Iowa Department of Transportation

MINUTES
OF
IOWA DOT SPECIFICATION COMMITTEE MEETING

October 11, 2007

Members Present:	John Adam	Statewide Operations Bureau
	Tom Reis, Chair	Specifications Section
	Daniel Harness, Secretary	Specifications Section
	Keith Norris	District 2-District Materials
	Bruce Kuehl	District 6-District Construction
	Larry Jesse	Office of Local Systems
	Jim Berger	Office of Materials
	Doug McDonald	District 1-Marshalltown RCE
Members Not Present:	Gary Novey	Office of Bridges & Structures
	Roger Bierbaum	Office of Contracts
	John Smythe	Office of Construction
	Mike Kennerly	Office of Design
	Troy Jerman	Office of Traffic & Safety
Advisory Members Present:	Lisa Rold	FHWA
Others Present:	Chin-Ta Tsai	Office of Location and Environment
	Alan Beddow	Office of Location and Environment
	Tom Jacobson	Office of Construction
	Wayne Sunday	Office of Construction
	Ed Kasper	Office of Contracts
	Frances Todey	Office of Design
	Brad Azeltine	Office of Location and Environment

Tom Reis, Specifications Engineer, opened the meeting. The following items were discussed in accordance with the agenda sent October 5, 2007:

1. Article 1108.01, Subletting of Contract.

The Office of Contracts requested a change to lower the amount of work the prime contractor is required to complete with their own organization from 50% to 30%.

2. Article 1109.05, C, Retainage.

The Office of Construction requested a change modify the specifications to match the current practice of retainage retention within the Contractor Payment System.

3. **Article 2212.06, D, Patches by Count.**
Article 2212.06, I, Hot Mix Asphalt Mixture.
Article 2212.07, D, Patches by Count.
Article 2212.07, H, Hot Mix Asphalt Mixture.

The Office of Construction requested a change simplifying payment for partial depth patches by making payment for partial depth repair and partial depth finish patches the same.

4. **Article 2301.34, Method of Measurement (Utility Accesses and Intakes).**
Article 2301.35, Basis of Payment (Utility Accesses and Intakes).

The Specifications Section requested changes to the measurement and payment for adjusting utility accesses and intakes on PCC paving projects to align the specifications with actual design practice.

5. **Article 2505.03, B, 4, End Anchors and Terminals.**
Article 2505.07, C, Beam Guardrail End Anchors and Terminal Devices.

The Office of Construction requested changes to make drilling new anchor bolt holes incidental to installation of the terminal device.

6. **Article 2510.02, A, Portland Cement Concrete.**
Article 2547.02, Materials.
Article 4130.01, Revetment Description.

The Office of Location and Environment requested changes to the specifications for revetment to ensure the Iowa DNR regulations are being met.

7. **Article 2510.04, A, Removal of Pavement.**
Article 2510.05, A, Removal of Pavement.

The Specifications Section requested changes to payment for removal of intakes and utility accesses not be included in the payment for pavement removal.

8. **Section 2536, Asbestos Removal**

The Office of Location and Environment requested changes to reflect updates to Iowa Workforce Development and Iowa DNR rules.

9. **Section 4111, Class L Fine Aggregate for Concrete.**

The Office of Materials requested to add this section back into the Specifications.

10. **DS-011XX, Developmental Specifications for Erosion Control.**

The Office of Construction requested changes to DS-01037 to clarify charging of working days during mowing operations.

11. **DS-011XX, Developmental Specifications for Trenchless Construction.**

The Office of Construction requested changes to clarify welding requirements. The Specifications Section also requested changes to align this specification with the SUDAS specifications.

12. **DS-011XX, Developmental Specifications for Polymer-Modified Microsurfacing.**

The Office of Design requested the addition of a new Developmental Specification for Poly-Modified Microsurfacing.

13. DS-011XX, Developmental Specifications for Modular Lane Separator System.

The Office of Construction requested the addition of a new Developmental Specification for Modular Lane Separator System.

14. Section 2413, Bridge Floor Surfacing, Repair, and Overlay.

The Specifications Section requested a discussion concerning potential revisions to the depth of removal for bridge floor surfacing scarification.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Roger Bierbaum	**Office:** Contracts	**Item 1**
Submittal Date: September 18, 2007	**Proposed Effective Date:** 2008 New Spec Book	
Article No.: 1108.01 **Title:** Subletting of Contract	**Other:**	

Specification Committee Action: Approved as is.

Deferred:	**Not Approved:**	**Approved Date:** 10/11/07	**Effective Date:** 4/15/08

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: District 2 Materials noted there is objection to the changes from one of their Construction Technicians as a result of a history of problems with subcontractors related to overbidding and change orders. The Office of Construction noted Prime contractors will need to step up their management of subcontractors. District 6 noted they are looking into adding language to the Specifications (or perhaps creating a Developmental Specification) that will require Prime contractors to become more involved with their subcontractors.

Specification Section Recommended Text:

1108.01, Subletting of Contract.

Replace 50% with 30% in the first paragraph.

Comments:

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

1108.01 SUBLETTING OF CONTRACT.
The Contractor's own organization shall perform work amounting to not less than 30~~50~~% of the total contract cost unless otherwise specified in the contract documents. In order to meet this 30~~50~~% requirement, the Contractor shall not purchase any materials for a subcontracted item nor shall they place other contractor's employees on their payroll. Employees must be hired in accordance with the Affirmative Action hiring process as detailed elsewhere in the contract documents. Any item designated as a specialty item may be performed by subcontract, and the cost of any such specialty item as performed by subcontract may be deducted from the total cost before computing the amount of work required by the Contractor's organization. Any items that have been selected as specialty items for the contract are listed as such in the contract documents.

Reason for Revision: In the early 1980's the FHWA lowered the amount of work that the prime contractor had to complete with their own organization from 50% to 30%. The Iowa DOT however kept our requirement at 50%. The Speciation Committee in 1989 approved lowering the percentage on "selected" projects to 40%. In the mid-1990's the Specifications Committee lowered the percentage to 30% on selected projects.

The makeup of various work types in our current projects and the way we now package contracts makes it difficult on many projects for a single type of contractor to satisfy the 50% requirement. The effort to check projects to determine if the 30%-70% subcontract note, check contractors requesting to bid a project and then checking the Request for Subcontract adds additional work, but little benefit

added. Therefore the request is to change the 50% to 30% on all contracts.					
County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes** X	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes** X	**No**
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe	**Office:** Construction	**Item 2**
Submittal Date: September 6, 2007	**Proposed Effective Date:** April, 2008	
Article No.: 1109.05, C **Title:** Retainage	**Other:**	

Specification Committee Action: Approved with changes as noted.

Deferred:	**Not Approved:**	**Approved Date:** 10/11/07	**Effective Date:** 4/15/07

Specification Committee Approved Text:

1109.05, C, Retainage.

Replace the first paragraph:

Three percent of each progress estimate will be deducted and held as retainage on the first $1,000,000 paid on a contract.~~, with no a~~Additional retainage will be withheld to a maximum of $30,000 following a retainage release if subsequent work is performed ~~on the remainder of the contract payment amount~~.

Comments: The Office of Construction requested additional language that states the maximum additional retainage that will be withheld is $30,000.

Specification Section Recommended Text:

1109.05, C, Retainage.

Replace the first paragraph:

Three percent of each progress estimate will be deducted and held as retainage on the first $1,000,000 paid on a contract.~~, with no a~~Additional retainage will be withheld following a retainage release if subsequent work is performed ~~on the remainder of the contract payment amount~~.

Comments:

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

C. Retainage.

Three percent of each progress estimate will be deducted and held as retainage on the first $1,000,000 paid on a contract.~~, with no a~~Additional retainage will be withheld following a retainage release if subsequent work is performed. ~~on the remainder of the contract payment amount~~.

Reason for Revision: The Contractor Payment System withholds retainage until a $30,000 maximum is achieved. Therefore, a retainage release voucher will initiate retainage again as subsequent payments are made. The intent of this proposal is to align CPS with the Specifications. This was a finding in the 2006 FHWA Improper Payment review.

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

Comments:

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

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Kevin Merryman	**Office:** Construction	**Item 3**
Submittal Date: October 1, 2007	**Proposed Effective Date:** April 2008	
Article No.: 2212.06, D **Title:** Patches by Count **Article No.:** 2212.06, I **Title:** Hot Mix Asphalt Mixture **Article No.:** 2212.07, D **Title:** Patches by Count **Article No.:** 2212.07, H **Title:** Hot Mix Asphalt Mixture	**Other:**	

Specification Committee Action: Approved as is.

Deferred:	**Not Approved:**	**Approved Date:** 10/11/07	**Effective Date:** 4/15/07

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: None.

Specification Section Recommended Text:

2212.06, D, Patches by Count.

Replace the first sentence:

In addition to the measurement~~s~~ described in Paragraph~~s~~ B ~~and C~~, the Engineer will count the total number of patches placed full depth~~, and partial depth~~.

2212.06, I, Hot Mix Asphalt Mixture.

Add as a new article:

In addition to the measurement described in Paragraph C, the Engineer will measure the weight (mass) of HMA placed in partial depth patches in accordance with Article 2303.05. If the patch area is increased to accommodate milling equipment, only the quantities for the area designated by the Engineer will be measured for payment. Asphalt binder and tack coat will not be measured separately for payment.

2212.07, D, Patches by Count.

Replace the first sentence:

In addition to payment described in Paragraph~~s~~ B ~~and C~~, for the number of individual full depth ~~and partial depth~~ patches placed, the Contractor will be paid the contract unit price for each.

2212.07, H, Hot Mix Asphalt Mixture.

Add as a new article:

In addition to the payment described in Paragraph C, HMA for partial depth repair patches will be paid for in accordance with Article 2530.09, B, 3.

Comments:

Member's Requested Change (Redline/Strikeout):

2212.06 METHOD OF MEASUREMENT.
The Engineer will measure the quantities of the various items involved in base repair in accordance with the following provisions:

A. Cleaning and Preparation of Base.
For the length of pavement cleaned and prepared in accordance with the contract documents, the length shown in the contract documents will be considered the length of cleaning and preparation of base.

B. Full Depth Repair Patches.
Patches involving full depth removal of old pavement and its replacement with PCC or HMA will be computed in square yards (square meters) from measurements of the areas of concrete removed and replaced, except that each patch which is less than 2 square yards (2 m^2) in area will be counted as 2 square yards (2 m^2).

C. Partial Depth Repair Patches.
The area will be computed in square yards (square meters) from measurements of the patch areas.

D. Patches by Count.
In addition to the measurement~~s~~ described in Paragraphs B ~~and C,~~ the Engineer will count the total number of patches placed full depth~~, and partial depth~~. Patches in each traffic lane will be individually counted.

E. Surface Patches.
Surface patches will be measured in tons (megagrams) as provided in Article 2303.05, A.

F. Primer or Tack Coat Bitumen.
Primer or tack coat bitumen used for repair patches will not be measured for payment.

G. Hot Mix Asphalt (Composite Section).
The HMA for composite patches will be measured in accordance with Article 2529.13, C.

