**MINUTES**
**OF**
**IOWA DOT SPECIFICATION COMMITTEE MEETING**

**November 12, 2015**

| | | |
|---|---|---|
| **Members Present:** | Darwin Bishop | District 3 - Construction |
| | Mark Brandl | District 6 - Davenport RCE |
| | Eric Johnsen, Secretary | Specifications Section |
| | Greg Mulder | Office of Construction & Materials |
| | Wes Musgrove | Office of Contracts |
| | Gary Novey | Office of Bridges & Structures |
| | Dan Redmond | District 4 - Materials |
| | Tom Reis, Chair | Specifications Section |
| | Brian Smith | Office of Design |
| | Willy Sorensen | Office of Traffic & Safety |
| **Members Not Present:** | Donna Buchwald | Office of Local Systems |
| | Mitch Dillavou | Project Delivery Bureau |
| **Advisory Members Present:** | Lisa McDaniel | FHWA |
| | Paul Wiegand | SUDAS |

Tom Reis, Specifications Engineer, opened the meeting. The following items were discussed in accordance with the agenda dated November 2, 2015:

**1. Section 2122, Paved Shoulders.**
**Article 2213.02, Materials (Base Widening).**
The Office of Construction and Materials requested to revise to align material properties and construction techniques for shoulders and base widening used as shoulders.

**2. Article 2216.03, Cracking and Seating PCC Pavements.**
The Office of Construction and Materials requested to allow 30 ton rollers for cracking and seating PCC pavement.

**3. Section 2304, Detour Pavement.**
The Office of Construction and Materials requested to simplify the mixture types used for detour pavements.

**4. Article 2404.03, E, 3, Reinforcing Supports and Spacers.**
The Office of Construction and Materials requested to clarify the types of reinforcing supports allowed.

**5. Article 2413.03, C, 2 & 3, Class A & Class B Deck Repair.**
The Office of Construction and Materials requested to clarify limitations on the area of deck concrete removal for concrete beam, steel girder, and continuous concrete slab bridges.

**6.** **Article 2416.04, B, Method of Measurement (Rigid Pipe Culverts).**
**Article 2417.04, B, Method of Measurement (Corrugated Culverts).**
The Office of Construction and Materials requested to change Method of Measurement for pipe aprons to a measured quantity.

**7.** **Article 2426.02 , Materials (Structural Concrete Repair).**
The Office of Construction and Materials requested to clarify the approved use of packaged Class O PC concrete mix for Structural Concrete Repair.

**8.** **Article 2532.03, B, 3, Pavement Surface Repair.**
The Office of Construction and Materials requested to re-establish the limit of a maximum of 2 lineal feet of voided macrotexture.

**9.** **Section 2601, Erosion Control.**
**Article 4169.10, Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Outlet or Channel Scour Protection (Transition Mat).**
The Office of Design requested to update the mulching and watering specifications, including eliminating incidental watering and rename outlet or channel scour protection (transition mat).

**10.** **Article 2602.04, K, Method of Measurement (Water Pollution Control (Soil Erosion)).**
The Office of Construction and Materials requested to clarify measurement of Mobilizations, Erosion Control on multi-project contracts.

**11.** **Article 4151.07, Reinforcement Couplers.**
The Office of Construction and Materials requested to remove the fatigue requirements and update the specification.

**12.** **Article 4169.12, Perimeter and Sediment Control Device.**
The Office of Design requested to further define sediment logs to ensure we receive the most efficient product available and eliminate 6 inch logs and wattles because they are not an industry standard.

**13.** **Section 4171, Detectable Warnings.**
The Office of Construction and Materials requested to remove wear resistance requirements that are no longer performed on cast iron and steel panels.

**14.** **Article 4189.05, Poles, Heads, and Signs.**
The Office of Bridges and Structures requested to update the specifications to current standards and methods.

**15.** **Article 4196.01, B, 6, Bridge Abutment Backfill Fabric.**
The Office of Construction and Materials requested to clarify the specifications for the fabric.

**16.** **DS-15025, High Performance Thin Lift Overlay.**
The Office of Construction and Materials requested approval of revisions to the Developmental Specifications for High Performance Thin Lift Overlay.

**17.** **Article 2320.03, A, Equipment (Polymer-Modified Microsurfacing).**
The Office of Construction and Materials requested to allow truck mounted batch type equipment for placing polymer-modified microsurfacing.

**18.** **Article 4127.02, Coarse Aggregate (Aggregate for Hot Mix Asphalt).**
The Office of Construction and Materials requested to allow an alternate method of testing the absorption of aggregate for HMA.

Form 510130 (08-15)

IOWA DOT

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Greg Mulder | **Office:** Construction and Materials | **Item 1** |
| **Submittal Date:** 9/23/2015 | **Proposed Effective Date:** April 2016 | |
| **Section No.:** 2122<br>**Title:** Paved Shoulders<br>**Article No.:** 2213.02<br>**Title:** Materials (Base Widening) | **Other:** | |

**Specification Committee Action:** Approved as recommended.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 4/19/2016 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** The Office of Local Systems asked if we should be changing references to HMA to ACC (asphalt cement concrete) instead of "asphalt". This was discussed a few years ago when warm mix asphalt was first added to the specifications and it was decided not to go back to ACC. There will be a complete overhaul of the flexible pavement specifications in the near future to address some recent changes in terminology and testing.

**Specification Section Recommended Text:**

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

**Replace** the Title and Article:

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

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

**2122.02, B, 3.**

**Replace** the Article:

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

**2122.02, C, 1, Hot Mix Asphalt Mixture.**

**Replace** the Title and Article:

~~**Hot Mix**~~ **Asphalt Mixture.**

**a.** Prior to placement, tack coat the pavement edge.

**b.** Proportion, mix, place, and compact ~~HMA~~ asphalt mixture to the width, thickness, grade, and slope shown in the contract documents, according to the requirements of Section 2303.

**2122.05, A, 2, c.**

**Renumber** the Article:

~~**C**~~ **3. Separate payment will not be made for:**

**2122.05, A, 3.**

**Renumber** the Article:

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

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

**Replace** the Article:

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

**2213.02, A, 1, HMA Base Widening.**

**Replace** the Title and Article:

**~~HMA~~ Asphalt Base Widening.**

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

~~a. Use mixture specified on the contract documents.~~

~~b. Meet requirements of Section 2303, as specified.~~

**2213.02, E, Preparation of Subgrade.**

**Replace** Articles 1 and 2:

**1.** Cut the trench to the width of the widening shown in the contract documents. Ensure ~~if the existing pavement is HMA, saw or trim the~~ a vertical edge ~~of existing asphalt (if any) to a vertical line~~ flush with the ~~edge of the~~ existing ~~concrete~~ pavement by sawing or milling, if needed. At the Contractors option, this trim line may be made at any uniform distance in from the edge of ~~the~~ existing concrete, but not to exceed 3 inches.

**2.** For ~~HMA~~ asphalt base widening, tack coat the edge of the old pavement at a rate of 0.10 to 0.15 gallon per square yard according to Article 2303.03, C, 2, b. A waiting period will not be required before placing the widening.

**2213.02, F, 1, HMA Base Widening.**

**Replace** the Title and Article:

**~~HMA~~ Asphalt Base Widening.**

**a.** ~~Limit the compacted thickness of the top layer to no more than 2 inches. The maximum thickness of lower layers may exceed 3 inches if the Contractor demonstrates the thicker layers have compaction and riding characteristics within conformance to that expected from a 3 inch thick layer. Avoids dumping base material on the surface of the pavement.~~ Immediately remove~~, by brooming,~~ base material spilled on adjacent pavement.

~~**b.** Spread base material so that after compaction, the constructed width conforms to the design dimension.~~

~~**c**~~ **b.** Promptly and thoroughly compact each layer. ~~Compact to the density specified in Article 2303.03, C, 5 for Class I compaction.~~

- For widening in a travel lane apply Class I compaction per Article 2303.03, C, 5, b.
- For widening in non-travel lane apply Class II compaction per Article 2303.03, C, 5, c.

~~**d.** The percent of compaction will be based on the laboratory density obtained for that day's mixture.~~

~~**e**~~ **c.** Succeeding layers of base material may be placed as soon as the previous layer has been compacted. ~~Take density samples from the compacted material and test according to Article 2303.**03, D.**~~

~~**f**~~ **d**. When the contract for base widening does not include resurfacing~~,~~:

- Ensure the final surface of the widening is flush with, or not more than 1/8 inch below, the surface of the old pavement.

- Limit compacted thickness of top lift to no more than 2 inches.

~~g~~ **e.** Do not open the widening to traffic until it has cooled sufficiently to provide stability.

**2213.02, I, Winter Seal.**

**Delete** the Article:

~~**I. Winter Seal.**~~

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

- ~~The bituminous material used as the primer or tack coat applied at 0.12 gallon per square yard, and~~
- ~~A sand cover applied at 10 to 15 pounds per square yard, according to Section 2307.~~

~~**2.** Winter seal that the Engineer requires will be paid for as provided in Article 1109.03, B.~~

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

**Comments:**

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

**2122.02 MATERIALS.**

**A.** ~~**Hot Mix**~~ **Asphalt Mixture** ~~**(1,000,000 ESAL Base Mixture).**~~
Use a 1,000,000 ESAL base mixture with a PG 58-28 binder according to ~~materials specified in~~ Section 2303.

**B. Preparation of Shoulder Area.**

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

**C. Paved Shoulder Construction.**
Construct paved shoulders as follows:

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

**2122.05 BASIS OF PAYMENT.**

Payment for all work performed and measured as prescribed will be according to the following provisions:

**A. Paved Shoulders.**

**1. Hot Mix Asphalt Paved Shoulder.**
Article 2303.05 applies.

**2. Portland Cement Concrete Paved Shoulder.**
**a.** Article 2301.05, A, applies.
**b. Payment for paved shoulders constructed is full compensation for:**

- Preparing the area, including the earth fill, furnishing and placing the paved shoulder, and finishing the shoulder edge.
- Furnishing all the material, equipment, tools, and labor to complete the work according the

contract documents and this specification.

~~C~~3. **Separate payment will not be made for:**

- Construction of the earth fill.
- Asphalt binder.
- Tack coat bitumen.
- Placement, construction, or sawing and filling of joints for the PCC base.
- Finishing of the shoulder edge and furnishing granular material.

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

**B. Special Backfill.**
Article 2102.05, A, 4, applies.

**C. Resurfacing or Overlay of Existing Paved Shoulders.**
For ~~HMA~~ asphalt of the type, width, and thickness specified and satisfactorily constructed, payment will be according to Article 2303.05.

**2213.02 MATERIALS.**
Use materials meeting the following requirements:

**A. Base Material.**

**1. ~~HMA~~ Asphalt Base Widening.**
Use a 1/2 inch or 3/4 inch 1,000,000 ESAL Base mixture. For base widening for shoulders, use a PG 58-28 binder.
~~c. Use mixture specified on the contract documents.~~
~~d. Meet requirements of Section 2303, as specified.~~

**E. Preparation of Subgrade.**
Prepare subgrade for base widening according to Article 2302.03, D, with the following exceptions:

**1.** Cut the trench to the width of the widening shown in the contract documents. Ensure ~~if the existing pavement is HMA, saw or trim the~~ a vertical edge ~~of existing asphalt (if any) to a vertical line~~ flush with the ~~edge of the~~ existing ~~concrete~~ pavement by sawing or milling, if needed. At the Contractors option, this trim line may be made at any uniform distance in from the edge of ~~the~~ existing concrete, but not to exceed 3 inches.

**2.** For ~~HMA~~ asphalt base widening, tack coat the edge of the old pavement at a rate of 0.10 to 0.15 gallon per square yard according to Article 2303.03, C, 2, b. A waiting period will not be required before placing the widening.

**F. Base Widening Construction.**
The contract documents will show the total thickness of base widening to be placed.

**1. ~~HMA~~ Asphalt Base Widening.**
a. ~~Limit the compacted thickness of the top layer to no more than 2 inches. The maximum thickness of lower layers may exceed 3 inches if the Contractor demonstrates the thicker layers have compaction and riding characteristics within conformance to that expected from a 3 inch thick layer. Avoids dumping base material on the surface of the pavement.~~ Immediately remove base material spilled on adjacent pavement ~~by brooming, base material spilled on pavement~~.
~~**b.** Spread base material so that after compaction, the constructed width conforms to the design dimension.~~
b~~c~~. Promptly and thoroughly compact each layer.

