

MAINE TURNPIKE AUTHORITY

MAINE TURNPIKE

CONTRACT DOCUMENTS

CONTRACT 2024.02

PORTLAND AREA PAVEMENT REHABILITATION
SOUTHBOUND MILE 42.0 TO 49.3

JANUARY 25, 2024

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 2024.02

PORTLAND AREA PAVEMENT REHABILITATION
SOUTHBOUND MILE 42.0 TO 49.3

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 February 20, 2024 at which time and place the Proposals will be publicly opened and read. Bids will be accepted from Contractors **prequalified** by the Maine Department of Transportation for Paving Construction Projects. All other bids may be rejected. This Project includes a wage determination developed by the State of Maine Department of Labor.

The pavement rehabilitation work consists of milling and filling two travel lanes, milling and filling bridge approaches, median and outside shoulder pavement rehabilitation, overlaying the entire project length including ramp tie-ins, catch basin adjustments to grade, guardrail height adjustments, pavement markings, maintenance of traffic, and all other work incidental thereto in accordance with the Plans and Specifications.

Plans and Contract Documents may be examined by prospective Bidders weekdays between 8:00 a.m. and 4:30 p.m. at the office of the Maine Turnpike Authority, 2360 Congress Street, Portland, Maine. **The half size Plans** and Contract Documents may be obtained from the Authority upon payment of Fifty (\$50.00) Dollars for each set, which payment will not be returned. Checks shall be made payable to: Maine Turnpike Authority. The Plans and Contract Documents may also be downloaded from a link on our website at <http://www.maineturnpike.com/project-and-planning/Construction-Contracts.aspx>.

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

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

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

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

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

A pre-bid conference will be held on February 13, 2024 at 10:00 a.m. at the Maine Turnpike Authority, 2360 Congress Street, Portland, Maine.

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

MAINE TURNPIKE AUTHORITY

Nate Carll
Purchasing Manager
Maine Turnpike Authority
Portland, Maine

Maine Turnpike Authority

MAINE TURNPIKE

PROPOSAL

CONTRACT 2024.02

PORTLAND AREA PAVEMENT REHABILITATION
SOUTHBOUND MILE 42.0 TO 49.3

MAINE TURNPIKE AUTHORITY

PROPOSAL

CONTRACT 2024.02

PORTLAND AREA PAVEMENT REHABILITATION
SOUTHBOUND MILE 42.0 TO 49.3

TO MAINE TURNPIKE AUTHORITY:

The pavement rehabilitation work consists of milling and filling two travel lanes, milling and filling bridge approaches, median and outside shoulder pavement rehabilitation, overlaying the entire project length including ramp tie-ins, catch basin adjustments to grade, guardrail height adjustments, pavement markings, 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 2024.02 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. 2024.02
Portland Area Pavement Rehabilitation
SOUTHBOUND MM 42.0 to MM 49.3**

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
202.202	Removing Pavement Surface - Mainline	Square Yard	33,000				
202.206	Removing Pavement Surface - Drainage Paths	Square Foot	960				
202.205	Rumble Strips	Each	54,000				
304.14	Aggregate Base Course - Type A	Cubic Yard	275				
403.2081	Hot Mix Asphalt - 12.5 mm Nominal Maximum Size (Polymer Modified)	Ton	23,000				
403.211	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (Shimming)	Ton	650				
403.213	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size (Base and Intermediate Base course)	Ton	2,800				
409.152	Bituminous Tack Coat Trackless - Applied	Gallon	21,000				
424.3231	Asphalt Rubber Mastic Crack Sealer - Applied	Pound	36,000				
424.324	Asphalt Rubber Mastic Crack Sealer With Aggregate	Pound	4,000				
427.09	Pavement Crack Repair	Linear Foot	175				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
BROUGHT FORWARD:							
470.08	Berm Dropoff Correction - Grindings	Linear Foot	41,700				
470.081	Berm Correction	Linear Foot	1,950				
520.23	Asphaltic Plug Joint	Linear Foot	242				
604.18	Adjusting Manhole or Catch Basin to Grade	Each	16				
606.178	Guardrail Beam	Linear Foot	625				
606.353	Reflectorized Flexible Guardrail Marker	Each	10				
606.3621	Guardrail Adjust, Single Rail	Linear Foot	3,400				
606.3622	Guardrail Adjust, Double Rail	Linear Foot	2,400				
606.471	Single Offset Block - W-Beam	Each	10				
606.48	Single Galvanized Steel Post	Each	15				
627.73	Temporary 6 Inch Pavement Marking Tape	Linear Foot	3,400				
627.731	Temporary 6 Inch Black Pavement Marking Tape	Linear Foot	2,600				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
BROUGHT FORWARD:							
627.78	Temporary Pavement Marking Line	Linear Foot	20,000				
627.812	Temporary Raised Pavement Markers	Each	8,300				
627.94	Pavement Marking Tape	Linear Foot	2,700				
627.941	Pavement Marking Tape – Dotted White Lane Line, 6-inch Width	Linear Foot	3,250				
627.944	Pavement Markings - Recessed Tape - Words, Arrow and Stop Bars	Square Foot	170				
629.05	Hand Labor, Straight Time	Hour	30				
631.12	All Purpose Excavator (including operator)	Hour	25				
631.133	Skid Steer (including operator)	Hour	20				
631.172	Truck-large (including operator)	Hour	30				
631.36	Foreman	Hour	25				
652.30	Flashing Arrow	Each	2				
652.312	Type III Barricades	Each	15				

CARRIED FORWARD:

Item No	Item Description	Units	Approx. Quantities	Unit Prices in Numbers		Bid Amount in Numbers	
				Dollars	Cents	Dollars	Cents
BROUGHT FORWARD:							
652.35	Construction Signs	Square Foot	1,860				
652.361	Maintenance of Traffic Control Devices	Lump Sum	1				
652.41	Portable-Changeable Message Sign	Each	4				
652.4502	Truck Mounted Attenuator	Each	2				
652.4503	Truck Mounted Attenuator	Week	8				
652.47	Sequential Flashing Warning Lights	Each	40				
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)
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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., 202____

Witnesses:

CONTRACTOR

_____ (SEAL)

SURETY

_____ (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)

MAINE TURNPIKE AUTHORITY

SPECIFICATIONS

PART II – SPECIAL PROVISIONS

PART II - SPECIAL PROVISIONS

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MAINE TURNPIKE AUTHORITYSPECIFICATIONSPART 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 pavement rehabilitation work consists of milling and filling two travel lanes, milling and filling bridge approaches, median and outside shoulder pavement rehabilitation, overlaying the entire project length including ramp tie-ins, catch basin adjustments to grade, guardrail height adjustments, pavement markings, 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 2024.02 – Portland Area Pavement Rehabilitation”. 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 DefinitionHolidays

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

Juneteenth Day 2024 (June 19, 2024)	6:00am Wednesday to 6pm Wednesday
Independence Day 2024 (Fourth of July)	6:00 a.m. preceding Wednesday to 6:00 a.m. the following Monday.

103.4 Notice of Award

The following sentence is added:

The Maine Turnpike Authority Board is scheduled to consider the Contract Award on February 29, 2024.

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:

**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.

2024 Fair Minimum Wage Rates -- Highway & Earth Cumberland County

Occupational Title	Minimum Wage	Minimum Benefit	Total
Brickmasons And Blockmasons	\$32.25	\$4.33	\$36.58
Bulldozer Operator	\$29.00	\$4.56	\$33.56
Carpenter	\$29.69	\$6.18	\$35.87
Cement Masons And Concrete Finisher	\$22.67	\$2.21	\$24.88
Commercial Divers	\$30.00	\$4.62	\$34.62
Construction And Maintenance Painters	\$26.00	\$3.81	\$29.81
Construction Laborer	\$25.00	\$3.35	\$28.35
Crane And Tower Operators	\$33.93	\$9.47	\$43.40
Crushing Grinding And Polishing Machine Operators	\$23.88	\$4.94	\$28.82
Drywall And Ceiling Tile Installers	\$26.20	\$10.62	\$36.82
Earth Drillers - Except Oil And Gas	\$21.65	\$2.53	\$24.18
Electrical Power - Line Installer And Repairers	\$38.93	\$8.91	\$47.84
Electricians	\$33.64	\$18.07	\$51.71
Elevator Installers And Repairers	\$68.38	\$45.29	\$113.67
Excavating And Loading Machine And Dragline Operators	\$26.00	\$4.62	\$30.62
Excavator Operator	\$33.25	\$6.34	\$39.59
Fence Erectors	\$20.00	\$0.00	\$20.00
Flaggers	\$20.00	\$0.41	\$20.41
Floor Layers - Except Carpet/Wood/Hard Tiles	\$27.00	\$6.21	\$33.21
Glaziers	\$37.00	\$6.60	\$43.60
Grader/Scraper Operator	\$27.40	\$8.13	\$35.53
Hazardous Materials Removal Workers	\$21.50	\$1.54	\$23.04
Heating And Air Conditioning And Refrigeration Mechanics And Installers	\$32.00	\$5.46	\$37.46
Heavy And Tractor - Trailer Truck Drivers	\$25.00	\$5.44	\$30.44
Highway Maintenance Workers	\$19.98	\$2.55	\$22.53
Industrial Machinery Mechanics	\$31.25	\$1.01	\$32.26
Industrial Truck And Tractor Operators	\$29.25	\$4.06	\$33.31
Insulation Worker - Mechanical	\$24.05	\$3.59	\$27.64
Ironworker - Ornamental	\$27.75	\$4.50	\$32.25
Light Truck Or Delivery Services Drivers	\$21.50	\$0.78	\$22.28
Millwrights	\$33.75	\$8.78	\$42.53
Mobile Heavy Equipment Mechanics - Except Engines	\$28.00	\$4.89	\$32.89
Operating Engineers And Other Equipment Operators	\$31.50	\$3.75	\$35.25
Paver Operator	\$27.03	\$5.15	\$32.18
Pile-Driver Operators	\$32.75	\$1.95	\$34.70
Pipelayers	\$28.50	\$4.69	\$33.19
Plumbers Pipe Fitters And Steamfitters	\$30.00	\$5.87	\$35.87
Pump Operators - Except Wellhead Pumps	\$31.49	\$32.08	\$63.57
Radio Cellular And Tower Equipment Installers	\$26.00	\$3.77	\$29.77
Reclaimer Operator	\$28.50	\$5.72	\$34.22
Reinforcing Iron And Rebar Workers	\$22.67	\$25.11	\$47.78
Riggers	\$31.25	\$7.68	\$38.93
Roofers	\$24.00	\$3.35	\$27.35
Screed/Wheelman	\$30.40	\$4.28	\$34.68
Sheet Metal Workers	\$25.25	\$5.68	\$30.93
Structural Iron And Steel Workers	\$30.04	\$7.22	\$37.26
Tapers	\$28.00	\$1.71	\$29.71
Telecommunications Equipment Installers And Repairers - Except Line Installers	\$28.33	\$6.08	\$34.41
Telecommunications Line Installers And Repairers	\$26.00	\$4.83	\$30.83
Tile And Marble Setters	\$27.75	\$6.73	\$34.48

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


Apprentices – The minimum wage rates for registered apprentices are the rates recognized in the sponsorship agreement for registered apprentices working in the pertinent classification.

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

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

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

A true copy

Attest: 

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

**Expiration Date: 12-31-2024
Revision Date: 1-3-2024**

104.4.6 Utility Coordination

This Subsection is amended by the addition of the following:

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

General

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

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

AERIAL UTILITIES

The following aerial utilities are known to be present on this project, including contact information:

CENTRAL MAINE POWER COMPANY (CMPCo)

83 Edison Drive

Augusta, ME 04336

ATTN: Mark Buxton

Tel: (207) 629-1431

Email: mark.buxton@cmpco.com

CMP has several aerial crossings of the Turnpike within the project limits;

- South of Gorham Road
 - Attachees: Charter, Consolidated, Crown Castle, Scarborough Fire Dept.
- South of Cummings Road
 - Attachees: Charter, Consolidated, Crown Castle, Firstlight, Verizon
- North of Running Hill Road
 - Attachees: Charter, Consolidated, Crown Castle, Firstlight, Verizon
- Crosby Maintenance
 - Attachees: Charter, Consolidated, Crown Castle
- South of Congress St,
 - Attachees: Charter, Consolidated, Firstlight, MaineCOM, Verizon, Portland Fire Dept.
- North of Westbrook St,
- South of Rand Rd/Westbrook Arterial,
 - Attachees: Crown Castle
- North of Brighton Ave.
 - Attachees: Charter, Crown Castle, Firstlight, Portland Fire Dept.

Additionally, CMP has three existing transmission lines that cross the Exit 45 Southbound Off Ramp, turnpike mainline and the Exit 45 Northbound On Ramp.

CHARTER COMMUNICATIONS (SPECTRUM)

118 Johnson Road
Portland, ME 04102
ATTN: Mark Pelletier
Tel: (207) 253-2324
Email: Mark.pelletier@charter.com

Charter has several crossings, see above in the CMP section for additional crossings. Charter also has a single aerial line crossing north of Congress Street.

CONSOLIDATED COMMUNICATIONS (FAIRPOINT)

5 Davis Farm Road, Floor 2
Portland, ME 04103
ATTN: Marty Pease
Tel: (207) 272-7993
Email: martin.pease@consolidated.com

Consolidated has several crossings, see above in the CMP section for additional crossings. Consolidated also has a crossing in conduit attached to the Brighton Avenue bridge.

CROWN CASTLE FIBER (LIGHTOWER)

1800 West Park Dr, Suite 250
Westborough MA, 01581
ATTN: Chris Stevens
Tel: (978) 881-4543
Email: cstevens@lighttower.com

ATTN: Mark Bonnano
Tel: (617) 828-1415
Email: mbonnano@lighttower.com

Crown Castle has several crossings, see above in the CMP section for crossings noted.

FEDERAL AVIATION ADMINISTRATION (FAA) AT LIMITS OF WORK

1001 Westbrook Street
Portland, ME 04102
ATTN: Jim Mello
Tel: (207) 552-1505
Tel: (207) 318-2830
Email: james.mello@faa.gov

1001 Westbrook Street
Portland, ME 04102
ATTN: Dave Simard
Tel: (207) 318-2827
Email: david.p.simard@faa.gov

1001 Westbrook Street
Portland, ME 04102
ATTN: Robert Durocher
Tel: (207) 552-1501
Email: robert.durocher@faa.gov

FAA owns a steel Lightbridge near the Exit 46 Interchange. The Lightbridge crosses the turnpike mainline at approx. Sta. 2285+50 and crosses the Exit 46 southbound on ramp at approx. 47+90.

MAINE FIBER COMPANY (FIRSTLIGHT)

14 Resilient Circle Brunswick, ME 04011
ATTN: Michael Ellingwood
Tel: (207) 462-2759
Tel: (207) 333-3471
Email: mellingwood@firstlight.net

Firstlight.has several crossings, see above in the CMP section for crossings noted.

MAINECOM

16 Middle Street, 4th Floor
Portland, ME 04101
Attn: Mike Atwater
Tel: (207-557-1591
Email: MAAtwater@Tilsontech.com

MaineCOM.has one crossing, see above in the CMP section for crossings noted.

MCI WORLD COMMUNICATIONS (VERIZON)

82B Northside Road PO Box 600
Charlton, MA 01507
ATTN: Matthew Mahon
Tel: (413) 325-7933
Email: matthew.mahon@verizon.com

82B Northside Road PO Box 600
Charlton, MA 01507
ATTN: Tremain Fernandes
Tel: (617) 953-9575

Email: tremain.k.fernandes@verizon.com

Verizon has several crossings, see above in the CMP section for crossings noted. They also have a single line crossing immediately north of the Brighton Avenue bridge.

PORTLAND FIRE DEPARTMENT

380 Congress Street
Portland, ME 04101
ATTN: Jon Belanger
Tel: (207) 653-2450
Tel: (207) 874-8400
Email: belangerj@portlandmaine.gov

Portland Fire Dept. has several crossings, see above in the CMP section for crossings noted.

SCARBOROUGH FIRE DEPARTMENT

246 US Route 1
Scarborough, ME 04074
ATTN: B. Michael Thurlow
Tel: (207) 730-4201
Email: mthurlow@scarboroughmaine.org

Scarborough Fire Dept. has one crossing, see above in the CMP section for crossings noted.

UNDERGROUND UTILITIES

The following underground utilities are known to be present to this project, including contact information:

BUCKEYE PARTNERS, L.P.

170 Lincoln Street
South Portland, ME 04106
ATTN: Walter Ronfeldt
Tel: (207) 274-0914
Tel: (207) 808-4511
Email: wronfeldt@buckeye.com

Buckeye Pipeline has a High Pressure Petroleum Products pipeline which is located easterly of the northbound mainline. The pipeline is within the Exit 46 infield area, crosses beneath both Exit 46 northbound ramps, runs along the northbound mainline, and crosses beneath the turnpike mainline at approximately station 2308+50.

CITY OF PORTLAND

212 Canco Road

Portland, ME 04103
ATTN: Bradley Roland, P.E.
Tel: (207) 874-8840
Email: Brad@portlandmaine.gov

The City of Portland has a 16-inch asbestos concrete sewer line inside a 42-inch casing which runs across the turnpike just north of Exit 48, at approx. Sta. 2420+75.

FEDERAL AVIATION ADMINISTRATION (FAA) AT LIMITS OF WORK

1001 Westbrook Street
Portland, ME 04102
ATTN: Jim Mello
Tel: (207) 552-1505
Tel: (207) 318-2830
Email: james.mello@faa.gov

1001 Westbrook Street
Portland, ME 04102
ATTN: Dave Simard
Tel: (207) 318-2827
Email: david.p.simard@faa.gov

1001 Westbrook Street
Portland, ME 04102
ATTN: Robert Durocher
Tel: (207) 552-1501
Email: robert.durocher@faa.gov

The Portland Jetport and Federal Aviation Administration (FAA) owns an Approach Lighting with Sequenced Flashing Lights (ALSFL) duct bank consisting of 10-PVC conduits, which run from the easternmost tower of the FAA light bridge to a pair of electrical manholes before crossing under the Exit 46 northbound off ramp to lights on the east side.

