IOWA DEPARTMENT OF TRANSPORTATION

To Office:	Specification Committee	**Date:**	May 4, 2026
Attention:		**Ref. No.:**	305
From:	Eric Johnsen, P.E.		
Office:	Specifications		
Subject:	Agenda for May 14, 2026, Specification Committee Meeting		

The Specification Committee will meet on Thursday, May 14, 2026, at 9:00 a.m.

The agenda is as follows:

1. **Article 2527.02, D,1, b; Pavement Markings.**

The Construction and Materials Bureau requests to allow contract documents to specify width of tape since there are various options available.

2. **Article 2527.03; Pavement Markings.**

The Construction and Materials Bureau requests to add language for clarity.

3. **Article 2527.03, H, 1; Pavement Markings.**

The Construction and Materials Bureau requests the change update current practices.

4. **DS-23069; Multicomponent Liquid Pavement Markings.**

The Construction and Materials and Maintenance Bureaus request updates to the Developmental Specifications for Multi-Component Liquid Pavement Markings.

5. **Article 2105.05; Roadway Borrow and Excavation.**
Article 2104.05; Channel Excavation.
Article 2105.05; Stripping, Salvaging and Spreading Topsoil.

The Local Systems Bureau requested the following changes to the contract proposal language to update fuel adjustment.

6. **Article 2214.03, D, 8; Pavement Scarification.**

The Construction and Materials Bureau requests the change to better clarify working days and to limit structural damage to the existing pavement.

7. **Article 2310; Portland Cement Concrete Overlay.**
Article 4196; Engineering Fabrics.

The Construction and Materials Bureau requests to move pavement interlayer geofabric specifications from DS-23052 into the Standard Specifications.

8. **Article 2317.05; Pavement Smoothness.**

The Construction and Materials Bureau requests to change the payment tables based on current paving practices.

9. **Article 2528.03, J, 7, a; Automated Flagger Assistance Devices (Traffic Control).**
Article 2528.04, J; Flaggers and Automated Flagger Assistance Devices (Traffic Control).
Article 2528.05, J; Flaggers and Automated Flagger Assistance Devices (Traffic Control).
Article 4188.12; Automated Flagger Assistance Devices (Traffic Control Devices).

The Construction and Materials Bureau requests the updated language for a new Bid Item.

10. **Article 2602.01, D, 2; Water Pollution Control Quality Control.**

The Construction and Materials Bureau requests to remove Permix from the language since the DOT has discontinued use.

11. **Article 4127.03, A; Aggregate for Flexible Pavement Mixtures.**

The Construction and Materials Bureau requests to remove language not applicable to the combined gradation table.

12. **DS-23018; Structural Concrete (4500 PSI or Greater).**

The Construction and Materials Bureau requests updates to the Developmental Specifications for Structural Concrete (4500 PSI or Greater).

13. **SS-23002; Evaluation of Longitudinal Joint Quality for Flexible Paving Mixtures with Incentive/Disincentive.**

The Construction and Materials Bureau requests updates to the Supplemental Specifications for Evaluation of Longitudinal Joint Quality for Flexible Paving Mixtures with Incentive/Disincentive.

14. **Article 2549.03, B, Manhole Rehabilitation (Pipe, Culvert, and Manhole Cleaning and Rehabilitation).**
Article 2549.04, Method of Measurement (Pipe, Culvert, and Manhole Cleaning and Rehabilitation).
Article 2549.05, M, 2, Basis of Payment (Pipe, Culvert, and Manhole Cleaning and Rehabilitation).
Article 2549.05, Basis of Payment (Pipe, Culvert, and Manhole Cleaning and Rehabilitation).
Article 4147.02, Manhole Rehabilitation (Pipe and Manhole Rehabilitation Materials).
Article 4150.02, E, 2, a, 1, a, 2, Solid Single Copper Conductor (Tracer System).
Article 4150.02, E, 2, a, 1, b, 1, Bimetallic Copper Clad Steel Conductor (Tracer System).
Article 4150.02, E, 2, a, 1, b, 6, Solid Single Copper Conductor (Tracer System).
Article 4150.02, E, 2, a, 2, g, Directional Drilling/Boring (Tracer System).

The Specifications Section requests updates to match SUDAS Standard Specifications for shared sections.

Form 510130 (08-24)

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Scott Nixon / Brian Worrel / Ben Hucker	**Bureau/Office:** Construction & Materials and Maintenance	**Item 1**
Submittal Date: 04/23/2026	**Proposed Effective Date:** 10/20/2026	
Article No.: 2527.02, D, 1, b, 2 **Title:** Pavement Markings	**Other:**	

Specification Committee Action:

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

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:
2527.02, D, 1, b, 2.

Replace the Article:

Nominal width ~~of 4 inches~~ as specified in the contract documents.

Comments:

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

1. Wet, Retroreflective Removable Tape Markings.

a. Meet the requirements of Article 4183.06, A, and prequalified for use according to Materials I.M. 483.06.

b. Complying with the following:

1) Preformed markings consist of white or yellow films providing immediate and continuing retroreflection during dry, wet, and rainy conditions.

2) Nominal width ~~of 4 inches~~ as specified in the contract documents.

Reason for Revision: With the change in the Iowa DOT's Interstate and Primary Highway default pavement marking width to 6-inches, it was necessary to update the stated language. Defining the width based on the contract documents allows local agencies some flexibility if they have not yet adopted wider lines.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments:

County or City Comments: Local Systems Bureau sent this out for comment to LPAs and no feedback was received.

Industry Comments: This change was presented to the Iowa ATSSA members at a special meeting on April 23rd, and positive feedback was received. There are various widths of wet, retroreflective removable tape on the market, so multiple width options are available for contractors to meet contract

requirements.

Form 510130 (08-24)

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Scott Nixon / Brian Worrel / Ben Hucker	**Bureau/Office:** Construction & Materials and Maintenance	**Item 2**
Submittal Date: 04/27/2026	**Proposed Effective Date:** 10/20/2026	
Article No.: 2527.03 **Title:** Pavement Markings	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:
2527.03, A, General.

Replace the Article:

1. The contract documents will specify the quantity, locations, and type of pavement markings required.

2. For painted pavement markings, use self-propelled or truck-mounted equipment designed for the purpose of applying painted pavement markings of the type, width and thickness required. Hand application or towing of the equipment will be allowed for smaller areas as approved by the Engineer. Equip the machine with an adjustable guide-on to obtain proper placement of the line. For all other marking types, use equipment designed for the preparation and application of the appropriate type of pavement marking material.

3. Beginning January 1, 2028, provide a minimum of one employe on the project holding an ATSSA Pavement Marking Technician certification and experience in the application of the appropriate type of pavement marking material. Employee(s) shall be on site at all times when pavement markings are being applied, with their primary attention being devoted to the surface preparation and pavement marking operations. If a Certified Technician is not available, a person holding a certificate of completion from the ATSSA Pavement Marking Technician training course (but not yet fully certified as a Pavement Marking Technician) may be allowed to perform temporary waterborne pavement marking applications only.

4. Provide a letter of certification from the pavement marking manufacturer indicating the Contractor's qualifications to install their product. The letter must be signed by an official from marking manufacturer and the date of the signature must be within the previous 12 months. Include a copy of the manufacturer's application instructions enclosed with the letter and always have a copy of both available on site for reference by the Engineer upon request.

5. Before beginning permanent painted pavement marking operations, at a location approved by the Engineer, complete a 300 foot test section application of the appropriate type of pavement marking material that demonstrates the ability to meet the requirements of this specification. Do not begin permanent pavement marking operations until the Engineer

approves the test strip. The Engineer may waive the test strip requirement if they have sufficient evidence to ensure the crew will perform a quality application.

6. ~~2.~~ When waterborne or solvent based traffic paint is specified, use the following to determine which to apply. Monitor weather conditions to ensure equipment capable of placing the proper type of paint is available. The Engineer will not consider temperature conditions an excuse for delaying placement of pavement markings. Follow the manufacturer's written recommendations for other details of application.
   a. From April 23rd to October 7th, use waterborne traffic paint when both the atmospheric and surface temperatures are at least 35˚F and rising. Only use solvent-borne paint if these requirements cannot be met.
   b. From October 8th to April 22nd, solvent-borne paint may be used any time. Only use waterborne traffic paint if both the atmospheric and surface temperatures are at least 35˚F and rising at the time of application.

7. ~~3.~~ Follow the manufacturer's temperature restriction recommendations for tape and durable paint.

8. ~~4.~~ For all pavement markings, ensure the pavement surface is dry and free from dirt, dust, oil, curing compound, and other contaminates which may interfere with markings properly bonding to the surface. For permanent pavement marking applications, use both compressed air sprays and a power broom ahead of the application truck to achieve these requirements. Ensure the clean surface is at least 1 inch wider than the anticipated marking. Shoot an air blast on the pavement surface immediately prior to placing the new markings. The air blast is not intended to remove large amounts of dust, but only a very small amount of residue that might be left from the removal and cleaning operation.

9. ~~5.~~ Ensure the following for all painted and taped pavement markings:
   - Uniform thickness,
   - Uniform distribution of glass beads throughout the line width,
   - Minimum ~~L~~line widths as specified, ~~with a tolerance of ± 1/4 inch for 4 inch lines and ± 1/2 inch for wider lines~~ or a maximum of 1/2 inch above the specified width,
   - Symbols and Legends are visually proportional to contract documents with an out-to-out tolerance of ± 6 inches, ~~and~~
   - Markings have sharp edges and cutoffs at the ends~~.~~, and
   - Location and alignment are consistent with contract document requirements

10. Take a minimum of ten width measurements per mile per line per color, spaced approximately 500 feet apart, for each line and each color. Report these values and locations to the Engineer at the end of each working day. The Engineer may perform additional width checks at their discretion. All measurements taken may be used to determine conformance with marking width requirements.

11. Take a minimum of three length measurements within the first 1000 feet of pavement markings applied each day, for each non-continuous line and each color. Measure both the length of each stripe and the gap between the stripes to ensure they are in conformance with the contract documents and Standard Road Plan PM-110. Report these values and locations to the Engineer at the end of each working day. The Engineer may perform additional length checks at their discretion. All measurements taken may be used to determine conformance with marking length requirements.

12. For pavement markings placed on new pavement surfaces, install any necessary temporary pavement markings, and wait a minimum of 2 weeks from the day the surface is completed before installing permanent markings.

13. Lay out the pavement marking and grooving as detailed in the Contract Documents and as follows:

a. Apply pavement markings straight and close to the intended alignment without abrupt changes that result in an unacceptable appearance by using a guiding device extending at least 3 feet ahead of the machine. A laser or camera guidance system is also acceptable provided they provide the proper guidance. Lines that deviate laterally from the intended alignment more than 2 inches in 200 feet may be rejected.

b. The location of edge lines on all two-lane roadways shall be referenced from the roadway centerline. On multi-lane roadways, the locations of edge lines shall be referenced to accurately located longitudinal joints near lane line locations. The location of edge lines on ramps may be referenced to the pavement edge. Where such references do not exist or are not reliable, locate the lines as follows:

1) For straight or nearly straight lines, provide reference marks spaced no more than 50 feet apart, or reference the location to a stringline set between marking line points.

2) For curves, reference the locations to closely spaced marking line points. For sharp curves, a spacing of 10 feet between marking reference points may be required.

3) Other equally effective systems the Engineer approves.

a) For all markings, utilize adequate guide marks to ensure the accurate application of the pavement markings.

b) Pavement marking grooving shall adhere to these same requirements such that properly applied marking material can be placed fully within each intended groove.

14. For all painted pavement marking applications, do not exceed manufacturer's recommended application travel speed or 10 mph, whichever is less.

15. ~~**6.**~~ For tape products, follow the manufacturer's recommendations for surface dryness, primers, adhesives, and other surface preparation requirements. Unless specified otherwise by the tape manufacturer, meet the following test for determining surface dryness before applying the tape:

a. In an area of direct sunlight where the tape will be applied, place an 18 inch by 18 inch piece of polyethylene (a green or black garbage bag may be used). There should not be any holes or tears in the polyethylene.

b. Tape down all the edges of the polyethylene sheet to seal all the edges and not allow any air movement to get under the polyethylene.

c. Firmly tamp the tape using the tamper cart or by foot tamping.

d. Allow 20 - 25 minutes for the polyethylene to be exposed to ~~the~~ direct sunlight.

e. Remove the polyethylene from the road surface. If no moisture is present on the underside of the polyethylene or on the road surface, the tape can be applied.

f. If any moisture is present, allow another hour to pass and repeat the test until no moisture is found.

2527.03, D, 3.

Delete the Article:

~~**3.** Accurately place all lines to a close tolerance using a guide extending at least 3 feet ahead of the machine. The location of edge lines may be referenced to the pavement edge. The locations of other longitudinal lines may be referenced to accurately located longitudinal joints. Where such references do not exist or are not reliable, locate the lines as follows:~~

~~**a.** For straight or nearly straight lines, reference the locations to a stringline set between marking line points.~~

~~**b.** For curves, reference the locations to closely spaced marking line points. For sharp curves, a spacing of 10 feet may be required.~~
~~**c.** Other equally effective systems the Engineer approves.~~

2527.03, G, Defective Pavement Markings.

Replace the title and Article:

Defective Pavement Markings and Grooves.

