MINUTES
OF
IOWA DOT SPECIFICATION COMMITTEE MEETING

November 8, 2018

Members Present:	Darwin Bishop	District 3 - Construction
	Mark Brandl	District 6 - Davenport RCE
	Mark Dunn	Office of Contracts
	Stuart Nielsen	Office of Design
	Eric Johnsen, Secretary	Specifications Section
	Wes Musgrove	Office of Construction & Materials
	Gary Novey	Office of Bridges & Structures
	Tom Reis, Chair	Specifications Section
	Willy Sorensen	Office of Traffic & Safety
Members Not Present:	Donna Buchwald	Office of Local Systems
	Charlie Purcell	Project Delivery Bureau
Advisory Members Present:	Paul Geilenfeldt	Marshall County
	Andrew Zimmerman	FHWA

The Specification Committee met on Thursday, November 8, 2018, at 9:00 a.m. in the NW Wing, 1st Floor Conference Room. Tom Reis, Specifications Engineer, opened the meeting. The items were discussed in accordance with the revised agenda dated November 2, 2018:

The minutes are as follows:

1. Article 1102.11, D, Proposal Guaranty.

The Office of Contracts requested to require submittal of Annual Bid Bonds electronically.

2. Article 1102.20, Title VI Assurances.

The Office of Local Systems requested to add new requirements mandated by the FHWA.

3. Article 2214.03, D, 8, Limitations (Pavement Scarification).

The Office of Construction and Materials requested to include surface overlay types other than HMA and PCC.

4. Article 2303.03, D, 3, b, 2, Plant Production Control (Flexible Paving Mixture).

The Office of Construction and Materials requested to clarify cold-feed gradation requirements for gyratory mix design.

5. Article 2523.02, Materials (Highway Lighting Materials).
Article 4151.03, A, Reinforcement for Structures.

Article 4187.01, C, 2, Fasteners for Galvanized Steel Superstructures.

Article 4189.01, D, Footings (Traffic Signal Equipment).

The Office of Traffic and Safety requested to modify the specifications for highway lighting, traffic signals, and signing.

6. **Article 1105.03, E, Submittals.**

Article 2524.03, Construction (Highway Signing).

The Office of Traffic and Safety requested to add two new highway sign construction methods, update the highway sign standard, and require shop drawings for milepost markers.

7. **Article 2528.03.B, Portable Dynamic Message Signs (Traffic Control).**

Article 4188.07, Portable Dynamic Message Sign (Traffic Control Devices).

The Office of Traffic and Safety requested to update the PDMS specifications for current practice and consistency between providors.

8. **Article 2528.03, H, Temporary Traffic Signals.**

The Specifications Section requested to include flagger station signals in the Standard Specifications.

9. **Article 4186.03, B, 1, Permanent Signs and Devices (Retro Reflective Sheeting).**

Article 4186.05, Inks, Clears, and Thinners (Signing Materials).

Article 4186.06, B, 1, a, Application of Sheeting (Sign Fabrication).

The Office of Traffic and Safety requested to update to Type XI retro reflective sheeting for permanent signs.

10. **DS-15064, PCC Pavement Non-Destructive Thickness Determination.**

The Office of Construction and Materials requested revisions to the Developmental Specifications for PCC Pavement Non-Destructive Thickness Determination.

11. **SUDAS Consent Items.**

SUDAS has proposed revisions to their specifications, which affect some of the Department's specifications that are based on SUDAS. These items will not be discussed individually unless there is a need to.

Form 510130 (08-15)

IOWA DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Mark Dunn / Danny Stokes	**Office:** Contracts	**Item 1**
Submittal Date: 8/30/2018	**Proposed Effective Date:** April 2019 GS	
Article No.: 1102.11, D **Title:** Proposal Guaranty	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 11/8/2018	**Effective Date:** 4/16/2019

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: This revision will be applied by proposal note starting with the December or January letting.

Specification Section Recommended Text:

1102.11, D.

Replace the Article:

A Contractor's Annual Bid Bond (Form 650043) may also be used for the proposal guaranty in lieu of that specified above~~. The Annual Bid Bond shall contain the following items:~~, using the electronic bid bond verification feature authorized by the Department. Annual Bid Bonds will be declared invalid and bid proposals will not be considered if any of the following items are omitted or incorrect:

- Name of Contractor
- ~~Original signature of the Contractor~~ Digital Signature of Contractor: In the case of joint venture bid, all Contractors shall sign.
- Date of signature
- Name of Surety Company
- ~~Original signature of the Surety~~ Digital Signature of Surety (if Surety's limitation is less than the amount of the bid bond, a certificate of reinsurance shall be attached).
- Expiration Date of Bond shall not exceed 365 calendar days from the effective date of bond.

Comments: This is currently being applied by proposal note, starting with the November letting.

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

D. A Contractor's Annual Bid Bond (Form 650043) may also be used for the proposal guaranty in lieu of that specified above~~. The Annual Bid Bond shall contain the following items~~: ,using the electronic bid bond verification feature authorized by the Department. Annual Bid bonds will be declared invalid and bid proposals will not be considered if any of the following items are omitted or incorrect:

- Name of Contractor
- ~~Original signature of the Contractor~~ Digital Signature of Contractor: In case of joint venture bid, all contractors must sign.
- Date of signature
- Name of Surety Company
- ~~Original signature of the Surety~~. Digital Signature of Surety (if Surety's limitation is less than the amount of the bid bond, a certificate of reinsurance must be attached).
- Expiration Date of Bond shall not exceed 365 calendar days from the Effective Date of Bond.

Reason for Revision: This change is necessary to acquire Annual Bid Bonds electronically. Because of this change, the process will move faster and more efficiently. The number of bids rejected by the

Office of Contracts shall decrease immediately.		
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 (08-15)

IOWA DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Donna Buchwald / John Dostart	**Office:** Local Systems	**Item 2**
Submittal Date:	**Proposed Effective Date:** April 2019 GS	
Article No.: 1102.20 **Title:** Title VI Assurances	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 11/8/2018	**Effective Date:** 4/16/2019

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: This revision will be applied by proposal note starting with the January letting.

Specification Section Recommended Text:

1102.20, Title VI Assurance.

Add to the end of the Article:

APPENDIX E

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following on discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21;
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);

- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 -- 12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;

- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);

- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;

- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);

- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

Comments:

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

~~**APPENDIX A**~~

~~During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor") agrees as follows:~~

~~**1.** Compliance with Regulations: The contractor shall comply with the Regulations relative to nondiscrimination in Federally-assisted programs of the Department of Transportation (hereinafter, "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.~~

~~**2.** Nondiscrimination: The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, national origin, sex, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.~~

~~**3.** Solicitations for Subcontracts, Including Procurement of Materials and Equipment: In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurement of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, national origin, sex, age, or disability.~~

~~**4.** Information and Reports: The contractor shall provide all information and reports required by the Regulations or directives issued pursuant there to, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Iowa Department of Transportation or Federal Highway Administration to be pertinent to ascertain compliance with such Regulations, orders and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information the contractor shall so certify to the Iowa Department of~~

~~Transportation or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain the information.~~

~~**5.** Sanctions for Noncompliance: In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the Iowa Department of Transportation shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:~~
~~**a.** withholding of payments to the contractor under the contract until the contractor complies, and/or~~
~~**b.** cancellation, termination or suspension of the contract, in whole or in part.~~

~~**6.** Incorporation of Provisions: The contractor shall include the provisions of paragraphs (1) through (6) in every subcontract, including procurement of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the Iowa Department of Transportation or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for non-compliance: Provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the Iowa Department of Transportation to enter into such litigation to Protect the interests of the Iowa Department of Transportation and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.~~

APPENDIX A

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Nondiscrimination in Federally-assisted programs of the U.S. Department of Transportation, **Federal Highway Administration**, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations as set forth in Appendix E, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.

4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the **Federal Highway Administration** to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the **Federal Highway Administration**, as appropriate, and will set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Nondiscrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the **Federal Highway Administration** may determine to be appropriate, including, but not limited to:

a. withholding payments to the contractor under the contract until the contractor complies; and/or

b. cancelling, terminating, or suspending a contract, in whole or in part.

6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or the **Federal Highway Administration** may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

APPENDIX E

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following on discrimination statutes and authorities; including but not limited to:

· Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21;

· The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);

· Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), (prohibits discrimination on the basis of sex);

· Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;

· The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age);

· Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);

· The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);

· Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 -- 12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;

· The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);

· Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;

· Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);

· Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

Reason for Revision: As required by the Federal Highway Administration the Iowa DOT has an approved Title VI Program Plan available at:
https://iowadot.gov/civilrights/documents/TitleVIProgramPlan.pdf?ver=2016-02-16-145008-370

Part of that plan requires that Appendixes A and E be attached to all contracts funded with Federal-aid funds. Appendix A is currently attached. The U.S. DOT order requiring this is available here:

https://www.faa.gov/about/office_org/headquarters_offices/acr/com_civ_support/non_disc_pr/media/dot_order_1050_2A_standard_dot_title_vi_assurances.pdf

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: Required by FHWA; LPA comments not needed.		
Industry Comments:		

Form 510130 (08-15)

IOWA DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Wes Musgrove / Jeff Schmitt	**Office:** Construction & Materials	**Item 3**
Submittal Date:	**Proposed Effective Date:** April 2019 GS	
Article No.: 2214.03, D, 8 **Title:** Limitations (Pavement Scarification)	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 11/8/2019	**Effective Date:** 4/16/2019

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: None.

Specification Section Recommended Text:
2214.03, D, 8.

Replace the first sentence:

Commence ~~HMA or PCC~~ overlay (HMA, PCC, Seal Coat, Slurry Seal, etc.) placement operations within 10 working days after completion of the scarification operation.

Comments:

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

8. Commence ~~HMA or PCC~~ overlay (HMA, PCC, Seal Coat, Slurry Seal, etc.) placement operations within 10 working days after completion of the scarification operation. 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: Existing specification language does not address other overlay operations that may follow the scarification operation and be subject to same limitations / conditions. This specification change was requested by Mark Brandl (Davenport RCE) to help field offices enforce the 10-day limitation for seal coats, slurry seals, etc.

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 (08-15)

IOWA DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Wes Musgrove / Jeff Schmitt	**Office:** Construction & Materials	**Item 4**
Submittal Date:	**Proposed Effective Date:** April 2019 GS	
Article No.: 2303.03, D, 3, b, 2. **Title:** Plant Production Control (Flexible Paving Mixture)	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 11/8/2018	**Effective Date:** 4/16/2019

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: None.

Specification Section Recommended Text:

2303.03, D, 3, b, 2.

Replace the Article:

The gyratory mix design gradation control points for the size mixture designated in the project plans will not apply to plant production control tolerances.

