INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N758 CM
Indianapolis, Indiana 46204

PHONE: (317) 232-5502
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Eric Holcomb, Governor
Joe McGuinness, Commissioner

FINAL DRAFT MINUTES

October 21, 2021 Standards Committee Meeting

(Changes to the Agenda by the Action of the Committee shown as highlighted in yellow)

November 12, 2021

TO: Standards Committee

FROM: Scott Trammell, Secretary

RE: Minutes from the October 21, 2021 Standards Committee Meeting

The Standards Committee meeting was called to order by Mr. Pankow, Chair, at 09:01 a.m. on October 21, 2021, and was held virtually via *Teams* (Microsoft application). The meeting was adjourned at 10:34 a.m.

The following committee members were in attendance:

Gregory Pankow, Chairman, Director, Construction Management
John Wooden, Contract Administration Division
Dave Boruff, Traffic Engineering
Peter White, Bridge Engineering
Joseph Novak, Construction Management
Matt Thomas*, Pavement Engineering
Jim Reilman, Materials and Tests
Michael Koch, District Construction, Fort Wayne District
Mark Orton, Highway Engineering
Kurt Pelz, Construction Technical Support
Anne Rearick**, Engineering and Asset Management
**Proxy* for Kumar Dave
***Proxy* for Louis Feagans

Also, presence was captured by Microsoft Teams of the following:

Awwad, Nathan, INDOT
Bazlamit, Subhi, INDOT
Blanchard, Jacob, INDOT
McNutt, Donald, guest
Mouser, Elizabeth, INDOT
Mueller, Bart, INDOT

FINAL DRAFT MINUTES

Bowen, Alisa, INDOT
Bruno, Joseph, INDOT
Camarata, Rebecca, INDOT
Coulter, Josh, INDOT
Fegan, Roland, INDOT
Fisher, Steve, INDOT
Hauser, Derrick, INDOT
Hunter, Jeremy, INDOT
Jacobs, David, INDOT
Kachler, Mischa, INDOT
Koch, Michael, INDOT
Leffel, Victoria, INDOT
Nelson, Mike, INDOT
Osborn, Dan, ICI
Patterson, Patrick, INDOT
Pfeiffer, Nate, INDOT
Podorvanova, Lana, INDOT
Ritter, John, INDOT
Siddiki, Nayyar, INDOT
Smart, Steve, guest
Sturgeon, Dan, INDOT
Susong, John, guest
Thomas, Matthew, INDOT
Trammell, Scott, INDOT

The following items were discussed:

A. GENERAL BUSINESS ITEMS

OLD BUSINESS

(No items were listed)

NEW BUSINESS

1. Approval of the Minutes from the September 16, 2021 meeting

Mr. Pankow requested a motion to approve the Minutes from the September 16, 2021 meeting.

Motion: Mr. Boruff
Second: Mr. Orton
Ayes: 10
Nays: 0

ACTION: PASSED AS SUBMITTED

B. CONCEPTUAL PROPOSAL ITEMS

OLD BUSINESS

(No items were listed)

NEW BUSINESS

(No items were listed)

FINAL DRAFT MINUTES

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

OLD BUSINESS

Item No. 1 (2/18/2021, 9/16/2021)	Mr. Boruff	pg 6

Standard Drawings:

E 801-TCTC series	(*see* proposal)
E 801-TCMO series	(*see* proposal)
E 801-TCFO series	(*see* proposal)

ACTION: PASSED AS SUBMITTED

Item No. 2 (9/16/2021)	Mr. Wooden	pg 39

Special Provision:

xxx-x-xxx	*TEMPORARY SPEED FEEDBACK ASSEMBLY*

ACTION: PASSED AS SUBMITTED

Item No. 3 (9/16/2021)	Mr. Wooden	pg 44

Special Provision:

xxx-x-xxx	*WATERPROOFING MEMBRANE FOR REINFORCED-CONCRETE BOX STRUCTURES AND THREE-SIDED STRUCTURES*

NEW BUSINESS

ACTION: PASSED AS REVISED

Item No. 1 (2022 SS)	Mr. Reilman	pg 53

Standard Specifications:

216.02	Materials
216.03	Mix Design
216.08	Installation
725.02	Materials
725.07	Cellular Concrete Grout
912.05	Foaming Agent

ACTION: PASSED AS SUBMITTED

FINAL DRAFT MINUTES

Item No. 2 (2022 SS)	Mr. Reilman	pg 58

Standard Specifications:

203.13	Slides

ACTION: PASSED AS REVISED

Item No. 3 (2022 SS)	Mr. Reilman	pg 62

Special Provision:

xxx-x-xxx	*DISCOVERY OF KARST FEATURES WITHIN THE CONSTRUCTION LIMITS*

ACTION: PASSED AS SUBMITTED

Item No. 4 (2022 SS)	Mr. Reilman	pg 64

Standard Specifications:

909.02(c)	Polyurethane Finish Coat
909.02(e)	Finish Coat for Weathering Steel

ACTION: PASSED AS REVISED

Item No. 5 (2022 SS)	Mr. Reilman	pg 70

Standard Specifications:

101.01	Abbreviations
307.05	Mix Design
308.05	Mix Design
416.05	Mix Design
417.05	Mix Design

ACTION: PASSED AS SUBMITTED

Item No. 6 (2022 SS)	Mr. Reilman	pg 75

Special Provision:

620-R-483	SOUND BARRIER SYSTEMS

ACTION: PASSED AS REVISED

Item No. 7 (2022 SS)	Mr. Reilman	pg 90

Standard Specifications:

101.01	Abbreviations
715.02	Materials
718.02	Materials
719.02	Materials

FINAL DRAFT MINUTES

SECTION 907	CONCRETE, CLAY, AND PLASTIC DRAINAGE COMPONENTS *(various subsections)*
922.19	Conduit and Fittings

ACTION: PASSED AS SUBMITTED

Item No. 8 (2022 SS) Mr. Novak pg 100

Special Provision:

401-R-577	INERTIAL PROFILER WITH SMOOTHNESS PAY ADJUSTMENTS FOR HMA, FIXED INTERVAL

ACTION: PASSED AS REVISED

Item No. 9 (2022 SS) Mr. Reilman pg 110

Standard Specifications:

502.04	Concrete Mix Criteria

ACTION: PASSED AS SUBMITTED

FINAL DRAFT MINUTES

cc: Committee Members
FHWA
ICI

Mr. Boruff
Date: 10/21/21
[OLD BUSINESS ITEM]

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD DRAWINGS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The Standard Drawing series for flagger operations (E 801-TCFO) largely date back to 1997 and include details for work that does not include flagging. INDOT Standard Drawings E 801-TCFO-03, E 801-TCTC-09, and E 801-TCTC-10 depict mobile operations and should be combined into a new series just for mobile operations. Other sheets in the temporary closure series (801-TCTC) are duplicates of other drawings or show information that should be detailed in the plans.

PROPOSED SOLUTION: Revise and update the standard drawing series on flagger operations (E 801-TCFO) and create a new series for mobile operations (E 801-TCMO). Delete unnecessary and duplicate details from the temporary closure series (E 801-TCTC).

APPLICABLE STANDARD SPECIFICATIONS: 801.16 was updated at the 2/18/21 meeting

APPLICABLE STANDARD DRAWINGS: 2 series [E 801-TCFO and E 801-TCTC]

Proposed New (3)	Proposed Deletions (6)		Proposed Moves (3)
801-TCFO-01 Flagger Operations Index	801-TCFO-05	801-TCTC-06	801-TCFO-03 to 801-TCMO-02
801-TCFO-03 Flagger Operations < 50 mph	801-TCFO-06	801-TCTC-07	801-TCTC-09 to 801-TCMO-03
801-TCMO-01 Mobile Operations Index	801-TCTC-05	801-TCTC-08	801-TCTC-10 to 801-TCMO-04

APPLICABLE DESIGN MANUAL SECTION: No

APPLICABLE SECTION OF GIFE: No

APPLICABLE RECURRING SPECIAL PROVISIONS: 801-T-209

PAY ITEMS AFFECTED: No

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Yes, traffic standards subcommittee

IF APPROVED AS RSP OR RPD, PROPOSED BASIS FOR USE: N/A

IMPACT ANALYSIS (attach report): Yes, attached

Submitted By: Joe Bruno on behalf of Dave Boruff

Title: Sr. Engineer of Signals & Markings
Organization: INDOT Traffic Engineering Division
Phone Number: (317) 234-7949
Date: 9/27/2021

FINAL DRAFT MINUTES

Mr. Boruff
Date: 10/21/21
[OLD BUSINESS ITEM]

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD DRAWINGS

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? Yes
Will approval of this item affect the Approved Materials List? No
Will this proposal improve:

- Construction costs? No
- Construction time? No
- Customer satisfaction? Yes
- Congestion/travel time? No
- Ride quality? No

Will this proposal reduce operational costs or maintenance effort? No

Will this item improve safety:

- For motorists? Yes
- For construction workers? Yes

Will this proposal improve quality for:

- Construction procedures/processes? Yes
- Asset preservation? Yes
- Design process? No

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

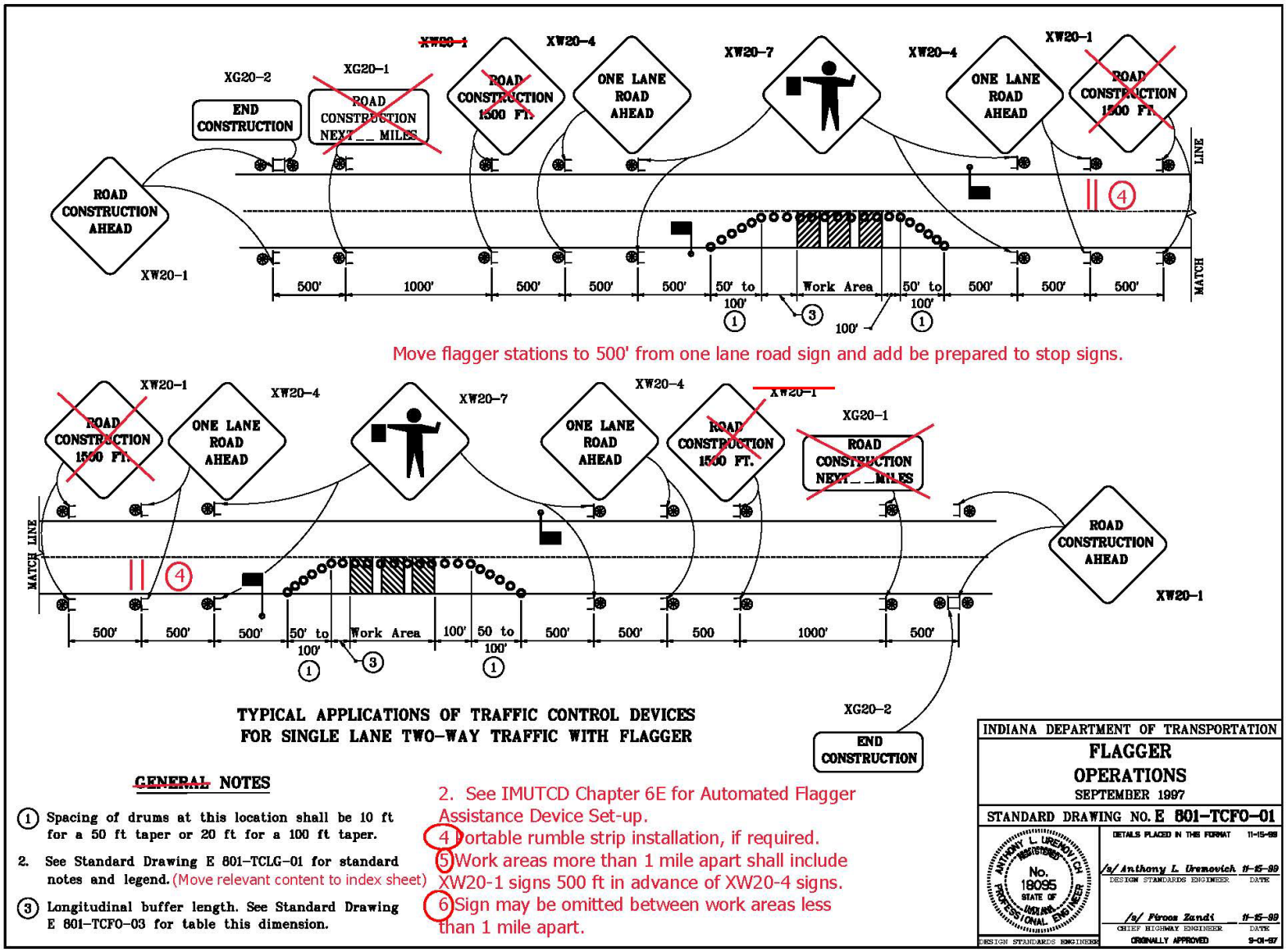
Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: N/A

FINAL DRAFT MINUTES

REVISION TO STANDARD DRAWINGS

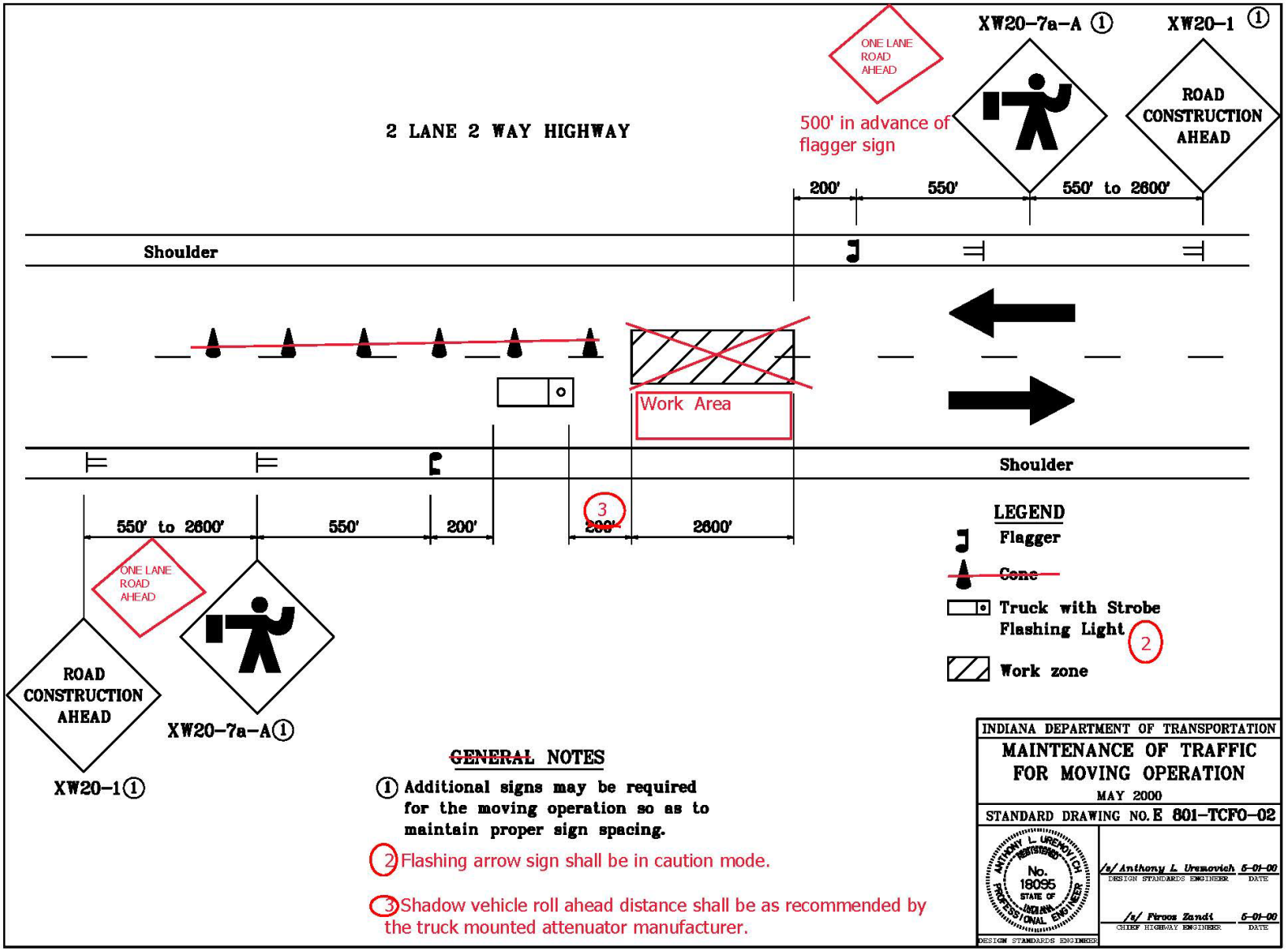
E 801-TCFO-01 FLAGGER OPERATIONS (WITH MARKUPS)



Item No. 1 (2022 SS) (contd.)
Mr. Boruff
Date: 10/21/21
[OLD BUSINESS ITEM]

REVISION TO STANDARD DRAWINGS

E 801-TCFO-02 MAINTENANCE OF TRAFFIC FOR MOVING OPERATIONS (WITH MARKUPS)

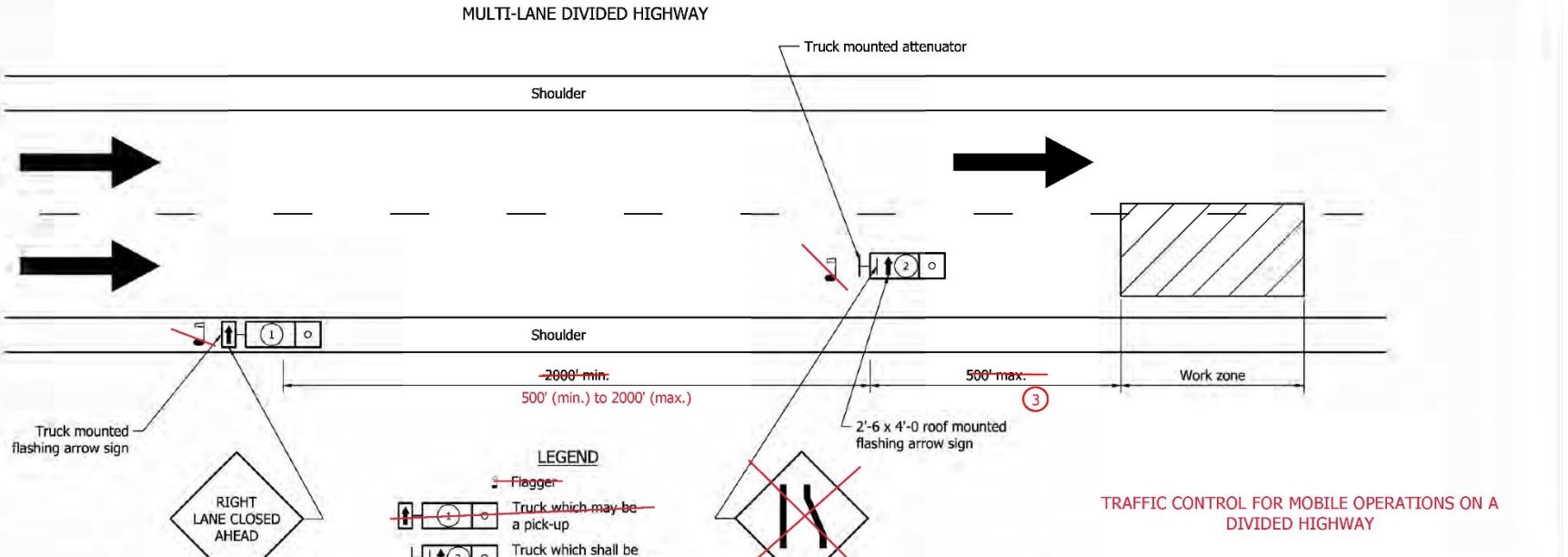


Item No. 1 (2022 SS) (contd.)
Mr. Boruff
Date: 10/21/21
[OLD BUSINESS ITEM]

REVISION TO STANDARD DRAWINGS

E 801-TCFO-03 MAINTENANCE OF TRAFFIC FOR REFLECTOR REPLACEMENT (WITH MARKUPS)

Create New Sheet for Flagging Operations Similar to IMUTCD Figure 6H-10



TRAFFIC CONTROL FOR MOBILE OPERATIONS ON A DIVIDED HIGHWAY

INDIANA DEPARTMENT OF TRANSPORTATION

~~MAINTENANCE OF TRAFFIC FOR REFLECTOR REPLACEMENT~~

SEPTEMBER 2009 TCMO-02

STANDARD DRAWING NO. E 801-~~TCFO-03~~

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/01/09
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/09
CHIEF HIGHWAY ENGINEER DATE

LONGITUDINAL BUFFER LENGTH SHOWN ON STANDARD DRAWING E 801-TCFO-01

Posted Speed Limit, mph	Length, ft
30 or lower	80
35	115
40	180
45	230
50	280
55	350
60	410
65	500

GENERAL NOTES

~~1. Flagger shall be used while trucks are stopped.~~
2. Strobe lights will be require on all vehicles.
3. Distances shown are approximate and may be adjusted as directed.
~~4 Truck mounted attenuator shall be designed to attenuator impacts by a pickup truck of 4400 lbs. gross vehicular weight at 60 mph.~~

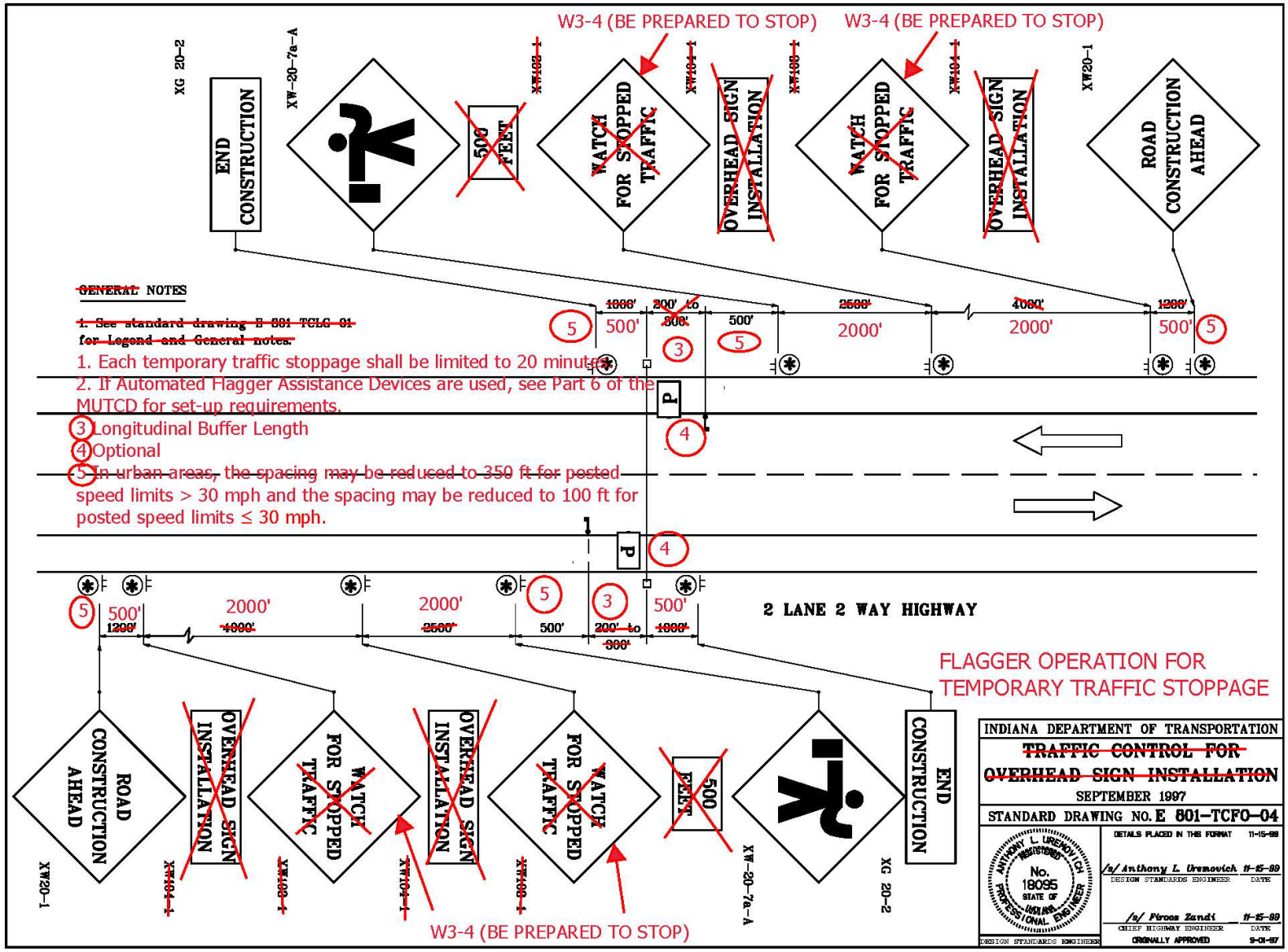
1 Use XW20-5 sign or PCMS equivalent if speed limit is > 35 mph.

2 If required, deploy additional shadow vehicle with XW20-5 sign 0.25 miles in advance of any queue or as directed by the Engineer.

