



INDIANA DEPARTMENT OF TRANSPORTATION
Driving Indiana's Economic Growth

100 North Senate Avenue
Room N925
Indianapolis, Indiana 46204

PHONE: (317) 232-5456
FAX: (317) 232-5551

Michael R. Pence, Governor
Karl B. Browning, Commissioner

AGENDA

July 17, 2014 Standards Committee Meeting

MEMORANDUM

July 2, 2014

TO: Standards Committee

FROM: Scott Trammell, Secretary

RE: Agenda for the July 17, 2014 Standards Committee Meeting

A Standards Committee meeting is scheduled for 09:00 a.m. on July 17, 2014 in the N955 Bay Window Conference Room. Please enter meeting through the double doors directly in front of the conference room.

The following items are listed for consideration:

A. GENERAL BUSINESS ITEMS

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

- 1. Approval of the Minutes from the May 15, 2014 meeting*

B. CONCEPTUAL PROPOSAL ITEMS

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

- 1. Addressing current issues when using hydrodemolition and expanding use of the Unique Special Provision: EXISTING OVERLAY REMOVAL, HYDRODEMOLITION AND LATEX MODIFIED CONCRETE REPLACEMENT OVERLAY FOR BRIDGE DECK*
([see PROPOSAL](#) pg 03/Ms. Phillips)

C. STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
PROPOSED ITEMS

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

Item No. 01	7/17/2014 (2014 SS)	Ms. Phillips	pg 11
615.04		Monuments	
615.09		Setting Monuments	
615.10		Re-Established Monuments	
Item No. 02	7/17/2014 (2014 SS)	Mr. Walker	pg 14
804.02		Materials	
804.07		Basis of Payment	
919.01(b)1		Reflective Sheeting	
926.01		Flexible Delineator Posts	
926.01(a)		Type I. Ground Mounted Flexible Delineator Post	
926.01(b)		Type II. Surface Mounted Flexible Delineator Post	
Item No. 03	7/17/2014 (2014 SS)	Mr. Walker	pg 20
804-T-XXX		LANE SEPARATORS	
Item No. 04	7/17/2014 (2014 SS)	Mr. Boruff	pg 23
805-T-173		WIRELESS VEHICLE DETECTION SYSTEMS	
805-T-173d		WIRELESS VEHICLE DETECTORS	
Item No. 05	7/17/2014 (2014 SS)	Mr. Walker	pg 29
217-R-XXX		SOILS DRYING WITH CHEMICAL MODIFIERS	
Item No. 06	7/17/2014 (2014 SS)	Mr. Pankow	pg 34
SECTION 304		ASPHALT BASES	
SECTION 305		CONCRETE BASES	
506.12		Method of Measurement	

cc: Committee Members
 FHWA
 ICA

CONCEPTUAL PROPOSAL ITEM

1. *EXISTING OVERLAY REMOVAL, HYDRODEMOLITION AND LATEX MODIFIED
CONCRETE REPLACEMENT OVERLAY FOR BRIDGE DECK*

CONCEPTUAL PROPOSAL

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Hydrodemolition is the preferred method for removing unsound concrete during a Latex Modified Concrete (LMC) bridge deck overlay project. Although hydrodemolition is permitted per 722.05 (a) 2, a unique provision has been in use for many years. The Division of Bridges desires to have the hydrodemolition language standardized for future contracts.

PROPOSED SOLUTION: The solution is two-tiered. The first (this proposal) is to update the unique provision to address current issues when using hydrodemolition, e.g. gal/min water rate and the use of a bond coat), incorporate best practices (use of an evaporation retardant), and address removal of an existing overlay. The USP will be made available on the Department's Example USP site for use. The second tier is to review and revise the entire *Standard Specifications* section 722 and incorporate the USP at that time.

Highlights of changes for the USP:

1. Evaporation retardant applied to overlay
2. Brooming (brush-applied bond coat) is not required when hydrodemolition is used.
3. The Engineer is not required to verify the settings (e.g. water pressure, water usage, machine staging) for the hydrodemolition equipment. The settings are no longer specified.
4. Deck scarification by surface milling is 1/2 in. instead of 1/4 in.
5. Overlay thickness is 2 inches unless otherwise specified.
6. Partial depth patching pay item is replaced by the hydrodemolition pay item.
7. Surface milling no longer subtracts out the areas to be removed from the quantity.

APPLICABLE STANDARD SPECIFICATIONS: 722

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: Section 72-3.01. Hydrodemolition description was included in May 2014 revision

APPLICABLE SECTION OF GIFE: 2009 interim Section 5.27. Recommend identifying changes associated with hydrodemolition as noted above.

APPLICABLE RECURRING SPECIAL PROVISIONS:

PAY ITEMS AFFECTED:

CONCEPTUAL PROPOSAL ITEM

(CONTINUED)

1. *EXISTING OVERLAY REMOVAL, HYDRODEMOLITION AND LATEX MODIFIED
CONCRETE REPLACEMENT OVERLAY FOR BRIDGE DECK*

Submitted By: Elizabeth Phillips

Title: Bridge Standards & Policy Supervisor

Organization: Standards and Policy, Division of Bridges

Phone Number: 232-6775

Date: 6/27/14

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc – Elizabeth Phillips (Standards)
and George Snyder (Bridge Rehab).

CONCEPTUAL PROPOSAL ITEM

(CONTINUED)

1. EXISTING OVERLAY REMOVAL, HYDRODEMOLITION AND LATEX MODIFIED
CONCRETE REPLACEMENT OVERLAY FOR BRIDGE DECK

EXISTING OVERLAY REMOVAL, HYDRODEMOLITION
AND LATEX MODIFIED CONCRETE REPLACEMENT OVERLAY FOR BRIDGE DECK

Description

This work shall consist of the removal of the existing bridge deck overlay followed by preparation of the exposed bridge deck surface in accordance with 722, and shall involve milling and the use of hydrodemolition. Subsequent to the deck preparation, the work shall consist of constructing a latex modified Portland cement concrete overlay.

Materials

Materials shall be in accordance with 722.02 and as follows.

Evaporation retardant shall be one of the products listed below. A Type D certification in accordance with 916 shall be furnished to the Engineer prior to use.

1. Confilm, manufactured by Master Builders Technologies; 3715 Bargetown Road, Room 214; Louisville, KY 40218
2. Sika-Film, manufactured by Sika Corporation; 2930 Switzer Road; Columbus, OH 43219
3. Eucobar, Euclid Chemical Company; 19218 Redwood Road; Cleveland, OH 44110

Storage and Handling of Materials

Storage and handling of materials shall be in accordance with 722.03.

CONSTRUCTION REQUIREMENTS

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 done by chipping hammers or handchipping.

Deck Scarification

The deck surface shall be scarified by surface milling to an initial depth of 1/2 in. The milling operation shall be limited to the portion of the deck that is closed to traffic at any one time. After the initial surface milling, additional milling may be required as directed.

Surface milling shall be performed with a milling machine capable of removal to the required depth. The equipment shall be self-propelled with sufficient power, traction and stability to maintain accurate depth of cut and slope. The equipment shall be capable of accurately and automatically establishing profile grades along each edge of the machine by referencing the existing bridge deck by means of a ski or matching shoe.

CONCEPTUAL PROPOSAL ITEM

(CONTINUED)

1. *EXISTING OVERLAY REMOVAL, HYDRODEMOLITION AND LATEX MODIFIED
CONCRETE REPLACEMENT OVERLAY FOR BRIDGE DECK*

If the milling operation results in the snagging of the top mat of steel reinforcement, the milling operation shall be stopped and the depth of removal adjusted. Any damaged reinforcing bars shall be repaired as directed at no additional cost.

Hydrodemolition

Hydrodemolition shall be used to remove all unsound concrete in accordance with 722.05(a)2. 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 herein, as well as removing rust and concrete particles from exposed reinforcing bars. The hydrodemolition equipment shall be calibrated and approved prior to use.

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. Calibration of the hydrodemolition equipment shall be conducted for every day of operation and, if necessary, re-calibrated to ensure removal of known areas of delaminated concrete as well as 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 conducted 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 self-propelled hydrodemolition equipment. Handchipping tools may be hand or mechanically driven and operated.

The Contractor shall submit a water control plan to the Engineer for approval prior to commencing hydrodemolition activities. The plan shall include control and filtering of all water discharged during hydrodemolition operations to produce visibly clear water prior to release to the surrounding environment. The Contractor shall block all drains on the deck and install dams to strain the runoff every 150 ft or less, along the drainage path. The dams shall be constructed from aggregate or straw having minimum dimensions of 6 in. in height, by 1 ft in width. The exposed bridge deck shall be used as a settlement basin for runoff. An additional settlement basin outside the limits of the bridge deck may be required if further straining is necessary.

The Contractor shall provide shielding to ensure containment of all dislodged concrete during hydrodemolition operations to prevent damage to surrounding property and 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

CONCEPTUAL PROPOSAL ITEM

(CONTINUED)

1. *EXISTING OVERLAY REMOVAL, HYDRODEMOLITION AND LATEX MODIFIED
CONCRETE REPLACEMENT OVERLAY FOR BRIDGE DECK*

and slurry from the bridge deck surface. Debris and slurry shall not be allowed to dry prior to vacuuming.

