



**MINUTES
OF
IOWA DOT SPECIFICATION COMMITTEE MEETING**

October 12, 2017

Members Present:	Darwin Bishop Mark Brandl Donna Buchwald Jeff Devries Mark Dunn Eric Johnsen, Secretary Wes Musgrove Gary Novey Tom Reis, Chair Brian Smith	District 3 - Construction District 6 - Davenport RCE Office of Local Systems District 1 - Materials Office of Contracts Specifications Section Office of Construction & Materials Office of Bridges & Structures Specifications Section Office of Design
Members Not Present:	Charlie Purcell Willy Sorensen	Project Delivery Bureau Office of Traffic & Safety
Advisory Members Present:	Lisa McDaniel	FHWA
Others Present:	Mark Bortle Jeremey Vortherms	Office of Construction & Materials Office of Project Management

The Specification Committee met on Thursday, October 12, 2017, at 9:00 a.m. in the NW Wing, 1st Floor Conference Room. Tom Reis, Specifications Engineer, opened the meeting. The items were discussed in accordance with the agenda dated October 2, 2017:

The minutes are as follows:

- 1. Section 2306, Bituminous Fog Seal (Pavement).**
- Section 2308, Bituminous Fog Seal (Shoulders).**
- Section 2548, Milled Rumble Strips - HMA or PCC Surface.**
- Section 4142, Engineered Emulsion.**

The District 1 Materials and Specifications Section requested to allow the use of engineered emulsion for fog seals.

- 2. Article 2320.04, Method of Measurement (Polymer-Modified Microsurfacing).**

The District 1 Materials and Specifications Section requested to adjust the method of measurement when slag is used for polymer-modified microsurfacing.

3. Article 2431.02, B, 4, Subdrains (Segmental Retaining Wall).

Article 2432.02, B, 4, Subdrains (MSE Retaining Wall).

Article 4143.01, B, Pipe for Longitudinal Subdrains (Subdrain Pipe).

The Office of Construction and Materials requested to correct where rodent guard details can now be found.

4. Article 2528.01, C, Traffic Quality Control.

The Office of Construction and Materials requested to require Traffic Control Technicians renew their training every 5 years, requires all employees placing and removing traffic control to be supervised by a Traffic Control Technician, and includes an AGC of Iowa traffic control technician class as an approved class.

5. Article 2528.03, M, Limitations (Traffic Control).

Article 2550.04, Traffic Control.

The Office of Construction and Materials requested to require all contractor vehicles to display and operate amber or yellow colored warning lights when operating within 15 feet of an open lane of traffic (unless behind barriers) and when entering/exiting a work area day or night.

6. Section 2530, Partial Depth Finish Patches.

The Office of Construction & Materials and Specifications Section requested to incorporate DS-15022, Partial Depth Finish Patches into the Standard Specifications.

7. Section 2556, Dowel Bar Retrofit.

The Office of Construction & Materials and Specifications Section requested to incorporate DS-15010, Dowel Bar Retrofit into the Standard Specifications.

8. DS-15XXX, On-Call Contracting for High Tension Cable Guardrail Repair.

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

9. SS-15002, Supplemental Specifications for Project Management.

The Office of Construction & Materials requested approval of revisions to Supplemental Specifications for Project Management.

Form 510130 (08-15)



SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jeff De Vries / Eric Johnsen		Office: District 1 Materials / Specifications	Item 1
Submittal Date: 2017.05.04		Proposed Effective Date:	
Section No.: 2306 Title: Bituminous Fog Seal (Pavement) Section No.: 2308 Title: Bituminous Fog Seal (Shoulders) Section No.: 2548 Title: Milled Rumble Strips - HMA or PCC Surface Section No.: 4142 Title: Engineered Emulsion		Other:	
Specification Committee Action: Deferred to the November meeting.			
Deferred: X	Not Approved:	Approved Date:	Effective Date:
Specification Committee Approved Text:			
<p>Comments: The Office of Local Systems questioned the method of measurement. With little inspection on these projects and no requirement to measure the quantity of emulsion placed, there's no way to check the rate the emulsion was applied at.</p> <p>The District 3 Office asked if the 97% retroreflectivity number is a good number to use. This is what the only current approved manufacturer states in their product literature. This standard may be too high to be a requirement and we may need to use a lower number for final retroreflectivity.</p> <p>The engineered emulsion may be competitive, but most likely if the Contractor can avoid the pavement markings required when asphalt emulsion is used. This may necessitate bidding alternates or making the painting incidental to the fog seal.</p> <p>The District 1 Office requested to remove Article 4142.01, A. Allowing materials besides agricultural oil derivatives should bring more competition.</p> <p>The District 1 Office asked if we need separate bid items for the asphalt emulsion and engineered emulsion so that the Contracting Authority could require asphalt emulsion on roadways that had been recently painted. This could probably be handled by plan note or just allow the cheaper alternative to be used (engineered emulsion only versus asphalt emulsion and new pavement markings).</p> <p>The highlighted "(300)" in Table 4142.01-1 can be deleted.</p> <p>Some of the rates for engineered emulsion need to be reviewed.</p>			
Specification Section Recommended Text:			
2306, Bituminous Fog Seal (Pavement).			
<p>Replace the Section: 2306.01 DESCRIPTION. Clean the pavement surface and apply diluted asphalt emulsion to the entire pavement surface using a bituminous distributor.</p>			

2306.02 MATERIALS.

Unless the Engineer directs otherwise, use asphalt emulsion grade CSS-1 or SS-1 meeting the requirements of Section 4140 or engineered emulsion meeting the requirements of Section 4142.

2306.03 CONSTRUCTION.

A. Equipment.

Use equipment meeting the requirements of Articles 2001.12 and 2001.14.

B. Cleaning.

Immediately prior to placing the emulsion, clean the entire pavement surface. Use scrapers, compressed air, or other approved methods.

C. Dilution (Asphalt Emulsion Only).

Dilute the asphalt emulsion with water prior to application to the pavement surface. The dilution rate is one part of asphalt emulsion to four parts water.

D. General.

Calibrate the bituminous distributor to the specified target rate prior to start of work on the pavement surface.

E. Application.

1. Uniformly apply dilute asphalt emulsion at the rate of 0.12 gallon per square yard of pavement surface. Uniformly apply engineered emulsion at the rate of 0.02 gallons per square yard of pavement surface. The application rate may be reduced if directed adjusted by the Engineer based on texture, porosity, and age of pavement. For excessive application rates, the Engineer may require a light coat of sand. The Engineer may require brooming of ponded areas prior to placing traffic on the pavement.
2. Use safety and convenience to the public without soiling their vehicles as a controlling factor.
3. Apply asphalt emulsion at a width of one-half of the roadway plus an overlap of approximately 4 inches at the middle of the road. Cover each width in one application while the opposite one-half of the roadway is left open to public traffic.
4. Do not apply asphalt emulsion to bridge decks or railroad rails and flangeways.
5. For projects using engineered emulsion, demonstrate to Engineer at start of work the ability to retain 97% of initial retroreflectivity of pavement markings at no additional cost to the Contracting Authority. Use procedure in Materials I.M. 386 to determine retroreflectivity.

F. Limitations.

1. Do not place asphalt emulsion on a damp or wet surface unless the Engineer approves. ~~Work will not be allowed on Sundays or holidays, according to Article 1108.03.~~
2. Apply asphalt emulsion during weather conditions which allow satisfactory application. Do not apply asphalt emulsion when either the pavement temperature or the air temperature is below 60°F (50°F for engineered emulsion). Do not apply asphalt emulsion after August 31 without the Engineer's permission.
3. A sand dam or other approved means may be necessary to prevent emulsion from running on to the pavement adjacent to the work area in areas of superelevated curves.
4. Do not allow traffic on roadway surface until emulsion has fully cured.

G. Traffic Control.

1. Unless stated otherwise in the contract documents, furnish and install the following signs, including mounting devices:
 - a. "NO PAVEMENT MARKINGS" and "NEXT MILES" signs.

- Place at the beginning and end of the project. They may be mounted on posts or skids.
- b. **"NO PAVEMENT MARKINGS" signs.**
Place on each side of towns and on each side of intersections of Primary and County Roads. They may be mounted on posts or skids.
 - c. **"DO NOT PASS" signs.**
Place on the right-hand side of the road at the beginning of each no-passing zone. Mount on posts.
 - d. **"PASS WITH CARE" Signs.**
Place on the right-hand side of the road at the end of each no-passing zone. Mount on posts.
- 2. For projects using asphalt emulsion, the Contracting Authority will place new pavement markings and remove the signs when the project is complete.
 - 3. Traffic Control will be paid per Section 2528.

H. Scheduling.

- 1. A preconstruction conference will be required for this work. This will normally be a single conference for all work of this type in each residency.
- 2. At the preconstruction conference, provide the Engineer a probable schedule for work of this type in the District jurisdiction, including the sequence for each project.

2306.04 METHOD OF MEASUREMENT.

A. Asphalt Emulsion for Fog Seal (Pavement).

Gallons of undiluted asphalt emulsion as provided in Article 2307.04, B calculated from placement area and application rate.

B. Sand.

Not measured for payment.

2306.05 BASIS OF PAYMENT.

- A. Payment for Asphalt Emulsion for Fog Seal (Pavement) will be at the contract unit price per gallon for undiluted asphalt emulsion that is mixed and used on the project shown in the contract documents. Diluted asphalt emulsion that is delivered to the job site, but not applied to the roadway surface will not be considered for payment.
- B. Payment is full compensation for:
 - 1. Cleaning the pavement surface.
 - 2. Furnishing and applying the diluted asphalt emulsion including water for dilution (if applicable).
 - 3. Furnishing and applying sand cover.
 - 4. Brooming of ponded areas as necessary.
 - 5. Protecting the pavement adjacent to the work area in areas of superelevated curves.

2308, Bituminous Fog Seal (Shoulders).

Replace the Article:

2308.01 DESCRIPTION.

Apply diluted asphalt emulsion to the shoulder surface using a bituminous distributor.

2308.02 MATERIALS.

Use asphalt emulsion grade CSS-1 or SS-1 meeting the requirements of Section 4140 or engineered emulsion meeting the requirements of Section 4142, unless directed otherwise by the Engineer.

