Iowa Department of Transportation

MINUTES
OF
IOWA DOT SPECIFICATION COMMITTEE MEETING

April 10, 2014

Members Present:	Darwin Bishop	District 3 - Construction
	Mark Brandl	District 6 - Davenport RCE
	Donna Buchwald	Office of Local Systems
	Eric Johnsen, Secretary	Specifications Section
	Greg Mulder	Office of Construction & Materials
	Wes Musgrove	Office of Contracts
	Dan Redmond	District 4 - Materials
	Tom Reis, Chair	Specifications Section
	Brian Smith	Office of Design
	Willy Sorensen	Office of Traffic & Safety
Members Not Present:	Mitch Dillavou	Project Delivery Bureau
	Gary Novey	Office of Bridges & Structures
Advisory Members Present:	Lisa McDaniel	FHWA
Others Present:	Todd Hanson	Office of Construction & Materials
	Adam Kemper	Office of Contracts
	Kevin Merryman	Office of Construction & Materials
	Stuart Nielsen	Office of Bridges & Structures
	Melissa Serio	Office of Construction & Materials

Tom Reis, Specifications Engineer, opened the meeting. The following items were discussed in accordance with the agenda dated April 3, 2014:

1. Article 1107.02, B, 7, Insurance When Working In Railroad Right-of-Way.

The Office of Contracts requested to clarify payment for meeting railroad insurance requirements.

2. Article 2120.03, Application (Fuel Adjustment).

The Office of Contracts requested to address application of fuel adjustment by specification and not proposal note and add items covered by fuel adjustment.

3. Article 2301.03, H, 3, Macrotexture (Portland Cement Concrete Pavement).

The Office of Construction and Materials requested to update the specifications for macrotexture (tining).

4. Section 2310, Portland Cement Concrete Overlay.

The Office of Construction and Materials requested to clarify the specifications for PCC Overlay and add Seal Coat Bond Breaker.

5. Article 2433.02, B, 8, Concrete (**Concrete Drilled Shaft)**.

The Office of Construction and Materials requested to revise the mineral admixture requirements for concrete for drilled shafts.

6. **Article 2506.02, Materials** (**Flowable Mortar)**.

The Office of Construction and Materials requested to eliminate non-critical flow mix designs and reduce testing.

7. **Article 4196.01, B, 3, Embankment Erosion Control.**

Article 4196.01, B, 6, Concrete and Stone Revetment and Bridge Abutment Backfill Fabric.

The Office of Construction and Materials requested to revise the appropriate engineering fabric for concrete and stone revetment applications.

8. **Specification Revision Submittal Form.**

The Specification Section requested approval of revisions to the Specification Revision Submittal Form requested by the Office of Contracts.

The Office of Construction and Materials asked that a comments section be added for the bid item changes. This was added.

The new form will be posted on the W drive and distributed to Specification Committee members.

The Office of Traffic and Safety requested that the revision form and an M.S. Word copy of the standard specifications be posted in a more obvious location for member access. A new folder will be added under Specifications on the W drive.

The Office of Construction and Materials asked if a guide document could be written for submitting specification revisions. The Specifications Section will work on this.

The Specifications Section indicated that some other States post proposed specification revisions for public/industry comment prior to their specification committee meetings. This will be discussed and potentially brought back to Specification Committee for approval.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Wes Musgrove / Ed Kasper	**Office:** Contracts	**Item 1**
Submittal Date: March 14, 2014	**Proposed Effective Date:** October 2014	
Article No.: 1107.02, B, 7 **Title:** Insurance When Working In Railroad Right-of-Way	**Other:**	

Specification Committee Action: Deferred to the May Specification Committee Meeting.

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

Specification Committee Approved Text:

Comments: The Office of Contracts requested to defer this revision to address some issues with the implementation of the revision. The Office of Design will set up a meeting with affected offices to discuss.

The Office of Design requested clarification on how they will be notified of the need for a railroad insurance provision bid item. The Rail Section is reviewing all projects and flagging in the Project Scheduling System (PSS) when a railroad is involved. This would indicate the need for a bid item.

The Office of Local Systems requested a report on the cost bid for the existing railroad insurance provisions bid items. The Office of Contracts will produce a report prior to the meeting.

The District 6 Office asked about verifying the adequacy of the Contractor's insurance policy. They requested the policies be submitted to the Rail Section for review, similar to the specifications for shop drawings in Article 1105.03. The Office of Contracts indicated that they believe the Office of Finance keeps track of what railroad policies have been submitted, but does not verify the policies meet specifications. The BNSF Railroad requires submission of railroad policies on some projects for approval prior to the Office of Contracts signing the contract. The Office of Contracts indicated that they review other policies prior to signing the contract. The District 6 Office asked how they know to pay the bid price for the railroad insurance bid item. The Office of Contracts indicated that the Construction Office could pay as soon as they receive the contract, as the Office of Contracts has already reviewed the policy. The Construction Offices would like to receive copies of the policies for administration of the contract.

The District 6 Office indicated that they have had some maintenance projects that included a bid item for railroad insurance, but the Contractor had not yet obtained a policy or the Office of Contracts checked for a policy. Maintenance projects have had some issues due to the timing of when they are added to PSS.

The District 6 Office asked if the Contractor could submit the railroad policy after the contract is signed, so as not to delay the contract. The Office of Contracts indicated that they believed Iowa Code required the Department to verify the Contractor's bond and insurance prior to signing the contract.

The District 6 Office asked about working in DOT right-of-way that is less than 25 feet from the tracks. The Specifications Section indicated that a railroad insurance policy would not be required, if the Contractor is not working in railroad right-of-way, but railroad flaggers would be required.

Specification Section Recommended Text:

1107.02, B, 7, Payment.

Replace the title and Article:

Method of Measurement and Basis of Payment.

~~Payment to the Contractor for insurance required in the contract documents shall be considered as incidental to other items in the contract.~~

The lump sum price bid for Insurance Provisions, of the company specified, will be full compensation for fulfilling the requirements of Article 1107.02.

Full payment will be made upon submittal of the required evidence of coverage and, where

necessary, approval of such coverage by the railroad company.

Comments:

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

7. Method of Measurement and Basis of Payment.

~~Payment to the Contractor for insurance required in the contract documents shall be considered as incidental to other items in the contract.~~

The lump sum price bid for this item will be full compensation for fulfilling the requirements of 1107.02, B.

Full payment will be made upon submittal of the required evidence of coverage and, where necessary, approval of such coverage by the railroad company.

Reason for Revision:

To establish simplicity and uniformity so that rail requirements can be accurately addressed in the contract documents. Currently rail insurance is a bid item in some instances and incidental in others. Also, in some situations only a portion of the rail insurance cost is to be applied to the bid item, and in other situations the entire cost is applied. This has resulted in errors and inconsistencies in contract documents and re-work or addendums to make corrections.

A new bid item will be established for each railroad company. The bid item will be used anytime railroad protective insurance is required, either by Article 1107.02, B; DS; SS; or SP.

It is intended to enhance the Project Scheduling System so that the Office of Rail Transportation may communicate to designers and others the projects that have rail impacts, what rail companies are impacted and what specifications are required.

Federal aid participation is limited to Railroad Protective liability insurance coverage limits of $2 million per occurrence and $6 million aggregate. When specifications require coverage limits greater than that, the bid item must be in a non-participating category. For simplicity on projects where the DOT is contracting authority the item may be made non-participating routinely. This does not prohibit local agencies from designating federal aid participation on a case by case basis.

County or City Input Needed (X one)	**Yes** x	**No**
Comments: Local agencies are represented on the Specification Committee. There has been no previous related correspondence.		

Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes**	**No** x	**Industry Concurrence:**	**Yes**	**No**
Comments: It is anticipated that industry will support this change because it helps draw attention to those projects requiring rail protective insurance and provides uniformity to the process.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Wes Musgrove / Ed Kasper	**Office:** Contracts	**Item 2**
Submittal Date: March 28, 2014	**Proposed Effective Date:** October 2014	
Article No.: 2120.03 **Title:** Application (Fuel Adjustment)	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 4/10/2014	**Effective Date:** 10/21/2014

Specification Committee Approved Text:

2120.03, A.

Replace the Article:

Applied to eligible items as the work is done, ~~according to this specification~~ when ~~indicated in the contract documents~~ the contract quantity of that eligible item is 50,000 cubic yards (38,228 m^3) or more.

2120.03, B.

Add the Article:

9. Select Treatment, Contractor Furnished

2120.03, C.

Replace the Article:

Fuel adjustment using a FUF ~~factor~~ of 0.27 gallon per cubic yard (1.3 L/m^3) will be applied to Embankment-in-Place, Contractor Furnished, and Embankment-in-Place (non-dredge material).