Additional Removal

After hydrodemolition has been completed, the deck will undergo final sounding to assure that all unsound concrete has been removed. The prepared deck surface shall be completely dry prior to final sounding and will consist of as many successive soundings as required to ensure that all unsound concrete has been removed. Additional concrete removal shall be performed by handchipping or hydrodemolition. Only handchipping tools shall be used when removing concrete within 1 in. of reinforcement.

Where the bond between the existing concrete and the reinforcing bars has been destroyed by handchipping, the concrete adjacent to the steel shall be removed to a minimum clearance of 1 in. around the periphery of the exposed reinforcement.

Full Depth Repair of Bridge Floor

Full depth patching of the bridge floor shall be in accordance with 722.06(a) and as follows.

Where the deck is sound for less than half 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. Any damaged reinforcing bars shall be repaired as directed at no additional cost. The removal area 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 full depth removal area after removal of all loose and unsound concrete. The 1 in. cut may be waived by the Engineer if it is determined that a cut will damage the reinforcement.

Preparation of Bridge Floor Prior to Overlay Placement

After completion of hydrodemolition and full depth repair of the bridge floor, but not more than 24 h prior to placement of the overlay, the entire deck shall be cleaned in accordance with 722.05(b).

Proportioning and Mixing

Proportioning and mixing of the latex modified concrete shall be in accordance with 722.04 and 722.08, respectively.

Placing and Finishing

Placement and finishing of the latex modified concrete overlay shall be in accordance with 722.09 except that a bond coat shall not be applied to surfaces where the removal was accomplished by hydrodemolition. Evaporation retardant shall be applied in accordance with the evaporation retardant manufacturer's recommendations to the surface of the latex modified concrete immediately after every second transverse pass of the burlap or pan drag on the finishing machine is completed. Reapplication of the evaporation retardant shall be

CONCEPTUAL PROPOSAL ITEM

(CONTINUED)

*1. EXISTING OVERLAY REMOVAL, HYDRODEMOLITION AND LATEX MODIFIED
CONCRETE REPLACEMENT OVERLAY FOR BRIDGE DECK*

performed to all areas where the surface has been disturbed after the application of the evaporative retardant, such as from bull floating or hand finishing, or when drying of the surface is observed. The evaporation retardant shall be used as such and not as a finishing aid. Excessive amounts shall not be applied and worked into the latex modified concrete surface.

Texturing and Curing

Texturing and curing shall be in accordance with 722.10 and 722.11, respectively. When a portion of the grooving or tining, not to exceed 5 ft longitudinally, is complete, the evaporative retardant shall be re-applied to the freshly textured surface.

Calibration of Continuous Mixers

Calibration of continuous mixers shall be in accordance with 722.12.

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.

The surface milling operation for deck scarification will be measured by the square yard for the initial 1/2 in. depth. Surface milling below the initial 1/2 in. depth, as approved by the Engineer, will be measured by the square yard for each required 1/4 in depth. Additional removal of unsound concrete by handchipping will not be measured.

Hydrodemolition of the bridge deck will be measured by the square yard.

Full depth patching will be measured in accordance with 722.14.

Overlay material used to fill surface irregularities will be measured in accordance with 722.14.

Bridge deck overlay will be measured in accordance with 722.14, except that when no overlay thickness is shown on the plans, the overlay thickness shall be 2 inches.

Epoxy resin adhesive and bond coat will not be measured for payment. Blasting, cleaning, finishing, texturing, and curing will not be measured for payment.

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.

The initial 1/2 in. deck scarification will be paid for at the contract unit price per square yard for surface milling. Surface milling below the initial 1/2 in. depth will be paid for at 75% of the contract unit price per square yard for surface milling for each additional 1/4 in. depth.

CONCEPTUAL PROPOSAL ITEM

(CONTINUED)

1. EXISTING OVERLAY REMOVAL, HYDRODEMOLITION AND LATEX MODIFIED
CONCRETE REPLACEMENT OVERLAY FOR BRIDGE DECK

Hydrodemolition of the bridge deck will be paid for at the contact unit price per square yard.

Full depth patching will be paid for in accordance with 722.15.

Overlay material used to fill surface irregularities will be paid for in accordance with 722.15.

Bridge deck overlay will be paid for in accordance with 722.15.

Payment will be made under:

Pay Item Pay Unit Symbol

Bridge Deck Overlay, Remove.....SYS
Hydrodemolition.....SYS

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 scarification 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 for blocking drains, initial equipment calibration, any re-calibration, filtering of discharge water, constructing settlement basins for runoff, equipment shielding, handchipping curb areas, handchipping unsound concrete, cleaning of debris and slurry, compressed air cleaning, and sandblasting shall be included in the contract unit price for hydrodemolition.

The cost of bond coat, furnishing and placing the overlay material, and incidentals shall be included in the cost of bridge deck overlay. Coring of the bridge deck, patching core holes, and all corrective measures required in accordance with 722.11 shall be performed at no additional cost.

CONCEPTUAL PROPOSAL ITEM

(CONTINUED)

1. *EXISTING OVERLAY REMOVAL, HYDRODEMOLITION AND LATEX MODIFIED
CONCRETE REPLACEMENT OVERLAY FOR BRIDGE DECK*

DISCUSSION:

AGENDA

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

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: *Standard Specifications* require a copper pin for survey monuments. Standard Drawing 615-SLMN-0, Survey Line Monuments requires a steel rod.

The Land & Aerial Survey Office gathered information district survey staff that indicated steel is preferred. The use of steel makes locating monuments for subsequent work using magnetic locators much easier and is typically less expensive.

PROPOSED SOLUTION: Revise *Standard Specifications* to require a steel pin in lieu of copper when setting monuments. Include steel pin when describing re-established monuments.

APPLICABLE STANDARD SPECIFICATIONS: 615.04, 615.09, 615.10

APPLICABLE STANDARD DRAWINGS: 615-SLMN-01

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE:

APPLICABLE RECURRING SPECIAL PROVISIONS:

PAY ITEMS AFFECTED:

Submitted By: Elizabeth Phillips

Title:

Organization: Standards and Policy, Division of Bridges

Phone Number: 232-6775

Date: 5/23/14

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc – Elizabeth Phillips, Eric Banschbach, Scott Trammell.

REVISION TO STANDARD SPECIFICATIONS

SECTION 615 - MONUMENTS, MARKERS, AND PARKING BARRIERS

615.04 MONUMENTS

615.09 SETTING MONUMENTS

615.10 RE-ESTABLISHED MONUMENTS

(Note: Proposed changes shown highlighted gray)

The Standard Specifications are revised as follows:

SECTION 615, BEGIN LINE 54, DELETE AND INSERT AS FOLLOWS:

The pin shall be set perpendicular to and flush with the top of the monument while the concrete is plastic and left undisturbed until the concrete has set. The pin shall be ~~copper~~*steel* and shall be 1 in. in diameter and 5 in. long. If for type D monuments, the hole shall be drilled in the center with a 1/8 in. drill for a depth of 1 1/2 in. The hole shall be filled with lead flush with the end of the pin. Castings for protected monuments shall be in accordance with 910.05(a).

SECTION 615, BEGIN LINE 96, DELETE AND INSERT AS FOLLOWS:

615.09 Setting Monuments

If the location of a monument falls within the limits of a cement concrete pavement, a ~~copper~~*steel* pin, the details of which are shown on the plans, shall be set perpendicular to and flush with the top of the finished pavement. It shall be placed just before the concrete takes initial set and then left undisturbed until the concrete has set. Other monuments shall be of the type shown on the plans, depending on the type or surface of the pavement in which they are to be placed or if they are to be placed outside of pavement. Necessary excavation shall be to the required depth. The bottom of the excavation shall be firm and true to line and grades given. After a monument is in place, the remaining excavated areas shall be backfilled with suitable material firmly tamped in layers. The monument shall not be disturbed.

SECTION 615, BEGIN LINE 111, DELETE AND INSERT AS FOLLOWS:

615.10 Re-Established Monuments

It may be necessary to re-establish existing monuments in pavements or bases which are disturbed unavoidably or covered by operations embraced in the contract.

If the existing monument is, or contains a brass, ~~or~~ copper, *or steel* pin, the pin shall be extended to the surface of the new pavement by attaching a ~~brass or copper~~ pin *of the same metal* with at least a 1 in. diameter and of the length required. Such extensions shall be attached by tapping the original pin and providing a necessary screw attachment such that the extension can be fastened securely to the original pin. The tapped hole shall be at least 1/4 in. in diameter and no less than 1 in. deep. The screw attachment shall have the same diameter as for the hole in the original pin and shall be no less than 1 in. in length.

