Iowa Department of Transportation

MINUTES
OF
IOWA D.O.T. SPECIFICATION COMMITTEE MEETING

September 8, 2011

Members Present:	Jim Berger	Office of Materials
	Donna Buchwald	Office of Local Systems
	Eric Johnsen, Secretary	Specifications Section
	Bruce Kuehl	District 6 - Construction
	Deanna Maifield	Office of Design
	Doug McDonald	District 1 - Marshalltown RCE
	Gary Novey	Office of Bridges & Structures
	Dan Redmond	District 4 - Materials
	Tom Reis, Chair	Specifications Section
	John Smythe	Office of Construction
	Willy Sorensen	Office of Traffic & Safety
Members Not Present:	Roger Bierbaum	Office of Contracts
	John Selmer	Statewide Operations Bureau
Advisory Members Present:	Joe Jurasic	FHWA
Others Present:	Chris Poole	Design
	Scott Schram	Materials

Tom Reis, Specifications Engineer, opened the meeting. The following items were discussed in accordance with the revised agenda dated September 7, 2011:

1. Article 2214.03, D, 5, Limitations (Pavement Scarification).

The Specifications Section requested changes to replace vertical panels with 42 inch (1050 mm) channelizers for pavement scarification traffic control.

2. Article 2214.03, D, 7, Limitations (Pavement Scarification)
Article 2214.05, Basis of Payment (Pavement Scarification).

The Office of Construction requested changes to the patching requirements for taking pavement scarification samples.

3. Article 2602.03, Construction (Water Pollution Control (Soil Erosion)).

The Office of Construction requested changes to clarify submittal of an Erosion Control Implementation Plan and define the ECIP as a living document.

4. Article 4196.01, General Requirements (Engineering Fabrics).

The Office of Materials requested changes to the testing requirements and methods for engineering fabrics.

5. DS-09060, Floating Silt Curtain.

The Specifications Section requested changes to the Developmental Specifications for Floating Silt Curtain.

6. **DS-090XX, High Build Waterborne Paint Pavement Markings**.

The Office of Traffic & Safety requested approval of Developmental Specifications for High Build Waterborne Paint Pavement Markings.

7. **SS-090XX, Mobilization for Erosion Control**.

The Office of Construction requested changes to the Supplemental Specifications for Mobilization for Erosion Control.

8. **DS-090XX, On-Call Contracting for High Tension Cable Guardrail Repair**.

The Office of Contracts requested approval of Developmental Specifications for On-Call Contracting for High Tension Cable Guardrail Repair.

9. **SS-090XX, Flexible Paving Mixtures**.

The Office of Materials requested approval of Supplemental Specifications for Flexible Paving Mixtures.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Tom Reis / Eric Johnsen	**Office:** Specifications	**Item 1**
Submittal Date: 8/22/2011	**Proposed Effective Date:** April 2012	
Article No.: 2214.03, D, 5 **Title:** Limitations (Pavement Scarification)	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 9/8/2011	**Effective Date:** 4/17/2012

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: The Office of Traffic and Safety asked if this was the only use of "vertical panels" in the spec. book. The Specifications Section explained that the spec. book was searched when the use of vertical panels was discontinued, so this should be the only instance remaining.

Specification Section Recommended Text:

2214.03, D, 5.

Replace the last three sentences of the Article:

Mark the drop-off with ~~vertical panels~~ 42 inch (1050 mm) channelizers. Place the ~~panels~~ channelizers at 150 foot (45 meter) intervals in rural areas and at 50 foot (15 m) intervals in urban areas. Use a minimum of three ~~vertical panels~~ channelizers at each drop-off location.

Comments: This revision was recommended by the Office of Construction.

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

Reason for Revision: Vertical panels are no longer used.

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

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Jeff Schmitt	**Office:** Construction	**Item 2**
Submittal Date: August 24, 2011	**Proposed Effective Date:** April 2012 GS	
Article No.: 2214.03, D, 7 **Title:** Limitations (Pavement Scarification) **Article No.:** 2214.05 **Title:** Basis of Payment (Pavement Scarification)	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 9/8/2011	**Effective Date:** 4/17/2012

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: None.

Specification Section Recommended Text:

2214.03, D, 7.

Replace the second sentence:

Patch these areas after scarifying, when necessary.

2214.05, Basis of Payment.

Replace the fourth sentence:

Payment for scarifying will not include areas scarified to obtain preliminary samples~~,~~. ~~but~~ ~~p~~Patching of these areas, when necessary, will be ~~included with patching for payment~~ considered incidental to Pavement Scarification.

Comments:

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

Revise the second sentence of Article 2214.03, D, 7:

7. Preliminary scarifying may be done to obtain representative samples. Patch these areas after scarifying, when necessary. Patching should be done daily. Complete patching necessary to bring the scarified surface to the tolerance specified within 2 working days of the scarifying operation. Additional patching may be necessary to maintain this temporary surface.

Revise the last sentence of Article 2214.05:

2214.05 BASIS OF PAYMENT.

Payment for scarifying will not include areas scarified to obtain preliminary samples~~,~~. ~~but p~~Patching of these areas, when necessary,will be ~~included with patching for payment~~ considered incidental to Pavement Scarification.

Reason for Revision: Variations in procedures used to obtain representative scarification samples have resulted in situations where patching is not required, which has led to conflicts in specification interpretation. By making patching incidental, all situations will be treated consistently.

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**	**No**
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Melissa Serio	**Office:** Construction	**Item 3**
Submittal Date: August 24, 2011	**Proposed Effective Date:** April 17, 2012	
Article No.: 2602.03 **Title:** Water Pollution Control (Soil Erosion), Construction	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 9/8/2011	**Effective Date:** 4/17/2012

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: None.

Specification Section Recommended Text:

2602.03, Construction.

Replace Articles A and B:

A. ~~At~~ Prior to the preconstruction conference ~~or prior to the start of construction~~, ~~submit for acceptance~~ furnish the Engineer ~~the work plans and schedules~~ initial Erosion Control Implementation Plan (ECIP) for accomplishment of temporary and permanent erosion control. In addition, ~~submit for acceptance~~ furnish the proposed method of erosion control on haul roads and borrow pits as well as the plan for the removal of excess materials from the project.

B. Obtain the Engineer's ~~approval~~ acceptance for ~~erosion control schedules the~~ ECIP and methods before commencing work. Schedule and perform all operations so erosion control features are placed according to ~~the approved work plan~~ accepted ECIP. Update ECIP as needed to address changes in schedule of operations or staging, weather changes, or other changes required in order to comply with applicable permit requirements.

Comments:

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

A. Prior to ~~At~~ the preconstruction conference ~~or prior to the start of construction~~, furnish to the Engineer ~~submit for acceptance~~ the initial Erosion Control Implementation Plan (ECIP) ~~work plans and schedules~~ for accomplishment of temporary and permanent erosion control. In addition, furnish ~~submit for acceptance~~ the proposed method of erosion control on haul roads and borrow pits as well as the plan for the removal of excess materials from the project.

B. Obtain the Engineer's acceptance ~~approval~~ for the ECIP ~~erosion control schedules~~ and methods before commencing work. Schedule and perform all operations so erosion control features are placed according to the accepted ECIP ~~approved work plan~~. Update the ECIP as needed to address changes in schedule of operations or staging, weather changes, or any other changes required in order to comply with applicable permit requirements.

Reason for Revision: Change reference of "work plan and schedule" to ECIP. Characterize the ECIP as a "living document" by referencing to initial ECIP and updates as required.

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: Discussed at AGC/IaDOT Erosion Control Task Force meeting held 8/9/11.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger	**Office:** Materials	**Item 4**
Submittal Date: August 24, 2011	**Proposed Effective Date:** April 2012	
Article No.: 4196.01 **Title:** General Requirements (Engineering Fabrics)	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 9/8/2011	**Effective Date:** 4/17/2012

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: None.

Specification Section Recommended Text:

4196.01, B, 1, b.

Replace Table 4196.01-1: Silt Fencing Fabric Properties:

Table 4196.01-1: Silt Fencing Fabric Properties

Property	Value	Test Method No.
Grab Strength, dry, minimum average ~~full~~ fill direction run direction[a]	100 lbs. (445 N) 150 lbs. (667 N)	~~Iowa 913~~ ~~Iowa 913~~ ASTM D 4632
~~Grab strength, after 500 hr. in a QUV weatherometer with a cycle of 4 hr. UV @ 60°C and 4 hr. COND @ 40°C, minimum average value in either principal direction[a]~~ Ultraviolet Stability(Retained Strength)	~~50 lbs. (222 N)~~ 70%	~~Iowa 913~~ ASTM D 4355
~~Filtering Efficiency[b]~~ ~~Flow Time, maximum minutes~~ Permittivity	~~25 - 50%~~ ~~15~~ 0.05	~~Iowa 909~~ ~~Iowa 909~~ ASTM D 4491
Apparent Opening Size, maximum	US mesh 30 (600 µm)	ASTM D 4751

(a) When plastic net reinforcing is used, ensure the minimum average grab strength requirement for fabric, before and after accelerated weathering, is 100 pounds (445 N) and 35 pounds (155 N), respectively. Apply the grab strength to both the fill and run direction.

