MAINE TURNPIKE AUTHORITY

MAINE TURNPIKE

CONTRACT DOCUMENTS

CONTRACT 2021.03

BRIDGE REPAIRS 3 LOCATIONS
BENNETT ROAD UNDERPASS MILE 68.6
GROVE STREET UNDERPASS MILE 83.7
ROUTE 9 UNDERPASS MILE 86.1

NOTICE TO CONTRACTORS

PROPOSAL

CONTRACT AGREEMENT

CONTRACT BOND

FINAL LIEN AND CLAIM WAIVER AND AFFIDAVIT

SPECIFICATIONS

MAINE TURNPIKE AUTHORITY

SPECIFICATIONS

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

The Maine Turnpike Supplemental Specifications are additions and alterations to the 2014 Maine Department of Transportation Standard Specifications. 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 2021.03

BRIDGE REPAIRS 3 LOCATIONS
BENNETT ROAD UNDERPASS MILE 68.6
GROVE STREET UNDERPASS MILE 83.7
ROUTE 9 UNDERPASS MILE 86.1

at the office of the Maine Turnpike Authority, 2360 Congress Street, Portland, ME, until 11:00 a.m., prevailing time as determined by the Authority on May 20, 2021, at which time and place the Proposals will be publicly opened and read online via a Zoom Meeting. All registered plan holders will be sent the link for the Zoom bid opening. The Zoom meeting link can also be obtained by contacting Nate Carll, Purchasing Manager, at (207) 871-7739 or email ncarll@maineturnpike.com**.** 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 general repairs and modifications to Bennett Road Underpass Bridge at Mile 68.6, Grove Street Underpass Bridge at Mile 83.7, and Route 9 Underpass Bridge at Mile 86.1. The work includes pavement and membrane replacement on Bennett Road and Route 9 Underpass Bridges; bridge joint repairs and modifications at Route 9 Underpass Bridge, end of deck and backwall reconstruction at Bennett Road Underpass Bridge; concrete repairs, pavement grinding and overlay on approaches at Bennett Road and Route 9 Underpass Bridges; beam repairs at Grove Street Underpass Bridge; maintenance of traffic and all other work incidental thereto in accordance with the Plans and Specifications.

The half size Plans and Contract Documents may be obtained from the Authority upon payment of One Hundred ($100.00) 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.

An online Zoom pre-bid conference will be held on May 4, 2021, at 10:00 a.m. All registered plan holders will be sent the link for the Zoom pre-bid conference. The meeting link can also be obtained by contacting Nate Carll, **Purchasing Manager, at (207) 871-7739 or email ncarll@maineturnpike.com.**

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 2021.03

BRIDGE REPAIRS 3 LOCATIONS
BENNETT ROAD UNDERPASS MILE 68.6
GROVE STREET UNDERPASS MILE 83.7
ROUTE 9 UNDERPASS MILE 86.1

MAINE TURNPIKE AUTHORITY

PROPOSAL

CONTRACT 2021.03

BRIDGE REPAIRS 3 LOCATIONS
BENNETT ROAD UNDERPASS MILE 68.6
GROVE STREET UNDERPASS MILE 83.7
ROUTE 9 UNDERPASS MILE 86.1

TO MAINE TURNPIKE AUTHORITY:

This work consists of general repairs and modifications to Bennett Road Underpass Bridge at Mile 68.6, Grove Street Underpass Bridge at Mile 83.7, and Route 9 Underpass Bridge at Mile 86.1. The work includes pavement and membrane replacement on Bennett Road and Route 9 Underpass Bridges; bridge joint repairs and modifications at Route 9 Underpass Bridge; end of deck and backwall reconstruction at Bennett Road Underpass Bridge; concrete repairs, pavement grinding and overlay on approaches at Bennett Road, and Route 9 Underpass Bridges; beam repairs at Grove Street Underpass Bridge; 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 2021.03 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. 2021.03
Bridge Repairs, 3 Locations

Item No.	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
202.12	REMOVING EXISTING STRUCTURAL CONCRETE	Cubic Yard	33				
202.127	REMOVING OF EXISTING BITUMINOUS PAVEMENT	Lump Sum	1				
202.191	REMOVING EXISTING DRAIN TROUGHS	Lump Sum	1				
202.202	REMOVING PAVEMENT SURFACE	Square Yard	1,130				
202.206	REMOVING OF RUMBLE STRIPS	Linear Foot	1,170				
203.20	COMMON EXCAVATION	Cubic Yard	88				
203.25	GRANULAR BORROW	Cubic Yard	78				
403.208	HOT MIX ASPHALT, 12.5MM NOMINAL MAXIMUM SIZE	Ton	221				
403.213	HOT MIX ASPHALT, 12.5MM NOMINAL MAXIMUM SIZE (BASE AND INTERMEDIATE COURSE)	Ton	147				
409.15	BITUMINOUS TACK COAT RS-1 OR RS-1h - APPLIED	Gallon	177				

CARRIED FORWARD:		

Item No.	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
				BROUGHT FORWARD:			
502.21	STRUCTURAL CONCRETE, ABUTMENTS AND RETAINING WALLS	Cubic Yard	23				
502.42	STRUCTURAL CONCRETE ROADWAY AND SIDEWALK SLAB ON STEEL BRIDGES	Cubic Yard	11				
502.701	BRIDGE DRAIN GRATE MODIFICATIONS	Each	6				
502.7011	WEEP DRAIN EXTENSIONS	Lump Sum	1				
503.12	REINFORCING STEEL, FABRICATED AND DELIVERED	Pound	3,600				
503.13	REINFORCING STEEL, PLACING	Pound	3,600				
503.14	EPOXY-COATED REINFORCING STEEL, FABRICATED AND DELIVERED	Pound	3,400				
503.15	EPOXY-COATED REINFORCING STEEL, PLACING	Pound	3,400				
504.80	STRUCTURAL STEEL REPAIR (REPAIR AREA "A")	Lump Sum	1				
504.81	STRUCTURAL STEEL REPAIR (REPAIR AREA "B")	Lump Sum	1				
504.82	STRUCTURAL STEEL REPAIR (REPAIR AREA "C")	Lump Sum	1				
506.9103	ZINC RICH COATING SYSTEM (FIELD APPLIED)	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:			
508.14	HIGH PERFORMANCE WATERPROOFING MEMBRANE	Lump Sum	1				
515.201	PIGMENTED PROTECTIVE COATING FOR CONCRETE SURFACES	Square Yard	705				
515.202	CLEAR PROTECTIVE COATING FOR CONCRETE SURFACES	Square Yard	730				
518.10	ABUTMENT REPAIRS	Square Foot	60				
518.20	PIER REPAIRS	Square Foot	485				
518.39	GRANITE CURB JOINT MORTAR AND BEDDING REPAIR	Linear Foot	820				
518.43	PARAPET JOINT REPAIR	Linear Foot	350				
518.75	FASCIA AND OVERHANG REPAIRS	Square Foot	75				
518.80	PARTIAL DEPTH CONCRETE DECK REPAIRS	Square Foot	140				
518.81	FULL DEPTH CONCRETE DECK REPAIRS	Square Foot	5				
520.211	EXPANSION DEVICE MODIFICATIONS (ROUTE 9)	Each	2				
520.2112	BRIDGE EXPANSION JOINT CLEANING (LITTLEFIELD ROAD)	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:			
520.23	EXPANSION DEVICE - ASPHALTIC PLUG JOINT (BENNETT ROAD)	Linear Foot	52				
520.2111	BRIDGE EXPANSION JOINT CLEANING (WILSON ROAD)	Lump Sum	1				
524.31	TEMPORARY DECK SUPPORT SYSTEM	Lump Sum	1				
531.82	HEAT STRAIGHTENING	Lump Sum	1				
607.17	CHAIN LINK FENCE - 6 FOOT	Linear Foot	250				
607.34	BRACING ASSEMBLY CHAIN LINK FENCE	Each	16				
609.11	VERTICAL CURB TYPE 1	Linear Foot	35				
610.08	PLAIN RIPRAP	Cubic Yard	85				
619.1202	TEMPORARY MULCH	Lump Sum	1				
620.58	EROSION CONTROL GEOTEXTILE	Square Yard	370				
627.712	WHITE OR YELLOW PAVEMENT MARKING LINE	Linear Foot	3,220				
627.73	TEMPORARY 6 INCH PAVEMENT MARKING TAPE	Linear Foot	80				
				CARRIED FORWARD:			

Item No.	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
				BROUGHT FORWARD:			
627.731	TEMPORARY 6 INCH BLACK PAVEMENT MARKING TAPE	Linear Foot	180				
627.77	REMOVING PAVEMENT MARKINGS	Square Foot	310				
627.94	PAVEMENT MARKING TAPE	Linear Foot	2,050				
629.05	HAND LABOR - STRAIGHT TIME	Hour	40				
631.12	ALL PURPOSE EXCAVATOR (INCLUDING OPERATOR)	Hour	20				
631.172	TRUCK-LARGE (INCLUDING OPERATOR)	Hour	40				
631.36	FOREMAN	Hour	20				
643.72	TEMPORARY TRAFFIC SIGNAL	Lump Sum	1				
652.39	WORK ZONE TRAFFIC CONTROL	Lump Sum	1				
652.45	TRUCK MOUNTED ATTENUATOR	Cal. Day	56				
652.451	AUTOMATED TRAILER MOUNTED SPEED LIMIT SIGN	Cal. Day	28				
656.50	BALED HAY, IN PLACE	Each	16				
				CARRIED FORWARD:			

Item No.	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
				BROUGHT FORWARD:			
656.632	30 INCH TEMPORARY SILT FENCE	Linear Foot	800				
659.10	MOBILIZATION	Lump Sum	1				
				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:
https://www.maineturnpike.com/Projects/Construction-Related-Documents.aspx

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 general repairs and modifications to Bennett Road Underpass Bridge at Mile 68.6, Grove Street Underpass Bridge at Mile 83.7, and Route 9 Underpass Bridge at Mile 86.1. The work includes pavement and membrane replacement on Bennett Road and Route 9 Underpass Bridges; bridge joint repairs and modifications at Route 9 Underpass Bridge; end of deck and backwall reconstruction at Bennett Road Underpass Bridge; concrete repairs, pavement grinding and overlay on approaches at Bennett Road, and Route 9 Underpass Bridges; beam repairs at Grove Street Underpass Bridge; 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 2021.03 – BRIDGE REPAIRS 3 LOCATIONS – BENNETT ROAD UNDERPASS (MILE 68.6) – GROVE STREET UNDERPASS (MILE 83.7) – ROUTE 9 UNDERPASS (MILE 86.1)". The right is reserved by the Resident to make such minor corrections or alterations in the Plans as he deems necessary without change in the unit prices on the Schedule of Prices of the Proposal.

101.2 Definition

Holidays

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

Independence Day 2021 (Fourth of July)	12:01 p.m. preceding Friday to 6:00 a.m. the following Tuesday.

103.4 Notice of Award

The following sentence is added:

The Maine Turnpike Authority Board is scheduled to consider the Contract Award on May 27, 2021.

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 ALL CONSTRUCTION SITES FUNDED IN PART WITH STATE FUNDS

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

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

2021 Fair Minimum Wage Rates
Heavy & Bridge Cumberland County

Occupation Title	Minimum Wage	Minimum Benefit	Total	Occupation Title	Minimum Wage	Minimum Benefit	Total
Asphalt Raker	$ 19.51	$ 2.14	$ 21.65	Ironworker - Reinforcing	$ 29.38	$ 6.98	$ 36.36
Backhoe Loader Operator	$ 28.75	$ 12.88	$ 41.63	Ironworker - Structural	$ 22.00	$ 4.94	$ 26.94
Boom Truck (Truck Crane) Operator	$ 25.00	$ 5.86	$ 30.86	Laborer - Skilled	$ 22.50	$ 4.46	$ 26.96
Bulldozer Operator	$ 23.97	$ 3.88	$ 27.85	Laborers (Helpers & Tenders)	$ 21.01	$ 1.52	$ 22.53
Carpenter	$ 24.75	$ 5.90	$ 30.65	Line Erector - Power/Cable Splicer	$ 32.89	$ 5.85	$ 38.74
Carpenter - Rough	$ 25.00	$ 5.67	$ 30.67	Loader Operator - Front-End	$ 26.00	$ 4.54	$ 30.54
Cement Mason/Finisher	$ 24.50	$ 0.00	$ 24.50	Mechanic- Maintenance	$ 24.61	$ 3.67	$ 28.28
Comm Transmission Erector-Microwave/Cell	$ 23.00	$ 4.64	$ 27.64	Mechanic- Refrigeration	$ 26.50	$ 6.58	$ 33.08
Communication Equip Installer	$ 19.75	$ 3.69	$ 23.44	Millwright	$ 27.00	$ 5.49	$ 32.49
Crane Operator =>15 Tons)	$ 31.98	$ 6.87	$ 38.85	Painter	$ 35.00	$ 0.00	$ 35.00
Diver	$ 32.00	$ 4.80	$ 36.80	Paver Operator	$ 23.91	$ 7.36	$ 31.27
Dry-Wall Applicator	$ 24.00	$ 0.00	$ 24.00	Pipe/Steam/Sprinkler Fitter	$ 27.00	$ 6.72	$ 33.72
Dry-Wall Taper & Finisher	$ 24.00	$ 0.84	$ 24.84	Pipelayer	$ 25.50	$ 5.90	$ 31.40
Earth Auger Operator	$ 27.33	$ 5.85	$ 33.18	Plumber (Licensed)	$ 28.00	$ 4.19	$ 32.19
Electrician - Licensed	$ 31.98	$ 8.44	$ 40.42	Plumber Helper/Trainee	$ 19.25	$ 2.10	$ 21.35
Electrician Helper/Cable Puller	$ 21.75	$ 18.67	$ 40.42	Reclaimer Operator	$ 26.83	$ 13.25	$ 40.08
Elevator Constructor/Installer	$ 61.42	$ 41.17	$ 102.59	Rigger	$ 26.00	$ 7.43	$ 33.43
Excavator Operator	$ 28.00	$ 4.27	$ 32.27	Roller Operator - Earth	$ 20.00	$ 1.92	$ 21.92
Fence Setter	$ 18.50	$ 2.00	$ 20.50	Roller Operator - Pavement	$ 23.91	$ 4.70	$ 28.61
Flagger	$ 15.00	$ 0.00	$ 15.00	Screed/Wheelman	$ 21.00	$ 3.61	$ 24.61
Floor Layer	$ 22.00	$ 4.32	$ 26.32	Sheet Metal Worker	$ 22.50	$ 5.42	$ 27.92
Grader/Scraper Operator	$ 23.71	$ 4.85	$ 28.56	Truck Driver - Heavy	$ 23.99	$ 1.93	$ 25.92
Hot Top Plant Operator	$ 23.91	$ 10.99	$ 34.90	Truck Driver - Light	$ 17.00	$ 0.52	$ 17.52
Industrial Truck (Forklift) Operator	$ 26.83	$ 1.95	$ 28.78	Truck Driver - Medium	$ 20.95	$ 2.02	$ 22.97
Insulation Installer	$ 21.00	$ 2.12	$ 23.12	Truck Driver - Tractor Trailer	$ 25.00	$ 2.57	$ 27.57

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.

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

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

A true copy

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

Expiration Date: 12-31-2021
Revised 2-25-2021

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

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

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

2021 Fair Minimum Wage Rates
Highway & Earth Cumberland County

Occupation Title	Minimum Wage	Minimum Benefit	Total	Occupation Title	Minimum Wage	Minimum Benefit	Total
Asphalt Raker	$ 19.80	$ 1.01	$ 20.81	Ironworker - Reinforcing	$ 28.36	$ 0.00	$ 28.36
Backhoe Loader Operator	$ 25.46	$ 4.33	$ 29.79	Laborer - Skilled	$ 20.61	$ 2.19	$ 22.80
Boom Truck (Truck Crane) Operator	$ 25.00	$ 5.86	$ 30.86	Laborers (Helpers & Tenders)	$ 20.00	$ 0.89	$ 20.89
Bulldozer Operator	$ 24.97	$ 3.50	$ 28.47	Loader Operator - Front-End	$ 20.50	$ 3.80	$ 24.30
Carpenter - Rough	$ 30.76	$ 19.72	$ 50.48	Mechanic- Maintenance	$ 24.00	$ 3.92	$ 27.92
Cement Mason/Finisher	$ 20.50	$ 1.42	$ 21.92	Millwright	$ 25.75	$ 5.41	$ 31.16
Communication Equip Installer	$ 22.00	$ 0.00	$ 22.00	Painter	$ 19.50	$ 0.00	$ 19.50
Crane Operator =>15 Tons)	$ 29.00	$ 6.68	$ 35.68	Paver Operator	$ 30.00	$ 5.21	$ 35.21
Crusher Plant Operator	$ 20.00	$ 2.39	$ 22.39	Pipelayer	$ 23.90	$ 3.50	$ 27.40
Electrician - Licensed	$ 28.00	$ 5.90	$ 33.90	Reclaimer Operator	$ 26.83	$ 13.25	$ 40.08
Electrician Helper/Cable Puller	$ 18.50	$ 2.39	$ 20.89	Roller Operator - Earth	$ 19.83	$ 0.00	$ 19.83
Excavator Operator	$ 24.20	$ 4.00	$ 28.20	Roller Operator - Pavement	$ 23.06	$ 4.59	$ 27.65
Fence Setter	$ 19.00	$ 2.00	$ 21.00	Screed/Wheelman	$ 24.86	$ 4.18	$ 29.04
Flagger	$ 15.50	$ 0.00	$ 15.50	Stone Mason	$ 25.00	$ 1.88	$ 26.88
Grader/Scraper Operator	$ 27.89	$ 8.90	$ 36.79	Truck Driver - Heavy	$ 19.00	$ 2.03	$ 21.03
Highway Worker/Guardrail Installer	$ 24.87	$ 1.36	$ 26.23	Truck Driver - Light	$ 24.15	$ 0.38	$ 24.53
Hot Top Plant Operator	$ 23.91	$ 13.25	$ 37.16	Truck Driver - Medium	$ 21.00	$ 1.64	$ 22.64
Industrial Truck (Forklift) Operator	$ 26.83	$ 1.48	$ 28.31	Truck Driver - Tractor Trailer	$ 20.00	$ 0.72	$ 20.72

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.

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

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

A true copy

Attest: Scott R. Cotnoir

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

Expiration Date: 12-31-2021
Revised 2-25-2021

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

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

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

2021 Fair Minimum Wage Rates
Heavy & Bridge Androscoggin County

Occupation Title	Minimum Wage	Minimum Benefit	Total	Occupation Title	Minimum Wage	Minimum Benefit	Total
Asphalt Raker	$ 19.51	$ 2.14	$ 21.65	Ironworker - Reinforcing	$ 28.88	$ 15.05	$ 43.93
Backhoe Loader Operator	$ 28.50	$ 12.87	$ 41.37	Ironworker - Structural	$ 23.15	$ 4.57	$ 27.72
Boom Truck (Truck Crane) Operator	$ 25.00	$ 5.86	$ 30.86	Laborer - Skilled	$ 26.82	$ 0.00	$ 26.82
Bulldozer Operator	$ 23.97	$ 3.88	$ 27.85	Laborers (Helpers & Tenders)	$ 21.01	$ 1.51	$ 22.52
Carpenter	$ 24.50	$ 5.96	$ 30.46	Line Erector - Power/Cable Splicer	$ 32.20	$ 5.65	$ 37.85
Carpenter - Rough	$ 25.60	$ 5.70	$ 31.30	Loader Operator - Front-End	$ 27.25	$ 4.02	$ 31.27
Cement Mason/Finisher	$ 24.50	$ 0.00	$ 24.50	Mechanic- Maintenance	$ 24.00	$ 3.42	$ 27.42
Comm Transmission Erector-Microwave & Cell	$ 24.00	$ 4.51	$ 28.51	Mechanic- Refrigeration	$ 26.50	$ 6.58	$ 33.08
Communication Equip Installer	$ 18.90	$ 3.84	$ 22.74	Millwright	$ 27.25	$ 6.59	$ 33.84
Crane Operator =>15 Tons)	$ 31.00	$ 6.53	$ 37.53	Painter	$ 37.98	$ 0.00	$ 37.98
Diver	$ 32.00	$ 4.80	$ 36.80	Paver Operator	$ 23.91	$ 7.36	$ 31.27
Dry-Wall Applicator	$ 24.00	$ 0.00	$ 24.00	Pipe/Steam/Sprinkler Fitter	$ 28.63	$ 7.93	$ 36.56
Dry-Wall Taper & Finisher	$ 24.00	$ 0.84	$ 24.84	Pipelayer	$ 23.25	$ 5.57	$ 28.82
Earth Auger Operator	$ 27.33	$ 5.85	$ 33.18	Plumber (Licensed)	$ 28.00	$ 4.19	$ 32.19
Electrician - Licensed	$ 31.98	$ 8.70	$ 40.68	Plumber Helper/Trainee	$ 19.25	$ 2.10	$ 21.35
Electrician Helper/Cable Puller	$ 21.75	$ 5.24	$ 26.99	Reclaimer Operator	$ 26.83	$ 13.25	$ 40.08
Elevator Constructor/Installer	$ 61.42	$ 41.17	$ 102.59	Rigger	$ 26.00	$ 7.43	$ 33.43
Excavator Operator	$ 29.13	$ 4.89	$ 34.02	Roller Operator - Earth	$ 20.00	$ 1.92	$ 21.92
Fence Setter	$ 18.50	$ 2.00	$ 20.50	Roller Operator - Pavement	$ 23.91	$ 4.70	$ 28.61
Flagger	$ 15.00	$ 0.00	$ 15.00	Screed/Wheelman	$ 21.00	$ 3.61	$ 24.61
Floor Layer	$ 22.00	$ 4.32	$ 26.32	Sheet Metal Worker	$ 22.50	$ 5.42	$ 27.92
Grader/Scraper Operator	$ 23.71	$ 4.85	$ 28.56	Truck Driver - Heavy	$ 23.99	$ 1.05	$ 25.04
Hot Top Plant Operator	$ 23.91	$ 10.99	$ 34.90	Truck Driver - Light	$ 17.00	$ 0.52	$ 17.52
Industrial Truck (Forklift) Operator	$ 26.83	$ 1.95	$ 28.78	Truck Driver - Medium	$ 20.95	$ 2.02	$ 22.97
Insulation Installer	$ 21.00	$ 2.12	$ 23.12	Truck Driver – Tractor Trailer	$ 24.75	$ 2.81	$ 27.56

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.

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

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

A true copy

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

Expiration Date: 12-31-2021
Revised 2-25-2021

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

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

2021 Fair Minimum Wage Rates
Highway & Earth Androscoggin County

Occupation Title	Minimum Wage	Minimum Benefit	Total	Occupation Title	Minimum Wage	Minimum Benefit	Total
Asphalt Raker	$ 19.66	$ 0.98	$ 20.64	Ironworker - Reinforcing	$ 28.36	$ 0.00	$ 28.36
Backhoe Loader Operator	$ 25.00	$ 4.33	$ 29.33	Laborer - Skilled	$ 24.37	$ 0.81	$ 25.18
Boom Truck (Truck Crane) Operator	$ 25.00	$ 5.86	$ 30.86	Laborers (Helpers & Tenders)	$ 19.49	$ 0.90	$ 20.39
Bulldozer Operator	$ 22.13	$ 2.67	$ 24.80	Loader Operator - Front-End	$ 20.00	$ 2.57	$ 22.57
Carpenter - Rough	$ 30.76	$ 19.72	$ 50.48	Mechanic- Maintenance	$ 24.00	$ 3.78	$ 27.78
Cement Mason/Finisher	$ 20.50	$ 1.42	$ 21.92	Millwright	$ 25.75	$ 5.41	$ 31.16
Communication Equip Installer	$ 22.00	$ 0.00	$ 22.00	Painter	$ 19.50	$ 0.00	$ 19.50
Crane Operator =>15 Tons)	$ 29.00	$ 6.68	$ 35.68	Paver Operator	$ 27.04	$ 4.90	$ 31.94
Crusher Plant Operator	$ 20.00	$ 2.39	$ 22.39	Pipelayer	$ 23.90	$ 3.71	$ 27.61
Electrician - Licensed	$ 31.98	$ 17.24	$ 49.22	Reclaimer Operator	$ 26.83	$ 13.25	$ 40.08
Electrician Helper/Cable Puller	$ 18.50	$ 2.39	$ 20.89	Roller Operator - Earth	$ 19.83	$ 0.00	$ 19.83
Excavator Operator	$ 23.95	$ 3.75	$ 27.70	Roller Operator - Pavement	$ 22.77	$ 4.32	$ 27.09
Fence Setter	$ 18.50	$ 2.00	$ 20.50	Screed/Wheelman	$ 24.21	$ 4.02	$ 28.23
Flagger	$ 15.00	$ 0.00	$ 15.00	Stone Mason	$ 25.00	$ 1.88	$ 26.88
Grader/Scraper Operator	$ 27.89	$ 8.90	$ 36.79	Truck Driver - Heavy	$ 20.00	$ 0.86	$ 20.86
Highway Worker/Guardrail Installer	$ 24.87	$ 1.36	$ 26.23	Truck Driver - Light	$ 24.15	$ 0.38	$ 24.53
Hot Top Plant Operator	$ 23.91	$ 13.25	$ 37.16	Truck Driver - Medium	$ 20.50	$ 1.23	$ 21.73
Industrial Truck (Forklift) Operator	$ 26.83	$ 2.78	$ 29.61	Truck Driver - Tractor Trailer	$ 20.00	$ 0.72	$ 20.72

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.

