MINUTES
OF
IOWA DOT SPECIFICATION COMMITTEE MEETING

October 13, 2016

Members Present:	Darwin Bishop	District 3 - Construction
	Mark Brandl	District 6 - Davenport RCE
	Jeff Devries	District 1 - Materials
	Eric Johnsen, Secretary	Specifications Section
	Greg Mulder	Office of Construction & Materials
	Gary Novey	Office of Bridges & Structures
	Wes Musgrove	Office of Contracts
	Tom Reis, Chair	Specifications Section
	Brian Smith	Office of Design
Members Not Present:	Donna Buchwald	Office of Local Systems
	Charlie Purcell	Project Delivery Bureau
	Willy Sorensen	Office of Traffic & Safety
Advisory Members Present:	Tammy Nicholson	Office of Location & Environment
	Ernie Steffensmeier	Lee County
	Paul Wiegand	SUDAS
	Andy Wilson	FHWA
Others Present:	Kyle Frame	Office of Construction & Materials
	Melissa Serio	Office of Construction & Materials
	Dan Waid	County Engineers' Service Bureau

Tom Reis, Specifications Engineer, opened the meeting. The following items were discussed in accordance with the agenda dated November 1, 2016:

The agenda is as follows:

1. Article 1102.11, Proposal Guaranty.

The Office of Contracts requested to revise the proposal guaranty/bid bond form number due to a new form being created separate from the Purchasing Section.

2. Article 1107.06, Federal Requirement.

The Specifications Section requested to incorporate a federal requirement for United States-flag commercial vessels into the Standard Specifications until the FHWA-1273 is updated.

3. Article 2316.02, B, 2, c, Pavement Smoothness.

The Office of Construction and Materials requested to move pavement smoothness testing to the wheel paths instead of the quarter point, which will match the testing location for Interstate and Primary pavements.

4. Article 2320, B, Aggregate (Polymer-Modified Microsurfacing).
Section 4126, Aggregate Polymer-Modified Microsurfacing.

The Office of Construction and Materials requested to move aggregate specifications from 2320 to a new section in 4100 series and add gradations to the Aggregate Gradation Table.

5. Article 2408.03, B, Welding.

The Office of Construction and Materials requested to remove Iowa DOT certification of welders and specify that the current AWS standards at the time of letting apply.

6. Article 2528.03, L, 5, Limitations (Traffic Control).

The Office of Construction and Materials requested to clarify the type of high visibility garment required on DOT projects.

7. Article 2552.02, F, Stabilization (Foundation) Material.
Section 4128, Stabilization (Foundation) Material.

The Office of Construction and Materials requested to move aggregate specifications from 2552 to a new section in 4100 series and provide reference to existing gradation and add quality requirements.

8. Article 2602.04, K, Mobilizations, Erosion Control.

The Offices of Construction and Materials and Design requesedt to clarify that a contractor mobilizing to the same location but different sites will only be paid for one mobilization.

9. DS-15011, PCC Pavement Non-Destructive Thickness Determination.

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

10. DS-15046, Pavement Interlayer Geotextile for PCC Overlays.

The Office of Construction and Materials requested updates to the Developmental Specifications for Pavement Interlayer Geotextile for PCC Overlays.

11. SS-15XXX, Supplemental Specifications for Concrete Steps.

The Office of Design requested approval of Supplemental Specifications for Concrete Steps.

Form 510130 (08-15)

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Wes Musgrove	**Office:** Contracts	**Item 1**
Submittal Date: 2016.10.20	**Proposed Effective Date:** April 2017 GS	
Article No.: 1102.11 **Title:** Proposal Guaranty	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 11/10/2016	**Effective Date:** 4/18/2017

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: This does not affect performance bonds, which are separate and can be viewed in Doc Express by field personnel.

Specification Section Recommended Text:

1102.11, C.

Replace the first sentence:

A Proposal Guaranty/Bid Bond (Form ~~131084~~ 518003) may be used for the proposal guaranty in lieu of that specified above, using the electronic bid bond verification feature authorized by the Department.

Comments:

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

C. A Proposal Guaranty/Bid Bond (Form ~~131084~~ 518003) may be used for the proposal guaranty in lieu of that specified above, using the electronic bid bond verification feature authorized by the Department. Bid bonds will be declared invalid and bid proposals will not be considered if any of the following items are omitted or incorrect:

- Date of Letting
- Bid Order Number
- Name of Contractor
- Digital Signature of Contractor: In case of joint venture bid, all contractors must sign.
- Name of the Surety Company
- Digital Signature of Surety (if Surety's limitation is less than the amount of the bid bond, a certificate of reinsurance must be attached)

Reason for Revision: A new form is being created so that Office of Contracts and Purchasing Section (Office of Finance) will have independent bid bond documents. This is anticipated to have little impact on local agencies. The form will be available online for locals use. This action is being taken to address questions from contractors. It is expected this will satisfy industry concerns.

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:

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IOWA DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Tom Reis / Eric Johnsen	**Office:** Specifications Section	**Item 2**
Submittal Date: 10/24/2016	**Proposed Effective Date:** April 2017 GS	
Article No.: 1107.06 **Title:** Federal Requirement	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 11/10/2016	**Effective Date:** 4/18/2017

Specification Committee Approved Text:

1107.06, Federal Requirement.

Add the Article:

C. Use of United States-Flag Vessels.
In accordance with 46 CFR 381.7(b), on all Federal-Aid contracts, the Contractor agrees:

1. To utilize privately owned United States-flag commercial vessels to ship at least 50% of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.

2. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in Article 1107.06, C, 1, to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

3. To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract.

Comments: The reference in Article 1107.06, C, 2 to the CFR was revised to reference the correct article in the Standard Specifications.

A missing parentheses was added to Article 2.

Specification Section Recommended Text:

1107.06, Federal Requirement.

Add the Article:

C. Use of United States-Flag Vessels.
In accordance with 46 CFR 381.7(b), on all Federal-Aid contracts, the Contractor agrees:

4. To utilize privately owned United States-flag commercial vessels to ship at least 50% of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities

pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.

5. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b) (1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

6. To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract.

Comments:

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

Reason for Revision: To incorporate a federal requirement that has been handled by proposal note until the FHWA-1273 is updated.