COMMENTS AND ACTION

615.04 MONUMENTS

615.09 SETTING MONUMENTS

615.10 RE-ESTABLISHED MONUMENTS

DISCUSSION:

Motion:	Action:
Second:	<input type="checkbox"/> Passed as Submitted
Ayes:	<input type="checkbox"/> Passed as Revised
Nays:	<input type="checkbox"/> Withdrawn
Standard Specifications Sections affected:	<input type="checkbox"/> 2016 Standard Specifications Book
615.04 pg 423; 615.09 and 615.10 pg 424.	<input type="checkbox"/> Revise Pay Items List
Recurring Special Provision affected:	<input type="checkbox"/> Create RSP (No. <input type="text"/>)
NONE	Effective <input type="text"/> Letting
	RSP Sunset Date: <input type="text"/>
	<input type="checkbox"/> Revise RSP (No. <input type="text"/>)
	Effective <input type="text"/> Letting
	RSP Sunset Date: <input type="text"/>
Standard Sheets affected:	Standard Drawing Effective
NONE	<input type="checkbox"/> Create RPD (No. <input type="text"/>)
	Effective <input type="text"/> Letting
	<input type="checkbox"/> Technical Advisory
Design Manual Sections affected:	GIFE Update Req'd.? Y <input type="checkbox"/> N <input type="checkbox"/>
NONE	By <input type="text"/> Addition or <input type="text"/> Revision
GIFE Sections cross-references:	Frequency Manual Update Req'd? Y <input type="checkbox"/> N <input type="checkbox"/>
NONE	By <input type="text"/> Addition or <input type="text"/> Revision
	Received FHWA Approval? <input type="text"/>

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

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The specifications need to be modified to include both ground mounted and surface mounted delineator posts. High density polyethylene is no longer being used by most delineator manufacturers due to poor impact resistance and surface energy properties. Impact resistant thermoplastics are currently being used. Also, a section should be added to include the appropriate anchoring for the posts.

PROPOSED SOLUTION: Revise sections 804, 919, and 926 as follows:

- 804 (*Delineators*) -- include both ground mounted and surface mounted flexible delineator posts and the appropriate pay item description;
- 919 (*Sheeting Material*) -- require that delineators include reflective sheeting;
- 926 (*Flexible Delineator Posts*) -- require impact resistant thermoplastics. Require NTPEP testing and guidelines for acceptance of the delineator posts from bumper and tire impacts. Also, include requirements for anchors of the posts and reflective sheeting.

APPLICABLE STANDARD SPECIFICATIONS: 804, 919, and 926

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: 502-2.06

APPLICABLE SECTION OF GIFE:

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: Yes

Submitted By: Ron Walker

Title: Manager, Office of Materials Management

Organization: INDOT

Phone Number: 317-610-7251 x 204

Date: 6-12-14

APPLICABLE SUB-COMMITTEE ENDORSEMENT: 800 Committee

REVISION TO STANDARD SPECIFICATIONS

SECTION 804 - DELINEATORS

804.02 Materials

804.07 Basis of Payment

SECTION 919 - TRAFFIC SIGNS

919.01(b)1 Reflective Sheeting

SECTION 926 - MISCELLANEOUS MATERIALS

926.01 Flexible Delineator Posts

926.01(a) *Type I. Ground Mounted Flexible Delineator Post*

926.01(b) *Type II. Surface Mounted Flexible Delineator Post*

(Note: Proposed changes shown highlighted gray)

The Standard Specifications are revised as follows:

SECTION 804, BEGIN LINE 10, INSERT AS FOLLOWS:

804.02. Materials

Materials shall be in accordance with the following:

Delineator Posts	910.15
Delineators	926.02
Flexible Delineator Posts	926.01

The types of delineators shall be:

- (a) D1 – single;
- (b) D2 – double;
- (c) D3 – triple.

Hardware for mounting delineators on posts shall be aluminum alloy in accordance with 919.01(d)2; stainless steel or galvanized steel in accordance with 919.01(d)1; or aluminum pull-through blind rivets. Bolts and lock-nuts or rivets shall be 3/16 in. diameter.

The types of flexible delineator posts shall be:

- (a) Type I – ground mounted*
- (b) Type II – surface mounted.*

CONSTRUCTION REQUIREMENTS

804.03 Delineator Visibility

Delineator reflector units shall be positioned so as to be visible for a distance of 1000 ft on tangent sections or at maximum visibility distances on curves. These locations shall be established under normal weather and atmospheric conditions when illuminated by the upper beam of standard automobile headlights.

REVISION TO STANDARD SPECIFICATIONS

SECTION 804 - DELINEATORS

804.02 Materials

804.07 Basis of Payment

SECTION 919 - TRAFFIC SIGNS

919.01(b)1 Reflective Sheeting

SECTION 926 - MISCELLANEOUS MATERIALS

926.01 Flexible Delineator Posts

926.01(a) Type I. Ground Mounted Flexible Delineator Post

926.01(b) Type II. Surface Mounted Flexible Delineator Post

804.04 Posts

Posts shall be installed in accordance with 802.07.

804.05 Flexible Delineator Posts

These posts shall be installed according to the manufacturer's recommendations and shall be set so that the top is no more than 1/2 in. from any vertical plane through the bottom.

804.06 Method of Measurement

Delineators with posts, delineator posts, and flexible delineator posts will be measured by the number of units of the type specified.

804.07 Basis of Payment

The accepted quantities of delineators, delineators with post, delineator post, and flexible delineator post, if set out as a separate pay item, will be paid for at the contract unit price per each for the type specified, complete in place.

Payment will be made under:

Pay Item	Pay Unit Symbol
Delineator Post	EACH
Delineator Post, Flexible, <u> </u> type	EACH
Delineator with Post, <u> </u> type	EACH
Delineator	EACH

Where new delineator posts are installed to replace existing delineator posts, the cost of the removal of the existing post shall be included in the cost of the new post.

SECTION 919, BEGIN LINE 86, DELETE AND INSERT AS FOLLOWS:

1. Reflective Sheeting

Reflective sheeting used for signs, channelizing and delineation devices shall be in accordance with ASTM D 4956. Type V reflective sheeting ~~may~~shall be used on delineators. Reboundable reflective sheeting shall be used on plastic drums, flexible delineator posts, and other flexible channelizers.

REVISION TO STANDARD SPECIFICATIONS

SECTION 804 - DELINEATORS

804.02 Materials

804.07 Basis of Payment

SECTION 919 - TRAFFIC SIGNS

919.01(b)1 Reflective Sheeting

SECTION 926 - MISCELLANEOUS MATERIALS

926.01 Flexible Delineator Posts

926.01(a) Type I. Ground Mounted Flexible Delineator Post

926.01(b) Type II. Surface Mounted Flexible Delineator Post

The reflective sheeting shall include an adhesive backing Class 1 or Class 2 in accordance with ASTM D 4956.

SECTION 926, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 926 - MISCELLANEOUS MATERIALS

926.01 Flexible Delineator Posts

Flexible delineator posts shall be made of ~~HDPE plastic in accordance with ASTM D 5203~~ *impact resistant thermoplastics*. The post shall be straight along its center line and have a smooth surface free from cracks, flaws, seams, laps, blisters, and edges affecting the strength, durability, or appearance. The cross section width shall not exceed 6 in.

The reflective sheeting on the posts shall be in accordance with 919.01(b)1 and shall have minimum dimensions of 3 in. by 8 in. Reflective sheeting shall be applied directly to the post and protected in a manner that minimizes damage to the sheeting upon impact.

The color of the post and the reflective sheeting shall match the color of the adjacent edgeline.

Posts shall have been tested by the National Transportation Product Evaluation Program within the past 10 years. When installed, the flexible post shall withstand, without damage, five winter and five summer vehicle impacts at ambient air temperatures of 32°F and at 85°F each. The vehicle impacts shall include both bumper and tire impacts. It shall be able to bend to an angle of 85° from vertical and right itself to within 10° of the vertical immediately and stand erect within 4 h within the same ambient air temperature range. After 10 impacts, at least 7 of 8 posts tested shall be intact and no post shall have a lean greater than 10°. Breakage or loss of any one post shall be considered a failure.

Only flexible delineator posts from the Department's list of approved Flexible Delineator Posts shall be used. Flexible delineator posts will be placed and maintained on the Department's approved list in accordance with ITM 806, Procedure GH.

(a) Type I. Ground Mounted Flexible Delineator Post

Roadside delineator post shall use an anchor sufficient to keep the post securely embedded in the soil.

(b) Type II. Surface Mounted Flexible Delineator Post

REVISION TO STANDARD SPECIFICATIONS

SECTION 804 - DELINEATORS

804.02 Materials

804.07 Basis of Payment

SECTION 919 - TRAFFIC SIGNS

919.01(b)1 Reflective Sheeting

SECTION 926 - MISCELLANEOUS MATERIALS

926.01 Flexible Delineator Posts

926.01(a) Type I. Ground Mounted Flexible Delineator Post

926.01(b) Type II. Surface Mounted Flexible Delineator Post

Surface-mounted post shall have either a surface-mounted base capable of bolting or adhering to the pavement or an anchor cup embedded in the pavement. Bases shall be made of materials suitable for securely mounting the vertical portion to the roadway. Materials used to attach the base or in-pavement anchor cup to the roadway surface shall be in accordance with the manufacturer recommendations.

The reflective sheeting on surface-mounted posts shall consist of two 3 in. wide wraps around the post separated by a 3 in. gap beginning 1 in. down from the top, or as shown on the plans.

