



Iowa Department of Transportation

MINUTES OF IOWA DOT SPECIFICATION COMMITTEE MEETING

November 13, 2014

Members Present:	Darwin Bishop Mark Brandl Donna Buchwald Eric Johnsen, Secretary Greg Mulder Wes Musgrove Gary Novey Dan Redmond Tom Reis, Chair Brian Smith Willy Sorensen	District 3 - Construction District 6 - Davenport RCE Office of Local Systems Specifications Section Office of Construction & Materials Office of Contracts Office of Bridges & Structures District 4 - Materials Specifications Section Office of Design Office of Traffic & Safety
Members Not Present:	Mitch Dillavou	Project Delivery Bureau
Advisory Members Present:	Lisa McDaniel Paul Wiegand	FHWA SUDAS
Others Present:	Ed Kasper Mahbub Khoda Melissa Serio Danny Stokes Wayne Sunday	Office of Contracts Office of Construction & Materials Office of Construction & Materials Office of Contracts Office of Construction & Materials

Tom Reis, Specifications Engineer, opened the meeting. The following items were discussed in accordance with the agenda dated October 30, 2014:

1. Article 1102.11, Proposal Guaranty.

The Office of Contracts requested to require individual bid bonds for the proposal guaranty to be electronic.

2. Article 1105.03, Working Drawings.

The Office of Bridges and Structures requested to eliminate copying the District Materials Engineer on preliminary and intermediate shop drawing submittal.

3. Section 2102, Roadway and Borrow Excavation.

The Offices of Construction and Materials and Design requested to clarify roadway and borrow specifications.

4. Article 2102.05, A, 6, Locating Tile Lines.

The Office of Construction and Materials requested to clarify the basis of payment for locating tile lines.

5. Section 2112, Wick Drains.

The Office of Construction and Materials requested to update the wick drain specifications.

6. Article 2320.02, B, 2, Polymer-Modified Microsurfacing.

The Office of Construction and Materials requested to add a carbonate gradation for microsurfacing.

7. Article 2403.03, P, Surface Finish.

The Office of Construction and Materials requested to specify a tolerance for the accuracy of the finished elevation of bridge beam seats.

8. Article 2412.03, Construction (Concrete Bridge Decks).

The Office of Construction and Materials requested to address handling/removal of slurry from longitudinal grooving operations and allow the Engineer to postpone burlap placement.

9. Article 2426.03, C, 1, Structural Concrete Repair – Shallow Repair.

The Office of Construction and Materials requested to eliminate specific grouting requirements and clarify curing requirements.

10. Article 2502.03, C, Longitudinal Subdrains.

Article 2529.05, E, Patch Subdrain.

The Office of Design requested to eliminate the use of rodent guards on pipes.

11. Article 2511.03, B, 1, General (Removal and Construction of Sidewalks and Recreational Trails).

The Office of Design requested to add a reference to the slope verification Materials I.M to the sidewalk and recreational trail construction specifications.

12. Article 2526.03, A, 3, d, Construction Survey - Bridges.

The Office of Construction and Materials requested to clarify the independent check for bridge stakes.

13. Article 2528.01, C, Traffic Quality Control.

The Office of Construction and Materials requested to add another approved training class for Traffic Control Technicians.

14. Section 2529, Full Depth Finish Patches.

The Design requested to add method of measurement and basis of payment for Subbase Patch with EF Joint.

15. Article 2530.03, B, 3, c, 1, Class A Patching Material (Partial Depth Finish Patches).

The Office of Construction and Materials requested to clarify curing times for manufactured patching products.

16. Article 2601.03, H, 3, c, Application (Erosion Control).

The Office of Construction and Materials requested to eliminate manufacturer's instructions for installing TRM, as a Standard Road Plan is being added.

17. Article 2601.04, D, Method of Measurement (Erosion Control).

The Offices of Design and Construction and Materials requested to correct the inconsistency between the MOM and BOP articles.

18. Section 4109 Appendix, Aggregate Gradation Table.

The Office of Construction and Materials requested to revise gradations 6 and 19 and Note 10.

19. Article 4141.03, Metal Pipe Aprons and Beveled End Sections.

The Office of Design requested to correct some standard road plan references that are being renumbered.

20. Section 4171, Detectable Warnings.

The Office of Construction and Materials requested to update the detectable warning specifications.

21. Article 4185.02, D, Breakaway (Transformer) Base.

The Office of Design requested to add slip base specifications and references to the Materials I.M. for approved sources.

22. DS-12035, Partial Depth Bridge Deck Patching.

The Office of Bridges and Structures requested revisions to the Developmental Specifications for Partial Depth Bridge Deck Patching.

23. SS-12008, Backfilling and Compaction of Pipe and Reinforced Box Culverts by Flooding.

The Office of Construction and Materials requested revisions to the Supplemental Specifications for Backfilling and Compaction of Pipe and Reinforced Box Culverts by Flooding.

Additional Discussion Items

The Specifications Section requested that all committee members use the new Specification Revision Submittal form. The form will be distributed to all committee members.

The Specifications Section informed the committee that a new Standard Specifications book will be issued for October 2015. This will most likely be the last printed edition of the Standard Specifications.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Wes Musgrove / Ed Kasper		Office: Contracts	Item 1
Submittal Date: October 24, 2014		Proposed Effective Date: April 2015	
Article No.: 1102.11 Title: Proposal Guaranty		Other:	
Specification Committee Action: Approved with changes.			
Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015
Specification Committee Approved Text:			
1102.11, Proposal Guaranty.			
Replace the Article:			
<p>A. Each proposal shall be supported by a proposal guaranty in the form and amount prescribed in the proposal. Bids not so supported will not be read. The proposal guaranty shall be filed at the place designated in the notice to bidders, prior to the time advertised for opening of bids.</p> <p>B. The proposal guaranty shall may be in the form of a certified check or credit union certified share draft, cashier's check, money order, or bank draft drawn on a solvent bank or credit union. Certified checks or credit union certified share drafts shall bear an endorsement signed by a responsible official of such bank or credit union as to the amount certified. Cashier's checks, money orders, or bank drafts shall be made payable either to the Contracting Authority or to the bidder and, where made payable to the bidder, shall contain an unqualified endorsement to the Contracting Authority signed by the bidder or the bidder's authorized agent. Certified checks and credit union share drafts shall be certified, or the cashier's check shall be drawn and endorsed, in an amount not less than prescribed in the proposal.</p> <p>C. A Proposal Guaranty/Bid Bond (Form 131084) may be used for the proposal guaranty in lieu of that specified above, using the electronic bid bond verification feature authorized by the Department. Bid bonds will be declared invalid and bid proposals will not be considered if any of the following items are omitted or incorrect:</p> <ul style="list-style-type: none"> • Date of Letting. • Bid Order Number. • Name of Contractor. • Original Digital Signature of Contractor: In case of joint venture bid, all contractors must sign. • Name of the Surety Company. • Original Digital Signature of Surety (if Surety's limitation is less than the amount of the bid bond, a certificate of reinsurance must be attached). 			
Comments: The Office of Contracts requested to not eliminate Article B and leave the certified check option for the proposal guaranty. The Office of Contracts will revisit this issue in 6 months and potentially eliminate this option.			
The District 3 Office asked if Contracts could monitor the number of checks submitted over the next 6 months to 1 year and find out why contractors are using the check option. The Office of Contracts will also monitor the electronic bid bond program and report back to the Committee.			
Specification Section Recommended Text:			
1102.11, Proposal Guaranty.			
Replace the Article:			
A. Each proposal shall be supported by a proposal guaranty in the form and amount			

prescribed in the proposal. Bids not so supported will not be read. The proposal guaranty shall be filed ~~at the place designated in the notice to bidders,~~ prior to the time advertised for opening of bids.

~~B. The proposal guaranty shall be in the form of a certified check or credit union certified share draft, cashier's check, money order, or bank draft drawn on a solvent bank or credit union. Certified checks or credit union certified share drafts shall bear an endorsement signed by a responsible official of such bank or credit union as to the amount certified. Cashier's checks, money orders, or bank drafts shall be made payable either to the Contracting Authority or to the bidder and, where made payable to the bidder, shall contain an unqualified endorsement to the Contracting Authority signed by the bidder or the bidder's authorized agent. Certified checks and credit union share drafts shall be certified, or the cashier's check shall be drawn and endorsed, in an amount not less than prescribed in the proposal.~~

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

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

~~D C.~~ A Contractor's Annual Bid Bond (Form 650043) may also be used for the proposal guaranty in lieu of that specified above. The Annual Bid Bond shall contain the following items:

- Name of Contractor
- Original signature of Contractor
- Date of signature
- Name of Surety Company
- Original signature of Surety

Comments:

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

A. Each proposal shall be supported by a proposal guaranty in the form and amount prescribed in the proposal. Bids not so supported will not be read. The proposal guaranty shall be filed **at the place designated in the notice to bidders,** prior to the time advertised for opening of bids.

B. **The proposal guaranty shall be in the form of a certified check or credit union certified share draft, cashier's check, money order, or bank draft drawn on a solvent bank or credit union. Certified checks or credit union certified share drafts shall bear an endorsement signed by a responsible official of such bank or credit union as to the amount certified. Cashier's checks, money orders, or bank drafts shall be made payable either to the Contracting Authority or to the bidder and, where made payable to the bidder, shall contain an unqualified endorsement to the Contracting Authority signed by the bidder or the bidder's authorized agent. Certified checks and credit union share drafts shall be certified, or the cashier's check shall be drawn and endorsed, in an amount not less than prescribed in the proposal.**

B. C.-A **Submit a Proposal Guaranty/Bid Bond (Form 131084) may be used for the proposal guaranty in lieu of that specified above. using the electronic bid bond verification feature**

<p>authorized by the Department. Bid bonds will be declared invalid and bid proposals will not be considered if any of the following items are omitted or incorrect:</p> <ul style="list-style-type: none"> • Date of Letting • Bid Order Number • Name of Contractor • Original Digital Signature of Contractor: In case of joint venture bid, all contractors must sign. • Name of the Surety Company • Original Digital Signature of Surety (if Surety's limitation is less than the amount of the bid bond, a certificate of reinsurance must be attached). <p>C. D. A Contractor's Annual Bid Bond (Form 650043) may also be used for the proposal guaranty in lieu of that specified above. The Annual Bid Bond shall contain the following items:</p> <ul style="list-style-type: none"> • Name of Contractor • Original signature of the Contractor • Date of signature • Name of Surety Company • Original signature of the Surety 					
<p>Reason for Revision: To provide an electronic method for bidders to submit individual bid bonds. Eliminate paper individual bid bonds and checks.</p>					
County or City Input Needed (X one)		Yes X		No	
<p>Comments: Local agencies will have the opportunity for comment at the Specification Committee Meeting.</p>					
Industry Input Needed (X one)		Yes X		No	
Industry Notified:	Yes X	No	Industry Concurrence:	Yes X	No
<p>Comments: A contractor's surety company would coordinate with the bond registry company, and no additional burden to the contractor is anticipated, plus the convenience of not having to mail the paper bond form or a check. Per recent discussion with a third-party bond registry company, costs for bid bond registry and electronic signature are in the \$8 to \$15 range, so cost should not be a significant factor or concern.</p>					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Gary Novey		Office: Bridges and Structures	Item 2
Submittal Date: September 30, 2014		Proposed Effective Date: April 21, 2015	
Article No.: 1105.03 Title: Working Drawings		Other:	
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: None.			
Specification Section Recommended Text:			
1105.03, F, Electronic Submittals.			
<p>Replace Articles 2 and 3:</p> <ol style="list-style-type: none"> 2. Provide a courtesy copy of the submittal to the Engineer and District Materials Engineer. 3. When the contract documents specify submittals to be sent to the design consultant's email address, the review office shall be courtesy copied, in addition to the Engineer and District Materials Engineer. 			
1105.03, G, Paper Submittals.			
<p>Replace the first two paragraphs:</p> <p>For Primary and Interstate projects, paper submittals shall be processed by the Contractor and sent to the Review Office identified in Table 1105.03-1 below with a copy of the cover letter sent to the Resident Construction Engineer and District Materials Engineer. The cover letter shall include the following information:</p> <ul style="list-style-type: none"> • Date of submittal or resubmittal • Project number • Description of submittal • Contractor's name, address, and telephone number • Number of submittal copies • Fabricator's name, address, and telephone number (if applicable). <p>When the contract documents specify submittals to be sent to the design consultant, copies of the cover letter shall be sent to the review office, as well as the Engineer and District Materials Engineer.</p>			
Comments:			
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and Highlight .)			
1105.03 WORKING DRAWINGS.			
F. Electronic Submittals.			
<ol style="list-style-type: none"> 1. For Primary and Interstate projects, electronic submittals may be made via email and sent to the following email addresses corresponding to the review office identified in Table 1105.03-1, or to the consultant email address indicated on the contract documents: 			
<u>REVIEW OFFICE</u>		<u>EMAIL ADDRESS</u>	