3 Shadow vehicles roll ahead distance shall be as recommended by the truck mounted attenuator manufacturer.

REVISION TO STANDARD DRAWINGS

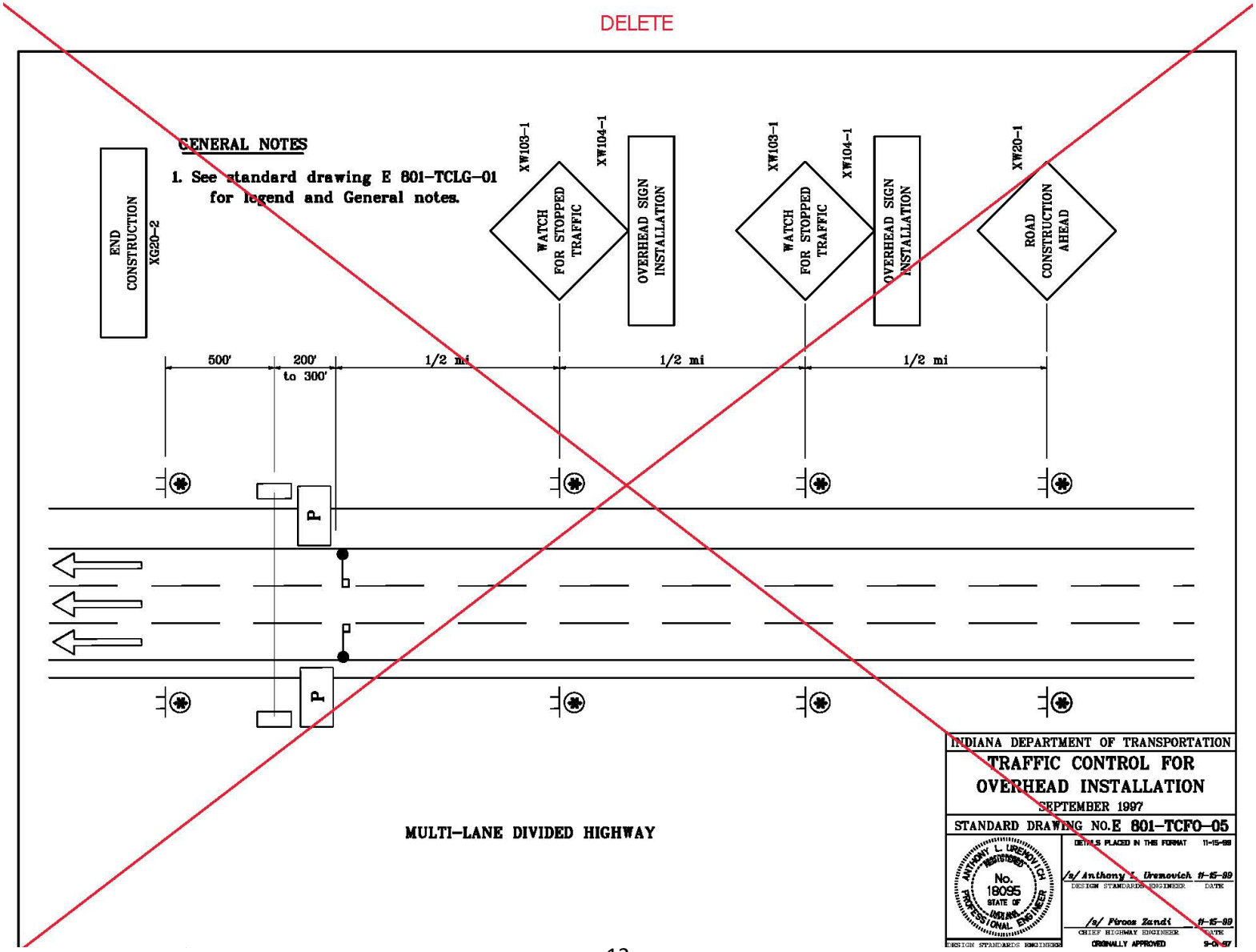
E 801-TCFO-04 TRAFFIC CONTROL FOR OVERHEAD SIGN INSTALLATION (WITH MARKUPS)



REVISION TO STANDARD DRAWINGS

E 801-TCFO-05 TRAFFIC CONTROL FOR OVERHEAD INSTALLATION (WITH MARKUPS)

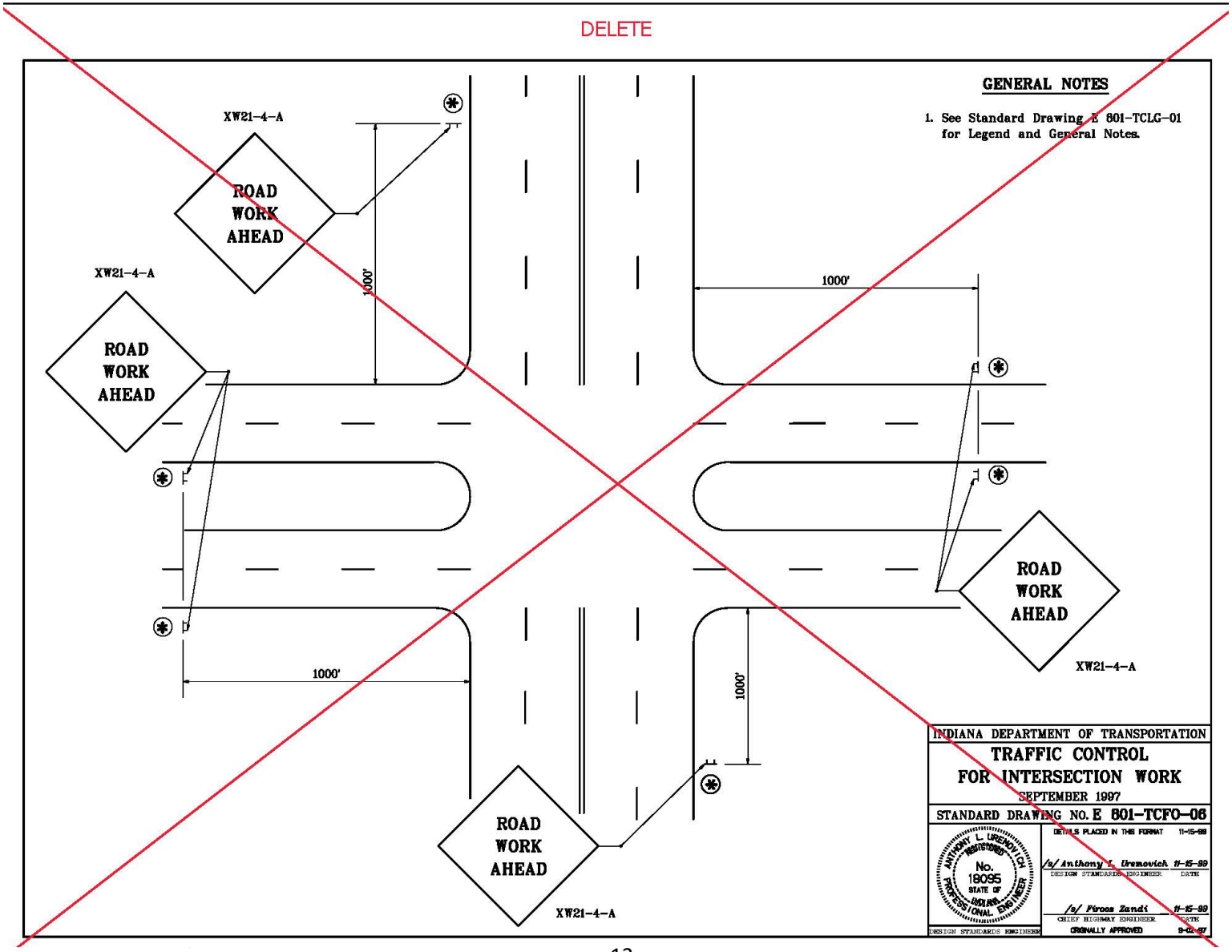
DELETE



REVISION TO STANDARD DRAWINGS

E 801-TCFO-06 TRAFFIC CONTROL FOR INTERSECTION WORK (WITH MARKUPS)

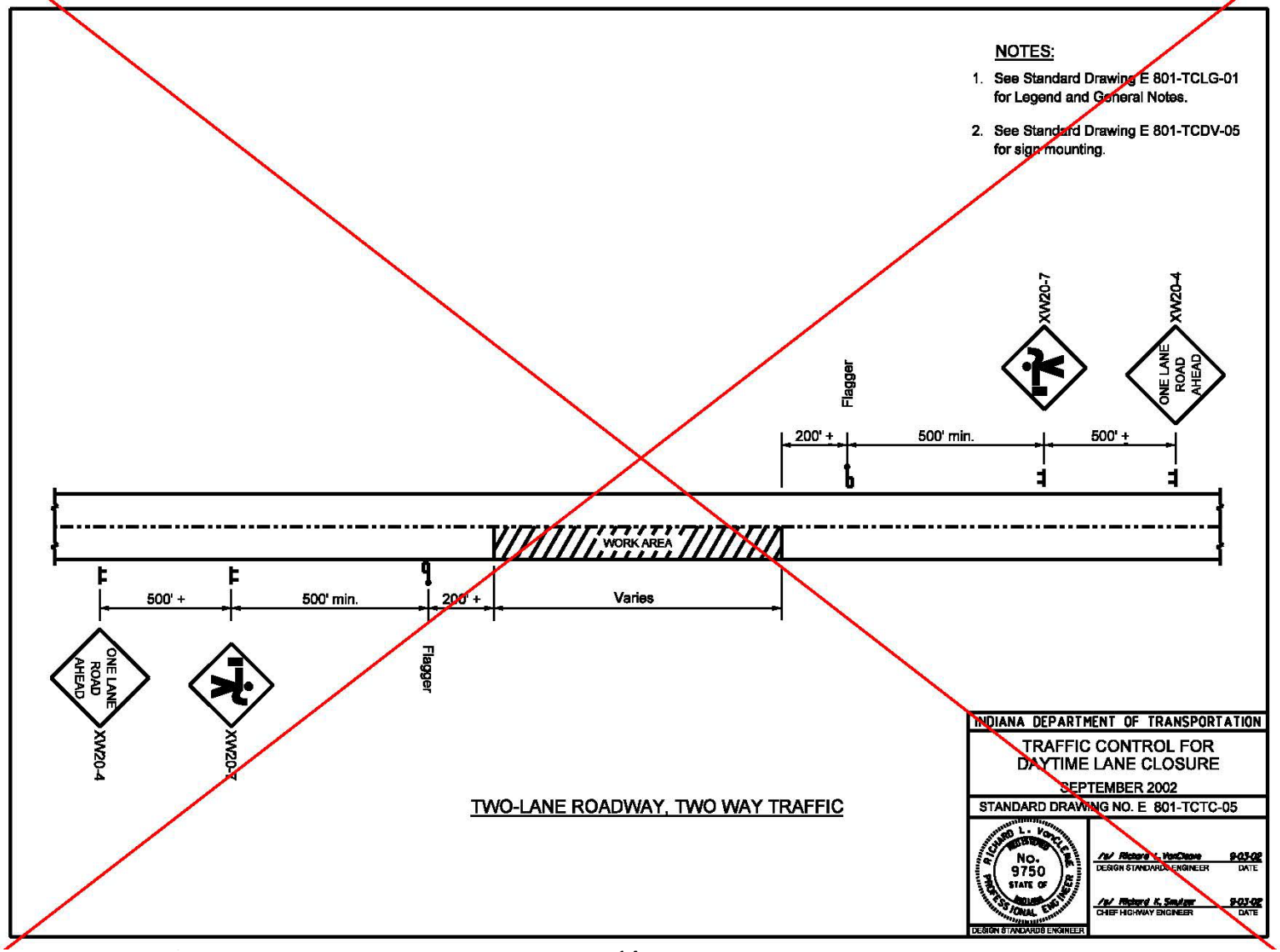
DELETE



REVISION TO STANDARD DRAWINGS

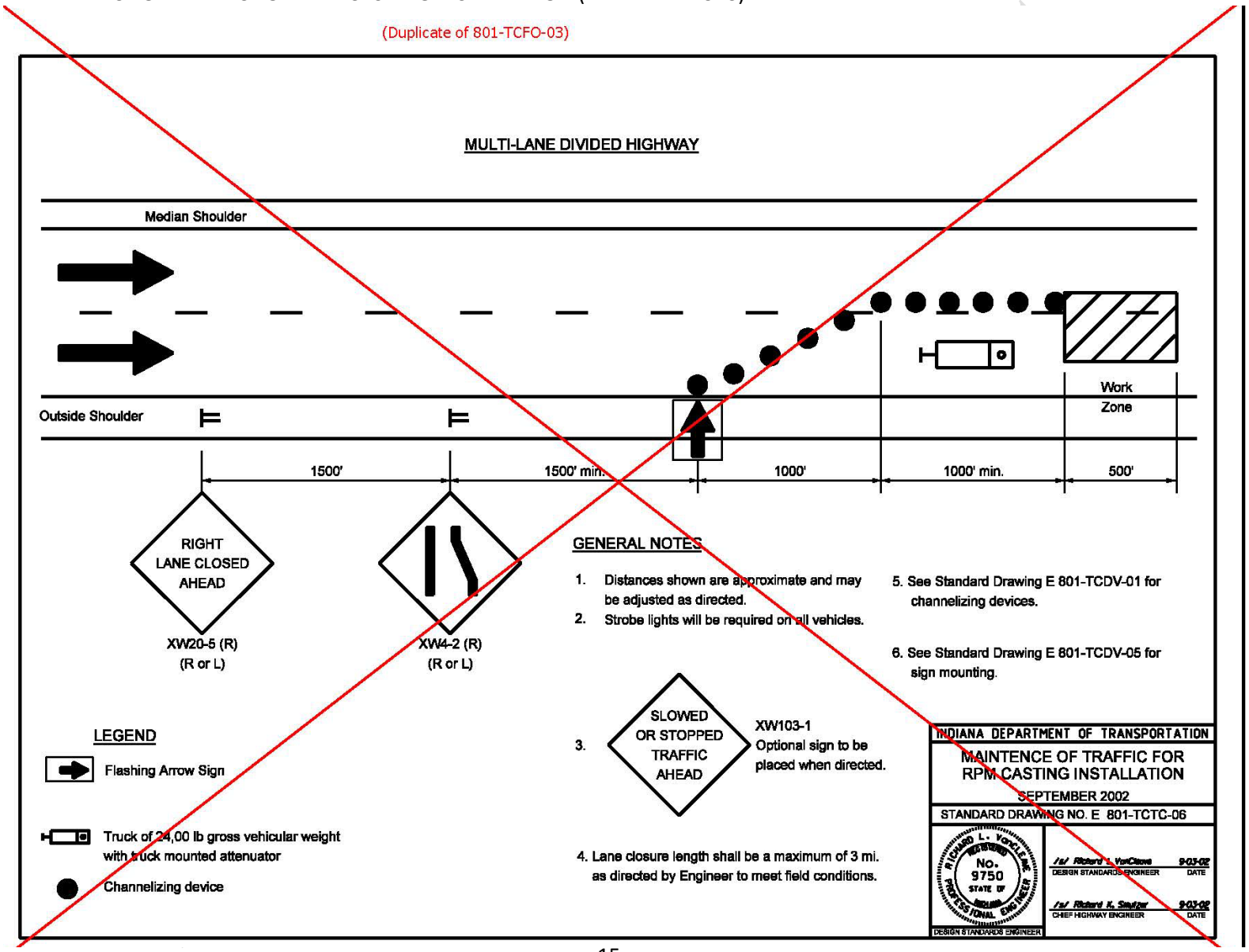
E 801-TCTC-05 TRAFFIC CONTROL FOR DAYTIME LANE CLOSURE (WITH MARKUPS)

Delete (Addressed in 801-TCFO Series)



REVISION TO STANDARD DRAWINGS

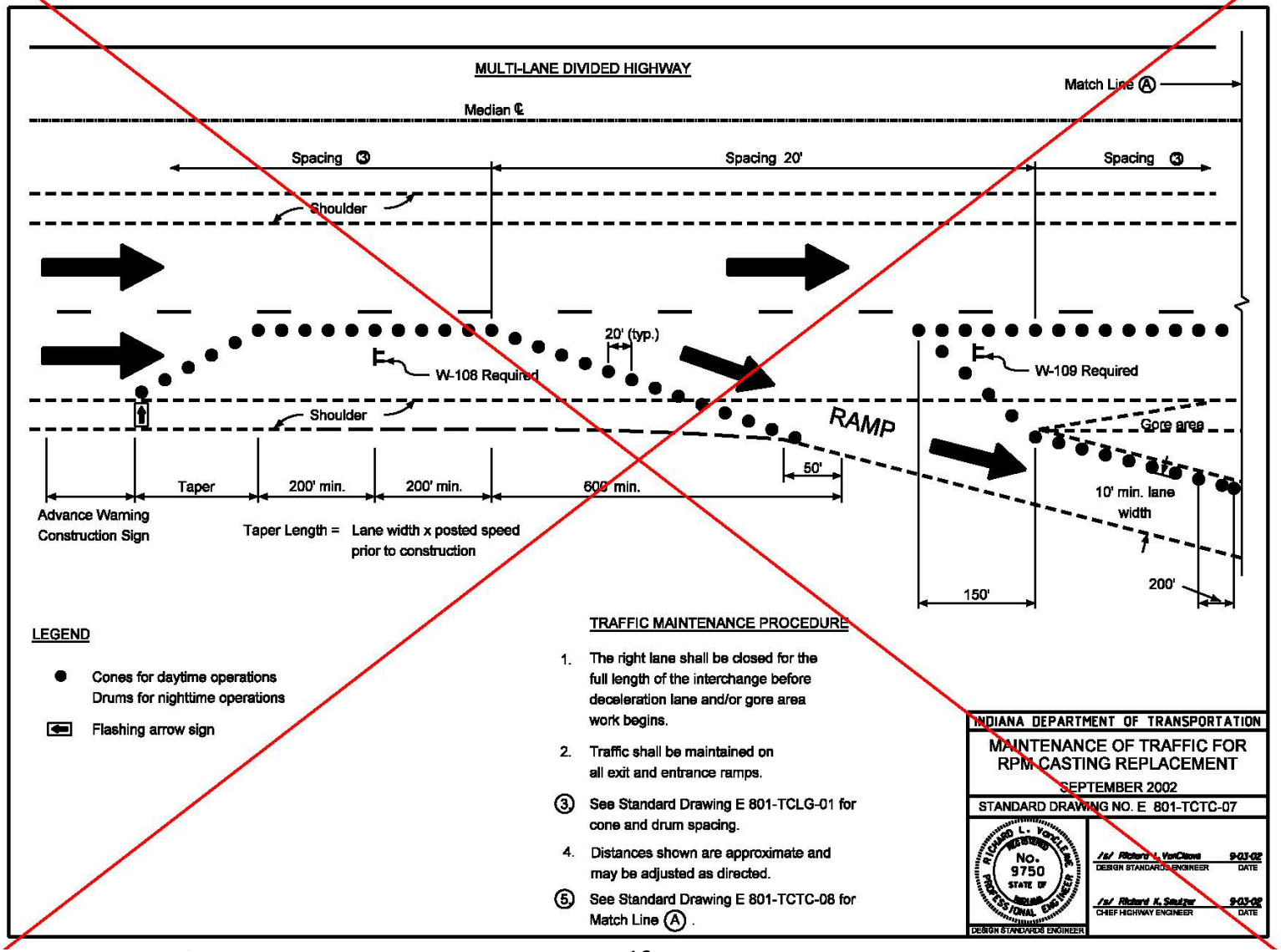
E 801-TCTC-06 MAINTENANCE OF TRAFFIC FOR RPM CASTING INSTALLATION (WITH MARKUPS)



REVISION TO STANDARD DRAWINGS

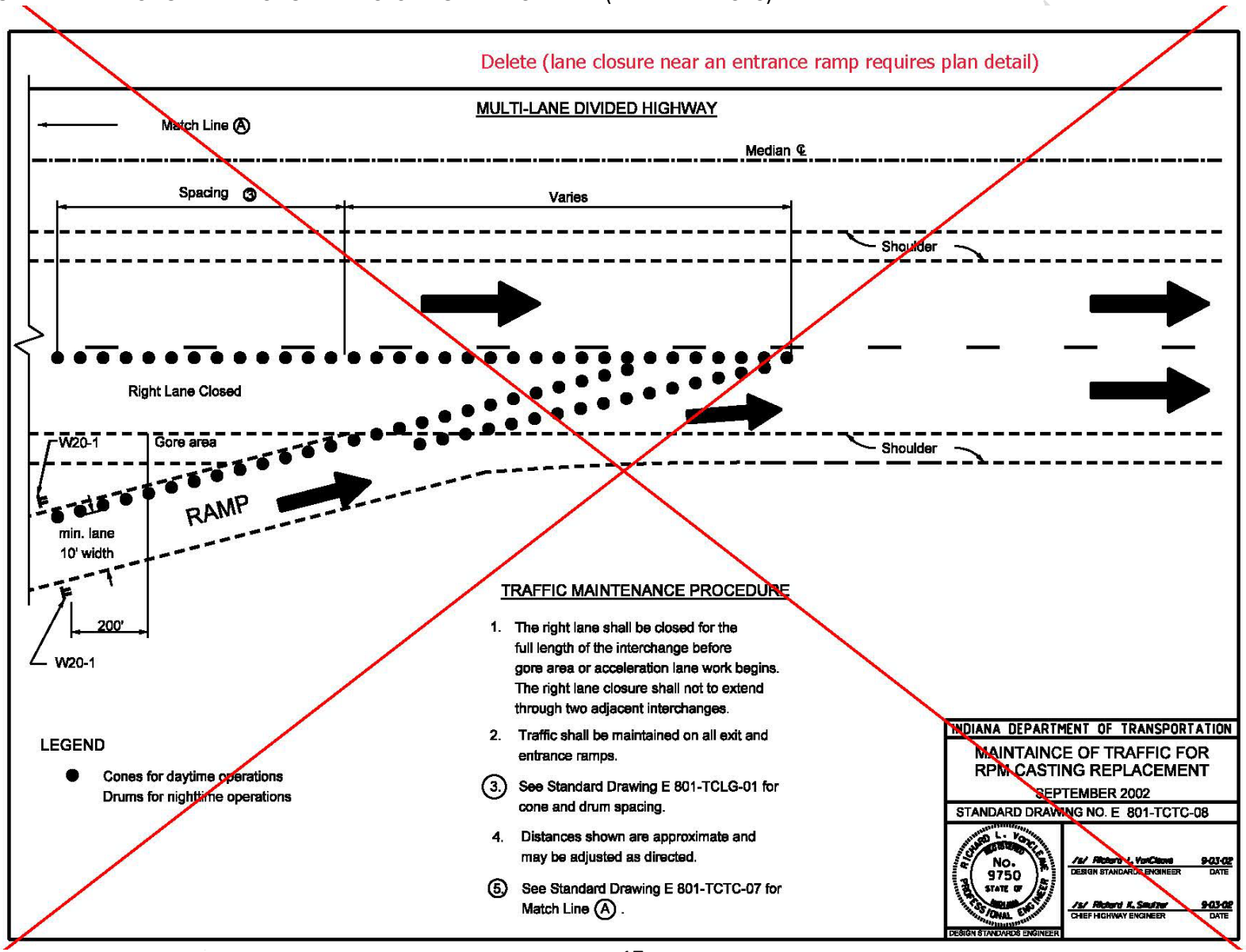
E 801-TCTC-07 MAINTENANCE OF TRAFFIC FOR RPM CASTING REPLACEMENT (WITH MARKUPS)

(Addressed in 801-TCLC-15)



REVISION TO STANDARD DRAWINGS

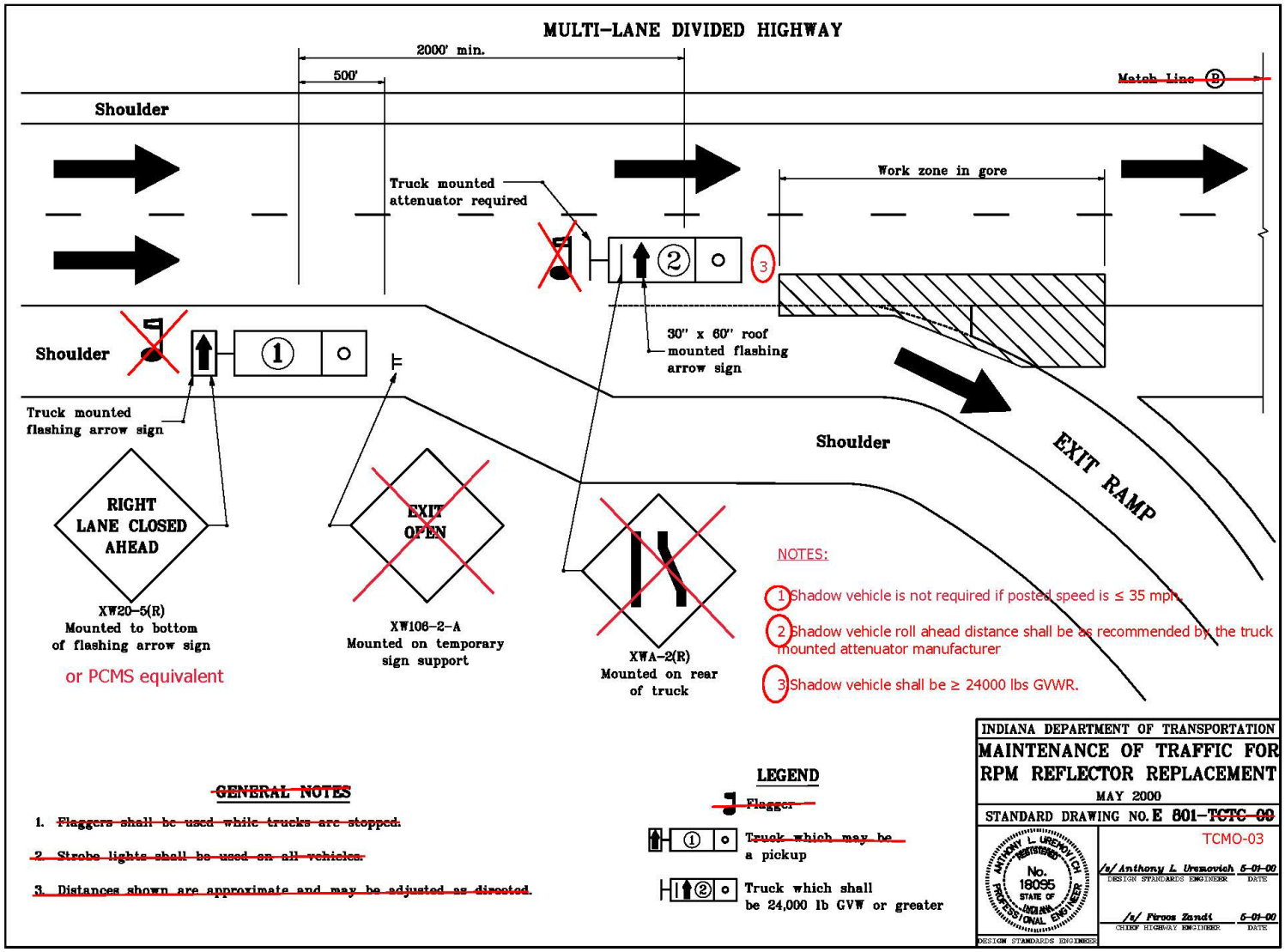
E 801-TCTC-08 MAINTENANCE OF TRAFFIC FOR RPM CASTING REPLACEMENT (WITH MARKUPS)