GRANITE STATE GAS

325 West Road
Portsmouth, NH 03810
ATTN: Brian Chaput
Tel: (603) 294-5146
Email: chaputb@unitil.com

UNITIL

376 Riverside Industrial Parkway
Portland ME, 04103
ATTN: Mike Rodney
Tel: (207) 632-3132

Email: rodneym@unitil.com

Granite State & Unitil owns/operates several pipelines with crossings within the project limits. These crossings and adjacent runs are noted here:

- An 8-inch steel pipe, 0.156-inch wall thickness, in a concrete casing. This pipe crosses the Maine Turnpike at approximately STA. 2278+65, at a skew of approximately 70 degrees from the Maine Turnpike centerline.
- Pipeline segment runs parallel to the Turnpike beneath Skyway Drive on the southbound side.
- Pipeline crosses the Turnpike south of Congress Street.
- Pipeline crosses the Turnpike south of Westbrook Street.
- Pipeline crossing at Brighton Avenue is attached to the underside of bridge.

MAINE TURNPIKE AUTHORITY (CROSBY WATERLINE)

Maine Turnpike Authority
 2360 Congress Street
 Portland, ME 04102
 ATTN: Shawn Laverdiere
 Tel: (207) 829-3767
 Email: SLaverdiere@maineturnpike.com

The Maine Turnpike Authority owns a waterline which crosses the Maine Turnpike at approximately STA. 2267+60 and enters the Crosby Maintenance Facility.

MAINE TURNPIKE AUTHORITY (ELECTRIC - LIGHTING)

Maine Turnpike Authority
 2360 Congress Street
 Portland, ME 04102
 ATTN: Shawn Laverdiere
 Tel: (207) 829-3767
 Email: SLaverdiere@maineturnpike.com

Maine Turnpike Authority owns highway lighting facilities within the project limits along each interchange ramp.

OCEAN PROPERTIES

1000 Market Street
 Portsmouth, NH 03801
 ATTN: Peter Connell
 Tel: (207) 557-3324
 Email: peter.connell@pcfsl.com

Ocean Properties owns and maintains a 12-inch PVC sewer line that crosses the Maine Turnpike at approximately STA. 2251+70.

PORTLAND PIPE LINE CORPORATION (PPLC)

30 Hill Street
 South Portland, ME 04106
 ATTN: Randy Hughes
 Tel: (207) 767-0437
 Email: randy.hughes@pmpl.com

Portland Pipe Line Corporation (PPLC) has a 24-inch oil pipeline which runs parallel to the turnpike on the easterly side from the Exit 46 Northbound On Ramp until it crosses underneath the Stroudwater River Bridge. It then runs parallel to the turnpike on the westerly side before crossing underneath the Exit 47 Southbound on and Southbound Off Ramps.

Portland Pipe Line Corporation (PPLC) also has a 12-inch and 18-inch oil pipeline that run easterly to the turnpike before crossing underneath the Exit 48 Northbound Off Ramp, the turnpike mainline and the Exit 48 Southbound On Ramp.

PORTLAND WATER DISTRICT (PWD)

225 Douglass Street P.O. Box 3553
 Portland, ME 04104
 ATTN: Joseph Parent
 Tel: (207) 232-3851
 Email: jparent@pwd.org

Portland Water District owns several underground facilities which cross the Maine Turnpike within the project limits;

- A 12-inch main within a 24-inch concrete casing just south of Gorham Road crossing the Maine Turnpike at a skew at approximately Station 2176+40;
- A 16-inch underground trunk water main within a 42-inch concrete casing near Cummings Rd, crossing the Exit 45 northbound off ramp, Exit 45 southbound on ramp, and the Maine Turnpike at approximately Station 2210+10
- A 30-inch trunk water main within a 54-inch concrete casing which crosses the Maine Turnpike at Station. 2236+90
- A 42-inch main within a 66-inch concrete casing which crosses the Maine Turnpike mainline at approximately Station 2281+45, the Exit 46 northbound off ramp at approximately Station 65+00 and the Exit 46 southbound on ramp at approximately Station 44+05.
- Portland Water District has a 12-inch main in a 24-inch casing crossing the Turnpike near Congress Street at approximately station 2303+50.
- A 42-inch RCCP water main located at Station 2340+52.81 near Westbrook St.
- A 42-inch CIP water main located at Station 2360+02.55 near Rand Rd.
- An 8-inch main in a 24-inch casing at Exit 48 interchange, crossing the mainline at station 2407+50, southbound onramp at station 125+00, and northbound offramp at station 145+00.

SEWER

175 Running Hill, LLC
 Managed by:
 Maine Realty Advisers

100 Commercial Street, Suite 202
 Portland, ME 04101
 ATTN: Josh Soley & Coly Libby
 Tel: (207) 744-3084
 Email: josh@mainerealtyadvisers.com
cole@mainerealtyadvisers.com

Dead River Company owns a 12-inch ductile iron gravity sewer service that crosses the Maine Turnpike at approximately STA. 2237+40, and crosses the northbound on ramp at approx. Sta. 316+45.

104.4.7 Cooperation With Other Contractors

This Subsection is amended by the addition of the following:

Adjacent contracts currently scheduled for the 2024 construction season include:

MTA Contract 2022.07 – Saco Interchange Improvements, Mile 34.7 to 36.6

MTA Contract 2023.03 – Route 122 Bridge Rehabilitation, Mile 74.0

MTA Contract 2024.04 – Exit 75 Paving, Mile 75

MTA Contract 2024.05 – Bridge Painting, Miles 64.3, 66.2, and 68.6

MTA Contract 2024.06 – Bridge Repair (SLRR), Mile 74.5

MTA Contract 2024.07 – Culvert Repair, Mile 40.3

MaineDOT WIN 27482.00 – Route 703 Mill and Fill

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.

The LOD for this Contract has been estimated to be **2.5 acres**, all of which is considered 'routine maintenance' under the Maine Construction General Permit. 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.

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 contractor shall be aware that:

- The Resident shall have a minimum of five (5) working days to approve the revised LOD plan.
- The Resident shall first approve of the plan, and then, depending on the scope and area of the LOD change, possibly submit a Maine Construction General Permit Notice of Intent for Maine DEP approval. The approval may take a minimum of 14 working days once filed with 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 Army Corps Maine General Permit, Army Corps project-specific authorization, Maine DEP NRPA Permit or Permit by Rule, Site Location of Development Act General Permit, the Stormwater MOA, and the Maine Construction General Permit. 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.

107.1 Contract Time and Contract Completion Date

This Subsection is amended by the addition of the following:

The work shall be substantially complete by September 27, 2024, and all work shall be completed on or before October 25, 2024.

107.1.1 Substantial Completion

This Subsection is amended by the addition of the following:

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

- All milling and paving complete.
- All drainage and median work complete.
- Entire length of project shall be fully opened to traffic including shoulders, guardrail, surface pavement and signage.
- No ramp closures shall remain.
- No lane closures shall remain, except for rumble strip installation, line striping, and demobilization (removal of construction signs, drums, cones, etc. and general clean-up).

- All disturbed slopes and grassed median shall be loamed, seeded and mulched, and temporary erosion control mix and/or blanket installed where necessary.

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.

107.3.2 Night Work

This Subsection is amended by the addition of the following:

Nightwork will be allowed within the limitations defined in Section 652. The Contractor shall formally notify the Resident of their intent to perform night work a minimum of 14 calendar days ahead of the planned nightwork.

107.3.3 Sundays and Holidays

This Subsection is amended by the addition of the following:

Sunday work operations will be allowed within the limitations defined in Section 652. The Contractor shall formally notify the Resident of their intent to work on Sunday a minimum of 14 calendar days ahead of the planned Sunday work.

107.4.6 Prosecution of Work

The following Subsection is added:

107.4.7 Limitations of Operation

The Contractor shall submit to the Authority, prior to milling, a construction schedule and documentation that the Contractor has the necessary labor and equipment to work immediately and continuously at the two-lane mill and fill area. Once started, the mill and fill operations for lanes 1 and 2 shall be completed prior to any other milling or paving operations. Paving of this milled area, including lane 3 drainage path, shall be completed within seven days of completed milling. The intent of this specification is to minimize the amount of time traffic must traverse the widened drainage path across lane 3 (right lane) when lane 2 (middle lane) is milled.

The construction shall proceed expeditiously. Once milling and/or paving operations commence for every day/night not worked (milling or paving) when work is allowed by Contract and weather, the Contractor will be charged a fee in the amount of \$1,000 (excluding inclement weather days).

The median and outside shoulder milling and paving work southbound shall be performed such that the finished grade is flush with the existing pavement elevation of the adjacent lane at the end of each shift.

The paving operation shall begin within seven calendar days of all milling being complete. The Contractor will be allowed to work in two separate work areas on the mainline. The work areas are not

required to be in the same lane.

For the two-lane mill and fill area (southbound approximate stations 2294+00 to 2368+50): the Contractor shall begin the milling operation in Lane 3 (wide drainage paths), followed by Lane 2, followed by Lane 1, (left-most passing lane).

For the two-lane mill and fill area (southbound approximate stations 2294+00 to 2368+50): the Contractor shall begin the fill paving operation in Lane 1 (left-most passing lane), followed by Lane 2, followed by Lane 3.

For the overlay: the Contractor shall begin the milling operation at the median shoulder longitudinal butt joint, followed by the ramp butt joints.

For the overlay: the Contractor shall begin the paving operation in the median shoulder and Lane 1 (left-most passing lane), followed by Lane 2, followed by Lane 3, followed by the ramps and outside shoulder. Interchange ramps shall be paved at the same time as adjacent Lane 3. The intent is to consolidate and minimize the total number of lane and ramp closures at each individual ramp.

Interchange ramp closures will be allowed per requirements of Special Provision 652. Adjacent interchange ramps in the same direction shall not be closed at the same time.

Interchange ramp closures shall be limited to one night for mill operations, including for ramp and mainline, one night for crack sealing, including ramp and mainline, and one night for paving operation, including for ramp and mainline.

Interchange 45 southbound on-ramp shall not be closed. Contractor shall develop and submit for approval temporary traffic control plans to maintain on-ramp traffic during milling and paving operations.

The Contractor shall develop and submit to the Resident for approval, temporary traffic control plans for all ramp closures, for all layouts that shift ramp traffic, and for all layouts that shift mainline traffic out of their lane.

The Contractor shall secure all catch basin grates with Sikaflex 1a before being allowed to shift traffic onto the outside shoulder. This work will be incidental to Item 652.361.

The Contractor shall limit the milling operations such that temporary pavement markings or pavement markers are applied daily prior to the roadway being open to traffic.

Permanent pavement markings shall be laid out for painting once the mainline is completely paved so that the MTA can paint within two weeks.

Lane closure(s) will not be allowed over a weekend or Holidays unless otherwise approved by the Resident.

The Contractor shall keep a 14 foot wide lane open for traffic during the milling and paving

operations from ½ hour before sunrise to ½ hour after sunset unless otherwise approved by the Resident.

Temporary bituminous ramps will be required at all transverse butt joints, unless otherwise noted on the plans. Longitudinal butt joints (median gutter line) do not require temporary bituminous ramps.

Traffic will be allowed to traverse the longitudinal joint where the pavement is lower in one lane than the adjacent lane.

SPECIAL PROVISION

SECTION 202

REMOVING STRUCTURES AND OBSTRUCTIONS

(Removing Pavement Surface-Mainline)

202.01 Description

The following sentences are added:

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

Removal of approach pavement shall be completed using a milling machine meeting the requirements in the first two paragraphs of section 202.061.

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

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

The following subsection is added:

202.032 Removing Bridge Pavement Surface and Membrane

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

The following paragraph is added:

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

202.061 Removing Pavement Surface

This Subsection is deleted and replaced with the following:

The equipment for removing the bituminous surface, excluding bridge decks, shall be a power-operated milling machine or 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 $\frac{1}{4}$ 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 manufacturer's 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 contractor shall not use a 'skid-steer' type milling machine for the median longitudinal butt joint. It is the intent of this special provision that the same machine-controlled milling be applied to the median longitudinal butt joint as the mainline milling.

The finished milled surface will be inspected before being accepted, and any deviations in the profile exceeding $\frac{3}{8}$ 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 $\frac{3}{8}$ 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.

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

<u>Name of Facility</u>	<u>Mile Marker</u>	<u>Cubic Yards</u>
Crosby Maintenance	45.8 Southbound	up to 950 cy

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

In the event of encountering shoulder gravels during milling, the contractor shall reset and plunge cut fully through pavement into shoulder gravels by 1-2 inches as directed by the Resident. Contractor will be paid double the unit price of Item 202.202 - Removing Pavement Surface, for the area requiring the deeper plunge cut. Type A gravels to restore grade shall be paid under 304.14 – Aggregate Base Course – Type A. No additional payment will be made for this work.

202.07 Method of Measurement

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

The following sentences are added:

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

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

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

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

Installation of longitudinal and transverse butt joints will not be measured separately for payment, but shall be incidental to the Removing Pavement Surface item.

Shoulder area requiring a deeper plunge cut to remove thin remaining existing pavement will be measured by the square yard of additional material removed. In effect, the Contractor will be paid double the unit price of Item 202.202 - Removing Pavement Surface, for the area requiring the deeper plunge cut; once for typical depth milling and once for the deeper depth removal. Type A gravels to restore grade shall be measured and paid under 304.14 – Aggregate Base Course – Type A. No additional payment will be made for this work.

202.08 Basis of Payment

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

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
202.202 Removing Pavement Surface – Mainline	Square Yard

SPECIAL PROVISION

SECTION 202

REMOVING STRUCTURES AND OBSTRUCTIONS

(Removing Pavement Surface – Drainage Paths)

202.01 Description

The following paragraphs are added:

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

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

The following Subsection is added:

202.011 Materials

Grinding shall be done in accordance with Section 202.

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

Bituminous tack coat shall conform to Section 409.

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

202.06 Removing Bituminous Concrete Pavement

This Subsection is deleted and replaced with the following:

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

The drainage paths shall be installed at the roadway low points of the sag vertical curves and at approximately 500-foot intervals in both the outside and inside shoulders. Drainage paths shall not be installed within 500 feet of the crest of a vertical curve. The drainage paths shall extend from the edge of the milled travel lane (Lane 3) and daylight six feet into the outside shoulder and from the edge of the milled passing lane (Lane 1) and the edge of pavement (4'-0") without guardrail.

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

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

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

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

Vehicles will be permitted to traverse unfilled drainage paths.

202.07 Method of Measurement

The second paragraph is deleted and replaced with the following:

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

202.08 Basis of Payment

The following is added after the last paragraph:

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

Payment will be made under:

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

SPECIAL PROVISION

SECTION 202

REMOVING STRUCTURES AND OBSTRUCTIONS

(Rumble Strips)

202.01 Description

The following sentences are added after the first paragraph:

This work shall consist of cutting a pattern of rumble strips from MM 42.0 to MM 49.3 on the southbound roadway at the locations noted on the Plans. Rumble strips shall not be placed across ramp openings or on bridges.

The following Subsections are added:

202.065 Rumble Strips

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

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

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

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

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

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

202.07 Method of Measurement

The following paragraph is added:

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

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

202.08 Basis of Payment

The following sentences are added:

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

Payment will be made under:

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

SPECIAL PROVISION

SECTION 203

EXCAVATION AND EMBANKMENT

203.04 General

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

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

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

203.10 Embankment Construction - General

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

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

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

203.16 Winter Construction of Embankments

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

203.18 Method of Measurement

The following paragraphs are added:

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

SPECIAL PROVISION
SECTION 401

HOT MIX ASPHALT PAVEMENT

Section 401 of the Maine Turnpike Authority 2016 Supplemental Specifications is deleted in its entirety and replaced with the following:

401.01 Description

The Contractor shall furnish and place one or more courses of Hot Mix Asphalt Pavement (HMA) on an approved base in accordance with the Contract documents and in reasonably close conformity with the lines, grades, thickness, and typical cross sections as shown on the Plans or established by the Resident. The Authority will accept this work under Quality Assurance provisions, in accordance with these Specifications and the requirements of Section 106, Quality, the provisions of AASHTO M 323, except where otherwise noted in Section 401 of these Specifications, and the MaineDOT Policies and Procedures for HMA Sampling and Testing. A Quality Control Plan (QCP) is required.

401.02 Materials

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: Each individual aggregate stockpile shall conform to the following requirements. 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: Each individual aggregate stockpile shall conform to the following requirements. 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, excluding natural sand, 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. The fine

aggregate, excluding RAP, shall have a Micro-Deval of 15.0 percent or less when tested in accordance with ASTM D-7428.

Each individual stockpile for both coarse and fine aggregates shall be completely separated from any other stockpile and be constructed such that the material is visually homogenous and maintains consistent consensus quality test results. A documented testing program and records of all test results shall be maintained for all materials and subject to inspection by the Authority.

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

Cone Penetration	90-150
Flow @ 60°C [140°F]	3.0mm [1/8 in] max
Bond, non-immersed	Three 12.7mm [½ in] specimens pass 3 cycles @ 200% extension @ -29°C [-20°F]
Resilience, %	60 min
Asphalt Compatibility, ASTM D5329	pass*

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

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.

401.021 Recycled Asphalt Materials

Recycled Asphalt Pavement (RAP) may be introduced into the mixture at percentages approved by the Authority. If approved by the Authority, the Contractor shall provide documentation stating the source, average test results for average residual asphalt content, and stockpile gradations showing RAP materials have been sized to meet the maximum aggregate size requirements of each mix designation. The Authority will obtain samples for verification and approval prior to its use.

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.

