# MAINE TURNPIKE AUTHORITY MAINE TURNPIKE

#### **CONTRACT DOCUMENTS**

# **CONTRACT 2019.10**

BRIDGE REPLACEMENT
WARREN AVENUE OVERPASS (MILE 49.0)

NOTICE TO CONTRACTORS

**PROPOSAL** 

CONTRACT AGREEMENT

CONTRACT BOND

FINAL LIEN AND CLAIM WAIVER AND AFFIDAVIT

**SPECIFICATIONS** 

# MAINE TURNPIKE AUTHORITY SPECIFICATIONS

The Specifications are divided into two parts:
Part I, Supplemental Specifications and Part II, Special
Provisions.

The Maine Turnpike Supplemental Specifications are additions and alterations to the 2014 Maine Department of Transportation Standard Specifications.

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#### MAINE TURNPIKE AUTHORITY

#### NOTICE TO CONTRACTORS

Sealed Proposals will be received by the Maine Turnpike Authority for:

#### **CONTRACT 2019.10**

# BRIDGE REPLACEMENT WARREN AVENUE OVERPASS (MILE 49.0)

at the office of the Maine Turnpike Authority, 2360 Congress Street, Portland, ME, until 11:00 a.m., prevailing time as determined by the Authority on April 23, 2019 at which time and place the Proposals will be publicly opened and read. Bids will be accepted from Contractors **prequalified** by the Maine Department of Transportation for Bridge Construction Projects. All other bids may be rejected. This Project includes a wage determination developed by the State of Maine Department of Labor.

The work consists of replacing the Warren Avenue Overpass (NB & SB) bridges in the City of Portland, Maine. The work includes phased construction, removal of the existing bridges, construction of new concrete decks and steel girder superstructures on new integral abutments, and approach roadway work including paving, guardrail, bridge rail, median barrier, maintenance of traffic and all other work incidental thereto in accordance with the Plans and Specifications.

Plans and Contract Documents may be examined by prospective Bidders weekdays between 8:00 a.m. and 4:30 p.m. at the office of the Maine Turnpike Authority, 2360 Congress Street, Portland, Maine. **The half size Plans** and Contract Documents may be obtained from the Authority upon payment of Seventy Five (\$75.00) Dollars for each set, which payment will not be returned. Checks shall be made payable to: Maine Turnpike Authority. The Plans and Contract Documents may also be downloaded from a link on our website at <a href="http://www.maineturnpike.com/project-and-planning/Construction-Contracts.aspx">http://www.maineturnpike.com/project-and-planning/Construction-Contracts.aspx</a>.

For general information regarding Bidding and Contracting procedures, contact Nate Carll, Purchasing Manager, at (207) 482-8115. For information regarding Schedule of Items, plan holders list and bid results, visit our website at <a href="http://www.maineturnpike.com/project-and-planning/Construction-Contracts.aspx">http://www.maineturnpike.com/project-and-planning/Construction-Contracts.aspx</a>. For Project specific information, fax all questions to Nate Carll, Purchasing Manager, at (207) 871-7739 or email nearll@maineturnpike.com. Responses will not be prepared for questions received by telephone. Bidders shall not contact any other Authority staff or Consultants for clarification of Contract provisions, and the Authority will not be responsible for any interpretations so obtained.

All work shall be governed by the Specifications entitled "State of Maine, Department of Transportation, Standard Specifications, Revision of November 2014", "Standard Details, Revision of November 2014" and "Best Management Practices for Erosion and Sediment

Control", latest issue. Copies and recent updates to these publications can be downloaded at: <a href="http://www.maine.gov/mdot/contractors/publications/">http://www.maine.gov/mdot/contractors/publications/</a>.

Proposals must be accompanied by an original bid bond, certified or cashier's check payable to the Maine Turnpike Authority in an amount not less than Five (5%) Percent of the Total Amount in the Proposal, but not less than \$500.00. The Bidder to whom a Contract is awarded will be required to furnish a Surety Corporation Bond, satisfactory to the Authority, on the standard Contract Bond form of the Authority, for a sum not less than the Total Amount of the Proposal.

Proposals must be made upon the Proposal Forms furnished by the Authority separately with the Contract Documents, and must be enclosed in the sealed special addressed envelope provided therefore bearing the name and address of the Bidder, the name of the Contract, and the date and time of Proposal opening on the outside.

A pre-bid conference will be held on April 2, 2019 at 1:00 p.m. at the Maine Turnpike Authority, 2360 Congress Street, Portland, Maine.

The Authority reserves the unqualified right to reject any or all Proposals and to accept that Proposal which in its sole judgment will under all circumstances serve its best interest.

MAINE TURNPIKE AUTHORITY

Nate Carll Purchasing Manager Maine Turnpike Authority

Portland, Maine

# Maine Turnpike Authority

# MAINE TURNPIKE

# **PROPOSAL**

**CONTRACT 2019.10** 

BRIDGE REPLACEMENT
WARREN AVENUE OVERPASS
(MILE 49.0)

#### MAINE TURNPIKE AUTHORITY

#### **PROPOSAL**

#### **CONTRACT 2019.10**

# BRIDGE REPLACEMENT WARREN AVENUE OVERPASS (MILE 49.0)

#### TO MAINE TURNPIKE AUTHORITY:

The work consists of replacing the Warren Avenue Overpass (NB & SB) bridges in the City of Portland, Maine. The work includes phased construction, removal of the existing bridges, construction of new concrete decks and steel girder superstructures on new integral abutments, and approach roadway work including paving, guardrail, bridge rail, median barrier, maintenance of traffic and all other work incidental thereto in accordance with the Plans and Specifications.

This Work will be done under a Contract known as Contract 2019.10 according to the Plans and Specifications which are on file in the office of the Maine Turnpike Authority, 2360 Congress Street, Portland, Maine.

On the acceptance of this Proposal for said Work, the undersigned will give the required bond with good security conditioned for the faithful performance of said Work, according to said Plans and Specifications, and the doing of all other work required by said Specifications for the consideration herein named and with the further condition that the Maine Turnpike Authority shall be saved harmless from any and all damages that might accrue to any person, persons or property by reason of the carrying out of said Work, or any part thereof, or by reason of negligence of the undersigned, or any person or persons under his employment and engaged in said Work.

The undersigned hereby declares that he/she has carefully examined the Plans, Specifications and other Contract Documents, and that he/she will contract to carry out and complete the said Work as specified and delineated at the price per unit of measure for each scheduled item of Work stated in the Schedule of Prices as follows:

It is understood that the TOTAL AMOUNT stated by the undersigned in the following Schedule of Prices is based on approximate quantities and will be used solely for the comparison of bids, and that the quantities stated in the Schedule of Prices for the various items are estimates only and may be increased or decreased all as provided in the Specifications.

# **SCHEDULE OF BID PRICES CONTRACT NO. 2019.10**

# **BRIDGE REPLACEMENT** WARREN AVENUE OVERPASS **MILE 49.0**

Item No	Item Description	Units	Approx. Quantities	Unit Prices in N	lumbers	Bid Amount in I	Numbers
110			Quantitio	Dollars	Cents	Dollars	Cents
202.15	Removing Manhole or Catch Basin	Each	2				
202.151	Abandoning Existing Manhole or Catch Basin	Each	2		<del> </del>		
202.16	Removing Existing Pipe	Linear Foot	230				
202.161	Abandoning Existing Pipe	Linear Foot	200		     		
202.19	Removing Existing Bridge	Lump Sum	1		<del> </del>   		<del>-                                    </del>
202.202	Removing Pavement Surface - Mainline	Square Yard	61500				
202.2026	Removing Pavement Surface - Drainage Paths	Square Foot	460				
202.203	Pavement Butt Joints	Square Yard	3000				<u> </u>
202.205	Rumble Strips - Shoulder	Linear Foot	19400				
203.20	Common Excavation	Cubic Yard	19050				
203.24	Common Borrow	Cubic Yard	9950		       		

203.20	Common Excavation	Cubic	19050	İ				
		Yard				i		
203.24	Common Borrow	Cubic Yard	9950					
CARRIED FORWARD:								
			P-2					

Item   No						CON	NTRACT NO: 2	019.10
Dollars   Cents   Dollars	Item No	Item Description	Units				Bid Amount in I	Numbers
203.25   Granular Borrow   Cubic Yard   11560				Q	Dollars	Cents	Dollars	Cents
203.33   Lightweight Fill   Cubic   7000					BROUGHT FORW	ARD:		
304.10   Aggregate Subbase Course -   Cubic Yard     304.14   Aggregate Base Course - Type   Cubic Yard     403.207   Hot Mix Asphalt - 19.0 mm   Ton   10850     403.208   Hot Mix Asphalt - 12.5 mm   Ton   120     403.2081   Hot Mix Asphalt - 12.5 mm   Ton   6850     403.209   Hot Mix Asphalt - 9.5 mm (sidewalks, drives, & incidentals)     403.212   Hot Mix Asphalt - 4.75mm   Ton   1700     403.213   Hot Mix Asphalt - 12.5mm HMA (base and intermediate course)     403.213   Hot Mix Asphalt - 12.5mm HMA (base and intermediate course)     500   Cubic Yard   4450     4450   A450     4460   A450     44	203.25	Granular Borrow		11560				
304.14   Aggregate Base Course - Type   Cubic Yard   4450	203.33	Lightweight Fill		7000				
A   Yard	304.10			8550				
403.208	304.14			4450				
403.2081   Hot Mix Asphalt, 12.5 mm (Polymer Modified) – RAP   Ton	403.207	Hot Mix Asphalt - 19.0 mm	Ton	10850				
(Polymer Modified) – RAP  403.209 Hot Mix Asphalt - 9.5 mm (sidewalks, drives, & incidentals)  403.212 Hot Mix Asphalt - 4.75mm (Shim)  Ton 1700  403.213 Hot Mix Asphalt - 12.5mm HMA (base and intermediate course)	403.208	Hot Mix Asphalt - 12.5 mm	Ton	120				
(sidewalks, drives, & incidentals)  403.212 Hot Mix Asphalt - 4.75mm Ton (Shim)  403.213 Hot Mix Asphalt - 12.5mm HMA (base and intermediate course)	403.2081		Ton	6850				
(Shim)  403.213 Hot Mix Asphalt - 12.5mm HMA Ton (base and intermediate course)	403.209	(sidewalks, drives, &	Ton	34				
(base and intermediate course)	403.212		Ton	1700				
400 15 Rituminous Task Coat PS 1 or Callon 9050	403.213		Ton	2500				
RS1h- Applied	409.15	Bituminous Tack Coat RS-1 or RS1h– Applied	Gallon	8950				
419.30 Sawing Bituminous Pavement Linear 8500 Foot	419.30	Sawing Bituminous Pavement		8500				

			T		001	TRACT NO: 2	0 10.10
Item No	Item Description	Units	Approx. Quantities	Unit Prices in Num	bers	Bid Amount in N	Numbers
110			Quantitio	Dollars (	Cents	Dollars	Cents
				BROUGHT FORW	ARD:		•
461.131	Temporary Pavement	Ton	40	I I			1
				į			
470.08	Berm Dropoff Correction - Grindings	Ton	660				
470.081	Berm Correction	Linear Foot	20000	İ			
501.231	Dynamic Loading Test	Each	4				
501.50	Steel H-Beam Piles 89 lb/ft, delivered	Linear Foot	2400				
501.501	Steel H-Beam Piles 89 lb/ft, in place	Linear Foot	2400				
501.90	Pile Tips	Each	40	 			
501.91	Pile Splices	Each	40	1			
501.92	Pile Driving Equipment Mobilization	Lump Sum	1	 			
502.21	Structural Concrete, Abutments and Retaining Walls	Cubic Yard	250				
502.26	Structural Concrete Roadway and Sidewalk Slab on Steel Bridges	Lump Sum	1				
502.264	Structural Concrete Parapets	Cubic Yard	52				

			P-4					
CARRIED FORWARD:								
					i I		 	
502.264	Structural Concrete Parapets	Cubic Yard	52				<u> </u>	
	and Sidewalk Slab on Steel Bridges	Sum					   	

Item	Item Description	Units	Approx.	Unit Prices in Nu		Bid Amount in N	
No	· ·		Quantities	Dollars	Cents	Dollars	Cents
				BROUGHT FOR	WARD:		
502.31	Structural Concrete Approach Slab	Lump Sum	1				
502.72	FRP Bridge Drain - Type F	Each	12		<u> </u> 		<del>-</del>  -  -
503.14	Epoxy-Coated Reinforcing Steel, Fabricated and Delivered	Pounds	250000		<del> </del>   		<del> </del>
503.15	Epoxy-Coated Reinforcing Steel, Placing	Pounds	250000		         		<del> </del>
503.17	Mechanical/Welded Splice	Each	1560		 		<del></del>
503.26	Stainless Steel Reinforcement, Fabricated and Delivered	Pounds	21800		<del> </del>  -    -		<del>                                     </del>
503.27	Stainless Steel Reinforcement, Placing	Pounds	21800		 		<del></del>
504.70	Structural Steel Fabricated and Delivered	Lump Sum	1				<del> </del>
504.71	Structural Steel Erection	Lump Sum	1		<del> </del>   		
505.08	Shear Connectors	Lump Sum	1		-         		<del> </del>
506.9104	Thermal Spray Coating (Shop Applied)	Lump Sum	1				
507.091	Aluminum Bridge Railing, 1 Bar	Lump Sum	1				

			P-5				•
				CARRIED FORW	/ARD	:	
307.031	Auminum bridge Railing, 1 Dai	Lump Sum	'				
	Applied)  Aluminum Bridge Railing, 1 Bar	Sum	1				
	Amaliad)	Curre	1	į			

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Nu		Bid Amount in Nu	
INO			Quantities	Dollars	Cents	Dollars	Cents
				BROUGHT FORV	VARD:		
508.14	High Performance Waterproofing Membrane	Lump Sum	1		<u> </u>  -		
508.15	Membrane Waterproofing	Lump Sum	1				<del> </del>   
511.091	Temporary Earth Support Systems	Lump Sum	1		     		     
514.06	Curing Box for Concrete Cylinders	Each	1		    -  -  -		
515.202	Clear Protective Coating for Concrete Surfaces	Square Yard	850				       
520.23	Asphaltic Plug Joint	Linear Foot	242		<u> </u> 		<del> </del>   
524.40	Protective Shielding - Steel Girders	Square Yard	1940				
526.301	Temporary Concrete Barrier, Type 1	Lump Sum	1				<del> </del>   
526.304	Temporary Concrete Barrier, Anchored	Lump Sum	1		<del> </del>     		
526.35	Median Barrier	Linear Foot	2850		<del> </del>   		<u>;</u>     
526.361	Bridge Endpost Median Barrier Transition	Each	2				     
526.362	Guardrail Median Barrier Transition	Each	2		<del>                                     </del>		<u> </u>   
					! !		<u>:                                    </u>

			P-6				
				CARRIED FORV	VARD	:	
	Transition				 		
526.362	Guardrail Median Barrier	Each	2				
526.361	Transition	Eacn	2				

				I		TRACT NO: 2	
Item No	Item Description	Units	Approx. Quantities	Unit Prices in Nเ	ımbers	Bid Amount in Numbers	
			Quantitio	Dollars	Cents	Dollars	Cents
				BROUGHT FOR	WARD:		
527.341	Work Zone Crash Cushions - TL-3	Unit	4		-		
603.159	12 inch Culvert Pipe Option III	Linear Foot	64		<del> </del> 		
603.28	Concrete Collar for Reinforcing Concrete Pipe	Each	2				<del> </del>
603.431	36" RCP Class 5	Linear Foot	40		-		
604.092	Catch Basin Type B1-C	Each	7.375		<u> </u>  -  -  -		
604.164	Rebuilding Catch Basin	Each	1		<del> </del>		
604.18	Adjusting Manhole or Catch Basin to Grade	Each	2		-    - 		     
604.247	Catch Basin Type F5-C	Each	5				
604.262	Catch Basin Type B5-C	Each	9		<del></del>		
605.09	6 inch Underdrain Pipe Type B	Linear Foot	600		<u>-</u> - - -		     
605.10	6 inch Underdrain Outlet	Linear Foot	160		<del> </del>		<del> </del>
605.11	12 inch Underdrain Pipe Type C	Linear Foot	2050		<del> </del>  -  -		       

		CARRIED FORWARE	):	
	Foot			

	ı			1	CON	TRACT NO: 20	719.10
Item No	Item Description	Units	Approx. Quantities	Unit Prices in Nu	mbers	Bid Amount in N	umbers
1,10			Quantitio	Dollars	Cents	Dollars	Cents
				BROUGHT FORV	VARD:		
605.12	15 inch Underdrain Pipe Type C	Linear Foot	740		  -    -  -		-
606.1301	31" W-Beam Guardrail – Mid-way Splice (8' Steel Posts, 8" Offset Blocks, Single Faced)	Linear Foot	1537.5		  -    -		
606.1306	31" W-Beam Guardrail - Mid- way Splice Tangent Terminal	Each	2		    - 		-
606.1351	Terminal End - Anchored End - 31" W-Beam Guardrail	Each	2		- - - -		
606.1723	Bridge Transition - Type III	Each	4		<u> </u>  -  -		-    -  -
606.1725	Guardrail Transition Type III (Modified)	Each	2		<del> </del>		<del>                                     </del>
606.352	Reflectorized Beam Guardrail Delineator	Each	34		- - - - -		<del> </del> 
606.356	Underdrain Delineator Post	Each	36		<u> </u> 		<del> </del>
606.3561	Delineator Post - Remove and Reset	Each	18		<del>!</del>    -		
606.3606	Guardrail Remove, Modify and Reset, Double Rail	Linear Foot	175				
607.17	Chain Link Fence - 6 foot	Linear Foot	280				
607.23	Chain Link Fence Gate	Each	2		!		
					! !		<u> </u>

CARRIED FORWARD:

			ı	T		TRACT NO: 2	-010.10
Item No	Item Description	Units	Approx. Quantities	Unit Prices in N	umbers	Bid Amount in	Numbers
110			Quantitio	Dollars	Cents	Dollars	Cents
				BROUGHT FOF	RWARD:		
607.32	Bracing Assembly Type I - Metal Posts	Each	10				
607.33	Bracing Assembly Type II - Metal Posts	Each	8				
609.11	Vertical Curb Type 1	Linear Foot	640		<del></del>		
609.12	Vertical Curb Type 1 - Circular	Linear Foot	13				
609.15	Sloped Curb Type 1	Linear Foot	516		-		
609.191	Concrete Curb Type 2	Linear Foot	88		 		
609.234	Terminal Curb Type 1 - 4 foot	Each	1		-		<del>-                                    </del>
609.2341	Terminal Curb Type 1- 4 ft - Circular	Each	1		-		
609.238	Terminal Curb Type 1 - 8 foot	Each	1		<del></del>		
610.08	Plain Riprap	Cubic Yard	1050				
610.181	Temporary Stone Check Dam	Cubic Yard	10		-		
613.319	Erosion Control Blanket	Square Yard	700		<del> </del>		

		CARRIED FORWARD	:	
	Yard	1		

	T		1		001	TRACT NO: 2	0 10.10
Item No	Item Description	Units	Approx. Quantities	Unit Prices in Nur	mbers	Bid Amount in Numbers	
110			Quantitio	Dollars	Cents	Dollars	Cents
				BROUGHT FORW	VARD:		•
615.07	Loam	Cubic Yard	1600				
618.14	Seeding Method Number 2	Unit	130				
618.143	Special Seeding	Unit	40		   		<del> </del>
619.1201	Mulch - Plan Quantity	Unit	170		       		
619.1202	Temporary Mulch	Lump Sum	1				     
619.14	Erosion Control Mix	Cubic Yard	200				
620.58	Erosion Control Geotextile	Square Yard	1200				
620.70	HDPE Geomembrane	Square Yard	600				     
624.01	Stormwater Soil Filter Bed	Cubic Yard	140		     		
626.12	Quazite Junction Box	Each	3				
626.204	3" Schedule 80 PVC Conduit	Linear Foot	510				
626.341	Light Standard Foundation	Each	3				
					ı		

626.341	Light Standard Foundation	Each	3				
					!   		
				CARRIED FORV	VARD	:	
			P-10				

		1	T	Т	CON	TRACT NO: 20	719.10
Item No	Item Description	Units	Approx. Quantities	Unit Prices in Nur	mbers	Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
				BROUGHT FORW	/ARD:		
627.30	Grooving for Painted Pavement Markings	Square Foot	19750				
627.712	White or Yellow Pavement Marking Line	Linear Foot	23165				
627.73	Temporary 6 Inch Pavement Marking Tape	Linear Foot	25000				<del> </del>   
627.77	Removing Existing Pavement Marking	Square Foot	21100				
627.78	Temporary Pavement Marking Type, White or Yellow	Linear Foot	185000				   
627.812	Temporary Raised Pavement Markers	Each	1300				<del> </del>   
627.94	Pavement Marking Tape	Linear Foot	7575				
629.05	Hand Labor, Straight Time	Hour	100				<del> </del>
631.10	Air Compressor (Including Operator)	Hour	40				<del> </del>     
631.11	Air Tool (Including Operator)	Hour	80				
631.12	All Purpose Excavator (Including Operator)	Hour	30				<del> </del>
631.171	Truck - Small (Including Operator)	Hour	50				
	1		<u> </u>		•	<u> </u>	

CARRIED FORWARD:	

	1			,	CON	TRACT NO: 20	19.10
Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numb	ers	Bid Amount in Numbers	
				Dollars C	ents	Dollars	Cents
				BROUGHT FORWA	RD:		
631.18	Chain Saw Rental (Including Operator)	Hour	10				   
631.22	Front End Loader (Including Operator)	Hour	70				
631.32	Culvert Cleaner (Including Operator)	Hour	10	İ			<del> </del>   
631.360	Foreperson	Hour	30				
634.208	Remove and Reset Light Standard	Each	3				
639.18	Field Office, Type A	Each	1				<del> </del>   
645.105	Remove and Stack Sign	Each	1				<del> </del>   
645.106	Demount Regulatory, Warning, Confirmation and Route Marker Assembly Sign	Each	7				<del> </del>   
645.109	Remove and Reset Sign	Each	4				
645.271	Regulatory, Warning, Confirmation and Route Assembly Sign, Type I	Square Foot	97.5				
645.272	Regulatory, Warning and Bridge Number Signs, Type I - Supplied by Authority	Each	2				<u> </u>
645.511	LED Flashing Sign	Each	2				
<del></del>	1		<u> </u>	ı			

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		CARRIED FORWARD	:	
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Item No	Item Description	Units	Approx. Quantities	Unit Prices in N	umbers	Bid Amount in	Numbers
			Q	Dollars	Cents	Dollars	Cents
				BROUGHT FOR	WARD:		
652.30	Flashing Arrow	Each	2				
652.312	Type III Barricades	Each	8				<del></del>
652.33	Drum	Each	425				-
652.34	Cone	Each	100				<u> </u>
652.35	Construction Signs	Square Foot	2331				- - -
652.361	Maintenance of Traffic Control Devices	Lump Sum	1				<del> </del>
652.38	Flaggers	Hour	160				<del></del>
652.381	Traffic Officers	Hour	160				-
652.41	Portable-Changeable Message Sign	Each	5				-
652.45	Truck Mounted Attenuator	Cal. Day	60				-
652.452	Automated Trailer Mounted Speed Limit Sign	Each	2				-
656.50	Baled Hay, In Place	Each	50				

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Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers		
.,.				Dollars	Cents	Dollars	Cents	
BROUGHT FORWARD:								
656.632	30 inch Temporary Silt Fence	Linear Foot	6150					
659.10	Mobilization	Lump Sum	1					
802.182	20" Class 52 DI Restrained Joint Pipe	Linear Foot	300				-	
802.32	Casing Spacers	Each	21		- - - -			
830.279	Horizontal Directional Drilling, 18-inch HDPE Culvert	Linear Foot	140					

Acknowledgment is hereby made of the Plans and Specifications:	the following Addenda received since issuance of the
	original bid bond, cashiers or certified check on Bank, for,
Turnpike Authority and the undersigned she security required by the Maine Turnpike Au time fixed therein, an amount of money equ Proposal for the Contract awarded to the und	In case this Proposal shall be accepted by the Maine ould fail to execute a Contract with, and furnish the athority as set forth in the Specifications, within the lal to Five (5%) Percent of the Total Amount of the dersigned, but not less than \$500.00, obtained out of leck, shall become the property of the Maine Turnpike
The performance of said Work und specified in Subsection 107.1.	er this Contract will be completed during the time
	e of this Contract and that I (we) will, in the event of the time limit named above, pay to Maine Turnpike or amounts stated in the Specifications.
	rtnership/Corporation under the laws of the State of nt,
	(SEAL)
Affix Corporate Seal	(SEAL)
or Power of Attorney Where Applicable	(SEAL)
	By:
	Its:

Information below to be typed or printed where applicable:

INDIVIDUAL:	
(Name)	(Address)
PARTNERSHIP - Name and Address of General	al Partners:
(Name)	(Address)
(Name)	(Address)
(Name)	(Address)
(Name)	(Address)
INCORPORATED COMPANY:	
(President)	(Address)
(Vice-President)	(Address)
(Secretary)	(Address)
(Treasurer)	(Address)

#### MAINE TURNPIKE AUTHORITY

## **MAINE TURNPIKE**

#### YORK TO AUGUSTA

#### **CONTRACT AGREEMENT**

This Agreement made and entered into between the Maine Turnpike Authority, and sometimes termed the "Authority", and
herein termed the "Contractor":
WITNESSETH: That the Authority and the Contractor, in consideration of the premises and of the mutual covenants, considerations and agreements herein contained, agree as follows:
FIRST: The parties hereto mutually agree that the documents attached hereto and herein incorporated and made a part hereof collectively evidencing and constituting the entire Contract to the same extent as if herein written in full, are the Notice to Contractors, the Accepted Proposal, the Specifications, the Plans, this Agreement, the Contract Bond and all Addenda to the Contract Documents duly issued and herewith enumerated:
SECOND: The Contractor for and in consideration of certain payments to be made as hereafter specified, hereby covenants and agrees to perform and execute all of the provisions of this Contract and of all documents and parts attached hereto and made a part thereof, and at his own cost and expense to furnish and perform everything necessary and required to construct and complete, ready for its intended purpose, in accordance with the Contract and such instructions as the Engineer may give, acceptable to the Authority, in the times provided, all of the Work covered and included under Contract No covering as herein described.
THIRD: In consideration of the performance by the Contractor of his covenants and agreements as herein set forth, the Authority hereby covenants and agrees to pay the Contractor according to the Schedule of Prices set forth in the Proposal with additions and deductions as elsewhere herein provided in the times and in the manner stated in the Specifications. This Agreement shall insure to the benefit of, and shall be binding upon the parties hereto, and upon

their respective successors and assigns; but neither party hereto shall assign or transfer his interest

herein in whole or in part without the consent of the other, except as herein provided.

	IN WITNESS	WHEREOF	the	parties	to	this	Agreement	have	executed	the	same	in
quintu	plicate.											

	AUTHORITY -	AUTHORITY -				
	MAINE TURNPIKE AUTHORITY	MAINE TURNPIKE AUTHORITY				
	By:					
	Title: CHAIRMAN					
	Date of Signature:					
ATTEST:						
Secretary						
	CONTRACTOR -					
	CONTRACTOR					
	By:					
	Title:					
	Date of Signature:					
WITNESS:						

# CONTRACT BOND

KNOW ALL N	MEN BY THESE PRES	SENTS that	
of	in the County of _	and State o	f
as Principal, and		a Corporation duly or	ganized under the
laws of the State of	and have	ing a usual place of business in	
		d unto the Maine Turnpike Author Dollars (\$	
		Dollars (\$ or its successors, for which payme ecutors, successors and assigns joi	
foregoing Contract No satisfy all claims and equipment and all oth contemplated by said which the Obligee may shall be null and void;	demands incurred for the demands incurred for the demands incurred for the demands contracted for the demands incurred fo	ch that the Principal, designated as shall faithfully perform the Contrate the same and shall pay all bills for, or used by him, in connectionally reimburse the Obligee for all order any default of said Principal, the in in full force and effect.	or labor, material, on with the Work utlay and expense en this Obligation
Witnesses:		CONTRACTOR	
			(SEAL)
			(SEAL)
			(SEAL)
		SURETY	
			(SEAL)
			(SEAL)
			(SEAL)

(Surety must attach copy of Power of Attorney showing authority of Office or Agent to execute bonds)

# FINAL LIEN AND CLAIM WAIVER AND AFFIDAVIT

Upon receipt of the sum of, which sum
represents the total amount paid, including the current payment for work done and materials supplied for
Project No, in, Maine, under the undersigned's Contract with the Maine Turnpike Authority.
Contract with the Maine Turnpike Authority.
The undersigned, on oath, states that the Final Payment of
The undersigned, on oath, states that all persons and firms who supplied Work Items to the undersigned in connection with said Project have been fully paid by the undersigned for such Work Items or that such payment will be fully effected immediately upon receipt of this payment.
In consideration of the payment herewith made, the undersigned does fully and finally release and hold harmless the Maine Turnpike Authority, and its Surety, if any, from any and all claims, liens or right to claim or lien, arising out of this Project under any applicable bond, law or statute.
It is understood that this Affidavit is submitted to assure the Owner and others that all liens and claims relating to the Work Items furnished by the undersigned are paid.
(Contractor)
(Communication)
By:
Title:
State of MAINE
County of
I,, hereby certify on behalf of
I,, hereby certify on behalf of(Company Name) (Company Name)
its, being first duly sworn and stated that the foregoing representations are
(Title)
are true and correct upon his own knowledge and that the foregoing is his free act and deed in said capacity and the free act and deed of the above-named
(Company Name)
The shows named normally appeared before me this day of
The above-named,, personally appeared before me this day of and swears that this is his free act and deed.
(SEAL)
Notary Public
•
My Commission Expires:

## MAINE TURNPIKE AUTHORITY

## **SPECIFICATIONS**

## PART I – SUPPLEMENTAL SPECIFICATIONS

(Rev. November 10, 2016)

The Supplemental Specifications are available on the Maine Turnpike Authority Website at <a href="http://www.maineturnpike.com/Projects-Planning/Construction-Contracts.aspx">http://www.maineturnpike.com/Projects-Planning/Construction-Contracts.aspx</a>

# MAINE TURNPIKE AUTHORITY SPECIFICATIONS PART II – SPECIAL PROVISIONS

# PART II - SPECIAL PROVISIONS

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(18" HDPE CULVERT)

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#### MAINE TURNPIKE AUTHORITY

#### **SPECIFICATIONS**

#### PART II - SPECIAL PROVISIONS

All work shall be governed by the Maine Department of Transportation Standard Specifications, Revision of November 2014, except for that work which applies to sections of the Maine Department of Transportation Standard Specifications which are amended by the Maine Turnpike Supplemental Specifications and the following modifications, additions and deletions.

#### General Description of Work

The work consists of replacing the Warren Avenue Overpass (NB & SB) bridges in the City of Portland, Maine. The work includes phased construction, removal of the existing bridges, construction of new concrete decks and steel girder superstructures on new integral abutments, and approach roadway work including paving, guardrail, bridge rail, median barrier, maintenance of traffic and all other work incidental thereto in accordance with the Plans and Specifications.

#### Plans

The drawings included in these Contract Documents, and referred to as the Plans, show the general character of the work to be done under this Contract. They bear the general title "Maine Turnpike – Contract 2019.10 – Bridge Replacement – Warren Avenue Overpass (MM 49.0)". The right is reserved by the Resident to make such minor corrections or alterations in the Plans as he deems necessary without change in the unit prices on the Schedule of Prices of the Proposal.

#### 101.2 Definition

#### Holidays

The following is added after Memorial Day in the Supplemental Specifications:

- Independence Day 2019: 12pm preceding Wednesday to 6am following Friday.
- Christmas 2019: 12pm preceding Tuesday to 6am following Thursday.
- New Years 2020: 6pm preceding Tuesday to 6am following Thursday.
- Independence Day 2020: 12pm preceding Thursday to 6am following Monday.
- Christmas 2020: 12pm preceding Thursday to 6am following Saturday.
- New Years 2021: 6pm preceding Thursday to 6am following Saturday.

#### 103.4 Notice of Award

The following sentence is added:

The Maine Turnpike Authority Board is scheduled to consider the Contract Award on April 25, 2019.

# 104.3.8 Wage Rates and Labor Laws

Section 104.3.8 Wage Rates and Labor Laws has been amended as follows:

The fair minimum hourly rates determined by the State of Maine Department of Labor for this Contract are as follows:

# THIS DOCUMENT MUST BE CLEARLY POSTED AT THE PERTAINING STATE FUNDED PREVAILING WAGE CONSTRUCTION SITE

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

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

Title of Project -----MTA 2019.10-Warren Ave. Bridge Replacement

Location of Project -- Portland, Cumberland County

#### 2019 Fair Minimum Wage Rates Highway & Earth Cumberland County

	Minimum	Minimum			Minimum	Minimum	
Occupation Title	Wage	<b>Benefit</b>	<b>Total</b>	Occupation Title	Wage	Benefit	<b>Total</b>
Asphalt Raker	\$16.00	\$0.79	\$16.79	Line Erector - Power/Cable	\$31.00	\$5.32	\$36.32
Backhoe Loader Operator	\$22.00	\$5.08	\$27.08	Loader Operator - Front-End	\$20.00	\$2.97	\$22.97
Bulldozer Operator	\$23.85	\$4.32	\$28.17	Mechanic- Maintenance	\$20.50	\$2.96	\$23.46
Carpenter	\$20.00	\$2.64	\$22.64	Millwright	\$24.25	\$8.80	\$33.05
Carpenter - Rough	\$19.00	\$1.88	\$20.88	Oil/Fuel Burner Serv. & Install	\$23.00	\$3.51	\$26.51
Cement Mason/Finisher	\$17.00	\$1.34	\$18.34	Painter	\$17.50	\$0.42	\$17.92
Concrete Mixing Plant Operator	\$22.11	\$4.89	\$27.00	Paver Operator	\$21.00	\$0.27	\$21.27
Crane Operator =>15 Tons)	\$26.80	\$4.74	\$31.54	Pipe-layer	\$22.00	\$1.49	\$23.49
Crusher Plant Operator	\$17.00	\$3.86	\$20.86	Re-claimer Operator	\$21.58	\$1.80	\$23.38
Driller - Well	\$19.83	\$2.66	\$22.49	Roller Operator - Earth	\$22.11	\$3.02	\$25.13
Electrician - Licensed	\$22.55	\$14.26	\$36.81	Roller Operator - Pavement	\$19.00	\$1.38	\$20.38
Electrician Helper/Cable Puller	\$17.00	\$1.34	\$18.34	Screed/Wheelman	\$19.00	\$0.94	\$19.94
Excavator Operator	\$21.00	\$3.11	\$24.11	Sider	\$16.75	\$1.38	\$18.13
Fence Setter	\$17.50	\$2.94	\$20.44	Stone Mason	\$21.00	\$0.95	\$21.95
Flagger	\$13.00	\$0.00	\$13.00	Truck Driver - Light	\$17.00	\$1.15	\$18.15
Grader/Scraper Operator	\$18.00	\$1.62	\$19.62	Truck Driver - Medium	\$19.00	\$3.13	\$22.13
Highway Worker/Guardrail							
Install	\$17.50	\$1.76	\$19.26	Truck Driver - Heavy	\$17.50	\$1.41	\$18.91
Ironworker - Reinforcing	\$22.11	\$2.79	\$24.90	Truck Driver - Tractor Trailer	\$18.50	\$3.20	\$21.70
Laborers (Incl. Helpers &							
Tenders)	\$15.00	\$0.84	\$15.84	Truck Driver - Mixer (Cement)	\$17.19	\$1.07	\$18.26
Laborer - Skilled	\$17.85	\$1.50	\$19.35				

The Laborer classifications include a wide range of work duties. Therefore, if any specific occupation to be employed on this project is not listed in this determination, call the Bureau of Labor Standards at the above number for further clarification.

Welders are classified in the trade to which the welding is incidental.

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

Posting of Schedule - Posting of this schedule is required in accordance with 26 MRSA §1301 et. seq., by any contractor holding a State contract for construction valued at \$50,000 or more and any subcontractors to such a contractor.

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

Determination No: HI-074-2019 A true copy

Filing Date: February 28, 2019

Attest: Scott R. Cotnoir

Expiration Date: 12-31-2019 Scott R. Cotnoir

Bureau of Labor Standards

BLS(Highway & Earth Cumberland)

# THIS DOCUMENT MUST BE CLEARLY POSTED AT THE PERTAINING STATE FUNDED PREVAILING WAGE CONSTRUCTION SITE

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

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

Title of Project ------MTA 2019.10-Warren Ave. Bridge Replacement

Location of Project -- Portland, Cumberland County

#### 2019 Fair Minimum Wage Rates Heavy & Bridge Cumberland County

	Minimum	Minimum			Minimum	Minimum	
Occupation Title	Wage	Benefit	Total	Occupation Title	Wage	Benefit	Total
Backhoe Loader Operator	\$26.48	\$4.96	\$31.44	Laborer - Skilled	\$19.50	\$3.55	\$23.05
Boilermaker	\$24.00	\$9.00	\$33.00	Line Erector - Power/Cable	\$31.00	\$5.86	\$36.86
Bulldozer Operator	\$20.00	\$3.71	\$23.71	Loader Operator - Front-End	\$22.85	\$3.31	\$26.16
Carpenter	\$22.00	\$4.42	\$26.42	Mechanic- Maintenance	\$20.50	\$2.96	\$23.46
Carpenter - Rough	\$22.00	\$6.12	\$28.12	Mechanic-Refrigeration	\$25.71	\$5.09	\$30.80
Communication Equip Installer	\$23.00	\$1.82	\$24.82	Millwright	\$25.20	\$8.90	\$34.10
Comm Transmission Erector	\$19.80	\$3.49	\$23.29	Painter	\$26.00	\$1.08	\$27.08
Concrete Mixing Plant Operator	\$22.11	\$4.92	\$27.03	Paver Operator	\$20.00	\$0.00	\$20.00
Crane Operator =>15 Tons)	\$27.00	\$5.14	\$32.14	Pipe/Steam/Sprinkler Fitter	\$26.40	\$9.32	\$35.72
Crusher Plant Operator	\$17.38	\$3.12	\$20.50	Pipelayer	\$23.00	\$1.14	\$24.14
Diver	\$32.00	\$6,91	\$38,91	Plumber (Licensed)	\$25.00	\$4.26	\$29.26
Driller - Well	\$19.83	\$2.66	\$22.49	Plumber Helper/Trainee	\$19.00	\$3.10	\$22.10
Earth Auger Operator	\$25.84	\$5.78	\$31.62	Rigger	\$22.50	\$6.57	\$29.07
Electrician - Licensed	\$30.07	\$7.90	\$37.97	Roller Operator - Earth	\$22.11	\$2.77	\$24.88
Electrician Helper/Cable Puller	\$17.50	\$5.46	\$22.96	Roller Operator - Pavement	\$19.00	\$1.06	\$20.06
Excavator Operator	\$25.25	\$4.27	\$29.52	Sheet Metal Worker	\$20.00	\$4.11	\$24.11
Fence Setter	\$15.00	\$2.00	\$17.00	Stone Mason	\$21.00	\$0.95	\$21.95
Flagger	\$13.00	\$0.00	\$13.00	Truck Driver - Light	\$17.00	\$1.17	\$18.17
Ironworker - Reinforcing	\$28.71	\$0.00	\$28.71	Truck Driver - Medium	\$19.00	\$3.37	\$22.37
Ironworker - Structural	\$25.38	\$3.79	\$29.17	Truck Driver - Heavy	\$19.00	\$2.98	\$21.98
Laborers (Helpers & Tenders)	\$18.00	\$2.26	\$20.26	Truck Driver - Tractor Trailer	\$21.13	\$4.07	\$25.20

The Laborer classifications include a wide range of work duties. Therefore, if any specific occupation to be employed on this project is not listed in this determination, call the Bureau of Labor Standards at the above number for further clarification.

Welders are classified in the trade to which the welding is incidental.

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

Posting of Schedule - Posting of this schedule is required in accordance with 26 MRS §1301 et. seq., by any contractor holding a State contract for construction valued at \$50,000 or more and any subcontractors to such a contractor.

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

Determination No: HB-008-2019 A true copy

Filing Date: February 28, 2019 Attest: Scall & Coheci

Expiration Date: 12-31-2019 Scott R. Cotnoir
Wage & Hour Director
Bureau of Labor Standards

BLS(Heavy & Bridge Cumberland)

# 104.4.6 Utility Coordination

This Subsection is amended by the addition of the following:

These Special Provisions outline the arrangements which have been established by the Authority for coordination of the work to be accomplished by the utilities. The scope and schedule of utility relocation work is noted herein. The Contractor shall plan and conduct his work accordingly.

#### General

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

The Contractor shall plan and conduct his operations in accordance with the following utility schedule.

There are existing aerial utilities that cross the Maine Turnpike over Span 1 of the existing bridges. These utilities will be relocated approximately 8 feet south from their current location to provide clearance between the aerial utilities and the proposed piles to be driven at Abutment 1. Central Maine Power will install a new pole east of the southern end of the new bridge and reset pole #54 which is located west of the southern end of the new bridge. After the two poles have been set, Central Maine Power, Spectrum and FirstLight will move their lines to the new poles. This work is anticipated to be completed prior to July 1, 2019.

The Contractor shall coordinate their work with the aerial utilities relocation, as necessary. The utility owners will be responsible for obtaining any necessary work permits to complete the utility relocation work.

In addition to the relocation of the poles and aerial utilities, Central Maine Power has indicated that the electric lines can be de-energized as needed. The Contractor shall coordination with Central Maine Power regarding the schedule and length of time that the electric lines can be de-energized. Note that in the event of a power emergency, the electric lines may need to be re-energized at any time. Proper warning will be given to the Contractor by Central Maine Power prior to any re-energizing of the lines.

The Contractor must comply with all OSHA regulations pertaining to work adjacent to utility wires. The Contractor shall plan and conduct his work accordingly.

The following utilities are located within the Project limits. The Contractor shall ascertain the location of the existing utilities and any other necessary information by direct inquiry at the office of the following utility owners:

# **AERIAL UTILITIES**

#### **COMMUNICATION:**

FirstLight 491 Lisbon Street Lewiston, ME 04240

ATTN: Mike Ellingwood (207) 333-3471

#### CABLE TELEVISION:

Spectrum Cable 118 Johnson Road Portland, ME 04102

ATTN: Mark Pelletier (207) 253-2324

#### **ELECTRIC:**

Central Maine Power Company 83 Edison Drive Augusta, ME 04336

ATTN: Jason Ward (207) 629-1432, Cell (207) 242-5398

#### **UNDERGROUND UTILITIES**

#### WATER:

Portland Water District 225 Douglass Street Portland, ME 04102

ATTN: Charlene Poulin (207) 774-5961 x3105

Portland Water District owns a 20-inch underground water main within the project limits. This watermain crosses the Turnpike near STA 2438+67 north of the overpass. As part of this contract the water main will be replaced, and the casing will be extended. See Water Line Details and Appendix D for more information.

#### NATURAL GAS:

Unitil Maine Gas Operations 376 Riverside Industrial Parkway Portland, ME 04103 866-933-3821

No utility impacts are assumed as part of the project other than the aerial utilities noted above. If any additional utility impacts are required, the Contractor shall coordinate all work with the applicable utilities.

#### 104.4.7 Cooperation With Other Contractors

This Subsection is amended by the addition of the following:

Adjacent contracts currently scheduled for the 2019 and 2020 construction season include:

- MTA Contract 2018.02 Rand Road Intersection Improvements, MM 47.3
- MTA Contract 2018.19 Cummings Road Bridge Replacement, MM 44.6
- MTA Contract 2018.13 Guide Sign Modifications, Phase III Maine Turnpike Exits 32, 36, 42, 44 and 45. Mile 16.9 to 50.5.
- MTA Contract 2019.01 Scarborough/South Portland/Portland Mainline Pavement Rehabilitation, MM 42 44.3
- MTA Contract 2019.09 Stroudwater River Bridge Improvements, MM 46.7 and Maine Central Railroad Bridge Improvements, MM 47.9
- MTA Contract 2019.13 Exit 45 Interchange Reconstruction Pre-Load, MM 44.9
- MTA Contract 2020.03/.04 Portland Area Widening & Safety Improvements, MM 43.0 to MM 49.3
- MTA Contract 2020.XX Exit 45 Interchange Reconstruction, MM 44.9
- MTA Contract 2020.XX Forest Avenue Emergency Vehicle Ramps
- MTA Contract 2020.XX Saco/Scarborough Mainline Pavement Rehabilitation, MM 35.5 – 42.0

The following Subsection is added:

#### 105.2.4.2 Lead Paint

The Contractor shall note that the existing bridge structure does not contain lead based paint. A copy of the Lead Determination Report is attached as **Appendix E**.

#### 105.8.2 Permit Requirements

The Project is being constructed under the Maine Department of Environmental Protection (DEP) Natural Resources Protection Act Permit by Rule regulations, Section 11 – State Transportation Facilities, updated June 8, 2012. A copy of the Section 11 – State Transportation Facilities Permit by Rule regulations are attached in **Appendix B**.

The Project is being permitted under Section 404 of the Clean Water Act, through the US Army Corps of Engineers Maine Programmatic General Permit, Category 2. The Project is subject to the General Conditions of the Maine General Permit dated October 13, 2015 through October

13, 2020 and additional conditions specified in the Maine General Permit Category 2 authorization NAE-2018-03016 issued by the U.S. Army Corps of Engineers. A copy of the Army Corps of Engineers Maine Category 2 permit and General Permit standards and conditions are attached in **Appendix A**. A signed copy of the Category 2 Start Work Notification Form must be sent to the Army Corps Maine Project Office at least two weeks before work commences.

The Project is subject to the requirements of the Maine Pollutant Discharge Elimination System (MPDES) General Permit for Stormwater Discharge from Construction Activity, as promulgated by the US Environmental Protection Agency (US EPA) and Administrated by the Maine Department of Environmental Protection (DEP).

A Notice of Intent (NOI), accompanied by a preliminary Limit of Disturbance (LOD) plan will be submitted by the Authority to the DEP for coverage under the Maine Construction General Permit (MCGP). Compliance with the erosion and sedimentation control requirements outlined in this Contract is required by the Contractor.

The Contractor shall prepare a LOD plan illustrating the Contractor's proposed limit of earthwork disturbance. The LOD plan shall show all construction access locations, field office locations, material and temporary waste storage locations, as well as include the Contract limits of earthwork disturbance. All applicable erosion and sedimentation control devices needed shall be detailed on the Contractor's LOD plan and are not limited to those devices shown on the Contract LOD plan. This Plan shall be submitted for review and approval, to the Resident within 14 days of Contract award. Payment for creating, revising, and completing this plan shall be incidental to Item 659.10, Mobilization.

The LOD for this Contract, which will be submitted as part of the NOI, has been estimated to be 11.26 acres.

At any time during the Contract, if the Limit of Disturbance needs to be adjusted to accommodate construction activities, the Contractor shall resubmit the LOD plan (including any additional erosion and sedimentation control measures needed) to the Resident for review and approval prior to any additional disturbance taking place:

- If the cumulative area of disturbance exceeds the estimated LOD noted above, by less than one acre, the Resident shall have a minimum of five (5) working days to approve the revised LOD plan.
- If the cumulative area of disturbance exceeds the estimated LOD noted above, by over one acre, the Resident shall first approve of the plan and then possibly resubmit the NOI for MaineDEP approval. The approval may take a minimum of 21 working days.

Compliance with the erosion and sedimentation control requirements outlined in this Contract is required by the Contractor.

The Contractor shall comply with the conditions outlined in the Army Corps General Permit, Maine Department of Environmental Protection NRPA Permit by Rule, and the Maine Pollutant Discharge Elimination System General Permit for stormwater discharge associated with construction activity. The Contractor shall indemnify and hold harmless the Maine Turnpike

Authority or its agents, representatives and employees against any and all claims, liabilities or fines arising from or based on the violation of the above noted permits.

This Project is also subject to the requirements of the Maine Pollutant Discharge and Elimination System (MPDES) General Permit for the Discharge of Stormwater from MTA's Municipal Separate Storm Sewer Systems (MS4), because it is located within an Urbanized Area (UA) as defined by the 2000 census by the U.S. Bureau of the Census. MS4 compliance requires all Contractors to be properly trained in Erosion and Sedimentation Control (ESC) measures (as per Special Provision Subsections 105.8.1 and 656.07) and implement measures to reduce pollutants in stormwater runoff from construction activities.

# 107.1 Contract Time and Contract Completion Date

This Subsection is amended by the addition of the following:

All work in this Contract shall be completed on or before June 25, 2021.

The construction for the Warren Avenue Overpass (NB & SB) bridges shall be substantially complete by November 13, 2020. Supplemental Liquidated Damages on a calendar day basis in accordance with Subsection 107.8 shall be assessed for each calendar day that substantial completion is not achieved.

# 107.1.1 Substantial Completion

This Subsection is amended by the addition of the following:

Substantially complete shall be defined by the Authority as the following:

- All bridge replacement and roadway work required by the Contract that impacts traffic including bridge railing/barrier, guardrail installation including attachments, and pavement and pavement markings complete and available for traffic.
- All disturbed slopes loamed, seeded and mulched, temporary erosion control mix and/or blanket installed where necessary.
- All temporary concrete barrier removed from the Maine Turnpike and all lanes on the Maine Turnpike shall be open to traffic.

Supplemental Liquidated damages on a calendar day basis in accordance with Subsection 107.8 shall be assessed for each calendar day that substantial completion is not achieved.

# 107.4.6 Prosecution of Work

The following activities must be completed as specified:

#### Phase 1A Construction

- Phase 1A Construction shall not exceed 25 consecutive calendar days.
- Completion of Phase 1A Construction shall include the removal of all Phase 1A temporary traffic control and the establishment of Phase 1B temporary traffic control.

Supplemental Liquidated damages on a calendar day basis in accordance with Subsection 107.8 shall be assessed for each calendar day beyond 25 that Phase 1A is not complete.

#### Phase 3 Construction

- Phase 3 Construction shall not exceed 30 consecutive calendar days. Completion of Phase 3 Construction shall include the removal of all temporary concrete barrier from the Maine Turnpike and all lanes on the Maine Turnpike shall be open to traffic. Supplemental Liquidated damages on a calendar day basis in accordance with Subsection 107.8 shall be assessed for each calendar day beyond 30 that Phase 3 is not complete.
- Early Opening Incentive The Contractor will be paid a \$5,000 incentive for each complete Calendar Day that Phase 3 Construction is complete prior to the 30 consecutive calendar day allowable deadline.
- Late Opening Disincentive The Contractor will be assessed a \$5,000 disincentive for each Calendar Day, or portion of a Calendar Day, that Phase 3 Construction is not complete beyond to the 30 consecutive calendar day allowable deadline.
- Maximum Total Contract Incentives/Disincentives The maximum combined monetary incentive is capped at \$50,000 for Phase 3 Construction. The maximum combined disincentive is not capped. These are in addition to contract liquidated damages.

# Mill and Overlay Construction

- The Mill and Overlay Construction between STA 2459+50 and STA 2551+83 shall be substantially complete by September 15, 2019. Once the Mill and Overlay Construction has begun, the Contractor shall work continuously to complete the work in a diligent manner.
- The Mill and Overlay Construction between STA 2453+13 and STA 2459+50 shall be completed as part of the final surface paving after all temporary traffic control devices associated with the bridge construction have been removed.
- Substantial completion of the Mill and Overlay Construction shall be defined as all paving work between STA 2459+50 and STA 2551+83 required by the Contract that impacts traffic and pavement and pavement markings complete and available for traffic.
- Supplemental Liquidated damages on a calendar day basis in accordance with Subsection 107.8 shall be assessed for each calendar day that the Mill and Overlay Construction between STA 2459+50 and STA 2551+83 is not complete after September 15, 2019.

# Bridge Closure Pour Placement

- The bridge deck closure pours shall be completed as part of Phase 3 Construction.
- At the Contractor's option, the bridge deck closure pours may be completed as part of Phase 2 Construction provided that the following requirements are met:
  - The closure pour concrete placement shall be completed within one hour of implementing a nighttime closure of the adjacent travel lane. The nighttime

- closure of the adjacent travel lane shall be implemented per the time requirements of Table A in Special Provision 652.
- The closure pour concrete shall remain plastic until the start of the nighttime closure of the adjacent travel lane can be implemented. The Contractor shall submit to the Resident for approval a description of the procedure and any proposed concrete admixtures that will be used to ensure that the concrete remains plastic until the temporary lane closure is implemented.
- The nighttime closure of the adjacent travel lane shall be maintained for the maximum amount of time allowed per the time requirements of Table A in Special Provision 652. The concrete shall reach initial set prior to removing the temporary lane closure.

The Contractor shall submit to the Authority a construction schedule which shall document that the Contractor has the necessary labor and equipment to work immediately and continuously at the project site once the long term lane shifts are implemented. The intent of this specification is to minimize the amount of time for bridge closure and maintenance of traffic, while providing the Contractor sufficient time to complete the work in a diligent manner and reopen the bridge as prescribed by the project's Substantial Completion date.

#### 107.4.7 Limitations of Operations

Pile driving will not be allowed within 10 feet of traffic. The two piles per abutment nearest to the phased construction joints may need to be driven at night with a temporary lane closure to meet this requirement. Other than the two piles per abutment that are nearest to the phased construction joints, there shall be no pile driving during non-daylight hours.

Traffic shall be maintained as described in Section 652.

The Contractor will not be permitted to place and remove temporary pavement markings on the final lift of surface pavement unless noted in the plans. The final surface lift of pavement shall be placed utilizing temporary lane closures once all concrete barrier has been removed.

The Contractor shall complete the work as shown on the phasing and maintenance of traffic plans. Modifications to the phasing or associated maintenance of traffic plans will not be permitted unless approved by the Resident.

#### 107.8.1 Fabrication Time.

The Authority has budgeted for the following amounts of continuous full time fabrication/shop inspection for certain Work components:

ElementTimeSupplemental LD1) Structural Steel60 calendar days\$500 per calendar day

The fabrication/shop inspection time noted above is for all structural steel and includes inspection of the metalizing of the structural steel.

The Contractor is responsible for requiring their fabricators and suppliers to produce these products for the Work continuously until finished, including any needed actions to correct unacceptable workmanship or materials. If the Authority determines that shop inspection beyond these times is required, then the corresponding Supplemental Liquidated Damages will be deducted as they occur from the amounts otherwise due the Contractor. The Contractor will be notified by the Department when these times begin and when the allotted time will expire.

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

Inspection is required for the following activities:

For metal fabrication work – welding, including tack welding, heat correcting, nondestructive examination, assembly verification, and metalizing.

#### SECTION 202

#### REMOVING STRUCTURES AND OBSTRUCTIONS

(Removing Existing Manholes or Catch Basins) (Abandoning Existing Manhole or Catch Basin)

#### 202.05 Removing Manholes or Catch Basins

The following sentence is added:

Frames and grates shall be removed, transported and stacked at the Crosby Maintenance Facility.

Contractor shall remove existing manhole or catch basin whenever the center of an existing structure is located within 10 feet center to center distance of a proposed manhole, catch basin, or other similar structure. If the center of existing structure that is not incorporated in the proposed structure is more than 10-feet from a proposed structure, the structure shall be abandoned in place as described below.

Add the following section:

# 202.051 Abandoning Existing Manhole or Catch Basin

Existing manholes or catch basins to be abandoned as indicated on the plans or as directed by the Resident shall be have the frame and grate/removed, transported and stacked at the Crosby Maintenance Facility. The top of the structure shall be removed such that no part of the structure is within three-feet of proposed finish grade and then completely filled with flowable fill meeting the requirements of Special Provision 602. The bottom of the structure shall be broken, as approved by the Resident, to prevent the accumulation of water in the abandoned structure.

#### 202.07 Method of Measurement

The last paragraph is deleted and replaced with the following:

Removing Manholes or Catch Basins will be measured by each unit satisfactorily removed.

Abandoning Existing Manhole or Catch Basin will be measured by each unit satisfactorily abandoned.

#### 202.08 Basis of Payment

The following is added after the first sentence of the fourth paragraph:

Removing, transporting and stacking the frames and grates will not be paid for separately, but shall be incidental to the Removing Existing Manholes or Catch Basin item.

The following paragraph is added after the fourth paragraph:

The accepted quantity of Abandoning Existing Manhole Catch basin will be paid for at the contract unit bid price each, which price shall include all work, materials, labor and equipment. Removing, transporting and stacking the frames and grates/covers will be paid for separately, but shall be incidental to the Abandoning Existing Manhole or Catch Basin item.

# Payment will be made under:

Pay Item		Pay Unit
202.15	Removing Manhole or Catch Basin	Each
202.151	Abandoning Existing Manhole or Catch Basin	Each

#### SECTION 202

#### REMOVING STRUCTURES AND OBSTRUCTIONS

(Removing Existing Pipe)
(Abandoning Existing Pipe)

# 202.01 Description

The following paragraphs are added:

This work shall consist of removing wholly or in part, and satisfactory disposing of all designated pipe to be removed and abandoning existing pipes in places as designated as part of the contract documents.

The following Subsection is added:

#### 202.052 Removing Existing Pipe

When an existing pipe not part of the proposed project is within 10-feet as horizontally measured, of a proposed pipe, Contractor shall remove wholly or in part, existing pipe as indicated within contract documents. Contractor shall backfill and compact, level with adjacent grade, entire void space with material meeting the gradation of gravel borrow, unless area is subject to other improvements; ie. pavement section, structure, etc.

Add the following section:

#### 202.053 Abandoning Existing Pipe

As designated on the plans or as directed by the Resident, existing pipes shall be abandoned by installing a cap or masonry plug on the downgradient outlet of the pipe and completely filling with flowable fill meeting the requirements of Special Provision 602. Once the pipe is completely filled, a cap or masonry plug shall be installed on the upstream end of the pipe.

#### 202.07 Method of Measurement

The following paragraphs are added:

No payment will be made for the removal of pipes within the limits of excavation or structural excavation including excavation for drainage and minor structures.

Removing Existing Pipe shall be measured by the length in linear feet along the centerline of the pipe removed.

Abandoning Existing Pipe shall be measured by the length in linear feet along the centerline of the pipe abandoned.

# 202.08 Basis of Payment

The following are added after the last paragraph:

Payment for Removing Existing Pipe will be made at the contract unit price per linear foot, which price shall include all work, materials, labor, and equipment to satisfactory perform the work.

Payment for Abandoning Existing Pipe will be made at the contract unit price per linear foot, which price shall include all work, materials, labor, and equipment to satisfactorily perform the work.

# Payment will be made under:

Pay Item		<u>Pay Unit</u>
202.16	Removing Existing Pipe	Linear Foot
202.161	Abandoning Existing Pipe	Linear Foot

#### SECTION 202

#### REMOVING STRUCTURES AND OBSTRUCTIONS

(Removing Pavement Surface-Mainline)

# 202.01 Description

The following sentences are added:

This work shall also consist of removing the surface of the bituminous concrete pavement in all locations to the depth, width, grade, and cross section on the mainline as shown on the Plans or as directed by the Resident.

Removal of approach pavement shall be completed through the use of a milling machine. The milling machine(s) shall be capable of accurately establishing profile grades by referencing from a floating straight edge, a minimum of 30 feet.

Areas requiring shim pavement to reach final pavement grade shall not be milled.

This work shall also consist of construction of temporary ramps at all butt joints as shown in the MaineDOT Standard Details, November 2014 Edition – Pavement Overlay Butt Joint Detail (Roadways), Page 202(01) or as approved by the Resident. The length of the temporary ramp shall be at least 1/2 L.

The following subsection is added:

# 202.032 Removing Bridge Pavement Surface and Membrane

All bridge deck pavement, membrane and scrapings shall be disposed of by the Contractor off of the turnpike right-of-way in accordance with the Maine Department of Environmental Protection Solid Waste Management Requirements.

The following paragraph is added:

Extreme care shall be taken to avoid damaging the existing concrete or bituminous pavement intended to remain. All existing bituminous pavement and bridge deck concrete, intended to remain, damaged by the Contractor's removal operations shall be repaired by the Contractor as approved by the Resident at no additional cost to the Authority.

# 202.061 Removing Pavement Surface

This Subsection is deleted and replaced with the following:

The equipment for removing the bituminous surface, excluding bridge decks, shall be a power-operated milling machine or planer capable of removing the bituminous concrete pavement to the required depth, transverse cross slope, and profile grade by use of 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 mill head on the machine shall have a maximum 8mm tooth spacing pattern and a minimum triple wrap configuration. The milling machine shall be capable of accurately establishing profile grades by referencing from a floating straight edge, minimum of  $30\pm$  feet. The equipment shall also have an effective means for removing excess material from the surface and preventing flying material in compliance with Subsections 105.2.5 Compliance with Health and Safety Laws and 105.2.6 Convenience of the Public, of the Specification.

The contractor shall operate the milling machine such that the forward operating speed of the machine in feet per minute (fpm) does not exceed 65% of the mill head in revolutions per minute (rpm). i.e. 100 rpm head speed equals maximum forward operating speed of 65 fpm. The contractor shall avoid stopping the milling operation during truck exchanges by staging the haul units accordingly.

The forty-five degree pavement safety edge needed between lanes 1 and 2 and between lane 2 and the eight foot shoulder shall be incidental to the 202 pay items.

The Contractor shall locate, identify and remove all objects in the pavement through the work area that would be detrimental to the milling machine.

The Contractor shall be responsible for the layout of the longitudinal centerline between the travel lane and passing lane.

The finished milled surface will be inspected before being accepted, and any deviations in the profile exceeding 3/8 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 the centerline will be corrected. In no case shall the cross slope in a single lane width be inverted resulting in a depression as measured transverse to the direction of travel. Any cross slope inversions or depressions shall be corrected by spot shimming the area with HMA as directed by the resident prior to installing any leveling or wearing course. These corrections shall be done with no additional expense to the Authority.

The Contractor shall deliver the cubic yards of pavement grindings as specified below to the following Maintenance Facilities. The exact location of the stockpile shall be as directed by the Resident.

Name of Facility	Mile Marker	Cubic Yards
Crosby Maintenance Facility	Mile 46 SB	200

All surplus pavement grindings, except for the amount specified above, shall be disposed of by the Contractor off the Turnpike right-of-way. All grindings shall be disposed of in accordance with the Maine Department of Environmental Protection Solid Waste Management Requirements.

#### 202.07 Method of Measurement

The removal of existing bituminous concrete pavement – mainline will be measured by the square yard of material removed to the required depth.

The following sentences are added:

Transporting and stockpiling of the pavement grindings at the maintenance facilities will not be measured separately for payment, but shall be incidental to the Removing Pavement Surface items.

Installation of temporary bituminous ramps will not be measured separately for payment, but shall be incidental to the Contract.

Removal of temporary bituminous ramps will not be measured separately for payment, but shall be incidental to the Contract.

# 202.08 Basis of Payment

Removing Pavement Surface – Mainline will be paid for at unit price per square yard which price shall be full compensation for removing and disposing of the bituminous and gravel materials.

Payment will be made under:

Pay Item		Pay Unit
202.202	Removing Pavement Surface – Mainline	Square Yard

#### SECTION 202

#### REMOVING STRUCTURES AND OBSTRUCTIONS

(Removing Pavement Surface – Drainage Paths)

#### 202.01 Description

The following paragraphs are added:

This work shall consist of grinding drainage paths in the existing inside and outside bituminous shoulders on the mainline and interchange ramps. The depth shall match the elevation of the adjacent milled travel lane. Locations and lengths of removal shall be as shown on the Plans or as directed by the Resident.

This work shall also consist of repaying the shoulder drainage paths with bituminous pavement to match the existing grades on each side of the drainage path to coincide with the paving operation of the adjacent travel lane as shown on the Plans or as directed by the Resident.

The following Subsection is added:

#### 202.011 Materials

Grinding shall be done in accordance with Section 202.

Bituminous pavement shall conform to Section 401, Hot Mix Asphalt, 12.5 mm.

Bituminous tack coat shall conform to Section 409.

Joint sealant shall conform to Federal Specifications SS-S-1401C.

#### 202.06 Removing Bituminous Concrete Pavement

This Subsection is deleted and replaced with the following:

The drainage paths shall be milled concurrently with the adjacent travel lane milling. The drainage paths shall be located such that they include all of any milled section of an impacted rumble strip.

The drainage paths shall be installed at the roadway low points of the sag vertical curves and at 500 foot intervals in both the outside and inside shoulders. Drainage paths shall not be installed within 500 feet of the crest of a vertical curve. The drainage paths shall extend from the edge of the milled travel lane (Lane 2) and daylight six feet into the outside shoulder and from the edge of the milled passing lane (Lane 1) and the edge of pavement (4'-0") without guardrail.

All grindings shall be disposed of in accordance with the Maine Department of Environmental Protection Solid Waste Management Requirements.

The Contractor may request that the Resident waive the requirement for the installation of drains at 500 foot intervals. The Resident will consider the weather forecast as well as the Contractor's proposed paving schedule when reviewing the request.

The tapered sides of the outside drainage paths shall be milled to form a vertical face prior to paving. The drainage paths shall be joint sealed, tack coated, and paved concurrently with the adjacent lane.

The Contractor shall not be required to replace the shoulder rumble strips removed for the drainage paths.

Vehicles will be permitted to traverse unfilled drainage paths.

#### 202.07 Method of Measurement

The second paragraph is deleted and replaced with the following:

Removing Pavement Surface – Drainage Paths shall be measured by the square foot.

# 202.08 Basis of Payment

The following is added after the last paragraph:

Removing Pavement Surface – Drainage Paths shall be paid for at the Contract unit price per square foot which includes all grinding, tack coat, sealant, bituminous pavement, equipment, labor, and incidentals necessary to satisfactorily complete the work.

Payment will be made under:

Pay Item		<u>Pay Unit</u>
202.2026	Removing Pavement Surface – Drainage Paths	Square Foot

#### SECTION 202

#### REMOVING STRUCTURES AND OBSTRUCTIONS

(Removing Existing Bridge)

#### 202.01 Description

This section is amended by the addition of the following:

Prior to starting any demolition work, the Contractor shall submit a demolition plan to the Resident for approval. The demolition plan shall be stamped by a Professional Engineer licensed in the State of Maine. The demolition plan shall consider the effect of construction equipment, methods of operation, and sequence of work on the capacity and stability of the bridge. The capacity of the structure shall be calculated to demonstrate the proposed work activities will not result in unacceptable overstress in the structure.

No demolition will be permitted until the approved method of shielding is completely installed. Traffic will not be permitted to use the travelway directly under the demolition work; a lane closure will be required.

All materials removed as part of this work shall become the property of the Contractor unless otherwise noted. The Contractor shall provide the Resident with an affidavit stating the final location of all disposed material and that the material was disposed of in accordance with the Maine Department of Environmental Protection Solid Waste Regulations.

# 202.03 Removing Existing Superstructure, Structural Concrete, Railings, Curbs, Sidewalks and Bridges

The first sentence of the fifth paragraph is deleted and replaced with the following:

When the material from an existing structure is specified on the plans to be retained by the Authority the Contractor shall carefully dismantle it, and all materials, except those that may be specified to be reused in the new structure, shall be loaded on trucks, transported and neatly stacked by the Contractor at the location specified on the plans.

The seventh paragraph is deleted and replaced with the following:

All materials not specified to be retained by the Authority shall become the property of the Contractor and shall be removed from the site at the completion of the Project. The Contractor shall provide the Resident with an affidavit stating the final location of all disposed material and that the material was disposed of in accordance with the Maine Department of Environmental Protection Solid Waste Regulations.

# 202.08 Basis of Payment

The last sentence in the first paragraph is deleted and replaced with the following:

Removing and stacking the existing bridge railing system will not be measured separately for payment, but shall be incidental to the removal pay item.

#### SECTION 202

#### REMOVING STRUCTURES AND OBSTRUCTIONS

(Rumble Strips)

# 202.01 Description

The following sentences are added after the first paragraph:

This work shall consist of cutting a pattern of rumble strips from MM 49.3 to MM 51.2 on the northbound and southbound roadways at the locations shown on the Plans. Rumble strips shall not be placed across ramp openings or on bridges.

The following Subsections are added:

# 202.065 Rumble Strips

The rumble strips shall not be cut until the Contractor has placed the permanent pavement markings at the required locations.

At proposed rumble strip locations, the bituminous concrete paved surface shall be removed by milling in strips as detailed on the Plans and as directed by the Resident. The pattern will be 80 feet of rumble strips followed by a 20 foot space repeated along the entire length on the outside shoulder. The inside shoulder shall be continuous. The rumble strips shall be normal to the baseline of the roadway on tangent sections and radial on curves. The Contractor shall be responsible for the layout of the rumble strips. The milling machines for this type of rumble strip are designed by:

Surface Preparation Technology 81 Texaco Road Mechanicsburg, PA 17055 Tel. (717) 697-1450

L&C Flashing Barricades 60 Walpole Street Canton, MA 02021 Tel. (508) 580-6700

Thomas Grinding 110 Fox Lane Southwest Moore Haven, FL 33471 Tel. (863) 946-1461

The milling machine shall be equipped with a 20 foot pointer to provide longitudinal grade control.

# 202.07 Method of Measurement

The following paragraph is added:

Rumble Strips will be measured by the actual number cut, completed and accepted.

Layout of rumble strips, disposal of milled bituminous pavement and roadway cleanup will not be measured separately for payment, but shall be incidental to this item.

# 202.08 Basis of Payment

The following sentences are added:

Rumble Strips will be paid for at the Contract unit price per each, which price shall be full compensation for all labor, materials, equipment and incidental items of work for a complete installation.

Payment will be made under:

Pay Item		<u>Pay Unit</u>
202.205	Rumble Strips - Shoulder	Each

#### SECTION 203

#### EXCAVATION AND EMBANKMENT

#### 203.01 Description

The following paragraph is added:

This work shall consist of cutting, removing and disposing of the full depth of existing bituminous concrete pavement at the approaches to the bridge structures within the limits of work as shown on the Plans or as approved by the Resident. The pavement shall be sawcut to the full depth of pavement at the limits of the excavation to provide a clean, vertical cut surface.

#### 203.04 General

The following sentence is added to the end of the third paragraph.

There are no approved waste storage areas or waste areas within the Project limits unless shown on the Plans. Unsuitable materials shall be disposed of off-site in accordance with Subsection 203.06.

All excavations shall be accomplished in accordance with the applicable OSHA Standards. The Resident reserves the right to request the Contractor to prepare an excavation plan. This plan shall include, but not necessarily be limited to, the limit and depth of excavation, side slope, shoring, trench box and utility support.

#### 203.10 Embankment Construction - General

The thirteenth and fourteenth paragraphs are deleted and replaced with the following:

All portions of the embankment shall be compacted in accordance with the designated embankment compaction requirements specified for the Project.

The existing slopes should be benched as shown on the drawings prior to placing additional fill. Embankment fill should be placed in lifts which extend laterally beyond the limits of the design side slopes such that the specified degree of compaction is achieved within the limits of the completed embankment. The slopes should then be trimmed back to design dimensions.

#### 203.16 Winter Construction of Embankments

The word "core" is deleted from the first and second sentences in the first paragraph.

#### 203.18 Method of Measurement

The following paragraphs are added:

There will be no additional payment for the required excavation plan, and costs shall be incidental to the Excavation items.

#### SECTION 203

#### EXCAVATION AND EMBANKMENT

(Lightweight Fill)

# 203.01 Description

The following paragraph is added:

The work shall also consist of installing Ultra Lightweight Foamed Glass Aggregate (ULFGA) as shown on the Plans or as approved by the Resident. All work performed under this Special Provision shall be coordinated with the project's Geotechnical Engineer. The work also includes separating subgrade and granular fills from ULFGA by means of geotextile to prevent soil migration as described in this Special Provision.

#### 203.02 Materials

The following paragraph is added:

The Contractor shall supply and install Lightweight backfills that consist of UL-FGA15 manufactured by AeroAggregates or an approved equivalent material. The material shall have an uncompacted moist density ranging from 15 to 19 pcf, and a maximum 10% compacted moist density of 21 pcf.

The following section is added:

# 203.021 Submittals

The Contractor shall submit a plan to the Resident for approval for transporting, delivering, stockpiling (if proposed), placing and compacting ULFGA. The plan will include at a minimum: the name and address of the supplier, laboratory testing data to show the uncompacted unit weight and internal friction angle, proposed means of delivery and stockpiling (if proposed), proposed equipment and procedures for placing separation geotextile, and placing and compacting ULFGA.

The plan shall also indicate a proposed schedule for the placement of the ULGFA. The Contractor shall provide a minimum of 3 working days' notice to the Resident prior to the placement of any ULGFA.

#### 203.04 General

The following paragraphs are added:

<u>Product Handling.</u> The contractor shall protect the ULFGA before, during, and after construction as recommended by the material manufacturer.

<u>Installation</u>. The contractor shall place the ULFGA as indicated on the plans. Preparation of the subgrade shall include excavation with a smooth-edged bucket in order to minimize disturbance of the subgrade materials.

The areas to be filled shall not have standing water, ice, organic or otherwise unsuitable materials present prior to placement. If encountered, these materials should be excavated and replaced with compacted fill consisting of MaineDOT 703.06 Type D Gravel compacted to 95 percent of maximum density determined by ASTM D1557 (Modified Proctor Test).

A nonwoven geotextile fabric shall be placed directly on the prepared subgrade as a separator between the ULFGA and all other materials. The geotextile shall be installed between the ULFGA and any differing adjacent material exposed by excavation or differing adjacent material being placed beside or on top of the ULFGA.

The geotextile shall consist of punched nonwoven geotextile with a minimum grab tensile strength of 160 lbs per ASTM D4632 and shall meet the requirements of Subsection 722.04 for Separation Geotextile. To limit possible degradation, the geotextile shall not be exposed to the elements for more than 14 days after placement.

ULFGA may be dumped in place and spread in place. Construction equipment, other than for placement and compaction, shall not operate on the exposed ULFGA.

The ULFGA shall be placed in lifts not exceeding 12 inches in loose thickness. Each lift shall be compacted by two to four passes of a 110-220 lb vibrating plate compactor or by similar compactive effort. Sufficient compaction has been achieved when in the judgement of the Geotechnical Engineer the material ceases to densify further with additional passes of the plate compactor. Excessive compaction shall be avoided to minimize crushing of the aggregate.