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Attest: Scott R. Cotnoir

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

Expiration Date: 12-31-2021
Revised 2-25-2021

The following Subsection is added:

105.2.4.2 Lead Paint The Contractor shall note that the existing bridge structures and strongback system supplied by the Authority contain lead based paint. A copy of the Lead Determination Report for the Grove Street Bridge is attached as **Appendix B**. The Contractor shall institute every precaution when working with materials coated with lead based paints.

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:

- Be signed by the Contractor;
- State whether Contractor or licensed lead abatement subcontractor will be undertaking the work; and,
- 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 Appendix A1 of 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 Project is subject to the Stormwater Memorandum of Agreement for Stormwater Management Between the Maine Department of Transportation, Maine Turnpike Authority, and Maine Department of Environmental Protection (Stormwater MOA). Under the Stormwater MOA, all MTA construction, operation, and maintenance activities are subject to Maine Stormwater Law Basic Standards through implementation of MaineDOT's Best Management Practices for Erosion and Sedimentation Control (MaineDOT BMP Manual), which are the Contractor's responsibility to implement. Under the Stormwater MOA, certain projects may also require the construction of permanent post-construction stormwater management BMPs, as specified in the plan set to this project where applicable.

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 **0.15** acre.

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:

- The Resident shall have a minimum of five (5) working days to approve the revised LOD plan.

- For contracts with a project-specific NOI, if the cumulative area of disturbance exceeds the estimated LOD noted above, the Resident shall first approve of the plan and then possibly resubmit the NOI to Maine DEP for approval. The approval may take a minimum of 14 working days from the date of submittal to Maine DEP.

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

The Contractor shall comply with the conditions and compliance standards outlined in the Site Location of Development Act General Permit and the Stormwater MOA. The Contractor shall indemnify and hold harmless the Maine Turnpike Authority or its agents, representatives and employees against any and all claims, liabilities or fines arising from or based on the violation of the above noted permits.

This Project is also subject to the requirements of the Maine Pollutant Discharge and Elimination System (MPDES) General Permit for the Discharge of Stormwater from MTA's Municipal Separate Storm Sewer Systems (MS4), because it is located within an Urbanized Area (UA) as defined by the 2010 census by the U.S. Bureau of the Census. MS4 compliance requires all Contractors to be properly trained in Erosion and Sedimentation Control (ESC) measures (as per Special Provision Subsections 105.8.1 and 656.07) and implement measures to reduce pollutants in stormwater runoff from construction activities.

107.1 Contract Time and Contract Completion Date

This Subsection is amended by the addition of the following:

All work shall be completed on or before November 30, 2021. The repairs at Grove Street Underpass Bridge are considered an emergency and shall be substantially complete by September 15, 2021.

107.1.1 Substantial Completion

This Subsection is amended by the addition of the following:

Substantially complete for Grove Street shall be defined by the Authority as the following:

- The roadway is fully opened to traffic including shoulders and completion of all pavement layers.
- All traffic control devices have been removed from the site, including the detour route.

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

107.4.6 Prosecution of Work

The 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 bridge is closed. The intent of this specification is to minimize the amount

of time for bridge closure, 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.

The following closures must be completed in the time specified. Supplemental liquidated damages (SLD) of One Thousand Dollars ($1000) per calendar day per bridge site shall be assessed for each calendar day, or fraction thereof, that any of the below noted closures remain active. The assessed SLD shall continue until the closures have been removed:

- The Contractor will be allowed to close Bennett Road Underpass Bridge for a maximum of 56 (fifty-six) calendar days. This closure must be consecutive and cannot begin prior to June 15, 2021.
- The Contractor will be allowed to close Grove Street Underpass Bridge for a maximum of 60 (sixty) calendar days. This closure must be consecutive and cannot begin prior to June 8, 2021.
- The Contractor will be allowed to close one lane and use one-way alternating traffic on the Route 9 Underpass Bridge for a maximum of 50 (fifty) calendar days. This closure must be consecutive.

107.4.7 Limitations of Operations

All work required for the Bridge Expansion Joint Cleaning on Wilson Road Mile 2.0 and Littlefield Road Mile 17.3 shall be scheduled within the first month of award and be completed in one day.

The following applies to work at the Grove Street Bridge:

- The temporary strongback shall be in place and supporting the bridge deck before beginning any steel removal on the north fascia girder and shall remain in place until the beam insert work has been completed and accepted. The temporary strongback does not need to be in place to complete the required heat straightening.

- The proposed counterweight materials that are to be placed on the bridge deck shall be in place prior to starting lifting operations with the strongback.

- The Grove Street Bridge shall be closed to traffic while the strongback is in place. The work shall be sequenced such that the duration of the closure is reduced to the extent practical.

- Heat straightening work shall be sequenced such that all repair areas on a given beam are heated in rapid succession in order to maximize the movement induced by each heat cycle. Temporary southbound traffic stoppages will be permitted as outlined in Special Provision Section 652, Maintenance of Traffic, for this purpose. Traffic stoppages will not be permitted during weekend and Holiday periods.

- Heat straightening work shall be completed using short-term lane closures that are removed at the completion of each day or night. All heat straightening shall be completed prior to commencing the beam insert work.

- Lane closures with temporary concrete barrier are allowed on the Maine Turnpike for the completion of girder repairs including girder removals, installation of the welded beam insert, grinding, rivet and bolt replacements, and the application of protective coatings.

- Approved shielding shall be in place for all work performed around open holes in the bridge deck and for all work within 6 feet of live traffic. This work includes, but is not limited to, drilling/coring holes for hanger rods and pedestals, installing and securing hanger rods to the bottom of the deck, and patching hanger rod holes in the deck.

- The combined weight of all construction equipment, tools and materials on the Grove Street Bridge, excluding any materials shown on the plans, shall not exceed 2,000 pounds while the strong back is supporting the bridge deck.

- The Contractor shall provide shielding, tarps, welding blankets, or other approved devices to prevent adjacent combustible surfaces from igniting during the proposed work and to shield patron vehicles from grinding debris and cutting and welding slag. Fire extinguishers shall be on-hand during all cutting, burning, and heating operations.

SPECIAL PROVISION

SECTION 202

REMOVING STRUCTURES AND OBSTRUCTIONS

(Removing Pavement Surface)
(Removing Existing Pavement Surface – Bridge Deck)

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 as shown on the Plans or as directed by the Resident.

When full-depth pavement and membrane removal is required or directed by the Resident, the work shall be completed by scraping or other methods that will not damage the existing concrete deck surface. The removal of pavement from bridge decks will be allowed using milling machines only when the full thickness of the pavement layer is not specified to be removed.

Removal of approach pavement shall be completed through the use of a milling machine meeting the requirements in the first two paragraphs of section 202.061, except where plans indicate removal limits are within common excavation limits.

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, bituminous pavement or membrane waterproofing intended to remain. All existing bituminous pavement, membrane waterproofing, 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 grinder capable of removing the bituminous concrete pavement to the required depth, transverse cross slope, and profile grade using an automated grade and slope control system. The controls shall automatically increase or decrease the pavement removal depth as required, and readily maintain desired cross slope to compensate for surface irregularities in the existing pavement course. The milling machine shall accurately establish profile grades by referencing from a fixed point such as a 30-foot minimum contact ski (floating beam), 24-foot non-contact ski (floating beam) with 3 or more sensors; or 3 non-contact sensors directly affixed to the fore, mid, and aft points of the milling machine. Systems designed to incorporate a contact sensor located at the mid-point of the milling machine in lieu of a non-contact sensor in conjunction with non-contact sensors at the fore and aft points will be permitted. Grade control sensors shall all be located on the same side. A single sensor, contact or otherwise, shall not be permitted. A copy of the automation operations manual shall be provided to the resident upon request. 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 rotary drum on the machine shall be a minimum of 7 feet in width and utilize carbide tipped tools at a maximum 8mm tooth spacing pattern and a minimum triple wrap configuration. The difference in height from the top of any ridge to the bottom of the groove adjacent to that ridge shall not exceed ¼ inch. The carbide tipped tools on the rotary drum shall be continually maintained and shall be replaced as warranted to provide a uniform milled pavement texture. The forward operating speed shall be limited to a maximum speed of 50 feet per minute (fpm). The limited speed is not to be calculated on an average basis over time but shall be the actual limitation at any moment during the milling operation.

The track pads that the machine travel on shall all be of a uniform thickness equal to or exceeding the manufacturers recommendations. A copy of the manufacturers recommendations shall be provided to the resident upon request.

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 along the crown line. The contractor shall layout the site prior to any milling. Layout shall be achieved by physical measurements obtained every 50’ along the length to be milled from a fixed reference point. The contractor shall transfer the measurements to the pavement surface every 50’ and apply a paint mark at each location. The marks shall then be connected by a smoothed string line and subsequent paint marks applied along the string at no greater than 10’ intervals. The Resident will inspect the layout line before milling activities may begin.

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 12 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. Any areas requiring corrections will be subject to the same acceptable surface tolerances. These corrections shall be done with no additional expense to the Authority. Excess material that becomes bonded to the milled surface shall be removed to the Resident's satisfaction before the area is accepted.

If a milled safety wedge is required by the contract, it shall not be removed any sooner than 24 hours prior to paving. In no case will a vertical milled edge be permitted over a weekend or holiday. The contractor shall schedule the wedge removal accordingly.

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 following sentences are added:

Removing Pavement Surface will be measured by the square yard of material removed to the required depth.

Transporting and stockpiling of the pavement grindings 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.

Installation of and removal of longitudinal safety wedges will not be measured separately for payment, but shall be incidental to the Contract.

202.08 Basis of Payment

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

Payment will be made under:

Pay Item		Pay Unit
202.202	Removing Pavement Surface	Square Yard

SPECIAL PROVISION

SECTION 202

REMOVING STRUCTURES AND OBSTRUCTIONS

(Removing Existing Drain Troughs)

202.01 Description

The following paragraph is added:

The work shall consist of removing and disposing of the existing drain troughs as indicated on the plans.

The filling and shaping of the void left by the removal of the existing drain troughs and any slope erosion shall be filled with Granular Borrow, as directed by the Resident prior to installation of new drain troughs indicated in the plans, and considered incidental to this item.

The following Subsections are added:

202.025 General

All drain trough components removed 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.

202.07 Method of Measurement

The following paragraph is added:

Removing Existing Drain Troughs shall be measured by the lump sum.

202.08 Basis of Payment

The following sentences are added:

Removing Existing Drain Troughs shall be paid for at the Contract lump sum price which includes all removals, disposal, granular borrow, equipment and labor necessary to satisfactorily complete the work.

Payment will be made under:

Pay Item		Pay Unit
202.191	Removing Existing Drain Troughs	Lump Sum

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 202

REMOVING STRUCTURES AND OBSTRUCTIONS

(Removing Existing Structural Concrete)
(Removing of Existing Bituminous Pavement)

202.01 Description

This section is amended by the addition of the following:

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

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

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

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

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

The seventh paragraph is deleted and replaced with the following:

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

202.031 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 unless otherwise indicated on the plans.

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. All hardware damaged by the Contractor shall be replaced at the Contractor's expense.

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 last two 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.

203.18 Method of Measurement

The following paragraphs are added:

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

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 15.0 percent or less as determined by AASHTO T 327. The crushed stone shall have a maximum of 1.5% material finer than the No. 200 mesh when tested in accordance with AASHTO T-11. Flat and elongated particles shall not exceed a maximum of 8% at a 5:1 ratio in accordance with ASTM D-4791. Coarse aggregate angularity shall be a minimum of 95/90 in accordance with AASHTO T-335.

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

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

Cone Penetration	90-150
Flow @ 60°C [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 401.021 Recycled Asphalt Materials

Delete the second paragraph and replace with the following:

In the event that RAP source or properties change, the Contractor shall notify the Authority of the change and submit new documentation stating the new source or properties. A plant produced test batch meeting all requirements including Hamburg Wheel Tracker results.

Section 401.03 Composition of Mixtures

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

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

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

The Contractor shall compose the Hot Mix Asphalt Pavement with aggregate, Performance Graded Asphalt Binder (PGAB), and mineral filler if required. HMA shall be designed and tested according to AASHTO R35 and the volumetric criteria in Table 1. The Contractor shall size, uniformly grade, and combine the aggregate fractions in proportions that provide a mixture meeting the grading requirements of the Job Mix Formula (JMF). The Contractor may use a maximum of 15 percent reclaimed asphalt pavement (RAP) in any mainline surface course.

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

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

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.
- Data Sheets (SDS) For PGAB.
- Asphalt Content vs. Air Voids trial blend curve.
- Test report for Contractor's Verification sample.
- Summary of RAP test results (if used), including count, average and standard deviation of binder content and gradation.

At the time of JMF submittal, the Contractor shall identify and make available the stockpiles of all proposed aggregates at the plant site. There must be a minimum of 150 ton for coarse aggregate stockpiles, 75 ton for fine aggregate stockpiles before the JMF may be submitted. The Authority shall obtain samples for laboratory testing. The Contractor shall also make available to the Authority the PGAB proposed for use in the mix in enough quantity to test the properties of the asphalt and to produce samples for testing of the mixture. Before the start of paving, the Contractor and the Authority's representative shall test a production sample in the Contractor's

laboratory for evaluation. If the Authority finds the mixture acceptable, an approved JMF will be forwarded to the Contractor. The Authority will then notify the Contractor that paving may commence. The first day's production shall be monitored, and the approval may be withdrawn if the mixture exhibits undesirable characteristics such as checking, shoving or displacement. The Contractor shall be allowed to submit aim changes within 24 hours of receipt of the first Acceptance test result for an individual JMF. Adjustments will be allowed of up to 2% on the percent passing the 2.36 mm sieve through the 0.075 mm and 3% on the percent passing the 4.75 mm or larger sieves. Adjustments will be allowed on the %PGAB of up to 0.2 percent. Adjustments will be allowed on GMM of up to 0.010.

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

The Contractor shall submit a new JMF for approval each time a change in material source or materials properties is proposed. The same approval process shall be followed. The cold feed percentage of any aggregate except natural sand may be adjusted up to 10 percentage points from the amount listed on the JMF, however no aggregate listed on the JMF shall be eliminated. Natural sand may be adjusted up to 5 percent from the amount listed on the JMF but shall not exceed 10% by weight of total aggregates. The cold feed percentage for RAP may be reduced up to five percentage points from the amount listed on the JMF and shall not exceed the percentage of RAP approved in the JMF or for the specific application.

TABLE 1
VOLUMETRIC DESIGN CRITERIA

Design ESAL's (Millions)	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

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

TABLE 1A
HAMBURG WHEEL TRACKER REQUIREMENTS

Specified PG 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

Section 401.04 Temperature Requirements

Add the following line item after the third bullet:

- Any HMA placed over bridge deck membrane shall have a minimum temperature of 300° F measured directly behind the screed in the uncompacted mat.

Add the following paragraph:

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

Section 401.06 Weather and Seasonal Limitations

The first paragraph shall be deleted and replaced with:

The Contractor may place Hot Mix Asphalt Pavement for use other than a traveled way wearing course, provided that the air temperature as determined by an approved thermometer (placed in the shade at the paving location) is 45°F or higher and the area to be paved is not frozen. The Contractor may place Hot Mix Asphalt Pavement as traveled way wearing course, provided the air temperature determined as above is 50°F or higher. For the purposes of this Section, the traveled way includes truck lanes, ramps, approach roads, shoulders, and auxiliary lanes. The atmospheric temperature for all courses on bridge decks shall be 50°F or higher.

Section 401.08 Hauling Equipment Trucks for Hauling HMA

Add the following paragraphs:

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.

The contractor shall supply enough haul units such that paving is continuous and without any stops or paver speed changes during the installation of ramp or mainline wearing courses utilizing an MTV, or any course placed on a bridge deck. The contractor will be charged a fee of $1000 for every occurrence if paving is either stopped or the paver must slow down to avoid stopping due to inadequate number of haul units at the sole discretion of the Authority.

Section 401.09 Pavers

Add the following to the end of the fourth paragraph:

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

Section 401.091 Material Transfer Vehicle (MTV)

The first paragraph shall be deleted and replaced with:

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

The fourth paragraph shall be deleted and replaced with:

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

Section 401.11 Preparation of Existing Surface

Add the following paragraph:

The contractor will be permitted to be generally innovative in methods to dry existing wet or damp pavement. Any method which causes damage or burning of the existing pavement, or which causes debris to fly into traffic shall be discontinued.

Section 401.111 Layout

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

Section 401.165 Longitudinal Joint Density

The first paragraph shall be deleted and replaced with:

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

The eighth paragraph shall be deleted and replaced with:

The minimum density of the completed pavement shall be 92.0 percent of the theoretical maximum density obtained. Two consecutive failing tests shall result in production shut down.

Prior to resuming paving operations, the contractor quality control unit shall satisfy the Authority that the paving operation will produce joint densities in compliance with the Specifications.

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

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

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

Section 401.17 Joints

Delete the following sentence from the third paragraph:

"The Authority may allow feathered or "lap" joints on lower base courses or when matching existing base type pavements."

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

Add the following paragraph v. to the QCP requirements

v. The contractor shall provide a detailed plan outlining how the number of haul units will be determined and supplied to the project to prevent the paver from stopping on mainline wearing course and bridge deck paving over membrane

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

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

Section 401.191 Inspection/Testing

In paragraph nine delete and replace Item #8 with:

8. Secure High-Speed Internet Access

401.21 Method of Measurement

The second paragraph shall be deleted and replaced with:

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

SPECIAL PROVISION

SECTION 403

HOT MIX ASPHALT PAVEMENT

Course	HMA Grading	Item Number	Total Thickness	No. of Layers	Complimentary Notes
Bennett Road Underpass Approaches					
Wearing	**12.5mm**	**403.208**	**1.5”**	**1**	**C, I**
Base	**12.5mm**	**403.213**	**4.5”**	**3**	**C, I**
Bennett Road Underpass Bridge Route 9 Underpass Bridge					
Wearing	**12.5mm**	**403.208**	**1.5”**	**1**	**C, I**
Base	**12.5mm**	**403.213**	**1.5”**	**1**	**C, I**
Bennett Road Underpass Approaches Mill & Fill Route 9 Underpass Approaches Mill & Fill					
Wearing	**12.5mm**	**403.208**	**1.5”**	**1**	**C, I**
Grove Street Underpass Bridge					
Wearing	**12.5mm**	**403.208**	**1.75”**	**1**	**C, F, I**

COMPLEMENTARY NOTES

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

J. Hydrated Lime shall be incorporated into the mixture.
K. The antistrip additive Zycotherm SP manufactured by Zydex Industries shall be incorporated into the PGAB at a rate of 0.1%.

SPECIAL PROVISION

SECTION 409

BITUMINOUS TACK COAT

409.01 Description

This Subsection is deleted and replaced with the following:

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

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.

409.09 Basis of Payment

The following pay items are added:

Pay Item		Pay Unit
409.15	Bituminous Tack Coat RS-1 or RS1h– Applied	Gallon

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 or as directed by the Resident.

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 not be measured separately for payment but shall be considered incidental to related contract items under Section 203.

SPECIAL PROVISION

SECTION 502

STRUCTURAL CONCRETE

(Temporary Strongback Concrete Repairs)

502.01 Description

This work shall include the replacement of structural concrete removed to allow installation of the temporary deck support system, as well as the repair of any other concrete and pavement removal areas necessary and complete the installation of the strongback and the proposed beam repairs in accordance with the Plans, these Specifications, and as directed by the Resident.

502.03 Materials

Patching concrete shall be SikaGrout 212 extended with 3/8" pea gravel in accordance with the Manufacturers recommendations.

Concrete bonding agents shall be one of the epoxy-based materials listed in MaineDOT's Qualified Products List of Concrete Bonding Agents. Bonding agents shall be applied in strict compliance with the manufacturer's recommendations for working time.

Hot Rubber shall be a hot-applied rubberized asphalt material, meeting the requirements of Type 4 crack seal, approved by the Resident.

Hot Pour Mastic materials shall be an approved hot-applied, pourable, self-adhesive mastic blended with aggregates designed for maintenance and repair of asphalt and Portland cement concrete pavements such as "Mastic One" as manufactured by Crafco. The hot pour mastic materials shall be composed of highly modified polymer asphalt binder and fine graded lightweight aggregate, or standard weight aggregates, as required by the application. The mastic material shall be delivered in the manufacturer's original container. The material shall be pre-packaged with the manufacturers name and product name marked on each container.

502.102 Preparation of Concrete Surfaces

Prior to placement of concrete repair materials, pavement removals shall be completed as shown on the plans. At pedestal repair locations pavement removals shall extend to the top of the existing waterproofing membrane. At all other repair locations, the base pavement shall remain.

Asphalt, tar, oil, grease, laitance and dirt on concrete surfaces to be repaired shall be removed with picks or chipping hammers. The removal areas shall then be thoroughly cleaned by sandblasting. Sandblasting equipment shall be equipped with oil separators. Any oil spots shall be removed by additional chipping. Such chipping shall be followed by again cleaning of the repair area.

The cleaned areas shall be kept dry so that dust will not pack into hollows and crevices. Prior to the repair being cast, the repair areas shall be again cleaned with water and oil free

compressed air, and all non-formed existing concrete surfaces shall be coated with the selected concrete bonding agent.

502.105 Mixing and Placing Concrete

The repair material shall be mixed and placed in strict conformance with the manufacturer's written mixing and installation instructions. The concrete repair mix shall be screeded level with the top of concrete. Forms shall remain in place a minimum of three (3) days after placement.

The placement of concrete at pedestal core hole locations shall extend flush with the top of the existing concrete deck.

The placement of concrete at hanger rod and anchor rod hole locations in the deck shall extend to ½" below the top of the existing concrete deck.

502.106 Repair of Membrane

Following placement and curing of the deck patching material at pedestal core hole locations the Contractor shall apply a single patch of high performance waterproofing membrane over the two core holes at each pier location. The repair membrane shall be a torch-applied product listed on MaineDOT's qualified product list for waterproofing membranes. The membrane patch shall overlap at least 3" with the existing membrane waterproofing. Installation shall be in accordance with Standard Specification, Section 508.

Following placement and curing of the deck patching material at hanger rod and anchor rod locations the sides of the core hole above the patch material shall be thoroughly cleaned of laitance, slurry and other foreign materials to provide a clean surface for the repair material to bond with the deck, membrane and existing pavement. Following cleaning and drying, the core hole shall be filled with Hot Rubber of Hot Pour Mastic to the top of pavement elevation and allowed to cool.

502.18 Method of Measurement

Patching of concrete surfaces,, repair of membrane waterproofing, application of Hot Rubber, application of Hot Poured Mastic, and associated sawcutting and pavement removals for the base layer of pavement required to complete the work will not be measured separately for payment, but shall be incidental to Pay Item 524.31, Temporary Deck Support System.

