IOWA DEPARTMENT OF TRANSPORTATION

To Office:	Specification Committee	**Date:**	May 12, 2015
Attention:		**Ref. No.:**	305
From:	Thomas L. Reis, P.E.		
Office:	Specifications		
Subject:	Revised Agenda for May 14, 2015, Specification Committee Meeting		

The Specification Committee will meet on Thursday, May 14, 2015, at 9:00 a.m. in the NW Wing, 1st Floor Conference Room.

The revised agenda is as follows:

1. Article 1104.09, Right-of-Way.

The Office of Design requests to move specifications on selective clearing from a plan note to the Standard Specifications.

2. Article 1105.03, Working Drawings.
Section 1113, Electronic Document Management.

The Office of Construction and Materials requests to add the Developmental Specifications for Electronic Document Storage (Doc Express) to the Standard Specifications.

3. Article 1109.01, B, Metrication.

The Specifications Section requests to eliminate most metric measurements from the Standard Specifications.

4. Article 1109.05, A, 2, Progress Payments.

The Office of Construction and Materials requests to eliminate the reference to location of materials stockpiles and clarify that the Contractor is responsible for materials until it is incorporated into the project and accepted.

5. Article 2304.03, A, 2, PCC Option (Detour Pavement).

The Office of Construction and Materials requests to add texture requirements to detour pavement.

6. Article 2403.03, F, 5, e, Placing and Protection in Cold Weather.

The Office of Construction and Materials requests to add a minimum water temperature for concrete placement under water.

7. Article 2405.03, H, 2, Bridge Bearings.
Article 2525.03, H, 3, Hardware (Traffic Signalization).
Article 4185.02, B, Anchor Bolt and Slip-Base Plate Fasteners for Lighting Poles.
Article 4187.01, C, 3, Anchor Bolts, Nuts and Washers.

The Office of Construction and Materials requests to include tightening procedure and requirements for various anchor bolts.

8. Article 2408.02, Material Requirements, Identification and Fabrication (Steel Structures).

The Office of Construction and Materials requests to update the Standard Specifications to match current AISC terminology .

9. Article 2412.03, C, Placing Concrete.

The Office of Construction and Materials requests to add Engineer approval to use concrete placing equipment directly on bridge deck reinforcing steel.

10. Article 2412.03, E, Curing Concrete Decks.

The Office of Construction and Materials requests to add clarification on prewetting burlap for curing concrete bridge decks and overlays.

11. Article 2418.01, Description (Temporary Stream Diversion).

The Office of Construction and Materials requests to eliminate the perennial requirement from the temporary stream diversion specifications.

12. Article 2428.04, B, Dips (Smoothness of Bridge Decks and Bridge Deck Overlays).

The Office of Construction and Materials requests to add correction requirements for dips that would reduce concrete cover thickness to less than 2 inches.

13. Article 2502.03, C, Longitudinal Subdrains.

The Office of Construction and Materials requests to add another type of compaction for longitudinal subdrain trenches.

14. Article 2503.01, Description (Storm Sewers).
Article 4149.03, B, Reinforced Concrete Arch Pipe.

The Office of Design requests to allow elliptical pipe as an equivalent to arch pipe.

15. Article 2512.03, C, Forms (Portland Cement Curb and Gutter).

The Office of Construction and Materials requests to change curb and gutter form placement specifications to end result, rather than method.

16. Article 2513.03, A, 2, b, 4, Cast-in-Place and Slip Form (Concrete Barrier).

The Office of Construction and Materials requests to allow monitoring of the in-place barrier rail concrete air content.

17. Article 2522.03, G, 1, Luminaire Frame and Head Frame (Tower Lighting).

The Office of Construction and Materials requests to change the steel strength requirements for tower lighting luminaire frame and head frame.

18. Article 2523.03, G, Foundations (Highway Lighting).

The Office of Design requests to allow precast foundations.

19. Article 2526.03, A, 2, c, Areas Constructed with AMG (Construction Survey).

The Office of Design requests to define how to set hubs in areas constructed with AMG.

20. Article 2526.03, A, 3, Bridges (Construction Survey).

The Office of Construction and Materials requests to have the Contractor develop the proposed final deck grades.

21. Section 2529, Full Depth Finish Patches.

The Office of Construction and Materials requests to add specifications for patches without calcium chloride for locations where a 24 hour cure is acceptable.

22. Article 2548.03, Construction (Milled Shoulder Rumble Strips - HMA or PCC Surface).

The Office of Design requests to require 14 days of curing before milling rumble strips in PCC.

23. Article 2601.03, Placement of Erosion Control.

The Office of Design requests changes to align the specifications with current practice.

24. Article 2602.03, L, Mobilizations, Erosion Control.

The Office of Design requests changes to align the specifications with current practice.

25. Article 4151.03, Reinforcement for Structures.

The Office of Construction and Materials requests to combine articles in 4151.03 that relate to epoxy coated reinforcing for clarity and add requirements for stainless steel reinforcing that are currently being used in the Special Provision for Stainless Steel Bars for Concrete Reinforcement.

26. Section 4155, Guardrail.

The Office of Design requests changes to remove steel blockouts (spacer blocks) from the specifications.

27. Article 4161.03, A, Treatment (Preservative Treatment).

The Office of Construction and Materials requests to update wood treatment specifications to the 2014 AWPA standards.

28. Article 4169.12, Perimeter and Slope Sediment Control Device.

The Office of Design requests to add language to define what wattles, sediment logs, and filter socks are and the requirements associated with each.

29. Article 4186.09, A, 4, Fastening Accessories (Signing Materials).

The Office of Traffic and Safety requests to change the outside diameter of a washer to be consistent with Standard Road Plan SI-131.

30. DS-12042, Quality Management Concrete.

The Office of Construction and Materials requests revisions to the Developmental Specifications for Quality Management Concrete.

31. DS-12046, Mass Concrete - Control of Heat of Hydration.

The Office of Construction and Materials requests revisions to the Developmental Specifications for Mass Concrete - Control of Heat of Hydration.

32. DS-12050, High Performance Concrete for Structures.

The Office of Construction and Materials requests revisions to the Developmental Specifications for High Performance Concrete for Structures.

33. Article 2435.03, A, General Requirements for Installation of Manholes and Intakes.
Article 2504.03, D, Gravity Main Pipe Jointing.
Section 4149, Sanitary and Storm Sewer Pipe and Structure Materials.

The Specifications Section requests revisions to match SUDAS revisions.

34. Article 4152.02, C, Structural Steel.

The Office of Construction and Materials requests revisions to add HPS to Table 4152.02-1.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Brian Smith	**Office:** Design	**Item 1**
Submittal Date: 3/23/2015	**Proposed Effective Date:** 10/20/2015	
Article No.: 1104.09 **Title:** Right-of-Way	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:
1104.09, Right-of-Way.

Replace 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. The Contractor shall not disturb desirable or native grass areas or desirable trees outside construction limits. The Contractor shall not park or service vehicles and equipment or use these areas for storage of materials. Storage, parking, and service area(s) will be subject to approval of the Engineer.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**
1104.09, Right-of-Way.

Add as the first sentence to the second paragraph and **replace** the original first sentence:

The Contractor shall not remove any trees outside of the construction limits, including areas in divided medians and inside of interchanges, without approval of the Engineer. The Contractor shall not disturb desirable or native grass areas or desirable trees outside construction limits. The Contractor shall not park or service vehicles and equipment or use these areas for storage of materials. Storage, parking, and service area(s) will be subject to approval of the Engineer.

Reason for Revision:

The Office of Design would like to move language currently contained in Standard Note 232-4 into the Standard Specifications.

232-4
10-18-11

EROSION CONTROL
(SELECTIVE CLEARING)

Selective clearing will be required on this project.

Do not remove any trees outside of the construction limits without the Engineer's approval. This includes areas in divided medians and inside interchanges.

Clearing along the right-of-way line will be necessary to permit installation of fence. This clearing should be done as soon as possible with trees cut off at the ground line.

Do not disturb native grass areas outside the construction limits.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments:

County or City Comments:

Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder	**Office:** Construction & Materials	**Item 2**
Submittal Date: April 27, 2015	**Proposed Effective Date:** 10/20/2015	
Article No.: 1105.03 **Title:** Working Drawings **Section No.:** 1113 **Title:** Electronic Document Management	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

1105.03, Working Drawings.

Replace Articles F and G:

F. ~~**Electronic**~~ **Submittals.**

1. For Primary and Interstate projects, electronic submittals ~~may be made via email and sent to the following email addresses corresponding to the review office identified in Table 1105.03-1~~ will be made via electronic document management system (Doc Express), or to the consultant email address indicated on the contract documents:

~~**REVIEW OFFICE**~~	~~**EMAIL ADDRESS**~~
~~Bridges and Structures~~	~~Bridges.Structures@dot.iowa.gov~~
~~Design (Soils Design Section)~~	~~Soils.Design@dot.iowa.gov~~
~~Traffic and Safety~~	~~Traffic.Safety@dot.iowa.gov~~

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

~~**3**~~ **2.** 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~~ the submitter shall also place a copy of the document in Doc Express for the Engineer and appropriate design office.

~~**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**~~ **3.** 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**~~ **4.** Provide project number and submittal description ~~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, Contractor's name, address, and telephone number; and fabricator's name, address, and telephone number (if applicable) ~~in the body of the email, or on the electronic attachment~~.

~~8~~ 5. 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 Resident Construction 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, cantilever 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~~ a]	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	Design (Soils Design Section)	~~Preliminary submittal: 3 design calculations, 3 shop drawings, and 3 field construction drawings~~ ~~Final submittal: 3 design calculations, 3 shop drawings, and 3 field construction drawings~~	30 14
Soil nail and tie-back retaining walls	Design (Soils Design Section)	~~6 final design plans~~	60
Intermediate foundation improvement (IFI) (i.e. stone columns, geopiers, etc.)	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	Bridges and Structures	~~1~~	30
Architectural paving	Bridges and Structures	~~1~~	30
Architectural paint color samples and manufacturer data	Bridges and Structures	~~3~~	30
Architectural concrete texture form liner samples and drawings	Bridges and Structures	~~3~~	30
Architectural concrete sealer samples and manufacturer data	Bridges and Structures	~~3~~	30
Architectural ornamental brick	Bridges and Structures	~~3~~	30

(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).~~

~~**(b)**~~ Submittal time shall be within 45 calendar days from the date of award of contract.

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://docexpress.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 -** ~~A~~ 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.

Comments: Any reason we are keeping email submittals to consultants? Won't they be using Doc Express on our projects?

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

1105.03 WORKING DRAWINGS.

A. The plans will be supplemented by such working drawings as are necessary to adequately control the work. Working drawings shall be furnished by the Contractor, as required by the contract documents. When certification by a Professional Engineer licensed in the State of Iowa is required, the certification

shall be in the appropriate branch of engineering, for the work specified in the contract documents. Working drawings may include shop drawings of fabricated materials, erection plans, falsework plans, cofferdam plans, or other supplemental plans or data. Shop drawings for structures shall show fully detailed dimensions and sizes of all component parts of the structure. Prior to review of working drawings, any work done or material ordered shall be at the Contractor's risk. The Contractor shall understand that the Contracting Authority's review of working drawings submitted by the Contractor covers only requirements for strength and arrangement of component parts. The Contracting Authority assumes no responsibility for errors in dimensions and assumes the Contractor will use material complying with requirements of the contract documents or, where not specified, those of sound and reasonable quality, and will erect the subjects of such working drawings in accordance with recognized standards of first quality work or, when specified, in accordance with standards of the contract documents. If unanticipated and either unusual or complex construction procedures or site conditions occur, the Engineer may require the Contractor to submit such working drawings as, in the judgment of the Engineer, are necessary to satisfactorily complete the proposed construction.

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. Unless specified otherwise in the contract documents, Contractor submittal time will be subject to the specified review time and the Contractor's need based on their schedule for the work.

D. Submittals shall not be subdivided or made in a piecemeal fashion unless approved by the Engineer. If subdivided submittals are approved by the Engineer, they shall be made in packages with logical break points (e.g. structural steel units) so the Engineer may make a complete review of subdivided submittal.

E. Submittals that are required to be revised and resubmitted shall have the revisions clouded or annotated to designate revisions. Resubmittals made in accordance with this provision will have a review time in calendar days of half of the review time shown in Table 1105.03-1. Resubmittals that are not in accordance with this provision will be allowed the review time shown in Table 1105.03-1.

F. Electronic Submittals.

1. For Primary and Interstate projects, electronic submittals will be made via electronic document management system (Doc Express) ~~may be made via email and sent to the following email addresses corresponding to the review office identified in Table 1105.03-1~~, or to the consultant email address indicated on the contract documents:

~~**REVIEW OFFICE**~~	~~**EMAIL ADDRESS**~~
~~Bridges and Structures~~	~~Bridges.Structures@dot.iowa.gov~~
~~Design (Soils Design Section)~~	~~Soils.Design@dot.iowa.gov~~
~~Traffic and Safety~~	~~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 submitter of the submittal will also place a copy of the document in Doc Express for the Engineer and the appropriate design office ~~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.~~

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6. 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. Provide project number and submittal description for the document title in Doc Express ~~email subject line~~. The Doc Express submittal ~~email~~ 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. 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. Will not be accepted.