H. CD and CT Joints.

1. CD Joint Assembly
2. CT Joint

CD and CT Joints will be measured in accordance with Article 2529.13, B.

I. Hot Mix Asphalt Mixture.
In addition to the measurement described in Paragraph C, the Engineer will measure the weight (mass) of HMA placed in partial depth patches in accordance with Article 2303.05. If the patch area is increased to accommodate milling equipment, only the quantities for the area designated by the Engineer will be measured for payment. Asphalt binder and tack coat will not be measured separately for payment.

2212.07 BASIS OF PAYMENT.
For construction of the various items involved in the base repair, measured as specified above, the Contractor will be paid as follows:

A. Cleaning and Preparation of Base.
For the length of pavement cleaned and prepared, in accordance with the contract documents, the length shown in the contract documents, in miles (kilometers), the Contractor will be paid the contract unit price per mile (kilometer).

B. Full Depth Repair Patches.
For the number of square yards (square meters) of full depth repair patches placed, either PCC or HMA, the Contractor will be paid the contract unit price per square yard (square meter). This payment shall be full compensation for removal of the old pavement, restoring the subgrade or subbase, furnishing and installation of tie bars, restoring longitudinal reinforcement for continuously reinforced patches, furnishing and placing the patching material, including the asphalt binder, tack coat, curing, joint sealing, and backfilling the disturbed area.

Payment for overdepth patches will be made in accordance with Article 2529.14, A, 2.

C. Partial Depth Repair Patches.
For the number of square yards (square meters) of partial depth repair patches placed, the Contractor will be paid the contract unit price per square yard (square meters). This payment shall be full compensation for removal of old pavement in accordance with Article 1104.08 and for all materials and other items involved in construction of these patches.

D. Patches by Count.
In addition to payment described in Paragraphs B ~~and C,~~ for the number of individual full depth ~~and partial depth~~ patches placed, the Contractor will be paid the contract unit price for each. This payment shall be full compensation for sawing or cutting necessary, for furnishing and installation of dowel bars at patch edges, and for traffic control associated with that patch.

E. Surface Patches.
For the number of tons (megagrams) of surface patch measured for payment, the Contractor will be paid the contract unit price per ton (megagram). This payment shall include compensation for asphalt binder in the mixture. Tack coat shall be incidental to Surface Patches.

F. Hot Mix Asphalt (Composite Section).
The HMA for composite patches will be paid for in accordance with Article 2529.14, C.

G. CD and CT Joints.

1. CD Joint Assembly
2. CT Joint

CD and CT Joints will be paid for in accordance with Article 2529.14, B.

H. Hot Mix Asphalt Mixture.
In addition to the payment described in Paragraph C, the HMA for partial depth repair patches will be paid for in accordance with Article 2530.09, B, 3.

Reason for Revision: Partial depth repair patches are currently paid for differently than partial depth

finish patches. Partial depth repair patches are paid by square and count whereas partial depth finish patches are paid by square and weight of HMA used. The changes will simplify payment for partials by making payment for repair and finish partials the same.

Because the same count item is used both for partial and full-depth repair patches, problems often arise when either overruns or underruns significantly because the bid item price reflects a blended bid of both types of work. The proposed changes eliminate the payment for count on partial depth repair patches and pay using squares and weight of HMA. It also will eliminate the blending of bid prices for the count item for repair patches.

County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes** Y	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes** X	**No**
Comments: Gordon Smith with the Iowa Concrete Paving Association was notified and indicated that the industry has no problem with the change.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Tom Reis / Daniel Harness	**Office:** Specifications	**Item 4**
Submittal Date: 9/14/07	**Proposed Effective Date:** April 08	
Article No.: 2301.34 **Title:** Method of Measurement **Article No.:** 2301.35 **Title:** Basis of Payment	**Other:**	

Specification Committee Action: Deferred.

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

Specification Committee Approved Text:

Comments: District 6 Construction asked if "1 foot" should be changed to "1.0 feet". The Specifications Section stated they would look into this change. They noted there are a number of other situations in the Standard Specifications similar to this.

The Office of Design noted they have encountered a number of resurfacing projects for which adjustments less than 1 foot have been paid for. District 6 Construction noted designers seem to be treating fixtures located within the pavement different that those located outside of the pavement: inside the pavement, fixture adjustments are paid for regardless of how much they are adjusted, while outside of the pavement they are paid for if the adjustment is 1 foot or more. This is very common with city and consultant plans. The Office of Construction noted the Standard Specifications state adjustments to fixtures in HMA pavement are always paid for. The Specifications Section asked if fixture adjustments for PCC should be changed to match HMA.

The Office of Construction asked what the rationale was for making the break point 1 foot. It was explained that an adjustment of less than a foot can typically be done by adding rings, whereas an adjustment of more than a foot requires rebuilding the structure. The Office of Design noted that whether a utility access is adjusted or rebuilt may also be driven in part by the steps in the utility access. If adjusting the utility access results in difficulty reaching the steps, the utility access may need to be rebuilt.

District 6 noted there is a wide difference in prices for adjusting fixtures, depending on the type of fixture adjusted. The Office of Local Systems noted the common practice with locals is to make adjustments less than 1 foot incidental and to pay for adjustments of more than 1 foot.

The Specifications Section will bring this item back in November with similar language for PCC and HMA that states adjustments less that 1 foot are incidental and adjustments more than 1 foot are paid for. They will also add language that if the height of adjustment is not stated in the plans, it will be paid for as extra work. The Office of Construction noted that adjustments that are incidental will need to be identified in the plans.

Specification Section Recommended Text:

Comments:

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

2301.34. B, Reserved.

Replace the title and entire article:

2301.34, B, ~~Reserved~~ Adjustment of Utility Accesses and Intakes.
When the adjustment of a utility access or intake to the finished grade line involves a change in elevation of 1 foot (0.3 m) or less, this adjustment shall be made without extra compensation. When this adjustment involves a change in elevation more than 1 foot (0.3 m), each utility access and intake adjustment will be counted.

2301.35. B, Reserved.

Replace the title and entire article:

2301.35, B, ~~Reserved~~ Adjustment of Utility Accesses and Intakes.
When the adjustment of a utility access or intake involves a change in elevation more than 1 foot (0.3 m), each adjustment will be paid for as follows:

1. Utility Access, Rebuilding.
The Contractor will be paid the contract unit price for each utility access rebuilt.

2. Intake, Rebuilding.
The Contractor will be paid the contract unit price for each intake rebuilt.

Reason for Revision: The Design Manual states that adjustments greater than 1 foot for utility accesses and intakes are to be tabbed on Tab 104-11, Rebuilding of Intakes and Utility Accesses, and bid as Utility Access, Rebuilding and Intake, Rebuilding. The Standard Specifications currently state these are to be bid as extra work, which is contrary to what is actually being done.

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

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Wayne A. Sunday	**Office:** Construction	**Item 5**
Submittal Date: September 27, 2007	**Proposed Effective Date:** April 15, 2008	
Article No.: 2505.03, B, 4 **Title:** End Anchors and Terminals **Article No.:** 2505.07, C **Title:** Beam Guardrail End Anchors and Terminal Devices	**Other:**	

Specification Committee Action: Approved as is.

Deferred:	**Not Approved:**	**Approved Date:** 10/11/07	**Effective Date:** 4/15/08

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: The Office of Construction noted they added language requiring the use of a core bit. They explained that if reinforcing steel is encountered when using a hammer drill, the result is holes that are out of alignment. Hammer drills also tend to cause spalling on the backside of the concrete rail. Using a core bit will greatly reduce both of these problems.

Specification Section Recommended Text:

2505.03, B, 4, End Anchors and Terminals.

Add as the second and third sentences of the first paragraph:

When anchor bolt holes in concrete bridge end posts do not align correctly for the formed steel beam guardrail terminal connection, the Contractor shall drill new anchor bolt holes in the locations required for the terminal connection. Drilling of new anchor bolt holes shall be done with a core bit to ensure correct anchor bolt hole location and alignment.

2505.07, C, Beam Guardrail End Anchors and Terminal Devices.

Add as the second sentence:

Drilling of new anchor bolt holes in concrete bridge end posts for formed steel beam guardrail connection shall be incidental to the terminal device.

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 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 Anchors and Terminals.
End anchors and terminal devices of the type shown in the contract documents shall be installed. When anchor bolt holes in concrete bridge end posts are not correct for the formed steel beam guardrail terminal connection, the contractor shall drill new anchor bolt holes in the locations required for the terminal connection. Drilling of new anchor bolt holes shall be done with a core bit to ensure correct anchor bolt hole location and alignment.

Concrete required for end 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 4186.012 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 4186.12 shall be installed when indicated in the contract documents.

2505.04 RESERVED.

2505.05 LIMITATIONS.
Attachments to new concrete or to anchor bolts set in epoxy resin shall not be stressed until the new concrete or epoxy resin has attained an age of 3 calendar days. This time requirement may be lengthened by the Engineer during cool weather.

Grading work, if required, shall be completed prior to removal of any existing guardrail or installation of new guardrail.

When a roadway is open to traffic during construction, guardrail installations shall be completed within 5 working days from the day the structure, barrier rail, pavement, shoulder, or whichever is the controlling item of work, is sufficiently completed to allow guardrail installation. In areas where guardrail construction is not restricted by other construction, removal of existing guardrail, if any, and construction of new guardrail, except for end anchors requiring concrete, shall be completed on the same working day. Beam rail shall be fully connected to all posts. Guardrail with end anchors requiring concrete shall be ended with a Type E Terminal Section, a Type II Barricade and a Type A Warning Light, until the final anchor is completed. Concrete for the final end anchor shall be placed no later than the next working day.

When a roadway is closed to public traffic for construction, all guardrail installations shall be completed

before opening the road to traffic.

On a roadway that is open to traffic during guardrail construction, each guardrail installation exceeding the 5 working day completion requirement will be subject to a $100 per working day contract price adjustment.

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

D. Cable Guardrail End Anchors.

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.

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 anchors, and terminals. This payment will include hauling salvaged material to the stockpile site. Backfill of post and end 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 anchors, terminals, and remaining hardware will be incidental to the item.

For cable guardrail the number of posts, hook bolts, turnbuckles, compensating devices, end 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 Anchor and Terminal Devices.
The Contractor will be paid the contract unit price for each type of beam guardrail end anchor or terminal device. Drilling of new anchor bolt holes in concrete bridge end posts for formed steel beam guardrail connection shall be incidental to the terminal device.

D. 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.

Reason for Revision: On older existing bridges the existing anchor bolt holes in concrete bridge end sections for the formed steel beam guardrail were established for the specified terminal device connection at the time the bridge was built. Changes in terminal device connections have resulted in changes to the number and location of anchor bolt holes which require that new anchor bolt holes be drilled in the required location for the new terminal device connection. Due to the frequency in which this occurs this specification revision will include the drilling of the new anchor bolt holes as an incidental to the terminal device.