Comments: The Office of Construction and Materials asked if fuel adjustment was applied when a single eligible item was over 50,000 cubic yards or when the sum of the eligible items was over 50,000 cubic yards. The practice has been when any single item is over 50,000 cubic yards. A follow up question asked if fuel adjustment is applied to all eligible items when any one of them is over the threshold. The District 3 Office and District 6 Office indicated that fuel adjustment is only applied to the item or items that were over 50,000 cubic yards. The specification language was revised to make this clearer.

The proposal note used until the specification is revised will be changed to match the approved revision.

Specification Section Recommended Text:

2120.03, A.

Replace the Article:

Applied as the work is done, according to this specification when ~~indicated in the contract documents~~ the contract quantity of any eligible item is 50,000 cubic yards (38,228 m^3) or more.

2120.03, B.

Add the Article:

9. Select Treatment, Contractor Furnished

2120.03, C.

Replace the Article:

Fuel adjustment using a FUF factor of 0.27 gallon per cubic yard (1.3 L/m^3) will be applied to

Embankment-in-Place, Contractor Furnished, and Embankment-in-Place (non-dredge material).

Comments: Currently, a proposal note adds Embankment-in-Place, Contractor Furnished to Article 2120.03, B and not 2120.03, C. The factors are different. Is this an issue that needs to be changed prior to October?

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

2120.03 APPLICATION.

A. Applied as the work is done, according to this specification when ~~indicated in the contract documents.~~ the contract quantity of each eligible item is 50,000 CY or more.

B. Fuel adjustment using a fuel adjustment factor (FUF) of 0.20 gallon per cubic yard (1.0 L/m^3) will be applied to:

1. Selected Backfill (including Stockpile)

2. Class 10 (Roadway & Borrow, Unsuitable, Waste, Stockpile, and Channel)

3. Class 12 (Roadway & Borrow, Channel, and Waste)

4. Class 13 (Roadway & Borrow, Channel, and Waste)

5. Topsoil, Furnish and Spread

6. Topsoil, Spread

7. Topsoil, Strip, Salvage, and Spread

8. Topsoil, Strip and Stockpile

9. Select Treatment, Contractor Furnished

C. Fuel adjustment using a FUF factor of 0.27 gallon per cubic yard (1.3 L/m^3) will be applied to Embankment-in-Place, Contractor Furnished, and Embankment-in-Place (non-dredge material).

D. Fuel adjustment will also be applied to Embankment-In-Place (dredge material). The fuel usage will be based on billed gallons (liters) of fuel used.

Reason for Revision: To clarify that fuel adjustment applies to the two new bid items for contractor furnished embankment-in-place and contractor furnished select treatment. Currently, a proposal note is required for fuel adjustment eligibility ("when indicated in the contract documents") based on a quantity of 50,000 CY or more. The Office of Contracts would like to eliminate the need for a proposal note (and related checker program) by simply specifying the quantity threshold in the specification.

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

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Kevin Merryman	**Office:** Construction & Materials	**Item 3**
Submittal Date: March 26, 2014	**Proposed Effective Date:** October 2014	
Article No.: 2301.03, H, 3 **Title:** Finishing and Texture	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 4/10/2014	**Effective Date:** 10/21/2014

Specification Committee Approved Text:

2301.03, H, 3, Macrotexture.

Replace the Article:

a. General.

~~**1)**~~ Macrotexture (tining) is constructed by placing grooves in the surface of a pavement, normally while the concrete is plastic. ~~The Contractor may either transversely or longitudinally provide macrotexture tining.~~

~~**2) When longitudinal grooving is used on mainline pavement, transverse grooving may be used on other pavement on the same project.**~~

b. Application.

1) Where the speed limit is greater than 35 mph (60 km/h), place macrotexture ~~on all mainline pavement, turn lanes, and the traveled portion of ramps~~ as required in Table 2301.03-1. ~~Macrotexturing is not required on radii, crossovers, paved medians, shoulders, and other irregular areas.~~

~~**2) Transversely or longitudinally groove gapped sections of mainline pavement that utilize longitudinal texture. Hand methods may be used on these mainline sections.**~~

~~**3**~~ **2)** When surface corrections are made in the hardened concrete, no macrotexture replacement is required.

~~**4) Unless specified otherwise, groove or otherwise finish bridge approach sections in the same manner as either the adjacent bridge or pavement surface.**~~

~~**5) When finishing by hand methods, except for mainline pavement and ramps as described above, only microtexture will be required.**~~

Table 2301.03-1: Macrotexture Requirements

Pavement/Placement Type	Macrotexture Orientation		Macrotexture Not Required
	Longitudinal	Transverse	
Mainline - slip-form	X		
Mainline - handwork		X	
Turn lanes - slip-form	X	1	
Turn lanes - handwork		X	
Ramps - slip-form	X	1	
Ramps - handwork		X	
Gapped sections of mainline - slip-form	X	1	
Gapped sections of mainline - handwork		X	
Radii			X
Crossovers			X

Paved Medians			X
Shoulders			X
Irregular Areas			X
Bridge Approaches		2	

1. Transverse macrotexture permitted for placements less than 600 feet (180 m) in length.
2. Transverse tining required unless longitudinal grooving in concrete is specified in the contract documents.

c. Operation.

1) General.

For ~~grooving~~ tining, use a mechanical device that:

- Has a single row of tines that are 1/8 inch ± 1/64 inch (3 mm ± 0.5 mm) wide, and
- Forms grooves in the plastic concrete that are1/8 inch (3 mm) deep as a target, with a ± 1/16 inch (± 1.5 mm) tolerance.

2) Transverse ~~Grooving~~ Tining.

a) For transverse ~~grooves~~ tining, ~~randomly space the tines from 3/8 inch to 1 5/8 inch (10 to 40 mm) with no more than 50% of the spacing exceeding 1 inch (25 mm)~~ uniformly space tines at 1/2 inch (12 mm) intervals.

b) At transverse joints, leave a 4 inch to 6 inch (100 to 150 mm) wide strip of pavement surface (centered along the joint) that is not ~~grooved~~ tined for the length of the joint.

c) Transverse tining may be placed by hand methods.

3) Longitudinal ~~Grooving~~ Tining.

a) For longitudinal ~~grooves~~ tining, uniformly space the tines at 3/4 inch (20 mm) intervals.

b) Accomplish longitudinal ~~grooving~~ tining using equipment with horizontal and vertical ~~string line~~ controls to ensure straight, uniform grooves.

c) At longitudinal joints, leave a 2 inch to 3 inch (50 to 75 mm) wide strip of pavement surface (centered along the joint) that is not ~~grooved~~ tined for the length of the joint.

d) Do not place longitudinal tining by hand methods.

d. Limitations.

1) ~~Form grooves~~ Place tining in a time and manner producing the desired surface texture while minimizing displacement of larger aggregate particles. Complete ~~grooving~~ tining before pavement surface permanently sets.

2) Where abutting pavement is to be placed, extend ~~grooving~~ tining as close as possible to the edge without damaging the edge. Where abutting pavement is not to be placed, do not ~~groove~~ tine the 6 inch (150 mm) area nearest the edge or 1 foot (300 mm) from the face of the curb.

3) Do not ~~groove~~ tine the outside 2 feet (0.6 meters) if placing structural rumble strips (rumble strips placed in the outside 2 feet (0.6 meters) of PCC pavements, as shown in the contract documents, to deter traffic).

~~4)~~ ~~Uniform width slabs of 20 feet (300 mm) or narrower and less than 600 feet (200 m) long may be transversely grooved by hand methods. Mainline and ramp pavement may also be grooved by hand methods during equipment breakdowns.~~

Comments: The table was revised to show that longitudinal tining is not allowed for bridge approaches. Bridge approaches will have either transverse tining or longitudinal grooving post curing.

The metric conversion of 600 feet in the table notes was revised to 180 m to match the smoothness specifications.

Specification Section Recommended Text:

2301.03, H, 3, Macrotexture.

Replace the Article:

a. General.

~~1)~~ Macrotexture (tining) is constructed by placing grooves in the surface of a pavement, normally while the concrete is plastic. ~~The Contractor may either transversely or longitudinally provide macrotexture tining.~~

~~2) When longitudinal grooving is used on mainline pavement, transverse grooving may be used on other pavement on the same project.~~

b. Application.

1) Where the speed limit is greater than 35 mph (60 km/h), place macrotexture ~~on all mainline pavement, turn lanes, and the traveled portion of ramps~~ as required in Table 2301.03-1. ~~Macrotexturing is not required on radii, crossovers, paved medians, shoulders, and other irregular areas.~~

~~2) Transversely or longitudinally groove gapped sections of mainline pavement that utilize longitudinal texture. Hand methods may be used on these mainline sections.~~

~~3~~ **2)** When surface corrections are made in the hardened concrete, no macrotexture replacement is required.