- For widening in a travel lane Apply Class I compaction per Article 2303.03, C, 5, b.
- For widening in non-travel lane Apply Class II compaction per Article 2303.03, C, 5, c.

~~Compact to the density specified in Article 2303.03, C, 5 for Class I compaction.~~
~~**d. The percent of compaction will be based on the laboratory density obtained for that day's mixture.**~~
c~~e~~. Succeeding layers of base material may be placed as soon as the previous layer has been compacted.
~~**Take density samples from the compacted material and test according to Article 2303.03, D.**~~

~~fd~~. When the contract for base widening does not include resurfacing
- Ensure the final surface of the widening is flush with, or not more than 1/8 inch below, the surface of the old pavement.
- Limit compacted thickness of the top lift to no more than 2 inches.

~~eg~~. Do not open the widening to traffic until it has cooled sufficiently to provide stability.

~~**I. Winter Seal.**~~

~~**1.** Prime HMA base which is not covered with upper base or surface in the same construction season in which it is built. The Engineer may require an application of a winter seal consisting of:~~
- ~~The bituminous material used as the primer or tack coat applied at 0.12 gallon per square yard, and~~
- ~~A sand cover applied at 10 to 15 pounds per square yard, according to Section 2307.~~

~~**2.** Winter seal that the Engineer requires will be paid for as provided in Article 1109.03, B.~~

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

**D. Base Widening.**

**1. ~~Hot Mix~~ Asphalt Base Widening.**

**a. Measurement by Weight.**
Determined according to Article 2303.04, A, 2.

**b. Measurement by Area.**
Determined according to Article 2303.04, A, 3.

**Reason for Revision:** General rewrite to align material properties and construction techniques for shoulders and base widening used as shoulders.

Update references to HMA with asphalt.

Renumerated the BOP for separate pay items so they are not nested beneath the PCC.

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| **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:** Industry in support for simplification. Output from the SimSpec committee as part of a partnership with the APAI and DOT.

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Greg Mulder / Jeff Schmitt | **Office:** Construction & Materials | **Item 2** |
| **Submittal Date:** | **Proposed Effective Date:** April 2016 GS | |
| **Article No.:** 2216.03<br>**Title:** Cracking and Seating PCC Pavements | **Other:** | |

**Specification Committee Action:** Approved with changes.

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| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 4/19/2016 |

**Specification Committee Approved Text:**

**2216.03, A, 2, a, 1.**

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

~~**c)** The roller tires shall be inflated to the pressure necessary to obtain proper surface contact pressure to satisfactorily seat pavement slabs.~~

~~**d**~~ **c)** At the Contractor's option, the roller tires may contain liquid.

**2216.03, A, 2, a, 2.**

**Replace** the Article:

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

**2216.03, A, 2, b.**

**Delete** the Article:

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

**2216.03, D, 2.**

**Replace** the Article:

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

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

**Comments:** The Office of Local Systems asked if there should be range on the acceptable weight of the roller. The committee determined that 30 tons should be the minimum.

**Specification Section Recommended Text:**

**2216.03, A, 2, a, 1.**

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

~~**c)** The roller tires shall be inflated to the pressure necessary to obtain proper surface contact pressure to satisfactorily seat pavement slabs.~~

~~**d**~~ **c)** At the Contractor's option, the roller tires may contain liquid.

**2216.03, A, 2, a, 2.**

**Replace** the Article:

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

**2216.03, A, 2, b.**

**Delete** the Article:

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

**2216.03, D, 2.**

**Replace** the Article:

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

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

**Comments:**

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

**Section 2216. Cracking and Seating PCC Pavement**

**2216.03 CONSTRUCTION.**

**A. Equipment.**

**2. Seating Equipment.**

**a.** Use a pneumatic rubber tired roller meeting the following requirements:

**1)** Four rubber tires equally spaced across the full width.

~~**c)** The roller tires shall be inflated to the pressure necessary to obtain proper surface contact pressure to satisfactorily seat pavement slabs.~~

~~**cd**~~**)** At the Contractor's option, the roller tires may contain liquid.

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

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

**D. Pavement Seating.**

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

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

**Reason for Revision:** The (rare) 50-ton roller may cause additional cracking and distortion of the fractured PCC pavement, reducing its structural value and integrity. The (more common) 30-ton roller has been shown to accomplish required seating, without further damaging the fractured PCC slab.

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| **County or City Input Needed (X one)** | | | **Yes** | **No** X | |
| **Comments:** | | | | | |
| **Industry Input Needed (X one)** | | | **Yes** | **No** X | |
| **Industry Notified:** | **Yes** X | **No** | **Industry Concurrence:** | **Yes** X | **No** |
| **Comments:** Industry representatives expressed agreement with proposed specification change, when discussed at Strategic Asphalt Committee meeting on September 16, 2015 and the SimSpec meeting on September 28, 2015. | | | | | |

Form 510130 (08-15)

IOWA DOT

**SPECIFICATION REVISION SUBMITTAL FORM**

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|---|---|---|
| **Submitted by:** Greg Mulder | **Office:** Construction and Materials | **Item 3** |
| **Submittal Date:** 9/23/2015 | **Proposed Effective Date:** April 2015 | |
| **Section No.:** 2304<br>**Title:** Detour Pavement | **Other:** | |

**Specification Committee Action:** Approved as recommended.

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|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 4/19/2016 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** The Office of Construction and Materials asked if detour pavement should be changed to a measured quantity, as there can be field variations requiring a change order. Median crossovers are typically pretty accurate, but more extensive detour pavement can be off. This will be further discussed within the Office of Construction and Materials and a specification revision requested if desired.

**Specification Section Recommended Text:**
**2304.02, B, HMA Option.**

**Replace** Articles 1, 2, and 3:

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

2. ~~For detour pavement carrying more than 10,000,000 total 20 year ESALs, use HMA 10,000,000 ESAL surface or intermediate course, 3/4 inch, with PG 64-22 asphalt binder.~~ For detour pavements on all other primary highways, use a 3,000,000 ESAL surface or intermediate mixture with a PG 64-22 asphalt binder.

3. ~~For median crossovers, use HMA 10,000,000 ESAL surface or intermediate course, 3/4 inch, with PG 64-22 asphalt binder. Apply compaction per Section 2303. The surface lift requires L-4 friction aggregate.~~ For detour pavements on non-primary projects use a 1,000,000 ESAL surface or intermediate mixture with a PG 64-22 asphalt binder.

**2304.03, B, HMA Option.**

**Replace** the Article:

Meet the requirements of ~~Section~~ Article 2303.03, E.

**Comments:**

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

**2304.02 MATERIALS.**

Use PCC or HMA for the detour pavement. Meet the following requirements.

**B. HMA Option.**

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

~~**1.** For detour pavement carrying less than 10,000,000 total 20 year ESALs, use HMA 1,000,000 ESAL surface or intermediate course, 1/2 inch or 3/4 inch, with PG 64-22 asphalt binder.~~

~~**2.** For detour pavement carrying more than 10,000,000 total 20 year ESALs, use HMA 10,000,000 ESAL surface or intermediate course, 3/4 inch, with PG 64-22 asphalt binder.~~

~~**3.** For median crossovers, use HMA 10,000,000 ESAL surface or intermediate course, 3/4 inch, with PG 64-22 asphalt binder. Apply compaction per Section 2303. The surface lift requires L-4 friction aggregate.~~

**1.** For detour pavements or median crossovers on interstates and multi-lane primary highways, use a10,000,000 ESAL surface or intermediate mixture, with PG 64-22 asphalt binder. The surface lift requires L-4 friction aggregate.

2. For detour pavements on all other primary highways, use a 3,000,000 ESAL surface or intermediate mixture with a PG 64-22 asphalt binder.

3. For detour pavements on non-primary projects use a 1,000,000 ESAL surface or intermediate mixture with a PG 64-22 asphalt binder.

**2304.03 CONSTRUCTION.**

**B. HMA Option.**
Meet the requirements of Section 2303.03, E.

**Reason for Revision:** General rewrite to simplify the mixture types used for detour pavements. The ESAL calculations were cumbersome for contractors and field staff to calculate.

Acceptance is now based on small quantities.

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| **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:** Industry in support for simplification. Output from the SimSpec committee as part of a partnership with the APAI and DOT.

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Greg Mulder / Wayne Sunday | **Office:** Construction & Materials | **Item 4** |
| **Submittal Date:** 2015.10.23 | **Proposed Effective Date:** April 2016 | |
| **Article No.:** 2404.03, E, 3<br>**Title:** Reinforcing Supports and Spacers | **Other:** | |

**Specification Committee Action:** Approved as recommended.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 4/19/2016 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** The Office of Bridges and Structures asked if tie wires are coated in epoxy or plastic. Also, should we allow plastic coated bar supports (if they even exist). The Office of Construction and Materials will investigate.

The Office of Traffic and Safety asked if plastic needs to be specified. The District 4 Materials Office indicated that we don't really care, as long as the wire is covered. The Office of Traffic and Safety also asked if plastic zip ties would be allowed. Not currently, because it is not a wire, but we can address it if someone brings it to us.

**Specification Section Recommended Text:**

**2404.03, E, 3.**

**Replace** the Article:

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

**Comments:**

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

**E. Reinforcing Supports and Spacers.**

**1.** Support horizontal reinforcement using support devices, or tie to vertical reinforcing steel.
**2.** Position vertical reinforcement using side-form spacers. Use support devices and side-form spacers, either plastic or steel, meeting the requirements of Materials I.M. 451.01.
**3.** Hold epoxy coated reinforcing steel in place with ~~epoxy or plastic coated~~ plastic bar supports, epoxy coated steel bar supports, and epoxy or plastic coated tie wires.
**4.** Do not use concrete block inserts, bricks, stones, wood blocks, wood stakes, and similar materials to support reinforcement if by their use they may become embedded in the concrete.
**5.** Space support devices according to the manufacturer's recommendations or as recommended by the current CRSI Manual of Standard Practice. Use a support system with spacing not to exceed 4 feet (1.2 m) in each direction for bolsters or continuous high chairs and 3 feet (0.9 m) in each direction for individual bar chairs.
**6.** Rest the base of chairs and support bolsters on the supporting false work. Use supporting chairs that have either upturned legs or a horizontal bar spot welded at the base of the leg.
**7.** Cross-tie legs at their bases or nail them to the forms if necessary to prevent spreading of upturned legs.
**8.** For situations where two or more separate mats of reinforcing steel are required, support each mat independently using an approved support system.
**9.** Place side-form spacers at intervals sufficient to ensure that all reinforcing is at the required clearance.

**Reason for Revision:** There has been confusion regarding the previous specification language. The confusion came from the language that stated plastic or epoxy coated bar supports. The field staff and contractors thought this referred to only the coating of the steel bar supports, when the intent was to refer to plastic chairs and epoxy coated steel chairs. This specification revision will clarify the requirements.

| | | |
|---|---|---|
| **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 5** |
| **Submittal Date:** October 23, 2015 | **Proposed Effective Date:** April 2016 | |
| **Article No.:** 2413.03, C, 2 & 3<br>**Title:** Class A & Class B Deck Repair | **Other:** | |

**Specification Committee Action:** Approved as recommended.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 4/19/2016 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** The Office of Local Systems asked about Class B repair on concrete slab bridges. This is not allowed without permission of the Engineer, per the new note.

**Specification Section Recommended Text:**
**2413.03, C, Preparation of Surface for Deck Repair.**

**Add** to the end of the first paragraph:

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

**Comments:**

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

**C. Preparation of Surface for Deck Repair.**

Remove concrete from each area (either designated in the contract documents or by the Engineer) to a depth and in a manner consistent with the classification for that area. Areas as shown in the contract documents are based on the best information available. The Engineer will determine actual areas.

**1. General.**

**a.** Keep areas from which concrete has been removed free of slurry produced by wet sawing concrete joints. Remove all slurry from prepared areas before concrete is placed.

