Updated 2/5/2026

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.

February 5, 2026
Supersedes April 28, 2017

NOTICE

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

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

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

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

NOTICE

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

Bid Enclosed - Do Not Open
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:

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

BIDDER'S LIST FORM

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

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

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

A copy of the new Bidder's List Form and instructions for completing it are attached.

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

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

Revised: 5/2025

INSTRUCTIONS FOR PREPARING THE MAINEDOT BIDDER'S LIST FORM

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

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

SPECIFIC INSTRUCTIONS FOR COMPLETING THE FORM:

Section A:

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

Section B:

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

Maine Department of Transportation
BIDDER'S LIST FORM

SECTION A. Bidder/Prime Contractor Information - ***This section must be completed by the Bidder/Prime Contractor***

Prime Contractor Name:_____

Prime Contractor Email Address:_____ Bid Date:_____

Federal Project WIN:_____ Project Location:_____

SECTION B. COMMITMENT DETAILS – ***Prime contractor and all proposed subcontractor information is required in this section.***

A. **Firm name & address, including zip code.** **Prime must be listed first.**	**B.** **Annual gross receipt bracket Select 1 to 7***	**C.** **Status: DBE or Non-DBE**	**D.** **NAICS Code(s) and scope of work**	**E.** **Age of each firm**	**F.** **Proposed amount**

*1) Less than $1M; 2) $1 – $3M; 3) $3 - $6M; 4) $6 - $10M; 5) $10 - $20M; 6) $20 - $50M; 7) Greater than $50M – More than 5 subs use additional form.

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

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

MaineDOT Use Only: ☐ FHWA ☐ FTA ☐ FAA

Received Date:_____ Verified by:_____ Rev. 06.26

DBE GOAL NOTICE

Maine Department of Transportation
Disadvantaged Business Enterprise Program

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

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

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

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

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

Maine Department of Transportation Civil Rights Office

Directory of Certified Disadvantaged Business Enterprises

Listing can be found at:

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

For additional information and guidance contact:

Civil Rights Office at (207) 624-3056

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

September 14, 2007

Vendor Registration

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

STATE OF MAINE DEPARTMENT OF TRANSPORTATION
NOTICE TO CONTRACTORS

Sealed Bids addressed to the Maine Department of Transportation, Augusta, Maine 04333 and endorsed on the wrapper "Bids for **Highway Improvements** in the town of **Livermore Falls"** 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 **August 12, 2026,** and at that time and place, publicly opened and read. Bids will be accepted from all bidders. The lowest responsive bidder must have completed, or successfully complete, a **Highway Construction,** 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. NHPP-2264(300) WIN 022643.00

Location: In Androscoggin County, project is located on Route 17, beginning at the intersection of Route 17 and Route 133 in Livermore Falls and extending northerly 1.10 miles to the intersection of Route 17 and Bridge Street.

Outline of Work: Highway Improvements and other incidental work.

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

Bid Documents, specifications and bid forms can be viewed and obtained digitally at no cost at http://www.maine.gov/mdot/contractors/ . They may be purchased from the Department between the hours of 7:00 a.m. to 3:30 p.m. by cash, credit card (Visa/Mastercard) or check payable to Treasurer, State of Maine sent to Maine Department of Transportation, Attn.: Mailroom, 24 Child Street, Augusta, Maine 04333-0016. They also may be purchased by telephone at (207) 624-3536 between the hours of 7:00 a.m. to 3:30 p.m. Full size plans **$152.00 ($161.00** by mail). Half size plans **$76.00 ($80.25** by mail), Bid Book $10 ($13 by mail), Single Sheets $2, payment in advance, all non-refundable.

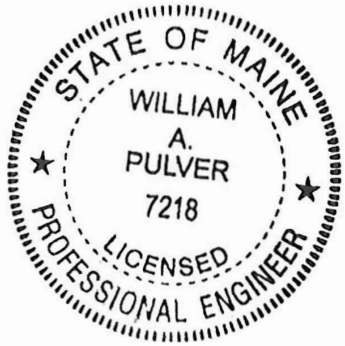
Each Bid must be made upon blank forms provided by the Department and must be accompanied by a bid bond at 5% of the bid amount or an official bank check, cashier's check, certified check, certificate of deposit, or United States postal money order in the amount of 5% of the bid amount, payable to Treasurer,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

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

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

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

Augusta, Maine
July 22, 2026



WILLIAM A. PULVER P. E.
CHIEF ENGINEER

NOTICE

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

SPECIAL PROVISION 102.7.3
ACKNOWLEDGMENT OF BID AMENDMENTS

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

Amendment Number	Date

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

CONTRACTOR

Date

Signature of authorized representative

(Name and Title Printed)

Maine Department of Transportation

Proposal Schedule of Items

Proposal ID: 022643.00 **Project(s):** 022643.00

SECTION: 1 HIGHWAY

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	201.23 REMOVING SINGLE TREE TOP ONLY	4.000 EA				
0020	201.24 REMOVING STUMP	5.000 EA				
0030	202.08 REMOVING BUILDING NO.: 1	LUMP SUM	LUMP SUM			
0040	202.12 REMOVING EXISTING STRUCTURAL CONCRETE	46.000 CY				
0050	202.15 REMOVING EXISTING MANHOLE OR CATCH BASIN	55.000 EA				
0060	202.202 REMOVING PAVEMENT SURFACE	950.000 SY				
0070	203.20 COMMON EXCAVATION	28,100.000 CY				
0080	203.2312 HEALTH AND SAFETY PLAN	LUMP SUM	LUMP SUM			
0090	203.2333 DISPOSAL TREATMENT OF SPECIAL EXCAVATION	1.000 T				
0100	206.061 STRUCTURAL EARTH EXCAVATION - DRAINAGE AND MINOR STRUCTURES, BELOW GRADE	200.000 CY				
0110	206.07 STRUCTURAL ROCK EXCAVATION - DRAINAGE AND MINOR STRUCTURES	200.000 CY				

Proposal ID: 022643.00 **Project(s):** 022643.00

SECTION: 1 HIGHWAY

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
0120	304.10 AGGREGATE SUBBASE COURSE - GRAVEL	23,840.000 CY				
0130	304.14 AGGREGATE BASE COURSE - TYPE A	75.000 CY				
0140	403.2071 19 MM POLYMER MODIFIED HOT MIX ASPHALT	5,200.000 T				
0150	403.2081 12.5 MM POLYMER MODIFIED HOT MIX ASPHALT	2,790.000 T				
0160	403.209 HOT MIX ASPHALT 9.5 MM (SIDEWALKS, DRIVES, INCIDENTALS)	1,160.000 T				
0170	403.2131 12.5 MM POLYMER MODIFIED HMA BASE	2,550.000 T				
0180	409.15 BITUMINOUS TACK COAT - APPLIED	1,950.000 G				
0190	502.32 STRUCTURAL CONCRETE CULVERT ENDWALLS	5.000 CY				
0200	502.565 CONCRETE FILL (PIPE FILL)	120.000 CY				
0210	524.301 TEMPORARY STRUCTURAL SUPPORT CATCH BASIN REPLACEMENTS STA 55+93 RT, 56+38 RT	LUMP SUM	LUMP SUM			

Proposal ID: 022643.00 **Project(s):** 022643.00

SECTION: 1 HIGHWAY

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
0220	524.301 TEMPORARY STRUCTURAL SUPPORT DRAINAGE OUTLET STA 49+35 LT	LUMP SUM	LUMP SUM	_____.____
0230	525.329 DRY-LAID STONE WALL - REMOVE AND RESET CONCRETE BLOCK RETAINING WALL - REMOVE AND RESET	LUMP SUM	LUMP SUM	_____.____
0240	526.301 PORTABLE CONCRETE BARRIER TYPE I	LUMP SUM	LUMP SUM	_____.____
0250	602.30 FLOWABLE CONCRETE FILL	55.000 CY	_____.____	_____.____
0260	603.001 INSPECT DRAINAGE STRUCTURE/PIPE (CAMERA)	1.000 EA	_____.____	_____.____
0270	603.01 CULVERT BORING/JACKING INSTALLATION 24" CULV OPTION III BORING/JACKING	LUMP SUM	LUMP SUM	_____.____
0280	603.05 6 INCH PVC PIPE	7.000 LF	_____.____	_____.____
0290	603.1311 8 " PVC PIPE	30.000 LF	_____.____	_____.____
0300	603.155 12 INCH REINFORCED CONCRETE PIPE CLASS III	60.000 LF	_____.____	_____.____
0310	603.159 12 INCH CULVERT PIPE OPTION III	440.000 LF	_____.____	_____.____

Proposal ID: 022643.00 **Project(s):** 022643.00

SECTION: 1 HIGHWAY

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
0320	603.165 15 INCH REINFORCED CONCRETE PIPE CLASS III	170.000 LF				
0330	603.169 15 INCH CULVERT PIPE OPTION III	320.000 LF				
0340	603.175 18 INCH REINFORCED CONCRETE PIPE CLASS III	430.000 LF				
0350	603.179 18 INCH CULVERT PIPE OPTION III	290.000 LF				
0360	603.195 24 INCH REINFORCED CONCRETE PIPE CLASS III	100.000 LF				
0370	603.199 24 INCH CULVERT PIPE OPTION III	680.000 LF				
0380	604.072 CATCH BASIN TYPE A1-C	8.250 EA				
0390	604.077 72 INCH CATCH BASIN TYPE A1-C	1.625 EA				
0400	604.092 CATCH BASIN TYPE B1-C	42.375 EA				
0410	604.097 72 INCH CATCH BASIN TYPE B1-C	1.000 EA				
0420	604.18 ADJUSTING MANHOLE OR CATCH BASIN TO GRADE	1.000 EA				
0430	604.243 CATCH BASIN TYPE F3-C	1.000 EA				

Proposal ID: 022643.00 **Project(s):** 022643.00

SECTION: 1 HIGHWAY

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
0440	604.245 CATCH BASIN TYPE F4-C	3.000 EA				
0450	604.247 CATCH BASIN TYPE F5-C	5.000 EA				
0460	604.249 CATCH BASIN TYPE F6-C	1.000 EA				
0470	604.252 CATCH BASIN TYPE A5-C	16.500 EA				
0480	604.252 CATCH BASIN TYPE A5-C 72" CATCH BASIN TYPE A5-C	1.250 EA				
0490	604.262 CATCH BASIN TYPE B5-C	27.500 EA				
0500	604.2622 72 " CATCH BASIN TYPE B5-C	1.000 EA				
0510	605.09 6 INCH UNDERDRAIN TYPE B	5,850.000 LF				
0520	605.11 12 INCH UNDERDRAIN TYPE C	2,500.000 LF				
0530	605.12 15 INCH UNDERDRAIN TYPE C	450.000 LF				
0540	605.13 18 INCH UNDERDRAIN TYPE C	1,300.000 LF				
0550	605.15 24 INCH UNDERDRAIN TYPE C	500.000 LF				
0560	606.356 UNDERDRAIN DELINEATOR POST	11.000 EA				

Proposal ID: 022643.00 **Project(s):** 022643.00

SECTION: 1 HIGHWAY

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

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price Dollars	 Cents	Bid Amount Dollars	 Cents
0570	606.47 SINGLE WOOD POST	3.000 EA				
0580	607.24 REMOVE AND RESET FENCE	540.000 LF				
0590	608.08 REINFORCED CONCRETE SIDEWALK	1,900.000 SY				
0600	608.10 BRICK SIDEWALK, REMOVE AND REBUILD	21.000 SY				
0610	608.26 CURB RAMP DETECTABLE WARNING FIELD	300.000 SF				
0620	609.11 VERTICAL CURB TYPE 1	1,750.000 LF				
0630	609.1101 SPECIAL GRANITE CURB - 48"	390.000 LF				
0640	609.12 VERTICAL CURB TYPE 1 - CIRCULAR	200.000 LF				
0650	609.21 CONCRETE SLIPFORM CURB	6,250.000 LF				
0660	609.219 CONCRETE SLIPFORM CURB - TERMINAL END	1,150.000 LF				
0670	609.234 TERMINAL CURB TYPE 1 - 4 FOOT	8.000 EA				
0680	609.237 TERMINAL CURB TYPE 1 - 7 FOOT	1.000 EA				

Proposal ID: 022643.00 **Project(s):** 022643.00

SECTION: 1 HIGHWAY

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
0690	609.238 TERMINAL CURB TYPE 1 - 8 FOOT	37.000 EA				
0700	609.2381 TERMINAL CURB TYPE 1 - 8' CIRCULAR	7.000 EA				
0710	609.38 RESET CURB TYPE 1	450.000 LF				
0720	610.08 PLAIN RIPRAP	8.000 CY				
0730	610.16 HEAVY RIPRAP	120.000 CY				
0740	610.18 STONE DITCH PROTECTION	9.000 CY				
0750	613.319 EROSION CONTROL BLANKET	870.000 SY				
0760	615.07 LOAM	1,145.000 CY				
0770	618.13 SEEDING METHOD NUMBER 1	92.000 UN				
0780	619.12 MULCH	92.000 UN				
0790	620.58 EROSION CONTROL GEOTEXTILE	325.000 SY				
0800	626.11 PRECAST CONCRETE JUNCTION BOX	8.000 EA				
0810	626.421 24 INCH DIAMETER FOUNDATION	70.000 LF				

Proposal ID: 022643.00 **Project(s):** 022643.00

SECTION: 1 HIGHWAY

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

Contractor: _____

Proposal Line Number	Item ID / Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0820	627.18 12 " SOLID WHITE PAVEMENT MARKING	10.000 LF				
0830	627.733 4" WHITE OR YELLOW PAINTED PAVEMENT MARKING LINE	21,770.000 LF				
0840	627.75 WHITE OR YELLOW PAVEMENT & CURB MARKING	2,700.000 SF				
0850	627.78 TEMPORARY 4 INCH PAINTED PAVEMENT MARKING LINE, WHITE OR YELLOW	54,000.000 LF				
0860	629.05 HAND LABOR, STRAIGHT TIME	100.000 HR				
0870	631.10 AIR COMPRESSOR (INCLUDING OPERATOR)	40.000 HR				
0880	631.11 AIR TOOL (INCLUDING OPERATOR)	40.000 HR				
0890	631.12 ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR)	40.000 HR				
0900	631.14 GRADER (INCLUDING OPERATOR)	60.000 HR				
0910	631.172 TRUCK - LARGE (INCLUDING OPERATOR)	40.000 HR				
0920	631.18 CHAIN SAW RENTAL (INCLUDING OPERATOR)	40.000 HR				

Proposal ID: 022643.00 **Project(s):** 022643.00

SECTION: 1 HIGHWAY

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
0930	631.20 STUMP CHIPPER (INCLUDING OPERATOR)	20.000 HR				
0940	631.21 ROAD BROOM (INCLUDING OPERATORS AND HAULER)	25.000 HR				
0950	631.32 CULVERT CLEANER (INCLUDING OPERATOR)	40.000 HR				
0960	634.208 REMOVE AND RESET LIGHT STANDARDS	4.000 EA				
0970	639.18 FIELD OFFICE TYPE A	1.000 EA				
0980	642.15 PRECAST CONCRETE STEPS	1.000 EA				
0990	643.621 RECTANGULAR RAPID FLASHING BEACON ASSEMBLY	3.000 EA				
1000	645.106 DEMOUNT REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGN	102.000 EA				
1010	645.116 REINSTALL REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGN	102.000 EA				
1020	645.292 REGULATORY, WARNING, CONFIRMATION AND ROUTE MARKER ASSEMBLY SIGNS TYPE II	66.000 SF				

Proposal ID: 022643.00 **Project(s):** 022643.00

SECTION: 1 HIGHWAY

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
1030	652.312 TYPE III BARRICADE	26.000 EA				
1040	652.33 DRUM	150.000 EA				
1050	652.34 CONE	200.000 EA				
1060	652.35 CONSTRUCTION SIGNS	1,800.000 SF				
1070	652.36 MAINTENANCE OF TRAFFIC CONTROL DEVICES	870.000 CD				
1080	652.38 FLAGGER	8,452.000 HR				
1090	652.41 PORTABLE CHANGEABLE MESSAGE SIGN	6.000 EA				
1100	656.75 TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL	LUMP SUM	LUMP SUM			
1110	659.10 MOBILIZATION	LUMP SUM	LUMP SUM			
1120	660.21 ON-THE-JOB TRAINING (BID)	2,000.000 HR				
1130	801.03 TEST PITS	23.000 EA				
1140	801.071 TEMPORARY SEWER BY-PASS NEW SEWER INSTALLATION	LUMP SUM	LUMP SUM			

Proposal ID: 022643.00 **Project(s):** 022643.00

SECTION: 1 HIGHWAY

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
1150	801.071 TEMPORARY SEWER BY-PASS SEWER REHAB	LUMP SUM	LUMP SUM			
1160	801.141 4" PVC SANITARY SEWER (SDR-35)	1,320.000 LF				
1170	801.16 6 INCH PVC SANITARY SEWER (SDR-35)	80.000 LF				
1180	801.17 8 INCH PVC SANITARY SEWER (SDR-35)	1,140.000 LF				
1190	802.211 RELINE EXISTING SEWER (UV CIPP LINER, 10-INCH DIAMETER)	895.000 LF				
1200	802.211 RELINE EXISTING SEWER (UV CIPP LINER, 12-INCH DIAMETER)	930.000 LF				
1210	802.211 RELINE EXISTING SEWER (UV CIPP LINER, 15-INCH DIAMETER)	885.000 LF				
1220	802.211 RELINE EXISTING SEWER (UV CIPP LINER, 18-INCH DIAMETER)	620.000 LF				
1230	802.211 RELINE EXISTING SEWER (UV CIPP LINER, 24-INCH DIAMETER)	135.000 LF				
1240	802.211 RELINE EXISTING SEWER (UV CIPP LINER, 8-INCH DIAMETER)	1,520.000 LF				
1250	803.16 4 FOOT DIAMETER PRECAST SEWER MANHOLE	5.000 EA				

Proposal ID: 022643.00 **Project(s):** 022643.00

SECTION: 1 HIGHWAY

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
1260	803.1732 SEWER MANHOLE - 4 FOOT DIAMETER	90.000 VF				
1270	812.161 ALTER SEWER MANHOLE	26.000 EA				
1280	812.164 REBUILDING SEWER MANHOLE	2.000 EA				
1290	822.33 6 INCH CLASS 52 DUCTILE IRON PIPE	210.000 LF				
1300	822.34 8 INCH CLASS 52 DUCTILE IRON PIPE	250.000 LF				
1310	822.36 12 INCH DUCTILE IRON PIPE	2,250.000 LF				
1320	822.36032 CLEAN & LINE WATER MAIN UNDER RAILROAD CROSSING	200.000 LF				
1330	823.311 12 INCH GATE VALVE WITH BOX	8.000 EA				
1340	823.3251 8 INCH GATE VALVE WITH BOX	1.000 EA				
1350	823.33 6 INCH GATE VALVE WITH BOX	7.000 EA				
1360	823.3332 GATE VALVE BOX, REPLACE	27.000 EA				
1370	824.3010 HYDRANT ASSEMBLY	4.000 EA				
1380	824.31 REMOVE FIRE HYDRANT	4.000 EA				

Proposal ID: 022643.00 **Project(s):** 022643.00

SECTION: 1 HIGHWAY

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
1390	824.32 REMOVE/RESET HYDRANT	3.000 EA				
1400	825.312 3/4 INCH CURB STOP	39.000 EA				
1410	825.32 2 INCH CORPORATION	5.000 EA				
1420	825.321 1 INCH CORPORATION	15.000 EA				
1430	825.322 2" CURB STOP	5.000 EA				
1440	825.331 1" CURB STOP	15.000 EA				
1450	825.422 2" PLASTIC SERVICE	180.000 LF				
1460	825.430 1" CTS SERVICE	450.000 LF				
1470	825.4301 3/4" CTS SERVICE	920.000 LF				
1480	825.5411 TEMPORARY WATER MAIN	LUMP SUM	LUMP SUM			
1490	827.302 UNSUITABLE SOIL EXCAVATION - BELOW GRADE	300.000 CY				
1500	827.331 TRENCH INSULATION	30.000 SY				
1510	910.30 SPECIAL WORK MANHOLE-JOINT GROUTING	13.000 EA				

Maine Department of Transportation

Proposal Schedule of Items

Proposal ID: 022643.00 **Project(s):** 022643.00

SECTION: 1 HIGHWAY

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
1520	910.30 SPECIAL WORK MANHOLE-POINT REPAIR ON WALL INTERIOR	13.000 EA				
	Section: 1		**Total:**			
			Total Bid:			

CONTRACT AGREEMENT, OFFER & AWARD

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

_____

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

_____

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

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, **WIN 022643.00** for **Highway Improvements** in the town of **Livermore Falls**, County of **Androscoggin, Maine**. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

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

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

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **July 31, 2028.** Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the *State of Maine Department of Transportation Standard Specifications, March 2020 Edition* and related Special Provisions.

C. Price.

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

_____

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

D. Contract.

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

E. Certifications.

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

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

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

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

F. Offer.

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

WIN 022643.00 - Highway Improvements - in the town of Livermore Falls

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

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

As Offeror also agrees:

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

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

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

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

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

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

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

CONTRACTOR

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

G. Award.

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

MAINE DEPARTMENT OF TRANSPORTATION

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

CONTRACT AGREEMENT, OFFER & AWARD

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

_____

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

_____

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

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, **WIN 022643.00** for **Highway Improvements** in the town of **Livermore Falls**, County of **Androscoggin, Maine**. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

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

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

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **July 31, 2028.** Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the *State of Maine Department of Transportation Standard Specifications, March 2020 Edition* and related Special Provisions.

C. Price.

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

_____

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

D. Contract.

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

E. Certifications.

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

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

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

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

F. Offer.

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

WIN 022643.00 - Highway Improvements - in the town of Livermore Falls

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

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

As Offeror also agrees:

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

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

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

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

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

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

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

CONTRACTOR

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

G. Award.

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

MAINE DEPARTMENT OF TRANSPORTATION

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

CONTRACT AGREEMENT, OFFER & AWARD

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

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

SAMPLE

A. The Work.

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

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

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

B. Time.

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

C. Price.

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

D. Contract.

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

E. Certifications.

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

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

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

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

SAMPLE

F. Offer.

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

PIN 012345.00 South Nowhere, Hot Mix Asphalt Overlay ,

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

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

SAMPLE

As Offeror also agrees:

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

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

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

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

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

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

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

CONTRACTOR

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

SAMPLE

G. Award.

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

MAINE DEPARTMENT OF TRANSPORTATION

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

BOND # _____

CONTRACT PERFORMANCE BOND
(Surety Company Form)

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

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

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

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

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

SAMPLE

BOND # _____

CONTRACT PAYMENT BOND
(Surety Company Form)

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

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

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

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

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

SAMPLE

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

"General Decision Number: ME20260045 05/18/2026

State: Maine

Construction Types: Highway

Counties: Maine Counties of
Androscoggin

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

SUME2014-040 06/23/2017

	Rates	Fringes
TRUCK DRIVER: DUMP TRUCK	$ 15.60	1.38
TRAFFIC CONTROL: LABORER-CONES/ BARRICADES/BARRELS - SETTER/MOVER/SWEEPER	$ 17.02	5.37
TRAFFIC CONTROL: FLAGGER	$ 9.06	0.00
OPERATOR: ROLLER ASPHALT	$ 19.14	3.43
OPERATOR: ROLLER (EARTH)	$ 14.74	1.29
OPERATOR: PAVER (ASPHALT, AGGREGATE, AND CONCRETE)	$ 20.86	3.73
OPERATOR: MILLING MACHINE	$ 28.51	5.44
OPERATOR: MECHANIC	$ 24.69	8.18
OPERATOR: LOADER	$ 19.52	3.19
OPERATOR: GRADER/BLADE	$ 27.40	8.13
OPERATOR: BULLDOZER	$ 21.71	5.67
OPERATOR: BROOM/SWEEPER	$ 19.52	0.00
OPERATOR: BOBCAT/SKID STEER/SKID LOADER	$ 21.03	3.43
OPERATOR: BACKHOE/EXCAVATOR/TRACKHOE	$ 20.09	3.20
LABORER: WHEELMAN	$ 22.87	3.79
LABORER: EPOXY INJECTOR (CONCRETE)	$ 13.43	1.15
LABORER: COMMON OR GENERAL	$ 14.65	1.64
LABORER: ASPHALT, INCLUDES RAKER, SHOVELER, SPREADER AND DISTRIBUTOR	$ 16.71	0.63
IRONWORKER, STRUCTURAL	$ 22.33	4.50
IRONWORKER, REINFORCING	$ 21.85	0.00
INSTALLER - GUARDRAIL	$ 19.98	2.55

	Rates	Fringes
HIGHWAY/PARKING LOT STRIPING: LABORER	$ 15.53	2.04
ELECTRICIAN	$ 25.21	5.63
CEMENT MASON/CONCRETE FINISHER	$ 19.27	1.13
CARPENTER, INCLUDES FORM WORK	$ 18.95	3.23

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

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

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

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

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

Union Rate Identifiers

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

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

Union Average Rate Identifiers

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

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

Survey Rate Identifiers

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

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

State Adopted Rate Identifiers

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

WAGE DETERMINATION APPEALS PROCESS

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

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

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

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

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

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

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

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

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

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

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

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END OF GENERAL DECISION

Town: Livermore Falls, Route 17
Project: **022643.00**
Date: July 7, 2026

SPECIAL PROVISIONS
SECTION 104
UTILITIES

UTILITY COORDINATION

The Contractor has primary responsibility for coordinating their work with Utilities/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 and/or railroad work to be undertaken in conjunction with this project. The following list identifies all known utilities/railroads having facilities presently located within the limits of this project or intending to install facilities during project construction.

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

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

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

OVERVIEW

Utility	Aerial	Buried	RR	Contact	Phone
Central Maine Power Co. (CMP)	X			Craig Bate Brian Harmon	(207) 578-2062 (207) 620-4633
Charter Communications, Inc.	X			Dan Gould Stephanie Foster	(207) 233-6822 (207) 592-4788
Fidium	X	X		Mike McPherson	(207) 217-7711
Livermore Falls Water District (LFWD)		X		Scott Greenleaf	(207) 897-8202
Livermore Falls, Town of		X		Mark Holt	(207) 576-1414
CSX Transportation, Inc.			X	Mike Sliper Adel Hadri Ryan Peploski	(518) 767-6081 (617) 618-8811 (315) 212-7644

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

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

All adjustments are to be made by the respective Utility/Railroad unless otherwise specified herein.

Fire hydrants, if present, shall not be disturbed until all necessary work has been accomplished in order to ensure 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 proposed pole locations in the field where needed, and prior to the start of those utility relocations. Should any adjustments to planned pole relocations become necessary, the Utility will document said adjustments and inform the Department prior to those utility relocations. The Contractor shall provide the Utilities access to new pole locations, where needed.

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

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

AERIAL

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

Aerial utilities require **5 working days' notice** prior to any operations involving work around their lines.

Summary:

Utility	No. of Pole Sets	New Wires / Cables	Trans. Wires / Cables	No. of Pole Removals	Estimate of Workdays Required
Central Maine Power Company	27	X	X	28	37
Charter Communications, Inc.	0	TBD	X	0	10
Fidium	0	TBD	X	0	35
					Total: 82

Utility Specific Issues:

Central Maine Power Co. (CMP) - will be placing **27** poles within the project limits pursuant to the included pole list. Due to limited right-of-way, most transfer work will be completed utilizing an alley-arm configuration for this project. This will ensure that all poles will be behind the proposed sidewalk, while keeping energized lines from encroaching onto private property.

CMP will require **15 working days' notice** for the scheduling of their crew(s) to be on-site, as well as **15** working days to place poles, **2** working days to perform any remaining aerial trimming, **15** working days to transfer existing and/or establish new facilities, and **5** working days to remove the old poles.

Charter Communications, Inc. - will transfer its facilities and/or establish new facilities within the project limits. Charter Communications will require **10 working days' notice** for the scheduling of their crew(s) to be on-site. The Contractor and/or CMP shall also notify Charter once CMP has completed its work. Charter Communications will require **10** working days to complete all aerial work located within the project limits.

Fidium - will transfer its facilities and/or establish new facilities within the project limits. Fidium will require **15 working days' notice** for the scheduling of their crew(s) to be on-site. The Contractor and/or Charter Communications shall also notify Fidium once Charter has completed its work. Fidium will require **35** working days to complete all aerial work located within the project limits.

Pole List:

Existing Pole #	Existing Station	Left / Right		Existing Offset (ft.)	Proposed Station	Left / Right		Proposed Offset (ft.)	Comments
		L	R			L	R		
CMP 24 / FIDIUM 31	23+97	X		25.7	**24+03**	X		**33.7**	**Park St.**
CMP 23 / FIDIUM 9/30	25+17	X		16.9	**25+16**	X		**24.4**	6 in. Fill
CMP 22 / FIDIUM 29	26+43	X		14.8	**26+39**	X		**22.3**	6 in. Fill
CMP 21 / FIDIUM 28	27+65	X		17.0	**27+65**	X		**23.0**	-
CMP 20 / FIDIUM 27	28+79	X		17.2	**28+85**	X		**23.2**	6 in. Fill
CMP 19 / FIDIUM 26	30+03	X		17.8	**30+03**	X		**23.8**	-
CMP 18 / FIDIUM 9/25	31+13	X		18.2	**31+32**	X		**24.7**	-
CMP 17 / FIDIUM 24	32+44	X		18.8	**32+44**	X		**25.8**	-
CMP 16 / FIDIUM 23	33+47	X		18.4	**33+45**	X		**26.4**	-
CMP 15 / FIDIUM 22	34+91	X		20.6	**35+03**	X		**26.6**	-
CMP 14 / FIDIUM 21	36+04	X		19.1	**36+04**	X		**26.1**	-
CMP 13 / FIDIUM 9/20	36+90	X		18.2	**37+05**	X		**21.7**	-
CMP 12 / FIDIUM 19	38+26	X		18.4	**38+24**	X		**22.4**	1ft. Fill
CMP 11 / FIDIUM 18	39+39		X	21.4	**39+43**		X	**22.2**	-
CMP 10 / FIDIUM 17	40+76		X	21.5	**40+76**		X	**28.5**	-
CMP 9 / FIDIUM 16	41+87		X	17.3	**41+87**		X	**22.3**	1ft. Cut
CMP 8 / FIDIUM 9/15	43+21		X	16.6	**43+21**		X	**24.8**	6 in. Fill
CMP 7 / FIDIUM 14	44+51		X	15.1	**44+45**		X	**22.1**	6 in. Fill
CMP 6 / FIDIUM 13	45+73		X	13.7	**45+71**		X	**26.7**	1ft. Cut
CMP 4 / FIDIUM 12	47+13		X	22.4	**47+05**		X	**24.9**	6 in. Fill
CMP 3 / FIDIUM 11	48+67		X	17.2	**48+77**		X	**17.5**	-
CMP 2 / FIDIUM 9/10	49+87		X	17.2	**49+89**		X	**17.5**	-
CMP 1 / FIDIUM 9	51+06		X	15.6	**51+10**		X	**17.5**	-

Pole List - Continued									
CMP 30 / FIDIUM 6	54+18	X		24.8	**54+18**	X		**27.8**	**Depot St.**
CMP 31½S / FIDIUM 4S	56+60		X	26.5	**56+60**		X	**28.5**	-
CMP 32 / FIDIUM 2	58+27	X		24.3	**58+29**	X		**27.3**	-
CMP 06 / FIDIUM ??	902+52	X		26.2	**902+49**	X		**38.2**	**Church St.**
CMP 1 / FIDIUM ??	1000+21		X	16.2	**1000+23**		X	**23.2**	**Union St.** New pole has been set.

SUBSURFACE

Summary:

Fidium - has underground facilities located within the project limits. Some of these facilities will be close to proposed drainage systems and may need to be adjusted in order to accommodate new drainage. Fidium will work directly with the Contractor to accomplish this work **while trenches are open**.

Fidium will perform any necessary test pits to determine duct bank locations & elevations in areas of potential conflict prior to drainage work being performed, or as requested by the Contractor.

Fidium will require **15 working days' notice** for the scheduling of test pits and/or duct bank adjustments, in order to have personnel on-site. Fidium will require **5** working days to complete up to **5** anticipated test pits, and **5** additional working days to adjust the associated duct banks, if necessary, and **while trenches are open**.

Anticipated test pit locations are as follows:

- Mill St. - Vic. of Sta. **800+50 RT** - Qty **1**
- Church St. - Vic. of Sta. **902+00 LT** - Qty **1**
- Water St. - Vic. of Sta. **65+36 LT** - Qty **1**
- Main St. - Vic. of Sta. **65+00 RT** & **65+70 RT** - Qty **2**

Livermore Falls Water District (LFWD) - has a drinking water system located within the project limits. LFWD intends to replace, rehabilitate, relocate and adjust sections of their water facilities. LFWD 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 their schedule for construction.

This work shall be completed in accordance with plans and special provisions for water work included in the contract documents and shall be completed in a manner in which the system remains fully functional at all times, unless otherwise approved by LFWD. The Water District requires **10 working days' notice** prior to water work taking place in order to schedule their on-site representative for inspection purposes. If a suspension of water work occurs, LFWD requires **10 working days' notice** prior to water work starting back up in order to re-schedule inspection services.

Town of Livermore Falls (Sewer Dept.) - has a sewer system located within the project limits. The Town intends to replace, rehabilitate, relocate and adjust sections of their sewer facilities. The Town 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 their schedule for construction.

This work shall be completed in accordance with plans and special provisions for sewer work, included in the contract documents, and shall be completed in a manner in which the system remains fully functional at

all times, unless otherwise approved by the Town. The Town requires **10 working days' notice** prior to sewer work taking place in order to schedule their on-site representative for inspection purposes. If a suspension of sewer work occurs, the Town requires **10 working days' notice** prior to sewer work starting back up in order to re-schedule inspection services.

AMERICAN IRON & STEEL & BABA REQUIREMENTS

New water and sewer utility construction for the Livermore Falls Water District and the Town of Livermore Falls is funded or is anticipated to be funded by the SRF (State Revolving Funds) Program. Therefore, the 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 apply American Iron and Steel (AIS) requirements to this project. Those requirements are incorporated and made a part hereof by reference.

American Iron and Steel (AIS) Requirements: 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.

- **NOTE:** Special funding requirements for utilities, such as SRF (State Revolving Fund) will Be tracked by the corresponding Utility.

Build America, Buy America Requirements: This project is subject to the Buy America (23 CFR 635.410) and Build America, Buy America Act (BABA) included in the Infrastructure Investment and Jobs Act (IIJA), Public Law No. 117-58. Further guidance can be found at the FHWA Buy America Construction Program Guide linked here:

- https://www.fhwa.dot.gov/construction/cqit/buyam.cfm

RAILROAD

CSX Transportation, Inc. (CSX): CSX has **two (2)** at-grade rail crossings located within project limits, Fed. ID #**365171K** & **365172S**. The Department has entered into an agreement with CSX to have the Contractor perform paving and drainage improvements within CSX's right-of-way/property boundaries. The Contractor is required by CSX to provide acceptable Certificates of Insurance, and to coordinate with CSX for all rail protection services. Authorization of the insurance and rail protection is required by CSX prior to **ANY** work being performed within CSX's right-of-way. Refer to the **Protection of Railroad Traffic & Structures (PRTS)** document for guidance.

The Contractor shall keep **ALL** personnel, equipment, and materials out of the Railroad's right-of-way, unless duly authorized by the Railroad and Rail Protection Services are present, if required. **NO** work shall take place within the Railroad's right-of-way without prior written authorization using the attached **Project Railroad Document Receipt & Sign-Off Form**.

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.

Project Railroad Document Receipt & Sign-Off Form

ME# / WIN #: _____ **Location / Milepost / Segment:** _____
Railroad (Owner / Operator): _____

MaineDOT Resident (Name): _____ **Phone:** _____

Contractor: _____ **Phone:** _____

Contact: _____ **Phone:** _____

Documents Received

I, the undersigned Resident in Charge, hereby acknowledge receipt of the following written *approved* railroad documents from the contractor in connection with the above-referenced project:

#	Document	Date Received	Comments (if any)	Initials
1	Railroad Approved Safety Plan / Rules / Procedures	____ / ____ / ____	_____	___
2	Railroad Approved Insurance Certificate(s) / Coverage Documents	____ / ____ / ____	_____	___
3	Railroad Approved Flagging requirements (or documentation showing no flagging needed)	____ / ____ / ____	_____	___
4	Contractor Superintendent Railroad Training document	____ / ____ / ____	_____	___

Conditions Before Work Commences

No work or equipment may commence or be within the railroad right-of-way until **all** of the above ***approved*** documents have been received from the contractor and accepted by the MaineDOT Resident If required Railroad flagger must be onsite. Any contractor violating this will be subject to fines and loss of payment for all work done in violation.

Signature

MaineDOT Resident / Engineer/ Project Manager
Name: _____
Title: _____
Signature: _____
Date all documents received/work may proceed: ____ / ____ / ____

** Not all items may be required from all railroads*

Rev 3. 04/23/26

Optional: Supplementary Acknowledgment (for Document Revisions, Page 2)

If any of the above documents are revised or supplemented during the course of the work, the Resident shall sign below to confirm receipt of the updated ***approved*** version:

Revision #	Document Revised	Date Received	Summary of Change	Signature / Date

EXHIBIT C

PROTECTION OF RAILROAD TRAFFIC AND STRUCTURES
SPECIAL PROVISIONS

1. GENERAL REQUIREMENTS

Part of the work required by the contract between MaineDOT and the Contractor for the performance of the Project (the "Contract") will be performed within a railroad right of way and/or adjacent to the tracks, telephone, telegraph, signal and electric supply lines of CSX Transportation, Inc. ("Railroad"). The Contractor agrees to perform all such work in compliance with all of the terms of these Special Provisions and all safety rules, regulations, or standards applicable to the Railroad. The Contractor shall be fully responsible for all damages arising from the Contractor's failure to comply with the requirements of these Special Provisions. The Contractor shall be deemed to have included all costs associated with complying with these requirements in the unit prices of the Schedule of Prices and the Proposal.

Additionally, the Contractor shall comply with the current version of the CSX *Special Provisions for Construction Near CSX Property* found in the CSX Public Project Information Manual. In instances where these Special Provisions and the aforementioned CSX Special Provisions conflict, the more stringent requirement shall prevail; where there is a conflict between a general requirement and a specific requirement, the specific requirement shall prevail.

2. AMOUNT OF WORK NEAR TRACKS

The estimated amount of work to be done within 50 feet of the Railroad's track is 1% of the Contract.

3. NUMBER OF TRAINS AND TRAIN SPEED

The Contractor is notified that a maximum speed of 10 mph will be considered as prevailing for the operation of trains of the Railroad at the Project location and that the approximate number of trains per day at the Project location is 1.

4. PRIORITY OF RAILROAD OPERATIONS

The train movements of the Railroad, and its lessees and licensees, shall have absolute priority over the performance of the Project within the Railroad right of way. The Contractor hereby agrees that the hours and times of work within the Railroad right of way must be coordinated through the Railroad and that such hours and times are subject to change without prior notice to the Contractor, unless other prior arrangements have been made through the Railroad.

5. AUTHORITY OF RAILROAD TO STOP WORK

If the Contractor fails to comply with the safety terms of these Special Provisions, or if the Railroad determines that the Contractor is using unsafe practices that threaten the safety of rail traffic, rail workers, or the general public, the Railroad shall have the right to immediately order the Contractor to cease work and vacate the Railroad's property. The Railroad agrees to confirm any cessation of work in writing by delivering to MaineDOT's Construction Manager a completed Stop Work Order form attached as Exhibit A within 24 hours of giving any such order.

The Contractor shall arrange and conduct its work so that there will be no interference with the Railroad's operations, including train, signal, telephone and telegraphic services, or damage to the Railroad's property, or to poles, wires, and other facilities of tenants on the Railroad's property or right-of-way. The Contractor shall store materials so as to prevent trespassers from causing damage to trains or to the Railroad's property. Whenever work is likely to affect the operations or safety of trains, the method of doing such work shall first be submitted to the Railroad's representative for approval, but such approval shall not relieve the Contractor from liability in connection with such work.

If conditions arising from or in connection with the Project require that immediate and unusual provisions be made to protect train operation or the Railroad's property, the Contractor shall make such provision. If the Railroad's representative determines that such provision is insufficient, the Railroad may, at the expense of the Contractor, require or provide such provision as may be deemed necessary, or cause the work to cease immediately.

6. ENTRY UPON RAILROAD PROPERTY

The Railroad hereby agrees to permit the Contractor, together with their subcontractors, suppliers, consultants and engineers (the "Contractor"), to enter upon the Railroad property for the purpose of performing the Project, PROVIDED THAT the Contractor complies with all of the terms of these Special Provisions and all safety requirements and directions of the Railroad's representative.

7. NOTICE REQUIRED BEFORE ENTRY

The Contractor shall not commence any work on the Railroad's property or rights-of-way until it has complied with the following conditions:

A. Notify the Railroad in writing of the date that it intends to commence work on the Project. Such notice must be received by the Railroad at least **14** calendar days in advance of the date the Contractor proposes to begin work on the Railroad's property. The notice must refer to the agreement between MaineDOT and the Railroad for the Project (the "Agreement") by date. Additional notice requirements when flagging/inspection services are required are set forth in Section 21.

B. Obtain authorization from the Railroad's representative to begin work on the Railroad's

property, such authorization to include an outline of specific conditions with which it must comply.

C. Obtain from the Railroad the names, addresses and telephone numbers of the Railroad's personnel who must receive notice under provisions in the Agreement. Where more than one individual is designated, the area of responsibility of each shall be specified.

8. HAZARDS

The Contractor shall assess to its own satisfaction hazards which may be caused by its operations. At a minimum, the Contractor agrees that the following shall constitute Hazards:

An operating track shall be considered fouled and subject to hazard when any object is brought nearer than 25 feet to the gauge line of the near rail of the track.

A signal line or communication line shall be considered fouled and subject to hazard when any object is brought nearer than 25 feet to any wire or cable.

An electric supply line shall be considered fouled and subject to hazard when any object is brought nearer than 25 feet to any wire of the line.

Cranes, trucks, power shovels or any other equipment shall be considered as fouling and subjecting to hazard a track, signal line, communication or electric supply line when working in such position that failure of equipment, with or without load, could foul the track, signal line, communication or electric supply line.

Railroad operation will be considered subject to hazard when explosives are used in the vicinity of Railroad premises, or during the driving or pulling of sheeting for any footing adjacent to a track, or when erecting structural steel adjacent to a track, or when performing work under, across or adjacent to a track, or when operations involve swinging booms or chutes that could in any way come nearer than 25 feet to the gauge line of the near rail of the track, or when erection or removal of staging, false work or forms fouls a track or wire line.

None of the operations specified as a Hazard above shall be carried on during the approach or passing of a train or without permission from the Railroad and the presence of a Railroad inspector/flagman, unless other prior arrangements have been made through the Railroad.

9. MINIMUM CLEARANCES

During the construction of staging, false work or forms, the Contractor shall at all times maintain a minimum vertical clearance of 23 feet above the top of high rail and a minimum side clearance of 10 feet from the gauge line of the near rail where track is tangent. Additional side clearance must be maintained where track is on a curve.

10. COOPERATION AND DELAYS

Contractor shall arrange a schedule with the Railroad for accomplishing stage construction involving work by the Railroad. In arranging its schedule, the Contractor shall ascertain, from the Railroad, the lead time required for assembling crews and materials and shall make due allowance therefore.

The Contractor may not charge any costs or submit any claims against the Railroad for hindrance or delay caused by railroad traffic; work done by the Railroad or other delay incident to or necessary for safe maintenance of railroad traffic; or for any delays due to compliance with these Special Provisions.

The Contractor shall cooperate with others participating in the construction of the Project to the end that all work may be carried on to the best advantage.

The Contractor understands and agrees that the Railroad does not assume any responsibility for work performed by others in connection the Project. The Contractor further understands and agrees that it shall have no claim whatsoever against the Railroad for any inconvenience, delay or additional cost incurred by the Contractor on account of operations by others.

11. WORK PLAN SUBMITTAL AND APPROVAL

The Contractor shall submit in writing to the Railroad's representative and MaineDOT's representative, at least 30 calendar day(s) in advance of the start of the Project, an outline of the Contractor's plan for work within the Railroad right of way, including contemplated method(s) of construction. This plan must meet with the approval of the Railroad's representative and MaineDOT's representative in every respect. If the Contractor contemplates the use of "on the track equipment", it should so state and obtain from the Railroad the conditions pertaining to such operations. All Railroad costs included in this operation will be borne by the Contractor. In a like manner, any of the Contractor's equipment or material on cars for the Project shall be handled in conformance with existing traffic rules, with all costs borne by the Contractor.

Prior to submitting its Proposal, the Contractor shall have ascertained, from the Railroad's representative and from MaineDOT's representative, all information relating to the Railroad's requirements and regulations and all costs in connection with compliance thereto.

The Railroad may require additional construction submittals pending review of the Work Plan. Such submittals may include but are not limited to:

1. Hoisting Operations
2. Demolitions Procedure
3. Erection Procedure
4. Temporary Excavation and Shoring
5. Track Monitoring

Submission requirements and review periods for such submittals will be communicated at the pre-construction utility meeting.

12. WORK FOR THE BENEFIT OF THE CONTRACTOR

No temporary or permanent changes to wire lines or other facilities (other than third-party fiber optic cable transmission systems) on the Railroad's property that are considered necessary to the work are anticipated or shown on the Plans. If any such changes are, or become, necessary in the opinion of the Railroad or MaineDOT, such changes will be covered by appropriate revisions to the Plans and by preparation of a force account estimate. Such force account estimate may be initiated by either the Railroad or MaineDOT, but must be approved by both the Railroad and MaineDOT. MaineDOT or Contractor shall be responsible for arranging for the relocation of the third-party fiber optic cable transmission systems, at no cost or expense to the Railroad.

Should MaineDOT or Contractor desire any changes in addition to the above, then it shall make separate arrangements with the Railroad for such changes to be accomplished at MaineDOT's or Contractor's expense.

13. HAUL ACROSS RAILROAD

If Contractor desires access across the Railroad's property or tracks at other than an existing and open public road crossing in or incident to construction of the Project, Contractor must first obtain the permission of the Railroad and shall execute a license agreement or right of entry satisfactory to the Railroad, wherein Contractor agrees to bear all costs and liabilities related to such access.

Contractor shall not cross the Railroad's property and tracks with vehicles or equipment of any kind or character, except at such crossing or crossings as may be permitted pursuant to this section.

14. STORAGE OF MATERIALS AND EQUIPMENT

Contractor shall not store its materials or equipment on the Railroad's property or where they may potentially interfere with the Railroad's operations, unless Contractor has received the Railroad representative's prior written permission. Contractor understands and agrees that the Railroad will not be liable for any damage to such materials and equipment from any cause and that the Railroad may move, or require Contractor to move, such material and equipment at Contractor's sole expense. To minimize the possibility of damage to the railroad tracks resulting from the unauthorized use of equipment, all grading or other construction equipment that is left parked near the tracks unattended by watchmen shall be immobilized to the extent feasible so that it cannot be moved by unauthorized persons.

15. EXCAVATIONS

Before excavation for footings adjacent to tracks and/or within the Railroad's right-of-way may commence, whether or not also within the limits of a public highway, plans and calculations for

such excavations, prepared by a Professional Engineer authorized to practice in Maine, shall be submitted to the Railroad's representative for review and approval. Unless other prior arrangements have been made, the Railroad shall have 30 calendar days to perform such review and approval and issue written permission to proceed with the excavation. No excavation shall proceed without such permission. If permission is denied, the Railroad shall have an additional 30 calendar days to perform such review of any re-submittal.

At a minimum, excavations must utilize proper bracing, shoring, sheeting or other support, as determined by the Railroad, to support the tracks with railroad traffic. Open excavation shall be suitably planked over when construction operations are not in progress. No excavation work shall be performed by the Contractor within the limits of the Railroad right of way, whether or not also within the limits of a public highway, until the Contractor has ascertained from the Railroad the location of any wires, conduits, pipes, cables or other railroad facilities below the surface of the ground. Damage to any such facilities caused by the failure of the Contractor to ascertain the location of such facilities or by failure to use due care to avoid injury to such facilities shall be at the expense of the Contractor.

16. EQUIPMENT

Equipment of the Contractor shall be in such condition so as to prevent failure that would cause delay in the operation of trains or damage to railroad facilities. Equipment shall not be placed or put in operation adjacent to a track without first obtaining permission of the Railroad. The Railroad agrees that such permission shall not be unreasonably withheld.

17. RAILROAD SERVICES - GENERALLY

When work is to be performed within the Railroad's right-of-way, the Railroad shall provide the services, equipment and materials provided in these Special Provisions including, but not limited to, engineering, flagging, inspection, signal protection and/or relocation, and restoration or replacement of the Railroad's track structure or ballast. Further, if the Railroad determines that the Contractor's operations do not comply with all of the safety requirements of these Special Provisions and all of the Railroad's safety requirements and directions, the Railroad will employ the necessary qualified employees to protect its trains and other facilities. The Contractor shall pay to the Railroad the cost for performing all Railroad Services unless said costs are to be paid by MaineDOT as specified in these Special Provisions.

18. CONSTRUCTION PROCEDURES

A. General

1. Construction work on the Railroad's property shall be subject to the Railroad's inspection and approval.

2. Construction work on the Railroad's property shall be in accord with the Railroad's written

outline of specific conditions and with these Special Provisions.

3. Contractor shall observe the terms and rules of the Railroad's Safe Way manual, which Contractor shall be required to obtain from the Railroad, and in accord with any other instructions furnished by the Railroad or the Railroad's Representative.

B. Blasting

1. Contractor shall obtain the Railroad's prior written approval for use of explosives on or adjacent to the Railroad's property. If permission for use of explosives is granted, Contractor must comply with the following:

a. Blasting shall be done with light charges under the direct supervision of a responsible officer or employee of Contractor.

b. Electric detonating fuses shall not be used because of the possibility of premature explosions resulting from operation of two-way train radios.

c. No blasting shall be done without the presence of an authorized Railroad representative. At least 10 calendar days' advance notice to the Railroad is required to arrange for the presence of an authorized Railroad representative and any flagging that the Railroad may require.

d. Contractor must have at the Project site adequate equipment, labor and materials, and allow sufficient time, to (i) clean up (at Contractor's expense) debris resulting from the blasting without any delay to trains; and (ii) correct (at Contractor's expense) any track misalignment or other damage to the Railroad's property resulting from the blasting, as directed by the Railroad's Representative, without delay to trains. If Contractor's actions result in delay of any trains, including Amtrak passenger trains, Contractor shall bear the entire cost thereof.

e. Contractor shall not store explosives on the Railroad's property.

2. The Railroad's representative will:

a. Determine the approximate location of trains and advise Contractor of the approximate amount of time available for the blasting operation and clean-up.

b. Have the authority to order discontinuance of blasting if, in his or her opinion, blasting is too hazardous or is not in accord with these Special Provisions.

19. MAINTENANCE OF DITCHES ADJACENT TO RAILROAD'S TRACKS

Contractor shall maintain all ditches and drainage structures free of silt or other obstructions that

may result from Contractor's operations. Contractor shall provide erosion control measures during construction and use methods that accord with applicable state standard specifications for road and bridge construction, including either (1) silt fence; (2) hay or straw barrier; (3) berm or temporary ditches; (4) sediment basin; (5) aggregate checks; and (6) channel lining. All such maintenance and repair of damages due to Contractor's operations shall be performed at Contractor's expense.

20. UTILITY FACILITIES ON RAILROAD'S PROPERTY

MaineDOT shall arrange, upon approval from the Railroad, to have any utility facilities on or over the Railroad's property changed as may be necessary to provide required clearances.

21. INSPECTION / FLAGGING

The Railroad has sole authority to determine the need for inspection/flagging required to protect its operations and property. The Railroad shall furnish and assign all inspectors/flaggers for general inspection purposes and for general protection of Railroad property and operations during construction as the Railroad determines are necessary to preserve safety.

(a) Responsibility for Cost. MaineDOT will bear the cost of flagging or inspection (including travel time), or any combination thereof, up to **30** man days of said flagging or inspection. If, in the opinion of the Railroad, further services of a flagger or inspector will be required due to the operations of the Contractor, the services will be furnished and the cost thereof (salary, expenses, insurance, taxes and vacation allowance, etc.) shall be paid to the Railroad by MaineDOT, and will be recovered by MaineDOT from the Contractor.

(b) Terms. The minimum hours per day for the Railroad employees engaged in inspection or flagging services shall be eight (8) hours. Time at rates for straight time, overtime or for deadheading starts in accordance with established practices in effect in the territory in which the Project is located. Information as to these practices should be obtained from the Railroad.

(c) Notice. The Contractor shall notify the Railroad's representative in writing at least **30** calendar days before the Contractor first commences work within 50 feet of the track or that otherwise requires inspection or flagging services so that Railroad can provide these services. Thereafter, following this initial notice, the Contractor shall notify the Railroad's representative in writing at least **10** calendar days before suspending such work, and shall notify the Railroad's representative in writing at least **10** calendar days before resuming such work. Failure to give notice of intent to suspend work shall be cause to charge the Contractor the cost of inspection during the period when work is suspended.

(d) Estimated Cost. The following is an estimate of the cost per day of inspection/flagging necessary for this Project. The rates shown include all overhead charges, travel time, deadheading and personal expenses.

Estimated daily rate for four (4) consecutive hours Monday-Friday (straight time): $850

Estimated daily rate for four (4) consecutive hours Saturday, Sunday, Holiday (overtime): $1275

Estimated rate for hours worked in excess of eight (8) hours in any one day: $160/hour

Rates charged will be the actual pay rate of the flaggers and inspectors used, plus standard additives, whether that amount is above or below the rate provided in the Estimate. The Railroad agrees to notify MaineDOT if rates used to calculate the above estimates change before the date of bids are received for this Contract.

(e) Definitions.

Man day (M.D.) - eight (8) consecutive hours or any portion thereof.

Overtime - Each additional hour or fraction thereof consecutive to and beyond the standard man day will count as 3/16 of a man day.

Standard Man Day - Eight (8) consecutive hours, Monday - Friday between the hours of 8:00 a.m. to 4:00 p.m. unless otherwise noted and agreed to by all parties.

Travel Time - Time required by flagger and/or inspector to commute between his or her point of headquarters to the project site. This time shall not be included in determining available man days.

22. CLEAN-UP

Contractor, upon completion of the Project, shall remove from the Railroad's property any temporary grade crossings, any temporary erosion control measures used to control drainage, all machinery, equipment, surplus materials, falsework, rubbish, or temporary buildings belonging to Contractor. Contractor, upon completion of the Project, shall leave the Railroad's property in neat condition, satisfactory to the Railroad's representative.

23. OTHER CONTRACTOR RESPONSIBILITIES

The restoring and resurfacing of tracks, if disturbed due to the Contractor's operations, shall be at the expense of the Contractor.

Any other changes made or services furnished by the Railroad as a result of the Contractor will be at the Contractor's expense.

24. INDEMNIFICATION

A. Generally. To the maximum extent permitted by applicable law, Contractor shall indemnify, defend, and hold Railroad and its affiliates harmless from and against all claims,

demands, payments, suits, actions, judgments, settlements, and damages of every nature, degree, and kind (including direct, indirect, consequential, incidental, and punitive damages), for any injury to or death to any person(s) (including, but not limited to the employees of Railroad, its affiliates, MaineDOT, or MaineDOT's other contractors, if any), for the loss of or damage to any property whatsoever (including but not limited to property owned by or in the care, custody, or control of Railroad, its affiliates, MaineDOT, or Maine DOT's other contractors (if any), and environmental damages and any related remediation brought or recovered against Railroad and its affiliates), arising directly or indirectly from the negligence, recklessness or intentional wrongful misconduct of Contractor, its agents, employees, invitees, or subcontractors in the performance of or in connection with the work or activities incidental thereto, or from their presence on or about Railroad's property. The foregoing indemnification obligation shall not be limited to the insurance coverage required herein, except to the extent required by law or otherwise expressly provided herein.

B. Compliance with Laws. Contractor shall comply with any federal, state, or local laws, statutes, codes, ordinances, rules, and regulations applicable to its work and shall indemnify, defend, and hold Railroad and its affiliates harmless with respect to any fines, penalties, liabilities, or other consequences arising from breaches of this requirement.

C. "Railroad Affiliates". For the purpose of this indemnification provision, Railroad's affiliates include CSX Corporation and all entities, directly or indirectly, owned or controlled by or under common control of Railroad or CSX Corporation and their respective officers, directors, employees and agents.

D. Notice of Incidents. Contractor shall notify Railroad and MaineDOT promptly of any loss, damage, injury or death arising out of or in connection with its work.

E. Survival. This indemnification provision shall survive the termination or expiration of the Contract.

25. INSURANCE

A. Insurance Policies. To the extent that Contractor is performing work on or about Railroad's property, Contractor shall procure and maintain the following insurance policies:

1. Commercial General Liability coverage at Contractor's sole cost and expense with limits of not less than $5,000,000 in combined single limits for bodily injury and/or property damage per occurrence, and such policy shall name Railroad as an additional insured.

2. Statutory Worker's Compensation and Employers Liability Insurance with limits of not less than $1,000,000, which insurance must contain a waiver of subrogation against Railroad and its affiliates (if permitted by state law).

3. Commercial automobile liability insurance with limits of not less than $1,000,000

combined single limit for bodily injury and/or property damage per occurrence, and such policy shall name Railroad as an additional insured.

4. Railroad Protective Liability Insurance with limits of not less than $5,000,000 combined single limit for bodily injury and/or property damage per occurrence and an aggregate annual limit of $10,000,000, which insurance shall satisfy the following additional requirements:

   a. The Railroad Protective Insurance Policy must be on the ISO/RIMA Form of Railroad Protective Insurance - Insurance Services Office (ISO) Form CG 00 35.

   b. CSX Transportation, Inc. must be the named insured on the Railroad Protective Insurance Policy.

   c. Name and Address of Contractor must appear on the Declarations page.

   d. Description of operations must appear on the Declarations page and must match the Project description.

   e. Authorized endorsements must include the Pollution Exclusion Amendment - CG 28 31, unless using form CG 00 35 version 96 and later.

   f. Authorized endorsements may include:

      (i) Broad Form Nuclear Exclusion - IL 00 21
      (ii) 30-day Advance Notice of Non-renewal or cancellation
      (iii) Required State Cancellation Endorsement
      (iv) Quick Reference or Index - CL/IL 240

   g. Authorized endorsements may not include:

      (i) A Pollution Exclusion Endorsement except CG 28 31
      (ii) A Punitive or Exemplary Damages Exclusion
      (iii) A “Common Policy Conditions” Endorsement
      (iv) Any endorsement that is not named in Section 4 (e) or (f) above
      (v) Policies that contain any type of deductible

5. All insurance companies must be A. M. Best rated A- and Class VII or better.

6. The CSX Transportation project number contract number, as applicable, must appear on each Declarations page and/or certificates of insurance.

7. Such additional or different insurance as Railroad may require.

B. Additional Terms.

1. Contractor must submit the original Railroad Protective Liability policy, Certificates of Insurance and all notices and correspondence regarding the insurance policies to:

   Insurance Department
   CSX Transportation, Inc.
   500 Water Street, C-907
   Jacksonville, FL 32202

   OR

   insurancedocuments@csx.com

2. Neither Agency nor Contractor may begin work on the Project until it has received Railroad's written approval of the required insurance.

26. ROADWAY WORKER SAFETY REGULATION

All Contractors/Subcontractors and individuals must be aware of the Federal Roadway Worker Safety Regulation, CFR 49, Part 214(c), and all Contractor employees designated as Roadway Workers must comply with this regulation. Additional safety requirements can be found here: Safety Requirements - CSX.com.

Requirements will be discussed at the pre-construction utility meeting.

27. FAILURE TO COMPLY

If MaineDOT or Contractor violate or fail to comply with any of the requirements of these Special Provisions, (a) the Railroad may require MaineDOT and/or Contractor to vacate the Railroad's property; (b) the Railroad may withhold monies due MaineDOT and/or Contractor; (c) the Railroad may request that MaineDOT withhold monies due Contractor; and (d) the Railroad may cure such failure and MaineDOT or Contractor shall reimburse the Railroad for the cost of curing such failure.

EXHIBIT A
ORIGINAL TO CONTRACTOR

MDOT/RAILROAD STOP WORK ORDER

Section A - Contractor	Town
	DOT Railroad Project #
Railroad Name	Location
	Notice #
DESCRIPTION OF SAFETY HAZARD/REASON FOR ORDER	
Standard Violated	RAC (Risk Assessment Code) **N/R**
Railroad Official (Flagger/Inspector) Name Signature	Date
SECTION B - ACTION TAKEN:	

cc: MDOT - R.E. or Inspector
MDOT - Utility Section
MDOT - Construction Division
Railroad - Chief Engineer

1. Risk Assessment. Each identified/validated hazard shall be assigned a Risk Assessment Code (RAC) by the Safety Office. The RAC represents the degree of risk associated with the deficiency and combines the elements of hazard severity and mishap probability. The RAC is derived as follows:

a. Hazard Severity. The hazard severity is an assessment of the worst potential consequence: Defined by degree of injury, occupational illness, or property damage, which is likely to occur as a result of a deficiency. Hazard severity categories shall be assigned by roman numeral according to the following criteria.

(1) Category I - Catastrophic: The hazard may cause death or loss of a facility.

(2) Category II - Critical: May cause severe injury, severe occupational illness, or major property damage.

(3) Category III - Marginal: May cause minor injury, minor occupational illness, or minor property damage.

(4) Category IV - Negligible: Probably would not affect personnel safety or health, but is nevertheless in violation of a NAVOSH standard.

b. Mishap Probability. The mishap probability is the probability that a hazard will result in a mishap, based on an assessment of such factors as location, exposure in terms of cycles or hours of operation, and affected population. Mishap probability shall be assigned an Arabic letter according to the following criteria:

(1) Sub-category A - Likely to occur immediately or within a short period of time.

(2) Sub-category B - Probably will occur in time.

(3) Sub-category C - May occur in time.

(4) Sub-category D - Unlikely to occur.

c. Risk Assessment Code. The RAC is an expression of risk which combines the elements of hazard severity and mishap probability. Using the matrix shown below, the RAC is expressed as a single Arabic number that can be used to help determine hazard abatement priorities.

	Mishap Probability					RAC
		A	B	C	D	1 - Critical
Hazard Severity	I	1	1	2	3	2 - Serious
	II	1	2	3	4	3 - Moderate
	III	2	3	4	5	4 - Minor
	IV	3	4	5	5	5 - Negligible

EXHIBIT D

INITIAL ESTIMATE
ATTACHED

ACCT. CODE : 709 - ME0031 | **Form Revision** 20250520-A

ESTIMATE SUBJECT TO REVISION AFTER: 7/7/2027		**DOT NO.:** 365172S & 365171K	
CITY: Livermore Falls	**COUNTY:** Androscoggin		**STATE:** ME
DESCRIPTION: Roadway Improvements			
ZONE: New England	**SUB-DIV:** Waterville	**MILE POST:** WAT -20.4992 -20.654	
AGENCY PROJECT NUMBER: WIN 022643.00			

PRELIMINARY ENGINEERING:						
Contracted & Administrative Engineering Services					$	-
Subtotal					**$**	-
CONSTRUCTION ENGINEERING/INSPECTION:						
Contracted & Administrative Engineering Services					$	58,000
Subtotal					**$**	**58,000**
FLAGGING SERVICE: (Contract/CSX Labor)						
Engineering Labor (Foreman/Inspector/Flagman)		30	Days @	$ 700.00	$	21,000
Additive	(Engineering Department)				$	51,639
Subtotal					**$**	**72,639**
SIGNAL & COMMUNICATIONS WORK:					$	-
TRACK WORK:					**$**	-
CONTRACT WORK:					**$**	-
PROJECT SUBTOTAL:					**$**	**130,639**
CONTINGENCIES:	10.00%				$	13,064
PROJECT TOTAL:	**********				$	143,703
CURRENT AUTHORIZED BUDGET:	**********				$	-
TOTAL SUPPLEMENT REQUESTED:	**********				**$**	**143,703**
DIVISION OF COST:						
Agency	100.00%				$	143,703
Railroad	0.00%				$	-
					$	**143,703**

NOTE: Estimate is based on FULL CROSSING CLOSURE during work by Railroad Forces.

This estimate has been prepared based on site conditions, anticipated work duration periods, material prices, labor rates, manpower and resource availability, and other factors known as of the date prepared. The actual cost for CSXT work may differ based upon the agency's requirements, their contractor's work procedures, and/or other conditions that become apparent once construction commences or during the progress of the work

Office of Director - CSXT Public Projects, Jacksonville, Florida

Estimated prepared by: MBI **Approved by:** TRS **CSXT Public Project Group**

DATE: 07/07/26 **REVISED:** _____ **DATE:** 7-8-26

EXHIBIT E

PAYMENT SCHEDULE

Deposit Payment in Advance

Upon delivery of the notice to proceed with the Project, Agency will deposit with Railroad a sum equal to ten percent (10%) of the Reimbursable Expenses as shown by the Estimate.

Progress Payments In Arrears

Notwithstanding anything to the contrary set forth in this Agreement, Agency thereafter shall pay Railroad in arrears for its Reimbursable Expenses, rather than in advance, with only such exceptions, such as purchasing materials and equipment, as the parties mutually agree. Accordingly, Agency shall remit payment to Railroad for its Reimbursable Expenses within thirty (30) days following delivery to Agency of an invoice.

SCHEDULE I

CONTRACTOR'S ACCEPTANCE

To and for the benefit of CSX Transportation, Inc. ("Railroad"), and to induce Railroad to permit Contractor on or about Railroad's property for the purposes of performing work in accordance with the Agreement dated _____, 20__, between the Maine Department of Transportation and Railroad for Livermore Falls Highway Construction Project 022643.00 Contractor hereby agrees to abide by and perform all applicable terms of Exhibit C to the Agreement, titled "Protection of Railroad Traffic and Structures – Special Provisions."

Contractor: _____

By: _____

Name: _____

Title: _____

Date: _____

SPECIAL PROVISION 105
CONSTRUCTION AREA

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

The sections of highway under construction in Androscoggin County:

Project 022643.00 *is located in the town of Livermore Falls on Route 17, beginning at the intersection of Route 17 and Route 133 in Livermore Falls and extending northerly 1.10 miles to the intersection of Route 17 and Bridge Street.*

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

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

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

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

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

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

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

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

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

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

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

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

I. Historic Resources are present adjacent to and along the Project. MaineDOT has completed consultation in accordance with Section 106 of the National Historic Preservation Act and Programmatic Agreement for the project as presented. The Contractor shall comply with the provisions from Standard Specification 105.9 related to changes in the design at these historic properties during construction including tree clearing, property impacts, or project materials. The following is project specific:

A. This project is located along and adjacent to Section 106 and Section 4(f) resources:

1. Individually Eligible or National Register-Listed properties:
    1. Station 62+54 to 63+14 Left
    2. Station 65+38 to 66+62 Left
    3. Station 66+50 to 66+94 Right

B. Deviations from the approved project design during construction within the above-specified stations shall be approved by the MaineDOT Project Manager. Changes could have adverse effects to the historic resources and jeopardize federal funding.

II. Wetlands are defined in the Standard Specifications (Section 101.2) and shown on project plans. The following shall apply to this project:

A. Wetland impacts are authorized as non-notifying under the Maine Regional General Permit (RGP) 3 at the following location:

1. Station 57+40 Right: 1,400 SF permanent wetland fill.

B. Any changes to the scope or location of impacts from what is shown on the plans may require review for additional permit approvals. General conditions of the Maine Army Corps of Engineers General Permit apply (see conditions in the contract documents).

III. Approvals:

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

Livermore Falls
Route 17 - Reconstruction
CSX Rail Crossings
WIN: 22643.00

GENERAL NOTE

As the Route 17 Reconstruction project intersects CSX active rail line at two locations, coal ash may be present on this project within the railroad bed and immediate adjacent areas. Coal ash is characteristically identified as being fine grained black material. Coal ash, if encountered, shall be reused on-site as fill material. If the coal ash cannot be reused on site, the Contractor is responsible for obtaining all approvals or permits, and any required analytical results for proper disposal at a licensed Maine Department of Environmental Protection (MDEP) facility. Please note that CSX Construction Notes (CSX Environmental Department) shall be adhered to and may supersede this General Note. The CSX Environmental Department shall be contacted if any contamination is encountered during work operations adjacent to CSX property.

During the duration of the project, the Contractor is responsible for proper disposal of any railroad ties that may be encountered, and which cannot be reused on site. The Contractor is responsible for having unused ties disposed of as demolition waste at a landfill approved to accept demolition waste/debris. If the Contractor encounters other potential demolition debris and is not sure of proper disposal procedures, the Contractor shall notify the Resident. The Resident shall contact the Senior Geologist in Maine Department of Transportation Environmental Office (MaineDOT-ENV) at 207-624-3000 for clarification.

Further, if the Contractor encounters evidence of soil or groundwater contamination, the Contractor shall stop work in the contaminated area, secure the excavation, and immediately notify the Resident. The Resident shall contact the Senior Geologist in MaineDOT-ENV at 207-624-3000 and the MDEP at 800-482-0777. Work may only continue with authorization from the Resident.

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

1. Maximum lane closure length shall be 2,500’ or 4,000’ for paving, milling, or crack sealing unless approved by the Resident.

2. Pedestrian traffic accommodations must be addressed in the Contractor’s Traffic Control Plan.

3. The Contractor’s Traffic Control Plan shall address construction practices and schedules that will be implemented to minimize vehicle, pedestrian, and bicycle disruptions.

4. The Contractor shall maintain a minimum of one lane of alternating one-way traffic at all times.

5. The Contractor shall only use Flaggers for lane closures during daylight hours.

6. Only one paving operation is allowed at one time, excluding hand placing paving, unless otherwise approved by the Resident.

7. The Contractor shall plan operations so that the Resident will have sufficient advance notification to provide the necessary inspection and testing. Sufficient notification is considered to be 48 hours.

8. The Contractor shall request absences at least 72 hours in advance. The Department will review and approve requested absences based on existing roadway condition, paving deadlines, adherence to schedule, traffic restrictions, detours etc. The Contractor shall assure that the roadway surface and signage are maintained for safe passage of traveling public during any approved absences. The Department will not modify the Contract Completion Date for approved absences.

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

105.11 Other Federal Requirements this section is replaced with the following:

105.11 Build America, Buy America Requirements

Unless expressly otherwise provided in the Bid Documents, the following provisions are hereby incorporated into the Contract.

This project is subject to the Buy America (23 CFR 635.410) and Build America, Buy America Act (BABA) included in the Infrastructure Investment and Jobs Act (IIJA), Public Law No. 117-58. Further guidance can be found at the FHWA Buy America Construction Program Guide linked here:

https://www.fhwa.dot.gov/construction/cqit/buyam.cfm

The Contractor shall certify compliance with Buy America and BABA in the following categories. An article, material or supply should only be classified into one of the following categories and is classified based on its state when it arrives at the project site.

1. **Iron and Steel:** All iron and steel permanently incorporated into the project must be produced in the United States. The only exception to this requirement is the production of pig iron and the processing, pelletizing, and reduction of iron ore, which may occur in another country. This means all manufacturing processes, from the initial melting stage through the application of coatings, must occur in the United States. Any process that modifies the chemical content, the physical size and shape, or the final finish is considered a manufacturing process, including 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.

Existing De Minimis Use Exemption for Iron and Steel: The requirements of the law and regulations do not prevent a minimal use of foreign steel and iron materials if the total cost of such materials used does not exceed one-tenth of one percent (0.1%) of the total construction contract price or $2,500.00, whichever is greater.

2. **Manufactured Products:** Articles, materials, or supplies that have been processed into a specific form and shape, or combined with other articles, materials, or supplies to create a product with different properties than the individual articles, materials, or supplies. If a domestic product is taken out of the United States for any process, it becomes a foreign source material.

All Manufactured Products used in the project must be manufactured in the United States ("final assembly requirement"). "Component" means an article, material, or supply, whether manufactured or unmanufactured, incorporated directly into a manufactured product or, where applicable, an iron or steel product. If a manufactured product is

predominantly iron, steel, or a combination of both it must meet the above requirements for iron and steel products. Predominantly iron or steel or a combination of both means the total cost of the iron and steel content exceeds 50 percent of the total cost of all its components.

Precast concrete products classified as Manufactured Products must additionally have predominantly iron or steel components meet the above requirements for iron and steel. Cabinets or other enclosures of intelligent transportation systems (ITS) and other electronic hardware systems classified as Manufactured Products must also comply with the above requirements for iron and steel if the cabinet or enclosure is predominantly iron or steel.

3. **Construction Materials:** Items, articles, materials, or supplies that consist of only one of the items listed below:
    i. Non-ferrous metals.
    ii. Plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables).
    iii. Glass (including optic glass);
    iv. Fiber optic cable.
    v. Optical fiber.
    vi. Lumber.
    vii. Engineered wood; and
    viii. Drywall.

Minor additions of articles, materials, supplies, or binding agents to a Construction Material do not change the categorization of the Construction Material.

All Construction Materials permanently incorporated into the project must be produced in the United States. For the Construction Material to be considered "produced in the United States," it must meet the following standards:

i. Non-ferrous metals. All manufacturing processes, from initial smelting or melting through final shaping, coating, and assembly, occurred in the United States.

ii. Plastic and polymer-based products. All manufacturing processes, from initial combination of constituent plastic or polymer-based inputs, or where applicable, constituent composite materials, until the item is in its final form, occurred in the United States.

iii. Glass. All manufacturing processes, from initial batching and melting of raw materials through annealing, cooling, and cutting, occurred in the United States.

iv. Fiber optic cable (including drop cable). All manufacturing processes, from the initial ribboning (if applicable), through buffering, fiber stranding, and jacketing, occurred in the United

States. All manufacturing processes also include the standards for glass and optical fiber, but not for non-ferrous metals, plastic, and polymer-based products, or any others.

v. Optical fiber. All manufacturing processes, from the initial preform fabrication stage through the completion of the draw, occurred in the United States.

vi. Lumber. All manufacturing processes, from the initial debarking through treatment and planning, occurred in the United States.

vii. Drywall. All manufacturing processes, from initial blending of mined or synthetic gypsum plaster and additives through cutting and drying of sandwiched panels, occurred in the United States.

viii. Engineered wood. All manufacturing processes, from the initial combination of constituent materials until the wood product is in its final form, occurred in the United States.

Construction Materials brought on site and combined with other materials are not considered Manufactured Products. Items that consist of two or more of the listed Construction Materials that have been combined off-site through a manufacturing process, and items that include at least one of the listed materials combined with a material that is not listed through a manufacturing process should be treated as Manufactured Products rather than as Construction Materials.

Specifically Excluded Materials

Section 70917(c) of the Build America Buy America Act specifically excludes certain materials from being classified as either construction materials or manufactured products. These exclusions include cement and cementitious materials, aggregates (such as stone, sand, or gravel), and aggregate binding agents or additives.

Additionally, when these materials are combined as an unsettled mixture without a final form upon arriving at the work site, such as wet concrete or hot mix asphalt, the mixture is not considered a manufactured product. However, if these same materials are combined off-site to create a finished product, such as precast concrete, that finished product is considered a manufactured product.

Public Interest Waiver of BABA Requirements for De Minimis Costs

The US Department of Transportation issued a public interest Waiver of Buy America Requirements for De Minimis Costs. The Waiver for De Minimis Costs exempts Manufactured Products and Construction Materials produced outside the United States for which the total value of the non-compliant products is no more than the lesser of $1,000,000 or 5% of total applicable costs for the project.

The obligation to track costs throughout the life of the contract is the Contractor's responsibility. The term "total applicable costs" is defined as the total actual final material cost of the compliant and non-compliant iron and steel, Manufactured Products, and Construction Materials.

Certification

For iron and steel materials and for Manufactured Products produced predominantly of iron or steel or a combination of both*, the Contractor shall submit 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). A "Buy America" Certification is required from each manufacturer, fabricator, supplier, subcontractor that engages in "manufacturing" as defined above.

**Predominantly of iron or steel or a combination of both means that the cost of the iron and steel content exceeds 50% of the total cost of all its components. The cost of iron and steel is the cost of the iron or steel mill products, castings, or forgings utilized in the manufacture of the product and a good faith estimate of the cost of the iron or steel components.*

In addition, upon completion of the project, the Contractor shall certify in writing as to the overall compliance with BABA and provide the total project delivered cost of all foreign Manufactured Products and Construction Materials. The Contractor shall also submit individual certifications from all subcontractors and suppliers that furnish applicable Construction Materials and Manufactured Products valued at $10,000 or more. Such individual certifications shall be submitted upon delivery of the Construction Material or Manufactured Products to the site.

Example certification:

I hereby certify that this project is in compliance with the Build America, Buy America Act (Public Law 117- 58) requirements for this project. All Iron and Steel, Manufactured Products produced predominantly of steel or iron, Manufactured Products and Construction Materials that are permanently incorporated into the work for this project were produced in the United States of America, with the only exceptions as noted below.

As required, we will maintain all records and documents pertinent to the Build America, Buy America Act requirements, at the address given above, for not less than 3 years from the date of Final Acceptance. These files will be available for inspection and verification by the Maine Department of Transportation and/or the Federal Highway Administration.

We further certify that the total value of foreign steel and iron for this project is $_____, said value being less than 0.1% of the total construction contract price or $2,500.00, whichever is greater.

We further certify that the total material cost of foreign Manufactured Products and Construction Materials for this project is $_____, said value being no more than the lesser of $1,000,000 or 5% of total applicable costs. The term “total applicable costs” is defined as the total actual final material cost of the compliant and non-compliant iron and steel, Manufactured Products, and Construction Materials.

Signed (*Contractor*)
(*President*) (*Contractor Firm*)

MaineDOT DBE Project Attainment Target (PAT)

for this Project is **0**%

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

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

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

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

December 11, 2025

SPECIAL PROVISION
SECTION 106 - HOT MIX ASPHALT PAVEMENT

The following subsections of the most current version of Specification 100 – General Conditions have been revised and amended by the following:

106.7.3 Early Termination of Lots

In the event a Lot in progress is terminated prematurely before the Department is able to take the number of acceptance samples required by the test method specified in the Contract, the following will apply as applicable unless otherwise detailed in the specifications for the item:

1. For items under statistical acceptance where payfactors are generated
    a. If three or more samples have been taken, then payfactors will be generated using the available samples results for the lot.
    b. If the termination was requested by the Contractor and approved by the Department prior to three samples being taken, then each property's payfactor will be set to 0.80.
    c. If the termination was initiated by the Department prior to three samples being taken, then each property's payfactor will be set to 1.00 for each property.
2. For items not under statistical acceptance
    a. If initiated by the contractor and no random sample has been reached the entire lot shall be subject to a penalty of 20% of the item's price.
    b. If initiated by the contractor and only the most recent sample tonnage has not been reached only the tonnage for that sublot will be subject to a penalty of 20% of the items price.

An HMA mix design aim change request from the Contractor with open Lots in progress will constitute a contractor initiated lot termination. For methods A & C, the minimum samples required to generate a pay factor prior to termination will be three. If a minimum of three samples have not been obtained, then each property's payfactor will be set to 0.80. For methods B & D the minimum number of samples (sublots) required prior to an aim change will be the total tonnage of the lot, or a minimum of three, whichever is less. If the minimum number of samples have not been obtained then the pay adjustment for each of the sublot's properties will be set to 0.80.

SPECIAL PROVISION
SECTION 107
CONTRACT TIME

1. The Contractor will be allowed to commence work on this project as long as all applicable plans as required under this contract have been submitted and approved.

2. The Contractor shall proceed with all sewer lining work at the beginning of the project. Sewer lining work must be completed prior to earth disturbing activities to protect the sewer system.

3. The completion date for this contract is **July 31, 2028.**

4. All work schedule changes must be submitted for approval to the Department a minimum of 48 hours prior to the requested change.

5. The Contractor shall not work on holidays.

6. Once operations commence, for every weekday not worked, the Contractor will be charged liquidated damages per Section 107.7.2 of the Standard Specifications, excluding days lost due to inclement weather, holidays, and approved absences.

SPECIAL PROVISION
SECTION 202
REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Under Section 202.02 of the Standard Specifications, ownership of buildings and all equipment, fixtures, and materials therein shall be interpreted as meaning all equipment, fixtures, and materials that are recognized as real property. Any items that are recognized as personal property are excepted and are reserved to the owner. If the bidder is in doubt as to whether any item not listed is real or personal property, they shall request a determination of the matter prior to date on which bids are to be received.

All debris and unusable demolition materials shall be removed and disposed of at a facility licensed by the Maine Department of Environmental Protection (MDEP) for management of Special Waste. 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-site location. For a related provision, see MDEP - Maine Solid Waste Management Rules, 06-096 CMR Ch. 401, Landfill Siting, Design and Operation. Fill material used for the foundation cavities shall meet the Standard Specification requirements for Common Borrow, Section 703.18.

Demolition of the structure (Former Stretch It Body Shop - 40 Depot Street) will be conducted entirely at the building/property location. At no time will demolition vehicles or equipment be in the roadway/highway right-of-way. The Contractor shall provide and maintain all temporary barricades, signs, or other safety measures as necessary to complete the work. The Contractor shall obtain all permits or licenses necessary for the performance of the work and conform to all Federal, State, and local laws, regulations or ordinances applicable to the work.

The following list of items is to be reserved to the property owner and/or occupants of Buildings:

No Reservations

Building to be removed under Section 202 - Removing Structures and Obstructions of the contract will be made available to the Contractor as follows:

Once the project has been awarded, the Project Manager will be in contact with the Contractor to discuss access and building availability. Immediate removal is recommended.

Building #1:

Stretch It Auto Body Shop - 40 Depot Street, Livermore Falls, ME
2 Story (not including basement/cellar level) with walkout Commercial Building (Estimated at 5,663 SQ.FT.); Asphalt Shingled, Gabled Roof; Metal Siding; Insulated; Fixed Sash Type Windows; Flooring Wood/Tile; Oil Fired Hot Water Boiler.

Utilities:

Electrical – circuit breakers and overhead utility into the building - Disconnected
Municipal Water and Sewer
Two - #2 Fuel Oil Tanks (275-gallon each)

Real Property:

None

Exterior:

None

Hazardous Materials and #2 Fuel Oil Tanks:

Prior to any demolition of buildings, the Contractor shall conduct a Hazardous Materials Survey, interior and exterior, for the structure (two-story commercial building) associated with the subject property. Specifically, the Hazardous Materials Survey should include assessments of the structure for Asbestos Containing Materials (ACM), Lead-Based Paint (LBP)/lead-containing surface coatings, and an inventory of potential Universal and/or Hazardous Wastes or materials. Considering this, the Contractor shall retain an MDEP certified Asbestos / Lead Abatement Contractor for proper identification and potential removal, handling, transport, and disposal of asbestos and lead material at an MDEP approved disposal facility.

If asbestos and/or lead is found to be present, the Contractor shall be responsible for proper management of these materials, including any laboratory testing in accordance with General Regulations of MDEP Chapter 425 – Asbestos Management Rules, MDEP Chapter 424 – Lead Management Regulations.

If ACM, lead-containing materials, and/or Universal or Hazardous Wastes are identified and require removal and disposal, the Department will bear all expenses incurred in abatement of these materials as detailed in Standard Specification 109.7.5 – Force Account. Any questions can be directed to the Office of Legal Service (624-3030).

The Contractor shall follow the best management practices for Universal and/or Hazardous Wastes - identification, removal/handling and proper disposal in accordance with applicable state, and municipal codes, regulations, and standards.

The heating oil (#2 fuel oil) tanks shall be managed following State of Maine Oil and Solid Fuel Board rules/regulations. Any product remaining in the tanks should be pumped from the heating oil tanks prior to their removal. The Contractor shall follow best management practices for fuel oil handling/management, in accordance with applicable, state codes, regulations, and standards.

Other:

All plywood panels, hasps, padlocks and other materials used to secure these buildings will remain property of the Department of Transportation. These panels and padlocks will be salvaged and transported to a location in the area to be determined by the Resident and MaineDOT Property Manager.

If not completed by the Property Manager, the Contractor shall remove all utility service connections prior to the demotion of any building. The Contractor shall coordinate the disconnection of overhead utilities with the appropriate utility companies. Electrical service within portions of any building to be removed shall be disconnected or otherwise shut off by a licensed electrician. Sewer connections shall be cut off and sealed with a water and gas-tight seal or pumped and removed in their 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 all service 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 the building including the foundation. Any slabs to be abandoned and backfilled shall be broken to ensure positive drainage. Backfill area to be flush with roadway and the adjacent property at 38 Depot St., as indicated on plans or bid documents.

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 – Force Account.

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

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.

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.

Start and Completion of Work:

The Contractor will notify the Resident and MaineDOT Property Manager prior to the start of the work and agrees that once demolition is commenced, work will be performed continuously from day to day until completion.

Method of Measurement:

Removing the building 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 full compensation for all materials, labor, and equipment necessary for the work described above and as 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	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.

Contractor Quality Control

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

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

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

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

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

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

a. General Requirements:

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

b. Quality Control Plan requirements

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

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

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

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

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

Table 106.4 A - Quality Control Pay Reduction

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

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

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

Basis of Payment

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

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

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

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

Livermore Falls
Route 17 - Reconstruction
WIN: 22643.00
April 28, 2024

SPECIAL PROVISION
SECTION203
EXCAVATION AND EMBANKMENT
(CONTAMINATED SOIL AND GROUNDWATER MANAGEMENT)

General: The work under this specification shall be performed in conformance with all the procedures and requirements described herein for the following activities: contaminated soil handling, reuse, temporary stockpiling, transportation, storage and disposal, and contaminated water handling, storage, treatment and disposal. This specification also addresses contaminated soil location, identification, and classification. The intent of this specification is to ensure that any contaminated soil and/or water encountered during construction will be managed in a manner that protects worker health and safety, public welfare, and the environment.

Environmental Site Conditions: The Maine Department of Transportation Environmental Office (MaineDOT-ENV) has conducted a series of assessments related to the Livermore Falls Route 17 Reconstruction Project. An initial Phase I Environmental Assessment for the project area was completed to obtain a general understanding of the environmental conditions along the project corridor. Data garnered from this assessment was used to design a Modified, Phase II Contamination Assessment for the project. The primary focus of the assessments was to evaluate the type and extent of subsurface contamination along the project corridor. The Phase I Assessment included a review of relevant Maine Department of Environmental Protection (MDEP) and Environmental Protection Agency (EPA) databases and field reconnaissance of the project area. During Phase II, borings were advanced along the project's length for investigative purposes. Using data gathered from the advancement of these borings and previous work by others, one area with impacted soil was identified. A photo-ionization detector (PID) was used to test soil grab samples from select explorations for volatile organic compound (VOC) concentrations indicative of petroleum products. (See *Identified Areas of Contamination* below). Select samples for laboratory testing were also taken to further aid in evaluating subsurface conditions. The results of these investigations are available for review from the Hydrogeologist at MaineDOT-ENV in Augusta (207-624-3000).

Identified Area of Contamination: The MaineDOT-ENV investigation identified one area of soil contamination associated with the Route 17 Reconstruction Project. For reference, this area is designated as **"Area A".** The location of **Area A** is defined as located in the vicinity of the Bailey Brother's Ford Dealership roughly between MaineDOT survey stations 48+75 to roughly 52+00, right and left of centerline along Route 17. Within **Area A,** poly-bag field sample screened with a photo-ionization detector (PID) was 770 (parts per million) ppm. Laboratory results for the following: Extractable Petroleum Hydrocarbons (EPH); C9-C18 at 822 ppm, C19-C36 at 36.6 ppm and Cl 1-C22 at 170 ppm, Phenanthrene at 7.14 ppm, Fluoranthene at 5.60 ppm, Pyrene at 4.40ppm, Benzo(a)anthracene at 2.13 ppm, Chrysene at 2.06 ppm, Benzo(b)fluoranthene at 1.45 ppm, Benzo(k) fluoranthene at 0.999 ppm, Benzo(a)pyrene at 1.53 ppm, Indeno(l,2,3-cd) pyrene at 0.738 ppm, naphthalene at 3.35 ppm, 2- Methylnapthalene at 6.19 ppm, Acenaphthylene at 0.422 ppm, Acenaphthene at 0.516 ppm, Fluorene at 1.84 ppm, Anthracene at 1.83 ppm, and Benzo(g,h,j) perylene at 0.659 ppm. For Volatile Petroleum Hydrocarbons (VPH) the following were detected; C5-C8 Aliphatic Hydrocarbons at 925 ppm, C9-Cl2 Aliphatic Hydrocarbons at 1210 ppm, C9- Cl0 Aromatic Hydrocarbons at 1020 ppm, Naphthalene at 32.9 ppm, and m,p-Xylene at 14.2 ppm. The laboratory results indicate the following VOCs were detected: n-Butylbenzene at 18,000 parts per billion (ppb), sec-Butylbenzene at 6,770 ppb, Isopropylbenzene at 3,400 ppb, 4-Isopropyltoluene at 13,400 ppb, Naphthalene at 11,100 ppb, n-Propylbenzene at 11,900 ppb, 1,2,4-Trimethylbenzene at 66,000 ppb, and 1,3,5- Triethylbenzene at 29,900 ppb. Benzene TCLP was <5.0 ppb. Total lead was 15 ppm. TCLP lead was 0.059 ppm. These concentrations define the soils as potential Special Waste per State remedial guidelines. Soil contamination in **Area A** appears to be related to the past use and storage of gasoline.

Identifying and Screening Contaminated Soil and Groundwater: Within the contaminated section designated **Area A,** excavated soils will be classified by the Resident (or MaineDOT-ENV representative) based on photo-ionization detector (PID) field screening measurements following the Outdoor Commercial Worker / Excavation-Construction Worker Cleanup and Notification Guidelines as prescribed in Table 1 – Approved PID Field Cleanup and Notification Guidelines in MDEP Standard Operating Procedure (SOP) TS004 – COMPENDIUM of FIELD TESTING of SOIL SAMPLES for GASOLINE and FUEL OIL (10/15/2012).

Excavated soils within **Area A** shall be classified as Group 1, Group 2 or Group 3.

> **Group 1** soils shall have PID field screening measurements indicating relative concentrations of volatile organic compounds (VOCs) less than or equal to 20 parts per million (ppm) as measured in 5-gram bag-headspace sample and an "Undetected" result using an oleophilic dye test.

Group 2 soils shall have PID field screening measurements indicating VOC concentrations greater than 20 ppm in a 5-gram bag-headspace sample and less than the value indicated in Table 1 of SOP-TS004 when screened in accordance with the "Outdoor Commercial Worker / Excavation-Construction Worker" clean-up scenario OR a "Slightly Positive" result using an oleophilic dye test.

Group 3 soils shall exceed the threshold limit stated in the TS004 Compendium of Field Testing of soil samples exceeding "Outdoor Commercial Worker/Excavation-Construction Worker" clean-up scenario OR indicate a "Saturated" / "Positive" result using an oleophilic dye test.

Handling and Disposition of Soil Materials: Within **Area A** soil material excavated during construction shall be handled as follows:

Group 1 soils are not considered contaminated. Thus, special handling and disposal are not required for Group I soils.

Group 2 soils shall be placed back into their excavation section of origin. The Contractor shall make every attempt to side cast any Group 2 soils next to the excavation site. Upon completion of the given constructional feature, Group 2 soils shall be placed back into the excavation up to 2 feet below ground surface. Group 2 materials not handled in this manner shall be considered Surplus Group 2 soils. Surplus Group 2 soils must be disposed of or treated at a facility licensed by the MDEP to accept petroleum contaminated Special Waste. The Contractor is solely responsible for obtaining the associated permits and approvals for the disposal or treatment of Surplus Group 2 soils from relevant Municipal, State, and Federal agencies at no additional cost to the State. Notification shall be given to the Resident once approval is granted for acceptance of this material at the off-site facility. No removal of Surplus Group 2 soils from the project shall occur without prior approval by the Resident. If any Surplus Group 2 soils cannot be transported to the pre-approved, properly licensed facility within 8 hours of the excavation, the material must be placed in a Temporary Secure Stockpile Area somewhere within the project limits (See Temporary Secured Stockpile Area below).

Group 3 soils shall not be excavated without prior approval by the Resident. The Contractor shall arrange and undertake disposal of all Group 3 soils at a landfill or treatment facility licensed to accept petroleum contaminated Special Waste. The Contractor is responsible for all additional testing required by the receiving facility. Group 3 soils that cannot be disposed of within 8 hours of excavation shall be stored in a Temporary Secured Stockpile area. If the Contractor proposes other disposal or treatment options, the

Contractor is solely responsible for obtaining the associated permits and approvals from relevant Municipal, State, and Federal agencies at no additional cost to the State.

The Resident is responsible for signing any manifests or bills of lading required to transport and dispose of contaminated soil. The Resident will send all manifests and bills of lading to MaineDOT, Environmental Office, Station 16, Augusta, Maine 04333.

Trench and Underdrain/Stormdrain Design in Contaminated Sections: In **Area A,** solid, Option III, non-perforated pipe shall be used instead of perforated underdrain pipe to help prevent the infiltration and transportation of potentially contaminated groundwater within the underdrain / storm drain system. The Contractor shall backfill around the pipe and trenches in this section with uncontaminated material or Group 2 soils. Backfilling of the trench shall be in accordance with Section 206.03. All stones larger than 3 inches, frozen lumps, dry chunks of clay or any other objectionable matter shall be removed before backfilling.

Seepage control dikes (SCD) shall be installed roughly every 60 feet along the stormwater pipe trench

The SCDs shall consist of a mineral clay material with a liquid limit of equal to or greater than 24 and a natural moisture content of at least 20 percent. The clay should be placed in dry excavations in 6-inch maximum, thick lifts and compacted to 90% of the maximum dry unit weight as determined by AASHTO T99 (Standard Proctor). The SCDs shall be 5 feet long, be in intimate contact with the trench floor, trench walls and circumference of the pipe and extend up to the bottom of the road base. The excavated existing road base or similar material may be placed on top of the SCDs. The Contractor shall take care to ensure that no voids or uncompacted soil is left beside or beneath the Option Ill culvert pipe.

Secured Stockpile Area: Direct transport of Surplus Group 2 or Group 3 soils to a pre-approved management facility is recommended. However, should the Contractor temporarily store any Surplus Group 2 or Group 3 soils at the site for more than 8 hours following excavation, they must be placed into a properly constructed Temporary Secured Stockpile Area. The Temporary Secured Stockpile Area must be constructed as defined herein and must be approved by the Resident prior to its use.

Should the Contractor utilize a Temporary Secured Stockpile Area, they shall install a continuous 0.3-meter-high compacted soil berm around the Secured Stockpile. The Secured Stockpile shall be placed on a liner of 20-mil polyethylene and securely covered with 20-mil polyethylene. The polyethylene liner and cover shall be placed over the soil berm and be installed to ensure that precipitation water drains directly to the outside of the berm perimeter while leachate from the contaminated soil is

retained within the stockpile. The Secured Stockpile and soil shall be enclosed within a perimeter of concrete Jersey barriers or wooden barricades. The area within the Jersey barriers (or wooden barricades) shall be identified as a "restricted area" to prevent unauthorized access to the contaminated soils.

Secured Stockpile Area – Materials:

A. Polyethylene. Polyethylene used for liner in the Secured Stockpile Area shall have a minimum of 20-mil thickness and shall meet the requirements of ASTM D3020.

B. Common Borrow. Fill used in the construction of the Temporary Secured Stockpile Area soil berm shall consist of Common Borrow and meet the requirements of Section 703.18

C. Concrete Barriers or Wooden Barricades. Concrete barriers or wooden barricades utilized to form the sides of the Temporary Secured Stockpile Area shall meet the requirements of Section 526 or 652.05.

Health and Safety/Right-to-Know: Contractors and subcontractors are required to notify their workers of the history of the site and contamination that may be present and to be alert for evidence of contaminated soil and groundwater. The Contractor shall notify the Resident **at least three business days** prior to commencing any excavation in **Area A.**

The Contractor shall prepare a site-specific Health and Safety Plan (HASP) for its workers and subcontractors who may work in the contaminated areas of the site. A Qualified Health and Safety Professional shall complete the HASP. The Qualified Health and Safety Professional will be an expert in field implementation of the following federal regulations:

29 CFR 1910.120 or 29 CFR 1926.65	Hazardous Waste Operations and Emergency Response
29 CFR 1910.134	Respiratory Protection
29 CFR 1926.650	Subpart D - Excavations
29 CFR 1926.651	General Requirements
29 CFR 1926.652	Requirements for Protective Systems

MaineDOT is voluntarily ameliorating contamination in **Area A.** The remedial efforts defined herein have been reviewed and approved by MDEP. Given that this is a voluntary clean-up effort approved by a regulatory agency, the OSHA requirements as defined in 29 CFR 1910.120 apply. These requirements mandate that workers and any subcontractors working in the contaminated areas shall comply with all OSHA regulations for Hazardous Waste Operations and Emergency Response including a 40-hour initial hazardous waste operations certification [OSHA 1910.120(e)], annual 8-hour refresher course within the last 12 months and medical surveillance [OSHA 1910.120(f)] within the last 12 months.

The Contractor shall designate a person to provide direct on-site supervision of the work in the contaminated areas. This person shall have the training under OSHA 1910.120 (e) as above and in addition be qualified as a construction Competent Person. It is the responsibility of the competent person to make those inspections necessary to identify situations that could result in hazardous conditions (e.g., possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions), and then to ensure that corrective measures are taken.

Submittals: The Contractor shall submit a site-specific Health and Safety Plan (HASP) to the Resident at least two weeks in advance of any excavation work on the project. The Contractor shall not proceed with work until MaineDOT has reviewed the plan and notified the Contractor that it is acceptable.

Health and Safety Monitoring: Within the contaminated areas of the project, the Contractor's designated on-site person shall monitor the worker breathing zone for those constituents specified in the Contractor's HASP. The Contractor shall provide all required health and safety monitoring equipment.

Dewatering: Groundwater may be encountered and its removal necessary to complete work within **Area A.** It will be treated as "contaminated" water. The Contractor shall inform the Resident before any dewatering commences. The "contaminated" water shall be pumped into a temporary holding tank(s). The Contractor will be responsible for the procurement of any holding tank(s). Any testing, treatment and/or disposal of the stored, petroleum-contaminated water shall be undertaken by the Contractor in accordance with applicable Federal, State and local regulatory requirements.

On-Site Water Storage Tanks – Materials: If dewatering within the identified contaminated area becomes necessary, the holding tanks used for temporary storage of contaminated water pumped from excavations shall be contamination free and have a minimum capacity of 2,000 gallons.

Dust Control: The Contractor shall employ dust control measures to minimize the creation of airborne dust during the construction process in potentially contaminated areas. As a minimum, standard dust control techniques shall be employed where heavy equipment and the public will be traveling. These may include techniques such as watering-down the site or spreading hygroscopic salts.

Unanticipated Contamination: If the Contractor encounters previously undiscovered contamination or potentially hazardous conditions related to contamination, the Contractor shall immediately suspend work and secure the area. The Contractor will then notify the Resident immediately. These potentially hazardous conditions include, but are not limited to, buried containers, drums, tanks, "oil saturated soils", strong odors, or the presence of petroleum sufficient to cause a sheen on the groundwater. The area of potential hazard shall be secured to minimize health risks to workers and the public and to prevent a release of contaminants into the environment. The source of any suspected contamination shall be evaluated by the Resident (or MaineDOT's-ENV representative). As appropriate, the Resident will notify the MDEP Response Services Unit in Augusta and MaineDOT-ENV. The Livermore Falls Fire Department must also be notified prior to removal of buried storage tanks and associated piping. The Contractor will evaluate the impact of the hazard on construction, amend the HASP if necessary, and with the Resident's approval, recommence work in accordance with the procedures of this Special Provision.

Method of Measurement: There will be no measurement for identification and environmental screening of contaminated soil material (this will be done by the Resident or MaineDOT-ENV representative).

Measurement for the development of a Health and Safety Plan (HASP) and providing health and safety equipment and personnel shall be by lump sum.

Measurement of the off-site treatment or disposal of Surplus Group 2 and all Group 3 soils will be by the ton of Special Excavation.

There will be no measurement for construction of a Temporary Secured Stockpile Area. Construction of a Temporary Secured Stockpile Area, if necessary, is considered incidental to project construction. There will be no measurement for hauling Surplus Group 2 material or Group 3 soils to the Temporary Secure Stockpile area or placement and removal of Surplus Group 2 or Group 3 soils in or out of the Temporary Secure Stockpile area. All hauling and any subsequent management/placement of contaminated soils are considered incidental to project construction.

There will be no measurement for additional laboratory testing of contaminated soil that is required by the landfill or treatment facility. Testing is incidental to the disposal of Special Excavation.

Measurement for the following items shall be according to Subsection 109:04. ("Change Order"/Force Account): any necessary contaminated water holding tank(s); and treatment or disposal of any contaminated groundwater.

Basis of Payment: There will be no payment for the identification and environmental screening of contaminated soil material (this will be done by the Resident or MaineDOT-ENV representative).

Payment for the development of a Health and Safety Plan (HASP) and providing health and safety equipment and personnel shall be by the lump sum Payment for offsite disposal or treatment of contaminated Surplus Group 2 and all Group 3 soils at a MDEP licensed facility shall be by the ton of Special Excavation.

There will be no payment for the construction of the Temporary Secured Stockpile Area or hauling/management/placement of contaminated soils to the Temporary Secured Stockpile Area. The Temporary Secured Stockpile Area shall be considered incidental to project construction.

Payment for the following items shall be according to Subsection 109:04 ("Change Order"/Force Account): any necessary contaminated water holding tank(s); and treatment or disposal of any contaminated groundwater.

Pay Item		Pay Unit
203.2312	Health and Safety Plan (HASP)	L.S.
203.2333	Disposal/Treatment of Special Excavation	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) using a single approved design for each item on an approved base in accordance with the contract documents and in reasonably close conformity with the lines, grades, thickness, and typical cross sections shown on the plans or established by the Resident. The Department will accept this work under Quality Assurance provisions, in accordance with these specifications and the requirements of Section 106 – Quality, the provisions of AASHTO M 323 except where otherwise noted in sections 401 and 703 of these specifications, and the MaineDOT Policies and Procedures for HMA Sampling and Testing.

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

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

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

TABLE 1: VOLUMETRIC DESIGN CRITERIA

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

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

The Contractor shall submit a JMF to the Department for each mixture to be supplied. The JMF will be approved by the Department in accordance with the MaineDOT HMA Policies and Procedures for HMA Sampling and Testing Manual. At the time of JMF submittal, the Contractor shall identify and make available the stockpiles of all proposed aggregates at the plant site. There must be a minimum of 150 ton for coarse aggregate stockpiles and 75 ton for fine aggregate stockpiles before

the JMF may be submitted. The Contractor shall provide aggregate samples to the Department unless otherwise required. The Contractor shall also make available to the Department the PGAB proposed for use in the mix in sufficient quantity to test the properties of the asphalt and to produce samples for testing of the mixture. The first day's production shall be monitored, and the approval may be withdrawn if the mixture exhibits undesirable characteristics such as checking, shoving or displacement. The Contractor shall be allowed to submit aim changes for a JMF as outlined in the MaineDOT HMA Policies and Procedures for HMA Sampling and Testing Manual: Mix Design Approval Section.

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

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

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

TABLE 2: ALLOWABLE TEMPERATURE RANGES

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

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

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

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

TABLE 3: SEASONAL AND TEMPERATURE LIMITATIONS

Description	Zone 1 Allowable Placement Dates	Zone 2 Allowable Placement Dates	Minimum Ambient Air Temperature
HMA Surface Course greater than or equal to 1" (Travelway)	May 1 to Saturday following October 1	April 15 to Saturday following October 15	50°F
HMA Surface Course less than 1" (Travelway)	May 15 to Saturday following September 15	May 15 to Saturday following October 1	
HMA Surface Course less than 1" considered to be "**Night Work**" (Travelway)	June 1 to the Saturday following September 1		
HMA Surface Course less than 1" (Shoulders)	May 15 to the Saturday following October 15		
HMA for Surface Course on **Bridge Decks**	May 1 to Saturday following October 1	April 15 to Saturday following October 15	
HMA for Base or Shim Course on **Bridge Decks**	April 15 to November 15		
HMA for use other than Travelway Surface Course (Shoulders greater than or equal to 1", Intermediate, Base, Shim)	April 15 to November 15		40°F
HMA for curb, driveways, sidewalks, islands, or other incidentals	N/A		
With Use of Approved Warm Mix Technology as Compaction Aid (Surface Course Ambient Air Temperature Allowances)			
HMA Surface Course greater than or equal to 1" (Travelway)	May 1 to Saturday following October 1	April 15 to Saturday following October 15	Begin at 50°F and pave **down to** 45°F
HMA Surface Course less than 1" (Travelway)	May 15 to Saturday following October 1	May 15 to Saturday following October 15	
HMA Surface Course less than 1" considered to be "**Night Work**" (Travelway)	June 1 to the Saturday following September 15		
HMA Surface Course less than 1" (Shoulders)	May 15 to the Saturday following October 15		
With Use of Approved Warm Mix Technology as Compaction Aid (Seasonal Limitation Extensions)			
HMA Surface Course greater than or equal to 1" (Travelway)	Saturday following October 1 to Saturday following October 15	Saturday following October 15 to Saturday following October 29	50°F
HMA Surface Course less than 1" (Shoulders)	Saturday following October 15 to Saturday following October 29		
HMA for use other than Travelway Surface Course (Shoulders greater than or equal to 1", Intermediate, Base, Shim)	April 15 to Saturday following November 15		35°F

1. Shoulders paved with the travelway pass shall meet travelway ambient air temperatures
2. Refer to the 461 SP for UTBWC for seasonal and temperature requirements.
3. The minimum ambient air temperature for placement of HMA for curbs, driveways, sidewalks, islands, and other incidental work shall be 40°F, regardless of whether the mixture is produced using an approved WMA technology.

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

401.07 Hot Mix Asphalt Plant

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

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

401.072 Stockpiles The Contractor shall provide sufficient space for stockpiles and maintain a minimum of supply for 2 days production of all aggregate products used in MaineDOT approved mix designs currently under production. A minimum stockpile supply of 100 ton (70 yards) shall be maintained at all times. The Contractor shall construct stockpiles to prevent intermingling and to minimize segregation. All stockpiles used in MaineDOT mixes shall be identified with weatherproof signs at least 12" high and 24" wide, with reflective lettering at least 2" high.

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

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

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

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

401.077 Batch Plants

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

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

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

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

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

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

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

401.078 Drum Plants

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

Binder System The flow of asphalt binder shall adjust automatically with dry aggregate weights. The Department will conduct an asphalt flow meter check annually and after each change of plant location. The flow meter check must be performed prior to producing mix for Department projects. The plant must be configured to provide a convenient means to check accuracy of the flow meter. The flow meter will be considered accurate if the measured weight is within 1% of actual weight.
Drum Mixer The plant shall be equipped with a diversion system where mix can be diverted at startup/shutdown and any time. The drum mixer shall be subject to annual inspection prior to removal of safety features and being readied for service. The Contractor shall provide the Department a minimum period of 72 hours to inspect the drum mixer while providing at least 72 hours' notice that the drum mixer is ready for inspection.

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

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

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

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

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

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

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

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

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

TABLE 4: PAVER REQUIREMENTS

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

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

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

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

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

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

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

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

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

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

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

Tack coat shall conform to the requirements of Section 409 – Bituminous Tack Coat, Section 702 – Bituminous Material, and all applicable sections of the contract.

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

TABLE 5: PLACEMENT CONDITIONS FOR ADJOINING LANES

Depth (at centerline)	Placement Conditions
Vertical Longitudinal Joint	
¾" and less (incl. shim)	The Contractor may place the HMA course over the full single travel lane width for each production day.
1" to 1 ¼"	The Contractor may place the HMA course over the full single travel lane width for each production day and will be required to place a matching course of HMA over the adjacent section of travel lane before weekend or holiday suspension. A maximum unmatched centerline joint of the project's 1 days' average production will be permitted over the weekend.
1 ½" to 2"	The Contractor may place the HMA course over the full single travel lane width for each production day and will be required to place a matching course of HMA over the adjacent section of travel lane before the end of the following calendar day.
Greater than 2"	The Contractor shall place each course over the full width of the traveled way section being paved that day.
Notched-Wedge Longitudinal Joint	
1 ½" to 2"	The Contractor may place the HMA course over the full single travel lane width for each production day and will be required to place a matching course of HMA over the adjacent section of travel lane before weekend or holiday suspension. A maximum unmatched centerline joint of the project's 1 days' average production will be permitted over the weekend.
Greater than 2"	The Contractor may place the HMA course over the full single travel lane width for each production day and will be required to place a matching course of HMA over the adjacent section of travel lane before the end of the following calendar day.
Longitudinal Joints (<45 mph) *	
Greater than 2"	With use of a Notch-Wedge device, the Contractor may place the HMA course over the full single travel lane width for each production day and will be required to place a matching course of HMA over the adjacent section of travel lane before weekend or holiday suspension. A maximum unmatched centerline joint of the project's 1 days' average production will be permitted over the weekend.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

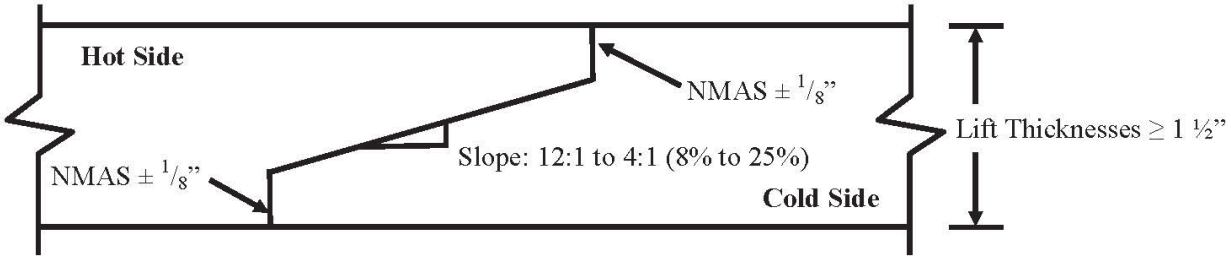


FIGURE 1: Notched Wedge Joint

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

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

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

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

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

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

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

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

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

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

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

b. Process Control Technician(s) (PCT) shall utilize test results and other quality control practices to assure the quality of aggregates and other mix components and control proportioning to meet the JMF(s). The PCT shall inspect all equipment used in mixing to assure it is operating properly and that mixing conforms to the mix design(s) and other Contract requirements, and that delivery slips and plant recordation accurately reflects the mix being produced with all the required information. The QCP shall detail how these duties and responsibilities are to be accomplished and documented, and whether more than one PCT is required. The Plan shall include the criteria to be utilized by the PCT to correct or reject unsatisfactory materials. The PCT shall be certified as a Plant Technician by the NETTCP.