~~4) Unless specified otherwise, groove or otherwise finish bridge approach sections in the same manner as either the adjacent bridge or pavement surface.~~

~~5) When finishing by hand methods, except for mainline pavement and ramps as described above, only microtexture will be required.~~

Table 2301.03-1: Macrotexture Requirements

Pavement/Placement Type	Macrotexture Orientation		Macrotexture Not Required
	Longitudinal	Transverse	
Mainline - slip-form	X		
Mainline - handwork		X	
Turn lanes - slip-form	X	1	
Turn lanes - handwork		X	
Ramps - slip-form	X	1	
Ramps - handwork		X	
Gapped sections of mainline - slip-form	X	1	
Gapped sections of mainline - handwork		X	
Radii			X
Crossovers			X
Paved Medians			X
Shoulders			X
Irregular Areas			X
Bridge Approaches	2	2	

1. Transverse macrotexture permitted for placements less than 600 feet (183 m) in length.

2. Match adjacent pavement or bridge.

c. Operation.

1) General.

For ~~grooving~~ tining, use a mechanical device that:

- Has a single row of tines that are 1/8 inch ± 1/64 inch (3 mm ± 0.5 mm) wide, and
- Forms grooves in the plastic concrete that are1/8 inch (3 mm) deep as a target, with a ± 1/16 inch (± 1.5 mm) tolerance.

2) Transverse ~~Grooving~~ Tining.

a) For transverse ~~grooves~~ tining, ~~randomly space the tines from 3/8 inch to 1 5/8 inch (10 to 40 mm) with no more than 50% of the spacing exceeding 1 inch (25 mm)~~ uniformly space tines at 1/2 inch (12 mm) intervals.

b) At transverse joints, leave a 4 inch to 6 inch (100 to 150 mm) wide strip of pavement surface (centered along the joint) that is not ~~grooved~~ tined for the length of the joint.

c) Transverse tining may be placed by hand methods.

3) Longitudinal ~~Grooving~~ Tining.

a) For longitudinal ~~grooves~~ tining, uniformly space the tines at 3/4 inch (20 mm) intervals.

b) Accomplish longitudinal ~~grooving~~ tining using equipment with horizontal and vertical ~~string line~~ controls to ensure straight, uniform grooves.

c) At longitudinal joints, leave a 2 inch to 3 inch (50 to 75 mm) wide strip of pavement surface (centered along the joint) that is not ~~grooved~~ tined for the length of the joint.

d) Do not place longitudinal tining by hand methods.

d. Limitations.

1) ~~Form grooves~~ Place tining in a time and manner producing the desired surface texture while minimizing displacement of larger aggregate particles. Complete ~~grooving~~ tining before pavement surface permanently sets.

2) Where abutting pavement is to be placed, extend ~~grooving~~ tining as close as possible to the edge without damaging the edge. Where abutting pavement is not to be placed, do not ~~groove~~ tine the 6 inch (150 mm) area nearest the edge or 1 foot (300 mm) from the face of the curb.

3) Do not ~~groove~~ tine the outside 2 feet (0.6 meters) if placing structural rumble strips (rumble strips placed in the outside 2 feet (0.6 meters) of PCC pavements, as shown in the contract documents, to deter traffic).

~~**4)** Uniform width slabs of 20 feet (300 mm) or narrower and less than 600 feet (200 m) long may be transversely grooved by hand methods. Mainline and ramp pavement may also be grooved by hand methods during equipment breakdowns.~~

Comments: Should the length 600 feet shown in the Table 2301.03-1 be 183 m, 200 m, or 180 m? The 183 meters is soft converted, while 200 meters is currently used the text above being deleted, and 180 meters is commonly used in Sections 2316 and 2317 for pavement smoothness.

Member's Requested Change (Redline/Strikeout):

H. Finishing and Texture.

3. Macrotexture.

a. General.

1) Macrotexture (tining) is constructed by placing grooves in the surface of a pavement, normally while the concrete is plastic. ~~The Contractor may either transversely or longitudinally provide macrotexture tining~~

2) ~~When longitudinal grooving is used on mainline pavement, transverse grooving may be used on other pavement on the same project.~~

b. Application.

1) ~~Where the speed limit is greater than 35 mph (60 km/h), place macrotexture on all mainline pavement, turn lanes, and the traveled portion of ramps. Macrotexturing is not required on radii, crossovers, paved medians, shoulders, and other irregular areas.~~ Place macrotexture as required in Table 2301.03-1.

2) ~~Transversely or longitudinally groove gapped sections of mainline pavement that utilize longitudinal texture. Hand methods may be used on these mainline sections.~~

3) When surface corrections are made in the hardened concrete, no macrotexture replacement is required.

4) ~~Unless specified otherwise, groove or otherwise finish bridge approach sections in the same manner as either the adjacent bridge or pavement surface.~~

5) ~~When finishing by hand methods, except for mainline pavement and ramps as described above, only microtexture will be required.~~

Table 2301.03-1: Macrotexture Requirements (speed limit greater than 35 mph)

Pavement/Placement Type	Macrotexture Not Required	Macrotexture Required	Required Macrotexture Orientation	
			Longitudinal *	Transverse**
Mainline - slip-form		X	X	
Mainline - handwork		X		X
Turn lanes - slip-form		X	X	1
Turn lanes - handwork		X		X
Ramps - slip-form		X	X	1
Ramps - handwork		X		X
Gapped sections of mainline - slip-form		X	X	1
Gapped sections of mainline - handwork		X		X
Radii	X			
Crossovers	X			
Paved Medians	X			
Shoulders	X			
Irregular Areas	X			
Bridge Approaches		X	2	2

*Place all longitudinal macrotexture using equipment with horizontal and vertical controls to ensure straight, uniform grooves. Do not place longitudinal macrotexture by hand methods.
** Transverse macrotexture may be placed by hand methods
1. Transverse macrotexture permitted for placements less than 600 feet in length
2. Match adjacent pavement or bridge

c. Operation.

1) General.

For ~~grooving~~ tining, use a mechanical device that:

- Has a single row of tines that are 1/8 inch ± 1/64 inch (3 mm ± 0.5 mm) wide, and
- Forms grooves in the plastic concrete that are1/8 inch (3 mm) deep as a target, with a ± 1/16 inch (± 1.5 mm) tolerance.

2) Transverse ~~Grooving~~ Tining.

a) For transverse ~~grooves~~ tining, ~~randomly space the tines from 3/8 inch to 1 5/8 inch (10 to 40 mm) with no more than 50% of the spacing exceeding 1 inch (25 mm)~~ uniformly space the tines at ½ inch (12 mm) intervals.

b) At transverse joints, leave a 4 inch to 6 inch (100 to 150 mm) wide strip of pavement surface (centered along the joint) that is not ~~grooved~~ tined for the length of the joint.

3) Longitudinal Grooving.

a) For longitudinal ~~grooves~~ tining, uniformly space the tines at 3/4 inch (20 mm) intervals.

b) Accomplish longitudinal ~~grooving~~ tining using equipment with horizontal and vertical ~~string line~~ controls to ensure straight, uniform grooves.

c) At longitudinal joints, leave a 2 inch to 3 inch (50 to 75 mm) wide strip of pavement surface (centered along the joint) that is not ~~grooved~~ tined for the length of the joint.

d. Limitations.

1) ~~Form grooves~~ Place tining in a time and manner producing the desired surface texture while minimizing displacement of larger aggregate particles. Complete

~~grooving~~ tining before pavement surface permanently sets.

2) Where abutting pavement is to be placed, extend ~~grooving~~ tining as close as possible to the edge without damaging the edge. Where abutting pavement is not to be placed, do not ~~groove~~ tine the 6 inch (150 mm) area nearest the edge or 1 foot (300 mm) from the face of the curb.

3) Do not ~~groove~~ tine the outside 2 feet (0.6 meters) if placing structural rumble strips (rumble strips placed in the outside 2 feet (0.6 meters) of PCC pavements, as shown in the contract documents, to deter traffic).

~~**4)** Uniform width slabs of 20 feet (300 mm) or narrower and less than 600 feet (200 m) long may be transversely grooved tined by hand methods.~~

~~5) Mainline and ramp pavement may also be grooved by hand methods during equipment breakdowns.~~

Reason for Revision: In previous meetings of the ICPA/IDOT Joint Specification Committee it was agreed that a subcommittee would review PCC pavement texture requirements and revise those requirements to align with the results of the surface characteristics research. The changes are a result of the subcommittee's work.

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 changes were drafted with input from ICPA and their members.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Kevin Merryman	**Office:** Construction & Materials	**Item 4**
Submittal Date: March 27, 2014	**Proposed Effective Date:** October 2014	
Section No.: 2310 **Title:** PCC Overlay	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 4/10/2014	**Effective Date:** 10/21/2014

Specification Committee Approved Text:

2310.01, Description.

Replace Articles B and C:

B. Unbonded overlay: a PCC overlay over an existing pavement where a stress relief layer is placed on top of the existing PCC pavement or ~~an existing PCC pavement that has been overlaid with HMA (composite pavement)~~ a PCC overlay over an existing composite pavement (flexible pavement over PCC).