1. Pavement markings will be evaluated by the Engineer for acceptance following installation~~.~~ ~~The~~, and the Engineer will notify the Contractor of any pavement ~~markings~~ that fail to meet acceptance. ~~Reasons for failure could include, but are not limited to, failed retroreflectivity readings, incorrect color, incorrect location, poor alignment, poor adherence to the pavement surface, insufficient thickness, width or length and insufficient bead embedment.~~ Replace, at no additional cost to the Contracting Authority, all pavement markings which the Engineer determines to be defective and not in conformance with this specification. Remove the defective markings completely and clean ~~to~~ the underlying pavement surface according to the requirements of Article 2527.03, C. Remove the defective area plus all adjacent marking material extending 1 foot in any direction. After surface preparation work is complete, finish the repair by reapplying new marking material over the cleaned pavement surface according to the requirements of ~~this specifications~~ the contract documents.

2. Non-conformance with the contract documents may include, but are not limited to:

a. Pavement markings that:

1) Have drag marks, gashes, gouges, foreign covering, discolored areas or areas that have failed to solidify.

2) Have improper adhesion, length, color, thickness, or bead embedment.

3) Have areas that present a ragged appearance, areas that do not present sharply defined edges, or areas with abrupt unintended changes in alignment.

b. Pavement marking grooves that are not of the correct width, length, depth, cross slope, or alignment.

c. Markings that are not substantially placed within each intended pavement marking groove, when grooving is required and the grooves are placed in conformance with the contract documents.

d. Lines or grooves that deviate laterally from the intended alignment by more than 2 inches in 200 feet may be rejected.

e. Lines or grooves that do not meet the required widths. No more than 300 feet of deficient width line or groove may be allowed to remain in each 1 mile segment.

f. Lines that do not meet minimum retroreflectivity requirements as listed in Tables 2527.02-3, 2527.02-4, and 2527.02-5. Markings shall be evaluated in 1 mile increments by the requirements listed in Materials I.M. 386. For any 1 mile section in which the average of all readings in a single line does not meet minimum retroreflectivity requirements, the markings in the entire 1 mile section shall be replaced to ensure they meet minimum retroreflectivity requirements.

Comments:

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

2527.03 CONSTRUCTION.

A. General.

1. The contract documents will specify the quantity, locations, and type of pavement markings required.

2. For painted pavement markings, use self-propelled or truck-mounted equipment designed for the purpose of applying painted pavement markings of the type, width and thickness required. Hand application or towing of the equipment will be allowed for smaller areas as approved by the Engineer. Equip the machine with an adjustable guide-on to obtain proper placement of the line. For all other marking types, use equipment designed for the preparation and application of the appropriate type of pavement marking material.

3. Beginning January 1, 2028, provide a minimum of one employe on the project holding an American Traffic Safety Services Association (ATSSA) Pavement Marking Technician certification and experience in the application of the appropriate type of pavement marking material. Employee(s) shall be on site at all times when pavement markings are being applied, with their primary attention being devoted to the surface preparation and pavement marking operations. If a Certified Technician is not available, a person holding a certificate of completion from the ATSSA Pavement Marking Technician training course (but not yet fully certified as a Pavement Marking Technician) may be allowed to perform temporary waterborne pavement marking applications only.

4. Provide a letter of certification from the pavement marking manufacturer indicating the Contractor's qualifications to install their product. The letter must be signed by an official from marking manufacturer and the date of the signature must be within the previous twelve months. Include a copy of the manufacturer's application instructions enclosed with the letter and always have a copy of both available on site for reference by the Engineer upon request.

5. Before beginning permanent painted pavement marking operations, at a location approved by the Engineer, complete a 300-foot test section application of the appropriate type of pavement marking material that demonstrates the ability to meet the requirements of this specification. Do not begin permanent pavement marking operations until the Engineer approves the test strip. The Engineer may waive the test strip requirement if they have sufficient evidence to ensure the crew will perform a quality application.

~~2.~~6. When waterborne or solvent based traffic paint is specified, use the following to determine which to apply. Monitor weather conditions to ensure equipment capable of placing the proper type of paint is available. The Engineer will not consider temperature conditions an excuse for delaying placement of pavement markings. Follow the manufacturers' written recommendations for other details of application.

- **g.** From April 23rd to October 7th, use waterborne traffic paint when both the atmospheric and surface temperatures are at least 35F and rising. Only use solvent-borne paint if these requirements cannot be met.
- **h.** From October 8th to April 22nd, solvent-borne paint may be used any time. Only use waterborne traffic paint if both the atmospheric and surface temperatures are at least 35F and rising at the time of application.

~~3.~~7. Follow the manufacturers' temperature restriction recommendations for tape and durable paint.

~~4.~~8. For all pavement markings, ensure pavement surface is dry and free from dirt, dust, oil, curing compound, and other contaminates which may interfere with markings properly bonding to the surface. For permanent pavement marking applications, use both compressed air sprays and a power broom ahead of the application truck to achieve these requirements. Ensure the clean surface is at least 1 inch wider than anticipated marking. Shoot an air blast on the pavement surface immediately prior to placing new

markings. Air blast is not intended to remove large amounts of dust, but only a very small amount of residue that might be left from removal and cleaning operation.

~~5.~~9. Ensure the following for all painted pavement markings:

- Uniform thickness,
- Uniform distribution of glass beads throughout the line width,
- Minimum line widths as specified, ~~with a tolerance of 1/4 inch for 4 inch lines and 1/2 inch for wider lines~~ or a maximum of ½ inch above the specified width,
- Symbols and Legends are visually proportional to contract documents with an out-to-out tolerance of 6 inches, ~~and~~
- Markings have sharp edges and cutoffs at the ends, and
- Location and alignment are consistent with contract document requirements

10. Take a minimum of 10 width measurements per mile per line per color, spaced approximately 500' apart, for each line and each color. Report these values and locations to the Engineer at the end of each working day. The Engineer may perform additional width checks at their discretion. All measurements taken may be used to determine conformance with marking width requirements.

11. Take a minimum of 3 length measurements within the first 1,000 feet of pavement markings applied each day, for each non-continuous line and each color. Measure both the length of each stripe and the gap between the stripes to ensure they are in conformance with the contract documents and Standard Road Plan PM-110. Report these values and locations to the Engineer at the end of each working day. The Engineer may perform additional length checks at their discretion. All measurements taken may be used to determine conformance with marking length requirements.

12. For pavement markings placed on new pavement surfaces, install any necessary temporary pavement markings, and wait a minimum of 2 weeks from the day the surface is completed before installing permanent markings.

13. Lay out the pavement marking and grooving as detailed in the Contract Documents and as follows:

c) Apply pavement markings straight and close to the intended alignment without abrupt changes that result in an unacceptable appearance by using a guiding device extending at least 3 feet ahead of the machine. A laser or camera guidance system is also acceptable provided they provide the proper guidance. Lines that deviate laterally from the intended alignment more than 2 inches in 200 feet may be rejected.

d) The location of edge lines on all two-lane roadways shall be referenced from the roadway centerline. On multi-lane roadways, the locations of edge lines shall be referenced to accurately located longitudinal joints near lane line locations. The location of edge lines on ramps may be referenced to the pavement edge. Where such references do not exist or are not reliable, locate the lines as follows:

1) For straight or nearly straight lines, provide reference marks spaced no more than 50 feet apart, or reference the location to a stringline set between marking line points.

2) For curves, reference the locations to closely spaced marking line points. For sharp curves, a spacing of 10 feet between marking reference points may be required.

3) Other equally effective systems the Engineer approves.

e) For all markings, utilize adequate guide marks to ensure the accurate application of the pavement markings.

f) Pavement marking grooving shall adhere to these same requirements such that properly applied marking material can be placed fully within each intended groove.

14. For all painted pavement marking applications, do not exceed manufacturer's recommended application travel speed or 10 mph, whichever is less.

~~6.~~15. For tape products, follow the manufacturer's recommendations for surface dryness, primers, adhesives, and other surface preparation requirements. Unless specified otherwise by the tape manufacturer, meet the following test for determining surface dryness before applying the tape:

a. In an area of direct sunlight where the tape will be applied, place an 18-inch by 18-inch piece of polyethylene (a green or black garbage bag may be used). There should not be any holes or tears in the polyethylene.
b. Tape down all the edges of the polyethylene sheet to seal all the edges and not allow any air movement to get under the polyethylene.
c. Firmly tamp the tape using the tamper cart or by foot tamping.
d. Allow 20 - 25 minutes for the polyethylene to be exposed to ~~the~~ direct sunlight.
e. Remove the polyethylene from the road surface. If no moisture is present on the underside of the polyethylene or on the road surface, the tape can be applied.
f. If any moisture is present, allow another hour to pass and repeat the test until no moisture is found.

D. Permanent Pavement Marking.

~~3. Accurately place all lines to a close tolerance using a guide extending at least 3 feet ahead of the machine. The location of edge lines may be referenced to the pavement edge. The locations of other longitudinal lines may be referenced to accurately located longitudinal joints. Where such references do not exist or are not reliable, locate the lines as follows:~~

~~**a.** For straight or nearly straight lines, reference the locations to a stringline set between marking line points.~~
~~**b.** For curves, reference the locations to closely spaced marking line points. For sharp curves, a spacing of 10 feet may be required.~~
~~**c.** Other equally effective systems the Engineer approves.~~

G. Defective Pavement Markings and Grooves.

1. Pavement markings will be evaluated by the Engineer for acceptance following installation~~.~~, and ~~T~~the Engineer will notify the Contractor of any ~~pavement~~ markings that fail to meet acceptance. ~~Reasons for failure could include, but are not limited to, failed retroreflectivity readings, incorrect color, incorrect location, poor alignment, poor adherence to the pavement surface, insufficient thickness, width or length and insufficient bead embedment.~~ Replace, at no additional cost to the Contracting Authority, all pavement markings which the Engineer determines to be defective and not in conformance with this specification. Remove the defective markings completely and clean ~~to~~ the underlying pavement surface according to the requirements of Article 2527.03, C. Remove the defective area plus all adjacent marking material extending 1 foot in any direction. After surface preparation work is complete, finish the repair by reapplying new marking material over the cleaned pavement surface according to the requirements of ~~this specifications~~ the contract documents.

2. Non-conformance with the contract documents may include, but are not limited to:
   a. Pavement markings that:

i. have drag marks, gashes, gouges, foreign covering, discolored areas or areas that have failed to solidify.
ii. have improper adhesion, length, color, thickness, or bead embedment.
iii. have areas that present a ragged appearance, areas that do not present sharply defined edges, or areas with abrupt unintended changes in alignment.

b. Pavement marking grooves that are not of the correct width, length, depth, cross slope, or alignment.
c. Markings that are not substantially placed within each intended pavement marking groove, when grooving is required and the grooves are placed in conformance with the contract documents.
d. Lines or grooves that deviate laterally from the intended alignment by more than 2 inches in 200 feet may be rejected.
e. Lines or grooves that do not meet the required widths. No more than 300 feet of deficient width line or groove may be allowed to remain in each 1-mile segment.
f. Lines that do not meet minimum retroreflectivity requirements as listed in Tables 2527.02-3, 2527.02-4, and 2527.02-5. Markings shall be evaluated in 1-mile increments by the requirements listed in Materials I.M. 386. For any 1-mile section in which the average of all readings in a single line does not meet minimum retroreflectivity requirements, the markings in the entire 1-mile section shall be replaced to ensure they meet minimum retroreflectivity requirements.

Reason for Revision: We've identified some challenges in past pavement marking applications that have led to shortened marking life, poor quality, or sloppy appearance. These updates seek to bring this specification up to the current industry standards for quality pavement marking applications.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments: Some proposed changes were modeled after those used by the Kansas Department of Transportation, who has used these specifications with good results.

County or City Comments: Local Systems Bureau sent this out for comment to LPAs and no feedback was received.

Industry Comments: These changes were presented to the Iowa ATSSA members at a special meeting on April 23rd, and positive feedback was received. The group had some comments for clarity and consistency, which were incorporated into the above proposed language.

Form 510130 (08-24)

IOWA | DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Scott Nixon / Brian Worrel / Ben Hucker	**Bureau/Office:** Construction & Materials and Maintenance	**Item 3**
Submittal Date: 05/14/2026	**Proposed Effective Date:** 10/20/2026	
Article No.: 2527.03, H, 1 **Title:** Pavement Markings	**Other:**	

Specification Committee Action:

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

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

2527.03, H, 1.

Replace the Article:

When specified, place pavement markings in a groove cut into the pavement surface. Dry or wet cut the groove in a single pass, using ~~stacked diamond~~ polycrystalline disk cutting heads mounted on a ~~floating~~ down-pressure head with controls capable of providing accurate and uniform depth relative to the pavement surface, a groove cross slope that matches that of the adjacent pavement, and alignment consistent with the requirements of the contract documents. If dry cutting, use equipment that is self-vacuuming. Use the equipment according to the manufacturer's recommendations.

Comments:

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

H. Grooving for Pavement Markings.

1. When specified, place pavement markings in a groove cut into the pavement surface. Dry or wet cut the groove in a single pass, using ~~stacked diamond~~ polycrystalline disk cutting heads mounted on a ~~floating~~ down-pressure head with controls capable of providing accurate and uniform depth relative to the pavement surface, a groove cross slope that matches that of the adjacent pavement, and alignment consistent with the requirements of the contract documents. If dry cutting, use equipment that is self-vacuuming. Use the equipment according to the manufacturer's recommendations.

Reason for Revision: Stacked diamond blades require water when cutting to keep them cool, which leaves behind a wet surface. This is problematic for pavement marking grooving, as pavement markings need to be applied to a dry surface. Removing the requirement for stacked diamond blades and replacing it with polycrystalline disk (PCD) cutting heads better aligns with the needs of the operation. A "floating head" is an outdated reference, as down-pressure is required to ensure the head cuts into the pavement properly to achieve a uniform groove.

