



GS-15002

(Replaces GS-15001)

General Supplemental Specifications for Highway and Bridge Construction

Effective Date
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THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS, ADDITIONS, AND DELETIONS. THESE ARE GENERAL SUPPLEMENTAL SPECIFICATIONS AND SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

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Division 11. General Requirements and Covenants.

Section 1101

1101.03, Definition of Terms.

Add the Article:

Holidays.

The following holidays are observed by the Department:

- New Year's Day, January 1,
- Martin Luther King, Jr.'s Birthday, third Monday in January,
- Memorial Day, last Monday in May,
- Independence Day, July 4,
- Labor Day, first Monday in September,
- Veterans Day, November 11,
- Thanksgiving Day, fourth Thursday in November,
- Friday after Thanksgiving, and
- Christmas Day, December 25.

Section 1102

1102.01, Competency and Qualification of Bidders.

Replace the second sentence of Article A:

To prequalify, a prospective bidder shall complete the required sections, including Bidder Status Form, of the "Contractor's Financial - Experience - Equipment Statement" (Form 650004) and submit it to the Department.

Add to the end of Article H:

Bidders shall complete Bidder Status Form portion of Form 650004.

1102.05, Issuance of Proposals.

Replace the first sentence:

Requests for proposal forms to bid construction and maintenance contracts ~~must~~ and a Bidder Status Form shall be filed by noon of the working day prior to the letting.

1102.09, E.

Replace the Articles:

5. For Federal-aid contracts, certifies acknowledgment of the limitations of lobby activities shown in the bidding documents, ~~and~~
6. For Federal-aid contracts, certifies the bidder does not maintain segregated facilities, ~~and~~

Add the Article:

7. Certifies Bidder Status Form on file with the Office of Contracts is accurate.

1102.11, Proposal Guaranty.

Replace Articles C and D:

C. A Proposal Guaranty/Bid Bond (Form 131084) may be used for the proposal guaranty in lieu of that specified above, using the electronic bid bond verification feature authorized by the Department. Bid bonds will be declared invalid and bid proposals will not be considered if any of the following items are omitted or incorrect:

- Date of Letting
- Bid Order Number
- Name of Contractor
- ~~Original~~ Digital Signature of Contractor: In case of joint venture bid, all contractors must sign.
- Name of the Surety Company

- ~~Original~~ Digital Signature of Surety (if Surety's limitation is less than the amount of the bid bond, a certificate of reinsurance must be attached).
- D. A Contractor's Annual Bid Bond (Form 650043) may also be used for the proposal guaranty in lieu of that specified above. The Annual Bid Bond shall contain the following items:
- Name of Contractor
 - ~~Digital~~ Original signature of the Contractor
 - Date of signature
 - Name of Surety Company
 - ~~Digital~~ Original signature of the Surety

Section 1103

1103.01, Consideration Of Bids.

Add the Article:

- K. For failure to have Bidder Status Form on file with Office of Contracts.

Section 1104

1104.09, Right-of-Way.

Add to the beginning of the second paragraph:

Contractor shall not remove trees outside the construction limits, including areas in divided medians and inside of interchanges, without approval of the Engineer.

Section 1105

1105.03, Working Drawings.

Delete Article B and **Renumber** Articles C, D, and E:

- ~~B. For projects on the Secondary Road System (non-Primary projects), working drawings shall be submitted to the Engineer unless noted otherwise in the contract documents.~~

~~C B.~~

~~D C.~~

~~E D.~~

Replace and **Renumber** Articles F and G:

F E. Electronic Submittals.

1. For projects on the Secondary Road System (non-Primary and Interstate projects), working drawings shall be submitted to the Engineer unless noted otherwise in the contract documents.
- 4 2. For Primary and Interstate projects (and when specified for Secondary Road System projects), ~~electronic submittals may be made via email and sent to the following email addresses corresponding to the review office identified in Table 1105.03-4 shall be made via electronic document management system (Doc Express).~~ or If noted in the contract documents, submittals shall also be made to the consultant email address indicated on the contract documents:.

REVIEW OFFICE
Bridges and Structures
Design (Soils Design Section)
Traffic and Safety

EMAIL ADDRESS
Bridges.Structures@dot.iowa.gov
Soils.Design@dot.iowa.gov
Traffic.Safety@dot.iowa.gov

- ~~2. Provide a courtesy copy of the submittal to the Engineer and District Materials Engineer.~~

- ~~3. When the contract documents specify submittals to be sent to the design consultant's email address, the review office shall be courtesy copied, in addition to the Engineer and District Materials Engineer.~~

- ~~4. Electronic submittals shall be sent from the Contractor's email address that is applicable to the project. Emails sent from subcontractor's, fabricator's, and supplier's email address will not be accepted. Emails from personal email addresses are discouraged and may require authentication by the Engineer prior to acceptance for review.~~
- ~~5. Submittals shall be limited to 15 MB attachment file size. Split larger files and send in multiple emails.~~
- 6 a.** The submittal file shall be Portable Document Format (PDF) sized to print on 11 inch by 17 inch (279.4 mm by 431.8 mm) or 8.5 inch by 11 inch (215.9 mm by 279.4 mm) paper. Full size print documents cannot be accepted in electronic format. Minimum resolution of 300 dpi (118 dots/cm) is recommended. Ensure document submitted is legible. Submittal files in other formats (e.g. CAD files) will not be accepted.
- 7 b.** Provide project number and submittal description in the email subject line for the document title in Doc Express. The email Doc Express submittal will serve as the transmittal log and shall include, by virtue of the user login, the Contractor's name, address, and telephone number, and the fabricator's name, address, and telephone number (if applicable) in the body of the email, or on the electronic attachment.
- 8 c.** Shop drawings submitted electronically via email Doc Express will be tracked, processed, and returned to the Contractor via email Doc Express. Paper copies will not be distributed.

G. Paper Submittals.

For Primary and Interstate projects, all paper submittals shall be processed by the Contractor and sent to the review office identified in Table 1105.03-1 below with a copy of the cover letter sent to the Engineer and District Materials Engineer. The cover letter shall include the following information:

- ~~• Date of submittal or resubmittal~~
- ~~• Project number~~
- ~~• Description of submittal~~
- ~~• Contractor's name, address, and telephone number~~
- ~~• Number of submittal copies~~
- ~~• Fabricator's name, address, and telephone number (if applicable).~~

When the contract documents specify submittals to be sent to the design consultant, copies of the cover letter shall be sent to the review office, as well as the Engineer and District Materials Engineer.

Table 1105.03-1: Review Offices for Working Drawings

DESCRIPTION	REVIEW OFFICE	NUMBER OF COPIES ^(a)	REVIEW TIME (calendar days)
Falsework for slab bridges	Bridges and Structures	2-(6)	30
Cofferdam design (when required)	Bridges and Structures	2-(6)	30
Reconstruction of substructure (detailed plans for supporting the superstructure)	Bridges and Structures	2-(6)	30
Steel Structures	Bridges and Structures	2-(7)	30
Detail plans for falsework or centering support of steel structures (i.e. erection plans)	Bridges and Structures	2-(6)	30
Steel and aluminum pedestrian hand rails and aesthetic fences	Bridges and Structures	2-(7)	30
Highway sign support structures (i.e. bridge-type trusses, cantilevers trusses, & bridge mounts)	Bridges and Structures	2-(7)	30
Precast concrete (i.e. deck panels, RCB culverts, noise wall panels, arch sections, etc.)	Bridges and Structures	2-(8)	30
Tower lighting	Bridges and Structures	2-(7)	30
Highway lighting	Traffic & and Safety	2	30
Highway signing steel breakaway posts	Traffic and Safety	2	30

Traffic signalization ^(b)	Traffic and Safety	2	30
Highway signing - Type A and B signs	Traffic and Safety	2	30
Bridge components	Bridges and Structures	2 (7)	30
Pre-engineered steel truss recreational trail bridge	Bridges and Structures	2 (8)	30
MSE, segmental, and modular block retaining walls (Preliminary and final submittals shall include design calculations, shop drawings, and field construction drawings)	Design (Soils Design Section)	Preliminary submittal: 3 design calculations, 3 shop drawings, & and 3 field construction drawings	30
		Final submittal: 3 design calculations, 3 shop drawings, & and 3 field construction drawings	14
Soil nail and tie-back retaining walls (Submittal includes final design plans)	Design (Soils Design Section)	6 final design plans	60
Intermediate foundation improvement (IFI) (i.e. stone columns, geopiers, etc.) (Submittal shall include design calculations and field construction drawings)	Design (Soils Design Section)	4 design calculations & and 8 field construction drawings	30
Removal of box girder bridges	Bridges and Structures	2 (5)	30
Structural erection manual	Bridges and Structures	2 (6)	30
Temporary shoring	Bridges and Structures	2 (6)	30
Temporary sheet pile retaining wall	Bridges and Structures	2 (6)	30
Architectural mock-ups ^(a)	Bridges and Structures	4	30
Architectural paving ^(a)	Bridges and Structures	4	30
Architectural paint color samples and manufacturer data ^(a)	Bridges and Structures	3	30
Architectural concrete texture form liner samples and drawings ^(a)	Bridges and Structures	3	30
Architectural concrete sealer samples and manufacturer data ^(a)	Bridges and Structures	3	30
Architectural ornamental brick ^(a)	Bridges and Structures	3	30
<p>(a) Number of copies only applies to paper submittals. Number of copies in parenthesis is the number required for full size prints. Full size prints are any print exceeding 11 inches by 17 inches (279.4 mm by 431.8 mm). Submittals of physical samples shall be through the Engineer.</p> <p>(b) Submittal time shall be within 45 calendar days from the date of award of contract.</p>			

1105, Control of Work.

Add the Articles:

1105.13, C.

26. Active Nests of Migratory Birds.

To protect migratory birds, do not conduct construction activities where active nests are present between the dates of April 1 and July 15, inclusive or until the birds have fledged and left the nest. Active nests are nests containing eggs or young of migratory birds.

Beginning on the date the contract is fully executed, the contractor shall remove all non-active, existing migratory bird nests and monitor to prevent the establishment of active nests. Prior to that date, the Contracting Authority is responsible to remove all non-active, existing migratory bird nests and monitor to prevent the establishment of active nests.

If evidence of migratory bird nesting is discovered after beginning work, or in the event that migratory birds nests become established, immediately stop work and notify the Engineer.

1105.17, Subsoil Tillage.

Prior to placement of topsoil and/or stabilizing crop seeding, perform subsoil tillage to an average depth of 16 to 20 inches on stockpile areas, haul roads, and areas used for storage of equipment. Till at 3 foot maximum centers and at right angles to finished slope.

Equip tillage equipment with arrowhead type shoe providing lateral displacement and limit movement of subsoil to the surface. Obtain Engineer's approval for equipment.

It is intended that following subsoil tillage, the area remain in a loosened condition. Additional compaction or operation of heavy equipment, other than that required for topsoil placement and shaping, will not be allowed on areas tilled.

This work shall be considered incidental to other work on the project and will not be paid for separately.

1105.18, Topsoil on Haul Road.

Before placing a construction haul road, strip topsoil from within proposed haul road footprint to a depth of 8 inches and stockpile. After haul road has been removed, prepare disturbed area according to Article 1105.17, and place topsoil over disturbed area to a minimum depth of 4 inches.

This work shall be considered incidental to Mobilization and will not be paid for separately.

Section 1108

1108.02, A, 1.

Replace the second sentence:

The proposal form may also indicate the contract period by a Completion Date ~~for non-highway type contracts (e.g. buildings, furnishing materials, etc.).~~

1108.02, C, 1, Specified Start Date.