<u>Testing.</u> The Contractor shall measure the as-delivered loose bulk density and submit documentation of the results. At least one test shall be performed for every 500 cubic yards of ULFGA delivered. Bulk density testing shall be performed in the presence of the Geotechnical Engineer.

The Contractor and Geotechnical Engineer shall visually observe compaction of each lift of ULFGA for sufficient compaction.

Compaction shall be performed in the presence of the Geotechnical Engineer who will observe performance of the selected equipment and the compactive effort, and establish requirements for the number of passes, and lift thickness for specific compaction equipment.

#### 203.18 Method of Measurement

The following paragraph is added:

Lightweight Fill will be measured by the cubic yard in place by cross sectional elevations.

#### 203.19 Basis of Payment

Lightweight Fill will be paid for at the contract unit price per cubic yard, which shall be full compensation for all labor, materials, equipment, and incidentals required to supply, deliver and install the ULFGA and separation geotextile as described in this Special Provision and shown on the Plans including the creation of an approved plan. Removal and replacement of Lightweight Fill damaged by the Contractor shall be incidental to the work, as directed by the Resident and/or Geotechnical Engineer. No additional compensation shall be provided for separation geotextile.

Payment will be made under:

Pay Item		<u>Pay Unit</u>
203.33	Lightweight Fill	Cubic Yard

#### SECTION 401

#### HOT MIX ASPHALT PAVEMENT

Section 401 of the Maine Turnpike Authority 2016 Supplemental Specifications is modified as follows:

# 401.01 Description

The following paragraph is added:

A Quality Control Plan (QCP) is required.

#### 401.02 Materials

Section 401.02 is deleted in its entirety and replaced with the following:

Aggregates for HMA Pavements Coarse Aggregate and fine aggregate for HMA pavements shall be graded such 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. 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

Mainline Surface HMA Coarse aggregate: The material retained on the No. 4 sieve, shall consist of angular fragments obtained from crushed quarry stone and be free of dirt or other objectionable materials. Coarse aggregate shall have a Micro-Deval value of 15.0 percent or less as determined by AASHTO T 327. The crushed stone shall have a maximum of 1.5% material finer than the No. 200 mesh when tested in accordance with AASHTO T-11. Flat and elongated particles shall not exceed a maximum of 8% at a 5:1 ratio in accordance with ASTM D-4791. Coarse aggregate angularity shall be a minimum of 95/90 in accordance with AASHTO T-335.

Mainline Surface HMA Fine aggregate: The material passing the No. 4 sieve, shall be crushed manufactured sand free from dirt, clay balls, or other objectionable material. Natural sand may be incorporated into the mix at a rate no greater than 10 percent by weight of total aggregate. The unconfined void content of the fine aggregate blend shall be a 45 minimum value when tested in accordance with AASHTO T-304, method A. AASHTO T-176 sand equivalent value shall be 45 minimum.

Asphalt Low Modulus Joint Sealer: Asphalt Low Modulus Joint Sealer shall be a modified asphalt and rubber compound designed for sealing and improving the strength and performance of the base asphalt cement and shall conform to ASTM D6690 Type IV and the following specifications:

Cone Penetration 90-150

Flow @ 60°C [140°F] 3.0mm [1/8 in] max

Bond, non-immersed Three 12.7mm [½ in] specimens pass

3 cycles @ 200% extension @ -29°C

[-20°F]

Resilience, % 60 min

Asphalt Compatibility, ASTM D5329 pass\*

The contractor shall provide the Resident or authorized representative with a copy of the material manufacturer's recommendations pertaining to heating, application, and reheating prior to the beginning of operations or the changing of materials.

# Section 401.03 Composition of Mixtures

Section 401.03 is deleted in its entirety and replaced with the following:

HMA pavement mixtures for base, intermediate, shim and local road bridge projects shall be a currently approved MDOT design unless otherwise noted. A maximum of 20% RAP may be used. VMA shall meet the requirements listed in Table 1.

HMA pavement mixtures for Mainline surface paving projects shall conform to the following requirements:

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). The Contractor may use a maximum of 15 percent reclaimed asphalt pavement (RAP) in any mainline surface course.

The Contractor shall submit a job mix formula (JMF) developed for each specified mixture at least 30 days prior to placement.

The JMF shall establish a single percentage of aggregate passing each sieve size within the limits shown in Subsection 703.09. The mixture shall be designed and produced, including all production tolerances, to comply with the allowable control points for the particular type of mixture as outlined in Subsection 703.09. The JMF shall state the original source, gradation, and percentage to be used of each portion of the aggregate and mineral filler if required. It shall also state the proposed PGAB content, the name and location of the refiner, the supplier, the source of PGAB submitted for approval, the type of PGAB modification if applicable, and the location of the terminal if applicable.

<sup>\*</sup> There shall be no failure in adhesion, formation of any oily exudate at the interface between the sealant and asphaltic concrete or other deleterious effects on the asphaltic concrete or sealant when tested at 60°C [140°F].

In addition, the Contractor shall provide the following information with the proposed JMF:

- Properly completed JMF indicating all mix properties (Gmm, VMA, VFB, etc.).
- Stockpile Gradation Summary.
- Test reports for individual aggregate consensus properties
- Design Aggregate Structure Consensus Property Summary.
- Design Aggregate Structure Trial Blend Gradation Plots (0.45 power chart).
- Trial Blend Test Results for at least three different aggregate blends.
- Selected design aggregate blend.
- Test results for the selected design aggregate blend at a minimum of three binder contents.
- Test results for final selected blend compacted to N<sub>max</sub>.
- Specific Gravity for the PGAB to be used.
- Recommended mixing and compaction temperatures from the PGAB supplier.
- Data Sheets (SDS) For PGAB.
- Asphalt Content vs. Air Voids trial blend curve.
- Test report for Contractor's Verification sample.
- Summary of RAP test results (if used), including count, average and standard deviation of binder content and gradation.

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, 75 ton for fine aggregate stockpiles before the JMF may be submitted. The Authority shall obtain samples for laboratory testing. The Contractor shall also make available to the Authority the PGAB proposed for use in the mix in enough quantity to test the properties of the asphalt and to produce samples for testing of the mixture. Before the start of paving, the Contractor and the Authority's representative shall test a production sample in the Contractor's laboratory for evaluation. If the Authority finds the mixture acceptable, an approved JMF will be forwarded to the Contractor. The Authority will then notify the Contractor that paving may commence. 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 within 24 hours of receipt of the first Acceptance test result for an individual JMF. Adjustments will be allowed of up to 2% on the percent passing the 2.36 mm sieve through the 0.075 mm and 3% on the percent passing the 4.75

mm or larger sieves. Adjustments will be allowed on the %PGAB of up to 0.2 percent. Adjustments will be allowed on GMM of up to 0.010.

Approved mix designs from the previous calendar year may be carried over, however no aim changes will be granted for a carryover mix design and the initial design must not be older than the previous paving season.

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 except natural sand 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. Natural sand may be adjusted up to 5 percent from the amount listed on the JMF but shall not exceed 10% by weight of total aggregates. The cold feed percentage for RAP may be reduced up to five 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.

TABLE 1 VOLUMETRIC DESIGN CRITERIA

Design ESAL's (Millions)	_	nired Decent of (	•	Voids in the Mineral Aggregate (VMA)(Minimum Percent) Nominal Maximum Aggregate Size (mm)			Voids Filled with Binder (VFB) (Minimum %)	Fines/Eff. Binder Ratio	
	Ninitial	N <sub>design</sub>	N <sub>max</sub>	19	12.5	9.5	4.75		
10 to <30	<u>&lt;</u> 89.0	96.0	<u>&lt;</u> 98.0	13.5	14.5	15.5	15.5	65-80	0.6-1.2

As part of the JMF submittal, there are Hamburg Wheel Tracker requirements, the Contractor shall provide the Authority the test results in accordance with AASHTO T324. The results shall be generated by a third-party independent testing laboratory as approved by the Authority. The test results for each individual specimen as well as the average shall meet the requirements of Table 1A

TABLE 1A
HAMBURG WHEEL TRACKER REQUIREMENTS

Specified PG	Test Temperature	Maximum Rut	Minimum	Minimum
Binder Grade	(°C)	Depth (mm)	Number of Passes	Allowable SIP*
64-28	45	12.5	20,000	15,000
64E-28	45	8.0	20,000	15,000
70E-34	45	6.3	20,000	15,000

Section 401.031 Warm Mix Technology

Add the following to the end of the first paragraph:

Weather and seasonal limitations as outlined in section 401.06 may be reduced by a maximum 5°F with the use of WMA except for HMA being placed over bridge deck membrane.

#### Section 401.04 Temperature Requirements

No vehicular loads shall be permitted on newly completed pavement until adequate stability has been attained and the material has cooled sufficiently to prevent distortion or loss of fines. The newly paved area may be opened to traffic after the internal temperature of the pavement has cooled to 120° F. The Resident will test the internal temperature of the pavement and shall be the sole judge as to the opening to traffic. The period of time before opening to traffic may be extended at the discretion of the Resident. The lane closure may not be removed until the internal temperature has cooled to 120° F.

#### Section 401.06 Weather and Seasonal Limitations

The first paragraph shall be deleted and replaced with:

The Contractor may place Hot Mix Asphalt Pavement for use other than a traveled way wearing course, provided that the air temperature as determined by an approved thermometer (placed in the shade at the paving location) is  $40^{\circ}$ F or higher and the area to be paved is not frozen. The Contractor may place Hot Mix Asphalt Pavement as traveled way wearing course, provided the air temperature determined as above is  $50^{\circ}$ F or higher. For the purposes of this Section, the traveled way includes truck lanes, ramps, approach roads and auxiliary lanes. The atmospheric temperature for all courses on bridge decks shall be  $50^{\circ}$ F or higher.

# Section 401.08 Hauling Equipment Trucks for Hauling HMA

Add the following paragraph:

The undercarriage of haul units actively hauling HMA to the site shall be relatively free of dust / mud agglomerations. Haul units found to be contaminating the paving surface shall be removed from the site and cleaned prior to returning.

# Section 401.09 Pavers

Add the following to the end of the fourth paragraph:

The forward operating speed of the paver shall be limited based on the course being placed. A shim or leveling course shall have a maximum speed of 50 feet per minute (fpm). Any base, intermediate, or surface course shall have a maximum paver speed of 40 fpm. The limited speed is not to be calculated on an average basis over time but shall be the actual limitation at any moment during the paving operation.

#### Section 401.091 Material Transfer Vehicle (MTV)

The first paragraph shall be deleted and replaced with:

When required by Special Provision Section 403, the paver shall be supplied mixture by a material transfer vehicle (Roadtec SB2500 or approved equal) capable of receiving and storing bituminous mixture from haul trucks, remixing, and delivering the mix to the paver hopper in a

consistently uniform manner.

The fourth paragraph shall be deleted and replaced with:

The MTV shall be designed so that the mix receives additional mixing action.

#### Section 401.111 Layout

The contractor shall layout the site prior to any pavement course or final striping. Layout shall be achieved by physical measurements obtained every 50' along the length to be paved or striped. The contractor shall transfer the measurements to the pavement surface every 50' and apply a paint mark at each location. The marks shall then be connected by a smoothed string line and subsequent paint marks applied along the string at no greater than 10' intervals. The Resident will inspect the layout line before associated activities may begin.

#### Section 401.165 Longitudinal Joint Density

The first paragraph shall be deleted and replaced with:

When noted in Special Provision Section 403, the Authority will measure the pavement density of longitudinal joints between adjoining mainline travel lanes in both the unconfined and confined condition as determined by the days paving operation.

The eighth paragraph shall be deleted and replaced with:

The minimum density of the completed pavement shall be 92.0 percent of the theoretical maximum density obtained. Two consecutive failing tests shall result in production shut down. Prior to resuming paving operations, the contractor quality control unit shall satisfy the Authority that the paving operation will produce joint densities in compliance with the Specifications.

The eleventh paragraph and associated table shall be deleted and replaced with:

Payment reduction will be applied to each sublot that has a density lower than 92.0% as outlined below.

PERCENT COMPACTION	PERCENT PAY
92.0 or greater	100
91.9 to 90.0	95
89.9 to 88.5	90
88.4 or less	80

#### Section 401.17 Joints

The fourth paragraph shall be deleted and replaced with:

When required by Special Provision Section 403, Mainline Longitudinal joints shall be constructed as notched-wedge joint and constructed in a manner that will best ensure joint integrity.

#### Section 401.18 Quality Control

The following shall be added to section c. Quality Control Technician(s) QCT:

The QCT shall be on site during paving operations performing quality control activities. QCT's shall not act as equipment operators, trainers or laborers.

# Section 401.191 Inspection/Testing

In paragraph nine delete and replace Item #8 with:

8. Secure High-Speed Internet Access

#### 401.21 Method of Measurement

The second paragraph shall be deleted and replaced with:

A reduction in payment will occur when the voids, asphalt content, and density are other than the limits specified below for 100 percent payment. The payment reduction for voids and PGAB content and density will be based upon each sublot (500 tons) of production as specified in Subsections 401.162, 401.163, 401.164, and 401.165. The Contractor may request one retest for each failing sublot for core density only. The original core density and the recut core density shall be averaged together to determine payment for the sublot. No retest will be allowed for voids or asphalt content. The Contractor shall pay \$250.00 for each additional core tested. Pavement restoration will not be measured separately for payment but shall be incidental to the respective pay item.

#### SECTION 401

#### HOT MIX ASPHALT PAVEMENTS

(HMA using Hydrated Lime)

The following sections of Section 400 have been revised with following additional requirements.

# 401.01 Description

The Contractor shall compose Hot Mix Asphalt (HMA) Pavement with aggregate, Performance Graded Asphalt Binder (PGAB), hydrated lime, and mineral filler if required. Hydrated Lime shall be utilized in all mixtures so denoted in Special Provision 403 - Hot Mix Asphalt Pavement.

#### 401.02 Materials

Materials shall meet the requirements specified.

Hydrated Lime

AASHTO 216

# 401.03 Composition of Mixtures

The Contractor shall compose the Hot Mix Asphalt Pavement with aggregate, Performance Graded Asphalt Binder (PGAB), hydrated lime 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).

Hydrated lime shall be used in all HMA at a rate of one percent (1%) by weight of the total dry aggregate including RAP aggregate, if used. The Contractor shall obtain a shipping ticket for each shipment of hydrated lime. The Contractor shall provide the Resident with a copy of each shipping ticket from the supplier, including the date, time and weight of hydrated lime shipped and used in HMA production. The Contractor shall submit a material data sheet for the hydrated lime to the Resident for approval.

The Contractor shall provide the following information with the proposed JMF: Safety Data Sheets (SDS) for hydrated lime Supplier and source for Hydrated Lime

#### 401.13 Preparation of Aggregates

The Contractor shall add water to the aggregates as required to maintain a minimum total aggregate moisture content of 3 percent. The Contractor shall mix the lime uniformly with the aggregate before introducing the aggregate into the dryer or dryer drum. Hydrated lime introduction

systems must be controlled by a proportioning device to the amount required on the JMF plus or minus 0.1% of the target.

The Contractor shall add lime to the aggregate by one of the following methods:

- A. The Contractor shall add lime to the combined cold feed aggregate using an enclosed inline cold feed mechanical pugmill mixer. The Contractor shall use a twin-shaft, continuous mixing pugmill with mixing paddles to thoroughly blend the lime with the aggregate. The Contractor shall adjust the retention time of the mixture in the pugmill so no unmixed lime is visible after the lime and aggregate exit the pugmill.
- B. The Contractor shall add lime to the combined cold feed aggregate by introducing the lime between aggregate layers as the aggregate flows from the cold feed bins. The Contractor shall thoroughly mix the lime and aggregate on the conveyor belt. The Contractor shall provide a lime introduction system so that no unmixed lime is visible before the lime and combined aggregate enter the drum.

The cold storage for hydrated lime shall be a separate bulk storage bin with a vane feeder or other approved feeder system which can be readily calibrated. The system shall provide a means for convenient sampling of the hydrated lime additive and verifying the quantity of lime dispensed. If the hydrated lime is to be introduced directly into the plant then the additive equipment shall be synchronized with the cold feed controls to operate concurrently with the cold feed operation. The system will be configured to automatically adjust the hydrated lime feed to variations in the cold aggregate feed. The hydrated lime system shall have out-of-tolerance sensing ability by weight, and have a means to indicate the out-of-tolerance condition.

#### 401.14 Mixing

Hydrated lime shall be added into the HMA aggregate mixture prior to the aggregate blend mixing with the PGAB. Aggregate feed rate, or pugmill mixing times shall be adjusted to ensure complete blending of Hydrated Lime and aggregate before the PGAB is added.

## 401.18 Quality Control

The Contractor shall provide a written supplement to the project specific QCP outlining the proposed methods of adding and mixing the hydrated lime for approval by the Authority. This written summary shall also provide information describing how the Contractor will perform quality control on the addition of hydrated lime, specifically the method of introduction and how the lime use will be measured to assure that the specified percentage is consistently added, and appropriately mixed. The supplemental QCP covering hydrated lime introduction shall be provided to the Authority at least one week prior to the prepave meeting.

#### SECTION 403

#### **HOT MIX ASPHALT PAVEMENT**

## 403.01 Description

This work shall also consist of the construction, maintenance and removal of all temporary bituminous ramps at locations as shown on the Plans or as directed by the Resident.

## 403.02 General

The Contractor shall compose the Hot Mix Asphalt Pavement with aggregate, Performance Graded Asphalt Binder (PGAB), and mineral filler if required. The Performance Graded Asphalt Binder (PGAB) shall be polymer modified as detailed in this special provision and shall conform to the requirements of AASHTO M 332 (including Appendix 1). The PG64E-28 Binder shall contain a minimum of 2.25% Styrene-Butadiene-Styrene (SBS) polymer {BWT} in a homogeneous blend with a minimum average percent recovery of 75% as determined by AASHTO T350 @ 3.2 kPA (R3.2) on RTFO residue at 64°C to assure significant polymer load and performance. The stability of the modified binder shall be verified in accordance with ATSM D7173 using the Dynamic Shear Rheometer (DSR). The DSR G\*/sin(δ) results from the top and bottom sections of the ATSM D7173 test shall not differ by more than 10%. The results of ASTM D7173 shall be included on the Certified Test Report.

When required PG70E-34 Binder shall be modified with Styrene-Butadiene-Styrene (SBS) polymer {BWT} in a homogeneous blend with a minimum average percent recovery of 75% as determined by AASHTO T350 @ 3.2 kPA (R3.2) on RTFO residue at 70°C to assure significant polymer load and performance. The stability of the modified binder shall be verified in accordance with ATSM D7173 using the Dynamic Shear Rheometer (DSR). The DSR  $G^*/\sin(\delta)$  results from the top and bottom sections of the ATSM D7173 test shall not differ by more than 10%. The results of ASTM D7173 shall be included on the Certified Test Report.

#### 403.03 Construction

All areas which have been milled or overlaid shall have a minimum length temporary ramp constructed as determined by the Resident at the milled or overlaid limits prior to opening the roadway to traffic. Temporary ramps shall be constructed using the same material as being placed on that day or as directed by the Resident. All temporary ramps are to be constructed on a sand joint. The Contractor shall be responsible for all repairs and maintenance required for the temporary ramps.

The Contractor shall be responsible for the layout of the longitudinal centerline between the travel lanes.

The sand and loose debris adjacent to the median guardrail shall be removed and disposed of by the Contractor off of Turnpike property.

The forty-five degree pavement safety edge needed between lanes 1 and 2 and between lane 2 and the eight foot shoulder shall be incidental to the 202 pay items.

A minimum test strip of 100 tons placed at a nominal depth of 1 ½ inches, full lane width, shall be required. It shall be evaluated under testing requirements for mix volumetric and density. The exact location will be identified by the Authority. Prior to placement of the test strip, a leveling course (Item 403.211) shall be placed at the chosen location. A fog coat of Item 409.15, Bituminous Tack Coat, shall be applied to the level course prior to the placement of the HMA surface course, payment to be made under the 409.15 pay item. The test strip will be excluded from the remainder of the projects' QA analysis. The Contractor shall notify the Authority at least 48 hours in advance of placing the test strip. The test strip is intended to allow the Contractor to establish a method of compaction and adjust plant settings prior to mainline plant production.

#### 403.04 Method of Measurement

The construction and removal of temporary ramps on sand joints, and maintaining the ramps will not be measured separately for payment, but shall be incidental to Items 403.

The removal of sand and loose debris will not be measured separately for payment, but shall be incidental to paving items.

Hot Mix Asphalt, 12.5 mm (Polymer Modified pavement with (up to) 15% RAP, placed as a wearing surface will be measured under Item 403.2081 Hot Mix Asphalt, 12.5 mm (Polymer Modified) - RAP.

## 403.05 Basis of Payment

Hot Mix Asphalt, 12.5 mm (Polymer Modified) pavement with (up to) 15% RAP, placed as a wearing surface will be paid under Item 403.2081 Hot Mix Asphalt, 12.5 mm (Polymer Modified) – RAP.

The following pay items are added:

Pay Item Pay Unit

403.2081 Hot Mix Asphalt, 12.5 mm (Polymer Modified) – RAP Ton

## SECTION 403

## **HOT MIX ASPHALT PAVEMENT**

Course	HMA	Item	Total	No. of	Complimentary
	Grading	Number	Thickness	Lavers	Notes

## Northbound and Southbound Main Line and Outside Shoulder Construction

Wearing	12.5mm	403.2081	1.5"	1	<b>A,D,E,F,G,H,I,J,K</b>
Intermediate	12.5mm	403.213	1.5"	1	C,I
Base	19.0mm	403.207	2.5"	1	C,I
Base	19.0mm	403.207	4.5"	2	C,I

## Northbound and Southbound Median Construction

Wearing	12.5mm	403.2081	1.5"	1	<b>A,D,E,G,H,I,J,K</b>
Intermediate	12.5mm	403.213	1.5"	1	C,I
Base	19.0mm	403.207	2.5"	1	C,I
Base	19.0mm	403.207	2.25"	1	C,I

## Northbound and Southbound Mill and Overlay

Wearing	12.5mm	403.2081	1.5"	1	A,D,E,F,G,H,I,J,K
Shim	4.75mm	403.212	1/2"	1	C,I

## Northbound and Southbound Overlay

Wearing   12.5mm   403.2081   1.5"   1   A,D,E,F,G,H,I,J,K
--

# NB On Ramp Gore Mill and Overlay

Wearing   12.5mm   403.208   1.5"   1   C
---

## **Median Drainage Waterway**

|--|

## **Warren Ave Shoulder Reconstruction**

Wearing	12.5mm	403.208	1.5"	1	C,I
Intermediate	12.5mm	403.213	1.5"	1	C,I
Base	19.0mm	403.207	3"	1	C,I

#### **Warren Ave Sidewalks**

	Handwork	9.5mm	403.209	2"	2	C
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#### **COMPLEMENTARY NOTES**

- A. The required PGAB for this mixture shall be **64E-28**.
- B. RAP may not be used.
- C. The Maine DOT will conduct the job mix verification. The aggregate qualities shall meet the design traffic level of 3 to <10 million ESALS for mix placed under this contract. Minimum and Maximum PGAB content limits from 401.21 shall not apply.
- D. The MTA will conduct the job mix verification. The aggregate qualities shall meet the design traffic level of 10 to <30 million ESALS for mix placed under this contract. The design verification, Quality Control, and Acceptance tests for this mix will be performed at **75 gyrations**. (N design)
- E. A material transfer vehicle (MTV) shall be used for the placement of Hot Mix Asphalt wearing surface on all roadways including acceleration and deceleration lanes and all ramps.
- F. Joints shall be constructed as the "notched wedge" type in accordance with Subsection 401.17.
- G. Joint density will be measured in accordance with Subsection 401.165.
- H. PGAB shall conform to the provisions of 403.02 Polymer Modified PGAB for HMA
- I. The contractor shall furnish a quality control technician equipped with an approved densometer to ensure density requirements are met.
- J. Hydrated Lime shall be incorporated into the mixture.
- K. The antistrip additive Zycotherm manufactured by Zydex Industries shall be incorporated into the PGAB at a rate of 0.1%.

#### SECTION 409

#### BITUMINOUS TACK COAT

#### 409.01 Description

This Subsection is deleted and replaced with the following:

This work consists of furnishing and applying one uniform application of Emulsified Asphalt RS-1 or RS-1h conforming to the specifications of AASHTO M-140. The application rate shall be 0.04 gal/yd<sup>2</sup>

#### 409.05 Equipment

Add "or as determined by the Resident", after the words "gal/yd<sup>2</sup>]" in the fourth line of the second paragraph of this Subsection.

### 409.06 Preparation of Surface

The following paragraph is added:

All existing pavement and shoulder areas on which bituminous concrete mixtures are to be placed shall receive a tack coat. The surface area where the tack coat is to be applied shall be dry and cleaned of all dirt, sand, and loose material. Cleaning shall be accomplished by use of revolving brooms or mechanical sweepers. Undesirable material not removed by the above means shall be cleaned by hand sweeping or scraping, or a combination of both. Small areas otherwise inaccessible may be swept with hand brooms. The tack coat shall be applied only when the existing surface is dry.

#### 409.08 Method of Measurement

The following paragraphs are added:

Measurement will be based on delivery slips made out in duplicate by the Contractor and signed by the Resident, or his representative, at the point of delivery. One of these slips shall be retained by the Resident and one by the Contractor. Delivery slips shall be furnished by the Contractor and shall provide space for identifying the vehicle and driver, for stating the volume of material carried, the source of the material, the date, and the Resident or his representative's signature.

Material included in the delivery slips and not used or rejected shall be deducted from the amount being measured for payment. Each day's delivery slips shall be reconciled by the Contractor and the Resident within 24-hours.

Cleaning of the surface area where tack coat is to be applied shall be incidental to Item 409.152, Bituminous Tack Coat - Applied.

## 409.09 Basis of Payment

The following pay items are added:

Pay Item		<u>Pay Unit</u>
409.15	Bituminous Tack Coat RS-1 or RS1h– Applied	Gallon

## SECTION 419

#### SAWING AND SEALING JOINTS IN BITUMINOUS PAVEMENT

(Sawing Bituminous Pavement)

#### 419.01 Description

This work consists of sawing bituminous concrete pavement as shown on the Plans, as specified herein or as approved by the Resident.

#### 419.02 General

The bituminous concrete pavement to be sawed shall be accurately marked before cutting. The marking shall be in accordance with the locations as shown on the Plans or as approved by the Resident. Cutting shall be with an approved power driven saw with an abrasive blade.

Unless otherwise noted or directed, the sawcut shall be vertical, a minimum of 3/8 inch wide, and extend through the full depth of pavement.

Residue or debris from the sawing operation shall be removed immediately and legally disposed of by the Contractor.

#### 419.03 Method of Measurement

Sawing Bituminous Pavement will be measured by the linear foot of pavement actually cut and accepted. No additional payment will be made for variations in the pavement thickness.

#### 419.04 Basis of Payment

Sawing Bituminous Pavement will be paid for at the Contract unit price per linear foot which shall be full compensation for all materials, tools, equipment labor, and all incidentals necessary for the completion of the work to the satisfaction of the Resident. The disposal of sawcut residue shall be incidental to this item.

Payment will be made under:

Pay Item		<u>Pay Unit</u>
419.30	Sawing Bituminous Pavement	Linear Foot

#### SECTION 461

#### TEMPORARY PAVEMENT

(Temporary Pavement)

#### 461.01 Description:

This work shall consist of furnishing all labor, materials and equipment, for the manufacturing, installation and removal of all Temporary Pavement in accordance with these specifications, Special Provision 403 Hot Mix Asphalt, and the Plans. Temporary pavement shall meet all mix design requirements of a 12.5 mm surface mix for the top  $1\frac{1}{2}$  inches, and a 12.5 mm base mix for the remaining depth.

#### 461.02 Method of Measurement:

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

#### 461.03 Basis of Payment:

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

Payment will be made under:

Pay Item		<u>Pay Unit</u>
461.131	Temporary Pavement	Ton

#### SECTION 470

#### BERM DROP OFF CORRECTION

(Berm Dropoff Correction - Grindings)
(Berm Correction)

#### 470.01 Description

This work shall consist of furnishing and placing bituminous grindings to eliminate the berm dropoff along the inside and outside shoulder edges at all locations, including guardrail sections at locations shown on the plans or as directed by the Resident.

The work shall also consist of removing materials at the inside and outside shoulder edges at all locations, including guardrail sections at locations shown on the plans or as directed by the Resident.

#### 470.02 Bituminous Materials

The recycled bituminous pavement shall be reprocessed (crushed) to meet the following gradations:

Sieve Designation	Percentage by Weight
	Passing Square Mesh Sieve
3/4**	100
1/2**	95-100
No. 4	50-80
No. 50	18-28
No. 200	3-10

#### 470.03 Method of Construction

Work under this item shall be in accordance with the details as shown on the Plans or as directed by the Resident.

At a minimum, a walk behind plate compactor shall be used for compaction. Other methods may be used upon approval by the Resident.

#### 470.04 Method of Measurement

Berm Dropoff Correction – Grindings will be measured by the ton of Pavement grindings delivered and installed.

Material included in the delivery slips and not used or rejected shall be deducted from the amount being measured for payment.

Berm Correction will be measured by the linear foot for material removed.

## 470.05 Basis of Payment

The accepted quantity of "Berm Dropoff Correction – Grindings" will be paid for at the contract unit price per ton, which price shall include all materials, crushing to gradation range, weighing, transportation, placement, labor, equipment, and all incidentals necessary to accomplish the work.

The accepted quantity of "Berm Correction" will be paid for at the contract unit price per linear foot, which price shall include removing all materials, grading, transportation, labor, equipment, and all incidentals necessary to accomplish the work.

#### Payment will be made under:

Pay Item		Pay Unit
470.08	Berm Dropoff Correction – Grindings	Ton
470.081	Berm Correction	LF

#### SECTION 502

#### STRUCTURAL CONCRETE

(Fiber Reinforced Polymer Bridge Drain)

#### 502.01 Description

This Subsection is amended by the addition of the following:

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

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

- a. AASHTO LRFD Guide Specifications for Design of Concrete-Filled FRP Tubes for Flexural and Axial Members, 2012.
- b. American Composites Manufacturing Association, ACMA Code of Standard Practice, First Edition, 2011.
- c. ISO/IEC Guide 58, Calibration and Testing Laboratory Accreditation Systems General Requirements for Operation and Recognition.
- d. ISO/IEC 17025 General Requirements for the Competence of testing and Calibration Laboratories.
- e. NBS Voluntary Product Standard PS15-69. Custom Contact-Mold Reinforced Polyester Chemical-Resistant Process Equipment. The Society of the Plastics Industry, Inc., 355 Lexington Ave., N.Y., N.Y. 10017
- f. ASTM D 2584. Standard Test Method for Ignition Loss of Cured Reinforced Resins.
- g. ASTM D 3171. Standard Test Methods for Constituent Content of Composite Materials.
- h. ASTM D 4385. Standard Practice for Classifying Visual Defects in Thermosetting Reinforced Plastic Pultruded Products.
- i. ASTM D 570. Test Method for Water Absorption of Plastics.
- j. ASTM E 1356. Standard Test Method for Assignment of the Glass Transition Temperatures by Differential Scanning Calorimetry.
- k. ASTM E 1640. Standard Test Method for Assignment of the Glass Transition Temperature by Dynamic Mechanical Analysis.
- 1. ASTM C 582. Standard Specification for Contact-Mold Reinforced Thermosetting Plastic (RTP) Laminates for Corrosion-Resistant Equipment.

#### 502.03 Materials

This Subsection is amended by the addition of the following:

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

## 502.031 Construction

This Subsection is amended by the addition of the following:

#### FRP DRAIN MANUFACTURERS

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

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

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

All manufactures or fabricators of FRP bridge drain systems/components are required to have a minimum of 3 years of experience in providing FRP composite structural grade products to the general market. Manufacturers need to provide documentation that personnel involved in manufacture/fabrication hold and maintain American Composites Manufactures Association (ACMA) certifications in a minimum of two of the following disciplines; 1) Open Molding, 2) Corrosion, 3) Vacuum Infusion, 4) Closed Molding and that the Manufacturer/Fabricator have an ISO 9001:(current year) or other independent certification to ensure that the Manufacturer's process has been independently audited for conformance.

#### Design Guide for FRP Composite Scupper Bodies/Drain Inlets

General – The bridge shall use a size G offset FRP composite scupper (42 inch long x 12 inch wide x 10 diameter downspout) See Appendix B for additional details. The bottom of the downspout shall extend a minimum of 12 inches below the bottom of the beams.

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

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

a. Steel grating shall be commercial heavy - duty grating with 1 1/2" x 5/16" bearing bars spaced at 2 3/8" and 3/8" diameter cross bars spaced at 2". The grating shall be centered in the drain top. The bearing bars shall run parallel to traffic.

- b. FRP grating if used shall provide an opening area at least 75% of steel grating noted above. FRP gratings that do not meet this requirement are not acceptable and shall not be used.
- c. Grates shall be designed so that they can be removed by mechanical means. Fasteners for grates shall be stainless. Where selected grates require orientation to flow, the grates will have orienting features included as required, i.e. for orders of paired drains one drain would have left hand orientation and the other right hand orientation.

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

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

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

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

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

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

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

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

Shop Drawings/Inspection – Drawings The Contractor shall prepare shop detail, erection and other necessary working drawings in accordance with Section 105.7 - Working Drawings.

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

Quality Control/Quality Assurance – Within 30 calendar days the Contractor shall submit to the Department a Quality Control Quality Assurance (QCQA) Plan for fabrication of the HCB's. Fabrication of HCB's shall not commence until the QCQA Plan has been reviewed and approved by the Authority.

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

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

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

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

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

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

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

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

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

#### 502.18 Method of Measurement

This Subsection is amended by the addition of the following:

FRP Bridge Drains will be measured by the quantity each, for fabrication, delivery and installation.

## 502.19 Basis of Payment

This Subsection is amended by the addition of the following:

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

Payment will be made under:

Pay Item		Pay Unit
502.72	FRP Bridge Drain – Type F	Each

#### Special Provision Section 502 – APPENDIX A

## A.1 Scope

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

#### A.2 Material/Laminate Composition

#### A.2.1 Fibers

Fiber sizings and coupling agents shall be compatible with the resin system used to impregnate them.

#### A.2.2 Matrix Resins

Commercial grades of vinyl ester and epoxy resin systems are permitted provided the finished product meets the material property requirements before and after durability conditioning as set forth in Section A. Styrene is permitted to be added to the polymer resin during processing. Added styrene shall be less than 10 percent by mass of the polymer resin. The amount of styrene, as a mass percentage of the polymer resin, added during processing shall be reported per Section A.5.3.

#### A.2.3 Fillers and Additives

Commercial grade inorganic fillers such as kaolin clay, calcium carbonate, and alumina tri-hydrate shall not exceed 20 percent by mass of the polymer resin constituent. Commercial grade additives and process-aids, such as release agents, low profile shrink additives, initiators, promoters, hardeners, catalysts, pigments, fire-retardants, and ultra-violet inhibitors are permitted and depend on the processing method. Shrink additives, if used, shall be less than 20 percent by mass of the polymer resin. Commercial grade inorganic or organic non-woven surfacing mats or veils are permitted.

#### A.2.4 Fiber Content

Fiber content shall be measured by ASTM D 3171 or ASTM D 2584. Fiber content shall be high enough to meet the mechanical property requirements of the FRP system laminate. The manufacturer shall report the fiber content of the end product by volume or by mass in accordance to the method used. If fiber content is not provided by the manufacturer, then the manufacturer shall provide material data sheets with the weight per unit area of the fiber reinforcement used to manufacture the part.

#### A.2.5 Glass Transition Temperature

The characteristic value of the glass transition temperature of the composite system, determined in accordance with ASTM E1640, shall be at least 40 degrees Fahrenheit higher than the maximum design temperature, TMaxDesign, defined in section 3.12.2.2 of the AASHTO LRFD Guide Specifications for Design of Concrete-Filled FRP Tubes for Flexural and Axial Members, 2012. FRP drain systems may not be used in environments with a service temperature higher than the glass transition temperature of the resin used for their manufacturing.

#### A.2.6 Longitudinal and Transverse Coefficients of Thermal Expansion (CTE)

The coefficient of Thermal Expansion (CTE) of the tube may vary in the longitudinal and circumferential directions of the component depending on the laminate architecture and type of fibers and resins.

#### A.3 Mechanical Properties

#### A.3.1 Tensile Properties

The tensile strength, tensile modulus of elasticity, and ultimate tensile strain shall be determined for both the axial and hoop directions of the tubular components or in transverse and longitudinal directions of inlet bodies, see Section A.5.1 Test Samples. The tensile strength as reported by the manufacturer for product certification shall be measured according to ASTM Test Method D 3039, or other tension test method designed to determine tensile properties of composite laminates at the approved frequency and number of specimens as specified in section A.5.

#### A.3.4 Compressive Properties

The compressive strength and ultimate compressive strain shall be determined for the longitudinal directions of the tube laminate. The compressive strength and ultimate compressive strains shall be derived from specimens tested in accordance with ASTM Test Method D 6641, or other approved compression test method designed to determine compressive properties of the composite.

#### A.4 Durability Properties

Material properties shall retain 85% of their baseline values for the material properties listed in Section 2.3 after conditioning for all the durability tests listed below. Durability test methods are adopted from AASHTO Guide Specifications for Design of Bonded FRP Systems for Repair and Strengthening of Concrete Bridge Elements.

Durability property testing is only required for initial product certification and not required for subsequent production orders. The testing is the responsibility of the manufacturer and shall be conducted by an approved independent testing lab per section A.5.2.

#### A.4.1 Moisture Absorption

Samples will be immersed in distilled water having a temperature of 100 +/-3 degrees Fahrenheit and tested after 1,000 hours of exposure.

#### A.4.2 Resistance to Alkaline Environment

Samples will be immersed in a saturated solution of calcium hydroxide (pH-11) at ambient temperature of 73 +/-3 degrees Fahrenheit for 1,000 hours prior to testing. The pH level will be monitored and the solution will be maintained as needed.

#### A.4.3 Alternating Ultraviolet Light and Condensation Humidity

Samples will be conditioned in an apparatus under Cycle I-UV exposure condition according to ASTM G154 Standard Practice. Samples will be tested within two hours after removal from the apparatus.

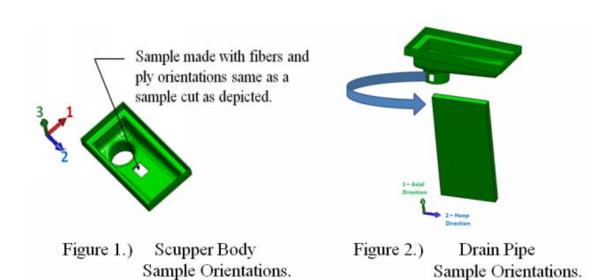
#### A.4.4 Freeze-Thaw

Samples will be exposed to 100 repeated cycles of freezing and thawing in an apparatus meeting the requirements of ASTM C666.

## A.5 Sampling, Testing & Results.

#### A.5.1 Test Samples.

The manufacturer is responsible for testing and may use samples in accordance to the test methods and needs of test equipment available. Test coupons may be cut from manufactured products or prepared using identical processes e.g. wet lay-up, vacuum infusion, etc. in a flat sheet, or witness plate, in which test coupons may be cut. Approval of the Fabrication Engineer shall be required for acceptance of test specimens produced by a different manufacturing method. Samples derived from special coupon test sheets shall be taken interior to edge sections 1.5x the width of the required coupon width. Samples shall be prepared from samples oriented with the directions illustrated in figures 1 and 2 for scupper body and drain pipes. For samples from filament wound pipes, samples shall be constructed over polygon mandrels allowing for flat panels to be removed for test purposes. Each test shall use a quantity of three samples. See Tables A.5.4 for tests, material requirements and sample breakdown.



## A.5.2 Test Lab Requirements.

All testing of FRP material properties is being conducting in accordance to specified standards. Internal or external testing is to be conducted through laboratory facilities in accordance to ISO/IEC Guide 58, Calibration and Testing Laboratory Accreditation Systems - General Requirements for Operation and Recognition and ISO/IEC 17025 General Requirements for the Competence of testing and Calibration Laboratories as related by AASHTO document R18 "Recommended Practice for Establishing and Implementing a Quality System for Construction Materials Testing Laboratories."

## A.5.3 Production Validation (PV) Testing.

Certification of materials used in FRP drain products must undergo PV testing of the specified material properties before and after environmental conditioning as set forth in Section A.5.4 by an independent lab. PV tests may be conducted internally by the manufacturer for development but

are not acceptable for certification. Reported values for the material composition is be recorded and reported by the manufacturer, no independent audit is required.

A.5.4 Production Validation Sample Quantities, Minimum Material Properties and Reported Values

The following data shall be reported for material certification. Note that the tables shown use orientations related to FRP scupper or inlet bodies as set forth in Figure 1 of Section A.5.1, orientation direction 2 as shown in Figure 2 of Section A.5.1 shall be substituted for orientation direction 3 when evaluating tubular sections. The required number of samples have been reduced from ASTM requirements.

Table A.5.4.a PV reported material composition data. (Recorded by the manufacturer during the manufacturing process)

Section No.	Characteristic	Applicable Test Standard	Number of Samples	Tolerance	Reported
A.2.2	Styrene, mass percentage of polymer resin	per tolerance	N/A	10% max	
A.2.3	Inorganic fillers, mass percentage of polymer resin.	per tolerance	N/A	20% max	
PLZ.3	Shrink additives, mass percentage of polymer resin.	per tolerance	N/A	20% max	
A.2.4	Fiber Content	ASTM D3171 or ASTM D2584	3	Sufficient to meet mechanical properties	
A.2.5	Glass Transition Temperature	ASTM E1640	3	> Max Design Temperature	

Table A.5.4.b PV Reported Baseline Mechanical Properties

(Conducted	by an indeper	ndent laboratory. Samples as Manufacture	ed w/o additional conditionin	g per Section A.3)	)	Independent Lab Reported Values			
					Minumum	Sample	Sample	Sample	Avg
Section No.	Direction	Characteristic	Applicable Test Standard	No. of Samples	Allowable Values	1	2	3	Value
		Tensile Strength			10000 (psi)				
	1	Tensile Modulas of Elasticity		3	800000 (psi)				
A.3.1	Ultimate Tensile Strain ASTM D3039	ASTM D2020		0.003 in/ in					
A.3.1	2	Tensile Strength	ASIM DSUSY	3	10000 (psi)				
		Tensile Modulas of Elasticity			800000 (psi)				
		Ultimate Tensile Strain			0.003 in/ in				
		Compressive Strength			22000 (psi)				
A.3.4	1	Ultimate Compressive Strain	ASTM D6641	3	0.003 in/ in				
A.3.4	2	Compressive Strength	ASTM D0041	2	22000 (psi)				
	3	Ultimate Compressive Strain		3	0.003 in/ in				

Table A.5.4c PV Reported Mechanical Properties after 1000 hr. Moisture Immersion Condidtioning per Section A.4.1

		ted Mechanical Properties after 1000 fil.		onducted by an independent laboratory) Independent Lab Reported Values												
(Conducted I	by an indepen	dent laboratory)				Indepen	dent Lab	Reporte	d Values							
					Minumum	Sample	Sample	Sample	Avg							
Section No.	Direction	Characteristic	Applicable Test Standard	No. of Samples	Allowable Values	1	2	3	Value							
		Tensile Strength			8500 (psi)											
	1	Tensile Modulas of Elasticity	]	3	680000 (psi)											
A.3.1		Ultimate Tensile Strain	ASTM D3039		0.0025 in/in											
A.3.1	2	Tensile Strength	ASTM D3039	3	8500 (psi)											
		Tensile Modulas of Elasticity			680000 (psi)											
		Ultimate Tensile Strain			0.0025 in/in											
		Compressive Strength			18700 (psi)											
A,3,4	1	Ultimate Compressive Strain	ACTAL DECAL	3	0.0025 in/in											
A.3.4	2	Compressive Strength	ASTM D6641	2	18700 (psi)											
	3	Ultimate Compressive Strain		] 3	0.0025 in/in											

Table A.5.4d PV Reported Mechanical Properties after 1000 hr. of Alkaline Environment Conditioning per Section A.4.2

(Conducted	nducted by an independent laboratory)						Independent Lab Reported Values			
					Minumum	Sample	Sample	Sample	Avg	
Section No.	Direction	Characteristic	Applicable Test Standard	No. of Samples	Allowable Values	1	2	3	Value	
		Tensile Strength			8500 (psi)					
	1	Tensile Modulas of Elasticity	ASTM D3039	3	680000 (psi)					
A,3,1		Ultimate Tensile Strain			0.0025 in/in					
A.3.1	2	Tensile Strength		3	8500 (psi)					
		Tensile Modulas of Elasticity			680000 (psi)					
		Ultimate Tensile Strain			0.0025 in/in					
	4	Compressive Strength		,	18700 (psi)					
A,3,4	1	Ultimate Compressive Strain	ASTM D6641	3	0.0025 in/in					
A.3.4	2	Compressive Strength		,	18700 (psi)					
	3	Ultimate Compressive Strain		3	0.0025 in/in					

Table A.5.4e PV Reported Mechanical Properties after UV Light Conditioning per Section A.4.3 (ASTM G154).

(Conducted	by an indepen	dent laboratory)				Independent Lab Reported Val			d Values
					Minumum	Sample	Sample	5ample	Avg
Section No.	Direction	Characteristic	Applicable Test Standard	No. of Samples	Allowable Values	1	2	3	Value
		Tensile Strength			8500 (psi)				
	1	Tensile Modulas of Elasticity	ASTM D3039	3	680000 (psi)				
A.3.1		Ultimate Tensile Strain			0.0025 in/in				
M.3.1		Tensile Strength		3	8500 (psi)				
		Tensile Modulas of Elasticity			680000 (psi)				
		Ultimate Tensile Strain			0.0025 in/in				
		Compressive Strength		,	18700 (psi)				
A.3.4	1	Ultimate Compressive Strain	ASTM DECAM	3	0.0025 in/in				
A.3.4		Compressive Strength	ASTM D6641		18700 (psi)				
	3	Ultimate Compressive Strain		3	0.0025 in/in				

Table A.5.4f PV Reported Mechanical Properties after 100 Freeze-Thaw Cycle Conditioning per Section A.4.4 (ASTM C666).

(Conducted	ducted by an independent laboratory)						Independent Lab Reported Values			
					Minumum	Sample	Sample	Sample	Avg	
Section No.	Direction	Characteristic	Applicable Test Standard	No. of Samples	Allowable Values	1	2	3	Value	
		Tensile Strength	ASTM D3039 —		8500 (psi)					
	1	Tensile Modulas of Elasticity		3	680000 (psi)					
A.3.1		Ultimate Tensile Strain			0.0025 in/in					
A.3.1	2	Tensile Strength		3	8500 (psi)					
		Tensile Modulas of Elasticity			680000 (psi)					
		Ultimate Tensile Strain			0.0025 in/in					
		Compressive Strength			18700 (psi)					
A.3.4	1	Ultimate Compressive Strain	ASTM D6641	3	0.0025 in/in					
A.3.4	-	Compressive Strength	ASIM 06641	-	18700 (psi)					
	3	Ultimate Compressive Strain		3	0.0025 in/in					

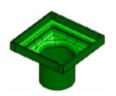
Table B2 Preferred Offset FRP Composite Scupper Bodies

	Size Designation	D	E	F	G		
	Size Dimensions (Grate Length x Width, Down Spout Diameter)	24x12xØ8	30x12xØ10	36x12xØ10	42x12xØ12		
	Dimension		Nominal Di		Nominal Design	Manufacturing	
Number	Name		Nominal Di	Tolerance	Tolerance		
1	Down Spout Inner Diameter	8"	10"	10"	12"	min	+/- 0.015"
2	Grate Frame Width	12"	12"	12"	12"	+ 2"/-0"	+/- 0.025*
3	Grate Frame Height	As require	d to contain grate an	d recessed from deck	surface		
4	Grate Frame Flange & Wall Thickness	0.25"	0.25"	0.25"	0.25"	min	+/- 0.025*
5	Scupper Toe Depth	4"	4*	4"	4"	+1"/-0"	+/- 0.1"
6	Scupper Toe Slope	1:10	1:10	1:10	1:10	min	+ 1 degree
7	Scupper Body Radii	2"	2*	2"	2"	min	+0.1"
8	Down Spout Position to Heel	6"	6"	6"	6"	+/- 0.5*	
9	Height	13.5"	16"	18"	18"	Open	+/- 0.25"
10	Scupper Heel Slope	1:10	1:10	1:10	1:10	min	+0.1"
11	Grate Frame Length	24"	30"	36"	42"	+ 2"/-0"	+/- 0.025"
12	Scupper and Down Spout Wall Thickness	0.25"	0.25"	0.25"	0.25"	min	+0.015"

## SPECIAL PROVISION SECTION 502

## STRUCTURAL CONCRETE

(Fiber Reinforced Polymer Bridge Drains)
Standard Details
APPENDIX B



Bridge Drain - Symmetric Inlet

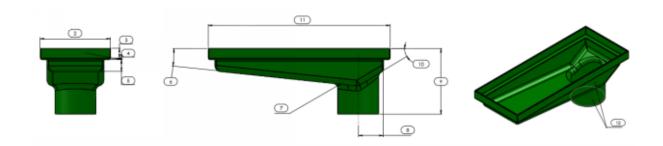
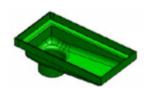


Table B1 Preferred Symmetric FRP Composite Inlet Bodies

	Size Designation	A	В	C		
	Size Dimensions (Grate Length x Width, Down Spout Diameter)	12×12ר8	14x14xØ10	18x18xØ12		
	Dimension		Nominal Dimensions		Nominal Design	Manufacturing
Number	Name	'	vominal Dimensions	Tolerance	Tolerance	
1	Down Spout Inner Diameter	8"	10"	12"	min	+/- 0.015"
2	Grate Frame Width	12"	14"	18"	+/- 1"	+/- 0.025"
3	Grate Frame Height	As required to conta	in grate and recessed			
4	Grate Frame Flange & Wall Thickness	0.25"	0.25"	0.25"	min	+/- 0.025"
5	Scupper Toe Depth	4"	4"	4"	+1"/-0"	+/- 0.1"
6	Scupper Toe Slope	1:10	1:10	1:10	min	+ 1 degree
7	Scupper Body Radii	2"	2"	2"	min	+0.1"
8	Down Spout Position to Heel	6"	6"	6"	+/- 0.5"	
9	Height	18"	18"	18"	Open	+/- 0.25"
10	Scupper Heel Slope	1:10	1:10	1:10	min	+0.1"
11	Grate Frame Length	12"	14"	18"	+/- 1"	+/- 0.025"
12	Scupper and Down Spout Wall Thickness	0.25"	0.25"	0.25"	min	+0.015"



**Bridge Drain-Offset Scupper** 

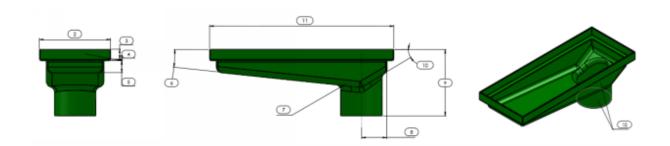


Table B2 Preferred Offset FRP Composite Scupper Bodies											
	Size Designation	D	E	F	G	]					
	Size Dimensions	24×12ר8	30x12xØ10	36×12ר10	42×12ר12	1					
	(Grate Length x Width, Down Spout Diameter)	24x12x p0	30x12xp10	30x12xp10	42X12XØ12						
	Dimension		Nominal Di		Nominal Design	Manufacturing					
Number	Name		Nonlina	Tolerance	Tolerance						
1	Down Spout Inner Diameter	8"	10"	10"	12"	min	+/- 0.015"				
2	Grate Frame Width	12"	12"	12"	12"	+ 2"/-0"	+/- 0.025"				
3	Grate Frame Height	As require	d to contain grate an	d recessed from deck	surface						
4	Grate Frame Flange & Wall Thickness	0.25"	0.25"	0.25"	0.25"	min	+/- 0.025"				
5	Scupper Toe Depth	4"	4"	4"	4"	+1"/-0"	+/- 0.1"				
6	Scupper Toe Slope	1:10	1:10	1:10	1:10	min	+ 1 degree				
7	Scupper Body Radii	2"	2"	2"	2"	min	40.1"				
8	Down Spout Position to Heel	6"	6"	6"	6"	+/- 0.5"					
9	Height	13.5"	16"	18"	18"	Open	+/- 0.25"				
10	Scupper Heel Slope	1:10	1:10	1:10	1:10	min	+0.1"				
11	Grate Frame Length	24"	30"	36"	42"	+ 2"/-0"	+/- 0.025"				
12	Scupper and Down Spout Wall Thickness	0.25"	0.25"	0.25"	0.25"	min	+0.015"				

#### SECTION 504

#### STRUCTURAL STEEL

#### <u>504.03 Drawings</u>

This Subsection is amended by the addition of the following:

The Contractor shall submit a structural steel erection plan stamped by a Professional Engineer licensed in the State of Maine. The erection plan shall include the number and location of crane(s), the weight of the pick, crane capacities, bracing locations and all other pertinent information needed to demonstrate the structural steel can be safely erected and assembled.

#### 504.51 Installation

This Subsection is amended by the addition of the following:

Where an outer face of the bolted parts has a slope of more than one to 20 with respect to a plane normal to the bolt axis, a smooth beveled washer will be used to compensate for the lack of parallelism.

#### 504.641 Method of Measurement

There will be no additional payment for the required erection plan. The cost shall be incidental to the Structural Steel Erection pay item.

#### SECTION 506

#### SHOP APPLIED PROTECTIVE COATING - STEEL

(Thermal Spray Coating – Shop Applied)

#### 506.05 Inspection

This section is amended by the addition of the following:

The QAI shall be given ample notice in order to inspect the product prior to coating, recoating or removal of paint from the area. "Ample notice" shall be defined at the Pre-Job meeting depending on shop or site conditions.

Substrates that are coated without notification of the QAI will be rejected and no further coating shall be done on the piece. Rejected coating shall be removed and re-applied. Conditionally accepted coatings shall be made acceptable as approved by the Resident. The cost of additional repairs shall be borne by the Contractor.

#### 506.11 Materials

This section is amended by the addition of the following:

Thermal Spray Coating shall utilize metallized 85-15 zinc-aluminum wire.

#### 506.16 Touch-up and Repairs

This section is amended by the addition of the following:

The Contractor shall repair any damage that is done to the coating after the members have left the shop at no expense to the Authority. The Contractor shall document any damage and propose a repair that is in accordance with the manufacturer's recommendations to the Resident for approval. No repairs shall be done prior to receiving approval of the proposed method of repair.

#### 506.35 Seal Coat and Top Coat Application (Paint)

This section is amended by the addition of the following:

The metallized girders shall be sealed with clear seal coat only; additional coatings and pigmentation are not required. The clear seal coat shall be compatible with an epoxy intermediate coat and a polyurethane top coat from the MaineDOT NEPCOAT QPL. Provide certification of compatibility between the seal coat and epoxy intermediate coat and polyurethane top coat from the intermediate coat/top coat manufacturer.

The clear seal coat shall be applied within 8 hours after thermal spraying. If a sealer cannot be applied within 8 hours, it shall be verified that the TSC (a) has not been contaminated by visual inspection, and (b) is dust-free using the clear cellophane tape test per ISO 8502-3 before applying the sealer.

Top flanges of beams requiring shear connectors and all faying surfaces shall receive a flash/primer coat only.

The seal coat shall be adequately cured before handling, but under no circumstances shall the product be handled before the coating has achieved the manufacturer's published minimum cure time.

Material shall not be loaded for shipment until the seal coat has adequately cured and been inspected and accepted. The components will be stamped "APPROVED" only after the loading has been completed and approved, and no material shall be shipped without the prior approval of the Resident.

## 506.61 Basis of Payment

This section is amended by the addition of the following:

All costs for clear seal coat shall be considered incidental to Thermal Spray Coating (Shop Applied).

## SECTION 507

## **RAILINGS**

# 507.09 Basis of Payment

Payment will be made under:

Pay Item Pay Unit

507.091 Aluminum Bridge Railing, 1 Bar Lump Sum

#### SECTION 508

#### WATERPROOFING MEMBRANE

(Membrane Waterproofing)

#### 508.01 Description

The following paragraph is added:

The work shall also include furnishing and applying an approved membrane waterproofing system to the approach slabs, backwalls and abutments as shown on the plans.

#### 508.02 Materials

The following paragraph is added:

Membrane Waterproofing for the backs of the curtain walls and abutments shall consist of an adhesive primer, preformed waterproofing membrane sheet and mastic designed to work as one system. The following systems have been pre-approved for use on this project for the backs of the curtain walls and abutments:

- 1) Jiffy-Seal 140/60 Cold Weather membrane, VOC 100 Primer, 160H Mastic Manufactured by Protecto Wrap Co.
- 2) 104-AHT membrane, 740 Primer, 104CM Mastic Manufactured by Royston Laboratories, Inc.
- 3) Lo Temp Membrane, Bituthene Primer B2, Bituthene Mastic Manufactured by W.R. Grace

The following paragraphs are added:

#### 508.055 Installation – Membrane Waterproofing

For the backs of the curtain walls and abutments the concrete surfaces shall have a uniform, fine-textured finish that is free of protrusions prior to application of the Membrane Waterproofing system. All honeycombed areas and surface cavities in new and existing concrete shall be cleaned and filled with approved patching materials. All surfaces to be membraned shall be clean and free of laitance, oil and foreign materials.

Immediately prior to application of the primer, the surface shall be cleaned by brooms and compressed air. The concrete surface shall be inspected and approved by the Resident prior to priming.

The adhesive primer shall be thoroughly mixed before use and applied by roller only and allowed to cure in accordance with the manufacturer's recommendations.

Membrane shall be installed in a shingled pattern so that water is permitted to drain without accumulating against seams. The membrane shall be pressed or rolled into place to assure bond with the primed surface and elimination of air bubbles. Lap joints at the beginning and end of rolls shall be staggered with those of adjacent rolls and shall be sealed in accordance with the manufacturer's recommendation.

Torn or damaged membrane shall be repaired in accordance with manufacturer's recommendations.

#### 508.08 Method of Measurement

The following paragraph is added:

Membrane Waterproofing for the backs of curtain walls and abutments will be measured for payment as one lump sum.

#### 508.09 Basis of Payment

The following paragraphs are added:

Membrane Waterproofing will be paid for at the Contract lump sum price, which shall be payment in full for furnishing all materials, labor and equipment, including cleaning of concrete surfaces and providing a moisture meter, and all incidentals necessary to provide a waterproof barrier on the specified concrete surface that is properly adhered to the concrete substrate. Adhesive primer, preformed waterproofing membrane sheets and mastic provided as part of the membrane waterproofing manufacturer's system shall be included in the lump sum price for Membrane Waterproofing. Cleaning and filling of all honeycombed areas and surface cavities in new and existing concrete surfaces to which membrane is to be applied with approved patching materials shall be included in the lump sum price for Membrane Waterproofing. Damage to new or existing concrete surfaces, resulting from the Contractor's placement or curing operations, or any damage caused by the Contractor's operations shall be repaired at no cost to the Authority.

Payment will be made under:

Pay Item		<u>Pay Unit</u>
508.15	Membrane Waterproofing	Lump Sum

## SECTION 511

#### **COFFERDAMS**

(Temporary Earth Support Systems)

Section 511, Cofferdams, is deleted in its entirety and replaced with the following:

## 511.01 Description

This work shall consist of the complete design, construction, maintenance and removal of temporary earth support systems and other related work, including dewatering and inspection, required to allow for the excavation of foundation units, to permit and protect the construction of roadways and bridge or other structural units, and to protect adjacent roadways, adjacent public or private rights-of-way, embankments, or other structural units, in accordance with the Contract.

Temporary earth support structures may require pumping or dewatering to complete the Project work. The locations of temporary earth support structures may, or may not, be shown on the Plans whether required for the completion of the Contract or not.

#### 511.02 Materials

The Contractor shall submit Working Drawings for the proposed temporary earth support systems for review and acceptance. The submission shall include plans, details and calculations designed and sealed by a Professional Engineer licensed in the State of Maine. This Professional Engineer may be directly employed by, or otherwise retained by, the Contractor. Working drawings shall consist of plan views and cross sections to illustrate clearances, limits, and retainment heights as applicable at roadway cuts/fills, cofferdams, abutment footings, and phased construction areas. Construction shall not be started on temporary earth support systems until such submittals are accepted. Any review of or comment on, or any lack of review of or comment on, these Working Drawings by the Department shall not result in any liability upon the Department and it shall not relieve the Contractor of the responsibility for the satisfactory functioning of the cofferdam.

Temporary earth retaining structures shall be designed to support all appropriate combinations of earth, hydrostatic, and surcharge loads (from traffic, construction equipment, material stockpiles, and other sources) imposed on the system during all phases of construction. Temporary earth support systems adjacent to traveled ways, shall additionally be designed to resist any vibration or impact forces due to traffic and shall incorporate sufficient protection against impact by errant vehicles. Sufficient redundancy shall be designed into the support system so that failure of one member will not cause the collapse of the entire system. The Contractor's design shall consider the means and methods and construction sequencing proposed by the Contractor.

The Working Drawings shall also show the Contractor's proposed method of excavation, water diversion and dewatering methods (sumps, wells, seal concrete, or well points) to minimize

the flow of groundwater into the excavation. Such methods should preserve the undisturbed condition of the subgrade and permit foundation construction in-the-dry.

Design computation shall be in accordance with the AASHTO LRFD Bridge Design Specifications, Latest Edition.

Following construction of each temporary earth support system the Professional Engineer responsible for the design of the system shall inspect the installation and provide a certification to the Resident stating that construction was completed in conformance with the accepted working drawings. The certification shall be signed and sealed by the Professional Engineer responsible for the design of the system.

## 511.03 Temporary Earth Support System Construction

Temporary earth support systems shall, in general, be carried well below the elevation of the bottom of footings or approach slabs, and shall be well braced and watertight. In cases where pile foundations contain batter piles, the temporary earth support system shall be installed to accommodate, without obstruction, the proper placement and alignment of the batter piles, either by staggering the depth of the support system or by increasing the annulus between the foundation and the support system. The interior dimensions of temporary earth support systems shall provide sufficient clearance for the construction and inspection of forms and to permit pumping outside of forms. Exterior dimensions of the temporary earth support system shall be limited to the size shown on the Plans or those illustrated in the Project permits, whichever is more stringent.

Temporary earth support systems shall be constructed such that water will not come in contact with concrete as required in Section 502, Structural Concrete.

Temporary earth support systems, including all sheeting and bracing involved, shall be completely removed after the completion of the work unless otherwise noted on the Contract Drawings. Care shall be taken not to disturb or otherwise injure the finished roadway, masonry or foundation elements.

No timber or other bracing shall be used in temporary earth support systems in such a way as to remain in the substructure masonry.

### 511.04 Pumping

Pumping from the interior of any foundation enclosure shall be done in such a manner as to prevent any current of water that would carry away or segregate the concrete.

Pumping to dewater a sealed temporary earth support system shall not commence until the seal concrete has set sufficiently to withstand the hydrostatic pressure. In no case will pumping be permitted until a minimum of five (5) days has elapsed since the completion of the installation of the seal concrete, when the temperature of the water body outside the temporary earth support system is greater than 4°C [40°F], or a minimum of seven (7) days has elapsed since the completion of the installation of the seal concrete, when the temperature of the water body outside the temporary earth support systems is less than 4°C [40°F].

Sediment laden water will not be allowed to leave the Project area. The Contractor shall be required to install appropriate erosion and sedimentation control devices as approved by the Resident. Erosion and sedimentation control devices may include plain riprap, haybales, silt fence and sedimentation basins.

All water and materials pumped from excavation shall be pumped into a sedimentation basin which is of sufficient volume to detain the pumped water and materials. The water and materials removed from the excavation shall be pumped at a rate that permits infiltration of the water into the earth, preventing any overland flow or direct discharge into a stream or other waterbody.

## 511.05 Method of Measurement

Temporary Earth Support Systems shall be measured for payment as one lump sum per Contract, regardless of the number of individual Temporary Earth Support structures required at the Project site or sites, which price shall include full compensation for design, furnishing materials, excavation beyond the pay limits, installation, removal, tools, equipment and labor necessary to construct, maintain and remove the work in accordance with the Plans or as called for in the Contract.

If Temporary Earth Support Systems is not required due to the acceptance of a Value Engineering Proposal in accordance with Subsection 109.6, the cost of the deleted Temporary Earth Support Systems shall be included as part of the Value Engineering Proposal.

#### 511.06 Basis of Payment

The accepted quantity of Temporary Earth Support Systems will be paid for at the Contract lump sum price, per Contract. Such payment shall be full compensation for furnishing and installing all materials required to construct the Temporary Earth Support Systems including, but not limited to steel sheeting and shoring, timber bracing and cribbing, seal concrete, crushed stone, geotextile and geotextile face wrap. Payment will also be full compensation for excavation, dewatering, erosion control and other incidentals required to construct, maintain and remove the Temporary Earth Support Systems.

When required, the elevation of the bottom of footing of any substructure unit may be lowered, without change in the price to be paid for Temporary Earth Support Systems. However, if the average elevation of more than 25 percent of the area of the excavation is more than three feet below the elevation shown on the Plans, and if requested by the Contractor, then the entire cost of the Temporary Earth Support Systems will be paid in accordance with Subsection 109.7, Equitable Adjustments to Compensation, instead of the Contract lump sum price.

All costs of constructing, maintaining and removing sedimentation basins; water testing; and pumping or transporting water and other materials to the sedimentation basin will not be measured separately for payment, but shall be incidental to the Temporary Earth Support Systems pay item.

All costs of related temporary soil erosion and water pollution controls, including inspection and maintenance, will not be measured separately for payment, but shall be incidental to the Temporary Earth Support Systems item.

Payment will be made under:

Pay Item		<u>Pay Unit</u>
511.091	Temporary Earth Support Systems	Lump Sum

#### SECTION 515

#### PROTECTIVE COATING FOR CONCRETE SURFACES

(Clear Concrete Protective Coating)

Section 515, Protective Coating for Concrete Surfaces, is deleted in its entirety and replaced with the following:

#### 515.01 Description

The work shall include the surface preparation and application of a clear protective coating on concrete surfaces to protect new cast-in-place concrete, precast concrete and masonry structures. The coating system shall be applied to abutments, piers, endposts, curbs and fascia in accordance with the Plans, Specifications and the manufacturer's published recommendations.

#### 515.02 Materials

The penetrating sealer shall be StandOff® SLX100 Water & Oil Repellent, as manufactured by ProSoCo, Inc., or an approved equal. The sealer shall have the following properties:

Active Substance: modified alkyl alkoxy silane

Active Content: > 90%
Form: clear liquid

VOC: < 3.5 pounds per gallon

The product shall comply with regulations limiting the Volatile Organic Compound (VOC) content of architectural and industrial maintenance coatings.

The Contractor shall submit the ProSoCo's product data sheets, material safety data sheets and recommended instructions for application of the StandOff® SLX100.

Materials shall be delivered to the site in original packages or containers bearing the manufacturer's labels and identification.

#### 515.021 Substitute Materials

The Contractor shall submit a written request for approval of proposed substitute material naming the proposed manufacturer and product. This request shall be accompanied by:

1. Test data from an independent testing laboratory stating that the proposed substitute meets or exceeds the specified requirements as listed and has been tested in accordance with the specified test standards.

- 2. Documentation that the proposed material has a proven record of performance when used in the intended application as confirmed by actual field tests and successful installations in place on at least five similar projects.
- 3. Certification that if two or more types of products are intended to be used as part of a system, they will be supplied by the same manufacturer to ensure compatibility of materials, and to maintain single source manufacturer responsibility.

The Resident reserves the right to require additional testing to evaluate any proposed substitute product at no additional cost to the Authority. The Resident's decision as to the acceptability or non-acceptability of the proposed product shall be final.

# 515.03 Surface Preparation

All caulking, patching, and joint sealant shall be installed prior to application of the sealer. On new surfaces to be treated, all voids shall be dressed by dry rubbing to remove form marks and blemishes to present a neat appearance. Concrete and masonry surfaces shall be cleaned free of dust, surface dirt, oil, efflorescence and contaminants to ensure penetration of the sealer. The surface may be slightly damp at the time of treatment.

The Contractor may use, when required, appropriate cleaning materials recommended by the sealer manufacturer in conjunction with high pressure water for cleaning the concrete or masonry.

# 515.04 Application

The Contractor shall apply the clear concrete protective coating in strict accordance with the manufacturer's published recommendations.

The application shall not be conducted when surface and air temperatures are below 40°F or above 90°F. The work shall not be conducted when there is a chance of the surface temperature falling below 40°F in the 24-hours following application; nor should it be applied on hot, windy days.

The treatment shall not be applied during rain to wet surfaces or when there is a chance of rain within 24-hours after application. After treatment, surfaces should be protected from rain for not less than 48-hours. It shall not be applied when winds are sufficient to carry airborne chemicals to unprotected surfaces.

Prior to applying the sealer, the Contractor shall protect all surrounding non-masonry/non-concrete surfaces, landscape and lawn areas, and surfaces not designated for treatment, from contact with the penetrating sealer, and prevent overspray of the penetrating sealer caused by wind drift.

The Contractor shall ensure that all safety equipment, facilities and precautions recommended by the product manufacturer are furnished and/or strictly adhered to.

The sealer material shall be applied in the manner and with the equipment recommended by the product manufacturer. Coverage will vary depending on condition, texture and porosity of the surfaces. Pre-testing is required.

Sealer shall be applied as packaged without dilution or alteration. The sealer shall be applied with low pressure (20 psi) airless spray equipment or with a heavily saturated brush or roller unless otherwise permitted by the Resident. Sufficient material shall be applied to thoroughly saturate the surface making sure to brush out excess material that does not penetrate.

When the sealer is applied to horizontal surfaces, it shall be applied in a single saturating application with sufficient material and applied so the surface remains wet for one to two minutes before penetration into the concrete. Surface residues, pools and puddles shall be broomed-out thoroughly until they completely penetrate into the surface.

When the sealer is applied to vertical and sloped surfaces, it shall be applied in a "wet-on-wet" application for best results on most porous materials. In the case of extremely dense concrete, it may be necessary to restrict the amount of material applied to one saturating application in order to prevent surface darkening. Apply from the bottom up with sufficient material to thoroughly coat the surface and create a slight rundown below the spray pattern. Allow the first application to penetrate the concrete surface, and within a few minutes after the first coat appears dry, reapply in the same saturating manner.

When the sealer is applied to vertical and sloped surfaces, it shall be applied in two applications, 10 minutes apart, with a low pressure (20 psi) airless sprayer.

# 515.05 Method of Measurement

Clear Protective Coating for Concrete Surfaces will be measured for payment by the square yard, satisfactorily applied and accepted.

#### 515.06 Basis of Payment

Clear Protective Coating for Concrete Surfaces will be paid at the Contract unit price per square yard which price shall be full compensation for all labor, materials, equipment and incidentals required for furnishing and applying the clear concrete protective coating as shown on the Plans, in accordance with these Specifications or as approved by the Resident.

Surface preparation, vegetation removal, and protection of surfaces not designated for treatment will not be measured separately for payment, but shall be incidental to the Clear Concrete Protective Coating item.

Payment will be made under:

Pay Item Pay Unit

515.202 Clear Protective Coating for Concrete Surfaces Square Yard

#### SECTION 520

#### EXPANSION DEVICES – NON-MODULAR

(Asphaltic Plug Joint)

Section 520, Expansion Devices, Non-Modular, is deleted in its entirety and replaced with the following:

# 520.01 Description

This work consists of furnishing and installing asphaltic plug joint systems at the location(s) shown on the Plans, in accordance with these Specifications or as directed by the Resident. This work shall include furnishing, installation and removal of any bond breaking materials used to prevent asphalt pavement layers from adhering to any waterproofing membrane and any temporary header(s) installed with the intent to form the asphaltic plug joint channel, and any preparation required for the installation of the asphaltic plug joint.

This work shall also include having the approved manufacturer provide a qualified technical representative(s) to supervise the installation of the joint systems. The representative(s) shall instruct, train and supervise the Contractor's personnel in the proper methods of installation. All costs associated with this service shall be included in the unit price of the work.

Bridging plates for asphaltic plug joint systems shall only be used when shown on the Contract Plans.

### 520.02 Submittals

Prior to construction, the Contractor shall submit the following to the Resident for review and approval:

- (a) Complete and detailed Shop Drawings of asphaltic plug joint system. Shop Drawing shall include information covering materials, their properties, installation procedures, storage and handling requirements, and Materials Safety Data Sheets.
- (b) The resume of the manufacturer's technical representative, which shall include the representative's experience installing the asphaltic plug joint system along with the names and telephone numbers of contact persons for recent projects where technical assistance was provided.
- (c) Certified test reports of the asphaltic binder, closed cell foam backer rod and the plastic compound.
- (d) Certificates of Compliance for bridging plates, centering nails, and aggregate.

#### 520.03 Materials

The asphaltic plug joints shall consist of a system including bridge joint binder material, aggregate, backer rod, elastomeric concrete header material and polysulfide joint sealant conforming to the details and dimensions shown on the Plans, in accordance with these Specifications and as directed by the Resident. Bridging plates shall only be used when shown on the Contract Plans.

The following systems are acceptable for use as asphaltic plug joints:

Thorma-Joint	<u>Polyjoint</u>	Koch BJS
Linear Dynamics, Inc.	A.H. Harris	Koch Materials Company
400 Lannidex Plaza	321 Ellis Street	P.O. Box 510
Parsipanny, NJ 07054	New Britain, CT 06050	Stroud, OK 74079

Materials which are incorporated in or used in conjunction with approved asphaltic plug joint systems are as follows:

# (a) Asphaltic Binder:

Binder shall meet or exceed requirements of AASHTO M301 (ASTM D3405) and consist of hot applied, thermoplastic polymeric modified asphalt with the following properties when tested in accordance with the following ASTM methods:

PROPERTY	REQUIREMENT	TEST METHOD
Softening Point, °F	180 min.	ASTM D36
Tensile Adhesion @ 77°F, %	800 min.	ASTM D3583
Ductility @ 77°F, inch	16 min.	ASTM D113
Penetration, 0.1 mm 77°F, 150 g, 5 s 0°F, 200 g, 60 s	90 max. 10 max.	ASTM D3407
Flow 5 hrs @ 140°F, mm	3.0 max.	ASTM D3407
Bond @ -20°F	pass 3 cycles	ASTM D3407
Resilience @ 77°F, %	60 min.	ASTM D3407
Asphalt Compatibility @ 140°F	pass	ASTM D3407
Recommended Pouring Temperature, °F	380 to 390	
Safe Heating Temperature, °F	410	

#### (b) Backer Rod:

Backer rod shall be a cylindrical closed cell expanded polyethylene foam rod, with a diameter of 150 percent of joint opening width, capable of withstanding the temperature of the hot binder materials and meeting the manufacturer's requirements, or the following properties, whichever is more stringent:

PROPERTY	REQUIREMENT	TEST METHOD
Density, lb/ft <sup>3</sup>	2.0 min.	ASTM D1622
Tensile Strength, psi	25 min.	ASTM D1623
Water Absorption, % of wt.	1.0 max.	ASTM C509

# (c) Bridging Plate:

Bridging Plate shall be either Plate Steel or Aluminum Flashing as specified on the plans.