~~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 Resident Construction 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)
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Detail plans for falsework or centering support of steel structures (i.e. erection plans)	Bridges and Structures	~~2 (6)~~	30
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Highway sign support structures (i.e. bridge type trusses, cantilever 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
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MSE, segmental, and modular block retaining walls	Design (Soils Design Section)	~~Preliminary submittal: 3 design calculations, 3 shop drawings, and 3 field construction drawings~~ ~~Final submittal: 3 design calculations, 3 shop drawings, and 3 field construction drawings~~	30 14
Soil nail and tie-back retaining walls	Design (Soils Design Section)	~~6 final design plans~~	60
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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	Bridges and Structures	~~1~~	30
Architectural paving	Bridges and Structures	~~1~~	30
Architectural paint color samples and manufacturer data	Bridges and Structures	~~3~~	30
Architectural concrete texture form liner samples and drawings	Bridges and Structures	~~3~~	30
Architectural concrete sealer samples and manufacturer data	Bridges and Structures	~~3~~	30
Architectural ornamental brick	Bridges and Structures	~~3~~	30

(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).~~
(b) Submittal time shall be within 45 calendar days from the date of award of contract.

Add DS-12066 to GS as Section 1113 with the following first paragraph:

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

Reason for Revision: Changes are being made to represent the elimination of Paper submittals for working drawings. Other changes are being made to best utilize the document management system (Doc Express), for the electronic submittal and processing of working drawings, that the Department is utilizing on all projects let and administered by the DOT. RCEs, Contractors, suppliers, and Design offices all desire a single submittal process that is consistent for projects statewide.

May want to verify if by deleting everything in the “Number of Copies” column that some things are not lost.

May also want to verify the wording for the PDF file size, scan quality stuff. Scalable image from produced from a native source?

Add DS-12066 to General Supplemental Specifications and apply requirements to all contracts where the Iowa Department of Transportation is the Contracting Authority.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments:
County or City Comments:
Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Tom Reis / Eric Johnsen	**Office:** Specifications	**Item 3**
Submittal Date: 2015.04.24	**Proposed Effective Date:** October 2015	
Article No.: 1109.01, B **Title:** Metrication	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			

Specification Section Recommended Text:

1109.01, B, Metrication.

Replace the Article:

1. Project specific documents provided by the Contractor ~~on English unit contracts~~ shall be expressed in English units ~~and on metric unit contracts shall be expressed in metric units~~. Manual conversion of metric units to English units is acceptable ~~on contracts expressed in English units~~. ~~Manual conversion of English units to metric units will be acceptable on metric unit contracts.~~ The Contractor shall be responsible for the conversion of units. ~~The following tables~~ ASTM SI 10 provides common metric ~~units and symbols, prefixes, and~~ conversion~~s:~~ factors.

~~**Table 1109.01-1: Common Prefixes Used with Metric Units**~~

~~Prefix~~	~~Symbol~~	~~Multiplication Factor~~
~~giga~~	~~G~~	~~1,000,000,000~~
~~mega~~	~~M~~	~~1,000,000~~
~~kilo~~	~~k~~	~~1,000~~
~~hecto~~	~~h~~	~~100~~
~~deka~~	~~da~~	~~10~~
~~base unit~~	~~–~~	~~1~~
~~deci~~	~~d~~	~~0.1~~
~~centi~~	~~c~~	~~0.01~~
~~milli~~	~~m~~	~~0.001~~
~~micro~~	~~µ~~	~~0.000001~~

~~**Table 1109.01-2: Common Metric Units and Symbols**~~

~~Measurement~~	~~Unit~~	~~Symbol~~
~~Length~~	~~kilometer~~ ~~meter~~ ~~centimeter~~ ~~millimeter~~ ~~micrometer~~	~~km~~ ~~m~~ ~~cm~~ ~~mm~~ ~~µm~~
~~Area~~	~~hectare~~ ~~square meter~~ ~~square centimeter~~ ~~square millimeter~~	~~ha~~ ~~m^2~~ ~~cm^2~~ ~~mm^2~~
~~Volume~~	~~cubic meter~~ ~~cubic centimeter~~ ~~cubic millimeter~~ ~~kiloliter~~ ~~liter~~ ~~milliliter~~	~~m^3~~ ~~cm^3~~ ~~mm^3~~ ~~kL~~ ~~L~~ ~~mL~~
~~Mass~~	~~megagram~~	~~Mg~~

	~~kilogram~~ ~~gram~~	~~kg~~ ~~g~~
~~Temperature~~	~~degrees Celsius~~	~~ºC~~
~~Pressure~~	~~pascal~~ ~~kilopascal~~ ~~megapascal~~	~~Pa~~ ~~kPa~~ ~~MPa~~
~~Force~~	~~newton~~ ~~kilonewton~~	~~N~~ ~~kN~~

~~Table 1109.01-3: Other Metric Units Which Might be Encountered and the Symbol for Each~~

~~Electric current~~	~~ampere~~	~~A~~
~~Luminous Intensity~~	~~candela~~	~~cd~~
~~Frequency~~	~~hertz~~	~~Hz~~
~~Energy, Work~~	~~joule~~ ~~gigajoule~~	~~J~~ ~~GJ~~
~~Luminous flux~~	~~lumen~~	~~lm~~
~~Electric Potential~~	~~volt~~	~~V~~
~~Power~~	~~watt~~ ~~kilowatt~~	~~W~~ ~~kW~~

~~Table 1109.01-4: English and Metric Unit Conversion (Referenced from ASTM SI-10, except those marked with asterisks)~~

~~Measurement~~	**~~English Units (Multiply)~~**	**~~Metric Units (To Find)~~**	**~~Conversion Factor (By)~~**
~~Length~~	~~mile~~ ~~yard~~ ~~foot (U.S. Survey)~~ ~~inch~~ ~~station*~~ ~~station*~~	~~kilometer~~ ~~meter~~ ~~meter~~ ~~millimeter~~ ~~meter~~ ~~metric station~~	~~1.609347~~ ~~0.9144~~ ~~0.3048006~~ ~~25.4~~ ~~30.48006~~ ~~0.3048006~~
~~Area~~	~~acre~~ ~~square yard~~ ~~square foot~~ ~~square inch~~ ~~square mile~~ ~~square*~~	~~hectare~~ ~~square meter~~ ~~square meter~~ ~~square millimeter~~ ~~square kilometer~~ ~~square meter~~	~~0.4046873~~ ~~0.8361274~~ ~~0.09290304~~ ~~645.16~~ ~~2.589998~~ ~~9.290304~~
~~Volume~~	~~cubic yard~~ ~~cubic foot~~ ~~cubic inch~~ ~~gallon~~ ~~fluid ounce~~ ~~board foot~~	~~cubic meter~~ ~~cubic meter~~ ~~cubic millimeter~~ ~~liter~~ ~~milliliter~~ ~~cubic meter~~	~~0.7645549~~ ~~0.02831685~~ ~~16,387.06~~ ~~3.785412~~ ~~29.57353~~ ~~0.00236~~
~~Mass~~	~~ton (2000 lb.)~~ ~~pound~~ ~~ounce~~	~~megagram~~ ~~kilogram~~ ~~gram~~	~~0.9071847~~ ~~0.4535924~~ ~~28.34952~~
~~Pressure~~	~~pounds per sq. in. (psi)~~ ~~pounds per sq. ft.~~	~~kilopascals~~ ~~Pascal~~	~~6.894757~~ ~~47.880263~~
~~Overhaul~~	~~station yard*~~	~~station meter~~	~~0.2330368~~

~~Other~~	~~lbs./cu. ft.~~ ~~lbs. force~~ ~~gal./cu. yd.~~ ~~lbs./gal.~~ ~~oz./cu yd.~~ ~~oz./100 lbs.~~	~~kg/m^3~~ ~~Newton~~ ~~L/m^3~~ ~~kg/L~~ ~~mL/m^3~~ ~~mL/kg~~	~~16.01846~~ ~~4.448222~~ ~~4.9511316~~ ~~0.1198264~~ ~~38.680714~~ ~~0.6519846~~
	~~**(To Find)**~~	~~**(Divide)**~~	~~**(By)**~~
~~**Temperature:**~~ ~~**(ºC x 1.8) + 32 = ºF** (Take the temperature in ºC and multiply by 1.8; then add this number to 32 to get the temperature in ºF.)~~			

~~1~~ 2. ~~Exceptions.~~

The Engineer may approve exceptions to construction based on plan dimensions, on a project-by-project basis, provided the request does not adversely affect the intended design. Exceptions shall be at no additional cost to the Contracting Authority.

a) ~~The following exceptions in Division 41, Construction Materials are approved, and will be allowed:~~

~~**1) Section 4151, Steel Reinforcement.**~~

All English Reinforcing steel may be substituted with metric reinforcing steel as follows:

Table 1109.01-6: Metric Reinforcing Steel

English	Hard Converted* Metric Size	Soft Converted* Metric Size
3	10	10
4	15	13
5	15	16
6	20	19
7	25	22
8	25	25
9	30	29
10	35	32
11	35	36
14	45	43
18	55	57

* Hard Converted metric size reinforcing steel refers to bars referenced in ASTM A 615/A 615 M - 95b using the following sizes: 10, 15, 20, 25, 30, 35, 45, and 55. Soft Converted metric size reinforcing steel refers to bars referenced in ASTM A 615/A 615 M - 96a using the following sizes: 10, 13, 16, 19, 22, 25, 29, 32, 36, 43, and 57.

~~**2) Plant Operations.**~~

~~Batching of materials may be performed with English or metric units, but all reports on English unit contracts shall be prepared in English units, and all reports on metric unit contracts shall be prepared in metric units.~~

~~**3) Delivery Tickets.**~~

~~Delivery tickets for materials such as aggregates, HMA mixes, asphalt binder, etc. may be converted at the end of the day, or at the end of a process for the day, in lieu of individual ticket conversion; but all reports on English unit contracts shall be prepared in English units and all reports on metric unit contracts shall be prepared in metric units.~~

~~**b)** All hard converted metric reinforcing steel (bar size matrix shown on plans) may be substituted with English reinforcing steel or soft converted metric steel as follows:~~

~~**Table 1109.01-7: Hard Converted and Soft Converted Metric Sizes**~~

~~English~~	~~Hard Converted* Metric Size~~	~~Soft Converted* Metric Size~~
~~4~~	~~10~~	~~13~~
~~5~~	~~15~~	~~16~~
~~6~~	~~20~~	~~19~~
~~8~~	~~25~~	~~25~~
~~10~~	~~30~~	~~32~~
~~11~~	~~35~~	~~36~~

~~* Hard Converted metric size reinforcing steel refers to bars referenced in ASTM A 615/A 615 M - 95b using the following sizes: 10, 15, 20, 25, 30, 35, 45, and 55. Soft Converted metric size reinforcing steel refers to bars referenced in ASTM A 615/A 615 M - 96a using the following sizes: 10, 13, 16, 19, 22, 25, 29, 32, 36, 43, and 57.~~

~~c~~ **b)** The spacing or pattern of bar placement shall be as shown in the contract documents, and no changes in the spacing or the pattern will be allowed with the substitution.

~~**2. Method of Measurement and Basis of Payment.**~~

~~The cost of all equipment, labor, and materials necessary for metric conversion shall not be paid separately, but shall be considered incidental to the price bid for the item for which the conversion was necessary. The cost of exception of construction materials as specified above shall not be paid separately, but shall be considered incidental to the price bid for the item for which the substitution is made.~~

Comments: All metric equivalent dimensions will also be eliminated from the Standard Specifications, Supplemental Specifications, Developmental Specifications, and Materials I.M.'s.

These revisions will be made to the 2015 Standard Specification book since metric equivalent dimensions are being eliminated effective with the printing of the new book effective with the October 2015 letting.

Member's Requested Change: **(Do not use '<u>Track Changes</u>', or '<u>Mark-Up</u>'. Use ~~Strikeout~~ and Highlight.)**

Reason for Revision: Eliminate metric measurements from Department work.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes** X	**No**

Comments: All metric bid items will be obsoleted.

County or City Comments:

Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder	**Office:** Construction and Materials	**Item 4**
Submittal Date: April 27, 2015	**Proposed Effective Date:** October 20, 2015	
Article No.: 1109.05, A, 2 **Title:** Progress Payments	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:
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 documents 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.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

1109.05 PARTIAL PAYMENTS.
A. Progress Payments.

2. 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 documents and the manner of storage is satisfactory to the Engineer.
The Contractor shall be responsible for all damages and material losses. The Contractor is responsible until the material is incorporated into the work and the work is accepted.