SPECIAL PROVISION

SECTION 502

STRUCTURAL CONCRETE

(Bridge Drain Grate Modification)
(Weep Drain Extensions)

502.01 Description

The following sentences are added:

The work also consists of removing existing bridge drain grates, and fabricating, galvanizing, and installing bridge drain grate extensions where noted and as detailed on the Plans.

The work also consists of removing and patching deck concrete adjacent to the bridge drain grates being modified where noted and as detailed on the plans.

The work also consists of extending deck weep drains as directed by the Resident and approved by the Engineer.

502.03 Materials

The following sentences are added:

Bridge drain materials shall meet the requirements specified in, and shall be galvanized in accordance with, Division 700, Subsection 711.04, Bridge Drains.

Bridge weep drain extensions shall match the material of the existing weep drains to be extended.

All structural concrete removed shall be replaced with a material from Maine Turnpike Authority's approved concrete patching material list. See Section 518 – Structural Concrete Repair.

502.17 Bridge Drains and Incidental Drainage

The following sentences are added:

Prior to beginning the work, the Contractor shall make provisions to ensure that concrete debris or portions of the existing bridge drains do not drop into any water body, roadway, shoulder, or railroad area below.

The existing bridge drain grates shall be removed by grinder, cut off wheel, or other mechanical means which minimize damage to the adjacent grate to remain. After removal of the existing bridge grate and adjacent concrete, the replacement grate shall be fitted and welded to the existing bridge drain body.

All bridge drain grates shall be accurately placed at the locations shown on the Plans or as approved by the Resident. The Contractor shall provide an adequate means for securely holding them in the required positions during welding.

Touch-up the damaged galvanizing with two coats of zinc-rich chromate paint after wire brushing and solvent cleaning the damaged area.

Patch concrete with a concrete repair material with a concrete repair material from the Maine Turnpike Authority's approved concrete patching material list.

502.18 Method of Measurement

The following sentences are added:

Bridge Drain Grate Modification will be measured per each by the actual number of bridge drain grates modified per the Plans, complete in place and accepted.

Weep Drain Extensions will be measured by the lump sum, as required on the Plans and directed by the Resident, complete in place and accepted.

502.19 Basis of Payment

The following paragraphs are added:

Bridge Drain Grate Modification will be paid for at the Contract unit price per each, which price shall be full compensation for measuring and preparing the existing bridge drain grate; fabrication, galvanizing, and installation of the replacement bridge drain grate and extension, galvanizing touchup, and deck removal and repair including all materials, labor tools, equipment and incidentals necessary for furnishing and installing the Bridge Drain Grate Modification with the Plans and Specifications.

Weep Drain Extensions will be paid for at the Contract lump sum price, which price shall be the full compensation for measuring and preparing the existing weep drains, providing shop drawings for approval by the Engineer of the intended repair method and materials, fabrication and installation of the weep drain extension, deck removal and repair including all materials, labor, tools, equipment, and incidentals necessary for furnishing and installing the Weep Drain Extensions as detailed in the Plans and Specifications, and as directed by the Resident.

Payment will be made under:

Pay Item		Pay Unit
502.701	Bridge Drain Grate Modification	Each
502.7011	Weep Drain Extensions	Lump Sum

SPECIAL PROVISION

SECTION 504

STRUCTURAL STEEL

(Repair of Damaged Girders)

504.01 Description

The following paragraphs are added:

This work includes structural steel repairs to existing girders at the Grove Street Bridge over the southbound lanes of the Maine Turnpike.

Three girders on the Grove Street Bridge were damaged when the bridge was struck by an overheight vehicle and shall be repaired. All girders are 27WF94 rolled sections and the concrete deck is composite with the girders. The proposed repairs include:

At Girder G1 the beam shall be heat straightened to remove the sweep in the bottom flange, an area of damaged/torn steel at the girder bottom flange and web shall be removed, and a replacement welded insert measuring approximately 5-feet in length shall be welded into place. These repairs are shown by Repair Area "A" on the plans. Grinding shall be completed as directed to remove gouges to the bottom flange.

The repairs at Girders G3 and G4 include heat straightening to remove the sweep in the bottom flange as shown by Repair Areas "B" and "C" on the plans. Grinding shall be completed as directed to remove gouges to the bottom flange.

The work at all locations shall also be in accordance with Standard Specification 504, Structural Steel, Special Provisions 502, Temporary Strongback Concrete Repairs, and Special Provision 531, Heat Straightening Repairs to Structural Steel.

The work also includes, but is not limited to: patching holes in the deck slab in accordance with Special Provision 502; removal and replacement of damaged fasteners noted on the plans; and all tools, materials, labor and equipment required to satisfactorily complete the girder repairs as described herein.

This work also includes providing the Authority, or its duly authorized representatives, reasonable access to the damaged girders for the purposes of inspection, testing, and observation as requested.

504.66 Steel Beam Repair

The Contractor will not be permitted to start the removal of structural steel at the location of the proposed beam insert until heat straightening is completed and the temporary strongback system is in place and supporting the deck slab to the satisfaction of the Resident.

a. Beam Insert Repair Procedure (Repair Area “A")

1. Install traffic control devices on the Grove Street Bridge and Turnpike mainline as shown in the Contract Plans.

2. Remove the paint system in the vicinity of the repairs as shown on the Contract Plans in accordance with Special Provision 506.

3. Complete heat straightening of the fascia girder in accordance with Special Provision 531 such that the area of the beam to receive the repair insert is straight, plumb, and the girder flanges at either end of the insert are reasonably aligned.

4. Install temporary supports (strongback) in accordance with Special Provision 524. The temporary support system shall not be installed until the specified traffic control devices have been installed on the Grove Street Bridge. Temporary supports are only required for the work proposed at repair area "A". At the Contractor’s option, heat straightening may be completed with the deck supported by the strongback. However, this approach may reduce the efficiency of the heat straightening operation.

5. At each repair area the Resident will mark-out the portions girder to be removed by the Contractor. The removal limits shall approximately match the limits shown on the plans.

6. Flame cut the flange and web neatly and accurately along the limits delineated by the Resident to remove damaged portions of the beam at repair area "A".

7. Field measure for the proposed insert and provide proposed insert dimensions to the Resident for approval prior to fabrication. All cuts on the inserts shall be neat, straight, and accurate. A maximum 1/8 inch gap shall be present between the existing and new steel sections after fitting into place.

8. Install the beam insert in accordance with the Contract Plans. The beam insert shall not be installed prior to completion and acceptance of the heat straightening of repair. All grinding, when required, shall be done in the longitudinal direction of the beam. Both visual inspection and ultrasonic testing shall be performed on 100 percent of all welds and acceptance shall be in accordance with AWS D1.5. Ultrasonic testing will be the provided by the Authority.

9. Nicks, gouges and scrapes more than 1/16” in depth shall be ground smooth. Repairs that require removal of more than 1/8 inch of the thickness of a cross-sectional element require the Resident’s approval. Any cracks discovered before or during the repair shall be brought to the attention of the Resident. Final grinding shall be done in the longitudinal direction of the beam. Visual inspection shall be performed on all gouge repairs by the Authority’s representative prior to painting.

10. Following completion an acceptance of the heat straightening, welded insert repair, and grinding, the Contractor shall remove the temporary structural supports. The temporary structural supports shall be dismantled before removal of the specified traffic control devices on Grove Street Bridge.

11. Areas of paint removal and girder repair shall be painted accordance with Special Provision 506.

b. Girder Gouge Repair (Repair Areas "B" and “C”)

1. Remove the paint system in the vicinity of the repairs as shown on the Contract Plans.

2. Heat straighten the existing beams to reduce distortion of the girder flange in accordance with the Contract Plans and Special Provision 531.

3. Nicks, gouges and scrapes more than 1/16” in depth shall be ground smooth. Repairs that require removal of more than 1/8 inch of the thickness of a cross-sectional element require the Resident’s approval. Any cracks discovered before or during the repair shall be brought to the attention of the Resident. Final grinding shall be done in the longitudinal direction of the beam. Visual inspection shall be performed on all gouge repairs by the Authority’s representative prior to painting.

4. Areas of paint removal and girder repair shall be painted in accordance with Special Provision 506.

504.641 Method of Measurement

Structural Steel Repairs (Repair Area "A"), Structural Steel Repairs (Repair Area "B"), and Structural Steel Repairs (Repair Area "C"), will each be measured for payment separately as one lump sum.

The removal and application of protective coatings will be measured for payment under Section 506 Item 506.9103 Zinc-Rich Coating System.

Heat straightening will be measured for payment under Pay Item 531.82, Heat Straightening.

The procurement, installation, and removal of the temporary deck support system (strongback) will be measured for payment under Pay Item 524.31, Temporary Deck Support System.

Patching the concrete deck penetrations at strongback column support and anchor rod locations will be incidental to Pay Item 524.31, Temporary Deck Support System.

Removing and patching the wearing surface as shown on the Plans will be measured for payment under the appropriate pay items as indicated on the Plans.

504.65 Basis of Payment

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

The Lump Sum payment for Structural Steel Repairs will be full compensation for all materials, equipment, labor and incidentals, including, but not necessarily limited to: removal and

disposal of the portion of the existing beam to the limits specified by the Resident; fabricating, fitting and installing the beam the insert; providing inspection team access; temporary lighting; the collection of field measurements and data necessary to complete the work; grinding; and all other incidental materials, tools, equipment and labor necessary to satisfactorily complete the work in accordance with the Plans and these Specifications.

Payment will be made under the following items:

Pay Item		Pay Unit
504.80	Structural Steel Repair (Repair Area "A")	Lump Sum
504.81	Structural Steel Repair (Repair Area "B")	Lump Sum
504.82	Structural Steel Repair (Repair Area "C")	Lump Sum

SPECIAL PROVISION

SECTION 506

PAINTING STRUCTURAL STEEL

506.01 Description

This work shall consist of removing areas existing paint to the limits shown on the plans, or as required to complete the work, and as approved by the Resident. All lead paint removal shall be completed in strict accordance with Section 105.2.4.2, Lead Paint.

This work shall also consist of applying a zinc-rich protective coating to steel substrate in accordance with the Plans and 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:

- Zinc-Rich Coating System Subsections 506.20 through 506.27

506.05 Inspection

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

506.06 Non-Conforming Work

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

506.6 through 506.19 Vacant

ZINC-RICH COATING SYSTEMS

506.10 Description

Work shall consist of application of a two coat, zinc-rich coating system in accordance with this Specification.

506.11 Materials

Coatings systems shall be selected from the Northeast Protective Coating Committee (NEPCOAT) Qualified Products List (QPL) C or D list. The list may be found through the NEPCOAT Web page (http://www.nepcoat.org).

The Contractor shall provide the batch description, lot number, date of manufacture, shelf life and the manufacturer's published storage requirements for each coating to the Resident. In addition, the Contractor shall provide the manufacturer's published instructions for application of each coat of the coating system including equipment, surface preparation, anchor profile, mixing, thinning, application, cure time for the entire range of allowable environmental conditions, DFT and recoat time.

506.12 Limits of Work

All surfaces exposed in the assembled product shall be coated with primer and topcoat. Surfaces to be embedded in concrete shall receive a mist coat (0.75 to 1.5 mils) of primer only.

The termination point shall be taped off to prevent overrun and overspray. The finish coat color shall match color of the existing paint system.

Faying surfaces of bolted connections shall be primed only and develop a Class B slip coefficient in accordance with the *"Specification for Structural Joints Using ASTM A325 or A 490 Bolts"* by the Research Council of Structural Connections (RCSC). The Contractor shall provide documentation to demonstrate that the coating was tested and met the above requirements.

506.13 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 power tool cleaned to meet the requirements of SSPC-SP3. All surfaces shall be solvent wiped in accordance with SSPC-SP1 following power tool cleaning.

After cleaning is complete the surface shall be visually inspected for fins, tears, delaminations and other discontinuities. Fins, tears and other discontinuities shall be removed with a grinder or other suitable power tool and the area shall be blended at a slope of approximately 1:20.

The allowable time between cleaning and primer application shall not exceed the manufacturer's published recommendations or eight hours, whichever is less. If the substrate develops flash rust (rust bloom) before the primer is applied or before the primer application is completed, the piece shall be re-blasted to bare substrate and re-coated.

506.14 Mixing and Application

All protective coatings shall be applied using a method approved by the Resident. Protective coating shall not be applied when the steel temperature, or the ambient temperature in the immediate vicinity of the piece(s) in question; See manufacturers guidelines for temperature limitations. 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.

Primer and topcoat 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.

Recoat time shall be in accordance with the manufacturer's published requirements for the environmental conditions at the time of application and cure. If the coating is contaminated with dust, debris, over spray or other deleterious material, the surface shall be cleaned in accordance with SSPC-SP 1 immediately prior to recoating. Other methods of cleaning may be used if approved by the Resident.

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-Job 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.

506.15 Vacant

506.16 Touch-up and Repairs

Damaged or unacceptable coatings shall be repaired. Damaged areas shall be prepared in accordance with the manufacturer's published instructions or as directed 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.

506.17 Handling and Storage

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. Coated steel members shall be handled in a manner to avoid damage to the coating. Members shall be lifted and moved using non-metallic slings, padded chains and beam clamps, softeners or other non-injurious methods. Material shall be stored, both at the coating facility and in the field, in a manner that prevents damage to the coating.

506.18 through 506.19 Vacant

MEASUREMENT AND PAYMENT

506.90 Method of Measurement

The application of Protective Coating 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.

The removal of the existing paint system necessary to complete the work will not be measured separately for payment, but shall be incidental to Pay Item 506.9103, Zinc-Rich Coating System.

506.91 Basis of Payment

All work for Protective Coating 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 work including: existing paint removal, containment and disposal in accordance with Section 105; preparation of surfaces to receive protective coating; protective coating application and curing; and all testing, labor, materials, equipment and incidentals required to satisfactorily complete the work in accordance with these Specifications and the Contract Plans.

Pay Items		Pay Unit
506.9103	Zinc-Rich Coating System	Lump Sum

SPECIAL PROVISION

SECTION 508

WATERPROOFING MEMBRANE

(High Performance Waterproofing Membrane)

508.01 Description.

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

The membrane installation shall include reinforced corners at the intersection of the bridge deck and bridge curb. The reinforced corners shall be constructed as illustrated in Appendix C and in strict accordance with the manufacturer's published recommendations.

508.02 Materials.

Replace the section with the following:

High Performance Membrane shall be Sopralene Flam Antirock Membrane manufactured by Soprema USA.

The high performance membrane installation shall include all materials, as recommended by the manufacturer, to produce a waterproof barrier on the specified concrete surface. In addition to the membrane, these materials may include primer, ALSAN Flashing, aggregate scatter, tack coat, and ALSAN Polyfleece reinforcement.

The Contractor shall provide corner details reinforced as shown in Appendix C using ALSAN Polyfleece polyester reinforcement as supplied by Soprema USA, 310 Quadral Dr, Wadsworth, OH 44281.

508.04 Construction – General.

Add the following paragraph after the second paragraph:

Prior to the installation of the Soprema High Performance Membrane, any notch in the vertical surface of the curb shall be filled with an approved grout. The finished surface shall be a vertical plane along the curb.

508.05 Installation – Sheet Membrane.

Delete this subsection in its entirety.

508.06 Installation – Torch Applied High Performance Membrane.

Remove the third paragraph of this subsection and replace with the following:

After installation of the waterproofing membrane, ALSAN Flashing shall be applied to the vertical curb face up to within ½ inch of the top of the HMA wearing surface or to ½ inch above the filled notch in existing granite curb, whichever is greater. The Flashing shall also be applied to the membrane surface and extend a minimum of 1" beyond the limits of ALSAN Polyfleece polyester fabric. Polyester fabric shall be applied to the vertical Flashing surface, beginning 1" below the top of HMA wearing surface or beginning at the filled notch in existing granite curb, to the interface of the deck and vertical face, and extend a minimum of 8" horizontally along the surface of the waterproofing membrane. Following installation of the polyester fabric into the wet ALSAN Flashing, an additional layer of ALSAN Flashing shall be applied immediately with limits not less than the previous ALSAN Flashing layer. After these applications have dried, a third layer of ALSAN Flashing shall be applied. The final layer of ALSAN Flashing can be left exposed or ceramic granules may be broadcast into the Flashing prior to it drying. Application rates shall be 2 gallons per 100 square feet for all layers. Curing for all layers shall conform to the manufacturer's recommendations.

508.07 Installation – Spray Applied High Performance Membrane.

Delete this subsection in its entirety.

508.09 Basis of Payment.

Add the following sentence:

The lump sum price shall also include furnishing and installing the specified reinforced membrane corners as described herein, and in accordance with the manufacturer's specifications, including all equipment, materials, incidentals, and labor necessary to satisfactorily complete the work.

SPECIAL PROVISION

SECTION 515

PROTECTIVE COATING FOR CONCRETE SURFACES

(Pigmented 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 pigmented concrete protective coating system, consisting of a clear penetrating sealer followed by a pigmented top coat, to protect new and existing concrete and masonry structures. The coating system shall be applied to piers, endposts, wingwalls, abutments, curbs and fascia in accordance with the Plans, Specifications and the manufacturer's published recommendations.

Where pigmented protective coatings are already present on concrete surfaces specified to receive new protective coatings, the work shall also include removing areas of existing protective coating that are blistered, flaking, peeling or otherwise loosely adhered to the concrete substrate prior to application of the new coating. The removal of loosely adhered pigmented protective coatings shall be completed by high-pressure chemical washing capable of completely removing the existing coating. Where the removal of existing pigmented coatings is required the anticipated removal limits, and the anticipated quantity of removal, will be shown on the plans. The actual removal limits may vary and will be established and marked in the field by the Resident.

515.02 Materials

The pigmented penetrating sealer system shall be a two coat system consisting of Certi-Vex Guard Clear (primer/sealer) and Certi-Vex HBC Smooth (top coat), as manufactured by Vexcon Chemicals, Inc., or an approved equal, consisting of the following two parts:

- The primer shall be a vinyl toulene acrylic silane polymer blend or an approved equal. This primer shall provide the main protection against the ingress of water borne chlorides and sulfates.

- The top coat shall be solvent borne modified acrylic resins with selected pigments and fillers.

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

The Contractor shall submit the Vexcon Chemical's product data sheets, material safety data sheets and recommended instructions for application of the Certi-Vex Guard Clear and Certi-Vex HBC Smooth.

The pigmented penetrating sealer color shall be Concrete Gray.

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. The surface shall be prepared in strict accordance with the instructions of the approved manufacturer. Surface shall be fully cured, dry, and free from contamination such as asphalt coatings, oil, grease, loose particles, decaying matter, moss, algae growth, and curing compounds. For maximum penetration of the primer, the Contractor shall lightly sandblast the surface.

Existing form tie hole plugs which are loose or deteriorated shall be completely removed. The holes shall be reamed to sound concrete. All open form tie holes, new and existing shall be filled with an approved non-shrinking mortar, and after setting, rubbed level to the adjacent surface. Filled holes shall be cured for at least two (2) days prior to the application of the concrete protective coating.

Grass and vegetation adjacent to surfaces to be coated shall be removed or trimmed closely to permit proper preparation and application of the coating.

Where coatings are specified to be applied to concrete surfaces that have been previously covered with pigmented coating, the Contractor shall remove any protective coating that, in the judgement of the Resident, is blistered, flaking, peeling or otherwise loosely adhered to the concrete substrate. Loosely adhered coating shall be generally defined as any coating that can be removed by vigorously scraping the concrete surface using a 3” steel putty knife and firm pressure. The goal of the removal work is to remove areas of flaking, missing or otherwise compromised

coating systems; protective coatings that are tightly adhered to the concrete substrate need not be removed.

The removal of existing protective coatings shall be completed using high pressure chemical washing. The specific pressure, flow rate, nozzle and standoff distance for the high-pressure washing operation shall be selected by the Contractor to remove loosely adhered coatings as specified. After high-pressure washing the Resident shall verify all loosely adhered coatings have been removed from the specified areas by scraping the surfaces with a putty knife. The Contractor will be required to complete additional pressure washing to remove any remaining loosely adhered coatings identified by the Resident

Following removal of existing coating systems all exposed surfaces of the substructure unit to be coated shall be cleaned and rinsed by pressure washing. 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. After pressure washing the concrete surfaces shall be allowed to air dry for a minimum of 48 hours prior to applying the new protective coating.

The Contractor will be responsible for controlling and filtering runoff resulting from the pressure washing operations in accordance with Supplemental Specification 656, and all local, state and federal requirements.

515.04 Application

The materials shall be mixed and applied in strict accordance with the instructions of the approved manufacturer. Spray or roll the primer at the recommended application rate. If the surface is very absorbent, the primer should be applied until surface is saturated per the manufacturer's written instructions. All areas not to receive coating shall be marked with straight, even lines as the limit lines.

The Contractor shall, in the presence of the Resident, apply the materials on a sample area which is representative of a jobsite application. When color and application methods are approved, the sample area shall serve as a standard of acceptance for all further work.

The primer shall not be applied in direct sunlight when the air or surface temperature is greater than 90°F, or when air or surface temperature is below 35°F. The top coat shall not be applied when air or surface temperature is below 45°F or as approved by the Resident.

For surfaces that have previously received pigmented coating the primer shall only be applied to areas where the existing coating was marked for removal and then removed by sandblasting. The primer application shall extend beyond the removal limits of the existing coating system by six inches on all sides.

The primer shall be allowed to dry for a minimum of two-hours before applying pigmented top coat. Under poor drying conditions this time shall be extended. The primer shall not be coated with top coat until the surface is dry. The top coat should be applied by brush, roller or suitable airless spray.

Top coat material shall be applied per the manufacturer's recommended application rate and in strict accordance with the manufacturer's written instructions. The top coat shall provide consistent color without light spots or shadows. The Resident reserves the right to have the Contractor recoat the top coat if the dried top coat(s) lack consistent color or show light spots or shadows.

For surfaces that have previously received pigmented coating the top coat shall be applied to the complete limits of pigmented coating application as described on the Contract Plans, not just the area of old coating removal.

Regardless of the application method used (sprayer, roller or brush) the Contractor shall be responsible for achieving 100% coverage of the concrete including the interior surfaces of concrete voids, recesses, or other depressions on the concrete surface.

Protect plants, grass, sealant, asphalt, traffic, etc. during application from spray.

515.05 Method of Measurement

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

The removal of existing pigmented protective coatings will not be measured for payment separately, but shall be incidental to the Pigmented Protective Coating for Concrete Surfaces pay item.

515.06 Basis of Payment

Pigmented Concrete Protective 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 pigmented concrete protective coating as shown on the Plans, in accordance with these Specifications or as approved by the Resident.

Surface preparation, including high-pressure washing to remove existing pigmented coatings, vegetation removal, and protection of surfaces not designated for treatment will not be paid for separately, but shall be incidental to the Pigmented Concrete Protective Coating item.

Payment will be made under:

Pay Item		Pay Unit
515.201	Pigmented Protective Coating for Concrete Surfaces	Square Yard

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

515.04 Application

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

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

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

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

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

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

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

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

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

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

515.05 Method of Measurement

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

515.06 Basis of Payment

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

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

Payment will be made under:

Pay Item		Pay Unit
515.202	Clear Protective Coating for Concrete Surfaces	Square Yard

SPECIAL PROVISION

SECTION 518

STRUCTURAL CONCRETE REPAIR

(Granite Curb Joint Mortar and Bedding Repair)

518.01 Description

The following sentence is added:

This work shall consist of the removal and replacement of existing granite curb joint mortar and granite curb bedding mortar as shown on the plans and as approved by the Resident.

518.02 Repair Materials

The following sentence is added:

Mortar shall be one from the MaineDOT's Products Quality List for pre-blended mortars.

The following Subsection is added:

518.032 Construction Requirements

The existing granite curb joint mortar shall be removed between curb sections to a minimum depth of 1 in. from the face of curb. Any loose mortar shall also be removed. The repair area shall be repointed with new mortar and tooled concave at the face of curb. The mortar shall be proportioned, mixed, and applied in accordance with the Manufacturer's recommendations.

The existing granite bedding mortar shall be removed under the curb to a minimum depth of 1 in. from the face of curb. The mortar shall be proportioned, mixed, and applied in accordance with the Manufacturer's recommendations.