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: Greg Mulder	**Office:** Construction and Materials	**Item 3**
Submittal Date: 2016.10.18	**Proposed Effective Date:** April, 2017	
Article No.: 2316.02,B,2,c **Title:** Pavement Smoothness	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 11/10/2016	**Effective Date:** 04/18/2017

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: FHWA asked why quarter point testing was being retained as an option. The Office of Construction and Materials indicated that on some small projects, such as bridge decks, a "push" profilometer is still used and wheel track testing would be additional work.

The District 3 Office asked what was to stop a Contractor from running the profilometer on both the wheel tracks and quarter point and turning in the best results for them. The Office of Construction and Materials did not think this would be an issue, as wheel track testing with the current profilometer vehicles is much safer and this change is being requested by the industry.

Specification Section Recommended Text:

2316.02, B, 2, c.

Replace the last sentence:

~~Testing will be done at the quarter point of the traffic lanes~~ Determine pavement profiles for each lane according to procedures for one lane, as shown in Materials I.M. 341 except for main line traffic lanes which will be tested in the wheel paths. Round trace scallops to nearest 0.01 inch. Wheel paths are defined as 3 feet and 9 feet from center line or lane line. Average the two wheel path profile indexes for each segment. For projects with less than 0.5 miles of mainline paving, Contractor may elect to determine pavement profile in the quarter point unless another location is specified in the contract documents.

Comments:

c. Sections longer than 778 feet or 0.147 miles (240 m) placed without interruption will be separated into segments of 0.1 mile (160 m). The terminating segment may be shorter than 0.1 mile (160 m) and greater than 250 feet (80 m) and still be considered a segment. A segment is to be in only one traffic lane. Each traffic lane will be tested and evaluated separately. Gaps for temporary crossings or similar construction sequencing which are placed in otherwise continuous sections will be tested, when placed, and included in the adjacent section evaluation. Determine the pavement profiles for each lane according to the procedures for one lane, as shown in Materials I.M. 341 except for main line traffic lanes which will be tested in the wheel paths. Round the trace scallops to the nearest 0.01 inch (0.1 mm). The wheel paths are defined as 3 feet (0.9 m) and 9 feet (2.7 m) from the center line or lane line. Average the two wheel path profile indexes for each segment. For projects with less than 0.5 miles of mainline paving, the contractor at their option may elect to determine the pavement profile in the quarter point ~~Testing will be done at the quarter point of the traffic lanes~~ unless another location is specified in the contract documents.

Reason for Revision: Most contractor profilers and all DOT profilers are configured with the lasers

positioned over the wheel paths. To test quarter point, they must either ride the center line with the left side wheels or run the edge line or beyond with the right side wheels to obtain a quarter point profile. Either method is less safe than running in the wheel paths. The original reason for quarter point testing was to reduce the amount of testing done with a push profilograph. Technological advances in equipment have eliminated this issue. There are situations where a contractor may still be using a profilograph for convenience on side roads and short sections of mainline so the option was left in.		
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)

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder	**Office:** Construction and Materials	**Item 4**
Submittal Date: 2016.10.18	**Proposed Effective Date:** April 2017 GS	
Section No.: 2320 and 4126 (new) **Title:** Polymer-Modified Microsurfacing	**Other:**	

Specification Committee Action: Approved as recommended.			
Deferred:	**Not Approved:**	**Approved Date:** 11/10/2016	**Effective Date:** 4/18/2017
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: None.			

Specification Section Recommended Text:
2320.02, B, Aggregate.

Replace the Article:

1. Use mineral aggregate composed of a combination of crushed stone and mineral filler meeting the following requirements based on the friction classification specified in the contract documents. Aggregate source frictional classifications can be found in Materials I.M. T 203.

a. Friction Classification L-2.

Use Friction Type 2 crushed stone (for non-Interstate mixes steel slag may also be used) complying with the following:

1) Table 4124.03-1 with the following exceptions:

- Maximum abrasion loss of 30%, and
- Sand equivalence of not less than 60.

2) Objectionable materials limits in Table 2320.02-01.

b. Friction Classification L-4.

Use Friction Type 4 or better crushed stone complying with the following:

1) Table 4124.03-1, and

2) Objectionable materials limits in Table 2320.02-01.

c. No Special Friction Requirement.

Use Friction Type 5 or better crushed stone complying with the following:

1) Table 4124.03-1, and

2) Objectionable materials limits in Table 2320.02-01.

Table 2320.02-01: Maximum Permissible Amounts of Objectionable Material

Objectionable Materials	Maximum Percent Allowed	Test Method
Unsound chert particles retained on No. 4 sieve	0.5	Materials I.M. 372
Total of all unsound chert, shale, coal, and iron combined	1.0	Materials I.M. 372
Clay Lumps/Friable Particles	0.5	Materials I.M. 368
Organic Materials, except coal	0.1	Iowa DOT Materials Laboratory Test Method No. 215

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

Table 2320.02-2: Job Mix (Target) Gradation

	Sieve Size - Percent Passing							
	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200
Quartzite/Granite/ Slag	100	90-100	65-90	45-70	30-50	18-30	10-21	5-15

~~Limestone/Dolomite~~	~~100~~	~~70-90~~	~~45-70~~	~~25-50~~	~~15-35~~	~~10-25~~	~~5-20~~	~~5-15~~

Meet the requirements of Section 4126.

Section 4126, Aggregate for Polymer-Modified Microsurfacing.

Add the Section:

Section 4126. Aggregate for Polymer-Modified Microsurfacing

4126.01 DESCRIPTION.
Crushed stone. For non-Interstate mixes steel slag may also be used.

4126.02 GRADATION.
For quartzite, granite, and slag meet requirements for Gradation No. 37 of the Aggregate Gradation Table, Article 4109.02. For limestone and dolomite meet requirements for Gradation No. 38 of the Aggregate Gradation Table, Article 4109.02

4126.03 QUALITY.
Meet requirements of Table 4126.03-1 and 4126.03-2 with the exception that use of Friction Type 2 crushed stone requires a maximum abrasion loss of 30% and sand equivalence of not less than 60. Testing is based on aggregate crushed to 3/4 inch nominal size.

Table 4126.03-1: Aggregate Quality

Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	40	AASHTO T 96
A Freeze	10	Office of Materials Test Method No. Iowa 211, Method A
Alumina[(a)]	0.7	Office of Materials Test Method No. Iowa 222
Sand Equivalence	45 (Minimum)	AASHTO T 176
Organic Materials	0.01	Office of Materials Test Method No. Iowa 215
(a) If the Alumina value fails, determine the A Freeze value for specification compliance. Office of Materials Test Method No. Iowa 222 does not apply to gravel or quartzite.		

