APPROVED MINUTES
(as revised)
(Revisions are shown highlighted yellow, pages 29 and 61)

December 18, 2018 Standards Committee Meeting

January 24, 2019

TO: Standards Committee

FROM: Scott Trammell, Secretary

RE: Minutes from the December 18, 2018 Standards Committee Meeting

The Standards Committee meeting was called to order by Mr. Leckie, Chair, at 09:00 a.m. on December 18, 2018 in the N955 Bay Window Conference Room. The meeting was adjourned at 11:23 a.m.

The following committee members were in attendance:

John Leckie, Chairman, Construction and Materials Management
Michael Beuchel, Contract Administration Division
Dave Boruff, Traffic Engineering Division
Mark Orton, Bridges Division
Greg Pankow, Construction Management Division
Pankaj Patel*, Pavement Engineering, Highway Design
Matthew Beeson, Office of Materials Management
Michael Koch, District Construction, Fort Wayne District
Elena Veksler, Highway Design and Technical Support
Kurt Pelz, Construction Technical Support
Louis Peagans, District Production, Statewide Technical Services Director

*Proxy for Kumar Dave

Also in attendance were the following:

Andrew Pangallo, INDOT
John Susong, Rinker Materials
Zach Corrice, INDOT
Nayyar Siddiki, INDOT
Andy Najafiarab, INDOIT
Steve Fisher, INDOT
Tom Duncan, FHWA
Ting Nahrwold, INDOT
Steve Smart, County Materials
Ashley Aiken, ICI
Tom Harris, INDOT
Don McNutt, ACPA

Joe Bruno, INDOT
Michael Nelson, INDOT
Lana Podorvanova, INDOT
Stephanie Wagner, INDOT
Steve Duncan, INDOT
Derrick Hauser, INDOT
Scott Trammell, INDOT
Jim Reilman, INDOT
Dan Osborn, ICI
Jim Boyer, INDOT
Victoria Leffel, INDOT
The following items were listed for consideration:

A. GENERAL BUSINESS ITEMS

   OLD BUSINESS

   (No items were listed)

   NEW BUSINESS

   1. Approval of the Minutes from the November 20, 2018 meeting

   DISCUSSION: Mr. Leckie requested a motion to approve the minutes from the
   November 20, 2018 meeting.

   Motion: Mr. Pankow
   Second: Mr. Koch
   Ayes:   9
   Nays:   0

   ACTION: PASSED AS SUBMITTED

B. CONCEPTUAL PROPOSAL ITEMS

   OLD BUSINESS

   (No items were listed)

   NEW BUSINESS

   (No items were listed)

C. STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

   PROPOSED ITEMS

   OLD BUSINESS

   Item No. 4   (2018 SS)   Mr. Beeson   pg 4
   203.22 Embankment Over Existing Roadbeds

   ACTION: WITHDRAWN

   NEW BUSINESS

   Item No. 1   (2018 SS)   Mr. Boruff   pg 10
   Recurring Special Provision: 801-T-194 AUTOMATED FLAGGER ASSISTANCE DEVICE

   ACTION: PASSED AS SUBMITTED

   Item No. 2   (2018 SS)   Mr. Pelz   pg 16
   Recurring Special Provision: 109-C-219 PG ASPHALT BINDER MATERIAL COST
   ADJUSTMENTS

   ACTION: PASSED AS REVISED
Item No. 3 (2018 SS) Mr. Beeson pg 22
106.02 Samples, Tests, Cited Specifications
ACTION: PASSED AS SUBMITTED

Item No. 4 (2018 SS) Mr. Beeson pg 26
602.02 Materials
707.02 Materials
SECTION 709 PORTLAND CEMENT CONCRETE SEALERS
714.02 Materials
723.02 Materials
909.09 Epoxy Penetrating Sealers Blank
909.10 Non-Epoxy PCC Sealers
ACTION: PASSED AS REVISED

Item No. 5 (2018 SS) Mr. Beeson pg 41
203.24 Method of Making Strength, Stiffness and Density Tests
ACTION: PASSED AS REVISED

Item No. 6 (2018 SS) Mr. Beeson pg 45
Recurring Special Provision: 722-B-307 CONCRETE BRIDGE DECK OVERLAYS
ACTION: PASSED AS REVISED

Item No. 7 (2018 SS) Mr. Beeson pg 76
914.04 Grass and Legume Seed
ACTION: PASSED AS SUBMITTED

Item No. 8 (2018 SS) Mr. Beeson pg 81
913.01 Water
ACTION: PASSED AS SUBMITTED

Item No. 9 (2018 SS) Mr. Koch pg 85
202.05 Removal of PCCP, Sidewalks, Curbs, RCBA, and Reinforced Concrete Moment Slabs
ACTION: PASSED AS SUBMITTED

cc: Committee Members
FHWA
ICI
PROBLEM(S) ENCOUNTERED: These Specs were used on few projects and new pavement failed due to soils are switched between two pavement and drainage is not specified.

PROPOSED SOLUTION: Subgrade construction and drainage were taken in account and previous project experience has been used in specification development. The whole section 203.22 is rewritten. This section would replace the current 203.22.

APPLICABLE STANDARD SPECIFICATIONS: 203.22

APPLICABLE STANDARD DRAWINGS: NA

APPLICABLE DESIGN MANUAL SECTION: NA

APPLICABLE SECTION OF GIFE: Yes

APPLICABLE RECURRING SPECIAL PROVISIONS: Yes

PAY ITEMS AFFECTED: NA

APPLICABLE SUB-COMMITTEE ENDORSEMENT: NA

IMPACT ANALYSIS (attach report): NA

Submitted By: Matt Beeson and Nayyar Siddiki
Title: State Material Engineer
Organization: INDOT
Phone Number:
Date:
STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? NA

Will approval of this item affect the Approved Materials List? NA

Will this proposal improve:

- Construction costs? NA
- Construction time? NA
- Customer satisfaction? Yes
- Congestion/travel time? NA
- Ride quality? Yes

Will this proposal reduce operational costs or maintenance effort? NA

Will this item improve safety:

- For motorists? NA
- For construction workers? Na

Will this proposal improve quality for:

- Construction procedures/processes? Yes
- Asset preservation? Yes
- Design process? Yes

Will this change provide the contractor more flexibility?

Will this proposal provide clarification for the Contractor and field personnel?

Can this item improve/reduce the number of potential change orders?

Is this proposal needed for compliance with:

- Federal or State regulations?
- AASHTO or other design code?

Is this item editorial?

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:
REVISION TO STANDARD SPECIFICATIONS (OLD BUSINESS ITEM)

SECTION 203 - EXCAVATION AND EMBANKMENT

203.22 EMBANKMENT OVER EXISTING ROADBEDS

The Standard Specifications are revised as follows:

SECTION 203, AFTER LINE 960, INSERT AS FOLLOWS:

203.22 Embankment Over Existing Roadbeds

If embankment for new pavement is to be placed over an area where a rigid pavement or any pavement having a concrete base is in place, or in other cases when required, the upper surface of which is 1 ft or less below the subgrade elevation of the proposed new pavement, the existing old pavement, including any concrete base, shall be removed. The method of removal, disposal, and basis of payment shall be in accordance with 202.05 and 202.14.

If embankment for new pavement is to be placed over an area where an existing rigid pavement is in place, the upper surface of which is more than 1 ft but less than 3 ft below the subgrade elevation of the proposed new pavement, or in other cases when required, the existing pavement shall be broken. Pavement shall be broken so the area of any individual unbroken slab does not exceed 1 sq yd.

If embankment for new pavement is to be placed over an area where an asphalt filled brick-type or an asphalt-type surface on a concrete base is in place, and such existing surface is more than 1 ft but less than 3 ft below the subgrade elevation of the proposed new pavement, or in other cases when required, the brick and cushion material, or the asphalt courses, shall be removed and the concrete base broken. Removal of the surfacing material, breaking the base, disposal of removed material, and basis of payment shall be in accordance with 202.05 and 202.14.

If embankment for new pavement is to be placed over an area where a flexible-type pavement is in place, the top of which is at the approximate elevation of, or is 1 ft or less below the required subgrade elevation of the proposed new pavement, the existing pavement shall be loosened to the depth directed, but no less than 1 ft. This loosened material shall be spread uniformly over the full width of the subgrade plus 1 ft on each side and compacted. No direct payment will be made for this loosening, spreading, and compacting, the cost thereof to be included in the various pay items of the contract.

If embankment for new pavement is to be placed over an existing macadam, the surface of which is more than 1 ft but less than 3 ft below the subgrade elevation of the proposed new pavement, the existing macadam shall be loosened to a depth sufficient to prevent possible trapping of water above the existing surface. No direct payment will be made for this loosening, the cost thereof to be included in the various pay items of the contract.

Where the existing roadbed is too narrow, except as otherwise herein provided, new pavement shall not be placed partly on old and partly on new embankment. If the fill supporting an existing roadbed is 1 ft or more in depth, and is too narrow to carry the entire
width of the proposed new pavement, the existing width of roadbed shall be taken down to include the new roadbed width and rebuilt from the lowest elevation of the disturbed old roadbed to the required new width. This rebuilding shall be in accordance with these specifications for constructing embankment and as directed. For the necessary tearing down of the existing embankment, payment will be made at the contract unit price per cubic yard for the class or classes of excavation encountered.

If an embankment is to be widened, due precautions shall be taken to ensure a firm foundation. After all sod and other perishable material has been removed, the existing shoulders shall be plowed down 2 ft out from the existing pavement. This material shall be used for widening. Benches, a minimum of 4 ft wide, shall be cut into the slope of the old embankment, unless otherwise directed. The materials from plowing down the shoulders and benching the slopes shall be deposited, spread, and compacted as set out herein for embankment, after which any remaining required embankment shall be finished with additional material, deposited and compacted in like manner. No direct payment will be made for benching, plowing, spreading, and compacting, the cost thereof to be included in the various pay items of the contract.

When an embankment is to be widened, precautions shall be taken to ensure a firm foundation. All sod and other perishable material shall be removed. Benches, a minimum of 4 ft wide, shall be cut into the slope of the old embankment, unless otherwise directed. The Engineer shall be notified if water seeps from the bench cut of the existing embankment. The Engineer will then contact the Office of Geotechnical Services. When tearing down an existing embankment as shown on the plans, payment will be made at the contract unit price per cubic yard for the class or classes of excavation encountered.

(a) Existing Pavement or Rigid Base 2 Ft or Less below Subgrade Elevation
When an embankment for new pavement is to be placed over an area where an existing pavement is 2 ft or less below the subgrade elevation of the proposed new pavement, the existing pavement, including any concrete base, shall be removed. In the area of widening excavate 12 in. below the bottom of existing pavement, place a layer of geotextile in accordance with 918.02(c), Type 2A, and construct the embankment and subgrade with coarse aggregate No. 53 in accordance with 301. Geotextile shall be extended to from the widened area to and shall be a minimum of 2 ft beneath the existing embankment. The method of removal and disposal shall be in accordance with 202.05. The basis of payment will be in accordance with 202.14. Asphalt and brick shall be removed in accordance with 203.02.

(b) Existing Pavement More Than 2 Ft below Subgrade Elevation
When an embankment for new pavement is to be placed over an area where an existing pavement is greater than 2 ft below the subgrade elevation of the proposed new pavement, the existing pavement may remain in place. If the existing pavement remains in place, a 6 in. thick layer of coarse aggregate No. 5 or No. 8, or as shown in the plans, shall be encapsulated in a layer of geotextile for pavement and subgrade, in accordance with
SECTION 203 - EXCAVATION AND EMBANKMENT

203.22 EMBANKMENT OVER EXISTING ROADBEDS

203.09 and 918.02(c). The geotextile-aggregate encapsulation shall be placed on top of the existing pavement and shall extend across the top of the existing pavement and horizontally across the new embankment as shown on the plans. A 4 in. diameter underdrain outlet pipe, in accordance with 715.02(i), shall be installed on both sides of the geotextile-aggregate encapsulation at 400 ft spacing as measured longitudinally along the top of the embankment. The geotextile shall be cut as needed to facilitate installation of the outlet pipe. A type 3 outlet protector shall also be installed in accordance with 718. The embankment shall be constructed with soils in accordance with 203.23 or rock in accordance with 203.20(a). The subgrade shall be constructed in accordance with 207.

The method of measurement and basis of payment for underdrain outlet pipe and outlet protectors shall be in accordance with 715 and 718 respectively.

SECTION 203, AFTER LINE 1414, INSERT AS FOLLOWS:

The cost of placing embankment over existing roadbeds shall be included in the cost of the embankment item shown in the Schedule of Pay Items. The cost of common excavation for existing asphalt or brick pavement shall be included in the cost of the embankment. The cost of benching, plowing, spreading, and compacting shall be included in cost of the embankment.
COMMENTS AND ACTION

203.22 EMBANKMENT OVER EXISTING ROADBEDS

DISCUSSION:

This item was introduced and presented by Mr. Beeson, along with Mr. Siddiki and Mr. Reilman, who explained that Standard Specification section 203.22 has been utilized on only a few projects. The result was that new pavement failed due to soils being switched between existing and proposed pavements where drainage was not specified. Mr. Beeson stated that subgrade construction and drainage were taken into account and previous project experience has been used in this specification development. All of 203.22 has been revised, as shown above. The intention is for this revision to replace the current 203.22.

Mr. Osborn asked about the proposed language that refers to items being paid as “embankment” pay item. What if the job does not have an embankment pay item? Are they saying any job that has this scenario where the existing pavements remain will have an embankment pay item? If so, will the job still have common excavation and borrow pay items? This seems rather confusing.

Mr. Osborn stated that paragraph (a) is also confusing, since it is now unclear if we’re placing geotextile in the widening or to the widening. Does this refer to two different areas? Clarification was provided by Mr. Reilman and revisions are as shown above.

Mr. Osborn further expressed concern with the first sentence in paragraph (b), where it states that “the existing pavement may remain in place.” The word “may” has significant implications with regard to estimating costs and time.

Mr. Beeson agreed with Mr. Pankow in that there are more issues to be discussed and Mr. Beeson chose to withdraw this item so the above concerns can be addressed.

Motion: Mr. Beeson
Second: Mr. Boruff
Ayes: ___________________________ Action: ___________________________
Nays: ___________________________ Passed as Submitted
FHWA Approval: X Withdrawn

Standard Specifications Sections referenced and/or affected:

- 203.22 pg 166-168. Revise Pay Items List

Recurring Special Provision affected: Create RSP (No. ____)

- None Effective _____ Letting
  RSP Sunset Date:

Standard Drawing affected:

- None Revise RSP (No. ____)
  Effective _____ Letting
  RSP Sunset Date:

Design Manual Sections affected:

- None Standard Drawing
  Effective

GIFE Sections cross-references:

- None Create RPD (No. ____)
  Effective _____ Letting

GIFE Update

SiteManager Update
PROBLEM(S) ENCOUNTERED: RSP 801-T-194 for automated flagger assistance devices (AFAD’s) was developed for stop/slow paddle type AFAD’s, but the more prevalent type of AFAD used by industry is the red/yellow lens type. There are also multiple manufacturers of the red/yellow lens type compared to just one stop/slow paddle type manufacturer. In 2016, the IMUTCD was revised to allow red/yellow lens type AFAD’s in Indiana.

Additionally, RSP 801-T-194 has a requirement that the remote control batteries be rechargeable and include a recharging device. This requirement is more suited for a Department procurement specification and should not be a requirement for contractor owned devices.

PROPOSED SOLUTION: Revise RSP 801-T-194 to accommodate both types of AFAD’s and eliminate the rechargeable battery requirements for the remote control device.

APPLICABLE STANDARD SPECIFICATIONS: 801.15, 801.16(b), 923

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: 801-T-194

PAY ITEMS AFFECTED: N/A (part of 801-06775, maintaining traffic, LS)


IMPACT ANALYSIS (attach report): Yes

Submitted By: Joe Bruno on behalf of Dave Boruff

Title: Sr. Engineering of Signals & Markings

Organization: INDOT

Phone Number: (317) 234-7949

Date: 11/26/2018
STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO SPECIAL PROVISIONS

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? Yes, ITM 955 was revised at the 11/8/2018 ITM Committee meeting.

Will this proposal improve:

- Construction costs? Yes
- Construction time? Yes
- Customer satisfaction? N/A
- Congestion/travel time? Yes
- Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? N/A

Will this item improve safety:

- For motorists? Yes
- For construction workers? Yes

Will this proposal improve quality for:

- Construction procedures/processes? Yes
- Asset preservation? N/A
- Design process? N/A

Will this change provide the contractor more flexibility? Yes

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

- Federal or State regulations? No
- AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: N/A
REVISION TO SPECIAL PROVISION
801-T-194 AUTOMATED FLAGGER ASSISTANCE DEVICE

801-T-194 AUTOMATED FLAGGER ASSISTANCE DEVICE

(Revised 05-25-17)

The Standard Specifications are revised as follows:

SECTION 801, BEGIN LINE 11, INSERT AS FOLLOWS:
801.02 Materials
Materials shall be in accordance with the following:

Automated Flagger Assistance Devices .................................923.08

SECTION 801, AFTER LINE 824, INSERT AS FOLLOWS:
(e) Automated Flagger Assistance Devices
An Automated Flagger Assistance Device, AFAD, may be used to control a single
lane of approaching traffic on a two-lane highway for flagging operations.