REVISION TO STANDARD DRAWINGS

E 801-TCTC-09 MAINTENANCE OF TRAFFIC FOR RPM REFLECTOR REPLACEMENT (WITH MARKUPS)

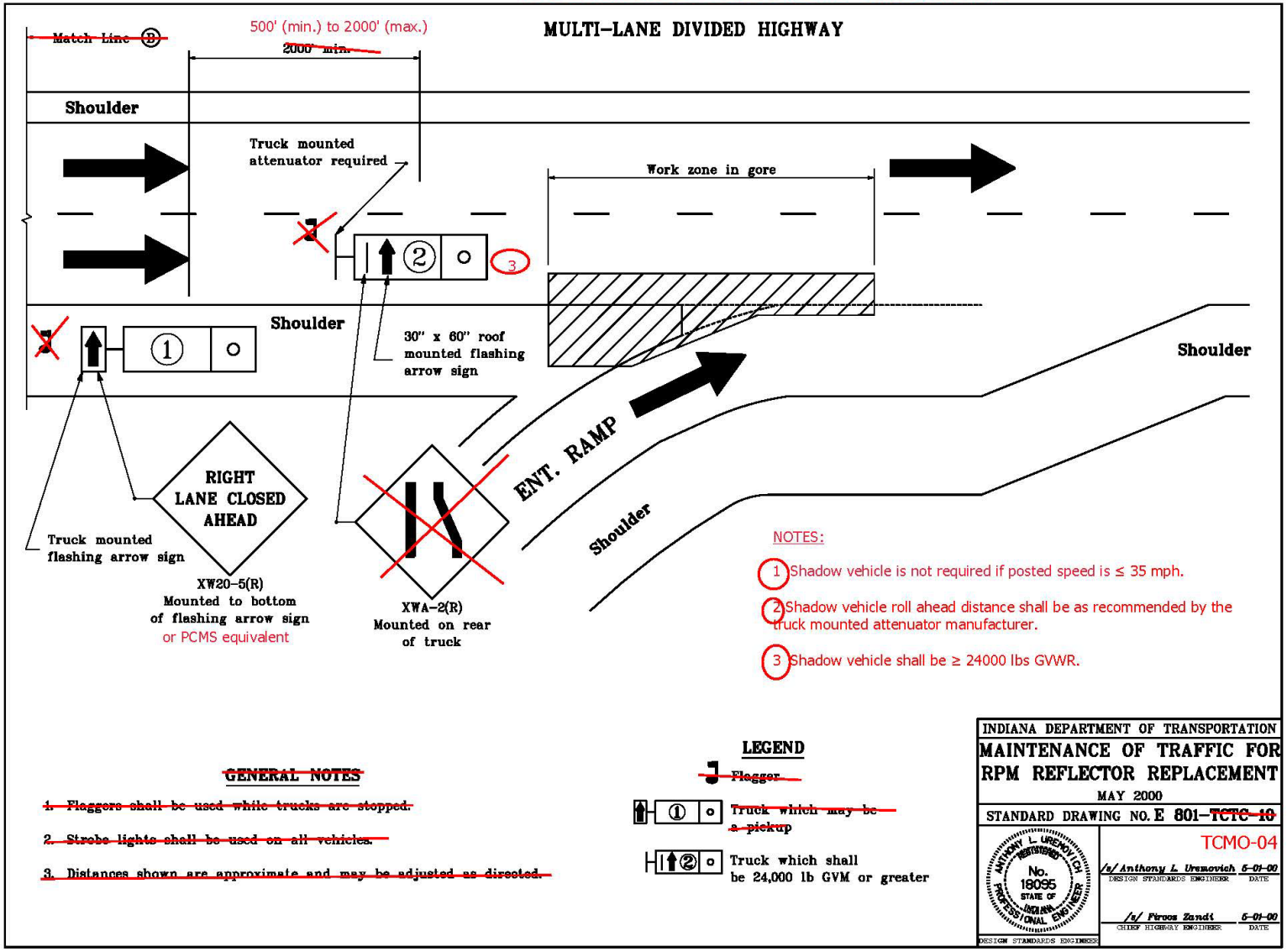
Move to New Series on Traffic Control for Mobile Operations



REVISION TO STANDARD DRAWINGS

E 801-TCTC-10 MAINTENANCE OF TRAFFIC FOR RPM REFLECTOR REPLACEMENT (WITH MARKUPS)

Move to new series on Traffic Control for Mobile Operations



REVISION TO STANDARD DRAWINGS

E 801-TCFO-01 FLAGGER OPERATION FOR TWO LANE ROADS, INDEX AND GENERAL NOTES (PROPOSED DRAFT)

INDEX

GENERAL NOTES:

1. Unless otherwise noted, the spacing of channelizing devices in tangent sections shall be 100 ft where the posted speed limit is 50 mph or greater, and the spacing shall be 50 ft where the posted speed limit is less than or equal to 45 mph.
2. For temporary lane closures during daylight hours, cones or tubular markers may be used in lieu of drums.
3. Temporary pavement markings shall not be required for temporary daylight lane closures
4. Channelizing devices as shown are schematic, the number of channelizing devices will vary based on field conditions.
5. The posted speed limit is the permanent posted speed limit prior to road construction.

INDIANA DEPARTMENT OF TRANSPORTATION

FLAGGER OPERATION FOR TWO LANE ROADS, INDEX AND GENERAL NOTES

SEPTEMBER 2022

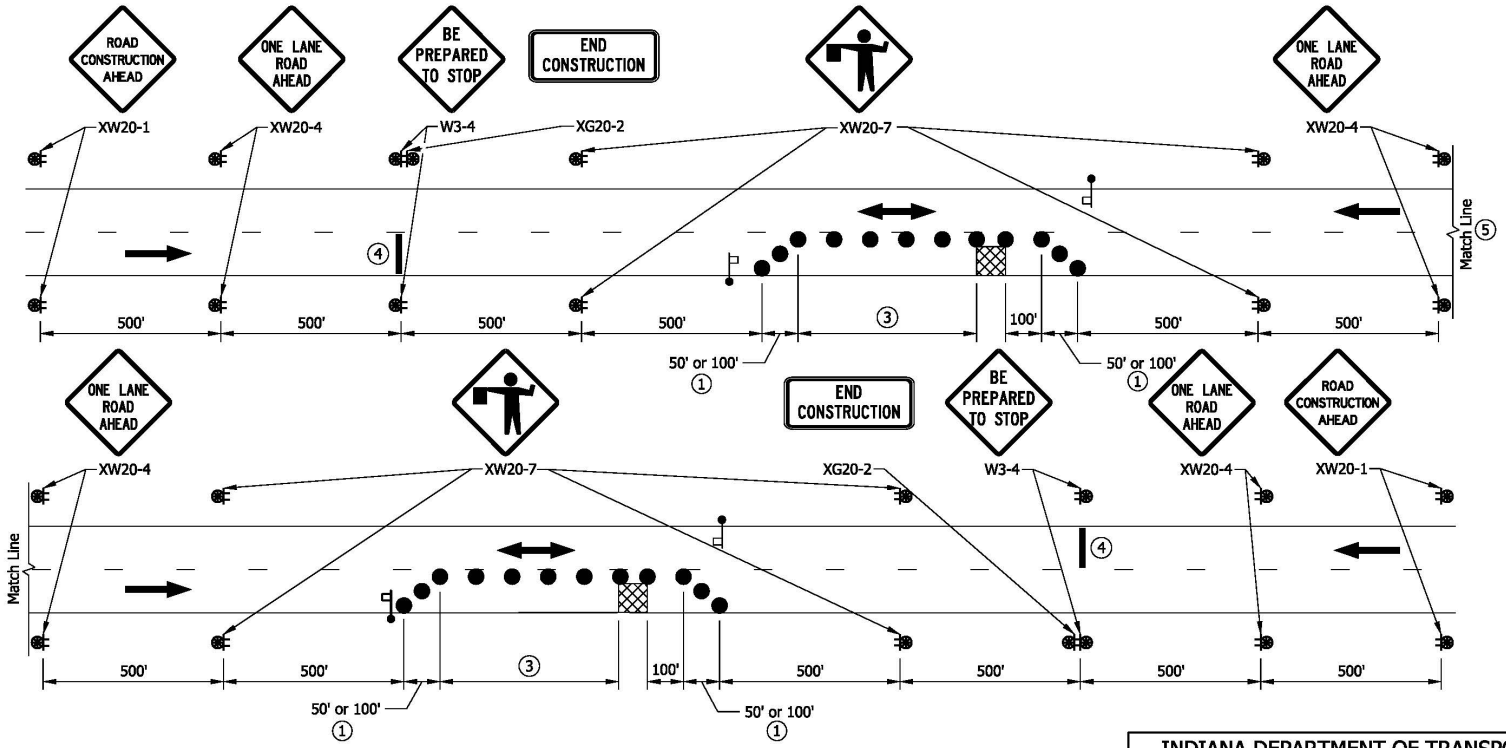
STANDARD DRAWING NO. E 801-TCFO-01

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

REVISION TO STANDARD DRAWINGS

E 801-TCFO-02 FLAGGER OPERATION FOR MULTIPLE WORK AREAS WITH POSTED SPEED ≥ 50 MPH (PROPOSED DRAFT)



NOTES:

(1) Spacing of channelizing devices at this location shall be 10 ft for a 50 ft taper or 20 ft for a 100 ft taper.

2. If Automated Flagger Assistance Devices are used, see Part 6 of the MUTCD for set-up requirements.

(3) Longitudinal Buffer Length

(4) Portable rumble strip installation, if required.

(5) Work areas more than 1 mile apart shall include XW20-1 signs 500 ft in advance of XW20-4 signs, and W3-4 signs 500 ft after the XW20-4 signs.

LONGITUDINAL BUFFER LENGTH	
Posted Speed Limit (mph)	Length (ft)
50	425
55	495

LEGEND

- Flagger
- Work Area
- Channelizing Device
- Construction Sign and Supports
- Construction Warning Light, Type A
- Direction of Traffic

INDIANA DEPARTMENT OF TRANSPORTATION

FLAGGER OPERATION FOR MULTIPLE WORK AREAS WITH POSTED SPEED ≥ 50 MPH

SEPTEMBER 2022

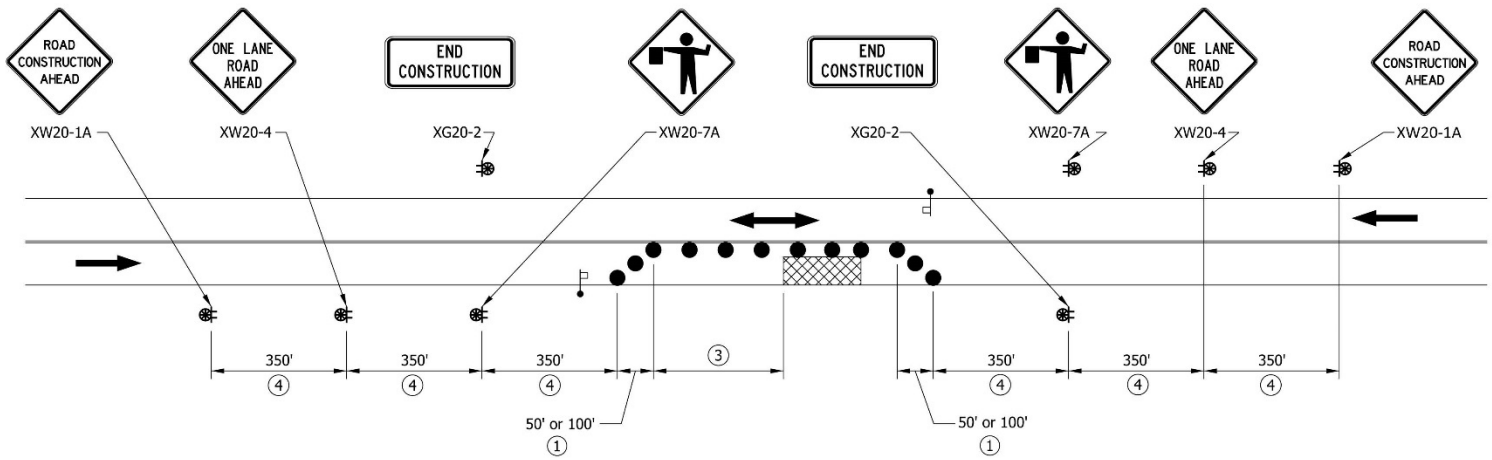
STANDARD DRAWING NO. E 801-TCFO-02

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

REVISION TO STANDARD DRAWINGS

E 801-TCFO-03 FLAGGER OPERATION FOR URBAN TWO LANE ROADS WITH POSTED SPEED < 50 MPH SINGLE WORK AREA (PROPOSED DRAFT)



NOTES:

(1) Spacing of channelizing devices at this location shall be 10 ft for a 50 ft taper or 20 ft for a 100 ft taper.

2. If Automated Flagger Assistance Devices are used, see Part 6 of the MUTCD for set-up requirements.

(3) Longitudinal Buffer Length

(4) Sign spacing may be 100 ft for posted speed limits ≤ 35 mph.

LONGITUDINAL BUFFER LENGTH	
Posted Speed Limit (mph)	Length (ft)
≤30	200
35	250
40	305
45	360

LEGEND

- Flagger
- Work Area
- Channelizing Device
- Construction Sign and Supports
- Construction Warning Light, Type A
- Direction of Traffic

INDIANA DEPARTMENT OF TRANSPORTATION

FLAGGER OPERATION FOR URBAN TWO LANE ROADS WITH POSTED SPEED < 50 MPH SINGLE WORK AREA

SEPTEMBER 2022

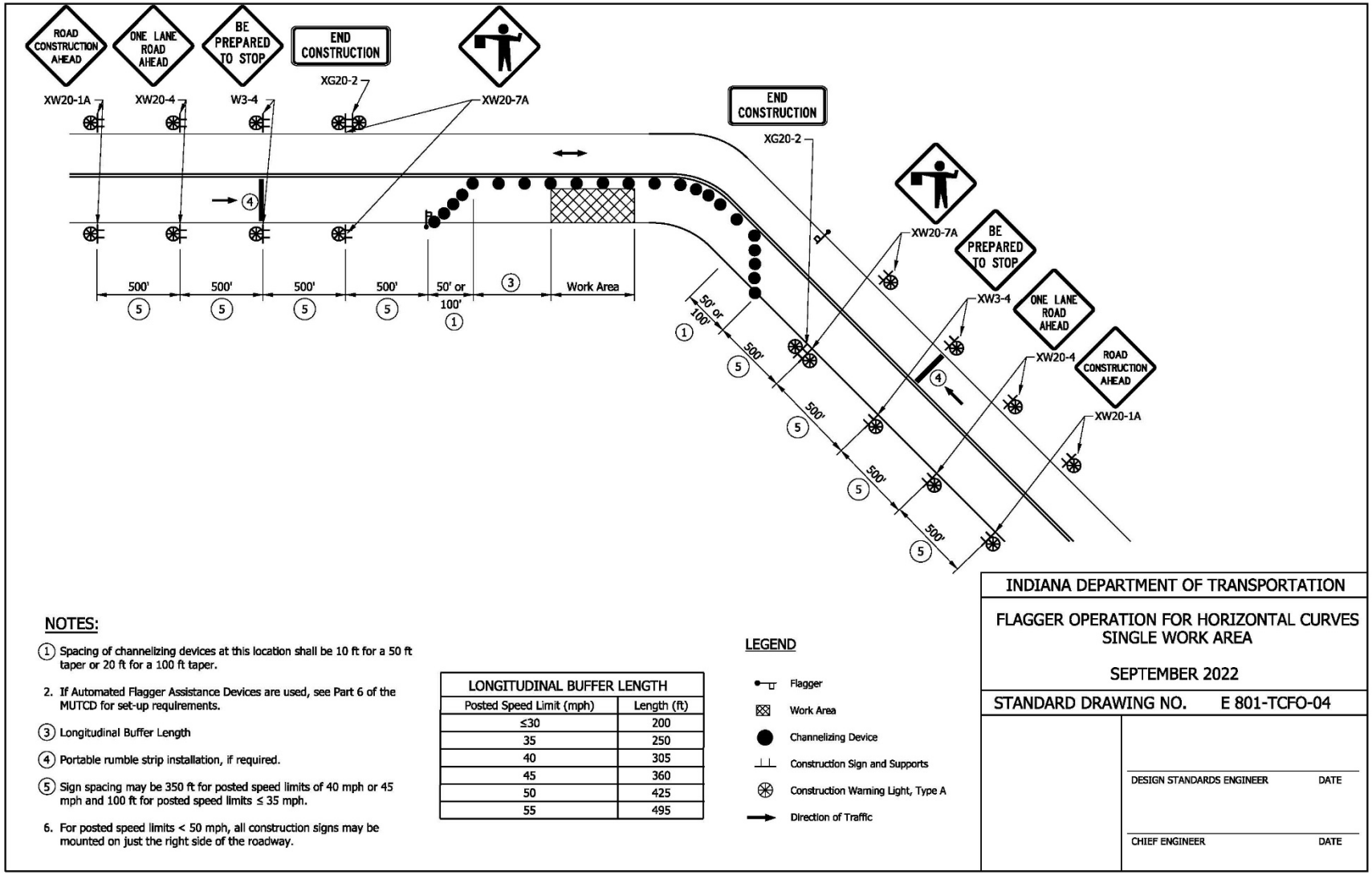
STANDARD DRAWING NO. E 801-TCFO-03

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

REVISION TO STANDARD DRAWINGS

E 801-TCFO-04 FLAGGER OPERATION FOR HORIZONTAL CURVES SINGLE WORK AREA (PROPOSED DRAFT)



NOTES:

1. Spacing of channelizing devices at this location shall be 10 ft for a 50 ft taper or 20 ft for a 100 ft taper.
2. If Automated Flagger Assistance Devices are used, see Part 6 of the MUTCD for set-up requirements.
3. Longitudinal Buffer Length
4. Portable rumble strip installation, if required.
5. Sign spacing may be 350 ft for posted speed limits of 40 mph or 45 mph and 100 ft for posted speed limits ≤ 35 mph.
6. For posted speed limits < 50 mph, all construction signs may be mounted on just the right side of the roadway.

LONGITUDINAL BUFFER LENGTH	
Posted Speed Limit (mph)	Length (ft)
≤30	200
35	250
40	305
45	360
50	425
55	495

LEGEND

- Flagger
- Work Area
- Channelizing Device
- Construction Sign and Supports
- Construction Warning Light, Type A
- Direction of Traffic

INDIANA DEPARTMENT OF TRANSPORTATION

FLAGGER OPERATION FOR HORIZONTAL CURVES SINGLE WORK AREA

SEPTEMBER 2022

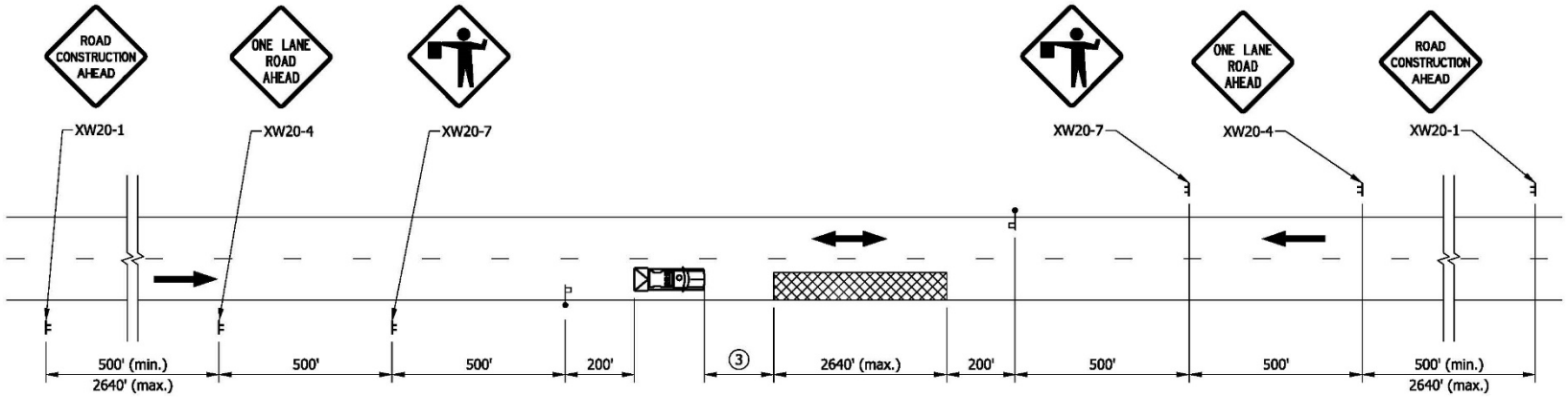
STANDARD DRAWING NO. E 801-TCFO-04

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

REVISION TO STANDARD DRAWINGS

E 801-TCFO-05 MAINTENANCE OF TRAFFIC FOR MOBILE OPERATION WITH FLAGGERS FOR TWO LANE ROADS (revised DRAFT, see DISCUSSION)



FLASHING ARROW SIGN DETAIL
②

NOTES:

1. Additional signs may be required for the moving operations so as to maintain proper spacing.

② Flashing arrow sign shall be in caution mode.

③ Shadow vehicle roll ahead distance shall be as recommended by the truck mounted attenuator manufacturer.

LEGEND

- Flagger
- Work Area
- Construction Sign and Supports
- Direction of Traffic
- Shadow vehicle with truck-mounted attenuator, type B flashing arrow sign, and strobe lights.

INDIANA DEPARTMENT OF TRANSPORTATION

MAINTENANCE OF TRAFFIC FOR MOBILE OPERATION WITH FLAGGERS FOR TWO LANE ROADS

SEPTEMBER 2022

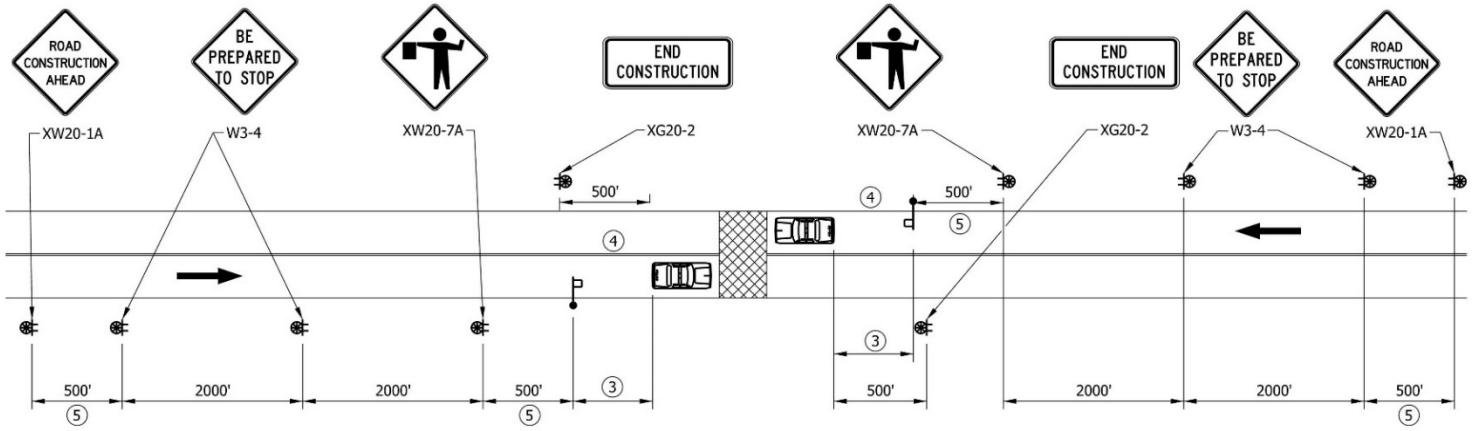
STANDARD DRAWING NO. E 801-TCFO-05

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

REVISION TO STANDARD DRAWINGS

E 801-TCFO-06 FLAGGER OPERATION FOR TEMPORARY TRAFFIC STOPPAGE FOR TWO LANE ROADS (PROPOSED DRAFT)



NOTES:

1. Each temporary traffic stoppage shall be limited to 20 minutes.
2. If Automated Flagger Assistance Devices are used, see Part 6 of the MUTCD for set-up requirements.

(3) Longitudinal Buffer Length.

(4) Location for law enforcement vehicles, if present, to supplement flaggers.

(5) In urban areas, the spacing may be reduced to 350 ft for posted speed limits > 30 mph and the spacing may be reduced to 100 ft for posted speed limits ≤ 30 mph.