Reason for Revision: Proposed change eliminates reference to locations where material is stockpiled. With reduced resources, Iowa DOT materials staff are not able to travel to out-of-state locations to inspect stockpiled materials. Also, clarifies requirement that contractor is responsible for material until incorporated into project and is accepted.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments:

County or City Comments:

Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Kevin Merryman	**Office:** Construction and Materials	**Item 5**
Submittal Date: April 27, 2015	**Proposed Effective Date:** October 2015	
Article No.: 2304.03, A, 2 **Title:** PCC Option (Detour Pavement)	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

2304.03, A, 2.

Replace the Article:

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

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

2304.03 CONSTRUCTION.

A. PCC Option.

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

Reason for Revision: Current specification language does not require placement of microtexture and macrotexture. This requirement should not be determined based upon whether or not a pavement is permanent or temporary. Instead, safety and speed should be the determining factors, which is why the specification language for texture in Section 2301 should apply to detour pavement. Also, the requirements of 2301.03, H, 4, a should apply. Only the smoothness requirements in 2301.03, H, 4, b should be excluded. These changes match much of the practice being used in the field. Most of the time contractors place microtexture in detour pavement and ask if macrotexture should be placed.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments:

County or City Comments:

Industry Comments: These changes were discussed with ICPA members at the recent joint specification committee meeting on April 17.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Wayne Sunday	**Office:** Construction & Materials	**Item 6**
Submittal Date: April 20, 2015	**Proposed Effective Date:** October 20, 2015	
Article No.: 2403.03, F, 5, e **Title:** Placing and Protection in Cold Weather	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			

Specification Section Recommended Text:

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.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

F. Placing and Protection in Cold Weather.

5. Before concrete is placed at ambient air temperatures below 40°F (4°C) or when these temperatures might occur during the protection period, provide heating or protecting facilities, or both, meeting requirements of Article 2403.03, B, 4, adequate to protect the work as follows:

e. If all the concrete is at least 1 foot (0.3 m) below ground water level, it may be placed at a temperature no less than 40°F (4°C) and flooded to a minimum depth of 1 foot (0.3 m) in lieu of other methods of protection and curing provided that the water temperature is 50º F or greater. Ensure that concrete cured in this manner is not subjected to freezing temperatures within 10 calendar days after it is placed. In lieu of flooding, culvert footings may be protected from freezing by an adequate layer of straw or hay for at least 5 calendar days.

Reason for Revision: The specifications did not consider the effect of cold water on placed concrete that is hydrating and generating heat. This specification revision is intended to limit the use of flooding cure when there are conditions of cold water to mitigate the potential for thermal shock and possible cracking of the concrete.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments:		
County or City Comments:		
Industry Comments:		

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Kyle Frame	**Office:** Construction and Materials	**Item 7**
Submittal Date: 4/24/15	**Proposed Effective Date:** Oct. 2015	
Article No.: 2405.03, H, 2 **Title:** Bridge Bearings **Article No.:** 2525.03, H, 3 **Title:** Hardware (Traffic Signalization) **Article No.:** 4185.02, B **Title:** Anchor Bolt and Slip-Base Plate Fasteners for Lighting Poles. **Article No.:** 4187.01, C, 3 **Title:** Anchor Bolts, Nuts and Washers	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

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 that the nut on the opposite side, to the extent possible, is subsequently tightened until all of the nuts in that pass have been tightened.

2525.03, H, 3, b, Nuts.

Add as the last bullet:

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

4185.02, B, 6.

Add as the last bullet:

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

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.

Comments: Should Article 2405.03, H, 2, C, apply to foundation nuts also? We could move this to the general article to apply there also.

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

Add Article 2405.03,H,2,c:

2. Bridge Bearings.

c. 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 that the nut on the opposite side, to the extent possible, is subsequently tightened until all of the nuts in that pass have been tightened.

Add third bullet to Article 2525.03,H,3,b:

3. Hardware.

b. **Nuts.**

- Heavy hex meeting the requirements of ASTM A 563, DH.
- May be over-tapped according to the allowance requirements of ASTM A 563.
- Refer to Article 2522.03,H,2,b through h for tightening procedure and requirements.

Add fifth bullet to Article 4185.02,B,6:

6. Furnish nuts that:

- Meet the requirements of ASTM A 563,
- Are grade DH,
- Are heavy hex, and
- Are galvanized according to the requirements of ASTM F 2329, or ASTM B 695, Class 55, Type I.
- Refer to Article 2522.03,H,2,b through h for tightening procedure and requirements.

Add Article 4187.01,C,3,b,5:

3. Anchor Bolts, Nuts, and Washers.

b. Nuts.

1) Comply with ASTM A 563, Grade DH.
2) Use heavy hex.
3) Use ANSI/ASME B1.1 for UNC thread series, Class 2B tolerance.
4) Nuts may be over-tapped according to the allowance requirements of ASTM A 563.
5) Refer to Article 2522.03,H,2,b through h for tightening procedure and requirements.

Reason for Revision: Include tightening procedure and requirements for bridge bearing anchor bolts, traffic signal anchor bolts, lighting pole anchor bolts, and sign truss anchor bolts.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments:		
County or City Comments:		
Industry Comments:		

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Kyle Frame	**Office:** Construction and Materials	**Item 8**
Submittal Date: 04/20/2015	**Proposed Effective Date:** October 2015	
Article No.: 2408.02 **Title:** Material Requirements, Identification, and Fabrication (Steel Structures)	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

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.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

Delete the second sentence of the first paragraph in Article 2408.02 and add the following:

~~All main member fabrication, except bearing devices, must be fabricated by plants certified as Category III, Major Steel Bridges, under the provisions of AISC's Quality Certification Program.~~

All main member fabrication, except bearing devices, must be fabricated by plants certified as Simple, Intermediate or Advanced Bridges according to the AISC 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 that do not require extraordinary measures. Typical examples might 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 are those requiring 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.

Reason for Revision: Update our specifications to match current AISC terminology.

County or City Input Needed (X one)			**Yes**	**No**	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes**	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Wayne Sunday	**Office:** Construction & Materials	**Item 9**
Submittal Date: April 27, 2015	**Proposed Effective Date:** October 20, 2016	
Article No.: 2412.03, C **Title:** Placing Concrete	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			

Specification Section Recommended Text:
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 with manufacturer's specifications for review/approval prior to use in concrete placement.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

C. Placing Concrete.

5. Concrete placement equipment proposed to be operated directly on bridge deck reinforcing steel shall be submitted with manufacturer's specifications for review/approval prior to use in concrete placement.

Reason for Revision: We had an instance of a contractor operating concrete placement equipment directly on the bridge deck reinforcing steel during a bridge deck placement. This equipment was called "Line Dragon" and there were two four wheel rubber tired vehicles that had flexible pump lines attached to deliver and convey the concrete. The inspector's observed that this equipment bent and displaced deck reinforcing steel which had to be corrected/retied during the deck placement. The weight of this equipment appears to be too great for the current specified bars sizes and support systems being used. Future proposed use of placement equipment directly on the bridge deck reinforcing steel will require submittal of specifications with review/approval prior to use.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments:		
County or City Comments:		
Industry Comments:		

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Wayne Sunday	**Office:** Construction & Materials	**Item 10**
Submittal Date: April 27, 2015	**Proposed Effective Date:** October 20, 2015	
Article No.: 2412.03, E **Title:** Curing Concrete Decks	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			

Specification Section Recommended Text:

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.

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 the burlap wet during the moist curing period. The system may be interrupted to replenish the 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.

Comments: Article 2413.03, F was rewritten to more closely correspond with Article 2412.03, E since we are doing the same thing.

Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)

2412.03

E. Curing Concrete Decks.

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

1. Place the first layer of prewetted burlap in the following manner:

a. Interstate and Primary Projects.
Place on the concrete within 10 minutes after final finishing.

b. Other Projects.
Immediately after final finishing and grooving, cover the area finished with white pigmented curing compound meeting requirements of Article 4105.05 applied at a maximum rate of 135 square feet per gallon (3.3 square meters per liter). Place the first layer of prewetted burlap on the concrete within 30 minutes after the concrete has been finished and grooved. Burlap placement beyond 30 minutes may be allowed, up to an additional 30 minutes, if approved by the Engineer based upon environmental conditions at time of deck placement.

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

3. Apply water to the burlap covering for a period of 4 calendar days. Use a pressure sprinkling system that is effective in keeping the burlap wet during the moist curing period. The system may be interrupted only to replenish the 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.

4. Maintain continuous contact, except as noted above, between all parts of the concrete deck and the burlap during the 4 calendar day moist curing period.

5. On concrete decks placed after October 1 and prior to April 1, after 20 hours of the application of water, the Contractor may substitute the application of a moisture proof plastic film no less than 3.4 mils (86 µm) thick over the wet burlap in lieu of applying water. Maintain intimate contact between the surface of the concrete, the burlap, and the plastic film.

2413.03

F. Curing.

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.

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

Reason for Revision: There have been numerous efforts to emphasize the importance of prewetting burlap prior to placement and there continues to be a wide variation from completely dry to fully saturated. Inspection personnel constantly have to deal with instances where contractors have not made a reasonable attempt to adequately prewet their burlap prior to placement. This specification revision will leave no question as to the intent.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments:

County or City Comments:

Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Melissa Serio	**Office:** Construction & Materials	**Item 11**
Submittal Date: 4/23/15	**Proposed Effective Date:** October 20, 2015	
Article No.: 2418.01 **Title:** Description (Temporary Stream Diversion)	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			

Specification Section Recommended Text:

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.

Comments: "Either" implies a choice of two items, not three.

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

2418.01 DESCRIPTION

Replace the Article

Construct, maintain, and remove temporary stream diversion according to the contract documents. Temporary stream diversion involves diverting flow of a ~~perennial~~ stream around the construction site by use of either a diversion channel, pipe, or hose. Temporary stream diversion applies to projects involving installation or extensions of reinforced box culverts 6 feet by 6 feet (1800 mm by 1800 mm) or larger, precast box culverts 6 feet by 6 feet (1800 mm by 1800 mm) or larger, or arch pipe culverts 102 inches by 62 inches (2590 mm by 1575 mm) or larger.

Reason for Revision: By deleting perennial, this clarifies that application of item depends on size and not on stream flow.

New Bid Item Required (X one)	**Yes**	**No** x
Bid Item Modification Required (X one)	**Yes**	**No** x
Bid Item Obsoletion Required (X one)	**Yes**	**No** x
Comments: None.		
County or City Comments:		
Industry Comments:		

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Wayne Sunday	**Office:** Construction & Materials	**Item 12**
Submittal Date: April 24, 2015	**Proposed Effective Date:**	
Article No.: 2428.04, B **Title:** Dips	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

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 the dip area,
- Saw cut 3/4 inches at the perimeter,
- Remove deck concrete to 1 inch below top mat of deck reinforcing, and
- Place a deck overlay patch.

Comments: Much of this language is better suited to the Construction Manual, as it is instructions to the Engineer.

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

2428.04 BUMPS AND DIPS.

Bumps and dips, including those at headers, on all surfaces for which smoothness is designated will be evaluated. Correction work will be required according to the criteria in Paragraphs B and C below.

A. Bumps.

1. Correct all bumps exceeding 0.5 inch (12.7 mm) within a 25 foot (7.6 m) span, as indicated on the profilogram, except as stated in Article 2428.04, C.

2. Corrected bumps will be considered satisfactory when profilograph measurement shows that the bumps were 0.3 inch (7.6 mm) or less in a 25 foot (7.6 m) span.

B. Dips.

1. Correct all dips exceeding 0.5 inch (12.7 mm) in a 25 foot (7.6 m) span, as indicated on the profilogram, only when the Engineer requires, except as stated in Article 2428.04, C.

Correction Criteria: Engineer will review the following for determining correction (this criteria also applies to decisions on Article 2428.04, C):

a. Evaluate the vehicle ride with the uncorrected dip to determine if the ride is reasonably acceptable. If acceptable no correction would be done, but a $900 price adjustment would be applied.

b. If the ride is not reasonably acceptable, determine the depth of grinding that would be required to correct and review the as-constructed deck cover concrete thickness. If the grinding can be done and not reduce the cover concrete thickness to less than 2 inches then require the contractor to grind the dip.

c. When the correction of the dip by grinding would result in a cover concrete thickness less than 2 inches, the contractor will be required to identify the limits of the dip area, saw cut ¾ inches at the perimeter, remove the deck concrete to 1 inch below the top mat of deck reinforcing, and place a deck overlay patch.

The Contractor will be assessed a price adjustment of $900 for each dip exceeding 0.5 inch (12.7 mm) that is not corrected, except as stated in Article 2428.04, C.

2. A dip in both wheel paths at a lane location will be considered a single dip when assessing a price adjustment.

3. Corrected dips will be considered satisfactory when the profilogram shows the dips are less than 0.3 inch (7.6 mm) in a 25 foot (7.6 m) span.