2308.03 CONSTRUCTION.

A. Equipment.

~~Meet the requirements of Section 2001.~~ Use equipment meeting the requirements of Articles 2001.12 and 2001.14.

B. Cleaning.

Immediately prior to placing the emulsion fog seal, clean the shoulder surface of foreign material. Use scrapers, compressed air, or other approved methods.

C. Dilution (Asphalt Emulsion Only).

Dilute the asphalt emulsion with water prior to application to the shoulders. The dilution rate is one part of asphalt emulsion to two parts of water. The Engineer will require documentation that the dilution is done properly.

D. Application.

1. Uniformly apply the diluted asphalt emulsion at the rate of 0.20 gallon per square yard of shoulder surface. Uniformly apply engineered emulsion at the rate of 0.02 gallons per square yard of pavement surface. The application rate may be reduced if directed adjusted by the Engineer based on texture, porosity, and age of pavement.
2. Use safety and convenience to the public without soiling their vehicles as a controlling factor.
3. Apply diluted asphalt emulsion so the entire shoulder surface is covered in one application.
4. Do not apply asphalt emulsion to bridge decks, PCC gore areas, or adjacent paved surfaces and painted edge lines. Replace edge lines obliterated by this operation at no additional cost to the Contracting Authority.

E. Limitations.

1. Do not apply asphalt emulsion on damp or wet surfaces without the Engineer's approval. ~~Work will not be allowed on Sundays or holidays, according to Article 1108.03.~~
2. Apply asphalt emulsion during weather conditions which allow satisfactory application. Do not apply asphalt emulsion when either the pavement temperature or air temperature is below 60°F (50°F for engineered emulsion). Do not apply asphalt emulsion after August 31 without the Engineer's permission.
3. A sand dam or other approved means may be necessary to prevent emulsion from running on the pavement in areas of superelevated curves.

F. General.

The asphalt emulsion as applied shall have an appearance satisfactory to the Engineer. Dilution rate (if applicable) and application rate may need to be adjusted to accomplish desired results.

G. Traffic Control.

Place traffic control according to Article 1107.09 and the appropriate traffic control detail. Traffic Control will be paid per Section 2528.

2308.04 METHOD OF MEASUREMENT.

A. Asphalt Emulsion for Fog Seal (Shoulders).

Gallons of undiluted asphalt emulsion as ~~provided in Article 2307.04, B~~ calculated from placement area and application rate.

B. Sand.

Not measured for payment.

2308.05 BASIS OF PAYMENT.

- A. Payment for ~~Asphalt~~ Emulsion for Fog Seal (Shoulders) will be at the contract unit price per gallon for undiluted asphalt emulsion that is ~~mixed and used on the project~~ shown in the contract documents. ~~Diluted asphalt emulsion that is delivered to the job site, but not applied to the roadway surface will not be considered for payment.~~
- B. Payment is full compensation for:
1. Cleaning the shoulder surface.
 2. Furnishing and applying the ~~diluted asphalt~~ emulsion including water for dilution (if applicable).
 3. Furnishing and applying sand cover.
 4. Brooming of ponded areas as necessary.
 5. Protecting the adjacent pavement and edge lines, including special protection and dams in areas of superelevated curves.

2548.01, Description.

Replace the last sentence of the Article:

Apply ~~diluted asphalt~~ emulsion to the milled shoulder rumble strips on HMA surfaces by means of a bituminous distributor.

2548.02, B, Asphalt Emulsion Fog Seal.

Replace the title and Article:

Asphalt Emulsion Fog Seal.

1. Use asphalt emulsion Grade CSS-1 or CSS-1h, meeting requirements of Section 4140 or ~~engineered emulsion meeting the requirements of Section 4142.~~
2. Dilute ~~the~~ asphalt emulsion with water prior to application to the milled shoulder rumble strip. The dilution rate is one part of asphalt emulsion to one part of water.

2548.03, C, Asphalt Emulsion Fog Seal.

Replace the title and Article:

Asphalt Emulsion Fog Seal.

1. Ensure the equipment meets the requirements of ~~Section 2004~~ Articles 2001.12 and 2001.14.
2. Ensure the application width covers the entire milled shoulder rumble strip.
3. Place the ~~diluted asphalt~~ emulsion fog seal according to Article 2308.03, D, at a rate of 0.13 gallon per square yard for asphalt emulsion and 0.13 gallon per square yard for engineered emulsion.
4. Do not place ~~asphalt~~ emulsion on a damp or wet surface.
5. Apply ~~asphalt~~ emulsion during weather conditions under which satisfactory application can be obtained. Do not apply asphalt emulsion when the air temperature is below 50°F. Do not place ~~asphalt~~ emulsion after October 15 without the Engineer's permission.

2548.04, C, Asphalt Emulsion for Fog Seal (Shoulder Rumble Strips).

Replace the title and Article:

Asphalt Emulsion for Fog Seal (Shoulder Rumble Strips).

Gallons computed from field measurements of distributors or from tank cars or transport trucks as provided in Article 4100.03. When quantities computed from field measurements check within 1.0% of the billed gallons, payment will be based on billed gallons. When quantities computed from field measurements differ from billed gallons by more than 1.0%, payment will be based on the quantity from field measurements. From these quantities, any amount used by the Contractor as fuel, left in cars, or

~~otherwise not delivered to the road surface will be deducted. The Engineer will advise the Contractor promptly, in writing, of quantities deducted. Gallons of undiluted asphalt emulsion as calculated from placement area and application rate.~~

2548.05, C, Asphalt Emulsion for Fog Seal (Shoulder Rumble Strips).

Replace the title and Article:

Asphalt Emulsion for Fog Seal (Shoulder Rumble Strips).

1. Per gallon for undiluted Asphalt Emulsion for Fog Seal (Shoulder Rumble Strips) that is ~~mixed and used on the project shown in the contract documents. Diluted asphalt emulsion that is delivered to the project site, but not applied to the roadway surface will not be considered for payment.~~
2. Payment is full compensation for cleaning the shoulder surface, furnishing and applying ~~diluted asphalt~~ emulsion, mixing water (if applicable), and protecting the adjacent pavement and edge lines.

4142, Engineered Emulsion.

Add the Article:

4142.01 GENERAL REQUIREMENTS.

Intended for work described in Sections 2306 and 2308.

- A. Minimum 75% of the applied material by volume shall be composed of agricultural oil derivatives and polymers.
- B. Use approved products from Materials I.M. 439 Appendix A. See Materials I.M. 439 for approval process.

C. Material Properties.

Table 4142.01-1: Engineered Emulsion Material Properties

	Min.	Max.
Distillation: Oil Distillate, by Volume of Emulsion, %	12.0	18.0
Tests on Residue from Distillation Test: Penetration @ 77°F @ 0.1 mm Ductility @ 39°F 5 cm/min., cm	100 30 (300)	150 -
Elastic Recovery (Materials Method Test No. Iowa 631)	85	-
Specific Gravity	0.8700	0.8800
pH	3.1	5.0
Boiling Point (°F)	310	330
Sieve Test	0	0.3
Saybolt Viscosity (Materials I.M. 343), seconds	5	20

- D. Do not reduce retroreflectivity of traffic paint and/or pavement markings by more than 3% when measured per Materials I.M. 386

Comments: This revision was deferred at the last Specification Committee meeting when it was proposed as a Developmental Specification. It was decided to make it an option in the Standard Specifications.

To accommodate the engineered emulsion which is shipped in its final concentration, we are changing the measurement of fog seal to a plan quantity based on the calculated gallons of undiluted asphalt emulsion in the contract documents.

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

Reason for Revision: New technologies providing acceptable results. This will allow engineered

emulsion to be used for fog seal applications.		
New Bid Item Required (X one)	Yes	No X
Bid Item Modification Required (X one)	Yes X	No
Bid Item Obsolescence Required (X one)	Yes	No X
Comments: "Asphalt" will need to be removed from the existing bid items.		
County or City Comments:		
Industry Comments:		

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jeff De Vries / Eric Johnsen		Office: District 1 Materials / Specifications	Item 2
Submittal Date: 2017.09.25		Proposed Effective Date: 4/17/2018	
Article No.: 2320.04 Title: Method of Measurement (Polymer-Modified Microsurfacing)		Other:	
Specification Committee Action: Approved with changes.			
Deferred:	Not Approved:	Approved Date: 10/12/18	Effective Date: 4/17/18
Specification Committee Approved Text: 2320.04, A, Aggregate for Microsurfacing. <p>Add to the end of the Article: When slag is used, reduce aggregate quantity for pay by 25%.</p> 2320.04, C, Emulsified Asphalt for Microsurfacing. <p>Add to the end of the Article: When slag is used, reduce emulsion quantity for pay by 25%.</p>			
Comments: The subject in Article 2320.04, C was corrected to “emulsion” and not “aggregate”.			
Specification Section Recommended Text: 2320.04, A, Aggregate for Microsurfacing. <p>Add to the end of the Article: When slag is used, reduce aggregate quantity for pay by 25%.</p> 2320.04, C, Emulsified Asphalt for Microsurfacing. <p>Add to the end of the Article: When slag is used, reduce aggregate quantity for pay by 25%.</p>			
Comments:			
Member’s Requested Change: (Do not use ‘Track Changes’, or ‘Mark-Up’. Use Strikeout and Highlight.) Amend Articles 2320.04 2320.04, METHOD OF MEASUREMENT <p>A. Aggregate for Microsurfacing. Weight of the individual loads in tons of aggregate, of the frictional classification specified, used in accepted portions of work. No deductions will be made for moisture naturally occurring in the aggregate. The quantity of mineral filler will be included with the aggregate quantity. When slag is used, reduce the aggregate quantity for pay by 25%.</p> <p>B. Preparation of Surface for Microsurfacing. Plan quantity for the length of pavement prepared according to the contract documents.</p>			

<p>C. Emulsified Asphalt for Microsurfacing. Volume of emulsified asphalt including polymer latex modifier used in accepted portions of work. No deductions will be made for water in approved emulsion. The volume will be corrected for temperature to 60°F. When slag is used as the aggregate, reduce the emulsion quantity for pay by 25%.</p>		
<p>Reason for Revision: If slag is used, 25% less aggregate and emulsified asphalt (by weight) is required due to the specific gravity of the slag.</p>		
New Bid Item Required (X one)	Yes	No X
Bid Item Modification Required (X one)	Yes	No X
Bid Item Obsolescence Required (X one)	Yes	No X
Comments:		
County or City Comments:		
Industry Comments:		