Bridges and Structures Design (Soils Design Section) Traffic and Safety	Bridges.Structures@dot.iowa.gov Soils.Design@dot.iowa.gov Traffic.Safety@dot.iowa.gov	
<p>2. Provide a courtesy copy of the submittal to the Engineer and District Materials Engineer.</p> <p>3. When the contract documents specify submittals to be sent to the design consultant's email address, the review office shall be courtesy copied, in addition to the Engineer and District Materials Engineer.</p>		
<p>G. Paper Submittals. For Primary and Interstate projects, all paper submittals shall be processed by the Contractor and sent to the Review Office identified in Table 1105.03-1 below with a copy of the cover letter sent to the Resident Construction Engineer and District Materials Engineer. The cover letter shall include the following information:</p> <ul style="list-style-type: none"> • Date of submittal or resubmittal • Project number • Description of submittal • Contractor's name, address, and telephone number • Number of submittal copies • Fabricator's name, address, and telephone number (if applicable). <p>When the contract documents specify submittals to be sent to the design consultant, copies of the cover letter shall be sent to the review office, as well as the Engineer and District Materials Engineer.</p>		
<p>Reason for Revision: The DME's requested to be removed from shop drawing contractor initial and intermediate transmittals. They will receive the final approved shop drawings upon distribution.</p>		
New Bid Item Required (X one)	Yes	No X
Bid Item Modification Required (X one)	Yes	No X
Bid Item Obsolescence Required (X one)	Yes	No X
Comments:		
County or City Comments:		
Industry Comments:		

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Melissa Serio & Brian Smith	Office: Construction & Materials / Design	Item 3
Submittal Date: 2014.10.25	Proposed Effective Date: April 21, 2015	
Section No.: 2102 Title: Roadway and Borrow Excavation	Other:	

Specification Committee Action: Approved as recommended.

Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015
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Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: The District 6 Office indicated that the shrinkage data is missing from some projects with Class 10. The Office of Design will work to make sure all plans with Class 10 include shrinkage data. All contractor furnished material is bid as Embankment-in-Place and doesn't include shrink.

Specification Section Recommended Text:

2102.02, D, 1, a, 1.

Replace the Article:

45% or less silt size fraction. Silt size particles are 2.91 to 0.79 mils (0.074 to 0.002 mm).

2102.02, D, 3, Unsuitable Soils.

Replace Table 2102.02-1:

Table 2102.02-1: Uses for Unsuitable Soils

Definition	Use
<ol style="list-style-type: none"> Peat or Muck. Soils with a plasticity index of 35 or greater. A-7-5 or A-5 having a density less than 85 pcf (1350 kg/m³) (AASHTO T 99 Proctor Density or Materials I.M. 309). 	Slope Dressing Only. Topsoil Applications.
<ol style="list-style-type: none"> Soils with a plasticity index of 35 or greater. A-7-5 or A-5 having a density less than 85 pcf (1350 kg/m³) (AASHTO T 99 Proctor Density or Materials I.M. 309). 	To be wasted off-site, unless shown otherwise in the contract documents.
<ol style="list-style-type: none"> All soils other than A-7-5 or A-5 having a density of 95 pcf (1500 kg/m³) or less (AASHTO T 99 Proctor Density or Materials I.M. 309). All soils other than A-7-5 or A-5 containing 3.0% or more carbon. 	Type C placement placed 3 feet (1 m) below top of subgrade in fills.
<ol style="list-style-type: none"> A-7-6 (30 or greater). Residual clays (overlying bedrock), Paleosols, claypan, gumbo, and gumbotils regardless of classification. 	Type B placement placed 5 feet (1.5 m) below top of subgrade in fills.
<ol style="list-style-type: none"> Shale. A-7-5 or A-5 soils having a density greater than 86 pcf (1351 kg/m³) but less than 95 pcf (1500 kg/m³) (AASHTO T 99 Proctor Density or Office or Materials I.M. 309). 	Type A placement placed in layers 5 feet (1.5 m) below top of subgrade in fills (Alternate layers to consist of suitable soils or Type C placement soils).

Article 2102.04, A, 1, d.

Add to the end of the Article:

Shrinkage will not be included in the quantity.

2102.04, A, 9, Contractor Furnished Embankment-in-Place.

Replace the Article:

Cubic yards (cubic meters) shown in the contract documents. Shrinkage will not be included in the quantity.

Comments:

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

Revise Article 2102.02, D, 1, a. to the following:

1. Select Treatment Material.

a. Cohesive Soils.

Meet all of the following requirements:

- 1) 45% or less silt size fraction. **Silt size particles are 0.074 to 0.002 mm.**

Revise Table 2102.02-1 to the following:

Table 2102.02-1: Uses for Unsuitable Soils

Definition	Use
<ol style="list-style-type: none"> 1. Peat or Muck. 2. Soils with a plasticity index of 35 or greater. 3. A-7-5 or A-5 having a density less than 85 pcf (1350 kg/m³) (AASHTO T 99 Proctor Density or Materials I.M. 309). 	<p>Slope Dressing Only. Topsoil Applications.</p>
<ol style="list-style-type: none"> 3. Soils with a plasticity index of 35 or greater. 4. A-7-5 or A-5 having a density less than 85 pcf (1350 kg/m³) (AASHTO T 99 Proctor Density or Materials I.M. 309). 	<p>To be wasted off-site, unless shown otherwise in the contract documents.</p>
<ol style="list-style-type: none"> 1. All soils other than A-7-5 or A-5 having a density of 95 pcf (1500 kg/m³) or less (AASHTO T 99 Proctor Density or Materials I.M. 309). 2. All soils other than A-7-5 or A-5 containing 3.0% or more carbon. 	<p>Type C placement placed 3 feet (1 m) below top of subgrade in fills.</p>
<ol style="list-style-type: none"> 1. A-7-6 (30 or greater). 2. Residual clays (overlying bedrock), Paleosols, claypan, gumbo, and gumbotils regardless of classification. 	<p>Type B placement placed 5 feet (1.5 m) below top of subgrade in fills.</p>
<ol style="list-style-type: none"> 1. Shale. 2. A-7-5 or A-5 soils having a density greater than 86 pcf (1351 kg/m³) but less than 95 pcf (1500 kg/m³) (AASHTO T 99 Proctor Density or Office or Materials I.M. 309). 	<p>Type A placement placed in layers 5 feet (1.5 m) below top of subgrade in fills (Alternate layers to consist of suitable soils or Type C placement soils).</p>

Revise Article 2102.04, A, 1, d. to the following:

- d. When embankment-in-place is specified, the Engineer will determine the quantity of materials placed using cross section and end area methods. The quantity for which payment is made will not exceed that necessary to construct the embankment to the neat cross section shown in the contract documents, adjusted for settlement. The Engineer may elect to measure the embankment after selected backfill material and topsoil have been spread and deduct the computed quantities of selected backfill material and topsoils from the quantities of total embankment. **Shrinkage will not be included in the quantity.**

Revise Article 2102.04, A, 9. to the following: 9. Contractor Furnished Embankment-in-Place. Cubic yards (cubic meters) shown in the contract documents. Shrinkage will not be included in the quantity.		
Reason for Revision: <ul style="list-style-type: none"> • Add definition of silt size particles. Iowa DOT lab test method and AASHTO silt particle range is 0.074 to 0.002 mm. ASTM range is 0.074 to 0.005 mm. • Change use of materials that were previously designated as “slope dressing only” • Clarify that shrinkage is not included in quantity for embankment-in-place. It is currently an estimate reference note in PSS. 		
New Bid Item Required (X one)	Yes	No X
Bid Item Modification Required (X one)	Yes	No X
Bid Item Obsolescence Required (X one)	Yes	No X
Comments: None		
County or City Comments:		
Industry Comments:		

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Melissa Serio		Office: Construction & Materials	Item 4
Submittal Date: 2014.09.24		Proposed Effective Date: April 21, 2015	
Article No.: 2102.05, A, 6. Title: Basis of Payment (Locating Tile Lines)		Other:	
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: None.			
Specification Section Recommended Text: 2102.05, A, 6, Locating Tile Lines.			
<p>Replace the Article:</p> <ul style="list-style-type: none"> a. Per station (meter). b. Payment is full compensation for constructing trench, locating and sizing tile lines, repairing tile lines damaged during locating, and placing backfill material. 			
Comments:			
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and Highlight .)			
Revise Article 2102.05, A, 6. to the following:			
<p>6. Locating Tile Lines.</p> <ul style="list-style-type: none"> a. Per station (meter). b. Payment is full compensation for constructing trench, locating and sizing of tile lines, repairing tile lines damaged during locating, and placing backfill material. 			
Reason for Revision: Basis of payment clarification for locating tile lines.			
New Bid Item Required (X one)	Yes	No X	
Bid Item Modification Required (X one)	Yes	No X	
Bid Item Obsolescence Required (X one)	Yes	No X	
Comments: None			
County or City Comments:			
Industry Comments:			

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Melissa Serio		Office: Construction & Materials	Item 5
Submittal Date: October 24, 2014		Proposed Effective Date: April 21, 2015	
Section No.: 2112 Title: Wick Drains		Other:	
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015
Specification Committee Approved Text: See attached.			
Comments: The Specifications Section asked if the discharge capacity units are consistent as English units are gallons per minute and metric units are m ³ /s. This is consistent with how the majority of manufacturers report their capacities.			
Specification Section Recommended Text: See attached.			
Comments:			
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and Highlight .) Replace entire section. See attached.			
Reason for Revision:			
<ul style="list-style-type: none"> • Update wick drain material requirements. • Allow splicing of wick drains. • Clarify requirements for trial drain installation and additional soil borings. 			
New Bid Item Required (X one)	Yes	No X	
Bid Item Modification Required (X one)	Yes	No X	
Bid Item Obsolescence Required (X one)	Yes	No X	
Comments: None			
County or City Comments:			
Industry Comments:			

Section 2112. Wick Drains

2112.01 DESCRIPTION.

- A. Furnish all necessary labor, equipment, and materials and perform operations necessary for installation of prefabricated vertical drainage wicks (wick drains) according to the contract documents.
- B. Wick drains consist of a band-shaped plastic case which permits continuous vertical drainage, wrapped in a filter material, installed in the subsoils by displacement methods, and spaced and arranged as shown on the plans.