COMMENTS AND ACTION

804.02 Materials
804.07 Basis of Payment
919.01(b)1 Reflective Sheeting
926.01 Flexible Delineator Posts
926.01(a) *Type I. Ground Mounted Flexible Delineator Post*
926.01(b) *Type II. Surface Mounted Flexible Delineator Post*

DISCUSSION:

Motion:	Action:
Second:	<input type="checkbox"/> Passed as Submitted
Ayes:	<input type="checkbox"/> Passed as Revised
Nays:	<input type="checkbox"/> Withdrawn
Standard Specifications Sections affected:	<input type="checkbox"/> 2016 Standard Specifications Book <input type="checkbox"/> Revise Pay Items List
804.02 pg 756; 804.07 pg 757; 919.01(b)1 pg 989; 926.01 pg 1056.	<input type="checkbox"/> Create RSP (No. <input type="text"/>) Effective <input type="text"/> Letting RSP Sunset Date: <input type="text"/>
Recurring Special Provision affected:	<input type="checkbox"/> Revise RSP (No. <input type="text"/>) Effective <input type="text"/> Letting RSP Sunset Date: <input type="text"/>
NONE	
Standard Sheets affected:	Standard Drawing Effective <input type="text"/> <input type="checkbox"/> Create RPD (No. <input type="text"/>) Effective <input type="text"/> Letting <input type="checkbox"/> Technical Advisory
NONE	
Design Manual Sections affected:	GIFE Update Req'd.? Y <input type="checkbox"/> N <input type="checkbox"/> By <input type="text"/> Addition or <input type="text"/> Revision
502-2.06	
GIFE Sections cross-references:	Frequency Manual Update Req'd? Y <input type="checkbox"/> N <input type="checkbox"/> By <input type="text"/> Addition or <input type="text"/> Revision
NONE	
	Received FHWA Approval? <input type="text"/>

Mr. Walker
Date: 7/17/14

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

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The Unique Special Provision should be converted to a Recurring Special Provision and another product and manufacturer of the lane separator included.

PROPOSED SOLUTION: Convert specification to a Recurring Special Provision and add another manufacturer of the lane separator.

APPLICABLE STANDARD SPECIFICATIONS: 804

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE:

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: None

Submitted By: Ron Walker

Title: Manager, Office of Materials Management

Organization: INDOT

Phone Number: 317-610-7251 x 204

Date: 6-12-14

APPLICABLE SUB-COMMITTEE ENDORSEMENT: 800 Committee

REVISION TO RECURRING SPECIAL PROVISIONS

804-T-XXX LANE SEPARATORS

804-T-XXX LANE SEPARATORS

(Adopted XX-XX-14)

Description

This work shall consist of furnishing and installing lane separators to channelize road users, to divide opposing vehicular traffic lanes, to divide lanes when 2 or more lanes are open in the same direction, or to provide continuous channelization.

Materials

Lane separators shall be NCHRP 350 approved and constructed of highly durable material that is resistant to ultraviolet light, ozone, and hydrocarbons.

The modular curb for lane separators shall have a maximum height of 4 in. and a maximum width of 1 ft, and shall have sloping sides in order to facilitate crossover by emergency vehicles.

Lane separators shall be equipped with a release feature which allows the delineators to be removed from the base.

Only lane separators from the following list shall be used:

1. Qwick Kurb, manufactured by Qwick Kurb, Inc
2. Tuff Curb, manufactured by Impact Recovery Systems
3. Dura Curb, manufactured by John Thomas, Inc

Delineators for lane separators, shall be retroreflectorized, or include retroreflective sheeting, in accordance with 926, to provide nighttime visibility.

Construction Requirements

Lane separators shall be installed by affixing it to the pavement in accordance with the manufacturer's recommendations. Each unit shall be capable of being shifted from place to place to accommodate changing conditions.

Method of Measurement

Lane separators will be measured by the linear foot.

Basis of Payment

Lane separators will be paid for at the contract unit price per linear foot, complete in place.

Payment will be made under:

Pay Item.....Pay Unit Symbol

Lane Separator.....LFT

Delineators, retroreflective sheeting and all other incidentals shall be included in the cost of other items.

COMMENTS AND ACTION

804-T-XXX LANE SEPARATORS

DISCUSSION:

Motion:	Action:
Second:	<input type="checkbox"/> Passed as Submitted
Ayes:	<input type="checkbox"/> Passed as Revised
Nays:	<input type="checkbox"/> Withdrawn
Standard Specifications Sections affected:	<input type="checkbox"/> 2016 Standard Specifications Book
SECTION 804 pg 756.	<input type="checkbox"/> Revise Pay Items List
Recurring Special Provision affected:	<input type="checkbox"/> Create RSP (No. <input type="text"/>)
NONE	Effective <input type="text"/> Letting
Standard Sheets affected:	RSP Sunset Date: <input type="text"/>
NONE	<input type="checkbox"/> Revise RSP (No. <input type="text"/>)
Design Manual Sections affected:	Effective <input type="text"/> Letting
NONE	RSP Sunset Date: <input type="text"/>
GIFE Sections cross-references:	Standard Drawing Effective <input type="text"/>
NONE	<input type="checkbox"/> Create RPD (No. <input type="text"/>)
	Effective <input type="text"/> Letting
	<input type="checkbox"/> Technical Advisory
	GIFE Update Req'd.? Y <input type="checkbox"/> N <input type="checkbox"/>
	By <input type="text"/> Addition or <input type="text"/> Revision
	Frequency Manual Update Req'd? Y <input type="checkbox"/> N <input type="checkbox"/>
	By <input type="text"/> Addition or <input type="text"/> Revision
	Received FHWA Approval? <input type="text"/>

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS
REVISION TO RECURRING SPECIAL PROVISIONS AND RECURRING PLAN DETAILS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Recurring Special Provision 805-T-173 and Recurring Plan Detail 805-173d regarding wireless vehicle detection refer to two types of wireless detectors, a type that is capable of counting vehicles and a type that is not. However, it turns out that the type that was thought to be incapable of counting vehicles actually can and the one that INDOT had been buying to count vehicles is more expensive and has extra features that aren't needed.

PROPOSED SOLUTION: In conjunction with updating the approved materials list for Traffic Signal and ITS Control Equipment, eliminate the type description in the pay item and clarify on the recurring plan detail that the detectors can be programmed to count vehicles.

APPLICABLE STANDARD SPECIFICATIONS: 805.10 and 922.13(c)

APPLICABLE STANDARD DRAWINGS:

APPLICABLE DESIGN MANUAL SECTION: 502-3.0

APPLICABLE SECTION OF GIFE:

APPLICABLE RECURRING SPECIAL PROVISIONS:

PAY ITEMS AFFECTED: 805-10107 Wireless Magnetometer Detector Type

Submitted By: Joseph Bruno for Dave Boruff

Title: Manager, Traffic Administration

Organization: Traffic Engineering Division

Phone Number: 317-234-7975

Date: 6/20/14

APPLICABLE SUB-COMMITTEE ENDORSEMENT: None

REVISION TO RECURRING SPECIAL PROVISIONS AND RECURRING PLAN DETAILS
805-T-173 WIRELESS VEHICLE DETECTION SYSTEMS

(Note: Proposed changes shown highlighted gray)

805-T-173 WIRELESS VEHICLE DETECTION SYSTEM

(Revised XX-XX-14)

Description

This work shall consist of furnishing and installing wireless vehicle detection systems for vehicle detection at traffic signals.

Materials

The wireless vehicle detection system, WVDS, is comprised of wireless ~~in-pavement magnetometers~~ **detectors**, contact closure cards, receiver processors, and wireless repeaters installed for a signalized intersection. The system shall be capable of monitoring vehicles on a roadway via detection of changes in inductance caused by the presence or passage of a vehicle and shall provide detector outputs to a traffic signal controller.

The WVDS shall include ~~in-pavement magnetometers~~ **detectors**, a minimum of two receiver processors, the required mounting equipment, cables, rack mounted cards, set-up and operating software, all connectors, and miscellaneous equipment necessary for the installation and operation of the system. If required, the WVDS shall also include wireless repeaters.

Only models from the Department's approved materials list for traffic signal control equipment shall be used.

Ethernet cable for wireless vehicle detectors shall be outdoor rated and UV shielded.

Construction Requirements

Prior to the installation, the Contractor shall test all ~~in-pavement sensors~~ **wireless magnetometer detectors** and demonstrate proper operation and communication between the ~~in-pavement sensors~~ **wireless magnetometer detectors** and the receiver processor and wireless repeater, if required.

Prior to the installation, the Contractor shall demonstrate that each ~~in-pavement sensor~~ **wireless magnetometer detector** ~~shall~~ be ~~installed~~ within range of its corresponding receiver processor, using wireless repeaters as necessary. All in-pavement sensors assigned to either a receiver processor or wireless repeater shall be located within a 120° arc measured from the receiver processor or wireless repeater.

The Contractor shall install each ~~in-pavement sensor~~ **wireless magnetometer detector** in the roadway according to the manufacturer's recommendations ~~with one wireless magnetometer detector programmed to count vehicles for each through travel lane and as shown on the plans.~~ Holes cored in the pavement shall be cleaned and dried before installing ~~in-pavement sensors~~ **wireless magnetometer detectors**. The cored pavement shall be backfilled according to the manufacturer's recommendations.

REVISION TO RECURRING SPECIAL PROVISIONS AND RECURRING PLAN DETAILS
805-T-173 WIRELESS VEHICLE DETECTION SYSTEMS

Receiver processors and wireless repeaters shall be mounted on traffic signal steel strain, or cantilever poles, or signal pedestals on type A foundations. The mounting height of receiver processors above the pavement surface shall be between 20 ft and 35 ft. The mounting height of wireless repeaters above the pavement surface shall be between 13 ft and 35 ft.