Table 4126.03-02: Maximum Permissible Amounts of Objectionable Material

Objectionable Materials	Maximum Percent Allowed	Test Method

Unsound chert particles retained on No. 4 sieve	0.5	Materials I.M. 372
Total of all unsound chert, shale, coal, and iron combined	1.0	Materials I.M. 372
Clay Lumps/Friable Particles	0.5	Materials I.M. 368
Organic Materials, except coal	0.1	Iowa DOT Materials Laboratory Test Method No. 215

Appendix.

Add to the Aggregate Gradation Table

AGGREGATE GRADATION TABLE

Grad. No.	Section No.	Std. Sieve Sz.	1 1/2"	1.00"	3/4"	1/2"	3/8"	4	8	30	50	100	200	
		Intended Use	Percent Passing											Notes
37	2320 (Quartzite/Granite/Slag)	Polymer-Modified Emulsified Asphalt					100	90-100	65-90	30-50	18-30	10-21	5-15	12, 13
38	2320 (limestone/Dolomite)	Polymer-Modified Emulsified Asphalt					100	70-90	45-70	15-35	10-25	5-20	5-15	12, 13

12. For Quartzite/Granite/Slag: 45% to 70% passing No. 16 Sieve; for Dolomite/Limestone: 25% to 50% passing No. 16 Sieve.

13. Percent passing shall not go from the high end to the low end of the range for any two consecutive screens.

Comments:

Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)
Section 2320. Polymer-Modified Microsurfacing

Replace the Article:

Meet the requirements of Section 4126.

~~**Aggregate.**~~

~~**1.** Use mineral aggregate composed of a combination of crushed stone and mineral filler meeting the following requirements based on the friction classification specified in the contract documents. Aggregate source frictional classifications can be found in Materials I.M. T-203.~~

~~**a. Friction Classification L-2.**~~

~~Use Friction Type 2 crushed stone (for non-Interstate mixes steel slag may also be used) complying with the following:~~

~~**1)** Table 4124.03-1 with the following exceptions:~~

- ~~Maximum abrasion loss of 30%, and~~
- ~~Sand equivalence of not less than 60.~~

~~**2)** Objectionable materials limits in Table 2320.02-01.~~

~~**b. Friction Classification L-4.**~~

~~Use Friction Type 4 or better crushed stone complying with the following:~~

~~**1)** Table 4124.03-1, and~~

~~**2)** Objectionable materials limits in Table 2320.02-01.~~

~~**c. No Special Friction Requirement.**~~

~~Use Friction Type 5 or better crushed stone complying with the following:~~

~~**1)** Table 4124.03-1, and~~

~~**2)** Objectionable materials limits in Table 2320.02-01.~~

~~**Table 2320.02-01: Maximum Permissible Amounts of Objectionable Material**~~

~~Objectionable Materials~~	~~Maximum Percent Allowed~~	~~Test Method~~
~~Unsound chert particles retained on No. 4 sieve~~	~~0.5~~	~~Materials I.M. 372~~
~~Total of all unsound chert, shale, coal, and iron combined~~	~~1.0~~	~~Materials I.M. 372~~
~~Clay Lumps/Friable Particles~~	~~0.5~~	~~Materials I.M. 368~~
~~Organic Materials, except coal~~	~~0.1~~	~~Iowa DOT Materials Laboratory Test Method No. 215~~

~~**2.** The job mix (target) gradation within the gradation band specified below. The percent passing shall not go from the high end to the low end of the range for any two consecutive screens.~~

~~**Table 2320.02-2: Job Mix (Target) Gradation**~~

	~~Sieve Size - Percent Passing~~							
	~~3/8"~~	~~No. 4~~	~~No. 8~~	~~No. 16~~	~~No. 30~~	~~No. 50~~	~~No. 100~~	~~No. 200~~
~~Quartzite/Granite/Slag~~	~~100~~	~~90-100~~	~~65-90~~	~~45-70~~	~~30-50~~	~~18-30~~	~~10-21~~	~~5-15~~
~~Limestone/Dolomite~~	~~100~~	~~70-90~~	~~45-70~~	~~25-50~~	~~15-35~~	~~10-25~~	~~5-20~~	~~5-15~~

Section 4126

Create new Section:

Section 4126. Polymer-Modified Microsurfacing

4126.01 DESCRIPTION.
Crushed stone. For non-Interstate mixes steel slag may also be used.

4126.02 GRADATION.
For quartzite, granite, and slag meet the requirements for Gradation No. 37 of the Aggregate Gradation Table, Article 4109.02. For limestone and dolomite meet the requirements for Gradation No. 38 of the Aggregate Gradation Table, Article 4109.02

4126.03 QUALITY.
Meet the requirements of Table 4126.03-1 and 4126.03-2 with the exception that use of Friction Type 2 crushed stone requires a maximum abrasion loss of 30% and sand equivalence of not less than 60. Testing is based on aggregate crushed to 3/4 inch (19 mm) nominal size.

Table 4126.03-1: Aggregate Quality

Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	40	AASHTO T 96
A Freeze	10	Office of Materials Test Method No. Iowa 211, Method A
Alumina[(a)]	0.7	Office of Materials Test Method No. Iowa 222
Sand Equivalence	45 (Minimum)	AASHTO T 176
Organic Materials	0.01	Office of Materials Test Method No. Iowa 215
(a) If the Alumina value fails, determine the A Freeze value for specification compliance. Office of Materials Test Method No. Iowa 222 does not apply to gravel or quartzite.		

Table 4126.03-02: Maximum Permissible Amounts of Objectionable Material

Objectionable Materials	Maximum Percent Allowed	Test Method
Unsound chert particles retained on No. 4 sieve	0.5	Materials I.M. 372
Total of all unsound chert, shale, coal, and iron combined	1.0	Materials I.M. 372
Clay Lumps/Friable Particles	0.5	Materials I.M. 368
Organic Materials, except coal	0.1	Iowa DOT Materials Laboratory Test Method No. 215

Revise Aggregate Gradation Table 4109.02: See Attached below.

Reason for Revision: Move aggregate specifications from 2320 to a new section in 4100 series. Move gradations to the aggregate gradation table 4109.02. Merge tables into one specification.

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: Greg Mulder / Kyle Frame	**Office:** Construction and Materials	**Item 5**
Submittal Date: Oct 19, 2016	**Proposed Effective Date:** April 2017	
Article No.: 2408.03 B **Title:** Welding	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 11/10/2016	**Effective Date:** 4/18/2017

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: The Office of Construction and Materials explained that there are 8 or 9 sites around the state where a welder can get certified by AWS. This certification can be used in other states as well. There is a fee associated with this certification, similar to how the Department charges a fee.