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

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

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

a. <u>General Requirements:</u>

- Job Mix Formulas (JMFs)
- Name of QCP Administrator, and certification number
- Description of corrective action process
- Disposition of defective material
- A procedure to take immediate possession of acceptance samples once released by MaineDOT and deliver said samples to the designated acceptance laboratory.
- Type of release agent to be used on haul units, tools and rollers.
- A note stating that the use of petroleum-based fuel oils, such as diesel or kerosene, or asphalt stripping solvents will not be permitted.

b. Process Control Requirements: Each Hot Mix Asphalt plant shall have a Plant Specific Process Control Plan. At minimum the plan shall include:

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

c. Quality Control Requirements – Method A & B:

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

d. Quality Control Requirements – Method C and D:

- Name of QCP Administrator and certification number(s) as specified in Section 401.19.
- Name of Process Control Technicians(s) and certification number(s).
- Name of Quality Control Technicians(s) and certification number(s).
- Anticipated Compaction Temperature Zones for each roller zoneduring placement.
- Mix TMD to be used for density gauge setting for method spec density work
- Procedures for avoiding paving in inclement weather.

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

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

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

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

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

TABLE 6: MINIMUM QUALITY CONTROL FREQUENCIES

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

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

TABLE 7: CONTROL LIMITS

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

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

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

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

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

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

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

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

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

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

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

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

401.192 Quality Control and Acceptance for Item 403.209 Hot Mix Asphalt, 9.5 mm Nominal Maximum Size, (sidewalks, drives, islands & incidentals) and visual acceptance items Item 403.209 will be accepted under method D acceptance unless otherwise noted in the 403 special provision. A QCP, certified QC personnel, or Prepave Meeting shall not be required for Item 403.209 - Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (sidewalks, drives, islands & incidentals) when accepted under either visual acceptance or under Method D acceptance unless otherwise specified in the 403 SP. An approved JMF shall be provided to the Resident prior to placement.

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

TABLE 8: ACCEPTANCE PROPERTIES – METHOD A & C

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

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

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

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

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

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

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

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

Isolated Areas During the course of inspection, should it appear that there is an isolated area that is not representative of the lot based on a lack of observed compactive effort, excessive segregation, a change in process or any other questionable practice, that area may be isolated and tested separately.

An area so isolated that has a calculated pay factor below 0.80 for Method A, based on three random tests shall be removed and replaced at the expense of the Contractor for the full lane width and a length not to be less than 150 ft.

TABLE 10: ACCEPTANCE LIMITS – METHOD A & C

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

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

TABLE 11: CEASE PRODUCTION – METHOD A & C

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

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

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

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

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

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

The following variables will be used for pay adjustment:

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

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

TABLE 12: PAY ADJUSTMENT CALCULATIONS – METHOD A & C

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

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

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

TABLE 13: 0.075 MM SIEVE PAY ADJUSTMENT

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

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

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

TABLE 14: ACCEPTANCE PROPERTIES – METHOD B & D

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

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

Lot Size*	Entire mix quantity per item per contract per year
Maximum Sublot Size – Mix	250 ton (Max 4 Sublots)
Sublot Size – Density	125 ton (Max 5 Sublots)

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

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

TABLE 16: ACCEPTANCE LIMITS – METHOD B & D

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

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

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

TABLE 17: PAY ADJUSTMENTS – METHOD B & D

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

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

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

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

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

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

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

TABLE 18: DISPUTE RESOLUTION VARIANCE LIMITS

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

*Disputes will not be allowed on Item 403.209

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

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

SECTION 402 - PAVEMENT SMOOTHNESS

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

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

402.02 Lot Size Lot size for smoothness will be 3000 lane-feet. A 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

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, passing lanes, and any other areas considered mainline travelway for conventional density testing will be considered travel lanes for longitudinal joint density testing as 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:

The Lot size will be the total length of eligible longitudinal joint(s) 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. For tracking purposes, the method of testing shall be "C".

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
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 Pavement Materials Engineer for each mixture to be supplied including the PG binder grade/supplier and the intended test temperature for the HWT approval. The JMF will be approved by the Department in accordance with the MaineDOT HMA Policies and Procedures for HMA Sampling and Testing Manual. If the Contractor is submitting a new JMF, the Contractor shall identify and make available the stockpiles of all proposed aggregates at the plant site at the time of JMF submittal. 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 PG Binder 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. If the Contractor is submitting a new JMF the first day's production shall be monitored, and 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.

If submitting a new JMF, the Contractor shall provide the Department with eight boxes of plant produced HMA before the start of paving. 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 Department will not test the mixture for HWT until the HMA meets the mix design verification requirements.

The sample will be required to meet the applicable requirements of Table 1A below for approval and will be dependent on the test temperature submitted by the Contractor. The minimum PG Binder grade required shall be as specified by the 403 Special Provision. The Contractor may submit a design with a binder grade exceeding the minimum specified to meet the HWT requirements of the 403. If the sample meets the requirements of Table 1A, an approved JMF listing the approved PG Binder Grade to meet the HWT requirements 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 (or greater)	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 https://www.maine.gov/dot/doing-business/hma-resources

Should the Contractor choose to change their PG Binder source and/or modify the PG Binder grade after initial approval, the Department will take an additional verification sample and test the HMA to verify compliance with the Hamburg Wheel Tracker Requirements. If this sample fails to meet the criteria in Table 1A, the Contractor will be required cease production and submit a corrective action letter to the Department. HWT approval of the JMF will be suspended until the Department can verify that the submitted sample meets the requirements of Table 1A. Failure to notify the Department of a change in supplier will be treated as a second incident under 106.4.6 QCP Non-compliance.

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 PG Binder source and grade, 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 6,000 ton and at least once per Acceptance Lot	AASHTO T 324

If the Contractor is submitting a new JMF 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

First Day Production HWT Verification Sample for Acceptance The Department will sample the HMA on the first day of production. This sample will be considered a first day of production HWT verification sample and will not count towards the minimum HWT acceptance frequencies specified in Table 3A unless otherwise determined by the Department. This sample may be taken in conjunction with the first mix acceptance sample. The number of boxes required will be as specified in Table 3B.

If the first day of production HWT verification sample fails to meet the criteria in Table 1A or yields an inconclusive result, the Contractor shall cease paving operations and submit a verification sample to the Department. HWT approval of the JMF will be suspended until the Department can verify that the submitted sample meets the requirements of Table 1 and Table 1A.

A first day production sample will not be required for a previously approved JMF that has met HWT requirements listed in Table 1A if the following criteria have been met:

1. A minimum of one passing HWT Department issued acceptance results within the calendar year (Construction Season) of production.
2. A minimum of three consecutive passing HWT Department issued acceptance results within the past year of production (365 days). These results shall be the three most recent Department issued acceptance samples.
3. No changes in the source of the PG Binder and/or modifications to the PG Binder grade from the initial HWT approval have been made.

As part of the QCP, the Contractor shall provide in writing the request to waive the first day production sample and will include the necessary supporting documentation as specified above.

Acceptance Sampling The Department will sample at the HWT acceptance frequencies specified in Table 3A to verify the compliance with the Hamburg Wheel Tracker Requirements. The number of boxes required will be as specified in Table 3B, with two boxes reserved for retesting of inconclusive results. A mix acceptance sample within an acceptance lot will be selected at random by the Department for HWT acceptance sampling. Depending on daily production rates, the first day of production HWT verification sample and the first acceptance sample may be taken on the same day, but shall not be from the same acceptance sample unless otherwise determined by the Department.

If a HWT acceptance sample fails to meet the criteria in Table 1A and fails to exceed an average of 15,000 cycles, the Contractor shall cease paving operations and submit a verification sample to the Department. HWT approval of the JMF will be suspended until the Department can verify that the submitted sample meets the requirements of Table 1 and Table 1A. A pay factor will be determined using Table 4.

If a HWT acceptance sample fails to meet the criteria in Table 1A, but exceeds an average of 15,000 cycles, the Contractor shall cease paving operations and submit a Corrective Action to the Department. A pay factor for the failing sample will be determined using Table 4.

Inconclusive Results If a HWT acceptance sample indicates an "inconclusive result" the Department will immediately retest the sample using the additional retained 2 boxes. Should the second sample also yield an inconclusive result, the Contractor shall cease paving operations and submit a verification sample to the Department. HWT approval of the JMF will be suspended until the Department can verify that the submitted sample meets the requirements of Table 1 and Table 1A.

Informational Sampling At the Resident's discretion, 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 1 or Table 1A, the Contractor will be required to submit a corrective action letter to the Department.

TABLE 3A: MINIMUM HWT ACCEPTANCE FREQUENCIES

Test or Action	Frequency
Hamburg Wheel Tracker	1 per 6,000 ton or at least once per Acceptance Lot

TABLE 3B: MINIMUM NUMBER OF BOXES

Sample Type	Number of Boxes
First Day Production (Taken without Mix Acceptance)	4
First Day Production (Take w/ Mix Acceptance)	8 (4 Additional)
HWT Acceptance Sample	8 (4 Additional)

Cease For ALL occurrences of cease described in the sections above, the Contractor shall 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.

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. The average passes to failure will be used to determine the number of passes.

TABLE 4: HWT PAY ADJUSTMENT

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

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

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

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

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

Aggregates for HMA Pavement	703.07
HMA Mixture Composition	703.09

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

SPECIAL PROVISION
SECTION 403
HOT MIX ASPHALT

Desc. Of Course	Grad Design.	Item Number	Total Thick	No. Of Layers	Comp. Notes
6" HMA – Highway Reconstruction Areas					
Route 17 and 4 Travel lanes and Shoulders					
Travel Lanes, On-Street Parking, Sideroads, Curb Pad /Fill (As Indicated)					
Wearing	12.5 mm	403.2081	1 ½"	1	2,4,10,22,23,24,42,43,53
Intermediate	12.5 mm	403.2131	1 ½"	1	2,4,10,22,24,41,42,43,53
Base	19.0 mm	403.2071	3"	1/more	2,4,10,24,41,42,43,53
3" HMA – Reconstruction Areas					
Commercial Drive Drainage Outlet (As Indicated)					
Wearing	12.5 mm	403.2081	1 ½"	1	2,4,10,24,30,31,
Base	12.5 mm	403.2131	1 ½"	1	4,10,24,30,31,41,
1 ½" HMA – Mill and Overlay Areas					
Mill Street - Travelway & Shoulders (As Indicated)					
Wearing	12.5 mm	403.2081	1 ½"	1	2,4,10,24,42,
Drives, Islands, Misc. (As Directed)					
Wearing	9.5 mm	403.209	2"-3"	1/more	3,20,30

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. The total quantity in the respective pay item shall constitute a Lot unless otherwise adjusted at the pre-pave.
20. The combined aggregate gradation required for this item shall be classified as a 9.5mm Thin Lift Mixture (TLM) mixture, using the Aggregate Gradation Control Points as defined in 703.09.

22. Longitudinal joint density testing shall be applied to the specified HMA layer. See Special Provision 401 – Hot Mix Asphalt Longitudinal Joint Density for project specifics.
23. The mixture shall meet the minimum requirements of Special Provision 401 - HMA Hamburg Wheel Tracker Specification.
24. See Special Provision 401 - HMA with Fine Micro-Deval Requirement for project specifics.
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.
31. Compaction of the new Hot Mix Asphalt Pavement will be obtained using a minimal roller train consisting of a **10 ton** vibratory and a **3-5 Ton** finish roller for roadway work. A **Quality Control Technician (QCT)** shall be required for all roadway mixtures placed under this contract. A daily paving report, summarizing the mixture type, mixture temperature, equipment used, environmental conditions, and number of roller passes, shall be recorded and signed by the QCT and presented to the Department's representative by the **end of the working day**.
41. The lower lifts of base and intermediate HMA pavement (consisting of 4.5 inches in the 6-inch section and 1.5 inches in the 3-inch section) shall be completed before winter suspension. Any surface or base HMA placed after the seasonal limitations shall be considered temporary and removed and replaced the following construction season. The Department will not be responsible for costs or time related to the placement, removal or replacement of temporary pavement.
42. The Contractor shall plan its construction sequencing so that no longitudinal joints fall within the mainline travelway lanes (excluding center turn lanes).
43. The contractor shall mill a stepped butt joint into the existing pavement at both the beginning and end joints for each pavement layer excluding the bottom base layer. For each layer, the stepped joint shall be cut to the depth and width of the pavement layer being placed and extend 5 feet beyond the immediate underlying layer**.** The **butt joint** for the overlying layer shall be **completed prior** to placing the adjacent layer**.** The Resident may extend this length as determined by the condition of the match point. No additional payment will be made for the milling of the butt joints but will instead be considered incidental to associated paving items.
53. At the discretion of the Contractor, the use of concrete fill will be allowed in lieu of pavement and gravel to back fill around granite curbing (Type 1 & 5). When utilized, at least 3" of HMA shall be placed on top of the concrete fill for cover on the mainline edge of curb (face of curb). At minimum, the Concrete shall be a 3000 psi Class S or Class Fill Concrete. **Flowable fill shall not be permitted**. Unless otherwise specified, there will not be additional compensation for the Concrete Fill but shall be considered incidental to the 609 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 502
STRUCTURAL CONCRETE
(QC/QA Acceptance Methods)

CLASS OF CONCRETE	ITEM NUMBER	DESCRIPTION	P	METHOD
A	502.32	Culvert End Wall	-	C

P values listed above reflect the price per cubic yard (yd^3) for all pay adjustment purposes.

SPECIAL PROVISION
SECTION 502
STRUCTURAL CONCRETE
(Structural Concrete End Wall)

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

This work shall consist of constructing structural concrete end walls with trash rack at closed drainage pipe outlet locations as called out in the plans. The size, shape and elevations shall conform to that outlined in the plans, sections, and special details for the associated outlet pipe size.

502.03 Materials The following paragraph is added to Subsection 502.03 of the Standard Specifications.

The Contractor may choose to substitute precast concrete endwalls in lieu of cast in place structural concrete. Precast endwalls shall conform to Standard Specification Section 534.

Pipe sections entering concrete end walls shall be firmly connected to the structure wall. Pipe connections shall consist of Portland cement mortar, mastic joint filler or other approved type of watertight joint in conformance with Standard Specification Section 604.

Trash rack shall be affixed to the concrete end wall over the pipe outlet with a minimum opening size of 4 inches by 4 inches. Trash rack shall be steel fabricated with a hot-dipped galvanized finish. Fastening hardware shall be stainless steel with concrete anchors, minimum diameter of 3/8 inches.

502.17 Installation The following subsection is added to Standard Specification 502.

End walls shall be placed to the required grade on a compacted foundation of uniform density and backfilled with pipe installation. Pipe sections entering catch basins shall be firmly connected to the structure wall. Pipe connections shall consist of Portland cement mortar, mastic joint filler or other approved type of watertight joint in conformance with Standard Specification Section 604.

Trash rack shall be installed for full coverage of the outlet opening and affixed to the concrete end wall allowing for adequate maintenance access.

502.18 Method of Measurement The following paragraph is added to Subsection 502.18 of the Standard Specifications.

Structural Concrete End Wall with Trash Rack satisfactorily placed and accepted will be measured by the cubic yard in accordance with the dimensions shown on the Plans and Special Details or Authorized changes in the plans.

502.19 Basis of Payment The following paragraph is added to Subsection 502.19 of the Standard Specifications.

The accepted work done under structural concrete, of the classes and for the types of work required, will be paid for at the Contract unit price per cubic yard for the respective Contract items involved. Pipe connections, trash rack, installation and all materials, equipment and labor to furnish complete in place shall be incidental to the Contract Unit Prices. Reinforcing steel will not be paid for separately but will be considered incidental to Item 502.32.

SPECIAL PROVISION
SECTION 524
TEMPORARY STRUCTURAL SUPPORTS
(Railroad Support during Drainage Installation)

524.01 Description Replace this entire section with:

This work shall consist of the designing, fabricating, erecting, maintaining and dismantling of temporary structural support wall(s) for the purpose of supporting excavation for test pit and drainage facilities installation in the proximity of the CSX Railroad.

524.03 Design Replace the last sentence of the first paragraph with:

Temporary support(s) shall be designed by a licensed Professional Engineer and all plans, computations, and working drawings shall be sealed and signed by that Engineer and shall be submitted to the Resident for MaineDOT review and CSX Railroad Outside Party (OP) Request Form submittal for approval. Any excavation within the Theoretical Railroad Embankment Line (TREL) requires interlocking sheeting for support of excavation.

Design shall conform to CSX requirements, design and assumptions: CSX Design and Construction Standard Specifications, Pipeline Occupancies, Revised June 5, 2018 or newest publication.
https://www.csx.com/index.cfm/library/files/customers/property-real-estate/permitting/pipeline-design-construction-specifications/\

Add the following sentences:

The design for the Temporary Structural Supports and dewatering plan shall be submitted to the Resident for MaineDOT review and CSX Railroad Outside Party (OP) Request Form submittal for approval at least 60 days prior to construction.

If dewatering is planned for a public project a dewatering plan is required, submit to the Resident for MaineDOT review and CSX Railroad Outside Party (OP) Request Form and CSX Environmental Department review and approval the dewatering plan prior to work being initiated on CSX property. CSX prohibits the discharge of water onto its property without prior approval. CSX prohibits environmental sampling of groundwater or surface water unless granted through a written Environmental Right of Entry or approved in writing by the CSX Environmental Department. Contact the Manager Environmental Programs at (904) 359-4833 for assistance.

The Contractor shall use support of excavation to support the existing roadway and railroad adjacent to the test pit and drainage construction. The Contractor shall submit a detailed design and procedure for the installation of a sheeting/shoring system adjacent to

the tracks. Shoring protection shall be provided when excavating with Potential to Foul, or as otherwise determined by CSX.

A. Shoring may not be required if all of the following conditions are satisfied:
   1) The excavation does not encroach within the Theoretical Live Load Influence Zone.
   2) The track structure is situated on level ground, or in a cut section, and on stable soil.
   3) The excavation does not adversely impact the stability of a CSX facility (i.e., signal bungalow, drainage facility, under grade bridge, building, etc.), or the stability of any structure on, over, or adjacent to CSX property with potential to foul.
   4) Shoring is not required by any governing federal, state, local or other construction code.

B. Shoring is required when excavating the toe of an embankment. Excavation of any embankment which supports an active CSX track structure without shoring will not be permitted.

C. Trench boxes are not an acceptable means of shoring. Trench boxes are prohibited for use on CSX property or within the Theoretical Railroad Live Load Influence Zone.

D. Shoring shall be a cofferdam-type, which completely encloses the excavation. However, where justified by site or work conditions, partial cofferdams with open sides away from the track may be permissible, as determined by CSX Engineer.

E. Cofferdams shall be constructed using interlocking steel sheet piles, or when approved by the CSX Engineer, steel soldier piles with timber lagging. Wales and struts shall be included when dictated by the design.

F. The use of tiebacks can be permissible for temporary shoring systems, when conditions warrant. Tiebacks shall have a minimum clear cover of 6’-0”, measured from the bottom of the rail. Upon completion of the work, tiebacks shall be grouted, cut off, and remain in place.

G. All shoring systems on, or adjacent to CSX right-of-way, shall be equipped with railings or other fall protection, compliant with the governing federal, state or local requirements. Area around pits shall be graded to eliminate all potential tripping hazards.

H. Interlocking steel sheet piles shall be used for shoring systems qualifying one or more of the following conditions:
   1) Within 18’-0” of the nearest track centerline.
   2) Within the live load influence zone.

3) Within slopes supporting the track structure.
4) As otherwise deemed necessary by the CSX Engineer.

I. Sheet piles qualifying for one or more of the requirements listed in Section VI.I of the CSX Construction Submission Criteria document shall not be removed. Sheet piles shall be left in place and cut off a minimum of 3'-0" below the finished grade, the ditch line invert, or as otherwise directed by the CSX Engineer. The ground shall be backfilled and compacted immediately after sheet pile is cut off.

J. The following design considerations shall be considered when preparing the shoring design package:

1) Shoring shall be designed to resist a vertical live load surcharge of 1,880 lbs. per square foot, in addition to active earth pressure. The surcharge shall be assumed to act on a continuous strip, eight feet six inches (8'-6") wide. Lateral pressures due to surcharge shall be computed using the strip load formula shown in AREMA Manual for Railway Engineering, Chapter 8, Part 20.

2) Allowable stresses in materials shall be in accordance with AREMA Chapters 7, 8, and 15.3.

3) A minimum horizontal clearance of ten feet (10'-0") from centerline of the track to face of nearest point of shoring shall be maintained, provided a twelve feet (12'-0") roadbed is maintained with a temporary walkway and handrail system.

4) For temporary shoring systems with Potential to Foul, piles shall be plumb under full dead load. Maximum deflection at the top of wall, under full live load, shall be as follows:

a) One-half (1/2) inch for walls within twelve feet (12'-0") of track centerline (Measured from centerline of the nearest track to the nearest point of the supporting structure).

b) One (1) inch for walls located greater than twelve feet (12'-0") from track centerline.

K. Shoring work plans shall be submitted in accordance with Section II of the Construction Submittal Criteria, as well as the following additional requirements:

1) The work plan shall include detailed drawings of the shoring systems calling out the sizes of all structural members, details of all connections. Both plan and elevation drawings shall be provided, calling out dimensions from the face of shoring relative to the nearest

track centerline. The elevation drawing shall also show the height of shoring, and track elevation in relation to bottom of excavation.
2) Full design calculations for the shoring system shall be furnished.
3) A procedure for cutting off the sheet pile, backfilling and restoring the embankment.

Method of Measurement Replace this entire section with:

Temporary structural supports will be measured as one lump sum satisfactorily designed, erected, maintained, and dismantled for each location. The work associated with removal and reinstallation of existing highway appurtenances (e.g. guardrails, supports, etc.) to facilitate the erection of temporary supports will not be measured for payment, but will be considered incidental to the Temporary Structural Support Pay Item.

Basis of Payment Replace this entire section with:

Temporary structural supports will be paid for at the Contract unit price, one lump sum which shall be full compensation for all materials, equipment, labor and incidentals necessary for the design, erection, maintenance, and dismantling of such supports in accordance with these specifications.

Payment will be made under:

Pay Item		Pay Unit
524.301	Temporary Structural Support – Drainage Outlet Sta. 49+35 LT	Lump Sum
524.301	Temporary Structural Support – Catchbasin Replacements Sta. 55+93 RT, 56+38 RT	Lump Sum

SPECIAL PROVISION
SECTION 525 GRANITE MASONRY
(Concrete Block Retaining Wall, Remove and Reset)

525.01 Description The following paragraph is added:

This work shall consist of removing and resetting a concrete waste block retaining wall. The wall is located north of the Livermore Falls Fire Department building and along the CSX railroad ditch line (Sta. 49+00 to 49+50 LT) with a length of approx. 36 feet (pictured below). The wall shall be removed and reset to facilitate drainage outlet construction. The concrete block retaining wall shall be reconstructed outside of the CSX Railroad right-of-way, shifting the wall back approx. 5 feet from the existing condition in accordance with these specifications and in reasonably close conformity with the plans or as directed by the Resident.

525.02 Materials The following paragraph is added:

Concrete blocks from the existing wall shall be reused for the reset wall. Any replacement blocks required due to damage during removal or installation to complete the wall shall generally match the texture, size, type, and color of the existing blocks. Replacement blocks are subject to inspection and approval by the Resident. The additional blocks are subject to rejection if they do not generally match the existing stone characteristics. Guardrail and posts from existing wall shall be reused and reset. Guardrail bolts, nuts and washers shall be replaced and conform to Section 606. Gravel surfacing and backfill material shall be reused.

525.03 Installation The following paragraphs are added:

The concrete block retaining wall, guardrail, wall drainage pipe, backfill and gravel surfacing shall be reconstructed in a manner that is consistent with the existing wall condition and level of detail. Before setting concrete blocks, all blocks shall be cleaned free of dirt and soil. Cleaning methods shall be nondestructive to the block and approved by the Resident. The concrete block retaining wall shall be reconstructed to the location and limits shown on the plans or as approved by the Resident. Any blocks damaged during removal and installation shall be replaced and shall match the texture and color of the existing stones.

Care should be taken to keep weathered faces exposed.

Remove from site all excess materials, excavated soils, debris, tools, and equipment.

No mortar shall be used. The concrete block retaining shall be constructed to act as a self-supporting gravity wall. The wall front & rear surfaces shall be battered consistent with the existing wall, or as approved by the Resident.

525.09 Method of Measurement The following paragraph is added:

Concrete Block Retaining Wall, Remove and Reset will be measured as one lump sum.

525.10 Basis of Payment This Subsection is amended by the addition of the following:

Concrete Block Retaining Wall, Remove and Reset will be paid for at the contract unit price per lump sum. The unit price shall include full compensation for removing existing wall, guardrail and wall drainage, excavation and grading, temporarily storing on site, cleaning, resetting wall, guardrail and wall drainage, and furnishing all materials, labor, equipment, and other incidentals necessary to complete the work. The unit price shall include full compensation for all materials, labor, equipment, transportation of materials, removal of excess excavated soils, replacement of guardrail installation bolts, nuts and washers, and other incidentals necessary to complete the work.

Payment will be made under:

Pay Item		Pay Unit
525.329	Concrete Block Retaining Wall, Remove and Reset	Lump Sum

SPECIAL PROVISION
SECTION 603
INSPECT DRAINAGE STRUCTURE/PIPE (CAMERA)

Description This work shall consist of video inspection of the existing storm drainage outlet along Mill Street (Sta. 801+00 to the outlet at the Androscoggin River) prior to fill and abandon of the existing pipes. The existing 24" CMP is approximately 240 feet in length. The intent of the video inspection is to ensure that there are no blind connections (floor drains, foundation drains etc.) that may be affected or compromised by the drainage reconstruction and pipe filling operations. A catch basin is thought, but not confirmed, to exist at the bend in the outlet line, which would have been filled over in the past during construction of the Town Office Building or the Mill Street sidewalk.

Construction Requirements

The existing 24" CMP drainage outlet pipe shall be subjected to internal video inspection. The pipe runs shall be cleaned and inspected for joining pipes using a video camera meeting the requirements below. The Resident shall be notified as soon as practicable of any visual observations found and all video recordings of these areas of concern shall be made available within 24 hours. Final report shall be submitted to the Resident within 10 days of inspection.

The video camera shall be able to verify the existing pipe conditions and not be limited by poor lighting, waterflow, or pipe length. The camera should have the following qualities:

Provide its own light source or have a separate light source capable of producing images acceptable to the Resident.

Be able to move remotely inside the entire pipe length.

Be able to pan and tilt to enable full view of pipe.

Have a remote monitor and a recording apparatus to view and record the condition of the installed pipe.

The video should include identification before each section of pipe filmed. The identification should include project number, structure numbers corresponding to the structure numbers on the plans, size of pipe, date and time. The video should also be marked with distances down the pipe length with an accuracy of one foot per 100 feet.

A copy of the video shall be provided to the Resident on CD/DVD media in .WMV or .MPEG format. A written report accompanying the video shall also be provided to the Resident.

Method of Measurement Video inspection will be measured by each for the inspected outlet drainage lines.

Basis of Payment The accepted quantities of video inspection will be paid for at the Contract unit price per each and will include all required labor, equipment and materials.

Payment will be made under:

Pay Item	Pay Unit
603.001 INSPECT DRAINAGE STRUCTURE/PIPE (CAMERA)	EA

SPECIAL PROVISION
SECTION 603
24-INCH CULVERT OPTION III – BORING/JACKING

Description This work shall consist of installing boring/jacking a 36-inch inside diameter steel casing to act as a sleeve under the CSX railroad and inserting a 24-inch Culvert Option III Pipe with supporting casing spacers and casing end seals (Sta. 66+50 RT) in accordance with the plans and specifications.

Materials Materials shall meet the requirements of the following specifications:

Casing Pipe. Casing pipe for highway/railroad crossing shall be steel and shall be in accordance with AP1 STD.5L, Grade B, X-42, ASTM A 139.

Casing Pipe:

Description	
Nominal Casing Size	36"
Casing Inside Diameter	36"
Yield Strength (min)	35,000 psi
Type of Joint	Butt Welded
Type of Coating	None

Steel casing pipe wall thickness shall be a minimum of 0.532 inches unless calculations indicate a thicker wall is required

Tolerance - Out-of-round tolerance shall not exceed 0.50 inches.

Pipe Spacers shall be a two-piece 14-gauge T-304 stainless steel assembly with stainless steel bolts. Assembly shall be the center restrained positioning type. The bearing surfaces, runners, shall be a ultra high molecular weight polymer with a maximum coefficient of friction 0.12. The assembly shell liner shall be 0.090" thick, ribbed PVC extrusion with a restraining section that overlaps the edges of the shell and prevents slippage. The runners shall be attached to support structures at appropriate positions to properly support the carrier pipe within the casing pipe and to ease installation. The runners shall be mechanically bolted to the spacer. Risers shall be made of T-304 stainless steel of a maximum 10 gauge and the bolt heads are welded to the inside of the risers for strength. Spacer assembly shall be as manufactured by Cascade Waterworks MFG. Co. or approved equal. Spacing of casing spacers shall conform to the manufacturer's specifications for the Option III pipe. Casing spacers shall be placed within 2 feet (max) of each end of the casing pipe and within 2 feet (max) of each side of the Option III pipe joint.

Bulkhead Materials shall be as follows

Rubber Seal. Rubber shall have one adhesive side for initial attachment to the pipe. Bonding agent shall seal the two ends of the rubber. Three-quarter-inch stainless steel bands shall secure the rubber seal to the casing and carrier pipes. Rubber seal shall be Model CCES as manufactured by Cascade Waterworks MFG or approved equal.

Culvert Option III shall conform to Standard Specification Section 603.

Design:

Pipes within the liveload influence of CSX Railroad shall conform to current edition of AREMA Manual for Railway Engineering guidance and ASTM specifications and shall be designed for internal and external loads to which they will be subjected. The railroad live load used shall be a Cooper C-80- loading, this loading consists of 80 kip axle loads spaced 5 feet on centers. An impact factor of 1.75 (multiply live load by the impact factor) shall be used for depth of cover up to 5 feet. Between 5 and 30 feet, the impact factor is reduced by 0.03 per foot of depth. Below a depth of 30 feet the impact factor is one. Steel casing shall be sized to carry loading independent of the host pipe and be sized for anticipated jacking means methods and loading. The dead load of the earth shall be considered as 120 pounds per cubic foot unless soil conditions warrant the use of a higher value.

The values shown in Table 1 shall be used for the vertical pressure on a buried structure for the various heights of cover.

Table 1 - Live loads, including impact for various heights of cover for a Cooper E-80 loading

Height of Cover	Load	
Feet	Pound per square foot	(kPa)
2	3800	(162.8)
3	3150	(150.8)
4	2850	(136.5)
5	2550	(122.1)
6	2250	(107.7)
7	1950	(93.4)
8	1700	(81.4)
9	1500	(71.8)
10	1300	(62.2)
12	1000	(47.9)
14	800	(38.3)
16	625	(29.9)
18	500	(23.9)
20	400	(19.2)
25	250	(12.0)
30	150	(7.2)

Design and construction methods shall conform to CSX requirements, design and assumptions: CSX Design and Construction Standard Specifications, Pipeline Occupancies, Revised June 5, 2018 or newest publication.
https://www.csx.com/index.cfm/library/files/customers/property-real-estate/permitting/pipeline-design-construction-specifications/

Temporary support(s), 36-inch steel casing and appurtenances shall be designed by a licensed Professional Engineer and all plans, computations, and working drawings shall be sealed and signed by that Engineer and shall be submitted to the Resident for MaineDOT review and CSX Railroad Outside Party (OP) Request Form submittal for approval at least 60 days prior to construction.

The Contractor shall submit fabrication details and calculations including assembly drawings, casing jacking boring, welding and pipe insertion methods, internal joint coupling, casing spacer details and casing end seals, to the Resident for MaineDOT review and CSX Railroad Outside Party (OP) Request Form submittal for approval. The Contractor shall submit a detailed design and procedure for the installation of a sheeting/shoring system adjacent to the tracks to accomplish the work to the Resident for MaineDOT review and CSX Railroad Outside Party (OP) Request Form submittal for review and approval. Shoring protection shall be provided when excavating with Potential to Foul, or as otherwise determined by CSX.

The design for the Temporary Structural Supports, 36-inch steel casing, casing spacers, Option III carrying pipe, casing end boots, appurtenances and dewatering plan shall be submitted to the Resident for MaineDOT review and CSX Railroad Outside Party (OP) Request Form submittal for approval at least 60 days prior to construction.

If dewatering is planned for a public project a dewatering plan is required, submit to the Resident for MaineDOT review and CSX Railroad Outside Party (OP) Request Form and CSX Environmental Department review and approval the dewatering plan prior to work being initiated on CSX property. CSX prohibits the discharge of water onto its property without prior approval. CSX prohibits environmental sampling of groundwater or surface water unless granted through a written Environmental Right of Entry or approved in writing by the CSX Environmental Department. Contact the Manager Environmental Programs at (904) 359-4833 for assistance.

The Contractor shall use support of excavation to support the existing roadway and railroad adjacent to the drainage construction. The Contractor shall submit a detailed design and procedure for the installation of a sheeting/shoring system adjacent to the tracks. Shoring protection shall be provided when excavating with Potential to Foul, or as otherwise determined by CSX.

A. Shoring may not be required if all of the following conditions are satisfied:
    1) The excavation does not encroach within the Theoretical Live Load Influence Zone.

2) The track structure is situated on level ground, or in a cut section, and on stable soil.
3) The excavation does not adversely impact the stability of a CSX facility (i.e., signal bungalow, drainage facility, under grade bridge, building, etc.), or the stability of any structure on, over, or adjacent to CSX property with potential to foul.
4) Shoring is not required by any governing federal, state, local or other construction code.

B. Shoring is required when excavating the toe of an embankment. Excavation of any embankment which supports an active CSX track structure without shoring will not be permitted.

C. Trench boxes are not an acceptable means of shoring. Trench boxes are prohibited for use on CSX property or within the Theoretical Railroad Live Load Influence Zone.

D. Shoring shall be a cofferdam-type, which completely encloses the excavation. However, where justified by site or work conditions, partial cofferdams with open sides away from the track may be permissible, as determined by CSX Engineer.

E. Cofferdams shall be constructed using interlocking steel sheet piles, or when approved by the CSX Engineer, steel soldier piles with timber lagging. Wales and struts shall be included when dictated by the design.

F. The use of tiebacks can be permissible for temporary shoring systems, when conditions warrant. Tiebacks shall have a minimum clear cover of 6’-0”, measured from the bottom of the rail. Upon completion of the work, tiebacks shall be grouted, cut off, and remain in place.

G. All shoring systems on, or adjacent to CSX right-of-way, shall be equipped with railings or other fall protection, and vehicular barrier compliant with the governing federal, state or local requirements. Area around pits shall be graded to eliminate all potential tripping hazards.

H. Interlocking steel sheet piles shall be used for shoring systems qualifying one or more of the following conditions:
1) Within 18’-0” of the nearest track centerline.
2) Within the live load influence zone.
3) Within slopes supporting the track structure.
4) As otherwise deemed necessary by the CSX Engineer.

I. Sheet piles qualifying for one or more of the requirements listed in Section VI.I of the CSX Construction Submission Criteria document shall not be removed. Sheet piles shall be left in place and cut off a minimum of 3’-0”

below the finished grade, the ditch line invert, or as otherwise directed by the CSX Engineer. The ground shall be backfilled and compacted immediately after sheet pile is cut off.

J. The following design considerations shall be considered when preparing the shoring design package:

1) Shoring shall be designed to resist a vertical live load surcharge of 1,880 lbs. per square foot, in addition to active earth pressure. The surcharge shall be assumed to act on a continuous strip, eight feet six inches (8'-6") wide. Lateral pressures due to surcharge shall be computed using the strip load formula shown in AREMA Manual for Railway Engineering, Chapter 8, Part 20.

2) Allowable stresses in materials shall be in accordance with AREMA Chapters 7, 8, and 15.3.

3) A minimum horizontal clearance of ten feet (10'-0") from centerline of the track to face of nearest point of shoring shall be maintained, provided a twelve feet (12'-0") roadbed is maintained with a temporary walkway and handrail system.

4) For temporary shoring systems with Potential to Foul, piles shall be plumb under full dead load. Maximum deflection at the top of wall, under full live load, shall be as follows:

a) One-half (1/2) inch for walls within twelve feet (12'-0") of track centerline (Measured from centerline of the nearest track to the nearest point of the supporting structure).

b) One (1) inch for walls located greater than twelve feet (12'-0") from track centerline

K. Shoring work plans shall be submitted in accordance with Section II of the Construction Submittal Criteria, as well as the following additional requirements:
1) The work plan shall include detailed drawings of the shoring systems calling out the sizes of all structural members, details of all connections. Both plan and elevation drawings shall be provided, calling out dimensions from the face of shoring relative to the nearest track centerline. The elevation drawing shall also show the height of shoring, and track elevation in relation to bottom of excavation.
2) Full design calculations for the shoring system shall be furnished.

3) A procedure for cutting off the sheet pile, backfilling and restoring the embankment.

Construction Requirements

Handle and assemble all elements of the structure in accordance with the manufacturer's instructions, except as modified herein, on the plans or as ordered by the Resident in writing.

Casing and carrier pipe jacking/pushing loads shall be monitored. Excessive force could telescope pipe joints or damage the pipe. Refer to manufacturer safe compressive/jacking loads and pushing distances.

Casing pipe shall be so constructed as to prevent leakage of any substance from the casing throughout its length, except at ends of casing where ends are left open, or through vent pipes when the ends of the casing are sealed. Casing shall be installed so as to prevent the formation of a waterway under the railroad.

The inside diameter of the casing pipe shall be such as to allow the carrier pipe to be removed subsequently without disturbing the casing or the roadbed.

Joints between the sections of pipe shall be constructed to be capable of withstanding railroad loading. Joints shall be constructed through butt welding.

Temporary track supports shall be installed at the direction of CSX.

Method of Measurement Casing pipe, casing spacers, casing end seals and Culvert Option III shall be measured by the lump sum.

Basis of Payment Payment for the 24-inch Culvert Option III Boring/Jacking will be full compensation for furnishing all labor, materials, equipment necessary to manufacture and install the 36-inch steel casing pipe, casing spacers, casing end seals and culvert Option III carrying pipe complete and in place, including: but not limited to dewatering, cleaning, inspecting, strutting, bracing, support of excavation (inlet and outlet) and temporary track supports.

Payment will be made under:

Pay Item	Pay Unit
603.01 24-inch Culvert Option III Boring/Jacking	Lump Sum

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
603.05	6 Inch PVC Pipe	
603.1311	8 Inch PVC Pipe	
603.155	12 Inch Reinforced Concrete Pipe Class III	Linear Foot
603.165	15 Inch Reinforced Concrete Pipe Class III	Linear Foot
603.175	18 Inch Reinforced Concrete Pipe Class III	Linear Foot
603.195	24 Inch Reinforced Concrete Pipe Class III	Linear Foot

SPECIAL PROVISION
SECTION 609
GRANITE CURB

Standard Specification Section 609 shall be amended by adding following:

609.01 Description: The types of curb are designated as follows:

Special Granite Curb – Stone Curbing of quarried granite stone.

609.02 Materials: Special Granite Curb shall meet the requirements of Division 700, Section 712.04, except as indicated on the plans. Height of the units shall be as indicated on the plans. Minimum thickness shall be 5 inches.

609. 03 Vertical Stone Curb, Terminal Section and Transition Sections and Portland Cement Curb, Terminal Sections and Transitions Sections

a. Installation Special Granite Curb may be set in flowable concrete at the Contractor's option. Cutting or fitting necessary to install curb in the locations directed shall be incidental.

b. Backfill for one foot behind Special Granite Curb shall meet the requirements of Section 304, Aggregate Subbase Course - Gravel.

Method of Measurement: Special Granite Curb will be measured by the length in linear feet along the front face of the curb at the elevation along of the finished loam at lowest reveal, complete in place and accepted.

Basis of Payment: The accepted quantities of Special Granite Curb will be paid for at the contract unit price per linear foot. There will be no separate payment for cutting, bedding, or backfill, but these will be considered incidental to the work.

Pay Item		Pay Unit
609.1101	Special Granite Curb - 48 Inch	Linear Foot

SPECIAL PROVISION
SECTION 634
HIGHWAY LIGHTING
(Remove and Reset Light Poles)

Description: This work will consist of removing and relocating light poles and installing necessary pullboxes, conduit and wiring to energize them. The existing foundations and junction boxes shall be removed and become the property of the contractor. The existing light poles are approximately 25 feet long. The light poles will be relocated 0 to 15 feet from their existing locations.

Construction Requirements: The relocated light poles shall be installed in accordance with Section 626 and 634 and any applicable portions of the Standard Specifications and the Standard Details. Existing foundation anchor bolts shall be protected.

Method of Measurement: The removal and resetting of light poles and foundations shall be measured for payment by the unit, each, satisfactorily installed and operating. Any poles or fixtures that are damaged during demounting, transporting, storing or reinstalling shall be replaced by the Contractor at no additional cost to the contract.

Basis of Payment: Payment will be made for removal, storage and resetting of each light pole as shown on the plans or as directed by the Resident at the contract each price which will be full compensations for all labor, materials, and incidental needed to satisfactorily complete the work, including the conduit, wiring, foundation and operational testing. New anchor bolts for poles to be reinstalled on new foundations shall be provided by the contractor incidental to the each payment.

Foundations and Precast Concrete Junction Boxes shall be paid under Section 626 pay items.

Payment will be made under:

Pay Item		Pay Unit
634.208	Remove and Reset Light Standards	Each

Highway Lighting Quality Control Checklist

Subsection 634.09 Field Testing

Project Pin # _____

Location (if multiple services, please be specific)- _____

Grounding Electrode Resistance at service _____

Number of Circuits _____

Hand-Off-Auto Switch? _____

Circuit #1

Open Circuit Resistance- (Ohm out both hot legs at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Megger Test- (Meg out both hot legs to ground at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Current draw- (during normal operation) Leg #1 _____ Leg #2 _____

Operating Voltage at last pole _____

Circuit #2

Open Circuit Resistance- (Ohm out both hot legs at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Megger Test- (Meg out both hot legs to ground at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Current draw- (during normal operation) Leg #1 _____ Leg #2 _____

Operating Voltage at last pole _____

I, _____, certify that this work was done in accordance with subsection 643.14 and current NEC _____ guidelines, and when tested, was functioning as intended.

(YEAR)

Electrician's Signature _____

Electrician's License # _____

Highway Lighting Quality Control Checklist

Subsection 634.09 Field Testing

Project Pin # _____

Location (if multiple services, please be specific)- _____

Grounding Electrode Resistance at service _____

Number of Circuits _____

Hand-Off-Auto Switch? _____

Circuit #3

Open Circuit Resistance- (Ohm out both hot legs at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Megger Test- (Meg out both hot legs to ground at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Current draw- (during normal operation) Leg #1 _____ Leg #2 _____

Operating Voltage at last pole _____

Circuit #4

Open Circuit Resistance- (Ohm out both hot legs at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Megger Test- (Meg out both hot legs to ground at the cabinet while they are shorted together at the last pole and the fuse holders are disconnected at each pole) _____

Current draw- (during normal operation) Leg #1 _____ Leg #2 _____

Operating Voltage at last pole _____

I, _____, certify that this work was done in accordance with subsection 643.14 and current NEC _____ guidelines, and when tested, was functioning as intended.

(YEAR)

Electrician's Signature _____

Electrician's License # _____

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
TRAFFIC SIGNALS
(Rectangular Rapid Flashing Beacon Assembly)

Amend Standard Specification Section 643 - Traffic Signals as follows:

Add the following to the end of Section 643.01, Description:

This work shall consist of furnishing and installing Rectangular Rapid Flashing Beacons (RRFBs), signage, and associated equipment and appurtenances, in accordance with these specifications and in conformity with the lines, grades, and dimensions shown on the Plans or established herein.

Add the following Section 643.025, Assembly:

RRFBs and signs for each crosswalk shall meet the latest version of the Manual on Uniform Traffic Control Devices (MUTCD) Chapter 4L – Rectangular Rapid-Flashing Beacons.

The following are also required in addition to:

1. Each RRFB Assembly shall include equipment visible for each direction of vehicular traffic unless otherwise shown on the plans. Said equipment shall include two W11-2 signs (one to be a mirrored image for the left side of the road), two W16-7P signs, and two RRFB units.
2. A small light directed at and visible to pedestrians in the crosswalk shall be installed integral to the RRFB to give confirmation that the RRFB is in operation.
3. RRFB must operate between the temperatures of -40° F to +176° F.
4. W11-2 and W16-7P signs shall be MUTCD compliant and fluorescent yellow-green.
    a. Signs shall be sheet aluminum and meet requirements of Section 645 for Type II regulatory, warning, and route marker assembly signage.
5. Pedestrian activated pushbuttons shall be used.
6. Communication between the devices shall be Spread Spectrum Wireless or direct wire as shown on plans.
7. Each assembly shall have two LED lights mounted to each pole for pedestrian vertical illuminance. One light shall be aimed at the detectable warning field and the other towards the center of the travel lane. Additional requirements for the pedestrian lights are as follows:
    a. They shall activate in conjunction with the RRFB
    b. They shall activate when less than 10 lux of ambient light is present and shall not illuminate when the ambient light is equal to or greater than 10 lux
    c. They shall provide vertical illuminance of 20 lux across the entire crosswalk, measured at a height of 5 feet from the road surface
    d. They shall be housed in their own IP66 minimum rated enclosures
    e. They shall be adjustable for 120 degrees horizontally and vertically
8. Each pole shall be outfitted with an 85-watt solar panel, a NEMA 4X aluminum pole mount cabinet, and a 105 Amp-hour absorbent glass mat lead acid battery.

9. The pole shall be a 4-inch inner diameter ASTM A53 Schedule 40 galvanized steel. A cap to make the pole watertight shall be provided at the top of the pole.
10. Each support pole shall be installed with a square aluminum pedestal base with grounding lug.
11. The pole and pedestal base shall conform to the latest edition of "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals" and National Cooperative Highway Research Program Report 350.
12. All equipment shall be securely attached to the pole with sufficient banding or fasteners.
13. All wiring shall be located inside the pole to the maximum extent possible.

Add the following to the end of Section 643.18, Method of Measurement:

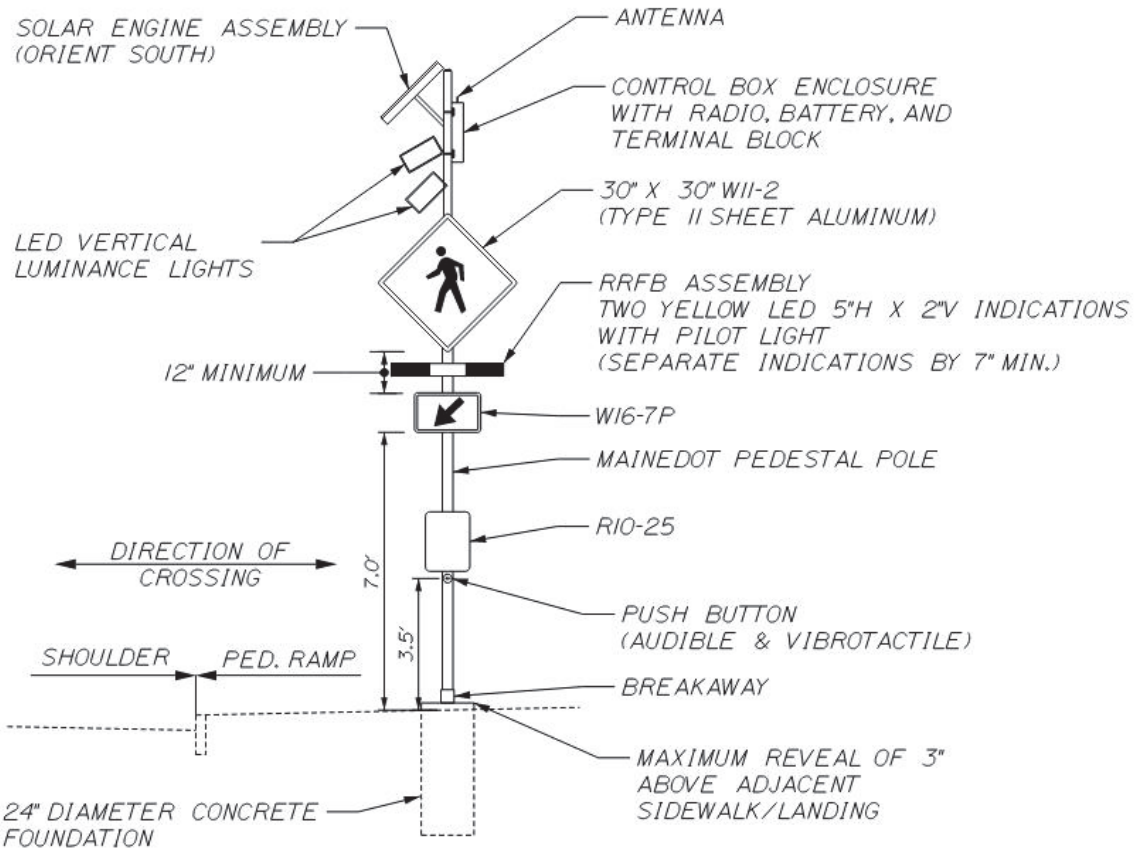
Rectangular Rapid Flashing Beacon Assembly will be measured for payment by each installation complete in place.

Add the following to the end of Section 643.19, Basis of Payment:

Rectangular Rapid Flashing Beacon Assembly will be paid for at the Contract unit price by each. Payment will be full compensation for furnishing all materials including, but not limited to, the RRFB LED-arrays, LED vertical illuminance, controller cabinet, pole and breakaway device, wiring, fasteners, pedestrian push button, signs, solar panel, battery, wireless spread spectrum communication, and all appurtenances and incidentals required for a complete and functioning system. Wiring, grounding, and associated electrical work and materials shall be incidental. Foundations shall be paid for under applicable Section 626 pay items.

Payment will be made under:

Pay Item		Pay Unit
643.621	Rectangular Rapid Flashing Beacon Assembly	Each



NOTES:

1. FLASH DURATION FOR CROSSING SHALL MEET MUTCD REQUIREMENTS.
2. INSTALL R10-25 SIGNAGE AND PUSH BUTTON TO ALIGN TO DIRECTION OF CROSSING.
3. PEDESTRIAN PUSH BUTTONS SHALL BE ADA COMPLIANT AND BE INSTALLED AT 3.5 FEET ABOVE ADJACENT ACCESSIBLE SURFACE GRADE.
4. MAXIMUM ALLOWABLE REACH DISTANCE FOR PEDESTRIAN PUSH BUTTONS IS 10 INCHES. INSTALL EXTENSION BRACKETS IF REQUIRED. PAYMENT FOR EXTENSION BRACKETS WILL BE INCIDENTAL TO RRFB PAY ITEM.
5. ACCESSIBLE PEDESTRIAN PUSH BUTTONS ON RRFB PEDESTAL POLES SHALL BE PROVIDED WITH A SPEECH MESSAGE. SPEECH MESSAGES SHALL BE "(STREET NAME). YELLOW LIGHTS ARE FLASHING FOR (STREET NAME)". SPEECH MESSAGES SHALL BE REPEATED AT LEAST TWICE FOR EACH PUSH BUTTON ACTIVATION.
6. ALIGN W11-2 RRFB ASSEMBLY AND W16-7p TO FACE TRAFFIC.
7. RRFB GROUPINGS AT EACH CROSSWALK SHALL BE INTERCONNECTED WITH SPREAD SPECTRUM WIRELESS RADIO COMMUNICATIONS.
8. ALL FIELD WIRING SHALL BE NEATLY BUNDLED AND CLEARLY IDENTIFIED WITH PERMANENT, LEGIBLE, WEATHERPROOF TAGS SECURELY ATTACHED TO EACH CABLE.

RECTANGULAR RAPID FLASHING BEACON ASSEMBLY DETAIL
ITEM NO. 643.621
(SOLAR POWERED, RADIO ACTIVATED)

SPECIAL PROVISION
SECTION 652
MAINTENANCE OF TRAFFIC

Approaches. Approach signing shall include the following signs at a minimum. Field conditions may warrant the use of additional signs as determined by the Resident.

Road Work Next X* Miles
Road Work 500 Feet (Ahead)
End Road Work

Work Areas. At each work site, signs and channelizing devices shall be used as directed by the Resident.

Signs include:

Road Work xxxx[1].
One Lane Road Ahead
Flagger Sign

Other typical signs include:

Be Prepared to Stop
Low Shoulder
Bump
Pavement Ends

The above lists of Approach signs and Work Area signs are representative of the contract requirements. Other sign legends may be required.

Unless otherwise defined in Special Provision 105/107 or submitted and approved in the Traffic Control Plan, the following shall apply:

- The Contractor shall conduct their operations in such a manner that the roadway will not be restricted to one lane for more than 2,500 feet at each work area and no more than 4,000 feet for paving, milling, and crack seal/repair work areas.
- Where more than one work area restricts traffic to one lane operation, these work areas shall be separated by at least 1 mile of two-way operation.

Temporary Centerline A temporary centerline shall be placed each day on all new pavement to be used by traffic. The temporary centerline, when specified of reflectorized traffic paint, shall conform to the standard marking patterns used for permanent markings. Failure to apply a temporary centerline daily will result in a Traffic Control Violation and suspension of paving operations until temporary markers are applied to all previously placed pavement.

[1] "Road Work Ahead" to be used in short duration operations and "Road Work xx feet" to be used in stationary operations as directed by the Resident.

MAIN STREET, DEPOT STREET, PARK STREET AND PLEASANT STREET SEWER IMPROVEMENTS

MDOT WIN NO. 22643.00

TOWN OF LIVERMORE FALLS, ME

BIDDING/CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

MARCH 2026

21011

WRIGHT-PIERCE
Engineering a Better Environment

LIVERMORE FALLS, MAINE

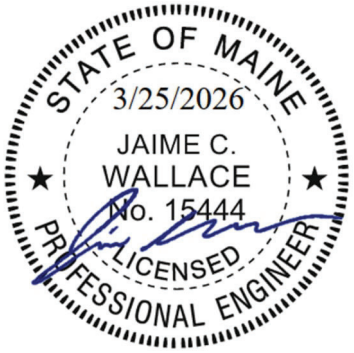
BIDDING/CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

FOR

MAIN STREET, DEPOT STREET, PARK STREET AND PLEASANT STREET SEWER IMPROVEMENTS

MDOT WIN NO. 22643.00

MARCH 2026



Prepared By:

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Topsham, ME 04086
207-725-8721

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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, sexual orientation, gender identity 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, sexual orientation, gender identity 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, sexual orientation, gender identity 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-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 it does not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The federally assisted construction CONTRACTOR certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its 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 it has obtained identical certifications from proposed Subcontractors for specific time periods) it 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 it will retain such certifications in its 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

SECTION SC-44

DEBARMENT AND SUSPENSION

Executive Order 12549—Debarment and Suspension

Source: The provisions of Executive Order 12549 of Feb. 18, 1986, appear at 51 FR 6370, 3 CFR, 1986 Comp., p. 189, unless otherwise noted.

By the authority vested in me as President by the Constitution and laws of the United States of America, and in order to curb fraud, waste, and abuse in Federal programs, increase agency accountability, and ensure consistency among agency regulations concerning debarment and suspension of participants in Federal programs, it is hereby ordered that:

Section 1.
(a) To the extent permitted by law and subject to the limitations in Section l(c), Executive departments and agencies shall participate in a system for debarment and suspension from programs and activities involving Federal financial and nonfinancial assistance and benefits. Debarment or suspension of a participant in a program by one agency shall have government-wide effect.
(b) Activities covered by this Order include but are not limited to: grants, cooperative agreements, contracts of assistance, loans, and loan guarantees.
(c) This Order does not cover procurement programs and activities, direct Federal statutory entitlements or mandatory awards, direct awards to foreign governments or public international organizations, benefits to an individual as a personal entitlement, or Federal employment.

Section 2. To the extent permitted by law, Executive departments and agencies shall:
(a) Follow government-wide criteria and government-wide minimum due process procedures when they act to debar or suspend participants in affected programs.
(b) Send to the agency designated pursuant to Section 5 identifying information concerning debarred and suspended participants in affected programs, participants who have agreed to exclusion from participation, and participants declared ineligible under applicable law, including Executive Orders. This information shall be included in the list to be maintained pursuant to Section 5.
(c) Not allow a party to participate in any affected program if any Executive department or agency has debarred, suspended, or otherwise excluded (to the extent specified in the exclusion agreement) that party from participation in an affected program. An agency may grant an exception permitting a debarred, suspended, or excluded party to participate in a particular transaction upon a written determination by the agency head or authorized designee stating the reason(s) for deviating from this Presidential policy. However, I intend that exceptions to this policy should be granted only infrequently.

Section 3. Executive departments and agencies shall issue regulations governing their implementation of this Order that shall be consistent with the guidelines issued under Section 6. Proposed regulations shall be submitted to the Office of Management and Budget for review within four months of the date of the guidelines issued under Section 6. The Director of the Office of

Management and Budget may return for reconsideration proposed regulations that the Director believes are inconsistent with the guidelines. Final regulations shall be published within twelve months of the date of the guidelines.

Section 4. There is hereby constituted the lnteragency Committee on Debarment and Suspension, which shall monitor implementation of this Order. The Committee shall consist of representatives of agencies designated by the Director of the Office of Management and Budget.

Section 5. The Director of the Office of Management and Budget shall designate a Federal agency to perform the following functions: maintain a current list of all individuals and organizations excluded from program participation under this Order, periodically distribute the list to Federal agencies, and study the feasibility of automating the list; coordinate with the lead agency responsible for government-wide debarment and suspension of contractors; chair the lnteragency Committee established by Section 4; and report periodically to the Director on implementation of this Order, with the first report due within two years of the date of the Order.

Section 6. The Director of the Office of Management and Budget is authorized to issue guidelines to Executive departments and agencies that govern which programs and activities are covered by this Order, prescribe government-wide criteria and government-wide minimum due process procedures, and set forth other related details for the effective administration of the guidelines.

Section 7. The Director of the Office of Management and Budget shall report to the President within three years of the date of this Order on Federal agency compliance with the Order, including the number of exceptions made under Section 2(c), and shall make recommendations as are appropriate further to curb fraud, waste, and abuse.

END OF SECTION

SECTION 01010B

SUMMARY OF WORK

PART 1 - GENERAL

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 Town of Livermore Falls on and adjacent to State Route 4.
   1. Park Street from Foundry Road to Depot Street.
   2. Depot Street from High Street to Main Street.
   3. Main Street from Depot Street to the intersection of Main Street and Bridge Street.
   4. Pleasant Street from Depot Street to Union Street/School Street.
   5. Church Street from Main Street to Knapp Street.
   6. Union Street from Church Street and extending approximately 60-feet east.

B. Work Included:
   1. Replacement and relining of an existing sewer main within Route 17 as part of Maine Department of Transportation's WIN 22643.00. The work includes, but is not limited to, the following:
      a. Replacement and relocation of approximately 1140 linear feet of existing sewer with new 8" PVC gravity sanitary sewers, replacement of select manholes and installation of new manholes as identified on the Contract Drawings, and replacement of sewer services from the sewer main to the edge of pavement limit.
      b. UV lining of the gravity sanitary sewers listed below. Work at these sewers will also include replacement of select manholes as identified on the Contract Drawings, and replacement of sewer services from the sewer main to the edge of the pavement limit.
         i. Approximately 1630 linear feet of existing 8" AC, PVC, and VCP gravity sanitary sewers
         ii. Approximately 760 linear feet of existing 10" VCP
         iii. Approximately 500 linear feet of existing 12" VCP, PVC
         iv. Approximately 885 linear feet of existing 15" VCP
         v. Approximately 615 linear feet of existing 18" VCP
         vi. Approximately 135 linear feet of existing 24" VCP
      c. Removal and disposal of existing sewer manholes, sewers, and laterals.
      d. Existing flow management/bypass pumping for installation of new sanitary sewer pipes, manholes, and laterals.
   2. All related site work includes trench excavation, ledge excavation, groundwater dewatering, disposal of excess excavated materials, filter fabric, bedding, backfill, compaction, and restoration of disturbed property.

C. Work Included (Pleasant Street from DOT project limit to Union Street Intersection):
   1. Relining of an existing sewer main on Pleasant Street from the limits of the DOT contract to Union Street intersection. This work includes but is not limited to the following:
      a. UV lining of approximately 325 linear feet of existing 12" VCP. Work will also include replacement of select manholes as identified on the Contract Drawings, and replacement of sewer services from the sewer main to the edge of pavement limit.

D. Work Included (Depot Street from DOT project limit to High Street Intersection):
   1. Relining of an existing sewer main on Depot Street from the limits of the DOT contract to High Street intersection. This work includes but is not limited to the following:
      a. UV lining of approximately 280 linear feet of existing 8" VCP. Work will also include replacement of select manholes as identified on the Contract Drawings, and replacement of sewer services from the sewer main to the edge of pavement limit.
   2. All related site work including trench excavation, ledge excavation, groundwater dewatering, disposal of excess excavated materials, filter fabric, bedding, backfill, compaction, road/drive subbase, paving, and loam/seed.
   3. Restoration of the work area and adjacent disturbed private property, including:
      a. Property monumentation disturbed as part of construction
      b. Driveways in like materials
      c. Gravels and paving
      d. Sidewalks
      e. Bituminous Curb
      f. Lawn space
      g. Pavement markings

E. Contractor shall comply with all Buy America (BAA), Build America Buy America (BABA), and American Iron and Steel (AIS) requirements.

F. Related Work Specified Elsewhere
   1. Measure and Payment: Section 01150
   2. Submittals: Section 01340
   3. Traffic Regulation: Section 01570
   4. Project Record Document: Section 01720
   5. Site work, piping, structures, testing requirements are specified in Division 2.

G. 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.

1.2 PERMITS, FEES, AND BONDS

A. The Contractor shall maintain copies of permits on site during construction and shall place a copy of the permit in protective sleeve and post in prominent location for project identification.

B. The contractor shall comply with all CSXT requirements while working in or adjacent to CSXT right-of-way. Approximate location of CSXT right-of-way is shown on the plans.

1.3 EXISTING UTILITIES AND STRUCTURES

A. The location and size of existing underground facilities such as sewers, drains, culverts, water mains, cables, service pipes, etc., are shown on the plans based on a survey and/or existing records and are shown as approximate only. The plans do not show the exact location and depth of all utilities, nor do they show all utilities that may be encountered.

B. The Contractor shall assume that there are existing underground utility connections to each and every building or structure along the line of work, whether they appear on the drawings or not. The Contractor shall notify the proper utility companies and obtain and preserve the locations as marked for all existing utilities that may be encountered along the line of work until such time as such markings are no longer required.

1.4 TWENTY-FOUR (24) HOUR EMERGENCY SERVICE

A. The Contractor shall maintain a 24-hour, 7-day a week telephone service and a local facility to handle emergency requirements such as settled trenches, clogged drains, rain damage, etc. The Contractor's emergency personnel shall be able to respond to emergency calls within thirty minutes. A list of the personnel and their telephone numbers shall be submitted to the Owner and to the local Police and Fire Departments. This requirement shall apply during the entire length of the project.

B. This list shall be submitted on the Contractor's letterhead and shall state that should an emergency arise during the implementation of this project; these people are to be contacted. The Contractor shall submit this letter at the pre-construction conference.

C. If in the Owner’s opinion, public health, safety or welfare is jeopardized by a condition of the work performed by the Contractor, every effort shall be made to reach the Contractor to correct said condition(s). However, where the Contractor is unable to be reached or unwilling or unresponsive to alerts made by the Engineer or Owner, the Owner reserves the right to access the work and if necessary, employ emergency forces not party to this contract for the correction of the hazards or defects in the work. All costs and charges for the performance of these corrections shall be deducted and paid out of monies due or to become due to the Contractor under this agreement. The Owner shall not be held to the lowest figures for this work of completing the contract or any part thereof. All sums actually paid, therefore, shall be charges to the Contractor. In case the expense so charged exceeds the sum which would have been payable under this contract, the Contractor shall pay the amount in excess to the Owner.

1.5 STORAGE OF EQUIPMENT AND MATERIALS

A. Equipment and material storage areas shall be reviewed with and approved by the Maine Department of Transportation and the Sewer District at the pre-construction conference and shall be secured by the Contractor at his own expense.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 MAINTAIN EXISTING WORKS

A. Existing Operations:
   1. Uninterrupted service shall be always provided during construction except for planned shutdowns which will need to be coordinated directly with the Sewer District and affected customers.

B. Minimize Interference:
   1. The Contractor shall always conduct his operations to interfere as little as possible with existing works. The Contractor shall develop a program, in cooperation with the Owner, Sewer District, Maine DOT, water customers and interested officials, which shall provide for the construction and putting into service the new works in the most orderly manner possible. This program shall be adhered to except as deviations therefrom are expressly permitted in writing by the Sewer District or its authorized representative.

3.2 CONSTRUCTION SEQUENCE

A. The Contractor will be required to always maintain uninterrupted service during construction except for planned shutdowns which will need to be coordinated directly with the Sewer District and affected customers.

B. The Contractor shall submit to the Engineer for review and acceptance a complete schedule of the proposed sequence of construction operations prior to commencing any work. This schedule shall include the Contractor's plans for doing the work.

C. The Contractor shall submit to the Engineer a written request to deviate from the above sequence with adequate supporting information to demonstrate to the Engineer that the continuity and degree of treatment will not be adversely affected.

3.3 SCHEDULE LIMITATIONS AND WORK RESTRICTIONS/ REQUIREMENTS

A. Work Hours:
   1. All Work shall be prohibited on Saturdays, Sundays, and legal holidays.
   2. All Work on weekdays shall be performed in accordance with Maine DOT requirements and Town of Livermore Falls ordinance.
   3. The Contractor shall request permission to work outside the work hours specified above at least 72-hours in advance of the proposed work. The Contractor shall not commence work outside of the work hours specified above unless or until granted such permission from the Owner and Engineer.

B. Maintain Services:
   1. Maintain all existing water services.

2. Maintenance of all other existing services shall be coordinated directly with Maine DOT and Livermore Falls Water District.

C. Proposed Road Closures:
   1. Local road closures shall be coordinated with Maine DOT, emergency services, school district, and Town of Livermore Falls.

D. Special Coordination Requirements:
   1. Contractor shall coordinate all work with Maine DOT, Livermore Falls Water District, and the Town of Livermore Falls.

E. Pavement Maintenance and Winter Shutdown Period:
   1. The Contractor shall maintain pipe trenches with compacted gravel until pavement operations can be completed.
      a. Trenches shall be paved on a weekly basis unless otherwise approved by Engineer and Owner.
   2. No excavation in paved roadways shall be allowed after November 15 without written approval from the Town of Livermore Falls and Maine DOT.
   3. All streets shall be paved prior to any "winter shutdown period", which is defined as November 15th to April 1st. Any temporary pavement placed prior to winter shutdown shall be removed during the following construction season.

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 INCIDENTAL WORK

A. Incidental work items for which separate payment will not be made includes, but is not limited to, the following items:
   1. Clean-up and restoration of property.
   2. Restoration of fences and other structures.
   3. Cooperation and coordination with other Contractors and utility companies including related inspection costs and other costs.
   4. Protection of existing property monumentation.
   5. Resetting of existing property monumentation disturbed as part of construction by a licensed P.L.S. licensed in the State of Maine.
   6. Utility crossings and relocations, unless otherwise paid for.
   7. Temporary utility services to buildings, as required to maintain service during construction.
   8. Minor Items--such as relocation of sign posts, guard rails, rock wall, mail boxes, curbs, traffic loop detectors, pavement markings, etc., damaged as a result of construction activities.
   9. Trench boxes, steel and/or wood sheeting as required, including that left in place.
   10. Temporary Construction Dewatering as necessary.
   11. Dust control.
   12. Quality assurance testing.
   13. Clearing, grubbing and stripping.
   14. Loam, seeding, grading, liming, fertilization, mulching, and watering.
   15. Construction schedules, bonds, insurance, shop drawings, warranties, guarantees, certifications and other submittals required by the Contract Documents.
   16. Repair and replacement of water lines under 2-inches in size, culverts, underdrains, rock lined drainage trenches in streets and other utilities damaged by construction activities and corresponding proper disposal of removed materials unless otherwise paid for.
   17. Temporary construction necessary for construction sequencing and other facilities not permanently incorporated into the work.
   18. Weather protection.
   19. Permits not otherwise paid for or provided by the Owner.
   20. Visits to the project site or elsewhere by personnel or agents of the Contractor, including manufacturer's representatives, as may be required.

21. All excavation except the test pits specifically shown or ordered by the Engineer to establish sewer line and water line locations, earth excavation below grade and rock excavation.
22. Contract administration and insurance.
23. Test pits to establish in place field soils density, groundwater conditions, or requirements for dewatering.
24. Pipe markings.
25. Replacement of unsuitable material above pipe bedding and backfill.
26. Earthwork (Except Ledge)
27. Test Pits for the Contractor's Benefit
28. Sewer service risers.
29. Temporary resetting or replacement of existing street and traffic signs and temporary traffic signals where necessary.
30. Disconnecting and reconnecting traffic signal power to accommodate the work.
31. Raising and lowering of existing frames and covers of buried utilities to grade unless payment is otherwise provided for.
32. Adjustment of frames, covers and grates to match final grades and curb faces.
33. Removing and replacing existing SMH inverts to accommodate new and replacement pipes.
34. Removing and resetting of existing steps, guard rails, fences, walls and non-paved brick or paver walkways disturbed during construction, other than those identified on the Drawings to be replaced.
35. Protection of existing block and stone retaining walls unless otherwise identified to be removed, relocated or modified in the Drawings.
36. Installing temporary pavement markings on binder course that will not be surfaced within 14 days of installation.
37. Installing raised pavement markers and temporary symbols on the binder course within 48 hours of installing any section of the binder course and maintaining these throughout the project duration.
38. Locating and verifying the locations of water and sewer services within the limits of work.
39. Leak testing of all existing sewer manholes whose frames and covers have been replaced.
40. Removal of temporary or permanent pavement markings, prior to paving. This includes removing markings that are applied on the winter binder layer, prior to installation of the wearing course.
41. Provide temporary pavement marking paint on the streets as shown in the layout plans on the binder course within two weeks of pavement installation if the wearing course will not be installed until after a winter season.

1.4 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.

All pay items shall be paid for per Maine DOT Standard Specifications most recent edition, unless otherwise noted below:

Item No. (602.30) – Flowable Concrete Fill

A. Method of Measurement: Flowable concrete fill for abandoning in-place sewer mains and for pipe support at pipeline crossings measured for payment shall be the actual cubic yards of flowable fill placed for either pipe abandonment or trench pipe support.
B. Basis of Payment: The Contract unit price per cubic yard of flowable concrete fill shall constitute full compensation for all labor, equipment, and materials necessary to complete this work including placement of the fill, including pumping, pipe preparation, curing, backfill, non-pressurized pipe caps, and all other requirements for safely capping and plugging the pipe.

Item No. (801.03) – Test Pits

A. Method of Measurement: The quantity to be paid for under this item shall be the actual number of test pits performed as indicated on the Contract Drawings and authorized by the Engineer.
B. Basis of Payment: Test pits shall be paid for at the unit price per each test pit as indicated on the Contract Drawings. 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; 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.

Item No. (801.071) – Temporary Sewer By-Pass

A. Method of Measurement: Payment of the lump sum amount for temporary sewer by-pass pumping shall be full compensation for preparation, submittal of bypass plan, installation, testing, operation, maintenance, and removal as required to maintain sewer service.
B. Basis of Payment: Temporary sewer by-pass pumping shall be paid for as a lump sum price stated in the Schedule of Values. Said lump sum price shall be full compensation for all labor, materials, tools and equipment necessary to complete this work including but not limited to: preparing and submitting sewer bypass plan; maintaining existing flows; providing temporary sewer system for mainlines and services including fittings, manhole plugs, pumps that can pump the maximum capacity of the existing gravity sewer pipes; all setups and relocations of temporary bypass systems necessary for the work; and removing all temporary bypass systems upon acceptance of the permanent/rehabilitated sewer pipes and manhole structures; providing labor/staff to maintain the temporary bypass pumping system outside of normal work hours; connection to existing sewer manholes and pipes; sawcut, management, removal and disposal of surface pavement; excavation; backfill; compaction; providing permanent trench patch; site restoration; and all else incidental thereto for which payment is not provided under other items. 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.

1. Work to be paid for under Item 801.071 – Temporary Sewer By-Pass shall be paid for under two separate lump sum line items:
    a. Item 802.211 – Temporary Sewer By-Pass (For Sewer Rehabilitation)
    b. Item 802.211 – Temporary Sewer By-Pass (For New Sewer Installation)

(801.141) and (801.16) – 4" PVC Sanitary Sewer (SDR 35) (Sewer Service) and 6" PVC Sanitary Sewer (SDR 35) (Service)

A. Method of Measurement: 4" PVC sanitary sewer (SDR 35) and 6" PVC sanitary sewer (SDR 35) measured for payment shall be the number of linear feet of services installed from the top of the tee or wye in the main to the edge of the roadway pavement limit measured along the centerline of pipe. These items shall consist of installing house sanitary service leads from sanitary sewer mains to the edge of the roadway pavement as shown on the Drawings and/or as determined in the field.

B. Basis of Payment:
    1. The contract unit price per linear foot 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, adequately capping service connection and marking location as specified and shown on the Drawings or connection to existing service, 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. Service pipe acceptably set in place and backfilled - 90 percent.
        b. Service pipe successfully cleaned and tested - 10 percent.

Item (801.17) – 8” PVC Sanitary Sewer (SDR-35)

A. Method of Measurement: 8” PVC sanitary sewer (SDR-35) measured for payment shall be the number of linear feet installed measured along the center line of the pipe as laid including fittings. Pipes shall be measured between centers of the manholes minus half the inside diameter of each manhole. Pipe installed into the manhole will not be measured for payment.

B. Basis of Payment:
    1. The contract unit price per linear foot for sewer 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), removal and disposal of existing sewer pipe dewatering, bedding, furnishing and installing pipe and fittings, making connections to new and existing manholes, backfill, compaction, testing; light cleaning prior to each CCTV inspection; post-CCTV inspection of the sewer, providing video files, database, and written logs on external hard drives; 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. Sewer pipe acceptably set in place and backfilled - 90 percent.

b. Sewer pipe successfully tested - 10 percent.

3. Maintenance of sewer flows and a temporary sewer bypass system will be paid for under Item No. 801.17 – Temporary Sewer By-Pass (For New Sewer Installation).

Item No. (802.211) – Reline Existing Sewer

A. Method of Measurement: Reline existing sewer using UV cured-in-place-pipe (CIPP/lining) method accepted for payment shall be the actual distance in linear feet measured along the pipeline and accepted as complete as indicated in the Contract Documents or as directed by the Engineer. Pipes shall be measured between centers of the manholes minus half the inside diameter of each manhole. Pipe CIPP/lined into the manhole will not be measured for payment.

B. Basis of Payment: Reline existing sewer shall be paid for at the Contract unit price per linear foot by pipe diameter as stated in the Bid Schedule. Said unit price shall include compensation for furnishing all labor, materials, tools, and equipment necessary to complete the work including delivering written notices to abutters prior to CIPP/lining work; light and heavy cleaning sewer prior to CIPP/lining; disposal of material removed from the sewer; pre-CCTV and post CCTV inspections of the sewer; providing video files, database, and written logs on external solid-state hard drives; furnishing, installing, and curing CIPP/liner; sealing around CIPP/liner in manholes; reinstating sewer services; testing; modifying and rebuilding invert in manhole to complete the work; all else incidental thereto for which payment is not provided under other items.

1. Work to be paid for under Item 802.211 – Reline Existing Sewer shall include payment by existing sewer diameter as follows:
   a. Item 802.211 – Reline Existing Sewer, 8-Inch Diameter
   b. Item 802.211 – Reline Existing Sewer, 10-Inch Diameter
   c. Item 802.211 – Reline Existing Sewer, 12-Inch Diameter
   d. Item 802.211 – Reline Existing Sewer, 15-Inch Diameter
   e. Item 802.211 – Reline Existing Sewer, 18-Inch Diameter
   f. Item 802.211 – Reline Existing Sewer, 24-Inch Diameter
2. Payment for this work on interim requisitions shall be according to the following percentages:
   a. Sewer pipe acceptably UV CIPP/lined – 90 percent.
   b. Sewer pipe successfully tested and post-CCTV inspected – 10 percent
3. Maintenance of sewer flows and a temporary sewer bypass system will be paid for under Item No. 801.17 – Temporary Sewer By-Pass (For Sewer Rehabilitation).

Item No. (803.16) – 4’ Diameter Precast Sewer Manhole

A. Method of Measurement: 4’ diameter precast sewer manhole accepted for payment shall be the actual number of structures installed and accepted complete in place, as indicated in the Contract Documents, or as directed by the Engineer.

B. Basis of Payment:

1. The contract unit price per vertical foot shall be full compensation for all labor, materials, tools and equipment necessary to complete this work including

sawcut, management, removal and disposal of pavement; excavation (except ledge excavation), removal and disposal of existing manholes, frame and cover; bedding; furnishing and installing precast concrete sections, frames, and covers; furnishing and installing frost protective wrap; masonry materials; waterproofing; constructing inverts; connection to sewer pipes; compaction; cleaning; testing; and all else incidental thereto for which payment is not provided under other items.

2. Payment for this item shall be as follows:
   a. Manhole acceptably set in place and backfilled - 90 percent.
   b. Manhole successfully cleaned and tested - 10 percent.
3. Maintenance of sewer flows and a temporary sewer bypass system will be paid for under Item No. 801.17 – Temporary Sewer By-Pass (For New Sewer Installation).

Item No. (803.1732) – Sewer Manhole – 4 Foot Diameter (Rehab w/ Geopolymer)

A. Method of Measurement: Sewer manhole – 4 foot diameter (rehab w/ geopolymer) accepted for payment shall be for the actual vertical feet of structures, regardless of diameter, rehabilitated with geopolymer lining from the lowest invert to bottom of the frame as indicated in the Contract Documents or as directed by the Engineer.

B. Basis of Payment: The contract unit price per vertical foot shall be full compensation for all labor, materials, tools, and equipment necessary to complete this work including cleaning; disposal of materials removed; surface preparation; patching holes and grouting to stop running water/active infiltration sources; replacement/removal of manhole steps; furnishing and installing geopolymer liner; testing; and all else incidental thereto for which payment is not provided under other items.

1. Maintenance of sewer flows and a temporary sewer bypass system will be paid for under Item No. 801.17 – Temporary Sewer By-Pass (For Sewer Rehabilitation).

Item No. (812.161) – Alter Sewer Manhole

A. Method of Measurement: Alter sewer manhole accepted for payment shall be the actual number of structures altered above the manhole cone as indicated in the Contract Documents or as directed by the Engineer.

B. Basis of Payment: The contract unit price per each structure shall be full compensation for all labor, materials, tools, and equipment necessary to complete this work including sawcut, management, removal and disposal of pavement; 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; resetting covers and frames; backfill; compaction; testing; furnishing and installing bituminous pavement; site restoration; and all else incidental thereto for which payment is not provided under other item.

1. As required, frames and covers shall be supplied by the Contractor.

Item No. (812.164) – Rebuilding Sewer Manhole

A. Method of Measurement: Rebuild sewer manhole accepted for payment shall be the

actual number of structures required to be rebuilt or adjusted below the manhole cone as indicated in the Contract Documents or as directed by the Engineer.

B. Basis of Payment: The contract unit price per each structure shall be full compensation for all labor, materials, tools, and equipment necessary to complete this work including sawcut, management, removal and disposal of pavement; excavation; removal of existing covers, frames, and structure sections; cleaning of castings and bedding surface on existing structures, furnishing and setting manhole sections; resetting covers, frames, and manhole sections; backfill; compaction; testing; furnishing and installing bituminous pavement; site restoration; and all else incidental thereto for which payment is not provided under other item.

Item No. (827.302) – Unsuitable Soil Excavation Below Grade

A. Method of Measurement: Quantity to be paid for under unsuitable soil excavation below grade shall be the number of cubic yards of material removed and replaced below the pipe or structure bedding 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 the sum of 18 inches plus 1-1/3 times the nominal inside diameter of pipe to be installed (minimum 3 feet) extending from the typical excavation depth called out in the contract drawings (bottom of bedding layer) to the depth accepted by the Engineer for the length of the excavation as directed by the Engineer.

B. Basis of Payment:

1. Unsuitable soil excavation below grade 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; and including furnishing installing and compacting replacement suitable backfill, and filter fabric, and for all other work and expenses incidental thereto for which payment is not provided under other items.
2. Material excavated below pipe bedding grade 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.

Item No. (827.331) – Trench Insulation

A. Method of Measurement: 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 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.

(910.30) – Special Work (Manhole – Point Repair on Wall Interior)

A. Method of Measurement: Special work (manhole – point repair on wall interior) accepted for payment shall be the actual number of manholes that have point repairs patches of the wall within the structure (not the number of repairs) and accepted complete in place, as indicated in the Contract Documents, or as directed by the

Engineer.

B. Basis of Payment: Payment for point repair of wall shall be made for at the unit bid price stated in the Bid Schedule. The unit price per manhole shall be full compensation for all labor, materials, tools, and equipment necessary to complete this work including cleaning; disposal of materials removed; surface preparation; patching wall with cementitious material; testing; modifying, to include coring, patching and parging of existing sewer structures to accommodate new pipes as shown on plans; and all else incidental thereto for which payment is not provided under other items.
   1. Maintenance of sewer flows and a temporary sewer bypass system will be paid for under Item No. 801.17 – Temporary Sewer By-Pass (For Sewer Rehabilitation).

(910.30) – Special Work (Manhole – Joint Grouting)

A. Method of Measurement: Special work (manhole – joint grouting) accepted for payment shall be per each joint at the locations within the structure (not number of joints grouted) indicated in the Contract Documents or as directed by the Engineer.

B. Basis of Payment: The unit price per each manhole grouted shall be full compensation for all labor, materials and equipment necessary to complete the work including power wash cleaning; surface preparation; drilling holes for injection grouting; furnishing and injecting of grout; removing excess grout from inside the manhole; patching grout holes; testing; and all else incidental thereto for which payment is not provided under other items.
   1. Maintenance of sewer flows and a temporary sewer bypass system will be paid for under Item No. 801.17 – Temporary Sewer By-Pass (For Sewer Rehabilitation).

END OF SECTION

SECTION 01340

SUBMITTALS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Submit all shop drawings, operations and maintenance manuals, Manufacturers' certificates, project data, and samples required by the Specifications.

B. General Submittals Requirements: 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.

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, their subcontractors, suppliers, or manufacturers which illustrate the manufacturer, fabrication, construction, and installation of the work, or a portion thereof.

C. The Contractor shall submit to the Engineer one electronic copy of Shop Drawings and approved data. The Engineer will distribute digital copies (for Owner's, Engineer's and Field Representative's files) and the Contractor. It's the contractor's responsibility to distribute to subcontractors, suppliers and manufacturers. If the Contractor requires hardcopies, that shall be coordinated with the Engineer accordingly. All shop drawing comments will be summarized on the Submittal Review Form.

D. 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.
   1. Each shop drawing submittal shall include a complete copy of the relevant specification section markup up to reflect "compliance" or "deviation" on an item-by-item basis.

E. 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.

F. 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.

G. 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.

H. 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.

I. 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 their 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.

J. Only drawings which have been checked and corrected by the fabricator should be submitted to the Contractor by their subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to confirm 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.

K. 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.

L. Should the Contractor submit equipment that requires modifications to the structures, piping, electrical conduit, wires and appurtenances, layout, etc., detailed on the Drawings, Contractor 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.

M. 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.

N. Shop Drawings that include drawings or other material that is illegible or too small may be returned without review.

O. American Iron & Steel certifications must be submitted with the initial shop drawing.

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).
d. O&M submittals shall be numbered with the Specification Section number followed by a dash, the letters "OM", another dash, and then a sequential number beginning with 01 (e.g. 16000-OM-01). Resubmittals of O&Ms shall include an alphabetic suffix after the corresponding sequential number (e.g. 16000-OM-01A).

5. Notification of deviations from Contract Documents.
6. Other pertinent data.

B. A completed Contractor Submittal Certification Form shall be attached to each hardcopy and electronic PDF of 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 or O&M submittal 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 be **exactly** as submitted in the hardcopy.
4. The electronic PDF shall include an electronic table of contents that is bookmarked for each section of the submittal.
5. The electronic PDF shall be configured such that is fully searchable.
6. PDF versions of 24x36 drawings shall be converted to 24 x 36 PDFs so as not to lose the clarity of the original drawing.
7. Electronic PDF submittals that are not submitted in accordance with the requirements stated above will not be reviewed by the Engineer.
8. 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 all review comments. Resubmittal from the Contractor shall address each review comment and include supplemental information, as necessary.
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 identifies all changes made to the submittal, indicates how each review comment has been addressed and indicates 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. For Information Only (Status 5 on shop drawing log). The shop drawing review was for information only.
7. In Review (Status 6 on shop drawing log). The shop drawing is currently under review.

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:

_____
_____
_____
_____

By: _____ By: _____

Contractor

Manufacturer

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

OPERATIONS AND MAINTENANCE MANUAL CERTIFICATION FORM

PROJECT: _____ CONTRACTOR'S PROJ. NO: _____

CONTRACTOR: _____ ENGINEER'S PROJ. NO: _____

ENGINEER: _____

O&M NUMBER: _____ (SPECIFICATION SECTION OR DRAWING NO:) - OM- _____ (SEQUENTIAL NUMBER (& ALPHA SUFFIX FOR RESUBMITTAL))

DESCRIPTION: _____

MANUFACTURER: _____

The above referenced operations and maintenance manual has been reviewed by the undersigned and I/we certify that the manual is customized as needed for this project, is suitable for mounting in a 3-ring binder, and contains the following items:

- ☐ Table of Contents
- ☐ Contractor and Manufacturer Contact Information
- ☐ Preventative Maintenance Schedule and Summary
- ☐ Removal and Replacement Instructions
- ☐ Lubrication Schedule
- ☐ Troubleshooting Information
- ☐ Warranty Information
- ☐ Rebuild Information for All Components
- ☐ Startup, Operation and Shutdown Procedures
- ☐ Normal and Emergency Operations
- ☐ Safety Procedures and Precautions
- ☐ Shop Drawings corrected to As-Built Conditions
- ☐ Personnel Training Requirements
- ☐ Project-Related Design Data
- ☐ Serial Numbers
- ☐ Maintenance and Repair Procedures
- ☐ Wiring and Control Diagrams
- ☐ Equipment Drawings & Schematics
- ☐ Equipment Performance Curves
- ☐ Parts and Service Contact Information
- ☐ Manufacturer's Contact Information
- ☐ Emergency Operations Plan
- ☐ List of All Component Part Numbers
- ☐ List of Spare Parts Supplied
- ☐ Testing Equipment & Special Tools
- ☐ Other System Specific Information

By: _____ Contractor[a] By: _____ Manufacturer[b]

Date: _____ Date: _____

[a] Contact information shall include name, address and telephone number.
[b] Required on all Operation and Maintenance Manuals.
[c] When required by Specifications. Page ___ of ___

General Contractor's Stamp

PROCESS EQUIPMENT MANUFACTURER SUBMITTAL CERTIFICATION
(Divisions 11 and 14)

Owner:_____ Date: _____

_____

Project:

_____

_____

Contractor: _____

_____

Equipment Manufacturer: _____

_____

_____

Equipment: _____

As an authorized representative of the equipment manufacturer, the undersigned certifies that the equipment listed above conforms to the requirements of Section 11000, Part 1.3.K. The undersigned authorized representative of the manufacturer further certifies that the equipment manufacturer or supplier has: reviewed the Contract Documents, the intended installation by the Contractor, and the intended functional and operational conditions; determined all conditions to be acceptable; and found no conditions which would cause the warranty to be void; or the equipment to function improperly, or not meet the performance requirements.

_____ _____
(Authorized Representative of the Manufacturer) (Date)

END OF SECTION

SECTION 01515

TEMPORARY BYPASS PUMPING SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Contractor shall design, furnish, install, test, operate, maintain and remove temporary bypass pumping system(s) in order to divert sewage flow around the work area. Temporary bypass pumping system(s) shall be fully automated and able to reliably convey the full range of wastewater flows, as scheduled herein.

1.2 QUALITY ASSURANCE

A. All system components specified herein shall be furnished by a Supplier who regularly engages in temporary bypass pumping systems. Supplier shall have a minimum of 15 years of experience with temporary bypass pumping systems. Supplier shall provide at least 5 references of project of a similar size and complexity as this project that have been performed within the past 5 years within New England.

B. Supplier shall have sufficient equipment and spare parts inventory to perform normal rentals, including this project, and maintain at least 100% reserve equipment for this project for immediate delivery. Supplier shall have sufficient service personnel to provide service calls within 4 hours, 24 hours per day, 7 days per week.

C. Temporary bypass pumping systems shall be:
   1. Xylem Dewatering Solutions, Bozrah, CT;
   2. Baker Corp, Oxford, Massachusetts;
   3. or equal.

D. A qualified representative of the Supplier shall inspect the installation and supervise the startup and testing of the temporary bypass pumping system.

E. The temporary bypass pumping system shall meet all applicable local, state and federal requirements.

1.3 SUBMITTALS

A. In accordance with the requirements of Section 01340.
   1. Qualifications information
   2. Proposed schedule, sequence of construction, duration of activities and description of sewer control methods to be utilized for each element of the project.
   3. Coordination Drawings showing detailed layout of equipment, pumps, suction piping, discharge piping, fittings, valves, supports, materials, temporary enclosure and temporary odor control provided under this section.
   4. List of duty equipment, pumps, piping, fittings, valves, and materials to be utilized by the Contactor for the temporary bypass pumping system.

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. Fuel consumption rate at full speed duty and standby pumping.
7. Fuel storage tank and secondary containment provision, including Spill Prevention Control and Countermeasure (SPCC) Plan, if applicable.
8. Catalog cut sheets/ technical data for equipment and appurtenances.
9. Performance curves for wastewater bypass pumps and suction lift, static head, headloss, and total dynamic head (TDH) calculations.
10. Description of maintenance procedures to be utilized.
11. Description of controls and alarm equipment to be utilized. Sample alarm log.
12. Names of individuals responsible for on-call response, 24 hours per day, 7 days per week. Call list for alarm response.

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 WASTEWATER BYPASS PUMPING SYSTEM

A. Pumping Equipment:

1. Temporary bypass pumping system(s) shall be designed to convey the full range of flows and head conditions as scheduled herein.

FOUNDRY ROAD FLOWS	
Duty	Raw unscreened sewage
Duty Pumps	Diesel
Standby Pumps	Diesel
Variable Speed Required for Duty Pumps	No
Peak Instantaneous Flow	70 gpm
Average Flow	30 gpm

2. The temporary bypass pumping system shall be able to convey the peak instantaneous flow, as scheduled herein:
   a. with the largest available pump off-line; and
   b. without utility power.
3. Each pump shall be a skid-mounted unit. The pump system may utilize available on-site manholes, junction/splitter structures, and/or tankage for suction and discharge, as appropriate.
4. The pumps shall be centrifugal trash pumps suitable for handling raw, unscreened sewage with solids up to 3 inches in diameter, and capable of

running completely dry for extended periods of time without damage. Pumps shall be capable of static suction lifts to 28 vertical feet, at sea level.

5. The pump priming system shall be fully automatic, needing no form of adjustment or manual addition of water. The priming system shall be capable of priming the pump from a completely dry casing.
6. All pumps shall be critically silenced to less than 69 decibels at 30 feet.
7. Contractor shall provide appropriately sized portable spill guard containment dikes to contain leaks resulting from the pumping system, from the fuel storage tanks(s) and/or from the pumps and process piping within 5 feet of the system.

B. Piping
   1. Suction piping and discharge piping shall be constructed of:
      a. Rigid galvanized steel pipe with ball and socket joints, Bauer HK Quick Coupling Piping or equal.
      b. Fused HDPE piping
      c. Connection to existing piping shall be made equivalent materials.
   2. Aluminum "irrigation" type piping or glued PVC pipe shall not be allowed.

C. Controls and Alarms
   1. The pump set shall be furnished with a weather-proof automatic control system consisting of floats and/or transducer level controls.
   2. The controller shall start/stop the pumps based on signals from high and low level floats or a transducer. The controller shall be capable of automatically varying the pump speed to match varying flow conditions and maintain a constant suction level, if scheduled herein.
   3. The controller shall annunciate and log all alarm conditions including but not limited to high upstream water level, duty pump failure, utility power loss and standby pump failure. The alarm log shall include the type of alarm, time of alarm, time alarm acknowledged, and time alarm condition cleared. Annunciation shall be via teledialer, two-way radio, cellular telephone, or equivalent.

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 temporary bypass pumping work. The Owner will identify personnel to be notified in addition to those identified by the Contractor.

C. Contractor shall coordinate temporary bypass pumping operations with the Owner and Engineer on a daily basis.

3.2 PERFORMANCE:

A. General
   1. 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.

2. The Contractor shall be solely responsible for clean-up, repair, property damage costs and claims resulting from failure of the diversion system.
3. Any temporary pumps, piping, fuel storage, or other appurtenances associated with the temporary pumping 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 bypass pumping system shall be furnished, installed, tested, operated, maintained and removed as follows:
1. The Contractor shall furnish, install, and test temporary bypass 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 pumping station 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. Contractor shall coordinate with the Owner on a daily basis.
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. Upon receipt of approval by the Owner and Engineer, the Contractor shall disassemble and remove the temporary bypass pumping system, including all appurtenant piping. Contractor shall restore the area impacted by the temporary bypass pumping system to a like-new condition.

C. Contractor shall be responsible for cleanup, repairs, restoration and fines required to address spills or overflows from a failed bypass pumping system.

END OF SECTION

SECTION 01570

TRAFFIC REGULATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Provide all materials and perform all work necessary to completely regulate traffic in the area of Work.
   2. Perform all work in such a manner as to provide safe passage at all times for the public and with a minimum of obstruction to traffic.
   3. Do not close roads or streets to passage of the public without the permission of the proper authorities.
   4. Uniformed officers with vehicles and flaggers (including police officers when required by law, regulations, ordinances, or as a result of poor traffic control) shall be obtained and paid for by the Contractor.

B. The local police department and/or the appropriate state transportation authority who will decide if safe passage is being maintained and shall have the authority to require the Contractor to take any additional steps necessary to maintain safe passage. If the Authority furnishes an inspector on the job or requires additional traffic control as a result of poor traffic control by the Contractor, the Contractor shall be responsible for all costs assessed by the Authority and for additional traffic control at their own expense. Minimize the length of delays or traffic stoppage to the extent practicable. Maximum traffic stoppage time shall be 10 minutes.

C. Develop a project specific traffic control plan that meets the requirements of Manual of Uniform Traffic Control Devices (MUTCD) and any local and state requirements. Proposed Traffic Control Plan shall indicate signs/locations to be used. Traffic Control Plan submittal to the Engineer will be for general information only.

D. The Contractor's designated traffic control representative shall respond to all traffic safety complaints and be available to direct traffic control subcontractors the entire time work is occurring on site. If the designated representative is not on site for a period of time, another on site representative shall be designated by the Contractor for that period.

1.2 SCHEDULING WORK

A. During the Project Pre-Construction Meeting one Contractor representative will be designated as the coordinator between the Police Department and subcontracted traffic control.

B. Variable Message Signs notifying the public of pending road closure and/or construction must be in place seven days prior to road closure or as required by [insert appropriate state transportation authority].

C. Schedule all work so that two adjacent parallel streets are not closed to passage by the public at any one time, if at all possible.

D. Revise the plan of work if it will create a traffic hazard or an unreasonably long detour.

E. Do not start work in any new location without the permission of the Engineer.
F. Notify all police and fire departments of all scheduled detours and when streets are reopened.

1.3 SUBMITTALS

A. Submit a project specific traffic control plan that meets the requirements of the Manual of Uniform Traffic Control Devices (MUTCD) and any local and state requirements. The proposed Traffic Control Plan shall indicate signs/locations to be used.
B. The Contractor shall be responsible for coordination with and providing information required by Maine Department of Transportation for the traffic control plan, as necessary.
C. The proposed Traffic Control Plan is provided "for information only" to inform the Owner, Engineer and Resident Project Representative of the project specific traffic control; however, if the Traffic Control Plan is incomplete (e.g., missing elements relevant to the project work), inadequate (e.g., outdated qualifications) or not project specific, it will be returned "revise and resubmit". Delays related to an incomplete Traffic Control Plan are the responsibility of the Contractor.

PART 2 - PRODUCTS

2.1 WARNING SIGNS AND BARRICADES

A. Traffic control (plans, methods and devices) shall be as outlined in the MUTCD as published by U. S. Department of Transportation, and any local and state requirements.
B. Provide adequate warning signs, barricades, signal lights, flaggers/uniformed police officers, and take other necessary precautions for the safety of the public.
C. Provide and illuminate suitable warning signs to show where construction, barricades or detours exist.
D. Provide digital message boards at appropriate locations as determined by the local police department and/or the Maine Department of Transportation to maintain safe passage of traffic and work zone.
E. Provide barricades of substantial construction and painted with a finish that increases visibility at night, as outlined in the MUTCD.
F. Keep signal lights illuminated at all barricades and obstructions from sunset to sunrise.
G. Maintain all necessary signs, barricades, lights, flaggers, crew and other safety precautions during authorized suspension of the Work, weekends, holidays or other times when the Work is not in progress.
H. Contractor shall make periodic inspection throughout the day of the traffic control patterns, methods, signs and other devices to ensure that they are properly placed.

2.2 UNIFORMED POLICE OFFICER

A. A uniformed police officer is a police officer (local, county or state) on regular or special duty dressed in uniform with the necessary high visibility vest and apparel needed for traffic control.

2.3 FLAG PERSON

A. A flag person is a trained and certified individual assigned specifically to the task of directing traffic and is outfitted in the necessary high visibility vest and apparel needed for traffic control.
B. Flag persons shall be provided by the Contractor, except for flagging required for railroad work within the railroad right-of-way.

PART 3 - EXECUTION

3.1 DETOURS

A. Provide, identify and maintain suitable detours when the project, or any part thereof, is closed to public travel.
B. When the closed part of the project is reopened, restore the detour area and any other disturbed areas to the original condition.

3.2 INCONVENIENCE TO RESIDENTS OF VICINITY

A. Whenever a traveled way is closed, perform the Work in such a manner that local travel, residents and businesses in the vicinity of the Work will be inconvenienced as little as possible.
B. Allow access to residents and abutting land owners along the project to driveways and other normal outlets from their property.

3.3 TRAFFIC CONTROL OFFICERS

A. Where required by the local, county or state police departments and/or when specified, traffic control officer shall be Uniformed Police Officers.
B. Where the local, county or state police departments do not wish to or are unable to furnish traffic control officers and/or when specified, the traffic control officers shall be flag person.

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, Request for Information, Work Change Directive, Field Order or Engineer's Clarification).

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. Records shall be made available for review by the Owner, Engineer, Resident Project Representative and/or Funding Agency(s) upon request.

G. Failure to maintain current records, as specified herein, shall be grounds for withholding payment from monthly partial payment requests.

H. 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.

1.3 RECORDING

A. Label each document "PROJECT RECORD" in large 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 horizontal and vertical dimensions, swing-ties, and elevations shall be accurate to within one-tenth of a foot, unless greater accuracy is specified herein or elsewhere in the Specifications (e.g., concrete elevations, weir elevations, etc.).
   2. 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.

3. Stations shall be recorded to the nearest foot.
4. Inverts shall be recorded to the nearest hundredth of a foot.
5. Elevations shall be recorded to the nearest hundredth of a foot.
6. Building dimensions shall be recorded to the nearest 1/4".
7. 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, water main thrust blocks, sewer mains and services, sewer force main valves, sewer force main thrust blocks, 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, Oil/Water Separators and other structures.
   a. Renumber structure stationing to reflect changes.
   b. Show ties to center of structure covers or hatches.
   c. Show all inverts at the face of the structure.
   d. Draw any new structures that are added on plan and profile.
   e. Show any field or office redesigns.
   f. Redraw plan if the structure's location is moved more than 5 feet in any direction.
   g. Redraw profile if inverts changed by more than 6 inches.
3. Gravity Sewer Line
   a. Annotate sewer line slopes indicated on Drawings if inverts are changed.
   b. Draw any new gravity lines that are added on plan and profile.
   c. Show any field or office redesigns.
   d. Redraw the sewer line profile if manhole inverts are redrawn.
   e. Redraw the sewer line on plan corresponding to relocated manholes.
4. House Services
   a. Draw all house services (even to empty lots) on plans and show ties.
   b. Show swing ties or distances to wyes from manhole.
   c. Show chimneys heights in the profile.

5. Ledge
    a. Show ledge profiles. Note whether the plotted ledge profile reflects undisturbed or expanded conditions.
6. Site Piping and Buried Electrical Conduit
    a. Site piping and utilities shall be drawn to reflect the installed locations, with ties (or XY coordinates) and elevation of all bends (horizontal and vertical). Coordinates, if provided, shall be in the same coordinate system as the Drawings.
    b. Show location and elevations of buried electrical conduits, electrical handholes and electrical manholes. Show elevations at all crossings of site piping.
7. Roads
    a. Show centerline road profile and level spot elevations.
    b. Show pavement widths.
    c. Show the pavement cross slope on road cross-sections if they differ from the Drawings.
    d. Show any deviations from the design plans.
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. “Sanitary Sewer Service Location” forms for all services and septic tanks.
2. Record drawings shall be provided as a bound paper set of computer-generated drawings, an electronic file (pdf format) of the bound paper set, and electronic files in AutoCAD format. Ownership of the drawings and files shall pass to the Owner at the time of submittal.
3. If the Contractor provides alternate or substitute equipment that requires revised arrangements from the Bidding Documents, the Contractor shall provide supplemental record drawings of these items in AutoCAD format.

B. Submittal shall be accompanied by a letter containing the following:
1. Date, project title and number.
2. Contractor's name and address.
3. Title and number of each record document with certification that each submitted document is completed and accurate.
4. Signature of Contractor, or their authorized representative.

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. Do not conceal any Work until the required records are collected.
C. Records shall be made available for review by the Owner, Engineer, Resident Project Representative and/or Funding Agency(s) upon request.
D. Records shall be submitted as specified herein.

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 all the relevant information specified herein.
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.

3.3 FORMAT FOR ELECTRONIC DELIVERABLES

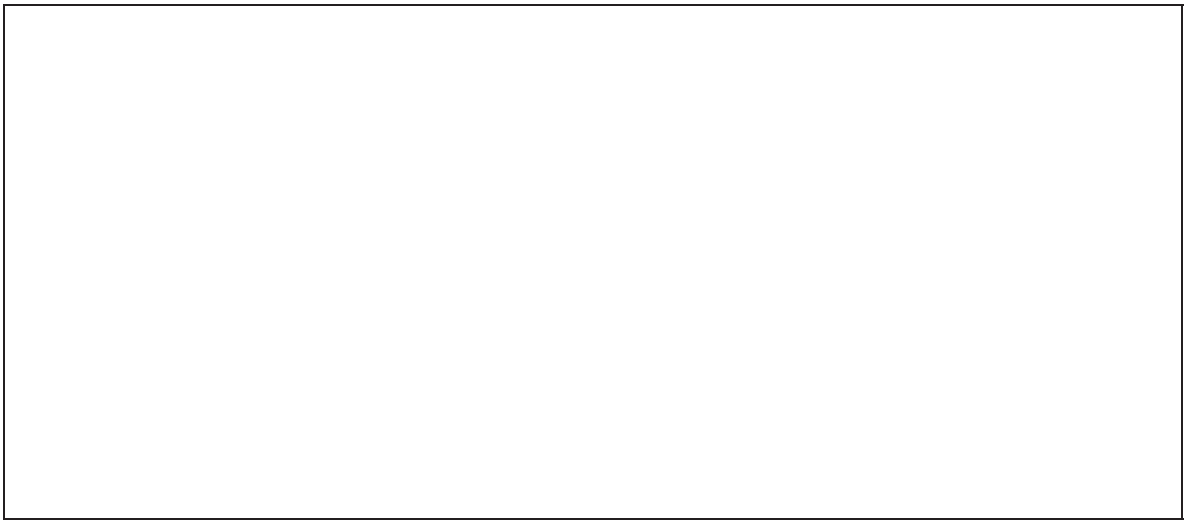
A. AutoCAD digital survey data for the as-built survey shall include:
    1. Copy of field notes and sketches of the survey.
    2. Paper copy of description of layers.
    3. Paper copy of base map.
    4. Provide digital information on compact disk with paper copy printout; information shall be provided in .DWG format (AutoCAD 2011 or earlier). Data shall be provided in 3D format (northing, easting, elevation, or Y, X, Z).
    5. Drawing scale: Minimum one inch = twenty feet.
    6. Layering:
        a. Repetitive symbols made into blocks and defined on layer 0.
        b. All entities shall be drawn “by layer” as opposed to individual properties.
        c. Use one linetype and one color per layer as opposed to numerous colors/linetypes on a single layer.
        d. Preface each layer with the initials of the Survey company or Contractor (example, Survey Company: SC “layername”).
        e. Database text annotation will be coordinated so the text will be right-reading.
        f. Place text on separate layers.

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)

END OF SECTION

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. Grading
   5. Providing soil material as necessary
   6. Disposal of unsuitable materials
   7. Disposal of excess suitable material

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 C117 and ASTM C136 (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 D1557 (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 D1556, (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 D698 (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

A. The Independent Testing Laboratory shall conform to the procedures and standards listed below. 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.

C. Paved Areas 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.

D. Trenches: Field density test in trenches shall be taken at 75 linear foot intervals on every third lift.

E. In addition to the above tests the Independent Testing Laboratory will perform additional density tests at locations and times requested by the Engineer.

F. 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. 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. Material shall be in conformance to MEDOT Standard Specification Section 703.06. Type A 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 MEDOT Type A Aggregate
1/2 inch	45-70
1/4 inch	30-55
No. 40	0-20
No. 200	0-6.0

B. Aggregate Subbase: 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. Material shall be in conformance to MEDOT Standard Specification Section 703.06. The gradation of the material shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves MEDOT Type D
1 inch	35-80
3/4 inch	25-65
No. 4	0-30
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. 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

E. 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

F. 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.

2.2 FILTER FABRIC

A. N/A

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 its 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. The extent of open excavation shall be controlled by prevailing conditions subject to any limits prescribed by the Engineer.
7. 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. 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.

H. 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.
   3. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Install shoring and bracing as excavation progresses.

I. 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.

J. 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.

K. 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.

L. 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.
      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, it shall furnish, as directed, loam and topsoil at least equal in quantity and quality to that excavated.

M. Dust Control:
   1. During the progress of the work, the Contractor shall conduct its operations and maintain the area of its activities, including sweeping and sprinkling of streets as necessary, so as to minimize the creation and dispersion of dust.
   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, sand 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, sand 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) in non-paved areas. Where backfilling with excavated material, compact to native field density in non-paved areas. In cases where pipe trenches are within Roadways, Drives, and Paved Areas, 95% compaction requirement in paved areas governs for pipe bedding material and each layer of backfill up through subbase and base material.

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. 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. Additionally, material should be compacted in lifts no more than 12” thick. 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.

E. 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. Compaction:
   1. After grading, compact subgrade surfaces to the depth and percentage of maximum density for each area classification.

D. 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 SUBBASE COURSE

A. General:
   1. Base course consists of placing the specified materials in layers to support a subbase 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 subbase 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 subbase 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 02225

FLOWABLE FILL

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Provide and install flowable fill material in authorized excavation(s) as shown on the Drawings and/or as specified herein.

1.2 QUALITY ASSURANCE

A. Perform work in accordance with ACI 229, Controlled Low-Strength Materials, or as specified here-in.

1.3 SUBMITTALS

A. Submit Mix designs for each mixture to be provided at least 15 days prior to production.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Materials shall meet the following requirements:
   1. Portland Cement, Type I or II - ASTM C150.
   2. Fly Ash (LOI limits do not apply) - ASTM C618.
   3. Fine Aggregate/Mineral Filler – ASTM C 33, ASTM or non-ASTM sands or mineral fillers with 100% passing the 1/2" sieve may be considered which produce an acceptable flow and desired performance characteristic. Soils with fine clays will not be considered. All other than ASTM C 33 materials must receive prior approval from the Engineer.
   4. Air Entraining Admixtures - As Per Manufacturer's Specifications.
   5. Light Weight Cellular Admixture - As Per Manufacturer's Specifications.
   6. Water – Potable or ASTM C 94.
   7. Preformed Foam – Procedures for evaluation ASTM C 796 and ASTM C 869.

B. Standard Flowable Fill:
   1. Compressive strength at 28 days less than 1200 psi

C. Excavatable Flowable Fill:
   1. Compressive strength at 28 days between 100-200 psi.
   2. Mix:
      a. Portland Cement: 50-100 lb/yd3
      b. Fly Ash: up to 350 lb/yd3, lime content not to exceed 10% by weight.
      c. Fine Aggregate/Mineral Filler: 2000-3000 lb/yd3
      d. Water: 325-600 lb/yd3, for Class F fly ash and cement-only mixtures up to 1000 lb/yd3 may be acceptable.

D. Low Density Flowable Fill:

1. The preformed foam shall produce stable air cells capable of resisting the chemical and physical forces imposed during mixing, placing and setting.
2. Submit the foaming agent Manufacturer's recommended mixing procedures and approved mixing equipment to the Engineer.
3. Methods of placement must not cause a change in density due to loss of air content beyond predictable ranges.