RAP shall meet the following requirements:

Classification	Asphalt Content Standard Deviation	% Passing #200 Sieve Standard Deviation	% Passing #200 Sieve / Asphalt Content Ratio	Residual Aggregate Micro Deval Loss Value
Class II	≤ 0.5	≤ 1.0	≤ 2.8	≤ 18.0
Class I	≤ 0.3	≤ 0.5	≤ 1.8	≤ 18.0

401.03 Composition of Mixtures

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 during production 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 Class I reclaimed asphalt pavement (RAP) or a maximum of 10 percent Class II 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.
- Contractor generated test reports for individual aggregate consensus properties. Test results must have been generated within six months of JMF submission
- 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. (Not required if the supplier has mix history with the selected design aggregate blend)
- 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} .
- PGAB certification from the supplier
- 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. This should be a MaineDOT generated report showing approval.

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 sufficient quantity to test the properties of the asphalt and to produce samples for testing of the mixture. Before the start of paving, the Contractor and the Authority'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.

The contractor may request to carry over an approved mix design from the previous calendar year. The Authority will evaluate the request based on the performance and production history from the previous season. If the request is approved by the Authority no aggregate material, RAP, or 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)				Voids Filled with Binder (VFB) (Minimum %)	Fines/Eff. Binder Ratio
				Nominal Maximum Aggregate Size (mm)					
	$N_{initial}$	N_{design}	N_{max}	19	12.5	9.5	4.75		
3 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 the Contractor shall provide the Authority with Hamburg Wheel Tracker 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 (°C)	Maximum Rut Depth (mm)	Minimum Number of Passes	Minimum Allowable SIP*
64-28	45	12.5	20,000	15,000
64E-28	48	8.0	20,000	15,000
70E-28	50	6.3	20,000	15,000

401.031 Warm Mix Technology

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

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

401.04 Temperature Requirements

After the JMF is established, the temperatures of the mixture shall conform to the following tolerances:

- In the truck at the mixing plant – allowable range 275° to 325°F.
- At the paver – allowable range 275° to 325°F.
- Or the recommendations, approved by the Authority, from the Asphalt Binder supplier.
- Any HMA placed over bridge deck membrane shall have a minimum temperature of 300° F measured directly behind the screed in the uncompacted mat.

The JMF and the mix subsequently produced shall meet the requirements of Table 1.

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.

401.05 Performance Graded Asphalt Binder

Unless otherwise noted in Special Provision Section 403, Hot Bituminous Pavement, PGAB shall be 64-28. The PGAB shall meet the applicable requirements of AASHTO M320 - Standard Specification for PGAB. The Contractor shall request approval from the Authority for a change in PGAB supplier or source by submitting documentation stating the new supplier or source a minimum of 24-hours prior to the change. If the PGAB supplier or source is changed, the Contractor shall make efforts to minimize the occurrence of PGAB co-mingling.

401.06 Weather and Seasonal Limitations

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, shoulders, approach roads and auxiliary lanes. The atmospheric temperature for all courses on bridge decks shall be 50°F or higher.

Hot Mix Asphalt Pavement used for curb, driveways, sidewalks, islands, or other incidentals is not subject to seasonal limitations, except that conditions shall be satisfactory for proper handling and

finishing of the mixture. All mixtures used for curb, driveways, sidewalks, islands, or other incidentals shall conform to Subsection 401.04, Temperature Requirements. Unless otherwise specified, the Contractor shall not place Hot Mix Asphalt Pavement on a wet or frozen surface and the air temperature shall be 40°F or higher.

On all sections of overlay with wearing courses one inch thick or less, the wearing course for the travel way and adjacent shoulders shall be placed provided the air temperature is determined as above 50°F or higher.

401.07 Hot Mix Asphalt Plant

401.071 General Requirements

HMA plants shall meet the requirements of the 2020 Maine Department of Transportation Standard Specifications section 401.07 and maintain current approval from the Maine Department of Transportation.

401.08 Hauling Equipment Trucks for Hauling Hot Mix Asphalt

Trucks for hauling Hot Mix Asphalt Pavement shall have tight, clean, and smooth metal dump bodies, which have been thinly coated with a small amount of approved release agent to prevent the mixture from adhering to the bodies. Solvents based agents developed to strip asphalts from aggregates will not be allowed as release agents.

All truck dump bodies shall have a cover of canvas or other water repellent material capable of heat retention, which completely covers the mixture. The cover shall be securely fastened on the truck, unless unloading.

All truck bodies shall have an opening on both sides, which will accommodate a thermometer stem. The opening shall be located near the midpoint of the body, at least 12 inches above the bed.

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 \$1,000. 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.

401.09 Pavers

Pavers shall be self-contained, self-propelled units with an activated screed (heated if necessary) capable of placing courses of Hot Mix Asphalt Pavement in full lane widths specified in the Contract on the mainline, shoulder or similar construction.

On projects with no price adjustment for smoothness, pavers shall be of sufficient class and size to place Hot Mix Asphalt Pavement over the full width of the mainline travel way with a 10 feet minimum main screed with activated extensions.

The Contractor shall place Hot Mix Asphalt Pavement on the mainline with a paver using an automatic grade and slope controlled screed, unless otherwise authorized by the Authority. The controls shall automatically adjust the screed and increase or decrease the layer thickness to compensate for irregularities in the preceding course. The controls shall maintain the proper transverse slope and be readily adjustable so that transitions and super elevated curves can be properly paved. The controls shall operate from a fixed or moving reference such as a grade wire or ski type device (floating beam) with a minimum length of 30 ft, a non-contact grade control with a minimum span of 24 ft, except that a 40 ft reference shall be used on mainline projects.

The Contractor shall operate the paver in such a manner as to produce a visually uniform surface texture and a thickness within the requirements of Subsection 401.101, Surface Tolerances. The paver shall have a receiving hopper with sufficient capacity for a uniform spreading operation and a distribution system to place the mixture uniformly, without segregation in front of the screed. The screed assembly shall produce a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture. Pavers with extendible screeds shall have auger extensions and tunnel extenders as per the manufacturer's recommendations, a copy of which shall be available if requested. 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 45 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.

The Contractor shall have the paver at the Project site sufficiently before the start of paving operations to be inspected and approved by the Authority. The Contractor shall repair or replace any paver found worn or defective, either before or during placement, to the satisfaction of the Authority. Pavers that produce an unevenly textured or non-uniform mat will be repaired or replaced before continuing to place HMA on MTA projects. On a daily basis, the Contractor shall perform density testing across the uncompacted mat being placed, at 12 inch intervals. If the values vary by more than 2.0 percent from the mean, the Contractor shall make adjustments until the inconsistencies are remedied.

Failure to replace or repair defective placement equipment may result in a letter of suspension of work and notification of a quality control violation resulting in possible monetary penalties as governed by Section 106, Quality.

401.091 Material Transfer Vehicle (MTV)

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 MTV shall operate as an independent unit not attached to the paver. It shall be a

commercially manufactured unit specifically designed to transfer the hot mix from haul trucks to the paver without depositing mix on the roadway.

Also required is a separate hopper with a capacity of 18 mg (20 Ton) that shall be inserted into the regular paving hopper.

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

The MTV and the hopper insert will not be measured separately for payment, but shall be incidental to the various Hot Mix Asphalt items.

401.10 Rollers

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

The Contractor shall repair or replace any roller found to be worn or defective, either before or during placement, to the satisfaction of the Authority. Rollers that produce grooved, unevenly textured or non-uniform mat will be repaired or replaced before continuing to place HMA on MTA projects.

The type of rollers to be used and their relative position in the compaction sequence shall generally be the Contractor's option, provided Specification densities are attained and with the following requirements:

- a. At least one roller shall be a minimum 16 ton pneumatic-tired. Pneumatic-tired rollers shall be equipped with skirting to minimize the pickup of HMA materials from the paved surface. The contractor shall provide a weigh slip for the rubber tire being used.
- b. Compaction with a vibratory or steel wheel roller shall precede pneumatic-tired rolling, unless otherwise authorized by the Authority.
- c. Vibratory rollers shall not be operated in the vibratory mode when checking or cracking of the mat occurs, or on bridge decks.
- d. Any method, which results in cracking or checking of the mat, will be discontinued and corrective action taken.
- e. The use of an oscillating steel roller shall be required to compact all mixtures placed on bridge decks.

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

401.101 Surface Tolerances

The Authority will check surface tolerance utilizing the following methods:

- a. A 16 ft straightedge or string line placed directly on the surface, parallel to the centerline of pavement.
- b. A 12 ft straightedge or string line placed directly on the surface, transverse to the centerline of pavement.

The allowable tolerance shall be $\frac{1}{4}$ inch in the segments as described above. This includes fresh HMA joints as well as new longitudinal HMA adjoining pavements. The tolerance shall also apply to the cross slope in a single paver width with the exception that in no case shall the pavement surface in the single paver width be inverted resulting in a depression as measured transverse to the direction of travel. The Contractor shall correct variations exceeding $\frac{1}{4}$ inch by removing defective work and replacing it with new material as directed by the Authority. The Contractor shall furnish a 12 foot straightedge for the Authority's use.

401.11 Preparation of Existing Surface

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

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.

401.12 Hot Mix Asphalt Documentation

The Contractor and the Authority shall agree on the amount of Hot Mix Asphalt Pavement that has been placed each day. HMA Pavement yield shall be calculated and monitored by both the resident and the paving foreman. Yield calculations shall be communicated in real time between both parties throughout the paving operations. All delivery slips shall conform to the requirements of 401.073.

401.13 Preparation of Aggregates

The Contractor shall dry and heat the aggregates for the HMA to the required temperature. The Contractor shall properly adjust flames to avoid physical damage to the aggregate and to avoid depositing soot on the aggregate.

401.14 Mixing

The Contractor shall combine the dried aggregate in the mixer in the amount of each fraction of aggregate required to meet the JMF. The Contractor shall measure the amount of PGAB and introduce it into the mixer in the amount specified by the JMF.

The Contractor shall produce the HMA at the temperature established by the JMF.

The Contractor shall dry the aggregate sufficiently so that the HMA will not flush, foam excessively, or displace excessively under the action of the rollers. The Contractor shall introduce the aggregate into the mixer at a temperature of not more than 25°F above the temperature at which the viscosity of the PGAB being used is 0.150 Pa·s (Pascal-second).

The Contractor shall store and introduce into the mixer the Performance Graded Asphalt Binder at a uniformly maintained temperature at which the viscosity of the PGAB is between 0.150 Pa·s and 0.300 Pa·s. The aggregate shall be coated completely and uniformly with a thorough distribution of the PGAB. The Contractor shall determine the wet mixing time for each plant and for each type of aggregate used.

401.15 Spreading and Finishing

On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impracticable, the Contractor shall spread, rake, and lute the HMA with hand tools to provide the required compacted thickness. Solvent based agents developed to strip asphalts from aggregates will not be allowed as release agents.

On roads opened to two-way traffic, the Contractor shall place each course over the full width of the traveled way section being paved that day, unless otherwise noted by the Authority in Section 403, Hot Mix Asphalt Pavement.

In addition, hot mix asphalt pavement placed on bridges shall also conform to Section 508.04 and the following requirements.

- a. The bottom course shall be placed with an approved rubber mounted paver of such type and operated in such a manner that the membrane waterproofing will not be damaged in any way.

- b. The top course shall not be placed until the bottom course has cooled sufficiently to provide stability.
- c. The Contractor will not be required to cut sample cores from the compacted pavement on the bridge deck, unless otherwise directed by Special Provisions.
- d. After the top course has been placed, the shoulder areas shall be sealed 3 ft wide with two applications of an emulsified bituminous sealer meeting the requirements of Section 612.03 – Sealing and Section 702.12 – Emulsified Bituminous Sealing Compound. The first application shall be pre-mixed with fine, sharp sand, similar to mortar sand, as needed to fill all voids in the mix in the area being sealed. The second application may be applied without sand. The sealer shall be carried to the curb at the gutter line in sufficient quantity to leave a bead or fillet of material at the face of curb. The area to be sealed shall be clean, dry and the surface shall be at ambient temperature.
- e. The furnishing and applying of the required quantity of sealer for the bridge shoulder areas shall be incidental to placing the hot mix asphalt pavement. The sealer shall be applied after 30 days of cure time on the new HMA placed.
- f. The atmospheric temperature for all courses placed on bridge decks shall be 50°F or higher.
- g. A pneumatic tire roller shall be used on the bridge deck membrane just prior to paving.

401.16 Compaction

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

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

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

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

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

401.162 Voids

The HMA will be accepted for percent air voids on a subplot basis. Percent air voids will be determined in accordance with AASHTO T 312. Point of sampling will be from the truck at the plant. A subplot will consist of 500 tons. The number of samples per day will be computed as one for every 500 tons plus one for any additional fractional subplot that is equal to or greater than 100 tons or as directed by the Resident. There shall be a minimum of one subplot per day per JMF. One sample shall be taken and tested for each 500 tons of production or portions thereof. Full payment will be made for each 500 tons of production that meets the specified void range of 2.5 to 5.5 percent.

Payment reduction will be applied to each subplot (500 tons) that falls outside of this range. See Subsection 401.21.

Section 401.163 PGAB Content and Aggregate Gradation

The HMA will be accepted for PGAB content and Aggregate Gradation on a subplot basis. PGAB content will be determined in accordance with AASHTO T 308. Aggregate Gradation will be determined in accordance with AASHTO T 30. Point of sampling will be from the truck at the plant. A subplot will consist of 500 tons. The number of samples per day will be computed as one for every 500 tons plus one for any additional fractional subplot that is equal to or greater than 100 tons or as directed by the Resident. There shall be a minimum of one subplot per day per JMF.

Payment reduction will be applied to each subplot (500 tons) that falls outside the allowable limits. See Subsection 401.21.

401.164 Density

Pavement density will be determined by comparing the density of six-inch diameter full depth cores (for the course being laid) taken from the compacted pavement to the Theoretical Maximum Density of that core. Core locations shall be by random samples in conformance with ASTM-D979 & D3665. The Contractor shall supply a masonry saw with a 12 inch diamond wet cutting saw blade capable of cutting the six inch diameter cores. The resident shall determine if trimming is required and the core will be labeled as such.

For determination of pavement density, core samples six inches in diameter, for the full depth of the course being laid, shall be taken by the Contractor from the mixture incorporated in the work after finishing operations have been completed and the pavement has cooled to 70°F. Ice or dry ice shall be used to reduce temperature as necessary. All core samples shall be inspected, measured, and sealed in an approved transport container by the Resident. The contractor shall deliver the sealed container to the laboratory for testing by the Authority's representative.

Vertical surface of the core area shall be coated with rubberized joint sealer prior to refilling with bituminous mixture. Cores will not be cut for shim pavement.

The joint sealer, bituminous mixture and the labor for obtaining these samples in the field and restoring the surface shall be furnished without charge by the Contractor. The joint sealant shall conform to the material requirements for Asphalt Low Modulus Joint Sealer and shall be incidental to the pavement items. Care must be exercised to avoid excess joint material on top of the finish mat and at the bottom of the joint.

No additional course shall be constructed on a course until the density of the sample has been established and approved.

The densities of the completed pavement shall be 92.5 to 97.0 percent of the theoretical maximum density obtained.

The pavement will be accepted for density on a subplot basis. A subplot will consist of 500 tons. The number of cores per day will be computed as one for every 500 tons plus one for any portion that does not equal 500 tons or as directed by the Resident. There shall be a minimum of one subplot per day per JMF.

Each subplot will be evaluated separately and full or partial payment will be made based on the results of tests performed on the cores.

Payment reduction will be applied to each core that has a density outside of the allowable range (92.5 to 97.0). See Subsection 401.21.

401.165 Longitudinal Joint Density

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. Only joints constructed between travel lanes will be tested, joints between a travel lane and a shoulder are excluded from sampling.

Pavement joint density will be determined by comparing the density of six-inch diameter full depth cores (for the course being laid) taken from the compacted pavement to the Theoretical Maximum Density of that core. The edge of the core nearest the joint shall be a 1" offset from the visible longitudinal joint as determined by the resident. Longitudinal core locations shall be determined by random sampling in conformance with ASTM-D979 & D3665. The Contractor shall supply a masonry saw with a 12 inch diamond wet cutting saw blade capable of trimming the underside of the six inch diameter cores if necessary. The resident shall determine if trimming is required and the core will be labeled as such.

For determination of pavement joint density, core samples six inches in diameter, for the full depth of the course being laid, shall be taken by the Contractor from the mixture incorporated in the work

after finishing operations have been completed and the pavement has cooled to 70°F. Ice or dry ice shall be used to reduce temperature as necessary.

Vertical surface of the core area shall be coated with rubberized joint sealer prior to refilling with bituminous mixture. Cores will not be cut for shim pavement.

The joint sealer, bituminous mixture and the labor for obtaining these samples in the field and restoring the surface shall be furnished without charge by the Contractor. The joint sealant shall conform to the material requirements for Asphalt Low Modulus Joint Sealer and shall be incidental to the pavement items. Care must be exercised to avoid excess joint material on top of the finished mat and at the bottom of the joint.

No additional course shall be constructed on a course until the density of the sample has been established and approved.

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 pavement will be accepted for joint density on a subplot basis. A subplot will consist of 500 tons. The number of cores per day will be computed as one for every 500 tons plus one for any portion that does not equal 500 tons or as directed by the Resident. There shall be a minimum of one subplot per day per JMF.

Each subplot will be evaluated separately and full or partial payment will be made based on the results of tests performed on the cores.

Payment reduction will be applied to each subplot 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	75

401.17 Joints

The Contractor shall construct wearing course transverse and longitudinal joints in such a manner that minimum tolerances shown in Subsection 401.101, Surface Tolerances, are met when measured with a straightedge.

The paver shall always maintain a uniform head of HMA during the joint construction.