The District 6 Office asked if the Department would maintain a list of approved welders in the state. The Office of Construction and Materials agreed to include a link to the AWS website of certified welders in the Construction Manual.

SUDAS asked if the Department would retain Materials I.M. 560. The Department will maintain this I.M. for information purposes.

Specification Section Recommended Text:

2408.03, B, Welding.

Replace the Article:

1. Current AWS standards in effect at the time of letting are applicable.

~~**1**~~ **2.** Comply with ANSI/AWS D1.1 Structural Welding Code procedures and requirements for the following items, except comply with AASHTO/AWS D1.5~~-02~~ as modified below for filler metal and welder qualification requirements.

- **a.** Bridge Components and Miscellaneous Items. This includes bearing assemblies, sole plates, expansion joint devices, pile and appurtenances, drainage system components, guardrail connections, metal railing, chain link enclosures and wire fence components, conduit systems, and tread plates.
- **b.** Traffic Signal Components.
- **c.** Sign Support Components.
- **d.** Lighting Structure Components.
- **e.** Pre-Engineered Pedestrian Bridges.

~~**2**~~ **3.** Comply with AASHTO/AWS D1.5~~-02~~, as modified by this specification, for welding and fabricating steel structures.

~~**3**~~ **4.** Each of the modifications in this article is referenced by the appropriate paragraph number in AASHTO/AWS D1.5~~-02~~, to which it is a modification.

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SECTION 1. General Provisions

1.3 Welding Processes

ADD the following Paragraphs after the existing 1.3.1:

1.3.1.1 Welding of main members and welding of attachments thereto shall be performed using only shielded metal arc, flux cored arc, submerged arc, and/or stud welding processes. Unless otherwise approved by the Engineer, all welding of butt splices and flange to web welds and stiffeners to web welds shall be done using the submerged arc process. Shielded metal arc welding may be used for repairs to butt splices and flange to web welds.

1.3.1.2 The WPS shall be initialed by the welder and posted at the welder's workstation at all times during welding operations.

REPLACE Paragraph 1.3.2 with the following:

Electroslag (ESW) and electrogas (EGW) welding are specifically disapproved for use.

SECTION 3. Workmanship

3.2 Preparation of Base Metal

ADD the following paragraph before the existing first Paragraph 3.2.2:

For main members, thermal cutting is limited to oxygen cutting except that plasma arc cutting of web and stiffeners may be used when approved by the Engineer.

DELETE the last sentence of Paragraph 3.2.7 which reads "Excess Camber may be corrected by heating without the engineer's approval."

3.5 Dimensional Tolerances

REPLACE all of the text and tables of Paragraph 3.5.1.3 with the following:

Camber of main members of continuous or simple span bridges with lines composed of rolled beams, beams and girders, or girders, shall be fabricated so that when the members are assembled in laydown with bearing points accurately positioned as shown on the erection diagram, points on any member shall not vary in the offset position from that indicated in the erection diagram by more than ± 1/2 inch.

The erection diagram on the shop drawings shall show camber offsets at bearing points and splice points, and at midpoints of individually cambered beams or girders.

REPLACE Paragraph 3.5.1.4 with the following:

Permissible variation in specified sweep for horizontally curved welded beams or girders is

$$\frac{\pm\ 1/8 \text{ in. x No. of ft. of total length}}{10} \qquad (\pm\ 1 \text{ mm/m of the total length})$$

provided the member has sufficient lateral flexibility to permit the attachment of diaphragms, cross-frames, lateral bracing, etc., without damaging the structural member or its attachments.

REPLACE Paragraph 3.5.1.14 with the following:

Mechanically connected joints and splices of main members with surfaces intended to be parallel planes shall be nearly parallel after connection, and the surfaces to be in contact shall have an offset no greater than 1/16 inch after all filler plates have been added, if any. The accuracy of the angle of connecting stiffeners, angles, or plates shall be ± 0.5 degrees, when measured at the hole locations.

3.7 Repairs

REPLACE Paragraph 3.7.4 with the following:

Prior approval of the Engineer shall be obtained for repairs to base metal, repair of major or delayed cracks, or for a revised design to compensate for deficiencies.

ADD the following paragraph before the existing Paragraph 3.7.7:

The approval of the Engineer is required for all corrections of mislocated holes.

ADD the following Paragraph after the existing 3.7.7:

3.7.8 The maximum number of repairs to unacceptable defects in a butt splice shall be three, i.e., the times a butt splice may be opened, welded closed, and resubmitted for NDT inspection, unless otherwise approved by the Engineer.

SECTION 5. Qualifications

Part A. General Requirements

5.2 Qualification Responsibility

~~**REPLACE**~~ **ADD the following paragraph after the first paragraph of** Paragraph 5.2 ~~with the following~~:

To qualify welding procedures, the Contractor shall produce test weldments, perform nondestructive testing and machine specimens for mechanical testing in accordance with this code. ~~The Contracting Authority will witness the production of test weldments and conduct mechanical tests.~~

Part B. Welder, Welding Operator, and Tack Welder Qualification

5.21 General Requirements

REPLACE Paragraph 5.21.4 with the following**:**

Shop welder's, welding operator's, or tack welders qualification herein specified shall be considered as remaining in effect from the end of the month in which the tests were taken, for a period of 1 year. The qualification for the above may be extended annually, based on a letter from the fabricator/Contractor certifying that they have been engaged in the process(es) for which they qualified without interruption of more than 6 months during the preceding twelve months, or by requalification.

Field welder's qualification herein specified will be considered as remaining in effect from the end of the month in which the test was taken, for a period of ~~1~~ 3 years. ~~For field welders who have successfully passed their qualification tests without failure for 3 consecutive years, requalification will only be required every 2 years. Requalification may be required at any time there is a specific reason to question a welder's ability to make sound welds.~~

5.21.6 Responsibility

REPLACE Paragraph 5.21.6.1 with the following:

To qualify shop welders, welding operators, and tackers, the Contractor shall ~~furnish test weldments, and perform nondestructive testing in accordance with this code. The Contracting Authority shall witness the production of test weldments and conduct mechanical tests. The Contractor may~~, at no additional cost to the Contracting Authority, engage an outside firm or agency to witness production of test weldments and conduct mechanical tests. The acceptance of work performed by an outside firm or agency is the prerogative of the Contracting Authority. The engineer may require recertification if there is specific reason to question the welder's ability.