~~(b) Fabrics that do not meet the minimum filtering efficiency requirement may be approved for trial use on specific projects. Approval will be based on acceptable field performance. Fabric exceeding the maximum filtering efficiency will not be considered.~~

4196.01, B, 2.

Replace Table 4196.01-2: Fabric for use in Subsurface Drains:

Table 4196.01-2: Fabric for use in Subsurface Drains

Property	Value	Test Method
Grab strength, dry, minimum average value in either principal direction	90 lbs. (400 N)	~~Iowa 913~~ ASTM D 4632
Elongation, dry, minimum average value in either principal direction	20%	~~Iowa 913~~ ASTM D 4632
~~Water Permeability, K~~ Permittivity	0.02 - 0.30	~~Iowa 911~~ ASTM D 4491
Apparent Opening Size, ~~minimum~~ maximum	US mesh 40 (450 µm)	~~Corps of Engineers W-02215~~ ASTM D 4751

4196.01, B, 3.

Replace Table 4196.01-3: Fabric for use under Erosion Stone:

Table 4196.01-3: Fabric for use under Erosion Stone

Property	Value	Test Method
Grab strength, dry, minimum average value in either principal direction	150 lbs. (667 N)	~~Iowa 913~~ ASTM D 4632
Elongation, dry, minimum average value in either principal direction	20%	~~Iowa 913~~ ASTM D 4632
~~Water Permeability, K~~ Permittivity	0.02 - 0.30	~~Iowa 911~~ ASTM D 4491
Apparent Opening Size, ~~minimum~~ maximum	US mesh 40 (450 µm)	~~Corps of Engineers W-02215~~ ASTM D 4751

4196.01, B, 4.

Replace Table 4196.01-4: Fabric Placed under Asphalt Mixtures:

Table 4196.01-4: Fabric Placed under Asphalt Mixtures

Property	Value	Test Method
Grab strength, dry, minimum average value in either principal direction	90 lbs. (400 N)	~~Iowa 913~~ ASTM D 4632
Elongation, dry, minimum average value in either principal direction	20%	~~Iowa 913~~ ASTM D 4632
Grab Strength after 400°F (204°C) for 3 hr.[(a)] minimum average value in either principal direction	75 lbs. (335 N)	~~Iowa 913~~ ASTM D 4632
(a) Applies only when asphalt temperatures exceeding 300°F (149°C) are anticipated.		

Comments:

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

Section 4196. Engineering Fabrics

4196.01 GENERAL REQUIREMENTS.

A. Meet the following requirements for engineering fabrics (known as geotextiles):

1. Permeable, synthetic textile materials suitable for use with soil, rock, or other geotechnical engineering related materials as an integral part of a highway project, structure, or system.

2. Mildew, rot, insect, and rodent resistant.

3. Inert to commonly encountered chemicals found in soil.

4. During all periods of shipment and storage, the fabric is maintained by wrapping in a heavy duty protective covering to protect the fabric from direct sunlight, ultraviolet rays, mud, dirt, dust, and debris.

5. Free of defects or flaws which significantly affect its physical properties.

B. Comply with Materials I.M. 496.01 for inspection and acceptance of engineering fabrics. Label each roll of fabric in a shipment with a number or symbol to identify the production run. Meet the following additional fabric requirements for the specific applications:

1. Silt Fencing.

a. Meet the following requirements:

1) Woven material with a minimum width of 36 inches (0.9 m).

2) Top edge of the fabric hemmed or modified otherwise so that a braided cord or woven belt can be suitably attached for loop tying to fence posts.

3) The cord or belt of minimum tensile strength of 150 pounds (670 N).

4) Fabric and any reinforcing plastic netting contains or is treated with ultraviolet stabilizers, sufficient to prevent damaging deterioration for 2 years of outdoor exposure.

5) Has the properties listed in Table 4196.01-1.

b. The fabric may be reinforced with plastic netting of nominal 3/4 inch (19 mm) strand spacing and a minimum three strand grab strength of 40 pounds (180 N) and 15 pounds (70 N) after the same accelerated weathering as required for the fabric. Fabric that is reinforced in this manner may have lower grab strengths as indicated.

Table 4196.01-1: Silt Fencing Fabric Properties

Property	Value	Test Method No.
Grab Strength, dry, minimum average ~~fill~~ ~~full~~ direction run direction[(a)]	100 lbs. (445 N) 150 lbs. (667 N)	ASTM D 4632 ~~Iowa 913~~ ~~Iowa 913~~
~~Grab strength, after 500 hr. in a QUV weatherometer with a cycle of 4 hr. UV @ 60°C and 4 hr. COND @ 40°C, minimum average value in either principal direction[(a)]~~ Ultraviolet Stability(Retained Strength)	~~50 lbs. (222 N)~~ 70%	~~Iowa 913~~ ASTM D4355
~~Filtering Efficiency[(b)]~~ ~~Flow Time, maximum minutes~~ Permittivity. Apparent opening size.(Max)	~~25 - 50%~~ ~~15~~ 0.05 0.60 mm	~~Iowa 909~~ ~~Iowa 909~~ ASTM D 4491 ASTM D4751

(a) When plastic net reinforcing is used, ensure the minimum average grab strength requirement for fabric, before and after accelerated weathering, is 100 pounds (445 N) and 35 pounds (155 N), respectively. Apply the grab strength to both the fill and run direction.

~~(b) Fabrics that do not meet the minimum filtering efficiency requirement may be approved for trial use on specific projects. Approval will be based on acceptable field performance. Fabric exceeding the maximum filtering efficiency will not be considered.~~

2. Subsurface Drainage.

In subsurface drains, use fabric that:

- Is capable of withstanding normal installation stresses, and
- Has the properties listed in Table 4196.01-2.

Table 4196.01-2: Fabric for use in Subsurface Drains

Property	Value	Test Method
Grab strength, dry, minimum average value in either principal direction	90 lbs. (400 N)	~~Iowa 913~~ ASTM D 4632
Elongation, dry, minimum average value in either principal direction	20%	~~Iowa 913~~ ASTM D 4632
~~Water Permeability, K~~ Permittivity	0.02 - 0.30	~~Iowa 911~~ ASTM D 4491
Apparent Opening Size, ~~minimum~~ (Maximum)	US mesh 40 (450 µm)	~~Corps of Engineers W-02215~~ ASTM D 4751

3. Embankment Erosion Control.

Under erosion stone or gabions used for embankment or erosion control, use fabric that:

- Is capable of withstanding normal installation stresses, and
- Has the properties listed in Table 4196.01-3.

Table 4196.01-3: Fabric for use under Erosion Stone

Property	Value	Test Method
Grab strength, dry, minimum average value in either principal direction	150 lbs. (667 N)	~~Iowa 913~~ ASTM D 4632
Elongation, dry, minimum average value in either principal direction	20%	~~Iowa 913~~ ASTM D 4632
~~Water Permeability, K~~ Permittivity	0.02 - 0.30	~~Iowa 911~~ ASTM D 4491
Apparent Opening Size, ~~minimum~~ (Maximum)	US mesh 40 (450 µm)	~~Corps of Engineers W-02215~~ ASTM D 4751

4. Asphalt Overlay Fabric.

a. When placing fabric under asphalt mixtures to provide waterproofing and delay reflective cracking, ensure the fabric:
- Is capable of withstanding installation stresses,
- Is not damaged by temperatures common to asphalt mixtures, and
- Has the properties listed in Table 4196.01-4.

Table 4196.01-4: Fabric Placed under Asphalt Mixtures

Property	Value	Test Method
Grab strength, dry, minimum average value in either principal direction	90 lbs. (400 N)	~~Iowa 913~~ ASTM D 4632
Elongation, dry, minimum average value in either principal direction	20%	~~Iowa 913~~ ASTM D4632
Grab Strength after 400°F (204°C) for 3 hr.[(a)] minimum average value in either principal direction	75 lbs. (335 N)	~~Iowa 913~~ ASTM D4632
(a) Applies only when asphalt temperatures exceeding 300°F (149°C) are anticipated.		

b. Ensure asphalt absorption is sufficient to produce a good bond between the overlay and the overlaid surface when a tack coat of 0.20 gallon to 0.25 gallon (0.9 L to 1.1 L) of asphalt binder per square yard (square meter) is used.

c. The Engineer may approve fabrics, such as fiberglass, which do not lend themselves to testing by some of the previously specified methods.

5. Subgrade Stabilization Material.

a. To stabilize a subgrade under pavement or pavement patches, use material that:
- Is capable of withstanding installation stresses, and
- Has the properties listed in Table 4196.01-5 for the type specified for use in the contract documents.

Table 4196.01-5: Fabric for use as Subgrade Stabilization (Polymer Grid)

Property	Value	Test Method
Minimum tensile strength at 2% strain. Both directions.	250 lbs./ft. (3650 N/m)	GRI Test Method GG1-87
Maximum aperture. Both directions.	2 in. (50 mm)	Internal Dimension Measuring Calipers
Minimum aperture. Both directions.	0.5 in. (13 mm)	Internal Dimension Measuring Calipers
Minimum Ultimate junction strength. Both directions.	800 lbs./ft. (11,675 N/m)	GRI Test Method GG2-87

b. Inspection and acceptance of polymer grid will be according to Materials I.M. 496.01.