**b.** Use hand tools to remove final particles of concrete or to achieve the required depth. Sandblast or shot blast all surfaces against which new concrete is to be placed, including curbs and exposed reinforcement. Remove all dirt, oil, and other foreign material, as well as any unsound concrete. Clean the surface with an air blast immediately before applying grout in preparation for placement of new concrete.

**c.** Thoroughly clean all reinforcing bars and newly exposed concrete by sandblasting or shot blasting. Clean epoxy coated reinforcing with hand tools that will not damage the epoxy coating. Where bond between existing concrete and reinforcing steel has been destroyed, remove the concrete adjacent to the bar to a depth that will permit new concrete to bond to the entire periphery of the exposed bar. A minimum of 3/4 inch clearance is required around the bar. Exercise care to prevent cutting, stretching, or damaging any exposed reinforcing steel. The Engineer may require enlarging a designated area should inspection indicate deterioration of concrete or corrosion of reinforcing beyond the limits previously designated.

**d.** Do not presaturate existing concrete prepared for surfacing before grout and new concrete is placed. Allow the prepared surface to dry to allow some absorption of the grout.

**e.** At the time of placement of either Class O PCC or Class HPC-O, ensure the area is clean and the reinforcement free of rust. Rust forming overnight because of dew on clean reinforcement will not be considered objectionable; however, reinforcement with a greater amount of rust shall be recleaned before placing the concrete. Clean the area with an air blast before the concrete is placed.

**2. Class A Deck Repair.**

**a.** Class A repair removal is considered to start 1/4 inch below the existing surface. This does not preclude removal coincidental with preparation for overlay. Removal for Class A repair extends at least to the level of the top reinforcing bars, and deeper, as determined by the Engineer, to remove unsound concrete. Class A deck repairs on concrete beam and steel girder bridges have no removal area restrictions. Class A deck repair on continuous concrete slab bridges shall not extend below the top mat of deck reinforcing without review and approval of the

Engineer.

**b.** Concrete may be removed by using a jack hammer, chipping hammer, shot blasting, hydro blasting, or by a combination of these. Concrete removal beneath reinforcing bars shall be accomplished using a 15 pound chipping hammer. Complete the final cleanup at the periphery and base of Class A repair using a 15 pound chipping hammer or hand tools.

**c.** For Class A repair and in preparation for bridge deck overlay, the deck surface may also be prepared or partially prepared using a high pressure water system, at the Contractor's option. Use the equipment manufacturer's recommended procedures, subject to the Engineer's approval, and within such limitations as may be imposed.

**d.** Additional removal may be required to provide for test wells.

**3. Class B Deck Repair.**

**a.** Class B repair removal is considered to start 1/4 inch below the existing surface. This does not preclude removal coincidental with preparation for overlay. Remove all concrete within all areas designated for Class B repair, and in all areas designated for Class A repair in which the depth of the remaining sound concrete is less than 50% of the original depth of the bridge deck. Class B deck repairs on concrete beam and steel girder bridges have no removal area restrictions. Class B deck repair on continuous concrete slab bridges shall not extend below the top mat of deck reinforcing without review and approval of the Engineer.

**b.** Designated Class A repair areas will be measured as Class B Deck Repair when full depth removal is required. At the Engineer's direction, limited areas of removal greater than 50% of the floor thickness (such as beneath reinforcing) may be allowed. These limited areas of excess depth will be measured as Class A Deck Repair.

**c.** Remove concrete using a jack hammer or chipping hammer, or by using a combination of a scarifyier and chipping hammer. Accomplish the final removal at the periphery and base (if not full depth) of Class B repair using a 15 pound chipping hammer or hand tools. Provide a method of removal at the bottom of the bridge deck that will prevent feather edging of the concrete.

**d.** Provide forms to enable placement of new concrete in the full depth opening. Use forms that, preferably, are suspended from existing reinforcing bars by wire ties. In the case of large area openings, forms may be supported by blocking from the beam flanges. Support all forms by elements of the existing superstructure unless specifically noted or shown otherwise in the contract documents.

**Reason for Revision:** The specifications needed to clarify limitations on the area of deck concrete removal for concrete beam, steel girder, and continuous concrete slab bridges. There are no restrictions on concrete beam and steel girder bridges, but the deck concrete removal on continuous concrete slab bridges cannot extend below the top mat of deck reinforcing due to structural issues. If deck concrete repairs need to extend below the top deck reinforcing, guidance on the width of removal will be provided by the Engineer.

| | | |
|---|---|---|
| **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 6** |
| **Submittal Date:** 10/19/15 | **Proposed Effective Date:** April 19, 2016 | |
| **Article No.:** 2416.04, B<br>**Title:** Method of Measurement (Rigid Pipe Culverts)<br>**Article No.:** 2417.04, B<br>**Title:** Method of Measurement (Corrugated Culverts) | **Other:** | |

**Specification Committee Action:** Approved as recommended.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 4/19/2016 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** None.

**Specification Section Recommended Text:**

**2416.04, B.**

**Replace** the Article:

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

**2417.04, B.**

**Replace** the Article:

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

**Comments:**

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

**Replace the Articles:**

**2416.04, B.**

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

**2417.04, B.**

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

**Reason for Revision:** Change Method of Measurement for pipe aprons to a measured quantity.

| | | |
|---|---|---|
| **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:** Apron items will no longer be "contract quantity" bid items.

**County or City Comments:**

**Industry Comments:**

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Greg Mulder / Wayne Sunday | **Office:** Construction & Materials | **Item 7** |
| **Submittal Date:** 2015.10.26 | **Proposed Effective Date:** April 2016 | |
| **Article No.:** 2426.02<br>**Title:** Materials (Structural Concrete Repair) | **Other:** | |

**Specification Committee Action:** Approved as recommended.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 4/19/2016 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** The Office of Local Systems asked what is meant by "3/4 inch behind an unbonded reinforcing bar". Behind would be the opposite side from where you are removing concrete, whether that is below on a horizontal surface or behind on a vertical surface.

**Specification Section Recommended Text:**

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

**Add** as the second sentence:

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

**Comments:**

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

**Section 2426. Structural Concrete Repair**

**2426.01 DESCRIPTION.**

**A.** Repair spalled or deteriorated structural concrete as specified in the contract documents. This work may include the installation of concrete anchors, reinforcing bars, or wire mesh.

**1. General.**

Repairs shall be placed against sound concrete.

**2. Shallow Repair.**

Repair that:

- Is 3/4 inch to 1 1/2 inch in depth, and
- Does not use forms to support the patching material, except

where the patching material cannot support itself.

**3. Regular Repair.**

Repair that:

- Is a minimum depth of 1 1/2 inch, or 3/4 inch behind an unbonded reinforcing bar, and
- Uses forms.

**B.** The Engineer will outline the areas to be repaired.

**2426.02 MATERIALS.**

**A.** Use materials meeting the appropriate requirements of Division 41.

**B. Patching Materials.**

**1. Shallow Repair.**

Use approved material from Materials I.M. 491.08 in accordance with manufacturer's recommendations.

**2. Regular Repair.**

Furnish Class O concrete. I.M 447 provides for use of packaged , dry, combined materials for Class O PC concrete. Use 3 inches as the target slump, with a variation not to exceed ± 1 inch. For placements requiring higher slump, a mid range water reducer may be used with a target slump of 5 inches or a high range water reducer may be used with a target slump of 7 inches.

**2426.03 CONSTRUCTION.**

**A. Equipment.**

Use equipment that meets the requirements of Article 2413.03, A, 2, to prepare the repair area.

**B. Surface Preparation.**

- **1.** Remove all loose, disintegrated, and unsound concrete from the repair areas. Outline all repairs with a 3/4 inch deep saw cut. Concrete anchors and wire mesh may be required, as shown in the

contract documents. Overhead repairs may require special procedures, as proposed by the Contractor and approved by the Engineer.

- **2.** After removal of loose, unsound concrete, sandblast the repair area and follow with an air blast with oil free air so the substratum is sound, clean and free of all contaminants. Exercise extreme care in concrete removal so that prestressed strands are not damaged. The substrate must be dry prior to concrete placement or bonding grout application, if required.
- **3.** Sandblast exposed reinforcement to remove all rust. Remove and replace damaged or badly corroded reinforcing bars, as directed by the Engineer.

**C. Placement Procedure.**

**1. Shallow Repair.**

**a.** Prepare concrete surface in accordance with manufacturer's recommendations.

**b.** Place and compact repair concrete. Strike off and finish the repair concrete to the correct lines.

**2. Regular Repair.**

**a.** Place concrete according to Article 2403.03, C.

**b.** When repairing a vertical face, place the patch in heights not to exceed 4 feet. Provide access ports at 4 foot intervals in the forms for placement and vibration. Remove forms according to Article 2403.03, M.

**D. Curing.**

For Class O concrete, apply white pigmented curing compound to the concrete immediately following concrete finishing or immediately after removing forms, if used. Apply curing compound according to Article 2403.03, E, except use an application rate of 100 square feet per gallon. Use manufacturer's recommendations for curing products from Materials I.M. 491.08.

**2426.04 METHOD OF MEASUREMENT.**

The Engineer will determine the square feet of Concrete Repair by measuring the surface dimensions of the area repaired to the nearest 0.1 foot. Distinction will not be made between shallow repair and regular repair.

**2426.05 BASIS OF PAYMENT.**

**A.** Payment for the number of square feet of Concrete Repair completed, measured as provided above, will be the contract unit price per square foot.

**B.** Payment is full compensation for:

- Removal of excess concrete from the project,
- Furnishing all materials and equipment, including concrete anchors, wire mesh, and reinforcing bars, if required.
- Sandblasting exposed reinforcement,
- Removing and replacing damaged reinforcing bars,
- Forms, and
- Labor necessary to complete the work according to the contract documents.

**Reason for Revision:** Package Class O PC concrete mix is approved in I.M. 447 and this revision to 2426 will also clarify the approved use of packaged Class O PC concrete mix for Structural Concrete Repair.

| | | |
|---|---|---|
| **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 A. Sunday | **Office:** Construction & Materials | **Item 8** |
| **Submittal Date:** October 6, 2015 | **Proposed Effective Date:** April 2016 | |
| **Article No.:** 2532.03, B, 3<br>**Title:** Pavement Surface Repair | **Other:** | |

**Specification Committee Action:** Approved as recommended.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 4/19/2016 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** None.

**Specification Section Recommended Text:**

**2532.03, B, 3, a.**

**Add** as the second sentence:

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

**Comments:**

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

**B. Pavement Surface Repair.**

**1. General.**

**a.** Grind and texture the concrete surface in a longitudinal direction.

**b.** Ensure the surface, after grinding, is of uniform texture.

**c.** When using more than one grinding machine in the same travel lane, use similar blade segment thicknesses, blade spacings, and blade diameters on all machines so the texture of the ground surface is reasonably uniform across the lane.

**d.** To be in compliance, the land area and the texture depth shall be within the specified ranges. It may be necessary to adjust the blade spacing during a project to stay within specified ranges.

**e.** For multiple passes, carefully control the equipment to minimize the overlap. Ensure overlaps do not exceed 1 inch (25 mm).

**f.** Ensure that, after grinding, the transverse slope of the concrete surface is uniform to a degree that there are no depressions or misalignment of slope greater than 1/4 inch in 12 feet (6 mm in 3.6 m) when tested by stringline or straightedge placed perpendicular to the center line.

**g.** In order to match the outside edge of the pavement, grind adjacent paved areas (for example shoulders, curb and gutter, turn lanes, tapers, paved crossovers, and so forth) to minimize vertical projections.

**h.** The Contractor is responsible for quality control of the texture. The Engineer will conduct random Quality Assurance inspections.

**2. PCC Pavement.**

**a.** Grind and texture entire surface area of the pavement until:

- The pavement surface on both sides of the transverse joints and all cracks are substantially in the same plane with no greater than 1/16 inch (1.59 mm) difference between adjacent sides of joints or cracks, and
- The pavement surface meets the smoothness required.

**b.** In each lane, ensure at least 95% of the area in each 100 foot (30 m) section has a newly textured surface. Depressed pavement areas and areas of excess faulting as identified in 2532.03, C, 1, b, 4 will be exempt from this requirement.