The HMA shall be free of segregation and meet temperature requirements outlined in Subsection 401.04. Transverse joints of the wearing course shall be straight and neatly trimmed. The Contractor may form a vertical face exposing the full depth of the course by inserting a header, by breaking the bond with the underlying course, or by cutting back with hand tools.

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.

The installation of the longitudinal joint shall be straight and true to the direction of travel and be located within 1-1/2" of the layout line. Deviations and or crossing back and forth over the layout line shall not be permitted and any such deviations or meandering shall be corrected by saw cutting the affected area prior to placing the adjacent lane with no additional cost to the Authority. Methods or activities that prove detrimental to the construction of straight, sound longitudinal joints will be discontinued.

Extra care shall be taken to insure satisfactory vertical joints in the pavements. On the notched-wedge joints a double layer of tack shall be applied. The Contractor shall apply a coating of joint sealant immediately before paving all cold joints (temperatures less than 120°F) to the vertical face of the wearing surface if they are not a notched-wedge joint unless otherwise directed by the Resident. A heavy application of tack coat shall be applied to the vertical face of all cold joints on lower lifts. The Contractor shall use an approved spray apparatus designed for covering a narrow surface. The Authority may approve application by a brush for small surfaces, or in the event of a malfunction of the spray apparatus, but for a period of not more than one (1) working day. Joint sealer shall conform to the material requirements for Asphalt Low Modulus Joint Sealer.

Where pavement under this Contract joins an existing pavement or when the Authority directs, the Contractor shall cut the existing pavement along a smooth line, producing a neat, even, vertical joint. The Authority will not permit broken or raveled edges. The cost of all work necessary for the preparation of joints is incidental to related Contract pay items.

401.18 Quality Control

The Contractor shall submit for approval and operate in accordance with the approved Quality Control Plan (QCP) to assure a product meeting the contract requirements. The QCP shall meet the requirements of Section 106.4 – Quality Control and this Section. The Contractor shall not begin paving operations until the Authority approves the QCP in writing. Prior to placing any mix, the Authority and the Contractor shall hold a Pre-paving conference to discuss the paving schedule, source of mix, type and amount of equipment to be used, sequence of paving pattern, rate of mix supply, random sampling, project lots and sublots and traffic control.

A copy of the QC random numbers to be used on the project shall be provided to the Resident. The Authority's random numbers for Acceptance testing shall be generated and on file with the Resident and the Project Manager. All personnel of the Authority and the Contractor who have significant information relevant to the paving items shall attend, including the responsible onsite paving supervisor for the Contractor. The Resident will prepare minutes of the conference and distribute them to all

attendees. Any requests to revise the minutes must be made to the Resident within 7 days of receipt. These minutes will constitute the final record of the pre-paving conference.

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

- a. JMF(s)
- b. Hot mix asphalt plant details
- c. Stockpile Management (to include provisions for a minimum 2 day stockpile). Detailing how the stockpiles will be built, labeled, and kept separated from each other. Also provide a detailed description of the aggregate consensus quality testing program including all pertinent qualities, frequency of testing, in house procedures for determining material acceptability and addressing deficient test results.
- d. Make and type of paver(s)
- e. Make and type of rollers including weight, weight per inch of steel wheels, and average contact pressure for pneumatic tired rollers
- f. Name of QCP Administrator, and certification number
- g. Name of Process Control Technician(s) and certification number(s)
- h. Name of Quality Control Technician(s) and certification number(s)
- i. Mixing and transportation including process for ensuring that truck bodies are clean and free of debris or contamination that could adversely affect the finished pavement
- j. Testing plan
- k. Laydown operations including longitudinal joint construction, procedures for avoiding paving in inclement weather, type of release agent to be used on trucks tools and rollers, compaction of shoulders, tacking of all joints, methods to ensure that segregation is minimized, procedures to determine the maximum rolling and paving speeds based on best engineering practices, and provide these results, as well as past experience in achieving the best possible smoothness of the pavement. Solvent based agents developed to strip asphalts from aggregates will not be allowed as release agents
- l. Examples of Quality Control forms including a daily plant report, daily paving report, control charts, and delivery slip template for any plant to be utilized.
- m. Silo management and details (can show storage for use on project of up to 36 hours)

- n. Provisions for varying mix temperature due to extraordinary conditions or production limitations. If a warm-mix technology is utilized, a proposed target production range (not to exceed 50 F) will be provided for each mix design.
- o. Name and responsibilities of the Responsible onsite Paving Supervisor
- p. Method for calibration/verification of Density Gauge
- q. A note that all testing will be done in accordance with AASHTO and the Maine DOT Policies and Procedures for HMA Sampling and Testing
- r. A detailed description of RAP processing, stockpiling and introduction into the plant as well as a note detailing conditions under which the percent of RAP will vary from that specified on the JMF
- s. A detailed procedure outlining when production will be halted due to QC or Acceptance testing results
- t. A plan to address the change in PGAB source or supplier and the potential co-mingling of differing PGAB's.
- u. Provisions for how the QCP will be communicated to the Contractor's field personnel
- 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 QCP shall include the following technicians together with following minimum requirements:

- a. QCP Administrator – A qualified individual shall administer the QCP. The QCP Administrator must be a full-time employee of or a consultant engaged by the Contractor or paving subcontractor. The QCP Administrator shall have full Authority to institute any and all actions necessary for the successful operation of the QCP. The QCP Administrator (or its designee in the QCP Administrator's absence) shall be available to communicate with the Authority at all times. The QCP Administrator shall be certified as a Quality Assurance Technologist certified by the New England Transportation Technician Certification Program (NETTCP).
- b. Process Control Technician(s) (PCT) shall utilize test results and other quality control practices to assure the quality of aggregates and other mix components and control proportioning to meet the JMF(s). The PCT shall inspect all equipment used in mixing to assure it is operating properly and that mixing conforms to the mix design(s) and other Contract requirements, and that delivery slips and plant recordation accurately reflects the mix being produced with all required information. The QCP shall detail how these duties and responsibilities are to be accomplished and documented, and whether more than one PCT is required. The Plan shall include the criteria to be utilized by the PCT to correct or

reject unsatisfactory materials. The PCT shall be certified as a Plant Technician by the NETTCP.

- c. Quality Control Technician(s) (QCT) shall perform and utilize quality control tests at the job site to assure that delivered materials meet the requirements of the JMF(s). The QCT shall inspect all equipment utilized in transporting, laydown, and compacting to assure it is operating properly and that all laydown and compaction conform to the Contract requirements. The QCP shall detail how these duties and responsibilities are to be accomplished and documented, and whether more than one QCT is required. The QCT shall be on site during paving operations performing quality control activities. QCT's shall not act as equipment operators, trainers or laborers. The QCP shall include the criteria utilized by the QCT to correct or reject unsatisfactory materials. The QCT shall be certified as a Paving Inspector by the NETTCP.

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

401.191 Inspection/Testing

Aggregates used in mainline surface mixes shall be tested at the following frequencies during mix production:

Test	Frequency	Test Method
Coarse Aggregates		
Sieve Analysis	1 per week	AASHTO T27/T11
Specific Gravity	1 per 10000 Mix Ton minimum of 1 test	ASHTO T85
Micro Deval	1 per 10000 Mix Ton minimum of 1 test	AASHTO T327
Fine Aggregates		
Sieve Analysis	1 per week	AASHTO T27/T11
Specific Gravity	1 per 10000 Mix Ton minimum of 1 test	ASHTO T84
Micro Deval	1 per 10000 Mix Ton minimum of 1 test	ASTM D-7428

All quality control testing at the plant and paving site for bituminous concrete paving shall be provided by the Contractor and will be incidental to the various items of the Contract. Quality control testing to verify the job mix formula at the plant shall be comprised of a sample taken and tested for each 500 tons of production. The plant will be shut down for two consecutive out of Specification test results for VMA, VFB, Fbe, PGAB content, gradation, and/or voids. The consecutive failures need not be on the same property. Prior to resuming paving operations, the plant quality control unit shall satisfy the Authority that the plant production is in compliance with the Specifications. The plant, at no additional cost to the

Authority, shall assign qualified quality control staff personnel and have an on-site laboratory equipped to perform all tests.

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

CONTROL LIMITS	
Property	UCL and LCL
% Passing #4 and larger sieves	Target \pm 4.0
% Passing #8 and #16 sieves	Target \pm 2.5
% Passing #30, #50, and #100 sieves	Target \pm 1.5
% Passing #200 sieve	Target \pm 1.0
PGAB Content	Target \pm 0.25
VMA N_{des}	LCL = LSL + 0.2
Voids N_{des}	Target \pm 1.2
G_{mm}	Target \pm 0.015

The Contractor shall submit all QC test and inspection reports and updated control charts to the Resident by email. The reports and updated control charts shall be signed by the appropriate technician and be submitted to the Resident by 1:00 P.M. / A.M. on the next working day / night.

The Contractor shall submit a list of on-site laboratory and sampling facilities, including available equipment.

Adequate and convenient sampling facilities shall be provided, allowing the Resident and the Authority's designated quality assurance personnel to obtain representative samples from the full width and depth of the discharge area of each aggregate bin. The sampling tray shall be structurally supported during the sampling operation. Access to the sampling facilities shall be provided. The use of such access shall not be more difficult than climbing a ladder leading to a secure platform with railings.

Final acceptance shall be based on quality assurance tests to assure compliance with the job mix formula as established. Samples and certified quality control reports shall be available to the Resident and the Authority's designated quality assurance personnel as often as requested. Sample locations will be random in compliance with ASTM D3665 or as directed by the Resident.

When plant inspection is maintained, the material will be considered acceptable for use when the specified tests from samples obtained at the production plant indicate conformance to the approved job mix formula.

Quality assurance testing services for bituminous concrete pavement shall be provided by the Authority. The Contractor shall provide adequate space and all lab equipment, materials and chemicals at the bituminous plant necessary to verify job mix formula (asphalt content (AASHTO T164 or T308) and gradations). Upon completion, the Contractor shall be responsible for the proper disposal of all

materials and chemicals. This work will not be measured separately for payment, but shall be incidental to the various items of the Contract.

A. Inspection. The Resident, or his authorized representative, shall have access and use of the laboratory facilities at any time and access to all parts of the plant for:

1. Inspection of the condition and operations of the plant.
2. Confirmation of the adequacy of equipment in use.
3. Verification of the character and proportions of the mixture.
4. Determination of temperatures being maintained in the preparation of the mixtures.
5. Inspection of incidental related procedures.
6. Performing quality assurance testing.

B. Plant Testing Laboratory. The Contractor shall provide a plant testing laboratory for use by the Authority's quality assurance personnel for acceptance testing functions.

The plant laboratory shall be available at the following times for use by the Authority's quality assurance personnel:

1. During periods of pavement production;
2. During periods of sampling and testing; and,
3. Whenever materials subject to the provisions of these Specifications are being supplied or tested.

The Authority's quality assurance personnel will always have priority in use of the laboratory. The laboratory shall have sufficient equipment in order for both (Authority's and Contractor's) testing representatives to operate efficiently.

The plant testing laboratory shall have a floor space area of not less than 150 square feet, with a ceiling height of not less than 7-1/2 feet. The laboratory shall be weather tight, sufficiently heated in cold weather and air-conditioned in hot weather, to maintain temperatures for testing purposes of 70°F ± 5°F.

As a minimum the plant testing laboratory shall have:

1. Adequate artificial lighting.
2. Electrical outlets sufficient in number and capacity for operating the required testing equipment and drying samples.

3. Two fire extinguishers, Underwriter's Laboratory approved.
4. Work benches for testing, minimum 2-1/2 feet by 10 feet.
5. Desk with two chairs.
6. Sanitary facilities convenient to testing laboratory.
7. Exhaust fan to outside air, minimum 12 inch blade diameter.
8. Secure High Speed Internet Access
9. File cabinet with lock for Resident.
10. Sink with running water, attached drain board and drain.
11. Metal stand for holding washing sieves.
12. Mechanical shaker and appropriate sieves (listed in 639.06) meeting the requirements of ASTM E11.
13. Superpave gyratory compactor.
14. Oven, thermostatically controlled, inside minimum one cubic foot.
15. Two volumetric specific gravity flasks, 500 CC.
16. Other necessary hand tools required for sampling and testing.
17. Library containing Contract Specification, latest ASTM Volumes 4.03 and 4.04, AASHTO Materials Parts I and II.
18. Equipment for Maximum Theoretical Density meeting the requirements of AASHTO T209 and equipment for Bulk Spec. Gravity meeting the requirements of AASHTO T166.
19. Infra-red temperature measuring device for use at both plant and Project site.
20. Necessary equipment for PGAB Content testing.
21. Diamond blade saw for trimming pavement cores.
22. Two ovens.
23. All equipment (scales, Superpave gyratory compactor, etc.) to have current calibrations and certifications.

Approval of the plant and testing laboratory by the Resident requires all the above facilities and equipment to be in good working order during pavement production, sampling and testing. Failure to provide any of the above shall be sufficient cause for disapproving the bituminous plant operations.

401.21 Method of Measurement

The Authority will measure Hot Mix Asphalt Pavement by the ton in accordance with Subsection 108.1, Measurement of Quantities for Payment.

A reduction in payment will occur when the voids, asphalt content, gradation, 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 subplot (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 subplot for core density only. The original core density and the recut core density shall be averaged together to determine payment for the subplot. 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.

Any lot resulting in zero payment shall be removed, disposed of and replaced at no additional cost to the Authority. Replacement pavement will be paid for based on the accepted and payment criteria specified herein.

<u>CORE DENSITY VS. CORE THEORETICAL MAXIMUM DENSITY COMPACTION (SURFACE) 92.5-97 PERCENT</u>	
<u>PERCENT COMPACTION</u>	<u>PERCENT PAYMENT</u>
92.5 - 97.0	100
91.5 - 92.4, 97.1 - 97.9	95
90.5 - 91.4, 98.0 - 98.5	85
90.0 - 90.4, 98.6 - 99.0	75
<90.0, > 99.0	0
Note: Percent compaction is the percentage of the field core density as compared to the Theoretical Maximum Density (TMD) of that core.	

<u>AIR VOIDS – 2.5 – 5.5 PERCENT</u>	
<u>VOIDS</u>	<u>PAYMENT PERCENT</u>
2.5 to 5.5	100
2.0 - 2.4, 5.6 - 6.1	95
1.5 – 1.9, 6.2 – 6.6	85
1.0 - 1.4, 6.7-7.1	75
<1.0, >7.1	0

Note: Voids are based on the average of the test specimens fabricated at the plant for each subplot (500 tons).

Payment for PGAB content shall be based on the JMF aim with an allowable production tolerance of 0.4% except that test results which fall outside of the following ranges shall not be permitted:

9.5 mm	5.7 – 7.5
12.5 mm	5.2 – 6.4

9.5 mm PGAB CONTENT	
% PGAB	% PAYMENT
JMF Aim ± 0.4	100
JMF Aim + 0.5 , - 0.5 , < 5.7	95
JMF Aim + 0.6 , - 0.6 , < 5.6	85
JMF Aim + 0.7 , - 0.7 , < 5.5	75
JMF Aim + 0.8 , - 0.8 , ≤ 5.4 , > 7.5	50
<u>Note:</u> PGAB content is based on samples tested at the plant for each 500 Ton subplot	
12.5 mm PGAB CONTENT	
% PGAB	% PAYMENT
JMF Aim ± 0.4	100
JMF Aim + 0.5 , - 0.5 , < 5.1	95
JMF Aim + 0.6 , - 0.6 , < 5.0	85
JMF Aim + 0.7 , - 0.7 , < 4.9	75
JMF Aim + 0.8 , - 0.8 , ≤ 4.8 , > 6.4	50
<u>Note:</u> PGAB content is based on samples tested at the plant for each 500 Ton subplot	
Gradation	
Sieve Size	% Deduction
% Passing #4 and larger sieves	N/A
% Passing #8 sieve	2
% Passing #16 sieve	N/A
% Passing #30 sieve	N/A
% Passing #50 sieve	1
% Passing #100 sieve	N/A
% Passing #200 sieve	3
<u>Note:</u> Gradation is based on samples tested at the plant for each 500 Ton subplot	

As an example of payment reduction, if a subplot of 500 tons of 12.5mm was tested and found to have 96 percent TMD compaction, 5.8 percent air voids and asphalt content of 5.19 percent, the payment reduction would be as follows:

500 tons x 1.00	= 500 tons payment	=	0 tons reduction (compaction)
500 tons x 0.95	= 475 tons payment	=	25 tons reduction (voids)
500 tons x 0.95	= 475 tons payment	=	25 tons reduction (asphalt content)

Payment = 500 tons - (0 + 25 + 25) = 450 tons.

401.22 Basis of Payment

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

The Authority will pay for the work specified in Subsection 401.11, for the HMA used, except that cleaning objectionable material from the pavement and furnishing and applying bituminous material to joints and contact surfaces is incidental.

Payment for this work under the appropriate pay items shall be full compensation for all labor, equipment, materials, and incidentals necessary to meet all related Contract requirements, including design of the JMF, implementation of the QCP, obtaining core samples, transporting cores and samples, filling core holes, applying specified material to joints, and providing testing facilities and equipment.

SPECIAL PROVISIONSECTION 401HOT MIX ASPHALT PAVEMENTS

(HMA using Hydrated Lime)

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

401.01 Description

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

401.02 Materials

Materials shall meet the requirements specified.

Hydrated Lime

AASHTO 216

401.03 Composition of Mixtures

The Contractor shall compose the Hot Mix Asphalt Pavement with aggregate, Performance Graded Asphalt Binder (PGAB), hydrated lime and mineral filler if required. HMA shall be designed and tested according to AASHTO R35 and the volumetric criteria in Table 1. The Contractor shall size, uniformly grade, and combine the aggregate fractions in proportions that provide a mixture meeting the grading requirements of the Job Mix Formula (JMF).