Only qualified flaggers who have been trained on the operation of the AFAD shall
operate the AFAD. AFAD operators shall be able to provide written proof that they have
been trained by the AFAD manufacturer. Two trained flaggers shall be available on-site
to provide flagging in case of an AFAD malfunction. The flagger operating the AFAD shall
be positioned to have an unobstructed line of sight to approaching traffic and the AFAD.
A single flagger may be used to control both approaches to the work site if adequate
unobstructed sight distance exists between the AFAD operator and both approaching
directions of traffic and both AFADs.

The flagger operating the AFAD shall not leave the device unattended at any time
while the AFAD is in use. The operating flagger shall be positioned at such point to be in
full view of oncoming traffic and the AFAD at all times the AFAD is in use. The flagger
operator shall keep a back up handheld remote readily available at all times when the
device is being operated.

The AFAD shall be positioned so that the end of the gate arm, if used, shall extend
at least to the center of the lane being controlled but shy of the roadway centerline.

A drum shall be placed immediately in front of the AFAD trailer at both corners
for delineation.

SECTION 801, BEGIN LINE 1177, INSERT AS FOLLOWS:
The cost of necessary flaggers; automated flagger assistance devices; protection of
traffic at structure foundations; and furnishing, erecting, placing, maintaining, relocating,
and removing lights, cones, flexible channelizers, tubular markers, drums, delineators, or
other devices as directed shall be included in the cost of maintaining traffic.
SECTION 923, AFTER LINE 229, DELETE AND INSERT AS FOLLOWS:

923.08 Automated Flagger Assistance Device
The Automated Flagger Assistance Device, AFAD, shall alternately display either a STOP sign and a SLOW sign or a steadily illuminated CIRCULAR RED and a flashing CIRCULAR YELLOW lens to control traffic while being operated by a handheld remote control. AFADs shall meet the requirements of the Indiana Manual on Uniform Control Devices, Chapter 6E. Each AFAD shall be equipped with two handheld remote controls. Trailer mounted AFAD’s shall be equipped with a gate arm.

Only automated flagger assistance devices from the List of Approved Solar Powered Traffic Control Devices shall be used. Automated flagger assistance devices will be placed and maintained on the list of approved Solar Powered Traffic Control Devices in accordance with ITM 955.

(a) Signs

1. STOP/SLOW AFAD
The STOP and SLOW signs shall have a minimum width of 24 in. with lettering that is at least 8 in. in height. The WAIT ON STOP sign shall be visible along the same line of view of the STOP sign face.

2. RED/YELLOW Lens AFAD
A “STOP HERE ON RED”, (R10-6 or R10-6a,) sign shall be installed on the right-hand side of the approach at the point at which drivers are expected to stop when the CIRCULAR RED lens is illuminated.

(b) Signals
Red/Yellow lens AFAD shall have at least one set of CIRCULAR RED and CIRCULAR YELLOW lenses that are 12 inches in diameter and in accordance with the Institute of Transportation Engineers, ITE, Purchase Specification for Vehicle Traffic Control Signal Heads.

(bc) Supplemental Conspicuity Devices
The STOP sign face in STOP/SLOW AFAD shall be supplemented by a circular, red stop beacon. The SLOW sign face shall be supplemented by either: a circular, yellow warning beacon, or Type B warning lights with a minimum viewing distance of 1000 ft.

(ed) Gate Arm
Gate arms shall be made of reinforced thermoplastic or tubular aluminum. When in the horizontal positions the arm shall have a 2 ft to 4 ft mounting height above the pavement surface.

(de) Cabinets and Controller
The battery and controller cabinets shall be in accordance with NEMA Standard 250 Enclosure 3R requirements and be provided with a hasp and lock. The AFAD shall
include a manual override of the handheld remote at the device. The AFAD shall not have any means by which it can operate on a pre-set or pre-timed basis.

**Remote Control Device**

Two handheld, cordless remote controls shall be provided with each AFAD. The remote control shall be waterproof and display signal receipt confirmation. The remote shall use a frequency hopping, spread spectrum radio signal with frequencies outside the 700MHz band, 698 MHz to 806 MHz. The remote control device shall be programmable to control either one unit or two units simultaneously and shall control the units over a one-mile range. Remote control batteries shall be rechargeable. A recharging device shall be provided with each remote.

**Batteries and Charging System**

Batteries shall be deep cycle type and be capable of operating the AFAD continuously for two days, 24 hrs per day without a need of re-charging. An audible low battery voltage alarm sound system shall be provided. The battery charging system shall consist of a solar panel. Solar panels shall be UL 1703 certified.

**Trailer**

The trailer, if used, shall be designed to withstand a 60 mph wind loading with a 1.3 gust factor when the AFAD is set up in operating position. The trailer shall be painted safety orange, Federal Standard 595SAE-AMS-STD-595, color No. 12300. The trailer shall be provided with a minimum of two leveling jacks, each operated by a crank which locks in place.

**Acceptance of Temporary Traffic Control Devices**

Temporary traffic control devices will be accepted by visual inspection unless otherwise indicated.
COMMENTS AND ACTION

801-T-194 AUTOMATED FLAGGER ASSISTANCE DEVICE

DISCUSSION:
Mr. Boruff introduced and presented this item, with the assistance of Mr. Bruno, stating that RSP 801-T-194 for automated flagger assistance devices, AFAD’s, was developed for stop/slow paddle type AFAD’s, but the more prevalent type of AFAD used by industry is the red/yellow lens type. There are also multiple manufacturers of the red/yellow lens type compared to just one stop/slow paddle type manufacturer. In 2016, the IMUTCD was revised to allow red/yellow lens type AFAD’s in Indiana. Mr. Boruff pointed out that RSP 801-T-194 also has a requirement that the remote control batteries be rechargeable and include a recharging device. This requirement is more suited for a Department procurement specification and should not be a requirement for contractor owned devices.

Mr. Boruff proposed to revise RSP 801-T-194 to accommodate both types of AFAD’s and eliminate the rechargeable battery requirements for the remote control device.

Mr. Koch asked if the word “circular” is the correct terminology and Mr. Bruno replied that yes, that is the terminology used in the MUTCD, and the approved materials list will be updated for consistency.

Mr. Koch inquired if changing 923.08 to 923.09 would create any confusion, and Mr. Bruno answered that it should not since 923.08 is not referenced elsewhere.

Minor editorial revisions are also shown in these minutes.

Motion: Mr. Boruff
Second: Mr. Koch
Ayes: 10
Nays: 0
FHWA Approval: YES

Passed as Submitted
Passed as Revised
Withdrawn

2020 Standard Specifications
Revise Pay Items List
Create RSP (No.______)
Effective ______ Letting
RSP Sunset Date:

X

Revised RSP (No.801-T-194)
Effective June 01, 2019 Letting
RSP Sunset Date:

Standard Drawing
Effective

Standard Drawing
Effective

Create RPD (No.______)
Effective ______ Letting

GIFE Update
SiteManager Update

Item No. 1 12/18/18 (2018 SS) (contd.)
Mr. Boruff
Date: 12/18/18
STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO SPECIAL PROVISIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: It has been brought to the Department’s attention that misinterpretation has occurred on payment adjustments for when a HMA pay item quantity reaches the RSP 109-C-219 criteria to initiate a pay adjustment for PG asphalt binder.

PROPOSED SOLUTION: Clarify the RSP with an editorial adjustment and notified the field via a construction memorandum stating the criteria of when and when not to initiate a pay adjustment.

APPLICABLE STANDARD SPECIFICATIONS: N/A

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: 109-C-219

PAY ITEMS AFFECTED: Payment Adjustment, PG Asphalt Binder

APPLICABLE SUB-COMMITTEE ENDORSEMENT: N/A

IMPACT ANALYSIS (attach report): Yes

Submitted By: Kurt Pelz

Title: Construction Technical Services Manager

Organization: Construction Management and District Support

Phone Number: 317-234-7726

Date: 11/28/2018
STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO SPECIAL PROVISIONS

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? N/A

Will approval of this item affect the Approved Materials List? N/A

Will this proposal improve:
- Construction costs? Yes
- Construction time? N/A
- Customer satisfaction? N/A
- Congestion/travel time? N/A
- Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? N/A

Will this item improve safety:
- For motorists? N/A
- For construction workers? N/A

Will this proposal improve quality for:
- Construction procedures/processes? Yes
- Asset preservation? N/A
- Design process? N/A

Will this change provide the contractor more flexibility? N/A

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:
- Federal or State regulations? N/A
- AASHTO or other design code? N/A

Is this item editorial? Yes

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: N/A
REVISION TO SPECIAL PROVISION
109-C-219 PG ASPHALT BINDER MATERIAL COST ADJUSTMENTS

(Basis for Use: Required for all contracts with
304, 401, 402, 410, 414, or 610 pay items, or 718-06526.)

109-C-219 PG ASPHALT BINDER MATERIAL COST ADJUSTMENTS
(Revised 05-25-17)

The Standard Specifications are revised as follows:

SECTION 109, AFTER LINE 909, INSERT AS FOLLOWS:

109.05.3 PG Asphalt Binder Material Cost Adjustments

The Contractor shall elect at the time the bid proposal is submitted, in a manner
determined by the Department, whether or not to enact PG asphalt binder material cost
adjustments. If the Contractor elects not to enact such adjustments, there will be no
adjusted payment made to the Contractor for changes in the cost of PG asphalt binder
materials used on the project and the provisions of this specification will not be applied
to the contract. PG asphalt binder material cost adjustments will not be added to the contract
at any time after the Contractor has elected not to enact such adjustments with submittal
of the bid proposal. PG asphalt binder material cost adjustments will not be applied to
alternate bid pavement items, but may be applied to the common items on contracts
containing alternate bid pavement items.

When the Contractor elects to enact PG asphalt binder material cost adjustments
at the time the bid proposal is submitted, the Department will adjust payment to the
Contractor due to an increase or decrease in the cost of PG asphalt binder material used
on the project to produce HMA mixtures that are paid in accordance with 304, 401, 402,
410, 414, 610, or 718. Payment will be adjusted when an increase or decrease in the PG
asphalt binder index for the contract is greater than or equal to 10.01%. Payment will only
be adjusted when the total original or revised quantity of at least one HMA pay item
exceeds 2,000 tons.

For contracts without any original HMA pay item quantity equal to or greater than
2,000 tons, adjusted payment will not be made until the revised quantity of at least one
HMA pay item meets the quantity criteria. No adjusted payment will be made on any
quantity of HMA items placed prior to when the 2,000 ton criteria has been met.

No adjusted payment will be made on any quantity of HMA items placed prior to
when the 2,000 ton criteria has been met. The initial 2,000 tons of HMA will not be eligible
for a payment adjustment.

The Department will determine a PG asphalt binder index from one or more
commercial services that provide regional indices. The PG asphalt binder index will be
maintained by the Office of Materials Management and posted on the Department’s
website. The posting will include an explanation of how the index is determined. A monthly
payment adjustment will be calculated for each HMA pay item placed on the contract during that month. The total PG asphalt binder adjustment applied to the contract each month will be the sum of the calculations for each HMA pay item. The payment adjustment for each HMA pay item will be calculated as follows:

For a price increase:

$$MPA = \frac{(Q \times Pb)}{100} \times LI \times \left[\frac{(BI-LI)}{LI} - 0.10\right]$$

For a price decrease:

$$MPA = \frac{(Q \times Pb)}{100} \times LI \times \left[\frac{(BI-LI)}{LI} + 0.10\right]$$

Where:

- $MPA$ = Mixture Payment Adjustment, in dollars, calculated to the nearest 0.01 dollar for each HMA pay item.
- $Q$ = Quantity of a HMA pay item placed, in tons, entered to the actual 0.01 unit placed. The quantity will be calculated prior to calculation of any other quantity adjustment.
- $Pb$ = Percent of virgin asphalt binder from the DMF, in the adjustment period, or JMF for the HMA mixture, entered to the nearest 0.1.
- $BI$ = PG asphalt binder index for the month the HMA pay item is placed, reported to the nearest whole dollar.
- $LI$ = PG asphalt binder index for the contract. The $LI$ for all original contract HMA pay items equals the $BI$ for the month immediately prior to the month of letting for the contract. The $LI$ for any HMA extra work pay item will be the $BI$ for the month the unit price for the pay item is submitted by the Contractor.

The calculation of $(BI-LI)/LI$ will be rounded to the nearest 0.001. Payment will only be adjusted when the absolute value of $(BI-LI)/LI$ is equal to or greater than 0.101.

If HMA pay items are placed beyond the specified contract completion date for the contract, the Department will calculate pay adjustments on the $BI$ for the month of the specified completion date or the month of placement, whichever result is less.

The unit price of PG asphalt binder payment adjustment will be $1.00 and the pay quantities will be in units of dollars.
**REVISION TO SPECIAL PROVISION**

**109-C-219 PG ASPHALT BINDER MATERIAL COST ADJUSTMENTS**

*Payment will be made under:*

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment Adjustment, PG Asphalt Binder</td>
<td>DOL</td>
</tr>
</tbody>
</table>

---
COMMENTS AND ACTION

109-C-219 PG ASPHALT BINDER MATERIAL COST ADJUSTMENTS

DISCUSSION:
This item was introduced and presented by Mr. Pelz who explained that a misinterpretation has occurred on payment adjustments for when a HMA pay item quantity reaches the RSP 109-C-219 criteria to initiate a pay adjustment for PG asphalt binder. Mr. Pelz proposed to clarify the RSP with an editorial revision and has notified the field via a construction memorandum stating the criteria of when and when not to initiate a pay adjustment.

Mr. Koch proposed language regarding the initial 2,000 tons of HMA not being eligible for payment adjustment. Following a brief discussion with Mr. Pelz and Mr. Beeson, the revision was agreed upon and is as shown highlighted above.

<table>
<thead>
<tr>
<th>Motion: Mr. Pelz</th>
<th>Action:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second: Mr. Koch</td>
<td>Passed as Submitted</td>
</tr>
<tr>
<td>Ayes: 10</td>
<td>X Passed as Revised</td>
</tr>
<tr>
<td>Nays: 0</td>
<td>Withdrawn</td>
</tr>
<tr>
<td>FHWA Approval: YES</td>
<td></td>
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Standard Specifications Sections referenced and/or affected:

<table>
<thead>
<tr>
<th>109.05 begin pg 51.</th>
<th>2020 Standard Specifications</th>
</tr>
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<tr>
<td>Revise Pay Items List</td>
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Recurring Special Provision affected:

<table>
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<tr>
<th>109-C-219 PG ASPHALT BINDER MATERIAL COST ADJUSTMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revise RSP (No.109-C-219) Effective June 01, 2019 Letting</td>
</tr>
<tr>
<td>RSP Sunset Date:</td>
</tr>
</tbody>
</table>

Standard Drawing affected:

<table>
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<tr>
<th>NONE</th>
</tr>
</thead>
</table>

Design Manual Sections affected:

<table>
<thead>
<tr>
<th>NONE</th>
</tr>
</thead>
</table>

GIFE Sections cross-references:

<table>
<thead>
<tr>
<th>NONE</th>
</tr>
</thead>
</table>

SiteManager Update
PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The section in 106.02 regarding Indiana Test Methods and the ITM Committee is out of date and not in line with how the ITM Committee currently operates.

PROPOSED SOLUTION: Delete reference to “T” and “P” ITMs, as in practice users do not need to know the distinction. ITM changes are intended by the ITM Committee to be effective immediately, except in cases determined by the Department to affect current contracts, in which case the implementation is delayed. This is rare, so the language in 106.02 is edited to reflect that.

APPLICABLE STANDARD SPECIFICATIONS: 106.02

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: None

APPLICABLE SUB-COMMITTEE ENDORSEMENT: ITM Committee

IMPACT ANALYSIS (attach report):

Submitted By: Matt Beeson
Title: State Materials Engineer
Organization: INDOT
Phone Number: 317-522-9662
Date: 11/8/18
STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

- Construction costs? N/A
- Construction time? N/A
- Customer satisfaction? N/A
- Congestion/travel time? N/A
- Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? N/A

Will this item improve safety:

- For motorists? N/A
- For construction workers? N/A

Will this proposal improve quality for:

- Construction procedures/processes? Yes
- Asset preservation? N/A
- Design process? N/A

Will this change provide the contractor more flexibility? N/A

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? N/A

Is this proposal needed for compliance with:

- Federal or State regulations? N/A
- AASHTO or other design code? N/A

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:
The Standard Specifications are revised as follows:

SECTION 106, BEGIN LINE 126, DELETE AND INSERT AS FOLLOWS:

The standards for materials and methods of tests of AASHTO and ASTM or other specification referred to herein or elsewhere shall be the standard, interim, or tentative specifications included in the latest published edition which is on file on January 1, unless otherwise specified. Indiana Test Methods and Procedures will be designated as a test method by inserting a T in the ITM number or as a procedure by inserting a P in the ITM number. A test method will become effective immediately upon approval by the ITM Committee. A procedure will become effective on the next September 1, unless approved otherwise by the ITM Committee, unless otherwise directed. In case of discrepancy, the following relationships apply:
106.02 SAMPLES, TESTS, CITED SPECIFICATIONS

DISCUSSION:

Mr. Beeson introduced and presented this item stating that 106.02, with regard to Indiana Test Methods and the ITM Committee, is out of date and not in line with how the ITM Committee currently operates. Mr. Beeson proposed to revise 106.02 to delete the reference to the "T" and "P" ITMs, since users do not need to know the distinction. Mr. Beeson explained that ITM changes are intended by the ITM Committee to be effective immediately, except in cases determined by the Department to affect current contracts, in which case the implementation is delayed, which is rare, so the language in 106.02 has been revised accordingly.

