Iowa Department of Transportation

MINUTES OF IOWA DOT SPECIFICATION COMMITTEE MEETING

May 10, 2007

Members Present:	John Adam	Statewide Operations Bureau
	Tom Reis, Chair	Specifications Section
	Daniel Harness, Secretary	Specifications Section
	Gary Novey	Office of Bridges & Structures
	Larry Jesse	Office of Local Systems
	Jim Berger	Office of Materials
	Bruce Kuehl	District 6-District Construction
	Troy Jerman	Office of Traffic & Safety
	Doug McDonald	District 1-Marshalltown RCE
Members Not Present:	Keith Norris	District 2-District Materials
	Mike Kennerly	Office of Design
	Roger Bierbaum	Office of Contracts
	John Smythe	Office of Construction
Advisory Members Present:	Max Grogg	FHWA
Others Present:	Deanna Maifield	Office of Design
	Ed Kasper	Office of Contracts
	Wayne Sunday	Office of Construction
	Ole Skaar	Office of Design
	Tom Jacobson	Office of Construction
	Scott Marler	Office of Location and Environment

Tom Reis, Specifications Engineer, opened the meeting. The following items were discussed in accordance with the agenda dated May 3, 2007:

1. Article 1105.14, Placement of Fill Material in Streams and Water Bodies.

The Office of Construction requested changes to specify compliance with the Clean Water Act and Section 404 permits, and to clarify contractors' options.

2. Article 1107.09, B, 11, Lane Drop-off or Rise.

The Office of Construction requested changes to eliminate language from the Standard Specifications that will be placed on Standard Road Plan TC-418.

3. Article 1107.09, B, 12, Two Way Traffic Signs on Four Lane Highways.
Article 2528.02, Signs.

The Office of Construction requested changes to clarify use and payment for two way traffic signs.

4. Article 2317.03, Profile Testing.
Article 2317.04, Profile Index.

To reflect concerns of AGCI, the Office of Construction requested changes to language approved at the March 8 meeting.

5. Article 2401.02, Notification for Complete Removal of Bridges.

The Office of Construction requested a change to add contract language to provide the Contractor a basis for completing the "Notification of Demolition" form.

6. Article 2412.07, Curing.

The Office of Construction requested changes that will separate the processes for applying burlap for Interstate/Primary projects and other projects.

7. Section 2413, Surfacing and Repair and Overlay of Bridge Floors.

The Offices of Materials and Construction requested changes to remove the latex modified option and replace it with Class HPC-O high performance concrete overlay from DS-01069.

8. Article 2423.05, A, Fabrication and Assembly.

The Office of Materials requested changes that will assure weld integrity by requiring extra testing of base plate-to-column groove welds.

9. Article 2509.03, A, Temporary Crash Cushions.
Article 2509.03, B, Permanent Crash Cushions.

The Office of Design requested changes that will bring uniformity to retroreflective markers for crash cushions.

10. Article 2528.02, Signs.

The Office of Traffic and Safety requested a change to allow END ROAD WORK (G20-2) signs to be eliminated for temporary traffic control zones.

11. Article 2528.11, Limitations.

The Office of Construction requested a change to revise specification language to be consistent with the High Visibility Apparel FHWA Rulemaking issued on November 24, 2006 which requires all workers to wear ANSI 107 Class 2 apparel effective November 24, 2008.

12. Section 2547, Temporary Stream Access.

The Office of Contracts requested a change to add a new section which will provide language for payment of temporary stream crossings.

13. Article 4161.02, Preservatives.

The Specifications Section requested a change to delete ammoniacal copper arsenate (ACA) as a preservative. It was eliminated in Section 4160 with GS-01012

14. Article 4169.10, C, Wood Excelsior Mat.

The Office of Design requested a change to eliminate straw coconut fiber mat as an option.

15. Article 4186.10, B, Steel Breakaway Posts for Type B Signs.

The Specifications Section requested a change to add a reference to Article 1105.03.

16. DS-01095, Primary and Interstate Pavement Smoothness.

The Office of Materials requested changes to incorporate the zero inch blanking band and to convert this Developmental Specification to a Supplemental Specification.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John M. Smythe	**Office:** Construction	**Item 1**
Submittal Date: April 3, 2007	**Proposed Effective Date:** October, 2007	
Article No.: 1105.14 **Title:** Placement of Fill Material in Streams and Water Bodies	**Other:**	

Specification Committee Action: Approved with changes as noted.

Deferred:	**Not Approved:**	**Approved Date:** 5/10/07	**Effective Date:** 10/16/07

Specification Committee Approved Text:

Replace the title and entire article:

1105.14 ~~Placement of Fill Material in Streams and Water Bodies~~ Protection of Water Quality and Wetlands.

~~The placement of fill material in streams is regulated by Federal and State law. The intent of this specification is to require the Contractor's operations in streams and other water bodies and adjacent swamps, marshes, bogs, or similar areas to be in compliance with Federal and State regulations.~~

~~Fill material means any material used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of a water body.~~

~~Fill material shall consist of clean, suitable, naturally occurring material, which is free from unacceptable levels of toxic pollutants.~~

~~At the Contractor's option, stream crossings and causeways may be constructed, unless otherwise indicated in the Clean Water Act Section 404 Permit cover letter included in the proposal form. On Interstate and Primary projects, temporary stream crossings and causeways shall be constructed in accordance with the Standard Road Plan RL-16. Temporary stream crossings or causeways shall not restrict expected high flows or disrupt the movement of aquatic life native to the stream or water body. They shall not extend over 100 feet (30 m) into any swamp, bog, marsh, or similar area that is adjacent to the stream or water body. Expected high flows are those flows which the Contractor expects to experience during the period of time that the crossing is in place. They shall maintain pre-construction downstream flow conditions. Contractors are encouraged to construct these during low flows. They shall be maintained to prevent unnecessary erosion and other non-point sources of pollution. When no longer needed, they shall be removed and all disturbed areas shall be reshaped and stabilized. The cost for constructing temporary stream crossings or causeways will not be paid for separately and shall be considered incidental to the contract price for Mobilization.~~

The Contractor shall comply with the requirements of the Clean Water Act (33 U.S.C. 1344 and 33 CFR 323) and Executive Order 11990. When it becomes necessary for the Contractor to work in waters of the United States, the Contractor shall be aware that a Section 404 permit may be required.

When required, the Contracting Authority will obtain a Section 404 permit for essential work on the right-of-way prior to the award of the contract. The Contractor shall adhere to the requirements of the permit. Activities occurring in or across waters of the United States not specifically reviewed and approved in the permit are not authorized. If the Contractor desires to use construction methods that are not specifically approved by the permit, the Contractor shall be responsible for obtaining approval in the form of a new Section 404 permit from the U.S. Army Corps of Engineers and possibly Iowa DNR. The Contractor shall not use construction methods

that require additional mitigation by the Contracting Authority. The Contractor will not be granted additional compensation or contract time due to their request for a new permit. If, however, due to no fault of the Contractor, a Section 404 permit modification involving activities within the right-of-way is deemed necessary by the Engineer, additional contract time and/or compensation may be considered.

Comments: This item was discussed in conjunction with Item 12.

The Office of Construction noted that dredging material from the stream bottom will no longer be allowed unless stated in the contract documents. The Office of Contracts suggested defining “Waters of the USA” in the definitions. The Specifications Section will do that. They also noted they will remove text from Article 1105.14 that is repeated in the proposed Section 2547 (Item 12).

Specification Section Recommended Text:

1105.14, Placement of Fill Material in Streams and Water Bodies.

Replace the title and entire article:

1105.14 ~~Placement of Fill Material in Streams and Water Bodies~~ Protection of Water Quality and Wetlands.

~~The placement of fill material in streams is regulated by Federal and State law. The intent of this specification is to require the Contractor's operations in streams and other water bodies and adjacent swamps, marshes, bogs, or similar areas to be in compliance with Federal and State regulations.~~

~~Fill material means any material used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of a water body.~~

~~Fill material shall consist of clean, suitable, naturally occurring material, which is free from unacceptable levels of toxic pollutants.~~

The Contractor shall comply with the requirements of the Clean Water Act (33 U.S.C. 1344 and 33 CFR 323) and Executive Order 11990. When it becomes necessary for the Contractor to work in waters of the United States, the Contractor shall be aware that a Section 404 permit may be required. Waters of the United States are defined as follows: all waters, impoundments of waters, or tributaries of waters, including but not limited to lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, or natural ponds.
When required, the Contracting Authority will obtain a Section 404 permit for essential work on the right-of-way prior to the award of the contract. The Contractor shall adhere to the requirements of the permit. Activities occurring in or across waters of the United States not specifically reviewed and approved in the permit are not authorized. If the Contractor desires to use construction methods that are not specifically approved by the permit, the Contractor shall be responsible for obtaining approval in the form of a new Section 404 permit from the U.S. Army Corps of Engineers and possibly Iowa DNR. The Contractor shall not use construction methods that require additional mitigation by the Contracting Authority. The Contractor will not be granted additional compensation or contract time due to their request for a new permit. If, however, due to no fault of the Contractor, a Section 404 permit modification involving activities within the right-of-way is deemed necessary by the Engineer, additional contract time and/or compensation may be considered.

~~At the Contractor's option, stream crossings and causeways may be constructed, unless otherwise indicated in the Clean Water Act Section 404 Permit cover letter included in the proposal form. On Interstate and Primary projects, temporary stream crossings and causeways shall be constructed in accordance with the Standard Road Plan RL-16.~~ The Contracting Authority will obtain approval for a temporary stream crossing in the Section 404 permit, unless indicated otherwise in the contract documents. When allowed, the temporary stream crossing

may be used at the Contractor's option, and shall be constructed in accordance with Standard Road Plan RL-16, unless specified otherwise in the contract documents. Fill material used to construct the temporary stream crossing shall be furnished by the Contractor, and shall not be dredged/excavated from the river unless specifically allowed elsewhere in the contract documents. Temporary stream crossings or causeways shall not restrict expected high flows or disrupt the movement of aquatic life native to the stream or water body. They shall not extend over 100 feet (30 m) into any swamp, bog, marsh, or similar area that is adjacent to the stream or water body. Expected high flows are those flows which the Contractor expects to experience during the period of time that the crossing is in place. They shall maintain pre-construction downstream flow conditions. Contractors are encouraged to construct these during low flows. They shall be maintained to prevent unnecessary erosion and other non-point sources of pollution. ~~When~~ Within 30 calendar days of no longer being needed, they shall be completely removed to an upland area, and all disturbed areas shall be reshaped and stabilized. The cost for constructing temporary stream crossings or causeways will not be paid for separately and shall be considered incidental to the contract price for Mobilization.

Comments: This was Item 2 of the April meeting. It was deferred to the May meeting to allow the Office of Contracts to develop language for payment of temporary crossings. If the language is approved for the proposed new Section 2547 (see Item 9), the proposed changes in this item for the third paragraph, along with the remainder of the text in the third paragraph, will be deleted since it will all be contained in the new section.

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

1105.14 ~~PLACEMENT OF FILL MATERIAL IN STREAMS AND WATER BODIES.~~ PROTECTION OF WATER QUALITY AND WETLANDS

~~The placement of fill material in streams is regulated by Federal and State law. The intent of this specification is to require the Contractor's operations in streams and other water bodies and adjacent swamps, marshes, bogs, or similar areas to be in compliance with Federal and State regulations.~~

The Contractor shall comply with the requirements of the Clean Water Act (33 U.S.C. 1344 and 33 CFR 323) and Executive Order 11990. When it becomes necessary for the Contractor to work in waters of the United States, the Contractor shall be aware that a Section 404 permit may be required. Waters of the United States are all waters, impoundments of waters, or tributaries of waters, including but not limited to lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, or natural ponds.

When required, the Contracting Authority will obtain a Section 404 permit for essential work on the right-of-way prior to the award of the contract. The Contractor will be required to adhere to the requirements of the permit. Activities occurring in or across waters of the United States not specifically reviewed and approved in the permit are not authorized. If the Contractor desires to use construction methods that are not specifically approved by the permit, the Contractor will be responsible for obtaining approval in the form of a new Section 404 permit from the U.S. Army Corps of Engineers and possibly Iowa DNR. The Contractor will not be allowed to use construction methods that will require additional mitigation by the Contracting Authority. The Contractor will not be granted additional compensation or contract time due to their request for a new permit. If, however, due to no fault of the Contractor, a Section 404 permit modification involving on right-of-way activities is deemed necessary by the Engineer, additional contract time and/or compensation may be considered.

~~Fill material means any material used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of a water body.~~

~~Fill material shall consist of clean, suitable, naturally occurring material, which is free from unacceptable levels of toxic pollutants.~~

~~At the Contractor's option, stream crossings and causeways may be constructed, unless otherwise~~

~~indicated in the Clean Water Act Section 404 Permit cover letter included in the proposal form. On Interstate and Primary projects, temporary stream crossings and causeways shall be constructed in accordance with the Standard Road Plan RL-16.~~ The Contracting Authority will obtain approval for a temporary stream crossing in the Section 404 permit, unless indicated otherwise in the contract documents. When allowed, the temporary stream crossing may be used at the Contractor's option, and shall be constructed in accordance with Standard Road Plan RL-16, unless specified otherwise in the contract documents. Fill material used to construct the temporary stream crossing shall be furnished by the Contractor, and shall not be dredged/excavated from the river unless specifically allowed elsewhere in the contract documents. Temporary stream crossings or causeways shall not restrict expected high flows or disrupt the movement of aquatic life native to the stream or water body. They shall not extend over 100 feet (30 m) into any swamp, bog, marsh, or similar area that is adjacent to the stream or water body. Expected high flows are those flows which the Contractor expects to experience during the period of time that the crossing is in place. They shall maintain pre-construction downstream flow conditions. Contractors are encouraged to construct these during low flows. They shall be maintained to prevent unnecessary erosion and other non-point sources of pollution. Within 30 days of ~~When~~ no longer being needed, they shall be completely removed to an upland area, and all disturbed areas shall be reshaped and stabilized. The cost for constructing temporary stream crossings or causeways will not be paid for separately and shall be considered incidental to the contract price for Mobilization.

Reason for Revision: Specify compliance with the Clean Water Act, Section 404 permits, and clarify contractor's options.

County or City Input Needed (X one)	**Yes**	**No** X
Comments: This clarification is consistent with currently established procedures.		

Industry Input Needed (X one)			**Yes**	**No** X	
Industry Notified:	**Yes**	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments: This change clarifies existing requirements.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Mark Bortle	**Office:** Construction	**Item 2**
Submittal Date: April 24, 2007	**Proposed Effective Date:** October, 2007 GS	
Article No.: 1107.09, B, 11 **Title:** Lane Drop-off or Rise	**Other:**	

Specification Committee Action: Approved as is.

Deferred:	**Not Approved:**	**Approved Date:** 5/10/07	**Effective Date:** 10/16/07

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: District 6 Construction noted the same notes proposed for TC-418 should also be added to TC-419.

Specification Section Recommended Text:

1107.09, B, 11, Lane Drop-off or Rise.

Delete the title and entire article:

~~**11. Lane Drop-off or Rise.**~~

~~The following shall apply for work on Interstate and other divided highways:~~

~~When there is a lane drop-off or rise on Interstate and other divided highway work, traffic shall not be required to cross over the drop-off or rise.~~

Comments:

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

~~**11. Lane Drop-off or Rise.**~~
~~The following shall apply for work on Interstate and other divided highways:~~

~~When there is a lane drop-off or rise on Interstate and other divided highway work, traffic shall not be required to cross over the drop-off or rise~~.

Reason for Revision: The Office of Design, Methods Section is including the following two notes on TC-418 which is included in the October 2007 Standard Road Plan revisions.

Where there is a lane line drop-off or rise, traffic shall not be allowed to cross over the drop-off or rose; except for ramp locations where a BUMP (W8-1) sign shall be placed.

Drop-offs greater than a nominal 4 inches shall not be allowed during non-working hours.

These two notes will replace the language proposed for deletion from the specifications.

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:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Mark Bortle	**Office:** Construction	**Item 3**
Submittal Date:	**Proposed Effective Date:** April 2008 GS	
Article No.: 1107.09, B, 12 **Title:** Two Way Traffic Signs on Four Lane Highways **Article No.:** 2528.02 **Title:** Signs	**Other:**	

Specification Committee Action: Approved with changes as noted.

Deferred:	**Not Approved:**	**Approved Date:** 5/10/07	**Effective Date:** 10/16/07

Specification Committee Approved Text: For Article 1107.09, B, 12, see Specification Section Recommended Text.

2528.02, Signs.

Add as the sixth paragraph:

On projects where two new lanes are being constructed adjacent to an existing two lane highway, TWO WAY TRAFFIC (W6-3) signs shall be placed. The signs shall be placed off the right shoulder of mainline: 1) after each public side road for each direction of travel for traffic that may enter from all intersecting side roads; or 2) at 1/2 mile (0.8 km) intervals, whichever is less. These signs shall be installed when grading activities start and shall remain in place until the entire four lane divided highway is opened to traffic. If the pavement is constructed under a separate contract, these signs shall remain in place after the grading contract is completed and become the property of the Contracting Authority. The paving contractor shall then take over these signs and remove them when the four lane divided highway is opened to traffic. Payment will be in accordance with Article 2528.13, A, 1.

Comments: The Specifications Section noted there were additional changes approved by the Traffic Safety Committee that were not included in this item. The Specifications Section will include those changes in the Specification Committee Approved Text.

Specification Section Recommended Text:

1107.09, B, 12, Two Way Traffic Signs on Four Lane Highways.

Delete the title and entire article:

~~**12. Two-Way Traffic Signs on Four-Lane Highways.**~~

~~On construction projects where the motorist may perceive that a four lane divided roadway exists, such as grading and paving additional lanes adjacent to existing traffic lanes or repaving traffic lanes adjacent to existing traffic lanes, two way traffic signs will be required on the roadway which is under traffic. The signs shall be placed at 1/2 mile (0.8 km) intervals for each direction of travel through the project limits.~~

~~When two way traffic remains on the project during construction, the signs shall be black lettering on an orange background. Should traffic remain on the two lane roadway permanently, the signs shall be replaced with signs with black lettering on yellow background.~~

2528.02, Signs.

Add as the sixth paragraph:

On projects where two new lanes are being constructed adjacent to an existing two lane highway, TWO WAY TRAFFIC (W6-3) signs shall be placed. The signs shall be placed on the right shoulder of mainline: 1) after each public side road for each direction of travel for traffic that may enter from all intersecting side roads; or 2) at 1 mile intervals, whichever is less. These signs shall be installed when grading activities start and shall remain in place until the entire four lane divided highway is opened to traffic. If the pavement is constructed under a separate contract, these signs shall remain in place after the grading contract is completed and become the property of the Contracting Authority. The paving contractor shall then take over these signs and remove them when the four lane divided highway is opened to traffic. Payment shall be in accordance with Article 2528.13, A, 1.

Comments:

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

Delete indented article 1107.09.B.12:

1107.09 BARRICADES AND WARNING SIGNS.

B. Responsibilities of the Contractor.
~~12. Two-Way Traffic Signs on Four-Lane Highways.~~

~~On construction projects where the motorist may perceive that a four lane divided roadway exists, such as grading and paving additional lanes adjacent to existing traffic lanes or repaving traffic lanes adjacent to existing traffic lanes, two way traffic signs will be required on the roadway which is under traffic. The signs shall be placed at 1/2 mile (0.8 km) intervals for each direction of travel through the project limits.~~

~~When two way traffic remains on the project during construction, the signs shall be black lettering on an orange background. Should traffic remain on the two lane roadway permanently, the signs shall be replaced with signs with black lettering on yellow background.~~

Add a new paragraph 6 to article 2528.02:

2528.02 SIGNS.
On projects where two new lanes are being constructed adjacent to an existing two lane highway, TWO WAY TRAFFIC (W6-3) signs shall be placed. The signs shall be placed on the right shoulder of mainline after each public side road for each direction of travel for traffic that may enter from all intersecting side roads or at 1 mile intervals, whichever is less. These signs shall be installed when grading activities start and shall remain until the entire four lane divided highway is opened to traffic. If the paving is constructed under a separate contract, these signs shall remain in place after the grading contract is completed and become property of the contracting authority. The paving contractor will then take over these signs and will remove them when the four lane divided highway is opened to traffic. Payment shall be per Article 2528.13.A.1.

Reason for Revision: Clarification of use and payment for two way traffic signs

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:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Wayne A. Sunday	**Office:** Construction	**Item 4**
Submittal Date: April 13, 2007	**Proposed Effective Date:** October 16, 2007	
Section No.: 2317.03 **Title:** Profilograph Testing **Section No.:** 2317.04 **Title:** Profile Index	**Other:**	

Specification Committee Action: Approved as is.

Deferred:	**Not Approved:**	**Approved Date:** 5/10/07	**Effective Date:** 10/16/07

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: None.

Specification Section Recommended Text:

2317.03, Profilograph Testing.