Replace the Article:

Except as noted in Article 1108.02, E, 2, f, ~~Working days will be charged to the Contractor starting on the Specified Start Date, but not prior to 15 calendar days after the contract has been signed by the Contracting Authority.~~ Starting work prior to the Specified Start Date will be considered upon request, and working days will be charged when work starts.

1108.02, E, 2.

Replace the Article:

Working days will be charged beginning with the following circumstances:

- ~~a. On the date specified for projects with a Specified Start Date.~~
- b. On the date that has been agreed to at the preconstruction conference for ~~projects~~ contracts with an Approximate Start Date.
- c. On the start date indicated in the Notice to Proceed for ~~projects~~ contracts with an Approximate Start Date.
- d. On the day following the date the site becomes available if the Contractor is already working ~~on the site~~ onsite for ~~projects~~ contracts with an Approximate Start Date.
- e. On the date the Contractor begins work prior to the Late Start Date.
- f. On the date specified for ~~projects~~ contracts with a Late Start Date or Specified Start Date, and the Contractor has not ~~begun~~ started work prior to that date. However, working days will not be charged prior to 15 calendar days after the contract has been signed by ~~the Contracting Authority~~ all required entities, ~~as long as~~ provided the Contractor furnished the signed contract, performance bond, and proof of insurance within the time allowed by Article 1103.07~~;~~, and has not ~~begun~~ started work on the contract.

1108.03, C.

Delete the second sentence:

~~The Contractor should request a determination of the holidays to be observed at the beginning of each calendar year.~~

Section 1109

1109.05, A, 2.

Replace the Article:

On contracts for which the contract sum is \$10,000 or more, payments may be allowed based on value of processed or fabricated materials or rolled steel products which have been delivered on the work or 90% of the value of processed or fabricated material, or rolled steel products, reserved for the project and stored elsewhere ~~within Iowa or in other locations where there is routine inspection by Departmental personnel,~~ provided the materials ~~are of acceptable quality~~ conform to the requirements of the contract and the manner of storage is satisfactory to the Engineer. Contractor is responsible for damages and material losses until the material is incorporated into the work and the work is accepted.

Section 1113

1113, Electronic Document Storage.

Add the Section:

1113.01 GENERAL.

Electronic Document Management shall be used for electronic document storage on contracts where the Department is the Contracting Authority. This requirement may be used on other contacts when specified in the contract documents.

This specification contains requirements for collection and management of electronic documents through the use of Doc Express at <https://doxexpress.com>. Doc Express is a web based document management program which accepts electronic documents and provides security as appropriate for each submittal.

The Contracting Authority will perform setup of Doc Express in accordance with project requirements. Doc Express is the complete and officially recognized construction document management system for contract documents required by the Contracting Authority.

Costs associated with the use of Doc Express are incidental to Mobilization. Contract item progress payments will be withheld until documentation is provided as defined in this specification.

A. Structure.

The framework utilizes basic contract drawers to store project documents.

Within each drawer are types used to group similar items together. A complete listing of the types in each drawer can be seen when submitting a document to that drawer in Doc Express.

B. Security.

As requested, each user within an organization will be assigned an account within Doc Express by their own organization. Access to Doc Express will be tracked through the use of the user's unique email address and password. User permissions will be defined within Doc Express for each specific contract.

1. **Prime** - The Contractor will be assigned Prime permission to submit documents and view all documents submitted into Doc Express - including those submitted by the Contracting Authority and users with an Associate level permission.

The Prime can grant access to all associates to all drawers except the Payroll drawer to which only the Prime should have access.

2. **Associate** - Subcontractors and suppliers will be assigned Associate permission which will authorize any user associated with the respective subcontractor or supplier to submit documents but can view only those documents submitted by that respective entity. An Associate user is not able to view documents submitted by a Prime, Contracting Authority, or other Associate users.
3. **Reviewer** - Reviewer permission allows the user to only view all documents and will typically be assigned to those that will oversee the specific contract, but are not responsible for daily tasks.

4. **Contracting Authority** - A formal permission level is not assigned. Contracting Authority staff has the ability to submit, receive, audit, or reject a document.

Documents submitted into Doc Express are secure. Security of the program will not allow modifications to a submitted document by any user. The user, or another user within the organization, who submitted the document may delete the submittal from Doc Express as long as the document has not been received, rejected, or had a comment attached.

The Payroll drawer has a more restrictive security setting. Only the user who submits a payroll document or a Contracting Authority user specifically assigned to access payroll information for the specific contract can view the payroll document. Other Prime users will not be able to view the submitted payroll document nor will other Contracting Authority users.

C. Document Types.

Doc Express will accept all types of electronic documents including, but not limited to, Microsoft Excel files, Microsoft Word documents, Adobe Portable Document File (PDF), Tagged Image File (TIFF), and Joint Photographic Experts Group (JPEG). The maximum size limit of a file is 50 MB, but uploading and opening of the document will take longer as the file size increases. Preference should be given to smaller file sizes anytime they can be used.

1113.02 RESPONSIBILITIES.

A. Contracting Authority.

1. Contract set-up including drawer and type creation within a contract with applicable Prime, Associate, and Reviewer permissions.
2. The Construction Project File will be maintained in Doc Express. The Contracting Authority will submit to the appropriate drawer and type, all construction related documents generated by the Contracting Authority.
3. Review and verify that the documentation submitted meets the applicable submittal requirements. The review of documents will be made promptly from when the documents were able to be verified. Contractor payment may be withheld for contract documents not submitted.

B. Contractor.

1. Verify subcontractors and suppliers involved with the project have access to contract in Doc Express. Add any subcontractor or supplier which was omitted from the set-up performed by the Contracting Authority.
2. Submit electronic documentation per type defined in Doc Express. Each electronic submittal may contain multiple pages of documentation but shall provide information required for the specified type only.
3. Provide daily or weekly statements that show an itemized summary of the quantity of certified non-proportioned material delivered to the project site. The statement is to include a total for the day or week provided and a running total for the amount delivered to the project to date.
4. Submit the invoice, certified bill of materials, or bill of lading for each shipment as documentation to allow the Contracting Authority to authorize progress payments for:
 - Corrugated Metal Culvert Pipe – Materials I.M. 441.
 - Precast Concrete – Materials I.M. 445.
 - Plastic Pipe – Materials I.M. 446.

C. Shared Contracting Authority and Contractor/Supplier Responsibilities.

Doc Express will store final versions of documentation required for the contract. Some documents require involvement and coordination between the Contracting Authority and Contractor to reach a final version. This shared responsibility will be coordinated to prevent incomplete or redundant data from being electronically stored.

Division 20. Equipment Requirements.

Section 2001

2001.12, G.

Add to the end of the Article:

- Provide a manufacturer produced tank stick.

2001.12, H.

Delete the Article:

~~H. Calibrate distributors initially at the Iowa DOT Materials Laboratory. Verification of a manufacturer's calibration may be made by the Iowa DOT Materials Laboratory or by a District Materials Office. Have distributor calibrations certified annually by either the Iowa DOT Materials Laboratory or District materials personnel. If distributors are found to have inaccurate calibrations, have distributors recalibrated by the Iowa DOT Materials Laboratory before further use.~~

Division 21. Earthwork, Subgrades, and Subbases.

Section 2122

2122.02, A, Hot Mix Asphalt Mixture (1,000,000 ESAL Base Mixture).

Replace the title and Article:

Hot Mix Asphalt Mixture (1,000,000 ESAL Base Mixture).

Use materials specified in a 1,000,000 ESAL base mixture with PG 58-28 binder according to Section 2303.

2122.02, B, 3.

Replace the Article:

For shoulder construction in which PCC is placed over HMA asphalt, thoroughly clean the surface by brooming prior to placing concrete. When HMA asphalt is to be placed over HMA asphalt, prepare the surface according to Article 2303.03, C, 4.

2122.02, C, 1, Hot Mix Asphalt Mixture.

Replace the title and Article:

Hot Mix Asphalt Mixture.

- a. Prior to placement, tack coat the pavement edge.
- b. Proportion, mix, place, and compact HMA asphalt mixture to the width, thickness, grade, and slope shown in the contract documents, according to the requirements of Section 2303.

2122.05, A, 2, c.

Renumber the Article:

C 3. Separate payment will not be made for:

2122.05, A, 3.

Renumber the Article:

3 4. Furnish samples as specified in Section 2303 or 2301, with payment to be made as specified.

2122.05, C, Resurfacing or Overlay of Existing Paved Shoulders.

Replace the Article:

For HMA asphalt of the type, width, and thickness specified and satisfactorily constructed, payment will be according to Article 2303.05.

Division 22. Base Courses.

Section 2213

2213.02, A, 1, HMA Base Widening.

Replace the title and Article:

HMA Asphalt Base Widening.

Use 1/2 inch or 3/4 inch 1,000,000 ESAL Base mixture. For base widening for shoulders, use PG 58-28 binder.

- ~~a. Use mixture specified on the contract documents.~~
- ~~b. Meet requirements of Section 2303, as specified.~~

2213.02, E, Preparation of Subgrade.

Replace Articles 1 and 2:

1. Cut the trench to the width of the widening shown in the contract documents. Ensure if the existing pavement is HMA, saw or trim the a vertical edge of existing asphalt (if any) to a vertical line flush with the edge of the existing concrete pavement by sawing or milling, if needed. At the Contractors option, this trim line may be made at any uniform distance in from the edge of the existing concrete, but not to exceed 3 inches.
2. For HMA asphalt base widening, tack coat the edge of the old pavement at a rate of 0.10 to 0.15 gallon per square yard according to Article 2303.03, C, 2, b. A waiting period will not be required before placing the widening.

2213.02, F, 1, HMA Base Widening.

Replace the title and Article:

HMA Asphalt Base Widening.

- ~~a. Limit the compacted thickness of the top layer to no more than 2 inches. The maximum thickness of lower layers may exceed 3 inches if the Contractor demonstrates the thicker layers have compaction and riding characteristics within conformance to that expected from a 3 inch thick layer. Avoids dumping base material on the surface of the pavement. Immediately remove, by brooming, base material spilled on adjacent pavement.~~
- ~~b. Spread base material so that after compaction, the constructed width conforms to the design dimension.~~
- ~~c b. Promptly and thoroughly compact each layer. Compact to the density specified in Article 2303.03, C, 5 for Class I compaction.~~
 - For widening in a travel lane apply Class I compaction per Article 2303.03, C, 5, b.
 - For widening in non-travel lane apply Class II compaction per Article 2303.03, C, 5, c.
- ~~d. The percent of compaction will be based on the laboratory density obtained for that day's mixture.~~
- ~~e c. Succeeding layers of base material may be placed as soon as the previous layer has been compacted. Take density samples from the compacted material and test according to Article 2303.03, D.~~
- ~~f d. When the contract for base widening does not include resurfacing:~~
 - Ensure the final surface of the widening is flush with, or not more than 1/8 inch below, the surface of the old pavement.
 - Limit compacted thickness of top lift to no more than 2 inches.

2213.02, I, Winter Seal.

Delete the Article:

~~I. Winter Seal.~~

- ~~1. Prime HMA base which is not covered with upper base or surface in the same construction season in which it is built. The Engineer may require an application of a winter seal consisting of:

 - The bituminous material used as the primer or tack coat applied at 0.12 gallon per square yard, and
 - A sand cover applied at 10 to 15 pounds per square yard, according to Section 2307.~~
- ~~2. Winter seal that the Engineer requires will be paid for as provided in Article 1109.03, B.~~

- ~~3. Except where road closure is provided in the contract documents, traffic will be allowed to use the road from the time construction is stopped until work is resumed the following season. Make required repairs to the base when construction is resumed, at no additional cost to the Contracting Authority.~~

2216.03, A, 2, a, 1.