E. Submitted flowable fill mix design must be a MaineDOT approved mix design.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Flowable fill shall be produced and delivered using standard concrete construction equipment and practices.
B. Placing flowable fill shall be by chute, pumping, or other method approved by the Engineer.
C. The flowable fill shall be discharged directly from the mixer truck into the space to be filled.
D. No flowable fill shall be placed on frozen ground.
E. At the time of placement the flowable fill shall have a temperature of at least 40 degrees F.
F. When flowable fill is placed in freezing temperatures, the material should be covered with blankets and protected from freezing until hardening.
G. The Contractor shall provide all necessary means to confine the material within a designated space.
H. Formed walls or other bulkheads shall be constructed to withstand hydrostatic pressure exerted by flowable fill where necessary and as determined by the Engineer.
I. The Contractor is responsible to ensure underground utilities, including but not limited to pipes, tanks, structures, cables, etc. are secured to prevent floating.
J. No compaction or vibration of the material is required.
K. Where flowable fill is being used as pipe bedding it shall be placed in lifts to ensure lateral support of the pipe develops along the side of the pipe before continuing with the backfilling.
L. When paving over flowable fill in cold weather, any frozen material on the surface shall be scraped off and removed prior to paving.
M. The flowable fill shall be left undisturbed until the material obtains sufficient strength. Sufficient strength for paving is achieved when the flowable fill can support the weight of foot traffic without apparent deformation. Sufficient strength for supporting vehicular traffic is 2.5 tons per square foot as measured by a pocket penetrometer.
N. Trenches shall be covered and barricaded until hardening occurs.

END OF SECTION

SECTION 02601

MANHOLES, COVERS AND FRAMES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Construct manholes, covers, frames, brick masonry, inverts and apply dampproofing in conformance with the dimensions, elevations, and locations shown on the Drawings and as specified herein.

1.2 QUALITY ASSURANCE

A. Precast Manhole Base, Barrel and Top Sections:
   1. Conform to ASTM C478 latest edition except as modified herein, and on the Drawings.
   2. Average strength of 5,000 psi at 28 days.
   3. Testing:
      a. Determine concrete strength by tests on 6-inch by 12-inch vibrated test cylinders cured in the same manner as the bases, barrels and tops. NTS: For structures 6’ in diameter or greater – delete if not applicable.
      b. Have tests conducted at the manufacturer's plant or at a testing laboratory approved by the Engineer.
      c. Have not less than 2 tests made for each 100 vertical feet of precast manhole sections. Testing not required for projects with less than 100 vertical feet of precast structures. Test aggregate in accordance with ASTM C1293 and Section 03420. Aggregate having an expansion less than 0.04% at 1-year is acceptable for use. Section 03420 only applicable on projects with precast structures of 6’-0” or greater interior dimension.

B. Frames and Covers:
   1. Acceptable Manufacturers:
      a. EJ Castings
      b. Neenah Foundry Company.
      c. Or equal

C. 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, C595 Type IL.
   3. Hydrated Lime: ASTM C207
   4. Sand: ASTM C33

D. Dampproofing:
   1. Acceptable Manufacturers:
      a. Karnak #220 AF Fibered Emulsion Dampproofing, Karnak Corp., Clark, NJ.
      b. Master Seal 615Sealmastic Type II Emulsion
      c. Or equal.

E. Pipe connections shall conform to ASTM C923, "Standard Specifications for

Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals"

F. Grade rings for frame and cover adjustments shall be made from expanded polypropylene. Pro-Rings or equivalent.

G. Sealant between precast sections shall be butyl rubber sealant with a minimum diameter of 1-inch. Conseal SC-102, Kent Seal, RN 101 Ram Nek or equivalent.

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.

B. Precast Manhole Sections:
   1. Submit concrete test results for review prior to delivery to the site.
   2. Submit all accessories products for review.

C. Submit riser diagrams for each precast structure for review and field verification.

1.4 WARRANTY

A. Contractor's one year warranty, as specified in Division 0, shall include but not be limited to:
   1. Cracking, spalling or other surface and structural defects.
   2. Separation of joints or misalignment of adjacent units due to faulty precast concrete sections.
   3. Leakage through all joints between concrete sections due to faulty materials or improper installation.

B. The Contractor shall repair or replace all defective work at no additional cost to the Owner within warranty period.

PART 2 - PRODUCTS

2.1 PRECAST MANHOLE SECTIONS

A. Dimensions, shall be as shown on the Drawings:
   1. Base & Riser Sections:
      a. Diameter: As shown on the Drawings.
      b. Length: As required.
      c. Wall Thickness: Not less than 5 inches.
      d. Joints: Bell-and-spigot or tongue-and-groove formed on machine rings to ensure accurate joint surfaces.
   2. Tops:
      a. Diameter: Eccentric cone type, 24 inches I.D. at top, match I.D. at bottom unless otherwise shown on the Drawings.
      b. Height: 4 feet.
      c. Wall thickness: Not less than 5 inches at the base, tapering to not less than 8 inches at the top.
      d. Joints: Bell-and-spigot or tongue-and-groove formed on machine rings to ensure accurate joint surfaces.
      e. Exterior face of cone sections shall not flare out beyond the vertical.

3. Flat Slab Tops:
   a. Location: Where shallow installations do not permit the use of a cone-type top and where indicated on the Drawings.
   b. Slab thickness: Not less than 6 inches.
   c. Constructed to support an H-20 wheel loading.

B. Aggregates:
1. The use of crushed hydraulic cement or recycled aggregate is prohibited.
2. Coarse aggregate shall consist of a well graded crushed stone or a washed gravel conforming to the requirements of ASTM C33/C33M.

C. Openings:
1. Provide openings in the risers to receive pipes entering the manhole.
2. Make openings at the manufacturing plant.
3. Size: To provide a uniform annular space between the outside wall of pipe and riser.
4. Location: To permit setting of the entering pipes at the correct elevations.
5. Openings shall have a flexible watertight union between pipe and the manhole wall.
   a. Cast into the manhole wall and sized to the type of pipe being used.
   b. Type of flexible joint being used shall be approved by the Engineer. Install materials according to the Manufacturer's instructions.
      i. Lock Joint Flexible Manhole Sleeve made by Interpace Corporation.
      ii. Kor N Seal made by Trelleborg.
      iii. Press Wedge II made by Press-Seal Gasket Corporation.
      iv. A-Lok Manhole Pipe Seal made by A-Loc Corporation.
      v. Or equivalent.

D. Joints:
1. Joint gaskets to be flexible self-seating butyl rubber joint sealant installed according to manufacturer's recommendations. Install a double row of joint sealants for every manhole joint. For cold weather applications, use adhesive with joint sealant as recommended by manufacturer.
   Acceptable Materials:
   a. Kent-Seal No. 2
   b. Ram-Nek
   c. Or equivalent.
2. Joints between precast sections shall conform to related standards and manufacturer's instructions.
3. All manholes greater than 6 ft. diameter and all manholes used as wet wells, valve pits and other dry-pit type structures shall be installed with exterior joint collars. The joint collar shall be installed according to the manufacturer's instructions.
   Acceptable Materials:
   a. MacWrap exterior joint sealer as manufactured by Mar-Mac Manufacturing Company
   b. Cretex External Joint Wrap
   c. Or equivalent.

E. Dampproofing:
   1. The exterior surface of all manholes shall be given two coats of dampproofing material at an application rate as recommended by the manufacturer.
   2. The coating shall be applied after the manholes have cured adequately and can be applied by brush or spray in accordance with the manufacturer's written instruction.
   3. Sufficient time shall be allowed between coats to permit sufficient drying so that the application of the second coat has no effect on the first coat.

2.2 FRAMES AND COVERS

A. Standard Units:
   1. Made of cast iron conforming to ASTM A48 latest edition, 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 H-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. Pick hole dimensions shall not exceed the thickness of the frame inner flange.
      b. Frame - 24-inch diameter clear opening, with flange bracing ribs.

B. Water Tight Units:
   1. Same features as above for Standard Units, with 22-inch diameter minimum clear opening.
   2. Sealing features:
      a. Inner lid held by a bronze tightening bolt in a locking bar.
      b. Neoprene gasket
      c. Water tight pick hole.
   3. Constructed to support H-20 wheel loading.

2.3 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 to 1:3/4, but in no case shall the volume of sand exceed 3 times the sum of the volume of cement and lime.
   3. Cement shall be Type II portland cement.
   4. Hydrated lime shall be Type S.
   5. Sand:
      a. Shall consist of inert natural sand.
      b. 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. Precast Manhole Sections:
   1. Perform jointing in accordance with manufacturer's recommendations and as approved by the Engineer.
   2. Install riser sections and tops level and plumb.
   3. Make all joints watertight.
   4. When necessary, cut openings carefully to prevent damage to barrel sections and tops. Replace damaged manhole sections and tops at no additional cost to the Owner.

B. Drop Manholes:
   1. The difference in elevation between the invert of the inlet pipe and outlet pipe is to be either less than 6-inches (which does not require a drop manhole) or more than 24-inches (which does require a drop manhole).
   2. Where difference in elevation between the invert of the inlet pipe to the invert of the outlet pipe exceeds 24 inches, construct a drop manhole as shown on the Drawings or as directed by the Engineer.

C. 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.

D. Pipe Connections to Manholes: Connect pipes to manholes with joint design and materials approved by the Engineer. Special care shall be taken to ensure that the openings through which pipes enter the structure are watertight.

E. Invert Channels:
   1. After manhole and all pipes entering or exiting the manhole have been installed, construct the invert channels and shelf.
   2. Channels to be smooth and semicircular in shape conforming to the inside of the adjacent sewer section.
   3. Make changes in direction of flow with smooth curves having a radius as large as permitted by the size of the manhole.
   4. Stop the pipes at the inside face of the manhole where changes of direction occur.
   5. Form invert channels and shelf with smooth and carefully shaped 2500 psi concrete with no voids. Coat concrete with non-slip, hi-build epoxy coating.

6. The maximum change in elevation from the invert of the inlet pipe to the invert of the outlet pipe is 6-inches. Shape invert to make smooth transition in vertical grade.
7. Slope the floor of the manhole (shelf) to the flow channel, as shown on the Drawings.

F. 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.

G. 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.

H. 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.

I. Cleaning:
1. Thoroughly clean manholes, frames, and covers of all debris and foreign matter.

J. 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.

3.2 MANHOLE TESTING

A. General:
1. Perform a vacuum test on all manholes
2. Perform all testing in the presence of the Engineer.
3. Suitably plug all pipes entering each manhole and brace plugs to prevent blow out.

B. Vacuum Test:
   1. The manhole shall be tested by a vacuum test after assembly of the manhole, connection piping and backfilling. Vacuum testing to be conducted prior to construction of invert channels.
   2. Plug all lifting holes completely with non-shrink grout.
   3. Properly tighten all boot clamps and brace all plugs to prevent them from being sucked into the manhole.
   4. Install the testing equipment according to the manufacturer's instructions.
   5. A vacuum of 10 inches of Hg shall be drawn on the manhole and the loss of 1 inch of Hg vacuum timed. The manhole shall be considered to have passed the test if the time for the loss of 1 inch of Hg vacuum is:
      a. Greater than 2 minutes for manholes less than 10-feet deep.
      b. Greater than 2.5 minutes for manholes 10 to 15-feet deep.
      c. Greater than 3 minutes for manholes more than 15-feet deep.
   6. If the manhole fails the initial test, the Contractor shall locate the leak(s) and make repairs. The manhole shall be retested until a satisfactory test result is obtained.

3.3 FIELD REPAIRS

A. Structural repairs shall be completed at the direction of the Engineer.
B. Leakage Repairs
   1. Correct leakage by reconstruction, replacement of gaskets and/or other methods as approved by the Engineer.
   2. The use of lead-wool or expanding mortar will not be permitted.
C. After the manholes have been backfilled, and prior to final acceptance, any signs of leaks or weeping visible inside the manholes shall be repaired and the manhole made watertight.

END OF SECTION

SECTION 02610

RIGID BOARD INSULATION FOR PIPE IN TRENCHES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Provide and install rigid board insulation in trenches over or between piping, as shown on the Drawings and as specified herein.

1.2 REFERENCES

A. ASTM C272 - Test Method for Water Absorption of Core Materials for Structural Sandwich Construction.
B. ASTM C518 - Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter.
C. ASTM D1621 - Test Method for Compressive Properties of Rigid Cellular Plastics.

1.3 SUBMITTALS

A. Submit shop drawings, product data and manufacturer’s written installation instruction in accordance with the applicable section of Division 1 and the General Conditions of the Construction Contract.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to project site in manufacturer's original unopened packaging.
B. Identify contents, manufacture, brand name, thermal values, and applicable standards.
C. Store materials in area protected from weather, and moisture.
D. Remove damaged materials from site.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Rigid Pipe Insulation
   1. Dow Chemical Company – Styrofoam Highload 40
   2. Certifoam 40
   3. Or equivalent

2.2 RIGID PIPE INSULATION

A. Insulation: Closed cell polystyrene foam board
   1. Standard Two Foot Width.
   2. Aged "R" Value - "R" = 5.0 per inch, ASTM C518.
   3. Water Absorption - 0.1 percent, ASTM C272.
   4. Water Vapor Permeance - 1.0 perm (max) ASTM E96
   5. Compressive Strength - 40 pounds per square inch, ASTM D1621.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Lay rigid board insulation in trenches over or between piping where depth of pipe cover is than that required on the Drawings. Install rigid board insulation as shown on the Drawings.

END OF SECTION

SECTION 02622

POLYVINYL CHLORIDE (PVC) NON-PRESSURE PIPE

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Provide and install PVC non-pressure pipe and fittings of the size(s) and type(s) and in the location(s) shown on the Drawings and as specified herein.

1.2 QUALITY ASSURANCE

A. Manufacturers:
   1. Ipex
   2. JM Eagle
   3. National Pipe & Plastics
   4. Or equivalent.

1.3 SUBMITTALS TO THE ENGINEER

A. Submit shop drawings in accordance with 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 other documents as specified in the appropriate Sections of this Division.

1.4 DELIVERY STORAGE AND HANDLING

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 and damage
   2. Deviations beyond allowable tolerances for joint dimensions.
   3. Removal of debris and foreign matter.
D. Examine area and structures to receive piping for:
   1. Defects, such as weak structural components that adversely affect the execution and quality of work.
   2. Deviations beyond allowable tolerance for pipe clearances.
E. All materials and methods not meeting the requirements of the Contract Documents will be rejected.
F. Immediately remove all rejected materials from the project site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pipe and Fittings:

1. The polyvinyl chloride pipe and fittings, including those required for stubs, shall conform to ASTM standard specification for PVC Sewer Pipe and Fittings, Designation D 3034 (SDR 35) (4" to 15"), F679 (18" to 27"), or F1760-01 (for recycled pipe, all diameters).
2. Straight pipe shall be furnished in lengths of not more than 14 feet.
3. Saddles will not be allowed.

B. Joints:
1. Joints for the polyvinyl chloride pipe shall be push-on joints using factory installed elastomeric ring gaskets.
2. The gaskets shall be securely fixed into place by the manufacturer so that they cannot be dislodged during joint assembly.
3. The gaskets shall be of a composition and texture which is resistant to common ingredients of sewage and industrial wastes, including oils and ground water, and which will endure permanently under the conditions of the proposed use.
4. The joints shall conform to ASTM Specifications for Joints for Drain and Sewer Plastic Pipes using Flexible Elastomeric Seals, Designation D3212-76.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Inspection:
1. Each pipe unit shall be inspected before being installed. No single piece of pipe shall be laid unless it is generally straight.
2. The centerline of the pipe shall not deviate from a straight line drawn between the centers of the openings at the ends of the pipe by more than 1/16 inch per foot of length.
3. If a piece of pipe fails to meet this requirement for straightness it shall be rejected and removed from the site.
4. Any pipe unit or fitting discovered to be defective either before or after installation shall be removed and replaced with a sound unit.

B. Jointing:
1. All pipe and fittings shall be cleared of all debris, dirt, etc., before being installed and shall be kept clean until accepted in the completed work.
2. Pipe and fittings shall be installed to the lines and grades indicated on the drawings or as required by the Engineer. Care shall be taken to ensure true alignments and gradients.
3. All joint surfaces shall be cleaned. Immediately before jointing the pipe, the bell or groove shall be lubricated in accordance with the manufacturer's recommendation.
4. Each pipe unit shall than be carefully pushed into place without damage to pipe or gasket. Suitable devices shall be used to force the pipe units together so that they will fit with a minimum open recess inside and outside and have tightly sealed joints. Care shall be taken not to use such force as to wedge apart and split the bell or groove ends.
5. Joints shall not be "pulled" or "cramped" unless permitted by the Engineer.

C. Service Connections:
1. All service connections to new pipe shall utilize a wye fitting.

2. All service connections must enter the top half of the mainline pipe.
3. Service connections shall be 6-inch, minimum, unless otherwise noted.
4. Contractor shall provide all necessary fittings, adapters and couplings to connect the service to the sewer main.
5. Service laterals shall be placed at 2% slope, unless otherwise noted. If 2% slope is not available, notify the Engineer.
6. Contractor shall maintain the trench for sufficient time for the Engineer to inspect the work. Contractor shall provide 3 working day notice to the Engineer.

D. Pipe Deflection:
1. Pipe provided under this specification shall be installed so there is no more than a maximum deflection of 5.0 percent. Such deflection shall be computed by multiplying the amount of deflection (normal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.
2. The Contractor shall wait a minimum of 30 days after completion of a section of sewer, including placement and compaction of backfill, before measuring the amount of deflection by pulling a specially designed gage assembly through the completed section. The gage assembly shall be in accordance with the recommendations of the pipe manufacturer and be acceptable to the Engineer.
3. Should the installed pipe fail to meet this requirement, the Contractor shall do all work to correct the problem as the Engineer may require without additional compensation.

E. Testing:
1. Clean and test pipe in accordance with appropriate sections of this division.
2. CCTV pipe in accordance with Section 02755.

END OF SECTION

SECTION 02751

SEWER FLOW CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: During the installation, replacement, rehabilitation and/or testing of sanitary sewer lines and sanitary sewer manholes via open-cut or trenchless approach, the Contractor shall maintain and control flow around the pipe segment(s) or structure(s) that are temporarily out of service. Existing sewer services shall remain live at all times during the progress of the Work. Sewer flow control which extends outside of Contractor work hours shall be completed in accordance with Section 01515. All temporary pumping equipment shall meet the requirements outlined in local noise regulations.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 SUBMITTALS

A. In accordance with the requirements of Section 01340. Additional specific information required is listed below.
   1. Proposed schedule, sequence of construction, duration of activities and description of sewer control methods to be utilized for each element of the project.
   2. Technical data (including capacity and fuel tank size) of any portable temporary pumping equipment to be used during normal Contractor work hours.
   3. Supplemental information required under Section 01515 for sewer flow control which extends beyond Contractor work hours.

PART 2 - PRODUCTS – NOT APPLICABLE

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 the Owner, Engineer, and Utility Companies seven days in advance of any temporary bypass pumping work. The Owner will identify personnel to be notified in addition to those identified by the Contractor.

C. Contractor shall coordinate temporary bypass pumping operations with the Owner and Engineer on a daily basis.

3.2 PERFORMANCE

A. General
   1. 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.
   2. The Contractor shall be solely responsible for clean-up, repair, property damage costs and claims resulting from failure of the diversion system.

B. Plugging or Blocking:
   1. Insert plug at a manhole upstream of line to be inspected and tested.
   2. Plug shall be so designed that all or any portion of the sewage flows can be released.
   3. Flows shall be shut off or substantially reduced during line testing.

C. Pumping and Bypassing:
   1. When required, supply the necessary pumps, conduits and other equipment (including standby equipment) to divert the flow of sewage around the line in which work is being performed.
   2. Furnish the necessary labor and 24-hour supervision to set up, test and operate the pumping and bypassing system.
   3. Any temporary pumps, piping, fuel storage, or other appurtenances associated with the portable temporary pumping equipment 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.

END OF SECTION

SECTION 02752

SEWER LINE CLEANING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Provide all equipment necessary for the proper cleaning of the sewers prior to the joint testing operations and/or closed circuit television inspection.

1.2 REFERENCE

A. The type of pipe cleaning (light vs heavy) shall be chosen based on the definitions in the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) Version 7.0 standards.
   1. Light cleaning definition – Cleaning and removal of settled deposits when the deposits are less than the following percentage of the pipe diameter:
      a. Pipe diameters less than or equal to 12-inches: < 25%
      b. Pipes diameters between 13-inches and 24-inches: < 15%
      c. Pipes diameters between 25-inches and 30-inches: < 10%
      d. Pipe diameters greater than 30-inches: not applicable (use heavy cleaning)
   2. Heavy cleaning definition – Cleaning and removal of settled deposits when the deposits are greater than the following percentage of the pipe diameter:
      a. Pipe diameters less than or equal to 12-inches: > 25%
      b. Pipes diameters between 13-inches and 24-inches: >15%
      c. Pipes diameters between 25-inches and 30-inches: >10%
      d. Pipe diameters greater than 30-inches: all pipes regardless of the amount of deposits

PART 2 - PRODUCTS

2.1 MATERIALS

A. High Velocity Hydro-Cleaning Equipment shall:
   1. Have a minimum of 400 feet of high pressure hose.
   2. Have multiple high velocity nozzles, as follows:
      a. Standard 35 degree nozzle with multiple rear jets and one front jet.
      b. Sand nozzle capable of transporting sand and gravel to the downstream manhole; and
      c. Rotating nozzle for removal of grease and scale.
   3. Include a high velocity gun for washing and scouring manhole walls and floor.
   4. Be capable of producing flows from a fine spray to a long distance solid stream.
   5. Include a water tank, auxiliary engines and pumps, and a hydraulically driven hose reel.
   6. Have equipment operating controls located above ground.

B. Water Source
   1. Water shall be obtained from Owner's water distribution system at no cost to the Contractor. Contractor to provide a backflow preventor for a hydrant.

Contractor shall coordinate with Owner on which hydrant(s) can be used to fill the vac truck before any water is obtained.

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Select cleaning equipment based on the conditions of the lines at the time the work commences.
   1. Light cleaning (as defined by NASSCO PACP): Use high pressure water jetting equipment, brushes and swabs.
   2. Heavy cleaning (as defined by NASSCO PACP): Use high pressure water jetting equipment specifically designed for the intended use.

B. Use selected equipment to remove all dirt, grease, rock and other deleterious materials and obstructions.

C. Protect existing sewer lines from damage caused by improper use of cleaning equipment.

D. Take precautions to avoid damage or flooding to public or private property being served by the line being cleaned.

E. Removal of Materials:
   1. Remove all solids and semi-solids at the downstream manhole of the section being cleaned.
   2. Passing material from one section of a line to another will not be permitted.

F. Disposal of Materials: Remove from the site and dispose of all solids or other waste materials recovered during the cleaning operations in an approved manner.

3.2 DETERMINING TYPE OF CLEANING

A. All heavy cleaning must be coordinated with RPR or Engineer verbally or written for each pipe before any heavy cleaning commences.

3.3 FIELD QUALITY CONTROL

A. Acceptance of this portion of the work may be made upon completion of subsequent television inspection and shall be to the complete satisfaction of the Engineer.

END OF SECTION

SECTION 02753

TELEVISION INSPECTION OF SEWERS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish all necessary labor, materials, supervision and equipment to satisfactorily inspect gravity sewer lines and sewer service pipes as required by the Contract Documents by means of a closed circuit television (CCTV) system.

1.2 QUALITY ASSURANCE

A. CCTV work shall be completed and delivered per the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) Version 7.0 standards. Operators of CCTV equipment shall be currently certified in NASSCO PACP.

1.3 SUBMITTALS

A. Provide shop drawings as specified in the General Conditions and Section 01340.
B. Contractor shall submit copies of active NASSCO PACP certifications.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. The cameras shall be designed and constructed for sewer line inspection work. The mechanical design of the lens shall allow it to turn and rotate 360 degrees to provide a close up view of sewer pipe walls and sewer service pipes. The camera shall be designed to maintain proper orientation of the picture while the lens is turning and rotating.
B. The cameras shall be operative in 100% humidity conditions.
C. The lighting for the cameras shall be suitable to allow a clear picture of service pipes and the entire periphery of the mainline sewer pipe, such that joints, root intrusions, cracks, offset joints, deposits, etc. can be seen and identified by the Engineer.
D. The lens focus and rotational capabilities and the light intensity will be remotely controlled from an above ground television "studio".
E. The cameras shall produce a continuous, full color picture with a quality acceptable to the Engineer.

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Flow Control:
    1. A minimum of 75% of the periphery of the sewer line shall be visible at all times.
    2. The Engineer may require that the line be plugged so that the entire periphery can be inspected. For details on sewer flow control, see Section 02751.

B. Operation:
   1. Perform inspection of sewer lines after lines have been suitably cleaned.
   2. When inspecting newly constructed sewer lines, introduce water into the sewer lines to be tested from the upstream manhole prior to the television inspection, but no more than 24 hours in advance of the inspection.
   3. Lines will be suitably isolated from the remainder of the sewer line as required.
   4. Move the cameras through the line in either direction at a moderate rate, not to exceed 30 feet per minute, as recommended by NASSCO PACP standards.
   5. The Engineer may require Contractor to pull cameras back to get a second view of a section of the pipe.
   6. Use manual winches, power winches, television cable reel powered rewinds, high-pressure hose and reels on jet-cleaning trucks, or a flexible pole, to move the camera through the sewer.
   7. If, during the inspection operation, the camera will not pass through the entire pipe section, the Contractor shall set up the equipment so that the inspection can be performed from the opposite manhole on the pipe segment.
   8. The screen monitor and winch operators shall be in full communication at all times.
   9. Remove all wires, screens, sand bags, etc. used in the television inspection process from the sewers at the completion of inspection of each sewer section.

C. Measurement:
   1. Measurement for location of defects, service connections, etc., shall be accurate to two tenths (0.2) of a foot over the length of the section being inspected.

D. Records:
   1. Printed records shall be provided, reflecting location of defects, service connections, etc., and shall be recorded per NASSCO PACP standards and stored to a NASSCO PACP-certified digital reporting software:
      a. Keep records and supply to the Engineer when the work has been completed.
      b. Show the exact location in relation to adjacent manholes, of each infiltration point discovered by the television camera.
      c. Show locations of laterals, unusual conditions, roots, break-in storm sewer connections, collapsed sections, presence of scale and corrosion, and other discernible features.
   2. Inventory the houses and apparent empty lots bordering each section of sewer line that is inspected and compare results to the number and location of house services found during the inspection. Log inconsistencies and report them to the Engineer.
   3. Database
      a. One copy of the NASSCO PACP Exchange database shall be provided in digital format (MS Access).
   4. Video / Photographs:
      a. Two copies of the video shall be provided on an external hard drive, downloaded or output from a NASSCO PACP-certified software: one copy to the Engineer and one copy to the Owner.

b. The video shall be digitally recorded, indexed by pipe section (labeled by manhole number or other means acceptable to Engineer) and allow for printing of still photographs.

c. Photographs shall be printed at Engineer's request and shall be identified on the back as follows:

Date_____; Section: MH#_____ to MH#_____
Diameter of Sewer _____; Distance from MH#_____ is _____LF
Description of item photographed _____
_____

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.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.1 PERFORMANCE

A. General:

1. All sewers, manholes, 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 lines 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 and the plumbing or building inspector in accordance with the requirements of the local and state plumbing codes.
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. Line Acceptance Tests (Gravity sewers with no active service connections):

1. Test all gravity sewer lines with no active service connections for leakage by conducting a low pressure air test.
2. Equipment:
   a. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.

b. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
c. All air used shall pass through a single control panel.
d. Connect 3 individual hoses:
   i. From the control panel to the pneumatic plugs for inflation.
   ii. From the control panel to the sealed sewer line for introducing the low pressure air.
   iii. From the sealed sewer line to the control panel for continually monitoring the air pressure rise in the sealed line.

3. Testing Pneumatic Plugs:
   a. Seal test all pneumatic plugs prior to using them in the actual test.
   b. Lay one length of pipe on the ground and seal both ends with the pneumatic plugs to be tested.
   c. Pressurize the sealed pipe to 5 psig.
   d. The pneumatic plugs are acceptable if they remain in place without bracing.
4. Testing Sewer Pipeline:
   a. After the sewer pipe has been cleaned and the pneumatic plugs checked, place the plugs in the sewer line at each manhole and inflate them.
   b. Introduce low pressure air into the sealed sewer pipeline until the air pressure reaches 4 psig greater than the average groundwater pressure.
   c. Allow a minimum of 2 minutes for the air pressure to stabilize to a minimum of 3.5 psig greater than the groundwater pressure. Groundwater is assumed to be at ground surface unless the Contractor can prove otherwise by test pitting.
   d. After the stabilization period, disconnect the air hose from the control panel to the air supply.
   e. The pipeline will be acceptable if the pressure decrease is not greater than l/2 psig in the time stated in the following table for the length of pipe being tested:

Pipe Diameter (inches)	Time (Min.) for Length of Pipe			
	0-100 ft	101-200 ft	201-300 ft	301-400 ft
4	2.0	2.0	2.0	2.0
6	3.0	3.0	3.0	3.0
8	4.0	4.0	4.0	5.0
10	5.0	5.0	6.0	8.0
12	5.5	5.5	8.5	11.5
15	7.0	8.5	13.0	17.0
18	8.5	12.0	19.0	25.0
21	10.0	17.5	26.0	35.0
24	11.5	23.0	34.0	45.5
27 and larger	14.5	29.0	43.0	58.0

5. Test Results:
    a. If the installation fails the low pressure air test, determine the source of leakage.
    b. Repair or replace all defective materials and/or handiwork and repeat low pressure air test at no additional cost to the Owner.

C. Alignment Tests (Gravity Sewers):
1. Perform tests for the correctness of horizontal and vertical alignment on each and every length of gravity sewer pipeline between manholes.
2. Alignment tests to be conducted after all pipe has been installed and backfilled.
3. The observation test shall be conducted after all upstream work has been completed and the pipeline cleaned of debris.
4. Notify the Engineer at least 24 hours in advance of the proposed observation testing.
5. Introduce water into the sewer lines to be tested from the upstream manhole prior to the observation test but no more than 24 hours in advance of the test.
6. Beam a source of light, acceptable to the Engineer, through the pipeline from both ends and the Engineer will directly observe the light in the downstream, and/or upstream manhole of each test section.
7. To pass this test, the following conditions must be met:
    a. A full circle of light (full diameter of the pipe) shall be observed.
    b. No standing water shall be allowed. The presence of standing water shall be cause for rejection of that pipe (including manhole) section.
8. Improper alignment will be corrected by re-excavation and resetting of pipe at no additional cost to the Owner.

D. Pipe Deflection: (Gravity Sewers)
1. Pipe provided under this specification shall be installed so there is no more than a maximum deflection of 5.0 percent. Such deflection shall be computed by multiplying the amount of deflection (normal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.
2. The Contractor shall wait a minimum of 30 days after completion of a section of sewer, including placement and compaction of backfill, before measuring the amount of deflection by pulling a specially designed gage assembly through the completed section. The gage assembly shall be in accordance with the recommendations of the pipe manufacturer and be acceptable to the Engineer.
3. Should the installed pipe fail to meet this requirement, the Contractor shall do all work to correct the problem as the Engineer may require without additional compensation.

E. Television Inspection Tests (Gravity Sewers)
1. Where television inspection testing is required, test procedures shall be in compliance with the requirements outlined in Specification Section 02753.
2. No standing water shall be allowed. The presence of standing water may be cause for rejection of that pipe.
3. Any standing water, detectable leaks, improper joints or any other unacceptable feature detected by the television inspection will be corrected by re-excavation and resetting pipe at no additional cost to the Owner.

F. 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
      f. Drop connection arrangements
   3. Non-Monitored Make-Up Water Test procedures are as follows:
      a. The test procedure consists of 2 phases, an initial expansion phase and a testing phase. For the initial expansion phase, make-up water is added as required to maintain the test pressure in the test section of pipe for 4 hours. The test pressure is 1.5 times the system design pressure at the lowest elevation in the section under test or 100 psi, whichever is greater.
      b. After the expansion phase is complete, the test phase begins with the pressure in the pipe at test pressure. The test pressure is then reduced by 10 psi. If the pressure remains steady (within 5% of target value) after one hour, then the pipe has passed the leakage test.

G. Manhole Leakage Testing:
   1. Specified in the "Manholes, Covers and Frames" Section in Division 2.

END OF SECTION

SECTION 02756C

SEWER PIPE LINING USING UV CURING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Provide all equipment necessary for the lining of sanitary sewer lines using ultraviolet light (UV) cured-in-place-pipe (CIPP) liner method and the reinstatement of sewer services.

B. The system shall provide for the rehabilitation of pipes by the installation of a resin impregnated fiberglass or polyester tube patch inserted against the inside of the existing pipe utilizing air pressure (manhole-to-manhole lining) or an inflatable element and air pressure (short lining). Curing shall be accomplished by passing a UV light through the liner to cure the resin into a hard, impermeable pipe within a pipe. The CIPP should extend over the length of the repair in a continuous, tight-fitting, watertight pipe within a pipe.

1.2 QUALITY ASSURANCE

A. Standards:

1. Cured-in-place-pipe (CIPP) shall meet all the requirements of the following standards:
    a. ASTM F1216 – Standard Practice for rehabilitation of existing pipelines and conduits by the inversion and curing of a resin-impregnated tube
    b. ASTM F1743 – Standard Practice for rehabilitation of existing pipelines and conduits by pulled-in-place installation of cured-in-place thermosetting resin pipe
    c. ASTM D2990 - Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics
    d. ASTM F2019 – Standard Practice for rehabilitation of existing pipelines and conduits by the pulled-in-place installation of glass reinforced plastic cured-in-place thermosetting resin pipe
    e. ASTM D790 – Standard test methods for flexural properties of unreinforced and reinforced plastics and electrical insulating materials
    f. ASTM D543 - Test Method for Resistance of Plastics to Chemical Reagents
    g. ASTM D578 - Standard Specification Glass Fiber Strands
    h. ASTM D638 - Standard Test Method for Tensile Properties of Plastics
    i. ASTM F2454 – Standard Practice for Sealing Lateral Connections and lines from the mainline Sewer Systems by the Lateral Packer Method, Using Chemical Grouting

B. References:

1. NASSCO (National Association of Sewer Service Companies) Recommended Specifications for Sewer Collection System Maintenance and Rehabilitation.

C. Acceptable Contractors:

1. Vortex Companies (manhole-to-manhole lining and short lining), or equal,

2. Or qualified equivalent contractor with a minimum of 5 years experience in sewer pipe lining using UV curing method and a minimum of 100,000 feet of installed CIPP liner that was cured by UV.

D. Contractor's Staff
   1. The CIPP superintendent shall have a minimum experience of 3 years.
   2. The CIPP lateral reinstatement operator shall have a minimum experience of 1 year.
   3. If the above minimum years of experience for both roles cannot be met, an acceptable alternative is to have a manufacturer representative onsite during the lining work.

E. Pre-installation and Post-installation Inspections:
   1. Pre-installation and post-installation inspections of existing sewer lines shall be performed by experienced personnel NAASCO trained in locating breaks, obstacles and service connections by CCTV. The interior of the line shall be carefully inspected to determine the location of any conditions which may prevent proper installation of the liner pipe into the lines, and such conditions shall be noted so they can be corrected. Post-installation inspection must include observations of restored service connections. A video and suitable log shall be kept for later reference by the Owner. All inspection data must be rated using Pipeline Assessment and Certification Program (PACP) developed by NASSCO. Video files must be made available via thumb drive or MP4 files to be transferred electronically for viewing and as a deliverable for actual linear foot quantity and payment. Reporting must include provided asset ID numbers. The Contractor may be provided with a template for inspections.
      a. Two post-installation inspections by CCTV will be required:
         i. One following installation of the liner and reinstatement of existing service connections.
         ii. One following replacement and reinstatement of the service connections.

1.3 SUBMITTALS

A. The Contractor shall submit to the Owner and/or Engineer, complete design calculations for the liner that meet the requirements of ASTMs F1216, F1743, or F2019, whichever is applicable for the installation and curing methods to be used. The design shall be based on the following physical conditions of the existing pipe to be rehabilitated:
   1. All pipes shall be considered fully deteriorated and no bonding to the existing pipe shall be assumed.
   2. All pipes are subjected to a soil load of 120 lbs/cf with an H-20 live traffic load.
   3. Prism loading on the pipe.
   4. The water table is assumed to be just below the ground surface.
   5. A soil modulus of 700 psi where cover is between 5 feet and 10 feet. A soil modulus of 1000 psi where cover is between 10 feet and 15 feet.
   6. Maximum lining enhancement factor of 5.
   7. Pipe lengths and depths are shown on the Plans and shall be verified by the Contractor during the pre-installation inspection.

8. The minimum pipe ovality is 2%, unless documented, measured by the Contractor and submitted to the Engineer.
9. The maximum pipe deflection is 5%.
10. The minimum wall thickness for a felt tube CIPP liner is 6 mm. The minimum wall thickness for a fiberglass reinforced tube CIPP liner is 2.8 mm. Thickness design calculations shall be provided prior to the liners being ordered.
11. The minimum flexural modulus of elasticity of the cured liner shall be 2,000,000 psi, with a flexural strength of 20,000 psi, as tested in accordance with ASTM D-790.
12. A retention value of 50% shall be used for long-term flexural properties.
13. The calculations shall account for a 50-year design life and include a documented factor of safety of 2.0.

B. Contractor to submit materials and installation procedures for review by Owner and/or Engineer, including information on resin, tube material, and end seals including certifications, internal and exterior liner coatings, a pre-liner layer if required, manhole and service sealants, an installation schedule, the manufacturer's recommended shipping, storing, and handling recommendations for all components of the CIPP system, inflation pressure and pulling speed for each diameter, the manufacturer's recommended curing schedule, means of obtaining and collecting samples for testing, method of monitoring liner temperature during curing, safety data sheets for all materials to be furnished for the project, and other quality management programs, plans for by-passing or handling of sewer flows, and traffic control.

C. Contractor to submit specifications of the UV curing system proposed to be used on the project, including the length of each train and maximum wattage of the bulbs used.

D. Contractor to submit electronic video files on thumb drives or video MP4 files of pre-installation CCTV inspection and post-lining CCTV inspections, and a 1-year warranty inspection as specified in Section 02753.

E. Contractor shall provide the location of the wet-out facility to manufacturer the liner, and include documentation of its permitting status and QA/QC controls. If requested in writing by the Engineer, the Contractor shall assist the Engineer in setting up an inspection of the wet-out facility in advance of the manufacturing of the liner.

F. Contractor to submit an outreach plan to the Engineer at least 1 week prior to the commencement of lining activities, this plan shall at minimum include a schedule for 1-week and 24-hour advance notices to residents who will be affected by the pipe lining, samples of notices to be provided to residents, and an odor and noise mitigation plan.

G. Contractor to submit documentation relative to the qualifications, training and experience of the installers.

H. Contractor to supply an equipment listing including redundant tools and spare parts to be on site during the lining work, including proposed backup equipment.

I. Contractor to submit an odor mitigation plan to be implemented during the liner installation.

J. Contractor to submit a plan indicating the proposed procedures for removal of any existing blockages in the pipeline that may be encountered during the cleaning

process.

K. Contractor to supply information on proposed or potential repair and/or rehabilitation methods based on manufacturer's recommendations in the event of a failed liner installation including step-by-step repair procedure and how the finished product will meet the requirements of this contract specification.

L. A detailed public notification plan shall be prepared and submitted including detailed staged notification to residences affected by the CIPP installation.

M. Contractor to submit a proposed Safety Plan that identifies all competent persons and includes a description of a daily safety program for the job site and all emergency procedures to be implemented in the event of a safety incident. All work shall be conducted in accordance with the Contractor's submitted Safety Plan.

N. Prior to liner installation, Contractor shall supply wet-out logs, saturation charts, and curing schedules.

O. During liner installation, Contractor shall supply wet-out logs; curing schedules, including curing logs from the light train quality control software; and collected samples for testing.

PART 2 - PRODUCTS

2.1 PIPE LINER

A. The Contractor shall furnish a glass fiber reinforced felt tube and resin and catalyst system compatible with the UV curing. Liner material shall be manufactured with resins pre impregnated within the liner to eliminate the possibility of air bubbles and voids. Inner and outer foil shall be used to protect and contain the resin and shall be styrene resistant. If agreed upon, a liner with an integrated inner foil, such a Saertex S+ Fast+ or equivalent, may be utilized.

B. The liner shall be fabricated from materials that are chemically resistant to exposure to domestic sewage and septic tank effluent having a pH range of 5 to 11 and temperature of 140ºF.

C. The resin, tube and curing methods shall be compatible with each other and the installation method to be used, in accordance with manufacturer's recommendations.

D. The completed liner shall be continuous, seamless, and jointless from manhole to manhole. Hydrophilic end seals are to be installed at each manhole inlet and outlet.

E. The Liner shall be manufactured to expand sufficiently but not greater than 10% achieving a tight fit against the host pipe. The liner should have sufficient strength to bridge missing pipe sections or with the use a fabric restraint sleeve.

F. The interior surface of the liner shall be a relatively light reflective color so that a clear detailed examination with closed circuit television equipment can be made.

G. Interior and exterior liners shall be provided to mitigate styrene migration. The interior and exterior liners shall be included as part of the pipe design, or removed as part of the installation.

H. Liner thickness calculation property requirements are discussed in Part 1. Regardless of the design calculations submitted by the contractor, the liner thicknesses of the segments installed under the railroad will be pre-approved by CSX using the required properties provided and cannot be altered.

I. Liner material shall meet the requirements of ASTM F1216, F1743, or F2019, whichever is applicable based on the materials, installation and curing methods to be

used.

J. Short liners are small sections of liner meant to repair smaller sections of defects within the existing pipe. These short liner locations are noted in the Contract Documents with approximate length of liners and the distance from upstream manhole and/or downstream manhole.

K. The information on the existing pipeline(s) to be lined in the Contract Documents is provided for reference only and should be verified during CCTV inspection prior to short lining. The interior of the line shall be carefully inspected to determine the location of any conditions which may prevent proper installation of the liner pipe into the lines, such as protruding areas, collapsed or crushed pipe, and reductions in the cross-sectional area. Such conditions shall be noted and brought to the Engineer's attention immediately so they can be corrected. Field measurements of the existing pipe diameters, ovality and length shall be taken by the Contractor of each pipe segment to be lined before ordering the liner. Any adjustments to the scope should be discussed with the Engineer prior to installation.

L. All materials shall be stored and handled in accordance with the manufacturer's recommendations and consistent with the type or curing method to be used.

2.2 MANHOLE END SEALS

A. The manhole end seals shall be a single-component, hydrophilic mastic water stop. End seals to be installed at all manhole walls for all lining products.

1. End seals must be LMK Insignia or equivalent.

2.3 SERVICE CONNECTION GROUTING

A. The grout materials and equipment used to seal service connections shall be in accordance with ASTMF2454.

PART 3 - EXECUTION

3.1 GENERAL

A. All work shall be done in compliance with all current OSHA and manufacturer's safety regulations.

3.2 BEFORE INSTALLATION

A. Prior to conducting any work, Contractor shall deliver notices to all residents and/or building owners within the area of the pipe lining. Notice shall indicate when the work will take place and who to call with questions or in the event of an emergency. Notice to be approved by the Owner prior to distribution.

B. Contractor to control sewer flow and bypass pump per Section 02751.

C. It shall be the responsibility of the Owner to locate and designate all manhole access points open and accessible for the work, and provide rights-of-access to these locations. The Contractor shall notify the Owner of all access issues prior to ordering the liner. If access to the manholes is not feasible due to location or rights, such as a cross country line, the Owner may decide to request a change order from the Contractor to complete the work using specialized equipment or remove or replace the pipe segment from the scope of work.

D. Traffic control shall be the responsibility of the Contractor.

E. The Owner shall provide access to a water source for cleaning, installation and other process related work items requiring water.

F. Prior to lining the sewer main, the sewer shall be cleaned in accordance with Section 02752 and inspected with CCTV equipment per Section 02753. Contractor to verify that the conditions of the sewers are acceptable for the methods of liner installation required. Prior to lining of pipe, Contractor shall trim back any protruding pipes/services extending into the pipe. Pipes shall be trimmed back to within ½-inch of the pipe wall, or as close as possible to avoid damaging the host pipe and also to prevent bulges in the liner to be installed. All debris from cleaning and trimming operations shall be removed from the sewer system and not flushed downstream.

G. Ground water temperatures and ambient temperatures shall not be excessive for the product installation procedures.

H. Contractor shall be responsible for confirming the locations of all service connections prior to installing the CIPP.

I. Contractor to protect liner from groundwater infiltration and ensure adequate curing of liner even under groundwater conditions.

J. Active leaks shall be stopped prior to lining if they could, in the opinion of the Engineer, create pockets of trapped water or heat sinks which could cause improper curing of the liner.

K. Contractor shall inspect the liner for any defects and if it had prematurely started to cure during transportation and storage.

L. Install odor mitigation devices per submitted odor mitigation plan to deflect odors for both workers and general public.

3.3 LINING METHOD AND CURING

A. The Contractor shall install and UV cure the liner per the method recommended by the liner manufacturer and as submitted in the shop drawing.

B. Method of Installation:

1. A continuous heavy gauge (10mm) plastic sheet shall be pulled into place the entire length of host pipe, covering 1/3 – 1 /2 the diameter of lower portion of the host pipe, protecting liner during the pull in process, unless a gliding foil is integrated into the liner.
2. Liner shall be securely attached to winch and pulled into place taking care not to exceed pulling forces as stated in manufacturer’s installation protocol.
3. Liner shall be inflated per manufactures inflation process. Once inflated to working pressures the liner shall fit tightly against the host pipe.
4. Once working inflation pressures are reached the liner shall be inspected by integrated CCTV on light assembly checking for proper fit and expansion of the liner.
5. Initial curing speeds will start off at a sufficient speed to ensure the first 15’ of liner is cured properly, ramping up to working speed to properly cure the remainder of liner per manufacturer’s protocol. The same process shall be adhered to during the last 15’ of liner.
6. Inflation pressure must be maintained through the curing process.
7. The integrated CCTV camera on the light assembly will inspect curing operations, fit of liner and any problems that may occur during the curing process.

8. Process data, including inflation pressure record and light train performance (speed and wattage), for each pipe segment must be recorded and provided for owner acceptance.

C. After liner installation and curing, Contractor shall cool the liner down to at least 100 degrees Fahrenheit prior to commencing service reinstatement and collection of samples. Liner parameters during curing and cool-down shall be monitored, and recorded from the quality control software guiding the light-train.

3.4 POST LINING INSTALLATION

A. After liner installation, curing, and cool down, the Contractor shall reinstate the existing service connections, using remote controlled equipment including a television camera meeting the requirements of Section 02753. The opening created for the service lateral shall be at least 95% of the original opening. After creating the hole in the liner, polish the edges of the hole to remove sharp edges and improve flow conditions from the service pipe into the lined sewer main. This shall be done without excavation in pavement areas, and in the case of non-man-entry pipes, from the interior of the pipeline by means of a 360- degree television camera and a cutting device that reestablishes the service connection. Coupons of the lining material removed during service reinstatement shall be collected at the downstream manhole and shall not be left within the sewer system.

1. The Contractor shall grout and seal each service connection to prevent leakage between the existing pipe, the existing service connection, and the new liner. Any connections to the sewer main that are not to be reinstated after liner installation shall be coordinated with the Owner. It is the Contractor's sole responsibility to confirm with the Owner that a connection is to be abandoned and not reinstated to the main. For each connection not reinstated, the Contractor shall obtain a sign-off from the Owner, using the form included at the end of this Section.
2. Following installation of new sewer services, the service connections shall be reinstated as outlined in the above Section 3.4.A and 3.4.A.1.

C. Services should not be over-cut as this could damage the pipe, break the CIPP watertight seal and/or interfere with future lining of the lateral. Any damage to the liner or lateral while reinstating services will be repaired by a point repair. No grouting will be allowed and no separate payment shall be made for such repair.

D. If a liner is determined to be defective, the Contractor shall be responsible for removal. If the host pipe collapses in the course of removing the defective liner, the Contractor shall be responsible to replace the host pipe and restore the roadway at no additional cost to the owner

E. Provide a watertight seal at the insertion and termination points in the manholes. Seal any annular space between the liner and host pipe in the manholes and provide for smooth merging of flows from other pipelines entering the manhole.

F. The use of the video from the light train shall not be used for post-inspection documentation purposes.

3.5 TESTING

A. After completion of the work, perform post-installation CCTV inspection of the completed liner and the restored existing service connections per the requirements of

Section 02753. Any of the following defects that are observed shall be repaired immediately at the expense of the Contractor in accordance with the liner manufacturer's recommendations:

1. Visible leaks, weeping or pinholes
2. Fins, bulges, wrinkles or other obstructions located:
    a. Outside of the flow line of the pipe that are 5% or greater of the cross-sectional area of the host pipe shall be repaired.
    b. In the lower third of the pipe or inside the flow line and in circumferential configuration that are 3% or greater of the cross-sectional area or 0.5-inches, whichever is smaller.
3. Soft or uncured sections of the liner
4. Visual discoloration or other visual anomalies

B. Once sewer service connections have been replaced and reinstated to the line, an additional post-installation CCTV inspection of the completed liner and the new restored service connections per the requirements of Section 02753 must be completed.

1. The initial CCTV prior to installation of new sewer services must be completed prior to paving. An additional CCTV inspection will be required following final pavement. During the one-year warranty period, any defects which will affect the integrity, or the strength of the liner shall be repaired at the expense of the Contractor.

C. During the one-year warranty period, any defects which will affect the integrity, the strength and/or leak resistance of the liner shall be repaired at the expense of the Contractor.

CONFIRMATION TO ABANDON AN EXISTING CONNECTION TO THE SEWER MAIN

Complete this form for each connection to the sewer main that is not reinstated after lining.

Connection Location:

Street Address: _____

_____ LF upstream/downstream (circle one) of MH _____ as indicated on CCTV inspection prior to lining of the main.

Purpose for Abandonment (check all that apply):

_____	Service No Longer Active	_____	Served by Separate Lateral
_____	Connection to Storm Drain	_____	Other:_____

Method of Determining Connection can be Abandoned:

_____	Dye Test	_____	Direction from Owner
_____	CCTV Inspection	_____	Visual Inspection
_____	Building Inspection	_____	Other:_____

Confirmation that Connection is to be Abandoned (not reinstated):

_____	_____
Owner	Contractor
_____	_____
Date	Date

Submit copy of the signed form to the Engineer.

END OF SECTION

SECTION 02758

MANHOLE REHABILITATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: The work includes the rehabilitation of sewer manholes, including but not limited to:
   1. the removal of roots, mineral build-up and debris;
   2. the grouting of sources of infiltrations;
   3. the sealing and lining of various manhole components;
   4. the adjustment to grade of frames and covers;
   5. the geopolymer lining of manhole.

B. The locations of the manholes to be rehabilitated are shown in Appendix A. Appendix A describes the manholes that will be rehabilitated and the types of rehabilitation that will be required.

C. The intent of the manhole rehabilitation work is to correct the observed defect and prevent future deterioration using various products and procedures and methods either singularly or in combination.

1.2 DESCRIPTION OF METHODS

A. Cleaning: Miscellaneous manhole cleaning is typically incidental to other rehabilitation work and includes pressure washing, debris removal and other necessary work to properly prepare surfaces and manholes for the work to be performed. Protect pipe inlets and outlets to prevent debris from entering the collection system.

B. Patch manhole: Cementitious/non-shrink grout patching in manholes is typically incidental to other rehabilitation work and is used to fill large voids in manhole and/or stop running water in manhole.

C. Plug abandoned pipe connections: Non-shrink material to plug abandoned pipes.

D. Grout manhole: Manhole grouting involves injection grouting to stop leakage includes surface preparation where required, drilling through the manhole walls, bench or table as identified, injecting grout material into the voids and earthen materials outside the structure; patching of the drill and grouting holes; and other associated work to stop leaks.

E. Adjust (raise or lower) manhole frame and cover: Adjustment to grade of manhole frame and cover includes saw cutting the existing pavement, removing the frame and cover, and reinstalling the frame and cover to grade including any required chimney adjustments, and restoring the disturbed area to grade by matching the existing pavement depth, or loaming and seeding.

F. Geopolymer lining of manhole: Provide all labor, material and equipment required to provide for the preparation and installation of a Geopolymer Lining System providing a minimum 50-year service life for internal protection and fully structural rehabilitation of existing sanitary sewer manholes. Geopolymer lining for sanitary sewer manholes includes using an approved structural, monolithic hand or spray-

application of a high-build, Geopolymer Lining System with enhanced corrosion and abrasion protection, forming a new structure within existing deteriorated infrastructure. The geopolymer liner may be spin cast, hand sprayed or troweled.

G. Final acceptance: After the rehabilitation work has been completed, the manholes shall be visually inspected by the Engineer and tested (as required) in the presence of the Owner and/or Engineer.

1.3 REFERENCES

A. ASTM F2414-03 Standard Practice for Sealing Sewer Manholes Using Chemical Grouting
B. ASTM F2551 Standard Practice for Installing a Protective Cementitious Liner System in Sanitary Sewer Manholes
C. ASTM C78 Standard Test Method for Flexural Strength of Concrete; Using Simple Beam with Third Point Loading
D. ASTM C109/C109M-05 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)
E. ASTM C 138 / C 642 – Standard Test Method for Density
F. ASTM C267 Test Methods for Chemical Resistance of Mortars, Grouts and Monolithic Surfacings and Polymer Concretes
G. ASTM C31 Standard Practice for Making and Curing Concrete Test Specimens in the Field
H. ASTM C 39 / C 109 – Compressive Strength Hydraulic Cement Mortars
I. ASTM C469 Standard Test Method for Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression
J. ASTM C496/C496M-04e1 Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens
K. ASTM C666/C666M-03 Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
L. ASTM C 807 – Set Time of Hydraulic Cement Mortar
M. ASTM C882-05 Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear
N. ASTM C1090 Shrinkage Test
O. ASTM C1138 Standard Test Method for Abrasion Resistance of Concrete
P. ASTM C1202 Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration
Q. ASTM D-4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
R. ASTM D7234 - Pull-off Strength of Coatings Using a Portable Adhesion Tester.
S. SSPC SP-13/NACE No. 6 – Surface Preparation of Concrete

1.4 QUALITY ASSURANCE

A. All work shall be performed in accordance with the National Association of Sewer Service Companies (NASSCO) Specification Guidelines, latest edition. Handiwork shall be first-class in all respects.
B. Contractor shall have at least five years experience with the rehabilitation technology and completed the rehabilitation technology on a minimum of 50 manholes.
C. Contractor's personnel involved in the installation of material shall be certified by

the manufacturer that they have successfully completed training in handling, applying and finishing the materials being used.

D. Contractor shall inspect pre-rehabilitation work, surface preparation, rehabilitation operations, and post-rehabilitation work.

E. Qualifications for work specific to geopolymer lining shall be as follows:
   1. Product Manufacturer: Company specializing in manufacturing quality Geopolymer liner products with minimum 10 years experience in the manufacture and distribution of a geopolymer product.
   2. Licensed Applicator: Company pre-approved by the Product Manufacturer with at least 5-years' experience specializing in the application of spray on lining systems including the installation of at least 35,000 LF | 1,067 m in horizontal infrastructure using the specified material(s) being proposed for the subject project.

1.5 SUBMITTALS

A. Submit shop drawings in accordance with the General Conditions of the Contract Documents and Section 01340 - Submittals.

B. Contractor to submit materials and installation procedures for review by Owner and/or Engineer including: manufacturer information on materials; safety data sheets; ASTM references; an installation schedule; manufacturer's recommended installation; the manufacturer's recommended curing schedule; chemical resistance; means of obtaining and collecting samples for testing; quality management programs; odor mitigation plan (in addition to or part of the project-wide health and safety plan); noise mitigation plan; plans for by-passing or handling of sewer flows; and traffic control.

C. Submit detailed descriptions of the recommended procedures for handling and storing materials including a proposed method for monitoring temperatures of the storage location.

D. Submit a detailed description of all required field-testing processes and procedures as applicable from the manufacturer.

E. Contractor to supply information on proposed or potential repair and/or rehabilitation methods in the event of a failed rehabilitation component system installation including step-by-step repair procedure and how the finished product will meet the requirements of this contract specification.

F. Submit a certified statement from the manufacturer that the contractor / installer is an approved installer and tester of the rehabilitation product with certificates of completed training for each crew member involved in each rehabilitation component.

G. Submit the contact information and documentation for the third-party National Association of Corrosion Engineers (NACE) accredited inspector or manufacturer's representative who shall perform holiday (spark) testing on the manhole liner.

H. Submit manufacturer's "Certification of Conformance" that lining materials meet or exceed the requirements of these Specifications.

I. Submit a minimum of five recent verifiable references for similar project work in the United States indicating the successful application of the manhole rehabilitation as specified herein or to be furnished by the Contractor and applied in a similar project environment as included in these contract specifications.

J. Submit documentation of a minimum of a five-year successful installation history of

the products to be used.

K. Submit other documents as specified in the appropriate Sections of this Division.

L. Submit the following documentation for geopolymer lining:

1. The design calculations for the liner thickness. Design calculations substantiating the geopolymer liner system thickness shall be prepared under the direction of a Licensed Engineer registered in the State of the project or in the State of manufacture, with experience in the design of sanitary sewer and storm pipe, culverts, tunnels, manholes, boxes, wet wells, structures and other similar infrastructure linings. Submittal of computations without the Licensed Engineer seal, signature and date shall be immediately rejected without any review.
    a. Regardless of design, installation thickness of 1.0-inch | 25.4mm minimum shall be achieved unless approved in writing from liner manufacturer prior to Bid.
    b. For corrugated pipe, unless Owner/Engineer allows for corrugations not to be filled elsewhere in the plans/specification, corrugations shall be filled with liner material or alternative material approved by liner manufacturer prior to or as part of the installation process and shall not be considered as part of the installation thickness from the standpoint of achieving the 1.0-inch | 25.4mm minimum.
2. The following product information:
    a. Field measurement of cured liner thickness.
    b. The X-Ray Fluorescence (XRF) analysis report, prepared within the past 6 months, with test results verifying the materials composition as listed in Section 2.10.A.
    c. Third party lab testing supporting the claimed physical properties of the product, found in Section 2.10.A, prepared within the past 36 months.
    d. Third party certification that the product has a reduced carbon footprint of no less than 40% when compared to Portland cement and calcium aluminate repair mortars and CIPP liner materials. Certification must be prepared by an independent neutral third-party ANSI accredited certifying entity.
    e. Following application, the test results substantiating 28-day compressive strength in accordance with ASTM C39/C109, refer to Section 3.15.B.9. Compressive testing is called for as it is typically the primary factor for determining thickness in the design calculations. Should other physical characteristic values be used as primary factors within the design calculation, additional testing of that specific parameter shall be required at the same frequency and quantity to clearly show that design strength assumptions were met or exceeded in the field.
3. The following post-installation documentation:
    a. Structure Inspection Form documenting at minimum: Host material, installed liner material and thickness, date of installation, gas readings, depth and diameter, infiltration observations, corrosion observations, surface preparations made, repair products used, any special conditions.

b. Color Photo(s)/Video (1 copy) of the Licensed Applicator's inspection of the (1) pre-preparation, (2) post preparation / pre-lining and (3) completed Work. Video shall be required for any infrastructure deeper than 25 VF | 7.62m or larger than 8 FT | 2400mm diameter.
c. Test results of field samples of Geopolymer Liner material as specified in the Contract Documents.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Rehabilitation component materials are to be kept dry, protected from weather and stored under cover and in accordance with manufacturer's recommendations.
B. Polymer, epoxy, polyurea, geopolymer, and cementitious protective lining materials and components are to be stored at temperatures as recommended by the manufacturer to prevent freezing and handled according to their SDS. Do not store near flame, heat, or strong oxidants.

PART 2 - PRODUCTS

2.1 PATCH MANHOLE

A. Equipment – trowel
B. Materials – The mortar used shall be a non-shrink hydraulic cement.

2.2 GROUT MANHOLE

A. Equipment: The basic equipment shall consist of pumps, containers, injection packers, hoses, valves, and all necessary equipment and tools required to seal manhole joints and leak and/or seal the exterior surface. The chemical grout injection pumps shall be equipped with pressure meters that will provide for monitoring pressure during the injection of the chemical sealants. When necessary, liquid bypass lines equipped with pressure-regulating bypass valves will be incorporated into the pumping system.
B. Materials:
1. Hydrophilic polyurethane chemical grout for crack injections: consists of premeasured, prepackaged polyurethane chemical grout with root inhibitor. The grout is designed for crack injections to react with water and form a water impermeable foam or gel mass unaffected by mildly corrosive environments. The grout shall be non-toxic, non-flammable, high flash point (225˚ F) hydrophilic polymer of the type which is applied in a crack or open joint. When mixed with water, the material shall expand up to 4 times its original volume and cure to a closed cell polyurethane foam.
2. Hydrophobic polyurethane chemical grout for crack injections: consists of premeasured, prepackaged polyurethane chemical grout with root inhibitor. The grout is designed for crack injections to form flexible gasket or plugs. The grout shall be non-toxic, non-flammable, high flash point (225˚ F) hydrophobic polymer of the type which is applied in a crack or open joint. When mixed with water, the material shall expand up to 4 times its original volume and cure to a tough, flexible, closed cell polyurethane foam.
3. Hydrophobic polyurethane chemical grout for large voids consists of premeasured, prepackaged polyurethane chemical grout with root inhibitor that

when mixed and makes contact with the water shall fill large voids in rock fissures, gravel layers and cracks in concrete structures and for the stopping of gushing water. The grout shall be non-toxic, non-flammable, high flash point (225˚ F) hydrophobic polymer of the type which is applied in a crack or open joint by use of a packer.

4. Water: Potable from municipal/public water supply.
5. Filler Gaskets: Oakum, use strong fibrous jute material, saturated with grout for use in plugging larger openings in combination with the polyurethane grout.
6. Utilize proper grout for the intended application as recommended by the manufacturer. Grout conditions may be adjusted for catalyzing the reaction, inhibiting the reaction, lowering the freezing temperature of the grout solution, adding fillers, providing strength, or for inhibiting root growth according to the instructions of the grout manufacturer and in the specified quantities as recommended by the grout manufacturer.
7. Utilize non-shrink grout for patching holes and filling gaps around pipe connections or left behind by drilling holes for injection.

C. Acceptable Sealant Grout Manufacturers and Products are:
   1. Hydrophilic polyurethane chemical grout for crack injections
      a. Avanti International AV-202 LV or AV-330
      b. Sika Corporation SikaFix HH Hydrophilic
      c. or equal
   2. Acrylamide chemical grout for crack injection
      a. Avanti International AV-100
      b. Or equal
   3. Hydrophobic polyurethane chemical grout for crack injections
      a. Avanti Grouts AV-248 Flexseal LV with AV-249 Catalyst LV
      b. Sealing Systems, Inc. (S.S.I.) Aqua Seal
      c. Alchemy- Spetec PUR F400
      d. or equal
   4. Hydrophobic polyurethane chemical grout for large voids
      a. Avanti Grouts AV-275
      b. Sika Corporation SikaFix HH+
      c. Sealing Systems, Inc. (S.S.I.) Aqua Seal
      d. Alchemy-Spetec PUR H100
      e. or equal

2.3 REPAIR/REPLACEMENT OF MANHOLE BENCH, CHANNEL AND/OR INVERT

A. Equipment
   1. Refer to Sections 02601.
B. Materials
   1. Refer to Section 02601.

2.4 ADJUSTING HEIGHT OF MANHOLE FRAME AND COVER

A. Equipment
   1. Refer to Section 02601.
B. Materials
   1. Refer to Section 02601.

2.5 GEOPOLYMER LINER

A. Materials: The geopolymer lining material shall be a factory blended, one-component (just add water), eco-friendly, fiber reinforced, ultra-dense geopolymer mortar synthesized from reactive SiO2 and Al2O from industrial byproducts, enhanced with monocrystalline quartz aggregate. This material shall be formulated to restore structural integrity while eliminating the infiltration of groundwater, provide enhanced corrosion resistance and shall be specifically formulated for ease of mechanical pumping, spraying and spin casting.

A process to rule out cementitious products and to quantitatively classify a Geopolymer shall include oxide composition testing using X-Ray Fluorescence (XRF). Prior to testing, the geopolymer precursor shall be isolated by screening the original untreated, unground/undissolved product through a 200# mesh screen, to remove aggregate and fibers. Once isolated, the precursor shall be analyzed by X-Ray Fluorescence (XRF) and shall result in the % weight of Calcium Oxide (CaO) being less than 25% of the total oxides.

The geopolymer liner material shall conform to the minimum requirements below:

Compressive Strength	ASTM C39/C109	Min 8,000 psi | 55.15 MPa @ 28 days
Flexural Strength	ASTM C78	Min 800 psi | 5.51 MPa @ 28 days
Chemical Resistance, Sulfuric Acid pH 1.0	ASTM C267	Max 1.0% mass loss @ 12 weeks
Modulus of Elasticity	ASTM C469/469M	Min. $5x10^6$ psi | 34.47 GPa @ 28 days
Freeze Thaw Durability	ASTM C666	Max 0.1% Loss @300 cycles
Bond Strength to Concrete	ASTM C882/882M	Min 3,000 psi | 20.68 MPa @ 28 days
Shrinkage Test	ASTM C1090	Max 0.02% @ 28 days
Abrasion Resistance	ASTM C1138	Max 1.5% Weight Loss @ 6 cycles on 28 day sample
Rapid Chloride Ion Permeability	ASTM C1202	Very Low @ 28 days

PART 3 - EXECUTION

3.1 MANHOLE PRE-REHABILITATION INSPECTIONS

A. Prior to rehabilitation of manholes, the Contractor and Engineer will inspect each manhole to determine or confirm the scope of rehabilitation as outlined herein:
   1. Open each manhole with the Engineer present and look for visible cracks, leaks, or evidence of past leaks. Areas of particular interest are manhole section joints and pipe openings.
      a. If available compare to the existing inspection and note any condition changes or discrepancies.

2. Compare to the existing inspection and note any condition change or discrepancies.
3. Clean each manhole as outlined subsequently. After cleaning, again look for visible cracks, leaks or evidence of past leaks, and general condition of the manhole.
4. Provide Engineer a written list of manhole defects at least three weeks before the scheduled work.
5. The Engineer shall review and confirm the scope of required rehabilitation prior to work commencing. The Owner and Engineer reserve the right to modify the scope at each manhole as needed to obtain the proper rehabilitation. The Engineer shall provide written direction to the Contractor for any scope changes.

3.2 ENVIRONMENTAL REQUIREMENTS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the Manufacturer. Do not apply the products to frozen surfaces.
B. Do not apply coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the Manufacturer.

3.3 MANHOLE SURFACE PREPARATION

A. Temporarily bypass pump wastewater around manholes, use flow through plugs, or otherwise divert flows as necessary.
B. Clean interior surfaces of manhole of debris, dirt, oil, grease, remains of old coating materials, and any other extraneous materials.
C. Pressure wash manhole walls to remove loose mortar, concrete and debris. Pressure washing levels, used for cleaning, shall be as recommended by the manufacturer. Other surface preparation methods may include hydro blasting, abrasive blasting, grinding, detergent water cleaning and shall be suited to provide a surface compatible for installation of the liner system.
D. Repair irregularities and repair leakage in manhole using materials compatible with proposed resurfacing material, specified in these contract specifications.
E. Repair leakage in manhole using materials, compatible with proposed resurfacing material, specified in these contract specifications.
F. Trim and grout laterals and pipes as required and/or specified.
G. Remove debris and roots from manhole and sewer connections.
H. Handle cleaning water to prevent water and residue from causing damage.
I. Do not discharge debris downstream through the sewer system.
J. Filter solids-laden water through a de-silting device.
K. Properly dispose of debris and residue from cleaning and other construction operations in a manner satisfactory to Owner and authority having jurisdiction over area where work site is located.

3.4 MANHOLE PATCHING

A. Patching Procedures for Precast, Brick and Block Manholes:

1. Each hole shall be manually filled with mortar and troweled flush with the surface of the manhole walls or other surfaces. The mortar used shall be a non-shrink hydraulic cement.

3.5 MANHOLE GROUTING

A. All surface preparations must be performed to meet or exceed manufacturer's recommendations prior to application.

B. The grout shall be applied when temperatures are greater than 45 ^{o}F. If the temperature is less than 45 ^{o}F, contact the manufacturer and follow their recommendations. Temperature will affect grout cure times.

C. Do not grout when ice is present in the area.

D. To prevent spalling of concrete or unnecessary damage to manhole structures, the crack injection method of Variable Pressure Application Technique (VPAT) for sealing water infiltration is not allowed.

E. For grouting to remove infiltration from cracks or manhole joints, the following shall apply:

1. At each point of leakage within the manhole structure (including at pipe penetrations), a hole shall be carefully drilled from within the manhole and shall extend through the entire manhole wall. The holes shall be drilled adjacent to the crack or joint.
   a. In cases where there are multiple leaks around the circumference of the manhole, fewer holes may be drilled, providing all leakage is stopped from these holes.
   b. For grouting joints, drill the holes at 90° (degree) intervals.
2. Grout ports or sealant injection devices shall be placed in these previously drilled holes in such a way as to provide a watertight seal between the holes and the injection device.
3. A hose, or hoses, shall be attached to the injection device from an injection pump. Chemical sealing materials as specified shall then be pumped through the hose until material refusal is recorded on the pressure gage mounted on the pumping unit or a predetermined quantity of sealant has been injected. Ensure that chemical grout fills entire circumference of each manhole joint or pipe penetration, or other identified leakage point. Care shall be taken during the pumping operation to ensure that excessive pressures do not develop and cause damage to the manhole structure.
4. Upon completion of the injection, the ports shall be removed, and the remaining holes filled with mortar and troweled flush with the surface of the manhole walls or other surfaces. The mortar used shall be a non-shrink hydraulic cement.

F. For curtain grouting to seal the exterior surface of the manhole to stop/prevent infiltration, the following shall apply:

1. Holes shall be carefully drilled from within the manhole and shall extend through the entire manhole wall. The holes shall be drilled at 90° (degree) intervals in multiple, vertical locations of the manhole. The minimum injection hole spacing shall be 12" (1 foot) to a maximum 36" (3 feet) in any direction. The highest set of grout ports shall be a few feet from the ground surface to prevent the ground from heaving.
2. The drilled holes should be flushed with clean water before receiving packers.

3. Grout ports or sealant injection devices shall be placed in these previously drilled holes in such a way as to provide a watertight seal between the holes and the injection device.
4. Grout shall typically be injected through the lowest holes first, working the grout higher until the manhole is externally sealed with grout.
5. Additional holes may be required to verify that the grout has encompassed the entire outside of the manhole.
6. A hose, or hoses, shall be attached to the injection device from an injection pump. Chemical grouting (sealing) materials as specified shall then be pumped through the hose until material refusal is recorded on the pressure gage mounted on the pumping unit or a predetermined quantity of grout has been injected. Ensure that chemical grout fills entire circumference of each manhole joint or pipe penetration, or other identified leakage point. Care shall be taken during the pumping operation to ensure that excessive pressures do not develop and cause damage to the manhole structure.
7. Upon completion of the grout injection,
    a. The ports shall be removed.
    b. Grout shall be removed as to be flush with the surface. Any extraneous grout on the surrounding surface will be removed.
    c. The remaining holes filled with mortar and troweled flush with the surface of the manhole walls or other surfaces. The mortar used shall be a non-shrink hydraulic cement.

3.6 PLUG PIPE CONNECTIONS

A. Pipe connections to manholes called to be plugged under this contract shall have a watertight plug installed into the connection.
B. Plug shall be installed, mounted and braced such that no leaks are present under the current condition and that the plug can maintain a watertight seal under the conditions of hydrostatic pressure of water within the upstream pipe.

3.7 ADJUST HEIGHT OF MANHOLE FRAME AND COVER

A. Sawcut pavement.
B. Carefully remove frame and cover. Any damage to the chimney shall be repaired by the Contractor at no additional cost to the Owner.
C. Dispose of chimney off-site, as necessary.
D. Cleaning the surfaces to be re-mortared
E. Adjust the elevation by providing additional height as required and as indicated in the Contract Documents.
F. Prepare and reset frame and cover on new brickwork to match new grades.
G. Repair pavement, as necessary.
H. Perform all manhole work in accordance with Section 02601
I. Perform pavement restoration in accordance with Section 02513

3.8 GEOPOLYMER LINER

A. Mixing
    1. Combine all of the packaged geopolymer liner dry mix with the product manufacturer’s specified amount of potable water for mixing until proper

consistency is obtained. The mixer must be capable of regulating the amount of water added to the mix on a consistent basis. Mixing water temperatures must be determined before blending operations begin. The mixing water temperature must be recorded in the Daily Application Log for each bag/batch of material mixed during the installation process. The ability to provide mixing water at a controlled temperature is a critical aspect of the mixing and installation process, especially during hot or cold weather applications.

B. Application

1. The geopolymer liner may be hand sprayed or spin cast to the interior surface of the host infrastructure after it has been properly prepared and cleaned. The geopolymer lining material shall be applied to a damp surface, saturated surface-dry (SSD). Pools of water should be removed before the start of the application of the geopolymer lining material.
    a. When hand sprayed, the geopolymer lining material delivery hose shall be coupled to a medium velocity spray application nozzle. Pumping of the material shall commence and the material shall be atomized by the introduction of air at the nozzle, creating a medium-velocity spray pattern for material application. Material shall be applied to a specified uniform minimum thickness no less than 1 inch | 25.4mm, unless otherwise approved in writing by the Manufacturer prior to Bid. Material shall be applied to the invert area in such a manner as to provide for positive drainage without ponding. Troweling of materials shall begin immediately following the spray application. Initial troweling shall be in a motion, to compress the material into any voids within the structure walls. Precautions should be taken not to over trowel.
    b. When centrifugally cast, the geopolymer lining material delivery hose shall be coupled to a medium-velocity spray application nozzle. Pumping of the material shall commence and the material shall be spin cast onto the infrastructure surface. A gyroscopic head that has a speed adjustment for making multiple position changes per minute is required. The gyroscopic head and angles of application introduced allows the spin cast mechanism and the associated selected nozzle to make multiple passes on the infrastructure wall in a single pass of the sled assembly.
2. Where the geopolymer liner meets other infrastructure/liners, the joints shall be flush with no gaps, providing a uniform surface. The geopolymer liner shall not be applied when ambient and surface temperatures are expected to fall below 36 degrees F | 2.2 degrees C within 72 hours of placement, without written permission from the manufacturer. Extreme weather precautions should be followed.
3. To ensure safety, an employee not otherwise engaged in the mixing and pumping of material shall be onsite and positioned outside the infrastructure to be lined to watch over the manned entry. A minimum of three employees must be on-site during preparation, mixing and pumping operations when an employee is making manned entry.

C. Thickness Verification
   1. A minimum of three (3) small plastic depth gauges (plastic indicator tabs) shall be attached as a ring around the inner surface of the sewer, one (1) at the crown, and one (1) at each spring line, with each measuring just below the designed or specified finished geopolymer layer. The depth gauges shall act as a method to confirm the thickness installed meets or exceeds the designed or specified thickness. The gauge rings shall be placed no further than every twenty (20) linear feet | 6.1 meters apart. The gauges will be covered curing material application and left in place within the geopolymer layer.
   2. The Contractor shall be required to apply the approved designed liner thickness. Additional material thickness applied by the Contractor will be at the Contractor's own expense. No separate additional payment will be made for any extra material thickness applied above the approved designed liner thickness.

D. Curing
   1. Follow the manufacturer's recommended cure schedule in curing of the geopolymer liner.

3.9 TESTING

A. General
   1. The Contractor shall test 10 percent of each type of installed rehabilitation component system using the testing procedures described below. If more than 5 percent of the tested rehabilitation component systems fail, an additional 10 percent of the manholes shall be selected by Engineer for further testing by the Contractor. The process continues until the rehabilitation component system tested meets the requirements of the Contractor Documents to the satisfaction of the Engineer.
   2. All manholes shall be visually inspected in the presence of the Engineer. Any leakage into the manholes in areas where a rehabilitation component system was installed by the Contractor shall be identified.
   3. All visible leaks and defects observed during inspection and testing shall be repaired to the Engineer's satisfaction and at no additional cost to the Owner.
   4. All touch-up/repair procedures for defects identified and/or areas where destructive testing samples were taken shall follow the manufacturer's recommendations and at no additional cost to the Owner.
   5. Upon final completion of the work, the manufacturer shall provide a written certification to Owner and Engineer that the tests, test results, and repair materials were applied per the manufacturer's recommendations.

B. Testing Methods
   1. pH Test
      a. The Contractor shall test the pH of the surface material.
   2. Cup Test
      a. For acrylic grout resin
         i. Fill a cup ¼ full of the solution from Tank A and fill a second cup ¼ full of the solution from Tank B.
         ii. Pour contents of one cup into the other cup.
         iii. Time how long it takes for the mixed solution to become a solid gel.

Normal gel time is approximately 20 – 40 seconds.

b. For hydrophilic grout resin
   i. Stir into a cup, equal parts of water from the site and grout resin.
   ii. Time how long it takes for the mixed solution to become a solid. Normal time to become is a solid is approximately 30 – 60 seconds.
c. For hydrophobic grout resin
   i. Fill a cup 5% full of water from the site.
   ii. Stir in grout resin into the water.
   iii. Time how long it takes for the mixed solution to become a solid. Normal time to become is a solid is approximately 30 – 60 seconds.

3. Adhesion Test
   a. Adhesion testing is to verify the adhesion/mechanical bond of the coating to the substrate. Tests shall be conducted in accordance with ASTM D-4541, ASTM D-7234, or National Association of Corrosion Engineers (NACE) SP018.
   b. Number of dollies and locations:
      i. For manhole lining, a minimum of three 50-mm dollies shall be affixed to the coated surface at the cone area, mid-section and at the bottom of the structure or in areas suspect from non-destructive evaluation and testing.
      ii. For chimney lining, a minimum of two 50-mm dollies shall be affixed to the coated surface at the chimney area or in areas suspect from non-destructive evaluation and testing.
   c. The adhesive used to attach the dollies to the coating shall be rapid setting with tensile strengths in excess of the coating product and permitted to cure in accordance with manufacturer recommendations. The coating and dollies shall be adequately prepared to receive the adhesive.
   d. Failure of the dolly adhesive shall be deemed a non-test and require re-testing. Prior to performing the pull test, the coating shall be scored to the substrate by mechanical means without disturbing the dolly or bond within the test area.
   e. Two of the three adhesion pulls shall exceed 300 psi or concrete failure with more than 50% of the subsurface adhered to the coating.
   f. Should a structure fail to achieve two successful pulls as described above, additional testing shall be performed at the discretion of the Engineer. Any areas detected to have inadequate bond strength shall be evaluated by the Engineer.
   g. Further bond tests may be performed in that area to determine the extent of potentially deficient bonded area and repairs shall be made by the Contractor.

4. Leakage Test
   a. Following the expansion of the lower band, a quality assurance test shall be performed to ensure effective sealing by pulling the upper section of the seal or extension inward to create a recess behind the seal where water can be poured. Pour the water behind the seal and observe the lower

sealing area for any visible leaks. The sealing shall be considered effective if no water leaks from behind the seal at the lower sealing area.

5. Hydraulic cement mortar test
   a. A minimum of nine samples shall be obtained for each sampling event and formed into cylinders following ASTM C31 and tested in accordance with ASTM C39. Three samples will be tested at 7 and 28 days, with the remaining three samples serving as retains.
   b. The samples may be taken from the pump immediately before discharge into the hose, from a section of hose, or at the spin caster, if feasible.
   c. The samples must be undisturbed and stored on the project site for a period of at least 24 hours before they can be transported to the independent testing laboratory.
   d. The test cylinders shall be required at the start of the project. From that point on, a set of samples shall be collected for every 42,000 pounds | 19,050 kg of material applied. A final sample set shall be collected on the last day of application.

C. Testing Methods per Rehabilitation Component System
   1. Grouting
      a. Visual inspection – throughout installation
      b. Cup test – before installation
   2. Mechanical Frame Seal
      a. Visual inspection – throughout installation
      b. Leakage test – after installation
   3. Physical repairs such as drop pipe connections and plugging pipe openings.
      a. Visual inspection – throughout installation
   4. Geopolymer Liner
      a. Hydraulic cement mortar test

3.10 WARRANTY INSPECTIONS

A. The Engineer and Owner reserve the right to inspect the rehabilitated manholes during the warranty period (including during periods when the groundwater table is higher than at the time the work is completed). The Owner and/or Engineer shall notify the Contractor prior to inspection, and the Contractor shall be present during the inspection.

B. Ten (10) percent of manholes rehabilitated shall be inspected, at locations randomly selected, by the Owner and/or Engineer.
   1. No infiltration or inflow shall be visible in the renewed manhole.
   2. If any rehabilitation component system fails the warranty inspection, the Owner shall inspect all rehabilitation component systems installed in the contract, together with Contractor.

C. Any leakage or defects in the work found by this inspection shall be corrected by the Contractor at no additional cost to the Owner within one month.

3.11 GEOPOLYMER LINER QUALITY CONTROL

A. A visual inspection should be made by the Inspector and Licensed Applicator periodically throughout the progression of construction, prior to the completion of a lining stage. Any deficiencies in the finished lining shall be marked and repaired by

the Licensed Applicator according to the procedures set forth herein.

B. While infrequent, small points of infiltration and/or surface cracking may occur in newly lined infrastructure. As with other trenchless repair technologies, repair methods are available to address the areas of concern and restore the infrastructure to its intended condition. To address the observed conditions, the following activities are to be performed:
   1. Points of Infiltration – The area will be cleaned and treated with either a topical application of patching material or in more severe cases will be drilled and chemical grout will be injected to permanently stop infiltration.
   2. Surface Cracks – The area around the crack will be cleaned and the crack opened using a small wire brush. The crack will then be rinsed and filled with GeoKrete, Manufacturer approved additive or a mixture of the two. The treated area will be blended to match the surrounding surface creating a permanent solution.

C. At the completion of a lining stage of the infrastructure and once all repairs have been made and accepted, the Inspector should indicate acceptance of the work and general conformance with the plans and specifications by signing a Project Sign-off Form provided by the Licensed Applicator/Contractor. Once signed, the Licensed Applicator should document a final inspection photo (1 copy) of the completed infrastructure. This inspection shall be performed using a color camera. The finished Geopolymer Liner shall be continuous over the entire length of all runs and be free of wet spots. No infiltration of groundwater shall be observed. All service entrances shall be accounted for and shall be unobstructed. Documentation shall be submitted to the Owner/Engineer by the Licensed Applicator/Contractor.

END OF SECTION

SECTION 02866

WORK WITHIN RAILROAD RIGHTS-OF-WAY

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Furnish all necessary materials and perform all work within railroad rights-of-way as shown on the Drawings and specified herein.
   2. Perform all work to meet requirements of the Railroad. If a conflict exists between this Division and the Railroad required, the Railroad requirements shall apply unless specifically noted otherwise. Wherever the Railroad requirements indicate "Owner or its Contractor" the specifications shall be altered to indicate "Contractor".
   3. Perform any additional work specifically required by the Railroad.
   4. Construction Agreement with the Railroad (see Appendix C) shall be executed prior to any construction.

1.2 INSURANCE AND CERTIFICATES

A. Obtain and submit to the Engineer all required Federal, State and Municipal permits prior to starting work.
B. Obtain Workman's Compensation Insurance.
C. Obtain and submit insurance policies in accordance with Railroad requirements.
D. All insurance policies shall be in effect before any work is started and remain in effect until formal acceptance of work by the Chief Engineer of the Railroad.

1.3 INSPECTION

A. If deemed necessary by the Chief Engineer of the Railroad, the Railroad will furnish inspectors and flaggers for the general protection of railroad property and operations. The inspection shall be at the expense of the Contractor.

1.4 SUBMITTALS

A. Contractor shall submit to the Railroad all drawings, details and associated design calculations deemed necessary by the Railroad.

PART 2 - PRODUCTS

2.1 MATERIALS

A. All materials shall conform to minimum Railroad specifications.

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Perform all work in accordance with Railroad requirements.
B. Perform all work in a manner satisfactory to the Chief Engineer of the Railroad.

END OF SECTION

APPENDIX A
Sewer and Manhole Rehab Inventory

Livermore Falls Sewer Department
Livermore Falls, Maine

Livermore Falls Sewer Manhole Rehabilitation Project

Manhole Rehabilitation Inventory

Manhole ID	Location	Manhole Material	Manhole Diameter (ft)	Rim to Invert (ft)	Manhole Cover Size	Anticipated Repairs
SMH-078	Roadway	Block	4	6.75	24 inch	Grouting, geopolymer lining, point repair wall
SMH-081	Roadway	Concrete	4	9.75	24 inch	Grouting, point repair wall
SMH-084	Roadway	Brick/Block	4	8.33	24 inch	Grouting, geopolymer lining, point repair wall
SMH-087	Roadway	Brick/Block	4	9	24 inch	Grouting, geopolymer lining, point repair wall
SMH-090	Roadway	Brick	4	10.5	24 inch	Grouting, geopolymer lining, point repair wall
SMH-093	Roadway	Brick	4	9.2	24 inch	Grouting, geopolymer lining, point repair wall
SMH-522	Roadway	Brick	4	5.42	24 inch	Grouting, geopolymer lining, point repair wall
SMH-534	Roadway	Concrete	4	7.75	24 inch	Grouting, geopolymer lining, point repair wall
SMH-543	Roadway/Shoulder	Concrete	4	6.91	24 inch	Grouting, geopolymer lining, point repair wall
SMH-546	Roadway/Shoulder	Concrete	4	6.33	24 inch	Grouting, geopolymer lining, point repair wall
SMH-597	Grass Area off Road	Concrete	4	3.67	24 inch	Grouting, geopolymer lining, point repair wall
SMH-606	Roadway	Concrete	4	6.75	24 inch	Grouting, geopolymer lining, point repair wall
SMH-618	Roadway/Shoulder	Concrete	4	6.3	24 inch	Grouting, geopolymer lining, point repair wall

Street	Pipe Segment	Location	Material	Size	Footage	# Services	Private Line	Town	Sheet
Fayette Road	SMH-504 to SMH-453	Street	AC	8	47	0	N	Livermore Falls	C-3
Park Street	SMH-546 to SMH-543	Street	VCP	8	220	5	N	Livermore Falls	C-5
Park Street	SMH-534 to SMH-528	Street	PVC	8	61	1	N	Livermore Falls	C-6
Park Street/Mill Street	SMH-528 to SMH-531	Street/RR Crossing	PVC	8	225	0	N	Livermore Falls	C-6
Park Street	SMH-528 to SMH-522	Street/Easement	VCP	8	386	3	N	Livermore Falls	C-6/C-7
Cedar Street	SMH-522 to STA 369+00	Street	VCP	8	60	0	N	Livermore Falls	C-7
Park Street/Mill Street	SMH-600 to SMH-321	Street/RR Crossing	PVC	12	205	0	N	Livermore Falls	C-8
Park Street	SMH-600 to SMH-618	Street	PVC	8	162	1	N	Livermore Falls	C-8
Depot Street	SMH-96 to SMH-102	Street	VCP	8	280	4	N	Livermore Falls	C-9/C-12
Depot Street	SMH-96 to SMH 93	Street	VCP	12	270	5	N	Livermore Falls	C-10
Depot Street/Pleasant Street	SMH-93 to Intersection of Pleasant/Union	Street	VCP	12	372	UNK	N	Livermore Falls	C-9/C-13
Depot Street	SMH-93 to SMH-90	Street/RR Crossing	VCP	15	330	0	N	Livermore Falls	C-9
Depot Street	SMH-90 to SMH on Foundry Road	Street	VCP	24	135	0	N	Livermore Falls	C-9
Depot Street	SMH-90 to SMH-87	Street	VCP	18	302	8	N	Livermore Falls	C-9/C-10
Depot Street	SMH-87 to SMH-84	Street	VCP	18	310	13	N	Livermore Falls	C-10
Main Street	SMH-84 to SMH-81	Street	VCP	15	289	5	N	Livermore Falls	C-10/C-11
Main Street	SMH-78 to SMH-72	Street	VCP	15	262	4	N	Livermore Falls	C-11
Church Street	SMH-78 to SMH-75	Street	VCP	8	69	0	N	Livermore Falls	C-11
Union Street	SMH-75 to SMH-252	Street	VCP	10	60	0	N	Livermore Falls	C-11
Church Street	SMH-75 to Intersection of Knapp Street	Street	VCP	10	700	6	N	Livermore Falls	C-11

Appendix B
SRF Documentation

UTILITY POLICY NO. 2026-1

UTILITY WORK PERFORMED UNDER MAINEDOT PROJECT CONTRACTS

Initial Policy Development Date: October 2021
Last Revision Date: March 4, 2026

105.11 Build America, Buy America Act Requirements

This project is subject to the Buy America (23 CFR 635.410) and Build America, Buy America Act (BABA) included in the Infrastructure Investment and Jobs Act (IIJA), Public Law No. 117-58. Further guidance can be found at the FHWA Buy America Construction Program Guide linked here:

https://www.fhwa.dot.gov/construction/cqit/buyam.cfm

The Contractor shall certify compliance with Buy America and BABA in the following categories. An article, material or supply should only be classified into one of the following categories and is classified based on its state when it arrives at the project site.

1. **Iron and Steel:** All iron and steel permanently incorporated into the project must be produced in the United States. The only exception to this requirement is the production of pig iron and the processing, pelletizing, and reduction of iron ore, which may occur in another country. This means all manufacturing processes, from the initial melting stage through the application of coatings, must occur in the United States. Any process that modifies the chemical content, the physical size and shape, or the final finish is considered a manufacturing process, including 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.

Existing De Minimis Use Exemption for Iron and Steel: The requirements of the law and regulations do not prevent a minimal use of foreign steel and iron materials if the total cost of such materials used does not exceed one-tenth of one percent (0.1%) of the total construction contract price or $2,500.00, whichever is greater.

2. **Manufactured Products:** Articles, materials, or supplies that have been processed into a specific form and shape, or combined with other articles, materials, or supplies to create a product with different properties than the individual articles, materials, or supplies. If a domestic product is taken out of the United States for any process, it becomes a foreign source material.

All Manufactured Products used in the project must be manufactured in the United States ("final assembly requirement"). "Component" means an article, material, or supply, whether manufactured or unmanufactured, incorporated directly into a manufactured product or, where applicable, an iron or steel product. If a manufactured product is predominantly iron, steel, or a combination of both it must meet the above requirements for iron and steel products. Predominantly iron or steel or a combination of both means the total cost of the iron and steel content exceeds 50 percent of the total cost of all its components.

Precast concrete products classified as Manufactured Products must additionally have predominantly iron or steel components that meet the above requirements for iron and steel. Cabinets or other enclosures of intelligent transportation systems (ITS) and other electronic hardware systems classified as Manufactured Products must also comply with the above requirements for iron and steel if the cabinet or enclosure is predominantly iron or steel.

3. **Construction Materials:** Items, articles, materials, or supplies that consist of only one of the items listed below:

    i. Non-ferrous metals.
    ii. Plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables).
    iii. Glass (including optic glass);
    iv. Fiber optic cable.
    v. Optical fiber.
    vi. Lumber.
    vii. Engineered wood; and
    viii. Drywall.

Minor additions of articles, materials, supplies, or binding agents to a Construction Material do not change the categorization of the Construction Material.

All Construction Materials permanently incorporated into the project must be produced in the United States. For the Construction Material to be considered "produced in the United States," it must meet the following standards:

i. Non-ferrous metals. All manufacturing processes, from initial smelting or melting through final shaping, coating, and assembly, occurred in the United States.
ii. Plastic and polymer-based products. All manufacturing processes, from initial combination of constituent plastic or polymer-based inputs, or where applicable, constituent composite materials, until the item is in its final form, occurred in the United States.
iii. Glass. All manufacturing processes, from initial batching and melting of raw materials through annealing, cooling, and cutting, occurred in the United States.
iv. Fiber optic cable (including drop cable). All manufacturing processes, from the initial ribboning (if applicable), through buffering, fiber stranding, and jacketing, occurred in the United States. All manufacturing processes also include the standards for glass and optical fiber, but not for non-ferrous metals, plastic, and polymer-based products, or any others.
v. Optical fiber. All manufacturing processes, from the initial preform fabrication stage through the completion of the draw, occurred in the United States.
vi. Lumber. All manufacturing processes, from the initial debarking through treatment and planning, occurred in the United States.

vii. Drywall. All manufacturing processes, from initial blending of mined or synthetic gypsum plaster and additives through cutting and drying of sandwiched panels, occurred in the United States.
viii. Engineered wood. All manufacturing processes, from the initial combination of constituent materials until the wood product is in its final form, occurred in the United States.

Construction Materials brought on site and combined with other materials are not considered Manufactured Products. Items that consist of two or more of the listed Construction Materials that have been combined off-site through a manufacturing process, and items that include at least one of the listed materials combined with a material that is not listed through a manufacturing process should be treated as Manufactured Products rather than as Construction Materials.

Specifically Excluded Materials

Section 70917(c) of the Build America Buy America Act specifically excludes certain materials from being classified as either construction materials or manufactured products. These exclusions include cement and cementitious materials, aggregates (such as stone, sand, or gravel), and aggregate binding agents or additives.

Additionally, when these materials are combined as an unsettled mixture without a final form upon arriving at the work site, such as wet concrete or hot mix asphalt, the mixture is not considered a manufactured product. However, if these same materials are combined off-site to create a finished product, such as precast concrete, that finished product is considered a manufactured product.

Public Interest Waiver of BABA Requirements for De Minimis Costs

The US Department of Transportation issued a public interest Waiver of Buy America Requirements for De Minimis Costs. The Waiver for De Minimis Costs exempts Manufactured Products and Construction Materials produced outside the United States for which the total value of the non-compliant products is no more than the lesser of $1,000,000 or 5% of total applicable costs for the project.

The obligation to track costs throughout the life of the contract is the Contractor's responsibility. The term "total applicable costs" is defined as the total actual final material cost of the compliant and non-compliant iron and steel, Manufactured Products, and Construction Materials.

Certification

For iron and steel materials and for Manufactured Products produced predominantly of iron or steel or a combination of both*, the Contractor shall submit 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). A “Buy America” Certification is required from each manufacturer, fabricator, supplier, subcontractor that engages in “manufacturing” as defined above.

**Predominantly of iron or steel or a combination of both means that the cost of the iron and steel content exceeds 50% of the total cost of all its components. The cost of iron and steel is the cost of the iron or steel mill products, castings, or forgings utilized in the manufacture of the product and a good faith estimate of the cost of the iron or steel components.*

In addition, upon completion of the project, the Contractor shall certify in writing as to the overall compliance with BABA and provide the total project delivered cost of all foreign Manufactured Products and Construction Materials. The Contractor shall also submit individual certifications from all subcontractors and suppliers that furnish applicable Construction Materials and Manufactured Products valued at $10,000 or more. Such individual certifications shall be submitted upon delivery of the Construction Material or Manufactured Products to the site.

Example certification:

I hereby certify that this project is in compliance with the Build America, Buy America Act (Public Law 117-58) requirements for this project. All Iron and Steel, Manufactured Products produced predominantly of steel or iron, Manufactured Products and Construction Materials that are permanently incorporated into the work for this project were produced in the United States of America, with the only exceptions as noted below.

As required, we will maintain all records and documents pertinent to the Build America, Buy America Act requirements, at the address given above, for not less than 3 years from the date of Final Acceptance. These files will be available for inspection and verification by the Maine Department of Transportation and/or the Federal Highway Administration.

We further certify that the total value of foreign steel and iron for this project is $_____, said value being less than 0.1% of the total construction contract price or $2,500.00, whichever is greater.

We further certify that the total material cost of foreign Manufactured Products and Construction Materials for this project is $_____, said value being no more than the lesser of $1,000,000 or 5% of total applicable costs. The term “total applicable costs” is defined as the total actual final material cost of the compliant and non-compliant iron and steel, Manufactured Products, and Construction Materials.

Signed (*Contractor*)
(*President*) (*Contractor Firm*)

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: March 4, 2026

STATE REVOLVING FUND (SRF)
UTILITY CONSTRUCTION CONTRACT REQUIREMENTS
TO SUPPLEMNENT THE
MAINE DEPARTMENT OF TRANSPORTATION
GENERAL CONDITIONS

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 all environmental mitigation measures identified through the environmental review process, as required by applicable federal, state, and local laws, regulations, permits, and authorities, including:

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 a 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.

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.

Build America, Buy America Act (BABA) Requirements

The Contractor acknowledges, to and for the benefit of the Owner and the State (Maine Department of Environmental Protection), that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund (CWSRF) that have statutory requirements commonly known as "Build America, Buy America Act" (BABA), that requires all of the iron and steel, manufactured products, and construction materials used in the project to be produced in the United States ("Build America, Buy America Requirements") including iron and steel, manufactured products, and construction materials provided by the Contractor pursuant to this Agreement.

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 Build America, Buy America Requirements, (b) all of the iron and steel, manufactured products, and construction materials used in the project will be and/or have been produced in the United States in a manner that complies with the Build America, Buy America Requirements, unless a waiver of the requirements 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 Build America, Buy America Requirements, as may be requested by the Owner or the State.

While the Contractor has no direct contractual privity with the State, as a lender or awardee 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 Build America, Buy America (BABA) manufacturer certifications. The Contractor and subcontractors shall provide step manufacturer certifications to the Owner for each BABA 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 a BABA Compliance Certification (see form attached) with each Contractor's pay application. The Owner, shall in turn, submit this certification

from the Contractor, with their own BABA Compliance Certification (see form attached), to the State with the SRF payment reimbursement requisition.

A nationwide waiver to the Build America, Buy America Act waives the BABA requirements for products used and incorporated into a project that cumulatively comprise no more than five percent of the total project cost. This waiver is referred to as the BABA De Minimis waiver. It is the State's interpretation that all CWSRF projects will likely contain 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 maintain records and provide the necessary documentation (see attached sample de minimis tracking form) to the Owner. The Owner shall maintain files on the project site for this documentation, which shall be made available to State and Federal officials for inspection upon request.

The AIS De Minimis waiver cannot be used on projects subject to the Build America, Buy America Requirements. The iron and steel components must be accounted for under the BABA De Minimis waiver.

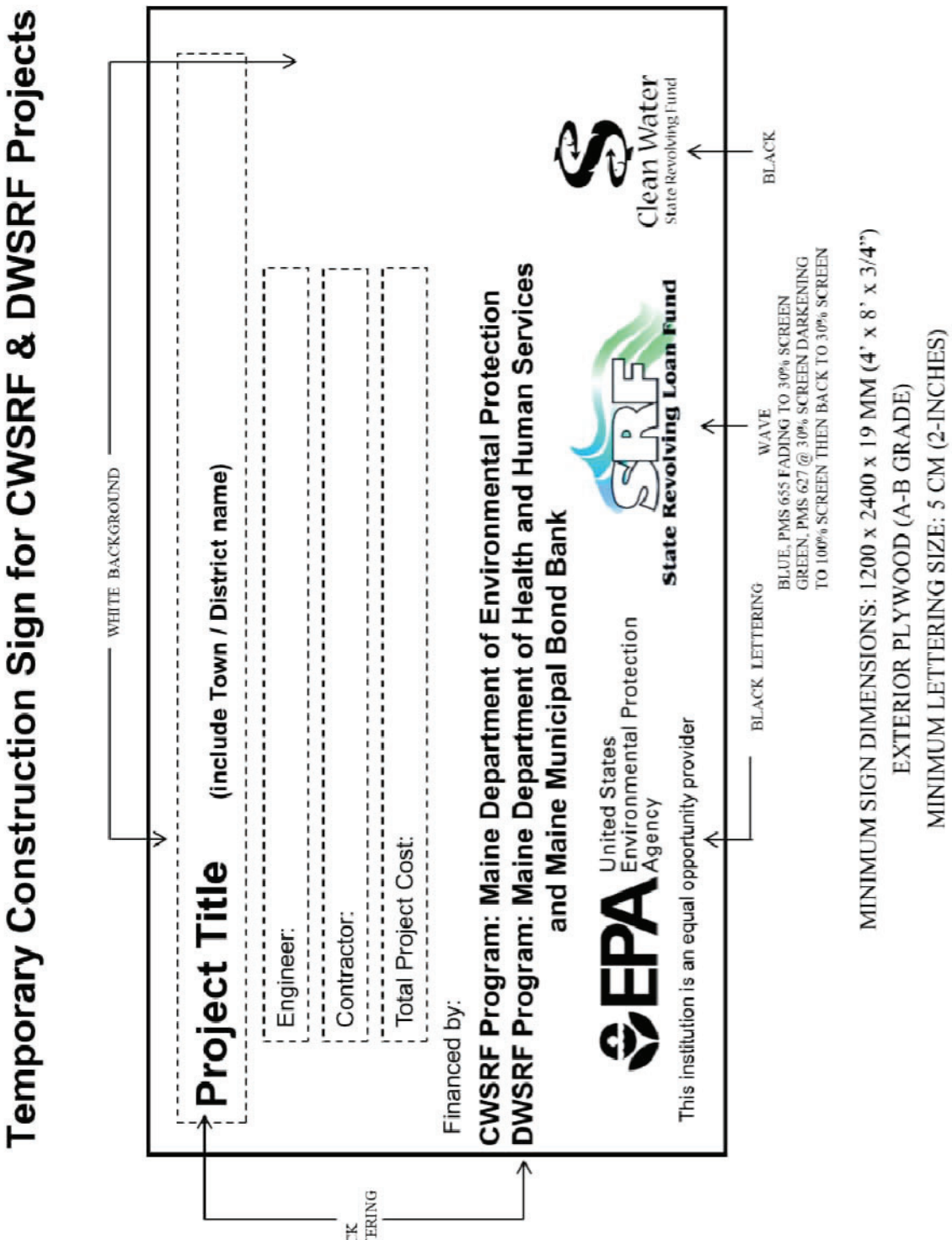
The Contractor shall refer to the attached BABA Contractor FAQ document for guidance. Additional information regarding the BABA law, requirements and waivers can be found on the EPA website: https://www.epa.gov/cwsrf/build-america-buy-america-baba.

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

- BABA Contractor FAQ *(include only for projects that require BABA)*
- BABA/AIS Certification by Owner *(include only for projects that require BABA)*
- BABA/AIS Certification by Contractor *(include only for projects that require BABA)*
- BABA/AIS Step Manufacturer Certification *(include only for projects that require BABA)*
- BABA De Minimis Tracking Form *(include only for projects that require BABA)*

Select Utility Construction Project Sign Drawings As Appropriate



Disadvantaged Business Enterprise Program

(DBE) PROGRESS REPORT OF DBE SUBCONTRACTOR UTILIZATION FORM

(To be attached to each Prime Contractor's Pay Application whether it includes invoiced amounts from a certified WBE or MBE subcontractor 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 to its 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 Contractor Involving Construction, Services, Equipment or Supplies	Amount Received by Prime Contractor

[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 pursuant to an EPA award of financial assistance.

(DBE Subcontractor Participation Form) SRF FORM 6100-2

Disadvantaged Business Enterprise Program (DBE) Subcontractor Participation Form

Please use the space below to report any concerns regarding the above EPA-funded project:

Subcontractor Signature	Print Name
Title	**Date**

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 Contractor Involving Construction, Services, Equipment or Supplies**	**Amount Received by Prime Contractor**

[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 acontractor to provide services pursuant to an EPA award of financial assistance.

DBE Subcontractor Participation Form) SRF FORM 6100-2, Page 2 of 2

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 Contractor's 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 InvolvingConstruction, 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 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 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 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 foregoing 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 and BABA Q & A

The following FAQs were compiled from a number of resources made available by the EPA. The EPA's AIS and BABA website contains further information, including the statues and point of contacts for AIS and BABA implementation.

AIS:
https://www.epa.gov/cwsrf/american-iron-and-steel-requirement-guidance-and-questions-and-answers

BABA:
https://www.epa.gov/cwsrf/build-america-buy-america-baba

CERTIFICATION BY THE OWNER
OF COMPLIANCE WITH THE
BUILD AMERICA BUY AMERICA ACT
AND THE
AMERICAN IRON AND STEEL LAW

(To be attached to each Owner SRF Payment Reimbursement Requisition)

We, the Owner named, _____, having obtained funding from the State of Maine, State Revolving Fund (SRF), for the Utility Construction Project named _____, hereby submit to the SRF program, certification from the Prime Contractor that the use of iron, steel, manufactured products and construction materials in their pay application(s) complies with the American Iron and Steel law and the Build America Buy America Act, 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 in this SRF payment requisition #_____ are in compliance with both aforementioned laws.

_____	_____	_____
Signature of Official	Printed Name	Date

Attachment: BABA/AIS Certification(s) by Contractor

State Revolving Loan Fund

CERTIFICATION BY CONTRACTOR
OF COMPLIANCE WITH THE
BUILD AMERICA BUY AMERICA ACT AND THE
AMERICAN IRON AND STEEL LAW

(Prime Contractor must provide the Owner one certification for each Pay Application)

We, the Prime Contractor and Subcontractors, as named below, hereby certify that the use of iron, steel, manufactured products and construction materials for the utility construction of the project named ______ , being requested in the Prime Contractor's Payment Application *(or invoice)* #______ and dated ______, complies with the American Iron and Steel law and the Build America Buy America Act, or that a waiver has been obtained from the U.S. Environmental Protection Agency.

Prime Contractor Name:

______________________	______________________	______________________
Signature of Official	Printed Name	Date

- -

Subcontractor Name	Signature of Official	Date
______________________	______________________	______________________
______________________	______________________	______________________
______________________	______________________	______________________
______________________	______________________	______________________
______________________	______________________	______________________
______________________	______________________	______________________

Maine Clean Water State Revolving Loan Fund (CWSRF)

Build America, Buy America - De Minimis Tracking Form (Sample)

The EPA has issued a public interest waiver for De Minimis products. The Prime Contractor must maintain an itemized list to track the products, including all iron and steel products, covered under De Minimis. The Owner may create their own format for the list or use this sample form. Additional sheets should be used as necessary.

Owner: _____ **Loan #:** _____

Project Name: _____

Products that qualify for a *de minimis* waiver cumulatively may comprise no more than a total of five percent of the total project cost. The five percent threshold can be used for any products, independent of the purpose of the project. This de minimis waiver includes all iron and steel products as well as other products covered under the Build America, Buy America Act. The EPA will review this waiver every five years after the date on which the waiver is issued (Current waiver issued Oct. 21, 2022).

NOTE: The total cost of a product may be based on estimated, or if available, actual costs.

Total Project Cost: _____ 5% Limit: $0.00

Product Description	Part/Model (if applicable)	Quantity (if applicable)	Cost per Unit (if applicable)	Total Cost of Product	Product Category (Iron and Steel, Manufactured Product, or Construction Material)	Invoice or Receipt Attached
			Total Cost deemed to be De Minimis:			

Completed by: _____

Company: _____ Title: _____

Name: _____ Date: _____

Signature: _____

APPENDIX C

Signed Railroad Agreement and CSX Design & Construction Standard Specifications (To be provided at a later date)

DESIGN AND CONSTRUCTION STANDARD SPECIFICATIONS

Pipeline Occupancies

OFFICE OF:
VICE PRESIDENT - ENGINEERING
JACKSONVILLE, FLORIDA
ISSUED: September 15, 2003
REVISED: June 5, 2018

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PART 1 – INTRODUCTION

1.1 Scope

a) This specification shall apply to the design and construction of pipelines carrying flammable or non-flammable substances and casings containing wires, cables, and carrier pipes across and along CSXT property and facilities. This specification shall also apply to tracks owned by others (sidings, industry tracks, etc.) over which CSXT operates its equipment.

b) It is to be clearly understood that CSXT owns its right-of-way for the primary purpose of operating a railroad. All occupancies shall therefore be designed and constructed so that rail operations and facilities are not interfered with, interrupted, or endangered. In addition, the proposed facility shall be located to minimize encumbrance to the right-of- way so that the railroad will have unrestricted use of its property for current and future operations.

1.2 Definitions

CSXT	CSX Transportation, Inc.
CS	Corridor Services
Owner (Applicant)	Individual, Corporation, or Municipality desiring occupancy of CSXT property
Professional Engineer	Engineer licensed in the state where the facilities are to be constructed
Carrier Pipe	Pipe used to transport the commodity
Casing Pipe	Pipe through which the carrier pipe is installed under main tracks
Sidings or Industry Tracks	Tracks located off of CSXT's right-of-way, serving an industry

1.3 Application for Occupancy

a) Owner (Applicant) desiring occupancy of CSXT property by pipeline occupations must satisfy the following: receive approval by CSXT of all engineering and construction details, execute an appropriate CSXT occupational agreement, and remit payment of any required fees and/or rentals specified therein.

b) Occupancy applications shall be completed in full with all of the required information requested in order for the application to be processed. Review the entire application package, as well as the engineering specifications, before completing the application.

Applications must be submitted through the CSX Property Portal. Visit www.csx.com to establish an account and submit an application. Once on the site, use the following path: CUSTOMERS→CSX Real Estate→CSX Property Portal.

1.4 Right of Entry

a) Entry upon CSXT property for the purpose of conducting surveys, field inspections, obtaining soils information, or any other purposes associated with the design and construction for the proposed occupancy, will not be permitted without a proper entry permit prepared by CSXT. The applicant must pay the associated fees and execute the entry permit.

b) The issuance of an entry permit does not constitute authority to proceed with any construction. Construction cannot begin until a formal agreement is executed by CSXT and the Owner receives permission, from the designated inspection agency of CSXT, to proceed with the work.

1.5 Site Inspection

a) For longitudinal occupancy of CSXT property, a site inspection along the proposed pipeline route may be required before final design plans are prepared. When a site inspection is required, the applicant and/or the engineer must meet with a CSXT Field Representative to view the entire length of the proposed occupancy; the applicant will be informed of the need for a meeting during application processing.

b) Prior to the site inspection the applicant must submit the following information:

i) A plan view of the proposed route showing all tracks, both CSXT right-of-way lines, and all other facilities located on the right-of-way. The distance from the proposed pipeline to the adjacent track and to the right-of-way lines must be shown.

ii) A complete application form.

c) Site inspections for pipe crossings are not required unless, in the opinion of CSXT, the size and location of the facility warrant an inspection.

