Iowa Department of Transportation

MINUTES
OF
IOWA DOT SPECIFICATION COMMITTEE MEETING

April 13, 2006

Members Present:	John Adam	Statewide Operations Bureau
	Tom Reis, Chair	Specifications Section
	Daniel Harness, Secretary	Specifications Section
	Keith Norris	District 2-District Materials Engineer
	Bruce Kuehl	District 6-District Const. Engineer
	Gary Novey	Office of Bridges & Structures
	Roger Bierbaum	Office of Contracts
	Larry Jesse	Office of Local Systems
	Jim Berger	Office of Materials
	Troy Jerman	Office of Traffic & Safety
	Doug McDonald	District 1-Marshalltown RCE Office
Members Not Present:	John Smythe	Office of Construction
	Mike Kennerly	Office of Design
Advisory Members Present:	Lisa Rold	FHWA
Advisory Members Not Present:	Jim Rost	Office of Location & Environment
	Larry Stevens	SUDAS
Others Present:	Deanna Maifield	Office of Design
	Wayne Sunday	Office of Construction
	Tom Jacobson	Office of Construction
	Vince Ehlert	Iowa County
	Dave Matulac	Office of Traffic & Safety

Tom Reis, Specifications Engineer, opened the meeting. The following items were discussed in accordance with the revised agenda dated April 6, 2006. After the agenda was sent out, the Specifications Section sent committee members four formatting options for the next Specifications Manual. The discussion of these options is included as Item 14.

1. Article 2102.01, Roadway and Borrow Excavation.

The Office of Construction requested a change to Article 2102.01 that will link Sections 2102 and 2107 together for better clarity.

2. Article 2214.05, Limitations (Pavement Scarification).

The Office of Construction requested a re-discussion of the change to Article 2214.05 that was originally approved at the March 9, 2006 Specification Committee meeting.

3. Article, 2303.03, D, Placement (HMA).

The Office of Construction requested a change to Article 2303.03 that will clarify the intent of the specification and limit the length of lane closure and exposure to pavement edge drop-off.

4. Article, 2303.03, G, Miscellaneous Operations (HMA).

The Office of Construction requested a change to Article 2303.03 that will clarify the requirements for compacting HMA paved shoulders and associated price adjustments.

5. Section 2412, New Concrete floors on Bridge Decks.

The Office of Construction requested a change to Section 2412 that will require all tining and grooving to be longitudinal.

6. Article 2412.07, Curing (New Concrete Floors on Bridge Decks).

The Office of Construction requested a change to Article 2412.07 that will clarify the timing and application of curing compound and burlap.

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

The Office of Construction requested changes to Section 2413 that will eliminate transverse grooving or tining of bridge deck overlays and associated approaches.

8. Article 2413.08, Curing (Surfacing and Repair and Overlay of Bridge Floors).

The Office of Construction requested a change to Article 2413.08 that will eliminate transverse tining for bridge deck overlays and make changes to the curing of the concrete.

9. Section 2505, Removal and Construction of Guardrail.

The Office of Construction requested changes to Section 2505 that will provide a bid item and specifications for removal and reinstallation of guardrail that restricts paved shoulder construction.

10. Article 2524.02, Traffic Signs.

The Office of Traffic and Safety requested several changes to Article 2524.02 that will update the specifications to conform to current practices and allow legends to be direct applied.

11. Article 4115.04, Aggregate Use Durability Requirements
Article 4115.05, Coarse Aggregate for Surfacing and Repair and Overlay.

The Office Materials requested changes to Articles 4115.04 and 4115.05 that will correct some formatting problems. This item was originally discussed at the March 9, 2006 Specification Committee meeting.

12. Section 4186, Signing Materials.

The Office of Traffic and Safety requested several changes to Section 4186 that will update the specifications to conform to current practices and allow legends to be direct applied.

13. DS-01075, Night Work Lighting.

The Specifications Engineer requested a discussion of the proposed changes to DS-01075 that will decrease the size of the required signs, change to the MOM/BOP, and which vehicles are required to carry the signs.

14. Discussion of Standard Specification Manual Format.

The Specifications Section requested a discussion of several formatting options for the next Standard Specifications manual.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / John Vu	**Office:** Construction	**Item 1**
Submittal Date: 2006.03.10	**Proposed Effective Date:** October 2006	
Article No.: 2102.01 **Title:** Description	**Other:**	

Specification Committee Action: Defer to the next meeting.

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

Specification Committee Approved Text:

Comments: District 6 Construction noted that quantities for benching into existing slopes is not always included in the plans. Although not directly spelled out in the Specifications, this quantity could be considered Class 10 excavation. The Office of Design explained that currently they do not have a means for calculating this quantity automatically. They also realize designers occasionally miss this item. They are looking into how to best solve the problem. The Office of Contracts suggested making the item incidental to excavation. The Office of Construction noted that the Standard Road Plan showing benching requirements would need to be included in the plans. The Specifications Section suggested getting input from industry. The committee decided to defer this item to the next meeting. The Specifications Section will contact industry for their input.

Specification Section Recommended Text:

2102.01, Description.

Add as the fourth paragraph.

Preparation of the site and construction of the embankment shall be done per Section 2107.

Comments:

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

Add the following paragraph at the end of Article 2102.01.

Preparation of the site and construction of the embankment shall be done per Section 2107.

Reason for Revision: There is no clear connection between Section 2102 and Section 2107. Section 2102 covers soil types and classes. Section 2107 covers embankment construction. The plans sometimes only have 2102 items. Thus, it may be difficult to enforce Section 2107 for site preparation.

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 / Kevin Merryman	**Office:** Construction	**Item 2**
Submittal Date: February 27, 2006	**Proposed Effective Date:** October 2006 GS	
Article No.: 2214.05 **Title:** Limitations (Pavement Scarification)	**Other:**	

Specification Committee Action: Defer to the next meeting.

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

Specification Committee Approved Text:

Comments: Some concern was expressed that 10 working days may be too tight for the contractor to get all the work done, especially if shoulder widening is involved or if patching is to be done after scarification. The committee agreed that the type and length of project has a significant impact. They also agreed that it is undesirable to have a scarified surfaced exposed for several weeks. The idea of stating a default was proposed. The Specifications Section suggested listing the normal items of work and their order of completion. If a different order is required, or if an extended period of time beyond 10 working days would be required, this could be noted in the plans. The Specifications Sections suggested deferring this item to the next meeting. They will come up with an order for work items, which will be the default. Changes to the order of items would be noted in the contract documents.

Specification Section Recommended Text:

2214.05, LIMITATIONS.

Replace the first and second sentences of the eight paragraph:

> The Contractor shall begin ~~HMA placement~~ resurfacing operations within 10 working days after completion of the scarification operation. Once started, ~~HMA~~ placement shall occur on each working day until such time that the scarified surface is completely covered ~~with HMA~~. Failure to comply with these requirements will result in the assessment of a price adjustment equal to the liquidated damages stated in the contract documents. The Contractor shall be responsible for repair of any damage to the scarified surface occurring during a time period for which liquidated damages are being assessed.

Replace the first sentence of the ninth paragraph:

> When HMA resurfacing is part of the contract, all scarified surfaces shall be covered with at least one full lift of HMA prior to winter shutdown. The Contractor shall leave no vertical edges or fillets.

Comments: Originally approved at the March 9, 2006 Specification Committee meeting, but it was requested to discuss this item again due potential conflicts.

Note from Construction: As we discussed, there is a problem with the change that was approved as Item 5 at the March spec committee regarding limitations included for pavement scarification. The change approved in March made the limitations generic to HMA or PCC. However, it reestablished the required operation as "resurfacing", which was eliminated during the previous change of this article to accommodate a widening operation prior to resurfacing.

Also, the issue of patching has been raised. Some Districts are requiring contractors to perform patching after the scarification to better determine the size of patch needed. If this sequence is required, the 10 days allowed may not be sufficient to accomplish the patching without adversely affecting the production and cost of the HMA operations.

Member's Requested Change (Redline/Strikeout):

Make the following changes to the 8th and 9th paragraphs of Article 2214.05 LIMITATIONS:

The Contractor shall begin ~~HMA placement~~ resurfacing operations within 10 working days after completion of the scarification operation. Once started, ~~HMA~~ placement shall occur on each working day until such time that the scarified surface is completely covered ~~with HMA~~. Failure to comply with these requirements will result in the assessment of a price adjustment equal to the liquidated damages stated in the contract documents. The Contractor shall be responsible for repair of any damage to the scarified surface occurring during a time period for which liquidated damages are being assessed.

When HMA resurfacing is part of the contract, all scarified surfaces shall be covered with at least one full lift of HMA prior to winter shutdown. The Contractor shall leave no vertical edges or fillets.

Reason for Revision: When changes were made to this article in the April 2006 GS, language was added to the above paragraphs that was specific to HMA resurfacing. However, this article can apply to both HMA and PCC resurfacing work. The proposed changes restore the article to a more generic form that can apply to both types of work.

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 / Jeff Schmitt	**Office:** Construction	**Item 3**
Submittal Date: March 30, 2006	**Proposed Effective Date:** October 2006	
Article No.: 2303.03, D **Title:** Placement (Construction)	**Other:**	

Specification Committee Action: Defer to the next meeting.