LONGITUDINAL BUFFER LENGTH	
Posted Speed Limit (mph)	Length (ft)
≤30	200
35	250
40	305
45	360
50	425
55	495

LEGEND

- Flagger
- Work Area
- Police Car
- Construction Sign and Supports
- Construction Warning Light, Type A
- Direction of Traffic

INDIANA DEPARTMENT OF TRANSPORTATION

FLAGGER OPERATION FOR TEMPORARY TRAFFIC STOPPAGE FOR TWO LANE ROADS

SEPTEMBER 2022

STANDARD DRAWING NO. E 801-TCFO-06

DESIGN STANDARDS ENGINEER DATE

CHIEF ENGINEER DATE

REVISION TO STANDARD DRAWINGS

E 801-TCMO-01 MOBILE OPERATION, INDEX AND GENERAL NOTE (PROPOSED DRAFT)

INDEX	
SHEET NO.	SUBJECT
1	Mobile Operation, Index and General Note
2	Traffic Control for Mobile Operation on a Divided Highway
3	Maintenance of Traffic for RPM Reflector Replacement Near Exit Ramp
4	Maintenance of Traffic for RPM Reflector Replacement Near Entrance Ramp

GENERAL NOTE:

1. Strobe lights shall be used on all shadow vehicles.

INDIANA DEPARTMENT OF TRANSPORTATION

MOBILE OPERATION,
INDEX AND GENERAL NOTE

SEPTEMBER 2022

STANDARD DRAWING NO. E 801-TCMO-01

DESIGN STANDARDS ENGINEER DATE

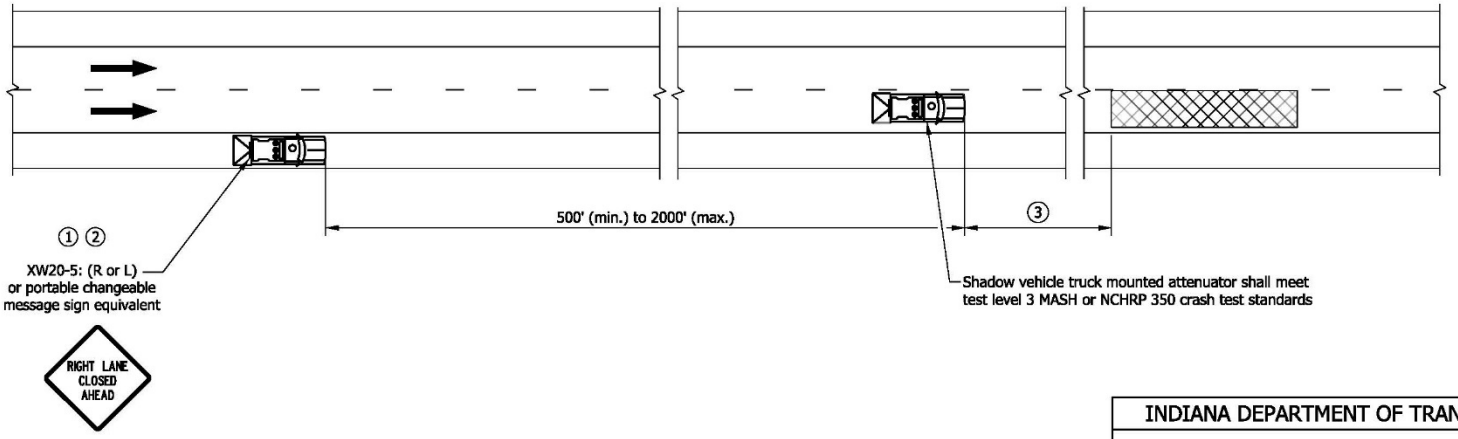
CHIEF ENGINEER DATE

REVISION TO STANDARD DRAWINGS

E 801-TCMO-02 TRAFFIC CONTROL FOR MOBILE OPERATION ON A DIVIDED HIGHWAY (PROPOSED DRAFT)

NOTES:

1. Use XW20-5 sign or portable changeable message sign equivalent if speed limit is > 35 mph.
2. If required by the Engineer, deploy additional shadow vehicle(s) with XW20-5 sign ¼ mi. in advance of any queue or as directed.
3. Shadow vehicle roll ahead distance shall be as recommended by the truck mounted attenuator manufacturer.



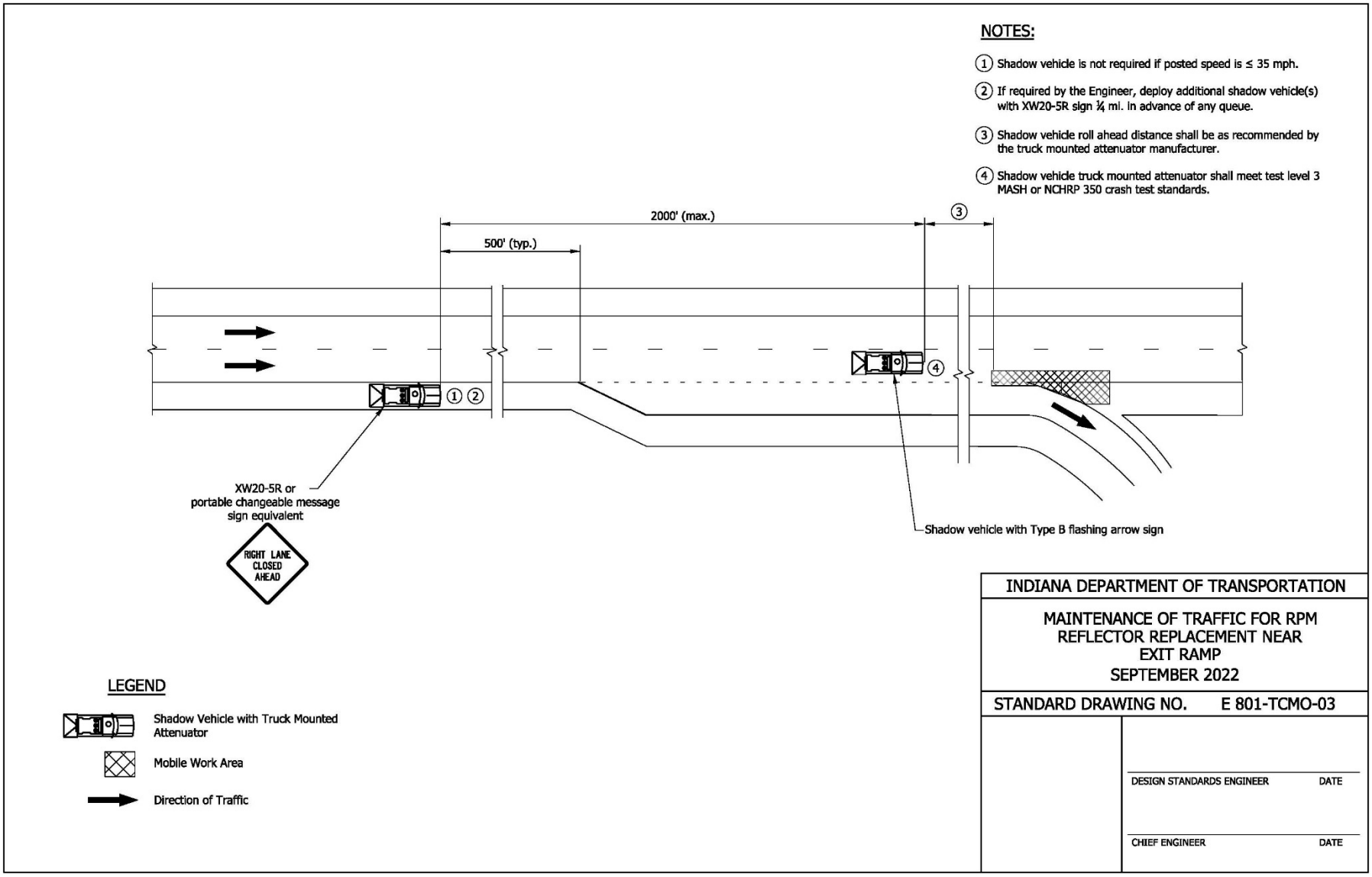
LEGEND

- Shadow Vehicle with Truck Mounted Attenuator and Type B Flashing Arrow Sign
- Mobile Work Area
- Direction of Traffic

INDIANA DEPARTMENT OF TRANSPORTATION	
TRAFFIC CONTROL FOR MOBILE OPERATION ON A DIVIDED HIGHWAY SEPTEMBER 2022	
STANDARD DRAWING NO. E 801-TCMO-02	
	DESIGN STANDARDS ENGINEER DATE CHIEF ENGINEER DATE

REVISION TO STANDARD DRAWINGS

E 801-TCMO-03 MAINTENANCE OF TRAFFIC FOR RPM REFLECTOR REPLACEMENT NEAR EXIT RAMP (PROPOSED DRAFT)

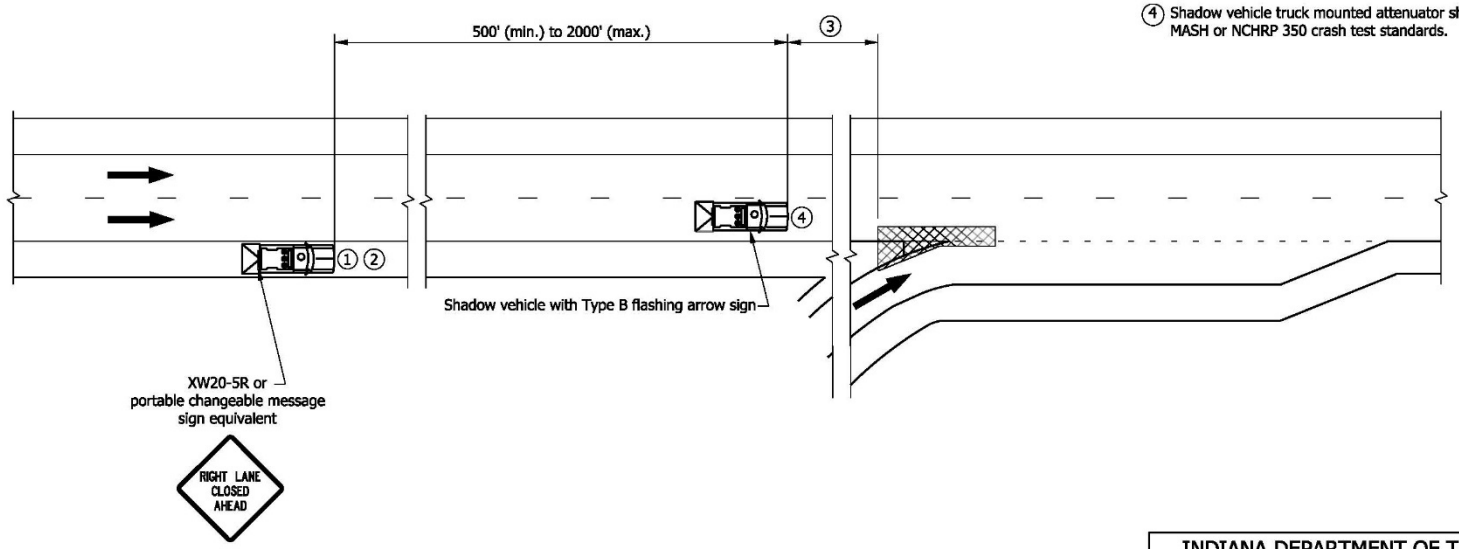


REVISION TO STANDARD DRAWINGS

E 801-TCMO-04 MAINTENANCE OF TRAFFIC FOR RPM REFLECTOR REPLACEMENT NEAR ENTRANCE RAMP (PROPOSED DRAFT)

NOTES:

1. Shadow vehicle is not required if posted speed is ≤ 35 mph.
2. If required by the Engineer, deploy additional shadow vehicle(s) with XW20-5R sign ¼ mi. in advance of any queue or as directed.
3. Shadow vehicle roll ahead distance shall be as recommended by the truck mounted attenuator manufacturer.
4. Shadow vehicle truck mounted attenuator shall meet test level 3 MASH or NCHRP 350 crash test standards.



LEGEND

- Shadow Vehicle with Truck Mounted Attenuator
- Mobile Work Area
- Direction of Traffic

INDIANA DEPARTMENT OF TRANSPORTATION	
MAINTENANCE OF TRAFFIC FOR RPM REFLECTOR REPLACEMENT NEAR ENTRANCE RAMP SEPTEMBER 2022	
STANDARD DRAWING NO. E 801-TCMO-04	
	DESIGN STANDARDS ENGINEER DATE CHIEF ENGINEER DATE

BACKUP 1

IDM 503-3.05(07) Temporary Transverse Rumble Strips (REVISED *revision draft*)
IDM 503-7.03(01) Types (REVISED *revision draft)*

503-3.05(07) Temporary Transverse Rumble Strips [Rev. Month 202X]

Temporary transverse rumble strips are used to alert drivers of unusual vehicle conditions in a work zone such as an unexpected change in alignment or a potential stop condition. Conventional temporary transverse rumble strips, also known as buzz strips, should be specified for any bridge project on a freeway where traffic is being crossed over or maintained adjacent to the work area. If queuing is expected then they should be used as back of queue warning.

Additionally, temporary transverse rumble strips should be considered as a means to alerting drivers to potentially unexpected conditions when it is determined that the TTCP will include:

1 flagging or

2. a lane merge or

3. within a long work zone where work areas are separated by areas with no work, particularly in advance of lane merges, lane shifts, or crossovers.

This measure can be particularly beneficial where speeds are high (greater than 40 mph), the peak-hour volume-to-capacity ratio approaches or is greater than 1, or if stopping sight distance to the flagger or merge taper is restricted. This potential plan need should be discussed with the district during the preliminary and final field checks.

Temporary portable rumble strips, should be specified with flagging on a two-lane highway or multilane divided highway where the regular posted speed limit is 50 mph or above and one of the following conditions are met:

- the flaggers will be at location for more than 4 hours such as for concrete polymeric bridge deck overlays, HMA patches, PCCP patches including PCCP rapid setting patches, or high friction surface treatments,
- there is inadequate stopping sight distance to the work zone,
- the flagging will be done at night, or
- automated flagger assistance devices will be used.

FINAL DRAFT MINUTES

BACKUP 1

IDM 503-3.05(07) Temporary Transverse Rumble Strips (REVISED *revision draft*)
IDM 503-7.03(01) Types (REVISED *revision draft)*

Temporary portable rumble stripes should also be specified on a multilane highway (non-freeway) where the regular posted speed limit is 50 mph or above and the work will be at a location for more than one hour. Portable rumble strips may be considered under the following conditions:

- with any flagging operation; or
- within a long work zone where the work area is moving from day to day.

Additionally, the designer should specify the use of a TMA for installation and incorporate the TMA pay item into the cost estimate.

Conventional temporary transverse rumble strips should be considered for long term stationary duration work zone applications. The INDOT *Standard Specifications* require either removable or durable pavement markings.

For applications of temporary rumble strips other than back of queue warning on a freeway/expressway a unique plan detail and associate special provision should be developed.

Section 503-7.03(01) provides additional information related to temporary transverse rumble strips.

503-7.03(01) Types [Rev. Month 202X]

1. Paint. Quick-drying traffic paint is a low-cost, temporary pavement marking. To improve reflectivity, glass beads are required. Temporary paint is a non-removable type of temporary pavement marking and is not allowed on a final pavement surface except as follows.

   If it is anticipated that the temporary markings will be in place through the wintermonths, temporary paint may be the most suitable choice on a final pavement surface. The decision to use temporary paint under these conditions should be coordinated with the district Traffic Office and district Construction.

2. Temporary Raised Pavement Markers. In a high traffic-volume location, raised temporary pavement markers should be considered as a supplemental device to improve delineation through the construction zone. Typical locations include centerline, lane line, gore area, or where there are changes in the alignment, e.g., lane closure or lane shift. For

FINAL DRAFT MINUTES

a centerline or lane line, temporary raised pavement markers are placed at the midpoint of each gap, i.e., every 40 ft. For a taper, gore, or similar element, the raised markers should be spaced at 20 ft. Temporary raised pavement markers must be removed prior to the placing of the next pavement course.

3. Temporary Pavement Marking Tape. Temporary pavement marking tape is the appropriate material choice where there is a change to the traffic pattern during construction, such as a crossover switch. Temporary tape may be the most desirable option when temporary markings are needed on the final pavement surface. It can be easily and quickly installed and, if necessary, easily removed. This helps to protect the pavement surface and eliminates the potential for "ghost markings" – left over remnants of the temporary markings that are no longer in the correct position. Disadvantages of temporary tape are that it tends to move or break up under heavy traffic volume, and that it is not suitable for usage during the winter months. Temporary pavement marking tape requires more maintenance in comparison to temporary paint. INDOT uses the following temporary pavement marking tape.

   a. Type I. Type I tape is a removable type of temporary pavement marking that may be used as a temporary centerline, lane line, or no-passing zone line that is placed parallel to the normal pavement marking pattern, or as a temporary transverse marking or pavement message marking. It should also be used where pavement markings are placed at an angle to the normal pavement marking pattern, e.g., taper for lane closure or lane shift. When black Type I tape is used to cover conflicting markings, the width specified should be at least 1 in. wider than the existing marking to be covered.

   b. Type II. Type II tape is a non-removable type of temporary pavement marking that may be used on a pavement which is expected to be removed or covered by additional pavement courses. It may be used as a centerline, lane line, or edge line that is parallel to the normal pavement markings. It may also be used as a centerline or lane line on a resurfacing overlay course.

4. Thermoplastic or Multi-Component Markings. Thermoplastic or multi-component (epoxy) markings are used in a construction zone only if the traffic volume is high, and

FINAL DRAFT MINUTES

the temporary traffic pattern will be in place for over one year. Thermoplastic or multi-component markings are non-removable types of pavement markings. Durable markings used for a temporary application are paid for with the appropriate pay item for permanent markings.

5. Rumble Strips. Temporary transverse rumble strips are used in advance of a lane closure, alignment change, or stop condition to warn the motorist of the impending change. See INDOT *Standard Drawings* series 801-TCDV for conventional temporary transverse rumble strip details, also known as buzz strips, and Recurring Special Provision (RSP) 801-T-209 for temporary portable rumble strip details. The ambient temperature range for temporary portable rumble strips is 0°F to 110°F. Figure 503-7G illustrates the typical layout for temporary transverse rumble strips placed in advance of a lane closure.

Section 503-3.05(07) provides additional information regarding applications for temporary transverse rumble strips.

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Taper Type		Length
Upstream	Merging	L (min.)
	Shifting[3]	½ L (min.)
	Shoulder	1/3 L (min.)
	Two-Way Traffic[4]	100 ft
Downstream (optional)[4]		100 ft per Lane

Notes:

1. *See the INDOT Standard Drawings for L.*
2. *Figure 503-7F illustrates the permissible taper types.*
3. *May be used for determining buffer-zone length.*
4. *The two-way traffic and downstream tapers may be reduced to 50 ft based on site conditions such as the presence of a driveway.*

TAPER-LENGTH CRITERIA FOR CONSTRUCTION ZONE

Figure 503-7D

FINAL DRAFT MINUTES

BACKUP 2

DESIGN MEMORANDUM No. 21-xx Temporary Portable Rumble Strips (DRAFT)
XX

INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Design Memorandum No. 21-xx

Month X, 202Y

TO: **All Design, Operations, District Personnel, and Consultants**

FROM: **/s/ David Boruff**
David Boruff
Manager, Office of Traffic Administration
Traffic Engineering Division

SUBJECT: **Temporary Portable Rumble Strips**

REVISES: ***Indiana Design Manual*** **(IDM) Sections 503-3.05(07) and 503-7.03(01)**

EFFECTIVE: **Lettings on or after Third Month in Quarter 1, 202Y**

IDM Sections 503-3.05(07) and 503-7.03(01) have been revised to include updated information on suitable applications for temporary portable rumble strips. The revised section is included for reference below. Recurring special provision 801-T-209 has also been updated.

Temporary portable rumble strips have been found to get out of alignment too frequently on freeways and appear to be tire treads when they get displaced. A more effective application for temporary portable rumble strips is with stationary flagging operations. As a result, temporary portable rumble strips should be included in the plans for flagger operations on two-lane highways where the speed limit is 50 mph or above and one of the following: the flaggers will be at a location for more than four hours, there is inadequate stopping sight distance to the work zone for passenger cars or trucks, the flagging will be done at dawn, dusk, or night, or automated flagger assistance devices will be used. Temporary portable rumble strips should be included in the plans for flagger operations on multilane highways where the speed limit is 50 mph or above and the work will be at a location for more than one hour.

Questions regarding project specific applications for temporary portable rumble strips should be discussed with the appropriate district Traffic Engineer. Dave Boruff, Office of Traffic Administration Manager, dboruff@indot.in.gov, may be contacted with general questions.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

E 801-TCFO (series)
E 801-TCMO (series)
E 801-TCTC (series)

DISCUSSION:

This item was introduced by Mr. Boruff, assisted by Mr. Bruno, who explained that the Standard Drawing series for flagger operations (E 801-TCFO) largely date back to 1997 and include details for work that does not include flagging. INDOT Standard Drawings E 801-TCFO-03, E 801-TCTC-09, and E 801-TCTC-10 depict mobile operations and should be combined into a new series just for mobile operations. Other sheets in the temporary closure series (801-TCTC) are duplicates of other drawings or show information that should be detailed in the plans.

Mr. Boruff proposed to revise and update the standard drawing series on flagger operations (E 801-TCFO), create a new series for mobile operations (E 801-TCMO), and delete unnecessary and duplicate details from the temporary closure series (E 801-TCTC).

Prior to the meeting,
Mr. Koch asked if the taper rate shown in 801-TCFO-02, 3 & 4 is optional, and if further guidance is needed. Mr. Bruno responded that there is existing guidance on this as Figure 503-7D of the Design Manual recommends 100 ft as the two-way traffic taper. However, the two-traffic taper in IMUTCD Figure 6H-10 on flagging is 50 to 100 ft, which matches the current 801-TCFO series. As a result, an option for 50 ft two-way traffic tapers is being retained for situations such as where the shorter taper would keep a driveway out of the work zone or would allow the flaggers to be able to see each other. The potential circumstances where a 50 ft taper may be used could be added as a note to IDM Figure 503-7D.

Mr. Koch asked if the line work for the flagger can be adjusted for clarity in 801-TCFO-05, since the overlapping line seems to hide the flagger symbol. Mr. Bruno said that yes, the dimension line for this flagger can be shortened so that it stops short of the flagger symbol.

Mr. Koch asked if there could be some clarifications made to the DM regarding the temporary portable rumble strips, and asked if some of the language could be revised to “consider”. Mr. Bruno said that the industry members requested shall or must here, so ‘should’ is a compromise. But the Design Manual language included as background material here may be modified further as it is reviewed by INDOT Standards & Policy and the FHWA Indiana Division Office.

Mr. Koch stated that it is very difficult for owners to guess how long a contractor will perform a function. If the ‘should be specified’ language needs to remain can the 4 hr time frame be struck as creating a design guideline may never make it to the Contractor creating a legal snag. Mr. Bruno said that he thinks the word will is useful here and is intended to mean only work where it is known ahead of time will take more than 4 hours. But we could clarify this with examples such as polymeric bridge deck overlays and high friction surface treatments.

Mr. Koch said that the DM guidance seems to require the use of temporary portable rumble strips on two lane highways with a 10 mph range of speed and multilane highways 50 & over. Should the two lane speed language be changed to 50 & above? Mr. Bruno agreed, stating that the wording 50 mph or above is better here.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

E 801-TCFO (series)
E 801-TCMO (series)
E 801-TCTC (series)

Mr. Koch said that the Design Memo (pg #32 of the agenda) states "Temporary portable rumble strips have been found to get out of alignment too frequently on freeways and appear to be tire treads when displaced.", yet the DM guidance will require use on multilane highways with speed limits greater the 50 mph. Mr. Bruno responded that the speeds on divided highways are less than the interstates and there aren't as many trucks going more than 70 mph, which seems to be the issue for the RoadQuake portable rumble strips. The flaggers will also be able to see if the portable rumble strips get out of alignment. Flagging isn't very common on multilane divided highways so this design guidance will not be used very much.

Mr. Koch also inquired about the language in RSP 801-T-209 regarding the rumble strips and if we want to be approving or directing whether or not the strips shall be secured to the pavement. And what if the temperature falls below the manufacturer's recommendation during use? Shall the device be removed? Mr. Bruno replied that the bottom of the RoadQuake does have openings and flat sections so that it could be secured to the pavement with either adhesives or bolts. For flagging operations, securing them to the pavement should not be necessary since they will not be leaving them in place when no work is being done. There are only a few days per year in Indiana where the high temperature is less than 0°F and it is even rarer that there are active INDOT construction jobs on those days. But on those days the portable rumble strips should not be used. We can note the temperature limitations in the design guidance.

Mr. Bruno updated the DM and IDM 503, based on the comments shown above, which will be shown in the final draft minutes.

There were no further comments, and this item passed as submitted.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

E 801-TCFO (series)
E 801-TCMO (series)
E 801-TCTC (series)

[CONTINUED]

Motion: Mr. Boruff Second: Mr. Pelz Ayes: 10 Nays: 0 FHWA Approval: YES	Action: _X_ Passed as Submitted ___ Passed as Revised ___ Withdrawn
Standard Specifications Sections referenced and/or affected: NONE	___ 2024 Standard Specifications (SS) ___ Revise Pay Items List
Recurring Special Provision: 801-T-209 TEMPORARY PORTABLE RUMBLE STRIPS	___ Create RSP (No.___) Effective: RSP Sunset Date:
Standard Drawing affected: see proposal sheet	___ Revise RSP (No.___) Effective: RSP Sunset Date:
Design Manual Sections affected: NONE	_X_ Standard Drawing Effective: September 1, 2022
GIFE Sections cross-references: NONE	___ Create RPD (No. ___) Effective: ___ GIFE Update ___ Frequency Manual Update ___ SiteManager Update

FINAL DRAFT MINUTES

Mr. Wooden
Date: 10/21/21
[OLD BUSINESS ITEM]

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO SPECIAL PROVISIONS

PROPOSAL TO THE STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Unique Special Provisions are intended for a single use on a specific contract for a specific situation on the contract that is not already covered by the Standard Specification or a Special Provision. However, some USPs have been utilized quite frequently on numerous contracts, and have become somewhat "standard".

PROPOSED SOLUTION: The proposed solution for this USP is to convert it to a Recurring Special Provision in order to expedite the process of implementing this Special Provision into future contracts, while eliminating the need for further review.

APPLICABLE STANDARD SPECIFICATIONS: 801.

APPLICABLE STANDARD DRAWINGS:

APPLICABLE DESIGN MANUAL SECTION:

APPLICABLE SECTION OF GIFE:

APPLICABLE RECURRING SPECIAL PROVISIONS:

PAY ITEMS AFFECTED: Item description changed. The word 'WORKSITE' will be deleted.

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Dave Boruff, Manager of Traffic Administration; Scott Trammell, Construction Specifications Engineer, and the USP Review Process, et al.

IF APPROVED AS A RECURRING SPECIAL PROVISION, THE BASIS FOR USE IS: As determined necessary by the Project Designer.

IMPACT ANALYSIS (attach report): Yes

Submitted By: John Wooden

Title: Estimating Administrator

Organization: Contract Administration

Phone Number: 317-233-5743

Date: September 23st, 2021

FINAL DRAFT MINUTES

Mr. Wooden
Date: 10/21/21
[OLD BUSINESS ITEM]

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? Yes, several.
Will approval of this item affect the Approved Materials List? No
Will this proposal improve:

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

Will this proposal reduce operational costs or maintenance effort? Yes

Will this item improve safety:

- For motorists? Yes
- For construction workers? Yes

Will this proposal improve quality for:

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

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? Yes
- 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: For ease of use for implementation and to improve the USP Review Process flow capacity.

FINAL DRAFT MINUTES

REVISION TO SPECIAL PROVISIONS

801-x-xxx TEMPORARY SPEED FEEDBACK ASSEMBLY *(proposed new)*

xxx-x-xxx TEMPORARY SPEED FEEDBACK ASSEMBLY

(Adopted xx-xx-21)

Description

This work shall consist of furnishing, installing, and maintaining a solar powered, temporary speed feedback assembly to increase driver awareness of their speed at the locations shown on the plans or where directed by the Engineer, in accordance with 105.03.