Delete Article c and **Renumber** Article d:

- ~~c) The roller tires shall be inflated to the pressure necessary to obtain proper surface contact pressure to satisfactorily seat pavement slabs.~~
~~d c) At the Contractor's option, the roller tires may contain liquid.~~

2216.03, A, 2, a, 2.

Replace the Article:

Weight body suitable for ballasting to a minimum gross load of ~~50~~ 30 tons. The ballast shall allow gross roller weight (~~mass~~) to be readily determined and controlled to maintain a minimum gross roller weight (~~mass~~) of 50 30 tons.

2216.03, A, 2, b.

Delete the Article:

- ~~b. Tow the roller with a rubber tired prime mover.~~

2216.03, D, 2.

Replace the Article:

Roll the cracked pavement until seated to the Engineer's satisfaction. The intent is to:

- ~~• Load the roller so that satisfactory seating can be reasonably assured by one complete coverage by the roller, and~~
- ~~• Accomplish seating with a minimum damage to aggregate interlock at the cracks.~~

Division 23. Surface Courses.

Section 2303

2303.02, C, 6, c, Unclassified RAP.

Replace Note 3 of Table 2303.02-1:

Certified RAP meeting Type B quality for alumina per Section 4127 (by a lab designated by the Engineer) shall have the same maximum allowable usage as Classified RAP for mixes allowing Type B aggregate quality, and credit for crushed particles shall be the percent of aggregate retained on the No. 8 (2.36 mm) sieve from Engineer's extraction test.

2303.02, E, 1, Tack Coat.

Add to the end of the Article:

An equivalent trackless product approved on AASHTO's Product Evaluation Listing (APEL) may be used when ambient temperatures are at least 55°F (12°C).

2303.03, D, 3, b, 1. Asphalt Binder.

Add to the end of the Article:

Do not sample when production of HMA that incorporates the binder is less than 100 tons (100 Mg) in a day.

2303.03, D, 3, c, 10.

Add to the end of the Article:

On or after the third occurrence of the moving average point for absolute deviation from target lab voids falls outside the specification tolerance limit, the Engineer may declare the lot or portions of the lot defective.

2303.05, A, 4.**Replace** the first sentence:

When the basis of payment is by area (or by weight and the final lift of the course has been placed), payment will be further adjusted by the appropriate percentage in Table 2303.05-2 below according to the quality index for thickness determined for that lot:

Section 2304**2304.02, B, HMA Option.****Replace** the Article:

Design a mixture per Materials I.M. 510 for the following:

1. For detour pavement carrying less than 10,000,000 total 20 year ESALs, use HMA 1,000,000 ESAL surface or intermediate course, 1/2 inch or 3/4 inch, with PG 64-22 asphalt binder. For detour pavements or median crossovers on interstates and multi-lane primary highways, use a 10,000,000 ESAL surface or intermediate mixture, with PG 64-22 asphalt binder. The surface lift requires L-4 friction aggregate.
2. For detour pavement carrying more than 10,000,000 total 20 year ESALs, use HMA 10,000,000 ESAL surface or intermediate course, 3/4 inch, with PG 64-22 asphalt binder. For detour pavements on all other primary highways, use a 3,000,000 ESAL surface or intermediate mixture with a PG 64-22 asphalt binder.
3. For median crossovers, use HMA 10,000,000 ESAL surface or intermediate course, 3/4 inch, with PG 64-22 asphalt binder. Apply compaction per Section 2303. The surface lift requires L-4 friction aggregate. For detour pavements on non-primary projects use a 1,000,000 ESAL surface or intermediate mixture with a PG 64-22 asphalt binder.

2304.03, A, 2.**Replace** the Article:

Do not apply Articles 2301.03, H, 2; 3; and 4, b, unless stated otherwise in the contract documents.

2304.03, B, HMA Option.**Replace** the Article:

Meet the requirements of Section Article 2303.03, E.

Section 2320**2320.03, A, 1.****Replace** the Article:**1. Machinery.****a. Self-propelled Machine.**

Use a spreading machine designed and manufactured to perform microsurfacing work, including prewetting the surface. To mix the material, use an automatic sequenced, self-propelled microsurfacing mixing machine, able to accurately deliver and proportion the aggregate, emulsified asphalt, mineral filler, control setting additive and water to a revolving multi-blade double shafted mixer, and discharge the mixed product on a continuous flow basis. Use a mixing machine with sufficient storage capacity for aggregate, emulsified asphalt, mineral filler, control additive and water to ensure a constant flow of a homogeneous slurry mixture.

b. Truck-mounted Machines.

- 1) Use truck-mounted machines specifically designed and manufactured to perform microsurfacing work. The machine shall supply a consistent amount of material to all parts of the spreader box to ensure complete and uniform coverage.
- 2) Operate a minimum of two truck-mounted machines. Cycle these truck-mounted units so mixture production is never delayed more than 15 minutes. Control forward speed of truck in a manner

resulting in a uniform spread rate of material. If there is noncompliance with these requirements, stop production and make appropriate adjustments to the operation.

- 3) Finished surface, joints, and edges shall meet the requirements of Article 2320.03, F. If there is noncompliance with these requirements, stop production and make corrections to affected areas. The Engineer may require a second lift, to correct widespread segregation or variations in the spread rate, at no additional cost to the Contracting Authority.

Division 24. Structures.

Section 2402

2402.04, B, 4.

Replace the first sentence:

For cast-in-place culverts, the amount of excavation measured for payment will be computed from an excavation centered on the center line of the culvert, to the required depth, length, and a width 2 4 feet greater than the inside width of the culvert.

Section 2403

2403.03, F, 5, e.

Replace the first sentence:

If all concrete is at least 1 foot below ground water level, it may be placed at a temperature no less than 40°F and flooded to a minimum depth of 1 foot in lieu of other methods of protection and curing provided the water temperature is 50°F or greater.

Section 2404

2404.03, E.

Replace the Article:

Hold epoxy coated reinforcing steel in place with epoxy coated steel or plastic coated bar supports, and epoxy or plastic coated tie wires.

Section 2405

2405.03, H, 2, Bridge Bearings.

Add the Article:

c. Nut Tightening.

Tighten nuts to snug tight condition. Snug tight is defined as the full effort of one person on a wrench with a length equal to 14 times the bolt diameter, but not less than 18 inches. Apply full effort as close to the end of the wrench as possible. Perform tightening by leaning back and using entire body weight to pull firmly on the end of the wrench until the nut stops rotating. Perform a minimum of two separate passes of tightening. Sequence tightening in each pass so the nut on the opposite side, to the extent possible, is subsequently tightened until all nuts in that pass have been tightened.

Section 2408

2408.02, Materials Requirements, Identification, and Fabrication.

Replace the second sentence of the first paragraph:

All main member fabrication, except bearing devices, shall be fabricated by plants certified as ~~Category III, Major Steel Bridges~~, under the provisions of Simple, Intermediate, or Advanced Bridges according to the AISC's Quality Certification Program for Steel Bridge Fabricators. AISC categories are defined as follows:

- Simple bridges consist of unspliced rolled sections with no radius in the section.
- Intermediate bridges are typical bridges not requiring extraordinary measures. Typical examples include: (1) a rolled beam bridge with field or shop splices, either straight or with a radius over 500 feet; (2) a built

up I-shaped plate girder bridge with constant web depth (except for dapped ends), with or without splices, either straight or with a radius over 500 feet; (3) a built-up I-shaped plate girder with variable web depth (e.g., haunched), either straight or with a radius over 1000 feet; (4) a truss with a length of 200 feet or less that is entirely or substantially pre-assembled at the certified facility and shipped in no more than three sub-assemblies.

- Advanced bridges require an additional standard of care in fabrication and erection, particularly with regard to geometric tolerances. Examples include tub or trapezoidal box girders, closed box girders, large or non-preassembled trusses, arches, bascule bridges, cable-supported bridges, moveable bridges, and bridges with a particularly tight curve radius.

Certification in a higher category qualifies all lower categories.

Section 2412

2412.03, C, Placing Concrete.

Add the Article:

5. Concrete placement equipment proposed to be operated directly on bridge deck reinforcing steel shall be submitted to the Engineer with manufacturer's specifications for review/approval prior to use in concrete placement. Requests may require closer spacing of reinforcing bar supports and tying of all reinforcing bar intersections.

2412.03, E, Curing Concrete Decks.

Replace the first paragraph:

Use burlap with sufficient water that is prewetted by fully saturating, stockpiling to drain, and covering with plastic to maintain wetness prior to placement, ~~to prevent absorption of moisture from the concrete surface.~~
~~Keep the burlap wet.~~

2412.03, E, 2.

Replace the Article:

As soon as practical, but no later than 2 hours after placing the first layer, place a second layer of prewetted burlap on the deck.

Section 2413

2413.02, D, 1, b.

Replace the Article:

Fly ash substitution up to 20% is ~~not~~ permitted for Class O PCC. The proportions for Class O mix with fly ash are in Materials I.M. 529.

2413.03, C, Preparation of Surface for Deck Repair.

Add to the end of the first paragraph:

Deck repairs on concrete beam and steel girder bridges have no removal area restrictions. Deck repairs on continuous concrete slab bridges shall not extend below top mat of deck reinforcing without review and approval of the Engineer.

2413.03, F, Curing.

Replace the Article:

Use burlap that is prewetted by fully saturating, stockpiling to drain, and covering with plastic to maintain wetness prior to placement.

1. Place a single layer of prewetted burlap on the concrete as follows:
 - a. **Interstate and Primary Projects.**

Place within 10 minutes after finishing. If Class O PCC is revibrated because of failure to meet density requirements with initial vibration, place the prewetted burlap within 10 minutes after finishing of the revibrated area.

b. Other Projects.

Immediately after final finishing, cover the area finished with white pigmented curing compound meeting the requirements of Article 4105.05, applied at a rate of no more than 135 square feet per gallon (3.3 square meters per liter). Place the prewetted burlap on the concrete within 30 minutes after the concrete has been deposited on the deck. If Class O PCC is revibrated because of failure to meet density requirements with initial vibration, this time limit will be extended by 15 minutes.

- c. Failure to apply prewetted burlap within the required time is cause for rejecting the affected work. Remove surface concrete in the rejected area and replace at no additional cost to the Contracting Authority.

~~2. Cure the concrete as follows:~~

~~a. For Class O PCC or Class HPC-O:~~

- ~~1) Allow the surface to cure for at least 72 hours.~~
- ~~2) Keep the burlap continuously wet by means of an automatic sprinkling or wetting system.~~
- ~~3) Failure to apply wet burlap within the required time is cause for rejecting the affected work. Remove the surface concrete in the rejected area and replace at no additional cost to the Contracting Authority.~~

~~b. Prewet the burlap with sufficient water, prior to placement, to prevent absorption of moisture from the concrete surface.~~

- 2. Apply water to the burlap covering for a period of 72 hours. Use a pressure sprinkling system that is effective in keeping burlap wet during the moist curing period. The system may be interrupted to replenish water supply, during periods of natural moisture, or during construction contiguous to the concrete being cured. The Engineer may approve interruptions for periods longer than 4 hours on the basis of the method for keeping the concrete moist.
- 3. Maintain continuous contact, except as noted above, between all parts of the concrete deck and the burlap during the 72 hour moist curing period.