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

Specification Committee Approved Text:

Comments: The committee determined that ultimately the 1 1/2 days production limit is in place to limit exposure to a dropoff to no more than 1 1/2 days. The Specifications Section will reword to focus more on limiting exposure to dropoff.

Specification Section Recommended Text:

2303.03, D, Placement.

Replace the first sentence and **Add** new second sentence of the ninth paragraph:

When placing two adjacent lanes, not more than 1 1/2 days of ~~rated~~normal plant production ~~capacity~~ shall be paved in a lane before the adjacent lane(s) is paved. The adjacent lane shall be placed to match the first lane during the next day of plant production. The Contractor shall not spread more mixture than can be compacted in the specified working hours of the same working day. At the close of each working day, the roadbed shall be free of any construction equipment.

Comments:

Member's Requested Change (DO NOT USE "TRACK CHANGES," use Strikeout/Highlight):

Revise paragraph 9 of Article 2303.03, D., Placement, as follows:

When placing two adjacent lanes, not more than 1 1/2 days of ~~rated~~normal plant production ~~capacity~~ shall be paved in a lane before the adjacent lane(s) is paved. The adjacent lane shall be placed to match the first lane during the next day of plant production. The Contractor shall not spread more mixture than can be compacted in the specified working hours of the same working day. At the close of each working day, the roadbed shall be free of any construction equipment.

Reason for Revision: Clarify intent of specification. Limits the length of lane closure and exposure to pavement edge drop-off.

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

Comments:

Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments: This proposed change has been discussed informally with several members of APAI Specification Committee.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Jeff Schmitt	**Office:** Construction	**Item 4**
Submittal Date: April 3, 2006	**Proposed Effective Date:** October 2006	
Article No.: 2303.03, Paragraph G **Title:** Miscellaneous Operations (HMA)	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 4/13/06	**Effective Date:** 10/17/06

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: The Office of Local Systems asked if there is a process for price adjustment. The Office of Construction noted that there is not. The question was asked if the contractor chooses the method of compaction. The Office of Construction responded by saying it is the contractor's choice.

Specification Section Recommended Text:

2303.03 G, Miscellaneous Operations.

Add new article:

6. Paved HMA Shoulders
Compaction of paved HMA shoulders shall be accomplished using one of the following methods:

a. Class II compaction (Article 2303.03, E.2),
b. Rolling pattern established during the first day of shoulder placement to achieve Class 1C compaction (Article 2303.03, E.1), or
c. Same rolling pattern established for mainline lanes, as determined by density coring.

Shoulder area will not be included in calculations for density price adjustment on mainline. Shoulder area may be subject to price adjustment for failure to adhere to the established roller pattern.

Comments:

Member's Requested Change (DO NOT USE "TRACK CHANGES," use Strikeout/Highlight):

Add the following new paragraph 6 to Article **2303.03 G, Miscellaneous Operations**:

6. Paved HMA Shoulders
Compaction of paved HMA shoulders shall be accomplished using one of the following methods:
a. Class II compaction (Article 2303.03, E.2)
b. Rolling pattern established during the first day of shoulder placement to achieve Class 1C compaction (Article 2303.03, E.1), or
c. Same rolling pattern established for mainline lanes, as determined by density coring

Shoulder area is not included in calculations for density penalties on mainline. Shoulder area is subject to penalty for failure to adhere to the established roller pattern.					
Reason for Revision: Clarify specification requirements and options for compacting HMA paved shoulders. Clarify distinction between associated penalties for paved shoulders and mainline lanes.					
County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments: This proposed change has been discussed informally with several members of APAI Specification Committee.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Wayne Sunday	**Office:** Construction	**Item 5**
Submittal Date: March 20, 2006	**Proposed Effective Date:** October 17, 2006	
Article No.: 2412.06 **Title:** Surface Finish **Article No.:** 2412.11 **Title:** Method of Measurement and Basis of Payment	**Other:**	

Specification Committee Action: Defer to the next meeting.

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

Specification Committee Approved Text:

Comments: The Office of Construction noted that longitudinal grooving is required on decks, overlays, approaches and overlay approaches. This is being handled with plan notes. The Office of Construction would like this to be covered in the Standard Specifications. Counties and cities would need to include a note in their plans if they did not want longitudinal grooving. The Office of Local Systems noted that a majority of bridges built are with counties and cities. A majority of bridge projects would require a note deleting longitudinal grooving. The Specifications Section suggested calling this out in the specifications. Iowa County asked why the change to longitudinal grooving is being made. The Office of Construction responded the change is to address concerns with noise reduction. An additional benefit is allowing curing to be applied sooner. Iowa County suggested a tiered specification. The Office of Contracts agreed with this idea, adding that if the specification is not tiered, then the specifications should call for tining, with longitudinal grooving being covered in the plans. The Specifications Section will rewrite so the specification is tiered. The Office of Design noted that application of grooving to multi-lane single or non-reinforced approaches is not covered in the proposed language. The Office of Construction replied that they are aware of this and have discussed it with the Office of Bridges and Structures. Language will be added to address this situation.

Specification Section Recommended Text:

2412.06, Surface Finish.

Replace the fourth, fifth, and sixth paragraphs:

> Promptly after smoothing and checking for smoothness and while the concrete is still plastic, the surface shall be given a final finish. When the contract documents show a second course of bridge floor surfacing or other wearing course, the surface of the first course shall be finished by a burlap drag. For one coarse bridge floors the final finished surface shall be the smoothed surface checked for smoothness without additional finishing.
>
> ~~When the surface being placed is the wearing course, the entire surface, except the area within approximately 2 feet (0.6 m) of the curbs, shall be given a suitable grooving by hand methods. Grooving shall be similar to that described in Article 2301.16, A, with the following exceptions:~~
>
> ~~• Grooving shall be transverse to the centerline of the roadway.~~

- ~~Transverse grooving shall be randomly spaced from 3/4 inch to 1 5/8 inches (20 mm to 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.~~

~~When the surface being placed is the final surface of a bridge sidewalk, the surface of sidewalk shall be given a transverse coarse broom texture.~~

Transverse grooving or tining in the plastic concrete of the bridge deck (and bridge approaches when included in the bridge project) will not be allowed unless stated otherwise in the contract documents. Longitudinal grooves shall be cut into the hardened concrete surfaces using a mechanical cutting device. Longitudinal grooving shall be done after any surface correction grinding is done.

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 ¾ inch (19 mm) intervals measured from center of groove to center of groove.

Longitudinal grooving on the bridge deck and double reinforced bridge approach 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 the bridge joints. Longitudinal grooving of the single reinforced bridge approach sections and the non-reinforced bridge approach sections shall be applied only to the areas within 12 feet (3.6 m) of centerline of roadway.

For staged bridge and bridge approach construction the contractor will have the option of cutting longitudinal grooves in the hardened concrete at the end of each stage of construction or waiting 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 and bridge approach 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 will be required to establish temporary lane closures to accomplish longitudinal grooving for all stages. Traffic control for this will be done in accordance with Standard Road Plan RS-3. Cost of the temporary lanes closures is to be included in the price bid for "Traffic Control". 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 will be cut into the hardened concrete in order to establish an acceptable driving surface texture for the winter season.

2412.11, Method of Measurement and Basis of Payment.

Add as the fifth paragraph:

The quantity of Longitudinal Grooving in Concrete, in square yards (square meters), will be the quantity shown in the contract documents. The Contractor will be paid the contract unit price for longitudinal grooving in concrete per square yard (square meter).

Comments:

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

2412.06 SURFACE FINISH.
Promptly after the concrete has been placed and vibrated as provided in Articles 2403.08 and 2403.09, it shall be struck off with a template to provide a smooth surface with the proper crown. Supports for the strike off template shall be parallel to the center line of the structure, firmly fastened in place and set to

the correct elevation, with proper allowance for deflection caused by the load of the concrete. These screed supports must extend sufficiently beyond each end of the bridge to accommodate the strike off template or finishing machine used and to provide support for bridges used when operating a longitudinal float. The Contractor may be required to provide any or all of the items specified in Article 2301.07 which may be adapted to the work.

In lieu of the above requirements, for all bridges exceeding 60 feet (20 m) in length, the following shall apply:

> Promptly after the concrete is deposited and vibrated, as provided in Articles 2403.08 and 2403.09, it shall be struck off to the proper elevation by means of an approved, self propelled and mechanically operated finishing machine. It shall operate on adequately supported rails adjusted to conform to the grade specified, with allowance for anticipated dead load deflection shown in the contract documents. Supporting rails shall extend beyond each end of the bridge a sufficient distance to accommodate the finishing machine. The load of the finishing machine shall not be so great as to cause undue deflection of the bridge members or falsework. The screeds of the finishing machine may be of metal or metal shod wood. Sufficient passes of the machine shall be made to obtain a void free surface struck off to the elevation specified. Finishing machines other than as described above will be considered for approval.

After the final pass of the finishing machine or after the floating operation, if used, the surface shall be smoothed to meet requirements of Article 2301.16 and checked with 10 foot (3 m) straightedges, and surface irregularities shall be corrected.

Promptly after smoothing and checking for smoothness and while the concrete is still plastic, the surface shall be given a final finish. When the contract documents show a second course of bridge floor surfacing or other wearing course, the surface of the first course shall be finished by a burlap drag. For one coarse bridge floors the final finished surface shall be the smoothed surface checked for smoothness without additional finishing.