Replace the entire article:

~~The Contractor shall perform testing and furnish the profilogram results to the Engineer. The testing and evaluation shall be done by a trained and certified person, and the evaluation shall be certified in accordance with Materials I.M. 341.~~

~~The Engineer may perform monitor testing. Any portion of the project may be tested if the Engineer determines that the Contractor certified test results are inaccurate. If the test results are inaccurate, the Contractor will be charged for this work at a rate of $150 per lane per mile (kilometer), with a minimum charge of $500. In addition, furnishing inaccurate test results could result in decertification.~~

~~If the placements are less than 100 feet (30 m), each lane shall be tested and evaluated. The final trace and index and the final evaluation shall be received by the Engineer within 14 calendar days of the completion of the deck.~~

~~On deck placements of 100 feet (30 m) and greater, the initial profile trace and index for each lane shall be received by the Engineer by noon of the fifth working day following each of the first two placements. On subsequent placements, the trace and index shall be submitted following every third placement until completion of the deck. On single-pour bridges, the final profile trace and index and the final evaluation shall be submitted to the Engineer within 2 weeks of the completion of the deck.~~

The Contractor shall remove all objects and foreign material from the deck surface, including protective covers, if used, prior to testing by the Engineer. If appropriate, properly replace protective covers after testing.

A profilogram will be made by a test in each wheel path of each traffic lane. The profilogram will include a minimum of 16 feet (5 m) beyond the bridge section when there is adjoining pavement. Bridge decks and bridge deck overlays will be treated as one section. The profilogram will include a minimum of 100 feet (30 m) beyond the approach section when there is adjoining pavement.

For bridge lengths of 778 feet (240 m) or less, each traffic lane shall be a segment. For bridge longer than 778 feet (240 m), a segment shall be 0.1 miles (160 m) of the traffic lane. If the

remaining segment is 250 feet (80 m) or less in length, it shall be included in the adjacent bridge segment. If the remaining segment is more than 250 feet (80 m) in length, it shall be evaluated on its own. When bridge deck overlay expansion joints are not new or replaced, segments shall begin and end at the expansion joints.

Each bridge approach lane shall be a separate segment.

The Contractor shall perform quality control testing and furnish the profilogram results to the Engineer. The testing and evaluation shall be done by a trained and certified person, and the evaluation shall be certified in accordance with Materials I.M. 341.

Section 2317.04, Profile Index.

Replace the first paragraph:

An ~~individual~~ average profile index shall be calculated for each segment from the two wheel path profilograms in accordance with Materials I.M. 341 except for:

1. Bridge decks or bridge deck overlays less than 100 feet (30 m) in length.
2. New bridge approach sections or bridge approach overlays less than 100 feet (30 m) in length.
~~**3.** Bridge deck overlays including overlay of approaches less than 100 feet (30 m) in length.~~
43. Bridge decks for new concrete slab bridges.
~~**54.**~~ The 16 feet (5 m) at the ends of the section ~~when the Contractor is not responsible for the adjoining surface~~.
~~**65.**~~ The 16 feet (5 m) on each side of the expansion joints that are not ~~adjusted~~ new or replaced.

Comments: In the submittal for the March 8, 2007 meeting, Article 2317.03 was incorrectly titled “Profile Testing”. It should have been “Profilograph Testing”. It has been corrected for this item.

Member’s Requested Change: **(DO NOT USE “Track Changes,” or “Mark-Up”. Use ~~Strikeout~~/Highlight)**

2317.03, Profile Testing.

Replace the entire article:

~~The Contractor shall perform testing and furnish the profilogram results to the Engineer. The testing and evaluation shall be done by a trained and certified person, and the evaluation shall be certified in accordance with Materials I.M. 341.~~

~~The Engineer may perform monitor testing. Any portion of the project may be tested if the~~

~~Engineer determined that the Contractor certified test results are inaccurate. If the test results are inaccurate, the Contractor will be charged for this work at a rate of $150 per lane mile (kilometer), with a minimum charge of $500. In addition, furnishing inaccurate test results could result in decertification.~~

~~If the placements are less than 100 feet (30 m). each lane shall be tested and evaluated. The final trace and index and the final evaluation shall be received by the Engineer within 14 calendar days of the completion of the deck.~~

~~On deck placements of 100 feet (30 m) and greater, the initial profile trace and index for each lane shall be received by the Engineer by noon of the fifth working day following each of the first two placements. On subsequent placements, the trace and index shall be submitted following every third placement until completion of the deck. On single pour bridges, the final profile trace and index and the final evaluation shall be submitted to the Engineer within 2 weeks of the completion of the deck.~~

The Contractor shall remove all objects and foreign material from the deck surface, including protective covers, if used, prior to testing by the Engineer. If appropriate, properly replace protective covers after testing.

A profilogram will be made by a test in each wheel path of each traffic lane. The profilogram will include a minimum of 16 feet (5 m) beyond the bridge section when there is adjoining pavement. Bridge decks and bridge deck overlays will be treated as one section. The profilogram will include a minimum of 100 feet (30 m) beyond the approach section when there is adjoining pavement.

For bridge lengths of 778 feet (240 m) or less, each traffic lane shall be a segment. For bridge longer than 778 feet (240 m), a segment shall be 0.1 miles (160 m) of the traffic lane. If the remaining segment is 250 feet (80 m) or less in length, it shall be evaluated on its own. When bridge deck overlay expansion joints are not new or replaced ~~adjusted~~, segments shall begin and end at the expansion joints.

Each bridge approach lane shall be a separate segment.

The Contractor shall perform quality control testing and furnish the profilogram results to the Engineer. The testing and evaluation shall be done by a trained and certified person, and the evaluation shall be certified in accordance with Materials I.M. 341.

2317.04, **Profile Index.**

Replace the first paragraph:

An ~~individual~~ average profile index shall be calculated for each segment from the two wheel path profilograms in accordance with Materials I.M. 341 except for:

~~**1.**~~ Bridge decks or bridge deck overlays less than 100 feet (30 m) in length.

~~**2.**~~ New bridge approach sections or bridge approach overlays less than 100 feet (30 m) in length.

~~**3.** Bridge deck overlays including overlay of approaches less than 100 feet (30 m) in length.~~

~~**4.**~~**3**. Bridge decks for new concrete slab bridges.

~~**5.**~~**4**. The 16 feet (5 m) at the ends of the section ~~when the Contractor is not responsible for the adjoining surface.~~

~~**6.**~~**5**. The 16 feet (5 m) on each side of the expansion joints that are not new or replaced ~~adjusted.~~

Reason for Revision: The original text for Article 2317.03 above was a revision reviewed and approved at the March 8, 2007 Specification Meeting for inclusion in the October 16, 2007 GS. The highlighted text is an additional proposed revision in this Article for Specification Committee review and approval at the May Specification Meeting. This revision is to provide clarification regarding profile testing on bridges with expansion joints. When the bridge has new or replaced expansion joints the profile testing will be run across the expansion joints since the contractor has been able to set these expansion joints to the plan grade and cross section. When the bridge has existing expansion joints where only a raised steel plate is welded to the top of the expansion joint, the contractor is not able to accurately set the top of the raise plate to the plan grade and cross section so the profile testing will end at the expansion joints.

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: John Smythe	**Office:** Construction	**Item 5**
Submittal Date: April 24, 2007	**Proposed Effective Date:** October, 2007	
Article No.: 2401.02 **Title:** Notification for Complete Removal of Bridges	**Other:**	

Specification Committee Action: Approved as is.

Deferred:	**Not Approved:**	**Approved Date:** 5/10/07	**Effective Date:** 10/16/07

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: The Office of Contracts will make subsequent changes to the "Notification of Demolition Form". District 6 Construction asked if the age of a bridge is still on the form. They wanted to know how contractors are to determine the age of a bridge. The Office of Contracts noted it would be filled in on the "Notification of Demolition" form.

Specification Section Recommended Text:

2401.02, Notification of Complete Removal of Bridges.

Add as the second paragraph:

The Contracting Authority has inspected the existing bridge for asbestos. Unless otherwise indicated in the contract documents, no asbestos was found, or it has been removed prior to the letting. The Contractor may use this information to complete the "Notification of Demolition" form.

Comments:

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

2401.02 NOTIFICATION OF COMPLETE REMOVAL OF BRIDGES.

The Contractor shall notify the Iowa DNR by mail and the Engineer, ~~in writing, of the intended starting and completion dates for the complete removal of a bridge. Notification shall be~~ with the "Notification off Demolition" form, not less than ~~25 calendar~~ 10 business days prior to the start of bridge demolition. If the Contractor is unable to begin work on the intended start date, the Contractor shall notify the Iowa DNR and the Engineer~~, in writing,~~ of the new intended start date by sending a revised "Notification of Demolition" form. Notification of the inability to commence work on the intended start date shall be made no later than 1 ~~working~~ business day prior to the original intended start date.~~, or f~~Failure to notify the Iowa DNR and the Engineer of a change in start date 1 ~~working~~ business day prior to the original intended start date, will result in the need for a new ~~25 calendar~~ 10 business day notification to the Iowa DNR and the Engineer.

Add the following new second paragraph to 2401.02

The Contracting Authority has inspected the existing bridge for asbestos. Unless otherwise indicated in the contract documents, no asbestos was found, or it has been removed prior to the letting. The Contractor may use this information to complete the Notification of Demolition form.

Reason for Revision: Add contract language to provide the Contractor a basis for completing the Notification of Demolition form.					
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 / Wayne A. Sunday	**Office:** Construction	**Item 6**
Submittal Date: May 2, 2007	**Proposed Effective Date:** October 16, 2007	
Article No.: 2412.07 **Title:** Curing	**Other:**	

Specification Committee Action: Approved with changes as noted.

Deferred:	**Not Approved:**	**Approved Date:** 5/10/07	**Effective Date:** 10/16/07

Specification Committee Approved Text:

2412.07, Curing.

Add a new article:

A. Interstate and Primary Projects.
The first layer of prewetted burlap shall be placed on the concrete within 10 minutes after final finishing.

Add a new article:

B. Other Projects.
Immediately after final finishing and grooving, the area finished shall be covered with white pigmented curing compound, meeting requirements of Article 4105.05, applied at a rate of not more than 135 square feet per gallon (3.3 square meters per liter). The first layer of prewetted burlap shall be placed on the concrete within 30 minutes after the concrete has been finished and grooved.

Delete the first sentence of the first indented paragraph:

~~The first layer of prewetted burlap shall be placed on the floor within 10 minutes after final finishing or texturing.~~

Comments: The Office of Contracts pointed out that on occasion, a project on a Primary route will have a local systems project number. They wanted to know how the proposed changes would be applied in those situations. The Office of Construction noted that who has jurisdiction would determine how the specification would apply. The Office of Contracts asked how the bidder would know. The Office of Construction explained that the agency that has responsibility for caring for the bridge should determine what specifications apply.

The Office of Construction suggested changing the definition of “Interstate projects” to include local road bridges over the Interstate, and changing the definition of “Primary projects” to include local road bridges over the Primary system at interchanges. The Specifications Section will include these changes in the October 2007 GS.

District 6 Construction pointed out the original specification stated that burlap was to be placed within 10 minutes of finishing or texturing. They noted that “texturing” has been left out of the new specification. They asked if it texturing should be included for Other Projects. The Office of Construction agreed with this and noted that the term “grooving” should be used instead of “texturing”.

Specification Section Recommended Text:

2412.07, Curing.

Add a new article:

A. Interstate and Primary Projects.
The first layer of prewetted burlap shall be placed on the concrete within 10 minutes after final finishing.

Add a new article:

B. Other Projects.
Immediately after final finishing, the area finished shall be covered with white pigmented curing compound, meeting requirements of Article 4105.05, applied at a rate of not more than 135 square feet per gallon (3.3 square meters per liter). The first layer of prewetted burlap shall be placed on the concrete within 30 minutes after the concrete has been finished.

Delete the first sentence of the first indented paragraph:

~~The first layer of prewetted burlap shall be placed on the floor within 10 minutes after final finishing or texturing.~~

Comments:

Member's Requested Change: **(DO NOT USE "Track Changes," or "Mark-Up". Use ~~Strikeout~~/Highlight)**

2412.07 CURING.

A. Interstate and Primary Projects.
The first layer of prewetted burlap shall be placed on the concrete within 10 minutes after final finishing.

B. Other Projects.
Immediately after final finishing, the area finished shall be covered with white pigmented curing compound, meeting requirements of Article 4105.05, applied at a rate of not more than 135 square feet per gallon (3.3 square meters per liter). The first layer of prewetted burlap shall be placed on the concrete within 30 minutes after the concrete has been finished.

Concrete floors shall be cured as follows:

~~The first layer of prewetted burlap shall be placed on the floor within 10 minutes after final finishing or texturing.~~ Burlap shall be prewetted with sufficient water, prior to placement, to prevent absorption of moisture from the concrete surface. It shall be kept wet. As soon as practical but not later than 2 hours after the first layer is placed, a second layer of burlap shall be placed on the floor. Water shall be applied to the burlap covering for a period of 4 calendar days by means of a pressure sprinkling system that is effective in keeping the burlap wet during the moist curing period. The system may be interrupted only to replenish the water supply, during periods of natural moisture, or during construction contiguous to the concrete being cured. Interruptions for periods longer than 4 hours may be approved by the Engineer on the basis of the method for keeping the concrete moist.

Continuous contact, except as noted above, shall be maintained between all parts of the concrete floor and the burlap during the 4 calendar day moist curing period.

On concrete floors placed after October 1 and prior to April 1, after 20 hours of the application of water, the Contractor may substitute the application of a moisture proof plastic film not less than 3.4 mils (86 µm) thick over the wet burlap in lieu of applying water. Intimate contact must be maintained between the surface of the concrete, the burlap, and the plastic film.					
Reason for Revision:					
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: John Smythe / Wayne A. Sunday	**Office:** Construction	**Item 7**
Submittal Date: April 24, 2007	**Proposed Effective Date:** October 16, 2007	
Article No.: 2413 **Title:** Surfacing and Repair and Overlay of Bridge Floors.	**Other:** Additional changes to Article 2413.07, A were submitted for the April and May meetings. These are included.	

Specification Committee Action: Approved with changes as noted.

Deferred:	**Not Approved:**	**Approved Date:** 5/10/07	**Effective Date:** 10/16/07

Specification Committee Approved Text: See Specification Section Recommended Text (Includes changes noted in comments).

Comments: The Office of Construction noted that after a field demonstration, they have decided to change the grout mixture from 3 gallons per bag to 5 to 6 gallons. They noted that the "shall" condition for nuclear testing (Article 2413.04) should be a "will" since the Contracting Authority will do the testing. They also noted in Article 2413.12, the last indented paragraph (regarding cost of sealing) applies only to bridge floor overlays, not to surfacing or repairs. The Specification Section will remove language referring to bridge floor surfacing and repairs.

The Office of Construction asked the Office of Bridges and Structures if they would want overlay mix for Class B repair. The Office of Bridges and Structure noted that Class C structural mix should be used. The second paragraph in Article 2413.07 will be changed to require Class C mix be used.

The Office of Bridges and Structures pointed out that there is no surface screed vibration with HPC-O. The Office of Construction requested that language regarding surface screed vibration in the last sentence of the second paragraph of Article 2413.07 be deleted.

The Office of Bridges and Structures asked if HPC is actually a good alternative for Class O PCC. The Office of Construction noted it's as good as, if not better. They indicated that at some point in the future, all decks will be HPC. The Office of Bridges and Structures questioned whether HPC is a good alternative as an overlay. The Office of Construction is comfortable that is as least as good as current methods.

Specification Section Recommended Text:

Section 2413. Surfacing and Repair and Overlay of Bridge Floors.

Replace the title and entire section:

Section 2413. ~~Surfacing and Repair and Overlay of Bridge Floors.~~ Bridge Floor Surfacing, Repair, and Overlay.

2413.01, Description.
~~Surfacing bridge floors~~ Bridge Floor Surfacing shall consist of placing a wearing course on a new bridge deck prepared surface, and other necessary work shown in the contract documents or specified herein.

Repair and overlay of bridge floors shall consist of removing concrete from the existing surface, replacing and overlaying with new concrete, and other necessary work shown in the contract documents or as specified. When structural repairs are included in the project, Class C ~~or Class D~~ concrete~~, as specified,~~ may be mixed using equipment meeting requirements of Article 2413.03, B. The concrete mixture used for the overlay may be used for the repair; the water and consistency shall be as specified in Article 2403.03, A. Unless otherwise provided in the contract documents, overlay shall accomplish a raise of the

existing roadway surface and shall cover the entire concrete floor surface, including those areas to be repaired. Bridge floor repair and overlay shall be classified as follows:

A. Class A Bridge Floor Repair.
Class A bridge floor repair shall consist of removing floor concrete below the level described for Bridge Floor Overlay, but less than full depth, transporting the existing concrete removed from the project, and replacing the excavated volume with concrete to a level bounding the Bridge Floor Overlay classification. Lower limit for Class A Bridge Floor Repair shall be to suitable existing concrete, as determined by the Engineer, but to at least the level of the top of the top reinforcing steel.

B. Class B Bridge Floor Repair.
Class B bridge floor repair shall consist of removing floor concrete below the level described for Bridge Floor Overlay for the full depth of the floor, transporting the existing concrete removed from the project, and replacing the excavated volume with concrete to a level bounding the Bridge Floor Overlay classification.

C. Bridge Floor Overlay.
Bridge floor overlay shall consist of removing floor concrete to a depth 1/4 inch (5 mm) below the existing, finished surface, except at drains and elsewhere as noted in the contract documents, transporting the existing concrete removed from the project, and overlaying with a concrete course of a depth designated. Thickness of the concrete overlay shall be measured from a level 1/4 inch (5 mm) below the original surface to a final raised surface as shown. Where removal to a level lower than 1/4 inch (5 mm) below the original surface is necessary because of surface fixtures, the minimum thickness of abutting overlay shall be 3/4 inch (20 mm) and shall be tapered to the full designated thickness.

~~Unless otherwise specified, the work shall be done using either Portland cement concrete or latex modified concrete, at the Contractor's option.~~

2413.02, Materials.
All materials shall meet requirements for the respective items in Division 41.

Only one brand of cement shall be used during an individual placement. ~~Class O concrete mixtures shall not contain fly ash, Type IP cement, or Type I(PM) cement~~.

Sections 4110, and 4115 shall apply to the aggregates. Only those coarse aggregates specifically allowed by Article 4115.05 for this work shall be used.

Mix shall be either of the following:

A. Class O Portland Cement Concrete.
Class O PCC ~~is required and it~~ shall meet the requirements of Materials I.M. 529 and the following requirements:

Fly ash substitution is not permitted for Class O PCC.

The slump, measured in accordance with Materials I.M. 317 shall be 3/4 inch (20 mm) with a maximum of 1 inch (25 mm) and no minimum requirement. Testing for slump of concrete from a continuous mixer shall commence within 2 to 4 minutes after the concrete is discharged.

The intended air entrainment of the finished concrete is 6%, but the air content of fresh, unvibrated concrete at the time of placement, as determined by Materials I.M. 318 shall be 6.5%, with a maximum variation of ~~± 1.0%~~ plus 2.0% and minus 1.0%.

~~Grout for bonding new concrete to previously placed concrete shall consist of equal parts by weight (mass) of Portland cement and fine aggregate for concrete mixed with sufficient water to form a stiff slurry. The consistency shall be so that the slurry can be applied with a stiff brush or broom to the previously placed concrete in a thin, even coating that will not run or puddle in low spots. An equivalent grout of Portland cement and water, to be applied by pressure spray may be substituted with approval of the Engineer. For sealing vertical joints between adjacent lanes and at the curbs, this grout shall be thinned to paint consistency.~~

B. ~~Latex Modified~~ Class HPC-O High Performance Concrete.

Class HPC-O shall meet the requirements of Materials I.M. 529 and the following requirements:

The slump, measured in accordance with Materials I.M. 317 shall be 1 inch (25 mm) to 3 inches (75 mm) with a maximum of 4 inches (100 mm). Testing for slump of concrete from a continuous mixer shall commence within 2 to 4 minutes after the concrete is discharged. Testing for slump of concrete from ready mix shall be done prior to placement.

A mid-range water reducing admixture meeting the requirements of Materials I.M. 403, Appendix C, shall be used. Other admixtures may be approved by the Engineer.

Air content shall be the same as required for Class O PCC.

Type IS or Type IP cement shall be used. If Type I/II is used, 25% replacement with ground granulated blast furnace slag shall be required.

Fly ash substitution rate shall not exceed 15% replacement by weight.

~~The latex modified concrete shall be a workable mixture having the following properties or limits:~~

~~PROPERTIES OF LATEX MODIFIED CONCRETE~~	
~~Material or Property~~	~~Type 2 Concrete~~
~~Cement (parts by weight (mass))~~	~~1.0 (1.0)~~
~~Fine Aggr. (parts by weight (mass))~~	~~2.5 (2.5)~~
~~Coarse Aggr. (parts by weight (mass))~~	~~2.0 (2.0)~~
~~Latex Emulsion Admixture (gal/bag (L/kg) cement)~~	~~3.5 (0.3)~~
~~Air Content of Plastic Mix, % (Note 1)~~	~~3-6~~
~~Slump, inches (mm), maximum (Notes 1 and 2)~~	~~5 (125)~~

~~Note 1. Following sampling of the discharged, normally mixed material: the commencement of the tests shall be delayed from 4 to 4.5 minutes.~~
~~Note 2. Water may be added to obtain slump within the prescribed limits. Concrete with a slump less than 3 inches (75 mm) may be rejected if it is not placed satisfactorily and with a closed tight surface.~~

~~The formulated latex admixture shall be a nontoxic, film forming, polymeric emulsion in water to which all stabilizers have been added at the point of manufacture and shall be homogeneous and uniform in composition.~~

~~The physical properties of the latex modifier shall conform to the following requirements:~~

PHYSICAL PROPERTIES OF LATEX MODIFIER	
Polymer type	Styrene butadiene
Stabilizers	
(a) Latex*	Nonionic surfactants
(b) Portland cement composition	Poly dimethyl siloxane
Percent solids	46.0 - 49.0
Weight per gallon (lb at 25°C)	8.4
(Mass per liter (kg at 25°C)	(1.0)
Color	White
*Chloride content of the latex must be less than 0.5%.	