Plate Steel Bridging Plates shall be fabricated from ASTM A36 steel, shall be a minimum of 1/4 inch thick and shall be galvanized. Holes for centering nails shall be located approximately one foot on center along the centerline of plates.

Aluminum Flashing Bridging Plates shall be rust-free roll aluminum. The aluminum flashing shall be a minimum of 6" wide and have a minimum thickness of 0.02 inches.

# (d) Centering Nail:

Nail shall be 16d or larger and hot dip galvanized in accordance with ASTM A153.

# (e) Aggregates:

Aggregate shall be crushed, double-washed and dried, igneous rock and meeting the manufacturer's gradation. This aggregate shall also be used for top dressing on the finished joints.

#### (f) Plastic Compound:

Plastic compound used for repairing overcuts in bituminous concrete overlays shall be a two-component liquid with a synthetic resin base. It shall have a minimum viscosity of 3,500 cps at 77°F and a maximum viscosity of 65,000 cps at 25°F. The plastic compound shall be cured by the addition of a specific hardener. Sufficient hardener shall be used to cure the plastic compound in approximately 30 minutes at 77°F. It shall have sufficient strength and resiliency to withstand stresses set up by vibration, expansion and contraction due to temperature changes. It shall also be resistant to most chemicals and solvents, including most salts, acids, and hydrocarbons.

#### 520.04 Installations

Asphaltic plug joint system shall be installed in accordance with manufacturer's latest instructions and specifications. Manufacturer's representatives shall be present during the entire installation to ensure satisfactory results are obtained.

Asphaltic plug joint system shall allow total joint movement for up to two inches. The installation shall be centered over the expansion joint gap as indicated on the Plans. It shall not be installed when ambient or substrate temperatures are below 40°F, when rain is imminent, or in other environmental conditions disapproved by the Resident. The area shall be free of any dirt, dust, moisture, petroleum or solvents that might contaminate the joint materials or reduce the bond of the joint system to the substrate or vertical faces. The use of compressed air and heat may be required to dry the area before installing the joint system.

The asphalt pavement layers shall be removed to the required dimensions shown on the plans. The asphalt pavement shall be sawcut to a depth that will not damage the waterproofing membrane, but permit the removal of the asphalt pavement layer. The pavement layer shall be removed in a manner that will not damage the waterproofing membrane. Bond breakers such as interlayers and fabrics, or temporary header(s) may be used as required to protect the waterproofing membrane from damage. The method of attaching any temporary header(s) to the concrete deck shall be approved by the Resident. The use of a temporary header shall not be allowed if it will need to be anchored into a precast prestressed concrete member. Should a concrete leveling course be required before installing the bridging plates, and the membrane layer is removed in the process, it shall be replaced before the asphaltic plug joint system is installed. Vertical surfaces of the asphalt pavement layers shall be cleaned to remove all water, dust, or other contaminates.

Backer rods shall be installed in expansion joint openings at a minimum of one inch depth as indicated on the Plans.

Binder shall be heated to a safe temperature as recommended by manufacturer. Heating kettles shall be equipped with continuous agitation system, temperature controller, calibrated thermometer and double steel jacket with an oil layer in between, to prevent scorching of the binder. During application, the temperature of binder shall be maintained at a minimum of 350°F. It shall be poured into expansion joint openings until it runs over edges.

If called for on the plans the bridging plates, whether fabricated from steel plate or aluminum flashing, shall be placed from curb to curb on the roadway portion of expansion joints. Plates shall be centered over joint openings. Centering nails shall be placed in pre-drilled holes and hammered in to secure plates.

Once the bridging plates are installed, liquid asphalt binder shall be poured and leveled over the bridging plates and adjacent membrane surfaces in a manner that ensures full coverage. Areas with excessive application, such as pooling of liquid, should be removed or dispersed along the joint area.

Aggregate shall be heated in a rotating drum mixer to a minimum of 350°F or as recommended by the Engineer. The thermoplastic polymeric modified asphalt Binder shall be added to the mixer to pre-coat aggregates.

Coated aggregate shall be placed into blockouts in layers as recommended by the manufacturer. Blockouts shall be overfilled with coated aggregate as required to compensate for compaction. Equipment for compaction shall be as recommended by the manufacturer. Additional

thermoplastic polymeric modified asphalt binder shall be screeded over the compacted joint to fill any surface voids.

Top dressing aggregate shall be applied per the manufacturer's recommendation.

Plastic compound shall be used for repairing overcuts in bituminous concrete. Cleaning, mixing and application shall be in conformance to the manufacturer's instructions.

Vehicular traffic may pass over finished joints two-hours after compaction or as recommended by the manufacturer.

# 520.05 Method of Measurement

Asphaltic Plug Joint system will be measured by the linear foot along the top surface of installed joints to the limits as shown on the Plan. Preparation of surfaces for the proposed joint system including cutting, grinding and cleaning, will not be measured separately for payment, but shall be incidental to the Asphaltic Plug Joint pay item.

# 520.06 Basis of Payment

Asphaltic Plug Joint will be paid for at the Contract unit price per linear foot which price shall be full compensation for all labor, materials, equipment and incidentals required for furnishing and installing the Asphaltic Plug Joint as shown on the Plans, in accordance with these Specifications or as approved by the Resident.

The backer rod and elastomeric sealant installed up the vertical face, and across the horizontal surfaces, of bridge curbs and sidewalks will not be measured separately for payment, but shall be incidental to the Asphaltic Plug Joint pay item.

Payment will be made under:

Pay Item		Pay Unit
520.23	Asphaltic Plug Joint	Linear Foot

# SECTION 524

### TEMPORARY STRUCTURAL SUPPORTS

(Protective Shielding - Steel Girders)

#### 524.01 Description

The following paragraph is added:

This work shall also consist of furnishing all labor, equipment and materials required to provide protection for the public during demolition and construction. This protection shall include, but not necessarily be limited to, protective shielding of existing structures during demolition work, concrete removal, and installation of temporary deck support over roadway lanes and shoulders on all existing and new bridge structures.

The following Subsections are added:

# 524.031 Protective Shielding Design

Prior to the start of work, the Contractor shall submit working drawings for review and comment indicating the sizes and dimensions of protective shielding. If the shielding is to be attached to prestressed concrete components the submittal shall be coordinated with the respective precast concrete shop drawings. The proposed methods of protective shielding, including connections and fasteners, shall be in accordance with the following criteria:

The protective shielding shall be designed for safely supporting all construction and dead loads, but not less than 100 pounds per square foot with a load duration of seven (7) days. Protective shielding shall be stiff enough to limit deflection to 1/2 inch under maximum loads and to be tightly sealed at all joints. The protective shielding shall be placed on the tops of the bottom flanges of the steel girders, or between the web or bottom flanges of the concrete I-girders, with edges and laps made tight to protect the turnpike motorists from dust, debris and falling objects.

Special hangers may be required to support shielding on prestressed structural concrete I-girders or prestressed structural concrete slabs. The Contractor will not be permitted to install inserts, shoot fasteners, or drill holes in the concrete I-girders or concrete slabs to support the shielding. The Contractor may propose 3/4 inch or one inch diameter sleeves be installed in the webs of the girders during fabrication for temporary fasteners to pass through. The proposed and approved sleeves shall be coordinated with the girder manufacturer; and shall be filled, and stuck flush, with an epoxy grout after the protective shielding is removed.

# 524.041 Protective Shielding Erection and Removal

No portion of the protective shielding installed over a roadway shall project below a plane connecting the bottoms of the bottom flanges of the steel stringers or concrete I-girders. During demolition operations, the protective shielding shall be covered with sheet plastic made tight at

edges and laps to prevent water used in the saw cutting operation from falling onto the facilities under the bridge.

The protective shielding on existing and new structures shall extend horizontally three feet beyond the fascia lines and vertically to a point one foot minimum above the top of parapet or railing. The shielding shall also extend 10 feet beyond the edge of pavement of the roadway below, unless otherwise noted on the Plans or as approved by the Resident.

Shielding shall be approved and installed prior to the start of any demolition work and shall remain in position during all demolition work. Shielding shall also be approved and installed prior to the start of any deck forming and shall remain in position during all deck work. The shielding shall be relocated or removed only as approved by the Resident.

Construction sequences may require protective shielding material to be removed, stored and then reinstalled by the Contractor. Any shielding which is damaged during this removal and reinstallation shall be replaced by the Contractor at no additional cost.

#### 524.28 Method of Measurement

The following paragraph is added:

Protective Shielding will be measured by the square yard for shielding designed, installed, removed and disposed or stacked. For purposes of computing the area, only the horizontal plan dimensions will be used.

# 524.29 Basis of Payment

The following paragraphs are added:

Protective Shielding will be paid for at the Contract bid price per square yard and shall include all design, materials, transportation and stacking, labor (to install, remove and stack as needed), tools and equipment necessary to perform the work as described above or as approved by the Resident. The measurement shall include one sequence of placement, removal, and on-site storage (if applicable for intended reuse) of Protective Shielding. Where bridge and girder construction dictates that Protective Shielding is to be installed in the same location at a later date, then the quantity of Protective Shielding shall be increased accordingly to reflect the total work, and shall be tabulated on the drawings. Therefore, the calculated quantity of Protective Shielding will be the summation of each sequence noted above (placement, removal, and on-site storage). The Contractor shall note that additional timber material may be required to accommodate differing girder spacing or differing overhang dimensions.

Payment will be made under:

<u>Pay Item</u>

524.40 Protective Shielding - Steel Girders Square Yard

# SECTION 526

#### CONCRETE BARRIER

(Temporary Concrete Barrier Type I)

#### 526.01 Description

The following paragraphs are added:

This work shall consist of furnishing Temporary Concrete Barrier, Type I. The barrier shall have attachments allowing individual sections to be connected into a continuous barrier.

At the Contractor's option, prefabricated temporary steel barrier systems meeting the requirements of this Special Provision may be substituted in place of temporary concrete barrier.

Temporary Barrier requiring pinning to the asphalt pavement per manufacturer's recommendations shall not be used on the final pavement wearing surface.

# Prefabricated temporary concrete and steel barrier systems

The temporary traffic barrier shall be one of the barriers included under FHWA's Roadside Hardware Policy and Guidance for crashworthy longitudinal barriers, at the Contractor's discretion, unless otherwise specified. The type of temporary traffic barrier shall be provided to the Engineer prior to use. All temporary traffic barrier and corresponding connections shall meet, unless otherwise specified in the Plans, Test Level 3 (TL-3) criteria as defined in NCHRP Report 350 or the AASHTO Manual for Assessing Safety Hardware (MASH). The appropriate resource shall be determined as described in the MASH publication.

The Contractor shall supply the FHWA approval letter, manufacturer approved shop drawings and connection and anchorage details (if applicable) and catalogue cuts for each barrier type to the resident engineer for approval. The manufacture's shop drawings shall specify the maximum deflection distance the product is approved for. The Contractor's shop drawing submittal shall specify the available distance between the back or non-roadway side of the barrier to the closet fixed object or edge of open excavation being protected for each location of differing available deflection distance. The Contractor shall ensure that this minimum available distance is not encroached upon at any time.

Each run of temporary barrier units shall be fastened together to form a continuous chain. Temporary impact attenuators with delineation shall be installed at the ends of the barrier within 30 feet of approaching traffic. The Contractor shall not leave a barrier leading edge unprotected. Delineators shall be installed in conformance with the manufacturer's recommendations on the barriers at the termini at 20 foot intervals on tangent sections and 10 foot intervals on curved sections depending on the radius as determined by the Resident Engineer. Delineators mounted on top of the barrier separating opposing traffic shall have two-sided amber reflectors delineating the left edge.

Temporary Barriers shall be removed and reset from existing locations and reset in accordance with the above requirements and manufacture's recommendations, as directed by the Resident Engineer.

# 526.02 Materials

The following paragraphs are added:

- f. Delineators shall be bi-directional with a minimum effective reflective area of eight square inches as approved by the Resident. The reflectors shall be methyl methacrylate and the housing of acrylonitrile butadiene styrene. Color shall be in accordance with the MUTCD.
- g. Temporary barrier markers shall be "Big Dog" barrier markers manufactured by Custom Products Corporation, or approved equal. Markers shall be bi-directional with a minimum effective reflective area of 96 square inches (48 square inches each side) as approved by the Resident. The reflectors shall meet MUTCD reflectivity requirements and shall be orange in color.

# 526.021 Acceptance

The Resident shall have the authority to accept or reject all Temporary Concrete Barrier Type I used on the Project that does not meet the requirements of this specification

# 526.03 Construction Requirements

The following paragraphs are added:

Concrete barrier placed at roadway low points shall be shimmed on 1" by 2" by 2' long wood planks to allow drainage to pass under the barrier. In addition, the Resident may direct the Contractor to shim the concrete barrier at other locations to provide for proper roadway drainage. All labor, material, and equipment necessary to shim the barrier will not be measured separately for payment, but shall be incidental to the Concrete Barrier.

The removal of concrete barrier from adjacent to the travel lane may be conducted without a lane closure if it is accomplished in accordance with the following requirements:

- 1. Barrier is removed from the trailing end and the workmen and equipment involved in the operation are always behind the barrier. No workmen or equipment shall enter the travel lane.
- 2. Barrier shall be dragged away from the travel lane to at least a 30-degree angle by the use of a cable.
- 3. Barrier shall be lifted no more than six inches while within 10 feet of the travel lane.

Retro-Reflective Delineators shall be mounted as follows:

1. One on top of each barrier.

- 2. One on the traffic side of every barrier used in a taper.
- 3. One on the traffic side of every other barrier at regularly spaced intervals and locations.
- 4. Delineators shall be installed on both sides of the barrier if barrier is used to separate opposing traffic.
- 5. Delineators shall be physically adhered so as to withstand the force of throw from a snow plow.
- 6. If more than 25% of delineators in any 50 foot section of barrier fall off for any reason, the Contractor will be responsible for reinstalling all the delineators in that run at that their own cost.
- 7. Contractor is required to submit the installation method for review and approval to the Resident.

Temporary barrier markers shall be mounted as follows:

- 1. One on top of each barrier.
- 2. Delineators shall be physically adhered so as to withstand the force of throw from a snow plow.
- 3. If more than 25% of delineators in any 50 foot section of barrier fall off for any reason, the Contractor will be responsible for reinstalling all the delineators in that run at their own cost.
- 4. Contractor is required to submit the installation method for review and approval to the Resident.

# 526.04 Method of Measurement

The following paragraphs are added:

Temporary Concrete Barrier, Type I shall be measured for payment by the lump sum.

The loading, transporting, setting, resetting, removing, transporting, sorting and stacking of the barrier, the furnishing, installation and maintenance of the barrier delineators, and furnishing and installing connector pins will not be measured separately for payment, but shall be incidental to the cost of the Barrier. Temporary storage of Concrete Barrier between construction phases, if required, will not be measured separately for payment, but shall be incidental to the cost of the Barrier. All equipment required to load, unload, transport and stack Concrete Barrier shall be supplied by the Contractor.

Any Barrier lost or damaged by the Contractor shall be replaced by the Contractor at no additional cost to the Authority.

# 526.05 Basis of Payment

The following paragraphs are added:

Temporary Concrete Barrier, Type I will be paid for at the Contract lump sum price, complete in place regardless of whether concrete or prefabricated steel barrier systems are used. Such payment shall be full compensation for furnishing, loading, transporting, setting, resetting, temporary storage, removing, transporting and stacking at the area designated, furnishing all

materials, including retro-reflective delineators and temporary barrier markers, anchors and/or pins, and all other incidentals necessary to complete the work.

Payment of Concrete Barrier shall be based on a percentage of the work accomplished during that pay period.

Payment will be made under:

Pay Item		Pay Unit
526.301	Temporary Concrete Barrier, Type 1	Lump Sum

#### SECTION 526

#### CONCRETE BARRIER

(Temporary Concrete Barrier, Anchored)

#### 526.01 Description

The following paragraphs are added:

This work shall consist of furnishing, setting and removing Temporary Concrete Barrier, Anchored to the existing and new bridge decks during phased construction to the limits on the Plans. The barrier shall have attachments allowing individual sections to be connected into a continuous barrier and provisions shall be made in the casting of the barrier for anchoring the barrier to the bridge deck.

Temporary Bi-Directional Delineators shall be installed on the roadway face of all temporary concrete barrier in conformance with Special Provision 526, Concrete Barrier (Temporary Concrete Barrier Type I).

The following concrete barrier designation is added:

Temporary Concrete Barrier, Anchored. Removable concrete barrier of the shape shown on the plans that is capable of being anchored to the bridge deck.

#### 526.02 Materials

The following paragraphs are added:

- e. Adhesive anchoring material for holding deck anchors shall be selected from the Qualified Products List of Concrete Adhesive Anchor Systems for Type I Reinforcing Steel (>#9) and Anchors (> 1") and shall be approved by MaineDOT's Transportation Research Division and the Bridge Program.
- f. Material for filling inserts or sleeves in precast deck panels shall be a non-shrink grout selected from the Qualified Products List of Grout Materials and approved by the Resident.

The following Subsection is added:

# 526.021 Acceptance

The Resident shall have the authority to accept or reject all Temporary Concrete Barrier, Anchored used on the Project.

# 526.03 Construction Requirements

The following paragraphs are added:

All Temporary Concrete Barrier, Anchored shall meet NCHRP 350 Test Level III (TL-3) crash test requirements. Prior to fabrication and installation of the barrier the Contractor shall submit the proposed barrier and anchorage design for approval. The proposed design shall be designed to in accordance with AASHTO LRFD Bridge Design Specifications, latest edition with all interims thereto (see Table A13.2-1 and related Provisions). The proposed barrier and anchorage design, including any required additional concrete deck reinforcement, shall be prepared and stamped by a Professional Engineer licensed in the State of Maine.

Thru-bolting of the barrier shall not be permitted to the proposed deck. Where thru-bolting of the existing deck is not permitted, anchorage shall be achieved through chemical adhesives or mechanical anchors. Where thru-bolting of the new deck is not permitted, anchorage shall be achieved through the use of mechanical anchors. In all cases, the barrier anchors shall be securely fastened and tightened prior to beginning any bridge demolition work.

Once the Temporary Concrete Barrier, Anchored has been removed, and prior to placing the second lift of pavement, all holes in the new bridge decks shall be repaired as follows:

- 1) Using a three inch diameter core bit, remove the area of pavement surrounding the anchor rod hole. Care shall be exercised to avoid removing or damaging the underlying high performance membrane;
- 2) Thoroughly clean the area to receive the repair and pack the void in the concrete deck with an approved repair mortar;
- 3) Once cured, coat the mortar surface and surrounding membrane with hot rubber sealant;
- 4) Fill the hole left by the three inch diameter pavement core with Hot Mix Asphalt, 12.5 mm Nominal Maximum Size, and thoroughly compact the repair using a hand tamp or other appropriate tools.

#### 526.04 Method of Measurement

The following paragraph is added:

Temporary Concrete Barrier, Anchored shall be measured for payment by the lump sum.

The setting, resetting, and temporary storage of concrete barrier between construction phases, if required, will not be measured separately for payment, but shall be incidental to the cost of the barrier. The anchoring of bridge barrier, removal of anchors, and the filling of voids will not be measured separately for payment, but shall be incidental to the cost of the barrier.

# 526.05 Basis of Payment

The following paragraph is added:

Temporary Concrete Barrier, Anchored will be paid for at the Contract lump sum price, complete in place. Payment shall be full compensation for furnishing, setting, anchoring,

assembling, and resetting the barrier, barrier removal, temporary bi-directional delineators, and all other incidentals, tools, material and labor necessary to complete the work.

Payment will be made under:

Pay Item		<u>Pay Unit</u>
526.304	Temporary Concrete Barrier, Anchored	Lump Sum

# SECTION 526

#### **CONCRETE BARRIER**

(Median Barrier)
(Bridge Endpost Median Barrier Transition)
(Guardrail Median Barrier Transition)

# 526.01 Description

This Section is deleted and replaced with the following:

This work shall consist of the furnishing, constructing, erecting, and setting permanent concrete barrier and associated elements in accordance with these Specifications and the lines and grades shown on the Plans or established by the Resident. The length of each precast barrier segment shall be in accordance with the parameters shown on the Plans. The Contractor shall minimize the number of joints in the final barrier assembly to the extent possible.

The work shall also include the application of Clear Protective Coating for Concrete Surfaces to all concrete surfaces exposed in the final condition in accordance with Special Provision 515.

Median Barrier – Double faced single slope precast concrete barrier 2'- 0" wide at the base, 41½" high and 36" reveal as shown on the Plans. A structural tube and I-beam connection detail is provided at each end.

Bridge Endpost <u>Median Barrier Transition</u>—Cast-in-place concrete barrier to transition from Median Barrier to F-shape bridge endposts as shown on the Plans. A structural tube and I-beam connection detail is provided at one end and a doweled connection for matching into the bridge end post is provided at the other end.

Guardrail <u>Median Barrier Transition</u> – Precast concrete barrier to transition from Median barrier to a vertical section to accept a guardrail attachment as shown on the Plans. A structural tube and I-beam connection detail is provided at one end.

# 526.02 Materials

The second paragraph is deleted in its entirety and replaced with the following:

All Median Barrier and Guardrail Median Barrier Transitions shall be supplied as precast units produced by an approved commercial precasting plant. Precast concrete shall be Class P, in accordance with Supplemental Specifications, Section 502.05 - Composition and Proportioning, with a minimum compressive strength of 4,500 psi.

All Bridge Endpost Median Barrier Transition shall be cast-in-place. Cast-in-Place concrete shall be Class AAA-Deck (without synthetic reinforcement) in accordance with

Supplemental Specifications, Section 502.05 - Composition and Proportioning, with a minimum compressive strength of 4,500 psi.

Materials for barrier connection assemblies shall be fabricated in accordance with MaineDOT Standard Specification 504. All barrier connection assemblies shall be hot dip galvanized after fabrication in accordance with ASTM A123 and A153.

The second paragraph is amended by the addition of the following:

All reinforcing steel for concrete barrier shall be epoxy coated. Reinforcing steel shall be fabricated and placed in accordance with the Standard Specifications, Section 503.

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

# 526.03 Construction Requirements

The first and second paragraphs are deleted and replaced with the following:

All permanent concrete barrier and transition barrier shall be constructed in accordance with the provisions of Supplemental Specifications 502 – Composition and Proportioning, through Section 502.15 – Curing Concrete, inclusive, with the following additions:

a. The following is added to Section 502.10 A. – Construction of Forms, after Construction of Forms: "Permanent concrete barrier shall not be formed using slip forming methods."

The following paragraphs are added after the fourth paragraph:

- d. Sections of barrier shall be uniform in color and in good condition, free from cracked or spalled surfaces.
- e. Defects shall be divided into two categories, minor defects and major defects. Minor defects in the barrier may be repaired in the field. Major defects shall be cause for rejection of the section or, at the Authority's sole discretion, the section shall be repaired in a manner directed by the Resident.

Minor defects are defined as holes, honeycombing or spalls which are 6 inch or less, in diameter, and which do not expose the outermost surface of the steel reinforcement. Surface voids 3/8 inch, or less, in diameter and 3/8 inch, or less, in depth are not considered defects and do not require repair.

Major defects are defined as any defect which does not meet the definition of a minor defect or minor defects which, in aggregate, comprise more than 2% of the surface area of the barrier section.

The repair of hardened concrete shall be as follows:

- Minor Defect Repair: Repair shall be made with a fast set non-shrink patching material included on MaineDOT's list of prequalified materials. Methods of repair shall be acceptable to the Resident. The color of the repaired portion shall match as nearly as practicable, the color of the surrounding concrete. Repaired portions shall match shape and tolerance requirements.
- Major Defect Repair: Major defect repair shall be pre-approved by the Engineer.

The following paragraphs are added at the end of this section:

The layout and placement of the concrete barriers shall be to the alignment and elevations shown on the Plans or as directed. Before any barrier or transitions may be placed, the subbase shall be compacted to 95 percent density and fine graded to a tolerance of  $\pm 1/2$  inch of the true grade at any location under the barrier.

All Cast-in-Place barrier adjacent to precast barriers shall include hardware for the barrier connection as detailed in the Plans.

# 526.04 Method of Measurement

The following paragraphs are added:

Median Barrier will be measured for payment by the linear foot from end to end of each run of barrier measured along the centerline of the barrier complete in place. No deduction in pay length will be made for joints between abutting barrier sections.

Bridge Endpost Median Barrier Transition sections and Guardrail Median Barrier transition sections will be measured by each barrier satisfactorily completed and in place as shown on the Plans.

The application of application of Clear Protective Coating for Concrete Surfaces will not be measured for payment separately, but shall be incidental to the Median Barrier, Bridge Endpost Median Barrier Transition and Guardrail Median Barrier Transition pay items.

#### 526.05 Basis of Payment

The following paragraphs are added:

The accepted quantities of Median Barrier will be paid for at the Contract unit price per linear foot, as specified, complete in place. Such payment shall be full compensation for: field layout; furnishing all materials, supplies, and equipment; casting; delivery, grading; installation; reflective delineators; application of Clear Protective Coating for Concrete Surfaces; and other all incidentals necessary to complete the work.

Bridge Endpost Median Barrier Transition sections and Guardrail Median Barrier transition sections shall be paid for at the Contract unit price per each, as specified, complete in place. Such payment shall be full compensation for: field layout; furnishing all materials, supplies,

and equipment; casting; delivery, grading; installation; reflective delineators; application of Clear Protective Coating for Concrete Surfaces; and other all incidentals necessary to complete the work.

# Payment will be made under:

Pay Item		Pay Unit
526.35	Median Barrier	Linear Foot
526.361	Bridge Endpost Median Barrier Transition	Each
526.362	Guardrail Median Barrier Transition	Each

# SECTION 527

#### **ENERGY ABSORBING UNIT**

(Work Zone Crash Cushion)

# 527.01 Description

The first paragraph is deleted in its entirety and replaced with the following:

The Contractor shall furnish and install work zone crash cushions where shown on the Plans, as specified herein, in Special Provision 652, or as approved by the Resident. Work zone crash cushions are required at each exposed end of temporary concrete barrier or guardrail.

The exposed end of the concrete barrier within 30 feet of the mainline travel lane shall be protected at all times. Barrier shall not be reset until after the work zone crash cushion(s) has been set to protect the exposed end of the barrier.

# 527.02 Materials

The following paragraph is added:

Only work zone crash cushions meeting the NCHRP Report 350 TL-3 crash test requirements may be used on the turnpike and local roadways with posted speeds of 45 MPH or greater. Work zone crash cushions meeting the NCHRP Report 350 TL-2 crash test requirements may be used on local roadways with posted speeds of 40 MPH or less. The Contractor shall provide the Resident with documentation of the proposed work zone crash cushion's NCHRP Report 350 Crash Test Results prior to installation at the jobsite.

#### 527.03 Construction Requirements

The following is added to the end of the first paragraph:

The design speeds for work zone crash cushions shall be 45 mph for local road and 70 mph for turnpike roadways unless otherwise noted on the Plans.

#### 527.04 Method of Measurement

Work Zone Crash Cushions used to protect exposed ends of guardrail for steel girder erection will not be measured separately for payment, but shall be included under the Maintenance of Traffic for Steel Girder Erection item.

# 527.05 Basis of Payment

Payment will be made under:

Pay Item Pay Unit

527.341 Work Zone Crash Cushions – TL-3 Unit

# SECTION 602

#### PIPE LINING

(Flowable Concrete Fill)

#### 602.01 Description

This work shall consist of providing and placing flowable concrete fill at the locations designated on the Plans.

#### 602.02 Materials

Materials shall conform to the requirements specified in the following Subsections of Division 700 — Materials:

•	Portland Cement	701.01
•	Water	701.02
•	Air Entraining Admixtures	701.03
•	Water Reducing Admixtures	701.04
•	Fly Ash	701.10
•	Fine Aggregate	703.01
•	Accelerating Admixtures	AASHTO M-194 Type "C"

# 602.03 Composition and Proportioning

Flowable concrete fill shall be composed of a homogeneous mixture of Portland Cement and/or pozzolans, fine aggregate, water, and chemical admixtures proportioned according to these Specifications.

The flowable concrete fill shall be proportioned to produce a 28 day compressive strength of 110-500 psi.

The water cement ratio for flowable concrete fill shall not be high enough to cause segregation of the mix.

Air content of five to 15 percent is the target. Higher air contents may be acceptable but will increase set time. All flowable concrete fill shall be air entrained by the addition of an air entraining admixture or other chemical admixtures.

At least 30 days prior to the first placement, a flowable concrete fill mix design shall be submitted by the Contractor to the Resident for approval. No flowable concrete fill shall be placed on the Project until the mix design is approved by the Resident. At a minimum, the mix design submitted by the Contractor shall include the following:

# A. Target water cement ratio

- B. Target strength
- C. Target air content

# 602.04 Quality Control

Process control measurements of air content, mix temperature, and slump shall be performed on the portion or portions of flowable concrete fill batches delivered to the site. At least one (1) set of measurements for air content, temperature, and slump of flowable concrete fill mix shall be performed per placement or per day, whichever is less frequent. Test cylinders will not be required.

Air content shall be measured following the requirements of AASHTO T152 utilizing Type B equipment.

Slump shall be measured by Modified Slump Test as described below.

#### Apparatus:

Scoop, measuring tape, flat edge, 3 in. x 6 in. cylinder mold open at both ends, and a flat non-absorbent surface.

# Procedure:

- 1. Set cylinder upright on flat non-absorbent surface.
- 2. Scoop representative sample of flowable concrete fill.
- 3. Fill the cylinder, with the sample in one lift without tamping. Strike-off the top with the flat edge to form a level surface.
- 4. Clear any residue from around the bottom of the cylinder.
- 5. During a count of three seconds, lift the cylinder straight up allowing the sample to spread on the flat surface.
- 6. Measure the spread diameter to the nearest 1/2 inch. A spread of nine to 14 inches is considered flowable.

# 602.05 Batching

Measuring and batching of materials shall be performed at an approved batching plant, either commercial or otherwise.

#### 602.06 Mixing and Delivery

The Contractor shall provide a Certificate of Compliance as described in Standard Specification Section 502, Structural Concrete, Subsection 502.0501, Quality Control METHOD C, for each truckload of flowable concrete fill.

#### 602.07 Cold Weather Placement

The following amended requirements of Standard Specification Section 502, Structural Concrete, Subsection 502.08, Cold Weather Concrete, will apply.

The Cold Weather Temperature Table does not apply to flowable concrete fill. The minimum concrete temperature as placed shall be 40°F. No housing framework or heating will be required when placed under approved cold weather conditions.

#### 602.08 Forms and Containment Berms

When necessary to contain flowable concrete fill within a defined area, berms shall be constructed of compacted granular material.

#### 602.09 Placing Flowable Concrete Fill

Flowable concrete fill shall not be placed until forms and/or containment berms have been checked and approved. Flowable concrete fill shall not be placed under water. The method and sequence of placing flowable concrete fill shall be approved by the Resident before any flowable concrete fill is placed.

All flowable concrete fill shall be placed before it has taken its initial set. Flowable concrete fill shall be placed in such a manner as to avoid separation and segregation of the mix. Consolidation, tamping, and vibration is not required or allowed.

Flowable concrete fill shall be discharged directly from the truck into the space to be filled. The drop height of the flowable concrete fill shall be as low as practicable. Flowable concrete fill shall not flow down the vertical face of a trench causing erosion of the trench face. Finishing and curing of flowable concrete fill is not required.

Flowable concrete fill placed will not be opened to traffic or covered with structural concrete or pavement for a minimum of 24-hours.

# 602.10 Method of Measurement

Flowable Concrete Fill will not require measurement as it is incidental to other Pay Items within the Contract.

#### SECTION 605

#### UNDERDRAINS

# 605.01 Description

The section is amended by the addition of the following:

This work shall also include construction of underdrain for the stormwater underdrain treatment swale using pipe and bedding material in accordance with these Specifications and in reasonably close conformity with the lines and grades on the Plans.

#### 605.02 Materials

The section is amended by the addition of the following:

Underdrain Type B bedding material shall be well graded, clean, coarse gravel, free from organic matter and meeting Subsection 703.22, Type B with no more than two percent by weight passing the #200 sieve.

# 605.04 Underdrain Construction

The section is amended by the addition of the following:

The underdrain system to be installed as part of the stormwater underdrain treatment swale consists of a six inch Underdrain Type B. The underdrain pipe system shall be surrounded by underdrain bedding. A drainage geotextile and HDPE geomembrane impervious liner (as specified in Section 620) shall be placed below the underdrain bedding on a graded, compacted and level base. The drainage geotextile and HDPE geomembrane shall also extend vertically along the walls of the underdrain bedding (and also extend vertically along the wall of the Soil Filter).

# SECTION 606

#### **GUARDRAIL**

(31" W-Beam Guardrail – Mid-way Splice (8' Steel Posts, 8" Offset Blocks, Single Faced))

# 606.01 Description

The section is amended by the addition of the following:

This work shall consist of furnishing and installing guardrail components the required locations in accordance with the Specifications and in reasonably close conformity with the lines and grades shown on the Plans. The types of guardrail are designated as follows:

31" W-Beam Guardrail – Mid-way Splice (8' Steel Posts, 8" Offset Blocks)

#### 606.02 Materials

The section is amended by the addition of the following:

Steel posts shall be 8 feet long as specified in the plans.

The guardrail elements shall be per the Components' List found on Sheet No. 2 of 2 of draft Drawing SGR47 – 31" W-Beam Guardrail with Standard 8" Offset Block in the Task Force 13 Report noted above and/or as noted in the Contract Documents unless noted otherwise.

# 606.04 Rails

The section is amended by the addition of the following:

Height of top of rail shall be 31" measured from final grade. Height transition from 31" W-Beam, mid-spliced guardrail to existing guardrail shall occur over a 25' length.

#### 606.08 Method of Measurement

The section is amended by the addition of the following:

31" W-Beam Guardrail – Mid-way Splice (8' Steel Posts, 8" Offset Blocks) will be paid for at the contract unit price per linear foot of rail satisfactorily installed and accepted.

#### 606.09 Basis of Payment

The section is amended by the addition of the following:

The accepted quantity of 31" W-Beam Guardrail – Mid-way Splice (8' Steel Posts, 8" Offset Blocks) will be paid for at the contract unit price per linear foot of rail and shall be full compensation for furnishing all labor, equipment and materials necessary to complete the work. Payment will be made under:

Pay Item		<u>Pay Unit</u>
606.1301	31" W-Beam Guardrail – Mid-way Splice (8' Steel Posts,	
	8" Offset Blocks, Single Faced)	Linear Foot

# SECTION 606

#### **GUARDRAIL**

(Guardrail – Tangent Terminal – 31" W-Beam Guardrail)

#### 606.01 Description

The following sentences are added:

This work shall consist of furnishing and installing a MSKT (MASH-compliant Sequential Kinking Terminal) for use with the 31" W-Beam Guardrail – Mid-way Splice (7' Steel Posts, 8" Offset Blocks, Single Faced) as manufactured by Road Systems, Inc., 3616 Old Howard County Airport Road, Big Spring, Texas 79720, (432) 263-2435, and retroreflective adhesive sheeting in accordance with these Specifications and the manufacturer's installation instructions, and in reasonably close conformity with the lines and grades as shown on the Plans or as approved by the Resident.

#### 606.02 Materials

The following sentence is added:

31" W-Beam Guardrail – Midway Splice Tangent Terminal components shall be comprised of those shown in the manufacturers installation instructions. 8" blocks shall be used.

Reflective sheeting shall meet the requirements of Subsection 719.01, Reflective Sheeting – minimum ASTM Type XI; 3M<sup>TM</sup> Diamond Grade<sup>TM</sup> DG³ Reflective Sheeting Series 4000 or approved equal, color white.

The contractor shall request for the impact face object marker, black chevron on yellow background, to be included in the shipped materials when installation is on the left side of roadway.

The following Subsections are added:

#### 606.03 Posts

Wood offset blocks shall be toe-nailed in two locations to the wood post to prevent the blocks from moving.

# 606.035 Construction Requirements

The Contractor shall submit a set of installation drawings to the Resident for approval. The system shall be installed in accordance with the manufacturer's recommendation and the installation drawings.

A reflective adhesive sheeting shall be applied to the nose of the MSKT System after installation.

# 606.041 Reflective Sheeting

The color for the reflective sheeting shall be silver (white) when installed on the right shoulder and shall be black chevron on yellow background only when installed on the left shoulder.

# 606.08 Method of Measurement

The second paragraph is amended by the addition of: "31" W-Beam Guardrail – Midway Splice Tangent Terminal, "after the words "Terminal section,".

31" W-Beam Guardrail – Midway Splice Tangent Terminal will be measured by each unit satisfactorily complete in place and accepted.

# 606.09 Basis of Payment

The first paragraph is amended by the addition of: "31" W-Beam Guardrail – Midway Splice Tangent Terminal," after the words "Terminal section,".

The second paragraph is amended by the addition of: ", 31" W-Beam Guardrail – Midway Splice Tangent Terminal, " after the words "NCHRP 350 end treatments".

The retroreflective sheeting will not be measured separately for payment, but shall be incidental to the 31" W-Beam Guardrail – Midway Splice Tangent Terminal item.

Payment will be made under:

Pay Item

606.1306 31" W-Beam Guardrail – Mid-way Splice Tangent Terminal Each

# SECTION 606

#### **GUARDRAIL**

(Terminal End - Anchored End – 31" W-Beam Guardrail)

# 606.01 Description

The section is amended by the addition of the following:

This work shall consist of furnishing and installing Terminal End – Anchored End – 31" W-Beam Guardrail end treatment in accordance with these Specifications, the AASHTO-AGCARBTA Joint Committee Task Force 13 Report: A Guide to Standardized Highway Barrier Hardware, Drawing SEW31 in AASHTO Manual for Assessing Safety Hardware (MASH) approval letter B-256; and in reasonably close conformity with the lines and grades as shown on the Plans or as approved by the Resident.

### 606.02 Materials

The following sentences are added:

The guardrail elements shall be per the Components' List found on Sheet No. 2 & 3 of 3 of Drawing SEW31 – Trailing-end Anchorage System in the Task Force 13 Report noted above and/or as noted in the Contract Documents. The component RWM14a shall be modified to a length of 9'-41/2" measured from the center of the Midway Splice to the center of the last guardrail post.

### 606.042 Terminal End - Anchored End

The following sentences are added:

Installation of the Terminal End – Anchored End - 31" W-Beam Guardrail end treatment shall be in strict accordance with these plans and specifications, the AASHTO-AGC-ARBTA Joint Committee Task Force 13 Report and the Details on Sheet No. 1 of 3 of Drawing SEW31 – Trailing-End Anchorage System.

### 606.08 Method of Measurement

The second paragraph is amended by the addition of: ", Terminal End - Anchored End – 31" W-Beam Guardrail," after the words "Terminal section,".

#### 606.09 Basis of Payment

The first paragraph is amended by the addition of: ", Terminal End - Anchored End -31" W-Beam Guardrail," after the words "Terminal section,".

The second paragraph is amended by the addition of: ", Terminal End - Anchored End - 31" W-Beam Guardrail, and" after the words "NCHRP 350 end treatments".

Payment will be made under:

Pay Item		Pay Unit
606.1351	Terminal End - Anchored End – 31" W-Beam Guardrail	Each

# SECTION 606

#### **GUARDRAIL**

(Bridge Transition – Type III)

# 606.01 Description

The following sentence is added:

This work shall consist of furnishing and installing Type III Bridge Transitions at bridge endposts on bridges over the Turnpike and at the ends of the pier protection concrete barriers as shown in the Contract Documents.

The following Subsection is added:

#### 606.071 Guardrail Attachments at Bridges

Bridge transition - Type III shall be used at bridge endpost locations or as shown on the plans.

#### 606.08 Method of Measurement

The following sentence is added:

Bridge transition - Type III will be measured by each unit of the type specified, installed and accepted. 606.09 Basis of Payment The following paragraphs are added: Bridge Transition - Type III will be paid for at the Contract unit price each complete in place and shall be full compensation for furnishing all labor, equipment and materials necessary to complete the work consisting of, but not necessarily limited to, the following: furnishing and installing guardrail, modifications to concrete end wall to accept terminal anchor, one terminal connector, precast concrete transition curb, including terminal connector anchorage and all other detailed accessories; furnishing and installing all required posts, rails, offset brackets, back-up plates, nuts, bolts, washers, and all other items necessary to make for a complete installation as shown on the Plans or as approved by the Resident.

Payment will be made under:

Pay Item Pay Unit

606.1723 Bridge Transition - Type III

Each

#### SECTION 606

#### **GUARDRAIL**

(Reflectorized Beam Guardrail Delineator)

# 606.01 Description

The following paragraphs are added:

Reflectorized beam guardrail delineators shall be installed on existing guardrail to remain in place, guardrail noted to be removed, modified and reset (single and/or double rail) or new guardrail, at the locations noted on Maintenance of Traffic plans or as approved by the Resident. The delineators shall be installed prior to traffic being shifted closer to the identified guardrail run. The color for the reflective sheeting shall be silver (white) when installed on the outside shoulder and yellow when installed on the inside shoulder.

Reflectorized beam guardrail delineators shall be mounted as follows:

- 1. Delineators on guardrail adjacent to a shifted detour should be spaced every other guardrail post and located at the bolt in the valley of the guardrail beam.
- 2. On existing steel bridge rail, the delineators shall be mechanically attached towards the top, every 10 feet, and bottom, every 20 feet. Delineators shall also be mechanically attached in a similar pattern to concrete endposts that are 10 feet or longer.
- 3. If more than 25% of delineators in any 50 feet of guardrail, bridge rail, or endposts fall off for any reason, the Contractor will be responsible for reinstalling all delineators in that run at that their own cost.
- 4. In no instance shall delineators be installed on guardrail which deviates substantially from the alignment (horizontal or vertical) of the roadway or which is located more than eight feet from the edge of pavement.
- 5. On Tangents, mount delineators every 62.5-feet or every 10<sup>th</sup> post.
- 6. On Curves, mount delineators every 31.25-feet or every 5<sup>th</sup> post.

Exceptions and/or modifications will only be made with the approval of the Resident.

Contractor is required to submit installation method for review and approval to the Resident.

#### 606.02 Materials

The fourth paragraph is deleted and replaced with the following:

The reflectorized beam guardrail delineators shall be fabricated from galvanized steel.

Reflective sheeting shall meet the requirements of Subsection 719.01, Reflective Sheeting – minimum ASTM Type XI; 3M<sup>TM</sup> Diamond Grade<sup>TM</sup> DG<sup>3</sup> Reflective Sheeting Series 4000 or approved equal.

# 606.08 Method of Measurement

The following paragraph is added:

Reflectorized Beam Guardrail Delineators will be measured by each unit of the kind specified and installed. Maintenance and replacement of delineators will not be measured separately for payment unless otherwise approved by the Resident.

# 606.09 Basis of Payment

The second and third sentences in the first paragraph are deleted and replaced with the following:

Reflectorized Beam Guardrail Delineators will be paid for at the Contract unit price each when installed on existing guardrail, complete in place, which price shall be full payment for furnishing and installing all components and for all incidentals necessary to complete the installation. Reflectorized Beam Guardrail Delineators will not be paid for on new guardrail.

Payment will be made under:

Pay Item		<u>Pay Unit</u>
606.352	Reflectorized Beam Guardrail Delineator	Each

# SECTION 606

#### **GUARDRAIL**

(Delineator Post – Remove and Reset) (Delineator Post - Remove and Stack)

#### 606.01 Description

The following paragraphs are added:

This work shall also consist of furnishing and installing new delineator posts and/or removing and resetting and/or removing and temporarily stacking existing delineator posts within the Contract limits at the Crosby Maintenance Facility. The existing reflectorized delineator panels shall be removed and replaced with new reflectorized delineator panels as required by the Resident.

Existing and new delineator posts shall be located as follows, with the indicated panel:

# Outside Shoulder:

- One at guardrail trailing ends (green delineator).
- Two at guardrail approach ends (one red delineator on first post and one red delineator on angle points.)

# Median:

- One at guardrail trailing ends (green delineator, facing traffic).
- Two at guardrail approach ends (one red delineator on first post of CAT units, green on guard rail side, red on median opening side; and one red (both sides) delineator at angle point.)
- One at all other median guardrail angle points (red on both sides)

#### Other Locations:

- One at culvert outlets (green delineator).
- Twenty per mile evenly spaced at the edge of outside shoulder (white delineator).
- One at electrical junction boxes not associated with another item (red delineator).
- One at communication only junction boxes not associates with another item(orange delineator).

Delineator posts that do not exist in the locations described above, shall be supplied and installed by the Contractor. The installation of the delineator post shall include the demountable reflectorized delineator panel.

White edge delineators shall not be installed on any portion of the widened shoulder for Guardrail 350 Flared Terminal installations, and shall not be installed behind the Guardrail 350 Flared Terminal rail segments.

# 606.02 Materials

The following paragraphs are added:

Non-guardrail Delineator Posts shall conform to Subsection 606.02 paragraph 3.

The seventh through ninth sentences of the fourth paragraph are deleted and replaced with the following:

Reflectorized flexible guardrail markers shall be a minimum of 2-inches in diameter, a maximum of 36" in length, ovalized at the top of the post to allow application of 3 inch by 9 inch high intensity reflective sheeting, and shall be capable of recovering from repeated impacts. The flexible guardrail delineator markers shall be grey and capped at the top with a flexible rubber cap; Safe-Hit Flexible Guardrail Delineator or approved equal. Reflective material shall meet the requirements of ASTM Type IX Diamond Grade VIP (Visual Impact Performance).

The demountable reflectorized delineator panels shall meet the material requirements of Subsection 719.06. The delineator panel shall be rectangles measuring 9" x 3".

## 606.03 Posts

The following paragraphs are added:

The top of delineator posts shall be installed 4' - 6" (54") ) above edge of pavement elevation. Delineators shall be installed four feet from edge of pavement except those delineating end treatments, culverts and electrical items.

Mile marker posts shall be mounted on breakaway supports. The bottom of the sign shall be 5' - 0" (60") above the pavement at the solid white line and shall be offset five feet from the edge of pavement.

A mock-up of the guardrail delineator posts shall be submitted to the Resident for approval prior to installation.

Any materials damaged by the Contractor's operations shall be replaced at no additional cost to the Authority.

Top of the delineator panel shall be flush with the top of post.

#### 606.08 Method of Measurement

The following paragraphs are added:

Delineator Posts shall be measured by each unit satisfactorily installed. Delineator Post-Removed and Reset will be measured by each unit satisfactorily removed and reset. Delineator Posts Removed and Stacked will be measured by each unit satisfactorily removed and stacked.

Mile Marker post shall be measured for payment as Delineator Post. The breakaway supports shall be incidental to the Underdrain Delineator Post pay item.

## 606.09 Basis of Payment

The following sentences are added:

The accepted quantity of Delineator Posts will be paid for under the Underdrain Delineator Post item, at the Contract unit price per each which price shall be full compensation for the post and specified delineator or mile marker panel, complete in place.

The accepted quantity of Delineator Post - Removed and Reset will be paid for at the Contract unit price each, which price shall be full compensation for removing and resetting the delineator panel or mile marker panel and post and all incidentals necessary to complete the work.

The accepted quantity of Delineator Posts Removed and Stacked will be paid for at the Contract unit price each, which price shall be full compensation for removing and stacking delineator panel or mile marker panel and posts and all incidentals necessary to complete the work.

Pay Item		Pay Unit	
606.3561	Delineator Post - Remove and Reset	Each	
606.3562	Delineator Post - Remove and Stack	Each	

#### SECTION 606

#### **GUARDRAIL**

(Guardrail – Remove, Modify and Reset, Double Rail)

# 606.01 Description

The following paragraphs are added:

This work shall also consist of removing, stockpiling and stacking of existing double guardrail elements, component parts and hardware suitable for replacement as approved by the Resident. At the completion of the Contract, any unused guardrail elements, posts, component parts and hardware suitable for reuse shall remain the property of the Authority. Any guardrail elements, posts, component parts and hardware unsuitable for reuse shall become property of the Contractor.

Stockpiled materials, suitable for reuse, shall be utilized on Remove, Modify and Reset items prior to new materials being paid for.

Guardrail materials may be temporarily stockpiled at the Crosby Maintenance Facility at MM 46 Southbound.

This work shall consist of removing, disposing of existing guardrail elements, component parts and hardware, as directed by the Resident. All materials shall become the property of the Contractor and shall be removed from the site at the completion of the Project. The Contractor shall provide the Resident with an affidavit stating the final location of all disposed material and that the material was disposed of in accordance with the Maine Department of Environmental Protection Solid Waste Regulations.

# 606.02 Materials

The following paragraph is added at the end of the subsection:

New non-wood offset blocks conforming to NCHRP 350 Test Level 3 shall be installed on all guardrail being reset. The existing steel offset brackets and backup plates shall become the property of the contractor.

The following Subsection is added:

#### 606.08 Method of Measurement

The following paragraphs are added:

Raking and compacting the earth around each reset post with a minimum 8 pound hand tamper or an approved device, and infilling and compacting holes created due to resetting posts with a similar surrounding material wil not be paid separately, but shall be incidental to the Guardrail - Remove, Modify and Reset Pay Items.

Guardrail removed and not reset or stacked shall be incidental to Contract Items and include all removal, disposal, equipment and labor necessary to satisfactorily complete the work.

Steel posts to replace damaged posts shall come from the stockpile of guardrail components to be disposed of, from this Contract and will not be measured separately for payment. If, in the opinion of the Resident, there are no suitable steel posts in the stockpile then steel posts will be measured for payment.

W-beam rail elements to replace damaged rail elements shall come from the stockpile of guardrail from the Remove and Stack or the guardrail to be disposed of from this Contract and will not be measured separately for payment. If, in the opinion of the Resident, there are no suitable W-beam rail elements in the stockpile then the W-beam rail elements will be measured for payment.

# 606.09 Basis of Payment

The following paragraphs are added:

The accepted quantity of guardrail removal will be paid for at the Contract unit price bid, which price shall be full compensation for removing, transporting and stacking all guardrail elements, component parts and hardware, equipment, labor and all incidentals necessary to complete the work. No additional payment will be made for double rail.

Pay Item		Pay Unit
606.3606	Guardrail - Remove, Modify, and Reset Double Rail	Linear Foot

#### SECTION 609

#### **CURBING**

(Concrete Curb Type 2)

# 609.01 Description

The following sentences are added:

The work shall consist of furnishing and installing Concrete Curb Type 2 in accordance with these Specifications and in reasonably close conformity with the lines, grades and locations shown on the Plans or as approved by the Resident. This work shall also consist of all excavation and backfill necessary to install the proposed curb as shown on the Plans.

# 609.02 Materials

The following sentence is added:

Backfill shall be Aggregate Subbase Course Gravel Type D in conformance with Subsection 304.02.

#### 609.19 Method of Measurement

The following sentences are added:

Concrete Curb Type 2 shall be measured by the linear foot along the front face of the curb at the elevation of the finished grade, complete in place and accepted.

Excavation and backfill associated with curb installation shall be incidental to Item 609.191, Concrete Curb Type 2.

## 609.10 Basis of Payment

Payment will be under:

Pay Item Pay Unit

609.191 Concrete Curb Type 2 Linear Foot

# SECTION 609

# **CURBING**

(Terminal Curb Type 1-4 ft - Circular)

# 609.10 Basis of Payment

Payment will be under:

Pay Item Pay Unit

609.2341 Terminal Curb Type 1- 4 ft - Circular Each

#### SECTION 610

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

(Temporary Stone Check Dams)

## 610.01 Description

Paragraph (g) is added as follows:

(g) Stone Check Dams – Machine placed stone, including the placement, removal and storage of the stone used for temporary stone check dams.

# 610.032.e. Stone Check Dams

The following paragraph is added:

Stone check dams shall be constructed in accordance with the details as shown on the Plans, detailed in the MaineDOT's latest Best Management Practices, or as approved by the Resident. The stone shall be placed in one operation without special handling or handwork except to create a low point along the top gradient above the ditch flow lines.

The following Subsection is added:

#### 610.033 Removing Stone

The stone for temporary stone check dams shall be removed after vegetation has been established in the ditches as approved by the Resident.

Any damage to the slopes and ditches caused by the removal of the stone check dams shall be repaired by the Contractor at his own expense.

The area directly under the temporary stone check dams shall be loamed, seeded and mulched immediately after the removal of the stone check dams. The loam, seed and mulch will be measured for payment under the appropriate pay items.

Stone used for temporary stone check dams shall be removed and stored and shall become the property of the Contractor at the completion of the Project.

The following Subsection is added:

#### 610.034 Maintenance

Stone check dams shall be maintained by the Contractor. Sediment deposits behind check dams shall be removed when the depth of sediment reaches 50 percent of the check dam height.

## 610.05 Method of Measurement

The following paragraphs are added:

Stone for Temporary Stone Check Dams will be measured by the cubic yard complete in place. The removal and storage of the stone will not be measured separately for payment, but shall be incidental to the Temporary Stone Check Dam item. This shall include the transporting and unloading of the stone. If this stone is reused on the Project, it will be measured separately for payment under the appropriate pay item.

The removal and disposal of sediment from behind the Temporary Stone Check Dams will not be measured separately for payment, but shall be incidental to the Temporary Stone Check Dam pay item.

## 610.06 Basis of Payment

The following sentences are added:

The accepted quantities of stone for Temporary Stone Check Dams will be paid for at the Contract unit price per cubic yard.

Pay Item		<u>Pay Unit</u>
610.181	Temporary Stone Check Dam	Cubic Yard

# SECTION 613

## EROSION CONTROL BLANKET

# 613.01 Description

This work shall also include seeding, mulching and watering the median swale and/or longitudinal flow line to the limits and width as shown on the Plans or as directed by the Resident.

## 613.02 Materials

The following sentences are added:

Seeding shall meet the requirements of Section 618, Seeding, Method Number 2.

Mulch shall meet the requirements of Section 619.

The following Subsection is added:

# 613.041 Maintenance and Acceptance

See Section 618.10 for maintenance and acceptance of seeding.

# 613.042 Mulch

All mulch shall be placed after the area has been seeded and prior to the installation of the Erosion Control Blanket.

# 613.09 Basis of Payment

The following "and mulch" is added after the words "initial seeding" in the second sentence.

# SECTION 618

#### **SEEDING**

(Special Seeding)

# 618.01 Description

The section is amended by the addition of the following:

Only Special Seeding shall be applied to the surface of the Stormwater Underdrain Treatment Swale.

#### 618.02 Materials

The section is amended by the addition of the following:

Special Seeding (for use on Stormwater Underdrain Treatment Swale) shall be "New England Erosion Control/Restoration Mix" as supplied by New England Wetland Plants, Inc., or an approved equal. All fertilizers, soil conditioners, limestone and other materials required to germinate, initiate and sustain seed growth shall be materials recommended by New England Wetland Plants, Inc. or other approved seed manufacturer as determined by the Resident.

# 618.03 Rates of Application

Subsection a. is deleted and replaced with the following:

a. Except for Special Seeding mix, agricultural ground limestone shall be applied at the rate of 33 pounds per unit for all seeding methods. Liquid lime shall be applied at the rate of 1/2 pint per unit for hydraulic method. A 1/2 pint of liquid lime shall be mixed with five pints of water.

#### Subsection g. is added:

g. At a minimum, the Special Seeding shall be applied at twice the seed manufacturer's recommended application rate. Fertilizers, limestone and other soil conditioners shall be applied at the manufacturers recommended rate. The Special Seeding mix shall be applied directly on top of the horizontal surface of the Stormwater Underdrain Treatment Swale and lightly raked into the mix. On the sloping sides of the swale up to a height of 1.5 feet above the top of the swale invert, Special Seeding shall be placed on a four inch layer of loam and lightly raked into that material. All seed shall be covered by a temporary erosion Control blanket immediately after seeding.

# 618.10 Maintenance and Acceptance

The second paragraph is deleted and replaced with the following:

The Contractor shall water the special seed as necessary and shall insure the continued growth of the Special Seeding. The Authority will accept areas sown with Special Seeding upon attainment of a reasonably thick stand of grass with at least 90 percent coverage, free from sizable thin or bare spots. Areas not meeting this requirement shall be reseeded and shall comply with Subsections 618.03 through 618.09.

## 618.12 Basis of Payment

The first paragraph is deleted and replaced with the following:

The accepted quantity of Special Seeding will be paid at the Contract price per unit, which price shall be full compensation for furnishing and spreading seed, limestone fertilizer, and inoculants. The price shall also include any reseeding, watering, and maintenance necessary to meet the requirements of Section 618.10, Maintenance and Acceptance.

Pay Item		Pay Unit
618.143	Special Seeding	Unit

# SECTION 619

# **MULCH**

(Mulch – Plan Quantity) (Temporary Mulch)

#### 619.01 Description

The first paragraph is modified by the addition of the following:

"as a temporary or permanent erosion control measure" after the word "mulch".

Add the following sentence at the end of the first paragraph:

Refer to Section 656 Temporary Soil and Water Pollution Control, for more information on Temporary Mulch.

#### 619.03 General

The first paragraph is deleted and replaced with the following:

Cellulose fiber mulch shall not be used within 200 feet of a wetland or stream. The limits shall be 200 feet up station and down station of the wetland or streams as well as the slopes adjacent to the stream. The application of hay or straw mulch with an approved binder shall be used at these locations to prevent erosion.

The use of cellulose fiber mulch will only be allowed at other areas with the approval of the Resident. The Contractor may be required to demonstrate that the material may be applied in a manner that will prevent erosion and will aid in the establishment of permanent vegetation. The Resident reserves the right to require the use of hay or straw mulch at all locations if he determines that the cellulose mulch is ineffective. Cellulose fiber mulch is not acceptable for winter stabilization.

#### 610.06 Method of Measurement

The following sentence is added:

Temporary Mulch will be paid for by the lump sum.

## 656.10 Basis of Payment

Temporary Mulch will be paid for at the Contract price per lump sum which shall be full compensation for furnishing and spreading the Temporary Mulch as many times as necessary as determined by the Contractor's operations and staging. The price shall also include the additional mulch netting and snow removal necessary during the winter months.

Pay Item		Pay Unit
619.1201	Mulch – Plan Quantity	Unit
619.1202	Temporary Mulch	Lump Sum

# SECTION 620

#### **GEOTEXTILES**

(HDPE Geomembrane)

#### 620.01 Description

The section is amended by the addition of the following:

This work shall include installation of HDPE Geomembrane for the Stormwater Underdrain Treatment Swale as shown on the Plans or as approved by the Resident.

#### 620.02 Materials

The section is amended by the addition of the following:

HDPE Geomembrane shall be Poly-Flex 40 mil High Density Polyethylene (HDPE) as manufactured by Poly-Flex, Inc., 2000 W. Marshall Drive, Grand Prairie, TX 75051, http://www.poly-flex.com, (888)-POLYFLX, Fax (972) 988-8331, or an approved equal.

#### 620.03 Placement

The section is amended by the addition of the following:

HDPE Geomembrane shall be placed within the limits shown on the Plans for the Stormwater Underdrain Treatment Swale. A surface slope shall be provided in the underlying leveling sand away from structures and toward the sides of the embankments. HDPE Geomembrane deployment shall proceed only when ambient temperatures are between 32°F to 104°F. HDPE Geomembrane shall not be placed during precipitation or moisture of any type (e.g., fog, rain, dew), or in the presence of excessive winds, as determined by the Resident. Observation of temperature, humidity, precipitation and wind should be noted to ensure that the weather conditions are acceptable prior to HDPE Geomembrane placement.

#### 620.05 Seems

The section is amended by the addition of the following:

Approved seaming processes are hot shoe fusion and extrusion welding. On side slopes, seams shall be oriented in the general direction of maximum slope, (i.e., oriented down, not across the slope). In corners and odd-shaped geometric locations, the number of field seams shall be minimized. Seams shall be aligned with the least possible number of wrinkles and "fishmouths". If a fishmouth or wrinkle is found, it shall be relieved and cap-stripped. Geomembrane panels must have a finished minimum overlap of four inches for hot shoe fusion welding and three inches for extrusion welding. Cleaning solvents may not be used unless the product is approved by the liner

manufacturer. Field test seams may be conducted on the liner in accordance with the manufacturer's recommendations to verify that seaming conditions are satisfactory.

# 620.09 Method of Measurement

The words, "and HDPE Geomembrane" shall be added after the word "geotextiles" in the first and second sentence of the first paragraph.

# 620.10 Basis of Payment

The words, "and HDPE Geomembrane" shall be added after the word "geotextiles" in the first and second sentence of the first paragraph.

Pay Item		<u>Pay Unit</u>
620.70	HDPE Geomembrane	Square Yard

# SECTION 624

#### STORMWATER TREATMENT

(Stormwater Soil Filter Bed)

# 624.01 Description

This work shall consist of constructing a stormwater underdrain treatment swale to treat stormwater runoff from portions of the northbound lanes of the Maine Turnpike as shown on the Plans. All work shall be done in accordance with these Specifications and as shown on the Plans, to provide a complete and operating system, and as approved by the Resident.

# 624.02 Materials

The swale bed filter material shall be a thoroughly blended mixture of the following:

- a. Sand shall constitute 50-55 percent by volume of the filter material. Sand shall meet Subsection 703.01, Fine Aggregate for Concrete, except no more than two percent by weight shall pass the # 200 sieve.
- b. Topsoil shall constitute 20-30 percent by volume of the filter material. Topsoil shall be a loamy sand with a clay content between 15-25 percent by weight passing the # 200 sieve.
- c. Mulch shall constitute 20-30 percent by volume of the filter material. Mulch shall be a moderately fine shredded bark mulch or wood fiber mulch with less than five percent by weight passing the #200 sieve.
- d. The Contractor may seek approval from the Resident to use filter material from offsite as provided by a supplier that specializes in providing filter material that complies with the above Specifications and DEP requirements for Stormwater Filters.

# 624.03 Mixing and Placement

The section is amended by the addition of the following:

The above materials shall be thoroughly mixed to create a uniform mixture. The stormwater filter material shall be mixed before placement over the top of the underdrain bedding. The stormwater filter material shall be placed using small equipment (small excavators, small trucks) to distribute the mixed soil material over the top of the underdrain bedding. To preserve filtration characteristics of the material, the stormwater filter material shall not be compacted. Natural compaction over time is preferred over intentional compaction methods. Light compaction due to operation of small equipment operating over the surface of the media to spread the material is acceptable. Such equipment operations shall be minimized to limit compaction. The stormwater filter material shall be graded and leveled to the elevations shown on the Plans and, if required, additional filter material shall be added to fill any depressions or natural settlements that occur prior to acceptance of the work.

## 624.04 Method of Measurement

The Stormwater Underdrain Treatment Swale soil filter media will be measured by the number of cubic yards computed using the dimension shown on the Plans for the Stormwater Underdrain Treatment Swale, complete and in place.

## 624.05 Basis of Payment

The accepted quantity of stormwater soil filter bed will be paid for at the Contract unit price per cubic yard. Payment shall be full compensation for obtaining the filter bed material, excavating, loading, hauling, mixing, placing, grading, and compacting, and all other materials, tools and labor incidental to the work. The excavation for the filter bed shall be included for payment under Item 203.20, Common Excavation. The underdrain for the filter bed and bedding material shall be included for payment under Item 605.009, 6 Inch Underdrain Type B. The drainage geotextile for the filter bed shall be included for payment under Item 620.58, Erosion Control Geotextile. The HDPE Liner shall be included for payment under Item 620.70 HDPE Geomembrane.

Payment will be made under:

Pay Item

Pay Unit

Cubic Yard

# SECTION 626

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

(Quazite Junction Box)

#### 626.02 General

The following paragraph is added:

Junction boxes for the electrical and communication conduit associated with the toll equipment and intelligent transportations systems shall be polymer concrete as manufactured by QUAZITE® a division of Hubbell Power Systems. The boxes shall be 36" x 24" and 21" deep. The words ELECTRICAL, LIGHTING, TRAFFIC, or COMMUNICATION shall be stamped on the cover as noted in the Plans or directed by the Resident. The boxes shall have an 8,000 lb. load rating. All existing QUAZITE® Junction Boxes in useable condition shall be removed and relocated as directed by the Resident Engineer.

Junction boxes for the electrical associated with highway lighting shall be precast concrete. All existing Precast Junction Boxes in useable condition shall be removed and relocated as directed by the Resident Engineer. New boxes shall have the word LIGHTING stamped on the cover.

#### 626.04 Method of Measurement

The following sentence is added:

Quazite junction box shall be measured by each unit in place and accepted existing or new.

Precast junction box shall be measured by each unit in place and accepted existing or new.

## 626.05 Basis of Payment

The words, "polymer concrete" shall be added after the words, "precast concrete" in the second sentence of the second paragraph.

Pay Item		Pay Unit
626.12	Quazite Junction Box	Each

# SECTION 626

#### ELECTRICAL WORK

(PVC Conduit)

# **Description**

This task shall include providing and the installation of PVC Conduit as shown on the Plan drawings and described herein. All conduit shall be installed per NEC specification. Connections to specialized fittings are to be compatible with adjoining conduit.

Joints shall be made in accordance with ASTM D 2855. Solvent cement shall meet the requirements of ASTM D 2564 with particular attention to matching the viscosity to the conduit size.

Joint adhesives shall be in accordance with ASTM D2517.

All conduit runs shall be watertight. Slope conduit to drain into junction boxes.

All empty conduits shall have a labeled pull string. Pull strings shall have length markings and should be used for long conduits over 50 feet or for all underground installations. Clean, plug and seal conduit ends after installation.

# Basis of Payment

Measurement and payment for installing PVC Conduit as shown on the Plan drawings and described herein will be per linear foot of each type of underground or exposed conduit actually furnished, installed, and accepted at the Contract price per linear foot. It shall include the furnishing, installing, supporting and connection of the conduit and all various hardware necessary for the installation. This price shall include the cost of hand digging, trenching, or plowing; furnishing and installing the conduit; furnishing special backfilling materials, pull string, fittings, groundings and bonding; test cleaning interiors of conduits and all materials, labor, equipment and incidentals necessary to complete the work.

Payment will be made under:

Pay Item Pay Unit

626.204 3" Schedule 80 PVC Conduit Linear Foot

# SECTION 626

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

(Light Standard Foundation)

# General

The following paragraph is added:

Light standard foundations shall be pre-cast concrete as manufactured and shall be meet the requirements of the light standard manufacturer for bolt circle diameter, anchor bolt thickness, anchor bolt projection, depth, and width.

The light standard foundation shall accommodate break away devices and shall meet all MTA and Maine DOT requirements.

# Method of Measurement

The light standard foundation shall be measured by each unit in place and accepted existing or new.

# **Basis of Payment**

The light standard foundation shall be paid for by each unit in place including all excavation, backfill, equipment, material and labor to complete the installation.

Pay Item		Pay Unit
626.341	Light Standard Foundation	Each

#### SECTION 627

#### PAVEMENT MARKINGS

(Grooving for Painted Pavement Marking)

# 627.01 Description

The following sentence is added:

This work shall consist of furnishing and installing a groove in the pavement for placement of pavement markings as shown on the Plans or as directed by the Resident.

## 627.04 General

The following paragraphs are added:

Prior to grooving any recessed lines, the Contractor shall layout the proposed pavement markings on the surface course with a chalk line or other suitable method so that the Resident can inspect the locations. Once the Resident has inspected and approved the proposed striping layout, the grooves for the proposed pavement markings may be ground. No pavement grooving shall be done without the prior approval of the Resident.

The Contractor shall use gang stacked diamond tipped cutting blades that will produce a smooth texture at the bottom of the groove that will be a flat, uniform texture with minimal variation in height so that the rise in the finished groove between each bottom of the cutting blade does not exceed 10 mils in depth. The acceptability of the surface texture will be decided by the Resident and/or Manufacturer's Technical Representative.

The final depth of the groove shall be  $105 \text{ mils} \pm 5 \text{ mils}$  for paint applications. The width of the groove shall be one  $(1) \pm \frac{1}{4}$  inch wider than the width of the painted lines indicated in the Contract or as directed by the Resident. A two (2) inch offset from the edge of the recessed groove to the longitudinal surface course pavement joint is desirable. Lengths of grooves shall be determined in the Contract. Depth plates shall be provided by the contractor to assure that desired groove depth is achieved.

Grooving for Pavement Markings must have paint applied to the centerline and edge line applied according to the following guidelines:

One line grooved 48 hours of grooving Two or more lines grooved 24 hours of grooving

Under no circumstances shall this time span over a weekend or a no work period. Failure to comply with this will result in a traffic control violation until such line has been marked.

Grooves shall be clean, dry with no visible moisture, free of laitance, oil, dirt, grease, paint or other foreign contaminants. Prior to the installation of the pavement marking the grooves shall be air blasted to remove any remaining dirt and residue. The Contractor shall prevent traffic from traversing and damaging the grooves and re-groove or re-clean grooves as necessary prior to application of any pavement markings. All debris resulting from the installation of the grooves shall be removed and disposed of by the contractor.

All grooved locations shall be constructed in accordance with this specification and any additional manufacturer's recommended procedures.

# 627.09 Method of Measurement

The following paragraph is added:

The quantity of grooving for painted pavement markings measured for payment will be the number of Square Feet as shown in the Schedule of Items in the Contract. Additional measurement will not be made except for authorized changes during construction or where significant errors are found in the contract quantity. The revision or correction in quantity will be measured, computed and added to or deducted from the contract quantity. When required, grooves will be measured separately and made to the nearest square foot.

When grooving is used for sections of broken lines for acceleration/deceleration, auxiliary lanes and passing zones the length measured for payment shall include only the grooved areas. Breaks or gaps will not be included in the length measured for payment.

# 627.10 Basis of Payment

The following paragraphs are added:

The accepted quantity of grooving for painted pavement markings will be paid for at the contract unit price per square foot. Payment will be considered full compensation for all labor, equipment, necessary material to complete the described work, including cleaning, loading, hauling, stockpiling and disposal of material; and any other incidental items.

Pay Item		<u>Pay Unit</u>
627.30	Grooving for Painted Pavement Marking	Square Foot

# SECTION 627

#### PAVEMENT MARKINGS

(Temporary 6 Inch Pavement Marking Tape) (Temporary 6 Inch Black Pavement Marking Tape)

# 627.01 Description

The following sentence is added:

This work shall also consist of furnishing, placing, maintaining and removing temporary pavement marking tape at locations shown on the Plans or as directed by the Resident.

This work shall also consist of furnishing, placing, maintaining and removing temporary black pavement marking tape at locations shown on the Plans or as directed by the Resident. Temporary 6 Inch Black Pavement Marking Tape shall be used to cover conflicting existing pavement marking paint.

## 627.02 Materials

The following paragraph is added:

Temporary pavement marking tape shall be Stamark Wet Reflective Removable Pavement Marking Tape Series 710 as manufactured by 3M of St. Paul, Minnesota or an approved equal.

Temporary pavement marking tape shall be Stamark Removable Black Line Mask Tape Series 715 as manufactured by 3M of St. Paul, Minnesota or an approved equal.

#### 627.04 General

The following paragraphs are added:

Work under this item shall be in accordance with the manufacturer's recommendations. A factory representative from 3M shall be present for the first application of all temporary pavement marking tape to insure proper application and product performance.

The pavement markings shall be applied mechanically to clean dry pavement as recommended by the manufacturer and approved by the Resident.

Temporary pavement markings shall consist of applying six-inch solid white, six-inch broken white, and six-inch yellow reflectorized pavement marking tape for traffic maintenance during construction as shown on the Plans or as directed by the Resident. The temporary broken white lines on the paved surface course shall be three-foot segments spaced at 40 feet on center. These temporary broken lines shall be removed immediately prior to installation of the final broken white lines as shown on the Plans or as directed by the Resident.

Temporary pavement marking tape that loses reflectivity, becomes broken, dislodged or missing during the life of the Contract shall be replaced by the Contractor at no additional cost to the Authority.

# 627.06 Application

The following paragraphs are added:

For application of the tape, when the pavement temperature is below 50<sub>o</sub>F, heat shall be applied to the pavement surface, if deemed necessary by the factory representative or as directed by the Resident, at no additional cost to the Authority. Proper primer for the temperatures shall be used as directed by the manufacture.

The pavement mark tape shall be rolled over with a vehicle once application is complete and then scored every 20 feet when placed in long runs to prevent full length unraveling.

# 627.08 Removing Lines and Markings

The following sentence is added:

Removal of temporary pavement marking tape shall be accomplished without the use of heat, solvents, grinding or sandblasting and in such a manner that no damage to the pavement results.

#### 627.09 Method of Measurement

The following paragraph is added:

Temporary Pavement Markings - Tape will be measured for payment by the linear foot. The measurement of broken lines will not include the gaps.

#### 627.10 Basis of Payment

The following paragraphs are added:

Payment for the Temporary Pavement Markings - Tape will be made at the Contract bid price per linear foot, which price shall include furnishing, installing, maintaining and removing the temporary tape and all materials, labor, equipment and incidentals necessary to accomplish the work. Replacement of Temporary Pavement Markings - Tape, as described above, will be incidental and no separate payment will be made.

Payment for the Temporary 6 Inch Black Pavement Marking Tape will be made at the Contract bid price per linear foot installed, which price shall include furnishing, installing, maintaining and removing the temporary tape and all materials, labor, equipment and incidentals necessary to accomplish the work. Replacement of 6 Inch Black Temporary Pavement Marking Tape, as described above, will be incidental and no separate payment will be made.

Pay Item		Pay Unit
627.73 627.731	Temporary 6 Inch Pavement Marking Tape Temporary 6 Inch Black Pavement Marking Tape	Linear Foot Linear Foot

# SECTION 627

#### PAVEMENT MARKINGS

(White or Yellow Pavement Marking Line)

#### 627.01 Description

The following sentences are added:

This work shall consist of furnishing and placing the final pavement markings at locations as shown on the Plans or as directed by the Resident.

