



# GS-23007

## General Supplemental Specifications for Highway and Bridge Construction

**Effective Date  
October 20, 2026**

THE STANDARD SPECIFICATIONS, SERIES 2023, ARE AMENDED BY THE FOLLOWING MODIFICATIONS, ADDITIONS, AND DELETIONS. THESE ARE GENERAL SUPPLEMENTAL SPECIFICATIONS AND SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS. REVISIONS INCLUDED IN PREVIOUS SERIES 2023 GENERAL SUPPLEMENTAL SPECIFICATIONS ARE NOT INCLUDED IN THIS EDITION.



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**Division 11. General Requirements and Covenants.**

**Section 1101**

**1101.02, Definitions of Abbreviations**

**Add the Abbreviation:m**

NECA – National Electrical Contractors Association

**1101.03, Definition of Terms, Joint Venture.**

**Replace the Article:**

The joining of two or more qualified contractors for the purpose of combining equipment, personnel, and finances in order to submit a bid on a single proposal. This includes both joint bidders and formal joint ventures.

**Section 1107**

**1107.02, Insurance.**

**Replace the Article:**

~~A. It shall be the Contractor's responsibility to have liability insurance covering all of the construction operations incident to contract completion and the Contractor must have on file with the Contracting Authority a current "Certificate of Insurance" prior to award of contract. The certificate shall identify the insurance company firm name and address, Contractor firm name, policy period, type of policy, limits of coverage, and scope of work covered (single contract or statewide). This requirement shall apply with equal force, whether the work is performed by persons employed directly by the Contractor including a subcontractor, persons employed by a subcontractor, or by an independent contractor.~~

~~B. In addition to the above, the Contracting Authority shall be included as an insured party, or a separate owner's protective policy shall be filed showing the Contracting Authority as an insured party.~~

~~C. The liability insurance shall be written by an insurance company (or companies) qualified to do business in Iowa. For independent contractors engaged solely in the transportation of materials, the minimum coverage provided by such insurance shall be not less than that required by Chapter 325A, Code of Iowa, for such truck operators or contract carriers as defined therein. For all other contractors, subcontractors, independent contractors, and the Contracting Authority, the minimum coverage by such insurance shall be as follows:~~

|  |  |
|--|--|
| <del>General Liability, Including:</del>     | <del>BODILY INJURY</del>                     |
| <del>Independent Contractors</del>           | <del>\$500,000 Each Occurrence</del>         |
| <del>Contractual Liability,</del>            | <del>\$500,000 Aggregate</del>               |
| <del>Products and Completed Operations</del> | <del>PROPERTY DAMAGE</del>                   |
|  | <del>\$250,000 Each Occurrence</del>         |
|  | <del>\$250,000 Aggregate</del>               |
|  | <del>or</del>                                |
|  | <del>BODILY INJURY AND PROPERTY DAMAGE</del> |
|  | <del>- COMBINED SINGLE LIMIT*</del>          |
|  | <del>\$750,000 Each Occurrence</del>         |
|  | <del>\$750,000 Aggregate</del>               |

~~\*A comprehensive Catastrophe Liability Policy (Umbrella) can be used to aid in achieving the minimum required limits.~~

~~D. Failure on the part of the Contractor to comply with the requirements of this article will be considered sufficient cause to suspend the work, withhold estimates, and to deny the Contractor from receiving further contract awards, as provided in Article 1103.01.~~

The insurance requirements of this article shall apply to all new contracts, as well as insurance renewals for

existing contracts, starting on January 1, 2027.

- A.** At its own expense, the Contractor shall carry insurance covering all construction operations incidental to contract completion. The Contractor shall submit to the Contracting Authority a current certificate (or certificates if necessary) of insurance prior to execution of the contract and thereafter as insurance policies are renewed or replaced. The certificate(s) shall show the Contracting Authority as the certificate holder and identify the Contractor's insurer(s), Contractor's name and address, type of policy, policy number, policy period, limits of coverage, and scope of work covered (single contract or statewide). This requirement applies with equal force, whether the work is performed by the Contractor, or by any subcontractor or independent contractor, or by anyone employed by any of the foregoing. Except as provided elsewhere in this article, coverage shall remain in force until the Engineer's final acceptance of the work.
- 1.** For contracts let by the Department:
    - a.** Submit initial certificate(s) of insurance electronically to the Department per instructions provided by the Contracts and Specifications Bureau prior to signing the contract.
    - b.** Certificates of insurance for Iowa DOT or county contracts may be statewide or contract specific per instructions provided by the Contracts and Specifications Bureau. Contracts for joint ventures or city projects shall be contract specific.
    - c.** Insurance renewals or replacements prior to final acceptance of the work shall be submitted electronically to the Department's Finance Bureau, per the instructions provided by the Department. Provide to the Engineer electronically per their instructions.
  - 2.** For locally let contracts, provide certificate of insurance as well as any renewals or replacements to the Contracting Authority.
- B.** The Contractor shall not cancel or fail to renew any required coverage without giving the Contracting Authority at least 30 calendar days' written notice. If any policy is to be canceled or not renewed during any period of required coverage, the Contractor must have in place a new policy before or upon cancellation or non-renewal of the former policy to ensure no lapse in coverage.
- C.** The insurance shall be written by an insurer or insurers qualified to do business in the State of Iowa. For independent contractors engaged solely in the transportation of materials, the coverage provided by such insurance shall not be less than that required by Iowa Code 325A for such truck operators or contract carriers as defined therein. For all other contractors, subcontractors, and independent contractors, the minimum insurance coverage shall be as follows:
- 1. Workers' Compensation.**  
Workers' compensation insurance shall be obtained at applicable State of Iowa statutory limits and include Employer's Liability insurance with limits of not less than: \$500,000 per accident for bodily injury by disease; \$500,000 per employee for bodily injury by disease; and \$500,000 policy limit. When required, US Longshore and Harbor Workers' Compensation Act and Jones Act coverage shall be added with appropriate limits.
  - 2. Commercial Auto Liability.**  
The limit of coverage shall not be less than \$1,000,000 combined single limit per accident for bodily injury and property damage. This policy shall be written on an occurrence basis and provide coverage for all owned, non-owned, and hired vehicles used on or off the project site.
  - 3. Commercial General Liability.**  
The limits of coverage shall not be less than: \$1,000,000 per occurrence for bodily injury and property damage; \$1,000,000 for personal and advertising injury; \$3,000,000 general aggregate; and \$3,000,000 products and completed operations aggregate. This policy shall be written on a broad form, occurrence basis, and provide coverage for blanket contractual liability, independent contractors, and general liability. Completed operations coverage shall remain in force for one year after the Engineer's final acceptance of the work. This policy shall not contain any exclusion for explosion, collapse, or underground property damage. Coverage under this policy shall be as broadly construed for the Contracting Authority as is available to the Contractor.