A. Longitudinal Grooving In Concrete

Transverse grooving or tining in the plastic concrete of the bridge deck (and bridge approaches when included in the bridge project) will not be allowed unless stated otherwise in the contract documents. Longitudinal grooves shall be cut into the hardened concrete surfaces using a mechanical cutting device. Longitudinal grooving shall be done after any surface correction grinding is done.

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 ¾ inch (19 mm) intervals measured from center of groove to center of groove.

Longitudinal grooving on the bridge deck and double reinforced bridge approach 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 the bridge joints. Longitudinal grooving of the single reinforced bridge approach sections and the non-reinforced bridge approach sections shall be applied only to the areas within 12 feet (3.6 m) of centerline of roadway.

For staged bridge and bridge approach construction the contractor will have the option of cutting longitudinal grooves in the hardened concrete at the end of each stage of construction or waiting 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 and bridge approach 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 will be required to establish temporary lane closures to accomplish longitudinal grooving for all stages. Traffic control for this will be done in accordance with Standard Road Plan RS-3. Cost of the temporary lanes closures is to be included in the price bid for “Traffic Control”. 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 will be cut into the hardened concrete in order to establish an acceptable driving surface texture for the winter season.

~~When the surface being placed is the wearing course, the entire surface, except the area within approximately 2 feet (0.6 m) of the curbs, shall be given a suitable grooving by hand methods. Grooving shall be similar to that described in Article 2301.16, A, with the following exceptions:~~

- ~~Grooving shall be transverse to the centerline of the roadway.~~
- ~~Transverse grooving shall be randomly spaced from 3/4 inch to 1 5/8 inches (20 mm to 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.~~

~~When the surface being placed is the final surface of a bridge sidewalk, the surface of sidewalk shall be given a transverse coarse broom texture.~~

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

2412.11 METHOD OF MEASUREMENT AND BASIS OF PAYMENT.
Structural concrete, reinforcement, and structural steel will be measured and paid for in accordance with Sections 2403, 2404, and 2408, respectively. These payments shall be full compensation for furnishing all materials, equipment, and labor and for performing all work necessary to complete the structure in conformance with the contract documents.

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

Deductions will not be made for the volume of concrete displaced by floor drains, expansion joints, shear lugs, beam flanges, and joint material. The cost of joint material and metal strips for sealing joints shall be included in the contract unit price per cubic yard (cubic meter) for structural concrete. The weight (mass) in pounds (kilograms) of structural steel paid for shall include all steel expansion plates, castings of steel or iron, welded shapes for floor drains, bearing plates, anchor bolts and other steel parts, except steel reinforcement for concrete and the metal fastenings therefor.

The cost of any additional concrete required to meet the requirements of Article 2412.04 shall be incidental to the cost of the structural concrete.

A. Longitudinal Grooving In Concrete

The quantity of longitudinal grooving in concrete, in square yards (square meters), will be the quantity shown in the contract documents. The contractor will be paid the contract unit price for longitudinal grooving in concrete per square yard (square meter).

Reason for Revision: The Bridge Design Office at the request of the Office of Construction is no longer allowing transverse grooving or tining in plastic concrete of bridge decks (and bridge approaches when included in the bridge project). The plans are currently requiring longitudinal grooves be cut in the hardened concrete. The reason for this change is to improve noise reduction, eliminate tining from the deck placement process to expedite curing, and to improve uniformity in texturing of bridge decks and bridge approaches. This specification once implemented will enable Bridge Design to remove the current notes on longitudinal grooving in concrete from the plans.

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 Sunday	**Office:** Construction	**Item 6**
Submittal Date: March 17, 2006	**Proposed Effective Date:** October 17, 2006	
Article No.: 2412.07 **Title:** Curing	**Other:**	

Specification Committee Action: Defer to the next meeting.

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

Specification Committee Approved Text:

Comments: The FHWA expressed concerns with placing prewetted burlap within 15 minutes of placing pigmented curing compound. There is a chance the curing compound will not be dry and will be soaked up into the burlap. The Office of Construction suggested eliminating the curing compound. They suggested instead that the wet burlap be placed within 10 minutes of tining. They also stated that they would be satisfied with a tiered specification if counties and cities want to continue using the specification as is. The Office of Local Systems stated that they would be satisfied with eliminating the curing compound. The Specifications Section noted that they will eliminate curing compound from the language and will add language requiring placement of wet burlap within 10 minutes of tining. The Office of Contracts explained that placing the Method of Measurement and Basis of Pavement for grooving is several separate sections would lead to separate bid items being created for the same work. The Specifications Section will look into the issue and determine the best location for Method of Measurement and Basis of Payment.

Specification Section Recommended Text:

2412.07, Curing.

Replace the first indented paragraph:

~~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 m^2/L).~~ The first layer of prewetted burlap shall be placed on the floor within ~~15~~ 10 minutes after final finishing. When stated in the contract documents; prior to placement of the first layer of prewetted burlap, but 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). Within 15 minutes of application of white pigmented curing compound, the first layer of prewetted burlap shall be placed. ~~(texturing) and covering of concrete with white pigmented curing compound~~. Burlap shall be prewetted prior to placement with sufficient water to prevent absorption of moisture from the concrete surface. ~~The Engineer may adjust the time for placement of the first layer of prewetted burlap to minimize burlap damage to the transverse grooving.~~ It shall be kept wet. As soon as practicable 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.

Comments:

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

2412.07 CURING.

Concrete floors shall be cured as follows:

~~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 m^2/L).~~ The first layer of prewetted burlap shall be placed on the floor within ~~15~~ 10 minutes after final finishing. When stated in the contract documents, prior to placement of the first layer of prewetted burlap, 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). Within 15 minutes of application of white pigmented curing compound, the first layer of prewetted burlap shall be placed. ~~(texturing) and covering of concrete with white pigmented curing compound~~. Burlap shall be prewetted prior to placement with sufficient water to prevent absorption of moisture from the concrete surface. ~~The Engineer may adjust the time for placement of the first layer of prewetted burlap to minimize burlap damage to the transverse grooving.~~ It shall be kept wet. As soon as practicable 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: Transverse tining in plastic concrete has been eliminated by plan notes which enables the wet burlap cure to be initiated sooner. Since the wet burlap placement is specified to occur within 10 minutes of final finishing there is also no need for application of white pigmented curing compound. This same curing requirement is standard for High Performance Concrete and Improved Durability Concrete Developmental Specifications.

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 Sunday	**Office:** Construction	**Item 7**
Submittal Date: March 20, 2006	**Proposed Effective Date:** October 17, 2006	
Section No.: 2413 **Title:** Surfacing and Repair and Overlay of Bridge Floors	**Other:**	

Specification Committee Action: Defer to the next meeting.

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

Specification Committee Approved Text:

Comments: District 6 commented that this as written does not allow transverse tining or grooving, and wanted to know what counties and cities should do. The Office of Construction noted that this specification will also need to be tiered in the same manner as section 2412. The Office of Contracts asked what will happen of grooving is not completed within 30 calendar days. The Office of Contracts explained that the situation will be handled in a similar manner to miscellaneous finishing items.

Specification Section Recommended Text:

2413.07, Placing and Finishing.

Replace the third and fourth paragraghs:

~~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.~~

Transverse grooving or tining in plastic concrete of bridge deck overlay (and bridge approach overlay when included in a bridge deck overlay project) will not be allowed. Longitudinal 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 of groove 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 bridge approach overlay sections and non-reinforced bridge approach overlay sections shall be applied only to areas within 12 feet (3.6 m) of centerline of roadway.

For staged bridge deck overlay and bridge approach overlay construction the Contractor will have the option of cutting longitudinal grooves in the hardened concrete at the end of each construction stage or waiting 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. Traffic control for this will be done in accordance with Standard Road Plan RS-3. Cost of the temporary lanes closures shall be included in the price bid for Traffic Control. 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.

2413.11, Method of Measurement.

Add new article:

A. Longitudinal Grooving In Concrete.

The quantity of Longitudinal Grooving in Concrete, in square yards (square meters), measured will be the quantity shown in the contract documents.

2413.12, Basis of Payment.

Add new article:

A. Longitudinal Grooving In Concrete

For the quantity of Longitudinal Grooving in Concrete measured the Contractor will be paid the contract unit price per square yard (square meter).

Comments:

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

2413.07 PLACING AND FINISHING.
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, 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. 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.

An internal vibrator 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.

B. Longitudinal Grooving In Concrete

Transverse grooving or tining in the plastic concrete of the bridge deck overlay (and bridge approach overlay when included in the bridge deck overlay project) will not be allowed unless stated otherwise in the contract documents. Longitudinal grooves shall be cut into the hardened concrete surfaces using a mechanical cutting device. Longitudinal grooving shall be done after any surface correction grinding is done.

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 ¾ inch (19 mm) intervals measured from center of groove to center of groove.

Longitudinal grooving on the 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 the bridge joints. Longitudinal grooving of the single reinforced bridge approach overlay sections and the non-reinforced bridge approach overlay sections shall be applied only to the areas within 12 feet (3.6 m) of centerline of roadway.

