MAINE TURNPIKE AUTHORITY

MAINE TURNPIKE

CONTRACT DOCUMENTS

CONTRACT 2019.09

BRIDGE IMPROVEMENTS
STROUDWATER RIVER OVERPASS
MILE 46.7

BRIDGE IMPROVEMENTS
MAINE CENTRAL RAILROAD OVERPASS
MILE 47.9

NOTICE TO CONTRACTORS

PROPOSAL

CONTRACT AGREEMENT

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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. See Subsection 100.1.

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MAINE TURNPIKE AUTHORITY

NOTICE TO CONTRACTORS

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

CONTRACT 2019.09

BRIDGE IMPROVEMENTS
STROUDWATER RIVER OVERPASS
MILE 46.7

BRIDGE IMPROVEMENTS
MAINE CENTRAL RAILROAD OVERPASS
MILE 47.9

at the office of the Maine Turnpike Authority, 2360 Congress Street, Portland, ME, until 1:00 p.m., prevailing time as determined by the Authority on November 13, 2018 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 improving the Stroudwater River Overpass (NB & SB) bridges and Maine Central Railroad Overpass (NB & SB) bridges in the City of Portland, Maine. The work includes phased construction, concrete deck and steel girder placement, concrete substructure modifications and repairs, approach work and paving, guardrail, bridge rails, substructure concrete repairs, bearing repairs, 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 One Hundred Fifty ($150.00) 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 http://www.maineturnpike.com/project-and-planning/Construction-Contracts.aspx.

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 **http://www.maineturnpike.com/project-and-planning/Construction-Contracts.aspx** . For Project specific information, fax all questions to Nate Carll, Purchasing Manager, at (207) 871-7739 or email ncarll@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: http://www.maine.gov/mdot/contractors/publications/ .

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 October 25, 2018 at 10:00 a.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 2019.09

BRIDGE IMPROVEMENTS
STROUDWATER RIVER OVERPASS
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MAINE TURNPIKE AUTHORITY

PROPOSAL

CONTRACT 2019.09

BRIDGE IMPROVEMENTS
STROUDWATER RIVER OVERPASS
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BRIDGE IMPROVEMENTS
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MILE 47.9

TO MAINE TURNPIKE AUTHORITY:

The work consists of improving the Stroudwater River Overpass (NB & SB) bridges and Maine Central Railroad Overpass (NB & SB) bridges in the City of Portland, Maine. The work includes phased construction, concrete deck and steel girder placement, concrete substructure modifications and repairs, approach work and paving, guardrail, bridge rails, substructure concrete repairs, bearing repairs, 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 2019.09 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. 2019.09
BRIDGE IMPROVEMENTS
STROUDWATER RIVER OVERPASS AND MCRR OVERPASS

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
201.11	Clearing	Acre	1.5				
202.10	Removing Existing Superstructure Property of Contractor - Stroudwater	Lump Sum	1				
202.10	Removing Existing Superstructure Property of Contractor - MCRR	Lump Sum	1				
202.12	Removing Existing Structural Concrete	Cubic Yard	255				
202.13	Removing Existing Railings Retained by Authority	Linear Foot	2,240				
202.15	Removing Existing Manhole or Catch Basin	Each	6				
202.202	Removing Pavement Surface	Square Yard	5,650				
202.206	Removing Rumble Strips	Linear Foot	1,230				
203.20	Common Excavation	Cubic Yard	28,650				
203.21	Rock Excavation	Cubic Yard	150				
203.24	Common Borrow	Cubic Yard	17,200				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
203.25	Granular Borrow	Cubic Yard	9,800				
203.45	Crushed Stone 3/4 - inch	Cubic Yard	40				
203.35	Clay Borrow	Cubic Yard	95				
206.07	Structural Rock Excavation - Drainage & Minor Structures	Cubic Yard	20				
206.082	Structural Earth Excavation - Major Structures, Plan Quantity	Cubic Yard	850				
206.10	Structural Earth Excavation - Piers	Cubic Yard	1,440				
304.10	Aggregate Subbase Course - Gravel	Cubic Yard	4,750				
304.14	Aggregate Base Course - Type A	Cubic Yard	3,900				
403.207	Hot Mix Asphalt, 19 mm Nominal Maximum Size	Ton	8,550				
403.2081	Hot Mix Asphalt, 12.5 mm (Polymer Modified) - RAP	Ton	2,920				
403.212	Hot Mix Asphalt, 4.75 mm	Ton	270				
403.213	Hot Mix Asphalt, 12.5 mm (base and intermediate course)	Ton	2,950				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
409.15	Bituminous Tack Coat, Applied	Gallon	4,550				
419.30	Sawing Bituminous Pavement	Linear Foot	7,250				
470.08	Berm Dropoff Correction - Grindings	Ton	217				
470.081	Berm Correction	Linear Foot	200				
501.231	Dynamic Loading Test	Each	16				
501.301	Steel Sheet Piling - MCRR	Lump Sum	1				
501.42	Steel H-beam Piles 57 lb/ft, delivered	Linear Foot	4,214				
501.421	Steel H-beam Piles 57 lb/ft, in place	Linear Foot	4,214				
501.44	Steel H-beam Piles 63 lb/ft, delivered	Linear Foot	2,968				
501.441	Steel H-beam Piles 63 lb/ft, in place	Linear Foot	2,968				
501.54	Steel H-beam Piles 117 lb/ft, delivered	Linear Foot	195				
501.541	Steel H-beam Piles 117 lb/ft, in place	Linear Foot	195				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
501.90	Pile Tips	Each	136				
501.91	Pile Splices	Each	49				
501.92	Pile Driving Equipment Mobilization - Stroudwater	Lump Sum	1				
501.92	Pile Driving Equipment Mobilization - MCRR	Lump Sum	1				
502.219	Structural Concrete, Abutments and Retaining Walls - Stroudwater	Lump Sum	1				
502.219	Structural Concrete, Abutments and Retaining Walls - MCRR	Lump Sum	1				
502.239	Structural Concrete Piers - Stroudwater	Lump Sum	1				
502.239	Structural Concrete Piers - MCRR	Lump Sum	1				
502.249	Structural Concrete Piers (Placed Under Water)	Cubic Yard	640				
502.26	Structural Concrete Roadway and Sidewalk Slab on Steel Bridges - Stroudwater	Lump Sum	1				
502.26	Structural Concrete Roadway and Sidewalk Slab on Steel Bridges - MCRR	Lump Sum	1				
502.264	Structural Concrete Parapets - MCRR	Lump Sum	1				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
502.264	Structural Concrete Parapets - Stroudwater	Lump Sum	1				
503.14	Epoxy-Coated Reinforcing Steel, Fabricated and Delivered	Pound	799,000				
503.15	Epoxy-Coated Reinforcing Steel, Placing	Pound	799,000				
503.17	Mechanical/Welded Splice	Each	4,512				
504.702	Structural steel fabricated and delivered, welded - Stroudwater	Lump Sum	1				
504.702	Structural steel fabricated and delivered, welded - MCRR	Lump Sum	1				
504.71	Structural steel erection - Stroudwater	Lump Sum	1				
504.71	Structural steel erection - MCRR	Lump Sum	1				
504.7111	Peening Cover Plate Welds	Each	64				
505.08	Shear Connectors - Stroudwater	Lump Sum	1				
505.08	Shear Connectors - MCRR	Lump Sum	1				
506.9102	Zinc Rich Coating System (Shop Applied) - Stroudwater	Lump Sum	1				
			CARRIED FORWARD:				

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
506.9102	Zinc Rich Coating System (Shop Applied) - MCRR	Lump Sum	1				
506.9105	Field Touch-Up of Existing Steel - Stroudwater	Lump Sum	1				
506.9105	Field Touch-Up of Existing Steel - MCRR	Lump Sum	1				
507.091	Aluminum Bridge Railing, 1 Bar - Stroudwater	Lump Sum	1				
507.091	Aluminum Bridge Railing, 1 Bar - MCRR	Lump Sum	1				
508.14	High Performance Waterproofing Membrane - Stroudwater	Lump Sum	1				
508.14	High Performance Waterproofing Membrane - MCRR	Lump Sum	1				
511.071	Cofferdam Pier 1 - NB - Stroudwater	Lump Sum	1				
511.072	Cofferdam Pier 1 - SB - Stroudwater	Lump Sum	1				
511.073	Cofferdam Pier 2 - NB - Stroudwater	Lump Sum	1				
511.074	Cofferdam Pier 2 - SB - Stroudwater	Lump Sum	1				
511.091	Temporary Earth Support Systems - Stroudwater	Lump Sum	1				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
511.091	Temporary Earth Support Systems - MCRR	Lump Sum	1				
514.06	Curing Box for Concrete Cylinders	Each	2				
515.202	Clear Protective Coating for Concrete Surfaces	Square Yard	2,630				
515.23	Anti-Graffiti Coating	Square Yard	3,230				
518.30	Abutment Seat Refacing	Cubic Yard	7				
518.40	Epoxy Injection Crack Repair	Linear Foot	99				
518.51	Repair of Upward Facing Surfaces - below Reinforcing Steel < 8 inches	Square Foot	160				
518.60	Repair of Vertical Surfaces < 8 inches	Square Foot	250				
520.221	Expansion Device - Locking Compression Seal with Steel Edge Beams	Each	6				
520.23	Asphaltic Plug Joint	Linear Foot	116				
523.52	Bearing Installation	Each	36				
523.5303	Steel Bearings, Fixed, Rocker	Each	8				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
523.5304	Steel Bearings, Expansion, Rocker	Each	28				
523.56	Clean and Paint Bearing	Each	49				
523.561	Clean, Paint, and Reset Bearing	Each	23				
524.301	Temporary Structural Support - Jacking - Stroudwater	Lump Sum	1				
524.301	Temporary Structural Support - Jacking - MCRR	Lump Sum	1				
524.302	Temporary Structural Support - Girders - Stroudwater	Lump Sum	1				
524.303	Temporary Structural Support - Braces - MCRR	Lump Sum	1				
524.303	Temporary Structural Support - Braces - Stroudwater	Lump Sum	1				
524.40	Protective Shielding - Steel Girders	Square Yard	5,900				
526.301	Temporary Concrete Barrier, Type I - Stroudwater	Lump Sum	1				
526.301	Temporary Concrete Barrier, Type I - MCRR	Lump Sum	1				
526.3011	Temporary Concrete Barrier, Type I: To Remain - Stroudwater	Lump Sum	1				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
526.3011	Temporary Concrete Barrier, Type I: To Remain - MCRR	Lump Sum	1				
526.304	Temporary Concrete Barrier, Anchored - Stroudwater	Lump Sum	1				
526.304	Temporary Concrete Barrier, Anchored - MCRR	Lump Sum	1				
526.307	Concrete Barrier Type I - Stormwater Filter	Linear Foot	40				
527.341	Work Zone Crash Cushion - TL3	Unit	4				
603.155	12 inch Reinforced Concrete Pipe - Class III	Linear Foot	320				
603.165	15 inch Reinforced Concrete Pipe - Class III	Linear Foot	65				
603.175	18 inch Reinforced Concrete Pipe - Class III	Linear Foot	77				
603.28	Concrete Collar	Each	4				
604.09	Catch Basin Type B1	Each	7				
604.15	Manhole	Each	1				
604.246	Catch Basin Type F5	Each	1				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
604.26	Catch Basin Type B5	Each	5				
604.40	Secure Catch Basin Grate	Each	14				
605.016	6 Inch PVC Underdrain	Linear Foot	590				
605.018	8 Inch PVC Underdrain	Linear Foot	240				
605.09	6" Underdrain Type B	Linear Foot	420				
605.11	12" Underdrain Type C	Linear Foot	140				
606.1301	31" W-Beam Guardrail - Mid-Way Splice (7' Steel Post, 8" Offset Blocks, Single Faced)	Linear Foot	4,137.5				
606.1305	31" W-Beam Guardrail - Mid-Way Splice Flared Terminal (31" Height)	Each	3				
606.1351	Terminal End - Anchored End - 31" W-Beam Guardrail	Each	3				
606.1723	Bridge Transition - Type III	Each	8				
606.353	Reflectorized Flexible Guardrail Marker	Each	4				
606.354	Remove and Reset Reflectorized Flexible Guardrail Marker	Each	10				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
606.3622	Guardrail Adjust - Double Rail	Linear Foot	530				
607.09	Woven Wire Fence - Metal Posts	Linear Foot	1,500				
607.17	Chain Link Fence - 6 foot	Linear Foot	1,760				
607.32	Bracing Assembly Type I - Metal Posts	Each	2				
607.33	Bracing Assembly Type II - Metal Posts	Each	10				
609.15	Sloped Curb Type I	Linear Foot	1,600				
610.08	Plain Riprap	Cubic Yard	1,639				
610.18	Stone Ditch Protection	Cubic Yard	327				
610.181	Temporary Stone Check Dam	Cubic Yard	60				
613.319	Erosion Control Blanket	Square Yard	14,700				
615.07	Loam	Cubic Yard	3,850				
618.14	Seeding Method Number 2	Unit	310				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
618.143	Special Seeding	Unit	6				
619.1201	Mulch - Plan Quantity	Unit	320				
619.1202	Temporary Mulch - MCRR	Lump Sum	1				
619.1202	Temporary Mulch - Stroudwater	Lump Sum	1				
620.58	Erosion Control Geotextile	Square Yard	2,523				
627.712	White or Yellow Pavement Marking Line	Linear Foot	41,700				
627.73	Temporary 6 Inch Pavement Marking Tape	Linear Foot	3,300				
627.77	Removing Existing Pavement Marking	Square Foot	31,600				
627.78	Temporary Painted Pavement Marking Line, White or Yellow	Linear Foot	61,300				
629.05	Hand Labor, Straight Time	Hour	40				
631.10	Air Compressor (Including Operator)	Hour	40				
631.11	Air Tool (Including Operator)	Hour	40				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
631.12	All Purpose Excavator (Including Operator)	Hour	40				
631.172	Truck - Large (Including Operator)	Hour	40				
631.32	Culvert Cleaner (Including Operator)	Hour	40				
631.36	Foreman	Hour	40				
645.272	Regulatory, Warning and Bridge Number Signs, Type 1 - Supplied By Authority	Each	4				
645.501	Remove and Reset Mainline Sign No. 1	Lump Sum	1				
645.502	Remove and Reset Mainline Sign No. 2	Lump Sum	1				
645.503	Remove and Reset Mainline Sign No. 3	Lump Sum	1				
645.504	Remove and Reset Mainline Sign No. 4	Lump Sum	1				
645.505	Remove and Reset Mainline Sign No. 5	Lump Sum	1				
645.506	Remove and Reset Mainline Sign No. 6	Lump Sum	1				
645.507	Remove and Reset Mainline Sign No. 7	Lump Sum	1				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
645.508	Remove and Reset Mainline Sign No. 8	Lump Sum	1				
645.509	Remove and Reset Mainline Sign No. 9	Lump Sum	1				
645.51	Remove and Reset Mainline Sign No. 10	Lump Sum	1				
645.511	Remove and Reset Mainline Sign No. 11	Lump Sum	1				
645.512	Remove and Reset Mainline Sign No. 12	Lump Sum	1				
645.513	Remove and Reset Mainline Sign No. 13	Lump Sum	1				
645.514	Remove and Reset Mainline Sign No. 14	Lump Sum	1				
645.515	Remove and Reset Mainline Sign No. 15	Lump Sum	1				
652.30	Flashing Arrow	Each	4				
652.312	Type III Barricades	Each	2				
652.33	Drum	Each	510				
652.34	Cone	Each	510				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
			BROUGHT FORWARD:				
652.35	Construction Signs	Square Foot	2,250				
652.361	Maintenance of Traffic Control Devices - Stroudwater	Lump Sum	1				
652.361	Maintenance of Traffic Control Devices - MCRR	Lump Sum	1				
652.41	Portable-Changeable Message Sign	Each	4				
652.45	Truck Mounted Attenuator	Calendar Day	130				
652.451	Automated Trailer Mounted Speed Limit Sign	Calendar Day	130				
656.50	Baled Hay, In Place	Each	40				
656.60	Temporary Berms	Linear Foot	1,000				
656.62	Temporary Slope Drains	Linear Foot	200				
656.632	30 Inch Temporary Silt Fence	Linear Foot	8,850				
656.64	Boom Supported Floating Silt Fence	Linear Foot	500				
659.10	Mobilization	Lump Sum	1				
			CARRIED FORWARD:				

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
BROUGHT FORWARD:							
673.01	Stormwater Filter Bed	Cubic Yard	170				
TOTAL:							

Acknowledgment is hereby made of the following Addenda received since issuance of the Plans and Specifications: _____

_____

_____

Accompanying this Proposal is an original bid bond, cashiers or certified check on _____ Bank, for _____, payable to the Maine Turnpike Authority. In case this Proposal shall be accepted by the Maine Turnpike Authority and the undersigned should fail to execute a Contract with, and furnish the security required by the Maine Turnpike Authority as set forth in the Specifications, within the time fixed therein, an amount of money equal to Five (5%) Percent of the Total Amount of the Proposal for the Contract awarded to the undersigned, but not less than $500.00, obtained out of the original bid bond, cashier's or certified check, shall become the property of the Maine Turnpike Authority; otherwise the check will be returned to the undersigned.

The performance of said Work under this Contract will be completed during the time specified in Subsection 107.1.

It is agreed that time is of the essence of this Contract and that I (we) will, in the event of my (our) failure to complete the Work within the time limit named above, pay to Maine Turnpike Authority liquidated damages in the amount or amounts stated in the Specifications.

The undersigned is an Individual/Partnership/Corporation under the laws of the State of _____, having principal office at _____, thereunto duly authorized.

_____ *(SEAL)*

_____ *(SEAL)*

Affix Corporate 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 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 quintuplicate.

AUTHORITY -

MAINE TURNPIKE AUTHORITY

By: _____

Title: CHAIRMAN

Date of Signature: _____

ATTEST:

_____
Secretary

CONTRACTOR -

_____
CONTRACTOR

By: _____

Title: _____

Date of Signature: _____

WITNESS:

_____

CONTRACT BOND

KNOW ALL MEN BY THESE PRESENTS that _____

of _____ in the County of _____ and State of _____

as Principal, and _____ a Corporation duly organized under the

laws of the State of _____ and having a usual place of business in _____

_____

As Surety, are held and firmly bound unto the Maine Turnpike Authority in the sum of _____Dollars ($_____.___), to be paid to said Maine Turnpike Authority, or its successors, for which payment, well and truly to be made, we bind ourselves, our heirs, executors, successors and assigns jointly and severally by these presents.

The condition of this obligation is such that the Principal, designated as Contractor in the foregoing Contract No. _____ shall faithfully perform the Contract on his part and satisfy all claims and demands incurred for the same and shall pay all bills for labor, material, equipment and all other items contracted for, or used by him, in connection with the Work contemplated by said Contract, and shall fully reimburse the Obligee for all outlay and expense which the Obligee may incur in making good any default of said Principal, then this Obligation shall be null and void; otherwise it shall remain in full force and effect.

Signed and sealed this _____ day of _____, A.D., 201___

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.

The undersigned, on oath, states that the Final Payment of _____ is the final payment for all work, labor, materials, services and miscellaneous (all of which are hereinafter referred to as "Work Items") supplied to the said Project through _____and that no additional sum is claimed by the undersigned respecting said Project.

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)

By: _____

Title: _____

State of MAINE

County of _____

I, _____, hereby certify on behalf of ___ _____
(Company Officer) *(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 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)

Supplemental Specifications available on the Maine Turnpike Authority website

MAINE TURNPIKE AUTHORITY

SPECIFICATIONS

PART II – SPECIAL PROVISIONS

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 improving the Stroudwater River Overpass (NB & SB) bridges and Maine Central Railroad Overpass (NB & SB) bridges in the City of Portland, Maine. The work includes phased construction, concrete deck and steel girder placement, concrete substructure modifications and repairs, approach work and paving, guardrail, bridge rails, substructure concrete repairs, bearing repairs, 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 2019.09 - Bridge Improvements - Stroudwater River Overpass - Mile 46.7 - Maine Central Railroad Overpass - Mile 47.9". 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:

Christmas 2018	12:00 p.m. preceding Monday noon to 6:00 a.m. the following Wednesday.
New Years 2019	6:00 p.m. preceding Monday to 6:00 a.m. the following Wednesday.
Independence Day 2019 (Fourth of July)	12:00 p.m. preceding Wednesday to 6:00 a.m. the following Friday.
Christmas 2019	12:00 p.m. preceding Tuesday noon to 6:00 a.m. the following Thursday.
New Years 2020	6:00 p.m. preceding Tuesday to

	6:00 a.m. the following Thursday.
Independence Day 2020 (Fourth of July)	12:00 p.m. preceding Thursday to 6:00 a.m. the following Monday.
Christmas 2020	12:00 p.m. preceding Thursday noon to 6:00 a.m. the following Saturday.
New Years 2021	6:00 p.m. preceding Thursday to 6:00 a.m. the 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 November 15, 2018.

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 MRSA §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 --------2019.09-Bridge Improvements-Stroudwater River Overpass (NB&SB) Maine Central Railroad Overpass-Mile 47.9

Location of Project –Portland, Cumberland County

2018 Fair Minimum Wage Rates
Heavy & Bridge Cumberland County

Occupation Title	Minimum Wage	Minimum Benefit	Total	Occupation Title	Minimum Wage	Minimum Benefit	Total
Backhoe Loader Operator	$20.00	$2.16	$22.16	Laborer (Includes Helper-Tender	$16.00	$1.64	$17.64
Boom Truck (Truck Crane)Operator	$21.66	$6.86	$28.52	Laborer - Skilled	$20.55	$3.62	$24.17
Bricklayer	$24.00	$3.99	$27.99	Line Erector-Power/Cable Splicer	$25.75	$7.59	$33.34
Bulldozer Operator	$20.00	$4.06	$24.06	Loader Operator - Front-End	$19.75	$2.82	$22.57
Carpenter	$24.31	$10.41	$34.72	Mechanic- Maintenance	$20.00	$5.72	$25.72
Carpenter - Rough	$20.67	$5.49	$26.16	Mechanic- Refrigeration	$24.88	$4.76	$29.64
Cement Mason/Finisher	$17.00	$0.56	$17.56	Millwright	$28.90	$22.50	$51.40
Communication Equipment Installer	$21.50	$3.28	$24.78	Painter	$22.00	$3.06	$25.06
Comm Transmission Erector Microwave & Cell	$19.00	$3.57	$22.57	Paver Operator	$20.00	$3.78	$23.78
Crane Operator =>15 Tons)	$28.00	$7.15	$35.15	Pile Driver Operator	$25.00	$11.13	$36.13
Crusher Plant Operator	$17.75	$2.48	$20.23	Pipe/Steam/Sprinkler Fitter	$22.50	$8.53	$31.03
Diver	$32.00	$0.00	$32.00	Pipe Layer	$28.00	$12.54	$40.54
Driller -Rock	$18.38	$2.60	$20.98	Pump Installer	$21.00	$3.73	$24.73
Earth Auger Operator	$23.76	$6.31	$30.07	Reclaimer Operator	$18.50	$2.85	$21.35
Electrician - Licensed	$28.83	$13.97	$42.80	Rigger	$20.00	$6.12	$26.12
Electrician Helper/Cable Puller (Licensed)	$26.00	$8.68	$34.68	Roller Operator - Earth	$15.88	$1.76	$17.64
Excavator Operator	$23.00	$3.68	$26.68	Roller Operator - Pavement	$18.30	$1.64	$19.94
Fence Setter	$16.00	$1.17	$17.17	Truck Driver - Light	$18.15	$2.88	$21.03
Flagger	$12.00	$0.00	$12.00	Truck Driver - Medium	$17.75	$1.82	$19.57
Grader/Scraper Operator	$21.33	$5.13	$26.46	Truck Driver - Heavy	$19.00	$3.17	$22.17
HVAC (Heat-Vent-Air Conditioning)	$23.00	$3.05	$26.05	Truck Driver - Tractor Trailer	$21.50	$5.59	$27.09
Ironworker – Ornamental	$22.85	$4.85	$27.70				
Ironworker - Reinforcing	$26.20	$12.15	$38.35				
Ironworker - Structural	$23.00	$6.26	$29.26				

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: HB-054-2018

A true copy

Filing Date: October 18, 2018

Attest: Scott R. Cotnoir

Scott A. Cotnoir
Wage & Hour Director

Expiration Date: 12-31-2018

BLS(Heavy & Bridge 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 MRSA §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 --------2019.09-Bridge Improvements-Stroudwater River Overpass (NB&SB) Maine Central Railroad Overpass-Mile 47.9

Location of Project –Portland, Cumberland County

2018 Fair Minimum Wage Rates
Highway & Earth Cumberland County

Occupation Title	Minimum Wage	Minimum Benefit	Total	Occupation Title	Minimum Wage	Minimum Benefit	Total
Asphalt Raker	$16.00	$0.44	$16.44	Ironworker – Ornamental	$23.13	$4.80	$27.93
Backhoe Loader Operator	$20.00	$2.23	$22.23	Ironworker - Reinforcing	$24.79	$10.60	$35.39
Boom Truck (Truck Crane) Operator	$21.66	$6.86	$28.52	Ironworker - Structural	$21.80	$4.88	$26.68
Bulldozer Operator	$22.30	$4.19	$26.49	Laborer (Includes Helper-Tender)	$14.50	$0.94	$15.44
Carpenter	$21.00	$2.36	$23.36	Laborer - Skilled	$17.00	$2.22	$19.22
Cement Mason/Finisher	$17.00	$0.56	$17.56	Line Erector-Power/Cable Splicer	$26.00	$7.59	$33.59
Crane Operator =>15 Tons)	$26.00	$5.97	$31.97	Loader Operator - Front-End	$19.88	$3.74	$23.62
Crusher Plant Operator	$17.75	$2.39	$20.14	Mechanic- Maintenance	$21.00	$3.15	$24.15
Diver	$28.50	$1.48	$29.98	Painter	$17.00	$0.00	$17.00
Driller -Rock	$18.38	$2.60	$20.98	Paver Operator	$18.00	$1.57	$19.57
Earth Auger Operator	$22.97	$6.17	$29.14	Pipelayer	$18.00	$3.16	$21.16
Electrician - Licensed	$26.00	$4.67	$30.67	Pump Installer	$21.00	$3.73	$24.73
Electrician Helper/Cable Puller (Licensed)	$17.00	$2.84	$19.84	Reclaimer Operator	$19.13	$2.98	$22.11
Elevator Constructor/Installer	$19.25	$1.62	$20.87	Roller Operator - Earth	$16.00	$1.89	$17.89
Excavator Operator	$21.54	$3.44	$24.98	Roller Operator - Pavement	$18.00	$2.07	$20.07
Fence Setter	$17.25	$1.72	$18.97	Screed/Wheelman	$22.88	$4.25	$27.13
Flagger	$12.50	$0.00	$12.50	Truck Driver - Light	$17.83	$3.74	$21.57
Grader/Scraper Operator	$21.33	$5.65	$26.98	Truck Driver - Medium	$18.00	$1.89	$19.89
Highway Worker/Guardrail Installer	$16.50	$0.79	$17.29	Truck Driver - Heavy	$16.50	$1.53	$18.03
Hot Top Plant Operator	$23.38	$5.55	$28.93	Truck Driver - Tractor Trailer	$19.00	$2.79	$21.79

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-154-2018

A true copy

Filing Date: October 18, 2018

Attest: Scott R. Cotnoir

Scott A. Cotnoir
Wage & Hour Director

Expiration Date: 12-31-2018

BLS(Highway & Earth 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. 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

There are no aerial utilities within the project site impacted by the proposed work.

UNDERGROUND UTILITIES

There are no underground utilities within the Maine Central Railroad Overpass (NB & SB) bridges project site impacted by the proposed work.

The following underground utilities are known to be present on the Stroudwater River Overpass (NB & SB) bridges project, including contact information:

PORTLAND PIPE LINE CORPORATION
30 Hill Street
South Portland, ME 04106
ATTN: Kenneth P. Brown
(207) 767-0449
ken.brown@pmpl.com

Portland Pipe Line owns a 24-inch underground high-pressure crude oil transmission pipeline within the project limits. This pipeline crosses the Turnpike near STA 2317+82 and crosses the Stroudwater River at an angle of approximately 53-degrees. The proposed work is not anticipated to impact the existing pipeline, the piers have been configurated to avoid impact. However,

construction will be in close proximity to the pipeline and the Contractor shall strictly follow Portland Pipe Line's construction requirements as documented in **Appendix A**.