C. Whitetopping: a PCC overlay over an existing, full depth ~~asphalt~~ flexible pavement.

2310.02, Materials.

Add the Article:

C. Seal Coat Bond Breaker.
Meet the requirements of Article 2307.02.

2310.03, Construction.

Replace the Article:

Apply the requirements of Section 2301 to this work with the modifications ~~for each type of work~~ identified below.

A. Scarifying, ~~or~~ Shotblasting, or Waterblasting Equipment.
Use power operated equipment capable of uniformly scarifying or removing the existing surface in a satisfactory manner and to depths required. Other types of removal devices may be used if their operation is suitable and if they can be demonstrated to the satisfaction of the Engineer. The contract documents will include a pay item for such work.

B. Preparation of Surface.

1. General.
- **a.** If full depth base repair is included in the project, complete it prior to preparation of the existing pavement surface.
- **b.** When required, include the entire area to be resurfaced in preparation of the existing pavement surface. Materials removed in the preparation operation may be placed in the shoulder area unless specified otherwise in the contract documents.

2. ~~Bonded Overlays~~ Surface Preparation.
- **a.** When required for bonded overlays, ~~P~~prepare the surface by shot blasting, waterblasting, or scarifying. Scarify to a nominal depth of 1/4 inch (5 mm).
- **b.** Ensure preparation removes all dirt, oil, foreign materials, laitance, or loose material from the surface and edges against which new concrete will be placed.

3. ~~Unbonded Overlays and Whitetopping~~ Pavement Scarification.

a. When required, ~~P~~prepare surface by scarifying per Section 2214.

~~**b.** When placement of HMA stress relief layer is included as part of the contract for unbonded overlays, pavement scarification will not be required.~~

~~**c**~~ **b.** At the direction of the Engineer, trim high spots found in the existing ~~HMA~~ flexible pavement. This work will be accomplished during the scarification operation, only at isolated locations, and will be considered incidental to the pavement scarification.

~~**d.** Work covered by Article 2310.03, B, 3, will be paid for according to Article 2310.05, D, Pavement Scarification.~~

c. Seal Coat Bond Breaker.

Prior to placement of the PCC overlay, place two applications of a seal coat bond breaker to scarified PCC surfaces per Article 2307.03 and as modified per Article 2316.03, B, 2, b. Do not allow traffic on bond breaker before it has set.

4. Hot Mix Asphalt Stress Relief Course.

Construct in accordance with Article 2303.03. Use Class II Compaction, except use only static steel wheeled rollers. Article 2303.04 shall also apply.

C. Placing and Finishing Overlay.

1. General.

a. Apply Section 2317 to all PCC Pavement bid items of a Primary project if any individual PCC Pavement bid item for that project is 5000 square yards (4200 m^2) or greater. Apply Section 2316 to all other Primary projects and when specifically required for other projects.

b. ~~Control the placing equipment to the proper elevation by string line. Take cross sections and establish a grade line. The Engineer will review and approve the new grade lines. Information detailing the pavement design thicknesses at the various survey points and material quantities will also be provided. During construction, do not alter these grades solely to account for concrete overruns. Some overrun is normal, and only with the Engineer's approval will they be adjusted.~~ Clean existing surface of loose or adhering foreign material prior to and during placement of PCC.

c. Ensure existing pavement surface is free of standing water during PCC placement.

d. Ensure temperature of existing pavement surface does not exceed 120ºF (50ºC) during PCC placement. Water may be applied to cool existing pavement surface provided standing water is not present during PCC placement.

~~**2. Bonded Overlays.**~~

~~**a. Surface Cleaning.**~~

~~Clean the entire surface with an air blast prior to placing concrete. After cleaning, no traffic will be permitted on the cleaned surface except that necessary for overlay construction.~~

~~**b. Surface Condition.**~~

~~Ensure the prepared surface is dry in order to allow some absorption of the concrete mortar.~~

~~**c. Joints.**~~

~~**1)** Use a reliable method to exactly locate and identify on both sides of the road:~~

~~**a)** Each contraction and expansion joint in the existing pavement.~~

~~**b)** The joint to be sawed at each full depth patch.~~

~~**2)** Saw joints in the resurfacing directly over existing joints. Saw joints to the full depth of new resurfacing concrete, including depressions created in the existing surface and as specified in the widening areas. Saw joints as soon as possible without causing excessive raveling.~~

~~**3. Unbonded Overlays.**~~

~~**a. Hot Mix Asphalt Stress Relief Course.**~~

~~Construct in accordance with Article 2303.03. Use Class II Compaction, except use only static steel wheeled rollers. Article 2303.04 shall also apply.~~

~~**b. Surface Cleaning.**~~

~~Clean the existing surface of all loose or adhering foreign material prior to placement of the PCC over HMA pavement. Normally this will be accomplished with a power broom. Make this broom available during paving operations to clean any loose material that the construction equipment may track onto the surface.~~

~~**c. Surface Condition.**~~

~~Ensure the prepared surface is dry when concrete is placed on the surface of the HMA pavement in order to allow some absorption of the concrete mortar. If the surface of the HMA is above 110ºF (40ºC), the Contractor may apply water to the surface of the HMA ahead of the paving operation in order to cool the surface. Apply water far enough in advance of the paving operation so that the surface will dry from evaporation before concrete is placed. Do not apply water to the surface of the pavement when the HMA surface temperature is below 100ºF (38ºC).~~

~~**d. Joints.**~~

~~When jointing is specified in which panels are smaller than a normal lane width, construct the joints to be 1/8 inch (3 mm) wide. No cleaning or sealing is required.~~

~~**4. Whitetopping.**~~

~~**a. Surface Cleaning.**~~

~~Clean existing surface of loose or adhering foreign material prior to placement of the PCC over HMA pavement. Normally this will be accomplished with a power broom. Make this broom available during paving operations to clean any loose material that the construction equipment may track onto the surface.~~

~~**b. Surface Condition.**~~

~~Ensure the prepared surface is dry when concrete is placed on the surface of the HMA pavement in order to allow some absorption of the concrete mortar. If the surface of the HMA is above 110ºF (40ºC), the Contractor may apply water to the surface of the HMA ahead of the paving operation in order to cool the surface. Apply water far enough in advance of the paving operation so that the surface will dry from evaporation before concrete is placed. Do not apply water to the surface of the pavement when the HMA surface temperature is below 100ºF (38ºC).~~

~~**c. Joints.**~~

~~When jointing is specified in which panels are smaller than a normal lane width, construct joints 1/8 inch (3 mm) wide. No cleaning or sealing is required.~~

2. Joints.

a. Unbonded Overlays and Whitetopping.

Place joints as shown in the contract documents.

b. Bonded Overlays.

1) Place joints directly over joints and cracks in the existing pavement.

2) Saw joints to the full depth of the overlay.

3) Ensure joints are at least as wide as the joint or crack in the existing pavement.

D. Limitation of Operations.

1. At forecasted air temperatures below 55°F (13°C) use the maturity method to determine the opening time. Do not place resurfacing concrete when the air or pavement temperature is below 40°F (4°C).

2. The Contractor may use the shoulders for construction activities. It will be the Contractor's responsibility to repair the shoulders, as the Engineer deems necessary, to restore the shoulders to a condition acceptable for shoulder work. This work shall be done at no additional cost to the Contracting Authority. The Contractor may elect to limit the use and

vehicle loadings to minimize this work and its cost.

3. Place bonded concrete overlays between June 1 and September 30.

~~**4.** Do not place unbonded overlay or whitetopping materials on HMA when the pavement surface temperature exceeds 120° F (50°C).~~

2310.04, Method of Measurement.

Add the Article:

F. Seal Coat Bond Breaker.

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

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

2310.05, Basis of Payment.

Add the Article:

F. Seal Coat Bond Breaker.

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

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

Comments: Materials requirements were added to Article 2310.02 for the seal coat bond breaker.

The Specifications Section asked if "hot mix asphalt stress relief course" should be changed to "flexible pavement stress relief course" to cover WMA. Article 2303.01, D, allows the substitution of WMA when HMA is specified.

The new language covering the maximum temperature to place a PCC overlay was revised to 120°F (50°C) to match the old language that was removed.

Specification Section Recommended Text:

2310.01, Description.

Replace Articles B and C:

B. Unbonded overlay: a PCC overlay over an existing pavement where a stress relief layer is placed on top of the existing PCC pavement or ~~an existing PCC pavement that has been overlaid with HMA (composite pavement)~~ a PCC overlay over an existing composite pavement (flexible pavement over PCC).

C. Whitetopping: a PCC overlay over an existing, full depth ~~asphalt~~ flexible pavement.

2310.03, Construction.

Replace the Article:

Apply the requirements of Section 2301 to this work with the modifications ~~for each type of work~~ identified below.

A. Scarifying, ~~or~~ Shotblasting, or Waterblasting Equipment.
Use power operated equipment capable of uniformly scarifying or removing the existing surface in a satisfactory manner and to depths required. Other types of removal devices may be used if their operation is suitable and if they can be demonstrated to the satisfaction of the Engineer. The contract documents will include a pay item for such work.