For staged bridge deck overlay and bridge approach overlay construction the contractor will have the option of cutting longitudinal grooves in the hardened concrete at the end of each stage of construction or waiting 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 will be required to establish temporary lane closures to accomplish longitudinal grooving for all stages. Traffic control for this will be done in accordance with Standard Road Plan RS-3. Cost of the temporary lanes closures is to be included in the price bid for “Traffic Control”. 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 will be cut into the hardened concrete in order to establish an acceptable driving surface texture for the winter season.

~~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.

2413.11 METHOD OF MEASUREMENT.
Bridge Floor Surfacing will be computed by the Engineer in square yards (square meters) from measurements of the areas surfaced. For bridge floor surfacing, concrete removal for 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, and Bridge Floor Overlay 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.

A. Longitudinal Grooving In Concrete

The quantity of longitudinal grooving in concrete, in square yards (square meters), for which payment will be made will be the quantity shown in the contract documents.

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 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, and Bridge Floor Overlay 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 Resurfacing, Class A Bridge Floor Repair, Class B Bridge Floor Repair, or Bridge Floor Overlay.

A. Longitudinal Grooving In Concrete

For the number of square yards (square meters) of longitudinal grooving in concrete constructed, the contractor will be paid the contract unit price per square yard (square meter).

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.

Reason for Revision: The Bridge Design Office at the request of the Office of Construction is no longer allowing transverse grooving or tining in plastic concrete of bridge deck overlays (and bridge approach overlays when included in the bridge deck overlay project). The plans are currently requiring longitudinal grooves be cut in the hardened concrete. The reason for this change is to improve noise reduction, eliminate tining from the deck placement process to expedite curing, and to improve uniformity in texturing of bridge decks overlays and bridge approach overlays. This specification once implemented will enable Bridge Design to remove the current notes on longitudinal grooving in concrete from the plans.					
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 Sunday	**Office:** Construction	**Item 8**
Submittal Date: March 17, 2006	**Proposed Effective Date:** October 17, 2006	
Article No.: 2413.08 **Title:** Curing	**Other:**	

Specification Committee Action: Defer to the next meeting.

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

Specification Committee Approved Text:

Comments: The Office of Contracts emphasized that it is clear in Sections 2412 and 2413 that transverse tining is not allowed on Primary and Interstate routes. District 6 explained that on occasion only a short section of approach may be placed, for example if a backwall is being repaired. They wanted to know how to handle such situations. The Office of Contracts explained that exceptions can be placed in the plan notes that allow for transverse tining.

Specification Section Recommended Text:

2413.08, Curing.

Replace the first paragraph.

~~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 m^2/L) . As soon as it can be placed without marring the surface, a~~ The first layer of prewetted burlap shall be placed on the concrete within 10 minutes after final finishing. When stated in the contract documents, prior to placement of the first layer of prewetted burlap, 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). Burlap shall be prewetted prior to placement with sufficient water to prevent absorption of moisture from the concrete surface. ~~and the~~ The concrete shall be cured as provided in the following paragraphs:

Delete the fourth sentence **AND replace** the fifth sentence of the first indented paragraph.

~~The wet burlap shall be applied within 30 minutes after the concrete has been deposited on the floor, except when the surface will be excessively marred by so doing, as directed by the Engineer.~~ If the concrete is revibrated because of failure to meet density requirements with initial vibration, ~~this~~ the time for placement of prewetted burlap will be extended 15 minutes.

Comments:

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

2413.08 CURING.

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 m^2/L) . As soon as it can be placed without marring the surface, a The first layer of prewetted burlap shall be placed on the concrete within 10 minutes after final finishing. When stated in the contract documents, prior to placement of the first layer of prewetted burlap, 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). Burlap shall be prewetted prior to placement with sufficient water to prevent absorption of moisture from the concrete surface. and the The concrete shall be cured as provided in the following paragraphs:

For Portland cement concrete, 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. ~~The wet burlap shall be applied within 30 minutes after the concrete has been deposited on the floor, except when the surface will be excessively marred by so doing, as directed by the Engineer.~~ If the concrete is revibrated because of failure to meet density requirements with initial vibration, ~~this~~ 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.

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.

Reason for Revision: Transverse tining in plastic concrete has been eliminated by plan notes which enables the wet burlap cure to be initiated sooner. Since the wet burlap placement is specified to occur within 10 minutes of final finishing there is also no need for application of white pigmented curing compound. This same curing requirement is standard for High Performance Concrete and Improved Durability Concrete Developmental Specifications.

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 Sunday	**Office:** Construction	**Item 9**
Submittal Date: March 17, 2006	**Proposed Effective Date:** October 17, 2006	
Article No.: 2505.03 **Title:** Removal and Construction of Guardrail **Article No.:** 2505.06 **Title:** Method of Measurement **Article No.:** 2505.07 **Title:** Basis of Payment	**Other:**	

Specification Committee Action: Defer to next meeting.

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

Specification Committee Approved Text:

Comments: The Office of Construction explained that this revision was requested by the ADEs. Currently they handle this in the plans. They explained that many contractors want to remove rail and spacer blocks to get compaction right up to the post. Office of Contracts asked if we really need to measure to 0.1 foot. The Office of Construction suggested instead the Engineer compute to 0.5 foot, and they compute only amount removed. District 6 asked if posts are pulled. The Office of Construction responded that they are not. They also noted that some shouldering projects do not involve guardrail replacement, just shoulder work. The Office of Traffic and Safety asked what the sequence of construction would be if guardrail replacement is involved. The Office of Construction stated that would be contractor's choice, as long as it meets the 5 day window of Section 2505.05. The Office of Contracts stated they already have bid item for removing an installation (including posts) and putting it back in. If this revision is included as is, this item would then be changed to involve removing and reinstalling guardrail only for purpose of access. The suggestion was made to discuss this revision with the ADEs and take the position that it should be incidental since it is such a small item of work. The Office of Design will discuss this with the ADEs to get a consensus. The Specifications Section suggested changing the title to Removal of Rail and Spacer Blocks in order to reduce the confusion with whether posts are removed.

Specification Section Recommended Text:

2505.03 REMOVAL AND CONSTRUCTION OF GUARDRAIL.

Add new article:

C. Remove and Reinstall Guardrail

The Contractor shall remove guardrail to provide access for work as specified in the contract documents. All materials removed shall be stockpiled and protected from damage. Following completion of work necessitating the removal, all guardrail materials shall be reinstalled. Material damaged by the Contractor shall be replaced with new material of the same kind at no additional cost to the Contracting Authority.

2505.03 Method of Measurement.

Add new article:

E. Remove and Reinstall Guardrail

The Engineer will measure the length of guardrail to be removed and reinstalled in linear feet (meters) to the nearest 0.1 foot (0.1 m) by measuring along the front of the rail from bolt hole to bolt hole.

2505.03 Basis of Payment.

Add new article:

E. Remove and Reinstall Guardrail

The Contractor will be paid the contract unit price per lineal foot (meter) for Removal and Reinstallation of Guardrail. This payment shall include removal of guardrail, blocks, and posts; stockpiling and protection of removed materials; and reinstallation of all posts, blocks, and guardrail.

Comments:

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

2505.03 REMOVAL AND CONSTRUCTION OF GUARDRAIL.

A. Removal of Guardrail.
The Contractor shall remove the guardrail as shown in the contract documents. The guardrail shall be removed so that all material considered suitable by the Engineer for future use may be salvaged. Guardrail material to be salvaged will be listed on the plans along with a location it should be delivered to. This Guardrail material shall remain the property of the Contracting Authority. Guardrail not suitable for future use shall be removed from the project and become the property of the Contractor.

Guardrail posts designated by the Engineer as being salvable shall be removed without damage. Those having no salvage value shall be pulled. All holes shall be backfilled with suitable soil. Sand or other granular materials are not acceptable for use as backfill. Backfill shall be placed in lifts not exceeding 4 inches (100 mm) and thoroughly compacted before the next lift is placed. All holes shall be filled and tamped within the same working day.

The Contractor shall carefully remove, disassemble, and clean the salvaged guardrail without damaging any parts. Material that is damaged by the Contractor shall be replaced with new material of the same kind by the Contractor at no additional cost to the Contracting Authority. The salvaged guardrail materials shall be stockpiled as indicated in the contract documents. The Contractor shall restore any area disturbed by the removal operation to an acceptable condition.

The Contractor shall remove the delineators and object markers as shown in the contract documents or as designated by the Engineer. The delineators and object markers shall be removed so that all material considered suitable by the Engineer for future use may be salvaged. The salvaged material shall remain the property of the Contracting Authority unless

otherwise noted in the contract documents. The Contractor shall remove non-salvaged material off the project site.

B. Installation of Guardrail.
The guardrail shall be erected to the specified line and mounting height. Guardrail shall be constructed as follows:

1. Formed Steel Beam Guardrail.
Rail elements shall be W-beam or thrie-beam, as designated in the contract documents. When not designated, W-beam shall be installed.

The rail elements shall be ready for assembly when delivered to the project site. Punching, drilling, cutting, or welding will not be allowed in the field.

2. Guardrail Cable.

a. Three Cable Guardrail
Three cables shall be attached to the posts and end ~~anchorages~~ anchors in accordance with the contract documents. Compensation devices and turnbuckles shall be attached in such a manner as to not cause any interference with the function of any part of the installation. Cables shall be attached to the posts by means of an approved hook bolt or other means when specified in the contract documents.