C. Exceptions.

When the Contractor is not responsible for the adjoining surface, bumps and dips in the 16 feet (5 m) at the end of a section will be reviewed by the Engineer. Correct bumps and dips determined to be under the control of the Contractor and resulting from the Contractor's operations. Correction of bumps and dips determined to be beyond the control of the Contractor will be paid according to Article 1109.03, B.

Reason for Revision: Bridge decks and bridge approaches have reinforcing steel at a limited depth below the concrete surface which is protected by the thickness of cover concrete. Deck overlays are thin placements intended to provide a wearing surface over the bridge deck or bridge approach. As such it is not desirable to significantly reduce the thickness of the cover concrete or deck overlay. In dip situations, correction requires significant surface concrete removal area to eliminate the dip condition. This will reduce the desired concrete cover and reduce the service life of the bridge deck, bridge approach, or overlay. The dip correction criteria is intended to be used for making the best decision on the type of correction to be done and not appreciably impact the service life.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments:		
County or City Comments:		
Industry Comments:		

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Melissa Serio	**Office:** Construction & Materials	**Item 13**
Submittal Date: 4/27/15	**Proposed Effective Date:** October 20, 2015	
Article No.: 2502.03, C **Title:** Longitudinal Subdrains	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			

Specification Section Recommended Text:
2502.03, C, 10.

Replace the Article:
Use trench rollers with a minimum trench wheel weight of 6000 pounds or a vibratory compactor wheel.

Comments: Does the compactive effort of the vibratory compactor wheel need to be specified?

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

2502.03, C, 10.

Replace the Article

10. Use trench rollers with a minimum trench wheel weight (mass) of 6000 pounds (2700 kg) or a vibratory compactor wheel.

Reason for Revision: To allow for another type of compaction equipment that will produce equivalent result.

New Bid Item Required (X one)	**Yes**	**No** x
Bid Item Modification Required (X one)	**Yes**	**No** x
Bid Item Obsoletion Required (X one)	**Yes**	**No** x
Comments: None.		
County or City Comments:		
Industry Comments:		

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Brian Smith	**Office:** Design	**Item 14**
Submittal Date: 4/20/2015	**Proposed Effective Date:** 10/20/2015	
Article No.: 2503.01 **Title:** Description (Storm Sewers) **Article No.:** 4149.03, B **Title:** Reinforced Concrete Arch Pipe	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

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.

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.

Comments: Article 4149.03 includes arch pipe, but does not include elliptical pipe.

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

2503.01, F.

Add as a new Article:

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

Reason for Revision: The Office of Design would like to add low clearance pipe to the storm sewer specifications.

New Bid Item Required (X one)	**Yes X**	**No**
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes X**	**No**

Comments: Bid items will need to be created for low clearance storm sewer.

County or City Comments:

Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Kevin Merryman	**Office:** Construction and Materials	**Item 15**
Submittal Date: April 27, 2015	**Proposed Effective Date:** October 2015	
Article No.: 2512.03, C **Title:** Forms	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			

Specification Section Recommended Text:

2512.03, C, 3.

Replace the Article:

Place forms in a manner that ~~E~~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.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

3. Place forms in a manner that will ~~E~~ensure the top face of ~~forms~~ curb does not vary from a true plane by more than 1/8 inch in 10 feet (3 mm in 3 m). Ensure the upstanding face~~, including any extension,~~ does not vary from a true plane by more than 1/4 inch in 10 feet (6 mm in 3 m). Remove forms that are bent, twisted, warped, broken, or battered from the work. Allow Engineer to inspect and approve repaired forms before using.

Reason for Revision: The change shifts the spec. requirement to more of an end result rather than method spec. Placement tolerances for forms don't necessarily equate to end results.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments:		
County or City Comments:		
Industry Comments:		

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Wayne Sunday	**Office:** Construction & Materials	**Item 16**
Submittal Date: April 27, 2015	**Proposed Effective Date:** October 20, 2016	
Article No.: 2513.03, A, 2, b, 4 **Title:** Cast-in-Place and Slip Form	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

2513.03, A, 2, b, 4.

Add to the end of the Article:

The target air may be adjusted by the Engineer based on random tests of the consolidated concrete behind the 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.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

2. Cast-in-Place and Slip Form.

b. Submit Class BR mix design to the District Materials Engineer for approval at least 7 calendar days prior to placement. Apply Section 2403, except meet the following mix design requirements:

4) Admixtures. Use air entrainment. Use 7% as a target value for the air content of fresh, unvibrated concrete, with a maximum variation of plus 1.5% or minus 1.0%. To improve workability and aid in air entrainment, water reducing or retarding admixtures may be used according to Article 2513.02, C. The target air may be adjusted by the Engineer based on random tests of the consolidated concrete behind the 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.

Reason for Revision: We have recently experienced severe deterioration of slip form concrete barrier rail. The barrier rail deterioration is being investigated, but was on the I-235 corridor and appears to be in isolated placement locations and not uniformly throughout the corridor. Early presumptions are that the contractor who placed this barrier rail used a very low slump concrete and subsequently increased the vibration to achieve concrete consolidation which resulted in loss of in-place air. This specification revision will enable monitoring of the in-place concrete barrier rail air content to identify and correct the concrete placement to minimize early concrete deterioration due to low in-place air content.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments:

County or City Comments:

Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder	**Office:** Construction & Materials.	**Item 17**
Submittal Date: 04-21-2015	**Proposed Effective Date:** OCT 2015.	
Article No.: 2522.03, G, 1 **Title:** Luminaire Frame and Head Frame	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

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.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

1. Luminaire Frame and Head Frame.

a. Ensure the luminaire frame and head frame assembly meet the requirements of ASTM A 709 Grade ~~50 (345).~~ 36. For the purpose of Charpy V-notch toughness requirements, all steel used for the luminaire frame and head frame assembly ~~required to be ASTM A 709 Grade 50(345) 36~~ shall meet impact requirements specified in Article 4152.02. Miscellaneous appurtenant steel components may be constructed using ASTM A 709 Grade 36 ~~(250)~~ 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.

Reason for Revision: This change was requested by industry representatives and was discussed with the Office of Bridges and Structures before deciding to make this change.

New Bid Item Required (X one)	**Yes**	**No** x
Bid Item Modification Required (X one)	**Yes**	**No** x
Bid Item Obsoletion Required (X one)	**Yes**	**No** x

Comments:

County or City Comments:

Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Brian Smith	**Office:** Design	**Item 18**
Submittal Date: 4/20/2015	**Proposed Effective Date:** 10/20/2015	
Article No.: 2523.03, G **Title:** Foundations	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:
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 in all respects 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 the bottom of the hole as undisturbed as possible. If caving soil or groundwater is present, remove prior to placing foundation. Place backfill consisting of Class B concrete.

Comments:

Member's Requested Change: **(Do not use '<u>Track Changes</u>', or '<u>Mark-Up</u>'. Use ~~Strikeout~~ and Highlight.)**
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 (150 mm) below the finished ground level. Precast foundations may be installed if allowed by the Engineer.
2. Ensure the foundations conform in all respects 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 (100 mm) 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 (0.3 m) larger than the diameter of the foundation. Leave the bottom of the hole as undisturbed as possible. If caving soil or groundwater is present, remove prior to placing foundation. Place backfill consisting of Class B concrete.

Reason for Revision: The Offices of Design, Bridges and Structures, and Construction and Materials met and decided to add language to the specifications to allow precast foundations. Currently, LI-201 allows the use of precast foundations. That language will be removed from the Standard for the April 2016 revision.

The Office of Design anticipates more than one Specification Committee meeting may be required to fine tune the language. Since the language won't be removed from LI-201 until the April 2016 revision, moving the implementation date back to April 2016 won't be a problem.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments:

County or City Comments:

Industry Comments: One manufacturer has asked to be placed on an approved list. No approved list currently exists. The Offices of Design, Bridges and Structures, and Construction and Materials decided not to create an approved list at this time since use of precast foundations has been very limited.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Brian Smith	**Office:** Design	**Item 19**
Submittal Date: 4/20/2015	**Proposed Effective Date:** 10/20/2015	
Article No.: 2526.03, A, 2, c **Title:** Areas Constructed with AMG	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

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.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

2526.03, A, 2, c, 2.

Revise: the last sentence:

Set hubs at top of finished subgrade at hinge points on cross section at 1000 foot (300 m) intervals on mainline and at least two cross sections on side roads and ramps. 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.

Reason for Revision: The Office of Design would like to add language to define how to set hubs. We understand that in many cases contractors are verifying these points using the surface which defeats the purpose of an independent check.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments:

County or City Comments:

Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Wayne Sunday	**Office:** Construction & Materials	**Item 20**
Submittal Date: April 24, 2015	**Proposed Effective Date:** October 20, 2016	
Article No.: 2526.03, A, 3 **Title:** Bridges (Survey)	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:
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.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

3. Bridges.

a. Mark locations and elevations with metal pin or tack in a wood hub, flat, and lath. Clearly mark flat with the pier/abutment station location, design number, and offset distance from centerline of the approach roadway.

b. Establish a minimum of three temporary benchmarks.

c. Mark location of test pile with a wood hub.

d. Perform an independent check of the above stakes. Independent check shall be performed by a second survey crew using their own calculations and equipment entries for staking bridge. Results and staking layout shall be sent to the Engineer prior to starting structure construction.

e. Submit elevations of all completed substructure beam seats to the Engineer for review prior to installation of bearings and superstructure elements.

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

g. Provide the Engineer with a copy of the staking diagram prior to commencing work.

Reason for Revision: Having the contractor prepare their review and proposed final deck grades will benefit the contractor in preliminary knowledge of the deck grades when they initiate deck forming. This will also reduce the work load demand on the Engineer and enable an earlier response to adjustment and approval of the deck grades for deck construction.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments:

County or City Comments:

Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder	**Office:** Construction & Materials	**Item 21**
Submittal Date:	**Proposed Effective Date:**	
Section No.: 2529 **Title:** Full Depth Finish Patches	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

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	75ºF 80ºF*
10 Hour	Type I, Type II Type IS	10% Fly Ash 0% Fly Ash	65ºF 70ºF*
24 Hour	Type I, Type II, Type IS	0% Fly Ash	50ºF
* 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, H, 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.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

2529.02.B.4

4. Cement.

For Class M mixes, meet the requirements of Section 4101. Table 2529.02-1 lists cement types and maximum allowable substitution rates. The maximum substitution for Type IS shall not exceed 25%.

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	75ºF (24ºC) 80ºF (27ºC)*
10 Hour	Type I, Type II Type IS	10% Fly Ash 0% Fly Ash	65ºF (18ºC) 70ºF (21ºC)*
24 Hour	Type I, Type II Type IS	0% Fly Ash	50ºF (10ºC)
* 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

9. Concrete Mixtures.

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.H.4

4. 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 contract documents or the 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.

Reason for Revision: When traffic conditions have permitted, a few districts have been placing patches without calcium chloride and curing longer to achieve better performance of patches. This change will add the longer curing for patches without calcium chloride.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments:		
County or City Comments:		
Industry Comments:		

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Brian Smith	**Office:** Design	**Item 22**
Submittal Date: 3/23/2015	**Proposed Effective Date:** 10/20/2015	
Article No.: 2548.03 **Title:** Construction	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			

Specification Section Recommended Text:
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.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**
2548.03, Construction.

Add as the third sentence to the first paragraph:
Allow PCC to cure for a minimum of 14 days prior to placing milled rumble strips.

Reason for Revision: To reduce potential for damage caused by milling operations.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments:

County or City Comments:

Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Brian Smith	**Office:** Design	**Item 23**
Submittal Date: 4/20/2015	**Proposed Effective Date:** 10/20/2015	
Article No.: 2601.03 **Title:** Placement of Erosion Control	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			

Specification Section Recommended Text:

2601.03, A, 14, Straw Mulching Machine.

Replace the second sentence:

~~Engineer may consider e~~Excessive pulverization ~~as~~ is the general absence of straw longer than 6 inches (150 mm) after distribution.

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, Perenneal (~~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 seed~~bed~~ 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, Perenneal (~~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 (Asclepias tuberosa)	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, 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.

2601.04, 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, lap joints, seed, and fertilizer ~~for Special Ditch Control, TRM and Slope Protection~~ are incidental.

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. S~~seed, and fertilizer ~~for Special Ditch Control and TRM~~ are incidental.

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 acres 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 the 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.

Comments:

Member's Requested Change: (Do not use '<u>Track Changes</u>', or '<u>Mark-Up</u>'. Use ~~Strikeout~~ and Highlight.)

2601.03, A, 14, Straw Mulching Machine.

Replace the second sentence:

~~Engineer may consider e~~Excessive pulverization ~~as~~ is the general absence of straw longer than 6 inches (150 mm) after distribution.

2601.03, A, 18, Slit Seeder.