0Comments:

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

2) The gyratory mix design gradation control points for the size mixture designated in the project plans will not apply to plant production control tolerances.

Reason for Revision: Projects with mix control issues may require setting design cold-feed gradation targets outside of production control points. This revision is to eliminate potential conflict with corresponding IM 510 changes being made to address the issue. The changes, recommended by Roger Boulet (District 6), were approved by District Materials Engineers at their September 13, 2018 meeting.

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 (08-15)

IOWA DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Tim Crouch	**Office:** Traffic and Safety	**Item 5**
Submittal Date: October 23, 2018	**Proposed Effective Date:** April 2019	
Article Nos.: 2523.02 **Title:** Materials **(**Highway Lighting Materials) **Article Nos.:** 4151.03, A **Title:** Reinforcement for Structures **Article Nos.:** 4187.01, C, 2 **Title:** Fasteners for Galvanized Steel Superstructures **Article Nos.:** 4189.01, D **Title:** Footings **(**Traffic Signal Equipment)	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 11/8/2018	**Effective Date:** 4/16/2019

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: None.

Specification Section Recommended Text:

2523.02, Materials.

Add the Articles:

D. Use uncoated reinforcing steel complying with Article 4151.03. All reinforcing steel shall be Grade 60.

E. For drilled-shaft foundations, comply with Articles 2433.01, 2433.02, 2433.03, A and 2433.03, C through I.

4151.03, A, General.

Replace the Article:

1. Unless otherwise specified, use deformed bars meeting the requirements of ASTM A 615 Grade 60, ASTM A 706 Grade 60, or ASTM A 996 Grade 60. Use bars fabricated according to Article 2404.03, B.

2. Spirals of No. 5 (15) bars or smaller and any bars No. 3 (10) or smaller for stirrups or hoops of a specified shape may, at the Contractor's option, be: steel meeting the physical and chemical requirements of ASTM A 1064 or ASTM A 615 Grade 40.

~~● Material meeting the requirements of ASTM A 1064 reinforcement specified above, or~~

~~● Steel meeting physical and chemical requirements of ASTM A 615 Grade 40.~~

3. For spirals in precast and prestressed concrete piling and all wire ties, use steel wire with a minimum ~~tensile~~ yield strength of ~~40,000 psi~~ 40 ksi, with other properties such as to permit bending as shown in the contract documents.

4. When required by the contract documents, coat steel wire supports with:
- PVC according to ASTM A 933, or
- Epoxy according to ASTM A 884.

4187.01, C, 2, d, Galvanized Steel U-Bolts.

Add the Articles:
6) Use nuts as specified in Article 4187.01, C, 2, b.
7) Use washers as specified in Article 4187.01, C, 2, c.

4189.01, D, Footings.

Replace the title and Article:
~~**Footings**~~ **Foundations.**

1. Use Class C structural concrete complying with Section 2403.

2. Use uncoated reinforcing steel complying with ~~Section 4151.~~ Article 4151.03. All reinforcing steel shall be Grade 60.

3. For drilled-shaft foundations, comply with Articles 2433.01, 2433.02, 2433.03, A and 2433.03, C through I.

Comments:

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

Section 2523. Highway Lighting

. . .

2523.02 MATERIALS.

F. Install lighting materials that meet the requirements of Division 41.
G. Use cast-in-place concrete that meets the requirements of Section 2403 or precast materials meeting Section 2419.
H. For granular base for handholes and preformed junction boxes, provide material meeting Gradation No. 3 or 5 of the Aggregate Gradation Table.
I. Use uncoated reinforcing steel complying with Article 4151.03. All reinforcing steel shall be Grade 60.
J. For drilled-shaft foundations, comply with Articles 2433.01, 2433.02, 2433.03, A and 2433.03, C – I.

Section 4151. Steel Reinforcement

4151.03 REINFORCEMENT FOR STRUCTURES.

A. General.

4. Unless otherwise specified, use deformed bars meeting the requirements of ASTM A 615 Grade 60, ASTM A 706 Grade 60 or ASTM A 996 Grade 60. Use bars fabricated according to Article 2404.03, B.

5. Spirals of No. 5 (15) bars or smaller and any bars No. 3 (10) or smaller for stirrups or hoops of a specified shape may, at the Contractor's option, be~~:~~ steel meeting the physical and chemical requirements of ASTM A 1064 or ASTM A 615 Grade 40.

~~● Material meeting the requirements of ASTM A 1064 reinforcement specified above, or~~

~~● Steel meeting physical and chemical requirements of ASTM A 615 Grade 40.~~

6. For spirals in precast and prestressed concrete piling and all wire ties, use steel wire with a minimum ~~tensile~~ yield strength of ~~40,000 psi~~ 40 ksi, with other properties such as to permit bending as shown in the contract documents.

Section 4187. Materials for Sign Support Structures

4187.01 GENERAL REQUIREMENTS.

. . .

C. Fasteners for Aluminum Alloy and Galvanized Steel Superstructures and Anchor Bolts.

. . .

2. Fasteners for Galvanized Steel Superstructures.

. . .

d. Galvanized Steel U-Bolts

1) Use size specified in the contract documents.

2) Galvanize according to the requirements of ASTM B 695, Class 55 Type 1 or ASTM F 2329 with zinc bath temperature limited to 850^{O}F.

3) U-bolts shall be ASTM A 449 Type 1, ASTM A 307 Grade B or ASTM F 1554, Grade 36 or 55.

4) Threads are to comply with ANSI/ASME B 1.1 for UNC thread series, Class 2A tolerance.

5) Bend and thread U-bolts prior to galvanizing.

6) Use nuts as specified in Article 4187.01, C, 2, b.

7) Use washers as specified in Article 4187.01, C, 2, c.

Section 4189. Traffic Signal Equipment

4189.01 UNDERGROUND.

. . .

D. ~~Footings~~ Foundations.

1. Use Class C structural concrete complying with Section 2403.

2. Use uncoated reinforcing steel complying with ~~Section 4151.~~ Article 4151.03. All reinforcing steel shall be Grade 60.

3. For drilled-shaft foundations, comply with Articles 2433.01, 2433.02, 2433.03, A and 2433.03, C – I.

Reasons for Revision:

1) Section 4151 in Division 41 currently does not specify the required steel grade for deformed reinforcing bars used in concrete structures such as light pole foundations and traffic signal pole foundations. Article 2523.02 (Highway Lighting Materials) references Division 41 (Construction Materials) for steel reinforcement for light pole foundations. Article 4189.01, D (Traffic Signal Pole Foundations) references Section 4151 (Steel Reinforcement) for steel reinforcement in traffic signal pole foundations.

2) Article 2523.02 (Highway Lighting Materials) and Article 4189.01, D (Traffic Signal Pole Foundations) currently do not reference the relevant articles in Section 2433 (Concrete Drilled Shafts).

3) Article 4187.01, C, 2 (Fasteners for Galvanized Steel Sign Support Structures) currently does not specify the type of nuts and washers to use with galvanized steel U-bolts in sign support structures.

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 (08-15)

IOWA DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Willy Sorenson / Tim Crouch	**Office:** Traffic and Safety	**Item 6**
Submittal Date: July 27, 2018	**Proposed Effective Date:** April 2019 GS	
Article No.: 1105.03, E **Title:** Submittals **Article No.:** 2524.03 **Title:** Construction (Highway Signing)	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 11/8/2018	**Effective Date:** 4/16/2019

Specification Committee Approved Text:

Comments:

Specification Section Recommended Text:
1105.03, E, Submittals.

Replace Table 1105.03-1:

Table 1105.03-1: Review Offices for Working Drawings

DESCRIPTION	REVIEW OFFICE	REVIEW TIME (calendar days)
Falsework for slab bridges	Bridges and Structures	30
Cofferdam design (when required)	Bridges and Structures	30
Reconstruction of substructure (detailed plans for supporting the superstructure)	Bridges and Structures	30
Steel Structures	Bridges and Structures	30
Detail plans for falsework or centering support of steel structures (i.e. erection plans)	Bridges and Structures	30
Steel and aluminum pedestrian hand rails and aesthetic fences	Bridges and Structures	30
Highway sign support structures (i.e. bridge type trusses, cantilever trusses, & bridge mounts)	Bridges and Structures	30
Precast concrete (i.e. deck panels, RCB culverts, noise wall panels, arch sections, etc.)	Bridges and Structures	30
Tower lighting	Bridges and Structures	30

Highway lighting	Traffic and Safety	30
Highway signing steel breakaway posts	Traffic and Safety	30
Traffic signalization[(b)]	Traffic and Safety	30
Highway signing - Type A and B signs	Traffic and Safety	30
Reference Location Signs	Traffic and Safety	30
Bridge components	Bridges and Structures	30
Pre-engineered steel truss recreational trail bridge	Bridges and Structures	30
MSE, segmental, and modular block retaining walls (Preliminary and final submittals shall include design calculations, shop drawings, and field construction drawings)	Design (Soils Design Section)	30 (Preliminary) 14 (Final)
Soil nail and tie-back retaining walls (Submittal includes final design plans)	Design (Soils Design Section)	60
Intermediate foundation improvement (IFI) (i.e. stone columns, geopiers, etc.) (Submittal shall include design calculations and field construction drawings)	Design (Soils Design Section)	30
Removal of box girder bridges	Bridges and Structures	30
Structural erection manual	Bridges and Structures	30
Temporary shoring	Bridges and Structures	30
Temporary sheet pile retaining wall	Bridges and Structures	30
Architectural mock-ups[(a)]	Bridges and Structures	30
Architectural paving[(a)]	Bridges and Structures	30
Architectural paint color samples and manufacturer data[(a)]	Bridges and Structures	30
Architectural concrete texture form liner samples and drawings[(a)]	Bridges and Structures	30
Architectural concrete sealer samples and manufacturer data[(a)]	Bridges and Structures	30
Architectural ornamental brick[(a)]	Bridges and Structures	30
(a) Submittals of physical samples shall be through the Engineer. **(b)** Submittal time shall be within 45 calendar days from the date of award of contract.		

2524.03, A, 1, Traffic Signs.

Replace the Article:

a. Except as modified by the contract documents, fabricate signs according to the standards established in the Standard Highway Signs, 2004 edition, and 2012 Supplement as published by the US DOT.

b. All traffic signs, except milepost markers and 6 inch by 6 inch route markers, are classified into two groups, Types A and B, as indicated in the contract documents.

1) Type A Signs.

a) Comply with the following:

- Aluminum, galvanized steel, ~~or when specifically specified,~~ plywood sheets mounted on wood posts, or ~~steel breakaway posts~~ perforated square steel tubing.
- Sign face material fabricated from reflective sheeting.
- Sign legends accomplished with either the direct or reverse silk screen process, ~~or~~ with black nonreflective sheeting that is direct applied, or transparent film, as approved for use by the retro reflective sheeting manufacturer.

b) Ensure the finished signs comply with the details specified in the contract documents.