New Bid Item Required (X one)	**Yes**	**No** X

Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments:		
County or City Comments:		
Industry Comments: The stacked-diamond blade portion of the specification revision was presented to Iowa ATSSA Chapter members at their meeting on February 3, 2026, and only positive feedback in support of this change was voiced. No Iowa contractors currently use stacked diamond blades for this operation; all use PCD. The change to the floating head was presented to the Iowa ATSSA members at a special meeting on April 23rd, and positive feedback was received. Iowa contractors do not typically use floating heads anymore, as they are ineffective for this purpose.		

Form 510130 (08-24)

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Scott Nixon / Brian Worrel / Ben Hucker	**Bureau/Office:** Construction & Materials and Maintenance	**Item 4**
Submittal Date: 04/27/2026	**Proposed Effective Date:** 07/21/2026	
Article No.: **Title:**	**Other:** DS-23069, Multicomponent Liquid Pavement Markings	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			
Specification Section Recommended Text: See attached draft Developmental Specifications for Multicomponent Liquid Pavement Markings.			
Comments:			

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

23069.02 MATERIALS.

A. General.

3. Provide materials in accordance with the retro reflectivity requirements below.

Table 23069.02-1: Minimum Initial ~~Retro reflectivity~~ Retroreflectivity Requirements

White lines	~~400 mcd/sq. m/lux~~ 500 mcd/m^2/lux
Yellow lines	~~250 mcd/sq. m/lux~~ 400 mcd/m^2/lux

23069.03 CONSTRUCTION.

A. General.

3. Use truck-mounted equipment designed for the preparation and application of multicomponent liquid pavement marking materials.

4. Beginning January 1, 2027, provide a minimum of one employe on the project holding an American Traffic Safety Services Association (ATSSA) Pavement Marking Technician certification and experience in the application of multicomponent liquid pavement markings. Employee(s) shall be on site at all times when multicomponent liquid pavement markings are being applied, with their primary attention being devoted to the surface preparation and pavement marking operations.

5. Provide a letter of certification from the pavement marking manufacturer indicating the Contractor's qualifications to install their product. The letter must be signed by an official from marking manufacturer and the date of the signature must be within the previous twelve months. Include a copy of the manufacturer's application instructions enclosed with the

letter and have a copy available at all times on site for reference by the Engineer upon request.

6. Before beginning pavement marking operations, at a location approved by the Engineer, complete a 300-foot test section application of multicomponent liquid pavement markings that demonstrates the ability to meet the requirements of this specification. Do not begin pavement marking operations until the Engineer approves the test strip. The Engineer may waive the test strip requirement if they have sufficient evidence to ensure the crew will perform a quality application.

~~2.~~6. Allowable painting dates will be from April 8th to October 22nd. Minimum pavement surface and air temperatures for application of pavement markings shall be 40°F and rising.

~~3.~~7. For all pavement markings, ensure pavement surface is dry and free from dirt, dust, oil, curing compound, and other contaminates which may interfere with markings properly bonding to the surface by using both compressed air sprays and a power broom ahead of the application truck. Ensure the clean surface is at least 1 inch wider than anticipated marking. Shoot an air blast on the pavement surface immediately prior to placing new markings. Air blast is not intended to remove large amounts of dust, but only a very small amount of residue that might be left from removal and cleaning operation.

~~4.~~8. For pavement markings placed on a new ~~asphalt~~ pavement surface, install any necessary temporary pavement markings, and wait a minimum of 2 weeks from the day the surface is completed before installing permanent markings.

~~5.~~9. Remove existing multi-component pavement markings prior to new pavement marking placement by vacuum blasting, vacuum dry grinding, wet grinding, shot blasting, or high-pressure water blasting. Containment is required if open abrasive blasting or dry grinding is utilized. Do not utilize chemical removal methods for removal of the existing marking. It is the intent that existing markings be approximately 90% removed while not creating a groove deeper than 0.080 inches +/- 0.010 inches. Confirm with Engineer that proper removal is achieved prior to new pavement marking placement. If consensus on removal is not confirmed or achieved, consult with manufacturer of the pavement marking to be placed and verify they concur with adequate existing marking removal. Provide this concurrence info to the Engineer prior to beginning new pavement marking placement.

~~7.~~10. Ensure the following for all painted pavement markings:

- Uniform thickness
- Uniform distribution of glass beads throughout the line width
- Minimum line widths as specified, ~~with a tolerance of +/-1/2 inch for all lines~~ or a maximum of ½ inch above the specified width
- Markings have sharp edges and cutoffs at the ends
- Black contrast markings are no closer than 2 inches and no farther than 4 inches from the adjacent markings, and that the entire marking is applied within the grooved area
- Location and alignment are consistent with contract document requirements.

11. Take a minimum of 10 width measurements per mile, per line, per color, spaced approximately 500’ apart, for each line and each color. Report these values and locations to the Engineer at the end of each working day. The Engineer may perform additional width checks at their discretion. All measurements taken may be used to determine conformance with marking width requirements.

12. Take a minimum of 3 length measurements within the first 1,000 feet of pavement markings applied each day, for each non-continuous line and each color. Measure both the length of

each stripe, the gap between adjacent stripes of differing colors, and the gap between each set of stripes to ensure they are in conformance with the contract documents and Standard Road Plan PM-110. Report these values and locations to the Engineer at the end of each working day. The Engineer may perform additional length checks at their discretion. All measurements taken may be used to determine conformance with marking length requirements.

~~6.~~13. Limitations~~.~~:

a. Complete grooving, existing pavement marking removal, and pavement marking placement in the same direction of travel as traffic is intended to utilize the lanes being worked on. On multi-lane roadways with adjacent lanes open to traffic, do not operate equipment against the flow of traffic.
b. When grooves are present, match existing cycle lengths for all non-continuous lines unless otherwise noted in the plans. If existing cycle lengths are found to differ from those specified in the contract documents by more than 10%, immediately cease work and consult the Engineer for direction.

D. Final Inspection

If Mobile Reflectometer Measurements are an item on the contract, perform final inspection in accordance with the Developmental Specification for Mobile Reflectometer Measurements. If that item is not on the contract, ~~P~~provide an acceptable, calibrated 30-meter geometry (100 feet), retro reflectometer to use on the project which will remain the property of the Contractor. In the presence of the Engineer, measure the retro-reflectivity of the pavement markings. Take a minimum of five randomly spaced readings per line type every 1 mile. The average minimum retro-reflectivity per mile shall be as per table 1 from Article 23069.02, A, 3.

E. Defective Pavement Markings and Grooves.

1. ~~Markings that are low on initial retro reflectivity up to 20% may, at the discretion of the Engineer, be accepted with a price adjustment.~~

~~2.~~1. Repair, at no additional cost to the Contracting Authority, all pavement markings which, after application and curing, the Engineer determines to be defective and not in conformance with ~~these specifications~~ the contract documents. Remove the defective markings completely and clean ~~to~~ the underlying pavement surface according to the requirements of Article 2527.03, C of the Standard Specifications. Remove the defective area plus all adjacent marking material extending 1 foot in any direction. After surface preparation work is complete, finish the repair by reapplying new marking material over the cleaned pavement surface according to the requirements of these specifications.

2. Non-conformance with the contract documents may include, but are not limited to:
   a. Pavement markings that:
      - have drag marks, gashes, gouges, foreign covering, discolored areas or areas that have failed to solidify.
      - have improper adhesion, length, color, thickness, or bead embedment.
      - have areas that present a ragged appearance, areas that do not present sharply defined edges, or areas with abrupt unintended changes in alignment.

   b. Pavement marking grooves that are not of the correct width, length, depth, cross slope, or alignment.
   c. Markings that are not substantially placed within each intended pavement marking groove, when grooving is required and the grooves are placed in conformance with the contract documents.

d. Lines or grooves that deviate laterally from the intended alignment by more than 2 inches in 200 feet may be rejected.

e. Lines or grooves that do not meet the required widths. No more than 300 feet of deficient width line or groove may be allowed to remain in each 1-mile segment.

f. Lines that do not meet minimum retroreflectivity requirements as listed in Table 23069.02-1. Markings shall be evaluated in 1-mile increments by the requirements listed in Materials I.M. 386. For any 1-mile section in which the average of all readings in a single line does not meet minimum retroreflectivity requirements, the markings in the entire 1-mile section of that line shall be fully removed and replaced.

Reason for Revision: After five years of experience with multicomponent liquid pavement markings, we have determined higher retroreflectivity requirements allow for greater marking life. Over the last few years, contractors have regularly exceeded these new minimum requirements on their typical installations, proving that these higher values are achievable within our current specifications.

After 5 years of experience with multicomponent liquid pavement markings, we've identified some challenges in past applications that have led to shortened marking life, poor quality, or sloppy appearance. These updates seek to bring this DS up to the current industry standards for quality, multicomponent liquid pavement marking applications.

Some proposed changes were modeled after those used by the Kansas Department of Transportation, who has successfully used these markings for many years with good results.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments:

County or City Comments:

Industry Comments: These changes were presented to the Iowa ATSSA members at a special meeting on April 23rd, and positive feedback was received. The group had some comments for clarity and consistency, which were incorporated into the above proposed language.

DRAFT DS- 23XXX
(Replaces DS-23069)

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DEVELOPMENTAL SPECIFICATIONS FOR MULTI-COMPONENT LIQUID PAVEMENT MARKINGS

Effective Date
July 21, 2026

THE STANDARD SPECIFICATIONS, SERIES 2023, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

23XXX.01 DESCRIPTION.
Provide reflectorized white and yellow multi-component, 100% solids liquid pavement markings that are free of toxic heavy metals for installation on asphalt and PCC pavement surfaces.

23XXX.02 MATERIALS.

A. General.

1. Apply multi-component liquid pavement markings in accordance with Article 2527.01 of the Standard Specifications.

2. Use materials capable of producing pavement markings with a wet-film thickness (WFT) of at least 20 mils. Apply at a greater WFT as recommended by the material manufacturer based on pavement type, pavement composition, environmental conditions, placement within a rumble, and other relevant factors. Approved products are listed in Materials I.M. 483.04, Appendix B. The Contractor may propose an equivalent product meeting all requirements of this specification, but the Engineer reserves the right to approve or deny the proposal. Multi-component Polyurea products will not be considered for usage.

3. Provide materials in accordance with the retro reflectivity requirements below.

Table 23XXX.02-1: Minimum Initial ~~Coefficient of Retroreflected Luminance~~ Retroreflectivity of Multi-Component Liquid Pavement Markings

Marking Type	Minimum Coefficient of Retroreflected Luminance (mcd/m2/lx)
White lines	~~400 mcd/sq. m/lux~~ 500
Yellow lines	~~250 mcd/sq. m/lux~~ 400

4. Provide yellow markings distinguishable from white markings in the dark.

5. Mix individual components before use if stored for more than 12 months.

B. Multi-Component Liquid Material.

1. Provide multi-component liquid material meeting the following requirements and characteristics:
   - **a.** Composed only of multi-component liquids and pigments,
   - **b.** Does not emit or leach solvents into the environment upon application to a pavement surface,
   - **c.** The infrared spectrum for all components shall match the reference sample provided by the manufacturer for the product tested and approved by the Department,
   - **d.** Free of lead, cadmium, mercury, hexavalent chromium, and other toxic heavy metals as defined by the EPA,
   - **e.** White material no darker than or no yellower than 17778 of Federal Standard Number 595C Colors,
   - **f.** Daytime color of the yellow epoxy meeting the following CIE chromaticity limits using illuminant "D65/2":

Table 23XXX.02-2: Daytime Chromaticity Coordinates (Corner Points) - Yellow

	1	2	3	4
x	0.470	0.485	0.520	0.480
y	0.440	0.460	0.450	0.420

   - **g.** White daylight directional reflectance (Y) of least 83%,
   - **h.** Yellow daylight directional reflectance (Y) of at least 50%,
   - **i.** Nighttime color of yellow meeting the following chromaticity limits in ASTM D 6628:

Table 23XXX.02-3: Nighttime Chromaticity Coordinates (Corner Points) - Yellow

	1	2	3	4
x	0.575	0.508	0.473	0.510
y	0.425	0.415	0.453	0.490

   - **j.** Contrast ratio of 0.98 or greater when measured on a black/white drawdown card at 15 mils WFT application rate.

2. Provide shadow lane line markings (legend BLC6) according to Standard Road Plans PM-110 and PM-320. Black epoxy should satisfy color chip 37038 of Federal Standard 595B and have similar quality as the white and yellow multi-component pavement markings. An anti-skid material shall be incorporated with the shadow line marking at a minimum rate of 15 pounds per gallon.

3. **Adhesion Capabilities.**
   Provide material meeting the adhesion requirements of the ACI Committee 403 when tested on PCC. Apply multi-component liquid pavement markings during the test to concrete pavements with a tensile strength of at least 300 psi and ensure the failure of the system occurs in the concrete during testing.

4. **Abrasion Resistance.**
   Provide material with an abrasion resistance wear index no greater than 82 when tested in accordance with ASTM C 501 with a CS 17 wheel under a load of 1000 g for 1000 cycles. The Department defines the wear index as the weight in milligrams of material abraded from the sample under the test conditions.

5. **Hardness.**
   Provide material with a Type D durometer hardness from 75 to 90 when tested in accordance with ASTM D 2240 after curing for 72 hours at 73°F ±4°F.

6. **Tensile Strength.**
   For epoxy-amine based multicomponent systems, including variations of this base chemistry, provide material with a tensile strength of at least 6000 psi when tested in accordance with ASTM D 638 after curing for 72 hours at 73°F ±4°F.