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Wes Musgrove / Melissa Serio		Office: Construction & Materials	Item 3
Submittal Date: 8/15/2017		Proposed Effective Date: April 2018 GS	
Article No.: 2431.02, B, 4 Title: Subdrains (Segmental Retaining Wall) Article No.: 2432.02, B, 4 Title: Subdrains (MSE Retaining Wall) Article No.: 4143.01, B Title: Pipe for Longitudinal Subdrains (Subdrain Pipe)		Other:	
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 10/12/17	Effective Date: 4/17/18
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: The Office of Bridges and Structures will check to see that they have no references to Standard Road Plan DR-304 in their standards.			
Specification Section Recommended Text: 2431.02, B, 4, b. Replace the Article: Provide Standard Road Plan DR-305 Type A outlets and fit with Standard Road Plan DR-304 rodent guards (complying with Materials I.M. 443.01). 2432.02, B, 4, b. Replace the Article: Provide a Standard Road Plan DR-305 Type A outlet fitted with a Standard Road Plan DR-304 rodent guard (complying with Materials I.M. 443.01). 4143.01, B, 4. Delete the Article: Cover outlet with a rodent guard meeting the requirements of Materials I.M. 443.01. Attach as shown in the contract documents. Engineer will inspect and accept according to Materials I.M. 443.01.			
Comments:			
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and Highlight.)			
2431.02, B, 4, b. Replace the Article: Provide Standard Road Plan DR-305 Type A outlets and fit with Standard Road Plan DR-304 rodent guards (complying with Materials I.M. 443.01). 2432.02, B, 4, b. Replace the Article:			

<p>Provide a Standard Road Plan DR-305 Type A outlet fitted with a Standard Road Plan DR-304 rodent guard (complying with Materials I.M. 443.01).</p>		
<p>4143.01, B, 4.</p>		
<p>Delete the Article: Cover outlet with a rodent guard meeting the requirements of Materials I.M. 443.01. Attach as shown in the contract documents. Engineer will inspect and accept according to Materials I.M. 443.01.</p>		
<p>Reason for Revision: Standard Road Plan DR-304 "Outlets for Longitudinal, Transverse and Backslope Subdrains" no longer shows rodent guard detail. Information is now in Materials IM 443.01.</p>		
New Bid Item Required (X one)	Yes	No x
Bid Item Modification Required (X one)	Yes	No x
Bid Item Obsolescence Required (X one)	Yes	No x
<p>Comments: None</p>		
<p>County or City Comments:</p>		
<p>Industry Comments:</p>		

InForm 510130 (08-15)



SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Wes Musgrove / Mark Bortle		Office: Construction & Materials	Item 4
Submittal Date:		Proposed Effective Date: April 2018 GS	
Article No.: 2528.01, C Title: Traffic Quality Control		Other:	
Specification Committee Action: Approved with changes.			
Deferred:	Not Approved:	Approved Date: 10/12/17	Effective Date: 4/17/18
Specification Committee Approved Text:			
2528.01, C, 1.			
Replace the Article:			
<p>Maintain a Traffic Control Technician on staff, even though the traffic control portion of the contract may be subcontracted. The Traffic Control Technician is required to have attended and passed the exam in an ATSSA Traffic Control Technician, IMSA Work Zone Traffic Control, Iowa AGC Traffic Control Technician class, Minnesota DOT Traffic Control Supervisor training class, or Texas Engineering Extension Service Work Zone Traffic Control training class. This Traffic Control Technician is responsible for overall management of the Contractor's quality control program for traffic control. Starting April 2018, the Traffic Control Technician shall retake and pass the exam in one of the approved classes every 5 years.</p>			
2528.01, C, Traffic Quality Control.			
Add the Article:			
<p>3. Employees who install and remove temporary traffic control signs and devices shall be supervised by a trained Traffic Control Technician per Article 2528.01, C, 1. When traffic control is installed or removed, the Traffic Control Technician who supervised the installation or removal of temporary traffic control devices and signs shall document in the daily traffic control diary what was installed or removed.</p>			
Comments: The Office of Construction and Materials will review the Construction Manual so that the instructions for the daily traffic control diary are clear. The new article will not apply to adjusting existing setups or moving a couple of devices.			
The Office of Construction and Materials requested to revise Article 2528.01, C, 3 to clarify that a separate daily traffic control diary is not needed, as this was a concern of a contractor.			
Specification Section Recommended Text:			
2528.01, C, 1.			
Replace the Article:			
<p>Maintain a Traffic Control Technician on staff, even though the traffic control portion of the contract may be subcontracted. The Traffic Control Technician is required to have attended and passed the exam in an ATSSA Traffic Control Technician, IMSA Work Zone Traffic Control, Iowa AGC Traffic Control Technician class, Minnesota DOT Traffic Control Supervisor training class, or Texas Engineering Extension Service Work Zone Traffic Control training class. This Traffic Control Technician is responsible for overall management of the Contractor's quality control program for traffic control. Starting April 2018, the Traffic Control Technician shall retake and pass the exam in one of the approved classes every 5 years.</p>			

2528.01, C, Traffic Quality Control.

Add the Article:

3. Employees who install and remove temporary traffic control signs and devices shall be supervised by a trained Traffic Control Technician per Article 2528.01, C, 1. In addition to the normal project traffic control diary, when traffic control is installed or removed, the Traffic Control Technician who supervised the installation or removal of temporary traffic control devices and signs shall document on a separate daily traffic control diary what was installed or removed that day. This separate daily traffic control diary shall be signed by the Traffic Control Technician and shall become part of the Contracting Authority's permanent project records.

Comments:

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

C. Traffic Quality Control.

1. Maintain a Traffic Control Technician on staff, even though the traffic control portion of the contract may be subcontracted. The Traffic Control Technician is required to have attended and passed the exam in an ATSSA Traffic Control Technician, IMSA Work Zone Traffic Control, Iowa AGC Traffic Control Technician class, Minnesota DOT Traffic Control Supervisor training class, or Texas Engineering Extension Service Work Zone Traffic Control training class. This Traffic Control Technician is responsible for overall management of the Contractor's quality control program for traffic control. Starting April 2018, the Traffic Control Technician shall retake and pass the exam in one of the approved classes every five (5) years.
2. On a daily basis as the project is constructed, perform the following quality control work associated with monitoring and documenting traffic control conditions:
 - a. Review all traffic control operations for compliance with contract documents and maintain a project traffic control daily diary in a format provided by the Contracting Authority. Submit this diary to the Engineer. It will become a part of the Contracting Authority's permanent project records. The Engineer may require submission of completed portions of the daily diary at routine intervals during construction of the project. In the diary include:
 - Listing and station location of traffic control used each day referenced to the appropriate Standard Road Plan, project plan sheet, etc.,
 - All reviews of traffic control devices and operations, whether satisfactory or unsatisfactory, and corrections made,
 - Approved changes to the contract document's traffic control,
 - Incidentals affecting the efficiency and safety of traffic, and
 - A daily list of trained flaggers used, including hours worked.
 - b. Monitor traffic operations and submit proposed Traffic Control Plan changes to the Engineer for approval.
 - c. Coordinate all changes to the Traffic Control Plan.
 - d. Coordinate all traffic control operations, including those of subcontractors and suppliers.
3. All employees who install and remove any temporary traffic control signs and devices shall be supervised by a trained Traffic Control Technician per sub article 1 above. In addition to the normal project traffic control diary, when traffic control is installed or removed, the Traffic Control Technician who supervised the installation or removal of temporary traffic control devices and signs shall document on a separate daily traffic control diary what was installed or removed in that day. This separate daily traffic control diary shall be signed by the Traffic Control Technician and shall become part of the Contracting Authority's permanent project records.

Reason for Revision: This revision is to require the TCT to renew their training every five (5) years which is similar to other Department training requirements. This 5-year renewal starts with the published date of this specification revision. This revision also requires all employees placing and removing traffic control shall be supervised by a trained traffic control technician in order to improve the quality of the temporary traffic control on Iowa's highways to provide for a safer environment for

<p>workers and the public. This revision also includes an AGC of Iowa traffic control technician class as an approved ATSSA TCT alternate which should help provide greater training opportunities for Iowa contractors than any of the current approved TCT classes. The AGC of Iowa intends to provide training as soon after this specification revision is approved and before it becomes a contract requirement in April 2018.</p>		
New Bid Item Required (X one)	Yes	No X
Bid Item Modification Required (X one)	Yes	No X
Bid Item Obsolescence Required (X one)	Yes	No X
Comments:		
County or City Comments:		
<p>Industry Comments: This proposed specification revision has been reviewed by representatives of AGC of Iowa and ATSSA of Iowa and has their concurrence. That said, one contractor has expressed concern regarding the requirement for a separate, additional (?) signed traffic control diary when TC is installed or removed, and this needs to be a point of consideration by the committee.</p>		

Form 510130 (08-15)



SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Wes Musgrove / Mark Bortle		Office: Construction and Materials	Item 5
Submittal Date:		Proposed Effective Date:	
Article No.: 2528.03, M Title: Limitations (Traffic Control) Article No.: 2550.04 Title: Traffic Control (Night Work Lighting)		Other:	
Specification Committee Action: Approved with changes.			
Deferred:	Not Approved:	Approved Date: 10/12/17	Effective Date: 4/17/18
Specification Committee Approved Text: 2528.03, M, Limitations. Add the Article: 14. Active contractor vehicles and self-propelled equipment (except hand operated equipment) operating or parked within 15 feet of an open traffic lane (unless shielded by temporary or permanent barrier) and contractor, delivery, and service vehicles entering or exiting work area shall display cab roof mounted amber or yellow high intensity rotating, flashing, or oscillating warning lights. Vehicle warning lights not functional or missing, shall be repaired or replaced within 24 hours. 2550.04, Traffic Control. Replace the Article: A. Ensure all vehicles and equipment (except for hand operated equipment) operating or parked within 15 feet of an open lane of traffic and all vehicles and equipment entering or exiting the work area display amber high intensity rotating, flashing, or oscillating lights. B A. Place and remove all traffic control devices during daytime hours, when possible, unless specified otherwise in the contract documents. C B. Continually review all traffic control devices, including monitoring of lights, to ensure proper installation and working order.			
Comments: The District 6 Office asked about making sure that delivery and service vehicles are included in the amber or yellow light requirement. The words "or missing" were added to the last sentence of Article 2528.03, M, 14 to cover vehicles that do not have amber or yellow lights. They will be allowed 24 hours to install one. Contractor was intentionally not capitalized in Article 2528.03, M, 14 so as to apply to the prime and sub-contractors.			
Specification Section Recommended Text: 2528.03, M, Limitations. Add the Article: 14. Active Contractor vehicles and self-propelled equipment (except for hand operated equipment) operating or parked within 15 feet of an open lane of traffic (unless shielded by			

temporary or permanent barrier) and vehicles and equipment entering or exiting the work area shall display cab roof mounted amber or yellow high intensity rotating, flashing, or oscillating warning lights. Vehicle warning lights that are not functional, shall be repaired or replaced within 24 hours.