**c.** Meet the following requirements for grinding:

**1)** Ensure all construction traffic entering or leaving the work area moves in the direction of traffic of the open lane.

**2)** Begin and end at lines normal to the pavement center line within any one ground area and at the project limits. This will not be required at the end of each shift.

**3)** Maintain good transverse drainage at all times.

**4)** Assemble the grinding head to produce the tolerances in Table 2532.03-1 on pavements with

the indicated coarse aggregates.

**Table 2532.03-1: Grinding Head Tolerances**

| | Limestone | Gravel/Quartzite |
|---|---|---|
| Land area between grooves[(a)] | 0.090 to 0.110 inches (2.29 to 2.79 mm) | 0.080 to 0.095 inches (2.03 to 2.41 mm) |
| Texture depth[(b)] | Target of 1/8 inch (3.18 mm) with average between 1/16 inch to 3/16 inches (1.59 mm to 4.77 mm) | |

(a) Based on an average of a minimum of ten measurements across the ground width for one pass.

(b) Based on an average of a minimum of six measurements across the ground width for one pass.

**5)** A test area 500 feet (150 m) long and the width of the grinding head will be allowed for each new or restacked head, provided a surface texture in reasonable conformance with the specification is being produced.

**3. Bridge Deck.**

**a.** When specified in the contract documents, grind and longitudinally groove the entire surface of the bridge deck according to Article 2412.03, D, 4, a. No areas greater than 2 feet (0.6 m) in length shall be left without texture. The total depth of concrete surface ground shall not exceed ¼ inch (6 mm). For other projects, re-establish transverse grooving through corrected areas using diamond blades to provide a surface similar to a new deck except the area within approximately 2 feet (0.6 m) from the curb.

**b.** Assemble the grinding head to produce the tolerances in Table 2532.03-1on bridge decks.

**C. Smoothness.**

**Reason for Revision:** DS-01029 Pavement Surface Repair (Diamond Grinding) dated October 21, 2003 was moved into the standard specifications and the above highlighted requirement was not included. This revision is to re-establish the requirement. The limit of a maximum of 2 lineal feet of voided macrotexture is based upon guidance from FHWA for bridge decks and bridge deck overlays.

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

Form 510130 (08-15)

IOWA DOT

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Brian Smith | **Office:** Design | **Item 9** |
| **Submittal Date:** 10/26/2015 | **Proposed Effective Date:** 4/19/2015 | |
| **Section No.:** 2601<br>**Title:** Erosion Control<br>**Article No.:** 4169.10<br>**Title:** Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Outlet or Channel Scour Protection (Transition Mat) | **Other:** | |

**Specification Committee Action:** Approved with revisions.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 4/19/2016 |

**Specification Committee Approved Text:**

**2601.01, Description.**

**Replace** the tenth bullet:

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

**2601.03, A, 15, a.**

**Delete** the second bulleted item:

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

**2601.03, A, 15, b.**

**Delete** the second and third sentences:

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

**2601.03, E, 2, a, Straw Mulch.**

**Add** the Article:

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

**2601.03, G, 3, d, 4.**

**Replace** the Article:

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

**2601.03, G, 3, e, Watering Sod.**

**Delete** the Article:

~~**e. Watering Sod.**~~

~~**1)** Provide watering equipment and an approved water supply before beginning any sodding operation. Six waterings will be required. Allow no more than 1 hour to elapse~~

~~between laying and initial watering of sod. Perform the second, third, and fourth waterings at 4 calendar day intervals, and fifth and sixth waterings at weekly intervals. Perform waterings unless notified by the Engineer in writing at least 1 calendar day prior to the day the watering is to occur. A price adjustment will be assessed at a rate of $200.00 per day for each calendar day that the Contractor fails to complete the watering from the day watering is to commence.~~

~~**2)** Ensure waterings are sufficient to thoroughly saturate sod, sodbed, and adjacent disturbed areas to a depth of approximately 4 inches.~~

~~**3)** Each watering may require a maximum of 100 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the sod. Complete each watering within a 4 hour period. More than one application for each watering may be necessary to provide adequate saturation without runoff.~~

**2301.03, G, 3, f, Urban, Island, and Safety Rest Area Sodding.**

**Renumber** the Article:

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

**2601.03, H, Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Outlet or Channel Scour Protection (Transition Mat).**

**Replace** the title of the Article and Articles 1, 6, and 7, and **Delete** Article 8:

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

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

**2601.03, Construction.**

**Add** the Article and **Renumber** subsequent Articles:

**I. Watering.**

1. **Watering of Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Transition Mat.**
   - **a.** Provide watering equipment and an approved water supply before starting special

ditch control, turf reinforcement mat, slope protection, or transition mat work. Water the area no later than the day following placement of the materials. If Contractor fails to water by second day following placement, a price adjustment will be assessed at a rate of $200.00 per calendar day until watering has been completed.

**b.** Apply three additional waterings at intervals of 5 to 8 calendar days. Perform waterings unless notified by Engineer in writing at least 1 calendar day prior to the day watering is to occur. If Contractor fails to complete watering before the 8th calendar day has elapsed, a price adjustment will be assessed at a rate of $200.00 per calendar day, beginning on the 9th day, until watering is completed.

**c.** Ensure waterings are sufficient to thoroughly saturate seedbed to a depth of approximately 2 inches.

**d.** Each watering may require a maximum of 50 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the seedbed. Complete each watering within a 4 hour period.

**e.** More than one application for each watering may be necessary to provide adequate saturation without runoff.

**2. Watering Sod.**

a. Provide watering equipment and an approved water supply before beginning sodding operation. Six waterings will be required. Allow no more than 1 hour to elapse between laying and initial watering of sod. Perform second, third, and fourth waterings at 4 calendar day intervals; and fifth and sixth waterings at weekly intervals. Perform waterings unless notified by the Engineer in writing at least 1 calendar day prior to the day watering is to occur. A price adjustment will be assessed at a rate of $200.00 per day for each calendar day that the Contractor fails to complete watering from the day watering is to commence.

b. Ensure waterings are sufficient to thoroughly saturate sod, sodbed, and adjacent disturbed areas to a depth of approximately 4 inches.

c. Each watering may require a maximum of 100 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the sod. Complete each watering within a 4 hour period. More than one application for each watering may be necessary to provide adequate saturation without runoff.

**~~I~~ J. Mowing.**

**~~J~~ K. Completion of the Work.**

**2601.04, E.**

**Replace** the Article:

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

**2601.04, H.**

**Replace** the Article:

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

**2601.05, A, 11.**

**Replace** the Article:

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

**a.** Contract unit price per square feet.

**b.** Payment is full compensation for ~~Outlet or Channel Scour Protection (~~Transition Mat~~)~~, TRM, preparation and materials including shaping outlets/channels, ditches, soil fill (if required), seed, fertilizer and anchors.

**2601.05, A, 12.**

**Replace** the second sentence and **delete** the third sentence:

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

**2601.05, A, 14.**

**Replace** the Article:

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

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

**Replace** the title:

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

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

**Replace** the title:

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

**Comments:** The Office of Construction and Materials indicated that they would prefer a crimp depth of 2 inches for straw mulch. The Office of Design indicated that a 2 inch depth is acceptable, but we will review performance to see if any changes need to be made in the future.

The Office of Local Systems asked if "Transition Mat" is commonly used for outlet or channel scour protection. This is what the Office of Design has decided to use and is consistent throughout the specifications, standards, and design manual.

**Specification Section Recommended Text:**

**2601.01, Description.**

**Replace** the tenth bullet:

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

**2601.03, A, 15, a.**

**Delete** the second bulleted item:

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

**2601.03, A, 15, b.**

**Delete** the second and third sentences:

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

**2601.03, E, 2, a, Straw Mulch.**

**Add** the Article:

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

**2601.03, G, 3, d, 4.**

**Replace** the Article:

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

**2601.03, G, 3, e, Watering Sod.**

**Delete** the Article:

~~**e. Watering Sod.**~~

~~**1)** Provide watering equipment and an approved water supply before beginning any sodding operation. Six waterings will be required. Allow no more than 1 hour to elapse between laying and initial watering of sod. Perform the second, third, and fourth waterings at 4 calendar day intervals, and fifth and sixth waterings at weekly intervals. Perform waterings unless notified by the Engineer in writing at least 1 calendar day prior to the day the watering is to occur. A price adjustment will be assessed at a rate of $200.00 per day for each calendar day that the Contractor fails to complete the watering from the day watering is to commence.~~

~~**2)** Ensure waterings are sufficient to thoroughly saturate sod, sodbed, and adjacent disturbed areas to a depth of approximately 4 inches.~~

~~**3)** Each watering may require a maximum of 100 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the sod. Complete each watering within a 4 hour period. More than one application for each watering may be necessary to provide adequate saturation without runoff.~~

**2301.03, G, 3, f, Urban, Island, and Safety Rest Area Sodding.**

**Renumber** the Article:

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

**2601.03, H, Special Ditch Control, Turn Reinforcement Mat, Slope Protection, and Outlet or Channel Scour Protection (Transition Mat).**

**Replace** the title of the Article and Articles 1, 6, and 7, and **Delete** Article 8:

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

1. **Preparation of Area to be Treated with Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and ~~Outlet or Channel Scour Protection (~~Transition Mat~~).**
6. **~~Outlet or Channel Scour Protection (~~Transition Mat~~)~~ (TM).**
7. **Finishing Adjacent to Special Ditch Control, Turf Reinforcement Mat, Slope Protection Areas, and ~~Outlet or Channel Scour Protection (~~Transition Mat~~).**
8. ~~**Watering of Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Outlet or Channel Scour Protection (Transition Mat).**~~

~~**a.** Provide watering equipment and an approved water supply before starting special ditch control, TRM, slope protection, or TM work. Water the area no later than the day following placement of the materials. If Contractor fails to water by second day following placement a price adjustment will be assessed at a rate of $200.00 per calendar day until the watering has been completed.~~

~~**b.** Apply three additional waterings at intervals of 5 to 8 calendar days. Perform waterings unless notified by Engineer in writing at least 1 calendar day prior to the day watering is to occur. If Contractor fails to complete watering before the 8th calendar day has elapsed, a price, adjustment will be assessed at a rate of $200.00 per calendar day, beginning on the 9th day, until the watering is completed.~~

~~**c.** Ensure waterings are sufficient to thoroughly saturate seedbed to a depth of approximately 2 inches.~~

~~**d.** Each watering may require a maximum of 50 gallons of water per square. Apply water~~

~~as a spray or dispersion to prevent damage to the seedbed. Complete each watering within a 4 hour period.~~

~~**e.** More than one application for each watering may be necessary to provide adequate saturation without runoff.~~

**2601.03, Construction.**

**Add** the Article and **Renumber** subsequent Articles:

**I. Watering.**

**1. Watering of Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Transition Mat.**

**a.** Provide watering equipment and an approved water supply before starting special ditch control, turf reinforcement mat, slope protection, or transition mat work. Water the area no later than the day following placement of the materials. If Contractor fails to water by second day following placement, a price adjustment will be assessed at a rate of $200.00 per calendar day until watering has been completed.

**b.** Apply three additional waterings at intervals of 5 to 8 calendar days. Perform waterings unless notified by Engineer in writing at least 1 calendar day prior to the day watering is to occur. If Contractor fails to complete watering before the 8th calendar day has elapsed, a price adjustment will be assessed at a rate of $200.00 per calendar day, beginning on the 9th day, until watering is completed.

**c.** Ensure waterings are sufficient to thoroughly saturate seedbed to a depth of approximately 2 inches.

**d.** Each watering may require a maximum of 50 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the seedbed. Complete each watering within a 4 hour period.

**e.** More than one application for each watering may be necessary to provide adequate saturation without runoff.

**2. Watering Sod.**

d. Provide watering equipment and an approved water supply before beginning sodding operation. Six waterings will be required. Allow no more than 1 hour to elapse between laying and initial watering of sod. Perform second, third, and fourth waterings at 4 calendar day intervals; and fifth and sixth waterings at weekly intervals. Perform waterings unless notified by the Engineer in writing at least 1 calendar day prior to the day watering is to occur. A price adjustment will be assessed at a rate of $200.00 per day for each calendar day that the Contractor fails to complete watering from the day watering is to commence.

e. Ensure waterings are sufficient to thoroughly saturate sod, sodbed, and adjacent disturbed areas to a depth of approximately 4 inches.

f. Each watering may require a maximum of 100 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the sod. Complete each watering within a 4 hour period. More than one application for each watering may be necessary to provide adequate saturation without runoff.