7. **Compressive Strength.**
   For epoxy-amine based multicomponent systems, including variations of this base chemistry, provide material with a compressive strength of at least 12,000 psi when tested in accordance with ASTM D 695 after curing for 72 hours at 73°F ±4°F.

C. Retroreflective Media.

1. Provide first drop wet media per the minimum rate shown for each product below. Use one of the following products for all grooved: edge lines, white broken lines, ramp edge lines, and lane drop lines:
   - 3M Connected Roads All Weather Elements Series 70E or 50E: Minimum rate 5 pounds per gallon
   - Potters VisiUltra 455: Minimum rate 8 pounds per gallon

2. Provide second drop glass spheres in accordance with Specification 4184 of the Standard Specifications on all lines except for black broken lane lines.
   a. Glass spheres shall be dual coated.
   b. Apply glass spheres at a minimum rate of 15 pounds per gallon. Application rate shall provide required minimum levels of retro reflectivity in accordance with Table 23XXX.02-1.

3. Provide beads packaged in moisture-proof, multi-wall shipping bags, and in containers marked with the following information:
   a. Manufacturer name,
   b. Manufacturer address,
   c. Type of treatment,
   d. Batch number, and
   e. Date of manufacture.

D. Sampling and Testing.

1. Test daylight directional reflectance and color meeting the requirements of ASTM E 1349.

2. Provide 1 pint samples of each manufacturer's lot or batch of material when manufactured to an independent lab for this testing. NTPEP data may be substituted if the product has not changed from initial submittal to NTPEP for evaluation of these products.
3. Submit to the Engineer a manufacturer's Certificate of Compliance for all components of the multi-component liquid pavement marking system.

4. Mark containers with the following information:
   a. Name of manufacturer,
   b. Product identification number,
   c. Lot or batch number,
   d. Date of manufacture,
   e. Color, and
   f. Net weight of contents.

23XXX.03 CONSTRUCTION.

A. General.

1. The contract documents will specify quantity, locations, and type of pavement markings required.

2. Use truck-mounted equipment designed for the preparation and application of multicomponent liquid pavement marking materials.

3. Beginning January 1, 2027, provide a minimum of one employe on the project holding an ATSSA Pavement Marking Technician certification and experience in the application of multicomponent liquid pavement markings. Employee(s) shall be on site at all times when multicomponent liquid pavement markings are being applied, with their primary attention being devoted to the surface preparation and pavement marking operations.

4. Provide a letter of certification from the pavement marking manufacturer indicating the Contractor's qualifications to install their product. The letter must be signed by an official from marking manufacturer and the date of the signature must be within the previous twelve months. Include a copy of the manufacturer's application instructions enclosed with the letter and have a copy available at all times on site for reference by the Engineer upon request.

5. Before beginning pavement marking operations, at a location approved by the Engineer, complete a 300 foot test section application of multicomponent liquid pavement markings that demonstrates the ability to meet the requirements of this specification. Do not begin pavement marking operations until the Engineer approves the test strip. The Engineer may waive the test strip requirement if they have sufficient evidence to ensure the crew will perform a quality application.

6. ~~2.~~ Allowable painting dates will be from April 8th to October 22nd. Minimum pavement surface and air temperatures for application of pavement markings shall be 40°F and rising.

7. ~~3.~~ For all pavement markings, ensure pavement surface is dry and free from dirt, dust, oil, curing compound, and other contaminates which may interfere with markings properly bonding to the surface by using both compressed air sprays and a power broom ahead of the application truck. Ensure the clean surface is at least 1 inch wider than anticipated marking. Shoot an air blast on the pavement surface immediately prior to placing new marking. Air blast is not intended to remove large amounts of dust, but only a very small amount of residue that might be left from removal and cleaning operation.

8. ~~4.~~ For pavement markings placed on a new ~~asphalt~~ pavement surface, install any necessary temporary pavement markings, and wait a minimum of 2 weeks from the day the surface is completed before installing permanent markings.

9. ~~5.~~ Remove existing multi-component pavement markings prior to new pavement marking placement by vacuum blasting, vacuum dry grinding, wet grinding, shot blasting, or high-pressure water blasting. Containment is required if open abrasive blasting or dry grinding is utilized. Do not utilize chemical removal methods for removal of the existing marking. It is the intent that existing markings be approximately 90% removed while not creating a groove deeper than 0.080 inches ±0.010 inches. Confirm with Engineer that proper removal is achieved prior to new pavement marking placement. If consensus on removal is not confirmed or achieved, consult with manufacturer of the pavement marking to be placed and verify they concur with adequate existing marking removal. Provide this concurrence info to the Engineer prior to beginning new pavement marking placement.

10. ~~7.~~ Ensure the following for all painted pavement markings:
    - Uniform thickness,
    - Uniform distribution of glass beads throughout the line width,

- ~~Minimum~~ ~~L~~line widths as specified, ~~with a tolerance of ± 1/2 inch for all lines,~~ or a maximum of 1/2 inch above the specified width,
- Markings have sharp edges and cutoffs at the ends,
- Black contrast markings are no closer than 2 inches and no farther than 4 inches from the adjacent markings, and that the entire marking is applied within the grooved area, and
- Location and alignment are consistent with contract document requirements.

11. Take a minimum of ten width measurements per mile, per line, per color, spaced approximately 500 feet apart, for each line and each color. Report these values and locations to the Engineer at the end of each working day. The Engineer may perform additional width checks at their discretion. All measurements taken may be used to determine conformance with marking width requirements.

12. Take a minimum of three length measurements within the first 1000 feet of pavement markings applied each day, for each non-continuous line and each color. Measure both the length of each stripe, the gap between adjacent stripes of differing colors, and the gap between each set of stripes to ensure they are in conformance with the contract documents and Standard Road Plan PM-110. Report these values and locations to the Engineer at the end of each working day. The Engineer may perform additional length checks at their discretion. All measurements taken may be used to determine conformance with marking length requirements.

13. ~~6.~~ Limitations.

a. Complete grooving, existing pavement marking removal, and pavement marking placement in the same direction of travel as traffic is intended to utilize the lanes being worked on. On multi-lane roadways with adjacent lanes open to traffic, do not operate equipment against the flow of traffic.

b. When grooves are present, match existing cycle lengths for all non-continuous lines unless otherwise noted in the plans. If existing cycle lengths are found to differ from those specified in the contract documents by more than 10%, immediately cease work and consult the Engineer for direction.

B. Grooving.

1. Perform grooving according to Article 2527.03, H of the Standard Specifications and Standard Road Plan PM-115.

2. Grooving is intended to provide a recessed surface for placement of the new pavement marking. Grooving is also intended to remove any existing markings where the new installation of pavement markings is to occur. If existing cycle lengths are found to differ from those specified in the contract documents such that the grooving operation does not remove at least 75% of each line segment, immediately cease work and consult the Engineer for direction. Failure to notify the Engineer will result in the removal of excess existing markings being considered incidental to the grooving operation.

C. Traffic Control.

Apply the provisions of Section 2528 of the Standard Specifications to traffic control for removing and placing painted and taped pavement markings, along with the following additional requirements:

1. All work shall take place under static lane closures. Place traffic control devices on the roadway before removal operations have commenced. Leave traffic control devices in place through the completed curing time of the newly applied pavement markings.

2. Do not close any longer length of lane than can be adequately removed and replace in a

single working day.

3. For painted pavement markings, do not remove traffic control devices until the newly applied pavement markings are tack free.

D. Final Inspection

If Mobile Reflectometer Measurements are an item on the contract, perform final inspection in accordance with the Developmental Specifications for Mobile Reflectometer Measurements. If that item is not on the contract, ~~P~~provide an acceptable, calibrated 30-meter geometry (100 feet), retro reflectometer to use on the project which will remain the property of the Contractor. In the presence of the Engineer, measure the retro-reflectivity of the pavement markings. Take a minimum of five randomly spaced readings per line type every 1 mile. The average minimum retro-reflectivity per mile shall be as per table 1 from Article 23XXX.02, A, 3.

E. Defective Pavement Markings and Grooves.

~~1. Markings that are low on initial retro reflectivity up to 20% may, at the discretion of the Engineer, be accepted with a price adjustment.~~

1. ~~2.~~ Repair, at no additional cost to the Contracting Authority, all pavement markings which, after application and curing, the Engineer determines to be defective and not in conformance with ~~these specifications~~ the contract documents. Remove the defective markings completely and clean ~~to~~ the underlying pavement surface according to the requirements of Article 2527.03, C of the Standard Specifications. Remove the defective area plus all adjacent marking material extending 1 foot in any direction. After surface preparation work is complete, finish the repair by reapplying new marking material over the cleaned pavement surface according to the requirements of these specifications.

2. Non-conformance with the contract documents may include, but is not limited to:
   - **a.** Pavement markings that:
     - have drag marks, gashes, gouges, foreign covering, discolored areas or areas that have failed to solidify.
     - have improper adhesion, length, color, thickness, or bead embedment.
     - have areas that present a ragged appearance, areas that do not present sharply defined edges, or areas with abrupt unintended changes in alignment.
   - **b.** Pavement marking grooves that are not of the correct width, length, depth, cross slope, or alignment.
   - **c.** Markings that are not substantially placed within each intended pavement marking groove, when grooving is required and the grooves are placed in conformance with the contract documents.
   - **d.** Lines or grooves that deviate laterally from the intended alignment by more than 2 inches in 200 feet may be rejected.
   - **e.** Lines or grooves that do not meet the required widths. No more than 300 feet of deficient width line or groove may be allowed to remain in each 1 mile segment.
   - **f.** Lines that do not meet minimum retroreflectivity requirements as listed in Table 23XXX.02-1. Markings shall be evaluated in 1 mile increments by the requirements listed in Materials I.M. 386. For any 1 mile section in which the average of all readings in a single line does not meet minimum retroreflectivity requirements, the markings in the entire 1 mile section of that line shall be fully removed and replaced.

23XXX.04 METHOD OF MEASUREMENT.

A. Measurement for pavement markings, pavement markings removed, and grooves cut, satisfactorily placed, removed, or approved, will be as follows:

1. **Painted Pavement Markings, Multi-Component Liquid.**

Stations placed.

2. **Pavement Markings Removed.**
   Stations Removed.

3. **Grooves Cut for Pavement Markings.**
   Stations. This quantity will be equivalent to the number of stations measured for the pavement markings. Additional width and transition length will be incidental.

B. The Engineer will measure the number of stations, based on a single 6 inch width of line. The length of markings will be determined using beginning and ending points, and adjusting for breaks at ramps, station equations, or other locations shown in the contract documents. The measurement for dashed and dotted lines will be adjusted to exclude skips. Measurement of lines wider than 6 inches will be adjusted by the quantity factor to a 6 inch line.

23XXX.05 BASIS OF PAYMENT.
Painted Pavement Markings, Multi-Component Liquid; Pavement Markings Removed; and Grooves Cut for Pavement Markings will be paid for per Article 2527.05 of the Standard Specifications.

Form 510130 (07-24)

IOWA | DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Dillon Feldmann	**Office:** Local Systems	**Item 5**
Submittal Date: 4/6/2026	**Proposed Effective Date:** 10/20/2026	
Article No.: 2102.05 **Title:** Roadway Borrow and Excavation **Article No.:** 2104.05 **Title:** Channel Excavation **Article No.:** 2105.05 **Title:** Stripping, Salvaging, and Spreading Topsoil	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

2102.05, Basis of Payment.

Add the Article:

F. Fuel adjustment shall apply to eligible items of work as per Section 2120.

2104.05, Basis of Payment.

Add the Article:

F. Fuel adjustment shall apply to eligible items of work as per Section 2120.

2105.05, Basis of Payment.

Add the Article:

F. Fuel adjustment shall apply to eligible items of work as per Section 2120.

Comments:

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

Section 2102. Roadway and Borrow Excavation

2102.05 BASIS OF PAYMENT.

Add the article:

G. Fuel adjustment shall apply to eligible items of work as per Section 2120.

Section 2104. Channel Excavation

2104.05 BASIS OF PAYMENT.

Add the article:

G. Fuel adjustment shall apply to eligible items of work as per Section 2120.

Section 2105. Stripping, Salvaging, and Spreading Topsoil

2105.05 BASIS OF PAYMENT.

Add the article:

G. Fuel adjustment shall apply to eligible items of work as per Section 2120.

Reason for Revision: The fuel adjustment specification was last updated in April of 2024. This update removed the minimum quantity requirement of 50,000 CY when the Department is the Contracting Authority.

Following this update, the contract proposal language that indicated when fuel adjustment applies was removed. This has created confusion on projects in which the Department is not the Contracting Authority as Section 2120 is not referenced in sections 2102, 2104, or 2105.

Adding this additional language will further indicate when Section 2120 applies.

New Bid Item Required (X one)	**Yes**	**No** x
Bid Item Modification Required (X one)	**Yes**	**No** x
Bid Item Obsoletion Required (X one)	**Yes**	**No** x
Comments:		
County or City Comments:		
Industry Comments:		

Form 510130 (07-24)

IOWA | DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Nixon/ Johnson	**Bureau/Office:** Construction and Materials Bureau	**Item 6**
Submittal Date: 4/3/2026	**Proposed Effective Date:** October 2026	
Article No.: 2214.03, D, 8 **Title:** Pavement Scarification	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			

Specification Section Recommended Text:
2214.03, D, 8.

Replace the first sentence:

When a road is scarified and open to traffic, ~~C~~commence ~~overlay~~ paving operations (HMA, PCC, Seal Coat, Slurry Seal, etc.) ~~placement operations within~~ no later than 10 working days after ~~completion of the scarification operation~~ commencing scarification on any portion of the project.