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

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Rost	**Office:** Location and Environment	**Item 6**
Submittal Date: September 28, 2007	**Proposed Effective Date:** April 2008 GS	
Article No.: 2510.02, A **Title:** Portland Cement Concrete **Article No.:** 2547.02 **Title:** Materials **Article No.:** 4130.01 **Title:** Revetment Description	**Other:**	

Specification Committee Action: Approved with changes as noted.

Deferred:	**Not Approved:**	**Approved Date:** 10/11/07	**Effective Date:** 4/15/07

Specification Committee Approved Text: For Articles 2510.02, A; 2547.02; and 4130.01, A, see the Specification Section Recommended Text.

4130.01, C, Revetment Description.

Replace the entire article:

C. Recycled PCC ~~revetment~~ pavement or broken concrete meeting the requirements of Materials I.M. 210 may be used as revetment with the approval of the Engineer.

- ~~Trim steel so that protrusions are less than 1/2 inch (12 mm)~~ All reinforcement material shall be cut flush with the flat surface of the concrete.
- A minimum of 50% of the ~~stone or~~ broken concrete revetment shall be composed of ~~beds or~~ slabs more than 5 inches (125 mm) thick.
- A minimum of 10% of the ~~beds or~~ slabs shall be thick enough to produce the required weight (mass) of ~~either~~ the ~~stone or~~ concrete with the greatest dimension not more than two times the smallest dimension.
- No petroleum based or HMA material shall be included in revetment material.

Comments: The Office of Construction noted that in the second bulleted item of 4130.01, C, "beds" should be deleted since "stone" was deleted. "Stone" and "beds" should also be deleted from the third bulleted item. The Statewide Operations Bureau asked if the last bulleted item of 4130.01, C is intended to include HMA. The Office of Location and Environment responded that it is. The Statewide Operations Bureau suggested adding in HMA for clarity.

Specification Section Recommended Text:

2510.02, A, Portland Cement Concrete.

Replace the second paragraph:

If PCC pavement or broken concrete is ~~to be~~ used as ~~riprap~~ revetment, it shall meet the requirements of Article 4130.01 ~~all protruding steel shall be cut to within 1 inch (25 mm) of encasing concrete~~. ~~The maximum size of broken concrete shall be approximately 0.25 square yard (0.2 m^2).~~

2547.02, Materials.

Replace the entire article:

Fill materials shall be furnished by the Contractor and shall not be obtained from the stream unless specifically allowed elsewhere in the contract documents. All fill material shall be clean

with less than 10% fines passing the #200 (75 µm) sieve, broken concrete ~~(with no exposed rebar)~~, revetment, or granular materials. Before placing broken concrete, all reinforcement material shall be cut flush with the flat surface of the concrete.

Material used for armoring shall be Class D or Class E revetment, or broken concrete ~~with no exposed steel~~ meeting the requirements of Section 4130.

4130.01, A, Revetment Description.

Replace the first item of the bulleted list:

- A minimum of 50% of the stone ~~or broken concrete revetment~~ shall be composed of beds or slabs more than 5 inches (125 mm) thick.

4130.01, C, Revetment Description.

Replace the entire article:

C. Recycled PCC ~~revetment~~ pavement or broken concrete meeting the requirements of Materials I.M. 210 may be used as revetment with the approval of the Engineer.

- ~~Trim steel so that protrusions are less than 1/2 inch (12 mm)~~ All reinforcement material shall be cut flush with the flat surface of the concrete.
- A minimum of 50% of the ~~stone or~~ broken concrete revetment shall be composed of beds or slabs more than 5 inches (125 mm) thick.
- A minimum of 10% of the beds or slabs shall be thick enough to produce the required weight (mass) of either the stone or concrete with the greatest dimension not more than two times the smallest dimension.
- No petroleum based material shall be included in revetment material.

Comments:

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

2510.02 REMOVAL OF PAVEMENT.

A. Portland Cement Concrete.

If PCC pavement or other broken concrete is to be placed in fills, all protruding steel shall be cut off to within 3 inches (75 mm) of encasing concrete. It shall be placed in alternating layers of broken concrete and soil with a maximum depth of either layer of 2 feet (0.6 m). Broken concrete shall not be placed within 2 feet (0.6 m) of final cross section. The maximum size of broken concrete shall be approximately 0.25 square yard (0.2 m^2).

If PCC pavement or broken concrete is to be used as ~~riprap, all protruding steel shall be cut to within 1 inch (25 mm) of encasing concrete~~ revetment, it shall meet the requirements of Article 4130.01. ~~The maximum size of broken concrete shall be approximately 0.25 square yard (0.2 m^2).~~

2547.02 Materials.

Fill materials shall be furnished by the Contractor and shall not be obtained from the stream unless specifically allowed elsewhere in the contract documents. All fill material shall be clean with less than 10% fines passing the #200 sieve, broken concrete ~~(with no exposed rebar)~~, revetment, or granular materials. Before placing broken concrete, all reinforcement material shall be cut flush with the flat surface of the concrete.

Material used for armoring shall be Class D or Class E revetment, or broken concrete ~~with no exposed steel~~ meeting the requirements of Section 4130.

4130.01 REVETMENT DESCRIPTION.

A. Broken limestone, dolomite, quartzite, or granite from an approved source as described in Materials I.M. 409.

- A minimum of 50% of the stone ~~or broken concrete revetment~~ shall be composed of beds or slabs more than 5 inches (125 mm) thick.
- A minimum of 10% of the beds or slabs shall be thick enough to produce the required weight (mass) of either the stone or concrete with the greatest dimension not more than two times the smallest dimension.

B. When the source test plot or service history is not available, meet the following requirements for virgin stone crushed to 3/4 inch to 1 1/2 inch (19 mm to 37.5 mm) nominal maximum sizes:

REVETMENT TYPE	REVETMENT QUALITY	TEST LIMITS	TEST METHOD
Primary projects; Class A & B revetment	Alumina	0.7	Iowa 222
All projects; Class E revetment	A Freeze	10	Iowa 211, Method A
	Secondary Pore Index	25	Iowa 219
Non-Primary projects; Class A & B revetment	C Freeze	5	Iowa 211, Method C
All projects; Class D revetment	C Freeze	10	Iowa 211, Method C
Erosion Stone	C Freeze	15	Iowa 211, Method C
Note: Revetment may pass either Alumina or A-Freeze for compliance.			

Abrasion loss for all revetment and erosion stone not to exceed 50% when tested according to AASHTO T 96.

C. Recycled PCC ~~revetment~~ pavement or broken concrete meeting the requirements of Materials I.M. 210 may be used as revetment with the approval of the Engineer.

- ~~Trim steel so that protrusions are less than 1.2 inch (12 mm).~~ All reinforcement material shall be cut flush with the flat surface of the concrete.
- A minimum of 50% of the ~~stone or~~ broken concrete revetment shall be composed of beds or slabs more than 5 inches (125 mm) thick.
- A minimum of 10% of the beds or slabs shall be thick enough to produce the required weight (mass) of either the stone or concrete with the greatest dimension not more than 2 times the smallest dimension.
- No asphalt or petroleum based material shall be used or included in revetment material.

Reason for Revision: The Iowa DNR requires reinforcement material to be cut flush with the flat

surface when using broken concrete as revetment. The Office of Location and Environment has learned that certain articles are not consistent with the requirements of DNR permits regarding flush cut reinforcement material in revetment. In addition, contractors at an Associated General Contractors of Iowa meeting in September 2007 indicated that the language for flush cut rebar is not clear in the general specifications.

We propose modification of articles 2501.02, 2547.02, and 4130.01 to clearly indicate the need for flush cut reinforcement material, consistent with DNR requirements.

County or City Input Needed (X one)			**Yes**	**No** X	
Comments: Clarification of general specifications to ensure compliance with DNR permits.					
Industry Input Needed (X one)			**Yes**	**No** X	
Industry Notified:	**Yes**	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments: Clarification of general specifications to ensure compliance with DNR permits.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Tom Reis / Daniel Harness	**Office:** Specifications	**Item 7**
Submittal Date: September 18, 2007	**Proposed Effective Date:** April 2008	
Article No.: 2510.04, **Title:** Removal of Pavement **Article No.:** 2510.05, A Title: Removal of Pavement	**Other:**	

Specification Committee Action: Approved with changes as noted.

Deferred:	**Not Approved:**	**Approved Date:** 10/11/07	**Effective Date:** 4/15/08

Specification Committee Approved Text:

Comments: The Specifications Section noted they were not satisfied with their proposed language in Article 2510.04, B. They suggested eliminating their proposed change and perhaps deleting "utility accesses and intakes within the pavement area". The Committee decided the original language is fine, so no changes will be made to Article 2510.04, B.

Specification Section Recommended Text:

See members requested change for Article 2510.05, A. No changes will be made to Article 2510.04, B.

Comments:

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

2510.04, B, Removal of Pavement.

Replace the second sentence:

This quantity will include areas of utility accesses and intakes within the pavement area (but not the utility accesses and intakes themselves); and integral and separate curb.

2510.05, A, Removal of Pavement.

Replace the third paragraph:

The cost of saw cut~~, removal of utility accesses, intakes,~~ and integral and separate curb shall be included in the contract unit price for the Removal of Pavement, Pavement Scarification, or Removal and Crushing of Pavement.

Reason for Revision: The specifications currently state that payment for removal of intakes and utility accesses is included in Pavement Removal. The specifications also state that they will be paid for as Removal of Intakes and Utility Accesses. This is creating some confusion. In the March 24, 2004 Specification Committee meeting, the Committee approved changes proposed by the Office of Design that would make pavement removal and intake removal separate bid items. This was requested by the AGC so the Iowa DOT and SUDAS specifications would match. The text in the specifications needs to be revised to reflect that payment for removal of intakes and utility accesses is not included in the payment for pavement removal.

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: Jim Rost / Brad Azeltine	**Office:** Location and Environment	**Item 8**
Submittal Date: June 25, 2007	**Proposed Effective Date:** April 2008	
Section No.: 2536 **Title:** Asbestos Removal	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 10/11/07	**Effective Date:** 4/15/08

Specification Committee Approved Text: See Specification Section Recommended Text, except change the last paragraph of Article 2536.05 to read:

> The Contractor shall comply with current EPA, State, and Federal ~~Iowa Division of Labor~~ regulations and shall at all times take necessary precautions and provide necessary equipment to all persons employed on the project.

Comments: The Office of Location and Environment explained that in the past for projects that involved asbestos removal, bids could be accepted only from contractors licensed to perform asbestos removal. That rule has changed, and now bids can be accepted from contractors who provide documentation that they will subcontract the asbestos removal.

The Office of Location noted that one additional change needs to be added in the last paragraph of Article 2536.05: “Iowa Division of Labor” should be replaced with “State and Federal”.

Specification Section Recommended Text:

Section 2536. Asbestos Removal

Replace the entire section:

2536.01 DESCRIPTION.
This work is for removal, transportation, and disposal of asbestos ~~in~~ from buildings and structures scheduled for demolition or renovation. It shall be performed in accordance with 40 CFR Part 61, Subpart M. The work will be detailed in the contract documents.