6. Concrete and Stone Revetment and Bridge Abutment Backfill Fabric.
Use engineering fabric having properties listed in Table 4196.01-6.

Table 4196.01-6: Fabric for use under conc./stone revetment & 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)	US Sieve #40 (0.43 mm)	ASTM D 4751

UV resistance (at 500 hours)	70% retained strength	ASTM D 4355
Flow Rate	18 gal./min./ft2 (733 L/min./m2)	ASTM D 4491

Reason for Revision: To make the testing methods same as ASTM & AASHTO methods.

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

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Tom Reis / Eric Johnsen	**Office:** Specifications	**Item 5**
Submittal Date: 8/22/2011	**Proposed Effective Date:** Oct. 18, 2011	
Article No.: **Title:**	**Other:** DS-09060, Developmental Specifications for Floating Silt Curtain	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 9/8/2011	**Effective Date:** 11/15/2011

Specification Committee Approved Text: See attached Developmental Specifications for Floating Silt Curtain.

Comments: The Committee had much discussion about the definition of maintenance and how the bid item would be paid. Maintenance/repair could take many forms, such as re-aligning the curtain, re-attaching seams in the curtain, or repairing tears in the curtain. Not all items have measureable lengths. Also, would the contract be paid for just checking the curtain, if they didn't have to realign or repair the curtain. The committee discussed changing the maintenance item to an hourly bid item or a lump sum bid item, possibly with a pre-determined price. Ultimately it was decided to not add the maintenance bid items and see if there are any more problems with maintenance. RCE's will need to decide when the curtain requires regular maintenance which is included in the bid price and when an unforeseen circumstance requires an EWO.

Specification Section Recommended Text: See attached Developmental Specifications for Floating Silt Curtain.

Comments: Revisions were developed in consultation with the Offices of Construction and Design.

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

Reason for Revision: Contractors and suppliers are having difficulty knowing which type of material will be required for the silt curtain, moving or still water.

Also, storms have caused some floating silt curtain installations to be compromised. Having a bid item for maintenance allows the Engineer to pay the Contractor to keep the floating silt curtain in working order without having to write a change order.

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

DRAFT DS-09XXX
(Replaces DS-09060)

Iowa Department of Transportation

DEVELOPMENTAL SPECIFICATIONS
FOR
FLOATING SILT CURTAIN

Effective Date
November 15, 2011

THE STANDARD SPECIFICATIONS, SERIES 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

09XXX.01 DESCRIPTION.

Floating Silt Curtains are temporary control measures used for containing suspended sediment in an area of open water. Open water is described as any perennial water course or water body with 6 inch (150 mm) or greater depth. Floating Silt Curtains consist of fabric fastened to a flotation carrier and weighted along the bottom edge. Two types of Floating Silt Curtains may be utilized:

A. Floating Silt Curtain (Containment).
Floating Silt Curtain (Containment) is intended to capture all sediment entering the water during construction activities and the sediment is to be completely removed with the floating silt curtain upon completion of the work.

B. Floating Silt Curtain (Hanging).
Floating Silt Curtain (Hanging) is intended to create a static water area isolated from the water course or water body. Sediment entering the static water area is isolated and settles out of suspension within the area of the floating silt curtain.

09XXX.02 MATERIALS.

A. Floating Silt Curtains shall meet the following minimum requirements and manufacturer recommendations:

Table DS-09XXX.02-1: Floating Silt Curtain Requirements

	~~TYPE~~	
	~~Still Water~~	~~Moving Water~~
Curtain Fabric Material Type	~~Impermeable vinyl-nylon laminate~~	Impermeable vinyl-coated nylon
Mass Per Square Yard (m^2)	~~18 oz. (0.6 kg)~~	22 oz. (0.75 kg)
Grab Tensile Strength ASTM D 4632 *	~~300 lbs. (1.3 kN)~~	500 lbs. (2.2 kN)
Flotation	~~6 inch (150 mm) diameter marine quality expanded polystyrene~~	8 inch (200 mm) diameter marine quality expanded polystyrene
Net Buoyancy, Per Foot (m)	~~13 lbs. (200 N)~~	20 lbs. (300 N)
Top Load Carrying Components	~~Fabric only~~	Fabric plus 5/16 inch (8 mm) galvanized steel cable 9800 lbs. (40 kN) minimum break strength
Ballast, Lbs. Per Foot (Kg/m), Minimum	~~0.7 lbs./foot (1.0 kg/m) enclosed 1/4 inch (6 mm) galvanized chain~~	1.1 lbs./foot (1.6 kg/m) enclosed 5/16 inch (8 mm) galvanized chain
Connection Between Sections	~~Laced grommets~~	Aluminum collar reinforced quick disconnects

* Minimum average roll value.

B. Design connecting devices to prevent silt from permeating through the connection and at specified strength to prevent ripping out.

09XXX.03 CONSTRUCTION.

A. General.

1. Construct Floating Silt Curtain as shown in the contract documents and to the expected water depth plus wave height.

2. On U.S. Coast Guard regulated waters or other navigable waterways, furnish buoys to mark the ends and special areas for visibility. Place buoys as required for navigational purposes.

3. Floating Silt Curtain shall be installed adjacent to planned work area prior to soil disturbance. The curtain shall be installed along the complete work area which is planned to be disturbed and to points 20 feet (6 m) beyond the limits of the area of disturbance and tied into the existing soil bank.

4. Floating Silt Curtain (Containment) installations will require both a containment floating silt curtain and a hanging floating silt curtain. Install the two floating silt curtains as shown in the contract documents with the containment silt curtain closest to shore and the hanging silt curtain 10 feet (6 m) outside the containment silt curtain.

5. Do not discharge water pumped from the work site into an area of unrestrained open water.

6. Control surface drainage prior to entry into the water by installation of appropriate erosion control measures on land.

B. Floating Silt Curtain (Containment).

1. Anchors shall include a chain that has a minimum weight of 3.3 pounds (1.5 kg) per yard and anchor weights as needed to hold the curtain down.

2. Inspect the containment floating silt curtain after heavy winds or major rain storms (1 inch (25 mm)) to check for damage and depth of silt on the bottom of the silt curtain. If 2 inches (50 mm) or more of silt is present on top of the silt curtain, remove the silt curtain and silt as described below and reinstall floating silt curtain.

3. Upon completion of the work or when clean-out of containment silt curtain is required, remove containment silt curtain and contained silt by pulling the top of curtain towards land until it reaches the trench line. Remove entrenched fabric and pull both ends up and out of the water. Dispose of collected silt offsite at an upland, non-wetland location or as approved by the Engineer. Following removal of containment curtain, the hanging curtain shall remain in place for a minimum of 48 hours after which it can be removed, provided all work in the area being protected is completed.

C. Floating Silt Curtain (Hanging).

1. Anchors shall be a minimum of 40 pounds (18 kg) and located at a maximum spacing of 100 feet (30 m) along curtain.

2. Hanging silt curtain shall remain in place for a minimum of 48 hours after completion of work activity to allow suspended sediment to settle out after which time the silt curtain can be removed. Remove curtain in a manner that will prevent re-suspension of silt into the water.

09XXX.04 METHOD OF MEASUREMENT.

A. Floating Silt Curtain, of the type specified, will be measured by length in feet (meters) furnished and installed.

B. Clean-out of Floating Silt Curtain (Containment) will be measured by length in feet (meters) removed, cleaned, and reinstalled (if necessary) each time cleaning is required.

09XXX.05 BASIS OF PAYMENT.

A. Payment for Floating Silt Curtain (Hanging) will be the contract unit price for the length in feet (meters) of hanging silt curtain furnished and installed. Payment is full compensation for labor, equipment, and materials necessary to construct, maintain, and remove hanging silt curtain. Upon satisfactory installation of hanging silt curtain, the Engineer may authorize partial payment not exceeding 80% of the quantity placed. Remaining quantity will be paid after Floating Silt Curtain is removed.

B. Payment for Floating Silt Curtain (Containment) will be the contract unit price for the length in feet (meters) of containment silt curtain furnished and installed. Payment is full compensation for labor, equipment, and materials necessary to construct and maintain containment silt curtain.

C. Payment for Clean-out of Floating Silt Curtain (Containment) will be the contract unit price for the length in feet (meters) of the Containment Silt Curtain removed each time cleaning is required. Payment is full compensation for labor and equipment necessary to remove and clean containment silt curtain, remove and dispose of collected silt, and reinstall containment silt curtain (if necessary). Clean-out of Floating Silt Curtain (Containment) will be paid to remove the containment silt curtain at the completion of the project.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Willy Sorensen / Kurtis Younkin	**Office:** Traffic & Safety	**Item 6**
Submittal Date: July 14, 2011	**Proposed Effective Date:** November 15, 2011	
Article No.: **Title:**	**Other:** DS-09XXX, Developmental Specifications for High Build Waterborne Paint Pavement Markings	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 9/8/2011	**Effective Date:** 11/15/2011

Specification Committee Approved Text: See attached Supplemental Specifications for High Build Waterborne Paint Pavement Markings.