Field welders shall be certified by a test facility with an accredited AWS Certified Welder Program as defined in the current AWS Standard QC 4. Welders shall be certified per the current QC 7 Standard for AWS Certified Welders. The code of acceptance shall be AWS Bridge Welding Code D1.5. Certification maintenance per applicable AWS Code of Acceptance shall be the responsibility of the certification holder. A copy of the current welder's certification from the AWS test facility shall be available to the Engineer upon request. The Engineer may require recertification if there is specific reason to question the welder's ability.

5.23 Qualification Tests Required

ADD Subparagraph 5.23.1 (5) after the existing 5.23.1 (4):

Plate weld tests may also be accepted for qualification of welding pipe piling of any diameter.

REPLACE Paragraph 5.23.3 with the following:

Tack Welder Qualification. A tack welder shall be qualified by fillet-weld-break specimen made using the same criteria as listed for plate-fillet welder qualification in Table ~~5.6~~ 5.8. The tack welder shall make a 1/4 inch maximum size tack weld approximately 2 inches long on the fillet-weld-break specimen, as shown in Fig. 5.28.

SECTION 6. Inspection

Part A. General Requirements

6.7 Nondestructive Testing

REPLACE Subparagraph 6.7.1.2(1) with the following:

100% of each joint subject to tension or reversals of stress, except that on vertical butt weld splices in beam or girder webs, only 1/3 of the web depth beginning at the point, or points, or maximum tension need be tested. If unacceptable discontinuities are found in the first 1/3, the remainder of the weld shall be tested.

REPLACE Subparagraph 6.7.1.2(2) with the following:

50% of each joint subject to compression or shear in each main member including longitudinal butt weld splices in beam or girder webs. If unacceptable discontinuities are found in the first 50% of joint, the entire length shall be tested.

Part B. Radiographic Testing of Groove Welds in Butt Joints

6.10 Radiographic Procedure

ADD the following Paragraph after existing 6.10.5.3:

6.10.5.4 Where areas being radiographed are adjacent to the edge of the plate, edge block shall be used.

6.12 Examination, Report, and Disposition of Radiographs

REPLACE Paragraph 6.12.3 with the following:

Two sets of radiographs shall be taken for welds subject to radiographic testing, including any that show unacceptable quality prior to repair. One radiograph of each test shall, upon completion of Q.C. and Q. A. interpretation, be forwarded to the Office of Materials, Ames, Iowa. The second set of radiographs shall be retained by the Contractor as part of on-site inspection records. Upon completion of the project, this second set will become the property of the Contractor.

Comments:

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

B. Welding.

2. Current American Welding Society (AWS) standards in effect at the time of letting are applicable.

2. Comply with ANSI/AWS D1.1 Structural Welding Code procedures and requirements for the following items, except comply with AASHTO/AWS D1.5~~-02~~ as modified below for filler metal and welder qualification requirements.

- **a.** Bridge Components and Miscellaneous Items. This includes bearing assemblies, sole plates, expansion joint devices, pile and appurtenances, drainage system components, guardrail connections, metal railing, chain link enclosures and wire fence components, conduit systems, and tread plates.
- **b.** Traffic Signal Components.
- **c.** Sign Support Components.
- **d.** Lighting Structure Components.
- **e.** Pre-Engineered Pedestrian Bridges.

3. Comply with AASHTO/AWS D1.5~~-02~~, as modified by this specification, for welding and fabricating steel structures.

4. Each of the modifications in this article is referenced by the appropriate paragraph number in AASHTO/AWS D1.5~~-02~~, to which it is a modification.

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for
Modifications to ANSI/AASHTO/AWS D1.5 ~~95~~ Bridge Welding Code

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SECTION 5. Qualifications

Part A. General Requirements

5.2 Qualification Responsibility

~~**REPLACE**~~ **ADD the following paragraph after the first existing** paragraph 5.2:

To qualify welding procedures, the Contractor shall produce test weldments, perform nondestructive testing and machine specimens for mechanical testing in accordance with this code. ~~The Contracting Authority will witness the production of test weldments and conduct mechanical tests.~~

Part B. Welder, Welding Operator, and Tack Welder Qualification

5.21 General Requirements

REPLACE Paragraph 5.21.4 with the following**:**

Shop welder's, welding operator's, or tack welders qualification herein specified shall be considered as remaining in effect from the end of the month in which the tests were taken, for a period of 1 year. The qualification for the above may be extended annually, based on a letter from the fabricator/Contractor certifying that they have been engaged in the process(es) for which they qualified without interruption of more than 6 months during the preceding twelve months, or by requalification.

Field welder's qualification herein specified will be considered as remaining in effect from the end of the month in which the test was taken, for a period of 3 years. ~~1 year. For field welders who have successfully passed their qualification tests without failure for 3 consecutive years, requalification will only be required every 2 years. Requalification may be required at any time there is a specific reason to question a welder's ability to make sound welds.~~

5.21.6 Responsibility

REPLACE Paragraph 5.21.6.1 with the following:

To qualify shop welders, welding operators, and tackers, the Contractor shall ~~furnish test weldments, and perform nondestructive testing in accordance with this code. The Contracting Authority shall witness the production of test weldments and conduct mechanical tests. The Contractor may~~, at no additional cost to the Contracting Authority, engage an outside firm or agency to witness production of test weldments and conduct mechanical tests. The acceptance of work performed by an outside firm or agency is the prerogative of the Contracting Authority. The engineer may require recertification if there is specific reason to question the welder's ability.

Field welders shall be certified by a test facility with an accredited AWS Certified Welder Program as defined in the current AWS Standard QC 4. Welders shall be certified per the current QC 7 Standard for AWS Certified Welders. The code of acceptance shall be AWS Bridge Welding Code D1.5. Certification maintenance per applicable AWS Code of Acceptance shall be the responsibility of the certification holder. A copy of the current welder's certification from the AWS test facility shall be available to the engineer upon request. The engineer may require recertification if there is specific reason to question the welder's ability.

5.23 Qualification Tests Required

ADD Subparagraph 5.23.1 (5) after the existing 5.23.1 (4):
Plate weld tests may also be accepted for qualification of welding pipe piling of any diameter.