B. Preparation of Surface.

1. General.

a. If full depth base repair is included in the project, complete it prior to preparation of the existing pavement surface.

b. When required, include the entire area to be resurfaced in preparation of the existing pavement surface. Materials removed in the preparation operation may be placed in the shoulder area unless specified otherwise in the contract documents.

2. ~~Bonded Overlays~~ Surface Preparation.

a. When required for bonded overlays, ~~P~~prepare the surface by shot blasting, waterblasting, or scarifying. Scarify to a nominal depth of 1/4 inch (5 mm).

b. Ensure preparation removes all dirt, oil, foreign materials, laitance, or loose material from the surface and edges against which new concrete will be placed.

3. ~~Unbonded Overlays and Whitetopping~~ Pavement Scarification.

a. When required, ~~P~~prepare surface by scarifying per Section 2214.

~~**b.** When placement of HMA stress relief layer is included as part of the contract for unbonded overlays, pavement scarification will not be required.~~

~~**c**~~ **b.** At the direction of the Engineer, trim high spots found in the existing ~~HMA~~ flexible pavement. This work will be accomplished during the scarification operation, only at isolated locations, and will be considered incidental to the pavement scarification.

~~**d.** Work covered by Article 2310.03, B, 3, will be paid for according to Article 2310.05, D, Pavement Scarification.~~

c. Seal Coat Bond Breaker.

Prior to placement of the PCC overlay, place two applications of a seal coat bond breaker to scarified PCC surfaces per Section 2307 and as modified per Article 2316.03, B, 2, b. Do not allow traffic on bond breaker before it has set.

4. Hot Mix Asphalt Stress Relief Course.

Construct in accordance with Article 2303.03. Use Class II Compaction, except use only static steel wheeled rollers. Article 2303.04 shall also apply.

C. Placing and Finishing Overlay.

1. General.

a. Apply Section 2317 to all PCC Pavement bid items of a Primary project if any individual PCC Pavement bid item for that project is 5000 square yards (4200 m^2) or greater. Apply Section 2316 to all other Primary projects and when specifically required for other projects.

~~**b.** Control the placing equipment to the proper elevation by string line. Take cross sections and establish a grade line. The Engineer will review and approve the new grade lines. Information detailing the pavement design thicknesses at the various survey points and material quantities will also be provided. During construction, do not alter these grades solely to account for concrete overruns. Some overrun is normal, and only with the Engineer's approval will they be adjusted.~~ Clean existing surface of loose or adhering foreign material prior to and during placement of PCC.

c. Ensure existing pavement surface is free of standing water during PCC placement.

d. Ensure temperature of existing pavement surface does not exceed 120ºF (40ºC) during PCC placement. Water may be applied to cool existing pavement surface provided standing water is not present during PCC placement.

~~**2. Bonded Overlays.**~~

~~**a. Surface Cleaning.**~~

~~Clean the entire surface with an air blast prior to placing concrete. After cleaning, no traffic will be permitted on the cleaned surface except that necessary for overlay construction.~~

~~**b. Surface Condition.**~~

~~Ensure the prepared surface is dry in order to allow some absorption of the concrete mortar.~~

~~**c. Joints.**~~

~~**1)** Use a reliable method to exactly locate and identify on both sides of the road:~~

~~**a)** Each contraction and expansion joint in the existing pavement.~~

~~**b)** The joint to be sawed at each full depth patch.~~

~~**2)** Saw joints in the resurfacing directly over existing joints. Saw joints to the full depth of new resurfacing concrete, including depressions created in the existing surface and as specified in the widening areas. Saw joints as soon as possible without causing excessive raveling.~~

~~**3. Unbonded Overlays.**~~

~~**a. Hot Mix Asphalt Stress Relief Course.**~~

~~Construct in accordance with Article 2303.03. Use Class II Compaction, except use only static steel wheeled rollers. Article 2303.04 shall also apply.~~

~~**b. Surface Cleaning.**~~

~~Clean the existing surface of all loose or adhering foreign material prior to placement of the PCC over HMA pavement. Normally this will be accomplished with a power broom. Make this broom available during paving operations to clean any loose material that the construction equipment may track onto the surface.~~

~~**c. Surface Condition.**~~

~~Ensure the prepared surface is dry when concrete is placed on the surface of the HMA pavement in order to allow some absorption of the concrete mortar. If the surface of the HMA is above 110ºF (40ºC), the Contractor may apply water to the surface of the HMA ahead of the paving operation in order to cool the surface. Apply water far enough in advance of the paving operation so that the surface will dry from evaporation before concrete is placed. Do not apply water to the surface of the pavement when the HMA surface temperature is below 100ºF (38ºC).~~

~~**d. Joints.**~~

~~When jointing is specified in which panels are smaller than a normal lane width, construct the joints to be 1/8 inch (3 mm) wide. No cleaning or sealing is required.~~

~~**4. Whitetopping.**~~

~~**a. Surface Cleaning.**~~

~~Clean existing surface of loose or adhering foreign material prior to placement of the PCC over HMA pavement. Normally this will be accomplished with a power broom. Make this broom available during paving operations to clean any loose material that the construction equipment may track onto the surface.~~

~~**b. Surface Condition.**~~

~~Ensure the prepared surface is dry when concrete is placed on the surface of the HMA pavement in order to allow some absorption of the concrete mortar. If the surface of the HMA is above 110ºF (40ºC), the Contractor may apply water to the surface of the HMA ahead of the paving operation in order to cool the surface. Apply water far enough in advance of the paving operation so that the surface will dry from evaporation before concrete is placed. Do not apply water to the surface of the pavement when the HMA surface temperature is below 100ºF (38ºC).~~

~~**c. Joints.**~~

~~When jointing is specified in which panels are smaller than a normal lane width, construct joints 1/8 inch (3 mm) wide. No cleaning or sealing is required.~~

2. Joints.

a. Unbonded Overlays and Whitetopping.

Place joints as shown in the contract documents.

b. Bonded Overlays.

1) Place joints directly over joints and cracks in the existing pavement.

2) Saw joints to the full depth of the overlay.

3) Ensure joints are at least as wide as the joint or crack in the existing pavement.

D. Limitation of Operations.

1. At forecasted air temperatures below 55°F (13°C) use the maturity method to determine the opening time. Do not place resurfacing concrete when the air or pavement temperature is below 40°F (4°C).

2. The Contractor may use the shoulders for construction activities. It will be the Contractor's responsibility to repair the shoulders, as the Engineer deems necessary, to restore the shoulders to a condition acceptable for shoulder work. This work shall be done at no additional cost to the Contracting Authority. The Contractor may elect to limit the use and vehicle loadings to minimize this work and its cost.

3. Place bonded concrete overlays between June 1 and September 30.

~~**4.** Do not place unbonded overlay or whitetopping materials on HMA when the pavement surface temperature exceeds 120° F (50°C).~~

2310.04, Method of Measurement.

Add the Article:

F. Seal Coat Bond Breaker.

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

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

2310.05, Basis of Payment.

Add the Article:

F. Seal Coat Bond Breaker.

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

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

Comments: There are no specifications for the seal coat bond breaker, i.e. materials and construction.

Member's Requested Change (Redline/Strikeout):

Section 2310. Portland Cement Concrete Overlay

2310.01 DESCRIPTION.
Overlay an existing pavement with one of the following types of PCC overlay:

A. Bonded overlay: a PCC overlay over an existing PCC pavement.

B. Unbonded overlay: a PCC overlay over an existing pavement where a stress relief layer is placed on top of the existing PCC pavement or ~~an existing PCC pavement that has been overlaid with HMA (composite pavement)~~ a PCC overlay over an existing composite pavement (HMA over PCC).

C. Whitetopping: a PCC overlay over an existing, full depth ~~asphalt~~ HMA pavement.

2310.02 MATERIALS.

A. Concrete.
Meet the requirements of Article 2301.02.

1. Use Class C concrete for PCC Overlays as specified in Materials I.M. 529, except use a C-3WR or C-4WR mix design for Bonded Overlays. Allowable substitutions shall comply with Article 2301.02, B.

2. For coarse aggregate, meet the requirements of Section 4109.02, Aggregate Gradation Table, Gradation No. 3 or 5 of the Appendix. Ensure the nominal maximum coarse aggregate size is no greater than one-third the overlay thickness.

3. Unless otherwise specified, use coarse aggregate for bonded overlays that is the same type of aggregate as the existing pavement.

B. Hot Mix Asphalt Stress Relief Course.

1. Use an HMA stress relief course for unbonded overlays consisting of a nominal 1 inch (25 mm) course of HMA meeting the requirements of Section 2303.