2112.02 MATERIALS AND EQUIPMENT.

At least two weeks prior to construction, submit wick drain samples and certification indicating the source and material properties of the drain materials. At the Preconstruction Conference, submit to the Engineer for review and approval details of the sequence and method of installation, including installation equipment, anchoring, manufacturer's splicing method, certification indicating source of wick drain material, drain layout, and numbering plan. Approval Review by the Engineer does not relieve the Contractor of the responsibility of installing the wick drains according to the contract documents.

A. Materials.

Install prefabricated wick drains consisting of a plastic drainage core encased in or integrated with a filter jacket. Ensure it is band-shaped with an aspect ratio (width divided by thickness) not exceeding 50. Prefabricated wick drains meeting this specification are listed in Inspection and acceptance of wick drain materials will be according to Materials I.M. 442.01.

1. Core.

- Meet the following requirements:
- Provide continuous vertical drainage.
- Continuous plastic material (excluding splice area) fabricated to promote drainage along the axis of the vertical drain.

2. Jacket.

- a. Install a jacket that allows free passage of pore water to the core without loss of soil material or piping. Meet the following requirements for jacket material:
 - Manufactured from a synthetic non-woven geotextile capable of resisting all bending, punching, and tensile forces imposed during installation and during the design life of the drain.
 - Sufficiently rigid to withstand lateral earth pressures due to embedment and surcharge so that the vertical flow capacity through the core will not be adversely affected.
 - Sufficiently flexible to bend smoothly during installation and induced consolidation settlement without damage.
 - Comply with the following specifications:

Table 2112.02-1: Wick Drain Jacket Specifications

Test Item	Designation	Minimum Average Roll Value* ¹
Grab Tensile Strength ²	ASTM D 4632	80 125 lb. (355 578 N)
Trapezoidal Tear ³	ASTM D 4533	25 55 lb. (110 267 N)
Puncture Strength	ASTM D 4833	50 lb. (220 N)
Burst Strength	ASTM D 3796	130 psi (900 kPa)
Permittivity	ASTM D 4491	100 gal/min/ft ² (4285 L/min/m ²) 0.7 sec ⁻¹
Apparent Opening Size (max.)	ASTM D 4751	60 sieve (250 µm)
* 1 Ensure the jacket material is tested in saturated and dry conditions.		
2 For bonded drains, tensile strength test may be conducted on assembled drain using ASTM D 4595.		
3 For bonded drains, trapezoidal tear test is waived.		

- b. Do not allow the jacket material to be subject to localized damage (for example, punching through the filter by sand/gravel particles). Ensure the jacket material does not undergo cracking and peeling during installation of the drain.

3. Assembled Drain.

Meet the requirements below. The Engineer may reject material that is damaged during shipment, storage, or handling, or which does not meet the minimum requirements of the drain material.

- One single type of assembled drain used on the project, unless the Engineer approves otherwise.
- Mechanical properties (strength and modulus) of the assembled vertical drain equal to or greater than those specified for the component jacket and core.
- Resistant against wet rot, mildew, bacterial action, insects, salts in solution in the groundwater, acids, alkalis, solvents, and any other significant components in the site groundwater.
- Minimum discharge capacity of 3500 cubic feet per year ($100 \text{ m}^3/\text{yr}$) 1.5 gallons per minute ($9.46 \times 10^{-5} \text{ m}^3/\text{s}$) when measured under a gradient of one at a minimum lateral confining pressure of 25 psi (172 kPa) according to ASTM D 4716.
- Ensure it is band-shaped with an aspect ratio (width divided by thickness) not exceeding 50.
- Minimum equivalent diameter of 2 inches (50 mm) using the following definition of equivalent diameter:
 - $dw = (a+b)/2$.
 - dw = diameter of a circular drain equivalent to the band shaped drain (inches (mm)).
 - a = width of the band shaped drain (inches (mm)).
 - b = thickness of the band shaped drain (inches (mm)).
- Drain material labeled or tagged in such a manner that the information for sample identification and other quality control purposes can be read from the label. Ensure, as a minimum, each roll is identified by the manufacturer as to lot or control numbers, individual roll number, date of manufacture, manufacturer, and product identification of the jacket and core.
- Ensure during shipment and storage the drain is wrapped in heavy paper, burlap, or similar heavy duty protective covering and according to the manufacturer's recommendations.

B. Equipment.

1. Install wick drains using equipment of a type that will cause minimum disturbance of the subsoil during the installation operation.
2. Install the wick drains using a mandrel. Push (in one continuous movement, except as needed for splicing) the mandrel through the sand blanket (if required by the contract documents) and into the soil. ~~Vibrating or driving are options if the Engineer approves.~~ Obtain the Engineer's approval for use of vibratory methods. Driving or jetting installation methods are not permitted. Ensure the mandrel:
 - Protects the wick material from tears, cuts, and abrasions during installation,
 - Is rectangular or rhombic in shape and of a cross sectional area not to exceed 10 square inches (6500 mm^2), and
 - Is provided with an "anchor" rod or plate at the bottom to prevent soil from entering the bottom of the mandrel during installation of the drain and to anchor the bottom of the drain at the required depth at the time of mandrel removal.

2112.03 CONSTRUCTION.

- A. Familiarity with site conditions and the available geotechnical information is a necessity. ~~Prior to installation of the wick drains, demonstrate the equipment, method, and materials produce a satisfactory drain installation. Drill at least two borings within the area designated on the plans in order to~~ Select the equipment, method, and materials: 1) suitable for the existing site conditions; and 2) capable of producing a satisfactory drain installation to the minimum elevation. ~~Installation of up to ten trial drains may be required in each of two to four test locations designated by the Engineer. Compensation will be made for each trial drain if the installation satisfies the requirements of the contract documents. No compensation will be allowed for installing unsatisfactory trial drains.~~ This may require the contractor to drill additional soil borings. Demonstrate the equipment, method, and materials produce a satisfactory drain installation by installing a trial drain at the location of the first production drain.
- B. The Engineer's ~~approval~~ review of the method and equipment used to install the trial drains does not constitute acceptance of the method for the remainder of the project. If the Engineer considers that the method of installation does not produce a wick drain that satisfies the requirements of the contract documents, alter the method or equipment, or both, in order to achieve compliance.
- C. Prior to installing the drains, grade the site sufficiently level (at no additional cost to the Contracting Authority) to allow vertical and proper drain installation.

- D. Install the wick drains following placement of the sand blanket (if required by the contract documents). Install a granular blanket of sufficiently coarse material and compact to provide a stable working surface.
- E. Locate, number, and stake wick drains. Take all reasonable precautions to preserve the stakes. Ensure drain locations vary by no more than 3 inches (75 mm) from the locations indicated on the drawings. ~~Two weeks prior to construction, submit drawings to the Engineer for approval showing the method of field locations, drain layout, and numbering plan.~~
- F. Auguring or other methods may be used to loosen stiff upper soils prior to the installation of the drains, provided such operations do not extend more than 2 feet (600 mm) ~~below the bottom of the sand blanket~~ into underlying compressible soils. After the wick drain has been satisfactorily installed, fill all holes or voids created by such operations with sand.
- G. Check the installation equipment for plumbness prior to advancing each drain. Ensure the plumbness of the mandrel does not deviate more than 1/4 inch per foot (50 mm per meter) from vertical. Install the drains to the minimum elevation as shown on the plans. If the penetration shown on the plans is more than 1 foot (300 mm) into the underlying foundation layer and difficulties are encountered prior to achieving the indicated depths, install the drains to a depth of 1 foot (300 mm) below the bottom of the soil layer(s) being improved by wick drain installation as shown on the plans.
- H. Raising the mandrel is permitted only after completion of drain installation.
- H I. The Engineer will reject wick drains that vary from their proper location by more than 6 inches (150 mm) at the ground surface, drains that are damaged during installation or subsequent construction, or drains that are improperly completed. No compensation will be allowed for any materials furnished or for any work performed on such drains.
- I J. During installation, provide the Engineer with suitable means of measuring the vertical length of each wick drain installed at a given location and deriving a tip elevation for each drain.
- J K. ~~Splices or connections in the wick drain material will not be allowed.~~ Provide splices with structural and hydraulic continuity of the drain. A maximum of one splice, constructed according to manufacturer's splicing method, per drain is allowed. Ensure manufacturer's splicing method is compatible with installation equipment.
- K L. When obstructions that cannot be penetrated by the drain installation equipment are encountered below the working surface, notify the Engineer and complete the drain from the elevation of the obstruction to the working surface. At the direction of the Engineer, attempt to install a new drain (maximum of two attempts, as directed by the Engineer) within an 18 inch (450 mm) radius from the obstructed drain. The Contractor will be compensated for each obstructed drain unless the drain is improperly completed, in which case no compensation will be allowed.
- L M. After installation, cut each drain horizontally such that approximately 6 inches (150 mm) of drain material extends above the top of the sand blanket ~~or as otherwise specified by the contact documents.~~
- M N. ~~The Engineer Contractor will shall~~ keep a daily log which lists for each drain the date of installation, top elevation, tip elevation, and pay length. A copy of each daily log ~~will shall~~ be provided to the ~~Contractor~~ Engineer.

2112.04 Method of Measurement.

- A. Measurement for Wick Drain (including trial wick drains) will be feet (meters) installed according to the contract documents, calculated from measurements taken from the top of the drain to the tip elevation of the drain.
- B. In the case of obstructions, the Engineer will calculate the number of feet (meters) from measurements taken from the top of the drain to the elevation at which the obstruction was encountered.

2112.05 Basis of Payment.

- A. Payment for Wick Drain will be the contract unit price per foot (meter).

- B.** Payment includes:
- Field staking for the location of wick drains, and
 - All labor, equipment, and materials necessary to complete the installation according to the contract documents.
- C.** No payment will be made for unacceptable drain or trial drain installations.
- D.** In instances where pre-auguring is permitted, the cost of pre-auguring and subsequent placing of sand backfill material is incidental to the price bid for Wick Drains.
- E.** The cost of additional borings drilled to select the equipment, method, and materials suitable for the existing site conditions to produce a satisfactory drain installation is incidental to the price bid for Wick Drains.
- F.** No payment will be made for constructing any work platform other than that shown in the contract documents.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder	Office: Construction and Materials	Item 6
Submittal Date: 2014.10.25	Proposed Effective Date: April 2015	
Article No.: 2320.02, B, 2 Title: Polymer-Modified Microsurfacing	Other:	

Specification Committee Action: Approved as recommended.

Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015
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Specification Committee Approved Text: See Specification Section Recommended Text.

2320.02, B, 2.

Replace the gradation with Table 2320.02-2:

Table 2320.02-2: Job Mix (Target) Gradation

	Sieve Size - Percent Passing							
	3/8" (9.5 mm)	No. 4 (4.75 mm)	No. 8 (2.36 mm)	No. 16 (1.18 mm)	No. 30 (600 µm)	No. 50 (300 µm)	No. 100 (150 µm)	No. 200 (75 µm)
Quartzite/Granite/Slag	100	90-100	65-90	45-70	30-50	18-30	10-21	5-15
Limestone/Dolomite	100	70-90	45-70	25-50	15-35	10-25	5-20	5-15

2320.02, F, 3.