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

The Contractor shall provide the following information with the proposed JMF:

Safety Data Sheets (SDS) for hydrated lime

Supplier and source for Hydrated Lime

401.13 Preparation of Aggregates

The Contractor shall add water to the aggregates as required to maintain a minimum total aggregate moisture content of 3 percent. The Contractor shall mix the lime uniformly with the aggregate before introducing the aggregate into the dryer or dryer drum. Hydrated lime introduction systems must be controlled by a proportioning device to the amount required on the JMF plus or minus 0.1% of the target.

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

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

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

401.14 Mixing

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

401.18 Quality Control

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

SPECIAL PROVISIONSECTION 403HOT MIX ASPHALT PAVEMENT

Section 403 of the Maine Department of Transportation Standard Specifications 2020 Edition is deleted in its entirety and replaced with the following:

403.01 Description

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

403.02 General

The Contractor shall compose the Hot Mix Asphalt Pavement with aggregate, Performance Graded Asphalt Binder (PGAB), and mineral filler if required. The Performance Graded Asphalt Binder (PGAB) shall be polymer modified as detailed in this special provision and shall conform to the requirements of AASHTO M 332. The PG70E-28 Binder shall be modified using a Styrene-Butadiene-Styrene (SBS) polymer {BWT} in a homogeneous blend. The stability of the modified binder shall be verified in accordance with ATSM D7173 using the Dynamic Shear Rheometer (DSR). The DSR $G^*/\sin(\delta)$ results from the top and bottom sections of the ATSM D7173 test shall not differ by more than 10%. The results of ASTM D7173 shall be included on the Certified Test Report.

403.03 Construction

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

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

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

The forty-five degree pavement safety edge needed between adjacent lanes and or shoulders shall be incidental to the 202 pay items.

403.04 Method of Measurement

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

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

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

403.05 Basis of Payment

Hot Mix Asphalt, 12.5 mm (Polymer Modified) pavement, placed as a wearing surface will be paid under Item 403.2081 Hot Mix Asphalt, 12.5 mm (Polymer Modified).

The following pay items are added:

<u>Pay Item</u>	<u>Pay Unit</u>
403.207 Hot Mix Asphalt. 19.0 mm	TON
403.208 Hot Mix Asphalt, 12.5mm, Surface	TON
403.2081 Hot Mix Asphalt, 12.5 mm (Polymer/Latex Modified)	TON
Hot Mix Asphalt, 12.5 mm (Polymer/Latex Modified) - Mill & Fill,	
403.2083 Ramps	TON
403.20831 Hot Mix Asphalt, 12.5 mm (Polymer/Latex Modified) - Mill & Fill	TON
Hot Mix Asphalt, 12.5 mm Nominal Maximum Size (sidewalks, drives,	
403.2084 islands & incidentals)	TON
403.2085 Hot Mix Asphalt, 12.5 mm (Polymer/Latex Modified) - Bridge Deck	TON
Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (sidewalks, drives,	
403.209 islands & incidentals)	TON
403.21 Hot Mix Asphalt, 9.5 mm Nominal Maximum Size	TON
403.2101 Hot Mix Asphalt, 9.5 mm Nominal Maximum Size -Bridge Deck	TON
403.21041 Hot Mix Asphalt, 9.5 mm (Polymer/Latex Modified) - Mill & Fill	TON
403.21042 Hot Mix Asphalt, 9.5 mm (Polymer/Latex Modified) - Bridge Deck	TON
403.21043 Hot Mix Asphalt, 9.5 mm (Polymer/Latex Modified) - Overlay	TON
403.21044 Hot Mix Asphalt, 9.5 mm (Polymer/Latex Modified) -Interchange	TON
403.211 Hot Mix Asphalt, Shimming	TON
403.212 Hot Mix Asphalt, 4.75 mm Nominal Maximum Size	TON
403.213 Hot Mix Asphalt, 12.5 mm Nominal Maximum Size, Base	TON
403.207 Hot Mix Asphalt. 19.0 mm Nominal Maximum Size	TON

403.208	Hot Mix Asphalt, 12.5mm Nominal Maximum Size, Surface	TON
403.2081	Hot Mix Asphalt, 12.5mm Nominal Maximum Size -Bridge Deck	TON
403.2082	Hot Mix Asphalt, 12.5 mm (Polymer/Latex Modified) - Overlay	TON
403.2083	Hot Mix Asphalt, 12.5 mm (Polymer/Latex Modified) - Mill & Fill, Ramps	TON
403.20831	Hot Mix Asphalt, 12.5 mm (Polymer/Latex Modified) - Mill & Fill	TON
403.2084	Hot Mix Asphalt, 12.5 mm Nominal Maximum Size (sidewalks, drives, islands & incidentals)	TON
403.2085	Hot Mix Asphalt, 12.5 mm (Polymer/Latex Modified) - Bridge Deck	TON
403.209	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size (sidewalks, drives, islands & incidentals)	TON
403.21	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size	TON
403.2101	Hot Mix Asphalt, 9.5 mm Nominal Maximum Size -Bridge Deck	TON
403.21041	Hot Mix Asphalt, 9.5 mm (Polymer/Latex Modified) - Mill & Fill	TON
403.21042	Hot Mix Asphalt, 9.5 mm (Polymer/Latex Modified) - Bridge Deck	TON
403.21043	Hot Mix Asphalt, 9.5 mm (Polymer/Latex Modified) - Overlay	TON
403.21044	Hot Mix Asphalt, 9.5 mm (Polymer/Latex Modified) -Interchange	TON
403.211	Hot Mix Asphalt, Shimming	TON
403.212	Hot Mix Asphalt, 4.75 mm	TON
403.213	Hot Mix Asphalt, 12.5 mm, Base	TON

SPECIAL PROVISION

SECTION 403

HOT MIX ASPHALT PAVEMENT

Course	HMA Grading	Item Number	Total Thickness	No. of Layers	Complimentary Notes
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Mainline and Ramp Overlay

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

Mainline Mill and Fill

Base	12.5 mm	403.213	1.5"	1	A,C,E,F,I,K

Mainline Mill and Fill (Trench Repair & Crack Repair)

Base	12.5 mm	403.213	1.5"	1	A,C,I,K

Mainline Median Shoulder 1 1/2" Mill and Fill

Base	12.5 mm	403.213	1.5"	1	A,C,I,K

Mainline Shoulder and Ramp Shoulder 1 1/2" Mill and Fill

Base	12.5 mm	403.213	1.5"	1	A,C,I,K

Mainline Shoulder and Ramp 1 1/2" Mill and Fill (Outside of Overlay)

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

Spot Shim/Delaminations/Incidentals (As Directed)

Shim	9.5 mm	403.211	variable	1	C,I

COMPLEMENTARY NOTES

- A. The required PGAB for this mixture shall be **70E-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 0.125%.

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 UltraTack (NTSS-1HM) by Blacklidge or NTT Tack Coat by All States Asphalt as indicated in this specification and as per manufacturers' recommendation. The application rate shall be 0.06 gal/yd²

409.05 Equipment

Add "or as determined by the Resident", after the words "gal/yd²]" in the fourth line of the second paragraph of this Subsection.

409.06 Preparation of Surface

The following paragraph is added:

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

409.08 Method of Measurement

The following paragraphs are added:

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

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

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

409.09 Basis of Payment

The following pay items are added:

<u>Pay Item</u>		<u>Pay Unit</u>
409.152	Bituminous Tack Coat Trackless– Applied	Gallon

SPECIAL PROVISIONSECTION 424ASPHALT RUBBER MASTIC CRACK SEALER WITH AGGREGATE424.01 Description

This work shall consist of the furnishing and placement of mastic material in the longitudinal, transverse and random cracks of the milled bituminous concrete pavement in both locations in accordance with these Special Provisions.

Placement shall consist of:

1. Crack cleaning and drying
2. Material preparation and application
3. Material finishing and shaping.

424.02 Materials

GAP 201 Mastic shall be supplied by Maxwell Products or an approved equal designed for improving the strength and performance of the base asphalt cement with sealant and engineered aggregates.

424.03 Weather

Mastic shall not be applied on a wet surface or when the atmospheric temperature is below 45°F as determined by an approved thermometer (placed in the shade at the crack sealing location), or when weather conditions are otherwise unfavorable for proper construction procedures.

424.04 Equipment

Equipment used in the performance of the work shall be subject to the Resident's or authorized representative's approval and shall be maintained in a satisfactory working condition at all times.

(a) Air Compressor: Air compressors shall be portable and capable of furnishing not less than 4 yd³ of air per minute at not less than 90 psi pressure at the nozzle. The compressor shall be equipped with traps that will maintain the compressed air free of oil and water.

(b) Sweeper: Manually operated, gas powered air-broom or self-propelled sweeper designed especially for use in cleaning pavements shall be used to remove debris, dirt, and dust from the cracks.

(c) Hot Air Lance: Should operate with propane and compressed air in combination at 2000°F - 3000°F, exit air heated at 310 m/s [1000 ft/s]. The lance should draw propane from no smaller than a 100 pound tank using separate hoses for propane and air draw. The hoses shall be

wrapped together with reflectorized wrap to keep them together and to protect workers in low light situations.

(d) Hand Tools: Shall consist of square shaped box screed, brooms, shovels, metal bars with chisel shaped ends, and any other tools which may be satisfactorily used to accomplish this work. The joints shall be raked open.

(e) Melting Kettle: The unit used to melt the joint sealing compound shall be a double boiler. indirect fired type. The space between inner and outer shells shall be filled with a suitable heat transfer oil or substitute having a flash point of not less than 320°C [608°F]. The kettle shall be equipped with a satisfactory means of agitating and mixing the joint sealer with 90% fibers at all times. This may be accomplished by continuous stirring with mechanically operated paddles and/or a continuous circulating gear pump attached to the heating unit. The kettle must be equipped with thermostatic control calibrated between 200°F and 550°F.

424.05 Preparations of Cracks

All cracks greater than $\frac{3}{4}$ of an inch shall be blown free and raked off of loose material, dirt, vegetation, and other debris by high pressure air. Material removed from the crack shall be removed from the pavement surface by means of a power sweeper or appropriate hand tools as required. Cracks showing evidence of vegetation after being blown out shall be additionally cleaned by appropriate hand tools and additionally blown out. All cracks must be blown and heated via the hot air lance 10 minutes prior to the crack being sealed. Distance between the hot air lance and the crack sealing unit should be no more than 50 ft to eliminate reinvasion of water, debris, and other incompressibles. All debris, vegetation, and water shall be removed to enhance adhesion of the crack sealing material. This work shall not be done in inclement weather.

424.06 Preparation and Placement of Sealer

The mastic material shall be heated and applied at the temperature specified by the manufacturer and approved by the Resident or authorized representative. Any material that has been heated above the manufacturer's specification longer than 30 minutes shall not be used. Material that is reheated or held at temperature for an extended period of time may be used as allowed by the manufacturer's specification and approval of the Resident or authorized representative. The Contractor shall provide the Resident or authorized representative with a suitable device for verifying the mastic temperature in the kettle and at the application site.

Any over application or spills are to be removed to the satisfaction of the Resident or authorized representative. Any sealed areas with damaged or contaminated sealer or visible voids are to be removed, prepared and resealed.

Mastic shall be delivered to the crack while the cracks are still hot from the hot air lance preparation through a pressure hose line and applicator shoe. The applicator shall be followed by a V-shaped squeegee to minimize any overband. A heated steel hotplate may be used on the surface of the repair area after the mastic has been applied. The cracks are to be filled flush with the milled surface. Any loose material on the surface or in the crack, which may contaminate the crack sealer or impede bonding of the sealant to the pavement, is to be removed by hand tools prior to crack filling. No crack filling material shall be applied in a crack that is wet or where frost, snow, or ice

is present.

424.07 Quality of Work

A Maxwell Products representative shall be present to verify the proper applications, installation, material, and pavement preparation on the first day of production. Excess of spilled mastic shall be removed from the pavement by approved methods and discarded. Any quality of work determined to be below normal acceptable standards will not be accepted and will be corrected and/or replaced as directed by the Resident or authorized representative at no additional expense to the Authority.

424.08 Method of Measurement

Asphalt Rubber Mastic Crack Sealer with Aggregate will be measured by the pound of mastic used. The manufacturer's weights of the mastic will be accepted as the basis for measurement.

424.09 Basis of Payment.

Asphalt Rubber Mastic Crack Sealer with Aggregate will be paid for at the contract unit price per pound complete in place. This price shall be full compensation for furnishing and placing crack sealer, including cleaning and drying cracks; and furnishing all labor, materials, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
424.324 Asphalt Rubber Mastic Crack Sealer With Aggregate	Pound

SPECIAL PROVISION

SECTION 424

ASPHALT RUBBER MASTIC CRACK SEALER - APPLIED

424.01 Description

This work shall consist of the furnishing and placement of a mastic material in the longitudinal, transverse and random cracks of the milled bituminous concrete pavement in accordance with these Special Provisions.

Placement shall consist of:

1. Crack cleaning and drying
2. Material preparation and application
3. Material finishing and shaping.

424.02 Materials

Elastoflex CA Type 4 shall be supplied by Maxwell Products or an approved equal designed especially for improving the strength and performance of the base asphalt cement with sealant.

424.03 Weather

Mastic shall not be applied on a wet surface or when the atmospheric temperature is below 45°F as determined by an approved thermometer (placed in the shade at the crack sealing location), or when weather conditions are otherwise unfavorable for proper construction procedures.

424.04 Equipment

Equipment used in the performance of the work shall be subject to the Resident's or authorized representative's approval and shall be maintained in a satisfactory working condition at all times.

(a) Air Compressor: Air compressors shall be portable and capable of furnishing not less than 4 yd³ of air per minute at not less than 90 psi pressure at the nozzle. The compressor shall be equipped with traps that will maintain the compressed air free of oil and water.

(b) Sweeper: Manually operated, gas powered air-broom or self-propelled sweeper designed especially for use in cleaning pavements shall be used to remove debris, dirt, and dust from the cracks.

(c) Hot Air Lance: Should operate with propane and compressed air in combination at 2000°F - 3000°F, exit air heated at 310 m/s [1000 ft/s]. The lance should draw propane from no smaller than a 100 pound tank using separate hoses for propane and air draw. The hoses shall be

wrapped together with reflectorized wrap to keep them together and to protect workers in low light situations.

(d) Hand Tools: Shall consist of a square shaped box screed, brooms, shovels, metal bars with chisel shaped ends, and any other tools which may be satisfactorily used to accomplish this work. The joints shall be raked open.

(e) Melting Kettle: The unit used to melt the joint sealing compound shall be a double boiler. indirect fired type. The space between inner and outer shells shall be filled with a suitable heat transfer oil or substitute having a flash point of not less than 320°C [608°F]. The kettle shall be equipped with a satisfactory means of agitating and mixing the mastic. This may be accomplished by continuous stirring with mechanically operated paddles and/or a continuous circulating gear pump attached to the heating unit. The kettle must be equipped with thermostatic control calibrated between 200°F and 550°F.

424.05 Preparations of Cracks

All cracks 1/2 of an inch and larger, or as directed by the Resident, shall be blown free and raked off of loose material, dirt, vegetation, and other debris by high pressure air. Material removed from the crack shall be removed from the pavement surface by means of a power sweeper or appropriate hand tools as required. Cracks showing evidence of vegetation after being blown out shall be additionally cleaned by appropriate hand tools and additionally blown out. All cracks must be blown and heated via the hot air lance 10 minutes prior to the crack being sealed. Distance between the hot air lance and the crack sealing unit should be no more than 50 ft to eliminate reinvasion of water, debris, and other incompressibles. All debris, vegetation, and water shall be removed to enhance adhesion of the crack sealing material. This work shall not be done in inclement weather.

424.06 Preparation and Placement of mastic

The mastic material shall be heated and applied at the temperature specified by the manufacturer and approved by the Resident or authorized representative. Any material that has been heated above the manufacturer's specification longer than thirty minutes shall not be used. Material that is reheated or held at temperature for an extended period of time may be used as allowed by the manufacturer's specification and approval of the Resident or authorized representative. The Contractor shall provide the Resident or authorized representative with a suitable device for verifying the mastic temperature in the kettle and at the application site.

Any over application or spills are to be removed to the satisfaction of the Resident or authorized representative. Any sealed areas with damaged or contaminated sealer or visible voids are to be removed, prepared and resealed.

Mastic shall be delivered to the crack while the cracks are still hot from the hot air lance preparation through a pressure hose line and applicator shoe. The applicator shall be controlled by the operator so that crack is not over-filled with mastic material and followed by a V-shaped squeegee to eliminate any overband. A heated steel hotplate may be used on the surface of the repair area after the mastic has been applied. Any loose material on the surface or in the crack, which may contaminate the crack sealer or impede bonding of the sealant to the pavement, is to

be removed by hand tools prior to crack filling. No crack filling material shall be applied in a crack that is wet or where frost, snow, or ice is present.

Crack sealing operations shall not occur directly following milling operations. Crack sealing shall be conducted in such a manner to minimize the time the traffic will be allowed to travel directly across the crack sealer.

424.07 Quality of Work

A Maxwell Products representative shall be present to verify the proper application, installation, material and pavement preparation on the first days' production. Excess of spilled mastic shall be removed from the pavement by approved methods and discarded. Any quality of work determined to be below normal acceptable standards will not be accepted and will be corrected and/or replaced as directed by the Resident or authorized representative at no additional expense to the Authority.

424.08 Method of Measurement

Asphalt Rubber Mastic Crack Sealer - Applied will be measured by the pound of mastic used. The manufacturer's weights of the mastic will be accepted as the basis for measurement.

424.09 Basis of Payment.

Asphalt Rubber Mastic Crack Sealer – Applied will be paid for at the contract unit price per pound complete in place. This price shall be full compensation for furnishing and placing crack sealer, including cleaning and drying cracks; and furnishing all labor, materials, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
424.3231 Asphalt Rubber Mastic Crack Sealer - Applied	Pound

SPECIAL PROVISION

SECTION 427

PAVEMENT CRACK REPAIR

427.01 Description

This work shall consist of grinding the existing bituminous pavement to the depth and width as shown on the plans and coating the vertical surfaces with hot rubberized asphalt and the horizontal surface with a bituminous tack coat and placing hot bituminous pavement over the entire milled area. The exact limits of the repair will be determined by the Resident in the field after the pavement has been milled.