1.6 Information Required for Submission

a) All plans and documents required in the application package shall be submitted as per the instructions in the application package.

b) Failure to follow these instructions may result in the return of the information provided without further action taken.

1.7 Notification to Proceed with Outside Party Request Form

a) After approval of the engineering plans and full execution of the facility encroachment agreement, the Owner will receive an e-mail notification containing a special reference number and link to the CSX Property Portal – Outside Party Request Form application. CSX requires 30 days' advance notice to schedule any activity.

b) Once the OP Form is received, the Owner or their Contractor will be contacted to discuss construction scheduling.

c) CSXT will determine if the project requires flagging, construction monitoring, or both. All costs associated with flagging and/or construction monitoring will be the responsibility of the Owner. CSXT, at its sole discretion, may elect to have the Owner remit payment for the estimated flagging/construction monitoring cost in advance or elect to invoice the Owner the actual cost as incurred.

END OF PART 1

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PART 2 – GENERAL REQUIREMENTS

2.1 Use of Casing Pipe

a) A casing pipe will be required for all pipeline crossings carrying liquid or gaseous substances. The casing pipe for liquid and gaseous substances may be omitted if the proposed pipe will be installed by the horizontal directional drilling (HDD) method. Reference section 4.1.5 for additional information and requirements.

b) For natural gas pipelines, the casing pipe may be omitted provided the carrier pipe meets the requirements in the Uncased Pipelines Carrying Gas section of this document. CSXT may require the use of a casing pipe at locations where increased risks from specific site conditions (traffic speed, traffic density, etc.) are present.

c) For non-pressure sewer or drainage crossings, where the installation can be made by open cut (see Construction Requirements Section) or reinforced concrete pipe can be jacked under the railroad (see Construction Requirements Section), the casing pipe may be omitted.

d) Pressure pipelines that are located within 25 feet of the centerline of any track shall be encased.

e) At proposed pipe crossing the casing pipe shall be laid **across the entire width of the right-of-way**, except where a greater length is required to comply with the Design Requirements-Casing Pipe Section of this specification, even though such extension is beyond the right-of-way.

f) At the discretion of CSXT a casing pipe may be required for any application regardless of the commodity carried.

2.2 Location of Pipeline on the Right-of-Way

a) Pipelines laid longitudinally on CSXT's right-of-way shall be located as far as practicable from any tracks or other important structures and as close to the railroad property line as possible. Longitudinal pipelines must not be located in earth embankments or within ditches located on the right-of-way.

b) Pipelines shall be located, where practicable, to cross tracks at approximate right angles to the track, but preferably at not less than 45 degrees.

c) Pipelines shall not be placed within a culvert, under railroad bridges, nor closer than 45 feet to any portion of any railroad bridge, building, or other important structure, except in special cases, and then by special design, as approved by CSXT's Chief Engineer, Design and Construction. Proposed pipelines that are to be located within the public right-of-way will be considered pending engineering review. An effort should be made to maximize distance to any substructure.

d) Pipelines shall not be located within the limits of a turnout (switch) when crossing the track. The limits of the turnout extend from the point of the switch to 15 feet beyond the last long timber.

e) Pipeline installations shall not be designed as an open cut installation where the pipeline is to be located within the limits of a grade crossing. If it is shown that no other method of installation is possible, the owner will be responsible for reimbursing CSXT for all costs associated with the removal and reconstruction of the grade crossing (This cost will require advance funding by the pipeline owner).

f) Pipelines carrying liquefied petroleum gas shall, where practicable, cross the railroad where tracks are carried on embankment.

2.3 Depth of Installation

2.3.1 Pipelines conveying non-flammable substances

a) Casing/carrier pipes placed under CSXT track(s) shall be not less than 5.5 feet from base of rail to top of pipe at its shallowest point.

b) Pipelines laid longitudinally on CSXT's right-of-way, 50 feet or less from centerline track shall be buried not less than 4 feet from ground surface to top of pipe. Where the pipeline is laid more than 50 feet from centerline of track, the minimum cover shall be at least 3 feet.

2.3.2 Pipelines conveying flammable substances

a) Casing pipes under CSXT track(s) shall be not less than 5.5 feet from base of rail to top of pipe at its closest point. On other portions of the right-of-way, where the pipe is not directly beneath any track, the depth from ground surface or from bottom of ditch to top of pipe shall not be less than 3 feet. Where 3 feet of cover cannot be provided from bottom of ditch, a 6-inch thick reinforced concrete slab shall be provided over the pipeline for protection.

b) Uncased natural gas pipelines under CSXT track(s) shall not be less than 10 feet from the base of rail to the top of the pipe at its closest point and not less than 6 feet from ground surface to top of pipe in all other locations. Where it is not possible to obtain the above depths, use of a casing pipe will be required.

c) Pipelines laid longitudinally on CSXT's right-of-way, 50 feet or less from centerline track shall be buried not less than 6 feet from ground surface to top of pipe. Where the pipeline is laid more than 50 feet from centerline of track, the minimum cover shall be at least 5 feet.

2.3.3 Pipelines within Limits of a Dedicated Highway

a) Pipelines within the limits of a dedicated highway are subject to all the requirements of this specification and must be designed and installed in accordance with this specification.

b) The limits of the dedicated highway (right-of-way) must be clearly shown on the plans.

c) Construction cannot begin until an agreement has been executed between CSXT and the Owner and proper notification has been given to CSXT's Regional Engineering Officer (See Notification to Proceed with Outside Party Request Form).

2.4 Modification of Existing Facilities

a) Any replacement of an existing carrier pipe and/or casing shall be considered as a new installation, subject to the requirements of this specification.

b) Modification of an existing carrier pipe and/or casing pipe by in-place, non-intrusive methods, such as Cured-in-Place Pipe (CIPP), may be considered as maintenance if there is an agreement between CSXT and the owner covering the existing pipe(s).

c) CIPP installations will only be considered for the following scenarios:

i) Circular Pipes

ii) Within the following host pipe materials: brick, concrete, clay tile, vitrified clay, PVC, corrugated steel, cast and ductile iron, fiberglass, or AC pipe. CIPP will not be allowed within smooth wall steel pipes.

d) CIPP design and installation plans and calculations must be submitted to CSXT's Corridor Services (CS) office for an engineering review if the following scenarios exist:

i) Excavation within CSXT right-of-way or TREL is required to access the existing facilities.

ii) The host pipe that the CIPP is being applied to is not within a casing pipe, such that the host pipe and CIPP will be subject to all external loads.

iii) The CIPP will be within a pipe that is parallel or longitudinal to the CSXT tracks.

e) CIPP design requirements are included in the Cured-in-Place-Pipes (CIPP) section of this document.

2.5 Abandoned Facilities

a) The owner of all pipe crossings proposed for abandonment shall notify CSXT, in writing, of the intention to abandon.

b) Abandoned pipelines shall be removed or completely filled with cement grout, compacted sand, or other methods, as approved by CSXT.

c) Abandoned manholes and other structures shall be removed to a minimum depth of 2 feet below finished grade and completely filled with cement grout, compacted sand, or other methods as approved by CSXT.

2.6 Conflict of Specifications

a) Where laws or orders of public authority prescribe a higher degree of protection than specified herein, then the higher degree so prescribed shall be deemed a part of this specification.

2.7 Insulation

a) Pipelines and casings shall be suitably insulated from underground conduits carrying electric wires on CSXT property.

2.8 Corrosion Protection and Petroleum Leak Prevention

a) Pipelines on CSXT property that carry petroleum products, hazardous gases, or hazardous liquids shall be designed in accordance with current federal, state, and/or local regulations that mandate leak detection automatic shutoff, leak monitoring, sacrificial anodes, and/or exterior coatings to minimize corrosion and prevent petroleum releases.

2.9 Plastic Carrier Pipe Materials

a) Plastic carrier pipe materials include, but are not limited to thermoplastic and thermoset plastic pipes, Thermoplastic types include Polyvinyl Chloride (PVC), Acrylonitrile Butadiene Styrene (ABS), High Density Polyethylene (HDPE), Polyethylene (PE), Polybutylene (PB), Cellulose Acetate Butyrate (CAB), and Styrene Rubber (SR), Thermoset types include Reinforced Plastic Mortar (RPM), Reinforced Thermosetting Resin (FRP) and Fiberglass Reinforce Plastic (FRP).

b) Plastic carrier pipelines shall be encased according to AREMA Chapter 1 Section 5.1.5.

c) Plastic pipe material shall not be used to convey **liquid** flammable substances.

d) Plastic pipe material shall be resistant to the chemicals with which contact can be anticipated. Plastic carrier pipe shall not be utilized where there is potential for contact with petroleum contaminated soils or other non-polar organic compounds that may be present in surrounding soils.

e) Plastic carrier pipe can be utilized to convey flammable **gas** products provided the pipe material is compatible with the type of product conveyed and the maximum allowable operating pressure is less than 100 PSI. Carrier pipe materials, design, and installation shall conform to Code of Federal Regulation 49CFR§178 to §199, specifically §192 and American National Standards Institute ASME B31.8 and ASTM D2513. Codes, specifications, and regulations current at time of construction of the pipeline shall govern the installation of the facility within the railway right-of-way. The proof testing of the strength of carrier pipe shall be in accordance with ANSI requirements. Plastic carrier pipes will be encased according to AREMA Chapter 1 Section 5.1.5.

f) Plastic carrier pipe conveying flammable substances shall be encased the entire limits of the right-of-way. If special conditions exist which prevent encasement within the entire limits

of the right-of-way, the Chief Engineer, Design and Construction must approve the minimum encased length.

g) Plastic carrier pipe must be encased under all tracks, including sidings and industrial tracks within the limits of the right-of-way.

h) Longitudinal carrier pipeline shall be steel or ductile iron. Plastic carrier pipe may be utilized for longitudinal installation with approval by the Chief Engineer, Design and Construction, but shall be fully encased within the limits of the right-of-way.

i) Codes, specifications, and regulations current at the time of construction the pipeline shall govern the installation of the facility within the railway rights-of- way. The proof testing of the strength of carrier pipe shall be in accordance with ANSI requirements.

Specification Number	Carrier Pipe Properties
ANSI/AWWA C900	PVC pressure pipe 4” through 12”
ANSI/AWWA C901	PE pressure pipe and tubing ½” through 3” for water
ANSI/AWWA C902	PE pressure pipe and tubing ½” through 3” for water
ANSI/AWWA C905	PVC water pipe, 14” through 36”
ANSI/AWWA C906	PE pressure pipe and fittings 4” – 63” for water
ANSI/AWWA C907	PVC pressure fittings 4” – 8”
ANSI/AWWA C950	Fiberglass pressure pipe

END OF PART 2

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PART 3 – DESIGN REQUIREMENTS

3.1 Soil Investigation

3.1.1 General Requirements

a) Test borings or other soil investigations, approved by CSXT's Chief Engineer, Design and Construction, shall be made to determine the nature of the underlying material for all pipe crossings with casing pipe sizes greater or equal to 48 inches in diameter and larger under track(s).

b) Test borings or other soil investigations, approved by CSXT's Chief Engineer, Design and Construction, may be required when, in the judgment of CSXT, they are necessary to determine the adequacy of the design and construction of pipe crossings with casings less than 48 inches in diameter and for other facilities located on the right-of-way. Note: the applicant shall be responsible for the notification of all underground utilities including CSX signal cables.

3.1.2 Location

a) Borings shall be made on each side of the track(s), on the centerline of the pipe crossing, and as close to the track(s) as practicable. **Entry upon CSXT property for the purpose of conducting borings requires a Right of Entry permit.**

b) Test boring logs shall be accompanied with a plan, drawn to scale, showing the location of the borings in relation to the track(s) and the proposed pipe.

3.1.3 Sampling

a) Test borings shall be made in accordance with current ASTM Designation D1586 except that sampling must be continuous from the ground surface to 5 feet below the proposed invert unless rock is encountered before this depth. Where rock is encountered, it is to be cored using a Series "M" Double Tube Core Barrel, with a diamond bit, capable of retrieving a rock core at least 1 5/8" in diameter. Individual core runs are not to exceed 5 feet in length.

b) All borings shall be sealed, for their full depth, with a 4-3-1 bentonite-cement- sand grout after accurate ground water readings have been taken and recorded.

c) Soil samples taken from auger vanes or return washwater are not acceptable.

3.1.4 Boring Logs

a) Test boring logs shall clearly indicate **all** of the following:

i) Boring number as shown on the required boring location plan.

ii) Ground elevation at each boring using same datum as the pipeline construction plans.

iii) Engineering description of soils or rock encountered.

iv) Depth and percent recovery of all soil samples.

v) Depth from surface for each change in strata.

vi) Blows for each 6 inches of penetration for the standard penetration test described in ASTM D 1586. Blows for lesser penetrations should be recorded.

vii) Percent recovery and Rock Quality Designation (RQD) for all rock cores.

viii) Depth to ground water while sampling and when it has stabilized in the bore hole.

b) The location of the carrier pipe and/or casing pipe shall be superimposed on the boring logs before submission to CSXT.

3.1.5 Additional Information

a) When directed by CSXT, additional borings may be required for the purpose of taking undisturbed thin-wall piston samples or Dennison type samples for laboratory testing to determine the index and engineering properties of certain soil strata.

3.2 Design Loads

3.2.1 General Requirements

a) All pipes, manholes, and other facilities shall be designed for the external and internal loads to which they will be subjected.

b) To allow for placement of additional track(s) or shifting of the existing track(s), all proposed pipelines or structures shall be designed as if a railroad loading is directly above the facility.

3.2.2 Earth Load

a) The dead load of the earth shall be considered as 120 pounds per cubic foot unless soil conditions warrant the use of a higher value.

3.2.3 Railroad Load (live load and impact)

a) The railroad live load used shall be a Cooper E-80 loading. This loading consists of 80 kip axle loads spaced 5 feet on centers.

b) An impact factor of 1.75 (multiply live load by the impact factor) shall be used for depth of cover up to 5 feet. Between 5 and 30 feet, the impact factor is reduced by 0.03 per foot of depth. Below a depth of 30 feet, the impact factor is one.

c) The values shown in Table 1 shall be used for the vertical pressure on a buried structure for the various heights of cover.

Table 1 - Live loads, including impact for various heights of cover for a Cooper E-80 loading

Height of Cover	Load	
Feet	Pound per square foot	(kPa)
2	3800	(162.8)
3	3150	(150.8)
4	2850	(136.5)
5	2550	(122.1)
6	2250	(107.7)
7	1950	(93.4)
8	1700	(81.4)
9	1500	(71.8)
10	1300	(62.2)
12	1000	(47.9)
14	800	(38.3)
16	625	(29.9)
18	500	(23.9)
20	400	(19.2)
25	250	(12.0)
30	150	(7.2)

d) To determine the horizontal pressure caused by the railroad loading on a sheet pile wall or other structure adjacent to the track, the Boussinesq analysis shall be used. The load on the track shall be taken as a strip load with a width equal to the length of the ties which is typically, 8.5 feet. The vertical surcharge, q (psf), caused by each axle, shall be uniform and equal to the axle load divided by the tie length and the axle spacing, 5 feet. For the E-80 loading this results in:

$$q = 80{,}000 / (8.5 \text{ X } 5) = 1882 \text{ psf}$$

The horizontal pressure due to the live load surcharge at any point on the wall or other structure is p_h and can be calculated by the following:

$$p_h = (2q/\pi)(\beta\text{-sin }\beta(\cos 2\propto))$$

e) The vertical and horizontal pressures given above shall be used unless an alternate design method is approved by CSXT. Proposals to use an alternate design method must include acceptable references and a statement explaining the justification for choosing the alternate method.

3.3 Design Assumptions

a) To design a casing pipe or an uncased carrier pipe for the external loads on CSXT's right-of-way, the following design assumptions shall be used, unless site conditions indicate more conservative values are required:

3.3.1 Flexible Pipe (Steel, DIP, CMP, and Tunnel Liner Plate)

a) Steel Pipe (Bored and jacked in place)

i) Spangler's Iowa formula shall be used for design with:

Deflection lag factor	-	$D_f = 1.5$
Modulus of soil reaction	-	$E' = 1080$ psi
Bedding constant	-	$Kb = 0.096$
Soil loading constant	-	$K_{u'} = 0.13$
Allowable deflection of pipe	-	3% of pipe diameter

b) Ductile Iron Pipe (Open Cut)

i) AWWA Specification C150 shall be used for design with:

Pipe laying condition = Type 3
Earth load - ANSI A 51.50 prism method

c) Corrugated Steel Pipe & Corrugated Structural Steel Plate Pipe (Open Cut)

i) AREMA Chapter 1, Sections 4.9 & 4.10 shall be used for design with:

Soil stiffness factor - K = 0.33
Railroad impact as per Design Requirements-Casing Pipe Section of this specification.

d) Tunnel Liner Plate (Tunneled)

i) AREMA Chapter 1, Part 4, Section 4.16 shall be used for design with:

Soil stiffness factor - K = 0.33
Railroad impact as per Design Requirements-Casing Pipe Section of this specification.

3.3.2 Rigid Pipe (RCP, Vitrified Clay Pipe, and PCCP)

a) Reinforced Concrete Pipe, Vitrified Clay Pipe and Prestressed Concrete Cylinder Pipe (Open Cut)

i) American Concrete Pipe Association design manual shall be used for design with:

Marston load theory used for earth load

Bedding (Load Factor) - $L_f = 1.9$
Factor of safety - FS = 1.25 for RCP
FS = 1.50 for VCP
Railroad impact as per Design Requirements-Casing Pipe Section of this specification.

b) Reinforced Concrete Pipe (Jacked)

i) American Concrete Pipe Association design manual shall be used for design with:

Marston load theory used for earth load
Bedding (Load Factor) - $L_f = 3.0$
Factor of safety = 1.25
Railroad impact as per Design Requirements-Design Loads Section of this specification.
Others – As approved by CSXT

3.4 Casing Pipe

3.4.1 General Requirements

a) Casing pipe shall be so constructed as to prevent leakage of any substance from the casing throughout its length, except at ends of casing where ends are left open, or through vent pipes when ends of casing are sealed. Casing shall be installed so as to prevent the formation of a waterway under the railroad, and with an even bearing throughout its length, and shall slope to one end (except for longitudinal occupancy).

b) The casing pipe and joints shall be of steel and of leakproof construction when the pipeline is carrying liquid flammable products or highly volatile substances under pressure.

c) The inside diameter of the casing pipe shall be such as to allow the carrier pipe to be removed subsequently without disturbing the casing or the roadbed. For steel pipe casings, the inside diameter of the casing pipe shall be at least 2 inches greater than the largest outside diameter of the carrier pipe joints or couplings, for carrier pipe less than 6 inches in diameter; and at least 4 inches greater for carrier pipe 6 inches and over in diameter.

d) For flexible casing pipe, a maximum vertical deflection of the casing pipe of 3 percent of its diameter, plus ½ inch (13 mm) clearance shall be provided so that no loads from the roadbed, track, traffic, or casing pipe itself are transmitted to the carrier pipe. When insulators are used on the carrier pipe, the inside diameter of the flexible casing pipe shall be at least 2 inches greater than the outside diameter of the carrier pipe for pipe less than 8 inches in diameter; at least 3¼ inches greater for pipe 8 inches to 16 inches, inclusive, in diameter and at least 4½ inches greater for pipe 18 inches and over in diameter.

e) In no event shall the casing pipe diameter be larger than is necessary to permit the insertion of the carrier pipe.

f) Casing pipe under railroad tracks and across CSXT's right-of-way shall extend the **greater** of the following distances, measured at right angle to centerline of track:

i) Across the entire width of the CSXT right-of-way.

ii) 3 feet beyond ditch line.

iii) 2 feet beyond toe of slope.

iv) A minimum distance of 25 feet from each side of centerline of outside track when casing is sealed at both ends.

v) A minimum distance of 45 feet from centerline of outside track when casing is open at both ends.

vi) Beyond the theoretical railroad embankment line. This line begins at a point 12 feet horizontally from centerline track, 18 inches below top-of-rail, and extends downward on a 1½ (H) to 1 (V) slope.

g) If additional tracks are constructed in the future, the casing shall be extended correspondingly at the Owner's expense.

3.4.2 Steel Pipe

a) Steel pipe may be installed by open cut, boring or jacking depending on situation.

b) Steel pipe shall have a specified minimum yield strength, SMYS, of at least 35,000 psi. The ASTM or API specification and grade for the pipe are to be shown on the Application Form.

c) Joints between the sections of pipe shall be constructed to be capable of withstanding railroad loading. Joints can either be constructed through butt welding or through the use of interlocking joints.

d) Steel casing pipe, with a **minimum** cover of 5.5 ft., shall have a minimum wall thickness as shown in Table 2, unless computations indicate that a thicker wall is required.

Table 2 – Steel Casing Pipe Wall Thicknesses

Pipe Diameter Nominal Pipe Size (in.)	Coated or Cathodically Protected Nominal Wall Thickness (in.)	Uncoated and Unprotected Nominal Wall Thickness (in.)
10 and under	0.188	0.188
12 & 14	0.188	0.250
16	0.219	0.281
18	0.250	0.312
20 & 22	0.281	0.344
24	0.312	0.375
26	0.344	0.406
28	0.375	0.438
30	0.406	0.469
32	0.438	0.500
34 & 36	0.469	0.532
38	0.500	0.562
40	0.531	0.594
42	0.562	0.625
44 & 46	0.594	0.657
48	0.625	0.688
50	0.656	0.719
52	0.688	0.750
54	0.719	0.781
56 & 58	0.750	0.812
60	0.781	0.844
62	0.812	0.875
64	0.844	0.906
66 & 68	0.875	0.938
70	0.906	0.969
72	0.938	1.000

e) Coated steel pipe that is bored or jacked into place shall conform to the wall thickness requirements for uncoated steel pipe since the coating may be damaged during installation.

f) For the required wall thicknesses on uncased steel carrier pipes conveying natural gas, refer to Uncased Pipelines Carrying Gas section in this document.

g) Smooth wall steel pipes with a nominal diameter over 72 inches will not be permitted.

3.4.3 Ductile Iron Pipe

a) Ductile iron pipe may be used only at the sole discretion of the Chief Engineer, Design and Construction when placed by the open cut method. Jacking or boring through the railroad embankment is not permitted due to the bell and spigot joints.

b) Ductile iron pipe shall conform to the requirements of ANSI A21.51/AWWA C-151. Class 56 pipe shall be used unless computations, in accordance with the Design Requirements-Design Loads and Design Assumptions sections, are provided.

c) Table 3 is based on the design assumptions given in the Design Requirements-Design Loads Section with a minimum cover of 5.5 feet. This table is provided for information only.

Table 3 – Ductile Iron Pipe Wall Thicknesses

Pipe Diameter (in.)	Thickness Class		Pressure Class
	Wall Thickness (in.)	Class	
3	0.25	51	350
4	0.25	51	350
6	0.25	50	350
8	0.25	50	350
10	0.26	51	350
12	0.28	51	350
14	0.31	52	350
16	0.34	52	350
18	0.36	53	350
20	0.38	53	350
24	0.42	55	350
30	0.49	56	350
36	0.56	56	350
42	0.63	56	350
48	0.70	56	350
54	0.79	56	350

d) The pipe shall have mechanical or push on type joints.

3.4.4 Corrugated Steel Pipe and Corrugated Structural Steel Plate Pipe

a) Corrugated steel pipe and corrugated structural steel plate pipe may be used for a casing only when placed by the open cut method. Jacking or boring through the railroad embankment is not permitted.

b) Corrugated steel pipe and corrugated structural steel plate pipe may be used for a casing provided the pressure in the carrier pipe is less than 100 psi.

c) Pipe shall be bituminous coated and shall conform to the current AREMA Specifications Chapter 1, Part 4.

d) Corrugated steel pipe shall have a minimum sheet thickness as shown in Table 4. Corrugated structural steel plate pipe shall have a minimum plate thickness of 8 gage, 0.168 in. If computations indicate that a greater thickness is required, the thicker sheet or plate shall be used.

Table 4 – Corrugated Steel Pipe Wall Thicknesses

Pipe Diameter	Sheet Thickness	
(in.)	(Gauge)	(in.)
12 to 30	14	0.079
36	12	0.109
42 to 54	10	0.138
60 to 120	8	0.168

3.4.5 Steel Tunnel Liner Plate

a) Liner plates shall be installed by the tunneling method as detailed in the Construction Requirements-Method of Installation section of this specification.

b) Tunnel liner plates shall be galvanized and bituminous coated and shall conform to current AREMA guidelines. If the tunnel liner plates are used only to maintain a tunneled opening until the carrier pipe is installed, and the annular space between the carrier pipe and the tunnel liner is completely filled with cement grout within a reasonably short time after completion of the tunnel, then the tunnel liner plates need not be galvanized and coated.

c) Tunnel liner plates are to be a minimum of 12 gage and shall be fabricated from structural quality, hot-rolled, carbon-steel sheets or plates conforming to ASTM Specification A 1011.

d) The following liner plate information must be shown on the Application Form:

i) Number of flanges (2 or 4)

ii) Width of plate

iii) Type of plate (smooth or corrugated)

3.4.6 Reinforced Concrete Pipe

a) Reinforced concrete pipe shall be installed by the open cut (at the sole discretion of the Chief Engineer, Design and Construction) or jacking method.

b) Reinforced concrete pipe shall conform to ASTM Specification C 76. Class V pipe, Wall B or C shall be used unless computations, in accordance with the Design Requirements-Design Assumptions, are provided.

c) Reinforced concrete pipe may be used for a casing provided the pressure in the carrier pipe is less than 100 psi.

d) Pipe placed by open cut shall be installed in accordance with AREMA Guidelines except that backfill and compaction shall be in accordance with the Construction Requirements-Method of Installation section of this specification.

e) Pipe jacked into place shall have tongue and groove joints and shall be installed in accordance with the Construction Requirements-Method of Installation section of this specification.

f) Joints between sections of the RCP shall be sealed with a gasket conforming to ASTM C 443 or approved equal**.**

3.4.7 Concrete Encasement

a) At locations where the installation is by open cut and a casing pipe is required, but cannot be installed due to elbows or other obstructions, concrete encasement may be used when approved by CSXT.

b) The concrete encasement must provide a minimum cover of 6 inches of concrete around the pipe. A 6 x 6 - W 2.9 x W 2.9 welded wire fabric shall be placed in the concrete on all sides.

3.5 Carrier Pipe

3.5.1 General Requirements

a) The pipe shall be laid with sufficient slack so that it is not in tension.

b) Steel pipe shall not be used to convey sewage, storm water, or other liquids that could cause corrosion.

c) Carrier pipes located on CSXT's right-of-way or under tracks which CSXT operates, shall be manufactured in accordance with the following specifications:

i) Steel Pipe - The ASTM or API specification and grade for the pipe is to be shown on the Application Form. The specified minimum yield strength is to be at least 35,000 psi. For flammable substances, see the Design Requirements-Carrier Pipe Section of this document for additional requirements.

ii) Ductile Iron Pipe - ANSI A21.51/AWWA C151

iii) Corrugated Metal Pipe - AREMA Chapter 1, Part 4

iv) Reinforced Concrete Pipe - ASTM C 76

v) Vitrified Clay Pipe - ASTM C 700

vi) Prestressed Concrete Cylinder Pipe - AWWA C301

vii) Reinforced Concrete Cylinder Pipe - AWWA C300

viii) Others - As approved by CSXT.

d) Carrier pipes installed within a casing pipe shall be designed for the internal pressure to which it will be subjected.

e) Gravity flow carrier pipes, installed without a casing pipe, shall meet the requirements, of the particular pipe material, as given in Design Requirements-Casing Pipe Section of this specification.

f) Design computations, stamped by a Professional Engineer, must be submitted for all uncased pressure pipelines installed on CSXT's right-of- way. The pipe must be designed for the internal and external loads (see the Design Requirements Section of this document) to which it may be subjected. The design assumptions given in Design Requirements Section shall apply.

3.5.2 Pipelines Carrying Flammable Substances

a) Products shall be of steel and conform to the requirements of the current ASME B 31.4 Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohols, and other applicable ASME codes, except that the maximum allowable stresses for design of steel pipe shall not exceed the following percentages of the specified minimum yield strength (multiplied by the longitudinal joint factor) of the pipe as defined in the above codes:

b) The following percentages apply to hoop stress in steel pipe within a casing under railroad tracks, across railroad right-of-way and longitudinally on railroad right-of-way:

i) Seventy-two percent on oil pipelines.

ii) Fifty percent for pipelines carrying condensate, natural gasoline, natural gas liquids, liquefied petroleum gas, and other liquid petroleum products.

iii) Sixty percent for installations on gas pipelines.

c) The following percentages apply to hoop stress in steel pipe laid longitudinally on railroad right-of-way without a casing:

i) Sixty percent for oil pipelines.

ii) Forty percent for pipelines carrying condensate, natural gasoline, natural gas liquids, liquefied petroleum gas, and other liquid petroleum products.

d) Computations, based on the above requirements and stamped by a Professional Engineer shall be submitted with the application for occupancy.

3.5.3 Uncased Pipelines Carrying Gas

a) Pipelines carrying flammable and nonflammable gas products shall be steel and shall conform to the requirements of the current ASME B 31.8 Gas Transmission and Distribution Piping Systems, and other applicable ANSI codes.

b) The minimum wall thickness for uncased carrier pipe shall be in accordance with the values provided in AREMA, Chapter 1, Part 5, Section 5.2.

c) A durable coating, which will resist abrasion (fusion bonded epoxy or other suitable material), shall be used to protect the uncased pipeline when the boring method of installation is used.

d) If CSXT determines there is the potential for damage to the uncased pipeline (foreign material in the subgrade, third party damage, etc.), special protection of the pipeline will be required. Special protection may include the use of concrete jacketed carrier pipe, a protection slab over the pipeline, increased depth of bury or other means.

3.6 Casing Pipe End Seals

a) Casings for carrier pipes of flammable and hazardous substances shall be suitably sealed to the outside of the carrier pipe. Details of the end seals shall be shown on the plans.

b) Casings for carrier pipes of non-flammable substances shall have both ends of the casing blocked up in such a way as to prevent the entrance of foreign material, but allowing leakage to pass in the event of a carrier break.

c) The ends of a casing pipe may be left open when the ends are at or above ground surface and above high water level, provided drainage is afforded in such a manner that leakage will be conducted away from railroad tracks and structures.

3.7 Vents

a) Sealed casings for flammable substances shall be properly vented. Vent pipes shall be of sufficient diameter, but in no case less than two inches in diameter, and shall be attached near each end of the casing and project through the ground surface at right-of-way lines or not less than 45 feet, measured at right angles from centerline of nearest track.

b) Vent pipes shall extend not less than 4 feet above the ground surface. Top of vent pipe shall have a down-turned elbow, properly screened, or a relief valve. Vents in locations subject to high water shall be extended above the maximum elevation of high water and shall be supported and protected in a manner approved by CSXT.

c) Vent pipes shall be at least 4 feet, vertically, from aerial electric wires or greater if required by National Electrical Safety Code (ANSI C2).

d) When the pipeline is in a public highway, street-type vents shall be installed.

3.8 Signs

a) All pipelines (except those in streets where it would not be practical to do so) shall be prominently marked at right-of-way lines (on both sides of track for crossings) by durable, weatherproof signs located over the centerline of the pipe. Signs shall show the following:

i) Name and address of owner

ii) Contents of pipe

iii) Pressure in pipe

iv) Pipe depth below grade at point of a sign

v) Emergency telephone number in event of pipe rupture

b) For pipelines running longitudinally on CSXT property, signs shall be placed over the pipe (or offset and appropriately marked) at all changes in direction of the pipeline. Such signs should also be located so that when standing at one sign the next adjacent marker in either direction is visible. In no event shall they be placed more than 500 feet apart unless otherwise specified by CSXT.

c) The Owner must maintain all signs on CSXT's right-of-way as long as the occupational agreement is in effect.

3.9 Warning Tape

a) All pressure pipelines installed by the trench method, without a casing, shall have a warning tape placed directly above the pipeline, 2 feet below the ground surface.

3.10 Shut-off Valves

a) Accessible emergency shut-off valves shall be installed within 2,000 feet on both sides of the pipeline crossing or longitudinal occupancy.

b) Steel pipelines conveying Natural Gas may exceed the 2,000 foot spacing requirement provided the following conditions are met:

i) The pipeline is equipped with Automatic or Remotely Controlled shut-off valves.

ii) Location of valves shall be in compliance with all State and Federal Regulations.

iii) The pipeline is monitored on a continuous, 24 hour - 365 day basis from a central control center.

iv) The pipeline operator shall provide CSXT with current emergency contact information

3.11 Cathodic Protection

a) Cathodic protection shall be applied to all pipelines carrying flammable substances on CSXT's right-of-way.

b) For crossings and at other locations where the pipeline must be placed within a casing, the casing is to have cathodic protection or the wall thickness is to be increased to the requirements of the Design Requirements Section Table 2.

c) Uncased gas carrier pipes must be coated and cathodically protected to industry standards and test sites, for monitoring the pipeline, provided within 50 feet of the crossing.

d) Where casing and/or carrier pipes are cathodically protected by other than anodes, CSXT shall be notified and a suitable test made to ensure that other railroad structures and facilities are adequately protected from the cathodic current in accordance with the recommendation of current Reports of Correlating Committee on Cathodic Protection, published by the National Association of Corrosion Engineers.

e) Where sacrificial anodes are used, the locations shall be marked with durable signs.

3.12 Manholes

a) Manholes shall not be located on CSXT property where possible. At locations where this is not practical, including longitudinal occupancies, manholes shall be precast concrete sections conforming to ASTM Designation C 478, "Specification for Precast Concrete Manhole Sections."

b) The top of manholes located on CSXT property shall be flush with top of ground.

c) The distance from centerline of adjacent track to centerline of proposed manhole shall be shown on the plans.

3.13 Box Culverts

a) Reinforced concrete box culverts shall be designed in conformance with CSX Standards and AREMA Guidelines.

3.14 Drainage

a) Occupancies shall be designed, and their construction shall be accomplished, so that adequate and uninterrupted drainage of CSXT's right-of-way is maintained.

b) All pipes, ditches, and other structures carrying surface drainage on CSXT property and/or under CSXT track(s) shall be designed to carry the run-off from a one hundred (100) year storm. Plans submitted to CSXT for approval shall be prepared by a Professional Engineer and should indicate design, suitable topographic plan, and outline of total drainage area.

c) If the drainage is to discharge into an existing drainage channel on CSXT's right- of-way and/or through a drainage structure under CSXT's track(s), the computations must include the hydraulic analysis of any existing ditch and/or structure.

d) When calculating the capacity of existing or proposed drainage structures, under CSXT's track(s), the headwater calculation at the structure shall not be greater than one (1) pipe diameter.

e) Pipe(s) used to carry surface drainage on CSXT's right-of-way shall have a minimum diameter of 24 inches.

f) Detention ponds must not be placed on any part of CSXT's right-of-way. Also, the railroad embankment must not be used as any part of a detention pond structure.

g) Formal approval of the proposed design, by the appropriate governmental agency having jurisdiction, shall be submitted with the drainage computations.

3.15 Pipelines on Bridges

a) Pipelines **cannot** be installed on any bridge carrying CSXT tracks.

b) Overhead pipe bridges will only be considered over CSXT right-of-way when underground installation of the pipeline is not possible. The Applicant must show that no practicable alternative is available and overhead pipe bridges will be permitted provided the conditions in Section 3.17 are met.

c) Pipelines carrying flammable substances or non-flammable substances, which by their nature might cause damage if escaping on or near railroad facilities or personnel, shall not be installed on bridges over CSXT tracks. In special cases when it can be demonstrated to CSXT's satisfaction that such an installation is necessary and that no practicable alternative is available, CSXT may permit the installation and only by special design approved by the Chief Engineer, Design and Construction.

d) When permitted, pipelines on bridges over CSXT tracks shall be so located as to minimize the possibility of damage from vehicles, railroad equipment, vandalism, and other external causes. They shall be encased in a casing pipe as directed by CSXT.

3.16 Cured-in-Place Pipes (CIPP)

a) CIPP installations shall be designed in accordance with ASTM F1216 Appendix X1.

b) CIPP to be installed in a casing pipe or an uncased carrier pipe shall be designed for a Fully Deteriorated condition. A Partially Deteriorated design condition will only be accepted for CIPP of carrier pipe that is already within a casing pipe. All CIPP calculations must be signed and sealed by a licensed Professional Engineer.

c) CIPP designs will not be accepted when the wall thickness of the CIPP liner is greater than 2 inches.

3.17 Pipe Bridges / Conveyors

a) The following are minimum requirements for the construction of pipe bridges:

i) The vertical clearance, distance from top of rail to closest component of structure, is shown and is a minimum of 23 feet, measured at a point 6 feet horizontally from centerline track.

ii) The support bents for the overhead structure are located off CSXT's right-of-way or a minimum clear distance of 20 feet from centerline track, whichever distance is greater.

iii) Support bents within 25 feet of centerline track have pier protection in accordance with AREMA, Chapter 8 Section 2.1.5.

iv) Complete structural plans and design computations for the structure and foundations, sealed by a licensed Professional Engineer, are submitted with the application.

v) A fence (topped with barbed wire) or other measures are provided which will prevent access to the bridge by unauthorized personnel or vandals.

b) The following are minimum requirements for the construction of conveyors:

i) The vertical clearance, distance from top of rail to closest component of structure, is shown and is a minimum of 23 feet, measured at a point 6 feet horizontally from centerline track.

ii) The support bents for the overhead structure are located off CSXT's right-of-way or a minimum clear distance of 20 feet from centerline track, whichever distance is greater.

iii) Support bents within 25 feet of centerline track have pier protection in accordance with AREMA, Chapter 8 Section 2.1.5.

iv) Complete structural plans and design computations for the structure and foundations, sealed by a licensed Professional Engineer, are submitted with the application.

v) A fence (topped with barbed wire) or other measures are provided which will prevent access to the bridge by unauthorized personnel or vandals.

vi) Plan revisions, if applicable, are to include all proposed utilities attached to the proposed conveyor that do not service the conveyor.

END OF PART 3

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PART 4 – CONSTRUCTION REQUIREMENTS

4.1 Method of Installation

4.1.1 General Requirements

a) Bored, jacked, or tunneled installations shall have a bore hole essentially the same as the outside diameter of the pipe plus the thickness of the protective coating.

b) The use of water or other liquids to facilitate casing emplacement and spoil removal is prohibited.

c) If, during installation, an obstruction is encountered which prevents installation of the pipe in accordance with this specification, notify CSXT immediately, abandon the pipe in place, and immediately fill with grout. A new installation procedure and revised plans must be submitted to, and approved by, CSXT before work can resume.

4.1.2 Bore and Jack (Steel Pipe)

a) This method consists of pushing the pipe into the earth with a boring auger rotating within the pipe to remove the spoil.

b) The boring operation shall be progressed on a 24-hour basis without stoppage (except for adding lengths of pipe) until the leading edge of the pipe has reached the receiving pit.

c) The front of the pipe shall be provided with mechanical arrangements or devices that will positively prevent the auger from leading the pipe so that no unsupported excavation is ahead of the pipe.

d) The auger and cutting head arrangement shall be removable from within the pipe in the event an obstruction is encountered.

e) The over-cut by the cutting head shall not exceed the outside diameter of the pipe by more than ½ inch. If voids should develop or if the bored hole diameter is greater than the outside diameter of the pipe (plus coating) by more than approximately 1 inch grouting (see the Construction Requirements-Grouting Section) or other methods approved by CSXT, shall be employed to fill such voids.

f) The face of the cutting head shall be arranged to provide a reasonable obstruction to the free flow of soft or poor material.

g) Plans and description of the arrangement to be used shall be submitted to CSXT for approval and no work shall proceed until such approval is obtained.

h) Any method that employs simultaneous boring and jacking for pipes over 8 inches in diameter that does not have above approved arrangement **will not be permitted**. For pipe 8 inches and less in diameter, auguring or boring without this arrangement may be considered for use only as approved by CSXT.

4.1.3 Jacking (RCP and Steel Pipe)

a) This method consists of pushing sections of pipe into position with jacks placed against a backstop and excavation performed by hand from within the jacking shield at the head of the pipe. Ordinarily 36 inch pipe is the least size that should be used, since it is not practical to work within smaller diameter pipes.

b) Jacking shall be in accordance with the current AREMA Guidelines, Chapter 1, Section 4.13, "Earth Boring and Jacking Culvert Pipe Through Fills." This operation shall be conducted without hand mining ahead of the pipe and without the use of any type of boring, auguring, or drilling equipment.

c) Bracing and backstops shall be so designed and jacks of sufficient rating used so that the jacking can be progressed on a 24-hour basis without stoppage (except for adding lengths of pipe) until the leading edge of the pipe has reached the receiving pit.

d) When jacking reinforced concrete pipe, a jacking shield shall be fabricated as a special section of reinforced concrete pipe with a steel cutting edge, hood, breasting attachments, etc., cast into the pipe. The wall thickness and reinforcing shall be designed for the jacking stresses.

e) When jacking reinforced concrete pipe tapped for no smaller than 1½- inch pipe, grout holes shall be cast into the pipe at manufacture. Three grout holes equally spaced around the circumference and 4 feet longitudinally shall be provided for greater than 54 inches and smaller. Four grout holes equally spaced around the circumference and 4 feet longitudinally shall be provided for RCP 60 inches and larger.

f) Immediately upon completion of jacking operations, the installation shall be pressure grouted as per Construction Requirements-Grouting Section of this specification.

4.1.4 Tunneling (Tunnel Liner Plate)

a) This method consists of placing rings of liner plate within the tail section of a tunneling shield or tunneling machine. A tunneling shield shall be used for all liner plate installations unless otherwise approved by CSXT.

b) The shield shall be of steel construction, designed to support a railroad track loading as specified in the Design Requirements-Casing Pipe of this specification, in addition to the other loadings imposed. The advancing face shall be provided with a hood, extending no less than 20 inches beyond the face and extending around no less than the upper 240 degrees of the total circumference. It shall be of sufficient length to permit the installation of at least one complete ring of liner plates within the shield before it is advanced for the installation of the next ring of liner plates. The shield shall conform to and not exceed the outside dimensions of the liner plate tunnel being placed by more than 1 inch at any point on the periphery unless otherwise approved by CSXT.

c) The shield shall be adequately braced and provided with necessary appurtenances for completely bulkheading the face with horizontal breastboards, and arranged so that the excavation can be benched as may be necessary. Excavation shall not be advanced beyond the edge of the hood, except in rock.

d) Manufacturer's shop detail plans and manufacturer's computations showing the ability of the tunnel liner plates to resist the jacking stresses shall be submitted to CSXT for approval.

e) Unless otherwise approved by CSXT, the tunneling shall be conducted continuously, on a 24-hour basis, until the tunnel liner extends at least beyond the theoretical railroad embankment line.

f) At any interruption of the tunneling operation, the heading shall be completely bulkheaded.

g) The liner plates shall have tapped grout holes for no smaller than 1½- inch pipe, spaced at approximately 3 feet around the circumference of the tunnel liner and 4 feet longitudinally.

h) Grouting behind the liner plates shall be in accordance with the Construction Requirements-Grouting Section of this specification.

4.1.5 Horizontal Directional Drilling

a) **Installations by this method are considered a variance to CSXT Pipeline Occupancy Specifications,** but special consideration will be given where the depth of cover is substantial, 15 feet or greater, or the bore is in rock. Factors considered will be track usage, pipe size, contents of pipeline, soil conditions, boring equipment and procedures, etc. Reference the CSXT Interim Guidelines for Horizontal Directional Drilling (HDD) for additional information and instructions.

4.1.6 Jack Conduit

a) Installations by this method are generally not acceptable, but may be considered under special circumstances. This method consists of using hydraulic jacking equipment to push a solid steel rod under the railroad from a launching pit to a receiving pit. At the receiving pit, a cone shaped “expander” is attached to the end of the rod and the conduit (casing pipe) is attached to the expander. The rod, expander, and conduit are then pulled back from the launching pit until the full length of the conduit is in place.

b) This method may be used to place steel conduit (casing pipe), up to and including 6 inches in diameter, under the railroad.

c) The project specifications must require the contractor to submit, to CSXT for approval, a complete construction procedure of the proposed boring operation. Included with the submission shall be the manufacturer’s catalog information describing the type of equipment to be used.

4.1.7 Open Cut – Not a readily accepted practice

a) The Owner must request open cut approval when making application for occupancy. All procedures will be in compliance with AREMA Chapter 1 Section 5.1.5.1(b).

b) Installations beneath the track by open trench methods will be permitted only with the approval of the Chief Engineer, Design and Construction.

c) Installations by open cut will not be permitted under mainline tracks, tracks carrying heavy tonnage or tracks carrying passenger trains. Also, open cut shall not be used within the limits of a highway/railroad grade crossing or its approaches, 25 feet either side of traveled way, where possible.

d) Rigid pipe (RCP, VCP, and PCCP) must be placed in a Class B bedding or better.

e) At locations where open cut is permitted, the trench is to be backfilled with crushed stone with a top size of the aggregate to be a maximum of 2 inches and to have no more than 5% passing the number 200 sieve. The gradation of the material is to be such that a dense stable mass is produced.

f) The backfill material shall be placed in loose 6 inch lifts and compacted to at least 95% of its maximum density with a moisture content that is no more than 1% greater than or 2% less than the optimum moisture as determined in accordance with current ASTM Designation D - 1557 (Modified Proctor). When the backfill material is within 3 feet of the subgrade elevation (the interface of the ballast and the subsoil) a compaction of at least 98% will be required. Compaction test results confirming compliance must be provided to CSXT's Regional Engineering Office by the Owner.

g) All backfilled pipes laid either perpendicular or parallel to the tracks must be designed so that the backfill material will be positively drained. This may require the placement of lateral drains on pipes laid longitudinally to the track and the installation of stub perforated pipes at the edge of the slopes.

h) Unless otherwise agreed upon, all work involving rail, ties, and other track material will be performed by railroad employees at the sole expense of the Owner, subject to advance payments by the owner.

4.2 Grouting

a) For jacked and tunneled installations a uniform mixture of 1:6 (cement: sand) cement grout shall be placed under pressure through the grout holes to fill any voids, which exist between the pipe or liner plate and the undisturbed earth.

b) Grouting shall start at the lowest hole in each grout panel and proceed upwards simultaneously on both sides of the pipe.

c) A threaded plug shall be installed in each grout hole as the grouting is completed at that hole.

d) When grouting tunnel liner plates, grouting shall be kept as close to the heading as possible, using grout stops behind the liner plates if necessary. Grouting shall proceed as directed by CSXT, but in no event shall more than 6 lineal feet of tunnel be progressed beyond the grouting.

4.3 Soil Stabilization

a) Pressure grouting of the soils or freezing of the soils before jacking, boring, or tunneling may be required at the direction of CSXT Chief Engineer, Design and Construction to stabilize the soils, control water, prevent loss of material, and prevent settlement or displacement of embankment. Grout shall be cement, chemical, or other special injection material selected to accomplish the necessary stabilization.

b) The materials to be used and the method of injection shall be prepared by a Licensed Professional Soils Engineer, or by an experienced and qualified company specializing in this work and submitted for approval to CSXT before the start of work. Proof of experience and competency shall accompany the submission.

4.4 Dewatering

a) When water is known or expected to be encountered all plans and specification must be submitted to the Chief Engineer, Design and Construction for approval before the process begins. Pumps of sufficient capacity to handle the flow shall be maintained at the site, provided the contractor has received approval from CSXT to operate them. Pumps in operation shall be constantly attended on a 24-hour basis until, in the sole judgment of CSXT, the operation can be safely halted. When dewatering, a process for monitoring for any settlement of track or structures must be in place.

4.5 Safety Requirements

a) All operations shall be conducted so as not to interfere with, interrupt, or endanger the operation of trains nor damage, destroy, or endanger the integrity of railroad facilities. All work on or near CSXT property shall be conducted in accordance with CSXT safety rules and regulations. Specifically all licensee's employees and agents, while on CSXT property, shall be required to wear an orange hard hart, safety glasses with side shields, 6" lace up boots with a distinct heel, shirts with sleeves, and long pants; additional personal protective equipment may be required for certain operations including abrasive cutting, use of torches, use of chainsaws, etc. The contractor and its employees shall comply with the CSXT safety rules at all times while occupying CSXT's property. Operations will be subject to CSXT inspection at any and all times.

b) All cranes, lifts, or other equipment that will be operated in the vicinity of the railroad's electrification and power transmission facilities shall be electrically grounded as directed by CSXT. Use of a crane or other lifting equipment is subject to requirements as stated in the CSXT Public Projects manual.

c) Whenever equipment or personnel are working closer than 25 feet from the centerline of an adjacent track, that track shall be considered as being obstructed. Insofar as possible, all operations shall be conducted no less than this distance. All operations shall be conducted only with the permission of, and as directed by, a duly qualified railroad employee present at the site of the work. All costs related to Railroad protection will be passed on to the applicant.

d) Crossing of tracks at grade by equipment and personnel is prohibited except by prior arrangement with and as directed by, CSXT.

4.6 Blasting

a) Blasting will not be permitted under or on CSXT's right-of-way.

4.7 Temporary Track Supports

a) When the jacking, boring or tunneling method of installation is used, and depending upon the size and location of the crossing, temporary track supports shall be installed at the direction of CSXT.

b) The Owner's contractor shall supply the track supports with installation and removal performed by CSXT employees.

c) The Owner shall reimburse CSXT for all costs associated with the installation and removal of the track supports.

4.8 Protection of Drainage Facilities

a) If, in the course of construction, it may be necessary to block a ditch, pipe, or other drainage facility, temporary pipes, ditches, or other drainage facilities shall be installed to maintain adequate drainage, as approved by CSXT. Upon completion of the work, the temporary facilities shall be removed and the permanent facilities restored.

b) Soil erosion methods shall be used to protect railroad ditches and other drainage facilities during construction on and adjacent to CSXT's right-of-way.

4.9 Support of Excavation Adjacent to Track

4.9.1 Launching and Receiving Pits

a) The location and dimensions of all pits or excavations shall be shown on the plans. The distance from centerline of adjacent track to face of pit or excavation shall be clearly labeled. Also, the elevation of the bottom of the pit or excavation must be shown on the profile.

b) The face of all pits shall be located a minimum of 25 feet from centerline of adjacent track, **measured at right angles to track,** unless otherwise approved by CSXT.

c) If the bottom of the pit excavation intersects the theoretical railroad embankment line, interlocking steel sheet piling, driven prior to excavation, must be used to protect the track stability. The use of trench boxes or similar devices is not acceptable in this area

d) Design plans and computations for the pits, sealed by a Licensed Professional Engineer, must be submitted by the Owner at time of application or by the contractor prior to start of construction. If the pit design is to be submitted by the contractor, the project specifications must require the contractor to obtain approval from CSXT's Chief Engineer, Design and Construction prior to beginning any work on or which may affect CSXT property.

e) The sheeting shall be designed to support all lateral forces caused by the earth, railroad and other surcharge loads. See Design Requirements- Design Loads for railroad loading.

f) After construction and backfilling, all sheet piling within 10 feet of centerline track must be cut off 3' – 0" below final grade and left in place.

g) All excavated areas are to be illuminated (flashing warning lights not permitted), fenced, and otherwise protected as directed by CSXT.

4.9.2 Parallel Trenching and Other Excavation

a) When excavation for a pipeline or other structure will be within the theoretical railroad embankment line of an adjacent track, interlocking steel sheet piling will be required to protect the track.

b) The design and construction requirements for this construction shall be in accordance with the requirements of the Construction Requirements – Support of Excavation Adjacent to Track section of this document.

4.9.3 Inspections and Testing

a) For pipelines carrying flammable or hazardous materials, ANSI Codes, current at time of constructing the pipeline, shall govern the inspection and testing of the facility on CSXT property, except as follows:

b) One hundred percent of all field welds shall be inspected by radiographic examinations, and such field welds shall be inspected for 100 percent of the circumference.

c) The proof testing of the strength of carrier pipe shall be in accordance with ANSI requirements.

4.9.4 Reimbursement of CSXT Costs

a) All CSXT costs associated with the pipe installation (inspection, flagging, track work, protection of signal cables, etc.) shall be reimbursed to CSXT by the Owner of the facility. Estimates for Railroad costs will be provided to the Owner prior to the commencement of any work on Railroad right-of-way. **At CSX's option, CSX may require the funds to be paid in advance of any work being done.**

END OF PART 4

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PART 5 – PUBLICATION STANDARDS SOURCES

5.1 Publication Standards Sources

Table 5 – Publication Standards Sources

Organization	Contact Information
ANSI	American National Standards Institute 1899 L Street, NW, 11th Floor Washington, DC 20036 Tel: 202-293-8020
AREMA	The American Railway Engineering and Maintenance-of-Way Association 4501 Forbes Blvd., Suite 130 Lanham, MD 20706 Tel: 301-459-3200
ASTM	American Society for Testing and Materials PO Box C700 West Conshohocken, PA 19428-2959 Tel: 877-909-2786
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235 Tel: 1-800-926-7337
NACE	Then National Association of Corrosion Engineers Houston, TX USA 1-800-797-6223

a) NOTE: If other than AREMA, ASTM, or AWWA specifications are referred to for design, materials, or workmanship on the plans and specifications for the work, then copies of the applicable sections of such other specifications referred to shall accompany the plans and specification for the work.

END OF PART 5

WRIGHT-PIERCE
Engineering a Better Environment

MAIN STREET, DEPOT STREET, PARK STREET AND PLEASANT STREET WATER MAIN IMPROVEMENTS

MDOT WIN NO. 22643.00

LIVERMORE FALLS WATER DISTRICT

LIVERMORE FALLS, ME

BIDDING/CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

MARCH 2026

20947

WRIGHT-PIERCE
Engineering a Better Environment

LIVERMORE FALLS WATER DISTRICT

LIVERMORE FALLS, MAINE

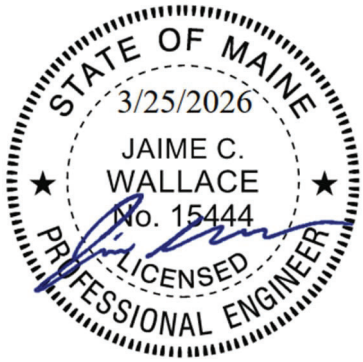
BIDDING/CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

FOR

MAIN STREET, DEPOT STREET, PARK STREET AND PLEASANT STREET WATER MAIN IMPROVEMENTS

MDOT WIN NO. 22643.00

MARCH 2026



Prepared By:

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A DWSRF Supplemental General Conditions
B Signed Railroad Agreement and CSX Design & Construction Standard Specifications

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, sexual orientation, gender identity 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, sexual orientation, gender identity 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, sexual orientation, gender identity 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-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 it does not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The federally assisted construction CONTRACTOR certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its 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 it has obtained identical certifications from proposed Subcontractors for specific time periods) it 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 it will retain such certifications in its 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

SECTION SC-44

DEBARMENT AND SUSPENSION

Executive Order 12549—Debarment and Suspension

Source: The provisions of Executive Order 12549 of Feb. 18, 1986, appear at 51 FR 6370, 3 CFR, 1986 Comp., p. 189, unless otherwise noted.

By the authority vested in me as President by the Constitution and laws of the United States of America, and in order to curb fraud, waste, and abuse in Federal programs, increase agency accountability, and ensure consistency among agency regulations concerning debarment and suspension of participants in Federal programs, it is hereby ordered that:

Section 1.
(a) To the extent permitted by law and subject to the limitations in Section l(c), Executive departments and agencies shall participate in a system for debarment and suspension from programs and activities involving Federal financial and nonfinancial assistance and benefits. Debarment or suspension of a participant in a program by one agency shall have government-wide effect.
(b) Activities covered by this Order include but are not limited to: grants, cooperative agreements, contracts of assistance, loans, and loan guarantees.
(c) This Order does not cover procurement programs and activities, direct Federal statutory entitlements or mandatory awards, direct awards to foreign governments or public international organizations, benefits to an individual as a personal entitlement, or Federal employment.

Section 2. To the extent permitted by law, Executive departments and agencies shall:
(a) Follow government-wide criteria and government-wide minimum due process procedures when they act to debar or suspend participants in affected programs.
(b) Send to the agency designated pursuant to Section 5 identifying information concerning debarred and suspended participants in affected programs, participants who have agreed to exclusion from participation, and participants declared ineligible under applicable law, including Executive Orders. This information shall be included in the list to be maintained pursuant to Section 5.
(c) Not allow a party to participate in any affected program if any Executive department or agency has debarred, suspended, or otherwise excluded (to the extent specified in the exclusion agreement) that party from participation in an affected program. An agency may grant an exception permitting a debarred, suspended, or excluded party to participate in a particular transaction upon a written determination by the agency head or authorized designee stating the reason(s) for deviating from this Presidential policy. However, I intend that exceptions to this policy should be granted only infrequently.

Section 3. Executive departments and agencies shall issue regulations governing their implementation of this Order that shall be consistent with the guidelines issued under Section 6. Proposed regulations shall be submitted to the Office of Management and Budget for review within four months of the date of the guidelines issued under Section 6. The Director of the Office of

Management and Budget may return for reconsideration proposed regulations that the Director believes are inconsistent with the guidelines. Final regulations shall be published within twelve months of the date of the guidelines.

Section 4. There is hereby constituted the lnteragency Committee on Debarment and Suspension, which shall monitor implementation of this Order. The Committee shall consist of representatives of agencies designated by the Director of the Office of Management and Budget.

Section 5. The Director of the Office of Management and Budget shall designate a Federal agency to perform the following functions: maintain a current list of all individuals and organizations excluded from program participation under this Order, periodically distribute the list to Federal agencies, and study the feasibility of automating the list; coordinate with the lead agency responsible for government-wide debarment and suspension of contractors; chair the lnteragency Committee established by Section 4; and report periodically to the Director on implementation of this Order, with the first report due within two years of the date of the Order.

Section 6. The Director of the Office of Management and Budget is authorized to issue guidelines to Executive departments and agencies that govern which programs and activities are covered by this Order, prescribe government-wide criteria and government-wide minimum due process procedures, and set forth other related details for the effective administration of the guidelines.

Section 7. The Director of the Office of Management and Budget shall report to the President within three years of the date of this Order on Federal agency compliance with the Order, including the number of exceptions made under Section 2(c), and shall make recommendations as are appropriate further to curb fraud, waste, and abuse.

END OF SECTION

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.1 DESCRIPTION:

A. Location: The Work locations for water main replacement include, but are not limited to, locations within the right-of-ways on the following streets and easements in the Town of Livermore Falls on and adjacent to State Route 17

1. Park Street from Foundry Road to Depot Street.
    a. Replace copper water services with CTS tubing from Foundry Road to PRV Station (no water main replacement in this area)
    b. Remove and replace existing gate valve boxes (top, bottom, and cap) in this area
2. Depot Street from Park Street to Main Street.
3. Main Street from Depot Street to the intersection of Main Street and Bridge Street.
4. Pleasant Street from Depot Street to Union Street/School Street.
5. Water Street from Main Street and extending approximately 180-feet West.
6. Church Street, Main Street, and Union Street intersection.

B. Work Included:

1. Replacement of an existing water main within Route 17 as part of Maine Department of Transportation's WIN 22643.00. The work includes, but is not limited to, the following:
    a. New water main, valves, connections, and hydrants.
    b. New CTS water services.
    c. Disinfection and pressure testing of new water mains.
    d. Removal and disposal or abandonment of existing water main, valves and services as shown on the plans.
    e. Temporary water service system and laterals designed by the Contractor.
    f. Installing and maintaining 6" HDPE temporary water line on Water Street to feed domestic and fire service.
    g. Cleaning and lining with cementitious liner two railroad crossings.
    h. Relocation of existing water main in areas of conflict with Maine DOT stormwater infrastructure.
2. All related site work including trench excavation, ledge excavation, groundwater dewatering, disposal of excess excavated materials, filter fabric, bedding, backfill, compaction, and restoration of disturbed property.

C. Work Included (Pleasant Street from DOT project limit to Union Street Intersection):

1. Replacement of an existing water main on Pleasant Street from the limits of the DOT contract to Union Street intersection. This connection is required as part of the Route 17 work. The work includes, but is not limited to the following:
    a. New water main, valves, connections and hydrants.
    b. New water services.
    c. Disinfection and pressure testing of new water mains.

d. Removal and disposal or abandonment of existing water main, valves and services as shown on the plans.
e. Temporary water service system and laterals designed by the Contractor.

2. All related site work including trench excavation, ledge excavation, groundwater dewatering, disposal of excess excavated materials, filter fabric, bedding, backfill, compaction, road/drive subbase, paving, loam/seed.
3. Restoration of the work area and adjacent disturbed private property, including:
   a. Property monumentation disturbed as part of construction
   b. Driveways in like materials
   c. Gravels and paving
   d. Sidewalks
   e. Bituminous Curb
   f. Lawn space
   g. Pavement markings

D. Contractor shall comply with all Buy America (BAA), Build America Buy America (BABA), and American Iron and Steel (AIS) requirements.

E. Contractor shall comply with all Maine Drinking Water State Revolving Fund (DWSRF) requirement and standards for all water main associated work.

F. Related Work Specified Elsewhere
1. Measure and Payment: Section 01150
2. Submittals: Section 01340
3. Traffic Regulation: Section 01570
4. Project Record Documents: Section 01720
5. Site work, piping, structures, testing requirements are specified in Division 2.

G. 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.

1.2 PERMITS, FEES, AND BONDS

A. The Contractor shall maintain copies of permits on site during construction and shall place a copy of the permit in protective sleeve and post in prominent location for project identification.

B. The Water District has obtained a Utility Location and Highway Opening Permit from Maine DOT and is included as an appendix to these specifications.

C. The Contractor shall comply with all CSXT requirements while working in or adjacent to CSXT right-of-way. Approximate location of CSXT right-of-way is shown on the plans. The Water District has entered into an agreement with CSXT and is included as an appendix to these specifications.

1.3 EXISTING UTILITIES AND STRUCTURES

A. The location and size of existing underground facilities such as sewers, drains, culverts, water mains, cables, service pipes, etc., are shown on the plans based on a survey and/or existing records and are shown as approximate only. The plans do not show the exact location and depth of all utilities, nor do they show all utilities that may be encountered.

B. The Contractor shall assume that there are existing underground utility connections to each and every building or structure along the line of work, whether they appear on the drawings or not. The Contractor shall notify the proper utility companies and obtain and preserve the locations as marked for all existing utilities that may be encountered along the line of work until such time as such markings are no longer required.

1.4 TWENTY-FOUR (24) HOUR EMERGENCY SERVICE

A. The Contractor shall maintain a 24-hour, 7-day a week telephone service and a local facility to handle emergency requirements such as settled trenches, clogged drains, rain damage, etc. The Contractor's emergency personnel shall be able to respond to emergency calls within thirty minutes. A list of the personnel and their telephone numbers shall be submitted to the Owner and to the local Police and Fire Departments. This requirement shall apply during the entire length of the project.

B. This list shall be submitted on the Contractor's letterhead and shall state that should an emergency arise during the implementation of this project; these people are to be contacted. The Contractor shall submit this letter at the pre-construction conference.

C. If in the Owner’s opinion, public health, safety or welfare is jeopardized by a condition of the work performed by the Contractor, every effort shall be made to reach the Contractor to correct said condition(s). However, where the Contractor is unable to be reached or unwilling or unresponsive to alerts made by the Engineer or Owner, the Owner reserves the right to access the work and if necessary, employ emergency forces not party to this contract for the correction of the hazards or defects in the work. All costs and charges for the performance of these corrections shall be deducted and paid out of monies due or to become due to the Contractor under this agreement. The Owner shall not be held to the lowest figures for this work of completing the contract or any part thereof. All sums actually paid, therefore, shall be charges to the Contractor. In case the expense so charged exceeds the sum which would have been payable under this contract, the Contractor shall pay the amount in excess to the Owner.

1.5 STORAGE OF EQUIPMENT AND MATERIALS

A. Equipment and material storage areas shall be reviewed with and approved by the Maine DOT and the Water District at the pre-construction conference and shall be secured by the Contractor at his own expense.

PART 2 - PRODUCTS

A. Not Applicable

PART 3 - EXECUTION

3.1 MAINTAIN EXISTING WORKS

A. Existing Operations:
   1. Uninterrupted service shall be always provided during construction except for planned shutdowns which will need to be coordinated directly with the Water District and affected customers.

B. Minimize Interference:
   1. The Contractor shall always conduct his operations to interfere as little as possible with existing works. The Contractor shall develop a program, in cooperation with the Owner, Water District, Maine DOT, water customers and interested officials, which shall provide for the construction and putting into service the new works in the most orderly manner possible. This program shall be adhered to except as deviations therefrom are expressly permitted in writing by the Water District or its authorized representative.

3.2 CONSTRUCTION SEQUENCE

A. The Contractor will be required to always maintain uninterrupted service during construction except for planned shutdowns which will need to be coordinated directly with the Water District and affected customers.

B. The Contractor shall submit to the Engineer for review and acceptance a complete schedule of the proposed sequence of construction operations prior to commencing any work. This schedule shall include the Contractor's plans for doing the work.

C. The Contractor shall submit to the Engineer a written request to deviate from the above sequence with adequate supporting information to demonstrate to the Engineer that the continuity and degree of treatment will not be adversely affected.

3.3 SCHEDULE LIMITATIONS AND WORK RESTRICTIONS/ REQUIREMENTS

A. Work Hours:
   1. All Work shall be prohibited on Saturdays, Sundays, and legal holidays.
   2. All Work on weekdays shall be performed in accordance with Maine DOT requirements and Town of Livermore Falls ordinance.
   3. The Contractor shall request permission to work outside the work hours specified above at least 72-hours in advance of the proposed work. The Contractor shall not commence work outside of the work hours specified above unless or until granted such permission from the Owner and Engineer.

B. Temporary Facilities Plan:
   1. A project Temporary Facilities Plan shall be submitted prior to the Pre-Construction Meeting. The Temporary Facilities Plan shall identify the approach for maintaining continuous operations for each impacted utility.

C. Maintain Services:
   1. Maintain all existing water services.

2. Maintenance of all other existing services shall be coordinated directly with Maine DOT and the Town of Livermore Falls.

D. Proposed Road Closures:
   1. Local road closures shall be coordinated with Maine DOT, emergency services, school district, and Town of Livermore Falls.

E. Special Coordination Requirements:
   1. Contractor shall coordinate all work with Maine DOT, Livermore Falls Water District, and the Town of Livermore Falls.

F. Pavement Maintenance and Winter Shutdown Period:
   1. The Contractor shall maintain pipe trenches with compacted gravel until pavement operations can be completed.
      a. Trenches shall be paved on a weekly basis unless otherwise approved by Engineer and Owner.
   2. No excavation in paved roadways shall be allowed after November 15 without written approval from the Town of Livermore Falls and Maine DOT.
   3. All streets shall be paved prior to any "winter shutdown period", which is defined as November 15th to April 1st. Any temporary pavement placed prior to winter shutdown shall be removed during the following construction season.

END OF SECTION

SECTION 01150

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 as per MaineDOT Standard Specifications.

B. The Contractor shall accept 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.

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 INCIDENTAL WORK

A. Incidental work items for which separate payment will not be made includes, but is not limited to, the following items:
   1. Clean-up and restoration of property.
   2. Restoration of fences and other structures.
   3. Cooperation and coordination with abutting property owners.
   4. Protection of existing property monumentation.
   5. Resetting of existing property monumentation disturbed as part of construction by a licensed P.L.S. licensed in the State of Maine.
   6. Utility crossings and relocations, unless otherwise paid for.
   7. Temporary utility services to buildings, as required to maintain service during construction.
   8. Minor Items--such as relocation of sign posts, guard rails, rock wall, mail boxes, curbs, traffic loop detectors, pavement markings, etc., damaged as a result of construction activities.
   9. Trench boxes, steel and/or wood sheeting as required, including that left in place.
   10. Temporary construction dewatering as necessary.
   11. Dust control.
   12. Quality assurance testing.
   13. Clearing, grubbing and stripping.
   14. Routine flagger services.
   15. Construction schedules, bonds, insurance, shop drawings, warranties, guarantees, certifications and other submittals required by the Contract Documents.
   16. Repair and replacement of water lines under 2-inches in size, culverts, underdrains, rock lined drainage trenches in streets and other utilities damaged by construction activities and corresponding proper disposal of removed materials unless otherwise paid for.
   17. Temporary construction necessary for construction sequencing and other facilities not permanently incorporated into the work.
   18. Weather protection.
   19. Permits not otherwise paid for or provided by the Owner.
   20. Visits to the project site or elsewhere by personnel or agents of the Contractor, including manufacturer's representatives, as may be required.
   21. All excavation except the test pits specifically shown or ordered by the Engineer to establish sewer line and water line locations, earth excavation below grade and rock excavation.
   22. Contract administration and insurance.
   23. Test pits to establish in place field soils density, groundwater conditions, or requirements for dewatering.
   24. Pipe markings.
   25. Replacement of unsuitable material above pipe bedding and backfill.

26. Earthwork (Except Ledge)
27. Test Pits for the Contractor's Benefit
28. Disinfection cleaning and testing of installed water mains and blow offs where show on plans
29. Temporary resetting or replacement of existing street and traffic signs and temporary traffic signals where necessary.
30. Disconnecting and reconnecting traffic signal power to accommodate the work.
31. Removing and resetting of existing steps, guard rails, fences, walls and non-paved brick or paver walkways disturbed during construction, other than those identified on the Drawings to be replaced.
32. Protection of existing block and stone retaining walls unless otherwise identified to be removed, relocated or modified in the Drawings.
33. Installing temporary pavement markings on binder course that will not be surfaced within 14 days of installation.
34. Installing raised pavement markers and temporary symbols on the binder course within 48 hours of installing any section of the binder course and maintaining these throughout the project duration.
35. Locating and verifying the locations of water and sewer services within the limits of work.
36. Removal and subsequent delivery of replaced or obsolete frames, covers, grates, hydrants curbstones and signs to a location within the Town limits designated by the Owner.
37. Removal of temporary or permanent pavement markings, prior to paving. This includes removing markings that are applied on the winter binder layer, prior to installation of the wearing course.
38. Provide temporary pavement marking paint on the streets as shown in the layout plans on the binder course within two weeks of pavement installation if the wearing course will not be installed until after a winter season.

1.4 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.

All pay items shall be paid for per Maine DOT Standard Specifications most recent edition, unless otherwise noted below:

Item No. (602.30) – Flowable Concrete Fill

A. Method of Measurement: Flowable concrete fill for abandoning in-place water mains and for pipe support at pipeline crossings measured for payment shall be the actual cubic yards of flowable fill placed for either pipe abandonment or trench pipe support.
B. Basis of Payment: The Contract unit price per cubic yard of flowable concrete fill shall constitute full compensation for all labor, equipment, and materials necessary to complete this work including placement of the fill, including pumping, pipe preparation, curing, backfill, non-pressurized pipe caps, and all other requirements for safely capping and plugging the pipe.

Item No. (801.03)- Test Pits

A. Method of Measurement: The quantity to be paid for under this item shall be the actual number of test pits performed as indicated on the Contract Drawings and authorized by the Engineer.
B. Basis of Payment: Test pit excavations shall be paid for at the unit price per each test pit as indicated on the Contract Drawings. 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; 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.

Item Nos. (822.33), (822.34), & (822.36) - 6" Class 52 Ductile Iron Pipe, 8" Class 52 Ductile Iron Pipe, and 12" Class 52 Ductile Iron Pipe

A. Method of Measurement: The quantity of water main to be paid for under this item shall be the actual length in feet as measured along the center line of the pipe as laid including all fittings and valves.
B. Basis of Payment:
    1. Water main shall be paid for at the unit price per linear foot stated in the Bid Schedule. Said unit price shall be full compensation for sawcut, management, removal and disposal of pavement; excavation (except ledge); furnishing all pipes, pipe fittings (except valves), bronze wedges, polywrap, labor, equipment, tools, and other materials required for the installation of the pipelines; for installing the polywrap; for utility crossings and relocations, laying, setting, and jointing all pipes and fittings; for connections and couplings to existing pipes; for furnishing and placing all bedding, haunching and initial backfill; for backfilling; for thrust blocks and supports; for restraining joints; saddles; for furnishing and placing all temporary sheeting and bracing; for cleaning and testing; for removal and disposal of existing water lines being replaced within the trench; for all labor, tools and construction equipment; disinfection, cleaning and testing of installed water mains, temporary utilities for construction and to maintain existing service during construction including any materials, labor, and equipment the Contractor needs to provide regardless of the construction sequence, pipe and buried utility markings and location tape, cross-over channels and underdrains for sewer, storm drain and water excavation pits, and check dams for all excavated channels and for all other work and expenses incidental thereto for which payment is not provided under other items.
    2. Payment for new fire hydrants will be paid for under Item No. (824.3010), Hydrant Assembly.
    3. Payment for this work on interim requisitions shall be according to the following percentages:
        a. Water main successfully set in place and backfilled - 80 percent.
        b. Water main pressure tested and disinfected - 20 percent.

Item No. (822.36032) Clean and Line Water Main Under Railroad Crossing

A. Method of Measurement: Clean and line water main under railroad crossing to be paid for under this item shall be the actual length in feet as measured along the center line of the pipe as installed including all fittings and valves.
B. Basis of Payment: Cleaning and lining under railroad crossings shall be paid for at the unit price per linear foot stated in the Bid Schedule. Said unit price shall be full compensation for furnishing materials required for cleaning and lining of the pipelines; for clearing and grubbing; for dewatering; for cleaning and cement mortar lining the pipelines; for excavating, for sheeting, shoring and plating access pits, for furnishing and placing all bedding, haunching and initial backfill; for backfilling; for furnishing and placing all bedding materials, subbase gravel, base course gravel and gravel surfacing; for select fill, for compaction; for furnishing and placing all temporary and/or permanent sheeting and bracing; for cleaning and flushing including temporary flushing connections; for chlorination, temporary taps and fittings required for testing; for television inspection of the completed lining; and for all other work and expenses incidental thereto; for all labor, tools and construction equipment; for all connections to the existing water mains unless otherwise paid for; and for all other work and expenses incidental thereto including testing, chlorinating, etc.
C. All temporary items and labor necessary to properly protect work, test and chlorinate mains shall be covered under this item.

Item Nos. (823.311), (823.3251), & (823.33)- 12 Inch Gate Valve with Box, 8 Inch Gate Valve with Box, and 6 Inch Gate Valve with Box

A. Method of Measurement: The quantity of gate valves to be paid for under this item shall be the actual number of valves and valve boxes installed complete in place.
B. Basis of Payment: Gate valves shall be paid for at the unit price per each stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all materials, labor, equipment, polywrap, and tools; sawcut, management, removal and disposal of pavement; excavation (except ledge); for installing, setting, and jointing the valve and valve box; for restraining joints; for thrust blocks and supports; disinfection, cleaning and testing of installed water mains, for valve box extensions; for testing all valves; and for all other work and expenses incidental thereto for which payment is not provided under other items.

Item No. (823.3332) – Gate Valve Box, Replace

A. Method of Measurement: The quantity of gate valve boxes to be paid for under this item shall be the actual number of valve boxes installed complete in place.
B. Basis of Payment: Gate valve boxes shall be paid for at the unit price per each stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all materials, labor, equipment, polywrap, and tools; sawcut, management, removal and disposal of pavement; excavation (except ledge); for installing, setting, and jointing the valve and valve box; and for all other work and expenses incidental thereto for which payment is not provided under other items.
C. This item is intended for gate valve box replacements only as indicated on the Contract Drawings. Gate valves with boxes are to be paid for under Item Nos. 823.311, 823.3251, & 823.33.

Item No. (824.3010)- Hydrant Assembly

A. Method of Measurement: The quantity of hydrant assemblies to be paid for under this item shall be the actual number installed complete in place.
B. Basis of Payment:
    1. Hydrant assemblies shall be paid for at the unit price per each stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all materials, labor, equipment, and tools; for installing, setting, and jointing; for excavation; for all thrust blocks and supports; restraining joints; hydrant; hydrant snow markers; cleaning, testing and disinfection and of all other work and expenses incidental thereto for which payment is not provided under other items.
    2. Payment for hydrant branch gate valve will be paid for under Item No. (823.33) – 6 Inch Gate Valve with Box.
    3. Payment for hydrant branch pipe, anchor/swivel tee, polywrap will be paid for under Item Nos. (822.33) – 6" Class 52 Ductile Water Main.
    4. Payment for this work on interim requisitions shall be according to the following proceedings:
        a. Hydrant assembly successfully set in place and backfilled - 80 percent
        b. Hydrant assembly pressure tested and disinfected - 20 percent.

Item No. (824.31) Remove Fire Hydrant

A. Method of Measurement: The quantity of hydrant removals to be paid for under this item shall be the actual number of hydrants removed.
B. Basis of Payment: Hydrant removals shall be paid at the unit price per each. Said unit price shall be full compensation for furnishing all materials, labor, equipment, and tools; for excavation; for removal of existing hydrants and associated thrust blocks and supports, gate valves, tees, pipe; for delivery of removed hydrant to owner approved location.

Item No. (824.32) Remove/Reset Hydrant

A. Method of Measurement: The quantity of hydrant removal and resets to be paid for under this item shall be the actual number removed and reset in place.
B. Basis of Payment: Removal/resetting of hydrants shall be paid at the unit price per each stated in the Bid Schedule. Said unit price shall be full compensation for furnishing all materials, labor, equipment, and tools; for resetting, setting, and jointing; for excavation; for removal of existing hydrants where directed; for all thrust blocks and supports; restraining joints; for the hydrant branch gate valve, tee, pipe and hydrant; hydrant snow markers; polywrap; location tape; cleaning, testing and disinfection and of all other work and expenses incidental thereto for which payment is not provided under other items

Item Nos. (825.32) & (825.321) - 2 Inch Corporation and 1 Inch Corporation

A. Method of Measurement: The quantity of corporation stops and taps to be paid for under this item shall be the actual number of stops furnished and installed in the main for service connections.
B. Basis of Payment: Corporation stops and taps shall be paid for at the unit price per each stated in the Bid Schedule. Said unit price shall be full compensation for all fittings, labor, equipment, and tools necessary for the installation of the corporation stops

including sawcut, management, removal and disposal of pavement; excavation (except ledge); tapping the main; and for all work and expenses incidental thereto for which payment is not provided under other items.

Item Nos. (825.312), (825.322), & (825.331)- ¾" Curb Stop, 2" Curb Stop and 1" Curb Stop

A. Method of Measurement: The quantity of curb stops to be paid for under this item shall be the actual number furnished and installed for service connections.
B. Basis of Payment: Curb stops and boxes shall be paid for at the unit price per each curb stop stated in the Bid Schedule. Said unit price shall be full compensation for all fittings, labor, equipment, tools, and other materials required for sawcut, management, removal and disposal of pavement; excavation (except ledge); the installation of the curb stop and box; backfilling, raising to grade, for replacing or rebuilding shrubs, fences, lawns, trees, and other materials except other such items specifically included in the Bid Schedule; and for all other work and expenses incidental thereto for which payment is not provided under other items.

Item Nos. (825.4301), (825.422), & (825.430)- ¾" CTS Service, 2" Plastic Service, and 1" CTS Service

A. Method of Measurement: The quantity of service pipe to be paid for under this item shall be the actual length in feet as measured along the center line of the pipe as laid.
B. Basis of Payment: Pipe shall be paid for at the unit price per linear foot stated in the Bid Schedule. Said unit price shall be full compensation for service pipe, labor, equipment, tools, and other materials required for sawcut, management, removal and disposal of pavement; excavation (except ledge); the installation of service pipes; locating and verifying the locations of water services to be connected to, utility crossings and relocations, laying, setting, and jointing all pipes and fittings; for subbase and base aggregate; for making all connections to existing services; for cleaning, testing, and disinfecting; for backfilling; pipe and buried utility markings and location tape, for replacing or rebuilding shrubs, fences, lawns, trees, or other materials, except other such items specifically included in the Schedule of Values; and for all other work and expenses incidental thereto for which payment is not provided under other items. Payment will be made for a service when the tie sheet for that service has been received and accepted by the Engineer.

Item No. (825.5411)- Temporary Water Main

A. Method of Measurement: Temporary water main measured for payment shall be lump sum.
B. Basis of Payment: Temporary water lines, hydrant assemblies, saddles, taps, back flow prevention, corporation stops and appurtenances as needed shall be paid for at a lump sum price. The lump sum shall be full compensation for furnishing all materials, labor, and equipment necessary to provide a fully operational temporary water system including mainlines and services as specified; removing all temporary lines at the resumption of water service; placing and maintaining fill over temporary mains at drives, walks, etc.; installing temporary pavement for trenches across roads, access to businesses, etc.; making connections to buildings; excavation (except ledge excavation) and connection to existing mains and services; cleaning, leakage testing, and disinfecting temporary lines;

coordinating connections and shut-offs with the Owner; backfilling and repaving all trenches for the temporary water; site restoration; and for all other work and expenses incidental thereto for which payment is not provided under other items.

Item No. (827.302)- Unsuitable Soil Excavation Below Grade

A. Method of Measurement: Quantity to be paid for under this item shall be the number of cubic yards of material removed and replaced below the pipe or structure bedding 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 the sum of 18 inches plus 1-1/3 times the nominal inside diameter of pipe to be installed (minimum 3 feet) extending from the typical excavation depth called out in the contract drawings (bottom of bedding layer) to the depth accepted by the Engineer for the length of the excavation as directed by the Engineer.
B. Basis of Payment:
    1. Excavated unsuitable materials below the bedding elevation 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; and including furnishing installing and compacting replacement suitable backfill, and filter fabric, and for all other work and expenses incidental thereto for which payment is not provided under other items.
    2. Material excavated below pipe bedding grade 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.

Item No. (827.331)- Trench Insulation

A. Method of Measurement: 2-inch polystyrene plastic insulation accepted for payment shall be the actual square yards of insulation installed and accepted complete in place.
B. Basis of Payment: The contract unit price per square yard for 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.

END OF SECTION

SECTION 01340

SUBMITTALS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Submit all shop drawings, operations and maintenance manuals, Manufacturers' certificates, project data, and samples required by the Specifications.

B. Related Work Specified Elsewhere
   1. Project Record Documents: Section 01720

C. General Submittals Requirements: 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.

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, their subcontractors, suppliers, or manufacturers which illustrate the manufacturer, fabrication, construction, and installation of the work, or a portion thereof.

C. The Contractor shall submit to the Engineer one electronic copy of Shop Drawings and approved data. The Engineer will distribute digital copies (for Owner's, Engineer's and Field Representative's files) and the Contractor. It's the contractor's responsibility to distribute to subcontractors, suppliers and manufacturers. If the Contractor requires hardcopies, that shall be coordinated with the Engineer accordingly. All shop drawing comments will be summarized on the Submittal Review Form.

D. 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.
   1. Each shop drawing submittal shall include a complete copy of the relevant specification section markup up to reflect "compliance" or "deviation" on an item-by-item basis.

E. 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.

F. 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.

G. 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.

H. 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.

I. 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 their 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.

J. Only drawings which have been checked and corrected by the fabricator should be submitted to the Contractor by their subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to confirm 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.

K. 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.

L. Should the Contractor submit equipment that requires modifications to the structures, piping, electrical conduit, wires and appurtenances, layout, etc., detailed on the Drawings, Contractor 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.

M. 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.

N. 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).
      d. O&M submittals shall be numbered with the Specification Section number followed by a dash, the letters “OM”, another dash, and then a sequential

number beginning with 01 (e.g. 16000-OM-01). Resubmittals of O&Ms shall include an alphabetic suffix after the corresponding sequential number (e.g. 16000-OM-01A).

5. Notification of deviations from Contract Documents.
6. Other pertinent data.

B. A completed Contractor Submittal Certification Form shall be attached to each hardcopy and electronic PDF of 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 or O&M submittal 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 be **exactly** as submitted in the hardcopy, if applicable.
   4. The electronic PDF shall include an electronic table of contents that is bookmarked for each section of the submittal.
   5. The electronic PDF shall be configured such that is fully searchable.
   6. PDF versions of 24x36 drawings shall be converted to 24 x 36 PDFs so as not to lose the clarity of the original drawing.
   7. Electronic PDF submittals that are not submitted in accordance with the requirements stated above will not be reviewed by the Engineer.
   8. 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 all review comments. Resubmittal from the Contractor shall address each review comment and include supplemental information, as necessary.
   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 identifies all changes made to the submittal, indicates how each review comment has been addressed and indicates 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. For Information Only (Status 5 on shop drawing log). The shop drawing review was for information only.
   7. In Review (Status 6 on shop drawing log). The shop drawing is currently under review.

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:

_____
_____
_____
_____

By: _____ By: _____

Contractor

Manufacturer

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

OPERATIONS AND MAINTENANCE MANUAL CERTIFICATION FORM

PROJECT: _____ CONTRACTOR'S PROJ. NO: _____

CONTRACTOR: _____ ENGINEER'S PROJ. NO: _____

ENGINEER: _____

O&M NUMBER: _____ SPECIFICATION SECTION OR DRAWING NO: - OM- _____ SEQUENTIAL NUMBER (& ALPHA SUFFIX FOR RESUBMITTAL)

DESCRIPTION: _____

MANUFACTURER: _____

The above referenced operations and maintenance manual has been reviewed by the undersigned and I/we certify that the manual is customized as needed for this project, is suitable for mounting in a 3-ring binder, and contains the following items:

- ☐ Table of Contents
- ☐ Contractor and Manufacturer Contact Information
- ☐ Preventative Maintenance Schedule and Summary
- ☐ Removal and Replacement Instructions
- ☐ Lubrication Schedule
- ☐ Troubleshooting Information
- ☐ Warranty Information
- ☐ Rebuild Information for All Components
- ☐ Startup, Operation and Shutdown Procedures
- ☐ Normal and Emergency Operations
- ☐ Safety Procedures and Precautions
- ☐ Shop Drawings corrected to As-Built Conditions
- ☐ Personnel Training Requirements
- ☐ Project-Related Design Data
- ☐ Serial Numbers
- ☐ Maintenance and Repair Procedures
- ☐ Wiring and Control Diagrams
- ☐ Equipment Drawings & Schematics
- ☐ Equipment Performance Curves
- ☐ Parts and Service Contact Information
- ☐ Manufacturer's Contact Information
- ☐ Emergency Operations Plan
- ☐ List of All Component Part Numbers
- ☐ List of Spare Parts Supplied
- ☐ Testing Equipment & Special Tools
- ☐ Other System Specific Information

By: _____ By: _____

Contractor[a] Manufacturer[b]

Date: _____ Date: _____

[a] Contact information shall include name, address and telephone number.
[b] Required on all Operation and Maintenance Manuals.
[c] When required by Specifications. Page ___ of ___

General Contractor's Stamp

PROCESS EQUIPMENT MANUFACTURER SUBMITTAL CERTIFICATION
(Divisions 11 and 14)

Owner:_____ Date: _____

_____

Project:

_____

_____

Contractor: _____

_____

Equipment Manufacturer: _____

_____

_____

Equipment: _____

As an authorized representative of the equipment manufacturer, the undersigned certifies that the equipment listed above conforms to the requirements of Section 11000, Part 1.3.K. The undersigned authorized representative of the manufacturer further certifies that the equipment manufacturer or supplier has: reviewed the Contract Documents, the intended installation by the Contractor, and the intended functional and operational conditions; determined all conditions to be acceptable; and found no conditions which would cause the warranty to be void; or the equipment to function improperly, or not meet the performance requirements.

_____ _____
(Authorized Representative of the Manufacturer) (Date)

END OF SECTION

SECTION 01570

TRAFFIC REGULATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Provide all materials and perform all work necessary to completely regulate traffic in the area of Work.
   2. Perform all work in such a manner as to provide safe passage at all times for the public and with a minimum of obstruction to traffic.
   3. Do not close roads or streets to passage of the public without the permission of the proper authorities.
   4. Uniformed officers with vehicles and flaggers (including police officers when required by law, regulations, ordinances, or as a result of poor traffic control) shall be obtained and paid for by the Contractor.

B. The local police department and/or the appropriate state transportation authority who will decide if safe passage is being maintained and shall have the authority to require the Contractor to take any additional steps necessary to maintain safe passage. If the Authority furnishes an inspector on the job or requires additional traffic control as a result of poor traffic control by the Contractor, the Contractor shall be responsible for all costs assessed by the Authority and for additional traffic control at their own expense. Minimize the length of delays or traffic stoppage to the extent practicable. Maximum traffic stoppage time shall be 10 minutes.

C. Develop a project specific traffic control plan that meets the requirements of Manual of Uniform Traffic Control Devices (MUTCD) and any local and state requirements. Proposed Traffic Control Plan shall indicate signs/locations to be used. Traffic Control Plan submittal to the Engineer will be for general information only.

D. The Contractor's designated traffic control representative shall respond to all traffic safety complaints and be available to direct traffic control subcontractors the entire time work is occurring on site. If the designated representative is not on site for a period of time, another on site representative shall be designated by the Contractor for that period.

E. Related Work Specified Elsewhere
   1. Summary of Work: Section 01010
   2. Measure and Payment: Section 01150
   3. Submittals: Section 01340
   4. Project Record Documents: Section 01720
   5. Site work, piping, structures, testing requirements are specified in Division 2.

1.2 SCHEDULING WORK

A. During the Project Pre-Construction Meeting one Contractor representative will be designated as the coordinator between the Police Department and subcontracted traffic control.

B. Variable Message Signs notifying the public of pending road closure and/or

construction must be in place seven days prior to road closure or as required by [insert appropriate state transportation authority].

C. Schedule all work so that two adjacent parallel streets are not closed to passage by the public at any one time, if at all possible.

D. Revise the plan of work if it will create a traffic hazard or an unreasonably long detour.

E. Do not start work in any new location without the permission of the Engineer.

F. Notify all police and fire departments of all scheduled detours and when streets are reopened.

1.3 SUBMITTALS

A. Submit a project specific traffic control plan that meets the requirements of the Manual of Uniform Traffic Control Devices (MUTCD) and any local and state requirements. The proposed Traffic Control Plan shall indicate signs/locations to be used.

B. The Contractor shall be responsible for coordination with and providing information required by Maine Department of Transportation for the traffic control plan, as necessary.

C. The proposed Traffic Control Plan is provided "for information only" to inform the Owner, Engineer and Resident Project Representative of the project specific traffic control; however, if the Traffic Control Plan is incomplete (e.g., missing elements relevant to the project work), inadequate (e.g., outdated qualifications) or not project specific, it will be returned "revise and resubmit". Delays related to an incomplete Traffic Control Plan are the responsibility of the Contractor.

PART 2 - PRODUCTS

2.1 WARNING SIGNS AND BARRICADES

A. Traffic control (plans, methods and devices) shall be as outlined in the MUTCD as published by U. S. Department of Transportation, and any local and state requirements.

B. Provide adequate warning signs, barricades, signal lights, flaggers/uniformed police officers, and take other necessary precautions for the safety of the public.

C. Provide and illuminate suitable warning signs to show where construction, barricades or detours exist.

D. Provide digital message boards at appropriate locations as determined by the local police department and/or the Maine Department of Transportation to maintain safe passage of traffic and work zone.

E. Provide barricades of substantial construction and painted with a finish that increases visibility at night, as outlined in the MUTCD.

F. Keep signal lights illuminated at all barricades and obstructions from sunset to sunrise.

G. Maintain all necessary signs, barricades, lights, flaggers, crew and other safety precautions during authorized suspension of the Work, weekends, holidays or other times when the Work is not in progress.

H. Contractor shall make periodic inspection throughout the day of the traffic control patterns, methods, signs and other devices to ensure that they are properly placed.

2.2 UNIFORMED POLICE OFFICER

A. A uniformed police officer is a police officer (local, county or state) on regular or special duty dressed in uniform with the necessary high visibility vest and apparel needed for traffic control.

2.3 FLAG PERSON

A. A flag person is a trained and certified individual assigned specifically to the task of directing traffic and is outfitted in the necessary high visibility vest and apparel needed for traffic control.
B. Flag persons shall be provided by the Contractor, except for flagging required for railroad work within the railroad right-of-way.

PART 3 - EXECUTION

3.1 DETOURS

A. Provide, identify and maintain suitable detours when the project, or any part thereof, is closed to public travel.
B. When the closed part of the project is reopened, restore the detour area and any other disturbed areas to the original condition.

3.2 INCONVENIENCE TO RESIDENTS OF VICINITY

A. Whenever a traveled way is closed, perform the Work in such a manner that local travel, residents and businesses in the vicinity of the Work will be inconvenienced as little as possible.
B. Allow access to residents and abutting land owners along the project to driveways and other normal outlets from their property.

3.3 TRAFFIC CONTROL OFFICERS

A. Where required by the local, county or state police departments and/or when specified, traffic control officer shall be Uniformed Police Officers.
B. Where the local, county or state police departments do not wish to or are unable to furnish traffic control officers and/or when specified, the traffic control officers shall be flag person.

END OF SECTION

SECTION 01715

CLEANING, TESTING AND DISINFECTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Provide all labor, tools, equipment, and materials required to clean, test, flush and disinfect all facilities to be in contact with potable water or non-potable facilities indicated in these specifications. Provide all labor, tools, equipment, and materials required to neutralize solutions used for cleaning, testing, and disinfecting facilities.

B. Testing includes pressure testing, leakage testing and sample collection and testing for disinfection requirements. Performance testing of equipment and processes is not included in this section and is in the technical specification section for each system and in the appropriate Division 1 section.

C. Facilities covered by this section include, but may not be limited to:

Table 01715-1 – Facilities Requiring Cleaning, Testing and Disinfection

	Cleaning	Testing	Disinfection
Water distribution system piping, valves, and appurtenances	Yes	Yes	Yes

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 REFERENCE STANDARDS

A. AWWA B300 – Standard for Hypochlorites.

B. AWWA C600 – Standard for Installation of Ductile-Iron Mains and Their Appurtenances.

C. AWWA C605 – Standard for Underground Installation of Polyvinyl Chloride (PVC) and Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe and Fitting.

D. AWWA C651 – Standard for Disinfecting Water Mains.

E. AWWA C655 – Standard for Field Dechlorination.

F. NSF Standard 60: Drinking Water Treatment Chemicals – Health Effects.

G. NSF Standard 61: Drinking Water System Components – Health Effects.

H. NSF Standard 372: Drinking Water System Components – Lead Content.

1.4 QUALITY ASSURANCE

A. Standards (as applicable):

1. All work shall be in accordance with this specification and the referenced AWWA standards. Where conflicts appear between these specifications and AWWA standards the more stringent requirement shall apply.
2. Chlorine solution used for disinfection shall be made from either liquid sodium hypochlorite, or solid calcium hypochlorite, which shall conform to the latest AWWA B300 Standard for Hypochlorite.

3. Chlorine test kits shall be as described in the current edition of AWWA M12 - Simplified Procedures for Water Examination and the referenced AWWA standards.
4. Handling and disposal of chlorinated water shall be in accordance with the referenced AWWA standards.

B. If water for flushing, testing and disinfection is supplied from a temporary connection to the distribution system, appropriate backflow prevention and flow metering methods shall be used.

C. Pressure Testing: Pressure gauges used to monitor any pressure testing shall be calibrated to within +/- 2 psi.

1.5 COORDINATION

A. Use of water will only be as approved and coordinated by the Owner.

B. All flushing, pressure and leakage testing and chlorinating shall be done by the Contractor, or third-party testing subcontractor, in the presence of the Engineer and in the presence of the Owner or Owner's Representative in accordance with the requirements of the local and state plumbing codes and the appropriate Sections of these Specifications, at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 CHEMICALS FOR DISINFECTION

A. Hypochlorite's (calcium and sodium) shall meet the requirements of AWWA B300, NSF 60 and shall be suitable for use in potable water. Liquid chlorine (chlorine gas) shall not be allowed unless Contractor petitions Owner and local Fire Department for its use and provides a plan that is acceptable to the local Authorities to protect against gas release.

B. Water used for cleaning, mixing chlorine solutions, and washing down shall be taken from the community drinking water distribution system when available or the on-site potable water well. Water for these purposes will be provided by the Owner at no cost to the Contractor.

C. Neutralizing chemicals: Contractor shall use sodium sulfite, sodium thiosulfate or sodium bisulfite to reduce chlorine residual to non-detectable levels. Contractors shall provide sufficient tablets for flow-through treatment or provide chemical metering pumps for injecting dechlorinating solutions into the discharge flow stream.

2.2 EQUIPMENT

A. Pressure and Leak Testing Equipment: Contractors shall provide the necessary taps, pumps, pressure gauges, and level measuring instruments necessary to monitor the pressure tests and leak tests for piping, equipment, and tanks. Equipment shall be suitable for use in potable water.

B. Disinfection Equipment:

1. All equipment used to mix, pump, and convey the chlorine solution for disinfecting shall be dedicated for that purpose. Equipment shall be thoroughly cleaned beforehand and shall not have been used for or in contact with sewage, hazardous chemicals, or wastes, etc.

2. A pumping unit or proportionate feeder suitable for delivering a hypochlorite solution to the isolated main shall be provided. The unit used shall prevent chlorine solution from flowing back into the existing system.

C. Contractors shall provide and use field test kits to confirm residual chlorine levels. Field test kits shall use colorimetric methods and be capable of measuring high levels (100 mg/L) of residual chlorine, as well as low levels of residual chlorine (down to 0.01 mg/L).

D. For pipelines: Temporary blow-offs shall consist of a corporation cock, PE or type K copper tubing and a curb stop, each of not less than 1-inch diameter.

PART 3 - EXECUTION

3.1 GENERAL

A. Thoroughly clean all wells, piping, equipment, and tanks prior to testing. Remove all dirt, dust, oil, grease, and other foreign material. Exercise care while cleaning to avoid damage to linings and coatings.

B. Supply all labor, equipment, materials, instruments, gauges, and pumps required to conduct the tests. The drawings do not detail taps, gauges, plugs and other related materials required to perform testing. These materials are the responsibility of the Contractor.

C. Water Mains

1. Flushing, testing, and chlorinating of pipelines shall closely follow pipe laying work. As the mainline is installed, it shall be tested approximately every 1,000 feet, or between line valves, whichever is less. Should the mainlines fail to be flushed, tested, and chlorinated as specified, the main laying work shall be suspended until the flushing, testing, and chlorinating is done.
2. Final acceptance of the water main shall be based on successful (negative) results of bacteriological tests, which shall be done on samples taken from the main following chlorination and final flushing. Locations of samples shall be determined by the Engineer.
3. The testing and related procedures described herein shall be performed in the order listed.
4. The Contractor, with the assistance of the Owner, shall fill mains as slowly as practicable so as not to cause dirty water and serious pressure drops within the existing water distribution system.

3.2 WATER MAIN FLUSHING AND TESTING

A. Flushing

1. All new water mains, and existing water mains that have been drained and cut-into for making connections, shall be thoroughly flushed prior to pressure or leakage testing or final chlorination. Flushing shall be accomplished by partially opening and closing valves, hydrants, and blowoffs, several times, under expected line pressure, to achieve flow velocities of not less than 3 feet per second, in the pipeline. The size and number of hydrant outlets and/or main taps to provide the required flow (at 40 psi residual pressure) is as follows:

Table 01715-2
Minimum Required Flow and Openings Required to Flush Water Mains
(Assuming 40 psi Residual Pressure in Ductile Iron Water Mains)

Main Diameter (in.)	Flow Required to Produce 3 fps in Main (gpm)	Minimum Size of Taps (in.)	Hydrant Outlets	
			Number	Size (in.)
4	120	1	1	2-1/2
6	265	1-1/2	1	2-1/2
8	470	2	1	2-1/2
10	735	2-1/2	1	2-1/2
12	1,055	3	1	2-1/2
16	1,880	4	2	2-1/2

2. For 24-inch or larger diameter mains, an acceptable alternative to flushing is to high-pressure water jet, scrubbing or broom-sweeping the main, carefully removing debris prior to filling and chlorinating the main. OSHA requirements for confined space need to be addressed before entering the pipeline.
3. If less than a 40-psi residual is available in the main, with the size tap shown above then a larger, or more tap(s) or hydrant outlets will be required, as determined by the Engineer.
4. The length of time for flushing, at or above the minimum allowable velocity, shall be computed to allow a minimum of 3 times the total volume of water in the main to be flushed to waste. Flushing shall be done in the presence of the Engineer.

B. Pipeline Pressure Test
1. Air Removal: Following flushing, and before applying the specified test pressure, air shall be completely expelled from the pipes, valves, and hydrants. After all air has been expelled, the air blowoffs can be closed, and the test pressure applied.
2. Pressure test (and flushing) shall be performed before disinfection.
3. All new water pipelines, or any sections thereof, shall be subjected to a hydrostatic pressure of at least 1.5 times the working pressure that will exist at the point of testing, but no less than 150 psi. **Thrust restraint must be designed for this test pressure and in place before conducting pressure test.** Test pressures shall meet the following requirements:
   a. Be of at least 2-hour duration.
   b. Be not less than 1.25 times the expected system working pressure **at the highest point** along the test section.
   c. Not exceed pipe or thrust-restraint design pressures.
   d. Not vary by more than +5 psi for the duration of the test.
   e. Not exceed 2-times the rated pressure of the valves or hydrants when the pressure boundary includes closed valves or hydrants. Valves shall not be operated in either direction at differential pressure greater than the rated pressure.

f. Not exceed 1.5-times the rated pressure of the valves when the pressure boundary of the test section includes closed butterfly valves or resilient seated gate valves.

4. Each section of the pipeline shall be slowly raised to the specified test pressure for two separate periods. The first period shall be for 15-minutes, after which the pressure shall be allowed to drop slowly back to system pressure. The pressure shall then be slowly raised again to the specified test pressure and maintained for 2 hours. The test pressure shall be based on the elevation of the lowest point of the main, in the test section and shall be corrected to the elevation of the test gauge, as directed by the Engineer. The test pressure shall be applied by means of a pump connected to the main, in an approved manner, and which will prevent any backflow into the existing system.
5. Any exposed pipe, fittings, valves, hydrants, and joints shall be carefully examined during the test. Any damaged or defective pipes, fittings, hydrants, or valves discovered following, or as a result of the pressure test shall be repaired or replaced with sound material. If faulty materials are removed and replaced, the pressure testing procedure shall be repeated.
6. Air pressure testing will not be allowed in lieu of water pressure testing. However, if Contractor elects to conduct intermediate testing with air for their own convenience, air pressure shall not exceed 25 psi and is not a substitution for water pressure testing.
7. Pipeline pressure testing shall be conducted by a third-party specialty Contractor.

C. Pipe Leakage Tests

1. Ductile Iron and PVC Pipes
   a. Leakage testing shall be conducted concurrently with the pressure test.
   b. Leakage is defined as the quantity of water that must be pumped into the new main during the test, or any section thereof, required to maintain pressure within 5 psi of the starting test pressure. Leakage shall be recorded to the nearest one-tenth of a gallon. The Contractor shall employ qualified personnel throughout the testing. Leakage shall not be measured by a drop in pressure over a period of time.
   c. Leakage in the test section must be less than an amount determined as follows:

$$L = \frac{SD\sqrt{P}}{148{,}000}$$

L = allowable gallons of leakage per hour
S = the length of pipe tested, in feet
D = the nominal pipe diameter in inches
P = the average test pressure during the test in psi

   d. The leakage formula is based allowable leakage of 10.49 gallons per day, per mile of main, per inch (nominal) of main diameter, at a pressure of 150 psi. Allowable leakage under various conditions is presented in Table 01715-3.

Table 01715-3 – Allowable Leakage (gph) per 1,000 Feet of Mainline

Average Test Pressure (psi)	Nominal Diameter (inches)						
	6	8	10	12	16	20	24
250	0.64	0.85	1.07	1.28	1.71	2.14	2.56
225	0.61	0.81	1.01	1.22	1.62	2.03	2.43
200	0.57	0.76	0.96	1.15	1.53	1.91	2.29
175	0.54	0.72	0.89	1.07	1.43	1.79	2.15
150	0.50	0.66	0.83	0.99	1.32	1.66	1.99
125	0.45	0.60	0.76	0.91	1.21	1.51	1.81
100	0.41	0.54	0.68	0.81	1.08	1.35	1.62

i. If the mainline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.
ii. When testing against closed metal seated valves, an additional leakage shall be allowed per closed valve of 0.0078 gallons per hour, per inch of nominal valve diameter.
iii. When hydrants are in the test section, the test shall be made against the closed hydrant(s).

e. Acceptance shall be determined on the basis of allowable leakage. If leakage in any test is greater than that specified, the Contractor shall locate leaks and make repairs as necessary until the leakage is within the specified allowance.
   i. All visible leaks are to be repaired regardless of the amount of leakage.
   ii. All water mains shall be pressure and leakage tested in the presence of the Engineer, in order to qualify for acceptance.
f. Non-Monitored Make-Up Water Test procedures are as follows:
   i. The test procedure consists of 2 phases, an initial expansion phase and a testing phase. For the initial expansion phase, make-up water is added as required to maintain the test pressure in the test section of pipe for 4 hours.
   ii. After the expansion phase is complete, the test phase begins with the pressure in the pipe at test pressure. The test pressure is then reduced by 10 psi. If the pressure remains steady (within 5% of target value) after one hour, then the pipe has passed the leakage test.
g. All water mains shall be pressure and leakage tested in the presence of the Engineer, in order to qualify for acceptance.

3.3 CHLORINE DISINFECTION

A. Disinfection shall be achieved through the use of sodium hypochlorite or calcium hypochlorite. Chlorine gas shall not be allowed unless specifically requested by the Contractor and approved by the local authorities having jurisdiction. Water systems that utilize chloramines will require additional chlorine addition to achieve the free chlorine levels outlined in these specifications. Calcium hypochlorite tablets shall not be used in solvent-welded plastic or screwed-joint steel piping. The Contractor shall provide a written plan on their proposed disinfection procedures.

B. Owner will provide the Contractor at no cost sufficient volume of water to disinfect the pipeline or tank once. If additional disinfecting is required, the Contractor shall purchase the water from the Owner at the current metered rate.

C. Water Main/Pipe Disinfection:

1. The method of chlorination shall be the Continuous Feed Method as described hereinafter. Chlorination procedures will not be allowed until acceptable flushing and pressure testing has been performed and accepted. The continuous feed method consists of the following steps:
   a. Prior to the application of chlorine, confirm that valves are closed to prevent back-feeding chlorine solution into the existing system.
   b. At a point not more than 3 feet downstream from the beginning of the new main, fill the main with chlorinated potable water, having an initial concentration of 25 mg/l free chlorine residual.
      i. Water from the existing distribution system or other approved source of supply shall flow at a constant measured rate, into the new main. In the absence of a meter, the rate may be approximated by measuring the discharge rate at the end of the test section with a pito-gauge or by measuring the time to fill a container of known volume.
   c. The application of chlorine solution shall continue until the entire main is filled with water having 25 mg/L of free available chlorine.
2. The amount of chlorine required to obtain a concentration of 25 mg/L per 100 feet of various diameter pipes is as follows.

Table 01715-5 – Chlorine Required to Obtain 25 mg/L per 100 feet of Various Diameters

Pipe Diameter (inches)	Sodium Hypochlorite (gallons)				Calcium Hypochlorite (ounces)
	5% Available Chlorine	10% Available Chlorine	12.5% Available Chlorine	15% Available Chlorine	65% Available Chlorine
4	0.03	0.02	0.02	0.01	0.02
6	0.08	0.04	0.03	0.03	0.75
8	0.13	0.07	0.06	0.06	1.30
10	0.20	0.10	0.09	0.07	2.10
12	0.28	0.15	0.12	0.10	2.90
16	0.50	0.25	0.22	0.17	5.30
20	0.80	0.40	0.34	0.28	8.40
24	1.30	0.60	0.50	0.40	12.00

a. The above quantities are to be added to a sufficient quantity of water, dissolved, and mixed. The solution shall be injected into the main as specified.
b. The quantities shown are based on concentrations of available chlorine by volume. Extended or improper storage may result in a loss of available chlorine.

3. The chlorinated water shall be retained in the main for a minimum of 24 hours. At the end of this 24-hour period, retest portions of the main to confirm that a minimum of 10 mg/l free available chlorine residual exists in the main. If the residual chlorine is less than 10 mg/L, acceptable bacteria results may not be obtained.
4. All water main disinfection shall be performed in the presence of the Engineer and potentially the regulatory agency, in order to qualify for acceptance.
5. Slug Method: Contractor shall petition the Owner and Engineer to use the slug method. The Contractor shall prepare and submit a specific plan detailing the process, equipment, testing locations and schedule for conducting disinfection using the slug method for review and approval by the Owner and Engineer.

D. Chlorination Procedures when Cutting into or Repairing Existing Pipe
1. Trench Treatment. The Contractor shall take all necessary steps to prevent trench water from entering the pipe and prevent contamination.
2. The interior of all pipes and fittings used in making a repair shall be swabbed or sprayed with a 1 percent hypochlorite solution before they are installed.
3. If valve and hydrant locations permit thorough flushing toward the work location from both directions, it shall be done. Flushing shall be started as soon as the repairs are completed and shall be continued until discolored water is eliminated.
4. Slug Chlorination. Where practical and in addition to the procedures above, a section of pipe in which the break is located shall be isolated. All service connections shall be shut off, and the section flushed and chlorinated by the Slug Chlorination method. This method allows the chlorine dose to be increased to as much as 300 mg/L, and the contact time reduced to as little as 1-hour. After chlorination, the section shall be properly flushed until discolored water is eliminated and the water is free of noticeable chlorine odor.
5. Bacteriological samples shall be taken after repairs. If the direction of flow is unknown, samples shall be taken on each side of the main break. If positive samples are recorded, daily sampling shall be continued until two consecutive negative samples are recorded.

3.4 FLUSHING AND NEUTRALIZATION OF CHLORINATED WATER

A. When flushing chlorinated water, whether from wells, water mains, building pipelines or tanks the heavily chlorinated water shall be flushed from the well, pipe or tank until chlorine measurements show the concentration in water being discharged is no higher than that generally prevailing in the system.
B. The Contractor shall obtain approval from the Owner and local authorities having jurisdiction of location(s) for discharging the heavily chlorinated water, which result from the chlorination procedures. Great care shall be exercised in the selection of the

rate of flow and the discharge points, in order to minimize complaints, and damage to public or private property and the environment.