Materials

Materials shall be in accordance with 801.02 and the Indiana MUTCD. The temporary speed feedback assembly shall be an all-weather, self-contained unit. The signs shall be installed on a mounted moveable stand or trailers in accordance with 910.14(f). Signs shall be in accordance with 919.01

Construction Requirements

Each temporary speed feedback assembly shall be installed in accordance with 801.15(c) and the manufacturer recommendations. Each unit installed shall consist of a driver speed feedback digital display and a static legend that reads "YOUR SPEED" or "YOUR SPEED IS". Each temporary speed feedback assembly shall require solar power and be normally dark. The display shall be illuminated and have reflective properties for day readability and automatic dimming for nighttime readability. Speed measurement shall be by radar and provide a detection distance of 1/4 to 1/2 mile. The radar speed display sign assembly shall be FCC Part 15 compliant.

The speed indicator display shall face approaching traffic and shall have a static sign legend of either "Your Speed" or "Your Speed is" above the speed display. The static sign legend and border shall he black on either white or yellow background. "The digital display between the fixed messages shall show two digits, 00 to 99. The minimum height of the numerals shall be 11 in. for conventional roads and 18 in. for freeways and expressways, and the nominal legibility distance shall be at least 750 ft. An R2-1-B sign displaying either the worksite speed limit with a "Worksite" plaque, or the work zone speed limit as established by temporary official action, or the permanently posted speed limit, whichever is applicable, shall be placed above the digital display.

The unit shall be programmable for the posted speed limit and threshold speed. The threshold speed shall be set at 10 mph above the posted speed for roadways with speeds under 45 mph and at 20 mph above the posted speed for roadways with speeds 45 mph or greater. The sign shall activate when the speed limit of the roadway is exceeded by one mph and flash the driver speed at a rate of 50 cycles per minute. When the detected speed exceeds the threshold speed the display shall go dark or display the message "SLOW DOWN". If the detected speed is less than or equal to the posted speed, the message "THANK YOU" may be displayed.

The speed indicator measurement and display functions shall be equipped with a power supply capable of providing 24 hours of uninterrupted service.

The Contractor shall provide all preventive maintenance effort in accordance with 107.12.

FINAL DRAFT MINUTES

REVISION TO SPECIAL PROVISIONS

801-x-xxx TEMPORARY SPEED FEEDBACK ASSEMBLY *(proposed new)*

Method of Measurement

Temporary speed feedback assemblies will be measured by the number of units installed.

Basis of Payment

Temporary speed feedback assemblies will be paid for at the contract unit price per each.

Payment will be made under:

Pay Item	**Pay Unit Symbol**
Temporary Speed Feedback Assembly	EACH

FINAL DRAFT MINUTES

COMMENTS AND ACTION

801-x-xxx TEMPORARY SPEED FEEDBACK ASSEMBLY

DISCUSSION:

Mr. Wooden introduced and presented this item stating that Unique Special Provisions are intended for a single use on a specific contract for a specific situation on the contract that is not already covered by the Standard Specification or a Special Provision. However, some USPs have been utilized quite frequently on numerous contracts and have become somewhat "standard".

The proposed solution for this USP is to convert it to a Recurring Special Provision in order to expedite the process of implementing this Special Provision into future contracts, while eliminating the need for further review.

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

Motion: Mr. Wooden Second: Mr. Novak Ayes: 10 Nays: 0 FHWA Approval: YES	Action: X Passed as Submitted ___ Passed as Revised ___ Withdrawn
Standard Specifications Sections referenced and/or affected: 801 begin pg 863.	___ 2024 Standard Specifications (SS) X Revise Pay Items List
Recurring Special Provision references in: (PROPOSED NEW)	X Create RSP (No. 801-T-231) Effective: June 1, 2022 RSP Sunset Date:
Standard Drawing affected: not listed	___ Revise RSP (No.___) Effective: RSP Sunset Date:
Design Manual Sections affected: not listed	___ Standard Drawing Effective:
GIFE Sections cross-references: not listed	___ Create RPD (No. ___) Effective:
	___ GIFE Update ___ Frequency Manual Update X SiteManager Update

FINAL DRAFT MINUTES

Mr. Wooden
Date: 10/21/21
[OLD BUSINESS ITEM]

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO SPECIAL PROVISIONS

PROPOSAL TO THE STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Unique Special Provisions are intended for a single use on a specific contract for a specific situation on the contract that is not already covered by the Standard Specification or a Special Provision. However, some USPs have been utilized quite frequently on numerous contracts, and have become somewhat "standard".

PROPOSED SOLUTION: The proposed solution for this USP is to convert it to a Recurring Special Provision in order to expedite the process of implementing this Special Provision into future contracts, while eliminating the need for further review.

APPLICABLE STANDARD SPECIFICATIONS: 714, and 723.

APPLICABLE STANDARD DRAWINGS:

APPLICABLE DESIGN MANUAL SECTION:

APPLICABLE SECTION OF GIFE:

APPLICABLE RECURRING SPECIAL PROVISIONS:

PAY ITEMS AFFECTED: None

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Scott Trammell, Construction Specifications Engineer, and the USP Review Process, et al.

IF APPROVED AS A RECURRING SPECIAL PROVISION, THE BASIS FOR USE IS: As determined necessary by the Project Designer.

IMPACT ANALYSIS (attach report): Yes

Submitted By: John Wooden

Title: Estimating Administrator

Organization: Contract Administration

Phone Number: 317-233-5743

Date: September 24, 2021

FINAL DRAFT MINUTES

Mr. Wooden
Date: 10/21/21
[OLD BUSINESS ITEM]

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? Yes, several.
Will approval of this item affect the Approved Materials List? No
Will this proposal improve:

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

Will this proposal reduce operational costs or maintenance effort? Yes

Will this item improve safety:

- For motorists? Yes
- For construction workers? Yes

Will this proposal improve quality for:

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

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? Yes
- 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: For ease of use for implementation and to improve the USP Review Process flow capacity.

FINAL DRAFT MINUTES

REVISION TO SPECIAL PROVISIONS

xxx-x-xxx WATERPROOFING MEMBRANE FOR REINFORCED-CONCRETE BOX STRUCTURES AND THREE-SIDED STRUCTURES *(proposed new)*

XXX-X-XXX WATERPROOFING MEMBRANE FOR REINFORCED-CONCRETE BOX STRUCTURES AND THREE-SIDED STRUCTURES

(Adopted xx-xx-21)

The Standard Specifications are revised as follows:

SECTION 714, AFTER LINE 20, INSERT AS FOLLOWS:

Fabric or Membrane for Waterproofing 918.06

SECTION 714, BEGIN LINE 337, DELETE AND INSERT AS FOLLOWS:

714.10 Precast Reinforced-Concrete Box Structure Section Joints

Precast reinforced concrete box structure section joints shall be sealed as shown on the plans. Pipe joint sealant shall be applied once the concrete surface temperature is above 40°F or above the minimum application temperature recommended by the pipe joint sealant manufacturer. The concrete surfaces shall be clean and dry prior to application of the pipe joint sealant. Heat may be applied to the concrete surfaces until they are in accordance with the temperature and dryness requirements. ~~The pipe joint sealant shall be centered on both sides of the joint as it is being applied. After application, the geotextile or membrane material shall be rolled to avoid wrinkling. If the roll of geotextile or membrane material does not cover the full length of the joint, an overlap of at least 2 1/2 in. will be required to start the next roll of material. The manufacturer's application instructions shall apply in addition to the above requirements.~~*The pipe joint sealant shall be applied to the bell or spigot section of the structure and applied prior to joining segments. The volume of pipe joint sealant applied shall be in accordance with the manufacturer's recommendations.*

Joints shall be covered by a joint membrane system in accordance with 907.07 unless a waterproofing membrane is shown on the plans. The ~~sealer system or~~ joint membrane system shall be centered across the joint and applied in accordance with the manufacturer's recommendations and the following. After application, the ~~geotextile or~~ membrane material shall be rolled to avoid wrinkling. If the roll of ~~geotextile or~~ membrane material does not cover the full length of the joint, the next roll of material shall overlap the end of the previous roll a minimum of 3 in. The manufacturer's application instructions shall apply in addition to the above requirements.

714.11 Waterproofing Membrane

When a waterproofing membrane is shown on the plans, joints, exterior vertical surfaces, and the exterior top horizontal surface shall be covered in their entirety with the membrane. A Type 2 waterproofing membrane shall be installed on all exterior vertical surfaces. If asphalt is placed directly on top of the waterproofing membrane, a Type 3 waterproofing membrane shall be installed otherwise a Type 2 membrane shall be installed.

(a) Preparation

Concrete surfaces shall be prepared in accordance with the waterproofing membrane manufacturer's recommendations and the following. Concrete surfaces shall be smooth and free

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from projections and holes. All sharp edges and metal protrusions shall be ground smooth. Immediately prior to application, the surface shall be dry and free of dust and loose materials. All joints and exterior corners shall be prepared in accordance with the waterproofing membrane manufacturer's recommendations.

Prior to installing a Type 2 waterproofing membrane a prime coat recommended by the waterproofing membrane manufacturer shall be applied to all exterior surfaces that will receive the waterproofing membrane. Waterproofing membranes shall be installed when the ambient temperature is 40°F or above unless lower temperatures are allowed in accordance with the waterproofing membrane manufacturer's recommendations.

Type 3 waterproofing membranes shall be installed when the ambient temperature is 40°F or above. The surface shall be sufficiently dry so as to prevent the formation of steam when the hot-applied prime coat is applied.

(b) Installation

The waterproofing membrane shall be installed prior to backfilling.

For waterproofing membrane material that does not cover the surface, an overlap of at least 3 in. shall be required on all edges. The Type 2 or Type 3 waterproofing membrane from the top horizontal surface shall overlap the membrane on the vertical surfaces on the outside by at least 12 in. The manufacturer's application instructions shall apply in addition to the above requirements.

1. Type 2 Waterproofing Membrane

For a Type 2 waterproofing membrane, the release liner shall be removed, and the adhesive side shall be placed on the prepared concrete surface. After application, the waterproofing membrane material shall be rolled to avoid wrinkling and ensure adhesion of the membrane to the concrete.

2. Type 3 Waterproofing Membrane

For a Type 3 waterproofing membrane, the prime coat shall be applied no farther than 5 ft in front of the membrane, using a squeegee to fill all voids and imperfections. The waterproofing membrane shall be applied from the low to the high side of the surface. An extra bead of prime coat material shall be applied at the edge of the waterproofing membrane.

Prime coat material and waterproofing membrane shall stop a uniform distance below the top surfaces and shall overlap the Type 2 waterproofing membrane a minimum of 12 in. The prime coat material shall not be splattered over or applied to surfaces or faces of concrete which subsequently are exposed in the finished structure. The waterproofing membrane shall be placed in V-strips at the joints to allow the movement of adjacent concrete sections without tearing the membrane. The waterproofing membrane shall be flashed at all exposed edges and laps sealed down. The waterproofing membrane shall not be damaged when backfill is placed. After installing

FINAL DRAFT MINUTES

the waterproofing membrane over the entire surface, all joints in the membrane shall be sealed by applying a prime coat and smoothing with a V-squeegee.

On structures with curbs, the waterproofing membrane shall be placed 3 in. up the curb face and the edge of the membrane shall be sealed in accordance with the waterproofing membrane manufacturer's recommendation ~~at an application rate of 0.05 to 0.08 gal./sq yd before placing any asphalt pavement~~.

Tack coat, in accordance with 406, shall be applied to a Type 3 waterproofing membrane, without damaging the membrane at an application rate of 0.05 to 0.08 gal./sq yd before placing any asphalt pavement.

SECTION 714, BEGIN LINE 351, DELETE AND INSERT AS FOLLOWS:

714.~~11~~*12* Method of Measurement

SECTION 714, BEGIN LINE 379, DELETE AND INSERT AS FOLLOWS:

714.~~12~~*13* Basis of Payment

SECTION 714, BEGIN LINE 412, INSERT AS FOLLOWS:

The cost of excavation except as provided in 206.11(a), expansion joint material, perpetuation of existing drains shown on the plans, removal of portions of existing structures, cleaning out old channels or structures, *waterproofing membrane, prime coat,* chemical anchor system, precast reinforced concrete structure joints, and necessary incidentals shall be included in the cost of the structure or structure extension.

SECTION 723, AFTER LINE 24, INSERT AS FOLLOWS:

Fabric or Membrane for Waterproofing 918.06

SECTION 723, BEGIN LINE 89, DELETE AND INSERT AS FOLLOWS:

723.03 General Requirements

Excavation and disposal shall be in accordance with the applicable requirements of 206. ~~The areas designated for waterproofing shall be waterproofed in accordance with 702.23~~ *Waterproofing membranes shall be in accordance with 714.11.*

SECTION 723, BEGIN LINE 395, INSERT AS FOLLOWS:

723.14 Joints

Joints between structure sections for three-sided arch-topped structures and true arch shape structures, and for flat-topped structures with cover of 3 ft or more, may be either butt joints or keyway joints.

The sections of flat-topped structures with less than 3 ft of cover shall be produced with a minimum 4 in. depth by 1 1/2 in. width keyway joint. Non-shrink grout in accordance with 707.09 shall be placed in the keyway joint.

FINAL DRAFT MINUTES

REVISION TO SPECIAL PROVISIONS

xxx-x-xxx WATERPROOFING MEMBRANE FOR REINFORCED-CONCRETE BOX STRUCTURES AND THREE-SIDED STRUCTURES *(proposed new)*

All butt joints between structure sections shall be covered with a joint wrap in accordance with ASTM C877 *unless a waterproofing membrane is shown on the plans.* The surface shall be free of dirt before the joint material is applied. The entire joint shall be continuously covered. ~~Joints between structure sections and wingwalls, between wingwalls and spandrel walls, and between structure sections and headwalls or spandrel walls shall be covered with either the same wrap used between structure sections or with geotextile in accordance with 918.02.~~*When shown on the plans, all joints, exterior vertical surfaces, and exterior top surfaces shall be covered in their entirety with a waterproofing membrane in accordance with 714.11.*

Joints between structure sections and wingwalls, between wingwalls and spandrel walls, and between structure sections and headwalls or spandrel walls shall be covered with ~~either~~ the same wrap used between structure sections ~~or with geotextile in accordance with 918.02~~.

SECTION 723, BEGIN LINE 417, INSERT AS FOLLOWS:

723.15 Backfilling

Waterproofing membrane shall be applied prior to backfilling. Structure backfill shall be placed and compacted in accordance with 211. Structure backfill shall be placed and compacted on each side of the structure to the fill line shown on the plans. During the backfill operation, the difference in elevations of the fill on each side of the structure shall not exceed 24 in.

SECTION 723, BEGIN LINE 502, INSERT AS FOLLOWS:

The cost of all design, coring, testing, pedestals or extended legs, excavation, repairs, plugging core and handling holes, mortar, grout, sealer, *waterproofing membrane, prime coat,* cylinder molds, and necessary incidentals shall be included in the cost of the structure or structure extension.

SECTION 918, BEGIN LINE 126, DELETE AND INSERT AS FOLLOWS:

918.06 Fabric *or Membrane* for Waterproofing

~~Fabric for~~*Type 1* waterproofing *membrane* shall ~~be~~ *consist of a Utility Asphalt, UA-1 in accordance with 902.01(d) and a fabric consisting of* treated cotton in accordance with ASTM D173, woven glass in accordance with ASTM D1668, or glass fiber mat in accordance with ASTM D2178. A type C certification in accordance with 916 shall be provided for the ~~fabric~~*Type 1 material*.

Type 2 waterproofing membrane shall consist of a rubberized asphalt and peel-and-stick membrane. Membrane materials shall be stored indoors and at temperatures not to exceed 120°F.

PROPERTY	*TEST METHOD*	*REQUIREMENTS*
Thickness	*ASTM D1777 or D3767*	*60 mils, min.*
Width		*24 in., min.*

FINAL DRAFT MINUTES

REVISION TO SPECIAL PROVISIONS

xxx-x-xxx WATERPROOFING MEMBRANE FOR REINFORCED-CONCRETE BOX STRUCTURES AND THREE-SIDED STRUCTURES *(proposed new)*

Pliability		*~~Must~~Shall be installed over 40 °F*
Elongation	*ASTM D412 (Die C)*	*300%, min.*
Puncture Resistance – Membrane	*ASTM E154*	*35 lb min.*
Permeance	*ASTM E96, Method B*	*0.05 Perms, max.*
Water Absorption, % by Weight	*ASTM D570*	*0.2, max.*
Adhesion to concrete	*ASTM D903*	*5.0, min.*

Type 3 waterproofing membrane shall consist of a hot-applied joint prime coat in accordance with ASTM D6690 and a membrane consisting of a high-density asphalt mastic between two layers of polymeric fabric. The membrane and prime coat materials shall be kept dry prior to installation.

PROPERTY	*TEST METHOD*	*REQUIREMENTS*
Thickness, min.	*ASTM D1777*	*0.135 in.*
Width, min.		*24 in.*
Weight, min.		*0.8 lb/sq ft*
Tensile strength, machine direction	*ASTM D882, Modified[1]*	*275 lb/in.* *2,000 psi*
Tensile strength, 90° to machine direction	*ASTM D882, Modified[1]*	*150 lb/in.* *1,000 psi*
Elongation at break	*ASTM D882, Modified[1]*	*100% min.*
Brittleness	*ASTM D517*	*Pass*
Softening point (mastic)	*ASTM D36*	*200 °F min.*
Peel adhesion	*ASTM D413[1]*	*2.0 lb/in.*
Cold flex	*ASTM D146* *2 x 5 in. specimen*	*180° bend over 2-in. mandrel with no cracking*
Heat stability	*2 x 5 in. specimen*	*vertically suspended in a mechanical convection oven 2 hr @ 190 °F with no dripping or delamination*
[1] 12 in. per minute test speed and 1 in. initial distance between the grips.		

FINAL DRAFT MINUTES

REVISION TO SPECIAL PROVISIONS

xxx-x-xxx WATERPROOFING MEMBRANE FOR REINFORCED-CONCRETE BOX STRUCTURES AND THREE-SIDED STRUCTURES *(proposed new)*

A type B Certification in accordance with 916 shall be provided for the Type 2 and Type 3 material.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

xxx-x-xxx WATERPROOFING MEMBRANE FOR REINFORCED-CONCRETE BOX STRUCTURES AND THREE-SIDED STRUCTURES

DISCUSSION:

Mr. Wooden introduced and presented this item stating that Unique Special Provisions are intended for a single use on a specific contract for a specific situation on the contract that is not already covered by the Standard Specification or a Special Provision. This item was withdrawn from last month's meeting pending further review and revisions. The special provision has been reviewed and revised by the subject matter experts as shown above.

The proposed solution for this USP is to convert it to a Recurring Special Provision in order to expedite the process of implementing this Special Provision into future contracts, while eliminating the need for further review. Further revisions are as shown which were explained by Mr. Reilman.

Mr. Novak asked about the Basis for Use and Mr. White responded that it needs to remain at the discretion of the District Technical Services and the design engineer for the time being.

There was no further discussion, and this item passed as revised.

Motion: Mr. Wooden Second: Mr. Reilman Ayes: 10 Nays: 0 FHWA Approval: YES	Action:	
	___	Passed as Submitted
	_X_	Passed as Revised
	___	Withdrawn
Standard Specifications Sections referenced and/or affected: 714 pg 721; 723 pg 791, and 918.06 pg 1134. Recurring Special Provision references in: *(not listed on proposal)* Standard Drawing affected: *(not listed on proposal)* Design Manual Sections affected: *(not listed on proposal)* GIFE Sections cross-references: *(not listed on proposal)*	___	2024 Standard Specifications (SS)
	___	Revise Pay Items List
	_X_	Create RSP (No. 714-R-748) Effective: March 1, 2022 RSP Sunset Date:
	___	Revise RSP (No.___) Effective: RSP Sunset Date:
	___	Standard Drawing Effective:
	___	Create RPD (No. ___) Effective:
	_X_	GIFE Update
	_X_	Frequency Manual Update
	_X_	SiteManager Update

FINAL DRAFT MINUTES

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: There is an incorrect ASTM reference for foaming agent. Also verification that the CCF has achieved a minimum 25 psi compressive strength is difficult to do in the field.

PROPOSED SOLUTION: Correct the reference to the ASTM so it is for the specification, not the test method except where the test method is the appropriate reference. Change the requirement from 25 psi compressive to a DCP of 25 blows in 12 in. which should be easier to do in the field.

APPLICABLE STANDARD SPECIFICATIONS: 216, 725, 912

APPLICABLE STANDARD DRAWINGS: NA

APPLICABLE DESIGN MANUAL SECTION: NA

APPLICABLE SECTION OF GIFE: NA

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: NA

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc: Michael Nelson, Jim Reilman, & Nayyar Siddiki

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: For contracts with 216 or 725 pay items.

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: INDOT Materials and Tests

Phone Number: 317-522-9692

Date: 9/13/21

FINAL DRAFT MINUTES

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? Yes
- 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? 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:

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 216 - CELLULAR CONCRETE FILL, CCF
216.02 Materials
216.03 Mix Design
216.08 Installation
SECTION 725 - SLIP LINING OF EXISTING PIPE
725.02 Materials
725.07 Cellular Concrete Grout
SECTION 912 - CONCRETE CURING MATERIALS AND ADMIXTURES
912.05 Foaming Agent

(Note: Proposed changes shown highlighted gray)

The Standard Specifications are revised as follows:

SECTION 216, BEGIN LINE 9, DELETE AND INSERT AS FOLLOWS:

216.02 Materials

Materials shall be in accordance with the following:

Cement	901.01(b)
Fly Ash	901.02
Foaming Agent	*912.05*
Water	913.01

An admixture in accordance with 912.03 may be used as recommended by the CCF manufacturer.

A foam*ing agent* ~~liquid concentrate in accordance with ASTM C796~~ shall ~~be used to~~ produce *CCF with* the ~~CCF~~ properties *shown* in ~~accordance with~~ 216.04. The foam*ing agent* ~~liquid concentrate~~ shall be chosen from those shown on the QPL of CCF Manufacturers/ Installers.

CONSTRUCTION REQUIREMENTS

216.03 Mix Design

A mix design prepared in accordance with the geotechnical report shall be submitted to the Engineer for approval at least five work days before the CCF operations begin. A cellular concrete manufacturer*/installer* shall be chosen from those shown on the QPL of CCF Manufacturers/Installers.

SECTION 216, BEGIN LINE 61, DELETE AND INSERT AS FOLLOWS:

216.08 Installation

CCF shall be proportioned, mixed, and placed in lifts as recommended by the manufacturer. Transit mixers will not be acceptable for mixing the CCF. The CCF shall not be subjected to load or disturbed by construction activities until a minimum ~~compressive strength~~*DCP blow count* of 25 ~~psi has been achieved~~*blows per 12 in. has been achieved. DCP will be performed in accordance with ITM 509.*

The final surface finish shall be within ± 0.1 ft of the plan elevation.

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 216 - CELLULAR CONCRETE FILL, CCF
216.02 Materials
216.03 Mix Design
216.08 Installation
SECTION 725 - SLIP LINING OF EXISTING PIPE
725.02 Materials
725.07 Cellular Concrete Grout
SECTION 912 - CONCRETE CURING MATERIALS AND ADMIXTURES
912.05 Foaming Agent

SECTION 725, BEGIN LINE 10, DELETE AND INSERT AS FOLLOWS:

725.02 Materials

Materials shall be in accordance with the following:

Admixture	*
Cellular Concrete Grout	ASTM C~~796~~*869*
Cement, Type I or Type III	901.01(b)
Concrete, A	702
Fine Aggregate**	904
Flowable Backfill	213
Foaming Agent	912.05
Profile Wall HDPE Liner Pipe	907.25(b)
Profile Wall PVC Liner Pipe	907.25(c)
Solid Wall HDPE Liner Pipe	907.25(a)
Water	913.01

* An admixture may be used as recommended by and in accordance with the foaming agent manufacturer's specifications.

** The supplier may elect to use gradations in accordance with 904.02(h) or may propose the use of alternate gradations.

SECTION 725, BEGIN LINE 151, DELETE AND INSERT AS FOLLOWS:

725.07 Cellular Concrete Grout

The cellular concrete grout shall be designed in accordance with ASTM C~~796~~*869* except as herein modified.

SECTION 912, BEGIN LINE 199, INSERT AS FOLLOWS:

912.05 Foaming Agent

Foaming agents used in making preformed foam for cellular concrete *fill and cellular concrete* grout shall be in accordance with ASTM C869. A type C certification in accordance with 916 shall be provided for the foaming agent.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

216.02 Materials
216.03 Mix Design
216.08 Installation
725.02 Materials
725.07 Cellular Concrete Grout
912.05 Foaming Agent

DISCUSSION:

Mr. Reilman introduced and presented this item stating that there is an incorrect ASTM reference for foaming agent. Also, verification that the CCF has achieved a minimum 25 psi compressive strength is difficult to do in the field.

Mr. Reilman proposed to correct the reference to the ASTM for the foaming agent, where applicable, and to change the requirement from 25 psi compressive to a DCP of 25 blows in 12 in. which should be easier to do in the field. Additional confirmation was provided by Mr. Siddiki.

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

Motion: Mr. Reilman Second: Mr. Novak Ayes: 10 Nays: 0 FHWA Approval: YES	Action:	
	X	Passed as Submitted
	___	Passed as Revised
	___	Withdrawn
Standard Specifications Sections referenced and/or affected: 216 pg 250; .725 pg 807 and 810; 912 pg 1092.	X	2024 Standard Specifications (SS)
	___	Revise Pay Items List
Recurring Special Provision references in: NONE	X	Create RSP (No. 216-R-745 725-R-746 Effective: March 1, 2022 RSP Sunset Date: 2024 SS
Standard Drawing affected: NONE	___	Revise RSP (No.___) Effective: RSP Sunset Date:
Design Manual Sections affected: NONE	___	Standard Drawing Effective:
GIFE Sections cross-references: NONE	___	Create RPD (No. ___) Effective:
	___	GIFE Update
	___	Frequency Manual Update
	X	SiteManager Update

FINAL DRAFT MINUTES

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: For proper slide treatment/remedial measures, the Geotechnical Engineering Division should be contacted to ensure the treatment is sufficient and stable. Specification 203.13 did not include contact guidance.