Mr. Beeson suggested that this approved revision be incorporated into the 2020 spec book, and that a RSP is not necessary.

Motion: Mr. Beeson  
Second: Mr. Koch  
Ayes: 10  
Nays: 0  
FHWA Approval: YES

<table>
<thead>
<tr>
<th>Standard Specifications Sections referenced and/or affected:</th>
<th>Action:</th>
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</thead>
<tbody>
<tr>
<td>106.02 pg 63.</td>
<td>2020 Standard Specifications</td>
</tr>
<tr>
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<td>Create RSP (No.____)</td>
</tr>
<tr>
<td></td>
<td>Effective _____ Letting</td>
</tr>
<tr>
<td></td>
<td>RSP Sunset Date:</td>
</tr>
<tr>
<td>Standard Drawing affected:</td>
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</tr>
<tr>
<td></td>
<td>Effective _____ Letting</td>
</tr>
<tr>
<td></td>
<td>RSP Sunset Date:</td>
</tr>
<tr>
<td>Design Manual Sections affected:</td>
<td>Standard Drawing</td>
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<tr>
<td></td>
<td>Effective</td>
</tr>
<tr>
<td>GIFE Sections cross-references:</td>
<td>Create RPD (No.____)</td>
</tr>
<tr>
<td></td>
<td>Effective _____ Letting</td>
</tr>
<tr>
<td></td>
<td>GIFE Update</td>
</tr>
<tr>
<td></td>
<td>SiteManager Update</td>
</tr>
</tbody>
</table>
PROBLEM(S) ENCOUNTERED: The Department is moving away from the use of epoxy penetrating sealers.

PROPOSED SOLUTION: Update the Standard Specifications to remove epoxy penetrating sealers from the specifications.

APPLICABLE STANDARD SPECIFICATIONS: 602.02, 707.02, 714.02, 723.02, 709, and 909

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: 722-B-307

PAY ITEMS AFFECTED: None

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad Hoc: Kelly Cummins, Irina Goloschokin, Mike Nelson, Jim Reilman

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman for Matt Beeson

Title: State Materials Engineer

Organization: INDOT

Phone Number: 317-522-9662

Date: 11/21/18
STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:
- Construction costs? NA
- Construction time? NA
- Customer satisfaction? Yes
- Congestion/travel time? NA
- Ride quality? NA

Will this proposal reduce operational costs or maintenance effort? NA

Will this item improve safety:
- For motorists? NA
- For construction workers? NA

Will this proposal improve quality for:
- Construction procedures/processes? Yes
- Asset preservation? Yes
- Design process? NA

Will this change provide the contractor more flexibility? NA

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? NA

Is this proposal needed for compliance with:
- Federal or State regulations? NA
- AASHTO or other design code? NA

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:
REVISION TO STANDARD SPECIFICATIONS

SECTION 602 - CONCRETE BARRIER
602.02 MATERIALS

SECTION 707 - PRECAST AND PRECAST PRESTRESSED CONCRETE STRUCTURAL MEMBERS
707.02 MATERIALS

SECTION 709 - PORTLAND CEMENT CONCRETE SEALERS

SECTION 714 - REINFORCED CONCRETE BOX STRUCTURES
714.02 MATERIALS

SECTION 723 - REINFORCED CONCRETE THREE-SIDED STRUCTURES
723.02 MATERIALS

SECTION 909 - PAINT AND LIQUID EPOXY
909.09 EPOXY PENETRATING SEALERS
909.10 NON-EPOXY PCC SEALERS

The Standard Specifications are revised as follows:

SECTION 602, BEGIN LINE 12, DELETE AS FOLLOWS:

602.02 Materials
Materials shall be in accordance with the following:

Barrier Delineators .................................................................926.02(c)
Bridge Deck Overlay Materials .............................................722.04
Cast-in-Place Barriers ............................................................702
Cast-in-Place Concrete Glare Screens ....................................702
Construction Warning Lights ...............................................923.03
Penetrating
Concrete Sealers .............................................................709, 909.09

SECTION 707, BEGIN LINE 12, DELETE AS FOLLOWS:

707.02 Materials
Materials shall be in accordance with the following:

Admixtures for Concrete .........................................................912.03
Backer Rod ............................................................................906.02(b)
Coarse Aggregates, Class A or Higher, Size No. 91 .............904
Concrete Curing Materials ......................................................912
Concrete Non-Epoxy PCC Sealers ...........................................909.09, 909.10

SECTION 709, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 709 – PORTLAND CEMENT CONCRETE SEALERS

709.01 Description
This work shall consist of cleaning the concrete surface by sandblasting and applying a concrete sealer in accordance with 105.03. Surfaces to be sealed with PCC sealers shall be given a finish in accordance with 702.21. Where existing concrete or bridge decks are to be sealed, their surfaces shall be sandblasted to remove all foreign materials.

709.02 Materials
Materials shall be in accordance with the following:
CONSTRUCTION REQUIREMENTS

709.03 Surface Preparation General Requirements
The surface to be sealed shall be thoroughly cleaned of all foreign materials by sandblasting if the surface is a bridge deck or older existing concrete, or by air blasting for all other surfaces, just prior to sealing. The air compressor shall be equipped with suitable separators, traps, or filters which remove water, oil, grease, or other substances from the air lines. If rain sufficient to uniformly wet the surface occurs after the cleaning operations and prior to the sealing, the surface to be sealed shall be re-sandblasted or re-airblasted. Concrete sealer shall not be applied in rainy conditions or if rain is anticipated within 2 h after application. Concrete sealer shall be applied when the surface and ambient temperatures are in accordance with the temperatures stated on the list of approved Non-Epoxy Portland Cement Concrete Sealers. Concrete surfaces shall be 28 days or older prior to application. The concrete surface shall be allowed to dry at least 48 h immediately prior to sealing. Sealer shall be applied only when the concrete surface, sealer, and ambient temperatures are all between 40°F and 100°F. The sealer shall be applied at the manufacturer’s specified application rate and shall not exceed the maximum rate stated on the list of approved Non-Epoxy Portland Cement Concrete Sealers. Spray applications shall be accomplished using low pressure, non-atomizing spray equipment adjusted to the wet spray condition, approximately 15 psi. The sealer shall be applied to vertical surfaces such that the spray pattern will be 6 to 8 in. wide, and all surfaces shall achieve a uniform coverage. The sealer shall not be applied when wind conditions may cause overspray. Sealer shall not be applied in rain or when rain is expected to occur within 2 h after completing the sealing application.

709.04 Environmental Requirements Surface Preparation
The surface to be sealed shall be thoroughly cleaned of all foreign materials by sandblasting if the surface is a bridge deck or older existing concrete, or by air blasting for all other surfaces, just prior to sealing. The air compressor shall be equipped with suitable separators, traps, or filters which remove water, oil, grease, or other substances from the air lines. If rain sufficient to uniformly wet the surface occurs after the cleaning operations and prior to the sealing, the surface to be sealed shall be re-sandblasted or re-airblasted. Concrete sealer shall not be applied in rainy conditions or if rain is anticipated within 2 h after application. Concrete sealer shall be applied when the surface and ambient temperatures are in accordance with the temperatures stated on the list of approved Non-Epoxy Portland Cement Concrete Sealers. Concrete surfaces shall be 28 days or older prior to application. The concrete surface shall be allowed to dry at least 48 h immediately prior to sealing. Sealer shall be applied only when the concrete surface, sealer, and ambient temperatures are all between 40°F and 100°F. The sealer shall be applied at the manufacturer’s specified application rate and shall not exceed the maximum rate stated on the list of approved Non-Epoxy Portland Cement Concrete Sealers. Spray applications shall be accomplished using low pressure, non-atomizing spray equipment adjusted to the wet spray condition, approximately 15 psi. The sealer shall be applied to vertical surfaces such that the spray pattern will be 6 to 8 in. wide, and all surfaces shall achieve a uniform coverage. The sealer shall not be applied when wind conditions may cause overspray. Sealer shall not be applied in rain or when rain is expected to occur within 2 h after completing the sealing application.
operations and prior to the sealing, the surface to be sealed shall be re-sandblasted or re-airblasted.

The concrete to be sealed shall be cured as stated on the list of approved Non-Epoxy Portland Cement Concrete Sealers prior to sealer application.

(a) General Requirements
Concrete sealer shall not be applied in rainy conditions or if rain is anticipated within 2 h after application. Concrete sealer shall be applied when the temperature of the concrete surface to be sealed is 40°F or above and when the air temperature is 50°F or above, unless otherwise approved in writing. Concrete sealer shall not be applied when the ambient temperature is expected to fall below 35°F within 12 h after application.

(b) Epoxy Penetrating Sealers
Cast-in-place concrete shall have a minimum of 72 h dry cure prior to the application of epoxy penetrating sealer.

(c) Non-Epoxy PCC Sealers
The concrete to be sealed shall be cured as stated on the list of approved Non-Epoxy Portland Cement Concrete Sealers prior to sealer application.

(d) Low Temperature Epoxy Penetrating Sealer
A low temperature epoxy penetrating sealer shall be applied in accordance with the requirements for epoxy penetrating sealer. However, the low temperature epoxy penetrating sealer shall be applied when the temperatures of the concrete surface and the air are 35°F or above. Low temperature concrete sealer shall not be applied when the ambient temperature is expected to fall below 20°F within 12 h of application.

709.05 Sealer Application

(a) General Requirements
The concrete surface to be sealed shall be completely cleaned and shall be dry and dust free prior to the application of concrete sealer. The concrete sealer shall be applied in a crisscross pattern and should any flat or dry spots appear, more sealer shall be applied. However, there shall be no puddling of material on the surface. The sealed surface shall be
allowed to cure in accordance with the manufacturer’s recommendations. No vehicular traffic will be allowed on the sealed surface during the curing time.

A qualified technical representative of the manufacturer may be required to be on the job the first day the sealer is used. It shall be this representative’s responsibility to instruct the workers in proper mixing, application technique, and safety precautions.

(b) Epoxy Penetrating Sealer

The mixing of the 2-component parts of the epoxy penetrating sealer, their handling and application on the concrete surface shall be in strict accordance with the recommendations of the manufacturer except as may be otherwise specifically covered in these specifications. Under no circumstances shall any solvent be added to the compounds.

The epoxy penetrating sealer shall be applied at the rate of 90 to 110 sq ft/gal. The sealer shall be mixed in the exact manner the manufacturer recommends. After the material has been adequately mixed, preferably by power, and the induction time completed in accordance to manufacturer’s recommendations, it shall be applied to the cleaned dry surface by brush, roller, squeegee, or other approved method.

All cracks shall be filled before beginning the complete sealing of the entire required surface. This crack filling operation shall cure a minimum of 2 h or in accordance with the manufacturer’s recommendations before the complete surface is sealed with the epoxy penetrating sealer. After the surface has been sealed and properly cured, all cracks that are not completely filled shall be retreated. This retreatment of cracks shall be completed within 72 h.

After sufficient amounts of the epoxy penetrating sealer have been applied and before the material has started its initial set or becomes tacky, a light coating of dry clean sand shall be broadcast at a rate of 1 to 2 lbs/sq yd onto all treated surfaces which carry vehicular or pedestrian traffic. The sand shall contain not less than 90% silica and shall be in accordance with the following gradation:

<table>
<thead>
<tr>
<th>SIEVE</th>
<th>PERCENT PASSING</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 16 (1.18 mm)</td>
<td>100</td>
</tr>
<tr>
<td>No. 100 (150 µm)</td>
<td>0-5</td>
</tr>
</tbody>
</table>
After the sand has been applied, the sealed surface shall be allowed to cure.

(ea) Non-Epoxy PCC Sealers

The sealer chosen for use shall be applied at the application rate specified on the list of approved Non-Epoxy Portland Cement Concrete Sealers. The sealer shall be applied without dilution or alteration. Sealers, which are applied by spraying shall be sprayed onto the concrete surface using low pressure spray equipment with a sufficient number of passes to achieve the minimum application rate and a uniform coverage. The low pressure spray apparatus shall have a 15 psi maximum nozzle pressure with a course fan spray, such as a garden, form oil, horticulture, or other low pressure sprayer. The spray equipment tanks, and hoses shall be thoroughly clean, free of foreign matter, oil, residue, and water prior to use. Sealers shall be selected from the Department’s list of approved Non-Epoxy Portland Cement Concrete Sealers and shall be spread to achieve uniform coverage. If roller spreading is required, a clean new roller shall be used for each application sequence. If brooming is specified, a clean, stiff-bristled broom shall be used to spread and work the sealer into the concrete surface.

(db) Clear Sealers

Clear sealers shall be used on all vertical wall surfaces including, but not limited to concrete bridge railing, barrier wall and exterior concrete bridge beams when sealing is specified for these items. Clear sealers will be those identified on the list of approved Non-Epoxy Portland Cement Concrete Sealers. Epoxy penetrating sealers are not clear sealers.

(ec) Alternate To Concrete Sealers

In lieu of concrete surface sealing for concrete barrier wall and concrete bridge decks, reinforced concrete bridge approaches, pier and bent caps, bridge railing, and bridge railing transitions, an alternate concrete mix design may be used [Note: These changes were approved at 09/21/2017 meeting]. The concrete mix design shall be as specified, except either 3% silica fume by weight of cementitious material shall be added to the mix design or 30% ground granulated blast furnace slag substitution based on the required cement content shall be incorporated into the mix. The substitution of ground granulated blast furnace slag shall be in accordance with 702.05. A water-reducing admixture or a water-reducing retarding admixture shall be used in the mix design, and the amount of water...
added shall be adjusted accordingly. The use of these admixtures shall be in accordance with 702.05.

When one of these alternate concrete mix designs are used in lieu of a concrete surface sealer, a finish in accordance with 702.21 will be required.

709.06 Safety Precautions
Epoxy materials are toxic and may be dermatitic. Precautions shall be taken to protect workers from the hazards of these materials. Solvents in the epoxy penetrating sealers and some of the other sealers are flammable. All necessary precautions shall be taken pertaining to the handling and potential overspray of these concrete sealers.

709.07 Method of Measurement
Since payment will be made in a lump sum, only those measurements necessary to verify application rates will be made.

709.08 Basis of Payment
The accepted quantities of this work will be paid for at the contract lump sum price for surface seal.

If an alternate concrete mix design in accordance with 709.05(e) is used in lieu of concrete surface sealing or portions thereof, it will be paid for as surface seal.

Payment will be made under:

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Seal</td>
<td>LS</td>
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</tbody>
</table>

The cost of all materials, labor, equipment, and necessary incidentals shall be included in the cost of this work.

If a curing-sealing material in accordance with 702.22(b) is used in lieu of sealing concrete surfaces or portions thereof, it will be paid for as surface seal.
REVISION TO STANDARD SPECIFICATIONS

SECTION 602 - CONCRETE BARRIER
602.02 MATERIALS

SECTION 707 - PRECAST AND PRECAST PRESTRESSED CONCRETE STRUCTURAL MEMBERS
707.02 MATERIALS

SECTION 709 - PORTLAND CEMENT CONCRETE SEALERS

SECTION 714 - REINFORCED CONCRETE BOX STRUCTURES
714.02 MATERIALS

SECTION 723 - REINFORCED CONCRETE THREE-SIDED STRUCTURES
723.02 MATERIALS

SECTION 909 - PAINT AND LIQUID EPOXY
909.09 EPOXY PENETRATING SEALERS
909.10 NON-EPOXY PCC SEALERS

SECTION 714, BEGIN LINE 35, DELETE AS FOLLOWS:
Non-Epoxy PCC Sealer ..........................................................909.09 or 909.10

SECTION 723, BEGIN LINE 39, DELETE AS FOLLOWS:
Non-Epoxy PCC Sealer ..........................................................909.09 or 909.10

SECTION 909, BEGIN LINE 520, DELETE AND INSERT AS FOLLOWS:
909.09 Epoxy Penetrating Sealers Blank

(a) Polysulfide-Type

The material shall be a system composed of a mixture of equal parts by volume of components A and B. Component A shall be a solution of totally reactive epoxy resin, which may be cut back with a reactive diluent, such as cresyl glycidyl ether. Component B shall be a solution of the specified liquid polysulfide polymer and an amine curing agent compatible with the epoxy resin. The use of butyl glycidyl ether in either compound shall be prohibited.

Neither component shall contain a residual constituent which is unreactive with the epoxy resin. An amount of liquid polysulfide polymer sufficient to comply with the mercaptan content, total sulfur, and total sulfur/mercaptan ratio requirements given below shall be contained within the component B.

Non-volatile, or non-reactive extenders will not be allowed in either component. Each component shall have a usable shelf life of at least six months from the date of delivery.

The epoxy resin shall be manufactured from epichlorohydrin and bisphenol A, shall contain no more than trace amounts of hydrolyzable chlorine, and may contain sufficient reactive diluent, such as cresyl glycidyl ether, to conform to the specific requirements of 909.09(e).