Add as a new Article:

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 three inches,
- Deposits metered seed directly behind the vertical grooves, and
- Contains packer wheels that press and firmly pack the 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:

Bluegrass, Kentucky[1]	~~122~~ 126 lbs. per acre (137 kg/ha)
Ryegrass, Perenneal (~~fineleaf~~ turf-type variety)[2]	~~35~~ 40 lbs. per acre (39 kg/ha)
Fescue, Creeping Red	18 lbs. per acre (20 kg/ha)
1. Choose three different cultivars of Kentucky bluegrass, at 42 lbs. per acre (45.7 kg/ha) each. 2. Choose two different cultivars of turf-type perennial ryegrass, at 20 lbs. per acre (19.5 kg/ha) 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 seed~~bed~~ 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.

Add as new Article 2:

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.

Replace Table 2601.03-2:

Bluegrass, Kentucky[1]	~~122~~ 126 lbs. per acre (137 kg/ha)
Ryegrass, Perenneal (~~fineleaf~~ turf-type variety)[2]	~~35~~ 40 lbs. per acre (39 kg/ha)
Fescue, Creeping Red	18 lbs. per acre (20 kg/ha)
1. Choose three different cultivars of Kentucky bluegrass, at 42 lbs. per acre (45.7 kg/ha) each. 2. Choose two different cultivars of turf-type perennial ryegrass, at 20 lbs. per acre (19.5 kg/ha) each.	

2601.03, C, 5, b, Seed Mixture.

Add as a new row to Table 2601.03-5:

Butterfly weed (Asclepias tuberosa)	3 oz. per acre (210 g/ha)

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, H, 5, a, 2.

Replace the Article:

2) ~~Use mixture specified.~~ Seed slopes using the 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 the area is prepared and prior to laying the 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 for the project, apply 300 pounds per acre (336 kg/ha) 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.

2601.04, 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, lap joints, seed, and fertilizer ~~for Special Ditch Control, TRM and Slope Protection~~ are incidental.

2601.04, A, 6.

Replace the Article:

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

2601.04, A, 10, b.

Replace the Article:

b. Payment is full compensation for the 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.

Reason for Revision: The Office of Design would like to make changes to line the specifications up with current practice.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments:

County or City Comments:

Industry Comments: A meeting was held with the industry that discussed the majority of these changes

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Brian Smith	**Office:** Design	**Item 24**
Submittal Date: 4/20/2015	**Proposed Effective Date:** 10/20/2015	
Article No.: 2602.03, L **Title:** Mobilizations, Erosion Control	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

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:~~ that 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.~~

Comments:

Member's Requested Change: **(Do not use '<u>Track Changes</u>', or '<u>Mark-Up</u>'. Use ~~Strikeout~~ and Highlight.)**

2602.03, L, 1.

Replace the Article:

1. Mobilizations, Erosion Control, applies to projects not identified as erosion control or landscaping and ~~containing at least one of the following items:~~ that 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.~~

Reason for Revision: The Office of Design would like to make changes to line the specifications up with current practice.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments:

County or City Comments:

Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Kyle Frame	**Office:** Construction and Materials	**Item 25**
Submittal Date: 4/23/15	**Proposed Effective Date:** Oct. 2015	
Article No.: 4151.03 **Title:** Reinforcement for Structures	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			

Specification Section Recommended Text:
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.**~~

~~**1**~~ **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:~~

~~1~~ **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 into direct contact with uncoated reinforcing bars, bare metal form hardware, or any 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. The 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 the requirements of Materials I.M. 451.01.

2) Bar chairs fabricated from stainless steel. Stainless steel materials for the bar chairs shall be compatible with the type of stainless steel materials used for the reinforcing bars.

3) Epoxy coated bar chairs meeting the 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 the 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 the 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 all 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 the 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 the 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 the 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.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

Delete 4151.03 C, D, E, F, G, H and add the following:

~~**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/A 775M.~~

~~**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.**~~

~~**5.** 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.~~

~~**6.** Bar sizes will be specified in the contract documents.~~

~~**7.** Bars shall be heat treated using one of the three methods listed in ASTM A 955.~~

~~**8.** If welding and/or tack welding is employed in the placement of stainless steel reinforcement, the following requirements shall be met prior to welding:~~
- ~~**e.** Welding shall not be performed without prior approval of Engineer.~~
- ~~**f.** Welding procedure suitable for the chemical composition and intended use shall be submitted for approval prior to welding.~~
- ~~**g.** Welding shall be performed by a state certified welder.~~
- ~~**h.** 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.**~~

~~**1.** 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 (50 µm to 100 µm)). Apply the coating within 0.5 hour after cleaning.~~

~~**2.** 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.**~~
~~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/D 3963M. The fabricator is responsible for the repair.~~

~~**G. Repair of Damage Incurred during Shipment and Handling at the Job Site.**~~
~~Comply with the following:~~

~~**1.** Repair visible damage incurred during shipment, storage, and /or placement of epoxy-coated bars at the job site.~~

~~**2.** 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.** Repair damage to the coating caused by shipment, storage, and/or placement at the job site.~~

~~**4.** 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.** The maximum amount of repaired, damaged areas is not to exceed 2% of the total surface area in each 1.0 linear foot (0.3 m) of the bar. Should the amount of damage exceed the 2% in 1.0 linear foot (0.3 m), then remove that bar and replace with an acceptable bar. Coating the cut ends will not be included in the repair percentage.~~

~~**6.** Apply a minimum coating thickness of 7 mils (175 µm) to areas to be repaired.~~

~~**7.** Allow patches to cure (dry to the touch) before placing concrete over the coated bars.~~

~~**8.** Prepare the surface, repair it, and apply patches according to the resin manufacturer's recommendations.~~

~~**H. 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.~~

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/A 775M.

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.

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 (50 µm to 100 µm)). Apply the coating within 0.5 hour after cleaning.

4. Ensure blast media meets the requirements of ASTM A 775. A maximum of 10% steel shot may be added to blast media.

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/D 3963M. The fabricator is responsible for the repair.

6. Repair visible damage incurred during shipment, storage, and /or placement of epoxy-coated bars at the job site.

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.

8. Repair damage to the coating caused by shipment, storage, and/or placement at the job site.

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.

10. The maximum amount of repaired, damaged areas is not to exceed 2% of the total surface area in each 1.0 linear foot (0.3 m) of the bar. Should the amount of damage exceed the 2% in 1.0 linear foot (0.3 m), then remove that bar and replace with an acceptable bar. Coating the cut ends will not be included in the repair percentage.

11. Apply a minimum coating thickness of 7 mils (175 µm) to areas to be repaired.

12. Allow patches to cure (dry to the touch) before placing concrete over the coated bars.

13. Prepare the surface, repair it, and apply patches according to the resin manufacturer's recommendations.

D. Storage, Handling, and Placement at the Job Site of Coated Bars.

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 epoxy 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.

13. 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.

14. Supply bars that are 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 are subject to rejection.

15. 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 the stainless steel reinforcing bars. Do not drop or drag stainless steel reinforcing bars or bundles.

16. 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.

17. 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.

18. Protect stainless steel from contamination during construction operations including cutting, grinding, or welding above or in the vicinity of the stainless steel.

19. Stainless steel reinforcing bars shall not be permitted to come into direct contact with uncoated reinforcing bars, bare metal form hardware, or any 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, the stainless steel reinforcing shall be isolated from contact with bare or galvanized metals by a wrap of electrical tape or other approved means. The protective wrap shall encompass the full perimeter of the bar and shall 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 are allowed to be in direct contact with undamaged epoxy coated reinforcing bars. Stainless steel reinforcing bars are allowed to be in direct contact with shear studs on steel girders.

20. Bar Chairs.

a. Bar chairs for support of stainless steel reinforcing shall comply with one of the following:

i. Bar chairs fabricated from solid plastic, meeting the requirements of Materials I.M. 451.01.

ii. Bar chairs fabricated from stainless steel. Stainless steel materials for the bar chairs must be compatible with the type of stainless steel materials used for the reinforcing bars.

iii. Epoxy coated bar chairs meeting the 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 the 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.

21. Tie Wire.

a. Tie wire for stainless steel reinforcing shall comply with one of the following:

i. 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 the protective coating. Wire ties exhibiting cracked or otherwise damaged protective coating shall be discarded and replaced with undamaged ties.

ii. Stainless steel tie wire. Stainless steel materials for tie wire must be compatible with the type of stainless steel materials used for the reinforcing bars.

b. Coated wire ties or stainless steel wire ties as noted herein shall be required for all 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.)

22. Prior to placing concrete, ensure the reinforcing bars are clean and exhibit a bright finish free of contaminants, oxidation or rust. Oxidation or rust on the bar surface shall not be permitted and shall be immediately brought to the attention of the Engineer.

23. At the discretion of the Engineer, isolated areas exhibiting minor oxidation or rust attributable to trace contaminants on the 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 the bar surface, or oxidation/rust otherwise suspected to have a negative impact on the intended performance and/or service life of the bar, shall be subject to rejection.

24. 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.

Reason for Revision: Combine sections of 4151.03 that relate to epoxy coated reinforcing for clarity and add requirements for stainless steel reinforcing that are currently being used in the Special Provision for Stainless Steel Bars for Concrete Reinforcement so the SP will no longer be required on future projects.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments:		
County or City Comments:		
Industry Comments:		

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Brian Smith	**Office:** Design	**Item 26**
Submittal Date: 4/20/2015	**Proposed Effective Date:** 10/20/2015	
Section No.: 4155 **Title:** Guardrail	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			

Specification Section Recommended Text:

4155.04, B, 3.

Replace the first sentence:

Ensure steel posts ~~and blocks~~ are galvanized according to the 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.~~

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

4155.04, B, 3.

Replace the first sentence:

Ensure steel posts ~~and blocks~~ are galvanized according to the 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.~~

Reason for Revision: Steel blockouts (spacer blocks) are not be used with Test Level 3 Midwest Guardrail Systems. The Office of Design would like them to be removed from the specifications. They should also be removed from Materials I.M. 455.02.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments:		
County or City Comments:		
Industry Comments:		

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Chengsheng Ouyang	**Office:** Construction & Materials	**Item 27**
Submittal Date: 4/27/2015	**Proposed Effective Date:** October 2015	
Article No.: 4161.03, A **Title:** Treatment (Preservative Treatment)	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

4161.03, A.

Replace Table 4161.03-1:

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

	Retention					
Material and Usage	**Creosote[a]**	**Pentachloro-phenol[a]**	**Copper Napthenate[a]**	**ACZA[b]**	**CCA[b, c]**	**AWPA UC-Section-Special Req.**
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.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

4161.03 TREATMENT.

A. Except as provided herein, follow the requirements and recommendations of AWPA Standards U1 and T1 and the applicable AWPA Commodity Specifications listed in Tables 4161.03-1 and 4161.03-2 for various materials and usages:

Table 4161.03-1: Minimum Preservative Retention Requirements
(lb./cu. ft. of wood)
~~(kg/m³ of wood)~~

	Retention					
Material and Usage	**Creosote[a]**	**Pentachloro-phenol[a]**	**Copper Napthenate[a]**	**ACZA[b]**	**CCA[b, c]**	**AWPA UC-Section-Special Req.**
Lumber and Timber for Structures[d]	AWPA U1	AWPA U1	AWPA U1	AWPA U1	AWPA U1	AWPA U1
Piles for Foundation						
Douglas Fir	17 ~~(272)~~	0.85 ~~(13.6)~~	0.14 ~~(2.2)~~	-	-	UC4C-E
Southern Pine	12 ~~(192)~~	0.60 ~~(9.6)~~	0.10 ~~(1.6)~~	-	-	
Guardrail Posts, and Spacer Blocks						
Sawed Four Sides	10	~~0.6~~ 0.5 ~~(9.6)~~	~~0.075~~ 0.06 ~~(1.2)~~	~~0.5~~ 0.4 ~~(8.0)~~	~~0.5~~ 0.4 ~~(8.0)~~	UC4A-A~~-4.3~~
Fence, Guide, and Sign Posts						
Round	-	0.4 ~~(6.4)~~	0.055 ~~(0.88)~~	0.4 ~~(6.4)~~	0.4 ~~(6.4)~~	UC4A-B
Sawed Four Sides	10	0.5 ~~(8.0)~~	0.060 ~~(0.96)~~	0.4 ~~(6.4)~~	0.4 ~~(6.4)~~	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.

Reason for Revision: Update based on 2014 AWPA Standards.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments:

County or City Comments:

Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Brian Smith	**Office:** Design	**Item 28**
Submittal Date: 4/20/2015	**Proposed Effective Date:** 10/20/2015	
Article No.: 4169.12 **Title:** Perimeter and Slope Sediment Control Device	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			

Specification Section Recommended Text:

4169.12, A, 1.

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. Straw is defined as stalks of threshed grain.

b. Sediment logs: Wood excelsior fibers.

c. Filter socks: Compost (from an approved source meeting Article 4169.08) and wood chip, wood chip, or mulch.

4169.12, B, Wattles and Sediment Logs.

Replace the Article:

~~**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, m~~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~~.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

4169.12, A, 1.

Replace the Article:

1. 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. Straw is defined as stalks of threshed grain.
   - **b.** Sediment logs: Wood excelsior fibers.
   - **c.** Filter socks: Compost (from an approved source meeting Article 4169.08) and wood chip, wood chip, or mulch.