Comments: Should this only apply to interstates?

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

2214.03.D.8

8. ~~Commence overlay (HMA, PCC, Seal Coat, Slurry Seal, etc.) placement operations within 10 working days after completion of the scarification operation.~~ When a road is scarified and open to traffic, commence paving operations (HMA, PCC, Seal Coat, Slurry Seal, etc.) no later than 10 working days after commencing scarification on any portion of the project.

Once started, continue placement operations each working day until the scarified surface is completely covered. Failure to comply with these requirements will result in the assessment of a price adjustment equal to the liquidated damages stated in the contract documents. Repair damage to the scarified surface during the time period for which liquidated damages are being assessed.

Reason for Revision: Based on feedback from industry non-interstate pavement scarification operations haven't been an issue. The language for interstate scarification was tightened to limit the potential for structural damage and safety risks. This will reduce degradation of milled pavements and exclude additional safety risk of the traveling public.

New Bid Item Required (X one)	**Yes**	**No** X

Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments:		
County or City Comments:		
Industry Comments:		

Form 510130 (07-24)

IOWA DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Scott Nixon/Elijah Gansen	**Bureau/Office:** Construction and Materials Bureau	**Item 7**
Submittal Date: 4/27/2026	**Proposed Effective Date:** October 2026	
Section No.: 2310 Title: Portland Cement Concrete Overlay **Article No.:** 4196.01, B Title: Engineering Fabrics	**Other:** DS-23017	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

2310.02, C, Bond Breaker.

Replace the Article:

1. Use white pigmented liquid curing compound meeting the requirements of Article 4105.05.

2. Use pavement interlayer geotextile meeting the requirements of Article 4196.01, B, 7.

2310.03, B, 3, C, Bond Breaker.

Replace the Title and Article:

Bond Breaker for PCC Patches.

All existing PCC patches that have been scarified and all new PCC patches not previously coated with curing compound will need to have a bond breaker applied prior to placing the PCC overlay using one of the two methods below:

1) ~~Prior to placement of the PCC overlay, p~~Place two applications of liquid curing compound ~~on all scarified PCC patches or other PCC surfaces to be overlain~~. Apply each coat evenly on the full area at a rate of 1 gallon per 200 square feet. If drying to the touch occurs within 10 minutes or rapid absorption into the scarified PCC surface is noted, then apply a third coat at a rate of 1 gallon per 200 square feet.

2) Place pavement interlayer geotextile in accordance with Article 2310.03, B, 5.

2310.03, B, Preparation of Surface.

Add the Article:

5. Pavement Interlayer Geotextile.

a. Sweep pavement to remove loose debris before applying pavement interlayer geotextile.

b. Place geotextile tight without excessive wrinkles or folds.

c. Use one of the following methods to secure the geotextile:

1) Secure geotextile with pins or nails punched through 2 to 2.75 inch galvanized

washers or disks every 6 feet or less. Place additional fasteners as needed to ensure geotextile does not shift or fold during concrete placement.

2) Secure geotextile with 3M HoldFast 70 Cylinder Spray Adhesive or approved alternate. Apply to all edges of the fabric and as needed to prevent shifting or folding of the fabric during concrete placement.

3) Other anchoring methods approved by the Engineer.

d. If geotextile fails to remain secured in place, resecure geotextile and limit placement length in advance of the paving machine such that proper securement can be maintained. Keep driving on geotextile to a minimum. Delay installation on areas subject to excess traffic, such as crossovers, until immediately before concrete placement.

e. Do not allow more than three layers of the geotextile to overlap in any location. Overlap edges of geotextile by 8 inches ± 2 inches. Sequence rolling out geotextile to ensure good lapping practice and prevent folding or tearing by construction traffic.

f. Extend free edge of geotextile interlayer a minimum of 4 inches beyond edge of pavement**.** Terminate interlayer in a drainable layer. Do not impair free drainage within the geotextile.

g. Keep geotextile clean and free of loose debris before concrete placement.

2310.04, F, Seal Coat Bond Breaker.

Replace the title and Article:

~~Seal Coat~~ Bond Breaker for PCC Patches.
The quantity of bond breaker for PCC patches will be the quantity in square yards shown in the contract documents.

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

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

2310.04, Method of Measurement.

Add the Article and **renumber** subsequent Article:

G. Pavement Interlayer Geotextile.
The quantity of Pavement Interlayer Geotextile will be the quantity in square yards shown in the contract documents.

H. ~~G.~~ Fiber Reinforcement.
Fiber reinforcement will be measured in pounds of fiber incorporated into the concrete mix.

2310.05, F, Seal Coat Bond Breaker.

Replace the title and Article:

~~Seal Coat~~ Bond Breaker for PCC Patches.
Payment for bond breaker for PCC patches will be at the contract unit price per square yard. Payment is full compensation for furnishing materials, labor and equipment necessary to install the bond breaker for PCC patches.

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

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

2310.05, Method of Measurement.

Add the Article and **renumber** subsequent Article:

G. Pavement Interlayer Geotextile.
Payment for Pavement Interlayer Geotextile will be at the contract unit price per square yard. Payment is full compensation for furnishing materials, labor and equipment necessary to install the pavement interlayer geotextile.

H. ~~G.~~ Fiber Reinforcement.
Per pound of fiber reinforcing. Payment shall be full compensation for supplying all materials, equipment, and labor for incorporating fiber reinforcement into the concrete mix.

4196.01, B.

Add the Article:

7. Pavement Interlayer Geotextile
Use a pavement interlayer for PCC overlay, meeting AASHTO M 288 and Table 4196.01-7.

Table 4196.01-7: Pavement Interlayer Geotextile Properties

Property	Requirement	Test Method
Fabric Type	Non-woven Geotextile, no thermal treatment	Manufacturer certification
Mass per unit area	≥13.3 oz/sq.yd and ≤16.2 oz/sq.yd	ASTM D 5261
Thickness under load (pressure)	0.29 psi: ≥ 0.12 inches 2.9 psi: ≥ 0.10 inches 29 psi: ≥ 0.04 inches	ASTM D 5199, modified under loads of 0.29, 2.9, and 29 psi
Tensile strength	≥ 685 lb/ft	ASTM D 4595
Maximum elongation	≤ 130%	ASTM D 4595
Water permeability in normal direction under load (pressure)	≥ 3.3×10^{-4} ft/s, at 2.9 psi	ASTM D 5493
Water permeability in the plane direction of the fabric (transmittivity) under load (pressure)	≥ 1.6×10^{-3} ft/s, at 2.9 psi ≥ 6.6×10^{-4} ft/s, at 29 psi	ASTM D 6574
Weather resistance	Resistance ≥ 60%	ASTM D4355, at 500 hours exposure
Alkali resistance	≥ 96% Polypropylene/Polyethylene	Manufacturer certification

DS-23017, Pavement Interlayer Geotextile for PCC Overlays.

Void the DS.

Comments: Won't we also have a new bid item for Bond Breaker for PCC Patches and obsoletion of bid item for Seal Coat Bond Breaker?

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

See attached word document for changes to Article 2310.

Section 4196
Add Paragraph 7.

7. Pavement Interlayer Geotextile

Use a pavement interlayer for PCC overlay, meeting AASHTO M 288 and Table 4196.01-7.

Table 4196.01-7: Pavement Interlayer Geotextile Properties

Property	Requirement	Test Method
Fabric Type	Non-woven Geotextile, no thermal treatment	Manufacturer certification
Mass per unit area	≥13.3 oz/sq.yd and ≤16.2 oz/sq.yd	ASTM D 5261
Thickness under load (pressure)	0.29 psi: ≥ 0.12 inches 2.9 psi: ≥ 0.10 inches 29 psi: ≥ 0.04 inches	ASTM D 5199, modified under loads of 0.29, 2.9, and 29 psi
Tensile strength	≥ 685 lb/ft	ASTM D 4595
Maximum elongation	≤ 130%	ASTM D 4595
Water permeability in normal direction under load (pressure)	≥ 3.3×10^{-4} ft/s, at 2.9 psi	ASTM D 5493
Water permeability in the plane direction of the fabric (transmittivity) under load (pressure)	≥ 1.6×10^{-3} ft/s, at 2.9 psi ≥ 6.6×10^{-4} ft/s, at 29 psi	ASTM D 6574
Weather resistance	Resistance ≥ 60%	ASTM D4355, at 500 hours exposure
Alkali resistance	≥ 96% Polypropylene/Polyethylene	Manufacturer certification

Void DS-23017 since it is no longer needed.

Reason for Revision: Moves pavement interlayer geofabric specifications into the GS from DS-23052. Also adds using pavement interlayer geotextile as a means for bond breaking on PCC patches to be overlaid with concrete.

Table updated to newest standards. EN standards not accessible. Require certification as MNDOT has in specification.

New Bid Item Required (X one)	**Yes** X	**No**
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X

Comments: New bid item: Bond Breaker for PCC Patches, PCC Overlay

County or City Comments: None

Industry Comments: Sent to ICPA/IRMCA

Section 2310. Portland Cement Concrete Overlay

2310.01 DESCRIPTION.
Overlay an existing pavement with a PCC overlay. Existing pavements may include any of the following:

A. PCC pavement.

B. Composite pavement (flexible pavement over PCC).

C. Pavement with a stress relief layer placed over the top.

D. Full depth flexible pavement.

2310.02 MATERIALS.

A. Concrete.
Meet the requirements of Article 2301.02.

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

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

3. Unless otherwise specified, use coarse aggregate for overlays over existing PCC pavement that is the same type of aggregate as the existing pavement. If existing pavement aggregate type cannot be determined or is not available, use limestone or dolomite coarse aggregate.

B. Hot Mix Asphalt Stress Relief Course.

1. When required by the contract documents, use an HMA stress relief course consisting of a nominal 1 inch course of HMA meeting the requirements of Section 2303.

2. Use PG 58-28S asphalt binder.

3. Use a mixture meeting the following:
- **a.** Standard Traffic (ST), 3/8 inch HMA mix requirements.
- **b.** Target air voids of 3.0%.
- **c.** No maximum film thickness restriction and no minimum filler/bitumen ratio restriction.
- **d.** Type B Aggregate (or better) with no percent crushed particle requirements and gradation falling below the restricted zone.
- **e.** Apply Article 2303.05, A, 3, a, 2 for AAD Acceptance of lab voids.

C. Bond Breaker.

1. Use white pigmented liquid curing compound meeting the requirements of Article 4105.05.

2. Use pavement interlayer geotextile meeting the requirements of Article 4196.

D. Fiber Reinforcement.

1. When fiber reinforcement is specified in the contract documents, use product approved in accordance with Materials I.M. 491.27, Appendix B.

2. Dose fiber reinforcement at the rate of 4 pounds per cubic yard of concrete unless stated otherwise in the contract documents.

2310.03 CONSTRUCTION.
Apply the requirements of Section 2301 to this work with the modifications identified below.

A. Scarifying, Shotblasting, or Waterblasting Equipment.

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

B. Preparation of Surface.

1. General.

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

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

2. Surface Preparation.

a. When required for overlays over existing PCC pavement, prepare the surface by shot blasting, waterblasting, or scarifying. Scarify to a nominal depth of 1/4 inch.

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

3. Pavement Scarification.

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

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

c. Bond Breaker For PCC Patches.

All existing PCC patches that have been scarified and all new PCC patches not previously coated with curing compound will need to have a bond breaker applied prior to placing the PCC overlay using one of the two methods below:

1) ~~Prior to placement of the PCC overlay,~~ pPlace two applications of liquid curing compound on all scarified PCC patches or other PCC surfaces to be overlain. Apply each coat evenly on the full area at a rate of 1 gallon per 200 square feet. If drying to the touch occurs within 10 minutes or rapid absorption into the scarified PCC surface is noted, then apply a third coat at a rate of 1 gallon per 200 square feet.

2) Place pavement interlayer geotextile in accordance with Article 2310.03, B, 5.

4. Hot Mix Asphalt Stress Relief Course.

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

5. Pavement Interlayer Geotextile.

a. Sweep pavement to remove loose debris before applying pavement interlayer geotextile.

b. Ensure geotextile is tight without excess wrinkles and folds.

c. Place geotextile and secure per Article 2310.03, 5, d. If geotextile fails to remain secured in place resecure loose geotextile and limit placement length in advance of the paving machine such that proper securement can be maintained. Limit driving on geotextile to a minimum. Delay installation on areas subject to excess traffic, such as crossovers, until immediately before concrete placement.

d. Use one of the following methods to secure the geotextile:

1) Secure geotextile with pins or nails punched through 2 to 2.75 inch galvanized washers or disks every 6 feet or less. Place additional fasteners as needed to ensure geotextile does not shift or fold during concrete placement.

2) Secure geotextile with 3M HoldFast 70 Cylinder Spray Adhesive or approved alternate. Apply to all edges of the fabric and as needed to prevent shifting or folding of the fabric during concrete placement.

3) Other anchoring methods approved by the Engineer.

e. Do not allow more than three layers of the geotextile to overlap in any location. Overlap edges of geotextile by 8 inches ± 2 inches. Sequence rolling out geotextile to ensure good lapping practice and prevent folding or tearing by construction traffic.

f. Extend free edge of geotextile interlayer a minimum of 4 inches beyond edge of pavement. Terminate interlayer in a drainable layer. Do not impair free drainage within the geotextile.

g. Keep geotextile clean and free of loose debris before concrete placement.