427.02 Materials

Grinding shall be done in accordance with Section 202 of the Standard Specifications.

Bituminous tack coat shall conform to Section 409.

Hot rubberized asphalt shall conform to ASTM D6690 Type IV.

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

427.03 General

The bituminous concrete pavement to be milled shall be accurately marked before beginning the milling operation. The marking shall be in accordance with the locations as shown on the Plans or as approved by the Resident. The milling machine shall be capable of removing the pavement to the required width and depth in one pass.

Residue or debris from the milling operation shall be removed immediately and legally disposed of by the Contractor off of Turnpike property.

Each crack repair shall be completed within a single shift.

427.04 Method of Measurement

Pavement Crack Repair shall be measured by the linear foot removed, in filled and accepted. Measurement shall be along a straight line from end of crack to end of crack, actually repaired and accepted.

Hot mix asphalt, milling, bituminous tack coat and hot rubberized asphalt will not be paid for separately, but shall be incidental to the 427.09 pay item.

427.05 Basis of Payment

Pavement Crack Repair shall be paid for at the Contract unit price per linear foot. This price shall be full compensation for all materials, equipment, labor, and incidental items necessary to satisfactorily complete the work.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
427.09	Pavement Crack Repair	Linear Foot

SPECIAL PROVISION

SECTION 470

BERM DROP OFF CORRECTION

(Berm Dropoff Correction - Grindings)
(Berm Correction)

470.01 Description

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

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

470.02 Bituminous Materials

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

Sieve Designation	Percentage by Weight Passing Square Mesh Sieve
¾"	100
½"	95-100
No. 4	50-80
No. 50	18-28
No. 200	3-10

470.03 Method of Construction

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

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

470.04 Method of Measurement

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

Material included in the delivery and not used or rejected shall not be measured for payment.

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

470.05 Basis of Payment

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

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

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
470.08	Berm Dropoff Correction – Grindings	LF
470.081	Berm Correction	LF

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 contaminants.

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 606

GUARDRAIL

- (Guardrail – Remove, Modify and Reset, Single Rail)
- (Guardrail – Remove, Modify and Reset, Double Rail)
- (Guardrail - Remove and Stack)
- (Guardrail Adjust – Single Rail)
- (Guardrail Adjust – Double Rail)

606.01 Description

The following paragraphs are added:

This work shall also consist of adjusting the height of the existing single and double rail guardrail in locations where the existing height of rail is not within 30 to 32 inches. The guardrail shall be adjusted to a height of 31 inches. Existing single and double rail shall also be adjusted for lean.

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

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

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

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

606.02 Materials

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

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

The following Subsection is added:

606.021 General

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

606.036 Adjusting Existing Guardrail

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

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

Any given length of guardrail to be adjusted shall be done in such a way that top of rail elevations do not vary drastically between each section of guardrail. Rail height tolerance shall be 31 inches, plus 1 inch, minus 1 inch. The 31 inches shall be measured from the edge of pavement to the top of rail beam when within 2 feet of the edge of pavement.

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

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

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

606.08 Method of Measurement

The following paragraphs are added:

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

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

Guardrail Remove and Stack will be measured on a linear foot basis of guardrail satisfactorily removed and stockpiled whether single rail or double rail. Single and double twisted end sections will be measured for payment on a linear foot basis as 25 feet of guardrail removed.

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

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

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

606.09 Basis of Payment

The following paragraphs are added:

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

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

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
606.3605	Guardrail – Remove, Modify, and Reset Single Rail	Linear Foot
606.3606	Guardrail – Remove, Modify, and Reset Double Rail	Linear Foot
606.369	Guardrail - Remove and Stack	Linear Foot
606.3621	Guardrail Adjust, Single Rail	Linear Foot
606.3622	Guardrail Adjust, Double Rail	Linear Foot

SPECIAL PROVISION

SECTION 606

GUARDRAIL

(Single Offset Block – W-Beam)
Single Offset Block - Thrie-Beam)
(Asymmetrical Thrie Beam Transition)

606.01 Description

The following paragraph is added:

This work shall consist of furnishing and installing single offset blocks at all existing guardrail beam locations that are not part of a new or remove, modify and reset location and as shown on the Contract Documents. New MASH compliant offset block shall be installed on existing galvanized steel posts and connected to Guardrail Type 3d and Thrie Beam Rail.

This work shall consist of removing and stacking existing Thrie Beam Transition panels, furnishing and installing the Asymmetrical Thrie beam to W-beam Transition panels, single rail - modified section and double rail modified section, connecting it to the existing or proposed W-Beam guardrail and Thrie Beam modified at locations on the Maine Turnpike, as shown on the Plans or as approved by the Resident. All guardrail components shall have passed the MASH Test Level 3. Composite offset blocks shall be used.

606.02 Materials

The following sentences are added:

Offset blocks shall have passed MASH Test Level 3 and shall not be wood.

The following Subsection is added:

606.021 General

The existing median guardrail posts have four off-center bolt holes used to attach the existing steel offset blocks. The new offset blocks have two bolt holes centered on the W-beam section. The existing posts must be retrofitted to receive the new non-wood offset block assembly. Additional bolt holes required in the existing posts shall be drilled or punched but the size shall not exceed the dimension given by the manufacturer. Metal around the holes shall be cleaned and painted with a cold-applied zinc-rich paint. The holes shall not be burned with a torch.

The completed guardrail system shall be in conformance with the MASH Test Level 3 requirements.

606.08 Method of Measurement

The following paragraphs are added:

Single Offset Block - W-Beam and Single Offset Block - Thrie Beam shall be measured per each unit installed and accepted.

Asymmetrical Thrie Beam Transition shall be measured by each unit installed and accepted.

606.09 Basis of Payment

The following paragraphs are added:

New Single Offset Block - W-Beam and Single Offset Block - Thrie Beam furnished and installed at specified locations will be paid for at the Contract unit price each complete in place and accepted. Payment shall be full compensation for furnishing all labor, equipment and materials necessary to complete the work including, but not necessarily limited to, removal of existing rail beam, removal and disposal of existing offset block, drilling new holes in existing post, application of galvanized paint, furnishing and installing new non-wood offset block, removal and disposal of back-up plates, and resetting the rail beam.

Asymmetrical Thrie Beam Transition will be paid for at the Contract unit price each complete in place, and shall be full compensation for furnishing all labor, equipment and materials necessary to complete the work consisting of, but not necessarily limited to, furnishing and installing the Asymmetrical Thrie Beam to Existing W-beam Transition, Single Rail - Modified Section and Existing Double Rail – Modified Section, and all detailed accessories; furnishing and installing all required posts, composite offset blocks, cables, nuts, bolts, washers, and all other items necessary to complete the installation and connection to the existing or proposed W-Beam and the Thrie Beam – Modified.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
606.471	Single Offset Block – W-Beam	Each
606.472	Single Offset Block – Thrie Beam	Each
606.701	Asymmetrical Thrie Beam Transition	Each

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

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

627.08 Removing Lines and Markings

The following sentence is added:

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

627.09 Method of Measurement

The following paragraph is added:

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

627.10 Basis of Payment

The following paragraphs are added:

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

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

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
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

(Temporary Raised Pavement Markers)

627.01 Description

The following sentence is added:

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

627.02 Materials

The second paragraph is deleted and replaced with the following:

The temporary raised pavement markers shall be white or yellow one way markers (Type Tom W-1, Y-1, Grade WZ) as distributed by Davidson Plastics Co. (DAPCO), Kent, WA, or an approved equal. Colors shall conform to 2009 MUTCD requirements.

627.04 General

The following sentences are added:

Temporary raised pavement markers shall only be used be used to delineate edge lines (SWEL and SYEL) only after placement of the surface course (HMA 12.5 mm).

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

The spacing and number of temporary pavement markers installed as edge lines shall be the same as shown for the BWLL on the Plans for Temporary Pavement Marking.

627.09 Method of Measurement

The following sentence is added:

Temporary Raised Pavement Markers will be measured by each unit, complete in place, maintained and accepted.

627.10 Basis of Payment

The following paragraphs are added:

The accepted quantity of Temporary Raised Pavement Markers white and/or yellow will be paid for at the Contract price each. This price shall include all labor and materials to furnish, install, maintain, and remove the markers.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
627.812	Temporary Raised Pavement Markers	Each

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.

Reference is made to the following 3M Information Folders

- 5.7 January 2018 3M Stamark Tapes Pavement Surface Preparation and Application Techniques
- 5.18 February 2022 3M Stamark Pavement Marking Tape and Liquid Pavement Markings
 - "Guidelines for Installing Pavement Markings on Grooved or Scarified Pavement Surfaces"
- 5.21 August 2013 3M Stamark Low VOC Surface Preparation Adhesive SPA60

3M Traffic Safety Systems Division
Mr. Michael D. Allen
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Email: mdallen@mmm.com

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 deceleration and acceleration lanes at locations as noted in the Plans. On deceleration lanes, the tape shall be installed from the beginning of taper to the deceleration lane and shall extend to the theoretical gore markings. On acceleration lanes, the DWLL shall extend from the theoretical gore markings to the end 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.

Prior to the placement of Pavement Marking Tape a pre tape meeting will be held and shall include representatives from the manufacturer and contractor/subcontractor completing the work.

A representative from the manufacturer shall be onsite the first day of production to review the application procedure for compliance with the specifications and manufactures recommendations.

627.05 Preparation of Surface

The following paragraph is added:

The contractor shall submit photos of the gang stacked diamond cutting heads and the RTC-2 tamper cart at least 2 weeks prior to the work. The Contractor shall mill a groove in the pavement for each tape length to be placed (“in-and-out” pattern). Continuous grooving for installation of the tape shall not be allowed. The groove length shall be the required tape length plus 12 inches on both ends. Tape length spacing shall be as shown on the plans. The groove width for inlaid tape pavement marking shall be the pavement marking width plus 1 inch, with a tolerance of $\pm \frac{1}{4}$ inch. The groove shall have a uniform depth of 150 Mils (± 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 heads with free floating independent heads 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.

Newly paved asphalt surfaces shall be not be grooved within 10 days of placement of the final course of pavement. Grooving and tape installation shall not occur unless the ambient air temperature is 5° above the dew point. If water is present during groove cutting for any reason the grooves shall be allowed to dry for a minimum of 24 hours before installing pavement markings.

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. Grooves shall be cleaned utilizing an air compressor with a minimum air flow of 185 cfm and an air pressure of at least 120 psi. Depth plates shall be provided by the contractor to assure that desired groove depth is achieved.

The tape shall be installed in the center of the groove and tamped by means of an RTC-2 wheeled tamping cart using a minimum of 6 passes (3 back and forth). The tamper shall weigh a minimum of 200 pounds and the wheel shall be a modifier RT1 rubber roller cut down to a 6-inch width with beveled edges. If the tape is wider than the wheel than additional passes are required to cover the full width of the tape. Vehicular tire passes will not be considered an acceptable substitute for the tamping wheel. A "Peel Test" will be completed on the first day of application to verify proper adhesion.

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

627.06 Application

Application shall not occur if there has been any precipitation within the previous 24 hours, the ambient air temperature is less than 40 degrees F, or there is any form of visible moisture on the pavement surface from dew or fog etc.

Immediately prior to applying the primer, the grooves shall be cleaned using compressed air through a nozzle having an inside diameter no less than ½". The air compressor shall be equipped with a moisture and oil trap and capable of delivering at least 185 CFM of air flow and 120psi of air pressure. The nozzle shall not be more than two feet off the ground while cleaning the groove. Any dust or debris in the grooves shall be blown away from traffic.

After cleaning, apply 3M Surface Preparation Adhesive SPA60. The adhesive shall be applied using a motor-powered airless sprayer in a manner that produces 100% coverage on the grooved surface at a thickness of 7 mils without pooling or puddling. The applied adhesive shall be allowed to completely dry such that it is no longer tacky to the touch.

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. The price shall include a one year observation period, following the completion of the observation period the contractor shall be responsible for replacing all missing tape.

Payment will be made under:

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

SPECIAL PROVISION

SECTION 627

PAVEMENT MARKINGS

(Recessed Pavement Marking Tape)

627.01 Description

The following sentence is added:

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

627.02 Materials

The following sentence is added:

Pavement Marking Tape for ramp lane reduction arrows shall be precut by the manufacturer, and shall be 3M Stamark Extended Season Tape Series 380IES– High Performance pavement marking tape, color- white, twelve (12) inch wide, as manufactured by 3M of St. Paul, Minnesota.

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627.04 General

The following sentences are added:

The recessed tape shall be installed as lane-reduction transition markings. The location of the markings is noted on the plans.

Prior to the placement of Pavement Marking Tape a pre tape meeting will be held and shall include representatives from the manufacturer and contractor/subcontractor completing the work.

A representative from the manufacturer shall be onsite the first day of production to review the application procedure for compliance with the specifications and manufactures recommendations.

627.05 Preparation of Surface

The following paragraph is added:

The Contractor shall mill a rectangular groove in the pavement for each lane reduction arrow to be placed. The groove length or area shall be 18.75 feet. Tape lane reduction arrow spacing shall be as shown on the plans. The groove width for inlaid tape pavement marking shall be 6.25 feet. The groove shall have a uniform depth of 150 Mils (± 20 Mils).

The bottom of the groove shall have a smooth, flat finished surface. The use of gang stacked diamond cutting heads with free floating, independent heads 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.

Newly paved asphalt surfaces shall be not be grooved within 10 days of placement of the final course of pavement. Grooving and tape installation shall not occur unless the ambient air temperature is 5° above the dew point. If water is present during groove cutting for any reason the grooves shall be allowed to dry for a minimum of 24 hours before installing pavement markings.

Grooves shall be clean, dry and free of laitance, oil, dirt, grease, paint or other foreign contaminants. Grooves shall be cleaned utilizing an air compressor with a minimum air flow of 185 cfm and an air pressure of at least 120 psi. 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 paragraphs are added:

The accepted quantity of Pavement Markings – Recessed Tape – Words and Arrows will be measured for payment by the square foot in place and accepted.

627.10 Basis of Payment

The following paragraphs are added:

The accepted quantity of Pavement Markings – Recessed Tape - Words and Arrows will be paid for at the Contract unit price per square foot which price shall include all material, pavement grooving, equipment, labor and incidentals necessary to complete the work. The price shall include a one year observation period, following the completion of the observation period the contractor shall be responsible for replacing all missing tape.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
627.944	Pavement Markings – Recessed Tape – Words, Arrows and Stop Bars	Square Foot

SPECIAL PROVISION

SECTION 652

MAINTENANCE OF TRAFFIC

(October 8, 2020)

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, signals, lighting devices, markings, barricades, channelizing, and hand signaling devices, portable light towers, truck mounted impact attenuators, portable rumble strips, portable speed trailers, sequential warning lights, 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 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 Boards.

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 a 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 handheld 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 one 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 1/2 or 5/8 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, green, white or any variation of these color 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 24,000 lbs.

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 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).

A Truck Mounted Attenuator **shall** be utilized in all lane closures, and shoulder closures, where workers are not protected by other positive means (i.e., closures that do not include temporary concrete barrier). If work is being completed behind guardrail a TMA shall be required for all work that is being completed within the deflection zone of the guardrail (minimum of four feet behind the guardrail post).

The placement and positioning of the vehicle shall be in accordance with the Manual on Uniform Traffic Control Devices and the manufacturer's recommendation. TMAs used on the Turnpike mainline shall have a minimum weight of 24,000 lbs and shall provide a 200 foot shadow distance from vehicles or the work zone. **For lane and shoulder closures in excess of 3,000 feet containing multiple work zones a TMA shall be used at each work zone.**

If a Truck Mounted Attenuator is not used as described above, then it will be considered a Traffic Control Plan violation and result in a reduction of payment as outlined in Section 652.

652.2.6 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 nighttime 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 nighttime 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

The Contractor will furnish, operate, and maintain Automated Trailer Mounted Speed Limit Sign(s) for project use. The automated speed sign shall be required 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 weatherproof, 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 amperes, 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.

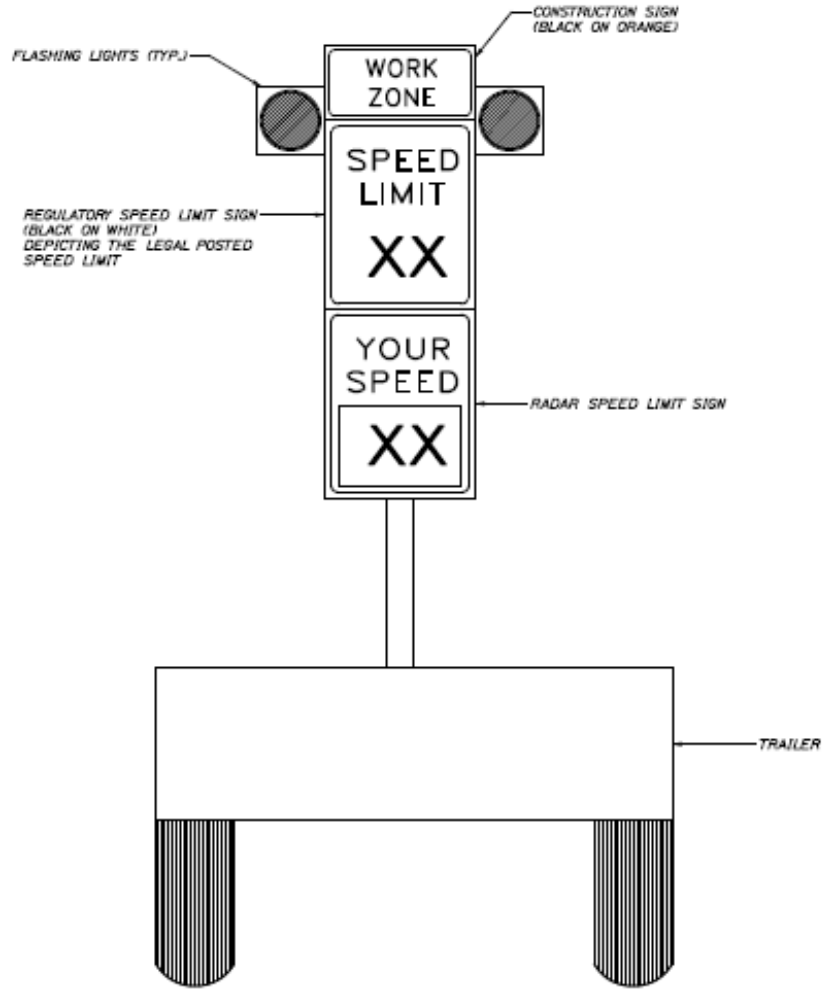
Upon delivery of the Automated Trailer Mounted Speed Limit Sign and before acceptance by the Authority, the Contractor shall have a representative of the manufacturer review the condition and notify the Resident in writing, of all deficiencies noted.