Replace the table number of Table 2320.02-2:

Table 2320.02-2 3: Microsurfacing Mixture Requirements

Comments: Subsequent to the Specification Committee meeting it was noted that the proposed table should instead be numbered as Table 2320.02-3 and the current Table 2320.02-2 should be renumbered as Table 2320.02-3.

Specification Section Recommended Text:

2320.02, B, 2.

Replace the gradation with Table 2320.02-3:

Table 2320.02-3: Job Mix (Target) Gradation

	Sieve Size - Percent Passing							
	3/8" (9.5 mm)	No. 4 (4.75 mm)	No. 8 (2.36 mm)	No. 16 (1.18 mm)	No. 30 (600 µm)	No. 50 (300 µm)	No. 100 (150 µm)	No. 200 (75 µm)
Quartzite/Granite/Slag	100	90-100	65-90	45-70	30-50	18-30	10-21	5-15
Limestone/Dolomite	100	70-90	45-70	25-50	15-35	10-25	5-20	5-15

Comments:

Action: Replace gradation table

2320.02 MATERIALS.

Section 2320. Polymer-Modified Microsurfacing

B. Aggregate.

	Sieve Size - % Passing							
	3/8" (9.5 mm)	No. 4 (4.75 mm)	No. 8 (2.36 mm)	No. 16 (1.18 mm)	No. 30 (600 µm)	No. 50 (300 µm)	No. 100 (150 µm)	No. 200 (75 µm)
Quartzite/Granite/Slag	100	90-100	65-90	45-70	30-50	18-30	10-21	5-15
Limestone/Dolomite	100	70-90	45-70	25-50	15-35	10-25	5-20	5-15

Reason for Revision: Addition of carbonate gradation for microsurfacing. The gradation for quartzite could not be made with limestone. The new gradation is similar to a gradation that has been used successfully in Minnesota with limestone/dolomite.

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: There was extensive work with both the aggregate industry and Sta-bilt to insure this gradation was a product which the aggregate industry could produce and compatible and workable with microsurfacing polymers.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Wayne Sunday		Office: Construction & Materials		Item 7	
Submittal Date: 2014.10.23		Proposed Effective Date: April 21, 2015			
Article No.: 2403.03, P Title: Surface Finish		Other:			
Specification Committee Action: Approved as recommended.					
Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015		
Specification Committee Approved Text: See Specification Section Recommended Text.					
Comments: None.					
Specification Section Recommended Text: 2403.03, P, 2.					
<p>Replace the first paragraph:</p> <p>Provide a Class 1, finish to horizontal surfaces not cast against a form and not subject to wear (for example, bridge seats, tops of backwalls, piers, abutments, wingwalls, retaining walls, spandrel walls, struts between pedestal piers, and horizontal surfaces of curbs and sidewalks of the bridge). Bridge beam seats shall be finished to the plan elevation with a tolerance of +/- 0.02 feet (6 mm). For all other surfaces required to be finished, provide a Class 2, finish to low water line or 1 foot (0.3 m) below the finished ground line.</p>					
Comments:					
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and Highlight .)					
<p>P. Surface Finish.</p> <p>Finish and seal concrete surfaces exposed, or will likely be exposed, after the structure is completed as follows:</p> <ol style="list-style-type: none"> 1. Finish concrete floors and concrete sidewalks as provided in Sections 2412, 2413, and 2511. 2. Provide a Class 1, finish to horizontal surfaces not cast against a form and not subject to wear (for example, bridge seats, tops of backwalls, piers, abutments, wingwalls, retaining walls, spandrel walls, struts between pedestal piers, and horizontal surfaces of curbs and sidewalks of the bridge). Bridge beam seats shall be finished to the plan elevation with a tolerance of +/- 0.02 feet. For all other surfaces required to be finished, provide a Class 2, finish to low water line or 1 foot (0.3 m) below the finished ground line. Provide a Class 3, finish to those areas designated in the contract documents. <p>a. Class 1, Floated Surface Finish.</p> <p>Overfill forms with concrete. Strike off concrete to the required elevation with a template and thoroughly work the surface with a wood float until the surface is uniformly smooth, dense, and true.</p>					
Reason for Revision: There currently is no tolerance specified for the accuracy of the finished elevation of bridge beam seats. Beam seat elevation accuracy is critical to ensure that the elevations for construction of the bridge deck are within the allowable maximum and minimum haunches specified. Article 2526.03, A, 3 for bridges requires that the as-constructed beams seats elevations be surveyed and provided to the Engineer for review prior to installation of bearings and superstructure elements. This specification revision will establish reasonable acceptance criteria for the Engineer's determination of acceptance or whether beam seats need correction or modification.					
County or City Input Needed (X one)		Yes		No	
Comments:					
Industry Input Needed (X one)		Yes		No	
Industry	Yes	No	Industry	Yes	No

Notified:			Concurrence:		
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Kevin Merryman / Wayne Sunday		Office: Construction & Materials	Item 8
Submittal Date: 2014.09.02		Proposed Effective Date: April 2015	
Article No.: 2412.03 Title: Construction (Concrete Bridge Decks)		Other:	
Specification Committee Action: Approved with changes.			
Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015
Specification Committee Approved Text: 2412.03, D, 4, a, Interstate and Primary Projects.			
<p>Add the Article:</p> <p>8) Continuously remove slurry or residue resulting from grooving operations. Do not deposit on deck or approach pavement. Leave deck and approach pavements in a clean condition. Ensure residue from grooving operations does not flow across lanes occupied by public traffic or into gutters or other drainage facilities. This residue may be spread on foreslope or removed according to Article 1104.08.</p> <p>2412.03, E, 1, b, Other Projects.</p> <p>Add to the end of the Article: Burlap placement beyond 30 minutes may be allowed, up to an additional 30 minutes, if approved by the Engineer based upon environmental conditions at time of deck placement.</p>			
Comments: FHWA requested assurance that burlap would still be placed in a reasonable time and not many hours after finishing and grooving. An additional 30 minutes was added for placing burlap, still at the discretion of the Engineer and depending on environmental conditions.			
Specification Section Recommended Text: 2412.03, D, 4, a, Interstate and Primary Projects.			
<p>Add the Article:</p> <p>8) Continuously remove slurry or residue resulting from the grooving operations. Do not deposit on deck or approach pavement. Leave deck and approach pavements in a clean condition. Ensure residue from grooving operations does not flow across lanes occupied by public traffic or into gutters or other drainage facilities. This residue may be spread on foreslope or removed according to Article 1104.08.</p> <p>2412.03, E, 1, b, Other Projects.</p> <p>Replace the last sentence: Place first layer of prewetted burlap on concrete within 30 minutes after concrete has been finished and grooved, unless approved otherwise by the Engineer.</p>			
Comments:			
Member's Requested Change (Redline/Strikeout): 2412.03 CONSTRUCTION. D. Surface Finish.			

4. After smoothing and checking for smoothness, promptly give the surface a final finish while the concrete is still plastic. When the contract documents show a second course of bridge floor surfacing or other wearing course, finish the surface of the first course with a burlap drag. Smooth and check the final surface for smoothness without additional finishing for one course bridge decks on Interstate and Primary projects.

a. Interstate and Primary Projects.

8) Continuously remove all slurry or residue resulting from the grooving operations. Do not deposit on the deck or approach pavement. Leave deck and approach pavements in a clean condition. Ensure residue from grooving operations does not flow across lanes occupied by public traffic or into gutters or other drainage facilities. This residue may be spread on the foreslope or removed according to [Article 1104.08](#).

E. Curing Concrete Decks.

Use burlap prewetted with sufficient water, prior to placement, to prevent absorption of moisture from the concrete surface. Keep the burlap wet.

1. Place the first layer of prewetted burlap in the following manner:

a. Interstate and Primary Projects.

Place on the concrete within 10 minutes after final finishing.

b. Other Projects.

Immediately after final finishing and grooving, cover the area finished with white pigmented curing compound meeting requirements of [Article 4105.05](#) applied at a maximum rate of 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 finished and grooved, unless approved otherwise by the Engineer.

Reason for Revision: Current specification does not address handling/removal of slurry from longitudinal grooving operations. Requirements are the same as for diamond grinding.

Local jurisdictions still do raked transverse texture in plastic concrete, apply white pigmented curing compound, and wet burlap for cure. The specifications require wet burlap to be placed within 30 minutes of final finishing and grooving. Several County Engineers have expressed concern with placing the burlap too soon and marring the transverse raked texture. This specification revision will allow the Engineer(s) to use their discretion as to how soon the wet burlap should be applied based upon the environmental conditions at the time of the deck placement.

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: Greg Mulder / Wayne Sunday	Office: Construction & Materials	Item 9
Submittal Date: 2014.09.23	Proposed Effective Date: April 21, 2015	
Article No.: 2426.03, C, 1 Title: Structural Concrete Repair – Shallow Repair	Other:	

Specification Committee Action: Approved as recommended.

Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015
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Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: None.

Specification Section Recommended Text:

2426.03, C, 1, Shallow Repair.

Replace the Article:

a. Bonding Grout.

Apply bonding grout to the properly cleaned, dry surface of the old concrete with a stiff bristle brush. Do not prewet the concrete surface before placing grout. Prepare concrete surface in accordance with manufacturer's recommendations.

b. Repair Concrete.

Place and compact repair concrete. before the grout dries. If the grout dries prior to concrete placement, remove the grout by sandblasting and reapply. Strike off and finish repair concrete to the correct lines.

2426.03, D, Curing.

Replace the Article:

For Class O concrete, Apply white pigmented curing compound to the concrete immediately following concrete finishing or immediately after removing forms, if used. Apply curing compound according to [Article 2403.03, E](#), except use an application rate of 100 square feet per gallon (2.5 m²/L). Use manufacturer's recommendations for curing products from Materials I.M. 491.08.

Comments:

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

C. Placement Procedure.

1. Shallow Repair.

a. Bonding Grout.

Apply bonding grout to the properly cleaned, dry surface of the old concrete with a stiff bristle brush. Do not prewet the concrete surface before placing grout. Prepare the concrete surface in accordance with manufacturer's recommendations.

b. Repair Concrete.

Place and compact repair concrete. before the grout dries. If the grout dries prior to concrete placement, remove the grout by sandblasting and reapply. Strike off and finish the repair concrete to the correct lines.

D. Curing.

For Class O concrete, apply white pigmented curing compound to the concrete immediately following concrete finishing or immediately after removing forms, if used. Apply curing compound according to [Article 2403.03, E](#), except use an application rate of 100 square feet per gallon (2.5 m²/L). Use manufacturer's recommendation for curing products from Materials I.M. 491.08.