2536.02 ~~LICENSING~~ BIDDING.
Bids will be received for this project ~~only~~ from bidders who hold a valid permit ~~are currently licensed~~ for this type of work issued by the Iowa ~~Division of Labor~~ Workforce Development, Labor Services Division, and from bidders who can provide documentation the work will be subcontracted to a contractor holding a valid permit.

2536.03 IDENTIFICATION OF WORK.
The buildings and structures will have been inspected by the Contracting Authority for the presence of asbestos. Suspect materials will have been sampled and tested. The results will be included in the contract documents.

Access to the buildings and structures by prospective bidders will be allowed. Arrangements for access will be made by the Office of Contracts, on request.

The Contracting Authority assumes no responsibility for the condition of the existing buildings and structures.

The Bidder shall inspect the sites identified in the contract documents from which asbestos is

to be removed prior to submittal of a bid.

The Contractor shall furnish, install, and maintain protective barricades, and fences for public safety during the contract period.

2536.04 RIGHTS OF POSSESSION OR OCCUPANCY.
The Contracting Authority has complete authority as to the possession of properties by any occupant. The Contractor, the Contractor's authorized subcontractors, their agents, or other individuals shall not have any right of authority to grant occupancy or to charge or collect any rents on any properties in this contract within the limits of this project.

2536.05 ASBESTOS REMOVAL.
The Contractor shall remove, transport, and dispose of all asbestos specified in the contract documents. This work shall be in compliance with current applicable local laws, rules, regulations, and ordinances and requirements of the U.S. EPA, the Iowa DNR, and the Iowa ~~Division of Labor~~ Workforce Development. The Contractor is expected to be fully knowledgeable of these requirements.

The Contractor shall provide workers licensed and trained in asbestos abatement in accordance with ~~347~~ 875 Iowa Administrative Code, Chapter ~~82~~ 155. These workers shall be on-site during the asbestos removal work and evidence that the required training has been accomplished by these persons shall be available for inspection during normal business hours.

This work shall be limited to asbestos removal. Salvage will not be permitted. Removal of pipes, ducts, or other items as units will be permitted only if future demolition is intended and the removal of these items is necessary for asbestos removal.

Some of the asbestos may not be friable. It may be possible to remove and dispose of this material in a manner to maintain its non-friable condition.

The Contractor shall monitor and test for air borne asbestos particles, during working hours, in accordance with the current EPA and Iowa ~~Division of~~ Labor Services Division regulations ~~within the area of the property or fence line~~. The Contractor shall conduct the operations to keep air borne particles ~~beyond this area~~ within the established regulation limits. The Contractor shall furnish the Engineer copies of correspondence, test results, recommendations, and other information to document the Contractor's compliance with these requirements.

When asbestos removal is completed, all work will be inspected for the presence of asbestos debris. Removal and cleaning shall continue until air monitoring clearance testing indicates a level of air borne fibers is equal to or less than the requirements in the current EPA and Iowa ~~Division of~~ Labor Services Division regulations. The Engineer shall be notified when this sampling is started. The Contractor shall provide documentation to the Engineer that the level of air borne fibers, after the work is completed, is equal or less than the requirements in the current EPA and Iowa ~~Division of~~ Labor Services Division regulations.

Test results for all air monitoring tests shall be furnished to the Engineer within 24 hours after the sampling has been completed.

The Contractor shall comply with current EPA and Iowa Division of Labor regulations and shall at all times take necessary precautions and provide necessary equipment to all persons employed on the project.

2536.06 REPORTING.
The Contractor shall give a minimum of 14 calendar days advance notification of the work to the Iowa DNR and the Iowa ~~Division of~~ Labor Services Division in accordance with 40 CFR Part 61, Subpart M and other applicable regulations concerning asbestos removal work. The Contractor shall also obtain any necessary authorizations for the work. The Contractor shall provide copies of all notification and authorization information to the Engineer prior to starting work.

Specific reporting, authorization, and notification requirements may be specified in the contract documents.

2536.07 REMOVAL AND DISPOSAL.
Removed asbestos shall be disposed of promptly. Transportation and disposal of waste containing asbestos shall be in accordance with current U.S. EPA and Iowa DNR regulations.

The Contractor shall identify or mark hauling vehicles used to transport asbestos waste, during loading and unloading, as required by the applicable regulations for transporting asbestos waste.

The Contractor shall also provide a Waste Shipment Record (WSR) to the waste site owner or operator at the time the waste is delivered to the waste disposal site. A copy of the WSR shall also be provided to the Engineer.

2536.08 SAFETY RULES.
The Contractor is solely responsible for enforcement of the safety rules for employees and any person the Contractor authorizes for entry into the work area. The Engineer and the Engineer's representatives will have a right of entry to the work area, and they will comply with the Contractor's safety rules.

2536.09 METHOD OF MEASUREMENT AND BASIS OF PAYMENT.
For the satisfactory Removal of Asbestos identified in the contract documents, the Contractor will be paid the lump sum contract price. This payment shall be full compensation for removal of asbestos, transporting asbestos, and disposal of asbestos at an approved disposal site. It shall also include the cost of all labor, monitoring, materials, equipment, permits, disposal fees, and preparation of and filing reports, notifications, and records.

Adjustment of contract price for Removal of Asbestos which is identified in the contract documents will not be allowed should any buildings from which asbestos is to be removed, be altered or damaged by others during the period of time between inspection by bidders and asbestos removal.

Partial payments may be paid as the work progresses, as authorized by the Engineer. Should asbestos be discovered, in addition to that identified in the contract documents, removal of the additional asbestos will be paid for as extra work, in accordance with Article 1109.03, B.

Comments:

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

Section 2536. Asbestos Removal

2536.01 DESCRIPTION.
This work is for removal, transportation, and disposal of asbestos ~~in~~ from buildings and structures scheduled for demolition or renovation. It shall be performed in accordance with 40 CFR Part 61, Subpart M. The work will be detailed in the contract documents.

2536.02 ~~LICENSING~~ BIDDING.
Bids will be received for this project ~~only~~ from bidders who hold a valid permit ~~are currently licensed~~ for this type of work issued by the Iowa ~~Division of Labor~~ Workforce Development, Labor Services Division, and from bidders who can provide documentation the work will be subcontracted to a contractor holding a valid permit.

2536.03 IDENTIFICATION OF WORK.
The buildings and structures will have been inspected by the Contracting Authority for the presence of

asbestos. Suspect materials will have been sampled and tested. The results will be included in the contract documents.

Access to the buildings and structures by prospective bidders will be allowed. Arrangements for access will be made by the Office of Contracts, on request.

The Contracting Authority assumes no responsibility for the condition of the existing buildings and structures.

The Bidder shall inspect the sites identified in the contract documents from which asbestos is to be removed prior to submittal of a bid.

The Contractor shall furnish, install, and maintain protective barricades, and fences for public safety during the contract period.

2536.04 RIGHTS OF POSSESSION OR OCCUPANCY.
The Contracting Authority has complete authority as to the possession of properties by any occupant. The Contractor, the Contractor's authorized subcontractors, their agents, or other individuals shall not have any right of authority to grant occupancy or to charge or collect any rents on any properties in this contract within the limits of this project.

2536.05 ASBESTOS REMOVAL.
The Contractor shall remove, transport, and dispose of all asbestos specified in the contract documents. This work shall be in compliance with current applicable local laws, rules, regulations, and ordinances and requirements of the U.S. EPA, the Iowa DNR, and the Iowa ~~Division of Labor~~ Workforce Development. The Contractor is expected to be fully knowledgeable of these requirements.

The Contractor shall provide workers licensed and trained in asbestos abatement in accordance with ~~347~~ 875 Iowa Administrative Code, Chapter ~~82~~ 155. These workers shall be on-site during the asbestos removal work and evidence that the required training has been accomplished by these persons shall be available for inspection during normal business hours.

This work shall be limited to asbestos removal. Salvage will not be permitted. Removal of pipes, ducts, or other items as units will be permitted only if future demolition is intended and the removal of these items is necessary for asbestos removal.

Some of the asbestos may not be friable. It may be possible to remove and dispose of this material in a manner to maintain its non-friable condition.

The Contractor shall monitor and test for air borne asbestos particles, during working hours, in accordance with the current EPA and Iowa ~~Division of~~ Labor Services Division regulations ~~within the area of the property or fence line~~. The Contractor shall conduct the operations to keep air borne particles ~~beyond this area~~ within the established regulation limits. The Contractor shall furnish the Engineer copies of correspondence, test results, recommendations, and other information to document the Contractor's compliance with these requirements.

When asbestos removal is completed, all work will be inspected for the presence of asbestos debris. Removal and cleaning shall continue until air monitoring clearance testing indicates a level of air borne fibers is equal to or less than the requirements in the current EPA and Iowa ~~Division of~~ Labor Services Division regulations. The Engineer shall be notified when this sampling is started. The Contractor shall provide documentation to the Engineer that the level of air borne fibers, after the work is completed, is equal or less than the requirements in the current EPA and Iowa ~~Division of~~ Labor Services Division regulations.

Test results for all air monitoring tests shall be furnished to the Engineer within 24 hours after the sampling has been completed.

The Contractor shall comply with current EPA and Iowa Division of Labor regulations and shall at all times take necessary precautions and provide necessary equipment to all persons employed on the

project.

2536.06 REPORTING.
The Contractor shall give a minimum of 14 calendar days advance notification of the work to the Iowa DNR and the Iowa ~~Division of~~ Labor Services Division in accordance with 40 CFR Part 61, Subpart M and other applicable regulations concerning asbestos removal work. The Contractor shall also obtain any necessary authorizations for the work. The Contractor shall provide copies of all notification and authorization information to the Engineer prior to starting work.

Specific reporting, authorization, and notification requirements may be specified in the contract documents.

2536.07 REMOVAL AND DISPOSAL.
Removed asbestos shall be disposed of promptly. Transportation and disposal of waste containing asbestos shall be in accordance with current U.S. EPA and Iowa DNR regulations.

The Contractor shall identify or mark hauling vehicles used to transport asbestos waste, during loading and unloading, as required by the applicable regulations for transporting asbestos waste.

The Contractor shall also provide a Waste Shipment Record (WSR) to the waste site owner or operator at the time the waste is delivered to the waste disposal site. A copy of the WSR shall also be provided to the Engineer.

2536.08 SAFETY RULES.
The Contractor is solely responsible for enforcement of the safety rules for employees and any person the Contractor authorizes for entry into the work area. The Engineer and the Engineer's representatives will have a right of entry to the work area, and they will comply with the Contractor's safety rules.

2536.09 METHOD OF MEASUREMENT AND BASIS OF PAYMENT.
For the satisfactory Removal of Asbestos identified in the contract documents, the Contractor will be paid the lump sum contract price. This payment shall be full compensation for removal of asbestos, transporting asbestos, and disposal of asbestos at an approved disposal site. It shall also include the cost of all labor, monitoring, materials, equipment, permits, disposal fees, and preparation of and filing reports, notifications, and records.

Adjustment of contract price for Removal of Asbestos which is identified in the contract documents will not be allowed should any buildings from which asbestos is to be removed, be altered or damaged by others during the period of time between inspection by bidders and asbestos removal.