PORTLAND WATER DISTRICT
225 Douglass Street
Portland, ME 04102
ATTN: Charlene Poulin
(207) 774-5961 x3105
cpoulin@pwd.org

Portland Water District owns an 8-inch underground sewer main within the project limits. This watermain crosses the Turnpike near STA 2316+10 and runs perpendicular to the Turnpike south of the overpass and is approximately 20-ft below ground. The proposed work is not anticipated to impact the existing sewer main and relocation is not planned

PORTLAND TRAIL

ATTN: Jaime Parker (Trails and Transportation Manager)
(207) 329-6180
jaime@trails.org

The Portland Trail system crosses the Stroudwater River Overpass (NB & SB) bridges project site near STA 2317+00. The proposed work includes reconstructing the existing trail under the overpass within the project limits. Additionally, the existing timber boardwalk shall be removed and stacked to become the property of Portland Trail and 10 cubic yards of the crushed stone material shall be stockpiled for use by the Portland Trail, the location of the stockpile shall be coordinated with the Resident and the Portland Trail. During construction the trail shall be closed to pedestrian and bicyclist traffic, appropriate signage as shown in the Plans shall be used for the closure. The Contractor shall coordinate with Portland Trail prior to trail closure.

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 2016.08 – Interchange 44 Barrier Toll Plaza ORT Conversion, MM44.3
- 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 2019.10 – Warren Avenue Bridge Improvements, MM 49.0
- MTA Contract 2019.13 – Exit 45 Interchange Reconstruction Pre-Load, MM 44.9
- MTA Contract 2020.XX – Exit 45 Interchange Reconstruction, MM 44.9
- MTA Contract 2020.XX – Saco/Scarborough Mainline Pavement Rehabilitation, MM 35.5 – 42.0
- MTA Contract 2020.XX – Mainline Widening and Median Safety Improvements, MM 43 – 46 and Exit 44 NB Ramp Improvements

104.4.8 Coordination With Railroads

This Subsection is amended by the addition of the following:

The Maine Central Railroad Overpass bridges cross over the Maine Central Railroad (MCRR), owned and operated by Pan Am Railways. This MCRR is an active single track serving approximately three freight trains (round trips) per week which do not operate on a set daily schedule.

Pan Am Railways

1700 Iron Horse Park
N. Billerica, MA 01862
ATTN: Shawn Higgins
(978) 663-1127
shiggins@panam.com

Any work on or affecting Pan Am property or operations requires the presence of a Pan Am Inspector-Flagman. These operations are explicitly laid out in the Railroad Specifications (**Appendix B**). As a general rule of thumb, the following rules outline when a Flagmen will be required on-site, however this shall be reviewed with the railroad on a case by case basis during construction, deviations to these rules of thumb may occur throughout construction;

- Operations that will foul the tracks may require a Flagman.
- Operations resulting in materials or equipment overhanging the bridge fascias without shielding or falsework directly underneath may require a Flagman.
- Operations on top of the bridge with shielding preventing material from falling onto the railroad ROW may not require a Flagman.

All Pan Am Inspector-Flagmen shall be scheduled through the Maine Turnpike Authority (MTA). The Contractor shall submit a request to the Resident by noon on the Wednesday prior to the week of proposed work requiring an Inspector-Flagman. The Authority will make payment for the Inspector-Flagmen directly to Pan Am. The Contractor shall be responsible for sequencing all work that requires a Pan Am Inspector-Flagman in a manner that minimizes the amount of visits required by the Flagmen to the extent practical, availability of Flagmen may be limited throughout

construction. The Contractor will not be entitled to additional compensation if scheduled work is not completed due to the unavailability of Inspector-Flagmen.

Pan Am shall approve of all Contractor activities that may impact Railroad property or operations. Contractor shall direct all submittals through the Authority. Normal approval time for Pan Am is two (2) weeks. The Authority will make payment for Pan Am's review time directly to Pan Am.

Pan Am Railways does not allow track closures.

Contractor work activities must cease 15 minutes prior to a train arrival.

The Contractor is required to agree to and sign a Railroad Service Agreement. A copy of this agreement is included in **Appendix C**. This signed agreement shall be submitted through the Authority. The Contractor shall be responsible for the $600 non-refundable service fee.

The Contractor shall abide by all Railroad Specifications. A copy of these Specifications is included in **Appendix B**.

The Contractor is required to carry Railroad Protective Liability Insurance. Refer to Section 8 of the Railroad Specifications in **Appendix B**.

105.2.4.2 Lead Paint

The Contractor shall presume that the existing Stroudwater River Overpass bridges and Maine Central Railroad Overpass bridges contain lead based paint. Paint samples were not taken on these structures therefore Lead Determination Reports are not available. The Contractor shall institute every precaution when working with materials coated with lead based paints.

At the Contractor's option, the Contractor may have the bridge paint sampled and analyzed. Each pair of structures would require the fascia girders and the interior girders be sampled. Should the Contractor's testing demonstrate the girders are not lead based paint the requirements of this section are waived.

Lead Paint Removal

The Contractor is required to remove and dispose of lead based paint and paint residue before cutting, grinding, drilling and sandblasting existing materials in preparation of completing the work except as provided under the Drilling of Lead Based Paint subsection in this Special Provision. All lead based paint and paint residue shall be removed, handled, stored and disposed of in conformance with all local, State and Federal laws and regulations governing lead based paint. The Contractor may use his own properly trained employees to abate the lead based paint in accordance with applicable regulations and requirements; or he may hire a licensed lead abatement subcontractor to abate the lead based paint in accordance with applicable regulations and requirements.

The Contractor, or licensed lead abatement subcontractor, shall submit a Project specific Health and Safety (OSHA) Plan and a Hazardous Waste Management Plan (EPA/DEP) a minimum of two (2) weeks prior to undertaking the removal of lead based paint.

Drilling of Lead Based Paint

The Contractor may drill lead based painted steel, without lead based paint removal, provided the Contractor collects and recycles the drill cuttings at a licensed metal recycling facility. If the Contractor chooses not to collect and recycle the drill cuttings at a licensed metal recycling facility he will be required to abate the area where drilling is to occur in full accordance with the lead based paint removal, storage and disposal requirement of this Special Provision.

The Authority will require a signed statement from the Contractor stating the drill cuttings were collected and recycled at a licensed metal recycling facility and the name the recycling facility.

Health and Safety Plan

The Health and Safety Plan submittal shall describe how the Contractor/licensed lead abatement subcontractor intends to remove the lead based paints; and shall outline how the Contractor/licensed lead abatement subcontractor will adhere to all Federal, State and local ordinances which govern worker (including authorized representatives of the Authority) exposure to lead based paints, and ensure the safety of the workers performing lead removal. Copies of current worker training certificates (OSHA), medical screenings, and respirator fit up shall be included in the submittal.

Hazardous Waste Management Plan

The Hazardous Waste Management Plan submittal shall describe how the Contractor/licensed lead abatement subcontractor intends to manage the hazardous waste that will be generated, temporarily accumulated, stored, transported off-site and disposed; adhere to ordinances associated with the management of hazardous wastes; and ensure protection of the environment.

The Hazardous Waste Management Plan shall:

a) Be signed by the Contractor;
b) State whether Contractor or licensed lead abatement subcontractor will be undertaking the work; and,
c) State whether abated lead materials will be accumulated and stored on-site (required if Contractor is not licensed by DEP/EPA to transport and temporarily store lead based hazardous waste), or be removed in HEPA vacuums daily to the removal Contractor's licensed waste storage facility (permitted only if Contractor is licensed by DEP/EPA to transport and temporarily store lead based hazardous waste).

If abated lead materials are to be accumulated and stored on-site, the Hazardous Waste Management Plan shall include (at a minimum) the following:

- Container size and labeling standards:
  - Containers must be 55 gallons or less
  - Containers must have the labeled "HAZARDOUS WASTE"

- Accumulation requirements:
  - Labels will include accumulation start date and container full date
  - On-site storage will not exceed 180 days from full date
  - Total on-site storage shall not exceed 55 gallons or 220 pounds

- Inspections (including frequency and checklist):
  - Inspections shall be performed each day the Contractor works
  - Inspection checklist shall be similar to MaineDEP format (Refer to MaineDEP Handbook for Hazardous Waste Generators – January 2008)
- Transport and DOT "pre-transport requirements":
  - Specify the licensed hazardous waste transporter to be used
  - Obtain Generator's EPA ID No. (typically a provisional ID # is obtained through the licensed hazardous waste transporter)
  - USDOT – approved containers must be used for shipment
  - Schedule MTA for signing Hazard Waste Manifest

- Recordkeeping requirements:
  - Describe where at the jobsite the required records (e.g., inspection logs, training records, Lead Determination report/hazardous waste characterization, etc.) will be maintained
  - Describe how and when copies of the required documents specified above will be transferred to the MTA Environmental Services Coordinator's office

The Contractor/licensed lead abatement subcontractor, shall provide documentation to the MTA that the employees who will be removing, handling, managing and/or directly supervising the hazardous waste operations have received required Resource Conservation and Recovery Act (RCRA) hazardous waste management training, and all training is current.

The lead based hazardous waste must remain on-site, unless the removal is being performed by a licensed lead abatement subcontractor that collects the paint residue in HEPA vacuums and is licensed by DEP/EPA to transport and temporarily store lead based hazardous waste at the removal Contractor's licensed waste storage facility. Both on-site and licensed off-site lead based hazardous waste storage facilities require secure storage and daily inspection of the stored waste.

If the removal Contractor is not licensed by DEP/EPA to transport and temporarily store lead based hazardous waste off-site, then an EPA licensed Hazardous Waste transporter(s) shall be used to remove hazardous waste from the site. All removal and disposal documentation will be required when the hazardous waste leaves the site. As the Generator, only the Authority's Environmental Services Coordinator or his trained designee shall sign waste manifests when material is removed from the Project site.

The removal, storage, handling, transporting, and disposal of lead based paint and lead based paint residue will not be measured separately for payment, but shall be incidental to the various Contract work items.

105.8.2 Permit Requirements

The Stroudwater River Overpass is being constructed under the Maine Department of Environmental Protection (MDEP) 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 D**.

The Stroudwater River Overpass is also being permitted under Section 404 of the Clean Water Act, through the US Army Corps of Engineers Programmatic General Permit, Category 2. Final permit authorization is anticipated by January 1, 2019 work in the wetlands and water may not occur until authorization is received. Upon receipt of authorization or denial of the permit the Contractor will be provided a copy of the permit providing the actual US Army Corps of Engineer's permit conditions; and providing Plan and Specification changes (if required) to adjust the Project schedule or phasing to meet the permit requirements. A copy of the un-authorized General Permit is attached in **Appendix E**. A signed copy of the Category 2 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 was 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 has been estimated to be **7.84** acres at Stroudwater River Overpass and **7.45** acres at Maine Central Railroad Overpass.

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.

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 Supplemental Specifications Subsections 105.8.1 and 656.07) and implement measures to reduce pollutants in stormwater runoff from construction activities. Refer to **Appendix F** for MS4 requirements and the Contractors Signature of Acknowledgement.

105.8.3 Wetland and Water Body Impacts

The following locations are classified as a waterbody:

Stroudwater River	2318+00
Fore River	2371+00

Prior to starting work, the Contractor shall submit for approval a detailed construction plan for each stream location. The plan shall outline the schedule, equipment, access plan and materials the Contractor will utilize to complete the work. There shall be no impact permitted to the Fore River wetland or water body as part of this project.

107.1 Contract Time and Contract Completion Date

This Subsection is amended by the addition of the following:

All work shall be completed on or before June 25, 2021. The construction for the Stroudwater River Overpass (NB & SB) bridges and Maine Central Railroad Overpass (NB & SB) bridges shall be substantially complete by November 13, 2020.

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 deck work, including bridge railing/barrier, guardrail installation including attachments, and surface pavement complete and available for traffic.

- Stroudwater River Overpass (NB & SB) and Maine Central Railroad Overpass (NB & SB) fully opened to traffic including shoulders, guardrail, surface pavement and signage.

- 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 and as outlined below in Subsection 107.4.6 Prosecution of Work.

107.3.2 Night Work

The Contractor shall be responsible to determine and adhere to the local regulations pertaining to night work time restrictions and noise limitations. The Contractor shall plan his work accordingly.

107.4.6 Prosecution of Work

The following activities must be completed by the date specified:

a. All Contract work that requires in-water work in the Stroudwater River shall be completed between July 15, 2019 and October 1, 2019 or July 15, 2020 and October 1, 2020.
b. The duration of Phase 1B should not exceed 14 calendar days to minimize disruptions to the exit 46 NB on ramp and the exit 47 NB on ramp. Earthwork and clearing that is necessary to construct Phase 1B may happen in Phase 1A as long as work is conducted at least 30’ from the existing travel lanes or is behind barrier.

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 closures 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

There shall be no pile driving during non-daylight hours. Pile driving will not be allowed within 10 feet of traffic.

Temporary access for pier construction must comply with the following:

- No infilling of the river or side slopes below the ordinary high water elevation;
- Maintain the existing water flow in the river; and,
- Temporary construction impacts must remain within the areas shown on the permit plans and areas must be restored to original condition upon completion.

Temporary access and construction for bridge deck, pier, and other bridge components construction shall not impact the railroad right-of-way or reduce the existing vertical clearance over the railroad at any time during construction.

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. 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.

Care shall be taken when working near catch basins and bridge drains to ensure foreign material and contaminants do not enter. The deck shall be maintained such that debris cannot leave the deck via the drains and enter the river. If foreign material and/or contaminants do enter the basin they shall be removed prior to the material exiting the basin into a waterway. Removal shall be completed to the satisfaction of the Resident and payment shall be incidental to the Contract.

The Contractor shall be responsible for sequencing all underwater repair work in a manner that minimizes the amount of site visits required by the Authority's third-party inspection firm to the extent practical. The Authority reserves the right to postpone the inspection of small and/or isolated repair areas until such time that the required underwater inspection efforts warrant mobilization of the inspection crew. Postponement of the inspection work by the Authority shall not entitle the Contractor to an adjustment for delay.

Construction of the Fore River sheet pile retaining wall shall not impact the surrounding stream in any way.

SPECIAL PROVISION

SECTION 202

REMOVING STRUCTURES AND OBSTRUCTIONS

(Removing Existing Structural Concrete)
(Removing Existing Railing Retained by Authority)

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.

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 by the Resident.

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.

202.031 Removing Existing Bituminous Pavement and Concrete Wearing Surface from Bridges and Scarifying the Top of Deck.

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

The use of milling equipment to remove existing bituminous pavement is not allowed.

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.

SPECIAL PROVISION

SECTION 202

REMOVING STRUCTURES AND OBSTRUCTIONS

(Removing Pavement Surface)

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 the pavement and membrane surface from the bridge decks shall be completed by scraping or other methods that will not damage the existing concrete deck surface. Milling of bridge deck pavement shall not be allowed.

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± 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 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.

All surplus pavement grindings, 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.

SPECIAL PROVISION

SECTION 202

REMOVING STRUCTURES AND OBSTRUCTIONS

(Removing Rumble Strips)

202.01 Description

The following paragraph is added:

This work shall consist of grinding existing rumble strip locations to a depth of 1-1/2 inches, coating vertical and horizontal surfaces with bituminous tack coat, and installing 1-1/2 inches of hot mix asphalt, 9.5 mm over the entire milled area. Locations and lengths of removal shall be as shown on the Plans or as approved by the Resident.

The following Subsections are added:

202.011 Materials

Grinding shall be done in accordance with Section 202. Bituminous tack coat shall conform to Section 409.

Hot mix asphalt, 9.5 mm shall conform to Section 401.

202.025 General

Existing rumble strips are approximately 16 inches long, seven inches wide, 1/2 inch deep, and spaced approximately every five inches.

202.07 Method of Measurement

The following paragraph is added:

Removing Rumble Strips shall be measured by the linear foot removed and accepted. Measurement shall be parallel to the baseline.

202.08 Basis of Payment

The following sentences are added:

Removing Rumble Strips shall be paid for at the Contract unit price per linear foot which includes all grinding, bituminous tack coat, pavement, equipment and labor necessary to satisfactorily complete the work.

Payment will be made under:

Pay Item		Pay Unit
202.206	Removing Rumble Strips	Linear Foot

SPECIAL PROVISION

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 if an excavation plan is required, the costs of preparing and submitting the excavation plan shall be incidental to the Excavation items.

SPECIAL PROVISION

SECTION 203

EXCAVATION AND EMBANKMENT

(Clay Borrow)

203.01 Description

The following sentence is added:

This work shall consist of the placement of clay borrow as an impermeable soil barrier within the embankment of the Stormwater Soil Filter Beds (USF Detention Basins) as shown on the Plans.

203.02 Materials

The following paragraphs are added:

Clay Borrow shall conform to the following requirements:

A. Impermeable Soil Barrier

1. Soil to be used as a barrier such as a compacted clay barrier shall consist of glaciomarine silt-clay material with a hydraulic conductivity of less than 10^{-5} (0.0001) cm/sec. Soil barrier material shall be free of organic material, debris, ice, snow, and other deleterious material, with no stone larger than one inch. Unless approved otherwise by the Resident, materials used for the impermeable soil barrier shall contain greater than 90 percent silt and clay content (minus No. 200 U.S. Std. Sieve) by dry weight, a Liquid Limit greater than or equal to 28, and a Plasticity Index greater than or equal to 11.

203.04 General

The following paragraphs are added:

The placement of the clay borrow shall conform to the following requirements:

1. Moisture Control: The workability of silt clay is acutely sensitive to moisture content. The water content of silt clay borrow used as fill shall be controlled by the Contractor to stay in the range of two percent dry of the laboratory-determined optimum water content to four percent wet of optimum water content. Silt clay not meeting this range of water contents shall be removed or reworked until the moisture content is within these limits, unless approved otherwise by the Resident.

2. Thickness: The final lift shall be a six inch compacted layer as specified on the Plans.

3. Compaction Criteria: Silt clay borrow shall be compacted to at least 95 percent of maximum dry density as determined by ASTM D698. The Contractor shall adjust the moisture content of the silt clay borrow as necessary to achieve the required degree of compaction.

4. Placement: Silt clay borrow shall be placed in continuous, approximately horizontal layers, not more than 12 inches in loose depth for material compacted by heavy construction equipment, and not more than six inches in loose depth for material compacted by hand-operated tampers. Fill material shall not be placed on surfaces that are muddy, frozen, or contain frost or ice.

   The distribution and gradation of the silt clay borrow throughout earthwork components shall be such that the fills will be free from lenses, pockets, streaks, or layers of material differing substantially in texture, gradation, or moisture from the surrounding material. The combined excavation, separation, and placement operations shall be such that the materials, when compacted, will be blended sufficiently to secure the best practicable distribution of the material.

5. Compaction: When each layer of material has been conditioned to have the specified moisture, it shall be compacted by at least four passes of the compaction equipment. The passage of compaction equipment in either direction (forward or backward) is considered a single "pass". When compacted, the density shall be essentially uniform throughout the layer. Compacted earth material having a moisture content or dry density that does not meet the criteria specified shall be reworked or re-compacted, as approved by the Resident to obtain the specified moisture content and dry density.

6. Heavy construction equipment shall not operate over the adjacent soil filter bed and underdrain system. Any damage or over compaction of these areas shall be corrected at no additional cost to the Authority.

203.18 Method of Measurement

The following sentence is added after the second paragraph:

Clay Borrow will be measured for payment by the cubic yard using the lines, grades and dimensions shown on the Plans.

203.19 Basis of Payment

The following is added after the first paragraph:

The accepted quantity of clay borrow will be paid for at the Contract unit price per cubic yard. Payment shall be full compensation for obtaining clay borrow and excavating, loading, hauling, placing, grading and compacting necessary for the formation of the clay borrow. It shall also include full compensation for disposing of excavated material and surplus material when necessary, and shall include all materials, labor, tools and equipment necessary to complete this work.

Payment will be made under:

Pay Item		Pay Unit
203.45	Clay Borrow	Cubic Yard

SPECIAL PROVISION

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 16.0 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 13 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 [140ºF]	3.0mm [1/8 in] max
Bond, non-immersed	Three 12.7mm [½ in] specimens pass 3 cycles @ 200% extension @ -29°C [-20ºF]
Resilience, %	60 min
Asphalt Compatibility, ASTM D5329	pass*

* 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 [140ºF].

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 local road and bridge projects shall be a currently approved MDOT design.

HMA pavement mixtures for Mainline 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, and a maximum of 20 percent RAP in any base, intermediate, or shim course. Current MaineDOT approved designs with up to 20 percent RAP will be allowed on local roads.

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.

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 $N_{max.}$
- Specific Gravity for the PGAB to be used.
- Recommended mixing and compaction temperatures from the PGAB supplier.
- Material Safety Data Sheets (MSDS) 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 stone stockpiles, 75 ton for sand stockpiles, and 50 ton of blend sand before the Authority will sample. 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 sufficient 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 shall split a production sample for evaluation. The Contractor shall test its split of the sample and determine if the results meet the requirements. If the results are found to be acceptable, the Contractor will forward their results to the Authority's Lab, which will test the Authority's split of the sample. The results of the two split samples will be compared and shared between the Authority and the Contractor. 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.

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 13% 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)	Required Density (Percent of G_{mm})			Voids in the Mineral Aggregate (VMA)(Minimum Percent) Nominal Maximum Aggregate Size (mm)				Voids Filled with Binder (VFB) (Minimum %)	Fines/Eff. Binder Ratio
	$N_{initial}$	N_{design}	N_{max}	19	12.5	9.5	4.75		
10 to <30	≤89.0	96.0	≤98.0	13.5	14.5	15.5	15.5	65-80*	0.6-1.2

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

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

** For 4.75mm nominal maximum aggregate size mixtures, the Fines/Effective Binder Ratio is 0.6-1.4*

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 shall meet the requirements of Table 1A

TABLE 1A
HAMBURG WHEEL TRACKER REQUIREMENTS

Specified PG Binder Grade	Test Temperature (ºC)	Maximum Rut Depth (mm)	Minimum Number of Passes	Minimum 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

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

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 401.091 Material Transfer Vehicle (MTV)

The fourth paragraph shall be deleted and replaced with:

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

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 or less	90

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 or laborers.

Section 401.191 Inspection/Testing

In paragraph nine delete and replace Item #8 with:

8. Secure High Speed Internet Access

SPECIAL PROVISION

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 320. The PG64E-28 Binder shall contain a minimum of 2.5% Styrene-Butadiene-Styrene (SBS) polymer {BWT} in a homogeneous blend. 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. The binder shall meet the requirements of AASHTO M 332 (including Appendix X1).

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 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

SPECIAL PROVISION

SECTION 403

HOT MIX ASPHALT PAVEMENT

Course	HMA Grading	Item Number	Total Thickness	No. of Layers	Complimentary Notes
Mainline Variable Depth Mill & Overlay					
Wearing	**12.5mm**	**403.2081**	**1.5”**	**1**	**A,F,I,J,K,L,N,O,P**
Intermediate	**12.5mm**	**403.213**	**1.5”**	**1**	**B,F,J,L,N,O,P**
Base	**19.0mm**	**403.207**	**7”**	**3**	**B,F,J,L,N,O,P**
Shim	**4.75mm**	**403.212**	**0.5”**	**1**	**B,F,J,L,N,O,P**
Mainline Full Depth Pavement					
Wearing	**12.5mm**	**403.2081**	**1.5”**	**1**	**A,F,I,J,K,L,N,O,P**
Intermediate	**12.5mm**	**403.213**	**1.5”**	**1**	**B,C,F,J,L,N,O,P**
Base	**19.0mm**	**403.207**	**7”**	**3**	**B,C,F,J,L,N,O,P**

COMPLEMENTARY NOTES

A. The required PGAB for this mixture shall be **64E-28.**
B. The required PGAB for this mixture shall be **64-28.**
C. A maximum of 15 percent RAP may be used.
D. RAP may not be used.
E. 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. The design verification, Quality Control, and Acceptance tests for this mix will be performed at **XX gyrations**. (N design) Minimum and Maximum PGAB content shall not apply.
F. 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)
G. 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.
H. Joints shall be constructed as the “notched wedge” type in accordance with Subsection 401.17.
I. Joint density will be measured in accordance with Subsection 401.165.
J. Tack coat shall be applied between all layers of pavement at a rate of 0.04 G/SY.
K. PGAB shall conform to the provisions of 403.02 – Polymer Modified PGAB for HMA
L. The contractor shall furnish a quality control technician equipped with an approved densometer to ensure density requirements are met.
M. Hydrated Lime shall be incorporated into the mixture.
N. 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.

O. The warm mix/antistrip additive Zycotherm manufactured by Zydex Industries shall be incorporated into the PGAB at a rate of 0.1%

P. A maximum of 20 percent RAP may be used.

SPECIAL PROVISION

SECTION 409

BITUMINOUS TACK COAT

409.02 Bituminous Material

This Subsection is deleted and replaced with the following:

Bituminous material shall conform to the Specifications for Emulsified Asphalt RS-1 or RS-1h, of the AASHTO Designation M-140.

409.05 Equipment

Add "or as determined by the Resident", after the words "gal/yd^2]" 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 409.15, Bituminous Tack Coat - Applied.

SPECIAL PROVISION

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 to the depth as shown on the Plans.

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		Pay Unit
419.30	Sawing Bituminous Pavement	Linear Foot

SPECIAL PROVISION

SECTION 470

BERM DROP OFF CORRECTION

(Berm Dropoff Correction - Grindings)

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
¾”	100
½”	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

SPECIAL PROVISION

SECTION 501

FOUNDATION PILES

(Sheet Pile Wall)

Amend Standard Specification Subsection 501.01 with the following:

501.01 Description

This work shall consist of furnishing, and installing an earth retention system at the existing Fore River Culvert comprised of sheet pile walls, ground anchor, and c-beams as shown on the Plans and specified herein. Sheet piles and ground anchor shall conform to and be installed, as detailed in these specifications, in reasonably close conformity to the lines, grades, and locations shown on the Plans or as authorized by the Resident.

Amend Standard Specification Subsection 501.02 with the following:

501.02 Materials

A. Sheet piles shall be hot-rolled steel meeting the chemical and mechanical requirements of ASTM A 572 Grade 50. The interlock of sheet piling shall be free-sliding and maintain continuous interlocking when installed. Sheet piling, including special fabricated sections, shall be full-length sections of the dimensions shown or required by the design. Fabricated sections shall conform to the requirements herein and the piling manufacturer's recommendations for fabricated sections. Provide sheet piling with standard pulling holes. Any metalwork fabrication for sheet pile sections shall conform to the requirements of Section 504, Structural Steel. Provide cast steel sheet pile protectors, in one-piece Z configuration, at the bottom of each pile.

B. Sheet Pile Connectors: Where sheet pile changes direction, connectors shall be equivalent to those manufactured by PilePro LLC or Skyline Steel LLC or LB Foster Company. Connectors shall be of the same material as the sheet pile.

C. Ground Anchor: Ground anchor tendons shall be fabricated from single or multiple elements of one of the following prestressing steels:

1. Steel bars conforming to ASTM A615 Grade 75 with double corrosion protection encapsulation
2. Seven-wire, low-relaxation strands conforming to AASHTO M 203
3. "Compact" seven-wire, low-relaxation strands conforming to ASTM A 779
4. Epoxy coated strand conforming to ASTM A 882
5. Epoxy coated reinforcing steel bars conforming to ASTM A 775

D. Prestressing steel bar couplers shall be capable of developing 100 percent of the minimum specified ultimate tensile strength of the prestressing steel bar. Steel strands used for a soil anchor shall be continuous with no splices, unless approved by the Engineer.

E. A sheath shall be used as part of the corrosion protection system for the unbonded length portion of the tendon. The sheath shall be fabricated from one of the following:

1. A polyethylene tube pulled or pushed over the prestressing steel. The polyethylene shall be Type II, III or IV as defined by ASTM D 1248 (or approved equal). The tubing shall have a minimum wall thickness of 0.06 in.
2. A hot-melt extruded polypropylene tube. The polypropylene shall be cell classification B55542-11 as defined by ASTM D 4101 (or approved equal). The tubing shall have a minimum wall thickness of 0.06 in.
3. A hot-melt extruded polyethylene tube. The polyethylene shall be high density Type III as defined by ASTM D1248 (or approved equal). The tubing shall have a minimum wall thickness of 0.06 in.
4. Steel tubing conforming to ASTM A 500. The tubing shall have a minimum wall thickness of 0.125 in.
5. Steel pipe conforming to ASTM A 53. The pipe shall have a minimum wall thickness of 0.125 in.
6. Plastic pipe or tube of PVC conforming to ASTM D 1784 Class 13464-B. The pipe or tube shall be Schedule 40 at a minimum.
7. A corrugated tube conforming to the requirement of the tendon bond length encapsulation.

F. Spacers shall be used to separate elements of a multi-element tendon and shall permit grout to freely flow around the tendon and up the drill hole. Spacers shall be fabricated from plastic, steel or material which is nondetrimental to the prestressing steel. Wood shall not be used. Spacers shall be provided at maximum intervals of 10 ft and may be combined with centralizers. A minimum of two spacers per tieback shall be provided.

G. When the Contract Drawings require the tendon bond length to be encapsulated to provide additional corrosion protection, the encapsulation shall be fabricated from one of the following:

1. High density corrugated polyethylene tubing conforming to the requirements of AASHTO M 252 and having a minimum wall thickness of 0.06 inch except pregrouted tendons which may have a minimum wall thickness of 0.04 inch.
2. Deformed steel tubing or pipes conforming to ASTM A 52 or A 500 with a minimum wall thickness of 0.2 in.
3. Corrugated, polyvinyl chloride tubes manufactured from rigid PVC compounds conforming to ASTM D 1784, Class 13464-B.
4. Fusion-bonded epoxy conforming to the requirements of AASHTO M 284.