REPLACE Paragraph 5.23.3 with the following:

Tack Welder Qualification. A tack welder shall be qualified by fillet-weld-break specimen made using the same criteria as listed for plate-fillet welder qualification in Table ~~5.6~~ 5.8. The tack welder shall make a 1/4 inch maximum size tack weld approximately 2 inches long on the fillet-weld-break specimen, as shown in Fig. 5.28.

Reason for Revision: Iowa DOT will no longer provide welder certification. Shop welders will continue to use independent third party testing firms for certification. Field welders will be certified through an American Welding Society (AWS) accredited facility. This will remove a time consuming responsibility for the DOT and it will allow AWS certified welders to work in different states without recertifying. AWS and Iowa DOT used the same criteria for certification, only we will require recertification every three years for field welders.

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: Greg Mulder / Mark Bortle	**Office:** Construction and Materials	**Item 6**
Submittal Date:	**Proposed Effective Date:** April 2017 GS	
Article No.: 2528.03.L.5 **Title:** Limitations	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 11/10/2016	**Effective Date:** 4/18/2017

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: None.

Specification Section Recommended Text:

2528.03, L, 5.

Replace the first sentence:

Personnel in the highway right-of-way shall wear orange or strong yellow green ANSI 107 Type R Class 2 apparel when exposed to traffic or construction equipment.

Comments:

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

5. Personnel in the highway right-of-way shall wear orange or strong yellow green ANSI 107 Type R Class 2 apparel when exposed to traffic or construction equipment. Orange or strong yellow green ANSI 107 Class E pants or shin reflectors/gaiters are also required to be worn at night. Shin reflectors/gaiters shall have a minimum of two 2 inch bands of retroreflective material spaced at least 6 inches apart. Background material shall extend at least 2 inches above and below retroreflective bands and continue through the length of shin reflector/gaiter. Shin reflector/gaiter shall completely encircle the leg and be worn on lower leg between knee and ankle.

Reason for Revision: The current ANSI 107-2015 document defines three different types of high visibility garments. Type R is for roadway use where employees are exposed to either public or construction traffic. Type O is for off-roadway use where employees are not exposed to public traffic. Type P is for emergency personnel and law enforcement only. We need to include the Type R requirement in the specifications to be compliant with this MUTCD referenced ANSI Standrad..

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:

company. At a minimum, the information found on the form in Appendix D3 shall be provided.

NOTE: Appendix D contains examples of forms to be used for testing combined-performance and retroreflective materials and background materials, and includes an example of a Declaration of Conformity. All forms are available for download in Adobe Acrobat format on www.safetyequipment.org.

4.4 Declaration of Conformity

The issuer of the declaration of conformity shall have procedures in place to ensure the continued conformity of the product, as delivered or accepted, with the stated requirements of the declaration of conformity. The issuer of the declaration of conformity shall have procedures in place to re-evaluate the validity of the declaration of conformity, in the event of:

a. changes significantly affecting the design or specification of the product;

b. changes in the standards to which conformity of the product is stated;

c. changes in the ownership or structure of the supplier, if relevant; or

d. relevant information indicating that the product may no longer conform to the specified requirements.

5 Types and Classes

5.1 HVSA Types

High-visibility garment types are designated by the work environment in which the wearer is performing a task.

Apparel includes, but is not limited to, clothing such as vests, jackets, pants, shirts, rainwear and coveralls.

5.1.1 Type O ("off-road") – Occupational HVSA for Non-Roadway Use

Type O HVSA provides daytime and nighttime visual conspicuity enhancement for workers in occupational environments which pose struck-by hazards from moving vehicles, equipment and machinery, but which will not include exposure to traffic on public access highway rights-of-way or roadway temporary traffic control (TTC) zones.

5.1.2 Type R ("roadway") – Occupational HVSA for Roadway Use

Type R HVSA provides daytime and nighttime visual conspicuity enhancement for workers in occupational environments which include exposure to traffic (vehicles using the highway for purposes of travel) from public access highway rights-of-way, or roadway temporary traffic control (TTC) zones or from work vehicles and construction equipment within a roadway temporary traffic control (TTC) zone.

5.1.3 Type P ("public safety") – Occupational HVSA for Emergency and Incident Responders and Law Enforcement Personnel

Type P HVSA provide daytime and nighttime visual conspicuity enhancement for emergency and incident responders and law enforcement personnel in occupational environments which include exposure to traffic (vehicles using the highway for purposes of travel) from public access highway rights-of-way, or roadway temporary traffic control (TTC) zones, or from work vehicles and construction equipment within a roadway temporary traffic control (TTC) zone or from equipment and vehicles within the activity area. Type P HVSA provides additional options for emergency responders, incident responders and law enforcement who have competing hazards or require access to special equipment.

5.2 Performance Classes

Performance Classes present within each type of high-visibility safety apparel are specified in terms of the minimum area of high-visibility materials to be incorporated. Performance Classes provide a range of design options corresponding with the needs of the user in the expected risk environment. Type O includes one Performance Class and Type R and Type P each have two Performance Classes.

5.2.1 Performance Class 1 (Type O)

Performance Class 1 provides the minimum amount of high-visibility materials required to differentiate the wearer visually from non-complex work environments, in scenarios in which the struck-by hazards will not be approaching at roadway speeds, and therefore operative detection and identification distances

Form 510130 (08-15)

IOWA DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder	**Office:** Construction & Materials	**Item 7**
Submittal Date: 10/20/16	**Proposed Effective Date:** October 2017 GS	
Article No.: 2552.02, F **Title:** Stabilization (Foundation) Material **Section No.:** 4128 (NEW) **Title:** Stabilization (Foundation) Material	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 11/10/2016	**Effective Date:** 4/18/2017

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: None.

Specification Section Recommended Text:

2552.02, F, Stabilization (Foundation) Material.

Replace the Article:

~~**1.** Clean 2 1/2 inch crushed stone with the following gradation:~~

~~**Sieve**~~	~~**Percent Passing**~~
~~2 1/2 inch~~	~~100~~
~~2 inch~~	~~90 to 100~~
~~1 1/2 inch~~	~~35 to 70~~
~~1 inch~~	~~0 to 20~~
~~1/2 inch~~	~~0 to 5~~

~~**2.** The Engineer may authorize a change in gradation subject to materials available locally at time of construction.~~

~~**3.** Crushed concrete may be used, if approved by the Engineer, if it is within ± 5% of the gradation for each size of material.~~

Meet the requirements of Section 4128.

Section 4128

Add the Section:

Section 4128. Stabilization (Foundation) Material

4128.01 DESCRIPTION.

Aggregate of the following types:

- Crushed stone, or
- Crushed PCC, if approved by the Engineer.

4128.02 GRADATION.
Meet the requirements of Gradation No. 13 of the Aggregate Gradation Table, Article 4109.02.

4128.03 QUALITY.
The requirements of Table 4128.03-1 apply to individual virgin aggregates when crushed to a 3/4 inch or 1 inch nominal size for testing:

Table 4128.03-1: Stabilization Material Quality

Macadam Quality	Maximum Percent Allowed	Test Method
Abrasion	50	AASHTO T 96
C Freeze	20	Office of Materials Test Method No. Iowa 211, Method C

Comments:

Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)
2552.02, F.

Replace the Article:

F. Stabilization (Foundation) Material.

Meet the requirements of Section 4128.

~~**1. Clean 2 1/2 inch crushed stone with the following gradation:**~~

~~Sieve~~	~~Percent Passing~~
~~2 1/2 inch~~	~~100~~
~~2 inch~~	~~90 to 100~~
~~1 1/2 inch~~	~~35 to 70~~
~~1 inch~~	~~0 to 20~~
~~1/2 inch~~	~~0 to 5~~

~~**2. The Engineer may authorize a change in gradation subject to materials available locally at time of construction.**~~

~~**3. Crushed concrete may be used, if approved by the Engineer, if it is within ± 5% of the gradation for each size of material.**~~

Section 4128

Create new Section:

Section 4128. Stabilization (Foundation) Material

4128.01 DESCRIPTION.
Aggregate of the following types:

- Crushed stone, or
- Crushed PCC, if approved by the Engineer.

4128.02 GRADATION.
Meet the requirements of Gradation No. 13 of the Aggregate Gradation Table, Article 4109.02.

4128.03 QUALITY.
The requirements of Table 4128.03-1 apply to individual virgin aggregates when crushed to a 3/4 inch (19 mm) or 1 inch (25 mm) nominal size for testing:

Table 4128.03-1: Stabilization Material Quality

Macadam Quality	Maximum Percent Allowed	Test Method
Abrasion	50	AASHTO T 96
C Freeze	20	Office of Materials Test Method No. Iowa 211, Method C

Reason for Revision: Move aggregate specifications from 2552 to a new section in 4100 series. Provide reference to existing gradation and add quality requirements.

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: No changes

County or City Comments:

Industry Comments:

Form 510130 (08-15)

IOWA DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Melissa Serio / Brian Smith	**Office:** Construction & Materials / Design	**Item 8**
Submittal Date: 10/24/16	**Proposed Effective Date:** April 2017 GS	
Article No.: 2602.04, K **Title:** Mobilizations, Erosion Control – Method of Measurement	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 11/10/2016	**Effective Date:** 4/18/2017

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: None.

Specification Section Recommended Text:

2602.04, K, Mobilizations.

Replace the last sentence:

For multi-project contracts, count will be on a per project basis, except for projects where limits are overlapping or contiguous.

Comments:

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

2602.04, K

Revise the last sentence in the Article:

K. Mobilizations, Erosion Control.

By count for each mobilization in the accepted ECIP and acceptably performed, as well as additional mobilizations ordered or approved by Engineer and acceptably performed. For multi-project contracts, count will be on a per project basis, except for projects where limits are overlapping or contiguous.

Reason for Revision: To provide clarification that a contractor mobilizing to the same location but different sites would not be paid multiple mobilizations.

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: No changes

County or City Comments:

Industry Comments:

Form 510130 (08-15)

IOWA DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder	**Office:** Construction and Materials	**Item 9**
Submittal Date: October 21, 2016	**Proposed Effective Date:** April 2016	
Article No.: **Title:**	**Other:** DS-15011, PCC Pavement Non-Destructive Thickness Determination	

Specification Committee Action: Approved as recommended.			
Deferred:	**Not Approved:**	**Approved Date:** 11/10/2016	**Effective Date:** 1/18/2017
Specification Committee Approved Text: See attached Developmental Specifications for PCC Pavement Non-Destructive Thickness Determination.			
Comments: None.			
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.) See Attached		
Reason for Revision: To make the treatment of irregular areas consistent with IM 346 that covers coring.		
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:		

DS-15051
(Replaces DS-15011)

DEVELOPMENTAL SPECIFICATIONS FOR PCC PAVEMENT NON-DESTRUCTIVE THICKNESS DETERMINATION

Effective Date
January 18, 2017

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.** Measurement work for thickness determination may be waived by mutual agreement for sections of the same design thickness less than 5000 square yards.
- **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 (square meter).

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-15011.

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.

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

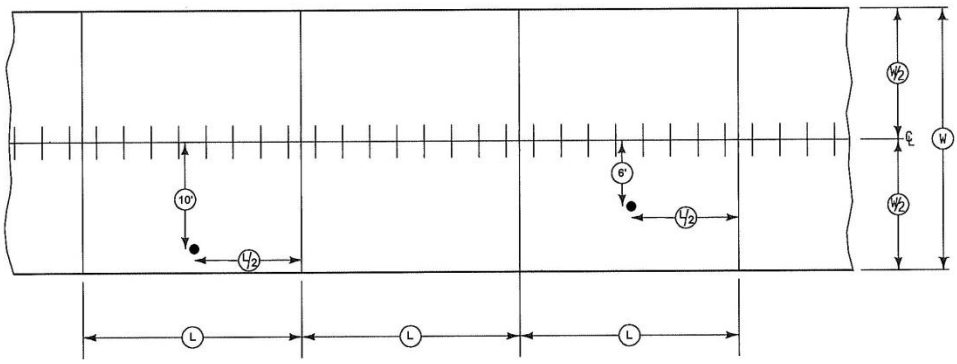
1. Divide the section longitudinally into 200 foot long lots. One target will be located in each lot based on the spreadsheet selection (The targets should be placed half way between dowel baskets). See Figure 1. A minimum of ten targets will be tested. If a target location falls on a bridge or in an 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 6 or 10 feet left or right of centerline. When tie steel is present at the edge of the pavement or lane, the locations will be 5 or 9 feet.

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. Place targets approximately mid-point transversely on shoulders wider than 6 feet. On 6 foot shoulders, the targets should be 4 feet from the edge of the pavement.

Figure1. Target Location



PLAN

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 feet. One target will be randomly located in each selected irregular area, unless one or more of the areas are significantly larger than the others, then more than one target may be located in the large area. 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 sq. yd., select a minimum of three areas to place targets. All targets will be measured.

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.

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

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)

IOWA DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Kevin Merryman	**Office:** Construction and Materials	**Item 10**
Submittal Date: October 25, 2016	**Proposed Effective Date:** January 2017	
Article No.: **Title:**	**Other:** DS-15046, Pavement Interlayer Geotextile for PCC Overlays	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 11/10/2016	**Effective Date:** 1/18/2017

Specification Committee Approved Text: See attached Developmental Specifications for Pavement Interlayer Geotextile for PCC Overlays.

Comments: None.

Specification Section Recommended Text: See attached Draft Developmental Specifications for Pavement Interlayer Geotextile for PCC Overlays.

Comments:

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

Reason for Revision: Changed title to clarify intended use of the specification. Added option to use adhesive to secure geotextile to match practice used in the field. Added option to secure geotextile by other means approved by the Engineer.

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: Industry requested that this change be made to allow adhesives to be used. The change has been made from anchors to adhesive on several recent projects.

DS-15052
(Replaces DS-15046)

DEVELOPMENTAL SPECIFICATIONS
FOR
PAVEMENT INTERLAYER GEOTEXTILE FOR PCC OVERLAYS

Effective Date
January 18, 2017

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.

15052.01 DESCRIPTION.
Place pavement interlayer geotextile as shown on the plans.

15052.02 MATERIALS.

A. Pavement Interlayer Geotextile.
Provide a pavement interlayer meeting AASHTO M 288, except as modified below:

Table DS-15052.02-1: Pavement Interlayer Geotextile Properties

Property	Requirement	Test Method
Fabric Type	Non-woven Geotextile, no thermal treatment	EN 13249, Annex F
Mass per unit area	≥13.3 oz/sq.yd and ≤16.2 oz/sq.yd	ASTM D 5261
Thickness under load (pressure)	0.29 psi: ≥ 0.12 inches 2.9 psi: ≥ 0.10 inches 29 psi: ≥ 0.04 inches	ASTM D 5199, modified under loads of 0.29, 2.9, and 29 psi
Tensile strength	≥ 685 lb/ft	ASTM D 4595
Maximum elongation	≤ 130%	ASTM D 4595
Water permeability in normal direction under load (pressure)	≥ 3.3×10^{-4} ft/s[under pressure of 2.9 psi]	ASTM D 5493
Water permeability in the plane direction of the fabric (transmittivity) under load (pressure)	≥ 1.6×10^{-3} ft/s [under pressure of 2.9 psi] ≥ 6.6×10^{-4} ft/s [under pressure of 29 psi]	ASTM D 6574
Weather resistance	Resistance ≥ 60%	EN 12224
Alkali resistance	≥ 96% Polypropylene/Polyethylene	EN 13249, Annex B

Note: EN is European Standard

B. For each lot of material, furnish manufacturer's certification statement to Engineer stating name of manufacturer, chemical composition of filaments or yarns, and compliance with this specification. Include test results from specific lots for all specification requirements.

15052.03 CONSTRUCTION.

A. Sweep pavement to remove loose debris before applying pavement interlayer geotextile**.**

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

C. Do not place more than 650 feet of geotextile in front of paver if construction traffic is expected on the grade in front of the paver. Limit driving on geotextile to a minimum. Delay installation on areas subject to excess traffic, such as crossovers, until immediately before concrete placement.

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

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

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

3. Other anchoring methods approved by the Engineer.

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

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

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

15052.04 METHOD OF MEASUREMENT.
The quantity of Pavement Interlayer Geotextile will be the quantity in square yards shown in the contract documents.

15052.05 BASIS OF PAYMENT.
Payment for Pavement Interlayer Geotextile will be at the contract unit price per square yard. Payment is full compensation for furnishing materials, labor and equipment necessary to install the pavement interlayer geotextile.

Form 510130 (08-15)

IOWA DOT

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Brian Smith	**Office:** Design	**Item 11**
Submittal Date: 11/1/2016	**Proposed Effective Date:** 2/21/2017	
Article No.: **Title:**	**Other:** SS-15XXX, Supplemental Specifications for Concrete Steps	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 11/10/2016	**Effective Date:** 2/21/2017

Specification Committee Approved Text: See attached Supplemental Specifications for Portland Cement Concrete Steps.

Comments: Spec. name and bid item were changed to match previously used bid item. This will hopefully give some bid cost history for the Office of Contracts.

Specification Section Recommended Text: See attached Draft Supplemental Specifications for Concrete Steps.

Comments: Previously we used the terminology PCC Steps. Is there a reason we are going to Concrete Steps?

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

Reason for Revision: We removed stairs from our standards and details a while back since they were not ADA compliant. We decided to refer to SUDAS when they were needed. That was a good idea but we did not have any specifications to go along with it.

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**

Comments: PCC Steps was obsoleted in 2011, so it will need to be unobsoleted.

County or City Comments:

Industry Comments:

SS-15007
(New)

SUPPLEMENTAL SPECIFICATIONS
FOR
PORTLAND CEMENT CONCRETE STEPS

Effective Date
February 21, 2017

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

15007.01 DESCRIPTION.
Construct PCC steps according to the contract documents.

15007.02 MATERIALS.

A. Concrete.
Class C concrete complying with Article 2304.02 of the Standard Specifications.

B. Reinforcing steel.
Comply with Section 4151 of the Standard Specifications for epoxy coated reinforcement.

C. Expansion joint.
Comply with Article 4136.03, A, of the Standard Specifications.

D. Forms.
Comply with Article 2403.03, B, 5, of the Standard Specifications.

15007.03 CONSTRUCTION.

A. Prepare Subgrade.
In fill areas, construct and compact subgrade to 95% of maximum standard proctor density

B. Forming.
Comply with Article 2403.03, B, 5, of the Standard Specifications.

C. Concrete.
Comply with Article 2403.03 of the Standard Specifications. Deposit concrete for the full depth of the steps in one operation.

D. Reinforcing Steel.
Comply with Section 2404 of the Standard Specifications. Provide a minimum 2 inches of cover on all reinforcing steel.

15007.04 METHOD OF MEASUREMENT.
Measurement will be the area of PCC Steps in square feet for each type of concrete step. Length will be the horizontal length between expansion joints, and the width will include curbs.

15007.05 BASIS OF PAYMENT.
Payment will be at the contract unit price per square foot of PCC Steps. Contract unit price includes all labor, equipment, and materials to construct PCC Steps as shown on the plan details including preparation of subgrade.