**4. Excess or Umbrella Liability.**

The Contractor may use Excess or Umbrella Liability insurance to aid in meeting the minimum limits of coverage required by this article.

- D.** The Contracting Authority shall be named as an additional insured on the Commercial General Liability (including ongoing and completed operations), Commercial Auto Liability, and Excess or Umbrella Liability policies. For general liability, the additional insured coverage shall not be less than that provided by ISO Forms CG 2010 0704 and 2037 0704 (together) or equivalent. All required insurance shall be primary and noncontributory to any insurance available to the Contracting Authority. Each policy shall include a waiver of subrogation in favor of the Contracting Authority. The Contractor shall obtain all endorsements necessary to support these requirements.
- E.** This article specifies minimum limits of coverage only and shall not be construed to limit the Contractor's actual liability under the contract.

**F. Insurance for Joint Ventures.**

1. If a contract is awarded to a joint venture, the parties to the joint venture shall each comply with all insurance requirements in this article.
2. Each party to a joint venture shall submit its own certificate of insurance naming itself as the insured but listing the Contracting Authority, the other party or parties to the joint venture, and the joint venture as additional insureds as it pertains to the contract, such to be shown in the certificate's Description of Operations. Each party shall obtain all endorsements necessary to support these requirements.

**G. Railroad Insurance.**

1. For contracts that involve work on or near railroad ROW, the Contractor shall at its own expense obtain the types and limits of insurance specified in the contract documents, including any requirement to obtain Railroad Protective Liability insurance.
  2. A separate certificate of insurance shall be submitted for each railroad with insurance requirements contained in the contract documents. The certificate shall show the railroad as the certificate holder and include the contract ID in the Description of Operations as well as meet all other requirements contained in the contract documents
- H.** The Contractor's failure to comply with the requirements of this article shall be considered sufficient cause to suspend the work, withhold estimates, and deny the Contractor from receiving further contract awards, as provided in [Article 1103.01](#).

**Division 20. Equipment Requirements****Section 2001****2001.21, C, Truck Mixer and Agitator.**

Add the Article:

8. Measure quantity of added water by visual methods or flow meters in accordance with ASTM C 94.

**Division 21. Earthwork, Subgrades, and Subbases****Section 2102****2102.05, Basis of Payment.**

Add the Article:

- F. Fuel adjustment shall apply to eligible items of work as per [Section 2120](#).

### Section 2104

#### 2104.05, Basis of Payment.

Add the Article:

- C. Fuel adjustment shall apply to eligible items of work as per [Section 2120](#).

### Section 2105

#### 2105.05, Basis of Payment.

Add the Article:

- C. Fuel adjustment shall apply to eligible items of work as per [Section 2120](#).

### Section 2107

#### 2107.05, Basis of Payment.

Add the Article:

- C. Fuel adjustment shall apply to eligible items of work as per [Section 2120](#).

## Division 22. Base Courses

### Section 2214

#### 2214.03, D, 8.

Replace the first sentence:

When a road is scarified and open to traffic, ~~Commence overlay paving operations (HMA, PCC, Seal Coat, Slurry Seal, etc.) placement operations within~~ no later than 10 working days after ~~completion of the scarification operation~~ commencing scarification on any portion of the project.

## Division 23. Surface Courses.

### Section 2303

#### 2303.03, C, 2, b, 5.

Replace the first sentence:

Allow tack coat to adequately cure ~~without use of artificial means of drying or heating~~ prior to placement of HMA.

### Section 2310

#### 2310.02, C, Bond Breaker.

Replace the Article:

1. Use white pigmented liquid curing compound meeting the requirements of [Article 4105.05](#).
2. Use pavement interlayer geotextile meeting the requirements of [Article 4196.01, B, 7](#).