Reason for Revision: A previous revision intended to remove all requirements for bonding grout, but

missed the two references. Manufactured patching products have specific procedures for bonding. Also, curing compound is typically not recommended by the manufactured patching products.					
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: Brian Smith		Office: Design	Item 10
Submittal Date: 2014.10.28		Proposed Effective Date: 4/21/2015	
Article No.: 2502.03, C Title: Longitudinal Subdrains Article No.: 2529.05, E Title: Patch Subdrain		Other:	
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: SUDAS asked if Materials I.M. 443.01 (approved sources of rodent guards) would be eliminated. The Department will keep the approved sources of rodent guards, as they are also used for drainage tiles on bridges, which does not allow recycled PCC and does not have issues with tufa formation.			
Specification Section Recommended Text:			
2502.03, C, 17.			
Delete the Article: 17. Cover subdrain outlets with a rodent guard described in Article 4143.01, B.			
2529.05, E, 2.			
Replace the second bullet: Furnishing and placing 4 inch (100 mm) perforated corrugated polyethylene pipe, porous backfill, impervious fill, and shoulder material, and rodent guard.			
Comments:			
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and Highlight.)			
2502.03, C, 17			
Delete the article: Cover subdrain outlets with a rodent guard described in Article 4143.01, B.			
2529.05, E, 2			
Replace the second bulleted item: Furnishing and placing 4 inch (100 mm) perforated corrugated polyethylene pipe, porous backfill, impervious fill, and shoulder material, and rodent guard.			
Reason for Revision: We are discontinuing use of rodent guards on longitudinal subdrains. Research at ISU has shown that tufa formation (caused by a mixture of fines with water) at outlets with rodent guards is more problematic than rodents building nests.			
New Bid Item Required (X one)	Yes	No X	
Bid Item Modification Required (X one)	Yes	No X	
Bid Item Obsolescence Required (X one)	Yes	No X	
Comments:			
County or City Comments:			
Industry Comments:			

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Brian Smith		Office: Design	Item 11
Submittal Date: 2014.10.28		Proposed Effective Date: 4/21/2015	
Article No.: 2511.03, B, 1 Title: General (Removal and Construction of Sidewalks and Recreational Trails)		Other:	
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: The Office of Construction and Materials would like to have the information in Materials I.M. 363 moved elsewhere, as it is not appropriate for a Materials I.M. The Offices of Design and Construction and Materials will review to see if there is a more appropriate location for these requirements.			
Specification Section Recommended Text: 2511.03, B, 1, General.			
<p>Replace the Article:</p> <ul style="list-style-type: none"> a. Widths shown in contract documents are minimums, excluding curbs or flares. b. The contract documents will contain sheets for construction of curb ramps, turning spaces, and transitions. Measure or stake as required to construct features. If either of the following is met, Engineer will provide staking for that quadrant and verify slopes during finishing: <ul style="list-style-type: none"> • Running Slope. Tolerance between design slope and maximum allowable slope is less than 1.0%. • Cross Slope and Turning Space Slopes. Tolerance of ±0.5% from design slope would exceed minimum or maximum allowable slope. c. If adequate construction tolerances are allowed, Engineer will not provide staking for construction of sidewalk or recreation trail. If field adjustments outside the acceptable range indicated in the contract documents are necessary, notify the Engineer prior to construction. d. Verify slope compliance according to Materials I.M. 363. e. At locations other than curb ramps, turning spaces, and transitions, ensure cross slope is between 0.5% and 2.0%. Ensure grade is within approximately 2.0% steeper than profile grade of adjacent roadway, or does not exceed 5.0%, whichever is steeper. f. Install detectable warnings according to manufacturer's recommendations. Install detectable warnings for full width of curb ramp, excluding curbs and flares. 			
Comments:			
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and <u>Highlight</u> .) 2511.03, B, 3, e, Verification.			
<p>Add as a new article:</p> <p>Slope Verification.</p> <p>Verify slope compliance according to Materials I.M. 363.</p>			
Reason for Revision: To include a reference to Materials I.M. 363 in the specifications.			
New Bid Item Required (X one)	Yes	No X	
Bid Item Modification Required (X one)	Yes	No X	
Bid Item Obsolescence Required (X one)	Yes	No X	

Comments:
County or City Comments:
Industry Comments:

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Wayne Sunday		Office: Construction & Materials		Item 12	
Submittal Date: October 6, 2014		Proposed Effective Date: April 21, 2015			
Article No.: 2526.03, A, 3, d		Other:			
Title: Construction Survey - Bridges					
Specification Committee Action: Approved as recommended.					
Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015		
Specification Committee Approved Text: See Specification Section Recommended Text.					
Comments: None.					
Specification Section Recommended Text: 2526.03, A, 3, d.					
Replace the Article: Perform an independent check of the above stakes. Independent check shall be performed by a second survey crew using their own calculations and equipment entries for staking bridge. Results and staking layout shall be sent to the Engineer prior to starting structure construction.					
Comments:					
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and Highlight .					
<p>3. Bridges.</p> <ul style="list-style-type: none"> a. Mark locations and elevations with metal pin or tack in a wood hub, flat, and lath. Clearly mark flat with the pier/abutment station location, design number, and offset distance from centerline of the approach roadway. b. Establish a minimum of three temporary benchmarks. c. Mark location of test pile with a wood hub. d. Perform an independent check of the above stakes. The independent check shall be performed by a second survey crew using their own calculations and equipment entries for staking the bridge. All results and staking layout shall be sent to the Engineer prior to starting any structure construction. e. Submit elevations of all completed substructure beam seats to the Engineer for review prior to installation of bearings and superstructure elements. f. Take elevations of beams as erected. Provide the elevations to the Engineer for computation of finish elevations for deck construction. Locations for determining beam elevations are to be according to the plans. g. Provide the Engineer with a copy of the staking diagram prior to commencing work. 					
Reason for Revision: The independent survey check needed to be more clearly defined and requirements added to ensure all staking information is provided to the Engineer prior to the start of construction.					
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: Greg Mulder / Mark Bortle		Office: Construction and Materials		Item 13	
Submittal Date: 2014.09.16		Proposed Effective Date: April 2015			
Article No.: 2528.01, C		Other:			
Title: Traffic Quality Control					
Specification Committee Action: Approved as recommended.					
Deferred:	Not Approved:	Approved Date: 11/13/2014		Effective Date: 4/21/2015	
Specification Committee Approved Text: See Specification Section Recommended Text.					
Comments: The Office of Traffic and Safety asked if the list of approved classes should be maintained somewhere other than in the Standard Specifications, so that changes could be made more quickly and without a specification revision. The Office of Construction and Materials will see if there is a more appropriate location to maintain this list.					
Specification Section Recommended Text: 2528.01, C, 1.					
<p>Replace the second sentence:</p> <p>The Traffic Control Technician is required to have attended and passed the exam in an ATSSA Traffic Control Technician, IMSA Work Zone Traffic Control, or Minnesota DOT Traffic Control Supervisor training class, or Texas Engineering Extension Service Work Zone Traffic Control training class.</p>					
Comments:					
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and Highlight .)					
<p>2528.01.C.1. Maintain a Traffic Control Technician on staff, even though the traffic control portion of the contract may be subcontracted. The Traffic Control Technician is required to have attended and passed the exam in an ATSSA Traffic Control Technician, IMSA Work Zone Traffic Control, or Minnesota DOT Traffic Control Supervisor training class, or Texas Engineering Extension Service Work Zone Traffic Control training class. This Traffic Control Technician is responsible for overall management of the Contractor's quality control program for traffic control.</p>					
Reason for Revision: To add another equivalent traffic control technician (TTC) course. The Instructor's Guide has been reviewed and it is substantially the same as the other current approved courses. This will allow another course to be used to fulfil the TCT training requirements.					
New Bid Item Required (X one)		Yes		No X	
Bid Item Modification Required (X one)		Yes		No X	
Bid Item Obsolescence Required (X one)		Yes		No X	
Comments:					
County or City 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: Brian Smith		Office: Design	Item 14
Submittal Date: 2014.10.28		Proposed Effective Date: 4/21/2015	
Section No.: 2529		Other:	
Title: Full Depth Finish Patches			
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: None.			
Specification Section Recommended Text:			
2529.04, Method of Measurement.			
Add the Article:			
H. Subbase Patch with EF Joint.			
<ol style="list-style-type: none"> 1. The Engineer will compute in square yards (square meters) areas of subbase placed as provided in Paragraph A, above. The Engineer will not measure subbase aggregate used for special shaping at longitudinal drains. 2. The Engineer will separately compute areas in square yards (square meters), where subbase was directed to be placed to a depth greater than originally specified. 3. When required by the contract documents, subgrade stabilization material will not be measured separately for payment. 			
2529.05, Basis of Payment.			
Add the Article:			
H. Subbase Patch with EF Joint.			
<ol style="list-style-type: none"> 1. For the number of square yards (square meters) of subbase furnished and placed, Contractor will be paid the contract unit price per square yard (square meter). 2. Payment is full compensation for: <ul style="list-style-type: none"> • Furnishing and installing subbase, • Additional excavation necessary for this placement and removal of excavated material, • Placing backfill material in the disturbed shoulder area. • Furnishing and installing subgrade stabilization material when required. 3. When subbase has been placed to a greater depth than specified in the contract documents, at the Engineer's direction, payment per square yard (square meter) for those areas will be increased by 20% for each inch (30 mm) of increased depth. This increased payment is full compensation for additional excavation and subbase material, associated compaction, and if so ordered, additional depth for the transverse subdrain. 			
Comments:			
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and <u>Highlight</u> .)			

2529.04, H, Subbase Patch with EF Joint.

Add as a new article:

1. The Engineer will compute in square yards (square meters) the areas of subbase placed as provided in Paragraph A, above. The Engineer will not measure subbase aggregate used for special shaping at longitudinal drains.
2. The Engineer will separately compute areas in square yards (square meters), where subbase was directed to be placed to a depth greater than that originally specified.
3. When required, subgrade stabilization material will not be measured separately for payment.

2529.05, H, Subbase Patch with EF Joint.

Add as a new article:

1. For the number of square yards (square meters) of subbase furnished and placed, the Contractor will be paid the contract unit price per square yard (square meter).
2. Payment is full compensation for:
 - Furnishing and installing subbase,
 - Additional excavation necessary for this placement and the removal of excavated material,
 - Placing backfill material in the disturbed shoulder area.
 - Furnishing and installing subgrade stabilization material when required.
3. When subbase has been placed to a greater depth than specified in the contract documents, at the Engineer's direction, payment per square yard (square meter) for those areas will be increased by 20% for each inch (30 mm) of increased depth. This increased payment is full compensation for additional excavation and subbase material, associated compaction, and if so ordered, additional depth for the transverse subdrain.

Reason for Revision: Currently, this appears as a Possible Contract Item on PR-101. At the time this was added to the standard, the intent was to create a bid item for Subbase Patch associated with EF Joints because these subbase patches are 12 inches thick as opposed to the standard 6 inches for other subbase patches.