2. Use PG 58-28 asphalt binder.

3. Use a mixture meeting the following:
- **a.** 300,000 ESAL, 3/8 inch (9.5 mm) HMA mix requirements.
- **b.** Target air voids of 3.0%.
- **c.** No maximum film thickness restriction and no minimum filler/bitumen ratio restriction.
- **d.** Type B Aggregate with no percent crushed particle requirements and gradation falling below the restricted zone.

2310.03 CONSTRUCTION.

Apply the requirements of Section 2301 to this work with the modifications ~~for each type of work~~ identified below.

A. Scarifying ~~or,~~ Shotblasting, or Waterblasting Equipment.

Use power operated equipment capable of uniformly scarifying or removing the existing surface in a satisfactory manner and to depths required. Other types of removal devices may be used if their operation is suitable and if they can be demonstrated to the satisfaction of the Engineer. The contract documents will include a pay item for such work.

B. Preparation of Surface.

1. **General.**
   - **a.** If full depth base repair is included in the project, complete it prior to preparation of the existing pavement surface.
   - **b.** When required, include the entire area to be resurfaced in preparation of the existing pavement surface. Materials removed in the preparation operation may be placed in the shoulder area unless specified otherwise in the contract documents.

2. ~~Bonded Overlays.~~ Surface Preparation
- **a.** When required for bonded overlays, ~~P~~prepare the surface by shot blasting, waterblasting, or scarifying. Scarify to a nominal depth of 1/4 inch (5 mm).
- **b.** Ensure preparation removes all dirt, oil, foreign materials, laitance, or loose material from the surface and edges against which new concrete will be placed.

3. ~~Unbonded Overlays and Whitetopping.~~ Pavement Scarification.
- **a.** When required, ~~P~~prepare surface by scarifying per Section 2214.
- ~~**b.** When placement of HMA stress relief layer is included as part of the contract for unbonded overlays, pavement scarification will not be required.~~
- ~~**c.**~~**b.** At the direction of the Engineer, trim high spots found in the existing HMA pavement. This work will be accomplished during the scarification operation, only at isolated locations, and will be considered incidental to the pavement scarification.
- ~~**d.** Work covered by Article 2310.03, B, 3, will be paid for according to Article 2310.05, D, Pavement Scarification.~~
- **c. Seal Coat Bond Breaker**

  Prior to placement of the PCC overlay, place two applications of a seal coat bond breaker to all scarified PCC surfaces per Section 2307 and as modified per Article 2316.03, B, 2, b. Do not allow traffic on the bond breaker before it has set.

4. Hot Mix Asphalt Stress Relief Course.

Construct in accordance with Article 2303.03. Use Class II Compaction, except use only static steel wheeled rollers. Article 2303.04 shall also apply.

C. Placing and Finishing Overlay.

1. General.
- **a.** Apply Section 2317 to all PCC Pavement bid items of a Primary project if any individual PCC Pavement bid item for that project is 5000 square yards (4200 m^2) or greater. Apply Section 2316 to all other Primary projects and when specifically required for other projects.

b. Control the placing equipment to the proper elevation by string line. Take cross sections and establish a grade line. The Engineer will review and approve the new grade lines. Information detailing the pavement design thicknesses at the various survey points and material quantities will also be provided. During construction, do not alter these grades solely to account for concrete overruns. Some overrun is normal, and only with the Engineer's approval will they be adjusted.

b. Clean the existing surface of all loose or adhering foreign material prior to and during placement of PCC.

c. Ensure the existing pavement surface is free of standing water during PCC placement.

d. Ensure the temperature of the existing pavement surface does not exceed 120ºF (40ºC) during PCC placement. Water may be applied to cool the existing pavement surface provided standing water is not present during PCC placement.

2. Bonded Overlays.

a. Surface Cleaning.

Clean the entire surface with an air blast prior to placing concrete. After cleaning, no traffic will be permitted on the cleaned surface except that necessary for overlay construction.

b. Surface Condition.

Ensure the prepared surface is dry in order to allow some absorption of the concrete mortar.

c. Joints.

1) Use a reliable method to exactly locate and identify on both sides of the road:

a) Each contraction and expansion joint in the existing pavement.

b) The joint to be sawed at each full-depth patch.

2) Saw joints in the resurfacing directly over existing joints. Saw joints to the full depth of new resurfacing concrete, including depressions created in the existing surface and as specified in the widening areas. Saw joints as soon as possible without causing excessive raveling.

3. Unbonded Overlays.

a. Hot Mix Asphalt Stress Relief Course.

Construct in accordance with Article 2303.03. Use Class II Compaction, except use only static steel wheeled rollers. Article 2303.04 shall also apply.

b. Surface Cleaning.

Clean the existing surface of all loose or adhering foreign material prior to placement of the PCC over HMA pavement. Normally this will be accomplished with a power broom. Make this broom available during paving operations to clean any loose material that the construction equipment may track onto the surface.

c. Surface Condition.

Ensure the prepared surface is dry when concrete is placed on the surface of the HMA pavement in order to allow some absorption of the concrete mortar. If the surface of the HMA is above 110ºF (40ºC), the Contractor may apply water to the surface of the HMA ahead of the paving operation in order to cool the surface. Apply water far enough in advance of the paving operation so that the surface will dry from evaporation before concrete is placed. Do not apply water to the surface of the pavement when the HMA surface temperature is below 100ºF (38ºC).

d. Joints.

When jointing is specified in which panels are smaller than a normal lane width, construct the joints to be 1/8 inch (3 mm) wide. No cleaning or sealing is required.

4. Whitetopping.

a. Surface Cleaning.

Clean existing surface of loose or adhering foreign material prior to placement of the PCC over HMA pavement. Normally this will be accomplished with a power broom. Make this broom available during paving operations to clean any loose material that the construction equipment may track onto the surface.

b. Surface Condition.

Ensure the prepared surface is dry when concrete is placed on the surface of the HMA pavement in order to allow some absorption of the concrete mortar. If the surface of the HMA is above 110ºF (40ºC), the Contractor may apply water to the surface of the HMA ahead of the paving operation in order to cool the surface. Apply water far enough in advance of the paving operation so that the surface will dry from evaporation before concrete is placed. Do not apply water to the surface of the pavement when the HMA surface temperature is below 100ºF (38ºC).

c. Joints.

When jointing is specified in which panels are smaller than a normal lane width, construct joints 1/8 inch (3 mm) wide. No cleaning or sealing is required.

2. Joints

a. Unbonded Overlays and Whitetopping

Place joints as shown in the contract documents.

b. Bonded Overlays

1) Place joints directly over all joints and cracks in the existing pavement.
2) Saw joints to the full depth of the overlay.
3) Ensure joints are at least as wide as the joint or crack in the existing pavement.

D. Limitation of Operations.

1. At forecasted air temperatures below 55°F (13°C) use the maturity method to determine the opening time. Do not place resurfacing concrete when the air or pavement temperature is below 40°F (4°C).

2. The Contractor may use the shoulders for construction activities. It will be the Contractor's responsibility to repair the shoulders, as the Engineer deems necessary, to restore the shoulders to a condition acceptable for shoulder work. This work shall be done at no additional cost to the Contracting Authority. The Contractor may elect to limit the use and vehicle loadings to minimize this work and its cost.

3. Place bonded concrete overlays between June 1 and September 30.

~~**4.** Do not place unbonded overlay or whitetopping materials on HMA when the pavement surface temperature exceeds 120° F (50°C).~~

2310.04 METHOD OF MEASUREMENT.

Measurement for the various items of work involved in the construction of PCC overlay will be as follows:

A. Portland Cement Concrete Overlay, Furnish Only.
Cubic yards (cubic meters) using a count of batches incorporated. Includes concrete placed in widening sections and partial depth patches.

B. Portland Cement Concrete Overlay, Placement Only.
Square yards (square meters) shown in the contract documents. Area will be determined from the longitudinal surface and the nominal pavement width, including widening sections.

C. Surface Preparation.
Square yards (square meters) shown in the contract documents. Area will be determined from the longitudinal surface and the nominal width of existing pavement.

D. Pavement Scarification

1. Measurement by Weight (Mass).
The quantity of Pavement Scarification will be determined in accordance with Article 2214.06, A, 1.

2. Measurement by Area.
The quantity of Pavement Scarification will be determined in accordance with Article 2214.06, A, 2.

E. Hot Mix Asphalt Stress Relief Course.

1. Measurement by Weight (Mass).
a. HMA will be measured according to Article 2303.04, A.
b. Asphalt binder will be measured according to Article 2303.04, B.

2. Measurement by Area.
a. HMA will be measured according to Article 2303,04, A, 2.
b. Asphalt binder used will not be measured separately for payment.

F. Seal Coat Bond Breaker

5. Aggregate, Cover – Sand
Cover aggregate will be measured according to Article 2307.04, A.

6. Binder Bitumen, CRS-2
Binder Bitumen will be measured according to Article 2307.04, B.

2310.05 BASIS OF PAYMENT.

Payment will be at the contract unit price as follows for the performance of acceptable work, measured as provided

above.