Latex admixture to be stored shall be kept in suitable enclosures which will protect it from freezing and from prolonged exposure to temperatures in excess of 85°F (30°C). Containers of latex admixture may be stored at the bridge site for a period not to exceed 10 calendar days. Such stored containers shall be covered completely with suitable insulating blanket material to avoid excessive temperatures.

Grout for bonding new concrete to previously placed concrete shall consist of about 5 to 6 gallons of water to each 94 pound bag (0.27 L/kg) of cement. The consistency shall be so that the slurry can be applied with a stiff brush or broom to the previously placed concrete in a thin, even coating that will not run or puddle in low spots. An equivalent grout of Portland cement and water, applied by pressure spray may be substituted with approval of the Engineer. For sealing vertical joints between adjacent lanes and at the curbs, this grout shall be thinned to paint consistency.

2413.03, Equipment.
Equipment used shall be subject to approval of the Engineer and shall comply with the following:

A. Preparation Equipment.
Preparation equipment shall be of the following types:

1. Sawing Equipment.
Sawing equipment shall be capable of sawing concrete to the specified depth.

2. Sandblasting or Shot Blasting Equipment.
Sandblasting or shot blasting equipment shall be capable of removing rust, oil, and concrete laitance from the existing surface of the bridge floor and exposed uncoated reinforcing bars.

3. Power Driven Hand Tools.
Power driven hand tools will be permitted with the following restrictions:

a. Jack Hammers heavier than nominal 30 pound class (with a mass greater than 14 kg) shall not be used.

b. Jack Hammers or mechanical chipping tools shall not be operated at an angle in excess of 45 degrees measured from the surface of the slab.

c. Chipping Hammers heavier than a nominal 15 pound (with a mass greater than 7 kg) class shall not be used.

4. Hand Tools.
Hand tools such as hammers and chisels shall be provided for removal of final particles of unsound concrete or to achieve the required depth.

5. High Pressure Water Blasting Equipment.
High pressure water blasting equipment shall be capable of removing rust, oil, concrete laitance, and unsound concrete from the existing surface of the bridge floor and exposed uncoated reinforcing bars.

B. Proportioning and Mixing Equipment.

~~1.~~ Proportioning and mixing equipment for Class O PCC or Class HPC-O ~~Portland cement concrete~~ shall meet requirements of Article 2001.20, D, and Article 2001.21, C. In addition, the device for proportioning water shall be accurate within 1.0%, and the mixer shall be a construction or stationary concrete mixer of the rotating paddle type. A continuous mixer used in conjunction with volumetric proportioning, described above, may be used.

Sufficient mixing capacity or mixers shall be provided for either type of mixture to permit the intended quantity to be placed without interruption.

The cement, fly ash, and GGBFS for Class HPC-O shall be pre-blended by the producer or by using equipment capable of thoroughly mixing the materials to the tolerances in ASTM C 685 when concrete is produced using a volumetric mixer.

For Class HPC-O, ready mixed concrete equipment meeting the requirements of Articles 2001.20 and 2001.21 will be allowed. For ready mixed concrete, the cement, fly ash, and GGBFS are not required to be pre-blended.

~~**2.** Proportioning and mixing equipment for latex modified concrete shall be of a self contained, mobile continuous mixing type subject to the following:~~

~~**a.** The mixer shall have storage for sufficient bulk cement, fine and coarse aggregate, latex modifier, and water to produce, on the site, not less than 6 cubic yards (4 m3) of concrete. The mixer shall be capable of metering materials and producing uniform concrete.~~

~~**b.** The mixer shall be capable of positive measurement of cement being introduced into the mix. A cement meter register, visible at all times, shall indicate this quantity.~~

~~**c.** The mixer shall provide positive control of the flow of water and latex emulsion into the mixing chamber. Water use shall be indicated by a recording water meter. The flow shall be readily adjustable to provide for minor variations in aggregate moisture.~~

~~**d.** The mixer shall be capable of being calibrated to automatically proportion and blend all components of indicated composition on a continuous or intermittent basis, as required by the finishing operation, and shall discharge mixed material through a conventional chute directly in front of the finishing machine.~~

C. Placing and Finishing Equipment for Bridge Floor Surfacing and Bridge Floor Overlay.
Placing and finishing equipment shall include adequate hand tools for placement of the mixture and for working it down to approximately the correct level for striking off with the screed. A self propelled finishing machine will be required for all surfacing and overlays~~, and the front screed shall be designed to consolidate the mixture to be placed to 100% of the rodded density~~. The machine shall operate on supporting rails which are adequately secured to the previously placed surface and are adjustable to the correct profile without shimming, which do not deflect under the load of the machine, and which may be removed without damage to the edge of the new surface that is to remain in place. When placing the mixture in a lane abutting a previously completed lane, that side of the finishing

machine adjacent to the completed lane shall be suitably equipped to travel on the completed lane. The finishing machine shall be inspected and approved before work is started on each project.

The finishing machine shall meet the following additional requirements for the type of mixture to be placed:

1. Class O Portland Cement Concrete.
The finishing machine shall meet requirements of Article 2412.06 and shall have a mechanical strike off to provide a uniform thickness of mixture in front of the screed designed to consolidate the mixture by vibration, as specified. The front screed shall be designed to consolidate the mixture to be placed to 100% of the rodded density. The bottom face of this screed shall be at least 5 inches (125 mm) wide with a turned up or rounded leading edge to minimize tearing of the surface of the plastic concrete. Each screed shall have an effective weight (mass) of at least 75 pounds for each square foot (365 kg/m^2) of bottom face area. Each screed shall be provided with positive control of the vertical position, the angle of tilt, and the shape of the crown. Design of the finishing machine together with appurtenant equipment shall be such that positive machine screeding of the plastic concrete will be obtained within 1 inch (25 mm) of the face of the existing curbs. The length of the screed shall be sufficient to extend at least 6 inches (150 mm) beyond the line where a saw cut is intended to form the edge of a subsequent placement section, and shall overlap the sawed edge of a previously placed course at least 6 inches (150 mm). ~~The finishing machine shall be capable of forward and reverse motion under positive control. Provision shall be made for raising the screeds to clear the screeded surface for traveling in reverse.~~

Internal vibration equipment will be required for consolidation at the edges of the placement for Class O PCC.

2. ~~Latex Modified~~ Class HPC-O High Performance Concrete.
~~The finishing machine shall be self propelled and shall be capable of forward and reverse movement under positive control. Provision shall be made for raising all screeds to clear the screeded surface for traveling in reverse.~~ The finishing machine shall meet the requirements of Article 2412.06 and be capable of finishing the surface to within 1 foot (0.3 m) of the edges of the area being placed.

The screeds shall be provided with positive control of the vertical position.

~~Internal vibration equipment will be required for consolidation at the edges of the placement.~~

The finishing machine shall be self propelled and shall be capable of forward and reverse movement under positive control. Provision shall be made for raising all screeds to clear the screeded surface for traveling in reverse.

D. General.
The overall combination of labor and equipment for proportioning, mixing, placing, and finishing the new surface shall be of such minimum capability as to meet the following requirements except when noted otherwise in the contract documents.

MINIMUM CAPACITY AND LABOR REQUIREMENTS	
Total Surface Area per Bridge, sq. yd. (m^2)	**Minimum Requirement, cu. yd. per hour (m^3 per hour)**
0-328 (0-274) 329-492 (274.1-410) 493-656 (410.1-550) over 656 (over 550.1)	1.0 (0.8) 1.5 (1.2) 2.0 (1.6) 2.5 (2.0)

The finishing machine shall be designed so that when the mixture is being mixed and placed at the specified minimum rate, under normal operating conditions, the elapsed time between depositing the mixture on the floor and final screeding shall not exceed 10 minutes.

2413.04, Preparation of Surface for Bridge Floor Surfacing and Bridge Floor Overlays.
Material for test ~~holes~~ wells (for Class O PCC density testing) and all loose, disintegrated, or unsound concrete shall be removed from the bridge floor, as designated by the Engineer. Test wells for nuclear density checks shall have nominal dimensions of 1 1/2 inches x 10 inches x 10 inches (40 mm x 250 mm x 250 mm). On bridge floor overlays, Class A bridge floor repair removal areas may be used as test wells provided they meet the nominal dimensions and are located in the testing frequency areas. Nuclear density testing of Class O PCC will be in accordance with Materials I.M. 358.

For bridge floor overlays, the entire existing concrete floor area shall be uniformly scarified or prepared to a depth of 1/4 inch (5 mm), except over areas of Class A and Class B repair where the 1/4 inch (5 mm) removal may be coincidental with operations for repair removal. Removal to a greater depth will be required at drains and elsewhere as noted in the contract documents.

The thickness of all new concrete above the prepared surface, for bridge floor surfacing, shall be as specified in the contract documents. ~~The clearance shall be checked in the following manner before concrete is placed.~~ The thickness of concrete above the prepared surface (for bridge floor surfacing) and above the prepared surface or reinforceing steel (for bridge floor overlay) shall be at least 1 3/4 inches (45 mm) and shall be greater if specified in the contract documents. The thickness and clearance shall be checked in the following manner before concrete is placed:

A filler block having a thickness 1/4 inch (5 mm) less than the ~~designated~~ overlay thickness shall be attached to the bottom of the screed; with screed guides in place, the screed shall be passed over the area to be concreted. As an alternate to passage of the finishing machine, an approved template, supported by the screed guides, may be passed over the overlay area ~~to be concreted~~. Where the intended clearance does not allow use of this method, a string line or other means shall be used, subject to approval of the Engineer. If the filler block or other method used to check does not clear the area to be concreted, the profile of the new surface shall be adjusted as approved by the Engineer.

For bridge floor overlays, all old concrete which does not have sufficient clearance shall be removed. All reinforcing steel which does not have sufficient clearance shall be depressed and fastened down. It may be necessary to remove concrete beneath some reinforcement to permit depressing the reinforcement adequately. The minimum clear distance around these bars for placement of new concrete shall be 3/4 inch (20 mm).

In preparation for placement of new concrete, the surface shall be sandblasted or shot blasted, followed by an air blast. This cleaning shall remove all dirt, oil, and other foreign material, as well as any unsound concrete, laitance, or loose material from the surface and edges against which the surface mixture is to be placed. It is desired that the surface be roughened by the cleaning to provide satisfactory bond with the surfacing mixture. Metal floor drains and areas of the curb or railing above the proposed surface shall

be protected from the cleaning.

~~For the PCC mixture, i~~It is not intended or desired that existing concrete, prepared for surfacing, be presaturated before grout and new concrete is placed. The prepared surface shall be dry to allow some absorption of the grout.

~~For the latex modified concrete, the surface of existing concrete shall be saturated but free of standing water.~~

Areas from which concrete has been removed shall be kept free of slurry produced by wet sawing of concrete joints. All of this slurry shall be removed from prepared areas before new concrete is placed.

Hand tools shall be used to remove final particles of concrete or to achieve the required depth. The entire surface against which new concrete is to be placed, including curbs and exposed reinforcement, shall be sandblasted or shot blasted. The cleaning shall be of an extent to remove all dirt, oil, and other foreign material, as well as any unsound concrete. Cleaning of epoxy coated reinforcing shall be with hand tools that will not damage the epoxy coating. Immediately before applying grout in preparation for placement of new concrete, the surface shall be cleaned with air blast. It is not intended or desired that existing concrete, prepared for repair, surfacing, or overlay, be pre-saturated with water before grout and new concrete is placed. The prepared surface shall be dry to allow some absorption of the grout.

At the time of placement of either Class O PCC or Class HPC-O, the area shall be clean and all exposed the reinforcement free of rust. Rust forming because of dew on clean reinforcement overnight will not be considered objectionable, but reinforcement with a greater amount of rust shall be subject to recleaning before the concrete is placed. The area shall be cleaned by air blast before the concrete is placed.

2413.05, Preparation of Surface for Repair ~~and Overlay~~.
Concrete shall be removed from each area, designated in the contract documents or by the Engineer, to a depth and in a manner consistent with the classification for that area. Areas as shown in the contract documents are based on the best information available; actual areas will be determined by the Engineer.

A. Class A Bridge Floor Repair.
Concrete may be removed by chipping, shot blasting, hydro blasting, or by a combination of these, except that final clean up, in any case, shall be by use of hand tools. Class A repair removal shall be considered to start 1/4 inch (5 mm) below the existing surface, but this shall not preclude removal coincidental with preparation for overlay. Removal for Class A repair shall extend at least to the level of the top reinforcing bars, and the removal shall extend deeper, as necessary, to remove unsound concrete.

~~All reinforcing bars and newly exposed concrete shall be thoroughly cleaned by sandblasting or shot blasting. Where bond between existing concrete and reinforcing steel has been destroyed, the concrete adjacent to the bar shall be removed to a depth that will permit new concrete to bond to the entire periphery of the exposed bar. A minimum of 3/4 inch (20 mm) clearance shall be required around the bar. Care shall be exercised to prevent cutting, stretching, or damaging any exposed reinforcing steel. The Engineer may require enlarging a designated area should inspection indicate deterioration of concrete or corrosion of reinforcing beyond the limits previously designated.~~

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

Additional removal may be required to provide for test ~~holes~~ wells.

B. Class B Bridge Floor Repair.
Within all areas designated for Class B repair, and any designated areas of Class A repair in which the depth of the remaining sound concrete is less than 50% of the original depth of the bridge floor, all concrete shall be removed. Designated Class A repair areas shall be measured as Class B Bridge Floor Repair when full depth removal is required. At the direction of the Engineer, limited areas of removal greater than 50% of the floor thickness, such as beneath reinforcing, may be allowed; these limited areas of excess depth will be measured as Class A Bridge Floor Repair. Concrete shall be removed by jack hammer, chipping hammer, or by a combination of scarifying and chipping hammer, except that the final removal at the periphery of Class B repair areas shall be accomplished by 15 pound (7 kg) jack hammer, chipping hammer, or hand tools. Class B repair removal shall be considered to start 1/4 inch (5 mm) below the existing surface, but this shall not preclude removal coincidental with preparation for overlay. ~~All exposed reinforcing bars and newly exposed concrete shall be thoroughly cleaned by sandblasting or shot blasting. Care shall be exercised to prevent cutting, stretching, or damaging exposed reinforcing.~~

Forms shall be provided to enable placement of new concrete in the full depth opening. The forms shall preferably be suspended from existing reinforcing bars by wire ties. Forms may, in the case of large area openings, be supported by blocking from the beam flanges. Forms will in all cases be supported by elements of the existing superstructure unless specifically noted or shown otherwise in the contract documents.

All reinforcing bars and newly exposed concrete shall be thoroughly cleaned by sandblasting or shot blasting. Cleaning of epoxy coated reinforcing shall be with hand tools that will not damage the epoxy coating. Where bond between existing concrete and reinforcing steel has been destroyed, the concrete adjacent to the bar shall be removed to a depth that will permit new concrete to bond to the entire periphery of the exposed bar. A minimum of 3/4 inch (20 mm) clearance shall be required around the bar. Care shall be exercised to prevent cutting, stretching, or damaging any exposed reinforcing steel. The Engineer may require enlarging a designated area should inspection indicate deterioration of concrete or corrosion of reinforcing beyond the limits previously designated.

~~**C. Bridge Floor Overlay.**~~
~~The entire existing concrete floor area shall be uniformly scarified or prepared to a depth of 1/4 inch (5 mm), except over areas of Class A and Class B repair where the 1/4 inch (5 mm) removal may be coincidental with operations for repair removal. Removal to a greater depth will be required at drains and elsewhere, as noted in the contract documents.~~

~~**D. General.**~~
~~The thickness of concrete above the prepared surface or reinforcing steel shall be at least 3/4 inch (20 mm) and shall be greater if specified in the contract documents. The clearance shall be checked in the following manner before concrete is placed:~~

~~A filler block having a thickness 1/8 inch (3 mm) less than the overlay thickness shall be attached to the bottom of the screed; with screed guides in place, the screed shall be passed over the area to be concreted. As an alternate to passage of the finishing machine, an approved template, supported by the screed guides, may be passed over the overlay area. Where the intended clearance does not allow use of this method, a string line or other means shall be used, subject to approval of the Engineer. All old concrete which does not have sufficient clearance shall be removed. All reinforcing steel which does not have sufficient clearance shall be depressed and fastened down. It may be necessary to remove concrete beneath some reinforcement to permit depressing the reinforcement adequately. The minimum clear distance around these bars for placement of new concrete shall be 3/4 inch (20 mm).~~

Areas from which concrete has been removed shall be kept free of slurry produced by wet sawing of concrete joints. All of this slurry shall be removed from prepared areas before new concrete is placed.

Hand tools shall be used to remove final particles of concrete or to achieve the required depth. The entire

surface, including curbs and exposed reinforcement, against which new concrete is to be placed shall be sandblasted or shot blasted. Cleaning of epoxy coated reinforcing shall be with hand tools that will not damage the epoxy coating. The cleaning shall be of an extent to remove all dirt, oil, and other foreign material, as well as any unsound concrete. Immediately before applying grout in preparation for placement of new concrete, the surface shall be cleaned with air blast. ~~For the Portland cement concrete, i~~It is not intended or desired that existing concrete, prepared for repair ~~or overlay~~ be presaturated with water before grout and new concrete is placed. The prepared surface shall be dry to allow some absorption of the grout.

At the time of placement of either Class O PCC or ~~latex modified concrete~~ Class HPC-O, the area shall be clean and the reinforcement free of rust; rust forming because of dew on clean reinforcement overnight will not be considered objectionable, but reinforcement with a greater amount of rust shall be subject to recleaning before the concrete is placed. The area shall be cleaned by air blast before the concrete is placed.

~~For latex modified concrete, the surface shall be flushed with water and kept wet for at least 1 hour before concrete placement. Puddles of free water shall be removed before covering with concrete.~~

2413.06, Proportioning and Mixing.
For Class O PCC, ~~T~~the mixture shall be proportioned and mixed at the project site. Ready mixed concrete will not be approved.

For Class HPC-O, ready mixed concrete or portioned and mixed concrete at the project site will be allowed.

The water reducing admixture for improved workability of ~~Portland cement concrete~~ Class O PCC or HPC-O shall be incorporated and mixed into the concrete in accordance with the manufacturer's recommendations and the Engineer's instructions.

A. Stationary Mixer.
When a construction or stationary mixer is used, proportioning and mixing shall be in accordance with applicable provisions of Article 2403.06.

B. Continuous Mixing Equipment.
When continuous mixing equipment is used, the following shall apply:

1. Mobile continuous mixers shall accurately proportion all materials for the specified mixture.

2. The proportioning equipment for each material shall be calibrated in the presence of the inspector, or the Engineer may accept a previous calibration and require satisfactory verification checks only, at the settings indicated by the previous calibration.

3. The proportioning equipment shall be operated at the speed recommended by the manufacturer during calibration, checks, or normal operation.

4. Continuous mixers shall be recharged at the site.

5. The Contractor may make yield checks or other checks and the inspector will cooperate in such checking.

6. The materials shall be mixed in an approved mixer within 1 mile (2 km) of the site of placement. They shall be mixed in accordance with the specified requirements for the equipment used. The mixture, as discharged from the mixer, shall be uniform in composition and consistency.

~~**7.** For latex modified concrete, mixing capability shall be such that finishing operations can~~

~~proceed at a steady pace with final finishing completed before the formation of the plastic surface film.~~

2413.07, Placing and Finishing.

A. Repairs.
The following applies to repair work:

Although repair classes are considered to begin 1/4 inch (5 mm) below the original concrete surface, repair concrete shall be placed monolithically with the overlay course, except as described for larger areas of Class B repair. Fresh concrete, 3 inches (75 mm) or more in thickness, shall be vibrated internally.

Areas of Class B repair 2 square yards (2 m^2) or greater shall have floor forms supported by beams or stringers. These larger areas of Class B repair shall have individual concrete replacement to the lower boundary for the superimposed overlay. Class C structural concrete meeting the requirements of Sections 2403 and 2412 shall be used for Class B repair. Floor repair concrete described in Article 2413.02, or Class C structural concrete meeting requirements of Sections 2403 and 2412, may be used for the partial placements. Surfaces of these individual placements are to be left rough, and all placements for each construction stage shall be complete before the overlay course is started. If a full depth repair is staged, a beveled keyway not less than 1 1/2 inch by 3 inches (35 mm by 75 mm) shall be provided at the vertical joint. Concrete placement and reinforcing support shall comply with applicable portions of these specifications except as modified by the contract documents. The partial placement shall have a 72 hour cure as described for the overlay surface. After the cure, partial placements are to be surface dried, sandblasted or shot blasted, and cleaned prior to the application of the grout and overlay course.

B. Bridge Floor Surfacing and Bridge Floor Overlay.
An approved finishing machine will be required as specified in Article 2413.03, C. Supporting rails upon which the finishing machine travels shall be placed outside the area to be surfaced. Provisions for anchorage of supporting rails shall provide for horizontal and vertical stability; positive anchorage may be required by the Engineer. A hold down device shot into concrete will not be permitted unless the concrete is to be subsequently surfaced. Hold down devices of other types leaving holes in

exposed areas will be approved provided the holes remaining are grouted full. Plans for anchoring support rails and the mixture placing procedure shall be submitted to the Engineer for approval.

