

DOCUMENT 00715



## SUPPLEMENTAL SPECIFICATIONS

(English Units)

JUNE 30, 2022

The 2022 *Standard Specifications for Highways and Bridges* are amended by the following modifications, additions and deletions. This Supplemental Specifications prevail over those published in the Standard Specifications.

The Specifications Committee has issued these Supplemental Specifications for inclusion into each proposal until such time as they are updated or incorporated into the next Standard Specifications.

Contractors are cautioned that these Supplemental Specifications are dated and will change as they are updated.

### DIVISION I

### GENERAL REQUIREMENTS AND COVENANTS

#### SECTION 1.00: DEFINITION OF TERMS

##### **Subsection 1.03: Defined Terms**

*(page 1.7) Delete the term Interim Supplemental Specifications.*

#### SECTION 4.00: SCOPE OF WORK

##### **Subsection 4.04 Changed Conditions**

*(page 1.21) Replace the fourth, fifth sixth and seventh paragraphs with the following:*

If the Contractor and the Department fail to agree on an equitable adjustment to be made under this Subsection, then the Contractor shall accept as full payment for the work in dispute an amount calculated using actual costs as provided in Subsection 9.03: Payment for Extra Work.

##### **Subsection 4.06 Increased or Decreased Contract Quantities**

*(pages 1.22 and 1.23) Replace the sixth, seventh and eighth paragraphs with the following:*

To assist the Engineer in the determination of an equitable adjustment for an overrun, the Contractor shall prepare a submission and accept as full payment for work or materials an amount for an equitable adjustment in the Contract Price calculated using actual costs as provided in Subsection 9.03: Payment for Extra Work.

#### SECTION 7.00: LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

##### **Subsection 7.03 Permits and Licenses**

*(page 1.47) Add the following paragraph after the first paragraph:*

For overweight vehicles in excess of 130,000 lbs., the Contractor shall provide a copy of each overweight vehicle permit to the Engineer prior to arrival or delivery of the vehicle to a project site. This requirement is for all Contractors, their subcontractors, equipment suppliers and material suppliers.

## SECTION 8.00: PROSECUTION AND PROGRESS

### **Subsection 8.05: Claim for Delay or Suspension or the Work**

*(page I.72) Replace the second paragraph of this subsection with the following:*

Provided, however, that if in the judgement of the Engineer it is determined that the performance of all or any major portion of the work is suspended, delayed, or interrupted for an unreasonable period of time by an act of the Department in the administration of the Contract, or by the Department's failure to act as required by the Contract within the time specified in the Contract ( or if no time is specified, within a reasonable time) and without the fault or negligence of the Contractor, an adjustment shall be made by the Department for any increase in the actual cost of performance of the Contract ( excluding profit and overhead) necessarily caused by the period of such suspension, delay or interruption. No adjustment shall be made if the performance by the Contractor would have been prevented by other causes even if the work had not been so suspended, delayed, or interrupted by the department

*(page I.72) Replace the fifth paragraph of this subsection with the following:*

Any dispute concerning whether the delay or suspension is unreasonable or any other question of fact arising under this paragraph shall be determined by the Engineer, and such determination and decision, in case any question shall arise, shall be a condition precedent to the right of the Contractor to receive any money hereunder.

### **Subsection 8.07 Character of Workers, Methods and Equipment**

*(page I.73) Add the following paragraph after the second paragraph:*

All electrical connections, splicing, grounding, resistance tests, service connections and circuit identification shall be done by a licensed electrician holding a Massachusetts journeyman electrician's license. The Contractor shall provide to the Engineer at least 10 days prior to each work assignment the names and license qualifications of electricians.

### **Subsection 8.13 Convenience Termination**

*(page I.80) Replace B. For Construction Related Costs with the following:*

Actual costs as provided in Subsection 9.03: Payment for Extra Work.