4169.12, B, Wattles and Sediment Logs.

Replace the Article:

~~**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, m~~Meet the following minimum weight (mass) requirements:

- 20 inch (510 mm) sediment logs and straw wattles: 3 pounds per foot (4.45 kg/m) with tolerance of 0.25 pounds per foot (0.40 kg/m).
- 12 inch (300 mm) sediment logs and straw wattles: 2 pounds per foot (3.00 kg/m) with tolerance of 0.25 pounds per foot (0.40 kg/m).
- 9 inch (230 mm) sediment logs and straw wattles: 1 pound per foot (1.50 kg/m) with a tolerance of 0.1 pounds per foot (0.15 kg/m).
- 6 inch (150 mm) sediment logs and straw wattles: 0.5 pounds per foot (0.75 kg/m) with a tolerance of 0.1 pounds per foot (0.15 kg/m).

4169.12, C, Filter Socks.

Replace the article:

Provide filter socks with a maximum 3/8 inch (10 mm) opening ~~and filled with a compost/wood blend filter material consisting of compost from an approved source meeting Article 4169.08~~.

Reason for Revision: The Office of Design would like to add language to define what wattles, sediment logs, and filter socks are and the requirements associated with each.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments:		
County or City Comments:		
Industry Comments:		

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Willy Sorensen	**Office:** Traffic & Safety	**Item 29**
Submittal Date: 04-17-2015	**Proposed Effective Date:** October 2015	
Article No.: 4186.09, A, 4 **Title:** Fastening Accessories	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			

Specification Section Recommended Text:
4186.09, A, 4, b.

Replace the Article:

Washers are to be 3/8 inch I.D. by ~~1 3/8~~ 1 1/2 inch O.D. by 0.125 inch.

Comments:

Member's Requested Change:

4. Washers

b. Washers are to be 3/8 inch (9.5 mm) I.D. by ~~1 3/8 inch (35mm)~~ 1 ½ inch (38 mm) O.D. by 0.125 inch (3mm).

Reason for Revision: To be consistent with Standard Road Plan SI-131 (signed 10-18-2011). To be consistent with sign washer available from the DOT Warehouse and used by DOT Maintenance.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments:

County or City Comments:

Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Kevin Merryman	**Office:** Construction and Materials	**Item 30**
Submittal Date: April 27, 2015	**Proposed Effective Date:** July 2015	
Article No.: **Title:**	**Other:** DS-12042, Quality Management Concrete	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			
Specification Section Recommended Text: See attached Draft Developmental Specifications for Quality Management Concrete.			
Comments: Are we going to use this before October or can we wait?			

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)** See attached		
Reason for Revision: Change removes the absolute volume requirement for Type IP Portland cement. Also clarifies measurement and payment for hand finished pavement.		
New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments:		
County or City Comments:		
Industry Comments:		

DRAFT DS-12XXX
(Replaces DS-12042)

Iowa Department of Transportation

DEVELOPMENTAL SPECIFICATIONS
FOR
QUALITY MANAGEMENT CONCRETE (QM-C)

Effective Date
July 21, 2015

THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

12XXX.01 DESCRIPTION.

A. This specification identifies a concrete mixture design with an optimum combined aggregate gradation, and the Contractor's testing and quality control responsibilities. Optimization of the aggregates should produce concrete with low water requirement as well as improved workability and finishing characteristics. While concrete strength is important and is measured, it is not the basis for optimization of the concrete mixture design.

B. Testing and quality control apply to all Contractor produced concrete using the Concrete Design Mixture (CDM). The CDM applies to mainline slip form pavement. At the Contractor's option, the CDM may apply to any other slip form paving.

12XXX.02 MATERIALS.

For all materials, meet the quality requirements for the respective items in Division 41 of the Standard Specifications. Compatibility of all material combinations is the Contractor's responsibility based on acquired field experience with proposed materials.

12XXX.03 LABORATORY DESIGN MIXTURE.

A. Develop a CDM based on a unit volume of 1.000 according to industry standard practice, and containing proportions of materials, including admixtures. Base the proportions upon saturated surface dry aggregates to produce a workable concrete mixture meeting the constraints of Table DS-12XXX.03-1:

Table DS-12XXX.03-1: Concrete Mixture Constraints

Nominal Maximum Coarse Aggregate Size	Greater than or equal to 1 inch (25 mm)
Gradation	Materials I.M. 532
Cementitious Content	Minimum, 560 pounds per cubic yard* (333 kg/m^3 *)
Fly Ash Substitution Rate	See Article 2301.02, B, 6
Water/Cementitious Ratio	Maximum, 0.45
Air Content	6% ± 1%, Design Absolute Volume = 0.060
28 Day Flexural Strength, Third Point	Minimum, 640 pounds per square inch (4.40 MPa)

*	The minimum cement content assumes the use of Type I/II cement with a specific gravity of 3.14 for an absolute volume of 0.106. If cement other than Type I/II is used, use an absolute volume of 0.106 and determine the weight (mass) of cement from the specific gravity of the cement. ~~For Type IP cement, use an absolute volume of 0.111.~~ Cement content may need to be increased to maintain the water to cementitious ratio during hot weather conditions.

B. Use normal production gradations to determine the relative percentage of each individual aggregate used in the CDM. Select the relative percentage of each individual aggregate to produce the desired combined aggregate gradation using the following sieves: 1.5 inch, 1 inch, 0.75 inch, 0.5 inch, 0.375 inch, No. 4, No. 8, No. 16, No. 30, No. 50, No. 100, and No. 200 (37.5 mm, 25 mm, 19 mm, 12.5 mm, 9.5 mm, 4.75 mm, 2.36 mm, 1.18 mm, 600 µm, 300 µm, 150 µm, and 75 µm).

C. Develop a target combined gradation for each CDM based on normal production gradations and the relative percentages of each individual aggregate. Limit the percent passing the No. 200 (75 µm) sieve to no more than 1.5% for the combined aggregate gradation. When the coarse aggregate used meets the increase in percent passing the No. 200 (75 µm) sieve, according to Section 4109, Aggregate Gradation Table, Note 10 of the Standard Specifications, limit the percent passing the No. 200 (75 µm) sieve to no more than 2.0% for the combined aggregate gradation. Contractor may use water reducing admixture, Type A, or water reducing and retarding admixture, Type D, in the CDM.

D. Comply with AASHTO T 126 for laboratory development of the CDM. Mix designs may be conducted in a ready mix or central mix batch plant provided the following conditions are met:

- All non-mix design materials are emptied,
- Mix design materials are used, and
- Batch size is at least 3 cubic yards (2 m^3).

E. An Iowa DOT PCC Level III Certified Technician is required to oversee the development of the CDM. Allow the Engineer to witness the development of the CDM. Provide notice 7 calendar days prior to this event. Perform the tests in Table DS-12XXX.03-2 in the development of the CDM:

Table DS-12XXX.03-2: Tests for CDM

Specific Gravity of Each Individual Aggregate	Materials I.M. 307
Gradation of Each Individual Aggregate	Materials I.M. 302
Unit Weight of Plastic Concrete	AASHTO T 121
Air Content of Plastic Concrete	Materials I.M. 318
28 Day Flexural Strength	AASHTO T 97
Temperature of Plastic Concrete	ASTM C 1064

12XXX.04 MIX DESIGN DOCUMENTATION.

A. At least 7 calendar days prior to the start of paving, submit a CDM report to the District Materials Engineer for approval. Contract extensions will not be allowed due to inadequate or additional CDMs. In the CDM report include the information shown in Table DS-12XXX.04-1:

Table DS-12XXX.04-1: Items to Include in CDM Report

Cover Page	Contractor name Project number Date and location of CDM laboratory development Date Submitted Signature of Contractor representative
Material Source Information	Brand Type Source

Material Proportion Information	Specific gravity Relative percentage of each individual aggregate Target combined gradation % passing (Materials I.M. 531) Target combined gradation charts (Materials I.M. 532) Design batch weight (mass) (SSD) As mixed batch weight (mass) (SSD)
Mix Properties	Unit weight (mass) of plastic concrete Air content of plastic concrete 28 day flexural strength Slump Temperature of plastic concrete

B. The District Materials Engineer may approve the mix design without laboratory mixture testing if the proposed mix design proportions fall within Zone II-A of Materials I.M. 532. If the mix design is approved without laboratory testing, cast a set of three beams on the first day of paving from concrete meeting the mix design criteria. Test the beams for 28 day flexural strength, third point loading. When the coarse aggregate for the mix design is quartzite, cast an additional set of three beams, and test at 90 days. Submit the strength results to the Engineer.

12XXX.05 QUALITY CONTROL.

A. General.

1. The Contractor is responsible for quality control of the concrete. An Iowa DOT PCC Level II Certified Technician is required to oversee quality control operations. The individual conducting the testing on grade is required to be an Iowa DOT PCC Level I Certified Technician. Calibrate and correlate testing equipment prior to and during paving operations.

2. At least seven calendar days prior to the preconstruction conference, submit to the Engineer a Quality Control Plan complying with Materials I.M. 530. Include the proposed mix design(s) with the Quality Control Plan. Do not begin paving until the plan is reviewed for compliance with the contract documents. Maintain equipment and qualified personnel to direct and perform all field quality control sampling and testing necessary to:

- Determine the various properties of the concrete governed by the contract documents, and
- Maintain the properties described in this specification.

B. Quality Control Testing.

1. Perform all quality control tests necessary to control the production and construction processes applicable to this specification and as set forth in the Quality Control Plan. Take samples for quality control testing in a random manner according to the prescribed sampling rate. Perform the tests listed in Table DS-12XXX.05-1:

Table DS-12XXX.05-1: Quality Control Table

	Limits	Testing Frequency	Test Methods
Unit Weight (Mass) of Plastic Concrete	Monitor for changes, ± 3%	Twice/day	AASHTO T 121
Gradation Combined % Passing	See Paragraph 2 below	1/1500 cubic yard (1/1200 m^3)	Materials I.M. 216, 301, 302, 531
Aggregate Moisture Contents	See Materials I.M. 527	1/1500 cubic yard (1/1200 m^3)	Materials I.M. 308
Air Content Plastic Concrete In Front of Paver	See Article 2301.02, B, 4	1/350 cubic yard (1/275 m^3) See below	Materials I.M. 318
Water/Cementitious Ratio	0.45 maximum	Twice/day	Materials I.M. 527

Table DS-12XXX.05-1: Quality Control Table

	Limits	Testing Frequency	Test Methods
Vibrator Frequency	See Article 2301.03, A, 3, a, 6, a	With Electronic Vibration Monitoring: Twice/day Without Electronic Vibration Monitoring: Twice/Vibrator/Day	Materials I.M. 384

2. The running average of three combined aggregate gradation tests is required fall within the limits established by the CDM target gradation and the working ranges of Table DS-12XXX.05-2:

Table DS-12XXX.05-2: CDM Target Gradations

Sieve Size	Working Range
No. 4 or greater (4.75 mm or greater)	± 5%
No. 8 to No. 30 (2.36 mm to 600 µm)	± 4%
No. 50 (300 µm)	± 3%
No. 100 (150 µm)	± 2%
minus No. 200 (75 µm)	See Article DS-12XXX.03

C. Corrective Action.

For QM-C mixes only, plot all process control test results on control charts as described in Materials I.M. 530.

1. Aggregate Tests.

Take corrective action when the running average approaches the working range limits. When a combined gradation test result for a sieve exceeds the working range limits, adjust the target and notify the Engineer. If the verification test result for the minus No. 200 (75 µm) exceeds the limits in Article DS-12XXX.03 for the combined gradation, the material represented by that test for this sieve will be considered non-complying. Pay factors will be assessed based on Coarseness/Workability Factors as described in Article DS-12XXX.07.

2. Concrete Tests.

Take corrective action when an individual test result approaches the control limits. Notify the Engineer whenever an individual test result exceeds the control limits.

D. Acceptable Field Adjustments.

1. All mix changes must be mutually agreed upon between the Contractor and Engineer. Document all mix changes on the QM-C Mix Adjustment form. Determine batch weights using a basic water cement ratio of 0.40. When the water cement ratio varies more than ±0.03 from the basic water cement ratio, adjust the mix design to unit volume of 1.000. A change in the source of materials or an addition of admixtures or additives requires a new CDM. The following are small adjustments that may be made without a new CDM being required:

- Increase cementitious content.
- Decrease fly ash substitution rate.
- Aggregate proportions may be adjusted from CDM proportions by a maximum of ± 4% for each aggregate.
- Change water reducer to water reducer retarder.
- Adjustment in water reducer or water reducer retarder admixture dosage.
- Change in source of fly ash.
- Change in source of sand, provided target gradation limits are met.

2. When circumstances arise, such as a cement plant breakdown, that create cement supply problems, a change in cement source may be allowed with the Engineer's approval. Consult the District Materials Engineer for approval of other changes to the mix design. A set of three beams for 28 day flexural strength testing may be required to document the changes.