2) Type B Signs.

a) Comply with the following:

- Extruded aluminum highway sign panels mounted on either wood posts, perforated square steel tubing, or steel breakaway posts as specified in the contract documents.
- Sign face material fabricated from reflective sheeting.
- Sign legends accomplished through use of reflectorized or nonreflectorized letters, numerals, symbols, and borders that are direct applied.

b) Ensure the finished signs comply with the details specified in the contract documents.

c) Prior to fabrication, submit shop drawings for each Type B sign according to Article 1105.03. Each drawing is to be a scale drawing of the sign face, showing the size, arrangement, and spacing of all letters, numerals, symbols, and borders.

c. Digital printing shall comply with the following:

- Sign manufacturer shall be certified for digital printing by the retro reflective sheeting manufacturer.
- All digital printing shall be done in a workmanlike manner and as recommend by the manufacturer of the retro reflective sheeting.
- Appropriate manufacturer's recommended overlaminate films must be used in digital printing. Any noticeable deviation from the shades shall be cause for rejection of any sign.
- Opaque or transparent inks shall be of the type and quality recommended by the manufacturer of the retro reflective sheeting.
- A matched component system, recommended by the manufacturer shall be used in the digital printing process.

2524.03, A, 2, Reference Location Signs.

Add the Article:

c. Prior to fabrication, submit shop drawings for each reference location sign according to Article 1105.03. Each drawing is to be a scale drawing of the sign face, showing the size, arrangement, and spacing of all letters, numerals, symbols, and borders.

Comments: "Milepost markers" was corrected to "reference location signs" per the latest GS.

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

2524.03 CONSTRUCTION.

Ensure all parts used in construction of traffic signs and delineators are able to withstand a wind load of 30 pounds per square foot on the sign surface.

A. Fabrication of Signs.

1. Traffic Signs.

a. Except as modified by the contract documents, fabricate signs according to the standards established in the Standard Highway Signs, 2004 edition, and 2012 Supplement as published by the US DOT.

b. All traffic signs, except milepost markers and 6 inch by 6 inch route markers, are classified into two groups, Types A and B, as indicated in the contract documents.

1) Type A Signs.

a) Comply with the following:

- Aluminum, galvanized steel~~, or when specifically specified~~, plywood sheets mounted on wood posts or perforated square steel tubing~~steel breakaway posts~~.
- Sign face material fabricated from reflective sheeting.
- Sign legends accomplished with either the direct or reverse silk screen process, ~~or~~ with black nonreflective sheeting that is direct applied, or transparent film, as approved for use by the retro reflective sheeting manufacturer.

b) Ensure the finished signs comply with the details specified in the contract documents.

2) Type B Signs.

a) Comply with the following:

- Extruded aluminum highway sign panels mounted on either wood posts, perforated square steel tubing, or steel breakaway posts as specified in the contract documents.
- Sign face material fabricated from reflective sheeting.
- Sign legends accomplished through use of reflectorized or nonreflectorized letters, numerals, symbols, and borders that are direct applied.

b) Ensure the finished signs comply with the details specified in the contract documents.

c) Prior to fabrication, submit shop drawings for each Type B sign according to Article 1105.03. Each drawing is to be a scale drawing of the sign face, showing the size, arrangement, and spacing of all letters, numerals, symbols, and borders.

c. Digital printing shall comply with the following:

- Sign manufacturer shall be certified for digital printing by the retro reflective sheeting manufacturer.
- All digital printing shall be done in a workmanlike manner and as recommend by the manufacturer of the retro reflective sheeting.
- Appropriate manufacturer's recommended overlaminate films must be used in digital printing. Any noticeable deviation from the shades shall be cause for rejection of any sign.
- Opaque or transparent inks shall be of the type and quality recommended by the manufacturer of the retro reflective sheeting.
- A matched component system, recommended by the manufacturer shall be used in the digital printing process.

2. Milepost Markers.

a. Comply with the following:

- Green reflectorized sheeting on flat aluminum or galvanized steel sheets as for Type A signs.
- Reflectorized white message applied directly to the face material.
- Dimensions as specified in the contract documents.

b. Mount milepost markers on posts of the type specified for delineators.

c. Prior to fabrication, submit shop drawings for each milepost marker according to Article 1105.03. Each drawing is to be a scale drawing of the sign face, showing the size, arrangement, and spacing of all letters, numerals, symbols, and borders.

(add this requirement to Table 1105.03-1 of the Specifications)

3. Route Markers, 6 Inch by 6 Inch.

Comply with the following:

- Reflectorized sheeting on flat aluminum or galvanized steel sheets as for Type A signs.
- Details as specified in the contract documents.

4. Delineators.

a. Install a hermetically sealed, acrylic plastic, prismatic, reflex reflector, appropriately housed and contained on Materials I.M. 486.07.

b. Mount above milepost markers on the same delineator post.

Reason for Revision: Add the process of digitally printed signs as an allowable method of constructing highway signs. This is a new process in the construction of highway signs that was not addressed in the specifications. And, to add the use of transparent fill for the creation of legend on a sign. This is another new method regularly used in the construction of signs.

Add the 2012 supplement to the Standard Highway Signs book to the specifications for currency.

Added the shop drawing requirement for milepost markers. This was an omission in the specifications and needed clarification that shop drawings should be submitted for the milepost markers which are similar in design and construction to Type A signs.

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 (08-15)

IOWA DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Willy Sorenson	**Office:** Traffic and Safety	**Item 7**
Submittal Date:	**Proposed Effective Date:** April 2019 GS	
Article No.: 2528.03.B **Title:** Portable Dynamic Message Signs (Traffic Control) **Article No.:** 4188.07 **Title:** Portable Dynamic Message Sign (Traffic Control Devices)	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 11/8/2018	**Effective Date:** 4/16/2019

Specification Committee Approved Text:

2528.03, B, Portable Dynamic Message Signs.

Replace the Article:

Furnish, place, operate (when specified), and maintain Portable Dynamic Message Sign (PDMS) meeting requirements of Article 4188.07 at locations shown on the plans. The Contractor maintains possession of PDMS upon completion of the project.

1. **Testing and Configuration.**
   - **a.** Physical and electronic access to PDMS shall be granted to the Engineer.
   - **b.** On Interstate and Primary projects:
     - **1)** At least ~~one~~ 1 week before PDMS is deployed to a project, a testing and configuration meeting with the Engineer shall be held.
     - **2)** The ~~Engineer, in conjunction with the~~ Contractor, ~~will~~ shall perform necessary configuration adjustments to the PDMS and cellular modem to allow remote control by the Contracting Authority's NTCIP software.

2. **Remote Operation.**
   - **a.** On Interstate and Primary projects, the Department will remotely operate signs through use of a modem and NTCIP software.
   - **b.** Contracting Authority will use their own NTCIP compliant software to activate messages, check sign's status, and perform diagnostic tests.
   - **c.** Anytime during the project, the Engineer may remotely activate a message on the PDMS. Any message placed on the PDMS shall not be removed or replaced by the Contractor unless requested by the Engineer.

3. **Direct Operation.**
   - **a.** On Secondary road projects, PDMS will be operated directly by either the Contractor or the Engineer.
   - **b.** The Engineer may request the Contractor to operate PDMS for advance traffic notification and warning. Authority to operate PDMS will be under the direction of the Engineer. The Contractor may only operate the PDMS to display messages authorized by the Engineer.
   - **c.** Promptly program and/or reprogram the computer to provide the messages as directed by the Engineer.

4. Maintenance.

a. Provide preventive maintenance necessary to achieve uninterrupted service. Provide monitoring of health of each PDMS to accomplish proactive preventive maintenance and provide uninterrupted service. This includes, but is not limited to, performing remote diagnostic tests of equipment's operational status, monitoring status of system performance such as communication, battery status, etc.

b. ~~On Interstate and Primary projects,~~ Engineer ~~will~~ may perform remote diagnostic tests of sign's operational status ~~each morning~~ and notify Contractor when a problem is detected.

~~**c.** On Secondary road projects, verify operational status each morning and notify Engineer when a problem is detected.~~

c. Respond to service phone calls immediately and to service request emails within 2 hours. Conduct remote or on-site troubleshooting and respond back to the Engineer with notification of action (i.e. device repaired remotely, sending field technician, etc.) within 2 hours of responding.

d. Provide unscheduled maintenance or total replacement of sign when sign is unable to display a message adequately within 24 hours of notification. Action shall be taken to resolve the following problems if they have been visually observed or confirmed by self diagnostics by the PDMS for three continuous days or seven intermittent days over a ~~two~~ 2 week period.

1) An entire pixel board is showing failure.

2) Five or more pixel failures over entire message panel anytime while sign is deployed for use (blank or displaying a message).

3) Two or more pixel failures in any character when displaying a message.

e. ~~If service is not restored within 24 hours,~~ Repairs shall be completed within 12 hours of initial notification or the Engineer ~~will~~ may cause such work to be performed as may be necessary to provide this service. The cost for this restoration shall be borne by the Contractor.

4188.07, Portable Dynamic Message Sign.

Replace the Article:

A. Sign Design.

1. A PDMS is defined as all components working together to accomplish the requirements of the specifications. These components include, but are not limited to, LED pixel boards, on-board computer, cellular modem (when specified), trailer, mounting equipment, solar panels, batteries, charge controller, etc.

2. The message panel shall be trailer mounted. Message panel shall be mounted at a height of at least 7 feet, measured from bottom of sign to ground directly below. Sign presents a level appearance. Sign is capable of displaying three lines of up to eight characters at one time. Characters ~~height is 18 inches and~~ shall be configured using a 7 pixel tall by 5 pixel wide ratio font. Characters shall be either yellow or orange and be displayed on a black background. Message panel may be configured as character matrix, line matrix, or full matrix.

3. PDMS (18 inch) shall have minimum 18 inch tall characters as defined by NEMA TS-4-2016 with a character width of 12.5 inches +/- 1.0 inch. Character spacing shall be 2.8 inches +/- 0.5 inch. This PDMS size shall be used on all roadways except as allowed in Article 4188.07, A, 4.

4. PDMS (12 inch) shall have minimum 12 inch tall characters as defined by NEMA TS-4-2016 with a character width of 8.5 inches (+/- 1.0 inch). Character spacing shall be 1.7 inches +/- 0.5 inch. The overall size of the PDMS display panel shall not exceed 86 inches in width.

This PDMS size shall only be used on roadways where the speed is 40 mph or less when shown in the contract documents.

~~3~~ **5.** Message panel shall be visible from 1/2 mile under both day and night conditions. Letters shall be legible from ~~750 feet~~ 600 feet for nighttime conditions and 800 feet for normal daylight conditions. Message sign shall include automatic dimming for nighttime operation and a power supply capable of providing service for 7 continuous days without recharging.