## SECTION 9.00: MEASUREMENT AND PAYMENT

### **Subsection 9.03 Payment for Extra Work**

*(page I.84) Replace B. Payment for work or materials for which no price is contained in the contract with the following:*

If the Engineer directs, the Contractor shall submit promptly in writing to the Engineer an offer to do the required work on a lump sum or unit price basis, as specified by the Engineer. The stated price, either lump sum or unit price, shall be divided so as to show that it is the sum of:

- (1) The estimated cost of direct labor, materials, and the use of equipment, plus 10 percent of this total for overhead;
- (2) Plus 13 percent of direct labor, for the actual costs of Federal Insurance Contribution Act (FICA), Federal Unemployment Tax Act (FUTA), State Unemployment Tax Act (SUTA) including workforce training and Massachusetts Employer Medical Assistance Contribution, Earned Sick Time (EST) Law (940 CMR 33.00), and Paid Family and Medical Leave (PFML) Act (458 CMR 2.00); or, as an alternative to the above 13 percent, the Contractor may elect to use actual rates for FICA, FUTA, SUTA, EST and PFML provided the actual rates are supported with verifiable documentation and shall be subject to review by Audit Operations;
- (3) Plus the actual cost of Workmen's Compensation and Liability Insurance, Health, Welfare and Pension benefits, and such additional fringe benefits which the Contractor is required to pay as a result of Union Labor Agreements and/or is required by authorized governmental agencies;
- (4) Plus subcontractor or a Public or Private Utility costs;

- (5) Plus 10 percent of the total of (1), (2), (3) and (4);
- (6) Plus the estimated proportionate cost of surety bonds (The Contractor shall provide evidence of revised bonds according to Subsection 3.04).

Unless an agreed lump sum and/or unit price is obtained from above and is so stated in the Extra Work Order the Contractor shall accept as full payment for work or materials for which no price agreement is contained in the Contract an amount equal to the following:

- (1) The actual cost for direct labor, material (less value of salvage, if any) and use of equipment, plus 10 percent of this total for overhead;
- (2) Plus 13 percent of direct labor, for the actual costs of Federal Insurance Contribution Act (FICA), Federal Unemployment Tax Act (FUTA), State Unemployment Tax Act (SUTA), including workforce training and Massachusetts Employer Medical Assistance Contribution, Earned Sick Time (EST) Law (940 CMR 33.00), and Paid Family and Medical Leave (PFML) Act (458 CMR 2.00); or, as an alternative to the above 13 percent, the Contractor may elect to use actual rates for FICA, FUTA, SUTA, EST and PFML provided the actual rates are supported with verifiable documentation and shall be subject to review by Audit Operations;
- (3) Plus the actual cost of Workmen's Compensation and Liability Insurance, Health, Welfare and Pension benefits, and such additional fringe benefits which the Contractor is required to pay as a result of Union Labor Agreements and/or is required by authorized governmental agencies;
- (4) Plus subcontractor or a Public or Private Utility costs;
- (5) Plus 10 percent of the total of (1), (2), (3) and (4);
- (6) Plus the estimated proportionate cost of surety bonds (The Contractor shall provide evidence of revised bonds according to Subsection 3.04).

Costs incurred for traffic police, railroad flagging and permits will be reimbursed without markup for overhead or profit.

No payments will be made for general superintendence, the use of small hand tools, and manual equipment.

The Contractor shall, when requested by the Engineer, furnish itemized statements of the cost of the work ordered and give the Engineer access to all accounts, bills and vouchers relating thereto, and unless the Contractor shall furnish such itemized statements, access to all accounts, bills and vouchers, the Contractor shall not be entitled to payment for any items of extra work for which such information is sought by the Engineer.