The following sentence is added:

This work shall consist of furnishing and placing pavement marking paint and temporary pavement marking paint at locations as shown on the Plans or as directed by the Resident.

# 627.02 Materials

The following is added before the last paragraph:

The paint for pavement markings shall be 100% acrylic waterbase paint.

#### <u>627.04 General</u>

Delete the fourth paragraph and replace with the following:

Broken lines shall consist of alternate 15-foot segments and 25-foot gaps of the pavement marking material indicated on the Plans or as directed by the Resident.

The following is added to the third paragraph:

Dotted white lines (DWL) shall consist of alternate 3 foot painted line segments and 9 foot gaps.

Permanent pavement marking paint shall be applied at the end of each work week prior to opening the work area to traffic or as approved by the Resident.

Temporary pavement marking paint and temporary pavement markers shall be applied daily prior to opening the work area to traffic during non-work hours or as approved by the Resident.

#### 627.08 Removing Lines and Markings

The last sentence is deleted and is not replaced.

## 627.09 Method of Measurement

The second and third sentences in the second paragraph are deleted and replaced with the following:

The measurement of broken white lines, both permanent and temporary and dotted white lines, will include the gaps when painted. Temporary painted pavement marking lines will be measured for payment by the linear foot.

## 627.10 Basis of Payment

This Subsection is deleted and replaced with the following:

The accepted quantity of white or yellow pavement marking lines will be paid at the Contract price per linear foot. This price shall include all labor and materials to furnish, and install the paint line.

The accepted quantity of broken and dotted white pavement marking lines will be paid at the Contract price per linear foot. This price shall include all labor and materials to furnish and install the paint line.

The accepted quantity of temporary white or yellow pavement marking lines will be paid at the Contract price per linear foot. This price shall include all labor and materials to furnish, install and maintain the paint marking.

Pay Item		<u>Pay Unit</u>
627.712	White or Yellow Pavement Marking Line	Linear Foot

#### SECTION 627

#### PAVEMENT MARKINGS

(Temporary Raised Pavement Markers)

#### 627.01 Description

The following sentence is added:

This work shall consist of furnishing, placing and removing temporary raised pavement markers at locations as shown on the Plans or as directed by the Resident.

# 627.02 Materials

The second paragraph is deleted and replaced with the following:

The temporary raised pavement markers shall be white or yellow one way markers (Type Tom W-1, Y-1, Grade WZ) as distributed by Davidson Plastics Co. (DAPCO), Kent, WA, or an approved equal. Colors shall conform to 2009 MUTCD requirements.

#### 627.04 General

The following sentences are added:

Temporary raised pavement markers shall be used to delineate travel lanes (BWLL) after placement of the surface course (HMA 12.5 mm).

Temporary raised pavement marker that lose reflectivity, becomes broken, dislodged or missing during the life of the Contract shall be replaced by the Contractor at no additional cost to the Authority.

The spacing and number of temporary pavement markers installed as edge lines shall be the same as shown for the BWLL on the Plans for Temporary Pavement Marking.

# 627.09 Method of Measurement

The following sentence is added:

Temporary Raised Pavement Markers will be measured by each unit, complete in place, maintained and accepted.

# 627.10 Basis of Payment

The following paragraphs are added:

The accepted quantity of Temporary Raised Pavement Markers white and/or yellow will be paid for at the Contract price each. This price shall include all labor and materials to furnish, install, maintain, and remove the markers.

<u>Pay Item</u>		Pay Unit	
627.812	Temporary Raised Pavement Markers	Each	

#### SECTION 627

#### PAVEMENT MARKINGS

(Pavement Marking Tape) (Pavement Marking Tape – Dotted White Lane Line, 6-inch Width)

#### 627.01 Description

The following sentence is added:

This work shall consist of furnishing and placing reflective pavement marking tape in conformity with the Plans, as specified herein and as directed by the Resident.

The pavement marking tape shall be installed at all locations.

#### 627.02 Materials

The following sentence is added:

For the Single White Broken Line (SWBL) and the Single White Solid Line (SWSL), Pavement Marking Tape shall be 3M Stamark<sup>TM</sup> High Performance Tape Series 380AW – High Performance pavement marking tape, color- white, six (6) inch width, as manufactured by 3M of St. Paul, Minnesota.

For the Single Yellow Solid Line (SYSL), Pavement Marking Tape shall be 3M Stamark<sup>TM</sup> High Performance Tape Series 381AW – High Performance pavement marking tape, color-yellow, six (6) inch width, as manufactured by 3M of St. Paul, Minnesota.

For the Dotted White Lane Line (DWLL), Pavement Marking Tape shall be 3M Stamark<sup>TM</sup> High Performance Tape Series 380I ES – High Performance pavement marking tape, color-white, six (6) inch wide and twelve (12) inch wide, as manufactured by 3M of St. Paul, Minnesota.

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## 627.04 General

The following paragraphs are added:

Where indicated on the Plans, the tape shall be used as a supplemental broken white lane line. The tape shall be installed between the painted Broken White Lane Line (BWLL) spaced eighty (80) foot center to center as shown on the Plans. The length of the tape shall be three (3)

feet. This shall only apply to broken white lane lines that consist of 10-foot segments and 30-foot gaps.

The tape shall also be used to mark a Dotted White Lane Line (DWLL) and shall be installed on parallel deceleration and acceleration lanes at locations as noted in the Plans. On deceleration lanes, the tape shall be installed from the beginning of the full width deceleration lane and shall extend to the theoretical gore markings. On acceleration lanes, the DWLL shall extend from the theoretical gore markings to a point one-half of the total length of the acceleration lane (including the lane taper length). Layout data is noted on the Plans. Dotted White Lane Line tape shall be three (3) foot in length and shall be spaced nine (9) feet apart. Spacing from the Solid White Lane Line (SWLL) or the Theoretical Gore Markings shall be nine (9) feet.

# 627.05 Preparation of Surface

The following paragraph is added:

The Contractor shall mill a groove in the pavement for each tape length to be placed ("in-and-out" pattern). Continuous grooving for installation of the tape shall not be allowed. The groove length shall be the required tape length plus 12 inches on both ends. Tape length spacing shall be as shown on the plans. The groove width for inlaid tape pavement marking shall be the pavement marking width plus 1 inch, with a tolerance of  $\pm \frac{1}{4}$  inch. The groove shall have a uniform depth of 150 Mils ( $\pm 20$  Mils). Groove position shall be a minimum of 2 inches from the edge of the pavement marking to the longitudinal pavement joint. The bottom of the groove shall have a smooth, flat finished surface. The use of gang stacked Diamond cutting blades is required for asphalt pavement surfaces. The spacers between blade cuts shall be such that there will be less than a 10 mil rise in the finished groove between the blades.

Grooves shall be clean, dry and free of laitance, oil, dirt, grease, paint or other foreign contaminants. The Contractor shall prevent traffic from traversing the grooves, and re-clean grooves, as necessary, prior to application of the primer and pavement marking tape. Depth plates shall be provided by the contractor to assure that desired groove depth is achieved.

Reference is made to 3M Information Folder 5.18 Grooving Applications, May 2011, "Application Guidelines for Pavement Marking in Grooved Pavement Surfaces."

## 627.09 Method of Measurements

The following paragraph is added:

The quantity of Pavement Marking Tape measured for payment will be the linear feet of tape in place and accepted. The measurement will not include the gaps.

#### 627.10 Basis of Payment

The following paragraphs are added:

The accepted quantity of pavement marking tape will be paid for at the Contract unit price per linear foot which price shall include all material, pavement grooving, equipment, labor and incidentals necessary to complete the work.

Pay Item		Pay Unit
627.94 627.941	Pavement Marking Tape Pavement Marking Tape – Dotted White Lane Line, 6-inch Width	Linear Foot Linear Foot

# SECTION 634

#### HIGHWAY LIGHTING

(Remove and Reset Light Standard)

# 634.01 Description

The following paragraph is added:

This work shall consist of removing existing light standards, luminaires, and any breakaway devices and resetting at locations as shown on the Plans.

# 634.02 General

The following paragraphs are added:

All Contract work shall be overseen by a Maine licensed Master Electrician. The lead person for the field installations shall be either a Maine licensed Master Electrician, or a Maine licensed Journeyman Electrician. Apprentice Electricians, Helper Electricians, Journeyman-In-Training Electricians, and helpers may work under the Master or Journeyman Electrician as permitted under the law.

The Contractor shall comply with National Electrical Code (NFPA 70) as applicable to construction and installation of electrical cable, wire and connectors; provide electrical cable, wire and connectors, which have been listed and labeled by Underwriters Laboratories, and comply with National Electrical Manufacturers Association/Insulated Power Cable Authorities Association Standards publications pertaining to materials, construction and testing wire cable, where applicable.

At a minimum the Contractor shall provide the following field quality control:

- Prior to energizing, check wire for continuity of circuitry and for short circuits with ohmmeter type testing equipment. Correct malfunction when detected.
- Subsequent to wire hook-ups, energize circuitry and demonstrate functioning in accordance with requirements.

#### 634.021 Materials

The following paragraphs are added:

Disconnect fuse kits in pole bases shall be Ideal SLK Disconnect Fuse Kit 30-S2212, or similar approved Ideal SLK Disconnect Fuse Kit, matched to the pole wiring configuration. All hot and neutral wires shall be fused. Ground wires do not need to be fused.

## 634.04 Cable Installation

All existing light standards that do not have a disconnect fuse kit, or have a damaged or un-suitable disconnect fuse kit in the pole base, shall have a new disconnect fuse kit installed. The work will be paid under the pay item - Disconnect Fuse Kit, Installed.

The Contractor shall advise the Authority's representative if the existing disconnect fuse kit at the pole base is damaged or un-suitable for continued use prior to proceeding with the work.

All existing light standards where the existing wire(s) at the luminaire are brittle and there is insufficient slack in the wire(s) to cut out the brittle portions of wire(s) and properly connect the new LED fixture, shall have new wire(s) installed from the new LED fixture to the (existing or new) disconnect fuse kit in the pole base.

New wire(s) between the luminaire and disconnect fuse kit at the pole base will be paid under the pay item - New Pole Wiring, Installed.

The Contractor shall advise the Authority's representative if the existing wiring between the pull box and the pole base is unsuitable for installing a disconnect fuse kit prior to proceeding with the work.

If the wiring from the pole base to the adjacent or nearest pull box needs to be replaced it will be paid as Extra Work. All Extra Work shall be authorized by the Authority before being undertaken by the Contractor. Should Extra Work be required the splices in junction boxes shall be made with ILSCO USPA-350-SS-DB Safetysub Watertight Direct Bury Splice Wire Range 350MCM-10-STR connectors for the appropriate wire count only.

# 634.051 Removing Light Standards

The first paragraph is deleted and replaced with the following:

Before removing light standards, the luminaires shall be removed from the light standard and stacked.

The Contractor will not be allowed to remove the existing light standards until all new foundations, wiring, conduits and junction boxes have been installed. Breakaway devices shall be required on all proposed light standards. If breakaway devices do not exist on the existing light standard, new breakaway devices shall be supplied and installed. For all entrance ramp, exit ramp, interchange, and toll plaza lighting locations, the Contractor will be allowed one (1) working day to remove and reset a light standard, including installing the luminaire and testing.

# 634.092 Method of Measurement

The following sentence is added:

Disconnect Fuse Kit, Installed will be measured per each, complete in place and accepted.

New Pole Wiring, Installed will be measured per each pole wired, complete in place and accepted, irrespective of the number of wires or total lineal feet of wire required to complete the work.

Removal and Resetting Light Standards will be measured by the single unit, complete in place and accepted.

# 634.093 Basis of Payment

In the second sentence of the first paragraph, the words, "LED fixture, pole wiring" shall be added after the words, "bracket arm".

The following paragraphs are added:

Payment for furnishing and installing Disconnect Fuse Kit, Installed will be made for the accepted quantity at the Contract unit price per each, which shall include furnishing and installing the fuse kit, new pole wiring from the fuse kit to the new LED fixture, and all incidentals necessary to complete the work.

Payment for furnishing and installing New Pole Wiring, Installed will be made for the accepted quantity at the Contract unit price per each pole wired, which shall include furnishing and installing the new pole wiring from the disconnect fuse kit to the new LED fixture, irrespective of the number of wires or total lineal feet of wire required to complete the work, and all incidentals necessary to complete the work.

The accepted quantity of Remove and Reset Light Standards will be paid at the Contract unit price each for the number of units that are removed and reset. Payment shall be full compensation for the removal and resetting of the light standard, including luminaires, breakaway device reset or new breakaway device installed, new pole wires, new disconnect fuse kit, and all incidentals necessary to complete the work.

Pay Item		Pay Unit
634.177	Disconnect Fuse Kit, Installed	Each
634.178	New Pole Wiring, Installed	Each
634.208	Remove and Reset Light Standard	Each

#### SECTION 645

#### **HIGHWAY SIGNING**

(Remove and Stack Sign) (Remove and Reset Sign)

# 645.07 Demounting and Reinstalling Existing Signs and Poles

The following paragraphs are added:

At locations as shown on the Plans, existing ground-mounted signs are designated to be removed and stacked. This work shall consist of removing, unbolting, and stacking existing sign panels and posts at the Authority's Sign Shop along the Turnpike Northbound at MM 58 and the excavations shall be backfilled and ground restored to the satisfaction of the Resident. Sign panels shall be stacked by approximate sizes at the Sign Shop as directed by the Authority.

Access to the Authority's Sign Shop shall be from the local roadway, Blackstrap Road. No Contractor vehicles are permitted direct access to or from the Sign Shop via the Turnpike mainline. Sign panels delivered to the Authority's Sign Shop shall be unbolted in the field and disassembled into sections not greater than 100 square feet for transport to the Sign Shop, without cutting into extruded panels.

At locations as shown on the Plans, existing ground mounted signs are designated to be removed and reset. This work shall consist of removing the sign panels, removing and resetting or disposing of the existing support equipment (wood posts or steel supports), and resetting the sign panels onto new wood or steel supports as required or as directed by the Resident.

Any existing signs not shown on the Plans are to remain in their existing condition unless directed otherwise by the Resident.

Steel H-beam supports salvaged to the Authority shall be labeled by size, shape, and length and stacked by approximate sizes at the Sign Shop as directed by the Authority. The label shall also note if the post has been drilled for mounting a breakaway kit (lower half) or breakaway splice plate (either lower half or upper half).

At locations as shown on the Plans, existing foundations to be removed shall be removed to a depth of 24 inches below final grade, including all concrete, reinforcing and anchor bolts. The removal of foundations shall include restoration of ground at the foundation locations.

#### 645.08 Method of Measurement

The following sentences are added:

Removing and stacking existing signs shall be measured as complete units each removed and stacked.

Removing and resetting signs shall be measured as complete units each removed, relocated, and reset at the new location.

# 645.09 Basis of Payment

The following paragraphs are added:

The accepted signs Removed and Stacked shall be paid for at the Contract unit price each as specified. Such price shall include removing, disassembling, and stacking sign panels and supports at the location specified, and removing any foundations that are not reused with ground restoration as specified.

The accepted signs Removed and Reset shall be paid for at the Contract unit price each as specified. Such price shall include removing and resetting sign panels, removing and resetting or disposing of existing supports, and resetting the sign onto the new supports. Any signs or supports that are indicated to be reset or reused that are damaged by the Contractor shall be replaced by the Contractor at no additional cost to the Authority.

# Payment will be made under:

Pay Item		<u>Pay Unit</u>
645.105	Remove and Stack Sign	Each
645.109	Remove and Reset Sign	Each

# SECTION 645

#### **HIGHWAY SIGNING**

(Regulatory, Warning and Bridge Number Signs, Type I - Supplied by Authority)

#### 645.01 Description

The following paragraph is added:

This work shall consist of erecting Regulatory, Warning and Bridge Number Signs furnished by the Authority and supplying and erecting any necessary sign posts as shown on the Plans or as directed by the Resident.

# 624.022 Sign Layout Drawings

This subsection is deleted and replaced with the following:

# 645.022 Authority Supplied Signs

The Maine Turnpike Authority will supply the proposed new permanent sheet aluminum signs for this project. The Contractor shall be responsible for coordinating with the MTA Sign Shop, located along the Turnpike northbound at Milepoint 58, to pick-up the signs and transport them to the job site.

#### 645.08 Method of Measurement

This subsection is deleted and replaced with the following:

Regulatory, Warning and Bridge Number Signs, Type I shall be measured by the unit complete in place and accepted.

# 645.09 Basis of Payment

This subsection is deleted and replaced with the following:

The accepted Regulatory, Warning and Bridge Number Signs, Type I – Supplied by Authority will be paid for at the Contract unit price each. Such price shall be full compensation for erecting the sign panels and supplying and erecting the necessary sign posts, pick-up and transportation of the signs from the MTA Sign Shop to the job site, and all other labor, tools, and incidentals necessary to complete the work.

# Payment will be made under:

Pay Item		Pay Unit
645.272	Regulatory, Warning and Bridge Number Signs, Type I - Supplied by Authority	Each

# SECTION 645

#### HIGHWAY SIGNING

(LED Flashing Sign)

# 645.01 Description

The following paragraph is added:

This work shall consist of furnishing and installing new light emitting diode (LED) flashing warning and regulatory signs mounted in accordance with these specifications and in reasonably close conformity with the plans. LED flashing signs shall be TAPCO Blinker Signs or approved equivalent.

#### 645.021 Materials

The following paragraphs are added:

LED flashing signs shall include a series of not less than eight (8) integral light emitting diode (LED) optical assemblies that emit light of the color appropriate to the sign. The LEDs shall be environmentally sealed, high-power units with a power output of approximately 1 watt per unit. The LEDs shall be embedded and integrated along the perimeter of the sign. LEDs shall operate at 12VDC.

LEDs shall be spaced at a rate of at least 25 percent of the sign perimeter dimension. The LEDs shall be dimmable to adjust the LED brightness in accordance with ambient light conditions. The flashing pattern shall be 50-60 flashes per minute with all LEDs flashing in unison. For regulatory signs with a red background used in a temporary traffic control situation, the LEDs shall be white. For temporary warning signs with a yellow or orange background, the LEDs shall be amber.

The sign face for the LED flashing signs shall be made of 0.080 inch sheet aluminum with Type XI microprismatic retroreflective sheeting. The sign shall include the standard MUTCD legend. For regulatory signs on a red background, the legend shall also be Type XI retroreflective sheeting. For temporary warning signs on a yellow or orange background, the legend shall be non-reflective black sheeting.

### 645.06 Installation of Type I Signs

The following paragraph is added:

c. <u>Sign Supports for LED Flashing Sign</u> Where LED flashing signs are indicated in the Contract documents, the Contractor shall install the sign on a support that complies with the

requirements of Section 645.06a and meets the manufacturer's recommendations for installation. Temporary traffic control sign installations that are in place for more than three consecutive days shall be mounted on a permanent sign support or a temporary trailer support that provides a minimum height to the bottom of the sign of seven (7) feet.

# 645.064 Installation of Sign Mounted Beacon Array

The following paragraphs are added:

LED flashing signs shall be powered by a detachable solar panel that provides 24/7 continuous operations. Electrical energy shall be stored in a battery system that provides a minimum of 5 days of autonomy under no light conditions. The solar power and battery system shall be contained in an aluminum enclosure as recommended by the manufacturer.

#### 645.08 Method of Measurement

The following paragraph is added:

LED Flashing Sign will be measured by each unit sign, complete in place, operational, maintained and accepted.

# 645.09 Basis of Payment

The following paragraph is added:

The accepted LED Flashing Sign furnished and installed will be paid for at the contract unit price per each. Such price shall be full compensation for furnishing and installing all materials, including but not limited to the LED embedded signs, the solar power and battery system, the control hardware and software, mounting hardware and sing supports, and all appurtenances and incidentals required for a complete and functional installation and for furnishing all tools and labor necessary for completing the installation.

Payment will be made under the following:

Pay Item		Pay Unit
645.511	LED Flashing Sign	Each

## SECTION 645

# **HIGHWAY SIGNING**

(Barrier Reflector)

# 645.01 Description

This Section is deleted and replaced with the following:

This work consists of furnishing and installing new barrier reflectors on the top portion of the precast concrete median barrier in accordance with these specifications and as shown on the plans, details, or as established; including all labor material, equipment and incidentals necessary to complete the work, in conjunction with the rest of the project.

#### 644.02 Materials

The reflectors shall be designed to be affixed to the top of the precast concrete median barrier by non-mechanical means, and when covered with reflective sheeting provides a directional visual cue to the location of the barrier wall and roadway. The design of the reflector shall provide twelve (12) square inches of surface area for application of retro-reflective sheeting of a specified grade during manufacture.

The T-shaped reflector shall consist of a flat rigid upper panel, to which is affixed retroreflective sheeting, and a rigid base plate. Connecting these two components shall be a clear, UV-stabilized, flexible polyurethane hinge at least 0.5" in height. The polyurethane hinge shall be both mechanically and chemically attached to both the base plate and top panel. All materials shall be new.

The reflector units shall be constructed of a UV-stabilized, high-impact rigid thermoplastic alloy conforming to the following material specifications:

Property	ASTM Test	Results
Tensile Strength @ Yield (min psi)	D638	6,400
Impact Strength @ 73F (Ft#/in) notched izod	D256	2.9
Impact Strength @ -4F (Ft#/in) notched izod	D256	2.3
Flexural Strength @ 73F (psi)	D790	12,000
Flexural Modulus @ 73F (psi)	D790	400,000

The "hinge" portion shall be constructed of a UV-stabilized, flexible thermo-plastic polyurethane conforming to the following material specifications:

Property	ASTM Test	Results
Specific Gravity (min.)	D 792	1.19
Hardness (min.)	D 2240	80 A
Tensile Strength @ yield, (min PSI)	D 412	4,600
Ultimate Elongation (min)	D 412	330
Compression Set (22 hrs @ 70° C)	D 396	65
Tear Strength (min PLI)	D 624, Die C	600
Taber Abrasion (CS17 Wheel)	100 cycles	3 mg

The polyurethane "hinge" of the reflector shall have the following minimum dimensions in relation to rigid top panel and base sections:

- Wall thickness of the rigid top panel and base sections shall be min. 0.090";
- Wall thickness of the polyurethane hinge section shall be min. 0.090";
- Total surface area of the connection of the hinge to the upper top panel shall be minimum of 0.500";
- Total surface area of the connection of the hinge to the lower base plate shall be a minimum of 0.400".
- The polyurethane hinge shall protrude vertically into the top panel.
- The polyurethane hinge shall also protrude down into the base plate.
- The un-encapsulated section of the poly-urethane hinge shall be no less than
- 0.100" thick and 0.130" tall.

The reflectors shall be constructed of UV-stabilized polymers white in color. The color shall be solid throughout and stabilized to resist UV degradation. The polyurethane "hinge" shall be natural/clear in color.

All reflectors shall have retro-reflective sheeting applied to both sides of the top panel. Reflective sheeting shall be yellow, and shall conform to the material requirements of Section 719.01 – Reflective Sheeting, for high intensity reflective sheeting. The sheeting shall be factory-applied to the reflector by the manufacturer.

#### 644.03 Construction Requirements

The Contractor shall note that it is the Department's intention for barrier reflector installation to occur concurrently with the linear installation of the precast concrete median barrier, however, the contractor may perform this work on their timing, with Resident approval. All maintenance of traffic is incidental.

There will be no separate payment for the furnishing and installation of the new barrier reflectors, but shall be considered incidental to the lump sum Pay Item 526.35 – Precast Concrete Median Barrier.

Final location for the installation of the barrier reflectors shall be in accordance with Table 1 – Spacing of Reflectors as shown on the Plans, and as approved by the Resident.

The Contractor shall operate in a manner which prevents damage to the barrier reflectors

during installation. The Contractor shall be responsible for replacement and reinstallation of barrier reflectors damaged during the Contractor's operations. No additional payment shall be made for replacement and reinstallation of barrier reflectors damaged as a result of the Contractor's operations.

# 644.04 Method of Measurement

The quantity of Barrier Reflectors shall not be measured for payment, but shall be considered incidental to Pay Item 526.35 – Precast Concrete Median Barrier.

# 644.05 Basis of Payment

No separate payment will be made. Payment shall be considered incidental to the related pay items for Median Barrier, Bridge Endpost Median Barrier Transition, and Guardrail Median Barrier Transition

# SECTION 652

#### **MAINTENANCE OF TRAFFIC**

(Truck Mounted Attenuator)

Section 652 of the Maine Turnpike Authority 2016 Supplemental Specifications is modified as follows:

### 652.1 Description

The following paragraph is added:

When a pay item for a Truck Mounted Attenuator (TMA) is included in the contract at least one TMA will be required on the project and its use will be required. The truck mounted attenuator should be utilized in lane closures and other construction operations where workers are exposed to traffic and not protected by other positive means. The Contractor shall manage the utilization and operation of the TMA and if at least one is not used as described above then it will be considered a Traffic Control Plan violation and result in a reduction of payment as outlined in Section 652.

# 652.2.1 Truck Mounted Attenuator

This section is deleted in its entirety and replaced with the following:

The truck mounted attenuator system shall conform to the following requirements:

- Truck and attached attenuator shall conform to the NCHRP Report 350, Test Level 3 criteria.
- A mounted revolving amber light or amber strobe light with 360-degree visibility.
- An arrow light bar fixed to the vehicle.
- The attenuator shall be mounted to a vehicle with a minimum weight of 10,000 lbs.

#### 652.3.7 Operations

This section is deleted in its entirety and replaced with the following:

The Contractor shall manage the operation of the truck mounted attenuator. The truck mounted attenuator should be utilized in lane closures and other construction operations where workers are exposed to traffic and not protected by positive means. The operation of the vehicle shall be in accordance with the Manual of Uniform Traffic Control Devices and the manufacturer's recommendation.

<u>Installation:</u> The chart below identifies the distance from the work zone or hazard where the TMA shall be deployed. If the work zone is within a marked lane closure, the

barrier truck distances shall apply and if the work is mobile, then shadow truck distances shall apply. The TMA shall not be located in the buffer zone. When used as a barrier, the barrier truck shall be parked in low gear with brakes applied and the front wheels turned away from the work zone and the adjacent traffic lane. For placement details, reference the Manual of Uniform Traffic Control Devices (MUTCD).

Waight of Tmale	Barrier Truck Distance from	Shadow Truck Distance from
Weight of Truck	Work Zone of Hazard	Work Vehicle or Work Zone
10,000 lbs	250 ft	300 ft
15,000 lbs	200 ft	250 ft
>24,000 lbs	150 ft	200 ft

#### 652.7 Method of Measurement

The last paragraph is deleted and replaced with:

Truck mounted attenuator shall be measured for payment by the calendar day for each calendar day that a unit is used on a travel lane or shoulder on the project, as approved by the Resident.

# 652.8.2 Basis of Payment

The last two paragraphs are deleted and replaced with:

The Truck Mounted Attenuator(s) will be paid for at the Contract unit price per calendar day for each TMA used. This price shall include all costs associated with the use of the vehicle. Payment shall include operator, fuel, truck, maintenance, flashing lights, arrow board and all other incidentals necessary to operate the vehicle.

Payment will be made under:

Pay Item		Pay Unit
652.45	Truck Mounted Attenuator	Calendar Dav

# SECTION 652

#### MAINTENANCE OF TRAFFIC

# (Automated Speed Limit Sign)

#### 652.1 Description

This special provision provides for furnishing, operating, and maintaining an Automated Trailer Mounted Radar Speed Limit Sign for project use. When a pay item for an Automated Trailer Mounted Radar Speed Limit Sign is included in the Contract at least one will be required on the project when there is a Work Zone Speed Limit in place. The Contractor shall furnish, operate, and maintain the Automated Trailer Mounted Radar Speed Limit Signs during the project operations.

652.1.1 Instruction and maintenance manuals shall be provided.

#### 652.2 Materials

# **Automated Trailer Mounted Speed Limit Sign**

Trailer mounted speed limit signs shall be self-contained units including sign assembly, flashing lights, directional radar to measure speed limits, a regulatory speed limit sign, and power supply specifically constructed to operate as a trailer-mounted sign. The preferred color of the unit shall be "construction orange".

# <u>Signs</u>

Base material for the regulatory speed limit signs shall be weather proof, rigid substrate specifically manufactured for highway signing and meet the retro-reflective sheeting application requirements of the sheeting manufacturer.

Sign text shall consist of the letters, digits and symbols either applied by stick-on or silk screen, to conform to the dimensions and designs indicated in the Contract, MUTCD and/or FHWA Standard Highway Signs. The materials and methods shall be in accordance with standard commercial processes.

"Work Zone" construction signs shall be mounted on the trailer unit above the regulatory speed limit sign. (see Appendix).

Signs and secondary signs shall follow the MUTCD for minimum mounting heights.

# Power supply

The power supply shall be either full battery power with solar panel charging (capable of maintaining a charged battery level) and 135 ampere, 12 volt deep cycle batteries, or diesel powered generator with a fuel capacity sufficient for 10 hours of continuous operation.

# Flashing Lights

Each unit shall be equipped with two mono-directional flashing lights, placed in accordance with the MUTCD, with amber lenses and reflectors, which are visible through a range of 120 degrees when viewed facing the sign. The lights, either strobe, halogen, or incandescent lamps, shall be visible for a minimum distance of one mile under daylight conditions and shall have a minimum flash rate of 40 flashes per minute. An "On" indicator light shall be mounted on the back of the signs, which is visible for at least 500 feet to provide confirmation that the flashing lights are operating.

#### Radar

The directional radar shall monitor approaching traffic only. The radar shall be capable of measuring speeds from 5 to 70 MPH at a distance of up to 1500 feet and shall have a high speed cut off thresh hold.

## **CONSTRUCTION REQUIREMENTS**

# 652.3.2 Responsibility of the Contractor

The Contractor shall furnish the Automated Trailer Mounted Speed Limit Sign as described in this Special Provision for this project.

All existing speed limit signs, which conflict with the construction zone trailer mounted speed limit signs shall be covered completely when the work zone speed limit is in place.

Automated Trailer Mounted Speed Limit Signs shall only be used when a work zone speed limit is in place. The Contractor shall manage the utilization and operation of the Automated Trailer Mounted Speed Limit Signs and if at least one is not used when work zone speed limits are in place then it will be considered a Traffic Control Plan violation and result in a reduction of payment as outlined in Section 652.

The Resident will record the actual time and location for the signs on a daily basis when the Automated Trailer Mounted Speed Limit Signs are in use.

The Automated Trailer Mounted Radar Speed Limit Sign may be placed as shown on the plans, or may replace the posted regulatory speed limit signs or may be placed at a location within the closed lane that has a reduced speed limit.

Automated Trailer Mounted Speed Limit Signs shall be delineated with retro-reflective temporary traffic control devices while in use and shall also be delineated by affixing a retro-reflective material directly on the trailer.

Upon delivery of the Automated Trailer Mounted Speed Limit Sign and before acceptance by the Authority, the Contractor shall have a representative of the manufacturer review the condition and notify the Resident in writing, of all deficiencies noted.

The Contractor shall arrange to have all necessary repairs performed at no cost to the Authority.

To avoid impairing driver vision, the Contractor shall dim the lighted speed limit readings by 50 percent during nighttime use, and restore full power lighting during daytime operation.

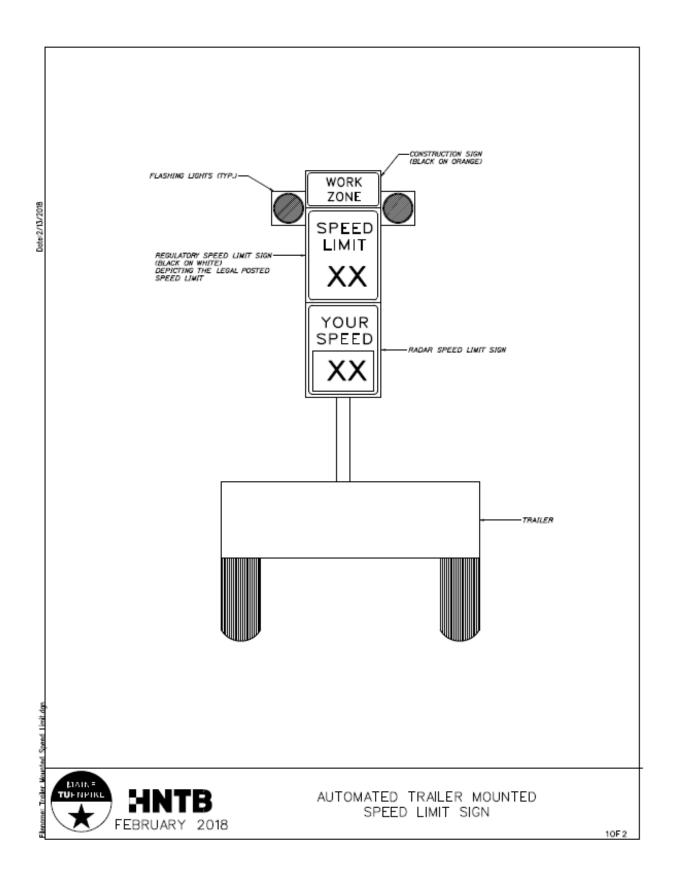
### 652.7 Method of Measurement

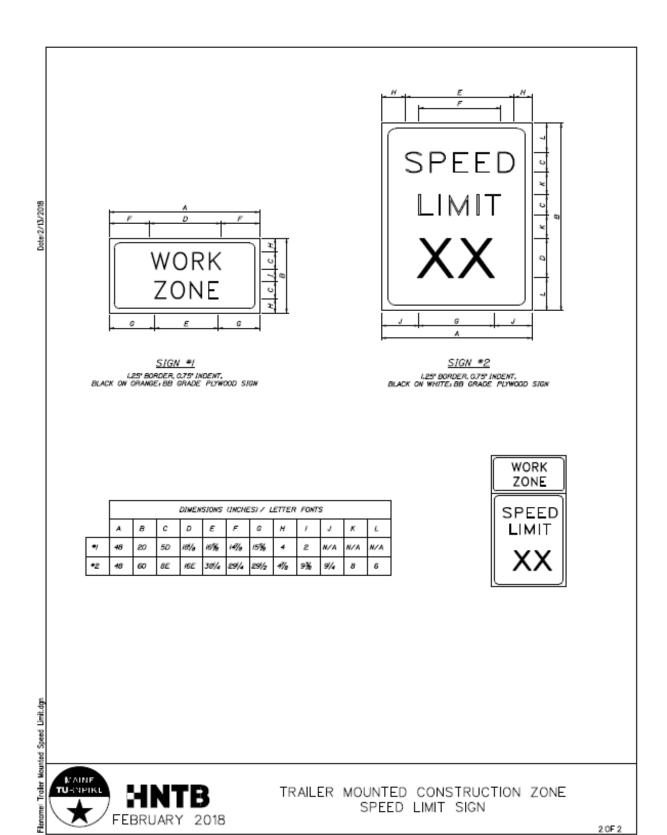
Automated Trailer Mounted Speed Limit Sign shall be measured for payment by each unit that is approved for use on the project. Payment shall include the Trailer, Radar Speed Limit Sign, flashing beacon amber lights, regulatory speed limit sign, fuel, necessary maintenance, and all checking of Radar Speed Limit Signs by manufacturer and all project moves including the transporting and delivery of the unit.

# 652.8 Basis of Payment

The Automated Trailer Mounted Speed Limit Sign(s) will be paid for at the Contract unit price per calendar day or per each. This price shall include all costs associated with the use of the Automated Trailer Mounted Speed Limit Sign.

Pay Item		Pay Unit
652.452	Automated Trailer Mounted Speed Limit Sign	Each





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#### SECTION 652

#### MAINTENANCE OF TRAFFIC

# (Temporary Portable Rumble Strips)

# 652.1 Description:

This work consists of furnishing and placing temporary portable rumble strips RoadQuake 2F TPRS or an approved equal.

#### 652.2 Materials:

Furnish a temporary portable rumble strip system, which includes a method to transport and move these to on-site locations where they will be used. The Contractor shall submit for approval, literature and all necessary certifications to the Maine Turnpike prior to procurement of the product.

#### 652.3 General:

If used, Temporary Portable Rumble Strips may not be practicable in areas where the roadway has more than two travel lanes, where volume windows do not allow for breaks in traffic to set up and monitor and adjust, or during night time lane closures.

#### Placement:

Provide rumble strips where the plans show or as directed by the Resident as follows:

Prior to placing rumble strips, clean the roadway of sand and other materials, that may cause slippage.

Place one end of the rumble strips 6 inches from the roadway centerline. Extend the strips perpendicular to the direction of travel. Ensure strips lay flat on the roadway surface.

Only one series of rumble strips, placed before the first work zone, is required per direction of travel for multiple work zones spaced 1 mile or less apart. Work zones spaced greater than 1 mile apart require a separate series of rumble strips. Each lane shall use one group of temporary rumble strips.

Bracketed "Rumble Strip Ahead" and "Bump" signs shall be utilized and will be paid for under the respective construction sign pay items.

#### Maintenance:

Maintain rumble strips as follows:

If rumble strips slide, become out of alignment, or are no longer in the wheel path of approaching vehicles during the work period, thoroughly clean both sides of the rumble strips and reset on a clean roadway.

Repair or replace damaged rumble strips immediately.

#### 652.4 Method of Measurement:

The accepted quantity of temporary portable rumble strips shall be measured by the unit complete in place, per lane closure application. A unit shall consist of 1 group of 3 full-lane width of rumble strips. As shown in the plans, a maximum of 3 units may be used at each lane closure. A unit shall be measured for each group of rumble strips, each time they are used for a lane closure.

## 652.5 Basis of Payment:

The accepted quantity of temporary portable rumble strips will be paid for at the contract unit price per unit which shall include the transport device. Payment is full compensation for providing, relocating, maintaining or replacing, and removing temporary portable rumble strips.

If the pay item is not included in the contract quantities, then the Authority does not anticipate the use of this item on the contract. If contractor wishes to utilize temporary portable rumble strips and the item is not in the contract, then the contractor may propose use of them to the Authority for consideration.

Pay Item		<u>Pay Unit</u>
652.46	Temporary Portable Rumble Strip	Unit

#### SECTION 652

# MAINTENANCE OF TRAFFIC

(Flaggers)

The following section of the Supplemental Specification Section 652 have been revised as follows:

#### Section 652.2.4 Other Devices

Paragraph five is deleted and replaced with:

STOP/SLOW paddles shall be the primary and preferred hand-signaling device. Flags shall be limited to emergencies. The paddle shall have an octagonal shape and be at least 18 inches wide with letters at least 6 inches high and should be fabricated from light semi-rigid material. All STOP/SLOW Paddles.

STOP / SLOW paddles shall have high intensity prismatic retro reflective sheeting Type XI, have an octagonal shape on a rigid handle and shall be at least 18 inches wide with letters at least 6 inches high and shall be constructed from light semi-rigid material. The STOP (R1-1) face shall have white letters and a white border on a red background. The SLOW (W20-8) face shall have black letters and a black border on an orange background. Paddles in existing stock meeting the current specification (Type VII, Type VIII, or Type IX) may be utilized until the end of the service life or until 12/31/18. All new paddles must meet the Type XI requirements."

# Section 652.4 Flaggers

Last sentence in first paragraph is deleted and replaced with:

Only flashing SLOW/STOP paddles meeting the requirements outlined in the MUTCD shall be used and the flagger station shall be illuminated to assure visibility in accordance with 652.6.2.

Add:

Flaggers shall not stop traffic on Turnpike mainline or interchange ramps. Only State Police are allowed to stop traffic on mainline or interchange ramps.

# 652.7 Method of Measurement

Add:

The measurement of Flaggers will be strictly limited to the following work activities: when Warren Avenue traffic is reduced to a single lane with alternating two-way traffic and during the installation and removal of bridge shielding along Warren Avenue.

All other uses of Flaggers will not be measured for payment but shall be incidental to the Maintenance of Traffic Control Devices item. This includes use of Flaggers for the delivery of materials and equipment to the project or other Flagger use that is for the Contractor's convenience, as determined by the Resident Engineer.

# SECTION 652

#### MAINTENANCE OF TRAFFIC

(Specific Project Maintenance of Traffic Requirements)

This Specification describes the specific project maintenance of traffic requirements for this Project.

The following minimum traffic requirements shall be maintained. These requirements may be adjusted based on the traffic volumes when authorized by the Authority.

# Warren Avenue Traffic Control Requirements

Warren Avenue shall be maintained open with at least two lane, two-way traffic during daylight hours in accordance with the details shown on the Plans and as described in Special Provision 652, Table B. Flaggers may be used as indicated in the Special Provision 652, Flaggers. When Flaggers are present, the alternating two-way traffic shall be maintained on a single lane of at least 14 feet wide.

For work that will be done below the bridge, specific traffic control plans have been developed to maintain traffic along Warren Avenue. The Contractor shall maintain full access to all existing driveways throughout construction.

For removal or installation of structural steel only, Warren Avenue in the vicinity of the bridges may be fully closed to all traffic between the hours of 10 p.m. and 5 a.m. Temporary road closures will be permitted upon submission of a written request to the Resident Engineer at least one week prior to the scheduled work. Before the roadway is reopened all materials shall be secured so they will not endanger the traffic passing underneath. A temporary detour shall be established and maintained during the Warren Avenue night time closures in accordance with the Warren Avenue Detour Plan. The detour route begins at the Warren Avenue bridge; following Warren Avenue to the Riverside Street intersection; continuing along Riverside Street to the Forest Avenue intersection; and continuing along Forest Avenue to Warren Avenue. Local (City of Portland) Traffic Officers shall be used along Warren Avenue during the roadway closures for the removal or installation of structural steel and paid for under Item 652.381. Traffic Officers along Warren Avenue used for any other purpose shall not be paid for but shall be incidental to the Maintenance of Traffic Control Devices item.

### Maine Turnpike Traffic Control Requirements

This Section outlines the minimum requirements that shall be maintained for work on, over, or adjacent to the Maine Turnpike roadway. A multi-phased maintenance of traffic control plan has been developed to facilitate construction. This maintenance of traffic control maintains two lanes of travel in each direction, utilizing lane shifts with concrete barrier to isolate the work zone from the travel lanes. However, there is one sub-phase (Phase 3B) where lane closures will be

required both northbound and southbound. This work may only occur at night. Turnpike lane closures shall be removed if construction is not ongoing. Unattended lane closures are not allowed.

Where traffic barrier is proposed in the maintenance of traffic control plans, the Contractor shall be responsible for snow plowing and snow removal within the project limits. Winter snow removal within the contract shall be incidental to the Maintenance of Traffic Control Devices item. The Contractor shall provide, to the maximum extent possible, a minimum of six (6) feet of right-side shoulder between November 15<sup>th</sup> and April 1<sup>st</sup> during construction. Additional shoulder width shall be provided by relocating or removing concrete barrier when safe to do so as determined by the Resident Engineer.

Loading/unloading trucks shall not be closer than six (6) feet from an open travel lane when being loaded or unloaded within the work zone. This restriction also applies to work that occurs adjacent to a concrete barrier.

Bridge work directly over traffic or within six feet of a travel lane as measured from the painted pavement marking line or traffic control device will require a lane closure. Loading/unloading trucks shall not be closer than six feet from an open travel lane when being loaded or unloaded within the work zone. This work includes but is not limited to the following:

- 1. Installing and removing shielding
- 2. Superstructure demolition
- 3. Unbolting structural steel
- 4. Removing structural steel
- 5. Erecting structural steel or concrete beams
- 6. Installing and removing deck and diaphragm forms
- 7. Erecting or moving sign panels on bridges
- 8. Bolting structural steel
- 9. Painting structural steel

When approved by the Resident, Items 3, 6 and 8 may be performed over traffic if a temporary floor is provided between the bottom flanges of the beams.

<u>During the erection or removal of structural steel traffic shall</u> be stopped and may be held for periods of up to 25 minutes during these operations. Before the roadway is reopened, all materials shall be secured so they will not endanger traffic passing underneath. The Contractor will reimburse the Authority at the rate of \$2,500.00 per five-minute period for each roadway not reopened (northbound and southbound), in excess of the 25 minute limit. Total penalty shall be deducted from the next pay estimate.

<u>Night work</u> is expected and will be permitted upon submission of a written request to the Resident Engineer at least one week prior to the scheduled work. Alternatively, the Contractor may submit a schedule for night work at least one week prior to the first night of work for review and approval by the Resident Engineer. Night work shall require a lighting plan submitted to the Resident Engineer for approval.

#### Shoulder Closures – General

Shoulder closures lasting more than three consecutive days shall use temporary concrete barrier to protect the work area and workers as shown in the maintenance of traffic details. Drums and barrier shall not impede on the width of the adjacent through lane.

The specific project maintenance of traffic control plans includes long-term shoulder closures with concrete barrier and single lane closures for the work that will occur on or adjacent to the Turnpike.

Shoulder closures (without concrete barrier) shall maintain a minimum of four (4) feet of lateral buffer from an open travel lane when in place.

Temporary lane closures are expected and will be permitted upon submission of a written request to the Resident Engineer at least one week prior to the scheduled lane closure. Temporary lane closures that would restrict travel to one lane in either direction shall be conducted at night in accordance with the limitations shown in Table A below. Travel lanes may not be impeded by traffic control devices until the time frames specified for each activity. Supplemental liquidated damages shall be assessed at \$1,000/minute for every minute that a temporary lane closure is in place outside of the times presented in Table A.

Construction vehicles that merge with Turnpike mainline traffic shall not impede the flow of traffic along the Turnpike. Construction vehicles are prohibited from merging with Turnpike mainline traffic during peak hours, to be defined as Monday through Friday between 6:00 a.m. and 9:00 a.m. and between 3:30 p.m. and 6:30 p.m. Additionally, construction vehicles are prohibited from merging with Turnpike mainline traffic after noon on Fridays between June 21<sup>st</sup> and September 8<sup>th</sup> unless the merge occurs at an interchange.

There shall be no temporary lane or shoulder closures permitted along the Turnpike over the following dates:

- April school vacation week 2019 (April 15<sup>th</sup> April 19<sup>th</sup>)
- May 24-28, 2019
- July 3-8, 2019
- August 30-September 3, 2019
- October 11-15, 2019
- November 27-December 2, 2019
- February school vacation week 2020 (TBD)
- April school vacation week 2020 (TBD)
- May 29-June 1, 2020
- July 3-6, 2020
- September 4-8, 2020
- October 10-14, 2020

# TABLE A: WARREN AVENUE OVERPASS (MM 49.00)

# Turnpike Mainline Northbound April 15, 2019 to May 23, 2019 September 3, 2019 to May 28, 2020 September 8, 2020 to November 20, 2020

		Turnpike Shoulder Closures	Turnpike Single Lane Closures	Removing / Erecting Structural Steel
Days of Week:	Sunday p.m. through Friday a.m.			
Time of Day:	7:30 p.m. to 6:00 a.m. next day	Allowed	Allowed	
Time of Day:	10:00 p.m. to 5:00 a.m. next day	Allowed	Allowed	Allowed
Days of Week:	Friday p.m. through Saturday a.m.			
Time of Day:	9:00 p.m. to 8:00 a.m. next day	Allowed	Allowed	
Time of Day:	10:00 p.m. to 5:00 a.m. next day	Allowed	Allowed	Allowed
Days of Week:	Saturday			
Time of Day:	Anytime	Allowed		
Days of Week:	Saturday p.m. through Sunday a.m.			
Time of Day:	6:30 p.m. to 11:00 a.m. next day	Allowed	Allowed	
Time of Day:	10:00 p.m. to 5:00 a.m. next day	Allowed	Allowed	Allowed
Days of Week:	Sunday			
Time of Day:	Anytime	Allowed		

# Turnpike Mainline Southbound April 15, 2019 to May 23, 2019 September 3, 2019 to May 28, 2020 September 8, 2020 to November 20, 2020

		Turnpike Shoulder Closures	Turnpike Single Lane Closures	Removing / Erecting Structural Steel
Days of Week:	Sunday p.m. through Friday a.m.			
Time of Day:	7:30 p.m. to 6:00 a.m. next day	Allowed	Allowed	
Time of Day:	10:00 p.m. to 5:00 a.m. next day	Allowed	Allowed	Allowed
Days of Week:	Friday p.m. through Saturday a.m.			
Time of Day:	7:00 p.m. to 8:00 a.m. next day	Allowed	Allowed	
Time of Day:	10:00 p.m. to 5:00 a.m. next day	Allowed	Allowed	Allowed
Days of Week:	Saturday			
Time of Day:	Anytime	Allowed		
Days of Week:	Saturday p.m. through Sunday a.m.			
Time of Day:	6:30 p.m. to 9:00 a.m. next day	Allowed	Allowed	
Time of Day:	10:00 p.m. to 5:00 a.m. next day	Allowed	Allowed	Allowed
Days of Week:	Sunday			
Time of Day:	Anytime	Allowed		

# Turnpike Mainline, Northbound and Southbound May 24, 2019 to September 2, 2019 May 29, 2020 to September 7, 2020

		Turnpike Shoulder Closures	Turnpike Single Lane Closures	Removing / Erecting Structural Steel
Days of Week:	Sunday p.m. through Friday a.m.			
Time of Day:	10:00 p.m. to 6:00 a.m. next day	Allowed	Allowed	
Time of Day:	10:00 p.m. to 5:00 a.m. next day	Allowed	Allowed	Allowed
Days of Week:	Friday p.m. through Saturday a.m.			
Time of Day:	10:00 p.m. to 8:00 a.m. next day	Allowed	Allowed	
Time of Day:	10:00 p.m. to 5:00 a.m. next day	Allowed	Allowed	Allowed
Days of Week:	Saturday			
Time of Day:	Anytime	Allowed		
Days of Week:	Saturday p.m. through Sunday a.m.			
Time of Day:	8:30 p.m. to 9:00 a.m. next day	Allowed	Allowed	
Time of Day:	10:00 p.m. to 5:00 a.m. next day	Allowed	Allowed	Allowed
Days of Week:	Sunday			
Time of Day:	Anytime	Allowed		

TABLE B: WARREN AVENUE - FLAGGING

Warren Avenue March 11, 2019 to November 15, 2020				
		Reduce Traffic to Single Lane using Flaggers		
Days of	Sunday p.m. through Friday			
Week:	a.m.			
Time of Day:	7:00 p.m. to 6:00 a.m. next day	Allowed		
Days of	Monday through Friday			
Week:	(daytime)			
Time of Day:	9:00 a.m. to 3:30 p.m.	Allowed		

# 652.7 Method of Measurement

The following paragraph is added:

Traffic control devices required to complete the work will be measured for payment under their respective pay items. Installation, maintenance, and removal of traffic setups, the Contractor's dedicated traffic employee, the use of Flaggers for the Contractor's convenience, and the winter maintenance of the traffic control through the concrete barrier sections will not be measured separately for payment, but shall be incidental to Item 652.361, Maintenance of Traffic Control Devices.

# SECTION 655

### **ELECTRICAL WORK**

(AWG Wire)

The following Section is added:

# 655.01 Description

This task shall include the providing and installation of the AWG wire, as described herein for clean and dirty power wiring, for grounding wires (where applicable) and other locations called for in the plans/specifications. All wire installed in conduit must be burial grade, suitable for wet locations.

# 655.05 Measurement of Payment

The quantity of AWG Wire will not be measured for payment, but shall be considered incidental to Pay Item 634.208 Remove and Reset Light Standard.

# 655.06 Basis of Payment

No separate payment will be made. Payment shall be considered incidental to the related lighting pay items.

#### SECTION 719

### SIGNING MATERIAL

# Section 719.01 Reflective Sheeting

This Subsection is deleted in its entirety and replaced with the following:

Retroreflective sheeting for signs shall meet at a minimum the requirements for ASTM 4956 – Type XI (Prismatic) manufactured by 3M Company, for all signs.

Reflective sheeting, used in sign construction, shall have been manufactured within the six months immediately prior to the fabrication of each sign. Upon delivery at the job site of each shipment of signs, a letter of certification shall be provided that the reflective sheeting conforms to the requirements.

Signs may only be covered using materials and techniques explicitly approved by the sheeting manufacturer for that purpose and shall not alter the sign sheeting warranty.

For Type 1 Guide Signs, all reflective sheeting shall be color matched on each sign unit.

All warning signs shall be fluorescent yellow except for Ramp Advisory Speed signs which shall be yellow.

All Construction Series signs that use orange backgrounds shall be fluorescent orange.

All Pedestrian Signs shall be fluorescent yellow-green.

EZ-PASS Purple shall conform to the FHWA Purple color box.

#### 719.02 Demountable High Intensity Reflectorized Letters, Numerals, Symbols, and Borders

This Subsection, including the title, is deleted in its entirety and replaced with the following:

### 719.02 Direct Applied Reflectorized Letters, Numerals, Symbols, and Borders

Direct applied letters, numerals, symbols and borders shall consist of cut out sheeting that shall meet at a minimum the requirements for ASTM 4956 – Type XI (Prismatic) sheeting. The sheeting material used for the direct applied legend shall be the same type as used for the background.

#### SECTION 830

## HORIZONTAL DIRECTION DRILLING

(18" HDPE CULVERT)

The following section is added:

# 830.01 Description

This work shall consist of using Horizontal Directional Drilling (HDD) method to furnish and install an underground utility/facility/product/pipe/conduit (referred to as product pipe in the rest of this section). The installation is according to the sizes and limits shown on the plans and specified by this Special Provision. The work includes all services, equipment, materials, tools, and labor for a complete and proper installation, and testing.

### 830.02 Materials

Select the product pipe material according to the type of product indicated on the plans. The product pipe must comply with all applicable MTA and MaineDOT specification sections and ASTM standards depending on the purpose and material of the product pipe. Join the pipe sections so that the joined pipe sections are installable using HDD. Ensure that the joined product pipes have adequate strength and flexibility to withstand the installation stresses, overburden pressures, and operating pressures without compromising the structural stability of the pipe wall. Ensure that the product pipe meets the bend radius required for the proposed installation. Join the pipe sections so that the inner surfaces are flush and even.

The following material standards are the minimum in place standards.

Material Standards for HDD Installation				
Material Type	Non-Pressure	Pressure		
Polyethylene (PE)	ASTM D 2447	ASTM D 2513 ASTM D 2447		
High Density	ASTM D 2447 ASTM D	ASTM D 2447 ASTM D 3350		
Polyethylene (HDPE)	3350 ASTM F714	ASTM F714 ASTM 2513		
Polyvinyl-Chloride (PVC)	ASTM F 789	ASTM D1785 ASTM D2241		
Steel	ASTM A139 Grade B <sup>(1)</sup>	AWWA C200 API 2B <sup>(2)</sup>		

- (1) No hydrostatic test required
- (2) Dimensional tolerances only

Detection Wire shall be electronic detection material for non-conductive piping products. Select tracer wire designed for HDD to conductively locate underground utility lines according to ASTM D-1248. Use either a continuous green sheathed solid conductor copper wire line (minimum #12 AWG for external placement) or a coated conductive tape. Select a minimum 12-gauge copper clad steel wire and able to withstand the installation tension along the entire length of the line.

## 830.03 Submittals

Work Plan: Prior to beginning work, submit to the Resident a Work Plan detailing the procedure and schedule to execute the project. The work plan will be comprehensive, realistic, and based on actual working conditions for this particular project. The work plan documents the planning required to successfully complete the project. The work plan includes complete descriptions of proposed plans, procedures, equipment, personnel, and if applicable, supporting material, for the following:

- 1. Drilling operations: describe the pilot hole drilling procedure, the reaming operation, the pullback procedure, and illustrate the plan
- 2. Profile of the bore plotted at a scale appropriate for the crossing and acceptable to the Resident.
- 3. HDD site layout including entry and exit points.
- 4. Directional drilling equipment list includes: drilling rig, drill bit, back-reamer, mud mixing and pumping systems, down-hole tools, guidance system, and rig safety system. Provide calibration records for guidance equipment.
- 5. Drilling fluid management plan: drilling fluid types and specifications, cleaning and recycling equipment, estimated flow rates, procedures for minimizing drilling fluid escape, and the method/location for final disposal of waste drilling fluids. Provide the MSDS for all drilling fluid additives that will be used.
- 6. Pipe storage and handling details.
- 7. Pipeline assembly and installation procedures.
- 8. MSDS of any potentially hazardous substances to be used.
- 9. Documentation of training and relevant experience of personnel shall be submitted. Indicate the number of years and/or projects that each individual has completed.
- 10. The Contractor shall indicate the environmental control devices that will be employed to ensure that no slurry or hydraulic fluids enter the drainage ditches on either side of the turnpike mainline or the interchange roadways. The manner by which slurry will be introduced and captured for proper disposal shall be outlined.
- 11. Contingency plans for possible problems.

Submit supporting calculations, certifications, or material demonstrating the strength of the product pipes for acceptance before the beginning of the installation.

If site conditions change and require modification to the work plan, resubmit revised drilling plans to achieve successful installation. Explain, in the revised submittal, the anticipated and encountered conditions that mandated the change in plans.

Warranty: A five-year warranty shall be provided on the work.

### 830.04 Installation

Have a representative who is thoroughly knowledgeable of the equipment, boring and the MTA procedures, present at the job site during the entire installation and available to address

immediate concerns and emergency operations. Do not begin installation until the Resident has reviewed the job site and agrees that proper preparations have been made.

# 830.05 Equipment

The directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the bore and pullback the conduit; a drilling fluid mixing & delivery system of sufficient capacity to successfully complete the crossing; a guidance system to accurately guide boring operations; and trained and competent personnel to operate the system. All equipment shall be in good, safe operating condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this Project.

<u>Drilling Rig:</u> The directional drilling machine shall consist of a hydraulically powered system to rotate, push, and pull conduit into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) bead. The machine shall be anchored or secured to the ground to withstand the pulling, pushing and rotating pressure required to complete the crossing. The hydraulic power system shall be self-contained with sufficient pressure and volume to power drilling operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pullback pressure during pull-back operations.

<u>Drill Head</u>: The drill head shall be steerable by changing its rotation and shall provide the necessary cutting surfaces and drilling fluid jets. The drill bit shall be equipped with a signal generator providing constant output for continuous path monitoring.

<u>Mud Motors (if required):</u> Mud motors shall be of adequate power to turn the required drilling tools.

<u>Drill Pipe:</u> Drill pipe shall be constructed of high-quality tubing with threaded box and pins.

### 830.06 Guidance System

The guidance system shall be of a proven type and shall be setup and operated by personnel trained and experienced with this system. The Operator shall be aware of any magnetic anomalies and shall consider such influences in the operation of the guidance system if using a magnetic system.

# 830.07 Drilling Slurry

Mixing System: A self-contained, closed, drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid composed of bentonite clay, potable water and appropriate additives. Mixing system shall be able to molecularly shear individual bentonite particles from the dry powder to avoid clumping and ensure thorough mixing. The drilling fluid reservoir tank shall be sized for adequate storage of the mud. Mixing system shall continually agitate the drilling fluid during drilling operations.

<u>Drilling Fluids</u>: Contractor shall supply and/or arrange for connection to supply water for mixing drilling fluid. Drilling fluid shall be composed of clean water and an appropriate additive. Water shall be from a clean source with a pH of 8.5-10 and/or as per mixing requirements of the Manufacturer. Water of a lower pH or with excessive calcium shall be treated with the appropriate

amount of sodium carbonate or equal. The water and additives shall be mixed thoroughly and be absent of any clumps or clods. A bentonite based drilling slurry shall be utilized which may include polymer extenders. The slurry shall be a mixture that will harden into a stable clay substance around the outside of the product pipe, leaving no voids and allowing no settlement of ground after installation. No hazardous additives may be used. Drilling fluid shall be maintained at a viscosity sufficient to suspend cuttings and maintain the integrity of bore wall. The slurry shall be recycled to minimize material and water requirements.

Delivery System: The mud pumping system shall have a minimum capacity to supply mud in accordance with the drilling equipment pull-back rating at a constant required pressure. The delivery system shall have filters in-line to prevent solids from being pumped into the drill pipe. Connections between the pump and drill pipe shall be relatively leak-free. Used drilling fluid and drilling fluid spilled during drilling operations shall be contained and properly disposed of. A berm, minimum of 12" high, shall be maintained around drill rigs, drilling fluid mixing system, entry and exit pits and drilling fluid recycling system (if used) to prevent spills into the surrounding environment. Pumps and or vacuum truck(s) of sufficient size shall be in place to convey excess drilling fluid from containment areas to storage facilities.

## 830.08 Commencement of Work

The Submittal Package shall be approved by the Resident prior to starting work. The Resident must be notified seven (7) days in advance of starting work. All personnel shall be fully trained in their respective duties as part of the directional drilling crew and in safety.

Prior to any alterations to work-site, Contractor shall photograph or video tape entire work area, including entry and exit points. The Contractor shall also survey the cross-section of the roadway for a distance of 20 feet to each side of the proposed drilling operation. Obtain grade elevations across the roadway no less than 10 in number, which shall be taken at the edge of pavements and at accessible lane lines. One (1) copy of the elevations shall be given to the Resident and one (1) copy shall remain with the Contractor for a period of one year following the completion of the Project.

Work site as indicated on the drawings, within the right-of-way, shall be graded or filled to provide a level working area. No alterations beyond what is required for operations are to be made. Contractor shall confine all activities to designated work areas. No construction equipment shall be located within the 10 feet of the edge of pavement without approval from the Resident.

Entire drill path shall be accurately surveyed with entry and exit stakes placed in the appropriate locations within the areas indicated on drawings. If Contractor is using a magnetic guidance system, drill path will be surveyed for any surface geo-magnetic variations or anomalies.

Contractor shall place silt fence between all drilling operations and any drainage, wetland, waterway or other area designated for such protection by Contract Documents, State, Federal and local regulations. Hydraulic fluid and slurry is not permitted to enter any drainage ditch or water feature on-site. Additional environmental protection necessary to contain any hydraulic or drilling slurry shall be put in place, including berms, liners, sump pumps, turbidity curtains, and other measures. Contractor shall adhere to all applicable environmental regulations. Fuel or oil may not be stored in bulk containers within 200 feet of any water-body or wetland. Contractor shall adhere

to all applicable State, Federal and local safety regulations and all operations shall be conducted in a safe manner. Safety meetings shall be conducted at least weekly with a written record of attendance and topic submitted to Resident.

# 830.09 Drilling Procedure

The drilling alignment shall conform to the lines and grades indicated on the Drawings or as directed by the Resident. Ground entry and exit points shall be as shown on the Drawings or as approved. The depth of the bore head shall be monitored every 12 feet to 20 feet as dictated by traffic control. No monitoring shall be allowed in an active traffic lane. Directional bore depths less than 10 feet in areas of bedrock may be allowed but shall be approved by the Resident prior to drilling.

Drill the pilot hole along the path shown on the plans and profile drawings within the allowable tolerance of the type of utility. Drainage pilot holes shall be at the line a grade shown on the plans or as approved by the Resident. In the event that pilot does deviate from bore path so much that the requirements of the contract can no longer be met, the Contractor will notify Resident and Resident may require Contractor to pullback and re-drill from the location along bore path before the deviation. Any alterations to the proposed plan to meet pilot hole deviations or re-drilling shall be done at no extra cost to the Authority.

In the event that a drilling fluid fracture, inadvertent returns, or returns loss occurs during pilot hole drilling operations, Contractor shall cease drilling, wait at least 30 minutes, inject a quantity of drilling fluid with a viscosity exceeding 120 seconds as measured by a March Funnel and then wait another 30 minutes. If mud fracture or returns loss continues, Contractor will cease operations and notify Resident. Resident and Contractor will discuss additional options and work will then proceed accordingly.

Upon successful completion of the pilot hole, Contractor will ream bore hole to no greater than 25 percent of the outside diameter of the product pipe using the appropriate tools. Contractor will not attempt to ream at one time more than the drilling equipment and mud system are designed to safely handle. After successfully reaming bore hole to the required diameter, Contractor will pull the product pipe through the bore hole. In front of the product pipe will be a swivel. Once pullback operations have commenced, operations must continue without interruption until product pipe is completely pulled into borehole. During pullback operations, Contractor will not apply more than the maximum safe product pipe pull pressure at any time. The Contractor shall not exceed the allowable bending radius of the product pipe as specified by the product pipe manufacturer. In the event that product pipe becomes stuck, Contractor will cease pulling operations to allow any potential hydro-lock to subside and will commence pulling operations. If product pipe remains stuck, Contractor will notify Resident. Resident and Contractor will discuss options and then work will proceed accordingly. In the event that the Contractor must abandon the drill hole before completion of the crossing, the Contractor will seal the hole and re-drill the crossing at no extra cost to the Authority.

#### 830.10 Site Restoration

Following drilling operations, Contractor will demobilize equipment and restore the work site to original condition. All excavations will be backfilled and compacted to 95 percent of

original density. Landscaping will be restored to original condition. All mud, cuttings, and slurry shall be properly contained, collected, and disposed of by the Contractor.

# 830.11 Record Keeping and Close Out

<u>As-Builts:</u> Contractor shall maintain a daily project log of drilling operations and a guidance system log with a copy given to Resident at completion of the Project. A final survey of elevations shall be completed by the Contractor of the mainline and ramp cross-section which shall accompany the as-built drawings.

The Authority shall have access at all times to any measuring or gauging devices used for the horizontal drilling operation, as well as any drilling logs maintained by the Contractor.

#### 830.12 Method of Measurement

Directional drilling will be measured by the horizontal linear foot.

# 830.13 Basis of Payment

The accepted quantity of Horizontal Directional Drilling will be paid for at the Contract unit price per horizontal linear foot. No adjustment will be made for vertical depth or parabolic draping of the drilled hole or for encountering ledge. Payment shall be full compensation for product pipe, labor, equipment and materials to complete the surveying, excavations, pits, drilling, environmental controls, installation, and site restoration. Payment shall also include full compensation for disposing of unsuitable and surplus soils, slurry, and materials.

Payment will be made under:

Pay Item		Pay Unit
830.279	Horizontal Directional Drilling, 18-inch HDPE Culvert	Linear Foot

# APPENDIX A

ACOE Category 2 Permit and General Permit Standards and Conditions

# APPENDIX B

Section 11 – State Transportation Facilities Permit by Rule Regulations

#### APPENDIX C

MS4 Procedures and Plans

## APPENDIX D

Portland Water District Water Main Replacement Contract Documents

# APPENDIX E

Lead Determination Report

## APPENDIX A

ACOE Category 2 Permit and General Permit Standards and Conditions



#### **DEPARTMENT OF THE ARMY**

NEW ENGLAND DISTRICT, CORPS OF ENGINEERS 696 VIRGINIA ROAD CONCORD, MASSACHUSETTS 01742-2751

#### MAINE GENERAL PERMIT (GP) **AUTHORIZATION LETTER AND SCREENING SUMMARY**

SEAN DONAHUE

MAINE TURNPIKE AUTHORITY 2360 CONGRESS STREET	CORPS PERMIT #NAE-2018-03016  CORPS GP ID#18-750  STATE ID# PBR
PORTLAND, MAINE 04102	STATE ID#
DESCRIPTION OF WORK:  Fill approximately 67,350 s.f. (1.55 acres) of freshwater we the Maine Turnpike at Portland, Maine in order to rehabili	
work is shown on the attached plans entitled "Maine Turn	pike Authority, Exit 103 Open Road Tolling" in one
sheet undated and "WARREN AVENUE OVERPASS REHABI	LITATION" in 15 sheets dated "11/1/18".
AT/LONG COORDINATES : 43.686535° N N70.32	2998° W USGS QUAD: PORTLAND WEST, ME
. CORPS DETERMINATION:	
Based on our review of the information you provided, we have determined that you are a same and wetlands of the United States. Your work is therefore authorized	
Permit, the Maine General Permit (GP). Accordingly, we do not plan to take a	any further action on this project.
You must perform the activity authorized herein in compliance with all the terms and any conditions placed on the State 401 Water Quality Certification including including the GP conditions beginning on page 5, to familiarize yourself with its dequirements; therefore you should be certain that whoever does the work fully a conditions of this authorization with your contractor to ensure the contractor can	any required mitigation]. Please review the enclosed GP carefully, contents. You are responsible for complying with all of the GP understands all of the conditions. You may wish to discuss the
f you change the plans or construction methods for work within our jurisdiction, uthorization. This office must approve any changes before you undertake then	
Condition 38 of the GP (page 16) provides one year for completion of work that of the GP on October 13, 2020. You will need to apply for reauthorization for an 2021.	has commenced or is under contract to commence prior to the expiration by work within Corps jurisdiction that is not completed by October 13,
This authorization presumes the work shown on your plans noted above is in was submit a request for an approved jurisdictional determination in writing to the un	
No work may be started unless and until all other required local, State and Fedimited to a Flood Hazard Development Permit issued by the town if neces	
I. STATE ACTIONS: PENDING [ X ], ISSUED [ ], DENIED [ ]	DATE
APPLICATION TYPE: PBR: X , TIER 1: , TIER 2: , TIER 3	:, LURC: DMR LEASE: NA:
II. FEDERAL ACTIONS:	
IOINT PROCESSING MEETING: 12/13/18 LEVEL OF REVI	EW: CATEGORY 1: CATEGORY 2:_ X
AUTHORITY (Based on a review of plans and/or State/Federal applications):	SEC 10, 404X 10/404, 103
EXCLUSIONS: The exclusionary criteria identified in the general permit do no	ot apply to this project.
FEDERAL RESOURCE AGENCY OBJECTIONS: EPA_NO_, USF&WS	S_NO, NMFS_NO
f you have any questions on this matter, please contact my staff at 207-623-836 you, we would appreciate your completing our Customer Service Survey located	67 at our Augusta, Maine Project Office. In order for us to better serve at at <a href="http://corpsmapu.usace.army.mil/cm">http://corpsmapu.usace.army.mil/cm</a> apex/f?p=136:4:0
LINDSI  LINDSI	3 19 19 EY E LEFEBYRE DATE

JAY L. CLEMENT SEMIOR PROJECT MANAGER MAINE PROJECT OFFICE

LINDSEY E. LEFEBVRE DAT CHIEF, PERMITS & ENFORCEMENT BRANCH

**REGULATORY DIVISION** 



# PLEASE NOTE THE FOLLOWING CONDITIONS FOR DEPARTMENT OF THE ARMY GENERAL PERMIT NO. NAE-2018-03016

- 1. This authorization requires you to 1) notify us before beginning work so we may inspect the project, and 2) submit a Compliance Certification Form. You must complete and return the enclosed Work Start Notification Form(s) to this office at least two weeks before the anticipated starting date. You must complete and return the enclosed Compliance Certification Form within one month following the completion of the authorized work and any required mitigation (but not mitigation monitoring, which requires separate submittals).
- 2. The permittee shall assure that a copy of this permit is at the work site whenever work is being performed and that all personnel performing work at the site of the work authorized by this permit are fully aware of the terms and conditions of the permit. This permit, including its drawings and any appendices and other attachments, shall be made a part of any and all contracts and sub-contracts for work which affects areas of Corps of Engineers' jurisdiction at the site of the work authorized by this permit. This shall be done by including the entire permit in the specifications for the work. If the permit is issued after construction specifications but before receipt of bids or quotes, the entire permit shall be included as an addendum to the specifications. The term "entire permit" includes permit amendments. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions of the entire permit, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps of Engineers jurisdiction.
- 3. Adequate sedimentation and erosion control devices, such as geotextile silt fences or other devices capable of filtering the fines involved, shall be installed and properly maintained to minimize impacts during construction. These devices must be removed upon completion of work and stabilization of disturbed areas. The sediment collected by these devices must also be removed and placed upland, in a manner that will prevent its later erosion and transport to a waterway or wetland.
- 4. All exposed soils resulting from the construction will be promptly seeded and mulched in order to achieve vegetative stabilization.
- 5. All tree cutting shall occur between October 16 and April 19 of any year to the maximum extent practicable and no tree cutting shall occur between June 1 and July 31 of any year in order to minimize potential impacts to federally listed northern long-eared bats.
- 6. Mitigation shall consist of payment of \$289,605.00 to the Natural Resource Mitigation Fund. The completed ILF Project Data Worksheet which must be mailed with a cashier's check or bank draft, made out to "Treasurer, State of Maine", with the permit number noted on the check. The check and worksheet should be mailed to: ME DEP, Attn: ILF Program Administrator, State House Station 17, Augusta, ME 04333. No project construction may begin until the permittee provides the Corps with a copy of the check, with the permit number noted on the check. The ILF amount is only valid for a period of one year from the date on the authorization letter. After that time, the project would need to be reevaluated and a new amount determined.

# MAINE IN-LIEU-FEE (ILF) PROJECT IMPACT WORKSHEET

DEP Invoice #		Filled in	by ILF Administrator in Augusta
Project name: Mai	Maine Turnpike Authority; Warren Avenue Overpasses Rehabilitation		
Permittee(s): Mai	ne Turnpike Authority		
DEP/Corps permit	#:	/NAE-2018-03016	Attach a copy of the permit
<b>DEP/Corps Project</b>	Manager: R.	Green/J. Clement	
ILF Fee Amount:	\$289,605.00		
Check Date:			Filled in by ILF Administrator in Augusta
Project address:	Intersection of Maine Turnpike and Warren Avenue Portland, Maine		Attach a locus map
Biophysical region -	- Section:	Southern Maine	
Biophysical region -	- Subsection:	Gulf of Maine Coastal Lowland	
Total impact area s compensation:	ubject to	67,350 SF (1.55 acres)	

Resource(s) impacted:

Resource Types (list all that apply)	Functions & Values (for wetland impacts) (list all that apply, by resource type)	Types of Impacts (list all that apply, by resource type)	SF Impacted (by resource type)	Linear FT of Streams Impacted (for Corps use)
PEM	WH, FF, STR, NR	Filling	67,350	NA
- 1	· · · · · · · · · · · · · · · · · · ·			
	P: 2	and the second second	×	
		Total impacts:	67,350	0

Resource Types: Wetlands by NWI Type (PEM, PFO, PSS, PUB, M1, M2, E1, E2, etc), significant vernal pool depression (SVP), significant vernal pool critical terrestrial habitat (VPCTH), shorebird feeding & staging habitat (shorebird), inland waterfowl & wading bird habitat (IWWH), Tidal waterfowl & wading bird habitat (TWWH), lake or pond (L1, L2), river/stream/brook (RSB)

Wetland Functions & Values: Groundwater recharge/discharge (GWR); floodflow alteration (FF); fish & shellfish habitat (FSH); sediment toxicant retention (STR); nutrient removal (NR); production export (PE); sediment/shoreline stabilization (SS); recreation (R); education/scientific value (ESV); uniqueness/heritage (UH); and visual quality/aesthetics (VQ); wildlife habitat (WH)

<u>Types of Impacts</u>: May include: filling, dredging, vegetation conversion (e.g. forested to shrub/scrub), excavation with associated discharge, etc.