518.10 Method of Measurement

The following sentence is added:

Granite Curb Joint Mortar and Bedding Mortar Repair will be measured for payment by the linear foot along the face of the curb, horizontally and vertically, complete and accepted.

518.11 Basis of Payment

The following sentence is added:

Granite Curb Joint Mortar and Bedding Mortar Repair will be paid for at the contract unit price per linear foot, which includes all materials, labor, equipment, and incidentals necessary to complete the work including removal of existing mortar.

Payment will be made under:

Pay Item		Pay Unit
518.39	Granite Curb Joint Mortar and Bedding Mortar Repair	Linear Foot

SPECIAL PROVISION

SECTION 518

STRUCTURAL CONCRETE REPAIR

(Parapet Joint Repair)

518.01 Description

The following sentence is added:

This work shall consist of the removal and replacement of existing deteriorated parapet joint sealant as approved by the Resident. The Contractor shall provide the Resident safe access to all the parapet joints for inspection before this work begins, including access to the fascia parapet joints.

The following Subsection is added:

518.032 Construction Requirements

After the Resident has identified the joint repair locations, the Contractor shall remove the existing joint sealant to a minimum 3/8 inch depth, clean and prepare the concrete surfaces per sealant manufacturer recommendations, and replace the sealant to the edge of concrete with an approved polyurethane-based sealant such as Sikaflex-1a or other product on the MaineDOT approved products list as directed by the Resident.

518.10 Method of Measurement

The following sentence is added:

The quantity of Parapet Joint Repair will be measured by the linear foot where the repair occurs.

518.11 Basis of Payment

The following sentence is added:

Parapet Joint Repair will be paid for at the Contract unit price per linear foot, which includes all materials, labor, equipment, and incidentals necessary to complete the work including removal of existing joint sealant.

Payment will be made under:

Pay Item		Pay Unit
518.43	Parapet Joint Repair	Linear Foot

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 to 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 asphaltic plug joint system shall be selected from the systems and manufacturers listed on the Contract Plans.

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 manufacturer's specifications.

(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 shall meet or exceed the manufacturer's specifications.**

(c) Bridging Plate:

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

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 the 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:

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

520.04 Installations

The asphaltic plug joint system shall be installed in accordance with this Specification and the manufacturer's latest installation procedures. An installer certified by the membrane manufacturer shall be present during the entire installation to ensure satisfactory results are obtained. Where conflicts between this Specification and the manufacturer's recommendations occur the more stringent requirement, as determined by the Resident, shall govern.

The asphaltic plug joint system shall allow for the joint movement specified on the Contract Plans (with the specified range being from extreme hot to extreme cold temperature). The installation shall be centered over the expansion joint gap as indicated on the **Contract** Plans. Installation shall occur when the structure temperature is between the limits indicated on the **Contract** Plans. It shall not be installed 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 **Contract** Plans. **For bridges with torch applied waterproofing membrane beneath the asphalt pavement, the waterproofing membrane shall remain in place regardless of the joint manufacturer's recommendations.** 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. **All other types of membrane shall be removed prior to joint installation in accordance with the manufacturer's recommendations. When membrane is required to be removed, the membrane removal limits shall end 1" to 2" from the pavement removal limits to allow the asphaltic joint to overlap with the 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 Contract 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 used 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 **Contract** 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 into 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 **and thoroughly combined into a coated aggregate mixture.**

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 **Contract** Plans. 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 **Contract** 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 520

EXPANSION DEVICES – NON-MODULAR

(Expansion Joint Modifications)

520.01 Description

This work consists of removing the existing joint seals, modifying and cleaning the existing steel rails and joint armor as noted below, and furnishing and installing new replacement seals in the bridge joints at the Route 9 Underpass Bridge in accordance with the Plans and this Specification.

Route 9 joint armor shall be modified by removing the existing locking compression seal steel rails (extrusions) and welding new steel plates and extrusions for new gland seals. Precaution shall be taken to avoid damaging the joint armor to remain.

520.02 Materials

Replacement joints used shall be Expansion Device - Gland Seal and shall meet the material requirements of Section 520 - Expansion Devices - Non-Modular Expansion Joints.

520.06 Installation

Existing steel shall be cleaned, sandblasted, and ground smooth if needed, prior to the installation of the new joint steel. Any portions of the existing steel rails within the parapet joint opening that must be removed to fit the new joint rails shall be ground smooth prior to installation of the new joint steel rails.

The Contractor shall install the replacement joint seals according to the manufacturer's recommendations. Replacement gland seals shall be installed full deck width (including turn-ups within parapets) in one piece after the existing seals are removed and the existing seal extrusions or joint armor are repaired, cleaned, sandblasted and primed (if priming is recommended by the seal manufacturer).

Once the new gland seals are permanently installed, the Contractor shall thoroughly clean the abutment seats, bearings, and girder ends by pressure washing to remove any debris, salt, or other foreign contaminants. Payment for pressure washing shall be incidental to the Expansion Device Modifications item.

520.07 Method of Measurement

Expansion Device Modifications will be measured as one lump sum, complete in place and accepted.

520.08 Basis of Payment

Expansion Device Modifications will be paid for at the contract lump sum price, which shall be full compensation for removal and disposal of the existing joint seal, cleaning and partial removal of existing steel rails, installation of new joint armor, repair of existing joint armor, and all materials, coatings, equipment, labor and incidentals necessary for furnishing and installing the new seals.

Payment will be made under:

Pay Item		Pay Unit
520.211	Expansion Device Modifications (Route 9)	Lump Sum

SPECIAL PROVISION

SECTION 520

EXPANSION DEVICES – NON-MODULAR

(Bridge Expansion Joint Cleaning)

520.01 Description

This work consists of removing sections of bridge expansion joint seal, pressure washing the steel opening exposed for inspection, and reinstalling the existing bridge expansion joint seal, as directed by the Resident. This work also consists of providing all maintenance of traffic needs to safely complete this work.

520.061 Construction Requirements

Schedule. The Constructor shall schedule this work within the first month of contract award and inform the Resident at least one week prior to commencement of work.

Work. The Contractor shall remove a section of expansion joint seal at each abutment no larger than 10 feet, taking care not to damage the seal. The Resident or their representative will determine the location of removal. The exposed joint armor shall be cleaned of debris and loose material using a pressure washer. The Contractor shall allow access to the cleaned section for the Resident or their representative of the Authority to inspect.

Upon completion of the inspection, the Contractor shall reinstall the existing seal, taking care not to damage it.

Maintenance of Traffic. At each site, the Contractor shall maintain traffic in accordance with Section 652 of these Specifications.

520.07 Method of Measurement. Bridge Expansion Joint Cleaning will be measured for payment by the lump sum, complete and accepted.

520.08 Basis of Payment. The accepted quantity of Bridge Expansion Joint Cleaning will be paid for by the lump sum price, which shall be full compensation for all materials, equipment, labor, and incidentals necessary to complete this work.

Maintenance of traffic will be paid for under the appropriate 652 item.

Payment will be made under:

Pay Item		Pay Unit
520.2111	Bridge Expansion Joint Cleaning (Wilson Road Mile 2.0)	Lump Sum
520.2112	Bridge Expansion Joint Cleaning (Littlefield Road Mile 17.3)	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 with edges and laps made tight to protect the turnpike motorists from dust, debris and falling objects.

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. During demolition operations, the protective shielding shall be covered with sheet plastic made tight at edges and laps to prevent water used in the sawcutting 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.

524.05 Method of Measurement

The following paragraph is added:

Protective Shielding will not be measured separately for payment but shall be considered incidental to related contract items under Section 518.

SPECIAL PROVISION

SECTION 524

TEMPORARY STRUCTURAL SUPPORTS

(Temporary Deck Support System)

524.1 Description

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

This work shall consist of the fabricating, erecting, maintaining and dismantling of a temporary deck support system (strongback) as shown on the Plans and in conformity with these Specifications.

This work shall also consist of coring holes through existing pavement and deck concrete as required to accommodate installation, and patching of core holes in accordance with Special Provision 502 upon completion of the work.

524.2 Materials

The following is added after the last paragraph of this Subsection:

Hanger rods shall conform to ASTM F1554 Grade 105 or ASTM A193 B7 with heavy hex nuts conforming to ASTM A563 Grade DH and hardened washers conforming to ASTM F436. The assemblies shall be lubricated and have a Class 2A/2B fit.

524.3 Design

The following is added after the last paragraph of this Subsection:

If the proposed temporary strongback system differs from that shown on the Contract Plans, the Contractor shall submit for approval design calculations and shop drawings for the temporary strongback beam system, hanger rods, temporary support column and jacking procedures. All computations, shop drawings, plans and other criteria submitted for review and approval shall be stamped by a Professional Engineer registered in the State of Maine.

The Contractor may "borrow" two coupled 61 foot W30x108 beams from the Maine Turnpike Authority to use in the strongback system. The components available to the Contractor include only the two beams that are connected together, and any components previously attached to those beams. Photos of the strongback available to the Contractor are provided in Appendix A. The Contractor is responsible for providing the four required support pedestals, hanger rods and washers, bracing assemblies, and other ancillary components required to complete the work. The Authority provided strongback system is located at the Auburn Maintenance Facility (Mile 76.9). The Contractor shall contact Kristi Van Ooyen at KVanOoyen@maineturnpike.com, or at (207) 482-8113, to arrange a time to inspect the strongback system giving 5 days notice. The Contractor shall arrange to pick-up and return the beams at the Authority's Auburn Maintenance Facility in Auburn (Mile 76.9) between the hours

of 7:00 a.m. and 3:30 p.m. Monday through Friday, holidays excluded. The Contractor shall be responsible for arranging for the loading and unloading the coupled beams at the Maintenance Yard.

The Contractor is advised that the strongback is coated in lead-based paint. The Contractor will be responsible for the proper removal and disposal of the lead-based paint system in areas that are to be cut, drilled, or ground in conformance with local, State, and Federal ordinances governing lead paint. See SP Subsection 105.21, Lead Paint, for additional information. An approved lead paint removal/hazardous waste management plan will be required before any lead-based paint is removed, and all removal and disposal documentation will be required before final payment is issued.

The Contractor is also advised that the beams may require the removal of superfluous connection plates or other attachments prior to their use. The Contractor will not be required to remove stiffener plates and other modifications required as part of this contract prior to returning the beams to the Authority. All modifications and all other components required for a complete strongback system, including but not necessarily limited to, bearing pedestals, base and cap plates, C channels, hanger rods and assemblies, Hilti studs, diagonal braces, plates and stiffeners, fasteners, etc. shall be the responsibility of the Contractor.

524.4 Erection and Removal

The following is added after the last paragraph of this Subsection:

General Notes

1. The Contractor shall submit for approval shop drawings for the temporary strongback support system, hanger rods, bearing pedestals, girder supports, deck lifting procedures, girder removal and installation plan, and material specifications and/or certifications for bolts, splice plates, concrete patching material and paint system.

2. The Contractor will not be permitted to remove the damaged beam section until the temporary strongback system is in place and supporting the deck slab.

3. The Contractor shall provide accurate survey for the lifting and lowering of the deck slab at the times specified herein. A written copy of the readings recorded at each strongback support, and at 4 feet on center between the support, will be required following each set of survey readings. Survey readings shall be taken at the following times:

    - After strongback installation and prior to the placement of counterweight materials on the bridge deck.
    - After the placement of counterweight materials and immediately prior to beginning deck lifting operations.
    - During deck lifting operations as directed by the Resident to monitor lifting progress and to allow for required adjustments. Approximately five sets of survey readings are expected
    - After deck lifting operations are completed, and prior to beginning work on the proposed girder insert.

Elevations shall be taken along top of deck over the fascia beam centerline and along the top of strongback. The Resident shall review the survey data prior to the Contractor commencing any girder removals. The Contractor shall also monitor the lateral deflection of the strongback system during the lifting of the deck to ensure it is uniformly loaded and that excessive deformations or warping are not occurring.

4. Before applying any lifting load to the bridge deck, and after surveying the deck slab as described in Step 3, the Contractor shall place approximately 30,000 pounds of "ballast" (precast concrete barrier or other approved weights) at midspan of Span 1 and approximately 30,000 pounds of "ballast" at midspan of Span 3 over Girders G1 and G2.

Temporary Deck Support Installation and Removal Procedure

1. Core 6" diameter holes through the pavement and concrete deck at the median pier and west pier. The bearing pedestals for the strongback system shall be positioned, plumbed and secured on sound concrete on top of the piers and shimmed as needed. Do not secure pedestals to diaphragms, girders, bearings or bearing masonry plates.

2. Layout and core (or drill) 1-1/2" diameter holes through the pavement and deck for hanger rods at 4'-0" spacing as shown on the Plans. The lane below the location being cored shall be closed and the Contractor shall prevent all cores and debris from dropping onto the open roadway or shoulder using approved shielding when work is within six feet of an open travel lane.

3. Place the strongback beams on top of the support pedestals and secure to the deck laterally as shown on the Plans (minimum five locations) to ensure the beams remain plumb and the unsupported length of the compression flange is reduced. Verify the strongback beams and pedestals are plumb and level prior to proceeding.

4. Install hanger rods between the strongback beams and through the cored/drilled holes in the deck slab. Double nut the assemblies on both ends utilizing two-piece spherical washers below the slab. The top half of each hanger rod assembly shall be lubricated prior to commencing any lifting operations.

5. All hanger rod assemblies shall be brought to a snug tight condition and then incrementally tensioned by torqueing the nuts sufficiently such that the total movement of the deck slab, including the movement from the ballast load, is 5/8" at midspan of Girder G1. It is estimated that the corresponding mid-span deflection of the Authority's strongback will be 2.25". If the Contractor chooses not to use the Authority provided strongback, the Engineer will provide the maximum anticipated mid-span deflection of the strongback following submittal of the Temporary Deck Support shop drawings. If the maximum mid-span deflection of the strongback is exceeded during lifting operations, the Contractor shall halt lifting operations and consult with the Resident and Engineer. Torqueing shall begin from the center of the span and proceed uniformly to both piers tightening each nut approximately one half turn per pass. The Contractor shall monitor the underside of the bridge deck during lifting operations for signs of loose or spalling concrete over the traveled way. The process shall be repeated until the deck is sufficiently supported by the strongback.

Once the deck has been lifted, the hanger rod assemblies shall be secured and locked-off with a double nut at each end. All girder bearings shall be monitored during lifting operations for potential liftoff while the deck slab is being lifted. Should girder liftoff occur, the Resident shall be notified immediately.

6. After all girder repairs and connections have been made, the concrete slab shall be lowered by reversing the lifting sequence. The hanger rods and the strongback support system shall be disassembled.

7. Mill the pavement surface in the repair area to the limits shown on the plans.

8. Patch all support pedestal access holes through the deck as shown on the Plans and in accordance with Special Provision 502, Temporary Strongback Concrete Repairs.

9. Patch all hanger rod and anchor rod holes through the deck as shown on the Plans and in accordance with Special Provision 502, Temporary Strongback Concrete Repairs.

524.28 Method of Measurement

The satisfactorily designed, erected, maintained and dismantled Temporary Deck Support System shall be measured as one lump sum.

Concrete coring and subsequent patching of the concrete deck penetrations at strongback column support and anchor rod locations will not be measured for payment separately, but incidental to Pay Item 524.31 Temporary Deck Support System.

524.29 Basis of Payment

The Contract Lump Sum payment for Temporary Deck Support System shall be full compensation for all materials, equipment, labor and incidentals including, but not necessarily limited to, furnishing, installing and removal of the temporary strongback system including all temporary girder supports, hanger rods and any required modifications; fabrication, assembly and erection of strongback braces and pedestal supports; supplying threaded rods and washer assemblies; concrete coring; raising and lowering the existing bridge deck; concrete deck patching; membrane repairs; completion of survey; and all other materials, equipment, labor and incidentals necessary for satisfactorily completing the work in accordance with the Plans and Specifications.

Payment will be made under:

Pay Items		Pay Unit
524.31	Temporary Deck Support System	Lump Sum

SPECIAL PROVISION

SECTION 526

CONCRETE BARRIER

(Temporary Concrete Barrier Type I - Supplied by Authority)

526.01 Description

The following paragraphs are added:

This work shall consist of loading, transporting, setting, resetting, removing, transporting and stacking Temporary Concrete Barrier Type I – Supplied by Authority. 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.

Concrete barriers supplied by Authority shall be available at the following location(s):

Maintenance Area	Linear Feet of Barrier
West Gardiner Maintenance Area Mile 101.8 Northbound	1,750

Upon substantial completion of work, the Contractor shall remove and transport the barrier back to its maintenance area of origin. All barrier shall be returned, sorted and stacked according to type in locations directed by the project Resident or maintenance area foreman.

526.02 Materials

The following paragraphs are added:

e. 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.

526.021 Acceptance

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

526.03 Construction Requirements

The following paragraphs are added:

The Contractor shall notify the Resident prior to the scheduled pick-up and delivery of concrete barrier. No barrier shall be removed from or stacked at the Turnpike Maintenance Area without approval of the Resident.

The Contractor shall move and place barrier-utilizing methods that will not damage the barrier. Barrier that is damaged by the Contractor by failing to use proper methods shall be replaced by the Contractor at no additional cost to the Maine Turnpike Authority.

Concrete barrier supplied by the Authority consists of several different styles. Not all barriers may be compatible. The Contractor shall utilize caution when setting barrier to use identical barrier types as adjacent barrier. Non-compatible barrier that cannot be attached together shall be overlapped by a minimum of 10 feet with the blunt end on the non-traffic side of the barrier. This work will not be measured separately for payment, but shall be incidental to the concrete barrier.

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.

526.04 Method of Measurement

The following paragraphs are added:

Temporary Concrete Barrier Type I – Supplied by Authority will not be measured for payment but shall be considered incidental to Item 652.39 Work Zone Traffic Control.

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 Item 652.39 Work Zone Traffic Control. Temporary storage of Concrete Barrier between construction phases, if required, will not be measured separately for payment, but shall be incidental to Item 652.39 Work Zone Traffic Control. 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.

SPECIAL PROVISION

SECTION 527

ENERGY ABSORBING UNIT

(Work Zone Crash Cushion)

527.01 Description

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

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

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

527.02 Materials

The following paragraph is added:

Work zone crash cushions fabricated prior to December 31, 2019 in serviceable condition shall meet the requirements of NCHRP 350 TL-3 crash test requirements and work zone crash cushions fabricated after December 31, 2019 shall meet the MASH TL-3 crash test requirements for use on the turnpike and local roadways with posted speeds of 45 MPH or greater. Work zone crash cushions fabricated prior to December 31, 2019 shall meet in serviceable condition shall meet the requirements of NCHRP 350 TL-2 crash test requirements and work zone crash cushions fabricated after December 31, 2019 shall meet the MASH TL-2 crash test requirements for use 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 MASH 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

Delete this section and add the following:

Work Zone Crash Cushions will not be measure for payment but will be considered incidental to Item 652.39 Work Zone Traffic Control.

SPECIAL PROVISION

SECTION 531

HEAT STRAIGHTENING REPAIRS TO STRUCTURAL STEEL

531.01 Description

This work shall consist of repairing damaged structural steel through the application of heat to damaged sections of beams and girders as described on the Contract Plans and in these Specifications. All heat straightening work shall be completed by one of the prequalified heat straightening firms listed in this Specification.

This work also includes the temporary removal, modification, and reinstallation of existing diaphragms, cross frames, stiffeners, and other secondary structural elements and attachments required to complete the heat straightening repair as described on the Contract Plans and in the Specifications.

Photos of the damaged areas to be heat straightened are provided in Appendix A. Approximate measurements of girder deformation are provided on the plans.

531.02 General Construction Requirements

Heat straightening is a repair procedure in which a limited amount of heat is applied in specific patterns to plastically deformed regions of damaged steel in repetitive cycles of heating and cooling to produce a gradual straightening of the member. An approved amount of force may be used to restrain the member from excessive undesired movement during heating. Force is not intended to be the primary method of straightening and its application shall be limited in accordance with this Section.

Procedures using forces that result in stresses over the yield stress of the material at the applied temperature, such as Hot Mechanical Straightening and Hot Working, are prohibited without prior approval of the Resident.

531.03 Submittals

Prior to initiating the repair, the Contractor shall develop and submit to the Resident for approval a repair plan that includes the following, at a minimum, with detailed requirements described in the Subsections noted:

(a) Name, address and contract information for the Contractor or Subcontractor designated to perform the heat straightening work (531.04)
(b) Damage assessment and documentation (531.05)
(c) Equipment to be used for heat application (531.06)
(d) Application of heat (531.07)
(e) Application of passive or active jacking forces (531.08)
(f) Crack inspection method (531.09)
(g) Paint removal and cleaning procedure (531.10)

Detailed requirements for each of the repair plan components are included in the Subsections that follow. The repair shall not begin without approval of this plan. Modifications to the approved repair plan due to changing conditions shall be submitted to the Resident for approval.

531.04 Qualifications

All heat straightening work shall be completed by one of the following prequalified heat straightening specialists; no alternate heat straightening specialists will be considered for this Contract:

Flame On, Inc.
12632 Wagner Road
Monroe, WA
Phone: (425) 397-7039

International Straightening
901 E. Bristol Drive
Bismarck, ND
Phone: (701) 223-5972

Dan Dalton, Inc.
912 W. Calispell Road
Usk, WA
Phone: (509) 447-3528

The heat straightening repair shall be directly supervised by a person with a minimum of five (5) years of continuous and successful experience completing heat straightening repairs of comparable scope and magnitude. The heat straightening supervisor shall be on-site and actively engaged in all heat straightening activities.

531.05 Damage Assessment

All areas exhibiting damage and to which heat shall be applied shall be visually inspected following paint removal and prior to heat application. 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. The repair plan submitted in accordance with Subsection 531.03 shall identify all locations to which heat shall be applied, areas that were visually inspected, and the results of non-destructive testing at areas suspected of cracking. In no case, shall the cracks be "V" grooved, filled with welding material, and then straightened.

531.06 Equipment

An oxygen-fuel combination shall be used for heating. Propane, propylene, acetylene, and MAPP gas are acceptable fuels. Heat shall be applied using either single or multiple (rosebud) orifice tips only. The size of the tip shall be proportional to the thickness of the heated material. The tip sizes shown in Table 531-1 are provided as a guide. Heating the steel with cutting torch heads is prohibited.

Where the application of force has been approved to restrain undesired movement during heating, use either hydraulic or mechanical jacks, come-alongs or other approved force application devices. Force application limits are described in Subsection 531.08.

Table 531-1 Orifice Type and Size Limits Based on Steel Thickness		
Steel Thickness (in)	Orifice Type	Size
< 1/4	Single	3
3/8	Single	4
1/2	Single	5
5/8	Single	7
3/4	Single	8
1	Single Multiple	8 3
2	Single Multiple	8 4
3	Multiple	5
> 4	Multiple	5

531.07 Application of Heat

A series of heats applied consecutively to different elements of the member at the same cross section is referred to as a heating pattern. Heating patterns and sequences shall be selected to match the type of damage and cross-section shape. Fundamental heating patterns (vee, line, edge, spot, and strip) may be used separately or in combination. When vee heats are used, the maximum width of the vee along the edge of the heated element shall be the smaller of one half of the width of the element or 10 inches.

The maximum allowable temperature to which the material can be heated is listed in Table 531-2. The steel shall be heated in a single pass following the approved heating pattern. All spots, lines, and patterns shall be clearly identified and marked on the steel prior to heating. The steel within the planned pattern shall be heated to the specified temperature as rapidly as possible without overheating. The Contractor shall protect adjacent surfaces and elements from unintentional heat application, and proposed methods of protection shall be described in the repair plan submitted for approval accordance with Subsection 531.03.

Table 531-2 Maximum Temperature Limits for Heat Application	
Material Grade	Maximum Temperature (°F)
ASTM A7, Grade 30 and 33	1,200
ASTM A709, Grade 36, 50, 50S and 50W	1,200
ASTM A709, Grade HPS 70W	1,050
ASTM A709, Grade 100 and 100W	1,100

The steel shall be permitted to cool to 250°F prior to reheating. Artificial cooling using dry compressed air to achieve the reheat temperature is permitted once the surface temperature of the steel is below 600°F. Artificial cooling methods that include water are prohibited.