**~~I~~ J. Mowing.**

**~~J~~ K. Completion of the Work.**

**2601.04, E.**

**Replace** the Article:

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

**2601.04, H.**

**Replace** the Article:

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

**2601.05, A, 11.**

**Replace** the Article:

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

**a.** Contract unit price per square feet.

**b.** Payment is full compensation for ~~Outlet or Channel Scour Protection (~~Transition Mat~~)~~, TRM, preparation and materials including shaping outlets/channels, ditches, soil fill (if required), seed, fertilizer and anchors.

**2601.05, A, 12.**

**Replace** the second sentence and **delete** the third sentence:

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

**2601.05, A, 14.**

**Replace** the Article:

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

**4169.10, SPECIAL DITCH CONTROL, TURF REINFORCEMENT MAT, SLOPE PROTECTION, AND OUTLET OR CHANNEL SCOUR PROTECTION (TRANSITION MAT).**

**Replace** the title:

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

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

**Replace** the title:

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

**Comments:** What bid item modification is required for these revisions?

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

**2601.03, A, 15, a.**

**Delete** the second bulleted item:

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

**2601.03, A, 15, b.**

**Delete** the second and third sentences:

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

**2601.03, E, 2, a, 3.**

**Add** as a new Article:

**3)** Crimp/tuck straw to a minimum of three inches below the ground surface.

**2601.03, G, 3, d, 4.**

**Replace** the Article:

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

**2601.03, G, 3, e, Watering Sod.**

**Delete** the Article:

~~**1)** Provide watering equipment and an approved water supply before beginning any sodding operation. Six waterings will be required. Allow no more than 1 hour to elapse between laying and initial watering of sod. Perform the second, third, and fourth waterings at 4 calendar day intervals, and fifth and sixth waterings at weekly intervals. Perform waterings unless notified by the Engineer in writing at least 1 calendar day prior to the day the watering is to occur. A price adjustment will be assessed at a rate of $200.00 per day for each calendar day that the Contractor fails to complete the watering from the day watering is to commence.~~

~~**2)** Ensure waterings are sufficient to thoroughly saturate sod, sodbed, and adjacent disturbed areas to a depth of approximately 4 inches.~~

~~**3)** Each watering may require a maximum of 100 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the sod. Complete each watering within a 4 hour period. More than one application for each watering may be necessary to provide adequate saturation without runoff.~~

**2601.03, H, Special Ditch Control, Turn Reinforcement Mat, Slope Protection, and Outlet or Channel Scour Protection (Transition Mat).**

**Replace** the title of the Article and Articles 1, 6, and 7, and **Delete** Article 8:

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

1. **Preparation of Area to be Treated with Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and ~~Outlet or Channel Scour Protection (~~Transition Mat~~).**
6. **~~Outlet or Channel Scour Protection (~~Transition Mat~~) (TM).**
7. **Finishing Adjacent to Special Ditch Control, Turf Reinforcement Mat, Slope Protection Areas, and ~~Outlet or Channel Scour Protection (~~Transition Mat~~).**
8. ~~**Watering of Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Outlet or Channel Scour Protection (Transition Mat).**~~

~~**a.** Provide watering equipment and an approved water supply before starting special ditch control, TRM, slope protection, or TM work. Water the area no later than the day following placement of the materials. If Contractor fails to water by second day following placement a price adjustment will be assessed at a rate of $200.00 per calendar day until the watering has been completed.~~

~~**b.** Apply three additional waterings at intervals of 5 to 8 calendar days. Perform waterings unless notified by Engineer in writing at least 1 calendar day prior to the day watering is to occur. If Contractor fails to complete watering before the 8th calendar day has elapsed, a price, adjustment will be assessed at a rate of $200.00 per calendar day, beginning on the 9th day, until the watering is completed.~~

~~**c.** Ensure waterings are sufficient to thoroughly saturate seedbed to a depth of approximately 2 inches.~~

~~**d.** Each watering may require a maximum of 50 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the seedbed. Complete each watering within a 4 hour period.~~

~~**e.** More than one application for each watering may be necessary to provide adequate saturation without runoff.~~

**2601.03, I, Watering.**

**Add** as a new Article and **renumber** subsequent Articles:

**Watering.**

1. **Watering of Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Transition Mat.**
   - **a.** Provide watering equipment and an approved water supply before starting special ditch control, turf reinforcement mat, slope protection, or transition mat work. Water the area no later than the day following placement of the materials. If Contractor fails to water by second day following placement a price adjustment will be assessed at a rate of $200.00 per calendar day until the watering has been completed.
   - **b.** Apply three additional waterings at intervals of 5 to 8 calendar days. Perform waterings unless notified by Engineer in writing at least 1 calendar day prior to the day watering is to occur. If Contractor fails to complete watering before the 8th calendar day has elapsed, a price, adjustment will be assessed at a rate of $200.00 per calendar day, beginning on the 9th day, until the watering is completed.
   - **c.** Ensure waterings are sufficient to thoroughly saturate seedbed to a depth of approximately 2 inches.
   - **d.** Each watering may require a maximum of 50 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the seedbed. Complete each watering within a 4 hour period.
   - **e.** More than one application for each watering may be necessary to provide adequate saturation without runoff.
2. **Watering Sod.**
   - **1.** Provide watering equipment and an approved water supply before beginning any sodding operation. Six waterings will be required. Allow no more than 1 hour to elapse between laying and initial watering of sod. Perform the second, third, and fourth waterings at 4 calendar day intervals, and fifth and sixth waterings at weekly intervals. Perform waterings unless notified by the Engineer in writing at least 1 calendar day prior to the day the watering is to occur. A price adjustment will be assessed at a rate of $200.00 per day for each calendar day that the Contractor fails to complete the watering from the day watering is to commence.
   - **2.** Ensure waterings are sufficient to thoroughly saturate sod, sodbed, and adjacent disturbed areas to a depth of approximately 4 inches.
   - **3.** Each watering may require a maximum of 100 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the sod. Complete each watering within a 4 hour period. More than one application for each watering may be necessary to provide adequate saturation without runoff.

**2601.04, H.**

**Replace** the Article:

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

**2601.05, A, 12.**

**Replace** the second sentence and **delete** the third sentence:

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

**2601.05, A, 14.**

**Replace** the Article:

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

| | | |
|---|---|---|
| **Reason for Revision:** The mulching requirement is being changed because the weight requirement is outdated. There are many different sizes of tucking equipment on the market today. Stating a minimum weight when one piece of equipment may be eight feet and the other is 24 feet does not ensure that the straw is being tucked properly.<br>The watering specification change is being made to conform with what our typical contracting process is. Eliminating 'incidental watering' watering was requested by the industry. | | |
| **New Bid Item Required (X one)** | **Yes** | **No** |
| **Bid Item Modification Required (X one)** | **Yes X** | **No** |
| **Bid Item Obsoletion Required (X one)** | **Yes** | **No** |
| **Comments:** | | |
| **County or City Comments:** | | |
| **Industry Comments:** | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Greg Mulder / Melissa Serio | **Office:** Construction & Materials | **Item 10** |
| **Submittal Date:** October 19, 2015 | **Proposed Effective Date:** April 19, 2016 | |
| **Article No.:** 2602.04, K.<br>**Title:** Method of Measurement<br>(Water Pollution Control (Soil Erosion)) | **Other:** | |

**Specification Committee Action:** Approved as recommended.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 4/19/2016 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** The District 3 Construction Office worried that there could be some abuse of this revision if an erosion control contractor is mobilized for multiple projects on the same contract within the same location. The committee decided that the Department does not want to do anything that discourages a rapid response to erosion control issues.

**Specification Section Recommended Text:**

**2602.04, K, Mobilizations, Erosion Control.**

**Add** to the end of the Article:

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

**Comments:** Would we be better off clarifying that ECIP's are project specific? It is somewhat hard to tell as there are references to both the contract and project in Section 2602.

Also, should references to "contract" in the rest of Section 2602 be changed to "project"?

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

**2602.04, K.**

**Add** as last sentence:

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

**Reason for Revision:** Needed clarification regarding measurement of Mobilizations, Erosion Control on multi-project contracts.

| | | |
|---|---|---|
| **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 / Mahbub Khoda | **Office:** Construction and Materials | **Item 11** |
| **Submittal Date:** October 23, 2015 | **Proposed Effective Date:** April 2016 | |
| **Article No.:** 4151.07<br>**Title:** Reinforcement Couplers | **Other:** | |

**Specification Committee Action:** Approved as recommended.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 4/19/2016 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** None.

**Specification Section Recommended Text:**
**4151.07, A, Reinforcement Couplers.**

**Replace** Articles A, B, C, and D:

**A. Strength Requirements.**

**1.** ~~Withstand 80,000 cycles of fatigue tensile loading from 5000 psi to 30,000 psi at a maximum frequency of 5 cycles per second.~~ Ultimate Tensile Strength of splice shall be minimum 90% of ultimate tensile strength of reinforcement bars.

**2.** Develop in tension at least 125% of the specified yield strength of the bars being spliced ~~both before and after fatigue loading~~.

**3.** Maximum slip of coupler after being loaded to 30,000 psi tension and unloaded to 3000 psi tension:
- For bar size up to No. 14 (45) - 0.01 inches
- For No. 18 (60) Bars - 0.03 inches

~~**B.** Couplers shall be made of steel conforming to one of the following:~~
- ~~ASTM A 108, Level one or Level two,~~
- ~~ASTM A 519 Grade 1025, or~~
- ~~ASTM A 576.~~

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

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

**Comments:**

**Member's Requested Change (Redline/Strikeout):**
4151.07 Reinforcement Couplers

Mechanical reinforcement couplers may be used when allowed by the contract documents or with the Engineer's approval. Use couplers that meet requirements of Materials I.M. 451 and the following:

A. Strength Requirements.

1. ~~Withstand 80,000 cycles of fatigue tensile loading from 5000 psi to 30,000 psi at a maximum frequency of 5 cycles per second~~. Ultimate Tensile Strength of the splice shall be minimum 90% of ultimate tensile strength of reinforcement bars.

2. Develop in tension at least 125% of the specified yield strength of the bars being spliced. ~~both before and after fatigue loading.~~

3. Maximum slip of coupler after being loaded to 30,000 psi tension and unloaded to 3000 psi tension:

· For bar size up to No. 14 (45) - 0.01 inches

· For No. 18 (60) Bars - 0.03 inches

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

~~· ASTM A 108, Level one or Level two,~~

~~· ASTM A 519 Grade 1025, or~~

~~· ASTM A 576.~~

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

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

**Reason for Revision:** Remove the fatigue requirements and update the spec.

| | | |
|---|---|---|
| **County or City Input Needed (X one)** | **Yes** | **No** X |
| **Comments:** | | |

| | | | | | |
|---|---|---|---|---|---|
| **Industry Input Needed (X one)** | | | **Yes** | **No** X | |
| **Industry Notified:** | **Yes** X | **No** | **Industry Concurrence:** | **Yes** X | **No** |
| **Comments:** | | | | | |

Form 510130 (08-15)

IOWA DOT

## SPECIFICATION REVISION SUBMITTAL FORM

| | | |
|---|---|---|
| **Submitted by:** Brian Smith | **Office:** Design | **Item 12** |
| **Submittal Date:** 10/26/2015 | **Proposed Effective Date:** 4/19/2016 | |
| **Article No.:** 4169.12<br>**Title:** Perimeter and Sediment Control Device | **Other:** | |

**Specification Committee Action:** Approved as recommended.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 4/19/2016 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** The Office of Construction and Materials asked where the 80% of wood excelsior fibers being 6 inches or longer came from and if current products would meet this specification. The Office of Design indicated that all current approved products would meet this specification, but some new proposed products would not and may not provide the same functionality. The Office of Construction and Materials proposed that the 80% requirement be handled at the approval stage and not field verified. Currently, approval is through NTPEP, which may or may not test for the percentage of 6 inch long fibers.