H. Sheet Pile Whaler: Shall be the c-shape specified in the plans and conforming to ASTM A572 Grade 50 with a hot dipped galvanized coating.

I. The Contractor shall furnish grout with a minimum 28-day compressive strength of 5 ksi.

J. Certification: Contractor shall certify that all component materials, manufacturing operations, and/or furnished products conform to all MaineDOT requirements pertinent to the project Plans, Special Provisions and Specifications for the Contract items indicated.

The following Subsection is added:

501.021 Submittals

A. Shop Drawings: Submit drawings for approval prior to start of the work or ordering materials.
   1. Sheeting:
      i. Include details of top protection, splices, fabricated additions to plain piles, method of installation, type and size of pile hammer, cut-off method, and corrosion protection. Drawings for sheet piling including fabricated sections shall show complete dimensions including details of piling and the driving schedule, sequence, and location of piling. Include details and dimensions of templates and other temporary guide structures for installing the piling. Provide details of the method of handling sheet piling to prevent permanent deflection, distortion, or damage to interlocks. The fully detailed plans shall be prepared in conformance with Subsection 105.7 of the Standard Specifications.
      ii. Material certificates including chemical and physical test results shall be submitted.
      iii. Pile driving records shall be submitted.

   2. Ground Anchors:
      i. The Contractor shall select the drilling method, grouting method, and grouting pressures, and be subject to the criteria specified herein and in the contract documents. The Contractor shall be responsible for installing tiebacks that will develop the load-carrying capacity and minimum bond length specified on the Contract Drawings and verify the capacity in accordance with the testing subsection of this Specification. The Contractor may propose alternatives for the bond length, unbonded length, and anchor diameter which may be accepted with the approval of the Engineer.
      ii. The design calculations and Shop Drawings shall be prepared and sealed by a Professional Engineer licensed in the State of Maine experienced in the design of tiebacks. The design calculations shall include grout-to-ground bond, tieback design load and any other pertinent calculations. These calculations shall be based upon the construction method and appropriate grout to ground bond as recommended in the references provided in Design Criteria Section of this specification. The tiebacks shall be designed for the capacities specified on the Contract Plans and shall consider any temporary load the retaining wall will be subjected to during construction. Unbonded length, bond lengths, and ground

anchor orientation shall be included in the Shop Drawings. The tiebacks shall not extend beyond the right-of-way limits shown on the Contract Drawings.

iii. The Contractor shall submit a list containing at least five (5) similar projects completed within the last five (5) years. For each project, the Contractor shall include with this submittal, at a minimum:
   1. Name of client contact, address, and telephone number;
   2. Location of project;
   3. Contract value; and
   4. Scheduled completion date and actual completion date for the project

iv. Resumes of the Contractor's staff shall be submitted to Maine DOT for review. Only those individuals designated as meeting the qualification requirements shall be used for the project. The Contractor cannot substitute for any of these individuals without written approval of Maine DOT or Engineer. The Engineer shall approve or reject the Contractor's qualifications and staff within fifteen (15) working days after receipt of the submission. Work shall not be started on ground anchors, and no materials ordered until the Contractor's qualifications have been approved by the Engineer.

v. The Contractor shall assign an engineer to supervise the work with at least three (3) years of experience in the design and construction of permanent ground anchors. The Contractor may not use manufacturer's representatives in order to meet the requirements of this section. Drill operators and on-site supervisors shall have a minimum of one (1) year experience installing permanent ground anchors with the Contractor's organization. The Engineer may suspend the work if the Contractor substitutes unqualified personnel for approved personnel during construction. If work is suspended due to the substitution of unqualified personnel, the Contractor shall be fully liable for additional costs resulting from the suspension of work and no adjustment in contract time resulting from the suspension of work will be allowed.

vi. The Contractor shall prepare and submit to the Engineer for review and approval Shop Drawings describing the tieback system intended for use. The Shop Drawings and design submission shall include a ground anchor schedule including the following:
   1. Anchor number
   2. Anchor design load
   3. Anchor orientation
   4. Type and size of tendon
   5. Minimum total Anchor length
   6. Minimum bond length
   7. Minimum tendon bond length
   8. Minimum unbonded length
   9. Working and staging areas
   10. Layout drawings showing the sequence of anchor installation.

vii. A drawing of the anchor tendon and the corrosion protection system including details for the following:

1. Spacers and their location
2. Centralizers and their location
3. Unbonded length corrosion protection system
4. Bond length corrosion protection system
5. Anchorage and trumpet
6. Anchorage corrosion protection system.

viii. Certificates of Compliance for the following materials, if used. The certificate shall state that the material or assemblies to be provided will fully comply with the requirements of the contract:

1. Prestressing steel, strand or bar
2. Portland cement
3. Prestressing hardware
4. Bearing plates
5. Corrosion protection system.

ix. The Contractor shall submit to the Engineer for review and approval or rejection mill test reports for the prestressing steel and the bearing plate steel. The Engineer may require the Contractor to provide samples of any anchor material intended for use on the project. The Engineer shall approve or reject the prestressing steel and bearing plate steel within five (5) working days after receipt of the test reports. The prestressing steel and bearing plates shall not be incorporated in the work without the Engineer's approval.

x. The Contractor shall submit to the Engineer for review and approval calibration data for each test jack, load cell, primary pressure gauge and reference pressure gauge to be used. The Engineer shall approve or reject the calibration data within five (5) working days after receipt of the data. Testing cannot commence until the Engineer has approved the jack, load cell, primary pressure gauge and reference pressure gauge calibrations.

xi. The Contractor shall submit to the Engineer within twenty (20) calendar days after completion of the anchor work a report containing:

i. Prestressing steel manufacturer's mill test reports for the tendons incorporated in the installation;

ii. Grouting records indicating the cement type, quantity injected and the grout pressures;

iii. Anchor test results and graphs; and

iv. As-built drawings showing the location and orientation of each anchor, nominal anchor resistance, tendon type, total tieback length, bond length, unbonded length, and tendon bond length as installed.

The following Subsection is added:

501.022 Design Requirements

A. Sheet pile systems shall be designed in accordance with the following:

1. Sheet pile wall systems shall be designed in accordance with the current edition of AASHTO LRFD Bridge Design Specifications (LRFD) with interims. The design shall be for permanent applications. The calculations shall clearly state the amount of steel thickness provided for sacrificial loss due to corrosion.
2. The Contract Plans.
3. The requirements specified herein.
4. The manufacturer's requirements.

B. Ground anchors shall be designed in accordance with the following:
1. The Contractor shall be responsible for designing and installing the anchors to meet the requirements specified on the Contract Drawings and as presented herein. The Contractor shall be responsible for determining the unbonded length, bonded length necessary to develop adequate resistance to satisfy the resistances shown on the Contract Drawings and anchor load tests. Ground anchor systems shall be designed in accordance with the current edition of AASHTO LRFD Bridge Design Specifications (LRFD) with interims and Publication No. FHWA-IF-99-015, Geotechnical Engineering Circular No. 4 "Ground Anchors and Anchored Systems", June 1999. The design load provided in the Contract Drawings shall be along the axis of the anchor. The design shall be for permanent applications.
2. Unless otherwise directed, the Contractor shall select the type of tendon to be used. The tendon shall be sized in accordance with the design standards. The lock-off load for the tendon shall be 60 percent of the nominal resistance provided in the Contract Drawings.
3. The Contractor shall be responsible for determining the bond length necessary to develop the design load indicated on the Contract Drawings in accordance with this Specification, if the Contractor submits an alternative design. The minimum bond length shall be 15 ft for strand and bar tendons in soil.
4. The free stressing length (unbonded length) for ground anchors shall not be less than 15 feet. Sufficient clear spacing between the casing and the tendon shall be provided as shown on the Contract Drawings to minimize the additional stresses on the tendon due to ground settlement.
5.

The following Subsection is added:

501.041 Construction Methods

A. Earthwork

1. Any excavation and backfill shall be performed in accordance with Section 203, Excavation and Embankment, except as modified herein.

2. Obstructions encountered in pile locations shall be dealt with as follows:

a. All rocks, timbers, or other obstructions within 5 feet of the existing ground surface which interfere with pile advance shall be removed. Excavation and removal of obstructions shall be considered incidental to the permanent sheet pile wall pay item.

b. In the case of an apparent obstruction below the level in (a), but above anticipated full depth, which prevents appreciable penetration of a pile(s), the abnormal condition will receive further consideration by the Resident. Depending on depth and resistance of the obstruction, the Resident will decide whether to consider the pile(s) acceptable or order the obstruction removed. The decision may be deferred until the driving of adjacent piles indicates the obstruction to be isolated or extending over the area of several piles.

B. Sheeting Installation

1. Pile Hammer

For steel sheet piles, both a vibratory and an impact hammer shall be available to the Contractor to install the sheet piles. Use a pile hammer having a delivered force or energy suitable for the total weight of the pile and the character of subsurface material to be encountered. Operate hammer at the rate(s) recommended by the manufacturer throughout the entire driving period. The Contractor shall be responsible for repairing damage to piling caused by use of a pile hammer with excess delivered force or energy.

2. Pile Protection

Use a protective cap during driving to prevent damage to the top of the piles.

3. Templates for Sheet Piles

Prior to driving, provide a template or driving frame suitable for aligning, supporting, and maintaining sheet piling in the correct position during setting and driving. Use a system of structural framing sufficiently rigid to resist lateral and driving forces and to adequately support the sheet piling until design tip elevation is achieved. Provide at least two levels of support, at third points. Templates shall not move when supporting sheet piling. Fit templates with wood blocking to bear against the web of each alternate sheet pile and hold the sheet pile at the design location alignment. Provide outer template straps or other restraints as necessary to prevent the sheets from warping or wandering from the alignment. Mark template for the location of the leading edge of each alternate sheet pile. If in view, also mark the second level to ensure the piles are vertical and in position. If two guide marks cannot be seen, other means must be used to keep the sheet pile vertical along its leading edge.

4. Pile Driving

Drive sheet pile to the design tip elevations. Maintain piling vertical during driving. Drive piles in such a manner as to prevent damage to the piles and to provide a continuous closure. Where possible for sheet piles, drive Z-pile with the ball end leading. If an open socket is leading, a bolt or similar object placed in the bottom of the interlock will minimize packing

material into it and ease driving for the next sheet. Incrementally sequence the driving of individual piles such that the tip of any sheet pile shall not be more than 4 feet below that of any adjacent sheet pile.

Piles that have heaved more than ¼ inch during the driving of other piling shall be reseated to the required penetration at the Contractor's expense.

5. Cutting and Splicing

Piles driven to refusal or the point where additional penetration cannot be attained and are extending above the required top elevation in excess of the specified tolerance shall be cut off to the required elevation. Piles driven below the required top elevation and piles damaged by driving and cut off to permit further driving shall be extended as required to reach the top elevation by splicing when directed by the Resident. One splice per pile will be permitted. Splices are not permitted when they will be visible at or above the water surface. Piles adjoining spliced piles shall be full length unless otherwise approved. Welding of splices shall conform to the requirements of Section 504, Structural Steel. Ends of piles to be spliced shall be squared before splicing to eliminate dips or camber. Splice piles with concentric alignment of the interlocks so that there are no discontinuities, dips or camber at the abutting interlocks. Spliced piles shall be free sliding and able to obtain the maximum swing with contiguous piles. Trim the tops of piles excessively battered during driving, when directed, at no cost. Pile cut-offs shall become the property of the Contractor and shall be removed from the site. Use a straight edge in cutting by burning to avoid abrupt nicks. Bolt holes shall be drilled or may be burned and reamed by approved methods which will not damage the surrounding metal. Holes other than bolt holes shall be smooth and the proper size for rods or other items to be inserted. Do not use explosives for cutting.

6. Welding

Shop and field welding, qualifications of welding procedures, welders, and welding operators shall be in accordance with AWS D1.1.

7. Tolerances in Driving

Drive all sheet piles with a variation from vertical of not more than ¼ inch per foot. Place the pile so the face will not be more than 6 inches from vertical alignment at any point over the entire length of the earth retention system. Top of pile at elevation of cut-off shall be within 2 inches horizontally and 2 inches vertically of the location indicated. Manipulation of piles to force them into position will not be permitted. Check all piles for heave. Redrive all heaved piles to the required tip elevation at the Contractor's expense.

8. Backfilling

The Contractor shall backfill the space between the proposed sheet pile wall and the existing abutment(s) with aggregate meeting the requirements of Subsection 703.22 – Underdrain Backfill Material, Type C, up to within 6 inches of the top of the proposed wall. The Contractor shall assist the consolidation of the backfill by attaching to and

vibrating the piles with short bursts of a vibratory hammer as the backfill operation progresses. When backfilling is complete, the Contractor shall cover the Underdrain Backfill Material, Type C with 722.02 non-woven Drainage Geotextile and then place 703.29 Stone Ditch Protection over the geotextile. Underdrain Backfill Material, Type C; Drainage Geotextile; and Stone Ditch Protection shall be incidental to the sheet pile wall pay item.

C. Anchor Installation

1. Drilling
   i. Drilling methods shall be left to the discretion of the Contractor, whenever possible. The Contractor shall be responsible for using a drilling method to establish a stable hole of adequate dimensions, within the tolerances specified. Drilling methods may involve, amongst others, rotary, percussion, rotary/percussive or auger drilling; or percussive or vibratory driven casing;
   ii. Holes for tiebacks shall be drilled at the locations and to the length, inclination and diameter shown on the Contract Drawings or the approved Shop Drawings. The drill bit or casing crown shall not be more than 0.125 inch smaller than the specified hole diameter. At the ground surface the drill hole shall be located within 12 inches of the location shown on the Contract Drawings. The drill hole shall be located so the longitudinal axis of the drill hole and the longitudinal axis of the tendon are parallel. In particular, the tieback hole shall not be drilled in a location that requires the tendon to bend in order to enable the bearing plate to be connected to the supported structure. At the point of entry the tieback shall be installed within plus/minus three (3) degrees of the inclination from horizontal shown on the Contract Drawings. At the point of entry the horizontal angle made by the tieback and the structure shall be within plus/minus three (3) degrees of a line drawn perpendicular to the plane of the structure unless otherwise shown on the Contract Drawings or approved Shop Drawings;

2. Tendons Placement
   i. Drilling methods shall be left to the discretion of the Contractor, whenever possible. The Contractor shall be responsible for using a drilling method to establish a stable hole of adequate dimensions, within the tolerances specified. Drilling methods may involve, amongst others, rotary, percussion, rotary/percussive or auger drilling; or percussive or vibratory driven casing;
   ii. Each tieback tendon shall be inspected by field personnel and the CQA Inspector during installation into the drill hole or casing. Damage to the corrosion protection system shall be repaired, or the tendon replaced if not repairable. Loose spacers or centralizers shall be reconnected to prevent shifting during insertion. Damaged fusion-bonded epoxy coatings shall be repaired in accordance with the manufacturer's recommendations. If the patch is not allowed to cure prior to inserting the tendon in the drill hole, the patched area shall be protected by tape or other suitable means.
   iii. The rate of placement of the tendon into the hole shall be controlled such that the sheathing, coating, and grout tubes are not damaged during installation of the tendon. Tieback tendons shall not be subjected to sharp bends. The bottom end of the tendon may be fitted with a cap or bullnose to aid its insertion into the hole, casing, or sheathing.

3. Grouting
   i. The Contractor shall use a neat cement grout or a sand-cement grout. The cement shall not contain lumps or other indications of hydration. Admixtures, if used, shall be mixed in accordance with the manufacturer's recommendations.
   ii. The grouting equipment shall produce a grout free of lumps and undispersed cement. A positive displacement grout pump shall be used. The pump shall be equipped with a pressure gauge to monitor grout pressures. The pressure gauge shall be capable of measuring pressures of at least 20 ksf or twice the actual grout pressures used by the Contractor, whichever is greater. The grouting equipment shall be sized to enable the grout to be pumped in one continuous operation. The mixer should be capable of continuously agitating the grout.
   iii. The grout shall be injected from the lowest point of the drill hole. The grout may be pumped through grout tubes, casing, hollow-stem-augers, or drill rods. The grout can be placed before or after insertion of the tendon. The quantity of the grout and the grout pressures shall be recorded. The grout pressures and grout takes shall be controlled to prevent excessive heave or fracturing.
   iv. After the tendon is installed, the drill hole may be filled in one continuous grouting operation except that pressure grouting shall not be used in the free length zone. The grout at the top of the drill hole shall not contact the back of the structure or the bottom of the trumpet.
   v. The grout tube may remain in the hole on completion of grouting if the tube is filled with grout.
   vi. After grouting, the tendon shall not be loaded for a minimum of three (3) days.;

4. Anchor Installation
   i. The tieback bearing plate and the anchor head or nut shall be installed perpendicular to the tendon, within plus/minus three (3) degrees and centered on the bearing plate, without bending or kinking of the prestressing steel elements. Wedge holes and wedges shall be free of rust, grout, and dirt.
   ii. The stressing tail shall be cleaned and protected from damage until final testing and lock-off. After the tieback has been accepted by the Engineer, the stress tail shall be cut to its final length according to the tendon manufacturer's recommendations.
   iii. The corrosion protection surrounding the unbonded length of the tendon shall extend up beyond the bottom seal of the trumpet or 4 inches into the trumpet if no trumpet seal is provided. If the protection does not extend beyond the seal or sufficiently far enough into the trumpet, the Contractor shall extend the corrosion protection or lengthen the trumpet.
   iv. The corrosion protection surrounding the unbonded length of the tendon shall not contact the bearing plate or the anchor head during testing and stressing. If the protection is too long, the Contractor shall trim the corrosion protection to prevent contact.

D. Inspection

Perform continuous inspection during pile driving by frequent optical surveying of the pile alignment relative to an established reference base line. Inspect all piles for compliance with tolerance requirements regarding horizontal and vertical alignment. Bring any unusual problems which may occur to the attention of the Resident.

1. Inspection of Driven Piling

   The Contractor shall inspect the interlocks of the portion of driven sheet piles that extend above ground. Remove and replace piles found to be out of interlock at no expense to the Authority.

2. Pulling and Redriving

   The Contractor may be required to pull selected piles after driving to bring into location tolerance, or to determine the condition of the underground portions of piles. The pile pulling method must be approved by the Resident. Remove and replace at the Contractor's expense any pile pulled and found to be damaged to the extent that its usefulness in the structure is impaired. Redrive piles pulled and found to be in satisfactory condition.

3. Installation Records

   Maintain a pile driving record for each pile. Indicate on the installation record installation dates and times, type and size of hammer, rate of operation, total driving time, dimensions of driving helmet and cap used, blows or time required per foot for each foot of penetration, driving resistance in blows for final 6 inches of penetration if driven, pile locations, tip elevations, ground elevations, and cut-off elevations. Record any unusual pile driving problems. Submit complete records to the Resident.

E. Load Testing

1. Each tieback shall be tested. No load greater than ten (10) percent of the design load can be applied to the tieback prior to testing. The load test shall be conducted to the design load and as per the direction of the Engineer. The design load shall not exceed 80 percent of the specified minimum ultimate tensile strength of the prestressing steel of the tendon. The test load shall be simultaneously applied to the entire tendon. Stressing of single elements of multi-element tendons shall not be permitted.
2. Five (5) percent of the tiebacks or a minimum of two (3) tiebacks, whichever is greater, shall be performance tested in accordance with the procedures described below. The Engineer shall select the tiebacks to be performance tested. The remaining tiebacks shall be tested in accordance with the proof test procedures (see Part 6.05). Performance testing shall be completed prior to installation of tiebacks requiring only proof testing. The Contractor shall perform any modifications required to bond length or the tieback dimensions within seven (7) days following the last performance test. Revised design calculations shall be resubmitted to the Engineer following any modifications to bond length or tieback dimensions.

3. The performance test shall be made by incrementally loading and unloading the tieback in accordance with the schedule provided. The load shall be raised from one increment to another immediately after recording the tieback movement. The tieback movement shall be measured and recorded to the nearest 0.001 inch with respect to an independent fixed reference point at the alignment load and at each increment of load. The load shall be monitored with the primary pressure gauge. The reference pressure gauge shall be placed in series with the primary pressure gauge during each performance test. If the load determined by the reference pressure gauge and the load determined by the primary pressure gauge differ by more than ten (10) percent, the jack, primary pressure gauge and reference pressure gauge shall be recalibrated at no expense to MNR. At load increments other than the maximum test load, the load shall be held just long enough to obtain the movement reading.
4. The maximum test load in a performance test shall be held for ten (10) minutes. A load cell shall be used to monitor small changes in load during constant load-hold periods.
5. The jack shall be adjusted as necessary in order to maintain a constant load. The load-hold period shall start as soon as the maximum test load is applied and the tieback movement, with respect to a fixed reference, shall be measured and recorded at 1 minute, 2, 3, 4, 5, 6 and 10 minutes. If the tieback movement between one (1) minute and ten (10) minutes exceeds 0.04 inch, the maximum test load shall be held for an additional 50 minutes. If the load hold is extended, the ground anchor movement shall be recorded at 15 minutes, 20, 30, 40, 50 and 60 minutes.
6. The proof test shall be performed by incrementally loading the tieback in accordance with the following schedule. The load shall be raised from one increment to another immediately after recording the tieback movement. The tieback movement shall be measured and recorded to the nearest 0.001 inch with respect to an independent fixed reference point at the alignment load and at each increment of load. The load shall be monitored with the primary pressure gauge. At load increments other than the maximum test load, the load shall be held just long enough to obtain the movement reading.
7. The maximum test load in a proof test shall be held for ten (10) minutes. The jack shall be adjusted as necessary in order to maintain a constant load. The load-hold period shall start as soon as the maximum test load is applied and the tieback movement with respect to a fixed reference shall be measured and recorded at 1 minute, 2, 3, 4, 5, 6 and 10 minutes. If the tieback movement between one (1) minute and ten (10) minutes exceeds 0.04 inch, the maximum test load shall be held for an additional 50 minutes. If the load hold is extended, the tieback movements shall be recorded at 15 minutes, 20, 30, 40, 50 and 60 minutes.

F. Tieback Acceptance Criteria

1. A performance-tested or proof-tested tieback with a 10 minute load hold shall be acceptable if the:
    a. Tieback resists the maximum test load with less than 0.04 inch of movement between 1 minute and 10 minutes;
    b. Total elastic movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length.
2. A performance-tested or proof-tested tieback with a 60 minute load hold shall be acceptable if the:
    a. Tieback resists the maximum test load with a creep rate that does not exceed 0.08 inch the last log cycle of time;

b. Total elastic movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length.

3. A tieback subjected to extended creep testing is acceptable if the:
   a. Tieback resists the maximum test load with a creep rate that does not exceed 0.08 inch the last log cycle of time;
   b. Total elastic movement at the maximum test load exceeds 80 percent of the theoretical elastic elongation of the unbonded length.
4. The initial lift-off reading shall be within plus or minus five (5) percent of the designed Lock-Off Load. If this criterion is not met, then the tendon load shall be adjusted accordingly and the initial lift-off reading repeated.
5. Tiebacks that do not satisfy the minimum apparent free length criteria shall be either rejected and replaced at no additional cost to Maine DOT or locked off at not more than 50 percent of the maximum acceptable load attained. In this event, no further acceptance criteria are applied.
6. In the event that a tieback fails, the Contractor shall perform modifications which may include, but are not limited to, installing additional tiebacks, modifying the installation methods, reducing the tieback design load by increasing the number of tiebacks, increasing the tieback length, or changing the tieback type. Any modification of design or construction procedures shall be at no change in the contract price. A description of any proposed modifications must be submitted to the Engineer in writing. Proposed modifications shall not be implemented until the Contractor receives written approval from the Engineer.

G. Tieback Lock-Off

1. After testing has been completed, the load in the tendon shall be such that after seating losses (i.e., wedge seating), the specified lock-off load has been applied to the tieback tendon. The lock-off load is specified on the Contract Drawings.
2. The magnitude of the lock-off load shall be specified by the Engineer, and shall not exceed 70% nominal resistance.
3. The wedges shall be seated at a minimum load of 50% nominal resistance. If the lock-off load is less than 50% nominal resistance, shims shall be used under the wedge plate and the wedges seated at 50% nominal resistance. The shims shall then be removed to reduce the load in the tendon to the desired lock-off load. Bar tendons may be locked off at any load less than 70% nominal resistance.

Amend Standard Specification Subsection 501.11 with the following:

501.11 Method of Measurement

The accepted work associated with all permanent steel sheet piling, installing ground anchors, installing walers, and performing load tests will be measured as one lump sum, completed in place.

Amend Standard Specification Subsection 501.12 with the following:

501.12 Basis of Payment

The accepted quantity of steel sheet piling with ground anchors will be paid for at the contract lump sum price. The price shall be full compensation for fabrication/supplying, transporting, storing, handling, placing and erecting the material specified including installing sheet piles and all related hardware, installing ground anchors and all related hardware, installing walers and all related hardware, installation and removal of any temporary bracing, installation and removal of pile driving template, removal and disposal of any obstructions, and performance and proof load testing.

Full compensation for all drilling, providing special driving tips, disposing of material resulting from drilling holes, or other work necessary to obtain the specified penetration of the sheet piles as shown on the Plans or as designed, as specified in the Standard Specifications and the Special Provisions, and as directed by the Resident shall be considered included in the contract unit price paid for steel sheet piling and no additional compensation will be allowed.

Payment will be made under:

Pay Item		Pay Unit
501.301	Steel Sheet Piling - MCRR	Lump Sum

SPECIAL PROVISION

SECTION 504

STRUCTURAL STEEL

504.03 Drawings

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.

This work shall also include the inspection of all welded cover plate ends for cracks at the Stroudwater River Overpass (NB & SB) bridges and Maine Central Railroad Overpass (NB & SB) bridges.

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.

504.53 Inspection

This Subsection is amended by the addition of the following:

The Contractor shall inspect all flange cover plate welded ends for cracks using methods described below. It should be noted that some cover plates are encased in the concrete deck and will need to be inspected once the deck has been removed. Cracks discovered shall be reviewed by the Resident, and repairs shall be made as directed by the Resident.

Inspection effort shall first include the visual inspection of all cover plate end welds. Suspected areas of cracking shall be called to the attention of the Resident and inspected using dye penetrant (ASTM E 165), magnetic particle (ASTM E 709), or other approved non-destructive testing method in accordance with Section 6 of the AASHTO/AWS D1.5 Bridge Welding Code.

An inspection plan shall be submitted for review prior to inspections and shall include the frequency at which visual inspections are to be performed and the proposed non-destructive method to be used where cracks are suspected. If any cracks are found a repair plan shall be submitted for review prior to repairs.

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.

There will be no additional payment for the required inspections. The cost shall be incidental to the Structural Steel Erection pay item. If any crack repairs are required, they shall be paid on a time and materials basis.

SPECIAL PROVISION

SECTION 504

STRUCTURAL STEEL

(Peening Cover Plate Welds)

This Section is amended by the addition of the following:

504.01 Description

This work shall consist of peening welds at the ends of cover plates and at additional weld locations designated on the Plans and/or as directed by the Resident.

504.02 Materials

Tools for the peening operation shall conform to the following:

1. Peening Tool: The peening tool shall be shaped from a high grade carbon steel rod and the tip shall conform to the dimensions as shown on the plans. All sharp edges and burrs shall be ground smooth and the tool, including geometric configuration of same, shall be maintained in this condition at all times. The peening tool and techniques for usage shall be approved by the Resident prior to commencement of the work.

2. Pneumatic Hammer: A small pneumatic hammer capable of supplying a pressure of 25 psi shall be used.

504.26 Welding

Peening Construction Requirements

Welds shall be peened to the limits shown on the plans. Peening shall be performed with the use of a peening tool as indicated herein and on the plans. Peening shall be continued until the weld toe becomes smooth. Depth of indentation due to peening shall be approximately 1/32” to 1/16”. Lightly grind the peened surface to remove any lap marks.

Peening shall be performed with a small pneumatic hammer. Best results will be obtained by operating the pneumatic hammer at approximately 25 psi.

Peened areas shall be painted in accordance with the item “Field Touch-Up of Existing Steel”

504.65 Method of Measurement

This work will be measured for payment by the actual number of peened weld locations completed and accepted. Each shall be considered each end of the cover plates.

504.66 Basis of Payment

This work will be paid at the contract unit price each for "Peening Cover Plate Welds" completed and accepted which price shall include peening welds at the ends of cover plates and all other weld locations designated on the plans and all materials, tools, equipment, labor and work incidental thereto.