Comments: The committee decided that this specification would be most appropriate as a Supplemental Specifications rather than a Developmental Specification. There are no restrictions on the use of the specification. This SS will be added to the General Supplemental Specifications in April, 2012.

Specification Section Recommended Text: See attached DS for High Build Waterborne Paint Pavement Markings.

Comments:

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

Reason for Revision: High build waterborne paint pavement markings are routinely being used on projects with a Special Provision required for each contract.

County or City Input Needed (X one)	**Yes**	**No** X
Comments: None		

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

SS-09XXX
(New)

Iowa Department of Transportation

SUPPLEMENTAL SPECIFICATIONS
FOR
HIGH-BUILD WATERBORNE PAINT PAVEMENT MARKINGS

Effective Date
November 15, 2011

THE STANDARD SPECIFICATIONS, SERIES 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SUPPLEMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

09XXX.01 DESCRIPTION.
Furnish and install permanent high-build waterborne paint pavement markings with glass beads.

09XXX.02 MATERIALS.

A. Provide high build waterborne paint listed in Materials I.M. 483.03 Appendix C.

B. Bead application rate, bead gradation, and bead coating is at the discretion of the Contractor. Provide a bead package that will ensure initial retroreflectivity requirements consistently at or above the minimum.

09XXX.03 CONSTRUCTION.

A. Meet requirements of Article 2527.03 of the Standard Specifications except as modified below.

B. Supply Engineer with a copy of paint manufacturer's recommendations for applying marking material. Include in recommendations minimum pavement temperature required for painting. Install paint according to manufacturer's recommendations. Provide binder thickness of 0.022 inches ± 0.0025 inches (0.56 mm ± 0.06 mm). Demonstrate to Engineer at start of work the ability to meet initial retroreflectivity requirements.

C. If paint is to be placed in a groove, then the contract plans will have a bid item for grooving. If plans call for grooving then provide grooves according to Article 2527.03, I. Provide groove depth of 0.080 inches $\pm$ 0.010 inches (2.00 mm $\pm$ 0.25 mm). Provide groove width of design line width plus 1.0 inches (25 mm), with a tolerance of minus 0.0 inches (0 mm) and plus 0.2 inches (5 mm).

D. For grooving broken lane lines, follow standard pavement marking cycle (10 feet (3.05 m) of marking with 30 foot (9.15 m) space between). Start cycle so most of the existing marking is removed with the groove. Do not use a continuous groove for broken centerlines or broken lane lines. No additional removal of existing markings is required.

E. Final acceptance will be based on compliance with these specifications. Ensure markings meet the following retroreflectivity requirements.

Minimum Coefficient of Retroreflectivity (Initial Placement)	**mcd / sq. ft. / ft.-cdl. (mcd / m^2 / lux)**
White longitudinal lines	300
Yellow longitudinal lines	225

The Engineer will use the procedure in Materials I.M. 386 to determine retroreflectivity.

09XXX.04 METHOD OF MEASUREMENT.
Apply Article 2527.04 of the Standard Specifications.

09XXX.05 BASIS OF PAYMENT.
Apply Article 2527.05 of the Standard Specifications.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Melissa Serio	**Office:** Construction	**Item 7**
Submittal Date: August 24, 2011	**Proposed Effective Date:** November 15, 2011	
Article No.: **Title:**	**Other:** SS-09011, Supplemental Specifications for Mobilization for Erosion Control	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 9/8/2011	**Effective Date:** 11/15/2011

Specification Committee Approved Text: See attached Supplemental Specifications for Mobilization for Erosion Control.

Comments: The Office of Local Systems asked about Article 090XX.01, G. The contractor will not be paid for mobilization if work is performed by labor, equipment and materials that are already on site, such as silt basins installed by the grading contractor.

Specification Section Recommended Text: See attached Supplemental Specifications for Mobilization for Erosion Control.

Comments:

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

See attached.

Reason for Revision: Clarified items of work that are considered for EC mobilization payment. Characterize the ECIP as a "living document" by referencing to initial ECIP and updates as required. Modify BOP to eliminate need for contract modification.

County or City Input Needed (X one)	**Yes**	**No** X
Comments: None		
Industry Input Needed (X one)	**Yes**	**No** X

Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes** X	**No**

Comments: Discussed at AGC / Iowa DOT Erosion Control Task Force meeting held 8/9/11.

SS-090XX
(Replaces SS-09011)

Iowa Department of Transportation

SUPPLEMENTAL SPECIFICATIONS
FOR
MOBILIZATION FOR EROSION CONTROL

Effective Date
November 15, 2011

THE STANDARD SPECIFICATIONS, SERIES 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SUPPLEMENTAL SPECIFICATIONS AND THEY PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

090XX.01 MOBILIZATIONS, EROSION CONTROL.

A. Prior to the Preconstruction Conference, submit for ~~approval~~ acceptance an initial Erosion Control Implementation Plan (ECIP) for accomplishing ~~all~~ aspects of erosion control work. In the ECIP include a description of additions or modifications to the contract. ~~Do not implement deviations from the approved ECIP without the Engineer's written permission.~~

B. During the ~~course of the~~ contract, review ECIP with the Engineer and modify as needed to address changes in schedule of operations, staging, weather changes, or other changes required to comply with applicable permit requirements, or when there are changes to the number of mobilizations.

~~B~~C. In the ECIP, include stages for erosion control work to address the Contractor's timetable and sequence for major activities or stages on the contract, including the number of Mobilizations, Erosion Control, anticipated for the contract. In the consideration of the number of mobilizations consider, as a minimum:

- Initial controls required prior to land disturbing activities,
- ~~Clearing and grubbing activities,~~
- The number of earthwork balances for the contract,
- Sensitive areas requiring special consideration,
- Anticipated suspension of work,
- Compliance with the Pollution Prevention Plan (PPP), and
- Separate mobilizations needed for different crews performing work such as silt fence, seeding, or ditch checks (however, multiple mobilizations will not be paid for a single crew performing different items of erosion control work ~~that require the same equipment to be mobilized~~).

~~C~~D. Only one mobilization will be paid for each stage of work described in the ECIP. Within the scope of work defined for each single mobilization described in the ECIP, additional movement due to weather delays or at the option of the Contractor will not be counted as a mobilization.

E. Payment for mobilization applies to contract items from Sections 2601 and 2602 of the Standard Specifications, excluding watering, mowing, debris pickup, monitoring well, or removal items.

~~D~~F. Additional mobilizations not outlined in the ECIP must be approved by the Engineer. ~~Only one mobilization will be paid for each stage of additional work approved by the Engineer.~~

G. Payment for mobilization to correct items not properly installed will not be approved. Payment for mobilization will also not be approved if labor, equipment, and materials to perform erosion control is used for other non-erosion control work onsite.

~~E~~H. Mobilize with sufficient labor, equipment, and materials to perform the erosion control included in the ECIP or as ordered or approved by the Engineer. If the Contractor fails to mobilize when erosion control work is needed to comply with the ECIP ~~and~~ or the PPP, the Engineer will, by written order, direct the Contractor to mobilize within 72 hours of a written order.

~~F~~I. If the Contractor fails to mobilize within such time period, a deduction of $750.00 per calendar day will be made from money due under the contract, except when the Engineer extends such time period.

~~G~~J. Mobilizations, Erosion Control is not to include work provided under the item of Mobilizations, Emergency Erosion Control.

090XX.02 MOBILIZATIONS, EMERGENCY EROSION CONTROL.
An emergency will be considered to be a sudden occurrence of a serious and urgent nature which ~~requires work not included in the contract or~~ is beyond normal maintenance of erosion control items ~~and the mobilizations included in the erosion control implementation plan~~. Emergency work requires immediate mobilization and movement of necessary labor, equipment, and materials to the emergency site, followed by the immediate installation of temporary erosion control measures.

A. Mobilize with sufficient labor, equipment, and materials on the job site within eight hours of the Engineer's written order to install temporary erosion control items on an emergency basis. The Engineer's written order will include a description of the required work. Only one mobilization will be paid for the work described in the written order.

B. If the Contractor fails to mobilize within eight hours of the written order, a deduction of $1500.00 per calendar day will be made from money due under the contract, except when the Engineer extends such time period.

090XX.03 METHOD OF MEASUREMENT.

A. Mobilizations, Erosion Control: units. The quantity measured for payment will be the number of such mobilizations in the ~~approved~~ accepted ECIP and acceptably performed, as well as all additional mobilizations ordered or approved by the Engineer and acceptably performed.

B. Mobilizations, Emergency Erosion Control: units. The quantity measured for payment will be the number of such mobilizations directed in writing by the Engineer and acceptably performed.