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

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder		Office: Construction & Materials	Item 15
Submittal Date: 2014.09.22		Proposed Effective Date: April 2015	
Article No.: 2530.03, B, 3, c, 1 Title: Partial Depth Finish Patches		Other:	
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: The Davenport RCE Office was supportive of the additional curing specifications.			
Specification Section Recommended Text: 2530.03, B, 3, c, 1, Class A Patching Material.			
<p>Replace the second sentence: Use a minimum curing time according to Materials I.M. 491.20, Appendix A. If manufacturer's strength data at anticipated curing temperatures is not available, use only when mix and substrate temperature are 50°F (10°C) or greater and cure for a minimum of 4 hours.</p>			
Comments: Deferred from the September meeting. The Davenport RCE Office asked what they should do if the manufacturer doesn't provide a table or cure times for multiple temperatures. When a cure time is given for only one temperature, there is no way to extrapolate a cure time for other temperatures. The Office of Construction and Materials will come up with an overall minimum cure time if none is given by the manufacturer or some other way to have an enforceable minimum cure time for all manufacturers.			
Member's Requested Change (Redline/Strikeout):			
<p>c. Protecting and Curing. 1) Class A patching material. Cure according to the manufacturer's recommendations. Use a minimum curing time according to Materials I.M. 491.20, Appendix A.</p>			
Reason for Revision: No cure times are given in IM 491.20. Use manufacturer's recommendations for cure time.			
New Bid Item Required (X one)	Yes	No	X
Bid Item Modification Required (X one)	Yes	No	X
Bid Item Obsolescence Required (X one)	Yes	No	X
Comments:			
County or City Comments:			
Industry Comments:			

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Melissa Serio		Office: Construction & Materials	Item 16
Submittal Date: 2014.10.06		Proposed Effective Date: April 21, 2015	
Article No.: 2601.03, H, 3, c Title: Application		Other:	
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: None.			
Specification Section Recommended Text: 2601.03, H, 3, c, Application. Replace the second sentence: Apply according to manufacturer's instructions and the contract documents.			
Comments:			
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and Highlight .) 2601.03, H, 3, c. Application Replace the Article: Place type specified on channel or slope after shaping. Apply according to manufacturer's instructions and the contract documents. Furnish and apply a minimum of 1 inch (25 mm) of soil suitable for the establishment of vegetation on the TRM. Furnish and apply seed and fertilizer. Furnish and apply special ditch control (wood excelsior mat) one soil fill.			
Reason for Revision: A new standard road plan (EC-104) for TRM installation will be effective April 2015.			
New Bid Item Required (X one)	Yes	No X	
Bid Item Modification Required (X one)	Yes	No X	
Bid Item Obsolescence Required (X one)	Yes	No X	
Comments: None			
County or City Comments:			
Industry Comments:			

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Brian Smith & Greg Mulder / Melissa Serio		Office: Design, and Construction & Materials	Item 17
Submittal Date: October 15, 2014		Proposed Effective Date: April 21, 2015	
Article No.: 2601.04, D Title: Method of Measurement		Other:	
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: None.			
Specification Section Recommended Text: 2601.04, D.			
<p>Replace the last sentence:</p> <p>Materials used for anchor slots, junction slots, check slots, terminal folds, and lap joints, mulch, and are incidental. sSeed and fertilizer for Special Ditch Control and TRM are incidental.</p>			
Comments:			
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and Highlight .)			
<p>Replace the Article:</p> <p>D. Special Ditch Control, Turf Reinforcement Mat, and Slope Protection: squares of 100 square feet (square meters) calculated from measurements to the nearest foot (0.1 m). Measurement of actual area covered will be used, but will not exceed an area based on the actual measured length and design width. Materials used for anchor slots, junction slots, check slots, terminal folds, and lap joints, mulch, and are incidental. sSeed and fertilizer for Special Ditch Control and TRM are incidental.</p>			
Reason for Revision: In Basis of Payment for Slope Protection, seed and fertilizer are not included. This revision is to correct the inconsistency between the MOM and BOP articles. Also deleting mulch since it is not part of the work item.			
New Bid Item Required (X one)	Yes	No X	
Bid Item Modification Required (X one)	Yes	No X	
Bid Item Obsolescence Required (X one)	Yes	No X	
Comments: None			
County or City Comments:			
Industry Comments:			

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Malcom Dawson		Office: Construction and Materials		Item 18	
Submittal Date: 2014.10.01		Proposed Effective Date: April 2015			
Article No.: 4109 Appendix Title: Aggregate Gradation Table		Other:			
Specification Committee Action: Approved with changes.					
Deferred:	Not Approved:	Approved Date: 11/13/2014		Effective Date: 4/21/2015	
Specification Committee Approved Text: See attached Gradation s 6 and 19.					
Comments: The Office of Construction and Materials withdrew the revision to Note 10. If a producer can meet the gradation and other requirements, the product does not need to be washed.					
Specification Section Recommended Text: Gradation 6, Gradation 19, and Note 10: see attached.					
Comments: Changes will be made to Metric Gradation Table also.					
Reason for Revision:					
Gradation 6: Repair and Overlay Aggregate					
Background: The ½” sieve for repair and overlay aggregate is 97-100 percent passing. One or two pieces of aggregate will make the gradation fall out of specification. Since most deck overlays are 2 inches, the maximum aggregate size of one third the thickness of the overlay equals 0.66 inches, so a few more particles of ½’ material will not cause any problems. Ames Mine is one of the few sources still producing the material for overlays and typically runs 94-96% passing the ½” sieve.					
Recommendation: Consider revising gradation No. 6 to 90-100 passing the ½” sieve					
Gradation 19: 1/2-inch Aggregate for Bituminous Seat Coat					
Background: The minus 200 identified in gradation 19 is 0 – 2 percent. The minus 200 in gradation 20 and 21 for ½ inch screened gravel and 3/8-inch cover aggregate is 0 – 1.5 percent. Past experience is that it is difficult to achieving acceptable compatibility results when the minus 200 on cover aggregate samples submitted for testing approaches 1.5 percent.					
NHRP Synthesis 342 “Chip Seal Best Practices”, recommends using an aggregate with a maximum minus 200 of 1 percent at time of production.					
DME Recommendation: Consider revising gradation No. 19 to 0 – 1.5 passing the No. 200 sieve.					
Note 10: Course aggregate for PCC needs to be a washed product.					
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:					

AGGREGATE GRADATION TABLE – ENGLISH

Grad. No.	Section No.	Std. Sieve Size	1½"	1"	¾"	½"	3/8"	#4	#8	#30	#50	#100	#200	*Notes
		Intended Use	Percent Passing											
6	4115.06 (Repair & Overlay)	PCC CA			100	97-90-100	40-90	0-30					0-1.5	10

Grad. No.	Section No.	Std. Sieve Size	1½"	1"	¾"	½"	3/8"	#4	#8	#30	#50	#100	#200	*Notes
		Intended Use	Percent Passing											
19	4125 (½" Cr. Gr. or Cr. St.)	Cover Aggregate			100	97-100	40-90	0-30	0-15				0-2 1.5	11

AGGREGATE GRADATION TABLE – METRIC

Grad. No.	Section No.	Std. Sieve Size	37.5mm	25mm	19mm	12.5mm	9.5mm	4.75mm	2.36mm	600µm	300µm	150µm	75µm	*Notes
		Intended Use	Percent Passing											
6	4115.06 (Repair & Overlay)	PCC CA			100	97-90-100	40-90	0-30					0-1.5	10

Grad. No.	Section No.	Std. Sieve Size	37.5mm	25mm	19mm	12.5mm	9.5mm	4.75mm	2.36mm	600µm	300µm	150µm	75µm	*Notes
		Intended Use	Percent Passing											
19	4125 (½" Cr. Gr. or Cr. St.)	Cover Aggregate			100	97-100	40-90	0-30	0-15				0-2 1.5	11

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Brian Smith		Office: Design	Item 19
Submittal Date: 2014.10.28		Proposed Effective Date: 4/21/2015	
Article No.: 4141.03 Title: Metal Pipe Aprons and Beveled End Sections		Other:	
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: None.			
Specification Section Recommended Text: 4141.03, C. Replace the Article: Furnish Aprons and end sections shall meeting requirements of Standard Road Plans RF-5 DR-203 and RF-44 DR-211.			
Comments:			
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and Highlight.) 4141.03, C Replace the article: Furnish Aprons and end sections shall meeting the requirements of Standard Road Plans RF-5 DR-203 and RF-44 DR-211.			
Reason for Revision: RF-5 is being renumbered as DR-203 and RF-44 is being renumbered as DR-211.			
New Bid Item Required (X one)	Yes	No	X
Bid Item Modification Required (X one)	Yes	No	X
Bid Item Obsolescence Required (X one)	Yes	No	X
Comments:			
County or City Comments:			
Industry Comments:			

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Mahbub Khoda		Office: Materials	Item 20
Submittal Date: 2014.10.25		Proposed Effective Date: April 2015	
Section No.: 4171 Title: Detectable Warnings		Other:	
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: None.			
Specification Section Recommended Text:			
4171, Detectable Warnings.			
Replace the Articles:			
4170.03 POLYMER DETECTABLE WARNING PANELS.			
Detectable warning panels with truncated dome inserts in prefabricated panels of vitrified polymer shall include integral embedment flanges for securing the panels to the concrete. Embedment flange cells shall include vent holes for a cast in place installation. Panels shall meet the following specifications:			
<ul style="list-style-type: none"> • Warpage of Edge - 0.5% maximum. • Water Absorption - ASTM D 570-98 less than 0.05% 0.2. • Slip Resistance - ASTM C 1028-96 greater than 0.80. • Compressive Strength - ASTM D 695-02a greater than 28,000 psi (193 MPa). • Tensile Strength - ASTM D 638-03 greater than 49,000 11,600 psi (434 80 MPa). • Flexural Strength - ASTM D 790-03 greater than 25,000 psi (172 MPa). • Chemical Stain Resistance - ASTM D 543-95 no discoloration or staining. • Abrasive Wear - ASTM D 2486-00 less than 0.060 after 1000 cycles. • Wear Resistance - ASTM C 501-84 greater than 500. • Fire Resistance - ASTM E 84-05 flame spread less than 45 20. • Impact Resistance - ASTM D 5420-04 greater than 550 inch-pounds per inch (24.5 J/cm). • Accelerated Weathering - ASTM G 155-05a for 3000 hours ΔE<4.5 tile color 33538, no fading or chalking. • Accelerated Aging Cycle testing - ASTM D 1037 no change in color, gloss or delamination. • Freeze Thaw - ASTM D 4037-99 1026 no cracking, delamination, or other defects. • Salt Spray - ASTM B 117-03 for 200 hours or no deterioration after 200 hours of exposure. 			
4170.04 CAST IRON DETECTABLE WARNING PANELS.			
Detectable warning panels with truncated dome inserts in cast iron panels shall meet the following requirements:			
<ul style="list-style-type: none"> • Slip resistance - ASTM C 1028 greater than 0.8. • Tensile strength of gray cast iron conforming to ASTM A 48. • Wear resistance - ASTM A-532 C 501 greater than 8500. • Impact resistance - ASTM A 327 greater than 550 inch-pounds per inch (24.5 J/cm). Resistance to impact from Falling Tub NCHRP Report 670: Draft T4-33, Part II. No Substantial damage. • Warpage of edge 0.5% maximum. 			

- Meet Article 4153.04.

4170.05 STEEL DETECTABLE WARNING PANELS.

Detectable warning panels with truncated dome inserts in steel panels shall meet the following requirements:

- Slip resistance - ASTM C 1028 greater than 0.8.
- Wear resistance - ASTM A-532 C 501 greater than 8500.
- Impact resistance - ASTM A 327 greater than 550 inch-pounds per inch (24.5 J/cm). Resistance to impact from Falling Tub NCHRP Report 670: Draft T4-33, Part II. No Substantial damage.
- ~~Warpage of edge 0.5% maximum.~~
- Meet Article 4153.03.

Comments:

Member's Requested Change (Redline/Strikeout):

4171.03 polymer detectable warning panels.