#### 2310.03, B, 3, c, Bond Breaker.

Replace the Title and Article:

**Bond Breaker for PCC Patches.**

All existing PCC patches that have been scarified and all new PCC patches not previously coated with curing compound shall have a bond breaker applied prior to placing the PCC overlay using one of the two methods below:

- 1) ~~Prior to placement of the PCC overlay, p~~Place two applications of liquid curing compound ~~on all scarified PCC patches or other PCC surfaces to be overlain.~~ Apply each coat evenly on the full area at a rate of 1 gallon per 200 square feet. If drying to the touch occurs within 10 minutes or rapid absorption into the scarified PCC surface is noted, then apply a third coat at a rate of 1 gallon per 200 square feet.
- 2) Place pavement interlayer geotextile in accordance with Article 2310.03, B, 5.

### 2310.03, B, Preparation of Surface.

Add the Article:

#### 5. Pavement Interlayer Geotextile.

- a. Sweep pavement to remove loose debris before applying pavement interlayer geotextile.
- b. Place geotextile tight without excessive wrinkles or folds.
- c. Use one of the following methods to secure the geotextile:
  - 1) Secure geotextile with pins or nails punched through 2 to 2.75 inch galvanized washers or disks every 6 feet along the edges and at least every 6 feet across the width of the pavement in a grid pattern. Place additional fasteners as needed to ensure geotextile does not shift or fold during concrete placement.
  - 2) Secure geotextile with 3M HoldFast 70 Cylinder Spray Adhesive or approved alternate. Apply to all edges of the fabric and as needed to prevent shifting or folding of the fabric during concrete placement.
  - 3) Other anchoring methods approved by the Engineer.
- d. If geotextile fails to remain secured in place, resecure geotextile and limit placement length in advance of the paving machine such that proper securement can be maintained. Keep driving on geotextile to a minimum. Delay installation on areas subject to excess traffic, such as crossovers, until immediately before concrete placement.
- e. Do not allow more than three layers of the geotextile to overlap in any location. Overlap edges of geotextile by 8 inches  $\pm$  2 inches. Sequence rolling out geotextile to ensure good lapping practice and prevent folding or tearing by construction traffic.
- f. Extend free edge of geotextile interlayer a minimum of 4 inches beyond edge of pavement. Terminate interlayer in a drainable layer. Do not impair free drainage within the geotextile.
- g. Keep geotextile clean and free of loose debris before concrete placement.

### 2310.04, F, Seal Coat Bond Breaker.

Replace the title and Article:

#### ~~Seal Coat Bond Breaker for PCC Patches.~~

The quantity of bond breaker for PCC patches will be the quantity in square yards shown in the contract documents.

#### ~~1. Aggregate.~~

~~Cover aggregate will be measured according to Article 2307.04, A.~~

#### ~~2. Binder Bitumen.~~

~~Binder Bitumen will be measured according to Article 2307.04, B.~~

### 2310.04, Method of Measurement.

Add the Article and **renumber** subsequent Article:

#### G. Pavement Interlayer Geotextile.

The quantity of Pavement Interlayer Geotextile will be the quantity in square yards shown in the contract documents.

#### H. ~~G.~~ Fiber Reinforcement.

Fiber reinforcement will be measured in pounds of fiber incorporated into the concrete mix.

**2310.05, F, Seal Coat Bond Breaker.**

Replace the title and Article:

**Seal Coat Bond Breaker for PCC Patches.**

Payment for bond breaker for PCC patches will be at the contract unit price per square yard. Payment is full compensation for furnishing materials, labor and equipment necessary to install the bond breaker for PCC patches.

**1. Aggregate.**

Payment for cover aggregate will be in accordance with Article 2307.05, A.

**2. Binder Bitumen.**

Payment for binder bitumen will be in accordance with Article 2307.05, B.

**2310.05, Basis of Payment.**

Add the Article and renumber subsequent Article:

**G. Pavement Interlayer Geotextile.**

Payment for Pavement Interlayer Geotextile will be at the contract unit price per square yard. Payment is full compensation for furnishing materials, labor and equipment necessary to install the pavement interlayer geotextile.

**H. G. Fiber Reinforcement.**

Per pound of fiber reinforcing. Payment shall be full compensation for supplying all materials, equipment, and labor for incorporating fiber reinforcement into the concrete mix.

**Division 24. Structures.****Section 2412****2412.03, D, 4, a, 1.**

Replace the Article:

Transverse grooving or tining in plastic concrete of bridge decks (and bridge approaches ~~when included in the bridge project~~) will not be allowed unless otherwise stated in the contract documents.

**2412.04, B.**

Replace the Article:

Square yards of Longitudinal Grooving in Concrete, ~~in square yards~~ Bridge Deck and/or Approaches, will be the plan quantity shown in the contract documents.

**2412.05, F.**

Replace the Article:

Payment for Longitudinal Grooving in Concrete, Bridge Deck and/or Approaches, will be the contract unit price ~~for~~ per square yard. This payment includes removal of slurry and residue during the grooving operation.

**Section 2426****2426.02, B, 2, Regular Repair.**

Replace the first paragraph:

Use approved material from [Materials I.M. 491.20, Appendix B](#), in accordance with manufacturer's recommendations or Class O PCC meeting the requirements of [Materials I.M. 529](#) and the following. Class O PCC batched in accordance with these requirements need not classify as low slump concrete.

**2426.03, D, Curing.**

**Replace** the third sentence:

Use manufacturer's recommendations for curing products from [Materials I.M. 491.08](#) and [Materials I.M. 491.20](#).