The minimum distance between a receiver processor and wireless repeater mounted on the same structure shall be 2 ft. This distance may be increased to enable better communication between the devices.

After installation, the Contractor shall demonstrate successful communication between each ~~in-pavement sensor~~ ~~wireless magnetometer detector~~, receiver processor, and wireless repeater to the Engineer.

Method of Measurement

Wireless magnetometer detectors, contact closure cards, receiver processors and wireless repeaters will be measured by the number of units installed.

Basis of Payment

Wireless magnetometer detectors, contact closure cards, receiver processors and wireless repeaters will be paid for at the contract unit price per each.

Pay Item

Pay Unit Symbol

Contact Closure Card.....	EACH
Receiver Processor.....	EACH
Wireless Magnetometer Detector Type	EACH
Wireless Repeater.....	EACH

The cost of coring the pavement, sealant, and all work necessary for proper installation and operation of the in-pavement sensors shall be included in the cost of the wireless magnetometer detector.

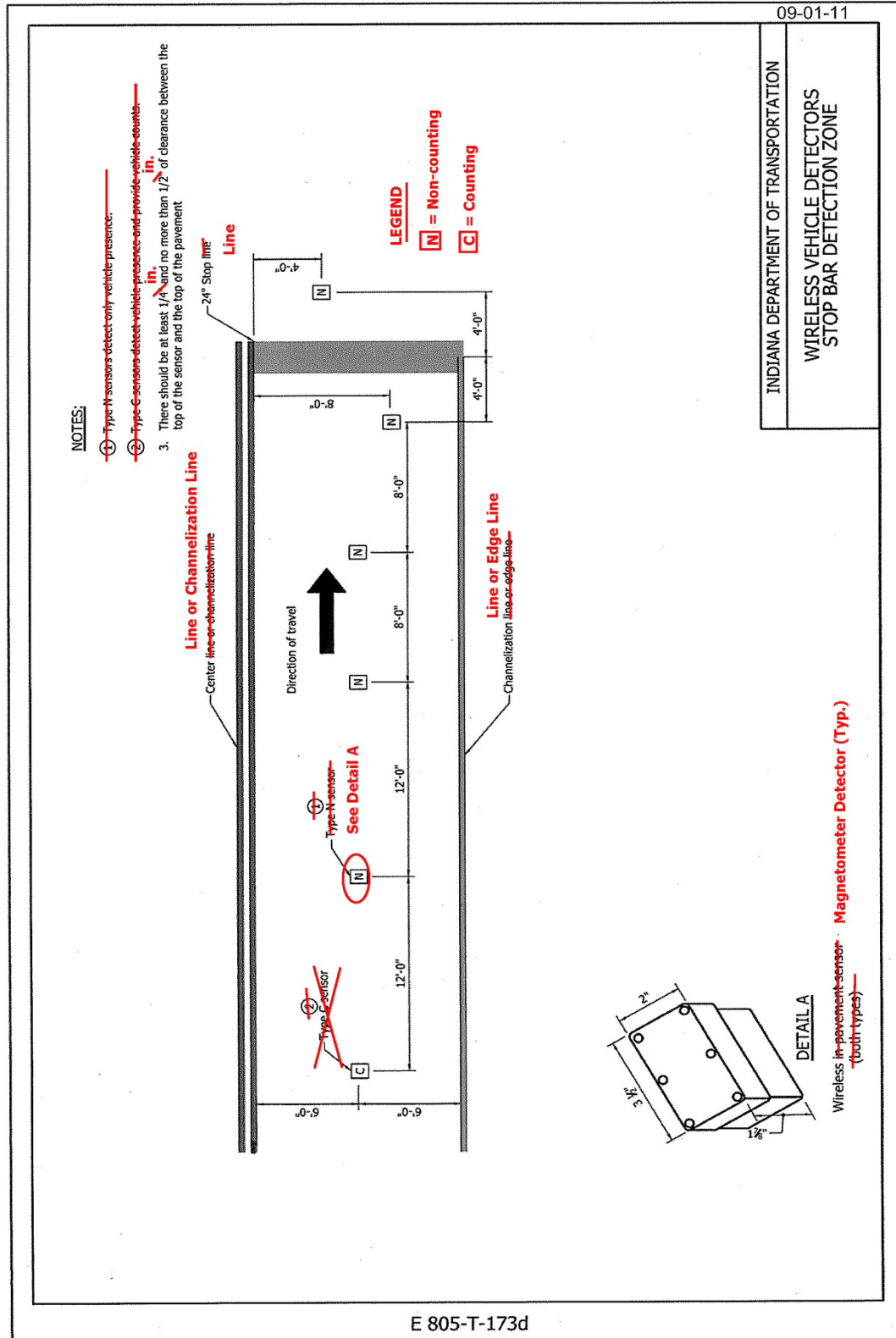
The cost of cables, connectors, set-up and operating software, access boxes, rack mounted expansion cards, and all hardware necessary to complete the installation shall be included in the cost of the contact closure cards.

The cost of required mounting equipment, cables, connectors, and miscellaneous equipment necessary for proper installation and operation of the receiver processors shall be included in the cost of the receiver processors.

The cost of required mounting equipment, connectors, and miscellaneous equipment necessary for proper installation and operation of the wireless repeaters shall be included in the cost of the wireless repeaters.

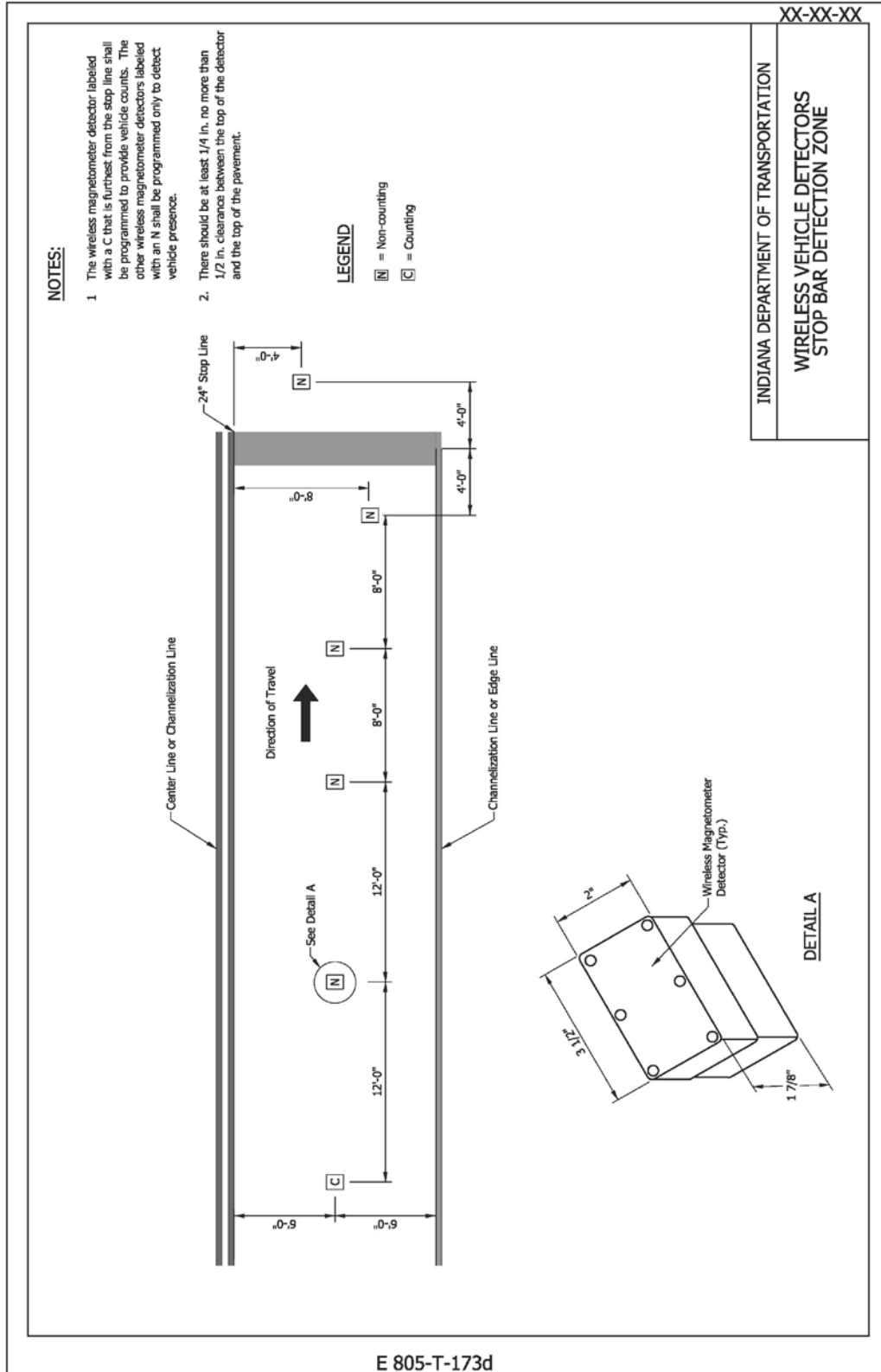
REVISION TO RECURRING SPECIAL PROVISIONS AND RECURRING PLAN DETAILS
 805-T-173d WIRELESS VEHICLE DETECTORS (WITH MARKUPS)

1. The wireless magnetometer labeled with a C that is furthest from the stop line shall be programmed to provide vehicle counts. The other wireless magnetometer detectors labeled with an N shall be programmed only to detect vehicle presence.