Individual cables may be spliced by use of an approved device installed where no interference with any other function will occur. One splice will be allowed per cable. Cable may not be spliced within 250 feet (75 m) of another splice.

Tightening of individual cables shall be accomplished by mechanical means. Cables shall be stretched tight so that no sags occur between posts and so that, in the opinion of the Engineer, the finished installation presents a satisfactory appearance.

b. Wire Rope Safety Barrier.
The Contractor shall install wire rope safety barrier according to the manufacturer's recommendations. The barrier shall be tensioned according to the manufacturer's recommendations at the time of installation, and then checked and adjusted approximately 3 weeks after installation.

At least one turnbuckle per 1000 foot (300 meter) strand shall be included to allow for tensioning of the cables. For installations less than 1000 feet (300 meters) in length, one turnbuckle per strand shall be included near the center of the installation to allow for tensioning of the cables.

Concrete post foundations shall be constructed in accordance with Article 2505.03, B, 4.

3. Posts.
Posts shall be driven in a manner that does not damage the post. Posts required to be set in prebored holes shall be backfilled with material removed or other suitable soil. Backfill shall be placed in lifts not exceeding 4 inches (100 mm) and thoroughly compacted before the next lift is placed.

Regardless of the method of setting posts, the posts shall be firm, plumb, and at the location, spacing, and elevation designated.

4. End ~~Anchorages~~ Anchors and Terminals.
End ~~anchorage~~ anchors and terminal devices of the type shown in the contract documents shall be installed.

Concrete required for end ~~anchorages~~ anchors shall be cast-in-place. Concrete shall be Class C in accordance with Section 2403, except air content may vary from 4% to 7%. Exposed concrete shall be finished as directed by the Engineer. Class C can be subjected to loading of the rail in 3 calendar days. Concrete with high early strength may be necessary to meet requirements of Article 2505.05. The Contractor may furnish Class M concrete at no additional cost to the Contracting Authority. Concrete with these proportions can also be subjected to loading in 3 calendar days.

5. Guardrail Markers and Barrier Markers.
Guardrail markers and barrier markers of the required type meeting the requirements of Article 4186.08 shall be installed when indicated in the contract documents.

6. Delineators and Object Markers.
Delineators and object markers of the required type meeting the requirements of Article 4186.08 shall be installed when indicated in the contract documents.

C. Remove and Reinstall Guardrail to Allow Other Work

The contractor shall remove formed steel beam guardrail and wood spacer blocks to provide access for other work as specified in the contract documents. All materials removed shall be stockpiled and protected from damage. Following completion of other work all removed guardrail materials shall be reinstalled. Material that is damaged by the contractor shall be replaced with new material of the same kind by the contractor at no additional cost to the contracting authority.

2505.06 METHOD OF MEASUREMENT.

A. Removal of Guardrail.
The Engineer will measure the length of the formed steel beam guardrail to be removed in linear feet (meters) to the nearest 0.1 foot (0.1 m), by measuring along the front of the rail from bolt hole to bolt hole.

The Engineer will measure the length of the cable guardrail to be removed in linear feet (meters) to the nearest 0.1 foot (0.1 m), by measuring along the front of one of the three cables with no deductions for turnbuckles or compensating devices.

B. Installation of Guardrail.
The quantity of steel beam and cable guardrail installed for which payment will be made will be the quantity shown in the contract documents. This will be the sum of the A, T, and H distances shown in the project plans. Extra Guardrail lapped due to the Adjustment Section will be paid for in increments of 6.25 feet (1.91 m).

The cable guardrail quantity will be calculated using one of the cables of cable guardrail, with no deductions for turnbuckles or compensating devices. Any changes in the installed length must be approved by the Engineer. This will also include the length of installations continued across a bridge.

C. Beam Guardrail End ~~Anchorages~~ Anchors and Terminal Devices.
The Engineer will count the quantity of each type of beam guardrail end ~~anchorages~~ anchors and terminal devices constructed. Installations continued across a bridge will not be counted as end ~~anchorages~~ anchors.

D. Cable Guardrail End ~~Anchorages~~ Anchors.
~~The Engineer will count the quantity of Cable Guardrail End Anchorages constructed.~~

1. Three Cable Guardrail.
The Engineer will count the quantity of end anchors constructed.

2. Wire Rope Safety Barrier.
The Engineer will count the quantity of end anchors constructed.

E. Remove and Reinstall Guardrail to Allow Other Work

The Engineer will measure the length of formed steel beam guardrail to be removed and reinstalled in linear feet (meters) to the nearest 0.1 foot (0.1 m) by measuring along the front of the rail from bolt hole to bolt hole.

2505.07 BASIS OF PAYMENT.
Payment for guardrail will include the furnishing of all materials, equipment, tools, and labor necessary to complete the removal and installation of the guardrail, including excavation and backfilling. However, excavation in unexpected rock will be paid for as extra work in accordance with Article 1109.03. Unexpected rock will be considered as rock encountered during excavation that was not visible from the roadway and was not indicated in the contract documents. The Engineer may adjust the payment for guardrail in accordance with Article 2505.05.

A. Removal of Guardrail.
The Contractor will be paid the contract unit price per linear foot (meter) for removal of guardrail, including formed steel beam, thrie-beam, cable guardrail, end ~~anchorages~~ anchors, and terminals. This payment will include hauling salvaged material to the stockpile site. Backfill of post and end ~~anchorage~~ anchor footing holes will be incidental.

Payment for nested formed steel beam and thrie-beam will be included in the contract unit price. For formed steel beam and thrie beam guardrail the number of posts, spacer blocks, object markers, delineators, guardrail markers, barrier markers, offset brackets, end ~~anchorages~~ anchors, terminals, and remaining hardware will be incidental to the item.

For cable guardrail the number of posts, hook bolts, turnbuckles, compensating devices, end ~~anchorages~~ anchors, and remaining hardware will be incidental to the item.

B. Installation of Guardrail.
The Contractor will be paid the contract unit price per linear foot (meter) for the installation of guardrail, including formed steel beam, thrie-beam, and cable guardrail.

Payment for nested formed steel beam and thrie-beam shall be included in the contract unit price. The number of posts, spacer blocks, object markers, delineators, guardrail markers, barrier markers, offset brackets, and remaining hardware shall be incidental to the item.

For cable guardrail the number of posts, hook bolts, turnbuckles, compensating devices; concrete; and remaining hardware will be incidental to the item.

C. Beam Guardrail End ~~Anchorage~~ Anchor and Terminal Devices.
The Contractor will be paid the contract unit price for each type of beam guardrail end ~~anchorage~~ anchor or terminal device.

D. Cable Guardrail End ~~Anchorage~~ Anchor.
~~The Contractor will be paid the contract unit price for each Cable Guardrail End Anchor~~.

1. Three Cable Guardrail.
The Contractor will be paid the contract unit price for each end anchor.

2. Wire Rope Safety Barrier.
The Contractor will be paid the contract unit price for each end anchor.

E. Remove and Reinstall Guardrail to Allow Other Work

The contractor will be paid the contract unit price per lineal foot (meter) for removal and reinstallation of formed steel beam guardrail and wood spacer blocks. This payment will include stockpiling and protection of removed guardrail materials until reinstallation has been completed.

Reason for Revision: Provide a bid item and specifications for removal and reinstallation of guardrail which restricts paved shoulder construction (ie: HMA paved shoulders) when the existing guardrail is not planned to be replaced or upgraded.

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: Troy Jerman / Dave Matulac	**Office:** Traffic & Safety	**Item 10**
Submittal Date: March 30, 2006	**Proposed Effective Date:** October 17, 2006	
Article No.: 2524.02 **Title:** Traffic Signs	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 4/13/06	**Effective Date:** 10/17/06

Specification Committee Approved Text: For Section 2524.02, B, see Specification Section Recommended Text.

2524.02, Traffic Signs.

Replace the second paragraph.

Except as modified by the contract documents, signs shall be made according to the standards established in the ~~1979~~ Standard Highway Signs ~~Manual~~, 2004 edition, as published by the United States Department of Transportation.

Delete the third paragraph.

~~Letters and numerals shall conform with the current edition of "Standard Alphabets for Highway Signs," printed by the U.S. Department of Transportation, Federal Highway Administration. Numeral-to-numeral spaces and letter-to-letter spaces, including uppercase-to-lowercase letters, lowercase-to-lowercase letters, and capital-to-capital letters, shall also conform with this publication. Scale drawings of letters are available on request. Other legend spacing dimensions required to complete fabrication shall be as shown in the contract documents.~~

Comments: The Office of Local Systems noted that in the Member's requested change, nonreflectorized is struck out. It is not in the Specification Section Recommended Text. The Office of Traffic and Safety stated that it should be struck out. District 6 noted that "the by" in the first sentence of the second paragraph of Section 2524.02 should be switched to "by the".

After the meeting The Office of Transportation and Safety notified the Specifications Section that "or reflectorized" should be left in.

Specification Section Recommended Text:

2524.02, Traffic Signs.

Replace the second paragraph.

Except as modified the by contract documents, signs shall be made according to the standards established in the ~~1979~~ Standard Highway Signs ~~Manual~~, 2004 edition, as published by the United States Department of Transportation.