2550.04, Traffic Control.

Replace the Article:

~~A. Ensure all vehicles and equipment (except for hand operated equipment) operating or parked within 15 feet of an open lane of traffic and all vehicles and equipment entering or exiting the work area display amber high intensity rotating, flashing, or oscillating lights.~~

~~B~~ **A.** Place and remove all traffic control devices during daytime hours, when possible, unless specified otherwise in the contract documents.

~~C~~ **B.** Continually review all traffic control devices, including monitoring of lights, to ensure proper installation and working order.

Comments:

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

ADD a new Article 2528.03.M.14:

All active contractor vehicles and self-propelled equipment (except for hand operated equipment) operating or parked within 15 feet of an open lane of traffic (unless shielded by temporary or permanent barrier) and all contractor vehicles and equipment entering or exiting the work area shall display cab roof mounted amber or yellow high intensity rotating, flashing, or oscillating warning lights. If any vehicle warning lights are not functional, the Contractor shall repair or replace them within 24 hours.

DELETE Article 2550.04.A and reorder B and C.

Reason for Revision: To have specification language requiring all contractor vehicles to display and operate amber or yellow colored warning lights when operating within 15 feet of an open lane of traffic (unless behind barriers) and when entering/exiting a work area day or night. The current specification requirements only apply to night work. This revision will include this requirement for daytime work operations also. The intent is to provide uniform guidance for the use of warning lights on Contractor vehicles with the goal of improving safety for the workers and public per TSMO philosophy.

New Bid Item Required (X one)	Yes	No X
Bid Item Modification Required (X one)	Yes	No X
Bid Item Obsolescence Required (X one)	Yes	No X

Comments:

County or City Comments:

Industry Comments: This proposed specification revision has been reviewed by representatives of AGC of Iowa and ATSSA of Iowa and has their concurrence.

Form 510130 (08-15)



SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Wes Musgrove / Eric Johnsen		Office: Construction & Materials / Specifications	Item 6
Submittal Date: 7/11/2017		Proposed Effective Date: April 2018	
Section No.: 2530 Title: Partial Depth Finish Patches		Other:	
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 10/12/17	Effective Date: 4/17/18
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: The District 3 Office asked about restoration of asphalt shoulders adjacent to patching, as contractors have questioned whether this was incidental. The basis of payment for Section 2530 does indicate that restoration is included. Section 2529 does not state that restoration is included, so this will be brought to the committee next month.			
Specification Section Recommended Text: Section 2530, Partial Depth Finish Patches.			
Replace the Section: 2530.01 DESCRIPTION.			
<p>A. Remove pavement in areas designated in the contract documents or by the Engineer to be patches. This includes furnishing and placing patching material to provide a new traffic surface, and restoring the adjacent shoulder as shown in the contract documents. This work is in areas where the size, shape, and depth of patch depends on the extent of pavement deterioration and shall be determined during the removal operation.</p> <p>B. Partial depth finish patches may be identified and constructed as one of the following types:</p> <ol style="list-style-type: none"> 1. Partial Depth PCC Finish Patches. These patches are square or rectangular in shape. Saw the edges. They will be less than 6 feet in length when placed on a longitudinal or transverse joint or random crack. Removal may be by milling or other equipment. This type of patch will be identified by tabulation in the contract documents. The size and location for each lane will be shown. 2. Partial Depth PCC Joint and Crack Repair Patches. Joint and crack repairs are square or rectangular in shape. They will be placed at a longitudinal or transverse joint or random crack. They will be a minimum of 6 feet in length, and will be identified by tabulation in the contract documents. Size and location will be shown. Repair size and location may be adjusted to fit field conditions. 3. Overdepth Patches. Overdepth patches are irregular in shape. They are placed to the full depth of existing pavement in areas of unsound concrete as designated by the Engineer. Repair size and location will be determined at time of construction. 2 4. Partial Depth Regular HMA Finish Patches. These patches are in the shape of a square or rectangle. They have square corners and straight edges to allow almost all of the removal by a milling machine. An air hammer or saw may be necessary to complete removal along edges and at corners. This type of patch will be identified by tabulation in the contract documents. The size and location in each lane will be shown. 			

3 5. Partial Depth Irregular HMA Finish Patches.

These patches are not square or rectangular in shape. They have at least one side that is not straight or one corner that is not square which will prohibit complete removal by a milling machine. Other equipment such as an air hammer or saw may be necessary to accomplish the removal. This type of patch will be identified by tabulation in the contract documents. This tabulation will be an estimate of the number of patches per lane mile, and the estimated total area of patch.

2530.02 MATERIALS.

Meet the requirements for the type of material specified.

A. Hot Mix Asphalt Patching Material.

Unless stated elsewhere in the contract documents, use HMA meeting or exceeding Section 2303 requirements for a Standard Traffic (ST) 3/8 or 1/2 inch surface mixture. Use an asphalt binder that meets or exceeds PG 64-22S or PG 58-28H. For partial depth patches on HMA overlay projects, the binder grade specified for mainline intermediate or surface course may be substituted.

B. Portland Cement Concrete Patching Material.

Meet one of the requirements below. When patching encroaches on an adjacent lane which is open to traffic or when there is patching on two lane pavements or other locations where overnight closures are not permitted, use Class A or Class B patching material. On pavements with three or more lanes and where overnight closure is permitted, use Class C patching material.

1. Class A Patching Material.

- a. Use a modified Portland cement type manufactured to provide rapid set and high early strength. Meet the requirements of Materials I.M. 491.20.
- b. When a mortar is furnished, add the manufacturer's recommended quantity of coarse aggregate.

2. Class B Patching Material.

- a. Use high early strength rapid set (5 hour) PCC meeting the requirements of Materials I.M. 529 and the following requirements:
 - Use Class M mixture patching material with calcium chloride. Class M mixtures with calcium chloride are not to contain fly ash.
 - When calcium chloride is used in a mixture, place the concrete within 30 minutes after the introduction of the calcium chloride.
 - For coarse aggregate, meet the requirements of Section 4115 and Gradation No. 5, Aggregate Gradation Table, Appendix.
- b. When Class B patching material is furnished for partial depth patches, it may also be furnished for full depth patches.

3. Class C Patching Material.

- a. Use a PCC mixture with an early set that will allow time of opening to traffic in 24 hours to 36 hours as directed by the Engineer. For coarse aggregate, meet the requirements for Class B patching material. Use Class M mixture meeting the requirements of the current Materials I.M. 529 without the addition of calcium chloride.
- b. When Class C patching material is furnished for partial depth patches, it may also be furnished for full depth patches.

4. Modifications to Mixtures for Class B and Class C Patching Material.

Apply the following modifications to the PCC mixtures for Class B and Class C patching material:

a. Slump.

- 1) Slump, measured according to Materials I.M. 317 prior to addition of calcium chloride solution, is to be between 1 inch and 2 1/2 inches as a target range, allowing a maximum of 3 inches. If calcium chloride solution is not to be added, the slump is to be between 1 inch and 3 inches as a target range, allowing a maximum of 4 inches.
- 2) When a Type A Mid Range water reducing admixture is used, the slump, tested prior to the addition of calcium chloride, is to be between 1 inch and 4 inches as a target range, allowing a maximum of 5 inches.

b. Air Entrainment.

The entrained air content of the unconsolidated concrete will be determined according to Materials I.M. 318, prior to addition of calcium chloride if it is to be added. When calcium chloride

is to be added, air entrainment is to be 5.0%, with a tolerance of $\pm 2.0\%$. When no calcium chloride is to be added, air entrainment is to be 6.5%, with a tolerance of $\pm 1.5\%$.

c. Temperature.

The temperature of Class B patching material, as delivered to the job site, is to be as required in Article 2530.02, B, 4, d below. Ensure the temperature of Class C patching material, as delivered to the job site, is greater than 65°F. Heating the water, aggregate, or both, may be necessary to meet this requirement. The cost of heating is incidental to patching.

d. Cement.

- 1) For Class M concrete mixtures, meet the requirements of Section 4101.
- 2) Refer to Table 2530.02-1 for cement types and maximum allowable substitution rates. The maximum substitution for Type IS is not to exceed 25%.

Table 2530.02-1: Cement Types and Maximum Allowable Substitution Rates

Patch Class	Cement Type	Maximum Allowable Substitution	Minimum Mix Temperature
B	Type I, Type II Type IS	0% Fly Ash 0% Fly Ash	75°F 80°F*
C	Type I, Type II Type IS	10% Fly Ash 0% Fly Ash	65°F 70°F*
* When a Type A Mid Range water reducing admixture is used, limit the minimum mix temperature to that required when Type I/II cement is used.			

e. Calcium Chloride.

- 1) Where calcium chloride is required, furnish it in water solution form and add it to the mix at the job site. Use a commercial 32% calcium chloride solution, or equivalent, prepared according to Table 2530.02-2:

Table 2530.02-2: Proportions for 32% Calcium Chloride Solutions

Type of Solid Calcium Chloride	Pounds of Solid per Gallon of Water	Solution Produced per Gallon of Water
Type 1 – Regular Flake (77% material)	6	1.3
Type 2 – Concrete Flake or Pellets (94% material)	4.5	1.2

- 2) The Engineer will check the solution concentration using a hydrometer according to Materials I.M. 373. Add the solution at the rate of 3.0 gallons per cubic yard of concrete. Calcium chloride solutions of different concentrations may be approved by the Engineer, provided appropriate adjustments in the total concrete composition are made.
- 3) Agitate the mixture until the calcium chloride is completely in solution, and continue agitation, as necessary, to maintain uniformity.
- 4) Except when using continuous mixing equipment described in Article 2001.20, E, ensure the calcium chloride solution is present in the mix for at least 2 minutes of mixing.

f. Water Reducer.