Painting of peened welds will be paid separately under the item "Field Touch-Up of Existing Steel"

Payment will be made under:

Pay Item		Pay Unit
504.7111	Peening Cover Plate Welds	EA

SPECIAL PROVISION

SECTION 506

SHOP APPLIED PROTECTIVE COATING - STEEL

(Zinc Rich Coating System – 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 primed or surfaces that are recoated without notification of the QAI will be rejected and no further coating shall be done on the piece. Coating applied without notification of the QAI will be investigated by destructive and non-destructive testing as approved by the Resident and by a review of the JCR. The Resident may reject, conditionally accept, or accept the coating based on documentation and test results. Rejected coating shall be removed and re-applied. Conditionally accepted coatings shall be made acceptable as approved by the Resident. The cost of additional testing and repairs shall be borne by the Contractor.

At the completion of the shop coating the completion date (month and year), NTPEP System No. (provided on the NEPCOAT Qualified Products List), the type of coating system used (Inorgnic Zinc = IOZ, Organic Zinc = OZ), and top coat federal color number shall be stenciled on the inside of the fascia beams, at the locations designated by the Resident, in four inch letters and numbers (for example: 6/05, SSC(09)-01, IOZ, Fed Color #30045). The paint used for this marking shall be white or black (whichever provides greater contrast) polyurethane or such other paint as may be approved by the Resident.

506.11 Materials

This first paragraph is deleted and replaced with the following:

Coatings systems shall be from the Northeast Protective Coating Committee (NEPCOAT) Qualified Products List (QPL), list A. The list may be found through NEPCOAT's web page: http://www.nepcoat.org.

506.17 Handling and Storage

This section is amended by the addition of the following:

The coating 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 shop coating 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.

SPECIAL PROVISION

SECTION 506

PAINTING STRUCTURAL STEEL

(Field Touch-Up of Existing Steel)

506.01 Description

Field touch-up shall be limited to cleaning and painting the newly exposed faying surfaces on the connection angles resulting from removal of the existing bearings and addition of diaphragms. This work includes the preparation of existing steel followed by the application of a cold galvanizing compound in accordance with the Plans and these Specifications.

506.02 Materials

Materials shall comply with the requirements in the respective subsections of this Specification.

506.03 Submittals

The Contractor shall submit for review by the Authority a materials' list, and other such details as described within the Plans and the respective subsections of this Specification.

506.04 General Requirements

Requirements for the type of protective coating to be furnished are as follows:

- Galvanizing — Subsections 506.10 through 506.19

506.22 Limits of Work

a) Field painting of existing steel surfaces

All areas of steel and deteriorated paint exposed by the removal of the existing bearings and addition of diaphragms shall be painted regardless of whether they will be covered or obscured by new steel components. The area of surface preparation and field touch-up shall extend a minimum of 3" beyond the limits of the faying surface.

506.23 Surface Preparation

a) Field touch-up of existing steel surfaces

Existing surfaces to be field painted shall be cleaned to meet the requirements of SSPC-SP 3, or the coating manufacturer's published recommendations, whichever is the more stringent, prior to the application of paint. SSPC VIS 3 shall be used to determine acceptable cleanliness (unless a more stringent cleanliness is required in which case the more stringent visual standard

shall govern). The QCI and QAI shall evaluate the first piece using VIS 3 as a comparator. No further cleaning shall be done until the QCI and QAI agree upon the acceptable Job Standard for cleanliness. If more than one method of cleaning is used (e.g., power sanders and needle guns), the acceptable Job Standard shall be established for each method.

The allowable time between cleaning and coating application shall not exceed the manufacturer's published recommendations.

506.26 Repairs

Damaged or unacceptable coatings shall be repaired in accordance with the manufacturer's published instructions or as approved by the Resident. Damaged or unacceptable coatings shall be repaired using the same coating removed and prepared for repair. Environmental conditions, cure times and DFTs shall be in accordance with manufacturer's published directions for the coating being applied. Repairs to topcoat shall result in a uniform gloss and color match. The Resident shall have final authority concerning acceptable appearance.

506.90 Method of Measurement

Field Touch-Up of Existing Steel shall be measured by the lump sum method, complete and accepted. The limits shall be as shown on the Plans or as described within the respective subsections.

Galvanizing will not be measured separately for payment, but shall be incidental to the item being galvanized.

506.91 Basis of Payment

All work for Field Touch-Up of Existing Steel will be paid for at the lump sum price for the respective item. Payment will be full compensation for all work and materials needed to complete the item; coating and cleaning materials, testing, labor, surface preparation, cleaning, application, curing and repairs to coating.

Payment will be made under:

Pay Item		Pay Unit
506.9105	Field Touch-Up of Existing Steel - Stroudwater	Lump Sum
506.9105	Field Touch-Up of Existing Steel - MCRR	Lump Sum

SPECIAL PROVISION

SECTION 506

PAINTING STRUCTURAL STEEL

506.01 Description

This work shall consist of field applying two coats of cold galvanizing to the bare steel exposed by the bearing cleaning required in the Plans and in accordance with this Specification.

506.02 Materials

The proposed cold galvanizing compound shall contain 95% metallic zinc by weight in the dried film.

506.03 Submittals

The Contractor shall submit for review by the Authority a materials list and other such details as described within the Plans and the respective subsections of this Specification.

506.04 Inspection

Quality Control (QC) is the responsibility of the Contractor. The Quality Control Inspector (QCI) shall inspect all aspects of the work and shall supervise required testing.

Quality Assurance (QA) is the prerogative of the Authority. The Resident will ensure that the QC function is performed properly, verify documentation, periodically inspect workmanship and witness testing. QA testing deemed necessary by the Resident, in addition to the minimum testing requirements, shall be scheduled to minimize interference with the production schedule.

506.05 Inspector's Authority

The Resident will have the authority to reject material or workmanship that does not meet the Contract requirements.

506.06 Rejections

Rejected material and workmanship shall be corrected or replaced by the Contractor in accordance with Subsection 106.8.2 of the Standard Specifications.

506.07 Limits of Work

All areas of existing steel exposed by the removal of existing protective coatings shall receive two layers of cold galvanizing compound as noted herein.

The application of cold-galvanizing compound shall, at a minimum, extend six inches beyond the limits of paint removal and cover all areas of bare steel exposed as part of this contract.

506.08 Surface Preparation

Prior to cleaning, all corners and edges of members and plates, whether rolled cut or sheared, exposed in the assembled product shall be rounded to approximately 1/8 inch radius. A series of tangents to the approximate radius will be considered as rounded

Surfaces to be field painted shall be cleaned to meet the requirements of SSPC-SP 3 prior to the application of paint. SSPC VIS 3 shall be used to determine acceptable cleanliness. If more than one method of cleaning is used (e.g., power sanders and needle guns), an acceptable job standard shall be established for each method. All surfaces shall be solvent wiped in accordance with SSPC-SP1 immediately prior to application of the protective coating.

The allowable time between cleaning and coating application shall not exceed the manufacturer's published recommendations.

506.09 Application

Cold galvanizing compound shall be applied by roller or brush in accordance with the manufacturer's recommendations.

Thinning and mixing of coatings shall be in conformance with the manufacturer's published instructions. Thinner shall be measured using a graduated cup or other container that clearly indicates the amount of thinner being added. Mixing shall be done using the method, equipment and for the amount of time recommended by the coating manufacturer.

All protective coatings shall be applied in accordance with the manufacturer's published recommendations. Environmental conditions in the immediate vicinity of the surfaces to be coated shall be within the range of the manufacturer's published requirements both during the coating operation and during the curing period. Primer shall not be force cured.

The Resident 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-Construction meeting depending on shop or site conditions.

Substrates that are primed or surfaces that are recoated without notification of the Resident will be rejected and no further coating shall be done on the piece. Rejected coating shall be removed and re-applied. The cost of repairs shall be borne by the Contractor.

506.11 Repairs

Damaged or unacceptable coatings within the limits of paint removal shall be repaired. Damaged areas shall be prepared in accordance with the manufacturer's published instructions or as approved by the Resident. The Resident shall have final authority concerning acceptable appearance.

506.12 Method of Measurement

The application of protective coatings will not be measured for payment separately, but shall be considered incidental to the related contract items.

SPECIAL PROVISION

SECTION 507

RAILINGS

507.09 Basis of Payment

Payment will be made under:

Pay Item		Pay Unit
507.091	Aluminum Bridge Railing, 1 Bar - Stroudwater	Lump Sum
507.091	Aluminum Bridge Railing, 1 Bar - MCRR	Lump Sum
507.092	Aluminum Bridge Railing, 2 Bar	Lump Sum

SPECIAL PROVISION

SECTION 511

COFFERDAMS

(Cofferdam)

511.03 Cofferdam Construction

The first paragraph is deleted and replaced with the following:

A. Working Drawings. The Contractor shall submit Working Drawings, showing the materials to be used and the proposed method of construction of cofferdams to the Department. All cofferdam design computations, plans, and working drawings shall be designed and sealed by a Professional Engineer, who must be licensed in accordance with the laws of the State of Maine. Construction shall not start on cofferdams until such Working Drawings have been submitted, reviewed and accepted by the Resident. Any review of or comment on, or any lack of review of or comment on, these Working Drawings by the Authority shall not result in any liability upon the Authority and it shall not relieve the Contractor of the responsibility for the satisfactory functioning of the cofferdam.

The temporary earth retaining structures shall be designed to support all appropriate combinations of earth, static water, stream pressure, ice loads and surcharge loads (from traffic, construction equipment, material stockpiles, and other sources) imposed on the system during all phases of construction. The Contractor's design shall consider the means and methods and construction sequencing proposed by the Contractor The height of the cofferdam and the depth of the seal concrete shall be determined by the Contractor's Engineer. The working drawings shall indicate the water elevation above which the cofferdam should be flooded to avoid overloading.

Design computation shall be in accordance with the requirement of either the AASHTO Standard Specifications for Highway Bridges, 17th edition, or the AASHTO LRFD Bridge Design Specifications, Latest Edition. Additionally, the Contractor's Engineer shall design the cofferdam to conform to all Federal, State, County and Local Regulations and Permits.

SPECIAL PROVISION

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 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. Temporary earth support structures do not require seal concrete.

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, 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 Authority shall not result in any liability upon the Authority 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, 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 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], 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 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, crushed stone. 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		Pay Unit
511.091	Temporary Earth Support Systems - Stroudwater	Lump Sum
511.091	Temporary Earth Support Systems - MCRR	Lump Sum

SPECIAL PROVISION

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 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 40ºF or above 90ºF. The work shall not be conducted when there is a chance of the surface temperature falling below 40ºF 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

SPECIAL PROVISION

SECTION 515

PROTECTIVE COATING FOR CONCRETE SURFACES

(Anti-Graffiti Coating)

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

515.01 Description

This work shall include the surface preparation and application of anti-graffiti protective coating to existing substructure concrete surfaces. The coating system shall be applied to all exposed substructure surfaces in accordance with the Plans, Specifications and the manufacturer's published recommendations.

This work also includes providing, cleaning, coating and curing a test area on one of the existing substructure units to ensure product suitability, number of coats required and that the desired results have been achieved.

515.02 Materials

The protective coating shall be Si-COAT 531 Spray Grade Anti-Graffiti Protective Coating, as manufactured by CSL Silicones, Inc. The Contractor shall submit CSL Silicones product data sheets, material safety data sheets and recommended instructions for application of the Si-COAT 531 to the Resident.

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

515.021 Substitute Materials

No material substitutions will be allowed for this item.

515.03 Surface Preparation

The selected surfaces shall be thoroughly cleaned of dust, dirt, grease, oil, loose materials or other objectionable materials before applying the coating. Cleaning shall be completed by pressure washing in accordance with the manufacturer's written instructions. Sandblasting will not be permitted. The coating shall be applied as soon as practicable after cleaning is completed. If in the opinion of the Resident, the surface has become soiled or otherwise contaminated prior to the application of the coating, the surface shall be recleaned at no additional cost.

515.04 Application

A test area on one of the substructure units to be coated shall be performed measuring a minimum of 4 feet by 4 feet, cleaned, coated and cured to ensure product suitability, number of

coats required and that the desired results have been achieved. The test area and final results shall be inspected and approved by the Resident prior to applying the coating to the remaining substructure units.

The Contractor shall apply the coating in strict accordance with these specifications and the manufacturer's published recommendations, whichever is more stringent.

Application of the protective coating shall not be conducted when surface and air temperatures are below 40°F. The environmental temperature shall be at least 5°F above the dew point prior to and during application. 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.

The coating shall not be applied during rain, to damp or wet surfaces, or when there is a chance of rain within 24-hours after application.

The coating shall not be applied when winds are sufficient to carry airborne coating to unprotected surfaces.

Prior to applying the coating the Contractor shall protect all surrounding surfaces not designated to receive anti-graffiti coating from accidental coating due to overspray or drifting.

The material shall be applied in a single coat using an airless sprayer taking care to evenly coat all pores and textured areas. The material shall be applied as packaged without dilution or alteration. A uniform application rate shall be used that provides a 12.5 mils DFT coating thickness.

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

515.05 Method of Measurement

Anti-Graffiti Coating will be measured for payment by the square yard satisfactorily applied and accepted.

No separate measurement will be made for providing, cleaning, and coating test area.

515.06 Basis of Payment

Anti-Graffiti Coating 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 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 Anti-Graffiti Coating pay item.

Providing, cleaning, and coating test area will not be measured separately for payment, but shall be incidental to the Anti-Graffiti Coating pay item.

Payment will be made under:

Pay Item		Pay Unit
515.23	Anti-Graffiti Coating	Square Yard

SPECIAL PROVISION

SECTION 518

STRUCTURAL CONCRETE REPAIR

(Epoxy Injection Crack Repair)

518.01 Description

The following paragraphs are added:

The work includes epoxy injection crack repair as described below.

- Epoxy Injection Crack Repair includes all concrete crack widths in the concrete equal to or greater than 0.06 inches as shown on the plans or identified by the Resident.

518.02 Repair Materials

The following paragraphs are added:

Epoxy injection crack repairs shall be completed using a high strength, low viscosity moisture tolerant epoxy resin as recommended by the manufacturer and approved by the Resident. The proposed repair materials shall be submitted to the Resident for approval.

The structural properties of all crack repair materials shall meet or exceed the following requirements:

Tensile Strength (@ 7 days)	5,000 psi	ASTM D638
Bond Strength (@ 14 days)	1,000 psi	ASTM C882
Compressive Strength (@ 3 days, 73 °F)	5,000 psi	ASTM D695
Compressive Modulus (@ 7 days)	250 ksi	ASTM D695
Flexural Strength (@14 days)	8,000 psi	ASTM D790

The Contractor shall submit the product data sheets, material safety data sheets and recommended instructions for application of the proposed material.

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

Wide cracks (1/2" +/- and greater) may be repaired with a non-shrink cementitious grout as recommended by the manufacturer. The following product shall be used:

- CONSPEC UW300 as manufactured by Dayton Superior, 7777 Washington Village Drive, Suite 130, Dayton OH, 45459

The following Subsection is added:

518.071 Placing Epoxy Injection Materials

Preparation:

d) The crack to be repaired and its surrounding surface, within three inches along each side shall be free of oil, solvent, grease, dirt, loose particles, laitance, and foreign matter
e) Cleaning of the crack shall be performed by air blasting, wire brush, and scrapers or other methods approved by the Resident.
f) Place injection ports along the crack using a high-modulus epoxy adhesive ensuring that the injection ports are spaced no more than six inches apart and that the opening of the injection port is not covered by the epoxy.
g) The Resident shall approve the prepared crack prior to applying the sealer.

Application:

a) Mix epoxy components per manufacturer's instructions. Review pot life characteristics of combined materials and prepare quantities accordingly;
b) Open all injection ports along the crack and ensure that all injection ports are securely fastened to the concrete substrate;
c) Attach injection device to the first port in the series on horizontal cracks;
d) Slowly and under constant pressure, inject the epoxy material into the first port until the epoxy flows out of the next port in the series. While maintaining constant pressure and flow at the first port, close the adjacent port and continue injection process until epoxy flows from the subsequent port in the series, or until no additional epoxy can be injected into the first port.
e) Seal the crack with epoxy adhesive using a small trowel, by pushing the epoxy into the crack and then feathering the surface so that the epoxy forms a raised profile over the crack and bonds to the adjacent concrete surface.
f) Repeat the above procedure until all ports have been injected.
g) The epoxy adhesive shall cure for the minimum duration recommended by the manufacturer.
h) The sealant shall not be applied during rain to wet surfaces or when there is a chance of rain within 24-hours after application.

518.10 Method of Measurement

The following paragraphs are added:

The quantity of Epoxy Injection Crack Repair will be measured by the linear foot.

518.11 Basis of Payment

The following paragraphs are added:

Epoxy Injection Crack Repair will be paid at the Contract unit bid price per linear foot for each repair; which price shall include, but not necessarily be limited to, removal and disposal of materials, cleaning existing concrete, furnishing and installing pressure injection system, placing,

curing and finishing epoxy and all materials, labor, equipment, tools and incidentals necessary to complete the work.

Payment will be made under:

Pay Item		Pay Unit
518.40	Epoxy Injection Crack Repair	Linear Foot

SPECIAL PROVISION

SECTION 520

EXPANSION DEVICES – NON MODULAR

(Locking Compression Seal with Steel Edge Beams)

520.01 Description

The following sentence is added:

Seals for locking compression seal expansion devices shall be Watson Bowman Acme "D" Series.

520.02 Materials

The following sentence is added:

Materials for locking compression seals shall meet the material requirements of Expansion Device - Compression Seal specified in this Subsection except the joint shall be a Watson Bowman Acme "D" Series Locking Compression Seal.

520.06 Installation

The following is added after the first paragraph:

On phased construction projects, the locking compression seal shall be installed in one piece after the joint armor is installed for all construction phases. The Contractor shall schedule the installation of the work when the ambient temperature allows the bridge steel to contract sufficiently so the locking compression seal may be installed without damage.

Once the compression seal is permanently installed, the Contractor shall thoroughly clean the abutment concrete, bearings, and girder ends by pressure washing to remove any debris, salt, or other foreign contaminants.

520.08 Basis of Payment

The following sentence is added:

Payment for pressure washing the abutment seats after seal installation will not be made directly, but shall be incidental to the Expansion Joint pay item.

Payment will be made under:

Pay Item		Pay Unit
520.221	Expansion Device – Locking Compression Seal with Steel Edge Beams	Each

SPECIAL PROVISION

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 waterproofing membrane, all temporary header(s) installed with the intent to form the asphaltic plug joint channel, and all preparation required for the installation of the asphaltic plug joint.

This work shall also include having the approved manufacturer provide a qualified technical representative to supervise the installation of the joint systems. The representative 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 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.

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

Thorma-Joint	Wabo Expandex	Matrix 502
Surface Dynamics, Ltd.	Watson Bowman ACME	D.S. Brown
373 Village Road	95 Pineview Drive	300 East Cherry Street
Pennsdale, PA 17756	Amherst, New York 14228	North Baltimore, OH 45872

Fibrejoint
Fibrecrete Preservation
Technologies
131 St. James Way
Mount Airy, NC 27030

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, %	700 min.	ASTM D3583
Ductility @ 77°F, inch	40 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, %	40 to 70	ASTM D3407
Asphalt Compatibility @ 140°F	Pass	ASTM D3407
Recommended Pouring Temperature, °F	380 to 390	
Safe Heating Temperature, °F	400 min.	

(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 having the following properties:

PROPERTY	REQUIREMENT	TEST METHOD
Density, lb/ft^3	2.0 min.	ASTM D1622
Tensile Strength, psi	20 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 granite or basalt, and meet the ASTM C33 Size No. 6 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 with new hot mix asphalt placements to avoid unnecessary saw cuts and 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.

Unless otherwise specified by the asphaltic plug joint system manufacturer, liquid asphalt binder meeting the requirements of a 64-28 or 58-28 PGAB shall be sued to coat the membrane and bridging plate surfaces.

The binder shall be heated to 350°F to 410°F, or 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, but no greater than 410°F. It shall be poured and leveled into expansion joint openings until overfilled, and the excess binder spreads over the area covered by the bridging plates.

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. The 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.

Asphaltic plug joint system aggregate shall be heated in a rotating drum mixer to a minimum of 350°F but no greater than 410°F, or as recommended by the manufacturer. 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

The Expansion Device - 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 Expansion Device - Asphaltic Plug Joint pay item.

520.06 Basis of Payment

The asphaltic plug joint system 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 Expansion Device - Asphaltic Plug Joint as shown on the Plans, in accordance with these Specifications, and as directed by the Resident.

The backer rod, closed cell foam, all patching needed for the waterproofing membrane, 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 Expansion Device - Asphaltic Plug Joint pay item.

Payment will be made under:

Pay Item		Pay Unit
520.23	Asphaltic Plug Joint	Linear Foot

SPECIAL PROVISION

SECTION 523

BEARINGS

(Clean and Paint Bearing)
(Clean, Paint, and Reset Bearing)

523.01 Description

The following paragraphs are added:

Clean and Paint Bearing shall consist of inspecting and cleaning the existing steel bearing assemblies (masonry plates, rocker bearings and sole plates) to remain at the locations described on the Plans and painting them to the satisfaction of the Resident.

Clean, Paint, and Reset Bearing shall consist of inspecting and cleaning the existing steel bearing assemblies (masonry plates, rocker bearings and sole plates), painting, and resetting the locations as shown on the Plans and to the satisfaction of the Resident. This will generally include cleaning, painting, resetting, and replacement of any pintels deemed unacceptable, adding shim plates with similar horizontal dimensions to the sole plates to maintain the existing bearing heights after cleaning, and replacing any missing keeper plates. If machine finishing of contact surfaces is determined to be necessary by the Resident, payment will be calculated under Subsection 109.7.5 Force Account Work.

523.02 Materials

The following paragraphs are added:

All new steel required to rehabilitate the existing bearings shall conform to AASHTO M270 Grade 36.

The following Subsection is added:

523.095 Clean and Paint Bearing

Each bearing shall be cleaned by removing rust, debris and other foreign materials, including lead from the exposed surfaces, jacking is prohibited. These bearing surfaces shall be cleaned to an SSPC-SP3 surface finish.

Removal of lead based paint shall be in accordance with Subsection 105.2, Health and Safety. The Contractor shall submit a lead based paint removal plan to the Resident for approval prior to the start of the work.

Once each bearing is cleaned the Contractor shall apply two coats of zinc rich cold galvanizing paint in accordance with Special Provision 506 Painting Structural Steel.

The following Subsection is added:

523.096 Clean, Paint, and Reset Bearing

The bearings shall be cleaned and painted as specified in Section 523.095 above. Additionally, the bearings shall be temporarily removed and reset as required on the Plans. Prior to jacking of the girder to remove the sole plate and rocker for inspection, cleaning, and resetting, the Contractor shall measure and document the height of each bearing from bottom of masonry plate to top of sole plate. After cleaning of the bearing is complete, shim plates (no more than two plates to be used in one location) shall be added between the sole plate and girder to re-establish the bearing height measured. The soleplate and shims shall be reattached to the girder using galvanized ASTM A325 high strength bolts matching the diameter of the existing rivets removed

The Contractor shall provide a jacking system and a temporary support system with the capacity to lift and support the design reactions provided on the Plans. Refer to Special Provision 524, Temporary Structural Support for additional information.

Extreme care shall be exercised during the removal of existing bearing components to avoid damaging the existing structure to remain. Any portion of the existing structure damaged by the Contractor shall be repaired in accordance with Section 504.412(e).

The following Subsection is added:

523.097 Rivet Removal

1. Rivet removal and replacement with high-strength bolts shall be completed as follows:

    i. The removal of all rivets shall be completed in accordance with Special Provision 105.2.4.2 , Lead Paint.

    ii. Where the rivet head bears directly on a primary girder component (e.g. girder web or flange) the rivet shall be removed by drilling, grinding, mechanically cutting or by shearing the rivet head using a pneumatically driven rivet breaker (helldog). After the rivet head is removed the shank shall be driven out using a pneumatic punch.

    iii. Where the rivet head bears on a secondary girder component (e.g. stiffener angle, connection plate or fill plate) the rivet may be removed by any of the above methods or by thermal cutting methods (air-carbon arc washing or oxygen lancing). Thermal cutting shall be performed in accordance with American Welding Society (AWS) D1.5, Section C-3.2.6, and in accordance with Subsection 504.411.

2. Upon removal of each rivet the base metal shall be examined for surface irregularities and cracks. Where thermal cutting methods have been used for rivet removal the inspection of the base metal shall be completed by a certified welder. All cracks shall be immediately brought to the attention of the Engineer. If the Engineer so determines that remedial action is required, the Contractor shall perform the work in accordance with Subsection 109.3 - Extra Work. Nicks, burrs, and foreign substances which may

interfere with the seating of bolt head, washer and/or nut shall be removed at no additional cost.

3. Prior to installing the high-strength bolt all areas of exposed steel shall be solvent cleaned and receive a single coat of an approved cold-galvanizing compound containing at least 95% metallic zinc by weight in the dried film. The cold-galvanizing compound shall be allowed to dry sufficiently to handle in accordance with the manufacturer's recommendations before installing high-strength bolts.

4. Replacement bolts shall be in conformance with Section 504.45 of the Standard Specifications and shall be the same diameter as the rivet that was removed.

5. Installation, tensioning and inspection of high-strength bolts shall be done in accordance with Subsections 504.50 through 504.53 of the Standard Specifications, except as modified in this Specification.

If the bolt will not fit in the hole the hole shall be sufficiently reamed to accommodate the bolt. If the reaming results in a hole exceeding the tolerances in Standard Specification 504 a larger bolt shall be substituted at no additional cost.

The following Subsection is added:

523.50 Method of Measurement

The following sentences are added:

Clean and Paint Bearing will be measured for payment by the actual number of existing bearings cleaned and painted in accordance with the Plans and Specifications.

Clean, Paint, and Reset Bearing will be measured for payment by the actual number of existing bearings repaired in accordance with the Plans and Specifications.

523.51 Basis of Payment

The following paragraphs are added:

Clean and Paint Bearing will be paid for at the contract unit price each, which will be full compensation for all materials, equipment, labor and incidentals required to inspect, clean, and paint the existing bearings to remain including, but not limited to lead removal.

Clean, Paint, and Reset Bearing will be paid for at the contract unit price each, which will be full compensation for all materials, equipment, labor and incidentals required to inspect, clean, paint, and reset the existing bearing to remain including, but not limited to, rivet removal.

All materials, equipment, labor and incidentals required for preparing the existing steel girders to receive the rehabilitated existing bearings including, but not limited to, lead paint removal and field repair of existing paint shall be incidental to the related Contract Items.

Jacking of the girders to facilitate repairs shall be paid under Item 524.301 Temporary Structural Support - Jacking.

Payment will be made under:

Pay Item		Pay Unit
523.56	Clean and Paint Bearing	Each
523.561	Clean, Paint, and Reset Bearing	Each

SPECIAL PROVISION

SECTION 524

TEMPORARY STRUCTURAL SUPPORTS

(Temporary Structural Support - Jacking)

524.01 Description

The following paragraphs are added:

This work shall consist of the jacking and temporary structural support of the existing superstructure for repair of the bearings and pedestal reconstruction as shown on the Plans.

This work shall also consist of designing, fabricating, erecting, operating, maintaining, and dismantling the temporary structural supports and jacking systems required to perform the work. The calculated unfactored jacking and temporary support loads, including live load impact, are as shown on the Plans.

The Contractor shall provide hydraulic jacks with the capacity of at least 150% of the loads stated at the respective girder. The temporary support system may be designed based on the actual applied loads.

The Contractor shall make provisions to prevent longitudinal and transverse movement of the superstructure and twisting of the stringers during the jacking operations. These provisions shall be submitted to the Resident for approval.

524.02 Materials

The following sentence is added:

All structural steel shall have minimum yield strength of 36,000 psi.

524.03 Design

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

Whereas the proposed temporary support system will carry active highway traffic all design, detail and load requirements shall conform to the most current edition of the AASHTO LRFD Bridge Design Specifications, applicable Interim Specifications, and these Specifications unless otherwise noted on the Plans. The design computations shall verify the proposed jacking scheme does not introduce unacceptable stresses in the existing bridge components including steel girders, diaphragms and connections. All design computations submitted for approval shall be reviewed, checked and initialed accordingly. Any support systems requiring attachment to existing concrete shall be subject to approval by the engineer. Systems requiring extensive drilling and anchoring into existing concrete will not be accepted.

The following paragraph is added:

Removal of lead based paint, where required, shall be in accordance with Subsection 105.2.4.2, Lead Paint. The Contractor shall submit a lead based paint removal plan to the Resident for approval prior to the start of the work.

524.04 Erection and Removal

The following paragraphs are added:

The existing superstructure shall be raised by jacking at the location required on the plans. The jacking shall be performed in such a way that a maximum of 1/4 inch vertical lift is achieved, or as limited by the modular joint system, whichever is less.

The Contractor may support the jacking systems and temporary structural support systems off of the abutment seats, footings, or Contractor-furnished blocking systems. Bracing shall be provided to maintain the superstructure in a stable condition during the jacking operations. Drilling into existing steel girders to remain will not be allowed.

Calculations and drawings showing the method the Contractor chooses to raise, temporarily support, and brace the superstructure shall be prepared and stamped by a Professional Engineer licensed in the State of Maine, and shall be submitted to the Resident for approval.