Delete the third paragraph.

~~Letters and numerals shall conform with the current edition of "Standard Alphabets for Highway Signs," printed by the U.S. Department of Transportation, Federal Highway Administration. Numeral-to-numeral spaces and letter-to-letter spaces, including uppercase-to-lowercase letters, lowercase-to-lowercase letters, and capital-to-capital letters, shall also conform with this publication. Scale drawings of letters are available on request. Other legend spacing dimensions required to complete fabrication shall be as shown in the contract documents.~~

2524.02, B, Type B Signs.

Replace the third sentence.

Sign legends shall be accomplished through use of ~~detachable,~~ reflectorized or nonreflectorized letters, numerals, symbols, and borders that are direct applied.

Comments:

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

Section 2524. Highway Signing.

2524.02 TRAFFIC SIGNS.

Except as modified by contract documents, signs shall be made according to the standards established in the ~~1979~~ Standard Highway Signs, 2004 Edition, ~~Manual~~ as published by the United States Department of Transportation.

~~Letters and numerals shall conform with the current edition of "Standard Alphabets for Highway Signs," printed by the U.S. Department of Transportation, Federal Highway Administration. Numeral-to-numeral spaces and letter-to-letter spaces, including uppercase-to-lowercase letters, lowercase-to-lowercase letters, and capital-to-capital letters, shall also conform with this publication. Scale drawings of letters are available on request. Other legend spacing dimensions required to complete fabrication shall be as shown in the contract documents.~~

B. Type B Signs.
Type B signs shall be extruded aluminum highway sign panels mounted on either wood or steel breakaway posts as specified in the contract documents. The sign face material shall be reflective sheeting, except when nonreflectorized sheeting is specifically designated in the contract documents. ~~Sign legends shall be accomplished through use of detachable,~~ The sign legends shall be accomplished with reflectorized ~~or nonreflectorized~~ letters, numerals, symbols, and borders that are direct applied.

Reason for Revision: Updating Specifications to conform with current practices. Specify the 2004 Edition of the Standard Highway Signs. Allow the use of direct applied legends (letters, numerals, symbols, and borders) for Type B signs, as opposed to detachable legends. Removing all references to the use of detachable legends for Type B signs.

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

Comments: Updating Specifications to conform with current practices.					
Industry Input Needed (X one)			**Yes**	**No** X	
Industry Notified:	**Yes**	**No** X	**Industry Concurrence:**	**Yes**	**No** X
Comments: Updating Specifications to conform with current practices. Allowing the legends to be direct applied has been used (for Type B signs) in the monthly statewide signing projects. This was a request by the sign manufacturer as a cost saving measure.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger	**Office: Materials**	**Item 11**
Submittal Date: March 20, 2006	**Proposed Effective Date:** October 2006	
Article No.: 4115.04 **Title:** Aggregate Use Durability Requirements **Article No.:** 4115.05 **Title:** Coarse Aggregate for Surfacing and Repair and Overlay	**Other:**	

Specification Committee Action: Approved.			
Deferred:	**Not Approved:**	**Approved Date:** 4/13/06	**Effective Date:** 10/17/06

Specification Committee Approved Text:

4115.04 AGGREGATE USE DURABILITY REQUIREMENTS.

TABLE 4115.04 Aggregate use durability requirements.

Specification Number	Minimum Durability Class Required			Use
	3i	3	2	
2122, 2201, 2212, 2213, 2301, 2302, 2310, 2529, 2530 Interstate Primary Other~~*~~	X*	X*	X	PCC Paved Shoulders, Base, Base Repair, Base Widening, PCC Pavement, Widening, ~~Bonded~~ PCC Overlay, Finish Patches, and Bridge Approaches
2403, 2406			X	Structural Concrete, Concrete Structures
2405 (See 2403)			X	Foundations and Substructures
~~2406 (See 2403)~~	~~-~~	~~-~~	~~X~~	~~Concrete Structures~~
2407			X	Precast Units
2407 , 2501		X		Prestressed Units, Concrete Piles
2412 (See 2403)			X	Concrete Bridge Floors
2413 (See 2413.02A)			X	Surfacing, Repair & Overlay of Bridge Floors
2414 (See 2403)			X	Concrete Railings
2415 (See 2403)			X	Concrete Box, Arch & Circular Culverts
2416 (See 4145)			X	Rigid Pipe Culverts

2424			X	Shotcrete
~~2501 (See 2407)~~	~~-~~	~~-~~	~~X~~	~~Concrete Piles & Sheet Piles~~
2503 (See 2403)			X	Storm Sewers (Catch Basins, Intakes & Utility Access)
2504 (See 2403)			X	Sanitary Sewers (Utility Access)
2505 (See 2403)			X	Guardrails (Concrete End Anchorage)
2511, 2515 (See 2403)			~~*~~ X	PCC Sidewalks, Paved Driveways
2512 (See 2403)			~~*~~ X	PCC Curb & Gutter
2513 (See 2403)			X	Concrete Barrier
2516 (See 2403)			X	Concrete Walls and Steps
2517 Primary Other		X	 X	Railroad Approach Sections
2522 (See 2403)			X	Tower Lighting (Concrete Footings & Foundations)
2523 (See 2403)			X	Highway Lighting (Concrete Footings & Foundations)
2524 (See 2403)			X	Highway Signing (Concrete Footings & Foundations)
2525 (See 2403)			X	Traffic Signals (Concrete Footings & Foundations)

Notes:
* For patches and PCC base repair~~, pavement repair, sidewalks and curb and gutters~~, Class 2 durability or better aggregate will be required if the existing pavement was constructed of Class 2 or lower durability aggregate. If the existing pavement was constructed of Class 3 or Class 3i durability aggregate, the aggregate used in the repair shall be Class 3 or better and Class 3i, respectively.

4115.05 COARSE AGGREGATE FOR BRIDGE DECK SURFACING AND REPAIR AND OVERLAY.

Acquire from a Class 2 durability or better source meeting the following requirements:

Comments: The Office of Contracts asked what the default is if aggregate durability is not known or not stated in the contract documents. The committee agreed that it should be Class 2 durability, even on Interstates and Primary Routes. Since the pavement is already several years old, the patch does not need a higher class durability. The question was posed if the first two rows of the table could be combined. The Office of Materials will look into this. The question was posed if the word “Finish” should be removed from the second row. The Office of Materials will look into this.

Subsequent to the Specification Committee meeting, the Office of Materials concurred that Sections 2122, 2201, 2212, and 2213 may be combined with Sections 2301, 2302, 2310, 2529, and 2530.

Specification Section Recommended Text: See Member’s submitted text.

Comments: This item was deferred from the March 9th Specification Committee meeting.

Member's Requested Change (Redline/Strikeout):

4115.04 AGGREGATE USE DURABILITY REQUIREMENTS.

TABLE 4115.04 Aggregate use durability requirements.

Specification Number	Minimum Durability Class Required			Use
	3i	3	2	
2122, 2201, 2212, 2213 Interstate Primary Other*	X*	X*	X	PCC Paved Shoulders, Base, Base Repair, Base Widening
2301, 2302, 2310, 2529, 2530 Interstate Primary Other*	X*	X*	X	PCC Pavement, Widening, ~~Bonded~~ PCC Overlay, Finish Patches, and Bridge Approaches
2403, 2406			X	Structural Concrete, Concrete Structures
2405 (See 2403)			X	Foundations and Substructures
~~2406 (See 2403)~~	~~-~~	~~-~~	~~X~~	~~Concrete Structures~~
2407			X	Precast Units
2407 , 2501		X		Prestressed Units, Concrete Piles
2412 (See 2403)			X	Concrete Bridge Floors
2413 (See 2413.02A)			X	Surfacing, Repair & Overlay of Bridge Floors
2414 (See 2403)			X	Concrete Railings
2415 (See 2403)			X	Concrete Box, Arch & Circular Culverts
2416 (See 4145)			X	Rigid Pipe Culverts
2424			X	Shotcrete
~~2501 (See 2407)~~	~~-~~	~~-~~	~~X~~	~~Concrete Piles & Sheet Piles~~
2503 (See 2403)			X	Storm Sewers (Catch Basins, Intakes & Utility Access)
2504 (See 2403)			X	Sanitary Sewers (Utility Access)
2505 (See 2403)			X	Guardrails (Concrete End Anchorage)
2511, 2515 (See 2403)			* X	PCC Sidewalks, Paved Driveways
2512 (See 2403)			* X	PCC Curb & Gutter
2513 (See 2403)			X	Concrete Barrier
2516 (See 2403)			X	Concrete Walls and Steps
2517 Primary Other		X	X	Railroad Approach Sections

2522 (See 2403)			X	Tower Lighting (Concrete Footings & Foundations)
2523 (See 2403)			X	Highway Lighting (Concrete Footings & Foundations)
2524 (See 2403)			X	Highway Signing (Concrete Footings & Foundations)
2525 (See 2403)			X	Traffic Signals (Concrete Footings & Foundations)

Notes:
* For patches and PCC base repair~~, pavement repair, sidewalks and curb and gutters~~, Class 2 durability or better aggregate will be required if the existing pavement was constructed of Class 2 or lower durability aggregate. If the existing pavement was constructed of Class 3 or Class 3i durability aggregate, the aggregate used in the repair shall be Class 3 or better and Class 3i, respectively.