Heat shall be applied completely through the thickness of the material at vee and strip patterns to ensure total upset of the material thickness. The heat pattern shall not be retraced until the steel has cooled to ambient temperatures. Weaves shall just touch each other but not overlap.

Where line heats are utilized, heat shall be applied partially through the thickness of the material to ensure upsetting of the material on the convex face of the element. A line heat is applied along a straight or radial path and is intended only to heat material along that path, effectively heating material within the width of the orifice tip. Line heat patterns do not incorporate the weaving movement of vee and strip heats, which are intended to heat an area wider than the orifice tip.

The Contractor shall field determine the limits of heat application and provide a submittal including the types of heat patters to be applied, their relative locations and the sequence of their application. The location of vee heats shall be shifted along the zone of yielded material between successive heating patterns. Simultaneous vee heats are permitted provided that the clear spacing between vees is greater than the width of the plate element to which heat is being applied, but no less than twelve inches.

Heating patterns other than those suggested in the Contract Documents may be used only if approved by the Engineer. The Contractor shall develop and submit proposed heating patterns to the Resident for the Engineer's approval as part of the repair plan described in Subsection 531.03. All proposed heating patterns, including the suggested patterns provided in the Contract Documents, shall be included in the repair plan submittal.

Steel temperatures shall be monitored during heat straightening with temperature-sensitive crayons, a pyrometer, or an infrared non-contact thermometer. Pyrometers and infrared thermometers shall be calibrated prior to use, and the calibration procedure and results shall be documented. When temperature-sensitive crayons are used either as the primary monitoring device or for calibration, the crayons provided shall be rated in temperature increments not to exceed 50°F above or below the desired temperatures, and they shall be accurate to within one percent of the rated temperature. The Contractor shall provide the heat monitoring device, and make it available to the Resident at all times. Temperature verifications shall be made regularly throughout the pattern, and the Contractor shall notify the Resident if the temperature of the steel exceeds the specified maximum temperature at any time. The heating flame shall be removed from the steel prior to each temperature reading.

531.08 Application of Passive or Active Jacking Forces

Passive or active jacking forces may only be used in accordance with an approved jacking submittal. Passive jacking forces are developed through the installation of a strut, tie or jack in a snug tight condition prior to heating. Passive jacks limit undesired girder movements during heating operations and increase the straightening effect of each heat cycle. The jacking force for a passive jack is limited to that which produces zero deflection of the unheated element. As straightening occurs the jacking forces should be relieved. Engineering calculations are not

required to be submitted for the use of passive jacks. Active jacking forces shall be considered the application of any force that exceeds the passive force needed to prevent undesired girder movement during heating operations.

When the Contractor elects to use active jacking forces the maximum allowable active jacking force for members shall be calculated by a Professional Engineer licensed in the state of Maine, with calculations submitted to the Resident for approval prior to commencing work. For computation of maximum allowable jacking force, assume the yield strength of the steel is 33,000 psi, unless otherwise noted in the Contract Documents. For repairs of local flange bending, the jacking force is limited to that which produces no deflection of the unheated flange.

The jacking forces shall be determined in accordance with the recommendations outlined in the "Guide for Heat-Straightening of Damaged Steel Bridge Members" (FHWA, 2008). Hot mechanical straightening and hot working repair methods (methods that induce stress in the steel beyond first yield) are prohibited. All plans and calculations prepared by the Contractor shall be stamped by a Professional Engineer licensed in the State of Maine.

The calibration of jacks shall be performed and documented.

Jacking forces shall not be increased during heating or cooling; all adjustments shall be made when the steel is cool to touch (in the area where heat was directly applied).

No deflection shall be induced in other bridge members being used to support the Contractor's proposed jacking devices.

When the use of jacking forces is proposed the repair plan submitted for approval in accordance with Subsection 531.03 shall include calculations and details of the proposed jacking scheme, including the restraint type, location, magnitude of applied force, and method of controlling the magnitude of the applied force.

531.09 Crack Inspection

If cracks are discovered during the course of the heat straightening repair, the Contractor shall stop work and notify the Resident for review and direction.

Upon completion of straightening, the Contractor shall inspect the flanges for cracks using methods prescribed in Subsection 531.05. Cracks discovered shall be reviewed by the Resident, and repairs shall be made as directed by the Resident prior to acceptance of the heat straightening repair.

The repair plan submitted in accordance with Subsection 531.03 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.

531.10 Paint Removal and Cleaning

Structural steel surfaces to which heat shall be applied during the repair shall be thoroughly cleaned of all paint, dust, dirt, oil, grease, corrosion and all other foreign matter prior to inspection and heat application. Unless otherwise noted in the Contract Documents, the Contractor shall be

responsible for identifying surface areas to be cleaned. If the existing surface is covered with a lead-based paint system, the paint shall be removed, contained, and disposed of in accordance with the Standard Specifications and the Special Provisions. All surfaces shall be cleaned as needed to perform the damage assessment described in Subsection 531.05 and marking as required in Subsection 531.07. Upon completion and acceptance of the heat straightening repair, a protective coating shall be applied in accordance with Section 506, Painting Structural Steel.

531.11 Tolerances

Completed tolerances shall be as follows:

At all locations of sweep and flange bulging repair: Completed tolerances for straightness of the flanges are within 1/4 inch of flat at the flange edge and 1/4 inch of horizontal sweep over 20 feet at the point of impact. The completed tolerances for the web are 1/100 of the web depth or 1/4 inch, whichever is greater, out of vertical alignment; and no more than 1/4 inch of localized deviation as measured with a straightedge vertically and horizontally against the web. These tolerances shall be met before cross frames are attached. The cross frames shall not be used to hold the straightened member in position in order to satisfy the tolerances specified herein.

531.12 Gouge Repairs

When gouge repairs are required, all nicks, divots, gouges, burrs, and scrapes shall be ground smooth prior to initial heat application. Grinding shall be completed parallel to the longitudinal axis of the beam. Visual inspection shall be performed on all gouge repairs by the Authority's representative prior to painting. Repairs that require removal of more than two percent of the cross-sectional area of an element require the Resident’s approval.

531.13 Heat Straightening Procedures

1. The Contractor shall have the following equipment on-site, or readily available, throughout the duration of the heat straightening work:

    - Electric generator and air compressor
    - Four foot long perforated air cooling pipe with shut-off valve
    - *Tempil* sticks
    - Calibrated Infrared thermometer
    - Appropriate multi-orifice heating tips
    - Sufficient oxygen and fuel cylinders (manifold if necessary)

2. Prior to initiating the repair, the Contractor shall develop and submit to the Resident for approval a repair plan that includes the following, at a minimum:

    - Name, address and contract information for the Contractor or Subcontractor designated to perform the heat straightening work
    - Any additional damage documentation and field measurements collected by the Contractor and used to develop the planned repair procedure
    - Equipment to be used for heat application
    - Proposed heating patterns and sequences
    - Proposed jacking scheme (if applicable)
    - Paint removal and cleaning procedure

3. The Contractor shall remove the paint system in the repair areas, as shown on the Contract Plans, prior to heat application.

4. The Contractor shall be required to perform heat straightening to achieve the alignment tolerances noted herein. A maximum of two heating cycles may be applied simultaneously in a given repair area to hasten the work, subject to spacing limitations shown on the Contract Plans.

5. Heat straightening shall be performed using a combination of vee heats on the bottom flange immediately followed by strip heats up the web. The satisfactory completion of one vee heat and corresponding web strip heat shall be considered one cycle. The straightening shall be done so as not to produce wrinkles, cracks or bulges in the web or flange. The Resident shall accept the heating cycle as complete before moving to the next heating cycle location, and shall concur with the Contractor where the next heating cycle shall be applied. The following shall apply during the work:

    - The calibration of electronic temperature monitoring equipment shall be performed and documented if such equipment is used.

    - Heating tips shall be adjusted to produce a neutral flame. Regulators appropriate for the proposed fuel shall be used. The maximum temperature reached by the steel under the flame shall not exceed the value shown in Table 531-2. During heating the temperature shall be checked periodically using temperature indicating crayons or a thermocouple instrument. Surface melting of the steel from flame contact shall be avoided. Heated steel shall be air cooled to 600°F after which dry compressed air emitted uniformly from a cooling pipe shall be used. Artificial cooling by quenching is prohibited. Only multi-orifice heating tips suitable for rapid heating through the flange/web thicknesses shall be used.

    - The number and location of flange vee heats shall be determined in the field as the work progresses. Web strip heats shall immediately follow all flange vee heats and be applied to the width of web material directly above the intersection of vee pattern on the flange and the web.

    - Heat shall be applied completely through the thickness of the material at vee and strip patterns to ensure total upset of the material thickness. The heat pattern shall not be retraced until the steel has cooled to ambient temperatures. Weaves shall just touch each other but not overlap.

    - Where line heats are utilized, heat shall be applied partially through the thickness of the material to ensure upsetting of the material on the convex face of the element. Line heat is applied along a straight or radial path and is intended only to heat material along that path, effectively heating material within the width of the orifice tip. Line heat patterns do not incorporate the weaving movement of vee and strip heats, which are intended to heat an area wider than the orifice tip.

6. The Contractor may elect to use jacks to restrain the members or elements against undesired movement associated with expansion during the cycles of applying heats in accordance with the requirements of subsection 531.08.

7. Any nicks, gouges and scrapes shall be ground smooth prior to initial heat application. Repairs that require removal of more than 2% of the cross sectional element, the web and each flange are considered a separate cross sectional element, require the Engineer's approval. Any cracks discovered before or during the repair shall be brought to the attention of the Resident. Grinding shall be done in the longitudinal axis of the beam, where practical.

8. Paint shall be touched-up as required by Section 506 of the Special Provisions.

531.14 Method of Measurement

Heat Straightening shall be measured for payment as one lump sum, complete and accepted.

Removal of the existing paint system will be measured for payment separately under Pay Item 506.9103.

531.15 Basis of Payment

The Contract Lump Sum payment for Heat straightening shall be full compensation for all materials, equipment, labor and incidentals including, but not necessarily limited to: field measurements necessary to complete the work; submittal development; mobilization; heat straightening; any diaphragm removals or reinstallation deemed necessary to complete the work. The payment will also be full compensation for all materials and consumables; equipment, labor and incidentals; set-up and heat straightening as required to complete the work and as directed by the Resident.

Payment will be made under:

Pay Item		Pay Unit
531.82	Heat Straightening	Lump Sum

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 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.

619.07 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	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 and dotted white lines will include the gaps when painted. Temporary painted pavement marking lines will not be measured for payment but will be considered incidental to Item 652.39 Work Zone Traffic Control. Pavement marking removal will only be measured for payment where the final marking layout shown in the plans does not match the existing marking layout and is beyond the limits required for site maintenance of traffic.

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.

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)
(Temporary 6 Inch Black Pavement Marking Tape)

627.01 Description

The following sentence is added:

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

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

627.02 Materials

The following paragraph is added:

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

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

627.04 General

The following paragraphs are added:

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

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

Temporary pavement markings shall consist of applying six inch solid white, six inch broken white, and six inch yellow reflectorized pavement marking tape for traffic maintenance during construction as shown on the Plans or as directed by the Resident.

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 50ºF, heat shall be applied to the pavement surface, if deemed necessary by the factory representative or as directed by the Resident, at no additional cost to the Authority. Proper primer for the temperatures shall be used as directed by the manufacture.

The pavement mark tape shall be rolled over with a vehicle once application is complete and then scored every 20 feet when placed in long runs to prevent full length unraveling.

627.08 Removing Lines and Markings

The following sentence is added:

Removal of temporary pavement marking tape shall be accomplished without the use of heat, solvents, grinding or sandblasting and in such a manner that no damage to the pavement results.

627.09 Method of Measurement

The following paragraph is added:

Temporary Pavement Markings - Tape will be measured for payment by the linear foot. The measurement of broken lines will not include the gaps.

627.10 Basis of Payment

The following paragraphs are added:

Payment for the Temporary Pavement Markings - Tape will be made at the Contract bid price per linear foot, which price shall include furnishing, installing, maintaining and removing the temporary tape and all materials, labor, equipment and incidentals necessary to accomplish the work. Replacement of Temporary Pavement Markings - Tape, as described above, will be incidental and no separate payment will be made.

Payment for the Temporary 6 Inch Black Pavement Marking Tape will be made at the Contract bid price per linear foot installed, which price shall include furnishing, installing, maintaining and removing the temporary tape and all materials, labor, equipment and incidentals necessary to accomplish the work. Replacement of 6 Inch Black Temporary Pavement Marking Tape, as described above, will be incidental and no separate payment will be made.

Payment will be made under:

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

SPECIAL PROVISION

SECTION 627

PAVEMENT MARKINGS

(Pavement Marking Tape)
(Pavement Marking Tape – Dotted White Lane Line, 6-inch Width)

627.01 Description

The following sentence is added:

This work shall consist of furnishing and placing reflective pavement marking tape in conformity with the Plans, as specified herein and as directed by the Resident.

The pavement marking tape shall be installed at all locations.

627.02 Materials

The following sentence is added:

For the Broken White Lane Line (BWLL), Pavement Marking Tape shall be 3M Stamark™ High Performance Tape Series 380AW – High Performance pavement marking tape, color- white, six (6) inch width, as manufactured by 3M of St. Paul, Minnesota.

For the Dotted White Lane Line (DWLL), Pavement Marking Tape shall be 3M Stamark™ High Performance Tape Series 380I ES – High Performance pavement marking tape, color- white, six (6) inch wide and twelve (12) inch wide, as manufactured by 3M of St. Paul, Minnesota.

3M Traffic Safety Systems Division
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627.04 General

The following paragraphs are added:

The tape shall be used as a supplemental broken white lane line. The tape shall be installed between the painted Broken White Lane Line (BWLL) spaced eighty (80) foot center to center as shown on the Plans. The length of the tape shall be three (3) feet.

The tape shall also be used to mark a Dotted White Lane Line (DWLL) and shall be installed on parallel deceleration and acceleration lanes at locations as noted in the Plans. On deceleration lanes, the tape shall be installed from the beginning of the full width deceleration lane and shall extend to the theoretical gore markings. On acceleration lanes, the DWLL shall extend from the theoretical gore markings to a point one-half of the total length of the acceleration lane (including the lane taper length). Layout data is noted on the Plans. Dotted White Lane Line tape

shall be three (3) foot in length and shall be spaced nine (9) feet apart. Spacing from the Solid White Lane Line (SWLL) or the Theoretical Gore Markings shall be nine (9) feet.

627.05 Preparation of Surface

The following paragraph is added:

The Contractor shall mill a groove in the pavement for each tape length to be placed ("in-and-out" pattern). Continuous grooving for installation of the tape shall not be allowed. The groove length shall be the required tape length plus 12 inches on both ends. Tape length spacing shall be as shown on the plans. The groove width for inlaid tape pavement marking shall be the pavement marking width plus 1 inch, with a tolerance of ± ¼ inch. The groove shall have a uniform depth of 150 Mils (±20 Mils). Groove position shall be a minimum of 2 inches from the edge of the pavement marking to the longitudinal pavement joint. The bottom of the groove shall have a smooth, flat finished surface. The use of gang stacked Diamond cutting blades is required for asphalt pavement surfaces. The spacers between blade cuts shall be such that there will be less than a 10 mil rise in the finished groove between the blades.

Grooves shall be clean, dry and free of laitance, oil, dirt, grease, paint or other foreign contaminants. The Contractor shall prevent traffic from traversing the grooves, and re-clean grooves, as necessary, prior to application of the primer and pavement marking tape. Depth plates shall be provided by the contractor to assure that desired groove depth is achieved.

Reference is made to 3M Information Folder 5.18 Grooving Applications, May 2011, "Application Guidelines for Pavement Marking in Grooved Pavement Surfaces."

627.09 Method of Measurements

The following paragraph is added:

The quantity of Pavement Marking Tape measured for payment will be the linear feet of tape in place and accepted. The measurement will not include the gaps.

627.10 Basis of Payment

The following paragraphs are added:

The accepted quantity of pavement marking tape will be paid for at the Contract unit price per linear foot which price shall include all material, pavement grooving, equipment, labor and incidentals necessary to complete the work.

Payment will be made under:

Pay Item		Pay Unit
627.94	Pavement Marking Tape	Linear Foot
627.941	Pavement Marking Tape – Dotted White Lane Line, 6-inch Width	Linear Foot

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.

Wilson Road and Littlefield Road Traffic Control Requirements

A minimum lane width of 16 feet of alternating traffic shall be maintained with flaggers on Wilson Road (Mile 2.0) and Littlefield Road (Mile 17.3) Underpass Bridges while the joint cleaning work is performed. This effort shall be coordinated to be successive for the two bridges.

No Mainline impacts are anticipated or allowed.

Bennett Road Traffic Control Requirements

Bennett Road will be closed to through traffic between Snow Hill Road and Route 202. The road closure dates shall conform with the requirements of section 107.4.6 Prosecution of Work and section 107.1 Contract Time and Contract Completion Date. The Contractor shall notify the Resident/Authority two weeks prior to the closure. A temporary detour shall be established and maintained at all times in accordance with the detour plan shown in the Plans. The Resident/Inspector shall notify the Town of New Gloucester prior to closing Bennett Road at the Turnpike.

See Maine Turnpike Traffic Control Requirements below for specific limitations on Mainline maintenance of traffic operations.

Grove Street Traffic Control Requirements

Grove Street will be closed to through traffic between Crowley Road and Randall Road. The road closure dates shall conform with the requirements of section 107.4.6 Prosecution of Work and section 107.1 Contract Time and Contract Completion Date. The Contractor shall notify the Resident/Authority two weeks prior to the closure. A temporary detour shall be established and maintained at all times in accordance with the detour plan shown in the Plans. The Resident/Inspector shall notify the City of Lewiston prior to closing Grove Street at the Turnpike.

Mainline may have single lane closures at any time at Grove Street. Complete stoppages of traffic will be permitted Sunday through Thursday beginning at 10:00 p.m. and ending at 5:30 a.m. for the performance of heat straightening operations at repair areas “A”, “B”, and “C”. Traffic may be stopped and held for periods of up to 25 minutes during these operations. Before the roadway is reopened, all materials shall be secured so they will not endanger traffic passing

underneath and the roadway shall be cleaned of any debris. The Contractor will reimburse the Authority at the rate of $2,500.00 for each five-minute period, or any portion thereof, for stoppages that remain in place in excess of the 25 minute limit. The total of any penalties shall be deducted from the next pay estimate.

Route 9 Traffic Control Requirements

A minimum of one-lane alternating traffic shall be maintained on Route 9 at all times in accordance with the details shown on the Plans.

See Maine Turnpike Traffic Control Requirements below for specific limitations on Mainline maintenance of traffic operations.

Maine Turnpike Traffic Control Requirements

Temporary lane and shoulder closures will be allowed at all times at Grove Street and Route 9 in accordance with Special Provision Section 652 Maintenance of Traffic – April 13,2021.

Temporary lane closures northbound at Bennett Road will not be allowed on Fridays from 2:00 p.m. to 7:00 p.m. Lane and shoulder closures will be allowed all other days and times in accordance with Special Provision Section 652 Maintenance of Traffic – April 13, 2021.

SPECIAL PROVISION

SECTION 652

MAINTENANCE OF TRAFFIC
(April 13, 2021)

MaineDOT Standard Specification 2014 Edition Section 652 – Maintenance of Traffic and the Maine Turnpike Authority 2016 Supplemental Specification Section 652 – Maintenance of Traffic are deleted in their entirety and replaced with the following:

652.1 Description

This work shall consist of furnishing, installing, maintaining and removing traffic control devices necessary to provide reasonable protection for motorists, pedestrians and construction workers in accordance with these Specifications, the applicable provisions of Section 105.4.5 - Special Detours, and the plans.

Traffic control devices include signs, lighting devices, markings, barricades, channelizing, and hand signaling devices, portable light towers, truck mounted impact attenuators, traffic officers, and flaggers.

652.2 Materials

All traffic control devices shall conform to the requirements of the latest edition of the MUTCD, NCHRP 350 guidelines **and all Traffic control devices shall meet Manual for Assessing Safety Hardware (MASH) 16 guidelines if date of manufacture was after December 31, 2019.**

All signs shall be fabricated with high intensity fluorescent retroreflective sheeting conforming to ASTM D 4956 - Type VII, Type VIII, or Type IX (prismatic). All barricades, drums, and vertical panel markers shall be fabricated with high intensity orange and white fluorescent retroreflective sheeting conforming ASTM D 4956 - Type VII, Type VIII, or Type IX (prismatic).

Construction signs shall be fabricated from materials that are flat, free from defects, retroreflectorized, and of sufficient strength to withstand deflections using a wind speed of 80 miles/hr.

652.2.2 Signs

Only signs with symbol messages conforming to the design of the Manual of Uniform Traffic Control Devices(MUTCD) shall be used unless the Resident approves the substitution of word messages.

Any proposed use of temporary plaques to cover text or to change text shall be approved by the resident. All signs or proposed plaques shall have a uniform face and be constructed from similar sheeting.

All signs shall be new, or in like new condition and maintained in like new condition throughout the project duration. Signs shall be cleaned just prior to installation and throughout the project utilizing a method that will not damage the reflective sign sheeting.

652.2.3 Flashing Arrow Board

Flashing Arrow Boards must be of a type that has been submitted to AASHTO's National Transportation Product Evaluation Program (NTPEP) for evaluation and placed on the Maine Department of Transportations' Approved Products List of Portable Changeable Message Signs & Flashing Arrow Panels.

Flashing Arrow Boards units shall meet requirements of the current Manual on Uniform Traffic Control Devices (MUTCD) for Type "C" panels as described in Section 6F.56 - Temporary Traffic Control Devices. Flashing Arrow Boards shall have matrix of a minimum of 15 low-glare, sealed beam, Par 46 elements capable of either flashing or sequential displays as well as the various operating modes as described in the MUTCD, Chapter 6-F. If an Flashing Arrow Board consisting of a bulb matrix is used, each element should be recess-mounted or equipped with an upper hood of not less than 180 degrees. The color presented by the elements shall be yellow.

Flashing Arrow Board elements shall be capable of at least a 50 percent dimming from full brilliance. Full brilliance should be used for daytime operation and the dimmed mode shall be used for nighttime operation. Flashing Arrow Board shall be at least 96 inches x 48 inches and finished in non-reflective black. The Flashing Arrow Board shall be interpretable for a distance not less than 1 mile.

Operating modes shall include, flashing arrow, sequential arrow, sequential chevron, flashing double arrow, and flashing caution. In the three arrow signals, the second light from the arrow point shall not operate.

The minimum element on-time shall be 50 percent for the flashing mode, with equal intervals of 25 percent for each sequential phase. The flashing rate shall be not less than 25 nor more than 40 flashes per minute. All on-board circuitry shall be solid state.

Primary power source shall be 12 volt solar with a battery back-up to provide continuous operation when failure of the primary power source occurs, up to 30 days with fully charged batteries. Batteries must be capable of being charged from an onboard 110 volt AC power source and the unit shall be equipped with a cable for this purpose.

Controller and battery compartments shall be enclosed in lockable, weather-tight boxes.

The Flashing Arrow Board shall be mounted on a pneumatic-tired trailer or other suitable support for hauling to various locations, as directed. The minimum mounting height of an arrow panel should be 7 feet from the roadway to the bottom of the panel.

The face of the trailer shall be delineated on a permanent basis by affixing retro-reflective material, known as conspicuity material, in a continuous line as seen by oncoming drivers.

A portable changeable message sign may be used to simulate an arrow panel display.

652.2.4 Other Devices

Vertical panel markers shall be orange and white striped, 8 inches wide by 24 inches high. On the Interstate System, vertical panel markers shall be orange and white striped, 12 inches wide by 36 inches high.