PROPOSED SOLUTION: Revise language in Specification 203.13 to provide guidance on who to contact.

APPLICABLE STANDARD SPECIFICATIONS: 203.13

APPLICABLE STANDARD DRAWINGS: NA

APPLICABLE DESIGN MANUAL SECTION: NA

APPLICABLE SECTION OF GIFE: Yes, chapter 3

APPLICABLE RECURRING SPECIAL PROVISIONS: NA
PAY ITEMS AFFECTED: NA

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

IMPACT ANALYSIS (attach report): NA

Submitted By: Jim Reilman for Nayyar Siddiki

Title: State Materials Engineer

Organization: Office of Materials & Tests

Phone Number: 317-522 9692

Date: 09/20/2021

FINAL DRAFT MINUTES

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? Yes

Will this proposal reduce operational costs or maintenance effort? Yes

Will this item improve safety:

For motorists? Yes

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:

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 203 - EXCAVATION AND EMBANKMENT
203.13 Slides

(Note: Proposed changes shown highlighted gray)

The Standard Specifications are revised as follows:

SECTION 203, BEGIN LINE 479, DELETE AND INSERT AS FOLLOWS:

203.13 Slides

When ~~S~~slides are encountered during construction*, or when water is observed seeping out of the slope or slope sloughing occurs the Engineer shall be notified. The Engineer will contact the Department's Geotechnical Engineering Division. The Department will provide the remedial measures to address the slope issues. Soil disturbed due to a slide* shall be ~~removed~~*treated* as directed. ~~and their removal~~*Excavation of ~~slide~~ material resulting from a slide or sloughing event* will be paid for as the class or classes of excavation encountered.

If the contract involves paving, the omission or delay of paving operations may be required at the location of a slide. If proper treatment of a slide has been ~~obtained~~*completed* prior to ~~completion of~~*constructing* the remaining pavement, the ~~gap~~*slide section* may ~~be required to~~ be paved, and payment will be at the contract unit price for pavement.

If ~~proper~~*the* treatment of a slide has not been ~~obtained~~*addressed* prior to completion of the remaining pavement, the ~~gap left at the slide location~~*slide section* shall become an exception to the contract item for pavement.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

203.13 Slides

DISCUSSION:

This item was introduced and presented by Mr. Reilman, assisted by Mr. Siddiki, who explained that for proper slide treatment/remedial measures, the Geotechnical Engineering Division should be contacted to ensure the treatment is sufficient and stable. Specification section 203.13 did not include contact guidance.

Mr. Reilman proposed to revise the language in 203.13 to provide guidance on who to contact.

Mr. Koch asked if the word 'slide' in 203.13 "Excavation of slide material…" is actually necessary. Mr. Reilman agreed that it is not, and the revision is as shown.

Mr. Reilman revised his motion.
There was no further discussion, and this item passed as revised.

Motion: Mr. Reilman Second: Mr. Koch Ayes: 10 Nays: 0 FHWA Approval: YES	Action: ___ Passed as Submitted _X_ Passed as Revised ___ Withdrawn
Standard Specifications Sections referenced and/or affected: 203.12 pg 160.	_X_ 2024 Standard Specifications (SS) ___ Revise Pay Items List
Recurring Special Provision references in: NONE	_X_ Revise RSP (No. 203-R-736) Effective: March 1, 2022 RSP Sunset Date: 2024 SS
Standard Drawing affected: NONE	___ Create RSP (No.___) Effective: RSP Sunset Date:
Design Manual Sections affected: NONE	___ Standard Drawing Effective:
GIFE Sections cross-references: Section 3	___ Create RPD (No. ___) Effective: _X_ GIFE Update ___ Frequency Manual Update ___ SiteManager Update

FINAL DRAFT MINUTES

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: More information and direction is needed when karst features are discovered during construction.

PROPOSED SOLUTION: Develop a new RSP for discovery of karst features.

APPLICABLE STANDARD SPECIFICATIONS: NA

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: Ad hoc: Sandy Bowman, Victoria Leffel, Nayyar Siddiki

IMPACT ANALYSIS (attach report): NA

Submitted By: Jim Reilman for Nayyar Siddiki

Title: State Materials Engineer

Organization: Office of Materials & Tests

Phone Number: 317-522 9692

Date: 09/20/2021

FINAL DRAFT MINUTES

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? 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:

FINAL DRAFT MINUTES

REVISION TO SPECIAL PROVISIONS

xxx-x-xxx DISCOVERY OF KARST FEATURES WITHIN THE CONSTRUCTION LIMITS
(*proposed new)*

~~xxx~~*203*-x-xxx DISCOVERY OF KARST FEATURES WITHIN THE CONSTRUCTION LIMITS

(Adopted xx-xx-xx)

Karst features include, but are not limited to, voids in the ground, caves, sinking streams, springs, seeps, and sinkholes.

If a potential karst feature is discovered during construction, all work within 100 ~~feet~~ of the feature shall immediately stop and the Engineer shall be notified. The Engineer will suspend all work in this area ~~as per~~in accordance with 104.02(b). The Engineer will notify the Department's~~'~~ Geotechnical Engineering Division and the Ecology and Waterway Permitting Group.

The Department will provide the treatment measures to address the karst feature. The karst feature shall be protected from sedimentation runoff in accordance with 205. Work shall not resume in the area until directed by the Engineer.

FINAL DRAFT MINUTE DAY

COMMENTS AND ACTION

xxx-x-xxx DISCOVERY OF KARST FEATURES WITHIN THE CONSTRUCTION LIMITS

DISCUSSION:

Mr. Reilman introduced and presented this item stating that more information and direction is needed when karst features are discovered during construction. Mr. Siddiki mentioned that not everyone is aware of this, which promotes the need for this special provision.

Mr. Reilman proposed to develop a new RSP for the discovery of karst features. Minor editorial revisions are shown in these minutes.

Mr. Novak asked about the Basis of Use. Following a brief discussion, it was decided that it be as determined by the designer in accordance with the environmental documents.

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

Motion: Mr. Reilman Second: Mr. Koch Ayes: 10 Nays: 0 FHWA Approval: YES	Action: X Passed as Submitted ___ Passed as Revised ___ Withdrawn
Standard Specifications Sections referenced and/or affected: NONE	___ 2024 Standard Specifications (SS) ___ Revise Pay Items List
Recurring Special Provision references in: NONE	X Create RSP (No. 203-R-744) Effective: March 1, 2022 RSP Sunset Date:
Standard Drawing affected: NONE	___ Revise RSP (No.___) Effective: RSP Sunset Date:
Design Manual Sections affected: NONE	___ Standard Drawing Effective:
GIFE Sections cross-references: NONE	___ Create RPD (No. ___) Effective: X GIFE Update ___ Frequency Manual Update ___ SiteManager Update

FINAL DRAFT MINUTES

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The Specular gloss requirement is different in 909.02(d)3 and 909.02(e).

PROPOSED SOLUTION: For convenience, the requirements should be the same for both applications.

APPLICABLE STANDARD SPECIFICATIONS: 909.02(e)

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: Ad hoc: Kelly Cummins & Jim Reilman

IMPACT ANALYSIS (attach report): NA

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: Office of Materials & Tests

Phone Number: 317-522 9692

Date: 09/27/2021

FINAL DRAFT MINUTES

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? 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:

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 909 - PAINT AND LIQUID EPOXY
909.02(c) Polyurethane Finish Coat
909.02(e) Finish Coat for Weathering Steel

(Note: Proposed changes shown highlighted gray)

The Standard Specifications are revised as follows:

SECTION 909, BEGIN LINE 143, INSERT AS FOLLOWS:

(c) Polyurethane Finish Coat

Polyurethane finish coat shall be a two-component polyester or acrylic aliphatic polyurethane suitable for use as a finish coat over epoxy intermediate paint.

The mixed paint shall be in accordance with the following requirements.

Volatile organic compounds, ASTM D3960, max. .....336 g/L
Volume solids, ASTM D2697, min. 60%
Set-to-touch, ASTM D1640, 5 mils wet film thickness, min. .....30 minutes
Total solids ASTM D2369, min. 70%
Specular gloss, 60°, *10 ±0.5 mils wet film thickness*
on a tin coated steel panel, dried 48 h, ASTM D523, min. 75
Viscosity, ASTM D562, Krebs Units, max. 100
Contrast ratio, ASTM D2805, 5 ±0.5 mils wet film thickness,
dried 24 h on opacity chart 2A or 2C, min. 0.95
Dry hard, ASTM D1640, 5 mils wet film thickness, max. .....24 h

SECTION 909, BEGIN LINE 223, DELETE AND INSERT AS FOLLOWS:

(e) Finish Coat for Weathering Steel

The finish coat shall be an aliphatic polyurethane or a waterborne acrylic paint, and the dried paint film shall match color No. 20045 of SAE-AMS-STD-595. It shall be suitable for use as a finish coat over epoxy intermediate paint. The mixed paint shall be in accordance with the following requirements.

For aliphatic polyurethane paint:

Weight/volume, ASTM D1475, 25°C, min. .....1.200 kg/L
Total solids, % by weight, ASTM D2369, min. 60
Volatile Organic Compounds, ASTM D3960, max. .....336 g/L
Specular gloss, 60°, *10 ±0.5 mils wet film thickness*
on a tin coated steel panel, dried 48 h, ASTM D523, max. .....~~25~~*30*

For waterborne acrylic paint:

Weight/volume, ASTM D1475, 25°C, min. .....1.200 kg/L
Total solids, % by weight, ASTM D2369, min. 48
Volatile Organic Compounds, ASTM D3960, max. .....180 g/L
Specular gloss, 60°, *10 ±0.5 mils wet film thickness*
on a tin coated steel panel, dried 48 h, ASTM D523, max. .....~~25~~*30*

FINAL DRAFT NOTES

COMMENTS AND ACTION

909.02(c) Polyurethane Finish Coat
909.02(e) Finish Coat for Weathering Steel

DISCUSSION:
This item was introduced and presented by Mr. Reilman who stated that the Specular gloss requirement is different in 909.02(d)3 and 909.02(e).

Mr. Reilman proposed that, for consistency, the requirements should be the same for both applications. Additional revisions, submitted by Mr. Reilman, are as shown highlighted above, in green. Mr. Reilman revised his motion.

Basis for Use will be for all contracts with 619 or 711 pay items.

There was no further discussion, and this item passed as revised.

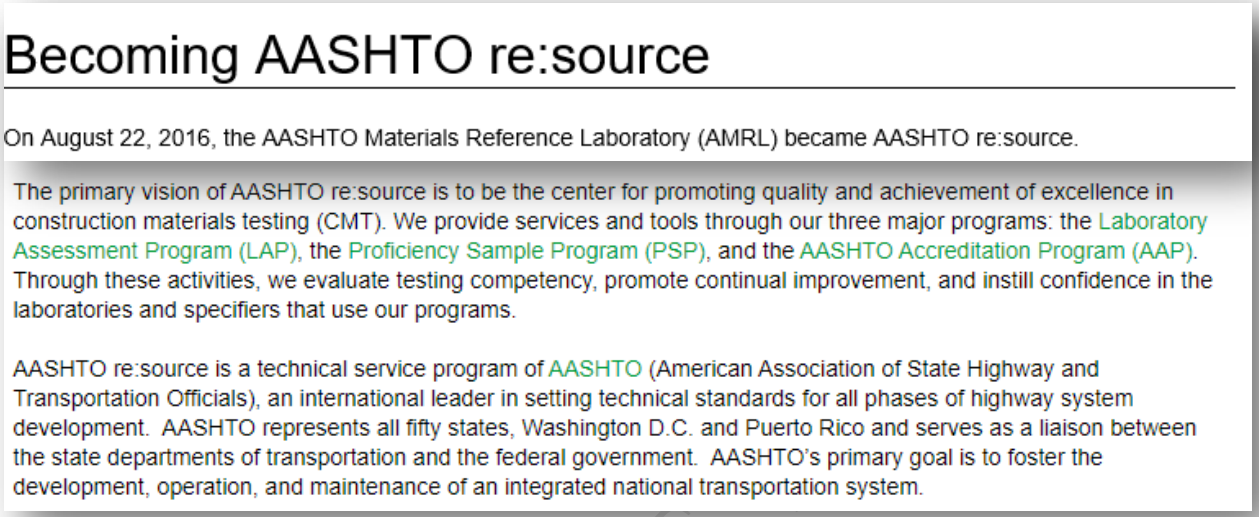
Motion: Mr. Reilman Second: Mr. Novak Ayes: 10 Nays: 0 FHWA Approval: YES	Action: ___ Passed as Submitted _X_ Passed as Revised ___ Withdrawn
Standard Specifications Sections referenced and/or affected: 909.02 pg. 1039, 1040	_X_ 2024 Standard Specifications (SS) ___ Revise Pay Items List
Recurring Special Provision references in: NONE	_X_ Create RSP (No. 909-M-063) Effective: March 1, 2022 RSP Sunset Date: 2024 SS
Standard Drawing affected: NONE	___ Revise RSP (No.___) Effective: RSP Sunset Date:
Design Manual Sections affected: NONE	___ Standard Drawing Effective:
GIFE Sections cross-references: NONE	___ Create RPD (No. ___) Effective:
	___ GIFE Update ___ Frequency Manual Update _X_ SiteManager Update

FINAL DRAFT MINUTES

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: There are outdated references to AASHTO AMRL.

from: www. aashtoresource.org/about-us



Becoming AASHTO re:source

On August 22, 2016, the AASHTO Materials Reference Laboratory (AMRL) became AASHTO re:source.

The primary vision of AASHTO re:source is to be the center for promoting quality and achievement of excellence in construction materials testing (CMT). We provide services and tools through our three major programs: the Laboratory Assessment Program (LAP), the Proficiency Sample Program (PSP), and the AASHTO Accreditation Program (AAP). Through these activities, we evaluate testing competency, promote continual improvement, and instill confidence in the laboratories and specifiers that use our programs.

AASHTO re:source is a technical service program of AASHTO (American Association of State Highway and Transportation Officials), an international leader in setting technical standards for all phases of highway system development. AASHTO represents all fifty states, Washington D.C. and Puerto Rico and serves as a liaison between the state departments of transportation and the federal government. AASHTO's primary goal is to foster the development, operation, and maintenance of an integrated national transportation system.

PROPOSED SOLUTION: Update affected sections to reflect the correct reference.

APPLICABLE STANDARD SPECIFICATIONS: 101, 307, 308, 416, 417
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

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: N/A

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman
Title: State Materials Engineer
Organization: INDOT
Phone Number: (317) 522-9692
Date: 9/29/21

FINAL DRAFT

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? 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:

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 101 - DEFINITIONS AND TERMS
101.01 Abbreviations
SECTION 307 - CEMENT STABILIZED FULL DEPTH RECLAMATION, FDR
307.05 Mix Design
SECTION 308 – ASPHALT EMULSION STABILIZED FULL DEPTH RECLAMATION, FDR
308.05 Mix Design
SECTION 416 - COLD IN-PLACE RECYCLING, CIR
416.05 Mix Design
SECTION 417 - COLD CENTRAL PLANT RECYCLING, CCPR
417.05 Mix Design

(Note: Proposed changes shown highlighted gray)

The Standard Specifications are revised as follows:

SECTION 101, BEGIN LINE 18, DELETE AS FOLLOWS:

AIA	American Institute of Architects
~~AMRL~~	~~AASHTO Materials Reference Laboratory~~
AMS	Aerospace Material Specifications

SECTION 307, BEGIN LINE 69, DELETE AND INSERT AS FOLLOWS:

The mix design and all associated testing shall be performed using samples of the existing pavement, base, and subgrade material from the project site representing the reclaiming depth. Sampling, testing, and the mix design shall be performed by a design laboratory that is AASHTO ~~Material Reference Laboratory, AMRL,~~*re:source* accredited for soil, aggregates, and concrete.

SECTION 308, BEGIN LINE 68, DELETE AND INSERT AS FOLLOWS:

308.05 Mix Design

The FDR mix design shall be in accordance with ITM 594 and comprised of existing RAP, existing base material, asphalt emulsion and if necessary, recycling additives. The mix design and all associated testing shall be performed using samples of the existing pavement and base material from the project site representing the reclaiming depth. Sampling, testing, and the mix design shall be performed by a design laboratory that is AASHTO ~~Material Reference Laboratory, AMRL,~~*re:source* accredited for soil, aggregates, HMA and asphalt emulsion.

SECTION 416, BEGIN LINE 65, DELETE AND INSERT AS FOLLOWS:

416.05 Mix Design

The CIR mix design shall be in accordance with ITM 592 and shall be comprised of existing RAP, asphalt emulsion and if necessary, recycling additives. The mix design and all associated testing shall be performed, using samples of the existing pavement material from the project site representing the recycling depth, by a design laboratory that is ~~AMRL~~*AASHTO re:source* accredited in HMA and asphalt emulsion. Additional mix designs shall be performed when the in-place material changes significantly in order to establish representative mixes for the entire job. The Contractor shall be responsible for obtaining all samples required to develop the mix design. One sample per lane mile of planned CIR shall be the minimum sampling frequency for mix design preparation.

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 101 - DEFINITIONS AND TERMS
101.01 Abbreviations
SECTION 307 - CEMENT STABILIZED FULL DEPTH RECLAMATION, FDR
307.05 Mix Design
SECTION 308 – ASPHALT EMULSION STABILIZED FULL DEPTH RECLAMATION, FDR
308.05 Mix Design
SECTION 416 - COLD IN-PLACE RECYCLING, CIR
416.05 Mix Design
SECTION 417 - COLD CENTRAL PLANT RECYCLING, CCPR
417.05 Mix Design

SECTION 417, BEGIN LINE 64, DELETE AND INSERT AS FOLLOWS:

417.05 Mix Design

CCPR mix designs shall be in accordance with ITM 592 and shall be comprised of existing RAP, asphalt emulsion and recycling additives, if necessary. The mix design and all associated testing shall be performed using samples of each proposed material. RAP samples shall either be collected from the existing pavement at the project site representing the milling depth or from the RAP stockpile to be used during construction. The mix design shall be completed by a design laboratory that is ~~AMRL~~*AASHTO re:source* accredited in HMA and asphalt emulsion. Additional mix designs shall be performed when the proposed material changes significantly in order to establish representative mixes for the entire job. The Contractor shall be responsible for obtaining all samples required to develop the mix design. One sample per lane mile of planned CCPR shall be the minimum sampling frequency for mix design preparation.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

101.01 Abbreviations
307.05 Mix Design
308.05 Mix Design
416.05 Mix Design
417.05 Mix Design

DISCUSSION:
Mr. Reilman introduced and presented this item stating that there are outdated references to AASHTO AMRL.

Mr. Reilman proposed to update the affected standard specification sections to reflect the correct reference, as shown above.

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

Motion: Mr. Reilman Second: Mr. Novak Ayes: 10 Nays: 0 FHWA Approval: YES	Action: X Passed as Submitted ___ Passed as Revised ___ Withdrawn
Standard Specifications Sections referenced and/or affected: 101 pg 1; 307 pg 281; 308 pg 290; 416 pg 385; 417 pg 395. Recurring Special Provision references in: NONE Standard Drawing affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	X 2024 Standard Specifications (SS) ___ Revise Pay Items List ___ Create RSP (No.___) Effective: RSP Sunset Date: ___ Revise RSP (No.___) Effective: RSP Sunset Date: ___ Standard Drawing Effective: ___ Create RPD (No. ___) Effective: ___ GIFE Update ___ Frequency Manual Update ___ SiteManager Update

FINAL DRAFT MINUTES

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO SPECIAL PROVISIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Painting requirements for posts are needed as well as there are other minor references that need updating.

PROPOSED SOLUTION: Provide clear information on painting posts and incorporate updates as shown.

APPLICABLE STANDARD SPECIFICATIONS: none

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: 620-R-483

PAY ITEMS AFFECTED: None

APPLICABLE SUB-COMMITTEE ENDORSEMENT: None

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: unchanged from what it currently is

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: INDOT

Phone Number: (317) 522-9692

Date: 9/27/21

FINAL DRAFT MINUTES

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? No
Will this proposal improve:

- Construction costs? Yes
- Construction time? Yes
- 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? NA
- 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? 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:

FINAL DRAFT MINUTES

REVISION TO SPECIAL PROVISIONS

620-R-483 SOUND BARRIER SYSTEMS

(Note: Proposed changes shown highlighted gray)

620-R-483 SOUND BARRIER SYSTEMS

(Revised 04-25-21)

The Standard Specifications are revised as follows:

SECTION 620, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 620 – ~~BLANK~~ *SOUND BARRIER SYSTEMS*

620.01 Description

This work shall consist of furnishing materials and placement of a sound barrier system and a coping in accordance with 105.03.

620.02 General Design Requirements

The sound barrier system shall be either wall mounted, bridge mounted or ground mounted, and shall consist of wall attachments or post foundations, vertical support posts, and sound barrier panels. For the purposes of this section, "panel" is defined as the reflective or absorptive component mounted between the posts, piers or columns.

All appurtenances behind, in front of, under, over, mounted upon, or passing through the wall, including drainage structures, fire hydrant access openings, highway signage, emergency access openings, utilities or other appurtenances shown on the plans, shall be accounted for in the design of the sound barrier system.

If the sound barrier manufacturer needs additional information to complete the design, the Contractor shall be responsible for obtaining such information. The Contractor shall be responsible for field verifying wall locations in areas of all existing traffic poles, utility poles, roadway lighting poles, drainage pipes, underdrain outlets, and bridge expansion joints and all other locations where the sound barrier system may conflict with existing conditions. The wall shall be realigned and designed to box out openings where conflicts occur with existing light poles and traffic control devices. The Contractor shall establish and account for the existing locations of all underdrain outlets, drainage pipes, and bridge expansion joints in the final wall plans. If the Contractor discovers that overhead utilities will be within 6 ft of the sound barrier, the Contractor shall notify the Engineer in accordance with 104.02 and 105.16.

The sound barrier wall design shall follow the general dimensions of the wall envelope as shown on the plans. The top of the sound barrier shall be at or above the acoustical profile line shown, unless noted. Changes in elevation shall be accomplished by stepping the sound barrier sections at the vertical support posts. Steps shall not exceed 3 ft vertically unless otherwise specified in the plans. Barrier heights shall be selected in groups of no fewer than three successive panels, except where barriers are to be stepped down for barrier termination. The ends of the sound barrier shall be tapered or stepped down to a height of 8 ft within the sound barrier end transitions or as shown on the plans. The bottom of ground mounted sound barrier shall be embedded a minimum of 6 in. into the ground. The bottom of wall mounted or bridge mounted

FINAL DRAFT MINUTES

sound barrier shall follow within 3 in. a profile 6 in. below the top of the existing concrete barrier railing or wall.

Caisson footings, vertical support posts, and connections for ground mounted sound barrier shall be designed as specified by the manufacturer, with minimum post spacing of 15 ft. Exceptions will be allowed due to site-specific conditions such as access doors, drainage requirements or utility accommodations. These shall be reviewed and approved through the working drawing process. The foundation design shall use the COM 624P or LPILE Program. The foundation design shall be based on the soil model shown on the plans based on cyclic loading and shall consider the effects of a sloping ground surface. The post deflection shall be limited to L/100, measured from the top of the caisson to the top of the wall. The foundation depth shall not be less than 7.5 ft and shall not exceed the depth of the soil model except where the Contractor elects to drill deeper borings to extend the model. The foundation diameter shall not be less than 18 in. and shall not be less than 6 in. larger than the diagonal dimension of the post being used. The foundation shall be designed by the sound barrier manufacturer. Vertical support posts shall be attached to caisson footings by means of anchor bolts, or embedded wide flange steel posts.

A sound barrier system shall be selected for the type specified from those which are on the QPL of Sound Barrier Systems. The materials used in the fabrication of the sound barrier system shall be the same as those used for qualification of the sound barrier system.

The structural design of the sound barrier system shall be in accordance with the AASHTO ~~Guide~~LRFD Bridge Design Specifications ~~for Structural Design of Sound Barriers~~, except as otherwise directed. ~~The sound barrier system shall be designed to withstand wind pressure as shown on the plans, as applied perpendicular to the barrier, in each direction.~~

The post spacing for sound barriers mounted on any structure or safety barrier shall be limited to a distance that does not overstress the ~~existing~~ structure or safety barrier. The spacing shall also be limited to a distance that allows the sound barrier to conform to the existing horizontal and vertical alignments. The allowable loads on a structure or barrier ~~will~~shall be as shown on the plans. ~~If no allowable loads are shown, the Contractor shall contact the project designer for this information.~~If no allowable loads are shown, the allowable loads on a sound barrier shall be in accordance with the AASHTO LRFD Bridge Design Specifications.

When sound barriers are to be installed on a bridge structure, design calculations shall be submitted to the Engineer that demonstrate structure loading limits~~, as shown on the plans,~~ will not be exceeded.

All materials shall have a minimum predicted maintenance free structural and acoustical lifespan of 20 years. All colorings and coatings shall have a minimum predicted maintenance free lifespan of 10 years.

The types of acoustic sound barrier systems that are accepted are as follows:

Type 1, single sided absorptive, sound barrier systems and their components shall be

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designed to achieve a sound transmission loss equal to or greater than 20 decibels at all frequencies when tested in accordance with ASTM E90. Type 1 sound barrier systems shall be designed to have a minimum noise reduction coefficient of 0.70 on the roadway side. Type 1 sound barrier systems shall be tested in accordance with ASTM C423. Material samples for this test shall be provided with the coating applied, so as to determine that the color coating does not inhibit the acoustic performance. The sample shall be mounted in accordance with ASTM E795, type A.

Type 2, double-sided absorptive, sound barrier systems and their components shall be designed to achieve a sound transmission loss equal to or greater than 20 decibels at all frequencies when tested in accordance with ASTM E90. Type 2 sound barrier systems shall be designed to have a minimum noise reduction coefficient of 0.70 on the roadway and non-roadway sides. Type 2 sound barrier systems shall be tested in accordance with ASTM C423. To determine that the color coating does not inhibit the acoustic performance, material samples for this test shall be provided with the coating applied. The sample shall be mounted in accordance with ASTM E795, type A.

Type 3, reflective, sound barrier systems and their components shall be designed to achieve a sound transmission loss equal to or greater than 20 decibels at all frequencies when tested in accordance with ASTM E90.