A Type A Mid Range water reducing admixture may be used. Use one listed in Materials I.M. 403, at the manufacturer's recommended dosage.

g. Aggregate Durability.

Unless specified otherwise, use coarse aggregate of the proper class of durability, as defined in Article 4115.04.

h. Transit Mix Concrete.

Use a mix from a plant from which the concrete can be delivered and placed within 60 minutes from the start of mixing. The time may be extended to 90 minutes when a retarding admixture, used according to Materials I.M. 403 including temperature dosage guidelines (and at no additional cost to the Contracting Authority), is added at the plant. Continuous mixing equipment using volumetric proportioning may be used according to Article 2001.20, E.

i. Prepackaged Mixture.

A prepackaged mixture, proportioned as specified above for Class B or Class C matching material, may be furnished as a Class B or Class C patching material with the Engineer's approval. The coarse aggregate for prepackaged mixtures is limited to that meeting the requirements of Article 4115.05. Mix prepackaged mixtures in an on-site paddle type mixer or proportion and mix with continuous mixing equipment using volumetric proportioning according to Article 2001.20, E.

C. Joint Boards.

Comply with the following:

1. Joint boards for recreating joints and cracks: use a resilient filler, cellulosic fiber, paraffin coated cardboard, or other compressible material of the proper shape to recreate the joint during placement of the patch material.
2. Boards for recreating transverse joints: one piece, ~~so as to have no horizontal joints.~~ One piece boards will not be required in lengths exceeding 6 feet.
3. Boards for recreating longitudinal joints: one piece. One piece boards will not be required in lengths exceeding 4 6 feet.
4. Joints and open transverse cracks: use a board with a nominal width of 1/4 inch. Metal strips may be used for narrow cracks.
5. Extend boards and metal strips into the pavement to the bottom of the patch.
6. Use of a bond breaker on board surfaces is encouraged.

D. Joint Sealer.

Use joint sealer and backer rod meeting the requirements of Section 4136. Unless specified otherwise, use only hot poured joint sealer.

E. Tack Coat Bitumen.

For HMA patches, use tack coat bitumen as specified in Article 2303.02, E.

2530.03 CONSTRUCTION.

A. Equipment.

1. Remove existing surface material using a milling machine, jack hammers, or similar equipment. Hand equipment may be necessary to achieve a vertical edge and the designated shape.
- ~~2. Sawing equipment is required at edges from a milling operation.~~
3. The following additional equipment is required for PCC patches:
 - a. Sandblasting equipment for cleaning of the prepared patch area on PCC pavements.
 - b. 15 pound (or less) air chisel to complete patch area preparation. A 30 pound air chisel may be used if its use does not result in significant damage to the patch area and edges.
 - c. Air compressor that emits oil and moisture free air for cleaning the prepared area.
 - d. On-site paddle type concrete mixer for mixing Class A patching material or other prepackaged mixtures.

B. Partial Depth Finish Patch Construction.

1. General.

- a. The tabulations for partial depth finish patches shown in the contract documents are for estimating purposes only. The Engineer will designate the location and limits of these patches.
- b. The shape and depth may be irregular so that hand operated equipment may be necessary for all or some of the removal.
- c. Remove the existing pavement material within the designated area to sound concrete as determined by the Engineer. All material removed not designated for salvage becomes the property of the Contractor and shall be removed according to Article 1104.08.

2. Hot Mix Asphalt Patches.

Construct partial depth HMA finish patches as follows:

a. Preparation of Patch Area.

- 1) Remove material to a minimum depth of 3 inches. Where this depth is adequate, make the prepared surface relatively even. The maximum depth is 75% of the pavement thickness, but no more than 9 inches.
- 2) Remove material so that the edges of all patch areas are vertical to a depth of 1 1/2 inches. Minor rounding of the bottom edge is permissible. Cut and remove exposed reinforcing steel. Clean the patch area.
- 3) Where removal to the depth described above leaves unsound concrete within the limits of the patch area, the Engineer may designate a part of the patch area as a full depth patch. Remove the concrete for the full depth, but removal to a depth greater than 12 inches will not be required. Consolidate the subgrade or subbase material with a mechanical tamper or other compaction equipment as directed by the Engineer.

b. Placing HMA Patch Material.

- 1) After removal of the old pavement, lightly tack the edges and bottom of the patch area. Deposit and compact the HMA patch mixture in layers as follows:
 - a) Deposit the upper 5 inches in at least two layers, with the top layer not exceeding 2 inches in thickness, when compacted. Lifts should be at least 3 times the mixture size.
 - b) Thoroughly compact each layer, while hot, using appropriate compaction equipment. Succeeding layers may be placed as soon as the preceding layer has been properly compacted.
 - c) Smooth the final layer with a steel tired finish roller meeting requirements of Article 2001.05, B or F. A roller meeting requirement of Article 2001.05, F, may be a small roller suitable for this type of operation.
 - d) Ensure the final compacted surface is level with, or not more than approximately 1/4 inch above, the surrounding pavement.
- 2) Open the patch to traffic after the mixture has cooled to provide stability; however, on two lane roadways, do not leave barricades in place overnight. If the patch becomes distorted beyond the smoothness requirements for any reason, smooth the surface within 1 working day by blading, scraping, filling, or by other approved means.
- 3) Prior to final acceptance, a finish patch shall be level with, or not more than 1/8 inch above, the adjacent pavement, and have a smooth riding surface.

c. Sealing Joints and Cracks.

- 1) Seal all edges of HMA patches to a width of 3 inches centered on the edge. Use CRS-2 bitumen applied with a "V" shaped squeegee tool. Blot excess bitumen material with sand.
- 2) When joint and crack sealing work is part of the contract, saw joints and cracks that cross areas of HMA finish patches to a width of 1/8 inch to 1/4 inch. Saw to the depth of the patch with a maximum depth of 3 inches. Perform this work within 3 working days after placement.

3. Portland Cement Concrete Patches.

Construct partial depth PCC finish patches as follows:

a. Preparation of Patch Area.

- 1) Remove concrete in designated repair area to a minimum width of 12 inches using either of the following methods:
 - a) Mill transversely or longitudinally matching general alignment of patch. Use a mill that produces patch edges with a 30 to 60 degree angle or chip back patch edges to a 30 to 60 degree angle. Chip out secondary spalling resulting from milling at no additional cost to the Contracting Authority.
 - b) Place 2 inch saw cuts along perimeter of patch area and chip back patch edges to a 30 to 60 degree angle.
- 2) If a joint or crack is within a patch area, construct the bottom edge of that patch to be at least 6 inches beyond the joint or crack.
- 3) Form or saw patch edges to prevent them from protruding beyond edge of existing pavement by more than 3/8 inch.
- 4) Each patch will have a generally rectangular area. Remove the PCC concrete in that area to a minimum depth of 3 inches. Many areas will require removal of unsound PCC concrete to a greater depth to reach sound concrete. The maximum depth is 75% one half of the pavement thickness but not more than 9 inches.
- 3) Milling will be allowed, but the depth within the designated patch area is to be at least 3 inches. Remove concrete from feathered runouts to a depth of 3 inches if within the

~~designated patch area, or to a depth of 2 inches if outside the designated patch area. Saw these edges vertically. Ensure the prepared area has reasonably straight and vertical edges, not to exceed 1 inch in saw cut depth. Sawing will be required around the remainder of the patch perimeter, unless the Contractor demonstrates that an edge can be produced that is true and vertical, without sawing.~~

- ~~5)~~ Do not damage steel reinforcement during removal process. Damaged steel will be the responsibility of the Contractor. If the end of a dowel bar is exposed, cut or remove dowel. Place duct tape, form oil, grease, or other method approved by the Engineer as a bond breaker on exposed dowels not removed.
 - ~~4 6)~~ When removal to the maximum depth leaves unsound concrete within the patch area, the Engineer may designate a part of the patch area as an ~~full depth~~ overdepth patch. Remove the concrete for the full depth of the existing pavement, ~~but no more than 12 inches~~. Consolidate the subgrade or subbase material using a mechanical tamper or other compaction equipment as directed by the Engineer. Furnish and install No. 4 tie bars at mid-depth of existing pavement using an approved non-shrink grout. Place bar to provide a minimum 2 inch concrete cover.
 - ~~5 7)~~ When it is necessary to go below reinforcing steel to reach sound concrete, cut the reinforcing steel flush with the perimeter edges of the patch and remove.
 - ~~6 8)~~ Clean the patch area by sandblasting, followed by cleaning with compressed air. The completed surfaces are to appear surface dry to visual examination.
 - ~~7 9)~~ Recreate a joint or crack in the patch area with a joint board of the proper size and shape. Extend the board to the bottom of the area to be patched, so as to separate completely all patching material on both sides. Use a board of a width approximately equal to the joint or crack. For wide openings, several thicknesses may be used. For patches 6 feet or greater in length:
 - a) Longitudinal joints may be reestablished by sawing to a depth of 1/3 the pavement thickness.
 - b) With approval of the Engineer, transverse joints may be reestablished by sawing the full depth of the patch when use of a form board will not allow complete separation of patch material on both sides of joint.
- b. Placing PCC Patch Material.**
- 1) Scrub a cement-sand-water grout of creamy consistency onto the patch surfaces, including the edges. Grout shall consist of two parts of Type I or Type I/II Portland cement and one part sand mixed with water. Mix grout by mechanical means. Place the patch material before the grout dries. If grout dries before placement of patch material, clean patch area again by sandblasting and air blasting, then reapply grout.
 - 2) ~~Mix Class A patching material with water and coarse aggregate, if required.~~ Place the properly mixed material in the patch area, ~~consolidated and worked~~ into place in a manner that will provide good bonding. Level it with the adjacent pavement to provide a smooth riding surface not varying from existing pavement surface by more than 1/8 inch when measured with a 10 foot straightedge placed over patch. Replace or grind patch to correct deficiencies. Texture patches longer than 1 foot in the manner of the adjacent pavement surface.
 - 3) For Class A patching materials, ~~perform~~ this work according to the patching manufacturer's recommendations and limitations, subject to approval of the Engineer. Furnish these recommendations to the Engineer. ~~After 1 hour, remove the joint board in a manner that does not damage the patch. The area may then be returned to public traffic.~~
 - 4) ~~Mix Class B and Class C patching material and place in the patch area. Consolidate it by vibration in a manner that will provide good bonding. Level the patch to provide a smooth riding surface. Texture patches longer than 1 foot in the manner of the adjacent pavement surface.~~
- c. Protecting and Curing.**
- 1) **Class A patching material.**
Cure according to the manufacturer's recommendations. ~~If manufacturer's strength data at anticipated curing temperatures is not available, use only when mix and substrate temperature are 50°F or greater and cure for a minimum of 4 hours.~~
 - 2) **Class B patching material.**
 - a) Cure as specified in Article 2529.03, G.
 - b) Cure these patches for the minimum time specified in Article 2529.02 for the mixture used.
 - 3) **Class C patching material.**