(b) Unmodified-Type

The material shall be a system composed of a mixture of equal parts by volume of components A and B. Component A shall be a solution of a totally reactive epoxy resin, and component B shall be a solution of an amine curing agent compatible with the epoxy resin. The use of butyl glycidyl ether in either component shall be prohibited.
Neither component shall contain a residual constituent which is unreactive with the epoxy resin. Non-volatile extenders will not be allowed in either component. Each component shall have a usable shelf life of at least six months from the date of delivery.

The epoxy resin shall be manufactured from epichlorohydrin and bisphenol A, shall contain no more than trace amounts of hydrolyzable chlorine, shall contain no reactive diluents, and shall be in accordance with 909.09(c).

(c) Specific Requirements
Specific requirements for each type of sealer shall be as shown in the table.

<table>
<thead>
<tr>
<th>Property</th>
<th>Type</th>
<th>Test Method</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Polysulfide</td>
<td>Unmodified</td>
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<tr>
<td><strong>RESIN</strong></td>
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</tr>
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<td>Epoxide-Equivalent</td>
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<td>180–195</td>
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<tr>
<td>Viscosity @ 77°F, Poises</td>
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<td>100–180</td>
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<tr>
<td>Color (Gardner) max.</td>
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<td>5</td>
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<tr>
<td><strong>COMPONENT A</strong></td>
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<tr>
<td>Viscosity @ 77°F, cps, max.</td>
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<td>Weight per Epoxy Equivalent</td>
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<td>Infrared Spectrum</td>
<td>Shall Essentially</td>
<td>Shall Essentially</td>
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<tr>
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<td>Match Std. Spectrum</td>
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<td><strong>COMPONENT B</strong></td>
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<tr>
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<tr>
<td>Color</td>
<td>Clear Amber</td>
<td>Clear Amber</td>
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</table>
REVISION TO STANDARD SPECIFICATIONS

SECTION 602 - CONCRETE BARRIER
602.02 MATERIALS

SECTION 707 - PRECAST AND PRECAST Prestressed Concrete Structural Members
707.02 MATERIALS

SECTION 709 - PORTLAND CEMENT Concrete Sealers
SECTION 714 - REINFORCED CONCRETE BOX STRUCTURES
714.02 MATERIALS

SECTION 723 - REINFORCED CONCRETE THREE-SIDED STRUCTURES
723.02 MATERIALS

SECTION 909 - PAINT AND LIQUID EPOXY
909.09 EPOXY PENETRATING SEALERS
909.10 NON-EPOXY PCC SEALERS

<table>
<thead>
<tr>
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<td>Total Sulfur, %, min.</td>
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<td>Corrected to 100% Solid Basis</td>
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<td>Mercaptan, %, min.</td>
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<td>Ratio of Total Sulfur % to Mercaptan %</td>
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1/1 VOLUME MIXTURE of A and B

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<th>Property</th>
<th>Specification</th>
<th>Approval Method</th>
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<td>Viscosity @ 77°F, cps, max.</td>
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<td>ASTM D 2196, Method A</td>
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<td>Total Solid, %, min.</td>
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<td>Ash, %, max.</td>
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<td>Set-to-touch, Hrs, max.</td>
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<td>FED Test Method Std. 141 (Note 4)</td>
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</tbody>
</table>

Note 1. Method A, except sample size shall be 3.0 g ± 0.1 g.
Note 2. Poured on glass plate, and cured 48 h @ 70 to 80°F.
Note 3. Applied to tin coated steel panel, approximately 20 ga., previously warmed to 90°F ± 2°F.
Note 4. Method 4061.1, applied at mixture temperature of 90°F ± 2°F.

The polysulfide polymer used in formulation of polysulfide sealer shall be a difunctional mercaptan made from 98 mole percent of bis, 2-chlorethyl, formal and 2 mole percent of trichloropropane.

(d) Low Temperature Epoxy Penetrating Sealer

A low temperature epoxy penetrating sealer shall consist of a system composed of a mixture of equal parts by volume of a totally reactive epoxy resin solution, and a solution
of an amine curing agent. The epoxy materials shall be in accordance with 909.09(a) or 909.09(b). The material, when mixed in accordance with the manufacturer’s recommendations, shall be capable of complete curing when applied to a concrete surface at a temperature of 35°F or above, and with an ambient air temperature of 35°F or above. The material shall be in accordance with 909.09(e), except the set to touch shall be determined at 20° ± 2°F when applied to a tin coated steel panel at a mixture temperature of 77° ± 2°F.

(e) Packaging and Marking
Each component shall be packaged in clean steel containers. Containers for component B shall be lined with a material inert to chemical reaction with the contents.

Each container shall be clearly marked with the product’s identification, component designation (A or B), manufacturer’s name, date of manufacture, formulation number, batch number, mixing directions, and such warning information as may be appropriate or required by law. A batch shall consist of a single charge of all ingredients in a mixing vessel and is not to be confused with the formulation number.

(f) Approval of Formulation
Prior to furnishing any material, the manufacturer shall obtain approval of formulation. Only epoxy penetrating sealers from the Department’s list of approved Coating Formulations shall be used. Epoxy penetrating sealers will be placed and maintained on the Department’s list of approved Coating Formulations in accordance with ITM 606.

909.10 Non-Epoxy PCC Sealers
Non-Epoxy PCC sealers shall be selected from the Department’s list of approved Non-Epoxy Portland Cement Concrete Sealers. A non-epoxy PCC sealer may be added to the approved list by completing the requirements in accordance with ITM 806, Procedure C.

(a) Properties
The non-epoxy PCC sealer shall be in accordance with NCHRP 244, Series IV, Southern Climate Weathering Test and possess the following properties.
REVISION TO STANDARD SPECIFICATIONS

SECTION 602 - CONCRETE BARRIER
602.02 MATERIALS

SECTION 707 - PRECAST AND PRECAST PRESTRESSED CONCRETE STRUCTURAL MEMBERS
707.02 MATERIALS

SECTION 709 - PORTLAND CEMENT CONCRETE SEALERS

SECTION 714 - REINFORCED CONCRETE BOX STRUCTURES
714.02 MATERIALS

SECTION 723 - REINFORCED CONCRETE THREE-SIDED STRUCTURES
723.02 MATERIALS

SECTION 909 - PAINT AND LIQUID EPOXY
909.09 EPOXY PENETRATING SEALERS
909.10 NON-EPOXY PCC SEALERS

Property Requirement

Reduction of Chloride Ion Content .................................................. 90% of the Control
Active Ingredients, minimum
   Silane Based........................................................................ 20% 40%
   Siloxane Based.................................................................... 15%
   Others 10%.

(b) Test Report

The testing shall be performed by a recognized laboratory in accordance with ITM 806.

The non-epoxy PCC sealers shall be delivered to the jobsite in unopened containers with the manufacturer’s numbered seal intact.
DISCUSSION:
This item was introduced and presented by Mr. Beeson, along with Mr. Nelson, who stated that the Department is moving away from the use of epoxy penetrating sealers. Mr. Beeson therefore proposed to update the Standard Specifications to remove language regarding epoxy penetrating sealers from the applicable specification sections.

Mr. Koch asked for clarification of the weather constraints described in 709.03. Mr. Nelson suggested to remove the statement about rain from 709.03 and add the statement to the approved list concerning the surface remaining dry for 2 h after application of the sealer. The committee however, following a brief discussion, thought it best to leave that language in 709.03 for clarification.

Mr. Osborn inquired about alternates to sealers and about the time constraints. Mr. Nelson and Mr. Koch acknowledged those considerations and they are addressed in 709 and the approved list. Mr. Koch suggested adding timing language to 709. Mr. Pelz recommended incorporating language regarding weather conditions and time constraints to the spec language. Mr. Beeson and Mr. Nelson agreed and said those revisions will be incorporated outside of this meeting.

Mr. Koch asked if all non-epoxy sealers are considered clear sealers since the first page of the approved list says “clear sealers”, and if 709.05(b) is needed. Mr. Nelson responded that all the sealers shown there are clear sealers and some contracts are using concrete stains to add coloring to the surface and it is possible that non-epoxy sealers may exist in the future that are not clear sealers. Mr. Nelson recommends leaving both Non-Epoxy PCC Sealers and Clear Sealers to 709.05 to avoid needing to undo the change later. Mr. Nelson also said they will add clarification to the approved list regarding clear sealers.

Mr. Beeson motioned to pass this item as revised, subject to proposed revisions, and that a RSP will not be necessary.
COMMENTS AND ACTION

602.02 MATERIALS
707.02 MATERIALS
SECTION 709 - PORTLAND CEMENT CONCRETE SEALERS
714.02 MATERIALS
723.02 MATERIALS
909.09 EPOXY PENETRATING SEALERS
909.10 NON-EPOXY PCC SEALERS

(CONTINUED)

Motion: Mr. Beeson
Second: Mr. Pankow
Ayes:   10
Nays:   0
FHWA Approval: YES

Action:
X   Passed as Submitted
X   Passed as Revised
X   Withdrawn

Standard Specifications Sections referenced and/or affected:

602.02 pg 407, 707.02 pg 570, 709
  begin pg 585, 714.02 pg 629,
723.02 pg 690, 909.09 and 909.10
  begin pg 932.

Recurring Special Provision affected (REFERENCES TO 709 ONLY):

709-C-256 ALTERNATE TO CONCRETE SEALERS; 706-B-306 BRIDGE RAILINGS

Standard Drawing affected:
NONE

Design Manual Sections affected:
NONE

GIFE Sections cross-references:
NONE

2020 Standard Specifications
Revise Pay Items List
Create RSP (No.  )
   Effective     Letting
   RSP Sunset Date:

Revise RSP (No.  )
   Effective     Letting
   RSP Sunset Date:

Standard Drawing
Effective
Create RPD (No.  )
   Effective     Letting

X   GIFE Update
X   SiteManager Update

40
STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED:  LWD is performed at very 1,400 cu yd on chemically modified soils whereas DCP test is performed at every 1500 ft. It creates confusion.

PROPOSED SOLUTION:  
We propose LWD tests to be performed at every 1500 ft. This will make DCP and LWD test consistent.

APPLICABLE STANDARD SPECIFICATIONS:  203

APPLICABLE STANDARD DRAWINGS:  NA

APPLICABLE DESIGN MANUAL SECTION:  NA

APPLICABLE SECTION OF GIFE:  yes

APPLICABLE RECURRING SPECIAL PROVISIONS:  NA

PAY ITEMS AFFECTED:  NA

APPLICABLE SUB-COMMITTEE ENDORSEMENT:  ad-hoc: Nayyar Siddiki & Victoria Leffel

IMPACT ANALYSIS (attach report):

Submitted By:  Matt Beeson & Nayyar Siddiki

Title:  State Materials Engineer

Organization:  Office of Materials Management and Office of Geotechnical Services

Phone Number:  317-522-9662

Date:
IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

- Construction costs? NA
- Construction time? NA
- Customer satisfaction? Yes
- Congestion/travel time? NA
- Ride quality? NA

Will this proposal reduce operational costs or maintenance effort? Yes

Will this item improve safety:

- For motorists? NA
- For construction workers? NA

Will this proposal improve quality for:

- Construction procedures/processes? Yes
- Asset preservation? NA
- Design process? Yes

Will this change provide the contractor more flexibility? NA

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? NA

Is this proposal needed for compliance with:

- Federal or State regulations? NA
- AASHTO or other design code? NA

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:
REVISION TO STANDARD SPECIFICATIONS
SECTION 203 - EXCAVATION AND EMBANKMENT
203.24 METHOD OF MAKING STRENGTH, STIFFNESS AND DENSITY TESTS

The Standard Specifications are revised as follows:

SECTION 203, BEGIN LINE 1088, DELETE AND INSERT AS FOLLOWS:

Acceptance of the compaction of chemically modified soils or aggregate will be determined by averaging three LWD tests obtained at a random station determined in accordance with ITM 802, for each 1,500 ft length of chemically modified soil for each two-lane pavement section, or for each 800 t of compacted aggregate. Where the construction area is 8 ft wide or more, the location of the three tests will be at 2 ft from each edge of the construction area and at 1/2 of the width of the construction area. Where the construction area is less than 8 ft wide, the location of the three LWD tests will be spaced at half of the width of the construction area and spaced 5 ft apart in the longitudinal direction. The average deflection shall be equal to or less than the maximum allowable deflection allowed in Table 1 or determined by the test section. The frequency of the LWD testing will be three tests for each 800 t for compacted aggregate and three tests for each 1,400 cu yd/1,500 ft of chemically modified soil.
COMMENTS AND ACTION

203.24 METHOD OF MAKING STRENGTH, STIFFNESS AND DENSITY TESTS

DISCUSSION:
Mr. Beeson introduced, and Mr. Siddiki, presented this item explaining that LWD is performed at every 1,400 cu yd on chemically modified soils whereas DCP testing is performed at every 1500 ft. Since this creates confusion, Mr. Beeson proposed to specify LWD tests to be performed at every 1500 ft, making the DCP and LWD tests consistent.

Mr. Koch asked if the language should also specify a width constraint. Minor editorial revisions are as shown for clarification and consistency, following a brief discussion of the proposed language.

Motion: Mr. Beeson                        Action: Passed as Submitted
Second: Mr. Koch                          X Passed as Revised
Ayes:  10  X Withdrawn
Nays:   0
FHWA Approval:  YES

Standard Specifications Sections referenced and/or affected:
X 2020 Standard Specifications

Recurring Special Provision affected:
Create RSP (No.____)  Effective _____ Letting
RSP Sunset Date:

Standard Drawing affected:
Revise RSP (No.____)  Effective _____ Letting
RSP Sunset Date:

Design Manual Sections affected:
Standard Drawing
Effective

GIFE Sections cross-references:
Create RPD (No.____)  Effective _____ Letting

X  GIFE Update
X  SiteManager Update
PROBLEM(S) ENCOUNTERED:

At the June 21, 2018 meeting, revisions were passed to section 722 that made many changes for overlays. There was discussion during the meeting and findings since June warrant further modifications as follows:

1. Evaporative retardants are being removed. The specification now requires machine grooving instead of tining which allows the deck to be covered more quickly and eliminates the need for evaporative retardants. The products consist of over 90% water and when used incorrectly will create surface durability problems.

2. Problems have been encountered at the beginning of pours using LMC overlays related to the testing of air content. Air testing needs to be conducted to ensure that each truck is within the specification limits prior to beginning work, but the spec is not clear regarding who is responsible for conducting the preliminary testing. This testing is considered quality control and a statement is being added to clarify that it is the contractor’s responsibility.

3. Changes are being made to clarify the requirements for surface milling depth and surface milling measurement/payment.

4. The curing requirements are being clarified. Industry expressed confusion about the requirement to use soaker hoses if plastic was being used in lieu of a second layer of burlap. Both soaker hoses and plastic sheeting are required.

5. The scale used by the industry representative during the calibration of mobile mixers must be calibrated annually per ITM 910.

6. The spec currently requires that the coarse aggregate and fine aggregate bin gates be adjusted based on a blended sample. Industry requested that the CA and FA bin gates be adjusted independently in order to ensure better overall material consistency among all trucks on a pour. This change is in line with how calibrations are done by other state DOTs. The spec is being modified to make the change and an updated mobile mixer calibration form will be available in the first quarter of 2019.

PROPOSED SOLUTION:

See problems encountered

APPLICABLE STANDARD SPECIFICATIONS: 722

APPLICABLE STANDARD DRAWINGS: none
APPLICABLE DESIGN MANUAL SECTION: none
APPLICABLE SECTION OF GIFE: none
APPLICABLE RECURRING SPECIAL PROVISIONS: 722-B-307
PAY ITEMS AFFECTED: none
APPLICABLE SUB-COMMITTEE ENDORSEMENT: none

IMPACT ANALYSIS (attach report):

Submitted By: Matt Beeson
Title: State Materials Engineer
Organization: INDOT Office of Materials Management
Phone Number: 317-522-9662
Date: 11/28/18
IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

- Construction costs? N/A
- Construction time? N/A
- Customer satisfaction? Yes
- Congestion/travel time? N/A
- Ride quality? Yes

Will this proposal reduce operational costs or maintenance effort? No

Will this item improve safety:

- For motorists? N/A
- For construction workers? N/A

Will this proposal improve quality for:

- Construction procedures/processes? Yes
- Asset preservation? Yes
- Design process? N/A

Will this change provide the contractor more flexibility? No

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? N/A

Is this proposal needed for compliance with:

- Federal or State regulations? No
- AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: N/A
The Standard Specifications are revised as follows:

SECTION 202, BEGIN LINE 157, DELETE AS FOLLOWS:

Hydrodemolition may be allowed for removal of portions of bridge structures as an alternate method to pneumatic hammers. Hydrodemolition for such removals may be accomplished either by use of a machine or a handheld device. Hydrodemolition shall otherwise be in accordance with 722.05(a)2.

SECTION 602, BEGIN LINE 9, DELETE AS FOLLOWS:

602.02 Materials
Materials shall be in accordance with the following:

Barrier Delineators .................................................................926.02(c)
Bridge Deck Overlay Materials .............................................722.04

SECTION 710, BEGIN LINE 85, DELETE AND INSERT AS FOLLOWS:

Cavities of 1/2 in. depth or greater shall be filled with concrete or a packaged patching product. Cavities of less than 1/2 in. depth shall be filled with mortar or a packaged patching product. When using concrete or mortar patching materials, the surfaces of prepared cavities and all exposed reinforcement within the cavities shall be coated with an epoxy resin adhesive in accordance with 722.06(a)1. When packaged patching products are to be applied, all surface preparation and the use of bonding agents shall be as directed by the manufacturer. The surface shall be in saturated surface damp condition with no standing water on the surface unless otherwise directed by the manufacturer.