Detectable warning panels with truncated dome inserts in prefabricated panels of vitrified polymer shall include integral embedment flanges for securing the panels to the concrete. Embedment flange cells shall include vent holes for a cast in place installation. Panels shall meet the following specifications:

- ~~Warpage of Edge - 0.5% maximum.~~
- Water Absorption - ASTM D 570-98 less than ~~0.05%~~ 0.2
- Slip Resistance - ASTM C 1028-96 greater than 0.80.
- Compressive Strength - ASTM D 695-02a greater than 28,000 psi (193 MPa).
- Tensile Strength - ASTM D 638-03 greater than ~~19,000~~ 11,600 psi (~~134~~ 80 MPa).
- Flexural Strength - ASTM D 790-03 greater than 25,000 psi (172 MPa).
- Chemical Stain Resistance - ASTM D 543-95 no discoloration or staining.
- Abrasive Wear - ASTM D 2486-00 less than 0.060 after 1000 cycles.
- Wear Resistance - ASTM C 501-84 greater than 500.
- Fire Resistance - ASTM E 84-05 flame spread less than ~~45~~ 20.
- Impact Resistance - ASTM D 5420-04 greater than 550 inch-pounds per inch (24.5 J/cm).
- Accelerated Weathering - ASTM G 155-05a for 3000 hours ~~ΔE<4.5 tile color 33538~~, no fading or chalking.
- Accelerated Aging Cycle testing - ASTM D 1037 no change in color, gloss or delamination.
- Freeze Thaw - ASTM D 1026 ~~1037-99~~ no cracking, delamination, or other defects.
- Salt Spray - ASTM B 117-03 ~~for 200 hours or no~~ deterioration after 200 hours of exposure.

4171.04 Cast iron detectable warning panels.

Detectable warning panels with truncated dome inserts in cast iron panels shall meet the following requirements:

- Slip resistance - ASTM C 1028 greater than 0.8.

<p>———— Tensile strength of gray cast iron conforming to ASTM A 48.</p> <ul style="list-style-type: none"> · Wear resistance - ASTM A 532 greater than 500. C501 greater than 8500. · Impact resistance – ASTM A 327 greater than 550 inch-pounds per inch (24.5 J/cm). Resistance to impact from Falling Tub NCHRP Report 670: Draft T4-33, Part II. No Substantial damage <li style="padding-left: 40px;">· Warpage of edge 0.5% maximum. · Meet Article 4153.04. <p>4171.05 steel detectable warning panels.</p> <p>Detectable warning panels with truncated dome inserts in steel panels shall meet the following requirements:</p> <ul style="list-style-type: none"> · Slip resistance - ASTM C 1028 greater than 0.8. · Wear resistance - ASTM A 532 greater than 500. C 501 greater than 8500. · Impact resistance - ASTM A 327 greater than 550 inch-pounds per inch (24.5 J/cm). Resistance to impact from Falling Tub NCHRP Report 670: Draft T4-33, Part II. No Substantial damage · Warpage of edge 0.5% maximum. · Meet Article 4153.03. 					
<p>Reason for Revision: Update current requirements.</p>					
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
<p>Comments: The special provision we used to write the spec was company specific. We currently have only three vendors who can meet our spec. The requested change will allow more vendors to compete without compromising durability of the Detectable Warning Panels.</p>					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Brian Smith		Office: Design	Item 21
Submittal Date: 2014.10.28		Proposed Effective Date: 4/21/2015	
Article No.: 4185.02, D Title: Breakaway (Transformer) Base		Other:	
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 4/21/2015
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: The Office of Traffic and Safety asked if Materials I.M. 485.01 is being added in April 2015, as it does not currently exist. It will be a new Materials I.M. effective with the April 2015 letting.			
Specification Section Recommended Text: 4185.02, D, Breakaway (Transformer) Base.			
<p>Rename and Replace the Article: Breakaway (Transformer) Base Light Pole Bases.</p> <p>1. Breakaway (Transformer) Base. Furnish bases meeting the following requirements:</p> <ul style="list-style-type: none"> 1 a. Two piece weldments with internally welded inside corners/material 356 T6 complying with ASTM B 108-87 aluminum alloy permanent mold castings. 2 b. Designed according to AASHTO Standards and Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals. 3 c. Meet or exceed NCHRP Report 350, or AASHTO MASH criteria for any assembly system evaluated after January 1, 2011. d. Comply with Materials I.M. 485.01. 4 e. Capable of supporting the pole mounting height and mastarm length shown in the contract documents. 5 f. Equipped with a manufacturer furnished, other than aluminum (in other words, having no scrap value), access door with door opening area of no less than 100 square inches (0.065 m²), unless shown otherwise. <p>2. Slip Base. Furnish bases meeting the following requirements:</p> <ul style="list-style-type: none"> a. Meet or exceed NCHRP Report 350, or AASHTO MASH criteria for any assembly system evaluated after January 1, 2011. b. Comply with Materials I.M. 485.01. 			
Comments:			
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and Highlight.) 4185.02, D, Breakaway (Transformer) Base. Retitle and replace the article: Breakaway (Transformer) Base Light Pole Bases. <p>1. Breakaway (Transformer) Base. Furnish bases meeting the following requirements:</p> <ul style="list-style-type: none"> 1a. Two piece weldments with internally welded inside corners/material 356 T6 complying with ASTM B 108-87 aluminum alloy permanent mold castings. 2b. Designed according to AASHTO Standards and Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals. 3c. Meet or exceed NCHRP Report 350, or AASHTO MASH criteria for any assembly system evaluated after January 1, 2011. 			

<p>d. Comply with Materials I.M. 485.01.</p> <p>4e. Capable of supporting the pole mounting height and mastarm length shown in the contract documents.</p> <p>5f. Equipped with a manufacturer furnished, other than aluminum (in other words, having no scrap value), access door with door opening area of no less than 100 square inches (0.065 m²), unless shown otherwise.</p> <p>2. Slip Base. Furnish bases meeting the following requirements:</p> <p>a. Meet or exceed NCHRP Report 350, or AASHTO MASH criteria for any assembly system evaluated after January 1, 2011.</p> <p>b. Comply with Materials I.M. 485.01.</p>		
<p>Reason for Revision: Add in reference to Materials I.M. 485.01, which will reference a list of approved transformer and slip bases.</p>		
New Bid Item Required (X one)	Yes	No X
Bid Item Modification Required (X one)	Yes	No X
Bid Item Obsolescence Required (X one)	Yes	No X
Comments:		
County or City Comments:		
Industry Comments:		

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Gary Novey		Office: Bridges and Structures		Item 22	
Submittal Date: October 28, 2014		Proposed Effective Date: January 2015			
Article No.:		Other: DS-12035 Partial Depth Bridge Deck Patching			
Specification Committee Action: Approved with changes.					
Deferred:	Not Approved:	Approved Date: 11/13/2014		Effective Date: 1/21/2015	
Specification Committee Approved Text: See attached Developmental Specifications for Partial Depth Bridge Deck Patching.					
<p>Comments: The Office of Bridges and Structures asked if there needed to be a specific temperature for the substrate before placement of the patch. The language previously read "until warm to the touch". Language was revised to match the temperature of the materials incorporated into the patch.</p> <p>The Specifications Section asked if the DS should be make available for projects in the January 2015 letting. The effective date was revised to January 21, 2015.</p>					
Specification Section Recommended Text: See attached Draft Developmental Specifications for Partial Depth Bridge Deck Patching.					
Comments:					
DS-12035 see attached					
Reason for Revision:					
<p>There were concerns from the field concerning contractor placing patches in cold weather without guidance from the material producer. Patches failed and had to be replaced. This update provides some guidance on curing when product data is insufficient or unavailable. Also, fixes reference to 2426 bonding grout that was removed from a previous spec change.</p>					
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:					

DS-12XXX
(Replaces DS-12035)



**DEVELOPMENTAL SPECIFICATIONS
FOR
PARTIAL DEPTH BRIDGE DECK PATCHING**

**Effective Date
January 21, 2015**

THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

12XXX.01 DESCRIPTION.

Partial depth bridge deck patching consists of removing deteriorated bridge deck concrete in areas designated by the contract documents. This includes furnishing and placing patching material to provide a new traffic surface. This work is in areas where the size, shape, and depth of patch depends on the extent of deck deterioration and will be determined during the removal operation.

12XXX.02 MATERIALS AND EQUIPMENT.

A. Materials.

1. When extended lane closures are allowed by the contract documents, a Class O or HPC-O mix in accordance with Material I.M. 529 may be utilized. ~~Curing times are shown in the following table. Do not use these mixes if average daily temperature drops below 40°F (5°C) for more than three consecutive days or stays below 50°F (10°C) for more than one half of any 24 hour period.~~

Table DS-12XXX.02-1: Curing Times

Ambient temperature	Curing period
Greater than 85°F (30°C)	24 hours
70 to 84°F (21 to 29°C)	36 hours
50 to 69°F (10 to 20°C)	48 hours

2. Use materials described below if extended lane closures are not allowed in the contract documents.
 - a. Use materials listed in Materials I.M. 491.20, Appendix B.
 - b. Follow manufacturer's recommendations for patching material except as modified by this specification. Furnish two copies of manufacturer's product information, mixing procedures, placement procedures and curing procedures to the Engineer at least 14 calendar days prior to Preconstruction Conference.
 - c. Calcium chloride shall not be added to patching mix.

- d. Patching materials may be used with or without coarse aggregate in accordance with manufacturer's recommendations.
- e. Aggregate for extending grout shall be pea gravel with a minimum durability of Class 2 meeting the following gradation:

Table DS-12XXX.02-21: Pea Gravel Gradation

Sieve Size	Percent Passing
0.5 inch (12.5 mm)	100
0.375 inch (9.5 mm)	85 - 100
No. 8 (2.36 mm)	0 - 10

- f. Manufacturer's recommendations shall be followed for adding aggregates to these mixes.

B. Equipment.

1. Remove existing deck surface material by wet or dry saws, jack hammers, or similar equipment. Hand equipment may be necessary to achieve a vertical edge and designated shape.
2. The following additional equipment will be required:
 - Sandblasting equipment for cleaning the prepared patch area before placing the patch.
 - Preparation of the patch area shall be completed using equipment no heavier than a 15 pound (7 kg) air chisel. With the approval of the Engineer, a 35 pound (16 kg) air chisel or jackhammer, may be used if its use does not result in significant damage to patch area and edges.
 - Compressed air for cleaning the prepared area shall be oil and moisture free.
 - An on-site mortar or paddle type concrete mixer shall be used for mixing patching material from Materials I.M. 491.20, Appendix B and also Class O and HPC-O mixes. When patch sizes, concrete volume, and deposition rate are appropriate, and the Contractor ensures adequate labor and equipment will be available, the Engineer may approve use of ready mixed Class O or HPC-O concrete.

12XXX.03 CONSTRUCTION.

Tabulations for partial depth bridge deck finish patches shown in the contract documents are for estimating purposes only. The Engineer will designate the location and limits of the patches. The shape and depth may be irregular, thus requiring the use of hand-operated equipment for some or all removal. Existing deck material shall be removed within the designated area to sound concrete as determined by the Engineer. Material removed and not designated for salvage shall become the property of the Contractor and removed in accordance with Article 1104.08 of the Standard Specifications.

Visually survey the bottom of the deck over open roadways or railroads prior to beginning removal operations. Care shall be taken to prevent material from falling onto traffic below. Lane closures below the bridge deck being patched may be required.