## DIVISION II

### CONSTRUCTION DETAILS

#### SUBSECTION 230: CULVERTS, STORM DRAINS, AND SEWER PIPES

##### **Subsection 230.40 General**

*(page II.62) Replace this subsection with the following:*

Materials shall meet the requirements specified in the following Subsections of Division III, Materials:

Mortar for Pipe Joints .....	M4.02.15
Jointing Materials for Pipes.....	M5.01.0
Reinforced Concrete Pipe .....	M5.02.1
Reinforced Concrete Pipe. Flared Ends .....	M5.02.2
Corrugated Metal Pipe.....	M5.03.0
Metal End Sections.....	M5.03.6
Polymeric Precoated Corrugated Metal Pip .....	M5.03.8
Corrugated Plastic Pipe .....	M5.03.10
Corrugated Plastic Flared Ends.....	M5.03.10
Corrugated Metal Pipe-Arch.....	M5.04.0
Structural Plate for Pipe and Pipe-Arch .....	M5.04.2
Smooth Steel Liner Helically Corrugated Shell Metal Pipe .....	M5.04.3
Ductile Iron Pipe .....	M5.05.3

##### **Subsection 230.62 Pipe Joints**

*(page II.62) Replace this subsection with the following:*

The joints of concrete pipe shall be formed by caulking a gasket of jute or oakum into the bell and then filling the remainder of the joint with cement mortar. The invert shall be kept smooth and free of any obstructions. In the case of concrete pipe, the surfaces to be joined shall be thoroughly cleaned and wetted with water before the joint is made. Corrugated metal pipe and corrugated plastic pipe shall be firmly joined with an approved coupling. The interior surfaces of abutting pipes shall form a smooth grade when pipe laying is completed.

Where watertight joints are required, concrete pipe shall be joined using flexible water tight rubber gaskets conforming to M5.01.0. The pipe ends shall be designed so that the gasket will be confined on all sides and will not support the weight of the pipe. Any alternative joint design must be pre-approved by the Engineer.

In designated areas, as directed, certain joints may be left open to allow for entrance of underground water into the pipeline.

##### **Subsection 230.82 Payment Items**

*(page II.67) Replace this subsection with the following:*

*230.	-Inch Corrugated Metal Pipe __ Gage .....	Foot
*230.7-	-Inch Corrugated Metal Pipe End Section .....	Each
*232.	__ x __ Inch ACCM Pipe-Arch __ Gage.....	Foot
*234.-	-Inch Drainage Pipe-Option.....	Foot
*238.	Ductile Iron Pipe.....	Foot
*239.	Structural Plate Pipe.....	Foot
*240.	Structural Plate Pipe-Arch, __ Gage .....	Foot
*241.-	-Inch Reinforced Concrete Pipe Class III .....	Foot
*242.-	-Inch Reinforced Concrete Pipe Flared End .....	Each
*243.-	-Inch Reinforced Concrete Pipe Class IV.....	Foot
*244.-	-Inch Reinforced Concrete Pipe Class V.....	Foot
*252.-	-Inch Corrugated Plastic Pipe .....	Foot
*252.1-	-Inch Corrugated Plastic Pipe Flared End .....	Each
*255.-	Polymeric Precoated Corrugated Metal Pipe.....	Foot

## SUBSECTION 301: WATER SYSTEMS

### **Subsection 301.40 General**

*(page II.76) Replace this subsection with the following:*

Materials shall meet the requirements specified in the following Subsections of Division III, Materials:

Thrust Blocks	
Cement Concrete.....	M4.02.0
Jointing Materials for Pipes.....	M5.01.0
Water Pipe and Fittings	
Copper Tubing .....	M5.06.0
Ductile Iron Pipe and Fittings .....	M5.05.3
Insulation and Waterproof Jackets.....	M9.11.0
Cellular Glass .....	M9.11.1
Fiber Glass .....	M9.11.2
Expanded Polystyrene .....	M9.11.3
Urethane.....	M9.11.4
Waterproof Jackets .....	M9.11.5

## SECTION 800: TRAFFIC CONTROL DEVICES

### SUBSECTION 813: WIRING, GROUNDING AND SERVICE CONNECTIONS

#### **Subsection 813.20 General**

*(page II.385) Delete the third paragraph.*

#### **Subsection 813.60 Wire and Cable**

*(page II.387) Under C. Splicing, delete the first paragraph.*

### SUBSECTION 815: TRAFFIC CONTROL SIGNALS

#### **Subsection 815.20 General**

*(page II.394) Replace the 9<sup>th</sup> paragraph of this subsection with the following:*

All work within the traffic control cabinet shall be done by an IMSA Certified Traffic Signal Level II Technician. The Contractor shall provide to the Engineer names and certification qualifications of all persons who will be working within the traffic control cabinet at least 10 days prior to the start of any traffic control cabinet work.