Partial payments may be paid as the work progresses, as authorized by the Engineer.
Should asbestos be discovered, in addition to that identified in the contract documents, removal of the additional asbestos will be paid for as extra work, in accordance with Article 1109.03, B.

Reason for Revision: These changes are meant to reflect updates to Iowa Workforce Development and Iowa DNR rules.

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: Jim Berger	**Office:** Materials	**Item 9**
Submittal Date: August 23, 2007	**Proposed Effective Date:** April 2008	
Section No.: 4111 **Title:** Class L Fine Aggregate for Concrete	**Other:**	

Specification Committee Action: Approved as is.

Deferred:	**Not Approved:**	**Approved Date:** 10/11/07	**Effective Date:** 4/15/08

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: None.

Specification Section Recommended Text:

4111, Class L Fine Aggregate for Concrete.

Add as a new section:

4111.01 Description.
Natural sands resulting from disintegration of rock through erosional processes. Acquire mineral aggregate from an approved source as described in Materials I.M. 409. Use Class L fine aggregate in Class L concrete mixtures as specified in Materials I.M. 529.

4111.02 Gradation.
Meet the requirements for Gradation No. 1 of the Aggregate Gradation Table, Article 4109.02. When the fine aggregate is sieved through the following sieves: No. 4, No. 8, No. 16, No. 30, No. 50, and No. 100 (4.75 mm, 2.36 mm, 1.18 mm, 600 µm, 300 µm, and 150 µm), not more than 45% shall pass one sieve and be retained on the sieve with the next higher number.

4111.03 Quality.

TABLE 4111.03

Fine Aggregate Quality	Test Limits	Test Method
Shale and Coal	2.0% (maximum)	Materials I.M. 344
Mortar Strength	1.3 (minimum)	Iowa DOT Materials Laboratory Test Method 212

Comments:

Member's Requested Change (Redline/Strikeout):

Section 4111. Class L Fine Aggregate for Concrete

4111.01 DESCRIPTION.

Natural sands resulting from disintegration of rock through erosional processes. Acquire mineral aggregate from an approved source as described in Materials I.M. 409. Use Class L fine aggregate in Class L concrete mixtures as specified in Materials I.M. 529.

4111.02 GRADATION.

Meet the requirements for Gradation No. 1 of the Aggregate Gradation Table, Article 4109.02. When the fine aggregate is sieved through the following sieves: No. 4, No. 8, No. 16, No. 30, No. 50, and No. 100 (4.75 mm, 2.36 mm, 1.18 mm, 600 µm, 300 µm, and 150 µm), not more than 45% shall pass one sieve and be retained on the sieve with the next higher number

4111.03 QUALITY.

TABLE 4111.03

Fine Aggregate Quality	Test Limits	Test Method
Shale and Coal	2.0% (maximum)	Materials I.M. 344
Mortar Strength [(a)]	1.3 (minimum)	Iowa DOT Materials Laboratory Test Method 212

Reason for Revision:

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

Comments: Deleted in April 2006 during rewrite because of little use. Recent source can't meet 4110, but will meet 4111. Reinstate Article 4111. A 5% increase in cement is required by L mixes in IM 529.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe	**Office:** Construction	**Item 10**
Submittal Date: Oct. 2, 2007	**Proposed Effective Date:** January 16, 2008	
Developmental Specification: DS-01037 **Title:** Erosion Control.	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 10/11/07	**Effective Date:** 4/15/08

Specification Committee Approved Text:

Comments: District 6 asked for a definition of a mowing day. The Office of Contracts suggested using a definition similar to a working day. The Specifications Section noted they will add a definition to the DS based on the definition of a working day.

The Office of Contracts noted the question has come up whether contractors can be charged mowing days before the late start date on a contract. They offered as an example the situation where the Department wants a contractor to mow in the Fall, but the late start date isn't until Spring. They suggested adding the following verbiage as the third sentence of the first paragraph in Article 2601.04, N: "Notification may be issued as early as 15 calendar days following the execution of the contract."

Specification Section Recommended Text: See attached Draft 011XX.

Comments:

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

See attached Draft DS-011XX

Reason for Revision: The current DS for mowing is confusing to administer because of the reference to working days. This revision will clarify that working days are not charged for time allowed for mowing.

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

Draft DS-011XX
(Replaces DS-01037)

Iowa Department of Transportation

DEVELOPMENTAL SPECIFICATIONS
FOR
EROSION CONTROL

Effective Date
January 16, 2008

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.

Replace the first two paragraphs of **Article 2601.04, N**, Mowing, with the following:

Mowing may be required prior to permanent seeding and any time during the growing season following permanent seeding. The Contractor will be notified by the Engineer in writing prior to each mowing. Notification may be issued as early as 15 calendar days following the execution of the contract. The Contractor will be given 5 ~~working~~ mowing days, plus 1 additional day for each 50 acre (20 ha) increment, that has been requested to be mowed. A mowing day shall be defined as any calendar day, exclusive of Saturdays, Sundays, or a recognized legal holiday, on which weather or other conditions (not under control of the Contractor) will permit mowing operations to proceed for not less than 3/4 of a normal work day in the performance of a controlling item of work. When multiple projects are combined into a single contract, the ~~working~~ mowing days will be administered independently for each project. ~~Working~~ mowing days will be charged starting on the day following the Contractor's notification. A price adjustment will be assessed at a rate of $200.00 per ~~working~~ mowing day after the work was to be completed.

The Contractor shall use suitable equipment for mowing. Bunching or windrowing of mowed vegetation will not be permitted. When wet soil conditions result in rutting, mowing shall be suspended. Any rutting damage caused by the Contractor shall be repaired at the direction of the Engineer at no additional expense to the Contracting Authority. Hand equipment will be required for areas inaccessible to other equipment. The cutting height shall be approximately 6 inches (150 mm). More than one pass may be required for each mowing.

Replace the first paragraph of **Article 2601.08, E**, Watering Sod, with the following:

The Contractor shall provide watering equipment and an approved water supply before any sodding operation is begun. Six waterings will be required. Not more than 1 hour shall elapse between laying and initial watering of sod. The second, third, and fourth waterings shall be at 4 calendar day intervals, and the fifth and sixth waterings shall be at weekly intervals. All waterings shall be performed unless the Contractor is notified by the Engineer in writing at least 1 calendar day prior to the day the watering is to occur. A price adjustment will be assessed at a rate of $200.00 per day for each calendar day that the Contractor fails to complete the watering from the day watering is to commence.

Replace the first paragraph of **Article 2601.19**, Watering of Special Ditch Control and Slope Protection, with the following two paragraphs:

The Contractor shall provide watering equipment and an approved water supply before special ditch control or slope protection work is started. Following placement of the materials as specified, the area shall be watered not later than the day following placement. If the Contractor fails to water by the second day following placement has elapsed, a price adjustment will be assessed at a rate of $200.00 per calendar day until the watering has been completed.

Three additional waterings shall be applied at intervals of 5 to 8 calendar days. All waterings shall be performed unless the Contractor is notified by the Engineer in writing at least 1 calendar day prior to the day the watering is to occur. If the Contractor fails to have completed the watering after the 8th calendar day has elapsed a price adjustment will be assessed at a rate of $200.00 per calendar day, beginning on the 9th day, until the watering is completed.

Replace the second sentence of the ninth indented paragraph of **Article 2601.22,** Basis of Payment, with the following:

For the quantity of water applied to sod, Article 2601.08, E, and to special ditch control and slope protection, Article 2601.19, the Contractor will be paid the predetermined contract unit price per 1,000 gallons (kiloliter).

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Kyle Frame	**Office:** Construction	**Item 11**
Submittal Date: 06/12/07	**Proposed Effective Date:**	
Article No.: DS-01057 **Title:** Developmental Specifications for Trenchless Construction	**Other:**	

Specification Committee Action: Approved for inclusion in the April 2008 GS. A subsequent meeting with SUDAS revealed a number of additional changes that are required. SUDAS will not be releasing these changes until October 2008. The Specifications Section determined that it is best to address these additional changes and wait until October 2008 to include this in the GS.

Deferred:	**Not Approved:**	**Approved Date:** 10/11/07	**Effective Date:**

Specification Committee Approved Text: See attached Draft DS-01XXX

Comments: This item was in the 9/13/07 meeting, but was deferred to give time to determine if this Developmental Specification should be placed in the General Supplemental Specification to replace Section 2418.

Specification Section Recommended Text: See attached Draft DS-01XXX

Comments: The Specifications Section is including additional changes to bring this DS in line with the SUDAS specifications for trenchless construction.

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

2418.02 Materials
B. Steel Pipe
Replace the second paragraph:

~~Joints shall comply with American Welding Society Code. Fully weld all joints with full penetrating weld, including joints of casing pipes laid in open pipe trenches.~~

Joints and welding shall comply with American Welding Society Code D1.1M / D1.1. Fully weld all joints with full penetrating weld, including joints of casing pipes laid in open pipe trenches. Welders shall be qualified according to IM 560. Welds shall be in accordance with IM 558.

Reason for Revision: Clarify welding requirements

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

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

Draft DS-011XX
(Replaces DS-01057)

Iowa Department of Transportation

DEVELOPMENTAL SPECIFICATIONS
FOR
TRENCHLESS CONSTRUCTION

Effective Date
January 16, 2008

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.

Replace Section 2418 of the Standard Specifications with the following:

Section 2418. Trenchless Construction.

2418.01 DESCRIPTION
This work involves the installation of pipe that is forced through existing embankment from side to side by application of force. Installation of pipe may be by one of the following methods unless otherwise indicated in the contract documents:

A. Auger Boring: A boring method that utilizes a rotating cutting head to form the bore and a series of rotating augers inside a casing pipe to remove the spoil.

B. Compaction Method: Boring methods that displace soil radially rather than removing spoil. Bore hole may be formed with a push rod or impact mole.

C. Directional Drilling: A boring method for installing pipe from a surface launched drilling rig. A pilot bore is formed and then enlarged by back reaming. The pipe is then pulled in.

D. Pipe Ramming: A boring method that involves driving a steel casing pipe with a percussive hammer. The front end of the casing pipe may be open ended or closed. If open, spoil must be removed from the pipe.

E. Slurry Boring: A boring method which first forms a pilot bore by forcing a drill tube through the embankment. The pilot hole is then enlarged by reaming. As the hole is enlarged with the reamer, drilling fluid (slurry) is pumped into the hole to hold the soil cuttings in suspension. After reaming, the pipe is pulled into place.

F. Microtunneling: A boring method that consists of a remotely controlled pipe jacking operation utilizing a tunnel boring machine. Personnel entry is not required.

G. Pipe Jacking: A jacking method in which pipe is pushed into the ground with hydraulic rams while soil is simultaneously excavated. Excavation is normally completed with a tunnel boring machine. This method requires personnel to enter the tunnel during the excavation process.

H. Utility Tunneling: A method of forming large diameter tunnels. As excavation takes place at the front of the tunnel, a liner is constructed to temporarily support the tunnel. Upon completion of the tunnel the pipe is pushed in place.