090XX.04 BASIS OF PAYMENT.
Payment for Mobilizations, Erosion Control, and Mobilizations, Emergency Erosion Control will be ~~according to Article 1109.03, B, 1, of the Standard Specifications,~~ at the unit prices stipulated in this specification. Mobilization for Erosion Control costs are not included as part of the contract item for "Mobilization" described in Section 2533 of the Standard Specifications.

A. Mobilizations, Erosion Control.

1. The quantity will be paid for at the unit price of $500.00 each for Mobilizations, Erosion Control, which is full compensation for staged movement of labor, equipment, and materials; and all labor, tools, equipment, and incidentals necessary to complete the movement.

2. Individual erosion control items provided for in the contract, and acceptably furnished and placed under the item of Mobilizations, Erosion Control, will be paid for separately at the contract unit price for the items.

B. Mobilizations, Emergency Erosion Control.

1. The quantity will be paid for at the unit price of $1000 each for Mobilizations, Emergency Erosion Control, which is full compensation for movement of labor, equipment and materials; and for labor, tools, equipment, and incidentals necessary to complete the movement.

2. Individual temporary erosion control items provided for in the contract, and acceptably furnished and placed under the item of Mobilizations, Emergency Erosion Control, will be paid for separately at the contract unit price for the items.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Roger Bierbaum	**Office:** Contracts	**Item 8**
Submittal Date: 2011.08.01	**Proposed Effective Date:** November 15, 2011	
Article No.: **Title:**	**Other:** DS for On-Call Contracting for High Tension Cable Guardrail Repair	

Specification Committee Action: Deferred until the October 13, 2011 Specification Committee meeting.

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

Specification Committee Approved Text:

Comments: There is interest in Districts 1 and 6 to use this method of repairing median cable guardrail. Since this guardrail system may be used on both medians and along the outside edge of the pavement section, the title needs to be changed from 'median' to 'high tension.' Intended contract period is one year. There will need to be coordination between the Engineer administrating the contract and the individuals contacting the Contractor requesting repairs if duplication of mobilization payments is desired to be reduced, otherwise multiple requests within one day will result in multiple payments for mobilization being required. Design will submit tensioning tables to Specifications for inclusion in the specification.

Specification Section Recommended Text: See attached Draft DS for On-Call Contracting for High Tension Cable Guardrail Repair.

Comments: DS is recommended to become effective with the November 2011 letting as turn-in for October letting was August 2, 2011. For the October letting an SP will be used.

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

Reason for Revision: To have contractors perform on-call median cable guardrail repairs

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**
Comments:					

DRAFT DS-09XXX
(New)

Iowa Department of Transportation

DEVELOPMENTAL SPECIFICATIONS
FOR
ON-CALL CONTRACTING FOR HIGH TENSION CABLE GUARDRAIL REPAIR

Effective Date
November 15, 2011

THE STANDARD SPECIFICATIONS, SERIES 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

In addition to the requirements of Section 2505 of the Standard Specifications, the following will apply.

09XXX.01 DESCRIPTION.

A. General.
This specification covers repair of median cable guardrail installations. Median cable guardrail installations are high-tension median cable guardrail. An installation is defined as a continuous length of cables located between two end anchors.

The contract documents will list county, route, begin and end milepost, manufacturer, and system type of each installation for work covered by this contract.

B. Requests for Repair.
Requests for repairs will be made by individuals who have been approved to authorize repairs. The Department will furnish the Contractor a list of individuals approved to initiate repairs. Requests for repairs will be initiated with a fax or e-mail to the Contractor. Requests for repair will include route, milepost location, direction, and number of posts to be replaced at each location. Provide Engineer with an e-mail address and fax number which will be used for requests for repairs.

09XXX.02 MATERIALS.
Apply Article 2505.02 of the Standard Specifications.

09XXX.03 CONSTRUCTION.

A. General.
Schedule repairs upon notification by the Engineer. Provide Engineer at least 24 hours notice of when proposed work will begin.

Routine repairs within a particular installation includes removal and replacement of damaged line posts and hardware, attaching cable(s) to line posts, and checking tension of cable(s). If tension of cable(s) falls outside manufacturer's recommended limits, re-tension cable(s) to within recommended limits. Notify Engineer if non-routine repairs is needed. Approval of non-routine repairs shall have Engineer's approval before repair work may begin.

Remove and dispose of damaged materials. Leave work site in a safe and orderly condition at

completion of work.

Keep a log of repairs. Provide Engineer a copy of log upon request. Log shall include:

- Date and time of notification to perform repairs,
- Department personnel requesting repair,
- Route number,
- Milepost of requested repair,
- Date and time repairs were completed,
- Number of posts which required cables to be reattached,
- Number of replacement posts installed,
- Cable tension measurements taken after each repair, or as part of annual tension check, and
- Cable tension measurements taken after each re-tensioning, as applicable.

Repairs may be performed either without a lane closure; or with a lane closure except for periods listed in the contract documents. Remove lane closures following completion of work. Traffic control for lane closures and shoulder closures shall be according to the Standard Road Plans included in the contract documents.

B. Annual Checking of Cable Tension.
Check tension of all cables within each installation once during the contract between April 1 and May 31. Check tension according to manufacturer's recommendations. Re-tension any cable whose tension falls outside manufacturer's recommendations.

09XXX.04 METHOD OF MEASUREMENT.

A. Posts Cable Repaired.
By count.

B. Posts, Footing Replacement.
By count.

C. Mobilization, On-Call.
By count.

D. Cable, Re-tension.
By count.

09XXX.05 BASIS OF PAYMENT.
Article 1109.16, C, 4, b, of the Standard Specifications shall not apply to items on this contract.

A. Posts, Cable Repaired.
Per line post. Payment is full compensation for reattaching cable to line post. Routine work, placement of cable on post, disposal of damaged materials, cost of removal of vegetation, snow removal, traffic control, and site cleanup are incidental to the item.

B. Line Posts, Foundation Replacement.
Per line post foundation replaced. Payment is full compensation for removing existing damaged foundation, installation of new foundation meeting manufacturer's recommendations, minor shaping, removal of foundation, and concrete.

C. Mobilization, On-Call.
Each. One mobilization payment of $3000 per notification regardless of number of locations to be reparied. Mobilization payment will not be made for annual checking of cable tension.

Liquated Damages of $500 per calendar day will be assessed for each calendar day repair is not completed if work is not completed within 14 calendar days following notification by the Engineer.

D. Cable, Re-tension.
Each. Payment is full compensation for re-tensioning each cable out of tolerance according to the manufacturer's recommendations. Individual cables checked, but not requiring re-tensioning will not be counted for payment. Checking tension of cables is incidental to the item.

E. Non-Routine Repairs.
Paid for according to Article 1109.03 of the Standard Specifications. May include, but not limited to the following: reattaching to end anchors, replacing end anchors, and repairing cable.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Scott Schram	**Office:** Materials	**Item 9**
Submittal Date: August 30, 2011	**Proposed Effective Date:** Nov 2011	
Section No.: 2303 **Title:** Hot Mix Asphalt Mixtures	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 9/8/2011	**Effective Date:** 11/15/2011

Specification Committee Approved Text: See attached draft SS for Flexible Paving Mixtures.

Comments: The Office of Materials explained the changes to the specification, which include adding WMA specifications, adding RAS specifications, and addressing issues with PWL.

The Office of Design requested that the use of WMA be clarified. The HMA bid items will continue to be used. Equivalent WMA mixtures will be allowed to be substituted for HMA mixture bid items without additional payment, unless specifically prohibited, such as interstate travel lanes. This was clarified in the Description, Method of Measurement and Basis of Payment.

The Office of Local Systems asked what is the intent of Article 2303.03, C, 5, b, 1, a. All roadways will be Class I compaction. The article was revised to indicate this.

The Office of Materials revised Article 2303.03, D, 5, d, 2 after the Specification Committee meeting due to comments from the District Materials Engineers.

The Office of Construction asked about using base widening for shoulder construction. Article 2303.03, D, 4, a, 6 was revised to indicate Class I compaction applies to base widening placed in the travel lanes and not base widening placed as shoulders. Article 2213.03, F, 1, c will need to be revised to clarify when base widening is Class I compaction (when placed in a travel lane) and when it is Class II compaction (when placed as a shoulder) for the next GS.

Subsequent to the Specification Committee meeting, personnel with the FHWA objected to the method of calculating a pay factor when the Engineer's results do not validate the contractor's. The SS was revised so that the Engineer's results will be used to calculate a pay factor when the contractor's results cannot be validated.

This specification will be used on all HMA projects. It will be incorporated into the General Supplemental Specifications in April 2012.

Specification Section Recommended Text: See attached draft SS for Flexible Paving Mixtures.

Comments:

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

See attached SS

Reason for Revisions: Implement WMA, RAS, and address issues with PWL prior to winter lettings.

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** X	**No**

Comments: These recommended changes came from the QMA steering committee and approved by DMEs.

DRAFT SS-09XXX
(New)

Iowa Department of Transportation

SUPPLEMENTAL SPECIFICATIONS
FOR
FLEXIBLE PAVING MIXTURES

Effective Date
November 15, 2011

THE STANDARD SPECIFICATIONS, SERIES 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SUPPLEMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

2303.01. Description.

Replace Article A:

Design, produce, place, and compact flexible paving (HMA and warm mix asphalt (WMA)) mixtures. Use proper quality control practices for the construction of surface, intermediate, or base course on a prepared subbase, base, or pavement to the dimensions specified in the contract documents.