The following Subsection is added:

524.641 Method of Measurement

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

Temporary Structural Support will be measured as one lump sum for the satisfactory design, installation and removal of all required temporary jacking and support systems.

524.65 Basis of Payment

This section is removed and replaced with the following:

Temporary Structural Support will be paid for at the contract unit price each which price shall be full compensation for all materials, equipment, excavation, ledge removal, labor and incidentals necessary for the design, installation, maintenance and dismantling of the jacking and temporary support system in accordance with these specifications.

Payment will be made under:

Pay Item		Pay Unit
524.301	Temporary Structural Support - Jacking - Stroudwater	Lump Sum
524.301	Temporary Structural Support - Jacking - MCRR	Lump Sum

SPECIAL PROVISION

SECTION 524

TEMPORARY STRUCTURAL SUPPORTS

(Temporary Structural Support - Girders)

524.01 Description

The following paragraphs are added:

This work shall also include the jacking and temporary structural support of the existing fascia girders at substructure locations to allow completion of substructure widening.

This work shall also consist of designing, fabricating, erecting, operating, maintaining, and dismantling the jacking systems and temporary structural supports and jacking systems required to perform the work.

All jacking operations shall occur with no bridge deck on the portion of the structure being jacked.

The Contractor shall make provisions to prevent lateral movement of the superstructure and rotation of the stringers during the jacking operations. These provisions shall be submitted to the Resident for approval.

524.02 Materials

The following paragraphs are added:

Materials used for supports shall be structural grade sawn timber or steel or a combination of both, at the Contractor's option, and whether new or used, shall be sound and of adequate cross section for the intended loads. Blocking needed below the temporary supports to accommodate differences in elevation and/or pads required to distribute loads may additionally incorporate plain and reinforced concrete.

All structural steel shall have a minimum yield strength of 36,000 psi.

524.04 Erection and Removal

The following paragraphs are added:

The existing superstructure shall be raised by jacking at each substructure unit. A minimum of two jacking points shall be used at each abutment and pier accordingly. The jacking shall be synchronized so that all portions of the girders are raised by approximately equal amounts simultaneously. A maximum of 1/8 inch differential movement between adjacent girders will be allowed during the jacking operation. A maximum of 3 inches of differential movement will be allowed between adjacent bearing lines during the jacking operation.

The Contractor may support the jacking systems and temporary structural support systems off of the abutment bearing seats, the abutment footings, pier caps, existing girders, or Contractor-furnished blocking systems. Bracing shall be provided to maintain the superstructure in a stable condition during the jacking operations. Alternative methods of removal or bracing may be proposed by the Contractor for review. Drilling into existing steel girders to remain will not be allowed.

Temporary structural support systems shall be designed, fabricated, erected, maintained and dismantled in accordance with Section 524, Temporary Structural Supports.

Drawings and calculations showing the method the Contractor chooses to raise, temporarily support, and brace the superstructure end spans and midspans shall be stamped by a Professional Engineer registered in the State of Maine, and shall be submitted to the Resident for approval.

All fabrication of structural steel shall be done in conformance with the latest AASHTO, American Welding Society and MaineDOT Specifications.

The following Subsection is added:

524.28 Method of Measurement

Temporary Structural Support - Girders, including submittals, jacks and jacking systems, temporary support systems, raising and lowering the superstructure, bracing, survey, excavation and backfill, dunnage, and all other incidentals thereto, shall be measured as one lump sum complete and accepted.

524.29 Basis of Payment

The following items are added:

Payment will be made under:

Pay Item		Pay Unit
524.302	Temporary Structural Support - Girders - Stroudwater	Lump Sum

SPECIAL PROVISION

SECTION 524

TEMPORARY STRUCTURAL SUPPORTS

(Temporary Structural Support - Braces)

524.01 Description

The following paragraph is added:

This work shall consist of fabricating, erecting, maintaining and dismantling if necessary the temporary girder bracing support system as shown on the Plans to brace the proposed and existing exterior girders during construction.

524.02 Materials

This Subsection is deleted and replaced with the following:

All materials used for construction of the bracing shall be the type and grade shown on the Plans. Alternate materials may be substituted with prior approval of the Resident.

Steel shall conform to ASTM A36 and shall be galvanized.

524.03 Design

This Subsection is deleted and not replaced.

524.28 Method of Measurement

This Subsection is deleted and replaced with the following:

Temporary Structural Support - Braces satisfactorily fabricated, erected, maintained and dismantled will be measured as one lump sum.

524.29 Basis of Payment

This Subsection is deleted and replaced with the following:

Temporary Structural Support - Braces will be paid for at the Contract lump sum price which price shall be full compensation for all materials, equipment, labor and incidentals necessary for the erection, maintenance, and dismantling of the girder supports in accordance with the Plans and these Specifications.

Payment will be made under:

Pay Item		Pay Unit
524.303	Temporary Structural Support - Braces - Stroudwater	Lump Sum
524.303	Temporary Structural Support - Braces - MCRR	Lump Sum

SPECIAL PROVISION

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:

Pay Item		Pay Unit
524.40	Protective Shielding - Steel Girders	Square Yard

SPECIAL PROVISION

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 staged 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 – Supplied by Authority).

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 Single Face 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 shall be prepared and stamped by a Professional Engineer licensed in the State of Maine.

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:

Single Face 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		Pay Unit
526.304	Temporary Concrete Barrier, Anchored - Stroudwater	Lump Sum
526.304	Temporary Concrete Barrier, Anchored - MCRR	Lump Sum

SPECIAL PROVISION

SECTION 526

CONCRETE BARRIER

(Temporary Concrete Barrier Type I)
(Temporary Concrete Barrier Type I: To Remain)

526.01 Description

The following paragraphs are added:

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

The work also includes supplying connecting pins and furnishing and mounting retro-reflective delineators, per Subsection 526.02 and 526.03.

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 and Temporary Concrete Barrier Type I: To Remain 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:

4. One on top of each barrier.
5. One on the traffic side of every barrier used in a taper.
6. One on the traffic side of every other barrier at regularly spaced intervals and locations.
7. Delineators shall be installed on both sides of the barrier if barrier is used to separate opposing traffic.
8. Delineators shall be physically adhered so as to withstand the force of throw from a snow plow.
9. 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.
10. 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 and Temporary Concrete Barrier, Type I: To Remain 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 and Temporary Concrete Barrier, Type I: To Remain will be paid for at the Contract lump sum price, complete in place. 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, and all other incidentals necessary to complete the work. Temporary Concrete Barrier, Type I: To Remain and all connecting pins shall remain the property of the Authority.

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 I - Stroudwater	Lump Sum
526.301	Temporary Concrete Barrier, Type I - MCRR	Lump Sum
526.3011	Temporary Concrete Barrier, Type I: To Remain - Stroudwater	Lump Sum
526.3011	Temporary Concrete Barrier, Type I: To Remain - MCRR	Lump Sum

SPECIAL PROVISION

SECTION 526

CONCRETE BARRIER

(Concrete Barrier Type I – Stormwater Filter)

526.01 Description

The following sentence is added:

The work also consists of furnishing and installing concrete barrier Type I for use as a weir on the overflow spillway of the Stormwater Soil Filter Beds (USF Detention Basins) as shown on the Plans.

526.02 Materials

The following items are added:

e. Joint between concrete barriers Type I shall be sealed on each side and on top, utilizing a backer rod and Sikaflex – 1a Elastomeric Sealant as manufactured by the Sika Corporation Lyndhurst, New Jersey 07071, telephone 201-933-8800, web site.
f. Concrete for the USF footing shall be Class B (f'c-3000 psi).

The following Subsection is added:

526.031 Construction Requirements – Concrete Barrier Type I - Stormwater Filter

The overflow weir at each Stormwater Filter overflow spillway, at a minimum, shall consist of two 10 foot section of concrete barrier type I doweled together and set on a continuous concrete footing. The ends of the barrier shall be flush and any projecting material such as steel loops used for connection pins shall be cut off flush with the concrete. The space between the two abutting barriers shall be sealed with non-shrink grout resulting in a continuous 20 foot concrete barrier. The concrete footing shall be constructed on stable compacted soil. The concrete barrier (overflow weir) shall be set level to the elevations shown on the Plans. Wood or other type shims will not be used to level the barrier.

The concrete barrier type I for the stormwater filter shall remain on the site at the completion of the Contract.

526.04 Method of Measurement

The following sentence is added:

Concrete Barrier Type I – Stormwater Filter shall be measured for payment by the linear foot of barrier, complete in place.

526.05 Basis of Payment

The fifth paragraph is deleted in its entirety and not replaced.

The following paragraph is added:

Concrete Barrier Type I – Stormwater Filter will be paid for at the Contract linear foot price, complete in place. Such payment shall be full compensation for furnishing, transporting and installing concrete barrier, including connecting dowels, non-shrink grout, concrete footing, and all other incidental materials, labor and equipment, required to complete the work.

Payment will be made under:

Pay Item		Pay Unit
526.307	Concrete Barrier Type I – Stormwater Filter	Linear Foot

SPECIAL PROVISION

SECTION 527

ENERGY ABSORBING UNIT

(Work Zone Crash Cushion – TL3)

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

SPECIAL PROVISION

SECTION 603

PIPE CULVERTS AND STORM DRAINS

(Reinforced Concrete Pipe)
(Concrete Collar)
(Corrugated Polyethylene Pipe)

603.01 Description

The following paragraphs are added:

This work shall also consist of furnishing and installing Class III or Class V reinforced concrete pipe at the locations as shown on the Plans or as approved by the Resident.

This work also consists of furnishing and installing a concrete collar to join existing concrete pipe to the proposed concrete or Corrugated High Density Polyethylene (HDPE) pipe in accordance with the details as shown on the Plans. The Contractor shall note that the concrete pipe ends may be of different sizes and may not fit snugly together.

This work shall also consist of furnishing and installing various sizes of corrugated HDPE pipe, including a dual wall adaptor fitting by Hancor or an approved equal as shown on the plans. No other pipe types within the Option III alternatives will be accepted.

603.02 Materials

All Corrugated High Density Polyethylene (HDPE) pipe for storm water and drainage systems shall meet the requirements of Subsection 706.06.

603.11 Method of Measurement

The following paragraph is added:

The Concrete Collar shall be measured by each unit installed, complete in place and accepted. This shall be full compensation for furnishing labor and materials to construct a Concrete Collar to connect the existing and proposed pipe ends in a working like manner.

Dual Wall Adapter Fitting shall be included for payment as three additional linear feet of the largest pipe involved.

603.12 Basis of Payment

Concrete Collars will be paid for at the Contract unit price each regardless of the size of the existing and proposed pipes.

Corrugated HDPE pipe will be paid for under the appropriate sized Culvert Pipe Option III pay items

Payment will be made under:

Pay Item		Pay Unit
603.155	12 inch Reinforced Concrete Pipe - Class III	Linear Foot
603.165	15 inch Reinforced Concrete Pipe - Class III	Linear Foot
603.1653	15 inch Reinforced Concrete Pipe - Class V	Linear Foot
603.175	18 inch Reinforced Concrete Pipe - Class III	Linear Foot
603.1753	18 inch Reinforced Concrete Pipe - Class V	Linear Foot
603.195	24 inch Reinforced Concrete Pipe - Class III	Linear Foot
603.1953	24 inch Reinforced Concrete Pipe - Class V	Linear Foot
603.205	30 inch Reinforced Concrete Pipe - Class III	Linear Foot
603.2053	30 inch Reinforced Concrete Pipe - Class V	Linear Foot
603.215	36 inch Reinforced Concrete Pipe - Class III	Linear Foot
603.2153	36 inch Reinforced Concrete Pipe - Class V	Linear Foot
603.225	42 inch Reinforced Concrete Pipe - Class III	Linear Foot
603.2253	42 inch Reinforced Concrete Pipe - Class V	Linear Foot
603.235	48 inch Reinforced Concrete Pipe - Class III	Linear Foot
603.2353	48 inch Reinforced Concrete Pipe - Class V	Linear Foot
603.245	54 inch Reinforced Concrete Pipe - Class III	Linear Foot
603.2453	54 inch Reinforced Concrete Pipe - Class V	Linear Foot
603.255	60 inch Reinforced Concrete Pipe - Class III	Linear Foot
603.2553	60 inch Reinforced Concrete Pipe - Class V	Linear Foot
603.265	66 inch Reinforced Concrete Pipe - Class III	Linear Foot
603.2653	66 inch Reinforced Concrete Pipe - Class V	Linear Foot
603.275	72 inch Reinforced Concrete Pipe - Class III	Linear Foot
603.2753	72 inch Reinforced Concrete Pipe - Class V	Linear Foot
603.155	12 Inch Reinforced Concrete Pipe – Class III	Linear Foot
603.28	Concrete Collar	Each

SPECIAL PROVISION

SECTION 604

MANHOLES, INLETS, AND CATCH BASINS

(Secure Catch Basin Grate)

604.01 Description

This work shall consist of removing existing catch basin grates in the existing four foot paved shoulder, or other locations noted on the plans, cleaning existing frames, furnishing and applying elastomeric sealer to frame seats, and furnishing and installing new grates. This work shall be completed prior to opening paved shoulders to traffic.

604.02 Materials

The following sentences are added:

Catch Basin Grates shall be a square holed grate meeting or exceed the AASHTO M306 Loading Requirements and be manufactured by EJ Company of Brockton, Massachusetts (or an approved equal) with the following product number:

5520M5 Grate Product Number 00552060

Elastomeric sealer shall be Sikaflex 1a as manufactured by Sika or an approved equal.

604.03 Construction Requirements

The following paragraphs are added:

After removal of an existing grate, the frame shall be cleaned to accept elastomeric sealer. Sealer shall be placed in a continuous bead over horizontal and vertical surfaces in accordance with the manufacturer's recommendations. Installed grates shall be preloaded and allowed to set for a minimum of 1.5-hours before receiving traffic loads to assure adequate adhesion of the sealer. The old grates shall be properly disposed of by the Contractor.

New grates shall remain in place at the completion of construction and shall become the property of the Maine Turnpike Authority.

The Contractor is required to have two additional grates on-site at all times for use as backup devices.

604.05 Method of Measurement

The following sentence is added:

Secure Catch Basin Grate will be measured for payment by each unit secured and accepted.

604.06 Basis of Payment

The following paragraphs are added:

The accepted quantity of Secure Catch Basin Grate will be paid for at the Contract unit price each. This price shall be full compensation for removing and disposing of the existing grate, cleaning the horizontal and vertical surfaces, applying the elastomeric sealer, furnishing and installing the new grate, and all other labor, equipment, and materials required to complete the work.

Unused backup grates stacked at Crosby Maintenance Area will be paid for at the Contract unit price each under the Secure Catch Basin Grate item.

Payment will be made under:

Pay Item		Pay Unit
604.40	Secure Catch Basin Grate	Each

SPECIAL PROVISION

SECTION 604

MANHOLES, INLETS AND CATCH BASINS

604.02 Materials

The following sentences are added:

Elastomeric sealer shall be Sikaflex 1a as manufactured by Sika or an approved equal.

Class AAA concrete shall conform to Subsection 502.05; except that the minimum cement factor shall be 750 pounds per cubic yard and the coarse aggregate size shall conform to ASTM C33 Grading 7.

The third paragraph should be deleted and replaced with:

Catch Basin Frames and Grates shall be as outlined below and be manufactured by EJ Company of Brockton, Massachusetts or an approved equal and shall meet or exceed the AASHTO M306 Loading Requirements.

Catch Basin Frames shall be manufactured by EJ Company of Brockton, Massachusetts (or an approved equal) with the following product numbers:

5521Z - 8 Inch Frame Product Number 00552111
5546Z – 6 Inch Frame Product Number 00554611
5544Z - 4 Inch Frame Product Number 00554411

Catch Basin Frames shall be 8” frames unless otherwise specified by the plans or approved by the resident.

Catch Basin Grates shall be a square holed grate as manufactured by EJ Company of Brockton, Massachusetts (or an approved equal) with the following product number:

5520M5 Grate Product Number 00552060

If a cascade catch basin grate is specified on the plans then it shall be manufactured by EJ Company of Brockton, Massachusetts (or an approved equal) with the following product numbers depending on the direction of flow:

5520M8 Product Number 00552084 or 5520M8 Product Number 00552085

SPECIAL PROVISION

SECTION 605

UNDERDRAIN

(PVC Underdrain)

605.01 Description

The following paragraph is added:

This work shall consist of the construction of underdrain for the stormwater filter system 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 following paragraphs are added:

Material for six inch PVC Underdrain (laterals) shall conform to the requirements of AASHTO M278 or ASTM F949.

Material for eight inch PVC Underdrain (header/outlet pipe) shall conform to Subsection 706.08, PVC Pipe.

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 following paragraphs are added:

The underdrain system to be installed as part of each stormwater filter consists of a series of parallel six inch PVC lateral underdrain pipes connected to an eight inch PVC underdrain header/outlet pipe as shown on the Plans. The underdrain pipe system shall be surrounded by underdrain bedding. A drainage geotextile (as specified in Section 620) shall be placed below the underdrain bedding on a graded, compacted and level base. Drainage geotextile shall also extend vertically along the walls of the underdrain bedding (and also extend vertically along the wall of the Soil Filter). A PVC underdrain cleanout shall be located at the upstream end of the eight inch PVC underdrain header/outlet pipe.

605.07 Basis of Payment

The following paragraphs are added:

Payment for 6 Inch PVC Underdrain and 8 Inch PVC Underdrain will be made at the Contract unit price per linear foot in place. Payment will be full compensation for furnishing and placing bedding, 8" and 6" PVC Underdrain, cutting and connecting the underdrain and all labor and equipment necessary to complete the work.

Payment will be made under:

Pay Item		Pay Unit
605.016	6 Inch PVC Underdrain	Linear Foot
605.018	8 Inch PVC Underdrain	Linear Foot

SPECIAL PROVISION

SECTION 606

GUARDRAIL

(31" W-Beam Guardrail – Mid-way Splice (7' 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 at 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 (7' Steel Posts, 8" Offset Blocks)

606.02 Materials

The section is amended by the addition of the following:

Steel posts shall be 7 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 34'-4 ½" length.

606.08 Method of Measurement

The section is amended by the addition of the following:

31" W-Beam Guardrail – Mid-way Splice (7' 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 (7' 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		Pay Unit
606.1301	31" W-Beam Guardrail – Mid-way Splice (7' Steel Posts, 8" Offset Blocks, Single Faced)	Linear Foot

SPECIAL PROVISION

SECTION 606

GUARDRAIL

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

606.01 Description

The following sentences are added:

This work shall consist of furnishing and installing a FLEAT (Flared Energy Absorbing 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., 1507 East 4th Street, Big Spring, Texas 79720, (915) 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:

Guardrail – Flared Terminal – 31" W-Beam Guardrail 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™ Diamond Grade™ 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 FLEAT System after installation. The existing sheeting shall be replaced on FLEAT systems to be removed, modified, and reset. Color – WHITE.

606.041 Reflective Sheeting

The color for the reflective sheeting shall be silver (WHITE) when installed on the outside shoulder and shall be black chevron on yellow background only when installed on the inside shoulder.

606.08 Method of Measurement

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

Guardrail – Flared Terminal – 31" W-Beam Guardrail 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: "Guardrail – Flared Terminal – 31" W-Beam Guardrail, " after the words "Terminal section, ".

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

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

Payment will be made under:

Pay Item		Pay Unit
606.1305	31" W-Beam Guardrail – Mid-Way Splice Flared Terminal (31" Height)	Each

SPECIAL PROVISION

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-AGC-ARBTA 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'-4½" 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

SPECIAL PROVISION

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

SPECIAL PROVISION

SECTION 606

GUARDRAIL

(Reflectorized Flexible Guardrail Marker)
(Remove and Reset Reflectorized Flexible Guardrail Marker)

606.01 Description

The following paragraphs are added:

This work shall also consist of furnishing and installing new reflectorized flexible guardrail markers and/or removing and resetting reflectorized flexible guardrail markers within the Contract limits at the Crosby Maintenance Area Mile 45.8 Southbound . 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 Reflectorized Flexible Guardrail Markers will be paid for under the Reflectorized Flexible Guardrail Markers 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 Remove and Reset Reflectorized Flexible Guardrail Markers 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.

Payment will be made under:

Pay Item		Pay Unit
606.353	Reflectorized Flexible Guardrail Marker	Each
606.354	Remove and Reset Reflectorized Flexible Guardrail Markers	Each

SPECIAL PROVISION

SECTION 606

GUARDRAIL

(Guardrail Adjust – Double Rail)

606.01 Description

The following paragraphs are added:

This work shall also consist of adjusting the height of the existing single and double rail guardrail in locations where the existing height of rail is not 30 inches. The guardrail shall be adjusted to a height of 30 inches. Existing single and double rail shall also be adjusted for lean.

The guardrail adjustment shall take place at all necessary locations; approximate locations are listed in the schedule of guardrail limits along the median. Exact locations for adjustment shall be determined by the Resident. If, during the course of the work, the contractor finds additional rail to be adjusted, then he shall notify the Resident, and the Resident determine if the rail is to be adjusted.

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:

606.021 General

All existing guardrail to be raised or lowered shall be completed prior to new guardrail or end treatments being attached.

606.036 Adjusting Existing Guardrail

Any materials or galvanizing damaged by the Contractor's operations shall be replaced or touched-up at no additional cost to the Authority.

Guardrail posts shall be raised to a minimum of five inches above final elevation prior to driving post to final elevation; this applies to both raising and lowering rail.

Any given length of guardrail to be adjusted shall be done in such a way that top of rail elevations do not vary drastically between each section of guardrail. Rail height tolerance shall be

30 inches, plus 0 inches, minus 1/2 inch. The 30 inches shall be measured from the edge of pavement to the top of rail beam when within 2 feet of the edge of pavement.

Rail shall be adjusted for lean where needed. All posts shall be plumb after adjusting for lean.

When the rail tapers from one bound to the other the rail shall be adjusted to the correct height on the farthest ends and shall be adjusted towards the center of the median to create a smooth line.

Earth around each adjusted or reset post shall be raked and compacted with a minimum 8 pound hand tamper or an approved device. Holes created due to adjusting or resetting a post shall be filled with a similar surrounding material and compacted.

606.08 Method of Measurement

The following paragraphs are added:

Adjusting of both single and double rail guardrail shall be measured by the linear foot of Guardrail adjusted and accepted.

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 will not be paid separately, but shall be incidental to the Guardrail - Adjust pay items.

606.09 Basis of Payment

The following paragraphs are added:

Adjusting of single and double rail guardrail will be paid for at the Contract unit price per linear foot and shall be full compensation for furnishing all labor, equipment and materials necessary to complete the work. Guardrail Adjust will not be measured for payment until all compaction has been completed.

Payment will be made under:

Pay Item		Pay Unit
606.3622	Guardrail Adjust, Double Rail	Linear Foot

SPECIAL PROVISION

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.

Payment will be made under:

Pay Item		Pay Unit
610.181	Temporary Stone Check Dam	Cubic Yard

SPECIAL PROVISION

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.

SPECIAL PROVISIONS

SECTION 618

SEEDING

(Special Seeding)

618.02 Materials

The following paragraph is added:

Special Seed (wetland seed mix-moist) shall be "New England Erosion Control/Restoration Mix for the USF Detention basins and Moist Sites" as supplied by New England Wetland Plants, Inc., Amherst, MA 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 Rate of Application

Subsection (a) is deleted and replaced with the following:

(a) Except for Special Seed 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 Seed mix shall be applied directly on top of the horizontal surface of the Soil Filter (i.e., the blended mix) and lightly raked into the mix. On the sloping surfaces surrounding the soil filter up to a height of 1.5 feet above the top of the soil filter, wetland seed 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 seed. The Authority will accept areas sown with Special Seed 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 Authority will pay for the accepted quantity of Special Seed 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.

Payment will be made under:

Pay Item		Pay Unit
618.143	Special Seeding	Unit

SPECIAL PROVISION

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.

619.06 Method of Measurement

The following sentence is added:

Temporary Mulch will be paid for by the lump sum.

619.10 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.

Payment will be made under:

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

SPECIAL PROVISION

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.

627.04 General

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.

Payment will be made under:

Pay Item		Pay Unit
627.712	White or Yellow Pavement Marking Line	Linear Foot

SPECIAL PROVISION

SECTION 627

PAVEMENT MARKINGS

(Temporary 6 Inch 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.

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.

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.

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^{o}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.

Pay Item		Pay Unit
627.73	Temporary 6 Inch Pavement Marking Tape	Linear Foot

SPECIAL PROVISION

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 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

SPECIAL PROVISION

SECTION 645

HIGHWAY SIGNING

(Remove and Reset Mainline Sign)

645.01 Description

The following paragraphs are added:

This work shall consist of removing and resetting the existing highway guide signs as shown on the Plans. The work includes a combination of the following: removal, resetting, modifying, furnishing, and disposal of concrete foundations, steel posts, wood posts, and breakaway foundations. Existing materials from the existing sign installation may be reused to reset the existing sign or another sign.

The signs shall remain visible to turnpike drivers at all times unless other provisions have been approved.

645.02 General

The following sentences are added:

New concrete foundations shall conform to the requirements of Section 626 and shall be in conformance with the Maine Department of Transportation Standard Details in conjunction with the information shown on the Plans.

Breakaway devices shall be B525 or B650 as manufactured by Transpo Industries, Inc. (www.transpo.com).

645.05 Signs

The following paragraphs are added:

The removal and resetting of the mainline signs shall be completed in accordance with the details as shown on the Plans. The Contractor shall keep all signs visible to turnpike drivers except for the period of time necessary to actually complete the relocation. The sign panel shall not be removed and relocated until after the proposed sign support system (foundation and posts) have been installed in the final location. One (1) working day is allowed for the sign relocation.

The Contractor may elect to utilize all new materials or reuse materials from other sign locations that have previously been reset. The cutting of structural steel post shall be accomplished by mechanical means. The use of burning to cut shall not be allowed. One single connection will be allowed to extend a post to the required length. A full penetration weld or a bolted splice shall be required for the connection. The Contractor shall submit his proposed connection method to the Resident for approval. Any damaged area shall be repaired with two coats of zinc-rich chromium

paint. Material removed from an existing sign location and not reused at a proposed sign location shall become the property of the Contractor.

All signs posts on breakaway foundations shall be installed in accordance with the Specifications for breakaway devices. Multipost signs shall be constructed with the required splice as in accordance with the Plans.

645.08 Method of Measurement

The following sentence is added:

Remove and Reset Mainline Sign shall be measured for payment as one lump sum for each sign number as shown on the Plans.

645.09 Basis of Payment

The payment for Remove and Reset Mainline Sign shall be at the Contract lump sum price for each sign number. This payment shall be full compensation for furnishing all new materials, removing, modifying resetting existing material and signs, and all labor and equipment necessary to complete the installation in accordance with the details as shown on the Plans. This may include furnishing and installing new materials such as structural steel, concrete foundations, and single and multipole breakaway devices. Compensation for the excavation and backfill for the concrete foundation, as well as removal of the concrete foundation, shall be included in this item.

Payment will be made under:

Pay Item		Pay Unit
645.501	Remove and Reset Mainline Sign No. 1	Lump Sum
645.502	Remove and Reset Mainline Sign No. 2	Lump Sum
645.503	Remove and Reset Mainline Sign No. 3	Lump Sum
645.504	Remove and Reset Mainline Sign No. 4	Lump Sum
645.505	Remove and Reset Mainline Sign No. 5	Lump Sum
645.506	Remove and Reset Mainline Sign No. 6	Lump Sum
645.507	Remove and Reset Mainline Sign No. 7	Lump Sum
645.508	Remove and Reset Mainline Sign No. 8	Lump Sum
645.509	Remove and Reset Mainline Sign No. 9	Lump Sum
645.510	Remove and Reset Mainline Sign No. 10	Lump Sum
645.511	Remove and Reset Mainline Sign No. 11	Lump Sum
645.512	Remove and Reset Mainline Sign No. 12	Lump Sum
645.513	Remove and Reset Mainline Sign No. 13	Lump Sum
645.514	Remove and Reset Mainline Sign No. 14	Lump Sum
645.515	Remove and Reset Mainline Sign No. 15	Lump Sum

SPECIAL PROVISION

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 volume when authorized by the Authority.

Maine Turnpike Traffic Control Requirements

A 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 to shift traffic away from the work zone. Winter snow removal within closures should be expected and shall be incidental to the Contract.

Additional traffic control measure restrictions are as follows:

- Temporary lane closures that would restrict travel to one lane in each direction shall be conducted at night between 10:00 p.m. and 5:00 a.m.
- Temporary shoulder closures shall maintain a minimum four foot lateral buffer from an open travel lane when in place between 6:00 a.m. and 9:00 a.m. and between 3:00 p.m. and 6:00 p.m. During July and August, the four foot minimum lateral buffer applies from 6:00 a.m. to 8:00 p.m.

Construction vehicles are prohibited from merging with mainline traffic between 7:00 a.m. and 10:00 a.m. and between 4:00 p.m. and 7:00 p.m. unless the merge occurs at an interchange.