Permit Number: NAE-2018-03016

(Minimum Notice: Permittee must sign and return notification within one month of the completion of work.)

## **COMPLIANCE CERTIFICATION FORM**

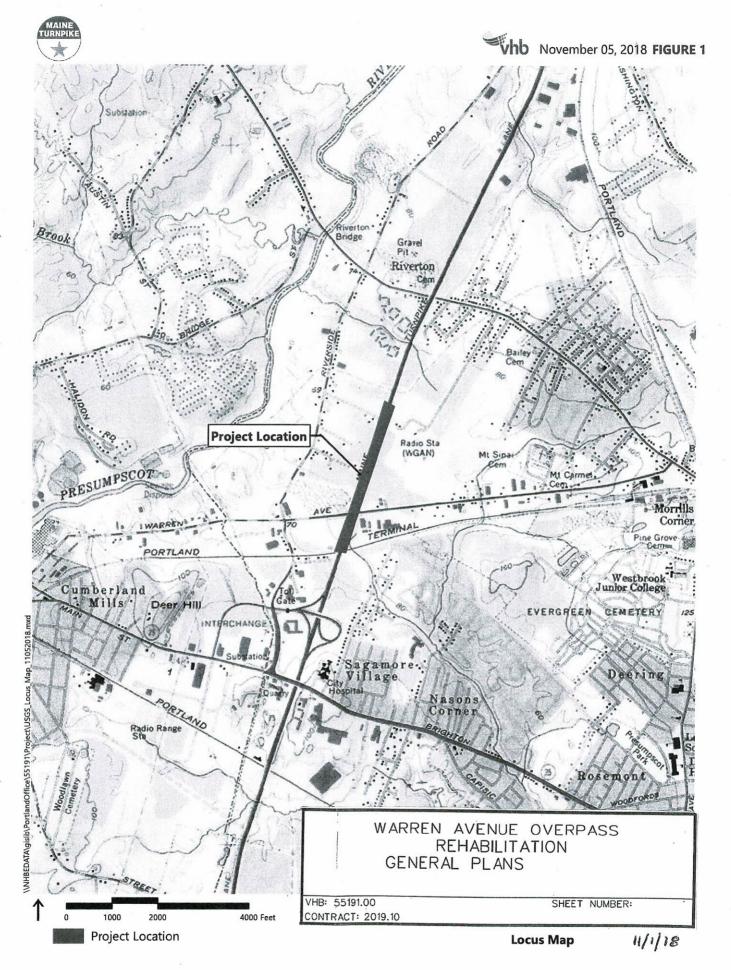
Project Manager_	Clement			
Name of Permittee	: Maine Turnpike Authority	<u>7</u>		
Permit Issuance Da	ate:			
and any mitigation r	ification and return it to the frequired by the permit. You on monitoring, which requires	must sub	mit this after the mitigat	
******	*******	*****	*******	*****
* P * R * 6	C.S. Army Corps of Engineers ermits and Enforcement Bran Legulatory Division 96 Virginia Road Concord, Massachusetts 0174	nch C	ngland District	* * * * *
	*******		*******	*****
permit suspension, r  I hereby certify tha accordance with th	representative. If you fail to modification, or revocation.  at the work authorized by the terms and conditions of the pleted in accordance with	he abovo	e referenced permit was e referenced permit, an	s completed in
Signature of Permitt	ree		Date	,
Printed Name			Date of Work Comple	etion
( ) Telephone Number		( Tele	) phone Number	

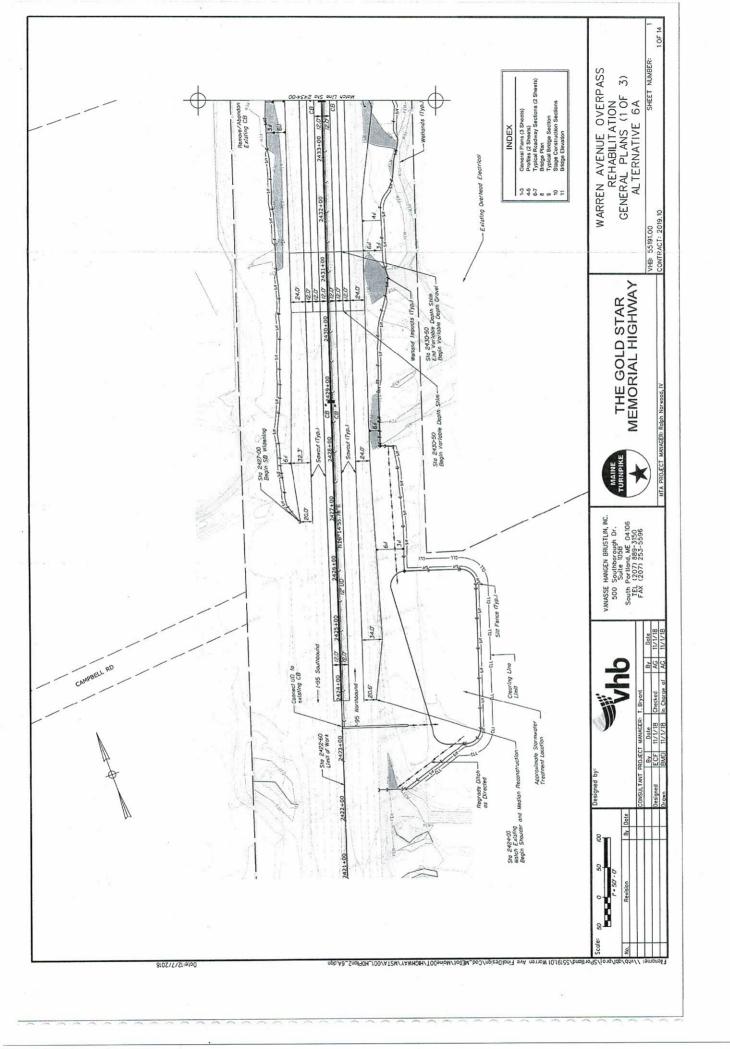


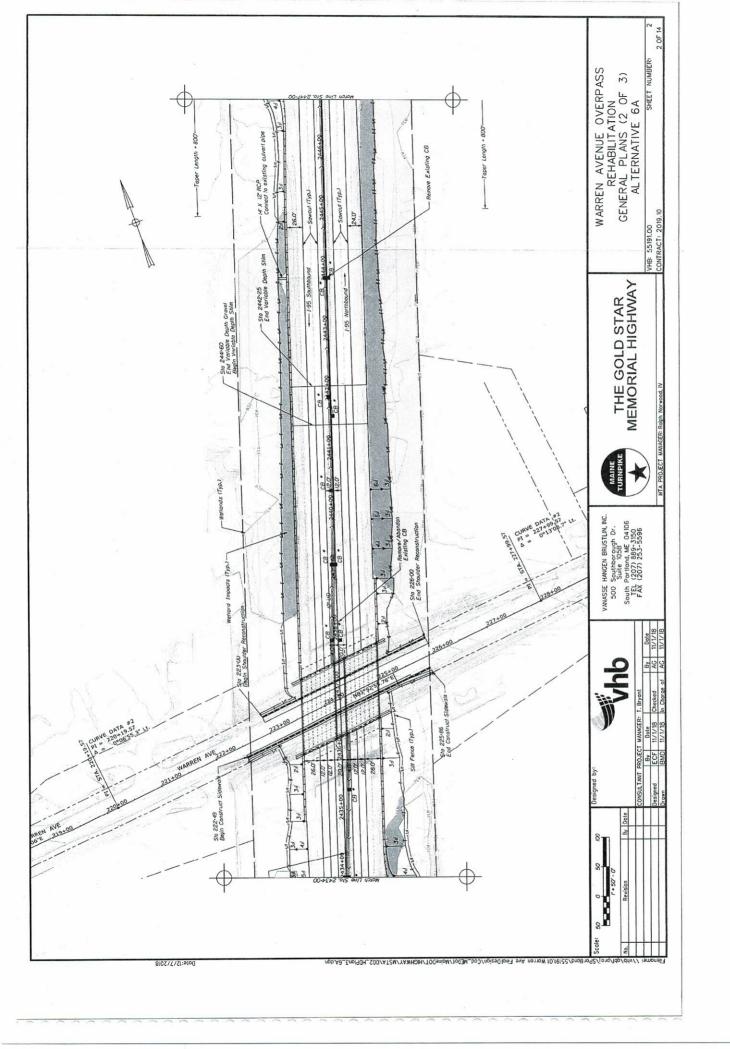
# GENERAL PERMIT WORK-START NOTIFICATION FORM

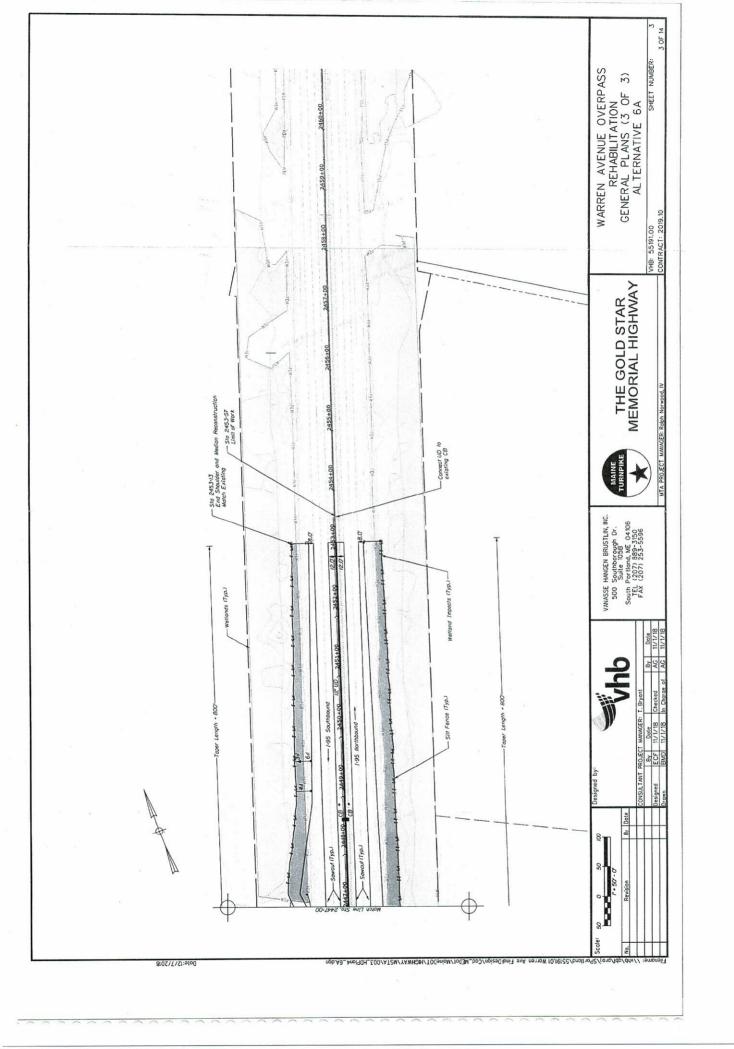
(Minimum Notice: Two weeks before work begins)

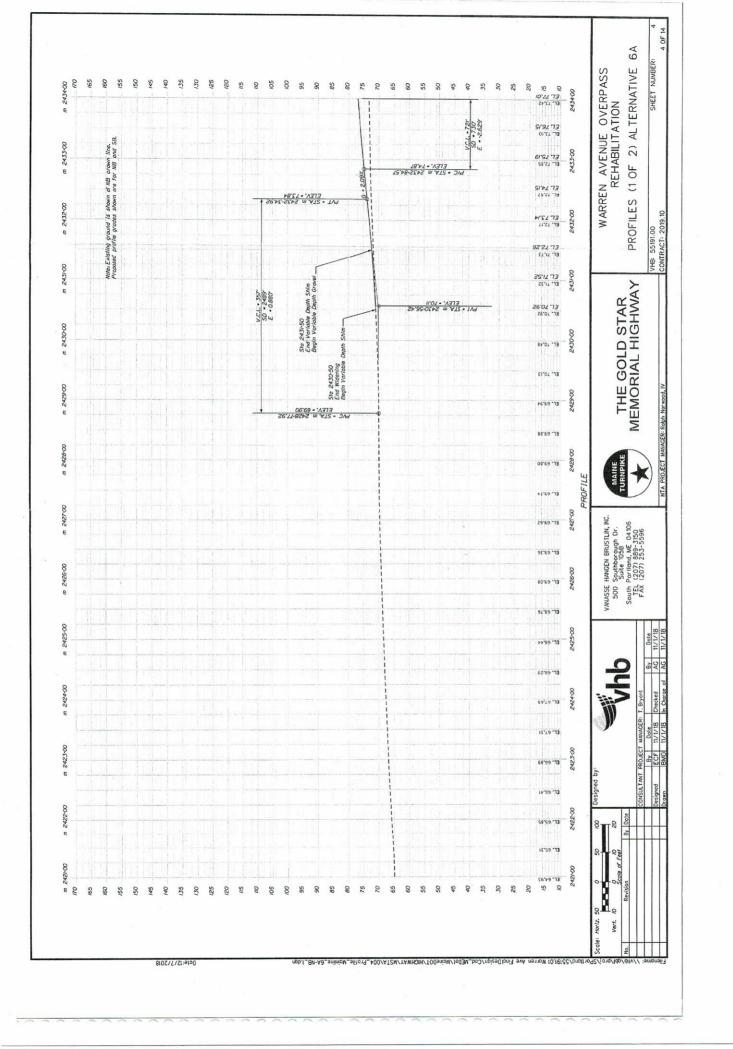
	U.S. Army Corps of Engineers, New Englar	nd District	*
*	Permits and Enforcement Branch		*
*	Regulatory Division 696 Virginia Road		*
*	Concord, Massachusetts 01742-2751		*
******	************	*******	****
on Turnpike and War approximately 67,	rs Permit No. NAE-2018-03016 was issued to . This work is located in freshwater rren Avenue at Portland, Maine. The permit 350 s.f. (1.55 acres) of freshwater wetlands a laine Turnpike at Portland, Maine in order to ss.	wetlands adjacent to the Ma authorized the permittee to fi at the intersection of Warren	ine II
The people (e.g., conditions and lim	contractor) listed below will do the work, and nitations.	I they understand the permit's	3
PLEASE PRINT	OR TYPE		
Name of Person/	Firm:		
Business Address	s:		
			-
Telephone Numb	pers: ()	()	
Proposed Work	Dates: Start:	Finish:	
Permittee/Agent	Signature:	Date:	
Printed Name: _		Title:	
Date Permit Issu		Date Permit Expires:	****
	FOR USE BY THE CORPS OF EN		
PM: Clement	Submittals Requ	nired: Yes	
Inspection Recor	mmendation: Inspect as convenient		- >

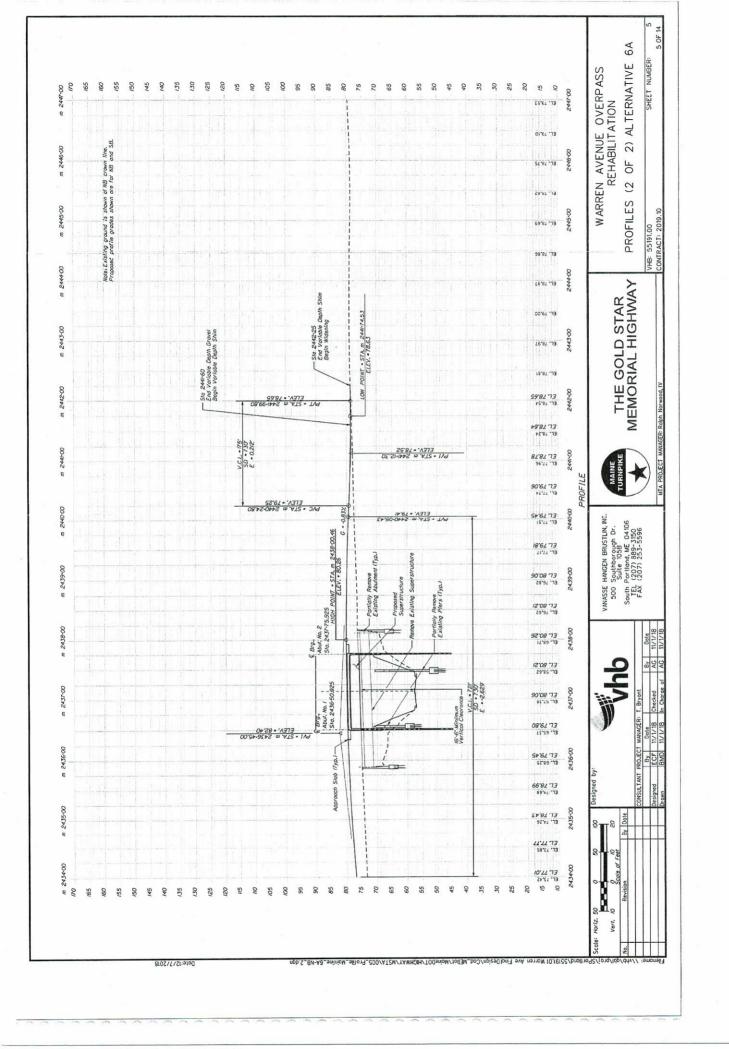


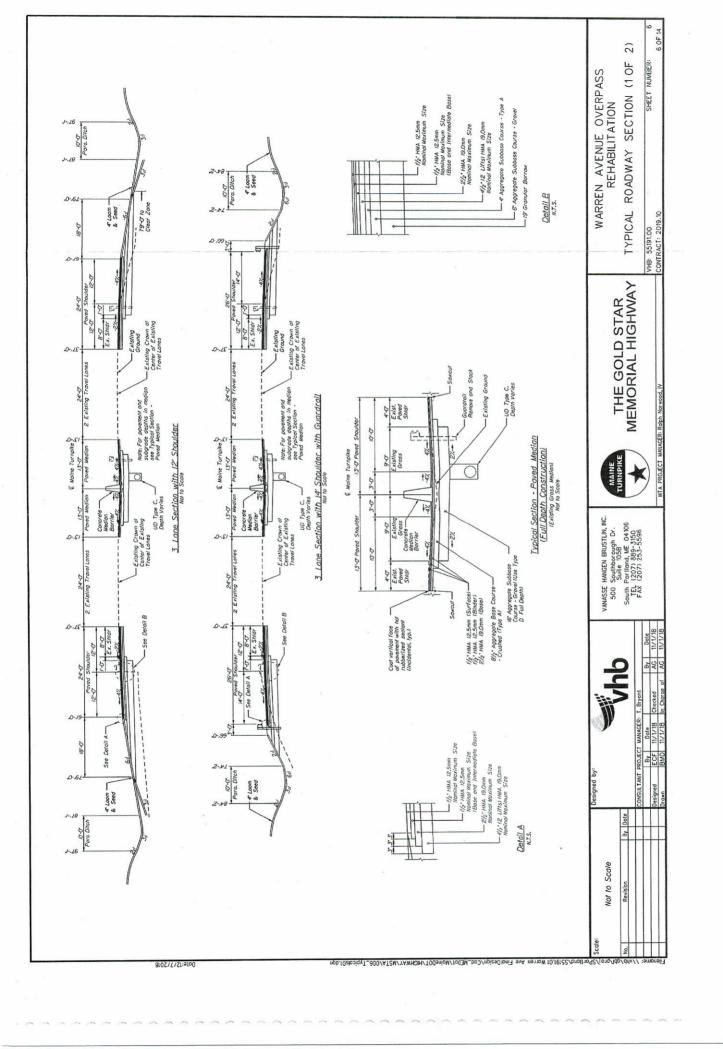


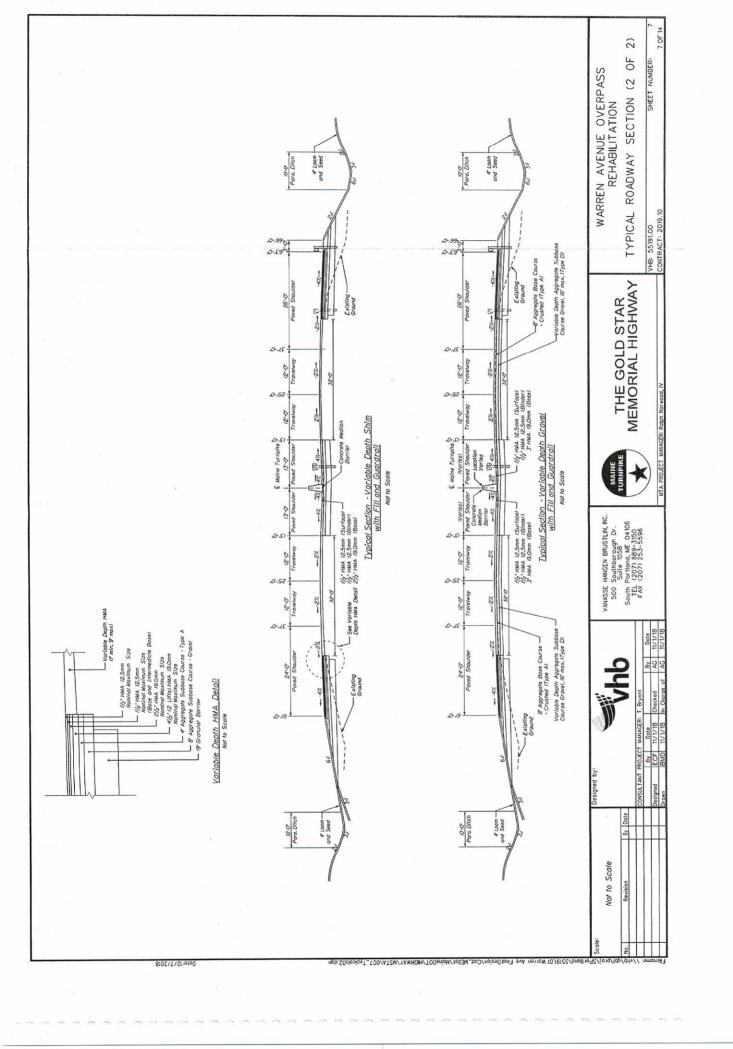


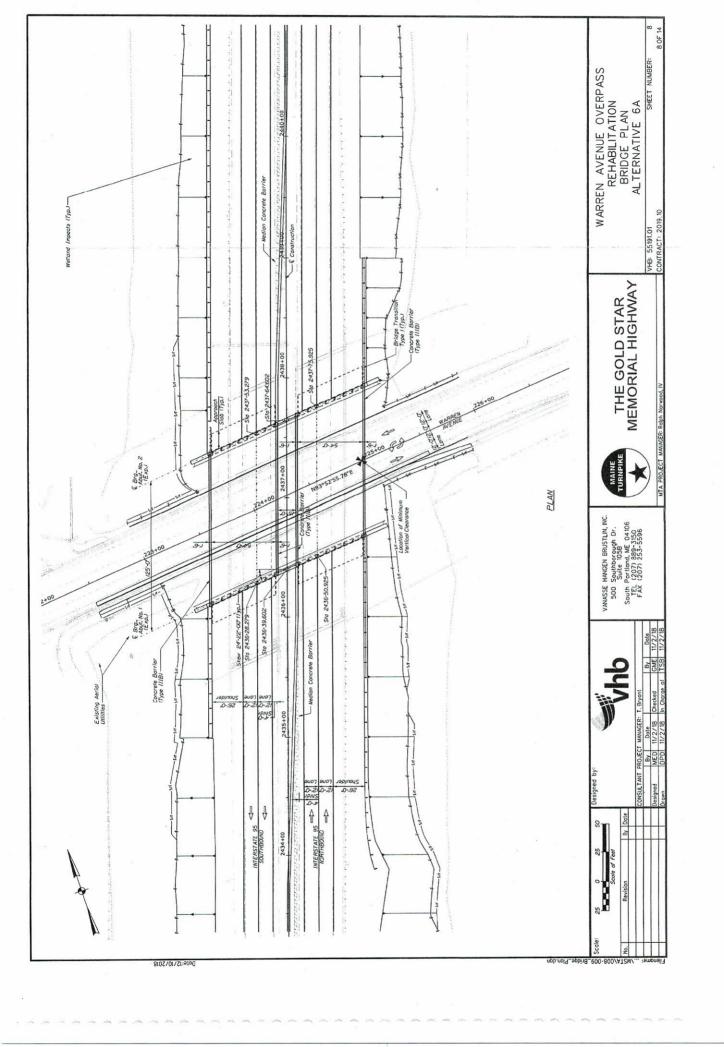


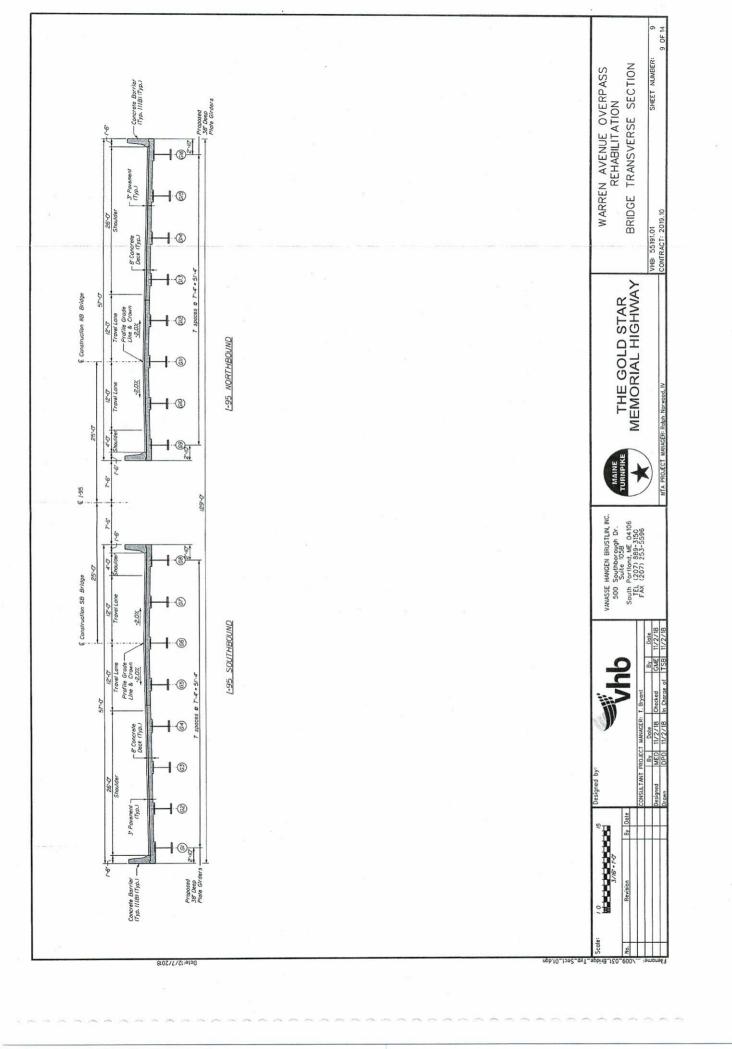


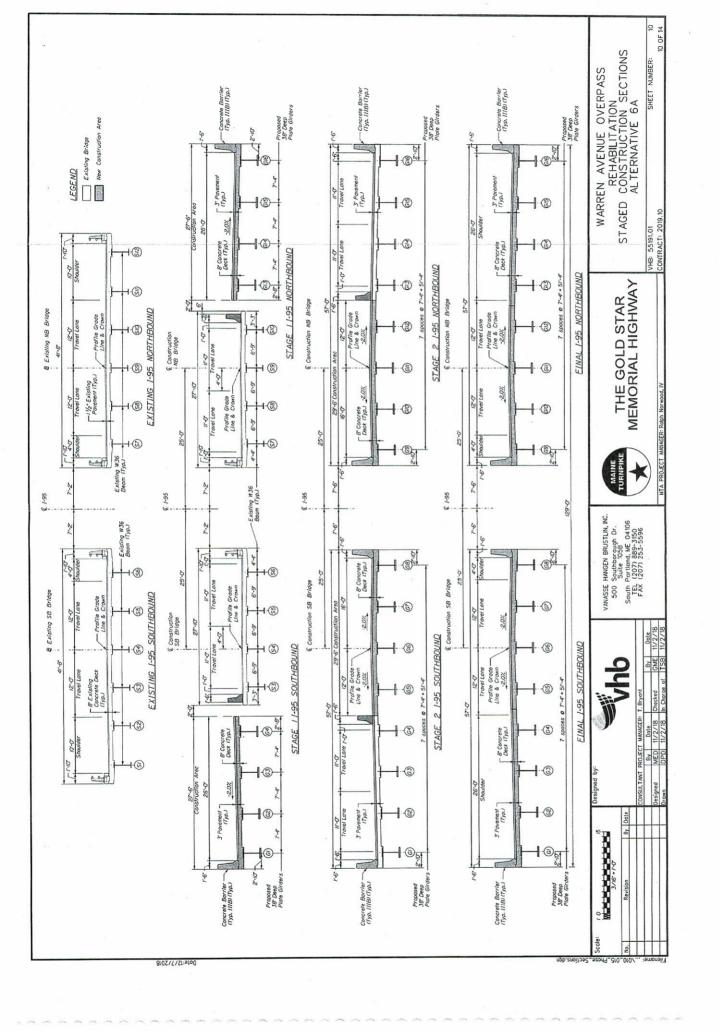


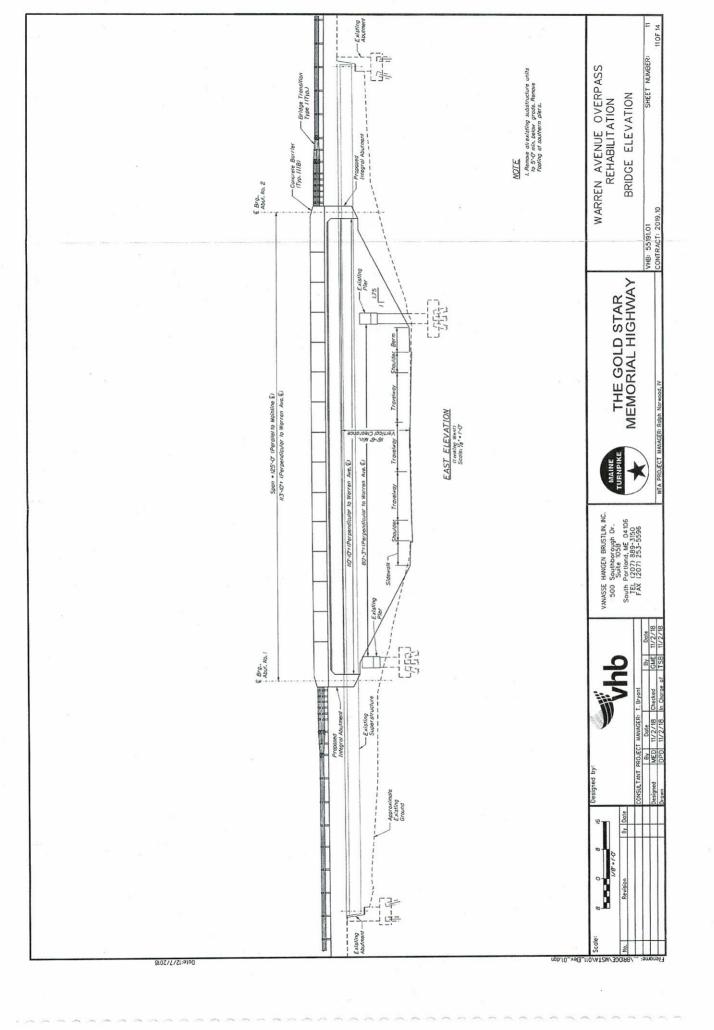


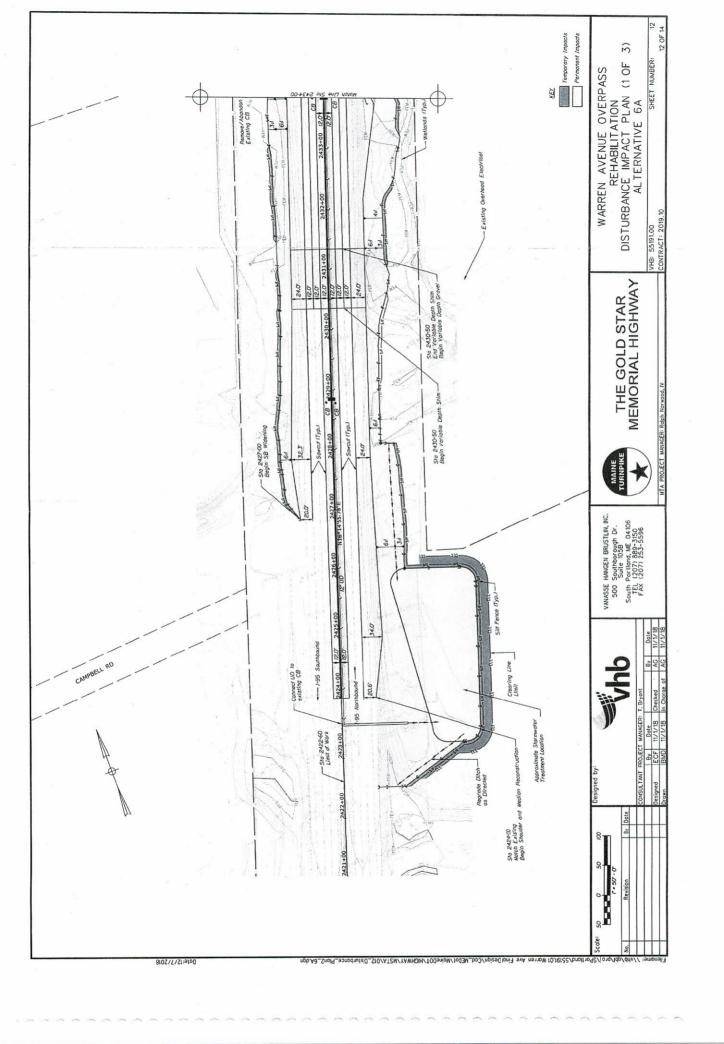


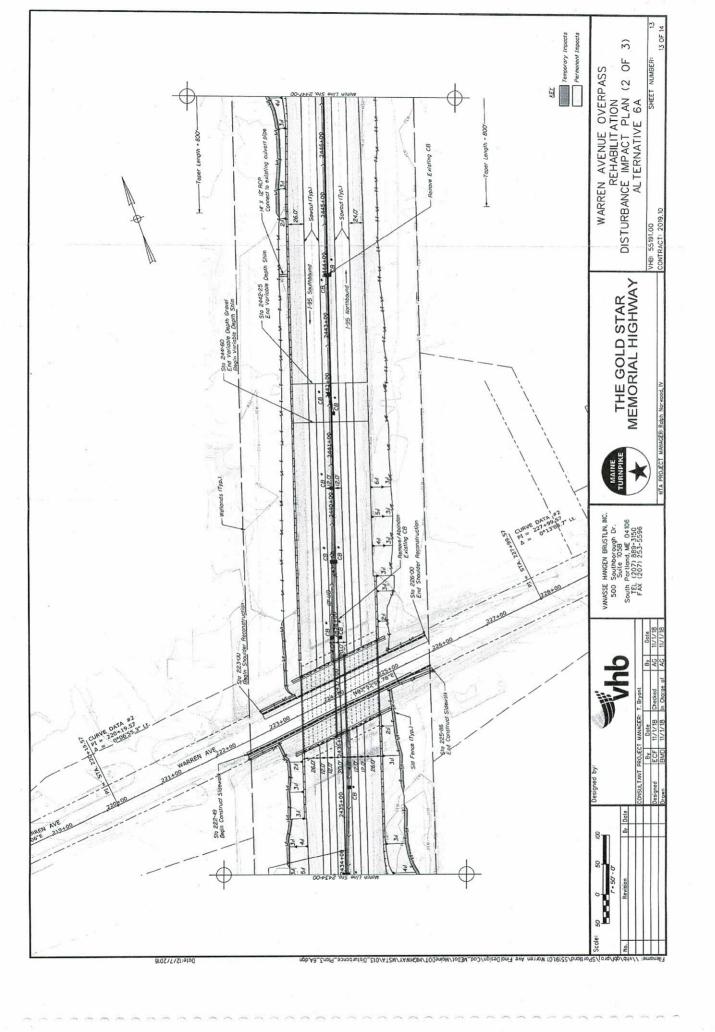


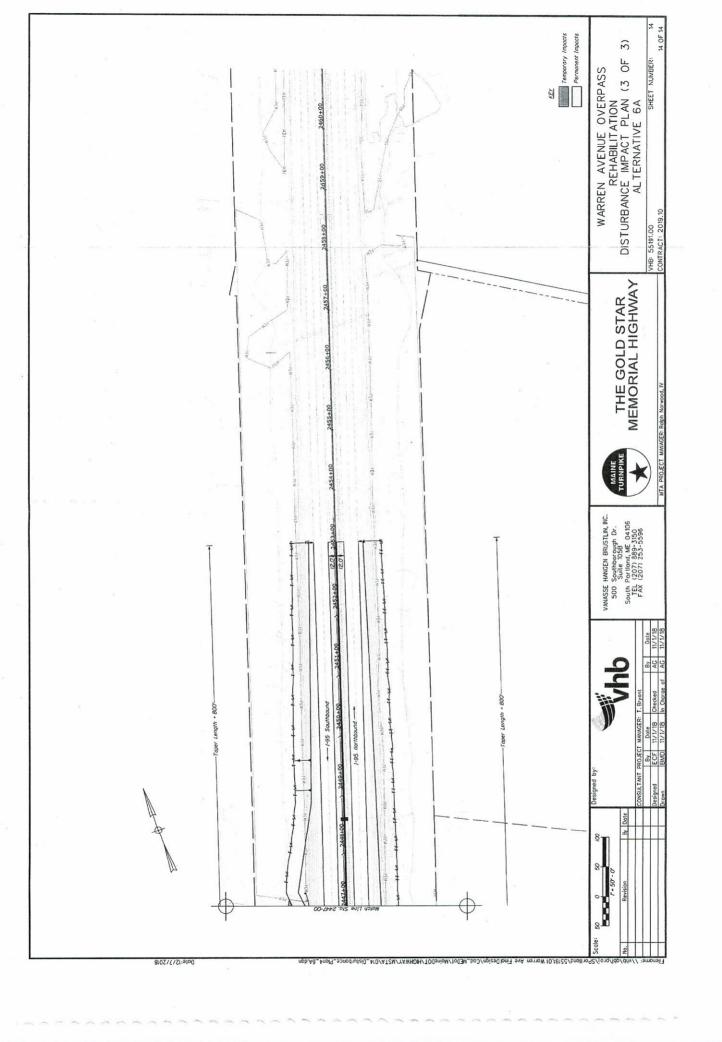












Applicant: General Public, State of Maine

Effective Date: October 13, 2015 Expiration Date: October 13, 2020

#### DEPARTMENT OF THE ARMY GENERAL PERMIT FOR THE STATE OF MAINE

The New England District of the U.S. Army Corps of Engineers (Corps) hereby issues a General Permit (GP) for activities subject to Corps jurisdiction in waters of the U.S. within the boundaries of the State of Maine. This GP is issued in accordance with Corps regulations at 33 CFR 320 - 332 [see 33 CFR 325.2(e)(2)]. This GP authorizes activity-specific categories of work that are similar in nature and cause no more than minimal individual and cumulative adverse environmental impacts. Refer to Page 2 for the list of activities and Appendix A for activity specific conditions of eligibility in inland and tidal waters.

#### I. GENERAL CRITERIA

- 1. In order for activities to qualify for this GP, they must meet the GP's terms and eligibility criteria (Pages 1-4), General Conditions (GC) (Pages 5-20), and Appendix A Definition of Categories.
- 2. Under this GP, projects may qualify for the following:
  - <u>Category 1</u>: Category 1 Self Verification Notification Form is required (SVNF see Appendix B).
  - <u>Category 2</u>: Application to and written approval from the Corps is required (Pre-Construction Notification (PCN)). <u>No work may proceed until written approval from the Corps is received.</u>

If your project is ineligible for Category 1, it may qualify for Category 2 or an Individual Permit and you must submit an application (see Page 3). The thresholds for activities eligible for Categories 1 and 2 are defined in Appendix A. This GP does not affect the Corps Individual Permit review process or activities exempt from Corps regulation.

- 3. Prospective permittees need to read:
  - a. Section II to determine if the activity requires Corps authorization.
- b. Sections III and IV to determine if the activity may be eligible for authorization under this GP, specifically whether it is eligible for Self-Verification (SV) or whether Pre-Construction Notification (PCN) is required.
- 4. Permittees must ensure compliance with <u>all</u> applicable General Conditions in Section IV. The Corps will consider unauthorized any activity requiring Corps authorization if that activity is under construction or completed and does not comply with all of the terms and conditions.
- 5. Project proponents are encouraged to contact the Corps with questions at any time. Pre-application meetings (see 33 CFR 325.1(b)), whether arranged by the Corps or requested by permit applicants, are encouraged to facilitate the review of projects. Pre-application meetings and/or site visits can help streamline the permit process by alerting the applicant to potentially time-consuming concerns that are likely to arise during the evaluation of their project (e.g., avoidance, minimization and compensatory mitigation requirements, historic properties, endangered species, essential fish habitat, and dredging contaminated sediments).

#### II. CORPS JURISDICTION/ACTIVITIES COVERED

- 1. Permits are required from the Corps of Engineers for the following work:
- a. The construction of any structure in, over or under any navigable water of the United States (U.S.)<sup>1</sup>, the excavating or dredging from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters. The Corps regulates these activities under Section 10 of the Rivers and Harbors Act of 1899. See 33 CFR 322;
- b. The discharge of dredged or fill material and certain discharges associated with excavation into waters of the U.S. (e.g. sidecasting). The Corps regulates these activities under Section 404 of the Clean Water Act (CWA). See 33 CFR 323; and
- c. The transportation of dredged material for the purpose of disposal in the ocean. The Corps regulates these activities under Section 103 of the Marine Protection, Research and Sanctuaries Act. See 33 CFR 324.

#### 2. Related laws:

33 CFR 320.3 includes a list of related laws, including: Section 401 of the CWA, Section 402 of the CWA, Section 307(c) of the Coastal Zone Management (CZM) Act of 1972, The National Historic Preservation Act of 1966, the Endangered Species Act, the Fish and Wildlife Act of 1956, the Marine Mammal Protection Act of 1972, Magnuson-Stevens Act, and Section 7(a) of the Wild and Scenic Rivers Act.

- 3. An activity listed below may be authorized by this GP only if that activity and the permittee satisfy all of the GP's terms and conditions. Any activity not specifically listed below may still be eligible for the GP; applicants are advised to contact the Corps for a specific eligibility determination. Category 1 and Category 2 eligibility criteria for each activity in both Inland and Tidal waters can be found in Appendix A.
- 1. Repair, Replacement, Expansion, and Maintenance of Authorized Structures and Fills
- 2. Moorings
- 3. Structures, Floats and Lifts
- 4. Aids to Navigation, and Temporary Recreational Structures
- 5. Dredging, Disposal of Dredged Material, Beach Nourishment, and Rock Removal and Relocation
- 6. Discharges of Dredged or Fill Material Incidental to the Construction of Bridges
- 7. Bank and Shoreline Stabilization
- 8. Residential, Commercial, Industrial, and Institutional Developments, and Recreational Facilities
- 9. Utility Line Activities
- 10. Linear Transportation Projects
- 11. Mining Activities
- 12. Boat Ramps and Marine Railways
- 13. Land and Water-Based Renewable Energy Generation Facilities and Hydropower Projects
- 14. Reshaping Existing Drainage Ditches and Mosquito Management
- 15. Oil Spill and Hazardous Material Cleanup
- 16. Cleanup of Hazardous and Toxic Waste
- 17. Scientific Measurement Devices
- 18. Survey Activities
- 19. Agricultural Activities
- 20. Fish and Wildlife Harvesting, Enhancement, and Attraction Devices
- 21. Habitat Restoration, Establishment and Enhancement Activities
- 22. Previously Authorized Activities
- 23. Stream & Wetland Crossings
- 24. Aquaculture

Note: Multiple activities may be authorized in the same GP, e.g. a recreational pier (#3) with an associated mooring (#2) or a windpower facility (#13) with an associated transmission line (#9).

<sup>&</sup>lt;sup>1</sup> Defined in Appendix F, Definitions and at 33 CFR 328. Section II

#### III. PROCEDURES

1. State Approvals. Applicants are responsible for applying for and obtaining any of the required state or local approvals. Federal and state jurisdictions may differ in some instances. State permits may be required for specific projects regardless of the general permit category.

In order for authorizations under this GP to be valid, when any of the following state approvals or statutorily-required reviews is also required, the approvals must be obtained prior to the commencement of work in Corps jurisdiction.

- Maine Department of Environmental Protection (DEP): Natural Resources Protection Act (NRPA) permit, including permit-by-rule (PBR) and general permit authorizations; Site Location of Development Act permit; Maine Waterway Development and Conservation Act permit; and Maine Hazardous Waste, Septage, and Solid Waste Management Act license.
- Maine Department of Conservation, Agriculture & Forestry: Land Use Planning Commission (LUPC) permit.
- Maine Department of Marine Resources: Aquaculture Leases.
- Maine Department of Conservation, Bureau of Parks and Lands, Submerged Lands: Submerged Lands Lease.

NOTE: This GP may also be used to authorize projects that are not regulated by the State of Maine (e.g., certain seasonal floats or moorings).

- 2. How to Obtain/Apply for Authorization.
- a. Category 1 (<u>Self-Verification</u>): Self-Verification Notification Form (SVNF) required. The SVNF is required for all SV eligible work in Maine unless otherwise stated in Appendix A. Activities that are eligible for SV are authorized under this GP and may commence without written verification from the Corps provided the prospective permittee has:
- i. Confirmed that the activity will meet the terms and conditions of Category 1. Consultation with the Corps and/or other relevant federal and state agencies may be necessary to ensure compliance with the applicable general conditions (GCs) and related federal laws such as the National Historic Preservation Act (see GC 6), the Endangered Species Act (GC 8) and the Wild and Scenic Rivers Act (GC 9). Prospective permittees are encouraged to contact the Corps with SV eligibility questions. Activities not meeting the SV criteria must submit a PCN to the Corps.
- ii. Submitted the SVNF (see GC 27 and Appendix B) to the Corps. **NOTE: A copy of a state** permit application form may be an acceptable surrogate for the SVNF. Whichever form chosen needs to include a location map, plans, and an Official Species List for federally listed threatened or endangered species (Reference Appendix D).
- b. Category 2 (<u>Pre-Construction Notification (PCN)</u>): Application to and written verification from the Corps is required before work can proceed. For activities that do not qualify for SV or where otherwise required by the terms of the GP, the permittee must submit a PCN and obtain a written permit before starting work in Corps jurisdiction.
- i. The Corps will coordinate review of all activities requiring PCN with federal and state agencies and federally recognized tribes, as appropriate. To be eligible and subsequently authorized, an activity must result in no more than minimal individual and cumulative effects on the aquatic environment as determined by the Corps in accordance with the criteria listed within this GP. This may require project modifications involving avoidance, minimization, or compensatory mitigation for unavoidable impacts to ensure that the net adverse effects of a project are no more than minimal.
- ii. The Corps will attempt to issue a written eligibility determination within the state's review period. Regardless, work eligible for Category 2 may not proceed before Corps written approval is received.
  - c. All applicants for Category 2 projects must:

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- i. Apply directly to the Corps using the state application form or the Corps application form (ENG Form 4345²), and apply directly to the state (DEP, LUPC, BPL or DMR) as applicable using the appropriate state form, if the work is regulated by the Corps and the state; or
- ii. Apply directly to the Corps using the Corps application form (ENG Form 4345<sup>2</sup>) if the work is regulated by the Corps but not the state (DEP, LUPC, BPL or DMR).
- iii. Provide application information (see "Information Typically Required" in Appendix C) to help ensure the application is complete and to speed project review.
- iv. Obtain an Official Species List of federally threatened or endangered species in the project area (GC 8).
- v. Submit a copy of their application materials to the Maine Historic Preservation Commission (MHPC) *and* <u>all five Indian tribes</u> listed at Appendix E, at the same time, or before, they apply to the Corps, to be reviewed for the presence of historic, archaeological or tribal resources in the permit area that the proposed work may affect. Submittals to the Corps shall include information to indicate that this has been done (a copy of the applicant's cover letter to MHPC and tribes or a copy of the MHPC and tribal response letters is acceptable).
- d. Work that is not regulated by the State of Maine, but is subject to Corps jurisdiction, may still be eligible for authorization under this GP.
- **e. Emergency Situations:** 33 CFR 325.2(e)4 states that an "emergency" is a situation which would result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen, and significant economic hardship if corrective action requiring a permit is not undertaken within a time period less than the normal time needed to process the application under standard procedures." <u>Emergency work is subject to the same terms and conditions of this GP as non-emergency work, and similarly, must qualify for authorization under the GP; otherwise an IP is required. The Corps will work with all applicable agencies to expedite verification according to established procedures in emergency situations.</u>
- 3. Individual Permits. Projects that are not authorized by this GP require an Individual Permit (IP) (33 CFR 325.5) and proponents must submit an application directly to the Corps. This GP does not affect the Corps IP review process or activities exempt from Corps regulation. For general information and application form, see the Corps website or contact the Corps (see Appendix E). The Corps encourages applicants to apply concurrently for a Corps IP and applicable state permits.

The Corps retains discretionary authority on a case-by-case basis to elevate a GP eligible project to an IP based on concerns for the aquatic environment or for any other factor of the public interest [33 CFR 320.4(a)]. Whenever the Corps notifies an applicant that an IP is required, no work in Corps jurisdiction may be conducted until the Corps issues the required authorization in writing indicating that work may proceed.

4. Enforcement/Non-Compliance. Work performed without the required Corps of Engineers permits is subject to administrative, civil, and criminal penalties. The Corps will evaluate unauthorized activities for enforcement action under 33 CFR 326.

The Corps will consider unauthorized any activity requiring Corps authorization if that activity is under construction or completed and does not comply with all of the terms and conditions of a GP or an IP. The Corps may elect to suspend enforcement proceedings if the permittee modifies his project to comply with a GP.

After considering whether a violation was knowing or intentional, and other indications of the need for a penalty, the Corps can elect to terminate an enforcement proceeding with an after-the- fact authorization under a GP, if all terms and conditions of the GP have been satisfied, either before or after the activity has been accomplished.

<sup>&</sup>lt;sup>2</sup> Located at <u>www.nae.usace.army.mil/missions/regulatory</u> under "Forms & Publications." Section III 4

#### IV. GENERAL CONDITIONS

To qualify for GP authorization, the prospective permittee must comply with the following general conditions, as applicable.

- 1. Other Permits
- 2. Federal Jurisdictional Boundaries
- 3. Minimal Direct, Secondary, and Cumulative Impacts
- 4. Mitigation (Avoidance, Minimization, and Compensatory Mitigation)
- 5. Single and Complete Projects
- 6. Historic Properties
- 7. Corps Projects and Property
- 8. Federal Threatened and Endangered Species
- 9. Wild and Scenic Rivers
- 10. Navigation
- 11. Federal Liability
- 12. Utility Line Installation and Removal
- 13. Heavy Equipment in Wetlands or Mudflats
- 14. Temporary Fill
- 15. Restoration of Special Aquatic Sites (including wetland areas).
- 16. Soil Erosion, Sediment and Turbidity Controls
- 17. Time of Year Windows/Restrictions.
- 18. Aquatic Life Movements & Management of Water Flows
- 19. Water Quality and Coastal Zone Management
- 20. Floodplains and Floodways
- 21. Storage of Seasonal Structures
- 22. Spawning, Breeding, and Migratory Areas
- 23. Vernal Pools
- 24. Invasive and Other Unacceptable Species
- 25. Programmatic Agreements
- 26. Permit On-Site
- 27. Self-Verification Notification Form (SVNF)
- 28. Inspections
- 29. Maintenance
- 30. Property Rights
- 31. Transfer of GP Verifications
- 32. Modification, Suspension, and Revocation
- 33. Special Conditions
- 34. False or Incomplete Information
- 35. Abandonment
- 36. Enforcement Cases
- 37. Duration of Authorization
- 38. Previously Authorized Activities
- 39. Discretionary Authority
- 40. St. John/St. Croix Rivers.
- 41. National Lands
- 42. Essential Fish Habitat (EFH)
- 43. Work Site Restoration
- 44. Bank Stabilization
- 45. Stream Work & Crossings and Wetland Crossings

1. Other Permits. Permittees must obtain other federal, state, or local authorizations required by law. Applicants are responsible for applying for and obtaining all required state or local approvals. This includes, but is not limited to, the project proponent obtaining a Flood Hazard Development Permit issued by the town, if necessary. Inquiries may be directed to the municipality or to the Maine Floodplain Management Coordinator at (207) 287-8063. See <a href="http://www.maine.gov/dacf/flood/">http://www.maine.gov/dacf/flood/</a>

#### 2. Federal Jurisdictional Boundaries

- a. Applicability of this GP shall be evaluated with reference to federal jurisdictional boundaries. Applicants are responsible for ensuring that the boundaries used satisfy the federal criteria defined at 33 CFR 328 "Waters of the U.S." and 33 CFR 329 "Navigable Waters of the U.S."
  - NOTE: Waters of the U.S. include the subcategories "navigable waters of the U.S." and "wetlands."
- b. For Category 1 projects, proponents are not required to delineate the waters of the U.S. that they plan to impact, but must approximate the square footage of impacts in order to determine the review category (1 or 2 or Individual Permit). For projects filling <15,000 square feet (SF) of waters of the U.S. that do not qualify for Category 1 (e.g., vernal pool, secondary or endangered species impacts, etc.) and therefore require an application to the Corps (PCN), and for those filling ≥15,000 SF, applicants shall delineate all waters of the U.S. that will be filled (direct impacts) in accordance with the Corps of Engineers Wetlands Delineation Manual and the most recent regional supplement (see Appendix C). In addition, applicants shall approximately identify all waters of the U.S. on the property and *known* waters adjacent to the property in order for the Corps to evaluate secondary impacts. The waters of the U.S. shall be clearly shown on the project plans submitted with the application. This includes all waters of the U.S. in areas under DEP or LUPC jurisdiction regardless of whether they're shown on LUPC zoning maps.
- c. On a case-by-case basis, the Corps may modify/refine the above delineation and identification requirements for waters of the U.S. See <a href="https://www.nae.usace.army.mil/missions/regulatory">www.nae.usace.army.mil/missions/regulatory</a> >> Jurisdictional Limits and Wetlands for more information on delineating jurisdictional areas.

#### 3. Minimal Direct, Secondary, and Cumulative Effects<sup>3</sup>

- a. Projects authorized by this GP shall have no more than minimal direct, secondary and cumulative adverse environmental impacts. Category 2 applicants should provide information on secondary and cumulative impacts as stated in Appendix C. Compensatory mitigation may be required to offset unavoidable impacts (see GC 4) and to ensure that they are no more than minimal. Compensatory mitigation requirements will be determined on a case-by-case basis.
- b. Secondary impacts to waterway and/or wetland areas, (e.g., areas drained, flooded, cleared, excavated or fragmented) shall be added to the total fill area when determining whether the project qualifies for Category 1 or 2. Direct, secondary and cumulative impacts are defined at Appendix A, Endnote 2 and Appendix F.
- c. Site clearing, grading and construction activities in the upland habitat surrounding vernal pools ("Vernal Pool Management Areas") are secondary impacts. See GC 23 for avoidance and minimization requirements and recommendations.
- d. Bank stabilization activities in tidal waters are provided at Appendix A, Page 30. Direct impacts in tidal waters from contiguous bank stabilization projects in excess of 200 linear feet (Applicant or Applicant + Abutters combined) must undergo Category 2 review.

#### 4. Mitigation (Avoidance, Minimization, and Compensatory Mitigation)

- a. Discharges of dredged or fill material into waters of the U.S., including wetlands, shall be avoided and minimized to the maximum extent practicable through consideration of alternatives. The Corps may require compensatory mitigation of unavoidable direct and secondary impacts associated with Category 2 projects on a case-by-case basis.
- b. Applicants proposing work in jurisdictional waters should consider riparian/forested buffers for stormwater management and low impact development (LID) best management practices (BMPs) to reduce

<sup>&</sup>lt;sup>3</sup> Direct, secondary and cumulative effects are defined at Appendix F, Definitions and Acronyms. Section IV 6

impervious cover and manage stormwater to minimize secondary impacts to aquatic resources to the maximum extent practicable.<sup>4</sup>

Compensatory mitigation<sup>5</sup> for effects to waters of the U.S., including direct, secondary and temporal<sup>6</sup>, may be required for permanent impacts that exceed the SV area limits, and may be required for temporary impacts that exceed the SV area limits, to offset unavoidable impacts which remain after all appropriate and practicable avoidance and minimization has been achieved and to ensure that the adverse effects to the aquatic environment are no more than minimal. Proactive restoration projects or temporary impact work with no lasting secondary effects may generally be excluded from this requirement. Refer to Appendix G.

#### 5. Single and Complete Projects<sup>7</sup>

- This GP shall not be used to piecemeal work and shall be applied to single and complete projects. When determining the review category in Appendix A (Category 1 or 2) for a single and complete project, proponents must include any permanent historic fill placed since October 1995 that is associated with that project and all currently proposed temporary and permanent impact areas.
  - A single and complete project must have independent utility<sup>7</sup>.
  - c. Unless the Corps determines the activity has independent utility:
- This GP shall not be used for any activity that is part of an overall project for which an Individual Permit is required.
- All components of a single project and/or all planned phases of a multi-phased project (e.g., subdivisions should include all work such as roads, utilities, and lot development) shall be treated together as constituting one single and complete project.
- For linear projects, such as power lines or pipelines with multiple crossings, the single and complete project is all crossings of a single water of the U.S. (i.e., single waterbody) at a specific location. For linear projects crossing a single waterbody several times at separate and distant locations, each crossing is considered a single and complete project. However, individual channels in a braided stream or river, or individual arms of a large, irregularly-shaped wetland or lake, etc., are not separate waterbodies and crossings of such features cannot be considered separately. If any crossing requires a Category 2 activity, then the entire linear project shall be reviewed as one project under Category 2.

#### 6. **Historic Properties**

No undertaking shall cause effects (defined at 33 CFR 325 Appendix C and 36 CFR 800) on properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places<sup>8</sup>, including previously unknown historic properties within the permit area, unless the Corps or another Federal action agency has satisfied the consultation requirements of Section 106 of the National Historic Preservation Act (NHPA). The State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO) and the National Register of Historic Places can assist with locating information on: i) previously identified historic properties; and ii) areas with potential for the presence of historic resources, which may require identification and evaluation by qualified historic preservation and/or archaeological consultants in consultation with the Corps and the SHPO and/or THPO(s).

<sup>&</sup>lt;sup>4</sup> See: www.nae.usace.army.mil/missions/regulatory >> State General Permit >> Permit Resources >> Mitigation for this additional information: a) "Wetland BMP Manual - Techniques for Avoidance & Minimization," b) riparian/forested buffer BMPs, and c) LID BMPs. LID BMPs include, but are not limited to: replacing curbs and gutters with swales; using an open space design for subdivisions; using permeable, pervious or porous pavements; constructing bio-retention systems; and/or, adding a green roof or rain garden.

<sup>&</sup>lt;sup>5</sup> Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR 332. See also the New England District Compensatory Mitigation Guidance at www.nae.usace.army.mil/regulatory >> Mitigation.

<sup>&</sup>lt;sup>6</sup> Temporal loss: The time lag between the loss of aquatic resource functions caused by the permitted impacts and the replacement of aquatic resource functions at the compensatory mitigation site(s) (33 CFR 332.2).

<sup>&</sup>lt;sup>7</sup> Single and Complete Project and Independent Utility are defined in Appendix F - Definitions.

<sup>&</sup>lt;sup>8</sup> The majority of historic properties are not listed on the National Register of Historic Places and may require identification and evaluation by qualified historic preservation and/or archaeological consultants in consultation with the Corps and the SHPO and/or THPO(s). 7

- b. For activities eligible for SV, proponents must ensure and document that the activity will not cause effects as stated in 6(a). Proponents must submit a PCN if the authorized activity may cause effects as stated in 6(a) as soon as possible to ensure that the Corps is aware of any potential effects of the permitted activity on any historic property to ensure all Section 106 requirements are met.
- c. All PCNs shall: i) show notification to the SHPO and applicable THPO(s)<sup>9</sup> for their identification of historic properties, ii) state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties, and iii) include any available documentation from the SHPO or THPO(s) indicating that there are or are not historic properties affected. Starting consultation early in project planning can save proponents time and money.
- d. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you 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.

#### 7. Corps Projects and Property

- a. In addition to any authorization under this GP, proponents must contact the Corps Real Estate Division at (978) 318-8585 for work occurring on or potentially affecting Corps properties and/or Corpscontrolled easements to initiate reviews and determine what real estate instruments are necessary to perform work. Permittees may not commence work on Corps properties and/or Corps-controlled easements until they have received any required Corps real estate documents evidencing site-specific permission to work.
- b. Any proposed temporary or permanent alteration, or modification or use, including occupation, 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 but not necessarily owned by the United States), which would obstruct or impair the usefulness of the federal project in any manner, and/or would involve changes to the authorized federal project's scope, purpose, and/or functioning that go beyond minor modifications required for normal operations and maintenance, is not eligible for SV and requires review and approval by the Corps pursuant to 33 USC 408. Where Section 408 is applicable, a decision on a Department of the Army general permit application will not be rendered prior to the decision on a Section 408 request.
- c. Any structure or work within any Corps Federal Navigation Project (FNP) or its buffer zone<sup>10</sup>, shall be subject to removal at the owner's expense prior to any future Corps dredging or the performance of periodic hydrographic surveys. See GC 10 for more requirements related to FNPs.

#### 8. Federal Threatened and Endangered Species

- a. No activity is authorized which: i) is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species; ii) "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed; or iii) violates the ESA.
- b. All applicants must request an Official Species List from the US Fish & Wildlife Service and must include the list in the Corps permit application. To request an Official Species List, refer to the instructions in Appendix D.
- c. For federally listed species in tidal waters, applicants should contact the National Marine Fisheries Service at: <a href="http://www.greateratlantic.fisheries.noaa.gov/protected/section7/">http://www.greateratlantic.fisheries.noaa.gov/protected/section7/</a>

See Appendix H for a fist of FNPs. The buffer zone is equal to three times the authorized depth.

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<sup>&</sup>lt;sup>9</sup> Appendix E, 3(a)&(b). Historic Resources, provides contact information and each tribe's "area of concern." <sup>10</sup> See Appendix H for a list of FNPs. The buffer zone is equal to three times the authorized depth of the FNP.

- d. A PCN is required if a threatened or endangered species, a species proposed for listing as threatened or endangered, or designated or proposed critical habitat (all hereinafter referred to as "listed species or habitat"), as identified under the ESA, is present in the action area<sup>11</sup>.
- e. Federal agencies should follow their own procedures for complying with the requirements of the ESA but should coordinate that consultation with the Corps as well.
- 9. Wild and Scenic Rivers. Any activity that occurs in the designated main stem of, within 0.25 mile up or downstream of the designated main stem of, or in tributaries within .25 miles of the designated main stem of a National Wild and Scenic River, or in "bordering and contiguous wetlands" (see Appendix A, Endnote 1) that are adjacent to the designated main stem of a National Wild and Scenic River, or that has the potential to alter flows within a river within the National Wild and Scenic River System, is not eligible for Category 1 regardless of size of the impacts. This condition applies to both designated Wild and Scenic Rivers and rivers officially designated by Congress as study rivers for possible inclusion while such rivers are in an official study status. National Wild and Scenic Rivers System segments for Maine as of October 2015 include: Allagash River beginning at Telos Dam continuing to Allagash checkpoint at Eliza Hole Rapids, approximately 3 miles upstream of the confluence with the St. John River (length = 92 miles); and 11.25 miles of the York River, in the State of Maine, from its headwaters at York Pond to the mouth of the river at York Harbor, plus its tributaries (currently under study).

#### 10. Navigation

- a. Any structure or work that extends closer to the horizontal limits of any Corps Federal Navigation Project (see Appendix H) than a distance of three times the project's authorized depth shall be subject to removal at the owner's expense prior to any future Corps dredging or the performance of periodic hydrographic surveys. This is applicable to Category 1 and 2. Reference Appendix A, Page 28 (Moorings) and Page 29 (Structures, Floats & Lifts).
- b. There shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein, and no attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the activity authorized herein.
- c. The permittee understands and agrees that if future U.S. operations require the removal, relocation, or other alteration of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the U.S. No claim shall be made against the U.S. on account of any such removal or alteration.
- d. A PCN is required for all work in, over or under an FNP or its buffer zone unless otherwise indicated in Appendix A. (Reference Appendix A, Endnote 13, Page 36)
- 11. Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following: (a) damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes; (b) damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the U.S. in the public interest;
- (c) damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit; (d) design or construction deficiencies associated with the permitted work; (e) damage claims associated with any future modification, suspension, or revocation of this permit.

#### 12. Utility Line Installation and Removal

a. Subsurface utility lines shall remain subsurface. If it is necessary to discharge dredged or filled material not previously authorized in order to keep such utility lines buried or restore them to their original subsurface condition, a PCN and written verification from the Corps may be required (e.g., in the case of side

<sup>&</sup>lt;sup>11</sup> The "Endangered Species Consultation Handbook – Procedures for Conducting Consultation and Conference Activities Under Section 7 of the ESA," defines action area as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. [50 CFR 402.02]."

<sup>&</sup>lt;sup>12</sup> Additional information can be found at: http://www.rivers.gov.

casting into wetlands from utility trenches). Certain repair, replacement or maintenance activities may be eligible for Category 1 – refer to Appendix A.

- b. Subsurface utility lines must be installed at a sufficient depth to avoid damage from anchors, dredging, etc., and to prevent exposure from erosion and stream adjustment. In accordance with Corps New England District Regulation NEDER 1110-1-9 (www.nae.usace.army.mil/missions/regulatory >> <u>Useful Links and Documents</u>), as an absolute minimum, the bottom cover associated with the initial installation of utility lines under navigable waters and navigation channels shall be 48 inches in soil or 24 inches in rock excavation in competent rock unless specified in a written determination. These minimum bottom cover requirements for pipelines and cables shall be measured from the maximum depth of dredging to the top of the utility. The maximum depth of dredging, in waterways having existing FNPs, is generally considered to be the authorized project depth plus any allowance for advanced maintenance and the allowable overdepth for dredging tolerances. In waterways that do not have existing FNPs, this depth should be taken as two feet below the existing bottom or maximum depth of proposed dredging, as applicable.
  - c. Aerial utility lines that cross navigable waters must meet minimum clearances. See 33CFR322.5(i).
- d. For horizontal directional drilling work, returns of drilling fluids to the surface (i.e., frac-outs) are not authorized and require restoration to the maximum extent practicable in accordance with the terms and conditions of this GP. The permittee and its contractor shall have onsite and shall implement the procedures detailed in a frac-out contingency plan for monitoring drilling operations and for the immediate containment, control and recovery/removal of drilling fluids released into the environment should a discharge of material occur during drilling operations.
- e. Within the context of any new installations, any abandoned or inactive utility lines should be removed and faulty lines (e.g., leaking hazardous substances, petroleum products, etc.) should be removed or repaired to the extent practicable. A PCN and written verification from the Corps is required if they are to remain in place, e.g., to protect sensitive areas or ensure safety.
- f. No work shall drain a water of the U.S. by providing a conduit for water on or below the surface. Trench plugs installed along pipelines may be effective.
- 13. Heavy Equipment in Wetlands or Mudflats. Operating heavy equipment other than fixed equipment (drill rigs, fixed cranes, etc.) within wetlands shall be minimized, and such equipment shall not be stored, maintained or repaired in wetlands, to the maximum extent practicable. Where construction requires heavy equipment operation in wetlands, the equipment shall either have low ground pressure (typically <3 psi), or it shall be placed on swamp/construction/timber mats (herein referred to as "construction mats" and defined at Appendix A, Endnote 4) that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation. Construction mats are to be placed in the wetland from the upland or from equipment positioned on swamp mats if working within a wetland. Dragging construction mats into position is prohibited. Other support structures that are capable of safely supporting equipment may be used with written Corps authorization (Category 2 authorization or Individual Permit). Similarly, the permittee may request written authorization from the Corps to waive use of mats during frozen, dry or other conditions. An adequate supply of spill containment equipment shall be maintained on site. Construction mats should be managed in accordance with the Construction Mat BMPs at <a href="https://www.nae.usace.army.mil/missions/regulatory">www.nae.usace.army.mil/missions/regulatory</a> State General Permits >> Permit Resources.
- **14. Temporary Fill.** Temporary fill that qualifies for Category 1 (e.g., <15,000 SF of combined temporary and permanent fill associated with the single and complete project) or is authorized in writing under Category 2, shall adhere to the following:
- a. All temporary fill and disturbed soils shall be stabilized to prevent its eroding into waters of the U.S. where it is not authorized. Work shall include phased or staged development to ensure only areas under active development are exposed and to allow for stabilization practices as soon as practicable, typically within three calendar days after disturbance. Accelerated stabilization (the providing of temporary or permanent cover by the end of the work day to prevent erosion) shall be employed as necessary. Temporary fill must be placed in a manner that will prevent it from being eroded by expected high flows.
- b. Unconfined temporary fill authorized for discharge into waters of the U.S. (e.g., temporary stream crossings) shall consist of material that minimizes impacts to water quality (e.g. washed stone, stone, etc.).

- c. 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. Place materials in a location and manner that does not adversely impact surface or subsurface water flow into or out of the wetland. Temporary fill authorized for discharge into wetlands shall be placed on geotextile fabric or other appropriate material laid on the pre-construction wetland grade where practicable to minimize impacts and to facilitate restoration to the original grade. Construction mats are excluded from this requirement.
- d. Temporary fill, construction mats and corduroy roads shall be entirely removed as soon as they are no longer needed to construct the authorized work. Temporary fill shall be placed in its original location or disposed of at an upland site and suitably contained to prevent its subsequent erosion into waters of the U.S. To qualify for Category 1, temporary fill placed during the: i.) growing season must be removed before the beginning of the next growing season, and ii.) non-growing season may remain throughout the following growing season, but must be removed before the beginning of the next growing season.
- e. Temporary fill, construction mats and corduroy roads are considered temporary only if they are removed as soon as they are no longer needed to construct the authorized work.
  - f. Construction debris and/or deteriorated materials shall not be located in waters of the U.S.

#### 15. Restoration of Special Aquatic Sites (Including Wetland Areas)

- a. Temporary fills must be removed in their entirety and the affected areas restored to their preconstruction condition, function and elevation. Restoration shall typically commence no later than the completion of construction.
- b. For excavated areas, "restored to pre-construction condition, function and elevation" means careful removal of existing soil and vegetation, separate topsoil and subsoil stockpiling, soil protection, and replacement back to the original location such that the original soil layering and vegetation schemes are approximately the same, unless otherwise authorized. Plan for natural settling that will occur (the initial post-restoration elevation of the backfilled areas should be above the desired final grade as topsoil may settle by 33% to 50%), minimize compaction, and ensure that topsoil is void of gravel and subsoil. A minimum of 4 inches of topsoil should be at the surface after the soil has settled. Wetland areas temporarily disturbed shall be stabilized (e.g., seeded or planted). Seed mixes and vegetation shall include only plant species native to New England and shall not include any species listed as "Invasive and Other Unacceptable Plant Species" in the "New England District Compensatory Mitigation Guidance" (see GC 24 and refer to Appendix G). This list may be updated periodically.
- c. Limit compaction to the minimum needed to promote a successful seedbed; avoid a 'fluffy' seedbed, which is susceptible to erosion until the plants get established, and a compacted topsoil layer, which is counter-productive and will lead to greater erosion susceptibility down the road. Test soils for compaction. A soil probe, auger, or shovel should be able to retrieve samples of post-restoration profile. Equipment refusal shall be considered a failure of restoration, in which case the soil should be restored through deep-ripping and/or de-compaction, or other appropriate methods, and wetland hydrology must be maintained. See the BMPs at www.nae.usace.army.mil/missions/regulatory >> State General Permits >> Permit Resources >> Restoration.
- d. In areas of authorized temporary disturbance, cut woody vegetation (trees, shrubs, etc.) shall be cut at or above ground level and not uprooted in order to prevent disruption to the wetland soil structure and to allow stump sprouts to revegetate the work area, unless otherwise authorized.
- e. Trenches shall be constructed or backfilled so that the trench does not drain waters of the U.S. (e.g., materials or methods that create a French drain effect).

#### 16. Soil Erosion, Sediment and Turbidity Controls

a. Adequate sedimentation and erosion control management measures, practices and devices, such as phased construction, installation of sediment control barriers (i.e. silt fence, vegetated filter strips, geotextile silt fences, erosion control mixes, hay bales or other devices) downhill of all exposed areas, retention of existing vegetated buffers, application of temporary mulching during construction, and permanent seeding and stabilization shall be installed and properly maintained to reduce erosion and retain sediment on-site during and after construction. They shall be capable of preventing erosion; of collecting sediment, suspended and floating materials; and of filtering fine sediment.

- b. Temporary sediment control barriers shall be removed upon completion of work, but not until all disturbed areas are permanently stabilized. The sediment collected by these sediment barriers shall be removed and placed at an upland location and stabilized to prevent its later erosion into a waterway or wetland.
  - c. All exposed soil and other fills shall be permanently stabilized at the earliest practicable date.
- 17. Time of Year Work Windows/Restrictions. For activities where work is authorized in streams and tidal waters that causes turbidity or sediment re-suspension or other construction related disturbances, work must be conducted during the following TOY work windows (not during the TOY restrictions) unless otherwise authorized by the Corps under Category 2 review:

<u>TOY Restriction</u> (no work) <u>TOY Work Window</u> (work allowed)

Non-tidal waters Oct. 01 through Jul. 14 Jul. 15 through Sep. 30 Tidal waters Apr. 10 through Nov. 07 Nov. 08 through Apr. 09

Alternate windows authorized under Category 2 may include species specific windows recommended by the Maine Dept. of Marine Resources and/or Maine Dept. of Inland Fisheries & Wildlife.