**Division 25. Miscellaneous Construction.****Section 2501****2501.05, L, 1.**

**Replace** the Article:

When required by the contract documents, or ordered ~~as directed~~ by the Engineer, payment will be ~~a lump sum price of \$500.00 per test each pile tested~~.

**Section 2527****2527.02, D, 1, b, 2.**

**Replace** the Article:

Nominal width ~~of 4 inches~~ as specified in the contract documents.

**2527.03, A, General.**

**Replace** the Article:

1. The contract documents will specify the quantity, locations, and type of pavement markings required.
2. For painted pavement markings, use self-propelled or truck-mounted equipment designed for the purpose of applying painted pavement markings of the type, width and thickness required. Hand application or towing of the equipment will be allowed for smaller areas as approved by the Engineer. Equip the machine with an adjustable guide-on to obtain proper placement of the line. For all other marking types, use equipment designed for the preparation and application of the appropriate type of pavement marking material.
3. Beginning January 1, 2028, provide a minimum of one employee on the project holding an ATSSA Pavement Marking Technician certification and experience in the application of the appropriate type of pavement marking material. Employee(s) shall be on site at all times when pavement markings are being applied, with their primary attention being devoted to the surface preparation and pavement marking operations. If a Certified Technician is not available, a person holding a certificate of completion from the ATSSA Pavement Marking Technician training course (but not yet fully certified as a Pavement Marking Technician) may be allowed to perform temporary waterborne pavement marking applications only.
4. Provide a letter of certification from the pavement marking manufacturer indicating the Contractor's qualifications to install their product. The letter must be signed by an official from marking manufacturer and the date of the signature must be within the previous 12 months. Include a copy of the manufacturer's application instructions enclosed with the letter and always have a copy of both available on site for reference by the Engineer upon request.
5. Before beginning permanent painted pavement marking operations, at a location approved by the Engineer, complete a 300 foot test section application of the appropriate type of pavement marking material that demonstrates the ability to meet the requirements of this specification. Do not begin permanent pavement marking operations until the Engineer approves the test strip. The Engineer may waive the test strip requirement if they have sufficient evidence to ensure the crew will perform a quality application.
6. ~~2.~~ When waterborne or solvent based traffic paint is specified, use the following to determine which to apply. Monitor weather conditions to ensure equipment capable of placing the proper type of paint is

available. The Engineer will not consider temperature conditions an excuse for delaying placement of pavement markings. Follow the manufacturer's written recommendations for other details of application.

- a. From April 23<sup>rd</sup> to October 7<sup>th</sup>, use waterborne traffic paint when both the atmospheric and surface temperatures are at least 35°F and rising. Only use solvent-borne paint if these requirements cannot be met.
  - b. From October 8<sup>th</sup> to April 22<sup>nd</sup>, solvent-borne paint may be used any time. Only use waterborne traffic paint if both the atmospheric and surface temperatures are at least 35°F and rising at the time of application.
7. ~~3.~~ Follow the manufacturer's temperature restriction recommendations for tape and durable paint.
8. ~~4.~~ For all pavement markings, ensure the pavement surface is dry and free from dirt, dust, oil, curing compound, and other contaminants which may interfere with markings properly bonding to the surface. For permanent pavement marking applications, use both compressed air sprays and a power broom ahead of the application truck to achieve these requirements. Ensure the clean surface is at least 1 inch wider than the anticipated marking. Shoot an air blast on the pavement surface immediately prior to placing the new markings. The air blast is not intended to remove large amounts of dust, but only a very small amount of residue that might be left from the removal and cleaning operation.
9. ~~5.~~ Ensure the following for all painted and taped pavement markings:
- Uniform thickness,
  - Uniform distribution of glass beads throughout the line width,
  - Minimum line widths as specified, with a tolerance of  $\pm 1/4$  inch for 4 inch lines and  $\pm 1/2$  inch for wider lines or a maximum of 1/2 inch above the specified width,
  - Symbols and Legends are visually proportional to contract documents with an out-to-out tolerance of  $\pm 6$  inches, and
  - Markings have sharp edges and cutoffs at the ends, and
  - Location and alignment are consistent with contract document requirements
10. Take a minimum of ten width measurements per mile per line per color, spaced approximately 500 feet apart, for each line and each color. Report these values and locations to the Engineer at the end of each working day. The Engineer may perform additional width checks at their discretion. All measurements taken may be used to determine conformance with marking width requirements.
11. Take a minimum of three length measurements within the first 1000 feet of pavement markings applied each day, for each non-continuous line and each color. Measure both the length of each stripe and the gap between the stripes to ensure they are in conformance with the contract documents and [Standard Road Plan PM-110](#). Report these values and locations to the Engineer at the end of each working day. The Engineer may perform additional length checks at their discretion. All measurements taken may be used to determine conformance with marking length requirements.
12. For pavement markings placed on new pavement surfaces, install any necessary temporary pavement markings, and wait a minimum of 2 weeks from the day the surface is completed before installing permanent markings.
13. Lay out the pavement marking and grooving as detailed in the contract documents and as follows:
- a. Apply pavement markings straight and close to the intended alignment without abrupt changes that result in an unacceptable appearance by using a guiding device extending at least 3 feet ahead of the machine. A laser or camera guidance system is also acceptable provided the system can achieve the intended alignment. Lines that deviate laterally from the intended alignment more than 2 inches in 200 feet may be rejected.
  - b. The location of edge lines on all two-lane roadways shall be referenced from the roadway centerline. On multi-lane roadways, the locations of edge lines shall be referenced to accurately located longitudinal joints near lane line locations. The location of edge lines on ramps may be referenced to the pavement edge. Where such references do not exist or are not reliable, locate the lines as follows:
    - 1) For straight or nearly straight lines, provide reference marks spaced no more than 50 feet apart, or reference the location to a stringline set between marking line points.
    - 2) For curves, reference the locations to closely spaced marking line points. For sharp curves, a