SECTION 722, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 722 - LATEX MODIFIED CONCRETE BRIDGE DECK OVERLAYS

722.01 Description
This work shall consist of the surface preparation and construction of a bridge deck overlay consisting of latex modified portland cement concrete, overlay LMC, latex modified concrete very early strength, LMC-VE, or silica fume modified concrete, SFMC, on an existing or new bridge deck, or it shall consist of patching an existing latex modified portland cement concrete overlay on a bridge deck in accordance with 105.03.

722.02 Quality Control
LMC-VE overlays shall be placed in accordance with the QCP, which shall be prepared and submitted in accordance with ITM 803. The QCP shall include the Contractor’s experience placing LMC-VE overlays within the last three years. The QCP
shall be submitted to the Engineer at least 14 days prior to commencing overlay operations. Approval of the QCP by the Department’s Office of Materials Management is required.

**722.023 Materials**

Materials shall be in accordance with the following:

Admixtures.................................................................912.03
Coarse Aggregate, Class A or Higher, Size No. 11*............904
Epoxy Penetrating Sealer.............................................909.09
Epoxy Resin Adhesive..................................................909.11
Fine Aggregate..........................................................904
Fly Ash.......................................................................901.02
Latex Modifier............................................................912.04
PCC Sealer/Healer.......................................................901.06
Portland Cement.......................................................901.01(b)
Rapid Hardening Hydraulic Cement**............................ASTM C 1600
Silica Fume..................................................................901.04
Water..........................................................................913.01

* Crushed stone only

** Cement shall be calcium sulfoaluminate, CSA, hydraulic cement type VRH except that the 3 h compressive strength shall be a minimum of 2,500 psi. Portland cement shall not be used.

Evaporation retardant shall be a product that produces a monomolecular film. A Type D certification in accordance with 916 shall be furnished to the Engineer prior to use.

Citric acid shall be marked “food grade” on the packaging.

**722.034 Storage and Handling of Materials**

Fine and coarse aggregates shall be stored and handled avoiding contamination and maintaining uniform moisture content. Fine and coarse aggregates which are stored in piles or bins shall remain separated and shall be covered with a moisture proof material which prevents variations in moisture content of the aggregates. The maximum variation of moisture content in successive concrete batches shall be 0.5%.

Cement shall be shipped and stored in weatherproof enclosures which protect the cement from dampness in accordance with 702.04 and 901.01. Cement shall not have developed lumps.

The latex modifier, liquid silica fume slurry, and dry condensed silica fume shall be stored in accordance with the manufacturer’s recommendations. Latex modifier shall be strained to remove solid particles during transfer of the material from storage drums to the mobile mixer tank.

**722.045 Proportioning**
**REVISION TO SPECIAL PROVISION**

**722-B-307 CONCRETE BRIDGE DECK OVERLAYS**

**50**

(a) **Latex Modified Concrete**

A mix design shall be submitted a minimum of 14 days prior to use and calibration of the mobile mixer in accordance with 722.09. The proportioning of the ingredients for the LMC shall be in accordance with 702.05 except as modified herein.

The amount of fine aggregate shall be 60% ± 5% by dry weight of the total aggregate and shall be considered as the amount of aggregate blend passing the No. 4 (4.75 mm) sieve. The coarse aggregate shall be No. 11, class A crushed stone. The cement content shall be a minimum of 658 lbs/cu yd of concrete. The same brand of cement shall be used throughout a bridge structure. The amount of latex modifier shall be 3.5 gal. per 94 lbs of cement. The net water added shall produce a slump of 5 in. ± 1 in. at 4 to 5 minutes after discharge from the mixer. The moisture content of the aggregates shall be controlled such that the slump is within the specified limits. The maximum water-cement ratio shall be 0.400 including the water in the latex. The air content shall be a maximum of 6%, by volume, of the plastic mix.

The yield will be checked using the 1/4 cu yd box method as follows. The chute shall be cleaned and the box shall be positioned to receive the discharged concrete. The mixer shall be operated until the cement counter indicates that 1/4 cu yd of concrete has been produced. The contents of the box shall be consolidated and struck off. Where the box is not essentially full, the gates shall be adjusted and the procedure shall be repeated until the actual and calculated volumes of concrete agree. Yield tests shall be run on the first load of each truck and every third load per truck thereafter. The air content shall be tested on the first load of each truck prior to placing concrete onto the deck. Additional tests will be required after making any adjustments.

Slump and air content tests will be performed after each acceptable yield test. The slump test shall be in accordance with AASHTO T 119 and will be performed 4 to 5 minutes after the concrete is discharged from the mixer. The water flow meter reading will be recorded at the time the slump test is taken. The concrete shall not be disturbed during the waiting period for the slump test. The air content test shall be in accordance with 505. Any concrete mixture which is not properly proportioned or does not conform to the specified slump will be rejected.

Class F or class C fly ash may be used in the latex modified portland cement concrete. The maximum cement reduction shall be 15% and the minimum replacement ratio by weight of fly ash to cement shall be 1.25:1. A concrete mix design shall be submitted in accordance with 702.05. Where portland pozzolan cement, type IP is to be used in the concrete mix design, the cement content shall be increased by a multiplier of 1.06 times the specified cement content.

Bridge deck patching concrete shall be composed of the following:

(a) Fine aggregate shall be 35% to 45% of the total weight of aggregate used.
(b) The cement shall be 564 lbs/cu yd of portland cement type III or type IIIA, or 846 lbs/cu yd of portland cement type I or type IA.

c) Air entraining admixture shall be added to produce 5% to 8% entrained air.

d) The net water added shall produce a slump of no more than 4 in.

(b) Latex Modified Concrete, Very Early Strength

Proportioning of ingredients for LMC-VE shall be in accordance with 722.05(a) except as follows:

Cement shall be a rapid hardening hydraulic cement. Fly ash or other pozzolonic materials shall not be used. Citric acid may be used as a retardant. The maximum content of citric acid shall be 1% of the cement weight. The minimum compressive strength shall be 2,500 psi at 3 h and 3,500 psi at 1 day 24 h. The net water added shall produce a minimum slump of 7 in. and maximum slump of 10 in. at 4 to 5 minutes after discharge from the mixer. The maximum water-cement ratio shall be 0.440 including the water in the latex.

1. Trial Batch Demonstration

A trial batch shall be produced to verify that the mix design complies with the physical properties specified, as well as, simulating the placement properties unique to the conditions of the contract such as profile grade, cross slope, delivery time, discharge rate, slump loss with time, air content and target compressive strength. All testing of the trial batch concrete shall be performed by an American Concrete Institute, ACI, certified concrete field testing technician, grade I.

The trial batch demonstration shall include a meeting between the Contractor, material suppliers, and Department to discuss LMC-VE, mixing, delivery, placement, finishing, curing and compressive testing. Representatives from the rapid hardening cement manufacturer shall be present for trial batch demonstrations and the start-up for initial bridge deck placement. The Office of Materials Management may waive the required attendance for these representatives where the Contractor provides sufficient evidence of adequate experience with producing and placing LMC-VE. The trial batch demonstration may be conducted in conjunction with calibration of the mobile mixer in accordance with 722.13.

2. Blank

(c) Silica Fume Modified Concrete

A concrete mix design submittal, CMDS, shall be submitted a minimum of 14 days prior to the trial batch utilizing the Department provided spreadsheet. The proportioning of ingredients for each batch of SFMC shall be in accordance with 702.05 except as
modified below and shall meet the mix design, trial batch demonstration, and job-use requirements as specified.

The portland cement content shall be 658 lb/cu yd. Silica fume shall be added at 50 lb/cu yd.

The SFMC shall utilize an approved type F or G admixture to be combined with an air entraining admixture, AEA, a HRWR admixture system or a HRWRR admixture system shall be selected from the Department’s list of approved PCC Admixtures and Admixture Systems.

The water/cement ratio shall be no less than 0.370 and shall not exceed 0.400. Portland cement and silica fume shall be included in the total amount of cementitious material.

The same brand of cement and silica fume shall be used throughout the structure. The HRWR or HRWRR admixture system shall not be changed during any individual contiguous pour.

The Contractor shall obtain a written statement from each admixture manufacturer stating the compatibility of the HRWR admixture system and satisfactory performance in SFMC.

The SFMC shall have a relative yield and air content in accordance with 702.05. The slump will be tested in accordance with AASHTO T 119 at the time of placement and shall be at least 4 1/2 in. but shall not exceed 7 1/2 in. The SFMC shall have a minimum compressive strength of 4,500 psi at seven days and 5,500 psi at 28 days. The compressive strength shall be in accordance with 702.24.

1. Trial Batch Demonstration
A trial batch shall be produced to verify that the mix design complies with the physical properties specified, as well as, simulating the placement properties unique to the conditions of the contract such as profile grade, cross slope, delivery time, discharge rate, slump loss with time, air content and target compressive strength. All testing of the trial batch concrete shall be performed by an American Concrete Institute, ACI, certified concrete field-testing technician, grade I.

The trial batch demonstration shall include a meeting between the Contractor, material suppliers, and Department to discuss SFMC, batching, mixing, delivery, placement, finishing, curing and compressive testing. Representatives from the silica fume and chemical admixture manufacturer shall be present for trial batch demonstrations and the start-up for initial bridge deck placement. The Office of Materials Management may waive the required attendance for these representatives where the Contractor provides sufficient evidence of adequate experience with producing and placing SFMC.
2. Batching

Batching shall be in accordance with 702.06 except the minimum batch shall be 4 cu yd and the maximum shall not exceed 80% of the truck rated capacity. Dry condensed silica fume shall be either sacked or bulk and it shall be batched in accordance with the requirements for cement as specified in 702.06. However, no partial sack of dry condensed silica fume shall be used in a batch of SFMC. Dry condensed silica fume shall be typically added after the initial water and aggregates, with premixing prior to the addition of cement and fly ash, to facilitate dispersion. An alternate batching sequence will be allowed as recommended by the manufacturer of the silica fume and as approved by the Engineer. Liquid silica fume slurry shall be batched as required by the manufacturer and as approved by the Engineer. The AEA shall be added initially with either the first portion of mix water or the fine aggregate. Where a type A or D chemical admixture is used as part of the approved HRWR admixture system, it shall be added separately with a portion of the mix water, after the AEA is premixed in the concrete. A type F or G chemical admixture shall be added separately at the end of the batching sequence with some mix water held in reserve to aid dispersion.

A change in the sequence of batching may be approved if it is in accordance with the chemical admixture and silica fume manufacturer’s recommendations, and is agreed to in writing prior to any trial batch demonstration.

722.056 Preparation of the Bridge Floor

(a) Concrete Removal of Existing Concrete Overlay

When an existing deck overlay is to be removed, the removal shall be performed with a milling machine. Removal in areas that are inaccessible to the milling machine, shall be performed by chipping hammers or handchipping in accordance with 722.06(b)3.

1-(b)-Deck Surface Preparation of Existing Concrete Deck

1. Surface Milling

The top 1/4 to 1/2 in. of the entire bridge deck surface shall be removed if the overlay is to be placed on a bridge deck constructed under a contract after removal of any previous contractor overlays. The top of the entire bridge deck surface shall be milled after removal of any previous overlays. The milling shall be 1/2 in. depth or to a depth as shown on the plans. The surface removal operation shall be limited to that portion of the bridge deck that is closed to traffic at any one time. After this initial surface removal, an additional 1/4 in. of surface removal milling may be required on part or all of the bridge deck as directed.

Surface removal shall be performed with a power operated mechanical milling machine. The equipment shall uniformly remove the required depth of concrete surface in a satisfactory manner. Surface removal, which is in areas adjacent to the curb that are inaccessible to milling, shall be done by handchipping in accordance with 722.06(b)3. All surface removal residue, including water, dust and concrete, shall be immediately removed.
Where the milling operation results in the snagging of the top mat of steel reinforcing bars, the milling operation shall cease and the depth of removal adjusted. Damaged reinforcing bars shall be repaired as directed with no additional payment.

2. Bridge Floor Hydrodemolition

When shown on the plans, removal of unsound concrete shall be performed by hydrodemolition. Following the cleanup from the surface removal operation, areas of unsound concrete to be removed will be marked. Removal of the unsound concrete shall be performed by handchipping or hydrodemolition. The hydrodemolition equipment shall consist of a self-propelled computerized machine that utilizes a high pressure water jet stream capable of removing concrete as specified, as well as, removing rust and concrete particles from exposed reinforcing bars.

Prior to hydrodemolition, the equipment shall be calibrated on an area of sound original deck concrete as designated by the Engineer.

The initial settings shall be verified on an area of unsound concrete. The initial settings may need to be adjusted in order to achieve total removal of unsound concrete. Equipment shall be calibrated each day prior to operation. Where directed, equipment shall be recalibrated to ensure removal of known areas of unsound concrete and to guard against removal of sound concrete. The Engineer shall be notified of the final equipment settings resulting from the calibration process.

After calibration of the equipment, concrete removal by hydrodemolition shall be performed on the bridge deck. The removal will be verified as necessary, every 30 ft along the cutting path. Handchipping shall be used in areas that are inaccessible to the hydrodemolition equipment. Handchipping tools may be handheld or mechanically driven. The removal operation shall cease where it is determined that sound concrete is being removed. Equipment shall be recalibrated or agreed upon changes to equipment and methods shall be performed prior to resuming the removal operation.

The Contractor shall submit a waste water control and disposal plan for approval seven days prior to commencing hydrodemolition activities. The waste water control and disposal plan shall detail how all waste water generated by the hydrodemolition activities shall be contained, tested for pH, stored, and transported to a disposal facility in accordance with 202.

The Contractor shall provide sufficient shielding to ensure containment of all dislodged concrete during hydrodemolition operations and to prevent damage to surrounding property from flying debris, both on and under the work site.

Cleaning of the hydrodemolition debris and slurry shall be performed with a vacuum system equipped with fugitive dust control devices and capable of removing wet debris and water in the same pass. The vacuum equipment shall be capable of washing the deck with pressurized water during the vacuum operation to dislodge all debris and slurry.
from the bridge deck surface. Debris and slurry shall not be allowed to dry prior to vacuuming.

After hydrodemolition has been completed, the deck will undergo sounding to identify remaining areas of unsound concrete. Ponded or standing water shall be removed from the deck prior to sounding.

Additional concrete removal of remaining unsound concrete, shall be as directed by the Engineer and shall be performed by handchipping or hydrodemolition.

3. Handchipping
When hydrodemolition is not shown on the plans, all removal of unsound concrete shall be performed by handchipping. Following the cleanup from the surface removal operation, areas of unsound concrete to be removed will be marked. Handchipping tools may be hand or mechanically driven. Jackhammers shall not be heavier than nominal 45 lb class and chipping hammers shall not be heavier than nominal 15 lb class. Only chipping hammers shall be used when removing concrete within 1 in. of reinforcing bars. Mechanically driven tools shall be operated at a maximum angle of 45° from the bridge floor surface.

The hydrodemolition machine shall utilize a high pressure water jet system and shall be approved prior to use. Hydrodemolition equipment shall be calibrated to remove only unsound concrete. The pressure of the water jet shall be calibrated for each structure prior to use. All water used in the hydrodemolition operation shall be potable, and stream or lake water will not be allowed. Precautions shall be taken, during the hydrodemolition operations, to prevent damage to surrounding property and traffic. Waste water shall not be discharged into a stream.

Regardless of the method of removal, the removal operation shall be stopped if cease where it is determined that sound concrete is being removed. Appropriate recalibration, or agreed upon changes in equipment and methods shall be performed prior to resuming the removal operation.

4. Additional Surface Preparation around Reinforcing Bars
Where reinforcing bars have been exposed for a length greater than 2.0 ft and the bond between the existing concrete and reinforcing bars has been destroyed, the concrete adjacent to the bars shall be removed to a minimum clearance of 1 in. around the entire periphery of the exposed bars. If the concrete is unsound down to the top layer of bottom reinforcing bars, all of the concrete within the marked area shall be removed and the cavity shall require full depth patching in accordance with 722.06(a).

5. Additional Construction Requirements
Regardless of the method used for unsound concrete removal, where the deck is unsound for more than 1/2 of its original depth, the concrete shall be removed full depth, except for limited areas as determined by the Engineer. Forms for areas of up to 4 sq ft
may be suspended from wires attached to the reinforcing bars. For areas greater than 4 sq ft, the forms shall be supported from the structural members of the superstructure or by shoring from below.

Prepared cavities which are deeper than the level of the adjacent prepared deck surface, but are not full depth, shall require partial depth patching in accordance with 722.06(b). Prepared partial depth cavities shall be made full depth when directed. Exposed reinforcing bars shall not be damaged by the removal operation. Any damaged reinforcing bars shall be repaired as directed with no additional payment.