~~For latex modified concrete, transverse bulkheads, equal in depth to the thickness of the surface, shall be installed to the required grade and profile prior to placing the concrete.~~

The locations of longitudinal joints may be shown in the contract documents. If not shown, the locations shall be subject to approval of the Engineer, and the approval will be based on avoiding joints in the wheel paths as much as practical.

In order to insure a junction with properly consolidated concrete, the surface course previously placed shall be sawed to a straight and vertical edge at longitudinal and transverse joints and removed before adjacent concrete is placed. The Engineer will determine the extent of such removal.

The Contractor shall take every reasonable precaution to secure a smooth riding bridge deck. Prior to placement operations, the Contractor shall review the equipment, procedures, personnel, and previous results with the Engineer, and the inspection procedures will be reviewed to assure coordination. Precautions shall include the following:

Assurance that concrete can be produced and placed within the specified limits, continuously and

with uniformity.

After finishing, the Contractor shall check the surface with a 10 foot (3 m) straightedge; causes for irregularities exceeding 1/8 inch (3 mm) should be eliminated, and corrections should be made, if practical.

Each placement will be checked in accordance with Section 2317 the day following placement or before another section is placed.

After the surface has been cleaned and immediately before placing ~~Portland cement concrete~~ Class O PCC or Class HPC-O, a thin coating of bonding grout shall be scrubbed into the dry, prepared surface. At the Contractor's option, the grout may be sprayed onto the surface in a manner subject to approval of the Engineer. Care shall be exercised to insure that all parts receive a thorough, even coating and that no excess grout is permitted to collect in pockets. The rate of progress in applying grout shall be limited so that the grout does not become dry before it is covered with new concrete. If the grout becomes dry, it shall be removed by sandblasting and new grout applied.

Concrete shall be placed in a continuous operation. For Class O PCC, ~~T~~the new concrete shall be manipulated and mechanically struck off slightly above final grade. It shall then be mechanically consolidated to 100% of the rodded density, with a minus tolerance of 2%, and screeded to final grade. The rodded density will be determined in accordance with Materials I.M. 358.

The rodded density measurement is not required for Class HPC-O.

For Class O PCC overlay, ~~An~~ internal ~~vibrator~~ vibration shall be used for consolidation at the curb side, and along the longitudinal construction joint adjacent to a previously constructed lane.

~~The following applies to repair and overlay work:~~

~~Although repair classes are considered to begin 1/4 inch (5 mm) below the original concrete surface, repair concrete shall be placed monolithically with the overlay course, except as described for larger areas of Class B repair. Fresh concrete, 3 inches (75 mm) or more in thickness, shall be vibrated internally in addition to the surface screed vibration.~~

~~Areas of Class B repair 2 square yards (2 m^2) or greater shall have floor forms supported by beams or stringers. These larger areas of Class B repair shall have individual concrete replacement to the lower boundary for the superimposed overlay. Floor repair concrete, described in Article 2413.02, or Class D structural concrete, meeting requirements of Sections 2403 and 2412, may be used for the partial placements. Surfaces of these individual placements are to be left rough, and all placements for each construction stage shall be complete before the overlay course is started. If a full depth repair is staged, a beveled keyway not less than 1 1/2 inch by 3 inches (35 mm by 75 mm) shall be provided at the vertical joint. Concrete placement and reinforcing support shall comply with applicable portions of these specifications except as modified by the contract documents. The partial placement shall have a 72 hour cure as described for the overlay surface. After the cure, partial placements are to be surface dried, sandblasted or shot blasted, and cleaned prior to the application of the overlay course or grout.~~

The concrete temperature and theoretical evaporation rate shall be in accordance with Article 2412.05.

Section 2317 shall apply to smoothness of the completed bridge floor surfacing and bridge floor overlay for Interstate and Primary projects and when specifically required for other projects.

C. Placement of Grooving.

~~A~~1. Interstate and Primary Projects.
Transverse grooving or tining in plastic concrete of bridge floor surfacing or bridge deck overlay (and bridge approach overlay when included in a bridge deck overlay project) will not be allowed. Longitudinal grooving shall be in accordance with Article 2412.06, A. ~~grooves shall be cut into the hardened concrete surfaces using a mechanical cutting device. Longitudinal grooving shall be done after surface correction grinding.~~

~~Longitudinal grooves shall be 1/8 inch +/- 1/64 inch (3 mm +/- 0.4 mm) in width, 1/8 inch +1/32 inch or -1/16 inch (3 mm +0.8 mm or -1.6 mm) in depth, and the grooves shall be uniformly spaced at 3/4 inch (19 mm) intervals measured from center to center of groove.~~

~~Longitudinal grooving on bridge deck overlay and double reinforced bridge approach overlay sections shall not be within the area approximately 2 feet (0.6 m) adjacent to the curbs and shall terminate approximately 6 inches (150 mm) from bridge joints. Longitudinal grooving of single reinforced and non-reinforced bridge approach sections shall not be applied within 6 inches (150 mm) of the edge of the outside lane lines.~~

~~For staged bridge deck overlay and bridge approach overlay construction the Contractor may cut longitudinal grooves in the hardened concrete at the end of each construction stage or wait until all stages have been completed. If the Contractor elects to delay cutting of the longitudinal grooves until completion of all stages, the concrete deck overlay and bridge approach overlay for any stage opened to traffic shall receive an interim coarse broom finish during placement. Within 30 calendar days following completion of the last stage of the project the Contractor shall establish temporary lane closures to accomplish longitudinal grooving for all stages. The interim coarse broom finish will not be allowed as a surface texture when opened to traffic over a winter season. If the interim coarse broom texture is present and the Contractor is not in a position to finish all stages of the project, longitudinal grooving shall be cut into the hardened concrete in order to establish an acceptable driving surface texture for the winter season.~~

~~B~~2. Other Projects.
When a tight, uniform surface has been achieved, the surface shall be given a suitable grooving, by hand methods, similar to that described in Article 2301.16, A, with the following exceptions:

- Grooving shall be transverse to the centerline of roadway.
- Transverse grooving shall be randomly spaced from 3/4 inch to 1 5/8 inches (20 mm by 40 mm) with no more than 50% of the spacings exceeding 1 1/4 inches (30 mm) with a minimum of four different spacings in a 2 foot (0.6 m) width.

This operation shall be done at a time and manner that the desired texture will be achieved while minimizing displacement of the larger aggregate particles. The texture should not extend into the areas within approximately 2 feet (0.5 m) of curbs. As soon as finishing has been completed, all vertical joints with adjacent concrete shall be sealed by painting with thinned grout.

~~Screed rails and/or construction dams shall be separated from newly placed latex modified concrete by passing a pointing trowel along their inside face. Care shall be exercised to assure that this trowel cut is made for the entire depth and length of rails or dams after the mixture has stiffened sufficiently and that it does not flow back.~~
~~Section 2317 shall apply to smoothness of the completed deck overlay for Primary projects and when specifically required for other projects.~~

2413.08, Curing.

A. Interstate and Primary Projects.

The first layer of prewetted burlap shall be placed on the concrete within 10 minutes after finishing. ~~Burlap shall be prewetted with sufficient water, prior to placement, to prevent absorption of moisture from the concrete surface.~~ If Class O PCC is revibrated because of failure to meet density requirements with initial vibration, the time for placement of prewetted burlap shall be within 10 minutes after finishing of the revibrated area.

B. Other Projects.

Immediately after final finishing, the area finished shall be covered with white pigmented curing compound meeting requirements of Article 4105.05, applied at a rate of not more than 135 square feet per gallon (3.3 square meters per liter). The first layer of prewetted burlap shall be placed on the concrete within 30 minutes after the concrete has been deposited on the floor. If Class O PCC is revibrated because of failure to meet density requirements with initial vibration, this time will be extended 15 minutes.

The concrete shall be cured as provided in the following paragraphs:

For ~~Portland cement concrete~~ Class O PCC or Class HPC-O, the surface shall be cured for at least 72 hours. For the first 24 hours, the burlap shall be kept continuously wet by means of an automatic sprinkling or wetting system. After 24 hours, the Contractor may cover the wet burlap with a layer of 4 mil (100 µm) polyethylene film for a minimum of 48 hours in lieu of using the sprinkling or wetting system. ~~If the concrete is revibrated because of failure to meet density requirements with initial vibration, the time for placement of prewetted burlap will be extended 15 minutes~~. Failure to apply wet burlap within the required time shall be cause for rejecting the work so affected. Surface concrete in the rejected area shall be removed and replaced at no additional cost to the Contracting Authority.

~~For latex modified concrete, the surface shall be cured by wet burlap for at least 24 hours and be air cured for an additional 48 hours. Within 1 hour of covering with wet burlap, a layer of 4 mil (100 µm) polyethylene film shall be placed on the wet layer for the required 24 hour period for curing. The curing material shall then be removed for an additional 48 hour air cure. Burlap polyethylene sheets may be substituted for the polyethylene film with the approval of the Engineer. It is the nature of the latex modifier to form a plastic film at the surface upon drying, usually within 25 minutes in hot, dry weather. It is the intent of this specification that this film be protected from drying and cracking by prompt covering with wet burlap.~~
Burlap shall be prewetted with sufficient water, prior to placement, to prevent absorption of moisture from the concrete surface.

At the Contractor's option, partial depth concrete for Class B repair may be cured with white pigmented curing compound only. When this curing is completed, the surface shall be sandblasted and allowed to dry, and the existing concrete in that vicinity shall be sandblasted, prior to placement of the overlay course.

2413.09, Sealing for Bridge Floor Overlay.
The tops and traffic sides of curbs, retrofit barrier rails, and concrete barrier rails shall be sealed in accordance with Article 2403.21, D. In addition, for ~~Portland cement concrete floor~~ Class O PCC overlay or Class HPC-O overlay, the sealer shall be applied along each gutter line, extending 1 foot (0.3 m) onto the roadway. Other areas requiring concrete sealer may be designated in the contract documents or by the Engineer.

2413.10, Limitations of Operations.

Work on the surface shall not be commenced until the lower course meets the requirements of Article 2403.19, B.

If traffic is to be maintained during the construction period of this contract, it will be noted in the contract documents. The Contractor shall provide traffic controls that are required by the contract documents.

Night work will be permitted. ~~When daytime temperatures exceed 85°F (30°C) the Engineer may require placement of latex modified concrete to be made at night or in the early morning hours if a satisfactory surface finish is not being achieved. In either case, a~~Adequate lights for nighttime work shall be furnished at the direction of the Engineer by the Contractor without additional compensation. The Engineer shall be given reasonable notice.

A construction dam or bulkhead shall be installed in case of major delay in the placement operation. During minor delays of 1 hour or less, the end of the placement may be protected from drying with several layers of wet burlap.

Adequate precautions shall be taken to protect freshly placed concrete from sudden or unexpected rain. The Engineer may order removal of any concrete damaged by rainfall.

Screed rails may be removed at any time after the concrete has taken initial set. Adequate precaution shall be taken during screed removal to protect the edge of the new surface from damage.

Concrete shall not be placed adjacent to a surface course less than 36 hours old, however, this restriction does not apply to a continuation of placement in a lane or strip beyond a joint in the same lane or strip.

If concrete placement is stopped or delayed for a period of 90 minutes or more, further placement shall be discontinued and may resume only after a period of not less than 12 hours. This restriction does not prohibit continuation of placement provided a gap is left in the lane or strip; the gap shall be sufficient in length for the finishing machine to clear previously placed concrete.

Preparation work will not be allowed in a lane or strip until the lane is closed to traffic. In areas where there is no traffic, preparation of the area may be started in a lane or strip adjacent to newly placed surface the day following its placement. If this work is started before the end of the 72 hour curing period, the work will be restricted as follows:

Sawing or other operations shall interfere with the curing process for the minimum practical time only, and in the immediate work area only, and the curing shall be resumed promptly.

Chipping hammers heavier than a nominal 15 pound (with a mass greater than 7 kg) class shall not be used.

Air compressors shall be operated on the floor only directly over the piers.

Loads other than construction equipment shall not be permitted on any portion of the bridge floor that has undergone preparation and prior to placement and curing of new concrete.

Traffic shall not be permitted on a finished surface course until 72 hours after placement. At temperatures below 55°F (13°C), the Engineer may require a longer waiting time.

PCC shall not be placed when the air or floor temperature is below 40°F (4°C). ~~Latex modified concrete shall not be placed when the air or floor temperature is below 45°F (7°C); however, it may be placed when these temperatures are 45°F (7°C) and a rising temperature is predicted.~~

Concrete mixture shall not be placed after October 1 and prior to April 1 without written approval of the

Engineer.

2413.11, Method of Measurement.
Bridge Floor Surfacing (Class O PCC) and Bridge Floor Surfacing (Class HPC-O) will be computed by the Engineer in square yards (square meters) from measurements of the areas surfaced. For bridge floor surfacing, concrete removal for Class O PCC test wells may be required by the Engineer. This removal will not be measured for payment.

Class A Bridge Floor Repair, Class B Bridge Floor Repair, Bridge Floor Overlay (Class O PCC), and Bridge Floor Overlay (Class HPC-O) will be computed by the Engineer in square yards (square meters) from measurements of the areas repaired or overlaid.

Sealing, as required in Article 2413.09, will not be measured separately for payment.

Longitudinal Grooving in concrete shall be measured in accordance with Article 2412.11.

2413.12, Basis of Payment.
For the performance of acceptable work, measured as provided above, the Contractor will be paid the contract unit price in accordance with the following provisions:

For the number of square yards (square meters) of Bridge Floor Surfacing (Class O PCC) or Bridge Floor Surfacing (Class HPC-O) constructed, the Contractor will be paid the contract unit price per square yard (square meter). This payment shall be full compensation for furnishing all material, equipment, forms, and labor necessary to complete this work in accordance with the contract documents.

When Section 2317 applies, payment may be modified as specified therein.

For the number of square yards (square meters) of Class A Bridge Floor Repair, Class B Bridge Floor Repair, Bridge Floor Overlay (Class O PCC), and Bridge Floor Overlay (Class HPC-O) constructed, the Contractor will be paid the respective contract unit price per square yard (square meters). This payment shall be full compensation for removal of excess concrete from the project and it becoming the property of the Contractor, for furnishing all material, equipment, forms, and labor necessary to complete the work in accordance with the contract documents.

When there is no item for Class B Bridge Floor Repair, but such work is required, payment for each square yard for 5 square yards (square meter for 4 m^2) or less will be at three times the contract unit price per square yard (square meter) for Class A Bridge Floor Repair. Should the quantity exceed 5 square yards (4 m^2), payment shall be made as extra work.

The cost of sealing as required in Article 2413.09 shall be included in the contract unit price for Bridge ~~Floor Surfacing, Class A Bridge Floor Repair, Class B Bridge Floor Repair,~~ Bridge Floor Overlay (Class O PCC), or Bridge Floor Overlay (Class HPC-O).

The profile may be improved by raising the finished overlay surfaces up to 1/2 inch (15 mm) above that shown in the contract documents with no additional compensation to the Contractor. At each location where the raise exceeds 1/2 inch (15 mm), the Contractor will be paid, as extra work, for the materials which represent the volume in excess of the 1/2 inch (15 mm) raise.

Longitudinal Grooving in Concrete will be paid for in accordance with Article 2412.11.

Comments: This was presented as Item 9 in the March meeting and Item 8 in the April meeting. Additional revisions submitted on 5/3/07 have been included.

Member's Requested Change (Redline/Strikeout):

2413.01 DESCRIPTION.
~~Surfacing bridge floors~~ Bridge floor surfacing shall consist of placing a wearing course on a new bridge deck prepared surface, and other necessary work shown in the contract documents or specified herein.

Repair and overlay of bridge floors shall consist of removing concrete from the existing surface, replacing and overlaying with new concrete, and other necessary work shown in the contract documents or as specified. When structural repairs are included in the project, Class C ~~or Class D~~ concrete~~, as specified,~~ may be mixed using equipment meeting requirements of Article 2413.03, B. The concrete mixture used for the overlay may be used for the repair; the water and consistency shall be as specified in Article 2403.03, A. Unless otherwise provided in the contract documents, overlay shall accomplish a raise of the existing roadway surface and shall cover the entire concrete floor surface, including those areas to be repaired. Bridge floor repair and overlay shall be classified as follows:

A. Class A Bridge Floor Repair.
Class A bridge floor repair shall consist of removing floor concrete below the level described for Bridge Floor Overlay, but less than full depth, transporting the existing concrete removed from the project, and replacing the excavated volume with concrete to a level bounding the Bridge Floor Overlay classification. Lower limit for Class A Bridge Floor Repair shall be to suitable existing concrete, as determined by the Engineer, but to at least the level of the top of the top reinforcing steel.

B. Class B Bridge Floor Repair.
Class B bridge floor repair shall consist of removing floor concrete below the level described for Bridge Floor Overlay for the full depth of the floor, transporting the existing concrete removed from the project, and replacing the excavated volume with concrete to a level bounding the Bridge Floor Overlay classification.

C. Bridge Floor Overlay.
Bridge floor overlay shall consist of removing floor concrete to a depth 1/4 inch (5 mm) below the existing, finished surface, except at drains and elsewhere as noted in the contract documents,

transporting the existing concrete removed from the project, and overlaying with a concrete course of a depth designated. Thickness of the concrete overlay shall be measured from a level 1/4 inch (5 mm) below the original surface to a final raised surface as shown. Where removal to a level lower than 1/4 inch (5 mm) below the original surface is necessary because of surface fixtures, the minimum thickness of abutting overlay shall be 3/4 inch (20 mm) and shall be tapered to the full designated thickness.

~~Unless otherwise specified, the work shall be done using either Portland cement concrete or latex modified concrete, at the Contractor's option.~~

2413.02 MATERIALS.
All materials shall meet requirements for the respective items in Division 41.

Only one brand of cement shall be used during an individual placement. ~~Class O PCC concrete mixtures shall not contain fly ash.~~ ~~, Type IP cement, or Type I(PM) cement.~~

Sections 4110, and 4115 shall apply to the aggregates. Only those coarse aggregates specifically allowed by Article 4115.065 for this work shall be used.

Mix shall be either of the following:

A. ~~**Portland Cement Concrete .**~~ **Class O Portland Cement Concrete.**
Class O PCC ~~is required and it~~ shall meet the requirements of Materials I.M. 529 and the following requirements:

Fly ash substitution is not permitted for Class O PCC.

The slump, measured in accordance with Materials I.M. 317 shall be 3/4 inch (20 mm) with a maximum of 1 inch (25 mm) and no minimum requirement. Testing for slump of concrete from a continuous mixer shall commence within 2 to 4 minutes after the concrete is discharged.

The intended air entrainment of the finished concrete is 6%, but the air content of fresh, unvibrated concrete at the time of placement, as determined by Materials I.M. 318 shall be 6.5%, with a maximum variation of plus ~~± 1.0%~~ 2.0% and minus 1.0%.

~~Grout for bonding new concrete to previously placed concrete shall consist of equal parts by weight (mass) of Portland cement and fine aggregate for concrete mixed with sufficient water to form a stiff slurry. The consistency shall be so that the slurry can be applied with a stiff brush or broom to the previously placed concrete in a thin, even coating that will not run or puddle in low spots. An equivalent grout of Portland cement and water, to be applied by pressure spray may be substituted with approval of the Engineer. For sealing vertical joints between adjacent lanes and at the curbs, this grout shall be thinned to paint consistency.~~

B. ~~**Latex Modified**~~ ~~**High Performance Concrete (HPC).**~~ **Class HPC-O High Performance Concrete.**

~~The latex modified concrete shall be a workable mixture having the following properties or limits:~~

~~**PROPERTIES OF LATEX MODIFIED CONCRETE**~~	
~~Material or Property~~	~~Type 2 Concrete~~
~~Cement (parts by weight (mass))~~	~~1.0 (1.0)~~
~~Fine Aggr. (parts by weight (mass))~~	~~2.5 (2.5)~~
~~Coarse Aggr. (parts by weight (mass))~~	~~2.0 (2.0)~~
~~Latex Emulsion Admixture (gal/bag (L/kg) cement)~~	~~3.5 (0.3)~~
~~Air Content of Plastic Mix, % (Note 1)~~	~~3 6~~
~~Slump, inches (mm), maximum (Notes 1 and 2)~~	~~5 (125)~~
~~Note 1. Following sampling of the discharged, normally mixed material: the commencement of the tests shall be delayed from 4 to 4.5 minutes.~~	
~~Note 2. Water may be added to obtain slump within the prescribed limits. Concrete with a slump less than 3 inches (75 mm) may be rejected if it is not placed satisfactorily and with a closed tight surface.~~	

all stabilizers have been added at the point of manufacture and shall be homogeneous and uniform in composition.

The physical properties of the latex modifier shall conform to the following requirements:

PHYSICAL PROPERTIES OF LATEX MODIFIER	
Polymer type Stabilizers (a) Latex* (b) Portland cement composition Percent solids Weight per gallon (lb at 25°C) (Mass per liter (kg at 25°C) Color	Styrene butadiene Nonionic surfactants Poly-dimethyl siloxane 46.0 - 49.0 8.4 (1.0) White
*Chloride content of the latex must be less than 0.5%.	

Latex admixture to be stored shall be kept in suitable enclosures which will protect it from freezing and from prolonged exposure to temperatures in excess of 85°F (30°C). Containers of latex admixture may be stored at the bridge site for a period not to exceed 10 calendar days. Such stored containers shall be covered completely with suitable insulating blanket material to avoid excessive temperatures.