- spacing of 10 feet between marking reference points may be required.
- 3) Other equally effective systems the Engineer approves.
  - c. For all markings, utilize adequate guide marks to ensure the accurate application of the pavement markings.
  - d. Pavement marking grooving shall adhere to these same requirements such that properly applied marking material can be placed fully within each intended groove.
14. For all painted pavement marking applications, do not exceed manufacturer's recommended application travel speed or 10 mph, whichever is less.
15. 6. For tape products, follow the manufacturer's recommendations for surface dryness, primers, adhesives, and other surface preparation requirements. Unless specified otherwise by the tape manufacturer, meet the following test for determining surface dryness before applying the tape:
- a. In an area of direct sunlight where the tape will be applied, place an 18 inch by 18 inch piece of polyethylene (a green or black garbage bag may be used). There should not be any holes or tears in the polyethylene.
  - b. Tape down all the edges of the polyethylene sheet to seal all the edges and not allow any air movement to get under the polyethylene.
  - c. Firmly tamp the tape using the tamper cart or by foot tamping.
  - d. Allow 20 to 25 minutes for the polyethylene to be exposed to the direct sunlight.
  - e. Remove the polyethylene from the road surface. If no moisture is present on the underside of the polyethylene or on the road surface, the tape can be applied.
  - f. If any moisture is present, allow another hour to pass and repeat the test until no moisture is found.

### 2527.03, D, 3.

Delete the Article:

3. Accurately place all lines to a close tolerance using a guide extending at least 3 feet ahead of the machine. The location of edge lines may be referenced to the pavement edge. The locations of other longitudinal lines may be referenced to accurately located longitudinal joints. Where such references do not exist or are not reliable, locate the lines as follows:
  - a. For straight or nearly straight lines, reference the locations to a stringline set between marking line points.
  - b. For curves, reference the locations to closely spaced marking line points. For sharp curves, a spacing of 10 feet may be required.
  - c. Other equally effective systems the Engineer approves.

### 2527.03, G, Defective Pavement Markings.

Replace the title and Article:

#### Defective Pavement Markings and Grooves.

1. Pavement markings will be evaluated by the Engineer for acceptance following installation. The, and the Engineer will notify the Contractor of any pavement markings that fails to meet acceptance. Reasons for failure could include, but are not limited to, failed retroreflectivity readings, incorrect color, incorrect location, poor alignment, poor adherence to the pavement surface, insufficient thickness, width or length and insufficient bead embedment. Replace, at no additional cost to the Contracting Authority, all pavement markings which the Engineer determines to be defective and not in conformance with this specification. Remove the defective markings completely and clean to the underlying pavement surface according to the requirements of Article 2527.03, C. Remove the defective area plus all adjacent marking material extending 1 foot in any direction. After surface preparation work is complete, finish the repair by reapplying new marking material over the cleaned pavement surface according to the requirements of this specifications the contract documents.
2. Non-conformance with the contract documents may include, but are not limited to:
  - a. Pavement markings that:
    - 1) Have drag marks, gashes, gouges, foreign covering, discolored areas or areas that have failed to solidify.
    - 2) Have improper adhesion, length, color, thickness, or bead embedment.

- 3) Have areas that present a ragged appearance, areas that do not present sharply defined edges, or areas with abrupt unintended changes in alignment.
- b. Pavement marking grooves that are not of the correct width, length, depth, cross slope, or alignment.
- c. Markings that are not substantially placed within each intended pavement marking groove, when grooving is required and the grooves are placed in conformance with the contract documents.
- d. Lines or grooves that deviate laterally from the intended alignment by more than 2 inches in 200 feet may be rejected.
- e. Lines or grooves that do not meet the required widths. No more than 300 feet of deficient width line or groove may be allowed to remain in each 1 mile segment.
- f. Lines that do not meet minimum retroreflectivity requirements as listed in Tables 2527.02-3, 2527.02-4, and 2527.02-5. Markings shall be evaluated in 1 mile increments by the requirements listed in [Materials I.M. 386](#). For any 1 mile section in which the average of all readings in a single line does not meet minimum retroreflectivity requirements, the markings in the entire 1 mile section shall be replaced to ensure they meet minimum retroreflectivity requirements.

### 2527.03, H, 1.

#### Replace the Article:

When specified, place pavement markings in a groove cut into the pavement surface. Dry or wet cut the groove in a single pass, using ~~stacked diamond~~ polycrystalline disk cutting heads mounted on a ~~floating~~ down-pressure head with controls capable of providing accurate and uniform depth relative to the pavement surface, a groove cross slope that matches that of the adjacent pavement, and alignment consistent with the requirements of the contract documents. If dry cutting, use equipment that is self-vacuuming. Use the equipment according to the manufacturer's recommendations.

## Section 2528

### 2528.03, J, 7, a.

#### Replace the Article:

~~Contractor may choose to use~~ Automated Flagger Assistance Devices (AFADs) shall be used for mainline flagging operations. AFADs are not required for sideroad flagging or temporary traffic control zones lasting less than 2 hours. Ensure all AFADs meet the ~~current~~ requirements of ~~the MUTCD Section 6E.04 and 6E.06~~ [Article 4188.12](#).