~~4~~ **6.** Message panel controlled by an onboard computer capable of:

- Storing a minimum of 99 programmed messages for instant recall,
- Being programmed to accept messages created by the operator via an alpha-numeric keyboard, and
- Being programmed remotely by National Transportation Communication for Intelligent Transportation Systems Protocols (NTCIP) DMS software (when specified).

~~5~~ **7.** Physical access to the onboard computer protected by a padlock or other locking handle mechanism. Electronic access to the onboard computer protected by a username and password.

B. Cellular Communications.

~~On Interstate and Primary projects,~~ PDMS shall be equipped with a cellular modem for remote communications.

1. Cellular service provider shall have data coverage within project limits. Contractor shall be responsible for integrating cellular modem with the PDMS.

~~**2.** Upon confirmation that remote communication has been successfully setup, the IP address, communications port, software, and username/password for web interface shall be supplied to Engineer for integration into the statewide ITS control software.~~

~~3~~ **2.** Cellular modem shall be capable of obtaining its location by GPS. Current location from GPS coordinates shall be stored in cellular modem's memory or PDMS controller for retrieval by ~~ITS control~~ NTCIP software. Modem shall have firewall security protections that ~~limit who and what can communicate to it~~ only allow communications from specified IP addresses. Cellular modem shall not use default usernames or passwords.

3. Upon deployment of PDMS and confirmation that remote communication has been successfully setup; the following information shall be supplied to the Traffic Management Center (TMC) via email at DOT-IWZ@iowadot.us for integration into the statewide ATMS software:

- IP address
- Port number (may not use default, 161)
- Protocol used (TCP or UDP)
- SNMP community name (may not use default names, i.e., "public" or "administrator")
- Sign Number
- Latitude and Longitude Coordinates
- Route PDMS is on and direction of traffic flow that can view PDMS

Modem and PDMS credentials shall not be default values or recorded on any part of the trailer.

Upon relocation or removal of PDMS, send email to DOT-IWZ@iowadot.us, with the PDMS sign number and new location so it can be updated or released by the TMC's software.

4. Typical monthly data usage by Contracting Authority is 5 Mb when PDMS is in good working condition. Additional data usage is possible if PDMS requires remote troubleshooting or maintenance.

C. NTCIP Compliance.

~~On Interstate and Primary projects,~~ PDMS onboard computer and operating firmware shall be compliant with at least NTCIP 1203 v1.15 supplemented with NTCIP 1203 Amendment 1 v07, (dated July 3, 2001) for the following commands:

- Read configuration data from sign,
- Send configuration data to sign,
- Poll sign (retrieve sign status) both manual and automated with software,
- Activate a message,
- Blank or remove a message,
- Upload fonts, and
- Reset controller/onboard computer.

Comments: The Office of Traffic and Safety submitted some further revisions based on a meeting with the Iowa chapter of ATSSA last week.

Equipment requirements specific to Department projects were extended to all projects. This will allow local systems to get the same panels required for Department projects. It is not thought that there will be issues with many of the PDMS currently in use.

Revisions related to changing "Engineer" to "Contracting Authority" were withdrawn. The Engineer is the ultimate authority on projects. The Engineer can designate the Traffic Operations Center to control the PDMS.

Definitions of standard and mini PDMS were revised to be more specific.

"Weekday" references were removed from Article 2528.03, B, 4, c, requiring the Contractor to respond to emails on weekends and respond back to Engineer.

Specification Section Recommended Text:

2528.03, B, Portable Dynamic Message Signs.

Replace the Article:

Furnish, place, operate (when specified), and maintain Portable Dynamic Message Sign (PDMS) meeting requirements of Article 4188.07 at locations shown on the plans. The Contractor maintains possession of PDMS upon completion of the project.

1. Testing and Configuration.

a. Physical and electronic access to PDMS shall be granted to the Engineer.

b. On Interstate and Primary projects:

1) At least one week before PDMS is deployed to a project, a testing and configuration meeting with the Engineer shall be held.

2) The ~~Engineer, in conjunction with the~~ Contractor, ~~will~~ shall perform necessary configuration adjustments to the PDMS and cellular modem to allow remote control by the Contracting Authority's NTCIP software.

2. Remote Operation.

a. On Interstate and Primary projects, the Department will remotely operate signs through use of a modem and NTCIP software.

b. Contracting Authority will use their own NTCIP compliant software to activate messages, check sign's status, and perform diagnostic tests.

c. Anytime during the project, the ~~Engineer~~ Contracting Authority may remotely activate a

message on the PDMS. Any message placed on the PDMS shall not be removed or replaced by the Contractor unless requested by the Engineer.

3. Direct Operation.

a. On Secondary road projects, PDMS will be operated directly by either the Contractor or the ~~Engineer~~ Contracting Authority.

b. The Engineer may request the Contractor to operate PDMS for advance traffic notification and warning. Authority to operate PDMS will be under the direction of the Engineer. The Contractor may only operate the PDMS to display messages authorized by the Engineer.

c. Promptly program and/or reprogram the computer to provide the messages as directed by the Engineer.

4. Maintenance.

a. Provide preventive maintenance necessary to achieve uninterrupted service. Provide monitoring of health of each PDMS to accomplish proactive preventive maintenance and provide uninterrupted service. This includes, but is not limited to, performing remote diagnostic tests of equipment's operational status, monitoring status of system performance such as communication, battery status, etc.

b. ~~On Interstate and Primary projects, Engineer~~ Contracting Authority will perform remote diagnostic tests of sign's operational status ~~each morning~~ and notify Contractor when a problem is detected.

~~**c.** On Secondary road projects, verify operational status each morning and notify Engineer when a problem is detected.~~

c. Respond to service phone calls immediately and to service request emails within 2 weekday hours. Conduct remote or on-site troubleshooting and respond back to the Engineer with notification of action (i.e. device repaired remotely, sending field technician, etc.) within 2 weekday hours.

d. Provide unscheduled maintenance or total replacement of sign when sign is unable to display a message adequately within 24 hours of notification. Action shall be taken to resolve the following problems if they have been visually observed or confirmed by self diagnostics by the PDMS for three continuous days or seven intermittent days over a ~~two~~ 2 week period.

1) An entire pixel board is showing failure.

2) Five or more pixel failures over entire message panel anytime while sign is deployed for use (blank or displaying a message).

3) Two or more pixel failures in any character when displaying a message.

e. ~~If service is not restored within 24 hours,~~ Repairs shall be completed within 12 hours of initial notification or the Engineer ~~will~~ may cause such work to be performed as may be necessary to provide this service. The cost for this restoration shall be borne by the Contractor.

4188.07, Portable Dynamic Message Sign.

Replace the Article:

A. Sign Design.

1. A PDMS is defined as all components working together to accomplish the requirements of the specifications. These components include, but are not limited to, LED pixel boards, on-board computer, cellular modem (when specified), trailer, mounting equipment, solar panels, batteries, charge controller, etc.

2. The message panel shall be trailer mounted. Message panel shall be mounted at a height of at least 7 feet, measured from bottom of sign to ground directly below. Sign presents a level appearance. Sign is capable of displaying three lines of up to eight characters at one time. Characters ~~height is 18 inches and~~ shall be configured using a

7 pixel tall by 5 pixel wide font. Characters shall be either yellow or orange and be displayed on a black background. Message panel may be configured as character matrix, line matrix, or full matrix.

3. Standard size PDMS shall have minimum 18 inch tall characters and may be used on any roadway except as allowed in Article 4188.07, A, 4.

4. Mini size PDMS shall have minimum 12 inch tall characters and shall only be used on roadways where the speed is 40 mph or less when shown in the contract documents.

~~**3**~~ **5.** Message panel shall be visible from 1/2 mile under both day and night conditions. Letters shall be legible from ~~750 feet~~ 600 feet for nighttime conditions and 800 feet for normal daylight conditions. Message sign shall include automatic dimming for nighttime operation and a power supply capable of providing service for 7 continuous days without recharging.

~~**4**~~ **6.** Message panel controlled by an onboard computer capable of:

- Storing a minimum of 99 programmed messages for instant recall,
- Being programmed to accept messages created by the operator via an alpha-numeric keyboard, and
- Being programmed remotely by National Transportation Communication for Intelligent Transportation Systems Protocols (NTCIP) DMS software (when specified).

~~**5**~~ **7.** Physical access to the onboard computer protected by a padlock or other locking handle mechanism. Electronic access to the onboard computer protected by a username and password.

B. Cellular Communications.

On Interstate and Primary projects, PDMS shall be equipped with a cellular modem for remote communications.

1. Cellular service provider shall have data coverage within project limits. Contractor shall be responsible for integrating cellular modem with the PDMS.

~~**2.** Upon confirmation that remote communication has been successfully setup, the IP address, communications port, software, and username/password for web interface shall be supplied to Engineer for integration into the statewide ITS control software.~~

~~**3**~~ **2.** Cellular modem shall be capable of obtaining its location by GPS. Current location from GPS coordinates shall be stored in cellular modem's memory for retrieval by ~~ITS control~~ Iowa DOT software. Modem shall have firewall security protections that ~~limit who and what can communicate to it~~ only allow communications from specified, "white listed" IP addresses. Cellular modem shall not use default usernames or passwords.

3. Upon deployment of PDMS and confirmation that remote communication has been successfully setup; the following information shall be supplied to the Traffic Management Center (TMC) via email at DOT-IWZ@iowadot.us for integration into the statewide ATMS software:

- IP address
- Port number (may not use default, 161)
- Protocol used (TCP or UDP)
- SNMP community name (may not use default names, i.e., "public" or "administrator")
- Sign Number

- Latitude and Longitude Coordinates
- Route PDMS is on and direction of traffic flow that can view PDMS

Modem and PDMS credentials shall not be default values or recorded on any part of the trailer.

Upon relocation or removal of PDMS, send email to DOT-IWZ@iowadot.us, with the PDMS sign number and new location so it can be updated or released by the TMC's software.

4. Typical monthly data usage by Contracting Authority is 5 Mb when PDMS is in good working condition. Additional data usage is possible if PDMS requires remote troubleshooting or maintenance.

C. NTCIP Compliance.

On Interstate and Primary projects, PDMS onboard computer and operating firmware shall be compliant with at least NTCIP 1203 v1.15 supplemented with NTCIP 1203 Amendment 1 v07, (dated July 3, 2001) for the following commands:

- Read configuration data from sign,
- Send configuration data to sign,
- Poll sign (retrieve sign status) both manual and automated with software,
- Activate a message,
- Blank or remove a message,
- Upload fonts, and
- Reset controller/onboard computer.

Comments: We have removed the Interstate and Primary project requirement from a couple of Articles. Is this correct and should we be removing it from some other Articles?