- a) ~~Cure according to Article 2529.03, G. Patches may be covered immediately with white pigmented curing compound. In this case, the specified cure may be delayed as much as 2 hours.~~ Cure patches with an approved white pigmented curing compound meeting the requirements of Section 4105. Apply curing compound within 30 minutes after placement of patching material.
- b) Cure patches with Class M concrete a minimum of 36 hours or as directed by the Engineer.
- c) ~~After the required curing period, the insulation blanket and the joint forming board may be removed in a manner that does not damage the patch, or removal may be delayed until the sealing is to be done provided no damage results from the delay.~~ Cure according to Article 2529.03, H, when overnight low temperatures are forecast to be below 35°F.
- d. **Surface Finish.**
Prior to final acceptance, level finish partial depth finish patches with the adjacent pavement. Trowel toward edge of the repair when finishing. Ensure they have a smooth riding surface.
- e. **Joint and Crack Sealing.**
Where joints and cracks cross areas of partial depth PCC patches, saw, seal, and clean the patch according to Article 2301.03, P. Complete sealing within 5 working days after the patch is placed. When joint and crack sealing is included in the contract, perform sealing as part of that work.
- f. **Failure Repair.**
Repair failed patches that appear within 30 calendar days of original construction or subsequent repair at no cost to Contracting Authority. Failures may include, but are not limited to, loss of bond between patch and underlying pavement or random cracking.

C. Limitations of Operations.

1. Unless the road is closed, maintain traffic during construction operations. Conduct all operations with minimum inconvenience to traffic. On two-lane roads, limit operations to one traffic lane at a time, except for minor encroachment in the adjacent lane for sawing and installing forms when traffic is maintained. For multiple lane roadways, the work area may include one lane in each direction.
2. An adjacent lane shall be opened to traffic prior to the old pavement being removed from a patch area.
3. When approved by the Engineer, patch areas may extend up to 2 feet into an adjacent lane as allowed by the contract documents.
4. Adjust the work schedule so all work for each patch, including removal of barricades and equipment (except the cure period for PCC Class C concrete), will be completed on the same day it is started between the hours of 30 minutes after sunrise to 30 minutes before sunset. If unforeseen conditions result in excavated areas being left overnight, assign a sufficient number of flaggers to warn and direct traffic until the patches are placed. Extra payment will not be made for the necessary flaggers.
5. Place PCC patching material only when the ambient air and pavement temperatures are 45°F or above.
6. The Engineer may limit advance sawing.
7. If an emergency makes a DW joint necessary, temporarily fill the excavated area following the joint with a suitable hot or cold paving mixture or stable granular material, as directed by the Engineer. The Engineer may direct that the lane remain closed to traffic overnight. Provide traffic control.
8. When PCC patches without calcium chloride are constructed, place two drums meeting the requirements of Article 2528.03, C, in front of each patch location where there is a possibility of turning into or returning to the closed lane. Additional drums need not be placed for patches spaced closer than 150 feet.
9. Apply Articles 1107.08, 1107.09, and 1108.03.

D. Area Restoration.

When the patch is completed, remove forms if they have been used. Fill all excavated space along the outside pavement edge with material similar to that in the existing shoulder, satisfactory to the Engineer. Thoroughly compact the material before the section is opened to traffic.

2530.04 METHOD OF MEASUREMENT.

The Engineer will determine the quantities involved in satisfactory construction of partial depth finish patches for the areas specified as follows:

A. Partial Depth PCC Finish Patches.

1. The Engineer will calculate the area of each patch in square feet from surface measurements. The area of each patch less than 1 square foot will be counted as 1 square foot for payment purposes. If the patch area is increased by the Contractor to accommodate milling equipment, only the area designated by the Engineer will be measured for payment.
2. ~~The Engineer will also calculate the area of patches in square foot which have been directed to be constructed full depth.~~ Removal and repair of areas up to one half existing pavement thickness will be included in this payment.

B. Partial Depth PCC Joint and Crack Repair Patches.

1. ~~Measurement for Partial Depth PCC Joint and Crack Repair Patches will be to the nearest 0.1 linear foot on the basis of 12 inch width of repair. Areas designated for repair outside the 12 inch repair width will be measured as Partial Depth PCC Finish Patches per Article 2530.04, A, 1.~~
2. ~~Removal and repair of areas up to one half existing pavement thickness will be included in this payment.~~

C. Overdepth Patches.

~~Engineer will calculate area of each Overdepth Patch in square feet at the mid-depth of the pavement. Area of each patch less than 1 square foot will be counted as 1 square foot for payment purposes.~~

B D. Partial Depth HMA Finish Patches.

1. The Engineer will measure the area for each patch and the weight of HMA placed in partial depth patches according to Article 2303.04. Regular patches and irregular patches will be calculated and totaled separately. 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.
2. Asphalt binder and tack coat will not be measured separately for payment.
3. The Engineer will also calculate the area and weight of patch material placed in HMA patches which have been directed to be constructed full depth. The Engineer will deduct quantities not used.

2530.05 BASIS OF PAYMENT.

Payment for construction of the various types of partial depth finish patches, satisfactorily constructed, at the areas specified, will be the contract unit price as follows:

A. Partial Depth PCC Finish Patches.

1. Per square foot.
2. Payment is full compensation for removal of all pavement, preparing the patch area, furnishing and placing all material, construction of joints, sawing, finishing, curing, and restoration of the area.
3. ~~When parts of PCC partial depth finish patches are constructed to full depth at the direction of the Engineer, payment will be for the areas of those parts at two times the contract price per square foot for partial depth PCC patches.~~

B. Partial Depth PCC Joint and Crack Repair Patches.

1. Per linear foot.
2. Payment is full compensation for repairs up to one half existing pavement thickness and includes removal of pavement, preparing the patch area, furnishing and placing material, construction of joints, sawing, finishing, curing, and restoration of area.

C. Overdepth Patches.

1. Per square foot. Payment for Overdepth Patches will be in addition to Partial Depth PCC Finish Patch or Partial Depth PCC Joint and Crack Repair Patch quantities for the same area.
2. Payment is full compensation for repairs designated in lower half of existing pavement and includes removal of pavement, preparing the patch area, and furnishing and placing material.

B D. Partial Depth HMA Finish Patches.

1. Payment will be for both the patch area and the quantity of HMA placed in the patch.
 - a. **Regular Partial Depth HMA Finish Patches, by Area.**
Per square yard.
 - b. **Irregular Partial Depth HMA Finish Patches, by Area.**
Per square yard.
 - c. **Hot Mix Asphalt Mixture.**
Per ton. Includes mixture designated for full depth patches.
2. When parts of regular or irregular partial depth HMA finish patches are constructed to full depth at the direction of the Engineer, payment will be for the areas of those parts at two times the contract price per square yard for regular or irregular partial depth HMA finish patches.
3. Payments are full compensation for:
 - Removal of the old pavement,
 - Preparing the patch area,
 - Furnishing and placing the HMA patching material, including asphalt binder in the mixture and necessary tack coat bitumen,
 - Sawing and sealing,
 - Sealing the patch edges, and
 - Restoration of the area.

4 E. When joint and crack sealing is included in the contract, it will be paid for as a part of that work.

Comments:

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

Reason for Revision: Incorporating DS-15022, Partial Depth Finish Patches into the Standard Specifications.

New Bid Item Required (X one)	Yes	No X
Bid Item Modification Required (X one)	Yes	No X
Bid Item Obsolescence Required (X one)	Yes	No X

Comments:

County or City Comments:

Industry Comments:

Form 510130 (08-15)



SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Kevin Merryman / Eric Johnsen		Office: Construction & Materials / Specifications	Item 7
Submittal Date: 7/11/2017		Proposed Effective Date: April 2018	
Section No.: 2556 Title: Dowel Bar Retrofit		Other:	
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 10/12/17	Effective Date: 4/17/18
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: None.			
Specification Section Recommended Text: Section 2556, Dowel Bar Retrofit.			
<p>Add the Section: 2556.01 DESCRIPTION. Install epoxy coated dowel bars on transverse joints and transverse cracks as shown in the plans. Place dowels after concrete repair operations and prior to diamond planing grinding operation. Areas with random cracks passing through dowel bar retrofit locations will be reviewed by the Engineer prior to construction.</p> <p>2556.02 MATERIALS.</p> <p>A. Epoxy Coated Dowel Bars.</p> <ol style="list-style-type: none"> 1. Ensure epoxy coated dowel bars, 1.5 inches by 15 inches, conform to requirements of Section 4151 of the Standard Specifications. Uniformly coat dowel bars with approved bond breaker according to Article 4151.02, B, of the Standard Specifications. 2. Dowel bars shall have tight fitting end caps made of nonmetallic material that allow for at least 0.25 inch bar movement at each end of the bar. 3. Chair devices for supporting dowel bars shall be either epoxy coated or made of a nonmetallic material. Chair devices shall provide a minimum clearance of 0.5 inch between the bottom of the bar and the surface upon which the bar is placed, and between the bar and the walls of the slot. Chairs shall be designed to prevent movement of the bar during placement of the grout. Submit samples of end caps and chairs to Engineer for approval before installation. <p>B. Caulking Filler. Acceptable caulking filler used for sealing the existing transverse joint or crack at the bottom and sides of the slot includes any commercial caulk designed as a concrete sealant that is compatible with the patch material being used.</p> <p>C. Foam Core Inserts. Foam core board filler material shall be a closed cell foam faced with plastic film, foil, or poster</p>			

board material on each side. Foam core board filler shall be 3/8 inch \pm 1/8 inch thick. Foam core board filler shall be approved by the Engineer before installation.