2413.03, H, 10.

Replace the first sentence:

Do not allow traffic on a finished surface course until 72 hours after placement ~~or 168 hours for Class HPC-O projects with greater than 1800 square yards.~~

Section 2416

2416.03, A.

Replace Table 2416.03-1:

Table 2416.03-1: Minimum and Maximum Allowable Pipe Sizes

Culvert Use	Minimum Pipe Size in.	Maximum Pipe Size in.
Roadway Culvert	18	108
Entrance Culvert	18*	108

* 15 inch entrance pipes allowed on non-interstate and non-primary roadways.

2416.04, B.

Replace the Article:

Aprons: ~~quantity shown in the contract documents~~ each apron installed will be counted for each size class.

Section 2417

2417.03, A, 1.

Replace Table 2417.03-1:

Table 2417.03-1: Minimum Allowable Pipe Sizes

Culvert Use	Minimum Pipe Size in.
Roadway Culvert	18
Entrance Culvert	18*

* 15 inch entrance pipes allowed on non-interstate and non-primary roadways.

2417.04, B.

Replace the Article:

Aprons: quantity shown in the contract documents each apron installed will be counted for each size class.

Section 2418

2418.01, Description.

Replace the second sentence:

Temporary stream diversion involves diverting flow of a perennial stream around the construction site by use of either a diversion channel, pipe, or hose.

Section 2419

2419.01, E.

Add to the end of the Article:

Section 2523: Highway Lighting

Section 2426

2426.02, B, 2, Regular Repair.

Add as the second sentence:

Materials I.M. 447 provides for use of packaged, dry, combined materials for Class O PC concrete.

2428.04, B, 1.

Add to the end of the Article:

When the Engineer requires correction of a dip by grinding, and grinding would result in a cover concrete thickness less than 2 inches, use the following method to correct the dip:

- Identify limits of dip area,
- Saw cut 3/4 inches deep at the perimeter,
- Remove deck concrete to 1 inch below top mat of deck reinforcing, and
- Place a deck overlay patch in accordance with Articles 2413.03, D; E, 2 & 3; F; G; and H.

Section 2428

2428.05, B, 3.

Replace Table 2428.05-2:

Table 2428.05-2: Price Reduction

New Bridge Decks		Bridge Deck Overlays	
Initial Profile Index Inches Per Mile (mm/km) Per Segment	Dollars Per Segment	Initial Profile Index Inches Per Mile (mm/km) Per Segment	Dollars Per Segment

22.1 - 30.0 (351 - 470)	2000	15.1 - 20.0 (241 - 315)	1000
30.1 - 35.0 (471 - 550)	4000	20.1 - 25.0 (316 - 390)	2000
35.1 - 40.0 (551-630)	6000	25.1 - 30.0 (391 - 470)	3000
over 40.0 (over 630)	^(a)	over 30.0 (over 470)	^(a)
^(a) Correction is required to an index of 15.0 inches per mile (240 mm/km) for overlays and to an index of 22.0 inches per mile (350 mm/km) for new decks.			

Section 2435

2435.03, A, 9, Adjustment Ring(s).

Replace the second sentence:

Bed each polyethylene or expanded polypropylene ring with the manufacturer's approved product and according to manufacturer's recommended installation procedure.

2435.03, A, 11, Infiltration Barrier.

Add the Article:

c. Heat Shrink Sleeve.

- 1) Ensure surfaces are clean, dry, and free of foreign objects and sharp edges.
- 2) Warm surface to drive off any moisture.
- 3) Cut sleeve to required length per manufacturer's requirements.
- 4) Apply primer to manhole and casting surface.
- 5) Place sleeve according to manufacturer's requirements.
- 6) Apply heat to sleeve, smooth out wrinkles, and remove trapped air.
- 7) Cut sleeve at the casting gussets. Reheat to place sleeve onto the casting.
- 8) Trim off excess material.

Division 25. Miscellaneous Construction.

Section 2502

2502.03, A, 8.

Replace the second and third sentences:

Drive the posts 3 feet into the ground and install 4 foot plastic sleeves over the posts. If plastic sleeves are furnished by the Contracting Authority furnishes sleeves, install the sleeves they furnish over posts.

2502.03, C, 10.

Replace the Article:

Use trench rollers with a minimum trench wheel weight of 6000 pounds or a vibratory compactor wheel.

Section 2503

2503.01, Description.

Add the Article:

- F. Low clearance pipe is defined as either arch or elliptical pipe. Unless specified otherwise, Contractor may supply either pipe shape when low clearance pipe is specified.

Section 2504

2504.03, D, Gravity Main Pipe Jointing.

Renumber Article 5 and **Add** the Article:

5. Polypropylene Pipe.

Coat gasket and bell with lubricant immediately prior to closing joint.

5 6. Connections between Dissimilar Pipes.

- a. Use manufactured adapters or couplings approved by the Engineer.
- b. Where adapters or couplings are not available, the Engineer may authorize use of a Type PC-2 concrete collar as shown in the contract documents.

Section 2512

2512.03, C, 3.

Replace the Article:

Place forms in a manner that ensures the top face of forms curb does not vary from a true plane by more than 1/8 inch in 10 feet. Ensure the upstanding face, including any extension, does not vary from a true plane by more than 1/4 inch in 10 feet. Remove forms that are bent, twisted, warped, broken, or battered from the work. Allow Engineer to inspect and approve repaired forms before using.

Section 2513

2513.03, A, 2, b, 3.

Add to the end of the Article:

Target air may be adjusted by the Engineer based on random tests of consolidated concrete behind slip form machine. These additional random tests will be used to consider the need for a target change, and will not be used in the acceptance decision.

Section 2517

2517.02, B, HMA Paving Projects.

Replace the second sentence:

Use asphalt binder meeting or exceeding PG 64-22 asphalt binder.

Section 2522

2522.03, G, 1, a.

Replace the Article:

Ensure the luminaire frame and head frame assembly meet the requirements of ASTM A 709 Grade 50 36. For the purpose of Charpy V-notch toughness requirements, all steel required to be ASTM A 709 Grade 50 used for the luminaire frame and head frame assembly shall meet impact requirements specified in Article 4152.02. Miscellaneous appurtenant steel components may be constructed using ASTM A 709 Grade 36 steel. Ensure all steel and the head frame dome are galvanized. Alternately, in a two cable lift system, the luminaire frame, head frame and miscellaneous appurtenant steel components will all be fabricated from ASTM A 240 Type 201LN stainless steel.

Section 2523

2523.02, B.

Replace the Article:

Use cast-in-place concrete meeting the requirements of Section 2403 or precast materials meeting Section 2419.

2523.03, G, Foundations.**Replace** the Article:

1. Construct cast-in-place concrete foundations for all lighting units not located on structures or barriers. Form and pour the top portion of all foundations in form work to at least 6 inches below the finished ground level. Precast foundations may be installed if allowed by the Engineer.
2. Ensure foundations conform to the details, including reinforcement and alignment to provide the correct overhang, as indicated in the contract documents. Ensure maximum exposed concrete above finished grade does not exceed 4 inches on all sides of finished foundation.
- 2 3. Ensure finished surfaces are smooth and free from stains and foreign material.
- 3 4. Construct or install an alternate foundation, as directed by the Engineer, when shale, sandstone, broken or shattered rock, solid rock, or other similar materials are encountered.
- 4 5. Place anchor bolts to provide for placement of nuts and washers on the top and bottom of the transformer base or pole flange, leaving ample room for adjustment and plumbing the pole. When slip bases are used, position anchor bolts so that they do not interfere with the operation of the slip base. Place anchor bolts according to Article 2405.03, H, 3.
6. When precast foundations are used, drill the hole a minimum 1 foot larger than the diameter of the foundation. Leave bottom of hole as undisturbed as possible. If caving soil or groundwater is present, remove prior to placing foundation. Place backfill consisting of Class B concrete.

Section 2526**2526.03, A, 2, c, 2.****Replace** the last sentence:

Establish these hubs, using means other than the machine guidance surface (such as plan typicals and cross sections), for use by Engineer to check accuracy of construction.

2526.03, A, 3, f.**Replace** the Article:

Take elevations of beams as erected. Develop proposed final deck grades for review by the Engineer on an Excel spreadsheet format. Provide ~~the elevations~~ proposed final deck grades to the Engineer for ~~computation of finish elevations~~ determination of required deck grade adjustments and approval of final deck grades for deck construction. Locations for determining beam elevations are to be according to the plans.

Section 2528**2528.01, A, 10.****Delete** the first bullet:

- ~~Iowa Department of the Blind: Director's Office, telephone: 515.281.1336, website: www.blind.state.ia.us.~~

Section 2529**2529.02, A, Hot Mix Asphalt Mixture.****Replace** the Article:

Unless stated elsewhere in the contract documents, use HMA meeting or exceeding Section 2303 requirements for a 300,000 ESAL surface mixture. ~~with~~ Use an asphalt binder meeting or exceeding PG 64-22 Performance Graded asphalt binder.

2529.02, B, 4, Cement.

Replace Table 2529.02-1:

Table 2529.02-1: Cement Types and Maximum Allowable Substitution Rates

Patch Type	Cement Type	Maximum Allowable Substitution	Minimum Mix Temperature
5 Hour	Type I, Type II Type IS	0% Fly Ash 0% Fly Ash	75°F 80°F*
10 Hour	Type I, Type II Type IS	10% Fly Ash 0% Fly Ash	65°F 70°F*
24 Hour	Type I, Type II, Type IS	0% Fly Ash	50°F
* When a Type A Mid Range Water reducing admixture is used, limit the minimum mix temperature to that required when Type I/II cement is used.			

2529.02, B, 9, Concrete Mixers.

Replace the Article:

For PCC patches, use Class M mixtures with calcium chloride. ~~The Engineer may waive the use of calcium chloride on patches cured longer than 10 hours.~~ Use Class M without calcium chloride for patches cured for 24 hours.

2529.03, G, 4.

Replace the Article:

Cure PCC patches placed on multi-lane sections for a minimum of 10 hours before opening to traffic. Cure PCC patches placed on two-lane sections a minimum of 5 hours before opening to traffic. When allowed by the contract documents or Engineer, cure PCC patches without calcium chloride on multi-lane sections a minimum of 24 hours. These restrictions may be modified in the plans or by the Engineer for specific sections.

Section 2530

2530.02, A, Hot Mix Asphalt Patching Material.

Replace the Article:

Unless stated elsewhere in the contract documents, use HMA meeting or exceeding Section 2303 requirements for a 300,000 ESAL 3/8 or 1/2 inch (9.5 mm or 12.5 mm) surface mixture. ~~with~~ Use an asphalt binder that meets or exceeds a PG 64-22 ~~Performance Graded asphalt binder.~~

Section 2532

2532.03, B, 3, a.

Add as the second sentence:

No areas greater than 2 feet in length shall be left without texture. Total depth of concrete surface ground shall not exceed 1/4 inch.

Section 2548

2548.03, Construction.

Add to the end of the first paragraph:

Allow PCC to cure for a minimum of 14 days prior to placing milled rumble strips.

Section 2552

2552.02, B, Bedding (Class I) Material.

Renumber and Retitle the Article:

B C. Bedding (Class I) Material (Non-Primary Roadways).

2552.02, C, Backfill Material (Under Interstate and Primary Roadways).

Renumber, Retitle, and Replace the Article:

C B. Pipe Bedding and Backfill Material (Under Interstate and Primary Roadways).

Meet requirements of Article 2102.02, A, and Section 4119.

2552.02, D, Backfill Material (Other Areas).