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

2528.03 SIGNS AND DEVICES.

B. Portable Dynamic Message Signs

Furnish, place, operate (when specified), and maintain Portable Dynamic Message Sign (PDMS) meeting requirements of Article 4188.07 at locations shown on the plans. The Contractor maintains possession of PDMS upon completion of the project.

1. Testing and Configuration.

a. Physical and electronic access to PDMS shall be granted to the Engineer.

b. On Interstate and Primary projects:

1) At least one week before PDMS is deployed to a project, a testing and configuration meeting with the Engineer shall be held.

2) The ~~Engineer, in conjunction with the~~ Contractor, will perform necessary configuration adjustments to the PDMS and cellular modem to allow remote control by the Contracting Authority's NTCIP software.

2. Remote Operation.

a. On Interstate and Primary projects, the Department will remotely operate signs through use of a modem and NTCIP software.

b. Contracting Authority will use their own NTCIP compliant software to activate messages, check sign's status, and perform diagnostic tests.

c. Anytime during the project, the ~~Engineer~~ Contracting Authority may remotely activate a message on the PDMS. Any message placed on the PDMS shall not be removed or replaced by the Contractor unless requested by the Engineer.

3. Direct Operation.

a. On Secondary road projects, PDMS will be operated directly by either the Contractor or the ~~Engineer~~ Contracting Authority.

b. The Engineer may request the Contractor to operate PDMS for advance traffic notification and warning. Authority to operate PDMS will be under the direction of the Engineer. The Contractor may only operate the PDMS to display messages authorized by the Engineer.

c. Promptly program and/or reprogram the computer to provide the messages as directed by the Engineer.

4. Maintenance.

a. Provide preventive maintenance necessary to achieve uninterrupted service. Provide monitoring of the health of each PDMS to accomplish proactive preventive maintenance and provide uninterrupted service. This includes, but is not limited to, performing remote diagnostic tests of the equipment's operational status, monitoring the status of system performance such as communication, battery status, etc.

b. ~~On Interstate and Primary projects,~~ The ~~Engineer~~ Contracting Authority will perform remote diagnostic tests of sign's operational status ~~each morning~~ and notify Contractor when a problem is detected.

~~**c.** On Secondary road projects, verify operational status each morning and notify Engineer when a problem is detected.~~

c. Respond to service phone calls immediately and to service request emails within two (2) weekday hours. Conduct remote or on-site troubleshooting and respond back to the Engineer with notification of action (i.e. device repaired remotely, sending field technician, etc.) within two (2) weekday hours.

d. Provide unscheduled maintenance or total replacement of sign when sign is unable to display a message adequately within 24 hours of notification. Action shall be taken to resolve the following problems if they have been visually observed or confirmed by self diagnostics by the PDMS for three continuous days or seven intermittent days over a two week period.

1) An entire pixel board is showing failure.

2) Five or more pixel failures over entire message panel anytime while sign is deployed for use (blank or displaying a message).

3) Two or more pixel failures in any character when displaying a message.

e. ~~If service is not restored within 24 hours~~ Repairs shall be completed within 12 hours of initial notification, Engineer ~~will~~ may cause such work to be performed as may be necessary to provide this service. The cost for this restoration shall be borne by the Contractor.

4188.07 PORTABLE DYNAMIC MESSAGE SIGN.

A. Sign Design.

1. A PDMS is defined as all components working together to accomplish the requirements of the specifications. These components include, but are not limited to, LED pixel boards, on-board computer, cellular modem (when specified), trailer, mounting equipment, solar panels, batteries, charge controller, etc.

2. The message panel shall be trailer mounted. Message panel shall be mounted at a height of at least 7 feet, measured from bottom of sign to ground directly below. Sign presents a level appearance. Sign is capable of displaying three lines of up to eight characters at one time. Characters shall be ~~height is 18 inches and~~ configured using a 7 pixel tall by 5 pixel wide font. Characters shall be either yellow or orange and be displayed on a black background. Message panel may be configured as character matrix, line matrix, or full matrix.

3. Standard size PDMS shall have minimum 18-inch-tall characters and shall be used on any roadway except as allowed in 4188.07.A.4 below.

4. Mini size PDMS shall have minimum 12-inch-tall characters and shall only be used on roadways where the speed is 40 mph or less when shown in the contract documents.

~~3~~5. Message panel shall be visible from 1/2 mile under both day and night conditions. Letters shall be legible from ~~750 feet~~ 600 feet for nighttime conditions and 800 feet for normal daylight conditions. Message sign shall include automatic dimming for nighttime operation and a power supply capable of providing service for 7 continuous days without recharging.

~~46~~. Message panel controlled by an onboard computer capable of:

- Storing a minimum of 99 programmed messages for instant recall,
- Being programmed to accept messages created by the operator via an alpha-numeric keyboard, and
- Being programmed remotely by National Transportation Communication for Intelligent Transportation Systems Protocols (NTCIP) DMS software (when specified).

~~57~~. Physical access to the onboard computer protected by a padlock or other locking handle mechanism. Electronic access to the onboard computer protected by a username and password.

B. Cellular Communications.

On Interstate and Primary projects, PDMS shall be equipped with a cellular modem for remote communications.

1. Cellular service provider shall have data coverage within project limits. Contractor shall be responsible for integrating cellular modem with the PDMS.

~~**2.** Upon confirmation that remote communication has been successfully setup, the IP address, communications port, software, and username/password for web interface shall be supplied to Engineer for integration into the statewide ITS control software.~~

~~32~~. Cellular modem shall be capable of obtaining its location by GPS. Current location from GPS coordinates shall be stored in cellular modem's memory for retrieval by ~~ITS control~~ Iowa DOT software. Modem shall have firewall security protections that ~~limit who and what can communicate to it~~ only allow communications from specified, "white listed" IP addresses. Cellular modem shall not use default usernames or passwords.

3. Upon deployment of PDMS and confirmation that remote communication has been successfully setup; the following information should be supplied to the Traffic Management Center (TMC) via email at DOT-IWZ@iowadot.us for integration into the statewide ATMS software:

- IP address
- port number (may not use default, 161)
- Protocol used (TCP or UDP)
- SNMP community name (may not use default names, i.e., "public" or "administrator")
- Sign Number
- Latitude and Longitude Coordinates
- Route PDMS is on and direction of traffic flow that can view PDMS

Modem and PDMS credentials shall not be default values or recorded on any part of the trailer.

Upon relocation or removal of PDMS, send email to DOT-IWZ@iowadot.us, with the PDMS sign number and new location so it can be updated or released by the TMC's software.

4. Typical monthly data usage by Contracting Authority is 5 Mb when PDMS is in good working condition. Additional data usage is possible if PDMS requires remote troubleshooting or maintenance.

C. NTCIP Compliance.

On Interstate and Primary projects, PDMS onboard computer and operating firmware shall be compliant with at least NTCIP 1203 v1.15 supplemented with NTCIP 1203 Amendment 1 v07, (dated July 3, 2001) for the following commands:

- Read configuration data from sign,
- Send configuration data to sign,
- Poll sign (retrieve sign status) both manual and automated with software,
- Activate a message,
- Blank or remove a message,
- Upload fonts, and
- Reset controller/onboard computer.

Reason for Revision:

These revisions are necessary to:

- Respond to industry requests to clarify use of PDMS on projects.
- Update communication requirements to current technology.
- Allow the use of smaller size PDMS on projects.
- Provide uniform and consistent requirements for PDMS provided by contractors, IWZ Vendor, and Iowa DOT

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: A meeting with the Iowa Chapter of the American Traffic Safety Services Association (ATSSA) is scheduled for October 25, 2018. This item is on the agenda.		

Form 510130 (08-15)

IOWA DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Eric Johnsen / Tom Reis	**Office:** Specifications	**Item 8**
Submittal Date: 10/8/2018	**Proposed Effective Date:** April 2019	
Article No.: 2528.03, H **Title:** Temporary Traffic Signals	**Other:**	

Specification Committee Action: Deferred to a future meeting

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

Specification Committee Approved Text:

Comments: Discussion centered on how to pay for the flagger station signal systems and how to make it a standard option for projects with flaggers.

The inclusion of signal operator in Article 2528.05, G, 2, may need to be addressed since flaggers are paid for separately for flagger station signal systems.

This item will be revised and possibly brought back as a DS before being added to the Standard Specifications.

Specification Section Recommended Text:

2528.03, H, 2, a, 2.

Replace the first sentence of the Article:

Apply Article ~~2525.03, E, 4~~, with the following exceptions for one lane two way traffic control:

2528.03, H, 2, a, 3.

Add the Article:

e) Supply breaker box and power meter or provide solar cell system with minimum 20 hours reserve battery supply.

2528.03, H, 2, Equipment.

Add the Article:

d. Flagger Station Signal Systems.

1) Provide portable temporary traffic signal system for one-lane/two-way temporary traffic signal operation used in conjunction with flagger and/or pilot car operation.

2) Two or more self-contained units each consisting of one or two signal heads.

- Single-signal head system: pedestal signal head positioned on each side of roadway.
- Two-signal head system: one signal head mounted on mast arm capable of extending over center of travel lane and the other signal head mounted on same trailer.

3) Signal heads mounted over road surface are mounted a minimum of 15 feet from bottom of signal head to top of road surface. Other signal heads mounted a minimum of 8 feet from bottom of signal head to top of ground surface.

4) Signal heads complying with Article 2528.03, H, 2, a, 3, c.

5) Operating temperature range at least -30°F to 120°F.
6) Solar cell system to facilitate battery charging.
7) Minimum 20 hours reserve battery supply and the capacity of operating with 120 volt power supply.

2528.03, H, 3, Operational Requirements.

Add the Article:

e. Flagger Station Signal Systems.

1) Notify Engineer at least 48 hours prior to use of signals for timing approval and verification.
2) Flaggers at each end of work area control the portable traffic signals. Flagger can only activate or extend green indication.
3) Yellow indication is approximately 4 seconds.
4) Minimum green time is 20 seconds. Green time may be extended in 2.5 second intervals by flagger to allow entire traffic queue to travel through flagging operation.

2528.04, G, Temporary Traffic Signals.

Replace the Article:

By count for each group installation of temporary traffic signals operated by a common control unit. A group installation is normally four signal heads at the same traffic conflict area. A set of flagger station signals will be counted once for each time they are set up.

2528.05, G, Temporary Traffic Signals.