### 2528.04, J, Flaggers and Automated Flagger Assistance Devices.

#### Replace the Article:

1. By count for the number of flaggers ~~or flaggers with AFAD~~ used during each work shift. A shift is a scheduled period of work for the Contractor's operations.
2. For a ~~Flaggers~~ or ~~Flagger with AFAD~~ to be counted:
  - a. Use of the flaggers or flagger with AFAD is necessary and they are used as part of preplanned work that is started that shift and is intended to proceed for a major part of the shift. If used less than 4 hours during a shift, one-half flagger will be counted. If used at least 4 hours, but less than 12 hours, a total of one flagger will be counted. If used 12 hours or more, an additional one-half flagger will be counted for a total of 1.5 flaggers for the shift.
  - b. Use of other flaggers is necessary and they are used for at least 1 hour during the shift, perhaps intermittently, and this shall be the primary duty of the employee. If used less than 4 hours in a shift, one-half flagger will be counted.
3. ~~AFADs will not be measured for payment separately, but they may be used as a supplement or an alternate to flaggers. Flaggers will include AFADs, if AFADs are used as described in this specification. A~~ Flaggers with AFAD will be measured as a single unit for the combination of ~~manual~~ flagger and AFAD at each flagger station location. If more than one AFAD is controlled by a single ~~manual~~ flagger, Flagger with AFAD will be measured ~~for payment~~ by count of the ~~flagger station locations~~ (AFAD locations).

**2528.05, J, Flaggers and Automated Flagger Assistance Devices.****Replace the Article:**

1. Predetermined contract unit price per each for the number of shifts each Flagger or Flagger with AFAD was used.
2. Payment is full compensation for providing trained flaggers and AFADs according to Article 2528.03, J.
3. ~~No direct payment for AFADs will be made for~~ Unit price for Flagger with AFAD includes cost of flagger and the installation, operation, relocation, maintenance, ~~or~~ and removal of the ~~devices~~ AFAD.
4. ~~Additional flagging and AFAD related~~ Signs and additional devices necessary ~~to comply with requirements related to the use of AFADs~~ for flagging and AFAD operations will not be paid for directly but shall be incidental to Traffic Control.

**Section 2548****2548.02, A, Milling.****Replace the Article:**

Equip milling equipment with a cutting head having ~~cutting tips~~ polycrystalline diamond (PCD) teeth arranged in a pattern as to provide a smooth cut, ~~with~~ approximately 1/16 inches between peaks and valleys.

**Section 2549****2549.03, B, Manhole Rehabilitation.****Add the Articles:**

- 6. Multi-Layer Polyurea/Polyurethane Protective Lining System.**
  - a. Surface Preparation:** Prepare according to the manufacturer's recommendations and the following.
    - 1) Provide a surface compatible for installation of the liner system, which may include high pressure water cleaning, hydro blasting, abrasive blasting, grinding, or detergent water cleaning.
    - 2) Produce a cleaned, abraded, and sound surface with no evidence of laitance, loose concrete, brick or mortar, contaminants or debris.
    - 3) After the defects in the structure are identified, repair all leaks with a chemical or hydraulic sealant designed for use in field sealing of ground water. Repair severe cracks with a urethane-based chemical sealant, as approved by Jurisdiction prior to installation. Repair exposed rebar, defective pipe penetrations, or inverts utilizing non- shrink grout or approved alternative method.
  - b. Lining Material Installation.**  
Apply according to the manufacturer's recommendations and the following.
    - 1) Ensure an adhesion layer minimum thickness of 50 mils.
    - 2) Apply the polyurethane liner system surface layer to a thickness of no less than 400 mils. Also use this material to produce a uniform interior wall surface prior to the installation of the final layer.
    - 3) Ensure final installation is a minimum of 50 mils of the lining.
  - c. Quality Assurance and Acceptance.**
    - 1) The Engineer will conduct a visual inspection of the completed lining system prior to acceptance. Any deficiencies in the finished liner system will be marked. Repair marked deficiencies according to the manufacturer's recommendations.
    - 2) Utilize high voltage holiday detection to inspect for pinholes or breaches in the liner system installation according to ASTM D 4787.
    - 3) When required, verify thickness of the application by point depth checks into the surface layer component and/or physical removal of a small area of the polyurethane material. Repair the test areas immediately following the test at the Contractor's expense.

**7. Casting.**

Install casting per [Article 2435.03, A, 10.](#)

**2549.04, Method of Measurement.**

Add the Articles:

**N. Multi-Layer Polyurea/Polyurethane Lining System.**

The vertical dimension of the lined structure with multi-layer polyurea/polymer protective liner will be measured in feet from the lowest flowline to the top of the rim.

**O. Remove and Replace Casting.**

Each casting to remove and replace will be counted.

**2549.05, M, 2.**

Replace the Article:

Payment is full compensation for the handling of sewer flows during lining operations as required to properly complete the installation, and replacement of the existing casting with a new casting salvaging and reusing existing casting.

**2549.05, Basis of Payment.**

Add the Articles:

**N. Multi-Layer Polyurea/Polyurethane Lining System.**

1. Payment will be at the unit price per vertical foot for each structure size.
2. Payment is full compensation for the handling of sewer flows during lining operations as required to properly complete the installation, and salvaging and reusing existing casting.