C. The heavily chlorinated water shall be suitably and thoroughly neutralized prior to disposal into the environment. In no case shall chlorinated or neutralized water be discharged directly into a water body. If necessary, state, federal, and local regulatory agencies should be contacted to determine special provisions for the disposal of heavily chlorinated water.

3.5 WATER QUALITY ANALYSES

A. Water Mains:

1. After final disinfection and flushing and before the water main is placed in service, water samples shall be collected twice (at least 16-hours apart) by the Contractor and tested for bacteriological quality in accordance with standard methods and AWWA C651. Water samples shall show the absence of coliform organisms and a background bacteria count [Heterotrophic Plate Count (HPC)] of less than 500 CFU/mL or no higher than the source water.
    a. Option B from AWWA C651 may be conducted by allowing the disinfected water main to sit without any water use for 16-hours, and then collecting two sets of samples 15-minutes apart while the sample taps are running.
2. If, during construction, trench water has entered the water main, or if in the opinion of the Engineer excessive quantities of dirt or debris have entered the main, bacteriological samples shall be taken at intervals of approximately 200 feet and shall be identified as to location. Samples shall be taken of water that has stood in the main for at least 24-hours after final flushing has been completed.
3. Samples shall be obtained through a corporation cock and copper tubing installed by the Contractor.
4. The Owner shall deliver samples to a state certified laboratory approved for bacterial analysis. The Owner shall pay for the cost of analysis. Only after each consecutive sample is approved shall the mains be incorporated into the water system. In the event that positive reports of contamination are received, the mains shall be flushed and chlorinated as many times as may be necessary to obtain approved (negative) results.

3.6 RE-CHLORINATION

A. If the initial chlorination fails to produce satisfactory bacteriological results, the pipe shall be re-flushed and re-sampled. If re-sampling fails to produce acceptable results, the pipe shall be re-chlorinated until satisfactory results are obtained. Provide engineer with laboratory testing for all testing.

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, Request for Information, Work Change Directive, Field Order or Engineer's Clarification).

B. Related Work Specified Elsewhere
   1. Summary of Work: Section 01010
   2. Measure and Payment: Section 01150
   3. Submittals: Section 01340
   4. Traffic Regulation: Section 01570
   5. Site work, piping, structures, testing requirements are specified in Division 2

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. Records shall be made available for review by the Owner, Engineer, Resident Project Representative and/or Funding Agency(s) upon request.

G. Failure to maintain current records, as specified herein, shall be grounds for withholding payment from monthly partial payment requests.

H. 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.

1.3 RECORDING

A. Label each document "PROJECT RECORD" in large 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 horizontal and vertical dimensions, swing-ties, and elevations shall be accurate to within one-tenth of a foot, unless greater accuracy is specified herein or elsewhere in the Specifications (e.g., concrete elevations, weir elevations, etc.).
2. 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.
3. Stations shall be recorded to the nearest foot.
4. Inverts shall be recorded to the nearest hundredth of a foot.
5. Elevations shall be recorded to the nearest hundredth of a foot.
6. Building dimensions shall be recorded to the nearest 1/4".
7. 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, water main thrust blocks, sewer mains and services, sewer force main valves, sewer force main thrust blocks, 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, Oil/Water Separators and other structures.
      a. Renumber structure stationing to reflect changes.
      b. Show ties to center of structure covers or hatches.
      c. Show all inverts at the face of the structure.
      d. Draw any new structures that are added on plan and profile.
      e. Show any field or office redesigns.
      f. Redraw plan if the structure's location is moved more than 5 feet in any direction.
      g. Redraw profile if inverts changed by more than 6 inches.
   3. Water Mains and Force Mains
      a. Show ties to the location of all valves, bends (horizontal and vertical), tees and other fittings. Show locations and size of all thrust blocks.
      b. Revise elevations indicated on the Drawings to reflect actual construction.

4. House Services
    a. Draw all house services (even to empty lots) on plans and show ties.
    b. Show swing ties or distances to wyes from manhole.
    c. Show chimneys heights in the profile.
5. Ledge
    a. Show ledge profiles. Note whether the plotted ledge profile reflects undisturbed or expanded conditions.
6. Site Piping and Buried Electrical Conduit
    a. Site piping and utilities shall be drawn to reflect the installed locations, with ties (or XY coordinates) and elevation of all bends (horizontal and vertical). Coordinates, if provided, shall be in the same coordinate system as the Drawings.
    b. Show location and elevations of buried electrical conduits, electrical handholes and electrical manholes. Show elevations at all crossings of site piping.
7. Roads
    a. Show centerline road profile and level spot elevations.
    b. Show pavement widths.
    c. Show the pavement cross slope on road cross-sections if they differ from the Drawings.
    d. Show any deviations from the design plans.
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. "Water Service Location" forms for all services.
2. Record drawings shall be provided as a bound paper set of computer-generated drawings, an electronic file (pdf format) of the bound paper set, and electronic files in AutoCAD format. Ownership of the drawings and files shall pass to the Owner at the time of submittal.
3. If the Contractor provides alternate or substitute equipment that requires revised arrangements from the Bidding Documents, the Contractor shall provide supplemental record drawings of these items in AutoCAD format.

B. Submittal shall be accompanied by a letter containing the following:
1. Date, project title and number.
2. Contractor's name and address.
3. Title and number of each record document with certification that each submitted document is completed and accurate.
4. Signature of Contractor, or their authorized representative.

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. Do not conceal any Work until the required records are collected.
C. Records shall be made available for review by the Owner, Engineer, Resident Project Representative and/or Funding Agency(s) upon request.
D. Records shall be submitted as specified herein.

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 all the relevant information specified herein.
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.

3.3 FORMAT FOR ELECTRONIC DELIVERABLES

A. AutoCAD digital survey data for the as-built survey shall include:
    1. Copy of field notes and sketches of the survey.
    2. Paper copy of description of layers.
    3. Paper copy of base map.
    4. Provide digital information on compact disk with paper copy printout; information shall be provided in .DWG format (AutoCAD 2011 or earlier). Data shall be provided in 3D format (northing, easting, elevation, or Y, X, Z).
    5. Drawing scale: Minimum one inch = twenty feet.
    6. Layering:
        a. Repetitive symbols made into blocks and defined on layer 0.
        b. All entities shall be drawn “by layer” as opposed to individual properties.
        c. Use one linetype and one color per layer as opposed to numerous colors/linetypes on a single layer.
        d. Preface each layer with the initials of the Survey company or Contractor (example, Survey Company: SC “layername”).
        e. Database text annotation will be coordinated so the text will be right-reading.
        f. Place text on separate layers.

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 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. Grading
   5. Providing soil material as necessary
   6. Disposal of unsuitable materials
   7. Disposal of excess suitable material

B. Related Work Specified Elsewhere
   1. Summary of Work: Section 01010
   2. Measure and Payment: Section 01150
   3. Submittals: Section 01340
   4. Traffic Regulation: Section 01570
   5. Project Record Documents: Section 01720
   6. Site work, piping, structures, testing requirements 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 C117 and ASTM C136 (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 D1557 (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 D1556, (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 D6938 (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

A. The Independent Testing Laboratory shall conform to the procedures and standards listed below. 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.

C. Paved Areas and 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.

D. Trenches: Field density test in trenches shall be taken at 75 linear foot intervals on every third lift.

E. In addition to the above tests the Independent Testing Laboratory will perform additional density tests at locations and times requested by the Engineer.

F. 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. 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. Material shall be in conformance to MEDOT Standard Specification Section 703.06. Type A 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 MEDOT Type A Aggregate
1/2 inch	45-70
1/4 inch	30-55
No. 40	0-20
No. 200	0-6.0

B. Aggregate Subbase: 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. Material shall be in conformance to MEDOT Standard Specification Section 703.06. The gradation of the material shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves MEDOT Type D
1 inch	35-80
1/4 inch	25-65
No. 40	0-30
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. 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

E. 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

F. 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.

2.2 FILTER FABRIC

A. N/A

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 its 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. Perform excavation for force mains and water mains in a logical sequence.
6. The extent of open excavation shall be controlled by prevailing conditions subject to any limits prescribed by the Engineer.
7. 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. 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.

H. 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.
   3. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Install shoring and bracing as excavation progresses.

I. 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.

J. 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.

K. 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.

L. 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, it shall furnish, as directed, loam and topsoil at least equal in quantity and quality to that excavated.

M. Dust Control:
   1. During the progress of the work, the Contractor shall conduct its operations and maintain the area of its activities, including sweeping and sprinkling of streets as necessary, so as to minimize the creation and dispersion of dust.
   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	Sand
PVC or PE Pipe	Sand

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	Sand
PVC or PE Pipe	Sand

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) in non-paved areas. Where backfilling with excavated material, compact to native field density in non-paved areas. In cases where pipe trenches are within Roadways, Drives, and Paved Areas, 95% compaction requirement in paved areas governs for pipe bedding material and each layer of backfill up through subbase and base material.

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. 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. Additionally, material should be compacted in lifts no more than 12” thick. 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.

E. 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. Compaction:
   1. After grading, compact subgrade surfaces to the depth and percentage of maximum density for each area classification.

D. 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 SUBBASE COURSE

A. General:
   1. Base course consists of placing the specified materials in layers to support a subbase 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 subbase 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 subbase 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 02225

FLOWABLE FILL

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Provide and install flowable fill material in authorized excavation(s) as shown on the Drawings and/or as specified herein.

B. Related Work Specified Elsewhere:

1. Earthwork, excavation, backfilling, compaction, piping, testing and pavement are specified in the appropriate sections of this Division.

1.2 QUALITY ASSURANCE

A. Perform work in accordance with ACI 229, Controlled Low-Strength Materials, or as specified here-in.

1.3 SUBMITTALS

A. Submit Mix designs for each mixture to be provided at least 15 days prior to production.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Materials shall meet the following requirements:

1. Portland Cement, Type I or II - ASTM C150.
2. Fly Ash (LOI limits do not apply) - ASTM C618.
3. Fine Aggregate/Mineral Filler – ASTM C 33, ASTM or non-ASTM sands or mineral fillers with 100% passing the 1/2" sieve may be considered which produce an acceptable flow and desired performance characteristic. Soils with fine clays will not be considered. All other than ASTM C 33 materials must receive prior approval from the Engineer.
4. Air Entraining Admixtures - As Per Manufacturer's Specifications.
5. Light Weight Cellular Admixture - As Per Manufacturer's Specifications.
6. Water – Potable or ASTM C 94.
7. Preformed Foam – Procedures for evaluation ASTM C 796 and ASTM C 869.

B. Standard Flowable Fill:

1. Compressive strength at 28 days less than 1200 psi

C. Excavatable Flowable Fill:

1. Compressive strength at 28 days between 100-200 psi.
2. Mix:
   a. Portland Cement: 50-100 lb/yd3
   b. Fly Ash: up to 350 lb/yd3, lime content not to exceed 10% by weight.
   c. Fine Aggregate/Mineral Filler: 2000-3000 lb/yd3
   d. Water: 325-600 lb/yd3, for Class F fly ash and cement-only mixtures up to 1000 lb/yd3 may be acceptable.

D. Low Density Flowable Fill:
   1. The preformed foam shall produce stable air cells capable of resisting the chemical and physical forces imposed during mixing, placing and setting.
   2. Submit the foaming agent Manufacturer's recommended mixing procedures and approved mixing equipment to the Engineer.
   3. Methods of placement must not cause a change in density due to loss of air content beyond predictable ranges.

E. Submitted flowable fill mix design must be a MaineDOT approved mix design.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Flowable fill shall be produced and delivered using standard concrete construction equipment and practices.

B. Placing flowable fill shall be by chute, pumping, or other method approved by the Engineer.

C. The flowable fill shall be discharged directly from the mixer truck into the space to be filled.

D. No flowable fill shall be placed on frozen ground.

E. At the time of placement the flowable fill shall have a temperature of at least 40 degrees F.

F. When flowable fill is placed in freezing temperatures, the material should be covered with blankets and protected from freezing until hardening.

G. The Contractor shall provide all necessary means to confine the material within a designated space.

H. Formed walls or other bulkheads shall be constructed to withstand hydrostatic pressure exerted by flowable fill where necessary and as determined by the Engineer.

I. The Contractor is responsible to ensure underground utilities, including but not limited to pipes, tanks, structures, cables, etc. are secured to prevent floating.

J. No compaction or vibration of the material is required.

K. Where flowable fill is being used as pipe bedding it shall be placed in lifts to ensure lateral support of the pipe develops along the side of the pipe before continuing with the backfilling.

L. When paving over flowable fill in cold weather, any frozen material on the surface shall be scraped off and removed prior to paving.

M. The flowable fill shall be left undisturbed until the material obtains sufficient strength. Sufficient strength for paving is achieved when the flowable fill can support the weight of foot traffic without apparent deformation. Sufficient strength for supporting vehicular traffic is 2.5 tons per square foot as measured by a pocket penetrometer.

N. Trenches shall be covered and barricaded until hardening occurs.

END OF SECTION

SECTION 02610

RIGID BOARD INSULATION FOR PIPE IN TRENCHES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Provide and install rigid board insulation in trenches over or between piping, as shown on the Drawings and as specified herein.

B. Related Work Specified Elsewhere:

1. Earthwork, excavation, backfilling, compaction, piping, testing and pavement are specified in the appropriate sections of this Division.

1.2 REFERENCES

A. ASTM C272 - Test Method for Water Absorption of Core Materials for Structural Sandwich Construction.

B. ASTM C518 - Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter.

C. ASTM D1621 - Test Method for Compressive Properties of Rigid Cellular Plastics.

1.3 SUBMITTALS

A. Submit shop drawings, product data and manufacturer’s written installation instruction in accordance with the applicable section of Division 1 and the General Conditions of the Construction Contract.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to project site in manufacturer's original unopened packaging.

B. Identify contents, manufacture, brand name, thermal values, and applicable standards.

C. Store materials in area protected from weather, and moisture.

D. Remove damaged materials from site.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Rigid Pipe Insulation

1. Dow Chemical Company – Styrofoam Highload 40
2. Certifoam 40
3. Or equivalent

2.2 RIGID PIPE INSULATION

A. Insulation: Closed cell polystyrene foam board

1. Standard Two Foot Width.
2. Aged "R" Value - "R" = 5.0 per inch, ASTM C518.
3. Water Absorption - 0.1 percent, ASTM C272.
4. Water Vapor Permeance - 1.0 perm (max) ASTM E96
5. Compressive Strength - 40 pounds per square inch, ASTM D1621.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Lay rigid board insulation in trenches over or between piping where depth of pipe cover is than that required on the Drawings. Install rigid board insulation as shown on the Drawings.

END OF SECTION

SECTION 02615

DUCTILE IRON PIPE & FITTINGS (BURIED APPLICATIONS)

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish, install and test ductile iron pipe and fittings of the type(s) and size(s) in the location(s) shown on the Drawings and as specified herein.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

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 equal.

1.4 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.

1.5 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 buried ductile iron pipe shall have push-on or mechanical joints unless otherwise specified or shown on the Drawings.
   2. All pipe within valve pits and other structures and all pipe that is above grade is considered exposed pipe and shall be flanged.
   3. 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. For flanged pipe: Class 53.
   4. Pipe for use with sleeve type couplings shall have plain ends (without bells or beads) cast or machined at right angles to the axis.
   5. Pipe for use with split type couplings or restrained joints shall have ends with cast or machined shoulders or grooves that meet the requirements of the manufacturer of the couplings.

B. Coatings
   1. Finish layer of factory applied bituminous coatings (in accordance with AWWA C151) shall be furnished on the exterior of all buried piping unless specified otherwise.

C. 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. All bolts and nuts for buried mechanical fittings shall be zinc plated and fluoropolymer coated for corrosion resistance and reduced assembly friction. Fluoropolymer coatings shall be resistant to abrasion, wear and chipping
   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 unless other coating required by Section 09900.
e. When applicable, provide and install flange clamps as shown on the Drawings.

D. Joint Bracing:
1. Provide joint bracing to prevent the piping from pulling apart under pressure as required and as shown on the Drawings or in the Pipe Schedule.
2. Types of bracing:
   a. 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 exposed installations after assembly or, if necessary, prior to assembly.
   b. Mechanical joint bolted-type follower gland pipe restrainers.
      i. Ductile iron gland and restraining ring.
      ii. Gasket shall be standard MJ gasket -ANSI/AWWA-C111/A21.11.
      iii. Working pressure 350 psi for 18-inch diameter and larger; 250 psi for less than 16-inch diameter and smaller.
      iv. Test pressure two times working pressure.
      v. Grip Rings™, Romac Industries, or other equivalent as
   c. approved by Engineer. Other types of bracing as shown on the Drawings.

2.2 FITTINGS

A. Standard Fittings:
1. Unless otherwise indicated on the Drawings, fittings shall be ductile iron and shall match or exceed the pressure rating of the piping system.
2. Hydrants shall be installed with anchoring tee, swivel tee, or standard tee as specified in the drawings.
3. 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.
4. Unless otherwise shown on the Drawings, flanged joint fittings shall be used with flanged joint pipe and mechanical joint fittings shall be used with push-on joint and mechanical joint pipe.
5. Lining shall match that specified for the pipe.
6. Coating shall match that specified for the pipe and pipe location.

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. Replace all damaged and rejected materials at no cost to the Owner.

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. Provide and install thrust restraint at each pipe joint, as necessary to meet the thrust restraint requirements per Drawings and manufacturer recommendations, whichever provide the larger thrust requirements.
    3. Concrete thrust blocks or other acceptable thrust resistant systems are required to be provided and installed at all valves and 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 and/or in Section 09900.
    3. Boltless 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.
        d. Insert locking segments and rotate clockwise around the pipe.

e. Hold the segments apart and wedge the rubber retainer into the slot between the locking segments.
f. Extend the joint to remove the slack in the locking segment cavity.
g. Set the joint deflection to not exceed 75% of the manufacturer maximum allowable value.

4. 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.
5. 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.
6. 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/Joint 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 02616

DUCTILE IRON MAIN ANTI-CORROSION POLYETHYLENE ENCASEMENT (POLYWRAP)

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish all materials and install polyethylene encasement (polywrap) of ductile iron water for all ductile iron main, valves and fittings and as specified herein.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 QUALITY ASSURANCE

A. A competent laboratory must be maintained by the manufacturer of the polywrap at the point of manufacture to insure quality control.

B. During all periods of shipment and storage, the fabric shall be wrapped in a heavy duty protective covering to protect the fabric from direct sunlight, ultraviolet rays, and temperatures greater than 140°F, mud, dirt, dust and debris.

1.4 SUBMITTALS

A. Manufacturer shall furnish certified test reports with each shipment of material attesting that the polywrap meets the requirements of this Specification.

B. Contractor shall submit product information they intend to use and the installation method they intend to employ.

PART 2 - PRODUCTS

2.1 MATERIALS

A. **Linear low density polyethylene (LLDPE)** Polyethylene encasement protection wrap for ductile iron pipe. 8 mil thickness. Tubes or sheets

TABLE 1

Geotextile Mechanical Property	Test Method	Minimum Permissible Value
Tensile Strength (both directions)	ASTM D882	3600 psi
Elongation	ASTM D882	800 percent

Geotextile Mechanical Property	Test Method	Minimum Permissible Value
Dielectric Strength	ASTM D149	800 V/mil
Impact Resistance	ASTM D1709-B	600 g
Propagation Tear Resistance Strength	ASTM D1922	2550 gf

B. Polywrap shall meet all requirements of ANSI/AWWA C105/A21.5
C. Polywrap shall consist of 3 layers of co-extruded linear low density polyethylene fused into a single layer, minimum 8 Mil thickness.
D. Inside surface of Polywrap shall be infused with an antimicrobial compound to mitigate microbiologically induced corrosion (MIC) and a volatile corrosion inhibitor to control galvanic corrosion.
E. The polywrap shall meet or exceed the minimum values stated above as determined by the most recent test methods specified above. The product must be marked with the specification conformance, applicable pipe sizes and the words "corrosion protection".

PART 3 - EXECUTION

3.1 GENERAL

A. Quality of installation is more important than the actual sequence followed.
B. Polyethylene shall not be stored in the sun.
C. When lifting polyethylene-encased pipe with a crane, use a synthetic sewn "sling" or padded wire rope sling to protect the polyethylene.
D. Remove all lumps of clay, mud, cinders, etc., on the pipe surface before encasing the pipe.
E. Prevent soil or bedding material from becoming trapped between the pipe and the polyethylene.
F. When installing polyethylene encasement below the water table or in areas subject to tidal action, seal as thoroughly as possible both ends of each polyethylene tube with polyethylene adhesive tape or plastic tie straps at the joint overlap. Additionally, place circumferential wraps of tape or plastic tie straps at two-foot intervals along the barrel of the pipe to help minimize the space between the polyethylene and the pipe.

3.2 DUCTILE IRON PIPE AND FITTINGS

A. Installation of the polywrap shall be done in accordance with one of the three recommended methods as outlined in ANSI/AWWA C105/A21.5. Methods A and B use polyethylene tubes, and method C uses polyethylene sheets.
B. Method A uses one length of polyethylene tube, overlapped at the joints, for each length of pipe. A minimum of 2' overlap shall be used. The polyethylene wrap shall be cut approximately 2 feet longer than that of the pipe section. After assembling the pipe joint, the polyethylene shall be overlapped approximately one (1) ft. and at all joints sealed with approved adhesive tape. Additional taping shall be used at 3 foot (3') intervals along the pipe. Any rips, punctures or other damage to the polyethylene shall be repaired immediately with adhesive tape. All copper service connections shall be wrapped for a distance of 3 feet from the centerline of the main. Before installing the polyethylene wrap, the exterior of the pipe shall be free of foreign material.
C. Method B uses a length of polyethylene tube for the barrel of the pipe and a separate length of polyethylene tube or sheet for the joints. The national standard does not recommend Method B for bolted-type joints unless an additional layer of polyethylene is provided over the joint area as in Methods A and C. If this method is

chosen an additional layer of polyethylene will be provided over the joint area.

D. In Method C, each section of pipe is completely wrapped with a flat polyethylene sheet.

3.3 JOINTS, VALVES, APPURTENANCES AND TAPS

A. All ductile iron pipe, fitting and valves will be wrapped in accordance with C105/A21.5.

B. Pipe-shaped appurtenances: bends, reducers, offsets, and other pipe-shaped appurtenances in shall be covered in the same manner as the pipe.

C. Odd-shaped appurtenances: Wrap odd-shaped appurtenances such as valves, tees, and crosses with a flat sheet or split length of polyethylene tube by passing the sheet under and then over the appurtenance and bringing it together around the body of the appurtenance. Make seams by bringing the edges of the polyethylene together, folding over twice, and taping them down.

D. Joints: Overlap joints as in normal installation; then tape the polyethylene securely in place at valve stems and other penetrations. When bolted-type joints are used, care should always be taken to prevent bolts or other sharp edges of the joint configuration from penetrating the wrap.

E. Branches, blow offs, air valves: To provide openings for branches, blow-offs, air valves, and similar appurtenances, make an X-shaped cut in the polyethylene and temporarily fold back the film. After installing the appurtenance, tape the slack securely to the appurtenance and repair the cut and any other damaged areas in the polyethylene with tape.

F. Service taps: Wrap a minimum of two layers of polyethylene adhesive tape completely around the pipe to cover the area where the tapping machine and chain will be mounted. Then install the corporation stop directly through the tape and polyethylene. After the tap is made, inspect the entire circumferential area for damage and make any necessary repairs.

G. Hydrants: Do not wrap hydrants that do not have drain port plugs installed. Tape the polyethylene securely in place on the hydrant branch after the valve, before reaching the hydrant.

END OF SECTION

SECTION 02620

TEMPORARY WATER MAIN

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish, install and test all fused high density polyethylene (HDPE) or polyvinylchloride (PVC) temporary water pipe, pipe fittings and services and appurtenances of the type(s) and size(s) and in the location(s) as shown on the Drawings and as herein specified. HDPE is preferred for use on this project.

B. Reference Sheet C-12 Water Street in Drawing Set

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 PROJECT CONDITIONS

A. The work includes the installation of a temporary water main in order to by-pass an existing water distribution system main that is to be rehabilitated or removed and replaced. The temporary water main will provide potable water service to the existing customers in the project area.

B. The water distribution system experiences water pressures of approximately 100 psi in this area of the distribution system.

C. The Contractor shall obtain approval from the local Fire Department for the proposed plan prior to proceeding.

D. The Contractor shall coordinate with the Water Department before making the connection of the temporary water main to the existing water distribution system.

E. Temporary water mains shall not be installed or in operation between October 15 and April 15.

1.4 SUBMITTALS

A. Temporary Bypass 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, disinfecting, operating, and removing the temporary bypass.
2. All components of the bypass shall be for potable water transmission and distribution with a minimum pressure rating of 150 psi. All plastic pipe or hose shall be designated or certified for potable/residential water use and must meet NSF/ANSI Standard 61 Certification.
3. Details of the materials, size, and location of temporary facilities including bypass mains, valves, connections, laterals, services, and fire hydrants.
4. Bypass mains shall be supplied an existing hydrant with backflow prevention as shown on the plans
5. All temporary services shall be greater than or equal to the diameter of the existing service.

6. Bypass mains shall be laid outside of the traveled and access ways whenever possible and trenched when crossing roadways. Temporary mains shall be ramped when crossing driveways. All services shall be ramped or trenched.
7. All plans shall include provision of twenty-four/seven contact information for operation and maintenance of the bypass system.
8. Pressure testing and disinfection testing shall comply with the requirements the applicable AWWA Standards and of Section 02675 prior to placing temporary water main into service.
9. All work shall be coordinated with Engineer, Water District and the Fire Department and no construction activity shall commence without a minimum of 48 hours advance notice to each department.
10. A backflow prevention device (approved by the Water Distirct) shall be installed at connection to the distribution system.
11. Bypass pipe ends shall have blow-off taps to allow for flushing and water quality inspections.

1.5 QUALITY ASSURANCE

A. Provide pipe and fittings manufactured by a single manufacturer.
B. Pressure rating or pressure class of pipe as detailed herein.
C. Standards:
   1. ASTM D 1248 Polyethylene Plastics Molding and Extrusion Materials.
   2. ASTM D 1505 Density of Plastics by the Density Gradient Technique.
   3. ASTM D 1693 Environmental Stress Cracking of Ethylene Plastics.
   4. ASTM D 4703 Preparation of Compression Molded Polyethylene Test Samples.
   5. ASTM D 1784 - Rigid Polyvinyl Chloride (PVC) Compounds and Chlorinated Polyvinyl Chloride (PVC) Compounds.
   6. ASTM D 2241 - PVC Pressure Rated Pipe (SDR Series).
   7. ASTM D 3139 - Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals.
   8. NSF/ANSI 61 – Drinking Water System Components – Health Effects: All components in contact with potable water shall be compliant with NSF 61 and shall be constructed of “Lead-free” material in compliance with NSF 372
D. Acceptable Manufacturers:
   1. Ryerson & Son, Inc. "Mono-Line"
   2. Dupont, "Aldyl-D"
   3. Sheldon "Sclairpipe"
   4. Certainteed Yelomine PVC
   5. Or approved equal.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Polyethylene Pipe:
   1. The pipe shall be obtained by polymerization of no less than 85% ethylene and no less than 95% of total olefins by weight.

2. The polyethylene resin shall be classified as a Type III, Class C, Category 3. Nominal density shall be 0.94l to 0.959.
3. 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%.
4. 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.
5. Pipe shall be homogeneous throughout and free of visible cracks, holes, foreign material, blisters, or other deleterious faults.
6. Polyethylene fittings shall have the same pressure rating as the pipe itself.
7. Adaptors: When applicable, provide adaptors for connecting polyethylene pipe to pipes constructed from other materials. All flanges shall have metal backing rings.
8. Pipe pressure rating shall be 150 psi (SDR-11) minimum.

B. Polyvinyl Chloride (PVC) Pipe:
1. PVC pipe shall be made from Type 1, Grade 1, 2000 psi design stress, Class 12454-B formulation Polyvinyl Chloride.
2. PVC formulation shall contain impact modifiers and ultraviolet inhibitors for use in above-ground temporary applications.
3. Pipe pressure rating shall be 150 psi (SDR-18) minimum.

C. Service Corporations: N/A
D. Water Main Valves: Provide gate valves at the connection to the distribution system.
E. Provide Water District approved backflow preventers at connections to distribution system.
F. Water District will provide and Contractor shall install flow meter.
Hydrants: N/A

2.2 FABRICATION

A. Polyethylene Pipe:
1. Thermal Butt-Fusion:
a. Join the pipe to itself, or to the polyethylene fittings or to the flange connections by means of thermal butt-fusion.
b. Have all fusion performed by personnel trained by the pipe supplier or other qualified persons, using tools approved by the pipe supplier.
c. 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.
d. Joint strength must be equal to that of the adjacent pipe.
2. Mechanical Connections: The mechanical connections of the polyethylene pipe to auxiliary equipment shall be in accordance with the pipe suppliers written instructions.

B. Polyvinyl Chloride (PVC) Pipe:
1. Fittings shall be supplied with Teflon coated "O"-ring to minimize assembly and disassembly effort required to install, remove and reinstall the system.

2. Mechanical Connections: The mechanical connections of the PVC pipe to auxiliary equipment shall be in accordance with the pipe suppliers written instructions.

C. Services:
1. Services shall be polyethylene pipe or hose that are NSF/ANSI 61 Certified.

PART 3 - EXECUTION

3.1 INSTALLATION OF TEMPORARY MAIN

A. Temporary water mains shall be placed in a manner that protects the pipeline from traffic, vandalism, etc. Pipeline shall be laid along edge of roadways or in curblines whenever possible.

B. Water mains shall be protected at all driveway entrances and curb cuts by the use of gravel, temporary pavement, or steel access ramps. In lieu of access ramps, in areas that will have new pavement, a shallow trench may be cut to allow the shallow burial of the temporary main. If trenching is used, trenches shall be sawcut, refilled with compacted gravel and repaved with trench pavement prior to final paving.

C. Temporary main shall be maintained in working order until such a time that all of the structures are being served by the new main. If the temporary main fails, the CONTRACTOR shall restore the main within 12 hours. No temporary watermains or temporary water services shall be installed or operated during freezing weather. Temporary pipes already in use shall be removed or drained and existing services restored when so directed by the ENGINEER or OWNER.

3.2 INSTALLATION OF SERVICES

A. The Contractor shall provide written notices to all affected property owners a minimum of 24 hours prior to any disruption of water service as a result of the temporary by-pass.
1. Contractor shall also contact property owners for written permission to lay temp water line across their property.

B. All services tapped to the temporary main will have a shutoff at the main to allow isolation of the individual service.

C. For fire protection (sprinkler) services, the Contractor shall coordinate with the Building Owner and Fire Department for service size and sprinkler service connection requirements. Contractor shall not connect sprinkler services without express written permission of the Building Owner.

D. Temporary services shall be maintained in working order until such a time that all of the structures are being served by the new main. If a temporary service fails, the CONTRACTOR shall restore the main within 12 hours.

3.3 CLEANING AND TESTING

A. Temporary water main shall be flushed, pressure tested and disinfected in accordance with Specification Section 01715 prior to being placed in service.

END OF SECTION

SECTION 02627

COPPER TUBE SIZE POLYETHYLENE SERVICE PIPE & FITTINGS (BURIED APPLICATIONS)

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish and install copper tube size polyethylene tubing pipe of the type and size and in the locations shown on the Drawings and as specified herein.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 QUALITY ASSURANCE

A. AWWA C901 (latest revision)
B. ASTM D3350 and D2737 (latest revision)
C. Service Brass: AWWA C-800 (latest revision)
D. All components in contact with potable water, or water being processed to become potable water, shall be compliant with NSF 61 and shall be constructed of "Lead-free" material in compliance with NSF 372.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pipe use:
    1. Domestic Water (buried exterior).
        a. Pipe with a working pressure of 200 psi.
B. Fittings:
    1. Buried Fittings: Waterworks brass, polyethylene pipe compression fittings with beveled BUNA-N gaskets for a water tight seal.
    2. Acceptable manufacturer:
        a. Mueller Company
        b. Ford
        c. or equal
    3. Insert stiffeners required.
    4. All brass fittings shall be "lead free".
C. Tracer Wire:
    1. Tracer wire shall be provided for all pipe. Tracer wire shall be connected to main-line tracer wire and curb stop per the manufacturer's recommendations.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Jointing
    1. Packed on compression joints

a. Cut pipe squarely.
b. Ream or file pipe to remove burrs.
c. Insert stainless steel stiffener.
d. Seat pipe in fittings and tighten nut.
e. Tighten restraint screw.

2. “Quick” compression joints
   a. Cut pipe squarely.
   b. Ream or file pipe to remove burrs.
   c. Insert stainless steel stiffener.
   d. Seat pipe in fittings and tighten nut.
3. Adapters: Use as required to connect to existing services.
4. Bending Pipe
   a. Bend pipe by the method and to the radius to comply with the manufacturer's recommendations.
   b. Bend pipe with suitable tools to provide smooth bend free of any cracks or buckles.
   c. Provide "goose neck" in new services as shown on Drawings.

END OF SECTION

SECTION 02640

SERVICE SADDLES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish and install service saddles of the type(s) and size(s) and in the location(s) shown on the Drawings and as specified herein.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 QUALITY ASSURANCE

A. All service saddles of the same type shall be manufactured by one manufacturer.

B. All components in contact with potable water, or water being processed to become potable water, shall be compliant with NSF 61 and shall be constructed of "Lead-free" material in compliance with NSF 372.

C. Qualifications of Manufacturer: Products shall have proven reliable in similar installations over a reasonable number of years.

1.4 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 service saddles meet or exceed the requirements of these Specifications.

C. Submit manufacturers installation instructions and specifications for all service saddles.

PART 2 - PRODUCTS

2.1 MATERIALS

A. For cast iron, ductile iron and asbestos cement (AC) pipe.

1. Body casting - wrap around design constructed of ductile iron (ASTM A 536).
2. Gasket - 3½ inch diameter constructed of Buna-N, grooved to conform to pipe surface and bonded in place.
3. Straps and bolts - low alloy steel conforming to AWWA C800.
4. Washers and nuts - heavy hex nuts and washers constructed low alloy steel conforming to AWWA C800.
5. Double strap required.
6. Acceptable manufacturer.
    a. Romac (style 202S).
    b. Smith Blair (Model 317)
    c. Or equal.

B. For C900 PVC and HDPE (minimum SDR26) pipe.

1. Body casting - wrap around design constructed of ductile iron (ASTM A 536) with nylon fused coating 10-12 mils.
2. Gasket - 3½ inch diameter constructed of Buna-N, grooved to conform to pipe surface and bonded in place.
3. Bands and bolts - welded 2" wide straps (14 gauge) and 5/8 inch treaded bolt combination constructed of Type 304 (18-8) stainless steel. Welds shall be passivated.
4. Washers and nuts - heavy hex nuts and washers constructed of 18-8 stainless steel.
5. Double band required.
6. Acceptable manufacturer.
    a. Romac (style 202NS for PVC and style 202N for HDPE).
    b. Smith Blair (Model 317)
    c. Ford Meter Box Company (Model FC202)
    d. Or equal.

C. For other type(s) of pipe – confirm with Engineer.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install at locations shown on the Drawings and as specified by the pipe manufacturer and saddle manufacturer.
B. Check for leaks prior to backfilling as appropriate.
C. Tap pipe with tools and by methods specifically furnished by pipe manufacturer.
D. For PVC, HDPE and AC pipe use tapping machine with smooth strap retainer (chains or other devices that may gouge or score the pipe shall not be used).

END OF SECTION

SECTION 02641

GATE VALVES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish, install and test gate valves of the type(s) and size(s) and in the location(s) shown on the Drawings and as specified.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 QUALITY ASSURANCE

A. All gate valves of same type and style shall be manufactured by one manufacturer.

B. All components in contact with potable water, or water being processed to become potable water, shall be compliant with NSF 61 and shall be constructed of "Lead-free" material in compliance with NSF 372.

C. Acceptable Manufacturers:
   1. American Flow Control
   2. Kennedy/McWane
   3. Clow/McWane
   4. Mueller
   5. Or approved equal.

1.4 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 valves meet or exceed the requirements of these Specifications.

C. Submit manufacturers installation instructions and specifications for all valves.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Waterworks type NRS valves (AWWA):
   1. Valve Body, bonnet and stuffing box - Cast iron (ASTM A126 C1B), or Ductile iron (ASTM A536), coated inside and out with fusion bonded epoxy meeting AWWA C550. Face-to-face dimensions shall comply with ANSI B16.10 and flanges to comply with ANSI B16.1.
   2. Resilient Wedge - Ductile iron wedge with bonded EPDM or Nitrile (Buna-N/NBR) rubber covering.
   3. Stem - Manganese bronze, ASTM B584
   4. Stuffing box O-rings
      a. Two O-rings, each nitrile rubber.
      b. Capable of changing under pressure.

5. Wedgenut - Bronze, ASTM B62 or Manganese bronze, ASTM B584
6. Bolting - stainless steel Type 18-8 (304 SS), ASTM F593, GP1 bolts and nuts
7. End Connections
   a. Buried valves – gasketed and bolted mechanical joints in conformance with AWWA standards for appropriate pipe material.
   b. Exposed valves in buried structures – flanged and bolted joints in conformance with ANSI/ASME B16.1 and AWWA standards for appropriate pipe material. Bolts shall be 304 stainless steel.
8. Operation
   a. Buried valves – 2-inch square nut, cast iron, ASTM A126, C1B or ductile iron, ASTM A536. Gear actuator is required if rim pull is greater than 40 ft-lbs. Offset gear required if needed based on valve position and bury depth. Gate box required. Provide a sufficient of tee-handle valve wrenches for operation valves of various depths.
   b. Exposed valves in buried structures
      i. Handwheel. Gear actuator is required if rim pull is greater than 40 ft-lbs.
      ii. Floor stand actuators where indicated on the Drawings
      iii. Floor boxes where indicated on the Drawings.
   c. **Opening Direction – counterclockwise (open left)**
9. Water working pressure: 250 psi
10. Standards - valves shall meet or exceed AWWA C509, latest edition.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's written instructions.
B. Install valves with stem position vertical.
C. Valve box vertical and centered over operating nut.
D. Valve box supported during backfilling and maintained vertical.
E. Install and test in accordance with AWWA C500 and AWWA C-509 or AWWA C515, latest revision.
F. For PVC or PE main, install anchor rods around the valve body or through the mounting lugs and embed the rods in concrete beneath the valve.

3.2 ADJUSTING

A. Valve Boxes: Top of valve box shall be adjusted to be flush with final grade.

END OF SECTION

SECTION 02642

CORPORATION STOPS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish and install corporation stops of the type(s) and size(s) and in the location(s) shown on the Drawings and as specified herein.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 QUALITY ASSURANCE

A. All corporation stops shall be manufactured by one manufacturer.
B. All components in contact with potable water, or water being processed to become potable water, shall be compliant with NSF 61 and shall be constructed of "Lead-free" or "No Lead" material where specified in compliance with NSF 372.
C. Qualifications of Manufacturer: Products have proven reliable in similar installations over a reasonable number of years.
D. Acceptable Manufacturers:
   1. Ford Meter Box Company Inc.
   2. A. Y. MacDonald Manufacturing Company
   3. Mueller Company
   4. Or equivalent

1.4 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. Ball style corporation valve conforming to AWWA C 800. Valve shall have solid one-piece tee head and stem, dual o-rings in the stem, coated brass ball with no metal-to-metal contact, and integral or secured ends to prevent unintentional disassembly.
B. Constructed of "Lead free" brass in compliance with NSF 372, NSF 61 and Safe Drinking Water Act Section 1417. Lead free fittings shall contain less than 0.25% lead on a weighted average and installed using flux and solder containing not more than 0.2% lead.
C. Inlet shall have AWWA standard thread (a.k.a. Mueller or "CC" thread).
D. Outlet shall be copper pipe packed joint (CPPJ) or approved restrained grip joint
E. Working pressure of 300 psi shall be required.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install at locations shown on the Drawings and as specified in accordance with manufacturer's instructions.

B. Check and adjust all corporation stops for smooth operation.

END OF SECTION

SECTION 02643

CURB STOPS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish and install curb stops of the type(s) and size(s) and in the location(s) shown on the Drawings and as specified herein.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 QUALITY ASSURANCE

A. All curb stops shall be manufactured by one manufacturer.

B. All components in contact with potable water, or water being processed to become potable water, shall be compliant with NSF 61 and shall be constructed of "Lead-free" or "No Lead" material where specified in compliance with NSF 372.

C. Qualifications of Manufacturer: Products shall have proven reliable in similar installations over a reasonable number of years.

D. Acceptable Manufacturers:
   1. Ford Meter Box Company
   2. A.Y. MacDonald
   3. Mueller Company
   4. Or equivalent

1.4 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 PRODUCT CONSTRUCTION

A. Ball style valve conforming to AWWA C 800. Valve shall have solid one-piece tee head and stem, dual o-rings in the stem, coated brass ball with no metal-to-metal contact, ring lock to lock stem solidly into the body and non-directional seats to support the valve and assure watertight.

B. Constructed of "Lead free" brass in compliance with NSF 372, NSF 61 and Safe Drinking Water Act Section 1417. Lead free fittings shall contain less than 0.25% lead on a weighted average and installed using flux and solder containing not more than 0.2% lead.

C. Inlet and outlet shall be copper pipe packed joint (CPPJ) type or approved restrained grip joint.

D. Working pressure of 300 psi shall be required.

E. Valve shall open **counterclockwise (open left)**

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install at locations shown on the Drawings and in accordance with manufacturer's instructions.

3.2 ADJUSTMENTS

A. Check and adjust all curb stops for smooth operation.

END OF SECTION

SECTION 02644

HYDRANT ASSEMBLIES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish and install hydrant assemblies of the type(s) and size (s) and in the locations (s) shown on the Drawings and as specified herein.

B. Hydrant Assemblies consist of:
   1. Hydrant.
   2. Drainage material.
   3. Thrust blocking and joint bracing.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 QUALITY ASSURANCE

A. Hydrants shall conform to AWWA C502 and all hydrants shall be from one manufacturer.

B. Gate valves shall conform to AWWA C5090 (Resilient-Seated Gate Valves for Water Supply).

C. All components in contact with potable water, or water being processed to become potable water, shall be compliant with NSF 61 and shall be constructed of “Lead-free” material in compliance with NSF 372.

D. Acceptable Manufacturers:
   1. Mueller Company, Decatur, Illinois.
   2. Or approved equal.

1.4 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 all hydrant assemblies meet or exceed the requirements of these Specifications.

C. Submit manufacturers installation instructions and specifications for all hydrant assemblies.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Fire Hydrants:
   1. Dry barrel type with a 5 inch minimum valve opening.
   2. Two (2) 2-1/2 inch hose connections and one (1) 4-1/2 inch pumper connection.
      a. 2-1/2 inch outlets: 60o V threads, 7-1/2 threads to the inch, external threads 3-1/16 inches, O.D. National Standard threads.

b. 4-1/2 inch outlet: 4 threads to the inch, external threads 5-3/4 inches, O.D. National Standard threads.
c. Supply adapters if existing fire fighting equipment does not match the threads specified above.

3. 150 pounds working pressure and 300 pounds hydrostatic test pressure.
4. Working parts shall be bronze and **open clockwise (open right)**
5. Designed with standpipe breaking ring or breakable sections.
6. Supply one (1) collision repair kit for every twenty-five (25) hydrants installed.
7. Caps shall be attached to hydrant body by chains.
8. Hydrant drains are not allowed.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install hydrants as shown in the details and using manufacturer's written instructions.
B. No hydrant assembly shall be backfilled until approved by the Engineer.
C. Provide drainage material and thrust blocks as shown.
D. Provide barrel extensions as required for hydrant to be installed at proper grade.
E. Provide finish paint on all exposed surfaces. Color shall meet Owner's requirements as approved by the Engineer.

3.2 CLEANING

A. Clean all hydrants of concrete, etc. and repaint as necessary to the satisfaction of the Engineer.

END OF SECTION

SECTION 02645

CURB BOXES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish and install curb boxes of type (s) and size (s) and in the locations shown on the Drawings and as specified herein.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 QUALITY ASSURANCE

A. All curb boxes shall be manufactured by one manufacturer.
B. Qualifications of Manufacturer: Products have proven reliable in similar installations over a reasonable number of years.
C. Acceptable Manufacturers:
   1. Quality Water Products.
   2. Mueller Co.
   3. Hayes Manufacturing Co.
   4. Or equivalent.

1.4 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 all curb boxes meet or exceed the requirements of these Specifications.
C. Submit manufacturers installation instructions and specifications for all curb boxes.

PART 2 - PRODUCTS

2.1 MATERIALS AND FABRICATION

A. Cast iron base piece, steel upper, cast iron lid, and threaded bronze plug with pentagon nut (Rope Thread).
B. Extension type and arch pattern base with 1/2" diameter stainless steel minimum, 30" stationary rod.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install as shown on the Drawings and/or as requested by the Engineer.
   1. When installation is complete no pressure shall be exerted by the curb box on either the curb stop or the service pipe.

END OF SECTION

SECTION 02646

VALVE BOXES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish and install valve boxes of type(s) and size(s) and in the locations shown on the Drawings and as specified herein.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 QUALITY ASSURANCE

A. All valve boxes shall be manufactured by one manufacturer.
B. Qualifications of Manufacturer: Products to have been proven reliable in similar installations over a reasonable number of years.
C. Acceptable Manufacturers:
   1. Tyler
   2. Quality Water Products
   3. Bibby-Ste-Croix
   4. McWane
   5. Or Equivalent

1.4 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 all valve boxes meet or exceed the requirements of these Specifications.
C. Submit manufacturers installation instructions and specifications for all valve boxes.

PART 2 - PRODUCTS

2.1 MATERIALS

A. The valve box shall be ductile iron or cast iron, slip type two-piece integral base, 5-1/4 inch shaft. Top section with flanges.
B. The cover shall be ductile iron or cast iron, with the word "Water" cast in cover.
Belled Base Section.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Installation as shown on the Drawings and/or as specified herein.
   1. When installation is complete, no pressure shall be exerted by valve box on the water main or on the valve.
   2. Be of such length as required without full extension. Minimum lap 6 inches.

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. Summary of Work: Section 01010
   2. Measure and Payment: Section 01150
   3. Submittals: Section 01340
   4. Traffic Regulation: Section 01570
   5. Project Record Documents: Section 01720
   6. Site work, piping, structures, testing requirements are specified in Division 2.

1.2 SUBMITTALS

A. Submit shop drawings in accordance with the applicable section of Division 1..

B. Submit manufacturer's "Certification of Conformance" that utility markings meet or exceed the requirements of these Specifications.

C. 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 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 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. 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
   7. All components in contact with potable water, or water being processed to become potable water, shall be compliant with NSF 61 and shall be constructed of “Lead-free” material in compliance with NSF 372.

1.4 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 Non-Restrained Couplings:
      a. Two top facing bolt design
      b. Fusion bonded epoxy ductile iron center sleeve, end rings and bolt guides. Ductile iron meeting or exceeding ASTM A536, Grade 65-45-12.
      c. Two wedge-section EPDM or NBR rubber gaskets compounded for water service. NSF-61 certified for potable water service.
      d. Ductile iron heat treated grippers, 304 stainless steel draw hooks, and reinforced nylon ramp runners.
      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 – Macro HP™
         ii. Or Equal
   2. 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. 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. Or Equal

D. Flexible Couplings for drain connections (Fernco or equal)
   1. Rubber material with stainless steel clamps
   2. Must provide a positive seal against infiltration and exfiltration
   3. Coupling materials must conform to applicable portions of ASTM C443 (Concrete), C564 (Cast Iron), D1869 (A.C.), D5926 (PVC), C1173 (transition) and CSA B602.

E. 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 02758

CLEANING AND CEMENT LINING WATER MAINS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope of Work:

1. The work covered by this section of the specifications includes the furnishing of all labor, equipment, tools, appliances and materials and performing all operations in connection with providing the cleaning and cement-mortar lining of cast-iron water pipelines, including excavation, sheeting, shoring, cutting pipe openings, dewatering pipelines and excavations, cleaning and inspecting pipelines, cement lining pipelines, video recorder inspection of cement lining, closing pipe openings, uncovering existing valves, removing existing mainline valves, removing and replacing piping, fittings and valves where obstructions occur, removing inoperative valves, clearing service connections, testing and disinfecting pipelines, backfilling, protection of existing structures, properties, and utilities, and all other appurtenant and related work required to satisfactorily complete the cleaning and cement-mortar lining of the existing cast-iron piping, complete and in strict accordance with the specifications and the applicable drawings, and as directed
2. The work covered by this section of the specifications also includes the above associated with cleaning and video inspection of the pipeline.
3. The work included in this Section shall be performed in strict accordance with the requirements of AWWA Standard for Cement-Mortar Lining of Water Pipelines – 4 inches and larger – In Place (AWWA C602), latest edition except as modified or otherwise specified
4. The work covered by this section will also need to be performed in strict accordance with CSXT Design Specifications specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.2 QUALITY ASSURANCE:

A. Pipe cleaning and cement lining operations shall conform to the requirements of the American Water Works Association Standard ANSI/AWWA C602-latest edition.

B. Sampling and testing of cement lining material shall be in accordance with ASTM C109.

C. Cement mortar lining work will have a one-year guarantee in accordance with AWWA C602.

1.3 SUBMITTALS

A. The Contractor shall determine, and submit for the Engineer's review the various locations where he anticipates excavation down to the level of the main. Insofar as

is possible, excavations shall be made in the shoulders of paved streets or traveled ways. Provisions shall be made for detouring and directing traffic where necessary.

B. Submit certificate of compliance for cement to be used.
C. Submit information and data describing the pipe cleaning and cement lining process to be used.
D. Submit cement mortar mix design, including admixtures and additives.
E. Submit product data and information for sleeves and coupling or other fitting used to close the openings in the pipe upon completion of the lining process.
F. Submit compressive test results for field sample cement lining materials.
G. Submit C value testing/inspection results.
H. Submit water main disinfection results.

1.4 RESPONSIBILITY OF THE DISTRICT

A. In cooperation with the Contractor, the District will:
   1. Operate all existing gate valves, curb stops and hydrants;
   2. Furnish sufficient water for use in the work from fire hydrants, existing water mains, or connection thereto, within a reasonable distance of the location where it is to be used;
   3. Provide connection points for the temporary by-pass lines;
   4. Notify all consumers in advance of service interruption;

PART 2 - PRODUCTS

2.1 MATERIALS

A. All cement-mortar or pipe linings shall be composed of Portland cement, sand and water. It shall be the proportion of one part of cement and one to one and one-half parts screened sand by volume. The exact proportion shall be designed to create the proper consistency to provide a dense, homogenous pipe lining which shall adhere firmly to the pipe interior surfaces.
B. Portland cement shall meet the requirements of ASTM.
   Designation: C 150, Type II, with latest amendment
C. Sand shall be clean and well graded, having clean, hard, durable, uncoated grains, free from organic matter, clay lumps, shale, soft or flaky particles and other unsound or deleterious substances. All sand shall be washed, if required, and shall pass a No. 16 mesh sieve with not more than 5 percent in weight passing a No. 100 sieve. Samples of sand to be used shall be furnished to the Owner and Engineer for test and approval at least 10 days prior to the time when it is to be used. Tests of sand will be made in accordance with the latest ASTM Standard Methods. Test results shall meet the approval of the Owner and Engineer.
D. Water shall be clean, free from injurious ingredients and shall be obtained from the Owner's water supply.
E. The mortar shall be well-mixed and the water-cement ratio shall be carefully controlled and kept to a minimum. No mortar which has attained its initial set shall be used for pipe lining.

2.2 TELEVISION EQUIPMENT

A. Closed Circuit Television

1. Television camera used for inspection shall be one specifically designed and constructed for such utilization. Lighting for camera shall be suitable to allow a clear color picture of the entire periphery of the pipe. Camera shall be operative in 100% humidity conditions. Camera, television monitor and other components of video system shall be capable of producing a minimum 500-line resolution video picture. Picture quality and definition shall be to satisfaction of the Engineer and if unsatisfactory, equipment shall be removed and replaced, with no payment made for unsatisfactory inspection.

PART 3 - EXECUTION

3.1 EXCAVATION AND BACKFILL

A. Access at excavations shall conform to the following:

1. The excavation shall be as limited as possible to be compatible with convenient and safe working conditions, so as to interfere with traffic as little as possible and limit the area to be resurfaced. All material removed shall be disposed of in a satisfactory manner by the Contractor at a Contractor supplied disposal area.
2. The Contractor shall maintain all excavations in proper condition for carrying on the work, and shall do all bailing, draining, or pumping as necessary to keep the excavations free of water.
3. As required by Town of Livermore Falls, Water District, and State authorities, the Contractor shall cover, bridge or refill temporarily all excavations.
4. The excavations shall, in all respects, conform to the requirements and specifications of the Town of Livermore Falls, Water District, and State authorities having jurisdiction.

3.2 PROTECTION OF EXISTING PIPE & DRAIN

A. The Contractor shall verify locations of adjacent utilities. Call Dig-Safe prior to excavation of access holes.

B. All existing gas pipe, water pipe, sewer, drains, electrical conduits, telephone ducts or other structures which are uncovered by the excavation, shall be carefully supported and protected from injury by the Contractor. The Contractor shall restore any items damaged by to as good condition as that in which they were found, and they shall be kept in repair during the life of this Contract.

3.3 ACCESS PITS FOR CLEANING & LINING

A. The Contractor shall open the water main at each end of the section to be cleaned and lined, at all main line valves, bends, fittings, and obstructions shown on the Contract Drawing or identified by the Owner, and at other locations to install new valves or relocate existing valves, and as necessary to permit satisfactory cleaning and lining. Additional openings may be required due to obstructions which prevent the passage of cleaning and lining equipment; payment for the removal of

obstructions shall be made as provided elsewhere in this Section for the conditions defined as "OBSTRUCTIONS".

B. Prior to construction, a plan showing all proposed access pit locations shall be submitted to the Owner for review and approval

C. Openings in the pipes shall be made by guillotine saw cuts, with an approved power-operated pipe cutter, removing existing couplings or other approved methods for cutting the pipe square and true by hand or machine. Any material not re-used shall become the property of the Contractor and shall be disposed of by the Contractor to a site approved by the Owner

D. At openings adjacent to sections under pressure or in service, the Contractor shall install adequate blocking to prevent movement during the time the pipe is open. The Contractor shall be responsible for the design and adequacy of all blocking required and the design of the blocking and adequacy of all blocking required and the design of the blocking shall be submitted to the Owner for review. The Contractor shall include in his unit prices, the cost of all access openings, especially in locations at or adjacent to valves and water main intersections; hand cleaning and lining; and bracing of existing or replaced valves as may be required to facilitate cleaning and lining of all portions of a main to the limits shown on the plans. Additional new valves shall be added to the pipeline as shown on the Contract Drawings and elsewhere as required by the Owner

3.4 DEWATERING PIPELINES

A. The Contractor shall dewater all pipelines prior to the start of cleaning, lining and such other work; drain all low spots; plug or close all services; close valves or otherwise isolate the work area. The Contractor shall be responsible for taking all necessary and special precautions to prevent the possibility of any water entering the sections where men are working. The Contractor shall insert bulkheads at the terminals of dewatered sections. Water shall be disposed of in a manner and to a location meeting the approval of the Owner.

B. Due to the age of the distribution system, the Livermore Falls Water District makes no warranty as to the completeness of water shutdowns from open pipes during the work. It is the contractor's responsibility to provide an adequate number and proper type of pumps to dewater the excavations to prosecute the work. There will be no extra payments to the contractor for delays as a result of inadequate dewatering.

3.5 CLEANING OF WATER MAINS

A. Prior to proceeding with the cleaning of pipelines all work shall be provided to determine existence of and to locate any conditions which might prevent free passage of cleaning or lining equipment. Conditions which constitute obstructions as described herein under paragraph entitle "OBSTRUCTIONS", shall be remedied by the Contractor and the work will be paid for in the manner specified herein under paragraph entitled "OBSTRUCTIONS"; all other conditions encountered, which in the opinion of the Owner, do not constitute obstructions within the scope of the criteria specified herein under paragraph entitled "OBSTRUCTIONS", shall be remedied by the Contractor in an approved manner to provide conditions

satisfactory for the performance of the work of the contract, at no additional expense to the Owner

B. All rust, tubercles, deposits, loose materials, and all other foreign materials which might affect adversely the bonding of the mortar to the pipe surfaces shall be removed from the interior of the pipelines by use of the dry dragline (or "drag") method, except for locations where hand cleaning is warranted or is the only feasible method. The Contractor shall provide the necessary measures to uncover all mainline valves and either remove all operating parts of valves or entirely remove existing mainline valves, as shown on the Contract Drawings and as specified herein under paragraph "CEMENT-MORTAR LINING OF PIPELINES", to prevent damages to valves and similar water line appurtenances. The Contractor shall pass the machine through the mains as many times as may be necessary and shall employ such other supplementary means as may be required to clean the pipe surfaces and to remove all foreign matter, rust and dirt from the pipe surfaces. It shall be the responsibility of the Contractor to employ approved methods and to do all work necessary to obtain clean pipe surfaces and to insure the satisfactory bonding of the cement-mortar lining to the pipe surfaces.

C. The Contractor shall dispose of cleaning water and the residue from cleaning the mains with the use of a vactor truck and shall be disposed of off-site. Backhoe removal and on-site disposal is not allowed. All work shall be performed in a manner as approved by governing City and State agencies and in accordance with NPDES requirements. He shall examine the location where cuts are to be made and make adequate preparations to avoid the flooding of streets and adjacent structures or private property. Precaution shall be taken to prevent cleaning wastes from being deposited in drains, sewers or waterways by use of sandbags stacked to trap the cleaning residue. Immediately following cleaning, streets and affected areas shall be hosed and swept clean of tuberculation residue.

D. The Contractor shall take precautions to prevent obstruction of any lateral, hydrant or service connection by deposit of cleaning debris. Branch connections and service connections shall be back flushed by the Contractor before closure of the pipe access openings to remove all sediment, loose and foreign materials which have entered the branch lines during cleaning operations. Precautionary measures shall be provided to protect valves and other appurtenances against the entrance of dirt, sediment and other foreign materials and any other damage. All damage to valves, pipes or other pipeline appurtenances and fittings as a result of the Contractor's operations shall be made good or replaced by the Contractor in a manner satisfactory to the Owner, at no additional expense to the Owner; defective parts not the result of the Contractor's operations will be repaired at the discretion of the Owner under the appropriate items in the Bid.

E. After the cleaning operations, the Owner and the Contractor shall make an examination of the interior of the pipes, in a satisfactory manner, to determine whether the pipes have been sufficiently and properly cleaned; that all other conditions are such as to insure the proper bonding and placing of the cement-mortar lining; and to determine whether any repairs to the pipes are required prior to the application of the cement-mortar lining. The Contractor shall provide such facilities as may be required for inspection of pipes by the Owner. If the examination and inspection reveal that the cleaning operations have not been satisfactorily performed, the Contractor, at no additional expense to the Owner, shall provide all other additional cleaning and other work as may be necessary for the proper installation of cement-mortar lining. No defective sections or part of the piping shall be cement-mortar-lined until repairs have been made by the Contractor in a manner satisfactory to the Owner.

3.6 CEMENT MORTAR LINING OF PIPELINES

A. Cement-mortar lining of pipelines shall not be started until all cleaning operations have been satisfactorily completed and approved by the Owner.

B. The cement-mortar lining in the pipelines shall be continuous, dense, smooth and without variations in quality, and free from noticeable change in thickness. The cement-mortar-lining of the pipelines shall be provided in strict accordance with the requirements of the American Water Works Association Standard Specifications for "Cement-Mortar Lining of Water Pipelines in Place". Designation: AWWA C602, with latest amendments, except as modified herein, and in accordance with additional requirements specified herein.

C. The cement-mortar lining thickness for the various diameter pipelines shall be in accordance with the following table, with an allowable plus tolerance of 1/8 inch. No minus tolerances in the cement-mortar lining thickness specified will be permitted.

Nominal Lining Pipe Diameter (inches)	Thickness (inches)
4 – 10	1/8
12 – 36	3/16
Greater Than 36	¼

D. Placing cement-mortar pipe lining: Immediately prior to running the lining machine through the pipeline, all sand, water, loose material and other foreign material that has accumulated in the pipeline shall be satisfactorily removed. All preparatory work shall be provided by the Contractor in a manner that shall insure the proper and satisfactory completion of the contract work.

It shall be the responsibility of the Contractor to clean branch connections, pitometer taps, air valves, blow-off, and services of any mortar or debris which

enter the connections in the process of cement lining by blowing back or flushing the connections at no additional expense to the Owner.

The cement-mortar pipe lining shall consist of a one course application of a premixed cement-mortar which shall be continuously placed by a machine projecting the mortar against the wall of the pipe by centrifugal force, without injurious rebound, and with sufficient velocity to cause the mortar to be densely packed and to satisfactorily adhere in place. The machine used for cement-mortar lining all pipelines shall be provided with an attachment for mechanically troweling or drag troweling the mortar so as to produce a smooth surface finish, and shall travel ahead of the lining so that the freshly placed and troweled mortar will not be touched until it has set; the design of the trowel attachment shall be such as to permit operation in pipes which may be found out of round, and produce a smooth surface without spiral shoulder. The finish surface shall be smooth and shall not have a sand finish.

Mortar which does not provide a dense, homogenous lining satisfactorily adhered to the pipe surfaces, mortar lining containing sand pockets, voids, oversanded and cracked areas, areas of unsatisfactory surface finish and such other defective areas and materials shall be removed from the pipe wall. These areas shall be repaired by hand application or other approved method to the full required thickness of the mortar lining and as approved. All spatter and loose material shall be removed from the pipelines.

Faulty sections of pipe lining such as sections of pipe lining which fail, or show evidence of failure, or show unusual or undue irregularity, or which will require an excessive amount of patching shall be removed by the Contractor before the lining has reached its initial set to the extent directed by the Owner. The pipe shall then be recleaned and the lining shall be replaced by the Contractor to conform to the requirements specified herein, and as approved. Defective lining rejected after initial set shall be repaired by the most practical method as determined by the Owner, in consultation with the contractor.

E. Curing of cement-mortar lining: Immediately upon completion of the cement-mortar lining of pipeline between pipeline openings or upon the completion of a day's run of the machine, the section of the pipeline shall be closed at each end and maintained in a moist condition by approved methods. As soon as practicable after placing the cement-mortar lining, water shall be introduced into the mortar-lined section between closed ends of pipe in order to create a moist atmosphere and keep the cement-mortar lining damp, but not under pressure, until the mortar lining has been in-place not less than 48 hours. The Contractor shall be responsible for the proper curing of the cement-mortar linings.

F. Hand mortar work: Cement-mortar lining of sharp bends, specials, areas adjacent to valves or other areas where machine placing is impracticable, and correcting defective areas shall be done by hand. Hand-placed mortar shall have uniformly smooth finished surfaces and smooth transitions adjacent to machine lining. Prior

to placing of hand mortar work, all areas to be lined shall be thoroughly cleaned in an approved manner with all loose and foreign materials removed, and if required surfaces shall be dampened before placing the mortar. Steel trowels shall be used for finishing where practicable. Hand mortar work shall be completed within 24 hours after machine application in that particular section of pipeline has been completed. Machine application of mortar lining shall be slowed down, or stopped if necessary, to assure hand mortar work is being placed in accordance with the requirements specified or directed.

G. Protection of lining: The Contractor shall be solely responsible for taking every precaution necessary to prevent injury to the pipe lining. All damage to pipe linings shall be satisfactorily repaired, or damaged portions removed and replaced by the Contractor to the satisfaction of the Owner, at no additional expense to the Owner.

3.7 INSPECTION AND TESTING

A. The Contractor shall make test cylinders of the cement-mortar used for pipe linings at such time as directed by the Owner. The making, curing, handling and testing of cement-mortar shall be in accordance with ASTM Specifications and as approved; the making, handling and curing of mortar test cylinders shall be as performed by the Contractor; the testing of mortar test cylinders will be made by the Owner.

B. The machine for placing the cement-mortar lining shall be so operated and controlled as to produce pipe linings conforming to the requirements specified herein. The operation and control for the equipment shall be constantly checked while the machine is in operation.

C. To identify defective areas in the lining and determine compliance with this specification, the Contractor shall provide the Owner with a video on disc which shall be made by the travel of a television/video recorder through the interior of the entire length of newly lined pipe. The video tape of the pipeline shall be submitted to the Owner for review prior to closure of the pipe access openings for that pipeline. Separate payment per linear foot will be made for video recorder inspection under this section of the Specifications.

D. The thickness of the cement-mortar lining for various pipe diameters shall be checked at each entrance /exit pit by the Owner and the Contractor and at other inspection points as directed by the owner. If the cement-mortar lining is found to be defective at any random inspection point, the Owner may require the Contractor to provide additional inspection pits to determine the extent of the defective lining, and the Contractor shall repair the cement-mortar lining found to be defective as required by subsection 3.04.D of this section, at no additional expense to the Owner. The Contractor shall make the necessary excavations, at locations as directed, cut out a three foot section of cleaned and cement lined pipe for visual inspection, patch the lining as required at pipe cuts, reinsert the section using approved pipe couplings as specified in paragraph “REPLACING PIPING” below, backfill excavations and place gravel base and temporary and permanent pavements. No separate payment will be made for inspection pit and related work, although compensation for such work as required, shall be considered to be

included in the prices bid for the applicable items of work under this contract such as F&I Pipe, couplings, Temporary and Permanent Pavements

E. The Hazen-Williams C factor will be used for determining the acceptability of surface finish of cement mortar lining. The newly cleaned and lined pipe shall meet the following Hazen-Williams C factor based upon the diameter.

Pipe Inside Diameter (in)	Guaranteed C Factor
4	90
6	100
8	110
10	115
12	120
14-20	125
>20	130

F. All lined potable water lines shall be disinfected in accordance with AWWA C651. Water Main shall be disinfected in accordance with specification 02675.

3.8 GUARANTEE OF CEMENT

A. General requirements: The Contractor shall guarantee materials and workmanship furnished under this contact against deterioration and failure for a period of one year after final acceptance of all the work under this contract. Any portion of the cement-mortar lining found to be deteriorated or have failed shall be made good by the Contractor in a satisfactory manner by patching or by removal and replacement of the cement-mortar lining, as required by the Owner, to provide a sound, durable cement-mortar lining. Repairs and/or replacements shall be made in accordance with AWWA Standard C602 (latest edition) and with the requirements specified herein, including removal of defective lining, cleaning the pipe, cutting and repairing or replacing access openings and all other incidental work. Repairs or replacements of defective cement-mortar lining and incidental work shall be provided in a satisfactory manner by the Contractor, at no additional expense to the Owner.

3.9 REPLACING PIPING

A. After all tests have been satisfactorily completed, and the cement-mortar lining approved by the Owner, the access opening in the pipeline shall be closed. Unless otherwise directed, the sections removed from the pipelines shall be disposed of and replaced with new D.I. pipe in the completed pipeline. At those locations where existing mainline valves have been removed and relocated elsewhere on the mainline, the Contractor shall provide a new section of pipe for the closure. New sections of pipe shall be provided in accordance with Section 02615 – “Ductile Iron Pipe & Fittings” and be paid for under this item”, as listed in the Bid. The cut sections of pipe shall be fitted into the pipeline in as close to the original position as practicable so as to maintain true alignment. All joints of cut sections of pipe

shall be made up using mechanical couplings. All exposed exterior surfaces of pipelines, couplings, bolts and nuts shall be cleaned and given a coating of coal tar, Koppers Bitumastic 50, Tnemec 46-449, or equal approved by the Owner.

3.10 OBSTRUCTIONS

A. Horizontal or vertical pipeline bends, pipeline specials, or other physical obstructions within the pipelines which will not permit the passage of pipe cleaning or cement-mortar lining devices, and which are not shown on the drawings or other plans made available to the Contractor; are not made known to the Contractor prior to the pipe cleaning operations at the respective section; or are not obviously implied by the layout on the drawings will be considered as "OBSTRUCTIONS" for purposes of payment. When an obstruction is encountered in the pipe cleaning operations which may not permit the passage of pipe cleaning and cement-mortar lining equipment, the Contractor shall provide all work necessary to permit the satisfactory passage of the equipment as directed by the Engineer.

3.11 LEAKAGE

A. If any leaks in the water main at locations where sections have been removed for access and later replaced by the contractor, or if leaks occur at any other locations which are directly attributable to the operations of the contractor in the cleaning and lining of mains, he shall uncover and satisfactorily repair such leaks at no additional expense to the owner for a period of one year after final acceptance under this contract. Refer to the General Conditions (Section 721), Article 63 titled "General Guaranty"

3.12 HOUSE SERVICE CLEANING

A. The Contractor shall clean debris and/or cement mortar from all services. The Contractor shall flush all such taps, or shall excavate, open, ream or otherwise repair all those whose operation is impaired by the cleaning and lining operation. The Engineer shall decide if house services are still impaired after flushing operations. If entry into the residence is required to perform this operation, advance notice shall be given to the owners by the Contractor.

3.13 CHLORINATION

A. Upon completion of all cleaning and lining operations of any section of pipeline and after such work has been approved by the Engineer, the Contractor shall disinfect the main in accordance with Section 02610 and the AWWA Manual for Disinfecting Water Mains – ANSI/AWWA C651.

3.14 PROTECTION OF WORK

A. Existing pipelines, utilities and structures, as well as work installed under this contract, shall be protected by the Contractor from damage during construction, backfilling and other contract operations; and if damaged, shall be satisfactorily replaced or repaired by the Contractor, at no additional expense to the Owner.

B. At locations where existing pipelines are cut and open and sections temporarily removed, the Contractor shall keep the open ends covered and plugged at all times, utilizing approved methods as directed by the Engineer, to prevent any run-off or foreign matter from entering the pipeline until such time as the existing pipeline has been permanently closed. No flexible fabrics, plastics or tape will be acceptable as bulkheads or caps.

3.15 TELEVISION INSPECTION

A. Camera shall be moved through the line in either direction at a uniform rate, stopping when necessary to insure proper documentation of the water main's condition, but in no case will television camera be pulled at a speed greater than 30 feet per minute. Manual winches, power winches, TV cable and powered rewinds, or other devices that do not obstruct the camera view or interfere with proper documentation of water main conditions shall be used to move the camera through the line. If, during the inspection operation, the television camera will not pass through an entire section, Contractor shall re-set up his equipment in a manner so inspection can be performed from the opposite access point. If, again, the camera fails to pass through the entire section, the Engineer may order additional cleaning.

1. Whenever non-remote powered and controlled winches are used to pull television camera through the line, telephones or other suitable means of communication shall be set up between the two access points of section being inspected to insure good communications between members of the crew.

2. One color digital file shall be submitted to Owner for both pre and post television inspections with accompanying logs for each inspection.

END OF SECTION

SECTION 02866

UTILITY CROSSING UNDER RAILROAD RIGHTS-OF-WAY

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:
   1. Furnish all necessary materials and perform all work associated with utility crossing(s) competed within railroad rights-of-way as shown on the drawings and specified herein.
   2. Perform all work to meet requirements of CSX Transportation, Inc. (Railroad). If a conflict exists between this Division and the Railroad specifications. All specifications shall apply unless specifically noted otherwise. Wherever the Railroad requirements indicate "Owner or its Contractor" the specifications shall be altered to indicate "Contractor".
   3. Perform any additional work specifically required by Railroad.
   4. Construction Agreement with the Railroad (see Appendix B) shall be executed prior to any construction.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 RAILROAD INSURANCE AND CERTIFICATES

A. Obtain and submit to the Engineer all required Federal, State and Municipal permits prior to starting work.
B. Obtain Workman's Compensation Insurance.
C. Obtain and submit insurance policies in accordance with Railroad requirements. Estimated insurance coverage:
   1. Commercial General Liability:
      a. Per occurrence: $5,000,000
      b. Duration: encroachment lifetime
   2. Railroad Protective Liability:
      a. Per Occurrence: $5,000,000
      b. Aggregate: $10,000,000
      c. Duration: encroachment construction activity
D. All insurance policies shall list the Owner, Engineer, and Railroad as additionally insured.
E. All insurance policies shall be in effect before any work is started and remain in effect until formal acceptance of work by the Chief Engineer of the Railroad.

1.4 INSPECTION

A. If deemed necessary by the Chief Engineer of the Railroad, Railroad will furnish inspectors and flaggers for the general protection of railroad property and operations. The inspection shall be at the expense of the Contractor.

1.5 SUBMITTALS

A. Contractor shall submit to Railroad all drawings, details and associated design calculations deemed necessary.

PART 2 - PRODUCTS

2.1 MATERIALS

A. All materials shall conform to minimum CSXT Transportation, Inc. Design and Construction Standard Specifications for Pipeline Occupancies (see Appendix B).

2.2 SUBMITTALS

A. Submit shop drawings in accordance with the applicable section of Division 1 and the General Conditions of the Construction Contract.

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Perform all work in accordance with CSX Transportation, Inc. specifications.
B. Perform all work in a manner satisfactory to the Chief Engineer of the Railroad.

3.2 SCHEDULING OF ACTIVITIES

A. Coordinate with Engineer to schedule construction activities within Railroad right-of-way. Railroad requires a minimum of 30 days advance notice to schedule any activities withing railroad right-of-way. Provide Engineer with 45 days advance notice to submit request form through Railroad portal.

3.3 ABANDONED FACILITIES

A. Abandoned pipelines shall be removed completely or filled with Portland cement grout, compacted sand, or other material as approved by Chief Engineer or Railroad.

END OF SECTION

SECTION 03319

PRE-CAST CONCRETE THRUST BLOCKS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Furnish and install pre-cast concrete thrust blocks for pipes in the location(s) and of the dimension(s) and shapes shown on the Drawings, as directed by the Engineer and as required to rigidly support pipes.

B. The Contractor shall provide pre-cast concrete thrust blocks, if cast-in-place thrust blocks are not used as indicated on the drawings.

1.2 QUALITY ASSURANCE

A. Acceptable Manufacturers:
   1. Superior Concrete, Auburn, ME
   2. Precast of Maine, Topsham, ME
   3. Or approved equal.

1.3 SUBMITTALS

A. Submit dimensioned drawings for each type of thrust block required, as indicated on the drawings.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Thrust blocks shall be manufactured of 3,000 psi concrete or greater.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Thrust blocks shall be installed as shown on the Drawings, to secure pipe and fittings and properly compacted as specified.

B. Secure pipe to prevent movement and floatation during the placement of the concrete.

END OF SECTION

APPENDIX A
DWSRF Supplemental General Conditions

UTILITY WORK PERFORMED UNDER MAINEDOT PROJECT CONTRACTS

Initial Policy Development Date: October 2021
Last Revision Date: March 4, 2026

105.11 Build America, Buy America Act Requirements

This project is subject to the Buy America (23 CFR 635.410) and Build America, Buy America Act (BABA) included in the Infrastructure Investment and Jobs Act (IIJA), Public Law No. 117-58. Further guidance can be found at the FHWA Buy America Construction Program Guide linked here:

https://www.fhwa.dot.gov/construction/cqit/buyam.cfm

The Contractor shall certify compliance with Buy America and BABA in the following categories. An article, material or supply should only be classified into one of the following categories and is classified based on its state when it arrives at the project site.

1. **Iron and Steel:** All iron and steel permanently incorporated into the project must be produced in the United States. The only exception to this requirement is the production of pig iron and the processing, pelletizing, and reduction of iron ore, which may occur in another country. This means all manufacturing processes, from the initial melting stage through the application of coatings, must occur in the United States. Any process that modifies the chemical content, the physical size and shape, or the final finish is considered a manufacturing process, including 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.

Existing De Minimis Use Exemption for Iron and Steel: The requirements of the law and regulations do not prevent a minimal use of foreign steel and iron materials if the total cost of such materials used does not exceed one-tenth of one percent (0.1%) of the total construction contract price or $2,500.00, whichever is greater.

2. **Manufactured Products:** Articles, materials, or supplies that have been processed into a specific form and shape, or combined with other articles, materials, or supplies to create a product with different properties than the individual articles, materials, or supplies. If a domestic product is taken out of the United States for any process, it becomes a foreign source material.

All Manufactured Products used in the project must be manufactured in the United States ("final assembly requirement"). "Component" means an article, material, or supply, whether manufactured or unmanufactured, incorporated directly into a manufactured product or, where applicable, an iron or steel product. If a manufactured product is predominantly iron, steel, or a combination of both it must meet the above requirements for iron and steel products. Predominantly iron or steel or a combination of both means the total cost of the iron and steel content exceeds 50 percent of the total cost of all its components.

Precast concrete products classified as Manufactured Products must additionally have predominantly iron or steel components that meet the above requirements for iron and steel. Cabinets or other enclosures of intelligent transportation systems (ITS) and other electronic hardware systems

classified as Manufactured Products must also comply with the above requirements for iron and steel if the cabinet or enclosure is predominantly iron or steel.

3. **Construction Materials:** Items, articles, materials, or supplies that consist of only one of the items listed below:

    i. Non-ferrous metals.
    ii. Plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables).
    iii. Glass (including optic glass);
    iv. Fiber optic cable.
    v. Optical fiber.
    vi. Lumber.
    vii. Engineered wood; and
    viii. Drywall.

Minor additions of articles, materials, supplies, or binding agents to a Construction Material do not change the categorization of the Construction Material.

All Construction Materials permanently incorporated into the project must be produced in the United States. For the Construction Material to be considered "produced in the United States," it must meet the following standards:

i. Non-ferrous metals. All manufacturing processes, from initial smelting or melting through final shaping, coating, and assembly, occurred in the United States.
ii. Plastic and polymer-based products. All manufacturing processes, from initial combination of constituent plastic or polymer-based inputs, or where applicable, constituent composite materials, until the item is in its final form, occurred in the United States.
iii. Glass. All manufacturing processes, from initial batching and melting of raw materials through annealing, cooling, and cutting, occurred in the United States.
iv. Fiber optic cable (including drop cable). All manufacturing processes, from the initial ribboning (if applicable), through buffering, fiber stranding, and jacketing, occurred in the United States. All manufacturing processes also include the standards for glass and optical fiber, but not for non-ferrous metals, plastic, and polymer-based products, or any others.
v. Optical fiber. All manufacturing processes, from the initial preform fabrication stage through the completion of the draw, occurred in the United States.
vi. Lumber. All manufacturing processes, from the initial debarking through treatment and planning, occurred in the United States.
vii. Drywall. All manufacturing processes, from initial blending of mined or synthetic gypsum plaster and additives through cutting and drying of sandwiched panels, occurred in the United States.

viii. Engineered wood. All manufacturing processes, from the initial combination of constituent materials until the wood product is in its final form, occurred in the United States.

Construction Materials brought on site and combined with other materials are not considered Manufactured Products. Items that consist of two or more of the listed Construction Materials that have been combined off-site through a manufacturing process, and items that include at least one of the listed materials combined with a material that is not listed through a manufacturing process should be treated as Manufactured Products rather than as Construction Materials.

Specifically Excluded Materials

Section 70917(c) of the Build America Buy America Act specifically excludes certain materials from being classified as either construction materials or manufactured products. These exclusions include cement and cementitious materials, aggregates (such as stone, sand, or gravel), and aggregate binding agents or additives.

Additionally, when these materials are combined as an unsettled mixture without a final form upon arriving at the work site, such as wet concrete or hot mix asphalt, the mixture is not considered a manufactured product. However, if these same materials are combined off-site to create a finished product, such as precast concrete, that finished product is considered a manufactured product.

Public Interest Waiver of BABA Requirements for De Minimis Costs

The US Department of Transportation issued a public interest Waiver of Buy America Requirements for De Minimis Costs. The Waiver for De Minimis Costs exempts Manufactured Products and Construction Materials produced outside the United States for which the total value of the non-compliant products is no more than the lesser of $1,000,000 or 5% of total applicable costs for the project.

The obligation to track costs throughout the life of the contract is the Contractor's responsibility. The term "total applicable costs" is defined as the total actual final material cost of the compliant and non-compliant iron and steel, Manufactured Products, and Construction Materials.

Certification

For iron and steel materials and for Manufactured Products produced predominantly of iron or steel or a combination of both*, the Contractor shall submit 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). A "Buy America" Certification is required from each manufacturer, fabricator, supplier, subcontractor that engages in "manufacturing" as defined above.

**Predominantly of iron or steel or a combination of both means that the cost of the iron and steel content exceeds 50% of the total cost of all its components. The cost of iron and steel is the cost of the iron or steel mill products, castings, or forgings utilized in the manufacture of the product and a good faith estimate of the cost of the iron or steel components.*

In addition, upon completion of the project, the Contractor shall certify in writing as to the overall compliance with BABA and provide the total project delivered cost of all foreign Manufactured Products and Construction Materials. The Contractor shall also submit individual certifications from all subcontractors and suppliers that furnish applicable Construction Materials and Manufactured Products valued at $10,000 or more. Such individual certifications shall be submitted upon delivery of the Construction Material or Manufactured Products to the site.

Example certification:

I hereby certify that this project is in compliance with the Build America, Buy America Act (Public Law 117-58) requirements for this project. All Iron and Steel, Manufactured Products produced predominantly of steel or iron, Manufactured Products and Construction Materials that are permanently incorporated into the work for this project were produced in the United States of America, with the only exceptions as noted below.

As required, we will maintain all records and documents pertinent to the Build America, Buy America Act requirements, at the address given above, for not less than 3 years from the date of Final Acceptance. These files will be available for inspection and verification by the Maine Department of Transportation and/or the Federal Highway Administration.

We further certify that the total value of foreign steel and iron for this project is $_____, said value being less than 0.1% of the total construction contract price or $2,500.00, whichever is greater.

We further certify that the total material cost of foreign Manufactured Products and Construction Materials for this project is $_____, said value being no more than the lesser of $1,000,000 or 5% of total applicable costs. The term "total applicable costs" is defined as the total actual final material cost of the compliant and non-compliant iron and steel, Manufactured Products, and Construction Materials.

Signed (*Contractor*)
(*President*) (*Contractor Firm*)

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: March 4, 2026

STATE REVOLVING FUND (SRF)
UTILITY CONSTRUCTION CONTRACT REQUIREMENTS
TO SUPPLEMNENT THE
MAINE DEPARTMENT OF TRANSPORTATION
GENERAL CONDITIONS

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 all environmental mitigation measures identified through the environmental review process, as required by applicable federal, state, and local laws, regulations, permits, and authorities, including:

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 a 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.

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.

Build America, Buy America Act (BABA) Requirements

The Contractor acknowledges, to and for the benefit of the Owner and the State (Maine Department of Environmental Protection), that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund (CWSRF) that have statutory requirements commonly known as "Build America, Buy America Act" (BABA), that requires all of the iron and steel, manufactured products, and construction materials used in the project to be produced in the United States ("Build America, Buy America Requirements") including iron and steel, manufactured products, and construction materials provided by the Contractor pursuant to this Agreement.

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 Build America, Buy America Requirements, (b) all of the iron and steel, manufactured products, and construction materials used in the project will be and/or have been produced in the United States in a manner that complies with the Build America, Buy America Requirements, unless a waiver of the requirements 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 Build America, Buy America Requirements, as may be requested by the Owner or the State.

While the Contractor has no direct contractual privity with the State, as a lender or awardee 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 Build America, Buy America (BABA) manufacturer certifications. The Contractor and subcontractors shall provide step manufacturer certifications to the Owner for each BABA 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 a BABA Compliance Certification (see form attached) with each Contractor's pay application. The Owner, shall in turn, submit this certification

from the Contractor, with their own BABA Compliance Certification (see form attached), to the State with the SRF payment reimbursement requisition.

A nationwide waiver to the Build America, Buy America Act waives the BABA requirements for products used and incorporated into a project that cumulatively comprise no more than five percent of the total project cost. This waiver is referred to as the BABA De Minimis waiver. It is the State's interpretation that all CWSRF projects will likely contain 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 maintain records and provide the necessary documentation (see attached sample de minimis tracking form) to the Owner. The Owner shall maintain files on the project site for this documentation, which shall be made available to State and Federal officials for inspection upon request.

The AIS De Minimis waiver cannot be used on projects subject to the Build America, Buy America Requirements. The iron and steel components must be accounted for under the BABA De Minimis waiver.

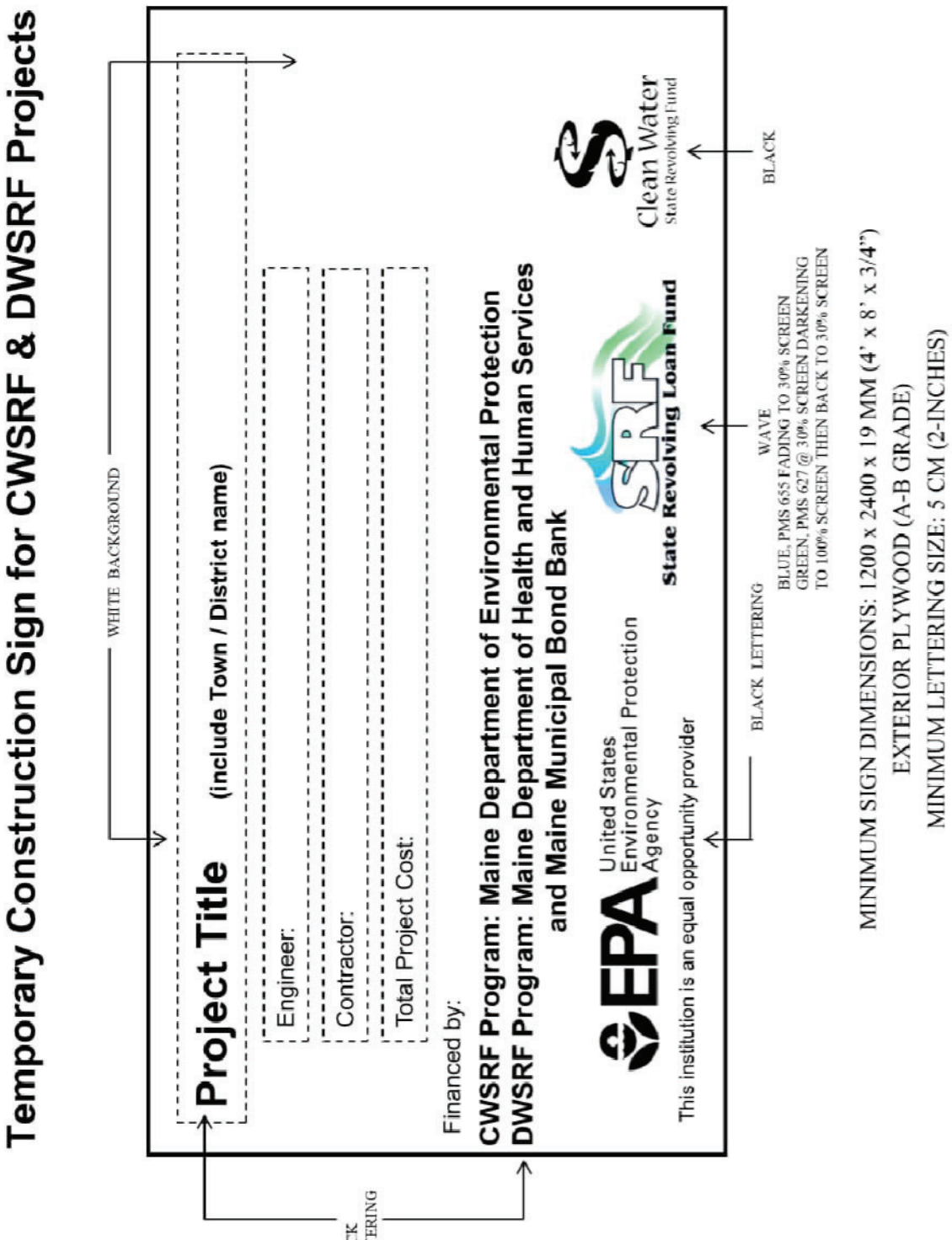
The Contractor shall refer to the attached BABA Contractor FAQ document for guidance. Additional information regarding the BABA law, requirements and waivers can be found on the EPA website: https://www.epa.gov/cwsrf/build-america-buy-america-baba.

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

- BABA Contractor FAQ *(include only for projects that require BABA)*
- BABA/AIS Certification by Owner *(include only for projects that require BABA)*
- BABA/AIS Certification by Contractor *(include only for projects that require BABA)*
- BABA/AIS Step Manufacturer Certification *(include only for projects that require BABA)*
- BABA De Minimis Tracking Form *(include only for projects that require BABA)*

Select Utility Construction Project Sign Drawings As Appropriate



Disadvantaged Business Enterprise Program

(DBE) PROGRESS REPORT OF DBE SUBCONTRACTOR UTILIZATION FORM

(To be attached to each Prime Contractor's Pay Application whether it includes invoiced amounts from a certified WBE or MBE subcontractor 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 to its 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 Contractor Involving Construction, Services, Equipment or Supplies	Amount Received by Prime Contractor

[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 pursuant to an EPA award of financial assistance.

(DBE Subcontractor Participation Form) SRF FORM 6100-2

Disadvantaged Business Enterprise Program (DBE) Subcontractor Participation Form

Please use the space below to report any concerns regarding the above EPA-funded project:

Subcontractor Signature	Print Name
Title	**Date**

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 Contractor Involving Construction, Services, Equipment or Supplies**	**Amount Received by Prime Contractor**

[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 acontractor to provide services pursuant to an EPA award of financial assistance.

DBE Subcontractor Participation Form) SRF FORM 6100-2, Page 2 of 2

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 Contractor's 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 InvolvingConstruction, 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 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 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 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 foregoing 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 and BABA Q & A

The following FAQs were compiled from a number of resources made available by the EPA. The EPA's AIS and BABA website contains further information, including the statues and point of contacts for AIS and BABA implementation.

AIS:
https://www.epa.gov/cwsrf/american-iron-and-steel-requirement-guidance-and-questions-and-answers

BABA:
https://www.epa.gov/cwsrf/build-america-buy-america-baba

CERTIFICATION BY THE OWNER
OF COMPLIANCE WITH THE
BUILD AMERICA BUY AMERICA ACT
AND THE
AMERICAN IRON AND STEEL LAW

(To be attached to each Owner SRF Payment Reimbursement Requisition)

We, the Owner named, _____, having obtained funding from the State of Maine, State Revolving Fund (SRF), for the Utility Construction Project named _____, hereby submit to the SRF program, certification from the Prime Contractor that the use of iron, steel, manufactured products and construction materials in their pay application(s) complies with the American Iron and Steel law and the Build America Buy America Act, 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 in this SRF payment requisition #_____ are in compliance with both aforementioned laws.

_____	_____	_____
Signature of Official	Printed Name	Date

Attachment: BABA/AIS Certification(s) by Contractor

CERTIFICATION BY CONTRACTOR
OF COMPLIANCE WITH THE
BUILD AMERICA BUY AMERICA ACT AND THE
AMERICAN IRON AND STEEL LAW

(Prime Contractor must provide the Owner one certification for each Pay Application)

We, the Prime Contractor and Subcontractors, as named below, hereby certify that the use of iron, steel, manufactured products and construction materials for the utility construction of the project named ______ , being requested in the Prime Contractor's Payment Application *(or invoice)* #______ and dated ______, complies with the American Iron and Steel law and the Build America Buy America Act, or that a waiver has been obtained from the U.S. Environmental Protection Agency.

Prime Contractor Name:

______________________	______________________	______________________
Signature of Official	Printed Name	Date

- -

Subcontractor Name	Signature of Official	Date
______________________	______________________	______________________
______________________	______________________	______________________
______________________	______________________	______________________
______________________	______________________	______________________
______________________	______________________	______________________
______________________	______________________	______________________

Maine Clean Water State Revolving Loan Fund (CWSRF)

Build America, Buy America - De Minimis Tracking Form (Sample)

The EPA has issued a public interest waiver for De Minimis products. The Prime Contractor must maintain an itemized list to track the products, including all iron and steel products, covered under De Minimis. The Owner may create their own format for the list or use this sample form. Additional sheets should be used as necessary.

Owner: _____ **Loan #:** _____

Project Name: _____

Products that qualify for a *de minimis* waiver cumulatively may comprise no more than a total of five percent of the total project cost. The five percent threshold can be used for any products, independent of the purpose of the project. This de minimis waiver includes all iron and steel products as well as other products covered under the Build America, Buy America Act. The EPA will review this waiver every five years after the date on which the waiver is issued (Current waiver issued Oct. 21, 2022).

NOTE: The total cost of a product may be based on estimated, or if available, actual costs.

Total Project Cost: _____ 5% Limit: $0.00

Product Description	Part/Model (if applicable)	Quantity (if applicable)	Cost per Unit (if applicable)	Total Cost of Product	Product Category (Iron and Steel, Manufactured Product, or Construction Material)	Invoice or Receipt Attached
			Total Cost deemed to be De Minimis:			

Completed by: _____

Company: _____ Title: _____

Name: _____ Date: _____

Signature:

APPENDIX B
Signed Railroad Agreement and CSX Design & Construction Standard Specifications

FACILITY ENCROACHMENT AGREEMENT

THIS AGREEMENT, made and effective as of December 1, 2025, by and between MAINE CENTRAL RAILROAD COMPANY, a Virginia corporation, whose mailing address is 500 Water Street, Jacksonville, Florida 32202, hereinafter called "Licensor," and LIVERMORE FALLS WATER DISTRICT, a municipal corporation, political subdivision or state agency, under the laws of the State of Maine, whose mailing address is 20 Depot Street, Livermore Falls, Maine 04254, hereinafter called "Licensee," WITNESSETH:

WHEREAS, Licensee desires to construct (unless previously constructed and designated as existing herein), use and maintain the below described facility(ies), hereinafter called "Facilities," over, under or across property owned or controlled by Licensor, at the below described location(s):

1. One (1) existing twelve inch (12") diameter sub-grade pipeline crossing, solely for the conveyance of potable water, located at or near Livermore Falls, Androscoggin County, Maine, New England Division, Pan Am Railway Subdivision, Milepost RUM-20.65, Latitude N44:28:23., Longitude W70:11:23.;

hereinafter, called the "Encroachment," as shown on print(s) labeled Exhibit "A," attached hereto and made a part hereof;

NOW, THEREFORE, in consideration of the mutual covenants, conditions, terms and agreements herein contained, the parties hereto agree and covenant as follows:

1. LICENSE:

1.1 Subject to Article 17, Licensor, insofar as it has the legal right, power and authority to do so, and its present title permits, and subject to:

(A) Licensor's present and future right to occupy, possess and use its property within the area of the Encroachment for any and all purposes, including Licensor's track(s) structures(s), power lines, communication, signal or other wires, train control system, cellular or data towers, or electrical or electronic apparatus, or any appurtenances thereto ("Licensor's Facilities") and any other facilities as now exist or which may in the future be located in, upon, over, under or across the property

(B) All encumbrances, conditions, covenants, easements, and limitations applicable to Licensor's title to or rights in the subject property; and

(C) Compliance by Licensee with the terms and conditions herein contained;

does hereby grant a non-exclusive license to Licensee for the Encroachment for the sole purpose of permitting Licensee to construct, maintain, repair, renew, operate, use, alter or change the

Facilities at the Encroachment above for the term herein stated, and to remove same upon termination.

1.2 The term Facilities, as used herein, shall include only those structures and ancillary facilities devoted exclusively to the transmission usage above within the Encroachment, and as shown on attached Exhibit A.

1.3 No additional structures or other facilities shall be placed, allowed, or maintained by Licensee in, upon or on the Encroachment except upon prior separate written consent of Licensor.

2. ENCROACHMENT FEE; TERM:

2.1 Licensee shall pay Licensor a one-time nonrefundable Encroachment Fee of SEVEN HUNDRED FIFTY AND 00/100 U.S. DOLLARS ($750.00) upon execution of this Agreement. Licensee agrees that the Encroachment Fee applies only to the original Licensee under this Agreement. In the event of a successor (by merger, consolidation, reorganization and/or assignment) or if the original Licensee changes its name, then Licensee shall be subject to payment of Licensor's current administrative and document preparation fees for the cost incurred by Licensor in preparing and maintaining this Agreement on a current basis.

2.2 However, Licensee assumes sole responsibility for, and shall pay directly (or reimburse Licensor), any additional annual taxes and/or periodic assessments levied against Licensor or Licensor's property solely on account of said Facilities or Encroachment.

2.3 This Agreement shall terminate as herein provided, but shall also terminate upon: (a) Licensee's cessation of use of the Facilities or Encroachment for the purpose(s) above; (b) removal of the Facilities; (c) subsequent mutual written consent; and/or (d) failure of Licensee to complete installation within five (5) years from the effective date of this Agreement.

2.4 In further consideration for the license or right hereby granted, Licensee hereby agrees that Licensor shall not be charged or assessed, directly or indirectly, with any part of the cost of the installation of said Facilities and appurtenances, and/or maintenance thereof, or for any public works project of which said Facilities is a part. Licensee agrees that it shall not assess Licensor any stormwater or drainage fee associated with such Facilities. Furthermore, Licensee shall be responsible for any stormwater or drainage fees assessed by any County or State agency managing such systems.

3. CONSTRUCTION, MAINTENANCE AND REPAIRS:

3.1 Licensee shall construct, maintain, relocate, repair, renew, alter, and/or remove the Facilities, in a prudent, workmanlike manner, using quality materials and complying with any applicable standard(s) or regulation(s) of Licensor (CSXT Specifications), or Licensee's particular industry, National Electrical Safety Code, or any governmental or regulatory body having jurisdiction over the Encroachment.

3.2 Location and construction of Facilities shall be made strictly in accordance with design(s) and specifications furnished to and approved by Licensor and of material(s) and size(s) appropriate for the purpose(s) above recited.

3.3 All of Licensee's work, and exercise of rights hereunder, shall be undertaken at time(s) satisfactory to Licensor, and so as to eliminate or minimize any impact on or interference with the safe use and operation of Licensor's property and appurtenances thereto.

3.4 In the installation, maintenance, repair and/or removal of said Facilities, Licensee shall not use explosives on or adjacent to Licensor's property of any type or perform or cause any blasting on or adjacent to Licensor's property without the separate express prior written consent of Licensor. As a condition to such consent, a representative will be assigned by Licensor to monitor blasting, and Licensee shall reimburse Licensor for the entire cost and/or expense of furnishing said monitor.

3.5 Any repairs or maintenance to the Facilities, whether resulting from acts of Licensee, or natural or weather events, which are necessary to protect or facilitate Licensor's use of its property, shall be made by Licensee promptly, but in no event later than thirty (30) days after Licensee has notice as to the need for such repairs or maintenance.

3.6 Licensor, in order to protect or safeguard its property, rail operations, equipment and/or employees from damage or injury, may request immediate repair or renewal of the Facilities, and if the same is not performed, may make or contract to make such repairs or renewals, at the sole risk, cost and expense of Licensee.

3.7 All work on the Encroachment shall be conducted in accordance with Licensor's safety rules and regulations.

3.8 Licensee hereby agrees to reimburse Licensor any loss, cost or expense (including losses resulting from train delays and/or inability to meet train schedules) arising from any failure of Licensee to make repairs or conduct maintenance as required by Section 3.5 above or from improper or incomplete repairs or maintenance to the Facilities or Encroachment.

3.9 In the event it becomes necessary for the Licensee to deviate from the approved Exhibit A, Licensee shall seek prior approval from Licensor, or when applicable, an official field representative of Licensor permitted to approve changes, authorizing the necessary field changes and Licensee shall provide Licensor with complete As-Built Drawings of the completed work. As-Built Drawings shall be submitted to Licensor in either electronic or hard copy form upon the substantial completion of the project and upon Licensor's request.

3.10 In the event of large scale maintenance/construction work to railroad bridges Licensee is required to protect power lines with insulated covers or comparable safety devices at their costs during construction/maintenance for safety of railroad employees.

4. PERMITS, LICENSES:

4.1 Before any work hereunder is performed, or before use of the Encroachment for the contracted purpose, Licensee, at its sole cost and expense, shall obtain all necessary permit(s) (including zoning, building, construction, health, safety or environmental matters), letter(s) or certificate(s) of approval. Licensee expressly agrees and warrants that it shall conform and limit its activities to the terms of such permit(s), approval(s) and authorization(s), and shall comply with all applicable ordinances, rules, regulations, requirements and laws of any governmental authority (State, Federal or Local) having jurisdiction over Licensee's activities, including the location, contact, excavation and protection regulations of the Occupational Safety and Health Act (OSHA) (29 CFR 1926.651(b)), et al., and State "One Call" - "Call Before You Dig" requirements.

4.2 Licensee assumes sole responsibility for failure to obtain such permit(s) or approval(s), for any violations thereof, and for costs or expenses of compliance or remedy.

5. MARKING AND SUPPORT:

5.1 With respect to any subsurface installation or maintenance upon Licensor's property, Licensee, at its sole cost and expense, shall:

(A) support track(s) and roadbed in a manner satisfactory to Licensor;

(B) backfill with satisfactory material and thoroughly tamp all trenches to prevent settling of surface of land and roadbed of Licensor in a manner satisfactory to Licensor; and

(C) either remove any surplus earth or material from Licensor's property or cause said surplus earth or material to be placed and distributed at location(s) and in such manner Licensor may approve.

5.2 After construction or maintenance of the Facilities, Licensee shall:

(A) Restore any track(s), roadbed and other disturbed property in a manner satisfactory to Licensor; and

(B) Erect, maintain and periodically verify the accuracy of aboveground markers, in a form approved by Licensor, indicating the location, depth and ownership of any underground Facilities or related facilities.

5.3 Licensee shall be solely responsible for any subsidence or failure of lateral or subjacent support in the Encroachment area for a period of three (3) years after completion of installation.

6. TRACK CHANGES:

6.1 In the event that rail operations and/or track maintenance result in changes in grade or alignment of, additions to, or relocation of track(s) or other facilities, or in the event future use of Licensor's rail corridor ("Rail Corridor") or property necessitate any change of location, height or depth in the Facilities or Encroachment, Licensee, at its sole cost and expense and within thirty (30) days after notice in writing from Licensor, shall make changes in the Facilities or Encroachment to accommodate such track(s) or operations.

6.2 If Licensee fails to do so, Licensor may make or contract to make such changes at Licensee's sole risk, cost and expense.

7. FACILITY CHANGES:

7.1 Licensee shall periodically monitor and verify the depth or height of the Facilities or Encroachment in relation to the existing tracks and facilities, and shall relocate the Facilities or change the Encroachment, at Licensee's expense, should such relocation or change be necessary to comply with the minimum clearance requirements of Licensor.

7.2 If Licensee undertakes to revise, renew, relocate or change in any manner whatsoever all or any part of the Facilities (including any change in voltage or gauge of wire or any change in circumference, diameter or radius of pipe or change in materials transmitted in and through said pipe), or is required by any public agency or court order to do so, plans therefor shall be submitted to Licensor for approval before such change. After approval, the terms and conditions of this Agreement shall apply thereto.

8. INTERFERENCE WITH RAIL FACILITIES:

8.1 Although the Facilities/Encroachment herein permitted may not presently interfere with Licensor's Facilities, in the event that the operation, existence or maintenance of said Facilities, in the sole judgment of Licensor, causes: (a) interference (including physical or interference from an electromagnetic induction, or interference from stray or other currents) with Licensor's power lines, communication, signal or other wires, train control system, or electrical or electronic apparatus; or (b) interference in any manner, with the operation, maintenance or use of Licensor's Facilities; then and in either event, Licensee, upon receipt of written notice from Licensor of any such interference, and at Licensee's sole risk, cost and expense, shall promptly make such changes in its Facilities or installation, as may be required in the reasonable judgment of the Licensor to eliminate all such interference. Upon Licensee's failure to remedy or change, Licensor may do so or contract to do so at Licensee's sole risk, cost and expense.

8.2 Without assuming any duty hereunder to inspect the Facilities, Licensor hereby reserves the right to inspect same and to require Licensee to undertake repairs, maintenance or adjustments to the Facilities, which Licensee hereby agrees to make promptly, at Licensee's sole cost and expense.

9. RISK, LIABILITY, INDEMNITY:

With respect to the relative risk and liabilities of the parties, it is hereby agreed that:

9.1 To the fullest extent permitted by State law (constitutional or statutory, as amended), Licensee hereby agrees to, defend, indemnify, and hold Licensor harmless from and against any and all liability, loss, claim, suit, damage, charge, cost or expense (including attorneys' fees) (collectively, "Claims and Losses") which Licensor may suffer, sustain, incur or in any way be subjected to, on account of death of or injury to any person whomsoever (including officers, agents, employees or invitees of Licensor), and for damage to or loss of or destruction of any property whatsoever, arising out of, resulting from, or in any way connected with the construction, repair, maintenance, replacement, presence, existence, operations, use or removal of the Facilities or any structure in connection therewith, or restoration of premises of Licensor to good order or condition after removal. EXCEPT when proven to have been caused solely by the willful misconduct or gross negligence of Licensor. HOWEVER, to the fullest extent permitted by State law, during any period of actual construction, repair, maintenance, replacement or removal of the Facilities, wherein agents, equipment or personnel of Licensee are on the railroad rail corridor, Licensee's liability hereunder shall be absolute, irrespective of any joint, sole or contributory fault or negligence of Licensor.

9.2 Use of Licensor's Rail Corridor involves certain risks of loss or damage as a result of the rail operations. Notwithstanding Section 9.1, Licensee expressly assumes all risk of loss and damage to Licensee's Property or the Facilities in, on, over or under the Encroachment, including loss of or any interference with use or service thereof, regardless of cause, including electrical field creation, fire or derailment resulting from rail operations. For this Section, the term "Licensee's Property" shall include property of third parties situated or placed upon Licensor's Rail Corridor by Licensee or by such third parties at request of or for benefit of Licensee.

9.3 To the fullest extent permitted by State law, as above, Licensee assumes all responsibility for, and agrees to defend, indemnify and hold Licensor harmless from any and all Claims and Losses arising from, under or in connection with or as a consequence of: (a) (i) any sudden or nonsudden pollution of air, water, land and/or ground water on or off the Encroachment area, arising from or in connection with the use of the Encroachment or (ii) any leaking, bursting, spilling, or any escape of the material transmitted in or through the Facilities; (b) any federal or state law dealing with either such sudden or nonsudden pollution of air, water, land and/or ground water arising therefrom or the remedy thereof; (c) any subsidence or failure of lateral or subjacent support of the tracks arising from such Facilities leakage; and (d) any drainage or runoff on or off the Encroachment area as a result of the Facilities/Encroachment herein permitted.

9.4 Notwithstanding Section 9.1, Licensee also expressly assumes all risk of loss which in any way may result from Licensee's failure to maintain either required clearances for any overhead Facilities or the required depth and encasement for any underground Facilities, whether or not such loss(es) result(s) in whole or part from Licensor's contributory negligence or joint fault.

9.5 Obligations of Licensee hereunder to release, indemnify and hold Licensor harmless shall also extend to companies and other legal entities that control, are controlled by, subsidiaries of, or are affiliated with Licensor, as well as any railroad that operates over the rail corridor on which the Encroachment is located, and the officers, employees and agents of each.

9.6 If a claim is made or action is brought against Licensor, and/or its operating lessee, for which Licensee may be responsible hereunder, in whole or in part, Licensee shall be notified to assume the handling or defense of such claim or action; but Licensor may participate in such handling or defense.

9.7 Notwithstanding anything contained in this Agreement, the limitation of liability contained in the state statutes, as amended from time to time, shall not limit Licensor's ability to collect under the insurance policies required to be maintained under this Agreement.

10. INSURANCE:

10.1 Prior to commencement of surveys, installation or occupation of premises pursuant to this Agreement, Licensee shall procure and shall maintain during the continuance of this Agreement, at its sole cost and expense, a policy of

(i) Statutory Worker's Compensation and Employers Liability Insurance with available limits of not less than ONE MILLION AND 00/100 U.S. DOLLARS ($1,000,000.00).

(ii) Commercial General Liability coverage (inclusive of contractual liability) with available limits of not less than FIVE MILLION AND 00/100 U.S. DOLLARS ($5,000,000.00) per occurrence (limit may be satisfied through a combination of both primary and umbrella/excess liability policies) for bodily injury and property damage and covering the contractual liabilities assumed under this Agreement and naming Licensor, and/or its designee, as additional insured. The evidence of insurance coverage shall be endorsed to provide for thirty (30) days' notice to Licensor, or its designee, prior to cancellation or modification of any policy. Mail CGL certificate, along with agreement, to CSX Transportation, Inc., Speed Code J180, 500 Water Street, Jacksonville, FL 32202. On each successive year, send certificate to RenewalCOI@csx.com.

(iii) Business automobile liability insurance with available limits of not less than ONE MILLION AND 00/100 U.S. DOLLARS ($1,000,000.00) combined single limit for bodily injury and/or property damage per occurrence naming Licensor, and/or its designee, as additional insured.

(iv) The insurance policies must contain a waiver of subrogation against CSXT and its parent, subsidiaries and affiliates, except where prohibited by law. All insurance companies must be A. M. Best rated A- and Class VII or better.

(v) Such other insurance as Licensor may reasonably require.

(vi) Licensee shall require its contractors to meet minimum insurance requirements above when performing work in relation to this Agreement. Licensee will procure and review contractor's insurance certificates to confirm requirements are met. Licensor may request a copy of the insurance certificate.

(vii) Licensor's acceptance of any certificate of insurance does not constitute a waiver, release or modification of any of the insurance coverages or endorsements required under this Article 10.

10.2 If Licensee's existing CGL policy(ies) do(es) not automatically cover Licensee's contractual liability during periods of survey, installation, maintenance and continued occupation, a specific endorsement adding such coverage shall be purchased by Licensee. If said CGL policy is written on a "claims made" basis instead of a "per occurrence" basis, Licensee shall arrange for adequate time for reporting losses. Failure to do so shall be at Licensee's sole risk.

10.3 Licensor, or its designee, may at any time request evidence of insurance purchased by Licensee to comply with this Agreement. Failure of Licensee to comply with Licensor's request shall be considered a default by Licensee.

10.4 To the extent permitted by law and notwithstanding anything to the contrary in this Agreement, the insurance required and provided by Licensee shall not be subject to the limitations of sovereign immunity.