4115.05 COARSE AGGREGATE FOR BRIDGE DECK SURFACING AND REPAIR AND OVERLAY.
Acquire from a Class 2 durability or better source meeting the following requirements:

Reason for Revision:

Format problem on Interstate, Primary, and Other. Change 2310 from Bonded overlays to PCC overlays. Add missing work types that do not include aggregate durability class in the Article.

4115.05 need to add Bridge Deck to title so not to confuse with a PCC pavement overlay, since the description was omitted by imperative mood rewrite.

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: Troy Jerman / Dave Matulac	**Office:** Traffic & Safety	**Item 12**
Submittal Date: March 30, 2006	**Proposed Effective Date:** October 17, 2006	
Section No.: 4186 **Title:** Signing Materials	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 4/13/06	**Effective Date:** 10/17/06

Specification Committee Approved Text: See Specifications Section Recommended Text.

Comments: See Reason for Revision and Comments below.

Specification Section Recommended Text:

4186.01 Description.

Delete the first paragraph.

~~Except as modified by contract documents, signs shall be made according to the standards established in the 1979 Standard Highway Signs Manual as published by the United States Department of Transportation.~~

4186.03, A, 1, Permanent Signs and Devices.

Replace the third sentence.

The legend on green signs shall be accomplished with white Type III or IV retroreflective sheeting that is direct applied~~ or with detachable copy~~.

Replace the fifth sentence.

The legend on blue or brown signs shall be accomplished using either transparent ink that is reverse silk screened on white Type III or IV sheeting, with white ~~t~~Type III or IV retroreflective sheeting that is direct applied~~, or with detachable copy~~.

Type III or IV retroreflective sheeting shall be used for permanent road closure barricades.

4186.06 SIGN FABRICATION.

Delete the third sentence of the first paragraph.

~~Hole drilling for detachable copy may be done after the application of sheeting.~~

4186.06, B, Legend.

Delete the entire article.

~~**B. Legend.**~~
~~Letters and numerals shall conform with the current edition of "Standard Alphabets for Highway Sign," printed by the U.S. Department of Commerce. Numeral-to-numeral spaces and letter-to-~~

~~letter spaces, including uppercase-to-lowercase letter, lowercase-to-lowercase letter, and capital-to-capital letters, shall also conform with the "Standard Alphabets for Highway Signs.~~

4186.06, C, Detachable Letters, Numerals, Symbols, and Borders.

Replace the title and entire article.

C. ~~Detachable~~ Letters, Numerals, Symbols, and Borders.
~~Detachable l~~Letters, numerals, symbols, and borders shall be in accordance with the details shown in the contract documents. ~~consist of sheeting applied to a properly prepared, flat sheet aluminum or galvanized, phosphatized steel base. The color and type of sheeting shall be specified in the contract documents.~~

~~Sheet base metal shall be 0.063 inch (1.6 mm) sheet, and thickness tolerances shall comply with requirements of Article 4186.02. The metal for the detachable items shall be of the same type as the sign blank.~~

~~Letters, numerals, and symbols shall be cut to the required shape and dimensions, and holes shall be drilled at locations indicated in the scale drawings furnished to the contractor.~~

~~Borders shall be cut to the widths and radii specified in the contract documents. Borders having widths of 1 inch (25 mm) and 1 1/2 inches (40 mm) shall have holes located 1/2 inch (13 mm) from each end and intermediate holes at intervals not greater than 8 inches (200 mm). Borders having a width of 2 (50 mm), 1 1/2 (65 mm), and 3 inches (75 mm) shall have two holes at each end. Each hole shall be located 1/2 inch (13 mm) from the end and from the edge. Intermediate holes shall be at intervals not greater than 8 inches (200 mm) located 1/2 inch (13 mm) from the edge on alternate sides of the strip. All holes shall be drilled no larger than 0.166 inch (4.72 mm).~~

~~After fabrication and prior to application of the sheeting, the cutout letters, numerals, symbols, and borders shall be degreased and etched according to the sheeting manufacturer's recommendations.~~

The border strip on the left and right edges of each sign shall be set in far enough from the edge to accommodate installation of the required trim molding without reducing the border width. ~~The border width shall be as specified in the contract documents.~~

4186.06, D, Other Details.

Delete the second paragraph

~~Hole locations and corner radii are shown on sign drawings available from the Highway Division.~~

4186.09, D, Detachable Message Fasteners.

Delete the entire article.

~~D. Detachable Message Fasteners.~~
~~Detachable letters, symbols, and borders shall be attached to the metal sign background with rivets.~~

~~Letters, numerals, and symbols consisting of flat sheet aluminum faced with reflective or nonreflective sheeting shall be offset from the sign background by use of rivet sleeves 1/8 inch (3.2 mm) long. Sleeves shall be cut from rigid aluminum tubing of 3/16 inch (5 mm) I.D. by 5/16 inch (8 mm) O.D.~~

~~Rivets shall be aluminum, pull through, hollow, blind rivets with a diameter of 1/8 inch (3.2 mm) and with a grip range of 0.313 inch (8 mm) to 0.375 inch (9.5 mm).~~

~~Spacing shall be determined by character size and shape, but in no case shall it be greater than 8 inches (200 mm) on centers. The Engineer shall designate those fastener heads that are to be painted to match reflective sheeting.~~

Comments:

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

Section 4186. Signing Materials.

4186.01 DESCRIPTION.
~~Except as modified by contract documents, signs shall be made according to the standards established in the 1979 Standard Highway Signs Manual as published by the United States Department of Transportation.~~

4186.03 REFLECTIVE SHEETING.

A. Utilization of Reflective Sheeting.

1. Permanent Signs and Devices.
Unless otherwise specified, all signs with yellow, green, or red, blue or brown background shall use Type III or IV retroreflective sheeting. The legend on white and yellow signs shall be accomplished with black nonreflective sheeting that is direct applied, or silk screened with black opaque ink. The legend on green signs shall be accomplished with white Type III or IV retroreflective sheeting that is direct applied ~~or with detachable copy~~. The legend on red signs shall be accomplished using either transparent red ink that is reverse silk screened on white Type III or IV sheeting, or with white Type III or IV retroreflective sheeting that is direct applied on a red Type III or IV retroreflective sheeting background. The legend on blue or brown signs shall be accomplished using either transparent ink that is reverse silk screened on white Type III or IV sheeting, with white T~~t~~ype III or IV retroreflective sheeting that is direct applied~~, or with detachable copy~~.

4186.06 SIGN FABRICATION.
Fabrication of all sign blanks and panels shall be accomplished in a uniform and high quality manner. All fabrication, including shearing, cutting, and hole punching or drilling, shall be completed prior to metal degreasing and application of reflective sheeting~~. Hole drilling for detachable copy may be done after the application of sheeting.~~ Sign blanks and panels shall be cut to size and shape and shall be free of buckles, warp, dents, cockles, burrs, and defects resulting from fabrication.

Delete current Article 4186.06B (Legend) and re-letter paragraphs C and D to B and C, respectively.

B. ~~Detachable~~ Letters, Numerals, Symbols, and Borders.
~~Detachable~~ Letters, numerals, symbols, and borders shall be in accordance with the details shown in the contract documents. ~~consist of sheeting applied to a properly prepared, flat sheet aluminum or galvanized, phosphatized steel base. The color and type of sheeting shall be specified in the contract documents.~~

Delete paragraphs 2 – 6 of current Article 4186.06C.

The border strip on the left and right edges of each sign shall be set in far enough from the edge to accommodate installation of the required trim molding without reducing the border width. ~~The border width shall be as specified in the contract documents.~~

C. Other Details.

~~Hole locations and corner radii are shown on sign drawings available from the Highway Division.~~

4186.09 FASTENING ACCESSORIES.

Delete Article 4186.09D (Detachable Message Fasteners).

Reason for Revision: Updating Specifications to conform with current practices. Remove reference to Standard Highway Signs since it's already stated in Section 2524 (Highway Signing). Allow the use of direct applied legends (letters, numerals, symbols, and borders) for Type B signs, as opposed to detachable legends. Removing all references to the use of detachable legends for Type B signs.