Loading/unloading trucks shall not be closer than six feet from an open travel lane when being loaded or unloaded within the work zone.

SPECIAL PROVISION

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.

Installation: 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).

Weight of Truck	Barrier Truck Distance from Work Zone of Hazard	Shadow Truck Distance from 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 Day

SPECIAL PROVISION

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”.

Signs

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.

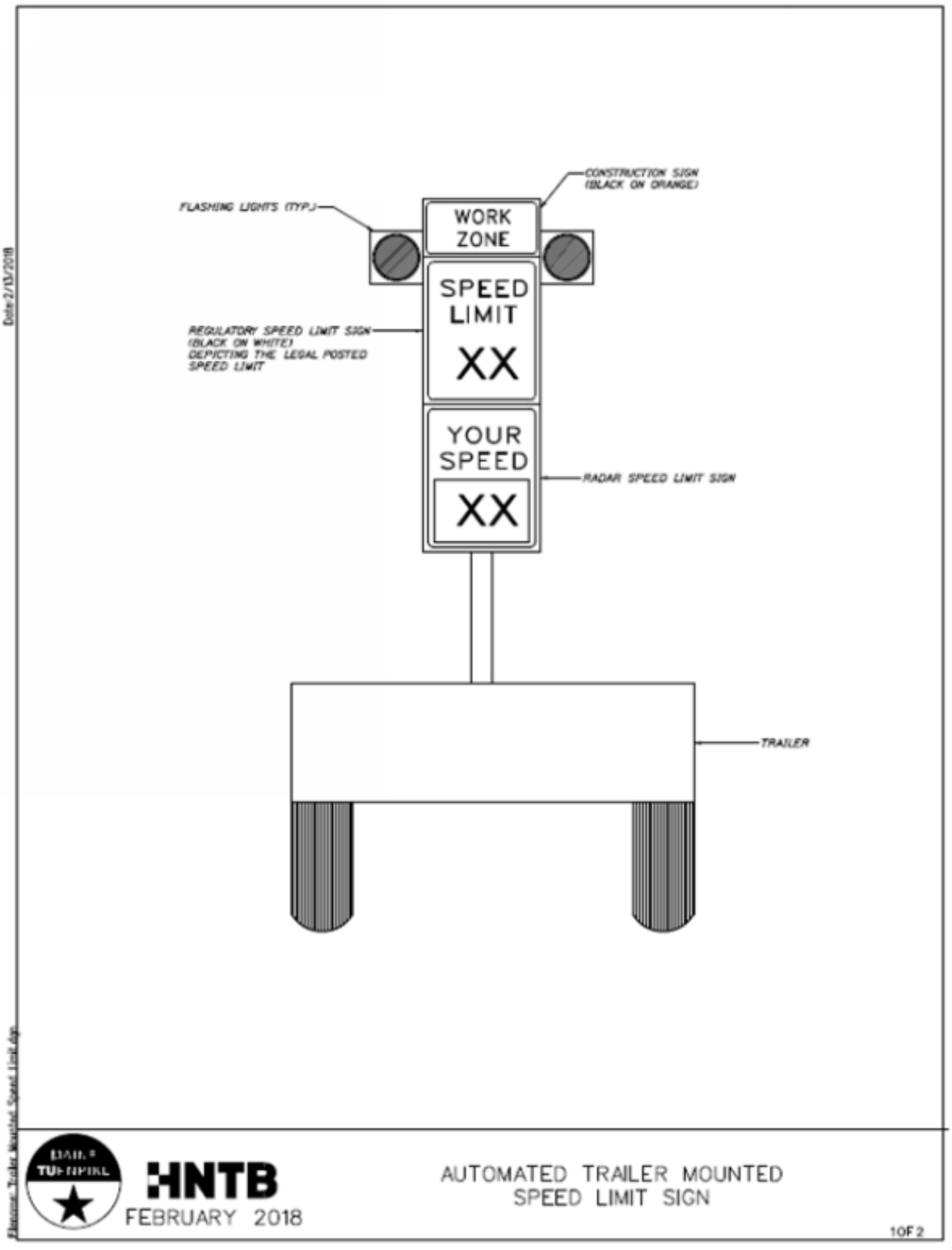
652.7 Method of Measurement

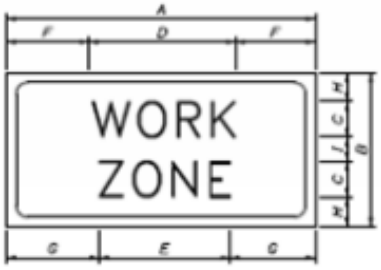
Automated Trailer Mounted Speed Limit Sign shall be measured for payment by the calendar day for each calendar day that the unit is used on a travel lane or shoulder on the project or per each for the continued use for the duration of the project. Payment shall include the Trailer, Radar Speed Limit 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.

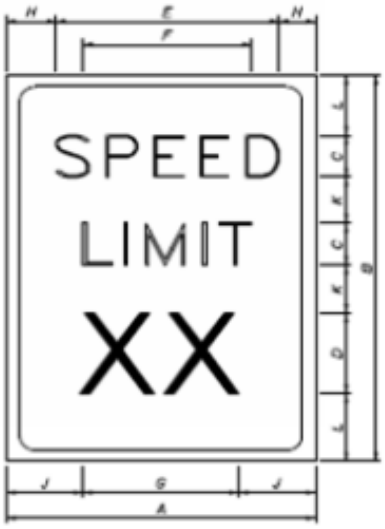
Pay Item		Pay Unit
652.451	Automated Trailer Mounted Speed Limit Sign	Calendar Day
652.452	Automated Trailer Mounted Speed Limit Sign	Each


CONSTRUCTION SIGN
(BLACK ON ORANGE)
FLASHING LIGHTS (TYP.)
WORK
ZONE
SPEED
LIMIT
XX
REGULATORY SPEED LIMIT SIGN
(BLACK ON WHITE)
DEPICTING THE LEGAL POSTED
SPEED LIMIT
YOUR
SPEED
XX
RADAR SPEED LIMIT SIGN
TRAILER
Date: 2/13/2018
TURNPIKE
HNTB
FEBRUARY 2018
AUTOMATED TRAILER MOUNTED
SPEED LIMIT SIGN
1 OF 2



SIGN #1

1.25" BORDER, 0.75" INDENT,
BLACK ON ORANGE, BB GRADE PLYWOOD SIGN



SIGN #2

1.25" BORDER, 0.75" INDENT,
BLACK ON WHITE, BB GRADE PLYWOOD SIGN

	DIMENSIONS (INCHES) / LETTER FONTS											
	A	B	C	D	E	F	G	H	I	J	K	L
#1	48	20	5D	18 1/4	16 7/8	14 1/4	15 7/8	4	2	N/A	N/A	N/A
#2	48	60	8E	16E	30 1/4	29 1/4	29 1/2	4 1/2	9 3/8	9 1/4	8	6

Date: 2/13/2018

Filename: Trailer Mounted Speed Limit.dgn

MAINE TURNPIKE

HNTB

FEBRUARY 2018

TRAILER MOUNTED CONSTRUCTION ZONE
SPEED LIMIT SIGN

2 OF 2

SPECIAL PROVISION

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		Pay Unit
652.46	Temporary Portable Rumble Strip	Unit

SPECIAL PROVISION

SECTION 673

STORMWATER FILTER SYSTEM

(Stormwater Soil Filter Bed)

673.01 Description

This work shall consist of constructing a stormwater soil filter bed (USF Detention Basins) to treat stormwater runoff from the northbound on-ramp. 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.

673.02 Materials

The 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. Loam shall constitute 20-30 percent by volume of the filter material. Loam 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.

673.03 Mixing and Placement

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.

673.04 Method of Measurement

The Stormwater soil filter bed will be measured by the number of cubic yards computed using the dimension shown on the Plans for the soil filter bed.

673.054 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 will not be measured separately for payment, but 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 605.016, 6 Inch PVC Underdrain, and Item 605.018, 8 Inch PVC Underdrain.

The drainage geotextile for the filter bed shall be included for payment under Item 620.58, Erosion Control Geotextile.

The Concrete Barrier Type I – Stormwater Filter but shall be included for payment under Item 526.307, Concrete Barrier Type I – Stormwater Filter.

Payment will be made under:

Pay Item		Pay Unit
673.01	Stormwater Soil Filter Bed	Cubic Yard

SPECIAL PROVISION

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 VII, Type VIII or Type IX, for all signs. All Type 1 Guide Signs shall meet at a minimum the requirements for ASTM 4956 –Type XI sheeting. Use of overlay film that degrades the retroreflectivity of the sign sheeting (i.e. Avery-Dennison overlay film) will be prohibited.

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 block.

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 shall meet at a minimum the requirements for ASTM 4956 – Type VII, Type VIII or Type IX sheeting.

All Type 1 Guide Signs shall meet at a minimum the requirements for ASTM 4956 –Type XI sheeting.

MAINE TURNPIKE AUTHORITY

SPECIFICATIONS

PART III – APPENDICES

APPENDIX A
UTILITY CONSTRUCTION REQUIREMENTS

STROUDWATER RIVER OVERPASS

CONSTRUCTION REQUIREMENTS & COORDINATION WITH PORTLAND PIPE LINE

A. General Conditions

Utility Coordination shall be governed by MaineDOT Standard Specifications, Revision of November 2014, as updated periodically by MaineDOT, unless otherwise provided herein.

Prior to commencement of work, the Contractor, by careful examination, must become sufficiently familiar with all utilities in the work area. Approximate horizontal alignment and top of pipe elevations have been provided for reference in the Plans, the information shown on the plans are based on the best information available, but the Maine Turnpike and the Engineer do not warrant their accuracy in either horizontal or vertical locations.

All work related to the utility coordination requirements outlined throughout this document and the Contract documents will not be paid for separately but shall be considered incidental to the related pay items.

The Contractor is responsible for understanding, following and abiding by the obligations and limitations outlined in these specifications throughout the Project. During construction the Contractor shall carefully protect all utilities from damage. **The Contractor shall be fully responsible for any damage to existing utilities.**

B. Dig Safe & Maintaining Utility Markings

The Contractor shall be responsible for determining the presence of underground utility facilities prior to commencing any excavation work and shall notify utilities of proposed excavation in accordance with M.R.S.A. Title 23 §3360-A, Maine "Dig Safe" System. Call 1-888-344-7233

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

C. Pre-Construction Meeting

A Preconstruction Utility Conference, as defined in Subsection 104.4.6 of the MaineDOT Standard Specifications is required.

D. Portland Pipe Line Corporation (PPLC)

PPLC has a licensing agreement with the Maine Turnpike established in 1965 to operate an twenty-four-inch, high-pressure, crude oil transmission pipeline. The Contractor is responsible for meeting the following requirements agreed to by, and among, PPLC and the Maine Turnpike:

1. **Primary Contact** – The Contractor will be required to work with representatives from PPLC and its engineers and contractors throughout the project for all activities occurring at the Stroudwater River Overpass. Initially all communications with PPLC should be channeled through the Resident until primary contacts are established.

2. **Weight and Equipment Restrictions** – PPLC has weight restrictions for all equipment working within five feet horizontally or vertically of the pipeline. To protect the pipeline, as a general rule,

PPLC will be required to review and approve all equipment or trucks operating in this area. PPLC reserves the right to review and approve each request individually and on a case-by-case basis, or to issue general approvals for specific equipment and operations that will remain in force throughout the duration of the project.

The five foot clearance requirement may be increased if, in the judgment of PPLC, soil conditions warrant an increase.

The following restrictions apply to all construction activities:

Equipment Crossing, or operating adjacent to, the Pipeline:

When equipment, trucks or other vehicles will be operated within five feet of the pipeline, and the proposed work is approved by PPLC, the Contractor shall be responsible for adhering to the following:

- A minimum cover of three feet shall be maintained over the pipeline. Where the existing cover is insufficient, additional fill shall be placed over the pipeline in accordance with PPLC requirements.
- Additional protective measures such as additional competent cover material or bridging with wooden matting when required by PPLC.
- All construction vehicles and equipment shall cross the pipeline at as close to a 90 degree angle as practical.

Driving Sheet Piling or H-Piles:

When driving sheet piling and H-piles is required within five feet of the pipeline, the Contractor shall establish the location and depth of the pipeline in the area of encroachment. This shall be accomplished by exposing the full width of the pipeline within five feet of proposed sheet piling, or by "keyholing" using vacuum excavation beyond five feet from proposed sheeting piling, to confirm the pipeline location and depth.

This work, including sheet pile installation and exposing the pipeline, shall be done under the supervision of a PPLC representative. The representative from PPLC shall confirm adequate clearances are maintained, confirm the proposed construction activities do not result in significant risk of damage to the pipeline, and to observe the pipeline for unacceptable movement or disturbance. PPLC reserves the right to require modifications to the Contractor's operations to preserve the integrity and condition of the pipeline.

In no case shall sheet piling or H-Piles be installed less than two feet from the pipeline.

Excavations adjacent to the Pipeline:

Where excavation is required within five feet horizontally or vertically of the pipeline, the work shall be completed by hand digging or vacuum truck excavation. Hand digging and vacuum excavation will not be required within cofferdams.

Placing Riprap in close proximity to the Pipeline:

Where placing riprap directly over the pipeline is required, stones shall be placed in a manner that limits the free fall of each stone to less than two feet where there is four feet of competent soil cover over the pipeline and to zero feet (no free fall) where there is less than four feet of competent cover over the pipeline.

Vibratory Equipment:

The use of vibratory compaction equipment and rollers larger than walk-behind units will not be allowed to operate within five feet of the pipeline.

The use of vibratory hammers for the installation of sheeting and piling will be subject to review and approval by PPLC.

Coordination of proposed equipment with PPLC:

All proposed vehicles and equipment with a loaded weight exceeding 2 tons proposed to operate over, or immediately adjacent to the pipeline, shall be submitted for approval by PPLC at least two weeks in advance of their planned use.

The submittal for each vehicle shall include the following:

- Equipment description and proposed use.
- Number and spacing of axles
- Total loaded weight and weight distribution.
- When vehicles will be used for hauling materials, the submittal shall clearly state the maximum load proposed to be carried by the vehicle.

The submittal for each piece of equipment shall include the following:

- Equipment description and proposed use
- Number and spacing/length of axles/tracks
- Proposed equipment configuration
- Equipment weight and load distribution

When vehicles or equipment will be used for lifting and/or hoisting equipment, materials, or personnel, the submittal shall provide the proposed location of the vehicle or equipment, maximum lifted load, maximum pick radius, and other relevant information necessary to determine the location and intensity of the resulting loads over the pipeline.

The Authority and PPLC reserve the right to reject the use of any vehicle or piece of equipment, regardless of weight, if in the judgment of the Authority, its use could have an unacceptable effect on the pipeline.

3. **Construction Supervision** - PPLC has agreed to work with the Resident, Project Engineers, and Contractor(s) to arrange for personnel to be present at appropriate times as outlined below and in accordance with the Project schedule to oversee any contractors or subcontractors who may be working near the pipeline. Supervision shall be required any time work is being done within five feet of the pipeline. The Contractor shall provide at least one week notice for work activities requiring supervision by PPLC.

4. **Work Stoppage** - PPLC shall have the right to stop work immediately if the pipeline or the safety of the public are or might be negatively impacted. Following the decision to stop work, and prior to the resumption of work, the Resident shall be contacted and a meeting held with PPLC, the Resident, the Project Engineer and the Contractor(s) to evaluate the concern(s) and determine a corrective course of action.

5. **Minimum Guidelines for Construction** - Except as modified herein, the Contractor shall observe the *Portland Pipe Line Corporation Construction Practices* established by PPLC for all work proposed within the project limits. These guidelines are included as a supplement to this document.

Figure 7-1

PORTLAND PIPE LINE CORPORATION
Safety, Environment, Customer, Community

Dig Safe System, Inc.
It's Smart. It's Free. It's the Law.

811
Know what's below.
Call before you dig.

CONSTRUCTION PRACTICES

TO BE OBSERVED BY OTHERS WHEN ON OR NEAR PORTLAND PIPE LINE CORPORATION RIGHTS-OF-WAY

The guidelines and construction practices listed below shall be followed by other pipeline, utility, construction organizations, and others performing work in the Portland Pipe Line Corporation right-of-way:

1. A minimum distance of 50 feet should be maintained between new structures and nearest pipeline (49 CFR 195.210).

2. Crossings of the pipelines should ideally be 90^{o}, but in no case less than 45^{o}.

3. A minimum vertical distance between lines crossing beneath the pipelines shall be 18 inches. Compaction near the pipelines shall be equal to original soil compaction. Certain soil conditions may dictate additional vertical clearance.

4. Lines crossing over the pipelines shall have an 18-inch minimum vertical clearance with 90% or greater Proctor compaction density or pipeline-approved supports on both sides of the pipeline crossed.

5. Excavation in questionable soils conditions, where shear failure or trench collapse might occur, must be investigated by a soils engineering consultant; and where conditions warrant it, suitable plans for soils stabilization shall be designed and carried out by a qualified engineer.

6. No excavation in the vicinity of pipelines is to be made without a pipeline representative being present. Excavation within five (5) feet of a pipeline shall be done with extreme caution and only by hand digging under a Pipe Line representative's direction. The pipelines and the required separation distance must be exposed for observation during trenchless crossings, for example by directional drilling, to ensure safety and clearance.

7. Where heavy construction vehicles must cross a pipeline, suitable compacted cover and padding shall be placed over the pipeline to provide generally not less than four (4) feet of suitable protective material over the pipeline. Pipe Line representative will locate pipelines for landowner or contractor upon request.

8. In no case shall cover be less than that required by the Department of Transportation, Code of Federal Regulation for transportation of hazardous liquids by pipeline (49 CFR 195.248).

9. All blasting is to be kept to an absolute minimum and shall be done according to good construction practices, using experienced, qualified blasting personnel and only then with Pipe Line approval.

10. Be aware of potential interference between Portland Pipe Line's DC electric rectifier systems and AC power line or power cable networks. If a pole line anchor is placed near a ground bed, contact a corrosion department representative for assistance.

11. Portland Pipe Line is to be notified at least 48 hours before work is performed in the vicinity of its pipelines. In extreme emergencies, when this is not possible, notification should be given at the earliest possible time.

12. No spoil, either of a permanent or temporary nature, is to be deposited on the pipelines.

13. Portland Pipe Line should be notified during initial planning stages for future installations located near pipelines so that the best mutually acceptable design practices are adopted.

14. Projects involving grading or access or utility crossings of Portland Pipe Line Corporation pipelines or rights of way must be submitted to PPLC for review and written approval prior to construction, with supporting documentation to demonstrate that the work will comply with the above requirements.

15. Portland Pipe Line Corporation supports the use of the Best Practices for project planning, design, and construction developed by the Common Ground Alliance and available at www.commongroundalliance.com.

Contact Information:

Director of Operations
(207) 767-0440

Maintenance Supervisor – Maine
(207) 767-0437

Maintenance Supervisor – New Hampshire/Vermont
(207) 232-7084

This document is provided for general technical guidance. All site and project specifics should be coordinated with a Portland Pipe Line Corporation representative.

APPENDIX B
RAILROAD SPECIFICATIONS

SECTION I

General Information

GTI - Rail Division
Engineering Department

January 1995

I. GENERAL INFORMATION

A. Initial Contact:

Guilford Transportation Industries-Rail Division (Boston and Maine Corp., Maine Central Railroad Company, and the Springfield Terminal Railway Company) owns rail lines in New England and the Northeast. In 1976 a portion of the Boston and Maine was sold to the Massachusetts Bay Transportation Authority, but is still operated over by the B&M. The B&M System and the MBTA sale is shown on the system map entitled "Boston and Maine Corp. - Lines Operated", at the end of this section. The sale consists of lines primarily North and Northwest of Metropolitan Boston, within the Commonwealth of Massachusetts.

Projects contemplated upon lines owned by GTI-Rail Division, the submission of plans and specifications should be made to the attention of the Chief Engineer-Design and Construction, GTI-Rail Division at the operating Railroad's headquarters. Also all legal documents and agreements should be made with the operating Railroad.

If the project contemplated is upon a line owned by the MBTA and operated by the B&M, the submission of plans and specifications should be made to the Chief Engineering Officer - Railroad Operations, MBTA, Ten Park Plaza, Boston, MA 02116 with a copy to the B&M Attention: Chief Engineer-Design and Construction.

B. Plans and Specifications:

1. SCOPE: It is the intent of the Railroad to eliminate or minimize any risk involved with construction on or affecting Railroad property. Therefore, we require Railroad approval of the plans and specifications for all phases of the proposed construction. The initial submission should contain three (3) sets for review with a later submission of five (5) sets for final approval.

2. PLANS: The plans are to show all the work which involves the Railroad (in some cases a partial set of the construction plans may be acceptable). They should contain a location map, a plan view of the project, with appropriate profiles and cross sections, and sufficient details. The proposed construction is to be located with respect to top of rail and centerline of track. Also to be included on the plan is Railroad stationing, property lines and subsurface soil conditions. The subsurface soils information is to be in the form of boring logs with the borings located on the plan view. (Please familiarize yourself with Railroad policy with regards to obtaining borings on Railroad property in Section II A.)

All pipe laid on Railroad property, adjacent to operating tracks must be capable of withstanding Railroad live loading. If reinforced concrete pipe is used, it must be Class 5 R.C. Pipe.

Pipe sleeves under Railroad tracks and along the right-of-way shall not be less than 5'6" below the base of rail. Under secondary or industry tracks, this distance may be reduced to 4'6", pending Railroad approval. The length of the pipe sleeve shall be the greatest length produced from the Railroad requirements shown on sheet 5, entitled "GTI Rail Division Requirements for Minimum Jacking Sleeve Lengths".

3. SPECIFICATIONS: The Specifications contained in Section III are the Standard Specifications of the Railroad. They apply to all types of construction work on the Railroad, including steel sleeves 30" in diameter and greater. These specifications are to be included in their entirety as a special section on the job specifications.

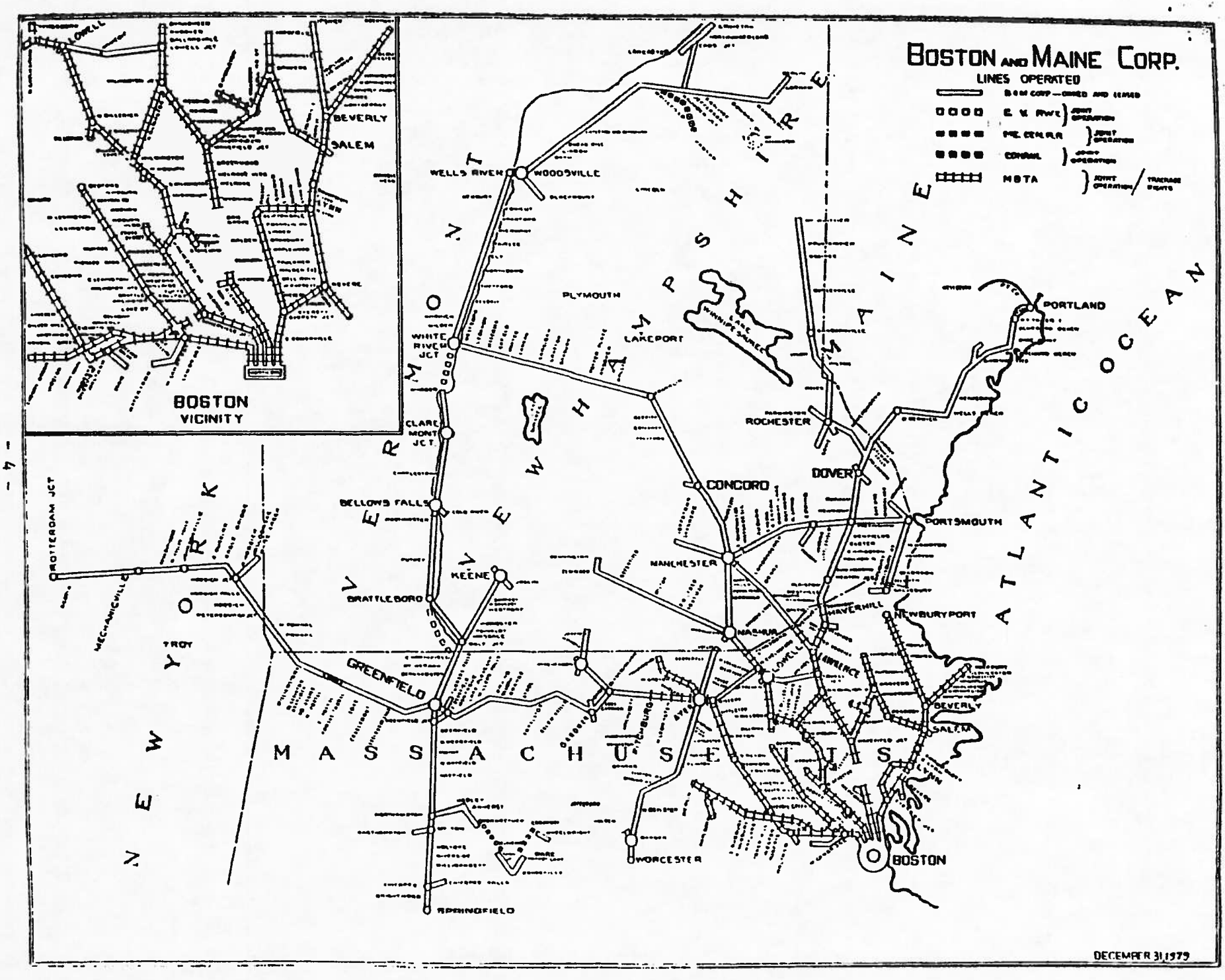
NOTE: Railroad specifications are the minimum requirements. In the event the contract specifications or drawings demand more stringent requirements, then, pending Railroad approval, the more stringent requirements will prevail.

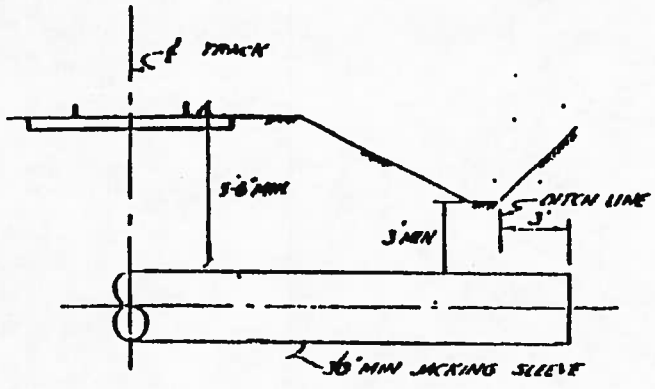
On those projects which occur on MBTA property, the Standard MBTA Specifications are to be used.

C. Review of Plans and Specifications:

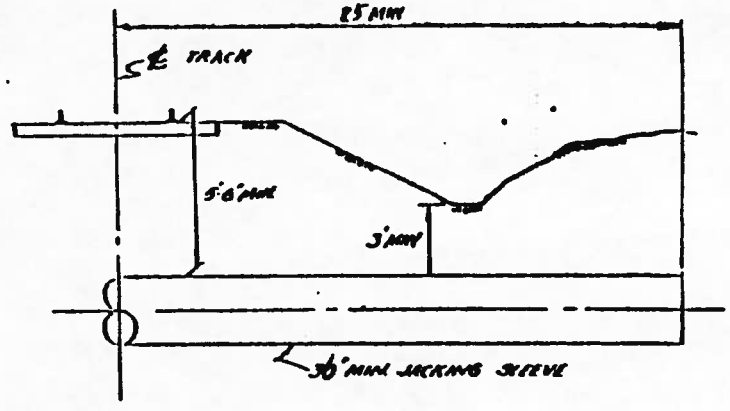
1. Project on lines owned by GTI-Rail Division:

The GTI-Rail Division requires payment for services it renders in the review of plans, specifications and related consultations, to cover crossings, bridges, pipes, conduits, wires, etc. which encroach upon Railroad property. An initial advance lump sum nonrefundable deposit to cover the cost of review is required. The amount of deposit will be determined at the time the initial submission is made. No work will proceed until the advance deposit has been received. Checks are to be made payable to the Operating Railroad.