Class HPC-O PCC shall meet the requirements of Materials I.M. 529 and the following requirements:

The slump, measured in accordance with Materials I.M. 317 shall be 1 inch (25 mm) to with a maximum of 3 inch (75 mm) with a maximum of 4 inch (100 mm). Testing for slump of concrete from a continuous mixer shall commence within 2 to 4 minutes after the concrete is discharged. Testing for slump of concrete from ready mix shall be done prior to placement.

A mid-range water reducing admixture meeting the requirements of Materials I.M. 403, Appendix C, shall be used. Other admixtures may be approved by the Engineer.

Air content shall be the same as required for Class O PCC concrete.

Type IS or Type IP cement shall be used. If Type I/II is used, 25% replacement with ground granulated blast furnace slag shall be required.

Fly ash substitution rate shall not exceed 15% replacement by weight.

Grout for bonding new concrete to previously placed concrete shall consist of about 3 gallons of water to each 94 pound bag of cement. The consistency shall be so that the slurry can be applied with a stiff brush or broom to the previously placed concrete in a thin, even coating that will not run or puddle in low spots. An equivalent grout of Portland cement and water, to be applied by pressure spray may be substituted with approval of the Engineer. For sealing vertical joints between adjacent lanes and at the curbs, this grout shall be thinned to paint consistency.

2413.03 EQUIPMENT.
Equipment used shall be subject to approval of the Engineer and shall comply with the following:

A. Preparation Equipment.
Preparation equipment shall be of the following types:

1. Sawing Equipment.
Sawing equipment shall be capable of sawing concrete to the specified depth.

2. Sandblasting or Shot Blasting Equipment.
Sandblasting or shot blasting equipment shall be capable of removing rust, oil, and concrete laitance from the existing surface of the bridge floor and exposed uncoated reinforcing bars.

3. Power Driven Hand Tools.
Power driven hand tools will be permitted with the following restrictions:

a. Jack Hammers heavier than nominal 30 pound class (with a mass greater than 14 kg) shall not be used.

b. Jack Hammers or mechanical chipping tools shall not be operated at an angle in excess of 45 degrees measured from the surface of the slab.

c. Chipping Hammers heavier than a nominal 15 pound (with a mass greater than 7 kg) class shall not be used.

4. Hand Tools.
Hand tools such as hammers and chisels shall be provided for removal of final particles of unsound concrete or to achieve the required depth.

5. High Pressure Water Blasting Equipment.
High pressure water blasting equipment shall be capable of removing rust, oil, concrete laitance, and unsound concrete from the existing surface of the bridge floor and exposed uncoated reinforcing bars.

B. Proportioning and Mixing Equipment.

~~1.~~ Proportioning and mixing equipment for Class O PCC or Class HPC-O ~~Portland cement concrete~~ shall meet requirements of Article 2001.20, D, and Article 2001.21, C. In addition, the device for proportioning water shall be accurate within 1.0%, and the mixer shall be a construction or stationary concrete mixer of the rotating paddle type. A continuous mixer used in conjunction with volumetric proportioning, described above, may be used.

Sufficient mixing capacity or mixers shall be provided for either type of mixture to permit the intended quantity to be placed without interruption.

The cement, fly ash, and GGBFS for Class HPC-O shall be a pre-blended by the producer or by using equipment capable of thoroughly mixing the materials to the tolerances in ASTM C 685 when concrete is produced using a volumetric mixer.

For Class HPC-O, ready mixed concrete equipment meeting the requirements of Articles 2001.20 and 2001.21 will be allowed. For ready mixed concrete the cement, fly ash, and GGBFS are not required to be pre-blended.

~~**2.** Proportioning and mixing equipment for latex modified concrete shall be of a self contained, mobile continuous mixing type subject to the following:~~

~~**a.** The mixer shall have storage for sufficient bulk cement, fine and coarse aggregate, latex modifier, and water to produce, on the site, not less than 6 cubic yards (4 m^3) of concrete. The mixer shall be capable of metering materials and producing uniform concrete.~~

~~**b.** The mixer shall be capable of positive measurement of cement being introduced into the mix. A cement meter register, visible at all times, shall indicate this quantity.~~

~~**c.** The mixer shall provide positive control of the flow of water and latex emulsion into the mixing chamber. Water use shall be indicated by a recording water meter. The flow shall be readily adjustable to provide for minor variations in aggregate moisture.~~

~~**d.** The mixer shall be capable of being calibrated to automatically proportion and blend all components of indicated composition on a continuous or intermittent basis, as required by the finishing operation, and shall discharge mixed material through a conventional chute directly in front of the finishing machine.~~

C. Placing and Finishing Equipment for ~~Surfacing Bridge Floors~~ Bridge Floor Surfacing and Bridge Floor Overlay.

Placing and finishing equipment shall include adequate hand tools for placement of the mixture and for working it down to approximately the correct level for striking off with the screed. A self propelled finishing machine will be required for all surfacing and overlays. ~~, and the front screed shall be designed to consolidate the mixture to be placed to 100% of the rodded density.~~ The machine shall operate on supporting rails which are adequately secured to the previously placed surface and are adjustable to the correct profile without shimming, which do not deflect under the load of the machine, and which may be removed without damage to the edge of the new surface that is to remain in place. When placing the mixture in a lane abutting a previously completed lane, that side of the finishing machine adjacent to the completed lane shall be suitably equipped to travel on the completed lane. The finishing machine shall be inspected and approved before work is started on each project.

The finishing machine shall meet the following additional requirements for the type of mixture to be placed:

1. ~~Portland Cement Concrete.~~ Class O Portland Cement Concrete.

The finishing machine shall meet requirements of Article 2412.06 and shall have a mechanical strike off to provide a uniform thickness of mixture in front of the screed designed to consolidate the mixture by vibration, as specified. The front screed shall be designed to consolidate the mixture to be placed to 100% of the rodded density. The bottom face of this screed shall be at least 5 inches (125 mm) wide with a turned up or rounded leading edge to minimize tearing of the surface of the plastic concrete. Each screed shall have an effective weight (mass) of at least 75 pounds for each square foot (365 kg/m^2) of bottom face area. Each screed shall be provided with positive control of the vertical position, the angle of tilt, and the shape of the crown. Design of the finishing machine together with appurtenant equipment shall be such that positive machine

screeding of the plastic concrete will be obtained within 1 inch (25 mm) of the face of the existing curbs. The length of the screed shall be sufficient to extend at least 6 inches (150 mm) beyond the line where a saw cut is intended to form the edge of a subsequent placement section, and shall overlap the sawed edge of a previously placed course at least 6 inches (150 mm). ~~The finishing machine shall be capable of forward and reverse motion under positive control. Provision shall be made for raising the screeds to clear the screeded surface for traveling in reverse.~~

Internal vibration equipment will be required for consolidation at the edges of the placement for Class O PCC ~~concrete.~~

2. ~~Latex Modified~~ ~~High Performance Concrete (HPC).~~ Class HPC-O High Performance Concrete.

~~The finishing machine shall meet the requirements of Article 2412.06.~~

~~The finishing machine shall be self propelled and shall be capable of forward and reverse movement under positive control. Provision shall be made for raising all screeds to clear the screeded surface for traveling in reverse.~~

The screeds shall be provided with positive control of the vertical position.

The finishing machine shall meet the requirements of Article 2412.06 and be capable of finishing the surface to within 1 foot (0.3 m) of the edges of the area being placed.

The finishing machine shall be self propelled and shall be capable of forward and reverse movement under positive control. Provision shall be made for raising all screeds to clear the screeded surface for traveling in reverse.

~~The screeds shall be provided with positive control of the vertical position.~~

~~Internal vibration equipment will be required for consolidation at the edges of the placement for Class O concrete.~~

D. General.

The overall combination of labor and equipment for proportioning, mixing, placing, and finishing the new surface shall be of such minimum capability as to meet the following requirements except when noted otherwise in the contract documents.

MINIMUM CAPACITY AND LABOR REQUIREMENTS	
Total Surface Area per Bridge, sq. yd. (m^2)	**Minimum Requirement, cu. yd. per hour (m^3 per hour)**
0-328 (0-274) 329-492 (274.1-410) 493-656 (410.1-550) over 656 (over 550.1)	1.0 (0.8) 1.5 (1.2) 2.0 (1.6) 2.5 (2.0)

The finishing machine shall be designed so that when the mixture is being mixed and placed at the specified minimum rate, under normal operating conditions, the elapsed time between depositing the mixture on the floor and final screeding shall not exceed 10 minutes.

2413.04 PREPARATION OF SURFACE FOR ~~SURFACING BRIDGE FLOORS~~ BRIDGE FLOOR SURFACING AND BRIDGE FLOOR OVERLAYS.

Material for test ~~holes~~ wells (for ~~PCC~~ Class O PCC ~~concrete~~ density tests) and all loose, disintegrated, or unsound concrete shall be removed from the bridge floor, as designated by the Engineer. Test wells for nuclear density checks shall have nominal dimensions of 1 ½ inches x 10 inches x 10 inches (40 mm x 250 mm x 250 mm). Class A bridge floor repair removal areas, on bridge floor overlays, may be used as test wells provided they meet the nominal dimensions and are located in the testing frequency areas. Nuclear density testing of ~~Portland Cement Concrete~~ Class O PCC ~~mix~~ shall be in accordance with Materials I.M. 358.

For bridge floor overlays t~~T~~he entire existing concrete floor area shall be uniformly scarified or prepared to a depth of 1/4 inch (5 mm), except over areas of Class A and Class B repair where the 1/4 inch (5 mm) removal may be coincidental with operations for repair removal. Removal to a greater depth will be required at drains and elsewhere, as noted in the contract documents.

The thickness of all new concrete above the prepared surface, for ~~surfacing bridge floors~~ bridge floor surfacing, shall be as specified in the contract documents. ~~The clearance shall be checked in the following manner before concrete is placed.~~ The thickness of concrete above the prepared surface (for bridge floor surfacing) and above the prepared surface or reinforcing steel~~,~~ (for bridge floor overlay)~~,~~ shall be at least ~~3/4 inch (20 mm)~~ 1 ¾ inches (45 mm) and shall be greater if specified in the contract documents. The thickness and clearance shall be checked in the following manner before concrete is placed:

A filler block having a thickness ¼ inch (5 mm) ~~1/8 inch (3 mm)~~ less than the overlay thickness shall be attached to the bottom of the screed; with screed guides in place, the screed shall be passed over the area to be concreted. As an alternate to passage of the finishing machine, an approved template, supported by the screed guides, may be passed over the overlay area. Where the intended clearance does not allow use of this method, a string line or other means shall be used, subject to approval of the Engineer. If the filler block or other method used to check does not clear the area to be concreted, the profile of the new surface shall be adjusted as approved by the Engineer.

For bridge floor overlays a~~A~~ll old concrete which does not have sufficient clearance shall be removed. All reinforcing steel which does not have sufficient clearance shall be depressed and fastened down. It may be necessary to remove concrete beneath some reinforcement to permit depressing the reinforcement adequately. The minimum clear distance around these bars for placement of new concrete shall be 3/4 inch (20 mm).

~~A filler block having a thickness 1/4 inch (5 mm) less than the designated thickness shall be attached to the bottom of the screed; with screed guides in place, the screed shall be passed over the area to be concreted. As an alternate to passage of the finishing machine, an approved template, supported by the screed guides, may be passed over the area to be concreted. If the filler block does not clear the area to be concreted, the profile of the new surface shall be adjusted as approved by the Engineer.~~

In preparation for placement of new concrete, the surface shall be sandblasted or shot blasted, followed by an air blast. This cleaning shall remove all dirt, oil, and other foreign material, as well as any unsound concrete, laitance, or loose material from the surface and edges against which the surface mixture is to be placed. It is desired that the surface be roughened by the cleaning to provide satisfactory bond with the surfacing mixture. Metal floor drains and areas of the curb or railing above the proposed surface shall be protected from the cleaning.

~~For the PCC mixture, i~~It is not intended or desired that existing concrete, prepared for surfacing, be presaturated before grout and new concrete is placed. The prepared surface shall be dry to allow some absorption of the grout.

Areas from which concrete has been removed shall be kept free of slurry produced by wet sawing of concrete joints. All of this slurry shall be removed from prepared areas before new concrete is placed.

Hand tools shall be used to remove final particles of concrete or to achieve the required depth. The entire surface, including curbs and exposed reinforcement, against which new concrete is to be placed shall be sandblasted or shot blasted. The cleaning shall be of an extent to remove all dirt, oil, and other foreign material, as well as any unsound concrete. Cleaning of epoxy coated reinforcing shall be with hand tools that will not damage the epoxy coating. Immediately before applying grout in preparation for placement of new concrete, the surface shall be cleaned with air blast. ~~For the Portland cement concrete, I~~It is not intended or desired that existing concrete, prepared for repair, surfacing, or overlay be presaturated with water before grout and new concrete is placed. The prepared surface shall be dry to allow some absorption of the grout.

At the time of placement of either Class O PCC or ~~latex modified~~ Class HPC-O ~~high performance concrete~~, the area shall be clean and any exposed ~~the~~ reinforcement free of rust; rust forming because of dew on clean reinforcement overnight will not be considered objectionable, but reinforcement with a greater amount of rust shall be subject to recleaning before the concrete is placed. The area shall be cleaned by air blast before the concrete is placed.

~~For the latex modified concrete, the surface of existing concrete shall be saturated but free of standing water.~~

2413.05 PREPARATION OF SURFACE FOR REPAIR ~~AND OVERLAY~~.
Concrete shall be removed from each area, designated in the contract documents or by the Engineer, to a depth and in a manner consistent with the classification for that area. Areas as shown in the contract documents are based on the best information available; actual areas will be determined by the Engineer.

A. Class A Bridge Floor Repair.
Concrete may be removed by chipping, shot blasting, hydro blasting, or by a combination of these, except that final clean up, in any case, shall be by use of hand tools. Class A repair removal shall be considered to start 1/4 inch (5 mm) below the existing surface, but this shall not preclude removal coincidental with preparation for overlay. Removal for Class A repair shall extend at least to the level of the top reinforcing bars, and the removal shall extend deeper, as necessary, to remove unsound concrete.

~~All reinforcing bars and newly exposed concrete shall be thoroughly cleaned by sandblasting or shot blasting. Where bond between existing concrete and reinforcing steel has been destroyed, the concrete adjacent to the bar shall be removed to a depth that will permit new concrete to bond to the entire periphery of the exposed bar. A minimum of 3/4 inch (20 mm) clearance shall be required around the bar. Care shall be exercised to prevent cutting, stretching, or damaging any exposed reinforcing steel. The Engineer may require enlarging a designated area should inspection indicate deterioration of concrete or corrosion of reinforcing beyond the limits previously designated.~~

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

Additional removal may be required to provide for test holes.

B. Class B Bridge Floor Repair.
Within all areas designated for Class B repair, and any designated areas of Class A repair in which the depth of the remaining sound concrete is less than 50% of the original depth of the bridge floor, all concrete shall be removed. Designated Class A repair areas shall be measured as Class B Bridge Floor Repair when full depth removal is required. At the direction of the Engineer, limited areas of removal greater than 50% of the floor thickness, such as beneath reinforcing, may be allowed; these limited areas of excess depth will be measured as Class A Bridge Floor Repair. Concrete shall be removed by jack hammer, chipping hammer, or by a combination of scarifying and chipping hammer, except that the final removal at the periphery of Class B repair areas shall be accomplished by 15 pound (7 kg) jack hammer, chipping hammer, or hand tools. Class B repair removal shall be considered to start 1/4 inch (5 mm) below the existing surface, but this shall not preclude removal coincidental with preparation for overlay. ~~All exposed reinforcing bars and newly exposed concrete shall be thoroughly cleaned by sandblasting or shot blasting. Care shall be exercised to prevent cutting, stretching, or damaging exposed reinforcing.~~

Forms shall be provided to enable placement of new concrete in the full depth opening. The forms shall preferably be suspended from existing reinforcing bars by wire ties. Forms may, in the case of large area openings, be supported by blocking from the beam flanges. Forms will in all cases be supported by elements of the existing superstructure unless specifically noted or shown otherwise in the contract documents.

All reinforcing bars and newly exposed concrete shall be thoroughly cleaned by sandblasting or shot blasting. Cleaning of epoxy coated reinforcing shall be with hand tools that will not damage the epoxy coating. Where bond between existing concrete and reinforcing steel has been destroyed, the concrete adjacent to the bar shall be removed to a depth that will permit new concrete to bond to the entire periphery of the exposed bar. A minimum of 3/4 inch (20 mm) clearance shall be required around the bar. Care shall be exercised to prevent cutting, stretching, or damaging any exposed reinforcing steel. The Engineer may require enlarging a designated area should inspection indicate deterioration of concrete or corrosion of reinforcing beyond the limits previously designated.

~~**C. Bridge Floor Overlay.**~~
~~The entire existing concrete floor area shall be uniformly scarified or prepared to a depth of 1/4 inch (5 mm), except over areas of Class A and Class B repair where the 1/4 inch (5 mm) removal may be coincidental with operations for repair removal. Removal to a greater depth will be required at drains and elsewhere, as noted in the contract documents.~~

~~**CD. General.**~~
~~The thickness of concrete above the prepared surface or reinforcing steel shall be at least 3/4 inch (20 mm) and shall be greater if specified in the contract documents. The clearance shall be checked in the following manner before concrete is placed:~~

~~A filler block having a thickness ¼ inch (5 mm) 1/8 inch (3 mm) less than the overlay thickness shall be attached to the bottom of the screed; with screed guides in place, the screed shall be passed over the area to be concreted. As an alternate to passage of the finishing machine, an approved template, supported by the screed guides, may be passed over the overlay area. Where the intended clearance does not allow use of this method, a string line or other means shall be used, subject to approval of the Engineer. All old concrete which does not have sufficient clearance shall be removed. All reinforcing steel which does not have sufficient clearance shall be depressed and fastened down. It may be necessary to remove concrete beneath some reinforcement to permit depressing~~

~~the reinforcement adequately. The minimum clear distance around these bars for placement of new concrete shall be 3/4 inch (20 mm).~~

Areas from which concrete has been removed shall be kept free of slurry produced by wet sawing of concrete joints. All of this slurry shall be removed from prepared areas before new concrete is placed.

Hand tools shall be used to remove final particles of concrete or to achieve the required depth. The entire surface, including curbs and exposed reinforcement, against which new concrete is to be placed shall be sandblasted or shot blasted. Cleaning of epoxy coated reinforcing shall be with hand tools that will not damage the epoxy coating. The cleaning shall be of an extent to remove all dirt, oil, and other foreign material, as well as any unsound concrete. Immediately before applying grout in preparation for placement of new concrete, the surface shall be cleaned with air blast. ~~For the Portland cement concrete,~~ It is not intended or desired that existing concrete, prepared for repair or overlay be presaturated with water before grout and new concrete is placed. The prepared surface shall be dry to allow some absorption of the grout.

At the time of placement of either Class O PCC or ~~latex modified~~ Class HPC-O ~~high performance concrete~~, the area shall be clean and the reinforcement free of rust; rust forming because of dew on clean reinforcement overnight will not be considered objectionable, but reinforcement with a greater amount of rust shall be subject to recleaning before the concrete is placed. The area shall be cleaned by air blast before the concrete is placed.

~~For latex modified concrete, the surface shall be flushed with water and kept wet for at least 1 hour before concrete placement. Puddles of free water shall be removed before covering with concrete.~~

2413.06 PROPORTIONING AND MIXING.

For Class O PCC, t~~T~~he mixture shall be proportioned and mixed at the project site. Ready mixed concrete will not be approved.

For Class HPC-O, ready mixed concrete or proportioned and mixed concrete at the project site ~~equipment meeting the requirements of Articles 2001.20 and 2001.21~~ will be allowed.

The water reducing admixture for improved workability of Class O PCC or Class HPC-O ~~Portland cement concrete~~ HPC shall be incorporated and mixed into the concrete in accordance with the manufacturer's recommendations and the Engineer's instructions.

A. Stationary Mixer.

When a construction or stationary mixer is used, proportioning and mixing shall be in accordance with applicable provisions of Article 2403.06.

B. Continuous Mixing Equipment.

When continuous mixing equipment is used, the following shall apply:

1. Mobile continuous mixers shall accurately proportion all materials for the specified mixture.

2. The proportioning equipment for each material shall be calibrated in the presence of the inspector, or the Engineer may accept a previous calibration and require satisfactory verification checks only, at the settings indicated by the previous calibration.

3. The proportioning equipment shall be operated at the speed recommended by the manufacturer during calibration, checks, or normal operation.

4. Continuous mixers shall be recharged at the site.

5. The Contractor may make yield checks or other checks and the inspector will cooperate in such checking.

6. The materials shall be mixed in an approved mixer within 1 mile (2 km) of the site of placement. They shall be mixed in accordance with the specified requirements for the equipment used. The mixture, as discharged from the mixer, shall be uniform in composition and consistency.

~~**7.** For latex modified concrete, mixing capability shall be such that finishing operations can proceed at a steady pace with final finishing completed before the formation of the plastic surface film.~~

2413.07 PLACING AND FINISHING.

A. Repairs

The following applies to repair ~~and overlay~~ work:

Although repair classes are considered to begin 1/4 inch (5 mm) below the original concrete surface, repair concrete shall be placed monolithically with the overlay course, except as described for larger areas of Class B repair. Fresh concrete, 3 inches (75 mm) or more in thickness, shall be vibrated internally in addition to the surface screed vibration.