10.5 (A) In the event Licensee finds it necessary to perform construction or demolition operations within fifty feet (50') of any operated railroad track(s) or affecting any railroad bridge, trestle, tunnel, track(s), roadbed, overpass or underpass, Licensee shall: (a) notify Licensor; and (b) require its contractor(s) performing such operations to procure and maintain during the period of construction or demolition operations, at no cost to Licensor, Railroad Protective Liability (RPL) Insurance, naming Licensor, and/or its designee, as Named Insured, written on the current ISO/RIMA Form (ISO Form No. CG 00 35 04 13) with limits of FIVE MILLION AND 00/100 U.S. DOLLARS ($5,000,000.00) per occurrence for bodily injury and property damage, with at least TEN MILLION AND 00/100 U.S. DOLLARS ($10,000,000.00) aggregate limit per annual policy period. The original of such RPL policy shall be sent to and approved by Licensor prior to commencement of such construction or demolition. Licensor reserves the right to demand higher limits.

(B) At Licensor's option, in lieu of purchasing RPL insurance or the 50 foot endorsements from an insurance company (but not CGL insurance), Licensee may pay Licensor, at Licensor's current rate at time of request, the cost of adding this Encroachment, or additional construction and/or demolition activities, to Licensor's Railroad Protective Liability (RPL)

Policy for the period of actual construction. This coverage is offered at Licensor's sole discretion and may not be available under all circumstances.

10.6 Notwithstanding the provisions of Sections 10.1 and 10.2, Licensee, pursuant to State Statute(s), may self-insure or self-assume, in any amount(s), any contracted liability arising under this Agreement, under a funded program of self-insurance, which fund will respond to liability of Licensee imposed by and in accordance with the procedures established by law.

11. GRADE CROSSINGS; PROTECTION SERVICES:

11.1 Nothing herein contained shall be construed to permit Licensee or Licensee's contractor to move any vehicles or equipment over the track(s), except at public road crossing(s), without separate prior written approval of Licensor.

11.2 If Licensor deems it advisable, during any construction, maintenance, repair, renewal, alteration, change or removal of said Facilities, to place watchmen, flagmen, or field construction managers for protection of operations of Licensor or others on Licensor's Rail Corridor at the Encroachment, and to keep persons, equipment or materials away from the track(s), Licensor shall have the right to do so at the expense of Licensee, but Licensor shall not be liable for failure to do so.

11.3 Subject to consent of Licensor, in its sole discretion, and subject to Licensor's operating rules and labor agreements, Licensee may provide flagmen, in place of Licensor's provision, at Licensee's sole risk, cost and expense, and in such event, Licensor shall not be liable for the failure or neglect of such flagmen. Such flagmen shall be approved by Licensor and shall meet all Licensor's requirement for performing such work.

12. LICENSOR'S COSTS:

12.1 Any additional or alternative costs or expenses incurred by Licensor to accommodate Licensee's continued use of Licensor's property as a result of track changes or changes to Licensor's Facilities shall also be paid by Licensee.

12.2 Licensor's expense for wages ("force account" charges) and materials for any work performed at the expense of Licensee pursuant hereto shall be paid by Licensee within thirty (30) days after receipt of Licensor's bill therefor. Licensor may, at its discretion, request an advance deposit for estimated Licensor costs and expenses.

12.3 Such expense shall include cost of railroad labor and supervision under "force account" rules, plus current applicable overhead percentages, the actual cost of materials, and insurance, freight and handling charges on all material used. Equipment rentals shall be in accordance with Licensor's applicable fixed rate. Licensor may, at its discretion, require advance deposits for estimated costs of such expenses and costs.

13. DEFAULT, BREACH, WAIVER:

13.1 The proper and complete performance of each covenant of this Agreement shall be deemed of the essence thereof, and in the event Licensee fails or refuses to fully and completely perform any of said covenants or remedy any breach within thirty (30) days after receiving written notice from Licensor to do so (or within forty-eight (48) hours in the event of notice of a railroad emergency). Licensor shall have the option of immediately revoking this Agreement and the privileges and powers hereby conferred, regardless of encroachment fee(s) having been paid in advance for any annual or other period. Upon such revocation, Licensee shall make removal in accordance with Article 14.

13.2 No waiver by Licensor of its rights as to any breach of covenant or condition herein contained shall be construed as a permanent waiver of such covenant or condition, or any subsequent breach thereof, unless such covenant or condition is permanently waived in writing by Licensor.

13.3 Neither the failure of Licensor to object to any work done, material used, or method of construction or maintenance of said Encroachment, nor any approval given or supervision exercised by Licensor, shall be construed as an admission of liability or responsibility by Licensor, or as a waiver by Licensor of any of the obligations, liability and/or responsibility of Licensee under this Agreement.

14. TERMINATION, REMOVAL:

14.1 All rights which Licensee may have hereunder shall cease upon the date of (a) termination, (b) revocation, or (c) subsequent agreement, or (d) Licensee's removal of the Facility from the Encroachment. However, neither termination nor revocation of this Agreement shall affect any claims and liabilities which have arisen or accrued hereunder, and which at the time of termination or revocation have not been satisfied; neither party, however, waiving any third party defenses or actions.

14.2 Within thirty (30) days after revocation or termination, Licensee, at its sole risk, cost and expense, shall (a) remove the Facilities from the Rail Corridor of Licensor, unless the parties hereto agree otherwise, (b) restore the Rail Corridor of Licensor in a manner satisfactory to Licensor, and (c) reimburse Licensor any loss, cost or expense of Licensor resulting from such removal.

14.3 Notwithstanding the termination, revocation or expiration of this Agreement, and except as otherwise stated in this Agreement, those obligations contained herein that by their terms or nature are intended to survive such termination, revocation or expiration shall do so including the indemnification, Facilities removal, restoration and reimbursement provisions herein.

15. NOTICE:

15.1 Licensee shall give Licensor at least thirty (30) days written notice before doing any work on Licensor's Rail Corridor, except that in cases of emergency shorter notice may be given. Licensee shall provide proper notification as follows:

a. For non-emergencies, Licensee shall submit online via the CSX Property Portal from Licensor's web site, via web link: https://propertyportal.csx.com/pub_ps_res/ps_res/jsf/public/index.faces

b. For emergencies, Licensee shall complete all of the steps outlined in Section 15.1 a. above, and shall also include detailed information of the emergency. Licensee shall also call and report details of the emergency to Licensor's Rail Operations Emergency Telephone Number: 1-800-232-0144. In the event Licensor needs to contact Licensee concerning an emergency involving Licensee's Facility(ies), the emergency phone number for Licensee is: 207-897-3445.

15.2 All other notices and communications concerning this Agreement shall be addressed to Licensee at the address above, and to Licensor at the address shown on Page 1, c/o CSXT Contract Management, J180; or at such other address as either party may designate in writing to the other.

15.3 Unless otherwise expressly stated herein, all such notices shall be in writing and sent via Certified or Registered Mail, Return Receipt Requested, or by courier, and shall be considered delivered upon: (a) actual receipt, or (b) date of refusal of such delivery.

16. ASSIGNMENT:

16.1 The rights herein conferred are the privileges of Licensee only, and Licensee shall obtain Licensor's prior written consent to any assignment of Licensee's interest herein (by operation of law or otherwise); said consent shall not be unreasonably withheld. Any assignment of this Agreement by Licensee, by operation or law or otherwise, or any interest herein, without the prior written consent of Licensor, shall be void.

16.2 Subject to Sections 2 and 16.1, this Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors or assigns.

16.3 Licensee shall give Licensor written notice of any legal succession (by merger, consolidation, reorganization, etc.) or other change of legal existence or status of Licensee, with a copy of all documents attesting to such change or legal succession, within thirty (30) days thereof.

16.4 Licensor expressly reserves the right to assign this Agreement, in whole or in part, to any grantee, lessee, or vendee of Licensor's underlying property interests in the Encroachment, upon written notice thereof to Licensee.

16.5 In the event of any unauthorized sale, transfer, assignment, sublicense or encumbrance of this Agreement, or any of the rights and privileges hereunder, Licensor, at its option, may revoke this Agreement by giving Licensee or any such assignee written notice of such revocation; and Licensee shall reimburse Licensor for any loss, cost or expense Licensor may incur as a result of Licensee's failure to obtain said consent.

17. TITLE:

17.1 Licensee understands that Licensor occupies, uses and possesses lands, rights-of-way and Rail Corridors under all forms and qualities of ownership rights or facts, from full fee simple absolute to bare occupation. Accordingly, nothing in this Agreement shall act as or be deemed to act as any warranty, guaranty or representation of the quality of Licensor's title for any particular Encroachment or segment of Rail Corridor occupied, used or enjoyed in any manner by Licensee under any rights created in this Agreement. It is expressly understood that Licensor does not warrant title to any Rail Corridor and Licensee will accept the grants and privileges contained herein, subject to all lawful outstanding existing liens, mortgages and superior rights in and to the Rail Corridor, and all leases, licenses and easements or other interests previously granted to others therein.

17.2 The term "license," as used herein, shall mean with regard to any portion of the Rail Corridor which is owned by Licensor in fee simple absolute, or where the applicable law of the State where the Encroachment is located otherwise permits Licensor to make such grants to Licensee, a "permission to use" the Rail Corridor, with dominion and control over such portion of the Rail Corridor remaining with Licensor, and no interest in or exclusive right to possess being otherwise granted to Licensee. With regard to any other portion of Rail Corridor occupied, used or controlled by Licensor under any other facts or rights, Licensor merely waives its exclusive right to occupy the Rail Corridor and grants no other rights whatsoever under this Agreement, such waiver continuing only so long as Licensor continues its own occupation, use or control. Licensor does not warrant or guarantee that the license granted hereunder provides Licensee with all of the rights necessary to occupy any portion of the Rail Corridor. Licensee further acknowledges that it does not have the right to occupy any portion of the Rail Corridor held by Licensor in less than fee simple absolute without also receiving the consent of the owner(s) of the fee simple absolute estate. Further, Licensee shall not obtain, exercise or claim any interest in the Rail Corridor that would impair Licensor's existing rights therein.

17.3 Licensee agrees it shall not have nor shall it make, and hereby completely and absolutely waives its right to, any claim against Licensor for damages on account of any deficiencies in title to the Rail Corridor in the event of failure or insufficiency of Licensor's title to any portion thereof arising from Licensee's use or occupancy thereof.

17.4 Licensee agrees to fully and completely indemnify and defend Licensor from and against any and all Claims and Losses arising out of or in connection with claims or litigation for slander of title, overburden of easement, or similar claims arising out of or based upon the Facilities placement, or the presence of the Facilities in, on or along any Encroachment(s), including claims for punitive or special damages; provided that Licensor shall have the right to participate in the defense of any such claim.

17.5 Licensee shall not at any time own or claim any right, title or interest in or to Licensor's property occupied by the Encroachments, nor shall the exercise of this Agreement for any length of time give rise to any right, title or interest in Licensee to said property other than the license herein created.

17.6 Nothing in this Agreement shall be deemed to give, and Licensor hereby expressly waives, any claim of ownership in and to any part of the Facilities.

17.7 Licensee shall not create or permit any mortgage, pledge, security, interest, lien or encumbrances, including tax liens and liens or encumbrances with respect to work performed or equipment furnished in connection with the construction, installation, repair, maintenance or operation of the Facilities in or on any portion of the Encroachment (collectively, "Liens or Encumbrances"), to be established or remain against the Encroachment or any portion thereof or any other Licensor property.

17.8 In the event that any property of Licensor becomes subject to such Liens or Encumbrances, Licensee agrees to pay, discharge or remove the same promptly upon Licensee's receipt of notice that such Liens or Encumbrances have been filed or docketed against the Encroachment or any other property of Licensor; however, Licensee reserves the right to challenge, at its sole expense, the validity and/or enforceability of any such Liens or Encumbrances.

18. APPROVALS:

18.1 Whenever this Agreement requires the prior approval or consent of Licensor, Licensee shall make a timely written request to Licensor therefor; and such approval or consent shall be obtained in writing. Except where this Agreement expressly obligates Licensor not to unreasonably withhold its approval or consent to any of Licensee's actions or requests, Licensor has the absolute right, in its sole and arbitrary discretion, to refuse any request Licensee makes or to withhold its approval of any of Licensee's proposed or effected actions that require Licensor's approval.

18.2 Licensor makes no warranties or guarantees upon which Licensee may rely, and assumes no liability or obligation to Licensee, by providing any waiver, approval, consent, or suggestion to Licensee in connection with this Agreement, or by reason of any neglect, delay, or denial of any request therefor.

19. GENERAL PROVISIONS:

19.1 This Agreement, and the attachments hereto, contains the entire understanding between the parties hereto, and supersedes all other oral or written agreements and understandings between them, with respect to the subject matter hereof.

19.2 Except as otherwise expressly provided in this Agreement, neither this Agreement, any provision hereof, nor any agreement or provision included herein by reference, shall operate or be construed as being for the benefit of any third person.

19.3 Except as otherwise provided herein, or in any Exhibit, Schedule or other attachment hereto, neither the form of this Agreement, nor any language herein, shall be interpreted or construed in favor of or against either party hereto as the sole drafter thereof.

19.4 This Agreement is executed under current interpretation of applicable Federal, State, County, Municipal or other local statute, ordinance or law(s). However, each separate division (paragraph, clause, item, term, condition, covenant or agreement) herein shall have independent and severable status for the determination of legality, so that if any separate division is determined to be void or unenforceable for any reason, such determination shall have no effect upon the validity or enforceability of each other separate division, or any combination thereof.

19.5 This Agreement shall be construed and governed by the laws of the state in which the Facilities and Encroachment are located. In interpreting this Agreement, the singular shall be read as the plural in each instance as sense shall require. The words "include," "includes" and "including" when used in this Agreement will be interpreted as if they were followed by the words "without limitation."

19.6 If any amount due pursuant to the terms of this Agreement is not paid by the due date, it will be subject to Licensor's standard late charge and will also accrue interest at eighteen percent (18%) per annum, unless limited by local law, and then at the highest rate so permitted.

19.7 Licensee agrees to reimburse Licensor for all reasonable costs (including attorney's fees) incurred by Licensor for collecting any amount due under the Agreement.

19.8 The provisions of this License are considered confidential and may not be disclosed to a third party without the consent of the other party(s), except: (a) as required by statute, regulation or court order, (b) to a parent, affiliate or subsidiary company, (c) to an auditing firm or legal counsel that are agreeable to the confidentiality provisions, or (d) to Lessees of Licensor's land and/or track who are affected by the terms and conditions of this Agreement and will maintain the confidentiality of this Agreement.

19.9 Within thirty (30) days of an overpayment in a cumulative total amount of One Hundred Dollars ($100.00) or more by Licensee to Licensor, Licensee shall notify Licensor in writing with documentation evidencing such overpayment. Licensor shall refund the actual amount of Licensee's overpayment within one hundred twenty (120) days of Licensor's verification of such overpayment.

19.10 This Agreement may be executed in any number of counterparts, and such counterparts may be exchanged by electronic transmission. Upon execution by the parties hereto, each counterpart shall be deemed an original and together shall constitute one and the same

instrument. A fully executed copy of this Agreement by electronic transmission shall be deemed to have the same legal effect as delivery of an original executed copy of this Agreement for all purposes.

19.11 Notwithstanding any other provision in this Agreement to the contrary, Licensor expressly reserves and does not waive any rights it may have under the Interstate Commerce Commission Termination Act of 1995, 49 U.S.C. § 10101, *et seq.*, the Federal Railroad Safety Act, 49 U.S.C. § 20101, *et seq.*, and/or any other federal law governing rail transportation and related operations.

[signature page follows]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement in duplicate (each of which shall constitute an original) as of the effective date of this Agreement.

Witness for Licensor:

MAINE CENTRAL RAILROAD COMPANY

By: _____

Print/Type Name: Eric Horton

Print/Type Title: Manager - Real Estate

Witness for Licensee:

LIVERMORE FALLS WATER DISTRICT

By: _____

Who, by the execution hereof, affirms that he/she has the authority to do so and to bind the Licensee to the terms and conditions of this Agreement.

Print/Type Name: Scott Greenleaf

Print/Type Title: Superintendent.

Tax ID No.: 016000833

Authority under Ordinance or

Resolution No. _____.

Dated 12/3/2025.

OPEN TRENCH

Livermore Falls, Androscoggin County, Maine | New England Division, Pan Am Railway
Subdivision Mile Post RUM 20.50 | Latitude Longitude: 44.47274, -70.18677

CSX PROPERTY SERVICES REVIEW
[X] No Exceptions [ ] Exceptions Noted
This review is for the general conformance with CSX utility design specifications only. Sole responsibility for all aspects of the overall design shall remain with the facility owner. This review does not constitute approval to proceed without meeting all of CSX's safety and contractual requirements.
By:

CSXT GENERAL NOTES:

1. REFER TO THE CSXT PIPELINE DESIGN & CONSTRUCTION SPECIFICATIONS FOR ADDITIONAL INFORMATION.
2. TRENCH EXCAVATIONS SHALL BE OF SUCH DIMENSIONS AS TO PROVIDE AMPLE ROOM FOR CONSTRUCTION. TRENCH WIDTHS SHALL BE AT LEAST 12 INCHES WIDER THAN THE OUTSIDE DIAMETER OF THE PIPE (6-INCHES EITHER SIDE OF THE PIPE). THE BOTTOMOF THE TRENCH, IN SO FAR AS IS PRACTICAL, SHALL BE EXCAVATED TO PERMIT PROPER PLACEMENT OF THE PIPE. THE EXCAVATION FOR THE PIPELINE SHALL INCLUDE THE REMOVAL OF ANY OBSTRUCTIONS ENCOUNTERED. THE TRENCH SHALL BE EXCAVATED TO A DEPTH AT LEAST 3 INCHES BELOW THE OUTSIDE BOTTOM ELEVATION OF THE PLANNED PIPELINE. WHEN NECESSARY, ALL EXCAVATIONS SHOULD BE DEWATERED PRIOR TO AND DURING INSTALLATION AND BACKFILLING OF THE SYSTEM.
3. COMPACT ALL BACKFILL IN EXCAVATIONS AND TRENCHES TO 95% MAXIMUM DRY DENSITY AS DEFINED IN ASTM STANDARD D1557. USE CLEAN, SUITABLE BACKFILL MATERIAL, INSTALL IN SIX-INCH LIFTS AND COMPACT.
4. BEDDING MATERIAL SHALL BE GRANULAR BACKFILL IDENTICAL TO SUBBALLAST, OR A WELL GRADED CRUSHED STONE OR GRAVEL.
5. WHEN EXCAVATING WORK WILL BE WITHIN CSXT RIGHT-OF-WAY, SHORING PLANS AND OTHER REQUIRED MATERIAL MUST BE SUBMITTED TO CSXT DESIGNEE FOR APPROVAL PRIOR TO ANY CONSTRUCTION. ANY EXCAVATION/HOLE LESS THAN 15' FROM THE CENTERLINE OF NEAREST TRACK MUST BE FILLED OR PROPERLY SHORED PRIOR TO ANY TRAIN PASSING.
6. PIPELINE SHALL BE PROMINENTLY MARKED AT BOTH SIDES OF THE CSXT PROPERTY LINES BY DURABLE, WEATHERPROOF SIGNS LOCATED OVER THE CENTERLINE OF THE PIPE IN ACCORDANCE WITH CSXT SPECIFICATIONS.
7. ALL PRESSURE PIPELINES INSTALLED BY THE TRENCH METHOD, WITHOUT A CASING, SHAL HAVE A WARNING TAPE PLACED DIRECTLY ABOVE THE PIPELINE, 2 FEET BELOW THE GROUND SURFACE.
8. INSTALL HAND HOLES, SPLICE BOXES, AND MANHOLES PER THE REQUIREMENTS OF CSXT DESIGN & CONSTRUCTION SPECIFICATIONS. INSTALL THEM SO AS NOT TO CREATE A TRIPPING HAZARD OR TO INTERFERE WITH RAILROAD OPERATIONS.
9. NO CONSTRUCTION OR ENTRY UPON THE CSXT CORRIDOR IS PERMITTED UNTIL THE DOCUMENT TRANSACTION IS COMPLETED, YOU ARE IN RECEIPT OF A FULLY EXECUTED DOCUMENT, AND YOU HAVE OBTAINED AUTHORITY FROM THE LOCAL ROADMASTER.
10. IF REQUIRED, A DEWATERING PLAN IN ACCORDANCE WITH CSXT SPECIFICATIONS WILL BE SUBMITTED TO THE CSXT DESIGNEE FOR REVIEW AND APPROVAL PRIOR TO ANY DEWATERING OPERATIONS.
11. BLASTING IS NOT PERMITTED UNDER OR ON CSXT PROPERTY.
12. CSXT DOES NOT GRANT OR CONVEY AN EASEMENT FOR THIS INSTALLATION.
13. ALL PERSONNEL SHALL RECEIVE SAFETY BRIEFINGS BY A CSXT FLAGMAN OR DESIGNATED CSXT DESIGNEE EACH DAY BEFORE BEGINNING WORK ON THE RIGHT OF WAY. ADDITIONAL SAFETY BRIEFINGS MAY BE REQUIRED WHEN CONDITIONS AND/OR WORK SITES ARE CHANGED.
14. AGENCY OR ITS CONTRACTOR SHALL ARRANGE AND CONDUCT ITS WORK SO THAT THERE WILL BE NO INTERFERENCE WITH CSXT OPERATIONS, INCLUDING TRAIN, SIGNAL, TELEPHONE AND TELEGRAPHIC SERVICES, OR DAMAGES TO CSXT'S PROPERTY, OR TO POLES, WIRES, AND OTHER FACILITIES OF TENANTS OF CSXT'S PROPERTY OR RIGHT-OF-WAY.
15. CONTRACTOR ACCESS WILL BE LIMITED TO THE IMMEDIATE PROJECT AREA ONLY. THE CSXT RIGHT-OF-WAY OUTSIDE THE PROJECT AREA MAY NOT BE USED FOR CONTRACTOR ACCESS TO THE PROJECT SITE AND NO TEMPORARY AT-GRADE CROSSINGS WILL BE ALLOWED.
16. ALL MATERIAL AND EQUIPMENT WILL BE STAGED TO NOT BLOCK ANY CSXT ACCESS OR MAINTENANCE ROADS. NO HOISTING OR AUXILIARY EQUIPMENT NECESSARY FOR THE PROCEDURE SHALL BE PLACED ON CSXT TRACK STRUCTURE AND / OR BALLAST SECTION. CLEAR WORKING LOCATIONS FOR EQUIPMENT USED WILL BE LAID OUT AND APPROVED BY THE CSXT FLAGGER PRIOR TO EQUIPMENT SET-UP.
17. DURING CONSTRUCTION, THE CONTRACTOR SHALL PROTECT ALL ACTIVE RAILROAD FACILITIES, INCLUDING ELECTRICAL, WATER LINES, SEWER LINES, COMMUNICATION AND SIGNAL LINES AS WELL AS UNDERGROUND PIPING. THE CONTRACTOR SHALL BE REQUIRED TO KEEP ALL EQUIPMENT AND MATERIAL A MINIMUM OF SIX (6) FEET FROM AFOREMENTIONED ELEVATED COMMUNICATION AND SIGNAL FACILITIES.
18. CONTRACTOR MUST CONDUCT ALL OF ITS WORK IN A SAFE MANNER. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH RULES, REGULATIONS, PROCEDURES AND SAFE PRACTICES OF CSXT, OSHA, THE FRA AND ALL OTHER GOVERNMENT AGENCIES HAVING JURISDICTION OVER THE PROJECT.
19. OWNER SHALL REIMBURSE CSXT DIRECTLY FOR ALL COSTS OF FLAGGING AND INSPECTION SERVICE THAT ARE REQUIRED ON ACCOUNT OF CONSTRUCTION WITHIN CSXT PROPERTY SHOWN IN THE PLANS, OR COVERED BY AN APPROVED PLAN REVISION, SUPPLEMENTAL AGREEMENT OR CHANGE ORDER. INSPECTION SERVICE SHALL NOT RELIEVE CONTRACTOR FROM LIABILITY FOR ITS WORK.
20. OWNER OR CONTRACTOR SHALL GIVE A MINIMUM OF 30 DAYS' ADVANCE NOTICE TO CSXT DESIGNEE FOR ANTICIPATED NEED FOR FLAGGING AND INSPECTION SERVICE. NO WORK SHALL BE UNDERTAKEN UNTIL THE FLAG PERSON(S) AND INSPECTOR(S) IS/ ARE AT THE JOB SITE. IF IT IS NECESSARY FOR CSXT TO ADVERTISE A FLAGGING JOB FOR BID, CSXT SHALL NOT BE LIABLE FOR THE COST OF DELAYS ATTRIBUTABLE TO OBTAINING SUCH SERVICE.
21. THE RIGHT OF WAY SHALL BE RESTORED TO A CONDITION EQUAL TO OR BETTER THAN THE CONDITION PRIOR TO BEGINNING THE PROJECT BEFORE FINAL ACCEPTANCE WILL BE PROVIDED. PUNCH LISTS SHALL BE RESPONDED TO PRIOR TO ISSUANCE OF AN ACCEPTANCE MEMORANDUM SIGNED BY THE CSXT DESIGNEE.
22. IDENTIFY HAZARDS AND PUT CONTROLS IN PLACE PRIOR TO START OF EXCAVATION. STAKE OR MARK PIT AS NEEDED FOR DIGGING. ESTABLISH A LAYDOWN AREA ABOVE THE FLOOD ZONE TO PLACE MOTORIZED EQUIPMENT. PLACE SNOW FENCE AROUND PIT 20' BEYOND THE LEADING EDGE OF EXCAVATION. ALL EROSION CONTROL METHODS SHALL BE INSTALLED AND MAINTAINED USING BEST MANAGEMENT PRACTICES AS REQUIRED. APPLY LAYER OF WASHED STONE TO BASE OF EXCAVATION TO ESTABLISH PROPER LINE AND GRADE (6" MIN.).
23. BACKFILL, COVER OR FENCE ALL EXCAVATIONS WHEN UNATTENDED. THE CSXT DESIGNEE WILL APPROVE THE PROTECTION METHOD AND THE TYPE OF FENCING MATERIAL. SET FENCING BACK AT LEAST 3 FEET (91 CENTIMETERS) FROM THE EDGES OF THE EXCAVATION. SET FENCE POSTS SECURELY IN THE GROUND AND INSURE THE FENCING IS SECURELY TIED TO POSTS WITH ZIP TIES OR SOME OTHER TIE WRAP PRODUCT.
24. IF THE EXCAVATION IS 5 FEET OR GREATER IN DEPTH, THE WALLS MAY BE SLOPED AT 1.5 HORIZONTAL TO 1 VERTICAL TO REDUCE THE RISK OF CAVE-INS OR SLIDES. A SAFE MANNER IN WHICH TO ENTER AND EXIT THE EXCAVATION MUST BE ESTABLISHED. THE TOE OF SLOPES IN EXCAVATION SHALL IN NO CASE BE UNDERCUT BY POWER SHOVELS, BULLDOZERS, GRADERS, BLASTING, OR IN ANY MANNER. EXCAVATION SHALL NOT BE MADE IN EXCESS OF THE AUTHORIZED CROSS-SECTION.
25. AVOID THE NEED FOR WORKERS TO BE IN TRENCHES WHENEVER POSSIBLE. FOR EXAMPLE, WHEN TRENCHING IN A CONDUIT SYSTEM, THE PIPE TO BE PLACED SHOULD BE ASSEMBLED ABOVE THE TRENCH AND LOWERED DOWN INTO THE TRENCH. WHEN WORKERS ARE REQUIRED TO GO INTO AN EXCAVATION, SHORING AND CONFINED SPACE REQUIREMENTS WILL GOVERN.
26. PROJECTS THAT GENERATE SOILS FROM CSXT PROPERTY MUST ADHERE TO CSXT'S SOIL MANAGEMENT POLICIES. CSXT REQUIRES SOILS GENERATED FROM ITS PROPERTY TO EITHER BE REUSED ON CSXT PROPERTY OR PROPERLY DISPOSED IN A CSXT APPROVED DISPOSAL FACILITY. CSXT ENVIRONMENTAL DEPARTMENT WILL HANDLE WASTE CHARACTERIZATION AND PROFILING INTO AN APPROVED DISPOSAL FACILITY. CSXT PROHIBITS ANY ENVIRONMENTAL SAMPLING ON ITS PROPERTY UNLESS GRANTED THROUGH AN WRITTEN ENVIRONMENTAL RIGHT-OF-ENTRY OR APPROVED IN WRITING BY THE CSXT ENVIRONMENTAL DEPARTMENT. THE MANAGEMENT OF SOILS GENERATED FROM CSXT PROPERTY SHOULD BE PLANNED FOR AND PROPERLY PERMITTED (IF APPLICABLE) PRIOR TO INITIATING ANY WORK ON CSXT PROPERTY. A LIST OF CSXT APPROVED LABORATORIES AND/OR DISPOSAL FACILITIES MAY BE OBTAINED FROM THE CSXT MANAGER ENVIRONMENTALPROGRAMS.
27. CONTRACTOR ALSO HAS THE SOLE RESPONSIBILITY OF ASCERTAINING THAT ALL OTHER UTILITIES HAVE BEEN PROPERLY LOCATED BY COMPLYING WITH THE LOCAL "CALL BEFORE YOU DIG" REGULATION(S). CONTRACTOR SHALL SOLELY BE RESPONSIBLE FOR NOTIFYING OWNERS OF ADJACENT PROPERTIES AND OF UNDERGROUND FACILITIES AND UTILITY OWNERS WHEN PROSECUTION OF THE WORK MAY AFFECT THEM, AND SHALL COOPERATE WITH THEM IN THE PROTECTION, REMOVAL, RELOCATION AND REPLACEMENT OF THEIR PROPERTY.
28. CONTRACTOR SHALL CONDUCT "PRE-DIG" MEETING PRIOR TO CONSTRUCTION WORK, WITH ALL SUBCONTRACTORS AND WORKERS TO REVIEW THE LOCATION OF ALL UTILITIES AS MARKED OUT, EXCAVATION PROCEDURES, AND TO CONFIRM THE "ONE CALL" REQUEST. THIS PERMIT IS SUBJECT TO ANY EXISTING UTILITIES THAT MAY BE IN CONFLICT WITH THE DESIGN AND REQUIRES POTHOLING. ALL EXISTING UTILITIES ARE REQUIRED TO BE POTHOLED PRIOR TO COMMENCEMENT OF CONSTRUCTION AND SHALL BE PERFORMED IN ACCORDANCE WITH CSXT SPECIFICATIONS. HAND EXPOSE LINES TO A POINT OF NO CONFLICT (24 INCHES ON EITHER SIDE OF THE UNDERGROUND INSTALLATION). IF MARKED UTILITY CANNOT BE LOCATED, EXCAVATION MUST NOT PROCEED AND YOU MUST NOTIFY THE ONE CALL NUMBER OR UTILITY COMPANY TO PROVIDE ADDITIONAL INFORMATION TO DETERMINE THE EXACT LOCATION.
29. BEFORE EXCAVATING, ALL SIGNAL CABLES AND OTHER UTILITIES MUST BE LOCATED AND MARKED/FLAGGED. CONTRACTOR SHALL BE HELD LIABLE FOR ANY DAMAGES TO CSXT COMMUNICATION & SIGNALFACILITIES.

NOTE: WORK SCHEDULE IS SUBJECT TO THE APPROVAL OF ALL REQUIRED CONSTRUCTION SUBMITTALS BY THE CSXT CONSTRUCTION REPRESENTATIVE, VERIFICATION THAT PROPOSED WORK WILL NOT CONFLICT WITH ANY CSXT U.G. FACILITIES, AND THE AVAILABILITY OF CSXT FLAGGING AND PROTECTION SERVICES. CONSTRUCTION SUBMITTALS WILL BE BASED UPON THE PROPOSED SCOPE OF WORK AND MAY INCLUDE, BUT ARE NOT LIMITED TO; PROPOSED WORK PLAN, PROJECT SCHEDULE, MEANS AND METHODS, SITE ACCESS, DEWATERING, TEMPORARY EXCAVATION/SHORING, SOIL DISPOSITION/MANAGEMENT, TRACK MONITORING, CONCRETE PLACEMENT WORK, STRUCTURAL LIFTING/RIGGING PLANS FOR HOISTING OPERATIONS, SUBSTRUCTURE CONSTRUCTION PLANS, STEEL ERECTION PLANS, ROADWORK PLANS, ETC. NO WORK MAY BEGIN ON, OVER, OR ADJACENT TO CSXT PROPERTY, OR THAT COULD POTENTIALLY IMPACT CSXT PROPERTY, OPERATIONS OR SAFETY WITHOUT THE PRIOR COMPLETION AND APPROVAL OF THE REQUIRED AFOREMENTIONED INFORMATION AND APPROVALS.

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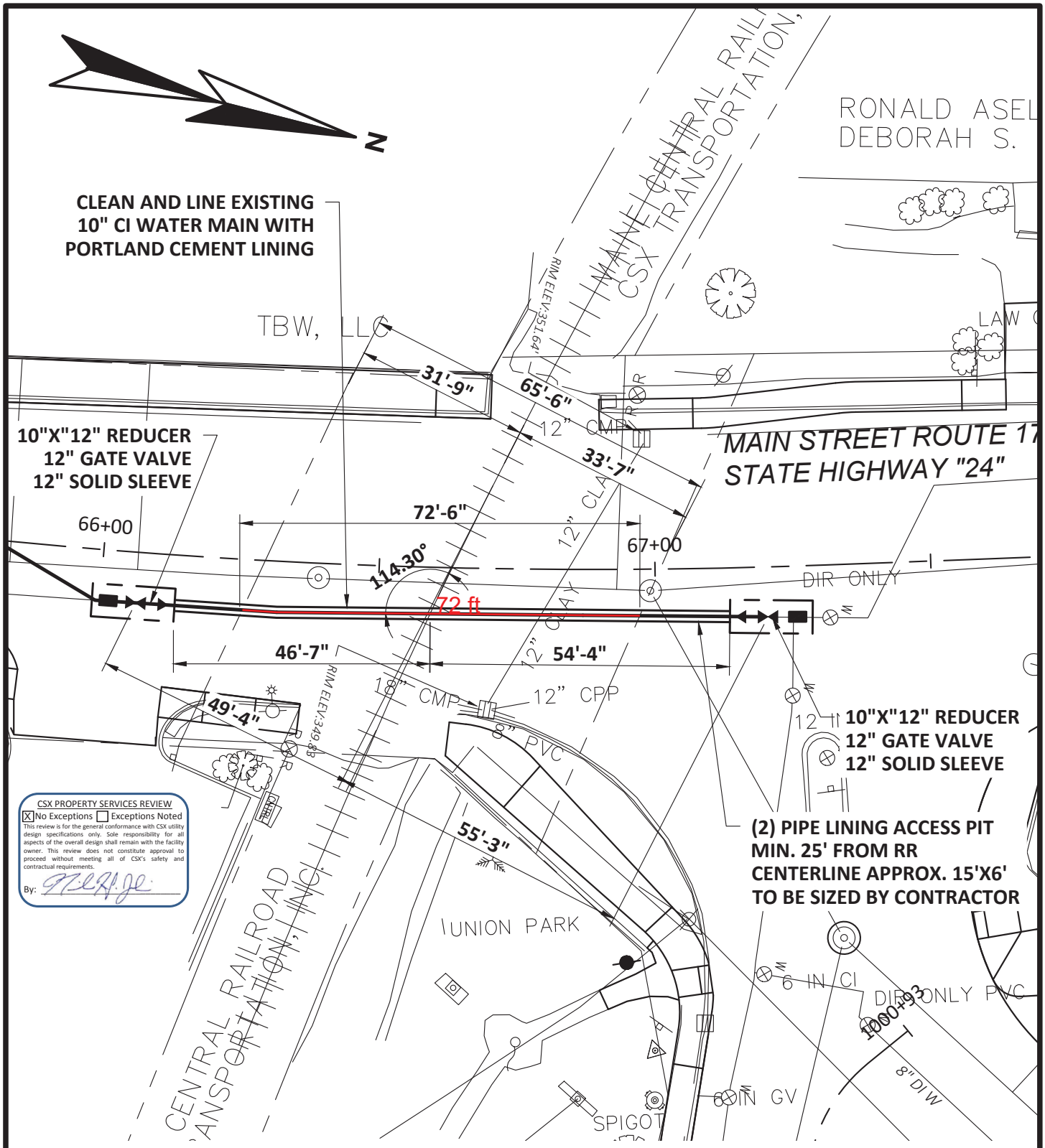


PLAN

SCALE: 1"=25'

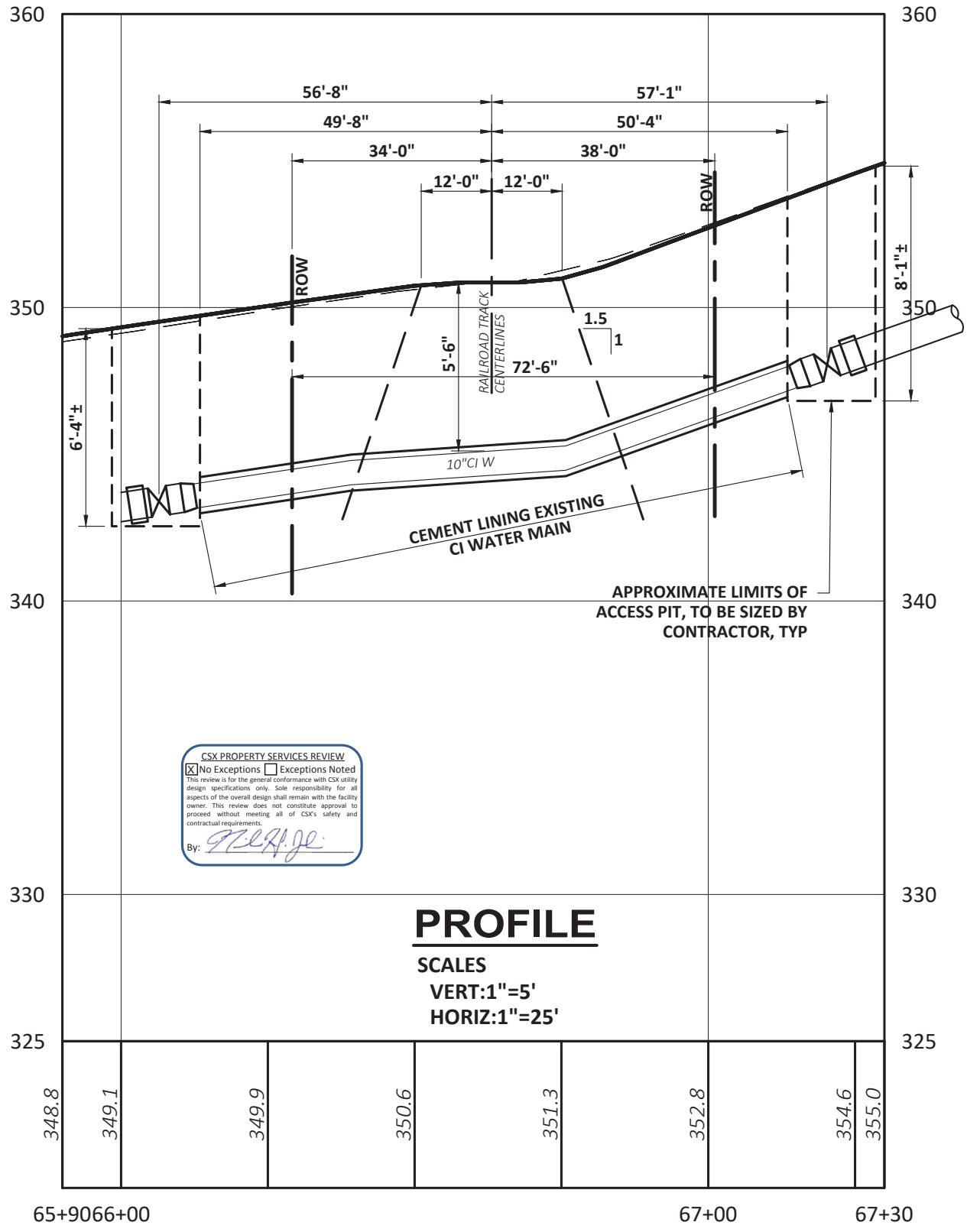
LIVERMORE FALLS, MAINE
ROUTE 17 UTILITY IMPROVEMENTS
WATER MAIN LINING

NO.	REVISIONS
1	

DRAWN BY: J.MICHAUD	DATE: AUGUST 2025	PROJ NO: 20947/21011
APPROVED BY: J.WALLACE	REFERENCE DWG: C-11	FIGURE: 1

WRIGHT-PIERCE

MAIN STREET RAILROAD CROSSING



CSX PROPERTY SERVICES REVIEW
[X] No Exceptions [ ] Exceptions Noted
This review is for the general conformance with CSX utility design specifications only. Sole responsibility for all aspects of the overall design shall remain with the facility owner. This review does not constitute approval to proceed without meeting all of CSX's safety and contractual requirements.
By:

PROFILE

SCALES
VERT:1"=5'
HORIZ:1"=25'

LIVERMORE FALLS, MAINE
ROUTE 17 UTILITY IMPROVEMENTS
WATER MAIN LINING

NO.	REVISIONS
1	

DRAWN BY: J.MICHAUD	DATE: AUGUST 2025	PROJ NO: 20947/21011
APPROVED BY: J.WALLACE	REFERENCE DWG: C-11	FIGURE: 2

WRIGHT-PIERCE

MAIN STREET RAILROAD CROSSING

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FACILITY ENCROACHMENT AGREEMENT

THIS AGREEMENT, made and effective as of December 1, 2025, by and between MAINE CENTRAL RAILROAD COMPANY, a Virginia corporation, whose mailing address is 500 Water Street, Jacksonville, Florida 32202, hereinafter called "Licensor," and LIVERMORE FALLS WATER DISTRICT, a municipal corporation, political subdivision or state agency, under the laws of the State of Maine, whose mailing address is 20 Depot Street, Livermore Falls, Maine 04254, hereinafter called "Licensee," WITNESSETH:

WHEREAS, Licensee desires to construct (unless previously constructed and designated as existing herein), use and maintain the below described facility(ies), hereinafter called "Facilities," over, under or across property owned or controlled by Licensor, at the below described location(s):

1. One (1) existing twelve inch (12") diameter sub-grade pipeline crossing, solely for the conveyance of potable water, located at or near Livermore Falls, Androscoggin County, Maine, New England Division, Pan Am Railway Subdivision, Milepost RUM-20.50, Latitude N44:28:21., Longitude W70:11:12.;

hereinafter, called the "Encroachment," as shown on print(s) labeled Exhibit "A," attached hereto and made a part hereof;

NOW, THEREFORE, in consideration of the mutual covenants, conditions, terms and agreements herein contained, the parties hereto agree and covenant as follows:

1. LICENSE:

1.1 Subject to Article 17, Licensor, insofar as it has the legal right, power and authority to do so, and its present title permits, and subject to:

(A) Licensor's present and future right to occupy, possess and use its property within the area of the Encroachment for any and all purposes, including Licensor's track(s) structures(s), power lines, communication, signal or other wires, train control system, cellular or data towers, or electrical or electronic apparatus, or any appurtenances thereto ("Licensor's Facilities") and any other facilities as now exist or which may in the future be located in, upon, over, under or across the property

(B) All encumbrances, conditions, covenants, easements, and limitations applicable to Licensor's title to or rights in the subject property; and

(C) Compliance by Licensee with the terms and conditions herein contained;

does hereby grant a non-exclusive license to Licensee for the Encroachment for the sole purpose of permitting Licensee to construct, maintain, repair, renew, operate, use, alter or change the

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Facilities at the Encroachment above for the term herein stated, and to remove same upon termination.

1.2 The term Facilities, as used herein, shall include only those structures and ancillary facilities devoted exclusively to the transmission usage above within the Encroachment, and as shown on attached Exhibit A.

1.3 No additional structures or other facilities shall be placed, allowed, or maintained by Licensee in, upon or on the Encroachment except upon prior separate written consent of Licensor.

2. ENCROACHMENT FEE; TERM:

2.1 Licensee shall pay Licensor a one-time nonrefundable Encroachment Fee of SEVEN HUNDRED FIFTY AND 00/100 U.S. DOLLARS ($750.00) upon execution of this Agreement. Licensee agrees that the Encroachment Fee applies only to the original Licensee under this Agreement. In the event of a successor (by merger, consolidation, reorganization and/or assignment) or if the original Licensee changes its name, then Licensee shall be subject to payment of Licensor's current administrative and document preparation fees for the cost incurred by Licensor in preparing and maintaining this Agreement on a current basis.

2.2 However, Licensee assumes sole responsibility for, and shall pay directly (or reimburse Licensor), any additional annual taxes and/or periodic assessments levied against Licensor or Licensor's property solely on account of said Facilities or Encroachment.

2.3 This Agreement shall terminate as herein provided, but shall also terminate upon: (a) Licensee's cessation of use of the Facilities or Encroachment for the purpose(s) above; (b) removal of the Facilities; (c) subsequent mutual written consent; and/or (d) failure of Licensee to complete installation within five (5) years from the effective date of this Agreement.

2.4 In further consideration for the license or right hereby granted, Licensee hereby agrees that Licensor shall not be charged or assessed, directly or indirectly, with any part of the cost of the installation of said Facilities and appurtenances, and/or maintenance thereof, or for any public works project of which said Facilities is a part. Licensee agrees that it shall not assess Licensor any stormwater or drainage fee associated with such Facilities. Furthermore, Licensee shall be responsible for any stormwater or drainage fees assessed by any County or State agency managing such systems.

3. CONSTRUCTION, MAINTENANCE AND REPAIRS:

3.1 Licensee shall construct, maintain, relocate, repair, renew, alter, and/or remove the Facilities, in a prudent, workmanlike manner, using quality materials and complying with any applicable standard(s) or regulation(s) of Licensor (CSXT Specifications), or Licensee's particular industry, National Electrical Safety Code, or any governmental or regulatory body having jurisdiction over the Encroachment.

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3.2 Location and construction of Facilities shall be made strictly in accordance with design(s) and specifications furnished to and approved by Licensor and of material(s) and size(s) appropriate for the purpose(s) above recited.

3.3 All of Licensee's work, and exercise of rights hereunder, shall be undertaken at time(s) satisfactory to Licensor, and so as to eliminate or minimize any impact on or interference with the safe use and operation of Licensor's property and appurtenances thereto.

3.4 In the installation, maintenance, repair and/or removal of said Facilities, Licensee shall not use explosives on or adjacent to Licensor's property of any type or perform or cause any blasting on or adjacent to Licensor's property without the separate express prior written consent of Licensor. As a condition to such consent, a representative will be assigned by Licensor to monitor blasting, and Licensee shall reimburse Licensor for the entire cost and/or expense of furnishing said monitor.

3.5 Any repairs or maintenance to the Facilities, whether resulting from acts of Licensee, or natural or weather events, which are necessary to protect or facilitate Licensor's use of its property, shall be made by Licensee promptly, but in no event later than thirty (30) days after Licensee has notice as to the need for such repairs or maintenance.

3.6 Licensor, in order to protect or safeguard its property, rail operations, equipment and/or employees from damage or injury, may request immediate repair or renewal of the Facilities, and if the same is not performed, may make or contract to make such repairs or renewals, at the sole risk, cost and expense of Licensee.

3.7 All work on the Encroachment shall be conducted in accordance with Licensor's safety rules and regulations.

3.8 Licensee hereby agrees to reimburse Licensor any loss, cost or expense (including losses resulting from train delays and/or inability to meet train schedules) arising from any failure of Licensee to make repairs or conduct maintenance as required by Section 3.5 above or from improper or incomplete repairs or maintenance to the Facilities or Encroachment.

3.9 In the event it becomes necessary for the Licensee to deviate from the approved Exhibit A, Licensee shall seek prior approval from Licensor, or when applicable, an official field representative of Licensor permitted to approve changes, authorizing the necessary field changes and Licensee shall provide Licensor with complete As-Built Drawings of the completed work. As-Built Drawings shall be submitted to Licensor in either electronic or hard copy form upon the substantial completion of the project and upon Licensor's request.

3.10 In the event of large scale maintenance/construction work to railroad bridges Licensee is required to protect power lines with insulated covers or comparable safety devices at their costs during construction/maintenance for safety of railroad employees.

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4. PERMITS, LICENSES:

4.1 Before any work hereunder is performed, or before use of the Encroachment for the contracted purpose, Licensee, at its sole cost and expense, shall obtain all necessary permit(s) (including zoning, building, construction, health, safety or environmental matters), letter(s) or certificate(s) of approval. Licensee expressly agrees and warrants that it shall conform and limit its activities to the terms of such permit(s), approval(s) and authorization(s), and shall comply with all applicable ordinances, rules, regulations, requirements and laws of any governmental authority (State, Federal or Local) having jurisdiction over Licensee's activities, including the location, contact, excavation and protection regulations of the Occupational Safety and Health Act (OSHA) (29 CFR 1926.651(b)), et al., and State "One Call" - "Call Before You Dig" requirements.

4.2 Licensee assumes sole responsibility for failure to obtain such permit(s) or approval(s), for any violations thereof, and for costs or expenses of compliance or remedy.

5. MARKING AND SUPPORT:

5.1 With respect to any subsurface installation or maintenance upon Licensor's property, Licensee, at its sole cost and expense, shall:

(A) support track(s) and roadbed in a manner satisfactory to Licensor;

(B) backfill with satisfactory material and thoroughly tamp all trenches to prevent settling of surface of land and roadbed of Licensor in a manner satisfactory to Licensor; and

(C) either remove any surplus earth or material from Licensor's property or cause said surplus earth or material to be placed and distributed at location(s) and in such manner Licensor may approve.

5.2 After construction or maintenance of the Facilities, Licensee shall:

(A) Restore any track(s), roadbed and other disturbed property in a manner satisfactory to Licensor; and

(B) Erect, maintain and periodically verify the accuracy of aboveground markers, in a form approved by Licensor, indicating the location, depth and ownership of any underground Facilities or related facilities.

5.3 Licensee shall be solely responsible for any subsidence or failure of lateral or subjacent support in the Encroachment area for a period of three (3) years after completion of installation.

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6. TRACK CHANGES:

6.1 In the event that rail operations and/or track maintenance result in changes in grade or alignment of, additions to, or relocation of track(s) or other facilities, or in the event future use of Licensor's rail corridor ("Rail Corridor") or property necessitate any change of location, height or depth in the Facilities or Encroachment, Licensee, at its sole cost and expense and within thirty (30) days after notice in writing from Licensor, shall make changes in the Facilities or Encroachment to accommodate such track(s) or operations.

6.2 If Licensee fails to do so, Licensor may make or contract to make such changes at Licensee's sole risk, cost and expense.

7. FACILITY CHANGES:

7.1 Licensee shall periodically monitor and verify the depth or height of the Facilities or Encroachment in relation to the existing tracks and facilities, and shall relocate the Facilities or change the Encroachment, at Licensee's expense, should such relocation or change be necessary to comply with the minimum clearance requirements of Licensor.

7.2 If Licensee undertakes to revise, renew, relocate or change in any manner whatsoever all or any part of the Facilities (including any change in voltage or gauge of wire or any change in circumference, diameter or radius of pipe or change in materials transmitted in and through said pipe), or is required by any public agency or court order to do so, plans therefor shall be submitted to Licensor for approval before such change. After approval, the terms and conditions of this Agreement shall apply thereto.

8. INTERFERENCE WITH RAIL FACILITIES:

8.1 Although the Facilities/Encroachment herein permitted may not presently interfere with Licensor's Facilities, in the event that the operation, existence or maintenance of said Facilities, in the sole judgment of Licensor, causes: (a) interference (including physical or interference from an electromagnetic induction, or interference from stray or other currents) with Licensor's power lines, communication, signal or other wires, train control system, or electrical or electronic apparatus; or (b) interference in any manner, with the operation, maintenance or use of Licensor's Facilities; then and in either event, Licensee, upon receipt of written notice from Licensor of any such interference, and at Licensee's sole risk, cost and expense, shall promptly make such changes in its Facilities or installation, as may be required in the reasonable judgment of the Licensor to eliminate all such interference. Upon Licensee's failure to remedy or change, Licensor may do so or contract to do so at Licensee's sole risk, cost and expense.

8.2 Without assuming any duty hereunder to inspect the Facilities, Licensor hereby reserves the right to inspect same and to require Licensee to undertake repairs, maintenance or adjustments to the Facilities, which Licensee hereby agrees to make promptly, at Licensee's sole cost and expense.

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9. RISK, LIABILITY, INDEMNITY:

With respect to the relative risk and liabilities of the parties, it is hereby agreed that:

9.1 To the fullest extent permitted by State law (constitutional or statutory, as amended), Licensee hereby agrees to, defend, indemnify, and hold Licensor harmless from and against any and all liability, loss, claim, suit, damage, charge, cost or expense (including attorneys' fees) (collectively, "Claims and Losses") which Licensor may suffer, sustain, incur or in any way be subjected to, on account of death of or injury to any person whomsoever (including officers, agents, employees or invitees of Licensor), and for damage to or loss of or destruction of any property whatsoever, arising out of, resulting from, or in any way connected with the construction, repair, maintenance, replacement, presence, existence, operations, use or removal of the Facilities or any structure in connection therewith, or restoration of premises of Licensor to good order or condition after removal, EXCEPT when proven to have been caused solely by the willful misconduct or gross negligence of Licensor. HOWEVER, to the fullest extent permitted by State law, during any period of actual construction, repair, maintenance, replacement or removal of the Facilities, wherein agents, equipment or personnel of Licensee are on the railroad rail corridor, Licensee's liability hereunder shall be absolute, irrespective of any joint, sole or contributory fault or negligence of Licensor.

9.2 Use of Licensor's Rail Corridor involves certain risks of loss or damage as a result of the rail operations. Notwithstanding Section 9.1, Licensee expressly assumes all risk of loss and damage to Licensee's Property or the Facilities in, on, over or under the Encroachment, including loss of or any interference with use or service thereof, regardless of cause, including electrical field creation, fire or derailment resulting from rail operations. For this Section, the term "Licensee's Property" shall include property of third parties situated or placed upon Licensor's Rail Corridor by Licensee or by such third parties at request of or for benefit of Licensee.

9.3 To the fullest extent permitted by State law, as above, Licensee assumes all responsibility for, and agrees to defend, indemnify and hold Licensor harmless from any and all Claims and Losses arising from, under or in connection with or as a consequence of: (a) (i) any sudden or nonsudden pollution of air, water, land and/or ground water on or off the Encroachment area, arising from or in connection with the use of the Encroachment or (ii) any leaking, bursting, spilling, or any escape of the material transmitted in or through the Facilities; (b) any federal or state law dealing with either such sudden or nonsudden pollution of air, water, land and/or ground water arising therefrom or the remedy thereof; (c) any subsidence or failure of lateral or subjacent support of the tracks arising from such Facilities leakage; and (d) any drainage or runoff on or off the Encroachment area as a result of the Facilities/Encroachment herein permitted.

9.4 Notwithstanding Section 9.1, Licensee also expressly assumes all risk of loss which in any way may result from Licensee's failure to maintain either required clearances for any overhead Facilities or the required depth and encasement for any underground Facilities, whether or not such loss(es) result(s) in whole or part from Licensor's contributory negligence or joint fault.

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9.5 Obligations of Licensee hereunder to release, indemnify and hold Licensor harmless shall also extend to companies and other legal entities that control, are controlled by, subsidiaries of, or are affiliated with Licensor, as well as any railroad that operates over the rail corridor on which the Encroachment is located, and the officers, employees and agents of each.

9.6 If a claim is made or action is brought against Licensor, and/or its operating lessee, for which Licensee may be responsible hereunder, in whole or in part, Licensee shall be notified to assume the handling or defense of such claim or action; but Licensor may participate in such handling or defense.

9.7 Notwithstanding anything contained in this Agreement, the limitation of liability contained in the state statutes, as amended from time to time, shall not limit Licensor's ability to collect under the insurance policies required to be maintained under this Agreement.

10. INSURANCE:

10.1 Prior to commencement of surveys, installation or occupation of premises pursuant to this Agreement, Licensee shall procure and shall maintain during the continuance of this Agreement, at its sole cost and expense, a policy of

(i) Statutory Worker's Compensation and Employers Liability Insurance with available limits of not less than ONE MILLION AND 00/100 U.S. DOLLARS ($1,000,000.00).

(ii) Commercial General Liability coverage (inclusive of contractual liability) with available limits of not less than FIVE MILLION AND 00/100 U.S. DOLLARS ($5,000,000.00) per occurrence (limit may be satisfied through a combination of both primary and umbrella/excess liability policies) for bodily injury and property damage and covering the contractual liabilities assumed under this Agreement and naming Licensor, and/or its designee, as additional insured. The evidence of insurance coverage shall be endorsed to provide for thirty (30) days' notice to Licensor, or its designee, prior to cancellation or modification of any policy. Mail CGL certificate, along with agreement, to CSX Transportation, Inc., Speed Code J180, 500 Water Street, Jacksonville, FL 32202. On each successive year, send certificate to RenewalCOI@csx.com.

(iii) Business automobile liability insurance with available limits of not less than ONE MILLION AND 00/100 U.S. DOLLARS ($1,000,000.00) combined single limit for bodily injury and/or property damage per occurrence naming Licensor, and/or its designee, as additional insured.

(iv) The insurance policies must contain a waiver of subrogation against CSXT and its parent, subsidiaries and affiliates, except where prohibited by law. All insurance companies must be A. M. Best rated A- and Class VII or better.

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(v) Such other insurance as Licensor may reasonably require.

(vi) Licensee shall require its contractors to meet minimum insurance requirements above when performing work in relation to this Agreement. Licensee will procure and review contractor's insurance certificates to confirm requirements are met. Licensor may request a copy of the insurance certificate.

(vii) Licensor's acceptance of any certificate of insurance does not constitute a waiver, release or modification of any of the insurance coverages or endorsements required under this Article 10.

10.2 If Licensee's existing CGL policy(ies) do(es) not automatically cover Licensee's contractual liability during periods of survey, installation, maintenance and continued occupation, a specific endorsement adding such coverage shall be purchased by Licensee. If said CGL policy is written on a "claims made" basis instead of a "per occurrence" basis, Licensee shall arrange for adequate time for reporting losses. Failure to do so shall be at Licensee's sole risk.

10.3 Licensor, or its designee, may at any time request evidence of insurance purchased by Licensee to comply with this Agreement. Failure of Licensee to comply with Licensor's request shall be considered a default by Licensee.

10.4 To the extent permitted by law and notwithstanding anything to the contrary in this Agreement, the insurance required and provided by Licensee shall not be subject to the limitations of sovereign immunity.

10.5 (A) In the event Licensee finds it necessary to perform construction or demolition operations within fifty feet (50') of any operated railroad track(s) or affecting any railroad bridge, trestle, tunnel, track(s), roadbed, overpass or underpass, Licensee shall: (a) notify Licensor; and (b) require its contractor(s) performing such operations to procure and maintain during the period of construction or demolition operations, at no cost to Licensor, Railroad Protective Liability (RPL) Insurance, naming Licensor, and/or its designee, as Named Insured, written on the current ISO/RIMA Form (ISO Form No. CG 00 35 04 13) with limits of FIVE MILLION AND 00/100 U.S. DOLLARS ($5,000,000.00) per occurrence for bodily injury and property damage, with at least TEN MILLION AND 00/100 U.S. DOLLARS ($10,000,000.00) aggregate limit per annual policy period. The original of such RPL policy shall be sent to and approved by Licensor prior to commencement of such construction or demolition. Licensor reserves the right to demand higher limits.

(B) At Licensor's option, in lieu of purchasing RPL insurance or the 50 foot endorsements from an insurance company (but not CGL insurance), Licensee may pay Licensor, at Licensor's current rate at time of request, the cost of adding this Encroachment, or additional construction and/or demolition activities, to Licensor's Railroad Protective Liability (RPL)

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Policy for the period of actual construction. This coverage is offered at Licensor's sole discretion and may not be available under all circumstances.

10.6 Notwithstanding the provisions of Sections 10.1 and 10.2, Licensee, pursuant to State Statute(s), may self-insure or self-assume, in any amount(s), any contracted liability arising under this Agreement, under a funded program of self-insurance, which fund will respond to liability of Licensee imposed by and in accordance with the procedures established by law.

11. GRADE CROSSINGS; PROTECTION SERVICES:

11.1 Nothing herein contained shall be construed to permit Licensee or Licensee's contractor to move any vehicles or equipment over the track(s), except at public road crossing(s), without separate prior written approval of Licensor.

11.2 If Licensor deems it advisable, during any construction, maintenance, repair, renewal, alteration, change or removal of said Facilities, to place watchmen, flagmen, or field construction managers for protection of operations of Licensor or others on Licensor's Rail Corridor at the Encroachment, and to keep persons, equipment or materials away from the track(s), Licensor shall have the right to do so at the expense of Licensee, but Licensor shall not be liable for failure to do so.

11.3 Subject to consent of Licensor, in its sole discretion, and subject to Licensor's operating rules and labor agreements, Licensee may provide flagmen, in place of Licensor's provision, at Licensee's sole risk, cost and expense, and in such event, Licensor shall not be liable for the failure or neglect of such flagmen. Such flagmen shall be approved by Licensor and shall meet all Licensor's requirement for performing such work.

12. LICENSOR'S COSTS:

12.1 Any additional or alternative costs or expenses incurred by Licensor to accommodate Licensee's continued use of Licensor's property as a result of track changes or changes to Licensor's Facilities shall also be paid by Licensee.

12.2 Licensor's expense for wages ("force account" charges) and materials for any work performed at the expense of Licensee pursuant hereto shall be paid by Licensee within thirty (30) days after receipt of Licensor's bill therefor. Licensor may, at its discretion, request an advance deposit for estimated Licensor costs and expenses.

12.3 Such expense shall include cost of railroad labor and supervision under "force account" rules, plus current applicable overhead percentages, the actual cost of materials, and insurance, freight and handling charges on all material used. Equipment rentals shall be in accordance with Licensor's applicable fixed rate. Licensor may, at its discretion, require advance deposits for estimated costs of such expenses and costs.

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13. DEFAULT, BREACH, WAIVER:

13.1 The proper and complete performance of each covenant of this Agreement shall be deemed of the essence thereof, and in the event Licensee fails or refuses to fully and completely perform any of said covenants or remedy any breach within thirty (30) days after receiving written notice from Licensor to do so (or within forty-eight (48) hours in the event of notice of a railroad emergency), Licensor shall have the option of immediately revoking this Agreement and the privileges and powers hereby conferred, regardless of encroachment fee(s) having been paid in advance for any annual or other period. Upon such revocation, Licensee shall make removal in accordance with Article 14.

13.2 No waiver by Licensor of its rights as to any breach of covenant or condition herein contained shall be construed as a permanent waiver of such covenant or condition, or any subsequent breach thereof, unless such covenant or condition is permanently waived in writing by Licensor.

13.3 Neither the failure of Licensor to object to any work done, material used, or method of construction or maintenance of said Encroachment, nor any approval given or supervision exercised by Licensor, shall be construed as an admission of liability or responsibility by Licensor, or as a waiver by Licensor of any of the obligations, liability and/or responsibility of Licensee under this Agreement.

14. TERMINATION, REMOVAL:

14.1 All rights which Licensee may have hereunder shall cease upon the date of (a) termination, (b) revocation, or (c) subsequent agreement, or (d) Licensee's removal of the Facility from the Encroachment. However, neither termination nor revocation of this Agreement shall affect any claims and liabilities which have arisen or accrued hereunder, and which at the time of termination or revocation have not been satisfied; neither party, however, waiving any third party defenses or actions.

14.2 Within thirty (30) days after revocation or termination, Licensee, at its sole risk, cost and expense, shall (a) remove the Facilities from the Rail Corridor of Licensor, unless the parties hereto agree otherwise, (b) restore the Rail Corridor of Licensor in a manner satisfactory to Licensor, and (c) reimburse Licensor any loss, cost or expense of Licensor resulting from such removal.

14.3 Notwithstanding the termination, revocation or expiration of this Agreement, and except as otherwise stated in this Agreement, those obligations contained herein that by their terms or nature are intended to survive such termination, revocation or expiration shall do so including the indemnification, Facilities removal, restoration and reimbursement provisions herein.

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15. NOTICE:

15.1 Licensee shall give Licensor at least thirty (30) days written notice before doing any work on Licensor's Rail Corridor, except that in cases of emergency shorter notice may be given. Licensee shall provide proper notification as follows:

a. For non-emergencies, Licensee shall submit online via the CSX Property Portal from Licensor's web site, via web link: https://propertyportal.csx.com/pub_ps_res/ps_res/jsf/public/index.faces

b. For emergencies, Licensee shall complete all of the steps outlined in Section 15.1 a. above, and shall also include detailed information of the emergency. Licensee shall also call and report details of the emergency to Licensor's Rail Operations Emergency Telephone Number: 1-800-232-0144. In the event Licensor needs to contact Licensee concerning an emergency involving Licensee's Facility(ies), the emergency phone number for Licensee is: 207-897-3445.

15.2 All other notices and communications concerning this Agreement shall be addressed to Licensee at the address above, and to Licensor at the address shown on Page 1, c/o CSXT Contract Management, J180; or at such other address as either party may designate in writing to the other.

15.3 Unless otherwise expressly stated herein, all such notices shall be in writing and sent via Certified or Registered Mail, Return Receipt Requested, or by courier, and shall be considered delivered upon: (a) actual receipt, or (b) date of refusal of such delivery.

16. ASSIGNMENT:

16.1 The rights herein conferred are the privileges of Licensee only, and Licensee shall obtain Licensor's prior written consent to any assignment of Licensee's interest herein (by operation of law or otherwise); said consent shall not be unreasonably withheld. Any assignment of this Agreement by Licensee, by operation or law or otherwise, or any interest herein, without the prior written consent of Licensor, shall be void.

16.2 Subject to Sections 2 and 16.1, this Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors or assigns.

16.3 Licensee shall give Licensor written notice of any legal succession (by merger, consolidation, reorganization, etc.) or other change of legal existence or status of Licensee, with a copy of all documents attesting to such change or legal succession, within thirty (30) days thereof.

16.4 Licensor expressly reserves the right to assign this Agreement, in whole or in part, to any grantee, lessee, or vendee of Licensor's underlying property interests in the Encroachment, upon written notice thereof to Licensee.

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16.5 In the event of any unauthorized sale, transfer, assignment, sublicense or encumbrance of this Agreement, or any of the rights and privileges hereunder, Licensor, at its option, may revoke this Agreement by giving Licensee or any such assignee written notice of such revocation; and Licensee shall reimburse Licensor for any loss, cost or expense Licensor may incur as a result of Licensee's failure to obtain said consent.

17. TITLE:

17.1 Licensee understands that Licensor occupies, uses and possesses lands, rights-of-way and Rail Corridors under all forms and qualities of ownership rights or facts, from full fee simple absolute to bare occupation. Accordingly, nothing in this Agreement shall act as or be deemed to act as any warranty, guaranty or representation of the quality of Licensor's title for any particular Encroachment or segment of Rail Corridor occupied, used or enjoyed in any manner by Licensee under any rights created in this Agreement. It is expressly understood that Licensor does not warrant title to any Rail Corridor and Licensee will accept the grants and privileges contained herein, subject to all lawful outstanding existing liens, mortgages and superior rights in and to the Rail Corridor, and all leases, licenses and easements or other interests previously granted to others therein.

17.2 The term "license," as used herein, shall mean with regard to any portion of the Rail Corridor which is owned by Licensor in fee simple absolute, or where the applicable law of the State where the Encroachment is located otherwise permits Licensor to make such grants to Licensee, a "permission to use" the Rail Corridor, with dominion and control over such portion of the Rail Corridor remaining with Licensor, and no interest in or exclusive right to possess being otherwise granted to Licensee. With regard to any other portion of Rail Corridor occupied, used or controlled by Licensor under any other facts or rights, Licensor merely waives its exclusive right to occupy the Rail Corridor and grants no other rights whatsoever under this Agreement, such waiver continuing only so long as Licensor continues its own occupation, use or control. Licensor does not warrant or guarantee that the license granted hereunder provides Licensee with all of the rights necessary to occupy any portion of the Rail Corridor. Licensee further acknowledges that it does not have the right to occupy any portion of the Rail Corridor held by Licensor in less than fee simple absolute without also receiving the consent of the owner(s) of the fee simple absolute estate. Further, Licensee shall not obtain, exercise or claim any interest in the Rail Corridor that would impair Licensor's existing rights therein.

17.3 Licensee agrees it shall not have nor shall it make, and hereby completely and absolutely waives its right to, any claim against Licensor for damages on account of any deficiencies in title to the Rail Corridor in the event of failure or insufficiency of Licensor's title to any portion thereof arising from Licensee's use or occupancy thereof.

17.4 Licensee agrees to fully and completely indemnify and defend Licensor from and against any and all Claims and Losses arising out of or in connection with claims or litigation for slander of title, overburden of easement, or similar claims arising out of or based upon the Facilities placement, or the presence of the Facilities in, on or along any Encroachment(s), including claims for punitive or special damages; provided that Licensor shall have the right to participate in the defense of any such claim.

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17.5 Licensee shall not at any time own or claim any right, title or interest in or to Licensor's property occupied by the Encroachments, nor shall the exercise of this Agreement for any length of time give rise to any right, title or interest in Licensee to said property other than the license herein created.

17.6 Nothing in this Agreement shall be deemed to give, and Licensor hereby expressly waives, any claim of ownership in and to any part of the Facilities.

17.7 Licensee shall not create or permit any mortgage, pledge, security, interest, lien or encumbrances, including tax liens and liens or encumbrances with respect to work performed or equipment furnished in connection with the construction, installation, repair, maintenance or operation of the Facilities in or on any portion of the Encroachment (collectively, "Liens or Encumbrances"), to be established or remain against the Encroachment or any portion thereof or any other Licensor property.

17.8 In the event that any property of Licensor becomes subject to such Liens or Encumbrances, Licensee agrees to pay, discharge or remove the same promptly upon Licensee's receipt of notice that such Liens or Encumbrances have been filed or docketed against the Encroachment or any other property of Licensor; however, Licensee reserves the right to challenge, at its sole expense, the validity and/or enforceability of any such Liens or Encumbrances.

18. APPROVALS:

18.1 Whenever this Agreement requires the prior approval or consent of Licensor, Licensee shall make a timely written request to Licensor therefor; and such approval or consent shall be obtained in writing. Except where this Agreement expressly obligates Licensor not to unreasonably withhold its approval or consent to any of Licensee's actions or requests, Licensor has the absolute right, in its sole and arbitrary discretion, to refuse any request Licensee makes or to withhold its approval of any of Licensee's proposed or effected actions that require Licensor's approval.

18.2 Licensor makes no warranties or guarantees upon which Licensee may rely, and assumes no liability or obligation to Licensee, by providing any waiver, approval, consent, or suggestion to Licensee in connection with this Agreement, or by reason of any neglect, delay, or denial of any request therefor.

19. GENERAL PROVISIONS:

19.1 This Agreement, and the attachments hereto, contains the entire understanding between the parties hereto, and supersedes all other oral or written agreements and understandings between them, with respect to the subject matter hereof.

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19.2 Except as otherwise expressly provided in this Agreement, neither this Agreement, any provision hereof, nor any agreement or provision included herein by reference, shall operate or be construed as being for the benefit of any third person.

19.3 Except as otherwise provided herein, or in any Exhibit, Schedule or other attachment hereto, neither the form of this Agreement, nor any language herein, shall be interpreted or construed in favor of or against either party hereto as the sole drafter thereof.

19.4 This Agreement is executed under current interpretation of applicable Federal, State, County, Municipal or other local statute, ordinance or law(s). However, each separate division (paragraph, clause, item, term, condition, covenant or agreement) herein shall have independent and severable status for the determination of legality, so that if any separate division is determined to be void or unenforceable for any reason, such determination shall have no effect upon the validity or enforceability of each other separate division, or any combination thereof.

19.5 This Agreement shall be construed and governed by the laws of the state in which the Facilities and Encroachment are located. In interpreting this Agreement, the singular shall be read as the plural in each instance as sense shall require. The words "include," "includes" and "including" when used in this Agreement will be interpreted as if they were followed by the words "without limitation."

19.6 If any amount due pursuant to the terms of this Agreement is not paid by the due date, it will be subject to Licensor's standard late charge and will also accrue interest at eighteen percent (18%) per annum, unless limited by local law, and then at the highest rate so permitted.

19.7 Licensee agrees to reimburse Licensor for all reasonable costs (including attorney's fees) incurred by Licensor for collecting any amount due under the Agreement.

19.8 The provisions of this License are considered confidential and may not be disclosed to a third party without the consent of the other party(s), except: (a) as required by statute, regulation or court order, (b) to a parent, affiliate or subsidiary company, (c) to an auditing firm or legal counsel that are agreeable to the confidentiality provisions, or (d) to Lessees of Licensor's land and/or track who are affected by the terms and conditions of this Agreement and will maintain the confidentiality of this Agreement.

19.9 Within thirty (30) days of an overpayment in a cumulative total amount of One Hundred Dollars ($100.00) or more by Licensee to Licensor, Licensee shall notify Licensor in writing with documentation evidencing such overpayment. Licensor shall refund the actual amount of Licensee's overpayment within one hundred twenty (120) days of Licensor's verification of such overpayment.

19.10 This Agreement may be executed in any number of counterparts, and such counterparts may be exchanged by electronic transmission. Upon execution by the parties hereto, each counterpart shall be deemed an original and together shall constitute one and the same

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instrument. A fully executed copy of this Agreement by electronic transmission shall be deemed to have the same legal effect as delivery of an original executed copy of this Agreement for all purposes.

19.11 Notwithstanding any other provision in this Agreement to the contrary, Licensor expressly reserves and does not waive any rights it may have under the Interstate Commerce Commission Termination Act of 1995, 49 U.S.C. § 10101, *et seq.*, the Federal Railroad Safety Act, 49 U.S.C. § 20101, *et seq.*, and/or any other federal law governing rail transportation and related operations.

[signature page follows]

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IN WITNESS WHEREOF, the parties hereto have executed this Agreement in duplicate (each of which shall constitute an original) as of the effective date of this Agreement.

Witness for Licensor:

Signed by: Eric Horton 119DE0C9ADEE4DA...

MAINE CENTRAL RAILROAD COMPANY

By: DocuSigned by: Alex Saar AC51944C08CF448...

Print/Type Name: Alex Saar

Print/Type Title: Director of Corridor Services

Witness for Licensee:

Cynthia L Hayden

LIVERMORE FALLS WATER DISTRICT

By: Scott Greenleaf

Who, by the execution hereof, affirms that he/she has the authority to do so and to bind the Licensee to the terms and conditions of this Agreement.

Print/Type Name: Scott Greenleaf

Print/Type Title: Superintendent

Tax ID No.: 016000833

Authority under Ordinance or

Resolution No. _____,

Dated _____.

Docusign Envelope ID: 596BB408-EDFF-4E08-B6F7-B5E2C0239D62

OPEN TRENCH

Livermore Falls, Androscoggin County, Maine | New England Division, Pan Am Railway
Subdivision Mile Post RUM 20.50 | Latitude Longitude: 44.47274, -70.18677

CSX PROPERTY SERVICES REVIEW
☐ No Exceptions ☒ Exceptions Noted
This review is for the general conformance with CSX utility design specifications only. Sole responsibility for all aspects of the overall design shall remain with the facility owner. This review does not constitute approval to proceed without meeting all of CSX's safety and contractual requirements.
By:

CSXT GENERAL NOTES:

1. REFER TO THE CSXT PIPELINE DESIGN & CONSTRUCTION SPECIFICATIONS FOR ADDITIONAL INFORMATION.
2. TRENCH EXCAVATIONS SHALL BE OF SUCH DIMENSIONS AS TO PROVIDE AMPLE ROOM FOR CONSTRUCTION. TRENCH WIDTHS SHALL BE AT LEAST 12 INCHES WIDER THAN THE OUTSIDE DIAMETER OF THE PIPE (6-INCHES EITHER SIDE OF THE PIPE). THE BOTTOMOF THE TRENCH, IN SO FAR AS IS PRACTICAL, SHALL BE EXCAVATED TO PERMIT PROPER PLACEMENT OF THE PIPE. THE EXCAVATION FOR THE PIPELINE SHALL INCLUDE THE REMOVAL OF ANY OBSTRUCTIONS ENCOUNTERED. THE TRENCH SHALL BE EXCAVATED TO A DEPTH AT LEAST 3 INCHES BELOW THE OUTSIDE BOTTOM ELEVATION OF THE PLANNED PIPELINE. WHEN NECESSARY, ALL EXCAVATIONS SHOULD BE DEWATERED PRIOR TO AND DURING INSTALLATION AND BACKFILLING OF THE SYSTEM.
3. COMPACT ALL BACKFILL IN EXCAVATIONS AND TRENCHES TO 95% MAXIMUM DRY DENSITY AS DEFINED IN ASTM STANDARD D1557. USE CLEAN, SUITABLE BACKFILL MATERIAL, INSTALL IN SIX-INCH LIFTS AND COMPACT.
4. BEDDING MATERIAL SHALL BE GRANULAR BACKFILL IDENTICAL TO SUBBALLAST, OR A WELL GRADED CRUSHED STONE OR GRAVEL.
5. WHEN EXCAVATING WORK WILL BE WITHIN CSXT RIGHT-OF-WAY, SHORING PLANS AND OTHER REQUIRED MATERIAL MUST BE SUBMITTED TO CSXT DESIGNEE FOR APPROVAL PRIOR TO ANY CONSTRUCTION. ANY EXCAVATION/HOLE LESS THAN 15' FROM THE CENTERLINE OF NEAREST TRACK MUST BE FILLED OR PROPERLY SHORED PRIOR TO ANY TRAIN PASSING.
6. PIPELINE SHALL BE PROMINENTLY MARKED AT BOTH SIDES OF THE CSXT PROPERTY LINES BY DURABLE, WEATHERPROOF SIGNS LOCATED OVER THE CENTERLINE OF THE PIPE IN ACCORDANCE WITH CSXT SPECIFICATIONS.
7. ALL PRESSURE PIPELINES INSTALLED BY THE TRENCH METHOD, WITHOUT A CASING, SHAL HAVE A WARNING TAPE PLACED DIRECTLY ABOVE THE PIPELINE, 2 FEET BELOW THE GROUND SURFACE.
8. INSTALL HAND HOLES, SPLICE BOXES, AND MANHOLES PER THE REQUIREMENTS OF CSXT DESIGN & CONSTRUCTION SPECIFICATIONS. INSTALL THEM SO AS NOT TO CREATE A TRIPPING HAZARD OR TO INTERFERE WITH RAILROAD OPERATIONS.
9. NO CONSTRUCTION OR ENTRY UPON THE CSXT CORRIDOR IS PERMITTED UNTIL THE DOCUMENT TRANSACTION IS COMPLETED, YOU ARE IN RECEIPT OF A FULLY EXECUTED DOCUMENT, AND YOU HAVE OBTAINED AUTHORITY FROM THE LOCAL ROADMASTER.
10. IF REQUIRED, A DEWATERING PLAN IN ACCORDANCE WITH CSXT SPECIFICATIONS WILL BE SUBMITTED TO THE CSXT DESIGNEE FOR REVIEW AND APPROVAL PRIOR TO ANY DEWATERING OPERATIONS.
11. BLASTING IS NOT PERMITTED UNDER OR ON CSXT PROPERTY.
12. CSXT DOES NOT GRANT OR CONVEY AN EASEMENT FOR THIS INSTALLATION.
13. ALL PERSONNEL SHALL RECEIVE SAFETY BRIEFINGS BY A CSXT FLAGMAN OR DESIGNATED CSXT DESIGNEE EACH DAY BEFORE BEGINNING WORK ON THE RIGHT OF WAY. ADDITIONAL SAFETY BRIEFINGS MAY BE REQUIRED WHEN CONDITIONS AND/OR WORK SITES ARE CHANGED.
14. AGENCY OR ITS CONTRACTOR SHALL ARRANGE AND CONDUCT ITS WORK SO THAT THERE WILL BE NO INTERFERENCE WITH CSXT OPERATIONS, INCLUDING TRAIN, SIGNAL, TELEPHONE AND TELEGRAPHIC SERVICES, OR DAMAGES TO CSXT'S PROPERTY, OR TO POLES, WIRES, AND OTHER FACILITIES OF TENANTS OF CSXT'S PROPERTY OR RIGHT-OF-WAY.
15. CONTRACTOR ACCESS WILL BE LIMITED TO THE IMMEDIATE PROJECT AREA ONLY. THE CSXT RIGHT-OF-WAY OUTSIDE THE PROJECT AREA MAY NOT BE USED FOR CONTRACTOR ACCESS TO THE PROJECT SITE AND NO TEMPORARY AT-GRADE CROSSINGS WILL BE ALLOWED.
16. ALL MATERIAL AND EQUIPMENT WILL BE STAGED TO NOT BLOCK ANY CSXT ACCESS OR MAINTENANCE ROADS. NO HOISTING OR AUXILIARY EQUIPMENT NECESSARY FOR THE PROCEDURE SHALL BE PLACED ON CSXT TRACK STRUCTURE AND / OR BALLAST SECTION. CLEAR WORKING LOCATIONS FOR EQUIPMENT USED WILL BE LAID OUT AND APPROVED BY THE CSXT FLAGGER PRIOR TO EQUIPMENT SET-UP.
17. DURING CONSTRUCTION, THE CONTRACTOR SHALL PROTECT ALL ACTIVE RAILROAD FACILITIES, INCLUDING ELECTRICAL, WATER LINES, SEWER LINES, COMMUNICATION AND SIGNAL LINES AS WELL AS UNDERGROUND PIPING. THE CONTRACTOR SHALL BE REQUIRED TO KEEP ALL EQUIPMENT AND MATERIAL A MINIMUM OF SIX (6) FEET FROM AFOREMENTIONED ELEVATED COMMUNICATION AND SIGNAL FACILITIES.
18. CONTRACTOR MUST CONDUCT ALL OF ITS WORK IN A SAFE MANNER. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH RULES, REGULATIONS, PROCEDURES AND SAFE PRACTICES OF CSXT, OSHA, THE FRA AND ALL OTHER GOVERNMENT AGENCIES HAVING JURISDICTION OVER THE PROJECT.
19. OWNER SHALL REIMBURSE CSXT DIRECTLY FOR ALL COSTS OF FLAGGING AND INSPECTION SERVICE THAT ARE REQUIRED ON ACCOUNT OF CONSTRUCTION WITHIN CSXT PROPERTY SHOWN IN THE PLANS, OR COVERED BY AN APPROVED PLAN REVISION, SUPPLEMENTAL AGREEMENT OR CHANGE ORDER. INSPECTION SERVICE SHALL NOT RELIEVE CONTRACTOR FROM LIABILITY FOR ITS WORK.
20. OWNER OR CONTRACTOR SHALL GIVE A MINIMUM OF 30 DAYS' ADVANCE NOTICE TO CSXT DESIGNEE FOR ANTICIPATED NEED FOR FLAGGING AND INSPECTION SERVICE. NO WORK SHALL BE UNDERTAKEN UNTIL THE FLAG PERSON(S) AND INSPECTOR(S) IS/ ARE AT THE JOB SITE. IF IT IS NECESSARY FOR CSXT TO ADVERTISE A FLAGGING JOB FOR BID, CSXT SHALL NOT BE LIABLE FOR THE COST OF DELAYS ATTRIBUTABLE TO OBTAINING SUCH SERVICE.
21. THE RIGHT OF WAY SHALL BE RESTORED TO A CONDITION EQUAL TO OR BETTER THAN THE CONDITION PRIOR TO BEGINNING THE PROJECT BEFORE FINAL ACCEPTANCE WILL BE PROVIDED. PUNCH LISTS SHALL BE RESPONDED TO PRIOR TO ISSUANCE OF AN ACCEPTANCE MEMORANDUM SIGNED BY THE CSXT DESIGNEE.
22. IDENTIFY HAZARDS AND PUT CONTROLS IN PLACE PRIOR TO START OF EXCAVATION. STAKE OR MARK PIT AS NEEDED FOR DIGGING. ESTABLISH A LAYDOWN AREA ABOVE THE FLOOD ZONE TO PLACE MOTORIZED EQUIPMENT. PLACE SNOW FENCE AROUND PIT 20' BEYOND THE LEADING EDGE OF EXCAVATION. ALL EROSION CONTROL METHODS SHALL BE INSTALLED AND MAINTAINED USING BEST MANAGEMENT PRACTICES AS REQUIRED. APPLY LAYER OF WASHED STONE TO BASE OF EXCAVATION TO ESTABLISH PROPER LINE AND GRADE (6" MIN.).
23. BACKFILL, COVER OR FENCE ALL EXCAVATIONS WHEN UNATTENDED. THE CSXT DESIGNEE WILL APPROVE THE PROTECTION METHOD AND THE TYPE OF FENCING MATERIAL. SET FENCING BACK AT LEAST 3 FEET (91 CENTIMETERS) FROM THE EDGES OF THE EXCAVATION. SET FENCE POSTS SECURELY IN THE GROUND AND INSURE THE FENCING IS SECURELY TIED TO POSTS WITH ZIP TIES OR SOME OTHER TIE WRAP PRODUCT.
24. IF THE EXCAVATION IS 5 FEET OR GREATER IN DEPTH, THE WALLS MAY BE SLOPED AT 1.5 HORIZONTAL TO 1 VERTICAL TO REDUCE THE RISK OF CAVE-INS OR SLIDES. A SAFE MANNER IN WHICH TO ENTER AND EXIT THE EXCAVATION MUST BE ESTABLISHED. THE TOE OF SLOPES IN EXCAVATION SHALL IN NO CASE BE UNDERCUT BY POWER SHOVELS, BULLDOZERS, GRADERS, BLASTING, OR IN ANY MANNER. EXCAVATION SHALL NOT BE MADE IN EXCESS OF THE AUTHORIZED CROSS-SECTION.
25. AVOID THE NEED FOR WORKERS TO BE IN TRENCHES WHENEVER POSSIBLE. FOR EXAMPLE, WHEN TRENCHING IN A CONDUIT SYSTEM, THE PIPE TO BE PLACED SHOULD BE ASSEMBLED ABOVE THE TRENCH AND LOWERED DOWN INTO THE TRENCH. WHEN WORKERS ARE REQUIRED TO GO INTO AN EXCAVATION, SHORING AND CONFINED SPACE REQUIREMENTS WILL GOVERN.
26. PROJECTS THAT GENERATE SOILS FROM CSXT PROPERTY MUST ADHERE TO CSXT'S SOIL MANAGEMENT POLICIES. CSXT REQUIRES SOILS GENERATED FROM ITS PROPERTY TO EITHER BE REUSED ON CSXT PROPERTY OR PROPERLY DISPOSED IN A CSXT APPROVED DISPOSAL FACILITY. CSXT ENVIRONMENTAL DEPARTMENT WILL HANDLE WASTE CHARACTERIZATION AND PROFILING INTO AN APPROVED DISPOSAL FACILITY. CSXT PROHIBITS ANY ENVIRONMENTAL SAMPLING ON ITS PROPERTY UNLESS GRANTED THROUGH AN WRITTEN ENVIRONMENTAL RIGHT-OF-ENTRY OR APPROVED IN WRITING BY THE CSXT ENVIRONMENTAL DEPARTMENT. THE MANAGEMENT OF SOILS GENERATED FROM CSXT PROPERTY SHOULD BE PLANNED FOR AND PROPERLY PERMITTED (IF APPLICABLE) PRIOR TO INITIATING ANY WORK ON CSXT PROPERTY. A LIST OF CSXT APPROVED LABORATORIES AND/OR DISPOSAL FACILITIES MAY BE OBTAINED FROM THE CSXT MANAGER ENVIRONMENTALPROGRAMS.
27. CONTRACTOR ALSO HAS THE SOLE RESPONSIBILITY OF ASCERTAINING THAT ALL OTHER UTILITIES HAVE BEEN PROPERLY LOCATED BY COMPLYING WITH THE LOCAL "CALL BEFORE YOU DIG" REGULATION(S). CONTRACTOR SHALL SOLELY BE RESPONSIBLE FOR NOTIFYING OWNERS OF ADJACENT PROPERTIES AND OF UNDERGROUND FACILITIES AND UTILITY OWNERS WHEN PROSECUTION OF THE WORK MAY AFFECT THEM, AND SHALL COOPERATE WITH THEM IN THE PROTECTION, REMOVAL, RELOCATION AND REPLACEMENT OF THEIR PROPERTY.
28. CONTRACTOR SHALL CONDUCT "PRE-DIG" MEETING PRIOR TO CONSTRUCTION WORK, WITH ALL SUBCONTRACTORS AND WORKERS TO REVIEW THE LOCATION OF ALL UTILITIES AS MARKED OUT, EXCAVATION PROCEDURES, AND TO CONFIRM THE "ONE CALL" REQUEST. THIS PERMIT IS SUBJECT TO ANY EXISTING UTILITIES THAT MAY BE IN CONFLICT WITH THE DESIGN AND REQUIRES POTHOLING. ALL EXISTING UTILITIES ARE REQUIRED TO BE POTHOLED PRIOR TO COMMENCEMENT OF CONSTRUCTION AND SHALL BE PERFORMED IN ACCORDANCE WITH CSXT SPECIFICATIONS. HAND EXPOSE LINES TO A POINT OF NO CONFLICT (24 INCHES ON EITHER SIDE OF THE UNDERGROUND INSTALLATION). IF MARKED UTILITY CANNOT BE LOCATED, EXCAVATION MUST NOT PROCEED AND YOU MUST NOTIFY THE ONE CALL NUMBER OR UTILITY COMPANY TO PROVIDE ADDITIONAL INFORMATION TO DETERMINE THE EXACT LOCATION.
29. BEFORE EXCAVATING, ALL SIGNAL CABLES AND OTHER UTILITIES MUST BE LOCATED AND MARKED/FLAGGED. CONTRACTOR SHALL BE HELD LIABLE FOR ANY DAMAGES TO CSXT COMMUNICATION & SIGNALFACILITIES.

NOTE: WORK SCHEDULE IS SUBJECT TO THE APPROVAL OF ALL REQUIRED CONSTRUCTION SUBMITTALS BY THE CSXT CONSTRUCTION REPRESENTATIVE, VERIFICATION THAT PROPOSED WORK WILL NOT CONFLICT WITH ANY CSXT U.G. FACILITIES, AND THE AVAILABILITY OF CSXT FLAGGING AND PROTECTION SERVICES. CONSTRUCTION SUBMITTALS WILL BE BASED UPON THE PROPOSED SCOPE OF WORK AND MAY INCLUDE, BUT ARE NOT LIMITED TO; PROPOSED WORK PLAN, PROJECT SCHEDULE, MEANS AND METHODS, SITE ACCESS, DEWATERING, TEMPORARY EXCAVATION/SHORING, SOIL DISPOSITION/MANAGEMENT, TRACK MONITORING, CONCRETE PLACEMENT WORK, STRUCTURAL LIFTING/RIGGING PLANS FOR HOISTING OPERATIONS, SUBSTRUCTURE CONSTRUCTION PLANS, STEEL ERECTION PLANS, ROADWORK PLANS, ETC. NO WORK MAY BEGIN ON, OVER, OR ADJACENT TO CSXT PROPERTY, OR THAT COULD POTENTIALLY IMPACT CSXT PROPERTY, OPERATIONS OR SAFETY WITHOUT THE PRIOR COMPLETION AND APPROVAL OF THE REQUIRED AFOREMENTIONED INFORMATION AND APPROVALS.

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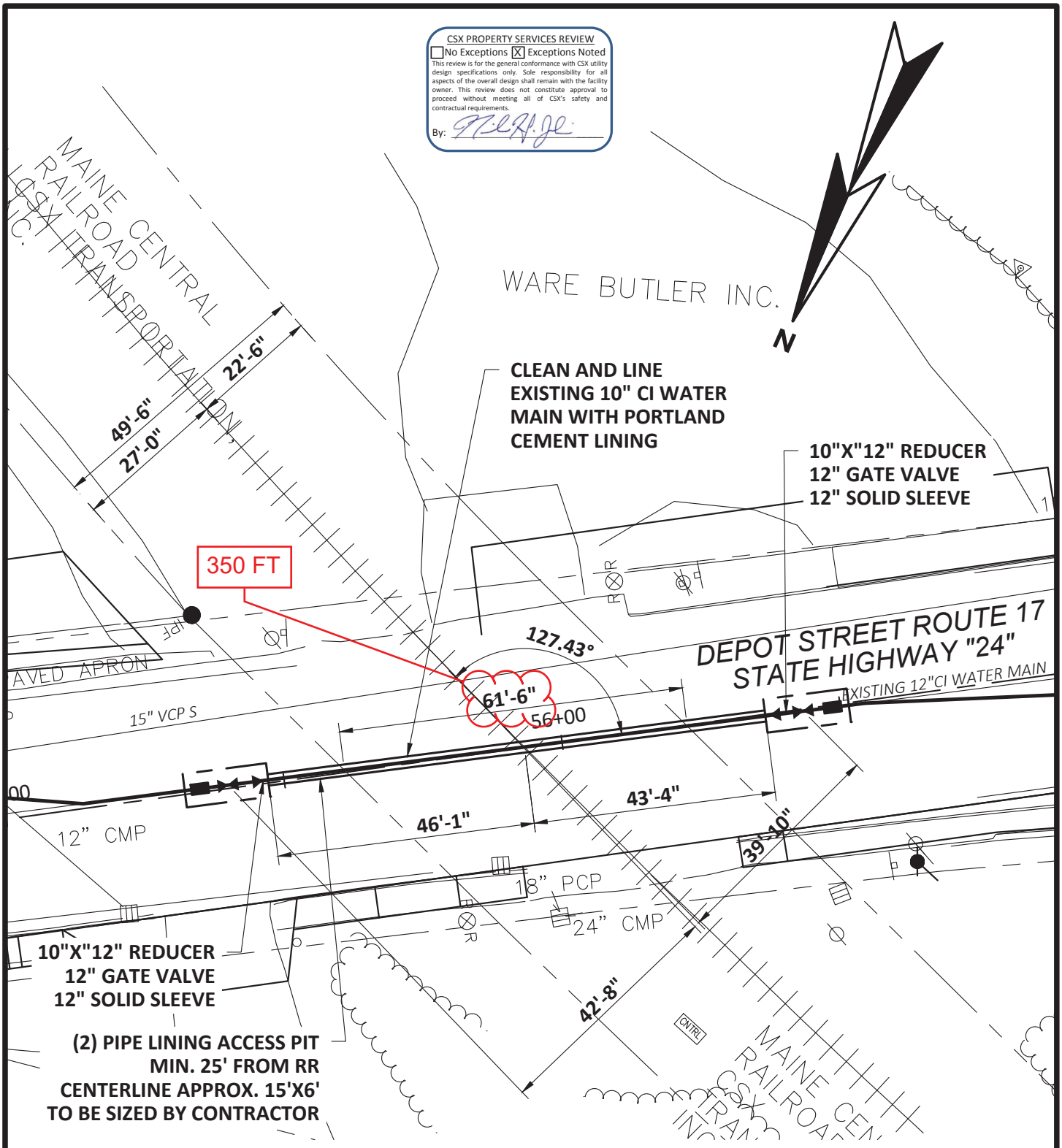
MEC1046765 EXHIBIT A.pdf

CSX PROPERTY SERVICES REVIEW
☐ No Exceptions ☒ Exceptions Noted
This review is for the general conformance with CSX utility design specifications only. Sole responsibility for all aspects of the overall design shall remain with the facility owner. This review does not constitute approval to proceed without meeting all of CSX's safety and contractual requirements.
By:



PLAN
SCALE: 1"=25'

LIVERMORE FALLS, MAINE ROUTE 17 UTILITY IMPROVEMENTS WATER MAIN LINING	NO.	REVISIONS	
	1		
	DRAWN BY: J.MICHAUD	DATE: AUGUST 2025	PROJ NO: 20947/21011
WRIGHT-PIERCE	APPROVED BY: J.WALLACE	REFERENCE DWG: C-9	FIGURE: 1
	DEPOT STREET RAILROAD CROSSING		

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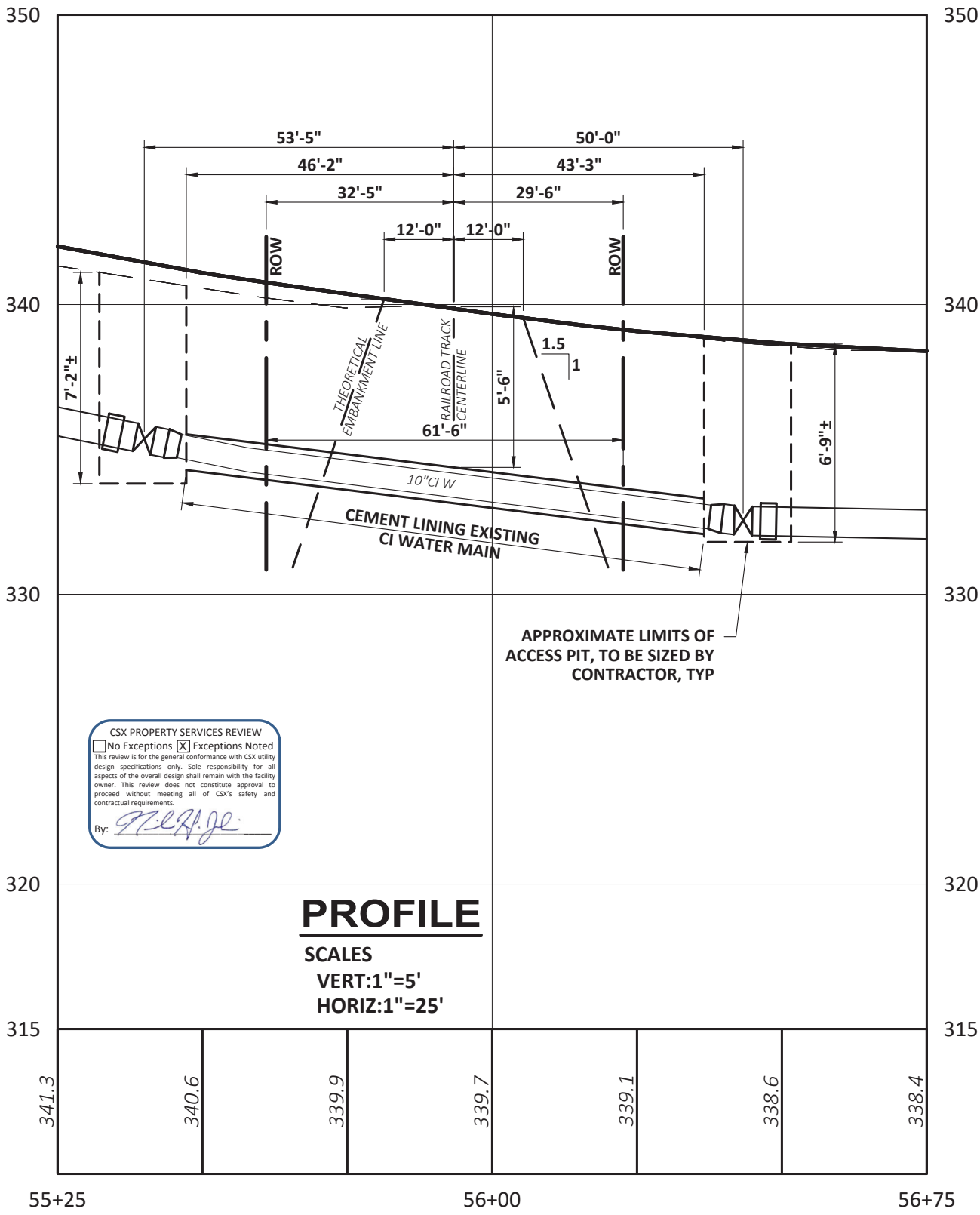
525



CSX PROPERTY SERVICES REVIEW
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By:

PROFILE

SCALES
VERT:1"=5'
HORIZ:1"=25'

LIVERMORE FALLS, MAINE
ROUTE 17 UTILITY IMPROVEMENTS
WATER MAIN LINING

NO.	REVISIONS
1	

DRAWN BY: J.MICHAUD	DATE: AUGUST 2025	PROJ NO: 20947/21011
APPROVED BY: J.WALLACE	REFERENCE DWG: C-9	FIGURE: 2

WRIGHT-PIERCE

DEPOT STREET RAILWAY CROSSING

J:\ENG\ME\LIVERMOREFALLS\21011-SEWERIMPROVEMENTS_MAINDEPOTPARK\DRAWINGS\CIV\21011-CM-PLANPROFILEVII.DWG

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER

CONTACT NAME:
PHONE (A/C, No, Ext):
FAX (A/C, No):
E-MAIL ADDRESS: patty.muncy@reaganinsurance.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A :	
INSURER B :	
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED

The Licensee identified in the agreement must be named insured. For municipal/government entities Licensee's Contractor can be named insured if they sign and provide the Contractor Acceptance form.

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY PRO-JECT LOC	X					EACH OCCURRENCE $ DAMAGE TO RENTED PREMISES (Ea occurrence) $ MED EXP (Any one person) $ PERSONAL & ADV INJURY $ GENERAL AGGREGATE $ PRODUCTS - COMP/OP AGG $ $
	AUTOMOBILE LIABILITY ANY AUTO ALL OWNED AUTOS HIRED AUTOS SCHEDULED AUTOS NON-OWNED AUTOS	X					COMBINED SINGLE LIMIT (Ea accident) $ BODILY INJURY (Per person) $ BODILY INJURY (Per accident) $ PROPERTY DAMAGE (Per accident) $ $
	UMBRELLA LIAB EXCESS LIAB DED RETENTION $						EACH OCCURRENCE $ AGGREGATE $ $
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below		X				WC STATU-TORY LIMITS OTH-ER X E.L. EACH ACCIDENT $ E.L. DISEASE - EA EMPLOYEE $ E.L. DISEASE - POLICY LIMIT $

The amount in this "Each Occurence" box must be at least five million dollars ($5,000,000); or the amount in the box combined with the "Each Occurence" coverage of any Excess Laiblity must be at least five million dollars ($5,000,000)

Combined single limit of not less than one million dollars ($1,000,000.00)

Standard limits of liability. Must contain a waiver of subrogation in favor of CSXT $1,000,000.00 per occurrence

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

This box should contain the following. CSX Transportation, Inc., is included as additional insured. This certificate applies to all contracts/agreements between the named Insured and CSXT.

CERTIFICATE HOLDER

CSX Transportation, Inc.
500 Water Street, J180
Jacksonville, FL 32202

CANCELLATION

Per the terms of the agreement this should state: Should any of the above described policies be modified, cancelled, or not renewed, the issuing insurer shall mail 30 days written notice to the certificate holder named herein.

DESIGN AND CONSTRUCTION STANDARD SPECIFICATIONS

Pipeline Occupancies

OFFICE OF:
VICE PRESIDENT - ENGINEERING
JACKSONVILLE, FLORIDA
ISSUED: September 15, 2003
REVISED: June 5, 2018

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PART 1 – INTRODUCTION

1.1 Scope

a) This specification shall apply to the design and construction of pipelines carrying flammable or non-flammable substances and casings containing wires, cables, and carrier pipes across and along CSXT property and facilities. This specification shall also apply to tracks owned by others (sidings, industry tracks, etc.) over which CSXT operates its equipment.

b) It is to be clearly understood that CSXT owns its right-of-way for the primary purpose of operating a railroad. All occupancies shall therefore be designed and constructed so that rail operations and facilities are not interfered with, interrupted, or endangered. In addition, the proposed facility shall be located to minimize encumbrance to the right-of- way so that the railroad will have unrestricted use of its property for current and future operations.

1.2 Definitions

CSXT	CSX Transportation, Inc.
CS	Corridor Services
Owner (Applicant)	Individual, Corporation, or Municipality desiring occupancy of CSXT property
Professional Engineer	Engineer licensed in the state where the facilities are to be constructed
Carrier Pipe	Pipe used to transport the commodity
Casing Pipe	Pipe through which the carrier pipe is installed under main tracks
Sidings or Industry Tracks	Tracks located off of CSXT's right-of-way, serving an industry

1.3 Application for Occupancy

a) Owner (Applicant) desiring occupancy of CSXT property by pipeline occupations must satisfy the following: receive approval by CSXT of all engineering and construction details, execute an appropriate CSXT occupational agreement, and remit payment of any required fees and/or rentals specified therein.

b) Occupancy applications shall be completed in full with all of the required information requested in order for the application to be processed. Review the entire application package, as well as the engineering specifications, before completing the application.

Applications must be submitted through the CSX Property Portal. Visit www.csx.com to establish an account and submit an application. Once on the site, use the following path: CUSTOMERS→CSX Real Estate→CSX Property Portal.

1.4 Right of Entry

a) Entry upon CSXT property for the purpose of conducting surveys, field inspections, obtaining soils information, or any other purposes associated with the design and construction for the proposed occupancy, will not be permitted without a proper entry permit prepared by CSXT. The applicant must pay the associated fees and execute the entry permit.

b) The issuance of an entry permit does not constitute authority to proceed with any construction. Construction cannot begin until a formal agreement is executed by CSXT and the Owner receives permission, from the designated inspection agency of CSXT, to proceed with the work.

1.5 Site Inspection

a) For longitudinal occupancy of CSXT property, a site inspection along the proposed pipeline route may be required before final design plans are prepared. When a site inspection is required, the applicant and/or the engineer must meet with a CSXT Field Representative to view the entire length of the proposed occupancy; the applicant will be informed of the need for a meeting during application processing.

b) Prior to the site inspection the applicant must submit the following information:

i) A plan view of the proposed route showing all tracks, both CSXT right-of-way lines, and all other facilities located on the right-of-way. The distance from the proposed pipeline to the adjacent track and to the right-of-way lines must be shown.

ii) A complete application form.

c) Site inspections for pipe crossings are not required unless, in the opinion of CSXT, the size and location of the facility warrant an inspection.

1.6 Information Required for Submission

a) All plans and documents required in the application package shall be submitted as per the instructions in the application package.

b) Failure to follow these instructions may result in the return of the information provided without further action taken.

1.7 Notification to Proceed with Outside Party Request Form

a) After approval of the engineering plans and full execution of the facility encroachment agreement, the Owner will receive an e-mail notification containing a special reference number and link to the CSX Property Portal – Outside Party Request Form application. CSX requires 30 days' advance notice to schedule any activity.

b) Once the OP Form is received, the Owner or their Contractor will be contacted to discuss construction scheduling.

c) CSXT will determine if the project requires flagging, construction monitoring, or both. All costs associated with flagging and/or construction monitoring will be the responsibility of the Owner. CSXT, at its sole discretion, may elect to have the Owner remit payment for the estimated flagging/construction monitoring cost in advance or elect to invoice the Owner the actual cost as incurred.

END OF PART 1

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PART 2 – GENERAL REQUIREMENTS

2.1 Use of Casing Pipe

a) A casing pipe will be required for all pipeline crossings carrying liquid or gaseous substances. The casing pipe for liquid and gaseous substances may be omitted if the proposed pipe will be installed by the horizontal directional drilling (HDD) method. Reference section 4.1.5 for additional information and requirements.

b) For natural gas pipelines, the casing pipe may be omitted provided the carrier pipe meets the requirements in the Uncased Pipelines Carrying Gas section of this document. CSXT may require the use of a casing pipe at locations where increased risks from specific site conditions (traffic speed, traffic density, etc.) are present.

c) For non-pressure sewer or drainage crossings, where the installation can be made by open cut (see Construction Requirements Section) or reinforced concrete pipe can be jacked under the railroad (see Construction Requirements Section), the casing pipe may be omitted.

d) Pressure pipelines that are located within 25 feet of the centerline of any track shall be encased.

e) At proposed pipe crossing the casing pipe shall be laid **across the entire width of the right-of-way**, except where a greater length is required to comply with the Design Requirements-Casing Pipe Section of this specification, even though such extension is beyond the right-of-way.

f) At the discretion of CSXT a casing pipe may be required for any application regardless of the commodity carried.

2.2 Location of Pipeline on the Right-of-Way

a) Pipelines laid longitudinally on CSXT's right-of-way shall be located as far as practicable from any tracks or other important structures and as close to the railroad property line as possible. Longitudinal pipelines must not be located in earth embankments or within ditches located on the right-of-way.

b) Pipelines shall be located, where practicable, to cross tracks at approximate right angles to the track, but preferably at not less than 45 degrees.

c) Pipelines shall not be placed within a culvert, under railroad bridges, nor closer than 45 feet to any portion of any railroad bridge, building, or other important structure, except in special cases, and then by special design, as approved by CSXT's Chief Engineer, Design and Construction. Proposed pipelines that are to be located within the public right-of-way will be considered pending engineering review. An effort should be made to maximize distance to any substructure.

d) Pipelines shall not be located within the limits of a turnout (switch) when crossing the track. The limits of the turnout extend from the point of the switch to 15 feet beyond the last long timber.

e) Pipeline installations shall not be designed as an open cut installation where the pipeline is to be located within the limits of a grade crossing. If it is shown that no other method of installation is possible, the owner will be responsible for reimbursing CSXT for all costs associated with the removal and reconstruction of the grade crossing (This cost will require advance funding by the pipeline owner).

f) Pipelines carrying liquefied petroleum gas shall, where practicable, cross the railroad where tracks are carried on embankment.

2.3 Depth of Installation

2.3.1 Pipelines conveying non-flammable substances

a) Casing/carrier pipes placed under CSXT track(s) shall be not less than 5.5 feet from base of rail to top of pipe at its shallowest point.

b) Pipelines laid longitudinally on CSXT's right-of-way, 50 feet or less from centerline track shall be buried not less than 4 feet from ground surface to top of pipe. Where the pipeline is laid more than 50 feet from centerline of track, the minimum cover shall be at least 3 feet.

2.3.2 Pipelines conveying flammable substances

a) Casing pipes under CSXT track(s) shall be not less than 5.5 feet from base of rail to top of pipe at its closest point. On other portions of the right-of-way, where the pipe is not directly beneath any track, the depth from ground surface or from bottom of ditch to top of pipe shall not be less than 3 feet. Where 3 feet of cover cannot be provided from bottom of ditch, a 6-inch thick reinforced concrete slab shall be provided over the pipeline for protection.

b) Uncased natural gas pipelines under CSXT track(s) shall not be less than 10 feet from the base of rail to the top of the pipe at its closest point and not less than 6 feet from ground surface to top of pipe in all other locations. Where it is not possible to obtain the above depths, use of a casing pipe will be required.

c) Pipelines laid longitudinally on CSXT's right-of-way, 50 feet or less from centerline track shall be buried not less than 6 feet from ground surface to top of pipe. Where the pipeline is laid more than 50 feet from centerline of track, the minimum cover shall be at least 5 feet.