The removal areas shall be thoroughly cleaned of all dirt, foreign materials and loose concrete to the extent necessary to produce a firm solid surface for adherence of the new concrete. A minimum 1 in. vertical surface shall remain, or be cut, 1 in. outside and around the entire periphery of each removal area after removal of all loose and unsound concrete. The 1 in. vertical cut may be waived where it is determined that a cut will damage the reinforcing bars. Where hydrodemolition is utilized on the adjacent surface, the 1 in. vertical surface will not be required.

(bc) Cleaning

After the concrete removal operation is completed and just prior to placing the patches or the overlay, the entire deck shall be heavily sandblasted to expose fine and coarse aggregates and to remove unsound concrete or laitance layers from the surface. Exposed reinforcing bars and the concrete under and around the exposed bars shall be thoroughly cleaned by sandblasting. The surface shall be then cleaned free of all dust, chips, water, and foreign material to the extent necessary to produce a firm, solid surface for adherence of the new concrete. The air lines for sandblasting and air cleaning shall be equipped with oil traps.

When hydrodemolition is utilized, water blasting may be used in lieu of sandblasting. The sandblasting or water blasting shall be performed using two passes with the second pass being at a right angle to the first pass or a cross-blasting technique. The minimum pressure of the water blast shall be 6,000 psi.

722.0607 Patching of the Bridge Floor

A vacuum device shall be used to remove all water from the prepared cavities.

(a) Full Depth Patching

The material used for full depth patching shall be either bridge deck patching concrete or latex modified overlay concrete, or concrete patching material from the Department’s list of approved Rapid Setting Patch Materials. Full depth patching shall be performed prior to the overlay operation unless otherwise requested and approved. The patching material shall be consolidated by internal vibration at the time of placement. Equipment shall not be operated on the repaired deck areas until the test beams indicate a minimum modulus of rupture of 550 psi. Curing of the patch shall be as directed.
1. Patching with Bridge Deck Patching Concrete

Epoxy resin adhesive shall be used to coat the surfaces of the prepared cavities and all the exposed reinforcing bars within the cavities. The epoxy coating shall be tacky at the time that the patching concrete is placed. Where the epoxy coating has cured beyond the obvious tacky condition, it shall be re-applied prior to patching. The coated cavities shall then be filled with the patching concrete to the level of the adjacent deck surface. Curing of the patching concrete shall be as directed.

Bridge deck patching concrete shall be composed of the following:

   a. Fine aggregate shall be 35% to 45% of the total weight of aggregate used.
   
   b. The cement shall be 564 lbs/cu yd of portland cement type III or type IIIA, or 846 lbs/cu yd of portland cement type I or type IA.
   
   c. Air entraining admixture shall be added to produce 5% to 8% entrained air.
   
   d. The net water added shall produce a slump of no more than 6 in. and a maximum water/cement ratio of 0.450.

2. Patching with Latex Modified Overlay Concrete

The surfaces of the prepared cavities shall be coated with a bond coat in accordance with 722.09/10. The cavities shall then be filled with the latex modified overlay concrete to the level of the adjacent deck surface.

3. Patching with Rapid Setting Patch Materials

Concrete patching materials shall be as approved by the overlay supplier for compatibility with the overlay material. Concrete patching materials shall be placed and cured in accordance with the manufacturer’s recommendations.

(b) Partial Depth Patching

The material used for partial depth patching shall be either bridge deck patching concrete, or latex modified concrete overlay, or concrete patching material from the Department’s list of approved Rapid Setting Patch Materials. The patching material shall be consolidated by internal vibration at the time of placement. Curing of the patch shall be as directed.

1. Patching with Bridge Deck Patching Concrete

Partial depth patching with bridge deck patching concrete shall be in accordance with 722.0607(a) and 722.0607(a)1. Curing of the patching concrete shall be as directed.

2. Patching with Latex Modified Overlay Concrete
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The surfaces of the prepared cavities shall be coated with a bond coat in accordance with 722.09 except where hydrodemolition is utilized. The cavities shall then be filled with the latex modified overlay concrete at the time that the overlay is placed. Concrete overlay material used for patching shall be cured in accordance with 722.12.

3. Patching with Rapid Setting Patch Materials

Concrete patching materials shall be as approved by the overlay supplier for compatibility with the overlay material. Concrete patching materials shall be placed and cured in accordance with the manufacturer’s recommendations.

722.07.08 Overlay Dam

An overlay dam shall consist of the removal of existing concrete from the bridge floor and replacing it with new concrete as shown on the plans or as otherwise directed. Overlay dam material shall be in accordance with 722.04.05.

The existing concrete shall be removed as required in accordance with 722.05(a). Exposed reinforcement reinforcing bars shall not be cut or otherwise damaged.

Power driven hand tools for removal by handchipping will be allowed. Pneumatic hammers with a maximum weight of 69 lbs may be used for the tops of mudwalls. Where, during the removal process, the tools or methods being used appear to cause damage such as cracks or spalling on the concrete which is to remain, the work shall cease immediately and shall not resume until the Engineer is assured the tools or methods being used will not cause further damage agreed upon changes in equipment and methods shall be performed prior to resuming the removal operation.

The surface to be repaired, the reinforcing bars, and the concrete under and around the bars shall be thoroughly cleaned in accordance with 722.05(06(c)). The cavity shall be epoxy coated with an epoxy resin adhesive in accordance with 722.06.07(a)1, then filled with class AC concrete in accordance with 702.

722.08.09 Mixing

(a) Latex Modified Concrete and Latex Modified Concrete, Very Early Strength

Proportioning and mixing of the latex modified concrete shall be performed in a self-contained, self-propelled continuous mixer. The mixer shall be calibrated to accurately proportion the specified mix prior to starting the work. The calibration shall be in accordance with 722.4213. Sufficient mixing capacity or mixers shall be provided to enable the intended pour to be placed without interruption. The mixer shall carry sufficient quantities of unmixed ingredients to produce at least 6 cu yd of latex modified concrete at the site.
The mixer shall measure and control the flow of ingredients being introduced into the mix and shall record these quantities on an approved visible recording meter equipped with a ticket printer. Water flow shall be readily adjustable to compensate for minor variations in aggregate moisture content, and shall be displayed by an approved flow meter. The flow of the latex modifier shall also be displayed by an approved flow meter. The manufacturer’s inspection plate shall clearly show the serial number, proper operating revolutions per minute, and the approximate number of counts on the cement meter to deliver 94 lbs of cement.

The mixer shall automatically proportion and blend simultaneously all the ingredients of the specified mix on a continuous or intermittent basis as required by the finishing operation. The latex modified concrete shall be discharged through a conventional chute directly in front of the finishing machine. The surface ahead of the deposited mixture shall be kept damp by spraying it with water. Where the water is applied by the mixer, it shall be dispensed ahead of the water flow meter.

(b) Silica Fume Modified Concrete

Mixing shall be in accordance with 702.09(a), 702.09(b), and 702.09(c), except mixing time shall be a minimum of 84 s. Retempering SFMC by adding water or by other means will not be allowed after 30 minutes from initial batching and mixing. When concrete is delivered in transit mixers, additional water may be allowed to increase a marginally low slump. Water shall not be added once 10% of the load has been discharged. Additional mixing shall be performed as directed and all operations completed within the time limits in accordance with 702.09(c). The amount of water shall be determined accurately and noted on the batch ticket. Such addition of water will not be allowed as a continuing operation. The total of all water included in the mix shall not exceed the maximum allowable water/cement ratio.

722.0910 Placing and Finishing

Existing expansion joints shall be maintained throughout the overlayment unless otherwise shown on the plans. A construction dam or bulkhead, equal in thickness to the joint width, shall be installed to the required grade and profile prior to placing the overlay. Screed rails for the finishing machine shall be placed to the required profile, and stably anchored vertically and horizontally. Screed rails shall not be treated with a bond breaking compound.

The overlay shall not be placed unless only when the ambient temperature is 45°F and rising, unless otherwise approved by the Department in writing. Placement may be required during early morning hours, at night, or during other limited work periods if the prevailing daytime maximum allowable ambient temperature exceeds 85°F. The overlay shall not be placed if rain is expected within 4 h. Adequate precautions shall be taken to protect freshly placed overlay material from sudden or unexpected rain. Damaged material shall be removed and replaced with no additional payment. A construction dam or bulkhead shall be installed in case of a delay in placement of 1 h or
more. During delays of less than 1 h, the end of the placed overlay material shall be protected from drying with layers of wet burlap.

After the surface has been cleaned, and immediately before placing the overlay material, the surface shall be thoroughly soaked and covered with plastic sheeting for a period of 1 h. The surface shall not be allowed to dry before placing the overlay material and there shall be no standing water at the time of placement. The surface shall then be thoroughly and evenly coated with a brush applied bond coat of latex-modified concrete overlay concrete, except a bond coat shall not be applied to surfaces where the removal was performed by hydrodemolition. The progress of the bond coat application shall be controlled to ensure that the bond coat does not dry before the overlay is placed to the required grade. Aggregate segregated in the brush application of the bond coat shall be removed before the overlay is placed. Surface irregularities shall be filled to approximately three-quarters of their depth sufficiently ahead of the overlay operation to allow the material to stiffen and resist rolling back during the finishing.

Following the bond coat application and partial filling of any surface irregularities, the latex-modified concrete overlay shall be placed to an elevation approximately 1/2 in. above final grade. The mix shall then be consolidated and machine finished to the required grade. The machine finishing shall be to within 12 in. of the curb line or coping line unless otherwise directed. Supplemental hand finishing with a wood float shall be performed as needed to produce the required tight, uniform surface.

The finishing machine shall be self-propelled and capable of positively controlled forward and reverse motion. The machine shall be equipped with at least two finishing devices. The first finishing device shall be a vibrating mechanism, such as a vibrating pan, for consolidating the deposited mix. The vibrating pan shall be metal and of sufficient dimensions to ensure proper consolidation. The second finishing device shall be either a rotating cylindrical drum, at least 45 in. in length, or a vibrating oscillating metal faced screed of 4 in. minimum in width. The vertical position of the finishing devices shall be positively controlled and the devices shall be raised clear of the finished surface when the machine is operated in the reverse direction. The vibration frequency of any vibrating finishing device shall be variable, with positive control between 3,000 and 6,000 vibrations per minute. Alternate finishing machines may be considered for approval subject to a written request.

Screed rails and construction dams shall be separated from the newly finished overlay by passing a pointing trowel along the rail-to-overlay and dam-to-overlay interfaces after the overlay has sufficiently set such that it does not flow back. This trowel cut shall be made for the entire length and depth of the rail or dam. The rails may be removed anytime after the overlay has initially set. Adequate precautions shall be taken during and subsequent to the rail removal to protect the edge of the new overlay from damage. The finished surface shall be in accordance with 504.03.
Protection shall be provided to prevent rapid drying of concrete. The rate of water evaporation shall be determined both prior to placement based on forecasted conditions and during placement based on actual conditions in accordance with ACI 308, section 5.2.1 or the following equation:

\[ E = (T_c^{2.5} - rT_a^{2.5})(1 + 0.4V) \times 10^{-6} \]

where:

- \( E \) = Evaporation rate, lb/sq ft/h
- \( T_c \) = Concrete mix temperature, °F
- \( T_a \) = Ambient temperature, °F
- \( r \) = (Percent of Relative Humidity)/100
- \( V \) = Wind velocity, mph

Measurement of \( T_a \), \( r \), and \( V \) shall be obtained from readings made by the local weather bureau or Contractor’s measurements made on site. Measurement of \( T_c \) shall be determined from the concrete on site at the point of placement. Fog misting shall be performed after the finishing operation and prior to the wet cure, where the evaporation rate exceeds or is expected to exceed 0.05 lb/sq ft/h. Fog misting shall keep the environment above the concrete surface at high humidity to protect against plastic shrinkage cracks and shall not be used to apply water directly to the surface to facilitate finishing. Evaporation retardants shall not be substituted for fog misting where the evaporation rate exceeds 0.05 lb/sq ft/h.

An evaporation retardant may be applied in a fine mist immediately after the finishing is complete to ensure that the surface remains wet until covered. The evaporation retardant shall be used as such and not as a finishing aid. These products consist primarily of water and excessive amounts of evaporation retardant shall not be applied. The product shall not be worked into the overlay surface. Evaporation retardant shall only be used on SFMC overlays. Evaporation retardant shall not be used in any other applications.

**722.4011 Texturing**

Immediately after the finishing is complete and before the surface film has formed, the surface of the overlay shall be textured by transverse grooving. The grooves may be formed by mechanized equipment using a vibrating beam roller, a series of discs or other approved device. Manual tools such as fluted floats, spring steel tined rakes, or finned floats with a single row of fins may be used. The grooves shall be relatively uniform and smooth and shall be formed without tearing the surface or bringing coarse aggregate to the top. The grooves shall be in accordance with 504.03. The grooves shall be terminated approximately 18 in. from vertical faces such as curbs and concrete railing.

All areas of hardened-grooved overlay which do not conform to these requirements due to either a deficiency in the grooving or a rough open textured surface shall be corrected.
with no additional payment. Corrections shall be made by cutting transverse grooves in the hardened overlay with an approved cutting machine or by sealing with an approved mixture and retexturing to a satisfactory finish as directed.

The overlay surface shall be textured with a double thickness burlap drag or a minimum 4 ft wide turf drag immediately following the placement of the overlay material. Areas where the texture is disturbed by other finishing operations shall be immediately restored to a burlap drag finish.

Grooving or tining in the plastic concrete of the concrete overlay will not be allowed. Transverse grooving, when specified, shall not commence until the curing requirements have been meet in accordance with 722.12. Grooves shall be cut into the hardened concrete surfaces perpendicular to the centerline using a mechanical cutting device. For curved bridges, grooves shall be cut transverse to the curve chord within the spans. Grooving shall be done before traffic is allowed on the surface except at follows:

The Contractor shall have the option of cutting the transverse grooves at the end of each phase of construction or waiting until all phases have been completed. If the Contractor elects to delay the grooving process until completion of all phases, the concrete overlay surface for any phase opened to traffic shall receive an interim coarse broom finish during placement.

The completion of the grooving process shall be within 30 days of completion of the last phase of construction. Any additional maintenance of traffic operations required for the grooving process shall be included in the cost of Maintaining Traffic. The interim broom finish shall not be allowed as a surface texture when opened to traffic over a winter season. If the coarse broom texture is present and the Contractor is not in a position to finish all phases of the project, transverse grooving shall be placed into the hardened concrete in order to establish an acceptable driving surface texture for the winter season.

Each groove shall be 1/8 in. +/- 1/64 in. in width, 3/16 in. +/- 1/16 in. in depth. The groves shall be uniformly spaced at 3/4 in. intervals measured from the center of groove to center of groove or randomly spaced at intervals between 5/8 in. to 1 1/4 in. from center of groove to center of groove with an average spacing of 7/8 in. Grooving shall not be within the area approximately 2 ft adjacent to the curbs. The grooving shall terminate approximately 6 in. from any expansion joints with steel nosing. Stair stepped ends in grooving will be allowed for skewed bridge decks. When a new reinforced concrete approach slab is placed adjacent to the overlay, the grooving shall extend across the reinforced concrete approach slab. Grooving shall terminate approximately 6 in. from the interface with the roadway pavement.

The Contractor shall submit a waste water control and disposal plan for approval seven days prior to commencing grooving activities. The waste water control and disposal plan shall detail how all waste water generated by the grooving activities shall be
Cleaning of the grooving debris and slurry shall be performed with a vacuum system equipped with fugitive dust control devices and capable of removing wet debris and water in the same pass. The vacuum equipment shall be capable of washing the deck with pressurized water during the vacuum operation to dislodge all debris and slurry from the bridge deck surface. Debris and slurry shall not be allowed to dry prior to vacuuming.

722.11 Curing
When fly ash is used, the requirement for additional wet or dry curing time shall be determined based on the relative initial, and final time of set and a comparison of strength versus age using control concrete strengths at conventional cure period ages as the reference. Unless otherwise directed, 702.22 shall apply except that the membrane forming curing compound shall not be used to cure the bridge deck overlay. The additional curing requirements shall be as approved by the Engineer.

For LMC overlays the minimum curing period shall be 2448 h of wet cure followed by 7248 h of dry cure. An LMC overlaid bridge deck may be opened to traffic during the minimum dry curing duration when the compressive strength of test cylinders is 4,000 psi or greater. The strength requirements, and the making and curing of the cylinders, shall be in accordance with 702.24.

For SFMC overlays the minimum curing period shall be seven calendar days consisting of 120 h of wet cure followed by 48 h dry cure. The deck shall remain completely covered during the dry cure period. An SMFC-SFMC overlaid bridge deck may be opened to traffic after the dry cure period when the compressive strength of cylinders is 4,500 psi or greater.

For LMC-VE concrete overlays the minimum curing period shall be 3 h of wet cure. An LMC-VE overlaid bridge deck may be opened to traffic after the wet curing period when the compressive strength of cylinders is a minimum of 2,500 psi.

The wet cure period for all overlay types is not controlled by strength and shall not be reduced. Membrane forming curing compound shall not be used to cure the bridge deck overlay. All cylinders shall be 6 in. by 12 in. and compressive strength shall be determined from the average of a minimum of two cylinders. For LMC and SFMC, cylinders shall be made and standard cured in accordance with 702.24. For LMC-VE cylinders shall be made and field cured at the jobsite under the same conditions as the LMC-VE overlay.