A. Preparation of Patch Area.

1. Area to be Patched.

The Engineer will determine areas to be patched by hand sounding. The patching area will normally include 2 to 3 inches (50 mm to 75 mm) of sound concrete around patch edges. Efforts will be made to mark the patching area to accommodate sawing patch edges by using a square, triangle, rectangle, or similar straight edged shape. The minimum depth of patch shall be 1 inch (25 mm).

2. Sawing.

- a. Determine the depth of existing reinforcing bars before sawing.
- b. Saw at a depth of 0.75 to 1 inch (20 to 25 mm) around the designated area. Care shall be

taken to avoid cutting into reinforcing bars.

- c. Keep areas where concrete has been removed free of slurry produced from wet sawing.

3. Removal.

- a. Remove unsound concrete to a minimum depth of 1 inch (25 mm) and no deeper than 1 inch (25 mm) below the top mat of reinforcing steel. Avoid jack hammering on reinforcing steel to prevent damage to reinforcing bars. Care shall to be taken to avoid breaking through the bridge deck. Keep patch edges as straight and square as possible when removal depth exceeds the initial sawcut.
- b. Within 24 hours prior to placing patching material, thoroughly clean all reinforcing bars and newly exposed concrete by sand blasting or shot blasting. Where the bond between existing concrete and reinforcing steel has been broken, remove the concrete adjacent to the reinforcing bar to a depth that will permit new concrete to bond to the entire periphery of the exposed bar. A minimum of 0.75 inch (20 mm) clearance will be required around the bar. Exercise care to prevent cutting, stretching, or damaging reinforcing steel. Do not sand blast or shot blast epoxy coated reinforcing steel. Clean epoxy coated reinforcing steel with hand tools and compressed air to avoid damaging the epoxy coating. Repair damage to the epoxy coating by a method approved by the Engineer.
- c. After sand blasting, remove all loose material with compressed air.

4. Mixing of Patch Material.

- a. Mix material in accordance with manufacturer's recommendations and subject to approval of the Engineer. For Class O and HPC-O mixes, mix material in accordance with Materials I.M. 529. For Class O and HPC-O concrete mixed on-site, slump at time of placement shall be 3 inches (75 mm) with a variation not to exceed +/-1 inch (25 mm). For ready mixed Class O and HPC-O concrete, slump at time of placement shall be 3 inches (75 mm) with a variation not to exceed +/-1 inch (25 mm) and air content of fresh, unvibrated concrete at the time of placement, as determined by Materials I.M. 318, shall be 6.5%, with a maximum variation of plus 2.0% and minus 1.0%.
- b. Organize work so all personnel and equipment are in place before mixing.
- c. Mix according to patch material manufacturer's recommendations and subject to approval of the Engineer. Mix only the amount of material that can be placed in the time frame designated by manufacturer. For Class O and HPC-O mixes, mix material in accordance with Materials I.M. 529 and only the amount of material that can be placed in the working time frame for the mix.
- d. Add ingredients to mixer in order of manufacturer's recommendations for materials listed in Materials I.M. 491.20 Appendix B.
- e. Amount of mix water is important. Use a properly graduated measuring device to measure required amount of water. Never exceed maximum recommended water content.

5. Patching Material Placement.

- a. Place patching mix according to the patching material manufacturer's recommendations and subject to the approval of the Engineer. Place Class O and HPC-O mix according to Article 2426.03, C.
- b. When Class O or HPC-O concrete is used, bonding grout is required. Bonding grout and placement shall be in accordance with Section 2426. scrub a cement-sand-water grout of creamy consistency onto patch surface, including edges. Grout shall consist of two parts Type I or Type I/II Portland cement and one part sand mixed with water. Mix grout by mechanical means. Place patch material before grout dries. If grout dries before placement of patch material, clean patch area again by sandblasting and air blasting, then reapply grout.
- c. Thoroughly trowel patching material into patch edges to ensure a good bond and seal. Ensure that all saw cuts extending beyond the patch area are filled with patching material to prevent water from getting around or under the patch.
- d. Protect and cure patches according to the manufacturer's recommendations. Cure Class

~~O and HPC-O mix in accordance with Article 2426.03, D.~~

- d.** Match profile of patches to the existing deck grade and cross slope. Texture the surface of patches to match the adjacent deck surface.
- e.** Prior to final acceptance, the patch shall be level with the adjacent pavement and have a smooth riding surface.

6. Curing and Opening.

- a.** Cure patches according to manufacturer's recommendations. In lieu of manufacturer's strength data at anticipated curing temperatures, use the following curing times and protection.
 - 1)** When ambient temperatures are between 50 and 60°F (10 to 16°C), precondition materials by storing in a warm place at 70°F (21°C) or warmer, for at least 48 hours before use. Keep materials warm in vehicle cab or insulating box when transporting to job site. Heat substrate by using ground heaters until surface is a minimum of 70°F (21°C). Cover repair with an insulating blanket for a minimum of 4 hours after placement.
 - 2)** From 61 to 74°F (16 to 23°C), cure a minimum of 3 hours.
 - 3)** From 75 to 90°F (24 to 32°C), cure a minimum of 2 hours.
- b.** Cure Class O and HPC-O mix according to Article 2426.03, D and the following table.

Table DS-12XXX.03-1: Curing Times

Ambient temperature	Curing period
Greater than 85°F (30°C)	24 hours
70 to 84°F (21 to 29°C)	36 hours
50 to 69°F (10 to 20°C)	48 hours

B. Limitations of Operations.

- 1.** When patching material, as listed in Materials I.M. 491.20, Appendix B is used, a manufacturer's representative for the patch material being used shall be present at the Preconstruction Conference and at the job site on the first day of patch material placement. Contractor is responsible for notifying manufacturer's representative of these dates and ensuring the representative will attend.
- 2.** Maintain traffic during construction unless the road is closed. Conduct operations with minimum inconvenience to traffic. Lane closures shall be in accordance with the Traffic Control Plan. On two-lane roadways, limit work to one traffic lane at a time except for minor encroachment in the adjacent lane for sawing and patch preparation when traffic is maintained. For multiple lane roadways, the work area may include one lane in each direction.
- 3.** When approved by the Engineer, patch areas may extend up to 2 feet (0.6 m) into an adjacent lane as allowed by the Traffic Control Plan.
- 4.** Place patch material within 24 hours of sawing operations.
- 5.** When patching material, as listed in Materials I.M. 491.20, Appendix B is being used and unforeseen conditions result in excavated areas being left open overnight, furnish a sufficient number of flaggers to warn motorists and direct traffic until patches are complete and the roadway is open to normal traffic. The cost of providing these flaggers shall be at no additional cost to the Contracting Authority.
- 6.** Place concrete patching material only when the ambient air and pavement deck temperatures are in accordance with the manufacturer's recommendations between 50 and 90°F (32°C). Place Class O and HPC-O mix only when ambient air temperatures are greater than 50°F

(10°C) for more than one half day and concrete repair surface temperature is 40°F (5°C) or greater.

~~7. Open patched areas to traffic as soon as the manufacturer's recommended patch strength is achieved. For Class O and HPC-O mixes, curing times are stated in Table DS-12XXX.02-1.~~

C. Area Restoration.

Keep bridge deck surface and areas immediately adjacent to patch areas clean of slurry and excess patch materials.

12XXX.04 METHOD OF MEASUREMENT.

- A. The Engineer will calculate the area of each Partial Depth Bridge Deck Finish Patch in square feet (square meters) from surface measurements.
- B. The area of each patch less than 1 square foot (0.1 m²) will be counted as 1 square foot (0.1 m²) for payment purposes.

12XXX.05 BASIS OF PAYMENT.

- A. Payment for Partial Depth Bridge Deck Finish Patch will be at the contract unit price per square foot (square meter).
- B. Payment is full compensation for sawing, removal of bridge deck concrete, preparing patch area, furnishing and placing patch material, finishing, curing, and restoration of the area.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Greg Mulder / Melissa Serio		Office: Construction & Materials	Item 23
Submittal Date: 2014.10.06		Proposed Effective Date: January 21, 2015	
Article No.: Title:		Other: SS-12008 Backfilling and Compaction of Pipe and Reinforced Box Culverts by Flooding	
Specification Committee Action: Approved as recommended.			
Deferred:	Not Approved:	Approved Date: 11/13/2014	Effective Date: 1/21/2015
Specification Committee Approved Text: See attached Supplemental Specifications for Backfilling and Compaction of Pipe and Reinforced Box Culverts by Flooding.			
Comments: Effective date was changed to January 21, 2015.			
Specification Section Recommended Text: See attached Draft Supplemental Specifications for Backfilling and Compaction of Pipe and Reinforced Box Culverts by Flooding.			
Comments:			
Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use Strikeout and Highlight .)			
12008.02 Materials			
Add to the following: Use perforated subdrain meeting requirements of Section 4143 of the Standard Specifications when shown in the contract documents.			
Reason for Revision: Add clarification that subdrain is to be used only when shown in the contract documents. This is shown in the standard road plan DR-111 (previously called RF-30D).			
New Bid Item Required (X one)	Yes	No X	
Bid Item Modification Required (X one)	Yes	No X	
Bid Item Obsolescence Required (X one)	Yes	No X	
Comments: None			
County or City Comments: None			
Industry Comments: None			

SS-12XXX
(Replaces SS-12008)



**SUPPLEMENTAL SPECIFICATIONS
FOR
BACKFILLING AND COMPACTION OF PIPE AND REINFORCED BOX CULVERTS BY FLOODING**

**Effective Date
January 21, 2015**

THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SUPPLEMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

12XXX.01 DESCRIPTION.

This specification describes backfill and compaction requirements for culverts using flooding. Apply Sections 2402, 2415, 2416, and 2417 of the Standard Specifications unless modified by this specification.

12XXX.02 MATERIALS.

- A.** Use floodable backfill material meeting the requirements of Section 4134 of the Standard Specifications.
- B.** When required, use porous backfill material meeting the requirements of Section 4131 of the Standard Specifications.
- C.** When shown in the contract documents, use perforated subdrain meeting requirements of Section 4143 of the Standard Specifications.

12XXX.03 CONSTRUCTION.

- A.** When backfilling and compaction by flooding is required, backfill may be placed in lifts up to 2 feet (0.6 m) thick. Place backfill simultaneously on both sides of culvert. Determine if pipe culverts need to be restrained and take appropriate actions to prevent floating of culverts during backfilling, flooding, and compaction.
- B.** Begin surface flooding for each lift at the inlet end of the culvert and progress to the outlet. To ensure uniform surface flooding and adequate compaction, fan-spray water in successive 6 to 8 foot (1.8 to 2.4 m) increments using a 2 inch (50 mm) diameter hose for three minutes within each increment. Run hose fully, but with water pressure low enough to avoid eroding cohesive soil plugs.
- C.** After flooding, evaluate effectiveness of compaction with a vibratory pan compactor. If pan compactor produces visible compaction, repeat flooding process until pan compactor produces no visible compaction.

12XXX.04 METHOD OF MEASUREMENT.

Quantity of Flooded Backfill, in cubic yards (cubic meters), will be the quantity shown in the contract documents, including pipe culverts installed by fill installation. Quantity measured for payment will not be adjusted unless the quantity of culvert installed is adjusted.

12XXX.05 BASIS OF PAYMENT.

Contractor will be paid contract unit price for Flooded Backfill per cubic yard (cubic meters). Backfill material, subdrains, restraining culverts against floating, and water required for flooding will not be measured separately for payment, but will be considered incidental to the contract unit price bid for Flooded Backfill.