A. Portland Cement Concrete Overlay, Furnish Only.

1. Per cubic yard (cubic meters).

2. Payment is full compensation for furnishing raw materials, proportioning, mixing, and delivery of concrete to the paving machine.

B. Portland Cement Concrete Overlay, Placement Only.

1. Per square yard (square meter).

2. Payment is full compensation for:
- **a.** Furnishing all materials, labor, and equipment necessary to place, finish, texture, and cure the concrete.
- **b.** Placement of tie bars for widening, if required.
- **c.** Sawing, cleaning, and sealing the joints, if required.
- **d.** Surface cleaning.

C. Surface Preparation.

1. Per square yard (square meter).
2. Payment is full compensation for preparation of the existing pavement, scarifying or shot blasting, and for removal of the existing pavement surface material according to Article 1104.08.

D. Pavement Scarification

1. Measurement by Weight (Mass).
The Contractor will be paid the contract unit price for Pavement Scarification in accordance with Article 2214.07, A, 1.

2. Measurement by Area.
The Contractor will be paid the contract unit price for Pavement Scarification in accordance with Article 2214.07, A, 2.

E. Hot Mix Asphalt Stress Relief Course.

1. Measurement by Weight (Mass).
- **a.** Article 2303.05 applies.
- **b.** Payment is full compensation for furnishing and placing the HMA stress relief course.
- **c.** Asphalt binder will be paid for separately according to Article 2303.05, B.

2. Measurement by Area.
- **a.** Article 2303.05 applies.
- **b.** Payment is full compensation for furnishing and placing the HMA stress relief course, including the cost of the asphalt binder.

F. Seal Coat Bond Breaker

3. Aggregate, Cover – Sand
Payment for cover aggregate will be in accordance with Article 2307.05, A.

4. Binder Bitumen, CRS-2
Payment for binder bitumen will be in accordance with Article 2307.05, B.

Reason for Revision: General rewrite for clarity and to add requirements for Seal Coat Bond Breaker.

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: This was sent to ICPA in November 2013. Some of the changes were discussed with ICPA					

members at a meeting in February 2014.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Todd Hanson	**Office:** Construction & Materials	**Item 5**
Submittal Date March 2014	**Proposed Effective Date:** October 2014	
Article No.: 2433.02, B, 8 **Title:** Concrete (Concrete Drilled Shaft)	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 4/10/2014	**Effective Date:** 10/21/2014

Specification Committee Approved Text:

2433.02, B, Concrete.

Replace Article 4:

4. Portland cement: meet the requirements of ASTM C 150 Type I ~~/~~ or II and Section 4101.

Replace Article 8:

8. ~~Do not use GGBFS.~~ Limit total mineral admixture substitution rate to 40%. Between October 15 and March 15, do not substitute GGBFS with Type I or Type II cement; or fly ash with Type IP or IS cement.

Comments: The requested revision to Article 2433.02, B, 4 was missed in the Specification Section Recommended Text.

Specification Section Recommended Text:

2433.02, B, 8.

Replace the Article:

~~Do not use GGBFS~~. Limit total mineral admixture substitution rate to 40%. Between October 15 and March 15, do not substitute GGBFS with Type I or Type II cement, or fly ash with Type IP or IS cement.

Comments:

Member's Requested Change (Redline/Strikeout):

2433.02

B. Concrete.

Comply with the following:

1. All materials, proportioning, air entraining, mixing, slump, and transporting of PCC shall be according to Section 2403, except as modified herein.
2. Water/cement ratio: not to exceed 0.45.
3. Drilled shaft construction: use Class D PCC mixture with a slump of 8 inches ±1.5 inches (200 mm ±40mm).
4. Portland cement: meet the requirements of ASTM C 150 Type I ~~/~~ , II and Section 4101.
5. Air entrainment: apply Section 2403.
6. Mid-range water reducer is required according to Materials I.M. 403.
7. Retarder is required according to Materials I.M. 403 to maintain workable concrete.
8. ~~Do not use GGBFS~~. Limit the total mineral admixture substitution rate to 40%. Between October 15 and March 15, do not substitute GGBFS with Type I, II cement or fly ash with Type IP or IS cement.

Reason for Revision: GGBFS was not allowed because of setting issues during cold weather when used in conjunction with fly ash. Current spec would not allow a blended IS cement to be used, although 4101

allow Type IS or IP when Type I,II is specified. This change allows blended cements to be used without fly ash substitution during cold weather.					
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: Greg Mulder / Todd Hanson	**Office:** Construction & Materials	**Item 6**
Submittal Date: January 2014	**Proposed Effective Date:** October 2014	
Article No.: 2506.02 **Title:** Materials (Flowable Mortar)	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 4/10/2014	**Effective Date:** 10/21/2014

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: The Office of Local Systems asked what critical fluidity flowable mortar is used for. Typically it is used for filling pipes when you can't see all of the area being filled. This may not be the best application of flowable mortar, but it is how it is used.

Specification Section Recommended Text:

2506.02, C, Fine Aggregate.

Replace the Article:

1. Use natural sand consisting of mineral aggregate particles or foundry sand from the castings of ferrous material. Use the gradation shown in Table 2506.02-1:

Table 2506.02-1: Fine Aggregate Gradation

Sieve Size	Percent Passing
~~3/4~~ 3/8 inch (9.5 mm)	100
No. 200 (75 µm)	0-10

2. It is intended that the sand be a fine sand that will stay in suspension in the mortar to the extent required for proper flow. For the Contractor's information, ~~uniformly~~ a well graded sand in the gradation range shown in Table 2506.02-2 has generally shown good flow characteristics when using the normal amount of fly ash (300 pounds per cubic yard (180 kg/m^3)). Concrete sand ~~normally does not~~ may require a higher amount of fly ash (400 pounds per cubic yard) (240 kg/m^3)) and air entrainment to produce the desired flowability.

Table 2506.02-2: Informational Gradation Limits

Sieve Size	Percent Passing
3/8 inch (9.5 mm)	100
No. 8 (2.36 mm)	80-100
No. 16 (1.18 mm)	60-100
No. 30 (600 µm)	45-80
No. 50 (300 µm)	12-40
No. 100 (150 µm)	1.5-25
No. 200 (75 µm)	0-5

~~**3.** Fine aggregate meeting the above informational gradation limits may be used in the basic proportions shown in Article 2506.02, E, without initial mix design, provided the flowable mortar is used in noncritical fluidity locations described in Article 2506.02, F. The Engineer reserves the right to reject the intended sand if a flowable mortar cannot be produced using the specified proportions.~~

4 3. ~~The Contractor is not responsible for certified aggregate testing. The Engineer will provide~~

~~appropriate inspection (normally, source approval) followed by visual inspection.~~ If foundry sand is used, ensure it meets the requirements of IAC 567 Section 108. Ensure suppliers of foundry sand submit a processing plan to the District Materials Engineer for review and approval.

2506.02, E, Mix Design.

Replace the Article:

1. For non critical fluidity, ~~U~~use the basic proportioning for flowable mortar shown in Table 2506.02-1.

Table 2506.02-1: Quantities of Dry Materials Per Cubic Yard (Cubic Meter) for Non-Critical Fluidity

Cement	100 pounds (60 kg)
Fly Ash	300 pounds (180 kg)
Fine Aggregate	2600 pounds (1545 kg)

Previous or alternate mix designs may be approved by the District Materials Engineer.

2. ~~Submit samples of fine aggregate, cement, and fly ash intended for use to the Engineer. Submit the samples before the work begins for mix proportions to produce the required efflux time.~~ For critical fluidity, use the basic proportioning as shown in Table 2506.02-2.

Table 2506.02-2: Quantities of Dry Materials Per Cubic Yard (Cubic Meter) for Critical Fluidity

Cement	100 pounds (60 kg)
Fly Ash	400 pounds (240 kg)
Fine Aggregate	2600 pounds (1545 kg)

a. Provide Engineer with mix proportions meeting requirements in Article 2506.02, F. Do not exceed 100 pounds of cement per cubic yard (60 kg/m^3) and a total amount of cementitious material of 500 pounds per cubic yard (295 kg/m^3).

b. When the design includes air entraining and water reducing admixtures, Engineer may approve the design without laboratory testing. Engineer may require representative materials for evaluation before approval. When required, one week before work begins, submit samples of fine aggregate, cement, and fly ash intended for use to the Engineer.

c. Previous mix designs for critical flow may be approved by the District Materials Engineer. These mixes may also be used for non critical flow.

~~**3.** The Engineer will determine the mix design. The cement content is not to exceed 100 pounds per cubic yard (60 kg/m^3). The total amount of cementitious material is not to exceed 500 pounds per cubic yard (295 kg/m^3).~~

4 3. ~~These quantities of dry materials, with approximately 70 gallons (345 L) of water (mixes utilizing foundry sand may require more water), will yield approximately 1 cubic yard (1 m^3) of flowable mortar of the proper consistency.~~ The quantity of water used for the trial mix or at the project may require adjustment to achieve proper solids suspension and optimum flowability.