### SUBSECTION 820: HIGHWAY LIGHTING

#### **Subsection 820.20 General**

*(page II.406) Delete TRAFFIC CONTROL DEVICES at the top of the page and delete the 7<sup>th</sup> paragraph of the subsection.*

### SUBSECTION 840: SIGN SUPPORTS

#### **Subsection 840.20 General**

*(page II.427) Replace the paragraph at the top of the page beginning with Before fabricating ... with the following:*

Before fabricating the sign support structures, the Contractor shall submit erection plans and shop drawings for approval of the Engineer.

Shop drawings shall be in accordance with Subsection 960.60: Shop Drawings and Subsection 5.02: Plans and Detail Drawings and include span lengths, post heights, vertical and horizontal clearances, material specifications (grade and/or alloy), anchor bolt layout, and any other pertinent information. Provisions for cambering shall also be shown to ensure that horizontal cross beams will not deflect below the horizontal.

Erection procedures shall be in accordance with Subsection 960.61 Design, Fabrication and Erection.

## **SUBSECTION 850: TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE OPERATIONS**

### **Subsection 850.29 Temporary Barrier and Temporary Barrier Removed and Reset**

*(page II.432) Replace the first paragraph of this subsection with the following:*

Temporary Barrier consists of furnishing, installing, maintaining and final removal of temporary barriers, including delineation, for traffic control or work zone protection in construction zones.

### **Subsection 850.30 Temporary Restrained Barrier and Temporary Restrained Barrier Removed and Reset**

*(page II.432) Delete this subsection.*

### **Subsection 850.50 Temporary Restrained Barrier**

*(page II.435) Delete this subsection.*

### **Subsection 850.70 Temporary Restrained Barrier and Temporary Restrained Barrier Removed and Reset**

*(page II.440) Delete this subsection.*

### **Subsection 850.80 Method of Measurement**

*(page II.443) Delete the fifth paragraph up from the end of this subsection.*

### **Subsection 850.81 Basis of Payment**

*(page II.445) Delete the 12<sup>th</sup>, 13<sup>th</sup> and 14<sup>th</sup> paragraph of this subsection.*

## **SUBSECTION 860: REFLECTORIZED PAVEMENT MARKINGS**

### **Subsection 860.40 General**

*(page II.447) Replace White Thermoplastic ReflectORIZED Pavement Markings ...M7.01.03 and Yellow Thermoplastic ReflectORIZED Pavement Markings ...M7.01.04 with the following:*

Liquid Thermoplastic Striping Material..... M7.01.3

### **Subsection 860.62 Application of Markings**

*(page II.448) Replace Table 860.62-1 with the following:*

***Table 860.62-1: Pavement Marking Application Requirements***

<b>Material</b>	<b>Application Temperature</b>	<b>Line Thickness Above Roadway Surface</b>	<b>Glass Bead Application</b>
M7.01.3	400°F to 425°F	125 to 188 mils	Drop-on 1 lb per 10 ft <sup>2</sup>
M7.01.23	135°F to 150°F	15 mils	6 lb per gal
M7.01.24	135°F to 150°F	15 mils	6 lb per gal

## DIVISION III MATERIALS SPECIFICATIONS

### SECTION M5: PIPE, CULVERT SECTIONS AND CONDUIT

#### **Subsection M5.01.0 Jointing Materials for Pipes**

*(page III.77) Add this new subsection:*

- A. Jute or oakum furnished for use in pipe joints shall be of an accepted grade approved for common usage.
- B. Mortar shall conform to the requirements of M4.02.15: Cement Mortar.
- C. Rubber ring or plastic gaskets shall be of tough, flexible, chemical-resistant material, and of such size and shape as to ensure satisfactory pipe joints when incorporated in the work and shall conform to ASTM C443.
- D. Mechanical joints shall conform to the requirements of the ASA Specifications A21.11.
- E. The yarning material for cast iron bell-and-spigot pipe joints shall be sterilized braided hemp or untarred twisted jute, clean and dry and free from oil, grease, or any other deleterious matter.