E 805-T-173d

REVISION TO RECURRING SPECIAL PROVISIONS AND RECURRING PLAN DETAILS
 REVISED 805-T-173 WIRELESS VEHICLE DETECTORS (DRAFT)



COMMENTS AND ACTION

805-T-173 WIRELESS VEHICLE DETECTION SYSTEMS
 805-T-173d WIRELESS VEHICLE DETECTORS

DISCUSSION:

Motion: Second: Ayes: Nays:	Action: <input type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn
Standard Specifications Sections affected: <p style="text-align: center;">NONE</p>	<input type="checkbox"/> 2016 Standard Specifications Book <input type="checkbox"/> Revise Pay Items List
Recurring Special Provision and Recurring Plan Details affected: <p style="text-align: center;">805-T-173 WIRELESS VEHICLE DETECTION SYSTEMS 805-T-173D WIRELESS VEHICLE DETECTORS</p>	<input type="checkbox"/> Create RSP (No. _____) Effective _____ Letting RSP Sunset Date: _____ <input type="checkbox"/> Revise RSP (No. _____) Effective _____ Letting RSP Sunset Date: _____
Standard Sheets affected: <p style="text-align: center;">NONE</p>	Standard Drawing Effective <input type="checkbox"/> Create RPD (No. _____) Effective _____ Letting <input type="checkbox"/> Technical Advisory
Design Manual Sections affected: <p style="text-align: center;">502-3.0</p>	GIFE Update Req'd.? Y ___ N By _____ Addition or _____ Revision
GIFE Sections cross-references: <p style="text-align: center;">NONE</p>	Frequency Manual Update Req'd? Y ___ N By _____ Addition or _____ Revision Received FHWA Approval? _____

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

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: These specifications for Soils drying are needed when soils are wet and the construction schedule requires a fast and stable embankment construction. The chemical modifier is capable of reducing excessive moisture of soils by hydration, dilution, and change in optimum moisture content in addition to increasing the strength of the embankment. These specifications are for the common soils which are several points above optimum moisture. Fly ash or lime are required to reduce costs.

PROPOSED SOLUTION: Develop a Recurring Special Provision that may be used when excessive moisture is present for in-place and borrow material.

APPLICABLE STANDARD SPECIFICATIONS: Proposed new 217

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

Submitted By: Ron Walker

Title: Manager, Office of Materials Management

Organization: INDOT

Phone Number: 317-610-7251x204

Date: June 30 , 2014

APPLICABLE SUB-COMMITTEE ENDORSEMENT? Geotechnical Services Committee with
Chemical Modifier Suppliers

REVISION TO RECURRING SPECIAL PROVISIONS

PROPOSED NEW 217-R-XXX SOILS DRYING WITH CHEMICAL MODIFIERS

217-R-XXX SOILS DRYING WITH CHEMICAL MODIFIERS

(Adopted XX-XX-14)

The Standards Specifications are revised as follows:

SECTION 217, BEGIN LINE 1, INSERT AS FOLLOWS:

SECTION 217 -- SOILS DRYING WITH CHEMICAL MODIFIERS

217.01 Description

This work shall consist of drying in-place or borrow soils by uniformly mixing fly ash or lime with soil to aid in achieving the workability of soils having moisture over 2 % above optimum moisture content.

MATERIALS

217.02 Materials

Materials shall be in accordance with the following:

<i>Fly ash</i>	<i>901.02</i>
<i>Lime</i>	<i>913.04(b)</i>
<i>Water</i>	<i>913.01</i>

Soils containing greater than 6% by dry weight calcium, magnesium carbonate or organic material, or having a maximum dry density of less than 95 pcf, or with soluble sulfate content greater than 1,000 ppm shall not be used. The density shall be determined in accordance with AASHTO T 99, the loss on ignition shall be determined in accordance with AASHTO T 267, calcium carbonate/magnesium carbonate content shall be determined in accordance with ITM 507, and the sulfate content shall be determined in accordance with ITM 510.

CONSTRUCTION REQUIREMENTS

217.03 Testing and Mix Design

The Contractor shall be responsible for all tests required to determine the chemical modifier type and the relationship between the soils, chemical modifier, and moisture content. The modifier selection, laboratory testing, and mix design shall be performed by an approved geotechnical consultant in accordance with the Department's Design Procedures for Soil Modification or Stabilization.

Chemical modifier, mix design, test results, and the geotechnical consultant recommendations shall be submitted to the Engineer and to the Office of Geotechnical Services for approval at least three business days prior to use. Fly ash and lime shall be from the Department's list of approved sources.

REVISION TO RECURRING SPECIAL PROVISIONS

PROPOSED NEW 217-R-XXX SOILS DRYING WITH CHEMICAL MODIFIERS

The quantity of chemical modifier may be adjusted for different soil types and moisture content.

217.04 Storage and Handling

The chemical modifier shall be stored and handled in accordance with 215.04.

217.05 Weather Limitations

The chemical soil modification shall be performed when the soil has a minimum temperature of 35°F, measured 4 in. below the surface, and with the air temperature rising. The chemical modifier shall not be mixed with frozen soils or with soil containing frost. A minimum of 12 in. thick soil lift shall be placed when the temperature is below 35°F.

217.06 Preparation of Soils

The preparation of the soil shall be in accordance with 215.06.

217.07 Spreading of Chemical Modifiers

The specified quantity of chemical modifier shall be spread a maximum of 12 in. on the scarified surface. The chemical modifier shall be distributed uniformly by a cyclone, screw-type, or pressure manifold type distributor. When soils are highly plastic, the soil shall be pulverized. The chemical modifier shall not be applied when wind conditions create problems in adjacent areas or create a hazard to traffic on any adjacent roadway. The spreading of the chemical modifier shall be limited to an amount which can be incorporated into the soil within the same work day. The chemical modifier spreading rate shall be adjusted to soil moisture content. If weather causes stoppage of work or exposes the chemical modifier to washing or blowing, additional chemical modifier may be spread when the work resumes.

217.08 Mixing

The chemical modifier, soil, and water when necessary, shall be thoroughly mixed by rotary speed mixers. The mixing shall continue until a homogenous layer of the required thickness has been obtained. Highly plastic soils shall be pulverized and mellowed prior to compaction. One hundred percent of the material, exclusive of rock particles, shall pass a 1 in. (25 mm) sieve and at least 60% shall pass a No. 4 (4.75 mm) sieve. The mixing depth shall be up to 12 inches.

217.09 Compaction

The moisture content of the mixture shall be at the optimum moisture content or above the optimum moisture content as determined by the mix design in accordance with 215.03. Moisture content will be determined in accordance with ITM 506. Aeration or drying by further mixing may be done to obtain the required moisture content. Compaction of the mixture shall begin as soon as practical. The Contractor shall perform moisture tests during the day to verify the spread rate application. Compaction shall be in accordance with 203 or 207.03, as applicable.

REVISION TO RECURRING SPECIAL PROVISIONS

PROPOSED NEW 217-R-XXX SOILS DRYING WITH CHEMICAL MODIFIERS

Acceptance testing for compaction of chemically modified soils will be performed on the finished grade with a Dynamic Cone Penetrometer, DCP, in accordance with ITM 509. The chemically modified soil lift shall meet the following requirements for compaction:

(a) A minimum DCP blow count of 20 for 12 in. of in place modification. A minimum DCP blow count of 8 for the top 6 in. is required.

(b) A minimum of one passing DCP test for each 1,000 lft of chemically modified soil for each 2-lane pavement.

A minimum of one gradation test will be performed every 2,500 ft and a minimum of one moisture test will be performed every 4 h of lime soils mixing.

Construction traffic or equipment will be allowed after the minimum DCP blow count is obtained and if construction traffic or equipment is routed in one direction so that the chemically modified soil does not pump or rut.

217.10 Method of Measurement

The accepted quantity for drying soils will be measured by the ton of chemical modifier complete in place. Soils required to construct the fill will be measured in accordance with 203. Borrow soils will not be measured.

217.11 Basis of Payment

The accepted quantity of chemically modified soils will be paid for by the ton of chemical modifier used for drying. Borrow soils will not be paid for. Soils required to construct the fill will be paid for in accordance with 203.

Payment will be made under:

Pay Item

Pay Unit Symbol

Drying Soils for Embankment TON

The cost of performing the laboratory tests, providing an approved geotechnical consultant, scarification of the subgrade, spreading, pulverization, mellowing and mixing of the chemical modifier and soil, moisture compaction of the resultant mixture, shaping the subgrade, work required due to adjustments of modifier proportioning, additional modification required due to weather conditions, correction of deficient areas, water required for the modification process, modified subgrade trimming, and all operations needed to meet the requirements of this specification shall be included in the cost of the pay item of this section.