~~5~~ 4. For information, volume loss during the cure period resulting from surface evaporation, moisture migration away from the flowable mortar unit, and hydration have been observed to be less than 4% of the original volume determined in the fluid condition. In mixes utilizing foundry sand, additional fly ash may be required and the limit of total cementitious material will not apply.

2506.02, F, 3.

Replace the Article:

In locations where fluidity is not critical, such as for placement below the beams under existing bridges or for use as backfill material in open trenches, ~~use an efflux time of 10 seconds to 26 seconds. T~~the Engineer will visually monitor. Provide sufficient fluidity to completely fill the space and produce a level surface without manipulation after discharge.

Comments:

Member's Requested Change (Redline/Strikeout):

2506.02 MATERIALS.
Meet the requirements for the respective items in Division 41 with the following exceptions:

A. Cement.
Meet the requirements of Section 4101.

B. Fly Ash.
Meet the requirements of Section 4108. Use fly ash from a source approved by the Engineer.

C. Fine Aggregate.

1. Use natural sand consisting of mineral aggregate particles or foundry sand from the castings of ferrous material. Use the gradation shown in Table 2506.02-1:

Table 2506.02-1: Fine Aggregate Gradation

Sieve Size	Percent Passing
~~3/4~~ 3/8 inch (9.5 mm)	100
No. 200 (75 µm)	0-10

2. It is intended that the sand be a fine sand that will stay in suspension in the mortar to the extent required for proper flow. For the Contractor's information, ~~uniformly~~ a well graded sand in the gradation range shown in Table 2506.02-2 has generally shown good flow characteristics when using the normal amount of fly ash (300 pounds per cubic yard (180 kg/m^3)). Concrete sand may require a higher amount of fly ash (400 pounds per cubic yard) (240 kg/m^3)) and air entrainment to ~~normally does not~~ produce the desired flowability.

Table 2506.02-2: Informational Gradation Limits

Sieve Size	Percent Passing
3/8 inch (9.5 mm)	100
No. 8 (2.36 mm)	80-100
No. 16 (1.18 mm)	60-100
No. 30 (600 µm)	45-80
No. 50 (300 µm)	12-40
No. 100 (150 µm)	1.5-25
No. 200 (75 µm)	0-5

3. ~~Fine aggregate meeting the above informational gradation limits may be used in the basic proportions shown in Article 2506.02, E, without initial mix design, provided the flowable mortar is used in noncritical fluidity locations described in Article 2506.02, F. The Engineer reserves the right to reject the intended sand if a flowable mortar cannot be produced using the specified proportions.~~

4. ~~The Contractor is not responsible for certified aggregate testing. The Engineer will provide appropriate inspection (normally, source approval) followed by visual inspection.~~ If foundry sand is used, ensure it meets the requirements of IAC 567 Section 108. Ensure suppliers of foundry sand submit a processing plan to the District Materials Engineer for review and approval.

D. Admixtures.
Air entraining and water reducing admixtures may be added to increase the fluidity of flowable mortar.

E. Mix Design.

1. For non critical fluidity, ~~U~~use the basic proportioning for flowable mortar shown in Table 2506.02-1.

Table 2506.02-1: Quantities of Dry Materials Per Cubic Yard (Cubic Meter)

Cement	100 pounds (60 kg)
Fly Ash	300 pounds (180 kg)
Fine Aggregate	2600 pounds (1545 kg)

a. Previous or alternate mix designs may be approved by the District Materials Engineer.

2. For critical fluidity, use the basic proportioning as shown in Table 2506.02-2.

Table 2506.02-2: Quantities of Dry Materials Per Cubic Yard (Cubic Meter)

Cement	100 pounds (60 kg)
Fly Ash	400 pounds (240 kg)
Fine Aggregate	2600 pounds (1545 kg)

~~**3.** The Engineer will determine the mix design. The cement content is not to exceed 100 pounds per cubic yard (60 kg/m^3). The total amount of cementitious material is not to exceed 500 pounds per cubic yard (295 kg/m^3).~~

a. Provide the Engineer with mix proportions that will meet requirements in 2506.02.F. Do not exceed 100 pounds of cement per cubic yard (60 kg/m^3) and a total amount of cementitious material of 500 pounds per cubic yard (295 kg/m^3).

b. When the design includes air entraining and water reducing admixtures, the Engineer may approve the design without laboratory testing. The Engineer may require representative materials for evaluation before approval. When required, one week before work begins, submit samples of fine aggregate, cement, and fly ash intended for use to the Engineer.

c. Previous mix designs for critical flow may be approved by the District Materials Engineer. These mixes may also be used for non critical flow.

3.~~**4.** These quantities of dry materials, with approximately 70 gallons (345 L) of water (mixes utilizing foundry sand may require more water), will yield approximately 1 cubic yard (1 m^3) of flowable mortar of the proper consistency.~~ The quantity of water used for the trial mix or at the project may require adjustment to achieve proper solids suspension and optimum flowability.

4.~~**5.**~~ For information, volume loss during the cure period resulting from surface evaporation, moisture migration away from the flowable mortar unit, and hydration have been observed to be less than 4% of the original volume determined in the fluid condition. In mixes utilizing foundry sand, additional fly ash may be required and the limit of total cementitious material will not apply.

F. Fluidity.

1. Measure the fluidity of the flowable mortar using the method described by Materials I.M. 375. Prior to filling the flow cone with flowable mortar, pass the mixture through a 1/4 inch (6.3 mm) screen.

2. In locations where fluidity is critical, such as inside existing culverts and between the beams under existing bridges, use an efflux time of 10 seconds to 16 seconds. The Engineer will measure prior to placement and at least once every 4 working hours until work is complete.

3. In locations where fluidity is not critical, such as for placement below the beams under existing

	bridges or for use as backfill material in open trenches, ~~use an efflux time of 10 seconds to 26 seconds.~~ ,~~t~~The Engineer will visually monitor. Provide sufficient fluidity to completely fill the space and produce a level surface without manipulation after discharge.

Reason for Revision: Non-critical flow mix designs have become standardized. No need for mix design. Also, reduce need for testing in non-critical flow situations.

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: Greg Mulder / Melissa Serio	**Office:** Construction & Materials	**Item 7**
Submittal Date: 2014.04.01	**Proposed Effective Date:** October 21, 2014	
Article No.: 4196.01, B, 3 **Title:** Embankment Erosion Control **Article No.:** 4196.01, B, 6 **Title:** Concrete and Stone Revetment and Bridge Abutment Backfill Fabric	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 4/10/2014	**Effective Date:** 10/21/2014

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments:

Specification Section Recommended Text:

4196.01, B, 3, Embankment Erosion Control.

Replace the first sentence:

Under concrete and stone revetment, erosion stone, or gabions used for embankment ~~or~~ erosion control, use fabric that:

Rename Table 4196.01-3:

Table 4196.01-3: Fabric for use ~~under Erosion Stone~~ as Embankment Erosion Control

4196.01, B, 6, Concrete and Stone Revetment and Bridge Abutment Backfill Fabric.

Rename the Article:

~~Concrete and Stone Revetment and~~ Bridge Abutment Backfill Fabric.

Rename Table 4196.01-6:

Table 4196.01-6: Fabric for use ~~under conc./stone revetment &~~ in bridge abutment backfill

Comments:

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

4196.01, B, 3.

Replace the Article:

3. Embankment Erosion Control.

Under concrete and stone revetment, 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.

Rename Table 4196.01-3:

Table 4196.01-3: Fabric for use as Embankment Erosion Control ~~under Erosion Stone~~

4196.01, B, 6.

Replace the Article:

6. ~~Concrete and Stone Revetment and~~ Bridge Abutment Backfill Fabric.

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

Rename Table 4196.01-6: **Table 4196.01-6: Fabric for use in bridge ~~under conc./stone revetment &~~ abutment backfill**					
Reason for Revision: Embankment erosion control engineering fabric is typically used under concrete and stone revetment.					
County or City Input Needed (X one)			**Yes**	**No** x	
Comments: None					
Industry Input Needed (X one)			**Yes**	**No** X	
Industry Notified:	**Yes**	**No** x	**Industry Concurrence:**	**Yes**	**No**
Comments: None					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by:			**Office:**		**Item 8**
Submittal Date:			**Proposed Effective Date:**		
Article No.: **Title:**			**Other:**		
Specification Committee Action:					
Deferred:	**Not Approved:**	**Approved Date:**		**Effective Date:**	
Specification Committee Approved Text:					
Comments:					
Specification Section Recommended Text:					
Comments:					
Member's Requested Change: (Do not use **'Track Changes'**, or **'Mark-Up'**. Use **~~Strikeout~~** and **Highlight**.)					
Reason for Revision:					
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 Input Needed (X one)			**Yes**	**No**	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes**	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments:					