#### **Subsection M5.02.1 Reinforced Concrete Pipe**

*(page III.77) Replace this subsection with the following:*

Reinforced concrete pipe shall conform to the requirements of AASHTO M 170 for the class of pipe specified in the contract documents.

- All pipe 24 in. in diameter or smaller shall be of the bell-and-spigot type.
- Pipes larger than 24 in. in diameter shall be tongue and groove or bell and spigot.

#### **Subsection M5.02.2 Reinforced Concrete Pipe Flare Ends**

*(page III.77) Replace this subsection with the following:*

Flared end sections shall be fabricated to comply with the current construction standard for this item. The method of fabrication and materials used shall conform to the requirements of AASHTO M 170, Class III, except that the three edge bearing tests shall not be required. The flare shall be of the same thickness and materials as the barrel and have steel reinforcement equaling or exceeding the amount shown on the table for AASHTO M 170, Class III, except that a double row of steel will not be required.

### SECTION M7: PAINTS, PROTECTIVE COATINGS AND PAVEMENT MARKINGS

#### **M7.00.0 General Requirements for Paints and Protective Coatings**

*(page III.92) Delete the second occurrence of M7.01: Pavement Markings in the last paragraph.*

#### **M7.01 Pavement Markings**

*(page III.92) Change the subsection number from M7.01 to M7.01.0. and delete M7.01.03 and M7.01.04.*

#### **M7.01.3 Liquid Thermoplastic Striping Material**

*(page III.93) Add this new subsection.*

#### **M7.01.3 Liquid Thermoplastic Striping Material**

##### **A. General.**

This specification covers a reflectorized thermoplastic pavement striping material that is extruded onto the pavement in a molten state by mechanical means with the application of glass beads. When applied properly and at the designated thickness and width the stripe shall, upon cooling, be reflectorized and be able to resist deformation by traffic. The material shall be placed on bare pavement or existing thermoplastic markings.

## 1. Materials

Prequalified batches of acceptable thermoplastic materials are listed on the QCML.

All thermoplastic material shall meet the requirements of AASHTO M 249 and tested in accordance with AASHTO T 250 and the following:

- 1) Glass Beads (Pre-Mix) used in the manufacture of thermoplastic shall be uncoated and meet the requirements of AASHTO M 247, Type I and M7.01.07 and have a minimum of 80% true spheres.
- 2) The resin shall be alkyd or hydrocarbon and meet the requirements of table M7.01.3-1.

*Table M7.01.3-1 Thermoplastic Resin Requirements*

Properties	Hydrocarbon	Alkyd
% Binder, Minimum	22	20
Indentation Resistance @ 115°F, ASTM D7735	--	40-75 units (Type A)
Bond Strength, Minimum, psi	180	200

The material manufacturer shall have the option of formulating a hydrocarbon resin-based or an alkyd resin-based system. However, the physical and chemical properties contained in this specification shall apply regardless of the type of formulation used. The binder must consist of a mixture of resins, at least one of which is a solid at room temperature, and high boiling point plasticizers. At least one third of the binder composition of an alkyd-based system must be maleic-modified glycerol ester of rosin and must be no less than 8% of the entire material formulation. Material of either binder type upon heating to the application temperature shall not evolve fumes which are toxic, or injurious to persons or property. The pigment, beads and filler shall be well dispersed in the resin. The material shall be free from all skins, dirt, and foreign objects.