#### 18. Aquatic Life Movements & Management of Water Flows

- a. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Unless otherwise stated, activities impounding water in a stream require a PCN to ensure impacts to aquatic life species are avoided and minimized. All permanent and temporary crossings of waterbodies (e.g., streams, wetlands) shall be:
- i. Suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species; and
- ii. Properly aligned and constructed to prevent bank erosion or streambed scour both adjacent to and inside the culvert. Permanent and temporary crossings of wetlands shall be suitably culverted, spanned or bridged in such a manner as to preserve hydraulic and ecological connectivity between the wetlands on either side of the road.
- b. To avoid adverse impacts on aquatic organisms, the low flow channel/thalweg shall remain unobstructed during periods of low flow, except when it is necessary to perform the authorized work.
- c. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the preconstruction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

#### 19. Water Quality and Coastal Zone Management

- a. Applicants must satisfy any conditions imposed by the state and EPA, where applicable, in their CWA § 401 Water Quality Certifications (WQC) for this GP, or in any Individual § 401 WQC. See Appendix E for state-specific contact information and to determine if any action is required to obtain a 401 WQC. The Corps may require additional water quality management measures to ensure that the authorized activity does not cause or contribute to a violation of water quality standards. All projects authorized by this GP shall be designed, constructed and operated to minimize or eliminate the discharge of pollutants.
- b. Applicants must satisfy any additional conditions imposed by the state in their Coastal Zone Management (CZM) Act consistency concurrences for this GP, or in any Individual CZM consistency concurrences. The Corps may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

#### 20. Floodplains and Floodways

- a. Appropriate measures must be taken to minimize flooding to the maximum extent practicable.
- b. Activities within 100-Year Floodplains must comply with applicable Federal Emergency Management Agency (FEMA)-approved state and/or local floodplain management permitting requirements. Proponents may need to coordinate with FEMA and apply for a formal change to the flood insurance study products or forward a set of project plans and relevant technical documentation in a digital format to the Risk

Analysis Branch Chief, Mitigation Division, FEMA, Region 1, 99 High Street, Boston, Massachusetts 02110. Applicants should provide a copy of any documentation to the Corps along with the PCN.

- c. Proponents may have to obtain a Flood Hazard Development Permit issued by the town. Inquiries may be directed to the municipality or to the Maine Floodplain Management Coordinator at (207) 287-8063. See <a href="http://www.maine.gov/dacf/flood/">http://www.maine.gov/dacf/flood/</a>
- **21. Storage of Seasonal Structures.** Seasonal or recreational structures such as pier sections, floats, aquaculture structures, etc. that are removed from the waterway for a portion of the year (often referred to as seasonal structures) shall be stored in an upland location landward of mean high water (MHW) or ordinary high water (OHW) and not in wetlands, tidal wetlands, their substrate or on mudflats. These seasonal structures may be stored on the fixed, pile-supported portion of the structure that is waterward of MHW or OHW. Seasonal storage of structures in navigable waters, e.g., in a protected cove on a mooring, requires Corps approval and local harbormaster approval.

#### 22. Spawning, Breeding, and Migratory Areas

- a. Jurisdictional activities and impacts such as excavations, discharges of dredged or fill material, and/or suspended sediment producing activities in jurisdictional waters that provide value as fish migratory areas, fish and shellfish spawning or nursery areas, or amphibian and migratory bird breeding areas, during spawning or breeding seasons shall be avoided and minimized to the maximum extent practicable.
- b. Jurisdictional activities in waters of the United States that provide value as breeding areas for migratory birds must be avoided to the maximum extent practicable. The permittee is responsible for obtaining any "take" permits required under the USFWS's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the USFWS to determine if such "take" permits are required for a particular activity (See Appendix E).

#### 23. Vernal Pools

- a. Only vernal pools that meet the current definition of waters of the U.S. are regulated by the Corps.
- b. Direct and indirect adverse effects to all vernal pools (VPs), including their envelopes and critical terrestrial habitats (VP Management Areas<sup>13</sup>), shall be avoided and minimized to the maximum extent practicable. Site clearing, grading, and construction activities associated with a regulated activity in the VP Management Area may cause these adverse effects to the VP.
  - c. The State of Maine has specific protections for vernal pools.<sup>14</sup>
- d. When any regulated activities occur within 750 feet of a vernal pool, the following management practices <u>must be followed</u> for all work within any VP Management Area (750' of a VP's edge) *in order to qualify for Category 1*:
- i. No disturbance within the VP Depression or VP Envelope (area within 100 feet of the VP Depression's edge)<sup>15</sup>;
- ii. Maintain a minimum of 75% of the Critical Terrestrial Habitat (area within 100-750 feet of the VP Depression's edge) as unfragmented forest with at least a partly-closed canopy of overstory trees to provide shade, deep litter and woody debris;
  - iii. Maintain or restore forest corridors connecting wetlands and significant vernal pools;
  - iv. Minimize forest floor disturbance; and
  - v. Maintain native understory vegetation and downed woody debris.

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<sup>&</sup>lt;sup>13</sup> The Corps VP Management Area, which includes the VP and a 750' radius from the VP's edge, is defined at Appendix A, Endnote 5.

<sup>&</sup>lt;sup>14</sup> Appendix G, 10(a)-(d) provides links to the state's Significant Wildlife Habitat regulations and references that provide impact minimization measures to reference when designing projects.

<sup>&</sup>lt;sup>15</sup> The no disturbance requirement in the VP envelope [see (b)(i)(1)], and (b)(i)(2), do not apply to temporary impacts associated with construction mats in previously disturbed areas of existing utility project (e.g., transmission lines, gas pipelines) or linear transportation project (e.g., roads, highways, railways, trails, airport runways and taxiways) right-of-ways provided there is a Vegetation Management Plan that avoids, minimizes and mitigates impacts to aquatic resources.

- vi. Cape Cod style-curbing or no curbing options shall be used on new roads to facilitate amphibian passage. (Reference Appendix G)
- e. A PCN is required for any regulated activity within 750' of a vernal pool when all work within the VP Management Area does not comply with the Category 1 requirements in (d) above. Information on directional buffers in accordance with the VP Directional Buffer Guidance document may be provided in order to demonstrate minimal impact and avoid compensation requirements (Reference Appendix G). Conservation of the un-impacted area within the VP Management Area will often be required.
- f. GC 2 requires applicants to delineate or approximately identify on the project plans all waters of the U.S., which contain vernal pools.
- g. GC 23(b-d) do not apply to projects that are within a municipality and meet the provisions of a Corps-approved VP Special Area Management Plan (VP SAMP) and are otherwise eligible for self-verification.

## 24. Invasive and Other Unacceptable Species<sup>16</sup>

- a. The introduction or spread of invasive or other unacceptable plant or animal species on the project site or areas adjacent to the project site caused by the site work shall be avoided to the maximum extent practicable. For example, construction mats and equipment shall be thoroughly cleaned and free of vegetation and soil before and after use. The introduction or spread of invasive plant or animal species on the project site caused by the site work shall be controlled.
- b. No cultivars, invasive or other unacceptable plant species may be used for any mitigation, bioengineering, vegetative bank stabilization or any other work authorized by this GP. However, non-native species and cultivars may be used when it is appropriate and specified in a written verification, such as using *Secale cereale* (Annual Rye) to quickly stabilize a site. All PCNs should explain the reason for using non-native species or cultivars.
- **25. Programmatic Consultations or Agreements.** The Corps requirements to comply with Section 106 of the NHPA, Section 7 of the Endangered Species Act or Essential Fish Habitat conservation under the Magnuson-Stevens Act may be satisfied by a Programmatic Agreement with the Corps, New England District or another federal action agency. Any Corps, New England District Programmatic Agreements will be available on our website.
- **26. Permit On Site.** The permittee shall ensure that a copy of this GP and any accompanying authorization letter with attached plans are at the site of the work authorized by this GP whenever work is being performed and that all construction personnel performing work which may affect waters of the U.S. are aware of its terms and conditions. The entire permit authorization shall be made a part of any and all contracts and subcontracts for work that affects areas of Corps jurisdiction at the site of the work authorized by this GP. This shall be achieved by including the entire permit authorization in the specifications for work. The term "entire permit authorization" means this entire GP and the authorization letter (including its drawings, plans, appendices and other attachments) and also includes permit modifications. If the authorization letter is issued after the construction specifications, but before receipt of bids or quotes, the entire permit authorization shall be included as an addendum to the specifications. If the authorization letter is issued after receipt of bids or quotes, the entire permit authorization shall be included in the contract or subcontract. Although the permittee may assign various aspects of the work to different contractors or subcontractors, all contractors and subcontractors shall be obligated by contract to comply with all environmental protection provisions contained within the entire GP authorization, and no contract or subcontract shall require or allow unauthorized work in areas of Corps jurisdiction.

<sup>&</sup>lt;sup>16</sup> For the purposes of this GP, plant species that are considered invasive and unacceptable are provided in Appendix G "Invasive and other Unacceptable Plant Species" of our document "Compensatory Mitigation Guidance" at <a href="https://www.nae.usace.army.mil/missions/regulatory">www.nae.usace.army.mil/missions/regulatory</a> >> Mitigation. Chapter 4(e) Planting is also particularly relevant. The June 2009 "Corps of Engineers Invasive Species Policy" provides policy, goals and objectives and is located at <a href="https://www.nae.usace.army.mil/missions/regulatory">www.nae.usace.army.mil/missions/regulatory</a> >> Invasive Species. Additional information can be found at: <a href="https://www.eddmaps.org/ipane">www.eddmaps.org/ipane</a>.

- 27. Self-Verification Notification Form (SVNF). Permitees must complete and submit the SVNF provided at Appendix B to the Corps for work authorized by this GP unless otherwise noted in Appendix A. NOTE: A copy of a state permit application form may be an acceptable surrogate for the SVNF provided either form used also include plans and an Official Species List of federally listed threatened or endangered species.
- **28. Inspections.** The permittee shall allow the Corps to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of this GP and any written verification. The Corps may also require post-construction engineering drawings for completed work, post-dredging survey drawings for any dredging work, or other post-construction reports. To facilitate these inspections, the permittee shall complete and return to the Corps the following forms:
  - For Category 1/Self-Verification: The SVNF (see Appendix B).
  - For Category 2/PCN: The a) Work-Start Notification Form and b) Compliance Certification Form, when either is provided with the authorization letter.

#### 29. Maintenance

- a. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable general conditions and activity-specific conditions to a written verification.
- b. The requirement in (a) above does not include maintenance of dredging projects. Each maintenance dredging event exceeding the self-verification limits requires a new PCN unless an unexpired, written PCN or other Corps authorization specifies that the permittee may "dredge and maintain" an area for a particular time period. Self-verification or PCN maintenance dredging includes only those areas and depths previously authorized and actually dredged. Maintenance dredging with ocean or open water disposal will always require a PCN and at least Category 2 review.
- c. Some maintenance activities may not be subject to regulation under Section 404 in accordance with 33 CFR 323.4(a)(2). Refer to Appendix A, Endnote 7.
- **30. Property Rights.** This GP does not convey any property rights, either in real estate or material, or any exclusive privileges, nor does it authorize any injury to property or invasion of rights or any infringement of federal, state, or local laws or regulations.
- **31. Transfer of GP Verifications**. When the structures or work authorized by this GP are still in existence at the time the property is transferred, the terms and conditions of this GP, including any special conditions, will continue to be binding on the entity or individual who received the GP authorizations, as well as the new owner(s) of the property. If the permittee sells the property associated with a GP verification, the permittee may transfer the GP verification to the new owner by submitting a letter to the Corps (see Appendix E for address) to validate the transfer. A copy of the GP verification must be attached to the letter, and *the letter must contain the new owner's contact information and the following statement and signature:*

"When the structures or work authorized by this GP are still in existence at the time the property is transferred
the terms and conditions of this GP, including any special conditions, will continue to be binding on the new
owner(s) of the property. To validate the transfer of this GP and the associated liabilities associated with
compliance with its terms and conditions, have the transferee sign and date below."

(Transferee)		
(Date)		

**32. Modification, Suspension, and Revocation.** Any work authorized under this GP by self-verification or PCN may be either modified, suspended, or revoked, in whole or in part, pursuant to the policies and procedures of 33 CFR 325.7. Any such action shall not be the basis for any claim for damages against the U.S.

- **33. Special Conditions.** The Corps may independently, or at the request of the federal resource agencies, impose other special conditions on a project authorized pursuant to this GP that are determined necessary to minimize adverse navigational and/or environmental effects or based on any other factor of the public interest. Failure to comply with all terms and conditions of the authorization, including special conditions, constitutes a permit violation and may subject the permittee to criminal, civil or administrative penalties and/or an ordered restoration.
- **34. False or Incomplete Information.** If the Corps makes a determination regarding the eligibility of a project under this GP and subsequently discovers that it has relied on false, incomplete or inaccurate information provided by the permittee, the Corps may determine that the GP authorization is not valid; modify, suspend or revoke the authorization; and the U.S. Government may institute legal proceedings.
- **35. Abandonment.** If the permittee decides to abandon the activity authorized under this GP, unless such abandonment is merely the transfer of property to a third party, he/she may be required to restore the area to the satisfaction of the Corps.
- **36. Enforcement cases.** This GP does not apply to any existing or proposed activity in Corps jurisdiction associated with an ongoing Corps or EPA enforcement action, until such time as the enforcement action is resolved or the Corps or EPA, as appropriate, determines that the activity may proceed independently without compromising the enforcement action.
- **37. Duration of Authorization.** This GP expires on October 12, 2020. Activities authorized under this GP that have commenced (i.e., are under construction) or are under contract to commence before this GP expires will have until October 12, 2021 to complete the activity under the terms and conditions of the current GP.

#### 38. Previously Authorized Activities.

- a. Projects that have received authorization (Category 1 or 2) from the Corps and that were completed under the previous PGPs, nationwide permits, regional general permits or letters of permission, shall remain authorized.
- b. Activities authorized pursuant to 33 CFR Part 330.3 ("Activities occurring before certain dates") are not affected by this GP.
- c. Any work not commenced nor completed that was authorized in a written letter from the Corps under the GP in effect between October 12, 2010 and October 12, 2015 remains authorized subject to the terms and general conditions of this GP along with any special conditions in the authorizing written letter. Exception if previously authorized work is not commenced and a new federally listed threatened or endangered species could be affected, the Corps must consult with the Service(s) prior to re-authorizing the work under this GP. Requests for re-authorization must include an updated Official Species list. To request an Official Species List, refer to the instructions in Appendix D.
- **39. Discretionary Authority.** Notwithstanding compliance with the terms and conditions of this permit, the Corps retains discretionary authority to require Category 2 or Individual Permit review based on concerns for the aquatic environment or for any other factor of the public interest [33 CFR 320.4(a)]. This authority is invoked on a case-by-case basis whenever the Corps determines that the potential consequences of the proposal warrant a higher level of review based on the concerns stated above. This authority may be invoked for projects that may contribute to cumulative environmental impacts that are more than minimal or if there is a special resource or concern associated with a particular project that is not already covered by the remaining conditions of the GP and that warrants greater review. Whenever the Corps notifies an applicant that an Individual Permit may be required, the project is not authorized under this GP and no work may be conducted until an Individual Permit is obtained or until the Corps notifies the applicant that further review has demonstrated that the work may proceed under this GP.
- **40. St. John/St. Croix Rivers.** Work within the Saint John and Saint Croix River basins that requires approval of the International Joint Commission is not eligible for Category 1 and a PCN to the Corps is required if any temporary or permanent use, obstruction or diversion of international boundary waters could affect the natural

flow or levels of waters on the Canadian side of the line; or if any construction or maintenance of remedial works, protective works, dams, or other obstructions in waters downstream from boundary waters could raise the natural level of water on the Canadian side of the boundary.

- **41. National Lands**. Activities that impinge upon the value of any National Wildlife Refuge, National Forest, National Marine Sanctuary, National Park or any other area administered by the National Park Service, U.S. Fish and Wildlife Service (USFWS) or U.S. Forest Service are not eligible for Category 1 and require a PCN
- **42. Essential Fish Habitat (EFH)**. Any work in the following rivers and streams, including all tributaries to the extent that they are currently or were historically accessible for salmon migration, shall not be authorized under Category 1 of the GP and must be screened for potential impacts to EFH (see Appendix G for more information).

Androscoggin River	Aroostook River	Boyden River	Dennys River
Ducktrap River	East Machias River	Hobart Stream	Kennebec River
Machias River	Narraguagus River	Orland River	Passagassawaukeag River
Patten Stream	Penobscot River	Pleasant River	Presumpscot River
Saco River	Sheepscot River	St. Croix River	Tunk Stream
			Union River

The above does not apply to the following activities which may qualify for Category 1 work:

- Exploratory drilling and borings for bridges.
- Moorings (see Appendix A, Page 28 for Category 1 thresholds and requirements)
- Structures, floats & lifts (see Appendix A, Page 29 for Category 1 thresholds and requirements)
- Other activities specified in a programmatic agreement with NMFS.

#### 43. Work Site Restoration

- a. Wetland areas where permanent disturbance is not authorized shall be restored to their original condition and elevation, which under no circumstances shall be higher than the pre-construction elevation. Original condition means careful protection and/or removal of existing soil and vegetation, and replacement back to the original location such that the original soil layering and vegetation schemes are approximately the same, unless otherwise authorized.
- b. Upon completion of construction, all disturbed wetland areas (the disturbance of these areas must be authorized) shall be properly stabilized. Any seed mix shall contain only plant species native to New England and shall not contain any species listed in the "Invasive and Other Unacceptable Plant Species" Appendix in the "New England District Compensatory Mitigation Guidance" (see GC 24 and refer to Appendix G). This list may be updated periodically.
- c. In areas of authorized temporary disturbance, if trees are cut they shall be cut at ground level and not uprooted in order to prevent disruption to the wetland soil structure and to allow stump sprouts to revegetate the work area, unless otherwise authorized.

## 44. Bank Stabilization

- a. Projects involving construction or reconstruction/maintenance of bank stabilization structures within Corps jurisdiction shall be designed to minimize environmental effects, effects to neighboring properties, scour, etc. to the maximum extent practicable.
- b. Project proponents must design and construct bank stabilization projects using this sequential minimization process: avoidance of aquatic resource impacts, diversion of overland flow, vegetative stabilization, stone-sloped surfaces, and walls/bulkheads. Vertical walls/bulkheads shall only be used in situations where reflected wave energy can be tolerated.
- c. Inland Water bank stabilization activities necessary for erosion prevention must meet all of the following criteria: i) No material is placed in excess of the minimum needed for erosion protection; ii) The activity is no more than 500 feet in total length along the bank(s); iii) The activity will not exceed an average of one cubic yard per running foot placed along the bank below the plane of the ordinary high water mark; iv) Structures angled steeper than 1H:1V and any material other than angular or sub-angular stone or fiber roll revetments require at least a Category 2 review; v) The activity does not involve discharges of dredged or fill

material into special aquatic sites; vi) No material is of the type, or is placed in any location, or in any manner, to impair surface water flow into or out of any water of the U.S.; vii) No material is placed in a manner that will be eroded by normal or expected high flows (properly anchored trees and treetops may be used in low energy areas); and viii) The activity is not a stream channelization activity.

d. Bank stabilization activities in tidal waters are provided at Appendix A, Page 30 & 31. Direct impacts in tidal waters from contiguous bank stabilization projects in excess of 200 linear feet (Applicant or Applicant + Abutters combined) must undergo Category 2 review.

## **45.** Stream Work and Crossings & Wetland Crossings Notes:

- a. For *Stream Work and Crossings* below, conditions (a) and (b) apply to Inland Waters and Wetlands (see Appendix A, Page 1 for definition) and Navigable Waters (see Appendix A, Page 27 for definition). Conditions (c)-(l) below only apply to Inland Waters and Wetlands that are streams. All new and replacement crossings in Navigable Waters require an application to the Corps and at least a Category 2 review.
- b. In-stream work in a watershed occupied by listed Atlantic salmon, Atlantic sturgeon, or shortnose sturgeon [see GC 8(b)] and some stream work such as crossings on EFH waters (see GC 42) is not eligible for Category 1.
- c. "High-Quality Stream Segments" are shown at <a href="www.maine.gov/dep/gis/datamaps">www.maine.gov/dep/gis/datamaps</a> and may be useful in evaluating impacts to fisheries. GIS shape files are under "Other Google Earth Interactive Maps" and PDFs by county are under "DEP GIS Maps." See Appendix E for more state contact information.

## **Conditions for Stream Work and Crossings:**

- a. All permanent crossings of rivers, streams, brooks, etc. (hereon referred to as "streams") shall be suitably culverted, bridged, or otherwise designed to i) withstand and to prevent the restriction of high flows to qualify for Category 1, and ii) not obstruct the movement of or not 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, beyond the actual duration of construction unless the activity's primary purpose is to impound water to qualify for Category 1 or 2. (NOTE: Areas of fill and/or cofferdams must be included in total waterway/wetlands impacts to determine applicability of this GP).
- b. Any work that temporarily or permanently impacts upstream or downstream flood conditions, or permanently impacts wetlands in excess of Category 1 thresholds, must be reviewed at least under Category 2. See the documents referenced in Appendix G, 8(c) and (d) for guidance.
  - c. New Stream Crossings. For new stream crossings to qualify for Category 1:
    - i. Must ensure compliance with GC 45(a) and GC 45(b) above.
- ii. Shall be designed and constructed in accordance with the Corps General Stream Crossing Standards provided on Page 19 and the stream simulation document listed at Appendix G, 8(a).
  - d. <u>Replacement Stream Crossings.</u> For replacement stream crossings to qualify for Category 1:
    - i. Must ensure compliance with GC 45(a) and GC 45(b) above.
- ii. Shall be designed and constructed in accordance with the Corps General Stream Crossing Standards provided on Page 19 and the stream simulation document listed at Appendix G, 8(a).
- e. <u>Culvert Extensions</u>. Culvert extensions on culverts that do not meet the Corps General Stream Crossing Standards do not qualify for Category 1 and require an application to the Corps and at least Category 2 review.
  - f. Temporary Stream Crossings.

Note: The General Stream Crossing Standards don't apply to temporary stream crossings.

- i. Temporary stream crossings or cofferdams shall be used for equipment access across streams [see Appendix G, 8(e)]. Note: Areas of fill and/or cofferdams must be included in total waterway/wetlands impacts to determine the review category in Appendix A.
  - ii. Temporary stream crossings shall be removed within 180 days to qualify for Category 1.

- iii. Temporary stream crossings that are not spans<sup>17</sup> (typically culverts) must be designed in accordance with 1-6 below to qualify for Category 1. Category 2 applications should include information demonstrating 2-6 below:
  - 1. Installed and removed during the low flow period specified in GC 45(1) below.
- 2. Placed on geotextile fabric or other material where practicable to ensure restoration to the original grade. Soil may not be used to construct or stabilize these structures and rock must be large enough to allow for easy removal without disrupting the streambed.
- 3. Designed and maintained to withstand and pass high flows. Water height should be no higher than the top of the culvert's inlet. A minimum culvert diameter of two feet is required to pass debris. Culverts must be aligned to prevent bank erosion or streambed scour.
- 4. Equipped with energy dissipating devices installed downstream if necessary to prevent scour.
  - 5. Designed and maintained to prevent soil from entering the waterbody.
- 6. Removed upon the completion of work. Impacts to the streambed or banks requires restoration to their original condition using stream simulation methods<sup>18</sup>.
- g. <u>Slip Lining</u>. Work using slip lining (retrofitting an existing culvert by inserting a smaller diameter pipe), invert lining, or resulting in decreased diameter, does not qualify for Category 1, either as new work or maintenance activities.
- h. <u>Work in Flowing Waters</u>. To qualify for Category 1, no unconfined fill [see GC 14(b)] or excavation in flowing waters is allowed. To accomplish this:
- i. Bank stabilization work below ordinary high water (OHW) shall utilize erosion controls such as inflatable cofferdams, jersey barrier, silt screen, turbidity curtain, etc. where practicable to prevent sediment input to the stream and to minimize turbidity and sedimentation impacts for sensitive life stages. Bank stabilization above OHW must utilize erosion controls.
- ii. Management techniques such as temporary flume pipes, culverts, cofferdams, etc. must be used to maintain normal flows within the stream boundary's confines, or water diversions may be used immediately up and downstream of the work footprint (see Appendix A, Endnote 6) or work must be performed in the dry under no flow conditions, or under very low flow conditions following the practices in GC 45(a).
- i. <u>Minimization</u>. In order to make the Category 2 review process more efficient and result in a faster decision, new and replacement stream crossings should be designed using the least intrusive and environmentally damaging method following this sequential minimization process: 1) spans with no stream impacts, 2) spans with stream impacts, and 3) embedded culverts with stream simulation or low-slope design.
- j. <u>Maintenance Requirements</u>. The permittee shall maintain the work authorized herein in good condition and in conformance with the terms and general conditions of this permit to facilitate aquatic life passage as stated in GC 45(a). Culverts that develop "hanging" inlets or outlets, result in bed washout, or a stream that doesn't match the characteristics of the substrate in the natural stream channel such as mobility, slope, stability confinement will require maintenance or repair to comply with this GC. This does not apply to GC 45(f) above.
- k. <u>Maintenance and Replacement Information</u>. An existing stream crossing must be authorized and in compliance with all conditions of its authorization(s) to qualify for maintenance not subject to regulation. See Appendix A, Endnote 7. A non-serviceable crossing is not eligible for maintenance and is therefore considered as a replacement crossing [see GC 45(d)].
- l. <u>Work Window</u>. For projects that otherwise meet the terms of Category 1, in-stream construction work shall be conducted during the low flow period July 15 September 30 in any year. Projects that are not to be conducted during that time period are ineligible for Category 1 and shall be screened pursuant to Category 2, regardless of the waterway and wetland fill and/or impact area.

## Corps General Stream Crossing Standards (required for Category 1; recommended for Category 2):

a. Culverts must be embedded:

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<sup>&</sup>lt;sup>17</sup> For the purposes of this GP, spans are bridges, three-sided box culverts, open-bottom culverts or arches that span the stream with footings landward of bankfull width.

<sup>&</sup>lt;sup>18</sup> Design and construction shall be in accordance with the stream simulation document listed at Appendix G, 8(a).

- $\bullet \ge 2$  feet for box culverts and other culverts with smooth internal walls,
- $\geq 1$  foot for corrugated pipe arches
- $\geq 1$  foot and at least 25 percent for corrugated round pipe culverts
- b. **For new crossings**, spans<sup>17</sup> are required to avoid or cause minimal disruption to the streambed and to meet the requirements of General Condition 45(a) and 45(b). Footings and abutments must be landward of 1.2 times bankfull width. To the greatest extent practicable, work in the stream shall be minimized, and design and construction shall allow the streambed's natural structure and integrity to remain intact. Any fill or excavation of the streambed below bankfull width other than footings, support pilings, or work specified in 45(h)ii requires Category 2 review and, unless demonstrated otherwise, stream simulation<sup>18</sup> to establish substrate and banks in the span structure and work area as specified in (d) and (e) below.
- c. **For replacement crossings**, spans<sup>17</sup> are required to meet the requirements of General Condition 45(a) and 45(b). Footings and abutments shall be landward of 1.2 times bankfull width. Unless demonstrated otherwise, stream simulation<sup>18</sup> is required to establish substrate and banks in the span structure and work area as specified in (d) and (e) below.
- d. Crossings must have a natural bottom substrate within the structure matching the characteristics of the substrate in the natural stream channel and the banks (mobility, slope, stability, confinement, grain and rock size) at the time of construction and over time as the structure has had the opportunity to pass significant flood events. To allow terrestrial passage for wildlife and prevent undermining the footings, crossings shall have a bank on both sides of the stream matching the horizontal profile of the existing stream and banks<sup>18</sup>. Note: Installation of substrate material within smaller culverts may not be safe or practicable. In these cases, it may be necessary to allow for natural deposition and bed development unless alternative methods are identified.
- e. Crossings must be designed and constructed<sup>18</sup> with appropriate bed forms and streambed characteristics so that water depths and velocities are comparable to those found in the natural channel at a variety of flows. In order to provide appropriate water depths and velocities at a variety of flows and especially low flows, it is usually necessary to reconstruct the streambed or preserve the natural channel within the structure. Otherwise, the width of the structure needed to accommodate higher flows will create conditions that are too shallow at low flows. The grain and rock size, and arrangement of streambed materials within the structure should be in accordance with (d) above. Flows could go subsurface within the structure if only large material is used without smaller material filling the voids.

#### **Conditions for Wetland Crossings:**

- a. All temporary and permanent crossings of wetlands shall be suitably culverted, bridged, or otherwise designed to: i) Withstand and prevent the restriction of high flows, ii) Not obstruct the movement of or not substantially disrupt the necessary life-cycle movements of those species of aquatic life indigenous to the wetland, including those species that normally migrate through the area, beyond the actual duration of construction unless the activity's primary purpose is to impound water. See Appendix E for the Maine DEP's crossing standards.
- b. To qualify for Category 1, new and replacement wetland crossings that are permanent shall be culverted, spanned or bridged in such a manner as to preserve hydraulic and ecological connectivity, at its present level, between the wetlands on either side of the road. To meet this requirement, we recommend that culverts, spans or bridges be placed at least every 50 feet with an opening at least 2 feet high and 3 feet wide at ground level where practicable. Closed bottom culverts shall be embedded at least 6 inches with a natural bottom.
- c. In the case of non-compliance, the permittee shall take necessary measures to correct wetland damage due to lack of hydraulic and ecological connectivity.
- d. Any work that results in flooding, results in impacts to wetlands on either side of the wetland crossing in excess of Category 1 thresholds, or impacts wetland drainage from the upgradient side of the wetland crossing does not qualify for Category 1.

Robert J. Desista

Deputy Chief, Regulatory Division For DISTRICT ENGINEER

DATE

	APPENDIX A: DEFINITION OF CATEGORIES		
A. INLAND WATERS AND WETLANDS	Inland Waters and Wetlands: Waters that are regulated under Section 404 of the Clean Water Act, including rivers, streams, lakes, ponds and wetlands, and <i>excluding Section 10 Navigable Waters of the U.S. (tidal and freshwater)</i> . The jurisdictional limits are the ordinary high water (OHW) mark in the absence of adjacent wetlands, beyond the OHW mark to the limit of adjacent wetlands when adjacent wetlands are present, and the wetland limit when only wetlands are present. For the purposes of this GP and designated activities, fill placed in the area between the mean high water (MHW) and the high tide line (HTL), and in the bordering and contiguous wetlands <sup>1</sup> to tidal waters are reviewed in the Navigable Waters section. (See B. Navigable Waters on page 27 below.)  Projects not meeting Category 1 require an application for review as a Category 2 or Individual Permit project.  All Category 1 and 2 projects must comply with all of this GP's applicable terms (Pages 1 – 4) and General Conditions (Pages 5–20).		
ACTIVITY	CATEGORY 1 Self-Verification Eligible (SVNF Required)	CATEGORY 2 (PCN Required)	
1. Repair, Replacement, Expansion, and Maintenance of Authorized Structures and Fills	Repair or maintenance of existing, currently serviceable, authorized fills with no expansion or change in use:  • Conditions of the original authorization apply.  • Minor deviations in fill design allowed. <sup>7</sup> • The repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events is authorized, provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage.  • No effect on federally listed endangered or threatened species or critical habitat.	Replacement of non-serviceable fills, or repair/maintenance of serviceable fill, with expansion <3 acres, or with a change in use.	
2. Moorings	NA – moorings in non-navigable inland waters are not subject to Corps jurisdiction.  Note: Moorings placed in freshwater navigable waters are reviewed in the Navigable Waters section. (See B. Navigable Waters on Page 28 below.)	NA	
3. Structures, Floats & Lifts	<ul> <li>For solid fill or crib supported structures on inland waters, &lt;15,000 square feet (SF) of waterway and/or wetland fill, associated secondary impacts<sup>2</sup>, and temporary fills.</li> <li>No effect on federally listed endangered or threatened species or critical habitat.</li> <li>Note: Temporary or permanent structures placed in freshwater navigable waters are reviewed in the Navigable Waters section. (See B. Navigable Waters on page 29 below.</li> </ul>	1. Work not eligible for Category 1 2. ≥15,000 SF to <3 acres of inland waterway and/or wetland fill and associated secondary impacts (e.g., areas drained, flooded, fragmented, or excavated).	
4. Aids to Navigation and Temporary Recreational Structures	NA - this activity in non-navigable inland waters is not subject to Corps jurisdiction.  Note: Aids to Navigation and other structures placed in freshwater navigable waters are reviewed in the Navigable Waters section. (See B. Navigable Waters on page 30 below.)	NA	

5. Dredging, Disposal of Dredged Material, Beach Nourishment, and Rock Removal and Relocation  6. Discharges of Dredged or Fill	<ol> <li>For regulated discharges associated with excavation, and disposal &lt;15,000 SF inland waterway and/or wetland impacts.</li> <li>The activity does not occur in navigable waters of the U.S.</li> <li>Stream channelization, relocation or loss of streambed including impoundments or discharge of tailings into streams does not occur.</li> <li>No effect on federally listed endangered or threatened species or critical habitat.</li> <li>NA - For discharges incidental to the construction of bridges in inland waters of the U.S. refer to Activity 23 (Stream and Wetland Crossings) and</li> </ol>	1. Work not eligible for Category 1 2. ≥15,000 SF to <3 acres of inland waters.  NA
Material Incidental to the Construction of Bridges	GC 45.  Note: Discharges of Dredged or Fill Material Incidental to the Construction of Bridges in freshwater navigable waters are reviewed in the Navigable Waters section. (See B. Navigable Waters on page 30 below.)	
7. Bank and Shoreline Stabilization	<ul> <li>Inland bank stabilization &lt;500 FT long and ≤1 CY of fill per linear foot below OHW, provided:</li> <li>≤1 cubic yard of fill per linear foot placed along the bank waterward of ordinary high water.</li> <li>Work complies with the GCs (GC 44 in particular), including:         <ul> <li>No structures angled steeper than 1H:1V allowed. Only rough-faced stone or fiber roll revetments allowed.</li> <li>No in-stream work involving fill or excavation in flowing waters (see GC 45(h)).</li> </ul> </li> <li>In-water work limited to Jul 15 – Sep 30.</li> <li>No work in vernal pools<sup>5</sup> or SAS<sup>3</sup>.</li> <li>No effect on federally listed endangered or threatened species or critical habitat.</li> </ul>	Work not eligible for Category 1
8. Residential, Commercial, Industrial, and Institutional Developments, and Recreational Facilities	<ol> <li>1. &lt;15,000 SF of inland waterway and/or wetland fill and associated secondary impacts² (e.g., areas drained, flooded, fragmented, mechanically cleared or excavated). Fill area includes all temporary and permanent fill, and regulated discharges associated with excavation. Construction mats are considered as fill. [See GC 14]</li> <li>Provided:         <ul> <li>Historic fill + proposed impact area &lt;15,000 SF complies with GC 5, Single and Complete Projects.</li> <li>No work in special aquatic sites (SAS)⁴ other than wetlands.</li> <li>No effect on federally listed endangered or threatened species or critical habitat.</li> </ul> </li> <li>2. For work in Vernal Pool (VP) Management Areas (includes VPs)⁵:</li> </ol>	<ol> <li>Work not eligible for Category 1.</li> <li>≥15,000 SF to &lt;3 acres of inland waterway and/or wetland fill and associated secondary impacts (e.g., areas drained, flooded, fragmented, or excavated). Fill area includes all temporary and permanent fill (including mats), and regulated discharges associated with excavation.</li> <li>Mechanical clearing without grubbing or other soil disturbance &gt;3 acres as a secondary impact may still be eligible for Category 2 at the discretion of the Corps.</li> <li>See GC 2 and Appendix C for wetland delineation</li> </ol>

	<ul> <li>See GC 23 and Appendix C for VP delineation requirements.</li> <li>See GC 23 to determine if work qualifies for Category 1 or 2.</li> </ul>	requirements.
9. Utility Line Activities	<ul> <li>See Appendix G for VP documents providing mitigation guidance.</li> <li>1. &lt;15,000 SF of inland waterway and/or wetland fill, associated secondary impacts², and temporary fills.</li> <li>2. The activity does not occur in, over, or under navigable waters of the U.S.</li> <li>3. Intake structures that are dry hydrants used exclusively for firefighting activities with no stream impoundments.</li> <li>4. There is no permanent change in pre-construction contours in waters of the U.S.</li> <li>5. Material resulting from trench excavation is temporarily side cast into waters of the U.S. for ≤3 months and is placed in such a manner that it is not dispersed by currents or other forces.</li> <li>6. The utility line is placed within and does not run a) parallel to, or b) along a streambed.</li> <li>7. Stream channelization, relocation or loss of streambed including impoundments does not occur.</li> </ul>	1. Work not eligible for Category 1 2. ≥15,000 SF to <3 acres of inland waterway and/or wetland fill and associated secondary impacts (e.g., areas drained, flooded, fragmented, or excavated). Fill area includes all temporary and permanent fill (including mats), and regulated discharges associated with excavation.  3. Mechanical clearing without grubbing or other soil disturbance >3 acres as a secondary impact may still be eligible for Category 2 at the discretion of the Corps.
	8. No effect on federally listed endangered or threatened species or critical habitat.  9. There is no discharge in SAS other than non-tidal wetlands.  10. Construction mats <sup>4</sup> of any area necessary to conduct activities that were previously authorized, authorized under Category 1, or not subject to regulation (see Endnote 7). Authorized construction mats must be in place for <3 months, removed immediately upon work completion, and the wetlands must be restored (see GC 43).  11. Stream crossings must comply with GC 17.	
10. Linear	1. <15,000 SF of inland waterway and/or wetland fill associated secondary	1. ≥15,000 SF to <3 acres of inland waterway and/or
Transportation Projects (not	impacts (e.g., areas drained, flooded, fragmented, mechanically cleared or excavated). Fill area includes all temporary and permanent fill, and	wetland fill and associated secondary impacts (e.g., areas drained, flooded, fragmented, or excavated). Fill area
including stream	regulated discharges associated with excavation. Construction mats are	includes all temporary and permanent fill (including
crossings)	considered fill. (See GC 14.)	mats), and regulated discharges associated with
	Provided:	excavation.
For stream crossings,	• Historic fill + proposed impact area <15,000 SF and complies with GC 5	2. Mechanical clearing without grubbing or other soil
refer to Activity 23	single and complete projects.	disturbance >3 acres as a secondary impact may still be
	<ul> <li>No work in special aquatic sites (SAS) other than wetlands.</li> <li>2. Construction mats<sup>4</sup> of any area necessary to conduct activities that were</li> </ul>	eligible for Category 2 at the discretion of the Corps.
	previously authorized, authorized under Category 1, or not subject to	
	regulation (see Endnote 7). Authorized construction mats must be in place	
	for <3 months, removed immediately upon work completion, and the	
	wetlands must be restored (see GC 43).  3. No effect on federally listed endangered or threatened species or critical	
	habitat.	

11. Mining Activities  12. Boat Ramps	<ol> <li>1. &lt;15,000 SF of inland waterway and/or wetland fill, associated secondary impacts, and temporary impacts.</li> <li>2. The activity does not occur in navigable waters of the U.S.</li> <li>3. Stream channelization, relocation or loss of streambed including impoundments or discharge of tailings into streams does not occur.</li> <li>4. No effect on federally listed endangered or threatened species or critical habitat.</li> <li>1. &lt;15,000 SF of inland waterway and/or wetland fill, associated secondary impacts, and temporary impacts.</li> <li>2. No effect on federally listed endangered or threatened species or critical habitat.</li> </ol>	<ol> <li>Work not eligible for Category 1.</li> <li>≥15,000 SF to &lt;3 acres of inland waterway and/or wetland fill and associated secondary impacts (e.g., areas drained, flooded, fragmented, or excavated). Fill area includes all temporary and permanent fill (including mats), and regulated discharges associated with excavation.</li> <li>Work not eligible for Category 1</li> <li>&gt;15,000 SF and &lt; 3 acres of impact.</li> </ol>
13. Land and Water-Based Renewable Energy Generation Facilities and Hydropower Projects  14. Reshaping	For land-based facilities:  1. <15,000 SF of inland waterway and/or wetland fill, associated secondary impacts, and temporary impacts.  2. Stream channelization, relocation or loss of streambed including impoundments does not occur.  3. No effect on federally listed endangered or threatened species or critical habitat.  For water-based facilities and hydropower projects:  No new facilities are eligible.  Not Applicable	For land-based activities:  1. Work not eligible for Category 1.  2. >15,000 SF and < 3 acres impact.  3. Mechanical clearing without grubbing or other soil disturbance >3 acres as a secondary impact may still be eligible for Category 2 at the discretion of the Corps.  For water-based facilities and hydropower projects:  > 3 acres of impact will require an IP.  Not Applicable
Existing Drainage Ditches & Mosquito Management  15. Oil Spill and Hazardous Material Cleanup	Jurisdictional activities required for the containment and cleanup of oil and hazardous substances that are subject to the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300) provided that the work is done in accordance with the Spill Control and Countermeasure Plan required by 40 CFR 112.3 or any existing state contingency plan and provided that the Regional Response Team (if one exists in the area) concurs with the proposed containment and cleanup action. SAS³ must typically be restored in place at the same elevation.  Note: SVNF or a surrogate state reporting form may be submitted after the fact.	Work not eligible for Category 1

16. Cleanup of Hazardous and toxic waste	<ul> <li>Specific jurisdictional activities to effect the containment, stabilization, or removal of hazardous or toxic waste materials, including court ordered remedial action plans or related settlements, which are performed, ordered or sponsored by a government agency with established legal or regulatory authority. SAS should be restored in place at the same elevation.         <ul> <li>&lt;15,000 SF of inland waterway and/or wetland fill, associated secondary impacts, and temporary impacts.</li> <li>No stream channelization, relocation or loss of streambed occurs.</li> <li>The project does not involve establishing new disposal sites or expanding existing sites used for the disposal of hazardous or toxic waste.</li> <li>No effect on federally listed endangered or threatened species or critical habitat.</li> </ul> </li> </ul>	Work not eligible for Category 1
17. Scientific Measurements Devices	<ol> <li>Scientific measurement devices whose purpose is to measure and record scientific data, such as staff gages, water recording devices, water quality testing and improvement devices, and similar structures. This excludes any biological sampling devices. Structures may not restrict or concentrate movement of aquatic organisms.</li> <li>No effect on federally listed endangered or threatened species or critical habitat.</li> </ol>	Work not eligible for Category 1
18. Survey Activities	1. Jurisdictional survey activities, such as core sampling, seismic exploratory operations, plugging of seismic shot holes and other exploratory-type bore holes, exploratory trenching, soil surveys, sampling, and historic resources surveys (but not recovery). Exploratory trenches must be restored in accordance with GC 43. The construction of temporary pads is authorized provided the discharge doesn't exceed 25 CY. This doesn't authorize permanent structures or the drilling and the discharge of excavated material from test wells for oil and gas exploration (the plugging of such wells is authorized).  2. No effect on federally listed endangered or threatened species or critical habitat.	Work not eligible for Category 1
19. Agricultural Activities	<ol> <li>For those activities subject to Corps jurisdiction<sup>16</sup>, &lt;15,000 SF of inland waterway and/or wetland fill, associated secondary impacts, and temporary impacts.</li> <li>No stream channelization, relocation, loss of streambed, or farm ponds in streams.</li> <li>No effect on federally listed endangered or threatened species or critical habitat.</li> </ol>	1. ≥15,000 SF to <3 acres of inland waterway and/or wetland fill and associated secondary impacts (e.g., areas drained, flooded, fragmented, or excavated). Fill area includes all temporary and permanent fill (including mats), and regulated discharges associated with excavation.  2. > 3 acres of impact will require an IP.

20. Fish and Wildlife Harvesting, Enhancement and Attraction Devices and Activities	NA - this activity in non-navigable inland waters, if not involving a discharge of dredged or fill material, is not subject to Corps jurisdiction. Note: Related structures placed in freshwater navigable waters (e.g. the upper Penobscot or Kennebec Rivers) are reviewed in the Navigable Waters section. (See B. Navigable Waters on Page 33 below.)	Not Applicable
21. Habitat Restoration, Establishment and Enhancement Activities	<ol> <li>1. &lt;15,000 SF of inland waterway and/or wetland fill, associated secondary impacts, and temporary impacts.</li> <li>2. The activity is supported in writing by a local, state, or non-Corps Federal environmental agency. Water impoundments require PCN.</li> <li>3. No conversion of i) a stream to wetland or vice versa, wetland to a pond or uplands, and ii) one wetland type to another.</li> <li>4. No dam removal.</li> <li>5. No effect on federally listed endangered or threatened species or critical habitat.</li> </ol>	1. Work not eligible for Category 1 2. Aquatic habitat restoration, establishment, and enhancement of wetlands and riparian areas and the restoration and enhancement of streams and other open waters with impacts of any area ≥15,000 SF, provided those activities result in net increase in overall aquatic resource functions and services. <sup>8</sup>
22. Previously Authorized Activities	Any work not commenced nor completed that was authorized in a written letter from the Corps under the GP in effect between October 12, 2010 and	
Authorized Activities	October 12, 2015. The terms and general conditions of this GP apply along with any special conditions in the written authorization.	
23. Stream &	1. River, stream and brook work and crossings:	Work not eligible for Category 1
Wetland Crossings	<ul> <li>Must comply with GC 45 in particular, including: <ul> <li>No slip lining [see GC 45 (g)].</li> <li>No in-stream work involving fill or excavation in flowing waters [see GC 45(h)].</li> <li>In-stream work limited to Jul 15 – Sep 30 [see GC 45 (l)].</li> </ul> </li> <li>No work in riffles and pools<sup>3</sup>.</li> <li>No stream relocations.</li> <li>No dams or dikes<sup>6</sup>.</li> <li>No effect on federally listed endangered or threatened species or critical habitat.</li> <li>&lt;15,000 SF of inland waterway and/or wetland fill, associated secondary impacts, and temporary impacts.</li> </ul> <li>Wetland crossings must comply with the particularly relevant GC 45.</li>	
24. Aquaculture	For land based installations, <15,000 SF of inland waterway and/or wetland	Work not eligible for Category 1
(freshwater)	<ul> <li>fill, associated secondary impacts, and temporary impacts.</li> <li>In-stream/in-water work limited to Jul 15 – Sep 30.</li> <li>No effect on federally listed endangered or threatened species or critical habitat.</li> <li>Note: Related structures placed in freshwater navigable waters are reviewed in the Navigable Waters section. (See B. Navigable Waters, below.)</li> </ul>	

B. NAVIGABLE WATERS	Navigable Waters of the United States: Waters that are subject to the ebb and flow of the tide and/or the tidal and non-tidal portions of the Federally designated navigable waters (the Penobscot River, Kennebec River, and Lake Umbagog) (Section 10 Rivers and Harbors Act of 1899). The jurisdictional limits are the mean high water (MHW) line in tidal waters and the ordinary high water (OHW) mark in non-tidal portions of the federally designated navigable rivers. For the purposes of this GP, fill placed in the area between the mean high water (MHW) and the high tide line (HTL), and in the bordering and contiguous wetlands <sup>1</sup> to tidal waters are also reviewed in this Navigable Waters section.  Projects not meeting Category 1 require an application for review as a Category 2 or Individual Permit project.  All Category 1 and 2 projects must comply with all of this GP's applicable terms (Pages 1 - 4) and General Conditions (Pages 5 - 20).		
ACTIVITY	<b>CATEGORY 1</b> Self-Verification Eligible (SVNF Required)	CATEGORY 2 (PCN Required)	
1. Repair, Replacement, Expansion, and Maintenance of Authorized (or grandfathered) Structures and Fills	<ol> <li>Repair, replacement in-kind, or maintenance<sup>7</sup> of existing, currently serviceable<sup>7</sup>, authorized structures or fills:         <ul> <li>All work is to be conducted in-the-dry, during low water.</li> <li>Conditions of the original authorization apply.</li> <li>No substantial expansion or change in use.</li> <li>No new fill in SAS<sup>3</sup>.</li> <li>Must be rebuilt in same footprint, however minor deviations in structure design allowed<sup>7</sup>.</li> </ul> </li> <li>The repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events is authorized, provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage.</li> </ol>	<ol> <li>Replacement of non-serviceable structures and fills or repair/maintenance of serviceable structures or fills, with fill, replacement or expansion &lt;1 acre, or with a change in use.</li> <li>&lt;2. &lt;1 acre temporary or permanent fill, excavation and/or secondary impacts. Fill area includes all temporary and permanent waterway fills, provided: <ul> <li>Temporary or permanent fill in eelgrass¹⁴ &lt;1000 SF.</li> <li>Permanent fill in SAS (excluding eelgrass¹⁴) &lt;4300 SF.</li> </ul> </li> <li>Standard Pile Driving Conditions. Work involving piles shall adhere to one of the four methods below:</li> <li>Piles installed in-the-dry during low water or in-water between Nov. 8th - Apr. 9th, or</li> <li>Must be drilled and pinned to ledge, or</li> <li>Vibratory hammers used to install any size and quantity of wood, concrete or steel piles, or</li> <li>Impact hammers limited to one hammer and &lt;50 piles installed/day with the following: wood piles of any size, concrete piles ≤18-inches diameter, steel piles &lt;12-inches diameter if the hammer is ≤3000 lbs and a wood cushion is used between the hammer and steel pile, and</li> <li>For the methods above:         <ul> <li>In-water noise levels shall not exceed &gt;187dB cSEL re 1µPa or 206dB peak re 1µPa at a distance &gt;10m from the pile being installed, and</li> <li>In-water noise levels &gt;150dB peak re 1µPa shall not exceed 12 consecutive hours on any given day and a 12 hour recovery period (i.e., in-water noise below 150dB peak re 1µPa) must be provided between work days.</li> </ul> </li> <li>Existing derelict, degraded or abandoned piles in the project area that are affected by project activities should be removed and properly disposed of in an upland location landward of MHW or OHW and not in wetlands, tidal wetlands, their substrate or mudflats.</li> </ol>	

## 2. Moorings

- 1. Private, non-commercial, non-rental, single-boat moorings, provided:
  - Authorized by the local harbormaster/town.
  - Not associated with any boating facility. 11
  - Boat or mooring not located in a Federal Navigation Project or buffer zone<sup>12</sup> other than in a Federal Anchorage<sup>12</sup>. Moorings in a Federal Anchorage not associated with a boating facility<sup>11</sup> and are not for rent.
  - No interference with navigation.
  - No new moorings located in SAS<sup>3</sup>. Prior to installation of moorings, a site-specific eelgrass survey should be conducted to document that eelgrass is not present.
  - When existing, authorized moorings in SAS³ are going to be replaced, they should be replaced with low impact mooring technology that prevents mooring chains from resting or dragging on the bottom substrate at all tides and helical anchors, or equivalent SAS protection systems where practicable.
- 2. Minor relocation of previously authorized moorings, provided:
  - Authorized by the local harbormaster/town.
  - Not located in SAS<sup>3</sup>
  - No interference with navigation.
  - Cannot be relocated into a Federal Navigation Project<sup>12</sup> other than a Federal Anchorage<sup>12</sup>

## Note: Cat 1 eligible moorings do not require SVNF.

- **3. Structures, Floats and Lifts**
- 1. Reconfiguration of existing authorized structures shall occur in-the-dry during low water.
- 2. Minor relocation of <u>previously authorized</u> floats or moored floats/lobster cars, provided:
  - Authorized by the local harbormaster/town.
  - Not located in SAS<sup>3</sup>.
  - No interference with navigation.
  - Cannot be relocated into a Federal Navigation Project<sup>12</sup> other than a Federal Anchorage<sup>12</sup>.

- 1. Moorings associated with an existing boating facility<sup>11</sup>. An eelgrass<sup>14</sup> survey may be required.
- 2. Moorings that don't meet the terms in Category 1 and don't require an Individual Permit. This includes private moorings with no harbormaster or means of local approval.
- 3. Moorings located such that they, and/or vessels docked or moored at them, are within the buffer zone of the horizontal limits<sup>13</sup> of a Federal Channel<sup>12</sup>. (See Appendix H.) The buffer zone is equal to 3 times the authorized depth of that channel.
- 4. An IP is required for moorings within the horizontal limits<sup>11</sup>, or with moored vessels that extend, into the horizontal limits of a Federal Navigation Project<sup>12</sup>, except those in Federal Anchorages<sup>12</sup>.

For 1-4 above, siting of new individual moorings in SAS³, including eelgrass¹⁴, should be avoided to the maximum extent practicable. If SAS³ cannot be avoided, plans should show elastic mooring systems that prevent mooring chains from resting or dragging on the bottom substrate at all tides and helical anchors, or equivalent SAS protection systems, where practicable. For moorings that appear to impact SAS, the Corps may require an eelgrass survey.

- 1. New structures or floats, including floatways/skidways, built to access waterway (seasonal and permanent). Includes both pile supported and crib supported structures.
- 2. Expansions to existing boating facilities<sup>11</sup>
  - *Pile-supported structures* < 400 SF, with attached floats totaling < 200 SF.
- Structures are  $\leq$ 4' wide and have at least a 1:1 height:width ratio<sup>11</sup>.
- Floats supported a minimum of 18" above the substrate during all tides.
- Structures & floats not located within 25' of any eelgrass<sup>8</sup>.
- Moored vessels not positioned over SAS<sup>3</sup>.

- The Corps may require a letter of no objection from the abutter if structure is to be within 25 feet of the property line.
- No structure extends across >25% of the waterway width at mean low water.
- Not located within the buffer zone of the horizontal limits<sup>13</sup> of a Corps Federal Navigation Project (FNP) (Appendix F). The buffer zone is equal to three times the authorized depth of that FNP.
- 3. An Individual Permit is required for structures or floats, including floatways/skidways, located such that they and/or vessels docked or moored at them are within the horizontal limits<sup>13</sup> of a Corps Federal Navigation Project<sup>12</sup> (see Appendix H).
- 4. An Individual Permit is required for structures & floats associated with a new or previously unauthorized boating facility<sup>11</sup>.
- 5. Standard Pile Driving Conditions. Work involving piles shall adhere to one of the four methods below:
  - Piles installed in-the-dry during low water or in-water between Nov. 8<sup>th</sup> Apr. 9<sup>th</sup>, or
  - Must be drilled and pinned to ledge, or
  - Vibratory hammers used to install any size and quantity of wood, concrete or steel piles, or
  - Impact hammers limited to one hammer and <50 piles installed/day with the following: wood piles of any size, concrete piles ≤18-inches diameter, steel piles <12-inches diameter if the hammer is ≤3000 lbs and a wood cushion is used between the hammer and steel pile, and
  - For the methods above:
    - o In-water noise levels shall not exceed >187dB cSEL re  $1\mu$ Pa or 206dB peak re  $1\mu$ Pa at a distance >10m from the pile being installed, and
    - o In-water noise levels >150dB peak re 1μPa shall not exceed 12 consecutive hours on any given day and a 12 hour recovery period (i.e., in-water noise below 150dB peak re 1μPa) must be provided between work days.
  - Existing derelict, degraded or abandoned piles in the project area that are affected by project activities should be removed and properly disposed of in an upland location landward of MHW or OHW and not in wetlands, tidal wetlands, their substrate or mudflats.

4. Aids to Navigation	1. Temporary buoys, markers, floats, etc. for recreational use	Work not eligible for Category 1
and Temporary	during specific events, provided they are removed within 30 days	
Recreational	after use is discontinued.	
Structures	2. The placement of aids to navigation and regulatory markers	
	which are approved by and installed in accordance with the	
	requirements of the U.S. Coast Guard. (See 33 CFR 66, Chapter I,	
	subchapter C)."	
	Note: Cat 1 eligible aids to navigation and regulatory markers	
	do not require SVNF.	
5. Dredging, Disposal	1. Maintenance dredging <sup>10</sup> for navigational purposes <1,000 CY	1. Maintenance dredging $^{10} \ge 1,000$ CY, new dredging $< 25,000$ CY,
of Dredged Material,	with upland disposal. Includes return water from upland contained	or projects not meeting Category 1. Includes return water
Beach Nourishment,	disposal area, provided:	from upland contained disposal areas. Disposal includes:
and Rock Removal	Proper siltation controls are used.	• Upland.
and Relocation	• Dredging & disposal operation limited to Nov. 8 – Apr. 9.	Beach nourishment (above mean high water) of any area
	• No impact to SAS <sup>3</sup> .	provided the dredging's primary purpose is navigation or the
	No dredging in intertidal areas.	sand is from an upland source.
	No dredging within 100' of shellfish beds.	• Open water & confined aquatic disposal, if Corps finds the
	No dredging in areas designated as Critical Habitat for	material suitable.
	Atlantic salmon [see GC 8(b) & (c)].	2. Beach nourishment associated with dredging when the primary
	• For dredging in tidal waters outside of Atlantic salmon	purpose is not navigation requires at least a Category 2 review.
	critical habitat, applicants must contact NMFS (see GC 8) to	3. Maintenance or new dredging <sup>10</sup> and/or disposal in or affecting a
	ensure no impacts to listed species such as shortnose	SAS <sup>3</sup> requires an Individual Permit.
	sturgeon, Atlantic surgeon, and listed sturgeon critical	*
	habitat.	
	Project proponents must contact the USFWS for work on	
	coastal beaches to ensure no impacts to piping plovers,	
	roseate terns, rufa red knot, or their habitat [see GC 8(c)].	
	No underwater blasting.	
	2. Maintenance dredging is not eligible for Category 1 if	
	conducted in tidal portions of the Penobscot river upstream of a	
	line extending from Turner Point in Castine to Moose Point	
	(formerly Squaw Point) on Cape Jellison in Stockton Springs or in	
	tidal portions of the Kennebec or Androscoggin Rivers upstream	
	of a line extending from Doubling Point in Arrowsic to Hospital	
	Point in West Bath.	
	Tome in west batil.	

6. Discharges of Dredged or Fill Material Incidental to the Construction of Bridges	1. Discharges of dredged or fill material incidental to the construction of bridges across navigable waters of the U.S., including cofferdams, abutments, foundation seals, piers, and temporary construction and access fills provided the U.S. Coast Guard authorizes such discharges as part of the bridge permit or appropriate approval.  2. Causeways and approach fills are not included in this category and require Category 2 or Individual Permit authorization.	<1 acre temporary or permanent fill, excavation and/or secondary impacts (e.g., areas drained, flooded, fragmented or mechanically cleared). Fill area includes all temporary and permanent waterway fills, provided: <ul> <li>Temporary or permanent fill in eelgrass<sup>14</sup> &lt;1000 SF.</li> <li>Permanent fill in SAS (excluding eelgrass<sup>14</sup>) &lt;4300 SF.</li> </ul>
7. Bank and Shoreline Stabilization	<ol> <li>Bank stabilization projects &lt;200 linear feet provided:         <ul> <li>≤1 cubic yard of fill per linear foot placed along the bank waterward of high tide line. No fill or equipment will occur in SAS<sup>3</sup>.</li> <li>Work conducted in the intertidal zone must be conducted in-the-dry during low water.</li> <li>No structures angled steeper than 1H:1V and only rough-faced stone or fiber roll revetments allowed.</li> <li>No driving of piles or sheeting.</li> </ul> </li> <li>Bank stabilization projects in excess of 200 linear feet (Applicant or Applicant + Abutters combined) must undergo Category 2 review.</li> </ol>	<ol> <li>Work not eligible for Category 1.</li> <li>&lt; 1 acre temporary or permanent fill, excavation and/or secondary impacts (e.g., areas drained, flooded, fragmented or mechanically cleared). Fill area includes all temporary and permanent waterway fills, provided: <ul> <li>Temporary or permanent fill in eelgrass<sup>14</sup> &lt; 1000 SF.</li> <li>Permanent fill in SAS (excluding eelgrass<sup>14</sup>) &lt; 4300 SF.</li> </ul> </li></ol>
8. Residential, Commercial, Industrial, and Institutional Developments, and Recreational Facilities	Not Eligible	<ol> <li>1. &lt;1 acre temporary or permanent fill, excavation and/or secondary impacts (e.g., areas drained, flooded, fragmented or mechanically cleared). Fill area includes all temporary and permanent waterway fills, provided:         <ul> <li>Temporary or permanent fill in eelgrass<sup>14</sup> &lt;1000 SF.</li> <li>Permanent fill in SAS (excluding eelgrass<sup>14</sup>) &lt;4300 SF.</li> </ul> </li> <li>Conversions of previously authorized pile supported buildings over navigable waters to residences, offices, or other non-water dependent uses require at least a Category 2 review.</li> <li>Floating house boats or businesses on floats require Category 2 review.</li> </ol>
9. Utility Line Activities	<ol> <li>Repair or maintenance of existing, currently serviceable, authorized utilities with no expansion or change in use:         <ul> <li>Conditions of the original authorization apply.</li> <li>Trenching or filling is confined to the existing footprint.</li> <li>In water work conducted between Nov 8 and Apr 9.</li> <li>No new impact to SAS.</li> </ul> </li> <li>Particularly relevant is GC12.</li> <li>New work in, over, or under navigable waters requires a PCN and Category 2 review.</li> <li>Except for aerial utility lines, work is not eligible for Category 1 if conducted in tidal portions of the Penobscot River upstream of a line extending from Turner Point in Castine to Moose Point (formerly</li> </ol>	1. New or replacement installations or work not otherwise eligible for Category 1.  2. <1 acre temporary or permanent fill, excavation and/or secondary impacts (e.g., areas drained, flooded, fragmented or mechanically cleared). Fill area includes all temporary and permanent waterway fills, provided:  • Temporary or permanent fill in eelgrass <sup>14</sup> <1000 SF.  • Permanent fill in SAS (excluding eelgrass <sup>14</sup> ) <4300 SF.  3. Particularly relevant is GC12

	Squaw Point) on Cape Jellison in Stockton Springs or in tidal	
10. Linear Transportation Projects (Not Including Stream Crossings)	Not eligible	<1 acre temporary or permanent fill, excavation and/or secondary impacts (e.g., areas drained, flooded, fragmented or mechanically cleared). Fill area includes all temporary and permanent waterway fills, provided: <ul> <li>Temporary or permanent fill in eelgrass<sup>14</sup> &lt; 1000 SF.</li> </ul> Provided: <ul> <li>Temporary or permanent fill in eelgrass<sup>14</sup> &lt; 1000 SF.</li> </ul>
11. Mining Activities	Not Eligible	• Permanent fill in SAS (excluding eelgrass <sup>14</sup> ) <4300 SF.  Not Eligible
12. Boat Ramps and Marine Railways	<ol> <li>No new impact to SAS</li> <li>Marine railway and boat ramp work not eligible for maintenance<sup>7</sup> (i.e. not currently serviceable<sup>7</sup>) may be replaced "in-kind" with minor deviations<sup>7</sup> provided:         <ul> <li>Work is in the intertidal zone.</li> <li>No fill expansion below high tide line.</li> <li>Work conducted in-the-dry during low water.</li> </ul> </li> <li>No new boat ramps or marine railways.</li> </ol>	1. Work not eligible for Category 1 2. <1 acre temporary or permanent fill, excavation and/or secondary impacts (e.g., areas drained, flooded, fragmented or mechanically cleared). Fill area includes all temporary and permanent waterway fills, provided:  • Temporary or permanent fill in eelgrass <sup>14</sup> <1000 SF.  • Permanent fill in SAS (excluding eelgrass <sup>14</sup> ) <4300 SF.
13. Land and Water- Based Renewable Energy Generation Facilities and Hydropower Projects	Not Eligible	1. <1 acre temporary or permanent fill, excavation and/or secondary impacts (e.g., areas drained, flooded, fragmented or mechanically cleared). Fill area includes all temporary and permanent waterway fills, provided:  • Temporary or permanent fill in eelgrass <sup>14</sup> <1000 SF.  • Permanent fill in SAS (excluding eelgrass <sup>14</sup> ) <4300 SF.  2. No new impoundments.
14. Reshaping Existing Drainage Ditches and Mosquito Management	<ol> <li>1. ≤500 linear feet of drainage ditch will be modified. The reshaping of the ditch cannot increase drainage capacity beyond the original asbuilt capacity nor can it expand the area drained by the ditch as originally constructed (i.e., the capacity of the ditch must be the same as originally constructed and it cannot drain additional wetlands or other waters of the U.S.).</li> <li>No new ditches or relocation of drainage ditches constructed in waters of the U.S.; the location of the centerline of the reshaped drainage ditch must be approximately the same as the location of the centerline of the original drainage ditch.</li> <li>No effect on federally listed endangered or threatened species or critical habitat</li> </ol>	<ol> <li>Work not eligible for Category 1</li> <li>&lt;1 acre temporary or permanent fill, excavation and/or secondary impacts (e.g., areas drained, flooded, fragmented or mechanically cleared). Fill area includes all temporary and permanent waterway fills, provided:         <ul> <li>Temporary or permanent fill in eelgrass<sup>14</sup> &lt;1000 SF.</li> <li>Permanent fill in SAS (excluding eelgrass<sup>14</sup>) &lt;4300 SF.</li> </ul> </li> </ol>

15. Oil Spill and Hazardous Material Cleanup	Jurisdictional activities required for the containment and cleanup of oil and hazardous substances that are subject to the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300) provided that the work is done in accordance with the Spill Control and Countermeasure Plan required by 40 CFR 112.3 and any existing state contingency plan and provided that the Regional Response Team (if one exists in the area) concurs with the proposed containment and cleanup action. SAS³ must typically be restored in place at the same elevation.	Work not eligible for Category 1
	Note: SVNF or a surrogate state reporting form may be submitted after the fact. No SVNF is required for Category Ieligible containment booms.	
16. Cleanup of Hazardous and Toxic Waste	Not eligible - except for booms placed for hazardous and toxic waste containment and absorption and prevention which are eligible for SV.	Specific jurisdictional activities with impacts of any area required to affect the containment, stabilization, or removal of hazardous or toxic waste materials that are performed, ordered, or sponsored
Wase	Note: No SVNF is required for Category 1 eligible containment booms.	by a government agency with established legal or regulatory authority. Wetlands and other SAS must typically be restored in place at the same elevation to qualify.
17. Scientific	Scientific measurement devices whose purpose is to measure and	1. Work not eligible for Category 1
Measurement	record scientific data, such as staff gages, water recording devices,	2. <1 acre temporary or permanent fill, excavation and/or
Devices	water quality testing and improvement devices, and similar structures.	secondary impacts (e.g., areas drained, flooded, fragmented or
	Structures may not restrict or concentrate movement of aquatic	mechanically cleared). Fill area includes all temporary and
	organisms; no activity results in a hazard to navigation; and no	permanent waterway fills, provided:
	activity requiring underwater blasting.	• Temporary or permanent fill in eelgrass <sup>14</sup> <1000 SF.
10 C A 4 * * * *		• Permanent fill in SAS (excluding eelgrass <sup>14</sup> ) <4300 SF.
18. Survey Activities	Jurisdictional survey activities such as exploratory drilling, surveying and sampling activities, excluding any biological sampling devices.	1. Work not eligible for Category 1 2. <1 acre temporary or permanent fill, excavation and/or
	Does not include any activity requiring underwater blasting, seismic	secondary impacts (e.g., areas drained, flooded, fragmented or
	exploratory operations, or oil and gas exploration and fill for roads or	mechanically cleared). Fill area includes all temporary and
	construction pads. No activity may result in a hazard to navigation.	permanent waterway fills, provided:
		• Temporary or permanent fill in eelgrass <sup>14</sup> <1000 SF.
		• Permanent fill in SAS (excluding eelgrass <sup>14</sup> ) <4300 SF.
19. Agricultural	Not Eligible	Not Eligible
Activities		

20. Fish & Wildlife Harvesting, Enhancement and Attraction Devices and Activities (Not Aquaculture)	Fish and wildlife harvesting, enhancement, and attraction devices and activities such as pound nets, crab traps, crab dredging, eel pots, lobster traps, and clam and oyster digging, and small fish attraction devices such as open water fish concentrators (sea kites, etc.). This does not authorize artificial reefs or impoundments and semi-impoundments of waters of the U.S. for the culture or holding of motile species such as lobster, or the use of covered oyster trays or clam racks. No activity that may result in a hazard to navigation.  Note: A SVNF is not required for these Category 1 eligible devices and activities.	<ol> <li>Work not eligible for Category 1.</li> <li>Impoundments or semi-impoundments of waters of the U.S. for the culture or holding of motile species such as lobster and new fish weirs with an impounded area &lt; ½ acre.</li> <li>For Aquaculture operations, refer to Activity 24.</li> </ol>
21. Habitat Restoration, Establishment and Enhancement Activities	<ol> <li>Cultch placement in tidal waters is eligible for SV provided there are no salt marsh or vegetated shallow impacts.</li> <li>SAS planting and transplanting ≤ 100 SF in tidal waters;</li> <li>No artificial or living reefs.</li> <li>The activity is authorized in writing by a local, state, or non-Corps federal environmental agency. Water impoundments require PCN.</li> <li>No conversion of i) a stream to wetland or vice versa, wetland to a pond or uplands, and ii) one wetland type to another.</li> <li>No dam removal.</li> <li>Shellfish habitat enhancement such as brushing the flats is eligible for Category 1, but not the use of netting which requires Category 2 review.</li> </ol>	Work not eligible for Category 1.     Aquatic habitat restoration, establishment and enhancement provided those activities are proactive and result in net increases in aquatic resource functions and services.  8
22. Previously Authorized Activities	Any work not commenced nor completed that was authorized in a written letter from the Corps under the GP in effect between October 12, 2010 and October 12, 2015. The terms and general conditions of this GP apply along with any special conditions in the written authorization.	
23. Stream & Wetland Crossings	Not Eligible	All temporary or permanent crossings of tidal navigable waters or adjacent tidal wetlands not eligible as maintenance require a PCN. GC 45 applies
24. Aquaculture	Not Eligible	Shellfish & finfish aquaculture (with the exception of Atlantic salmon and any other salmonid, or other federally listed endangered or threatened species), or other aquaculture facilities with no more than minimal individual and cumulative impacts to environmental resources or navigation. This is inclusive but not limited to cages, nets, bags, racks, long lines, fences, posts, poles, predator screening, etc. Aquaculture guidelines are provided at: <a href="https://www.maine.gov/dmr/aquaculture/index.htm.">www.maine.gov/dmr/aquaculture/index.htm.</a>

#### **Endnotes/Definitions**

<sup>1</sup>Bordering and Contiguous Wetlands: A bordering wetland is immediately next to its adjacent waterbody and may lie at, or below, the ordinary high water mark (mean high water in navigable waters) of that waterbody and is directly influenced by its hydrologic regime. Contiguous wetlands extend landward from their adjacent waterbody to a point where a natural or manmade discontinuity exists. Contiguous wetlands include bordering wetlands as well as wetlands that are situated immediately above the ordinary high water mark and above the normal hydrologic influence of their adjacent waterbody. Note, with respect to the federally designated navigable rivers, the wetlands bordering and contiguous to the tidally influenced portions of those rivers are reviewed under "II. Navigable Waters."

## <sup>2</sup> Direct, Secondary, and Cumulative Impacts/Effects:

<u>Direct Impacts</u>: The immediate loss of aquatic ecosystem within the footprint of the fill.

Secondary Impacts: These are effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material. Information about secondary effects on aquatic ecosystems shall be considered prior to the time final section 404 action is taken by permitting authorities. Some examples of secondary effects on an aquatic ecosystem are a) fluctuating water levels in all impoundment and downstream associated with the operation of a dam, b) septic tank leaching and surface runoff from residential or commercial developments on fill, and c) leachate and runoff from a sanitary landfill located in waters of the U.S. Put another way, secondary effects are those impacts outside the footprint of the fill that arise from and are associated with the discharge of dredged or fill material, including the operation of an activity or facility associated with the discharge. Examples may include habitat fragmentation; interruption of travel corridors for wildlife (for example, for amphibians that migrate to and from seasonal or vernal pools used as breeding habitat); hydrologic regime changes; and impacts from operation and maintenance activities for constructed facilities; such as noise/lighting, storm water runoff, and road kill of wetland dependent wildlife. Using the directions contained in the guidelines, we consider the circumstances of a proposed discharge and the project of which it is a part to evaluate the scope, extent, severity, and permanence of direct, secondary, and cumulative adverse effects upon the aquatic ecosystem.

<u>Cumulative Impacts</u>: The extent of past, present, and foreseeable developments in the area may be an important consideration in evaluating the significance of a particular project's impacts. Although the impacts associated with a particular discharge may be minor, the cumulative effect of numerous similar discharges can result in a large impact. Cumulative impacts should be estimated only to the extent that they are reasonable and practical.

<sup>3</sup> Special Aquatic Sites: Includes wetlands and saltmarsh, mudflats, riffles and pools, and vegetated shallows (predominantly comprised of eelgrass in Maine). <sup>4</sup> Construction Mats: Constructions, swamp and timber mats (herein referred to as "construction mats") are generic terms used to describe structures that distribute equipment weight to prevent wetland damage while facilitating passage and providing work platforms for workers and equipment. They are comprised of sheets or mats made from a variety of materials in various sizes. A timber mat consists of large timbers bolted or cabled together. Corduroy roads, which are not considered to be construction mats, are cut trees and/or saplings with the crowns and branches removed, and the trunks lined up next to one another. Corduroy roads are typically installed as permanent structures. Like construction mats, they are considered as fill whether they're installed temporarily or permanently. <sup>5</sup> Vernal Pools: A vernal pool, also referred to as a seasonal forest pool, is a temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and no viable populations of predatory fish. A vernal pool may provide the primary breeding habitat for wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (Ambystoma laterale), and fairy shrimp (Eubranchipus sp.), as well as valuable habitat for other plants and wildlife, including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition. For the purposes of this GP, the presence of any of the following species in any life stage in any abundance level/quantity would designate the waterbody as a vernal pool: fairy shrimp, blue spotted salamanders, spotted salamanders or wood frogs. The Corps may determine during a Category 2 review that a waterbody should not be regulated as a VP based on available evidence. For the purposes of this GP, the VP Management Areas are the: Vernal Pool Depression (includes the vernal pool depression up to the spring or fall high water mark, and includes any vegetation growing within the depression), Vernal Pool Envelope (area within 100 FT of the VP Depression's edge) and Critical Terrestrial Habitat (area within 100-750 FT of the Vernal Pool Depression's edge). [\*Note: Critical Terrestrial Habitat is defined as 100 -750 FT on page 243 of the document "Science and Conservation of Vernal Pools in Northeastern North America," Calhoun and deMaynadier, 2008, which is referenced in Appendix G, page 3, Paragraph 10(b).

- <sup>6</sup> Water Diversions: Water diversions are activities such as bypass pumping or water withdrawals. Temporary flume pipes, culverts or cofferdams where normal flows are maintained within the stream boundary's confines aren't water diversions. "Normal flows" are defined as no change in flow from pre-project conditions.