C. Placing and Finishing Overlay.

1. General.
- **a.** Clean existing surface of loose or adhering foreign material prior to and during placement of PCC.
- **b.** Ensure existing pavement surface is free of standing water during PCC placement.
- **c.** Ensure temperature of existing pavement surface does not exceed 120ºF during PCC placement. Water may be applied to cool existing pavement surface provided standing water is not present during PCC placement.
- **d.** Introduce fiber reinforcement into the mix in accordance with the fiber manufacturer's recommendations, unless otherwise approved by the Engineer. Ensure uniform distribution and random orientation of fibers throughout the concrete.

2. Joints.
- **a.** Saw joints as shown in the contract documents. Seal all joints unless directed otherwise.
- **b.** For overlays over existing PCC pavements:
  - **1)** Place joints directly over joints and cracks in the existing pavement.
  - **2)** Saw joints to the full depth of the overlay.
  - **3)** Ensure joints are at least as wide as the joint or crack in the existing pavement.

D. Limitation of Operations.

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

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

3. Place concrete overlays over existing PCC pavements between June 1 and September 30.

E. Time for Opening Pavement for Use.

1. The time for opening pavement for use shall be in accordance with Article 2301.03, U.

2. When the maturity method for opening is utilized, the Engineer may allow an opening strength requirement of 350 psi, for overlays 6 inches or greater.

F. Smoothness.
Apply Section 2317.

2310.04 METHOD OF MEASUREMENT.

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

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

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

D. Pavement Scarification

1. Measurement by Weight.
The quantity of Pavement Scarification will be determined in accordance with Article 2214.04, A, 1.

2. Measurement by Area.
The quantity of Pavement Scarification will be determined in accordance with Article 2214.04, A, 2.

E. Hot Mix Asphalt Stress Relief Course.

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

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

F. ~~Seal Coat Bond Breaker~~ Pavement Interlayer Geotextile.
The quantity of Pavement Interlayer Geotextile will be the quantity in square yards shown in the contract documents.

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

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

G. Bond Breaker For PCC Patches.
The quantity of bond breaker for PCC patches will be the quantity in square yards shown in the contract documents.

H. Fiber Reinforcement.
Fiber reinforcement will be measured in pounds of fiber incorporated into the concrete mix.

2310.05 BASIS OF PAYMENT.

A. Portland Cement Concrete Overlay, Furnish Only.

1. Per cubic yard.

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

B. Portland Cement Concrete Overlay, Placement Only.

1. Per square yard.

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

C. Surface Preparation.

1. Per square yard.

2. Payment is full compensation for preparation of the existing pavement, scarifying or shot blasting, and for removal of the existing pavement surface material according to Article 1104.08.

D. Pavement Scarification

1. **Measurement by Weight.**
   The Contractor will be paid the contract unit price for Pavement Scarification in accordance with Article 2214.05, A, 1.

2. **Measurement by Area.**
   The Contractor will be paid the contract unit price for Pavement Scarification in accordance with Article 2214.05, A, 2.

E. Hot Mix Asphalt Stress Relief Course.

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

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

F. ~~Seal Coat Bond Breaker~~ Pavement Interlayer Geotextile.
Payment for Pavement Interlayer Geotextile will be at the contract unit price per square yard. Payment is full compensation for furnishing materials, labor and equipment necessary to install the pavement interlayer geotextile.

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

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

G. Bond Breaker For PCC Patches.
Payment for bond breaker for PCC patches will be at the contract unit price per square yard. Payment is full compensation for furnishing materials, labor and equipment necessary to install the bond breaker for PCC patches.

H. Fiber Reinforcement.
Per pound of fiber reinforcing. Payment shall be full compensation for supplying all materials, equipment, and labor for incorporating fiber reinforcement into the concrete mix.

Form 510130 (07-24)

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Scott Nixon / Jeff DeVries	**Bureau/Office:** Construction and Materials	**Item 8**
Submittal Date: 4/27/2026	**Proposed Effective Date:** October 2026	
Article No.: 2317.05 **Title:** Pavement Smoothness	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

2317.05, C, PCC Pavement.

Replace Table 2317.05-3:

MRI (inches per mile)	Dollars per 528 feet segment per lane (Design Thickness Greater than 6")	Dollars per 528 feet segment per lane (Design Thickness 6" or less)
Less than ~~47.5~~ 36.83	1,500.00	1,250.00
~~47.5 to 57.5~~ 36.83 to 54.15	~~8,625.00-(150*MRI)~~ 4,689.6651 + (-86.6051*MRI)	~~7,187.50-(125*MRI)~~ 3,908.0543 + (-72.1709*MRI)
~~57.5 to 75~~ 54.15 to 67.98	Unit Price	Unit Price
~~75 to 90~~ 67.98 to 90	~~7,500.00-(100*MRI)~~ 4,630.7902 + (-68.1199*MRI) (or grind[1])	~~6,250.00-(83.333*MRI)~~ 3,858.9918 + (-56.7666*MRI) (or grind[1])
Greater than 90	-1,500.00 (and grind[12])	-1,250.00 (and grind[12])

1. ~~Correct these areas below 75.0 inches per mile~~ Disincentive based on final MRI or 67.98 inches per mile, whichever MRI value is greater.

2. Correct these areas greater than 90 inches/mile. Disincentive based on final MRI or 67.98 inches per mile, whichever MRI value is greater.

2317.05, D, HMA Pavement.

Replace Table 2317.05-5:

MRI (inches per mile)	Dollars per 528 feet segment per lane (Design Thickness greater than 4")	Dollars per 528 feet segment per lane (Design Thickness 4" or less)
Less than ~~29.84~~ 21.93	1,500.00	1,250.00
~~29.84 to 39.22~~ 21.93 to 34.6	~~6,271.915-(159.915*MRI)~~ 4,096.2904 + (-118.3899*MRI)	~~5,226.596-(133.2623*MRI)~~ 4,096.2904 + (-98.6583*MRI)
~~39.22 to 75~~ 34.6 to 38.95	Unit Price	Unit Price
~~75 to 90~~ 38.95 to 73.44	~~7,500.00-(100*MRI) or grind[1]~~ 1,693.9693 + (-43.4909*MRI)	~~6,250.00-(83.333*MRI) or grind[1]~~ 1,693.9693 + (-36.2424*MRI)
Greater than ~~90~~ 73.44	-1,500.00 (and Grind[1])	-1,250.00 (and Grind[1])

1. Correct these areas ~~below 75.0~~ greater than 73.44 inches per mile

Comments:

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

Table 2317.05-3: Schedule for Adjustment Payment for PCC Pavements for Primary and Interstate Projects

~~MRI (inches per mile)~~	**~~Dollars per 0.1 mile 528 feet segment per lane (Design Thickness Greater than 6")~~**	**~~Dollars per 0.1 mile 528 feet segment per lane (Design Thickness 6" or less)~~**
~~Less than 47.5~~	~~1,500.00~~	~~1,250.00~~
~~47.5 to 57.5~~	~~8,625.00-(150*MRI)~~	~~7,187.50-(125*MRI)~~
~~57.5 to 75~~	~~Unit Price~~	~~Unit Price~~
~~75 to 90~~	~~7,500.00-(100*MRI) (or grind[1])~~	~~6,250.00-(83.333*MRI) (or grind[1])~~
~~Greater than 90~~	~~Grind[1]~~	~~Grind[1]~~

~~1. Correct these areas below 75.0 inches per mile~~

		Dollars per 528' segment	
		design thickness	
MRI (in/mile)		>6"	<=6"
less than	36.83	1500.00	1250
from 36.83 to 54.15		4689.6651 + -86.6051 * MRI	-72.1709 + 3908.0543 * MRI
from 54.15 to 67.98		UNIT PRICE	UNIT PRICE
from 67.98 to 90		4630.7902 + -68.1199 * MRI or grind*	-56.7666 + 3858.9918 * MRI or grind*
Greater than	90	-1500.00 grind**	-1250 grind**

* Disincentive based on final MRI or 67.98"/mile, whichever MRI value is greater.

** Correct these areas below 90 inches/mile. Disincentive based on final MRI or 67.98"/mile, whichever MRI value is greater.

Table 2317.05-5: Schedule for Adjustment Payment for HMA Pavements for Primary and Interstate

Projects

~~MRI (inches per mile)~~	~~Dollars per 0.1 mile 528 feet segment per lane (Design Thickness greater than 4")~~	~~Dollars per 0.1 mile 528 feet segment per lane (Design Thickness 4" or less)~~
~~Less than 29.84~~	~~1,500.00~~	~~1,250.00~~
~~29.84 to 39.22~~	~~6,271.915-(159.915*MRI)~~	~~5,226.596-(133.2623*MRI)~~
~~39.22 to 75~~	~~Unit Price~~	~~Unit Price~~
~~75 to 90~~	~~7,500.00-(100*MRI) or grind[1]~~	~~6,250.00-(83.333*MRI) or grind[1]~~
~~Greater than 90~~	~~Grind[1]~~	~~Grind[1]~~

~~1. Correct these areas below 75.0 inches per mile~~

		Dollars per 528' segment	
		design thickness	
MRI (in/mile)		>4"	<=4"
less than	21.93	1500	1250
from 21.93	to 34.6	4096.2904 + -118.3899 * MRI	-98.6583 + 4096.2904 * MRI
from 34.6	to 38.95	Unit Price	Unit Price
from 38.95	to 73.44	1693.9693 + -43.4909 * MRI	-36.2424 + 1693.9693 * MRI
Greater than	73.44	-1500 (and grind*)	-1250 (and grind*)

*Correct these areas below 73.44"/mile.

Reason for Revision: Proposing changes to the above tables based on current paving processes.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments:		
County or City Comments:		
Industry Comments:		

Form 510130 (07-24)

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Scott Nixon / Brian Worrel	**Bureau/Office:** Construction and Materials	**Item 9**
Submittal Date:	**Proposed Effective Date:** 10/20/2026	
Article No.: 2528.03, J, 7, a **Title:** Automated Flagger Assistance Devices (Traffic Control) **Article No.:** 2528.04, J **Title:** Flaggers and Automated Flagger Assistance Devices (Traffic Control) **Article No.:** 2528.05, J **Title:** Flaggers and Automated Flagger Assistance Devices (Traffic Control) **Article No.:** 4188.12 **Title:** Automated Flagger Assistance Devices (Traffic Control Devices)	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

2528.03, J, 7, a.

Replace the Article:

~~Contractor may choose to use~~ Automated Flagger Assistance Devices (AFADs) shall be used for mainline flagging operations. AFADs are not required for sideroad flagging or temporary traffic control zones lasting less than 2 hours. Ensure all AFADs meet the ~~current~~ requirements of ~~the MUTCD Section 6E.04 and 6E.06~~ Article 4188.12.

2528.04, J, Flaggers and Automated Flagger Assistance Devices.

Replace the Article:

1. By count for the number of flaggers or flaggers with AFAD used during each work shift. A shift is a scheduled period of work for the Contractor's operations.

2. For a Flagger~~s~~ or Flagger with AFAD to be counted:
   a. Use of the flaggers or flagger with AFAD is necessary and they are used as part of preplanned work that is started that shift and is intended to proceed for a major part of the shift. If used less than 4 hours during a shift, one-half flagger will be counted. If used at least 4 hours, but less than 12 hours, a total of one flagger will be counted. If

used 12 hours or more, an additional one-half flagger will be counted for a total of 1.5 flaggers for the shift.

b. Use of other flaggers is necessary and they are used for at least 1 hour during the shift, perhaps intermittently, and this shall be the primary duty of the employee. If used less than 4 hours in a shift, one-half flagger will be counted.

3. ~~AFADs will not be measured for payment separately, but they may be used as a supplement or an alternate to flaggers. Flaggers will include AFADs, if AFADs are used as described in this specification.~~ A Flaggers with AFAD will be measured as a single unit for the combination of ~~manual~~ flagger and AFAD at each flagger station location. If more than one AFAD is controlled by a single ~~manual~~ flagger, Flagger with AFAD will be measured ~~for payment~~ by count of the ~~flagger station locations (~~AFAD locations~~)~~.

2528.05, J, Flaggers and Automated Flagger Assistance Devices.

Replace the Article:

1. Predetermined contract unit price per each for the number of shifts each Flagger or Flagger with AFAD was used.

2. Payment is full compensation for providing trained flaggers and AFADs according to Article 2528.03, J.

3. ~~No direct payment for AFADs will be made for~~ Unit price for Flagger with AFAD includes cost of flagger and the installation, operation, relocation, maintenance, ~~or~~ and removal of the ~~devices~~ AFAD.

4. ~~Additional flagging and AFAD related~~ Signs and additional devices necessary ~~to comply with requirements related to the use of AFADs~~ for flagging and AFAD operations will not be paid for directly but shall be incidental to Traffic Control.

4188.12, Automated Flagger Control Devices.

Replace the Article:

A. ~~Ensure all~~ Use only RED/YELLOW Lens type AFADs meeting the ~~current~~ requirements of ~~the~~ MUTCD ~~Section~~ Part 6~~E.04 and 6E.06~~.

~~**B.** Use RED/YELLOW Lens type AFADs as per MUTCD Section 6E.06.~~

B. ~~**C.**~~ AFADs shall meet crashworthiness requirements of Article 4188.01, B.

C. ~~**D.**~~ When using AFADs for work zones on Primary roadways, remote communication capabilities meeting requirements of Article 4188.11 are required.

Comments:

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

Reason for Revision: Require AFADs to be used for mainline flagging operations.

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

Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments: Add bid item for Flagger with AFAD. Will need to determine the cost of the AFAD to be included in the predetermined price with industry input.		
County or City Comments:		
Industry Comments: Industry is aware that AFAD use was going to be required at some point. Industry is supportive.		