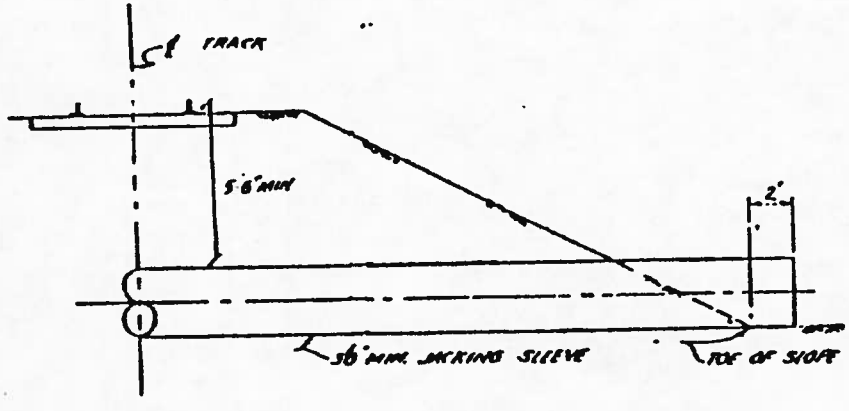

BOSTON AND MAINE CORP.
LINES OPERATED
B&M CORP — OWNED AND LEASED
B. & M. RWY.
ME. CENTRAL R.R.
CONRAIL
MBTA
JOINT OPERATION
TRACKAGE RIGHTS
BOSTON VICINITY
LOWELL
BEVERLY
SALEM
LYNN
BOSTON
NEW HAMPSHIRE
MAINE
VERMONT
NEW YORK
MASSACHUSETTS
ATLANTIC OCEAN
WELLS RIVER
WOODSVILLE
PLYMOUTH
WHITE RIVER JCT
LAKEPORT
LAKE WINNIPESAUKEE
CLAREMONT JCT.
BELLOWS FALLS
ROTTERDAM JCT
MECHANICVILLE
TROY
BRATTLEBORO
KEENE
GREENFIELD
SPRINGFIELD
WORCESTER
ROCHESTER
CONCORD
DOVER
PORTSMOUTH
PORTLAND
MANCHESTER
NASHUA
HAVERHILL
NEWBURYPORT
LOWELL
LAWRENCE
DECEMBER 31, 1979



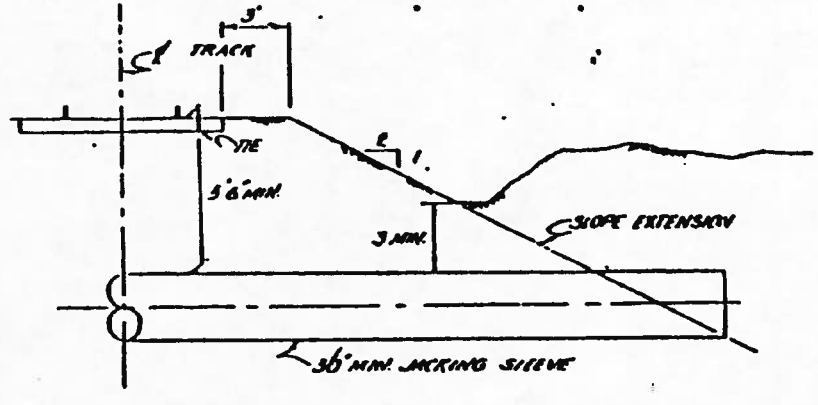
NO 1 GTI RAIL DIVISION REQUIREMENT FOR MINIMUM JACKING SLEEVE LENGTH



NO 3 GTI RAIL DIVISION REQUIREMENT FOR MINIMUM JACKING SLEEVE LENGTH



NO 2 GTI RAIL DIVISION REQUIREMENT FOR MINIMUM JACKING SLEEVE LENGTH



NO 4 GTI RAIL DIVISION REQUIREMENT FOR MINIMUM JACKING SLEEVE LENGTH

FOUR OF G.T.I RAIL DIVISION REQUIREMENTS FOR MINIMUM JACKING SLEEVE LENGTHS WITH 25 FEET AS THE ABSOLUTE MIN. FROM NEAREST ℄ TRACKS USE WHICH EVER OF THE FOUR (4) REQUIREMENTS GIVES THE GREATEST LENGTH.

SECTION II

Railroad Policies

GTI - Rail Division
Engineering Department

January 1995

II. GTI-RAIL DIVISION POLICIES

A. Regarding obtaining Surface and Subsurface Information.

In the event that the property either operated or owned by GTI-Rail Division has to be entered upon to obtain surface or subsurface information, the contractor is to obtain Railroad approval for the boring locations, Railroad insurance, and execute the Standard Railroad Service Contract, prior to any work being done. The Assistant Chief Engineer-Design should be contacted for information and initiation of this process.

B. Regarding Underground Utility Crossings.

1. Method of Installation:

(a) In a Public Way: (No work shall be done without engineer approval by the Railroad and a Railroad Inspector present.)

1. In or immediately adjacent to an at-grade crossing which has been rebuilt within the past ten (10) years, no open cuts will be allowed. All sleeves will be installed by the jacking method.

2. In or immediately adjacent to an at-grade crossing not scheduled for rebuilding, the preferred method of installation is by jacking. As an alternate, the sleeve may be installed by open cut within an acceptable depth, with strict adherence to the backfill specifications, and with the Owners paying for the complete rebuilding of the crossing, train schedule permitting.

3. In or immediately adjacent to an at-grade crossing scheduled for rebuilding the preferred method of installation is by jacking. As an alternate, within seven (7) calendar days of the scheduled date of the crossing reconstruction, the sleeve may be installed by open cut within an acceptable depth, train schedule permitting. Strict adherence shall be made to the backfill specifications, which provides the Railroad with written certification from a testing lab or P.E. registered in the State in which the work is performed, that the backfill density requirements of the Railroad specifications have been met or exceeded.

(b) Not within a Public Way:

The accepted method of crossing the Railroad is by jacking of a pipe sleeve under the Railroad. Only upon written request, will an alternate of open cut be given consideration. The engineering decision shall be based upon, but not limited to track usage, depth of excavation, soil conditions, and physical constraints. In the event an open cut is allowed, the contractor or owner must adhere to the following items:

1. The installation is to be a continuous operation and performed to a Railroad approved schedule.

2. No work shall be done without a Railroad inspector present.

3. Strict adherence to the Railroad backfill specifications by the Owner or its Contractor.

4. The Owner or its Contractor is to provide the Railroad with a non-refundable, lump sum payment for after the fact maintenance. The determination of this amount is based on the individual situation. No work will be allowed until this payment is received. This payment is not to be confused with the advance deposit for Railroad protective services (flagging, inspection, etc.) also required from the Owner or its Contractor before he enters upon Railroad property. Checks are to be made payable to the Operating Railroad.

C. Regarding Insurance and Indemnification.

1. Before entering upon the property of the Railroad, the Owner or its Contractor shall:

(a) Provide insurance, as specified in the Railroad specifications. The original policy shall be provided to the Railroad. No work will be done until an acceptable policy has been received and approved. The Railroad shall have the right to increase the limits of liability for both public liability and property damage during the life of the agreement.

(b) The Contractor shall execute the Standard Railroad Service Contract which indemnifies and saves harmless the Railroad.

(c) Provide payment as shall be required by the Railroad's Real Estate Department for preparation of agreement(s) and review of insurance.

D. Regarding Legal Documents for Temporary and Permanent Installations on:

1. Railroad lines:

(a) Outside Public Ways:

The Owner is required to either obtain a License Agreement, which includes an annual rental charge, that may be terminated by either party by giving 30 to 90 days notice, or the Owner may apply for a permanent easement, which may or may not be approved by the Railroad.

(b) Within Public Ways:

The Owner is not required to obtain an easement from the Railroad or obtain a License Agreement from the Railroad to install a facility. However, the Owner is required to conform with the requirements of C-1a and C-1b, and the Standard Railroad Specifications.

2. MBTA lines operated and controlled by the Railroad:

(a) Outside Public Ways:

The legal requirements will be as determined by the MBTA, however, the Railroad will require written notification and copy of the Agreement from the MBTA, indicating that their requirements have been met prior to any work being initiated, and the Contractor to sign a Standard Railroad Service Contract.

(b) Within Public Ways:

The Owner is not required to obtain an easement from the Railroad or to obtain a License Agreement from the Railroad to install a facility. However, the Owner is required to conform with the requirements of C-1a and C-1b, and the Standard Railroad Specifications.

E. Regarding Permanent Clearances.

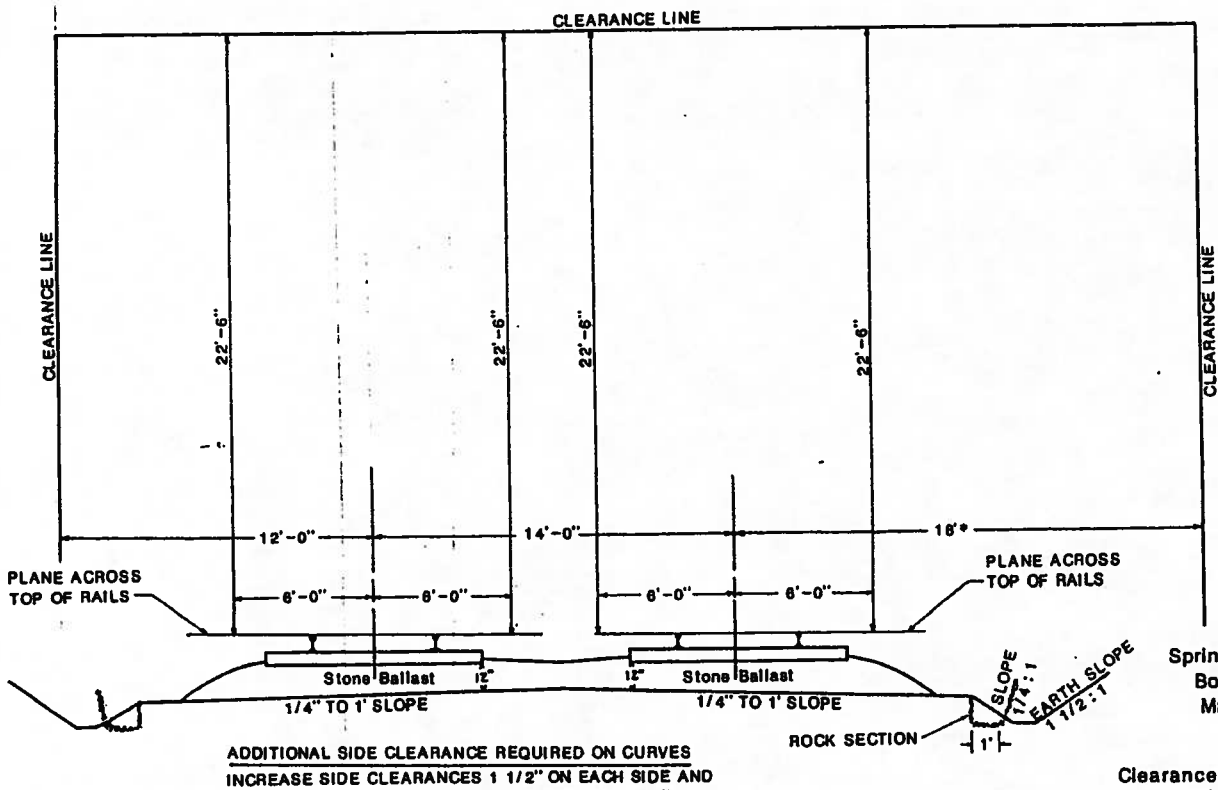
1. Railroad lines: All clearances for new construction shall adhere to those dimensions set forth on Standard Plan N8 entitled "GTI Rail Division Clearance Diagram New Bridge Construction". A copy of this standard plan is located at the end of this section. In the event of existing, severe limitations, the standard dimensions may be revised, at the discretion of the Railroad, but only upon written request.

2. MBTA lines operated and controlled by the Railroad.

(a) Railroad freight operations - The Chief Engineering Officer, GTI Rail Division, shall determine the clearance dimensions required for freight service.

Drawn MAT
Checked
Issue	Date
B	4/99

N8



ADDITIONAL SIDE CLEARANCE REQUIRED ON CURVES

INCREASE SIDE CLEARANCES 1 1/2" ON EACH SIDE AND 3" BETWEEN TRACKS FOR EACH DEGREE OF CURVE

ON SUPERELEVATED TRACK, THE TRACK CENTERLINE IS PERPENDICULAR TO A PLANE ACROSS TOP OF RAILS

Guilford Rail System
Springfield Terminal Railway Co.
Boston & Maine Corporation
Maine Central Railroad Co.

Clearance Diagram
for
New Overhead Bridge Construction

George S. Thayer
CHIEF ENGINEER-DESIGN & CONSTRUCTION

VICE PRESIDENT-ENGINEERING

* ACCESS ROAD LOCATION DETERMINED BY SITE SPECIFICS

NOTE: OVERHEAD BRIDGE DRAINAGE MUST BE DIRECTED AWAY FROM THE RAILROAD

Standard Railroad Specifications

Pan Am Railways/
Springfield Terminal Railway Company
Engineering Department

Office of Vice President Engineering
N. Billerica, Massachusetts
Date: 01/2011

SPECIFICATIONS RELATING TO WORKING WITHIN PREMISES OF
PAN AM RAILWAYS / SPRINGFIELD TERMINAL RAILWAY CO.

No other section of the Project Specifications shall supersede or modify this Section entitled: SPECIFICATIONS RELATING TO WORK WITHIN PREMISES USED AND CONTROLLED BY PAN AM RAILWAYS / SPRINGFIELD TERMINAL RAILWAY COMPANY.

1. DEFINITIONS:

1.1 Railroad: The work "Railroad" means Pan Am Railways and the Springfield Terminal Railway Company, their successors or assigns and their officers, agents and servants.

1.2 Owner: The word "Owner" means the individual, utility, government, or corporation who has title to the structure to be constructed upon property owned, controlled, or adjacent to the Railroad.

1.3 Utility: The work "Utility" includes public or private communication, water, sewer, electric, gas and petroleum companies.

1.4 Government: The work "Government" includes State, Town, City, County and other forms of Municipal Government.

1.5 Corporation: The word "Corporation" shall mean any firm duly incorporated under laws of a State Government.

1.6 Individual: The work "Individual" shall mean any party, which is not defined by 1.3, 1.4, or 1.5.

1.7 Contractor: The work "Contractor" means the individual, partnership, firm, corporation or any combination thereof, or joint venture, contracting with either a Utility, Government, Corporation or Individual, for work to be done on Railroad Property.

1.8 Owner or it's Contractor: The term "Owner or its Contractor" as used in these specifications shall not affect the responsibilities of each party as set forth in the Project Specifications.

1.9 Chief Engineering Officer of the Railroad: The Vice President of Engineering or Chief Engineer-Design and Construction or their authorized representatives at the Railroad.

2. SCOPE:

These specifications intend to provide for safeguards to the property owned or controlled by the Railroad and to its operations upon that property during construction operations by the Owner or its Contractor.

3. GENERAL:

3.1 Before entering upon Railroad premises or property used and controlled by the Railroad:

3.1.1 The Owner or its Contractor shall fully inform himself of all requirements of the Railroad as pertains to the specific project and shall conduct all his work accordingly. Any questions relating to the requirements of the Railroad should be directed to the representative of the Chief Engineer-Design and Construction at the Operating Railroad.

3.1.2 The Owner or its Contractor shall execute the Railroad's Standard Service Contract, and shall provide the Real Estate Department of the Railroad the insurance specified under Section 8.

3.1.3 The Owner or its Contractor shall take note that if an excavation is to be made within a 2 to 1 slope line commencing 3 feet from the end of tie, he shall submit for approval by the Chief Engineering Officer of the Railroad, his proposed method of preventing the soil from running.

3.1.4 The Owner or its Contractor shall furnish detailed plan, for falsework, bracing, sheeting, or other supports adjacent to the tracks for approval by the Chief Engineering Officer of the Railroad, and the work shall be performed in accordance with the approved plans. All plans and calculations shall be stamped by a Professional Engineer registered in the State in which the work is to be performed.

3.1.5 The Owner or its Contractor shall furnish to the Chief Engineering Office of the Railroad for approval complete sequence and plans with sufficient detail for checking, for the installation of, temporary supporting or removal of all members or structures above track. All such work shall be performed in

accordance with the approved plans and specifications. All plans and calculations shall be stamped by a Professional Engineer registered in the State in which the work is to be performed.

3.1.6 The Owner or its Contractor shall give written notice to the representative of the Chief Engineer-Design and Construction of the Railroad at the headquarters of the Operating Railroad at least seven (7) days in advance of starting work or locating equipment at the site. In addition, the Contractor shall give notice on the Wednesday prior to the week he proposed to do work which might cause any hazard, as described under Sections 4.

3.1.7 The Owner or its Contractor shall make all necessary arrangements with the Railroad before entering upon Railroad premises, or Property used and controlled by the Railroad.

3.1.8 The Owner or its Contractor shall at all times be aware that the Railroad may at any time withhold entry due to lack of flagging and/or inspection personnel.

3.2 After entering upon Railroad premises or property used and controlled by the Railroad.

3.2.1 The Owner or its Contractor shall have in his possession on the job site the contract plans and specifications, which bear the stamp of approval of the Railroad's Engineer of Design. The Owner or its Contractor shall conduct all his work according to these plans and specifications.

3.2.2 All work shall be performed and completed in a manner fully satisfactory to the Railroad's Chief Engineering Officer or his authorized representatives. Railroad inspection of the work shall be permitted at all times and the Owner of its Contractor shall cooperate fully with the Railroad representatives.

3.2.3 All equipment used by the Owner or its Contractor on Railroad premises or property used and controlled by the Railroad may be inspected by the Railroad and shall not be used if considered unsatisfactory by the Railroad's representative. Equipment of the Owner or its Contractor to be used adjacent to tracks shall be in first class condition so as to positively prevent

any failure that world cause delay in the operation of trains or damage to Railroad facilities. Equipment shall not be placed or put into operation adjacent to a track without first obtaining the permission of the Railroad.

3.2.4 Operators of such equipment may be examined by the Railroad representative to determine their fitness. If it is determined that they are unfit to work then the owner or its Contractor shall remove them from service.

3.2.5 Cranes used for lifting loads over Railroad property shall be rated at 150% of the load based on the crane manufacturer's load chart.

3.2.6 If the Chief Engineering Officer of the Railroad deems it necessary, the Owner or its Contractor shall furnish and erect in close proximity to the site of the work a suitable, furnished shelter with lights, heat, telephone, etc., exclusively for Railroad personnel mentioned previously.

3.2.7 The Owner or its Contractor's work shall be performed in such manner that the tracks, traffic and appurtenances of the Railroad will be safeguarded. He shall ascertain and comply with the requirements of the Railroad relative to his work on or adjacent to Railroad premises and except as permitted, he shall keep the tracks clear of obstruction.

3.2.8 Open excavations shall be suitable planked over when construction operations are not in progress.

3.2.9 Blasting will be permitted under or adjacent to tracks only after proof that blasting is required and all methods have been submitted to and approved by the Railroad's Chief Engineering Officer.

3.2.10 The Owner or its Contractor shall be fully responsible for all damages arising from his failure to comply with the requirements of these specifications.

3.2.11 If the specifications of the Railroad and the Consulting firm differ, then that which is more stringent shall prevail.

4. HAZARDS:

4.1 The Contractor's attention is called to the fact that the work under the Contract shall be performed adjacent to Main Line track, telephone lines, telegraph lines, signal lines and electric supply lines of the Railroad. A maximum speed of about __ miles per hour will be considered as prevailing for the operation of trains of the Railroad at this project.

4.2 An operating track shall be considered fouled and subject to hazard when any object or operation is or can be brought nearer than 15 feet to the centerline of the track. Specific site conditions may increase this dimension at the discretion of the Chief Engineer or his authorized representative.

4.3 A signal line or communication line shall be considered fouled and subject to hazard when any object is brought nearer than 4 feet to any wire or cable.

4.4 An electrical supply line shall be considered fouled and subject to hazard when any object is brought nearer than 10 feet to any wire of the line.

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

4.6 Railroad operations will be considered subject to hazard when explosives are used in the vicinity of Railroad premises, during the driving or pulling of sheeting for footings adjacent to a track, when erecting structural steel across or adjacent to a track, when operations involve swinging booms or chutes that could in any way come nearer than 15 feet to the center line of a track or wire line. None of these or similar operations, therefore, shall be carried on during the approach or passing to a train.

4.7 When, in the opinion of the Chief Engineering Officer of the Railroad or his representative the construction work would cause hazard to the safe operation of trains or to other Railroad facilities including any communication lines on Railroad premises, the Railroad will employ the necessary qualified employees to protect its trains and other facilities.

5. CLEARANCES:

Staging, falsework, or forms shall at all times be maintained with a minimum vertical clearance of 22'-6" above top of the rail and a minimum side clearance of 10'-0" from the center line of track, unless otherwise approved by the Railroad.

6. PROTECTION/INSPECTION SERVICES:

6.1 If deemed necessary by the Chief Engineering Officer of the Railroad the Railroad will furnish and assign an engineer(s) or inspector(s) for general inspection purposes or for general protection of Railroad property and operations during construction. Prior to start of any work on the Railroad, the Owner or its Contractor shall submit a deposit in the amount required by the Railroad. The Railroad may request additional deposits if projected expenses exceed the initial deposit amount. If the Railroad expenses are less than the amount of deposit, the Railroad will refund the balance to the Owner or its Contractor, after receipt of a written request. The Railroad will provide at its sole discretion such personnel, as it deems necessary or advisable because of the project. The Railroad reserves the right to request additional deposits as project work progresses. All checks are to be made out to the Operating Railroad.

6.2 If the Railroad determines that flagmen are necessary, the number required shall be on duty at the site during the hours of hazard described under Section 4. No work shall be performed if flagmen are required but not on duty.

6.3 It shall be the responsibility of the Owner or its Contractor to keep the Railroad informed at all times, and prior to such times, when the Owner or its Contractor shall be working on, above, or adjacent to

the Railroad creating the hazards described under Section 4. Failure of the Owner or its Contractor to give the Railroad suitable advance notice of hazardous operation shall result in the stoppage of the Owner's or its Contractor's work by the Railroad, until such time as sufficient number of flagmen are on duty at the site.

7. EXTRA-CONTRACT SERVICES:

7.1 Temporary and permanent changes of tracks and telephone lines, telegraph lines, signal lines, and electric supply lines made necessary by or to clear the permanent work of the Contractor will be made or caused to be made by the Railroad at the expense of the Owner or its Contractor.

7.2 All other changes made or services furnished by the Railroad, at the request of the Owner or its Contractor will be at the Owner's or its Contractor's expense.

8. INSURANCE:

8.1 At his sole expense the Owner or its Prime Contractor shall obtain, prior to working adjacent to Railroad premises and entry upon Railroad premises and keep in force during entire term of the work and for six (6) months subsequent to completion of work the following amounts and kinds of insurance. All policies shall be written for a minimum of one (1) year.

(A) Work on Pan Am Railways Property:

1. Contractors Public Liability - $5,000,000/$10,000,000

2. Contractors Property Damage Liability - $5,000,000/$10,000,000

3. The named insured shall be written exactly as follows: "Maine Central Railroad Co. and The Springfield Terminal Railway Company, their affiliates, successors and assigns,c/o Pan Am Railways, Iron Horse Park, North Billerica, Massachusetts 01862."

(B) Work on MBTA Property or other property where MBTA passenger service is operated:

1. Contractors Public Liability - $5,000,000/$10,000,000

2. Contractors Property Damage Liability - $5,000,000/$10,000,000

3. The named insured shall be written exactly as follows: "Pan Am Railways and The Springfield Terminal Railway Company, their affiliates, successors and assigns, and the Massachusetts Bay Transportation Authority."

The insurance shall be a Railroad Protective Liability Policy in a form acceptable to the Railroad.

The ORIGINAL insurance policy shall be furnished to the Real Estate Department of the Railroad at least ten (10) days prior to commencement of work. The Railroad shall have the right to increase the limits of liability for both public liability and property damage during the life of the agreement.

9. EXCAVATION:

9.1 The Owner or its Contractor shall furnish detail plans for falsework, bracing, shoring, sheeting, or other supports for excavation adjacent to the tracks to the Chief Engineering Officer of the Railroad for approval. The work shall be performed in accordance with the approved plans. No approval shall be given until the advance deposit (Item 6.1) has been received.

9.2 Open excavations shall be suitably planked over when construction operations are not in progress.

9.3 As excavation approaches pipes, conduits, or other underground structures on or adjacent to Railroad property, digging by machinery shall be discontinued and the excavation shall continue by means of hand tools.

9.4 All existing pipes, poles, wires, fences, property line markers, and other structures, which the Railroad's Chief Engineering Officer decides must be preserved in place without being temporarily or permanently relocated shall be carefully protected for damage by the Owner or its Contractor. Should such items be damaged, they shall be restored by the Railroad, at the Owner's or its Contractor's sole

expense, to at least as good condition as that in which they were found immediately before the work was begun.

9.5 If any excavation is taken beyond the work limit indicated on the approved plans or prescribed herein, the Owner or its Contractor shall backfill and compact as prescribed herein at his own expense.

9.6 The Railroad IS NOT a Dig Safe member utility. The Owner or its Contractor must contact the Railroad to have sub surface Railroad utility lines marked out prior to any excavation on Railroad property. The Owner or its Contractor will conduct all work so as to carefully protect Railroad utilities and will be responsible for all costs incurred to repair or replace Railroad utilities that are damaged.

10. BACKFILL:

10.1 Material

The material shall consist of stones, rock fragments and fine, hard durable particles resulting from the natural disintegration of rock. The material shall be free from injurious amounts of organic matter. The wear shall be not more than 60 percent. The material shall consist of a mixture of stones or rock fragments and particles with 95 to 100 percent passing the 3 inch sieve and 25 to 70 percent passing the No. 4 sieve. Not more than 15 percent of the material passing the No. 4 sieve shall pass the No. 200 sieve.

10.2 Backfilling

10.2.1 All backfill material adjacent to a pipe shall be approved soil. Backfill material shall be free from hard lumps and clods larger than 3-inch diameter, and free from large rocks or stumps. Uniformly fine material shall be placed next to any pipe liable to dent or break.

10.2.2 All backfill material shall be compacted at near optimum moisture content, in layers not exceeding 6 inches in compacted thickness by pneumatic tampers, vibrator compactors, or other approved means to the base of the Railroad subgrade. Care shall be

exercised to thoroughly compact the backfill under the haunches of the pipe to insure that the backfill soil is in intimate contact with the side of the pipe. Fill at the sides of the pipe may be compacted by rolling or operating heavy equipment parallel with the culvert, provided care is taken to avoid displacement or injury of the pipe. Material in the vicinity of pipes shall be compacted to not less than 95 percent of AASHO T 99, Method C. The Contractor will be required to supply, to the job site, ballast stone as prescribed herein to be installed by the Railroad.

10.3 The Owner or its Contractor shall provide testing, if requested by the Railroad, through the use of a testing lab or Professional Engineer registered in the State in which the work is performed, to insure that the in place density of the backfill meets or exceeds the requirements of Section 10.2.2. Written certification of the tests shall be given to the Railroad immediately upon completion of the test.

All Items Not addressed by the Pan Am Railways/ Springfield Terminal Railway Company's Standard Railroad Specifications shall conform to the latest specifications set forth in the American Railway Engineering and Maintainence of Way Association's Manual for Railway Engineering.

10.3 Certification

The Owner or its Contractor shall provide testing, through the use of a testing lab or Professional Engineer registered in the State in which the work is performed, to insure that the in place density of the backfill meets or exceeds the requirements of Section 10.2.2. Written certification of the tests shall be given to the Railroad immediately upon completion of the test.

11. BALLAST STONE

11.1 Material

Ballast shall consist of crushed stone with zero to fifteen percent passing a 1" screen, ninety to one hundred percent passing a 1.5" screen and one hundred percent passing a 2" screen.

11.2 Installation

The ballast stone shall be installed by Railroad forces according to Railroad Standards.

12. STEEL SLEEVE REQUIREMENTS FOR JACKING OPERATIONS

12.1 The outside diameter of the casing pipe shall be a minimum of thirty-six (36) inches (900 mm) with a minimum of six (6) inches (150 mm) greater than the largest outside diameter of the carrier pipe, joints or coupling.

12.2 The casing pipe shall be designed to withstand Coopers E-80 Railroad loading. Refer to the table below for nominal minimum thickness of steel sleeve required for a specific casing pipe diameter.

DIAMETER (inch)	DIAMETER (mm)	THICKNESS (inch)	THICKNESS (mm)
36	850 - 900	0.532	14
38 - 44	950 - 1100	0.569	15
46 - 50	1150- 1250	0.688	18
52 - 54	1300- 1350	0.813	21
60 - 66	1500- 1650	0.876	22
>66	>1676	investigate use of steel liner plate	

12.3 The casing pipe shall have a minimum yield strength of 35,000 psi (241325 kpa) and conform to the latest revisions of the requirements of A.W.A. Standards for fabricating electrically welded steel water pipes or its equivalent.

12.4 Method of Installation

12.4.1 The Owner or its Contractor shall submit to the Chief Engineering Officer, data and information demonstrating that he or his subcontractor has had successful previous experience in jacking in similar circumstances.

12.4.2 Before any work is begun within the limits of jacking the Owner or its Contractor shall have assembled all tools, materials and equipment which will be required. When the Owner or its Contractor has started the jacking operation, he will proceed in a continuous operation without stopping. This will minimize the tendency of the material to freeze around the pipe.

12.4.3 A jacking shield shall be used and jacked ahead of the casing pipe. The excavation within the jacking pipe should not advance beyond the head of the pipe shield. If the stability at the face needs to be maintained from raveling or running soil, suitable temporary bulkheads, struts and bracing shall be required. After completion of the sleeve installation the anular space around it shall be completely grouted with cement grout under pressure.