**O. Remove and Replace Casting.**

1. Payment will be at the unit price for each casting to be removed and replaced.
2. Payment is full compensation for furnishing and installing adjustment rings, installing new infiltration barrier (sanitary sewer manholes only), and salvaging existing casting for the Contracting Authority.

**Section 2552****2552.02, A, 1, a, Suitable Backfill Material.**

Replace the Article:

Class II, Class III, Class IVA, or Class IVB as defined in ~~Article 2552.02, C~~ [Article 2552.02, D](#).

**2552.02, A, 1, b, 1.**

Replace the Article:

Soils not classified as suitable backfill material, as defined in ~~Article 2552.02, C~~ [Article 2552.02, D](#).

**2552.02, A, 1, c, Topsoil.**

Replace the Article:

Class V material. Apply ~~Article 2552.02, D~~ [Article 2552.02, E](#).

**Section 2557****2557.05, Basis of Payment.**

Replace the Article:

~~Contract unit price per square yard~~ Payment for Longitudinal Grooving of Concrete, Pavement, will be the contract unit price for per square yard. This payment includes removal of slurry and residue during the grooving operation.

**Division 26. Roadside Development**

**Section 2601**

**2601.03, C, 2, b, Seed Mixture.**

Replace the Article:

- 1) Choose three different cultivars of Kentucky bluegrass, at 65 pounds per acre each.
- 2) Choose two different cultivars of turf-type perennial ryegrass, at 20 pounds per acre each.
- 3) Unless specified otherwise in the contract documents, use seeding rates shown in table 2601.03-3 for urban areas.

**Table 2601.03-3: Urban Stabilizing Crop Seeding Rates**

| Species  | Application Rate     |
|--|----------------------|
| Bluegrass, Kentucky - Cultivar 1                     | 195 65 lbs. per acre |
| Bluegrass, Kentucky - Cultivar 2                     | 65 lbs. per acre     |
| Bluegrass, Kentucky - Cultivar 3                     | 65 lbs. per acre     |
| Ryegrass, Perennial (turf-type variety) - Cultivar 1 | 40 20 lbs. per acre  |
| Ryegrass, Perennial (turf-type variety) - Cultivar 2 | 20 lbs. per acre     |
| Fescue, Creeping Red                                 | 25 lbs. per acre     |

**2601.03, C, 3, b, Seed Mixture.**

Replace the Article:

- 1) All tall fescue shall be endophyte free.
- 2) Perennial ryegrass shall be cultivars Linn, Amazon, Norlea, or Nui, or a combination thereof.
- 3) Use seeding rates in table 2601.03-4 for permanent seeding of rural areas, unless otherwise specified in the contract documents:

**Table 2601.03-4: Permanent Seed Rates, Rural Areas**

| Species   | Application Rate  |
|---|-------------------|
| Fescue, Tall <sup>1</sup> (endophyte free)  | 100 lbs. per acre |
| Ryegrass, Perennial <sup>2</sup> (cultivars Linn, Amazon, Norlea, or Nui, or a combination) | 75 lbs. per acre  |
| Bluegrass, Kentucky   | 20 lbs. per acre  |

**Section 2602**

**2602.01, D, 2.**

Replace the Article:

2. For projects regulated by a NPDES storm water permit and where the Department is the Contracting Authority, the Department may use **Permixon**, a web-based software application, to record storm water permit compliance information.
  - a. Project and permit set-up will be performed by the Department.
  - b. Contractor shall be responsible for:
    - Managing its own company users and adding subcontractor companies.
    - Uploading Erosion Control Implementation Plan and amended PPP documents.
    - Uploading subcontractor co-permittee certifications.
    - Reviewing and signing inspection reports (if not already signed in the field).
  - c. If **Permixon** the software application is not used on a project, the above referenced documents shall be uploaded to or signed in DocExpress per [Section 1113](#).
  - d. Costs associated with the use of **Permixon** the software application are incidental to Mobilization.

## Division 41. Construction Materials.

### Section 4108

#### 4108.01, Fly Ash and Natural Pozzolans.

Replace the Article:

- A. Comply with ASTM C 1945 for Class N, ASTM C 618 or ASTM C 1697, either Class N, for Class F or Class C, or ASTM C 1697 for blended fly ash, except the value of alkalis are not to exceed 3.80% as determined by [Materials I.M. 491.17](#).
- ~~B. When Class F is required, a Class C fly ash with minimum total oxides (SiO<sub>2</sub> + Al<sub>2</sub>O<sub>3</sub> + Fe<sub>2</sub>O<sub>3</sub>) of 66% and minimum SiO<sub>2</sub> of 38% may be used.~~
- ~~B. C.~~ Approval of the source of fly ash will be required. This is to be based on fly ash produced when the power plant is using specific materials, equipment, and processes. Any change in materials, equipment, and processes voids the source approval, and a new approval of the source will be required. Initial approval of Class N pozzolans will be based on meeting the additional requirements of Materials I.M. 491.17.
- ~~C. D.~~ Inspection and acceptance of fly ash and natural pozzolans will be according to Materials I.M. 491.17.
- ~~D. E.~~ Fly ash for soil stabilization shall meet ASTM C 618, Class C, except loss of ignition (LOI) requirement will not apply. Fly ash shall also contain a minimum of 22% calcium oxide (CaO).