  <sup>7</sup> Maintenance: a) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3 "Activities occurring before certain dates," provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification.
  - Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards that are necessary to make repair, rehabilitation, or replacement are authorized.
  - Currently serviceable means useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.
  - No seaward expansion for bulkheads or any other fill activity is considered Category 1 maintenance.
  - Only structures or fills that were previously authorized and are in compliance with the terms and condition of the original authorization can be maintained as a non-regulated activity under 33 CFR 323.4(a)(2), or in accordance with the Category 1 or 2 thresholds in Appendix A.
- **b**) The state's maintenance provisions may differ from the Corps and may require reporting and written authorization from the state.
- c) Contact the Corps to determine whether stream crossing replacements require a written application to the Corps for at least a Category 2 review.
- d) Exempted Maintenance. In accordance with 33 CFR 323.4(a)(2), any discharge of dredged or fill material that may result from any of the following activities is not prohibited by or otherwise subject to regulation under Section 404 of the CWA: "Maintenance, including emergency reconstruction of recently damaged parts, of currently serviceable structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, bridge abutments or approaches, and transportation structures. Maintenance does not include any modification that changes the character, scope, or size of the original fill design."
- Aquatic Habitat Restoration, Establishment and Enhancement: The Corps will decide if a project qualifies and must determine in consultation with federal and state agencies that the net effects are beneficial. The Corps may refer to Nationwide Permit 27 published in the 3/12/07 Federal Register. Activities authorized here may include, but are not limited to: the removal of accumulated sediments; the installation, removal, and maintenance of small water control structures, dikes, and berms; the installation of current deflectors; the enhancement, restoration, or establishment of riffle and pool stream structure; the placement of in-stream habitat structures; modifications of the stream bed and/or banks to restore or establish stream meanders; the backfilling of artificial channels and drainage ditches; the removal of existing drainage structures; the construction of small nesting islands in inland waters; the construction of open water areas; the construction of native shellfish species habitat over unvegetated bottom for the purpose of habitat protection or restoration in tidal waters; shellfish seeding; activities needed to reestablish vegetation, including plowing or discing for seed bed preparation and the planting of appropriate wetland species; mechanized land clearing to remove non-native invasive, exotic, or nuisance vegetation; and other related activities. Only native plant species should be planted at the site.

  9 Brushing the Flats: The placement of tree boughs, wooden lath structure, or small-mesh fencing on mudflats to enhance recruitment of soft-shell clams (Mya arenaria).
- <sup>10</sup> **Maintenance Dredging:** This includes only those areas and depths previously authorized by the Corps and dredged. The Corps may require proof of authorization. Maintenance dredging typically refers to the routine removal of sediment to maintain the design depths of serviceable navigation channels, harbors, basins, marinas, boat launches, and port facilities. Maintenance dredging is conducted for navigational purposes and does not include any expansion of the previously dredged area or depth. The Corps may review a maintenance dredging activity as new dredging if sufficient time has elapsed to allow for the colonization of SAS, shellfish, etc.
- <sup>11</sup> **Boating Facilities:** Facilities that provide for a fee, rent, or sell mooring space, such as marinas, yacht clubs, boat clubs, boat yards, town facilities, dockominiums, etc.
- <sup>12</sup> **Federal Navigation Projects (FNPs):** FNPs are comprised of Federal Channels and Federal Anchorages. See Appendix F for their location and contact the Corps for more information. "Horizontal Limits" is the outer edge of an FNP. "Buffer Zone" is equal to three times the authorized depth of that channel.
- <sup>13</sup> Horizontal Limits: The outer edge of a Federal Navigation Project (FNP). See Appendix F and contact the Corps for information on FNP's.
- <sup>14</sup> **Eelgrass (Zostera marina):** A type of rooted aquatic vegetation that exists in intertidal and shallow subtidal areas known as vegetated shallows. See <a href="https://www.nero.noaa.gov/hcd/">www.nero.noaa.gov/hcd/</a> for eelgrass survey guidance. Note: Eelgrass surveys should be conducted between May and October unless otherwise directed.

<sup>&</sup>lt;sup>15</sup> **Structures:** The height of structures shall at all points be equal to or exceed the width of the deck. For the purpose of this definition, height shall be measured from the marsh substrate to the bottom of the longitudinal support beam.

<sup>&</sup>lt;sup>16</sup>**Agricultural Activities:** The Clean Water Act exempts certain discharges associated with normal farming, ranching, and forestry activities such as plowing, cultivating, minor drainage, and harvesting for the production of food, fiber, and forest products, or upland soil and water conservation practices (Section 404(f)(1)(A)). Applicants are strongly advised to contact the Corps for a determination of whether their activity is exempt or requires a permit.



## **Appendix B: Self-Verification Notification Form**

(for all tidal and non-tidal projects in Maine subject to Corps jurisdiction)

# US Army Corps of Engineers ®

New England District

At least two weeks before work commences, complete **all** fields (write "none" if applicable) below or use the fillable form at <a href="www.nae.usace.army.mil/missions/regulatory.aspx">www.nae.usace.army.mil/missions/regulatory.aspx</a>. Send this form, a location map, any project plans, and an Official Species List (See GC 8) to the address noted below; fax to (207) 623-8206; or email to jay.l.clement@usace.army.mil. The two-week lead time is not required for emergency situations (see page 4 for definition). Please call (207) 623-8367 with questions.

Maine Project Office U.S. Army Corps of Engineers New England District 675 Western Avenue #3 Manchester, Maine 04351	State Permit Number: Date of State Permit: State Project Manager:
Permittee:Address, City, State & Zip:Phone(s) and Email:	
Address, City, State & Zip:	
Waterway Name:	Tax Map/Lot:
Provide any prior Corps permit numbers	:
Proposed Work Dates: Start:	Finish:
Area of wetland impact: Area of waterway impact: Area of compensatory mitigation provid	SF (leave blank if work involves structures & no fill in Navigable Waters) SF (leave blank if work involves structures & no fill in Navigable Waters) ed:SF
<ul><li>I. Inland Waters and wetlands:</li><li>II. Navigable Waters:</li></ul>	Appendix A categories (circle all that apply): 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 e, indicates that you accept and agree to comply with the terms, eligibility criteria, the Maine General Permit.
Permittee Printed Name:	
Permittee Signature:	Date:

Appendix B 1



## **Appendix C: Content of Pre-Construction Notification**

In addition to the following required information, the applicant must provide additional information as the Corps deems essential to make a public interest determination including, where applicable, a determination of compliance with the Section 404(b)(1) guidelines or ocean dumping criteria. Such additional information may include environmental data and information on alternate methods and sites as may be necessary for the preparation of the required environmental documentation. For a more comprehensive checklist, go to <a href="www.nae.usace.army.mil/missions/regulatory">www.nae.usace.army.mil/missions/regulatory</a> >> Forms >> Application and Plan Guideline Checklist. Please check with the Corps for project-specific requirements.

## **Information required for all projects:**

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Corps application form (ENG Form 4345) or appropriate state application form (see Appendix E).
Forms may need to be supplemented to include the information noted below.
Proof of notification to the SHPO and the appropriate THPOs (see Appendix E).
Appendix D)
Drawings, sketches, or plans (detailed engineering plans and specifications are not required) that are legible, reproducible (color is encouraged, but features must be distinguishable in black and white), no larger than 11"x17", with bar scale. Wetland area impact sheets should have the highest resolution possible to show work within Corps jurisdiction (do not just reduce project overview or cut large-scale plan into quadrant sheets). Provide locus map and a plan overview of the entire property with a key index to the individual impact sheets. A locus map be on a section of color
USGS topographic map is encouraged. Digital submissions are encouraged. Include:
□ All direct, secondary, permanent and temporary effects the project would cause, including the anticipated amount of impacts to waters of the U.S. expected to result from the activity, in acres, linear feet, or other appropriate unit of measure.
☐ Any historic permanent fill associated with each single and complete project.
□ Cross-section views of all wetland and waterway fill areas and wetland replication areas. □ Delineation of all wetlands, other special aquatic sites (vegetated shallows, saltmarsh, mudflats, riffles and pools, coral reefs, and sanctuaries and refuges), and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Use
Federal delineation methods and include Corps wetland delineation data sheets (see GC 2).
☐ MLW and MHW elevations in tidal waters. Show the HTL elevations when fill is involved. Show OHW elevation in lakes and non-tidal streams.
Existing and proposed conditions. □ Existing and proposed conditions.
☐ For vegetated shallow and eelgrass survey guidance, see <a href="https://www.nae.usace.army.mil/missions/">www.nae.usace.army.mil/missions/</a>
regulatory >> Jurisdictional Limits and Wetlands >> Submerged Aquatic Vegetation Survey Guidance for the New England Region.
☐ Show all known VPs on the project site. See GC 23 for vernal pool identification requirements.
Volume, type, and source of fill material to be discharged into waters and wetlands, including the
area(s) (in square feet or acres) of fill in wetlands, below OHW in inland waters and below the HTL
in coastal waters.

	An Official Species List of federally "listed species or critical habitat" present in the action area (see GC 8).
	A restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions (see GC 43).
	formation that may be required:
	Photographs of wetland/waterway to be impacted. Photos at low tide are preferred for work in tidal
	waters.
	For drawings, sketches, or plans:  □ The vertical datum for all coastal projects must be in U.S. survey feet and referenced to MLLW and current tidal epochs, with a reference chart showing conversion factor to NAVD88; do not use local datum. See www.nae.usace.army.mil/missions/regulatory >> Forms and Publications >> Vertical Datum - FEMA (Jul 2007);
	☐ The horizontal state plane coordinates shall be in U.S. survey feet and based on the appropriate
_	state plane coordinate system.
П	For the construction of a filled area or pile or float-supported platform, the use of, and specific structures to be erected on, the fill or platform.
П	For the discharge of dredged or fill material into waters of the U.S. or the transportation of dredged
	material for the purpose of disposing of it in ocean waters, the source of the material; the purpose of the discharge, a description of the type, composition and quantity of the material; the method of
	transportation and disposal of the material; and the location of the disposal site. For the discharge of dredged or fill material into waters of the U.S., include a statement describing how impacts to waters of the U.S. are to be avoided and minimized. Include either a statement describing how impacts to waters of the U.S. are to be compensated for or a statement explaining
	why compensatory mitigation should not be required for the proposed impacts.
	Purpose and need for the proposed activity; Limits and coordinates of any Federal Navigation Project in the vicinity of the project area.
	Limits and coordinates of any proposed mooring field, reconfiguration zone or aquaculture activity.
_	Provide coordinates for all corners;
	Schedule of construction/activity;
	Names and addresses of adjoining property owners;
	Location and dimensions of adjacent structures;
	List of authorizations required by other Federal, interstate, state, or local agencies for the work, including all approvals received or denials already made.
	Identification and description of potential impacts to Essential Fish Habitat (defined at VI.
	Definitions and Acronyms.
Ш	Identification of potential discharges of pollutants to waters, including potential impacts to impaired
	waters, in the project area (see GC 19).
Ш	Invasive Species Control Plan (see GC 24). For sample control plans, see
	<u>www.nae.usace.army.mil/missions/regulatory</u> >> Invasive Species. Wildlife Action Plan (WAP) maps. Contact Maine Inland Fisheries & Wildlife (Appendix E) or on
	line at <a href="http://www.maine.gov/ifw/wildlife/conservation/action_plan.html">http://www.maine.gov/ifw/wildlife/conservation/action_plan.html</a>
In	formation for dredging projects that may be required:
	Sediment testing, including physical (e.g., grain-size analysis), chemical and biological testing. For projects proposing open water disposal, applicants are encouraged to contact the Corps as early as possible regarding sampling and testing protocols. Sampling and testing of sediments without such
П	contact should not occur and if done, would be at the applicant's risk.  The area in square feet and volume of material to be dredged below mean high water.

	Existing and proposed water depths.
	Type of dredging equipment to be used.
	Nature of material (e.g., silty sand).
	Any existing sediment grain size and bulk sediment chemistry data for the proposed or any nearby projects.
	Information on the location and nature of municipal or industrial discharges and occurrence of any contaminant spills in or near the project area.
	Shellfish survey.
	Location of the disposal site (include locus sheet).
	Identification and description of any potential impacts to Essential Fish Habitat.
	Delineation of submerged aquatic vegetation (e.g., eelgrass beds).
<u>In</u>	formation for aquaculture projects that may be required:
	Maine Aquaculture guidelines and joint Corps/Maine DMR applications may be found at: www.maine.gov/dmr/aquaculture/index.htm.
	In addition to the information required above, applications must also include:
_	□ Whether canopy predator nets are being used.

Appendix C 3

## Appendix D: Instruction for USFWS IPaC Project Builder/Official Species List

NOTE: These instructions are subject to change by the USFWS. Users should check this GP's Corps webpage for the latest instructions or click <a href="here.">here.</a>

In your internet browser go to http://ecos.fws.gov/ipac/

- 1. Click on get started.
- 2. Click on enter project location.
- 3. Search or zoom to your project location. (You can enter an address and then zoom in with your mouse).
- 4. Define your area. (Select the polygon tool and click around the boundary of your project.) or (Use the draw a line tool for linear projects)

Note: You can change/select the map from Streets to Satellite or Topo in the lower left corner of the map.

- 5. Click finished drawing then click confirm and select continue.
- 6. On the next page under Tasks (lower left), select Request an official species list. The pane will open. Select "request official species list" again.
- 7. A new page will open. Fill in the project information blanks with the project name, brief description, project type, lead agency, and contact information. Be sure to check the box to verify this is a legitimate project. Click on Submit Official Species List Request.
- 8. You will be sent an e-mail with instructions to complete the request by clicking on the link provided.
- 9. The site will open Official Species List Request Completed. Under the Maine Ecological Services Field Office address you will see "Official Species List Document". Click on that link and your document will open. Save and or print a copy and **include the entire report with your application**.

Note, you will receive a second e-mail with the same information. You can save the link in the event you need to return to the IPaC site for an updated list.

If a period of time has passed since your initial "Official Species List" identifier number was generated, you may choose to generate an "UPDATED SPECIES LIST". To do this, return to the IPaC homepage at http://ecos.fws.gov/ipac site. In the middle of the page, click the purple "Need an updated species list" link.

On the request an "Updated Official Species List" page, complete the information in the boxes provided. You will need the project specific official consultation code generated and stated on the original official list as well as the email address entered with the original submission.

Click "Request Updated Species List". Print, or save.

## **Appendix E: Contacts and Tribal Areas of Interest**

#### 1. Federal

U.S. Army Corps of Engineers Maine Project Office 675 Western Avenue #3 Manchester, ME 04351 (207) 623-8367 (phone); (207) 623-8206 (fax)

U.S. Environmental Protection Agency 5 Post Office Square Suite 100 (OEP05–2) Boston, MA 02109-3912 (617) 918-1589 (phone)

U.S. Fish and Wildlife Service Maine Field Office 17 Godfrey Drive, Suite 2 Orono, ME 04473 (207) 866-3344 (phone); (207) 866-3351 (fax) (Federal endangered species)

National Marine Fisheries Service Maine Field Office 17 Godfrey Drive Suite 1 Orono, ME 04473 (207) 866-7379 (phone); (207) 866-7342 (fax) (Federal endangered species) Federal Emergency Management Agency 99 High St.
Boston, MA 02110
(877) 336-2734 (phone)
(Flood Plain Management)

National Marine Fisheries Service 55 Great Republic Drive Gloucester, MA 01930 (978) 281-9102 (phone); (978) 281-9301 (fax) (Federal endangered species & EFH)

National Park Service North Atlantic Region 15 State Street Boston, MA 02109 (617) 223-5203 (phone) (Wild and Scenic Rivers)

Commander (dpb)
First Coast Guard District
One South Street - Battery Bldg
New York, NY 10004-1466
(212) 668-7021 (phone); (212) 668-7967 (fax)
(bridge permits)

#### 2. State of Maine

a. <u>Department of Environmental Protection</u> (State permits & Water Quality Certifications)

Division of Land Resource Regulation Bureau of Land and Water Quality 17 State House Station Augusta, Maine 04333 (207) 287-7688 (phone)

Southern Maine Regional Office 312 Canco Road Portland, Maine 04103 (201) 822-6300 (phone) Eastern Maine Regional Office 106 Hogan Road Bangor, Maine 04401 (207) 941-4570 (phone)

Northern Maine Regional Office 1235 Central Drive - Skyway Park Presque Isle, Maine 04769 (207) 764-0477 (phone)

## b. Department of Agriculture, Conservation and Forestry

i. <u>Maine Land Use Planning Commission (LUPC)</u> (State permits & Water Quality Certifications in the unorganized areas of the State)

Augusta Office 22 State House Station Augusta, Maine 04333-0022 (207) 287-2631 (phone); (207) 287-7439 (fax)

Greenville Regional Office 43 Lakeview Drive P.O. Box 1107 Greenville, Maine 04441 (207) 695-2466 (phone); (207) 695-2380 (fax)

Rangeley Regional Office 133 Fyfe Road PO Box 307 West Farmington, ME 04992 (207) 670-7493 (phone); (207) 287-7439 (fax) Downeast Regional Office 106 Hogan Rd, Suite 8 Dorothea Dix Complex Bangor, Maine 04401 (207) 941-4052 (phone); (207) 941-4222 (fax)

Ashland Regional Office 45 Radar Road Ashland, ME 04732-3600 (207) 435-7963 (phone); (207) 435-7184 (fax)

East Millinocket Regional Office 191 Main Street East Millinocket, ME 04430 (207) 746-2244 (phone); (207) 746-2243 (fax)

## ii. Maine Coastal Program

Department of Agriculture, Conservation and Forestry Bureau of Resource Information and Land Use Planning 17 Elkins Lane {physical address} State House Station 93 Augusta, Maine 04333-0038 (207) 287-2801 (phone); (207) 287-2353 (fax) (CZM consistency determinations)

## iii. Division of Parks and Public Lands

22 State House Station Augusta, Maine 04333 (207) 287-3061 (phone); (207) 287-6170 (fax) (submerged lands leases)

## c. <u>Department of Marine Resources</u>

P.O. Box 8 West Boothbay Harbor, Maine 04575 (207) 633-9500 (phone); (207) 624-6024 (fax) (aquaculture leases)

## 3. Historic Properties

a. State Historic Preservation Officer (SHPO)

Mr. Kirk F. Mohney, Director

Maine Historic Preservation Commission (MHPC)

65 State House Station

Augusta, Maine 04333-0065

(207) 287-2132 (phone); (207) 287-2335 (fax)

Area of concern: The entire State of Maine

## b. Tribal Historic Preservation Officers (THPOs)

Note: The area of concern for each tribe is the entire State of Maine

THPO & Environmental Planner

Houlton Band of Maliseet Indians

88 Bell Road

Littleton, Maine 04730

(207) 532-4273, x215 (phone)

(207) 532-6883 (fax)

envplanner@maliseets.com

ogs1@maliseets.com

**THPO** 

Passamaquoddy Tribe of Indians

Pleasant Point Reservation

P.O. Box 343

Perry, Maine 04667

(207) 853-2600 (phone); (207) 853-6039 (fax)

soctomah@gmail.com

**THPO** 

Passamaquoddy Tribe of Indians

**Indian Township Reservation** 

P.O. Box 301

Princeton, Maine 04668

(207) 796-2301 (phone)

(207) 796-5256 (fax); soctomah@gmail.com

**THPO** 

Aroostook Band of Micmacs

7 Northern Road

Presque Isle, Maine 04769

(207) 764-1972 (phone); (207) 764-7667 (fax)

jpictou@mimca-nsn.gov

**THPO** 

Penobscot Nation

Cultural and Historic Preservation Dept.

12 Wabanaki Way

Indian Island, Maine 04468

(207) 817-7471 (phone)

chris.sockalexis@penobscotnation.org

## 4. Organizational Websites (Note – Subject to Change):

U.S. Army Corps of Engineers, N.E. District

U.S. Army Corps of Engineers, Headquarters

U.S. Environmental Protection Agency

National Marine Fisheries Service

U.S. Fish and Wildlife Service

National Park Service

Maine Department of Environmental Protection

Maine Department of Agriculture,

Conservation and Forestry

Maine Land Use Planning Commission

Maine Department of Marine Resources

State of Maine - Aquaculture Guidelines

www.nae.usace.army.mil/missions/regulatory.aspx

See above link>>Useful Links>>Federal Agency Links

www.epa.gov/owow/wetlands

www.nmfs.noaa.gov

www.fws.gov/mainefieldoffice

www.nps.gov/rivers/index.html

www.maine.gov/dep

www.maine.gov/acf/index.shtml

www.maine.gov/doc/lupc/commission/offices.shtml

www.maine.gov/dmr/index.htm

www.maine.gov/dmr/aquaculture/index.htm

## **Appendix F: Definitions**

## **Definitions**

**Attendant Features:** Occurring with or as a result of; accompanying.

**Biodegradable:** A material that decomposes into elements found in nature within a reasonably short period of time and will not leave a residue of plastic or a petroleum derivative in the environment after degradation. Examples of biodegradable materials include jute, sisal, cotton, straw, burlap, coconut husk fiber (coir) or excelsior. In contrast, degradable plastics break down into plastic fragments that remain in the environment after degradation.

**Boating facilities:** These provide, rent or sell mooring space, such as marinas, yacht clubs, boat yards, dockominiums, town facilities, land/home owners, etc. Not classified as boating facilities are piers shared between two abutting properties or town mooring fields that charge an equitable user fee based on the actual costs incurred.

**Brushing the Flats:** The placement of tree boughs, wooden lath structure, or small-mesh fencing on mudflats, or any bottom disturbance (e.g., discing, plowing, raking, etc.), to enhance recruitment of shellfish

**Buffer Zone:** The buffer zone of an FNP is equal to three times the authorized depth of the FNP. **Construction mats:** Constructions, swamp and timber mats (herein referred to as "construction" mats") are generic terms used to describe structures that distribute equipment weight to prevent wetland damage while facilitating passage and providing work platforms for workers and equipment. They are comprised of sheets or mats made from a variety of materials in various sizes. A timber mat consists of large timbers bolted or cabled together. Corduroy roads, which are not considered to be construction mats, are cut trees and/or saplings with the crowns and branches removed, and the trunks lined up next to one another. Corduroy roads are typically installed as permanent structures. Like construction mats, they are considered as fill whether they are installed temporarily or permanently **Cumulative effects:** See "Direct, secondary, and cumulative effects."

#### Direct, secondary, and cumulative effects:

Direct Effects: The loss of aquatic ecosystem within the footprint of the discharge of dredged or fill material. Direct effects are caused by the action and occur at the same time and place. Secondary Effects: These are effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material. Information about secondary effects on aquatic ecosystems shall be considered prior to the time final Section 404 action is taken by permitting authorities. Some examples of secondary effects on an aquatic ecosystem are a) aquatic areas drained, flooded, fragmented, or mechanically cleared, b) fluctuating water levels in all impoundment and downstream associated with the operation of a dam, c) septic tank leaching and surface runoff from residential or commercial developments on fill, and d) leachate and runoff from a sanitary landfill located in waters of the U.S. See 40 CFR 230.11(h). Cumulative Effects: The changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual 1) discharges of dredged or fill material, or 2) structures. Although the impact of a particular discharge may constitute a minor change in itself, the cumulative effect of numerous such piecemeal changes can result in a major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems. See 40 CFR 230(g).

### **Dredging:**

Maintenance Dredging: Includes areas and depths previously authorized by the Corps and dredged. The Corps may require proof of authorization. Maintenance dredging typically refers to the routine removal of accumulated sediment from channel beds to maintain the design depths of navigation channels, harbors, marinas, boat launches and port facilities. Routine maintenance dredging is conducted regularly for navigational purposes (typically at least once every ten years) and does not include any expansion of the previously dredged area or depth. The Corps may review a maintenance dredging activity as new dredging if sufficient time has elapsed to allow for the colonization of SAS, 1

Appendix F

shellfish, etc. The main characteristics of maintenance dredging projects are variable quantities of material; soft, uncompacted soil; contaminant content possible; thin layers of material; occurring in navigation channels and harbors; repetitive activity

New Dredging: Dredging of an area or to a depth that has never been authorized by the Corps or dredged.

**Dredged material & discharge of dredged material:** These are defined at 323.2(c) and (d). The term dredged material means material that is excavated or dredged from waters of the U.S.

**Essential Fish Habitat (EFH):** This is broadly defined to include those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.

**Fill material & discharge of fill material:** These are defined at 323.2(e) and (f). The term fill material is defined as material placed in waters of the U.S. where the material has the effect of either replacing any portion of a water of the U.S. with dry land or changing the bottom elevation of any portion of a water of the U.S.

Federal anchorages, Federal channels and Federal turning basin: Refer to Appendix H for those in Maine

**Federal navigation projects (FNPs):** These areas are maintained by the Corps; authorized, constructed and maintained on the premise that they will be accessible and available to all on equal terms; and are comprised of Federal Anchorages, Federal Channels and Federal Turning Basins. The buffer zone is equal to three times the authorized depth of a FNP. More information on the following FNPs is provided at <a href="https://www.nae.usace.army.mil/missions/navigation.aspx">www.nae.usace.army.mil/missions/navigation.aspx</a> Navigation Projects.

**Flume:** An open artificial water channel, in the form of a gravity chute, that leads water from a diversion dam or weir completely aside a natural flow. A flume can be used to measure the rate of flow.

**Frac out:** During normal drilling operations, drilling fluid travels up the borehole into a pit. When the borehole becomes obstructed or the pressure becomes too great inside the borehole, the ground fractures and fluid escapes to the surface.

**Independent utility:** A test to determine what constitutes a single and complete non-linear project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

**Individual Permit:** A Department of the Army authorization that is issued following a case-by-case evaluation of a specific structure or work in accordance with the procedures of 33 CFR 322, or a specific project involving the proposed discharge(s) in accordance with the procedures of 33 CFR 323, and in accordance with the procedures of 33 CFR 325 and a determination that the proposed discharge is in the public interest pursuant to 33 CFR 320.

**Maintenance:** Regulations on maintenance are provided at 33 CFR 323.4. The following definitions are applicable:

**Minor deviations:** Deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards, which are necessary to make repair, rehabilitation, or replacement are permitted, provided the adverse environ-mental effects resulting from such repair, rehabilitation, or replacement are minimal.

**Currently serviceable:** Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

**Marina reconfiguration zone:** A Corps-authorized area in which permittees may rearrange pile-supported structures and floats without additional authorizations. A reconfiguration zone does not grant exclusive privileges to an area or an increase in structure or float area.

**Navigable waters of the U.S.:** See Waters of the U.S. below.

**Overall project:** See "single and complete linear project" below.

**Practicable:** Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

**Permanent impacts:** Permanent impacts means waters of the U.S. that are permanently affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent impacts include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. Temporary impacts include waters of the U.S. that are temporarily filled, flooded, excavated, drained or mechanically cleared because of the regulated activity.

**Pre-construction notification (PCN):** A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by this GP. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of these GPs. A PCN may be voluntarily submitted in cases where PCN is not required and the project proponent wants confirmation that the activity is authorized under this GP.

**Secondary effects:** See "Direct, secondary, and cumulative effects."

**Single and complete linear project:** A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the U.S. (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for the purposes of this GP. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

The overall project, for purposes of this GP, includes all regulated activities that are reasonably related and necessary to accomplish the project purpose.

**Single and complete non-linear project:** For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. For non-linear projects, the single and complete project must have independent utility (see definition).

**Special aquatic sites:** These include inland and saltmarsh wetlands, mud flats, vegetated shallows, sanctuaries and refuges, coral reefs, and riffle and pool complexes. These are defined at 40 CFR 230 Subpart E.

**Stream channelization:** The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

**Temporary impacts:** See permanent impacts above.

**Utility line:** Any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and radio and television communication. The term 'utility line' does not include activities that drain a water of the U.S., such as drainage tile or French drains, but it does apply to pipes conveying drainage from another area.

**Vegetated shallows:** Permanently inundated areas that under normal circumstances support communities of rooted aquatic vegetation, such as eelgrass and widgeon grass (*Rupiamaritima*) in marine systems (doesn't include salt marsh) as well as a number of freshwater species in rivers and lakes. Note: These areas are also commonly referred to as submerged aquatic vegetation (SAV). **Vernal pools (VPs):** For the purposes of this GP, VPs are depressional wetland basins that typically go dry in most years and may contain inlets or outlets, typically of intermittent flow. Vernal pools range in both size and depth depending upon landscape position and parent material(s). Pools usually

support one or more of the following obligate indicator species: wood frog, spotted salamander, blue-spotted salamander, marbled salamander, Jefferson's salamander and fairy shrimp. However, they should preclude sustainable populations of predatory fish.

VP areas are:

- Depression (includes the VP depression up to the spring or fall high water mark, and includes any vegetation growing within the depression),
- Envelope (area within 100 feet of the VP depression's edge), and
- Critical terrestrial habitat (area within 100-750 feet of the VP depression's edge).

Note: See footnote to GC 23. The Corps may determine during the PCN review that a waterbody should not be designated as a VP based on available evidence.

**Water diversions:** Water diversions are activities such as bypass pumping (e.g., "dam and pump") or water withdrawals. Temporary flume pipes, culverts or cofferdams where normal flows are maintained within the stream boundary's confines aren't water diversions. "Normal flows" are defined as no change in flow from pre-project conditions.

**Weir:** A barrier across a river designed to alter the flow characteristics. In most cases, weirs take the form of a barrier, smaller than most conventional dams, across a river that causes water to pool behind the structure (not unlike a dam) and allows water to flow over the top. Weirs are commonly used to alter the flow regime of the river, prevent flooding, measure discharge and help render a river navigable.

Waters of the U.S. & Waters of the United States (U.S.): The term waters of the U.S. and all other terms relating to the geographic scope of jurisdiction are defined at 33 CFR 328. Also see Section 502(7) of the Federal CWA [33 USC 1352(7)]. Waters of the U.S. include jurisdictional wetlands. Not all waters and wetlands are jurisdictional. Contact the Corps with any questions regarding jurisdiction.

**Navigable waters:** Refer to 33 CFR 329. These waters include the following federally designated navigable waters in New England. This list represents only those waterbodies for which affirmative determinations have been made; absence from this list should not be taken as an indication that the waterbody is not navigable:

<u>ME</u>: All tidal waters; Kennebec River to Moosehead Lake; Penobscot River to the confluence of the East and West Branch at Medway, Maine; Lake Umbagog within the State of Maine.

# **Appendix G: Additional References**

#### 1. GC 2: Federal Jurisdictional Boundaries.

- (a) Corps Wetlands Delineation Manual, regional supplements, and Corps Wetland Delineation Data Sheets: <a href="www.nae.usace.army.mil/missions/regulatory">www.nae.usace.army.mil/missions/regulatory</a> and then "Wetlands and Jurisdictional Limits."
- (b) The USFWS publishes the 1988 National List of Plant Species that Occur in Wetlands (www.nwi.fws.gov).

The Natural Resources Conservation Service (NRCS) publishes the current hydric soil definition, criteria and lists: <a href="http://soils.usda.gov/use/hydric">http://soils.usda.gov/use/hydric</a>. For the Field Indicators for Identifying Hydric Soils in N.E., see <a href="https://www.neiwpcc.org/hydricsoils.asp">www.neiwpcc.org/hydricsoils.asp</a>.

# 2. GC 5: Single and Complete Project.

Single and complete project means the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. For example, if construction of a residential development affects several different areas of a headwater or isolated water, or several different headwaters or isolated waters, the cumulative total of all filled areas should be the basis for deciding whether or not the project will be covered by Category 1 or 2. The *Independent utility* test is used to determine what constitutes a single and complete 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.

# 3. GC 8: Threatened and Endangered Species.

(a) The following NMFS site must be referenced to ensure that listed species or critical habitat are not present in the action area [GC 8(b)] or to provide information on federally-listed species or habitat [GC 8(e)]: <a href="www.nero.noaa.gov/prot\_res/esp/ListE&Tspec.pdf">www.nero.noaa.gov/prot\_res/esp/ListE&Tspec.pdf</a>. Contact the USFWS for information to check for the presence of listed species (see Appendix D for contact information & procedures).

(b) The Endangered Species Act Consultation Handbook – Procedures for Conducting Section 7 Consultations and Conferences, defines action area as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action. [50 CFR 402.02]."

# 4. GC 42: Essential Fish Habitat.

As part of the GP screening process, the Corps may coordinate with NMFS in accordance with the 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act to protect and conserve the habitat of marine, estuarine and anadromous finfish, mollusks, and crustaceans. This habitat is termed "Essential Fish Habitat (EFH)", and is broadly defined to include "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." There are EFH waters throughout inland and coastal waters in Maine. For additional information, see the EFH regulations 50 CFR 600 at <a href="www.nero.noaa.gov/hcd">www.nero.noaa.gov/hcd</a> including the "Guide for EFH Descriptions" at <a href="www.nero.noaa.gov/hcd/list.htm">www.nero.noaa.gov/hcd/list.htm</a>. Additional information on the location of EFH can be obtained from NMFS (see Appendix D for contact information).

# 5. GC 4: Avoidance, Minimization and Compensatory Mitigation.

(a) See <a href="www.nae.usace.army.mil/missions/regulatory">www.nae.usace.army.mil/missions/regulatory</a> and then "Mitigation" to view the April 10, 2008 "Final Compensatory Mitigation Rule" (33 CFR 332) and related documents. The Q&A document states: "In order to reduce risk and uncertainty and help ensure that the required compensation is provided, the rule establishes a preference hierarchy for mitigation options. The most preferred option

is mitigation bank credits, which are usually in place before the activity is permitted. In-lieu fee program credits are second in the preference hierarchy, because they may involve larger, more ecologically valuable compensatory mitigation projects as compared to permittee-responsible mitigation. Permittee-responsible mitigation is the third option, with three possible circumstances: (1) conducted under a watershed approach, (2) on-site and in kind, and (3) off-site/out-of-kind.

(b) Compensatory mitigation may take the form of wetland preservation, restoration, enhancement, creation, and/or in lieu fee (ILF) for inclusion into the Natural Resources Mitigation Fund for projects in DEP and LURC territories. Avoidance of wetland impacts will reduce the ILF dollar total for applicants. The ILF compensation program was established to provide applicants with a flexible compensation option over and above traditional permittee responsible compensation projects. See the Maine ILF Agreement at <a href="www.nae.usace.army.mil/missions/regulatory">www.nae.usace.army.mil/missions/regulatory</a>, "Mitigation" and then "Maine," or <a href="www.nae.usace.army.mil/missions/regulatory">www.nae.usace.army.mil/missions/regulatory</a>, "Mitigation" and then "Maine," or <a href="www.maine.gov/dep/blwq/docstand/nrpa/ILF">www.maine.gov/dep/blwq/docstand/nrpa/ILF</a> and <a href="www.nae.usace.army.mil/missions/regulatory">NRCP/index.htm</a>.

# 6. GCs 24, 15, and 43: Invasive Species.

- (a) Information on what are considered "invasive species" is provided in our "Compensatory Mitigation Guidance" document at <a href="www.nae.usace.army.mil/missions/regulatory">www.nae.usace.army.mil/missions/regulatory</a> under "Mitigation." The "Invasive Species" section has a reference to our "Invasive Species Control Plan (ISCP) Guidance" document, located at <a href="www.nae.usace.army.mil/missions/regulatory">www.nae.usace.army.mil/missions/regulatory</a> under "Invasive Species," which provides information on preparing an ISCP.
- **(b)** The June 2009 "Corps of Engineers Invasive Species Policy" is at <a href="https://www.nae.usace.army.mil/missions/regulatory">www.nae.usace.army.mil/missions/regulatory</a> under "Invasive Species" and provides policy, goals and objectives.

#### 7. GC 44: Bank Stabilization.

This generally eliminates bodies of water where the reflected wave energy may interfere with or impact on harbors, marinas, or other developed shore areas. A revetment is sloped and is typically employed to absorb the direct impact of waves more effectively than a vertical seawall. It typically has a less adverse effect on the beach in front of it, abutting properties and wildlife. See the Corps Coastal Engineering Manual <a href="EM 1110-2-1100">EM 1110-2-1100</a> at <a href="www.nae.usace.army.mil/missions/regulatory">www.nae.usace.army.mil/missions/regulatory</a> under "Useful Links and Documents" for design and construction guidance.

# 8. GC 45: Stream and Wetland Crossings.

- (a) Projects should be designed and constructed to ensure long-term success using the most recent manual located at <a href="www.nae.usace.army.mil/missions/regulatory">www.nae.usace.army.mil/missions/regulatory</a> under "Stream and River Continuity," currently "Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings, by the U.S. Forest Service." Section 5.3.3 is of particular importance. Sections 7.5.2.3 Construction Methods and 8.2.11 Stream-Simulation Bed Material Placement both show important steps in the project construction.
- (b) For more information on High-Quality Stream Segments and their components see:
  - i. High-Quality Stream Segments are shown at www.maine.gov/dep/gis/datamaps.
  - ii. Class A Waters or Class AA Waters:

www.mainelegislature.org/legis/statutes/38/title38sec465.html, and www.mainelegislature.org/legis/statutes/38/title38sec467.html.

- iii. Outstanding river segments www.mainelegislature.org/legis/statutes/38/title38sec480-P.html.
- (c) The Massachusetts Dam Removal and the Wetland Regulations offer guidance to evaluate the positive and negative impacts of culvert replacement, including the loss of upstream wetlands, which may be offset by the overall benefits of the river restoration. See <a href="https://www.nae.usace.army.mil/missions/regulatory">www.nae.usace.army.mil/missions/regulatory</a> and then "Stream and River Continuity."

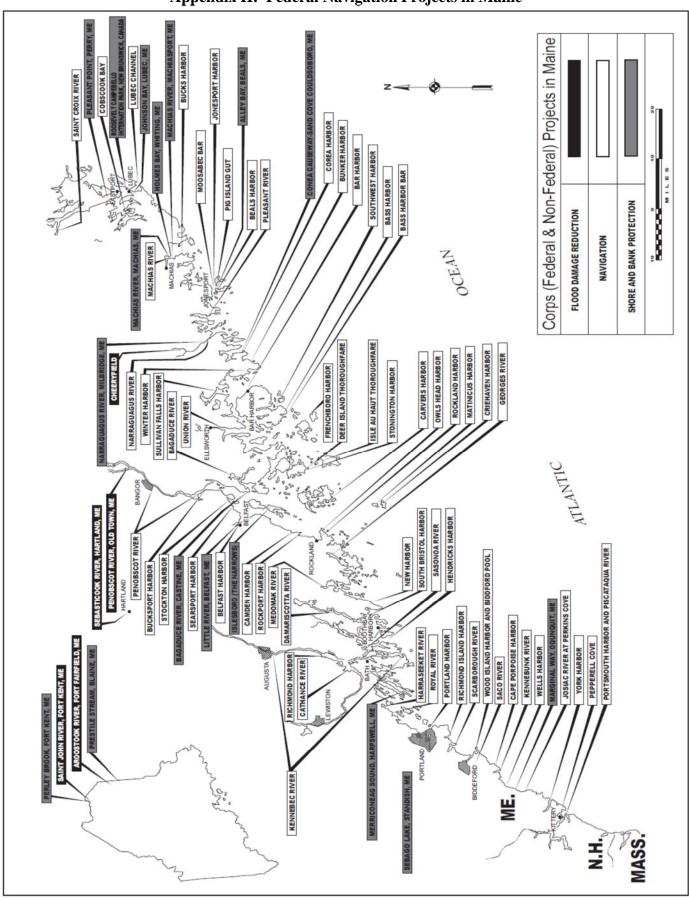
- (d) The ME DOT's document "Waterway and Wildlife Crossing Policy and Design Guide for Aquatic Organism, Wildlife Habitat, and Hydrologic Connectivity," 3rd Edition, July 2008, may be used as guidance to evaluate impacts to aquatic, wildlife and surface water resources when designing, constructing, repairing and maintaining stream crossings. Note: Adherence to this DOT document does not ensure compliance with this GP. Projects must comply with the requirements of this GP including GC 45 and the Corps General Stream Crossing Standards contained therein.

  www.maine.gov/mdot/environmental-office-homepage/fishpassage/3rd%20edition%20-%20merged%20final%20version%207-01-08a1.pdf.
- **(e)** GC 45(f): The Skidder Bridge Fact Sheet at <a href="www.nae.usace.army.mil/missions/regulatory">www.nae.usace.army.mil/missions/regulatory</a> under "Stream and River Continuity" may be a useful temporary span construction method.
- **9. GC 45: Wetland Crossings.** The Maine DEP's crossing standards are at 06-096 DEP, Chapter 305: Permits by Rule, 9 & 10) Crossings (utility lines, pipes and cables). www.maine.gov/dep/blwq/rules/NRPA/2009/305/305 effective 2009.pdf

# 10. GC 23: Protection of Vernal Pools.

- (a) The state's Significant Wildlife Habitat rules (<u>Chapter 335</u>, Section 9(C) "Habitat management standards for significant vernal pool habitat") are located at www.maine.gov/dep/blwq/docstand/nrpapage.htm#rule under "Rules."
- **(b)** The following documents provide conservation recommendations:
- i. Best Development Practices: Conserving pool-breeding amphibians in residential and commercial development in the northeastern U.S., Calhoun and Klemens, 2002. Chapter III, Management Goals and Recommendations, Pages 15 26, is particularly relevant. (Available for purchase at <a href="https://www.maineaudubon.org/resource/index.shtml">www.maineaudubon.org/resource/index.shtml</a> and on Corps website\*.)
- **ii.** Science and Conservation of Vernal Pools in Northeastern North America, Calhoun and deMaynadier, 2008. Chapter 12, Conservation Recommendations section, Page 241, is particularly relevant. (Available for purchase via the internet. Chapter 12 is available on Corps website\*.) \* www.nae.usace.army.mil/reg under "Vernal Pools."
- (c) Cape Cod Curbing: For smaller roads and driveways, the most important design feature to consider is curbing. Granite curbs and some traditional curbing can act as a barrier to amphibian and hatchling turtle movements. Large numbers of salamanders have been intercepted in their migrations by curbs and catch basins. Use of Cape Cod curbs rather than traditional curbing may be one solution. Alternatively, where storm water management systems require more traditional curbing, it may be possible to design in escape ramps on either side of each catch basin. Cape Cod curbing is shown on Page 35 of the document cited in 10.b.i above. Bituminous material is not required; other materials such as granite are acceptable.
- (d) The VP Directional Buffer Guidance document is located at <a href="https://www.nae.usace.army.mil/missions/regulatory">www.nae.usace.army.mil/missions/regulatory</a> under: 1) "State General Permits" and then "Maine," and 2) "Vernal Pools."
- **11. GC 29: Maintenance.** River restoration projects that are designed to accommodate the natural dynamic tendencies of the fluvial system are maintained in accordance with the project's design objectives (Category 1) or the Corps authorization letter (Category 2). These projects are generally designed to support and implement channel assessment and management practices that recognize a stream's natural dynamic tendencies.

**Appendix H: Federal Navigation Projects in Maine** 



Appendix H 1

# APPENDIX B

Section 11 – State Transportation Facilities Permit by Rule Regulations

Chapter 305: PERMIT BY RULE

1. Introduction. A "permit by rule" or "PBR", when approved by the Department of Environmental Protection (DEP), is an approval for an activity that requires a permit under the Natural Resources Protection Act (NRPA). Only those activities described in this chapter may proceed under the PBR process. A PBR activity will not significantly affect the environment if carried out in accordance with this chapter, and generally has less of an impact on the environment than an activity requiring an individual permit. A PBR satisfies the Natural Resources Protection Act (NRPA) permit requirement and Water Quality Certification requirement.

If a proposed activity is not described in this chapter, or will not be conducted in accordance with the standards of this chapter, the applicant must obtain an individual permit prior to beginning the activity.

- **A.** Location of activity. The location of an activity may affect whether an activity qualifies for PBR, and whether review by the Department of Inland Fisheries and Wildlife is required.
  - (1) Type of resource. For some types of activities, the availability of a PBR is affected by the type of natural resource in or adjacent to which the activity is proposed. For example, an applicant proposing an activity consisting of "Movement of rocks or vegetation" may receive a PBR only if the activity will take place in a great pond, river, stream or brook. Limitations concerning the location of activities are addressed in the "Applicability" provision in each section of this chapter.
  - (2) Essential habitat. Essential habitats include areas critical to the survival of threatened and endangered species such as the bald eagle, least tern, roseate tern, and piping plover. If the activity is located in essential habitat, such as near an eagle nesting site, a PBR is only available if the applicant obtains written approval from the Department of Inland Fisheries and Wildlife (IF&W). This approval from IF&W must be submitted to the DEP with the PBR notification form, and the applicant must follow any conditions stated in the IF&W approval.
- NOTE: Maps showing areas of essential habitat are available from the Department of Inland Fisheries and Wildlife regional headquarters, municipal offices, the Land Use Regulation Commission (for unorganized territories) and DEP regional offices. If the activity is located in essential habitat, IF&W must be contacted to request and obtain a "certification of review and approval".
- **B.** Notification. The applicant must file notice of the activity with the DEP prior to beginning work on the activity. The notification must be on a form provided by the DEP and must include any submissions required in this chapter. The applicant must keep a copy to serve as the permit.

The notification form must be sent to the DEP by certified mail (return receipt requested), or hand delivered to the DEP and date stamped by the department. By signing the notification form, the applicant is representing that the activity will meet the applicability requirements and standards of the rule. In addition, by signing the notification form the applicant represents that the applicant has sufficient title, right, or interest in the property where the proposed activity is to take place.

# C. Effective period

(1) Beginning of period. The PBR becomes effective 14 calendar days after the DEP receives the notification form, unless the DEP approves or denies the PBR prior to that date. If the DEP does not speak with or write to the applicant within this 14 day period regarding the PBR notification, the applicant may proceed to carry out the activity.

There are three exceptions regarding the effective date of an approved PBR:

- (a) Activities listed in Section 10 (Stream crossings) occurring in association with forest management are exempt from the 14 day waiting period.
- (b) Activities listed in Section 10 (Stream crossings) performed or supervised by individuals currently certified in erosion control practices by the DEP are exempt from the 14 day waiting period. To be certified in erosion control practices, an individual must successfully complete all course requirements of the Voluntary Contractor Certification Program administered by the DEP's Nonpoint Source Training and Resource Center.
- (c) Activities that are part of a larger project requiring a permit under the Site Location of Development or the Storm Water Management Acts may not proceed until any required permit under those laws is obtained.
- NOTE: Activities that are part of a larger project may require other permits from the DEP also. These other laws may prohibit the start of construction of any part of the project unless a permit under that law is obtained. In these cases, while not a violation of this rule, starting work on a PBR approved activity would be a violation of those other applicable laws.
- (2) End of period. The PBR is generally effective for 2 years from the date of approval, except that a PBR for "Replacement of structures" under Section 4 is effective for 3 years.
- NOTE: Activities that qualify under this chapter may need to meet other local, state and federal requirements. Examples -- (1) If an activity extends below the low water line of a lake, coastal wetland or international boundary water, the applicant should contact the Bureau of Parks and Lands (287-3061) concerning possible lease or easement requirements, or (2) If an activity will involve work below the mean high water line in navigable waters of the United States, the applicant should contact the Army Corps of Engineers (623-8367).
- **D. Discretionary authority.** Notwithstanding compliance with the PBR applicability requirements and standards set forth in this chapter, the DEP may require an individual permit application to be filed in any case where credible evidence indicates that the activity:
  - (1) May violate the standards of this rule or the NRPA (38 M.R.S.A. Section 480-D);
  - (2) Could lead to significant environmental impacts, including cumulative impacts; or
  - (3) Could adversely impact a resource of special concern.

If an individual permit is required pursuant to this subsection, the DEP shall notify the applicant in writing within the 14 calendar day waiting period described in sub-section (C) above. When

the DEP notifies an applicant than an individual permit is required, no work may be conducted unless and until the individual permit is obtained.

- **E. Violations.** A violation of law occurs when a person, or his or her agent, performs or causes to be performed any activity subject to the NRPA without first obtaining a permit from the DEP, or acts contrary to the provisions of a permit. The person, his or her agent, or both, may be held responsible for the violation. Commonly, the "person" is the landowner, and the "agent" is the contractor carrying out the activity. A violation occurs when:
  - (1) An activity occurs that is not allowed under PBR, whether or not a PBR notification form has been filed with and/or approved by the DEP;
  - (2) An activity occurs that is allowed under PBR, but a PBR for the activity has not become effective prior to the beginning of the activity; or
  - (3) An activity occurs that is allowed under PBR and a PBR for the activity is in effect, but the standards specified in this chapter are not met.

See the "applicability" provision under each activity for rules concerning what activities are allowed under PBR. A PBR is only valid for the person listed on the notification form, or for his or her agent.

Each day that a violation occurs or continues is considered a separate offense. Violations are subject to criminal penalties and civil penalties of not less than \$100 nor more than \$10,000 for each day of that violation (38 M.R.S.A. Section 349).

NOTE: A local Code Enforcement Officer (CEO) may take enforcement action for a violation of the Natural Resources Protection Act if he or she is authorized to represent a municipality in District Court, and he or she has been certified as familiar with court procedures, 30-A M.R.S.A. Section 4452(7).

# 11. State transportation facilities

# A. Applicability

(1) This section applies to the maintenance, repair, reconstruction, rehabilitation, replacement or minor construction of a State Transportation Facility carried out by, or under the authority of, the Maine Department of Transportation (MaineDOT) or the Maine Turnpike Authority, including any testing or preconstruction engineering, and associated technical support services.

(2) This section does not apply to an activity within a coastal sand dune system.

NOTE: The construction of a transportation facility other than roads and associated facilities may be subject to the Storm Water Management Law, 38 M.R.S.A. Section 420-D.

#### **B.** Standards

- (1) Photographs of the area to be altered by the activity must be taken before work on the site begins. The photographs must be kept on file and be made available at the request of the DEP.
- (2) The activity must be reviewed by the Department of Inland Fisheries and Wildlife and the Department of Marine Resources, as applicable. The applicant must coordinate with the reviewing agencies and incorporate any recommendations from those agencies into the performance of the activity.
- (3) All construction activities undertaken must be detailed in a site-specific Soil Erosion and Water Pollution Control Plan and conducted in accordance with MaineDOT's Best Management Practices for Erosion and Sediment Control, dated January 2000, and Standard Specifications, dated December 2002.
- (4) Alignment changes may not exceed a distance of 200 feet between the old and new center lines in any natural resource.
- (5) The activity may not alter more than 300 feet of shoreline (both shores added together) within a mile stretch of any river, stream or brook, including any bridge width or length of culvert.
- (6) The activity may not alter more than 150 feet of shoreline (both shores added together) within a mile stretch of any outstanding river segment identified in 38 M.R.S.A. 480-P, including any bridge width or length of culvert.
- (7) The activity must minimize wetland intrusion. The activity is exempt from the provisions of Chapter 310, the Wetland and Waterbodies Protection Rules, if the activity alters less than 15,000 square feet of natural resources per mile of roadway (centerline measurement) provided that the following impacts are not exceeded within the 15,000 square foot area:
  - (a) 1,000 square feet of coastal wetland consisting of salt tolerant vegetation or shellfish habitat; or
  - (b) 5,000 square feet of coastal wetland not containing salt tolerant vegetation or shellfish habitat: or
  - (c) 1,000 square feet of a great pond.

All other activities must be performed in compliance with all sections of Chapter 310, the Wetland Protection Rules, except 310.2(C), 5(A), 9(A), 9(B) and 9(C).

(8) The activity may not permanently block any fish passage in any watercourse containing fish. The applicant must coordinate with the reviewing agencies listed in paragraph 2 above to

improve fish passage and incorporate any recommendations from those agencies into the performance of the activity.

NOTE: For guidance on meeting the design objectives for fish passage, including peak flow, maximum velocity, mining depth and gradient, see the MaineDOT Waterbody and Wildlife Crossing Policy and Design Guide (July 2008), developed in conjunction with state and federal resource and regulatory agencies.

- (9) Rocks may not be removed from below the normal high water line of any coastal wetland, freshwater wetland, great pond, river, stream or brook except to the minimum extent necessary for completion of work within the limits of construction.
- (10) If work is performed in a river, stream or brook that is less than three feet deep at the time and location of the activity, the applicant must isolate the work area from the resource and divert stream flows around the work area, maintaining downstream flows while work is in progress.
- (11) Wheeled or tracked equipment may not operate in the water. Equipment operating on the shore may reach into the water with a bucket or similar extension. Equipment may cross streams on rock, gravel or ledge bottom. If avoiding the operation of wheeled or tracked equipment in the water is not possible, the applicant must explain the need to operate in the water. Approval from the DEP to operate in the water must be in writing, and any recommendations from the DEP must be incorporated into the performance of the activity.
- (12) All wheeled or tracked equipment that must travel or work in a vegetated wetland area must travel and work on mats or platforms.
- (13) Any debris or excavated material must be stockpiled either outside the wetland or on mats or platforms. Erosion and sediment control best management practices must be used, where necessary, to prevent sedimentation. Any debris generated during the activity must be prevented from washing downstream and must be removed from the wetland or water body. Disposal of debris must be in conformance with the Maine Hazardous Waste, Septage and Solid Waste Management Act, 38 M.R.S.A. Section 1301 *et seq*.
- (14) Work below the normal high water line of a great pond, river, stream or brook must be done at low water except for emergency work or work agreed to by the resource agencies listed in paragraph 2 above.
- (15) Perimeter controls must be installed before the work starts. Disturbance of natural resources beyond the construction limits shown on the plans is not allowed under this rule.

NOTE: Guidance on the location of construction limits can be obtained from the on site Construction Manager.

(16) The use of untreated lumber is preferred. Lumber pressure treated with chromated copper arsenate (CCA) may be used only if necessary and only if use is allowed under federal law and not prohibited from sale under 38 M.R.S.A. 1682, and provided it is cured on dry land in a manner that exposes all surfaces to the air for a period of at least 21 days prior to construction. Wood treated with creosote or pentachlorophenol may not be used where it will contact water.

- (17) A temporary road for equipment access must be constructed of crushed stone, blasted ledge, or similar materials that will not cause sedimentation or restrict fish passage. Such roads must be completely removed at the completion of the activity. In addition, any such temporary roads which are in rivers, streams or brooks, must allow for a passage of stormwater flows associated with a 10-year storm.
- (18) Non-native species may not be planted in restored areas.
- (19) Disposal of debris must be in conformance with Maine Hazardous Waste, Septage and Solid Waste Management Act, 38 M.R.S.A. Sections 1301 *et seq*.
- (20) Disturbance of vegetation must be avoided, if possible. Where vegetation is disturbed outside of the area covered by any road or structure construction, it must be reestablished immediately upon completion of the activity and must be maintained.
- (21) A vegetated area at least 25 feet wide must be established and maintained between any new stormwater outfall structure and the high water line of any open water body. A velocity reducing structure must be constructed at the outlet of the stormwater outfall that will create sheet flow of stormwater, and prevent erosion of soil within the vegetated buffer. If the 25 foot vegetated buffer is not practicable, the applicant must explain the reason for a lesser setback in writing. Approval from the DEP must be in writing and any recommendations must be incorporated into the activity.
- **C. Definitions.** The following terms, as used in this chapter, have the following meanings, unless the context indicates otherwise:
  - (1) **Diversion**. The rerouting of a river, stream or brook around a construction site and then back to the downstream channel.
  - (2) **Fill**. a. (verb) To put into or upon, supply to, or allow to enter a water body or wetland any earth, rock, gravel, sand, silt, clay, peat, or debris; b. (noun) Material, other than structures, placed in or immediately adjacent to a wetland or water body.
  - (3) **Floodplain wetlands**. Freshwater wetlands that are inundated with flood water during a 100-year flood event based on flood insurance maps produced by the Federal Emergency Agency or other site specific information.
  - (4) **Riprap**. Heavy, irregularly shaped rocks that are fit into place, without mortar, on a slope as defined in the MaineDOT Standard Specifications, dated December 2002.

# APPENDIX C

MS4 Procedures and Plans

# Maine Turnpike Authority MS4 Stormwater Awareness Plan

Developing and implementing a Best Management Plan (BMP) Adoption Plan is a requirement of the Maine Department of Environmental Protection's (DEP's) General Permit for the Discharge of Stormwater from Maine Department of Transportation (MaineDOT) and Maine Turnpike Authority (MTA) Municipal Separate Storm Sewer Systems (MS4s). Since MTA is subject to this MS4 permit and its six Minimum Control Measures (MCMs), Part IV(H)(1)(a)(ii) requires MTA to conduct Public Education and Outreach (MCM #1) efforts that encourage "employees and contractors to utilize BMPs that minimize stormwater pollution."

#### 1.0 PERMIT LANGUAGE

Part IV(H)(1) of the MS4 Permit establishes three goals for MCM # 1 - Public Education and Outreach on Stormwater Impacts. These include the following:

- 1. To raise awareness that polluted stormwater runoff is one of the most significant sources of water quality problems for Maine's waters;
- 2. To motivate staff and contractors to use Best Management Practices (BMPs) which reduce polluted stormwater runoff; and
- 3. To reduce polluted stormwater runoff as a result of increased awareness and utilization of BMPs.

In addition to continuing outreach efforts from the previous MS4 Permit (e.g., 5-year cycle)<sup>1</sup>, MTA must satisfy these three goals by encouraging employees and contractors to use BMPs that minimize stormwater pollution as part of this Targeted BMP Adoption Plan. The progress and effectiveness of the Plan and associated efforts must then be evaluated and included in each annual report submitted to Maine DEP in accordance with  $Part\ IV(J)$  of the MS4 Permit. As part of this evaluation, MTA must include an assessment of process indicators and impact indicators to evaluate efforts in meeting these goals. In the fifth annual report, the BMP Adoption Plan shall be reviewed fully and include analysis of the process and impact indicators.

#### 2.0 COVERAGE AREA

This plan has been developed for implementation by MTA to meet MS4 Permit requirements for Urbanized Areas (UAs) within MTA's right-of-way (ROW).

**Process indicators** are related to the execution of the program, such as (1) percent or number of employees who attend a training session; or (2) completion of a particular action item (e.g., distributing posters to employee work place and/or contractor job site).

**Impact indicators** are related to the achievement of the goals and objectives of the program, such as (1) observable/measurable effects on behavior; or (2) percent or number of employees to describe sources of storm water pollution, proper spill response, or maintenance of a BMP.

<sup>&</sup>lt;sup>1</sup> Public education and outreach efforts continued from the previous MS4 permit cycle include (but are not limited to) conducting annual stormwater pollution prevention/spill prevention control and countermeasures (SPCC) training to MTA maintenance and engineering employees, as well as other Measurable Goals that can be found in MTA's Stormwater Program Management Plan (SPMP) dated December 2013.

#### 3.0 OBJECTIVE

The objective of this Stormwater Awareness Plan is to raise awareness among MTA employees and contractors regarding stormwater issues. For example, stormwater runoff is one of the most significant sources of water quality problems for Maine's waters.

The goal of the Stormwater Awareness Plan is to provide information relative to stormwater impacts in an effort to raise awareness of MTA employees. For example, 100% of Highway Maintenance employees and Engineering Inspectors will attend training sessions at which stormwater issues and impacts will be addressed. Additionally, MTA will also work to raise awareness among MTA employees in other departments, such as Fare Collections by providing abbreviated Stormwater/Spill Prevention and Response training to supervisors and managers who will in turn inform additional employees regarding stormwater issues relative to MTA operations.

The goal of this Plan is to also raise awareness of contractors by providing this Plan, as well as the Targeted BMP Adoption Plan (which is designed to motivate employees and contractors to use BMPs to reduce polluted stormwater runoff), prior to starting work on MTA projects.

#### 4.0 MESSAGE

The message MTA will strive to impart on employees and contractors will relate to the potential impacts their activities may have on stormwater runoff and water quality in Maine. The message statement is:

"The effect stormwater runoff has on the water quality of Maine waters is impacted by the level of effort put into the construction, operation, and maintenance of MTA's stormwater infrastructure. Polluted water entering the storm drain system and discharged untreated directly to waterbodies is used for drinking, fishing, and swimming, which impacts everyone in Maine."

In addition to the Stormwater Awareness Plan message, the target audience will be informed of authorized non-stormwater discharges allowed by the permit provided they do not contribute to a violation of water quality standards, as determined by the DEP. These include the following:

- Landscape irrigation
- Diverted stream flows
- Rising ground waters
- Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20))
- Uncontaminated pumped ground water
- Uncontaminated flows from foundation drains
- Air conditioning and compressor condensate
- Irrigation water
- · Flows from uncontaminated springs
- Uncontaminated water from crawl space pumps
- Uncontaminated flows from footing drains
- Lawn watering runoff
- Flows from riparian habitats and wetlands
- Residual street wash water (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material has been removed and detergents are not used)
- Hydrant flushing and fire fighting activity runoff
- Water line flushing and discharges from potable water sources

# 4.1 OUTREACH TOOL(S) AND DISTRIBUTION

This Stormwater Awareness Plan and message will be provided to each MTA employee at annual training sessions and also to each contractor before commencement of work, in addition to the Targeted BMP Adoption Plan.

MTA has established or will rely on a number of outreach tools including the following:

- Existing stormwater training programs
  - For MTA employees, the internal training program will be evaluated annually (and updated, as needed) to include storm water topics in order to assess process and impact indicators; and
  - For contractors, MTA continues to require an On-Site Responsible Party (OSRP) certified by DEP's NPS Training Program to be knowledgeable of stormwater, specifically erosion prevention, sedimentation control and other potential impacts to water quality in Maine.
- Stormwater information packages to raise awareness and encourage utilization of targeted BMPs
  - o For MTA employees, information will be provided during annual and supplemental training sessions. Informational packages may also be provided via MTA's newsletters and memos posted to employee bulletin boards, as well as through employee meetings, including quarterly Environmental Health & Safety Committee meetings.
  - For contractors, MTA will continue to include contractual requirements provided in the standard contract language that establishes the anticipated expectations for performance and payment. Stormwater information will be discussed or provided to contractors prior to starting work (e.g., at Pre-Construction meetings).

#### 4.2 TIMELINE AND IMPLEMENTATION SCHEDULE

The timeline and implementation schedule is determined by:

- The training schedule established each year for MTA employees; and
- The solicitation and project award notices each year.

MTA has established a representative training schedule for each year and is similar to the table below:

Date	Training Type	
April	Erosion and Sediment Control (ESC) and Stormwater Pollution Prevention for highway	
	maintenance Supervisors and Foremen	
May - June	Spill Prevention Control and Countermeasures Plan (SPCC), Stormwater and Erosion and	
	Sediment Control (ESC) for MTA maintenance and engineering employees.	
October	Spill Prevention Control and Countermeasures Plan (SPCC) and Stormwater for Fare	
	Collections	

The training sessions are designed to meet the goal of increasing awareness, as well as encouraging utilization of targeted BMPs to reduce stormwater runoff and potential impacts. In addition to these training sessions, there may be supplemental training sessions as needed and/or new information posters about stormwater BMPs posted at MTA facilities. Newsletters including stormwater information may also be sent each year to employees.

For contractors, MTA's requirement to have an OSRP certified by DEP's NPS Program ensures that the contractor is aware of stormwater related issues. In addition, MTA distributes this Stormwater Awareness Plan to contractors.

#### 4.3 RESPONSIBLE PARTY

The primary responsible party at MTA is the Environmental Services Coordinator, John Branscom. The Environmental Services Coordinator may also rely on the following:

- MTA Supervisors, Foremen, Inspectors and/or other personnel to inform MTA employees and contractors of the targeted BMPs to be utilized;
- An environmental consulting firm, such as GZA GeoEnvironmental, Inc, to ensure MTA's employees are trained as defined by the Plan; and
- A design engineering firm, such as HNTB, who administer construction contracts, to ensure the Plan is properly implemented by the contractors.

#### 4.4 EVALUATION PROTOCOL

MTA training is documented with attendance sign-in sheets, exam scores, in-class workshops and evaluation forms. A training database is maintained with information gathered from employees during each training session.

<u>Process Indicators:</u> Assessment of the program execution will be included in the annual report. The following topics will be reported for MTA employees:

- 1. Number of employees that attended training; and
- 2. Average exam scores for attendees.

<u>Impact Indicators:</u> Gauging the achievement of goals and objectives of the program will be included in the annual report. These will be addressed by the following behavioral change questions:

- 1. Number or percentage of employees to identify the goals of MCM #1 correctly;
- 2. Number or percentage of employees to identify source(s) of storm water pollution;
- 3. Number or percentage of employees to identify and differentiate between structural and non-structural BMPs; and
- 4. Number or percentage of employees to demonstrate an applied knowledge of BMP-specific information.

Process and impact indicators for contractors will be tracked by documenting the pre-construction meetings when this Plan and the Targeted BMP Adoption Plan are provided to each contractor and the contractor, in turn, provides MTA with the certification for their OSRP for the project.

#### 4.5 PLAN MODIFICATION

This Stormwater Awareness Plan may require modification if evaluation data shows that efforts are not effective. Should modifications be needed, the plan will be revised or a new plan will be developed.

I have read and accept the policies outlined in this Storm Permit.	nwater Awareness Plan as required by MTA's MS4
Contractor Signature of Acknowledgement	Date
Printed Name	Project Number

# Maine Turnpike Authority MS4 Targeted BMP Adoption Plan

Developing and implementing a Best Management Plan (BMP) Adoption Plan is a requirement of the Maine Department of Environmental Protection's (DEP's) General Permit for the Discharge of Stormwater from Maine Department of Transportation (MaineDOT) and Maine Turnpike Authority (MTA) Municipal Separate Storm Sewer Systems (MS4s). Since MTA is subject to this MS4 permit and its six Minimum Control Measures (MCMs), Part IV(H)(1)(a)(ii) requires MTA to conduct Public Education and Outreach (MCM #1) efforts that encourage "employees and contractors to utilize BMPs that minimize stormwater pollution."

#### 1.0 PERMIT LANGUAGE

Part IV(H)(1) of the MS4 Permit establishes three goals for MCM # 1 - Public Education and Outreach on Stormwater Impacts. These include the following:

- 1. To raise awareness that polluted stormwater runoff is one of the most significant sources of water quality problems for Maine's waters;
- 2. To motivate staff and contractors to use Best Management Practices (BMPs) which reduce polluted stormwater runoff; and
- 3. To reduce polluted stormwater runoff as a result of increased awareness and utilization of BMPs.

In addition to continuing outreach efforts from the previous MS4 Permit (e.g., 5-year cycle)<sup>1</sup>, MTA must satisfy these three goals by encouraging employees and contractors to use BMPs that minimize stormwater pollution as part of this Targeted BMP Adoption Plan. The progress and effectiveness of the Plan and associated efforts must then be evaluated and included in each annual report submitted to Maine DEP in accordance with  $Part\ IV(J)$  of the MS4 Permit. As part of this evaluation, MTA must include an assessment of process indicators and impact indicators to evaluate efforts in meeting these goals. In the fifth annual report, the BMP Adoption Plan shall be reviewed fully and include analysis of the process and impact indicators.

#### 2.0 COVERAGE AREA

This plan has been developed for implementation by MTA to meet MS4 Permit requirements for Urbanized Areas (UAs) within MTA's right-of-way (ROW).

**Process indicators** are related to the execution of the program, such as (1) percent or number of employees who attend a training session; or (2) completion of a particular action item (e.g., distributing posters to employee work place and/or contractor job site).

**Impact indicators** are related to the achievement of the goals and objectives of the program, such as (1) observable/measurable effects on behavior; or (2) percent or number of employees to describe sources of storm water pollution, proper spill response, or maintenance of a BMP.

<sup>&</sup>lt;sup>1</sup> Public education and outreach efforts continued from the previous MS4 permit cycle include (but are not limited to) conducting annual stormwater pollution prevention/spill prevention control and countermeasures (SPCC) training to MTA maintenance and engineering employees, as well as other Measurable Goals that can be found in MTA's Stormwater Program Management Plan (SPMP) dated December 2013.

#### 3.0 OBJECTIVE

The objective of this Targeted BMP Adoption Plan is to educate MTA's employees and contractors to use BMPs which reduce polluted stormwater runoff within UA.

The goal of the BMP Adoption Plan is to target BMPs in the MaineDOT BMP Manual to be utilized by employees and contractors that minimize stormwater pollution during construction activities, such as:

- (1) Installing silt fence prior to land disturbance; and
- (2) Ensuring that hay mulch is applied to soil at the end of each work day.

For MTA employees, focus will also be given to targeting BMPs relevant to transportation-related maintenance and good housekeeping activities, such as:

- (1) Regular sweeping of the mainline and peripheral facilities;
- (2) Annual catch basin clean-outs and sediment removal;
- (3) As needed ditch cleaning and repair;
- (4) On-going culvert maintenance and litter removal.

Contractors are also encouraged to utilize BMPs in accordance with standard construction contract language (e.g., Special Provision 656), as well as the MaineDOT BMP Manual.

#### 4.0 MESSAGE

The message MTA will strive to impart on employees and contractors will relate to the impacts their activities have on stormwater runoff and the importance of BMPs. The message statement is:

"Implementing appropriate BMPs, as described in MaineDOT's Stormwater BMPs Manual, to all MTA related activities will help to minimize stormwater pollutants introduced to Maine's waterbodies."

# 4.1 OUTREACH TOOL(S) AND DISTRIBUTION

Targeted BMPs are included in the MaineDOT BMP Manual that is available at each MTA maintenance facility and referenced in standard contract language for contractors.

MTA has established or will rely on a number of outreach tools including the following:

- Existing stormwater training programs
  - For MTA employees, the internal training program will be evaluated annually (and updated, as needed) to include storm water topics in order to assess process and impact indicators; and
  - For contractors, MTA continues to require an On-Site Responsible Party (OSRP) certified by DEP's NPS Training Program to be knowledgeable in erosion prevention and sedimentation control.
- Existing standard contract language
  - Requires contractors to maintain a certified OSRP on-site who has authority to implement BMPs appropriately; and
  - Specifies that contractors must utilize MaineDOT's BMP Manual, as well as other BMPs, to ensure construction site runoff is minimized.
- Stormwater information packages to raise awareness and encourage utilization of targeted BMPs
  - For MTA employees, information will be provided during annual and supplemental training sessions. Informational packages may also be provided via MTA's newsletters

- and memos posted to employee bulletin boards, as well as through employee meetings, including quarterly Environmental Health & Safety Committee meetings.
- For contractors, MTA will continue to include contractual requirements provided in the standard contract language that establishes the anticipated expectations for performance and payment. This Target BMP Adoption Plan will also be provided to contractors prior to starting work (e.g., at Pre-Construction meetings).

#### 4.2 TIMELINE AND IMPLEMENTATION SCHEDULE

The timeline and implementation schedule is determined by:

- The training schedule established each year for MTA employees; and
- The solicitation and project award notices each year.

MTA has established a representative training schedule for each year and is similar to the table below.

Date	Training Type	
April	Erosion and Sediment Control (ESC) and Stormwater Pollution Prevention for Highway	
	Maintenance Supervisors and Foremen	
May - June	Spill Prevention Control and Countermeasures Plan (SPCC), Stormwater and Erosion and	
	Sediment Control (ESC) for MTA maintenance and engineering employees.	

In addition to the training sessions above, there may be supplemental training sessions as needed and/or new information posters about stormwater BMPs posted at MTA facilities. Newsletters including stormwater information may also be sent each year to employees.

For contractors, targeted BMPs are already being implemented in accordance with contract language and the MaineDOT BMP Manual. In addition, MTA distributes this Targeted BMP Adoption Plan to contractors.

# 4.3 RESPONSIBLE PARTY

The primary responsible party at MTA is the Environmental Services Coordinator, John Branscom. The Environmental Services Coordinator may also rely on the following:

- MTA Supervisors, Foremen, Inspectors and/or other personnel to inform MTA employees and contractors of the targeted BMPs to be utilized;
- An environmental consulting firm, such as GZA GeoEnvironmental, Inc, to ensure MTA's employees are trained as defined by the Plan; and
- A design engineering firm, such as HNTB, who administer construction contracts, to ensure the Plan
  is properly implemented by the contractors.

#### 5.0 EVALUATION PROTOCOL

MTA training is documented with attendance sign-in sheets, exam scores, in-class workshops and evaluation forms. A training database is maintained with information gathered from employees during each training session.

<u>Process Indicators:</u> Assessment of the program execution will be included in the annual report. The following topics will be reported for MTA employees:

- 1. Number of employees that attended training; and
- 2. Average exam scores for attendees.

<u>Impact Indicators:</u> Gauging the achievement of goals and objectives of the program will be included in the annual report. These will be addressed by the following behavioral change questions:

1. Number or percentage of employees to identify the goals of MCM #1 correctly;

- 2. Number or percentage of employees to identify source(s) of storm water pollution;
- 3. Number or percentage of employees to identify and differentiate between structural and non-structural BMPs; and
- 4. Number or percentage of employees to demonstrate an applied knowledge of BMP-specific information.

Process and impact indicators for contractors will be tracked and evaluated based on daily and/or weekly inspections conducted on-site.

# 6.0 PLAN MODIFICATION

This Targeted BMP Adoption Plan may require modification if evaluation data shows that efforts are not effective. Should modifications be needed, the plan will be revised or a new plan will be developed.

I have read and accept the policies outlined in t Permit.	his Stormwater Awareness Plan as required by MTA's MS4
Contractor Signature of Acknowledgement	Date
Printed Name	Project Number

# APPENDIX D

Portland Water District Water Main Replacement Contract Documents

# **CONTRACT DOCUMENTS**

**FOR** 

# WARREN AVE TURNPIKE CROSSING WATER MAIN REPLACEMENT

Portland, Maine



March 2019
PORTLAND WATER DISTRICT
225 Douglass Street
Portland, Maine 04104-3553



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# **DIVISION 1: GENERAL REQUIREMENTS**

#### **SECTION 01010 – SUMMARY OF WORK**

# PART 1 - GENERAL

#### 1.01 SUMMARY

A. The Contractor shall furnish and install water main and appurtenances in an easement crossing the Main Turnpike near Warren Ave in Portland as shown on the Drawings and specified herein.

#### 1.02 DUTIES OF THE OWNER

- A. The Owner will locate the terminal points of the work and will also locate any of its facilities lying in close proximity which would in any way be a hazard to the Contractor's operations.
- B. The Owner will operate any valves or hydrants which may be found desirable or necessary to be used for any purpose.
- C. The Owner will notify customers of all work involving temporary shutdown of service.