The thermoplastic pavement marking material may be supplied in block or granular form. Block material shall be packaged in suitable containers to which it will not adhere to during shipment or storage. The blocks shall be approximately 12" X 36" X 2". Granular material shall be packaged in bags that when introduced to the mix hopper of the application equipment, it will become part of the mix with no adverse effect to the performance of the thermoplastic material. The packages of either type shall weigh approximately 50 pounds. Each container label shall designate the color, manufacturer's name, batch number and date of manufacture. Each batch manufactured shall have its own separate number. The label shall warn the user that the material shall be heated in the range of 400-425°F during application.

## B. Sampling and Testing

### 1. Sampling

Provide one bag of thermoplastic material for verification testing per batch. A batch is a unit of production that is consistent in appearance, formulation, proportions and can be identified by a unique number known as a Batch Number. Each batch shall consist of a minimum of 3,000 lbs. and a maximum of 44,000 lbs.

### 2. Testing

Tests on White and Yellow Thermoplastic Striping Material shall be reported by an Independent Testing Laboratory and performed in accordance with these Specifications and AASHTO M 249.



The Independent Test Results shall be for each batch and shall identify the material by manufacturer including name and address, batch number(s), date and place of manufacture and any other information that will assist in identifying the product. It shall also note the test method used for each test. The report shall include the date tested and shall be signed by a person responsible for authenticating the veracity of the test. Below the signature shall be the person's printed name and title.

Request for prequalification for each thermoplastic material batch shall be submitted to RMS, accompanied by:

- a) Certificate of Compliance stating that the material complies with AASHTO M 249, AASHTO T 250, this specification and all applicable MassDOT requirements.
- b) Independent Lab test results; and
- c) One bag of thermoplastic striping material per batch in sample bags meeting the specifications above for verification testing. The bag shall be sent to the attention of the Director of Research & Materials, MassDOT/Highway, 5 Macadam Road, Hopkinton, MA 01748.

## **SUBSECTION M8: METALS AND RELATED MATERIALS**

### **Subsection M8.01.5 Anchor Bolts, Nuts and Washers**

*(page III.98) Replace this subsection with the following:*

All bolts, nuts and washers, with the exception of those with weathering characteristics, shall be galvanized in accordance with AASHTO M 232M/M 232.

#### **Used For Anchoring Bridge Railing Base Plates to Concrete**

Bolts, nuts, and washers shall conform to the requirements of ASTM F1554 Grade 105.

#### **Used For Anchoring Bridge Bearings to Concrete**

Bolts, nuts, and washers shall conform to the requirements of ASTM F1554 Grade 105.

#### **Used For Anchoring Signal Lighting and Sign Structures**

Bolts, nuts, and washers shall conform to the applicable requirements of one of the following:

- AASHTO M 31 Type W Grade 60
- AASHTO M 314 Grade 36
- AASHTO M 314 Grade 55
- AASHTO M 314 Grade 105
- ASTM F1554 Grade 55
- ASTM F1554 Grade 105

Notes: (1) Nuts and washers for the above shall be suited to the approved bolts.

(2) Hooked smooth bars and anchor bolts shall not exceed 55 ksi.

#### **High Strength Bolts**

High strength bolts, where specified, shall conform to Subsection M8.04.3. A galvanized hexagon nut, leveling nut and flat washer shall be furnished with each bolt.

### **M8.01.9 Mechanical Reinforcing Bar Splicer**

*(page III.95) Replace Table M8.01.9 – with the following.*

**Table M8.01.9-1: Requirements for Mechanical Reinforcing Bar Splicers**

Description	Test Method	Requirement
Ultimate Tensile Strength of Mechanical Splicer System	ASTM A1034 (Monotonic Tension Test)	100% of ultimate tensile strength of reinforcement bars per AASHTO M31.
Allowable Slip	California Test No. 670 – Slip Test	0.01 in., maximum for #14 and smaller bars, 0.03 in. maximum for #18 bars

## SECTION M9: MISCELLANEOUS MATERIALS

### **Subsection M9.10.0 Jointing Materials for Pipe**

*(page II.136) Delete this entire subsection.*

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END OF SUPPLEMENTAL SPECIFICATIONS