3. Should conditions beyond the Contractor's control prevent completion of the work with the CDM, a Class C mix, or a mix based on Class C mix proportions using project materials, will be allowed, at no additional cost to the Contracting Authority. Mutual agreement between the Contractor and Engineer is required. Pay Factor incentives/disincentives in Table DS-12XXX.07-1, will not be applied to Class C mixtures.

4. Prior to 28 days strength test results, paving with QM-C mix may begin if the Engineer approves when the mix design strength, based on the average of three beams, meets or exceeds 640 psi (4.4 MPa).

E. Hand Finished Pavement.
Use project materials based on Class C or Class M concrete mix proportions. With approval of the Engineer, the Contractor's CDM may be used for hand finished pavement. Quality control, as required in this specification, will not apply to hand finished pavement.

12XXX.06 METHOD OF MEASUREMENT.
Measurement will be as follows:

A. Standard or Slip-Form Portland Cement Concrete Pavement, QM-C.
Square yards (square meters) shown in the contract documents.

B. Portland Cement Concrete Overlay, QM-C, Furnish Only.
Article 2310.04, A, of the Standard Specifications applies.

C. Portland Cement Concrete Overlay, QM-C, Placement Only.
Article 2310.04, B, of the Standard Specifications applies.

D. ~~Class C and Class M Mixtures~~ Hand Finished Pavement.
Square yards (square meters) of Standard or Slip-Form Portland Cement Concrete Pavement, QM-C, constructed using Class C or Class M mixtures. For overlays, the Engineer will compute the number of:

- Square yards (square meters) of Portland Cement Concrete Overlay, QM-C, Placement Only, constructed using Class C or Class M mixtures, and
- Cubic yards (cubic meters) of Class C and Class M mixtures used.

12XXX.07 BASIS OF PAYMENT.
The cost for furnishing labor, equipment, and materials for the work required by the Contractor to design, test, and provide process control for production of QM-C shall be included in the contract unit price for QM-C bid items. Payment will be the contract unit prices as follows:

A. Standard or Slip Form Portland Cement Concrete Pavement, QM-C.

1. Contract unit price for Standard or Slip-Form Portland Cement Concrete Pavement, QM-C, per square yard (square meter).

2. The contract unit price per square yard (square meter) for Standard or Slip-Form Portland Cement Concrete Pavement, QM-C, constructed will be adjusted according to Table DS-12XXX.07-1 based upon the average coarseness and workability factors for each lot according to Materials I.M. 530.

Table DS-12XXX.07-1: Pay Factor Chart

Gradation Zone (Materials I.M. 532)	Pay Factor
II-A	1.03
II-B	1.02
II-C	1.01
II-D	1.00
IV	0.98
I	0.95

B. Portland Cement Concrete Overlay, QM-C, Furnish Only.
Article 2310.05, A, of the Standard Specifications applies. Average coarseness and workability factor for each lot will be determined according to Materials I.M. 530. The contract unit price will be adjusted according to Table DS-12XXX.07-1.

C. Portland Cement Concrete Overlay, QM-C, Placement Only.
Article 2310.05, B, of the Standard Specifications applies. Average coarseness and workability factor for each lot will be determined according to Materials I.M. 530. The contract unit price will be adjusted according to Table DS-12XXX.07-1.

D. ~~Class C and Class M Mixtures~~ Hand Finished Pavement.

1. Standard or Slip-Form Portland Cement Concrete Pavement, QM-C: per square yard (square meter).

2. Portland Cement Concrete Overlay, QM-C, Placement Only: per square yard (square meter)

3. Portland Cement Concrete Overlay, QM-C, Furnish Only: per cubic yard (cubic meter).

4. Pay Factor incentives/disincentives in Table DS-12XXX.07-1, will not be applied to ~~Class C and Class M mixtures~~ hand finished pavement.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Wayne Sunday	**Office:** Construction & Materials	**Item 31**
Submittal Date: 2015.04.24	**Proposed Effective Date:** July 21, 2015	
Article No.: **Title:**	**Other:** DS-12046, Mass Concrete - Control of Heat of Hydration	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			
Specification Section Recommended Text: See attached Draft Developmental Specifications for Mass Concrete - Control of Heat of Hydration.			
Comments:			

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**
See attached.

Reason for Revision: Several minor changes: 1) changed Type I/II cement to Type I & Type II due to confusion in the field and 2) clarified that ice used for cooling the batched concrete shall be crushed or shaved ice to ensure that the ice fully melts and incorporates. A more significant change was to replace the previous specified maximum concrete temperature at time of placement of 70ºF with a formula for calculating the maximum anticipated temperature based upon the constituent materials in the concrete mix.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments:		
County or City Comments:		
Industry Comments:		

DRAFT DS-12XXX
(Replaces DS-12046)

Iowa Department of Transportation

DEVELOPMENTAL SPECIFICATIONS
FOR
MASS CONCRETE – CONTROL OF HEAT OF HYDRATION

Effective Date
July 21, 2015

THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

12XXX.01 DESCRIPTION.
Produce a structure free of shrinkage cracks that would be a result of heat of hydration during the curing of large concrete cross-sections. Accomplish this through appropriate concrete mix design and management of concrete temperature and temperature differential. Structural mass concrete is defined as any concrete footing with a least dimension greater than 5 feet (1.5 m) or other concrete placements with a least dimension greater than 4 feet (1.2 m). Additional constraints are required on placements with a least dimension greater than 6.5 feet (2 m). This specification does not apply to concrete drilled shafts.

Apply Section 2403 and Division 41 of the Standard Specifications with the following modifications.

12XXX.02 MATERIALS.

A. Cement shall be Type ~~I/II~~ I, II, IP, or IS.

B. Use any combination of Ground Granulated Blast Furnace Slag or Class F fly ash. Class C fly ash may also be used with a maximum substitution of 20%. The maximum total substitution of Portland cement shall not exceed 50%, including the amount in the blended cement.

C. Cementitious content shall be a minimum of 560 pounds per cubic yard (332 kg/m^3).

D. Maximum water to cementitious ratio shall be 0.45.

E. Air entrainment shall be used. To improve workability and aid in air entrainment, water reducing or retarding admixtures may be used. A mid range water reducing admixture may be used and the slump shall be increased to six inches maximum.

12XXX.03 CONSTRUCTION.

A. Thermal Control Plan.
Develop and submit a written Thermal Control Plan (TCP) to the Engineer describing the procedures that will be used during the period of heat dissipation following concrete placement, so the temperature differential between the interior of the section and the outside surface of the section does not exceed the restrictions in Article 12XXX.03, B. Submit the TCP at least 30 calendar days before the first intended structural mass concrete placement.

Compliance with this specification may result in long cooling times. Consider options to control heat of hydration that are compatible with their desired construction schedule and erection procedures.

Do not place concrete covered by this specification until the TCP has received written approval by the Engineer and equipment and materials necessary to facilitate the plan are on site and ready for use. Provide and install temperature sensing devices according to Article 12XXX.03, B, 3.

The location of construction joints shall be as shown in the plans.

For mass concrete placements with a least dimension of less than or equal to 6.5 feet (2 m) the TCP procedures may include, but are not limited to, the following:

- Cooling component materials prior to addition to the mix to reduce the temperature of the concrete while in its plastic state.
- Adding crushed or shaved ice to the mix water.
- Sprinkle coarse aggregate with water or wet the stockpile.
- Controlling rate of concrete placement (low lifts).
- Insulating the forms and the surface of the concrete to prevent temperature differential.
- Placing concrete at times of day when the ambient temperature is lowest (in summer) or highest (in winter).
- Other acceptable methods that may be developed by the Contractor and approved in writing by the Engineer.

For mass concrete placements with a least dimension of greater than 6.5 feet (2 m), the TCP shall be developed by a Professional Engineer, licensed in the State of Iowa and competent in the modeling, design, and temperature control of concrete in mass elements (TC Engineer). The TC Engineer shall submit a list containing at least three mass concrete projects, of similar dimension and thermal control requirements to those shown on the plans, completed in the last three years. In the list of projects include names and phone numbers of owner's representatives who can verify the TC Engineer's participation on those projects. The TC Engineer shall follow the procedure outlined in Section 207.4R-05 of the ACI Manual of Cooling and Insulating Systems for Mass Concrete to formulate, implement, administer, and monitor a temperature control plan, making adjustments as necessary to ensure compliance with the contract documents.

The TCP shall include, but not be limited to the following:

1. Based on the concrete mix design, determine by lab testing the adiabatic heat generation for the concrete mix to be used.

2. Proposed methods to achieve required concrete temperature and control concrete temperature differential through concrete mix design and construction practices for temperature control to prevent thermal cracking.

3. Design of a cooling system consisting of non-corrosive piping to be embedded in the structural mass concrete for all mass concrete placements that are below water level within the limits of the river.

4. Provide information on the temperature sensing and recording equipment to be used and details of installation locations of the temperature probes for each planned mass concrete placement.

5. Mass concrete placement plan to ensure prevention of concrete cold joints.

6. Monitoring Plan to control temperature gradient.

B. Thermal Control.

1. Concrete Temperature Limits.

The maximum concrete temperature at time of placement, $T_{, max}$, shall be based on the following formula:

$T_{, max}$ (°F) = 160 – (wt. (lbs/yd^3) of cement + wt. (lbs/yd^3) of slag X SRF + wt. (lbs/yd^3) of Class C fly ash X 0.8 + wt. (lbs/yd^3) of Class F fly ash X 0.5) X 0.16

Where, SRF is determined as follows:

- Slag replacement <20%, SRF = 1.1.
- Slag replacement 20% or greater, but <40%, SRF =1.0.
- Slag replacement 40% or greater, SRF=0.9.

Maximum concrete temperature at time of placement may be based on the TCP developed by Professional Engineer, in accordance with Article DS-12XXX.03, A.

~~Maximum~~ The minimum concrete temperature at time of placement ~~shall not exceed 70ºF (21°C) and~~ shall not be less than 40ºF (4°C). The maximum concrete temperature during the period of heat dissipation shall not exceed 160ºF (71°C).

2. Temperature Differential Restrictions

The temperature differential between the interior of the section and the outside surface of the section shall not exceed the limits in the following table for placements with least dimensions of 6.5 feet (2 m) or less):

Hours after placement	Maximum temperature differential °F (°C)
0-24	20 (11.1)
24-48	30 (16.7)
48-72	40 (22.2)
>72	50 (27.8)

Thermal control of each placement shall be maintained until the temperature of the interior is within 50ºF (27.8°C) of the average outside air temperature. The average outside air temperature shall be determined by averaging the daily high and low temperatures over the preceding seven calendar days.

3. Temperature Sensing and Recording

For each placement of structural mass concrete, two temperature sensors shall be installed at each of the following locations (for a total of eight temperature sensors):

- Center of the placement,
- Midpoint of the side which is the shortest distance from the center (2 inch (50 mm) to 4 inch (100 mm) cover),
- Midpoint of the top surface (2 inch (50 mm) to 4 inch (100 mm) cover), and
- Air temperature.

The purpose for two sensors at each location is to provide a primary and secondary backup.

Temperatures shall be electronically recorded automatically by an approved recorder furnished by the Contractor and shall be capable of continuously recording a minimum of one reading per hour for the duration of the mass concrete temperature monitoring period. Sensors and recorder shall be accurate to within +/- 2ºF (1.1°C) in the temperature range of 32ºF (0°C) to 185ºF (85ºC). Provide a backup temperature sensing system, which shall include both backup temperature sensors and backup temperature readout device. Back-up system is intended to be used to complete the monitoring of a placement should the primary

system fail. Primary system shall be repaired or replaced before the commencement of the next placement.

C. Production Concrete.

1. The TC Engineer or their representative shall inspect and approve the installation of monitoring devices and verify the process for recording temperature data is effective for the first placement of each size and type mass component. Qualifications of all technicians employed to inspect or monitor mass concrete placements shall be submitted to the Engineer for approval. For placements other than the first, an employee, approved by the TC Engineer as qualified to inspect monitor device installation, shall be designated to: 1) review temperature data, 2) be in contact at all times with the TC Engineer if adjustments must be made as a result of the temperature differential being exceeded, and 3) immediately implement adjustments to temperature control measures as directed by the TC Engineer. Recorded temperature data shall be reviewed at intervals of no greater than 4 hours. Recording of temperature data shall begin when the mass concrete placement is complete and shall continue until the maximum temperature differential (not maximum temperature) is reached and a decreasing temperature differential is confirmed as defined in the TCP. If conditions change, such as a drop in the ambient temperature or a change in insulation which would result in an increase in the temperature differential, the recording of temperature data shall be resumed. A copy of all recorded temperature data shall be furnished to the Engineer as they are determined, and a final report shall be furnished within 3 days of completion of monitoring of each element.

Only use approved mixes for production concrete.