D. Grout.

1. Grout material placed around bars shall be a shrinkage compensated rapid set patch material listed in Materials I.M. 491.20, Appendix B.
2. Extend grout according to the manufacturer's recommendations. Aggregate for extending grout shall be pea gravel meeting Section 4112 ~~of the Standard Specifications~~, with a minimum durability of Class 2 and the following gradation:

<u>Sieve Size</u>	<u>Percent Passing</u>
1/2 inch	100
3/8 inch	85-100
No. 8	0-8

3. The rapid set cement used to produce any of the rapid set patch materials in Materials I.M. 491.20, Appendix B may be approved to produce a concrete patch mix utilizing sand meeting Section 4110 ~~of the Standard Specifications~~ and pea gravel meeting Section 4112 ~~of the Standard Specifications~~, at maximum aggregate extension. Concrete patch mix shall meet the following strength requirements:
 - 3 hour minimum compressive strength of 3000 psi, ASTM C 39
 - 24 hour minimum compressive strength of 5000 psi, ASTM C 39
 - 24 hour bond to dry PCC, 1000 psi, ASTM C 882
4. Furnish a list of materials for use in making the grout, and the mix design, to the Engineer at least 30 calendar days prior to installation. The District Materials Engineer may waive mix design testing based on previous testing with the patching materials.
5. Testing of the grout by the Engineer may be done anytime during production.

2556.03 CONSTRUCTION.

A. Process Control Plan.

Provide the Engineer a process control plan at least one week prior to the beginning of retrofit work. This plan shall include:

- Description of materials and process to be used to achieve required dowel bar alignment.
- Description of materials and processes to be used to prevent grout from entering existing joints.
- Description of materials and processes to be used to place and align foam core inserts.
- Mix design and proportion control for grout mixture

B. Preparing Slots for Dowel Bars.

1. Cut slots in pavement with gang saw capable of cutting at least three slots in each wheel path simultaneously. Cut slots to required depth to place center of dowels at mid-depth of concrete slab. Multiple saw cuts parallel to centerline may be required to remove material from slot.
2. Use jackhammers not larger than 30 pound class to remove concrete from slots. Prevent damage to pavement or vehicles traveling in the adjoining lane.
3. Sandblast and clean exposed surfaces and cracks in slots before bar installation. Fill transverse contraction joint on bottom and sides with non-sag caulking filler.

C. Placing Dowel Bars.

1. Use chair devices to support dowel bars at depth shown on the plans.
2. Place dowel bars parallel to centerline of pavement and parallel to pavement surface.
3. Place dowel bars within $\pm 1/4$ inch of desired alignment.
4. Center dowel bars over transverse joints or cracks so a minimum of 7 inches of dowel bar extends into adjacent panel.
5. Cut a piece foam core board material (angled if joints are skewed) to fit tightly around dowel bar. Place foam core board at center of dowel bar flush with surface of concrete pavement, or slightly recessed. Maintain foam core board in vertical position, tight to edges, during grout placement operations.

D. Grouting Dowel Bars.

1. Produce grout with a portable mixer approved by the Engineer. Place grout immediately after mixing and before grout has attained initial set. Do not re-temper grout with water.
2. Thoroughly moisten all surfaces of the sawed slot immediately prior to filling with grout. Remove all excess water with compressed air.
3. Place grout according to the manufacturer's recommendations. Thoroughly consolidate grout with a hand held vibrator so the grout completely surrounds dowel bars and support chairs. Place grout so that the material is at least $1/8$ inch higher than the pavement if the pavement is to be diamond ground. If the pavement is not to be ground, finish the grout flush with the surface.
4. Immediately after placement, thoroughly coat grout with white pigmented curing compound.

E. Re-establishing Joints or Cracks.

Re-establish joint or crack above foam board insert within 8 hours of grout placement by means of sawing when grout has attained sufficient strength. If foam board is visible, sawing of joint or crack will not be required.

F. Replacing Deficient Work.

Replace dowel bars that are to be removed due to poor quality work or material failure with new bars. Provide additional traffic control needed due to required retrofit repairs at no additional cost to the Contracting Authority.

2556.04 METHOD OF MEASUREMENT.

Dowel Bar Retrofit will be measured by each bar satisfactorily placed.

2556.05 BASIS OF PAYMENT.

Payment for Dowel Bar Retrofit will be paid at the contract unit price per each bar. Payment shall be considered full compensation for furnishing all labor, equipment, and materials necessary to perform the work prescribed in this specification.

Comments:		
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and Highlight.)		
Reason for Revision: Incorporate DS-15010, Dowel Bar Retrofit into the Standard Specifications.		
New Bid Item Required (X one)	Yes	No X
Bid Item Modification Required (X one)	Yes	No X
Bid Item Obsolescence Required (X one)	Yes	No X
Comments:		
County or City Comments:		
Industry Comments:		

Form 510130 (08-15)



SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Tom Reis / Eric Johnsen		Office: Specifications	Item 8
Submittal Date:		Proposed Effective Date: January 17, 2018	
Article No.: Title:		Other: Developmental Specifications for On-Call Contracting for High Tension Cable Guardrail Repair	
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 10/12/17	Effective Date: 1/17/18
Specification Committee Approved Text: See attached DS-15058, Developmental Specifications for On-Call Contracting for High Tension Cable Guardrail Repair.			
Comments: There will be no controller for this DS. The District 6 Office was concerned with the reference to calendar days in Article 15058.01, B, 2 and if this might conflict with a working day contract. These contracts do not have working days assigned, just a start and completion date. Each repair job is initiated by a work order that would start the 14 calendar day clock.			
Specification Section Recommended Text: See attached Draft Developmental Specifications for On-Call Contracting for High Tension Cable Guardrail Repair.			
Comments:			
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and Highlight.)			
Reason for Revision:			
New Bid Item Required (X one)	Yes	No X	
Bid Item Modification Required (X one)	Yes	No X	
Bid Item Obsolescence Required (X one)	Yes	No X	
Comments: These bid items have already been created.			
County or City Comments:			
Industry Comments:			

DS-15XXX
(New)



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

**Effective Date
January 17, 2018**

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

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

15058.01 DESCRIPTION.

A. General.

1. This specification covers repair of high tension cable guardrail installations.
2. Definitions:
 - Installation: a continuous length of cables located between two end anchors.
 - End anchor: a post, bracket, or combination thereof that attaches one or more cables to a foundation at ground level.
 - Special end anchor: a post, additional lengths of cable, attachment hardware, special steel beam guardrail sections or combination thereof that permanently attaches one or more cables to another barrier.
 - Line post: a post that holds one or more cables at an elevation above the ground.
3. The contract documents will list county, route, begin and end milepost, direction of travel, manufacturer, and system type of each installation for work covered by this contract.
4. The Engineer reserves the right to make repairs with Iowa DOT forces. Repairs that have been submitted to the Contractor will not be made by DOT forces, unless such repairs are not completed within 28 calendar days following notification by the Engineer.

B. Requests for Repair.

1. The Engineer will furnish the Contractor a list of individuals approved to initiate repairs. Requests for repairs will be initiated by either a fax or e-mail to the Contractor. Requests for repair will include the following: route number, milepost location, direction of travel, and an estimate of the number of posts to be replaced for each repair. Provide the Engineer with an e-mail address and fax number which will be used to initiate requests for repairs.
2. For repairs not completed within 14 calendar days following notification by the Engineer, Contractor will be charged the liquidated damage amount shown on the proposal for each day. Damages will begin to accrue on day 15.

15058.02 MATERIALS.

- A. Apply Article 2505.02 of the Standard Specifications.
- B. Replace damaged materials with new materials of the same type and manufacturer as existing.

15058.03 CONSTRUCTION.

A. General.

1. Schedule repairs upon notification by the Engineer. Provide Engineer at least 24 hours' notice of when proposed work will begin.
2. Routine repairs within a particular installation include:
 - End anchor repairs and resetting,
 - Removal and replacement of damaged line post foundations,
 - Removal and replacement of damaged line posts,
 - Removal and replacement of damaged line post hardware,
 - Attaching or reattaching cable(s) to line posts,
 - Removal and replacement of turnbuckles for cable, and
 - Removal and replacement of damaged cables.
3. Notify Engineer if non-routine repairs are needed. Non-routine repairs shall have Engineer's approval before repair work may begin.
4. Tension checks are required at locations where ten or more line posts are replaced, and at locations where cable tension is lost due to damage or repair activity. Upon completion of repairs at such locations, check the tension of every cable within the affected installation according to manufacturer's recommendations. If tension of cable falls outside manufacturer's tolerance, re-tension cable to within recommended limits.
5. Remove and dispose of damaged materials. Leave work site in a safe and orderly condition at completion of work.
6. Maintain a log of repairs. Provide Engineer a copy of log at the end of the contract period, and at any time upon request. Log shall include:
 - Date and time of notification by Engineer to perform repairs,
 - Department personnel requesting repair,
 - Route number,
 - Milepost location of requested repair,
 - Direction of travel,
 - Date and time repairs were completed,
 - Number of line posts repaired,
 - Number of line posts replaced,
 - Number of end anchors repaired,
 - Number of end anchors reset,
 - Number of line post foundations replaced,
 - Number of turnbuckles replaced,
 - Number and length of each cable replaced,
 - Cable tension measurements taken after each repair,
 - Cable tension measurements taken as part of annual tension check, and
 - Cable tension measurements taken after each re-tensioning, as applicable.
7. Repairs may be performed either without a lane closure; or with a lane closure except for periods listed in the contract documents. Remove lane closures following completion of work.

Traffic control for lane closures and shoulder closures shall be according to the Standard Road Plans included in the contract documents.

B. Annual Checking of Cable Tension.

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

15058.04 METHOD OF MEASUREMENT.

A. Line Post, Repair.

By count for each line post where one or more cables are reattached to the post.

B. Line Post, Replace.

By count for each line post replaced.

C. Line Post Foundation, Replace.

By count for each line post foundations replaced.