I. Other methods: Other methods not described here may be allowed upon written approval of the Engineer.

2418.02 MATERIALS.

A. Concrete Pipe: Concrete pipe for culverts or casing to be installed by trenchless methods shall meet requirements of Section 4145 of the Standard Specifications for the type specified and the following requirements:

Pipe may be furnished as a single unit or sectional. If sectional, it shall have joints of a type that will assure positive engagement of the sections during and after placement. Square end pipe without proper connecting devices will not be permitted. Pipe having projections on exterior surfaces that requires an excavation larger than the body of the pipe will not be permitted.

B. Steel Pipe: Steel pipe for culverts or casing shall be new and meet the requirements of ASTM A 139, Grade B; ASTM A 252, Grade 2; or ASTM A 53, Grade B. Hydrostatic test will ~~should~~ be waived for non-pressure applications and can be designated as (no hydro).

Joints and welding shall comply with American Welding Society Code D1.1M/D1.1. Fully weld all joints with full penetrating weld, including joints of casing pipes laid in open pipe trenches. Welders shall be qualified according to Materials I.M. 560. Welds shall be in accordance with Materials I.M. 558.

Upon approval of the Engineer, connecting adjacent pieces of steel pipe during installation may be achieved by a CNC machined integral press fit connection such as Permalok, or approved equal, as long as loading and installation design criteria are met. The press fit connection of the pipe shall be installed in accordance with the pipe manufacturer's recommendation.

Casing Pipe Minimum Wall Thickness

NOMINAL DIAMETER INCHES (mm)	WALL THICKNESS, MINIMUM INCHES (mm)	
	UNDER HIGHWAY	UNDER RAILROAD
6 thru 14 (150 thru 355)	0.188 (4.78)	0.25000 (6.35)
16 (465)	0.188 (4.78)	0.28125 (7.14)
18 (450)	0.25 (6.35)	0.31250 (7.94)
20 (510)	0.25 (6.35)	0.34375 (8.73)
22 (560)	0.25 (6.35)	0.34375 (8.73)
24 (600)	0.281 (7.14)	0.37500 (9.53)
26 (660)	0.281 (7.14)	0.40625 (10.32)
28 (710)	0.312 (7.92)	0.43750 (11.11)
30 (750)	0.312 (7.92)	0.46875 (11.91)
32 (815)	0.312 (7.92)	0.50000 (12.70)
34 (865)	0.312 (7.92)	0.53125 (13.49)
36 (900)	0.344 (8.74)	0.53125 (13.49)
38 (965)	0.344 (8.74)	0.56250 (14.29)
40 (1015)	0.344 (8.74)	0.59375 (15.08)

42 (1050)	0.344 (8.74)	0.62500 (15.88)
44 (1120)	0.344 (8.74)	0.65625 (16.67)
46 (1170)	0.344 (8.74)	0.65625 (16.67)
48 (1200)	0.344 (8.74)	0.68750 (17.46)
50 (1270)	For sizes greater than 48 inch (1200 mm) diameter, consult the Engineer	0.71875 (18.26)
52 (1320)		0.75000 (19.05)
54 (1370)		0.78125 (19.84)
56 (1420)		0.81250 (20.64)
58 (1470)		0.81250 (20.64)
60 (1525)		0.84375 (21.43)
62 (1575)		0.87500 (22.23)
64 (1625)		0.90625 (23.02)
66 (1675)		0.93750 (23.81)
68 (1725)		0.93750 (23.81)
70 (1780)		0.96875 (24.61)
72 (1830)		1.00000 (25.40)

C. Casing Pipe Diameter: Minimum inside diameter as shown in the contract documents. If not shown, casing diameter shall not be less than 4 inches (100 mm) greater than the greatest outside diameter of the carrier pipe, including pipe bells.

D. Casing Pipe Filler

1. The space between the carrier pipe and casing pipe shall not be filled unless required by the contract documents. The space shall not be completely filled to avoid transfer of earth and live loads from the casing to the carrier pipe.

2. Fill material: Fill sand or flowable mortar.

E. ~~Carrier Pipe Guide~~ Casing Spacers

1. Manufactured ~~guide~~ casing spacers to position carried pipe in casing. Wood skids will not be allowed.

2. Material requirements for ~~carrier pipe guide~~ casing spacers shall be in accordance with the following:

~~a. Band/Panel: ASTM A 240, Type 304 stainless steel or ASTM A 36 for carbon steel.~~

~~b. Riser: ASTM A 240, Type 304 stainless steel or ASTM A 36 for carbon steel.~~

~~c. Liner: Elastomeric PVC per ASTM D 149.~~

~~d. Chock Skid/Runner: Abrasion resistant polymer with a low coefficient of friction.~~

~~e. Fasteners: ASTM A 193 Type 304 (18-8) Stainless Steel.~~

a. HDPE Band/Panel and Riser: ASTM D 638.

b. Stainless Steel or Carbon Steel Band/Panel and Riser: Type 304 stainless steel per ASTM A 240 or carbon steel per ASTM A 36.

1) Liner: Elastomeric PVC per ASTM D 149.

2) Spacer Skid/Runner: Abrasion resistant polymer with a low coefficient of friction.

3) Fasteners: Type 304 (18-8) stainless steel per ASTM A 193.

2418.03 CONSTRUCTION.
Before installation begins, the pipe or initial section of pipe shall be aligned on a prolongation of the line and grade shown in the contract documents or staked by the Engineer, and shall be held by braces, guideways, and other devices, to follow these lines and grades as close as possible as it progresses through the embankment.

A. Pipe Installation.

1. Casing Pipe or Un-cased carrier pipe Installation:

a. Install pipe by auger boring, pipe jacking, microtunneling, open-ended pipe ramming, directional drilling (back-reaming required), or utility tunneling.

b. Methods which displace excess soil, rather than removing it, such as impact moling, push rod, or closed end pipe ramming will not be permitted.

c. Water jetting will not be allowed.

d. Use a jacking collar, timbers, and other means as necessary to protect the driven end of the pipe from damage.

e. Fully support borehole at all times to prevent collapse. Insert pipe as ~~earth~~ soil is removed, or support bore with drilling fluid.

f. Fill annular space between the inside of the bore hole and the outside of the pipe if the space is greater than 1 inch (25 mm) using flowable mortar.

2. Carrier Pipe Installation Through Casing:

a. Clean dirt and debris from the casing pipe after installation.

b. ~~Attach pipe guides or casing chocks~~ Install casing spacers to pipe sections as necessary to support pipe barrel in accordance with pipe manufacturer's recommendation. ~~Do not allow pipe to be supported by joint bells.~~

~~1. Pipe guides: At least one per pipe section.~~

~~2. Lubricant for pipe guides: Drilling mud or flax soap. Do not use petroleum-based lubricants or oils.~~

1. Space according to pipe manufacturer's recommendation. As a minimum, place a spacer within 1 foot of each side of the joint and a maximum spacing of 6 feet.

2. Do not allow pipe to be supported by joint bells.

3. Lubricate casing spacers with drilling mud or flax soap. Do not use petroleum-based lubricants or oils.

c. ~~As~~Ensure that thrust loads will not damage carrier pipe joints. Provide thrust collars between joint shoulders of concrete pipe.

d. Provide timbers for sufficient cushioning between the end of the pipe pushed and the jacking equipment to prevent damage to the pipe. Do not allow steel jack face to thrust against unprotected pipe end.

e. Position jacks so that resultant force is applied along the centerline of the pipe, and that force is applied evenly to the entire end of the pipe.

f. Assemble pipe joints in the jacking pit before pushing the carrier pipe into the casing.

g. Close end of casing pipe around the carrier pipe with either:

1. A manufactured synthetic rubber casing end seal with a minimum 1/8 inch (32 mm) thickness and stainless steel bands and fasteners, or

2. An open joint masonry plug (do not use with flexible pipes).

Excavation for a limited distance ahead of the forward end of the pipe will be permitted when the soil is sufficiently stable to stand without danger of caving. In this case, the hole shall be trimmed to the outside diameter of the pipe to reduce resistance to jacking and to maintain contact between embankment material and outside surface of the pipe. In soft or unstable soil, the pipe shall be allowed to cut its way through the soil to avoid danger of caving and subsidence of the overlying embankment and roadway. If the pipe is of metal with a coating of corrosion resisting material, care shall be taken to protect the coating from damage during installation and excavating processes.

A small, high pressure, low volume water jet (4 gal/min maximum (15 L per minute maximum)) may be used to cut the soil within a steerable shield at the leading edge of the pipe being installed. The water and the operation shall be controlled so there is no change in the condition of the soil adjacent to the pipe and no flow of water along the outside of the pipe.

Obstructions to the progress of the pipe, such as roots, boulders, or parts of former structures, shall be removed. Deviations from line or grade to pass obstructions shall be avoided if such deviation will result in unsatisfactory fitting joints. The use of explosives for removing obstructions will not be allowed.

Provisions shall be made for keeping the excavation free from surface and seepage water during the jacking operation.

After the excavation is opened, the installation of the pipe shall follow immediately to avoid unnecessarily disturbing the stability of the embankment.

Backfilling shall be done in accordance with Article 2402.09 of the Standard Specifications. Surplus excavated material may be uniformly spread in the immediate vicinity of the work, as directed by the Engineer.

B. Accuracy of Placement.

When the location and grade line of the culvert have been determined by the position or elevation of the available outlet, insertion of the pipe shall be from the outlet end. When the location and grade have been determined by the position of the inlet and the elevation to which water must be lowered at the upstream end, insertion of the pipe shall be from the inlet end.

Install pipe at line and grade according to the following tolerances:

a. Carrier pipe shall be installed at its true starting elevation and grade within a maximum alignment deviation of the pipe centerline as specified in the contract documents.

b. When no deviation tolerances are specified in the contract documents, the following shall apply:

1) Gravity Pipe: horizontal ± 1.0 foot per 100 feet (0.3 m per 30 m) of tunneling and vertical ± 0.2 feet up to 200 feet (0.06 m per 60 m) of tunneling. An additional ± 0.1 foot (0.03 m) between 200 feet and 300 feet (60 m and 90 m) or a total of ± 0.3 feet (0.09 m) deviation between 200 feet and 300 feet (60 m and 90 m).

2) Pressure Pipe: horizontal ± 0.2 feet (0.06 m) and vertical ± 1.0 foot (0.3 m).

c. The Contractor shall provide additional fittings, utility accesses, or appurtenances needed to accommodate any horizontal or vertical misalignment, if allowed by the Engineer, at no additional cost to the Contracting Authority.

d. The Contractor will be allowed to correct errors in grade of a casing pipe in order to achieve design grade of the carrier pipe by pouring an invert in the casing pipe, or by shimming the carrier pipe to a uniform grade, provided adequate clearance remains for proper installation of the carrier pipe.

Deviation from the prescribed line that reverses the fall of the grade line through the culvert shall be cause for rejection.

Openings more than 1/4 inch (5 mm) in width between adjacent sections of concrete pipe shall be filled with 1:2 cement/sand mortar.