Retitle the Article:

Backfill Material (Other Areas Non-Primary Roadways)

2552.03, E, Pipe Bedding and Backfill Material.

Add to Article 1:

- f. Refer to Standard Road Plan SW-101 for bedding and backfill zones.

Replace Articles 2 and 3:

2 3. Pipe Bedding (Non-Primary Roadways).

a. Granular Material.

- 1) Class I granular material is required for all gravity mains. Use when specified for pressure pipes.
- 2) Place bedding material in the bottom of the trench in lifts no greater than 6 inches thick. Consolidate and moderately compact bedding material.
- 3) Shape bedding material to evenly support pipe at the proper line and grade, with full contact under the bottom of the pipe. Excavate for pipe bells.
- 4) Install pipe and system components.
- 5) Place, consolidate, and moderately compact additional bedding material adjacent to the pipe to a depth equal to 1/6 the outside diameter of the pipe.

b. Suitable Backfill Material.

- 1) Only use with pressure pipe.
- 2) Use suitable backfill material to shape trench bottom to evenly support pipe at the proper line and grade, with full contact under the bottom of the pipe. Excavate for pipe bells.

c. Special Pipe Embedment and Encasement Materials.

- 1) If required in the contract documents, use concrete, flowable mortar, or CLSM in lieu of other bedding materials.
- 2) Secure pipe against displacement or flotation prior to placing concrete, flowable mortar, or CLSM.

3 2. Bedding and Backfill Under (Interstate and Primary Roads).

- ~~a.~~ Place in lifts no greater than 6 inches thick. Thoroughly tamp or vibrate each layer to ensure compaction.

~~b. Thoroughly tamp or vibrate each layer to insure compaction.~~

a. Pipe Bedding.

- 1) Shape bedding material to evenly support pipe at proper line and grade, with full contact under bottom of pipe. Excavate for pipe bells.
- 2) Install pipe and system components.
- 3) Place, consolidate, and moderately compact additional bedding material adjacent to pipe to a depth equal to 1/6 the outside diameter of pipe.

b. Backfill.

- ~~c.~~ Place backfill material after recording locations of connections and appurtenances or at the Engineer's direction. Terminate backfill material at subgrade elevation.

~~d. Terminate backfill material at subgrade elevation.~~

1) Under Roadway.

Use material meeting requirements of Section 4119 for haunch support, primary backfill, secondary backfill, and final trench backfill.

2) Outside of Roadway.

Use material meeting requirements of Section 4119 for haunch support, primary backfill, and secondary backfill. Use Class 10 material meeting requirements of Article 2102.02, A, for final trench backfill.

Retitle Articles 4, 5, and 6:

4. **Haunch Support** (~~Other Areas Non-Primary Roadways~~).
5. **Primary and Secondary Backfill** (~~Other Areas Non-Primary Roadways~~).
6. **Final Trench Backfill** (~~Other Areas Non-Primary Roadways~~).

Division 26. Roadside Development.

Section 2601

2601.01, Description.

Replace the tenth bullet:

~~Outlet or channel scour protection (Transition mat), and~~

2601.03, A, 14, Straw Mulching Machine.

Replace the second sentence:

~~Engineer may consider excessive pulverization as is the general absence of straw longer than 6 inches after distribution.~~

2601.03, A, 15, a.

Delete the second bullet:

- ~~• Have a nominal minimum diameter of 20 inches, and~~

2601.03, A, 15, b.

Delete the second and third sentences:

~~Use equipment that weighs approximately 1000 pounds. When directed by the Engineer, increase the weight (mass) of the equipment by the addition of ballast.~~

2601.03, A, Equipment.

Add the Article:

18. Slit Seeder.

Use a gas, diesel, or electric powered mechanical slit seeder that:

- Is capable of cutting vertical grooves a maximum of 1/4 inch deep into the soil with a maximum horizontal blade spacing of 3 inches,
- Deposits metered seed directly behind the vertical grooves, and
- Contains packer wheels that press and firmly pack seed into the soil.

2601.03, B, 4, c, 1.

Delete the first sentence:

~~Except when a hydraulic seeder is used, thoroughly mix all seed specified for the contract prior to placing seed in seed hopper.~~

2601.03, C, 2, b, Seed Mixture.

Replace Table 2601.03-2:

Table 2601.03-2: Urban Stabilizing Crop Seeding Rates

Bluegrass, Kentucky ¹	122 126 lbs. per acre
Ryegrass, Perennial (fineleaf turf-type variety) ²	35 40 lbs. per acre

Fescue, Creeping Red	18 lbs. per acre
1. Choose three different cultivars of Kentucky bluegrass, at 42 lbs. per acre each.	
2. Choose two different cultivars of turf-type perennial ryegrass, at 20 lbs. per acre each.	

2601.03, C, 2, d, Application Dates.

Replace the Article:

~~Normal seed application dates are March 1 through May 31, and August 10 through September 30.~~ Seed may be applied throughout the year unless ground conditions are unsuitable for seeding due to moisture or frost.

2601.03, C, 3, a, Preparation and Application.

Replace the Article:

- 1) Prepare seedbed according to Article 2601.03, B, 4, a c.
- 2) ~~Prepare seed according to Article 2601.03, B, 4, c.~~ In areas without existing stabilized crop seeding residue, prepare seedbed according to Article 2601.03, B, 4, a, and apply seed according to Article 2601.03, B, 4, d.
- 3) ~~Apply seed according to Article 2601.03, B, 4, d.~~ In areas with existing stabilized crop residue, apply seed with a native grass seed drill with a no till attachment through the small seed box. Seedbed preparation will not be required, except for areas with rills and gullies.

2601.03, C, 4, a, Preparation and Application.

Renumber Articles 2, 3, 4 and **Add** the Article:

- 2) In areas with existing urban crop stabilizing of 50% or greater density, full seedbed preparation and rolling will not be required. Apply seed using a slit seeder as defined in Article 2601.03, A, 18.
- 2 3)
- 3 4)
- 4 5)

2601.03, C, 4, b, Seed Mixture.

Replace Table 2601.03-4:

Table 2601.03-4: Permanent Seed Rates, Urban Area

Bluegrass, Kentucky ¹	122 126 lbs. per acre
Ryegrass, Perennial (fineleaf turf-type variety) ²	35 40 lbs. per acre
Fescue, Creeping Red	18 lbs. per acre
1. Choose three different cultivars of Kentucky bluegrass, at 42 lbs. per acre each.	
2. Choose two different cultivars of turf-type perennial ryegrass, at 20 lbs. per acre each.	

2601.03, C, 5, b, Seed Mixture.

Add row to Table 2601.03-5:

Butterfly weed (<i>Asclepias tuberosa</i>)	3 oz. per acre
----------------------------------------------	----------------

2601.03, C, 7, d, Application Dates.

Replace the Article:

~~Normal seed application dates are April 15 through June 30.~~ Normal seed application dates are April 1 through May 31 and November 1 until ground conditions are unsuitable for seeding due to moisture or frost.

2601.03, E, 2, a, Straw Mulch.

Add the Article:

- 3) Crimp/tuck straw to a minimum of 2 inches below ground surface.

2601.03, G, 3, d, 4.**Replace the Article:**

After sodding and seeding, water the sod, sodbed, and disturbed areas according to Article ~~2601.03, G, 3, e~~ 2601.03, I, 2.

2601.03, G, 3, e, Watering Sod.**Delete the Article:****~~e. Watering Sod.~~**

- ~~1) Provide watering equipment and an approved water supply before beginning any sodding operation. Six waterings will be required. Allow no more than 1 hour to elapse between laying and initial watering of sod. Perform the second, third, and fourth waterings at 4 calendar day intervals, and fifth and sixth waterings at weekly intervals. Perform waterings unless notified by the Engineer in writing at least 1 calendar day prior to the day the watering is to occur. A price adjustment will be assessed at a rate of \$200.00 per day for each calendar day that the Contractor fails to complete the watering from the day watering is to commence.~~
- ~~2) Ensure waterings are sufficient to thoroughly saturate sod, sodbed, and adjacent disturbed areas to a depth of approximately 4 inches.~~
- ~~3) Each watering may require a maximum of 100 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the sod. Complete each watering within a 4 hour period. More than one application for each watering may be necessary to provide adequate saturation without runoff.~~

2601.03, G, 3, f, Urban, Island, and Safety Rest Area Sodding.**Renumber the Article:**

~~f e.~~ Urban, Island, and Safety Rest Area Sodding.

2601.03, H, Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Outlet or Channel Scour Protection (Transition Mat).**Replace the title of the Article and Articles 1, 6, and 7, and Delete Article 8:**

Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and ~~Outlet or Channel Scour Protection (Transition Mat).~~

- 1. Preparation of Area to be Treated with Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and ~~Outlet or Channel Scour Protection (Transition Mat).~~**
- 6. ~~Outlet or Channel Scour Protection (Transition Mat) (TM).~~**
- 7. Finishing Adjacent to Special Ditch Control, Turf Reinforcement Mat, Slope Protection Areas, and ~~Outlet or Channel Scour Protection (Transition Mat).~~**
- 8. ~~Watering of Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Outlet or Channel Scour Protection (Transition Mat).~~**
 - ~~a. Provide watering equipment and an approved water supply before starting special ditch control, TRM, slope protection, or TM work. Water the area no later than the day following placement of the materials. If Contractor fails to water by second day following placement a price adjustment will be assessed at a rate of \$200.00 per calendar day until the watering has been completed.~~
 - ~~b. Apply three additional waterings at intervals of 5 to 8 calendar days. Perform waterings unless notified by Engineer in writing at least 1 calendar day prior to the day watering is to occur. If Contractor fails to complete watering before the 8th calendar day has elapsed, a price, adjustment will be assessed at a rate of \$200.00 per calendar day, beginning on the 9th day, until the watering is completed.~~
 - ~~c. Ensure waterings are sufficient to thoroughly saturate seedbed to a depth of approximately 2 inches.~~
 - ~~d. Each watering may require a maximum of 50 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the seedbed. Complete each watering within a 4 hour period.~~
 - ~~e. More than one application for each watering may be necessary to provide adequate saturation without runoff.~~

2601.03, H, 5, a, 2.**Replace the Article:**

~~Use mixture specified.~~ Seed slopes using seeding rates in Tables 2601.03-7 for slopes adjacent to native grass seedings and 2601.03-8 for slopes adjacent to rural seedings.

2601.03, H, 5, b, Fertilizing.**Replace the Article:**

~~For slope protection, use fertilizer specified. Apply provisions of Article 2601.03, B, 4, b.~~

- 1) After area is prepared and prior to laying slope protection, fertilize at the rate specified. Apply provisions of Article 2601.03, B, 4, b. Spread with a mechanical spreader to secure a uniform rate of application. Manipulation or mixing with the soil other than that incidental to Article 2601.03, H, 7, will not be required.
- 2) If the type of fertilizer is not specified, apply 300 pounds per acre of 6-24-24 (or equivalent) to slopes adjacent to rural seedings.
- 3) No fertilizer will be required for slopes adjacent to native grass seedings.

2601.03, Construction.**Add the Article and Renumber subsequent Articles:****I. Watering.****1. Watering of Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Transition Mat.**

- a. Provide watering equipment and an approved water supply before starting special ditch control, turf reinforcement mat, slope protection, or transition mat work. Water the area no later than the day following placement of the materials. If Contractor fails to water by second day following placement, a price adjustment will be assessed at a rate of \$200.00 per calendar day until watering has been completed.
- b. Apply three additional waterings at intervals of 5 to 8 calendar days. Perform waterings unless notified by Engineer in writing at least 1 calendar day prior to the day watering is to occur. If Contractor fails to complete watering before the 8th calendar day has elapsed, a price adjustment will be assessed at a rate of \$200.00 per calendar day, beginning on the 9th day, until watering is completed.
- c. Ensure waterings are sufficient to thoroughly saturate seedbed to a depth of approximately 2 inches.
- d. Each watering may require a maximum of 50 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the seedbed. Complete each watering within a 4 hour period.
- e. More than one application for each watering may be necessary to provide adequate saturation without runoff.