COMMENTS AND ACTION

217-R-XXX SOILS DRYING WITH CHEMICAL MODIFIERS

DISCUSSION:

Motion: Second: Ayes: Nays:	Action: <input type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn
Standard Specifications Sections affected: NONE (ADD NEW SECTION 217) Recurring Special Provision affected: PROPOSED NEW Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	<input type="checkbox"/> 2016 Standard Specifications Book <input type="checkbox"/> Revise Pay Items List <input type="checkbox"/> Create RSP (No._____) Effective _____ Letting RSP Sunset Date: <input type="checkbox"/> Revise RSP (No._____) Effective _____ Letting RSP Sunset Date: Standard Drawing Effective <input type="checkbox"/> Create RPD (No._____) Effective _____ Letting <input type="checkbox"/> Technical Advisory GIFE Update Req'd.? Y ___ N ___ By _____ Addition or _____ Revision Frequency Manual Update Req'd? Y ___ N ___ By _____ Addition or _____ Revision Received FHWA Approval? _____

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

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Standard Specifications do not adequately address patching of composite pavements consisting of an asphalt overlay on a concrete base.

PROPOSED SOLUTION: The attached proposal will include requirements associated with patching existing composite pavements.

APPLICABLE STANDARD SPECIFICATIONS: 304, 305, and 506

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: 304-11.3

APPLICABLE SECTION OF GIFE: 9

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: None

Submitted By: Jeff James for Greg Pankow

Title: State Construction Engineer

Organization: INDOT Division of Construction Management

Phone Number: 317/232-5502

Date: 4/21/14

APPLICABLE SUB-COMMITTEE ENDORSEMENT: None

REVISION TO STANDARD SPECIFICATIONS
SECTION 304 - ASPHALT BASES

The Standard Specifications are revised as follows:

SECTION 304, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 304 – ASPHALT BASES

304.01 Description

This work shall consist of constructing an HMA base on a prepared surface or preparing an existing asphalt pavement for use as an asphalt base in accordance with 105.03.

MATERIALS

304.02 Materials

Materials shall be in accordance with the appropriate sections.

304.03 Sealing Cracks and Joints

Cracks and joints shall be sealed in accordance with 408.

304.04 Patching

~~Areas to be patched will be marked on the surface by the Engineer. The marked pavement shall be removed to the depth shown on the typical section or as directed. A minimum 2 in. vertical joint shall be constructed with the pavement that remains in place. If it is determined that the marked pavement is to be removed full depth, the patch depth shall be to the bottom of the existing asphalt material or as directed.~~

~~Subgrade, of aggregate base under patches shall be compacted in accordance with 203.25. If the excavation for patches reveals unsuitable subgrade material, such material shall be removed to a depth of 6 in. and backfilled to the top of subgrade with compacted aggregate in accordance with 301. Unauthorized excavation beyond neat lines shall be replaced with compacted aggregate in accordance with 301.~~

~~The excavated patch areas shall be filled with HMA for patching of the type specified in the pay item. Partial depth patches shall use HMA intermediate mixture and full depth patches shall use HMA base mixture in accordance with 402. A MAF in accordance with 402.05 will not apply. Mixtures will be accepted in accordance with 402.09.~~

~~Each course shall be compacted by approved mechanical equipment in accordance with 409.03(d).~~

~~A smooth riding surface shall be maintained on HMA patches at all times. Deformation due to traffic or other conditions shall be corrected immediately. HMA base, intermediate, or surface mixtures may be used to maintain patches. Unless otherwise specified, patches shall be completed during daylight hours and opened to traffic at the close of the workday. Patches that cannot be completed prior to the end of daily~~

REVISION TO STANDARD SPECIFICATIONS
SECTION 304 - ASPHALT BASES

~~operations shall be backfilled, compacted, and a temporary surface placed to carry traffic, unless otherwise specified.~~

Patch locations will be marked on the existing HMA pavement surface. Patches in existing HMA pavement will either be partial or full depth. Existing HMA pavement at partial patch locations shall be removed to the depth shown on the plans and constructed with vertical joints with a minimum depth of 2 in adjacent to the pavement that is to remain. If it is found that the underlying HMA will not provide a satisfactory foundation for the partial depth patch, a full depth patch shall be constructed.

At full depth patch locations, if it is discovered that there is a concrete base under the HMA, the patch shall be in accordance with 305.

At full depth patch locations, all HMA shall be removed within the limits of the patch. The underlying aggregate base or subgrade shall be compacted in accordance with 301.06 or 203.25 as appropriate. If the underlying aggregate base cannot be satisfactorily compacted, it shall be removed and replaced with compacted aggregate base in accordance with 301 placed on subgrade compacted in accordance with 203.25. If the subgrade cannot be satisfactorily compacted, the existing subgrade material shall be removed to a minimum depth of 6 in and replaced with compacted aggregate in accordance with 301.

All patches shall be constructed so that a smooth riding surface is maintained over the patch and adjacent existing pavement. Repairs at patch locations shall be made as soon as practicable after notification of unsatisfactory patch performance.

Partial depth patches shall consist of HMA for patching of the type specified in the pay item in accordance with 402. Intermediate mixtures shall be used.

Full depth patches shall consist of either HMA for patching of the type specified in the pay item in accordance with 402 or PCCP patching in accordance with 506 except that the coarse aggregate shall be Class A or higher as shown on the plans. Full depth HMA patches shall use base mixtures.

304.05 Widening

The ~~outside~~ existing pavement face of adjacent to the excavated area shall be left as nearly vertical as the nature of the material will allow and not wider than the outside limits of the widening section. The subgrade in the widened area shall be ~~compacted~~ treated as shown on the plans and in accordance with 207.

Widening mixtures shall be HMA mixtures in accordance with 402 and as shown on the ~~typical section~~ plans or as directed.

REVISION TO STANDARD SPECIFICATIONS
SECTION 304 - ASPHALT BASES

~~The cost of furnishing, storage, hauling, and placing of all materials; pavement removal as required; temporary pavement required to carry traffic; choke aggregate required to eliminate pickup; disposal; excavation; preparation of subgrade; compacting; and finishing except as otherwise provided shall be included in the cost of the patching materials.~~

The cost of excavation and disposal of existing materials required for the ~~compacted aggregate~~ or HMA widening *or underlying compacted aggregate base* material shall be included in the cost of the HMA widening material.

Replacement of pavement damaged by the Contractor's operations shall be at no additional payment.

REVISION TO STANDARD SPECIFICATIONS
SECTION 305 - CONCRETE BASES

The Standard Specifications are revised as follows:

SECTION 305, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 305 – CONCRETE AND ASPHALT OVER CONCRETE BASES

305.01 Description

This work shall consist of constructing a PCC base on a prepared surface or preparing an existing concrete ~~surface~~ *or asphalt over concrete pavement* for use as a base all in accordance with 105.03.

MATERIALS

305.02 Materials

Materials shall be in accordance with the following:

Asphalt for Undersealing	612.02
Coarse Aggregate, Class A or Higher, Size No. 8	904
Coarse Aggregate, Class D or Higher, Size No. 53	904
Coarse Aggregate, Class D or Higher, Size No. 73	904

CONSTRUCTION REQUIREMENTS

305.03 New PCC Base

Construction of new PCC bases shall be in accordance with 502, except for 502.14, and 502.20. The CMDS shall be in accordance with 502.03 except utilization of the Department provided spreadsheet is not required. The surface shall be finished with wet burlap or by wood floats. Smoothness of the base will be controlled with a 16 ft long straightedge longitudinally and a 10 ft long straightedge transversely.

Joints shall be in accordance with 503, except for the following:

- (a) the second saw cut and sealing shall not be performed for transverse joints;
- (b) sealing shall not be performed for longitudinal joints; and
- (c) sawing and sealing shall not be performed for construction joints.

305.04 Existing PCCP or HMA over PCCP

Preparation of PCCP *or HMA over PCCP* for use as a base shall be in accordance with 507, except for:

(a) Patching

REVISION TO STANDARD SPECIFICATIONS
SECTION 305 - CONCRETE BASES

~~Patching PCC base shall be in accordance with 506 except the coarse aggregate shall be Class A or higher.~~

Patch locations will be marked on the existing pavement surface. Patches will either be partial or full depth. If the depth of a partial depth is less than the thickness of the overlay on a HMA over PCCP base, the patch shall be constructed in accordance with 304.04. Partial depth patches that extend into the PCCP less than or equal to 3 in shall be concrete in accordance with 506 with the exception that the coarse aggregate shall be Class A or higher. At partial depth patches, concrete removal shall be in accordance with 506.07(a) and concrete placement shall be in accordance with 506.10(a). If a partial patch depth extends into the PCCP by more than 3 in, exposes reinforcing steel, or exposes unsound concrete more than 3 in into the PCCP, the patch shall be extended to full depth.

At full depth patch locations, all PCCP or HMA over PCCP shall be removed in accordance with 506.07(b).

Full depth patching shall be HMA for patching in accordance with 304.04 or PCCP in accordance with 506 except that the coarse aggregate shall be Class A or higher as shown on the plans.

(b) Surface Milling

~~Surface~~ Milling of PCCP shall be in accordance with 306.07. Asphalt scarification and profile preparation of the HMA portion of the HMA over PCCP shall be in accordance with 306.04. Milling a specified depth of the HMA portion of the HMA over PCCP shall be in accordance with 306.05. Removal of the entire HMA overlay from a HMA over PCCP shall be in accordance with 306.06.

(c) Retrofit Load Transfer

Retrofit load transfer shall be in accordance with 507.08.