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.

Date: 2/13/2018

Element: Trailer Mounted Speed Limit.dwg

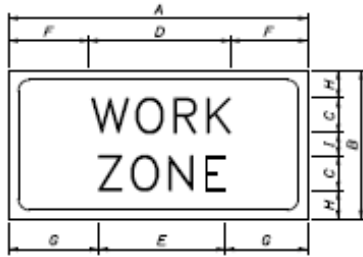


HNTB
FEBRUARY 2018

AUTOMATED TRAILER MOUNTED
SPEED LIMIT SIGN

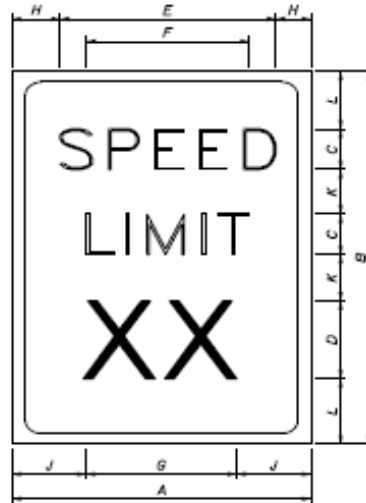
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Date: 2/13/2018



SIGN #1

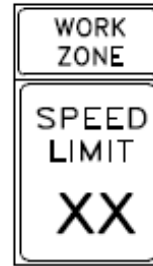
1.25" BORDER, 0.75" INDENT,
BLACK ON ORANGE, BB GRADE PLYWOOD SIGN



SIGN #2

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

DIMENSIONS (INCHES) / LETTER FONTS												
	A	B	C	D	E	F	G	H	I	J	K	L
*1	48	20	50	18 1/8	16 1/8	14 1/8	15 1/8	4	2	N/A	N/A	N/A
*2	48	60	8E	16E	30 1/4	29 1/4	29 1/2	4 1/8	9 1/8	9 1/4	8	6



Filename: Trailer Mounted Speed Limit.dgn



HNTB
FEBRUARY 2018

TRAILER MOUNTED CONSTRUCTION ZONE
SPEED LIMIT SIGN

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 nighttime 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 ensuring 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.

Ramp closures shall be done between 8:00 p.m. and 5:00 AM, unless otherwise shown on the Maintenance of Traffic Phasing Plans or as directed by the MTA. Milling and paving that does not require a closure may be done anytime in accordance with the remainder of the Special Provisions. 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 deceleration 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 on the mainline. Nighttime lane closures shall be a maximum of five (5) miles.

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.

Temporary 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 across mainline or ramp 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, 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.** The contractor is responsible for maintaining the temporary sign structures so that the sign face remains in a vertical position. Temporary signs supports shall not be used for signs that will remain in place at a single location for more than one month.

No signs on easels shall be placed on 4 foot shoulders with guardrail, signs required at these location shall be placed on taller easels on the median side of the guardrail.

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 placed along the Turnpike mainline shall have a minimum of one drum weight. Drums that will remain in the same location for more than three days shall have double drum weights. (i.e. a minimum of 40 lbs of drum tire rings). 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 snowbanks.

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 workstation. 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. 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 workstations, 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, In-slope 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. Ensure that all traffic control implements (signs, arrow boards, barrels, etc.) are on-site so the traffic program can be implemented effectively.
- c. Ensure 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

Signs, signs supplied by the Authority, and panel markers will be measured by the square foot for all signs authorized and installed. Flashing arrow boards, portable-changeable message signs, and flashing and steady burn lights, will be measured by each unit authorized and installed on the project. Barricades will be measured by each unit authorized. No additional payment will be made for devices that require replacement due to poor condition or inadequate retroreflectivity.

Drums and cones will not be measured separately for payment, but shall be incidental to the maintenance of traffic Section 652.

Flaggers or traffic officers used during the Contract, for the convenience of the Contractor, will not be measured separately for payment, but shall be incidental to the various pay items. **This includes use of Flaggers for the delivery of materials and equipment to the project or other Flagger use that is for the Contractor's convenience, as determined by the Resident Engineer. If flaggers are required to maintain traffic and there is not a pay item in the contractor for flaggers, then flaggers shall be incidental to the other Section 652 contract items and no separate payment shall be made.**

The accepted quantity of traffic officer and flagger time will be the number of hours the designated station is occupied. The number of hours authorized for payment, **if any**, will be measured to the nearest $\frac{1}{4}$ hour.

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.

Maintenance of traffic control devices required for the project will be measured by the calendar day or as one lump sum, as indicated in the plans and specifications, for all authorized and installed traffic control devices. Traffic control devices will only be measured for payment the first time used. Subsequent uses shall be incidental to Item 652.36 or 652.361.

The vehicle mounted arrow board, mounted on trucks used for installation and removal of lane closures, will not be measured separately for payment, but shall be incidental to Item 652.36 or 652.361.

The traffic coordinator(s) will not be measured separately for payment but shall be incidental to Item 652.36 or 652.361.

Portable light towers, lighting on equipment and lighting plan will not be measured separately for payment but shall be incidental to the related Contract items.

Truck mounted attenuator shall be measured for payment by the each, to be used for the duration of the project, and by the week for each week that a supplemental unit is used on a travel lane or shoulder on the project, as approved by the Resident.

Sequential Flashing Warning Lights shall be measured for payment by the maximum number of sequential flashing warning lights satisfactorily installed and properly functioning at any one time during the life of the project. Payment shall include all materials and labor to install, maintain and remove all Sequential Flashing Warning Lights.

Automated Trailer Mounted Speed Limit Sign shall be shall incidental to the Maintenance of Traffic Control device item. 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.

The accepted quantity of temporary portable rumble strips shall be measured by the unit complete in place, per lane closure application. A unit shall consist of 1 group of 3 full-lane width of rumble strips. As shown in the plans, a maximum of 3 units may be used at each lane closure. A unit shall be measured for each group of rumble strips, each time they are used for a lane closure.

652.8 Basis of Payment

The accepted quantity of signs, signs supplied by the Authority, and panel markers will be paid for at the contract unit price per square foot. Such payment will be full compensation for

furnishing (or retrieving from the Authority) and installing all signs, sign supports, and all incidentals necessary to complete the installation of the signs.

The accepted quantity of flashing arrow boards, barricades, battery operated flashing and steady burn lights will be paid for at the contract unit price each for the actual number of devices authorized, furnished, and installed. Such payment shall be full compensation for all incidentals necessary to install and maintain the respective devices.

The Sequential Flashing Warning Lights will be paid for at the Contract unit price per each. This price shall include all costs associated with furnishing, installing, operating, maintaining, relocating, and removing the Sequential Flashing Warning Lights.

The Truck Mounted Attenuator will be paid for at the Contract unit price per each for each TMA used throughout the project. Additionally, supplemental Truck Mounted Attenuator(s) will be paid for at the Contract unit price per week for each week a supplemental TMA is 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.

<u>Amount of Penalty Damages per Violation</u>		
<u>1st</u>	<u>2nd</u>	<u>3rd & Subsequent</u>
\$500	\$1,000	\$2,500

652.8.1 Maintenance of Traffic Control Devices

Maintenance of Traffic Control Devices will be paid at the contract unit price per calendar day or lump sum price, as indicated in the plans and specifications. Such payment will be full

compensation for all days that the Contractor maintains traffic as specified herein, and for moving devices as many times as necessary; for replacing devices damaged, lost, or stolen; and for cleaning, maintaining, and removing all devices used for traffic control, including replacing temporary pavement marking lines.

The contract price for Maintenance of Traffic Control Devices shall be full compensation for all days for such maintenance, encompassing all areas of the contract, regardless of whether or not the work areas or projects are geographically separated.

652.8.2 Other Items

The accepted quantities of flagger hours will be paid for at the contract unit price per hour for each flagging station occupied excluding lunch breaks, and for each approved breaker flagger. Overtime hours, as reported on the certified payrolls, will be paid an additional 30% of the bid price for 652.38. The computation and additional payment for overtime hours will occur during the project close-out process and will be paid as additional hours of 652.38 to the nearest ¼ hour. The contract unit price shall be full compensation for hiring, transporting, equipping, supervising, and the payment of flaggers and all overhead and incidentals necessary to complete the work.

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

The accepted quantities of traffic officer hours will be paid for at the contract unit price per ¼ hour for each station occupied, with no additional payment for overtime. This price shall be full compensation for supplying uniformed officers with police cruisers, and all incidentals necessary to complete the work, including transportation, equipment, and supervision.

Payment for temporary pavement marking lines and pavement marking removal will be made under the respective pay item in Section 627 - Pavement Markings.

Payment for temporary traffic signals will be made under Section 643 - Traffic Signals.

The accepted quantity of Portable Changeable Message Signs will be paid for at the Contract unit price each. This price shall be full compensation for furnishing, relocating, maintaining and removing the PCMS. The price also includes all costs associated with setting-up and paying for a data cellular account, technical support, training and any costs associated with the GPS location device.

Progress payment of each PCMS shall be pro-rated over the duration of the Contract. Contract duration shall be from the specified Contract start date to substantial completion or Contract completion, whichever is sooner.

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, payment will be reduced based on the pro-rated time that the PCMS is out of service.

Drums and cones shall not be measured separately for payment, but will be incidental to the maintenance of traffic Section 652.

The Truck Mounted Attenuator(s) will be paid for at the Contract unit price per each or per week as noted in the plans. 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 accepted quantity of temporary portable rumble strips will be paid for at the contract unit price per unit which shall include the transport device. Payment is full compensation for providing, relocating, maintaining or replacing, and removing temporary portable rumble strips. If the pay item is not included in the contract quantities, then the Authority does not anticipate the use of this item on the contract. If contractor wishes to utilize temporary portable rumble strips and the item is not in the contract, then the contractor may propose use of them to the Authority for consideration.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
652.30 Flashing Arrow Board	Each
652.31 Type I Barricade	Each
652.311 Type II Barricade	Each
652.312 Type III Barricades	Each
652.32 Battery Operated Light	Each
652.35 Construction Signs	Square Foot
652.351 Construction Signs-Supplied by Authority	Square Foot
652.36 Maintenance of Traffic Control Devices	Calendar Day
652.361 Maintenance of Traffic Control Devices	Lump Sum
652.38 Flaggers	Hour
652.381 Traffic Officers	Hour
652.41 Portable-Changeable Message Sign	Each
652.451 Truck Mounted Attenuator	Each
652.452 Truck Mounted Attenuator - Weekly	Weekly
652.46 Temporary Portable Rumble Strips	Unit
652.47 Sequential Flashing Warning Lights	Each

SPECIAL PROVISIONSECTION 652MAINTENANCE 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, to be more restrictive or less restrictive, based on the traffic volume when authorized by the Authority.

Temporary lane closures that would restrict travel to one lane in each direction shall be conducted between the times presented in the table below. Equipment moves involving stoppages and shoulder closures shall be performed between the times listed in the table below as well. Liquidated damages shall be assessed at \$1,000/five(5) minutes for every five minutes that a temporary lane closure is in place outside the times presented in the table below.

The following work zone speeds shall be applied when the noted work is being performed.

50 MPH Speed Limit – for all Paving and Milling Operations

60 MPH Speed Limit – for all other Operations

Temporary Concrete Barrier will only be allowed when there is an active work area behind it. Set up of the temporary concrete barrier shall occur just prior to the start of work and shall be removed as soon as the work is completed or as otherwise approved by the Resident.

The Contractor shall submit temporary traffic control plans to the Resident for review and approval, for each day lane or ramp closure(s) are planned. **The Contractor shall request approval from the Resident/Authority two weeks prior for all ramp closures.**

652.2.4 Other Devices

36 inch tall, 12 pound cones may be used in place of drums, on the tangent, for milling and paving operations. All tapers and shifts shall require drums.

652.62 Patrol Vehicle

The Contractor shall provide one traffic control vehicle(s) dedicated for traffic control only, with traffic coordinator(s) to be used for erecting, maintaining and dismantling lane closures as directed by the Resident. The traffic control vehicle(s) shall provide continuous patrolling (24-hours/seven days a week) when lane closures are installed (during non-work and work hours) to replace any and all damaged traffic control devices (arrow boards, variable message signs, barrels, signs, etc.). The traffic coordinator(s) shall report any and all disabled motorists, accidents or other unusual occurrences to the Resident, his

representative or the Turnpike Authority's communication dispatcher throughout the duration of any and all lane closures.

The traffic control vehicle shall meet the following requirements:

- a. In good mechanical condition, clean and presentable at all times.
- b. Be equipped with a cellular phone capable of communicating with the Resident, his representative or the Turnpike Authority's communication dispatcher.
- c. Be equipped with a mounted revolving amber light or amber strobe light capable of 360- degree visibility to meet all lighting requirements.
- d. Be equipped with a light bar (arrow board).

The patrol vehicle(s), driver(s), assistant(s) and cellular phone(s) will not be measured separately for payment, but shall be incidental to Item 652.361.

Mainline MM 36 to 44				
	Southbound		Northbound	
	Single Lane Closures	Double Lane Closures	Single Lane Closures	Double Lane Closures
March 3, 2024 to April 14, 2024				
<i>Sunday PM through Monday AM</i>	6 PM to 3 PM	9 PM to 7 AM	Anytime Sunday - 7 AM Monday	9 PM to 6 AM
<i>Monday PM through Friday AM</i>	7 PM to 2 PM	9 PM to 7 AM	6 PM to 8 AM	9 PM to 6 AM
<i>Friday PM through Saturday AM</i>	7 PM to Anytime Saturday	10 PM to 8 AM	7 PM to Anytime Saturday	10 PM to 8 AM
<i>Saturday PM through Sunday AM*</i>	Anytime Saturday to 12 PM Sunday	9 PM to 8 AM	Anytime Saturday - Anytime Sunday	9 PM to 9 AM
April 15, 2024 to May 19, 2024				
<i>Sunday PM through Monday AM</i>	6 PM to 3 PM	9 PM to 7 AM	Anytime Sunday - 7 AM Monday	10 PM to 6 AM
<i>Monday PM through Friday AM</i>	7 PM to 12 PM	10 PM to 7 AM	6 PM to 8 AM	9 PM to 6 AM
<i>Friday PM through Saturday AM</i>	7 PM to Anytime Saturday	10 PM to 8 AM	7 PM to 11 AM	10 PM to 8 AM
<i>Saturday PM through Sunday AM*</i>	Anytime Saturday to 11 AM Sunday	10 PM to 8 AM	2 PM Saturday to Anytime Sunday	10 PM to 9 AM
May 20, 2024 to September 8, 2024				
<i>Sunday PM through Monday AM</i>	8 PM to 10 AM	10 PM to 7 AM	6 PM to 7 AM	10 PM to 6 AM
<i>Monday PM through Friday AM</i>	7 PM to 10 AM	10 PM to 7 AM	7 PM to 8 AM	11 PM to 6 AM
<i>Friday PM through Saturday AM</i>	7 PM to 10 AM	10 PM to 8 AM	9 PM to 9 AM	11 PM to 8 AM
<i>Saturday PM through Sunday AM*</i>	7 PM to 10 AM	10 PM to 8 AM	7 PM to 11 AM	10 PM to 9 AM
September 9, 2024 to October 20, 2024				
<i>Sunday PM through Monday AM</i>	7 PM to 3 PM	10 PM to 7 AM	7 PM to 7 AM	9 PM to 6 AM
<i>Monday PM through Friday AM</i>	7 PM to 12 PM	10 PM to 7 AM	7 PM to 8 AM	10 PM to 6 AM
<i>Friday PM through Saturday AM</i>	7 PM to 11 AM	10 PM to 8 AM	8 PM to 10 AM	11 PM to 8 AM
<i>Saturday PM through Sunday AM*</i>	6 PM to 11 AM	10 PM to 8 AM	6 PM to 11 AM	10 PM to 9 AM
October 21, 2024 to November 17, 2024				
<i>Sunday PM through Monday AM</i>	6 PM to 3 PM	9 PM to 7 AM	Anytime Sunday - 7 AM Monday	9 PM to 6 AM
<i>Monday PM through Friday AM</i>	7 PM to 11 AM	10 PM to 7 AM	6 PM to 8 AM	9 PM to 6 AM
<i>Friday PM through Saturday AM</i>	7 PM to Anytime Saturday	10 PM to 8 AM	7 PM to 11 AM	10 PM to 8 AM
<i>Saturday PM through Sunday AM*</i>	Anytime Saturday to 11 AM Sunday	9 PM to 9 AM	2 PM Saturday to Anytime Sunday	9 PM to 9 AM

*Sunday Work Requires Approval
 For workzones spanning multiple closure times, the most restrictive time shall govern