Cones shall be orange in color, a minimum of 28 inches high, and retro-reflectorized. Retro- reflection shall be provided by a white bands of retro-reflective sheeting conforming to the MUTCD. **All cones utilized on the project shall be new or in like new condition and shall have a consistent design/appearance.**

Drums shall be of plastic or other yielding material, and shall be a minimum of 36 inches high and a minimum of 18 inches in diameter. There shall be at least two retro-reflectorized orange and at least two retro-reflectorized white stripes a minimum of 4 inches wide on each drum. **All drums utilized on the project shall be new or in like new condition and shall have a consistent design/appearance.**

Flaggers shall use a STOP / SLOW hand held paddle as the primary and preferred hand signaling device. Flags shall only be limited to emergencies. STOP / SLOW paddles shall have high intensity prismatic retro reflective sheeting, have an octagonal shape on a rigid handle and shall be at least 18 inches wide with letters at least 6 inches high and shall be constructed from light semi-rigid material. The STOP (R1-1) face shall have white letters and a white border on a red background. The SLOW (W20-8) face shall have black letters and a black border on an orange background.

STOP / SLOW paddles shall also incorporate either white or red flashing lights on the STOP face and white or yellow flashing lights on the SLOW face of the paddle and always be in use.

Paddles must conform to any of the following patterns:

A. Two white or red lights (colors shall be all white or all red), one centered vertically above and one centered vertically below the STOP legend; and/or two white or yellow lights (colors shall be all white or all yellow), one centered vertically above and one centered vertically below the SLOW legend;

B. Two white or red lights (colors shall be all white or all red), one centered horizontally on each side of the STOP legend; and/or two white or yellow lights (colors shall be all white or all yellow), one centered horizontally on each side of the SLOW legend;

C. One white or red light centered below the STOP legend; and/or one white or yellow light centered below the SLOW legend;

D. A series of eight or more small all white or all red lights no larger than 1/4 inch in diameter along the outer edge of the paddle, arranged in an octagonal pattern at the eight corners of the border of the STOP face; and/or a series of eight or more small all white or all yellow lights no larger than 1/4 inch in diameter along the outer edge of the paddle, arranged in a diamond pattern along the border of the SLOW face; or

E. A series of white lights forming the shapes of the letters in the legend. Flashing light patterns shall be compliant with Section 6E.03 Hand Signaling Devices in the most current version of the Manual on Uniform Traffic Control Devices.

All flashing light patterns on the STOP / SLOW paddle shall be visible from a minimum distance of 1000 feet.

Type I barricades shall be 2 feet minimum, 8 feet maximum in length with an 8 inch wide rail mounted 3 feet minimum above the ground. Type II barricades shall be 2 feet in length with two 8 inch wide rails, and the top rail shall be mounted 3 feet minimum above the roadway. Type III barricades shall be 8 feet in length with three 8 inch wide rails, and the top rail shall be mounted 5 feet minimum above the roadway. The cross members of all barricades shall be of ½ or ⅝ inch thick plywood or other lightweight rigid material such as plastic, fiberglass or fiber wood as approved by the Resident. The predominant color for supports and other barricade components shall be white, except that unpainted galvanized metal or aluminum components may be used.

652.2.5 Portable Changeable Message Sign

Portable-Changeable Message Signs (PCMS) will be furnished by the Contractor and shall be Ver-Mac PCMS-1210 or an approved equal. **The face of the PCMS trailer shall be delineated on a permanent basis by affixing retro-reflective material, known as conspicuity material, in a continuous line as seen by oncoming drivers.** PCMS's shall be located and relocated to locations approved by the Resident within the Project limits for the duration of the Project.

Features to the Ver-Mac PCMS shall include:

- An all LED display.
- Be legible from a distance of 1,000 feet.
- Have three (3) lines available for messages.
- Be NTCIP compliant (NTCIP 1203 & 1204).
- Be capable of being programmed by a remote computer via a data (IP over Cell) cellular modem connection.
- Have GPS location capability by adding on a GPS device capable of providing GPS location remotely to the MTA Communications' Center.
- Be programmable by Vanguard Software by Daktronics.

The Contractor shall complete and/or provide the following:

- Submit a catalog cut shop drawing to the Resident of all proposed equipment for review and approval.
- Establish and pay for a data cellular account so that PCMS may be remotely programmed and operated from the MTA Communications' Center.

- Provide to the Authority technical support from the PCMS manufacturer that may be necessary to integrate the PCMS into the MTA software platform (Vanguard Software by Daktronics).

- Provide the manufacturer's software necessary to change the PCMS messages remotely from the MTA Communications' Center and the Resident's computer if necessary or requested.

- Provide training on the operation of the PCMS to the Resident and the MTA Communications' Center representative.

- Make all PCMS on the Project work site available to the MTA for any/all emergency situations as defined by the MTA. This shall include the preemption of any messages running at the time of need as approved by the MTA and the Resident.

The Contractor shall also:

- Furnish, operate, relocate and maintain the PCMS as approved or requested by the Resident.

- Be responsible for the day to day programming and operation of the PCMS for Project purposes.

The PCMS(s) shall be on-site, with data cellular account established, GPS location capable, and all training required complete within one month after mobilization or seven days prior to implementing traffic shifts, detours or stoppages, whichever is sooner. Implementation of traffic shifts, detours, or stoppages of traffic will not be allowed without PCMS boards on-site with the specified MTA Communications' Center Software Platform integration and training.

652.2.5 Truck Mounted Attenuator

When a pay item for a Truck Mounted Attenuator (TMA) is included in the contract or otherwise required in contract at least one TMA will be required in use on the project. 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.

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 **or MASH if manufactured after 2019.**
- Amber strobe lights 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.
- **The attenuator shall be mounted to a vehicle with a minimum weight of 24,000 lbs. for Items 652.4501 – Truck Mounted Attenuator – 24, 000 LB.**

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. The shadow vehicle shall have its front wheels turned away the work area and from traffic, have parking brake set, and be put in park if an automatic transmission; or if a manual transmission it shall have its front wheels turned away the work area and from traffic, have parking brake set and should be placed in gear and shut off if possible while still maintaining warning lights. If length of time or weather are a concern for the battery since the warning lights must be maintained the engine should be started and run periodically for battery recharging. No other vehicles or equipment shall park in front of the shadow vehicle or within the buffer space behind the shadow vehicle. 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

652.2.6 Sequential Flashing Warning Lights

When included in contracts as a bid item Sequential Flashing Warning Lights on drums used for merging tapers and shifting tapers during night time operation for project use. The purpose of these lights is to assist the motorist in determining which direction to merge or shift and to reduce the number of late merges resulting in devices being struck and having to be reset to maintain positive guidance at the merge point. The successive flashing of the lights shall occur from the upstream end of the taper to the downstream end of the taper in order to identify the desired vehicle path.

The Sequential Flashing Warning Lights shall meet all of the requirements for warning lights within the current edition of the MUTCD. Each light unit shall be capable of operating fully and continuously for a minimum of 500 hours when equipped with a standard battery set. Each light in sequence shall be flashed at a rate of not less than 55 times per minutes and not more than 75 times per minute. The flash rate and flash duration shall be consistent throughout the sequence.

Sequential Flashing Warning Lights shall be "Pi-Lit" Sequential Barricade Warning Lamps or an approved equal.

Sequential Flashing Warning lights are to be used for merging and shifting tapers that are in place during the night time hours (12-hours when ambient light is dimmed). These lights shall flash sequentially beginning with the first light and continuing until the final light at the beginning of a tangent section.

The Sequential Flashing Warning Lights shall automatically flash in sequence when placed on the drums that form the merging or shifting tapers.

The number of lights used in the drum taper shall equal one half the number of drums used in the taper.

Drums are the only channelizing device permitted for mounting the Sequential Flashing Warning Lights.

The Sequential Flashing Warning Lights shall be weather independent and visual obstruction shall not interfere with the operation of the lights.

The Sequential Flashing Warning Lights shall automatically sequence when placed in line in an open area with a distance between lights of 25 to 150 feet. A 10 foot stagger in the line of lights shall have no adverse effect on the operation of the lights.

If one light fails, the flashing sequence shall continue. Non-sequential flashing is prohibited.

652.2.7 Automated Trailer Mounted Speed Sign

When included in the contract as a pay item Automated Trailer mounted speed signs requires 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

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”.

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 attached graphic details).

Signs and secondary signs shall follow the MUTCD for minimum mounting heights.

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.

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 shall be a minimum of **8 inch diameter**, either LED, halogen, or incandescent lamps, and 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.

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. **Speed data shall be recorded and stored on the sign and must be made available to the Authority as requested.**

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.

652.2.8 Temporary Portable Rumble Strips

If a pay item is included in the contract or the Contract desires to utilize Temporary Portable Rumble Strips this work consists of furnishing and placing temporary portable rumble strips RoadQuake 2F TPRS or an approved equal. Furnishing a temporary portable rumble strip

system 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.

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.

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.

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.

652.3.1 Responsibility of the Authority

The Authority will provide Project specific traffic control requirements and traffic control plans for use by the Contractor. The specific traffic control requirements for the Project are identified in Special Provision Section 652, Maintenance of Traffic (Specific Project Maintenance of Traffic Requirements). No revisions to these requirements or Plans will be permitted unless the Contractor can thoroughly demonstrate an overall benefit to the public and a Contract Modification is approved.

The Maine Turnpike Authority may erect lane closures on the mainline within the Project area to collect survey, provide layout, and for any other reasons deemed necessary by the Authority.

652.3.2 Responsibility of the Contractor

The Contractor shall provide continuous and effective traffic control and management for the Project that is appropriate to the construction means, methods, and sequencing allowed by the Contract and selected by the Contractor:

The Contractor shall ensure all jobsite personnel shall wear a safety vest labeled as ANSI 107-2004 standard performance for Class 3 risk exposures at all times. This requirement also applies to truck drivers and equipment operators when out of an enclosed cab.

652.3.3 Submittal of Traffic Control Plan

The Contractor shall provide continuous and effective traffic control and management for the Project that is appropriate to the means, methods and sequencing allowed by the Contract; and consistent with the Traffic Control Plans and Maintenance of Traffic Specifications. The Contractor is responsible for ensuring a safe environment for the Contract workforce, local road users, and turnpike users; and maintaining the safe efficient flow of traffic through the construction zone at all times during the Contract. The protocols and requirements outlined in the Contract shall be strictly enforced. The Contractor shall submit, at or before the Preconstruction Meeting, a Traffic Control Plan (TCP) that provides the following information to the Authority:

a. The name, telephone number, and other contact numbers (cellular phone, pager, if any) of the Contractor's Traffic Control Supervisor (TCS). The TCS is the person with overall responsibility for insuring the contractor follows the TCP, and who has received Work Zone Traffic Control Training commensurate with the level of responsibility shown in the requirements of the Contract, and who is empowered to immediately resolve any work zone traffic control deficiencies or issues. Provide documentation that the Traffic Control Supervisor has completed a Work Zone Traffic Control Training Course (AGC, ATSSA, or other industry- recognized training), and a Supervisory refresher training every 5 years thereafter. Submit training certificates or attendance roster that includes the course name, training entity, and date of training. **State how the traffic control devices will be maintained including a frequency of inspection for both temporary and permanent traffic control devices.**

Traffic Control Training Course curriculum must be based on the standards and guidelines of the MUTCD and must include, at a minimum, the following:

1. Parts of Temporary Traffic Control Zone
2. Appropriate use and spacing of signs
3. Use and spacing of channelizing devices
4. Flagging basics
5. Typical examples and applications

The Traffic Control Supervisor, or designee directly overseeing physical installation, adjustment, and dismantling of work zone traffic control, will ensure all personnel performing those activities are trained to execute the work in a safe and proper manner,

in accordance with their level of decision-making and responsibility. The emergency contact list shall contain a listing of individuals who may be contacted during non-work hours and shall adequately respond to the request.

b. Proposed revisions to the construction phasing or sequencing that reasonably minimizes traffic impacts.

c. A written narrative and/or plan explaining how traffic and pedestrians will be moved through the Project Limits, including transitions during the change from one phase of construction to the next, as applicable.

d. Temporary traffic control treatments at all intersections with roads, rail crossings, businesses, parking lots, pedestrian ways, bike paths, trails, residences, garages, farms, and other access points, as applicable.

e. A list of all Contractor or Subcontractor certified flaggers to be used on the Project, together with the number of flaggers which will be used for each type of operation that flagging is needed. If the Contractor is using a flagging Subcontractor, then the name and address of the Subcontractor may be provided instead of a list of flaggers.

f. A procedure for notifying the Resident of the need to change the traffic control plan or the need to remove a lane restriction.

g. A description of any special detours including provisions for constructing, maintaining, signing, and removing the detour or detours, including all temporary bridges and accessory features and complete restoration of the impacted land.

h. The maximum length of requested contiguous lane closure. The Contractor shall not close excessive lengths of traffic lane to avoid moving traffic control devices.

i. The proposed temporary roadway surface conditions and treatments. The Contractor shall provide an adequate roadway surface at all times; taking into account traffic speed, volume, and duration.

j. The coordination of appropriate temporary items (drainage, concrete barriers, barrier end treatments, impact attenuators, and traffic signals) with the TCP.

k. The plan for unexpected nighttime work, the contractor shall provide a list of emergency nighttime lighting equipment and safety personnel available on-site or have the ability to have them on site within an hour of the time of need.

l. The plan for meeting any project specific requirements contained in special provision 105 and/or 107, and/or Section 656

m. The lighting plan if night work is anticipated.

The Authority will review the TCP for completeness and conformity with Contract provisions, the current edition of the MUTCD, and Authority policy and procedures. The Authority will review and provide comments to the Contractor within 14 days of receipt of the TCP. No review or comment by the Authority, or any failure to review or comment, shall operate to absolve

the contractor of its responsibility to design and implement the plan in accordance with the Contract, or to shift any responsibility to the Authority. If the TCP is determined by the Authority to be operationally ineffective, the Contractor shall submit modifications of the TCP to the Authority for review, and shall implement these changes at no additional cost to the Contract. Nothing in this Section shall negate the Contractor's obligations set forth in Section 110 - Indemnification, Bonding, and Insurance. The creation and modification of the TCP will be considered incidental to the related 652 items.

652.3.4 General

Prior to starting any work on any part of the project adjacent to or being used by the traveling public, the Contractor shall install the appropriate traffic control devices in accordance with the plans, specifications and the latest edition of Manual of Uniform Traffic Control Devices, Part VI. The Contractor shall continuously maintain the traffic control devices in their proper position, and they shall be kept clean, legible and in good repair throughout the duration of the work. If notified that the traffic control devices are not in place or not properly maintained, the Contractor may be ordered to immediately suspend work until all deficiencies are corrected.

No equipment or vehicles of the Contractor, their subcontractors, or employees engaged in work on this contract shall be parked or stopped on lanes carrying traffic, or on lanes or shoulders adjacent to lanes carrying traffic, at any time, except as required by ongoing work operations. Contractor equipment or vehicles shall never be used to stop, block, or channelize traffic.

Vehicles parked on the shoulder shall be located so all portions of the vehicle(s) are a minimum of one foot from the traveled way. No operation shall be conducted on or near the traveled lanes or shoulders without first setting up the proper lane closure and traffic control devices. These precautions shall be maintained at all times while this Work is being performed. The Contractor shall keep all paved areas of the highway as clear as possible at all times. No materials shall be stored on any paved area of the highway or within 30 feet of the traveled way (unless protected by concrete barriers and specifically approved by the Resident). Private vehicles owned by Contractor's employees shall be parked close together in a group no closer than 30 feet from the traveled way in pre-approved areas.

Channelization devices shall include Vertical Panel Markers, Barricades, Cones, and Drums shall be in accordance with the MUTCD. These devices shall be installed and maintained at the spacing determined by the MUTCD through the work area.

The Contractor shall maintain existing guardrails and/or barriers until removal is necessary for construction. The Contractor shall use a temporary barrier or appropriate channelizing devices, as approved by the Resident, while the guardrails and/or barriers are absent. Permanent guardrails and barriers shall be installed as soon as possible to minimize risk to the public.

When Contractor operations or shoulder grading leave a continuous 3 inch or less exposed vertical face at the edge of the traveled way, **including the shoulder, or when traffic is shifted into the shoulder adjacent to the edge of pavement where an existing 3 inch or less exposed vertical face creates a safety hazard**, channelization devices should be placed 2 feet outside the edge of the pavement at intervals not exceeding 600 feet and, depending on type and location of the exposed vertical face, a 48 inch by 48 inch W8-9 Low Shoulder, or W8-11 Uneven Lane, and/or a W8-17P Shoulder Drop-Off sign should be placed at a maximum spacing of ½ mile. When

Contractor operations or shoulder grading leave greater than a 3 inch exposed continuous vertical face at the edge of the traveled way, **including the shoulder, or when an existing condition of an exposed vertical face of 3 inches or more is adjacent to active traffic shifted into shoulder**, the Contractor shall place shoulder material at a slope not exceeding 3 horizontal to 1 vertical to meet the pavement grade, before the lane is opened to traffic.

Special Detours and temporary structures, if used, shall meet applicable AASHTO standards, including curve radii and grade.

Maine Turnpike Traffic Control Requirements

This Section outlines the minimum requirements that shall be maintained for working on, over, or adjacent to the Maine Turnpike roadway.

General

Two travel lanes in each direction (each direction being 24 feet wide including/excluding shoulder) in the two lane portion of the turnpike, and three travel lanes in each direction (each direction being 36 feet wide including/excluding shoulder) in the three lane portion of the turnpike (Mile 0.0 to mile 44.3) shall be maintained at all times except while performing work in a designated lane, directly over or adjacent to traffic, and during the placement and removal of traffic control devices.

Unless otherwise specified in the contract documents the minimum main line width for a single travel lane shall be 14 ft and minimum ramp widths of 16 ft which must be maintained at all times, from ½ hour before sunrise and ½ hour after sunset as indicated on the Sunrise/Sunset Table at: http://www.sunrisesunset.com/usa/Maine.asp . If the Project town is not listed, the closest town on the list will be used as agreed at the Preconstruction Meeting.

Shoulder closures, lane closures, and lane shifts meeting the MUTCD guidelines, other than those shown in the plans, must be submitted for approval from the MTA prior to use in the construction operations.

No lane closures will be allowed during non-working hours, weekends and/or holiday periods unless included in the Contract as long-term traffic control requirement as outlined in Section 652 – Specific Project Maintenance of Traffic Requirements **unless written permission is obtained from the Authority.**

Any special signs, barricades or other devices deemed necessary by the Resident shall be furnished and maintained by the Contractor. Extra care shall be taken so that the traffic flow will not be disturbed. The use of construction signs and warning devices not shown on the Plans or in the MUTCD is prohibited unless approved by the Resident

The Contractor's personnel and equipment shall avoid crossing traffic whenever possible. No Contractor's vehicle may slow down or stop in a traffic lane unless said lane has previously been made safe with signs and barricades as required by the Resident.

No vehicle will move onto the traveled way at such a time or in such a manner so as to cause undue concern or danger to traffic approaching from either direction. The Contractor or his employees are not empowered to stop traffic.

The Contractor shall take necessary care at all times, in all operations and use of his equipment, to protect and facilitate traffic. During periods of idleness, the equipment shall not be left in a way to obstruct the traffic artery or to interfere with traffic.

The Contractor shall furnish approved signs reading "Construction Vehicle - Keep Back" to be used on trucks hauling to the Project. The signs shall be a minimum of 30 inch by 60 inch, Black and Orange, and meet construction sign retro reflectivity requirements

All vehicles used on the Project shall be equipped with amber flashing lights, by means of a single or multiple, flashing LED or strobe lights mounted so as to be visible 360 degrees. **In addition, vehicles operating under direction of the Maine Turnpike Authority may be equipped with auxiliary lights that are green, white or amber or any combination of green, white or amber.** Auxiliary lighting shall have sufficient intensity to be visible at 500 feet in normal daylight and a flash rate between 1Hz and 4Hz. The vehicle flashing system shall be in continuous operation while the vehicle is on any part of the project and positioned or mounted in such a way to not be obstructed by vehicle mounted or other equipment. Dump trucks, concrete trucks and utility trucks at a minimum shall have a strobe light mounted on each side of the vehicle. **The use of motorcycles is not permitted within a construction site or as a means to arrive at or leave a work zone.**

Where space is available pavement striping for all tapers shall create a minimum buffer of 250 feet to the point where the temporary concrete barrier taper ends and becomes parallel to the travelway. Temporary concrete barrier shall be tapered at a minimum 8:1 unless space is available and then it should be tapered at 15:1 or 100 feet whichever is longest.

Milling and paving of interchange ramps shall be done between 9:00 p.m. and 5:00 AM, unless otherwise shown on the Maintenance of Traffic Phasing Plans or as directed by the MTA. Only a single ramp at an interchange may be closed at once. Ramp closures will not be permitted the day before or after holidays, on holidays, or on Saturdays or Sundays. The Contractor shall request approval from the Resident/Authority two weeks prior for all ramp closures. Portable changeable message signs shall be used to provide advance notice and warning of the ramp closure. PCMS's shall be operational a minimum of 1 week prior to ramp closure to notify Patrons. The contractor shall coordinate PCMS locations with the Resident and the MTA.

Access to, and egress from, the construction area shall be with the direction of travel without crossing traffic. Construction vehicles are prohibited from merging with mainline traffic during the AM and PM peak traffic hours unless approved in writing from the MTA. The contractor shall develop work zone access/egress with acceleration and deacceleration areas and should utilize interchange ramp areas whenever feasible.

Temporary Mainline Lane Closures

A lane closure may be required whenever personnel will be actively working within four feet of a travel lane.

Loading/unloading trucks shall not be closer than six feet from an open travel lane. Temporary lane closures will only be allowed at the times outlined in Special Provision, Section 652, Specific Project Maintenance of Traffic Requirements. These hours may be adjusted based on the traffic volume each day by the Resident.

A lane closure is required when a danger to the traveling public may exist. The following is a partial list of activities requiring lane closures. Lane closures may be required for other activities as well:

- Milling and Paving Operations
- Bridge work
- Drainage Installation and/or Adjustment
- Clear Zone Improvements
- Pavement Markings Layout and Placement
- **Work directly over traffic within six feet of a travel lane as measured from the painted pavement marking line or traffic control device will require a lane closure. This work includes but is not limited to the following:**

    1. **Unbolting structural steel**
    2. **Removing structural steel**
    3. **Erecting structural steel**
    4. **Erecting or moving sign panels on bridges or sign structures**
    5. **Bolting structural steel**
    6. **Loading and unloading trucks**
    7. **Light pole removal or installation**
    8. **Snow fence installation**

Lane closures shall be removed if work requiring the lane closure is not ongoing unless included in the Contract as a long-term traffic control requirement or approved by the Resident.

During adverse weather condition when the speed limit on the Maine Turnpike has been reduced to 45 MPH, or during fog or when there is less than ½ mile of visibility, shoulder/lane closures cannot be set up and any currently in place shall be removed. Only work on the turnpike mainline that is behind temporary concrete barrier will be allowed when speed is reduced to 45 MPH or fog/visibility conditions exist.

Daytime lane closures shall be a maximum of three (3) miles. Only one daytime lane closure will be permitted per direction. Nighttime lane closures may extend through the entire length of the Project.

Temporary single lane closures are allowed upon approval of the Resident. **Lane and/or ramp closure** setup may not begin until the beginning time specified. Closures that are setup early or that remain in place outside of the approved time period shall be subject to a lane rental fee of **$1,000** per five minutes for every five minutes outside of the approved time. The installation of

the construction signs will be considered setting up the lane closure. Removal of the last construction sign will be considered removal of the closure. Construction signs shall be installed immediately prior to the start of the closure and shall be promptly removed when no longer required. The installation and removal of a closure, including signs, channelizing devices, and arrow boards shall be a continuous operation. The Authority reserves the right to order the removal of an approved closure.

The Authority desires to minimize the number of daytime lane closures and the number of times that a complete stoppage of traffic is required. The Contractor is encouraged to schedule work so that the interference with the flow of traffic will be minimized. Lane closures will not be allowed until traffic associated with complete stoppages of traffic has cleared. Complete stoppages of traffic or lane closures may not be allowed on a particular day if another complete stoppage of traffic has been previously approved for another project.

The Resident is required to receive approval from the Maine Turnpike Authority for all lane closures. **The Resident is required to submit a request for lane closures by noon on Thursday for any lane closures needed for the following week.** The Contractor shall plan the work accordingly.

Mainline Shoulder Closures

Shoulder closures are anticipated at locations where Contractor access to the mainline is required.