Abandoned tunnels shall be filled with either a PCC 3,000 psi (21 MPa) mixture of approximately 4 inch (100 mm) slump or flowable mortar.

2418.04 METHOD OF MEASUREMENT.
The quantity of Pipe Installed by Trenchless Construction, of the size and type specified, in feet (meters), will be the quantity shown on the contract documents, for each pipe to the nearest foot (0.1 m), but not including aprons. The quantity of pipe will be determined along the axis.

Normal excavation for pipe installed by trenchless construction will not be measured for payment, but shall be considered incidental to the pipe installed. Excavation for boulders smaller than one-third the diameter of the pipe being installed, or parts of existing structures identified in the contract documents will not be measured for payment, but shall be considered incidental to the price bid for trenchless construction. Excavation and removal of boulders larger than one-third the diameter of the pipe being installed, or parts of existing structures not identified in the contract documents will be paid for in accordance with Article 1109.03, B of the Standard Specifications.

2418.05 BASIS OF PAYMENT.
The Contractor will be paid the contract unit price for Pipe Installed by Trenchless Construction, of the type and size specified, per linear foot (meter). This payment shall be full compensation for equipment, labor, and materials to complete the work including sheeting, shoring, bracing, dewatering, pipe connections, excavation, and backfill. Installations that consist of both trenchless and conventionally placed pipe will include separate bid items for each portion.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Mike Kennerly / Francis Todey	**Office:** Design	**Item 12**
Submittal Date:	**Proposed Effective Date:** January 2008	
Developmental Specification: DS-011XX **Title:** Polymer-Modified Microsurfacing	**Other:**	

Specification Committee Action: Approved with changes as noted.			
Deferred:	**Not Approved:**	**Approved Date:** 10/11/07	**Effective Date:** 1/16/08

Specification Committee Approved Text: See attached Draft DS-011XX.

Comments: The Office of Design commented several Districts want to use microsurfacing. They explained that a hard aggregate is desired, and typically quartzite will be used as the aggregate.

The Office of Construction asked how well microsurfacing handles pavement markings. The Office of Design noted that it should handle pavement markings about as well as an HMA surface, but may wear off a little quicker since quartzite will commonly be used.

District 2 Materials noted the DS does not explicitly state the mixture must be approved before application. They suggested adding a statement to that effect. The Office of Design agreed. This will be added to the first paragraph of Article 011XX.02, F.

Specification Section Recommended Text:

Comments:

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

See attached Draft DS-011XX

Reason for Revision:

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

DRAFT SS-011XX
(New)

(Replaces SS-97024)

Iowa Department of Transportation

SUPPLEMENTAL SPECIFICATIONS
FOR
POLYMER-MODIFIED MICROSURFACING

Effective Date
January 16, 2008

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

011XX.01 DESCRIPTION.
This work consists of applying a properly proportioned, mixed, and uniformly spread mixture of polymer-modified emulsified asphalt, mineral aggregate, mineral filler, water, and necessary additives on existing roadway surfaces.

011XX.02 MATERIALS.

A. Polymer-Modified Emulsified Asphalt.
Polymer-Modified Emulsified Asphalt shall be a blend of CSS-1H emulsified asphalt and latex-based polymer. The polymer-modified emulsified asphalt shall be a quick-set polymer-modified CSS-1H.

The polymer material shall be milled or blended into asphalt or blended into emulsifier solution prior to emulsification process.

The amount and type of latex-based polymer modifier shall be determined by the laboratory performing the mix design. The amount required shall be based on the percent of asphalt by weight (mass) of asphalt, and 3% polymer solids shall be considered minimum. The Contractor shall provide to the Engineer at the time of delivery a certification from the emulsion manufacturer that 3% minimum polymers have been added to the emulsion.

The polymer-modified emulsified asphalt shall be CSS-1H and shall conform to the requirements of AASHTO M 208, with the following modifications and additions:

The storage stability and cement mixing test is not required for this emulsion.

TEST	QUALITY	REQUIREMENTS
AASHTO T 59	Residue after distillation	62% minimum

The standard distillation procedure shall be modified as follows:

The temperature on the lower thermometer shall be brought slowly to 350ºF +/- 10ºF

(177ºC +/- 5ºC) and maintained at this level for 20 minutes. The total distillation shall be completed in 60 minutes +/- 5 minutes from the first application of heat.

TEST ON RESIDUE

AASHTO T 53	Ring and Ball Softening Point	135ºF (57ºC) minimum

B. Aggregate.
The mineral aggregate shall be composed of a combination of crushed stone and mineral filler meeting the following requirements:

Crushed stone shall be produced from sources with an abrasion loss not greater than 30% and a freezing-and-thaw loss of not greater than 10 (Iowa Materials Laboratory Test Method 211, Method A) when tested using aggregate crushed to 3/4 inch (19 mm) maximum size. It shall be free of deleterious materials. The aggregate shall be of Type 2 or Type 3 friction classification in accordance with Materials I.M. T-203. The aggregate shall have a sand equivalent of not less than 60, as determined in accordance with AASHTO T 176.

The job mix (target) gradation shall be within the gradation band specified. The percent passing shall not go from the high end to the low end of the range for any two consecutive screens.

Sieve Size	Percent Passing
3/8" (9.5 mm)	100
#4 (4.75 mm)	90-100
#8 (2.36 mm)	65-90
#16 (1.18 mm)	45-70
#30 (600 µm)	30-50
#50 (300 µm)	18-30
#100 (150 µm)	10-21
#200 (75 µm)	5-15

C. Mineral Filler.
The mineral filler shall meet the requirements for Type I Portland Cement in accordance with Section 4101 of the Standard Specifications, and shall be free of lumps.

D. Water.
The water shall be in accordance with Section 4102 of the Standard Specifications.

E. Additives.
Additives may be added to the emulsion mix or any of the component materials to provide control of the quick-set properties and increase adhesion. Additives must be included as part of the mix design and be certified as to their compatibility with other components of the mix.

F. Composition and Quality of Mixture.
An approved mix design will be required prior to beginning placement of the microsurfacing mixture. The Contractor shall be responsible for the designing and proportioning the mixture. The mix design shall be prepared by a laboratory having three years experience in designing microsurfacing. The microsurfacing mixture shall be designed in accordance with the International Slurry Surfacing Association (ISSA) guidelines. The proposed mix design shall be submitted to the Materials Bituminous Engineer in the Central Laboratory for approval with a copy to the District Materials Engineer. The Central Laboratory will review the mix design within 14 calendar days. The proposed mix design shall include all test results, proportions of all ingredients of the mixture, and gradation of the aggregate proposed for use. The microsurfacing mixture shall not be applied without the approval of the Engineer.

The mix design shall designate the proportions to be used within the following limits:

- Mineral aggregate for microsurfacing: 10-20 pounds per square yard (dry weight) (5-11 kg/m^2 (dry mass)).
- Polymer-Modified Emulsified Asphalt, P.M. CSS-1H: residual asphalt 6% to 12% by dry weight (mass) of aggregate.
- Mineral Filler: 0.5% to 3.0% by dry weight (mass) of aggregate.
- Water: as needed to provide proper consistency.

Microsurfacing mixture shall meet the following requirements:

TEST	DESCRIPTION	REQUIREMENTS
ISSA TB-139	WET COHESION	
	@ 30 minutes (set)	10 lb-in (12 kg-cm) minimum
	@ 60 minutes (traffic)	17 lb-in (20 kg-cm) minimum
ISSA TB-109	Excess Asphalt by LWT	50 g/ft² (538 g/m²) maximum
ISSA TB-114	Wet Stripping	Pass (90% minimum)
ISSA TB-100	Wet Track Abrasion Loss	
	One hour soak	50 g/ft² (538 g/m²) maximum
	Six Day Soak	75 g/ft² (807 g/m²) maximum
ISSA TB-147A	Lateral Displacement	5% maximum
	Specific Gravity after 1000 cycles of 125 lbs. (57 kg)	2.10 maximum
ISSA TB-144	Classification	(AAA, BAA)
	Compatibility	11 grade points minimum
ISSA TB-113	Mix Time @ 77ºF (25ºC)	Controllable to 120 sec. minimum

011XX.03 CONSTRUCTION.

A. Equipment.

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

Individual volume or weight controls for proportioning each material to be added to the mix shall be provided. Each material control device shall be calibrated and properly marked.

The aggregate feed to the mixer shall be equipped with a revolution counter or similar device so that the amount of aggregate used may be determined at any time.

The emulsion pump shall be of a positive displacement type and shall be equipped with a revolution counter or similar device so that the amount of emulsion used may be determined at any time.

The mixing machine shall be equipped with a pressurized water system and a nozzle-type spray bar to provide water spray to the roadway surface immediately ahead of and outside the spreader box.

The mixing machine shall be equipped with fines feeder that delivers a uniform, positive, accurately-

metered, predetermined amount of mineral filler at the same time and location that the aggregate is fed.

The Contractor shall calibrate the mixing unit in the presence of the Engineer prior to the start of construction.

The Contractor shall provide nurse trucks to ensure that legal axle loads are maintained and a steady rate of progress in the laying of the microsurfacing is made.

B. Weather Limitations.
The microsurfacing material shall be spread only when the temperature on a shaded portion of the existing surface is 50ºF (10°C) and rising and when the weather is not foggy or rainy.

Microsurfacing material shall not be placed after October 1 without written permission from the Engineer.

C. Materials Handling.
Samples of individual materials and the microsurfacing mixture shall be furnished by the Contractor as specified in the contract documents.

1. Stockpiling of Aggregate.
The mineral aggregate shall be screened and weighed at the Contractor's stockpile prior to job site delivery. Precautions shall be taken to insure that stockpiles do not become contaminated with oversized rock, clay, and silt. Excess moisture which would interfere with the amount of asphalt required in producing the desired homogeneous mixture will not be permitted. The stockpile shall be kept in areas that drain readily. Segregation of the aggregate will not be permitted.

2. Storage of Emulsion.
The polymer-modified emulsified asphalt shall be weighed by approved scales or may be measured by volume. The Contractor shall provide suitable storage facilities for the polymer-modified emulsified asphalt. The facilities shall be equipped to prevent water from entering the emulsion, and shall be adequately heated to prevent freezing of the polymer-modified emulsified asphalt.

D. Preparation of Surface.
The area to be microsurfaced shall be thoroughly cleaned of all vegetation, loose aggregate, soil tracked onto the roadway and other objectionable material immediately prior to placing microsurfacing.

E. Test Strip.
A minimum 300 foot (100 m) test section to determine surface characteristics and set time shall be constructed and approved by the Engineer prior to commencing paving operations. A portion of the test section shall be at least 3/4 inch (19 mm) thick.

F. Spreading.
When required by local conditions, the surface shall be prewetted at a rate to dampen the entire surface without any free-flowing water ahead of the spreader box. The rate of application of the fog spray shall be adjusted during the day to suit temperatures, surface texture, humidity, and dryness of the pavement.