D. End Anchor, Repair.

By count. For purposes of this specification, all three Cable Release Posts within a Trinity CASS Cable Terminal are considered a single end anchor.

E. End Anchor - Special, Repair.

By count for each special end anchor repaired.

F. End Anchor, Reset.

By count. For purposes of this specification, all three Cable Release Posts within a Trinity CASS Cable Terminal are considered a single end anchor. Includes end anchors and special end anchors.

G. Turnbuckle, Replace.

By count.

H. Cable, Replace.

1. Linear feet. For purposes of this specification, each cable replaced is considered separately.
2. Length will be calculated as the distance from one anchor point to another. Anchor points may be turnbuckles or end anchors.

I. Mobilization, On-Call.

By count.

15058.05 BASIS OF PAYMENT.

Article 1109.16, C, 4, b, of the Standard Specifications will not apply to items on this contract.

A. Line Post, Repair.

Per line post. Payment is full compensation for removing and replacing line post hardware, and attaching or reattaching cable(s) to line post. Disposal of damaged materials, vegetation removal, snow removal, and site cleanup are incidental to item.

B. Line Post, Replace.

Per line post. Payment is full compensation for removing and replacing damaged line post, removing and replacing line post hardware, and attaching or reattaching cable(s) to line post. Disposal of damaged materials, vegetation removal, snow removal, and site cleanup are

incidental to item.

C. Line Post Foundation, Replace.

Per line post foundation. Payment is full compensation for removing and replacing damaged line post foundation. Disposal of damaged materials, vegetation removal, snow removal, and site cleanup are incidental to item.

D. End Anchor, Repair.

Each. Payment is full compensation for repairing the end anchor. Repair may include replacing cable end fittings and hardware, reattaching cable(s) to the end anchor, and removing the damaged anchor and installing a new anchor. Disposal of damaged materials, vegetation removal, snow removal, and site cleanup are incidental to item.

E. End Anchor - Special, Repair.

Each. Payment is full compensation for repairing the special end anchor. Repair may include removal of damaged components, and providing the any or all of the following items: additional lengths of cable, attachment hardware, special steel beam guardrail sections, modifications to any existing steel beam guardrail sections, and other materials necessary to provide for a complete connection. Disposal of damaged materials, vegetation removal, snow removal, and site cleanup are incidental to item.

E. End Anchor, Reset.

Each. Payment is full compensation for resetting the end anchor when non-end anchor repairs disturb the existing end anchor. Resetting may include realigning posts, reinserting cables into fittings and hardware, and reattaching cable(s) to the end anchor. Misplaced hardware will be replaced at the Contractor's expense.

F. Turnbuckle, Replace.

Per turnbuckle. Payment is full compensation for removing and replacing damaged turnbuckle. Disposal of damaged materials, vegetation removal, snow removal, and site cleanup are incidental to item.

G. Cable, Replace.

Per linear foot. Payment is full compensation for removing and replacing damaged cable. Disposal of damaged materials, vegetation removal, snow removal, and site cleanup are incidental to item.

H. Mobilization, On-Call.

1. Each. One payment of \$3000 per notification regardless of number of repair locations included.
2. Tension checks and re-tensioning of cable will be incidental to mobilization.
3. Traffic control for repairs not requiring a lane or shoulder closure will be incidental to mobilization. For purposes of this specification, all traffic control devices will be furnished by the Contractor.
4. One mobilization payment per contract will be made for annual checking of cable tension, including re-tensioning as necessary.

I. Non-routine repairs will be paid for according to Article 1109.03, B of the Standard Specifications.

J. Traffic control for lane or shoulder closures will be paid for according to Article 1109.03, B of the Standard Specifications.

Form 510130 (08-15)



SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Wes Musgrove		Office: Construction and Materials	Item 9
Submittal Date:		Proposed Effective Date: December 19, 2017	
Article No.:		Other: SS-15002, Supplemental Specifications for	
Title:		Project Management	
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 10/12/17	Effective Date: 12/19/17
Specification Committee Approved Text: See attached SS-15008, Supplemental Specifications for Project Management.			
Comments: None.			
Specification Section Recommended Text: See attached Draft Supplemental Specifications for Project Management.			
Comments:			
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and Highlight.) Revised SS-15002 attached			
Reason for Revision: SS-15002 was discussed at a DOT/ICPA Joint Specification Committee meeting. It was requested that the timeframe for submittals be extended. This was discussed with and agreed by the District Construction Engineers. Other changes were also suggested by the DCE's.			
New Bid Item Required (X one)	Yes	No X	
Bid Item Modification Required (X one)	Yes	No X	
Bid Item Obsolescence Required (X one)	Yes	No X	
Comments:			
County or City Comments:			
Industry Comments:			

SS-15008
(Replaces SS-15002)



**SUPPLEMENTAL SPECIFICATIONS
FOR
PROJECT MANAGEMENT**

**Effective Date
December 19, 2017**

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SUPPLEMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

15008.01 DESCRIPTION.

The Contractor shall provide a Project Manager to perform project management responsibilities as described in this Supplemental Specification.

15008.02 COORDINATION OF SUBCONTRACTORS.

The Project Manager shall be on the project at the beginning of each phase of work to be performed by a subcontractor. The Project Manager shall coordinate the work of each subcontractor working on the project and shall ensure that the subcontractor understands the scope of work required by the contract documents.

15008.03 COMMUNICATION WITH THE ENGINEER.

The Project Manager shall be responsible for communicating requests for information regarding details of the contract with the Engineer.

15008.04 DOCUMENTATION OF ITEM PROGRESS.

- A.** The Project Manager, or designated representative, shall take and record item measurements and perform calculations to determine pay quantities for invoicing work performed. The items shall be measured as defined in the Method of Measurement specified for each item. The measurements shall be accurate to the nearest 0.1 unit unless otherwise specified in the contract documents.
- B.** As a minimum, the following information shall be included for all item quantity records and measurements:
 - Project Number
 - Proposal Line No., and Item Code, and Division
 - Date the work was performed
 - Name of contractor/subcontractor performing the work
 - Location of the work
 - Measured quantity
 - Calculations made to arrive at the quantity

- Remarks and/ or supporting sketch as needed to clearly define the work performed and quantity measured
 - Names of persons measuring the work and person double checking records
 - Identification of whether the measurement is interim or final
 - Signed certification statement by the persons taking the measurements, performing the calculations, and submitting them for payment that the measurement and calculations are correct.
- C. The Contracting Authority will make available the item forms that shall be used for recording item progress. The Contractor may submit alternative forms to the Engineer for approval.
- D. When the method of measurement requires weighing or volume measurement in the hauling vehicle, the Project Manager, or designated representative, shall collect the scale tickets and record the location and placement of the material. The Project Manager shall furnish the original truck scale tickets and a signed, written summary of the delivery of the material to the Engineer at the end of each working day.
- E. For lump sum items, the records shall support invoiced progress payments for pay estimates.
- F. Unless otherwise specified, the item measurement shall be made when the work is in place and complete. When the work is not complete, the item measurement records shall be submitted as interim measurements.
- G. The quantities submitted for payment by the Project Manager shall not include measurements for quantities of work performed outside the scope of work included in the contract without written authorization from the Engineer. The Project Manager shall not submit quantities of work performed to establish or remove plant sites, storage areas, or temporary areas used for Contractor operations.
- H. Project Manager shall submit item measurement records to the Engineer ~~by the end of the following working day~~ on a weekly basis, or before subsequent work prevents verification of completed quantities, whichever occurs first.
- I. When the quantity of work required for an item exceeds the contract quantity, the Project Manager shall notify the Engineer, in writing, that extra work is being performed. The notification shall include the location and an estimate of the quantity of extra work.
- J. When extra work, as defined in Article 1109.03, B, of the Standard Specifications, is required, the Project Manager shall notify the Engineer, in writing, of the project number, quantity, contractor that will perform the work, and proposed cost settlement of extra work prior to beginning work. Project Manager and Engineer must agree on quantity and cost before extra work is performed. For unusual circumstances, Contractor may proceed with work upon verbal agreement. The Engineer will issue a change order within ~~3~~ 7 working days of the agreement. Contractor shall promptly return the signed change order to ensure prompt payment for extra work.
- K. The Project Manager and Engineer shall agree on a tracking system that will ensure mutual agreement on the status of all change orders.
- L. The Engineer will randomly select quantities for verification. If discrepancies between quantities furnished by the Project Manager and verified by the Engineer occur, Project Manager and Engineer must reconcile differences before payment is processed. The Project Manager shall arrange to have the items in question remeasured and resubmitted if it is determined the original measurement included unacceptable or incomplete quantities of work. In the event the Project

Manager, or designated representative, repeatedly fails to perform measurements as required, the Engineer will measure all quantities, and reduce final payment for the item, Project Management.

- M. If the Engineer withholds quantities for payment, the Project Manager will be provided the details, quantity, and reason for withholding payment. The Project Manager shall correct all deficiencies that have resulted in the withholding of payment within 2 weeks.

15008.05 SUBMISSION OF MATERIAL APPROVAL DOCUMENTATION.

Project Manager shall maintain a Material Approval Record. This record shall include all material approval documentation as required for the basis of acceptance by Materials I.M. 204 except for material approved by visual inspection or tests performed by the Engineer. This includes certification statements for all certified materials incorporated in the project. For materials approved by brand name from an approved source, the Project Manager, or designated representative, shall document the brand name, producer, quantity, and appropriate Materials I.M. for the material incorporated. Copies of these documents shall be provided to the Engineer when reporting item progress for progress payments.

15008.06 FALSE STATEMENTS.

The Contractor shall inform all personnel performing project management activities of the following provisions regarding the falsification of reports and certifications:

- FHWA 1273, IX False Statements;
- Iowa Code 714.8, Subsection 3, Fraudulent Practices; and
- Article 1102.03, C, 5, of the Standard Specifications; Imposition of Increase in Bidder Qualification Requirements, Suspension, and Disqualification.

15008.07 METHOD OF MEASUREMENT AND BASIS OF PAYMENT.

- A. The Lump Sum price for Project Management shall be full compensation for coordinating, communicating, measuring, recording, and submitting the required documentation for all projects on the contract. Final payment may be reduced for failure to perform these requirements.
- B. Progress payments for this item will be made at the same rate as the percent of work completed.