Replace the Article:

1. Each, for ~~individual group~~ installations operated by a common control unit~~, normally four signal heads at the same traffic control area~~ or a set of flagger station signals

2. Payment is full compensation for furnishing, installing, maintaining and servicing the controller, signal heads, traffic detection system, signal operator, costs for electrical energy, and the cost of removing temporary traffic signal materials from the construction site. ~~The Contractor shall supply their own breaker box and power meter and shall not connect to existing Contracting Authority owned circuits to supply power for temporary traffic signals.~~

3. Flaggers for flagger station signals will be paid for separately.

Comments:

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

Reason for Revision: To prepare for allowing or requiring flagger station signal systems for all projects where flaggers had been previously 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:

County or City Comments:

Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Willy Sorenson / Tim Crouch	**Office:** Traffic and Safety	**Item 9**
Submittal Date: October 27, 2018	**Proposed Effective Date:** April 2019 GS	
Article No.: 4186.03, B, 1 **Title:** Permanent Signs and Devices (Retro Reflective Sheeting) **Article No.:** 4186.05 **Title:** Inks, Clears, and Thinners (Signing Materials) **Article No.:** 4186.06, B, 1, a **Title:** Application of Sheeting (Sign Fabrication)	**Other:**	

Specification Committee Action: Approved as recommended.			
Deferred:	**Not Approved:**	**Approved Date:** 11/8/2018	**Effective Date:** 4/16/2019
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: None.			

Specification Section Recommended Text:

4186.03, B, 1, Permanent Signs and Devices.

Replace the Article:

a. Meet the following requirements:

1) Type ~~IV~~ XI sheeting is used for all signs with white, green, red, blue, or brown background, unless otherwise specified.

2) Type XI yellow sheeting is used for portions of a green sign requiring yellow sheeting.

~~**2**~~ **3)** Type XI Fluorescent sheeting is used for signs with yellow or yellow-green background.

~~**3**~~ **4)** The legend on white, yellow, and yellow-green signs is fabricated using black nonreflective sheeting that is applied directly, or by silk screening with black opaque ink.

~~**4**~~ ~~**5**~~**)** The legend on green signs is fabricated using white Type ~~IV~~ XI sheeting that is applied directly.

~~**5**~~ ~~**6**~~**)** The legend on red signs is fabricated using transparent red ink that is reverse silk screened on white Type ~~IV~~ XI sheeting, or ~~is~~ fabricated using white Type ~~IV~~ XI sheeting that is applied directly on a red Type ~~IV~~ XI sheeting background, or transparent film, as approved by the retro reflective sheeting manufacturer.

~~**6**~~ **7)** The legend on blue and brown signs is fabricated using transparent ink that is reverse silk screened on white Type ~~IV~~ XI sheeting, ~~or~~ white Type ~~IV~~ XI sheeting that is applied directly, or transparent film, as approved by the retro reflective sheeting manufacturer.

b. Use Type ~~IV~~ XI sheeting for permanent road closure barricades.

4186.05 Inks, Clears, and Thinners.

Replace the title:

Inks, Clears, ~~and~~ Thinners, and Transparent Films.

4186.06, B, 1, a.

Replace the Article:

Sheeting, reflective and nonreflective, and transparent film is applied mechanically with the equipment and in a manner specified by the sheeting manufacturer or by a method which will produce an equivalent result.

Comments:

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

4186.03 RETRO REFLECTIVE SHEETING.

A. **General.**

1. Meet the requirements of ASTM D 4956, including supplementary requirements, except when modified in the contract documents or this specification. Comply with Materials I.M. 486.03 for inspection and acceptance of reflective sheeting.

2. Retro Reflective sheeting is to be uniform in color and reflectivity. In a single sign, or traffic control device, variations in color or reflectivity noticeable at a distance of 50 feet or more, under daytime or nighttime lighting conditions, is cause for rejection of the sign.

3. Retro Reflective sheeting is classified as shown in Table 4186.03-1.

Table 4186.03-1: Retro Reflective Sheeting Classification

Type IV	A high intensity retroreflective sheeting. This sheeting is typically an unmetalized microprismatic retroreflective element material.
Type VI (Iowa)	A flexible, very high intensity retroreflective sheeting for use on roll-up signs. This sheeting is typically a microprismatic retroreflective material.
Type VII (Iowa)	A prismatic, very high intensity retroreflective sheeting. This sheeting is typically a microprismatic retroreflective material.
Type XI	A prismatic, very high intensity retro reflective sheeting having highest retro reflective characteristics at wide range of distances.

4. For Type VI (Iowa) and Type VII (Iowa) sheeting, meet the requirements of Materials I.M. 486.03.

B. Utilization of Reflective Sheeting.

1. Permanent Signs and Devices.

a. Meet the following requirements:

1) Type ~~IV~~ XI sheeting is used for all signs with white, green, red, blue, or brown background, unless otherwise specified.

2) Type XI yellow sheeting is used for any portions of a green sign that require yellow sheeting.

3~~2~~) Type XI Fluorescent sheeting is used for signs with yellow or yellow-green background.

4~~3~~) The legend on white, yellow, and yellow-green signs is fabricated using black nonreflective sheeting that is applied directly, or by silk screening with black opaque ink.

5~~4~~) The legend on green signs is fabricated using white Type ~~IV~~ XI sheeting that is applied directly.

6~~5~~) The legend on red signs is fabricated using transparent red ink that is reverse silk screened on white Type ~~IV~~ XI sheeting, or ~~is~~ fabricated using white Type ~~IV~~ XI sheeting that is applied directly on a red Type ~~IV~~ XI sheeting background, or transparent film, as approved by the retro reflective sheeting manufacturer.

7~~6~~) The legend on blue and brown signs is fabricated using transparent ink that is reverse silk screened on white Type ~~IV~~ XI sheeting, ~~or~~ white Type ~~IV~~ XI sheeting that is applied directly, or transparent film, as approved by the retro reflective sheeting manufacturer.

b. Use Type ~~IV~~ XI sheeting for permanent road closure barricades.

2. Work Zone Signs and Devices.

a. Interstate and Primary Highways.
Meet the following requirements:

1) Type VII (Iowa) sheeting is used for all rigid signs with orange backgrounds. The legend is fabricated using black nonreflective sheeting that is applied directly or by silk screening with black opaque ink.

2) Type VI (Iowa) sheeting is used for all flexible roll-up signs with orange backgrounds. The legend is fabricated by silk screening with black opaque ink.

3) Type VII (Iowa) sheeting is used for STOP/SLOW paddles. The black legend is fabricated using black nonreflective sheeting that is applied directly or by silk screening with black opaque ink on orange Type VII (Iowa) sheeting. The white legend is fabricated using transparent red ink that is reverse silk screened on white Type VII (Iowa) sheeting.

4) Type VII (Iowa) non-fluorescent sheeting is used for barricades, vertical panels, and all other work zone traffic control devices that use premanufactured barricade sheeting.

5) Type VII (Iowa) fluorescent orange and Type IV white sheeting is used for drums, 42 inch channelizers, tubular markers, and all other work zone traffic control devices that use horizontal sheeting.

6) For reboundable traffic control devices, Type IV or Type VII (Iowa) sheeting designed for this application is used.

b. Other Highways.

1) Meet the following requirements:

a) Type IV sheeting is used for all rigid post mounted signs with orange backgrounds. Unless specified otherwise, Type IV sheeting is used for all skid mounted signs with orange backgrounds. The legend is fabricated using black nonreflective sheeting that is applied directly or by silk screening with black opaque ink.

b) Type IV sheeting is used for STOP/SLOW paddles. The black legend is fabricated using black nonreflective sheeting that is applied directly or by silk screening with black opaque ink. The white legend is fabricated using transparent red ink that is reverse silk screened on white retroreflective sheeting.

c) Type IV sheeting is used for barricades and vertical panels.

d) Type IV sheeting designed for reboundable devices is used for reboundable drums, tubular markers, and other reboundable markers.

2) At the Contractor's option, work zone signs and devices using retroreflective sheeting according to Article 4186.03, B, 2, a, above may be used on all other highways.

C. Durability of Reflective Sheeting.
Subject reflective sheeting to the following tests, and at the end of the testing period, ensure it meets the requirements for artificial weathering specified in ASTM D 4956 Section 7.4 and 7.5 and shows no evidence of mildewing or similar disfigurement:

1. White, yellow, yellow-green, green, red, blue and brown reflective sheeting used for permanent signing and traffic control devices: 3 year outdoor NTPEP Minnesota test deck exposure at 45 degrees facing south.

2. Orange and White reflective sheeting used for temporary traffic control signing and traffic control devices: 1 year outdoor NTPEP Minnesota test deck exposure at 45 degrees facing south.

4186.04 NONREFLECTIVE SHEETING.
Meet the following requirements:

- Adhesive and physical properties are the same as for reflective sheeting found in ASTM D 4956.
- Color properties are the same as for Type IV reflective sheeting found in ASTM D 4956.

4186.05 INKS, CLEARS, ~~AND~~ THINNERS, AND TRANSPARENT FILMS.
Use according to the sheeting manufacturer's recommendations.

4186.06 SIGN FABRICATION.

A. **General.**
Meet the following requirements:

1. All sign blanks and panels are fabricated in a uniform and high quality manner.

2. All fabrication, including shearing, cutting, and hole punching or drilling, is completed before degreasing metal surface and applying reflective sheeting.

3. Sign blanks and panels are to size and shape and are free of buckles, warp, dents, cockles, burrs, and defects resulting from fabrication.

4. Type B signs are assembled using a maximum number of 12 inch wide structural panels, corresponding to the dimensions shown in the contract documents to keep the number of sign joints to a minimum. If a 6 inch panel is required, it is used in the top panel of the completed sign.

5. Finished signs, both Type A and B, are smooth and flat and are free from blisters, wrinkles, cracks, tears, and delaminations

6. All letters are clean cut and sharp.

B. Application of Sheeting.

1. Meet the following requirements:
- **a.** Sheeting, reflective, and nonreflective, and transparent film is applied mechanically with the equipment and in a manner specified by the sheeting manufacturer or by a method which will produce an equivalent result.
- **b.** On extruded aluminum or formed steel sign panels, the sheeting is lapped over the longitudinal edges of each panel a minimum distance of 1/4 inch.
- **c.** Sheeting is bonded to the panels using an accessory tool the sheeting manufacturer recommends or by a tool which will produce an equal result.

2. Whenever a sign face consists of two or more pieces or panels of reflective sheeting, they must be carefully matched for color at the time of sign fabrication to provide uniform appearance and brilliance, both day and night. Signs with background color of adjacent sheets or panels not properly matched will be rejected.

3. At splices, overlap pressure sensitive adhesive sheeting no less than 3/16 inch. Sheeting with heat activated adhesive may be spliced with overlap no less than 3/16 inch, or butted with a gap not to exceed 1/32 inch. Use only butt splices on screen processed signs with transparent color.

Reason for Revision: Update to the Type XI retro reflective sheeting for all signs except work zone signs and devices. The Type XI sheeting will provide a brighter sign and a longer sign life as the sheeting is more durable. The brighter sheeting will be beneficial for the newer vehicle headlamps which have a lower cutoff.