(d) Rubblizing Existing PCCP

The existing pavement shall be rubblized with a self-contained, self-propelled, resonant frequency pavement breaking unit capable of producing low amplitude, 2,000 lbf blows at a rate of not less than 44 per s or with a self-contained, self-propelled, multiple headed, impact hammer with the heads directly adjacent to each other and the lift height of each head independently adjustable. The sequence of impacts shall be on a random basis. The unit shall be equipped with a water system to suppress dust generated by the operation.

The operating speed of the unit shall be such that the existing pavement is reduced to particles ranging from sand sized to pieces not exceeding 6 in. in the largest dimension, the majority being a nominal 1 to 2 in. in size. The concrete from the surface to the top of the reinforcement shall be reduced to the 1 to 2 in. size to the fullest extent possible. Continuous coverage, overlapped if necessary, with the breaking shoe or impact

REVISION TO STANDARD SPECIFICATIONS
SECTION 305 - CONCRETE BASES

hammers shall be used. Additional passes of the resonator or multiple headed impact hammer may be required if larger sizes remain above the reinforcement.

~~Subsurface drains~~ *Underdrains in accordance with 718 and as shown on the plans* shall be installed along the edges of the pavement prior to the rubblization.

Rubblizing shall begin at the edge of pavement and proceed to the center of the pavement. The rubblization of the first lane shall extend 6 in. into the adjoining lane.

Prior to placing HMA mixtures, the complete width of the rubblized pavement shall be compacted by means of vibratory steel wheel and pneumatic-tired rollers in accordance with 409.03(d) in the following sequence: two initial passes with a vibratory roller, two passes with a pneumatic-tired roller, and then four final passes with a vibratory roller. The last two roller passes shall be immediately prior to priming operations. When the multiple headed impact hammer is used, a Z-pattern grid cladding bolted to the surface of the drum of the vibratory roller shall be used at least for the final two passes.

The vibratory roller shall be operated in the vibration mode at a speed not to exceed 6 ft per s. All depressions 1 in. or greater in depth from that of the immediate surrounding area that result from the rubblizing or compaction effort shall be filled with coarse aggregate No. 53 or 73 and struck off level with the surrounding area. Filled depressions shall be compacted with the same roller and compactive effort previously described.

Reinforcement in the rubblized pavement shall be left in place. Any reinforcement protruding above the surface as a result of rubblizing or compaction operations shall be cut off below the surface and removed from the site. All loose joint fillers, expansion material, or other similar materials shall also be removed from the rubblized surface.

Traffic will not be allowed on the rubblized pavement before the HMA base or immediate courses are in place unless otherwise directed. Rubblized material dislodged by traffic shall be removed from the pavement. The initial HMA course shall be placed within 48 h of rubblizing. However, in the event of rain, this time limitation may be waived to allow sufficient time for the rubblized pavement to dry to the satisfaction of the Engineer. Crossover and ramp crossings shall be maintained in the same compacted state as other areas until the initial HMA course is placed.

The preceding rubblizing operations shall be scheduled after widening or shoulder work has progressed up to the elevation of the existing pavement grade. These areas may then be utilized to support the breaking unit while the existing pavement is being rubblized. Shoulders may then be completed in conjunction with the placement of HMA pavement courses over the compacted rubblized pavement.

REVISION TO STANDARD SPECIFICATIONS
SECTION 305 - CONCRETE BASES

A joint shall be saw cut full depth or load transfer devices shall be severed at an existing joint on ramps or mainline where the rubblizing abuts concrete pavement which is to remain in place.

305.05 Widening With PCC Base

The subgrade shall be ~~prepared~~*treated* in accordance with 207. Subbase shall be in accordance with 302.

The concrete shall be placed directly against the existing pavement edges, which shall be free from all foreign materials. The surface of the concrete widening shall be at the same elevation as the top of the existing concrete base.

Materials and construction requirements shall be in accordance with the applicable requirements of 502, except the following:

- (a) coarse aggregate shall be Class A or higher;
- (b) joints shall be sawed in one pass and not sealed. Transverse joints constructed in the widening shall be aligned with existing transverse joints or cracks;
- (c) tining is not required;
- (d) shoulder corrugations are not required;
- (e) pavement smoothness shall be controlled by a 16 ft straightedge; and
- (f) utilization of the Department provided spreadsheet is not required.

When the widening is not open to traffic prior to placing an overlay, liquid membrane compounds shall not be used and an alternative curing option shall be used. AE-T in accordance with 406 may be used as a curing option.

305.06 Method of Measurement

Compacted aggregate will be measured ~~by the ton~~ in accordance with ~~109.01(b)303.09~~ *for the type specified*. Retrofit load transfer will be measured in accordance with 507.09. ~~Surface m~~*Milling* will be measured in accordance with 306.09. *HMA for patching will be measured in accordance with 304.06*. PCC base, PCC base patching, and widening with PCC base will be measured by the square yard of the thickness specified. The area of PCC will be the planned width of the base, patching or widening multiplied by the measured length or as directed in writing. The planned width of the base, patching and widening will be as shown on the ~~typical cross section of the plans~~.

Rubblized PCCP will be measured by the square yard of rubblized pavement.

REVISION TO STANDARD SPECIFICATIONS
 SECTION 305 - CONCRETE BASES

305.07 Basis of Payment

The accepted quantities of compacted aggregate will be paid for in accordance with ~~303.10~~303.10, for the type specified, complete in place. Retrofit load transfer will be paid for in accordance with 507.10. Surface milling will be paid for in accordance with 306.10. *HMA for patching will be paid for in accordance with 304.07.* PCC base, PCC base patching, and widening with PCC base will be paid for at the contract unit price by the square yard of the thickness specified.

Rubblized PCCP will be paid for at the contract unit price per square yard for rubblized pavement.

Payment will be made under:

Pay Item	Pay Unit Symbol
PCC Base, _____ in. thickness	SYS
PCC Base Patching, _____ in. thickness	SYS
Rubblizing PCCP	SYS
Widening With PCC Base, _____ in..... thickness	SYS

If PCC base is found to be deficient in thickness, price adjustments in accordance with 502.23 will be determined.

The cost of excavation, disposal of existing materials, ~~preparation of subgrade,~~ and subbase required for the PCC base widening shall be included in the cost of widening with PCC base.

The cost of excavation of *HMA from a patch location*, disposal of existing materials, ~~preparation~~*compaction* of subgrade, and subbase required for *HMA for patching or* PCC base patching shall be included in the cost of *HMA for patching or* PCC base patching. *If the plans indicate that PCCP or HMA over PCCP exists at a patch location, the cost for removal of pavement shall be included in the cost of the HMA for patching or PCC base patching. If the plans do not indicate that there is HMA over PCCP at a patch location, the required pavement removal will be measured in accordance with 202.13 and paid for in accordance with 202.14.*

Replacement of pavement damaged by the Contractor's operations shall be without additional payment.

The cost of furnishing all labor, materials, and equipment necessary to rubblize, suppress dust, cut and remove exposed reinforcement, cut and remove joint fillers or

REVISION TO STANDARD SPECIFICATIONS
SECTION 305 - CONCRETE BASES

similar materials, saw cutting of the pavement, severing existing joints, compacting and maintaining the compacted condition of the rubblized pavement shall be included in the cost of rubblized PCCP.

The cost of furnishing, hauling, placing, leveling, and compacting the aggregate to fill depressions in the rubblized PCCP shall be included in the cost of coarse aggregate No. 53 or 73.

AGENDA

REVISION TO STANDARD SPECIFICATIONS

SECTION 506 - PCCP PATCHING

506.12 METHOD OF MEASUREMENT

The Standard Specifications are revised as follows:

SECTION 506, BEGIN LINE 301, INSERT AS FOLLOWS:

506.12 Method of Measurement

Partial depth patching and full depth patching will be measured by the square yard. *The measurement will be taken at the pavement surface.*

AGENDA

COMMENTS AND ACTION

SECTION 304 - ASPHALT BASES
SECTION 305 - CONCRETE BASES
506.12 METHOD OF MEASUREMENT

DISCUSSION:

Motion: Second: Ayes: Nays:	Action: <input type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn
Standard Specifications Sections affected: SECTION 304 pg 226 thru 228; SECTION 305 pg 229 thru 232; 506.12 pg 365. Recurring Special Provision affected: NONE Standard Sheets affected: NONE Design Manual Sections affected: SECTION 304-11.3 GIFE Sections cross-references: SECTION 9	<input type="checkbox"/> 2016 Standard Specifications Book <input type="checkbox"/> Revise Pay Items List <input type="checkbox"/> Create RSP (No. <input type="text"/>) Effective <input type="text"/> Letting RSP Sunset Date: <input type="checkbox"/> Revise RSP (No. <input type="text"/>) Effective <input type="text"/> Letting RSP Sunset Date: Standard Drawing Effective <input type="checkbox"/> Create RPD (No. <input type="text"/>) Effective <input type="text"/> Letting <input type="checkbox"/> Technical Advisory GIFE Update Req'd.? Y <input type="checkbox"/> N By <input type="text"/> Addition or <input type="text"/> Revision Frequency Manual Update Req'd? Y <input type="checkbox"/> N By <input type="text"/> Addition or <input type="text"/> Revision Received FHWA Approval?