### Section 4127

#### 4127.03, A.

Replace the first paragraph:

Natural sand meeting the requirements of Table 4127.03-1. ~~A gradation for wearing course mixture of no more than 50% retained between two consecutive standard sieves below the No. 4 sieve or gravel aggregate with 100% passing the 3/8 inch sieve meeting these requirements.~~

### Section 4147

#### 4147.02, Manhole Rehabilitation.

Add the Article:

##### **E. Multi-Layer Polyurea/Polyurethane Lining System.**

##### **1. Lining System.**

Comprised of polyurea adhesion coating, polyurethane surface material, and polyurea final layer.

##### **2. Polyurea Adhesion Coating and Final Layers.**

Fast set, spray applied, two component that is 100% solid, contain no volatile organic compounds, moisture tolerant, elastomeric polyurea providing infiltration and corrosion protection. Ensure material is capable of curing properly given the specific project site conditions and conforms to the following table.

**Table 4147.02-4: Physical Properties**

| Property                | Specifications | Value    |
|-------------------------|----------------|----------|
| Harness                 | ASTM D 224     | D 48     |
| Tensile Strength        | ASTM D 412     | 3300 psi |
| Modulus (100%)          | ASTM D 412     | 1650 psi |
| Modulus (200%)          | ASTM D 412     | 1950 psi |
| Modulus (300%)          | ASTM D 412     | 2650 psi |
| Elastomer Tear Strength | ASTM D 624     | 400 psi  |
| Elongation              | ASTM D 412     | <395%    |

| Property                           | Specifications | Value |
|------------------------------------|----------------|-------|
| Taber Abrasion                     | CS-17 Wheel    | <15mg |
| Severe Wastewater Analysis Testing | ASTM G 210     | Pass  |

### 3. Polyurethane Surface Layer.

Spray applied, two component that is high closed cell content, contain no volatile organic compounds, be moisture tolerant, elastomeric polyurethane. Ensure material is capable of curing properly given the specific project site conditions and conforms to the following table.

**Table 4147.02-5: Physical Properties**

| Property                         | Value             |
|----------------------------------|-------------------|
| Density ASTM D 1622              | 6-8 pcf           |
| Compressive Strength ASTM D 1621 | 130-180 psi       |
| Closed Cell Content              | >94%              |
| Water Absorption                 | <0.03 lbs/sq ft   |
| Maximum Service Temperature      | 180               |
| Ultimate Elongation ASTM D 638   | 3.5 to 5.5 %      |
| Adhesion ASTM D 7234             | Substrate Failure |

### Section 4150

#### 4150.02, E, 2, a, 1, a, 2.

Replace the Article:

**Insulation Material:** Linear low-density polyethylene (LLDPE) or high molecular weight polyethylene (HMWPE) insulation suitable for direct burial applications.

#### 4150.02, E, 2, a, 1, b, 1.

Replace the Article:

**Size:** No. 14 12 AWG.

#### 4150.02, E, 2, a, 1, b, 6.

Replace the Article:

**Insulation Material:** High density polyethylene HMWPE.

#### 4150.02, E, 2, a, 2, g.

Replace the Article:

**Insulation Material:** High density, high molecular weight polyethylene HMWPE.

### Section 4188

#### 4188.12, Automated Flagger Control Devices.

Replace the Article:

**A.** Ensure all Use only RED/YELLOW Lens type AFADs meeting the current requirements of the MUTCD Section Part 6E.04 and 6E.06.

**B.** Use RED/YELLOW Lens type AFADs as per MUTCD Section 6E.06.

**B. C.** AFADs shall meet crashworthiness requirements of Article 4188.01, B.

**C. D.** When using AFADs for work zones on Primary roadways, remote communication capabilities meeting requirements of Article 4188.11 are required.

## Section 4196

## 4196.01, B.

Add the Article:

**7. Pavement Interlayer Geotextile**

Use a pavement interlayer for PCC overlay, meeting AASHTO M 288 and Table 4196.01-7.

**Table 4196.01-7: Pavement Interlayer Geotextile Properties**

| Property   | Requirement   | Test Method  |
|--|---|--|
| Fabric Type  | Non-woven Geotextile, no thermal treatment  | Manufacturer certification                                 |
| Mass per unit area   | $\geq 13.3$ oz/sq.yd and $\leq 16.2$ oz/sq.yd   | ASTM D 5261  |
| Thickness under load (pressure)  | 0.29 psi: $\geq 0.12$ inches<br>2.9 psi: $\geq 0.10$ inches<br>29 psi: $\geq 0.04$ inches | ASTM D 5199, modified under loads of 0.29, 2.9, and 29 psi |
| Tensile strength   | $\geq 685$ lb/ft  | ASTM D 4595  |
| Maximum elongation   | $\leq 130\%$  | ASTM D 4595  |
| Water permeability in normal direction under load (pressure)                                   | $\geq 3.3 \times 10^{-4}$ ft/s, at 2.9 psi  | ASTM D 5493  |
| Water permeability in the plane direction of the fabric (transmittivity) under load (pressure) | $\geq 1.6 \times 10^{-3}$ ft/s, at 2.9 psi<br>$\geq 6.6 \times 10^{-4}$ ft/s, at 29 psi   | ASTM D 6574  |
| Weather resistance   | Resistance $\geq 60\%$  | ASTM D4355, at 500 hours exposure                          |
| Alkali resistance  | $\geq 96\%$ Polypropylene/Polyethylene  | Manufacturer certification                                 |