# 1.03 DUTIES OF THE CONTRACTOR

- A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto.
- B. Provide water mains to supply the Owner with a satisfactory, watertight pipeline, laid to proper line and grade in accordance with these contract documents, to the satisfaction of the Owner. The Contractor shall leave the site in a condition, which is suitable to the Owner, abutting landowners and any municipal or state authorities having jurisdiction over the areas involved.
- C. The Contractor shall furnish plant and equipment which will be efficient, appropriate and large enough to secure a satisfactory quality of work and a rate of progress which will insure the completion of the work within the time stipulated in the Contract.
- D. The Contractor must give the District adequate notice of all planned activities such as shutdowns to allow time for customer notification.
- E. The Contractor will furnish all fuel, gasoline, oil, etc. for the operation of his equipment, all tools and equipment, and all labor and supervision necessary for the handling of material, for excavation, installation, backfilling and cleaning the site as required. He will dispose of excess spoil and restore the land surface to the original contour over the entire length of the project. Restoration shall be made to the satisfaction of the Engineer.

- F. The Contractor will perform the pressure and leakage test and disinfection of the main as described herein in the presence of the Engineer or Owner.
- G. The Contractor shall install and maintain a temporary water system sufficient to maintain service to all customers during the water main replacement.

#### **SECTION 01150 – SITE CONDITIONS**

# PART 1 - GENERAL

# 1.04 PLANT AND EQUIPMENT

A. The Contractor shall furnish plant and equipment which will be efficient, appropriate and large enough to secure a satisfactory quality of work and a rate of progress which will insure the completion of the work within the time stipulated in the Contract.

# 1.05 PIPE LOCATIONS

A. Pipelines shall be located substantially as indicated on the Drawings, but the Owner reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or for other reasons. Where fittings are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve him from laying and jointing different or additional items where required.

#### 1.06 CARE AND PROTECTION OF PROPERTY

- A. The Contractor shall familiarize himself with all obstructions which he can foresee, such as existing pipes, services, conduits, ducts, sewers or any other such obstructions which might interfere with the Work, and shall make arrangements with the owners of such facilities so as to save the Owner harmless from any damages thereto caused by his operations and to make whatever arrangements might be necessary to move and restore or remove and replace these facilities. Costs associated with this Work shall be incidental to the Contract.
- B. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the Work on the part of the Contractor, such property shall be restored by the Contractor, at no additional cost to the Owner, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in other manner acceptable to the Owner.
- C. The Contractor shall assume full responsibility for the protection of all trees, buildings, structures, and utilities, public or private, including poles, signs, services to buildings, buried utilities, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Costs associated with this Work shall be incidental to the Contract. Any damage resulting from the Contractor's operations shall be repaired at no additional expense to the Owner.
- D. Any damage to or displacement of street or highway surfaces due to blasting or otherwise shall be either replaced satisfactorily by the Contractor or shall be paid for by him to the authority responsible for the street or highway at no additional cost to the Owner.

#### **SECTION 01250 - MEASUREMENT AND PAYMENT**

# PART 1: GENERAL

# 1.1 METHOD OF MEASUREMENT AND BASIS OF PAYMENT:

A. All measurements for payments will be based on completed work performed in strict accordance with the drawings and specifications, and on the contract bidding and payment item schedules. All work completed under the contract will be measured by the PORTLAND WATER DISTRICT ("DISTRICT") according to the methods outlined below. In cases where the payment clause in the specifications relating to any unit or lump sum price stated in the contract requires that the said unit or lump sum price cover and be considered compensation for certain work or material essential to the item, this same item will not be measured or paid for under any other pay item which may appear elsewhere in the specifications.

# 1.2 INCIDENTAL WORK

- A. Incidental work items for which separate payment is not made include (but are not limited to) the following items:
  - 1. Pre-construction photographs
  - 2. Traffic control plan
  - 3. Clearing, grubbing and stripping
  - 4. Dewatering
  - 5. Clean-up
  - 6. Loaming and seeding
  - 7. Restoration of property
  - 8. Crossing other utilities, unless otherwise paid for
  - 9. Bonds, insurance, shop drawings, warranties and other submittals required by the contract documents
  - 10. Mobilization and demobilization
  - 11. Repair and replacement of utilities damaged by construction activities or for Contractor convenience and corresponding proper disposal of removed materials
  - 12. Temporary construction, including temporary water distribution, temporary paving and other facilities not to be permanently incorporated into the work necessary for construction sequencing and maintenance of operations
  - 13. Paving associated with the temporary water distribution system, beyond the trench paving limits associated with the water main, hydrants and service line replacements
  - 14. Weather protection
  - 15. Trench boxes, steel and/or wood sheeting, as required
  - 16. Dust control
  - 17. Permits not otherwise paid for or provided by the Owner
  - 18. Facilities for storage of materials to be incorporated into the Work
  - 19. Test pits to determine existing utility locations, soil conditions, and as required to complete the project
  - 20. Pavement markings
  - 21. Saw cutting, removal and disposal of existing pavement
  - 22. Resetting or replacement of existing street signs

# 1.3 PAYMENT FOR INCREASED OR DECREASED QUANTITIES

When alterations in the quantities or work not requiring supplemental agreements are ordered and performed, the Contractor shall accept payment in full at the contract price for the actual quantities or work done. No allowance will be made for anticipated profits.

# 1.4 OMITTED ITEMS

Should any item contained in the bid form be found unnecessary for the proper completion of the work contracted, the Owner may eliminate such items from the Contract, and such action shall in no way invalidate the Contract, and no allowance will be made for items so eliminated in making final payment to the Contractor.

# PART 2: PAYMENT ITEMS:

# 2.1 ITEM NO. 203.25 Granular Borrow

- A. Method of Measurement: Cubic yards as measured in place for the actual number of yards of granular borrow installed.
- B. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for excavation, installation and compaction of granular borrow as directed by the ENGINEER to replace unsuitable excavated material.

# 2.2 <u>ITEM NO. 603.28 Concrete Collar for Reinforcing Concrete Pipe</u>

- A. Method of Measurement: Actual number installed
- B. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for installation, forming, concrete, bedding, and associated work as specified and shown on Drawings.

# 2.3 ITEM NO. 603.431 Reinforced Concrete Pipe

- A. Method of Measurement: Linear feet as measured along the centerline of the pipe for the actual number of linear feet of pipe installed.
- B. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for excavation, bedding, backfill, fittings, piping, brick and mortar seals, laying and jointing, restoration of property and associated work as specified and shown on the Drawings.

# 2.4 ITEM NO. 802.182 Cl 52 DI Restrained Joint Pipe

- A. Method of Measurement: Linear feet as measured along the centerline of the pipe for the actual number of linear feet of pipe and fittings installed.
- B. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for equipment, excavating, shoring and bracing, dewatering, pipe, laying and jointing,

connections to existing piping, removal and disposal of existing piping, services and appurtenances, thrust restraint, select backfill, backfilling, testing, restoration, and associated work as specified and shown on the Drawings.

# 2.5 ITEM NO. 802.32 Casing Spacers

- A. Method of Measurement: Actual number installed
- B. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for installation, spacers, test pits and associated work as specified and shown on Drawings.

#### **SECTION 01300 - SUBMITTALS**

# PART 1 - GENERAL

# 1.07 GENERAL REQUIREMENTS

- A. For all products to be incorporated into the Work submit to the Owner for approval sufficient information in the form of shop drawings, product data and/or samples such that the Owner can determine that the product is in compliance with the Technical Specifications and Drawings.
- B. Submit two (2) copies of each submittal. One (1) copy will be returned to the Contractor. Each copy shall include a cover sheet which clearly identifies the product and corresponding specification section. Each cover sheet shall bear the Contractor's stamp and signature certifying that the submittal is in full compliance with the Contract Documents or that any deviations from the Contract Documents are clearly identified on a separate sheet(s) labeled "Deviations From Contract Documents" and attached to the cover sheet.
- C. The Owner shall review the submittals and indicate their status as:
  - 1. "A" Approved Subject to the Requirements of the Contract
  - 2. "B" Approved as Noted, Subject to the Requirements of the Contract
  - 3. "C" Revise as Noted, Resubmittal Required
  - 4. "D" Not Approved
- D. Owner's review is only for general conformance with the design concept and general conformance with the information given in the Contract Documents. Corrections or comments made during the review do not relieve the Contractor from compliance with the requirements of the Contract Documents.
- E. Re-submittals: Make re-submittals under procedures specified for submittals; identify changes made since previous submittal.
- F. Contractor shall be responsible for the delays and or additional expenses that result from the Contractor's failure to submit a complete submittal and/or to identify portions of the submittal that does not conform to the specifications.

#### SECTION 01710 – SITE CLEANUP

# PART 1 - GENERAL

# 1.08 APPLICABILITY

A. This section applies to project cleanup activities to be conducted throughout the entire duration of the Work.

# PART 2 – PRODUCTS

(NOT USED)

# PART 3 - EXECUTION

# 3.01 CLEANUP DURING WORK PROGRESS

- A. Proceed with construction cleanup as the Work progresses
  - 1. Remove mud, oil, grease, soil, gravel, trash, scrap, debris, and excess materials that are unsightly or may cause accidents to persons or properties.
  - 2. Properly store tools and materials when not in use away from trafficked areas.
- B. During the progress of the work, the construction areas shall be kept clean and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damages repaired so that the public and property owners will be inconvenienced as little as possible. Cleanup shall follow directly behind the progress of the Work.
- C. Contractor shall fill in all depressions and water pockets on public and private property caused by his operations; clean all drains, ditches and culverts which have been obstructed by his work; and, shall leave the site in a neat condition wherever his operations have disturbed existing conditions.

#### 3.02 FINAL CLEANUP

A. Final cleanup (including any property restoration, replacement or restitution per the Contract) shall be completed to the satisfaction of the right-of-way grantor, or any abutters, as well as to the satisfaction of any municipal or state authority which may be involved if in public right-of-way.

# **DIVISION 2: SITE WORK**

#### SECTION 02230 - CLEARING, GRUBBING AND RESTORATION

#### PART 1 - GENERAL

# 1.09 SCOPE

A. The Contractor shall do all clearing, grubbing, topsoil stripping, and restoration necessary for the construction of this project.

# PART 2 - PRODUCTS

#### 1. MATERIALS

A. Materials shall be at Contractor's option, except that stripped topsoil shall be stockpiled and replaced in approximately its original location and to its original depth.

# **PART 3 - EXECUTION**

#### 3.03 CLEARING AND GRUBBING

- A. Before any excavation shall begin, the Contractor shall remove all underbrush, trees, stumps, or other obstructions within the work area, but shall not work on any private property without permission. The Contractor and Engineer shall agree upon the extent of clearing within the work area prior to the start of work. The Contractor shall not deviate from the agreed upon limits without the permission of the Engineer.
- B. All limbs, stumps, etc., shall be disposed of offsite by the Contractor and at his expense unless otherwise specified.
- C. After the trees have been cut and stumps removed from wooded areas and in all field areas, existing topsoil and humus material shall be excavated and stockpiled by the Contractor.
- D. If the Contractor fails to salvage and reuse existing topsoil and humus material, he shall furnish sufficient loam from off the project site to restore the disturbed areas to match the existing topsoil depth, at no additional expense to the Owner.
- E. No excavations for pipe laying shall begin until the existing topsoil and humus material has been stockpiled.

# 3.04 CARE AND RESTORATION OF EXISTING PROPERTY

- A. Excavating machinery shall be of suitable type and be operated with care to prevent injury to trees not to be cut, and particularly to overhanging branches or limbs.
- B. Branches, limbs and roots shall not be cut except by permission of the Engineer. All cutting shall be smooth and neatly done without splitting or crushing. In case of cutting or unavoidable injury to branches, limbs, or trunks of trees, the cut or injured portion shall be

- neatly trimmed and covered with an application of grafting wax or tree-healing paint as directed.
- C. Cultivated hedges, shrubs, and plants which might be injured by the Contractor's operations shall be protected by suitable means or shall be dug up and temporarily replanted and maintained. After the construction operations have been substantially completed, they shall be replanted in their original position and cared for until growth is re-established. If cultivated hedges, shrubs and plants are injured to such a degree as to affect their growth or diminish their beauty or usefulness, they shall be replaced by items of kind and quality at least equal to the kind and quality existing at the start of the work.
- D. All surfaces which have been damaged by the Contractor's operations shall be restored to a condition at least equal to that in which they were found immediately before work was started.
- E. The Contractor shall be fully responsible for all damages to public and private property and will be expected to carefully protect from injury all walls, fences, buildings, and underground facilities. If removal and replacement is required, it shall be done so that the replacement is equivalent to that which existed prior to construction and shall be paid for by the Contractor.

#### SECTION 02260 – SEDIMENTATION AND EROSION CONTROL

# PART 1 - GENERAL

# 1.010 SCOPE

A. Furnish all labor, materials, equipment and incidentals necessary to perform all installation, maintenance, removal and area cleanup related to sediment and erosion control work as shown on the Drawings and as specified herein. The work shall include, but not necessarily be limited to installation of silt fences, sediment traps, sediment removal and disposal, device maintenance, removal of temporary devices, temporary mulching, erosion control blanket, and final cleanup.

# 1.011 SUBMITTALS

A. Within 10 days after award of Contract, submit to the ENGINEER for approval technical product literature for all commercial products to be used for sedimentation and erosion control.

# 1.012 REFERENCE MANUAL

A. Except as otherwise specified herein, the material and construction shall be in accordance with the Department of Transportation "Standard Specifications for Highways and Bridges of the State of Maine" and the "Maine Erosion and Sedimentation Control Handbook for Construction, Best Management Practices" (BMP Handbook).

# 1.013 PERFORMANCE REQUIREMENTS

- A. The CONTRACTOR shall be responsible for the timely installation and maintenance of all sedimentation control devices necessary to prevent the movement of sediment from the construction site to offsite areas or into streams and wetland areas via surface runoff or underground drainage systems. Measures in addition to those shown on the drawings necessary to prevent the movement of sediment off site, control erosion or stabilize disturbed areas shall be installed, maintained, removed and cleaned up at no additional cost to the OWNER.
- B. Sedimentation and erosion control measures shall conform to the requirements of the BMP Handbook.
- C. Where CONTRACTOR's effort to control erosion has been demonstrated to be ineffective or potentially ineffective in the opinion of the ENGINEER, the ENGINEER may order that the erosion control plan be amended and that additional erosion control measures be constructed at no additional cost to the OWNER.

# 1.014 SEQUENCE OF CONSTRUCTION

A. All hay bale check dams and silt fencing shall be in place below or adjacent to construction areas before actual construction begins. These devices shall remain in place until a healthy grass cover is obtained and the site is stabilized. These temporary structures shall be

- inspected weekly throughout the construction phase. They shall be repaired or replaced when necessary. These devices shall be removed when the area they serve is completely stabilized.
- B. Permanent re-vegetation or seeding of all disturbed areas shall occur immediately upon completion of work or, if temporary stabilization measures were used, within 7 days from the time the area was last actively worked. Temporary stabilization measures are required within two days from the time the area was last actively worked or prior to storm events.

### PART 2 - PRODUCTS

#### 2. MATERIALS

#### A. Silt Fence

- 1. Steel or wood posts shall be a minimum of 5 feet in length.
- 2. Silt fence fabric shall be a woven, polypropylene, ultraviolet resistant material such as Mirafi 100X as manufactured by Mirafi, Inc., Charlotte, N.C. or equal.
- B. Mulch material for all slopes equal to or greater than 20% shall be an erosion control blanket (ECB). The ECB shall consist of 70% long fiber hay or straw and 30% coconut fiber. The fibrous material shall be held in place by top and bottom netting sewn together. The fibrous material shall be reasonably free from noxious weeds or other undesirable material. The ECB shall be Type SC150 as manufactured by North American Green, or approved equal.
- C. For slopes less than 20% and level areas, mulch material shall consist of long fiber hay or straw reasonably free from noxious weeds or other undesirable material. No material shall be used which is so wet, decayed, or compacted as to inhibit even and uniform spreading. No chopped hay, grass clippings or other short fiber material shall be used unless directed. The hay or straw shall be treated with a mulch tackifier.
- D. Latex acrylic copolymer such as Soil Sealant with coalescing agent as manufactured by Soil Stabilization Co., Merced, California, or approved equivalent, shall be used as hay or straw mulch tackifier. Asphalt tackifiers are not allowed.

### PART 3 - EXECUTION

### 3.05 MINIMIZATION OF EXPOSED SOILS

A. Minimizing the exposed soil areas on the construction site is one of the most important and reliable methods of erosion control. The CONTRACTOR must phase the work so that areas of bare soil will be minimized. Exposed areas must be treated as described herein and in the BMP Handbook.

### 3.06 TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES

A. Temporary erosion and sedimentation control measures will include silt fences, hay bale barriers, temporary seeding, temporary mulching and topsoil stockpiling.

- B. Silt fence will be placed down slope of all construction areas which drain toward a stream, wetland or improved area.
- C. Hay bale barriers will be used as necessary until final restoration is complete. They may also be used as check dams in drainage areas. Hay bales will be staked end to end in an excavated trench four inches deep across the area of runoff.
- D. Temporary mulching will be placed on all disturbed areas within two days or prior to any storm event. Mulch anchoring will be used on areas where the slope is greater than 5% or when placed after September 15. Straw mulch shall be applied at a rate of 90 lbs. per 1000 sq. ft. All mulched areas will be inspected before and after storms. If less than 90% of the surface is covered by mulch, additional mulch shall be applied immediately. Mulching shall be installed and maintained as recommended in the BMP Handbook.
- E. Topsoil shall be stockpiled on site with silt fence installed down slope of the piles. These stockpiles shall be mulched in accordance with the temporary mulching requirements.

### 3.07 INSTALLATION

#### A. Silt Fence Installation

- 1. Position silt fences as shown on the Drawings and as necessary to prevent off site movement of sediment produced by construction activities as directed by the ENGINEER.
- 2. Dig trench approximately 4 inches wide and 4 inches deep along proposed fence lines.
- 3. Drive stakes 8 feet on center (maximum) at back edge of trenches. Drive stakes 2 feet (minimum) into ground.
- 4. Attach filter fabric on stakes to bottom of trench with about 4 inches of fabric laid across bottom of trench. Stretch fabric fairly taut along fence length and secure.
- 5. Backfill trench with excavated material and tamp.
- 6. Install pre-fabricated silt fence according to manufacturer's instructions.

### 3.08 MAINTENANCE AND INSPECTIONS

### A. Inspections

- 1. CONTRACTOR shall make a visual inspection of all sediment control devices daily and immediately before and after every rainstorm.
- 2. If such inspection reveals that additional measures are needed to prevent movement of sediment to offsite areas or into streams or wetland areas, CONTRACTOR shall promptly install additional devices as needed. Sediment controls in need of maintenance shall be repaired promptly.

### B. Device Maintenance

### 1. Silt fences

- a. Remove accumulated sediment once it builds up to one-half of the height of the fabric.
- b. Replace damaged fabric or patch with a two foot minimum overlap.
- c. Make other repairs as necessary to ensure that the fence is filtering all runoff directed to the fence.

#### 3.09 EROSION CONTROL BLANKET

- A. Install erosion control blankets in accordance with manufacturer's instructions. Properly prepare, fertilize and seed the area to be covered with permanent vegetation before the blanket is applied. Apply the blankets in the direction of water flow and staple together in accordance with manufacturer's instructions. Side overlaps shall be 2-inch minimum. The staples shall be made of wire .091-inch in diameter or greater, "U" shaped with legs 10 inches in length and a 1- inch crown. The staples shall be driven vertically into the ground at a rate of one staple per square yard according to manufacturer's staple pattern guide.
- B. Bury upper and lower ends of the matting to a depth of 4 inches in a trench. Where the matting must be cut or more than one roll is required, turn down upper end of downstream roll into a slit trench to a depth of 4 inches. Overlap lower end of upstream roll 4 inches past edge of downstream roll and staple.
- C. To ensure full contact with soil surface, roll matting with a roller weighing 100 pounds per foot of width perpendicular to flow direction after seeding, placing matting, and stapling. Thoroughly inspect after completion. Correct any areas where matting does not present a smooth surface in full contact with the soil below.

### 3.010 REMOVAL AND FINAL CLEANUP

A. Once the site has been fully stabilized against erosion, remove sediment control devices and all accumulated silt. Dispose of silt and waste materials in proper manner. Re-grade all areas disturbed during this process and stabilize.

-- END OF SECTION --

#### SECTION 02315 – EARTHWORK FOR WATER MAIN CONSTRUCTION

### PART 1 - GENERAL

#### 1.015 DESCRIPTION

- A. This section includes all excavation for water mains, hydrants and appurtenances, including drainage, sheeting and bracing, backfilling, disposal of surplus material, and miscellaneous grading. All work shall be done as indicated on the drawings and as herein specified.
- B. Excavation for water mains shall be the width and depth as indicated on the standard details. Excavation for hydrants and appurtenances shall provide suitable room for their construction.
- C. The Contractor shall furnish and place all sheeting, bracing and supports, and necessary dewatering, and shall carry out the excavation in such a manner as to eliminate all possibilities of undermining or disturbing existing pipelines, utilities, roadways, shoulders and/or structures.
- D. The Contractor shall furnish, place and compact various types of bedding material and trench sand as called for in the specifications or as directed. The types and quality of bedding and backfill material are specified in this section, but its use for pipe bedding, backfill, replacement of unsuitable material excavated below trench grade, and other uses are as specified elsewhere.

### PART 2 - PRODUCTS

#### 3. MATERIALS

### A. Bedding Material

1. Screened or crushed gravel bedding material shall be hard durable particles free from organic matter, lumps of clay and other deleterious substances. The gradation shall meet the requirements of the following table and MDOT specifications Section 703.06 Type B aggregate.

Sieve Size	
Designation	% By Weight
-	
½ inch	35 - 75
½ inch	25 - 60
No. 40	0 - 25
No. 200	0 - 5.0

- 2. Select backfill as specified below may be used for bedding material.
- 3. Bedding material shall not contain particles of rock which have any dimensions greater than 4".

#### B. Select Backfill

1. Sand backfill shall be hard, durable particles of granular material with 100% passing the 1/2" sieve and between 0-15 % passing the #200 mesh. All percentages are by weight. Sand shall be graded so as to secure the required compaction.

#### C. Backfill

- 1. Suitable native material that does not contain stone or rock particles with any dimensions greater than 8".
- 2. Bank Run gravel borrow consisting of uniformly graded granular material having no rocks with a maximum dimension greater than 8" and that portion passing a 3-inch square mesh sieve shall contain no more than 70% passing 1/4 inch mesh sieve and not more than 10% passing a No. 200 mesh sieve.

### PART 3 - EXECUTION

#### 3.011 EXCAVATION

- A. When any pavement, regardless of type, must be cut, it shall be done in a neat and symmetrical manner by use of a saw, chisel, or other suitable method. In no case shall pavement be torn up with a backhoe bucket except between and inside of cuts previously made as above. Should any further pavement be broken, outside of the cuts, as by blasting, such damaged pavement shall be cut out in a neat and orderly fashion.
- B. The Contractor shall perform all excavation of every description and of whatever substances encountered to the depths shown on the drawings or directed by the Engineer.
- C. No extras will be allowed for quicksand excavation, muck excavation, or any other type unless specifically provided for in the bidding schedule.
- D. Surplus excavated material may be used at other parts of the construction project as required for fill, etc. Excess material shall be disposed of by the Contractor.
- E. The sidewalls of all trench excavation shall be kept as nearly vertical as possible in all roadways, lawns, near homes, etc. by sheeting, bracing, or other means. The width of the trench at a point six (6) inches above the top of the water pipe shall not be greater than the width detailed. If the type of excavated material will not allow the width detailed, then the trench shall be properly sheeted and braced. The cost of sheeting, bracing, or other means is included in the cost of the pipelines and no extras will be allowed.
- F. The excavation shall be made to secure a flat bottom trench (undisturbed earth bottom) for the full length of the pipe so as to give a uniform support to the pipe and shall be in accordance with ANSI A21.50 (AWWA C150), Type 2 Laying Condition.
- G. The bottom of the trench shall be accurately graded to provide support to the full length of the pipe barrel. Excavate at each bell to prevent bell from bearing on trench bottom.

### 3.012 EXCAVATION BELOW TRENCH GRADE

- A. By mistake of Contractor: Where the bottom of the trench shall, by mistake of the Contractor, have been taken out to a greater depth than required, it shall be refilled to the proper grade with bedding material, and all to be placed and compacted as specified at no additional cost to the Owner.
- B. By instruction from Engineer: If, in the opinion of the Engineer, existing material below trench grade is unsuitable for properly laying the pipe, the Contractor will excavate and remove the unsuitable material and replace the same with bedding material as authorized by the Engineer and properly compacted to his satisfaction. The Contractor will be paid under the item titled "Unsuitable Material Excavated Below Trench Grade."

### 3.013 EXCAVATION NEAR EXISTING UTILITIES, ETC

- A. It will be necessary to excavate near existing pipes, drains and other utilities in certain locations. Some of these have been indicated on the drawings, but no attempt has been made to show all of the services and the completeness and accuracy of the information given is not guaranteed. The Contractor shall call "Dig-Safe" at least three business days in advance of any excavation to allow utilities to locate underground facilities.
- B. As the excavation approaches pipes, conduits, or other underground structures and utilities, digging by machinery shall be discontinued and the excavation shall be done by means of hand tools.
- C. If the utility is of the opinion that at any point sufficient or proper support has not been provided, they may order additional supports placed at the expense of the Contractor. Compliance with such order shall not relieve the Contractor from his responsibility for the sufficiency of such supports. It shall be the responsibility of the Contractor to prevent damage to or displacement of utilities and to consult with and request the concurrence of the utility company's representative in this matter at all locations. The cost of protecting such utilities shall be considered incidental to the cost of laying the pipe.

### 3.014 TRENCH SURCHARGES

A. The excavated material shall be placed adjacent to the excavation in a manner to cause no excessive surcharge on the trench bank nor to obstruct free access to hydrants and valves. Should traffic or other conditions make it impractical or unsafe to stack material adjacent to trench, it shall be hauled and stored at a location provided by the Contractor and at the expense of the Contractor. When required, it shall be re-handled and used in backfilling the trench by the Contractor and at his expense.

#### 3.015 SHEETING AND BRACING

A. The Contractor shall be responsible for the design, construction, maintenance and safety of all sheeting and bracing required to support the sides of the excavation and to prevent the movement of earth which could in any way damage or endanger adjacent structures, utilities, roadways, increase the width of the excavation to more than that specified, or delay the work.

- B. All sheeting, bracing and shoring is to be included in prices bid for several items of work in bidding schedule and will not be paid for as separate items.
- C. No shoring shall be left in place unless so directed by the Engineer.

#### 3.016 DRAINAGE AND DEWATERING OF EXCAVATIONS

- A. The Contractor shall conduct his operations so as to prevent at all times the accumulation of water, ice and snow in excavations or in the vicinity of excavated areas so as to prevent water from interfering with the progress or quality of the work. Under no conditions shall water be allowed to rise in unbackfilled trenches after pipe has been placed.
- B. Accumulated water, ice and snow shall be promptly removed and disposed of by dewatering. Disposal shall be carried out in a manner which will not create a hazard to public health; nor cause injury to public or private property, work completed or in progress, or public streets; nor cause any interference in the use of streets and roads by the public. Pipes under construction shall not be used for drainage of excavations.
- C. During construction, when an unstable condition in the pipe sub-grade has been created due to the Contractor's excavation, the sub-grade shall be stabilized by dewatering or other means accepted by the Engineer.

### 3.017 BACKFILLING – GENERAL

- A. In general and unless other material is indicated on the drawings or is specified, material used for backfilling trenches and excavations around structures shall be suitable material which was removed in the course of making the construction excavations or as specified.
- B. Frozen materials shall not be placed in the backfill, nor shall material be placed upon frozen material. Previous frozen material shall be removed or shall be otherwise treated as required before new backfill is placed.
- C. Backfilling shall be done as soon as practical after the pipe has been laid and jointed.

#### 3.018 SUITABLE BACKFILL MATERIAL

- A. Suitable backfill material shall be the following or a combination of the following:
  - 1. Excavated material that will compact to the compaction requirements.
  - 2. Material that does not contain rocks larger than 8" in any dimension.
  - 3. Dry clay backfill free from lumps.
  - 4. Wet clay that alone would pump but when mixed with sand and/or gravel will be stable and will compact.

#### 3.019 BACKFILLING PIPE TRENCHES

- A. As soon as practicable after the pipes have been laid and jointed, backfilling shall begin and shall proceed until it is completed or has sufficient backfill to allow pipe testing.
  - 1. The first layer of suitable backfill material shall be brought half-way up the pipe and compacted to 80% maximum density and then the normal backfilling shall begin and shall be compacted as specified.
  - 2. All backfill shall be thoroughly compacted by hand tamping as placed, by use of mechanical or vibratory compactors, or by other acceptable methods.
  - 3. Remainder of the trench shall be backfilled as follows:
    - a. In paved areas, road shoulders and seeded areas, the entire depth of trenches above the center line of the pipe shall be backfilled in eight (8) inch layers with suitable backfill material and each layer thoroughly and carefully compacted as specified. Bring backfill up to bottom of gravel base and/or loam.
    - b. In other areas, the trench above the center- line of the pipe shall have suitable backfill material placed and compacted in eighteen (18) inch maximum layers as specified.
- B. The nature of the excavated materials will govern both their acceptability for backfill and the method best suited for their placement and compaction in the backfill.
  - 1. Both the materials and the methods shall be subject to the acceptance of the Engineer.
  - 2. No stones or rock larger than 8" in the greatest dimension shall be placed in the backfill.
- C. Backfilling in public right-of-way, along the streets or highways in or along shoulder, berm or backslope shall be done in accordance with the specifications and requirements of the state or municipality, whichever is responsible for the street or highway involved. Responsibility for the fulfillment of permit conditions or any other applicable requirements of the street or highway authority shall be the obligation of the Contractor. Surface restoration shall be carried out to the satisfaction of the street or highway authority or as shown on the plans.
- D. Backfilling shall follow pipe laying as closely as reasonable, so that a minimum of trench shall be open at any time. The regulations of the highway authorities shall be observed as regards the amount of trench to be open at any one time. Overnight, and especially over weekends and holidays, the amount of open trench shall be kept at an absolute minimum. Any caved-in trench, especially after heavy rain and flooding, shall be cleaned out and the bottom consolidated before any additional pipe shall be laid.

### 3.20 TOP OF BACKFILL

A. In paved and shoulder areas, backfill shall be carried up to pavement or shoulder subgrade ready to receive the gravel base. In other areas, backfill shall be brought up to adjacent finished grade minus the depth of any required topsoil and so as to provide a

finished surface slightly mounded over the trench. Any trenches improperly backfilled, or where settlement occurs, shall be reopened to the depth required for proper compaction, and shall then be refilled and compacted with the surface restored to required grade and degree of compaction, mounded over, and smoothed off, at no additional expense.

B. In unpaved areas, the gravel topping shall be left in a smooth and even condition, with no large stone on or in the surface. In cases where a paved surface has been broken, a temporary bituminous patch and/or a permanent paving restoration shall be made as required by the appropriate local or state road authority.

#### 3.21 COMPACTION

- A. Compaction densities specified herein shall be the percentage of the maximum density obtainable at optimum moisture content as determined and controlled in accordance with AASHTO Standard T-180, Method A or D depending on the material size. Field density tests shall be made in accordance with AASHTO Standard T-147.
- B. Each layer of backfill shall be moistened or dried as required and shall be compacted to the following densities, unless otherwise specified in the project specifications.
  - 1. Bedding material: 80%
  - 2. Suitable backfill material under paved or shoulder areas: 90%
  - 3. Gravel base
    - a. Under paved areas: 95%
    - b. In shoulder areas: 90%
    - c. As replacement for unsuitable material excavated below grade: 90%
  - 4. Loam areas: 90%
  - 5. All other areas: 85%
- C. Methods and equipment proposed for compaction shall be subject to prior acceptance by the Engineer. Compaction generally shall be done with vibrating equipment.

  Displacement of, or injury to, the pipe and structure shall be avoided. Movement of inplace pipe or structures shall be at the Contractor's risk. Any pipe or structure damaged thereby shall be replaced or repaired as directed by the Engineer and at the expense of the Contractor.

### D. Testing:

- 1. Field density tests may be ordered by the Engineer for each foot of depth of backfill at an average interval of 200 feet along the trench.
- 2. The Contractor shall furnish all necessary samples for laboratory tests and shall provide assistance and cooperation during field tests. The Contractor shall plan his

- operations to allow adequate time for laboratory tests and to permit taking of field density tests during compaction.
- 3. Any costs of retesting required as a result of failure to meet compaction requirements shall be borne by the Contractor.

#### 3.22 FILL AND GRADING

- A. Excavated material not required for backfilling around pipes or structures may be used for fill in areas which require material for re-grading.
- B. The re-grading shall be carried out as directed by the Engineer, so that all surface water will drain towards brooks or drainage pipes.
- C. All material shall be of such nature that after it has been placed and properly compacted, it will make a dense and stable fill.

### 3.23 PROTECTION OF EXISTING STRUCTURES

A. All existing pipes, wires, poles, fences, property line markers and other items, which must be preserved in place without being temporarily or permanently relocated, shall be carefully supported and protected from injury by the Contractor, at no additional cost to the Owner. Should such items be injured, they shall be restored by the Contractor, without compensation therefore, to at least as good condition as that in which they were found immediately before the work was begun.

#### 3.24 ACCOMMODATION OF TRAFFIC

- A. The Contractor shall construct and maintain, without extra compensation, such adequate and proper bridges over excavations as may be necessary or as directed for the safe accommodation of pedestrians and vehicles. The Contractor shall furnish and erect, without cost to the Owner, substantial barricades at crossing of trenches, or along the trench, to protect the traveling public.
- B. The Contractor shall not obstruct fire hydrants.

-- END OF SECTION --

#### SECTION 02537 – WATER DISTRIBUTION SYSTEM

### PART 1 - GENERAL

#### 1.016 SCOPE

A. This section includes the furnishing and installing of ductile iron water pipe and ductile iron or cast iron fittings as specified.

### 1.017 SUBMITTALS

A. Submit shop drawings for all material in accordance with the provisions of Section 01300.

### PART 2 - PRODUCTS

### 4. GENERAL

- A. Upon approval of the proposed Manufacturer and Product Series, the Contractor shall utilize that source for said material for the entirety of the Work unless otherwise approved by the Engineer to maintain consistency throughout the project.
- B. Pipe delivered for construction shall be strung and protected so as to prevent entrance of any foreign material.
- C. Any defective or imperfect materials furnished by the Contractor shall be marked as such and removed immediately from the site. Satisfactory materials shall be substituted for that rejected at no additional cost to the Owner.
- D. All materials, products and coating that contact drinking water shall be certified to meet NSF/ANSI Standard 61 latest revision, Drinking Water System Components Health Effects.

### 5. ATTACHMENT HARDWARE

- A. Stainless Steel: Type 304 contains the addition of Molybdenum to the nickel-chromium steels.
- B. High Strength/Low Alloy Steel: Trade name for cold formed T-head bolts containing alloying elements such as copper, nickel, and chrome (Cor-Ten).

### 6. CAST IRON OR DUCTILE IRON SPLIT REPAIR SLEEVE

- A. Split repair sleeve shall be mechanical joint.
- B. The side rubber gaskets shall be rectangular to cross-section and shall fit into grooved channels in the casting. These gaskets shall extend the entire length of the sleeve.

- C. Split repair sleeve shall be AB-CD pattern to permit use of plain rubber and duck-tipped gaskets for various O.D. piping sizes.
- D. Mechanical joint with accessories furnished; glands, gaskets and Cor-Ten T-bolts and nuts or equal.
- E. All side bolts shall be Stainless Steel (Type 304) or silicone bronze.
- F. Interior and exterior to be bituminous coated with a minimum of 4 mils D.F.T.
- G. The sleeve shall be provided with a 2" F.I.P.T. test port with brass plug.

### 7. CORPORATION STOP

- A. Conforming to AWWA C-800.
- B. 3/4" to 2" curb stops shall be ball valve design with brass ball that is Teflon coated or brass ball with Teflon seats.
- C. The ball shall be supported by seats which are water tight in either direction.
- D. The valve shall have a full port opening.
- E. The body of the corporation stop shall be of heavy duty design.
- F. The valve working pressure shall be 300 psi.
- G. Approved Manufacturers:
  - 1. A.Y. McDonald
  - 2. Cambridge Brass
  - 3. Ford Meter Box Co.
  - 4. Mueller Co.

### 8. CURB STOP

- A. Conforming to AWWA C-800.
- B. <sup>3</sup>/<sub>4</sub>" to 2" curb stops shall be ball valve design with brass ball that is Teflon coated or brass ball with Teflon seats.
- C. The ball shall be supported by seats which are water tight in either direction.
- D. The valve shall have a full-port opening.
- E. The valve shall open with  $\frac{1}{4}$  turn (90°) with a check or stop.
- F. The valve shall not have a drain.

- G. The valve stem shall have 2 "O" rings and a bronze ring lock which holds the stem solidly in the valve body.
- H. The valve body shall be of heavy duty design.
- I. The valve working pressure shall be 300 psi.
- J. Approved Manufacturers:
  - 1. A.Y. McDonald
  - 2. Cambridge Brass
  - 3. Ford Meter Box Co.
  - 4. Mueller Co.

### 9. CUT-IN SLEEVE

- A. The sleeve shall be mechanical joint to plain-end type.
- B. The sleeve shall fit over either AB or CD pattern pipe.
- C. Interior coating—Seal-coated AWWA C104-74, min. 4 mils D.F.T.
- D. Exterior coating Bituminous coated, min. 4 mils D.F.T.
- E. Mechanical joint connections
  - 1. Glands: Duck-tipped for AB pipe, Plain Gaskets for CD pipe
  - 2. Cor-Ten tee bolts and nuts
- F. Cut-in sleeves shall have at least one stop-screw in sizes up through 10" and at least 2 stop-screws in 12" size.
- G. The stop-screw "O" ring shall be recessed into the body of the sleeve between stop-screw and body.
- H. Approved Manufacturers
  - 1. Mueller Co.

### 10. DUCTILE IRON FITTINGS

- A. Fittings include but are not limited to bends, reducers, off-sets, tees and sleeves.
- B. Material shall be ASTM A536 latest, grade 70-50-05, in accordance with AWWA C110 (latest revision) for fittings larger than 24" and C153 (latest revision) for fittings 3" thru 24".

- C. Fittings shall be cement lined AWWA C104 (latest revision) or fusion bonded epoxy coated with a 5 mil nominal thickness per AWWA C550 and C116.
- D. Interior seal coated AWWA C104 with minimum of 4 mils dry film thickness.
- E. Exterior bituminous coated, 4 mils minimum dry film thickness or fusion bonded epoxy coated with a 5 mil nominal thickness per AWWA C550 and C116.
- F. Sleeves shall not be cement lined, but shall be bituminous coated inside to 4 mils dry film thickness. All sleeves shall be long body type.
- G. Mechanical joint with accessories furnished: D.I. glands, gaskets, Cor-Ten T-bolts and nuts
- H. Class 350 pressure rating in accordance with AWWA C153 3"-24" sizes.
- I. Class 250 pressure rating in accordance with AWWA C110 30"-48" sizes.
- J. The "compact design" fittings must provide adequate space for the MJ joint and accessories to be installed without special tools (i.e. Lowell wrench can be used).

### 11. DUCTILE IRON PIPE

- A. Ductile iron pipe shall meet requirements of AWWA Standard C-151 (latest revision) and be cement lined and seal coated to meet AWWA Standard C-104 (latest revision).
- B. Joints shall meet requirements of AWWA C-111 (latest revision).
- C. Interior seal coated, bituminous paint oil cut, emulsion not acceptable, thickness minimum of 2 mils dry film thickness.
- D. Exterior bituminous coated with minimum of 2 mils dry film thickness.
- E. Class 52 wall thickness, 4-inch diameter through 12-inch diameter inclusive.
- F. Ductile Iron Pipe with diameters 16-inches and larger shall be approved by PWD.
- G. State nominal laying length and mark shorter lengths near bell.
- H. Mechanical joint pipe to be furnished with gland, gaskets and Cor-Ten bolts and nuts.
- I. Approved Manufacturers
  - 1. American Cast Iron Pipe (Flex-Ring Restrained Joint Pipe)
  - 2. U.S. Pipe (TR-Flex Restrained Joint Pipe)

#### 12. FIRE HYDRANT

- A. The hydrant shall open right.
- B. Operating nut shall be DI or bronze, pentagon in shape with dimensions:

1. Top 1-13/16" tapering to 1-7/8" on bottom

### C. Nozzles:

- 1. Two (2) each: 2-1/2" National Standard Thread
- 2. One (1) each: 4-1/2" National Standard Thread
- D. Port covers shall be supplied without chains and shall have the same size pentagon operator as specified in 3.0(b) above.
- E. Traffic model hydrant with breakaway feature.

## F. Barrel Length

- 1. 6 ft. cover, 6-1/2 ft. bury; or
- 2. 5-1/2 ft. cover, 6 ft. bury; or
- 3. 5 ft. cover, 5'-6" bury
- G. Hydrant shoe or base shall have 6" MJ inlet and 5-1/4" valve opening with non-draining bronze seat that is permanently plugged. Valve seat and sub-seat arrangement shall be bronze to bronze. Horizontal and vertical blocking planes manufactured into hydrant base.

### H. Bolts

- 1. All buried mechanical joint bolts and nuts (T-head, etc.) shall be Cor-Ten or equal
- 2. All buried flange joint bolts shall be stainless steel (Type 304) or silicone bronze

### I. Protective Coatings

- 1. All paintings and coatings shall be a minimum of 3 mils total dry film thickness, unless noted
- 2. The internal area of the hydrant base, which is normally exposed to water and which includes the internal body of hydrant shoes, including lower valve plate, shall be epoxy coated
- 3. All internal and external cast iron or ductile iron components shall be coated with an approved bituminous coating, 3 mils minimum.
- 4. Coatings for upper barrel exterior:
  - a. Surface preparation blast clean SSPC-SP-6
  - b. Primer Sherwin Williams Red Oxide E61RC21, 1.5 mils, dry

- c. Finish coat Sherwin Williams Regal Yellow, F78Y30, 1.5 mils, dry or sufficient paint to hide the second coat
- d. Total dry film thickness 3 mils minimum
- 5. Coatings for bonnet, operating nut, port cap:
  - a. Surface preparation: Blast clean, SSPC-SP-6
  - b. Exterior primer
  - c. Exterior aluminum
  - d. Total dry film thickness: 3 mils minimum.
- J. PWD personnel shall install flow indicator collars on all new hydrants.
- K. Approved Hydrants:
  - 1. Clow Eddy with lower stern machined from bar stock
  - 2. American Darling Models: B62B-1, B62B-5

#### 2.10 PIPE JOINT RESTRAINT

- A. Use in conjunction with mechanical joint fittings.
- B. The joint restraint ring and its wedging components shall be made of ductile iron conforming to ASTM A536-80.
- C. Dimensions of the restrainer must allow use with standard M.J. bell conforming to AWWA C111 and AWWA C153.
- D. Restrainer must restrain up to 350 psi of working pressure in 3" to 16" size and 250 psi of working pressure in 18" to 48" size with a 2:1 safety factor.
- E. Torque limiting twist off nuts shall be used to ensure proper actuation of the restraining wedges where applicable.
- F. Approved Manufactures
  - 1. Sigma Super Lug
  - 2. Ford Uni-Flange Series 1400
  - 3. Ebba Mega Lug
  - 4. Romac Grip Ring
  - 5. Star Grip Series 300

- 6. Romac Romagrip
- 7. MJ FIELD LOK Gasket

### 2.11 POLYETHYLENE ENCASEMENT

- A. Tube type polyethylene encasement shall be installed on all ductile iron pipe and fittings in accordance with AWWA Standard C105 latest revision, Method A.
- B. Polyethylene encasement shall be either linear low-density polyethylene (LLDPE) film with a minimum thickness of 8-mil or high-density, cross-laminated polyethylene (HDCLPE) film with a minimum thickness of 4-mil.
- C. Circumferential wraps of tape or plastic tie straps shall be placed at 2-ft. intervals along the barrel of the pipe.
- D. The polyethylene encasement shall prevent contact between the pipe and the surrounding backfill and bedding material but is not intended to be a completely airtight or watertight enclosure. All lumps of clay, mud, cinders, and so forth, on the pipe surface shall be removed prior to installation of the polyethylene encasement. During installation, care shall be exercised to prevent soil or embankment material from becoming trapped between the pipe and the polyethylene.
- E. The polyethylene film shall be fitted to the contour of the pipe to effect a snug, but not tight, encasement with minimum space between the polyethylene and the pipe. Sufficient slack shall be provided in contouring to prevent stretching the polyethylene where it bridges irregular surfaces, such as bell-spigot interfaces, bolted joints, or fittings, and to prevent damage to the polyethylene due to backfilling operations. Overlaps and ends shall be secured with adhesive tape, string, plastic tie straps, or any other material capable of holding the polyethylene encasement in place until backfilling operations are complete.
- F. Three layers of polyethylene adhesive tape shall be wrapped around any polywrapped pipe where a tapping machine will be placed. All copper services connected to a pipe wrapped in polyethylene encasement shall be wrapped within three feet of the pipe.

### 2.12 PVC PIPE

- A. For all water main installations that are less than 4" I.D. (4" and larger use ductile iron), the District will require use of 2" I.D. PVC plastic water pipe meeting the following: Under special site conditions the District does require the use of C-900 PVC in sizes larger than 4".
- B. Two inch diameter (2")
  - 1. The I.D. shall be a minimum of 2"
  - 2. The O.D. shall be a maximum of 2.38"
  - 3. The minimum wall thickness shall be 0.113"
  - 4. The minimum working pressure rating shall be 200 PSI (SDR-21).

- 5. The pipe shall conform to standard ASTM 2241.
- 6. The pipe shall be provided in 20' lengths. If approved by the Engineer, field cutting per Manufacturer's recommended practices.
- 7. The gasket or O-Ring material shall be rubber meeting ASTM F 477 and of the "permanent use" type.
- 8. Fittings: Standard AWWA C900 fittings are not available in the 2" I.D. and therefore "steel pipe" class fittings, or Certa-Lok Yelomine couplings and fittings meeting ASTM D 3139 shall be used. The normal nomenclature for "steel fittings" is Schedule 40 or Schedule 80, with the respective pressure ratings of 280 PSI and 400 PSI. Both of these fitting classes are acceptable for use.
- 9. Service Connections: All service connections shall be made with tapping saddles\* per Portland Water District specifications or by use of tees meeting the above noted fitting specifications.
- 10. An eight gauge bare copper wire shall be fastened to the buried PVC pipe to facilitate electronic pipe locating. The wire shall be fastened at two locations per length and not at any joint.
- C. The District requires 200 PSI (SDR-14) PVC pipe for other sizes such as 4", 6", 8", and 12". Pipe shall conform to AWWA C-900. PVC pipe for these sizes only as approved by PWD.
- D. Approved Manufacturers:
  - 1. J-M Manufacturing Blue Brute
  - 2. Certainteed Yelomine
  - 3. Victaulic Aquamine
  - 4. IPEX Blue Brute

#### 2.13 RESILIENT SEATED GATE VALVE

- A. Valve shall meet the latest revision of the AWWA C-509 Standard.
- B. Valve shall have a smooth unobstructed water way which shall be a minimum diameter of the valve.
- C. Valve ends to be specified and shall be furnished with Cor-ten (or equal) bolts and nuts.
- D. Valve shall be rated for zero leak rate at 200 psi differential working pressure and have a 400 psi hydrostatic test for structural integrity.
- E. Sealing Valve shall have a minimum of 2 "O" rings situated such that the "O" rings above the thrust collar can be replaced with the valve under pressure and in the open position.

### F. Valve stem shall:

- 1. open right with a stem nut made of grade D,E manganese bronze
- 2. non-rising
- 3. include a thrust collar integrally cast to the stem
- 4. include with two (2) thrust washers, placed one above and one below the stem thrust collar
- 5. constructed of grade D,E manganese bronze
- 6. such that the thrust washers are made of a synthetic polymer with physical properties required
- G. The body, including the stuffing box and the bonnet, shall be constructed of cast iron or ductile iron, meeting the latest revision of AWWA C-153
- H. Wedge shall be constructed of ductile iron (less guiding mechanism), fully encapsulated and permanently bonded with a resilient elastomer, constructed such to allow the flushing of any interior exposed surface during operations.

## I. Coatings

- 1. internal and external valve body, including the stuffing box, bonnet, and interior of the wedge shall be fusion bonded epoxy coated with 8 mils D.F.T.
- 2. interior shall meet latest version of AWWA C-550
- 3. shall be holiday free, interior and exterior, per testing method described in AWWA C-550, Sec. 5.1
- J. Operating nut shall be two inch (2") square ductile iron with a countersunk hold down nut (made of 316 stainless steel or silicone bronze), for tapered stems. Or, a stainless steel pin inserted through the stem for full diameter stems.
- K. Bolts The seal plate and bonnet bolts shall be stainless steel (Type 316 or Type 304)
- L. Valves 12" nominal diameter and smaller shall be directly operated by the nut on the valve stem and mounted vertically. Number of turns to open or close shall closely match the formula:  $(3 \times D) + 2$ . For example, a 12" valve should open or close with approximately  $(3 \times 12) + 2 = 38$  turns of the operating nut.
- M. Valves larger than 12" nominal diameter shall be designed to be installed horizontally and shall have bevel gear operators driven by the operating nut. Valves 14" 24" nominal diameter shall have 4:1 bevel gear operators. Valves with 30" 36" nominal diameters shall have 6:1 bevel gear operators and valves with 42" 48" nominal diameters shall have 8:1 bevel gear operators. Number of turns to open or close shall closely match the formula: ((3 x

- D) + 2) times the bevel gear ratio. For example, a 24" valve should open or close with approximately  $((3 \times 24) + 2) \times 4 = 296$  turns of the operating nut.
- N. Contractor may be required to supply a valve for inspection and determination of coating process.
- O. Approved Manufacturers
  - 1. U.S.P.
  - 2. AFC Series 2500
  - 3. Mueller A-2360/61/62
  - 4. Clow Series F6100

### 2.14 BUTTERFLY VALVE

- A. Butterfly valves and their operators shall conform generally, to AWWA standard C504, short body pattern Class 150B.
- B. The valve shafts shall be in two parts, inserted from each side of the valve. The disc pins or bolts shall be fastened to prevent loss, loosening in service, and shall be sealed as necessary to prevent leakage through the disc. Valve shafts shall be stainless steel. Carbon steel shafts with stainless steel journals are not permitted. Shaft seals shall be the "O" ring type or self adjusted packing.
- C. The valve disc shall be cast of either ductile iron or alloy iron and epoxy coated. The disc periphery shall be accurately machined or faced to form a 360 degree seating surface uninterrupted by shaft holes. The disc and shaft geometry shall be such that the seat rubber is not compressed when the valve is fully open.
- D. The natural rubber, insert type valve seat shall be mechanically retained in place, independent of cementing or bonding agents. The mating seat material shall be stainless steel.
- E. The stub shaft of all valves 16" and larger shall have a two way thrust bearing adequate to hold the disc centered in the valve seat.
- F. The valve operators shall be manual, totally enclosed, grease packed, and of traveling nut and lever design. The gear housing shall be suitable for buried and submerged service; special provisions shall be made to seal the gear housing from water infiltration from the ground or along the valve shaft into the housing. The space between the valve body and the gear box shall be one iron casting designed so as to provide access sufficient to inspect and replace the "O" ring seals. Operating stems shall be fitted with standard AWWA 2" square operating nuts. All valves shall turn to the <u>RIGHT</u> to open.
- G. The internal and external valve body shall be epoxy coated to C-550 with a minimum of 5 mils dry film thickness.

H. Seal plate and end cover bolts shall be 304 stainless steel, and valve ends as specified will be furnished with Cor-Ten, or equal, bolts and nuts.

## I. Approved Manufacturers

- a) Henry Pratt "Groundhog" Class 150 B
- b) Mueller: "Lineseal III" Class 150 B
- c) Clow / M&H / Kennedy Class 150 B

#### 2.15 RESTRAINED JOINT GASKETS

A. Restrained joint gaskets in the Portland Water District distribution system shall be rated in accordance with the performance requirements of ANSI/AWWA C111/A21.11.

### B. Required applications:

- 1. Any hydrant branch or service with a distance greater than 18' shall have an approved restrained joint gasket in the bell ends.
- 2. Where a casing is required, all joints within the casing shall have an approved restrained joint gasket unless restrained joint pipe is used.
- 3. At any time as required by the Owner or Engineer.
- 4. Any live service tap where there is a joint between the connection and the end of the service

### C. Approved Manufacturers

- 1. American Fast-Grip Gasket American Pipe
- 2. Field Lok 350 Gasket US Pipe

### 2.16 SERVICE BOX AND ROD

### A. Service box

- 1. Shall be 1.0" Schedule 40 steel pipe with top having 1.0" N.P.T. pipe threads for screw-on cover or coupling.
- 2. Shall be Erie style with 6' slide-type riser.
- 3. Any extension of a service box requires a threaded merchant coupling with no set screw.

### B. Cover

1. Shall be Quincy type (heavy duty) cover that screws on Service Box (1.1 above)

2. Shall be tapped with a 1" rope thread with a solid brass plug with pentagon operating he

### C. Service box foot piece

- 1. The standard foot piece shall be heavy duty (Ford style or equal) cast iron design.
- 2. The large, heavy-duty foot piece shall have an arch that will fit over 2" ball-valve curb stop

### D. Service Rod

- 1. Shall have a self-aligning design
- 2. 36" length for all services
- 3. 24" length for air valves
- 4. Shall be round and constructed of stainless steel (304) with an epoxy coating (minimum 4 mil D.F.T.)
- 5. Shall have a yoke design that is an integral part of the rod
- 6. The curb-stop attachment pin shall be a brass cotter pin
- 7. The rod "wrench-flat" shall have a minimum thickness of ½" tapered to 1/16" and width of 5/8" or ½".
- 8. Diameter:
  - a. ½" for ½", ¾", and 1" services
  - b. 5/8" diameter for 1 ½" and 2" service

#### 2.17 SERVICE SADDLE

- A. The service saddle shall have the "larger sized" body, the same as associated with the "service repair" saddle, which shall have a minimum diameter of 6 in. and multiple "O" ring type sealing.
- B. The saddle body shall be constructed of epoxy coated ductile iron.
- C. The sealing gasket(s) shall be either Buna-N rubber or SBR rubber (ASTM D2000).
- D. Service saddles shall be installed with all 1 1/2" and 2" corporation stops (cc only).
- E. Approved Manufacturers:

Size	Tap	Saddle
2" - 2-1/4"	<sup>3</sup> / <sub>4</sub> ", 1" cc	Smith-Blair 315, Ford FC 202
4" - 12" D.I.	<sup>3</sup> / <sub>4</sub> "- 11/2" cc	Smith Blair 331

4" - 12" D.I.	2" cc	Smith-Blair 313
16"	<sup>3</sup> / <sub>4</sub> "-2" cc	Smith-Blair 313
20" – 36"	<sup>3</sup> / <sub>4</sub> "-2"cc	Smith-Blair 366

- F. PVC Pipe: Stainless steel straps will be used on saddles on C-900 PVC Pipe
  - 1. Approved Manufacturers:

Size	Tap	Saddle
2" - 2-1/4"	<sup>3</sup> / <sub>4</sub> ", 1" cc	Smith-Blair 315, Ford FC 202
4"-12"		Smith-Blair 265

- G. HDPE Pipe: Spring washers are required for service saddles on HDPE Pipe
  - 1. Approved Manufacturers:

Size	Тар	Saddle
4"-12"		Smith-Blair 265

### 2.18 STAINLESS STEEL REPAIR CLAMP

- A. The sleeve shall be of full circle design, either one piece or two piece, for pipe sizes 2" thru 12"
- B. Body: Shall be 18-8 stainless steel shell.
- C. Gasket: Shall be full length and diameter of the body size. This gasket shall form a multiple O-ring, or grid, sealing barrier for the entire length and circumference. Shall be virgin SBR rubber (ASTM D2000 AA 415)
- D. Lugs, sidebar, and lifting bar shall be heavy gauge 18-8 stainless steel with TIG/MIG welding and chemical passivation of all welds.
- E. Bolts and Nuts shall be Teflon coated 18-8 heavy gauge stainless steel.
- F. Armor: The armor, or bridging plate between the side bars shall be heavy gauge 18-8 stainless steel bonded to the gasket to bridge the lug area.

### 2.19 TAPPING SLEEVE

- A. For sizes 12" and smaller tapping sleeve shall be ductile iron or approved fabricated steel.
  - 1. Tapping sleeve shall be mechanical joint with recessed outlet flange for tapping valve.
  - 2. Tapping sleeve shall conform to AWWA C-207, Class D, with rated maximum working pressure of 200 psi.

- 3. The side rubber gaskets shall be rectangular in cross-section and fit into grooved channels in the casting. These gaskets shall extend the entire length of the sleeve and shall not require cutting or trimming to match MJ end gaskets.
- 4. Tapping sleeve shall be AB-CD pattern to permit use of plain rubber and duck-tipped gaskets for various O.D. piping sizes.
- 5. Mechanical joint with accessories furnished; glands, gaskets, and Cor-Ten T-bolts and nuts or equal.
- 6. All flange outlet bolts shall be stainless steel (Type 304).
- 7. Interior and exterior to be bituminous coated with a minimum of 4 mils dry film thickness or fusion bonded epoxy coated.
- 8. The sleeve shall be provided with a ¾" F.I.P.T. test port and brass lug.
- 9. Approved Manufacturers
  - a. AFC
  - b. Mueller Co.
  - c. US Pipe
  - d. Tyler / Union
  - e. Powerseal Model 3490 and 3490 MJ (Fabricated Steel)
- B. For sizes 16" and larger tapping sleeve shall be fabricated steel:
  - 1. Body and Flange A-36
  - 2. Coating Fusion-bonded epoxy coating with minimum D.F.T. of 5 mils, inside and out
  - 3. Bolts, Nuts Stainless Steel (Type 304)
  - 4. Gaskets SBR
  - 5. Flange AWWA Class D plate flange with ANSI 150# drilling, proper recessing for tapping valves
  - 6. Sleeves shall be provided with 3/4" F.I.P.T. test port and plug
  - 7. Approved Manufacturers
    - a. Romac FTS 420
    - b. Fort FTSC
    - c. Smith Blair 622

- d. JCM 412
- e. Powerseal Model 3490 and 3490 MJ (up to 24")
- f. JCM 415 or approved equal (for RCCP pipe only)

#### 2.20 VALVE BOX

- A. Material shall be cast iron or ductile iron free from defects.
- B. Interior and exterior of all components shall be bituminous coated with a minimum of 4 mils dry film thickness.
- C. The valve box bottom section shall be slide-type with bell-type base with bottom lip
- D. The valve box top section shall be slide-type, 36 inches long (minimum). No top flange and no "bead" or bottom flange
- E. The valve box cover shall be a 2" drop-type cover to fit the 7-1/4" opening of the top sectio
- F. The valve box intermediate (mid) section shall be slide-type with a minimum 3" belled bottom. Base section No. 645 may be used as an alternate.

### PART 3 - EXECUTION

### 3.025 PIPE LAYING CONDITIONS

- A. Pipe shall not be laid in water, or when trench conditions or weather conditions are unsuitable for such work.
- B. The interior of each pipe shall be inspected while being joined to see that the alignment is preserved and to assure that no dirt or debris has entered the pipe after laying and partial backfilling.
- C. Pipe fittings and accessories shall be carefully lowered into the trench, piece by piece, by means of derrick, crane, slings and other suitable tools and equipment, in a manner such as to prevent damage to the material or to its protective coating and linings. No chain or slings shall be passed through the inside bore of any pipe or valve or fitting. Under no circumstances shall piping materials be dropped or dumped into the trench.

#### 3.026 LAYING DUCTILE IRON PIPE

- A. As soon as the excavation is completed and the existing trench bottom has been brought to the proper grade, the pipe shall be laid.
- B. All pipe, before being lowered into the trench, shall be inspected inside and out. Both ends shall be cleaned and any visible dirt or debris removed from inside the pipe and the interior of all affected pipe and fittings shall be swabbed with a 5% hypochlorite solution immediately before they are installed. Care shall be taken to lay the pipe to true lines and grades as shown on the drawings.

- C. Coupling holes shall be excavated so that the barrel of the pipe shall bear upon the trench bottom.
- D. Blocking under the pipe will not be permitted.
- E. Each section shall rest upon the pipe bed for the full length of its barrel.
- F. The circular rubber gasket shall be inserted in the gasket seat provided. A thin film of gasket lubricant shall be applied to the inside surface of the gasket. Gasket lubricant shall be a solution of vegetable soap or other solution supplied by the pipe manufacturer.
- G. The spigot end of the pipe shall be cleaned with an approved soap solution and entered into the rubber gasket in the bell, using care to keep the joint from contacting the ground. The joint shall then be completed by forcing the plain end to the seat of the bell. Pipe which is not furnished with a depth mark shall be marked before assembly to assure that the spigot end is inserted to the full depth of the joint.
- H. Pipe shall be aligned with the preceding unit and laid so as to form a close joint with the adjoining pipe and bring the inverts continuously to the required line and grade.
- I. No length of pipe shall be laid until the previous length has had sufficient material tamped about it to firmly secure it in place so as to prevent any movement or disturbance.
- J. Under no circumstances shall pipe be laid in water, and no pipe shall be laid when trench conditions or weather are unsuitable for such work, except by permission of the Engineer.
- K. The pipe shall be laid with the bell ends facing the direction of the laying, unless otherwise permitted by the Engineer.
- L. Joints, when made, shall be done in the manner prescribed by the manufacturer of the pipe. In the case of rubber gasket joints, these joints shall be made up in accordance with the American National Standards for the jointing of cast iron pressure pipe and fittings. (ANSI/AWWA C111/A21.11).
- M. Joints of all pipes in the trench shall be completed before work is stopped; and all openings in the pipeline shall be closed with watertight plugs when pipe laying is stopped at the close of the day's work or for other reasons.
- N. Thrust blocks shall be used behind tees, bends, or other fittings where shown. Size shall be appropriate for soil conditions and thrust forces acting on the specific fitting.

### 3.027 TRENCH BOTTOM

- A. Should the trench bottom contain unsuitable material, as indicated in Section 02217, Article 3.2-b, the Contractor shall over-excavate and replace with bedding material as required and authorized by the Engineer. The quantity of unsuitable material will be measured from the bottom outside of the pipe.
- B. Should ledge be encountered, it shall be removed to a depth of 6" below the bottom of the pipe, and replaced with bedding material.

#### 3.028 CUTTING PIPE

- A. All ductile iron pipe shall be cut using abrasive wheel cutter, rotary wheel hand cutter (with carbide cutter) or a guillotine pipe saw. All cuts shall be square and even with no ragged rough ends.
- B. Field cut pipe lengths shall be beveled and filed to avoid damage to the gasket and facilitate making the joint.
- C. When the cut end of pipe is to be used as a joint, the outside of the cut end shall be tapered back about 1/8-inch at an angle of about 30 degrees with the center line of the pipe. This shall be done with a coarse file or a portable grinder.

### 3.029 TEMPORARY PLUGS

A. When pipe laying is not actually in progress, the openings of pipes shall be closed by temporary watertight plugs or other accepted means.

### 3.030 RETAINER GLANDS

A. Install retainer glands on all mechanical joints of fittings, valves and hydrants.

#### 3.031 POLYETHYLENE ENCASEMENT

- A. Tube type polyethylene encasement shall be installed on all ductile iron pipe and fittings in accordance with AWWA Standard C105 latest revision, Method A. Circumferential wraps of tape or plastic tie straps shall be placed at 2-ft. intervals along the barrel of the pipe.
- B. The polyethylene encasement shall prevent contact between the pipe and the surrounding backfill and bedding material but is not intended to be a completely airtight or watertight enclosure. All lumps of clay, mud, cinders, and so forth, on the pipe surface shall be removed prior to installation of the polyethylene encasement. During installation, care shall be exercised to prevent soil or embankment material from becoming trapped between the pipe and the polyethylene.
- C. The polyethylene film shall be fitted to the contour of the pipe to effect a snug, but not tight, encasement with minimum space between the polyethylene and the pipe. Sufficient slack shall be provided in contouring to prevent stretching the polyethylene where it bridges irregular surfaces, such as bell-spigot interfaces, bolted joints, or fittings, and to prevent damage to the polyethylene due to backfilling operations. Overlaps and ends shall be secured with adhesive tape, string, plastic tie straps, or any other material capable of holding the polyethylene encasement in place until backfilling operations are complete.

#### 3.032 FIELD TEST OF INSTALLED HYDRANT

- A. Hydrant flow shall completely stop with no more than 200 ft. lb. of torque applied to the operating nut.
- B. Failure to shut completely at no more than 200 ft. lb. of torque will be cause for rejection of that hydrant.

## -- END OF SECTION --

#### SECTION 02594 – PRESSURE AND LEAK TESTING OF WATER MAINS

### PART 1 - GENERAL

#### 1.018 SCOPE

A. Furnish all labor, materials, equipment, gages and related items necessary to complete all pressure and leakage tests of all ductile iron (DI) water mains.

## PART 2 – PRODUCTS (NOT USED)

### PART 3 - EXECUTION

### 3.033 PRESSURE AND LEAKAGE TESS

- A. After the pipe has been laid and backfilled, it shall be pressure tested and tested for leakage in the presence of the Engineer and/or the Owner.
- B. All tests shall be conducted at a time and in a manner to minimize as much as possible any interference with the operation of the existing water system. The Owner will supply all water necessary for testing and placing the lines in service. The Contractor shall supply all labor, materials and equipment necessary to make any necessary connections to the water system and to carry out the tests.
- C. The Contractor shall excavate and provide a corporation tap for pressure and leak testing as directed by the Engineer. The Contractor is responsible for all work associated with the excavation, including proper trench protection, barricades, traffic control and proper backfilling and compaction upon successful completion of the test.
- D. The pipe shall be slowly filled with water and all air expelled from the pipe. If permanent air vents are not located at all high points, Contractor shall install corporation stops at such high points to bleed off air as the line is filled with water.
- E. A pressure test pump will be connected to the new main at the testing point. The pressure will be slowly increased to 150 psi and allowed to stabilize (+/-2.5 psi) for a minimum of 15 minutes.
- F. A reservoir of potable water shall be connected to the test pump and the initial level of water recorded.
- G. The pump pressure shall be maintained at 150 psi for one hour with all make up water withdrawn from the reservoir.
- H. After one hour, the water level in the reservoir will be measured and the volume of water drawn from the reservoir calculated and compared with the following allowable leakage:

Allowable Leakage (gph)	Pipe Length (feet) X Nominal Diameter					
=	(inches)					
	10,876*					

- I. If any test discloses leakage greater than that specified above, the Contractor shall, at his own expense, locate and make repairs as necessary until the leakage is within the specified allowance:
- J. Final acceptance of the lines will not occur until satisfactory tests have been passed.

-- END OF SECTION --

<sup>\*</sup>Correct only for 150 psi test pressure

#### SECTION 02595 – DISINFECTION OF WATER MAINS

### PART 1 - GENERAL

#### 1.019 SCOPE

- A. Furnish all labor, materials, equipment, and incidentals necessary to disinfect the distribution system.
- B. Do not disinfect water mains until pressure and leakage testing is completed, see Section 02594.

### PART 2 - PRODUCTS

#### 13. MATERIALS

- A. The Contractor shall chlorinate the new main in accordance with the continuous feed method specified in Section 5.2 of AWWA Standard C651-latest revision, using 5% to 15% sodium hypochlorite solution.
- B. The Contractor may use calcium hypochlorite granules or tablets placed in the new mains during installation in accordance with Section 5.1 of AWWA Standard C651-latest revision, as a supplement to the continuous feed method.

### PART 3 - EXECUTION

### 3.034 DISINFECTION

A. Upon satisfactory completion of the pressure and leak test, all new water mains shall be disinfected before they are placed into service in accordance with Section 5.2 of AWWA Standard C651-latest revision and the procedures specified herein.

#### 3.035 FLUSHING

- A. Section of pipe to be disinfected shall first be flushed to remove any solids or contaminated material that may have become lodged in the pipe. If no hydrant is installed at the end of the main, then a suitably sized tap should be provided.
- B. All taps required by the Contractor for chlorination or flushing purposes, or for temporary release of air, shall be provided by him as part of the construction of the water main.
- C. Flushing shall proceed for 4 hours at a flow velocity of 2.5 feet per second.

## 3.036 REQUIREMENTS OF CHLORINE

A. Before being placed into service, the main shall be chlorinated so that a chlorine residual of not less than 10 parts per million remains in the water after standing 24 hours in the pipe. Chlorine residual at start of test shall be at least 25 parts per million.

#### 3.037 POINT OF APPLICATION

A. The preferred point of application of the chlorinating agent is at the beginning of the pipeline or any valved section of it and through a corporation stop inserted in the pipe. The water injector for delivering the chlorine solution water into the pipe should be supplied from a tap made on the pressure side of the gate valve controlling the flow into the pipeline extension. Alternate points of application may be used when accepted or directed by the Engineer.

### 3.038 RATE OF APPLICATION

A. Water from the distribution system, or other source of supply as accepted by the Engineer, shall be controlled to flow very slowly into the newly laid pipeline during application of the chlorine. The rate of chlorine mixture flow shall be in such proportion to the rate of water entering the newly laid pipe that the dosage applied to the water will be sufficient at achieve at least 25 parts per million unless otherwise directed by the Engineer.

### 3.039 PREVENTING REVERSE FLOW

A. Valves shall be operated by the Owner so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water. Check valves may be used, if desired.

### 3.040 RETENTION PERIOD

A. Treated water shall be retained in the pipe at least 24 hours. After this period, the chlorine residual at pipe extremities and at other representative points shall be at least 10 parts per million.

### 3.041 CHLORINATING VALVES AND HYDRANTS

A. In the process of chlorinating newly laid pipe, all valves or other appurtenances shall be operated while the pipeline is filled with the chlorinating agent and under normal operating pressure.

#### 3.042 FINAL FLUSHING AND TESTING

- A. Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipe at its extremity until the replacement water throughout its length shows, upon tests, that the residual chlorine is not in excess of that to be carried in the system.
- B. After flushing, water samples collected from the treated piping system as directed by the Engineer, shall show satisfactory bacteriological results. Bacteriological analyses shall be performed by the Owner.
- C. Chlorine residual of water being flushed from the newly laid pipe following chlorination must be neutralized by treating with one of the chemicals listed in the table below.
- D. Amounts of chemicals required to neutralize various residual chlorine concentrations in 100,000 gallons of water\*

Residual				
Chlorine	Sulphur	Sodium	Sodium	Sodium
Concentration	Dioxide	Bisulfate	Sulfite	Thiosulfate
(mg/L)				
1	0.8	1.2	1.4	1.2
2	1.7	2.5	2.9	2.4
10	8.3	12.5	14.6	12.0
25	20.9	31.3	36.5	30.3

<sup>\*</sup>Except for residual chlorine concentration, all amounts are in pounds.

#### 3.43 REPETITION OF FLUSHING AND RESULTS

- A. Should the initial disinfection process result in an unsatisfactory bacterial test, the original chlorination procedure shall be repeated by the Contractor.
- B. If after the third re-chlorination attempt satisfactory results are not obtained, the Contractor shall submit for review and approval a foam pigging plan. The submittal shall include but is not limited to details and sketches showing point of entry, retrieval, pigging sub-contractor, and pigging subcontractor qualifications and experience. Work on pigging shall not commence until the submitted plan and proposed subcontractor are approved in accordance with Section 01300 Submittals. Pigging shall be provided at no additional expense to the Owner.
  - 1. Polyurethane pigs shall be new and will be not be reused. The pig shall be immersed in a 25 mg/l solution of sodium hypochlorite prior to launching. The pig shall be pushed through the main with water pressure.
  - 2. A minimum of three new pigs and three pig launching/flushing shall be completed by the Contractor.
  - 3. The third pig shall be inspected by the Owner and examined for any residue. At the sole discretion of the Owner, additional new pig launching and flushing shall be provided by the Contractor until a residue-free pig is produced.
  - 4. Following approval to conclude the pig launching and flushing process a final bacterial test shall be provided. If satisfactory results are not obtained, the pig launching and flushing process shall be repeated until a satisfactory result is obtained at no additional expense to the Owner.

-- END OF SECTION --

# APPENDIX E

Lead Determination Report



### **REPORT OF ANALYTICAL RESULTS**

Client: John Doughty

HNTB Corp. 340 County Rd Suite 6C

Westbrook, ME 04092

Lab Sample ID: Report Date: SM0761-001 1/31/2019

PO No.:

Project:

Turnpike Bridge Paint

Sample Description					Matrix		Filtered		Date Sampled		Date Received		
MM 49 WARREN AV	E GRAB				AQ		No(Tota	ıl)	01/23/2019	9	01/24	/2019	<del></del>
Parameter	Result	Units	Adjusted PQL	Dilution Factor	PQL	Analytical Method	Analysis Date	Ву	Prep Method	Prep Date	Ву	QC	Notes
ARSENIC, TCLP	U 0.04	mg/L	0.04	1	0.008	SW846 6010	1/29/19	MM	SW846 3010	1/29/19	AB	MA29ICW1	1
BARIUM, TCLP	1.84	mg/L	0.025	1	0.005	SW846 6010	1/29/19	MM	SW846 3010	1/29/19	AB	MA29ICW1	
CADMIUM, TCLP	U 0.0250	mg/L	0.0250	1	0.005	SW846 6010	1/29/19	MM	SW846 3010	1/29/19	AB	MA29ICW1	1
CHROMIUM, TCLP	U 0.0500	mg/L	0.0500	1	0.01	SW846 6010	1/29/19	MM	SW846 3010	1/29/19	AB	MA29ICW1	1
LEAD, TCLP	U 0.02	mg/L	0.02	1	0.005	SW846 6010	1/29/19	MM	SW846 3010	1/29/19	AB	MA29ICW1	1
MERCURY, TCLP	U 0.20	ug/L	0.20	1	0.2	SW846 7470	1/29/19	AB	SW846 7470	1/29/19	AB	MA29HGW	2
SELENIUM, TCLP	U 0.050	mg/L	0.050	1	0.01	SW846 6010	1/29/19	MM	SW846 3010	1/29/19	AB	MA29ICW1	1
SILVER, TCLP	U 0.050	mg/L	0.050	1	0.01	SW846 6010	1/29/19	MM	SW846 3010	1/29/19	AB	MA29ICW1	1

<sup>1</sup> The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.