Shoulder closures with plastic drums shall be removed at the end of the workday. Temporary shoulder closures with plastic drums will not be allowed during periods of inclement weather as determined by the Authority.

The location (limits) of shoulder closures with concrete barrier are shown on the Plans. The barrier must be placed prior to the start of the work requiring concrete barrier and shall remain in place until the work activity is complete.

Equipment Moves

The complete stoppage of traffic for an equipment move (including delivery of materials to the median) will be considered for approval if the action cannot reasonably be completed with the erection of a lane closure. Contractor shall be responsible for the installation of Signs CS-3, “Expect Stopped Traffic” and Signs W3-4 “Be Prepared to Stop”, in accordance with the Single Lane Closure Detail immediately prior to the equipment move. **Signs will be required on any adjacent ramps within proximity to the stoppage.** These signs shall be covered when not applicable.

State Police will be used to stop traffic. Cost for State Police will be the responsibility of the Authority. The times requested for trooper assisted equipment moves by on-duty troopers cannot be guaranteed. The MTA will not be held responsible for any delays or costs associated with the delay, postponement or cancellation of an on-duty trooper assisted equipment move.

The maximum time for which traffic may be stopped and held for an equipment move at any single time shall be five (5) minutes. The duration shall be measured as the time between the

time the last car passes the Resident until the time the Resident determines that all travel lanes are clear. The traffic shall only be stopped for the minimum period of time required to complete the approved activity. The Contractor shall reimburse the Authority at a rate of $500 per minute for each minute in excess of the five-minute allowance.

Unapproved movement of equipment or materials across the travel lanes shall be considered a violation of the Maintenance of Traffic Requirements and is subject to a minimum fine of $500 per occurrence with an additional $500 per minute thereafter.

Request for Complete Stoppage of Traffic

A request for a complete stoppage of traffic must be submitted to the Resident for approval. The Resident is required to receive approval from the Maine Turnpike Authority for all stoppages. The request shall be submitted to the Authority by the Resident at least five (5) working days prior to the day of the requested stoppage of traffic and two (2) days for a stoppage less than five minutes. All requests must be received by 12:00 p.m. noon to be considered as received on that day. Requests received after 12:00 p.m. shall be considered as received the following day. The Contractor shall plan the work accordingly.

During the erection or removal of overhead structures or signs traffic shall be stopped and may be held for periods of up to 25 minutes during these operations. Before the roadway is reopened, all materials shall be secured so they will not endanger traffic passing underneath. The Contractor will reimburse the Authority at the rate of $2,500.00 per five-minute period for each roadway not reopened (northbound and southbound), in excess of the 25 minute limit. Total penalty shall be deducted from the next pay estimate.

Blasting of Ledge The maximum time for which traffic may be stopped at any single time shall be six (6) minutes. This duration shall be measured as the time between the time that the last car passes the Resident, until the time the Resident determines that all travel lanes are cleared of blast debris. The Contractor shall reduce the size of the blast, change the design and method of the blast, use more mats, or otherwise alter the blasting so that the traffic is not stopped for more than six minutes. If, due to the throw of rock onto the highway or other blasting related activities, traffic is stopped for more than six minutes, the Contractor shall pay a penalty of $1,000.00 per minute for every minute traffic is stopped in excess of the six-minute limit. The penalty shall be measured separately on the northbound and southbound roadway (or eastbound and westbound roadway). Total penalties will be deducted from the next pay estimate. Whenever the volume of traffic is excessive such that a six-minute interruption would cause objectionable congestion, in the opinion of the Authority, the hours during which blasting may occur may be further restricted. A detailed blasting plan shall be submitted as required in Supplemental Specific or Special Provision Sections 105 or 107.

652.3.5 Installation of Traffic Control Devices

All traffic control devices shall be in conformance with NCHRP 350 requirements **and MASH 16 requirements if manufactured after December 31, 2019** and installed as per manufactures recommendations.

Portable signs shall be erected on temporary sign supports approved crashworthy devices so that the bottom of the sign is either 1) 12 inches or 2) greater than 5 feet above the traveled way. **The bottom of all regulatory signs and ramp exit signs shall be a minimum of 5 feet above the traveled way.** Post-mounted signs shall be erected so the bottom of the sign is no less than 5 feet above the traveled way, and 7 feet above the traveled way in business, commercial, and residential areas. Post-mounted signs must be erected so that the sign face is in a true vertical position. All signs shall be placed so that they are not obstructed in any manner and immediately modified to ensure proper visibility if obstructed.

The bottom of mainline and ramp traffic control signs intending to remain longer than 3 days, except as provided in 2009 MUTCD Section 6F.03 paragraph 12, shall be mounted 5 feet or greater above the edge of pavement on posts or portable sign supports.

The Resident will verify the exact locations of the construction signs in the field.

Construction signs behind guardrail shall be mounted high enough to be visible to traffic.

Vertical panel markers shall be mounted with the top at least 4 feet above the traveled way.

Drums shall not be weighted on the top. Drain holes shall be provided to prevent water from accumulating in the drums During winter periods, drums shall be placed on the grass shoulder or removed from the roadway so winter maintenance operations will not be impacted. This requires the placement of drums behind the median guardrail. Drums shall not be placed on snow banks.

The Contractor shall operate and maintain the flashing arrow board unit and for dependable service during the life of the contract. The units shall remain in continuous night and day service at locations designated until the Resident designates a new location or discontinuance of service.

The Contractor shall maintain the devices in proper position and clean them as necessary. Maintenance shall include the covering and uncovering of all signs when no longer applicable (even if for a very short duration). The sign shall be considered adequately covered when no part of the sign face is visible either around or through the covering.

The Contractor shall replace damaged traffic control devices with devices of acceptable quality, as directed by the Resident.

The Contractor is required to cover all existing signs, including regulatory and warning signs, within the Work zone which may conflict with the proposed construction signs. The Contractor is also required to cover all permanent construction signs when they conflict with a daily traffic control setup. The method of covering existing signs must be approved by the Resident. The use of adhesives on the sign face is prohibited.

Work Zone Speed Limits

Work Zone Speed (Fines Doubled) is a regulatory speed limit that indicates the maximum legal speed through a work zone which is lower than the normal posted speed. The speed limit shall be displayed by black on white speed limit signs in conjunction with a black on orange “Work Zone” plate. Speed limit signs shall be installed at each mile within the work zone. Any existing

regulatory speed limit signs within the reduced speed zone shall be covered once the reduced speed signs have been erected.

Two orange fluorescent flags shall be attached to all speed limit signs that are uncovered for a period of time exceeding one week. This work shall be incidental. Signs that are covered and uncovered on a regular basis are not required to have the supplemental flags.

The reduced speed limit signs shall be used when workers are adjacent to traffic, when travel lane(s) are closed, when indicated on Maintenance of Traffic Control Plans provided or other times as approved by the Resident:

The signs shall be covered or removed when not applicable. The covering and uncovering of signs shall be included for payment under Maintenance of Traffic. Signs relating to reduced speed shall be installed in accordance with the details. **The Contractor shall note that all signs including those behind concrete barrier or guardrail are required to be clearly visible to all drivers at all times**

Lane Closure Installation and Removal Procedure

The Contractor will follow the following procedures when closing any travel lanes on the turnpike roadways:

1. The sign package shall be erected starting with the first sign and proceeding to the start of the taper. The sign crew shall erect signs with the vehicle within the outside shoulder;

2. Position the arrow board with the proper arrow at the beginning of the taper; and,

3. When arrow board is in place, continue with the drums/cones to secure the work area.

To dismantle the lane closure, start with last drums/cone placed and work in reverse order until all the drums are removed. The arrow board which was installed first shall be the final traffic control device removed, excluding the sign package. The remaining sign package shall be picked-up starting with the first sign placed and continuing in the direction of traffic and with the vehicle in the outside shoulder.

Trucking Plan

The Contractor shall submit a trucking plan to the Resident within 10 working days of the award of the Contract. The trucking plan shall consist of at least the following:

- Date of anticipated start of work per each location.
- Haul routes from plant/pit to work area and return.
- Haul routes from work area to disposal area and return.
- Entering / exiting the work area.
- Vehicle safety equipment and Vehicle inspection.

- Personal safety equipment.
- Communications equipment and plan.

The trucking plan will not be paid for separately, but shall be incidental to the Contract.

652.3.6 Traffic Control

The existing travel way width shall be maintained to the maximum extent practical.

Vertical panel markers, drums, cones, or striping shall be used to clearly delineate the roadway through the construction area. Two-way traffic operation shall be provided at all times that the Contractor is not working on the project. One- way traffic shall be controlled through work areas by flaggers, utilizing radios, field telephones, or other means of direct communication.

The traffic control devices shall be moved or removed as the work progresses to assure compatibility between the uses of the traffic control devices and the traffic flow.

Pavement markings shall be altered as required to conform to the existing traffic flow pattern. Repainting of pavement marking lines, if required to maintain the effectiveness of the line, shall be considered **incidental to the** maintenance of traffic control devices, no separate payment will be made. Inappropriate pavement markings shall be removed whenever traffic is rerouted, and temporary construction pavement markings shall be placed. Removal of non-applicable markings and **initial** placement of temporary construction pavement markings will be paid for under the appropriate Contract items. Traffic changes shall not be made unless there is sufficient time, equipment, materials, and personnel available to complete the change properly before the end of the workday. This provision will not be required when traffic is rerouted for brief periods and the route can be clearly defined by channelizing devices, or flaggers, or both.

All vehicles used during the installation and removal of traffic control devices, including lane closures, shall be equipped with a vehicle-mounted lighted arrow board **or high intensity LED full width light bar** acceptable to the Resident. The arrow board **or full width light bar** shall be capable of displaying a left arrow, right arrow, double arrow, and light bar **patterns**.

652.4 Flaggers

The Contractor shall furnish flaggers as required by contract documents or as otherwise specified by the Resident. **Flaggers shall not stop traffic on Turnpike mainline or interchange ramps. Only State Police are allowed to stop traffic on mainline or interchange ramps.**

All flaggers must have successfully completed a flagger test approved by the Maine Department of Transportation and administered by a Maine Department of Transportation approved Flagger-Certifier. All flaggers must carry an official certification card with them at all times while flagging.

For daytime conditions, flaggers shall wear a top (vest, shirt or jacket) that is orange, yellow, yellow-green, or fluorescent versions of these colors meeting ANSI 107-2004, Class 3, along with a hat with 360 ˚ retro-reflectivity.

For nighttime conditions, flaggers shall wear all Class 3 apparel, meeting ANSI 107-2004, including a Class 3 top (vest, shirt or jacket) and a Class E bottom (pants or coveralls), shall be worn along with a hardhat with 360 ˚ retro-reflectivity and shall be visible at a minimum distance of 1000 ft. Flagger stations must be illuminated in nighttime conditions to assure visibility and will be specifically addressed in detail in the Contractor's TCP.

Flagger stations shall be located far enough in advance of the workspace so that approaching road users will have sufficient distance to stop at the intended stopping point. While flagging, the flagger should stand either on the shoulder adjacent to the traffic being controlled, or in the closed lane. At a spot obstruction with adequate sight distance, the flagger may stand on the shoulder opposite the closed sections to operate effectively. Under no circumstances shall the flagger stand in the lane being used by moving traffic or have their back to oncoming traffic. The flagger should be clearly visible to approaching traffic at all times and should have a clear escape route.

When conditions do not allow for proper approach sight distance of a flagger or storage space for waiting vehicles, additional flaggers shall be used at the rear of the backlogged traffic or at a point where approaching vehicles have adequate stopping sight distance to the rear of the backlogged traffic. All flagger stations shall be signed, even when in close proximity. The signs shall be removed or covered when flagger operations are not in place, even if it is for a very short duration.

Flaggers shall be provided as a minimum, a 10 minute break, every 2 hours and a 30 minute or longer lunch period away from the work station. Flaggers may only receive 1 unpaid break per day; all other breaks must be paid. Sufficient certified flaggers shall be available onsite to provide for continuous flagging operations during break periods. If the flaggers are receiving the appropriate breaks, breaker flagger(s) shall be paid starting 2 hours after the work begins and ending 2 hours before the work ends at a minimum. A maximum of 1 breaker per 6 flaggers will be paid (1 breaker flagger for 2 to 6 flaggers, 2 breaker flaggers for 7 to 12 flaggers, etc.). If a flagger station is manned for 10 hours or more, then ½ hour for lunch will be deducted from billable breaker flagger hours.

652.41 Traffic Officers

Local road traffic officers, if required, shall be uniformed police officers. State Police officers and vehicles shall be used to warn and stop traffic on the Maine Turnpike. All State Police shall be scheduled through the Maine Turnpike Authority. The Authority will make payment for the State Police officers and vehicles directly to the State Police.

The Contractor will not be entitled to additional compensation if scheduled Work is not completed due to the unavailability of State Police.

652.5.1 Rumble Strip Crossing

When lane shifts or lane closures require traffic to cross a permanent longitudinal rumble strip for 7 calendar days or less, the Contractor shall install warning signs that read "RUMBLE STRIP CROSSING" with a supplemental Motorcycle Plaque, (W8-15P).

When lane shifts or lane closures require traffic to cross a permanent longitudinal rumble strip for more than 7 calendar days, the Contractor shall pave in the rumble strips in the area that traffic will cross, unless otherwise directed by the Resident. Rumble strips shall be replaced prior to the end of the project, when it is no longer necessary to cross them.

652.6.1 Daylight Work Times

Unless otherwise described in the Contract, the Contractor is allowed to commence work and end work daily according to the Sunrise/Sunset Table at: http://www.sunrisesunset.com/usa/Maine.asp . If the Project town is not listed, the closest town on the list will be used as agreed at the Preconstruction Meeting. Any work conducted before sunrise or after sunset will be considered Night Work.

652.6.2 Night work

When Night Work occurs (either scheduled or unscheduled), the Contractor shall provide and maintain lighting on all equipment, at all work stations, and all flagger stations.

The lighting facilities shall be capable of providing light of sufficient intensity to permit good workmanship, safety and proper inspection at all times. The lighting shall be cut off and arranged on stanchions at a height that will provide perimeter lighting for each piece of equipment and will not interfere with traffic, including commercial vehicles, approaching the work site from either direction.

The Contractor shall have available portable floodlights for special areas.

The Contractor shall utilize padding, shielding or other insulation of mechanical and electrical equipment, if necessary, to minimize noise, and shall provide sufficient fuel, spare lamps, generators, etc. to maintain lighting of the work site.

The Contractor shall submit a lighting plan prior to any night work for review showing the type and location of lights to be used for night work. The Resident may require modifications be made to the lighting set up in actual field conditions.

Prior to beginning any Night Work, the Contractor shall furnish a light meter for the Residents use that is capable of measuring the range of light levels from 5 to 20 foot-candles.

Horizontal illumination, for activities on the ground, shall be measured with the photometer parallel to the road surface. For purposes of roadway lighting, the photometer is placed on the pavement. Vertical illumination, for overhead activities, shall be measured with the photometer perpendicular to the road surface. Measurements shall be taken at the height and location of the overhead activity.

Night Work lighting requirements:

Mobile Operations: For mobile-type operations, each piece of equipment (paver, roller, milling machine, etc) will carry indirect (i.e. balloon type) lights capable of producing at least 10 foot- candles of lighting around the work area of the equipment.

Fixed Operations: For fixed-type operations (flaggers, curb, bridge, pipes, etc.), direct (i.e. tower) lighting will be utilized capable of illuminating the work area with at least 10 foot-candles of light.

Hybrid Operations: For hybrid-type operations (guardrail, sweeping, Inslope excavation, etc.), either direct or indirect lighting may be utilized. The chosen lights must be capable of producing at least 10 foot-candles of light around the work area of the equipment

Inspection Operations: Areas required to be inspected by the Authority will require a minimum of 5 foot-candles of lighting. This may be accomplished through direct or indirect means.

The Contractor shall apply 2- inch wide retro-reflective tape, with alternating red and white segments, to outline the front back and sides of construction vehicles and equipment, to define their shape and size to the extent practicable. Pickup trucks and personal vehicles are exempt from this requirement.

The Resident or any other representative of the Authority reserves the right to suspend the work at any time and request a meeting to discuss violations and remedies. The Authority shall not be held responsible for any delay in the work due to any suspension under this item.

Failure to follow the approved Lighting Plan will result in a Traffic Control violation.

Payment for lighting, vehicle mounted signs and other costs accrued because of night work will not be made directly but will be considered incidental to the related contract items.

652.6.3 Traffic Coordinator and Personnel

The Contractor shall submit to the Resident for approval a list of traffic control personnel assigned to the Project including qualifications, certifications and experience.

The Traffic Coordinator duties shall include, but are not necessarily limited to:

a. Developing, in conjunction with the Resident and Project superintendent, a traffic control program for the days' work activities which will facilitate traffic in a safe and efficient manner;

b. Insure that all traffic control implements (signs, arrow boards, barrels, etc.) are on-site so the traffic program can be implemented effectively;

c. Insure a safe and effective setup or take-down of all signing implements to least impact the traveling motorist; and,

d. Working knowledge of construction signing/traffic control requirements in conformance with the latest issued Manual on Uniform Traffic Control Devices.

e. The Contractor shall supplement the traffic control plan with a daily plan, which includes schedules for utilizing traffic coordinators and flaggers. This plan shall be submitted daily and agreed upon cooperatively with the Resident.

652.7 Method of Measurement

Work Zone Traffic Control will be measured as a lump sum as indicated in the plans and specifications, for all authorized and installed traffic control devices for which traffic shall be maintained in accordance with the approved traffic control plans.

Signs (supplied by the contractor, static and automated), lighting devices, pavement markings, rumble strips, barriers and barricades, channelizing devices, hand signaling devices, portable light towers, flashing and steady burn warning lights and beacons, flashing arrow panels, portable-changeable message signs, truck-mounted equipment and trailers (except truck-mounted attenuators, temporary traffic signal systems, and automated trailer mounted speed limit signs), traffic officers, flaggers and traffic coordinators will not be measured regardless of when or how often used or relocated on the project but shall be incidental to the Work Zone Traffic Control item. No additional payment will be made for devices that require replacement due to poor condition or inadequate retroreflectivity.

The installation and removal of existing and temporary pavement markings necessary for maintenance of traffic during construction, regardless of material, will not be measured but shall be incidental to the Work Zone Traffic Control item. The installation and removal of pavement markings required for final pavement markings will be paid for under their respective pay items. Temporary pavement marking tape, as shown in the plans, will be paid under the respective pay items. No additional payment will be made for refreshing temporary paint pavement markings due to inadequate retroreflectivity or for re-installation of temporary tape pavement markings due to poor adhesion.

The Authority will make payment for the State Police officers and vehicles directly to the State Police when utilized for mainline traffic control activities. State Police escorts, if required to move oversize material or equipment loads to the jobsite, will not be paid separately, but shall be incidental to the various pay items.

Truck mounted attenuator 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, as approved by the Resident.

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

Work Zone Traffic Control will be paid at the contract lump sum price payable in installments as follows: 25% of the Lump Sum once the Contractor's Traffic Control Plan is approved; 70% of the Lump Sum paid as work progresses, proportional to the overall completion percentage of the Contract; and the remining 5% paid upon Final Acceptance.

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.

Failure by the contractor to reinstall cones, barrels, signs, covered/uncovered signs and similar traffic control devices within an hour of them being displaced, moved, knocked over, un-covered and etc. will result in a $150 fine per traffic control device if the issues is not resolved within 1 hour of notification by the resident. An additional $150 will be assessed for each additional hour that the device has not been corrected. If the traffic control device is critical to the maintenance of traffic creating an actual or potential safety issue with traffic and is not corrected immediately then it will result in a violation letter as described below.

Failure by the contractor to follow the Contracts 652 Supplemental Specifications, Special Provisions and Standard Specification and/or the Manual on Uniform Traffic Control Devices (MUTCD) and/or the Contractors own Traffic Control Plan, or failure to correct a violation, will result in a violation letter and result in a reduction in payment as shown in the schedule below. The Resident or any other representative of the Authority reserves the right to suspend the work at any time and request a meeting to discuss violations and remedies. The Authority shall not be held responsible for any delay in the work due to any suspension under this item. Any reduction in payment under this Special Provision will be in addition to forfeiting payment of maintenance of traffic control devices for that day.

Amount of Penalty Damages per Violation		
1st	2nd	3rd & Subsequent
$500	$1,000	$2,500

652.8.1 Maintenance of Traffic Control Devices

Delete the whole section and replace with the following:

Work Zone Traffic Control will be paid at the lump sum price as indicated in the plans and specifications. Such payment will be full compensation for the development and submission of the traffic control plans for approval and for the installation, operations, maintenance, relocation, replacement, and removal of all traffic control devices for the project, including signs, signals, lighting devices, pavement markings, rumble strips (excluding portable rumble strips, as defined for payment in special provision section 652), barriers and barricades, channelizing devices, hand signalizing devices, portable light towers, flashing and steady burn warning lights and beacons, flashing arrow panels, portable-changeable message signs, truck-mounted equipment and trailers (except truck-mounted attenuators, temporary signal systems, and automated trailer mounted speed limit signs, as defined for payment in special provision 652), traffic officers (except State Police as authorized by the Resident) with police cruisers, flaggers and traffic coordinators. The lump sum price shall also include full compensation for all daily operations and maintenance of the approved traffic control plan and for all labor, tools, materials, equipment, incidentals, transportation, and labor required to implement the approved traffic control plans.

652.8.2 Other Items

There will be no payment made under any 652 pay items after the expiration of the adjusted total contract time.

For a PCMS that fails to operate when required, the Contractor will be given 24-hours to repair or replace the PCMS. For periods longer than 24-hours, **the Contractor will be fined $200 per day, or portion thereof,** that the PCMS is out of service.

The Truck Mounted Attenuator(s) will be paid for at the Contract unit price per calendar day. 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.

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.

Payment will be made under:

Pay Item		Pay Unit
652.39	**Work Zone Traffic Control**	**Lump Sum**
652.45	Truck Mounted Attenuator	Calendar Day
652.4501	**Truck Mounted Attenuator – 24,000 LB**	**Calendar Day**
652.451	**Automated Trailer Mounted Speed Limit Sign**	**Calendar Day**
652.452	**Automated Trailer Mounted Speed Limit Sign**	**Each**

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 XI (Prismatic) manufactured by 3M Company, for all signs.

Reflective sheeting, used in sign construction, shall have been manufactured within the six months immediately prior to the fabrication of each sign. Upon delivery at the job site of each shipment of signs, a letter of certification shall be provided that the reflective sheeting conforms to the requirements.

For Type 1 Guide Signs, all reflective sheeting shall be color matched on each sign unit.

All warning signs shall be fluorescent yellow except for Ramp Advisory Speed signs which shall be yellow.

All Construction Series signs that use orange backgrounds shall be fluorescent orange.

All Pedestrian Signs shall be fluorescent yellow-green.

EZ-PASS Purple shall conform to the FHWA Purple color box.

719.02 Demountable High Intensity Reflectorized Letters, Numerals, Symbols, and Borders

This Subsection, including the title, is deleted in its entirety and replaced with the following:

719.02 Letters, Numerals, Symbols, and Borders

All signs shall be manufactured utilizing Direct Applied letters, numerals, symbols and borders or be Digitally Printed meeting all sign sheeting manufacturer's (3M) requirements to ensure that the manufacturer's warranty will be in full effect.

All Type 1 overhead signs, Type 1 interchange signs and any other Type 1 signs over 100 square feet shall utilize Direct Applied letters, numerals, symbols and borders.

Direct Applied

Direct reflectorized applied letters, numerals, symbols and borders shall consist of cut out sheeting that shall meet at a minimum the requirements for ASTM 4956 – Type XI (Prismatic) sheeting. The sheeting material used for the direct applied legend shall be the same type as used for the background.