The microsurfacing mixture shall be spread homogeneously and uniformly by a mechanical type spreader box (normally 10 to 13 feet (3 to 4 m) wide), equipped with rotating paddles or spiral augers to agitate and spread the material uniformly throughout the box. Flexible seals shall be in contact with the road to prevent loss of the mixture from the box. A secondary strike off shall be provided to improve the surface texture. The spreader shall be maintained to prevent the loss of the

microsurfacing mixture during the surfacing of superelevated curves. The mixture shall be spread to fill all crack and minor surface irregularities and leave a neat appearing uniform non-skid application of the aggregate and asphalt on the surface.

All excess material that overruns in gutters shall be removed or squeegeed back onto the surface. All excess material shall be removed from ends of each days run immediately.

1. Application Rate.
Surface treatment shall be placed at a minimum application rate of 20 pounds per square yard (11 kg/m^2).

2. Finished Surface.
The Engineer will make inspections of the finished surface at any time. On any 30 square yards (25 m^2) of surface area inspected, the Contractor shall comply with the following:

a. No more than four tear marks greater than 1/2 inch (13 mm) wide and/or 4 inches (100 mm) long.

b. No tear marks greater than 1 inch (25 mm) wide and 3 inches (75 mm) long.

c. No transverse ripples or longitudinal streaks of 1/4 inch (6 mm) or more in depth.

3. Joints.
Longitudinal and transverse joints shall be constructed without any buildups, uncovered areas or unsightly appearance, and shall comply with the following requirements:

a. Longitudinal joints on lane lines shall be placed with less than 2 inches (50 mm) overlap on adjacent passes and no more than 1/4 inch (6 mm) difference in elevation between the adjacent passes.

b. Transverse joints shall be constructed with no more than 1/8 inch (3 mm) difference in elevation across the joint.

4. Edges.
Edges shall be placed neatly and uniformly along the roadway lane, shoulder and curb lines. Edges shall be placed flush with curbs. Edges shall be placed no more than +/- 2 inches (50 mm) horizontal variance in any 100 foot (30 m), along roadway lane and shoulder. At locations where feathered microsurfacing is identified in the contract documents, +/- 2 inches (50 mm) edge variance shall be eliminated.

G. Opening to Traffic.
Microsurfacing shall be sufficiently cured so that it will not deform or be picked up by vehicle tires. The Contractor shall provide signs, barricades, and flaggers necessary to control traffic around the areas under construction. Damage to the microsurfacing due to premature opening to traffic shall be repaired by the Contractor at no additional cost to the Contracting Authority.

Microsurfacing treatment shall be placed to sustain traffic within 1 hour after placement. The Contractor shall schedule microsurfacing placement to ensure that the traffic lanes are opened to traffic 30 minutes before sundown of the same working day. When traffic is maintained, the entire roadbed shall be free of construction equipment during non-working hours.

011XX.05 METHOD OF MEASUREMENT.
Microsurfacing will be measured by the Engineer as follows:

A. Aggregate for Microsurfacing.
Aggregate used in accepted portions of work will be measured by the weight (mass) of the individual

loads in tons (megagrams). No deductions will be made for moisture naturally occurring in the aggregate. The quantity of mineral filler will be included with the aggregate quantity.

B. Preparation of Surface for Microsurfacing.
For the length of pavement prepared in accordance with the contract documents, the length shown in the contract documents will be considered the length of preparation of surface for microsurfacing.

C. Emulsified asphalt for Microsurfacing.
Emulsified asphalt including polymer latex modifier used in accepted portions of work will be measured by volume or by weight (mass). No deductions will be made for water in approved emulsion. The volume shall be corrected for temperature to 60ºF (16ºC).

Materials wasted after being used for calibration purposes will be included in quantities measured for payment, but the amount shall not exceed 5 tons (5 Mg) of aggregate and 100 gallons (375 L) of emulsified asphalt. The quantities of materials used for construction of a test strip will be included in the quantities of the respective bid items.

011XX.06 BASIS OF PAYMENT.
Microsurfacing will be paid for as follows:

A. Aggregate for Microsurfacing.
For the number of tons (megagrams) of aggregate used, the Contractor will be paid the contract unit price per ton (megagram). This payment shall be full compensation for furnishing all labor, equipment, and materials (except emulsified asphalt) to complete the work and construction of the test strip.

B. Preparation of Surface for Microsurfacing.
For the length of pavement prepared for microsurfacing, in accordance with the contract documents, the length shown in the contract documents, in miles (kilometers), the Contractor will be paid the contract unit price per mile (kilometer).

C. Emulsified asphalt for Microsurfacing.
For the number of gallons (liters) of emulsified asphalt used, the Contractor will be paid the contract unit price per gallon (liter). This payment shall be full compensation for furnishing the emulsified asphalt.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Mark Bortle	**Office:** Construction	**Item 13**
Submittal Date: September 28, 2007	**Proposed Effective Date:** January 16, 2008	
Developmental Specification: DS-011XX **Title:** Modular Lane Separator System	**Other:**	

Specification Committee Action: Approved. The Office of Construction will work with the Office of Materials to create a Materials I.M. to attach to the DS.

Deferred:	**Not Approved:**	**Approved Date:** 10/11/07	**Effective Date:** 2/19/08

Specification Committee Approved Text: See attached Draft DS-011XX.

Comments: District 6 Construction asked how the systems are anchored. The Office of Construction noted there are several methods. Some use mechanical fasteners, while others use the weight of the system to hold itself in place. Some concern was expressed with using mechanical fasteners. The Office of Construction explained they had contacted the Office of Bridges and Structure regarding the mechanical fasteners, and the Office of Bridges and Structures had no objections to their use on bridges. The Office of Construction further explained that sometimes temporary barrier rail systems also use mechanical fasteners. The fasteners can be set and then pulled and patched without causing damage to the pavement.

District 6 Construction asked if there is an approved list of systems. The Office of Construction noted that they will create a Materials I.M. effective April 2008. The list of approved systems will be included on the DS until then.

In the draft DS included with the agenda, the Specifications Section included questions regarding post height and spacing, reflector size, and placement of bands of reflective sheeting. They would like to see maximum and minimum values included to assist manufacturers of systems in determining if their systems comply with the Department's specifications. The Office of Construction commented these issues could be addressed in the Materials I.M.

The Office of Design asked if there is a way to provide visual cues to drivers to assist them through curves, since the close spacing of the posts can create a "wall effect" making it difficult for drivers to see through a curve. The Office of Construction explained that the intended use for Modular Lane Separator Systems is for short segments, primarily to prevent drivers from making undesired turns. The system is too expensive to use for long segments of lane separation.

The Specifications Section will work with the Office of Construction and the Office of Materials to create a Materials I.M. and address the questions posed by the Specifications Section.

Specification Section Recommended Text: See attached Draft DS-011XX.

Comments: Similar language has already been successfully included as a plan note in a project.

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

See attached Draft DS-011XX.

Reason for Revision:

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

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

DRAFT DS-011XX
(New)

Iowa Department of Transportation

DEVELOPMENTAL SPECIFICATIONS
FOR
MODULAR LANE SEPARATOR SYSTEM

Effective Date
February 19, 2008

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.

01XXX.01 GENERAL.
The modular lane separator system consists of a combination of longitudinal curb units and upright flexible, retroreflective posts. The modular units shall interface with each other to form a continuous longitudinal channelizing system. The modular lane separator system shall be designed to allow a radius or curve as required by roadway geometry. The complete system shall be NCHRP 350 compliant. A copy of the FHWA approval letter may be required by the Engineer. All damaged curb units or posts shall be repaired or replaced by the Contractor no later than 24 hours after the damage is reported to the Contractor. All holes left in the pavement or bridge deck when the modular lane separator system is removed shall be repaired by the Contractor. Upon completion of the project, the modular lane separator system will remain the property of the Contractor.

01XXX.02 CURB UNIT
The curb shall be a modular design and shall be fastened to the underlying pavement or bridge deck according to the manufacture's recommendations. The curb unit shall be a mountable design to allow for emergency vehicle crossovers. Each curb unit shall have a minimum of one drainage scupper or other drainage system to allow for cross drainage under the curb module.

Each curb unit shall have a minimum length of 36 inches (0. 9 m), height of 2 to 4 inches (50 to 100 mm), and width of 7 to 12 inches (170 to 310 mm). Each curb unit shall be yellow if used in a work zone installation or a permanent installation adjacent to yellow pavement markings, and white if used in a permanent installation adjacent to white pavement markings.

01XXX.03 UPRIGHT POST
Each modular curb unit shall include at least one upright post. Posts shall be manufactured from flexible plastic. Posts shall be spaced uniformly along the channelizing system spaced at no greater than 42 inches (1.1 m). Posts shall be orange in color if used in a work zone installation, yellow if used in a permanent installation adjacent to yellow pavement markings, and white if used in a permanent location adjacent to white pavement markings.

Posts shall be a minimum of 22 inches (550 mm) in height, and a minimum of 2 inches (50 mm) width facing traffic. Two 6 inch (150 mm) bands of Type III/IV retroreflective sheeting shall be placed near the top of each post, with a maximum 4 inch (100 mm) space between the bands. The top band shall be

located no more than 2 inches (50 mm) from the top of the post. The retroreflective sheeting shall be white if used in a work zone or permanent installation adjacent to a white pavement marking, and yellow if used in a permanent installation adjacent to yellow pavement markings. Posts shall be easily replaceable under traffic conditions.

01XXX.04 LIST OF APPROVED MANUFACTURERS
The following modular lane separator systems are approved for use:

- Filtrona Extrusion, Davidson Traffic Control Products: FG 300 Curb System
- Impact Recovery Systems: Tuff Curb
- Qwick Kurb, Incorporated: Qwick Kurb System

Other modular lane separator systems may be approved by contacting the Manufactured Products Engineer at 515.239.1259

01XXX.05 METHOD OF MEASUREMENT
The Engineer will measure the length of the Modular Lane Separator System installed in feet (meters).

01XXX.06 BASIS OF PAYMENT
For the number of feet (meters) of Modular Lane Separator System measured, the Contractor will be paid the contract unit price per foot (meter). This payment shall include the installation, maintenance, repair, removal of the modular lane separator system, and all required pavement or bridge deck repair.

Item 14

Section 2413, Bridge Floor Surfacing, Repair, and Overlay.

The Specifications Engineer requested a discussion concerning potential revisions to the depth of scarification for bridge floor surfacing in Section 2413. The Specifications Section has been asked to create a Developmental Specification that will allow the surface preparation for bridge floor surfacing, repair, and overlay to be either: 0.25 inches, or 1.5 inches down to the top of the top mat of reinforcing steel. This has been requested on several county plans due to funding requirements.

Potential options:

1. Maintain the current bid items Bridge Floor Overlay (but add a clarification: 0.25 inch scarification) and Bridge Floor Repair Class A and add a bid item for Bridge Floor Overlay (1.5 inch scarification).
2. Maintain the current bid items as noted in Option 1 and consider any additional scarification to be incidental to Class A repair.
3. Other options.

Discussion

Since the Office of Bridges and Structures was unable to attend the meeting, the Specifications Section requested this item be deferred to the November Specification Committee meeting.