2.3.3 Pipelines within Limits of a Dedicated Highway

a) Pipelines within the limits of a dedicated highway are subject to all the requirements of this specification and must be designed and installed in accordance with this specification.

b) The limits of the dedicated highway (right-of-way) must be clearly shown on the plans.

c) Construction cannot begin until an agreement has been executed between CSXT and the Owner and proper notification has been given to CSXT's Regional Engineering Officer (See Notification to Proceed with Outside Party Request Form).

2.4 Modification of Existing Facilities

a) Any replacement of an existing carrier pipe and/or casing shall be considered as a new installation, subject to the requirements of this specification.

b) Modification of an existing carrier pipe and/or casing pipe by in-place, non-intrusive methods, such as Cured-in-Place Pipe (CIPP), may be considered as maintenance if there is an agreement between CSXT and the owner covering the existing pipe(s).

c) CIPP installations will only be considered for the following scenarios:

i) Circular Pipes

ii) Within the following host pipe materials: brick, concrete, clay tile, vitrified clay, PVC, corrugated steel, cast and ductile iron, fiberglass, or AC pipe. CIPP will not be allowed within smooth wall steel pipes.

d) CIPP design and installation plans and calculations must be submitted to CSXT's Corridor Services (CS) office for an engineering review if the following scenarios exist:

i) Excavation within CSXT right-of-way or TREL is required to access the existing facilities.

ii) The host pipe that the CIPP is being applied to is not within a casing pipe, such that the host pipe and CIPP will be subject to all external loads.

iii) The CIPP will be within a pipe that is parallel or longitudinal to the CSXT tracks.

e) CIPP design requirements are included in the Cured-in-Place-Pipes (CIPP) section of this document.

2.5 Abandoned Facilities

a) The owner of all pipe crossings proposed for abandonment shall notify CSXT, in writing, of the intention to abandon.

b) Abandoned pipelines shall be removed or completely filled with cement grout, compacted sand, or other methods, as approved by CSXT.

c) Abandoned manholes and other structures shall be removed to a minimum depth of 2 feet below finished grade and completely filled with cement grout, compacted sand, or other methods as approved by CSXT.

2.6 Conflict of Specifications

a) Where laws or orders of public authority prescribe a higher degree of protection than specified herein, then the higher degree so prescribed shall be deemed a part of this specification.

2.7 Insulation

a) Pipelines and casings shall be suitably insulated from underground conduits carrying electric wires on CSXT property.

2.8 Corrosion Protection and Petroleum Leak Prevention

a) Pipelines on CSXT property that carry petroleum products, hazardous gases, or hazardous liquids shall be designed in accordance with current federal, state, and/or local regulations that mandate leak detection automatic shutoff, leak monitoring, sacrificial anodes, and/or exterior coatings to minimize corrosion and prevent petroleum releases.

2.9 Plastic Carrier Pipe Materials

a) Plastic carrier pipe materials include, but are not limited to thermoplastic and thermoset plastic pipes, Thermoplastic types include Polyvinyl Chloride (PVC), Acrylonitrile Butadiene Styrene (ABS), High Density Polyethylene (HDPE), Polyethylene (PE), Polybutylene (PB), Cellulose Acetate Butyrate (CAB), and Styrene Rubber (SR), Thermoset types include Reinforced Plastic Mortar (RPM), Reinforced Thermosetting Resin (FRP) and Fiberglass Reinforce Plastic (FRP).

b) Plastic carrier pipelines shall be encased according to AREMA Chapter 1 Section 5.1.5.

c) Plastic pipe material shall not be used to convey **liquid** flammable substances.

d) Plastic pipe material shall be resistant to the chemicals with which contact can be anticipated. Plastic carrier pipe shall not be utilized where there is potential for contact with petroleum contaminated soils or other non-polar organic compounds that may be present in surrounding soils.

e) Plastic carrier pipe can be utilized to convey flammable **gas** products provided the pipe material is compatible with the type of product conveyed and the maximum allowable operating pressure is less than 100 PSI. Carrier pipe materials, design, and installation shall conform to Code of Federal Regulation 49CFR§178 to §199, specifically §192 and American National Standards Institute ASME B31.8 and ASTM D2513. Codes, specifications, and regulations current at time of construction of the pipeline shall govern the installation of the facility within the railway right-of-way. The proof testing of the strength of carrier pipe shall be in accordance with ANSI requirements. Plastic carrier pipes will be encased according to AREMA Chapter 1 Section 5.1.5.

f) Plastic carrier pipe conveying flammable substances shall be encased the entire limits of the right-of-way. If special conditions exist which prevent encasement within the entire limits

of the right-of-way, the Chief Engineer, Design and Construction must approve the minimum encased length.

g) Plastic carrier pipe must be encased under all tracks, including sidings and industrial tracks within the limits of the right-of-way.

h) Longitudinal carrier pipeline shall be steel or ductile iron. Plastic carrier pipe may be utilized for longitudinal installation with approval by the Chief Engineer, Design and Construction, but shall be fully encased within the limits of the right-of-way.

i) Codes, specifications, and regulations current at the time of construction the pipeline shall govern the installation of the facility within the railway rights-of- way. The proof testing of the strength of carrier pipe shall be in accordance with ANSI requirements.

Specification Number	Carrier Pipe Properties
ANSI/AWWA C900	PVC pressure pipe 4” through 12”
ANSI/AWWA C901	PE pressure pipe and tubing ½” through 3” for water
ANSI/AWWA C902	PE pressure pipe and tubing ½” through 3” for water
ANSI/AWWA C905	PVC water pipe, 14” through 36”
ANSI/AWWA C906	PE pressure pipe and fittings 4” – 63” for water
ANSI/AWWA C907	PVC pressure fittings 4” – 8”
ANSI/AWWA C950	Fiberglass pressure pipe

END OF PART 2

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PART 3 – DESIGN REQUIREMENTS

3.1 Soil Investigation

3.1.1 General Requirements

a) Test borings or other soil investigations, approved by CSXT's Chief Engineer, Design and Construction, shall be made to determine the nature of the underlying material for all pipe crossings with casing pipe sizes greater or equal to 48 inches in diameter and larger under track(s).

b) Test borings or other soil investigations, approved by CSXT's Chief Engineer, Design and Construction, may be required when, in the judgment of CSXT, they are necessary to determine the adequacy of the design and construction of pipe crossings with casings less than 48 inches in diameter and for other facilities located on the right-of-way. Note: the applicant shall be responsible for the notification of all underground utilities including CSX signal cables.

3.1.2 Location

a) Borings shall be made on each side of the track(s), on the centerline of the pipe crossing, and as close to the track(s) as practicable. **Entry upon CSXT property for the purpose of conducting borings requires a Right of Entry permit.**

b) Test boring logs shall be accompanied with a plan, drawn to scale, showing the location of the borings in relation to the track(s) and the proposed pipe.

3.1.3 Sampling

a) Test borings shall be made in accordance with current ASTM Designation D1586 except that sampling must be continuous from the ground surface to 5 feet below the proposed invert unless rock is encountered before this depth. Where rock is encountered, it is to be cored using a Series "M" Double Tube Core Barrel, with a diamond bit, capable of retrieving a rock core at least 1 5/8" in diameter. Individual core runs are not to exceed 5 feet in length.

b) All borings shall be sealed, for their full depth, with a 4-3-1 bentonite-cement- sand grout after accurate ground water readings have been taken and recorded.

c) Soil samples taken from auger vanes or return washwater are not acceptable.

3.1.4 Boring Logs

a) Test boring logs shall clearly indicate **all** of the following:

i) Boring number as shown on the required boring location plan.

ii) Ground elevation at each boring using same datum as the pipeline construction plans.

iii) Engineering description of soils or rock encountered.

iv) Depth and percent recovery of all soil samples.

v) Depth from surface for each change in strata.

vi) Blows for each 6 inches of penetration for the standard penetration test described in ASTM D 1586. Blows for lesser penetrations should be recorded.

vii) Percent recovery and Rock Quality Designation (RQD) for all rock cores.

viii) Depth to ground water while sampling and when it has stabilized in the bore hole.

b) The location of the carrier pipe and/or casing pipe shall be superimposed on the boring logs before submission to CSXT.

3.1.5 Additional Information

a) When directed by CSXT, additional borings may be required for the purpose of taking undisturbed thin-wall piston samples or Dennison type samples for laboratory testing to determine the index and engineering properties of certain soil strata.

3.2 Design Loads

3.2.1 General Requirements

a) All pipes, manholes, and other facilities shall be designed for the external and internal loads to which they will be subjected.

b) To allow for placement of additional track(s) or shifting of the existing track(s), all proposed pipelines or structures shall be designed as if a railroad loading is directly above the facility.

3.2.2 Earth Load

a) The dead load of the earth shall be considered as 120 pounds per cubic foot unless soil conditions warrant the use of a higher value.

3.2.3 Railroad Load (live load and impact)

a) The railroad live load used shall be a Cooper E-80 loading. This loading consists of 80 kip axle loads spaced 5 feet on centers.

b) An impact factor of 1.75 (multiply live load by the impact factor) shall be used for depth of cover up to 5 feet. Between 5 and 30 feet, the impact factor is reduced by 0.03 per foot of depth. Below a depth of 30 feet, the impact factor is one.

c) The values shown in Table 1 shall be used for the vertical pressure on a buried structure for the various heights of cover.

Table 1 - Live loads, including impact for various heights of cover for a Cooper E-80 loading

Height of Cover	Load	
Feet	Pound per square foot	(kPa)
2	3800	(162.8)
3	3150	(150.8)
4	2850	(136.5)
5	2550	(122.1)
6	2250	(107.7)
7	1950	(93.4)
8	1700	(81.4)
9	1500	(71.8)
10	1300	(62.2)
12	1000	(47.9)
14	800	(38.3)
16	625	(29.9)
18	500	(23.9)
20	400	(19.2)
25	250	(12.0)
30	150	(7.2)

d) To determine the horizontal pressure caused by the railroad loading on a sheet pile wall or other structure adjacent to the track, the Boussinesq analysis shall be used. The load on the track shall be taken as a strip load with a width equal to the length of the ties which is typically, 8.5 feet. The vertical surcharge, q (psf), caused by each axle, shall be uniform and equal to the axle load divided by the tie length and the axle spacing, 5 feet. For the E-80 loading this results in:

$$q = 80{,}000 / (8.5 \text{ X } 5) = 1882 \text{ psf}$$

The horizontal pressure due to the live load surcharge at any point on the wall or other structure is p_h and can be calculated by the following:

$$p_h = (2q/\pi)(\beta\text{-sin }\beta(\cos 2\propto))$$

e) The vertical and horizontal pressures given above shall be used unless an alternate design method is approved by CSXT. Proposals to use an alternate design method must include acceptable references and a statement explaining the justification for choosing the alternate method.

3.3 Design Assumptions

a) To design a casing pipe or an uncased carrier pipe for the external loads on CSXT's right-of-way, the following design assumptions shall be used, unless site conditions indicate more conservative values are required:

3.3.1 Flexible Pipe (Steel, DIP, CMP, and Tunnel Liner Plate)

a) Steel Pipe (Bored and jacked in place)

i) Spangler's Iowa formula shall be used for design with:

Deflection lag factor	-	$D_f = 1.5$
Modulus of soil reaction	-	$E' = 1080$ psi
Bedding constant	-	$Kb = 0.096$
Soil loading constant	-	$K_{u'} = 0.13$
Allowable deflection of pipe	-	3% of pipe diameter

b) Ductile Iron Pipe (Open Cut)

i) AWWA Specification C150 shall be used for design with:

Pipe laying condition = Type 3
Earth load - ANSI A 51.50 prism method

c) Corrugated Steel Pipe & Corrugated Structural Steel Plate Pipe (Open Cut)

i) AREMA Chapter 1, Sections 4.9 & 4.10 shall be used for design with:

Soil stiffness factor - K = 0.33
Railroad impact as per Design Requirements-Casing Pipe Section of this specification.

d) Tunnel Liner Plate (Tunneled)

i) AREMA Chapter 1, Part 4, Section 4.16 shall be used for design with:

Soil stiffness factor - K = 0.33
Railroad impact as per Design Requirements-Casing Pipe Section of this specification.

3.3.2 Rigid Pipe (RCP, Vitrified Clay Pipe, and PCCP)

a) Reinforced Concrete Pipe, Vitrified Clay Pipe and Prestressed Concrete Cylinder Pipe (Open Cut)

i) American Concrete Pipe Association design manual shall be used for design with:

Marston load theory used for earth load

Bedding (Load Factor) - $L_f = 1.9$
Factor of safety - FS = 1.25 for RCP
FS = 1.50 for VCP
Railroad impact as per Design Requirements-Casing Pipe Section of this specification.

b) Reinforced Concrete Pipe (Jacked)

i) American Concrete Pipe Association design manual shall be used for design with:

Marston load theory used for earth load
Bedding (Load Factor) - $L_f = 3.0$
Factor of safety = 1.25
Railroad impact as per Design Requirements-Design Loads Section of this specification.
Others – As approved by CSXT

3.4 Casing Pipe

3.4.1 General Requirements

a) Casing pipe shall be so constructed as to prevent leakage of any substance from the casing throughout its length, except at ends of casing where ends are left open, or through vent pipes when ends of casing are sealed. Casing shall be installed so as to prevent the formation of a waterway under the railroad, and with an even bearing throughout its length, and shall slope to one end (except for longitudinal occupancy).

b) The casing pipe and joints shall be of steel and of leakproof construction when the pipeline is carrying liquid flammable products or highly volatile substances under pressure.

c) The inside diameter of the casing pipe shall be such as to allow the carrier pipe to be removed subsequently without disturbing the casing or the roadbed. For steel pipe casings, the inside diameter of the casing pipe shall be at least 2 inches greater than the largest outside diameter of the carrier pipe joints or couplings, for carrier pipe less than 6 inches in diameter; and at least 4 inches greater for carrier pipe 6 inches and over in diameter.

d) For flexible casing pipe, a maximum vertical deflection of the casing pipe of 3 percent of its diameter, plus ½ inch (13 mm) clearance shall be provided so that no loads from the roadbed, track, traffic, or casing pipe itself are transmitted to the carrier pipe. When insulators are used on the carrier pipe, the inside diameter of the flexible casing pipe shall be at least 2 inches greater than the outside diameter of the carrier pipe for pipe less than 8 inches in diameter; at least 3¼ inches greater for pipe 8 inches to 16 inches, inclusive, in diameter and at least 4½ inches greater for pipe 18 inches and over in diameter.

e) In no event shall the casing pipe diameter be larger than is necessary to permit the insertion of the carrier pipe.

f) Casing pipe under railroad tracks and across CSXT's right-of-way shall extend the **greater** of the following distances, measured at right angle to centerline of track:

i) Across the entire width of the CSXT right-of-way.

ii) 3 feet beyond ditch line.

iii) 2 feet beyond toe of slope.

iv) A minimum distance of 25 feet from each side of centerline of outside track when casing is sealed at both ends.

v) A minimum distance of 45 feet from centerline of outside track when casing is open at both ends.

vi) Beyond the theoretical railroad embankment line. This line begins at a point 12 feet horizontally from centerline track, 18 inches below top-of-rail, and extends downward on a 1½ (H) to 1 (V) slope.

g) If additional tracks are constructed in the future, the casing shall be extended correspondingly at the Owner's expense.

3.4.2 Steel Pipe

a) Steel pipe may be installed by open cut, boring or jacking depending on situation.

b) Steel pipe shall have a specified minimum yield strength, SMYS, of at least 35,000 psi. The ASTM or API specification and grade for the pipe are to be shown on the Application Form.

c) Joints between the sections of pipe shall be constructed to be capable of withstanding railroad loading. Joints can either be constructed through butt welding or through the use of interlocking joints.

d) Steel casing pipe, with a **minimum** cover of 5.5 ft., shall have a minimum wall thickness as shown in Table 2, unless computations indicate that a thicker wall is required.

Table 2 – Steel Casing Pipe Wall Thicknesses

Pipe Diameter Nominal Pipe Size (in.)	Coated or Cathodically Protected Nominal Wall Thickness (in.)	Uncoated and Unprotected Nominal Wall Thickness (in.)
10 and under	0.188	0.188
12 & 14	0.188	0.250
16	0.219	0.281
18	0.250	0.312
20 & 22	0.281	0.344
24	0.312	0.375
26	0.344	0.406
28	0.375	0.438
30	0.406	0.469
32	0.438	0.500
34 & 36	0.469	0.532
38	0.500	0.562
40	0.531	0.594
42	0.562	0.625
44 & 46	0.594	0.657
48	0.625	0.688
50	0.656	0.719
52	0.688	0.750
54	0.719	0.781
56 & 58	0.750	0.812
60	0.781	0.844
62	0.812	0.875
64	0.844	0.906
66 & 68	0.875	0.938
70	0.906	0.969
72	0.938	1.000

e) Coated steel pipe that is bored or jacked into place shall conform to the wall thickness requirements for uncoated steel pipe since the coating may be damaged during installation.

f) For the required wall thicknesses on uncased steel carrier pipes conveying natural gas, refer to Uncased Pipelines Carrying Gas section in this document.

g) Smooth wall steel pipes with a nominal diameter over 72 inches will not be permitted.

3.4.3 Ductile Iron Pipe

a) Ductile iron pipe may be used only at the sole discretion of the Chief Engineer, Design and Construction when placed by the open cut method. Jacking or boring through the railroad embankment is not permitted due to the bell and spigot joints.

b) Ductile iron pipe shall conform to the requirements of ANSI A21.51/AWWA C-151. Class 56 pipe shall be used unless computations, in accordance with the Design Requirements-Design Loads and Design Assumptions sections, are provided.

c) Table 3 is based on the design assumptions given in the Design Requirements-Design Loads Section with a minimum cover of 5.5 feet. This table is provided for information only.

Table 3 – Ductile Iron Pipe Wall Thicknesses

Pipe Diameter (in.)	Thickness Class		Pressure Class
	Wall Thickness (in.)	Class	
3	0.25	51	350
4	0.25	51	350
6	0.25	50	350
8	0.25	50	350
10	0.26	51	350
12	0.28	51	350
14	0.31	52	350
16	0.34	52	350
18	0.36	53	350
20	0.38	53	350
24	0.42	55	350
30	0.49	56	350
36	0.56	56	350
42	0.63	56	350
48	0.70	56	350
54	0.79	56	350

d) The pipe shall have mechanical or push on type joints.

3.4.4 Corrugated Steel Pipe and Corrugated Structural Steel Plate Pipe

a) Corrugated steel pipe and corrugated structural steel plate pipe may be used for a casing only when placed by the open cut method. Jacking or boring through the railroad embankment is not permitted.

b) Corrugated steel pipe and corrugated structural steel plate pipe may be used for a casing provided the pressure in the carrier pipe is less than 100 psi.

c) Pipe shall be bituminous coated and shall conform to the current AREMA Specifications Chapter 1, Part 4.

d) Corrugated steel pipe shall have a minimum sheet thickness as shown in Table 4. Corrugated structural steel plate pipe shall have a minimum plate thickness of 8 gage, 0.168 in. If computations indicate that a greater thickness is required, the thicker sheet or plate shall be used.

Table 4 – Corrugated Steel Pipe Wall Thicknesses

Pipe Diameter	Sheet Thickness	
(in.)	(Gauge)	(in.)
12 to 30	14	0.079
36	12	0.109
42 to 54	10	0.138
60 to 120	8	0.168

3.4.5 Steel Tunnel Liner Plate

a) Liner plates shall be installed by the tunneling method as detailed in the Construction Requirements-Method of Installation section of this specification.

b) Tunnel liner plates shall be galvanized and bituminous coated and shall conform to current AREMA guidelines. If the tunnel liner plates are used only to maintain a tunneled opening until the carrier pipe is installed, and the annular space between the carrier pipe and the tunnel liner is completely filled with cement grout within a reasonably short time after completion of the tunnel, then the tunnel liner plates need not be galvanized and coated.

c) Tunnel liner plates are to be a minimum of 12 gage and shall be fabricated from structural quality, hot-rolled, carbon-steel sheets or plates conforming to ASTM Specification A 1011.

d) The following liner plate information must be shown on the Application Form:

i) Number of flanges (2 or 4)

ii) Width of plate

iii) Type of plate (smooth or corrugated)

3.4.6 Reinforced Concrete Pipe

a) Reinforced concrete pipe shall be installed by the open cut (at the sole discretion of the Chief Engineer, Design and Construction) or jacking method.

b) Reinforced concrete pipe shall conform to ASTM Specification C 76. Class V pipe, Wall B or C shall be used unless computations, in accordance with the Design Requirements-Design Assumptions, are provided.

c) Reinforced concrete pipe may be used for a casing provided the pressure in the carrier pipe is less than 100 psi.

d) Pipe placed by open cut shall be installed in accordance with AREMA Guidelines except that backfill and compaction shall be in accordance with the Construction Requirements-Method of Installation section of this specification.

e) Pipe jacked into place shall have tongue and groove joints and shall be installed in accordance with the Construction Requirements-Method of Installation section of this specification.

f) Joints between sections of the RCP shall be sealed with a gasket conforming to ASTM C 443 or approved equal**.**

3.4.7 Concrete Encasement

a) At locations where the installation is by open cut and a casing pipe is required, but cannot be installed due to elbows or other obstructions, concrete encasement may be used when approved by CSXT.

b) The concrete encasement must provide a minimum cover of 6 inches of concrete around the pipe. A 6 x 6 - W 2.9 x W 2.9 welded wire fabric shall be placed in the concrete on all sides.

3.5 Carrier Pipe

3.5.1 General Requirements

a) The pipe shall be laid with sufficient slack so that it is not in tension.

b) Steel pipe shall not be used to convey sewage, storm water, or other liquids that could cause corrosion.

c) Carrier pipes located on CSXT's right-of-way or under tracks which CSXT operates, shall be manufactured in accordance with the following specifications:

i) Steel Pipe - The ASTM or API specification and grade for the pipe is to be shown on the Application Form. The specified minimum yield strength is to be at least 35,000 psi. For flammable substances, see the Design Requirements-Carrier Pipe Section of this document for additional requirements.

ii) Ductile Iron Pipe - ANSI A21.51/AWWA C151

iii) Corrugated Metal Pipe - AREMA Chapter 1, Part 4

iv) Reinforced Concrete Pipe - ASTM C 76

v) Vitrified Clay Pipe - ASTM C 700

vi) Prestressed Concrete Cylinder Pipe - AWWA C301

vii) Reinforced Concrete Cylinder Pipe - AWWA C300

viii) Others - As approved by CSXT.

d) Carrier pipes installed within a casing pipe shall be designed for the internal pressure to which it will be subjected.

e) Gravity flow carrier pipes, installed without a casing pipe, shall meet the requirements, of the particular pipe material, as given in Design Requirements-Casing Pipe Section of this specification.

f) Design computations, stamped by a Professional Engineer, must be submitted for all uncased pressure pipelines installed on CSXT's right-of- way. The pipe must be designed for the internal and external loads (see the Design Requirements Section of this document) to which it may be subjected. The design assumptions given in Design Requirements Section shall apply.

3.5.2 Pipelines Carrying Flammable Substances

a) Products shall be of steel and conform to the requirements of the current ASME B 31.4 Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia, and Alcohols, and other applicable ASME codes, except that the maximum allowable stresses for design of steel pipe shall not exceed the following percentages of the specified minimum yield strength (multiplied by the longitudinal joint factor) of the pipe as defined in the above codes:

b) The following percentages apply to hoop stress in steel pipe within a casing under railroad tracks, across railroad right-of-way and longitudinally on railroad right-of-way:

i) Seventy-two percent on oil pipelines.

ii) Fifty percent for pipelines carrying condensate, natural gasoline, natural gas liquids, liquefied petroleum gas, and other liquid petroleum products.

iii) Sixty percent for installations on gas pipelines.

c) The following percentages apply to hoop stress in steel pipe laid longitudinally on railroad right-of-way without a casing:

i) Sixty percent for oil pipelines.

ii) Forty percent for pipelines carrying condensate, natural gasoline, natural gas liquids, liquefied petroleum gas, and other liquid petroleum products.

d) Computations, based on the above requirements and stamped by a Professional Engineer shall be submitted with the application for occupancy.

3.5.3 Uncased Pipelines Carrying Gas

a) Pipelines carrying flammable and nonflammable gas products shall be steel and shall conform to the requirements of the current ASME B 31.8 Gas Transmission and Distribution Piping Systems, and other applicable ANSI codes.

b) The minimum wall thickness for uncased carrier pipe shall be in accordance with the values provided in AREMA, Chapter 1, Part 5, Section 5.2.

c) A durable coating, which will resist abrasion (fusion bonded epoxy or other suitable material), shall be used to protect the uncased pipeline when the boring method of installation is used.

d) If CSXT determines there is the potential for damage to the uncased pipeline (foreign material in the subgrade, third party damage, etc.), special protection of the pipeline will be required. Special protection may include the use of concrete jacketed carrier pipe, a protection slab over the pipeline, increased depth of bury or other means.

3.6 Casing Pipe End Seals

a) Casings for carrier pipes of flammable and hazardous substances shall be suitably sealed to the outside of the carrier pipe. Details of the end seals shall be shown on the plans.

b) Casings for carrier pipes of non-flammable substances shall have both ends of the casing blocked up in such a way as to prevent the entrance of foreign material, but allowing leakage to pass in the event of a carrier break.

c) The ends of a casing pipe may be left open when the ends are at or above ground surface and above high water level, provided drainage is afforded in such a manner that leakage will be conducted away from railroad tracks and structures.

3.7 Vents

a) Sealed casings for flammable substances shall be properly vented. Vent pipes shall be of sufficient diameter, but in no case less than two inches in diameter, and shall be attached near each end of the casing and project through the ground surface at right-of-way lines or not less than 45 feet, measured at right angles from centerline of nearest track.

b) Vent pipes shall extend not less than 4 feet above the ground surface. Top of vent pipe shall have a down-turned elbow, properly screened, or a relief valve. Vents in locations subject to high water shall be extended above the maximum elevation of high water and shall be supported and protected in a manner approved by CSXT.

c) Vent pipes shall be at least 4 feet, vertically, from aerial electric wires or greater if required by National Electrical Safety Code (ANSI C2).

d) When the pipeline is in a public highway, street-type vents shall be installed.

3.8 Signs

a) All pipelines (except those in streets where it would not be practical to do so) shall be prominently marked at right-of-way lines (on both sides of track for crossings) by durable, weatherproof signs located over the centerline of the pipe. Signs shall show the following:

i) Name and address of owner

ii) Contents of pipe

iii) Pressure in pipe

iv) Pipe depth below grade at point of a sign

v) Emergency telephone number in event of pipe rupture

b) For pipelines running longitudinally on CSXT property, signs shall be placed over the pipe (or offset and appropriately marked) at all changes in direction of the pipeline. Such signs should also be located so that when standing at one sign the next adjacent marker in either direction is visible. In no event shall they be placed more than 500 feet apart unless otherwise specified by CSXT.

c) The Owner must maintain all signs on CSXT's right-of-way as long as the occupational agreement is in effect.

3.9 Warning Tape

a) All pressure pipelines installed by the trench method, without a casing, shall have a warning tape placed directly above the pipeline, 2 feet below the ground surface.

3.10 Shut-off Valves

a) Accessible emergency shut-off valves shall be installed within 2,000 feet on both sides of the pipeline crossing or longitudinal occupancy.

b) Steel pipelines conveying Natural Gas may exceed the 2,000 foot spacing requirement provided the following conditions are met:

i) The pipeline is equipped with Automatic or Remotely Controlled shut-off valves.

ii) Location of valves shall be in compliance with all State and Federal Regulations.

iii) The pipeline is monitored on a continuous, 24 hour - 365 day basis from a central control center.

iv) The pipeline operator shall provide CSXT with current emergency contact information

3.11 Cathodic Protection

a) Cathodic protection shall be applied to all pipelines carrying flammable substances on CSXT's right-of-way.

b) For crossings and at other locations where the pipeline must be placed within a casing, the casing is to have cathodic protection or the wall thickness is to be increased to the requirements of the Design Requirements Section Table 2.

c) Uncased gas carrier pipes must be coated and cathodically protected to industry standards and test sites, for monitoring the pipeline, provided within 50 feet of the crossing.

d) Where casing and/or carrier pipes are cathodically protected by other than anodes, CSXT shall be notified and a suitable test made to ensure that other railroad structures and facilities are adequately protected from the cathodic current in accordance with the recommendation of current Reports of Correlating Committee on Cathodic Protection, published by the National Association of Corrosion Engineers.

e) Where sacrificial anodes are used, the locations shall be marked with durable signs.

3.12 Manholes

a) Manholes shall not be located on CSXT property where possible. At locations where this is not practical, including longitudinal occupancies, manholes shall be precast concrete sections conforming to ASTM Designation C 478, "Specification for Precast Concrete Manhole Sections."

b) The top of manholes located on CSXT property shall be flush with top of ground.

c) The distance from centerline of adjacent track to centerline of proposed manhole shall be shown on the plans.

3.13 Box Culverts

a) Reinforced concrete box culverts shall be designed in conformance with CSX Standards and AREMA Guidelines.

3.14 Drainage

a) Occupancies shall be designed, and their construction shall be accomplished, so that adequate and uninterrupted drainage of CSXT's right-of-way is maintained.

b) All pipes, ditches, and other structures carrying surface drainage on CSXT property and/or under CSXT track(s) shall be designed to carry the run-off from a one hundred (100) year storm. Plans submitted to CSXT for approval shall be prepared by a Professional Engineer and should indicate design, suitable topographic plan, and outline of total drainage area.

c) If the drainage is to discharge into an existing drainage channel on CSXT's right- of-way and/or through a drainage structure under CSXT's track(s), the computations must include the hydraulic analysis of any existing ditch and/or structure.

d) When calculating the capacity of existing or proposed drainage structures, under CSXT's track(s), the headwater calculation at the structure shall not be greater than one (1) pipe diameter.

e) Pipe(s) used to carry surface drainage on CSXT's right-of-way shall have a minimum diameter of 24 inches.

f) Detention ponds must not be placed on any part of CSXT's right-of-way. Also, the railroad embankment must not be used as any part of a detention pond structure.

g) Formal approval of the proposed design, by the appropriate governmental agency having jurisdiction, shall be submitted with the drainage computations.

3.15 Pipelines on Bridges

a) Pipelines **cannot** be installed on any bridge carrying CSXT tracks.

b) Overhead pipe bridges will only be considered over CSXT right-of-way when underground installation of the pipeline is not possible. The Applicant must show that no practicable alternative is available and overhead pipe bridges will be permitted provided the conditions in Section 3.17 are met.

c) Pipelines carrying flammable substances or non-flammable substances, which by their nature might cause damage if escaping on or near railroad facilities or personnel, shall not be installed on bridges over CSXT tracks. In special cases when it can be demonstrated to CSXT's satisfaction that such an installation is necessary and that no practicable alternative is available, CSXT may permit the installation and only by special design approved by the Chief Engineer, Design and Construction.

d) When permitted, pipelines on bridges over CSXT tracks shall be so located as to minimize the possibility of damage from vehicles, railroad equipment, vandalism, and other external causes. They shall be encased in a casing pipe as directed by CSXT.

3.16 Cured-in-Place Pipes (CIPP)

a) CIPP installations shall be designed in accordance with ASTM F1216 Appendix X1.

b) CIPP to be installed in a casing pipe or an uncased carrier pipe shall be designed for a Fully Deteriorated condition. A Partially Deteriorated design condition will only be accepted for CIPP of carrier pipe that is already within a casing pipe. All CIPP calculations must be signed and sealed by a licensed Professional Engineer.

c) CIPP designs will not be accepted when the wall thickness of the CIPP liner is greater than 2 inches.

3.17 Pipe Bridges / Conveyors

a) The following are minimum requirements for the construction of pipe bridges:

i) The vertical clearance, distance from top of rail to closest component of structure, is shown and is a minimum of 23 feet, measured at a point 6 feet horizontally from centerline track.

ii) The support bents for the overhead structure are located off CSXT's right-of-way or a minimum clear distance of 20 feet from centerline track, whichever distance is greater.

iii) Support bents within 25 feet of centerline track have pier protection in accordance with AREMA, Chapter 8 Section 2.1.5.

iv) Complete structural plans and design computations for the structure and foundations, sealed by a licensed Professional Engineer, are submitted with the application.

v) A fence (topped with barbed wire) or other measures are provided which will prevent access to the bridge by unauthorized personnel or vandals.

b) The following are minimum requirements for the construction of conveyors:

i) The vertical clearance, distance from top of rail to closest component of structure, is shown and is a minimum of 23 feet, measured at a point 6 feet horizontally from centerline track.

ii) The support bents for the overhead structure are located off CSXT's right-of-way or a minimum clear distance of 20 feet from centerline track, whichever distance is greater.

iii) Support bents within 25 feet of centerline track have pier protection in accordance with AREMA, Chapter 8 Section 2.1.5.

iv) Complete structural plans and design computations for the structure and foundations, sealed by a licensed Professional Engineer, are submitted with the application.

v) A fence (topped with barbed wire) or other measures are provided which will prevent access to the bridge by unauthorized personnel or vandals.

vi) Plan revisions, if applicable, are to include all proposed utilities attached to the proposed conveyor that do not service the conveyor.

END OF PART 3

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PART 4 – CONSTRUCTION REQUIREMENTS

4.1 Method of Installation

4.1.1 General Requirements

a) Bored, jacked, or tunneled installations shall have a bore hole essentially the same as the outside diameter of the pipe plus the thickness of the protective coating.

b) The use of water or other liquids to facilitate casing emplacement and spoil removal is prohibited.

c) If, during installation, an obstruction is encountered which prevents installation of the pipe in accordance with this specification, notify CSXT immediately, abandon the pipe in place, and immediately fill with grout. A new installation procedure and revised plans must be submitted to, and approved by, CSXT before work can resume.

4.1.2 Bore and Jack (Steel Pipe)

a) This method consists of pushing the pipe into the earth with a boring auger rotating within the pipe to remove the spoil.

b) The boring operation shall be progressed on a 24-hour basis without stoppage (except for adding lengths of pipe) until the leading edge of the pipe has reached the receiving pit.

c) The front of the pipe shall be provided with mechanical arrangements or devices that will positively prevent the auger from leading the pipe so that no unsupported excavation is ahead of the pipe.

d) The auger and cutting head arrangement shall be removable from within the pipe in the event an obstruction is encountered.

e) The over-cut by the cutting head shall not exceed the outside diameter of the pipe by more than ½ inch. If voids should develop or if the bored hole diameter is greater than the outside diameter of the pipe (plus coating) by more than approximately 1 inch grouting (see the Construction Requirements-Grouting Section) or other methods approved by CSXT, shall be employed to fill such voids.

f) The face of the cutting head shall be arranged to provide a reasonable obstruction to the free flow of soft or poor material.

g) Plans and description of the arrangement to be used shall be submitted to CSXT for approval and no work shall proceed until such approval is obtained.

h) Any method that employs simultaneous boring and jacking for pipes over 8 inches in diameter that does not have above approved arrangement **will not be permitted**. For pipe 8 inches and less in diameter, auguring or boring without this arrangement may be considered for use only as approved by CSXT.

4.1.3 Jacking (RCP and Steel Pipe)

a) This method consists of pushing sections of pipe into position with jacks placed against a backstop and excavation performed by hand from within the jacking shield at the head of the pipe. Ordinarily 36 inch pipe is the least size that should be used, since it is not practical to work within smaller diameter pipes.

b) Jacking shall be in accordance with the current AREMA Guidelines, Chapter 1, Section 4.13, "Earth Boring and Jacking Culvert Pipe Through Fills." This operation shall be conducted without hand mining ahead of the pipe and without the use of any type of boring, auguring, or drilling equipment.

c) Bracing and backstops shall be so designed and jacks of sufficient rating used so that the jacking can be progressed on a 24-hour basis without stoppage (except for adding lengths of pipe) until the leading edge of the pipe has reached the receiving pit.

d) When jacking reinforced concrete pipe, a jacking shield shall be fabricated as a special section of reinforced concrete pipe with a steel cutting edge, hood, breasting attachments, etc., cast into the pipe. The wall thickness and reinforcing shall be designed for the jacking stresses.

e) When jacking reinforced concrete pipe tapped for no smaller than 1½- inch pipe, grout holes shall be cast into the pipe at manufacture. Three grout holes equally spaced around the circumference and 4 feet longitudinally shall be provided for greater than 54 inches and smaller. Four grout holes equally spaced around the circumference and 4 feet longitudinally shall be provided for RCP 60 inches and larger.

f) Immediately upon completion of jacking operations, the installation shall be pressure grouted as per Construction Requirements-Grouting Section of this specification.

4.1.4 Tunneling (Tunnel Liner Plate)

a) This method consists of placing rings of liner plate within the tail section of a tunneling shield or tunneling machine. A tunneling shield shall be used for all liner plate installations unless otherwise approved by CSXT.

b) The shield shall be of steel construction, designed to support a railroad track loading as specified in the Design Requirements-Casing Pipe of this specification, in addition to the other loadings imposed. The advancing face shall be provided with a hood, extending no less than 20 inches beyond the face and extending around no less than the upper 240 degrees of the total circumference. It shall be of sufficient length to permit the installation of at least one complete ring of liner plates within the shield before it is advanced for the installation of the next ring of liner plates. The shield shall conform to and not exceed the outside dimensions of the liner plate tunnel being placed by more than 1 inch at any point on the periphery unless otherwise approved by CSXT.

c) The shield shall be adequately braced and provided with necessary appurtenances for completely bulkheading the face with horizontal breastboards, and arranged so that the excavation can be benched as may be necessary. Excavation shall not be advanced beyond the edge of the hood, except in rock.

d) Manufacturer's shop detail plans and manufacturer's computations showing the ability of the tunnel liner plates to resist the jacking stresses shall be submitted to CSXT for approval.

e) Unless otherwise approved by CSXT, the tunneling shall be conducted continuously, on a 24-hour basis, until the tunnel liner extends at least beyond the theoretical railroad embankment line.

f) At any interruption of the tunneling operation, the heading shall be completely bulkheaded.

g) The liner plates shall have tapped grout holes for no smaller than 1½- inch pipe, spaced at approximately 3 feet around the circumference of the tunnel liner and 4 feet longitudinally.

h) Grouting behind the liner plates shall be in accordance with the Construction Requirements-Grouting Section of this specification.

4.1.5 Horizontal Directional Drilling

a) **Installations by this method are considered a variance to CSXT Pipeline Occupancy Specifications,** but special consideration will be given where the depth of cover is substantial, 15 feet or greater, or the bore is in rock. Factors considered will be track usage, pipe size, contents of pipeline, soil conditions, boring equipment and procedures, etc. Reference the CSXT Interim Guidelines for Horizontal Directional Drilling (HDD) for additional information and instructions.

4.1.6 Jack Conduit

a) Installations by this method are generally not acceptable, but may be considered under special circumstances. This method consists of using hydraulic jacking equipment to push a solid steel rod under the railroad from a launching pit to a receiving pit. At the receiving pit, a cone shaped “expander” is attached to the end of the rod and the conduit (casing pipe) is attached to the expander. The rod, expander, and conduit are then pulled back from the launching pit until the full length of the conduit is in place.

b) This method may be used to place steel conduit (casing pipe), up to and including 6 inches in diameter, under the railroad.

c) The project specifications must require the contractor to submit, to CSXT for approval, a complete construction procedure of the proposed boring operation. Included with the submission shall be the manufacturer’s catalog information describing the type of equipment to be used.

4.1.7 Open Cut – Not a readily accepted practice

a) The Owner must request open cut approval when making application for occupancy. All procedures will be in compliance with AREMA Chapter 1 Section 5.1.5.1(b).

b) Installations beneath the track by open trench methods will be permitted only with the approval of the Chief Engineer, Design and Construction.

c) Installations by open cut will not be permitted under mainline tracks, tracks carrying heavy tonnage or tracks carrying passenger trains. Also, open cut shall not be used within the limits of a highway/railroad grade crossing or its approaches, 25 feet either side of traveled way, where possible.

d) Rigid pipe (RCP, VCP, and PCCP) must be placed in a Class B bedding or better.

e) At locations where open cut is permitted, the trench is to be backfilled with crushed stone with a top size of the aggregate to be a maximum of 2 inches and to have no more than 5% passing the number 200 sieve. The gradation of the material is to be such that a dense stable mass is produced.

f) The backfill material shall be placed in loose 6 inch lifts and compacted to at least 95% of its maximum density with a moisture content that is no more than 1% greater than or 2% less than the optimum moisture as determined in accordance with current ASTM Designation D - 1557 (Modified Proctor). When the backfill material is within 3 feet of the subgrade elevation (the interface of the ballast and the subsoil) a compaction of at least 98% will be required. Compaction test results confirming compliance must be provided to CSXT's Regional Engineering Office by the Owner.

g) All backfilled pipes laid either perpendicular or parallel to the tracks must be designed so that the backfill material will be positively drained. This may require the placement of lateral drains on pipes laid longitudinally to the track and the installation of stub perforated pipes at the edge of the slopes.

h) Unless otherwise agreed upon, all work involving rail, ties, and other track material will be performed by railroad employees at the sole expense of the Owner, subject to advance payments by the owner.

4.2 Grouting

a) For jacked and tunneled installations a uniform mixture of 1:6 (cement: sand) cement grout shall be placed under pressure through the grout holes to fill any voids, which exist between the pipe or liner plate and the undisturbed earth.

b) Grouting shall start at the lowest hole in each grout panel and proceed upwards simultaneously on both sides of the pipe.

c) A threaded plug shall be installed in each grout hole as the grouting is completed at that hole.

d) When grouting tunnel liner plates, grouting shall be kept as close to the heading as possible, using grout stops behind the liner plates if necessary. Grouting shall proceed as directed by CSXT, but in no event shall more than 6 lineal feet of tunnel be progressed beyond the grouting.

4.3 Soil Stabilization

a) Pressure grouting of the soils or freezing of the soils before jacking, boring, or tunneling may be required at the direction of CSXT Chief Engineer, Design and Construction to stabilize the soils, control water, prevent loss of material, and prevent settlement or displacement of embankment. Grout shall be cement, chemical, or other special injection material selected to accomplish the necessary stabilization.

b) The materials to be used and the method of injection shall be prepared by a Licensed Professional Soils Engineer, or by an experienced and qualified company specializing in this work and submitted for approval to CSXT before the start of work. Proof of experience and competency shall accompany the submission.

4.4 Dewatering

a) When water is known or expected to be encountered all plans and specification must be submitted to the Chief Engineer, Design and Construction for approval before the process begins. Pumps of sufficient capacity to handle the flow shall be maintained at the site, provided the contractor has received approval from CSXT to operate them. Pumps in operation shall be constantly attended on a 24-hour basis until, in the sole judgment of CSXT, the operation can be safely halted. When dewatering, a process for monitoring for any settlement of track or structures must be in place.

4.5 Safety Requirements

a) All operations shall be conducted so as not to interfere with, interrupt, or endanger the operation of trains nor damage, destroy, or endanger the integrity of railroad facilities. All work on or near CSXT property shall be conducted in accordance with CSXT safety rules and regulations. Specifically all licensee's employees and agents, while on CSXT property, shall be required to wear an orange hard hart, safety glasses with side shields, 6" lace up boots with a distinct heel, shirts with sleeves, and long pants; additional personal protective equipment may be required for certain operations including abrasive cutting, use of torches, use of chainsaws, etc. The contractor and its employees shall comply with the CSXT safety rules at all times while occupying CSXT's property. Operations will be subject to CSXT inspection at any and all times.

b) All cranes, lifts, or other equipment that will be operated in the vicinity of the railroad's electrification and power transmission facilities shall be electrically grounded as directed by CSXT. Use of a crane or other lifting equipment is subject to requirements as stated in the CSXT Public Projects manual.

c) Whenever equipment or personnel are working closer than 25 feet from the centerline of an adjacent track, that track shall be considered as being obstructed. Insofar as possible, all operations shall be conducted no less than this distance. All operations shall be conducted only with the permission of, and as directed by, a duly qualified railroad employee present at the site of the work. All costs related to Railroad protection will be passed on to the applicant.

d) Crossing of tracks at grade by equipment and personnel is prohibited except by prior arrangement with and as directed by, CSXT.

4.6 Blasting

a) Blasting will not be permitted under or on CSXT's right-of-way.

4.7 Temporary Track Supports

a) When the jacking, boring or tunneling method of installation is used, and depending upon the size and location of the crossing, temporary track supports shall be installed at the direction of CSXT.

b) The Owner's contractor shall supply the track supports with installation and removal performed by CSXT employees.

c) The Owner shall reimburse CSXT for all costs associated with the installation and removal of the track supports.

4.8 Protection of Drainage Facilities

a) If, in the course of construction, it may be necessary to block a ditch, pipe, or other drainage facility, temporary pipes, ditches, or other drainage facilities shall be installed to maintain adequate drainage, as approved by CSXT. Upon completion of the work, the temporary facilities shall be removed and the permanent facilities restored.

b) Soil erosion methods shall be used to protect railroad ditches and other drainage facilities during construction on and adjacent to CSXT's right-of-way.

4.9 Support of Excavation Adjacent to Track

4.9.1 Launching and Receiving Pits

a) The location and dimensions of all pits or excavations shall be shown on the plans. The distance from centerline of adjacent track to face of pit or excavation shall be clearly labeled. Also, the elevation of the bottom of the pit or excavation must be shown on the profile.

b) The face of all pits shall be located a minimum of 25 feet from centerline of adjacent track, **measured at right angles to track,** unless otherwise approved by CSXT.

c) If the bottom of the pit excavation intersects the theoretical railroad embankment line, interlocking steel sheet piling, driven prior to excavation, must be used to protect the track stability. The use of trench boxes or similar devices is not acceptable in this area

d) Design plans and computations for the pits, sealed by a Licensed Professional Engineer, must be submitted by the Owner at time of application or by the contractor prior to start of construction. If the pit design is to be submitted by the contractor, the project specifications must require the contractor to obtain approval from CSXT's Chief Engineer, Design and Construction prior to beginning any work on or which may affect CSXT property.

e) The sheeting shall be designed to support all lateral forces caused by the earth, railroad and other surcharge loads. See Design Requirements- Design Loads for railroad loading.

f) After construction and backfilling, all sheet piling within 10 feet of centerline track must be cut off 3' – 0" below final grade and left in place.

g) All excavated areas are to be illuminated (flashing warning lights not permitted), fenced, and otherwise protected as directed by CSXT.

4.9.2 Parallel Trenching and Other Excavation

a) When excavation for a pipeline or other structure will be within the theoretical railroad embankment line of an adjacent track, interlocking steel sheet piling will be required to protect the track.

b) The design and construction requirements for this construction shall be in accordance with the requirements of the Construction Requirements – Support of Excavation Adjacent to Track section of this document.

4.9.3 Inspections and Testing

a) For pipelines carrying flammable or hazardous materials, ANSI Codes, current at time of constructing the pipeline, shall govern the inspection and testing of the facility on CSXT property, except as follows:

b) One hundred percent of all field welds shall be inspected by radiographic examinations, and such field welds shall be inspected for 100 percent of the circumference.

c) The proof testing of the strength of carrier pipe shall be in accordance with ANSI requirements.

4.9.4 Reimbursement of CSXT Costs

a) All CSXT costs associated with the pipe installation (inspection, flagging, track work, protection of signal cables, etc.) shall be reimbursed to CSXT by the Owner of the facility. Estimates for Railroad costs will be provided to the Owner prior to the commencement of any work on Railroad right-of-way. **At CSX's option, CSX may require the funds to be paid in advance of any work being done.**

END OF PART 4

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PART 5 – PUBLICATION STANDARDS SOURCES

5.1 Publication Standards Sources

Table 5 – Publication Standards Sources

Organization	Contact Information
ANSI	American National Standards Institute 1899 L Street, NW, 11th Floor Washington, DC 20036 Tel: 202-293-8020
AREMA	The American Railway Engineering and Maintenance-of-Way Association 4501 Forbes Blvd., Suite 130 Lanham, MD 20706 Tel: 301-459-3200
ASTM	American Society for Testing and Materials PO Box C700 West Conshohocken, PA 19428-2959 Tel: 877-909-2786
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235 Tel: 1-800-926-7337
NACE	Then National Association of Corrosion Engineers Houston, TX USA 1-800-797-6223

a) NOTE: If other than AREMA, ASTM, or AWWA specifications are referred to for design, materials, or workmanship on the plans and specifications for the work, then copies of the applicable sections of such other specifications referred to shall accompany the plans and specification for the work.

END OF PART 5

WRIGHT-PIERCE
Engineering a Better Environment

September 22, 2025
Supersedes December 17, 2024

2020 STANDARD DETAIL UPDATES

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

Detail #	Description	Posted Date
502(06)	Concrete Sidewalk on Bridges	9/22/2025
502(19)	Bridge Drains	3/17/2023
502(15)	Bridge Drains	3/17/2023
502(20)	Bridge Drains	3/17/2023
502(23)	Bridge Drains	3/17/2023
502(24)	Bridge Drains	3/17/2023
502(25)	Bridge Drains	3/17/2023
502(26)	Bridge Drains	3/17/2023
504(07)	Diaphragm & Crossframe Notes	3/17/2023
507(04)	Steel Bridge Railing	9/22/2025
507(05)	Steel Bridge Railing	9/22/2025
507(06)	Steel Bridge Railing	9/22/2025
507(07)	Steel Bridge Railing	9/22/2025
507(14)	Steel Bridge Railing	9/22/2025
507(15)	Steel Bridge Railing	9/22/2025
507(20)	Steel Approach Railing 3-Bar	2/11/2021
507(21)	Steel Approach Railing 3-Bar	2/11/2021
507(22)	Steel Approach Railing, 3 Bar	9/22/2025
507(23)	Steel Approach Railing, 3 Bar	9/22/2025
507(26)	Steel Approach Railing, 3 Bar	9/22/2025
507(27)	Steel Approach Railing	9/22/2025
507(39)	Barrier – Mounted Steel Bridge Rail	9/22/2025
526(01)	Portable Concrete Barrier	1/14/2021
526(01A)	Portable Concrete Barrier	1/14/2021
526(01B)	Portable Concrete Barrier	1/14/2021
526(02)	Portable Concrete Barrier	1/14/2021
526(02A)	Portable Concrete Barrier	1/14/2021
526(03)	Portable Concrete Barrier	1/14/2021
526(04)	Portable Concrete Barrier	1/14/2021

526(04A)	Portable Concrete Barrier	1/14/2021
526(04B)	Portable Concrete Barrier	1/14/2021
526(05)	Permanent Concrete Barrier	3/17/2023
526(21)	Permanent Concrete Barrier	3/17/2023
526(22)	Concrete Transition Barrier	9/22/2025
526(23)	Concrete Transition Barrier	9/22/2025
526(23)A	Concrete Transition Barrier	9/22/2025
526(34)	Concrete Transition Barrier	9/22/2025
526(35)	Concrete Transition Barrier	9/22/2025
526(36)	Concrete Transition Barrier	9/22/2025
526(37)	Concrete Transition Barrier	9/22/2025
526(37) A	Concrete Transition Barrier	9/22/2025
526(38)	Concrete Transition Barrier	9/22/2025
526(39)	Texas Classic Rail	3/17/2023
526(55)	Texas Classic Rail	3/17/2023
603(10)	Concrete Pipe Ties	6/10/2021
605(01)	Underdrain	7/8/2022
605(01)	Underdrain Notes	7/8/2022
606(17)	Midway Splice Guardrail Transition	6/10/2022
606(21)	Guardrail Type 3 – Single Rail Bridge Mounted	9/22/2025
606(22)	Guardrail Treatment over Buried Structures	9/22/2025
606(23)	Standard Bridge Transition – Type “1”	2/11/2021
606(24)	Bridge Transition – Type “1A”	9/22/2025
606(25)	Bridge Transition – Type “2”	9/22/2025
607(10)	Snow Fence Details (New Detail)	9/22/2025
607(11)	Snow Fence Details (New Detail)	9/22/2025
607(12)	Snow Fence Details (New Detail)	9/22/2025
607(13)	Snow Fence Details (New Detail)	9/22/2025
607(14)	Snow Fence Details (New Detail)	9/22/2025
607(15)	Snow Fence Details (New Detail)	9/22/2025
607(16)	Snow Fence Details (New Detail)	9/22/2025
608(02)	Detectable Warnings	6/10/2021
609(08)	Precast Concrete Transition Curb	9/22/2025
609(09)	Precast Concrete Vertical Curb	9/22/2025
627(07)	Crosswalk	2/22/2022
627(08)	Crosswalk	2/22/2022

643(11)	ATCC Cabinet	12/14/2020
645(06)	H Beam Posts Highway Signing	12/17/2024
645(21)	Overpass Mounted Sign Support Highway Signing	9/22/2025
645 (22)	Overpass Mounted Sign Support Highway Signing	9/22/2025
801(10) Pavement Transition at Bridge	DISCONTINUE THIS STD DETAIL	9/22/2025
801(11)	Pedestrian Ramp Notes	11/20/2023
801(12)	Pedestrian Ramp Requirements	11/20/2023
801(13)	Ramp Length Table	11/20/2023
801(14)	Parallel Pedestrian Ramp	11/20/2023
801(15)	Perpendicular Pedestrian Ramp – Option 1	11/20/2023
801(16)	Parallel Pedestrian Ramp – Option 2A	11/20/2023
801(17)	Perpendicular Pedestrian Ramp – Option 2A	11/20/2023
801(18)	Parallel Pedestrian Ramp – Option 2B	11/20/2023
801(19)	Perpendicular Pedestrian Ramp – Option 2B	11/20/2023
801(20)	Parallel Pedestrian Ramp – Option 3	11/20/2023
801(21)	Perpendicular Pedestrian Ramp – Option 3	11/20/2023
801(22)	Side Street Pedestrian Ramp	11/20/2023
801(23)	Parallel Pedestrian Ramp – Esplanade	11/20/2023
801(24)	Perpendicular Pedestrian Ramp – Esplanade	11/20/2023
801(25)	Island Crossings	11/20/2023
801(26)	Blended Transition	11/20/2023
801(26)	Blended Transition	1/19/2024
801(27)	Pedestrian Ramp Adjacent to Driveway or Entrance	11/20/2023
802(05)	Roadway Culvert End Slope Treatment	1/03/2017
802(05)	Roadway Culvert End Slope Treatment	11/01/2024

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

SECTION 101
CONTRACT INTERPRETATION

101.2 Definitions

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

Construction Limit Line Remove this definition in its entirety.

Holidays Amend this paragraph by adding "**Juneteenth**" between 'Memorial Day' and 'Independence Day'.

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

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

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

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

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

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

SECTION 102
BIDDING

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

"**The Bid is not signed by a duly authorized representative of the Bidder.**
- **Properly submitted electronic bids meet this requirement.**
- **Paper bids must include at least one signed copy of the Contract Agreement Offer & Award form**."

SECTION 103
AWARD AND CONTRACTING

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

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

SECTION 104
GENERAL RIGHTS AND RESPONSIBILITIES

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

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

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

SECTION 105
GENERAL SCOPE OF WORK

Amend this Section by adding this new sub-section:
105.8.8 Protected Species If the Contractor witnesses a bat (dead or alive), any activities that may injure any live bats must cease immediately and the Contractor shall contact the

Resident. Dead and/or injured bats will be collected by the Department. Work in the vicinity of the live/dead bat sighting will not resume until the Department confirms it is acceptable to do so.

If the Contractor observes an active bird nest within the project limits, any activities that may disturb the nest or injure birds (i.e., nesting adults, chicks, eggs) must cease immediately, and the Contractor shall contact the Resident.

Amend this Section by adding this new sub-section to cover incidents in the field:
105.6.5 Survey Control Markers **If a survey control marker will be disturbed by Work on a project, the Resident shall be informed a minimum of 2 weeks prior to performing any Work that may disturb the marker. If a survey control marker is accidentally disturbed by Work on a project, the Resident shall be informed immediately. A disturbed marker will remain the property of the Department.**

105.10.1.4 Race-conscious Project Goals Revise the second paragraph of this section so it reads as follows:
*"***At the time of the bid opening, all Bidders shall submit with their bid a Disadvantaged Business Enterprise (DBE) Commitment Form provided by the Department. This form will list the DBE and non-DBE firms that are proposed to be used during the execution of the Work. This form must be filled out in its entirety. The dollar total of each commitment shall be totaled and a percentage determined.***"*

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

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

105.10.1.6 Bidders' List Survey This section shall be revised to meet the May 9, 2024 CFR changes as follows:
Revise the title of this Section to "**Bidders' List**" by removing the word "**Survey**".
Revise the current information required to:

(i) Firm name;
(ii) Firm address including ZIP code;
(iii) Firm's status as a DBE or non-DBE;
(iv) Race and gender information for the firm's majority owner;
(v) NAICS code applicable to each scope of work the firm sought to perform in its bid;
(vi) Age of the firm; and

**(vii) The annual gross receipts of the firm. You may obtain this information by asking each firm to
indicate into what gross receipts bracket they fit (*e.g.,* less than $1 million; $1-3 million; $3-6 million; $6-10 million; etc.) rather than requesting an exact figure from the firm.**

Revise this section by removing the paragraph beginning with "This information…" and replacing it with the following:
"This data is required from all bidders for federally assisted contracts to be submitted with their bids as this information is critical in determining the availability of DBE Businesses relative to other businesses that do similar work."

SECTION 106
QUALITY

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

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

Revise Subsection "B" by removing it and replacing it with:

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

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

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

"Method B: PF = [70 + (Quality Level * 0.33)] * 0.01"
106.9.1 Warranty by Contractor Revise the third paragraph of this section so that it reads:

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

SECTION 107
TIME

107.3.1 General Amend this paragraph by adding "**Juneteenth**" between 'Patriot's Day' and 'the Friday after Thanksgiving'.

SECTION 108
PAYMENT

108.2.3 Mobilization Payments Replace Standard Specification 108.2.3 – Mobilization Payments with the following:

"**108.2.3 Mobilization Payments "Mobilization" includes the mobilization and demobilization of all resources as many times as necessary during the Work.**

Percent Mobilization Bid will be determined by taking the amount Bid for Mobilization and dividing by the Total Contract Amount less Mobilization. Mob/(Total Contract – Mob).

Payment will be made at the following intervals:

% Mobilization Bid	% Mobilization Paid at Contract Award	% Mobilization Paid after the Department determines 50% of the work is Complete	% Mobilization Paid at Final Acceptance
10% or less	50%	50%	
More than 10% to 15%	33%	33%	34%
More than15% to 20%	25%	25%	50%
More than 20% to 30%	15%	15%	70%
Greater than 30%	10%	10%	80%

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

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

108.4.1 Price Adjustment for Hot Mix Asphalt Revise this section by removing it in its entirety and replacing it with the following:

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

Item 403.102	**Hot Mix Asphalt – Special Areas**
Item 403.207	**Hot Mix Asphalt - 19 mm**
Item 403.2071	**Hot Mix Asphalt - 19 mm (Polymer Modified)**
Item 403.2072	**Hot Mix Asphalt - 19 mm (Asphalt Rich Base)**
Item 403.208	**Hot Mix Asphalt - 12.5 mm**
Item 403.2081	**Hot Mix Asphalt - 12.5 mm (Polymer Modified)**
Item 403.2084	**Hot Mix Asphalt - 12.5 mm (Highly Modified HiMAP)**
Item 403.209	**Hot Mix Asphalt - 9.5 mm (sidewalks, drives, & incidentals)**
Item 403.210	**Hot Mix Asphalt - 9.5 mm**
Item 403.2101	**Hot Mix Asphalt - 9.5 mm (Polymer Modified)**
Item 403.2104	**Hot Mix Asphalt - 9.5 mm (Thin Lift Surface Treatment)**
Item 403.21041	**Hot Mix Asphalt - 9.5 mm (Polymer Modified Thin Lift Surface Treatment)**
Item 403.211	**Hot Mix Asphalt – Shim**
Item 403.2111	**Hot Mix Asphalt – Shim (Polymer Modified)**
Item 403.212	**Hot Mix Asphalt - 4.75 mm (Shim)**
Item 403.213	**Hot Mix Asphalt - 12.5 mm (base and intermediate course)**
Item 403.2131	**Hot Mix Asphalt - 12.5 mm (base and intermediate course Polymer Modified)**
Item 403.2132	**Hot Mix Asphalt - 12.5 mm (Asphalt Rich Base and intermediate course)**
Item 403.301	**Hot Mix Asphalt (Asphalt Rubber Gap-Graded)**
Item 461.13	**Light Capital Pavement**
Item 461.210	**9.5 mm HMA - Paver Placed Surface**
Item 461.2101	**Hot Mix Asphalt - 9.5 mm (Polymer Modified)**
Item 461.216	**Hot Mix Asphalt (Shim)**
Item 462.30	**Ultra-Thin Bonded Wearing Course**
Item 462.301	**Polymer Modified Ultra-Thin Bonded Wearing Course**

Price adjustments will be based on the variance in costs for the performance graded binder component of hot mix asphalt. They will be determined as follows:

The quantity of hot mix asphalt for each pay item will be multiplied by the performance graded binder percentages given in the table below times the difference in price between the base price and the period price of asphalt cement. Adjustments will be made upward or downward, as prices increase or decrease.

Item 403.102–6.2%
Item 403.207–5.2%
Item 403.2071–5.2%
Item 403.2072–5.8%
Item 403.208–5.6%
Item 403.2081–5.6%
Item 403.2084 – 6.2%
Item 403.209–6.2%
Item 403.210–6.2%
Item 403.2101–6.2%
Item 403.2104–6.2%
Item 403.21041–6.2%
Item 403.211–6.2%
Item 403.2111–6.2%
Item 403.212–6.8%
Item 403.213–5.6%
Item 403.2131–5.6%
Item 403.2132–6.2%
Item 403.301–6.2%
Item 461.13–6.7%
Item 461.210 – 6.4%
Item 461.2101 – 6.4%
Item 461.216 – 6.7%
Item 462.30–0.0021 tons/SY
Item 462.301–0.0021 tons/SY"

SECTION 110
INDEMNIFICATION, BONDING, AND INSURANCE

110.3.2 Commercial General Liability Revise the last sentence in this Section that starts with "The coverage shall also…" and add a sentence to the end so that it reads:

"**The coverage shall also include protection against damage claims due to explosives, collapse, and underground coverage. No endorsement excluding damage caused by subsidence, earth movement, and/or earth pressure shall be permitted.**"

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

10. Assurance Required by 49 CFR: 26.13(a)(b) Revise this section by removing it in its entirety and replacing it with the following:

"a. MaineDOT shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of any DOT-assisted contract or in the administration of its DBE Program or the requirements of 49 CFR part 26. MaineDOT shall take all necessary and reasonable steps under 49 CFR part 26 to ensure nondiscrimination in the award and administration of DOT-assisted contracts. MaineDOT's DBE Program, as required by 49 CFR part 26 and as approved by DOT, is incorporated by reference in this agreement. The implementation of this program is a legal obligation and failure to carry out its terms shall be treated as a violation of this agreement. Upon notification to the MaineDOT of its failure to carry out its terms shall be treated as a violation of this agreement. Upon notification to the MaineDOT of its failure to carry out its approved program, the Department may impose sanctions as provided for under 49 CFR Part 26, and may, in appropriate cases, refer the matter for enforcement under 18 U.S.C. 1001 and/or the Program Fraud Remedies Act of 1986 (31 U.S.C. 3801 et seq.). This language will appear in financial assistance agreements with sub-recipients.

b. The contractor, sub-recipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, including, but not limited to:

1. **Withholding monthly progress payments;**
2. **Assessing sanctions;**
3. **Liquidated damages; and/or**
4. **Disqualifying the contractor from future bidding as non-responsible."**

SECTION 206
STRUCTURAL EXCAVATION

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

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

- **Vertical pay limits:**

- **Below a plane parallel with and 12 inches below the bottom of the drainage or minor structure or**
- **Below the excavation limits shown in the Bid Documents; whichever is greater.**

- **Horizontal pay limits – The maximum allowable horizontal dimensions shall not exceed those bounded by vertical surfaces 18 inches outside the base, or extreme limits of, the structure, and to the vertical neat lines of underdrain trenches, as shown in the Contract Documents.**

SECTION 401
HOT MIX ASPHALT PAVEMENT

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

SECTION 501
FOUNDATION PILES

501.044 Special Requirements for Steel Pipe Piles and Steel Casings Amend this section by deleting it in its entirety and replacing with:

Pipe piles shall be driven closed ended, unless otherwise specified. When open-ended pipe piles are specified or when the ends are not completely closed ended when driven, the inside of the pile shall be thoroughly cleaned out, and the inside walls cleaned by jetting or other means approved by the Resident. The sediment control required for the cleaning operations shall be covered in the Contractor's SEWPCP.

Pipe piles shall be inspected and approved by the Resident immediately before concrete is placed in them. They shall be free from rupture and undue deformation and shall be free from water unless the Resident determines that the concrete can be placed without damage to the pile and such that the discharged water will be contained. The Contractor shall provide lights and other equipment necessary to enable the Resident to inspect each pipe pile.

Portland cement concrete for filling the pipe piles shall be placed in one continuous operation to fill the pile completely without causing water contamination. An internal type vibrator shall be used in the top 25 feet. Pile heads shall be protected and cured in accordance with Section 502, Structural Concrete.

The placing of concrete and the driving of piles shall be scheduled so that fresh and setting concrete will not be injured by the pile driving.

Concrete shall not be placed in pipe piles until pile driving has progressed beyond a radius of 15 feet from the pile to be concreted. If pile heave is detected for pipe piles that have been filled with concrete, the piles shall be redriven to the original position after the concrete has attained sufficient strength and a proper hammer-pile cushion system, is in place and is satisfactory to the Resident.

When a reinforcing steel cage is specified, it shall be placed inside the piles to allow for a minimum of 2 inches of concrete cover and the piles shall be filled with concrete to the elevation shown on the Plans.

Full-length pipe piles and steel casings shall be used wherever practicable; however, splicing may be permitted when approved by the Resident. The method of splicing shall be as follows:

a. Steel pipe piles and steel casings shall be spliced by full penetration butt joint welds.

b. When the pipe piles and steel casings are to be spliced while in a vertical position, splicing shall be accomplished utilizing single-bevel groove welds with the use of back-up rings. When the pipe piles and steel casings are to be spliced while in a horizontal position, splicing shall be accomplished utilizing single-vee groove welds with the use of back-up rings.

c. Welded joints shall conform to the Standard Details.

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

Full-length piles shall always be used wherever practicable. When full-length piles cannot be used, the number of splices, locations, and details shall be noted in the QCP. Piles fabricated from multiple pieces will be acceptable only if they comply with the following:

H-Beam Piles [a]		Pipe Piles and Steel Casings [a,b]	
Lengths	**Maximum No. Field Splices**	**Lengths**	**Maximum No. Field Splices**
Less than 20 ft.	**0**	**Less than 20 ft.**	**0**
Over 20 – 35 ft.	**1**	**Over 20 – 40 ft.**	**1**
Over 35 – 79 ft.	**2**	**Over 40 – 60 ft.**	**2**
Over 79 ft.	**1 per 40 ft.**	**Over 60 – 80 ft.**	**3**
		Over 80 ft.	**1 per 20 ft.**
[a] Pile lengths less than 10 feet will not be spliced, except as the final (top) section of the pile. [b] Where pipe piles are used for pile bent piers, no splices will be allowed in the length of pile from the cutoff elevation to 2 feet below the channel bottom.			

When pre-planned splicing is approved, the pile piece of lesser length shall be placed at the tip of the pile (the first part of the pile that enters the ground).

When splicing is allowed, the work shall be done in accordance with the following:

A. Welding shall be done in accordance with the requirements of the AWS D1.1 welding code.
B. Qualify welders in accordance with the most recent edition of the AWS D1.5 code.
C. Submit a written Weld Procedure Specification (WPS) for each joint to be included as part of the QCP. The WPSs shall be provided to the Fabrication Engineer for review and approval prior to beginning welding. Provide copies of the approved WPSs to the welder, QC Inspector and Resident prior to beginning welding. Welding performed without an approved WPS and approved QCP will be considered Unacceptable Work.
D. Provide a list of qualified welders with copies of their AWS certifications to the Fabrication Engineer for review prior to beginning welding. Welders shall have in their possession, at the time of welding, a valid certification for the process and position to be used in production from the AWS. The welder shall show the Resident their credentials upon request.
E. The Contractor shall only use electrodes that are on the Department's Qualified Products List for Welding Electrodes or shall submit alternative electrodes for review and approval by the Fabrication Engineer. Electrodes used shall match those approved for use in the WPS.
F. Welding shall not be done: When the temperature in the immediate vicinity of the weld is below 0°F; when the surfaces are damp or exposed to rain, snow, or high wind; or when the welders or welding operators are exposed to inclement conditions.
G. The pile shall be preheated to and maintained at 150°F minimum, within 6 inches from the joint during welding.
H. Power sources for welders shall have meters indicating amperage/voltage that have been calibrated within 1 year at the time of welding.
I. The Contractor shall provide the Department with notice, a minimum of, 7 Days prior to the start of any welding.
J. The Contractor shall provide a QC Inspector to perform QC for the welds in accordance with the AWS D1.1 welding code. The QC Inspector shall be an AWS Certified Welding Inspector (CWI) in conformance with the requirements of AWS QC1, Standard for AWS Certifications of Welding Inspectors. The Contractor may submit, in lieu of a CWI, an alternative QC Inspector with documented training and experience in metals fabrication, inspection, and testing for approval by the Fabrication Engineer. The QC Inspector shall be someone other than the welder performing the welds to be inspected.
K. The QC Inspector shall inspect all production stages of the welded splice to ensure that workmanship and materials meet the requirements of the AWS D1.1 welding code and the Contract. The QC Inspector shall submit a signed record of all weld inspection documentation to the Resident after welding is completed.

Record of weld inspection shall include, but not be limited to, the following:

1. **Name of QC Inspector**
2. **Project WIN and Location**
3. **Date**
4. **Weather conditions**
5. **Type, size, length, and location of welds.**

6. **Confirmation of appropriate equipment and materials used, including proper handling of welding electrodes.**
7. **Confirmation that welder has approved WPS onsite, and welding is performed in accordance with approved WPS.**
8. **Confirmation that welder is qualified to perform work per approved WPS. Include name and certifications of qualified welder who performed the work.**
9. **Confirm that 100% visual testing, in accordance with AWS D1.1 Table 8.1, has been conducted and any subsequent repairs are made prior to non-destructive testing (NDT).**
10. **Document NDT testing including name of NDT technician, NDT personnel qualifications, type and extent of NDT testing performed, and include NDT testing reports provided by the NDT testing technician.**

L. Piles shall not be driven until all pile welding has been inspected and accepted by the Department.

501.0471 Specific Requirements for Splicing H-Beam Piles

A. Damaged material shall be removed from the end of the driven pile. Lifting holes shall be repaired or trimmed off. The ends of both pieces to be spliced shall be cut off square with the longitudinal axis of the pile and beveled per the approved WPS. All cutting shall be done with the use of a mechanical guide, except that minor trimming may be allowed, as approved by the Resident.

B. The Contractor shall use an approved mechanical splicer or a full penetration butt weld for the entire cross section of the pile. Mechanical splicers shall be installed per the manufacturer's recommendations, except that the flanges shall be welded using a complete joint penetration weld, per the AWS D1.1 welding code.

C. In addition to the 100% visual testing (VT) performed by the QC Inspector, the Contractor shall perform NDT on the first two welded splices of the same type/size. The welds shall be radiographically (RT) or ultrasonically (UT) tested for their full length for acceptance per Table 8.2 of AWS D1.1. If both RT/UT-tested splices are determined to be acceptable, no further NDT will be required. If either of the first two RT/UT-tested splices contain defects warranting rejection, RT/UT testing of splices shall continue until two consecutive splices are found to be acceptable.

D. Should the Department determine that the Quality Control of the Contractor is not producing welds with acceptable quality, then the Department may request the Contractor to perform additional NDT, such as RT or UT of any or all welds. Should the NDT testing identify defects warranting rejection, the welds shall be repaired and retested. The Contractor shall perform the NDT and weld repair work at no additional cost to the Department. If the NDT does not identify defects warranting rejection, then the Department will pay for the cost of the NDT testing. RT and UT defect indications will be evaluated according to the statically loaded criteria of AWS D1.1.

501.0472 Specific Requirements for Splicing Steel Pipe Piles and Steel Casings

A. Damaged material shall be removed from the end of the driven pile. Lifting holes shall be trimmed off. The ends of both pieces to be spliced shall be cut off square with the

longitudinal axis of the pile and beveled per the approved WPS. All cutting shall be done with the use of a mechanical guide, except that minor trimming may be allowed, as approved by the Resident.

B. Splices shall be welded using an AWS D1.1 Complete Joint Penetration butt weld with a backer ring.

C. In addition to the 100% VT performed by the QC Inspector, the Contractor shall perform NDT on the first two welded splices of the same type/size. The welds shall be RT or UT tested for their full length for acceptance per Table 8.2 of AWS D1.1. If both RT/UT-tested splices are determined to be acceptable, no further NDT will be required. If either of the first two RT/UT-tested splices contain defects warranting rejection, RT/UT testing of splices shall continue until two consecutive splices are found to be acceptable.

D. Should the Department determine that the Quality Control of the Contractor is not producing welds with acceptable quality, then the Department may request the Contractor to perform additional NDT, such as RT or UT of any or all welds. Should the NDT testing identify defects warranting rejection, the welds shall be repaired and retested. The Contractor shall perform the NDT and weld repair work at no additional cost to the Department. If the NDT does not identify defects warranting rejection, then the Department will pay for the cost of the NDT testing. RT and UT defect indications will be evaluated according to the statically loaded criteria of AWS D1.1.

501.048 Prefabricated Pile Tips Amend this section by deleting it in its entirety and replacing it with:

Welding of pile tips shall be done in accordance with the following:

A. Welding shall be done in accordance with the requirements of the AWS D1.1 welding code.

B. Qualify welders in accordance with the most recent edition of the AWS D1.5 code.

C. Submit a written WPS for each tip to be included as part of the QCP. The WPSs shall be provided to the Fabrication Engineer for review and approval prior to beginning welding. Provide copies of the approved the WPS to the welder and Resident prior to beginning welding. Welding performed without an approved WPS and approved QCP will be considered Unacceptable Work.

D. Provide a list of qualified welders with copies of their AWS certifications to the Fabrication Engineer for review prior to beginning welding. Welders shall have in their possession, at the time of welding, a valid certification for the process and position to be used in production from the AWS or other organization acceptable to the Resident. The welder shall show the Resident their credentials upon request.

E. The Contractor shall only use electrodes that are on the Department’s Qualified Products List for Welding Electrodes or shall submit alternative electrodes for review and approval by the Fabrication Engineer. Electrodes used shall match those approved for use in the WPS.

F. Pile tips shall be approved by the Resident.

G. Welding shall not be done: When the temperature in the immediate vicinity of the weld is below 0°F; when the surfaces are damp or exposed to rain, snow, or high wind; or when the welders or welding operators are exposed to inclement conditions.

H. The pile shall be preheated to and maintained at 150°F minimum within 6 inches from the joint during welding.
I. Power sources for welders shall have meters indicating amperage/voltage that have been calibrated within 1 year at the time of welding.
J. Pile tips may be welded to the piles by the pile supplier upon approval by the Department. Approval is contingent upon submission of the following: A welding QC Plan; proof that the proposed welder(s) is certified per AWS D1.5; and an AWS D1.1 WPS, with base metal preheated to a minimum of 150°F. The Contractor shall provide notice a minimum of 14 Days prior to the start of any welding by the pile supplier. At a minimum, welds shall be 100% visually inspected by the pile supplier's QC representative.
K. The Contractor shall provide a QC Inspector to perform QC for the welds in accordance with the AWS D1.1 welding code. The QC Inspector shall be an CWI in conformance with the requirements of AWS QC1, Standard for AWS Certifications of Welding Inspectors. The Contractor may submit, in lieu of a CWI, an alternative QC Inspector with documented training and experience in metals fabrication, inspection, and testing for approval by the Fabrication Engineer. The QC Inspector shall be someone other than the welder performing the welds to be inspected.
L. The QC Inspector shall inspect all production stages of the welded splice to ensure that workmanship and materials meet the requirements of the AWS D1.1 welding code and the Contract. The QC Inspector shall submit a signed record of all weld inspection documentation to the Resident after welding is completed.

M.

Record of weld inspection shall include, but not be limited to, the following:

1. Name of QC Inspector
2. Project WIN and Location
3. Date
4. Weather conditions
5. Type, size, length, and location of welds.
6. Confirmation of appropriate equipment and materials used, including proper handling of welding electrodes.
7. Confirmation that welder has approved WPS onsite, and welding is performed in accordance with approved WPS.
8. Confirmation that welder is qualified to perform work per approved WPS. Include name and certifications of qualified welder who performed the work.
9. Confirm that 100% VT, in accordance with AWS D1.1 Table 8.1, has been conducted and any subsequent repairs are made prior to NDT.
10. Document NDT testing including name of NDT technician, NDT personnel qualifications, type and extent of NDT testing performed, and include NDT testing reports provided by the NDT testing technician.

N. The Contractor shall provide notice a minimum of 7 Days prior to the start of any field welding.

O. Piles shall not be driven until all pile welding has been inspected and accepted by the Department.

501.0481 Specific Requirements for Installing H-Beam Pile Tips

A. Damaged material shall be removed from the end of the driven pile, as applicable. Lifting holes shall be trimmed off. The end of the pile to which the tip is to be attached shall be cut off square with the longitudinal axis of the pile and prepared per the approved WPS. All cutting shall be done with the use of a mechanical guide, except that minor trimming may be allowed, as approved by the Resident.

B. Regarding weld size, prefabricated pile tips shall be attached to H-beam piles with 5/16-inch groove welds along each flange, or as recommended by the manufacturer of the pile tips, whichever weld size is larger.

C. The QC Inspector shall, at a minimum, perform 100% VT on each pile tip weld.

D. Should the Department determine that the Quality Control of the Contractor is not producing welds with acceptable quality, then the Department may request the Contractor to perform additional NDT, such as RT or UT of any or all welds. Should the NDT testing identify defects warranting rejection, the welds shall be repaired and retested. The Contractor shall perform the NDT and weld repair work at no additional cost to the Department. If the NDT does not identify defects warranting rejection, then the Department will pay for the cost of the NDT testing. RT and UT defect indications will be evaluated according to the statically loaded criteria of AWS D1.1.

501.0482 Specific Requirements for Installing Steel Pipe Pile Tips

A. Damaged material shall be removed from the end of the driven pile, as applicable. Lifting holes shall be trimmed off. The end of the pile to which the tip is to be attached shall be cut off square with the longitudinal axis of the pile and prepared per the approved WPS. All cutting shall be done with the use of a mechanical guide, except that minor trimming may be allowed, as approved by the Resident.

B. Unless otherwise shown on the Plans, steel pipe piles shall have pointed cast steel pile tips.

C. Regarding weld size, prefabricated pile tips shall be attached to steel pipe piles with a continuous 5/16-inch groove weld along the full perimeter of the pile, or as recommended by the manufacturer of the pile tips, whichever weld size is larger.

D. The QC Inspector shall, at a minimum, perform 100% VT on each pile tip weld.

E. Should the Department determine that the Quality Control of the Contractor is not producing welds with acceptable quality, then the Department may request the Contractor to perform additional NDT, such as RT or UT of any or all welds. Should the NDT testing identify defects warranting rejection, the welds shall be repaired and retested. The Contractor shall perform the NDT and weld repair work at no additional cost to the Department. If the NDT does not identify defects warranting rejection, then the Department will pay for the cost of the NDT testing. RT and UT defect indications will be evaluated according to the statically loaded criteria of AWS D1.1.

501.05 Method of Measurement
c. Piles in Place Revise the third paragraph by replacing the "10" with "20" so that it reads:

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

SECTION 502
STRUCTURAL CONCRETE

502.03 Materials Amend this section by adding the following to the list of materials:

Combined Aggregate Grading for Concrete 703.03

502.07 Mixing and Delivery Remove the last sentence in Paragraph A that starts with "With prior approval… and replace with the following:

"An approved hydration stabilizing admixture may be used to increase the discharge time. Justification for the need for a hydration stabilizing admixture shall be provided in the QC Plan. When a hydration stabilizing admixture is used, the manufacturer, dosage rate and discharge time, from the time cement is added to the aggregate, shall be documented in the approved QC Plan. The proposed discharge time(s) shall be based on the manufacturer's written recommendations, the anticipated concrete temperatures and anticipated ambient conditions at the time of placement(s). Discharge time(s) shall be adjusted when conditions change or are not as anticipated as outlined in the approved QC Plan. The discharge time(s) approved by the Department shall be subject to change at any time, and discharge of concrete into the permanent work shall cease immediately if the concrete is determined to have attained Accelerated Hydration Gain. Accelerated Hydration Gain being the condition where the fresh concrete has hydrated to the point where the workability and finishability is detrimental to the quality of the final product. Determination of when concrete has attained Accelerated Hydration Gain shall be made by the Contractor's Quality Control Technician(s) and shall be based on parameters proposed by the Contractor in the QC Plan, such as, but not limited to, loss of slump, plasticity, or workability, an increase in concrete temperature, or a change in the percentage of entrained air."

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

"**502.10 Placing Concrete**

A. **General Concrete shall not be placed until forms** …."

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

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

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

Under the list with the heading, "The QCP shall address all elements that affect the quality of the structural concrete including, but not limited to, the following:":

Replace "F" to read: "**Mix and Transportation, including Time from Batching to Completion of Delivery, as well as manufacturer, product name, proposed dosage(s) and discharge time(s) if a hydration stabilizing admixture is used**."

Replace "H" to read: "**Process QC Testing, including monitoring for attainment of Accelerated Hydration Gain when a hydration stabilizing admixture is used**."

Revise this section by replacing the paragraph before Table 4 that starts out "The Contractor shall maintain…"to read:

"**The Contractor shall maintain records of all QC tests and calculations. All QC test data shall be signed by the person who performed the test. The representative gradation test results shall be reported to the Department before the placement they represent. This initial representative gradation test shall be sampled a maximum of 30 days prior to the production day. The Contractor or supplier shall retain split samples of the most recent QC gradations for possible testing by the Department. In addition, the Department will sample the aggregates at the plant monthly to determine compliance with 703.03 Combined Aggregate Grading for Concrete. The Combined Aggregate Grading will be calculated by mathematically blending the individual aggregate gradations using the batch percentages from the approved mix design. If the Department's gradation tests determine that the aggregate does not meet the specified gradation limits, the current procedure mentioned in MaineDOT PCC Policies and Procedures Manual shall be followed. The compressive strength test results shall be reported to the Department by 10:00 A.M. of the first working day following the test. The Contractor shall record all onsite QC test data and calculations at the time of the placement and present this information, on a form acceptable to the Department, to the Department by 10:00 A.M. of the first working day following the concrete placement. Batch tickets shall be representative of that day's total moisture in aggregate value, QC test data for total moisture in aggregate shall be provided to the**

Department by 10:00 A.M. of the first working day following the concrete placement. All Method A and B QC testing shall meet the minimum requirements found in Table 4."

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

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

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

***Additional QC testing will be required any time a process change occurs during a placement, including changes in type or dosage of admixture. Additional testing shall include, but is not limited to, entrained air testing.**
****If the color produced is a laboratory designation Plate III, then the fine aggregate shall be tested once per month**

502.1702 Quality Control, Method C Remove this sub section and replace it with:

"**The Contractor shall submit a QCP listing the mix design(s) to be used, the name and location of the production facility, a brief description of the placement and curing process and the name and qualifications of any QCT to be used. When a hydration stabilizing admixture is proposed for use, the manufacturer, product name, dosage rate and discharge time, from the time cement is added to the aggregate, shall be included, as well as procedures for monitoring attainment of Accelerated Hydration Gain. A QCT will be required. The Contractor shall provide a Certificate of Compliance for each truckload of concrete to the Department at the time of the load placement**."

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

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

SECTION 503
REINFORCING STEEL

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

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

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

- **Normal weight concrete**
- **Minimum 28-day concrete compressive strength from 4,000 psi to 10,000 psi**

- **Class B tension lap splice**
- **Minimum center-to-center spacing between bars of 6 inches**
- **Minimum clear cover of 2 inches**
- **Nominal reinforcing steel yield strengths**
  - **Low-carbon Chromium = 100 ksi**
  - **Stainless = 75 ksi**
  - **All others = 60 ksi**
- **Reinforcement with yield strengths greater than 75 ksi shall have beam transverse reinforcement and column ties provided over the required lap splice length in accordancewith the current edition of the AASHTO LRFD Bridge Design Specifications**

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

Amend the Paragraph starting with Welded Splices may be made…" by adding to the last sentence beginning so that it reads **"The Contractor shall submit complete details of their proposed method of making welded splices for the Resident's approval at least 10 days prior to use."**

504.12 Protective Coatings Revise this subsection by removing the paragraph beginning with "When galvanizing is specified" and replacing it with:

"**When galvanizing is specified, clean the steel in accordance with SSPC-SP 6 prior to galvanizing. Galvanize in accordance with AASHTO M 111 (ASTM A123). Galvanize fasteners in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I. Galvanized nuts shall be lubricated with a water-soluble lubricant containing a dye that contrasts with the color of the galvanizing.**"

SECTION 506
SHOP APPLIED PROTECTIVE COATING – STEEL

506.10 Description Revise this subsection by removing the entire paragraph in its entirety and replacing it with:

"This work shall consist of surface preparation and application of coating systems in accordance with the Plans and this Specification. The color of structural steel painted in its entirety shall comply with SAE AMS-STD-595 – Colors Used in Government Procurement Color No. 14272 (Green), unless otherwise specified in the Contract. The color of partially painted weathering steel shall comply with SAE AMS-STD-595 – Colors Used in Government Procurement Color No. 30045 (Brown), unless otherwise specified in the Contract. All other coating colors shall be as specified in the Contract."

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

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

SECTION 518
STRUCTURAL CONCRETE REPAIR

518.02 Repair Materials Replace the paragraph beginning with "Where the depth of placement…" with the following:
"**Where the depth of placement is equal to or greater than 1 inch, the Contractor may use concrete as the repair material. When concrete is used, the coarse aggregate shall conform to the requirements of the table below and Standard Specification Section 703.02, Coarse Aggregate for Concrete, or 703.03, Combined Aggregate Grading for Concrete."**

Remove the second table with the heading, "Sieve Designation Percent by Weight Passing a Square Mesh Sieve"

SECTION 523
BEARINGS

523.051 Protective Coating Revise this subsection by removing the paragraph beginning with "Anchor rods shall be galvanized…" and replacing with:

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

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

SECTION 526
CONCRETE BARRIER

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

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

The types of concrete barrier are designated as follows:

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

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

Permanent Concrete Barrier Type IIIa **Single faced barrier 32 inches high in accordance with the Standard Details or as shown on the Plans.**
Permanent Concrete Barrier Type IIIb **Single faced barrier 42 inches high in accordance with the Standard Details or as shown on the Plans.**

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

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

526.02 Materials

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

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

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

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

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

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

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

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

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

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

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

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

526.03 Construction Requirements

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

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

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

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

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

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

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

a. Cross-sectional dimensions shall not vary from design dimensions by more than ¼ inch. The vertical centerline shall not be out of plumb by more than ¼ inch.

b. Longitudinal dimensions shall not vary from the design dimensions by more than ¼ inch per 10 feet of barrier section and shall not exceed ¾ inches per section.

c. Location of anchoring holes shall not vary by more than ½ inch from the dimensions shown in the concrete barrier details on the Plans.

d. Surface straightness shall not vary more than ¼ inch under a 10-foot straightedge.

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

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

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

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

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

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

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

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

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

The accepted quantity of all types of concrete barrier, whether portable or permanent, will be paid for at the lump sum or per each price, as applicable, which payment shall be full compensation for all materials, including reinforcing steel, protective coating, reflective

delineators, steel plates and hardware, equipment, labor and incidentals required, as necessary, to complete the work.

Payment will be made under:

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

SECTION 527
ENERGY ABSORBING UNIT

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

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

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

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

SECTION 535
PRECAST, PRESTRESSED CONCRETE SUPERSTRUCTURE

535.02 Materials Replace the description of "Coarse Aggregate for Concrete (Class A, AA, or Latex) in its entirety with: "**Coarse Aggregate for Concrete (Class A, AA, or SP-1-7)"**

535.22 Tolerances Amend this section by deleting it in its entirety and replacing it with:
"**Product dimensional tolerances shall be in conformance with the latest edition of PCI MNL-135, Tolerance Manual for Precast and Prestressed Concrete Construction, as applicable to the particular product (e.g., slab, I-girder, box beam), the Plans, and this Specification. Use Box**

Beam fabrication tolerances for voided or solid slab beams and use Double Tee tolerances for NEXT beams. In case of dispute, the Fabrication Engineer shall determine the allowable tolerance."

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

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

SECTION 606
GUARDRAIL

Amend this section by replacing it with the following:

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

31" W-Beam Guardrail - Mid-Way Splice
Galvanized steel w-beam, 8" wood or composite offset blocks, galvanized steel posts
Thrie Beam
Galvanized steel thrie beam, 8" wood or composite offset blocks, galvanized steel posts

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

606.03 Posts Posts for guardrail shall be set plumb in holes or they may be driven if suitable driving equipment is used to prevent battering and distorting the post. When posts are driven

through pavement, the damaged area around the post shall be repaired with approved bituminous patching. Damage to lighting and signal conduit and conductors shall be repaired by the Contractor.

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

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

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

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

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

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

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

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

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

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

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

606.06 Mail Box Post Single wood post shall be installed at the designated location for the support of the mailbox. The multiple mailbox assemblies shall be installed at the designated location in

accordance with the Standard Details and as recommended by the Manufacturer. Attachment of the mailbox to the post will be the responsibility of the home or business owner.

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

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

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

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

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

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

606.09 Basis of Payment The accepted quantities of guardrail will be paid for at the contract unit price per linear foot for the type specified, complete in place. Reflectorized beam guardrail (“butterfly”-type) delineators will not be paid for directly but will be considered incidental to guardrail items. Reflectorized flexible guardrail marker, terminal end, anchorage assembly, bridge transition, bridge connection, multiple mailbox post, and single post will be paid for at the contract unit price each for the kind specified complete in place.
Guardrail terminals will be paid for at the contract price each, complete in place which price shall be full payment for furnishing and installing all components including the terminal section, posts, offset blocks, "w" beam, cable foundation posts, plates and for all incidentals necessary to complete the installation within the limits as shown on the Standard Details or the Manufacturer’s installation instructions. Pay limits for a flared terminal will be 37.5 feet. Pay limits for a tangent terminal will be 50 feet. Each guardrail terminal will be clearly marked with the Manufacturer’s name and model number to facilitate any future needed repair. Such payment shall also be full compensation for furnishing all material, excavating, backfilling holes, assembling, and all incidentals necessary to complete the work, except that for excavation for posts or anchorages in solid ledge rock, payment will be made under 109.7.5 – Force Account. Type III Retroreflective Adhesive Sheeting shall be applied to the approach buffer end sections and sized to substantially cover the end section. On all roadways, the ends shall be marked with alternating black and retroreflective yellow stripes. The stripes shall be 3 in wide and sloped down at an angle of 45 degrees toward the side on which traffic is to pass the end section. Guardrail terminals shall also include a set of installation drawings supplied to the Resident.

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

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

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

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

Modify guardrail will be paid for at the contract unit price per linear foot and will be full compensation for furnishing and installing offset blocks, additional posts, and other specified modifications; removing, modifying, installing, and adjusting to grade existing posts and beams; removing plate washers and backup plates, and all incidentals necessary to complete the work. Payment shall also include removing and resetting guardrail terminals where required.

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

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

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

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

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

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

furnish and install either the “butterfly” type or linear delineation panels, at its discretion, for new guardrail items.

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

Payment will be made under:

Pay Item		Pay Unit
606.1301	31” W-Beam Guardrail - Mid-Way Splice – Single Faced	Linear Foot
606.1302	31” W-Beam Guardrail - Mid-Way Splice – Double Faced	Linear Foot
606.1303	31” W-Beam Guardrail - Mid-Way Splice, 15’ Radius and Less	Linear Foot
606.1304	31” W-Beam Guardrail - Mid-Way Splice, Over 15’ Radius	Linear Foot
606.1305	31” W-Beam Guardrail - Mid-Way Splice Flared Terminal	Each
606.1306	31” W-Beam Guardrail - Mid-Way Splice Tangent Terminal	Each
606.1307	Bridge Transition (Asymmetrical) – Type IA	Each
606.1721	Bridge Transition - Type I	Each
606.1722	Bridge Transition - Type II	Each
606.1731	Bridge Connection - Type I	Each
606.1732	Bridge Connection - Type II	Each
606.178	Guardrail Beam	Linear Foot
606.25	Terminal Connector	Each
606.257	Terminal Connector - Thrie Beam	Each
606.259	Anchorage Assembly	Each
606.265	Terminal End-Single Rail - Galvanized Steel	Each
606.266	Terminal End-Single Rail - Corrosion Resistant Steel	Each
606.275	Terminal End-Double Rail - Galvanized Steel	Each
606.276	Terminal End-Double Rail - Corrosion Resistant Steel	Each
606.352	Reflectorized Beam Guardrail Delineators (“Butterfly” type)	Each
606.3521	Linear Delineation System Panel	Each
606.353	Reflectorized Flexible Guardrail Marker	Each
606.354	Remove and Reset Reflectorized Flexible Guardrail Marker	Each
606.356	Underdrain Delineator Post	Each
606.358	Guardrail, Modify	Linear Foot
606.362	Guardrail, Adjust	Linear Foot
606.365	Guardrail, Remove, Modify, and Reset	Linear Foot
606.366	Guardrail, Remove and Reset	Linear Foot
606.367	Replace Unusable Existing Guardrail Posts	Each
606.3671	Replace Unusable Offset Blocks	Each
606.47	Single Wood Post	Each
606.48	Single Galvanized Steel Post	Each

606.50	Single Steel Pipe Post	Each
606.51	Multiple Mailbox Support	Each
606.568	Guardrail, Modify - Double Rail	Linear Foot
606.63	Thrie Beam Rail Beam	Linear Foot
606.64	Guardrail Thrie Beam - Double Rail	Linear Foot
606.65	Guardrail Thrie Beam - Single Rail	Linear Foot
606.66	Terminal End Thrie Beam	Each
606.70	Transition Section - Thrie Beam	Each
606.71	Guardrail Thrie Beam - 15 ft radius and less	Linear Foot
606.72	Guardrail Thrie Beam - over 15 ft radius	Linear Foot
606.73	Guardrail Thrie Beam - Single Rail Bridge Mounted	Linear Foot
606.74	Guardrail - Single Rail Bridge Mounted	Linear Foot
606.753	Widen Shoulder for Low Volume Guardrail End	Each
606.754	Widen Shoulder for Flared Guardrail Terminal	Each
606.78	Low Volume Guardrail End	Each
606.80	Buried-in-Slope Guardrail End	Each

SECTION 608
SIDEWALKS

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

SECTION 609
CURB

Remove this section in its entirety and replace with the following:

609.01 Description Construct or reset curb, gutter, or combination curb and gutter, paved ditch, and paved flume. The types of curb are designated as follows:

Type 1 - Stone curbing of quarried granite stone
Type 2 – Concrete Curbing
Type 3 - Bituminous curbing
Type 5 - Stone edging of quarried granite stone

609.02 Materials Except as provided below, the materials used shall meet the requirements of the following Sections of Division 700 - Materials:

Portland Cement and Portland Pozzolan Cement	701.01
Water	701.02
Air Entraining Chemical Admixture	701.03
Fine Aggregate for Concrete	703.01

Coarse Aggregate for Concrete	703.02
Joint Mortar	705.02
Reinforcing Steel	709.01
Stone Curbing and Edging	712.04
Epoxy Resin	712.35
Hot Mix Asphalt Curbing	712.36
Structural Precast Concrete Units (Concrete Curb)	712.061

The Contractor shall submit a concrete mix design for the Portland Cement Concrete to the Resident, for the uses specified below or in accordance with the Contract Documents.

Circular curb, terminal sections and transition sections shall be in reasonably close conformity with the shape and dimensions shown on the Plans and to the applicable material requirements herein for the type of curb specified.

Dowels shall be reinforcing steel deformed bars.

Concrete for Slipform Concrete Curb shall meet the requirements below:

a. Class A, with the exception that permeability requirements shall be waived.
b. Entrained air content of Slipform Concrete Curb shall be 4.0% to 7.0%
c. Concrete temperature, prior to discharge, shall not exceed 90 F.
d. Proposed mix designs may contain polypropylene fibers.
e. Partially discharged loads may be retempered with water provided the maximum water to cement ratio is not exceeded.

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

a. Installation The curb stone shall be set on a compacted foundation so that the front top arris line conforms to the lines and grades required. The foundation shall be prepared in advance of setting the stone by grading the proper elevation and shaping to conform as closely as possible to the shape of the bottom of the stone. The required spacing between stones shall be assured by the use of an approved spacing device to provide an open joint between stones of at least ¼ inch and no greater than ⅝ inch.

b. Backfilling All remaining spaces under the curb shall be filled with approved material and thoroughly hand tamped so the stones will have a firm uniform bearing on the foundation for the entire length and width. Any remaining excavated areas surrounding the curb shall be filled to the required grade with approved materials. This material shall be placed in layers not exceeding 8 inches in depth, loose measure and thoroughly tamped.

When backfill material infiltrates through the joints between the stones, small amounts of joint mortar or other approved material shall be placed in the back portion of the joint to prevent such infiltrating.

c. Protection The curb shall be protected and kept in good condition. All exposed surfaces smeared or discolored shall be cleaned and restored to a satisfactory condition or the curb stone removed and replaced.

d. Curb Inlets Curb placed adjacent to curb inlets shall be installed with steel dowels cemented into each stone with epoxy grout as shown in the Standard Details.

The epoxy grout shall be used in accordance with the manufacturer's instructions. The grout shall be forced into the hole, after which the dowel shall be coated with grout for one-half its length and inserted into the grout filled hole. The hole shall be completely filled with grout around the dowel. All tools and containers must be clean before using.

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

609.04 Bituminous Curb

a. Preparation of Base Before placing the curb, the foundation course shall be thoroughly cleaned of all foreign and objectionable material. String or chalk lines shall be positioned on the prepared base to provide guidelines. The foundation shall be uniformly painted with tack coat at a rate of 0.04 to 0.14 gal/yd^2.

b. Placing The curb shall be placed by an approved power operated extruding type machine using the shape mold called for. A tight bond shall be obtained between the base and the curb. The Resident may permit the placing of curbing by other than mechanical curb placing machines when short sections or sections with short radii are required. The resulting curbing shall conform in all respects to the curbing produced by the machine.

c. When required, the curb shall be painted and coated with glass beads in accordance with Section 627 - Pavement Marking. Curb designated to be painted shall not be sealed with bituminous sealing compound.

d. Acceptance Curb may be accepted or rejected based on appearance concerning texture, alignment, or both. All damaged curb shall be removed and replaced at the Contractor's expense.

e. Polyester fibers shall be uniformly incorporated into the dry mix at a rate of 0.25 percent of the total batch weight. Certification shall be provided from the supplier with each shipment meeting the following requirements:

Average Length	0.25 inches ± 0.005
Average Diameter	0.0008 inches ± 0.0001
Specific Gravity	1.32-1.40
Melting Temperature	480 °F Minimum

609.05 Slipform Concrete Curb

a. Preparation of Base Before placing the curb, the foundation course shall be thoroughly cleaned of all foreign and objectionable material. The Contractor shall not place Slipform Concrete Curb on a wet or frozen foundation. The foundation (HMA or concrete) may be in a Saturated Surface Dry condition, but no standing water shall be allowed. String or chalk lines shall be positioned on the prepared foundation to provide guidelines. Prior to placing the curb, the foundation shall be uniformly coated with an epoxy resin adhesive that meets the requirements of AASHTO M 235, Type I, II, III, IV or V and has been tested by AASHTO Product Evaluation & Audit Solutions. The Contractor shall submit the epoxy resin adhesive that they propose to utilize with the concrete mix design. The epoxy resin adhesive must be approved prior to placement and used in accordance with manufacturer's recommendations.

b. Placing Concrete shall be placed with an approved Slipform machine that will produce a finished product according to the design specified in the Plans. For cold weather slip forming, the outside temperature must be at least 36°F and rising. The curb shall be placed on a firm, uniform foundation, shall conform to the section profile specified in the Plans, and shall match the appropriate grade. Expansion joints shall be placed in the curb where it meets rigid structures such as but not limited to building foundations, catch basin headers or fire hydrants. Contraction joints will be placed at 10-foot intervals using sawing methods, which shall cut 1 to 3 inches into the concrete. Contraction joints shall be cut between 1 and 7 days after placement of the concrete. Joints shall be constructed perpendicular to the subgrade and match other joints in roadways, sidewalks, or other structures when applicable.

c. Curing and Sealing Proper curing shall be provided using either a combination curing/sealing compound spray that meets ASTM 1315 Type 1-Class A, or a curing compound spray that meets ASTM 309 Type 1-D – Class A. Curing may also be accomplished by the methods specified in Standard Specification Section 502.14, Curing Concrete.

If a combination curing/sealing compound spray is not used, a separate sealing compound from the MaineDOT Qualified Products List for a Type 1c sealer shall be applied after the concrete has cured.

d. Protection Slipform curb must be adequately protected after placement. The concrete shall be allowed to cure for at least 72 hours. During cold weather conditions, when temperatures drop below the required temperature of 36°F after placement, curbing shall be protected by concrete blankets or a combination of plastic sheeting and straw. After any

placement of Slipform curb, regardless of weather conditions, the placed curb shall be adequately protected by traffic control devices as necessary.

e. Marking When required, the curb shall be painted and coated with glass beads in accordance with Section 627 - Pavement Marking. Curb designated to be painted shall not be sealed unless a combination curing/sealing compound is used.

f. Acceptance Curb shall be accepted or rejected based on finish, alignment, entrained air content, and compressive strength. Concrete Quality Control and Acceptance shall be done in accordance with Standard Specification Section 502, Method C. All damaged curb shall be removed and replaced at the Contractor's expense.

609.06 Stone Edging The curb shall be installed, backfilled and protected in accordance with Section 609.03, except as follows:

a. Slope The edging shall be set on a slope as shown on the Plans or as directed.

b. Joints Joints shall be open and not greater than 1½ inch in width.

609.07 Stone Bridge Curb

a. Installation Each stone and the bed upon which it is to be placed shall be cleaned and thoroughly wetted with water before placing the mortar for bedding and setting the stone. The stone shall be set on a fresh bed of joint mortar and well bedded before the mortar has set so that the front top arris line conforms to the line and grade required. Whenever temporary supporting wedges or other devices are used in setting the stones, they shall be removed before the mortar in the bed has become set, and the holes left by them shall be filled with mortar. Concrete behind the stones shall not be placed until the stones have been in place at least two days. Bedding and pointing mortar for joints shall be cured as required under Section 502 - Structural Concrete.

b. Joints Vertical joints shall be ½ inch in width plus or minus ⅛ inch. Whenever possible, the face and top of the joint shall be pointed with joint mortar to a depth of 1½ inch, before the bedding mortar has set. Joints which cannot be so pointed, shall be prepared for pointing by raking them to a depth of 1½ inch before the mortar has set. Joints not pointed at the time the stone is laid shall be thoroughly wetted with clean water and filled with mortar. The mortar shall be well driven into the joint and finished with an approved pointing tool, flush with the pitch line of the stones.

609.08 Resetting Stone or Portland Cement Concrete Curb, Including Terminal Sections and Transitions

The curb shall be installed, backfilled and protected in accordance with Section 609.03, except as follows:

a. Removal of Curbing The Contractor shall carefully remove and store curb specified on the Plans or designated for resetting. Curb damaged or destroyed, because of the

Contractor's operations or because of their failure to store and protect it in a manner that would prevent its loss or damage, shall be replaced with curbing of equal quality at the Contractor's expense.

b. Cutting and Fitting Cutting or fitting necessary in order to install the curbing at the locations directed shall be done by the Contractor.

609.09 Method of Measurement Curb, both new and reset, will be measured by the linear foot along the front face of the curb at the elevation of the finished pavement, complete in place and accepted. Curb inlets at catch basins, including doweling, will not be measured for payment but shall be considered included in the cost of the catch basin. New transition sections and terminal curb will be measured by the unit. Reset transition sections and terminal curb will be included in the measurement for resetting curb.

Concrete Slipform Curb and terminal ends will be measured by the linear foot along the front face of the curb at the elevation of the finished pavement, complete in place and accepted.

609.10 Basis of Payment The accepted quantities of curbing will be paid for at the contract unit price per linear foot for each kind and type of curbing as specified.

Payment for terminal curb shall include only that portion of the curbing modified for installation at ends of curb runs shown in the Standard Details. Curb adjacent to terminal ends shall be paid for at the contract unit price per linear foot for the type of curb installed.

Vertical Curb Type 1 is required to have a radius of 60 feet or less, will be paid for as Vertical Curb Type 1 - Circular.

Curb, Type 5 required to have a radius of 30 feet or less will be paid for as Curb Type 5 - Circular.

There will be no separate payment for concrete fill, mortar, reinforcing steel, anchors, tack coat, drilling for and grouting anchors, pointing and bedding of curbing, and for cutting and fitting, but these will be considered included in the work of the related curb.

Removal of existing curb and necessary excavation for installing new or reset curbing will not be paid for directly but shall be considered to be included in the appropriate new or reset curb pay item. Base and Subbase material will be paid for under Section 304 - Aggregate Base and Subbase Course. Backing up bituminous curb is incidental to the curb items. Loam, as directed, will be paid under 615 – Loam.

Payment will be made under:

	Pay Item	Pay Unit
609.11	Vertical Curb Type 1	Linear Foot
609.12	Vertical Curb Type 1 - Circular	Linear Foot
609.13	Vertical Bridge Curb Type 1	Linear Foot
609.131	Vertical Bridge Curb Type 1A	Linear Foot
609.132	Vertical Bridge Curb Type 1B	Linear Foot
609.142	Vertical Bridge Curb Type 1B - Circular	Linear Foot
609.15	Sloped Curb Type 1	Linear Foot
609.151	Sloped Curb Type 1 - Circular	Linear Foot
609.161	Concrete Slipform Curb – Vertical Type 2	Linear Foot
609.21	Concrete Slipform Curb Type 2	Linear Foot
609.219	Concrete Slipform Terminal End Type 2	Linear Foot
609.23	Terminal Curb Type 1	Each
609.234	Terminal Curb Type 1 - 4 foot	Each
609.237	Terminal Curb Type 1 - 7 foot	Each
609.2371	Terminal Curb Type 1 - 7 foot – Circular	Each
609.238	Terminal Curb Type 1 - 8 foot	Each
609.26	Curb Transition Section B Type 1	Each
609.31	Curb Type 3	Linear Foot
609.34	Curb Type 5	Linear Foot
609.35	Curb-Type 5 - Circular	Linear Foot
609.38	Reset Curb Type 1	Linear Foot
609.39	Reset Curb Type 2	Linear Foot
609.40	Reset Curb Type 5	Linear Foot

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

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

SECTION 618
SEEDING

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

SECTION 619
MULCH

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

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

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

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

626.034 Concrete Foundations Revise this Section by changing '626.037' to '**626.036**' in the Second Paragraph which begins with "Foundations shall consist of cast-in-place…".

Revise the 10th paragraph beginning with "Before placing concrete, the required elbows…" by removing "…**in accordance with Standard Specification 633**."

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

SECTION 627
PAVEMENT MARKINGS

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

"When pavement marking paint must be applied on pavement with an air temperature between 35 ºF and 50 ºF, a low temperature waterborne paint may be used upon the Department's approval as noted below.

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

The manufacturer and product name of the low temperature waterborne paint

The manufacturer's technical product data sheets

The product's SDS sheets

All required and recommended application specifications for the product

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

627.06 Application Revise this subsection by replacing the paragraph beginning with " On other final pavement markings…" with the following:
"On other final pavement markings and on curb, where the paint is applied by hand painting or spraying, application shall be one uniform covering coat at least 16 mils thick. Before the paint has dried, the glass beads shall be applied by a pressure system that will force the glass beads onto the undried paint as uniformly as possible.

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

Revise this subsection by replacing the paragraph beginning with " If the final reflectivety values are less…" with the following:

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

If, after repainting, analysis of the final reflectivity values results in the need for a second repainting, the Contractor will submit in writing a plan of action to meet the reflectivity minimums prior to continuing any work. Once the plan has been reviewed and approved by the Department, the Contractor shall reapply at no cost to the Department."

SECTION 634
HIGHWAY LIGHTING

634.021 Materials Revise this subsection by removing the paragraph beginning with "All bolts for mounting lighting fixtures" and replacing with:

"**All bolts for mounting lighting fixtures under bridge structures shall conform to the requirements of ASTM A307. These bolts and other fastening hardware shall be galvanized in**

accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I."

SECTION 637
DUST CONTROL

Revise this section by removing it in its entirety.

SECTION 643
TRAFFIC SIGNALS

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

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

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

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

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

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

And by removing the paragraphs beginning with " A service ground rod shall be installed…" and "A total of 4, 10' service…" and replace them with "**A total of 4, 10' service ground rods shall be installed and properly connected together on the outside of the cabinet foundation. One ground rod shall be located at each corner and shall be either flush or slightly below finished grade. The connection between the ground rod and the ground wire shall be an**

exothermic connection such as a Cadweld. The ground wire from the interconnected ground rods shall be routed through a conduit in the foundation and into the base of the cabinet".

SECTION 645
HIGHWAY SIGNING

Section 645.023 Sign Support Structures. Under letter "c.", revise the fifth paragraph beginning with "In addition to the required details…" by removing the words "**and foundation**" from the 5th sentence.

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

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

SECTION 652
MAINTENANCE OF TRAFFIC

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

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

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

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

Category 2 (Barricades, Portable Sign Supports, Category 1 devices with attachments, and similar devices that are not expected to produce significant vehicular velocity change but may be otherwise hazardous) – All Category 2 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2025. Current Category 2 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2024.