Add the following Articles**:**

C. WMA refers to asphalt concrete mixtures produced at temperatures approximately 50°F (28 °C) or more below those typically used in production of HMA but no higher than 280°F (135 °C). Temperature reductions may be achieved through additives or water injection systems approved by the Bituminous Engineer. The goal with WMA is to produce mixtures with similar or better strength, durability, and performance characteristics as HMA using substantially reduced production temperatures.

D. Unless explicitly stated, produce and place WMA mixtures meeting the same requirements established for HMA mixtures. Equivalent WMA mixtures may be substituted for HMA mixtures unless it is prohibited by the specifications.

2303.02, B, 1, b, 1, Friction Classification L-2.

Replace the Article:

a) On Interstates and all mixtures designed for 30,000,000 ESALS and higher (cross-overs and detours with posted speeds below 60 mph excluded), ~~I~~if 40% or more of the total aggregate is a limestone, use a combined aggregate such that:

(1) At least 80% of the combined aggregate retained on the No. 4 (4.75 mm) sieve is Type 4 or better friction aggregate,

(2) At least 25% of the combined aggregate retained on the No. 4 (4.75 mm) sieve is Type 2 or better friction aggregate~~.~~,

(3) At least 30% of the combined aggregate passing the No. 4 (4.75 mm) sieve is Type 2 or better friction aggregate, and

(4) The fineness modulus of the combined Type 2 aggregate is at least 1.0. Calculations for fineness modulus are shown in Materials I.M. 501.

b) ~~If less than 40% of the total aggregate is a limestone~~ For all other mixtures that do not satisfy Article 2303.02, B, 1, b, 1, a, use a combined aggregate such that:
- **(1)** At least 80% of the combined aggregate retained on the No. 4 (4.75 mm) sieve is Type 4 or better friction aggregate, and
- **(2)** At least 25% of the combined aggregate retained on the No. 4 (4.75 mm) sieve is Type 2 or better friction aggregate, and
- **(3)** For Interstates and all mixtures designed for 30,000,000 ESALS and higher, ~~T~~the fineness modulus of the combined Type 2 aggregate is at least 1.0. Calculations for fineness modulus are shown in Materials I.M. 501.

2303.02, C, Recycled Asphalt Pavement.

Rename the Article:

C. Recycled Asphalt ~~Pavement~~ Materials.

Replace Article 1:

Recycle Asphalt Materials (RAM) includes Recycled Asphalt Pavement (RAP) and Recycled Asphalt Shingles (RAS). RAP is salvaged asphalt pavement. Use RAP from a source designated in the contract documents, or furnish Classified RAP, Certified RAP, or Unclassified RAP from the Contractor's stockpile. The designations Classified, Certified, and Unclassified are exclusively for the use of RAP in HMA.

Replace the first paragraph of Article 6:

For ~~HMA~~ mix design purposes, the Contracting Authority will test samples of the ~~RAP~~ RAM. The aggregate gradation and amount of asphalt binder in the ~~RAP~~ RAM will be based on the Contracting Authority's extraction tests. ~~When the amount of recycled binder exceeds 20% of the total asphalt binder, change the asphalt binder grade as directed in Materials I.M. 510. No adjustments will be made to the contract unit price for required changes to the asphalt binder grade.~~

Add the following Articles:

7. For mixtures not containing RAS, when the amount of recycled binder from RAP exceeds 20.0% of the total asphalt binder, change the asphalt binder grade as directed in Materials I.M. 510. For mixtures containing RAS, adjust the contract binder grade as follows:
- **a.** When the amount of recycled binder is inclusively between 15.0% and 25.0%
  - **1)** Lower the high temperature grade of the virgin asphalt binder by one grade.
  - **2)** Lower the low temperature grade of the virgin asphalt binder by one grade (i.e. PG XX-28 becomes PG XX-34).
- **b.** When the amount of recycled binder exceeds 25.0% of the total asphalt binder, the binder grade shall be selected based on testing by the contracting authority at no additional cost to the contracting authority.

The temperature spread of the adjusted PG grade shall be at least that of the contract grade (i.e. for a PG 64-22, maintain a spread of at least 64 – (-22) = 86). The adjusted grade shall meet the same elastic recovery requirements as the contract binder grade. No adjustments will be made to the contract unit price for required changes to the asphalt binder grade.

8. Pre-consumer or post-consumer shingles that have been processed, sized, and ready for incorporation into an asphalt mixture constitute RAS material.

9. Up to 5% RAS by weight of total aggregate may be used in the design and production of an asphalt mixture. The percentage of RAS used is considered part of the maximum allowable RAP percentage. Unless explicitly stated otherwise in this specification or Materials I.M. 505, use RAS according to the same requirements as prescribed for RAP material.

10. RAS shall be certified from an approved supplier designated in Materials I.M. 506. Material processed prior to DOT source approval will not be certified.

2303.02, D, Hot Mix Asphalt Mixture.

Rename the Article:

D. ~~Hot Mix Asphalt~~ Flexible Paving Mixture.

Replace Article 4**:**

Use ~~an HMA~~ a mixture design meeting gyratory design and mixture criteria corresponding to the design level specified in the contract documents. The Engineer may approve the substitution of any mixture which meets requirements for a higher design level than specified in the contract documents, at no additional cost to the Contracting Authority. When a commercial mix is specified, use a 1/2 inch (12.5 mm) 300K surface mixture or higher for JMF approval.

Replace Article 6**:**

Prepare gyratory ~~HMA~~ mixture designs for base, intermediate, and surface mixtures. Follow the procedure outlined in Materials I.M. 510. Submit a mixture design complying with Materials I.M. 510. Propose both a production and a compaction temperature between 215ºF (102ºC) and 280ºF (138ºC) for WMA mixture designs.

Add the following Article:

8. Unless otherwise indicated in the contract documents, do not use WMA on interstate travel lanes for surface, intermediate, or base courses.

2303.02, E, 2, Anti-strip Agent.

Replace Article a:

~~On Interstate and Primary highways designed for 30,000,000 ESALS and higher, perform a moisture sensitivity evaluation of the proposed asphalt mixture design in accordance with Materials I.M. 507.~~

Perform a moisture sensitivity evaluation of the proposed asphalt mixture design in accordance with Materials I.M. 507 for the following mixtures when placed in travelled lanes:

1) Mixtures for Interstate and Primary highways designed for 30,000,000 ESALS and higher

2) Mixtures for Interstate and Primary highways containing quartzite, granite, or other siliceous aggregate (not a limestone or dolomite) in at least 40% of the total aggregate (virgin and recycled) or at least 25% of the plus No. 4 (4.75 mm).

3) All WMA mixtures placed in travel lanes designed for 10,000,000 ESALS and higher.

For the purpose of evaluating moisture sensitivity of proposed WMA mix designs which use water injection technologies, in lieu of a lab-scaled foaming device the Contractor may test the proposed JMF from plant produced material placed off-site at no additional cost to the contracting authority.

Replace Article b:

~~On all other Interstate and Primary highways, perform a moisture sensitivity evaluation in accordance with Materials I.M. 507 of the proposed asphalt mixture design if 25% or more of the plus No. 4 (4.75 mm) (virgin and RAP) aggregates or more than 40% of the total (virgin and RAP) aggregates is:~~

- ~~Quartzite.~~
- ~~Granite.~~
- ~~Other siliceous aggregate (not a limestone or dolomite) which is obtained by crushing from ledge rock.~~

Sample and test plant produced mixture for moisture susceptibility in accordance with Materials I.M. 204 and Materials I.M. 507 for bid item plan quantities of more than 1000 tons (1000 Mg) as follows:

1) For mixtures satisfying Article 2303.02, E, 2, a

2) For conditions satisfied in Article 2303.02, E, 2, g

Replace Article g:

~~When there is a "significant mix change", t~~The Engineer may require ~~a re-evaluation~~ an evaluation of the test method in Materials I.M. 507~~.~~ for plant produced mixture as follows:

1) When there is a "significant mix change" to a mix satisfying Article 2303.02, E, 2, a

2) When there is contamination and/or coating of the aggregate for any mixture placed in a travel lane.

3) When aggregates are inadequately dried during production of any mixtures placed in a travel lane.

2303.02, E, 2, h, 2 Liquid Anti-strip Additives.

Add the following Article:

c) A dosage rate can be selected such that the conditioned indirect tensile strength can be improved by at least 10% while meeting all other requirements.

2303.02, E, Other Materials.

Add the following Article:

5. WMA Technologies.

Chemical additives, organic additives, or water injection systems approved by the Bituminous Engineer may be used at the rate established by the mixture design in the production of WMA. Once production of a bid item has begun with a WMA technology, continue its use throughout the remainder of the bid item's production unless otherwise approved by the District Materials Engineer.

2303.03, A, General.