2. Watering Sod.

- a. Provide watering equipment and an approved water supply before beginning sodding operation. Six waterings will be required. Allow no more than 1 hour to elapse between laying and initial watering of sod. Perform second, third, and fourth waterings at 4 calendar day intervals; and fifth and sixth waterings at weekly intervals. Perform waterings unless notified by the Engineer in writing at least 1 calendar day prior to the day watering is to occur. A price adjustment will be assessed at a rate of \$200.00 per day for each calendar day that the Contractor fails to complete watering from the day watering is to commence.
- b. Ensure waterings are sufficient to thoroughly saturate sod, sodbed, and adjacent disturbed areas to a depth of approximately 4 inches.
- c. Each watering may require a maximum of 100 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the sod. Complete each watering within a 4 hour period. More than one application for each watering may be necessary to provide adequate saturation without runoff.

I J. Mowing.**J K. Completion of the Work.**

2601.04, D.

Replace the second and third sentences:

Measurement of actual ditch area covered will be used, but will not exceed an area based on the actual measured length and design width. Materials used for anchor slots, junction slots, check slots, terminal folds, and lap joints are incidental. Seed, and fertilizer for Special Ditch Control and TRM are incidental.

2601.04, E.

Replace the Article:

~~Outlet or Channel Scour Protection (Transition Mat)~~: square feet calculated from measurements to the nearest foot.

2601.04, H.

Replace the Article:

Mowing described in Article 2601.03, ~~I~~ **J**: acres to the nearest 0.1 acre of surface area.

2601.05, A, 6.

Replace the Article:

Mulch furnished and placed: ~~predetermined contract unit price per acre (hectare)~~ contract unit price per acre to the nearest 0.1 acre for mulching. Payment is full compensation for preparing the area and furnishing and applying mulch.

2601.05, A, 10, b.

Replace the Article:

Payment is full compensation for slope protection preparation and materials ~~in addition to the amount paid for seed and fertilizer~~. This includes seedbed preparation, seed and fertilizer, slope protection, stapling, and installation of materials.

2601.05, A, 11.

Replace the Article:

Square feet of ~~Outlet or Channel Scour Protection (Transition Mat)~~ with material as specified:

- a. Contract unit price per square feet.
- b. Payment is full compensation for ~~Outlet or Channel Scour Protection (Transition Mat)~~, TRM, preparation and materials including shaping outlets/channels, ditches, soil fill (if required), seed, fertilizer and anchors.

2601.05, A, 12.

Replace the second sentence and delete the third sentence:

For the quantity of water applied to sod, (Article ~~2601.03, G, 3, e~~ 2601.03, I, 2), and to special ditch control, TRM, slope protection, and TM, (Article 2601.03, H, 8), payment will be the predetermined contract unit price per 1000 gallons. ~~When an item for watering is not included, the cost of watering is included in the amount paid for the item to be watered.~~

2601.05, A, 14.

Replace the Article:

Mowing as described in Article 2601.03, ~~I~~ **J**: contract unit price per acre to the nearest 0.1 acres.

Section 2602**2602.03, L, 1.**

Replace the Article:

Mobilizations, Erosion Control, applies to projects not identified as erosion control or landscaping and ~~containing at least one of the following items~~: contain a Storm Water Pollution Prevention Plan (SWPPP).

- ~~Stabilizing crop seeding and fertilizing: 1 acre (0.4 ha) or more,~~
- ~~Stabilizing crop seeding and fertilizing (urban): 1 acre (0.4 ha) or more,~~
- ~~Silt fence: 250 feet (75 m) or more, or~~
- ~~Silt fence for ditch checks: 250 feet (75 m) or more.~~

2602.04, K, Mobilizations, Erosion Control.

Add to the end of the Article:

For multi-project contracts, count will be on a per project basis.

Division 41. Construction Materials.

Section 4115

4115.01, Description.

Add to the end of the first paragraph:

Unless stated otherwise on the source approval, coarse aggregate for Portland Cement Concrete shall be washed with sufficient agitation to cause material coatings to be separated and removed.

Section 4119

4119, Pipe Backfill Material Under Interstate and Primary Roadways.

Retitle the Section:

Pipe Bedding and Backfill Material Under for Interstate and Primary Roadways.

Section 4127

4127.01, Description.

Replace the Article:

A. Crushed stone, gravel, slag, sand, and filler from an approved source. Crushed gravel may be used to satisfy crushed particle and friction requirements for HMA mixtures. Produce crushed gravel as a separate operation by crushing the portion of a gravel aggregate retained on a screen at least 1/4 inch larger than the sieve size that 100% of the gravel will pass after crushing.

B. ~~If a gravel aggregate has 100% passing the 3/8 inch sieve, the Engineer may replace the requirements of Table 4127.02-1 with the requirements of Article 4127.03.~~

4127.02, Coarse Aggregate.

Replace Table 4127.02-1:

Table 4127.02-1: Coarse Aggregate Quality (Flexible Paving Mixtures)

Coarse Aggregate Quality	Type A Maximum %	Type B Maximum %		Test Method
		Primary	Other	
Abrasion	45	45	45	AASHTO T 96
Absorption ^(a)	6.0	6.0	6.0	Iowa DOT Materials Laboratory Test Method No. 201
Alumina ^(b)	0.7	1.5	2.5	Iowa DOT Materials Laboratory Test Method No. 222
A Freeze	10	25	45	Iowa DOT Materials Laboratory Test Method No. 211, Method A

C Freeze	N/A	10	10	Iowa DOT Materials Laboratory Test Method No. 211, Method C
Clay Lumps/Friable Particles	0.5	N/A	N/A	Materials I.M. 368
Organic Material	0.01	0.01	0.01	Iowa DOT Materials Laboratory Test Method No. 215
<p>(a) When a coarse aggregate for use in asphalt fails absorption using Iowa DOT Materials Laboratory Test Method No. 201; absorption determined by Materials I.M. 380 (Vacuum-saturated specific gravity & absorption) will be used.</p> <p>(b) If the Alumina value fails, determine the A Freeze value for specification compliance. Iowa DOT Materials Laboratory Test Method No. 222 does not apply to gravel.</p>				

4127.03, A.

Replace the second sentence:

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 4136**4136.03, Expansion Joint Fillers and Seals.**

Add the Article:

E. Preformed, Pre-Compressed, Self-Expanding, Sealant System with Silicone Pre-Coated Surface.

1. Furnish an expansion joint system comprised of the following three components:
 - a. Cellular polyurethane foam impregnated with a hydrophobic polymer and factory coated with highway-grade, low modulus, fuel resistant silicone.
 - b. Field-applied epoxy adhesive.
 - c. Field-applied silicone sealant edging.
2. Use an impregnation agent having proven non-migratory characteristics. The highway grade, low modulus, fuel resistant silicone facing shall be factory applied to the impregnated foam when the foam is at a width greater than the maximum working joint opening and once cured and compressed will form a bellows. The self-expanding foam sealant system shall have a depth as recommended by the manufacturer.
3. Furnish material capable of movements of +/-50% (100% total) of nominal material size.
4. Approved sources of sealant systems are listed in Materials I.M. 436.07, Appendix A.

Section 4149**4149.02, A, Sanitary Sewer (Gravity Mains).**

Add the Articles:

9. **Double Walled Polypropylene Pipe 12 inch to 30 inch.**
 - a. Comply with ASTM F 2736
 - b. Minimum pipe stiffness per ASTM D 2412, 46 psi.
 - c. Integral bell and spigot joint complying with ASTM D 3212 and ASTM F 477.
10. **Triple Walled Polypropylene Pipe 30 inch to 36 inch.**
 - a. Comply with ASTM F 2764
 - b. Minimum pipe stiffness per ASTM D 2412, 46 psi.
 - c. Integral bell and spigot joint complying with ASTM D 3212 and ASTM F 477.

4149.02, B, 3, Sewage Air Release Valve.

Replace Articles a and b:

a. General.

Consists of an elongated tapered or conical body with outward-slanting walls and a float to operate (open and close) under pressure without spillage. Provide valves suitable for pressures up to 150 psi. Use a float with a flexible linkage connection to the seal plug assembly to prevent irregular air release and protect the connecting rod. Ensure the bottom of the valve body is sloped or funnel-shaped to encourage the accumulated sewage and solids to drain from the valve. Preserve a volume of air at all times between the liquid sewage and the seal plug assembly. Provide a flushing port with attachments for backwashing.

b. Materials.

- 1) **Body and Cover:** ~~Stainless steel, fiberglass-reinforced nylon, or other corrosion-resistant materials.~~
 - a) Stainless steel: ASTM A 351.
 - b) Cast Iron: ASTM A 126, Grade B.
 - c) Ductile Iron: ASTM A 536, Grade 65-45-12.
 - d) Other corrosion resistant materials.
- 2) Internal Metal Components: Stainless steel.
- 3) Float: Stainless Steel, ASTM A 240/A 240M, Type 304 or Type 316, or foamed polypropylene.
- 4) Seal Plug Assembly: Stainless steel, foamed polypropylene, EPDM rubber, Nitrile (Buna-N) rubber, and reinforced nylon.

4149.03, B, Reinforced Concrete Arch Pipe.

Replace the Article and Title:

B. Low Clearance Reinforced Concrete Arch Pipe.

1. Comply with Section 2419 and ~~ASTM C 506~~ either AASHTO M 206 (RCAP) or M 207 (RCEP).
2. Minimum Class 2000D (A-III or HE-III).
3. Use tongue and groove joints with cold applied bituminous or rubber rope gasket jointing materials, unless specified otherwise.
4. If specified, wrap exterior of each joint with engineering fabric.

4149.04, H, 1.

Replace the Article:

Use one of the following methods for grade adjustments of manhole or intake frame and cover assemblies:

a. Reinforced Concrete Adjustment Rings.

Comply with ASTM C 478. Provide rings free from cracks, voids, and other defects.

b. High Density Polyethylene Adjustment Rings.

Comply with ASTM D 1248 for recycled plastic.

- 1) Test and certify material properties by the methods in Table 4149.04-1:

Table 4149.04-1: Test Methods

Property	Test Method	Acceptable Value
Melt Flow Index	ASTM D 1238	0.3 to 30 g/10 min.
Density	ASTM D 792	0.94 to 0.98 g/cm ³
Tensile Strength	ASTM D 638	2000 to 5000 psi

- 2) Do not use polyethylene grade adjustment rings when they are exposed to HMA pavement or heat shrink infiltration barriers.
 - 3) When used in a single configuration, provide tapered adjustment ring with thickness that varies from 1/2 inch to 3 inches.
 - 4) Install adjustment rings on clean, flat surfaces according to the manufacturer's recommendations with the proper butyl rubber sealant/adhesive.
- c. Expanded Polypropylene Adjustment Rings.**
Comply with ASTM D 4819 for expanded polypropylene when tested according to ASTM D 2375.
- 1) Use adhesive meeting ASTM C 920, Type S, Grade N5, Class 25.

- 2) Provide finish rings with grooves on the lower surface and flat upper surface.
- 3) Do not use when heat shrinkable infiltration barrier is used.