Form 510130 (07-24)

IOWA | DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Scott Nixon/Melissa Serio	**Bureau/Office:** Construction & Materials	**Item 10**
Submittal Date: 4/27/26	**Proposed Effective Date:** October 2026 GS	
Article No.: 2602.01, D, 2 **Title:** Water Pollution Control Quality Control	**Other:**	

Specification Committee Action:

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

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

2602.01, D, 2.

Replace the Article:

2. For projects regulated by a NPDES storm water permit and where the Department is the Contracting Authority, the Department may use ~~Permix,~~ a web-based software application~~,~~ to record storm water permit compliance information.

a. Project and permit set-up will be performed by the Department.

b. Contractor shall be responsible for:

- Managing its own company users and adding subcontractor companies.
- Uploading Erosion Control Implementation Plan and amended PPP documents.
- Uploading subcontractor co-permittee certifications.
- Reviewing and signing inspection reports (if not already signed in the field).

c. If ~~Permix~~ the software application is not used on a project, the above referenced documents shall be uploaded to or signed in DocExpress per Section 1113.

d. Costs associated with the use of ~~Permix~~ the software application are incidental to Mobilization.

Comments:

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

2602.01, D, 2

Replace the Article:

2. For projects regulated by a NPDES storm water permit and where the Department is the Contracting Authority, the Department may use ~~Permix,~~ a web-based software application~~,~~ to record storm water permit compliance information.

a. Project and permit set-up will be performed by the Department.

b. Contractor shall be responsible for:

- Managing its own company users and adding subcontractor companies.
- Uploading Erosion Control Implementation Plan and amended PPP documents.
- Uploading subcontractor co-permittee certifications.
- Reviewing and signing inspection reports (if not already signed in the field).

c. If ~~Permix~~ the software application is not used on a project, the above referenced documents shall be uploaded to or signed in DocExpress per Section 1113. **d.** Costs associated with the use of ~~Permix~~ the software application are incidental to Mobilization.		
Reason for Revision: Remove reference to Permix since the DOT discontinued use in January 2026. However, remainder of spec is being left in-place in the event another software is used.		
New Bid Item Required (X one)	**Yes**	**No** x
Bid Item Modification Required (X one)	**Yes**	**No** x
Bid Item Obsoletion Required (X one)	**Yes**	**No** x
Comments: None		
County or City Comments:		
Industry Comments: No comments at 4/24/26 annual EC contractor meeting		

Form 510130 (07-24)

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Nixon/ Johnson	**Bureau/Office:** Construction and Materials Bureau	**Item 11**
Submittal Date: 4-3-2026	**Proposed Effective Date:** October 2026	
Article No.: 4127.03, A **Title:** Aggregate for Flexible Pavement Mixtures	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

4127.03, A.

Replace the first paragraph:

Natural sand meeting the requirements of Table 4127.03-1. ~~A gradation for wearing course mixture of no more than 50% retained between two consecutive standard sieves below the No. 4 sieve or gravel aggregate with 100% passing the 3/8 inch sieve meeting these requirements.~~

Comments:

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

4127.03 FINE AGGREGATE.

A. Natural sand meeting the requirements of Table 4127.03-1. ~~A gradation for wearing course mixture of no more than 50% retained between two consecutive standard sieves below the No. 4 sieve or gravel aggregate with 100% passing the 3/8 inch sieve meeting these requirements.~~

Table 4127.03-1: Fine Aggregate Quality (Flexible Paving Mixtures)

Fine Aggregate Quality	Type A Maximum %	Type B Maximum %	Test Method
Organic Matter	0.01	0.01	Iowa DOT Materials Laboratory Test Method No. 215
Clay Lumps/Friable Particles	1.5	3.0	Materials I.M. 368
Shale	2.0	5.0	Materials I.M. 344

Reason for Revision: Remove this language because flexible pavement mix design is based on a combined gradation. The producer has the option to mix individual aggregates to meet sieve design criteria based on control points within the SHADES mix design program

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

Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments:		
County or City Comments:		
Industry Comments:		

Form 510130 (07-24)

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Scott Nixon	**Bureau/Office:** Construction and Materials	**Item 12**
Submittal Date: 4/15/2026	**Proposed Effective Date:**	
Article No.: **Title:**	**Other:** DS-23018, Structural Concrete (4500 PSI or Greater)	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			
Specification Section Recommended Text: See attached Draft Developmental Specifications for Structural Concrete (4500 PSI or Greater).			
Comments:			

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

Reason for Revision: Typically, the Class C and HPC mix will meet the minimum of 4500 psi easily. Ability to use the Class C or HPC mix design with compressive strength results will make mix approval simpler. Require the more stringent requirements for 5000 psi or higher.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments:		
County or City Comments:		
Industry Comments: Sent to ICPA. No comments.		

DS-23XXX
(Replaces DS-23018)

DEVELOPMENTAL SPECIFICATIONS
FOR
STRUCTURAL CONCRETE (4500 PSI OR GREATER)

Effective Date
October 17, 2023

THE STANDARD SPECIFICATIONS, SERIES 2023, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

23XXX.01 DESCRIPTION.

A. Provide concrete mix design for structural elements designed with a minimum compressive strength of 4500 psi or greater as shown in contract documents. Submit documentation for Class C or HPC mixes meeting strength criteria or submit a new mix design.

B. Sections 2403 and 2412, and Division 41 of the Standard Specifications shall apply with the following modifications.

23XXX.02 MATERIALS.

A. General.

1. Material shall meet quality requirements for respective items in Division 41 of the Standard Specifications.

2. For compressive strength of 4500 psi up to 5000 psi, use a Class C or HPC mix design based on past experience and compressive strength test results. The District Materials Engineer may approve adjustments to ensure 28 day compressive strength requirements are met.

3. For compressive strength of 5000 psi or greater, ~~S~~submit a mix design meeting the minimum 28 day strength requirements noted in the contract documents. Mix design requirements and submittal are as follows:

B. New Mix Design.

1. ~~If Class C or HPC mix design from a concrete production facility cannot meet the strength requirements, a new mix design shall be submitted.~~ Proportions for a new mix design shall be based upon saturated surface dry aggregates and shall produce a workable concrete mixture meeting the following constraints:

Table DS-23XXX.02-1: Mix Design Constraints

Cementitious Content, minimum	560 pounds per cubic yard, (absolute volume 0.106)
Water/Cementitious Ratio	Maximum, 0.45
Target Air Content	6% (absolute volume 0.06)

2. Submit mix design to the District Materials Engineer for approval at least 60 calendar days prior to placement. Base mix design on a trial batch and mix in the equipment used to batch production concrete.

3. For a new mix design without previous experience and for which the concrete production facility does not have field data for calculation of the standard deviation, the strength shall be an average of three cylinders and shall meet the following strength requirement at 28 days as shown below.

Table DS-23XXX.02-2: Strength Requirements

Specified minimum compressive strength, f'_c psi	**Required average compressive strength, f'_c**
4500 to 5000	f'_c + 1200 psi
Greater than 5000	1.1 x f'_c + 700 psi

where, f'_c = specified compressive strength in contract documents

4. If the concrete production facility has test records for calculation of the standard deviation, the required 28 day compressive strength shall be as shown in Article 23XXX.02, B. Concrete shall represent materials, quality control procedures, conditions, materials and proportions within test records, and the mix design represented shall not have been more restricted than the proposed mix. Strength represented by test records shall be within 1000 psi of the required compressive strength.

C. Mix Design with History of Strength.

1. A Class C mix, or other mixes with satisfactory record of strength 5000 psi or greater, may be submitted in lieu of a new mix design. In accordance with ACI 301, a minimum of 30 tests for 28 day compressive strength shall be required as supporting documentation. The concrete produced for this specification shall be produced in accordance with Section 2403 of the Standard Specifications, representing material sources (fly ash source changes may be included), and shall be batched and mixed in the same equipment used to produce the concrete represented by the performance strength documentation. The standard deviation shall be calculated from the 30 strength tests, except as provided below. The required 28 day compressive strength, f'_c, shall be the greater of the following

f'_c + 1.34 s or
f'_c + 2.33 s – 500 psi

where: f'_c = specified compressive strength in contract documents s = standard deviation.

2. When the concrete production facility has less than 30 tests (15 to 29), the standard deviation shall be increased by the factor included in the following table:

Table DS-23XXX.02-3: Standard Deviation Factors

Number of tests*	**Factors for increasing the Standard Deviation**
15 to 19	1.16
20 to 24	1.08
25 to 29	1.03

*Less than 15 tests shall require a new mix design.

3. Submit modifications to an accepted concrete mix design to the Engineer for review and approval prior to use.

23XXX.03 CONSTRUCTION.

A. Trial Batch Concrete.

1. A trial batch will be required for any new mix design or any mix design with a history of strength without past experience on Interstate and primary projects. Approval will be based on trial batch mix properties and submittal of a trial batch report. The District Materials Engineer may waive the trial batch testing and perform testing on initial production placements where lower strengths are required, provided the concrete production facility produces acceptable test records for proposed mix demonstrating mix properties have been achieved through previous trial batches.

2. The District Materials Engineer shall be given notice and mix proportions 7 calendar days prior to this event. The trial batch shall be made at least 30 calendar days prior to planned placement and shall be a minimum of 3 cubic yards in size. Establish batching sequence during trial batch. Transport the concrete a distance comparable to the distance from the ready mix plant to the placement site. Use concrete for testing representative of the entire batch while having a slump within 1 inch of the maximum slump allowed, an intended in place air content of 6% ± 1%, and a w/c ratio that will be typical in the placement. Perform the following tests for each trial batch:

Table DS-23XXX.03-1: Trial Batch Tests

Specific Gravity of Each Individual Aggregate	Materials I.M. 307
Gradation of Each Individual Aggregate	Materials I.M. 302
Unit Weight of Plastic Concrete	Materials I.M. 340
Slump of Plastic Concrete	Materials I.M. 317
Air Content of Plastic Concrete	Materials I.M. 318

3. Submit a trial batch mix design report and include the following:

Table DS-23XXX.03-2: Trial Batch Report

Cover Page	Contractor and Producer Name Project Number Date and Location of Trial Batch Date Submitted Signature of Contractor/Producer Representative
Material Source Information	Brand, Type, and Source
Proportion Information	Specific Gravity Relative % of Each Individual Aggregate Design and As Mixed Batch Weights (SSD) Design and As Mixed w/c Ratios
Mix Properties	Unit Weight of Plastic Concrete Air Content of Plastic Concrete Slump Individual Compressive Strength results at 7 and 28 days

B. Production Concrete.

1. For compressive strength of 5000 psi or greater, ~~P~~prior to placing production concrete, develop a strength maturity curve in accordance with Material I.M. 383 based on compressive strength. Monitor unit being placed with a minimum of two probes. Forms may be removed and concrete may be subjected to exterior loads once the maturity meets the required design strength for the unit being placed. The Engineer remains responsible for determining if sufficient strength has been achieved. Submit documentation to the Engineer prior to form removal or loading.

2. Perform quality control testing of production concrete for strength to determine if production

concrete meets the minimum required design strength. Cast, cure, and handle strength samples according to Materials I.M. 315 using a PCC Level I Concrete Field Testing Technician. At the site ensure cylinders are cured properly with wet burlap and plastic. Do not move cylinders for 16 hours and ensure they remain at the site for a maximum of 1 calendar day before being transported to a certified laboratory for final curing and testing. Cast one random set of three strength samples in 4 inch by 8 inch cylinder molds for each pier, abutment, and deck with required design strength of 4500 psi or higher. Document slump, air content, and w/c ratio (adjusted for all water) of the concrete for the cylinders cast.

3. Test strength samples by a qualified lab in accordance with AASHTO T 22. Testthree cylinders for strength at 28 days.

4. Submit test results to the Engineer and the District Materials Engineer no later than 1 working day after testing is completed. Submittal shall clearly indicate the project number, location, Contractor, producer, structural element constructed, slump, air content, w/c ratio (adjusted for all water), date sampled, date tested, break age, individual compressive strengths, and average compressive strengths. Attach plant report for the placement to the submittal.

C. Failure to Comply.

According to ACI 318, strength is acceptable if the average compressive strength of three cylinders meets the required compressive strength and no individual test falls below the required compressive strength by more than 500 psi. When the average 28 day compressive strength does not meet or exceed the specified strength, propose evaluation methods to determine the in-place concrete strength. Submit the proposal to the Engineer for approval. Notify the Engineer 48 hours in advance of any sampling and testing and will witness the sampling and testing of the in-place concrete. The Engineer will review the results with the Office of Bridges and Structure and determine corrective action required. The Contractor shall be responsible for the cost of evaluation and any corrective action required.

23XXX.04 METHOD OF MEASUREMENT.

The quantity of Structural Concrete 4500 psi or Greater, As Specified, in cubic yards, will be the quantity shown in the contract documents.

23XXX.05 BASIS OF PAYMENT.

The Contractor will be paid the contract unit price for Structural Concrete 4500 psi or Greater, As Specified per cubic yard. The cost for testing the production concrete shall be included in the contract unit price for Structural Concrete 4500 psi or Greater, As Specified.

Form 510130 (07-24)

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Scott Nixon / Brian Johnson	**Bureau/Office:** Construction and Materials	**Item 13**
Submittal Date: 4/27/2026	**Proposed Effective Date:** July 21, 2026	
Article No.: **Title:**	**Other:** SS-23002, Evaluation of Longitudinal Joint Quality for Flexible Paving Mixtures with Incentive/Disincentive	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**
Specification Committee Approved Text:			
Comments:			
Specification Section Recommended Text: See attached draft Supplemental Specifications for Evaluation of Longitudinal Joint Quality for Flexible Paving Mixtures with Incentive/Disincentive			
Comments: We need to confirm that the SS is being added to projects with flexible pavement.			