Other changes add the use of transparent film as an acceptable method of creating the legend on some signs.

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 (08-15)

IOWA DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Wes Musgrove / Todd Hanson	**Office:** Construction & Materials	**Item 10**
Submittal Date: October 2018	**Proposed Effective Date:** December 18, 2018	
Article No.: **Title:**	**Other:** DS-15064, PCC Pavement Non-Destructive Thickness Determination	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 11/8/2018	**Effective Date:** 12/18/2018

Specification Committee Approved Text: See attached Developmental Specifications for PCC Pavement Non-Destructive Thickness Determination.

Comments: Committee questioned how a small section could be grouped with a previous year if the incentive for that year has already been paid. Language was revised to indicate that a small section the first year will be grouped with the subsequent year. A small section placed in the final year will be paid based on just that small section.

Specification Section Recommended Text: See attached Draft Developmental Specifications for PCC Pavement Non-Destructive Thickness Determination.

Comments:

Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**
DS-15064 Attached

Reason for Revision: Updated IM 346 to change section to yearly on multi-year projects, to allow incentive payment yearly.

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: Discussed with industry at ICPA Joint Spec Meeting April 12, 2018 Item 2

DS-15069
(Replaces DS-15064)

DEVELOPMENTAL SPECIFICATIONS FOR PCC PAVEMENT NON-DESTRUCTIVE THICKNESS DETERMINATION

Effective Date
December 18, 2018

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

Replace all of Articles 2301.04 and 2301.05 of the Standard Specifications with the following. Differences from the Standard Specifications are highlighted.

2301.04 METHOD OF MEASUREMENT.
Measurement will be as follows:

A. Portland Cement Concrete Pavement.

1. Square yards, of the type specified, shown in the contract documents. The area of manholes, intakes, or other fixtures in the pavement will not be deducted from the measured pavement area.

2. The measurement requirements for thickness do not apply to detour pavements, paved drives, and temporary pavements. The thickness of pavement constructed will be determined from thickness measurements as follows:
- **a.** The division of sections, lots, and measurement locations will be according to Appendix A.
- **b.** At locations determined by the Engineer.
- **c.** Determine thickness for sections of the same design thickness 3500 square yards or less by probing plastic concrete in accordance with Materials I.M. 396.
- **d.** Only sections which are measured for thickness will be included in the thickness index determination. Areas not measured for thickness will be paid for at the contract unit price.

B. Integral Curb.
Incidental to the other items of work. Not measured for payment.

C. Concrete Median.
Square yards shown in the contract documents. This will be calculated to the nearest 0.1 foot of the length along the surface and the overall width of median when no integral curb is involved, or the width from back to back of curb when integral curb is involved.

D. Bridge Approach Sections.
Square yards shown in the contract documents.

E. Excavation.

1. When the contract provides a unit price per station for earth shoulder finishing and a price per cubic yard for excavation, the excavation required for preparation of natural subgrade will be measured as provided in Article 2102.04. The volume measured for payment will include only the materials actually removed above the elevation of the pavement subgrade and between vertical planes 1 foot outside the edge of the finished pavement.

2. Other work connected with preparation of natural subgrade will not be measured for payment.

3. When the contract provides a unit price for earth shoulder construction (whether or not a unit price per cubic yard of excavation is provided in the contract), excavation required for preparation of natural subgrade will not be measured for payment. Unless otherwise provided in the contract documents, work connected with preparation of natural subgrade will not be measured for payment.

F. Driveway Surfacing Material.
Tons or cubic yards, as provided in the contract and in Section 2315, placed at intersecting roads, drives, and turnouts. Excavation required for placement of this material will not be measured for payment.

H. Saw Cut and Joint Sealing.

1. Saw cut for constructing joints in new pavement will not be measured for payment.

2. Saw cut for cutting old existing pavement, which is to be abutted with new pavement, will not be measured for payment.

3. Joint sealing will not be measured for payment.

I. Safety Fence for Pavement.
Not measured for payment.

J. Rumble Strip Panel (PCC Surface)
By count for Rumble Strip Panels properly installed at locations designated in the contract documents.

2301.05 BASIS OF PAYMENT.
Payment will be as follows:

A. Portland Cement Concrete Pavement.

1. Contract unit price for Standard or Slip-Form Portland Cement Concrete Pavement of the type specified per square yard.

2. Payment for the quantities of pavement in square yards will be at a percentage of the contract unit price according to Table 2301.05-1.

Table 2301.05-1: Payment Schedule for Quantities of Pavement

Thickness Index Range	Percent Payment	Thickness Index Range	Percent Payment
0.00 or more	103	-0.56 to -0.60	91
-0.01 to -0.05	102	-0.61 to -0.65	90
-0.06 to -0.10	101	-0.66 to -0.70	89
-0.11 to -0.15	100	-0.71 to -0.75	88
-0.16 to -0.20	99	-0.76 to -0.80	87
-0.21 to -0.25	98	-0.81 to -0.85	86
-0.26 to -0.30	97	-0.86 to -0.90	85
-0.31 to -0.35	96	-0.91 to -0.95	84
-0.36 to -0.40	95	-0.96 to -1.00	83

-0.41 to -0.45	94	-1.01 to -1.05	82
-0.46 to -0.50	93	-1.06 to -1.10	81
-0.51 to -0.55	92	-1.11 or less	80

3. Use the following formula to determine the thickness index for the section of pavement thickness:

$$TI = \overline{(X} - S) - T$$

Where:

TI = thickness index for the section.
$\overline{X}$ = mean thickness for the section.
T = see Table 2301.05-2.
S = measurement thickness standard deviation (of the sample) for the section.

Table 2301.05-2: Thickness Value for determining Thickness Index

Type of Base, Subbase, Subgrade just below the concrete	**Value of T in Inches**
Natural Subgrade or Soil Aggregate Subbase	Design Thickness
HMA Base, PCC Base, or Asphalt or Cement Treated Base	Design Thickness
Modified Subbase or Special Subbase	Design Thickness minus 0.25 inches
Granular Subbase	Design Thickness minus 0.35 inches

4. Replace pavement represented by cores deficient from design thickness by 1 inch or greater. The deficient areas and the replacement of the deficient cores will be determined according to Appendix A. The cost for coring that confirms deficient pavement or determines deficient areas shall be incidental to the price paid for Portland Cement Concrete Pavement. The cost for coring that indicates that pavement is sufficient shall be paid as extra work, according to Article 1109.03, B of the Standard Specifications. The cost for coring replacement pavement to verify compliance shall be incidental to the price paid for Portland Cement Concrete Pavement.

5. At the Contractor's option, measurement readings that are larger than the thickness value (from Table 2301.05-2) by three standard deviations or greater may be removed from analysis for thickness index determination. Do not remove more than 10% of the total measurements in a section. Do not replace measurements removed from the analysis.

6. Gaps in the pavement less than 500 feet, required by staging, will be considered irregular areas for analysis of pavement thickness determinations.

7. The percent payment for projects which have all measurement readings greater than T in Table 2301.05-2 will be at least 100%.

B. Integral Curb.
Not paid for separately.

C. Concrete Median.
Contract unit price per square yard.

D. Bridge Approach Sections.

1. Contract unit price for bridge approach pavement per square yard.

2. Payment is full compensation for:
- Excavation for modified subbase and subdrain.
- Furnishing and installing subdrain.
- Furnishing and installing subdrain outlet.
- Furnishing and installing polymer grid.
- Furnishing and placing porous backfill material.
- Furnishing and placing modified subbase backfill material.
- Saw cutting.
- Furnishing and installing reinforcing steel, tie bars, and dowel assemblies.
- Placing, finishing, texturing, grooving, and curing.

- All joint construction.
- All other materials and labor to construct the Bridge Approach Section as shown in the contract documents.

E. Excavation.

1. When the contract provides a unit price per station for earth shoulder finishing and the contract also provides a price per cubic yard for excavation, payment will be the contract unit price per cubic yard for excavation in connection with subgrade preparation and building shoulders.

2. When the contract provides a unit price for earth shoulder construction, the excavation required for preparation of subgrade and construction of shoulders will not be paid for as a separate item. It is incidental to pavement construction and earth shoulder construction and is to be included in those contract prices.

3. When no price per cubic yard for excavation is provided in the contract and no unit price is provided for earth shoulder finishing or earth shoulder construction, excavation necessary for subgrade preparation is incidental to pavement construction and is to be included in that contract unit price.

F. Driveway Surfacing Material.
Contract unit price as provided in Section 2315 for the quantity of driveway surfacing placed.

H. Saw Cut and Joint Sealing
Incidental to the price for pavement.

I. Safety Fence for Pavement.
Incidental to the price for pavement.

J. Rumble Strip Panel (PCC Surface)
Each. Payment is full compensation for construction of the panels as detailed in the contract documents.

K. **General.**

1. When any of the types of additional protection described in Article 2301.03, K, 3, is necessary, additional payment will be made as extra work at the rate of $1.00 per square yard of surface protected. Payment will be limited to protection necessary within the contract period. Protection necessary after November 15 will be paid for only when the Engineer authorizes the work.

2. Furnish concrete for test specimens and transport the specimens and molds between the grade and plant as directed by the Engineer, at no additional cost to the Contracting Authority.

3. The above prices are full compensation for furnishing all tools, equipment, labor, and materials necessary for construction of the pavement in accordance with the contract documents.

4. The cost of furnishing, installing, and monitoring vibrators, as well as the vibrator monitoring device itself, is incidental to the contract unit price for PCC pavement.

APPENDIX A
EVALUATING PORTLAND CEMENT
CONCRETE PAVEMENT THICKNESS

SCOPE

Thickness measurements will be taken on Portland Cement Concrete (PCC) pavement, to determine the pavement thickness and the thickness index for each section. Refer to Specification DS-15064.

APPARATUS

1. An MIT Scan T2 gauge will be used to perform thickness measures.
2. Steel Targets will be 11.81 inches in diameter, 24 gauge, meeting ASTM A 653, commercial steel with a G90 coating (about 275 g/m^2 total both sides).

DEFINITIONS

Section: All Portland Cement Concrete in a project of the same bid item. Irregular areas, as defined herein, of the same bid item shall form a separate section. On multiple year projects, a separate section will be formed for each year. If less than 20,000 square yards are placed in first year, that section will be grouped with the subsequent year.

Lot: A portion of a section normally 200 feet in length and 2 traffic lanes wide.

Regular area pavement sections:

- All mainline pavement for normal travel lanes. Includes middle (both direction) turn lanes
- Paved shoulder – if same thickness as pavement and part of pavement bid item include with pavement. If separate bid item, treat as separate section.
- Paved median - if same thickness as pavement and part of pavement bid item, and longer than 300 feet, include with pavement.
- Auxiliary lanes of full width longer 300 feet.
- Widening greater than 6 feet.