2. If the temperature differential within any structural mass concrete placement exceeds the limits in Article 12XXX.03, B , immediate corrective action as directed by the Contractor or the TC Engineer shall be taken, future placement of structural mass concrete will be suspended, and a revised TCP shall be submitted to the Engineer for approval. Do not resume placement of mass concrete without written approval from the Engineer.

When mass concrete temperature differentials are exceeded, all analyses and test results deemed necessary by the Engineer shall be provided for determining the structural integrity and durability of the mass concrete element, to the satisfaction of the Engineer. The analyses and/or test results shall be provided at no additional cost to the Contracting Authority and without additional time to be granted.

Based on the analyses and test results, a determination of corrective action will be made by the Engineer which may include, but not be limited to, price adjustment, epoxy injection of thermal cracks, a combination of both, or removal of the non-complying concrete.

12XXX.04 METHOD OF MEASUREMENT.
None.

12XXX.05 BASIS OF PAYMENT.
Costs for complying with this specification shall be considered incidental to the contract unit price for structural concrete.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Todd Hanson / Wayne Sunday	**Office:** Construction & Materials	**Item 32**
Submittal Date: April 27, 2015	**Proposed Effective Date:** July 21, 2015	
Article No.: **Title:**	**Other:** DS-12050, High Performance Concrete for Structures	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			
Specification Section Recommended Text: See attached Draft Developmental Specifications for High Performance Concrete for Structures.			
Comments: Are we going to use this before October or can we wait?			

Member's Requested Change (Redline/Strikeout): See attached					
Reason for Revision: Several minor updates and clarifications.					
County or City Input Needed (X one)			**Yes**	**No** x	
Comments:					
Industry Input Needed (X one)			**Yes** X	**No**	
Industry Notified:	**Yes**	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments: The SpG of Type IP has increased to 2.99 increasing the cement weight with the higher absolute volume. Spec change will require all cements use the same absolute volume.					

DRAFT DS-12XXX
(Replaces DS-12050)

Iowa Department of Transportation

DEVELOPMENTAL SPECIFICATION
FOR
HIGH PERFORMANCE CONCRETE FOR STRUCTURES

Effective Date
July 21, 2014

THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

12XXX.01 DESCRIPTION.

A. Develop and provide high performance concrete (HPC) for bridge substructures and decks when called for in the contract documents. HPC is defined as a concrete mix providing the following:
- Desired workability.
- Maximum 28 day permeability of 2000 coulombs for the substructure (or greater than 20 K ohm-cm surface resistivity by Wenner probe) and 1500 coulombs for the deck (or greater than 30 K ohm-cm surface resistivity by Wenner probe), as a target.

B. Apply Sections 2403, 2412, and Division 41 of the Standard Specifications with the following modifications.

12XXX.02 MATERIALS.

Contractor may use other mixes than those described below provided they meet the requirements of this specification and are approved by the District Materials Engineer.

A. Substructure:

1. Apply the following conditions for substructure HPC mixes:
- Coarse aggregate meeting Class 3i durability.
- Basic water to cementitious material (w/c) ratio of 0.42, with a maximum w/c ratio of 0.45.

2. HPC mix for substructure may be a HPC-S or CV-HPC-S. Apply the following conditions:
a. Use one of the following cement combinations:
- Type IS.
- Type ~~I/II~~ I or II with a minimum of 30% weight (mass) substitution with GGBFS.
- Type IP, except with an absolute volume of 0.126 for HPC-S mix.

b. Fly ash substitution not to exceed 20% by weight (mass) of the cement.
c. Maximum total substitution of 50%
d. A high range water reducer may be used with a maximum allowable slump of 8 inches (200 mm) and target air content of 7.5% ± 2.0%.

B. Deck.

1. Apply the following conditions for deck HPC mixes:

a. Use coarse aggregate meeting Class 3i durability.
b. Basic w/c ratio of 0.40, with a maximum w/c ratio of 0.42.

2. The HPC mix for the deck may be a HPC-D or a CV-HPC-D. Apply the following conditions:
a. Use one of the following cement combinations:
- Type IS.
- Type ~~I/II~~ I or II with a minimum of 30% weight (mass) substitution with GGBFS.
- Type IP~~, except use an absolute volume of 0.126 for the HPC-D mix~~.

b. Fly ash substitution not to exceed 20% by weight (mass) of the cement.
c. Maximum total substitution of 50%.
d. Combined aggregate gradation optimized according to Materials I.M. 532 and meeting the limits in Article 2513.03, A, 2, b, 3, of the Standard Specifications.

C. Contractor Designed HPC.
Other mixes meeting the above requirements may be approved by the District Materials Engineer.

12XXX.03 CONSTRUCTION.

A. Production Concrete.

1. Notify the Engineer at least 48 hours prior to placement of production concrete. Use only approved HPC mixes for production concrete. If a mix other than mix described in Article DS-12XXX.02, A or B is to be used, ensure it has same materials, proportions, and properties (including slump, air content, and w/c ratio) as approved by the District Materials Engineer.

2. District Materials Engineer will obtain random verification strength samples on a minimum of one deck placement. Strength samples will be tested at District Materials Laboratory according to AASHTO T 22. A set of four cylinders will be cast, cured, and handled according to Materials I.M. 315. Three cylinders will be tested for strength at 28 days. One cylinder will be tested for permeability on a random basis by Central Materials Laboratory or Wenner probe resistivity testing by the District Materials Engineer. Permeability testing will not be evaluated on footings or drilled shafts.

B. Placing Concrete.

1. If concrete is to be placed by pumping, use a pump line with a section reduction to reduce exit velocity of pumped concrete and minimize damage to epoxy coated reinforcement. Submit measures for reducing exit velocity of concrete to Engineer for approval prior to placement by pumping.

2. Protect epoxy coated reinforcement from damage caused by placing and handling equipment.

3. For the deck, placing of concrete floors shall not begin if the theoretical rate of evaporation exceeds 0.1 pounds per square foot per hour (0.5 kg/m^2 per hour). Monitor theoretical evaporation rate at a maximum interval of every three hours during placement at a location as near the deck as possible. If the rate exceeds 0.15 pounds per square foot per hour (0.75 kg/m^2 per hour) cease placement at next location acceptable to Engineer.

C. Curing.

1. Substructure.
a. Leave forms in place for 96 hours of curing.
b. Leave wet burlap covering in place for 96 hours.

2. **Deck.**
   a. Leave forms in place for 168 hours of curing.
   b. Apply water to the burlap covering for 168 hours of continuous wet sprinkling system curing.
   c. Do not place curing compound on floor.
   d. ~~Prewet burlap with sufficient water, prior to placement, to prevent absorption of moisture from concrete surface~~. Use burlap that is prewetted by fully saturating, stockpiling to drain, and covering with plastic to maintain wetness prior to placement. Place two layers of prewetted burlap on floor immediately after artificial turf drag or broom finish with a maximum time limit of 10 minutes after final finishing. Apply water to burlap covering for entire curing period by means of a continuous wet sprinkling system that is effective in keeping burlap wet during moist curing period.
   e. Use evaporation retardant only in situations where equipment and/or labor delays, or environmental conditions, prevent adequate protection of concrete until prewetted burlap is in place. Have an evaporation retardant, including Confilm, Conspec Acquafilm, Evapre, or Sure Film, readily available during placement for application as directed by the Engineer. Do not work evaporation retardant into concrete surface or use as a finishing aid.

D. Cold Weather Protection.

1. Monitor surface temperature of concrete continuously during curing period using electronic recording type thermometers capable of recording a minimum of one reading per hour. Furnish results to Engineer in electronic format as required.

2. If supplemental housing and heating is used, locate temperature monitors in the concrete at the furthest and closest point from heat source. Verify maximum temperature at monitor point closest to heat source does not exceed 150ºF (65ºC).

3. After required curing period, gradually reduce temperature of air surrounding concrete to outside air temperature according to Article 2403.03, I, of the Standard Specifications.
   a. **Substructure.**
      Ensure concrete and its surface temperature are maintained at a temperature of no less than 50ºF (10ºC) for the first 120 hours after placing. Curing time will not be counted if concrete temperature falls below 50ºF (10ºC).
   b. **Deck.**
      1) Covering with plastic will not be allowed as a substitute for continuous wet sprinkling system curing.
      2) Ensure concrete and its surface temperature are maintained at a temperature of no less than 50ºF (10ºC) for 168 hours of continuous wet sprinkling system curing. Curing time will not be counted if the concrete temperature falls below 50ºF (10ºC).

12XXX.04 METHOD OF MEASUREMENT.
Measurement for High Performance Concrete will be the cubic yards (cubic meters) shown in the contract documents.

12XXX.05 BASIS OF PAYMENT.
Payment for High Performance Concrete will be at the contract unit price per cubic yard (cubic meter). Payment includes cost for testing production concrete.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Tom Reis / Eric Johnsen	**Office:** Specifications	**Item 33**
Submittal Date:	**Proposed Effective Date:** October 2015	
Article No.: 2435.03, A **Title:** General Requirements for Installation of Manholes and Intakes **Article No.:** 2504.03, D **Title:** Gravity Main Pipe Jointing **Section No.:** 4149 **Title:** Sanitary and Storm Sewer Pipe and Structure Materials	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			

Specification Section Recommended Text:

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 all surfaces are clean, dry, and free of foreign objects and sharp edges.
2) Warm the 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 the sleeve, smooth out wrinkles, and remove trapped air.
7) Cut the sleeve at the casting gussets. Reheat to place the sleeve onto the casting.
8) Trim off any excess material.

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.

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.

4149.03, 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.

4149.04, 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.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

Reason for Revision: To match SUDAS specifications

New Bid Item Required (X one)	**Yes X**	**No**
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments: New trenched and trenchless bid items for polypropylene pipe needed in sizes from 12 inches to 36 inches.

County or City Comments:

Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder	**Office:** Construction & Materials	**Item 34**
Submittal Date: 04-24-2015	**Proposed Effective Date:** OCT 2015	
Article No.: 4152.02, C **Title:** Structural Steel	**Other:**	

Specification Committee Action:

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

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] HPS 50WT[a,b]	to 2~~, mechanically fastened or welded~~ ~~over 2 to 4, mechanically fastened~~ over 2 to 4~~, welded~~ to 4	15 at 40 ~~15 at 40~~ 20 at 40 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

(a) CVN-impact testing of "H" heat frequency testing according to ASTM A 673.
(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".
(c) CVN-impact testing of "P" plate frequency testing according to ASTM A 673.
(d) If the yield strength of the structural product exceeds 85 ksi, the testing temperature for the minimum average energy required shall be reduced by 15°F for each increment of 10 ksi above 85 ksi. The yield strength is the value given in the mill test report.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

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

Grade	Thickness (in.)~~(mm) and Joining Method~~	Minimum Average Energy, ft.lbf. at °F ~~(Joules at °C)~~
36T[a] ~~(250T[a])~~	to 4 ~~(100), mechanically fastened or welded~~	15 at 40 ~~(20 at 4)~~
50T[a, b] ~~(345T[a, b])~~ 50WT[a, b] ~~(345WT[a, b])~~ HPS 50WT[a,b]	to 2 ~~(50), mechanically fastened or welded~~ over 2 to 4 ~~(50.1 to 100), mechanically fastened~~ ~~over 2 to 4 (50.1 to 100), welded~~ to 4	15 at 40 ~~(20 at 4)~~ ~~15 at 40 (20 at 4)~~ 20 at 40 (27 at 4) 20 at 10
HPS 70WT~~100T~~[c][d] ~~(690T[e]),~~	To 4	25 at -10

	HPS 100WT[c] ~~(690WT[c])~~	to 2 1/2 ~~(65), mechanically fastened or welded~~ over 2 1/2 to 4 ~~(65.1 to 100), mechanically fastened~~ ~~over 2 1/2 to 4 (65.1 to 100), welded~~	25 at -30 ~~0 (34 at -18)~~ ~~25 at 0 (34 at -18)~~ 35 at -30 ~~0 (48 at -18)~~	
	(a) CVN-impact testing of "H" heat frequency testing according to ASTM A 673/A 673M. (b) If the yield point of the material exceeds 65 ksi ~~(450 MPa)~~, reduce the testing temperature for the minimum average energy required by 15°F ~~(8°C)~~ for each increment of 10 ksi ~~(70 MPa)~~ above 65 ksi ~~(450 MPa).~~ The yield point is the value given on the certified "Mill Test Report". (c) CVN-impact testing of "P" plate frequency testing according to ASTM A 673/A 673M. (d) If the yield strength of the structural product exceeds 85 Ksi, the testing temperature for the minimum average energy required shall be reduced by 15 deg F for each increment of 10 ksi above 85 ksi. The yield strength is the value given in the mill test report.			

Reason for Revision: To include HPS steels into the specifications as per the current ASTM A709.		
New Bid Item Required (X one)	**Yes**	**No** x
Bid Item Modification Required (X one)	**Yes**	**No** x
Bid Item Obsoletion Required (X one)	**Yes**	**No** x
Comments:		
County or City Comments:		
Industry Comments:		