4149.04, J, 1, Infiltration Barrier.

Add the Article:

d. Heat Shrink Sleeve.

Heat-shrinkable wrap around sleeve designed for protection of buried and exposed sanitary sewer manholes. Do not use with polypropylene or polyethylene adjustment rings.

1) Primer.

Compatible with concrete, ductile and cast iron, and sleeve material.

2) Sleeve and Backing.

Table 4149.04-2: Heat Shrink Sleeve

Property	Test Method	Acceptable Value
Water Absorption	ASTM D 570	0.05% maximum
Low Temperature Flexibility	ASTM D 2671	-40°F
Tensile Strength	ASTM D 638	2900 psi minimum
Elongation	ASTM D 638	600% minimum
Hardness	ASTM D 2240	Shore D: 46
Shrink Factor		40% minimum
Thickness		0.1 inch minimum

3) Adhesive.

Softening point of 212°F maximum meeting ASTM E 28.

Section 4151

4151.03, Reinforcement for Structures.

Replace Articles C, D, E, F, G, and H:

C. Epoxy Coated Reinforcement.

1. Ensure reinforcement (deformed and plain) required to be epoxy-coated has a protective coating of epoxy applied by electrostatic spray method according to the requirements of ASTM A 775.
2. Acceptance and handling of epoxy-coated reinforcing steel reinforcement bars at the project site are to be according to the requirements of these specifications and the requirements of Materials I.M. 451.03B.

~~D. Stainless Steel Reinforcement.~~

- ~~1. Unless otherwise specified in the contract documents, stainless steel reinforcement bars shall be deformed and meet requirements of ASTM A 955 and be the grade, UNS designations, and types listed in Materials I.M. 452.~~
- ~~2. Bar sizes will be specified in the contract documents.~~
- ~~3. Bars shall be heat treated using one of the three methods listed in ASTM A 955.~~
- ~~4. If welding and/or tack welding is employed in the placement of stainless steel reinforcement, the following requirements shall be met prior to welding:

 - ~~a. Welding shall not be performed without prior approval of Engineer.~~
 - ~~b. Welding procedure suitable for the chemical composition and intended use shall be submitted for approval prior to welding.~~
 - ~~c. Welding shall be performed by a state certified welder.~~
 - ~~d. Welding and/or tack welding shall be performed in accordance with the requirements of the contract documents, and latest edition of the American Welding Society, AWS D1.6, including requirements for minimum preheat and interpass temperature.~~~~

E. ~~Surface Preparation.~~

- ~~4~~ 3. Thoroughly blast (near-white) clean reinforcing steel surfaces to be coated. Remove mill scale, rust, and foreign matter. Ensure the blast media produces a suitable anchor pattern profile (a depth of 2.0 to 4.0 mils). Apply the coating within 0.5 hour after cleaning.
- ~~2~~ 4. Ensure blast media meets the requirements of ASTM A 775. A maximum of 10% steel shot may be added to blast media.

F. ~~Repair to Damage Incurred During Fabrication.~~

5. Ensure coating damage due to fabrication or handling at the fabricator facility is repaired using patching material meeting the requirements of Section 3.1 of ASTM D 3963. The fabricator is responsible for the repair.

G. ~~Repair of Damage Incurred during Shipment and Handling at the Job Site.~~

Comply with the following:

- ~~4~~ 6. Repair visible damage incurred during shipment, storage, and /or placement of epoxy-coated bars at the job site.
- ~~2~~ 7. Use coating patch materials of organic composition consisting of a two-component liquid properly mixed that hardens to a solid form upon curing. Approved repair/patch compounds are listed in Materials I.M. 451.03B.
- ~~3~~ 8. Repair damage to the coating caused by shipment, storage, and/or placement at the job site.
- ~~4~~ 9. Ensure sheared ends/saw-cut ends of the coated bars have adequate coating, have no signs of surface rust or damage, and are repaired and/or coated with the same patching material that is used for repairing damaged coating.
- ~~5~~ 10. The maximum amount of repaired, damaged areas is not to exceed 2% of the total surface area in each 1.0 linear foot of the bar. Should the amount of damage exceed the 2% in 1.0 linear foot, then remove that bar and replace with an acceptable bar. Coating the cut ends will not be included in the repair percentage.
- ~~6~~ 11. Apply a minimum coating thickness of 7 mils to areas to be repaired.
- ~~7~~ 12. Allow patches to cure (dry to the touch) before placing concrete over the coated bars.
- ~~8~~ 13. Prepare the surface, repair it, and apply patches according to the resin manufacturer's recommendations.

H D. Storage, Handling, and Placement at the Job Site.

1. Comply with the following:
 - a. Store coated bars or bundles above ground on wooden or padded supports with padded timbers placed between bundles when stacking is necessary. Place supports to prevent sags in the bundles.
 - b. Ensure systems for handling (loading, unloading, storing) the coated bars at the job site have padded contact areas. Do not drop or drag coated bars or bundles.
 - c. Store coated and uncoated steel reinforcing bars separately.
 - d. Minimize handling and re-handling of the coated bars.
 - e. Tie coated bars using tie wire coated with epoxy, plastic, Nylon, or other non-conductive Materials that will not damage or cut the coating.
 - f. Use a non-conductive Material compatible with concrete to coat or fabricate bar supports or spacers.
2. Use a non-transparent material to cover coated bars if they will be exposed for 2 months or more. Ensure adequate ventilation is provided to minimize condensation under the cover.

E. Stainless Steel Reinforcement.

1. Stainless steel reinforcement bars shall be deformed and meet requirements of ASTM A 955 and be the grade, UNS designations, and types listed in Materials I.M. 452. Bars shall be heat treated using one of the three methods listed in ASTM A 955.
2. Supply bars free of dirt, mill scale, oil and debris. Stainless steel reinforcing bars shall be pickled to a bright or uniform light finish. Bars supplied displaying rust/oxidation, questionable blemishes, or lack of bright uniform pickled surface may be rejected.
3. Employ lifting, handling, securing and transport equipment and processes that will prohibit contamination of stainless steel reinforcing from fragments of carbon steel or other material residues/fragments. Minimize handling and re-handling of stainless steel reinforcing bars. Do not drop or drag stainless steel reinforcing bars or bundles.
4. Store stainless steel reinforcing bars or bundles above ground on wooden supports with timbers placed between bundles when stacking is necessary. Place supports to prevent sags in the bundles. Store stainless steel reinforcing separately from coated or uncoated reinforcing bars.
5. Fabricate and bend stainless steel bars using tools and equipment that have been thoroughly cleaned or otherwise modified to prohibit contamination from fragments of carbon steel or other material residues/fragments.
6. Protect stainless steel from contamination during construction operations including cutting, grinding, or welding above or in the vicinity of the stainless steel.
7. Stainless steel reinforcing bars shall not be permitted to come in direct contact with uncoated reinforcing bars, bare metal form hardware, or other bare or galvanized metals unless specifically approved herein or otherwise approved in writing by the Engineer. When practicable, stainless steel reinforcing shall maintain a minimum 1 inch clearance from bare or galvanized metals. When 1 inch clearance is not practicable, stainless steel reinforcing shall be isolated from contact with bare or galvanized metals by a wrap of electrical tape or other approved means. Protective wrap shall encompass the full perimeter of the bar and extend at least 1 inch in each direction past the point of closest contact between the stainless bar and dissimilar metal. Stainless steel reinforcing bars may be in direct contact with undamaged epoxy coated reinforcing bars. Stainless steel reinforcing bars may be in direct contact with shear studs on steel girders.
8. **Bar Chairs.**
 - a. Bar chairs for support of stainless steel reinforcing shall comply with one of the following:
 - 1) Bar chairs fabricated from solid plastic, meeting requirements of Materials I.M. 451.01.
 - 2) Bar chairs fabricated from stainless steel. Stainless steel materials for bar chairs shall be compatible with the type of stainless steel materials used for reinforcing bars.
 - 3) Epoxy coated bar chairs meeting requirements of Materials I.M. 451.01, except where prohibited by the contract documents. Care shall be taken during installation of epoxy coated bar chairs to prevent damage to epoxy coating. Bar chairs exhibiting cracked or otherwise damaged epoxy coating shall be replaced.
 - b. Non-coated carbon steel bar chairs shall not be permitted to support or come into direct contact with stainless steel reinforcing.
9. **Tie Wire.**
 - a. Tie wire for stainless steel reinforcing shall comply with one of the following:
 - 1) Tie wire coated with epoxy, plastic, nylon, or other non-conductive materials. Care shall be taken during installation of coated wire ties to prevent damage to protective coating. Wire ties exhibiting cracked or otherwise damaged protective coating shall be discarded and replaced with undamaged ties.
 - 2) Stainless steel tie wire. Stainless steel materials for tie wire shall be compatible with the type of stainless steel materials used for reinforcing bars.
 - b. Coated wire ties or stainless steel wire ties as noted herein shall be required for bar tie locations in which a stainless steel reinforcing bar is present (includes stainless-to-stainless bar tie locations and stainless-to-epoxy coated bar tie locations.)

10. Prior to placing concrete, ensure reinforcing bars are clean and exhibit a bright finish free of contaminants, oxidation, or rust. Oxidation or rust on bar surface will not be permitted and shall be immediately brought to the attention of the Engineer.
11. At the discretion of the Engineer, isolated areas exhibiting minor oxidation or rust attributable to trace contaminants on bar surface shall be thoroughly cleaned and treated with pickling paste marketed for such application. Bars exhibiting evidence of oxidation/rust not attributable to trace contaminants on bar surface, or oxidation/rust otherwise suspected to have a negative impact on the intended performance and/or service life of the bar, may be rejected.
12. If welding and/or tack welding is employed in the placement of stainless steel reinforcement, the following requirements shall be met prior to welding:
 - a. Welding shall not be performed without prior approval of the Engineer.
 - b. Welding procedure suitable for the chemical composition and intended use shall be submitted to the Engineer for approval prior to welding.
 - c. Perform welding using a state certified welder.
 - d. Perform welding and/or tack welding in accordance with the requirements of the contract documents, and latest edition of AWS D1.6, including requirements for minimum preheat and interpass temperature.

Section 4151

4151.07, A, Reinforcement Couplers.

Replace Articles A, B, C, and D:

A. Strength Requirements.

1. ~~Withstand 80,000 cycles of fatigue tensile loading from 5000 psi to 30,000 psi at a maximum frequency of 5 cycles per second. Ultimate Tensile Strength of splice shall be minimum 90% of ultimate tensile strength of reinforcement bars.~~
2. Develop in tension at least 125% of the specified yield strength of the bars being spliced ~~both before and after fatigue loading.~~
3. Maximum slip of coupler after being loaded to 30,000 psi tension and unloaded to 3000 psi tension:
 - For bar size up to No. 14 (45) - 0.01 inches
 - For No. 18 (60) Bars - 0.03 inches

~~B. Couplers shall be made of steel conforming to one of the following:~~

- ~~• ASTM A 108, Level one or Level two,~~
- ~~• ASTM A 519 Grade 1025, or~~
- ~~• ASTM A 576.~~

~~C B.~~ Epoxy coated couplers shall be coated according to ASTM A 934. Other couplers shall have similar steel properties and same coating properties as reinforcement being spliced.

~~D C.~~ Install couplers following manufacturer's requirements.

Section 4152

4152.02, C.