Areas of Class B repair 2 square yards (2 m^2) or greater shall have floor forms supported by beams or stringers. These larger areas of Class B repair shall have individual concrete replacement to the lower boundary for the superimposed overlay. Floor repair concrete, described in Article 2413.02, or Class C ~~D~~ structural concrete, meeting requirements of Sections 2403 and 2412, may be used for the partial placements. Surfaces of these individual placements are to be left rough, and all placements for each construction stage shall be complete before the overlay course is started. If a full depth repair is staged, a beveled keyway not less than 1 1/2 inch by 3 inches (35 mm by 75 mm) shall be provided at the vertical joint. Concrete placement and reinforcing support shall comply with applicable portions of these specifications except as modified by the contract documents. The partial placement shall have a 72 hour cure as described for the overlay surface. After the cure, partial placements are to be surface dried, sandblasted or shot blasted, and cleaned prior to the application of the ~~overlay course or~~ grout and overlay course.

B. ~~Surfacing Bridge Floors~~ Bridge Floor Surfacing and Bridge Floor Overlay

An approved finishing machine will be required as specified in Article 2413.03, C. Supporting rails upon which the finishing machine travels shall be placed outside the area to be surfaced. Provisions for anchorage of supporting rails shall provide for horizontal and vertical stability; positive anchorage may be required by the Engineer. A hold down device shot into concrete will not be permitted unless the concrete is to be subsequently surfaced. Hold down devices of other types leaving holes in exposed areas will be approved provided the holes remaining are grouted full. Plans for anchoring support rails and the mixture placing procedure shall be submitted to the Engineer for approval.

~~For latex modified concrete, transverse bulkheads, equal in depth to the thickness of the surface, shall be installed to the required grade and profile prior to placing the concrete.~~

The locations of longitudinal joints may be shown in the contract documents. If not shown, the locations shall be subject to approval of the Engineer, and the approval will be based on avoiding joints in the wheel paths as much as practical.

In order to insure a junction with properly consolidated concrete, the surface course previously placed shall be sawed to a straight and vertical edge at longitudinal and transverse joints and removed before adjacent concrete is placed. The Engineer will determine the extent of such removal.

The Contractor shall take every reasonable precaution to secure a smooth riding bridge deck. Prior to placement operations, the Contractor shall review the equipment, procedures, personnel, and previous results with the Engineer, and the inspection procedures will be reviewed to assure coordination. Precautions shall include the following:

Assurance that concrete can be produced and placed within the specified limits, continuously and with uniformity.

After finishing, the Contractor shall check the surface with a 10 foot (3 m) straightedge; causes for irregularities exceeding 1/8 inch (3 mm) should be eliminated, and corrections should be made, if practical.

Each placement will be checked in accordance with Section 2317 the day following placement or before another section is placed.

After the surface has been cleaned and immediately before placing Class O PCC or Class HPC-O ~~Portland cement concrete or HPC~~, a thin coating of bonding grout shall be scrubbed into the dry, prepared surface. At the Contractor's option, the grout may be sprayed onto the surface in a manner subject to approval of the Engineer. Care shall be exercised to insure that all parts receive a thorough, even coating and that no excess grout is permitted to collect in pockets. The rate of progress in applying grout shall be limited so that the grout does not become dry before it is covered with new concrete. If the grout becomes dry, it shall be removed by sandblasting and new grout applied.

Concrete shall be placed in a continuous operation. For Class O PCC t~~T~~he new concrete shall be manipulated and mechanically struck off slightly above final grade. It shall then be mechanically consolidated to 100% of the rodded density, with a minus tolerance of 2%, and screeded to final grade. The rodded density will be determined in accordance with Materials I.M. 358.

The rodded density measurement is not required for Class HPC-O.

For ~~PCC~~ Class O PCC ~~mix~~ overlay, ~~A~~an internal ~~vibrator~~ vibration shall be used for consolidation at the curb side, and along the longitudinal construction joint adjacent to a previously constructed lane.

~~The following applies to repair and overlay work:~~

~~Although repair classes are considered to begin 1/4 inch (5 mm) below the original concrete surface, repair concrete shall be placed monolithically with the overlay course, except as described for larger areas of Class B repair. Fresh concrete, 3 inches (75 mm) or more in thickness, shall be vibrated internally in addition to the surface screed vibration.~~

~~Areas of Class B repair 2 square yards (2 m^2) or greater shall have floor forms supported by beams or stringers. These larger areas of Class B repair shall have individual concrete replacement to the lower boundary for the superimposed overlay. Floor repair concrete, described in Article 2413.02, or Class C D structural concrete, meeting requirements of Sections 2403 and 2412, may be used for the partial placements. Surfaces of these individual placements are to be left rough, and all placements for each construction stage shall be complete before the overlay course is started. If a full depth repair is staged, a beveled keyway not less than 1 1/2 inch by 3 inches (35 mm by 75 mm) shall be provided at the vertical joint. Concrete placement and reinforcing support shall comply with applicable portions of these specifications except as modified by the contract documents. The partial placement shall have a 72 hour cure as described for the overlay surface. After the cure, partial placements are to be surface dried, sandblasted or shot blasted, and cleaned prior to the application of the overlay course or grout and overlay course.~~

The concrete temperature and theoretical evaporation rate shall be in accordance with Article 2412.05.

Section 2317 shall apply to smoothness of the completed surfacing of bridge floor and bridge floor ~~deck~~ overlay for Primary projects and when specifically required for other projects.

A. Interstate and Primary Projects.
Transverse grooving or tining in plastic concrete of bridge floor surfacing or bridge deck overlay (and bridge approach overlay when included in a bridge deck overlay project) will not be allowed. Longitudinal grooving shall be in accordance with Article 2412.06, A. ~~grooves shall be cut into the hardened concrete surfaces using a mechanical cutting device. Longitudinal grooving shall be done after surface correction grinding.~~

~~Longitudinal grooves shall be 1/8 inch +/- 1/64 inch (3 mm +/- 0.4 mm) in width, 1/8 inch +1/32 inch or -1/16 inch (3 mm +0.8 mm or -1.6 mm) in depth, and the grooves shall be uniformly spaced at 3/4 inch (19 mm) intervals measured from center to center of groove.~~

~~Longitudinal grooving on bridge deck overlay and double reinforced bridge approach overlay sections shall not be within the area approximately 2 feet (0.6 m) adjacent to the curbs and shall terminate approximately 6 inches (150 mm) from bridge joints. Longitudinal grooving of single reinforced and non-reinforced bridge approach sections shall not be applied within 6 inches (150 mm) of the edge of the outside lane lines.~~

~~For staged bridge deck overlay and bridge approach overlay construction the Contractor may cut longitudinal grooves in the hardened concrete at the end of each construction stage or wait until all stages have been completed. If the Contractor elects to delay cutting of the longitudinal grooves until completion of all stages, the concrete deck overlay and bridge approach overlay for any stage opened to traffic shall receive an interim coarse broom finish during placement. Within 30 calendar days following completion of the last stage of the project the Contractor shall establish temporary lane closures to accomplish longitudinal grooving for all stages. The interim coarse broom finish will not be allowed as a surface texture when opened to traffic over a winter season. If the interim coarse broom texture is present and the Contractor is not in a position to finish all stages of the project, longitudinal grooving shall be cut into the hardened concrete in order to establish an acceptable driving surface texture for the winter season.~~

B. Other Projects.
When a tight, uniform surface has been achieved, the surface shall be given a suitable grooving, by hand methods, similar to that described in Article 2301.16, A, with the following exceptions:

- Grooving shall be transverse to the centerline of roadway.
- Transverse grooving shall be randomly spaced from 3/4 inch to 1 5/8 inches (20 mm by 40 mm) with no more than 50% of the spacings exceeding 1/4 inches (30 mm) with a minimum of four different spacings in a 2 foot (0.6 m) width.

This operation shall be done at a time and manner that the desired texture will be achieved while minimizing displacement of the larger aggregate particles. The texture should not extend into the areas within approximately 2 feet (0.5 m) of curbs. As soon as finishing has been completed, all vertical joints with adjacent concrete shall be sealed by painting with thinned grout.

~~Screed rails and/or construction dams shall be separated from newly placed latex modified concrete by passing a pointing trowel along their inside face. Care shall be exercised to assure that this trowel cut is made for the entire depth and length of rails or dams after the mixture has stiffened sufficiently and that it does not flow back.~~

~~Section 2317 shall apply to smoothness of the completed deck overlay for Primary projects and when specifically required for other projects.~~

2413.08 CURING.

The first layer of prewetted burlap shall be placed on the concrete within 10 minutes after finishing. Burlap shall be prewetted with sufficient water, prior to placement, to prevent absorption of moisture from the concrete surface. The concrete shall be cured as provided in the following paragraphs:

For ~~Portland cement concrete~~ Class O PCC or Class HPC-O, the surface shall be cured for at least 72 hours. For the first 24 hours, the burlap shall be kept continuously wet by means of an automatic sprinkling or wetting system. After 24 hours, the Contractor may cover the wet burlap with a layer of 4 mil (100 µm) polyethylene film for a minimum of 48 hours in lieu of using the sprinkling or wetting system. If ~~the~~ Class O PCC ~~mix~~ concrete is revibrated because of failure to meet density requirements with initial vibration, the time for placement of prewetted burlap shall be within 10 minutes after finishing of the revibrated area. ~~will be extended 15 minutes.~~ Failure to apply wet burlap within the required time shall be cause for rejecting the work so affected. Surface concrete in the rejected area shall be removed and replaced at no additional cost to the Contracting Authority.

~~For latex modified concrete, the surface shall be cured by wet burlap for at least 24 hours and be air cured for an additional 48 hours. Within 1 hour of covering with wet burlap, a layer of 4 mil (100 µm) polyethylene film shall be placed on the wet layer for the required 24 hour period for curing. The curing material shall then be removed for an additional 48 hour air cure. Burlap polyethylene sheets may be substituted for the polyethylene film with the approval of the Engineer. It is the nature of the latex modifier to form a plastic film at the surface upon drying, usually within 25 minutes in hot, dry weather. It is the intent of this specification that this film be protected from drying and cracking by prompt covering with wet burlap.~~

At the Contractor's option, partial depth concrete for Class B repair may be cured with white pigmented curing compound only. When this curing is completed, the surface shall be sandblasted and allowed to dry, and the existing concrete in that vicinity shall be sandblasted, prior to placement of the overlay course.

2413.09 SEALING FOR BRIDGE FLOOR OVERLAY.

The tops and traffic sides of curbs, retrofit barrier rails, and concrete barrier rails shall be sealed in accordance with Article 2403.21, D. In addition, for ~~Portland cement concrete~~ Class O PCC ~~floor~~ overlay or Class HPC-O overlay, the sealer shall be applied along each gutter line, extending 1 foot (0.3 m) onto the roadway. Other areas requiring concrete sealer may be designated in the contract documents or by the Engineer.

2413.10 LIMITATIONS OF OPERATIONS.
Work on the surface shall not be commenced until the lower course meets the requirements of Article 2403.19, B.

If traffic is to be maintained during the construction period of this contract, it will be noted in the contract documents. The Contractor shall provide traffic controls that are required by the contract documents.

Night work will be permitted. ~~When daytime temperatures exceed 85°F (30°C) the Engineer may require placement of latex modified concrete to be made at night or in the early morning hours if a satisfactory surface finish is not being achieved. In either case,~~ ~~a~~Adequate lights for nighttime work shall be furnished at the direction of the Engineer by the Contractor without additional compensation. The Engineer shall be given reasonable notice.

A construction dam or bulkhead shall be installed in case of major delay in the placement operation. During minor delays of 1 hour or less, the end of the placement may be protected from drying with several layers of wet burlap.

Adequate precautions shall be taken to protect freshly placed concrete from sudden or unexpected rain. The Engineer may order removal of any concrete damaged by rainfall.

Screed rails may be removed at any time after the concrete has taken initial set. Adequate precaution shall be taken during screed removal to protect the edge of the new surface from damage.

Concrete shall not be placed adjacent to a surface course less than 36 hours old, however, this restriction does not apply to a continuation of placement in a lane or strip beyond a joint in the same lane or strip.

If concrete placement is stopped or delayed for a period of 90 minutes or more, further placement shall be discontinued and may resume only after a period of not less than 12 hours. This restriction does not prohibit continuation of placement provided a gap is left in the lane or strip; the gap shall be sufficient in length for the finishing machine to clear previously placed concrete.

Preparation work will not be allowed in a lane or strip until the lane is closed to traffic. In areas where there is no traffic, preparation of the area may be started in a lane or strip adjacent to newly placed surface the day following its placement. If this work is started before the end of the 72 hour curing period, the work will be restricted as follows:

Sawing or other operations shall interfere with the curing process for the minimum practical time only, and in the immediate work area only, and the curing shall be resumed promptly.

Chipping hammers heavier than a nominal 15 pound (with a mass greater than 7 kg) class shall not be used.

Air compressors shall be operated on the floor only directly over the piers.

Loads other than construction equipment shall not be permitted on any portion of the bridge floor that has undergone preparation and prior to placement and curing of new concrete.

Traffic shall not be permitted on a finished surface course until 72 hours after placement. At temperatures below 55°F (13°C), the Engineer may require a longer waiting time.

Class O PCC or Class HPC-O shall not be placed when the air or floor temperature is below 40°F (4°C). ~~Latex modified concrete shall not be placed when the air or floor temperature is below 45°F (7°C); however, it may be placed when these temperatures are 45°F (7°C) and a rising temperature is predicted.~~

Concrete mixture shall not be placed after October 1 and prior to April 1 without written approval of the Engineer.

2413.11 METHOD OF MEASUREMENT.
Bridge Floor Surfacing (Class O PCC ~~mix~~) and Bridge Floor Surfacing Class HPC-O ~~(HPC)~~ will be computed by the Engineer in square yards (square meters) from measurements of the areas surfaced. For bridge floor surfacing, concrete removal for Class O PCC ~~mix~~ test wells may be required by the Engineer. This removal will not be measured for payment.

Class A Bridge Floor Repair (Class O PCC ~~mix~~), Class A Bridge Floor Repair (Class HPC-O), Class B Bridge Floor Repair (Class O PCC ~~mix~~), Class B Bridge Floor Repair (Class HPC-O), Bridge Floor Overlay (Class O PCC ~~mix~~), and Bridge Floor Overlay (Class HPC-O) will be computed by the Engineer in square yards (square meters) from measurements of the areas repaired or overlaid.

Sealing, as required in Article 2413.09, will not be measured separately for payment.

Longitudinal Grooving in concrete shall be measured in accordance with Article 2412.11.

2413.12 BASIS OF PAYMENT.
For the performance of acceptable work, measured as provided above, the Contractor will be paid the contract unit price in accordance with the following provisions:

For the number of square yards (square meters) of Bridge Floor Surfacing (Class O PCC ~~mix~~) or Bridge Floor Surfacing (Class HPC-O) constructed, the Contractor will be paid the contract unit price per square yard (square meter). This payment shall be full compensation for furnishing all material, equipment, forms, and labor necessary to complete this work in accordance with the contract documents.

When Section 2317 applies, payment may be modified as specified therein.

For the number of square yards (square meters) of Class A Bridge Floor Repair (Class O PCC ~~mix~~), Class A Bridge Floor Repair (Class HPC-O), Class B Bridge Floor Repair (Class O PCC ~~mix~~), Class B Bridge Floor Repair (Class HPC-O), Bridge Floor Overlay (Class O PCC ~~mix~~), and Bridge Floor Overlay (Class HPC-O) constructed, the Contractor will be paid the respective contract unit price per square yard (square meters). This payment shall be full compensation for removal of excess concrete from the project and it becoming the property of the Contractor, for furnishing all material, equipment, forms, and labor necessary to complete the work in accordance with the contract documents.

When there is no item for Class B Bridge Floor Repair (Class O PCC ~~mix~~) or Class B Bridge Floor Repair (Class HPC-O), but such work is required, payment for each square yard for 5 square yards (square meter for 4 m^2) or less will be at three times the contract unit price per square yard (square meter) for Class A Bridge Floor Repair (Class O PCC ~~mix~~) or Class A Bridge Floor Repair (Class HPC-O). Should the quantity exceed 5 square yards (4 m^2), payment shall be made as extra work.

The cost of sealing as required in Article 2413.09 shall be included in the contract unit price for Bridge Floor Surfacing (Class O PCC ~~mix~~), Bridge Floor Surfacing (Class HPC-O), Class A Bridge Floor Repair (Class O mix), Class A Bridge Floor Repair (Class HPC-O), Class B Bridge Floor Repair (Class O PCC ~~mix~~), Class B Bridge Floor Repair (Class HPC-O), Bridge Floor Overlay (Class O PCC ~~mix~~), or Bridge Floor Overlay (Class HPC-O).

The profile may be improved by raising the finished overlay surfaces up to 1/2 inch (15 mm) above that shown in the contract documents with no additional compensation to the Contractor. At each location where the raise exceeds 1/2 inch (15 mm), the Contractor will be paid, as extra work, for the materials which represent the volume in excess of the 1/2 inch (15 mm) raise.

Longitudinal Grooving in Concrete will be paid for in accordance with Article 2412.11.

Reason for Revision: Remove latex modified overlay option and replace with high performance concrete (HPC) overlay from DS.

County or City Input Needed (X one)			**Yes**	**No**	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments: Wayne Sunday has notified industry.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger	**Office:** Materials	**Item 8**
Submittal Date: 5/2/2007	**Proposed Effective Date:** October 2007	
Article No.: 2423.05, A **Title:** Fabrication and Assembly	**Other:**	

Specification Committee Action: Approved as is.

Deferred:	**Not Approved:**	**Approved Date:** 5/10/07	**Effective Date:** 10/16/07

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: None.

Specification Section Recommended Text:

2423.05, A, Fabrication and Assembly.

Replace the second sentence:

Non-destructive testing of welds for aluminum structures shall be in accordance with the AWS D1.2, Section 5~~, and~~. Testing shall be limited to the flange connection of the overhead section and the end supports.

Add as the fourth sentence:

For steel structures, testing shall also include the column-to-base plate, full penetration weld.

Comments:

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

2423.05 FABRICATION AND ASSEMBLY.
Fabrication of structural supports shall be in accordance with the Structural Welding Code--Steel, AWS D1.1, current edition, or the Structural Welding Code--Aluminum, AWS D1.2, current edition, with the following exceptions:

A. Non-destructive testing of welds for steel structures shall be in accordance with the requirements of the AWS D1.1, Section 6, Part D. Non-destructive testing of welds for aluminum structures shall be in accordance with the AWS D1.2, Section 5~~, and~~. Testing shall be limited to the flange connection of the overhead section and the end supports. For steel structures, the testing shall also include the column-to-base plate, full penetration weld.

Reason for Revision: The Iowa DOT now specifies steel columns. We need to provide a reasonable assurance of the weld integrity by requiring the extra testing of the base plate-to-column groove welds.

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: Mike Kennerly / Chris Poole.	**Office:** Design	**Item 9**
Submittal Date: 4/24/07	**Proposed Effective Date:** 10/16/07	
Article No.: 2509.03, A **Title:** Temporary Crash Cushions **Article No.:** 2509.03, B **Title:** Permanent Crash Cushions	**Other:**	

Specification Committee Action: Approved as is.

Deferred:	**Not Approved:**	**Approved Date:** 5/10/07	**Effective Date:** 10/16/07

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: District 6 Construction asked if these changes are being made to the Standard Road Plans. The Office of Design verified this.

Specification Section Recommended Text:

2509.03, A, Temporary Crash Cushions.

Add as the first paragraph:

Unless otherwise shown in the contract documents, the Contractor shall apply a retroreflective panel as described for permanent crash cushions.

2509.03, A, Permanent Crash Cushions.

Add as the first, second, and third paragraphs:

The approach end of the crash cushion shall be marked with a rectangular panel consisting of materials approved by the manufacturer and installed according to the manufacturer's recommendations. The panel shall be covered with alternating black and retroreflective yellow stripes. Stripes shall be a minimum of 3 inches in width and shall be sloped down at an angle of 45 degrees toward the side on which traffic is to pass the crash cushion. If traffic can pass to either side of the crash cushion, the alternating black and retroreflective yellow stripes shall form chevrons that point upwards. Yellow stripes shall meet the retroreflectivity requirements for Type III or Type IV reflective sheeting.

For crash cushions with a flat face, the panel shall cover the entire face of the crash cushion.

For crash cushions with a rounded face, the panel shall cover the entire height and width of that portion of the face between the sides of the crash cushion. However, the panel need not cover that portion of the face within 12 inches of the ground or higher than 42 inches.

Comments:

Member's Requested Change: (Do not use **'Track Changes'**, or **'Mark-Up'**. Use ~~**Strikeout**~~ and **Highlight**.
2509.03 CONSTRUCTION.

Crash cushions shall be installed according to the manufacturer's recommendations. Prior to installation, the Contractor shall provide the Engineer with:

- Three copies of the manufacturer's most current product manuals covering installation and maintenance of the unit.
- Required certification statements.
- Additional hardware, tools, or documentation supplied by the manufacturer.

The manufacturer may require the use of additional connection hardware, construction of a backup structure, or construction of a paved footing for a specific installation. When required, these items shall be constructed and attached to the obstacle, the crash cushion, or both, in a manner specified by the manufacturer.

Grading work, if required, shall be completed prior to installation of crash cushions.