Replace Articles 3 and 4:

3. Apply Quality Management - Asphalt (QM-A) to asphalt mixture bid items when the plan quantity is greater than 1000 tons (1000 Mg) and all Interstate contracts. Follow the procedures and meet the criteria established in Articles 2303.02 and 2303.03, B; Section 2521; and Materials I.M. 510 and 511.

4. Apply Article 2303.03, E for asphalt mixture bid items that have a plan quantity of 1000 tons (1000 Mg) or less as well as any patching bid items. For items bid in square yards (m^2), apply Article 2303.03, E when the plan quantity by weight (estimated with a unit weight of 145 pounds per cubic foot (2323 kg/m^3) unless otherwise stated on the plans) does not exceed 1000 tons (1000 Mg). Article 2303.03, E applies to Interstate patching as well as Interstate bid items of less than 1000 tons (1000 Mg), all of which are placed in a non-travel lane.

2303.03, B, Equipment.

Replace the first paragraph with the following:

Provide sufficient equipment of the various types required to produce, place, and compact each layer of ~~HMA~~ mixture as specified, such that the mixture is workable at the minimum placement and compaction temperature desired, regardless of storage or haul distance considerations.

Modify the asphalt mixing plant as required by the manufacturer when introducing a WMA technology. Plant modifications may include additional plant instrumentation, the installation of water injection systems and/or WMA additive delivery systems, tuning the plant burner and adjusting the flights in order to operate at lower production temperatures and/or reduced tonnage.

2303.03, C, 2, c, 5.

Replace the Article:

Place other fabrics with a heavy coat of ~~the same~~ asphalt binder ~~grade used in the HMA and applied~~ at a rate of 0.20 to 0.25 gallons per square yard (0.9 to 1.1 L/m^2). Use the same binder grade used in the asphalt concrete mixture. For binders containing a WMA technology, ~~P~~place at a temperature between 260°F and 315°F (127°C and 160°C), otherwise place at a temperature between 295°F and 315°F (145°C and 160°C).

2303.03, C, 3, d, 2.

Delete the Article:

~~**2)** Coating aids may be added with the Engineer's approval.~~

2303.03, C, 3, d, 4.

Replace the Article:

~~Unless the Engineer approves, d~~Do not allow the temperature of the mixtures to ~~exceed 330ºF (165ºC) .~~ fall outside the following parameters:

a) Keep the production temperature of WMA mixtures between 215ºF (102ºC) and 280ºF (138ºC) until placed on the grade.

b) Do not produce WMA mixtures more than 10ºF (6°C) below the target temperature designated in the JMF without the approval of the Engineer.

c) Keep the production temperature of HMA mixtures between 225ºF (102ºC) and 330ºF (165ºC) until placed on the grade. Do not discharge HMA into the hopper when its temperature is less than:

(1) 245 ºF (118ºC) for a nominal layer thickness of 1 1/2 inches (40 mm) or less, or

(2) 225 ºF (102ºC) for a nominal layer thickness of more than 1 1/2 inches (40 mm).

d) Flexible paving mixtures not meeting these requirements will be rejected.

2303.03, C, 3, d, 7.

Delete the Article:

~~**7)** Ensure mixture temperature allows for the specified compaction and density to be attained. Do not discharge HMA into the paver hopper when its temperature is less than:~~

- ~~245°F (120°C) for a nominal layer thickness of 1 1/2 inches (40 mm) or less, or~~
- ~~225°F (110°C) for a nominal layer thickness of more than 1 1/2 inches (40 mm).~~

2303.03, C, 4, c, 2.

Replace Tables 2303.03-1 and 2303.03-2:

Table 2303.03-1: Base and Intermediate Course Lifts of ~~HMA~~ Asphalt Mixtures

Nominal Thickness - inches (mm)	Road Surface Temperature, ºF (ºC)
1 1/2 (40)	40 (4)
2 - 3 (50 - 80)	35 (2)
Over 3 (Over 80)	~~25 (-4)~~ 35 (2)

Table 2303.03-2: Surface Course Lifts of ~~HMA~~ Asphalt Mixtures

Nominal Thickness - inches (mm)	Road Surface Temperature, ºF (ºC)
1 (30)	HMA: 50 (10) / WMA: 40 (4)
1 1/2 (40)	HMA: 45 (7) / WMA: 40 (4)
2 and greater (50 and greater)	40 (4)

2303.03, C, 5, b, 1, a.

Replace the Article:

Use Class I compaction for base, intermediate, and surface courses for the traffic lanes, ramps, and loops on ~~Interstate, Primary, and Secondary highways~~ all roadways.

2303.03, C, 7, a, 3.

Replace the Article:

Compact leveling courses and intermediate mixtures placed as leveling/scratch courses (less than or equal to 1 inch (25mm) plan thickness) using Class II compaction, except make all passes with a pneumatic roller.

2303.03, C, 7, b, Wedge Courses.

Add the following Article:

4) The Engineer may waive field void sampling for wedge courses provided compaction has been thorough and effective.

2303.03, D Quality Assurance Program

Replace the first two paragraphs:

For interstate mixtures placed in a travel lane and each ~~HMA~~ mixture bid item that has a plan quantity of more than 1000 tons (1000 Mg) (patching excluded) apply requirements of this article. For items bid in square yards (m^2), apply the requirements of this article when the plan quantity by weight (estimated with a unit weight of 145 pounds per cubic foot (2323 kg/m^3) unless otherwise specified in the plans) exceeds 1000 tons (1000 Mg).

HMA ~~m~~Mixture bid items with plan quantities of 1000 tons (1000 Mg) or less and patching bid items are both defined as small quantities. For those bid items, meet the requirements of Article 2303.03, E. For items bid in square yards (m^2), when the plan quantity by weight (estimated with a unit weight of 145 pounds per cubic foot (2323 kg/m^3) unless otherwise specified in the plans) does not exceed 1000 tons (1000 Mg), meet the requirements of Article 2303.03, E.

2303.03, D, 3, b, 3, vi.

Add the following Article:

h) When the same mix type is produced for multiple bid items in one day, assign all box samples to each bid item's existing PWL lot for lab voids. Assign the quantity of each bid item produced to its respective lot.

2303.03, D, 3, b, 3, vii, a.

Replace the Article:

Prepare and compact two gyratory specimens according to Materials I.M. 325G. Compact loose WMA field samples, transported to the laboratory, at 240ºF (115ºC).

2303.03, D, 3, b, 3.

Replace Articles ix and x:

ix) Use the following methods of acceptance for laboratory voids:

a) For base widening, non-high speed ramps, non-interstate shoulders, recreational trails, and other mixture bid items not placed in travel lanes of a permanent pavement, acceptance for laboratory voids will be based on a moving absolute average deviation (AAD) from target as defined in Appendix A of this specification. Use the production tolerance in Table 2303.03-5.

b) For all other mixture bid items, ~~D~~determine PWL for each lot as defined in Materials I.M. 501. Use 1.0% below the target air voids as the lower specification limit and 1.0% above

the target air voids as the upper specification limit. Lot size is defined in Article 2303.03, D, 3, b, 3, vi. When the same mix type is placed in both PWL and AAD areas in a single day, include all samples for that day in the PWL lot as well as the quantity of the mixture bid item produced and placed in the PWL area.

x) For mixture bid items in a PWL lot, ~~D~~determine the pay factor using the absolute average deviation (AAD) procedure described in Materials I.M. 501 for proportions of a mixture bid item which are produced in irregular intervals and placed in irregular areas. The following items qualify as such and shall be combined into weekly lots:

- Asphalt mixture produced and placed on gores, detours, cross-overs, temporary pavements, turning lanes, and fillets,
- Asphalt mixture produced and placed on ramps that are not high-speed ramps,
- Asphalt mixture produced and placed on non-interstate shoulders.

To be considered irregular, the production rate for mixture bid items described above is not to exceed 1000 tons (1000 mg) or 10,000 square yards (8400 m^2) for items bid in square yards in a single day.

2303.03, D, 3, b, 4, i.

Replace the Article:

The Engineer may obtain plant produced samples for moisture susceptibility testing in accordance with Materials I.M. 507 at any time for mixtures ~~requiring moisture sensitivity testing~~ identified in Article 2303.02, E, 2, A or Article 2303.02, E, 2, G to verify the minimum TSR has been achieved.

2303.03, D, 3, c.

Replace Table 2303.03-5:

Table 2303.03-5: Production Tolerances

Measured Characteristic	Target Value (%)	Specification Tolerance (%) [a]
Cold feed gradation No. 4 (4.75 mm) and larger sieves	by JMF	± 7.0
Cold feed gradation No. 8 (2.36 mm)	by JMF	± 5.0
Cold feed gradation No. 30 (600 µm)	by JMF	± 4.0
Cold feed gradation No. 200 (75 µm)	by JMF	± 2.0 [b]
Daily asphalt binder content	by JMF	± 0.3
Field laboratory air voids absolute deviation from target [c]	0.0	≤ 1.0
VMA [e]	by JMF	± 1.0 [f]

(a) Based on single test unless noted otherwise.
(b) Maintain the filler/bitumen ratio of the plant produced mixture between 0.6 and 1.4.
(c) When lab voids acceptance is not based on PWL.
(e) Restricted to an asphalt film thickness as specified for the level of HMA mixture. May be waived per Materials I.M. 510 Appendix A.
(f) Based on the daily lot average.