After texturing, the plastic film which forms on the surface of the overlay shall be protected from shrinkage cracking with a single layer of well drained wet burlap. This layer of wet burlap shall be placed as soon as the overlay surface will support it without deformation. Approximately 1 h after placing the first layer of wet burlap, a second layer shall be placed and the entire covering surface shall be covered with plastic sheeting and...
maintained in a saturated wet condition for a minimum of 24 h during the wet cure period. A network of soaker hoses shall be used under the plastic sheeting during the wet cure period for LMC and silica fume overlays. Polyethylene film or plastic sheeting may be used in lieu of the second layer of wet burlap. If the polyethylene film is used for the second covering, then the burlap already in place shall be wetted just before placing the polyethylene film and shall be maintained in a wet condition. After the 24 h elapse, all layers of covering material shall be removed.

Where the ambient temperature falls below 50°F during either the wet or dry curing periods, the time that the temperature is below 50°F shall not be considered as part of the total 96 h curing period. Where there is sufficient rain to wet the surface of the overlay for 1 h or more during the dry cure period, this number of hours shall not be considered as part of the 72 h dry cure period.

Immediately upon the start of the dry cure period or opening to traffic, the surface shall be checked for cracks. Upon request, the Contractor shall flood the deck with water to facilitate inspection for cracks and distress. Where cracks exist, a thorough investigation will be conducted prior to sealing cracks. Cores may be required to determine the actual crack depth. Surface cracks not exceeding 3/8 in. in depth shall be sealed with an approved epoxy penetrating sealer/healer followed by an application of an approved sand. The sealing and sand application shall be repeated as needed to ensure that the voids remain completely filled. Alternate methods of surface crack sealing may be used if approved. Cracks exceeding 3/8 in. in depth shall not be sealed at this time. Corrective procedures for repairing cracks exceeding 3/8 in. in depth will be determined after further investigation which may include additional cores. The Office of Materials Management will be contacted and the Engineer will determine the method of repair shall be as directed in writing and may include including possible removal and replacement or complete filling with an approved sealer/healer and a sand application on the surface. The Department will maintain a list of approved Sealers/Healers.

Where the area of shallow cracking exceeds 5% of the deck area, then the method of repair shall be the same as for cracks exceeding 3/8 in. Depth shall be calculated by multiplying the total combined linear feet of all cracks less than 3/8 in. in depth by a tributary width of 1 linear foot. The percentage of deck area will be the shallow crack area divided by the total deck area and multiplied by 100.

Where it is determined by sounding or coring that adequate bonding between the overlay and the bridge deck has not been attained, the deficient areas shall be removed and replaced as directed.

### 722.4213 Calibration of Continuous Mixers

**(a) Frequency**

A complete calibration shall be performed for each mixer prior to each pour unless the initial calibration was made within the previous 10 calendar days. A mixer that has
been calibrated within the previous 10 calendar days may be approved for use providing that the mixer operator is in possession of the completed, signed, certified and dated Department calibration form for that mixer. A complete calibration of a mixer may be required at any time as directed. All mixers which are calibrated within the 10 day limit but are changing aggregate sources shall have an aggregate blend test performed.

(b) Equipment

All special equipment required for calibration shall be furnished. It shall include but not be limited to suitable material containers, buckets, stop watches and a set of balance beam platform scales graduated in at least 1/4 lb intervals with a minimum capacity of 500 lbs, scale accurate to within 0.1 lbs or 0.3% of the test load, whichever is greater, at any point within the range of use. The minimum capacity of the scale shall be 150 lbs. The scale shall be verified annually per ITM 910. The contractor shall provide paperwork that shows the date the scale was verified by a company with NIST traceable class F weights. Samples shall be obtained and handled by the Contractor. Normal testing equipment such as aggregate sieves and containers shall also be furnished.

(c) Pre-calibration

The aggregate bin shall be clean and the bin vibrators shall be in good working order. The mixer shall be equipped with a grounding strap. The cement meter feeder, the fins and all pockets shall be clean and free of any accumulated cement. The aeration system shall be equipped with a gauge or indicator to verify that the system is operating. The main belts and the latex strainer shall be clean and free of any accumulated material.

(d) Calibration

1. Cement Meter

The mixer manufacturer’s mix setting chart shall determine the specified operating revolutions per minute and the approximate number of counts required on the cement meter to deliver 94 lbs of cement. At least 3,760 lbs of cement shall be placed in the cement bin.

The mixing unit shall rest on a level surface. The engine throttle shall be adjusted to obtain the required revolutions per minute. The unit discharging the cement shall be operated until the belt has made one complete revolution. The unit shall then be stopped and the cement meter shall be reset to zero.

A suitable container shall be positioned to catch the cement and at least 90 lbs of cement shall be discharged. The time required to discharge the cement shall be measured with a stop watch, the number of counts on the cement meter shall be recorded, and the weight of the discharged cement shall be determined. This process shall be repeated a total of three times. The cement counter shall be reset to zero before each repetition.

The following formulas shall be used to calculate the number of counts per 94 lbs of cement and the time required to discharge 94 lbs of cement.
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A

\[
94 \div \quad = \text{Counts per 94 lbs of cement}
\]

B

\[
94 \div \quad = \text{Time in seconds per 94 lbs of cement}
\]

C

\[
A = \text{Total weight of cement in pounds for three trials}
\]

\[
B = \text{Total number of counts on the cement meter for three trials}
\]

\[
C = \text{Total time in seconds for three trials.}
\]

2. Water Flow Meter

The accuracy of the water flow meter shall be verified by adjusting the flow to 2 gal. per minute. With the equipment operating at the required revolutions per minute, the water discharged during a one minute interval shall be collected and weighed. The weight in pounds of the discharged water shall be divided by 8.33 to determine the number of gallons. This procedure shall be repeated with the flow meter adjusted to 3 gal. per minute.

3. Aggregate Bin Gates

The gate opening shall be adjusted to provide the required amount of aggregate to produce a cubic yard of the designated mix. The ratio of fine aggregate to total aggregate shall be verified by stopping the cement discharge and collecting the aggregate discharged in a container. A representative sample of the discharged aggregate shall be selected and separated on a No. 4 (4.75 mm) sieve. The fine aggregate will be considered as the amount passing the No. 4 (4.75 mm) sieve. The percentage shall be computed on a dry weight basis. The aggregate gate openings shall be adjusted to provide the required amount of aggregate to produce a cubic yard of the designated mix. The gate settings for the fine aggregate and coarse aggregate shall be determined separately. Each aggregate shall be verified by stopping the cement discharge and collecting the aggregate discharged in a container. Calculations for all aggregates shall be based on saturated surface dried, SSD, weights taken from the mix design. The calculations shall be adjusted for the tested moisture content. The final gate setting for each aggregate must dispense material within a tolerance of ± 2% of the target weights after adjustment for measured moisture content.

4. Latex Throttling Valve

The latex strainer shall be unobstructed. The latex throttling valve shall be adjusted to deliver the required amount of latex emulsion admixture for each 94 lbs of cement. With the unit operating at the required revolutions per minute for the calculated time in seconds per 94 lbs of cement, the latex shall be discharged into a container. The weight of the latex shall be determined and, if necessary, the valve shall be adjusted such that the amount of latex discharged is within 1/2 lb of the amount required for each 94 lbs of cement. One verification shall be performed to check the accuracy of the valve setting.
5. Admixture Dispensers

This equipment shall be calibrated in accordance with the manufacturer’s instructions for the specific materials and quantities involved.

722.43/44 Patching an Existing Bridge Deck Overlay

(a) Materials

Materials shall be in accordance with 722.0203.

(b) Storage and Handling of Materials

Storage and handling of materials shall be in accordance with 722.0304.

(c) Proportioning

Proportioning shall be in accordance with 722.0405.

(d) Preparation of the Bridge Floor

Preparation of the bridge floor shall be in accordance with the applicable provisions of 722.0506.

(e) Patching

Patching shall be in accordance with 722.0607 except as modified herein. Where no new overlay is planned, bridge deck patching concrete used in patching the bridge floor shall be placed to the level of the original deck. The remainder of each cavity shall be patched with the same material as the existing overlay.

(f) Mixing

Mixing shall be in accordance with the applicable provisions of 722.0809.

(g) Placing and Finishing

Placing and finishing shall be in accordance with the applicable provisions of 722.0910. Machine finishing shall be required when directed.

(h) Texturing

Texturing shall be in accordance with 722.10. In addition, the surface texturing shall match the pattern of the adjacent overlay, and shall be in accordance with the following:

Immediately after the finishing is complete and before the surface film has formed, the surface of the overlay patch shall be textured by grooving in the same direction as the existing overlay. The grooves may be formed by mechanized equipment using a vibrating beam roller, a series of discs or other approved device. Manual tools such as fluted floats, spring steel tined rakes, or finned floats with a single row of fins may be used. The grooves shall be relatively uniform and smooth and shall be formed without tearing the surface or bringing coarse aggregate to the top. The grooves shall be in accordance with 504.03.
grooves shall be terminated the same distance from the vertical faces of railings as the existing grooves in the adjacent existing overlay surface.

All areas of hardened grooved overlay patch which do not conform to these requirements due to either a deficiency in the grooving or a rough open textured surface shall be corrected with no additional payment. Corrections shall be made by cutting transverse grooves in the hardened overlay with an approved cutting machine or by sealing with an approved mixture and retexturing to a satisfactory finish as directed.

(i) Curing
Curing shall be in accordance with 722.14/12.

(j) Calibration of Continuous Mixers
Calibration shall be in accordance with 722.14/13.

722.14/15 Method of Measurement
Removal of the existing overlay will be measured by the square yard of deck area regardless of the number of passes with the milling machine.

Surface milling will be measured by the square yard for the initial 1/4 in. depth or depth shown on the plans. Additional surface removal required below the initial 1/4 in. depth will be measured by the square yard for each required 1/4 in. depth. Only the portion of the bridge deck which is to remain in place will be measured for payment. The undefined areas requiring full depth deck removal will be measured for payment. The areas of the bridge floor which are shown on the plans to be removed, except for undefined full depth patching areas, will not be measured for payment.

Full depth patching will be measured by the square foot. The patching material used in full depth patching will not be measured for payment.

Hydrodemolition of the bridge deck will be measured by the square yard. Additional surface preparation will be measured by the linear foot of exposed reinforcing bar. Reinforcing bar repair will not be measured for payment.

Partial When hydrodemolition is not shown on the plans, partial depth patching will be measured by the square foot.

The measurement of bridge deck patching concrete used in partial depth patching cavities created by handchipping or hydrodemolition will be based on a theoretical quantity determined by multiplying the area of the appropriate partial depth patching cavities by an assumed average depth of 2 in. and converting the resulting volume into cubic yards. Overlay material used in a partial depth patching cavity will be measured by the cubic yard. The quantities of patching material used in a partial depth patching cavity will be included in the measurement of additional bridge deck overlay.
Overlay material used to fill surface irregularities will be measured by the cubic yard. Such quantity and will be included in the measurement of additional bridge deck overlay.

*Full depth patching will be measured by the square foot. The patching material used in full depth patching will not be measured for payment.*

Bridge deck overlay will be measured by the square yard for the specified thickness. Where there is no specified thickness shown on the plans, the specified thickness shall be 1-3/4 in.

Overlay dams and patching an existing overlay will be measured by the square foot.

*Transverse grooving will be measured by the square yard. No deduction in measurement will be made for areas where grooving is terminated or not required.*

Epoxy resin adhesive and bond coat will not be measured for payment. Blasting, cleaning, finishing, texturing other than the transverse grooving, and curing will not be measured for payment.

**722.15 Basis of Payment**

*Removal of the existing overlay will be paid for at the contract unit price per square yard of bridge deck overlay, remove.*

Milling of the initial 1/4 in. depth of surface will be paid for at the contract unit price per square yard for surface milling. Additional surface removal below the initial 1/4 in. depth will be paid for at the contract unit price per square yard for surface milling for each required 1/4 in. depth.

*Hydrodemolition of the bridge deck will be paid for at the contact unit price per square yard. When hydrodemolition is shown on the plans, additional surface preparation will be paid for at the established price shown per linear foot for bridge deck overlay, additional surface prep.*

When hydrodemolition is not shown on the plans, partial depth patching will be paid for at the contract unit price per square foot for bridge deck patching, partial depth.

When partial depth cavities are subsequently directed to be made full depth, additional payment will be made at 80 % of the contract unit price per square foot for bridge deck patching, full depth.

Full depth patching will be paid for at the contract unit price per square foot for bridge deck patching, full depth.
Partial depth patching will be paid for at the contract unit price per square foot for bridge deck patching, partial depth.

Prepared partial depth cavities exceeding 2 in. in average depth, which are subsequently directed to be made full depth, will be paid for at the contract unit price per square foot for bridge deck patching, partial depth. Additional payment will be made at 80% of the contract unit price per square foot for bridge deck patching, full depth.

Prepared partial depth cavities of 2 in. or less in average depth, which are subsequently directed to be made full depth, will be paid for at the contract unit price per square foot for bridge deck patching, full depth.

Patching material used for partial depth patching cavities will be paid for at the contract unit price of $550 shown per cubic yard for bridge deck overlay, additional for the type of overlay material placed.

Overlay material used to fill surface irregularities will be paid for at the contract unit price of $550 shown per cubic yard for bridge deck overlay, additional for the type of overlay material placed.

Bridge deck overlay will be paid for at the contract unit price per square yard, for the type of overlay material specified.

Patching an existing bridge deck overlay will be paid for at the contract unit price per square foot for bridge deck overlay patching.

Overlay dam will be paid for at the contract unit price per square foot, complete in place.

Transverse grooving will be paid for at the contract unit price per square yard.

The Department will include the pay item Bridge Deck Overlay Budget, with an established dollar amount in the proposal to pay for additional surface preparation completed after hydrodemolition and bridge deck overlay additional used to fill irregularities and partial depth cavities. This established amount is the Department’s estimate of the total cost of the work required to be performed for the contract. The established amount shown in the proposal is included in the total bid amount. The Department will pay for those items installed and listed with established prices for the quantities installed as directed by the Engineer. Where the work exceeds the Department’s estimated amount, the additional quantities will be reviewed for acceptance in accordance with 104.03 except that the additional surface preparation and bridge deck overlay additional will be paid at the pre-determined established prices shown.

Payment will be made under:
Item No. 6 12/18/18 (2018 SS) (contd.)
Mr. Beeson
Date: 12/18/18

REVISION TO SPECIAL PROVISION
722-B-307 CONCRETE BRIDGE DECK OVERLAYS

Pay Item Pay Unit Symbol
Bridge Deck Overlay .............................................................. SYS
Bridge Deck Overlay, Additional ................................................. CYS
Bridge Deck Overlay Budget ................................................. DOL
Bridge Deck Overlay, Latex Modified ...................................... SYS
Bridge Deck Overlay, LMC-VE .............................................. SYS
Bridge Deck Overlay, Patching .............................................. SFT
Bridge Deck Overlay, Remove Existing ................................. SYS
Bridge Deck Overlay, Silica Fume Modified .......................... SYS
Bridge Deck Patching, Full Depth ........................................... SFT
Bridge Deck Patching, Partial Depth ...................................... SFT
Hydrodemolition ................................................................. SYS
Transverse Grooving ............................................................ SYS
Overlay Dam ...................................................................... SFT
Surface Milling ................................................................. SYS

Items shown with an established price will be paid at the prices shown. Where any of the following items are shown in the schedule of pay items the bid item and price will prevail over the established prices shown.

Pay Item Pay Unit Symbol Established
Symbol Price
Bridge Deck Overlay, Additional LMC................................. CYS........$550
Bridge Deck Overlay, Additional LMC-VE ......................... CYS........$650
Bridge Deck Overlay, Additional Silica Fume Modified ...... CYS........$200
Bridge Deck Overlay, Additional Surface Prep................ LFT........$15

The cost of milling, handchipping, removing debris and water, and necessary incidentals shall be included in the cost of surface milling.

The cost of removal of unsound concrete, preparation of cavity surfaces, furnishing and applying bond coat or epoxy resin adhesive as required, furnishing and placing patches, and necessary incidentals shall be included in the cost of bridge deck patching, full depth, or bridge deck patching, partial depth.

The cost of overlay removal by handchipping in areas adjacent to the curb or otherwise inaccessible to the power-operated mechanical milling machine shall be included in the cost of bridge deck overlay, remove. The cost of disposing of overlay removal residue, including water, dust, concrete and incidentals shall be included in the cost of bridge deck overlay, remove.

The cost of deck surface preparation by handchipping in areas adjacent to the curb or otherwise inaccessible to the power-operated mechanical milling machine shall be
included in the cost of surface milling. The removal of surface milling residue, including water, dust, concrete and incidentals shall be included in the cost of surface milling.

The cost of the waste water control and disposal plan, waste water containment, testing, storing, transporting and disposal, and any incidentals related to the carrying out of the plan shall be included in the cost of hydrodemolition. If the waste water is found to have a pH of 12.5 or higher and thereby classified as hazardous, the additional costs associated with this classification will be paid for in accordance with 109.05.

The initial equipment calibration, any re-calibration, equipment shielding, handchipping curb areas, handchipping unsound concrete, cleaning of debris and slurry, compressed air cleaning, water blasting, and sandblasting shall be included in the cost of hydrodemolition.