Mainline MM 44-45				
	Southbound		Northbound	
	Single Lane Closures	Double Lane Closures	Single Lane Closures	Double Lane Closures
March 3, 2024 to April 14, 2024				
<i>Sunday PM through Monday AM</i>	Anytime	7 PM to 8 AM	Anytime Sunday to 8 AM Monday	8 PM to 7 AM
<i>Monday PM through Friday AM</i>	Anytime	8 PM to 8 AM	9 AM - 8 AM	8 PM to 7 AM
<i>Friday PM through Saturday AM</i>	Anytime	7 PM to 8 AM	9 AM - 8 AM	8 PM to 7 AM
<i>Saturday PM through Sunday AM*</i>	Anytime	8 PM to 10 AM	9 AM Saturday to Anytime Sunday	9 PM to 9 AM
April 15, 2024 to May 19, 2024				
<i>Sunday PM through Monday AM</i>	Anytime	7 PM to 8 AM	Anytime Sunday to 8 AM Monday	8 PM to 7 AM
<i>Monday PM through Friday AM</i>	Anytime	8 PM to 8 AM	9 AM - 8 AM	8 PM to 7 AM
<i>Friday PM through Saturday AM</i>	Anytime	7 PM to 8 AM	9 AM - 8 AM	8 PM to 7 AM
<i>Saturday PM through Sunday AM*</i>	Anytime	8 PM to 10 AM	9 AM Saturday to Anytime Sunday	9 PM to 9 AM
May 20, 2024 to September 8, 2024				
<i>Sunday PM through Monday AM</i>	Anytime	7 PM to 8 AM	Anytime Sunday to 8 AM Monday	8 PM to 7 AM
<i>Monday PM through Friday AM</i>	Anytime	9 PM to 8 AM	9 AM - 8 AM	8 PM to 7 AM
<i>Friday PM through Saturday AM</i>	Anytime	8 PM to 8 AM	9 AM - 8 AM	10 PM to 7 AM
<i>Saturday PM through Sunday AM*</i>	Anytime	8 PM to 10 AM	7 PM Saturday to Anytime Sunday	11 PM to 9 AM
September 9, 2024 to October 20, 2024				
<i>Sunday PM through Monday AM</i>	Anytime	7 PM to 8 AM	Anytime Sunday to 8 AM Monday	8 PM to 7 AM
<i>Monday PM through Friday AM</i>	Anytime	8 PM to 8 AM	9 AM - 8 AM	8 PM to 7 AM
<i>Friday PM through Saturday AM</i>	Anytime	8 PM to 8 AM	9 AM - 8 AM	8 PM to 7 AM
<i>Saturday PM through Sunday AM*</i>	Anytime	8 PM to 10 AM	6 PM Saturday to Anytime Sunday	10 PM to 9 AM
October 21, 2024 to November 17, 2024				
<i>Sunday PM through Monday AM</i>	Anytime	7 PM to 8 AM	Anytime Sunday to 8 AM Monday	8 PM to 7 AM
<i>Monday PM through Friday AM</i>	Anytime	7 PM to 8 AM	9 AM - 8 AM	8 PM to 7 AM
<i>Friday PM through Saturday AM</i>	Anytime	7 PM to 8 AM	9 AM - 8 AM	8 PM to 7 AM
<i>Saturday PM through Sunday AM*</i>	Anytime	8 PM to 10 AM	9 AM Saturday to Anytime Sunday	8 PM to 9 AM

*Sunday Work Requires Approval
 For workzones spanning multiple closure times, the most restrictive time shall govern

Mainline MM 45-46				
	Southbound		Northbound	
	Single Lane Closures	Double Lane Closures	Single Lane Closures	Double Lane Closures
March 3, 2024 to April 14, 2024				
<i>Sunday PM through Monday AM</i>	Anytime Sunday to 8 AM Monday	8 PM to 7 AM	Anytime	7 PM to 7 AM
<i>Monday PM through Friday AM</i>	10 AM to 5 PM, 7 PM to 8 AM	8 PM to 7 AM	Anytime	8 PM to 7 AM
<i>Friday PM through Saturday AM</i>	9 AM to 8 AM	8 PM to 7 AM	Anytime Friday to 4 PM Saturday	8 PM to 7 AM
<i>Saturday PM through Sunday AM*</i>	9 AM to Anytime Sunday	8 PM to 9 AM	6 PM Saturday to Anytime Sunday	9 PM to 9 AM
April 15, 2024 to May 19, 2024				
<i>Sunday PM through Monday AM</i>	Anytime Sunday to 8 AM Monday	8 PM to 7 AM	Anytime Sunday to 4 PM Monday	8 PM to 7 AM
<i>Monday PM through Friday AM</i>	10 AM to 5 PM, 7 PM to 8 AM	8 PM to 7 AM	6 PM to 8 AM	8 PM to 7 AM
<i>Friday PM through Saturday AM</i>	9 AM to 8 AM	8 PM to 7 AM	9 AM to 4 PM, 6 PM to 4 PM	8 PM to 7 AM
<i>Saturday PM through Sunday AM*</i>	9 AM to Anytime Sunday	8 PM to 9 AM	6 PM Saturday to Anytime Sunday	10 PM to 9 AM
May 20, 2024 to September 8, 2024				
<i>Sunday PM through Monday AM</i>	Anytime Sunday to 8 AM Monday	8 PM to 7 AM	Anytime Sunday to 8 AM Monday	9 PM to 7 AM
<i>Monday PM through Friday AM</i>	7 PM to 8 AM	9 PM to 7 AM	9 AM to 4 PM, 6 PM to 8 AM	9 PM to 7 AM
<i>Friday PM through Saturday AM</i>	10 AM to 4 PM, 7 PM to 8 AM	9 PM to 7 AM	9 AM to 3 PM, 7 PM to 2 PM	10 PM to 7 AM
<i>Saturday PM through Sunday AM*</i>	9 AM to 3 PM, 7 PM to Anytime Sun.	8 PM to 9 AM	7 PM Saturday to Anytime Sunday	11 PM to 8 AM
September 9, 2024 to October 20, 2024				
<i>Sunday PM through Monday AM</i>	Anytime Sunday to 8 AM Monday	8 PM to 7 AM	Anytime Sunday to 8 AM Monday	8 PM to 7 AM
<i>Monday PM through Friday AM</i>	7 PM to 8 AM	9 PM to 7 AM	9 AM to 4 PM, 6 PM to 8 AM	8 PM to 7 AM
<i>Friday PM through Saturday AM</i>	10 AM to 4 PM, 7 PM to 8 AM	9 PM to 7 AM	9 AM to 4 PM, 6 PM to 3 PM	9 PM to 7 AM
<i>Saturday PM through Sunday AM*</i>	9 AM to 3 PM, 7 PM to Anytime Sun.	8 PM to 9 AM	7 PM Saturday to Anytime Sunday	10 PM to 8 AM
October 21, 2024 to November 17, 2024				
<i>Sunday PM through Monday AM</i>	Anytime Sunday to 8 AM Monday	8 PM to 7 AM	Anytime Sunday to 8 AM Monday	7 PM to 7 AM
<i>Monday PM through Friday AM</i>	7 PM to 8 AM	8 PM to 7 AM	9 AM to 4 PM, 6 PM to 8 AM	8 PM to 7 AM
<i>Friday PM through Saturday AM</i>	10 AM to 4 PM, 7 PM to 8 AM	8 PM to 7 AM	9 AM to 4 PM, 6 PM to 4 PM	8 PM to 7 AM
<i>Saturday PM through Sunday AM*</i>	9 AM to 3 PM, 7 PM to Anytime Sun.	7 PM to 9 AM	7 PM Saturday to Anytime Sunday	9 PM to 9 AM

*Sunday Work Requires Approval
 For workzones spanning multiple closure times, the most restrictive time shall govern

Mainline MM 46-48				
	Southbound		Northbound	
	Single Lane Closures	Double Lane Closures	Single Lane Closures	Double Lane Closures
March 3, 2024 to April 14, 2024				
<i>Sunday PM through Monday AM</i>	Anytime Sunday to 8 AM Monday	8 PM to 6 AM	Anytime Sunday to 4 PM Monday	7 PM to 7 AM
<i>Monday PM through Friday AM</i>	10 AM to 8 AM	8 PM to 7 AM	7 PM to 4 PM	8 PM to 7 AM
<i>Friday PM through Saturday AM</i>	10 AM to Anytime Saturday	8 PM to 9 AM	7 PM to Anytime Saturday	9 PM to 10 AM
<i>Saturday PM through Sunday AM*</i>	Anytime	7 PM to 10 AM	Anytime	8 PM to 12 PM
April 15, 2024 to May 19, 2024				
<i>Sunday PM through Monday AM</i>	Anytime Sunday to 8 AM Monday	8 PM to 7 AM	Anytime Sunday to 4 PM Monday	7 PM to 7 AM
<i>Monday PM through Friday AM</i>	10 AM to 8 AM	8 PM to 7 AM	7 PM to 4 PM	8 PM to 7 AM
<i>Friday PM through Saturday AM</i>	10 AM to Anytime Saturday	8 PM to 9 AM	7 PM to Anytime Saturday	9 PM to 9 AM
<i>Saturday PM through Sunday AM*</i>	Anytime	7 PM to 10 AM	Anytime	8 PM to 11 PM
May 20, 2024 to September 8, 2024				
<i>Sunday PM through Monday AM</i>	2 PM to 8 AM	9 PM to 6 AM	Anytime Sunday to 4 PM Monday	8 PM to 7 AM
<i>Monday PM through Friday AM</i>	10 AM to 5 PM, 7 PM - 8 AM	8 PM to 7 AM	7 PM to 3 PM	10 PM to 7 AM
<i>Friday PM through Saturday AM</i>	10 AM to 4 PM, 6 PM - Anytime Sat.	8 PM to 9 AM	8 PM to Anytime Saturday	11 PM to 9 AM
<i>Saturday PM through Sunday AM*</i>	Anytime Saturday to 12 PM Sunday	8 PM to 9 AM	Anytime	8 PM to 10 PM
September 9, 2024 to October 20, 2024				
<i>Sunday PM through Monday AM</i>	Anytime Sunday to 8 AM Monday	8 PM to 7 AM	Anytime Sunday to 4 PM Monday	8 PM to 7 AM
<i>Monday PM through Friday AM</i>	10 AM to 5 PM, 7 PM - 8 AM	8 PM to 7 AM	7 PM to 4 PM	8 PM to 7 AM
<i>Friday PM through Saturday AM</i>	10 AM to 4 PM, 6 PM - Anytime Sat.	8 PM to 9 AM	7 PM to Anytime Saturday	10 PM to 9 AM
<i>Saturday PM through Sunday AM*</i>	Anytime	8 PM to 9 AM	Anytime	8 PM to 11 PM
October 21, 2024 to November 17, 2024				
<i>Sunday PM through Monday AM</i>	Anytime Sunday to 8 AM Monday	7 PM to 7 AM	Anytime Sunday to 4 PM Monday	7 PM to 7 AM
<i>Monday PM through Friday AM</i>	10 AM to 5 PM, 7 PM - 8 AM	8 PM to 7 AM	7 PM to 4 PM	8 PM to 7 AM
<i>Friday PM through Saturday AM</i>	10 AM to 4 PM, 6 PM - Anytime Sat.	8 PM to 9 AM	7 PM to Anytime Saturday	9 PM to 10 AM
<i>Saturday PM through Sunday AM*</i>	Anytime	7 PM to 10 AM	Anytime	7 PM to 11 PM

*Sunday Work Requires Approval

For workzones spanning multiple closure times, the most restrictive time shall govern

Mainline MM 48-49				
	Southbound		Northbound	
	Single Lane Closures	Double Lane Closures	Single Lane Closures	Double Lane Closures
March 3, 2024 to April 14, 2024				
<i>Sunday PM through Monday AM</i>	Anytime Sunday to 8 AM Monday	8 PM to 6 AM	Anytime Sunday to 5 PM Monday	6 PM to 7 AM
<i>Monday PM through Friday AM</i>	9 AM to 8 AM the following weekday	8 PM to 6 AM	6 PM to 5 PM the following weekday	8 PM to 7 AM
<i>Friday PM through Saturday AM</i>	9 AM Friday to Anytime Saturday	8 PM to 9 AM	6 PM to Anytime Saturday	9 PM to 11 AM
<i>Saturday PM through Sunday AM*</i>	Anytime	7 PM to 10 AM	Anytime	7 PM to 1 PM
April 15, 2024 to May 19, 2024				
<i>Sunday PM through Monday AM</i>	Anytime Sunday to 8 AM Monday	8 PM to 6 AM	Anytime Sunday to 5 PM Monday	7 PM to 7 AM
<i>Monday PM through Friday AM</i>	9 AM to 8 AM the following weekday	8 PM to 6 AM	6 PM to 5 PM the following weekday	8 PM to 7 AM
<i>Friday PM through Saturday AM</i>	9 AM Friday to Anytime Saturday	8 PM to 9 AM	6 PM to Anytime Saturday	9 PM to 11 AM
<i>Saturday PM through Sunday AM*</i>	Anytime	7 PM to 10 AM	Anytime	7 PM to 11 AM
May 20, 2024 to September 8, 2024				
<i>Sunday PM through Monday AM</i>	Anytime Sunday to 8 AM Monday	8 PM to 6 AM	Anytime Sunday to 5 PM Monday	7 PM to 7:30 AM
<i>Monday PM through Friday AM</i>	9:30 AM to 4 PM 6 PM - 8 AM	8 PM to 6 AM	6 PM to 4 PM the following weekday	9 PM to 7:30 AM
<i>Friday PM through Saturday AM</i>	9 AM Friday to Anytime Saturday	8 PM to 9 AM	7 PM to Anytime Saturday	10 PM to 9 AM
<i>Saturday PM through Sunday AM*</i>	Anytime	8 PM to 9 AM	Anytime	7 PM to 11 AM
September 9, 2024 to October 20, 2024				
<i>Sunday PM through Monday AM</i>	Anytime Sunday to 8 AM Monday	8 PM to 6 AM	Anytime Sunday to 5 PM Monday	7 PM to 7:30 AM
<i>Monday PM through Friday AM</i>	9 AM to 5 PM 6 PM - 8 AM	8 PM to 6 AM	6 PM to 4 PM the following weekday	8 PM to 7:30 AM
<i>Friday PM through Saturday AM</i>	9 AM to 5 PM, 6 PM Friday to Anytime Saturday	8 PM to 9 AM	6 PM to Anytime Saturday	10 PM to 10 AM
<i>Saturday PM through Sunday AM*</i>	Anytime	8 PM to 9 AM	Anytime	7 PM to 11 AM
October 21, 2024 to November 17, 2024				
<i>Sunday PM through Monday AM</i>	Anytime Sunday to 8 AM Monday	8 PM to 6 AM	Anytime	6 PM to 7:30 AM
<i>Monday PM through Friday AM</i>	9 AM to 5 PM 6 PM - 8 AM	8 PM to 6 AM	Anytime	7 PM to 7:30 AM
<i>Friday PM through Saturday AM</i>	9 AM to 5 PM, 6 PM Friday to Anytime Saturday	8 PM to 9 AM	Anytime	7 PM to 11 AM
<i>Saturday PM through Sunday AM*</i>	Anytime	8 PM to 9 AM	Anytime	5 PM to 12 PM

*Sunday Work Requires Approval
 For workzones spanning multiple closure times, the most restrictive time shall govern

Mainline MM 49-52 (2 Lane Section)		
	Southbound	Northbound
	Single Lane Closures	Single Lane Closures
March 3, 2024 to April 14, 2024		
<i>Sunday PM through Monday AM</i>	8 PM to 6 AM	7 PM to 7 AM
<i>Monday PM through Friday AM</i>	8 PM to 6 AM	8 PM to 7 AM
<i>Friday PM through Saturday AM</i>	8 PM to 9 AM	9 PM to 11 AM
<i>Saturday PM through Sunday AM *</i>	7 PM to 9 AM	7 PM to Noon Sunday
April 15, 2024 to May 19, 2024		
<i>Sunday PM through Monday AM</i>	8 PM to 6 AM	7 PM to 7 AM
<i>Monday PM through Friday AM</i>	8 PM to 6 AM	8 PM to 7 AM
<i>Friday PM through Saturday AM</i>	8 PM to 8:30 AM	9 PM to 10 AM
<i>Saturday PM through Sunday AM *</i>	7 PM to 9 AM	7 PM to 11AM
May 20, 2024 to September 8, 2024		
<i>Sunday PM through Monday AM</i>	8 PM to 6 AM	8 PM to 7 AM
<i>Monday PM through Friday AM</i>	8 PM to 6 AM	9 PM to 7 AM
<i>Friday PM through Saturday AM</i>	8 PM to 8:30 AM	9 PM to 9 AM
<i>Saturday PM through Sunday AM *</i>	8 PM to 9 AM	9 PM to 11 AM
September 9, 2024 to October 20, 2024		
<i>Sunday PM through Monday AM</i>	9 PM to 6 AM	7 PM to 7 AM
<i>Monday PM through Friday AM</i>	8 PM to 6 AM	9 PM to 7 AM
<i>Friday PM through Saturday AM</i>	9 PM to 9 AM	9 PM to 10 AM
<i>Saturday PM through Sunday AM *</i>	8 PM to 9 AM	9 PM to 11 AM
October 21, 2024 to November 17, 2024		
<i>Sunday PM through Monday AM</i>	8 PM to 6 AM	6 PM to 7 AM
<i>Monday PM through Friday AM</i>	8 PM to 6 AM	7 PM to 7 AM
<i>Friday PM through Saturday AM</i>	8 PM to 9 AM	7 PM to 11 AM
<i>Saturday PM through Sunday AM *</i>	8 PM to 9 AM	5 PM to Noon Sunday

*Sunday Work Requires Approval
 For workzones spanning multiple closure times, the most restrictive time shall govern

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.