When a roadway is closed to public traffic for construction, all crash cushions shall be installed prior to opening the road to traffic.

Attachments to new concrete or to anchor bolts set in epoxy resin shall not be stressed until the new concrete or epoxy resin has attained an age of 3 calendar days. This time requirement may be lengthened by the Engineer during cool weather.

A. Temporary Crash Cushions.
Unless otherwise shown in the contract documents, the Contractor shall apply a retroreflective panel as described for permanent crash cushions.

When damaged, the Contractor shall repair or replace the crash cushion. Initiation of service to a damaged crash cushion shall be within one hour of notification. The object that is being shielded shall not be exposed to traffic for more than 12 hours.

When a temporary crash cushion is no longer required, the crash cushion shall be removed and become the property of the Contractor. The Contractor shall remove any anchor bolts and fill the bolt holes with one of the non-shrink grouts listed in Materials I.M. 491.13, Appendix B.

When a crash cushion is required after the final stage of a project, the crash cushion will remain in place and become the property of the Contracting Authority.

B. Permanent Crash Cushions.
The approach end of the crash cushion shall be marked with a rectangular panel consisting of materials approved by the manufacturer and installed according to the manufacturer's recommendations. The panel shall be covered with alternating black and retroreflective yellow stripes. Stripes shall be a minimum of 3 inches in width and shall be sloped down at an angle of 45 degrees toward the side on which traffic is to pass the crash cushion. If traffic can pass to either side of the crash cushion, the alternating black and retroreflective yellow stripes shall form chevrons that point upwards. Yellow stripes shall meet the retroreflectivity requirements for Type III or Type IV reflective sheeting.

For crash cushions with a flat face, the panel shall cover the entire face of the crash cushion.

For crash cushions with a rounded face, the panel shall cover the entire height and width of that portion of the face between the sides of the crash cushion. However, the panel need not cover that portion of the face within 12 inches of the ground or higher than 42 inches. Permanent crash cushions will become the property of the Contracting Authority.					
Reason for Revision: To increase the conspicuity of crash cushion systems and to provide a uniform design for retroreflective markers for these systems.					
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: This issue arose from the I-235 project where throughout the corridor, we had crash cushions installed with several different styles and colors of reflective markers: solid yellow, black with yellow stripes, and black with orange stripes.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Steve Gent / Dan Sprengeler / Work Zone Traffic Safety Committee	**Office:** Traffic and Safety	**Item 10**
Submittal Date: May 3, 2007	**Proposed Effective Date:** October 2007 GS	
Article No.: 2528.02 **Title:** Signs	**Other:**	

Specification Committee Action: Approved as is.

Deferred:	**Not Approved:**	**Approved Date:** 5/10/07	**Effective Date:** 10/16/07

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: None.

Specification Section Recommended Text:

2528.02, Signs.

Add as the last paragraph:

The END ROAD WORK (G20-2) sign may be eliminated for mobile or short duration (less than 1 hour) temporary traffic control zones.

Comments:

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

Add a new paragraph 8 to article 2528.02:

2528.02 SIGNS.

The END ROAD WORK (G20-2) sign may be eliminated for mobile or short duration (less than 1 hour) temporary traffic control zones.

Reason for Revision: The work zone traffic safety committee, at the request of the field maintenance representatives, agrees to delete this sign for these traffic control zone types. The sign is not required by the MUTCD and is only needed to make the DOUBLE FINES law enforceable. Motorists traveling through these types of temporary traffic control zones are easily able to determine that the work area has been passed. Very rarely does law enforcement actively patrol these types of temporary traffic control zones, so the sign becomes superfluous.

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:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Mark Bortle	**Office:** Construction	**Item 11**
Submittal Date: April 16, 2007	**Proposed Effective Date:** October 2007 GS	
Article No.: 2528.11 **Title:** Limitations	**Other:**	

Specification Committee Action: Approved with changes as noted.

Deferred:	**Not Approved:**	**Approved Date:** 5/10/07	**Effective Date:** 10/16/07

Specification Committee Approved Text:

2528.11, Limitations.

Add as the second sentence of the fourth paragraph:

After November 24, 2008, all personnel shall wear ANSI 107 Class 2 apparel at all times when exposed to traffic or construction equipment in the highway right-of-way.

Comments: FHWA noted they didn't think this limitation would apply to personnel in their trucks. The Statewide Operations Bureau clarified that the Federal rule applies only to personnel exposed to traffic or construction equipment. It does not apply to personnel inside vehicles. The Committee agreed to add language to reflect what is in the Federal rules.

Specification Section Recommended Text:

2528.11, Limitations.

Add as the second sentence of the fourth paragraph:

After November 24, 2008, all personnel shall wear ANSI 107 Class 2 apparel at all times when present in the highway right-of-way.

Comments:

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

2528.11, paragraph 4 Limitations

At night, workers shall wear ANSI 107 Class 2 apparel if they are within 15 feet (4.6 m) of an open lane of traffic, unless they are shielded by temporary barrier rail or inside a vehicle cab. After November 24, 2008, all personnel shall wear ANSI 107 Class 2 apparel at all times when present in the highway right-of-way.

Reason for Revision: To revise specification language to be consistent with the High Visibility Apparel FHWA Rulemaking issued on November 24, 2006 which requires all workers to wear ANSI 107 Class 2 apparel effective November 24, 2008.

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:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Roger Bierbaum	**Office:** Contracts	**Item 12**
Submittal Date: April 12, 2007	**Proposed Effective Date:** October 2007 GS	
Article No.: 2547 **Title:** Temporary Stream Access	**Other:** 1105.14	

Specification Committee Action: Approved with changes as noted.

Deferred:	**Not Approved:**	**Approved Date:** 5/10/07	**Effective Date:** 10/16/07

Specification Committee Approved Text:

2547, Temporary Stream Access.

Add as a new section:

2547. Temporary Stream Access.

2547.01 Description.
This work shall consist of the construction, use, maintenance and removal of temporary structures used to provide construction access across along or into waters of the United States. Temporary structures are any features not a part of the completed project that are constructed or installed to provide access to the project site including stream crossings, causeways, pads and temporary bridges or barges. The type of structure used, if any, is at the Contractor's discretion provided it complies with Article 1105.14.

Unless indicated otherwise in the contract documents, the Contracting Authority will obtain approval for temporary stream crossings, constructed in accordance with Standard Road Plan RL-16 or as shown in the contract documents, in the Section 404 permit. The Contractor shall obtain a Section 404 permit for temporary stream crossings not to be constructed in accordance with RL-16 or the contract documents.

2547.02 Materials.
Fill materials shall be furnished by the Contractor and shall not be obtained from the stream unless specifically allowed elsewhere in the contract documents. All fill material shall be clean with less than 10% fines passing the #200 sieve, broken concrete (with no exposed rebar), revetment, or granular materials.

Material used for armoring shall be Class D or Class E revetment, or broken concrete with no exposed steel.

2547.03 Construction.
Temporary structures shall not restrict expected high flows or disrupt the movement of aquatic life native to the stream or water body, and shall not extend over 100 feet (30 m) into any swamp, bog, marsh, or similar area that is adjacent to the stream or water body. Expected high flows are those flows which the Contractor expects to experience during the period of time that the crossing is in place. Pre-construction downstream flow conditions shall be maintained. Temporary structures shall be maintained to prevent unnecessary erosion and other non-point sources of pollution.

Within 30 days of when no longer being needed, these features shall be completely removed. Revetment that has been removed may be incorporated elsewhere in the project provided it

meets the specification for the intended final use. All other fill material shall be removed to an upland area. All disturbed areas shall be reshaped and stabilized.

2547.04 Method of Measurement.
Temporary stream access will not be measured separately but will be considered as a lump sum.

2547.05 Basis of Payment.
For Temporary Stream Access, the Contractor will be paid the lump sum contract price. This payment shall be considered full compensation for furnishing all material, labor, and equipment and for the performance of all work necessary for the construction, maintenance, use and removal of temporary stream access, reshaping, and stabilizing; all in accordance with the contract documents.

Seventy-five percent of the lump sum contract price will be paid when the Contractor has installed the Temporary Stream Access. The remaining 25% will be paid when the Temporary Stream Access has been removed, and the area reshaped and stabilized.

Comments: This item was discussed in conjunction with Item 1.

The Office of Contracts explained that Industry pointed out language in Section 2547 could be taken to mean that temporary bridges cannot be used unless stated in the contact documents. They asked if the language in Article 1105.14 would still allow for temporary bridges even if it is not approved as part of the Section 404 permit, as long as the Contactor obtained a Section 404 permit to do so. The Office of Environment and Location verified that. The Office of Contracts also noted Industry had some questions regarding the first sentence of the first paragraph in Article 2547.03. They asked if that language comes from the Army Corps of Engineers. The Office of Environment and location verified that. They noted the 30 day limit for removal also comes from the Army Corps of Engineers.

Contracts asked if the percent of fines should be changed to 10%. The Office of Location and Environment verified that. The Committee agreed this language should be in the Standard Specifications rather than on RL-16. District 6 Construction pointed out they assumed the 10% fines should apply to any fill material. The Office of Construction agreed with this. The Statewide Operations Bureau noted it should be made clearer the 10% limit applies to all fill material.

The Office of Bridges and Structure asked why temporary bridges are included as stream crossings when the specification says if a stream crossing is allowed, it shall be constructed as per RL-16. The Office of Contracts noted the text in Section 1105.14 would apply if a temporary bridge is used. The Office of Bridges and Structures noted it needs to be clearer that if something other than an RL-16 will be used, the Contractor must obtain the permit. The Specifications Section will add language to that effect. The Office of Traffic and Safety asked if the first sentence of the second paragraph of Article 2547.01 should be rewritten to emphasize the Contracting Authority is obtaining approval only for temporary stream crossings constructed according to RL-16. The Specifications Section will rewrite the second paragraph of Article 2547.01 to clarify the intent.

The Office of Local Systems asked who would be responsible for deciding when a temporary stream crossing is required to do the project. The Office of Location and Environment explained that whenever a project involves a stream crossing, RL-16 is included in the Section 404 permit. The Office of Contracts noted this implies any time a Section 404 permit is required, there should be a bid item for a temporary stream crossing. The Office of Local Systems pointed out sometimes the Section 404 permit is required for something else. They also pointed out it is possible to construct a bridge without requiring a Section 404 permit. A bid item for a temporary stream crossing shouldn't be required. The Office of Construction noted in a case like that, contractors would bid zero. The Office of Traffic and Safety pointed out it needs to be made clear who decides the work is required. The Specifications Section suggested deleting the second paragraph of Article 2547.04. If the item is omitted and should be part of the plan, it's treated the same as any other item omitted that should have been in the plans. The Committee agreed.

District 6 Construction noted that the proposed specification states the contractors are encouraged to build stream crossings during low flow. They indicated that it is not something that can be enforced. They suggested eliminating the language since it is in the Section 404 permit. The Committee agreed.

The Offices of Contracts and Construction noted they want the final paragraph of Article 2547.05 to state that 75% of the lump sum contract price will be paid when the temporary stream access is installed. The remaining 25% will be paid when it has been removed.

The Office of Design noted the specifications should also cover situations that require the Modified RL-16. The Specifications Section will incorporate the necessary language.

Specification Section Recommended Text:

2547, Temporary Stream Access.

Add as a new section:

2547. Temporary Stream Access.

2547.01 Description.
This work shall consist of the construction, use, maintenance and removal of temporary structures used to provide construction access across, along or into waters of the United States. Waters of the United States are all waters, impoundments of waters, or tributaries of waters, including but not limited to lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, or natural ponds. Temporary structures are any features not a part of the completed project that are constructed or installed to provide access to the project site including stream crossings, causeways, pads and temporary bridges or barges. The type of structure used, if any, is at the contractor's discretion provided it complies with Article 1105.14.

The Contracting Authority will obtain approval for a temporary stream crossing in the Section 404 permit, unless indicated otherwise in the contract documents. When allowed, the temporary stream crossing may be used at the Contractor's option, and shall be constructed in accordance with Standard Road Plan RL-16, unless specified otherwise in the contract documents.

2547.02 Materials.
Fill materials shall be furnished by the Contractor, and shall not be obtained from the stream unless specifically allowed elsewhere in the contract documents. Fill material shall be clean with less than 5% fines passing the #200 sieve, broken concrete (with no exposed rebar), revetment or granular materials.

Material used for armoring shall be Class D or Class E revetment, or broken concrete with no exposed steel.

2547.03 Construction.
Temporary structures shall not restrict expected high flows or disrupt the movement of aquatic life native to the stream or water body, and shall not extend over 100 feet (30 m) into any swamp, bog, marsh, or similar area that is adjacent to the stream or water body. Expected high flows are those flows which the Contractor expects to experience during the period of time that the crossing is in place. Pre-construction downstream flow conditions shall be maintained. Contractors are encouraged to construct these during low flows. Temporary structures shall be maintained to prevent unnecessary erosion and other non-point sources of pollution.

Within 30 days of when no longer being needed, these features shall be completely removed. Revetment that has been removed may be incorporated elsewhere in the project provided it meets the specification for the intended final use. All other fill material shall be removed to an upland area. All disturbed areas shall be reshaped and stabilized.

2547.04 Method of Measurement.
Temporary stream access will not be measured separately but will be considered as a lump sum. Temporary stream access will not be considered incidental to other work on the project. When this work is required to complete the project and the bid item is omitted from the contract, this work will be paid for as per Article 1109.03, B.

2547.05 Basis of Payment.
For Temporary Stream Access, the Contractor will be paid the lump sum contract price. This payment shall be considered full compensation for furnishing all material, labor, and equipment and for the performance of all work necessary for the construction, maintenance, use and removal of temporary stream access, reshaping and stabilizing, all in accordance with the contract documents.

Ninety percent of the lump sum contract price will be paid when the contractor has installed the Temporary Stream Access. The remaining ten percent will be paid when the Temporary Stream Access has been removed, and the area reshaped and stabilized.

Comments:

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

Add the following new section to the Standard Specifications.

SECTION 2547. TEMPORARY STREAM ACCESS

2547.01 DESCRIPTION
This work shall consist of the construction, use, maintenance and removal of temporary structures used to provide construction access across, along or into waters of the United States. Waters of the United States are all waters, impoundments of waters, or tributaries of waters, including but not limited to lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, or natural ponds. Temporary structures are any features not a part of the completed project that are constructed or installed to provide access to the project site including stream crossings, causeways, pads and temporary bridges or barges. The type of structure used, if any, is at the contractor's discretion provided it complies with Article 1105.14.

The Contracting Authority will obtain approval for a temporary stream crossing in the Section 404 permit, unless indicated otherwise in the contract documents. When allowed, the temporary stream crossing may be used at the Contractor's option, and shall be constructed in accordance with Standard Road Plan RL-16, unless specified otherwise in the contract documents.

2547.02 MATERIALS
Fill materials shall be furnished by the Contractor, and shall not be obtained from the stream unless specifically allowed elsewhere in the contract documents. Fill material shall be clean with less than 5% fines passing the #200 sieve, broken concrete (with no exposed rebar), revetment or granular materials.

Material used for armoring shall be Class D or Class E revetment; or broken concrete with no exposed steel.

~~Other materials may be used provided they comply with Article 1105.14.~~ [This sentence was deleted per John Smythe's e-mail of April 11, 2007]

2547.03 CONSTRUCTION
Temporary structures shall not restrict expected high flows or disrupt the movement of aquatic life native to the stream or water body, and shall not extend over 100 feet (30 m) into any swamp, bog, marsh, or similar area that is adjacent to the stream or water body. Expected high flows are those flows which the Contractor expects to experience during the period of time that the crossing is in place. Pre-construction

downstream flow conditions shall be maintained. Contractors are encouraged to construct these during low flows. Temporary structures shall be maintained to prevent unnecessary erosion and other non-point sources of pollution.

Within 30 days of when no longer being needed, these features shall be completely removed. Revetment that has been removed may be incorporated elsewhere in the project provided it meets the specification for the intended final use. All other fill material shall be removed to an upland area. All disturbed areas shall be reshaped and stabilized.

2547.04 METHOD OF MEASUREMENT
Temporary stream access will not be measured separately but will be considered as a lump sum.

Temporary stream access will not be considered incidental to other work on the project. When this work is required to complete the project and the bid item is omitted from the contract, this work will be paid for as per Article 1109.03, B.

2547.05 BASIS OF PAYMENT
For Temporary Stream Access, the Contractor will be paid the lump sum contract price. This payment shall be considered full compensation for furnishing all material, labor, and equipment and for the performance of all work necessary for the construction, maintenance, use and removal of temporary stream access, reshaping and stabilizing, all in accordance with the contract documents.

Ninety percent of the lump sum contract price will be paid when the contractor has installed the Temporary Stream Access. The remaining ten percent will be paid when the Temporary Stream Access has been removed, the area reshaped and stabilized.

Reason for Revision: On April 2, 2007 an internal DOT meeting was held to discuss changes to Article 1105.14, Placement of Fill Material in Streams and Water Bodies. At the meeting the Office of Contracts agreed to provide a specification change which would pay for temporary stream crossing, since it would be inappropriate to make the temporary stream crossing incidental when it could make up 15% of the total contract amount.

It has been determined we should not be including construction work and bid items in Division 11 of the Standard Specifications. Therefore it is proposed a new Article be added to the Standard Specifications.

If this request is approved, it will delete the changes in the third paragraph of 1105.14 being proposed for the April 12, 2007 meeting.

County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes** X	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments: Proposed change is a result of contractors' concerns voices at the March 26, 2007 Joint Specification Meeting with the AGC Specifications Committee.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Tom Reis / Daniel Harness	**Office:** Specifications Section	**Item 13**
Submittal Date: 5/3/07	**Proposed Effective Date:** 10/16/07	
Article No.: 4161.02 **Title:** Preservatives	**Other:**	

Specification Committee Action: Approved as is.			
Deferred:	**Not Approved:**	**Approved Date:** 5/10/07	**Effective Date:** 10/16/07
Specification Committee Approved Text: See Member's Requested Change.			
Comments: None.			
Specification Section Recommended Text: See Member's Requested Change.			
Comments:			

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

4161.02, Preservatives.

Replace the second sentence:

Unless otherwise specified, treatment may be with creosote, pentachlorophenol, chromated copper arsenate (CCA), ~~ammoniacal copper arsenate (ACA),~~ ammoniacal copper zinc arsenate (ACZA), or Copper Naphthenate.

Reason for Revision: Ammoniacal copper arsenate (ACA) was eliminated as a preservative in Section 4160 effective with GS-01012. This was discussed with the Office of Materials.

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: Michael Kennerly	**Office:** Design	**Item 14**
Submittal Date: April 30, 2007	**Proposed Effective Date:** Oct. 2007	
Article No.: 4169.10, C **Title:** Wood Excelsior Mat	**Other:**	

Specification Committee Action: Approved with changes as noted.

Deferred:	**Not Approved:**	**Approved Date:** 5/10/07	**Effective Date:** 10/16/07

Specification Committee Approved Text: See Specification Section Recommended Text. The first sentence of the indented paragraph will not be changed.

Comments: Office of Design explained that straw coconut fiber has the potential to float if not installed properly for ditch protection. Wood excelsior mat does not have this problem.

District 6 Construction noted that the indented paragraph following the third paragraph applies to slope protection; therefore, straw-coconut fiber should still be allowed. The Committee agreed. There will be no changes to the first sentence of the indented paragraph following the third paragraph.

Specification Section Recommended Text:

4169.10, C, Wood Excelsior Mat

Replace the first sentence of the third paragraph:

At the Contractor's option, ~~straw-coconut fiber mat or~~ coconut fiber mat may be substituted for wood excelsior mat for special ditch control, and straw mat, straw-coconut fiber mat or coconut fiber mat may be substituted for wood excelsior mat for slope protection.

Replace the first sentence of the indented paragraph following the third paragraph:

The mat shall be of consistent thickness with the straw~~, straw-coconut fiber~~ or coconut fiber evenly distributed over the entire area of the mat.

Comments:

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

At the contractor's option, ~~straw-coconut fiber mat or~~ coconut fiber mat may be substituted for wood excelsior mat for special ditch control, and straw mat, straw-coconut fiber mat or coconut fiber mat may be substituted for wood excelsior mat for slope protection.

Reason for Revision: Straw-coconut fiber mat does not perform as well as wood excelsior mat in the ditch.

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** X
Comments: I have talked with two of the major manufacturers of the straw-coconut fiber mat. The first was American Excelsior, who produces both wood and straw-coconut fiber mat. They concur that the straw-coconut mat does not give the protection the wood excelsior mat does. I also have talked with North American Green, who produces only the straw-coconut fiber mat. I looked at the straw-coconut fiber mat problems in the field with them and they thought the problem was attributed to poor installation (improper staple numbers and location). From my experience the straw-coconut fiber mat floats and allows water to undercut it. Wood excelsior mat absorbs water and adheres to the soil and does not allow undercutting, even when installation is not done according to manufacturer's recommendations and our standards. I think our ditches are protected better and we will lose less soil using wood excelsior mat.					

PECIFICATION REVISION SUBMITTAL FORM

Submitted by: Tom Reis / Daniel Harness	**Office:** Specifications Section	**Item 15**
Submittal Date: 5/1/07	**Proposed Effective Date:** 10/16/07	
Article No.: 4186.10, B **Title:** Steel Breakaway Posts for Type B Signs	**Other:**	

Specification Committee Action: Approved as is.

Deferred:	**Not Approved:**	**Approved Date:** 5/10/07	**Effective Date:** 10/16/07

Specification Committee Approved Text: See Member's Requested Change.