**Specification Section Recommended Text:**

**4169.12, A, 1, b.**

**Replace** the Article:

Sediment logs: Wood excelsior fibers with 80% of the wood excelsior fibers being 6 inches long or longer.

**4169.12, B, 3.**

**Delete** the fourth bulleted item:

- ~~6 inch sediment logs and straw wattles: 0.5 pounds per foot with a tolerance of 0.1 pounds per foot.~~

**Comments:**

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

**4169.12, A, 1, b.**

**Replace** the Article:

Sediment logs: Wood excelsior fibers with 80% of the wood excelsior fibers being six inches long or longer.

**4169.12, B, 3.**

**Delete** the fourth bulleted item:

- ~~6 inch sediment logs and straw wattles: 0.5 pounds per foot with a tolerance of 0.1 pounds per foot.~~

**Reason for Revision:** The change to the description of the sediment logs is being proposed as a result of several new products that have been introduced to the erosion and sediment control industry and to help us further define our specifications to ensure we receive the most efficient product available.

| | | |
|---|---|---|
| The six inch logs and wattles are being eliminated because they are a not an industry standard and have to be specially made for the Iowa DOT. | | |
| **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:** | | |
| **County or City Comments:** | | |
| **Industry Comments:** | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Greg Mulder / Mahbub Khoda | **Office:** Construction and Materials | **Item 13** |
| **Submittal Date:** 2015.10.05 | **Proposed Effective Date:** April 2016 | |
| **Section No.:** 4171<br>**Title:** Detectable Warnings | **Other:** | |

**Specification Committee Action:** Approved as recommended.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 4/19/2016 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** The Office of Local systems asked why the testing agencies no longer performed the test on cast iron and steel products. The Office of Construction and Materials indicated that the cast iron and steel products were too hard and actually wore down the testing machine versus the panels. This led to widely variable results that were not indicative of the panels wear resistance.

**Specification Section Recommended Text:**

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

**Delete** the second bullet:

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

**4171.05, Steel Detectable Warning Panels.**

**Delete** the second bullet:

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

**Comments:**

**Member's Requested Change (Redline/Strikeout):**

**4171.04 CAST IRON DETECTABLE WARNING PANELS.**

Detectable warning panels with truncated dome inserts in cast iron panels shall meet the following requirements:

- Slip resistance - ASTM C 1028 greater than 0.8.
- ~~Wear resistance - ASTM C 501 greater than 8500.~~
- Impact resistance - Resistance to impact from Falling Tub NCHRP Report 670: Draft T4-33, Part II. No Substantial damage.
- Meet Article 4153.04.

**4171.05 STEEL DETECTABLE WARNING PANELS.**

Detectable warning panels with truncated dome inserts in steel panels shall meet the following requirements:

- Slip resistance - ASTM C 1028 greater than 0.8.
- ~~Wear resistance - ASTM C 501 greater than 8500.~~
- Impact resistance - Resistance to impact from Falling Tub NCHRP Report 670: Draft T4-33, Part II. No Substantial damage.
- Meet Article 4153.03.

**Reason for Revision:** Wear resistance - ASTM C 501 determine the loss of weight resulting from abrasion of unglazed ceramic and polymer panels. Although the testing labs performed this test on cast iron and steel but under industry pressure they stopped doing this test on cast iron and steel.

| | | |
|---|---|---|
| **County or City Input Needed (X one)** | **Yes** | **No** X |
| **Comments:** | | |
| **Industry Input Needed (X one)** | **Yes** X | **No** |

| **Industry Notified:** | **Yes** X | **No** | **Industry Concurrence:** | **Yes** | **No** |
|---|---|---|---|---|---|
| **Comments:** | | | | | |

Form 510130 (08-15)

IOWA DOT

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Gary Novey | **Office:** Bridges and Structures | **Item 14** |
| **Submittal Date:** October 26, 2015 | **Proposed Effective Date:** April 2016 | |
| **Article No.:** 4189.05<br>**Title:** Poles, Heads, and Signs | **Other:** | |

**Specification Committee Action:** Approved with changes.

| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 4/19/2016 |
|---|---|---|---|

**Specification Committee Approved Text:**
**4189.05, Poles, Heads, and Signs.**

**Replace** Article A and **renumber** Articles A and B:

**~~A~~ C. Traffic Signal Poles and Mast Arms.**

1. **General.**
   - **a.** Use ~~M~~mast arm length and vertical pole height as specified in the contract documents.
   - **b.** Ensure the mast arms, poles, and supporting bases are galvanized ~~inside and out~~ on both interior and exterior surfaces according to ASTM A 123.
   - **c.** Use ~~C~~continuously tapered, round steel poles of the transformer base type. Fabricate~~d~~ poles from low carbon (maximum carbon 0.30%) steel of U.S. standard gauge.
   - **d.** When a transformer base is not specified, provide a 6 inch by 16 inch handhole in the pole shaft for cable access. Provide a cover for the handhole. Secure the cover to the base with simple tools. ~~Hardware to be~~ Use corrosion resistant hardware.
   - **e.** Ensure minimum yield strength of 48,000 psi after manufacture. Supply base and flange plates of structural steel complying with ~~AASHTO M 183~~ ASTM A 36 and cast steel complying with ASTM A 27, Grade 65-35 or better.
   - **f.** Where a combination street lighting/signal pole is specified in the contract documents, ensure the luminaire arm is ~~to be~~ mounted in the same vertical plane as the signal arm unless otherwise specified. Use a luminaire arm of the single member tapered type ~~arm for the luminaire arm type~~. ~~Equip~~ Fabricate the pole with a minimum 4 inch by 6 inch handhole and cover located opposite the signal mast arm.
   - **g.** If allowed by the Engineer, poles and mast arms may be fabricated by shop welding two sections together, resulting in a smooth joint ~~and factory weld~~ as follows:
     - **1)** Ensure a minimum of 60% penetration for longitudinal butt welds in plates 3/8 inch and less in thickness ~~for longitudinal butt welds~~, except within 1 foot of a transverse butt-welded joint. Ensure a minimum of 80% penetration for longitudinal butt welds in plates over 3/8 inch in thickness.
     - **2)** Ensure 100% penetration for longitudinal butt welds ~~on~~ in poles and arms within 1 foot of a transverse butt-welded joint.
     - **3)** Ensure 100% penetration~~, achieved by~~ for transverse butt welds by using a back-up ring or bar~~, for transverse butt welds for connecting~~ to connect the sections.
     - **4)** Examine ~~100%~~ the full length of all transverse butt welds and 100%

penetration longitudinal butt welds by ultrasonic inspection according to the requirements of ANSI/AWS D1.1~~-80.AH~~.

**5)** Comply with ~~Structural Welding Code AWS D1-180, as modified by AASHTO 1981 Standard Specifications for Welding of Structural Steel Highway Bridges and by Supplemental Specifications No. 969~~ ANSI/AWS D1.1 except as modified by Article 2408.03, B.

**h.** Provide non-shrink grout (complying with Materials I.M. 491.13) or a rodent guard (complying with Materials I.M. 443.01) for placement between the pole base and the foundation.

**2. Pole Design.**

**~~a.~~** Comply with AASHTO ~~1994~~ 2013 Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals. Use a 90 mph basic wind speed with a 50 year mean recurrence interval for strength design. Use Category II for fatigue design. Apply only natural wind gust loads (i.e., do not apply galloping loads, vortex shedding loads, or truck-induced gust loads) for fatigue design. Install vibration mitigation devices on all traffic signal pole mast arms over 60 feet in length as shown in the standard details.

~~**b.** Designed to support the loading necessary for all traffic control equipment. Capable of withstanding winds up to 80 mph with a 1.3 gust factor without failure.~~

**3. Hardware.**

**a.** Equip~~ped~~ poles and mast arms with all necessary hardware and anchor bolts to provide for a complete installation without additional parts.

**b.** Use ~~A~~anchor bolts complying with ASTM F 1554 Grade 105 S5 Class 2A~~,~~; ~~hot-dip galvanized, and~~ threaded to a minimum of 6 inches at one end; and have~~e~~ing a 4 inch long, 90 degree bend at the other end.

**c.** Use ~~W~~washers complying with ASTM F 436 Type 1.

**d.** Use ~~H~~heavy hex nuts complying with ASTM A 563 Grade DH Class 2B.

**e.** Ensure ~~A~~all hardware is made of steel~~,~~ and is hot-dipped galvanized ~~complying with~~ according to ASTM F 2329~~,~~ with a zinc bath temperature limited to 850° F or mechanically galvanized according to ASTM B 695, Class ~~50~~ 55, Type 1~~, or electrodeposited coated of the same coating thickness and designed for this purpose~~.

**~~B~~ D. Traffic Signal Pedestal Poles.**

**Comments:** SUDAS asked if the final sentence of Article 4189.05, C, 2 was necessary, since it indicated something the Contracting Authority might do. The Office of Bridges and Structures indicated that they included the sentence to let the Owner know that it is something they might have to do. The Office of Traffic and Safety pointed out that the Contracting Authority may not be the owner of the traffic signals. This sentence was removed from the revision.

**Specification Section Recommended Text:**

**4189.05, Poles, Heads, and Signs.**

**Replace** the following Articles:

**~~A~~ C. Traffic Signal Poles and Mast Arms.**

**1. General.**

**i.** Use ~~M~~mast arm length and vertical pole height as specified in the contract documents.

**j.** Ensure the mast arms, poles, and supporting bases are galvanized ~~inside and out~~ on both interior and exterior surfaces according to ASTM A 123.

**k.** Use ~~C~~continuously tapered, round steel poles of the transformer base type.

Fabricated poles from low carbon (maximum carbon 0.30%) steel of U.S. standard gauge.

**l.** When a transformer base is not specified, provide a 6 inch by 16 inch handhole in the pole shaft for cable access. Provide a cover for the handhole. Secure the cover to the base with simple tools. ~~Hardware to be~~ Use corrosion resistant hardware.

**m.** Ensure minimum yield strength of 48,000 psi after manufacture. Supply base and flange plates of structural steel complying with ~~AASHTO M 183~~ ASTM A 36 and cast steel complying with ASTM A 27, Grade 65-35 or better.

**n.** Where a combination street lighting/signal pole is specified in the contract documents, ensure the luminaire arm is ~~to be~~ mounted in the same vertical plane as the signal arm unless otherwise specified. Use a luminaire arm of the single member tapered type ~~arm for the luminaire arm type~~. ~~Equip~~ Fabricate the pole with a minimum 4 inch by 6 inch handhole and cover located opposite the signal mast arm.

**o.** If allowed by the Engineer, poles and mast arms may be fabricated by shop welding two sections together, resulting in a smooth joint ~~and factory weld~~ as follows:

**6)** Ensure a minimum of 60% penetration for longitudinal butt welds in plates 3/8 inch and less in thickness ~~for longitudinal butt welds~~, except within 1 foot of a transverse butt-welded joint. Ensure a minimum of 80% penetration for longitudinal butt welds in plates over 3/8 inch in thickness.

**7)** Ensure 100% penetration for longitudinal butt welds ~~on~~ in poles and arms within 1 foot of a transverse butt-welded joint.

**8)** Ensure 100% penetration~~, achieved by~~ for transverse butt welds by using a back-up ring or bar~~, for transverse butt welds for connecting~~ to connect the sections.

**9)** Examine ~~100%~~ the full length of all transverse butt welds and 100% penetration longitudinal butt welds by ultrasonic inspection according to the requirements of ANSI/AWS D1.1~~-80.AH~~.

**10)** Comply with ~~Structural Welding Code AWS D1-180, as modified by AASHTO 1981 Standard Specifications for Welding of Structural Steel Highway Bridges and by Supplemental Specifications No. 969~~ ANSI/AWS D1.1 except as modified by Article 2408.03, B.

**p.** Provide non-shrink grout (complying with Materials I.M. 491.13) or a rodent guard (complying with Materials I.M. 443.01) for placement between the pole base and the foundation.