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

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

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

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

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

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

SECTION 681
PRECAST AGGREGATE-FILLED, CONCRETE BLOCK GRAVITY WALL

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

SECTION 701
STRUCTURAL CONCRETE RELATED MATERIAL

701.01 Portland Cement and Portland Pozzolan Cement Amend the first sentence of Paragraph 3 by adding "**or Type 1L Portland Limestone cement**" so that it reads:
"**A Type IP (MS) Portland-pozzolan cement (blended hydraulic cement with moderate sulfate resistance) or Type 1L Portland Limestone cement meeting the requirements of AASHTO M 240, may be used instead of Type II or where Type I Portland cement, meeting the requirements of AASHTO M 85, is allowed**."

SECTION 703
AGGREGATES

Add the following to Section 703 - Aggregates

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

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

Fine aggregate shall have a sand equivalent value of not less than 75 when tested in accordance with AASHTO T 176.
Fine aggregate sources shall meet the Alkali Silica Reactivity (ASR) requirements of Section 703.0201.

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

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

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
⅜ inch	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10
No. 200	0-5.0

703.02 Coarse Aggregate for Concrete Coarse aggregate for concrete shall consist of crushed stone or gravel having hard, strong, durable pieces, free from adherent coatings and of which the composite blend retained on the ⅜ inch sieve shall contain no more than 15 percent, by weight of flat and elongated particles when performed in accordance with test method ASTM D 4791, Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate, using a dimensional ratio of 1:5.

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

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

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

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

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves						
Grading	S	A	AA	SP-1-7	SP-1-78	SP-2-8	SP-2-89
Aggregate Size	1 ½ inch	1 inch	¾ inch	½ inch	½ inch	⅜ inch	⅜ inch
2 inch	100						
1 ½ inch	95-100	100					
1 inch	-	95-100	100				
¾ inch	35-70	-	90-100	100	100		
½ inch	-	25-60	-	90-100	90-100	100	100
⅜ inch	10-30	-	20-55	40-70	40-75	85-100	90-100
No. 4	0-5	0-10	0-10	0-15	5-25	10-30	20-55
No. 8	-	0-5	0-5	0-5	0-10	0-10	5-30
No. 16	-	-	-	-	0-5	0-5	0-10
No. 50	-	-	-	-	-	-	0-5
No. 200*	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5

*This limit will be 0-2.0 for Department production samples. Yearly quality samples will be held to 0-1.5.

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

As per AASHTO T 303 (ASTM C 1260): Use of a particular coarse or fine aggregate will be allowed with no restrictions when the mortar bars made with this aggregate expand less than or equal to 0.10 percent at 30 days from casting. Use of a particular coarse or fine aggregate will be classified as potentially reactive when the mortar bars made with this aggregate expand greater than 0.10 percent at 30 days from casting. Use of this aggregate will only be allowed with the use of cement-pozzolan blends and/or chemical admixtures that result in mortar bar expansion of less than 0.10 percent at 30 days from casting as tested under ASTM C 1567.

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

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

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

Amend this section by adding the new sub section:

"703.03 Combined Aggregate Grading for Concrete The combined gradation of the fine and coarse aggregates when mathematically blended using the mix design percentages shall conform to the requirements of the following table for the size or sizes designated and shall be well graded between the limits specified.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves						
Grading	**S**	**A**	**AA**	**SP-1-7**	**SP-1-78**	**SP-2-8**	**SP-2-89**
Aggregate Size	**1½ inch**	**1 inch**	**¾ inch**	**½ inch**	**½ inch**	**⅜ inch**	**⅜ inch**
2 inch	**100**						
1½ inch	**95–100**	**100**					
1 inch	**80–100**	**95–100**	**100**				
¾ inch	**55–90**	**90–100**	**93–100**	**100**	**100**		
½ inch	**45–80**	**55–80**	**60–90**	**90–100**	**90–100**	**100**	**100**
⅜ inch	**40–65**	**40–65**	**50–80**	**55–85**	**65–90**	**90–100**	**90–100**
No. 4	**35–55**	**35–55**	**35–60**	**30–60**	**40–70**	**45–75**	**50–80**
No. 8	**25–53**	**28–50**	**30–55**	**25–55**	**30–65**	**35–65**	**35–75**
No. 16	**15–40**	**18–45**	**19–45**	**18–50**	**20–55**	**20–55**	**20–55**
No. 30	**7–30**	**9–30**	**10–33**	**8–32**	**10–38**	**10–38**	**10–40**
No. 50	**3–14**	**4–14**	**4–16**	**3–16**	**4–20**	**4–20**	**4–20**
No. 100	**0–6**	**0–6**	**0–6**	**0–6**	**0–7**	**0–8**	**0–8**
No. 200	**0–3.5***	**0–3.5***	**0–3.5***	**0–3.5***	**0–3.5***	**0–3.5***	**0–3.5***

***The percent passing the No. 200 sieve shall not exceed 6.0 percent for any fine aggregate. The percent passing the No. 200 sieve shall not exceed 2.0 percent for any single coarse aggregate. The percent passing the No. 200 sieve shall not exceed 4.0 percent for the combined gradation of self-consolidating concrete (SCC) mix designs."**

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

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
⅜ inch	85-100
No. 200	0-5.0

703.06 Aggregate for Base and Subbase The following shall apply to Sections (a.) and (c.) below. The material shall have a Micro-Deval value of 25.0 or less as determined by AASHTO T 327. If the Micro- Deval value exceeds 25.0, the Washington State Degradation DOT Test Method T113, Method of Test for Determination of Degradation Value (January 2009 version) shall be performed, except that the test shall be performed on the portion of the sample that passes the ½ in sieve and is retained on the No. 10 sieve. If the material has a Washington Degradation value of less than 15, the material shall be rejected.
The material used in Section (b.) below shall have a Micro-Deval value of 25.0 or less as determined by AASHTO T 327. If the Micro-Deval value exceeds 25.0 the material may be used if it does not exceed 25 percent loss on AASHTO T 96, Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Table 4: Maximum Percent RAP According to Test Results

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

Table 5: RAP Verification Limits

Classification	Asphalt content (compared to aim)	Percent passing 0.075 mm sieve (compared to aim)
Class III	± 1.5	± 2.0
Class II	± 1.0	± 1.5
Class I	± 0.5	± 0.7

For specification purposes, RAP will be categorized as follows:

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

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

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

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

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

Revise this Section by removing 703.7 and 703.9 in its entirety and replace with the following:

703.07 Aggregates for HMA Pavements **Coarse and fine aggregate for hot mix asphalt pavements shall be of such gradation that when combined in the proper proportions, including filler, if required, the resultant blend will meet the composition of mixture for the type of pavement specified.**

Coarse aggregate, that material retained on the No. 4 sieve, shall be crushed stone or crushed gravel and, unless otherwise stipulated, shall consist of clean, tough, durable fragments free from an excess of soft or disintegrated pieces and free from stone coated with dirt or other objectionable matter. Coarse aggregate shall not exceed an absorption of 2.0 percent by weight as determined by AASHTO T 85.

Fine aggregate, material that passes the No. 4 sieve, shall consist of natural sand, manufactured sand, or a combination of these. It shall consist of hard, tough grains, free from injurious amounts of clay, loam, or other deleterious substances. Fine aggregate shall not exceed an absorption of 2.3 percent by weight as determined by AASHTO T 84.

All individual aggregates for hot mix asphalt pavements shall meet Table 3 requirements (excluding LCP) unless otherwise noted. The Department reserves the right to sample and test the aggregate for any of the following properties at any time:

TABLE 3: Aggregate Consensus Properties Criteria

Estimated Traffic, Million 18 kip ESALs	AASHTO T 335 (minimum %)	AASHTO T 304 Method A **	ASTM D 4791 Method B	AASHTO T 176	Aggregate shall meet at least one of these:		
					AASHTO T 327	AASHTO T 96	WSDOT T 113*
< 3.0	75/60	≥ 40%	≤ 10%	≥ 45	≤ 18.0%	≤ 40%	≥ 30
3.0 to < 10	90/80	≥ 45%		≥ 50		≤ 35%	
≥ 10	95/90					≤ 30%	N/A

* As determined by Washington State DOT Test Method T 113, Method of Test for Determination of Degradation Value except that the reported degradation value will be the result of testing a single composite specimen from that portion of the sample that passes the ½ inch sieve and is retained on the No. 10 sieve.

** Property will be evaluated on a mix design basis by calculating a weighted average based upon individual aggregate values (weighted average by the percentage proportion of the aggregate within the design).

AASHTO T 335 - "90/80" denotes that 90 percent of the coarse aggregate has one fractured face and 80 percent has two fractured faces.

AASHTO T 304 - Criteria are presented as percent air voids in loosely compacted fine aggregate, (U).

ASTM D4791 - Criteria are presented as maximum percent by weight of flat and elongated particles (5:1 ratio).

The entire HMA wearing course shall come from the same source of material and the same job mix formula, except when permission is obtained from the Department to change sources.

703.09 HMA Mixture Composition **The coarse and fine aggregate shall meet the requirements of Section 703.07. The several aggregate fractions for mixtures shall be sized, graded, and combined in such proportions that the resulting composite blends, including RAP aggregate will meet the grading requirements of the following table:**

Aggregate Gradation Control Points

Nominal Maximum Aggregate Size---Control Points (Percent Passing)						
Sieve Designation	**Type 25 mm**	**Type 19 mm**	**Type 12.5 mm**	**Type 9.5 mm**	**Type 9.5 mm Thin Lift Mixture (TLM)**	**Type 4.75 mm**
	Percent By Weight Passing - Combined Aggregate					
37.5 mm	**100**					
25 mm	**90-100**	**100**				
19 mm	**-90**	**90-100**	**100**			
12.5 mm	**-**	**-90**	**90-100**	**100**	**100**	**100**
9.5 mm	**-**	**-**	**-90**	**90-100**	**95-100**	**95-100**
4.75 mm	**-**	**-**	**-**	**-90**	**60-95**	**80-100**
2.36 mm	**19-45**	**23-49**	**28-58**	**32-67**	**47-65**	**40 - 80**
1.18 mm	**-**	**-**	**-**	**-**	**-**	**-**
0.60 mm	**-**	**-**	**-**	**-**	**-**	**-**
0.30 mm	**-**	**-**	**-**	**-**	**-**	**-**
0.075 mm	**2.0-6.0**	**2.0-6.0**	**2.0-6.0**	**2.0-7.0***	**2.0-7.0***	**2.0-7.0**

*** For 9.5 mm nominal maximum aggregate size mixtures, the maximum design aim for the percent passing the 75 µm sieve is 6.5%.**

SECTION 709
REINFORCING STEEL AND WELDED STEEL WIRE FABRIC

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

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

SECTION 710
FENCE AND GUARDRAIL

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

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

Remove the fourth paragraph which starts " That portion of wood posts…".

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

"Braces shall be of spruce, eastern hemlock, Norway pine, pitch pine, or tamarack timbers or other AWPA approved species, or spruce, cedar, tamarack or other AWPA approved species round posts of sufficient length to make a diagonal brace between adjacent posts. All wood posts and braces shall be pressure-treated in accordance with AASHTO M 133 and AWPA U1, UC4A Commodity Specification B: Posts. "

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

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

Revise the next paragraph so that it reads:

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

710.08 Guardrail Hardware Revise this subsection by replacing "**AASHTO M 298**" with "**ASTM B695**"

SECTION 711
MISCELLANEOUS BRIDGE MATERIAL

711.06 Stud Shear Connector Anchors and Fasteners Amend this section by deleting it in its entirety and replacing it with:
"Shear connectors shall meet the dimensional tolerances of Figure 9.1 of the ANSI/AASHTO/AWS D1.5 Bridge Welding Code (D1.5 Code). Shear connectors, anchors and fasteners shall meet the material requirements of Section 9 of the D1.5 Code. Shear connectors shall meet the mechanical property requirements of Table 9.1, Type B of the D1.5 Code. Anchors and fasteners shall meet the mechanical property requirements of Table 9.1 of the D1.5 Code, Type A."

SECTION 712
MISCELLANEOUS HIGHWAY MATERIAL

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

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

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

"**b. Air content shall be 5.0% to 8.0%**."

SECTION 713
STRUCTURAL STEEL AND RELATED MATERIAL

Section 713.01 Structural Steel Replace paragraph two in its entirety with the following:
"**Main load-carrying components subject to tensile stresses or stress reversal shall meet the notch toughness requirements in AASHTO M 270M, Table 11, Zone 2, for non-fracture critical steel or Table 12, Zone 2 for fracture critical steel. Frequency of tension tests shall comply with the requirements of S1.**"

Section 713.02 High Strength Bolts **R**evise this subsection by removing the portion from the beginning up to and including TABLE 1 – Test Schedule*, and replace it with:

"**Bolts shall conform to the requirements of ASTM F3125, Grade A325, Type 1 or Type 3. Type 3 bolts shall be supplied for all structures utilizing unpainted AASHTO M 270M weathering steel. Type 1 galvanized bolts shall be used for all structures utilizing metallized or galvanized steel.**

Nuts shall meet the requirements of ASTM A563.

Circular and beveled washers shall conform to the requirements of ASTM F436.

Direct Tension Indicators (DTI'S) shall conform to the requirements of ASTM F959. DTI's for use with painted steel shall have a plain "as fabricated" finish. DTI's for use with unpainted steel shall be galvanized to the requirements of ASTM B695 Class 50, Type I and have a fusion-bonded epoxy coating. DTI's used with galvanized steel, metalized steel and steel coated with a zinc-rich primer shall be galvanized to the requirements of ASTM B695 Class 50, Type I.

"Twist Off" Type Tension Control Structural Bolt/Nut/Washer Assemblies shall meet the requirements of ASTM F3125, Grade F1852.

Bolts, nuts and washers specified to be galvanized, shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695 Class 50, Type I.

All fastener (bolts and nuts), whether black or galvanized, shall be coated with a suitable lubricant. Galvanized nuts shall be lubricated with a lubricant containing a visible dye.

Each lot of bolts, nuts, washers and DTI's shall be tested by the manufacturer in accordance with the tests tabulated in Table 1 - Test Schedule. The testing frequency for bolts, nuts and washers from each shipping lot of fasteners shall be as specified in the applicable AASHTO/ASTM Standard Specifications. The testing frequency for each production lot of DTI's shall be as specified in ASTM F959.

TABLE 1 - Test Schedule*

Bolts	Tensile Strength (Wedge Test) Proof Load Hardness Coating Thickness	ASTM F606 ASTM F606 ASTM F606 ASTM B695
Nuts	Proof Load Hardness Coating Thickness	ASTM F606 ASTM F606 ASTM B695
Washers	Hardness Coating Thickness	ASTM F606 ASTM B695
DTI's	Coating Thickness Compression Load	ASTM B695 ASTM F959

Section 716
STRUCTURAL ALUMINUM AND RELATED MATERIAL

716.01 Aluminum Railings: Revise this subsection by removing section d. and replacing with:

d. Steel Anchor Assembly Steel spacers for post anchors shall conform to the requirements of ASTM A36. Nuts embedded in concrete shall conform to the requirements of ASTM A307.

Anchor bolts, exposed nuts and washers shall conform to the requirements of ASTM A449 or ASTM F1554, Grade 55 and shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I.

SECTION 718
TRAFFIC SIGNALS MATERIAL

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

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

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

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

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

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

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

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

Amend this Section by adding the following subsection:

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

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

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

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

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

1. The work under this item specifies the requirements for the FMU. The FMU shall operate independent of the brand/type of intersection controller deployed in the ATC traffic cabinet.

2. The FMU shall conform to the following requirements:
   - 2.1 The FMU shall function correctly between -34 degrees C and +74 degrees C.
   - 2.2 The FMU shall be provided with appropriately rated connectors that allows the FMU to be exchanged by unplugging connectors, without tools.
   - 2.3 The FMU shall monitor and log all ATC Controller and ATC cabinet faults and or alarms.
   - 2.4 The FMU shall be wired directly to the ATC cabinet.
   - 2.5 The FMU shall have an internal cellular modem running at 4G LTE.
     - 2.5.1 The Cellular modem shall be designed to be replaced / upgraded to 5G service when available.
   - 2.6 The FMU shall incorporate an integrated GPS and cell modem.
   - 2.7 The configuration of the FMU shall be accomplished by accessing the internal web server with a browser. It shall be possible to configure the FMU without any special software.
   - 2.8 The FMU shall be powered via a standard 120V input power.

2.9 The FMU shall allow for the routing of the controller configuration packets to and from the controller (either by Ethernet or serial communications) for any type of controller utilized by the MaineDOT. In this way it shall be possible to configure the controller and utilize the controller specific software to interrogate the controller, and the FMU shall provide the communications pipe which allows this to be accomplished.

2.10 The FMU shall, within the size limitations above, include a battery and battery charging/monitoring circuit, to allow the FMU to function correctly even when all power to the intersection has failed. The battery shall continue to power the FMU for a minimum of 5 hours after all power has failed to the intersection.

2.11 The FMU shall incorporate an integrated GPS which will allow the FMU to geo-locate itself on the FMU management software map, without configuration.

2.12 The FMU shall operate without requiring a static IP address. The only configuration required at the FMU is to enter the URL of where the FMU management software is hosted.

2.13 In the event that the cell service is interrupted or is not available, the FMU shall store any events that occur in internal memory and forward these events automatically to the FMU management software when the cell service is restored. In this way, a complete record of events at the device can be maintained even if cell service is interrupted for a period. The system will store 5000 events.

2.14 The FMU shall utilize HTTP and HTTPS protocols, and XML data structures, for communication with the FMU management software. In this way the data will be open for future expansion and competition. The use of secret proprietary protocols is not permitted.

2.15 The FMU shall include Ethernet communications via an Ethernet Port with RJ45 connector.

2.16 The FMU shall include weather proof antennas.

3. **Map Display FMU Management Software**

3.1 The FMU shall include a scrollable, zoomable map display, with the intersections and other monitored devices shown as representative icons on the map. The map shall include the ability to see the intersections using Google Streetview.

3.2 The alarm status of the intersection shall be clearly indicated on the icon on the map, so that the user can see at a glance which intersections are in alarm.

3.3 The map display shall also include a list of intersections, with the number and priority of alarms indicated on the list. Intersections in high priority alarm shall be moved to the top

of the list, followed by medium priority, low priority and then finally by intersections not in alarm.

3.4 The icons shall change to be able to clearly indicate if an intersection is offline.

3.5 Clicking on the icon on the map shall expose a box with the current parameters of the intersection shown.

3.6 The default map display position and zoom shall be configurable by user, so that the user's view will default to show the intersections that the user is responsible for managing.

3.7 The map view shall have the ability to show Google traffic overlays on the map.

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

4.1 It shall be possible to drill down, either from the map icon or from the list, to a device level detail for the intersection, which as a minimum shall display the following parameters:

4.1.1 The alarm status, with priority indicated, and a text description of the alarm (if an alarm is present for this device).

4.1.2 The time since the last communication with the device

4.1.3 The following parameters (real time now values, minimum for the day values, maximum for the day values, and average for the day values)

4.1.3.1 The AC mains voltage (value)

4.1.3.2 The battery back-up voltage (value)

4.1.3.3 The cabinet temperature (value)

4.1.3.4 The cabinet humidity (value)

4.1.3.5 The presence of AC power (OK or Fail)

4.1.3.6 The flashing status of the intersection (OK or Flashing)

4.1.3.7 Stop Time status (OK or Stop Time Active)

4.1.3.8 The cabinet door status (Open or Closed)

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

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

4.1.4.1 The AC mains voltage

4.1.4.2 The battery back-up voltage

4.1.4.3 The cabinet temperature

4.1.4.4 The cabinet humidity

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

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

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

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

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

6. **Alarms FMU Management Software**

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

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

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

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

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

7. **Alerts FMU Management Software**

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

7.2 It shall be possible to configure alerts to one or more personnel for each alarm. This will cause, as selected, an SMS and/or an email to be sent to the person when an alarm occurs.

7.3 The alert shall be configurable to optionally send via email and/or via SMS a message when an alarm clears.

7.4 The intention is that the FMU management software provides the alerts to the user in near real time. The SMS and email shall be issued within 30 seconds of the occurrence of event which results in an alert being issued.

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

8.1 The contractor shall supply the FMU with the FMU manufacturers 10 year options for Connectivity and Service, as part of the purchase price. The Connectivity and Service agreement shall include at a minimum:

8.1.1 Cellular Connectivity

8.1.2 No cellular overage charges

8.1.3 Extended warranty on the hardware for the period of the Connectivity and Service Agreement

8.1.4 Over-the-air software updates

8.1.5 Over-the-air security updates

8.1.6 Future Connected Vehicles Service

Section 719
SIGNING MATERIAL

719.072 Overhead Signing: Revise this subsection by replacing it in entirety with:

"**Sign panels mounted to independent sign support structures and support structure components mounted to bridges passing over the highway are considered to be overhead signing. Overhead signing shall be mounted on W6 by 9 steel beams conforming to the requirements of ASTM A992/A992M, galvanized in accordance with AASHTO M 111 (ASTM A123), or the same size aluminum beams conforming to ASTM B221M, alloys and tempers of 6061-T6, 6063-T6 or 6005-T5. These components shall be horizontally spaced a maximum of 5¼ feet on center, extending from the bottom of sign panel to the top. If supplemental signs are included in the contract, these beams will extend from the bottom of the main sign panel to the top of the supplemental sign panel. The maximum distance from the edge of the sign to the center of the W6 by 9 shall not exceed approximately 3¼ feet.**

On independent sign support structures, these W6 by 9 beam components shall be fastened to chords with a pair of appropriately sized U-bolts on each side of the web at each fastening

location. A similar pair of U-bolt assemblies shall be used in attaching each chord of an overhead component to upright supports. U-bolts for steel support structures shall conform to ASTM A449, Type 1. U-bolt hardware, which includes nuts, flat washers, and helical lock washers, shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I. Washers shall conform to the requirements of ASTM F436. The U-bolt material for aluminum support structures, or a combination of steel and aluminum structural components, shall be stainless steel conforming to the requirements of ASTM F593, alloy group 1, with a minimum yield strength of 45 ksi. Steel support structures may also utilize stainless steel hardware assemblies as an alternative to galvanized steel. Nuts shall be of the locking type with nylon inserts. Washers shall conform to the requirements of ASTM A276, Type 302. Flat washers, without helical lock washers, will be acceptable in this stainless steel assembly.

On bridge mounted structures, the fastener configurations shall be depicted in the contract documents. "

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

720.03 Steel Supports: Revise this subsection by removing the paragraph beginning with "Chord flange splice fastener" and replacing with:

"**Chord flange splice fastener assemblies shall conform to ASTM A325, Type 1, and galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I. Other fastener assemblies shall be as specified in Section 719.07, or as approved by the Fabrication Engineer."**

720.06 Steel H-beam: Revise this subsection by replacing it in its entirety with:

"**Steel H-beam Post shall conform to the requirements of ASTM A992. All work shall conform to the applicable provisions of Section 504 – Structural Steel. Steel shall be hot-dip galvanized in accordance with AASHTO M 111 (ASTM A123). All steel hardware for use with H-beam poles shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I."**

720.07 Anchor Bolts: Revise this subsection by replacing it in its entirety with:

"**Anchor bolts and nuts supplied for aluminum and/or steel supports shall conform to ASTM A449, Type 1, or ASTM F1554, Grade 55, both with a minimum yield strength of 55 ksi. Anchor bolts shall be supplied with 2 heavy hex nuts and 2 hardened washers and unless otherwise specified the anchor bolts shall have a 90° bend with a 6 inch minimum leg length at the lower end. The anchor bolts, nuts and hardened washers shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I. The bolt**

shall be zinc-coated 12 inches from the exposed end, unless otherwise specified. If the anchor bolts are to be used with breakaway devices incorporating the function of a nut, for example, longitudinally grooved breakaway couplings, nuts or washers will not be required.

Alternate materials, grades, and designs may be used for anchor bolts subject to approval of the Fabrication Engineer."

720.09 Wood Ornamental Light Standard: Revise this subsection by removing the paragraph beginning with "All bolts shall be" and replacing it with:

"**All bolts shall be galvanized in accordance with AASHTO M 232 (ASTM A153), ASTM F2329, or ASTM B695, Class 50, Type I."**

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

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

Revise the third paragraph that starts with "When pressure treated…" so that it reads:

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

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 0.5%
(Androscoggin)

6403 Portland, ME 0.6%
(Cumberland, Sagadahoc)

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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The United States Department of Transportation (USDOT)

Standard Title VI/Non-Discrimination Assurances

DOT Order No. 1050.2A

The **Maine Department of Transportation** (herein referred to as the "Recipient"), **HEREBY AGREES THAT,** as a condition to receiving any Federal financial assistance from the U.S. Department of Transportation (DOT), through **Federal Highway Administration** (herein referred to as "**FHWA**" is subject to and will comply with the following:

Statutory/Regulatory Authorities

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.,* 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin);
- 49 C.F.R. Part 21 (entitled *Non-discrimination In Federally-Assisted Programs Of The Department Of Transportation-Effectuation Of Title VI Of The Civil Rights Act Of 1964);*
- 28 C.F.R. section 50.3 (U.S. Department of Justice Guidelines for Enforcement of Title VI of the Civil Rights Act of 1964);

The preceding statutory and regulatory cites hereinafter are referred to as the "Acts" and "Regulations," respectively.

General Assurances

In accordance with the Acts, the Regulations, and other pertinent directives, circulars, policy, memoranda, and/or guidance, the Recipient hereby gives assurance that it will promptly take any measures necessary to ensure that:

> *"No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity, "for which the Recipient receives Federal financial assistance from DOT, including the* **FHWA.**

The Civil Rights Restoration Act of 1987 clarified the original intent of Congress, with respect to Title VI and other Non-discrimination requirements (The Age Discrimination Act of 1975, and Section 504 of the Rehabilitation Act of 1973), by restoring the broad, institutional-wide scope and coverage of these non-discrimination statutes and requirements to include all programs and activities of the Recipient, so long as any portion of the program is Federally assisted.

Specific Assurances

More specifically, and without limiting the above general Assurance, the Recipient agrees with and gives the following Assurances with respect to its Federally assisted **FHWA Program.**

1. The Recipient agrees that each "activity," "facility," or "program," as defined in§§ 21.23(b) and 21.2(e) of 49 C.F.R. § 21 will be (with regard to an "activity") facilitated, or will be (with regard to a "facility") operated, or will be (with regard to a "program") conducted in compliance with all requirements imposed by, or pursuant to the Acts and the Regulations.

2. The Recipient will insert the following notification in all solicitations for bids, Requests For Proposals for work, or material subject to the Acts and the Regulations made in connection with all **FHWA Programs** and, in adapted form, in all proposals for negotiated agreements regardless of funding source:

   *"The **Maine Department of Transportation,** in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 US.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award."*

3. The Recipient will insert the clauses of Appendix A and E of this Assurance in every contract or agreement subject to the Acts and the Regulations.

4. The Recipient will insert the clauses of Appendix B of this Assurance, as a covenant running with the land, in any deed from the United States effecting or recording a transfer of real property, structures, use, or improvements thereon or interest therein to a Recipient.

5. That where the Recipient receives Federal financial assistance to construct a facility, or part of a facility, the Assurance will extend to the entire facility and facilities operated in connection therewith.

6. That where the Recipient receives Federal financial assistance in the form, or for the acquisition of real property or an interest in real property, the Assurance will extend to rights to space on, over, or under such property.

7. That the Recipient will include the clauses set forth in Appendix C and Appendix D of this Assurance, as a covenant running with the land, in any future deeds,

leases, licenses, permits, or similar instruments entered into by the Recipient with other parties:

a. for the subsequent transfer of real property acquired or improved under the applicable activity, project, or program; and
b. for the construction or use of, or access to, space on, over, or under real property acquired or improved under the applicable activity, project, or program.

8. That this Assurance obligates the Recipient for the period during which Federal financial assistance is extended to the program, except where the Federal financial assistance is to provide, or is in the form of, personal property, or real property, or interest therein, or structures or improvements thereon, in which case the Assurance obligates the Recipient, or any transferee for the longer of the following periods:

    A. the period during which the property is used for a purpose for which the Federal financial assistance is extended, or for another purpose involving the provision of similar services or benefits; or
    b. the period during which the Recipient retains ownership or possession of the property.

9. The Recipient will provide for such methods of administration for the program as are found by the Secretary of Transportation or the official to whom he/she delegates specific authority to give reasonable guarantee that it, other recipients, sub-recipients, sub-grantees, contractors, subcontractors, consultants, transferees, successors in interest, and other participants of Federal financial assistance under such program will comply with all requirements imposed or pursuant to the Acts, the Regulations, and this Assurance.

10. The Recipient agrees that the United States has a right to seek judicial enforcement with regard to any matter arising under the Acts, the Regulations, and this Assurance.

By signing this ASSURANCE, **Maine Department of Transportation** also agrees to comply (and require any sub-recipients, sub-grantees, contractors, successors, transferees, and/or assignees to comply) with all applicable provisions governing the **FHWA's** access to records, accounts, documents, information, facilities, and staff. You also recognize that you must comply with any program or compliance reviews, and/or complaint investigations conducted by the **FHWA.** You must keep records, reports, and submit the material for review upon request to **FHWA** or its designee in a timely, complete, and accurate way. Additionally, you must comply with all other reporting, data collection, and evaluation requirements, as prescribed by law or detailed in program guidance.

Maine Department of Transportation gives this ASSURANCE in consideration of and for obtaining any Federal grants, loans, contracts, agreements, property, and/or discounts, or other Federal-aid and Federal financial assistance extended after the date hereof to the recipients by the U.S. Department of Transportation under the **FHWA Programs**. This ASSURANCE is binding on the State of Maine, other recipients, sub-recipients, sub-grantees, contractors, subcontractors and their subcontractors, transferees, successors in interest, and any other participants in the **FHWA Programs**. The person(s) signing below is authorized to sign this ASSURANCE on behalf of the Recipient.

Maine Department of Transportation
Dale F. Doughty, Commissioner
(Name of Recipient)

By: _____
(Signature of Authorized Official)

Dated: 2-13-26

APPENDIX A

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, **Federal Aviation Administration (FHWA)**, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.

4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the **FHWA** to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the **FHWA** as appropriate, and will set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non- discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the **FHWA** may determine to be appropriate, including, but not limited to:

a. withholding payments to the contractor under the contract until the contractor complies; and/or
b. cancelling, terminating, or suspending a contract, in whole or in part.

6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or the FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

APPENDIX B

CLAUSES FOR DEEDS TRANSFERRING UNITED STATES PROPERTY

The following clauses will be included in deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein from the United States pursuant to the provisions of Assurance 4:

NOW, THEREFORE, the U.S. Department of Transportation as authorized by law and upon the condition that the **Maine Department of Transportation** will accept title to the lands and maintain the project constructed thereon in accordance with all requirements imposed by Title 49, Code of Federal Regulations, Department of Transportation, subtitle A, Office of the Secretary, part 21, Non-discrimination in Federally-assisted Programs of the Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. § 2000d to 2000d-4), the Regulations for the Administration of **Federal Aviation Administration (FHWA) Program,** and the policies and procedures prescribed by the **FHWA** of the U.S. Department of Transportation in accordance and in compliance with all requirements imposed by Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. § 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto the **Maine Department of Transportation** all the right, title and interest of the U.S. Department of Transportation in and to said lands described in Exhibit A attached hereto and made a part hereof.

(HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto **Maine Department of Transportation** and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and will be binding on the **Maine Department of Transportation**, its successors and assigns.

The **Maine Department of Transportation**, in consideration of the conveyance of said lands and interests in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [,] [and]* (2) that the **Maine Department of Transportation** will use the lands and interests in lands and interests in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non- discrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended[, and (3) that in the event of breach of any of the above-mentioned non-discrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said land, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the U.S. Department of Transportation

and its assigns as such interest existed prior to this instruction].*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to make clear the purpose of Title VI.)

APPENDIX C

CLAUSES FOR TRANSFER OF REAL PROPERTY ACQUIRED OR IMPROVED UNDER THE ACTIVITY, FACILITY, OR PROGRAM

The following clauses will be included in deeds, licenses, leases, permits, or similar instruments entered into by the **Maine Department of Transportation** pursuant to the provisions of Assurance 7(a):

A. The (grantee, lessee, permittee, etc. as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add "as a covenant running with the land"] that:

   1. In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a U.S. Department of Transportation activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Acts and Regulations (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.

B. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Non-discrimination covenants, **Maine Department of Transportation** will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued.*

C. With respect to a deed, in the event of breach of any of the above Non-discrimination covenants, the **Maine Department of Transportation** will have the right to enter or re-enter the lands and facilities thereon, and the above described lands and facilities will there upon revert to and vest in and become the absolute property of the **Maine Department of Transportation** and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

APPENDIX D

CLAUSES FOR CONSTRUCTION/USE/ACCESS TO REAL PROPERTY ACQUIRED UNDER THE ACTIVITY, FACILITY OR PROGRAM

The following clauses will be included in deeds, licenses, permits, or similar instruments/agreements entered into by **Maine Department of Transportation** pursuant to the provisions of Assurance 7(b):

A. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the Acts and Regulations, as amended, set forth in this Assurance.

B. With respect to (licenses, leases, permits, etc.), in the event of breach of any of the above Non- discrimination covenants, **Maine Department of Transportation** will have the right to terminate the (license, permit, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued.*

C. With respect to deeds, in the event of breach of any of the above Non-discrimination covenants, **Maine Department of Transportation** will there upon revert to and vest in and become the absolute property of **Maine Department of Transportation** and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

APPENDIX E

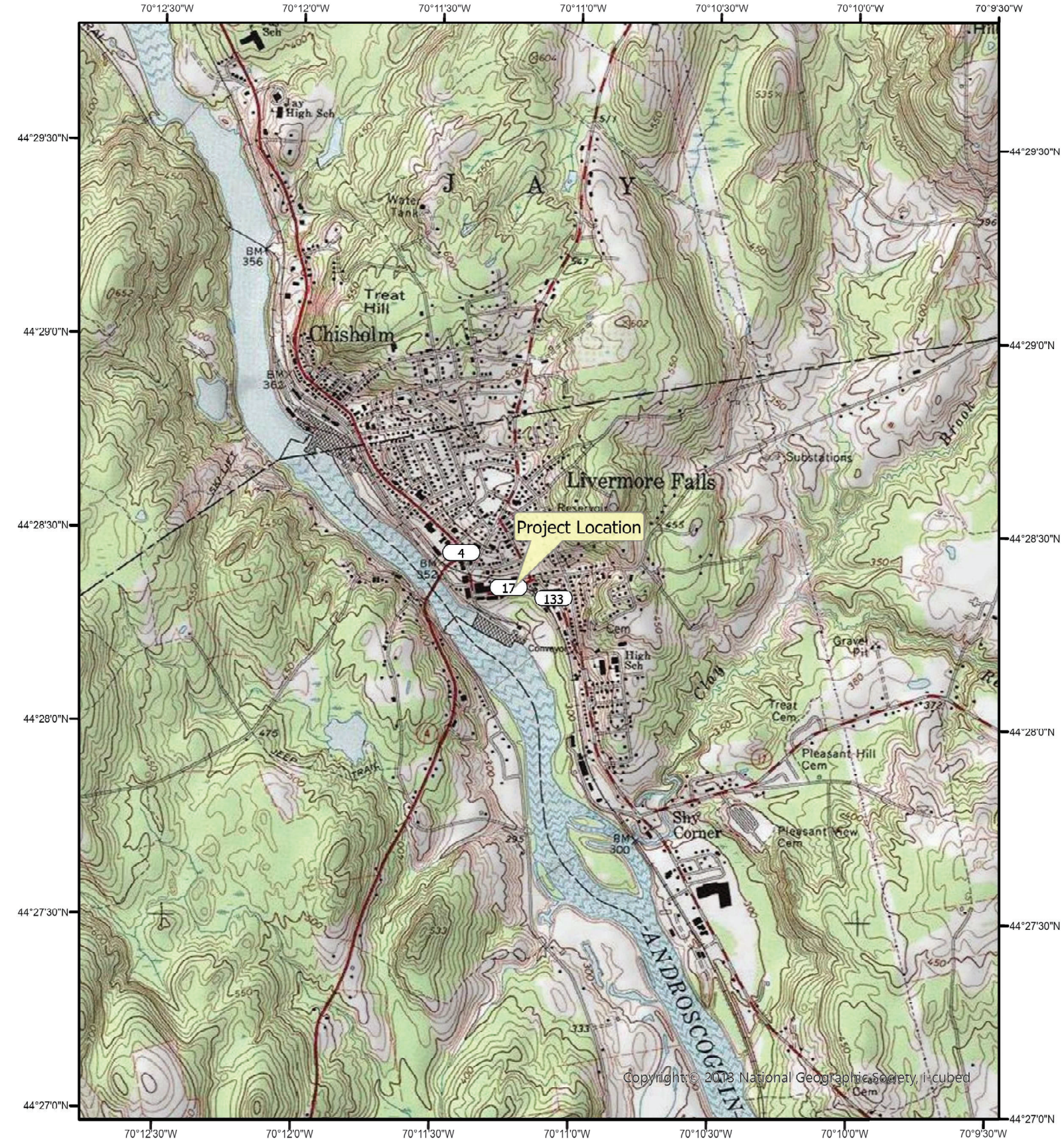
During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.),* (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.),* as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.),* (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure

compliance with Title VI, you must take reasonable steps to
-ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);

- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).



Route 17, Wetland Culvert Installation
WIN: 22643.00
Livermore Falls, ME (Androscoggin County)
Livermore Falls, ME USGS 24k topo map
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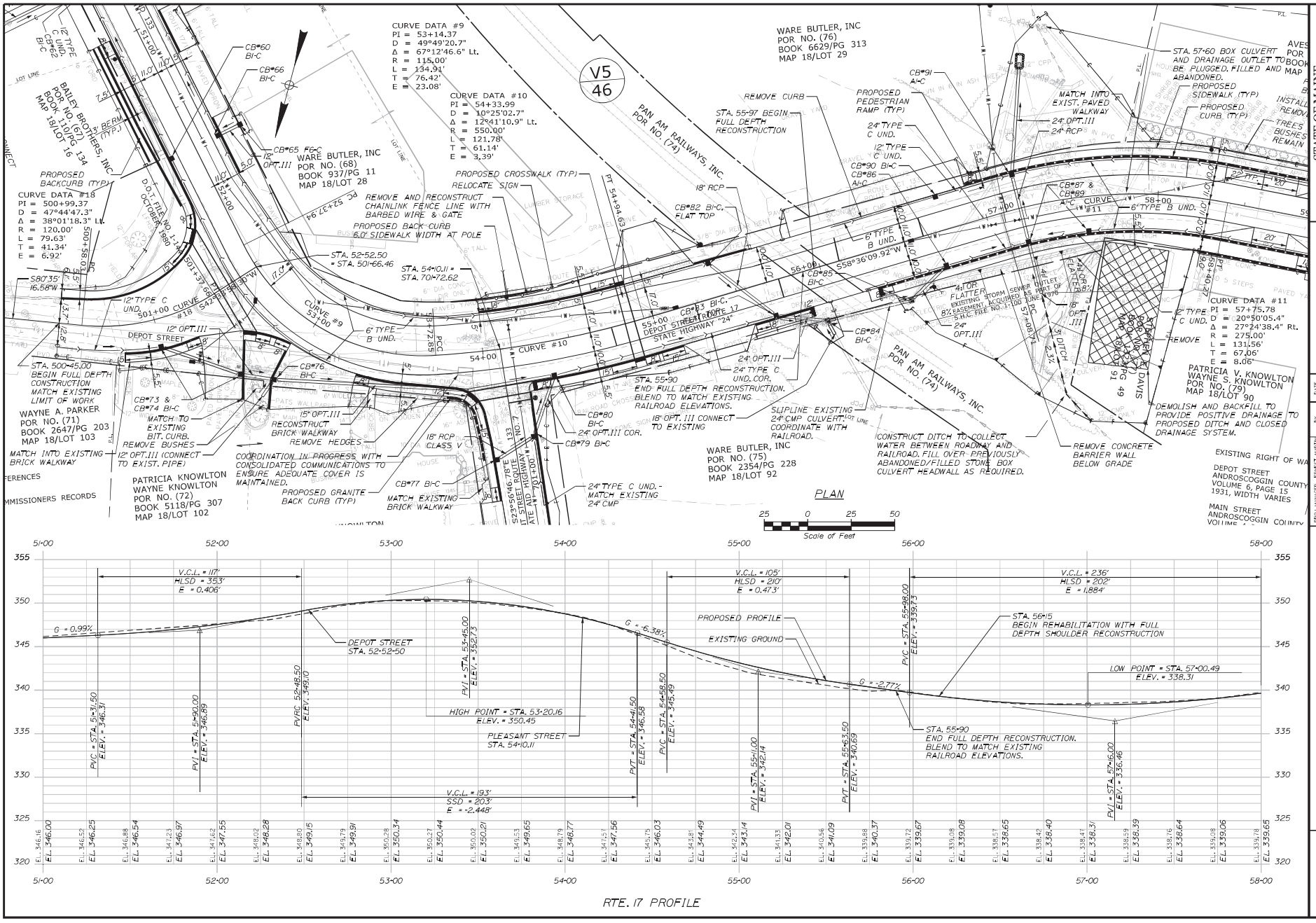


STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

NHPP-2264(300)

WIN
22643.00

HIGHWAY PLANS

PROJ MANAGER	ERNEST MARTIN	BY	DATE	SIGNATURE
DESIGNED/REVIEWED	T. HENDRICKX, W. SMITH	...	3/29/24	
DESIGN-DETAILED	...	...	...	P.E. NUMBER
DESIGN-DETAILED	...	...	...	
REVISIONS 1	...	...	...	DATE
REVISIONS 2	...	...	...	
REVISIONS 3	...	...	...	
REVISIONS 4	...	...	...	
FIELD CHANGES	...	...	...	

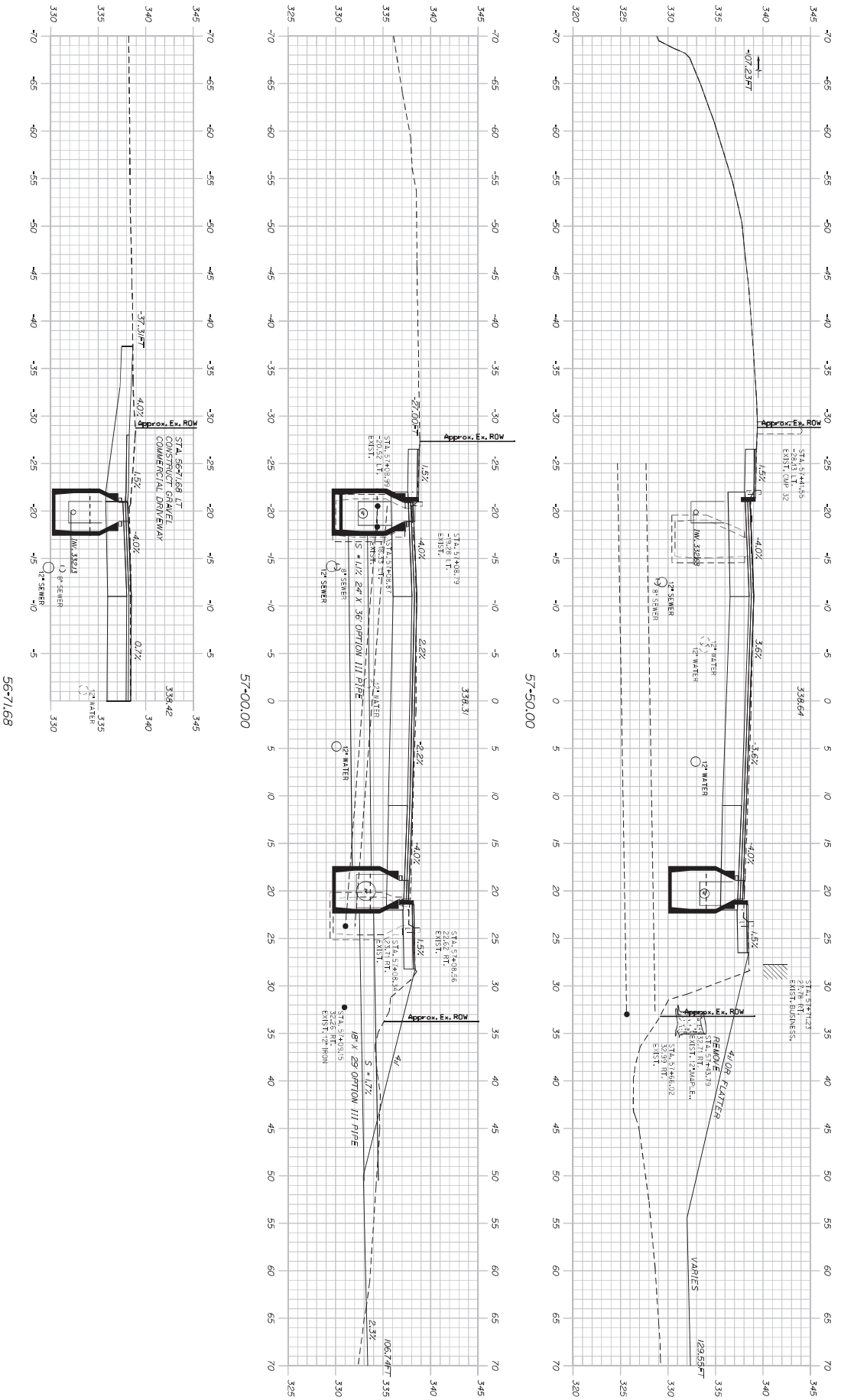
LIVERMORE FALLS
ROUTE 17

PLAN / PROFILE

SHEET NUMBER
14
OF 109

Filename: Livermore Falls Division: Highway Username: WSP USA Inc. Date: 3/29/24

665



PROJ. MANAGER	ERNEST MARTIN	BY	DATE
DESIGN-DETAILED	T. HIGGINSON	M. GROTE	3/29/24
CHECKED-REVIEWED	--	--	--
DESIGN2-DETAILED2	--	--	--
DESIGN3-DETAILED3	--	--	--
REVISIONS 1	--		--
REVISIONS 2	--		--
REVISIONS 3	--		--
REVISIONS 4	--		--
FIELD CHANGES	--		--

SIGNATURE

P.E. NUMBER

DATE

SHEET NUMBER 80 OF 109

LIVERMORE FALLS
ROUTE 17

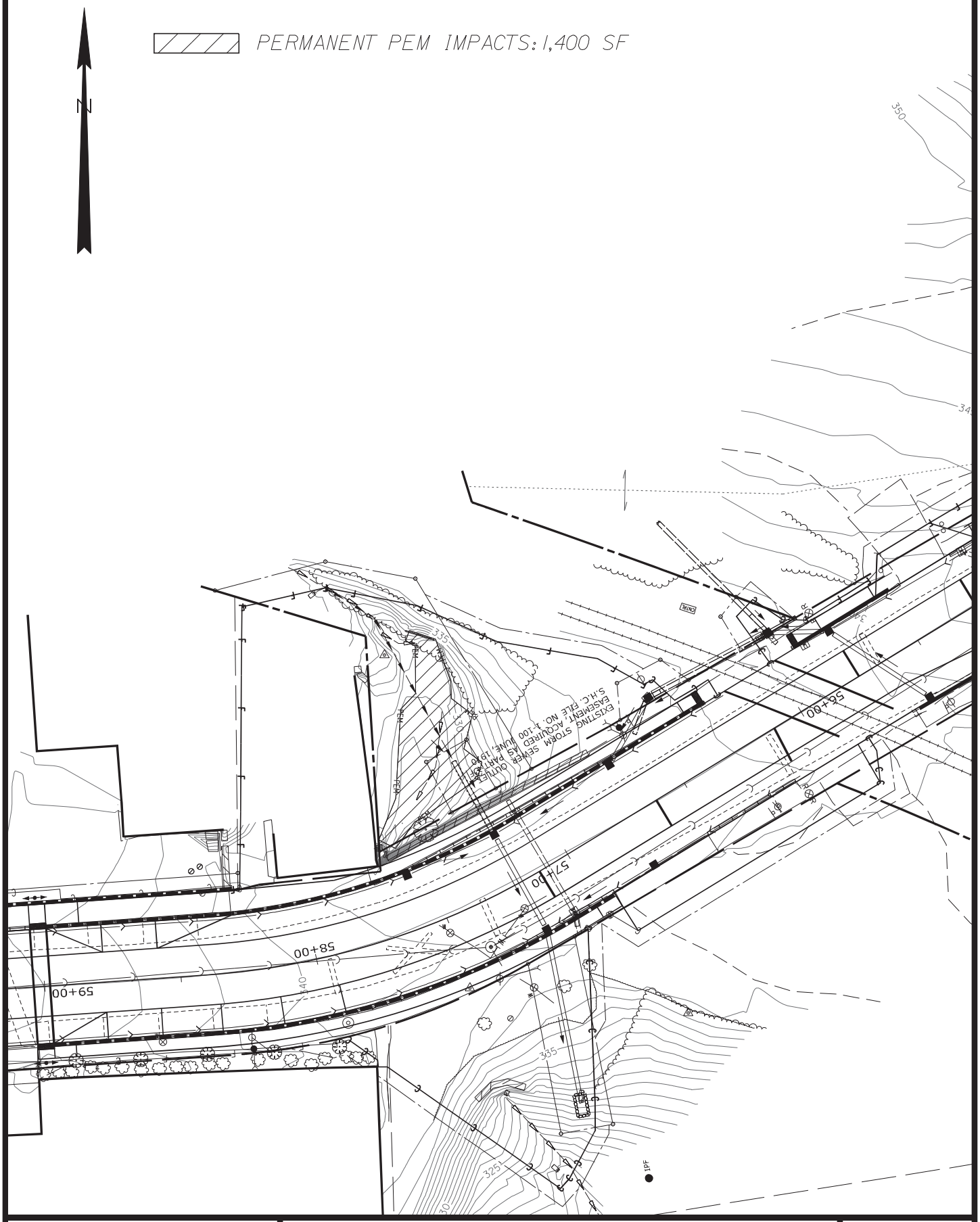
CROSS SECTIONS

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

NHPP-2264(300)

WIN 22643.00 HIGHWAY PLANS

Sta. 56+71.68 to Sta. 57+50.00



STATE OF MAINE DEPARTMENT OF TRANSPORTATION 022643.00	ROUTE 17 LIVERMORE FALLS ANDROSCOGGIN COUNTY	SHEET NUMBER 1 667 OF 1
11/19/2024	IMPACT PLAN	

Relevant sections provided. Full text of the general permit available at this website: https://www.nae.usace.army.mil/Portals/74/ME_RGP_NAE-2025-00485-MODIFIED_1.pdf

General Permit No.: NAE-2025-00485
Applicant: General Public, State of Maine

Effective Date: November 10, 2025
Expiration Date: October 31, 2030

Department of the Army
Regional General Permits for the State of Maine

The New England District, U.S. Army Corps of Engineers announces the thirty-seven (37) state-wide Department of Army Regional General Permits known as the Maine Regional General Permits (ME RGPs) with a modified Water Quality Certification (WQC) and Coastal Zone Management (CZM) consistency determination. This ME RGP document reflects updates resulting from a subsequent modification of the October 10, 2025 Maine general WQC and CZM consistency determination.

The ME RGPs are issued for activities subject to Corps jurisdiction in waters of the U.S., including wetlands; and navigable waters within the State of Maine and adjacent ocean waters to the seaward limit of the outer continental shelf. The Maine RGPs (hereafter referred to as the ME RGP or RGP) are issued in accordance with Corps regulations at 33 CFR 320 – 332 [see 33 CFR 325.5(c)(1)].

RGPs numbered "1-60" were developed to closely match the current 2021 Nationwide Permits (NWPs) and the upcoming 2026 NWPs. The next NWPs are proposed to be reissued in March 2026 and are proposed to be used in New England District (NAE), including the Maine Section. To ensure General Permit coverage, between October (expiration of existing Maine Regional General Permits NAE-2019-02771) to March (when the NWPs will be issued), the below RGPs will be used. Each RGP has been numbered to coincide with the current NWPs for ease of transition. Please note, once the 2026 NWPs are issued, New England District may phase in some or all the NWPs. The RGPs that have letters (A-C) will likely be proposed as New England District RGPs (post March 2026) as these activities are not covered under any proposed NWPs. If the new NWPs and/ or RGPs are proposed to be used in New England District, the NWPs will be public noticed in accordance with 33 CFR 330.5.

This document contains the following sections:

		Pages
SECTION I	Statutory Authorities and Regulated Activities	2
SECTION II	RGP Procedures	3-7
SECTION III	Maine General Permits	8-81
SECTION IV	General Conditions	82-110
SECTION V	District Engineers Discussion	111-113
SECTION VI	Definitions and Acronyms	114-119

Tammy R. Turley — November 10, 2025

Tammy R. Turley — Date
Chief, Regulatory Division
New England District
U.S. Army Corps of Engineers

SECTION I. STATUTORY AUTHORITIES AND REGULATED ACTIVITIES

1. Federal Authorities

   a. **Section 10 of the Rivers and Harbors Act of 1899** (see 33 CFR Part 322). The Corps regulates any *structure* in, over, or under any *navigable waters of the United States* (as defined in 33 CFR 329), and *work* such as excavating or dredging from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters.

   b. **Section 404 of the Clean Water Act** (see 33 CFR Part 323). The Corps regulates the discharge of *dredged material* or *fill material* and certain discharges associated with excavation into *waters of the United States* (as defined in 33 CFR 328), including wetlands. Exemptions of Section 404 can be found at 33 CFR Part 323.4.

2. State Approvals

   Applicants are responsible for applying for and obtaining any required state or local government agency approvals, such as those required by Maine Department of Environmental Protection, Maine Land Use Planning Commission, and Maine Department of Marine Resources; as well as those required by the City, Town, or County the project is located within. In many cases activities requiring Corps authorization will also require approval from these government agencies. However, Federal and state jurisdiction as well as review criteria will differ in some cases. State and Local permits may be required for specific projects regardless of Corps jurisdiction.

   When state or local approvals or statutorily required reviews are also required, those approvals should be obtained prior to commencing work under Corps jurisdiction. Refer to the document titled "*Agency & Partners Contact Directory"*, which can be found on the Corps website at: https://www.nae.usace.army.mil/missions/regulatory/state-general-permits/maine-general-permit/.

SECTION II. RGP PROCEDURES

To qualify under these RGPs, the design, construction, maintenance, and use associated with each proposed activity shall meet the terms and eligibility criteria listed in Section III of the RGPs and all applicable general conditions (GCs) in Section IV. For activities authorized by RGPs which do not require submission of a pre-construction notification, (i.e. non-notifying) prior to commencement of the activity, the proponent (i.e., the person and/or the entity performing the work) is responsible for ensuring the activity meets the terms of the applicable RGP, any applicable GCs, and applicable State Water Quality Certification (WQC) and Coastal Zone Management (CZM) Act consistency conditions found on Corps website at: https://www.nae.usace.army.mil/missions/regulatory/state-general-permits/maine-general-permit/. Below are the general conditions for the WQC and CZM. WQC and CZM specific conditions are within the RGP in Section III. Applicants should first review the RGPs to determine if a project is eligible for verification under one or more of the RGPs within this document. A Pre-Construction Notification (PCN) is required if a waiver is required by any RGP. Activities that do not meet criteria of these RGPs will require an Individual Permit (IP). Refer to the document titled *"Local Procedures For Submission of a Complete PCN or Application"* for guidance on the permitting process, which can be found on the Corps webpage at: https://www.nae.usace.army.mil/missions/regulatory/. (*This is a pending document and will be published on our website when completed.*)

Maine Department of Environmental Protection (MEDEP) & Land Use Planning Commission (LUPC) issued WQC with conditions and the Maine Coastal Program (MCP) concurred to the CZM with conditions for projects located within the boundaries of the State of Maine for the following GPs: 1, 3, 4, 5, 6, 7, 11, 12, 13, 14, 15, 17, 20, 27, 29, 33, 38, 39, 41, 42, 43, 46, 48, 51, 52 ,53, 55, 54, 57, 58, 60, A, B & C. WQC was issued and CZM concurrence was given for the above listed GPs so long as the project proponent follows the below general conditions:

1. Projects that would result in any direct, permanent salt marsh (tidal wetlands) loss must be reviewed individually for WQC and CZM unless mitigation is required.
2. When operating equipment or otherwise undertaking construction activities in aquatic resources, the project proponent shall:
    - Include in the project plan/design drawings the locations of:
        - the project site with all waters, including wetlands, clearly demarcated;
        - staging areas;
        - construction access points; and
        - disturbance limits.
    - Clean all equipment prior to the equipment arriving on the project site.
    - Have containment booms and/or absorbent material available onsite prior to the commencement of work. In the case of spills, the project proponent shall immediately employ containment booms and/or absorbent material to prevent discharges from reaching waters of the United States.
    - Prior to entering any waters of the United States, inspect all equipment for oil, gas, diesel, anti-freeze, hydraulic fluid, and other petroleum leaks. If the project proponent detects a leak from any equipment, they shall immediately remove the equipment from waters of the U.S.; and within 24 hours of detection of a leak, the project proponent shall repair the equipment in a staging area or move it offsite.
    - Clean all contaminated areas within 8 hours of spill detection and remove contaminated soil from the site within 24 hours or contain it in enclosed containers until it is removed from the site.
3. Project proponents must identify whether a proposed project would occur within an S1 or S2 natural community identified by the Maine Natural Areas Program (MNAP) and coordinate with MNAP to address any potential concerns and discuss mitigation as appropriate. Project proponents can use MNAP online resources to learn more about how each natural community is characterized here: https://www.maine.gov/dacf/mnap/features/commsheets.htm.Project proponents may also contact MNAP directly for questions and coordination here: maine.nap@maine.gov.
4. Project proponents must identify whether a proposed project would occur within an Essential Habitat, as listed in 09-137 C.M.R. ch. 8, or Significant Wildlife Habitat, as defined in 38 M.R.S. § 480-B(10), and coordinate with IFW to address any potential concerns and discuss mitigation as appropriate. Project proponents may contact DIFW directly for questions and coordination here: IFWEnvironmentalReview@maine.gov.

Environmental Protection Agency (EPA) issued WQC with general conditions for projects located within the boundaries of an Indian Reservation and Acadia National Park for the following GPs: 3, 7, 12, 13, 14, 15, 18, 33, 38, 39, 41, 51, 52, 54, 57, 58, 60, A, B, and C. WQC was issued for the above listed GPs so long as the project proponent follows the below general conditions:

1. Prior to construction, the project proponent shall develop a plan that:
    - Includes time stamped photo-documentation of the baseline conditions (*i.e.*, 50 feet upstream of the project area, within the project area, and 100 feet downstream of the project area).
    - Identifies on a site map:
        - Project site with all waters of the U.S. demarcated. Identify all locations where the project will cross jurisdictional waterbodies and identify the ordinary high-water mark and/or wetland boundaries; the planned work area where wetlands/aquatic resources will be removed, disturbed, and/or protected; buffer zones; and areas to be restored/reclaimed, as well as site access points and other approved work areas. Staging areas and stockpiling of materials and equipment, including locations for containment booms and/or absorbent materials, and/or hazardous materials. Stockpiles (*e.g.*, sediment, soil, or other construction materials) shall be stored at least 50 feet from where it may enter waters of the U.S.
        - Construction access points.
        - Disturbance limits.
        - Locations where site dredging and placement of dredged material activities will occur.
        - Locations where hazardous materials are stored. Identify where containment booms and/or absorbent materials are located for corrective action if needed. Hazardous materials shall be stored in leak-proof containers with appropriate secondary containment measures (*e.g.*, spill berms, dikes, spill containment pallets, absorbent materials). Any silt/sediment fencing.
        - Photo-reference sites. The project proponent shall indicate the directional view and location where photos were taken on the site map.
    - Includes a description of how the site will be restored to pre-construction conditions, including stream hydrology and stability/or aquatic resource composition and diversity of native species to be used. Non-native and invasive species shall not be used for restoration activities.
    - Includes the following as applicable:
        - <u>Cofferdams, temporary berms, pilings, and/or dikes:</u> Describe installation and maintenance practices for any cofferdams, temporary berms, pilings, and/or dikes.
        - <u>Dredging:</u> Describe how contaminated materials will be managed (*e.g.*, sediment testing data and information to identify whether sediments are clean or contaminated), if included in the project dredged area. Describe methods for minimizing dredging impacts (*i.e.*, sedimentation resuspension) in the water column.

- Erosion control: Identify the types and locations of sediment and erosion control features that shall be used onsite, including sediment control fences, haybales, heavy mud mats, and/or other structures. Biodegradable blankets and/or loose-weave mesh shall be used for erosion control matting. Dewatering: Describe methods for dewatering, including the equipment that would be used to conduct the dewatering activities. Identify the locations and timing, including length of time the area is to be dewatered. Explain removal method of the temporary structures and/or fill and what measures will be taken to minimize downstream turbidity and adaptive management measures that will be taken and employed to prevent the draining of waters of U.S., including wetlands.
- Ditching: Explain trenching and material placement techniques and stabilization methods to be employed, as well as timing. In wetlands, the top 6 to 12 inches of the trench shall be backfilled with topsoil from the trench, unless other techniques are approved. Include activity timing needs for ditching and stabilization.

- Submit the plan to EPA Region 1 at R1CWA401@epa.gov.

During construction, the project proponent shall:

- Visually inspect construction activities daily.
- Prevent sediment, debris, silt, sand, cement, concrete, oil or petroleum, organic materials, or other construction debris or wastes from entering waters of the U.S.
- Maintain documentation onsite that all equipment was cleaned of dirt, mud and other materials prior to arriving on the project site.
- Inspect all equipment daily and prior to entering any waters of the U.S. for oil, gas, diesel, anti-freeze, hydraulic fluid, and other petroleum leaks. If the project proponent detects a leak from any equipment, they shall immediately remove the equipment from waters of the U.S.; and within 24 hours of detection of a leak, repair the equipment in a staging area or move it offsite.
- Limit vegetation clearing and disturbance to waters.
- Limit restoration of the channel bed to pre-existing contours and conditions.
- Photo-document any failures or increased turbidity due to construction activities. Within 24 hours of observing a failure or marked increase in turbidity associated with construction, the project proponent shall remedy and implement any additional adaptive management measures to stabilize the activity and prevent further unauthorized discharges into waters of the U.S. The project proponent shall photo-document the failure (*i.e.*, 50 feet upstream of failure, at the incident site, and at least 100 feet downstream of the failure) and the adaptive management measures taken immediately following implementation. The project proponent shall take photos at the same location and direction as the photos in the plan.
  - Within 48 hours of observing any failure, the project proponent shall provide EPA Region 1 with the above mentioned photo-documentation, and descriptions of all observed failures and remedies.
  - Within three weeks of observing a failure, the project proponent shall provide EPA Region 1 with a description of the impacts and effectiveness of the adaptive management measures.

- Carry out as applicable:
    - Erosion control: Inspect sediment and erosion control measures daily during project implementation and within 12 hours of precipitation events. After construction is complete, stabilization purposes.
    - Dewatering: Assess all dewatering measures within 24 hours after a storm event.

Post construction, the project proponent shall as applicable:

- Submit a copy of the as-builts and a post dredged and disposal report within 45 days of each dredging or disposal event to EPA Region 1 at R1CWA401@epa.gov. The project proponent shall include the following items in the post-dredged and disposal report:
    - Dredging and disposal dates.
    - Updated site map displaying the disposal location(s).
    - Dredging and disposal volumes.
    - Water quality monitoring data.
    - Post-dredged bathymetry.
    - Updated site maps displaying any new ditches, spoil piles, widths and depths.

SECTION III. MAINE REGIONAL GENERAL PERMITS

Applicants shall review all Sections of the RGPs prior to utilizing them or submitting a pre-construction notification to the Corps to confirm that the activity, as proposed, complies with all terms and conditions of the 2025 ME RGPs.

Regional General Permits

1. Aids to Navigation
3. Maintenance
4. Fish and Wildlife Harvesting, Enhancement, and Attraction Devices and Activities
5. Scientific Measurement Devices
6. Survey Activities
7. Outfall Structures and Associated Intake Structures
11. Temporary Recreational Structures
12. Oil or Natural Gas Pipeline Activities
13. Bank Stabilization
14. Linear Transportation Projects
15. U.S. Coast Guard Approved Bridges
17. Hydropower Projects
18. Minor Discharges
19. Minor Dredging
20. Response Operations for Oil or Hazardous Substances
27. Aquatic Ecosystem Restoration, Enhancement, and Establishment Activities
29. Residential Developments
33. Temporary Construction, Access, and Dewatering
38. Cleanup of Hazardous and Toxic Waste
39. Commercial and Institutional Developments
41. Reshaping Existing Drainage and Irrigation Ditches
42. Recreational Facilities
43. Stormwater Management Facilities
45. Repair of Uplands Damaged by Discrete Events
46. Discharges in Ditches
48. Commercial Shellfish Mariculture Activities
51. Land-Based Renewable Energy Generation Facilities
52. Water-Based Renewable Energy Generation Pilot Projects
53. Removal of Low-Head Dams
54. Living Shorelines
55. Seaweed Mariculture Activities
57. Electric Utility Line and Telecommunications Activities
58. Utility Line Activities for Water and Other Substances
60. Activities to Improve Passage of Fish and Other Aquatic Organisms

A. Boat Ramps

B. Dredging, Disposal of Dredged Material, Beach Nourishment, Rock Relocation, Rock & Debris Removal, and Recreational Beach Grading & Raking

C. Structures and Moorings in Navigable Waters of The U.S.

RGP 3. Maintenance (Authorities: Sections 10 and 404):

(a) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This RGP also authorizes the removal of previously authorized structures or fills. Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications, including the removal of material from the stream channel, must be immediately adjacent to the project. This RGP also authorizes the removal of accumulated sediment and debris within, and in the immediate vicinity of, the structure or fill. This RGP also authorizes the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the district engineer, provided the permittee can demonstrate funding, contract, or other similar delays.

(b) This RGP also authorizes the removal of accumulated sediments and debris outside the immediate vicinity of existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.). The removal of sediment is limited to the minimum necessary to restore the waterway in the vicinity of the structure to the approximate dimensions that existed when the structure was built, but cannot extend farther than 200 feet in any direction from the structure. This 200 foot limit does not apply to maintenance dredging to remove accumulated sediments blocking or restricting outfall and intake structures or to maintenance dredging to remove accumulated sediments from canals associated with outfall and intake structures. All dredged or excavated materials must be deposited and retained in an area that has no waters of the United States unless otherwise specifically approved by the district engineer under separate authorization.

(c) This RGP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the maintenance activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After conducting the maintenance activity, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

(d) This RGP does not authorize maintenance dredging for the primary purpose of navigation. This RGP does not authorize beach restoration. This RGP does not authorize new stream channelization or stream relocation projects.

Pre-construction notification required if:

Activities authorized by paragraph (b) of this RGP, the permittee must submit a pre-construction notification to the district engineer prior to commencing the activity (see general condition 32). The pre-construction notification must include information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals.

Note 1: This RGP authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the Clean Water Act Section 404(f) exemption for maintenance.

Note 2: Activities conducted under RGPs involving the replacement or installation of new tidal crossings should comply with the State of Maine's CoastWise Approach. See state website for additional information: https://www.maine.gov/dmr/sites/maine.gov.dmr/files/inline-files/CoastWiseManualJuly2023_updated.pdf

Note 3: A joint pre-application consultation with the Corps and State Resource Agencies is advised for all activities that involve new or replacement tidal crossings.

Section 401 Water Quality Certification (WQC):

- MEDEP and LUPC granted WQC with general conditions and RGP-specific conditions for projects located within the boundaries of the State of Maine. See Section II above for general conditions.

RGP-specific conditions:

- To the greatest extent practicable, culvert installation must not disturb the stream's natural structure and work in the stream must be minimized.
- The culvert must follow the course and grade of the stream channel to the greatest extent possible.
- Culverts shall be sized to prevent perching and pooling.

- EPA granted WQC with general conditions for projects located within the boundaries of an Indian Reservation and Acadia National Park. See Section II above for general conditions.

Coastal Zone Management (CZM) Act Consistency Determination:

The MCP concurred with general and RGP- specific conditions with the Corps federal consistency determination for areas that are from the inland boundary of coastal municipalities or unorganized townships or plantations that contain tidal waters seaward to the outer limit of the State's territorial ownership, three nautical miles from the baseline from which the territorial sea is measured. See Section II above for general conditions and see MEDEP and LUPC WQC RGP-specific conditions above.

SECTION IV: General Conditions

To qualify for RGP authorization, the prospective permittee must comply with the following general conditions (GCs), as applicable. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an RGP.

1. Navigation
2. Aquatic Life Movements
3. Spawning Areas
4. Migratory Bird Breeding Areas
5. Shellfish Beds
6. Suitable Material
7. Water Supply Intakes
8. Adverse Effects From Impoundments
9. Management of Water Flows
10. Fills Within 100-Year Floodplains.
11. Equipment.
12. Soil Erosion and Sediment Controls.
13. Removal of Temporary Structures and Fills.
14. Proper Maintenance
15. Single and Complete Project
16. Wild and Scenic Rivers
17. Tribal Rights.
18. Federal Threatened and Endangered Species
19. Migratory Birds and Bald and Golden Eagles
20. Historic Properties
21. Discovery of Previously Unknown Remains and Artifacts
22. Designated Critical Resource Waters
23. Mitigation
24. Safety of Impoundment Structures
25. Water Quality
26. Coastal Zone Management
27. Regional and Case-By-Case Conditions
28. Use of Multiple Regional General Permits
29. Transfer of General Permit Verifications
30. Compliance Certification
31. Activities Affecting Structures or Works Built by the United States
32. Pre-Construction Notification
33. PCN Summary Table
34. Essential Fish Habitat
35. Invasive Species
36. General Permit Documentation On-Site
37. Abandonment
38. Expiration of Regional General Permits

1. **Navigation.**

(a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his or her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

(d) Aquaculture:

Navigation Risk Assessment (NRA), Aids to Navigation (AtoN), and Charting:

i. Coordination with the USCG can be completed by contacting via email: D01-SMB-SecNNE-Waterways@uscg.mil.

The applicant shall provide the following information to facilitate completion of the NRA: applicant name/company affiliation, license/lease type (commercial, research, shellfish, kelp, new or modified), nautical chart, detailed drawing with dimensions, time of year, potential lighting/marking, types/materials of structures in water, planned anchoring, cultivation techniques (number of weekly/monthly visits, vessel tending/type), and any other significant information.

If the applicant receives a medium- or high-risk assessment, they shall coordinate with the Corps and apply safety risk mitigations. The USCG will refer the project to the Corps unless the Corps makes the determination that it may proceed.

Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense. For required permitting, the applicant shall contact USCG First District Private Aid Program Manager through D01-SMB-D01PrivateAtoN@uscg.mil. Only actual AtoNs are permitted; floats, balls, markers, mooring balls and ‘highflier flags’ are not considered Aids to Navigation (AtoN). See: http://www.usharbormaster.com.

Applicants shall notify NOAA’s National Ocean Service (NOS) Nautical Data Branch Office of Coast Survey to initiate chart and Coast Pilot corrections. See:

https://nauticalcharts.noaa.gov/. Applicants must also notify NOAA on removal. See Note 2 below.
ii. For marine safety information during construction or other significant periods, applicants may use the First District's Marine Safety Information form and email to: D01-SMB-LNM@uscg.mil.

Note 1: If a PCN is required, applicants shall include documentation of all required coordination with their PCN.

Note 2: For nautical chart and coast pilot updates, activities owners should use the status report form at https://nauticalcharts.noaa.gov/charts/docs/charts-updates/USACE+Permit+Status+Report.pdf. For aquaculture activities owners should use: https://nauticalcharts.noaa.gov/charts/docs/charts-updates/Artificial+Reef+Aquaculture+Status+Report.pdf to notify the Office of Coast Survey of the project completion. The form should be emailed to ocs.ndb@noaa.gov and should include a copy of as-built drawings.

Note 3: There shall be no unreasonable interference with navigation by the existence or use of any activity authorized by any RGP, and no attempt shall be made by a permittee to prevent the full and free use by the public of all navigable waters at or adjacent to any activity authorized by any RGP.

2. **Aquatic Life Movements.**

No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

Note: Compliance with this condition may be achieved by ensuring that during in-stream work, the low flow channel/thalweg remains unobstructed during periods of low flow, except when it is necessary to perform the authorized work. Additionally, for work in tidal waters, in-stream controls should be installed in such a manner that do not obstruct fish passage.

3. **Spawning Areas.**

Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. **Migratory Bird Breeding Areas.**

   Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. **Shellfish Beds.**
   No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by RGPs 4, 48, 55 or is a shellfish seeding or habitat restoration activity authorized by RGP 27.

   Note: Contact the Maine Department of Marine Resource (ME DMR) for further conservation measures if a proposed activity would result in excess turbidity (i.e., dredging) and is located within 100 feet of ME DMR shellfish areas. Reference materials can be found at: https://dmr-maine.opendata.arcgis.com/datasets/mainedmr-molluscan-shellfish-2010/explore?location=43.733484%2C-69.767928%2C10.43 and https://mgs-maine.opendata.arcgis.com/datasets/maine-coastal-marine-geologic-environments/explore.

6. **Suitable Material.**
   No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. **Water Supply Intakes.**

   No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent stabilization.

8. **Adverse Effects From Impoundments.**

   If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

   Note: Permanent wetland crossings shall be constructed in such a manner as to prevent excessive ponding or drying on either side of the authorized crossing after completion of the work. Measures shall be taken to maintain the existing hydrology. Such measures may include road cross drains such as culverts that are appropriately sized and placed at intervals to maintain the existing hydrology of the contiguous wetland.

9. **Management of Water Flows.**

   To the maximum extent practicable, the preconstruction course, condition, capacity, and location of open waters must be maintained for each activity, including stream

channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows, including tidal flows. The activity must not restrict or impede the passage of normal or high flows, including tidal flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the preconstruction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains.

The activity must comply with applicable FEMA approved state or local floodplain management requirements.

11. Equipment.

Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

If mats are used to minimize soil disturbance, the affected areas must be returned to pre-construction elevations, and revegetated as appropriate. In circumstances where the use of mats has caused significant soil compaction efforts using techniques (e.g., soil reaeration techniques) to break up the compaction should be employed to return the soil to a pre-construction state prior to returning to pre-construction elevations.

Note 1: Compliance with this condition may be achieved through the implementation of best management practices outline in NAE's "*Construction Mat BMPs*" document available at: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Maine-General-Permit/.

Note 2: Compliance with this condition may be achieved by ensuring that construction equipment such as barges in tidal waters always provide clearance above the substrate to avoid impacts to SAS during all tides.

Note 3: Compliance with this condition may be achieved by ensuring that construction equipment that would cross or access streams utilizes temporary bridges, spans, construction mats, culverts, or cofferdams to minimize disturbance to the waterway.

12. Soil Erosion and Sediment Controls.

Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

Note: Compliance with this condition may be achieved by ensuring that all discharge points back into waters of the U.S., including wetlands use appropriate energy dissipaters and erosion and sedimentation control BMPs. Controls that are biodegradable can be left in place but should be removed if not biodegradable. Temporary controls should be removed upon completion of work, but not before all exposed soil and other fills and any work waterward of the OHWM are permanently stabilized. Once permanently stabilized, temporary controls should be removed as soon as possible. Sediment and debris collected by these controls should be removed and placed at an upland location and in a manner that will prevent its later erosion into a waterway or wetland.

13. Removal of Temporary Structures and Fills.

Temporary structures must be removed, to the maximum extent practicable, after their use has been discontinued. Temporary fills must be removed in their entirety and the affected areas returned to preconstruction elevations. The affected areas must be revegetated, as appropriate.

Note: Compliance with this general condition may be achieved through the use of underlying temporary fills with geotextile fabric which may help to facilitate the restoration to pre-construction elevations.

14. Proper Maintenance.

Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable RGP general conditions, as well as any activity-specific conditions added by the district engineer to an RGP authorization.

Note: Derelict, degraded or abandoned piles and sheet piles in navigable waters of the U.S., except for those inside existing work footprints for piers, must be completely removed, cut and/or driven to three feet below the substrate to prevent interference with navigation. Existing creosote piles that are affected by project activities shall be completely removed if practicable. In areas of fine-grained substrates, piles must be removed by the direct, vibratory or clamshell pull method to minimize sedimentation and turbidity impacts and prevent interference with navigation from cut piles. Removed piles shall be disposed of in an upland location landward of MHW or OHW and not in wetlands, tidal wetlands, their substrate, or mudflats.

15. Single and Complete Project.

The activity must be a single and complete project. The same RGP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers.

(a) No RGP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible

inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed RGP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the pre-construction notification with the Federal agency with direct management responsibility for that river. Permittees shall not begin the RGP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed RGP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/.

Note: See also: General Condition 33(c), Additional PCN Requirement (Wild and Scenic Rivers).

17. Tribal Rights.

No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Federal Threatened and Endangered Species.

(a) No activity is authorized under any RGP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any RGP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of "effects of the action" for the purposes of ESA section 7 consultation.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has

been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

Note: Federal agencies should refer to "*Multiple Federal Agency & Lead Federal Agency Best Practices"* when a Corps permit is required, which can be found on the Corps webpage at: www.nae.usace.army.mil/Missions/Regulatory/. (*This is a pending document and will be published on our website when completed.*)

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation), the pre-construction notification must include the name(s) of the endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. For activities where the non-Federal applicant has identified listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have "no effect" on listed species (or species proposed for listing or designated critical habitat (or critical habitat proposed for such designation), or until ESA section 7 consultation or conference has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation or conference with the FWS or NMFS the district engineer may add species-specific permit conditions to the RGPs.

(e) Authorization of an activity by an RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat

modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed RGP activity, the non-federal permittee should provide a copy of that ESA section 10(a)(1)(B) permit with the pre-construction notification required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed RGP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed RGP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed RGP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete preconstruction notification whether the ESA section 10(a)(1)(B) permit covers the proposed RGP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.nmfs.noaa.gov/pr/species/esa/ respectively.

19. Migratory Birds and Bald and Golden Eagles.

The permittee is responsible for ensuring that an action authorized by an RGP complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting the appropriate local office of the U.S. Fish and Wildlife Service to determine what measures, if any, are necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties.

(a) No activity is authorized under any RGP which may have the potential to cause effects on properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)(1)). If pre-construction notification is required for the proposed RGP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that

the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

Note: Federal agencies should refer to "*Multiple Federal Agency & Lead Federal Agency Best Practices"* when a Corps permit is required, which can be found on the Corps webpage at: www.nae.usace.army.mil/Missions/Regulatory/. (*This is a pending document and will be published on our website when completed.*)

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the RGP activity might have the potential to cause effects on any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed RGP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts commensurate with potential impacts, which may include background research, consultation, oral history interviews, sample field investigation, and/or field survey. Based on the information submitted in the pre-construction notification and these identification efforts, the district engineer shall determine whether the proposed RGP activity has the potential to cause effects on historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect.

(d) Where the non-Federal applicant has identified historic properties on which the proposed RGP activity might have the potential to cause effects and has so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects on historic properties or that NHPA section 106 consultation has been completed. For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the

non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

Note: To comply with GC 20 above, the *State Historic Preservation Office & Tribal Scoping Request* template should be submitted to the Maine Historic Preservation Commission and the Federally Recognized Tribes and included in the PCN submission to the Corps, which can be found on the Corps website. Also, the document titled "*Best Practices for Historic Properties & Cultural Resources"* is also found on the Corps website at: https://www.nae.usace.army.mil/Missions/Regulatory/. (*The above documents are pending and will be published on our website when completed. Please continue to notify the MHPC and THPOs through current practices.*)

21. Discovery of Previously Unknown Remains and Artifacts.

Permittees that discover any previously unknown historic, cultural or archaeological remains and artifacts while accomplishing the activity authorized by an RGP, they must immediately notify the district engineer of what they have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters.

Critical resource waters include, NOAA managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district

engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by RGPs 7, 12, 17, 29, 39, 42, 43, 51, 52, 57 and 58 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For RGPs 3, 13, 15, 18, 19, 27, 33, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed by permittees in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these RGPs only after she or he determines that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation.

The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10 -acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) Compensatory mitigation at a minimum one-for-one ratio will be required for all losses of stream bed that exceed 3/100-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity specific waiver of this requirement. This compensatory mitigation requirement may be satisfied through the restoration or enhancement of riparian areas next to streams in accordance with paragraph (e) of this general condition. For losses of stream bed of 3/100-acre or less that require pre-construction notification, the district engineer may determine on a case-

by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, because streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for RGP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. If restoring riparian areas involves planting vegetation, only native species should be planted. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the RGPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the pre-construction notification is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f).)

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the RGP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). If permittee-responsible mitigation is the proposed option, and the proposed compensatory mitigation site is located on land in which another federal agency holds an easement, the district engineer will coordinate with that federal agency to determine if proposed compensatory mitigation project is compatible with the terms of the easement.

(5) If in-lieu fee program credits are the proposed option, the mitigation plan needs to address only the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the RGP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the RGPs. For example, if an RGP has an acreage limit of ½-acre, it cannot be used to authorize any RGP activity resulting in the loss of greater than ½ -acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an RGP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the RGPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the RGP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may

be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

Note 1: In addition to the requirements of GC 23 above - *Mitigation*, compensatory mitigation requirements for unavoidable impacts to waters of the U.S. will be evaluated in accordance with the current *New England District Compensatory Mitigation Standard Operating Procedures* (April 26, 2024) and any superseding versions thereof (https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation/).

Note 2: Applicants are encouraged to utilize the Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS) in order to determine which in-lieu fee programs and/or mitigation banks have a sufficient amount of appropriate and available credits which they may propose to use to offset their proposed activity's unavoidable impacts to waters of the U.S., including wetlands. RIBITS is available at: https://ribits.ops.usace.army.mil/ords/f?p=107:2:::::.

24. Safety of Impoundment Structures.

To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state or federal, dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality.

(a) Where the certifying authority (state, authorized tribe, or EPA, as appropriate) has not previously certified compliance of an RGP with CWA section 401, a CWA section 401 water quality certification for the proposed activity which may result in any discharge from a point source into waters of the United States must be obtained or waived (see 33 CFR 330.4(c)). If the permittee cannot comply with all of the conditions of a water quality certification previously issued by the certifying authority for the issuance of the RGP, then the permittee must obtain a water quality certification or waiver for the proposed activity which may result in any discharge from a point source into waters of the United States in order for the activity to be authorized by an RGP.

(b) If the RGP activity requires pre-construction notification and the certifying authority has not previously certified compliance of an RGP with CWA section 401, the proposed activity which may result in any discharge from a point source into waters of the United States is not authorized by an RGP until water quality certification is obtained or waived. If the certifying authority issues a water quality certification for the proposed discharge into waters of the United States, the permittee must submit a copy of the certification to the district engineer. The discharge into waters of the United States is not authorized by an RGP until the district engineer has notified the permittee that the water quality

certification requirement has been satisfied (i.e., by the issuance of a water quality certification or a waiver and completion of the Section 401(a)(2) process).

(c) The district engineer or certifying authority may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

Note 1: For information concerning how to apply to EPA for a Water Quality Certification for activities located within a Indian Reservation and Acadia National Park, please see: https://www.epa.gov/cwa-401/resources-when-epa-acts-certifying-authority-under-section-401 and/or contact: R1CWA401@epa.gov.

Note 2: For information concerning how to apply to LUPC or MEDEP for a Water Quality Certification, please see: https://www.maine.gov/dep/water/wd/wqc/.

26. Coastal Zone Management.

In coastal states where an RGP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). If the permittee cannot comply with all of the conditions of a coastal zone management consistency concurrence previously issued by the state, then the permittee must obtain an individual coastal zone management consistency concurrence or presumption of concurrence in order for the activity to be authorized by an RGP. The district engineer or a state may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

Note 1: If an individual state coastal zone management consistency concurrence is required, applicants should submit a determination of consistency (see 15 CFR 930 Subpart C) or a consistency determination to the state (see 15 CFR 930 subpart D) at the same time as the PCN is submitted to the Corps, or shortly thereafter.

Note 2: For information concerning how to apply to the Maine Office of Community Affairs for a coastal zone management consistency certification, please see: https://www.maine.gov/dmr/programs/maine-coastal-program/federal-consistency-review.

27. Regional and Case-By-Case Conditions.

The activity must comply with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its CWA section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Regional General Permits.

The use of more than one RGP for a single and complete project is authorized, subject to the following restrictions:

(a) The total acreage loss of waters of the United States for a single and complete project cannot exceed the acreage limit of the RGP with the highest specified acreage limit when multiple RGPs are used to authorize an activity.

(b) If only one of the RGPs used to authorize the single and complete project has a specified acreage limit, the acreage loss of waters of the United States for that single and complete project cannot exceed that specified acreage limit. For example, if a road crossing over tidal waters is constructed under RGP 14 (which has an acreage limit of 1/3 acre in tidal waters), with associated bank stabilization authorized by RGP 13 (which does not have a specified acreage limit), the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

(c) If two or more of the RGPs used to authorize the single and complete project have specified acreage limits, the acreage loss of waters of the United States authorized by each of those RGPs cannot exceed the specified acreage limits of each of those RGPs. For example, if a commercial development is constructed under RGP 39 (which as a 1/2-acre limit), and the single and complete project includes the filling of a ditch authorized by RGP 46 (which has a 1-acre limit), the maximum acreage loss of waters of the United States for the construction of the commercial development under RGP 39 cannot exceed 1/2-acre, and the total acreage loss of waters of United States caused by the combination of the RGP 39 and RGP 46 activities cannot exceed 1 acre.

29. Transfer of General Permit Verifications.

If the permittee sells the property associated with a regional general permit verification, the permittee may transfer the regional general permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the regional general permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this regional general permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____ _____
(Transferee)

_____
(Date)

30. Compliance Certification.

Each permittee who receives an RGP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The successful completion of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the RGP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the RGP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation. The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States.

If an RGP activity also requires review by, or permission from, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission and/or review is not authorized by an RGP until the appropriate Corps office issues the section 408 permission or completes its review to alter, occupy, or use the USACE project, and the district engineer issues a written RGP verification.

Note: Refer to the New England District's Section 408 Program webpage that can be found at: https://www.nae.usace.army.mil/Missions/Section-408/. See also: Regional Condition 33(b), Additional PCN Requirement (Federal Projects).

32. Pre-Construction Notification.

(a) Timing. Where required by the terms of the RGP, the prospective permittee must notify the district engineer by submitting a preconstruction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information

necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the RGP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. If the proposed activity requires a written waiver to exceed specified limits of an RGP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the RGP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific RGP or RGP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) (i) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the RGP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental

effects caused by the proposed activity; and any other RGP(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures.

(ii) For linear projects where one or more single and complete crossings require preconstruction notification, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by an RGP but do not require PCNs). This information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project, and does not change those non PCN RGP activities into RGP PCNs.

(iii) Sketches should be provided when necessary to show that the activity complies with the terms of the RGP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of waters, wetlands, and other special aquatic sites on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate. For RGP 27 activities that require PCNs because of other general conditions or regional conditions imposed by division engineers, see Note 2 of that RGP;

Note: To comply with the above GC 32(5), the following methodologies should be utilized:

(a) Wetlands should be delineated in accordance with the Corps Wetlands Delineation Manual and the most recent Northcentral/Northeast Regional Supplement. Wetland delineation and jurisdiction information can be found at: www.nae.usace.army.mil/missions/regulatory/jurisdiction-and-wetlands and https://www.usace.army.mil/Media/Announcements/Article/4262089/1-august-2025-us-army-corps-of-engineers-enhances-aquatic-resource-delineation/.
(b) Refer to the “Best Practices for Jurisdictional Determinations and Wetland Delineations,” which can be found on the Corps webpage at:

https://www.nae.usace.army.mil/missions/regulatory/. (*This is a pending document and will be published on our website when completed.*)

(c) The ordinary high water mark should be delineated (on both sides) when streams, rivers, non-tidal open waters are present on the project site. Ordinary high water mark guidance can be found in RGL 05-05 (https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll9/id/1253). For complex, atypical, or problematic sites see: https://www.erdc.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/486085/ordinary-high-water-mark-ohwm-research-development-and-training/.

(d) Vegetated shallows should be delineated when present on the project site. Vegetated shallow survey guidance and maps can be found on the Corps webpage at: https://www.nae.usace.army.mil/Missions/Regulatory/Jurisdiction-and-Wetlands/.

(e) All Essential Fish Habitat should be delineated when present on the project site. EFH survey guidance can be found in the current EFH programmatic, which can be found on the Corps webpage at https://www.nae.usace.army.mil/Missions/Regulatory/Essential-Fish-Habitat/.

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed and a PCN is required, the prospective permittee must submit a statement describing how the compensatory mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-federal permittees, if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (or critical habitat proposed for such designation), the PCN must include the name(s) of those endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. For RGP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-federal permittees, if the RGP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For RGP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the “study river” (see general condition 16); and

(10) For an RGP activity that requires permission from, or review by, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the preconstruction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from, or review by, the Corps office having jurisdiction over that USACE project.

Note: Refer to the “*Best Practices for 408 Procedures”,* which can be found on the Corps webpage at: https://www.nae.usace.army.mil/missions/regulatory/state-general-permits/maine-general-permit/.

(c) Form of Pre-Construction Notification: The regional general permit pre-construction notification form (Form ENG 4342) should be used for RGP PCNs. A letter containing the required information may also be used. All PCN forms shall be submitted to the Maine Project Office via email:cenae-r-me@usace.army.mil.

(d) Agency Coordination:

(1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity’s compliance with the terms and conditions of the RGPs and the need for mitigation to reduce the activity’s adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for:

(i) all RGP activities that require preconstruction notification and result in the loss of greater than 1/2-acre of waters of the United States;

(ii) RGP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and

(iii) RGP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters.

(iv) All activities that require a waiver.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). These agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district

engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the RGPs, including the need for mitigation to ensure that the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered.

(4) In cases where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants will submit necessary documents and files to the Corps electronically via email at cenae-r-me@usace.army.mil or using the RRS at https://rrs.usace.army.mil/rrs

(6) The USACE will require additional information not listed here be provided with the PCN if necessary for compliance with other federal laws.

33. PCN Summary Table.

The following activities may require a PCN regardless of the terms of the applicable RGP. Please read the applicable GC to determine if a PCN is required.

Exceedance of loss thresholds within streams, non-tidal and tidal wetlands, tidal submerged aquatic vegetation, mudflats, and intertidal areas	See GC 33 - a
Located within or the vicinity of a Federal Project	See GC 33 - b
Located within or the vicinity of a Wild and Scenic River	See GC 33 - c
Involving discharges of temporary fill material	See GC 33 - d
Located within Vernal Pools	See GC 33 - e
Involving slip lining	See GC 33 - f
Activities within Time-of-Year Restrictions	See GC 33 - g
Located within the Saint John and Saint Croix River basins (Maine)	See GC 33 - h
Authorized by RGP 48, Commercial Shellfish Mariculture Activities and within the State of Maine > 5 acres	See GC 33 – i
Additional aquatic resource protection - activities within Important Rare Resources	See GC 33 - j
Involving stream crossings	See GC 33 - k

(a) Additional PCN Requirement (Specific Resources):

A PCN is required for any proposed activities which would result in the loss of waters of the United States[3] that exceed the listed thresholds to the following aquatic resources if not already required by the RGP.

Aquatic Resource:	**Threshold:**
Non-tidal Wetlands	4,356 square feet (0.1 acre)
Tidal and Non-Tidal Stream	200 linear feet or 0.03 acre (whichever is less)
Tidal Wetland	500 square feet
Tidal Submerged Aquatic Vegetation (SAV)	25 square feet
Mudflat	1,000 square feet
Intertidal	1,000 square feet

(b) Additional PCN Requirement (Federal Projects):

A PCN is required for any proposed activities which would involve the temporary or permanent occupation of, or alteration of, a federal project (including, but not limited to, a levee, dike, floodwall, channel, anchorage, breakwater, seawall, bulkhead, jetty, wharf, pier, or other work built or maintained but not necessarily owned by the United States). This includes all structures and work in, over, or under a Corps' federal navigation project (FNP) or in the FNP's buffer zone. The buffer zone is an area that extends from the horizontal limits of the FNP to a distance three times the FNP's authorized depth.

The activity may also require review and approval by the Corps pursuant to 33 USC 408 (Section 408 Permission). The applicant may reach out to the points of contact listed here: https://www.nae.usace.army.mil/Missions/Section-408/ and consult the National Channel Framework mapper: https://experience.arcgis.com/experience/b413139f18c046009ebcf62abea941dd/page/Map/. For activities which require a Section 408 permission, verification under a RGP will not be issued prior to the decision the Section 408 permission requires. Any structure or work constructed in an FNP, or its buffer zone shall be subject to removal at the owner's expense prior to any future Corps dredging or hydrographic surveys.

Applicants should contact the Corps Real Estate Division (https://www.nae.usace.army.mil/Missions/Real-Estate-Division/) at (978) 318-8585 for work that would occur on or would potentially affect a Corps property (or properties) and/or Corps-controlled easements. Work may not commence on Corps properties and/or Corps-controlled easements until they have received any required Corps real estate documents demonstrating site-specific permission to perform work.

A PCN is not required if an applicant has previously obtained a Section 408 permission for their proposed activities, or a determination from the Corps that a Section 408

[3] See Section VI – Definitions and Acronyms for loss of Waters of the United States.

permission is not required for their proposed activities, and the proposed activities qualify for a non-notifying RGP.

(c) Additional PCN Requirement (Wild and Scenic Rivers):

A PCN is required under GC 16, Wild and Scenic Rivers, and for: 1) any proposed activities which would be located in and within 0.25 mile up or downstream of a Wild and Scenic River (WSR) segment, or in tributaries within 0.25 mile of a WSR segment; 2) any proposed activities which would be located in wetlands within 0.25 mile of a WSR segment; and 3) any proposed activities that have the potential to alter free-flowing characteristics in a WSR segment. Applicants should utilize http://www.rivers.gov/ for the most up-to-date WSR designations.

Note: Applicants may coordinate with the Federal agency that has direct management responsibility of the WSR segment or tributary their proposed activity would be within 0.25 mile of prior to submitting a PCN to the Corps. If that Federal agency determines that the proposed activity would not adversely affect the subject WSR, a PCN is not required to be submitted.

(d) Additional PCN Requirement (Temporary Fills):

A PCN is required for any proposed activities that would involve the discharge of temporary fill (33 CFR 323.2(e) and (f)) greater than 1/10-acre to be left in place in non-tidal wetlands for more than one growing season. The growing season is generally defined as April 1 to September 30 (See the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* for more information about determining growing season. https://www.nae.usace.army.mil/Missions/Regulatory/Jurisdiction-and-Wetlands/Wetland-Delineation-Manual/).

Note 1: The Corps will decide on a case-by-case basis, after evaluating site-specific and activity-specific circumstances whether temporary construction mats proposed for use are considered as temporary fill.

Note 2: For linear projects, crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of RGP authorization (33 CFR 330.2(i)). Therefore, each crossing of a water of the U.S., including wetlands could have up to 0.1 acre of temporary fill without requiring the submittal of a PCN.

(e) Additional PCN Requirement (Vernal pools):

A PCN is required for any proposed discharges of dredged or fill material within a vernal pool depression which has been determined to be a water of the U.S. For information

on vernal pools, please visit:
https://www.nae.usace.army.mil/Missions/Regulatory/Vernal-Pools/

Note: Please note that the state may regulate additional vernal pools that the Corps does not.

(f) Additional PCN Requirement (Slip-Lining):

A PCN is required for any proposed activity which involves slip-lining a stream crossing that is not currently meeting the stream crossing BMPs found in GC 33(k) below (e.g., slip-lining and invert-lining).

(g) Additional PCN Requirement (In Water Work Time-of-Year Windows and Restrictions):

In-water work (including physical alterations) within non-tidal and tidal waters, shall be conducted during the following time-of-year (TOY) work windows (see below table). Approval to work outside the TOY work windows must be obtained from the Maine Department of Inland Fisheries and Wildlife (IFW) using the form located at: https://www.maine.gov/dep/land/permits/pbr/index.html for work in non-tidal waters or from the Maine Department of Marine Resources (DMR): https://www.maine.gov/dep/land/permits/pbr/index.html for work in tidal waters. If in-water work cannot be completed during the TOY work window or approval to work outside the TOY work window from IFW or DMR is not obtained, then the project requires a PCN and written verification removing the below requirements. If a PCN is required, due to RGP thresholds and/or other general and/or regional conditions, then the state's approval for working outside the TOY restriction shall be submitted with the PCN.

	TOY Work Restriction	TOY Work Window
Non-tidal Waters	Oct. 2 to Jul. 14	Jul. 15 to Oct 1.
Tidal Waters	Apr. 16 to Nov. 14	Nov. 15 to Apr. 15

Any proposed activity located in waters of the U.S. (excluding wetlands) shall be completed entirely "in-the-dry" or be isolated from active flows/the water column using temporary measures (i.e., cofferdams, sandbags, flume pipes, etc.) to the maximum extent practicable. The term "in-the-dry" means work that is done under dry conditions, e.g., work behind cofferdams or when the stream or tide is waterward of the work.

(h) Additional PCN Requirement (Saint John and Saint Croix River basins):

A PCN is required for any proposed work within the Saint John and Saint Croix River basins that requires approval of the International Joint Commission. In addition, a PCN is required if any temporary or permanent use, obstruction, or diversion of international boundary waters could affect the natural flow or levels of waters on the Canadian side

of the boundary; or if any construction or maintenance of remedial works, protective works, dams, or other obstructions in waters downstream from boundary waters could raise the natural level of water on the Canadian side of the boundary.

(i) Additional PCN Requirement (RGP 48, Commercial Shellfish Mariculture Activities):

A PCN is required for any activities proposed under RGP 48 which would install gear for a commercial shellfish operation within a site greater than 5 acres in size.

(j) Additional PCN Requirement (Important or Rare Resources):

A PCN is required if a discharge of dredged or fill material is proposed within any of the following aquatic resources or resource types identified as specifically important or rare within the State of Maine that warrant additional protections:

1. Lakes and tributaries that support arctic char and lake whitefish; or
2. Bogs and fens

(k) Additional PCN Requirement (Activities that do not meet the Stream Crossing BMPs):

A PCN is required for any proposed stream crossing activities that cannot comply with the below “Stream Crossing Best Management Practices (BMPs)” unless the district engineer provides the applicant written verification removing the below requirements.

1. The width of the crossing shall be greater than or equal to 1.2 times the bank full width.
2. The crossing shall be embedded greater than or equal to 2 feet and/or at least 25 percent of the conveyance’s height.
3. The crossing shall be constructed with a natural bottom substrate, as applicable.
4. The crossing shall match the gradient (i.e., slope) of the natural stream channel profile.
5. The crossing shall meet an openness ratio of greater than 0.82 feet.

For proposed stream crossings that cannot implement the above BMPs, the applicant should first coordinate with the appropriate state office to obtain required or recommended alternate stream crossing BMPs, prior to submitting a PCN to the Corps. If a stream crossing is designed to meet the standards required or recommended by the appropriate state agency for which the proposed activity is located within, those standards can serve in-lieu of these BMPs and submittal of a PCN is not required.

Note: Below are links to the stream crossing standards/guidelines for Maine that have published such standards/guidelines. Applicants are highly encouraged to contact their state for additional information regarding those requirements and/or recommendations, as state requirements may be more stringent than the above listed BMPs.

Maine Interagency Stream Crossing Guidelines: (https://www.nae.usace.army.mil/Missions/Regulatory/) - (*This is a pending document and will be published on our website when completed.*)

CoastWise: (https://www.maine.gov/dmr/sites/maine.gov.dmr/files/inline-files/CoastWiseManualJuly2023_updated.pdf)

34. Essential Fish Habitat (EFH):

Essential Fish Habitat (EFH) is defined as those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity (16 U.S.C. 1802).
The following GPs have been determined to result in no more than minimal adverse effects, provided the permittee complies with all terms and conditions of the RGP as applicable to the activity, including all activity thresholds and activity-specific Conservation Recommendations (CRs) identified in the current EFH and Fish and Wildlife Coordination Act (FWCA) Programmatic Consultation (https://www.nae.usace.army.mil/Missions/Regulatory/Essential-Fish-Habitat/).
For non-Federal applicants whose proposed activities would be located within EFH and that do not require a PCN per the language of the RGP or per any other general or regional condition (i.e., non-notifying), the applicant shall review the current EFH and FWCA Programmatic Consultation (https://www.nae.usace.army.mil/Missions/Regulatory/Essential-Fish-Habitat/) to ensure their proposed activity complies with all applicable CRs.

a. A PCN is required for any proposed project which would exceed the activity thresholds that are included within the current EFH and FWCA Programmatic Consultation. Any proposed project that exceeds an activity threshold requires preliminary coordination/project-specific consultation.

b. For all activities which do not exceed the activity-based thresholds included within the current EFH and FWCA Programmatic Consultation, the project proponent shall implement the activity-specific applicable CRs. If the applicable CRs cannot be implemented, a PCN must be submitted to the Corps, and work may not commence until the Corps verifies the project under the applicable RGP(s).

Federal applicants should follow their own procedures for compliance with the Magnuson-Stevens Fishery Conservation and Management Act and Fish and Wildlife Coordination Act.

Note 1: For activities proposed for authorization by an RGP that requires the submittal of a PCN, applicants are encouraged to review the current EFH and FWCA Programmatic

Consultation and design their proposed activities with the activity-based thresholds and incorporate applicable CRs.

Note 2: Applicants can utilize the NMFS EFH mapper to determine if their proposed activities are located within EFH: https://www.habitat.noaa.gov/apps/efhmapper/. Applicants can also utilize the current EFH and FWCA Programmatic Consultation (https://www.nae.usace.army.mil/Missions/Regulatory/Essential-Fish-Habitat/) for guidance on non-tidal waterbodies with diadromous fish.

35. **Invasive Species:**
The introduction, spread, or the increased risk of invasion of invasive plant or animal species on the project site, into new or disturbed areas, or into areas adjacent to the project site caused by the site work shall be prevented. Native, non-invasive vegetation must be used for revegetation unless otherwise authorized by the Corps, and shall not contain any species listed in Appendix K ("Invasive and Other Unacceptable Plant Species") of the current *New England District Compensatory Mitigation Standard Operating Procedures* and any superseding versions thereof (https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation/). Information about how to avoid the spread of invasive species can be found at: https://www.nae.usace.army.mil/Missions/Regulatory/Invasive-Species.

36. **General Permit Documentation On-Site:**
The permittee shall ensure that a copy of their verification letter (for notifying GPs only) and applicable RGP with all applicable GCs are at the worksite whenever work is being performed, and that all personnel performing work are fully aware of its terms and conditions.

37. **Abandonment:**
If the permittee decides to abandon the activity authorized by a RGP, unless such abandonment is merely the transfer of property to another party, the permittee may be required to restore the area to the satisfaction of the Corps.

38. **Expiration of Regional General Permits:**
If an RGP is not modified or reissued within five years of its effective date, it automatically expires and becomes null and void. Activities which have commenced (i.e, are under construction) or are under contract to commence in reliance upon an RGP will remain authorized provided the activity is completed within twelve months of the date of an RGP's expiration, modification, or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization. Activities completed under the authorization of an RGP which was in effect at the time the activity was completed continue to be authorized by that RGP.

Section V: District Engineer's Decision

1. In reviewing the pre-construction notification for the proposed activity, the district engineer will determine whether the activity authorized by the Maine General Permit will result in more than minimal individual or cumulative adverse environmental effects or maybe contrary to the public interest. If a project proponent requests authorization by a specific General Permit, the district engineer should issue the General Permit verification for that activity if it meets the terms and conditions of that General Permit, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the single and complete crossings of waters of the United States that require pre-construction notifications to determine whether they individually satisfy the terms and conditions of the RGP(s), as well as the cumulative effects caused by all of the crossings of waters of the United States authorized by a RGP. If an applicant requests a waiver of an applicable limit, the district engineer will only grant the waiver upon a written determination that the RGP activity will result in only minimal individual and cumulative adverse environmental effects.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the RGP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by a RGP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the RGP activity, the type of resource that will be affected by the RGP activity, the functions provided by the aquatic resources that will be affected by the RGP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the RGP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add activity-specific conditions to the RGP authorization to address site-specific environmental concerns.

3. If the proposed RGP activity includes a loss of waters greater than the thresholds outlined in the New England Compensatory Mitigation Guidance, the prospective permittee should submit a mitigation proposal with the pre-construction notification. Applicants may also propose compensatory mitigation for RGP activities with smaller impacts, or for impacts to other types of waters. However, compensatory mitigation shall not be required for activities authorized by RGP 27 because those activities must result in net increases in aquatic resource functions and services (see the text of RGP 27). The district engineer will consider any proposed compensatory mitigation or other

mitigation measures the applicant has included in the proposal when determining whether the net adverse environmental effects of the proposed RGP activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the proposed activity complies with the terms and conditions of the RGP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the RGP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the pre-construction notification, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan and determine whether the proposed mitigation would ensure that the RGP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the RGP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the RGP activity can proceed under the terms and conditions of the RGP, including any activity-specific conditions added to the RGP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed RGP activity are more than minimal, then the district engineer will notify the applicant either:
(a) that the activity does not qualify for authorization under the RGP and instruct the applicant on the procedures to seek authorization under an individual permit;

(b) that the activity is authorized under the RGP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or

(c) that the activity is authorized under the RGP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day pre-construction notification review period (unless additional time is required to comply with general conditions 16, 18, 20, and/or 31), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not

practicable or not necessary to ensure timely completion of the required compensatory mitigation.

Further Information:

1. District engineers have authority to determine if an activity complies with the terms and conditions of an RGP.

2. RGPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. RGPs do not grant any property rights or exclusive privileges.

4. RGPs do not authorize any injury to the property or rights of others.

5. RGPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

SECTION VI: Definitions and Acronyms

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term “discharge” means any discharge of dredged or fill material into waters of the United States.

Ecological reference: A model used to plan and design an aquatic ecosystem restoration, enhancement, or establishment activity under RGP 27. An ecological reference may be based on: (1) the structure, functions, and dynamics of an aquatic ecosystem type or a riparian area type that currently exists in the region; (2) the structure, functions, and dynamics of an aquatic ecosystem type or riparian area type that existed in the region in the past; and/or (3) indigenous and local ecological knowledge that apply to the aquatic ecosystem type or riparian area type (i.e., a cultural ecosystem). Cultural ecosystems are ecosystems that have developed under the joint influence of natural processes and human management activities (e.g., fire stewardship). An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water’s surface at the maximum height reached by a rising tide. The high tide line may be determined, in the

absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete nonlinear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. The loss of stream bed includes the acres of stream bed that are permanently adversely affected by filling or excavation because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters or wetlands for determining whether a project may qualify for an RGP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

Nature-based solutions: Actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.

Navigable waters: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329. Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the RGPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of “open waters” include rivers, streams, lakes, and ponds. Ordinary High Water Mark: The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Perennial stream: A perennial stream has surface water flowing continuously year round during a typical year.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit. Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms.

Preservation does not result in a gain of aquatic resource area or functions. Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource.

Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term “single and complete project” is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of RGP authorization. However, individual channels in a braided stream or river, or

individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term “single and complete project” is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of “independent utility”). Single and complete non-linear projects may not be “piecemealed” to avoid the limits in an RGP authorization.

Special Aquatic Sites (SAS): means wetlands, mudflats, vegetated shallows, coral reefs, riffle and pool complexes, sanctuaries, and refuges as defined at 40 CFR 230.40 through 230.45 and 33 CFR 330.2.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment. Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff. Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock, inorganic particles that range in size from clay to boulders. The substrate may also be comprised, in part, of organic matter, such as large or small wood fragments, leaves, algae, and other organic materials. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream’s course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized jurisdictional stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the

gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

Tribal lands: Any lands title to which is either: 1) held in trust by the United States for the benefit of any Indian tribe or individual; or 2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.
Vegetated shallows:

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the RGPs, a waterbody is a “water of the United States.” If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)).

Environmental Summary Sheet

WIN: 22643.00 **Date Submitted: 1/27/2026**
Town: Livermore Falls
CPD Team Leader: Danielle Tetreau
ENV Field Contact: Jamie Bray

NEPA Complete: Individual Categorical Exclusion (CE) 23 CFR 771.117.d.13 issued on 6/6/2024

Section 106
Review Complete: No adverse effect - SHPO Concurrence- Approved 2/6/2023
Section 106 Resources: Station 60+40 to 62+26 Right
Station 62+54 to 63+14 Left
Station 65+38 to 66+62 Left
Station 66+50 to 66+94 Right
**See SP 105 Environmental Requirements*

Section 4(f) and 6(f)

Section 4(f)	Section 6(f)
Review Complete - de minimis use	Review Complete - No takes

Union Park: Station 66+50 to 66+94 Right.
**See SP 105 Environmental Requirements*

Section 7 – Endangered Species Act
Species of Concern: Atlantic salmon Tier 3 critical habitat: no effect, no in stream work

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

Maine Department of Inland Fisheries and Wildlife
Not Applicable Timing Window: Not Applicable

Maine Department of Agriculture, Conservation, and Forestry
Public Lands, Submerged Land Lease: Not Applicable
Maine Land Use Planning Commission: Not Applicable

Maine Department of Environmental Protection
Not Applicable – Exempt per 480-Q-17

Army Corps of Engineers: Clean Water Act.
Non-Notifying Permit - RGP 3
**See SP 105 Environmental Requirements*

Stormwater Review
Review Complete

Hazardous Material Review
Review complete – Areas of concern: Station 48+75 to 52+00 Left & Right
Station 56+00 (railroad crossing)
Station 66+60 (railroad crossing)
**See SP 203 Contaminated Soil & Groundwater Management and General Note for details*

☒ **Special Provisions Required**

Standard Specification 656-Erosion Control Plan	N/A☐	Applicable☒
Standard Specification 105.8.8-Protected Species	N/A☐	Applicable☒
Special Provision 105-Environmental Requirements	N/A☐	Applicable☒
Special Provision 203-Contaminated Soil & Groundwater	N/A☐	Applicable☒
General Note for Hazardous Waste	N/A☐	Applicable☒
Special Provision 656-Minor Soil Disturbance	N/A☒	Applicable☐
Special Provision 203-Dredge Spec	N/A☒	Applicable☐

**All permits and approvals based on plans/scope as of: 3/29/2024*