12.5 Method of Joining Casing Pipe Ends

The casing pipe shall be jacked without being welded through the use of a collar plate as shown on the sheet entitled, "Method of Jacking and Joining the Steel Sleeve Sections". Upon completion of the jacking operation either the continuous butt weld will be performed or a continuous interior collar plate is to be provided as shown.

Alternate Method:

Casing pipe ends shall be beveled with a single V-groove for field welding. Pipe joints shall be butt welded and shall be a full penetration on the outside circumference of the pipe. The single V-groove butt weld shall conform to the latest A.W.S. Welding Code. All joints of the casing pipe shall be butt welded, by a certified welder, prior to being subject to the jacking operation.

13. GROUND STABILIZATION

If required, it shall be done to the soil prior to the start of jacking. Stabilization shall be by either dewatering or grouting or combination of both to maintain the stability of the face of the heading.

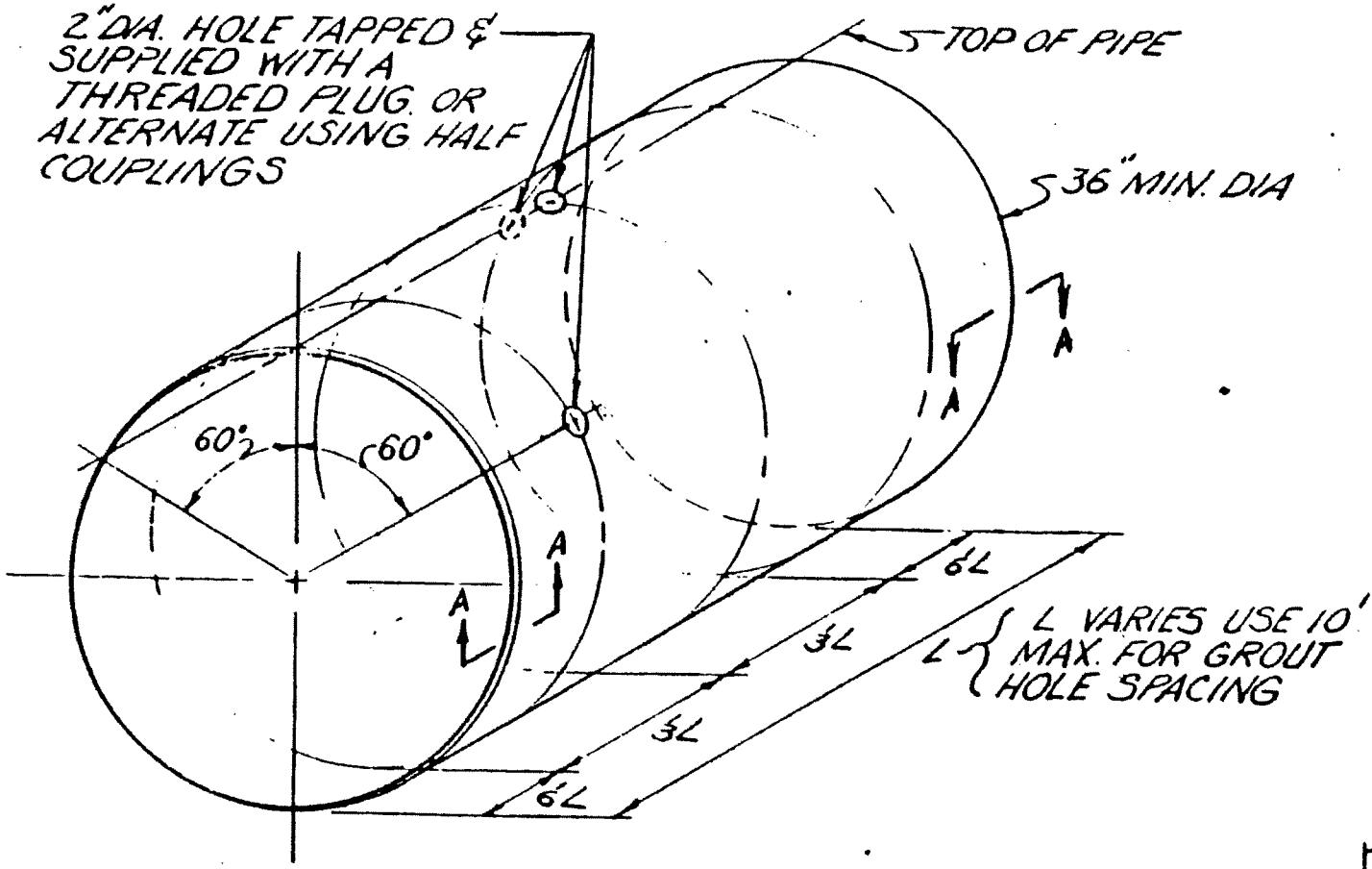
13.1 Dewatering

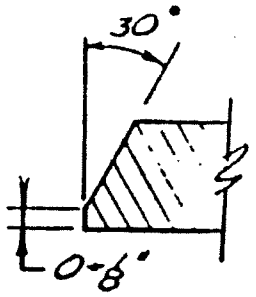
The Owner or its contractor shall lower and maintain the ground water level a minimum of 2 feet below the invert at all times during construction by well points, vacuum well points, or deep wells to prevent inflow of water or water and soil into the heading. Ground water observation wells shall be installed in the area to be dewatered to demonstrate that the dewatering requirements are being complied with.

13.2 Grouting

The grouting contractor shall be a specialist in the field with a minimum of five (5) continuous years of successfully grouting soils. All granular soils (silty sands, sand or sand and gravel) shall be stabilized by injection of a cement or chemical grout from the ground surface or from the pipe heading. The stabilization shall extend as far as necessary outside the periphery of the casing pipe in order to maintain a stable face at the heading.

13.3 Knowing that dewatering can cause settlement, it will be necessary that Railroad forces survey the crossing prior to, during and after construction. If it is found the tracks need to be aligned and surfaced by the Railroad forces because of the construction, the cost of this shall be borne by the Owner, or if so designated, by the Owner's Contractor.





STEEL SLEEVE

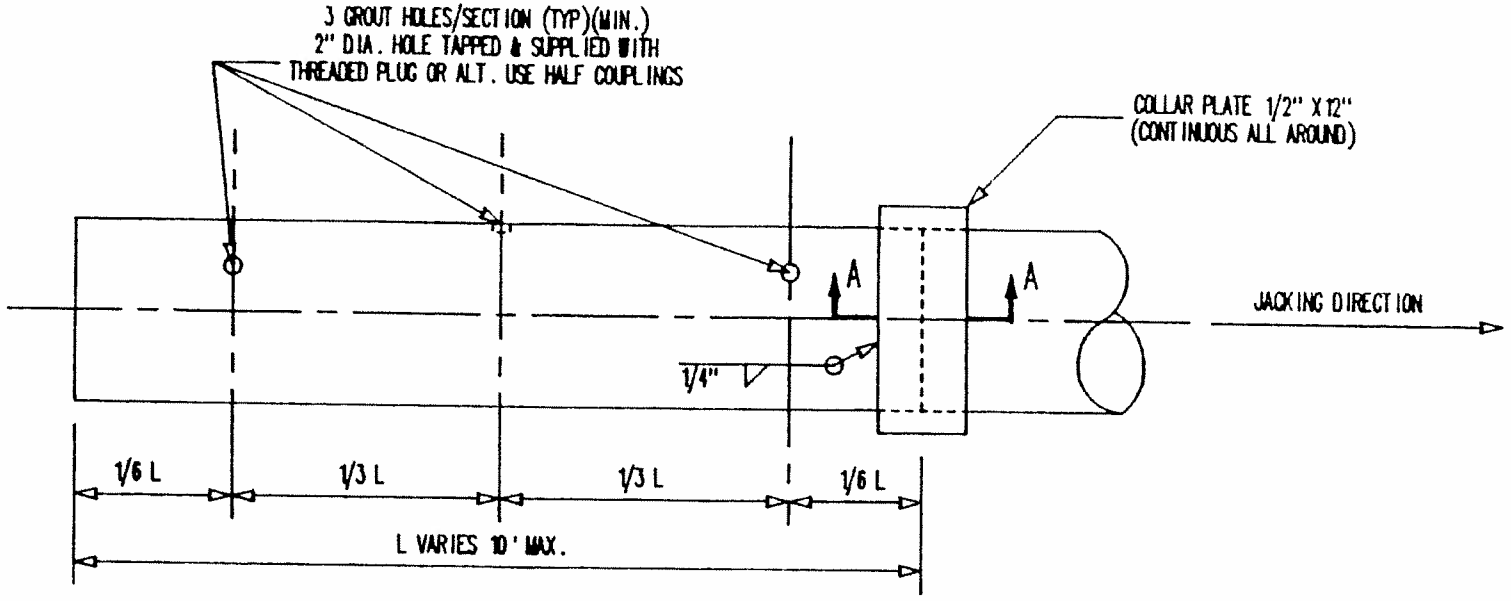
GROUT HOLES W/ THREADED PLUGS SHALL BE PROVIDED IN THE STEEL SLEEVE. A MINIMUM OF 3 GROUT HOLES WILL BE REQUIRED PER A 10 FOOT (MAX.) SECTION OF STEEL SLEEVE.

SECTION A-A

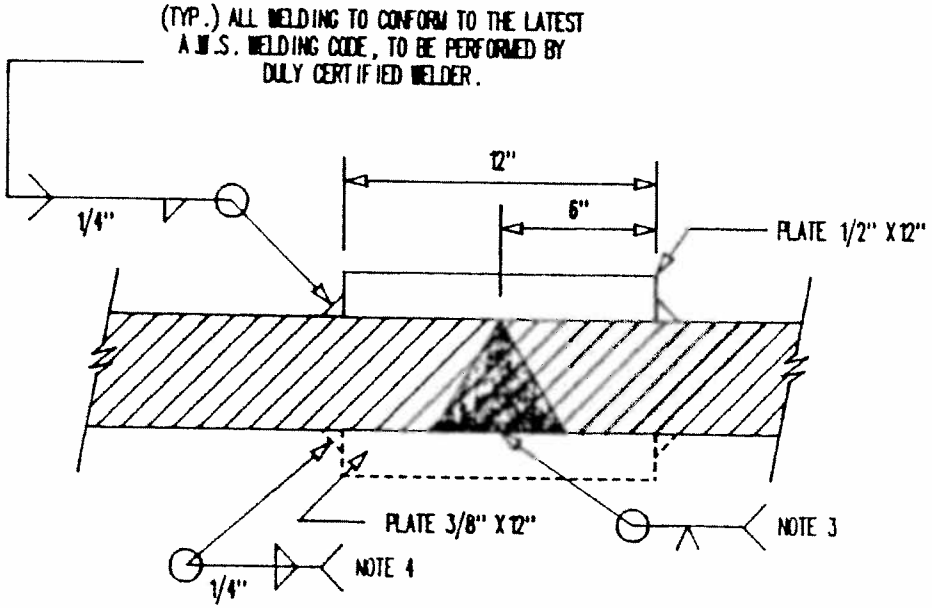
BY: D.IVANOV

DATE: 5-23-79

SHEET:



STEEL JACKING SLEEVE DETAIL



SECTION A-A

NOTES:

1. STEEL SLEEVE TO BE 36" MIN. DIA.
2. STEEL SLEEVE TO BE BEVELED ON THE INTERIOR OF THE PIPE.
3. THE CONTINUOUS BUTT WELD SHALL BE PERFORMED WHEN THE JACKING OPERATION IS FINISHED. (FOR ALTERNATE TO BUTT WELDING, SEE NOTE 4.)
4. AS AN ALTERNATE TO NOTE 3, PROVIDE A CONTINUOUS INTERIOR PLATE 3/8" X 12" WELDED ALL AROUND UPON COMPLETION OF THE JACKING OPERATION.

METHOD OF JACKING & JOINING
STEEL SLEEVE SECTIONS

BOSTON & MAINE CORP. DATE: 5/09/90 BY: DGR

the Railroad creating the hazards described under Section 4. Failure of the Owner or its Contractor to give the Railroad suitable advance notice of hazardous operation shall result in the stoppage of the Owner's or its Contractor's work by the Railroad, until such time as sufficient number of flagmen are on duty at the site.

7. EXTRA-CONTRACT SERVICES:

7.1 Temporary and permanent changes of tracks and telephone lines, telegraph lines, signal lines, and electric supply lines made necessary by or to clear the permanent work of the Contractor will be made or caused to be made by the Railroad at the expense of the Owner or its Contractor.

7.2 All other changes made or services furnished by the Railroad, at the request of the Owner or its Contractor will be at the Owner's or its Contractor's expense.

8. INSURANCE:

8.1 At his sole expense the Owner or its Prime Contractor shall obtain, prior to working adjacent to Railroad premises and entry upon Railroad premises and keep in force during entire term of the work and for six (6) months subsequent to completion of work the following amounts and kinds of insurance. All policies shall be written for a minimum of one (1) year.

(A) Work on Pan Am Railways Property:

1. Contractors Public Liability - $5,000,000/$10,000,000

2. Contractors Property Damage Liability - $5,000,000/$10,000,000

3. The named insured shall be written exactly as follows: "Maine Central Railroad Co. and The Springfield Terminal Railway Company, their affiliates, successors and assigns,c/o Pan Am Railways, Iron Horse Park, North Billerica, Massachusetts 01862."

(B) Work on MBTA Property or other property where MBTA passenger service is operated:

1. Contractors Public Liability - $5,000,000/$10,000,000

2. Contractors Property Damage Liability - $5,000,000/$10,000,000

3. The named insured shall be written exactly as follows: "Pan Am Railways and The Springfield Terminal Railway Company, their affiliates, successors and assigns, and the Massachusetts Bay Transportation Authority."

The insurance shall be a Railroad Protective Liability Policy in a form acceptable to the Railroad.

The ORIGINAL insurance policy shall be furnished to the Real Estate Department of the Railroad at least ten (10) days prior to commencement of work. The Railroad shall have the right to increase the limits of liability for both public liability and property damage during the life of the agreement.

9. EXCAVATION:

9.1 The Owner or its Contractor shall furnish detail plans for falsework, bracing, shoring, sheeting, or other supports for excavation adjacent to the tracks to the Chief Engineering Officer of the Railroad for approval. The work shall be performed in accordance with the approved plans. No approval shall be given until the advance deposit (Item 6.1) has been received.

9.2 Open excavations shall be suitably planked over when construction operations are not in progress.

9.3 As excavation approaches pipes, conduits, or other underground structures on or adjacent to Railroad property, digging by machinery shall be discontinued and the excavation shall continue by means of hand tools.

9.4 All existing pipes, poles, wires, fences, property line markers, and other structures, which the Railroad's Chief Engineering Officer decides must be preserved in place without being temporarily or permanently relocated shall be carefully protected for damage by the Owner or its Contractor. Should such items be damaged, they shall be restored by the Railroad, at the Owner's or its Contractor's sole

APPENDIX C
RAILROAD SERVICE AGREEMENT

MAINE CENTRAL RAILROAD COMPANY
SPRINGFIELD TERMINAL RAILWAY COMPANY

RAILROAD SERVICE AGREEMENT

AGREEMENT made as of this day of , 2018 by and between the "Railroad" as described in paragraph 1.A. below and "Contractor" as described in paragraph 1.B. below.

In consideration of the mutual promises, covenants and undertakings contained herein, and other good and valuable consideration, the receipt and sufficiency of which the parties hereby expressly acknowledge, the parties agree as follows:

1. The following terms shall have the meanings specified whenever used in this Agreement:

A. RAILROAD:

Maine Central Railroad Company and
Springfield Terminal Railway Company
c/o Pan Am Systems Incorporated
1700 Iron Horse Park
North Billerica, Massachusetts 01862

B. CONTRACTOR: The following described party, together with its agents, servants, employees, subcontractors, suppliers, consultants and engineers:

K&R Auto Sales
204 Minot Avenue
Auburn, Maine 04210

C. PROPERTY: The Railroad's so-called Freight Main Line in the vicinity of Minot Avenue and High Street, near Railroad milepost 162.15 in Auburn, Maine.

D. RAILROAD SERVICES: The Railroad shall perform such services and provide such equipment and materials which it deems, in its sole discretion, necessary for the safe performance by the Contractor of the Construction Project, including, without limitation, the performance of all preliminary, office and field engineering; internal record keeping and accounting; railroad flagging and signaling; restoration or replacement of the Railroad's track or ballast; and all railroad inspection; and the Railroad shall provide all railroad communication equipment and materials.

E. INITIAL RAILROAD SERVICE FEE: To be invoiced by the Engineering Department of the Railroad.

F. **CONSTRUCTION PROJECT**: Maintenance to an existing building, including but not limited to siding repair work.

G. **TERM:** One (1) year from the date first written above or completion of the construction project whichever occurs first.

H. **EXHIBITS:** The following Exhibits annexed hereto are hereby incorporated in this Agreement by this reference: Intentionally omitted.

2. **ENTRY UPON RAILROAD PROPERTY.** The Railroad hereby agrees to permit the Contractor to enter upon the Railroad Property for the Term for the limited purpose of performing the Construction Project, provided that the Contractor complies with all of the several terms, conditions and covenants contained in this Agreement, the Construction Project hereinabove described, and all work requirements and directions of the Vice President-Engineering of the Railroad, or his authorized representative (the "Vice President-Engineering").

3. **RAILROAD SERVICES**. In connection with the Contractor's performance of the Construction Project, the Railroad shall provide the Railroad Services.

4. **RAILROAD SERVICE FEES**. In consideration of the performance by the Railroad of the Railroad Services, the Contractor shall pay to the Railroad the Initial Railroad Service Fee. The Railroad hereby reserves the right to require additional Railroad Service Fees for Railroad Services necessary to complete the Construction Project. The Contractor further agrees to pay the Railroad a non-refundable fee of six hundred ($600.00) dollars as reimbursement for the costs and expenses incident to the preparation of this Agreement.

5. **NOTICE OF INTENTION TO COMMENCE THE CONSTRUCTION PROJECT**. The Contractor shall provide the Vice President - Engineering of the Railroad with seven (7) days' notice in advance of its intention to commence the Construction Project.

6. **COVENANTS OF THE CONTRACTOR**. The Contractor hereby covenants and agrees that it will observe the following affirmative and negative covenants during the term of this Agreement:

(a) The Contractor shall perform the Construction Project in a safe, good and workmanlike manner and in accordance with the description of the Construction Project herein contained and all work requirements and directions of the Vice President-Engineering.

(b) The Contractor shall permit to enter upon the Railroad Property and perform the Construction Project only those contractors and/or subcontractors having, in the exclusive opinion of the Vice President-Engineering, sufficient engineering, construction expertise and financial ability to accomplish the Construction Project. The Railroad shall have the right to disqualify any contractor or subcontractor employed by the Contractor from performing the Construction Project for the following reasons:

(i) Failure to pay in full Monies owed to the Railroad; or

(ii) Use of, or reputation for use of, construction methods or procedures which, in the exclusive opinion of the Vice President-Engineering, are unsafe, technically deficient, or not in compliance with the Railroad's standards.

Any contractor or subcontractor so disqualified by the Railroad shall immediately vacate the Railroad Property and shall not re-enter the Railroad Property without the prior written approval of the Vice President-Engineering.

(c) The Contractor shall not, at any time, except with the prior approval of the Vice President-Engineering, enter upon the Railroad Property or perform the Construction Project without the presence at the Railroad Property of a foreman, inspector, or flagman as may be assigned or required by the Vice President-Engineering, in his exclusive opinion.

(d) The Contractor shall procure and maintain, at its sole cost and expense, the following insurance coverage's naming the Railroad, exactly as designated in Paragraph 1, as insured, in forms and with companies and coverage limits satisfactory to the Railroad:

(i) Comprehensive General Liability Insurance protecting against liability from bodily injury or property damage arising out of the Construction Project.

(ii) Workers Compensation and Occupational Disease Insurance, as required by law.

(iii) Automobile Liability Insurance covering all motor vehicles used about or in connection with the Construction Project.

(iv) Railroad Protective Liability Insurance.

(e) The Contractor shall procure and maintain, at its sole cost and expense, all permits, licenses and approvals of all governmental authorities and all consents of all third parties necessary for the Contractor to perform the Construction Project. The Contractor shall comply with, and shall cause the Railroad Property to comply with, all applicable local, county, state or federal laws, codes or ordinances of any description, including, but not limited to: zoning, building, engineering, sanitation, health or environmental laws, particularly, the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (42 U.S.C. 9601, et seq., as amended) ("Law"). The Contractor shall promptly remedy any breach of any Law.

7. **INTERRUPTION OF CONSTRUCTION PROJECT**.

(a) Upon demand by the Railroad, the Contractor hereby agrees to immediately:

(i) Cease performance of the Construction Project;

(ii) Clear the Railroad Property of all personnel, materials, equipment or obstructions and render the Railroad Property safe for the passage of trains; and

(iii) Vacate the Railroad Property until such time as the Railroad gives notice of permission to re-enter the Railroad Property.

(b) In the event that the Contractor ceases work on the Construction Project, for any reason whatsoever, the Contractor shall provide notice of the same to the Vice President-Engineering and shall leave the Railroad Property in a safe condition, satisfactory to the Vice President - Engineering.

8. **PRIORITY OF RAILROAD OPERATIONS**. The operations of the Railroad, Pan Am Railway Incorporated ("Pan Am"), the affiliated railroads of Pan Am, (in general, and those running through the Railroad Property in particular) and the operations of the lessees, licensees and other lawful occupants of the Railroad Property shall have absolute priority over the performance of the Construction Project. The Contractor hereby agrees that the Construction Project shall be performed only at such hours and times and under such conditions as specified by the Railroad. Such hours and times shall be subject to change without prior notice to the Contractor. The Contractor hereby acknowledges and agrees that the Contractor may suffer delays and increased costs due to said agreed upon priority of the Railroad's and others' operations. Causes for such delay and increased cost may include: (i) the inability or default of the Railroad in providing adequate personnel to allow work; and/or (ii) passage of trains. The Parties agree that had the Contractor desired to proceed with the work without being subject to the aforementioned delay and increased cost, the terms of this Agreement would have been substantially different, and per diem costs to the Contractor, depending on job location, rail traffic, etc. could have far exceeded the Railroad Service Fee.

9. **INDEMNIFICATION OF RAILROAD.**

(a) The Contractor hereby agrees to defend with counsel acceptable to the Railroad, release, indemnify, protect and hold harmless the Railroad, Pan Am, their affiliates, successors and assigns, their lessees and licensees and all other lawful occupants of the Railroad Property from and against any and all loss, cost, damage, or expense arising in any way out of the Construction Project or Contractor's use or possession of the Railroad Property including, without limitation, (i) all claims or suits for loss or damage to property of any description or natural resources, (ii) personal injury, sickness or death of any person, (iii)

delay damages, (iv) consequential damages, (v) all matters relating to the alteration of wetlands, (vi) breach of any Law, particularly any alleged release of oil or hazardous or otherwise harmful materials or substances (including, but not limited to costs for assessment, remedial or response actions), or (vii) other damages arising in any way out of the Construction Project or Contractor's use or possession of Railroad Property, whether such loss, cost, damage, or expense is suffered by the Contractor, the Railroad, Pan Am, their affiliates, successors, assigns, lessees, licensees and all other lawful occupants of the Railroad Property, or the officers, agents employees, or representatives of any of them, or by others.

(b) In addition to the provisions above, the Contractor expressly agrees to assume responsibility for; and to release Railroad, Pan Am and their affiliates from, any and all claims, costs, suits, judgments arising from or related to any actual, alleged or potential violations of any federal, state or local environmental law, regulation, rule, ordinance, or code discovered by Contractor in a manner that relates in any way to the performance of the Construction Project, including, but not limited to, any actual, alleged potential violations that existed prior to the execution of this Agreement.

(c) In the event that at any time during the performance of the Construction Project, the Contractor discovers any contamination or suspected contamination that triggers notification requirements under any applicable federal, state or local law, rule, regulation or ordinance, the Contractor agrees to promptly notify the Railroad, who will assume responsibility for performing any notification, if necessary, in accordance with good environmental practice, and if any further investigation or remediation is determined necessary the Railroad will perform the investigation and remediation. The Contractor agrees to to indemnify the Railroad of any and all costs associated with the environmental contamination. The Contractor shall be held solely responsible for the cost of any necessary investigation and/or remediation

10. **GENERAL PROVISIONS.**

(a) Any notice or other communication in connection with this Agreement shall be deemed duly served when received (or upon attempted delivery if delivery is not accepted). Such notice shall be in writing and either delivered by hand or mailed (i) by registered or certified mail (return receipt requested) with the United States Postal Service, or (ii) by Federal Express or other overnight mail carrier furnishing evidence of receipt to the sender, at the address for such party set forth in Section 1. Either party may change the address at which it is to receive notices by notice given as hereinabove set forth.

(b) Failure of the Railroad to complain of any act or omission hereunder on the part of the Contractor, no matter how long the same may continue, shall not be deemed a waiver by the Railroad of any of its rights hereunder. No waiver by the Railroad

at any time, express or implied, of any breach of any provision of this Agreement shall ever be deemed a waiver of a breach of any other provision of this Agreement, or a consent to any subsequent breach of the same or any other provision. If any action by the Contractor shall require the Railroad's consent or approval, such consent or approval on any particular occasion shall not be deemed a consent or approval of any other action on any subsequent occasion.

(c) If any provision of this Agreement, or the application thereof to any person or circumstance, shall to any extent be invalid or unenforceable, the remainder of the Agreement, or the application of such provision to persons or circumstances other than those as to which it is invalid or unenforceable, shall not be affected. Each provision of this Agreement shall be deemed valid and enforceable to the fullest extent permitted by law.

(d) The Section headings contained in this Agreement are for reference and convenience only and in no way define or limit the scope and contents of this Agreement or in any way affect its provisions.

(e) This Agreement constitutes the entire understanding between the parties relating to the subject matter hereof, supersedes all prior oral and written offers, negotiations, proposals, representations, agreements, courses of dealing and understandings between the parties relating to the subject matter hereof and is subject to no understandings, conditions, or representations other than those expressly stated herein.

(f) This Agreement may only be amended or modified by a writing signed by all of the parties hereto which refers to this Agreement.

(g) This Agreement shall be governed by and construed in accordance with the laws of the state wherein the Railroad Property is located.

(h) Neither party to this Agreement shall be responsible to the other for delays or errors in its performance or other breach of this Agreement occurring solely by reason of circumstances beyond its control, including acts of civil or military authority, national emergencies, fire, labor disputes, flood or catastrophe, acts of God, insurrection, war, riots, delays of suppliers, or failure of transportation, communication or power supply.

(i) The parties agree that neither this Agreement nor any memorandum thereof shall be recorded at any registry of deeds and that any such recording by the Contractor shall constitute a breach of this Agreement.

(j) If the Contractor executes this Agreement through an agent or representative, each

such agent or representative hereby warrants and represents to the Railroad that he is authorized to execute, acknowledge, and deliver this Agreement on behalf of the Contractor and to thereby bind the Contractor to the same.

(k) This Agreement: (i) may be executed in any number of counterparts, each of which when executed by all parties to this Agreement shall be deemed to be an original, and all of which counterparts together shall constitute one and the same instrument, (ii) shall take effect as a sealed instrument, (iii) shall bind and inure to the benefit of the parties and their respective legal representatives, successors and assigns, except that the Contractor may not delegate any of its obligations under this Agreement or assign this Agreement without obtaining the Railroad's express written consent, and (iv) is not intended to inure to the benefit of any third party beneficiary.

(l) This Agreement shall not be construed as creating or vesting in the Contractor any estate in the Railroad Property, but only the limited right of using the Railroad Property in the manner hereinabove described.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as a sealed instrument as of the date first set forth above by their duly authorized representatives.

MAINE CENTRAL RAILROAD COMPANY
AND
SPRINGFIELD TERMINAL RAILWAY COMPANY

By:_____
Ted Krug,
Chief Design Engineer
Iron Horse Park
N. Billerica, MA 01862

K & R AUTO SALES

By: _____
John Vallieres

APPENDIX D
MAINE DEP ENVIRONMENTAL PERMITS (STROUDWATER)

This document can be found on the Maine Turnpike Authority website at the link below under the information for Contract 2019.09

Link: http://www.maineturnpike.com/Projects-Planning/Construction-Contracts.aspx

APPENDIX E
ACOE ENVIRONMENTAL PERMITS
(STROUDWATER)

This document can be found on the Maine Turnpike Authority website at the link below under the information for Contract 2019.09

Link: http://www.maineturnpike.com/Projects-Planning/Construction-Contracts.aspx

APPENDIX F
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)[1], 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.

[1] 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
  - 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.

Process Indicators: 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.

Impact Indicators: 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 Stormwater Awareness Plan as required by MTA's MS4 Permit.

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

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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)[1], 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).

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[1] 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.

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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.

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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 this Stormwater Awareness Plan as required by MTA's MS4 Permit.

_____	_____
Contractor Signature of Acknowledgement	Date
_____	_____
Printed Name	Project Number