**2. Pole Design.**

~~**c.**~~ Comply with AASHTO ~~1994~~ 2013 Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals. Use a 90 mph basic wind speed with a 50 year mean recurrence interval for strength design. Use Category II for fatigue design. Apply only natural wind gust loads (i.e., do not apply galloping loads, vortex shedding loads, or truck-induced gust loads) for fatigue design. Install vibration mitigation devices on all traffic signal pole mast arms over 60 feet in length as shown in the standard details. If necessary, the Contracting Authority will post-install vibration mitigation devices on traffic signal pole mast arms 60 feet or less that exhibit a galloping problem.

~~**d.** Designed to support the loading necessary for all traffic control equipment. Capable of withstanding winds up to 80 mph with a 1.3 gust factor without failure.~~

**3. Hardware.**

**f.** Equip~~ped~~ poles and mast arms with all necessary hardware and anchor bolts to provide for a complete installation without additional parts.

**g.** Use ~~A~~anchor bolts complying with ASTM F 1554 Grade 105 S5 Class 2A~~,~~; ~~hot-dip galvanized, and~~ threaded to a minimum of 6 inches at one end; and have~~ing~~ a 4 inch long, 90 degree bend at the other end.

**h.** Use ~~W~~washers complying with ASTM F 436 Type 1.
**i.** Use ~~H~~heavy hex nuts complying with ASTM A 563 Grade DH Class 2B.
**j.** Ensure ~~A~~all hardware is made of steel~~,~~ and is hot-dipped galvanized ~~complying with~~ according to ASTM F 2329~~,~~ with a zinc bath temperature limited to 850 °F or mechanically galvanized according to ASTM B 695, Class ~~50~~ 55, Type 1~~, or electrodeposited coated of the same coating thickness and designed for this purpose~~.

~~B~~ **D. Traffic Signal Pedestal Poles.**

**Comments:**

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

## Section 4189. Traffic Signal Equipment

**4189.05 POLES, HEADS, AND SIGNS.**

**~~A~~C. Traffic Signal Poles and Mast Arms.**

**1. General.**

**q.** Use ~~M~~mast arm length and vertical pole height as specified in the contract documents.
**r.** Ensure the mast arms, poles, and supporting bases are galvanized ~~inside and out~~ on both interior and exterior surfaces according to ASTM A 123.
**s.** Use ~~C~~continuously tapered, round steel poles of the transformer base type. Fabricate~~d~~ poles from low carbon (maximum carbon 0.30%) steel of U.S. standard gauge.
**t.** When a transformer base is not specified, provide a 6 inch by 16 inch handhole in the pole shaft for cable access. Provide a cover for the handhole. Secure the cover to the base with simple tools. ~~Hardware to be~~ Use corrosion resistant hardware.
**u.** Ensure minimum yield strength of 48,000 psi after manufacture. Supply base and flange plates of structural steel complying with ~~AASHTO M 183~~ ASTM A 36 and cast steel complying with ASTM A 27, Grade 65-35 or better.
**v.** Where a combination street lighting/signal pole is specified in the contract documents, ensure the luminaire arm is ~~to be~~ mounted in the same vertical plane as the signal arm unless otherwise specified. Use a luminaire arm of the single member tapered type~~. arm for the luminaire arm type.~~ ~~Equip~~ Fabricate the pole with a minimum 4 inch by 6 inch handhole and cover located opposite the signal mast arm.
**w.** If allowed by the Engineer, poles and mast arms may be fabricated by shop welding two sections together, resulting in a smooth joint ~~and factory weld~~ as follows:
  **11)** Ensure a minimum of 60% penetration for longitudinal butt welds in plates 3/8 inch and less in thickness ~~for longitudinal butt welds~~, except within 1 foot of a transverse butt-welded joint. Ensure a minimum of 80% penetration for longitudinal butt welds in plates over 3/8 inch in thickness.
  **12)** Ensure 100% penetration for longitudinal butt welds ~~on~~ in poles and arms within 1 foot of a transverse butt-welded joint.
  **13)** Ensure 100% penetration for transverse butt welds by using a ~~achieved by~~ back-up ring or bar to connect the sections. ~~, for transverse butt welds for connecting.~~
  **14)** Examine ~~100%~~ the full length of all transverse butt welds and 100% penetration longitudinal butt welds by ultrasonic inspection according to the requirements of ANSI/AWS D1.1~~-80.AH~~.
  **15)** Comply with ~~Structural Welding Code AWS D1-180, as modified by AASHTO 1981 Standard Specifications for Welding of Structural Steel Highway Bridges and by Supplemental Specifications No. 969.~~ ANSI/AWS D1.1 except as modified by Article 2408.03, B.
**x.** Provide non-shrink grout (complying with Materials I.M. 491.13) or a rodent guard (complying with Materials I.M. 443.01) for placement between the pole base and the foundation.

**2. Pole Design.**

**~~e.~~** Comply with AASHTO ~~1994~~ 2013 Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals. Use a 90-mph basic wind speed with a 50-year mean recurrence interval for strength design. Use Category II for fatigue design. Apply only natural wind gust loads (i.e., do not apply galloping loads, vortex shedding loads, or truck-induced gust loads) for fatigue design. Install vibration mitigation devices on all traffic signal pole mast arms over 60 feet in length as shown in the standard details. If necessary, the Contracting Authority will post-install vibration mitigation devices on traffic signal pole mast arms 60 feet or less that exhibit a galloping problem.

~~**f.** Designed to support the loading necessary for all traffic control equipment. Capable of withstanding winds up to 80 mph with a 1.3 gust factor without failure.~~

**3. Hardware.**

**k.** Equip~~ped~~ poles and mast arms with all necessary hardware and anchor bolts to provide for a complete installation without additional parts.

**l.** Use ~~A~~anchor bolts complying with ASTM F 1554 Grade 105 S5 Class 2A~~,~~; ~~hot-dip galvanized, and~~ threaded to a minimum of 6 inches at one end; and hav~~e~~ing a 4-inch long, 90-degree bend at the other end.

**m.** Use ~~W~~washers complying with ASTM F 436 Type 1.

**n.** Use ~~H~~heavy hex nuts complying with ASTM A 563 Grade DH Class 2B.

**o.** Ensure ~~A~~all hardware is made of steel~~,~~ and is hot-dipped galvanized ~~complying with~~ according to ASTM F 2329~~,~~ with a zinc bath temperature limited to 850$^{O}$F or mechanically galvanized according to ASTM B 695, Class ~~50~~55, Type 1~~,~~. or ~~electrodeposited coated of the same coating thickness and designed for this purpose.~~

**~~B~~D. Traffic Signal Pedestal Poles.**

[The Specification Section should review this article and make appropriate modifications to conform with the imperative mood and active voice writing style described in the Preface of the Iowa DOT *Standard Specifications*.]

**Reason for Revision:** Article 4189.05, C, 2 currently references the AASHTO 1994 *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals* (LTS-3). LTS-3 is over 20-years old and does not give detailed guidance for fatigue design. The AASHTO 2013 *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals* (LTS-6) gives detailed fatigue design guidance. The AASHTO 2015 *LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals* (LTSLRFD-1) also gives fatigue design guidance and is more current than LTS-6, but the Iowa DOT is not aware of any other state that has officially adopted the use of LTSLRFD-1.

Article 4189.05, C, 3, e currently allows steel hardware to be electroplated, but requires the zinc to be of the same coating thickness as for the hot-dipped galvanized and mechanically galvanized methods. This would require a minimum electroplated-coating thickness of 53 μm, which is not practical.

Other parts of Articles 4189.05, C and 4189.05, D were revised to update references to other design specifications, improve clarity, and to conform with the imperative mood and active voice writing style.

| | | |
|---|---|---|
| **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 15** |
| **Submittal Date:** September 28, 2015 | **Proposed Effective Date:** APR 2016 | |
| **Article No.:** 4196.01, B, 6<br>**Title:** Bridge Abutment Backfill Fabric | **Other:** | |

**Specification Committee Action:** Approved with changes.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 4/19/2016 |

**Specification Committee Approved Text:**

**4196.01, B, 6, Bridge Abutment Backfill Fabric.**

**Replace** Table 4196.01-6:

**Table 4196.01-6: Fabric for use in bridge abutment backfill**

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

**Comments:** The District 4 Materials Office pointed out that the tensile strength in the table is a minimum value, so this was indicated as such.

**Specification Section Recommended Text:**

4196.01, B, 6, Bridge Abutment Backfill Fabric.

Replace Table 4196.01-6:

**Table 4196.01-6: Fabric for use in bridge abutment backfill**

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

**Comments:**

**6. Bridge Abutment Backfill Fabric.**

Use engineering fabric having properties listed in Table 4196.01-6.

**Table 4196.01-6: Fabric for use in bridge abutment backfill**

| Property | Value | Test Method |
|---|---|---|
| Tensile Strength (at 5% Strain) | 1356 lbs/ft (19.8 kN/m) | ASTM D 4595 |
| Apparent opening size (AOS) (MAX) | US Sieve #40 (0.43 mm) | ASTM D 4751 |
| UV resistance (at 500 hours) | 70% retained strength | ASTM D 4355 |
| Flow Rate (MAX) | 20 ~~18~~ gal./min./ft$^2$ (733 L/min./m$^2$) | ASTM D 4491 |

**Reason for Revision:** Needed to clarify the spec. A small change to the values in the Table 4196.01-6.

| | | |
|---|---|---|
| **County or City Input Needed (X one)** | **Yes** | **No** X |

| | | | | | |
|---|---|---|---|---|---|
| **Comments:** | | | | | |
| **Industry Input Needed (X one)** | | | **Yes** | **No** x | |
| **Industry Notified:** | **Yes** | **No** x | **Industry Concurrence:** | **Yes** | **No** x |
| **Comments:** | | | | | |

Form 510130 (08-15)

IOWA DOT

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Greg Mulder | **Office:** Construction and Materials | **Item 16** |
| **Submittal Date:** 9/23/2015 | **Proposed Effective Date:** February 2016 | |
| **Article No.:**<br>**Title:** | **Other:** DS-15025, High Performance Thin Lift Overlay | |

**Specification Committee Action:** Approved as recommended.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 2/16/2016 |

**Specification Committee Approved Text:** See attached Developmental Specifications for High Performance Thin Lift Overlay.

**Comments:** None.

**Specification Section Recommended Text:** See attached Draft Developmental Specifications for High Performance Thin Lift Overlay.

**Comments:**

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

**A. Asphalt Binder.**

Use a PG 76-34 with a minimum percent recovery of 90% when tested at 64°C per AASHTO T 350 at 3.2 kPa. ~~See Table 4137.01-1 in the Standard Specifications for test temperature.~~

**B. Mix Design.**

**1.** ~~See Materials I.M. 510 Appendix A.~~

| | |
|---|---|
| Design Gyrations | 50 |
| Design Target (%Gmm) | 3.0 |
| Film Thickness | 8.0 – 13.0 |
| Aggregate Quality | A |
| Crushed Content (minimum) | 50% |
| FAA (minimum) | 40 |
| Sand Equivalency (minimum) | 50 |
| VMA (minimum) | 16% |

**2.** ~~50% of the total aggregate shall be Friction Type 4 for non-interstate roadways, and Friction Type 2 for interstate roadways.~~

**Friction Aggregate**

| | |
|---|---|
| Interstates | minimum 30% of Total Aggregate shall be Type 2 or better |
| Non-Interstates | minimum 50% of Total Aggregate shall be Type 4 or better |

**3.** ~~Mix approval is based on Performance Testing Requirements per Table 5 in Materials I.M. 510 Appendix A.~~

**Hamburg Testing (AASHTO T324)**

Compact to 3.5% air voids. No more than 8 mm rutting in the first 8,000 passes.

**4.** Do not use ~~RAP~~ more than 15.0% binder replacement.

**5. Gradation**

| Sieve Size | Min % Passing | Max % Passing |
|---|---|---|
| 1 ½ | | |
| 1 inch | | |
| 3/8 inch | 91 | 100 |
| #4 | | 90 |

| | | |
|---|---|---|
| #8 | 27 | 63 |
| #16 | | |
| #30 | | |
| #50 | | |
| #100 | | |
| #200 | 2 | 10 |

**15025.03 CONSTRUCTION.**

**A.** Apply tack coat prior to placement of thin lift overlay using a trackless product approved on AASHTO's Product Evaluation Listing (APEL).