Replace Articles 8, 9, and 10:

8) Prepare quality control charts according to Materials I.M. 511. Keep the charts current and available showing both individual sample results and moving average values for both lab voids and absolute deviation from target. Base moving average values on four consecutive sample results. The moving average absolute deviation from target may restart only in the event of a mandatory plant shutdown for failure to maintain the average within the production tolerance. Include the target value and specification tolerances on control charts.

9) Calculate laboratory voids for individual samples according to Materials I.M. 501. Use the individual density and individual maximum specific gravity determined for each sample. To determine the moving average of laboratory voids, use the average of the last four individual sample laboratory voids. Calculate absolute deviation from target lab voids according to Appendix A of this specification. To determine the moving average absolute deviation from target laboratory voids, use the average of the last four individual sample absolute deviations from target laboratory voids.

10) Monitor the test results and make mix adjustments, when appropriate, to keep the mixture near the target values. Notify the Engineer whenever the process approaches a specification tolerance limit. When acceptance for lab voids is not based on PWL, cease operations when the moving average point for absolute deviation from target lab voids is outside the specification tolerance limit. Assume responsibility to cease operations, including not incorporating material which has not been placed. Do not start the production process again until notifying the Engineer of the corrective action proposed.

2303.03, D, 4, a.

Replace Articles 2, 3, and 4:

2) A lot is considered to be one layer of one mixture bid item placed during a day's production. The Engineer may approve classifying multiple layers of construction placed during a single day as a lot provided only one mixture was used.

3) ~~The Engineer may waive sampling for field voids in the following situations, provided compaction has been thorough and effective:~~ For the following situations sampling for field voids may be waived by the Engineer provided compaction has been thorough and effective, or sampling may be modified by mutual agreement to include more than one day's production provided samples are taken prior to trafficking:

- When the day's operation is not more than 2500 square yards (2500 m^2) excluding areas deducted from the field voids lot,
- When the day's operation is not more than 500 tons (500 Mg) excluding quantities deducted from the field voids lot,
- When the mixture is being placed in irregular areas, or
- When placing wedge or strengthening courses.

4) Engineer will obtain and test samples for each lot according to Materials I.M. 204 Appendix F. The Contractor may request to have a quality control plan that indicates a higher testing frequency at no additional cost to the Contracting Authority if pre-approved by the Engineer at the preconstruction meeting. The Engineer will determine the core locations. The length laid in each lot will be divided into approximately equal sublots. Obtain one sample at a random location, as directed and witnessed by the Engineer, in each sublot. Determine a new random location for the sublot when the designated core location falls on a runout taper at an existing pavement, bridge, or bridge approach section where the thickness is less than the design thickness.

Replace Article 6:

Use the following methods of acceptance for field voids:

a) For mixture bid items placed in the following areas:

- Base widening placed in a travel lane,
- Non high-speed ramps,
- Bridge approaches placed as a separate operation,
- Non-interstate travel lanes intended to be in service for fewer than 12 months,
- State Park and Institutional roadways,
- Recreational trails,
- Irregular areas identified by the Engineer that may include areas not suitable for continuous paving, and
- Wedges,

the Engineer will accept the field voids lot based on the average test results or an established effective rolling pattern when approved by the Engineer. Do not exceed 8% average field

voids. The Engineer may modify the sample size and frequency provided compaction is thorough and effective. The Engineer may apply the pay schedule in 2303.05, A, 3, b, 3 to areas where thorough and effective compaction is not achieved.

b) For all other areas of Class I compaction, ~~D~~determine PWL, as defined in Materials I.M. 501, for each lot using a lower specification limit (LSL) of 3.5% voids (96.5% of G_{mm}) and an upper specification limit (USL) of 8.5% voids (91.5% G_{mm}).

Add the following Article:

9) Use maximum specific gravity (G_{mm}) results in field voids calculations as follows:

a) When cores represent one day's production and more than one G_{mm} test result is available, use the average G_{mm} in the field voids calculation for all cores.

b) When cores represent one day's production and only one G_{mm} test result is available, use the single G_{mm} test result in the field voids calculation for all cores.

c) When the cores represent more than one day's production, use the average of all G_{mm} test results from all days corresponding with the cores.

2303.03, D, 5, b, 7.

Replace the Article:

Facsimile, or deliver by other methods the Engineer approves, the Daily Plant Report to the Engineer and the designated laboratory daily. At project completion, provide the Engineer a copy of the electronic file(s) containing project information generated during the progress of the work.

2303.03, D, 5, d, 2.

Replace the Article:

If the Engineer's verification test results validate the Contractor's test results, the Contractor's results will be used for material acceptance. Disputes between the Contractor's and Engineer's test results will be resolved according to Materials I.M. 511. The DME may consider results from the IAP in the dispute resolution process. Do not apply Materials I.M. 511, 5, C, 1, c as a non-validation criterion.

Use a maximum lot pay factor of 1.000 when the Engineer's results are used for any portion of a lot. When using "Procedure B" in Materials I.M. 511 Appendix C to establish a correction factor, choose three consecutive split test results such that the differences between the splits each has the same sign (+ or -) and at least two of the selected three are outside the Materials I.M. 216 tolerance. When non-validation of test results cannot be explained by an assignable cause as determined by the DME, the Engineer's results will be used for acceptance.

2303.03, E, 1.

Replace the first sentence of the second paragraph:

For mixtures meeting the criteria in Article~~s~~ 2303.02, E, 2, a ~~or b~~:

2303.04, A, 1, General.

Add the following Article:

d. Unless stated otherwise, equivalent WMA mixtures may be substituted for specified HMA mixtures.

2303.04, Method Measurement.

Add the following Article

l. Recycled Asphalt Shingles (RAS)

67% of the asphalt binder from RAS which is incorporated into the mixture will be included in the quantity of asphalt binder used.

2303.05, A, 1.

Add to the end of the Article:

Unless stated otherwise, equivalent WMA mixtures may be substituted for specified HMA mixtures with no change in the contract unit price.

2303.05, A, 2.

Replace the Article:

Payment for ~~surface course test strip placement in an intermediate lift~~ test strips will be the contract unit price for ~~Hot Mix Asphalt Mixture, Surface Course,~~ the test strip mixture bid item per ton (megagram) regardless of lift placement.

2303.05, A, 3, b.

Add the following Article:

3) Payment when PWL is not used for acceptance:

Average Field Voids (Pa), %	**Pay Factor**
0.0 to 8.0	1.000
8.1 to 9.5	$PF = \frac{11 - Pa}{3}$
Over 9.5	0.500 maximum

When the average air void content exceeds 8.0%, the Engineer may declare the lot or parts of the lot deficient or unacceptable.

2303.05, B Asphalt Binder

Replace Article 2:

2. Payment for asphalt binder will be for new asphalt binder ~~and~~, the asphalt binder in the RAP which is incorporated in the mixture, and 67% of the asphalt binder from RAS which is incorporated into the mixture. The quantity of asphalt binder in ~~RAP~~ RAM, which is incorporated into the mix, will be calculated in tons (megagrams) of asphalt binder in the ~~RAP~~ RAM. This will be based on the actual asphalt binder content determined for the mix design from the results of the Engineer's extraction test.

2303.05, D, 1.

Replace the Article:

When anti-strip agent is required, the incorporation of the anti-strip agent into the asphalt mixture will be considered as extra work ordered by the Engineer if the Contracting Authority's TSR results from the field produced mixture meet or exceed the minimum requirement and the conditioned indirect tensile strength is improved by at least 10% over that from the plant mixture without anti-strip (or original JMF conditioned strength when plant mix without anti-strip is not available). Payment will be made at the rate of $2.00 per ton (megagram) of asphalt mixture in which the anti-strip agent is incorporated. WMA mixtures designed for 10,000,000 ESALS and higher must satisfy Articles 2303.02, E, 2, a, 1 or 2 to be eligible for anti-strip payment. For ~~HMA~~ mix designs (small quantities excluded) with a TSR greater than or equal to 80%, payment will stop when the Contracting Authority's TSR results of the field produced mixture without the agent are greater than or equal to 80%.

Appendix A – Calculations for Absolute Deviation from Target Lab Voids

Calculate the absolute deviation from target (ADT_i) for sample, *i,* using the following equation:

$$ADT_i = |Pa_i - Target\ Pa|$$

Where,

i = Sequential sample, *i*
ADT_i = Absolute deviation from target for sample, *i*
Pa_i = Laboratory air voids test result for sample, *i*
Target Pa = Target laboratory air voids for mixture
| | = Absolute value

Calculate the moving average ADT for *i* ≥ 4 using the following equation:

$$\left|\frac{ADT_i + ADT_{i-1} + ADT_{i-2} + ADT_{i-3}}{4}\right|$$

Where,

i = Sequential sample, *i*
ADT_i = Absolute deviation from target for sample *i*
| | = Absolute value