Replace Table 4152.02-1:

Table 4152.02-1: Non-Fracture Critical Tension Component Impact Test Requirements

Grade	Thickness (in.) and Joining Method	Minimum Average Energy, ft.lbf. at °F
36T ^(a)	to 4, mechanically fastened or welded	15 at 40
50T ^(a, b) , 50WT ^(a, b)	to 2, mechanically fastened or welded over 2 to 4, mechanically fastened over 2 to 4, welded	15 at 40 15 at 40 20 at 40

HPS 50WT ^(a,b)	to 4	20 at 10
100T HPS 70WT ^{(c)(d)} HPS 100WT ^(c)	to 4 to 2 1/2, mechanically fastened or welded over 2 1/2 to 4, mechanically fastened over 2 1/2 to 4, welded	25 at -10 25 at 0 -30 25 at 0 35 at 0 -30
<p>(a) CVN-impact testing of "H" heat frequency testing according to ASTM A 673.</p> <p>(b) If the yield point of the material exceeds 65 ksi, reduce the testing temperature for the minimum average energy required by 15°F for each increment of 10 ksi above 65 ksi. The yield point is the value given on the certified "Mill Test Report".</p> <p>(c) CVN-impact testing of "P" plate frequency testing according to ASTM A 673.</p> <p>(d) If yield strength of structural product exceeds 85 ksi, testing temperature for minimum average energy required shall be reduced by 15°F for each increment of 10 ksi above 85 ksi. Yield strength is the value given in the mill test report.</p>		

Section 4153

4153.06, B, 1, a.

Replace the Article:

High strength bolts, nuts, and washers meet the requirements of the appropriate ASTM Specifications as follows:

- bolts A 325
- nuts A 563 Grade DH3
- washers F 436

Section 4155

4155.04, B, 3.

Replace the first sentence:

Ensure steel posts and blocks are galvanized according to requirements of ASTM A 123.

4155.05, C.

Delete the Article:

~~C. Ensure galvanizing is done after fabrication and after all bolt holes have been drilled.~~

Section 4161

4161.03, A.

Replace Table 4161.03-1:

Table 4161.03-1: Minimum Preservative Retention Requirements (lb./cu. ft. of wood)

Material and Usage	Retention					AWPA UC-Section-Special Req.
	Creosote ^(a)	Pentachlorophenol ^(a)	Copper Napthenate ^(a)	ACZA ^(b)	CCA ^(b, c)	
Lumber and Timber for Structures ^(d)	AWPA U1	AWPA U1	AWPA U1	AWPA U1	AWPA U1	AWPA U1
Piles for Foundation						
Douglas Fir	17	0.85	0.14	-	-	UC4C-E
Southern Pine	12	0.60	0.10	-	-	
Guardrail Posts, and Spacer Blocks						
Sawed Four Sides	10	0.6 0.5	0.075 0.06	0.5 0.4	0.5 0.4	UC4A-A-4.3

Fence, Guide, and Sign Posts						
Round	-	0.4	0.055	0.4	0.4	UC4A-B
Sawed Four Sides	10	0.5	0.060	0.4	0.4	UC4A-A-4.3
^(a) Oil type preservatives. ^(b) Waterborne preservatives. ^(c) Do not use for the treatment of Douglas Fir. ^(d) Retentions based on AWPA Use Category and Commodity Specifications for different applications.						

Section 4169

4169.10, Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Outlet or Channel Scour Protection (Transition Mat).

Replace the title:

SPECIAL DITCH CONTROL, TURF REINFORCEMENT MAT, SLOPE PROTECTION, AND ~~OUTLET OR CHANNEL SCOUR PROTECTION (TRANSITION MAT)~~.

4169.10, F, Outlet or Channel Scour Protection (Transition Mat).

Replace the title:

~~Outlet or Channel Scour Protection (Transition Mat)~~.

4169.12, A, 1, b.

Replace the Article:

Provide wattles, sediment logs, and filter socks consisting of ~~wood products (including wood mulch), cereal grain straw, or native grass straw~~ the following materials contained in a tube of photo degradable fabric or synthetic netting:

- a. Wattles: Cereal straw or native grass straw certified by the Iowa Crop Improvement Association or other state's Crop Improvement Associations as Certified Noxious Weed Seed Free Mulch. Wattles with observed seed heads will not be accepted.
- b. Sediment logs: Wood excelsior fibers with 80% of the wood excelsior fibers being 6 inches long or longer.
- c. Filter socks: Compost (from an approved source meeting Article 4169.08) wood chips, or mulch.

4169.12, B, Wattles and Sediment Logs.

Delete the fourth bullet:

- ~~1. Ensure cereal grain straw for wattles or sediment logs is Certified Noxious Weed Seed Free Mulch certified by the Iowa Crop Improvement Association or other state's Crop Improvement Associations.~~
- ~~2. Wattles or sediment logs with observed unharvested seed heads will not be accepted.~~
- ~~3. For wood excelsior sediment logs and straw wattles, meet the following minimum weight requirements:~~
 - 20 inch sediment logs and straw wattles: 3 pounds per foot with tolerance of 0.25 pounds per foot.
 - 12 inch sediment logs and straw wattles: 2 pounds per foot with tolerance of 0.25 pounds per foot.
 - 9 inch sediment logs and straw wattles: 1 pound per foot with a tolerance of 0.1 pounds per foot.
 - ~~6 inch sediment logs and straw wattles: 0.5 pounds per foot with a tolerance of 0.1 pounds per foot.~~

4169.12, C, Filter Socks.

Replace the Article:

Provide filter socks with a maximum 3/8 inch opening ~~and filled with a compost/wood blend filter material consisting of compost from an approved source meeting Article 4169.08.~~

Section 4171**4171.04, Cast Iron Detectable Warning Panels.**

Delete the second bullet:

- ~~Wear resistance—ASTM C 501 greater than 8500.~~

4171.05, Steel Detectable Warning Panels.

Delete the second bullet:

- ~~Wear resistance—ASTM C 501 greater than 8500.~~

Section 4185**4185.02, B, 6.**

Add as the last bullet:

- Refer to Articles 2522.03, H, 2, b through h for tightening procedure and requirements.

Section 4186**4186.09, A, 4, b.**

Replace the Article:

Washers shall be 3/8 inch I.D. by 1-3/8 1 1/2 inch O.D. by 0.125 inch.

Section 4187**4187.01, C, 3, a, 2.**

Replace the Article:

Comply with either ASTM F 1554, ~~Grade 36~~, Grade 55, S1; or Grade 105, S5 ~~as specified~~.

4187.01, C, 3, b, Nuts.

Add the Article:

- 5) Refer to Articles 2522.03, H, 2, b through h for tightening procedure and requirements.

Section 4189**4189.04, A, 2, c.**

Replace the first sentence:

Police door with auto/flash switch, ~~manual/stop time switch~~, and on/off power switch for signal heads only.

4189.05, Poles, Heads, and Signs.

Replace Article A and renumber Articles A and B:

A C. Traffic Signal Poles and Mast Arms.**1. General.**

- a. Use ~~M~~ mast arm length and vertical pole height as specified in the contract documents.
- b. Ensure the mast arms, poles, and supporting bases are galvanized ~~inside and out~~ on both interior and exterior surfaces according to ASTM A 123.
- c. Use ~~C~~ continuously tapered, round steel poles of the transformer base type. Fabricated ~~poles~~ from low carbon (maximum carbon 0.30%) steel of U.S. standard gauge.
- d. When a transformer base is not specified, provide a 6 inch by 16 inch handhole in the pole shaft for cable access. Provide a cover for the handhole. Secure the cover to the base with simple tools. ~~Hardware to be~~ Use corrosion resistant hardware.

- e. Ensure minimum yield strength of 48,000 psi after manufacture. Supply base and flange plates of structural steel complying with ~~AASHTO M 183~~ ASTM A 36 and cast steel complying with ASTM A 27, Grade 65-35 or better.
- f. Where a combination street lighting/signal pole is specified in the contract documents, ensure the luminaire arm is ~~to be~~ mounted in the same vertical plane as the signal arm unless otherwise specified. Use a luminaire arm of the single member tapered type ~~arm for the luminaire arm type.~~
Equip ~~Fabricate~~ the pole with a minimum 4 inch by 6 inch handhole and cover located opposite the signal mast arm.
- g. If allowed by the Engineer, poles and mast arms may be fabricated by shop welding two sections together, resulting in a smooth joint ~~and factory weld~~ as follows:
 - 1) Ensure a minimum of 60% penetration for longitudinal butt welds in plates 3/8 inch and less in thickness ~~for longitudinal butt welds~~, except within 1 foot of a transverse butt-welded joint. Ensure a minimum of 80% penetration for longitudinal butt welds in plates over 3/8 inch in thickness.
 - 2) Ensure 100% penetration for longitudinal butt welds ~~on~~ in poles and arms within 1 foot of a transverse butt-welded joint.
 - 3) Ensure 100% penetration, ~~achieved by~~ for transverse butt welds by using a back-up ring or bar, ~~for transverse butt welds for connecting~~ to connect the sections.
 - 4) Examine ~~100%~~ the full length of all transverse butt welds and 100% penetration longitudinal butt welds by ultrasonic inspection according to the requirements of ANSI/AWS D1.1-80.AH.
 - 5) Comply with ~~Structural Welding Code AWS D1-180, as modified by AASHTO 1981 Standard Specifications for Welding of Structural Steel Highway Bridges and by Supplemental Specifications No. 969~~ ANSI/AWS D1.1 except as modified by Article 2408.03, B.
- h. Provide non-shrink grout (complying with Materials I.M. 491.13) or a rodent guard (complying with Materials I.M. 443.01) for placement between the pole base and the foundation.

2. Pole Design.

- a. Comply with ~~AASHTO 1994~~ 2013 Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals. Use a 90 mph basic wind speed with a 50 year mean recurrence interval for strength design. Use Category II for fatigue design. Apply only natural wind gust loads (i.e., do not apply galloping loads, vortex shedding loads, or truck-induced gust loads) for fatigue design. Install vibration mitigation devices on all traffic signal pole mast arms over 60 feet in length as shown in the standard details.
- b. ~~Designed to support the loading necessary for all traffic control equipment. Capable of withstanding winds up to 80 mph with a 1.3 gust factor without failure.~~

3. Hardware.

- a. Equipped poles and mast arms with all necessary hardware and anchor bolts to provide for a complete installation without additional parts.
- b. Use ~~A~~ anchor bolts complying with ASTM F 1554 Grade 105 S5 Class 2A, ~~hot dip galvanized,~~ and threaded to a minimum of 6 inches at one end, and having a 4 inch long, 90 degree bend at the other end.
- c. Use ~~W~~ washers complying with ASTM F 436 Type 1.
- d. Use ~~H~~ heavy hex nuts complying with ASTM A 563 Grade DH Class 2B.
- e. Ensure ~~A~~ all hardware is made of steel, and is hot-dipped galvanized ~~complying with~~ according to ASTM F 2329, with a zinc bath temperature limited to 850 F or mechanically galvanized according to ASTM B 695, Class 50 55, Type 1, ~~or electrodeposited coated of the same coating thickness and designed for this purpose.~~

B D. Traffic Signal Pedestal Poles.

Section 4196**4196.01, B, 6, Bridge Abutment Backfill Fabric.****Replace Table 4196.01-6:****Table 4196.01-6: Fabric for use in bridge abutment backfill**

Property	Value	Test Method
Tensile Strength (at 5% Strain), minimum	1356 lbs/ft	ASTM D 4595
Apparent opening size (AOS), maximum	US Sieve #40	ASTM D 4751
UV resistance (at 500 hours)	70% retained strength	ASTM D 4355
Flow Rate, maximum	18 20 gal./min./ft ²	ASTM D 4491