**B.** Pave when ambient temperatures are at least 60ºF and rising

**C.** Compact with steel wheeled roller.

**D.** Do not open to traffic until the entire mat has cooled below 150°F.

**E. Quality Assurance/Quality Control.**

**1. Field Voids Acceptance.**
Acceptance for field voids shall be Class II compaction defined in Section 2303 of the Standard Specifications.

**2. Lab Voids Acceptance.**
Sample from windrow or hopper. ~~Sample and test one hot box per day of production unless otherwise approved by the Engineer.~~ Apply Article 2303.05, A, 3, a, 2, of the Standard Specifications for AAD acceptance. Air void target is based on approved JMF.

**3.** Take at least one cold feed for gradation control each day of production.

**15025.04 METHOD OF MEASUREMENT.**
Hot Mix Asphalt Thin Lift Overlay~~, of the size specified~~, will be measured according to Article 2303.04 of the Standard Specifications.

**15025.05 BASIS OF PAYMENT.**
Hot Mix Asphalt Thin Lift Overlay~~, of the size specified~~, will be paid for according to Article 2303.05 of the Standard Specifications.

**Reason for Revision:** General rewrite to contain mix design info within the DS. Reduce friction requirement for L-2. Increase air voids. Update hamburg testing requirements. Identify sampling point for lab voids.

| | | |
|---|---|---|
| **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:** Currently only one bid item exists. Due to aggregate cost differences between interstates and non-interstates, two bid items should be created and replace the existing single item. One for L-2 and one for L-4 friction.

**County or City Comments:**

**Industry Comments:** Industry in support

**DS-15037**
**(Replaces DS-15025)**

**DEVELOPMENTAL SPECIFICATIONS**
**FOR**
**HIGH PERFORMANCE THIN LIFT OVERLAY**

**Effective Date**
**February 20, 2016**

**THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMANTAL SPECIFICATIONS AND THEY PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.**

**15037.01 DESCRIPTION.**
These specifications describe requirements for a highly polymer modified asphalt thin lift surface course. Apply Section 2303 of the Standard Specifications unless otherwise directed in these specifications.

**15037.02 MATERIALS.**

**A. Asphalt Binder.**
Use PG 76-34 with a minimum percent recovery of 90% when tested at 64°C per AASHTO T 350 at 3.2 kPa. ~~See Table 4137.01-1 in the Standard Specifications for test temperature.~~

**B. Mix Design.**

**1.** ~~See Materials I.M. 510 Appendix A.~~

| | |
|---|---|
| Design Gyrations | 50 |
| Design Target (%Gmm) | 3.0 |
| Film Thickness | 8.0 – 13.0 |
| Aggregate Quality | A |
| Crushed Content (minimum) | 50% |
| FAA (minimum) | 40 |
| Sand Equivalency (minimum) | 50 |
| VMA (minimum) | 16% |

**2.** ~~50% of the total aggregate shall be Friction Type 4 for non-interstate roadways, and Friction Type 2 for interstate roadways.~~
**Friction Aggregate.**

| | |
|---|---|
| Interstates | minimum 30% of Total Aggregate shall be Type 2 or better |
| Non-Interstates | minimum 50% of Total Aggregate shall be Type 4 or better |

**3.** ~~Mix approval is based on Performance Testing Requirements per Table 5 in Materials I.M. 510 Appendix A.~~
**Hamburg Testing (AASHTO T324).**
Compact to 3.5% air voids. No more than 8 mm rutting in the first 8000 passes.

**4.** Do not use ~~RAP~~ more than 15.0% binder replacement.

**5. Gradation.**

| Sieve Size | Min % Passing | Max % Passing |
|---|---|---|
| 1 ½ | | |
| 1 inch | | |
| 3/8 inch | 91 | 100 |
| #4 | | 90 |
| #8 | 27 | 63 |
| #16 | | |
| #30 | | |
| #50 | | |
| #100 | | |
| #200 | 2 | 10 |

**15037.03 CONSTRUCTION.**

**A.** Apply tack coat prior to placement of thin lift overlay using a trackless product approved on AASHTO's Product Evaluation Listing (APEL).

**B.** Pave when ambient temperatures are at least 60ºF and rising

**C.** Compact with steel wheeled roller.

**D.** Do not open to traffic until the entire mat has cooled below 150°F.

**E. Quality Assurance/Quality Control.**

**1. Field Voids Acceptance.**
Acceptance for field voids shall be Class II compaction defined in Section 2303 of the Standard Specifications.

**2. Lab Voids Acceptance.**
Sample ~~and test one hot box per day of production unless otherwise approved by the Engineer~~ from windrow or hopper. Apply Article 2303.05, A, 3, a, 2, of the Standard Specifications for AAD acceptance. Air void target is based on approved JMF.

**3.** Take at least one cold feed for gradation control each day of production.

**15037.04 METHOD OF MEASUREMENT.**
Hot Mix Asphalt Thin Lift Overlay~~, of the size specified,~~ will be measured according to Article 2303.04 of the Standard Specifications.

**15037.05 BASIS OF PAYMENT.**
Hot Mix Asphalt Thin Lift Overlay~~, of the size specified,~~ will be paid for according to Article 2303.05 of the Standard Specifications.

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Greg Mulder / Scott Schram | **Office:** Construction & Materials | **Item 17** |
| **Submittal Date:** 2015.10.02 | **Proposed Effective Date:** April 2016 GS | |
| **Article No.:** 2320.03, A<br>**Title:** Polymer-Modified Microsurfacing | **Other:** | |

**Specification Committee Action:** Approved with changes.

| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 4/19/2016 |
|---|---|---|---|

**Specification Committee Approved Text:**

**2320.03, A, 1.**

**Replace** the Article:

**1. Machinery.**

**a. Self-propelled Machine.**

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

**b. Truck-mounted Machines.**

**1)** Use truck-mounted machines specifically designed and manufactured to perform microsurfacing work. The machine shall supply a consistent amount of material to all parts of the spreader box to ensure complete and uniform coverage.

**2)** Operate a minimum of two truck-mounted machines. Cycle these truck-mounted units so mixture production is never delayed more than 15 minutes. Control forward speed of truck in a manner resulting in a uniform spread rate of material. If there is noncompliance with these requirements, stop production and make appropriate adjustments to the operation.

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

**Comments:** The Office of Local Systems asked if truck-mounted machines were required. The Office of Construction and Materials stated that the truck-mounted machines were an option in addition to the self-propelled machines. The revision was rewritten to make this clear.

**Specification Section Recommended Text:**

**2320.03, A, Equipment.**

**Add** the Article:

**9.** Use truck-mounted machines, if specifically designed and manufactured to perform microsurfacing work. The machine must supply a consistent amount of material to all parts of the spreader box to ensure complete and uniform coverage.

Operate a minimum of two truck-mounted machines at all times. Cycle these truck-mounted units so that mixture production is never delayed more than 15 minutes. Control the forward speed of the truck in a manner which results in a uniform spread rate of material. If at any time there is noncompliance with these requirements, stop production

and make appropriate adjustments to the operation.

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

**Comments:**

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

**2320.03 CONSTRUCTION.**

**A. Equipment.**

**9.** Use truck-mounted machines, if specifically designed and manufactured to perform microsurfacing work. The machine must supply a consistent amount of material to all parts of the spreader box to ensure complete and uniform coverage.

Operate a minimum of two truck-mounted machines at all times. Cycle these truck-mounted units so that mixture production is never delayed more than 15 minutes. Control the forward speed of the truck in a manner which results in a uniform spread rate of material. If at any time there is noncompliance with these requirements, stop production and make appropriate adjustments to the operation.

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

**Reason for Revision:** Change specification to allow use of truck-mounted batch type machines, to stay current with modern equipment and state of the practice for microsurfacing.

| **County or City Input Needed (X one)** | **Yes** | **No** X |
|---|---|---|

**Comments:** Truck-mounted equipment has been successfully used in other states, and on several large county microsurfacing projects in Iowa.

| **Industry Input Needed (X one)** | | | **Yes** X | **No** | |
|---|---|---|---|---|---|
| **Industry Notified:** | **Yes X** | **No** | **Industry Concurrence:** | **Yes** X | **No** |

**Comments:** Industry initially requested a specification change to allow truck-mounted units. The proposed specification revision has been reviewed by microsurfacing industry representatives.

Form 510130 (08-15)

IOWA DOT

## SPECIFICATION REVISION SUBMITTAL FORM

| | | |
|---|---|---|
| **Submitted by:** Greg Mulder | **Office:** Construction and Materials | **Item 18** |
| **Submittal Date:** Nov. 10, 2015 | **Proposed Effective Date:** April 2016 | |
| **Article No.:** Article 4127.02<br>**Title:** Aggregate for Hot Mix Asphalt | **Other:** | |

**Specification Committee Action:** Approved as recommended.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/12/2015 | **Effective Date:** 4/19/2015 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** The Office of Construction and Materials indicated that this does not come into play often, but absorption determined by Materials I.M. 380 is more appropriate for aggregate for asphalt.

**Specification Section Recommended Text:**

**4127.02, Coarse Aggregate.**

**Replace** Table 4127.02-1:

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

| Coarse Aggregate Quality | Type A Maximum % | Type B Maximum % | | Test Method |
|---|---|---|---|---|
| | | Primary | Other | |
| Abrasion | 45 | 45 | 45 | AASHTO T 96 |
| Absorption[(a)] | 6.0 | 6.0 | 6.0 | Iowa DOT Materials Laboratory Test Method No. 201 |
| Alumina[(b)] | 0.7 | 1.5 | 2.5 | Iowa DOT Materials Laboratory Test Method No. 222 |
| A Freeze | 10 | 25 | 45 | Iowa DOT Materials Laboratory Test Method No. 211, Method A |
| C Freeze | N/A | 10 | 10 | Iowa DOT Materials Laboratory Test Method No. 211, Method C |
| Clay Lumps/Friable Particles | 0.5 | N/A | N/A | Materials I.M. 368 |
| Organic Material | 0.01 | 0.01 | 0.01 | Iowa DOT Materials Laboratory Test Method No. 215 |

(a) When a coarse aggregate for use in asphalt fails absorption using Iowa DOT Materials Laboratory Test Method No. 201; absorption determined by Materials I.M. 380 (Vacuum-saturated specific gravity & absorption) will be used.

(b) If the Alumina value fails, determine the A Freeze value for specification compliance. Iowa DOT Materials Laboratory Test Method No. 222 does not apply to gravel.

**Comments:**

**Member's Requested Change:** Action: Add footnote (a).

**4127.02 COARSE AGGREGATE.**

Meet the requirements of Table 4127.02-1:

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

| Coarse Aggregate Quality | Type A Maximum % | Type B Maximum % | | Test Method |
|---|---|---|---|---|
| | | Primary | Other | |
| Abrasion | 45 | 45 | 45 | AASHTO T 96 |
| Absorption[(a)] | 6.0 | 6.0 | 6.0 | Iowa DOT Materials Laboratory Test Method No. 201 |
| Alumina[(b)] | 0.7 | 1.5 | 2.5 | Iowa DOT Materials Laboratory Test Method No. 222 |
| A Freeze | 10 | 25 | 45 | Iowa DOT Materials Laboratory Test Method No. 211, Method A |
| C Freeze | N/A | 10 | 10 | Iowa DOT Materials Laboratory Test Method No. 211, Method C |
| Clay Lumps/Friable Particles | 0.5 | N/A | N/A | Materials I.M. 368 |
| Organic Material | 0.01 | 0.01 | 0.01 | Iowa DOT Materials Laboratory Test Method No. 215 |

(a) When a coarse aggregate for use in HMA fails absorption using Iowa DOT Materials Laboratory Test Method No. 201; absorption determined by Materials IM 380 (Vacuum-saturated specific gravity & absorption) will be used.

(b) If the Alumina value fails, determine the A Freeze value for specification compliance. Iowa DOT Materials Laboratory Test Method No. 222 does not apply to gravel.

**Reason for Revision:** Absorption determined by Materials IM 380 which requires drying before determining absorption better simulates HMA production. Iowa Test No 201 which is dried after weighing is more appropriate for saturated PCC aggregate testing.

| | | |
|---|---|---|
| **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:** Industry concurs. | | |