A type 2 barrier system may be substituted for a type 1 barrier system at the Contractor's discretion. A type 1 or a type 2 barrier system may be substituted, with written approval, for a type 3 barrier system.

All molded finishes shall have a 1 in. minimum relief. All rolled finishes shall have a minimum 3/4 in. relief. Relief is defined by material that is provided in excess of the minimum wall thickness required to meet the Noise Reduction Coefficient required for the absorptive surfaces. Fluted finishes shall be coped at each end to avoid cracking.

Corrugations, ribs, or battens on sound barrier panels shall be oriented vertically when erected. The sound barrier shall be designed to prevent entrapment and ponding of water. The sound barrier shall not be designed with openings promoting the perching or nesting of birds, or the collection of dirt, debris, or water. The sound barrier shall not be designed with hand holds or grips promoting scaling or climbing of the system.

When shown on the plans, ~~F~~fire hydrant access points shall be included in the sound barrier and designed with additional reinforcement or bracing and protective coating around the opening as necessary to maintain structural integrity.

Closure plates shall be provided where new sound barrier is constructed adjacent to existing sound barrier. Where bridge mounted walls cross over expansion joints, expansion closure plates shall be used. The wall manufacturer shall provide expansion closure plates for each expansion joint unless directed otherwise. The minimum thickness of closure plates shall be 3/16 in.

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The calculations for sound barriers which also retain earth ~~must~~shall show that the walls are adequate for earth retention. The earth retention areas shall be shown on the plans. The exposed face of the sound barrier earth retaining panel ~~will~~shall match the adjacent panel's color and texture.

(a) Precast Panel Design Criteria

Base-plated or embedded reinforced precast concrete posts may be substituted for wide flanged steel posts with the approval of the Department. Proposed substitutions for wide flanged steel posts shall be shown on working drawings submitted for approval.

Support posts ~~must~~shall match the adjoining wall in color unless directed by the Engineer. Embedded reinforced precast concrete posts ~~must~~shall ~~-~~also match the adjoining wall in texture. Sound barrier systems utilizing stacked panels shall have ship-lapped or tongue and groove horizontal joints or other approved design which blocks the passage of light.

(b) Masonry Design Criteria

Reinforced masonry vertical support posts shall be faced to match the adjoining wall in color and texture unless directed by the Engineer.

Steel support posts shall match the adjoining wall in color unless directed by the Engineer.

620.03 Submittals

The Contractor shall submit a minimum of three alternative textured finishes for the wall to the Engineer. These shall include the following colors:

(a) light gray (SAE-AMS-STD-595, color No. 36492),
(b) light brown (SAE-AMS-STD-595, color No. 30450),
(c) light tan (SAE-AMS-STD-595, color No. 37769).

The colors will be presented to the public for their input in accordance with 620.05. The final wall pattern and color will be approved before production of the wall panels may begin.

The Contractor shall submit design calculations in accordance with 105.02. Calculations for sound barriers on bridge structures shall include an analysis of the bridge structure that demonstrates the additional loads imposed by the sound barrier, ~~including dead load and wind load~~in accordance with the AASHTO LRFD Bridge Design Specifications, will not exceed the structural capacity of the bridge. The Contractor shall submit working drawings in accordance with 105.02 after design calculations are approved and before beginning wall construction operations. Design calculations and working drawings shall meet the following minimum requirements:

(a) Design calculations shall include all structural design calculations and vertical support post design calculations.

FINAL DRAFT MINUTES

(b) Design calculations for bridge mounted installations shall include the design unit weight and mass of the sound barrier and support systems.

(c) Design calculations for bridge mounted installations shall demonstrate that the structural loading limits of the structure~~, as shown on the plans,~~ will not be exceeded.

(d) Working drawings shall include all details, dimensions, quantities, and cross sections necessary to construct the sound barrier systems and shall include but not be limited to the following:

1. A plan and elevation sheet or sheets for each sound barrier systems location.

2. An elevation view of the sound barrier systems which shall include the elevation at the top of the wall at all horizontal and vertical break points at least every 50 ft along the face of the wall.

3. A plan view of the wall that indicates the offsets from the construction centerline to the face of the wall at all changes in horizontal alignment. A plan view and elevation view which detail the placing position.

4. A typical cross section or cross sections showing elevation relationship between ground conditions and the sound barrier systems locations.

5. All general notes required for constructing the wall.

6. Each sheet shall show the complete project identification number.

7. All horizontal and vertical curve data affecting the wall.

8. A listing of the summary of quantities on the elevation sheet for each wall.

9. A list of manufacturer's recommendations with respect to maintenance, including repair of graffiti and other damages.

10. Typical sections, connection details, and elevation views for bridge mounted installations.

(e) Working drawings shall include a detailed plan of aesthetic treatment for the entire sound barrier system, manufacturer-recommended installation requirements and sequence of construction, manufacturer-recommended

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repair requirements for damage caused by vandalism or graffiti prior to final acceptance, and a detailed bill of materials.

MATERIALS

620.04 Materials

Materials shall be in accordance with the following:

Cast-in-Place Portland Cement Concrete, Class A	*702*
Coarse Aggregate, Class A or Higher, Size No. 91	*904.03*
Coarse Aggregate, Class D or Higher, Size No. ~~5~~2	*904.03*
~~Coarse Aggregate, Class D or Higher, Size No. 8~~	*~~904.03~~*
Concrete Masonry Units	*905.06*
Fine Aggregate, Size No. 23	*904.02*
Joint Mortar	*901.08, 907.12*
Paint	*909.02*
Portland Cement	*901.01(b)*
Precast Concrete	*707*
Reinforcing Bars	*910.01*
Structural Aluminum Posts	*910.14(d)*
Structural Steel	*910*
Water	*913.01*

~~Steel structural components shall be in accordance with ASTM A36.~~ Structural steel components shall be hot dipped galvanized in accordance with ASTM A123, coating grade 100 or painted in accordance with 619.11 and 619.12 with the exception that the finish coat shall be a waterborne acrylic paint in one of the colors listed below and otherwise in accordance with 909.02(e). ~~Exposed surfaces of galvanized components shall be coated in accordance with 619.09(b).~~ The galvanized surfaces shall be prepared using a light brush-off blast cleaning in accordance with SSPC-SP16. The surface profile shall be 15 to 30 microns in accordance with ASTM D4417, prior to painting. Exposed surfaces of galvanized components shall be painted in accordance with 619.09(b).

The color of the dried paint film shall match the color of the sound barrier panels

(a) light gray (SAE-AMS-STD-595, color No. 26492),
(b) light brown (SAE-AMS-STD-595, color No. 20450),
(c) light tan (SAE-AMS-STD-595, color No. 27769),

unless otherwise shown on the plans.

All structural steel hardware shall be in accordance with ASTM F3125, grade A 325 and shall be hot dipped galvanized in accordance with ASTM ~~A153~~F2329 or shall be made of nonferrous material or stainless steel. All other non-structural fastening devices shall be made of nonferrous metal or stainless steel. Plastic members shall be connected with either screws or bolts.

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Aluminum members shall be connected with stainless steel fasteners. Anchor bolts shall be of the size shown with a minimum of 10 in. of 7NC threads on the upper end. Anchor bolts shall be in accordance with ASTM F1554. The threads, nuts, and washers shall be galvanized in accordance with ASTM ~~A153~~F2329 or be mechanically galvanized and conform to the coating thickness, adherence, and quality requirements of ASTM ~~A153~~B695, Class 55~~, where required~~.

Solid portland cement concrete or composite concrete shall be coated or contain an integral pigment, as specified by the manufacturer, and shall meet the specified color requirements. Integral pigment shall be certified to be in accordance with ASTM C979. The coating shall be tested for accelerated weathering in accordance with ASTM D6695. The test panel substrate shall be of the same portland cement concrete or composite concrete material used in the sound barrier system component. Cured coating or integral pigment shall not contain heavy metals that exceed the requirements of 40 CFR 261.24.

Concrete class A for the coping shall be in accordance with the applicable requirements of 702, except the coarse aggregate for pre-cast units may be size No. 91 in accordance with 904. Reinforcing steel in the coping shall be in accordance with the applicable requirements of 703. The coping may be precast or cast-in-place.

Masonry block shall be tested in accordance with ASTM C90 and as follows:

(a) The average compressive strength of three units shall be a minimum of 3,000 psi with no single unit being less than 2,700 psi.

(b) The units shall be tested for water absorption in accordance with ASTM C140. The maximum absorption shall be 7%.

(c) Joint reinforcement for masonry block systems shall be in accordance with ASTM A951.

(d) Mortar for masonry block systems shall be in accordance with ASTM C270; type S, Table 2 proportion requirements.

(e) Portland cement-lime or mortar cement may be used. Masonry cement shall not be used. Grout for masonry shall be in accordance with ASTM C476.

(f) Aggregate for masonry grout shall be in accordance with ASTM C404.

Masonry blocks shall be coated or contain an integral pigment, as specified by the manufacturer, and shall meet the specified color requirements. The integral pigment shall be certified to be in accordance with ASTM C979. The coating shall be tested for accelerated weathering in accordance with ASTM D6695. The test panel substrate shall be of the same masonry blocks used in the sound barrier system component. Cured coating or integral pigment shall not contain heavy metals that exceed the requirements of 40 CFR 261.24.

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Certifications shall be provided for each of the materials to be supplied for the sound barrier system. A type C certification in accordance with 916 shall be provided for the sound barrier materials, unless otherwise noted. A type A certification in accordance with 916 shall be provided for compressive strength and absorption test values for masonry block, sampled and tested in accordance with ASTM C140. All test reports required to substantiate compliance shall be in accordance with the test method/material requirements cited herein. A Department approved laboratory shall conduct the testing.

CONSTRUCTION REQUIREMENTS

620.05 Information for Public Input

Colored flyers with appropriate graphics shall be developed by the Contractor and furnished to the Department.

Wall color photos shall be provided for each color in accordance with 620.03 along with photos of each available texture alternative. A minimum of three wall samples of the non-roadway side textures shall be provided. All samples of the wall textures shall be a minimum of 3 sq ft in area, with a distinguishable pattern.

Based on comments received, the Department will select the final finishes and colors for each wall. Each wall shall have the selected color used throughout the entire wall on the roadway and the non-roadway sides. The Contractor shall coordinate all sound barrier wall issues with the Engineer prior to ordering any materials.

620.06 Construction Requirements

Sound barrier components shall not be stored on the right-of-way unless written permission is given by the Department. Requests for permission to store materials on the right-of-way will not be accepted until after the contract has been awarded.

The sound barrier supplier shall provide technical instruction, guidance in preconstruction activities including the preconstruction conference, and on-site technical assistance during construction. The Contractor is responsible for following installing instructions from the supplier unless otherwise directed in writing by the Engineer.

Clearing and grading shall be in accordance with 201 and 202 as required.

The foundations for ground mounted sound barrier systems shall be constructed as shown on the working drawings. Holes for footings shall be drained of free water prior to installing any components. Placing concrete shall be in accordance with 702.

The integrity of the sound barrier system continuity shall be such that no light will be visible through any vertical joint between sound barrier panel and vertical support post, through any horizontal joint between sound barrier panels, between the bottom of any ground mounted sound barrier and the adjacent ground, or between the bottom of any wall mounted sound barrier

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and the top of the adjacent wall. Exceptions may be allowed as necessary for drainage as indicated on the plans.

Sound barrier wall posts shall be placed vertical with a tolerance of 1/2 in. per 10 ft on each axis. Sound barrier wall posts shall be placed at the distance indicated on the plans with a tolerance of 1 in. from centerline to centerline. Sound barrier wall posts shall be aligned to within 1 in. when measured from a straight line from the two adjacent posts. Sound barrier wall posts shall be at the height as shown on the plans. The posts shall project above the top sound barrier wall panel by 1 1/2 in. ±1/2 in. The top of the sound barrier wall shall be at or above the acoustical profile. Steel posts embedded in concrete shall have bottom cover of 8 in. ±4 in. Field-cut steel posts shall be primed with an organic zinc primer and painted in accordance with 619.

After post erection the area shall be backfilled to within 6 in. of the required final grade or as specified in the plans. The aggregate pad shall be placed as required. Positive drainage of the work area shall be maintained.

An aggregate pad of No. ~~5~~2 ~~or No. 8~~ coarse aggregate shall be included that extends 4 in. outside of each side of the panel and 4 in. below the bottom of the panel.

The sound barrier system and sound barrier system components shall be maintained until final acceptance. Elements of the sound barrier system that are damaged or destroyed, including due to graffiti or other vandalism, shall be repaired or replaced as directed by the Engineer. Repairs and repainting shall be conducted in accordance with the manufacturer's guidance and 620.02.

After construction of the sound barrier system the site shall be restored to the original condition with grading, seeding and sodding in accordance with the plans.

(a) Construction Requirements for Precast Panels

Sound barrier wall panels shall be placed in accordance with the plans and centered between adjacent posts. The sound barrier wall panels shall be of sufficient length to span the entire length between posts less 1/2 the width of the smallest retaining flange.

Panels may be field-cut to facilitate erection in accordance with the manufacturer's recommendation. Field-cut panels shall be cut to have the least impact on any patterns present in the textured or colored finish. Field-cut panels or other field cut components shall be painted in accordance with the manufacturer's guidance.

(b) Construction Requirements for Masonry

All grouting and reinforcing work for masonry block systems shall be performed by masonry craftworkers holding current International Masonry Institute, IMI, Grouting and Reinforcing Certification. Proof of certification shall be submitted prior to the beginning of work.

620.07 Acceptance

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The Contractor shall submit 2 ft by 2 ft sound barrier panel samples or five masonry block units in the colors and textures proposed and a 2 ft sample of painted support post, prior to the approval of the working plans. Once approved, these samples will be used as a control sample to verify delivered products meet the aesthetic requirements. The sound barrier system will be accepted for color based on a visual comparison between the control sample and the color of the wall as constructed in place.

The sound barrier system will be accepted for quality based on a visual inspection of the components of the system by the Engineer. The sound barrier system shall be subject to rejection due to failure to be in accordance with the requirements specified herein. In addition, the following defects may also be sufficient cause for rejection:

(a) Defects that indicate imperfect fabrication

(b) Defects in physical appearance such as cracks, checks, dents, scrapes, chips, stains, or color variations.

The Engineer will determine whether a defective sound barrier shall be repaired or shall be cause for rejection. Repair, if permitted, shall be completed by the Contractor and will be approved by the Engineer.

620.08 Method of Measurement

Sound barrier panels and sound barrier erection will be measured by the square foot of wall surface area. The pay quantity will be based on the limits of the sound barrier envelope as shown on the plans. The vertical and horizontal distance for each section of the wall defines the sound barrier envelope. The vertical distance extends from the elevation at the bottom of the lowest panel to the elevation of the acoustic profile for each section of the wall. The horizontal distance extends from centerline to centerline of adjacent posts for each section of wall. ~~Coping will not be measured.~~

Coping will not be measured. Brackets required for the attachment of signs to the sound barrier will not be measured.

620.09 Basis of Payment

Wall mounted sound barrier panels, bridge mounted sound barrier panels, ground mounted sound barrier panels, wall mounted sound barrier erection, bridge mounted sound barrier erection, and ground mounted sound barrier erection will be paid for at the contract unit price per square foot.

The Department may choose to acquire additional precast sound wall panels or masonry blocks in the colors and patterns selected on the project. A maximum of 12 panels of each type would be paid for at the invoice cost of the panels and shall be delivered to the District Office. If the Department elects to acquire additional precast sound wall panels or masonry blocks, the Contractor shall provide the material as extra work in accordance with 104.03.

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REVISION TO SPECIAL PROVISIONS

620-R-483 SOUND BARRIER SYSTEMS

Partial payment will be made for sound barrier panels stockpiled on the project site or at the Contractor's approved storage location within the State of Indiana. Partial payment will be based on the delivered cost of the sound barrier panels, as verified by invoices that include freight charges. The Contractor shall furnish the invoices and all required certifications. Partial payment will not exceed 75% of the contract unit price for bridge mounted, ground mounted or wall mounted sound barrier panels. Prior to authorizing the partial payment, verification will be obtained that all required inspection has been made and that the panels are acceptable.

Payment for all costs associated with the collection of all information not shown on the plans, revisions due to conflicts, sound barrier system details, all additions or incidentals necessary to provide complete plans, any redesigning of plans or details, the public information meetings and public information planning and presentations will be paid for at the contract lump sum price for sound barrier design and layout.

Payment will be made under:

Pay Item	***Pay Unit Symbol***
Sound Barrier Design and Layout	*LS*
Sound Barrier Erection, _____, _____ mounting type, type***	*SFT*
Sound Barrier Panels, _____, _____ mounting type, type***	*SFT*

* *Type of sound barrier system: (BM) bridge mounted, (GM) ground mounted, (WM) wall mounted*

** *Type 1, 2, or 3.*

The cost of sound barrier panel materials including vertical support posts, coping, aggregate pad, ~~mortar,~~ grout and joint reinforcement for masonry block, fasteners, closures, expansion plates, openings and incidentals shall be included in the cost of the sound barrier panels for the type of sound barrier panels.

The cost of designing, furnishing, and installing brackets for signs that attach to the sound barrier shall be included in the cost of the design and erection of the sound barrier panels.

Substituting type 2 wall for type 1 wall or substituting type 1 or type 2 wall for type 3 wall shall be at no cost to the Department.

The cost of the selected texture and selected color shall be included in the cost of the sound barrier panel for the type of sound barrier panels.

The cost of all labor and materials to prepare and erect the sound barrier shall be included in the cost of sound barrier erection for the type of sound barrier panels.

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REVISION TO SPECIAL PROVISIONS

620-R-483 SOUND BARRIER SYSTEMS

The cost of foundation preparation and construction with associated work shall be included in the cost of sound barrier, ground mounted.

The cost of removal or construction of concrete barrier walls is not included in the cost of sound barrier erection, wall mounted.

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COMMENTS AND ACTION

620-R-483 SOUND BARRIER SYSTEMS

DISCUSSION:

This item was introduced and presented by Mr. Reilman who explained that painting requirements for posts are needed, as well as other minor references that need updating.

Mr. Reilman proposed to incorporate the above shown revisions in order to provide clear information on painting posts, and revise other minor references as shown. Minor revisions are as shown.

Mr. Reilman revised his motion.

There was no further discussion, and this item passed as revised.

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Motion: Mr. Reilman Second: Mr. White Ayes: 10 Nays: 0 FHWA Approval: YES	Action: ___ Passed as Submitted _X_ Passed as Revised ___ Withdrawn
Standard Specifications Sections referenced and/or affected: SECTION 620 - BLANK, pg. 562. Recurring Special Provision references in: 620-R-483 SOUND BARRIER SYSTEMS Standard Drawing affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	___ 2024 Standard Specifications (SS) ___ Revise Pay Items List ___ Create RSP (No.__) Effective: RSP Sunset Date: _X_ Revise RSP (No. 620-R-483) Effective: March 1, 2022 RSP Sunset Date: ___ Standard Drawing Effective: ___ Create RPD (No. __) Effective: ___ GIFE Update ___ Frequency Manual Update ___ SiteManager Update

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: There is confusion on what pipes are allowed for underdrain outlet pipe.

PROPOSED SOLUTION: Harmonize the 715 and 907 sections that affect underdrain outlet pipes as shown in the attachment.

APPLICABLE STANDARD SPECIFICATIONS: 715, 718, 719, 907

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: create new RSP

PAY ITEMS AFFECTED: None

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc: Tim Buckner, Nathan Butts, Doug Corey, Daniel Jones, Mike Pelham, Jim Reilman, Kurt Sommer, Bill Tompkins

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: Any contract with 715-05053 or 715-05435, or 719 pay items

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: INDOT

Phone Number: (317) 522-9692

Date: 9/30/21

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Mr. Reilman
Date: 10/21/21

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? Yes
- 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? No

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

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922.19 Conduit and Fittings

(Note: Proposed changes shown highlighted gray)

The Standard Specifications are revised as follows:

SECTION 101, BEGIN LINE 50, INSERT AS FOLLOWS:

DBE	disadvantaged business enterprise
DCP	Dynamic Cone Penetrometer
DMF	design mix formula
DR	*dimension ratio*
DSR	dynamic shear rheometer

SECTION 101, BEGIN LINE 110, INSERT AS FOLLOWS:

PG	performance grade asphalt
POTW	Publicly Owned Treatment Works
PSM	*plastic sewer main*
PVC	polyvinyl chloride

SECTION 101, BEGIN LINE 125, INSERT AS FOLLOWS:

SAE	Society of Automotive Engineers
SC	slow curing asphalt
SCA	slow curing asphalt with additive
SDR	*standard dimension ratio*
SDS	Safety Data Sheet
SF	steel furnace slag

SECTION 715, BEGIN LINE 140, DELETE AND INSERT AS FOLLOWS:

(i) Underdrain Outlet Pipe

Pipe *for underdrain outlets and drain tile outlets* shall be *PSM PVC pipe,* profile wall PVC pipe*, smooth wall polyethylene pipe*, or smooth wall *PVC* pipe ~~for outlets~~ from the QPL of Thermoplastic Pipe and Liner Pipe Sources in accordance with 907.16 *and 907.24. Schedule 40 PVC pipe in accordance with 907.24 is also allowable*.

SECTION 718, BEGIN LINE 9, DELETE AND INSERT AS FOLLOWS:

718.02 Materials

Materials shall be in accordance with the following:

Coarse Aggregate, Class E or Higher, Size No. 8 or 9.....904.03

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Concrete, Class A	702
Geotextile for Underdrains	918.02(b)
Reinforcing Bars	910.01
Sod, including Nursery Sod	621
Structure Backfill	904.05
Underdrain Outlet Pipe	~~*~~*715.02(i)*
Underdrain Pipe	715.02(d)

~~* All thermoplastic pipes shall be from the QPL of Thermoplastic Pipe and Liner Pipe Sources in accordance with 907.16.~~

SECTION 719, BEGIN LINE 8, DELETE AND INSERT AS FOLLOWS:

719.02 Materials

Materials shall be in accordance with the following:

Concrete, Class A	702
~~Drain Tile Terminal Pipe~~	~~907.24~~
Flowable Backfill	213
Reinforcing Bars	910.01
Riprap	616.02
Structure Backfill	904
Rodent Screen	718.02

Drain tile materials shall be in accordance with 715.02(d). *Drain tile terminal pipe shall be underdrain outlet pipe in accordance with 715.02(i).*

SECTION 907, BEGIN LINE 218, DELETE AND INSERT AS FOLLOWS:

907.16 Thermoplastic Pipe Requirements

A QPL of thermoplastic pipe and liner pipe will be maintained by the Department. The list will specify the manufacturer and thermoplastic pipe designation. All of these materials shall comply with the applicable AASHTO or ASTM requirements listed in the following table and will only be accepted from qualified manufacturers. The manufacturer is defined as the plant which produces the thermoplastic pipe. The manufacturer shall become qualified by establishing a history of satisfactory quality control of these materials as evidenced by the test results performed by the manufacturer's testing laboratory.

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Summary of Thermoplastic Pipe Specification Requirements				
Pipe Material	Standard Specification	AASHTO	ASTM	Manufacturer Requirement
Corrugated Polyethylene Drainage Tubing	907.17(a)	M 252		ITM 806, Procedure O
Corrugated Polyethylene Pipe	907.17(b)	M 294*		ITM 806, Procedure O
Corrugated Polypropylene Pipe	907.19	M 330		ITM 806, Procedure O
Perforated PVC Semicircular Pipe	907.18		D3034	ITM 806, Procedure A
Profile Wall HDPE Liner Pipe	*907.25(b)*		*F894*	*ITM 806, Procedure A or 916, Type A Certification*
Profile Wall PVC Liner Pipe	*907.25(c)*		*F949*	*ITM 806, Procedure A or 916, Type A Certification*
Profile Wall PVC Pipe	907.22 *907.24(c)*	M 304		ITM 806, Procedure O
Profile Wall Polyethylene Pipe	907.20		F894	ITM 806, Procedure A
Schedule 40 PVC Pipe	907.24(b)		D1785 or D2665	916, Type C Cert*-ification*
Smooth Wall Polyethylene Pipe	907.21 *907.24(d)*		F714	ITM 806, Procedure A
Smooth Wall PVC Pipe	907.23 *907.24(e)*	M 278	F679	ITM 806, Procedure A

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Solid Wall HDPE Liner Pipe	*907.25(a)*		*F714*	*ITM 806, Procedure Q or 916, Type A Certification*
Type PSM PVC Pipe and Fittings	907.24(a)		D3034	ITM 806, Procedure A
* Pipe in accordance with AASHTO M 294 shall be manufactured with virgin materials.				

907.17 Corrugated Polyethylene Drainage Tubing and Pipe

(a) Corrugated Polyethylene Tubing

Tubing and fittings shall be in accordance with AASHTO M 252. Perforations shall be required for tubing used as a longitudinal underdrain. ~~Qualification requirements for the manufacturers shall be in accordance with~~*Pipe may be added to the QPL by completing the requirements of* ITM 806, Procedure O.

(b) Corrugated Polyethylene Pipe

Pipe and fittings shall be in accordance with AASHTO M 294. Pipe shall be manufactured with virgin materials~~,~~ and be marked with the code "V". Pipe shall not be manufactured with recycled materials. ~~Qualification requirements for the manufacturers shall be in accordance with~~*Pipe may be added to the QPL by completing the requirements of* ITM 806, Procedure O.

907.18 Perforated PVC Semicircular Pipe

Perforated PVC semicircular pipe may be used as an alternate to 6 in. or less diameter pipe or tile. Pipe shall be in accordance with ASTM D3034, ~~S~~DR 35. This semicircular pipe shall have a smooth top and a smooth, semicircular bottom, nominally 4 5/8 in. in diameter, with perforations uniformly distributed along the top of the bottom section in accordance with AASHTO M 252 perforation requirements. The top section shall extend a minimum of 1/2 in. beyond the top of the semicircular section. The top section shall be approximately 6 3/8 in. wide including the sloping overhangs on each side. ~~Qualification requirements for the manufacturers shall be in accordance with~~*Pipe may be added to the QPL by completing the requirements of* ITM 806, Procedure A.

907.19 Corrugated Polypropylene Pipe

Pipe and fittings shall be in accordance with AASHTO M 330. ~~Qualification requirements~~

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~~for the manufacturers shall be in accordance with~~*Pipe may be added to the QPL by completing the requirements of* ITM 806, Procedure O.