When hydrodemolition is shown on the plans, the cost of removal of unsound concrete shall be included in the cost of hydrodemolition. Preparation of cavity surfaces, furnishing and applying bond coat or epoxy resin adhesive as required in handchipped locations, furnishing and placing patching material, and necessary incidentals shall be included in the cost of bridge deck overlay for the type of overlay material specified. Additional concrete removal required around exposed bars shall be included in the cost of additional surface preparation.

When hydrodemolition is not shown on the plans, the cost of removal of unsound concrete, preparation of cavity surfaces, furnishing and applying bond coat or epoxy resin adhesive as required, furnishing and placing patching material, and necessary incidentals shall be included in the cost of bridge deck patching, full depth, or bridge deck patching, partial depth.

The cost of patching material used for full depth patching shall be included in the cost of bridge deck patching, full depth. The cost of texturing patched areas will not be paid for separately, but shall be included in the cost of the patch.

The cost of furnishing and placing patching material in partial depth cavities and necessary incidentals shall be included in the cost of bridge deck overlay, additional.

The cost of removing the existing concrete; furnishing, hauling, and placing all materials including the epoxy; preparing the surface; and all necessary incidentals shall be included in the cost of overlay dam.

The cost of blasting, deck cleaning, furnishing, and applying epoxy resin adhesive or bond coat shall be included in the cost of other pay items.

The cost of removing and disposing of the slurry created during the transverse grooving shall be included in the cost of transverse grooving.
REVISION TO SPECIAL PROVISION
722-B-307 CONCRETE BRIDGE DECK OVERLAYS

Coring of the bridge deck, patching core holes, and all corrective measures required in accordance with 722.11 shall be performed with no additional payment cost to the Department.

The cost of bond coat, furnishing and placing the overlay material, and necessary incidentals shall be included in the cost of bridge deck overlay or bridge deck overlay patching.
COMMENTS AND ACTION

722-B-307 CONCRETE BRIDGE DECK OVERLAYS

DISCUSSION:
Mr. Beeson introduced and presented this item, along with Mr. Nelson, explaining that revisions to 722 were passed at the June 21, 2018 standards committee meeting, that made many changes for overlays. Discussion during the meeting and findings since then warrant further modifications as shown on the proposal page for this item. Mr. Beeson proposed to implement the applicable revisions as shown herein. Mr. Nelson explained one of the major revisions included machine grooving instead of tinning so the material can be covered sooner.

Mr. Koch suggested that we still need to have some protection prior to covering since a slight wind can affect the fogging or misting process, since language for evaporative retarders was struck. Mr. Nelson recommended allowing the evaporative retarders only for silica fume overlays.

Mr. Koch stated that there does not appear to be any language concerning testing frequency, but if desired, suggests testing every 30 cubic yards, similar to the LMC specification. Mr. Nelson agreed and said it was an oversight and that he will add that language.

Ms. Wagner addressed the milling language and how deep it should go. Mr. Osborn mentioned that he understood that the intention was for scarification milling. Mr. Pankow asked if it is easily known if the depth of the existing overlay is known. A brief discussion ensued regarding how you can tell when you reached the bottom of the overlay. Ms. Wagner asked if that needs to be clarified in the spec. Mr. Koch mentioned that most of that is already addressed in the spec, and that hopefully, common sense will prevail.

Mr. Nelson explained the revisions to the wet curing language, calibrations to mobile mixtures and gates on the truck.

Mr. Beeson revised his motion and stated that the intention for this item is go straight to the new 2020 Standard Specifications Book.
### 722-B-307 CONCRETE BRIDGE DECK OVERLAYS

(Continued)

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<td>FHWA Approval: YES</td>
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| Recurring Special Provision affected:                     |
|-----------------------------------------------------------|---|
| 722-B-307 CONCRETE BRIDGE DECK OVERLAYS                   | |
| Standard Drawing affected:                                | |
| NONE                                                       | |
| Design Manual Sections affected:                          | |
| NONE                                                       | |
| GIFE Sections cross-references:                           | |
| NONE                                                       | |

- **2020 Standard Specifications**
  - Revise Pay Items List
  - Create RSP (No.____) Effective _____ Letting
  - RSP Sunset Date:

- **GIFE Update**
  - SiteManager Update

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STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The requirements for accepting seed are out-of-date.

PROPOSED SOLUTION: Update the Standard Specifications to accept seed by certification.

APPLICABLE STANDARD SPECIFICATIONS: 914
APPLICABLE STANDARD DRAWINGS: None
APPLICABLE DESIGN MANUAL SECTION: None
APPLICABLE SECTION OF GIFE: None
APPLICABLE RECURRING SPECIAL PROVISIONS: None
PAY ITEMS AFFECTED: None
APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad Hoc: Matt Beeson, Jim Reilman, Heather Woods

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman
Title: Asst. State Materials Engineer
Organization: INDOT
Phone Number: 317-522-9692
Date: 12/3/18
STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No
Will approval of this item affect the Approved Materials List? No
Will this proposal improve:

- Construction costs? NA
- Construction time? NA
- Customer satisfaction? NA
- Congestion/travel time? NA
- Ride quality? NA

Will this proposal reduce operational costs or maintenance effort? NA

Will this item improve safety:

- For motorists? NA
- For construction workers? NA

Will this proposal improve quality for:

- Construction procedures/processes? NA
- Asset preservation? NA
- Design process? NA

Will this change provide the contractor more flexibility? NA

Will this proposal provide clarification for the Contractor and field personnel? NA

Can this item improve/reduce the number of potential change orders? NA

Is this proposal needed for compliance with:

- Federal or State regulations? NA
- AASHTO or other design code? NA

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: accepting seed by certification will have a large impact on time that the INDOT Technicians can use in other areas.
REVISION TO STANDARD SPECIFICATIONS

SECTION 914 – ROADSIDE DEVELOPMENT MATERIALS

914.04 GRASS AND LEGUME SEED

The Standard Specifications are revised as follows:

SECTION 914, BEGIN LINE 62, DELETE AND INSERT AS FOLLOWS:

914.04 Grass and Legume Seed

Grass and legume seed in the quantities and varieties required shall be furnished full-tagged and delivered in properly designated packages or bags as directed. Seeds shall be in accordance with the following requirements.

Seed of warm season grasses, forbs, or aquatic species shall be delivered to the project site individually packaged by species. Warm season grass and forb seed shall be purchased from lots for which test results are provided. Testing will not be required for aquatic species. When normal germination testing is not practical for forb species, a tetrazolium test shall be conducted to determine seed viability.

Seeds shall contain none of the noxious weeds listed herein or any that are listed in the Acts of the General Assembly of the State. Noxious weeds are Canada Thistle, Field Bindweed, Johnson Grass, Perennial Peppergrass, Perennial Sowthistle, Quack Grass, Russian Knapweed, and Wild Garlic.

Clover shall be free from dodder with no tolerance allowed. Lespedeza will be allowed no more than 90 dodder/lb and 45 giant foxtail per lb.

Requirements noted above are minimum and trade allowances will not be allowed.

Seed shall be purchased from sources of supply that have been sampled, tested, and reported by the State Seed Commissioner, Purdue University, West Lafayette, Indiana, and found to be satisfactory. Seed of warm season grasses shall be tested by the State Seed Commissioner or an independent laboratory. Seed of forbs shall be tested by an independent laboratory. Test results by independent laboratories shall be signed by a Registered Seed Technologist. Test results shall be submitted to the State Seed Commissioner, and a copy to the Office of Materials Management. This report is required before seed is sown. Such test report shall be no more than nine months old at the time seed is used and the use of the seed shall be subject to approval.

Seed which has been tested by the State Seed Commissioner may be used without further testing provided each bag of seed bears a tag showing the seed meets the requirements of the Standard Specifications and various seeds and their respective percentage in the bag. Each bag of seed used on the contract shall be accompanied by a copy of the State Seed Commissioner’s letter for acceptance in accordance with 916.02(e).

Seed which meets the weed seed tolerance, but does not comply with the purity or germination requirements, or both, may be used provided the percentage of purity or the
REVISION TO STANDARD SPECIFICATIONS

SECTION 914 - ROADSIDE DEVELOPMENT MATERIALS
914.04 GRASS AND LEGUME SEED

percentage of germination is not more than 10% below the minimum specified and that the result obtained from the following formulae does not exceed the maximum percent of weed seeds allowed.
COMMENTS AND ACTION

914.04 GRASS AND LEGUME SEED

DISCUSSION:
This item was introduced and presented by Mr. Beeson who stated that the requirements for accepting seed are out-of-date, and proposed the above shown revision to accept seed by certification. Mr. Beeson explained that accepting seed by certification will have a large impact on the time that the INDOT Technicians can use in other areas.

There was no further discussion and this item passed as submitted.

Motion: Mr. Beeson
Second: Mr. Koch
Ayes: 10
Nays: 0
FHWA Approval: YES

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| X                             |
| GIFE Update                  |

| X                             |
| SiteManager Update           |
PROBLEM(S) ENCOUNTERED:
Section 913.01 references AASHTO T-26, but the standard was discontinued several years ago.

PROPOSED SOLUTION:
Replace the reference to AASHTO T-26 with current standards for the four water properties listed. The appropriate standards are as follows:

\[ \begin{align*}
  \text{pH} & \quad - \quad \text{ASTM D 1293} \\
  \text{Chloride Ions} & \quad - \quad \text{ASTM D 512} \\
  \text{Sulfate} & \quad - \quad \text{ASTM D 516} \\
  \text{Total solids} & \quad - \quad \text{ASTM C 1603}
\end{align*} \]

APPLICABLE STANDARD SPECIFICATIONS: 913.01
APPLICABLE STANDARD DRAWINGS: none
APPLICABLE DESIGN MANUAL SECTION: none
APPLICABLE SECTION OF GIFE: none
APPLICABLE RECURRING SPECIAL PROVISIONS: none
PAY ITEMS AFFECTED: none
APPLICABLE SUB-COMMITTEE ENDORSEMENT: none

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman for Matt Beeson
Title: Asst. State Materials Engineer
Organization: INDOT Office of Materials Management
Phone Number: 317-522-9692
Date: 11/30/18
IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:
- Construction costs? N/A
- Construction time? N/A
- Customer satisfaction? N/A
- Congestion/travel time? N/A
- Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? N/A

Will this item improve safety:
- For motorists? N/A
- For construction workers? N/A

Will this proposal improve quality for:
- Construction procedures/processes? N/A
- Asset preservation? N/A
- Design process? N/A

Will this change provide the contractor more flexibility? N/A

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? N/A

Is this proposal needed for compliance with:
- Federal or State regulations? No
- AASHTO or other design code? No

Is this item editorial? Yes

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: N/A
The Standard Specifications are revised as follows:

SECTION 913, BEGIN LINE 3, DELETE AND INSERT AS FOLLOWS:

913.01 Water

Water used in mixing or curing shall be reasonably clean and free of oil, salt, acid, alkali, sugar, vegetable, or other substance injurious to the finished product. The following water properties will be tested in accordance with AASHTO T 26, the test methods listed in the table below. The results of the water properties shall be in accordance with the requirements as follows:

(a) pH ................................................................................. 6 to 8
(b) Chloride Ions ................................................ less than 300 ppm
(c) Sulfate (SO₄) ................................................ less than 500 ppm
(d) Total Solids ................................................ less than 1,500 ppm

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<th>TEST METHOD</th>
<th>RESULT</th>
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<td>pH</td>
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<td>ASTM C 1603</td>
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In addition, water containing algae will be unacceptable for use in concrete. Water known to be of potable quality may be used without test. Where the source of water is relatively shallow, the intake shall be so enclosed as to exclude silt, mud, grass, or other foreign materials.
COMMENTS AND ACTION

913.01 WATER

DISCUSSION:
Mr. Beeson introduced and presented this item stating that 913.01 references AASHTO T 26, but that standard was discontinued several years ago. Mr. Beeson therefore proposed to replace the reference to AASHTO T 26 with current standards for the four water properties as shown above.

There was no further discussion and this item passed as submitted.

Mr. Beeson requested that this revision be incorporated into the 2020 spec book and that a RSP is not necessary.

Minor editorial revisions are shown in these minutes.

<table>
<thead>
<tr>
<th>Motion: Mr. Beeson</th>
<th>Action:</th>
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<tbody>
<tr>
<td>Second: Mr. Koch</td>
<td>X</td>
</tr>
<tr>
<td>Ayes: 10</td>
<td>Passed as Submitted</td>
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<tr>
<td>Nays: 0</td>
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<tr>
<td>FHWA Approval: YES</td>
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Standard Specifications Sections referenced and/or affected:

<table>
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<tr>
<th>913.01 pg 987.</th>
<th>X 2020 Standard Specifications</th>
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</table>

Recurring Special Provision affected:

NONE

Standard Drawing affected:

NONE

Design Manual Sections affected:

NONE

GIFE Sections cross-references:

NONE

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Motion: Mr. Beeson  
Second: Mr. Koch  
Ayes: 10  
Nays: 0  
FHWA Approval: YES  

Standard Specifications Sections referenced and/or affected:

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<th>913.01 pg 987.</th>
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Recurring Special Provision affected:

NONE

Standard Drawing affected:

NONE

Design Manual Sections affected:

NONE

GIFE Sections cross-references:

NONE
PROBLEM(S) ENCOUNTERED: The reference to ‘base’ has created confusions as to whether the term includes aggregates.

PROPOSED SOLUTION: Clarify that the term ‘base’ refers to the underlining pavement structure of a roadway which had received a PCC resurface.

APPLICABLE STANDARD SPECIFICATIONS: 202.05

APPLICABLE STANDARD DRAWINGS: na

APPLICABLE DESIGN MANUAL SECTION: na

APPLICABLE SECTION OF GIFE: na

APPLICABLE RECURRING SPECIAL PROVISIONS: na

PAY ITEMS AFFECTED: na

APPLICABLE SUB-COMMITTEE ENDORSEMENT: na

IMPACT ANALYSIS (attach report): na

Submitted By: Michael Koch
Title: FW Area Engineer
Organization: INDOT
Phone Number: 574-612-2224
Date: Dec 3rd 2018
STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO STANDARD SPECIFICATIONS

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? no

Will approval of this item affect the Approved Materials List? no

Will this proposal improve:
- Construction costs? no
- Construction time? no
- Customer satisfaction? no
- Congestion/travel time? no
- Ride quality? no

Will this proposal reduce operational costs or maintenance effort? no

Will this item improve safety:
- For motorists? no
- For construction workers? no

Will this proposal improve quality for:
- Construction procedures/processes? yes
- Asset preservation? no
- Design process? yes

Will this change provide the contractor more flexibility? no

Will this proposal provide clarification for the Contractor and field personnel? yes

Can this item improve/reduce the number of potential change orders? yes

Is this proposal needed for compliance with:
- Federal or State regulations? no
- AASHTO or other design code? no

Is this item editorial? yes

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:
The Standard Specifications are revised as follows:

SECTION 202, BEGIN LINE 199, DELETE AND INSERT AS FOLLOWS:

202.05 Removal of PCCP, Sidewalks, Curbs, RCBA, and Reinforced Concrete Moment Slabs

All unreinforced PCCP, sidewalks, curbs, gutters, and other unreinforced concrete elements designated for removal shall be:

(a) broken into pieces and used for riprap on the project; or

(b) broken into pieces, the maximum weight of which shall be 150 lb, and incorporated into the work as directed; or

(c) otherwise disposed of in accordance with 202.02.

RCBA, reinforced concrete moment slabs, and reinforced concrete elements designated for removal shall be disposed of in accordance with 202.02.

Pavement removal shall consist of the removal and satisfactory disposal of RCBA, reinforced concrete moment slabs, reinforced or unreinforced PCCP, PCC resurface with its base, or the total of any combination of HMA base, intermediate, and surface course of any pavement on a overlaying PCC, PCC resurface with its base, RCBA, or reinforced concrete moment slab base, including the base. Pavement removal shall include only the removal and disposal of existing public road, street, and alley pavement as required for the planned construction. Curb removal shall include curb that is separate from the pavement or removed separately. Integral curb that is removed with the adjacent pavement shall be paid for as pavement removal. Prior to performing the work of pavement removal at locations shown on the plans or where directed, cement concrete pavement to be removed shall be cut with a power driven concrete saw along designated lines. Sawing shall be such that any portion of the pavement to remain in place will not be damaged. Any portion that is damaged or removed outside the designated lines shall be replaced with no additional payment. Sawing of pavement to be removed will not be paid for directly, but shall be included in the cost of pavement removal.
COMMENTS AND ACTION

202.05 REMOVAL OF PCCP, SIDEWALKS, CURBS, RCBA, AND REINFORCED CONCRETE MOMENT SLABS

DISCUSSION:
This item was introduced and presented by Mr. Koch who explained that the reference to ‘base’ has created confusion as to whether the term includes aggregates. Mr. Koch therefore proposed to implement the revisions to 202.05, as shown above, which will clarify that the term ‘base’ refers to the underlining pavement structure of a roadway which had received a PCC resurface.

There was no further discussion and this item passed as submitted.

Mr. Koch requested that this revision be incorporated into the 2020 spec book and that no RSP is necessary.

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<th>2020 Standard Specifications referenced and/or affected:</th>
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<tr>
<td>202.05 pg. 135.</td>
<td>Revise Pay Items List</td>
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<td>RSP Sunset Date:</td>
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<th>Design Manual Sections affected:</th>
<th>Standard Drawing Effective</th>
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