County or City Input Needed (X one)			**Yes**	**No** X	
Comments: Updating Specifications to conform with current practices.					
Industry Input Needed (X one)			**Yes**	**No** X	
Industry Notified:	**Yes**	**No** X	**Industry Concurrence:**	**Yes**	**No** X
Comments: Updating Specifications to conform with current practices. Allowing the legends to be direct applied has been used (for Type B signs) in the monthly statewide signing projects. This was a request by the sign manufacturer as a cost saving measure.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Tom Reis			**Office:** Specifications		**Item 13**
Submittal Date: March 30, 2006			**Proposed Effective Date:** July 18, 2006 letting		
Developmental Specification: DS-01075 **Title:** Night Work Lighting			**Other:**		
Specification Committee Action: Approved. This item will be made incidental to Mobilization.					
Deferred:	**Not Approved:**	**Approved Date:** 4/13/06		**Effective Date:** 7/18/06	
Specification Committee Approved Text: This item will be made incidental to Mobilization. A new graphic will be included which reflects updated dimensions for the sign.					
Comments: District 6 noted that some plans require nighttime lighting, while others allow it at the contractor's option. The Specifications Section state this is good reason to continue making nighttime lighting and incidental item. The Office of Construction noted that traffic control subcontractors have stated that signing companies are not providing the lighting, so it should not be included in Traffic Control. The suggestion was made to make it incidental to Mobilization. The Office of Contracts agreed.					
Specification Section Recommended Text: See Developmental Specification					
Comments: Requested by Work Zone Safety Committee.					
Member's Requested Change (Redline/Strikeout):					
Reason for Revision: Modify sign size to allow smaller, yet readable sign and modify the MOM and BOP to make Night Work Lighting a separate bid item, not incidental to traffic control.					
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:					

DS-01075
(New)

Iowa Department of Transportation

DEVELOPMENTAL SPECIFICATIONS
FOR
NIGHT WORK LIGHTING

Effective Date
April 18, 2006

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

010075.01 DESCRIPTION
This work consists of furnishing, installing, operating, maintaining, moving, and removing night time lighting to illuminate construction work areas for night work when construction activities (vehicles, equipment, or workers) are within 15 feet (4.6 m) of an open lane of traffic. Night work is defined as work performed between 30 minutes before sunset and 30 minutes after sunrise.

010075.02 LIGHTING PLAN
The Contractor shall submit a lighting plan to the Engineer for review no later than the Preconstruction Conference. The lighting plan shall show the areas to be illuminated, type and layout of the lighting systems, and calculations of the averaged maintained lighting intensity.

Night work lighting shall be provided in areas where construction equipment or workers are active, and shall extend a minimum of 50 feet (15.2 m) ahead and behind such equipment or workers. The lighting shall provide a minimum intensity of 5 foot candles (54 lux) over the entire work area described above. The light sources shall be positioned to not interfere with or impede traffic in any direction and not cause glare for motorists or spillover onto adjacent properties.

Illumination may be accomplished by using a combination of portable floodlights, equipment lights, roadway lights (temporary or existing), or other lighting methods that will provide the required minimum lighting intensity.

The Engineer may require modifications to the lighting setup in order to fit field conditions.

01075.03 LIGHT METER
The Contractor shall furnish to the Engineer one light meter capable of measuring light intensity in foot candles (lux). Instructions for operating the light meter shall be provided to the Engineer. The light meter will remain the property of the Contractor upon completion of night work.

01075.04 TRAFFIC CONTROL
All vehicles, except ready mix trucks, hauling material to or from the work area during night work as described in Article 01075.01 shall display ~~an 18~~ a 16 inch by 48 inch (~~450~~ 400 mm by 1200 mm) sign

with the legend “DO NOT FOLLOW - INTO WORK AREA” as shown in the appendix of this specification. The sign shall be orange with black lettering using Type VII (Iowa) sheeting. The sign shall be kept clean in order to maintain its visibility.

All Contractor’s vehicles and equipment (except for hand operated equipment) operating within 15 feet (4.6 m) of an open lane of traffic and all vehicles and equipment entering or exiting the work area shall display amber high intensity rotating, flashing, or oscillating lights.

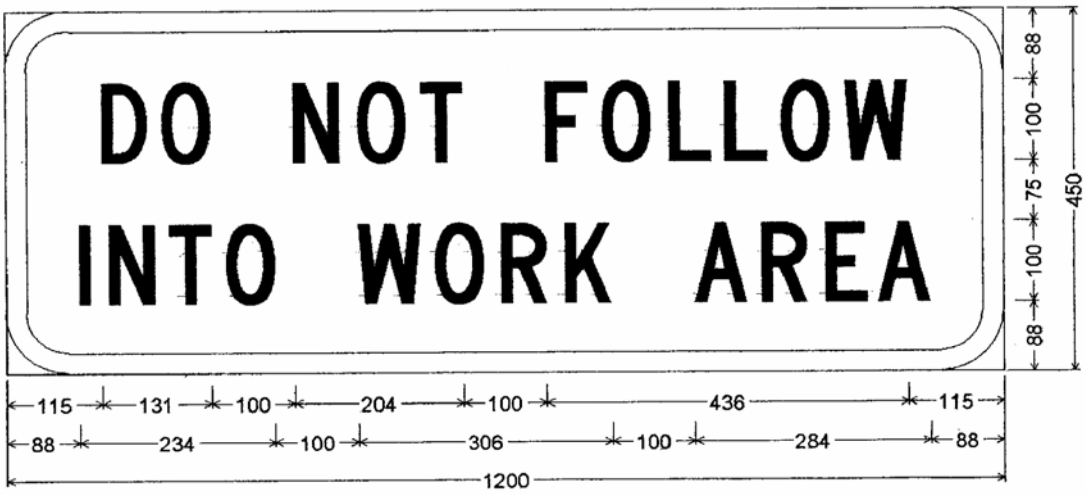
All traffic control devices shall be placed and removed when possible, during daytime hours, unless otherwise specified in the contract documents.

The Contractor shall continually monitor lights to ensure proper installation and working order.

01075.05 METHOD OF MEASUREMENT AND BASIS OF PAYMENT.
All costs associated with furnishing, installing, operating, maintaining, moving, and removing night work lighting ~~shall be considered incidental to the lump sum bid price for Traffic Control~~. shall be paid as the lump sum contract price for night work lighting.

APPENDIX

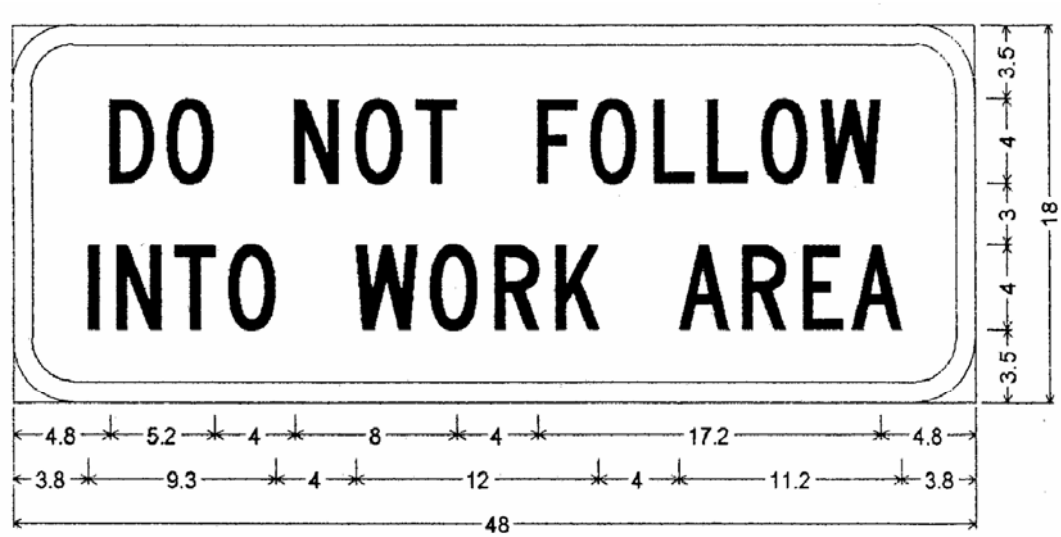
METRIC



75mm Radius, 25mm Border, Black on Orange;
"DO NOT FOLLOW" C; "INTO WORK AREA" C;
Table of widths and spaces.

115	D 56	16	O 58	101	N 56	21	O 58	18	T 51	100	F 51	16	O 58	22	L 51	18	L 51	16	O 58	18	W 76	115		
88	I 14	22	N 56	16	T 51	17	O 58	101	W 76	17	O 58	22	R 56	21	K 56	99	A 64	17	R 56	21	E 51	11	A 64	88

ENGLISH



3.0" Radius, 1.0" Border, Black on Orange;
"DO NOT FOLLOW" C; "INTO WORK AREA" C;
Table of widths and spaces.

4.8	D 2.2	0.7	O 2.3	4.0	N 2.2	0.8	O 2.3	0.7	T 2.0	4.0	F 2.0	0.7	O 2.3	0.8	L 2.0	0.7	L 2.0	0.7	O 2.3	0.7	W 3.0	4.8		
3.8	I 0.6	0.8	N 2.2	0.6	T 2.0	0.7	O 2.3	4.0	W 3.0	0.7	O 2.3	0.9	R 2.2	0.8	K 2.2	4.0	A 2.5	0.6	R 2.2	0.9	E 2.0	0.4	A 2.5	3.8

Discussion of Standard Specification Manual Format. **Item 14**

The Specifications Section sent committee members four formatting options for the next Standard Specifications manual:

Option 1: Conversion to imperative mood/active voice; maintain 6” X 9” page. This is similar to what Texas and North Carolina have done.

Option 2: Conversion to imperative mood/active voice, but switch to an 8 1/2" X 11" book (about half a dozen other states have 8 1/2" X 11" manuals, for example Wisconson and New York).

Option 3: Conversion to imperative mood/active voice with higher level of outlining (similar to the AASHTO Guide Specifications and SUDAS), but maintain 6" X 9" page.

Option 4: Conversion to imperative mood/active voice with higher level of outlining and switch to an 8 1/2" X 11" book.

The decision of the committee was to proceed with option 4.

The Specifications Section asked committee members to share these options with field personnel to get their opinions. The committee will discuss the options further at the next meeting.