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

Reason for Revision: There are currently this SS and a DS for the same work that are somewhat different. The revisions will update everything include outdates references.

New Bid Item Required (X one)	**Yes**	**No** X
Bid Item Modification Required (X one)	**Yes**	**No** X
Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments:		
County or City Comments:		
Industry Comments:		

DRAFT SS-23XXX
(Replaces SS-23002)

SUPPLEMENTAL SPECIFICATIONS FOR EVALUATION OF LONGITUDINAL JOINT QUALITY FOR FLEXIBLE PAVING MIXTURES

Effective Date
July 21, 2026

THE STANDARD SPECIFICATIONS, SERIES 2023, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SUPPLEMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

23XXX.01 DESCRIPTION.
This work is evaluating in-place quality of centerline longitudinal joints on the surface wearing course for flexible paving ~~and replaces Article 2303.03, D, 4, c, of the Standard Specifications~~.

23XXX.02 EVALUATION.

A. General Requirements.
For Class I compaction areas on the surface, longitudinal joint density lots independent from the mat will be established for mainline paving as specified in Article 23XXX.02, B for acceptance. Class I compaction is defined in Article 2303.03, C, 5, of the Standard Specifications. Mainline shall be considered through lanes within the traveled way including middle turn lanes. ~~Sampling and testing will be for information only.~~

B. Sampling.

1. When surface paving abuts a previously placed surface course, forming a completed longitudinal joint eligible for evaluation, the Engineer will obtain and test samples according to Materials I.M. 320 and 321. Using random core locations determined for daily field voids lot (mat), the Engineer will randomly select three of these locations to be sampled for joint density. When the length of longitudinal joint is less than 3 mat sublots, the Engineer will select two sublot locations. When the length of longitudinal joint(s) is less than 2 mat sublots, joint cores will be waived.

2. When sampling for mat field voids is modified to include multiple days due to low production, sampling from the joint may also be modified by the Engineer.

3. Joints constructed with tandem pavers will be included, unless otherwise indicated in the contract documents.

4. For vertical joints, center joint cores on the visible seam between the two adjacent lanes as shown in Appendix A of these specifications.

5. For notched wedge joints, center joint cores 4 inches away from the visible seam in the direction of the wedge as shown in Appendix A of these specifications.

6. Under the direction and witnessing of the Engineer, drill one 6 inch diameter core at each sample location as soon as possible, but no later than the day following the completion of the longitudinal joint.

7. Do not compress, bend, or distort samples during cutting, handling, transporting, and storing. If samples are damaged, immediately obtain replacement samples, as directed by the Engineer, longitudinally from within 12 inches of the original sample location.

~~8. Apply Article 2303.03, D, 5, c, of the Standard Specifications for post drilling operations.~~

8. ~~9.~~ Report sample locations and test results on the daily plant report corresponding with the JMF used in production of the sublot(s).

C. Lot Size.
Lot size shall be the length of field voids lot where longitudinal joint(s) exist.

D. Excluded Areas.

1. The Engineer will not obtain samples from the following excluded areas to determine lot acceptance:
   - Joints where one side of the joint is formed by existing pavement not constructed under this contract
   - Joints where one side of the joint is not on the mainline surface.
   - Areas within 1 foot longitudinally of an obstruction during construction of the surface course (manholes, inlet grates, utilities, bridge structures, runout, etc.). Should a random sample location fall within 1 foot of such an area, the Engineer shall select an alternate nearby location away from the obstruction.
   - Small areas, such as intersections, gore areas or transitions, or anywhere the Engineer determines paving and phasing methods do not allow for consistent longitudinal joint construction.
   - High performance thin lift mixtures.

2. Prior to paving, submit requests in writing to the Engineer for consideration of any areas to be excluded on this basis. The Engineer will make the final determination.

E. Joint Density.
Determine average joint density as a percentage of the average mat density per Appendix A. Mat cores and joint cores shall be collected on the same day of production for density determination. Mat cores identified as outliers for field voids acceptance will not be used in average mat density calculation.

23XXX.04 METHOD OF MEASUREMENT AND BASIS OF PAYMENT.
Costs associated with providing joint pavement samples shall be included with the payment for Hot Mix Asphalt Pavement Samples. Use Table SS-23010.04-1 to determine the lot payment adjustment based on the average joint density and the length of total longitudinal joint as measured by the Engineer.

Table SS-23010.04-1: Payment for Longitudinal Joint Density

Avg Joint Density (%)	Payment Adjustment ($/ft)
< 95.0[1]	0.16*Avg Joint Density -15.2
95.0 – 97.0	$0.00
> 97.0[2]	0.1333*Avg Joint Density – 12.93

1. Disincentive is not to exceed $0.80/ft.
2. Incentive is not to exceed $0.40/ft.

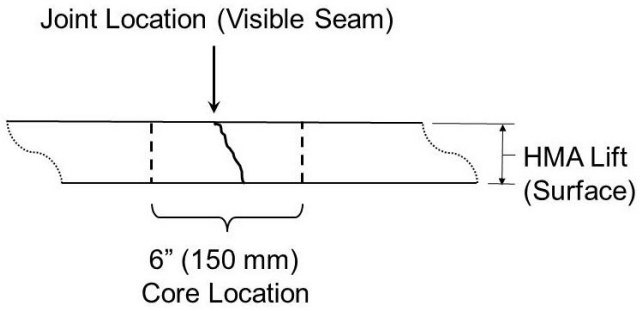
APPENDIX A

A. Joint Density

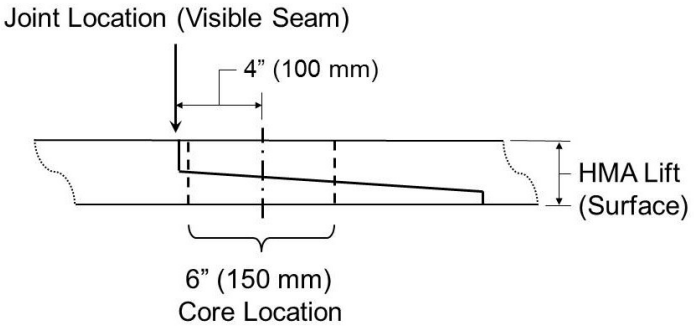
$$\boldsymbol{Avg\ Joint\ Density} = \mathbf{100} \times \frac{\boldsymbol{Avg\ Joint\ G_{mb}}}{\boldsymbol{Avg\ Mat\ G_{mb}}}$$

B. Coring Diagram

(a) Vertical Edge/Conventional (Butt) Joint



(b) Notched Wedge Joint



Form 510130 (07-24)

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SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Eric Johnsen	**Bureau/Office:** Specifications	**Item 14**
Submittal Date: 4/27/2026	**Proposed Effective Date:** October 2026	
Article No.: 2549.03, B **Title:** Manhole Rehabilitation (Pipe, Culvert, and Manhole Cleaning and Rehabilitation) **Article No.:** 2549.04 **Title:** Method of Measurement (Pipe, Culvert, and Manhole Cleaning and Rehabilitation) **Article No.:** 2549.05, M, 2 **Title:** Basis of Payment (Pipe, Culvert, and Manhole Cleaning and Rehabilitation) **Article No.:** 2549.05 **Title:** Basis of Payment (Pipe, Culvert, and Manhole Cleaning and Rehabilitation) **Article No.:** 4147.02 **Title:** Manhole Rehabilitation (Pipe and Manhole Rehabilitation Materials) **Article No.:** 4150.02, E, 2, a, 1, a, 2 **Title:** Solid Single Copper Conductor (Tracer System) **Article No.:** 4150.02, E, 2, a, 1, b, 1 **Title:** Bimetallic Copper Clad Steel Conductor (Tracer System) **Article No.:** 4150.02, E, 2, a, 1, b, 6 **Title:** Solid Single Copper Conductor (Tracer System) **Article No.:** 4150.02, E, 2, a, 2, g **Title:** Directional Drilling/Boring (Tracer System)	**Other:**	

Specification Committee Action:			
Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:

2549.03, B, Manhole Rehabilitation.

Add the Articles:

6. Multi-Layer Polyurea/Polyurethane Protective Lining System.

a. Surface Preparation: Prepare according to the manufacturer's recommendations and the following.

1) Provide a surface compatible for installation of the liner system, which may include high pressure water cleaning, hydro blasting, abrasive blasting, grinding, or detergent water cleaning.

2) Produce a cleaned, abraded, and sound surface with no evidence of laitance, loose concrete, brick or mortar, contaminants or debris.

3) After the defects in the structure are identified, repair all leaks with a chemical or hydraulic sealant designed for use in field sealing of ground water. Repair severe cracks with a urethane-based chemical sealant, as approved by Jurisdiction prior to installation. Repair exposed rebar, defective pipe penetrations, or inverts utilizing non- shrink grout or approved alternative method.

b. Lining Material Installation.

Apply according to the manufacturer's recommendations and the following.

1) Ensure an adhesion layer minimum thickness of 50 mils.

2) Apply the polyurethane liner system surface layer to a thickness of no less than 400 mils. Also use this material to produce a uniform interior wall surface prior to the installation of the final layer.

3) Ensure final installation is a minimum of 500 mils of the lining.

c. Quality Assurance and Acceptance.

1) The Engineer will conduct a visual inspection of the completed lining system prior to acceptance. Any deficiencies in the finished liner system will be marked. Repair marked deficiencies according to the manufacturer's recommendations.

2) Utilize high voltage holiday detection to inspect for pinholes or breaches in the liner system installation according to ASTM D 4787.

3) When required, verify thickness of the application by point depth checks into the surface layer component and/or physical removal of a small area of the polyurethane material. Repair the test areas immediately following the test at the Contractor's expense.

7. Casting.

Install casting per Article 2435.03, A, 10.

2549.04, Method of Measurement.

Add the Articles:

N. Multi-Layer Polyurea/Polyurethane Lining System.

The vertical dimension of the lined structure with multi-layer polyurea/polymer protective liner will be measured in feet from the lowest flowline to the top of the rim.

O. Remove and Replace Casting.

Each casting to remove and replace will be counted.

2549.05, M, 2.

Replace the Article:

Payment is full compensation for the handling of sewer flows during lining operations as required to properly complete the installation, and ~~replacement of the existing casting with a new casting~~ salvaging and reusing existing casting.

2549.05, Basis of Payment.

Add the Articles:

N. Multi-Layer Polyurea/Polyurethane Lining System.

1. Payment will be at the unit price per vertical foot for each structure size.

2. Payment is full compensation for the handling of sewer flows during lining operations as required to properly complete the installation, and salvaging and reusing existing casting.

O. Remove and Replace Casting.

1. Payment will be at the unit price for each casting to be removed and replaced.

2. Payment is full compensation for furnishing and installing adjustment rings, installing new infiltration barrier (sanitary sewer manholes only), and salvaging existing casting for the Contracting Authority.

4147.02, Manhole Rehabilitation.

Add the Article:

E. Multi-Layer Polyurea/Polyurethane Lining System.

1. Lining System.
Comprised of polyurea adhesion coating, polyurethane surface material, and polyurea final layer.

2. Polyurea Adhesion Coating and Final Layers.
Fast set, spray applied, two component that is 100% solid, contain no volatile organic compounds, moisture tolerant, elastomeric polyurea providing infiltration and corrosion protection. Ensure material is capable of curing properly given the specific project site conditions and conforms to the following table.

Table 4147.02-4: Physical Properties

Property	Specifications	Value
Harness	ASTM D 224	D 48
Tensile Strength	ASTM D 412	3300 psi
Modulus (100%)	ASTM D 412	1650 psi
Modulus (200%)	ASTM D 412	1950 psi
Modulus (300%)	ASTM D 412	2650 psi
Elastomer Tear Strength	ASTM D 624	400 psi
Elongation	ASTM D 412	<395%
Taber Abrasion	CS-17 Wheel	<15mg
Severe Wastewater Analysis Testing	ASTM G 210	Pass

3. Polyurethane Surface Layer.
Spray applied, two component that is high closed cell content, contain no volatile organic compounds, be moisture tolerant, elastomeric polyurethane. Ensure material is capable of curing properly given the specific project site conditions and conforms to the

following table.

Table 4147.02-5: Physical Properties

Property	Value
Density ASTM D 1622	6-8 pcf
Compressive Strength ASTM D 1621	130-180 psi
Closed Cell Content	>94%
Water Absorption	<0.03 lbs/sq ft
Maximum Service Temperature	180
Ultimate Elongation ASTM D 638	3.5 to 5.5 %
Adhesion ASTM D 7234	Substrate Failure

4150.02, E, 2, a, 1, a, 2.

Replace the Article:

Insulation Material: Linear low-density polyethylene (LLDPE) or high molecular wight polyethylene (HMWPE) insulation suitable for direct burial applications.

4150.02, E, 2, a, 1, b, 1.

Replace the Article:

Size: No. ~~14~~ 12 WG.

4150.02, E, 2, a, 1, b, 6.

Replace the Article:

Insulation Material: ~~High density polyethylene~~ HMWPE.

4150.02, E, 2, a, 2, g.

Replace the Article:

Insulation Material: ~~High density, high molecular weight polyethylene~~ HMWPE.

Comments:

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

Reason for Revision: To match SUDAS specifications, which is where these sections are taken.

New Bid Item Required (X one)	**Yes**	**No**
Bid Item Modification Required (X one)	**Yes**	**No**
Bid Item Obsoletion Required (X one)	**Yes**	**No**

Comments:

County or City Comments:

Industry Comments: