Iowa Department of Transportation

MINUTES
OF
IOWA D.O.T. SPECIFICATION COMMITTEE MEETING

April 12, 2012

Members Present:	Jim Berger	Office of Materials
	Roger Bierbaum	Office of Contracts
	Donna Buchwald	Office of Local Systems
	Eric Johnsen, Secretary	Specifications Section
	Bruce Kuehl	District 6 - Construction
	Deanna Maifield	Office of Design
	Doug McDonald	District 1 - Marshalltown RCE
	Gary Novey	Office of Bridges & Structures
	Dan Redmond	District 4 - Materials
	Tom Reis, Chair	Specifications Section
	John Smythe	Office of Construction
	Willy Sorensen	Office of Traffic & Safety
Members Not Present:	John Selmer	Statewide Operations Bureau
Advisory Members Present:	Lisa Rold	FHWA
Others Present:	Kimberly Anderson	FHWA
	Mark Bortle	Office of Construction
	Nicole Fox	Office of Local Systems
	Daniel Harness	Office of Design
	Kevin Merryman	Office of Construction
	Nicki Rainey	Office of Employee Services
	Wayne Sunday	Office of Construction

Tom Reis, Specifications Engineer, opened the meeting. The following items were discussed in accordance with the revised agenda dated April 6, 2012:

1. Article 1102.19, F, 5, Investigation of Each Complaint with Corrective Action if Necessary.

The Specifications Section requested changes to revise the language regarding the Iowa DOT's investigation of civil rights violations.

2. Article 1105.12, B, Restrictions on Moving and Use of Heavy Equipment.

The Office of Design requested changes to clarify payment on cross hauling that is within areas designated for removal.

3. Article 1107.08, Public Convenience and Safety.

The Office of Design requested changes to prohibit the use of median crossovers unless stated in the contract documents.

4. Article 1108.02, E, Charging of Working Days.

The Office of Construction requested changes to charge working days for Saturdays the Contractor works that require inspection.

5. Article 2212.03, B, 2, b, Full Depth Repair Patches (Base Cleaning and Repair).

The Office of Construction requested removal of patch thickness from the specifications in order to be compatible with the Patching Quantity Adjustment table in Article 2529.05.

6. Article 2301.05, K, 1, General (Portland Cement Concrete Pavement).
Article 2303.04, A, 3, a, Measurement by Area (Hot Asphalt Mixtures).

The Office of Design requested changes to eliminate the deduction of large manholes, intakes or other fixtures in the pavement from the measured pavement area.

7. Article 2407.03, B, Concrete (Precast and Prestressed Concrete Bridge Units).

The Office of Materials requested changes to add a new method of testing the permeability of PC Concrete samples.

8. Article 2413.03, F, Curing (Bridge Deck Surfacing, Repair, and Overlay).

The Office of Construction requested changes to allow reduction of the 7 day wet cure for HPC-O decks.

9. Section 2503, Storm Sewers.

The Office of Design requested corrections to match SUDAS Standard Specifications.

10. Article 2512.03, C, Forms (PCC Curb and Gutter).

The Office of Construction requested changes to allow hand forming of curb.

11. Section 2524, Highway Signing.

The Office of Materials requested addition of specifications for perforated square steel tube posts and anchors.

12. Article 2528.03, I, Temporary Floodlighting (Traffic Control).
Article 4188.05, Temporary LED Floodlighting Luminaires.

The Office of Construction requested changes to allow the use of Portable, Mobile Self Contained LED Floodlights.

13. Section 2529, Full Depth Finish Patches.

The Office of Construction requested changes to add bid items for full depth finish patches 50 feet (15 m) or greater in length, deletion of the patching quantity adjustment for patches differing from plan thickness, by more than 30%, and adjustment of the payment rate for removal of buried lugs.

14. Article 2552.02, Materials (Trench Excavation and Backfill).
Section 4118, Pipe Bedding Material and Trench Stabilization (Foundation) Material.

The Office of Materials requested changes to move pipe bedding material and trench stabilization (foundation) material specifications to Division 41.

15. Section 2602, Water Pollution Control.

The Office of Contracts requested to incorporate SS-09015, Mobilization for Erosion Control, into the Standard Specifications.

16. Section 4112, Intermediate Aggregate for PCC.

The Office of Materials requested to move gradations from body of specifications to the gradation table and to remove coarse sand from the specifications as it is not produced.

17. DS-09012, High Performance Concrete for Structures.
DS-09033, High Performance Concrete for Structures (Council Bluffs System).

The Office of Construction requested approval of combined Developmental Specifications for High Performance Concrete for Structures.

18. DS-09020, Quality Management Concrete.

The Office of Construction requested approval of revisions to the Developmental Specifications for Quality Management Concrete.

19. DS-090XX, Temporary Stream Diversion.

The Office of Design requested approval of Developmental Specifications for Temporary Stream Diversion.

20. Additional Item for Discussion.

The Specifications Section asked the committee's opinion on the content of the next edition of the Standard Specification book. The book can incorporate all revisions approved through the May Spec. Committee meeting, but without highlighted revisions. The other option is to only include revisions shown in GS-09005, with all revisions approved since, being contained in a new GS. The committee prefers issuing a GS at the same time as the new Standard Specification book that will contain all revisions approved since GS-09005 was issued.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Tom Reis / Nikita Rainey	**Office:** Specifications / O.E.S.	**Item 1**
Submittal Date: March 30, 2012	**Proposed Effective Date:** Oct 2012 GS	
Article No.: 1102.19 , F, 5 **Title:** Investigation of Each Complaint with Corrective Action if Necessary	**Other:**	

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

Specification Committee Approved Text:

Comments: Some of the revisions shown differed from what the Office of Employee Services - Civil Rights Section intended. This revision will be resubmitted for the May Specification Committee meeting.

Specification Section Recommended Text:

1102.19, F, 5, Investigation of Each Complaint with Corrective Action if Necessary.

Replace the Article:

The Contractor shall investigate, within 14 calendar days, complaints of alleged discrimination made in connection with their obligation under this contract, attempt to resolve complaints, and take appropriate corrective action within a reasonable time. If the investigation indicates the discrimination may affect other persons, corrective action shall also include those persons. Upon completion of each investigation, Contractor shall inform complainant and affected persons of their avenues of appeal. Complainant may contact the Department's Civil Rights Coordinator, OES-Civil Rights, for complaints of discrimination. If the complainant contacts the Department, they will be referred to the Iowa Civil Rights Commission.

An individual, group of individuals, or ~~entity~~ Contractor believing they have been subjected to discrimination prohibited by Title VI Nondiscrimination Provisions, may file a written complaint with the Department's OES-Civil Rights Team. A formal, signed complaint shall be filed within 180 calendar days of the alleged occurrence. The Department's Civil Rights Complaint procedure is available at www.iowa.dot.gov/civilrights.

Upon receipt of the complaint, the OES-Civil Rights Coordinator will determine its jurisdiction, acceptability, need for additional information, and investigative merit of the complaint. ~~In cases where the complaint is against one of the Department's sub-recipients of federal highway funds or federal transition funds, the Department will assume the jurisdiction and will investigate and adjusticate the case. Once the Coordinator decides to accept the complaint for investigation, t~~The complainant and ~~the~~ respondent will be notified in writing ~~of such determination within five calendar days~~ if complaint is being accepted for investigation. ~~The complaint will receive a case number and be logged into the OES-Civil Rights' records identifying its basis, race, color, national origin, and gender of the complainant.~~

~~In cases where the Department assumes the investigation of the complaint, the Coordinator will provide the respondent with the opportunity to respond to the allegations in writing. The respondent will have 10 calendar days to furnish OES-Civil Rights their response to the allegations.~~

~~Within 40 calendar days of receipt of the complaint, the OES-Civil Rights investigator* will prepare an investigative report for the Director of the Department's Operations and Finance Division to review. The report will include a narrative description of the incident, identification of persons interviewed, findings and recommendations for disposition. *This may be the District/Division Title VI Liaison, Coordinator, or Title VI Specialist.~~

~~The investigative report and its finding will be sent to the Attorney General's Office for review. The Attorney General's Office will review the report and associated documentation and provide input within 10 calendar days.~~

~~Comments or recommendations from the Attorney General's Office will be reviewed by the Department's Operations and Finance Division. The Department's Operations and Finance Division will discuss the report and recommendations with the Title VI Coordinator. The report will be modified as needed and made final for its release.~~

Once the Department's investigative report becomes final, the parties will be properly notified of the outcome and appeal rights.

~~The Department's investigative report and a copy of the complaint will be forwarded to FHWA, Washington Division Office, within 60 calendar days of the receipt of the complaint.~~

~~If the complainant is not satisfied with the results of the investigation, they shall be advised of their rights to appeal the Department's determination to the FHWA - Washington Division Office, U.S. DOT or U.S. Department of Justice. Appeals shall be filed within 180 calendar days after FHWA's final resolution. Unless new facts not previously considered come to light, reconsideration of the Department's determination will not be available.~~

~~The Department will serve as appealing forum to a complainant that is not satisfied with the outcome of an investigation conducted by a Department sub-recipient. The Department will analyze the facts of the case and issue its conclusion to the appellant within 60 calendar days of the receipt of the appeal.~~

Comments: The revision will be used as a proposal note for contracts, starting with the May letting, until the revision can be included in the October 2012 GS.

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

Replace the first paragraph of Article 1102.19, F, 5. with the following:

The contractor will promptly within 14 calendar days investigate all complaints of alleged discrimination made to the contractor in connection with its obligation under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal. The complainant ~~can~~contacts the Iowa DOT's Civil Rights Coordinator, Office of Employee Services – Civil Rights (OES-Civil Rights) for complaints of discrimination. Should the complainant contact the Iowa DOT, ~~we~~they will be referred ~~the complainant to~~ the Iowa Civil Rights Commission.

An ~~-~~individual, group of ~~-~~individuals, or ~~entity a~~ contractor ~~-~~believing they have been subjected to discrimination prohibited by ~~-~~Title VI Nondiscrimination Provisions may file a written complaint with the Iowa DOT's ~~Department's Office of Employee Services' Civil Rights Unit, (~~OES-Civil Rights Team~~)~~. A formal, signed complaint shall be filed within 180 calendar days of the alleged ~~-~~occurrence. The Iowa DOT's has a formal Civil Rights Complaint procedure. This procedure is available at www.iowa.dot.gov/civilrights.

Upon receipt of the complaint, the OES-Civil Rights Coordinator will determine its jurisdiction, acceptability, need for additional information, and investigative merit of the complaint. ~~In cases where the complaint is against one of the Department's sub-recipients of federal highway funds or federal transition funds, the Department will assume the jurisdiction and will investigate and adjusticate the case. Once the Coordinator decides to accept the complaint for investigation, the~~ The complainant and the respondent will be

notified in writing ~~within five business days~~ if the complaint is being accepted for investigation. ~~of such determination within five calendar days. The complaint will receive a case number and be logged into the OES-Civil Rights' records identifying its basis, race, color, national origin, and gender of the complainant.~~

~~In cases where the Iowa DOT Department assumes the investigation of the complaint, the Civil Rights Coordinator will provide the respondent with the opportunity to respond to the allegations in writing. The respondent will have 10 calendar days to furnish OES-Civil Rights their response to the allegations.~~

~~Within 40 calendar days of receipt of the complaint, the OES-Civil Rights investigator* will prepare an investigative report for the Director of the Department's Operations and Finance Division to review. The report will include a narrative description of the incident, identification of persons interviewed, findings and recommendations for disposition. *This may be the District/Division Title VI Liaison, Coordinator, or Title VI Specialist.~~

~~The investigative report and its finding will be sent to the Attorney General's Office for review. The Attorney General's Office will review the report and associated documentation and provide input within 10 calendar days.~~

~~Comments or recommendations from the Attorney General's Office will be reviewed by the Department's Operations and Finance Division. The Department's Operations and Finance Division will discuss the report and recommendations with the Title VI Coordinator. The report will be modified as needed and made final for its release.~~

Once the Iowa DOT~~Department~~'s investigative report becomes final, the parties will be properly notified of the outcome and appeal rights.

~~The Department's investigative report and a copy of the complaint will be forwarded to FHWA, Washington Division Office, within 60 calendar days of the receipt of the complaint.~~

~~If the complainant is not satisfied with the results of the investigation, they shall be advised of their rights to appeal the Department's determination to the FHWA - Washington Division Office, U.S. DOT or U.S. Department of Justice. Appeals shall be filed within 180 calendar days after FHWA's final resolution. Unless new facts not previously considered come to light, reconsideration of the Department's determination will not be available.~~

~~The Department will serve as appealing forum to a complainant that is not satisfied with the outcome of an investigation conducted by a Department sub-recipient. The Department will analyze the facts of the case and issue its conclusion to the appellant within 60 calendar days of the receipt of the appeal.~~

Reason for Revision: The request submitted to the Spec Committee for the November 2011 meeting was only to include Office changes for Civil Rights contacts. The proposed change to the complaint investigations was not reviewed prior to submittal and includes internal procedures that shouldn't be in the Standard Specifications.

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

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Deanna Maifield	**Office:** Design	**Item 2**
Submittal Date: 3/30/2012	**Proposed Effective Date:** 10/16/2012	
Article No.: 1105.012, B **Title:** Restrictions on Moving and Use of Heavy Equipment	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 4/12/2012	**Effective Date:** 10/16/2012

Specification Committee Approved Text:

1105.12, B.

Add as the second sentence of the sixth paragraph:

The Contractor will not be billed for crossings located within areas designed for removal of pavement after cross hauling is completed as long as the pavement is not damaged by the cross hauling.

Comments: The Office of Construction proposed including a provision that the crossing is not damaged. That way the contractor has some responsibility to protect the pavement during construction.

Specification Section Recommended Text:

1105.12, B.

Add as the second sentence of the sixth paragraph:

The Contractor will not be billed for crossings located within areas designed for removal of pavement after cross hauling is completed.

Comments:

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

1105.12, B, Restrictions on Moving and Use of Heavy Equipment.

Add the second sentence to the 6th paragraph:

The Contractor will not be billed for crossings located within areas which are designed for removal of pavement after cross hauling is completed.

Reason for Revision: This language is contained in Standard Note 211-1. The Office of design would like to add this to the Standard Specifications. The remainder of the note is already covered by the Standard Specifications. The note will be voided.

211-1
10-18-11

OVERHAUL

Equipment crossings on existing pavement will be allowed on this project and overhaul has been estimated according to current specifications. The Contractor will not be billed for crossings located within areas which are designed for removal of pavement after cross hauling is completed.

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

Industry Notified:	**Yes**	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Deanna Maifield	**Office:** Design	**Item 3**
Submittal Date: 3/30/2012	**Proposed Effective Date:** 10/16/2012	
Article No.: 1107.08 **Title:** Public Convenience and Safety	**Other:**	

Specification Committee Action:

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

Specification Committee Approved Text:

Comments: The Office of Design does not know what situations this note was originally written to cover, since U-turns at median crossovers are prohibited by law. The Office of Construction asked if this should only apply to restricted access roadways and not median crossovers intended for accessing side roads and properties. Also, IDOT policy allows use of median crossovers when both inside lanes are closed because of necessary work activity (Chapter 5.30 of the Construction Manual). The Office of Design noted that a shoulder closure would allow the contractor to enter the median and once in the median it shouldn't matter which direction the contractor leaves from. The Specifications Section noted that if we are allowing median crossovers to be used per the Construction Manual, the specifications should reflect this so that new contractors have the same information that existing contractors have. The Specifications Section proposed deferring this item to the May Spec. Committee meeting.

Specification Section Recommended Text:

1107.08, Public Convenience and Safety.

Add the Article:

N. Use of established or other median crossovers will be prohibited unless stated elsewhere in the contract documents.

Comments:

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

1107.08, Public Convenience and Safety

Add as a new article:

N. Use of established or other median crossovers will be prohibited unless stated elsewhere in the contract documents.

Reason for Revision: This is currently Standard Note 253-1. Normal practice is that contractors not be allowed to use median crossovers unless designated in the plans. The Office of Design is requesting this be added to the Standard Specifications. The Standard Note will be voided.

253-1
10-18-11

MEDIAN CROSSOVER

The Contractor is prohibited from using any established or other type median crossover on this project unless specifically designated for the Contractor's use by this plan.

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

Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe	**Office:** Construction	**Item 4**
Submittal Date: April 3, 2012	**Proposed Effective Date:** October, 2012	
Article No.: 1108.02, E **Title:** Charging of Working Days	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 4/12/2012	**Effective Date:** 10/16/2012

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: The Office of Construction indicated that they did not want to allow work not requiring inspection on Sundays and Holidays with no time charged as work is not allowed on these days without the Engineer's permission. If the Engineer allows them to work on Sundays or holiday, the Engineer would decide whether days would be charged.

The Office of Contracts does not think Saturday's will be consistently charged as inspection can vary depending on staff availability. The Office of Contracts does not approve of the revision as written, as it includes the exception for work not requiring inspection. The Office of Construction indicated that management supports the change as well as the construction industry supporting the change.

The revision was discussed at the next Statewide Operations Bureau staff meeting and with IDOT management and was approved.

Specification Section Recommended Text:

1108.02, E, 4.

Replace the Article:

Working days will not be charged for Saturdays, Sundays, and recognized legal holidays the Contractor does not work. Working days will be charged for Saturdays, Sundays, and recognized legal holidays the Contractor does work. Work not requiring inspection may be performed on Saturdays with no time charged.

1108.02, E, 5.

Delete the Article:

~~**5.** Working days will not be charged for Saturdays the Contractor does work, unless a 6 day work week is specified in the contract documents.~~

Comments: Should the allowance for Saturday work not requiring inspection also be applied to Sundays and/or holidays?

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

Revise 1108.02 E 4

4. Working days will not be charged for Saturdays, Sundays and recognized legal holidays the Contractor does not work. Working days will be charged for Saturdays, Sundays and recognized legal holidays the Contractor does work. Work that does not require inspection may be done on Saturdays with no time charged.

Delete 1108.02 E 5.

~~**5.** Working days will not be charged for Saturdays the Contractor does work, unless a 6 day work week is specified in the contract documents.~~

Reason for Revision: Work on Saturdays impacts operational costs. If inspection is needed, the day should be assessed against the contract period.

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

Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes** X	**No**
Comments: Discussed with the AGC Business Practices on February 24, 2012					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Kevin Merryman	**Office:** Construction	**Item 5**
Submittal Date: March 22, 2012	**Proposed Effective Date:** October 2012	
Article No.: 2212.03, B, 2, b **Title:** Full Depth Repair Patches (Base Cleaning and Repair)	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 4/12/2012	**Effective Date:** 10/16/2012

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: The Office of Contracts indicated that many local systems projects do not include a patch thickness. If there is no default shown in the specifications, what happens when the designer does not include a depth? The Office of Contracts does not want to review projects for a depth or write addendums for these projects that do not include a depth.

The Office of Local Systems asked how the local entities are informed of these changes. All County Engineers receive the minutes.

The Office of Design proposed leaving the default thicknesses in the specifications. The Office of Construction feels that this is allowing designers to produce poor plans. Designers will have to investigate to determine the thickness or decide on their own default thickness to place in the plans.

The Office of Design indicated that they can include an error message when designers use the standard patch tabulation if they do not include a patch depth.

Specification Section Recommended Text:

2212.03, B, 2, b.

Replace the Article:

~~**1)**~~ Construct full depth repair patches according to Section 2529. ~~with the following exceptions:~~

~~**a)** If the thickness of full depth repair patches is not shown in the contract documents, base the thickness on the existing pavement type.~~

~~**b)** Construct patches to be no less than:~~

~~**(1)** 6 inches (150 mm) for County Roads.~~

~~**(2)** 9 inches (230 mm) for Primary Roads.~~

~~**(3)** 12 inches (300 mm) for Interstate Roads.~~

~~**2)** Base maximum full depth repair patch thickness on the following:~~

~~**a) Portland Cement Concrete Repair Patch.**~~

~~**(1) Rigid Pavement:** Pavement thickness, but not more than 12 inches (300 mm).~~

~~**(2) Rigid Pavement resurfaced with HMA (composite patch):** Rigid pavement thickness and the patch covered with HMA surface.~~

~~**(3) Flexible Pavement:** Same as above for resurfaced rigid pavement.~~

~~**b) Hot Mix Asphalt Repair Patch.**~~

~~**(1) Rigid Pavement:** Pavement thickness, but not more than 12 inches (300 mm).~~

~~**(2) Rigid Pavement resurfaced with HMA:** Thickness of pavement, including resurfacing, but not more than 12 inches (300 mm).~~

~~**(3) Flexible Pavement:** Thickness of surface and base course, but not more than 12 inches (300 mm).~~

Comments:

Member's Requested Change (Redline/Strikeout):

2212.03 CONSTRUCTION.

B. Preparation and Repair of Base.

2. Base Repair.

b. Full Depth Repair Patches.

1) Construct full depth repair patches according to Section 2529~~ with the following exceptions:~~

~~**a) If the thickness of full depth repair patches is not shown in the contract documents, base the thickness on the existing pavement type.**~~

~~**b) Construct patches to be no less than:**~~

~~**(1)** 6 inches (150 mm) for County Roads.~~

~~**(2)** 9 inches (230 mm) for Primary Roads.~~

~~**(3)** 12 inches (300 mm) for Interstate Roads.~~

~~**2) Base maximum full depth repair patch thickness on the following:**~~

~~**a) Portland Cement Concrete Repair Patch.**~~

~~**(1) Rigid Pavement:** Pavement thickness, but not more than 12 inches (300 mm).~~

~~**(2) Rigid Pavement resurfaced with HMA (composite patch):** Rigid pavement thickness and the patch covered with HMA surface.~~

~~**(3) Flexible Pavement:** Same as above for resurfaced rigid pavement.~~

~~**b) Hot Mix Asphalt Repair Patch.**~~

~~**(1) Rigid Pavement:** Pavement thickness, but not more than 12 inches (300 mm).~~

~~**(2) Rigid Pavement resurfaced with HMA:** Thickness of pavement, including resurfacing, but not more than 12 inches (300 mm).~~

~~**(3) Flexible Pavement:** Thickness of surface and base course, but not more than 12 inches (300 mm).~~

Reason for Revision: Patch thickness must be shown in project plans to be compatible with the Patching Quantity Adjustment table in Article 2529.05.

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

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Deanna Maifield	**Office:** Design	**Item 6**
Submittal Date: 3/30/12	**Proposed Effective Date:** 10/16/12	
Article No.: 2301.05, K, 1 **Title:** General (PCC Pavement) **Article No.:** 2303.04, A, 3, a **Title:** Measurement by Area (HMA Mixtures)	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 4/12/2012	**Effective Date:** 10/16/2012

Specification Committee Approved Text:

2301.04, A, 1.

Add as the second sentence of the Article:

The area of manholes, intakes, or other fixtures in the pavement will not be deducted from the measured pavement area.

2301.05, K, 1.

Delete the Article:

~~Deduction will not be made from the area of pavement for fixtures with an area less than 9 square feet (1 m^2).~~

2303.04, A, 3, a.

Add as the second sentence of the Article:

The area of manholes, intakes, or other fixtures will not be deducted from the measured pavement area.

Comments: The Office of Construction asked if the first revision should more appropriately be placed in the Method of Measurement, as the second revision is. The new language has been moved to 2301.04, A, 1.

Specification Section Recommended Text:

2301.05, K, 1.

Replace the Article:

~~Deduction will not be made from the area of pavement for fixtures with an area less than 9 square feet (1 m^2).~~ The area of manholes, intakes, or other fixtures in the pavement will not be deducted from the measured pavement area.

2303.04, A, 3, a.

Add as the second sentence of the Article:

The area of manholes, intakes, or other fixtures will not be deducted from the measured pavement area.

Comments:

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

2301.05, K, 1, General.

Replace the article:

~~Deduction will not be made from the area of pavement for fixtures with an area less than 9~~

~~square feet (1 m^2).~~ The area of manholes, intakes, or other fixtures in the pavement will not be deducted from the measured pavement area.

2303.04, A, 3, a, Measurement by Area.

Add as the second sentence:

The area of manholes, intakes, or other fixtures will not be deducted from the measured pavement area.

Reason for Revision: The Office of Construction asked this revision be made to match SUDAS.

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

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger	**Office:** Materials	**Item 7**
Submittal Date: 3/29/12	**Proposed Effective Date:** October, 2012	
Article No.: 2407.03, B **Title:** Concrete (Precast and Prestressed Concrete Bridge Units)	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 4/12/2012	**Effective Date:** 10/16/2012

Specification Committee Approved Text:

2407.03, B, 4

Replace the Article:

If using HPC for prestressed concrete beams, use a mix design that has been evaluated according to ASTM C 1202 or AASHTO TP 95, and approved by the Engineer. To obtain mix design approval either:

a. Submit to the Engineer ASTM C 1202 results from mix samples taken and tested by an independent laboratory. The results shall be 1500 coulombs or less when cured using accelerated moist curing.

b. Submit to the Engineer AASHTO TP 95 results from mix samples taken and tested by an independent laboratory. The results shall be 30 kilohm-cm or more when cured for 28-day moist curing.

~~**b**~~ **c.** Contact the Engineer and arrange for a trial batch. The producer certified technician shall cast 4 inch by 8 inch cylinders for testing by the Materials Laboratory. The ASTM C 1202 results shall be 1500 coulombs or less when cured using accelerated moist curing or the AASHTO TP 95 results shall be 30 kilohm-cm or more on samples moist cured for 28 days.

~~**c**~~ **d.** When silica fume, class F fly ash, or GGBFS is used in the mix, the Engineer may waive ASTM C 1202 or AASHTO TP 95 testing.

Comments: The Office of Materials requested to allow the Engineer to waive the AASHTO TP 95 testing as they can for the ASTM C 1202.

The Office of Contracts asked about the working in the first sentence of the Article. A comma was added as well as the order changed to be consistent.

Specification Section Recommended Text:

2407.03, B, 4

Replace the Article:

If using HPC for prestressed concrete beams, use a mix design that has been evaluated according to AASHTO TP 95 or ASTM C 1202 and approved by the Engineer. To obtain mix design approval either:

a. Submit to the Engineer ASTM C 1202 results from mix samples taken and tested by an independent laboratory. The results shall be 1500 coulombs or less when cured using accelerated moist curing.

b. Submit to the Engineer AASHTO TP 95 results from mix samples taken and tested by an independent laboratory. The results shall be 30 kilohm-cm or more when cured for 28-day moist curing.

~~**b**~~ **c.** Contact the Engineer and arrange for a trial batch. The producer certified technician shall cast 4 inch by 8 inch cylinders for testing by the Materials Laboratory. The ASTM C 1202 results shall be 1500 coulombs or less when cured using accelerated moist curing or the AASHTO TP 95 results shall be 30 kilohm-cm or more on samples moist cured for 28 days.

~~**c**~~ **d.** When silica fume, class F fly ash, or GGBFS is used in the mix, the Engineer may

waive ASTM C 1202 testing.

Comments:

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

4. If using HPC for prestressed concrete beams, use a mix design that has been evaluated according to AASHTO TP95 or ASTM C 1202 and approved by the Engineer. To obtain mix design approval either:

a. Submit to the Engineer ASTM C 1202 results from mix samples taken and tested by an independent laboratory. The results shall be 1500 coulombs or less when cured using accelerated moist curing.

b. Contact the Engineer and arrange for a trial batch. The producer certified technician shall cast 4 inch by 8 inch cylinders for testing by the Materials Laboratory. The ASTM C 1202 results shall be 1500 coulombs or less when cured using accelerated moist curing or the AASHTO TP95 results shall be 30 Kohm-cm or more on samples moist cured for 28 days.

c. When silica fume, class F fly ash, or GGBFS is used in the mix, the Engineer may waive ASTM C 1202 testing.

d. Submit to the Engineer AASHTO TP95 results from mix samples taken and tested by an independent laboratory. The results shall be 30 Kohm-cm or more when cured for 28-day moist curing.

Reason for Revision: There has been considerable research nationally on a new method of testing PC concrete samples as an indicator of the concrete's permeability. It is now an AASHTO test procedure and soon to be an ASTM test procedure. The method correlates very well with the current ASTM C1202. The new method has several advantages over ASTM C1202:

1) The test equipment is less expensive and easier to operate and can be done in the field rather than having to ship samples to Ames.
2) The amount of technician time needed to prepare and test the samples is much less.
3) The results can be achieved at 28 days without an accelerated cure.
4) The testing is non-destructive so that samples can be used for strength testing after permeability testing.

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

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

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Wayne Sunday	**Office:** Construction	**Item 8**
Submittal Date: March 19, 2012	**Proposed Effective Date:** October 16, 2012	
Article No.: 2413.03, F **Title:** Curing	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 4/12/2012	**Effective Date:** 10/16/2012

Specification Committee Approved Text:

2413.03, F, 2, a, 1.

Delete the second sentence of the Article:

~~When Class HPC-O is used on projects with a deck overlay quantity greater than 1800 square yards (1500 m^2), allow the surface to cure for 168 hours.~~

Comments: The Office of Construction indicated that the 72 hour cure will be the default and the Office of Construction will need to request that the Office of Bridges and Structures include the 168 hour cure in the plan.

The Office of Contracts asked why the exception needs to be included in the specifications, when it will only be allowed when specified in the contract documents. The contract documents can always overrule the specifications and require the longer cure. Instructions and criteria for the department should not be included in the specifications.

The Office of Bridges and Structures will place a note in the Design Manual that indicates that for certain sized bridges with HPC-O concrete, the Office of Construction may require a longer cure time to be indicated in the plan.

The sentence will be deleted, so the 72 hour cure is the only cure specified in the specifications. The Office of Construction can still have the Office of Bridges and Structures specify a 168 hour cure in the plans.

Specification Section Recommended Text:

2413.03, F, 2, a, 1.

Replace the second sentence of the Article:

When Class HPC-O is used ~~on projects~~ for individual bridge decks with a deck overlay quantity greater than 1800 square yards (1500 m^2), allow the surface to cure for 168 hours when specified in the contract documents.

Comments: Should we say “unless otherwise specified in the contract documents” so that is the default?

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

F. Curing.
1. Place the first layer of prewetted burlap on the concrete as follows:
a. Interstate and Primary Projects.
Place within 10 minutes after finishing. If Class O PCC is revibrated because of failure to meet density requirements with initial vibration, place the prewetted burlap within 10 minutes after finishing of the revibrated area.
b. Other Projects.
Immediately after final finishing, cover the area finished with white pigmented curing compound meeting the requirements of Article 4105.05, applied at a rate of no more than 135 square feet per gallon (3.3 square meters per liter). Place the first layer of prewetted burlap on the concrete within 30 minutes after the concrete has been deposited on the deck. If Class O PCC is revibrated because of failure to meet density requirements with initial vibration, this time limit will be extended by 15 minutes.
2. Cure the concrete as follows:
a. For Class O PCC or Class HPC-O:

1) Allow the surface to cure for at least 72 hours. When Class HPC-O is used ~~on projects~~ for individual bridge decks with a deck overlay quantity greater than 1800 square yards (1500 m^2), allow the surface to cure for 168 hours when specified in the contract documents. **2)** Keep the burlap continuously wet by means of an automatic sprinkling or wetting system. **3)** Failure to apply wet burlap within the required time is cause for rejecting the affected work. Remove the surface concrete in the rejected area and replace at no additional cost to the Contracting Authority.					
Reason for Revision: This specification revision is being made to leave the decision for the 7 day wet cure up to the District Office based on each specific project and the effects of an extended wet cure time frame relative to the specific project constraints in expediting the work.					
County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes**	**No** X	
Industry Notified:	**Yes**	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Deanna Maifield	**Office:** Design	**Item 9**
Submittal Date: 3/30/12	**Proposed Effective Date:** 10/16/12	
Section No.: 2503 **Title:** Storm Sewers	**Other:**	

Specification Committee Action: Approved as recommended.

Deferred:	**Not Approved:**	**Approved Date:** 4/12/2012	**Effective Date:** 10/16/2012

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: None.

Specification Section Recommended Text:

2503.04, D, Connection to Existing Manhole or Intake.

Replace the article:

Connections to existing manhole or intake will be measured according to Article 2435.04, G.

2503.05, D, Connection to Existing Manhole or Intake.

Replace the article:

Connections to existing manhole or intake will be paid according to Article 2435.05, G.

Comments:

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

2503.04, D, Connection to Existing Manhole or Intake.

Replace the article:

Connections to existing manhole or intake will be paid for according to Article 2435.04, G.

2503.05, D, Connection to Existing Manhole or Intake.

Replace the article:

Connections to existing manhole or intake will be paid for according to Article 2435.05, G.

Reason for Revision: To match SUDAS.

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

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Kevin Merryman	**Office:** Construction	**Item 10**
Submittal Date: March 22, 2012	**Proposed Effective Date:** October 2012	
Article No.: 2512.03, C **Title:** Forms (PCC Curb and Gutter)	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 4/12/2012	**Effective Date:** 10/16/2012

Specification Committee Approved Text:

2301.03, A, 3, a, 2, Integral Curb Forms.

Replace the Article:

~~**a)** Use metal forms to form the back of all integral curbs, except where returns have a small radius or other special sections making the use of metal forms impractical.~~

~~**b)** Rigidly attach back forms for curb to the side forms for the pavement slab. Use all fastenings provided by the form manufacturer. Supply a sufficient length of curb forms and number of fastenings to make it possible to leave the forms in place for at least 6 hours after the curb is place.~~

~~**c)** At the time the curb form is placed, ensure the top of the pavement is free of all substances which prevent the rigid fastening or accurate alignment of the curb form. Ensure the curb form extends the plane of pavement form without a variation of more than 1/8 inch (3 mm). Set the top of the curb form at the elevation of top of curb being built, except at curb runouts.~~

~~**d)** Sloping faced curb not more than 4 inches (100 mm) in height may be shaped to the desired cross section with a curb mule without the use of face forms.~~

~~**e)** For straight sections of integral curb more than 4 inches (15 mm) high, the Contractor may use face forms or a slip form curb mule. If face forms are used, provide no less than 100 feet (30 m) for each curb being constructed. Properly secure face forms to maintain their shape and position during use. Ensure the face forms produce a curb cross section matching that of the details within the contract documents. Approved hand tools and methods may be used to supplement the forms in shaping the top roll and on returns and other special sections.~~

~~**f)** If a slip form curb mule is used, use a slip form curb mule that is no less than 6 feet (1.8 m) long, unless mounted on a machine. Obtain the Engineer's approval before using the slip form curb mule. Both back and face forms will be required when constructing barrier curbs or any curb having a top width of 8 inches (200 mm) or more.~~

Meet the requirements of section 2512, 03, C.

2512.03, C, 5.

Replace the second sentence:

If movable slip forms are used, use forms ~~that are least 6 feet (1.8 m) long with~~ providing a suitable opening for placing and consolidating concrete.

2512.03, C, Forms.

Replace the Article:

1. ~~Unless slip form equipment is permitted~~ When hand placement methods are used, form all straight sections of curb and gutter with steel forms for the full depth of the concrete. Wood forms may be used on curving sections.

2. Place a steel face, rigidly welded or bolted to the main form, on any extensions used to obtain the required depth of form.

3. Ensure the top face of forms does not vary from a true plane by more than 1/8 inch in 10 feet (3 mm in 3 m). Ensure the upstanding face, including any extension, does not vary from a true plane by more than 1/4 inch in 10 feet (6 mm in 3 m). Remove forms that are bent, twisted, warped, broken, or battered from the work. Allow Engineer to inspect and approve repaired forms before using.

4. Use flexible or rigid forms of proper curvature for curves having a radius of 100 feet (30 m) or less.

5. While concrete is being placed and consolidated, form the front face of the curb with fixed or movable forms. If movable ~~slip~~ forms are used, use forms that ~~are least 6 feet (1.8 m) long with~~ provide a suitable opening for placing and consolidating concrete. ~~Obtain Engineer's approval for slip forms.~~

6. Curb may be placed and shaped by hand methods, without the use of a front face form, provided placement tolerances in Article 2512.03, C, 3, are met. Form back of curb and consolidate to produce an integral unit with underlying gutter section.

~~6~~ **7.** Set forms with the upper edge to the correct line and grade. Firmly hold forms in place with adequate stakes and bracing.

~~7~~ **8.** Forms with height greater than the thickness of the concrete may be used, with no additional cost to the Contracting Authority for extra concrete required, if:

- The upper edge is set accurately to line and grade, and
- The subgrade is excavated to meet the bottom edge of the form in a slope not steeper than one vertical to four horizontal.

Comments: The Office of Construction realized that similar language is shown in Article 2301 and revisions to that Article will need to be made also. Article 2301 will refer to Article 2512.03, C for integral curb forms.

Subsequent to the Spec. Comm. Meeting, the Office of Construction corrected references to the Engineer permitting slip forms for curb, since Article 2512.03, B states that slip form equipment is permitted.

Specification Section Recommended Text:
2512.03, C, 5.

Replace the second sentence:

If movable slip forms are used, use forms ~~that are least 6 feet (1.8 m) long with~~ providing a suitable opening for placing and consolidating concrete.

2512.03, C.

Renumber Articles 6 and 7 and **Add** Article:

6. Curb may be placed and shaped by hand methods, without the use of a front face form, provided placement tolerances in Article 2512.03, C, 3, are met. Form back of curb and consolidate to produce an integral unit with underlying gutter section.

~~6~~ **7.** Set forms with the upper edge to the correct line and grade. Firmly hold forms in place with adequate stakes and bracing.

~~7~~ **8.** Forms with height greater than the thickness of the concrete may be used, with no additional cost to the Contracting Authority for extra concrete required, if:

- The upper edge is set accurately to line and grade, and
- The subgrade is excavated to meet the bottom edge of the form in a slope not steeper than one vertical to four horizontal.

Comments:

Member's Requested Change (Redline/Strikeout):

2512.03 CONSTRUCTION.

C. Forms.

1. Unless slip form equipment is permitted, form all straight sections of curb and gutter with steel forms for the full depth of the concrete. Wood forms may be used on curving sections.

2. Place a steel face, rigidly welded or bolted to the main form, on any extensions used to obtain the required depth of form.

3. Ensure the top face of forms does not vary from a true plane by more than 1/8 inch in 10 feet (3 mm in 3 m). Ensure the upstanding face, including any extension, does not vary from a true plane by more than 1/4 inch in 10 feet (6 mm in 3 m). Remove forms that are bent, twisted, warped, broken, or battered from the work. Allow Engineer to inspect and approve repaired forms before using.

4. Use flexible or rigid forms of proper curvature for curves having a radius of 100 feet (30 m) or less.

5. While concrete is being placed and consolidated, form the front face of the curb with fixed or movable forms. If movable slip forms are used, use forms that ~~are least 6 feet (1.8 m) long with~~ provide a suitable opening for placing and consolidating concrete. Obtain Engineer's approval for slip forms.

6. Curb may be placed and shaped by hand methods, without the use of a front face form, provided the placement tolerances in 2512.03, C, 3 are met. Form the back of curb and consolidate to produce an integral unit with the underlying gutter section.

~~6~~7. Set forms with the upper edge to the correct line and grade. Firmly hold forms in place with adequate stakes and bracing.

~~7~~8. Forms with height greater than the thickness of the concrete may be used, with no additional cost to the Contracting Authority for extra concrete required, if:

- The upper edge is set accurately to line and grade, and
- The subgrade is excavated to meet the bottom edge of the form in a slope not steeper than one vertical to four horizontal.

Reason for Revision: Common practice is to form curb by hand methods. This currently is not allowed by specification as the front face of the curb is required to be formed. It is acceptable to place curb by hand methods without a front face form provided the proper placement procedures are followed.

County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes** X	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments: Change was sent to ICPA and AGC. No comments received.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger	**Office:** Materials	**Item 11**
Submittal Date: 3/29/12	**Proposed Effective Date:** October, 2012	
Section No.: 2524 **Title:** Highway Signing	**Other:**	

Specification Committee Action:

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

Specification Committee Approved Text:

Comments: The Office of Construction asked if we need to specify the size and gauge of the posts in the specifications. The Specifications Section wondered if a Road Standard would be utilized with these posts that would give post gauge and size.

The Specifications Section asked if we need to specify that the anchor size matches the post size so that we don't get nested posts that may not be as durable or crashworthy.

The Office of Traffic and Safety asked if NCHRP Report 350 is the correct reference. The Office of Construction indicated that MASH is the current standard, with products meeting NCHRP Report 350 grandfathered in.

The Specifications Section suggested the NCHRP and MASH requirements could be removed from the specifications and included in the Materials I.M. instead where we show how to get on the approved list.

The Specifications Section asked if all references to NCHRP Report 350 need to have MASH added. The Specifications Section will do a search for references to NCHRP Report 350 in the Specs. so that they can be reviewed.

This revision will be revised to reflect changes to the post requirements and Materials I.M. and brought back for the May Spec. Comm. Meeting.

Specification Section Recommended Text:

2524.03, B, Erection of Signs, Milepost Markers, and 6 Inch by 6 Inch (150 mm by 150 mm) Route Markers.

Add the Article:

3. Perforated Square Steel Tube Posts and Anchors.

a. Position posts within anchor at the furthest corner from likely point of impact from an errant vehicle.

b. Embed post within anchor without any play.

c. Provide minimum insertion length as required by manufacturer.

d. Keep inside of break-away and slip base anchors installed in concrete free of concrete to allow interior to drain.

e. Install triangular slip base assembly as required by manufacturer.

2524.04, Method of Measurement.

Add the Articles:

G. Perforated Square Steel Tube Posts.

Linear feet (meters), to nearest foot (meter), measured from top of anchor to top of post. Embedded length will not be measured separately, but included in price bid for Perforated Square Steel Tube Posts.

H. Perforated Square Steel Tube Post Anchors.

By count of each type installed.

2524.05, Basis of Payment.

Add the Articles:

H. Perforated Square Steel Tube Posts.

1. Per linear foot (meter).

2. Payment is full compensation for furnishing, fabricating, and erecting posts.

I. Perforated Square Steel Tube Post Anchors.

1. Each, by type.

2. Payment is full compensation for providing and installing anchor, coring pavement, backfilling with concrete, slip base hardware, and other details necessary to provide anchor complete and erected in place.

4186.10, Sign Posts.

Add the Article:

D. Perforated Square Steel Tube (PSST) Posts and Anchors

Use PSST posts and anchors on the approved list in Materials I.M. 4XX and meet the following.

1. PSST Posts.

a. Provide perforated square steel tubular post of the dimensions and gauge required by the contract documents.

b. Post shall be designated “Crashworthy” as defined by NCHRP Report 350 category 2, level 3 and be FHWA accepted.

c. Galvanized post shall conform ASTM A 653, SS, Grade 50, designation G-90 or greater.

d. Cross section of post shall be a square tube roll formed and corner welded. Corner weld shall be zinc coated after scarfing operation.

e. Pre-punch 7/16 inch (11 mm) holes on 1 inch (25 mm) centers on all sides, vertically aligned and centered horizontally.

f. Furnished post shall be straight and have a smooth uniform finish. It must be possible to freely insert post into anchors and telescope consecutive sizes with a minimum amount of play.

g. If post is to be field cut, cut ends shall be coated with zinc rich paint as required per specification.

2. PSST Post Anchors.

a. Break-away, soil installation.
42 inch (1065 mm) minimum length, 7 gauge (4.76 mm) heavy duty winged anchor.

b. Break-away, concrete installation.
Posts installed in a concrete island, use a 48 inch (1220 mm) minimum length, 7 gauge (4.76 mm) heavy duty anchor. Core an 8 inch (200 mm) diameter hole through pavement at least 8 inches (200 mm) deep. After placing anchor, fill hole with concrete mix approved by the Engineer and level off top of concrete.

c. Triangular Slip Base Assembly.

1) Shall be designed in accordance with the AASHTO Standards and Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, current edition and shall meet or exceed NCHRP Report 350 and be FHWA accepted.

2) Triangular Slip Base Assembly consists of four parts: one-piece anchor, top half slip base, hardware, and concrete foundation.

a) One-piece anchor shall meet the following requirements:
- Anchor shall have a triangular slip plate (1 inch (25 mm) thick) welded directly to anchor leg.
- Anchoring portion shall be 3 inches (75 mm) square 7 gauge (4.76 mm) material and 42 inches (1065 mm) long.
- Galvanize by hot dip process, complying with ASTM A 123, grade 85.

b) Top-half slip base shall meet the following requirements:
- Cast unit from Ductile Iron meeting ASTM A 536 Class 65-45-12.
- Top half slip base shall have a triangular dimension to match 8 inch (200 mm) standard triangular slip plate, and shall receive 2.5 inch (63 mm) square sign support.

c) Hardware shall meet requirements of Article 4186.09.

d) Concrete Footings: Apply Section 2403.

Comments:

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

Add to 2524.03, B; Erection of Signs, Milepost Markers, and 6 Inch by 6 Inch (150 mm by 150 mm) Route Markers.

3. Perforated Square Steel Tube Posts and Anchors

a. Position posts within anchor at the furthest corner from the likely point of impact from an errant vehicle.

b. Embed post within anchor without any play.

c. Provide minimum insertion length as required by the manufacturer.

d. Keep inside of break-away and slip base anchors installed in concrete free of concrete to allow the interior to drain.

e. Install triangular slip base assembly as required by the manufacturer.

Add to 2524.04; METHOD OF MEASUREMENT

G. Perforated Square Steel Tube Posts.

Linear feet (meters), to the nearest foot (meter), measured from the top of the anchor to the top of the post. Embedded length will not be measured separately, but included in the price bid for Perforated Square Steel Tube Posts.

H. Perforated Square Steel Tube Post Anchors.

By count of each type installed.

Add to 2524.05 BASIS OF PAYMENT

H. Perforated Square Steel Tube Posts.

1. Per linear foot (meter).

2. Payment is full compensation for furnishing, fabricating, and erecting the posts.

I. Perforated Square Steel Tube Post Anchors.

1. Each, by type.

2. Payment is full compensation for providing and installing the anchor, coring the pavement, backfilling with concrete, slip base hardware and any other details necessary to provide the anchor complete and erected in place.

Add to 4186.10 Sign Posts

C. Perforated Square Steel Tube (PSST) Posts and Anchors

Use PSST posts and anchors that are on the approved list in Materials I.M. 4XX and meet the following.

A. PSST Posts.

h. Provide perforated square steel tubular post of the dimensions and gauge required by the contract documents.

i. Post shall be designated as "Crashworthy" as defined by NCHRP Report 350 category 2, level 3 and be FHWA accepted.

j. Galvanized post shall conform ASTM A-653, SS, Grade 50, designation G-90 or greater.

k. The cross section of the post shall be a square tube roll formed and corner welded with the corner weld to be zinc coated after the scarfing operation.

l. Perforations shall be pre-punched 7/16" holes on 1" centers on all four sides, vertically aligned and centered horizontally.

m. Furnished post shall be straight and have a smooth uniform finish. It shall be possible to freely insert post into the anchors and to telescope consecutive sizes with a minimum amount of play.

n. If post is to be field cut, cut ends must be coated with zinc rich paint as required per specification.

B. PSST Post Anchors.

d. Break-away, soil installation.
42 inch (1065 mm) minimum length, 7 gauge (4.76 mm) heavy duty winged anchor.

e. Break-away, concrete installation.
For posts installed in a concrete island, use a 48 inch (1220 mm) minimum length, 7 gauge (4.76 mm) heavy duty anchor. Core an 8 inch (200 mm) diameter hole through the pavement at least 8 inches (200 mm) deep. After placing anchor, fill the hole with concrete mix approved by the Engineer and level off the top of the concrete.

f. Triangular Slip Base Assembly.

3) Shall be designed in accordance with the AASHTO Standards and Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, current edition Minutes, Specification Committee Meeting, January 12, 2012, Page 20 of 21and shall meet or exceed NCHRP Report 350 and be FHWA accepted.

4) Triangular Slip Base Assembly consists of four parts: one-piece anchor, top half slip base, hardware, and concrete foundation.

a) One-piece anchor shall meet the following requirements:

- Anchor shall have a triangular slip plate (1 inches (25 mm) thick) welded directly to anchor leg.
- Anchoring portion shall be 3 inch (75 mm) square 7 gauge (4.76 mm) material and 42 inches (1065 mm) in length.
- Galvanizing is by the hot dip process, complying with ASTM A 123, grade 85.

b) Top-half slip base shall meet the following requirements:

- Cast unit from Ductile Iron ASTM A 536 Class 65-45-12.
- Top half slip base shall have a triangular dimension to match 8 inch (200 mm) standard triangular slip plate, and shall receive 2.5 inch (63 mm) square sign support.

c) Hardware shall meet the requirements of Article 4186.09 of the Standard Specifications.

d) Concrete Footings: Apply the provisions of Section 2403 of the Standard Specifications.

Reason for Revision: To include language for perforated square steel posts and anchors.		
County or City Input Needed (X one)	**Yes** X	**No**
Comments:		

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

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Mark Bortle	**Office:** Construction	**Item 12**
Submittal Date: April 2, 2012	**Proposed Effective Date:** October 16, 2012	
Article No.: 2528.03, I **Title:** Temporary Floodlighting **Article No.:** 4188.05 **Title:** Temporary LED Floodlighting Luminaires	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 4/12/2012	**Effective Date:** 10/16/2012

Specification Committee Approved Text:

2528.03, I, Temporary Floodlighting.

Replace the Article:

~~**1.** Ensure floodlighting is installed and in service before work is started that requires nighttime traffic control by the traffic control plan.~~

~~**2.** Ensure temporary floodlighting meets the following:~~
- ~~**a.** Pole-mounted luminaire or a luminaire mounted on portable equipment.~~
- ~~**b.** Mounting height of luminaires is no less than 35 feet (11 m) above the roadway, and as shown in the contract documents. Pole length determined by field measurement to obtain specified mounting height.~~
- ~~**c.** Clearance for overhead wiring a minimum of 18 feet (5.5 m). Auxiliary poles used to furnish power to floodlighting offset 30 feet (9 m) from the traveled way unless there are right of way restrictions.~~
- ~~**d.** Poles placed outside the normal shoulder line at the approximate locations shown in the contract documents.~~
- ~~**e.** Above ground lighting circuits are aluminum or A.C.S.R. triplex.~~
- ~~**f.** Underground lighting circuits are type U.S.E. or U.F.~~

~~**3.** Meet the following requirements for luminaires used for floodlighting:~~
- ~~**a.** Standard roadway types with totally enclosed refractors.~~
- ~~**b.** IES glare control rating of "cut off".~~
- ~~**c.** The lamps with an initial output rating of 19,000 lumens or greater.~~
- ~~**d.** Photoelectric controlled for dusk to dawn operation.~~
- ~~**e.** Approval of the Engineer.~~

~~**4.** Exercise reasonable care to avoid interruptions during the hours of darkness, promptly repair damage to the system, and replace all burned out lamps as soon as possible.~~

1. General.
- **a.** Set up and operate either pole mounted or portable, mobile self contained LED temporary floodlights at locations shown in contract documents.
- **b.** Ensure floodlighting is installed and in service before commencing work requiring nighttime traffic control according to the traffic control plan.
- **c.** Exercise reasonable care to avoid interruptions during hours of darkness, promptly repair damage to system, and replace burned out lamps promptly.

2. Equipment.
- **a. Pole Mounted Floodlights**.
  - **1)** Pole-mounted luminaire.
  - **2)** Mounting height of luminaires is no less than 35 feet (11 m) above the roadway and as shown in the contract documents. Pole length determined by field measurement to obtain specified mounting height.
  - **3)** Place poles outside normal shoulder line at approximate locations shown on the contract documents.
  - **4)** Meet the following requirements for floodlighting luminaires:

- Standard roadway types with totally enclosed refractors.
- IES glare control rating of "cut off".
- Lamps with initial output rating at least 19,000 lumens.
- Photoelectric controlled for dusk to dawn operation.
- Approval of the Engineer.

5) Ensure clearance for overhead wiring at least 18 feet (5.5 m). Auxiliary poles used to furnish power to floodlighting offset 30 feet (9 m) from traveled way unless there are right-of-way restrictions.

6) Above ground lighting circuits are aluminum or A.C.S.R. triplex.

7) Underground lighting circuits are type U.S.E. or U.F.

b. Portable, Mobile Self Contained LED Floodlights.

1) Mounted on portable trailers containing solar cell array and storage battery system to power LED luminaire. Ensure system meets NCHRP 350 Category IV crash testing.

2) Ensure mounting height of LED luminaires is no less than 17 feet (5.2 m) above roadway, or as shown in the contract documents.

3) Locate portable trailers so LED luminaire is centered over outside edge of pavement and trailer is on shoulder offset as far as possible from traveled way

4) Meet materials requirements of Article 4188.05 for LED Floodlighting Luminaires.

4188, Traffic Control Devices.

Add the Article:

4188.05 Temporary LED Floodlighting Luminaires.

Furnish luminaires made for portable, mobile self contained, floodlights for temporary traffic control zones. Luminaire shall have IES LM-79-08 report from qualified independent laboratory verifying luminaire performance, including the following requirements:

- L70 @ 25°C of 70,000 hours.
- LED color temperature of 4000 cct - 5000 cct.
- LED light engines meet dust and moisture rating of IP-66.
- Designed and tested to comply with ANSI C136.31 2001 for 100,000 cycles at 3G acceleration for normal and bridge applications.
- Surge protection for LED driver and electronics - category C high (20kV, 10kA).
- Totally enclosed glass refractor lenses with type IV distribution.
- IES glare control rating of "full cut off".
- Minimum initial output rating of 7200 lumens.
- Meets State of Iowa Energy Code requirements for LED roadway lighting (66 lm/W).
- Photoelectric controlled for dusk to dawn operation.

Comply with Materials I.M. 488.06 for inspection and acceptance of Temporary LED Floodlighting Luminaires.

Comments: The Office of Construction requested to add a note in Article 2528.03, I, 1 that gives the contractor the option of either temporary floodlighting luminaire type.

The Office of Traffic and Safety asked about a cutoff for the LED luminaires so that if the batteries are not fully charged, the lights will shut off instead of getting dim, not meeting the lighting requirements. Also, we need battery requirements for a minimum capacity should we not have sun. The Office of Design suggested creating a separate Article in the specifications that would give requirements for solar installations, including orientation, battery capacity, etc. that could be referenced for all items requiring solar arrays and storage battery systems. This new specification will be submitted for the May Spec. Comm. Meeting.

Specification Section Recommended Text:

2528.03, I, Temporary Floodlighting.

Replace the Article:

~~**1.** Ensure floodlighting is installed and in service before work is started that requires nighttime traffic control by the traffic control plan.~~

~~**2.** Ensure temporary floodlighting meets the following:~~

~~**a.** Pole mounted luminaire or a luminaire mounted on portable equipment.~~

~~**b.** Mounting height of luminaires is no less than 35 feet (11 m) above the roadway, and as shown in the contract documents. Pole length determined by field measurement to obtain specified~~

~~mounting height.~~

~~**c.** Clearance for overhead wiring a minimum of 18 feet (5.5 m). Auxiliary poles used to furnish power to floodlighting offset 30 feet (9 m) from the traveled way unless there are right-of-way restrictions.~~

~~**d.** Poles placed outside the normal shoulder line at the approximate locations shown in the contract documents.~~

~~**e.** Above ground lighting circuits are aluminum or A.C.S.R. triplex.~~

~~**f.** Underground lighting circuits are type U.S.E. or U.F.~~

~~**3.** Meet the following requirements for luminaires used for floodlighting:~~

~~**a.** Standard roadway types with totally enclosed refractors.~~

~~**b.** IES glare control rating of "cut off".~~

~~**c.** The lamps with an initial output rating of 19,000 lumens or greater.~~

~~**d.** Photoelectric controlled for dusk to dawn operation.~~

~~**e.** Approval of the Engineer.~~

~~**4.** Exercise reasonable care to avoid interruptions during the hours of darkness, promptly repair damage to the system, and replace all burned out lamps as soon as possible.~~

1. General.

d. Set up and operate temporary floodlights as shown in contract documents.

e. Ensure floodlighting is installed and in service before commencing work requiring nighttime traffic control according to the traffic control plan.

f. Exercise reasonable care to avoid interruptions during hours of darkness, promptly repair damage to system, and replace burned out lamps promptly.

2. Equipment

a. Pole Mounted Floodlights

8) Pole-mounted luminaire.

9) Mounting height of luminaires is no less than 35 feet (11 m) above the roadway and as shown in the contract documents. Pole length determined by field measurement to obtain specified mounting height.

10) Place poles outside normal shoulder line at approximate locations shown on the contract documents.

11) Meet the following requirements for floodlighting luminaires:

- Standard roadway types with totally enclosed refractors.
- IES glare control rating of "cut off".
- Lamps with initial output rating at least 19,000 lumens.
- Photoelectric controlled for dusk to dawn operation.
- Approval of the Engineer.

12) Ensure clearance for overhead wiring at least 18 feet (5.5 m). Auxiliary poles used to furnish power to floodlighting offset 30 feet (9 m) from traveled way unless there are right-of-way restrictions.

13) Above ground lighting circuits are aluminum or A.C.S.R. triplex.

14) Underground lighting circuits are type U.S.E. or U.F.

b. Portable, Mobile Self Contained LED Floodlighting Luminaires

5) Mounted on portable trailers containing solar cell array and storage battery system to power LED luminaire. Ensure system meets NCHRP 350 Category IV crash testing.

6) Ensure mounting height of LED luminaires is no less than 17 feet (5.2 m) above roadway, or as shown in the contract documents.

7) Locate portable trailers so LED luminaire is centered over outside edge of pavement and trailer is on shoulder offset as far as possible from traveled way

8) Meet materials requirements of Article 4188.05 for LED Floodlighting Luminaires.

4188, Traffic Control Devices.

Add the Article:

4188.05 Temporary LED Floodlighting Luminaires.

Furnish luminaires made for portable, mobile self contained, floodlights for temporary traffic control zones. Luminaire shall have IES LM-79-08 report from qualified independent laboratory verifying luminaire performance, including the following requirements:

- L70 @ 25°C of 70,000 hours.

- LED color temperature of 4,000 cct - 5,000 cct.
- LED light engines meet dust and moisture rating of IP-66.
- Designed and tested to comply with ANSI C136.31 2001 for 100,000 cycles at 3G acceleration for normal and bridge applications.
- Surge protection for LED driver and electronics - category C high (20kV, 10kA).
- Totally enclosed glass refractor lenses with type IV distribution.
- IES glare control rating of "full cut off".
- Minimum initial output rating of 7,200 lumens.
- Meets State of Iowa Energy Code requirements for LED roadway lighting (66 lm/W).
- Photoelectric controlled for dusk to dawn operation.
- Comply with Materials I.M. 488.06 for inspection and acceptance of Temporary LED Floodlighting Luminaires.

Comments:

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

REVISED ENTIRE ARTICLE:

2528.03.I. Temporary Floodlighting.

1. General.

a. Set up and operate temporary floodlights as shown in the contract documents.
b. Ensure floodlighting is installed and in service before work is started that requires nighttime traffic control by the traffic control plan.
c. Exercise reasonable care to avoid interruptions during the hours of darkness, promptly repair damage to the system, and replace all burned out lamps as soon as possible.
d.

2. Equipment

a. Pole Mounted Floodlights

1) Pole-mounted luminaire
2) Mounting height of luminaires is no less than 35 feet (11 m) above the roadway, and as shown in the contract documents. Pole length determined by field measurement to obtain specified mounting height.
3) Poles placed outside the normal shoulder line at the approximate locations shown in the contract documents.
4) Meet the following requirements for luminaires used for floodlighting:
   - Standard roadway types with totally enclosed refractors.
   - IES glare control rating of "cut off".
   - The lamps with an initial output rating of 19,000 lumens or greater.
   - Photoelectric controlled for dusk to dawn operation.
   - Approval of the Engineer.
5) Clearance for overhead wiring a minimum of 18 feet (5.5 m). Auxiliary poles used to furnish power to floodlighting offset 30 feet (9 m) from the traveled way unless there are right-of-way restrictions.
6) Above ground lighting circuits are aluminum or A.C.S.R. triplex.
7) Underground lighting circuits are type U.S.E. or U.F.

b. Portable, Mobile Self Contained LED Floodlights

1) Mounted on portable trailers which contain a solar cell array and storage battery system to power the LED luminaire. System shall meet NCHRP 350 Category IV crash testing.
2) Mounting height of LED luminaires is no less than 17 feet (5.2 m) above the roadway, or as shown in the contract documents.
3) Portable trailers located such that the LED luminaire is centered over the outside edge of the pavement and the trailer itself is on the shoulder offset as far as possible from the traveled way
4) Meet the materials requirements in article 4188.05 for LED sourced luminaires used for floodlighting.

NEW ARTICLE:

4188.05 Temporary LED Floodlighting Luminaires

Furnish LED sourced luminaires made for use in portable, mobile self contained floodlights for temporary traffic

control zones. LED luminaire shall have IES LM-79-08 report from qualified independent laboratory verifying luminaire performance, including the following requirements:

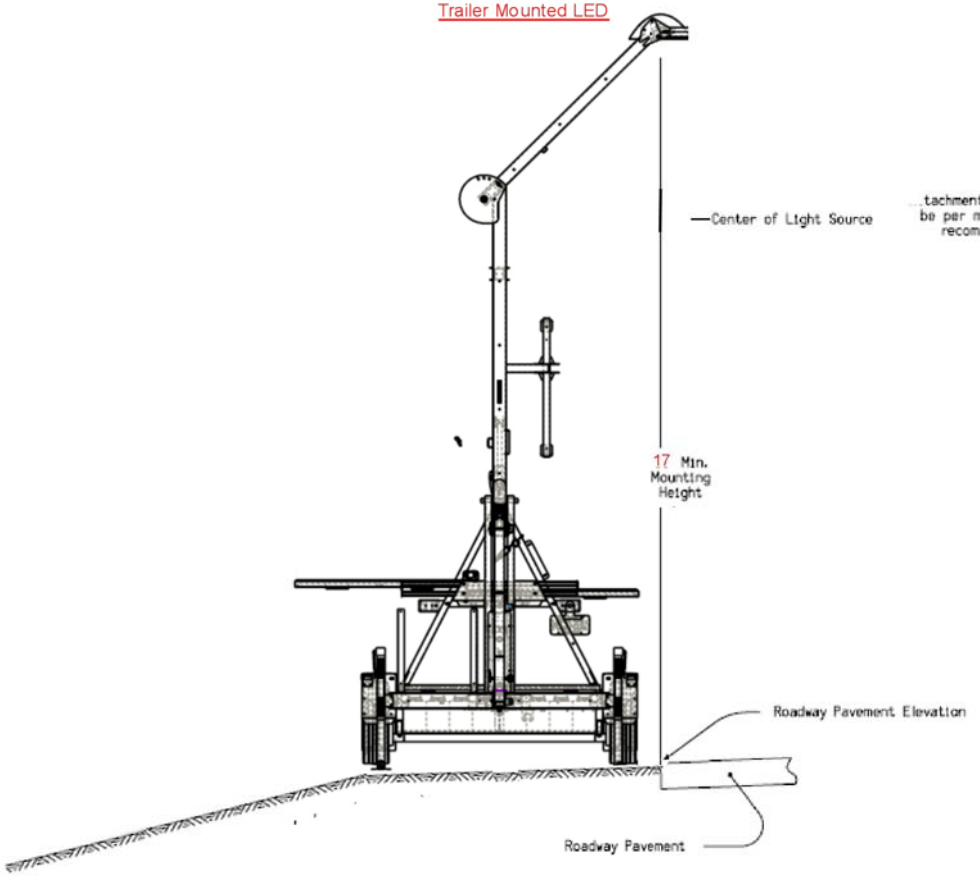
- **A.** L70 @25 degree C of 70,000 hours
- **B.** LED color temperature of 4,000cct- 5,000cct
- **C.** LED light engines meet dust and moisture rating of IP-66
- **D.** Designed and tested to comply with ANSI C136.31 2001 for 100,000 cycles at 3G acceleration for normal and bridge applications.
- **E.** Surge protection for LED driver and electronics- category C high (20kV, 10kA)
- **F.** Totally enclosed glass refractor lenses with type IV distribution.
- **G.** IES glare control rating of "full cut off".
- **H.** The LED luminaire will have initial output rating of 7,200 lumens or greater.
- **I.** LED luminaire shall meet State of Iowa Energy Code requirements for LED roadway lighting. (66 lm/W)
- **J.** Photoelectric controlled for dusk to dawn operation.
- **K.** Comply with Materials IM 488.06 for inspection and acceptance of Temporary LED Floodlighting Luminaires

Reason for Revision: To update temporary floodlights to allow the use of Portable, Mobile Self Contained LED Floodlights. This change will mitigate some of the issues with having a licensed electrician for any temporary hardwired connections to existing power lines and the oftentimes remote locations that need hardwired lighting requiring conduits to be run for up to many miles to obtain a power source. In addition, these would be “green” power to mitigate any need for external power sources. RM-48, Temporary Floodlighting Standard Road Plan is being revised in conjunction with this specification change and will be effective with the October 2012 letting. A draft Materials IM 488.06 is attached.

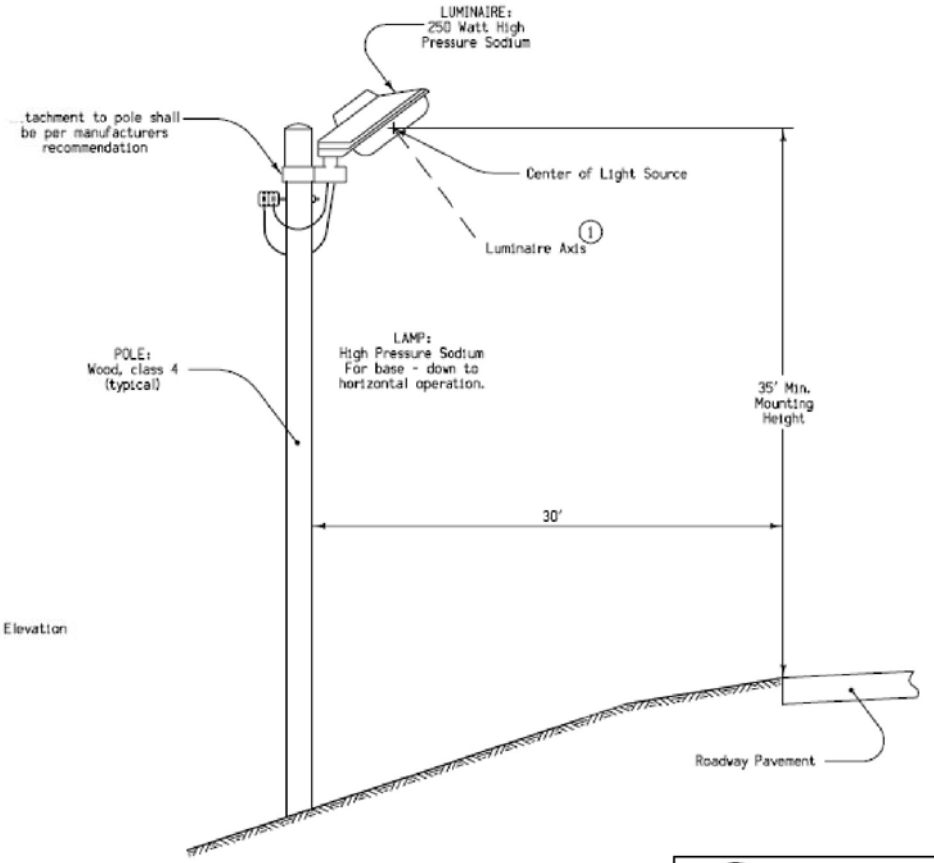
County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes**	**No** X	
Industry Notified:	**Yes**	**No**	**Industry Concurrence:**	**Yes**	**No**

Comments: I have worked with LED lighting manufactures to develop this generic specification. In the past year, LED luminaires have increased in availability and capabilities, such that there should be no problem in having at least three vendors on the approved list.

Trailer Mounted LED



OFFSET



ıaire axis shall be directed to within the limits
nearest traffic lane unless specified otherwise.

Contract Item:
Temporary Floodlighting Luminaire

Tabulation:
108-27

Iowa Department of Transportation

STANDARD ROAD PLAN

REVISION 3 10-16-12

RM-48

SHEET 2 of 2

REVISIONS: Added Sheet 2 to include trailer mounted LED floodlights.

Deanna Maifield
APPROVED BY DESIGN METHODS ENGINEER

TEMPORARY FLOODLIGHTING

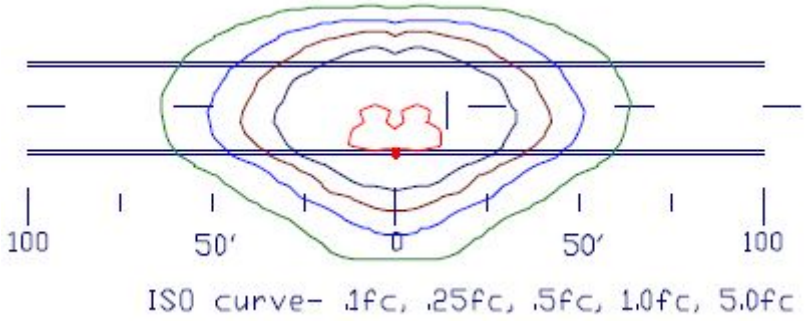
Iowa Department of Transportation

Office of Materials

October 16, 2012 Matls. IM 488.06
NEW

INSPECTION & ACCEPTANCE
TEMPORARY LED FLOODLIGHTING LUMINAIRES

GENERAL
The Temporary LED Floodlighting Luminaire consists of an LED luminaire used for lighting temporary traffic control zones. These luminaires shall meet the requirements of Article 4188.05 and the following ISO Chart.



ACCEPTANCE
Acceptance of Temporary LED Floodlighting Luminaire will be based on satisfactory review of an evaluation of a preliminary sample furnished to the Iowa Department of Transportation, Office of Materials, Ames, Iowa, a review of the qualified independent laboratory report, and the manufacturer certification statement of specification compliance. A list of approved manufacturers based on preliminary sample evaluation, review of the laboratory report, and certification documentation will be developed and maintained by the Office of Materials. This list appears in Appendix A.

CERTIFICATION
The manufacturer shall provide the Project Inspector the following statement of certification:

Certification Statement

This is to certify that (manufacturer name, product number) this Temporary LED Floodlighting Luminaire meets the requirements of the applicable specifications of the Iowa Department of Transportation.

_____
Authorized Signature and Date

A responsible manufacturer representative shall sign the certification statement.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Kevin Merryman	**Office:** Construction	**Item 13**
Submittal Date: March 22, 2012	**Proposed Effective Date:** October 2012	
Section No.: 2529 **Title:** Full Depth Finish Patches	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 4/12/2012	**Effective Date:** 10/16/2012

Specification Committee Approved Text:

2529.01, B.

Add the Articles:

8. Full depth PCC finish patches (50 feet (15 m) or greater in length).

9. Full depth HMA finish patches (50 feet (15 m) or greater in length).

2529.03, A, 1.

Replace the fourth sentence of the Article:

The patch thickness and type of patch material ~~may~~ will be included.

2529.03, B, Full Depth Patch Thickness.

Delete the Article:

~~**B. Full Depth Patch Thickness.**~~

~~If full depth patch thickness is not shown in the contract documents, establish thickness as follows:~~

~~**1. HMA Patches.**~~

~~Interstate and Primary pavement: the thickness of the HMA pavement, but no less than 9 inches (230 mm) or more than 15 inches (380 mm).~~

~~**2. PCC Patches.**~~

~~**a.** PCC pavements on Interstate and Primary Roads: the thickness of the pavement but no less than 9 inches (230 mm) or more than 12 inches (300 mm).~~

~~**b.** County roads: thickness no less than 6 inches (150 mm) or more than 12 inches (300 mm).~~

~~**3. Composite Patches.**~~

~~PCC pavements which have been resurfaced with HMA: patch materials and thickness the same as the existing pavement except the PCC portion of the patch is not to be less than 9 inches (230 mm) or more than 12 inches (300 m) unless specified otherwise in the contract documents. If the HMA resurfacing exceeds 4 1/2 inches (120 mm) (nominal) place an HMA patch, unless specified otherwise in the contract documents.~~

2529.03, H, 2

Replace the Article:

Place, consolidate, finish, and cure ~~of the~~ concrete as provided in Section 2301, except as follows:

a. Moisten the subbase or subgrade or cover with a single layer of plastic film meeting requirements of Section 4107.

b. Except for preplanned joints, place the patch in a continuous manner until placement is completed. When a delay of 45 minutes cannot be avoided, construct an appropriate DW joint.

c. Dump or convey the concrete into the patch areas to avoid segregation ~~of the aggregates and cement~~. Spread it into place and vibrate with a mechanical vibrator. Smooth the concrete and finish it to the elevation of the adjacent ~~PCC~~ pavement surface. Avoid excessive vibrating.

2529.03, I, Smoothness.

Replace the first sentence of the Article:

Apply Section 2316 to smoothness of full depth finish patches (except when the contract includes an overlay or pavement surface repair by diamond grinding or milling within the patch area) with the following modifications for Full Depth Finish Patches (50 feet (15 m) or greater in length):

2529.03, I, 1.

Delete the third sentence of the Article:

~~For each patch added by the Engineer that is greater than 50 foot (15 m) long, the Contractor will be paid $500 in addition to the appropriate unit prices involved. This is to compensate for additional smoothness requirements.~~

2529.03, K, 5.

Delete the third sentence of the Article:

~~A flagger will be required at these locations.~~

2529.03, K, 6.

Delete the Article:

~~**6.** When HMA patches on two-lane roadways and PCC patches with calcium chloride are constructed, adjust the work schedule so all equipment and obstructions are removed from the travel lanes and shoulders from 30 minutes before sunset to 30 minutes after sunrise.~~

2529.05, A, 1, a.

Replace the Article:

Each. The type or types of patches to be counted will be identified ~~by the following types~~ and tabulated in the contract documents.

~~**1)** Full Depth HMA Finish Patches.~~
~~**2)** Full Depth PCC Finish Patches, Without Dowels.~~
~~**3)** Full Depth PCC Finish Patches, Without Dowels, Composite Section.~~
~~**4)** Full Depth PCC Finish Patches, With Dowels.~~
~~**5)** Full Depth PCC Finish Patches, Composite Section.~~
~~**6)** Full Depth PCC Finish Patches, Continuously Reinforced.~~
~~**7)** Full Depth PCC Finish Patches, Continuously Reinforced, Composite Section.~~

2529.05, A, 2, Full Depth Finish Patches, by Area.

Rename the Article:

Full Depth Finish Patches, by Area and Full Depth Finish Patches, by Area (50 Feet (15 m) or Greater in Length).

2529.05, A, 2, b.

Replace the Article:

Payment is full compensation for:

- Removal of the old pavement,
- Restoring the subgrade or subbase,
- Furnishing and installation of tie bars,
- Restoring longitudinal reinforcement for continuously reinforced patches, ~~and~~
- Furnishing and placing the patching material, including the asphalt binder, tack coat, curing, joint sealing, and placing backfill material in the disturbed area~~.~~ and,
- Profilograph testing and any required profile correction for patches 50 feet (15 m) or greater in length.

2529.05, A, 2, c.

Replace Table 2529.05-1, Patching Quantity Adjustment:

Table 2529.05-1: Patching Quantity Adjustment

% Change of Thickness	% Change of Quantity
0 to 10	0
> 10 to 20	10
> 20 to 30	15
> 30	~~20~~ Paid per Article 1109.03, B

2529.05, F, 2.

Replace the second sentence of the Article:

If removal of anchor lugs is not a bid item in the contract documents, payment will be paid $~~600~~ 1200 per lane in which an anchor lug, or portion of anchor lug, is removed.

Comments: The Office of Contracts asked if we needed to list the patch type in Article 2529.04, A, 1, a, if we don't have separate bid items for all of the patch types. The only bid items are Patches, Full-Depth Finish, by Area and Patches, Full-Depth Finish, by Count. The list of patch types will be deleted from Article 2529.04, A, 1, a. The list will remain in Article 2529.01, B. The only new bid item added will be Patches, Full-Depth Finish, by Area (50 Feet (15 m) or Greater in Length).

The Office of Construction requested to include profile correction in the Basis of Payment for patches 50 feet (15 m) or greater in length.

Specification Section Recommended Text:

2529.01, B.

Add the Articles:

8. Full depth PCC finish patches (50 feet (15 m) or greater in length).

9. Full depth HMA finish patches (50 feet (15 m) or greater in length).

2529.03, A, 1.

Replace the fourth sentence of the Article:

The patch thickness and type of patch material ~~may~~ will be included.

2529.03, B, Full Depth Patch Thickness.

Delete the Article:

~~**B. Full Depth Patch Thickness.**~~

~~If full depth patch thickness is not shown in the contract documents, establish thickness as follows:~~

~~**1. HMA Patches.**~~

~~Interstate and Primary pavement: the thickness of the HMA pavement, but no less than 9 inches (230 mm) or more than 15 inches (380 mm).~~

~~**2. PCC Patches.**~~

~~**a.** PCC pavements on Interstate and Primary Roads: the thickness of the pavement but no less than 9 inches (230 mm) or more than 12 inches (300 mm).~~

~~**b.** County roads: thickness no less than 6 inches (150 mm) or more than 12 inches (300 mm).~~

~~**3. Composite Patches.**~~

~~PCC pavements which have been resurfaced with HMA: patch materials and thickness the same as the existing pavement except the PCC portion of the patch is not to be less than 9 inches (230 mm) or more than 12 inches (300 m) unless specified otherwise in the contract documents. If the HMA resurfacing exceeds 4 1/2 inches (120 mm) (nominal) place an HMA patch, unless specified otherwise in the contract documents.~~

2529.03, H, 2

Replace the Article:

Place, consolidate, finish, and cure ~~of the~~ concrete as provided in Section 2301, except as follows:

a. Moisten the subbase or subgrade or cover with a single layer of plastic film meeting requirements of Section 4107.

b. Except for preplanned joints, place the patch in a continuous manner until placement is completed. When a delay of 45 minutes cannot be avoided, construct an appropriate DW joint.

c. Dump or convey the concrete into the patch areas to avoid segregation ~~of the aggregates and cement~~. Spread it into place and vibrate with a mechanical vibrator. Smooth the concrete and finish it to the elevation of the adjacent ~~PCC~~ pavement surface. Avoid excessive vibrating.

2529.03, I, Smoothness.

Replace the first sentence of the Article:

Apply Section 2316 to smoothness of full depth finish patches (except when the contract includes an overlay or pavement surface repair by diamond grinding or milling within the patch area) with the following modifications for Full Depth Finish Patches (50 feet (15 m) or greater in length):

2529.03, I, 1.

Delete the third sentence of the Article:

~~For each patch added by the Engineer that is greater than 50 foot (15 m) long, the Contractor will be paid $500 in addition to the appropriate unit prices involved. This is to compensate for additional smoothness requirements.~~

2529.03, K, 5.

Delete the third sentence of the Article:

~~A flagger will be required at these locations.~~

2529.03, K, 6.

Delete the Article:

~~**6.** When HMA patches on two-lane roadways and PCC patches with calcium chloride are constructed, adjust the work schedule so all equipment and obstructions are removed from the travel lanes and shoulders from 30 minutes before sunset to 30 minutes after sunrise.~~

2529.05, A, 1, a.

Add the Articles:

8) Full depth PCC Finish Patches (50 feet (15 m) or greater in length).

9) Full depth HMA Finish Patches (50 feet (15 m) or greater in length).

2529.05, A, 2, b.

Replace the Article:

Payment is full compensation for:

- Removal of the old pavement,
- Restoring the subgrade or subbase,
- Furnishing and installation of tie bars,
- Restoring longitudinal reinforcement for continuously reinforced patches, ~~and~~
- Furnishing and placing the patching material, including the asphalt binder, tack coat, curing, joint sealing, and placing backfill material in the disturbed area~~.~~ and,
- Profilograph testing for Full Depth Finish Patches (50 feet (15 m) or greater in length).

2529.05, A, 2, c.

Replace Table 2529.05-1, Patching Quantity Adjustment:

Table 2529.05-1: Patching Quantity Adjustment

% Change of Thickness	% Change of Quantity
0 to 10	0
> 10 to 20	10
> 20 to 30	15
> 30	~~20~~ Paid per Article 1109.03, B

2529.05, F, 2.

Replace the second sentence of the Article:

If removal of anchor lugs is not a bid item in the contract documents, payment will be paid $~~600~~ 1200 per lane in which an anchor lug, or portion of anchor lug, is removed.

Comments:

Member's Requested Change (Redline/Strikeout):

2529.01 DESCRIPTION.

B. Work under this specification may include the types of patches listed below. Generally, the patch type will be consistent with the existing pavement.

1. Full depth HMA finish patches.

2. Full depth PCC finish patches, without dowels.

3. Full depth PCC finish patches, without dowels, composite section.

4. Full depth PCC finish patches, with dowels.

5. Full depth PCC finish patches, with dowels, composite section.

6. Full depth PCC finish patches, continuously reinforced.

7. Full depth PCC finish patches, continuously reinforced, composite section.

8. Full depth PCC finish patches (50 feet or greater in length).

9. Full depth HMA finish patches (50 feet or greater in length).

2529.03 CONSTRUCTION.

A. General.

1. The contract documents will include a tabulation of patches showing location and approximate area. This tabulation is intended primarily for estimating purposes. The actual patch location and size will be determined by the Engineer. The patch thickness and type of patch material ~~may~~ will be included. The contract documents will identify the existing pavement type, thickness, and reinforcement, and may identify the coarse aggregate classification.

~~**B. Full Depth Patch Thickness.**~~
~~If full depth patch thickness is not shown in the contract documents, establish thickness as follows:~~

~~**1. HMA Patches.**~~
~~Interstate and Primary pavement: the thickness of the HMA pavement, but no less than 9 inches (230 mm) or more than 15 inches (380 mm).~~

~~**2. PCC Patches.**~~
~~**a.** PCC pavements on Interstate and Primary Roads: the thickness of the pavement but no less than 9 inches (230 mm) or more than 12 inches (300 mm).~~
~~**b.** County roads: thickness no less than 6 inches (150 mm) or more than 12 inches (300 mm).~~

~~**3. Composite Patches.**~~
~~PCC pavements which have been resurfaced with HMA: patch materials and thickness the same as the existing pavement except the PCC portion of the patch is not to be less than 9 inches (230 mm) or more than 12 inches (300 m) unless specified otherwise in the contract documents. If the HMA resurfacing exceeds 4 1/2 inches (120 mm) (nominal) place an HMA patch, unless specified otherwise in the contract documents.~~

~~**C**~~**B. Pavement Removal.**

~~**D**~~**C. Restoring Subbase or Subgrade for Full Depth Finish Patches.**

~~**E**~~**D. Restoring Reinforcement for Portland Cement Concrete and Continuously Reinforced Concrete Finish Patches.**

~~**F**~~**E. Subdrains.**

~~**G**~~**F. Placing Full Depth Hot Mix Asphalt Finish Patches.**

~~**H**~~**G. Placing Full Depth Portland Cement Concrete Finish Patches.**

2. Place, consolidate, finish, and cure ~~of~~ the concrete as provided in Section 2301, except as follows:
a. Moisten the subbase or subgrade or cover with a single layer of plastic film meeting requirements of

Section 4107.

b. Except for preplanned joints, place the patch in a continuous manner until placement is completed. When a delay of 45 minutes can not be avoided, construct an appropriate DW joint.

c. Dump or convey the concrete into the patch areas to avoid segregation ~~of the aggregates and cement.~~ Spread it into place and vibrate with a mechanical vibrator. Smooth the concrete and finish it to the elevation of the adjacent ~~PCC~~ pavement surface. Avoid excessive vibrating.

~~I~~H. Smoothness.

Apply Section 2316 to smoothness of full depth finish patches (except when the contract includes an overlay or pavement surface repair by diamond grinding or milling within the patch area) with the following modifications:

1. ~~Profilometer~~ For Full Depth Finish Patches (50 Feet or Greater in Length), profilograph testing and evaluation is required for each patch ~~with a length of 50 feet (15 m) or more~~. Perform the testing near the center of the traffic lane after the patch is placed. ~~For each patch added by the Engineer that is greater than 50 foot (15 m) long, the Contractor will be paid $500 in addition to the appropriate unit prices involved. This is to compensate for additional smoothness requirements.~~

2. ~~Patches 50 feet~~ For Full Depth Finish Patches (50 Feet or Greater in Length) up to 100 feet (30 m) in length:

a. Test the patch length, and the existing pavement in that lane, for a distance of three times the patch length on both ends of the patch. If a patch occurs near a bridge, an intersection, and so forth, where the proper distance can not be tested, make up the required total on the other end of the patch. If interference occurs on both ends, test only to the points of interference.

b. Establish one Average Base Index (ABI) of the pavement for both ends of patch.

c. Calculate a new index for the entire length.

d. Compare the new index with the ABI.

1) If the new index does not exceed the ABI, the work is acceptable and no correction is required.

2) Corrective action is also not required if the new profilometer index is equal to or less than 12 inches per mile (190 mm/km), regardless of the ABI.

3) If the new profilometer index is greater than 12 inches per mile (190 mm/km) and less than 30 inches per mile (470 mm/km) and is also within 2 inches per mile (32 mm/km) of the ABI, corrective action is not required.

4) If the new profilometer index is greater than 30 inches per mile (470 mm/km), corrective action is required to reduce the new index at least to the ABI.

e. Corrective action involves correction of bumps and dips exceeding a vertical height of 0.5 inch (13 mm) in a 25 foot (7.6 m) span in the patch, if identified from the trace, plus appropriate surface correction within the patch and existing pavement, or both, on either end of the patch within the limits tested.

3. ~~Patches~~ Full Depth Finish Patches (50 Feet or Greater in Length) 100 feet to 250 feet (30 m to 75 m) in length: Article 2529.03, I, 2, above applies, except the length tested is the patch length, and the existing pavement in that lane for a distance of 300 feet (90 m) on both ends of the patch.

4. ~~Patches~~ Full Depth Finish Patches (50 Feet or Greater in Length) over 250 feet (75 m) in length: Apply the requirements for Chart B pavement, Section 2316.

~~J~~I. Area Restoration.

~~K~~J. Limitation of Operations.

5. When conditions permit, patch areas may extend up to 2 feet (0.6 m) into an adjacent lane. When this encroachment is not tabulated in the contract documents, it shall be approved by the Engineer prior to beginning work. ~~A flagger will be required at these locations.~~ Work in an adjacent lane shall be completed and opened to traffic the same day using PCC (Class A or B) or HMA to match the normal patch area material.

~~**6.** When HMA patches on two-lane roadways and PCC patches with calcium chloride are constructed, adjust the work schedule so all equipment and obstructions are removed from the travel lanes and shoulders from 30 minutes before sunset to 30 minutes after sunrise.~~

~~**7**~~**6.** When PCC patches without calcium chloride are constructed, place two drums meeting the requirements

of Article 2528.03, C, in front of each patch location where there is a possibility of turning into or returning to the closed lane. Additional drums need not be placed for patches spaced closer than 150 feet (45 m).

~~8~~**7.** If unforeseen difficulties should result in excavated areas being left overnight, assign a sufficient number of flaggers to warn and direct traffic until the areas are complete. No extra payment will be made for the necessary flaggers.

~~9~~**8.** Limit full depth sawing to patch areas scheduled to be constructed the following work day. The Engineer may limit advance sawing.

~~10~~**9.** Do not reconstruct pressure relief joints within patch areas. When these joints extend into adjacent lanes, construct a full depth patch in the adjacent lane as directed by the Engineer.

1~~1~~**10.** Joints and edges of PCC patches to be sealed may be cleaned and sealed as soon as the vertical surfaces appear dry by visual examination. Complete sealing within 5 working days after the patch is placed. For PCC patches to be covered by HMA, cover them with HMA during the working day the curing is completed.

1~~2~~**11.** When other work is included in the contract, sequence the operations in an area in the following order:
- **a.** Undersealing,
- **b.** Longitudinal subdrains,
- **c.** Patching,
- **d.** Milling,
- **e.** Installation of retrofit load transfer, and then
- **f.** Crack and joint sealing.

1~~3~~**12.** If a DW joint becomes necessary, fill the area following the joint with a suitable temporary hot or cold paving mixture or stable granular material, as directed by the Engineer.

2529.05 BASIS OF PAYMENT.

For construction of the various items measured for pavement patches, the Contractor will be paid as follows:

A. Full Depth Finish Patches.

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

1. Full Depth Finish Patches, by Count.

a. Each. The type or types of patches to be counted will be identified by the following types and tabulated in the contract documents.
- **1)** Full Depth HMA Finish Patches.
- **2)** Full Depth PCC Finish Patches, Without Dowels.
- **3)** Full Depth PCC Finish Patches, Without Dowels, Composite Section.
- **4)** Full Depth PCC Finish Patches, With Dowels.
- **5)** Full Depth PCC Finish Patches, Composite Section.
- **6)** Full Depth PCC Finish Patches, Continuously Reinforced.
- **7)** Full Depth PCC Finish Patches, Continuously Reinforced, Composite Section.
- 8) Full depth PCC finish patches (50 feet or greater in length).
- 9) Full depth HMA finish patches (50 feet or greater in length).

b. Payment is full compensation for all sawing or cutting necessary and for furnishing and installation of dowel bars at patch edges.

2. Full Depth Finish Patches, by Area.

a. Per square yard (square meter) to the nearest 0.1 square yards (m^2).

b. Payment is full compensation for:
- Removal of the old pavement,
- Restoring the subgrade or subbase,
- Furnishing and installation of tie bars,
- Restoring longitudinal reinforcement for continuously reinforced patches, ~~and~~
- Furnishing and placing the patching material, including the asphalt binder, tack coat, curing,

joint sealing, and placing backfill material in the disturbed area~~.~~ ~~and,~~

- Profilograph testing for patches 50 feet or greater in length.

c. When the average thickness of a patch at any one location varies from the patch thickness shown in the plans, the square yard (square meter) patching quantity will be adjusted per Table 2529.05-1. Quantities will be increased when patch thickness is greater than shown in the plans and decreased when less than shown in the plans. Adjustments will not be made for increased thickness due to damaged subgrade, base, or subbase as described in Article 2529.03, D, 2.

Table 2529.05-1: Patching Quantity Adjustment

% Change of Thickness	% Change of Quantity
0 to 10	0
> 10 to 20	10
> 20 to 30	15
> 30	~~20~~ To be paid per Article 1109.03, B.

F. Removal of Anchor Lugs.

2. Payment is full compensation for removal and for furnishing and placing subbase material, as specified. If removal of anchor lugs is not a bid item in the contract documents, payment will be paid $~~600~~1200 per lane in which an anchor lug, or portion of anchor lug, is removed.

Reason for Revision: The proposed language reflects changes agreed upon in a meeting with patching industry representatives in December 2011. Changes include addition of a bid item for patches 50 feet or greater in length to address smoothness evaluation and correction issues, deletion of the patching quantity adjustment for patches differing from plan thickness by greater than 30%, and adjustment to the payment rate for removal of buried lugs. The general patch thickness language is being deleted because patch thickness must be shown in the project plans to be compatible with the Patching Quantity Adjustment table for overdepth/underdepth patches.

County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes** X	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes** X	**No**
Comments: These changes were discussed and agreed upon in a meeting with industry representatives in December 2011.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger	**Office: Materials**	**Item 14**
Submittal Date: 2012.02.29	**Proposed Effective Date:** October 2012	
Article No.: 2552.02 **Title:** Materials (Trench Excavation and Backfill) **Section No.:** 4118 **Title:** Pipe Bedding Material and Trench Stabilization (Foundation) Material	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 4/12/2012	**Effective Date:** 10/16/2012

Specification Committee Approved Text:

2552.02, B, Bedding Material.

Rename and **Replace** the Article:

Bedding (Class I) Material.

~~**1. Class I Material.**~~

~~**a.** Crushed stone complying with the following gradation:~~

~~Sieve~~	~~Percent Passing~~
~~1 1/2 inch (37.5 mm)~~	~~100~~
~~1 inch (25 mm)~~	~~95 to 100~~
~~1/2 inch (12.5 mm)~~	~~25 to 60~~
~~No. 4 (4.75 mm)~~	~~0 to 10~~
~~No. 8 (2.36 mm)~~	~~0 to 5~~

~~**b.** The Engineer may allow the use of gravel or authorize a change in gradation subject to materials available locally at the time of construction~~

~~**c.** The Engineer may authorize the use of crushed PCC for pipe sizes up to 12 inches (300 mm).~~

~~**d.** Use aggregates having a percentage of wear, Grading A or B, not exceeding 50%, determined according to AASHTO T 96.~~

Meet the requirements of Section 4118.

Division 41, Construction Materials.

Add Section:

Section 4118. Pipe Bedding Material.

4118.01 DESCRIPTION.

Gravel or crushed stone. Crushed PCC may be used if approved by the Engineer.

4118.02 GRADATION.

Meet the requirements for Gradation No. 3 of the Aggregate Gradation Table, Article 4109.02 (Appendix). Restrictions on the No. 200 sieve do not apply.

4118.03 QUALITY.

The requirements of Table 4118.03-1 apply to individual virgin aggregates:

Table 4118.03-1: Coarse Aggregate Quality (Virgin Material)

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	50	AASHTO T 96
C - Freeze	15	Iowa 211, Method C

For crushed PCC, meet requirements of Materials I.M. 210.

Appendix.

Replace the Gradation Table.

See attached Gradation Table.

Comments: SUDAS did not want to change the gradation for stabilization (foundation) material. The changes related to this request were dropped by the Office of Materials.

The Office of Construction noted that we cannot delete the Class I Material reference, since Class I material is referred to in other parts of the specifications. Class I will be added to the heading.

Specification Section Recommended Text:

2552.02, B, Bedding Material.

Replace the Article:

~~**1. Class I Material.**~~

~~**a.** Crushed stone complying with the following gradation:~~

~~Sieve~~	~~Percent Passing~~
~~1 1/2 inch (37.5 mm)~~	~~100~~
~~1 inch (25 mm)~~	~~95 to 100~~
~~1/2 inch (12.5 mm)~~	~~25 to 60~~
~~No. 4 (4.75 mm)~~	~~0 to 10~~
~~No. 8 (2.36 mm)~~	~~0 to 5~~

~~**b.** The Engineer may allow the use of gravel or authorize a change in gradation subject to materials available locally at the time of construction~~

~~**c.** The Engineer may authorize the use of crushed PCC for pipe sizes up to 12 inches (300 mm).~~

~~**d.** Use aggregates having a percentage of wear, Grading A or B, not exceeding 50%, determined according to AASHTO T 96.~~

Meet the requirements of Section 4118.

2552.02, E, Stabilization (Foundation) Materials.

Replace the Article:

~~**1.** Clean 2 1/2 inch (63.5 mm) crushed stone with the following gradation:~~

~~Sieve~~	~~Percent Passing~~
~~2 1/2 inch (63 mm)~~	~~100~~
~~2 inch (50 mm)~~	~~90 to 100~~
~~1 1/2 inch (37.5 mm)~~	~~35 to 70~~
~~1 inch (25 mm)~~	~~0 to 20~~
~~1/2 inch (12.5 mm)~~	~~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 4118.

Division 41, Construction Materials.

Add Section:

Section 4118. Pipe Bedding Material and Trench Stabilization (Foundation) Material.

4118.01 DESCRIPTION.

A. For Pipe Bedding Material: Gravel or crushed stone. Crushed PCC may be used if approved by the Engineer.

B. For Trench Stabilization Material: Crushed stone. Crushed PCC may be used if approved by the Engineer**.**

4118.02 GRADATION.

A. For Pipe Bedding Material: meet the requirements for Gradation No. 3 of the Aggregate Gradation Table, Article 4109.02 (Appendix). Restrictions on the No. 200 sieve do not apply.

B. For Trench Stabilization Material: meet the requirements for Gradation No. 13 of the Aggregate Gradation Table, Article 4109.02 (Appendix).

4118.03 QUALITY.

The requirements of Table 4118.03-1 apply to individual virgin aggregates:

Table 4118.03-1: Coarse Aggregate Quality (Virgin Material)

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	50	AASHTO T 96
C - Freeze	15	Iowa 211, Method C

For crushed PCC, meet requirements of Materials I.M. 210.

Comments:

Section 2552. Trench Excavation and Backfill

B. Bedding and Backfill Material.

Meet the requirements of Article 4118.

~~1. Class I Material.~~

~~a. Crushed stone complying with the following gradation:~~

~~Sieve~~	~~Percent Passing~~
~~1 1/2 inch (37.5 mm)~~	~~100~~
~~1 inch (25 mm)~~	~~95 to 100~~
~~1/2 inch (12.5 mm)~~	~~25 to 60~~
~~No. 4 (4.75 mm)~~	~~0 to 10~~
~~No. 8 (2.36 mm)~~	~~0 to 5~~

~~b. The Engineer may allow the use of gravel or authorize a change in gradation subject to materials available locally at the time of construction~~

~~c. The Engineer may authorize the use of crushed PCC for pipe sizes up to 12 inches (300 mm).~~

~~d. Use aggregates having a percentage of wear, Grading A or B, not exceeding 50%, determined according to AASHTO T 96.~~

~~D~~ E. Stabilization (Foundation) Materials.

Meet the requirements of Article 4118.

~~**1.** Clean 2 1/2 inch (63.5 mm) crushed stone with the following gradation:~~

~~**Sieve**~~	~~**Percent Passing**~~
~~2 1/2 inch (63 mm)~~	~~100~~
~~2 inch (50 mm)~~	~~90 to 100~~
~~1 1/2 inch (37.5 mm)~~	~~35 to 70~~
~~1 inch (25 mm)~~	~~0 to 20~~
~~1/2 inch (12.5 mm)~~	~~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.~~

Reason for Revision: Moving aggregate specifications from 2552 to the 4100 series of specifications. Referencing known gradations and removing the gradations from the body of 2552. This is necessary for material certification as well as minimizing confusion on the part of aggregate producers. Removing the line from 2552 that allows any gradation or any material. Adding a C-freeze requirement to eliminate the use of shale which will break-down through wet-dry cycles. Moving “gravel” to the description to encourage its use without special provision.

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

AGGREGATE GRADATION TABLE – ENGLISH

Grad. No.	Section No.	Std. Sieve Size	1½"	1"	3/4"	1/2"	3/8"	#4	#8	#30	#50	#100	#200	
		Intended Use	Percent Passing											*Notes
1	4110,4125, 4133	PCC FA Cover Agg.					100	90-100	70-100	10-60			0-1.5	1
3	4115 (57, 2-8), 4118	PCC CA	100	95-100		25-60		0-10	0-5				0-1.5	2,11
4	4115 (2-8)	PCC CA	100	50-100	30-100	20-75	5-55	0-10	0-5				0-1.5	11
5	4115 (67, 2-8)	PCC CA		100	90-100		20-55	0-10	0-5				0-1.5	11
6	4115.05 (Repair & Overlay)	PCC CA			100	97-100	40-90	0-30					0-1.5	11
7	4117 (Class V)	PCC FA & CA	100					80-92	60-75	20-40				
8	4117.03 (Class V)	Fine Limestone					100	90-100					0-30	
10	4120.02, 4120.03 (C Gravel)	Granular Surface			100			50-80	25-60					3, 12
11	4120.02, 4120.04, 4120.05, 4120.07 (A, B, Cr. St.)	Granular Surface & Shoulder		100	95-100	70-90		30-55	15-40				6-16	4, 5, 12
12a	4121 (Cr. St.)	Granular Subbase	100			40-80			5-25				0-6	6, 12
12b	4121 (Cr. Gravel)	Granular Subbase	100			50-80			10-30		5-15		3-7	7, 12
13	4122.02 (Cr. St.)	Macadam St. Base	3" nominal maximum size – screened over 3/4" or 1" screen											12
14	4123	Modified Subbase	100		70-90				10-40				3-10	5, 7, 12
19	4125 (1/2" Cr. Gr. or Cr. St.)	Cover Aggregate			100	97-100	40-90	0-30	0-15				0-2	12
20	4125 (1/2" Scr. Gr.)	Cover Aggregate			100	95-100	40-80	0-15	0-7				0-1.5	12
21	4125 (3/8")	Cover Aggregate				100	90-100	10-55	0-20	0-7			0-1.5	12
22	4124.02	Fine Slurry Mixture					100	85-100	40-95	20-60	14-35	10-25	5-25	10, 12
23	4124.02 (Cr. St.)	Coarse Slurry Mixture					100	70-90	40-70	19-42			5-15	12
29	4131	Porous Backfill			100	95-100	50-100	0-50	0-8					12
30	4132.02 (Cr. St.)	Special Backfill	100						10-40				0-10	5, 12
31	4132.03 (Gravel)	Special Backfill		100	90-100	75-100			30-55				3-7	12
32	4133 (Sand/Gr./Cr. St.)	Granular Backfill	100% passing the 3" screen						10-100				0-10	8, 9, 12
35	4133.05 (Natural Sand/Gr.)	Floodable Backfill	100						20-90				0-4	12
36	4133.05 (Natural Sand)	Floodable Backfill							100				0-2	12

Notes: (Gradations Nos. 2, 9, 15, 16, 17, 18, 24, 25, 26, 27, 28, 33 and 34 have been deleted.)

*For numbered notes, see page 2.

1. For Section 4110, when the fine aggregate is sieved through the following numbered sieves - 4, 8, 16, 30, 50, and 100 - not more than 40% shall pass one sieve and be retained on the sieve with the next higher number.

2. When used in precast and prestressed concrete bridge beams, 100% shall pass the 1" sieve. When used for pipe bedding the No. 200 restriction does not apply.

3. When compaction of material is a specification requirement, the minimum percent passing the No. 200 sieve is 6%.

4. See specifications for combination of gravel and limestone.

5. Unwashed air-dried samples of crushed composite material shall be tested for gradation compliance except that no gradation determination will be made for material passing the No. 200 sieve.

6. The gradation requirement for the No. 8 sieve shall be 5% to 20% when recycled material is supplied.

7. For Section 4121 gravel, one fractured face on 30% or more of the particles retained on the 3/8-inch sieve. For Section 4123 gravel, one fractured face on 75% or more of the particles retained on the 3/8-inch sieve.

8. Crushed stone shall have 100% passing the 1.5" sieve.

9. When granular backfill is used in floodable applications, use gradation 35 or 36. When granular backfill is used under flowable mortar, one of the following alternative materials shall be used: natural sand compliant with Section 4110, except the % passing the No. 200 sieve shall not exceed 4%; gravel, crushed stone, or crushed concrete meeting the gradation requirements of Section 4121.

10. Gradation limitations for the 30, 50 and 100 sieves shall not apply when slurry mixture is applied by hand lutes, such as for slurry leveling.

11. Maximum of 2.5% passing the No. 200 sieve allowed if generated from the parent material when documented production is 1% or less as determined by the Office of Materials.

12. When Producer gradation test results are used for acceptance, test results representing at least 90% of the material being produced shall be within the gradation limits and the average of all gradation results shall be within the gradations limits. Stockpiled material not meeting the criteria may, at the District Materials Engineer's discretion, be resampled using Materials I.M. 301 procedures. One hundred percent of the stockpile quality control and verification test results shall be within the gradation limits.

HMA Gyratory gradation requirements are listed in IM 510, Appendix A.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Roger Bierbaum	**Office:** Contracts	**Item 15**
Submittal Date: February 22, 2012	**Proposed Effective Date:** October 2012 GS	
Section No.: 2602 **Title:** Water Pollution Control	**Other:** SS-09015, Mobilization for Erosion Control	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 4/12/2012	**Effective Date:** 10/16/2012

Specification Committee Approved Text:

2602.03, A.

Replace the Article:

Prior to the preconstruction conference, furnish the Engineer an initial Erosion Control Implementation Plan (ECIP) for accomplishment of temporary and permanent erosion control. ~~In addition, furnish the proposed method of erosion control on haul roads and borrow pits as well as the plan for the removal of excess materials from the project.~~

In the ECIP, include stages for erosion control work to address Contractor's timetable and sequence for major activities or stages on the contract, including:

- Initial controls required prior to land disturbing activities,
- Number of earthwork balances for the contract,
- Sensitive areas requiring special consideration,
- Anticipated suspension of work,
- Compliance with Pollution Prevention Plan (PPP),
- Method of erosion control on haul roads and borrow pits, and
- Removal of excess materials from project.

2602.03, Construction.

Add the Articles:

L. Mobilizations, Erosion Control.

1. Mobilizations, Erosion Control, applies to contracts not identified as erosion control or landscaping and containing at least one of the following items:

- Stabilizing crop seeding and fertilizing: 1 acre (0.4 ha) or more,
- Stabilizing crop seeding and fertilizing (urban): 1 acre (0.4 ha) or more,
- Silt fence: 250 feet (75 m) or more, or
- Silt fence for ditch checks: 250 feet (75 m) or more.

2. Only one mobilization will be paid for each stage of work described in the ECIP. Within the scope of work defined for each single mobilization described in the ECIP, additional movement due to weather delays or at the option of the Contractor will not be counted as a mobilization.

3. Separate mobilizations needed for different crews performing work such as silt fence, seeding, or ditch checks will be counted, however, multiple mobilizations will not be paid for a single crew performing different items of erosion control work.

4. Payment for mobilization applies to contract items from Sections 2601 and 2602, excluding watering, mowing, debris pickup, monitoring well, or removal items.

5. Additional mobilizations not outlined in the ECIP must be approved by the Engineer.

6. Payment for mobilization to correct items not properly installed will not be approved. Payment for mobilization will also not be approved if labor, equipment, and materials to perform erosion control are used for other non-erosion control work onsite.

7. Mobilize with sufficient labor, equipment, and materials to perform erosion control included in ECIP or as ordered or approved by Engineer. Failure to mobilize when erosion control work is needed to comply with the ECIP or PPP, will result in the Engineer, by written order, direct

mobilization within 72 hours of a written order.

8. Failure to mobilize within such time period, will result in a deduction of $750.00 per calendar day from payment due under the contract, except when Engineer extends such time period.

9. Mobilizations, Erosion Control, will not include work provided under the item of Mobilizations, Emergency Erosion Control.

M. Mobilizations, Emergency Erosion Control.
An emergency will be considered to be a sudden occurrence of a serious and urgent nature which is beyond normal maintenance of erosion control items. Emergency work requires immediate mobilization and movement of necessary labor, equipment, and materials to the emergency site, followed by immediate installation of temporary erosion control measures.

1. Mobilize with sufficient labor, equipment, and materials on job site within eight hours of Engineer's written order to install temporary erosion control items on an emergency basis. Engineer's written order will include a description of required work. Only one mobilization will be paid for work described in the written order.

2. Failure to mobilize within eight hours of written order, will result in a deduction of $1500.00 per calendar day from payment due under the contract, except when Engineer extends such time period.

2602.04, Method of Measurement.

Add the Articles:

M. 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.

N. Mobilizations, Emergency Erosion Control.
By count for each mobilization directed in writing by Engineer and acceptably performed.

2602.05, Basis of Payment.

Renumber Articles B, C, and D and **Add** the Article:

B. Payment for Mobilizations, Erosion Control, and Mobilizations, Emergency Erosion Control, will be at unit prices stipulated in the proposal. If bid items are not included in the proposal then mobilizations for erosion control will paid at unit prices stipulated below. Mobilization for Erosion Control costs are not included as part of the contract item for "Mobilization" described in Section 2533.

1. Mobilizations, Erosion Control.
The quantity will be paid for at the unit price of $500.00 each for Mobilizations, Erosion Control, which is full compensation for staged movement of labor, equipment, and materials; and labor, tools, equipment, and incidentals necessary to complete the movement.

2. Mobilizations, Emergency Erosion Control.
The quantity will be paid for at the unit price of $1000.00 each for Mobilizations, Emergency Erosion Control, which is full compensation for movement of labor, equipment and materials; and for labor, tools, equipment, and incidentals necessary to complete the movement.

~~**B**~~ **C.** When it is necessary for the Contractor to clean out, repair, or reconstruct a silt ditch, dike, or basin, the additional payment will be 100% of the contract unit price for construction of that item. When applicable bid items are not in the contract documents, payment for clean out, repair, or reconstruction will be according to Article 1109.03, B.

~~**C**~~ **D.** If water control measures are required due to the Contractor's negligence, carelessness, or failure to install the controls as a part of the work as scheduled, and are ordered by the Engineer, perform this work at no additional cost to the Contracting Authority.

~~**D**~~ **E.** All water pollution control features are to be in functional condition before final acceptance of the contract.

Comments: The Office of Construction asked if there will be an item in the Design Manual letting the

designers know when and how to add the bid items. The Office of Design indicated that they will add something to the Design Manual and share this with the Office of Local Systems.

The Office of Construction noted that there appears to be an error in Article 2602.03, L, 9. The word "not" had been omitted and has now been added back in.

Specification Section Recommended Text:

2602.03, A.

Replace the Article:

Prior to the preconstruction conference, furnish the Engineer an initial Erosion Control Implementation Plan (ECIP) for accomplishment of temporary and permanent erosion control. ~~In addition, furnish the proposed method of erosion control on haul roads and borrow pits as well as the plan for the removal of excess materials from the project.~~

In the ECIP, include stages for erosion control work to address Contractor's timetable and sequence for major activities or stages on the contract, including:

- Initial controls required prior to land disturbing activities,
- Number of earthwork balances for the contract,
- Sensitive areas requiring special consideration,
- Anticipated suspension of work,
- Compliance with Pollution Prevention Plan (PPP),
- Method of erosion control on haul roads and borrow pits, and
- Removal of excess materials from project.

2602.03, Construction.

Add the Articles:

L. Mobilizations, Erosion Control.

1. Mobilizations, Erosion Control, applies to contracts not identified as erosion control or landscaping and containing at least one of the following items:
- Stabilizing crop seeding and fertilizing: 1 acre (0.4 ha) or more
- Stabilizing crop seeding and fertilizing (urban): 1 acre (0.4 ha) or more
- Silt fence: 250 feet (75 m) or more
- Silt fence for ditch checks: 250 feet (75 m) or more

2. Only one mobilization will be paid for each stage of work described in the ECIP. Within the scope of work defined for each single mobilization described in the ECIP, additional movement due to weather delays or at the option of the Contractor will not be counted as a mobilization.

3. Separate mobilizations needed for different crews performing work such as silt fence, seeding, or ditch checks will be counted, however, multiple mobilizations will not be paid for a single crew performing different items of erosion control work.

4. Payment for mobilization applies to contract items from Sections 2601 and 2602, excluding watering, mowing, debris pickup, monitoring well, or removal items.

5. Additional mobilizations not outlined in the ECIP must be approved by the Engineer.

6. Payment for mobilization to correct items not properly installed will not be approved. Payment for mobilization will also not be approved if labor, equipment, and materials to perform erosion control are used for other non-erosion control work onsite.

7. Mobilize with sufficient labor, equipment, and materials to perform erosion control included in ECIP or as ordered or approved by Engineer. Failure to mobilize when erosion control work is needed to comply with the ECIP or PPP, will result in the Engineer, by written order, direct mobilazation within 72 hours of a written order.

8. Failure to mobilize within such time period, will result in a deduction of $750.00 per calendar day from payment due under the contract, except when Engineer extends such time period.

9. Mobilizations, Erosion Control, will include work provided under the item of Mobilizations, Emergency Erosion Control.

M. Mobilizations, Emergency Erosion Control.
An emergency will be considered to be a sudden occurrence of a serious and urgent nature which is beyond normal maintenance of erosion control items. Emergency work requires immediate mobilization and movement of necessary labor, equipment, and materials to the emergency site, followed by immediate installation of temporary erosion control measures.

1. Mobilize with sufficient labor, equipment, and materials on job site within eight hours of Engineer's written order to install temporary erosion control items on an emergency basis. Engineer's written order will include a description of required work. Only one mobilization will be paid for work described in the written order.

2. Failure to mobilize within eight hours of written order, will result in a deduction of $1500.00 per calendar day from payment due under the contract, except when Engineer extends such time period.

2602.04, Method of Measurement.

Add the Articles:

M. 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.

N. Mobilizations, Emergency Erosion Control.
By count for each mobilization directed in writing by Engineer and acceptably performed.

2602.05, Basis of Payment.

Renumber Articles B, C, and D and **Add** the Article:

B. Payment for Mobilizations, Erosion Control, and Mobilizations, Emergency Erosion Control, will be at unit prices stipulated in the proposal. If bid items are not included in the proposal then mobilizations for erosion control will paid at unit prices stipulated below. Mobilization for Erosion Control costs are not included as part of the contract item for "Mobilization" described in Section 2533.

1. Mobilizations, Erosion Control.
The quantity will be paid for at the unit price of $500.00 each for Mobilizations, Erosion Control, which is full compensation for staged movement of labor, equipment, and materials; and labor, tools, equipment, and incidentals necessary to complete the movement.

2. Mobilizations, Emergency Erosion Control.
The quantity will be paid for at the unit price of $1000.00 each for Mobilizations, Emergency Erosion Control, which is full compensation for movement of labor, equipment and materials; and for labor, tools, equipment, and incidentals necessary to complete the movement.

~~**B**~~ **C.** When it is necessary for the Contractor to clean out, repair, or reconstruct a silt ditch, dike, or basin, the additional payment will be 100% of the contract unit price for construction of that item. When applicable bid items are not in the contract documents, payment for clean out, repair, or reconstruction will be according to Article 1109.03, B.

~~**C**~~ **D.** If water control measures are required due to the Contractor's negligence, carelessness, or failure to install the controls as a part of the work as scheduled, and are ordered by the Engineer, perform this work at no additional cost to the Contracting Authority.

~~**D**~~ **E.** All water pollution control features are to be in functional condition before final acceptance of the contract.

Comments: The Office of Construction had concerns regarding how to handle mobilizations for erosion control if the bid items are not included on the proposal. As per Article 2602.05, B, they would be paid at the prices indicated in the specification. The Office of Construction would like the Engineer to have the discretion of adding the bid items by extra work order (if multiple mobilizations will be required) or having the mobilization be incidental (if only one mobilization will be required. The Specifications Section will revise Article 2602.05, B, to alleviate the Office of Construction's concerns.

The Office of Construction also indicated that the criteria for bidding mobilizations for erosion control will need to be added to the Design Manual. The Specifications Section asked if this criteria should be included in the Specification.

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

Incorporate SS-09015 (Mobilization for Erosion Control) into the General Supplemental Specifications. Formatting changes will be necessary to incorporate the SS into the GS. The only change in the specification is to state "The mobilizations for erosion control will be paid at the unit prices stipulated in the proposal. If no bid items are included in the proposal then the mobilizations for erosion control will paid at the unit prices stipulated in this specification."

Reason for Revision: The criteria for when mobilization for erosion control has expanded to more projects, but the consistency for adding the SS to proposals has decreased. Therefore it is desired that the specification is included in the GS and the bid items added by the designers rather than by Contracts.

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

SS-09015
(Replaces SS-09011)

Iowa Department of Transportation

SUPPLEMENTAL SPECIFICATIONS
FOR
MOBILIZATION FOR EROSION CONTROL

Effective Date
November 15, 2011

THE STANDARD SPECIFICATIONS, SERIES 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SUPPLEMENTAL SPECIFICATIONS AND THEY PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

09015.01 MOBILIZATIONS, EROSION CONTROL.

A. Prior to the Preconstruction Conference, submit for ~~approval~~ acceptance an initial Erosion Control Implementation Plan (ECIP) for accomplishing ~~all~~ aspects of erosion control work. In the ECIP include a description of additions or modifications to the contract. ~~Do not implement deviations from the approved ECIP without the Engineer's written permission.~~

B. During the ~~course of the~~ contract, review ECIP with the Engineer and modify as needed to address changes in schedule of operations, staging, weather changes, or other changes required to comply with applicable permit requirements, or when there are changes to the number of mobilizations.

~~B~~C. In the ECIP, include stages for erosion control work to address the Contractor's timetable and sequence for major activities or stages on the contract, including the number of Mobilizations, Erosion Control, anticipated for the contract. In the consideration of the number of mobilizations consider, as a minimum:

- Initial controls required prior to land disturbing activities,
- ~~Clearing and grubbing activities,~~
- The number of earthwork balances for the contract,
- Sensitive areas requiring special consideration,
- Anticipated suspension of work,
- Compliance with the Pollution Prevention Plan (PPP), and
- Separate mobilizations needed for different crews performing work such as silt fence, seeding, or ditch checks (however, multiple mobilizations will not be paid for a single crew performing different items of erosion control work ~~that require the same equipment to be mobilized~~).

~~C~~D. Only one mobilization will be paid for each stage of work described in the ECIP. Within the scope of work defined for each single mobilization described in the ECIP, additional movement due to weather delays or at the option of the Contractor will not be counted as a mobilization.

E. Payment for mobilization applies to contract items from Sections 2601 and 2602 of the Standard Specifications, excluding watering, mowing, debris pickup, monitoring well, or removal items.

~~D~~F. Additional mobilizations not outlined in the ECIP must be approved by the Engineer. ~~Only one mobilization will be paid for each stage of additional work approved by the Engineer.~~

G. Payment for mobilization to correct items not properly installed will not be approved. Payment for mobilization will also not be approved if labor, equipment, and materials to perform erosion control is used for other non-erosion control work onsite.

~~E~~H. Mobilize with sufficient labor, equipment, and materials to perform the erosion control included in the ECIP or as ordered or approved by the Engineer. If the Contractor fails to mobilize when erosion control work is needed to comply with the ECIP ~~and~~ or the PPP, the Engineer will, by written order, direct the Contractor to mobilize within 72 hours of a written order.

~~F~~I. If the Contractor fails to mobilize within such time period, a deduction of $750.00 per calendar day will be made from money due under the contract, except when the Engineer extends such time period.

~~G~~J. Mobilizations, Erosion Control is not to include work provided under the item of Mobilizations, Emergency Erosion Control.

09015.02 MOBILIZATIONS, EMERGENCY EROSION CONTROL.
An emergency will be considered to be a sudden occurrence of a serious and urgent nature which ~~requires work not included in the contract or~~ is beyond normal maintenance of erosion control items ~~and the mobilizations included in the erosion control implementation plan~~. Emergency work requires immediate mobilization and movement of necessary labor, equipment, and materials to the emergency site, followed by the immediate installation of temporary erosion control measures.

A. Mobilize with sufficient labor, equipment, and materials on the job site within eight hours of the Engineer's written order to install temporary erosion control items on an emergency basis. The Engineer's written order will include a description of the required work. Only one mobilization will be paid for the work described in the written order.

B. If the Contractor fails to mobilize within eight hours of the written order, a deduction of $1500.00 per calendar day will be made from money due under the contract, except when the Engineer extends such time period.

09015.03 METHOD OF MEASUREMENT.

A. Mobilizations, Erosion Control: units. The quantity measured for payment will be the number of such mobilizations in the ~~approved~~ accepted ECIP and acceptably performed, as well as all additional mobilizations ordered or approved by the Engineer and acceptably performed.

B. Mobilizations, Emergency Erosion Control: units. The quantity measured for payment will be the number of such mobilizations directed in writing by the Engineer and acceptably performed.

09015.04 BASIS OF PAYMENT.
Payment for Mobilizations, Erosion Control, and Mobilizations, Emergency Erosion Control will be ~~according to Article 1109.03, B, 1, of the Standard Specifications,~~ at the unit prices stipulated in this specification. Mobilization for Erosion Control costs are not included as part of the contract item for "Mobilization" described in Section 2533 of the Standard Specifications.

A. Mobilizations, Erosion Control.

1. The quantity will be paid for at the unit price of $500.00 each for Mobilizations, Erosion Control, which is full compensation for staged movement of labor, equipment, and materials; and all labor, tools, equipment, and incidentals necessary to complete the movement.

2. Individual erosion control items provided for in the contract, and acceptably furnished and placed under the item of Mobilizations, Erosion Control, will be paid for separately at the contract unit price for the items.

B. Mobilizations, Emergency Erosion Control.

1. The quantity will be paid for at the unit price of $1000 each for Mobilizations, Emergency Erosion Control, which is full compensation for movement of labor, equipment and materials; and for labor, tools, equipment, and incidentals necessary to complete the movement.

2. Individual temporary erosion control items provided for in the contract, and acceptably furnished and placed under the item of Mobilizations, Emergency Erosion Control, will be paid for separately at the contract unit price for the items.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger	**Office:** Materials	**Item 16**
Submittal Date: 2012.03.27	**Proposed Effective Date:** October 2012 GS	
Section No.: 4112 **Title:** Intermediate Aggregate for PCC	**Other:**	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 4/12/2012	**Effective Date:** 10/16/2012

Specification Committee Approved Text:

4112.02, Gradation.

Replace the Article:

~~**A. Intermediate Aggregate.**~~

~~For gradations, intermediate aggregate is considered coarse aggregate. Meet the following gradation limits:~~

~~Sieve Size~~	~~% Passing~~
~~1/2 inch (12.5 mm)~~	~~95-100~~
~~No. 4 (4.75 mm)~~	~~0-10~~

~~**B. Coarse Sand.**~~

~~Meet the following gradation limits:~~

~~Sieve Size~~	~~% Passing~~
~~1/2 inch (12.5 mm)~~	~~100~~
~~3/8 inch (9.5 mm)~~	~~90-100~~
~~No. 4 (4.75 mm)~~	~~75-95~~
~~No. 8 (2.36 mm)~~	~~60-90~~
~~No□ 30 (600 µm)~~	~~10-60~~
~~No. 200 (75 µm)~~	~~0-1.5~~

Intermediate aggregate shall meet the requirements for gradation No. 2 of the Aggregate Gradation Table, Article 4109.02.

4112.03, Pea Gravel and Coarse Sand.

Rename the Article:

Pea Gravel ~~and Coarse Sand~~.

Delete Article 1:

~~**1.** For the portion of coarse sand passing the No. 4 (4.75 mm) sieve, meet the quality requirements of Section 4110.~~

Replace the first sentence of Article 2:

For ~~pea gravel and~~ the portion ~~of coarse sand~~ retained on the No. 4 (4.75 mm) sieve, meet the quality requirements of Table 4112.03-2:

Appendix.

Replace the Gradation Table.

See attached Gradation Table.

Comments: The Office of Construction noted that the attached gradation is for gradation no. 2, but Article 4112.02 refers to gradation no. 9. This was revised to gradation no. 2.

Specification Section Recommended Text:

4112.02, Gradation.

Replace the Article:

~~**A. Intermediate Aggregate.**~~

~~For gradations, intermediate aggregate is considered coarse aggregate. Meet the following gradation limits:~~

~~Sieve Size~~	~~% Passing~~
~~1/2 inch (12.5 mm)~~	~~95-100~~
~~No. 4 (4.75 mm)~~	~~0-10~~

~~**B. Coarse Sand.**~~

~~Meet the following gradation limits:~~

~~Sieve Size~~	~~% Passing~~
~~1/2 inch (12.5 mm)~~	~~100~~
~~3/8 inch (9.5 mm)~~	~~90-100~~
~~No. 4 (4.75 mm)~~	~~75-95~~
~~No. 8 (2.36 mm)~~	~~60-90~~
~~No□ 30 (600 µm)~~	~~10-60~~
~~No. 200 (75 µm)~~	~~0-1.5~~

Intermediate aggregate shall meet the requirements for gradation No. 9 of the Aggregate Gradation Table, Article 4109.02.

4112.03, Pea Gravel and Coarse Sand.

Retitle the Article:

Pea Gravel ~~and Coarse Sand~~.

Delete Article 1:

~~**1.** For the portion of coarse sand passing the No. 4 (4.75 mm) sieve, meet the quality requirements of Section 4110.~~

Replace the first sentence of Article 2:

For ~~pea gravel and~~ the portion ~~of coarse sand~~ retained on the No. 4 (4.75 mm) sieve, meet the quality requirements of Table 4112.03-2:

Comments:

Section 4112. Intermediate Aggregate for Portland Cement Concrete

4112.02 GRADATION.

A. Intermediate Aggregate.

Meet the gradation requirements for gradation No. 9 of the Aggregate Gradation Table, Article 4109.02.

~~For gradations, intermediate aggregate is considered coarse aggregate. Meet the following gradation limits:~~

~~Sieve Size~~	~~% Passing~~
~~1/2 inch (12.5 mm)~~	~~95-100~~
~~No. 4 (4.75 mm)~~	~~0-10~~

~~**B. Coarse Sand.**~~

~~Meet the following gradation limits:~~

~~Sieve Size~~	~~% Passing~~
~~1/2 inch (12.5 mm)~~	~~100~~
~~3/8 inch (9.5 mm)~~	~~90-100~~
~~No. 4 (4.75 mm)~~	~~75-95~~
~~No. 8 (2.36 mm)~~	~~60-90~~
~~No. 30 (600 µm)~~	~~10-60~~

~~No. 200 (75 µm) 0-1.5~~

B. Pea Gravel ~~and Coarse Sand~~.

~~**1.** For the portion of coarse sand passing the No. 4 (4.75 mm) sieve, meet the quality requirements of Section 4110.~~

~~**2.**~~ For ~~pea gravel~~ ~~and the portion of coarse sand~~ the portion retained on the No. 4 (4.75 mm) sieve, meet the quality requirements of Table 4112.03-2:

Reason for Revision:. Removing gradations from body of specifications into the gradation table with a gradation number for certification and ease of use for aggregate producers. Remove coarse sand from specifications because it has never been produced and contractors want intermediate as a separate material.

County or City Input Needed (X one)			**Yes**	**No** X	
Comments: .					
Industry Input Needed (X one)			**Yes**	**No X**	
Industry Notified:	**Yes**	**No** X	**Industry Concurrence:**	**Yes**	**No**
Comments: See attached for addition to gradation table and gradation number.					

AGGREGATE GRADATION TABLE – ENGLISH

Grad. No.	Section No.	Std. Sieve Size	1½"	1"	3/4"	1/2"	3/8"	#4	#8	#30	#50	#100	#200	
		Intended Use	Percent Passing											*Notes
2	4112	PCC Intermediate				95-100			0-10					

Notes: (Gradations Nos. ~~2~~, 9, 15, 16, 17, 18, 24, 25, 26, 27, 28, 33 and 34 have been deleted.)

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Wayne Sunday	**Office:** Construction	**Item 17**
Submittal Date: March 27, 2012	**Proposed Effective Date:** June, 2012	
Article No.: **Title:**	**Other:** DS-09012, High Performance Concrete for Structures and DS-09033, High Performance Concrete for Structures (Council Bluffs System)	

Specification Committee Action: Approved with changes.

Deferred:	**Not Approved:**	**Approved Date:** 4/12/2012	**Effective Date:** 6/19/2012

Specification Committee Approved Text: See attached Draft DS for High Performance Concrete for Structures.

Comments: The Office of Construction requested to include the revisions included in Item 7 of the minutes.

The Office of Bridges and Structures asked if there were changes from the previous DS's to this one. The Office of Construction said this is the same as the existing DS's, with the two previously approved mixes included and the option to design a new mix.

The Office of Bridges and Structures asked about the "target" permeability. This was revised to indicate that this is a maximum permeability that will be tested at 28 days for new trial mixes.

The Office of Contracts asked if the Method of Measurement and Basis of Payment need to be more thorough. Article 09XXX.01, B indicates that 2403 applies which would have more MOM and BOP description.

A typo was corrected in the word "contractor" in Article 09XXX.02.

Wayne Sunday will be the controller of this DS.

Specification Section Recommended Text: See attached Draft DS for High Performance Concrete for Structures.

Comments:

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

See attached DS

Reason for Revision: There are several Developmental Specifications for High Performance Concrete that have been developed since approximately 2002. This HPC DS will combine specifications that previously existed into one Developmental Specification that will be used for all future specified projects throughout the State.

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

DS-09XXX
(Replaces DS-09012 and DS-09033)

Iowa Department of Transportation

DEVELOPMENTAL SPECIFICATION
FOR
HIGH PERFORMANCE CONCRETE FOR STRUCTURES

Effective Date
June 19, 2012

THE STANDARD SPECIFICATIONS, SERIES 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

09XXX.01 DESCRIPTION.

A. Develop and provide high performance concrete (HPC) for bridge substructures and decks when called for in the contract documents. HPC is defined as a concrete mix providing the following:
- Desired workability.
- Minimum average 28 day compressive strength of 5000 pounds per square inch (34.5 MPa), unless specified otherwise in the contract documents.
- Maximum 28 day permeability of 2000 coulombs for the substructure and 1500 coulombs for the deck.

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

09XXX.02 MATERIALS.
Contractor may use other mixes than those described below provided they meet the requirements of this specification and are approved by the District Materials Engineer.

A. Substructure:

1. Apply the following conditions for substructure HPC mixes:
- Coarse aggregate meeting Class 3i durability.
- Basic water to cementitious material (w/c) ratio of 0.42, with a maximum w/c ratio of 0.45.

2. HPC mix for substructure may be a HPC-S or CV-HPC-S. Apply the following conditions:
a. Use one of the following cement combinations:
- Type IS.
- Type I/II with a minimum of 30% weight (mass) substitution with GGBFS.
- Type IP, except with an absolute volume of 0.126 for HPC-S mix.

b. Fly ash substitution not to exceed 20% by weight (mass) of the cement.
c. Maximum total substitution of 50%
d. A high range water reducer may be used with a maximum allowable slump of 8 inches (200 mm) and target air content of 7.5% ± 2.0%.

B. Deck.

1. Apply the following conditions for deck HPC mixes:
- Use coarse aggregate meeting Class 3i durability.
- Basic w/c ratio of 0.40, with a maximum w/c ratio of 0.42.

2. The HPC mix for the deck may be a HPC-D or a CV-HPC-D. Apply the following conditions:
- **a.** Use one of the following cement combinations:
  - Type IS.
  - Type I/II with a minimum of 30% weight (mass) substitution with GGBFS.
  - Type IP, except use an absolute volume of 0.126 for the HPC-D mix.
- **b.** Fly ash substitution not to exceed 20% by weight (mass) of the cement.
- **c.** Maximum total substitution of 50%.
- **d.** Combined aggregate gradation optimized according to Materials I.M. 532 and meeting the limits in Article 2513.03, A, 2, b, 3, of the Standard Specifications.

C. Contractor Designed HPC.

Apply the following conditions for Contractor designed HPC:
- Type IP or IS cement.
- Type I/II cement with a minimum of 25% weight (mass) substitution with GGBFS.
- Minimum cementitious content of 624 pounds per cubic yard (370 kg/m^3).
- Maximum fly ash substitution not to exceed 20% by weight (mass) of the cement.
- Maximum total substitution of 50% by weight (mass) of the cement.
- Maximum water to cementitious ratio of 0.45 for substructure and 0.42 for deck
- Coarse aggregate meeting Class 3I durability
- For deck concrete, provide a combined aggregate gradation optimized according to Materials I.M. 532 and meeting the limits in Article 2513.03, A, 2, b, 3, of the Standard Specifications.
- For substructure, a high range water reducer may be used with a maximum allowable slump of 8 inches (200 mm) and a target air content of 7.5% ± 2.0%.

09XXX.03 CONSTRUCTION.

A. Trial Batch Concrete.

1. Trial batch is required only when Contractor proposes HPC mixes other than mixes described in Article 09xxx.02, A and B. When a trial batch is required, make one or more trial batches. An Iowa DOT PCC Level III Certified Technician shall develop HPC mix design.

2. Allow District Materials Engineer ample opportunity to witness trial batching. Provide District Materials Engineer notice and mix proportions seven calendar days prior to this event.

3. Mix trial batch (a minimum of 3 cubic yards (3 m^3) in size) at least 30 calendar days prior to planned placement. Establish batching sequence of materials during trial batch.

4. Transport concrete a distance comparable to distance from ready mix plant to placement site.

5. Use concrete for testing purposes representative of entire batch having a slump within 1 inch (25 mm) of the maximum slump allowed, an intended in-place air content of 6% ± 1%, and a w/c ratio that will be typical in substructure and deck placement. Perform the following tests for each trial batch:

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

Air Content of Plastic Concrete Materials I.M. 318

a. Substructure.
Evaluate mix workability for intended application and method of placement.

b. Deck.
Cast at least one test slabs 8 feet by 4 feet (2.4 m by 1.2 m) in area and 4 inches (100 mm) thick. Place and consolidate using methods typical for bridge deck pours. Finish concrete by hand and evaluate mix workability and finishability for intended application and method of placement.

6. Submit trial batch report to District Materials Engineer no later than seven calendar days after trial batching. Include the following in the report:

Cover Page	Contractor and Producer Name Project Number Date and Location of HPC Trial Batch Date Submitted Signature of Contractor/Producer Representative
Material Source Information	Brand, Type, and Source
Material Proportion Information	Specific Gravity Relative % of Each Individual Aggregate Target Combined Gradation %Passing (Materials I.M. 531) Target Combined Gradation Charts (Materials I.M. 532) Design and As Mixed Batch Weights (Mass) (SSD) Design and As Mixed w/c Ratios
Mix Properties	Unit Weight (Mass) of Plastic Concrete Air Content of Plastic Concrete Slump

7. District Materials Engineer will cast samples and transport them to Central Materials Laboratory for testing. Trial batch concrete will be tested for permeability and strength. All samples will be cast, cured, and handled according to Materials I.M. 315. One permeability and six strength samples will be cast in 4 inch by 8 inch (100 mm by 200 mm) cylinder molds.

8. One cylinder will be sent to Central Materials Laboratory for rapid chloride permeability testing in accordance with Iowa Materials Test Method 412-A. Samples for permeability will be delivered within seven days of casting, left in molds, and sealed in a plastic bag or placed in container with water. Two samples will be obtained from the cylinder. Target value of permeability is 2000 coulombs for substructure and 1500 coulombs for deck, or less based on average of two tests.

9. Strength samples will be stripped of their molds and wet cured until their break age. Strength samples will be tested according to AASHTO T 22. Three cylinders will be tested for strength at each age of 28, and 56 days. For a mix design without previous experience, average 28 day compressive strength shall be equal to or greater than 5000 plus 1400 pounds per square inch (34.5 + 9.5 MPa).

10. Approval will be based on trial batch mix properties and submittal of trial batch report. District Materials Engineer may waive trial batch testing provided satisfactory mix properties have been achieved through testing of previous trial batches or production placements.

B. Production Concrete.

1. Notify District Materials Engineer at least 48 hours prior to placement of production concrete. Use only approved HPC mixes for production concrete. If a mix other than mix described in Article 09xxx.02, A or B is to be used, ensure it has same materials, proportions, and properties (including slump, air content, and w/c ratio) as established in trial batch.

2. Test production concrete for strength. These test results will be used for acceptance. An Iowa DOT certified PCC Level I Concrete Field Testing Technician shall cast, cure, and handle strength samples according to Materials I.M. 315. Properly cure cylinders at the site with wet burlap and plastic. Do not move cylinders for 16 hours and leave them at the site for a maximum of one calendar day before transporting to a certified laboratory for final curing and testing. Cast six strength samples in 4 inch by 8 inch (100 mm by 200 mm) cylinder molds for each day of placement greater than 100 cubic yards. Document slump, air content, and w/c ratio (adjusted for all water) of the concrete for the cylinders cast.

3. Strength samples shall be tested by a certified lab according to AASHTO T 22. Test three cylinders for strength at each age of 28 and 56 days. After 15 or more sets of samples have been tested, testing of the cylinder at 56 days may be waived by the Engineer if average 28 day strength exceeds required strength.

4. Submit test results to Engineer and District Materials Engineer no later than one working day after testing is completed. Clearly indicate in the submittal (as a minimum): the project number, location, Contractor, producer, structural element constructed, slump, air content, w/c ratio (adjusted for all water), date sampled, date tested, break age, individual compressive strengths, and average compressive strengths. In addition, attach the plant report for the pour to the submittal.

5. District Materials Engineer will obtain random verification strength samples on a minimum of one substructure placement and one deck placement. Strength samples will be tested at District Materials Laboratory according to AASHTO T 22. A set of four cylinders will be cast, cured, and handled according to Materials I.M. 315. Three cylinders will be tested for strength at 28 days. One cylinder will be tested for permeability on a random basis by Central Materials Laboratory. Permeability testing will not be evaluated on footings or drilled shafts.

C. Non Complying Strength.

When average 28 day compressive strength does not meet or exceed specified strength, propose evaluation methods to determine in place concrete strength. Submit proposal to Engineer. Notify Engineer 48 hours in advance of sampling and testing. Engineer will witness sampling and testing of in-place concrete. Engineer will review results and determine corrective action required. Contractor is responsible for cost of evaluation and any corrective action required.

D. Placing Concrete.

1. If concrete is to be placed by pumping, use a pump line with a section reduction to reduce exit velocity of pumped concrete and minimize damage to epoxy coated reinforcement. Submit measures for reducing exit velocity of concrete to Engineer for approval prior to placement by pumping.

2. Protect epoxy coated reinforcement from damage caused by placing and handling equipment.

3. For the deck, placing of concrete floors shall not begin if the theoretical rate of evaporation exceeds 0.1 pounds per square foot per hour (0.5 kg/m^2 per hour). Monitor theoretical evaporation rate at a maximum interval of every three hours during placement at a location as near the deck as possible. If the rate exceeds 0.15 pounds per square foot per hour (0.75 kg/m^2 per hour) cease placement at next location acceptable to Engineer.

E. Curing.

1. Substructure.
- **a.** Leave forms in place for 96 hours of curing.
- **b.** Leave wet burlap covering in place for 96 hours.

2. Deck.
- **a.** Leave forms in place for 168 hours of curing.
- **b.** Apply water to the burlap covering for 168 hours of continuous wet sprinkling system curing.
- **c.** Do not place curing compound on floor.
- **d.** Prewet burlap with sufficient water, prior to placement, to prevent absorption of moisture from concrete surface. Place two layers of pre-wetted burlap on floor immediately after artificial turf drag or broom finish with a maximum time limit of 10 minutes after final finishing. Apply water to burlap covering for entire curing period by means of a continuous wet sprinkling system that is effective in keeping burlap wet during moist curing period.
- **e.** Use evaporation retardant only in situations where equipment and/or labor delays, or environmental conditions, prevent adequate protection of concrete until prewetted burlap is in place. Have an evaporation retardant, including Confilm, Conspec Acquafilm, Evapre, or Sure Film, readily available during placement for application as directed by the Engineer. Do not work evaporation retardant into concrete surface or use as a finishing aid.

F. Cold Weather Protection.

1. Monitor surface temperature of concrete continuously during curing period using electronic recording type thermometers capable of recording a minimum of one reading per hour. Furnish results to Engineer in electronic format as required.

2. If supplemental housing and heating is used, locate temperature monitors in the concrete at the furthest and closest point from heat source. Verify maximum temperature at monitor point closest to heat source does not exceed 150ºF (65ºC).

3. After required curing period, gradually reduce temperature of air surrounding concrete to outside air temperature according to Article 2403.03, I, of the Standard Specifications.
- **a. Substructure.**
  Ensure concrete and its surface temperature are maintained at a temperature of no less than 50ºF (10ºC) for the first 120 hours after placing. Curing time will not be counted if concrete temperature falls below 50ºF (10ºC).
- **b. Deck.**
  - **1)** Covering with plastic will not be allowed as a substitute for continuous wet sprinkling system curing.
  - **2)** Ensure concrete and its surface temperature are maintained at a temperature of no less than 50ºF (10ºC) for 168 hours of continuous wet sprinkling system curing. Curing time will not be counted if the concrete temperature falls below 50ºF (10ºC).

09XXX.04 METHOD OF MEASUREMENT.
Measurement will be as follows:

A. High Performance Concrete.
Cubic yards (cubic meters) shown in the contract documents.

B. Trial Batch Concrete.
None.

09XXX.05 BASIS OF PAYMENT.
Payment will be at the contract unit price as follows:

A. High Performance Concrete.

1. Per cubic yard (cubic meter).

2. Include cost for testing production concrete in the contract unit price for High Performance Concrete.

B. Trial Batch Concrete.

1. Lump sum.

2. Payment is full compensation for furnishing materials, tools, and labor for performance of work necessary to design, cast, finish, and dispose of test slabs as indicated.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe / Kevin Merryman	**Office:** Construction	**Item 18**
Submittal Date: March 22, 2012	**Proposed Effective Date:** June 2012	
Article No.: **Title:**	**Other:** DS – 09020, Quality Management Concrete	

Specification Committee Action: Approved as recommended.			
Deferred:	**Not Approved:**	**Approved Date:** 4/12/2012	**Effective Date:** 6/19/2012
Specification Committee Approved Text: See attached Draft DS for Quality Management Concrete.			
Comments: None.			
Specification Section Recommended Text: See attached Draft DS for Quality Management Concrete.			
Comments:			

Member's Requested Change (Redline/Strikeout): See attached DS.					
Reason for Revision: Corrections/clarifications of current spec. language.					
County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes**	**No** X	
Industry Notified:	**Yes**	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments:					

DRAFT **DS-09XXX**
(Replaces DS-09020)

Iowa Department of Transportation

DEVELOPMENTAL SPECIFICATIONS
FOR
QUALITY MANAGEMENT CONCRETE (QM-C)

Effective Date
June 19, 2012

THE STANDARD SPECIFICATIONS, SERIES 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

09020.01 DESCRIPTION.

A. This specification identifies a concrete mixture design with an optimum combined aggregate gradation, and the Contractor's testing and quality control responsibilities. Optimization of the aggregates should produce concrete with low water requirement as well as improved workability and finishing characteristics. While concrete strength is important and is measured, it is not the basis for optimization of the concrete mixture design.

B. Testing and quality control apply to all Contractor produced concrete using the Concrete Design Mixture (CDM). The CDM applies to mainline slip form pavement. At the Contractor's option, the CDM may apply to any other slip form paving.

09020.02 MATERIALS.

For all materials, meet the quality requirements for the respective items in Division 41 of the Standard Specifications. Compatibility of all material combinations is the Contractor's responsibility based on acquired field experience with proposed materials.

~~The Gradation Table in the Appendix of the Standard Specifications may be waived for coarse aggregate if specific gradations are produced to meet requirements of this specification.~~

09020.03 LABORATORY DESIGN MIXTURE.

A. Develop a CDM based on a unit volume of 1.000 according to industry standard practice, and containing proportions of materials, including admixtures. Base the proportions upon saturated surface dry aggregates to produce a workable concrete mixture meeting the constraints of Table DS-09020.03-1:

Table DS-09020.03-1: Concrete Mixture Constraints

Nominal Maximum Coarse Aggregate Size	Greater than or equal to 1 inch (25 mm)
Gradation	Materials I.M. 532
Cementitious Content	Minimum, 560 pounds per cubic yard* (333 kg/m^3 *)
Fly Ash Substitution Rate	See Article ~~2301.03, F, 6~~ 2301.02, B, 6
Water/Cementitious Ratio	Maximum, 0.45

Air Content	6% ± 1%, Design Absolute Volume = 0.060
28 Day Flexural Strength, Third Point	Minimum, 640 pounds per square inch (4.40 MPa)

* The minimum cement content assumes the use of Type I/II cement with a specific gravity of 3.14 for an absolute volume of 0.106. If cement other than Type I/II is used, use an absolute volume of 0.106 and determine the weight (mass) of cement from the specific gravity of the cement. For Type IP cement, use an absolute volume of 0.111. Cement content may need to be increased to maintain the water to cementitious ratio during hot weather conditions.

B. Use normal production gradations to determine the relative percentage of each individual aggregate used in the CDM. Select the relative percentage of each individual aggregate to produce the desired combined aggregate gradation using the following sieves: ~~2 inch,~~ 1.5 inch, 1 inch, 0.75 inch, 0.5 inch, 0.375 inch, No. 4, No. 8, No. 16, No. 30, No. 50, No. 100, and No. 200 (~~50 mm,~~ 37.5 mm, 25 mm, 19 mm, 12.5 mm, 9.5 mm, 4.75 mm, 2.36 mm, 1.18 mm, 600 µm, 300 µm, 150 µm, and 75 µm).

C. Develop a target combined gradation for each CDM based on normal production gradations and the relative percentages of each individual aggregate. Limit the percent passing the No. 200 (75 µm) sieve to no more than 1.5% for the combined aggregate gradation. When the coarse aggregate used meets the increase in percent passing the No. 200 (75 µm) sieve, according to ~~Article 4115.05~~ Section 4109, Aggregate Gradation Tables, Note 11 of the Standard Specifications, limit the percent passing the No. 200 (75 µm) sieve to no more than 2.0% for the combined aggregate gradation. The Contractor may use water reducing admixture, Type A, or water reducing and retarding admixture, Type D, in the CDM.

D. Comply with AASHTO T 126 for laboratory development of the CDM. Mix designs may be conducted in a ready mix or central mix batch plant provided the following conditions are met:
- All non-mix design materials are emptied,
- Mix design materials are used, and
- Batch size is at least 3 cubic yards (2 m^3).

E. An Iowa DOT PCC Level III Certified Technician is required to oversee the development of the CDM. Allow the Engineer to witness the development of the CDM. Provide notice 7 calendar days prior to this event. Perform the tests in Table 09020.03-2 in the development of the CDM:

Table DS-09020.03-2: Tests for CDM

Specific Gravity of Each Individual Aggregate	Materials I.M. 307
Gradation of Each Individual Aggregate	Materials I.M. 302
Unit Weight of Plastic Concrete	AASHTO T 121
Air Content of Plastic Concrete	Materials I.M. 318
28 Day Flexural Strength	AASHTO T 97
Temperature of Plastic Concrete	ASTM C 1064

09020.04 MIX DESIGN DOCUMENTATION.

A. At least 7 calendar days prior to the start of paving, submit a CDM report to the District Materials Engineer for approval. Contract extensions will not be allowed due to inadequate or additional CDMs. In the CDM report include the information shown in Table DS-09020.04-1:

Table DS-09020.04-1: Items to Include in CDM Report

Cover Page	Contractor name Project number Date and location of CDM laboratory development Date Submitted Signature of Contractor representative

Material Source Information	Brand Type Source
Material Proportion Information	Specific gravity Relative percentage of each individual aggregate Target combined gradation % passing (Materials I.M. 531) Target combined gradation charts (Materials I.M. 532) Design batch weight (mass) (SSD) As mixed batch weight (mass) (SSD)
Mix Properties	Unit weight (mass) of plastic concrete Air content of plastic concrete 28 day flexural strength Slump Temperature of plastic concrete

B. The District Materials Engineer may approve the mix design without laboratory mixture testing if the proposed mix design proportions fall within Zone II-A of Materials I.M. 532. If the mix design is approved without laboratory testing, ~~the~~ cast a set of three beams on the first day of paving from concrete meeting the mix design criteria. Test the beams for 28 day flexural strength, third point loading. When the coarse aggregate for the mix design is quartzite, cast an additional set of three beams, and test at 90 days. Submit the strength results to the Engineer.

09020.05 QUALITY CONTROL.

A. General.

1. The Contractor is responsible for quality control of the concrete. An Iowa DOT PCC Level II Certified Technician is required to oversee quality control operations. The individual conducting the testing on grade is required to be an Iowa DOT PCC Level I Certified Technician. Calibrate and correlate testing equipment prior to and during paving operations.

2. At least seven calendar days prior to the preconstruction conference, submit to the Engineer a Quality Control Plan and Project Information Quality Control Plan complying with Materials I.M. 530. Do not begin paving until the plan is reviewed for compliance with the contract documents. Maintain equipment and qualified personnel to direct and perform all field quality control sampling and testing necessary to:

- Determine the various properties of the concrete governed by the contract documents, and
- Maintain the properties described in this specification.

B. Quality Control Testing.

1. Perform all quality control tests necessary to control the production and construction processes applicable to this specification and as set forth in the Quality Control Plan. Take samples for quality control testing in a random manner according to the prescribed sampling rate. Perform the tests listed in Table DS-09020.05-1:

Table DS-09020.05-1: Quality Control Table

	Limits	Testing Frequency	Test Methods
Unit Weight (Mass) of Plastic Concrete	~~±3% of the CDM~~ Monitor for changes, ± 3%	Twice/day	AASHTO T 121
Gradation Combined % Passing	See Paragraph 2 below	1/1500 cubic yard (1/1200 m^3)	Materials I.M. 216, 301, 302, 531
Aggregate Moisture Contents	See Materials I.M. 527	1/1500 cubic yard (1/1200 m^3)	Materials I.M. 308

Table DS-09020.05-1: Quality Control Table

	Limits	Testing Frequency	Test Methods
Air Content Plastic Concrete In Front of Paver	See Article ~~2301.03, F, 5~~ 2301.02, B, 4	1/350 cubic yard (1/275 m^3) See below	Materials I.M. 318
Water/Cementitious Ratio	0.45 maximum	Twice/day	Materials I.M. 527
Vibrator Frequency	See Article 2301.03, A, 3, a, 6, a	With Electronic Vibration Monitoring: Twice/day Without Electronic Vibration Monitoring: Twice/Vibrator/Day	Materials I.M. 384

2. The running average of three combined aggregate gradation tests is required fall within the limits established by the CDM target gradation and the working ranges of Table DS-09020.05-2:

Table DS-09020.05-2: CDM Target Gradations

Sieve Size	Working Range
No. 4 or greater (4.75 mm or greater)	± 5%
No. 8 to No. 30 (2.36 mm to 600 µm)	± 4%
No. 50 (300 µm)	± 3%
No. 100 (150 µm)	± 2%
minus No. 200 (75 µm)	See Article 09020.03

C. Corrective Action.

For QM-C mixes only, plot all process control test results on control charts as described in Materials I.M. 530.

1. Aggregate Tests.

Take corrective action when the running average approaches the working range limits. When a combined gradation test result for a sieve exceeds the working range limits, adjust the target and notify the Engineer. If the verification test result for the minus No. 200 (75 µm) exceeds the limits in Article DS-09020.03 for the combined gradation, the material represented by that test for this sieve will be considered non-complying. Pay factors will be assessed based on Coarseness/Workability Factors as described in Article DS-09020.07.

2. Concrete Tests.

Take corrective action when an individual test result approaches the control limits. Notify the Engineer whenever an individual test result exceeds the control limits.

D. Acceptable Field Adjustments.

1. All mix changes must be mutually agreed upon between the Contractor and Engineer. Document all mix changes on the QM-C Mix Adjustment form. Determine batch weights using a basic water cement ratio of 0.40. When the water cement ratio varies more than ±0.03 from the basic water cement ratio, adjust the mix design to unit volume of 1.000. A change in the source of materials or an addition of admixtures or additives requires a new CDM. The following are small adjustments that may be made without a new CDM being required:

- Increase cementitious content.
- Decrease fly ash substitution rate.
- Aggregate proportions may be adjusted from CDM proportions by a maximum of ± 4% for each aggregate.
- Change water reducer to water reducer retarder.

- Adjustment in water reducer or water reducer retarder admixture dosage.
- Change in source of fly ash.
- Change in source of sand, provided target gradation limits are met.

2. When circumstances arise, such as a cement plant breakdown, that create cement supply problems, a change in cement source may be allowed with the Engineer's approval. Consult the District Materials Engineer for approval of other changes to the mix design. A set of three beams for 28 day flexural strength testing may be required to document the changes. Should conditions beyond the Contractor's control prevent completion of the work with the CDM, a Class C mix, or a mix based on Class C mix proportions using project materials, will be allowed, at no additional cost to the Contracting Authority. Mutual agreement between the Contractor and Engineer is required.

3. Prior to 28 days strength test results, paving with QM-C mix may begin if the Engineer approves when the mix design strength, based on the average of three beams, meets or exceeds 640 psi (4.4 MPa).

E. Hand Finished Pavement.
Use project materials based on Class C or Class M concrete mix proportions. With approval of the Engineer, the Contractor's CDM may be used for hand finished pavement. Quality control, as required in this specification, will not apply to hand finished pavement.

09020.06 METHOD OF MEASUREMENT.
Measurement will be as follows:

A. Quality Management Concrete (QM-C).
Cubic yards (cubic meters) of QM-C computed using the number of batches produced for which quality control and testing were performed. This QM-C quantity will also include: 1) the quantity of QM-C produced at the Contractor's option as referenced in Article DS-09020.01; and 2) Class C mixture used according to Article DS-09020.05, C. The amount of concrete produced for hand finished pavement and waste will be excluded from this quantity.

B. Standard or Slip-Form Portland Cement Concrete Pavement, QM-C.
Square yards (square meters) shown in the contract documents.

C. Portland Cement Concrete Overlay, QM-C, Furnish Only.
Article 2310.04, A, of the Standard Specifications applies.

D. Portland Cement Concrete Overlay, QM-C, Placement Only.
Article 2310.04, B, of the Standard Specifications applies.

E. Class C and Class M Mixtures.
Square yards (square meters) of Standard or Slip-Form Portland Cement Concrete Pavement, QM-C, constructed using Class C or Class M mixtures. For overlays, the Engineer will compute the number of:

- Square yards (square meters) of Portland Cement Concrete Overlay, QM-C, Placement Only, constructed using Class C or Class M mixtures, and
- Cubic yards (cubic meters) of Class C and Class M mixtures used.

09020.07 BASIS OF PAYMENT.
Payment will be the contract unit prices as follows:

A. Quality Management Concrete (QM-C).

1. Predetermined price per cubic yard (cubic meter).

2. Payment is full compensation for furnishing all labor, equipment, and materials for the work required by the Contractor to design, test, and provide process control for the production of QM-C.

B. Standard or Slip Form Portland Cement Concrete Pavement, QM-C.

1. ~~Square yards (square meters) of Standard or Slip-Form Portland Cement Concrete Pavement, QM-C, constructed will be determined from the average coarseness and workability factors for each lot according to Materials I.M. 530.~~ Contract unit price for Standard or Slip-Form Portland Cement Concrete Pavement, QM-C, per square yard (square meter).

2. The contract unit price per square yard (square meter) for Standard or Slip-Form Portland Cement Concrete Pavement, QM-C, constructed will be adjusted ~~in the following manner:~~ according to Table DS-09020.07-1 based upon the average coarseness and workability factors for each lot according to Materials I.M. 530.

Table DS-09020.07-1: Pay Factor Chart

Gradation Zone (Materials I.M. 532)	Pay Factor
II-A	1.03
II-B	1.02
II-C	1.01
II-D	1.00
IV	0.98
I	0.95

C. Portland Cement Concrete Overlay, QM-C, Furnish Only.
Article 2310.05, A, of the Standard Specifications applies. Average coarseness and workability factor for each lot will be determined according to Materials I.M. 530. The contract unit price will be adjusted according to Table DS-09020.07-1.

D. Portland Cement Concrete Overlay, QM-C, Placement Only.
Article 2310.05, B, of the Standard Specifications applies. Average coarseness and workability factor for each lot will be determined according to Materials I.M. 530. The contract unit price will be adjusted according to Table DS-09020.07-1.

E. Class C and Class M Mixtures.

1. Standard or Slip-Form Portland Cement Concrete Pavement, QM-C: per square yard (square meter).

2. Portland Cement Concrete Overlay, QM-C, Placement Only: per square yard (square meter)

3. Portland Cement Concrete Overlay, QM-C, Furnish Only: per cubic yard (cubic meter).

4. Pay Factor incentives/disincentives in Table DS-09020.07-1, will not be applied to Class C and Class M mixtures.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Deanna Maifield	**Office:** Design	**Item 19**
Submittal Date: 3/30/2012	**Proposed Effective Date:** 10/16/2012	
Article No.: **Title:**	**Other:** DS-09XXX, Temporary Stream Diversion	

Specification Committee Action:

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

Specification Committee Approved Text:

Comments: The Office of Contracts asked how it will be handled if the bid item and DS are not on a contract, but a temporary stream diversion is required. The Office of Construction indicated that the DS and bid item would be added by extra work order. They have discussed the DS with the Office of Local Systems, so that they can let the local entities know about the DS. The Office of Contracts is concerned that the bid item and DS will be missed.

The Office of Materials asked about having quality requirements for the revetment stone since the material is temporary. The Office of Construction indicated that the majority of the time, there will be permanent revetment stone on the project, so the material can be used for the permanent installation.

The Office of Contracts would like this specification to be placed in the standard specifications since it should apply to all culverts of a certain size. The Office of Construction would like to have a DS until we have experience with the DS in the field.

The Specifications Section asked if we could eliminate the bid item and make the temporary stream diversion incidental to the culvert construction. The Office of Construction prefers the bid item so that the Engineer has more control over ensuring the contractor follows the specifications.

The Office of Design pointed out that this bid item would be an Office of Design bid item that would be required based on the Office of Bridges and Structures design. This issue would need to be worked through to ensure the Office of Designs adds the bid item when necessary.

The Office of Construction is agreeable to including the specifications in the standard specifications if there is still a bid item.

This item was deferred and will be discussed at the May Spec. Committee meeting.

Specification Section Recommended Text: See attached Draft DS for Temporary Stream Diversion.

Comments:

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

See attached Draft DS-090XX and Draft Standard Road Plan RL-20.

Reason for Revision: The Offices of Design, Construction, and Bridges & Structures have developed this DS for use with a new Standard Road Plan. The DS and Standard Road Plan are based on practices in use by the North Carolina DOT.

The most common application will be for projects involving installation or extension of box culverts 6 feet by 6 feet or larger, precast box culverts 6 feet by 6 feet or larger, or arch pipe culverts 102 inches by 62 inches or larger. The Office of Design has developed guidance that will be placed in the Design Manual.

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

Comments:

DRAFT DS- 09XXX
(New)

Iowa Department of Transportation

DEVELOPMENTAL SPECIFICATIONS
FOR
TEMPORARY STREAM DIVERSION

Effective Date
October 16, 2012

THE STANDARD SPECIFICATIONS, SERIES 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

09XXX DESCRIPTION.
Construct, maintain, and remove temporary stream diversion according to the contract documents. Temporary stream diversion involves diverting flow of a perennial stream around a construction site by use of either diversion channel, pipe, or hose.

09XXX MATERIALS.

A. Impervious Dike.
Use one of the following:
- Impervious fabric with earth, stone, or other fill material.
- Revetment stone meeting the requirements of Section 4130 of the Standard Specifications, with impervious soil or fabric behind the dike.
- Sandbags.
- Sheet piles.
- Other as approved by the Engineer.

B. Temporary Energy Dissipation.
Revetment stone meeting the requirements of Section 4130 of the Standard Specifications.

C. Sediment Control.
Meet the requirements of Section 2602 of the Standard Specifications, for silt fence or perimeter and slope sediment control devices.

09XXX CONSTRUCTION.
Contractor may choose which type of temporary stream diversion to construct, unless otherwise stated in the contract documents,

A. Temporary Stream Diversion by use of a Pipe or Hose.
This method may include bypass pumping.

1. Set up bypass pump (if used) and temporary pipe or hose. Provide temporary energy dissipation measures at discharge point of temporary outlet pipe or hose. Firmly anchor bypass pump and pipe or hose.

2. Construct impervious dike upstream of work area. When constructing dike, place revetment or impervious fabric prior to placing soil or earth.

3. Construct impervious dike or sediment control device downstream to isolate work area.

4. Routinely inspect bypass pump and temporary pipe or hose to ensure proper operation. Inspect impervious dike(s) for leaks and repair damage. Inspect discharge point for erosion. Install additional temporary energy dissipation material as needed. Ensure flow is adequately diverted through pipe or hose and maintain elements of temporary stream diversion throughout construction period.

5. Immediately after completion of construction in the work area, remove impervious dike(s), bypass pump, temporary pipe or hose, temporary energy dissipation material, and sediment control materials in stream.

B. Temporary Stream Diversion by use of a Diversion Channel.

1. Excavate diversion channel without disturbing existing channel. Install sediment control along top of diversion channel.

2. Connect downstream diversion channel into downstream existing channel. Install temporary energy dissipation measures at discharge point into existing channel.

3. Connect upstream diversion channel into existing channel at upstream side to divert flow into diversion channel.

4. Construct impervious diversion dike in existing channel at upstream side to divert flow into diversion channel. When constructing dike, place revetment or impervious fabric prior to placing soil or earth.

5. Construct impervious dike or other sediment control in existing channel at downstream side to isolate work area.

6. Routinely inspect diversion channel for scour or erosion, and sediment loss at channel discharge location. Install rock checks in channel and additional temporary energy dissipation material at outlet as needed. Inspect impervious dikes for leaks and repair damage. Ensure flow is adequately diverted through diversion channel and maintain all elements of temporary stream diversion throughout construction period.

7. Immediately after completion of construction in the work area, remove impervious dike(s), temporary energy dissipation material, and sediment control materials in the stream. Divert channel back into existing channel.

09XXX METHOD OF MEASUREMENT.

A. Each Temporary Stream Diversion will be counted.

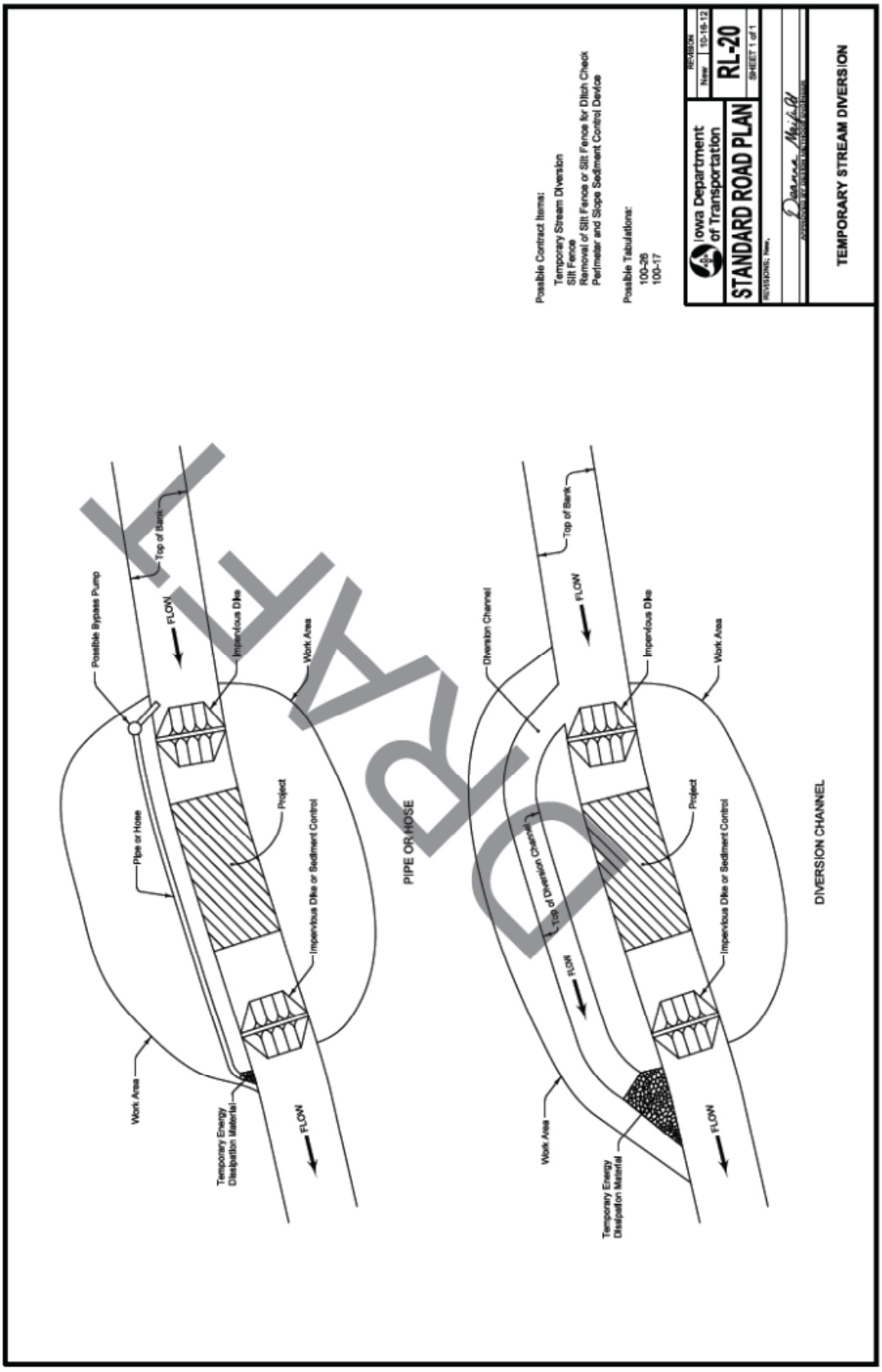
B. Sediment control and sediment control removal will be measured according to Article 2602.04 of the Standard Specifications, for the type of device used.

09XXX BASIS OF PAYMENT.

A. Payment will be at the contract unit price for each Temporary Stream Diversion. Payment is full compensation for labor, equipmnet, and materials necessary to construct and remove Temporary Stream Diversion. Payment of 50% of item will be made upon completion of installation of

temporary stream diversion and remaining 50% will be paid upon completion of removal of temporary stream diversion and restoration of work site.

B. Sediment control and sediment control removal will be paid for according to Article 2602.05 of the Standard Specifications, for the type of device used.


Possible Contract Items:
Temporary Stream Diversion
Silt Fence
Removal of Silt Fence or Silt Fence for Ditch Check
Perimeter and Slope Sediment Control Device
Possible Tabulations:
100-26
100-17
Iowa Department of Transportation
STANDARD ROAD PLAN
REVISION
None 10-16-12
RL-20
SHEET 1 of 1
REVISIONS: None
TEMPORARY STREAM DIVERSION
Possible Bypass Pump
Top of Bank
FLOW
Impervious Dike
Work Area
Pipe or Hose
Project
Impervious Dike or Sediment Control
Work Area
Temporary Energy Dissipation Material
FLOW
PIPE OR HOSE
Diversion Channel
Top of Bank
FLOW
Impervious Dike
Work Area
Top of Diversion Channel
FLOW
Project
Impervious Dike or Sediment Control
Work Area
Temporary Energy Dissipation Material
FLOW
DIVERSION CHANNEL