Irregular areas:

- Widening less than 6 feet.
- Side street connections.
- Ramps, including gore areas, and collector distributor roads.
- Deceleration and acceleration lanes.
- Turn lanes, including taper sections.
- Tapers.
- Radiuses.
- Median crossovers

PROCEDURES

The District Materials Engineer will determine the location of each lot, the random location of each metal target, and the random thickness measuring scheme for each section using an Iowa DOT developed MSExcel spreadsheet.

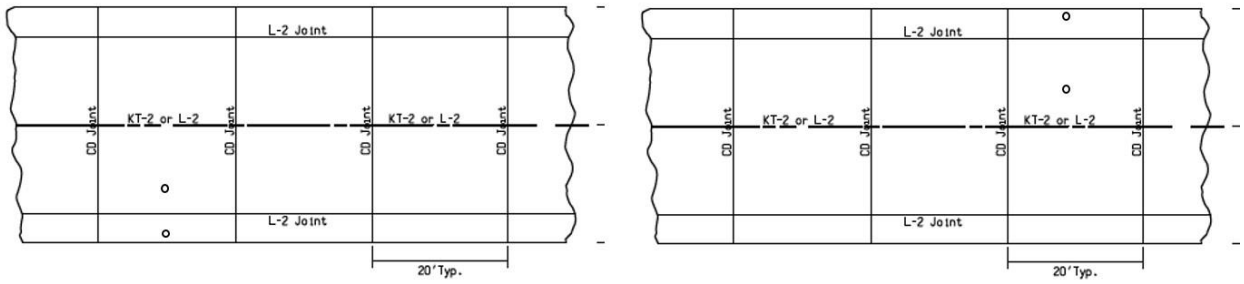
A. Target Location for Regular Areas

1. Divide the section longitudinally into 200 foot long lots. One target will be located in each lot based on the spreadsheet selection. Beginning with the first station at +00, place a target from the edge of the pavement half way between dowel baskets~~)~~. See Figure 1. If the +00 station falls on a basket, move the target location ahead halfway between the dowel baskets. A minimum of ten targets will be tested. If a target location falls on a bridge or in an approach section, it will be eliminated.

2. The transverse location of the targets will be randomly determined by the spreadsheet program. The random locations will be either 4 or 8 feet from edge of pavement, left or right.
3. The program will randomly determine which targets to measure. If a measurement location falls on a bridge or bridge approach pavement, it will be eliminated and the next closest target not in the original random selection will be used for measurement.

4. Shoulders. Divide the section into 200 foot long lots. Beginning with the first station at +00, locate a target every 200 feet, alternating between the inside and outside shoulder (or every 400 feet on one side). On 6 foot shoulders or wider, the targets should be 4 feet from the edge of the pavement. On 4 foot shoulders, the targets should be 3 feet from the edge of the pavement.

Figure1. Target Location



B. Target Location for Irregular Areas

1. All irregular areas of the same design thickness will be grouped together for determining the number of lots. The Engineer may waive sections of the same design thickness that total less than 5000 square yards.

2. Place targets randomly in all irregular areas larger than 100 square yards. One target will be randomly located in each selected irregular area For irregular areas greater than 1000 square yards, randomly place a minimum of two targets. Targets must be placed at least 2 feet away from tie steel and 4 feet from dowel bars. A minimum of ten targets will be tested to represent each section of irregular areas. For projects with less than ten irregular areas larger than 100 square yards, select a minimum of three areas to place targets. All targets will be measured. If more than 20 targets are located in irregular areas, randomly select 50% to be tested.

C. Testing

Follow the manufacturer's instructions for operating the thickness gauge. It is important to avoid testing close to any steel including vehicles, equipment, steel toed shoes as well as tie bars, dowel bars and baskets, and manhole covers. When wearing steel toed shoes, always keep both toes at least 2 feet from the gauge during the test. Three repeat readings will be taken. The readings should all be within 1 to 2 mm of each other. If the difference between any of the readings is more than 3 mm, take 2 additional readings. If the two additional readings are within 3 mm of any of the first 3 readings, the measurement is valid for that location. If not, note that the location is not valid and select the next target location not originally selected for testing.

D. Section Evaluation

1. Use the following formula to determine the mean thickness for the section:

$$\overline{X} = \frac{\sum X}{n}$$

Where: $\overline{X}$ = mean length for the section

$\sum X$ = sum of core lengths for the section

n = number of cores taken within the section

Round the mean thickness to two decimal places.

2. Use the following formula to determine the sample standard deviation of the thickness of the section:

$$S = \sqrt{\frac{\sum\left(X - \overline{X}\right)^2}{n-1}}$$

Where:

S = thickness standard deviation for the section.
$\overline{X}$ = mean thickness for the section
X = individual thickness values for the section.
n = number of tests representing the section.

$\sum$ = sign indicating the sum of all values of $(X - \overline{X})^2$

Round the sample standard deviation to two decimal places.

NOTE: Calculations of the standard deviation are best made with an electronic calculator with standard deviation capability that uses the formula containing the quantity (n-1).

3. Use the following formula to determine the thickness index for the section of pavement thickness.

$$TI = (\overline{X} - S) - T$$

Where:

TI = thickness index for the section
$\overline{X}$ = mean thickness length for the section
T = from Table 2301.05-2
S = measurement thickness standard deviation (of the sample) for the section

Round the thickness index to two decimal places.

NOTE: If the mean thickness minus the standard deviation is less than T of the section, the thickness index will be a negative number.

4. Basis of Payment. Payment for the quantities of pavement in square yards in each section will be as shown in Article 2301.05 of the Standard Specifications and based on the thickness index as determined in accordance with these instructions.

E. Deficient Areas

1. If any measurement is deficient from T by 1 inch or more, the measurement should be rechecked to confirm the reading and the equipment. If the repeat measurement is also 1 inch or more below T, mark the location directly over the target. The Contractor shall drill a 4.0 inch diameter core at that location. If the core length confirms the pavement is deficient by 1 inch or more, continue to drill cores as described below.

2. Deficient areas, represented by cores deficient in length by 1 inch or more from design thickness, are to be replaced. These areas will be determined by drilling a core 60 feet in each direction longitudinally at the same transverse location from the deficient core. Drilling will be continued at 60 feet intervals until a core is obtained which is not deficient by 1 inch or more from design thickness. Interpolate between this core and the adjacent core to determine the limits of the deficient area. This is the area to be removed and replaced at contractor's expense. These additional cores are to be used to define the deficient area and will not be used in the thickness index calculation. When an obstruction, such as a bridge, intersection, previous work, etc., prevents drilling a core at the required 60 feet interval in either direction longitudinally, continue the balance of the distance on the other side of the obstruction.

3. Any readings taken in the area for removal will be eliminated from the analysis for the entire section. After replacement, the contractor will take cores as directed by the engineer to verify the thickness.

Form 510130 (08-15)

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Paul Wiegand	**Office:** SUDAS	**Item 11**
Submittal Date:	**Proposed Effective Date:** April 2019 GS	
Article No.: **Title:**	**Other:**	

Specification Committee Action: Approved with minor change submitted by SUDAS.

Deferred:	**Not Approved:**	**Approved Date:** 11/8/2018	**Effective Date:** 4/16/2019

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: SUDAS revised the dewatering specification to remove wellpoints, sheet piling, and cofferdams from the list of included equipment.

Specification Section Recommended Text:

Item B.

2552.05, A, 6.

Replace the Article:

Dewatering including, but not limited to, equipment such as generators, pumps, rock for sump pits, discharge piping, and any extra excavation needed to facilitate dewatering.

Item C.

2503.04, E, 1, Plug.

Replace the Article:

~~None.~~ Each plug installed in a pipe will be counted.

2503.05, E, Storm Sewer Abandonment.

Replace the Article:

1. Plug.

~~Plugging sanitary sewers is incidental to other work and will not be paid for separately.~~

a. Payment will be made at the contract unit price for each plug installed.

b. Payment is full compensation for trench excavation (if necessary), cutting pipe (if required), furnishing and placing plug materials, and placing backfill.

2. Fill and Plug.

a. Payment will be the contract unit price per linear foot for each size of pipe filled and plugged.

b. Payment is full compensation for trench excavation (if necessary), cutting pipe (if required), furnishing and placing pipe fill material, furnishing and placing plug materials, and placing backfill.

2504.04, K, 1, Plug.

Replace the Article:

~~None.~~ Each plug installed in a pipe will be counted.

2504.05, K, Sanitary Sewer Abandonment.

Replace the Article:

1. Plug.

~~Plugging sanitary sewers is incidental to other work and will not be paid for separately.~~

a. Payment will be made at the contract unit price for each plug installed.

b. Payment is full compensation for trench excavation (if necessary), cutting pipe (if required), furnishing and placing plug materials, and placing backfill.

2. Fill and Plug.

a. Payment will be the contract unit price per linear foot for each size of pipe filled and plugged.

b. Payment is full compensation for trench excavation (if necessary), cutting pipe (if required), furnishing and placing pipe fill material, furnishing and placing plug materials, and placing backfill.

Item D.

2503.03, Construction.

Renumber Articles E through I.

~~**E**~~ **F. Tolerances.**

~~**F**~~ **G. Conflicts.**

~~**G**~~ **H. Storm Sewer Abandonment.**

~~**H**~~ **I. Connection to Existing Manhole or Intake.**

~~**I**~~ **J. Cleaning, Inspection, and Testing.**

Add the Article:

E. Aprons.

Install pipe aprons where specified in the contract documents. Install apron guards when specified.

2503.04, Method of Measurement.

Add the Article:

G. Aprons.

Measured according to Article 2416.04, B and 2417.04, B.

2503.05, Basis of Payment.

Add the Article:

G. Aprons.

Paid according to Article 2416.05, B and 2417.05, B.

4149.03, Storm Sewer Pipe.

Add the Articles:

J. Storm Sewer Pipe Aprons.

Comply with the requirements of Articles 4149.03 for the pipe material of which the apron is constructed.

L. Storm Sewer Apron Guard.

Per Standard Road Plan DR-213.

Comments:		
Member's Requested Change: **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**		
Reason for Revision: To implement revisions to SUDAS Standard Specifications where the Department uses those specifications as the basis for our specifications.		
New Bid Item Required (X one)	**Yes** X	**No**
Bid Item Modification Required (X one)	**Yes**	**No**
Bid Item Obsoletion Required (X one)	**Yes**	**No** X
Comments: New bid items: Storm Sewer Abandonment, Plug; Sanitary Sewer Abandonment, Plug; Internal Drop Connection, SW-308. Modified Bid items: External Drop Connection, SW-307.		
County or City Comments:		
Industry Comments:		