Comments: None.

Specification Section Recommended Text: See Member's Requested Change.

Comments:

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

4186.10, B, Steel Breakaway Posts for Type B Signs.

Replace the eighth paragraph:

Before fabrication, ~~six copies of~~ shop drawings for the steel breakaway sign posts shall be submitted in accordance with Article 1105.03 ~~to the Engineer~~ for review.

Reason for Revision: Reference Article 1105.03 for working drawings.

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:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger	**Office:** Materials	**Item 16**
Submittal Date: March 2007	**Proposed Effective Date:** October 2007	
Supplemental Specification: SS-010XX **Title:** Primary and Interstate Pavement Smoothness	**Other:**	

Specification Committee Action: Approved as is.			
Deferred:	**Not Approved:**	**Approved Date:** 5/10/07	**Effective Date:** 10/16/07
Specification Committee Approved Text: See attached Draft SS.			
Comments: The Specifications Section noted that since this will be an SS, it will apply to all Interstate/Primary projects. The Office of Contracts noted this could be missed on projects on the Primary system if they have a local system project number. The Office of Construction noted that in that case, it would be covered by Section 2316. Smoothness may not be as good as with zero blanking band, but it should be adequate.			
Specification Section Recommended Text: See attached Draft SS.			
Comments: This was Item 22 in the April meeting. It was deferred to the May meeting. The Office of Materials has added values in the Schedules for Adjustment Payment for Interstate and Multi-lane Divided Segments.			

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

See attached SS-010XX

Reason for Revision: Move the DS to and SS for general use.

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

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

Comments:

-The specification and IM is written for a profilograph. The requirements need to be changed to better accommodate the profilers. Testing to a day's end header and testing side roads are problems. Maybe test all side roads at the end at one time. Maybe allow stopping 500'+ short of the header on PCC.

-Need to clearly identify how to handle things like utility access in the testing path and railroad crossings. Mathy said MN and WI DOT have a good process for handling RR crossings.

-Urban paving especially when matching curb and gutter affects ride especially when held tight to the elevation of the curb and gutter.

-P.I for 2" overlays. The suggestion was to provide the Design Office guidance on when to require the P.I. on single lift sections. Sometimes it's reasonable to have and sometimes the cost isn't justified.

-Still some concern over the impact of the existing pavement on the ride quality of the overlay.

-It can be inefficient to try to run the high speed profiler after each day's paving especially on 4-lane with lane closures in place. Mathy indicated the other states they work in have gone away from the daily testing. South Dakota does all the acceptance testing.

-Reporting was brought up by the industry. Maybe it is time to allow the computer printout from the computerized profiler and profilographs. Some inconsistencies on what residencies expect was mentioned.

-Contractors would like us to consider the provision for grinding into incentive on individual segments. Suggested they bring it up at the joint ICPA-Spec Meeting.

-Contractors feel we still need to do something with the grind level on side roads. We talked about the 0.2" band for county and city side roads and 0.0" band for primary side roads. Asked the contractors to propose what they feel is a reasonable grind level.

-Contractors discussed PCC overlays. More difficult to get ride quality.

Draft SS-010XX
(Replaces DS-01095)

Iowa Department of Transportation

SUPPLEMENTAL SPECIFICATIONS
FOR PRIMARY AND INTERSTATE PAVEMENT SMOOTHNESS

Effective Date
October 16, 2007

THE STANDARD SPECIFICATIONS, SERIES 2001, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SUPPLEMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

Replace all of Section 2316 with the following:

~~**Section 2316. Pavement Smoothness**~~

010XX.01 GENERAL.
Pavement smoothness shall be evaluated for all Interstate and Primary main line pavement surfaces, and all other road surfaces included on Primary projects, except when specifically excluded or modified by the contract documents. ~~Pavement smoothness shall not be evaluated for all other roads unless specified in the contract documents.~~ Main line pavement is defined as all permanent pavement for through lanes. ~~traffic lanes, including tapers to parallel lanes or through lanes at intersections, tapers to climbing lanes, and tapers to ramps and loops. Pavement smoothness shall also be evaluated for all interchange ramps and loops, side roads, auxiliary lanes, and bridge approaches.~~ Exclusions from profilograph testing are detour pavement, shoulders, crossovers, and individual sections of pavement less than 50 feet (15 m) in length.

~~If this specification is required by contract documents on non-Primary projects let by the Department, it will be added in its entirety without modification.~~

The Engineer may determine the pavement smoothness according to Materials I.M. 341 using a 10 foot (3 m) straightedge or rolling straightedge on surfaces excluded from profilograph testing. The variation of the surface from the testing edge of the straightedge shall not exceed 1/8 inch (3 mm) between any two contacts, longitudinal or transverse. The Contractor shall correct all irregularities exceeding the specified tolerance using equipment and methods approved by the Engineer. After the Contractor has corrected an irregularity, the Engineer may perform monitor testing of the area to verify compliance with the specified tolerance.

010XX.02 EQUIPMENT.
The Contractor shall provide and operate an Ames type or California type profilograph to produce a profilogram (profile trace) of the surface tested ~~determine the pavement profile~~ in accordance with Materials I.M. 341. Other types of profilographs or profilers that produce compatible results and meet the requirements of Materials I.M. 341 may be used. The Contractor's operator shall be trained and certified to operate the profilograph as required by the Contracting Authority.

If the Contractor's profilograph has a mechanical recorder, the Contractor shall provide automated trace reduction equipment in accordance with Materials I.M. 341. If the Contractor's profilograph has a computerized recorder, the trace produced will be evaluated without further reduction.

010XX.03 SURFACE TOLERANCES, TESTING, AND EVALUATION.
A pavement ~~section~~ segment is defined as a continuous area of finished pavement 0.1 mile (161 m) in length and one lane (10 to 12 foot (3.0 to 3.7 m) nominal) in width. A partial ~~section~~ segment resulting from an interruption of the continuous pavement surface (i.e. bridge approaches, side road tie-ins, the cessation of the daily paving operations, etc.) is subject to the same evaluation as a whole ~~section~~ segment.

A. Tolerances.
The Contractor shall produce pavement with an average profile index per 0.1 mile (161 m) ~~section~~ segment as shown in ~~the t~~Table 010XX.03 below.

TABLE 010XX.03: TOLERANCE FOR AVERAGE PROFILE INDEX PER 0.1 MILE 161m)
(0 inch blanking band)

Surface Type	Profile Index For greater than 45 mph	Profile Index For 45 mph or less and ramps
	Inches per mile (mm/km)	Inches per mile (mm/km)
PCC Pavement	~~45.0 or less (710 or less)~~ 40.0 or less (630 or less)	65.0 or less (1025 or less)
HMA Pavement	~~40.0 or less (630 or less)~~ 35.0 or less (550 or less)	45.0 or less (710 or less)

B. Testing.
The Contractor shall determine the pavement profiles for each lane according to the procedures for one lane, as shown in Materials I.M. 341 except for main line traffic lanes ~~and through lanes~~ which will be tested in the wheel paths. Round the trace scallops to the nearest 0.01 inch (0.1 mm). The wheel paths are defined as the 3 feet (0.9 m) and 9 feet (2.7 m) from the center line or lane line. Average the two wheel path profile indexes for each ~~section~~ segment. Additional profiles may be taken only to define the limits of an out-of-tolerance surface variation. The Engineer may use a 10 foot (3 m) straightedge (or other means) to detect irregularities outside the required trace paths. The Engineer may also use the straightedge to delineate the areas that require corrective action.

Bridge approaches shall be tested according to Section 2317 of the Standard Specifications.

C. Evaluation.
The Contractor shall determine a profile index based on the 0 inch (0 mm) blanking band following the same procedures shown in Materials I.M. 341 for each ~~section~~ segment of finished pavement surface except for:

1. Primary ~~S~~side road~~s~~ connections less than 600 feet (180 m) in length.
2. Non-primary side road connections, which shall be evaluated according to Section 2316 of the Standard Specifications.
~~**2**~~**3.** Bridge approaches, ~~less than 50 feet (15 m)~~ which shall be evaluated according to Section 2317.
~~**3**~~**4.** Storage lanes, turn lanes, and other auxiliary lanes less than 600 feet (180 m).
~~**4**~~**5.** Pavement less than 8.5 feet (2.6 m) in width.
~~**5**~~**6.** The 16 feet (5 m) before and the 16 feet (5 m) beyond the ends of the section when the Contractor is not responsible for the adjoining surface.

~~6~~7. ~~On HMA single lift pavement overlays pavements with no milling.~~ Single lift pavement overlays 2 inches (50 mm) or less in thickness, unless the existing surface has been corrected by milling or scarification.
~~7~~8. Runout tapers on HMA overlays at existing pavement, bridges, or bridge approach sections where the thickness is less than the design thickness.

~~The Contractor shall determine, for information only, a profile index based on the 0.2 inch (5.1 mm) blanking band.~~

For the following situations, the profile index will be evaluated. If the average profile index exceeds the tolerances listed in Article 010XX.03, A, the Contractor may elect to eliminate that area from the profile index for the day's paving operation and evaluate the area using a 10 foot (3 m) straightedge as outlined in Article 010XX.01.

1. Horizontal curves with a centerline radius of less than 1000 feet (300 m) and the pavement within the superelevation transition of such curves.
2. Crest and sag vertical curves with an L/A < 100 where L is the length of curve in feet and A is the grade change in percent (L/A < 30.5 where L is the length in meters and A is the grade change in percent).

The Contractor shall determine a daily average profile index for each day's paving operation. A day's paving operation is defined as a minimum of 0.1 mile (161 m) ~~section~~ segment of pavement placed in a day. If less than 0.1 mile (161 m) ~~section~~ segment is paved, the day's production will be grouped with the next day's production. If the production of the last day of project paving is less than 0.1 mile (161 m) ~~section~~ segment, it will be grouped with the previous day's production.

During the first 3 days of the paving operation, and after long shut-down periods, the pavement shall be tested and the test report furnished to the Engineer and District Materials Engineer by the end of the next day worked following the placement. On HMA pavement, the testing shall be performed as soon as the pavement has cooled sufficiently to permit testing. The Engineer and the Contractor will use the results of the initial testing to evaluate the paving methods and equipment. If the initial paving operation produces acceptable results, the Contractor may continue paving.

If the day's average profile index exceeds the values in Table 010XX.03 ~~45.0 inches per mile (710 mm/km) (65.0 inches per mile (1025 mm/km) on roadways with posted speeds of 45 mph or less)~~, the paving operation will be suspended until corrective action is taken by the Contractor. When the paving is resumed, the paving operations will be evaluated with the start-up testing procedures in the preceding paragraph.

The Contractor shall make the profilogram and evaluation available to the Engineer and District Materials Engineer during the project and furnish both at the end of the project. The evaluation of the trace shall be performed according to Materials I.M. 341. The test report shall be furnished to the Engineer within 2 working days after placement of the pavement and again within 2 working days after any corrections are made.

010XX.04 CORRECTIVE ACTIONS.
The pavement will be evaluated in 0.1 mile (161 m) ~~sections~~ segments using the profilograph, to determine pavement ~~sections~~ segments where corrective work or pay adjustments will be necessary. Each individual profilograph trace will be evaluated (not the average of multiple traces) to determine the areas where corrective action on 0.5 inches (12.7 mm) bumps and dips is needed.

Within each 0.1 mile (161 m) ~~section~~ segment, all areas representing high points (bumps) or low points (dips) with deviations in excess of 0.5 inches (12.7 mm) in a length of 25 feet (7.6 m) or less shall be corrected by the Contractor regardless of the profile index value. Pavement ~~sections~~ segments excluded from profile index evaluation in Article 010XX.03 shall be evaluated for high points and low points with

deviations in excess of 0.5 inches (12.7 mm) in a length of 25 feet (7.6 m) or less and shall be corrected by the Contractor.

Bumps and dips equal to or exceeding 0.5 inches (12.7 mm) in a length of 25 feet (7.6 m) or less shall be identified separately.

A. Roadways with a posted speed greater than 45 mph.
Any 0.1 mile (161 m) ~~section~~ segment, including bumps, having an initial average profile index of greater than those tolerances shown in Article 010XX.03, A, shall be corrected to reduce the average profile index to those shown in ~~the t~~Table 010XX.04 below, or replaced at the Contractor's option. On ~~sections~~ segments where corrections are made, the Contractor shall test the pavement to verify that corrections have met the average profile index as shown in ~~the t~~Table 010XX.04 below.

B. Roadways with a posted speed of 45 mph, or less, and ramps.
Any 0.1 mile (161 m) ~~section~~ segment, including bumps, having an initial average profile index of greater than those tolerances shown in Article 010XX.03, A, shall be corrected to reduce the average profile index to those shown in ~~the t~~Table 010XX.04 below, or replaced at the Contractor's option. On ~~sections~~ segments where corrections are made, the Contractor shall test the pavement to verify that corrections have met the average profile index as shown in ~~the t~~Table 010XX.04 below.

TABLE 010XX.04: AVERAGE PROFILE INDEX PER 0.1 MILE (161 m) AFTER CORRECTIONS (0 inch blanking band)

Surface Type	Profile Index For greater than 45 mph	Profile Index For 45 mph or less and ramps
	Inches per mile (mm/km)	Inches per mile (mm/km)
PCC Pavement	40.0 or less (630 or less)	65.0 or less (1025 or less)
HMA Pavement	40.0 or less (630 or less)	~~45.0 or less (710 or less)~~ 50.0 or less (790 or less)

C. Bridge approach sections shall be corrected according to Section 2317 of the Standard Specifications. ~~having an initial average profile index of 65.1 inches per mile (1026 mm/km) or greater shall be corrected to reduce the profile index to 65.0 inches per mile (1025 mm/km) or less on each trace, or replaced at the Contractor's option. On sections where corrections are made, the pavement will be tested by the Contractor to verify that corrections have produced a profile index of 65.0 inches per mile (1025 mm/km) or less for each trace.~~

D. Corrective work shall be at the Contractor's expense except for the 16 feet (5 m) before and the 16 feet (5 m) beyond the end of the section when the Contractor is not responsible for the adjoining surface. Corrective work shall be completed prior to determining pavement thickness.

Bush hammers or other impact devices will not be permitted.

1. PCC Pavement.
On PCC pavement, corrections shall be made using an approved profiling device or by removing and replacing the pavement. The corrective methods used by the Contractor shall be applied to the full lane width. When completed, the corrected area (full lane width) shall have uniform texture and appearance, with the beginning and ending of the corrected area squared normal to centerline of the paved surface. Where surface corrections are made, transverse grooving will not be required.

2. HMA Pavement.
On HMA pavement, corrections shall be made by diamond grinding, by overlaying the area, by replacing the area, or by inlaying the area. If the surface is corrected by diamond grinding, the

work and equipment shall be the same as specified for PCC pavement except that the ground surface shall be covered with a seal coat in accordance with Section 2307 of the Standard Specifications with the following modifications:

The binder bitumen may be the emulsion or cutback asphalt used for tack coat, applied at a rate of 0.10 gallon per square yard (0.7 L/m^2). Hand methods may be used for spraying.

The cover aggregate shall be sand, applied at a rate of 10 pounds per square yard (5 kg/m^2). Hand methods may be used may be used for spreading. The sand shall be slightly damp, but with no free moisture, as determined by visual inspection. Embedment shall be by at least one complete pneumatic roller coverage.

This seal coat is intended to be placed immediately after the diamond grinding is completed in the travel lane. The Engineer may approve this construction when road surface temperatures are below 60ºF (16ºC).

Labor, equipment, and materials used for this seal coat will not be paid for, but shall be considered incidental to other items.

If the surface is corrected by overlay, replacement, or inlay, the surface correction shall begin and end with a transverse saw cut normal to the pavement lane lines or edge lines within any one area. The profile of the surface must be smooth with no bumps or dips at the beginning or end ~~or~~ of correction.

Overlay correction must be for the entire pavement width. Pavement cross slope must be maintained through the corrected areas.

E. ~~The Engineer may perform profilograph testing on the surface for monitoring and comparison purposes. The procedure for monitoring and comparing results is in Materials I.M. 216.~~ The Engineer will perform verification testing to validate the Contractor's certified quality control testing. If the Engineer's verification test results validate the Contractor's test results, the Contractor's results will be used for acceptance. Disputes between the Contractor's and Engineer's test results will be resolved in accordance with Materials I.M. 341. The Engineer may test the entire project length if it is determined that the Contractor certified test results are inaccurate, and the Contractor will be charged for this work at a rate of $400.00 per mile ($250.00 per kilometer), per profile track, with a minimum charge of $800.00. Furnishing inaccurate tests may result in decertification of the Contractor's certified operator.

On lanes over 8.5 feet (2.6 m) in width, for through traffic which requires matching the surface of the new pavement to the surface of an existing pavement, an Average Base Index (ABI) will be determined according to Section 2316 of the Standard Specifications. ~~calculated as shown in Materials I.M. 341; this will be the smoothness base in inches per mile (millimeters per kilometer) for payment for the new pavement unless otherwise specified. The schedule for adjusted payment for the ABI is in Article 2316.05. Should the surface of the existing pavement be specified for correction, smoothness testing for ABI calculation shall be done after correction. Surface correction is required for smoothness exceeding ABI +50 for any section for posted speeds greater than 45 mph or exceeding ABI +85 for any section for posted speeds of 45 mph or less and ramps.~~

010XX.05 PAY ADJUSTMENTS.

Pay adjustments will be based on the initial average profile index determined for the ~~sections~~ segments prior to performing any corrective work. Areas excluded from the profilograph testing and bridges approaches will not be subject to price adjustments.

If the Contractor elects to remove and replace the ~~sections~~ segments, the Contractor will be paid the price adjustment that corresponds to the initial average profile index obtained on the pavement ~~sections~~ segments after replacement.

When the plans dictate that an area of pavement is to be hand finished, the area will not be subject to reduced payment. However, the area is to be profiled and corrected as necessary to meet these specifications.

A. PCC Pavement.
The payment will be adjusted as shown in ~~the t~~Table 010XX.05A below according to the posted or proposed speed.

TABLE 010XX.05A: SCHEDULE FOR ADJUSTMENT PAYMENT FOR PCC PAVEMENTS (0 inch blanking band)

Profile Index For greater than 45 mph	Profile Index For 45 mph or less and ramps	Dollars per 0.1 mi. ~~section~~ segment per lane	
Inches per mile (mm/km)	Inches per mile (mm/km)	Interstate & Multi-Lane Divided Segments	Other Primary Segments
22.0 or less (345 or less)	25.0 or less (395 or less)	+950.00	+850.00
22.1 to 23.5 (346 to 370)		+800.00	+650.00
23.6 to 26.0 (371 to 410)	25.1 to 30.0 (396 to 475)	+600.00	+450.00
26.1 to ~~45.0~~ 40.0 (411 to ~~710~~ 630)	30.1 to 65.0 (476 to 1025)		0.00
40.1 to 45.0 (631 to 710)	65.1 to 70.0 (1025 to 1105)	-600.00	-450.00
45.1 or more (711 or more)	~~65.1~~ 70.1 or more (~~1026~~ 1105 or more)	0.00*	0.00*

* These ~~sections~~ segments must be corrected to the levels shown in ~~the t~~Table 010XX.04 ~~in Article 2316.04~~.

B. HMA Pavement.
The payment will be adjusted as shown in ~~the t~~Table 010XX.05B below according to the posted or proposed speed.

TABLE 010XX.05B: SCHEDULE FOR ADJUSTMENT PAYMENT FOR HMA PAVEMENTS (0 inch blanking band)

Profile Index For greater than 45 mph	Profile Index For 45 mph or less and ramps	Dollars per 0.1 mi. ~~section~~ segment per lane	
Inches per mile (mm/km)	Inches per mile (mm/km)	Interstate & Multi-Lane Divided Segments	Other Primary Segments
10.0 or less (160 or less)		+850.00	+750.00
10.1 to 11.5 (161 to 180)	15.0 or less (235 or less)	+650.00	+500.00
11.6 to 13.5 (181 to 215)		+500.00	+350.00
13.6 to 15.5 (216 to 245)	15.1 to 20.0 (236 to 315)	+350.00	+200.00
15.6 to ~~40.0~~ 35.0 (246 to ~~630~~ 550)	20.1 to 45.0 (316 to 710)	0.00	0.00
35.1 to 40.0 (551 to 630)	45.1 to 50.0 (711 to 790)	-350.00	-200.00
40.1 or more (631 or more)	~~45.1~~ 50.1 or more (791 or more)	0.00*	0.00*

* These ~~sections~~ segments must be corrected to the levels shown in ~~the t~~Table 010XX.04 ~~in Article 2316.04~~.

C. Pavements using ABI.

SCHEDULE FOR ADJUSTMENT PAYMENT
FOR PAVEMENTS USING ABI (0 inch blanking band)

Profile Index For greater than 45 mph	Profile Index 45 mph or less and ramps	Contract Price Adjustment
Inches per mile (mm/km)	inches per mile (mm/km)	Dollars per section*
0 to ABI ABI +.1 (1) to ABI +30.0 (470) ABI +30.1 (471) to ABI +40.0 (630) ABI +40.1 (631) to ABI+50.0 (790)	0 to ABI ABI +0.1 (1) to ABI +45.0 (710) ABI +45.1 (711) to ABI +65.0 (1025) ABI +65.1 (1026) to ABI +85.0 (1340)	0.00 -300.00 -500.00 -800.00

* Payment will be based on results after correction.