Digitally Printed

Digital printing methods may be used to produce the sign copy and borders on retroreflective sheeting. Retroreflective sheeting complying with ASTM D 4956 Type XI and designated by the manufacturer as suitable for digital printing traffic signs along with associated ink and premium overlay film. Digitally Printed signs shall meet all sign sheeting manufacturer's (3M) requirements to ensure that the manufacturer's warranty will be in full effect

Transparent and opaque durable inks used in digital printed sign copy and borders shall be as recommended by the sheeting manufacturer (3M). Digital printed traffic colors shall be properly applied and shall have a warranty life of the base retroreflective sign sheeting. Digitally printed signs shall present a flat surface, free from foreign material, and all copy and borders shall be clear and sharp. Digital printed signs shall conform to 70% of the retroreflective minimum values established for its type and color (applicable to traffic colors only), as required by ASTM D 4956. Digital printed signs shall meet the daytime color and luminance, and nighttime color requirements of ASTM D 4956. Printed traffic colors shall meet the accelerated weathering and colorfastness requirements of ASTM D 4956. Digitally printed black shall remain sufficiently opaque for its intended use for the warranty period of the base sheeting. No variations in color or overlapping of colors will be permitted.

Digitally printed traffic signs shall have an integrated engineered match component clear UV- premium protective overlay recommended by the sheeting manufacturer applied to the entire face of the sign.

All digitally printed traffic signs shall utilize an integrated engineered match component system for materials and printing process and equipment. The integrated engineered match component system shall consist of retroreflective sheeting, durable ink(s), and clear protective overlay film, as specified by the sheeting manufacturer, applied to aluminum substrate.

The sign fabricator shall use an integrated engineered match component system digital printer approved by the sheeting manufacturer. Each approved digital printer shall only use the compatible retroreflective sign sheeting manufacturer's engineered match component system products. The sign fabricator shall maintain their digital printer's color calibration according to the sheeting manufacturer's requirements to help ensure digitally printed signs meet the manufacturer's specifications. The fabricator shall be trained by the sheeting manufacturer to produce digitally printed traffic signs that qualify for the sheeting manufacturer's warranty.

General

Type 1 Guide Signs shall have two-inch-tall, series C text that indicates the sign size, and the sign install date (MM/YY) located two inches above the bottom border of the sign.

MAINE TURNPIKE AUTHORITY

SPECIFICATIONS

PART III – APPENDICES

APPENDIX A

GIRDER DAMAGE AND STRONGBACK PHOTOS

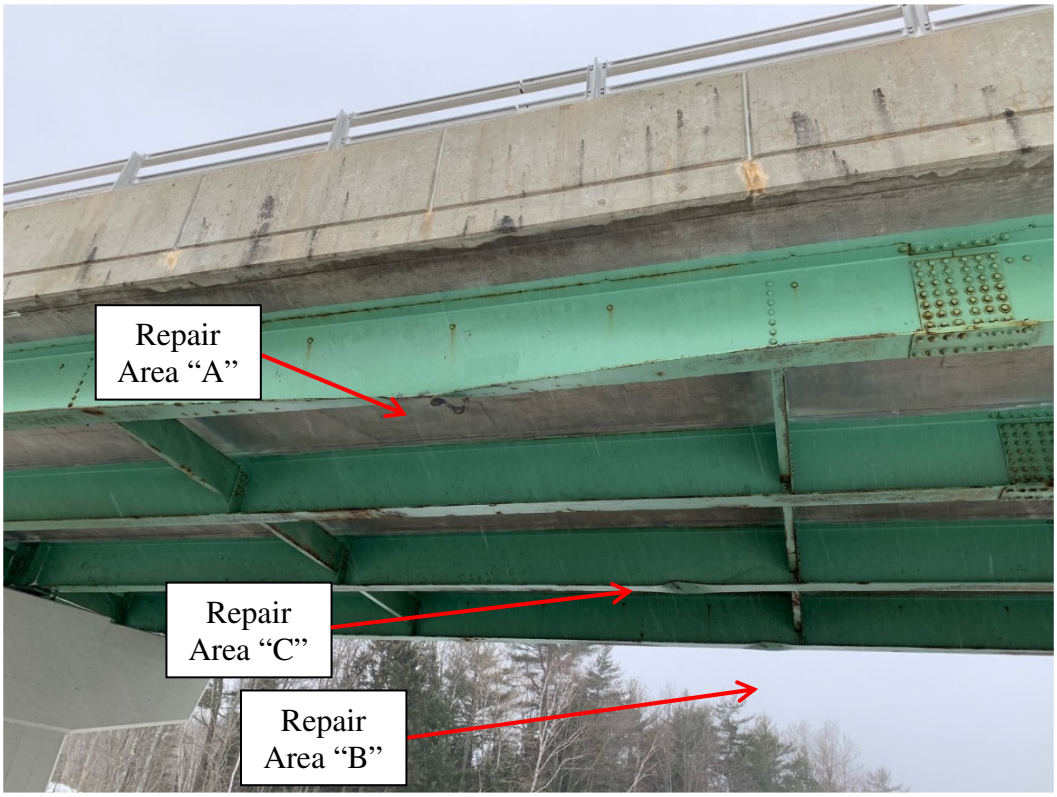


Photo 1 – Girder G1, G3, and G4 Collision Damage – Looking South

Figure 1 - Girder G1 Collision Damage (Looking East)

Photo 2 – Repair Area "A" G1 Bottom Flange Tear (Looking East)

Photo 3 – Girder G1 Collision Damage – Bottom Flange Tear (Looking East)

Photo 5 – Girder G2 & G4 Collision Damage (Looking East)

Photo 4 – Girder G3 Collision Damage – Bottom Flange Gouge and Deformation (Looking East)

Photo 7 – Girder G4 Collision Damage – Bottom Flange Gouge (Looking South)

Photo 8 – Elevation View of the MTA's Strongback

Photo 9 – End View of the MTA's Strongback

Photo 10 – Photo of MTA Strongback Showing Lifting Devices and Stiffeners

APPENDIX B

LEAD DETERMINATION REPORT for GROVE STREET BRIDGE

April 14, 2021

Mr. Harold Walton
HNTB
340 County Rd
Westbrook,ME 04092

RE: Katahdin Lab Number: SO1923
Project ID: Turnpike Bridge Paint
Project Manager: Ms. Sara Colby
Sample Receipt Date(s): April 09, 2021

Dear Mr. Walton:

Please find enclosed the following information:

* Report of Analysis (Analytical and/or Field)
* Chain of Custody (COC)
* Login Report

A copy of the Chain of Custody is included in the paginated report. If requested, the original COC is attached as an addendum to this report.

Should you have any questions or comments concerning this Report of Analysis, please do not hesitate to contact the project manager listed above. The results contained in this report relate only to the submitted samples. This cover letter is an integral part of the ROA.

We certify that the test results provided in this report meet all the requirements of the NELAC standards unless otherwise noted in an attached technical narrative or in the Report of Analysis.

We appreciate your continued use of our laboratory and look forward to working with you in the future. The following signature indicates technical review and acceptance of the data.

Please go to http://www.katahdinlab.com/cert for copies of Katahdin Analytical Services Inc. current certificates and analyte lists.

Sincerely,
KATAHDIN ANALYTICAL SERVICES

Leslie Dimond

Leslie Dimond - Quality Assurance Officer 04/14/2021 **Date**

TECHNICAL NARRATIVE

Metals Analysis

Due to matrix interference from iron in Katahdin Sample Number SO1923-1, a dilution was applied to reduce interference. A twenty-fold dilution was needed to reduce the interference and interpret results for selenium and silver. These dilutions are reflected in the "Dilution Factor" column on the sample Results of Analysis. Accordingly, the "Adjusted PQL" column reflects the change in the adjusted PQLs caused by the dilution factors.

KATAHDIN ANALYTICAL SERVICES – INORGANIC DATA QUALIFIERS

The sampled date indicated on the attached Report(s) of Analysis (ROA) is the date for which a grab sample was collected or the date for which a composite sample was completed. Beginning and start times for composite samples can be found on the Chain-of-Custody.

U Indicates the compound was analyzed for but not detected above the specified level. This level may be the Practical Quantitation Level (PQL) (also called Limit of Quantitation (LOQ)), the Limit of Detection (LOD) or Method Detection Limit (MDL) as required by the client.

Note: All results reported as "U" MDL have a 50% rate for false negatives compared to those results reported as "U" PQL "U" LOQ or "U" LOD, where the rate of false negatives is <1%.

E Estimated value. This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis.

J Estimated value. The analyte was detected in the sample at a concentration less than the laboratory Practical Quantitation Level (PQL) (also called Limit of Quantitation (LOQ)), but above the Method Detection Limit (MDL).

I-7 The laboratory's Practical Quantitation Level (PQL) or LOQ could not be achieved for this parameter due to sample composition, matrix effects, sample volume, or quantity used for analysis.

A-4 Please refer to cover letter or narrative for further information.

H_ Please note that the regulatory holding time for _____ is "analyze immediately". Ideally, this analysis must be performed in the field at the time of sample collection. _____ for this sample was not performed at the time of sample collection. The analysis was performed as soon as possible after receipt by the laboratory.

H1 - pH H2 - DO H3 - sulfite H4 - residual chlorine

T1 The client did not provide the full volume of at least one liter for analysis of TSS. Therefore, the PQL of 2.5 mg/L could not be achieved.

T2 The client provided the required volume of at least one liter for analysis of TSS, but the laboratory could not filter the full one liter volume due to the sample matrix. Therefore, the PQL of 2.5 mg/L could not be achieved.

M1 The matrix spike and/or matrix spike duplicate recovery performed on this sample was outside of the laboratory acceptance criteria. Sample matrix is suspected. The laboratory criteria was met for the Laboratory Control Sample (LCS) analyzed concurrently with this sample.

M2 The matrix spike and/or matrix spike duplicate recovery was outside of the laboratory acceptance criteria. The native sample concentration is greater than four times the spike added concentration so the spike added could not be distinguished from the native sample concentration.

R1 The relative percent difference (RPD) between the duplicate analyses performed on this sample was outside of the laboratory acceptance criteria (when both values are greater than ten times the PQL).

MCL	Maximum Contaminant Level	NL	No limit
NFL	No Free Liquid Present	FLP	Free Liquid Present
NOD	No Odor Detected	TON	Threshold Odor Number

D-1 As required by Method 5210B, APHA Standard Methods for the Examination of Water and Wastewater (21st edition), the BOD value reported for this sample is 'qualified' because the check standard run concurrently with the sample analysis did not meet the criteria specified in the method (198 +/- 30.5 mg/L). These results may not be reportable for compliance purposes.

D-2 The measured final dissolved oxygen concentrations of all dilutions were less than the method-specified limit of 1 mg/L. The reported BOD result was calculated assuming a final oxygen concentration equal to 1 mg/L. The reported value should be considered a minimum value.

D-3 The dilution water used to prepare this sample did not meet the method and/or regulatory criteria of less than 0.2 or 0.4 mg/L dissolved oxygen (DO) uptake over the five day period of incubation. These results may not be reportable for compliance purposes.

Katahdin ANALYTICAL SERVICES

REPORT OF ANALYTICAL RESULTS

Client: Harold Walton
HNTB
340 County Rd
Westbrook, ME 04092

Lab Sample ID: SO1923-001
Report Date: 4/14/2021
Project: Turnpike Bridge Paint

Sample Description	Matrix	Date Sampled	Date Received
MM 83.7 GRAVE ST UNDERPASS GRA	SL	04/08/2021	04/09/2021

Parameter	Result	Units	Adjusted PQL	Dilution Factor	PQL	Analytical Method	Analysis Date	By	Prep Method	Prepped Date	By	QC	Notes
ARSENIC	36	mg/Kgdrywt	20	20	0.8	SW846 6010	4/13/21	EP	SW846 3050	4/12/21	SF	OD12ICS1	
BARIUM	6050	mg/Kgdrywt	10	20	0.5	SW846 6010	4/13/21	EP	SW846 3050	4/12/21	SF	OD12ICS1	
CADMIUM	14.9	mg/Kgdrywt	10.0	20	0.5	SW846 6010	4/13/21	EP	SW846 3050	4/12/21	SF	OD12ICS1	
CHROMIUM	193	mg/Kgdrywt	20.0	20	1	SW846 6010	4/13/21	EP	SW846 3050	4/12/21	SF	OD12ICS1	
LEAD	7540	mg/Kgdrywt	10	20	0.5	SW846 6010	4/13/21	EP	SW846 3050	4/12/21	SF	OD12ICS1	
MERCURY	U 0.040	ug/gdrywt	0.040	1	0.04	SW846 7471	4/13/21	SF	SW846 7471	4/13/21	SF	OD13HGS1	
SELENIUM	U 20	mg/Kgdrywt	20	20	1	SW846 6010	4/13/21	EP	SW846 3050	4/12/21	SF	OD12ICS1	1
SILVER	U 20.0	mg/Kgdrywt	20.0	20	1	SW846 6010	4/13/21	EP	SW846 3050	4/12/21	SF	OD12ICS1	1

1 The laboratory's Practical Quantitation Level could not be achieved for this parameter due to sample composition, matrix effects,sample volume, or quantity used for analysis.

Katahdin Analytical Services, LLC. — Sample Receipt Condition Report

Client: HNTB	KAS PM: SC	Sampled By: NA
Project: MM 83.7	KIMS Entry By: SCB	Delivered By: NA
KAS Work Order#: SO 1923	KIMS Review By: SC	Received By: GM
	Labeled By: JM	
SDG #:	Cooler: 1 of 1	Date/Time Rec.: 4/9/21 755

Receipt Criteria	Y	N	EX*	NA	Comments and/or Resolution
1. Custody seals present / intact?				✓	
2. Chain of Custody present in cooler?	✓				
3. Chain of Custody signed by client?	✓				
4. Chain of Custody matches samples?	✓				
5. Temperature Blanks present? If not, take temperature of any sample w/ IR gun.		✓			Temp (°C): 1.0 — Thermometer ID: IR-1
Samples received at <6 °C w/o freezing?	✓				Note: Not required for metals (except Hg soil) analysis.
Ice packs or ice present?	✓				The lack of ice or ice packs (i.e. no attempt to begin cooling process) or insufficient ice may not meet certain regulatory requirements and may invalidate certain data.
If yes, was there sufficient ice to meet temperature requirements?	✓				
If temp. out, has the cooling process begun (i.e. ice or packs present) and sample collection times <6hrs., but samples are not yet cool?				✓	Note: No cooling process required for metals (except Hg soil) analysis.
6. Volatiles:					
Aqueous: No bubble larger than a pea?					
Soil/Sediment:					
Received in airtight container?					
Received in methanol?					
Methanol covering soil?					
D.I. Water - Received within 48 hour HT?					
7. Trip Blank present in cooler?					
8. Proper sample containers and volume?					
9. Samples within hold time upon receipt?					
10. Aqueous samples properly preserved? Metals, COD, NH3, TKN, O/G, phenol, TPO4, N+N, TOC, DRO, TPH – pH <2					
Sulfide - >9					
Cyanide – pH >12					
11. Bottleware Prepped on:					

* Log-In Notes to Exceptions: document any problems with samples or discrepancies or pH adjustments.

Katahdin
ANALYTICAL SERVICES
800 Technology Way
P.O. Box 540
Scarborough, ME 04070
Tel: (207) 874-2400
Fax: (207) 775-4029

Chain of Custody

Client: HNTB	Contact: Harold Walton	Phone #: (207)774-5155	Fax #: (207)228-0909
Address: 340 County Road Suite 6-C	City: Westbrook	State: Maine	Zip Code: 04092
Purchase Order #:	Proj. Name/No.: Turnpike Bridge Paint		Katahdin Quote #:
Bill (if different than above):	Address:		
Sampler (Print/Sign): Nick Adams /			Copies To:

LAB USE ONLY

Work Order #: SO 1923
Katahdin Project Number

Remarks:

Shipping Info: FEDEX UPS CLIENT
Airbill No:
Temp C Temp Blank Intact Not Intact

	Sample Description	Date/Time Collected	Matrix	No. of Containers	Analysis and Container Type Preservatives: Total Metals	Filt. N	Filt. N	Filt. N	Filt. N	Filt. N	Filt. N	Filt. N	Filt. N	Filt. N	Filt. N
	MM 83.7 Grove St Underpass grab	4/8/2021 1730	S	1	1										

COMMENTS: Metals list: As, Ba, Cd, Cr, Pb, Se, Ag, Hg

Relinquished By: Nick Adams	Date/Time 4/9/21 0755	Received By:	Relinquished By:	Date/Time	Received By:
Relinquished By:	Date/Time	Received By:	Relinquished By:	Date/Time	Received By:

All laboratory and field work shall be governed by KATAHDIN's Standard Terms and Conditions, except where a Purchase Order or Contract supersede.

Katahdin
ANALYTICAL SERVICES

Katahdin Analytical Services

Login Chain of Custody Report (lno1)

Apr. 12, 2021
08:41 AM

Quote/Incoming:

Login Number: SO1923

Account: HNTBCO001
HNTB Corp.

Project:

NoWeb

Primary Report Address:
Harold Walton
HNTB
340 County Rd

Westbrook,ME 04092
hwalton@hntb.com

Primary Invoice Address:
Accounts Payable
HNTB Corp.
340 County Rd
Suite 6-C
Westbrook,ME 04092

Report CC Addresses:
Invoice CC Addresses:

Login Information:

ANALYSIS INSTRUCTIONS	:	verbal for report. TS=100%
CHECK NO.	:	
CLIENT PO#	:	
CLIENT PROJECT MANAGE	:	
CONTRACT	:	
COOLER TEMPERATURE	:	1.0
DELIVERY SERVICES	:	KAS
EDD FORMAT	:	
LOGIN INITIALS	:	JCB
PM	:	SJC
PROJECT NAME	:	Turnpike Bridge Paint
QC LEVEL	:	I
REPORT INSTRUCTIONS	:	Email PDF and invoice to Harold: hwalton@hntb.com
SDG ID	:	
SDG STATUS	:	
VERBAL TAT	:	

Login Number: SO1923

Quote/Incoming:

Account: HNTBCO001 NoWeb
HNTB Corp.

Project:

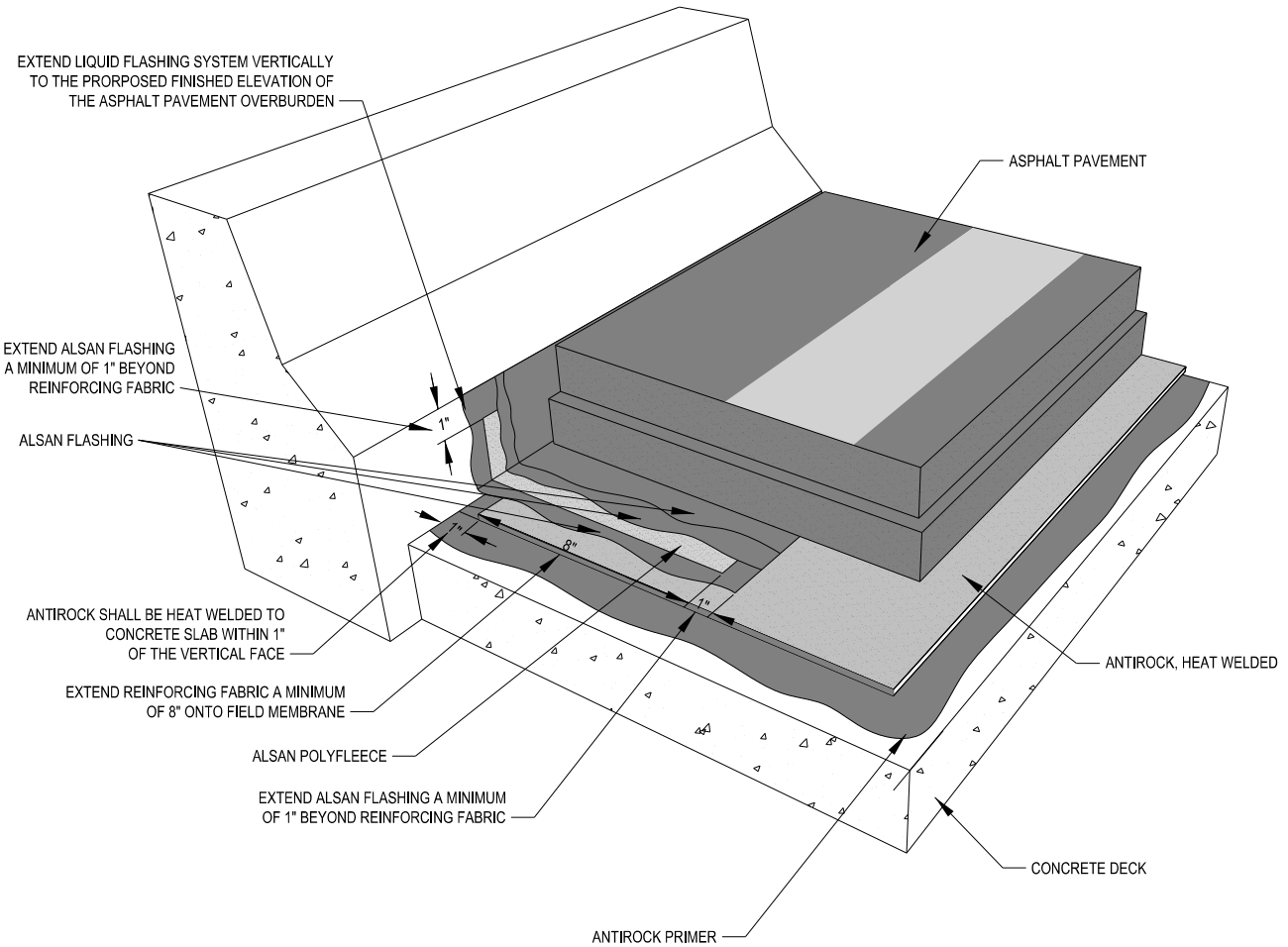
Laboratory Sample ID	Client Sample Number	Collect Date/Time	Receive Date	PR	Verbal Date	Due Date	Mailed
SO1923-1	MM 83.7 GRAVE ST UNDERPASS GRA	08-APR-21 17:30	09-APR-21		**14-APR-21**	14-APR-21	

Matrix		Product	Hold Date (shortest)	Bottle Type	Bottle Count	Comments
Solid	P	RCRA-METALS				**TS=100%**
		SW3050-PREP	SW6010-ARSENIC	SW6010-BARIUM		
		SW6010-CADMIUM	SW6010-CHROMIUM	SW6010-LEAD		
		SW6010-SELENIUM	SW6010-SILVER	SW7471-MERCURY		
Aqueous	S	SAMPLING				
Solid	S	TS-ME	15-APR-21			

Total Samples: 1 ***Total Analyses: 3***

APPENDIX C

HIGH PERFORMANCE WATERPROOFING MEMBRANE
REINFORCED CORNER DETAIL



NOTES:

1. SOPREMA DETAIL DRAWINGS: REFER TO SOPREMA AND OTHER RELATED PUBLISHED DOCUMENTATION, PRODUCT DATA SHEETS (PDS) AND SAFETY DATA SHEETS (SDS) FOR ADDITIONAL INFORMATION. ALL DETAIL DRAWINGS AND RELATED INSTALLATION GUIDELINES ARE PROVIDED BY SOPREMA FOR THE SOLE PURPOSE OF ISSUING A SOPREMA WARRANTY. ACCORDINGLY, THE DETAIL DRAWINGS ARE NOT OFFERED, AND SHOULD NOT BE CONSIDERED, AS A SUBSTITUTE FOR PROFESSIONAL DESIGN SERVICES.
2. HOT WORK: THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING APPROPRIATE CONDITIONS TO UTILIZE HEAT-WELDING EQUIPMENT. REFER TO LOCAL CODES OWNER'S REQUIREMENTS FOR HOT WORK OPERATIONS.
3. PRIMER: WHERE NOT SHOWN OR INDICATED ON DETAIL DRAWINGS, REFER TO MATERIAL PRODUCT DATA SHEETS FOR PRIMER APPLICATION REQUIREMENTS.

SOPREMA®
US CORPORATE ADDRESS
310 QUADRAL DRIVE
WADSWORTH, OHIO 44281
www.soprema.us
Tel:330.334.0066

PROJECT:

DRAWN BY: SOPREMA TECHNICAL SUPPORT, GGALLOWAY

NO.:	REVISION:	DATE:

TITLE:

ANTIROCK SBS MEMBRANE, CIVIL ENGINEERING, UPSTAND

DATE: 10.4.2018

SCALE: NTS

DRAWING NUMBER:
US.CE.02.01