907.20 Profile Wall Polyethylene Pipe

Pipe and fittings shall be either closed profile or ribbed open profile in accordance with ASTM F894. ~~Qualification requirements for the manufacturers shall be in accordance with~~*Pipe may be added to the QPL by completing the requirements of* ITM 806, Procedure A.

907.21 Smooth Wall Polyethylene Pipe

Pipe shall be in accordance with ASTM F714 for nominal diameters of 39 in. or less. Fittings shall be in accordance with ASTM F1055. The pipe sizes shall be in accordance with ISO sizing system. The pipe ~~dimension ratio~~*DR* shall be 26 or less. The resin used in manufacturing this type of pipe shall have a minimum cell classification of 335434C in accordance with ASTM D3350 or a minimum grade of PE4710 in accordance with ASTM F714. *Pipe may be added to the QPL by completing the requirements of ITM 806, Procedure A.*

~~Qualification requirements for the manufacturers shall be in accordance with ITM 806, Procedure A.~~

907.22 Profile Wall PVC Pipe

Pipe and fittings shall be in accordance with AASHTO M 304. ~~Perforations~~*Pipe* shall be ~~required~~*perforated* when used as a longitudinal underdrain or end bent drain pipe. *Pipe shall be unperforated when used as an underdrain outlet pipe.* ~~Qualification requirements for the manufacturers shall be in accordance with~~*Pipe may be added to the QPL by completing the requirements of* ITM 806, Procedure O.

907.23 Smooth Wall PVC Pipe

Pipe and fittings shall be in accordance with AASHTO M 278 for pipe sizes 4 in. through 15 in., and ASTM F679 for pipe sizes 18 in. through 27 in. ~~Qualification requirements for the manufacturers shall be in accordance with~~*Pipe may be added to the QPL by completing the requirements of* ITM 806, Procedure A.

907.24 ~~Smooth Wall~~ Pipe for Outlets

Pipe and pipe fittings *used for outlets* shall be smooth *interior* wall, ~~non-~~*un*perforated plastic pipe. ~~Qualification requirements for the manufacturers shall be in accordance with ITM~~

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922.19 Conduit and Fittings

~~806, Procedure A.~~

(a) Type PSM PVC Pipe and Fittings

Pipe and fittings shall be in accordance with ASTM D3034, ~~S~~DR 23.5. *Pipe may be added to the QPL by completing the requirements of ITM 806, Procedure A.*

(b) Schedule 40 PVC Pipe

Pipe shall be in accordance with ASTM D1785 or D2665 and shall have a minimum pipe stiffness of 150 psi at 5% deflection when determined in accordance with ASTM D2412. Material furnished under this specification shall reference ASTM D1785 or ASTM D2665 in the product print line. A type C certification in accordance with 916 shall be provided for the schedule 40 PVC pipe.

(c) Profile Wall PVC Pipe

Pipe shall be in accordance with 907.22.

(d) Smooth Wall Polyethylene Pipe

Pipe shall be in accordance with 907.21.

(e) Smooth Wall PVC Pipe

Pipe shall be in accordance with 907.23.

907.25 Thermoplastic Liner Pipe

Thermoplastic liner pipe shall be HDPE or PVC pipe with sufficient rigidity to withstand the installation operation and shall exhibit a minimum amount of distortion. The liner pipe shall be free from visible cracks, holes, foreign inclusions, or other defects. *Liner pipe shall be either from the QPL or a* ~~A~~ type A certification in accordance with 916 shall be provided for the ~~HDPE~~ liner pipe. The results of the tests listed in ITM 804 shall be shown on the certification.

(a) Solid Wall HDPE Liner Pipe

Solid wall HDPE liner pipe shall be in accordance with ASTM F714. The maximum ~~standard dimension ratio,~~ SDR~~,~~ as defined in ASTM F412 for the liner pipe shall be 32.5. The actual calculated minimum ~~dimension ratio,~~ DR, as defined in ASTM F412 for the liner pipe shall be 30.0. The resin used in the manufacture of the liner pipe shall have a minimum cell classification of 345464C in accordance with ASTM D3350 or a minimum grade of PE4710 in accordance with

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SECTION 922 – TRAFFIC SIGNAL MATERIALS AND EQUIPMENT
922.19 Conduit and Fittings

ASTM F714. A 12 in. section of the liner pipe shall show no evidence of splitting, cracking, or breaking when compressed between parallel plates to 40% of its outside diameter within 2 to 5 minutes. Thermoplastic liner pipe may be added to the QPL by completing the requirements of ITM 806, Procedure Q.

SECTION 922, BEGIN LINE 1503, DELETE AS FOLLOWS:

(d) HDPE Schedule 40 or 80 Conduit

Conduit shall be smooth wall, Type III, Grade P-33, Category 5, Class C, coilable, HDPE. ~~Standard dimension ratio,~~ SDR~~,~~ 13.5 may be used for Schedule 40 HDPE and SDR 11 may be used for Schedule 80. Conduit and fittings shall meet the applicable requirements of ASTM D1248, ASTM D3350, ASTM F2160 and UL 651.

Schedule 40 or 80 HDPE conduit shall be marked in accordance with ASTM D3485 with the producer code and designation type indicated. HDPE conduit shall be produced from material with an orange color and ultraviolet stabilization code of C, D, or E in accordance with ASTM D3350. Schedule 40 HDPE conduit for use above ground shall be black.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

101.01 Abbreviations
715.02 Materials
718.02 Materials
719.02 Materials
SECTION 907 – CONCRETE, CLAY, AND PLASTIC DRAINAGE COMPONENTS *(various subsections)*
922.19 Conduit and Fittings

DISCUSSION:
Mr. Reilman introduced and presented this item stating that there has been some confusion on what pipes are allowed for underdrain outlet pipe.

Mr. Reilman proposed to revise the 715 and 907 sections that affect underdrain outlet pipes as shown above, for consistency.

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

Motion: Mr. Reilman Second: Mr. Novak Ayes: 10 Nays: 0 FHWA Approval: YES	Action:	
	X	Passed as Submitted
	___	Passed as Revised
	___	Withdrawn
Standard Specifications Sections referenced and/or affected: 101 pg 2 and 3; 715.02 pg 731; 718.02 pg 755; 719.02 pg 759; 907 begin pg 1020; 922.19 pg. 1190.	X	2024 Standard Specifications (SS)
	___	Revise Pay Items List
	X	Create RSP (No. 715-R-747) Effective: March 1, 2022 RSP Sunset Date: 2024 SS
Recurring Special Provision references in: NONE		
	___	Revise RSP (No.__) Effective: RSP Sunset Date:
Standard Drawing affected: NONE		
Design Manual Sections affected: NONE	___	Standard Drawing Effective:
	___	Create RPD (No. __) Effective:
GIFE Sections cross-references: NONE		
	___	GIFE Update
	X	Frequency Manual Update
	X	SiteManager Update

FINAL DRAFT MINUTES

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO SPECIAL PROVISIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: As INDOT transitions from measuring smoothness on contracts from profilograph to inertial profiler, revisions are needed to the RSP in order to incorporate industry feedback.

PROPOSED SOLUTION: Revise the RSP language for incorporation into 2022 pilot project contracts.

APPLICABLE STANDARD SPECIFICATIONS: 401.18, 401.19(c), 401.22, 402.18

APPLICABLE STANDARD DRAWINGS: N/A

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: 13.4, 13.7, 13.17, 13.18, 13.21

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

PAY ITEMS AFFECTED: 401-12169 (Inertial Profiler, HMA)

APPLICABLE SUB-COMMITTEE ENDORSEMENT: APAI, Jacob Blanchard, Nate Pfeiffer

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: Approval from State Construction Engineer

IMPACT ANALYSIS (attach report): Attached

Submitted By: Joe Novak

Title: State Construction Engineer

Organization: INDOT Construction Management

Phone Number: 317-501-7805

Date: 9/30/2021

FINAL DRAFT MINUTES

Mr. Novak
Date: 10/21/21

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? No
Will this proposal improve:

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

Will this proposal reduce operational costs or maintenance effort? No

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? 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? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: Advantageous to incorporate industry comments while still in pilot mode.

FINAL DRAFT MINUTES

REVISION TO SPECIAL PROVISIONS

401-R-577 INERTIAL PROFILER WITH SMOOTHNESS PAY ADJUSTMENTS FOR HMA, FIXED INTERVAL

(Note: Proposed changes shown highlighted gray)

401-R-577 INERTIAL PROFILER WITH SMOOTHNESS PAY ADJUSTMENTS FOR HMA, FIXED INTERVAL

(Adopted 06-17-21)

The Standard Specifications are revised as follows:

SECTION 401, DELETE LINES 593 THROUGH 705.

SECTION 401, AFTER LINE 705, INSERT AS FOLLOWS:

401.18 Pavement Smoothness

Pavement smoothness will be accepted by means of an inertial profiler, a 16 ft long straightedge, or a 10 ft long straightedge as described below. The 10 ft long straightedge will be used to check transverse slopes, across travel lanes and shoulders, approaches, and crossovers. When the 10 ft straightedge is used, the pavement variations shall be corrected to 1/8 in. or less.

(a) Inertial Profiler with Smoothness Pay Adjustments

When a pay item for Inertial Profiler, HMA is included in the contract, the Contractor shall furnish, calibrate, and operate an approved inertial profiler in accordance with ITM 917 for the acceptance of longitudinal smoothness on the mainline traveled way, including adjacent acceleration or deceleration lanes, where all of the following conditions are met:

1. *The posted speed is greater than 45 mph.*

2. *The traveled way width and slope are constant and is at least 0.5 mi in length.*

3. *The HMA is placed on a milled surface and the planned lay rate for a single lift is 165 lb/sq yd or greater, or the total combined planned lay rate of surface, intermediate, and base courses is 385 lb/sq yd or greater.*

The profiles, International Roughness Index, IRI, results including areas of localized roughness, and fixed interval IRI results produced shall become the property of the Department. The inertial profiler shall remain the property of the Contractor.

The project area will be divided into individual smoothness sections measuring 0.1 mi in length for each lane. The paving exceptions and areas exempt from inertial profiler operation will be in accordance with ITM 917.

FINAL DRAFT MINUTES

REVISION TO SPECIAL PROVISIONS

401-R-577 INERTIAL PROFILER WITH SMOOTHNESS PAY ADJUSTMENTS FOR HMA, FIXED INTERVAL

If the posted speed limit for an entire smoothness section is less than or equal to 45 mph, the section will be exempt from ~~IRI~~Inertial Profiler operation and the smoothness within the section will be accepted in accordance with 401.18(b).

If the posted speed limit is greater than 45 mph for a portion of a smoothness section and is less than or equal to 45 mph for the remainder, the section smoothness acceptance will be as follows:

1. *By inertial profiler for the portion of the section with a posted speed limit greater than 45 mph.*

2. *In accordance with 401.18(b) for the portion of the section with a posted speed limit less than or equal to 45 mph.*

At locations where the inertial profiler is required, it shall be used on the surface course and on any dense graded intermediate course immediately below the surface course.

(b) 16 ft Straightedge

The Contractor shall furnish and operate 16 ft straightedges as described below. The 16 ft straightedge is used to accept smoothness along the direction of mainline traffic.

For contracts which include the Inertial Profiler, HMA pay item, the 16 ft long straightedge or the Inertial Profiler simulating the 16 ft long straightedge shall be used to accept longitudinal smoothness on surface courses at the following locations:

1. *All mainline traveled way lanes shorter than 0.5 mi.*

2. *All mainline traveled way lanes at locations exempted from inertial profiler operation in accordance with ITM 917.*

3. *All mainline traveled way lanes within smoothness sections with posted speed limits less than or equal to 45 mph throughout the entire section length.*

4. *All tapers.*

5. *All ramps.*

6. *All turn lanes, including bi-directional left turn lanes shorter than 0.5 mi.*

FINAL DRAFT MINUTES

REVISION TO SPECIAL PROVISIONS

401-R-577 INERTIAL PROFILER WITH SMOOTHNESS PAY ADJUSTMENTS FOR HMA, FIXED INTERVAL

7. *All acceleration and deceleration lanes associated with ramps with posted speeds of 45 mph or less.*

8. *All shoulders.*

9. *All intersections with significant change in cross slope.*

For contracts where the inertial profiler is not used for smoothness acceptance, the 16 ft straightedge will be used to accept longitudinal smoothness on all dense graded courses at the above locations ~~as well as~~and on all mainline traveled way lanes and ramps with posted speeds ~~of~~ greater than 45 mph. Smoothness acceptance on ramp acceleration or deceleration lanes will also be based on operation of the 16 ft straightedge.

(c) Areas of Localized Roughness, ~~(ALR)~~

At locations where the inertial profiler is being used on an intermediate course, all areas having a localized roughness in excess of 160 in./mi utilizing continuous IRI with a 25 ft window shall be corrected subject to review by the Engineer.

At locations where the inertial profiler is being used on a surface course, all areas under category Type A, as defined in 401.19(c), having a localized roughness in excess of 160 in./mile or category Type B in excess of 170 in./mile utilizing continuous IRI with a 25 ft window shall be corrected subject to review by the Engineer. After ALR's have been identified, a grinding simulation shall be performed to estimate whether the ALR can be corrected to an IRI value of less than 160 in./mi with no more than a 1/4 in. max grind depth at any spot. If such correction is not possible, then an ALR with an IRI value of less than 190 in./mi can remain uncorrected if approved by the Engineer, and an ALR with an IRI value greater than 190 in./mi shall require full depth removal and replacement of the surface course of sufficient area to meet specifications.

In addition, if there is only one ALR in any two lane mile section, then no smoothness correction will be required if the ALR does not exceed 190 in./mi and the overall smoothness in accordance with 401.18(d) of the two lane mile section does not require any corrective action. A two lane mile section will start one mile before the ALR and end one mile after the ALR in order that all two lane mile sections will have, at most, one ALR each.

(d) Smoothness Section Correction

The width of the corrected area may be partial or full lane width, depending on the respective wheel path profiles. Underlying courses that are exposed by corrective action shall be milled to a depth of 1 1/2 in. and replaced with surface course. After the corrective action is taken on a surface course, the inertial profiler shall be operated throughout the entire affected smoothness section to verify the adequacy of the corrective action.

FINAL MINUTES

REVISION TO SPECIAL PROVISIONS

401-R-577 INERTIAL PROFILER WITH SMOOTHNESS PAY ADJUSTMENTS FOR HMA, FIXED INTERVAL

At locations where the 16 ft straightedge is used, the pavement variations shall be corrected to 1/4 in. or less.

If grinding of an intermediate course is used for pavement smoothness corrections, the grinding shall not precede the surface placement by more than 30 calendar days if open to traffic.

SECTION 401, DELETE LINES 805 THROUGH 843.

SECTION 401, AFTER LINE 843, INSERT AS FOLLOWS:

(c) Smoothness

Smoothness pay adjustments will only be applied when the smoothness is measured by an inertial profiler in accordance with 401.18(a).

The Mean Roughness Index, MRI, will be determined for each lane for each 0.1 mile section of paving. The MRI for a 0.1 mile section will be the average of the IRI of the two wheel paths. Categorized segments shall be as follows:

1. *Type A. Pavement on a non-interstate with more than a single opportunity to achieve a smooth ride or asphalt pavement on an interstate with a single opportunity or more. The following operations, if performed on the contract, will be considered opportunities.*

   a. *A layer of HMA base, intermediate, and surface; each layer is an opportunity. Wedge and level will not be considered an opportunity.*

   b. *Profile milling to correct cross slope is considered an opportunity prior to placing base, intermediate, or surface HMA.*

2. *Type B. Pavement that is not included in the description above under Type A.*

At locations where an inertial profiler is used to accept smoothness, a quality assurance adjustment will be determined for each lane. This adjustment will be applied to all QC/QA HMA pay items within the pavement section. The adjustment will be calculated using the following formula:

$$q_s = (PF_s - 1.00) \sum_{i=1}^{n} \left(A \times \frac{S}{T} \times U \right)$$

FINAL DRAFT MINUTES

REVISION TO SPECIAL PROVISIONS

401-R-577 INERTIAL PROFILER WITH SMOOTHNESS PAY ADJUSTMENTS FOR HMA, FIXED INTERVAL

where:

q_s = *quality assurance adjustment for smoothness for one section*
PF_s = *pay factor for smoothness*
n = *number of layers*
A = *area of the section, sq yd*
S = *planned spread rate for material, lb/sq yd*
T = *conversion factor: 2,000 lb/ton*
U = *unit price for the material, $/ton.*

The quality assurance adjustment for smoothness, Q_s, for the contract will be the total of the quality assurance adjustments for smoothness, q_s, on each section by the following formula:

$$Q_s = \sum q_s$$

When smoothness is measured by an inertial profiler, payment adjustments will be made for any 0.1 mile section based on initial MRI generated on the surface course only and in accordance with the following table. Smoothness correction, if required, shall be in accordance with 401.18(c~~),~~). T~~t~~he ~~IRI~~MRI pay factors for smoothness will be determined prior to any required smoothness correction ~~in accordance with 401.18(c)~~.

PAY FACTORS FOR SMOOTHNESS Posted Speed greater than 45 mph	
~~IRI~~MRI, in./mi.	*Pay Factor, PF*
over 0 to 35	*1.06*
over 35 to 40	*1.05*
over 40 to 45	*1.04*
over 45 to 50	*1.03*
over 50 to 55	*1.02*
over 55 to 60	*1.01*
over 60 to 70	*1.00*
over 70 to 75	*0.99*
over 75 to 80	*0.98*
over 80 to 85	*0.96*
over 85 to 90	*0.95*
over 90	*For Type A, the pay factor will be 0.95 and the section shall be corrected to 70 or less.*
over 90 to 110	*For Type B, the pay factor will be 0.95 and the section does not require correction.*

FINAL MINUTES

REVISION TO SPECIAL PROVISIONS

401-R-577 INERTIAL PROFILER WITH SMOOTHNESS PAY ADJUSTMENTS FOR HMA, FIXED INTERVAL

over 110	*For Type B, the pay factor will be 0.95 and the section shall be corrected to 90 or less.*

SECTION 401, BEGIN LINE 916, DELETE AND INSERT AS FOLLOWS:

401.22 Basis of Payment

The accepted quantities for this work will be paid for at the contract unit price per ton for QC/QA-HMA, of the type specified, complete in place.

Payment for furnishing, calibrating, and operating the ~~profilograph~~*inertial profiler*, and furnishing profile information will be made at the contract lump sum price for ~~profilograph~~*inertial profiler*, HMA.

Adjustments to the contract payment with respect to mixture, density, and smoothness for *the* mixture produced will be included in a quality adjustment pay item in accordance with 109.05.1.

SECTION 401, BEGIN LINE 940, DELETE AND INSERT AS FOLLOWS:

~~Profilograph~~*Inertial Profiler*, HMA..... LS

SECTION 401, BEGIN LINE 964, DELETE AND INSERT AS FOLLOWS:

The price for ~~Profilograph~~*Inertial Profiler,* HMA will be full compensation regardless of how often the ~~profilograph~~*inertial profiler* is used or how ~~many profilograms are produced~~*often the IRI is determined.*

SECTION 402, BEGIN LINE 344, DELETE AND INSERT AS FOLLOWS:

402.18 Pavement Smoothness

Pavement smoothness will be in accordance with 401.18 except ~~profilograph~~*inertial profiler* requirements will not apply.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

401-R-577 INERTIAL PROFILER WITH SMOOTHNESS PAY ADJUSTMENTS FOR HMA, FIXED INTERVAL

DISCUSSION:

Mr. Novak introduced and presented this item explaining that as the Department transitions from measuring smoothness on contracts from profilograph to inertial profiler, revisions are needed to the RSP in order to incorporate industry feedback.

Mr. Novak proposed to revise the RSP language for incorporation into 2022 pilot project contracts. Minor editorial revisions are shown in these minutes, and Mr. Novak motioned that this item be approved as revised.

Prior to the meeting:

Mr. Koch asked, with regard to the ALR, if we can keep the existing 160/170 and require a grinding simulation? If the simulation removes more than a 1/4 in., remove and replace the surface. Mr. Koch also stated that without verifying the need, allowing bumps to remain is potentially problematic regardless of how smooth everything else is within a 2 mile segment, and prefers the "I'll know it when I see it." approach. Ideally all bumps would be marked with a dot of paint or short line and the site driven or subject to review by the engineer.

Mr. Novak responded that INDOT adopted from FHWA, for asset management, a max permissible section IRI of 170 in./mile for interstate and 225 in./mile for other roads. Other states have much higher ALR thresholds than us. The 160/170 was based on data we collected from pilot projects that would result in the approximate same number of grind locations as the profilograph, unadjusted for the fact that we are measuring data in both wheel paths. We are just talking about ALR and trying balance necessary R&R with smoothness since R&R results in transverse pavement joints which will likely be a source of deterioration. We thought 190 in./mile was that compromise and still comparable to other states. The 190 was actually in the pilot field guidance for bump grinding, we just moved it to the spec.

Mr. Koch replied that whether the target is X or Y is fine, for simplicity and to provide a clear message, a single target is advantageous. Setting a target of 160/170, 190, and 190 with two smooth miles seems like this will generate considerable conversation which likely require AE resolution. The grinding simulation sounds like a cool idea!

Mr. Pankow asked if this is still in pilot mode, and Mr. Novak confirmed that it is, in order to implement proper QA.

There was no further discussion, and this item passed as revised.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

401-R-577 INERTIAL PROFILER WITH SMOOTHNESS PAY ADJUSTMENTS FOR HMA, FIXED INTERVAL

[CONTINUED]

Motion: Mr. Novak Second: Mr. Reilman Ayes: 10 Nays: 0 FHWA Approval: YES	Action: ___ Passed as Submitted _X_ Passed as Revised ___ Withdrawn
Standard Specifications Sections referenced and/or affected: 401 begin pg 299; 402 pg 334. Recurring Special Provision references in: 401-R-577 INERTIAL PROFILER WITH SMOOTHNESS PAY ADJUSTMENTS FOR HMA, FIXED INTERVAL Standard Drawing affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: 13.4, 13.7, 13.17, 13.18, 13.21	___ 2024 Standard Specifications ___ Revise Pay Items List ___ Create RSP (No.__) Effective: RSP Sunset Date: _X_ Revise RSP (No. 401-R-577) Effective: March 1, 2022 RSP Sunset Date: ___ Standard Drawing Effective: ___ Create RPD (No. __) Effective: _X_ GIFE Update ___ Frequency Manual Update ___ SiteManager Update

FINAL DRAFT MINUTES

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: There is a maximum cement content listed in 502.04 that should not be there.

PROPOSED SOLUTION: Delete the maximum cement content line. The intent is for only 564 lbs/cy to be used in this mix design.

APPLICABLE STANDARD SPECIFICATIONS: 502.04

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: Create new 502 RSP

PAY ITEMS AFFECTED: None

APPLICABLE SUB-COMMITTEE ENDORSEMENT: None

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: All contracts with a 502, 506, or 605 pay item

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: INDOT

Phone Number: (317) 522-9692

Date: 10/5/21

FINAL DRAFT MINUTES

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? 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? No

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

FINAL DRAFT MINUTES

REVISION TO STANDARD SPECIFICATIONS

SECTION 502 – PORTLAND CEMENT CONCRETE PAVEMENT, PCCP
502.04 Concrete Mix Criteria

(Note: Proposed changes shown highlighted gray)

The Standard Specifications are revised as follows:

SECTION 502, BEGIN LINE 73, DELETE AS FOLLOWS:

502.04 Concrete Mix Criteria

Chemical admixtures type A, type B, type C, type D, type E, and type F may be allowed if shown on the CMDP. The supplied concrete mix shall include one of the following water reducing admixtures: type A, type D, type E, or type F.

(a) Portland Cement Concrete

The CMD shall produce workable concrete mixtures, with the minimum amount of water, and having the following properties.

Targets for the CMD:

Portland cement content	564 lb/cu yd[A]
~~Maximum portland cement content~~	~~752 lb/cu yd[A]~~
Minimum water/cementitious ratio	0.340[B]
Maximum water/cementitious ratio	0.435[B]
Maximum portland cement reduction for slag cement replacement	30%
Slag cement/portland cement substitution ratio	1.00 by weight
Maximum cement reduction for fly ash replacement	20%
Fly ash/portland cement substitution ratio	1.25 by weight
Air Content	6.5%
Minimum modulus of rupture	570 psi at 7 days[C]
Relative Yield	1.00

Field Acceptance Properties:

Minimum water/cementitious ratio	0.320[B]
Maximum water/cementitious ratio	0.450[B]
Slump	2 to 6 in.
Air Content	5.0% to 8.0%
Minimum modulus of rupture	570 psi at 7 days[C]
Relative Yield	0.98 to 1.02

[A] The target cement content during production shall not be adjusted from the value stated on the CMDP.

[B] The water cementitious ratio during production shall not deviate more than 0.020 from the target stated in the CMDP and shall not fall outside the limits above.

[C] Beams shall be standard cured in a water tank in accordance with AASHTO T 23 and 505.01(a). The water does not need to be saturated with calcium hydroxide. Minimum flexural strength for opening to traffic shall be in accordance with 506.12.

FINAL DRAFT MINUTES

COMMENTS AND ACTION

502.04 Concrete Mix Criteria

DISCUSSION:

This item was introduced and presented by Mr. Reilman, assisted by Mr. Nelson, who stated that there is a maximum cement content listed in 502.04 that should not be there. Mr. Nelson mentioned that the mix could present trial batch problems if not revised.

Mr. Reilman proposed to delete the maximum cement content line. The intent is for only 564 lb/cu yd to be used in this mix design.

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

Motion: Mr. Reilman Second: Mr. Novak Ayes: 10 Nays: 0 FHWA Approval: YES	Action: X Passed as Submitted ___ Passed as Revised ___ Withdrawn
Standard Specifications Sections referenced and/or affected: 502.04 pg 423. Recurring Special Provision references in: NONE Standard Drawing affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	X 2024 Standard Specifications ___ Revise Pay Items List ___ Create RSP (No.___) Effective: _____ RSP Sunset Date: X Revise RSP (No. 702-R-739) Effective: December 1, 2021 RSP Sunset Date: 2024 SS ___ Standard Drawing Effective: ___ Create RPD (No. __) Effective: ___ GIFE Update ___ Frequency Manual Update X SiteManager Update

FINAL DRAFT MINUTES