INDIANA DEPARTMENT OF TRANSPORTATION
Driving Indiana's Economic Growth

100 North Senate Avenue
Room N925
Indianapolis, Indiana 46204

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Mitchell E. Daniels, Jr., Governor
Michael B. Cline, Commissioner

AGENDA

May 19, 2011 Standards Committee Meeting

MEMORANDUM

May 05, 2011

TO: Standards Committee

FROM: Scott Trammell, Secretary

RE: Agenda for the May 19, 2011 Standards Committee Meeting

A Standards Committee meeting is scheduled for 09:30 a.m. on May 19, 2011 in the N642 Bay Window Conference Room. Please enter the meeting through the double doors directly in front of the conference room.

The following agenda items are listed for consideration.

A. GENERAL BUSINESS ITEMS

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

1. Approval of Minutes from April 19, 2011 meeting

2. Safety Edge — Mr. Miller

3. Revision to Indiana Design Manual, Standard Contract Documents, and Unique Special Provisions — Mr. Strain

B. CONCEPTUAL PROPOSAL ITEMS

OLD BUSINESS

(No items on this agenda)

NEW BUSINESS

(No items on this agenda)

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

OLD BUSINESS

Item No. 02 04/19/11 (2010 SS) Mr. Pankow page 04

Recurring Special Provision:

108-C-XXX	*WORKING RESTRICTIONS DURING CERTAIN HOLIDAY PERIODS*
104-R-168	SCHEDULE OF OPERATIONS AND TRAFFIC CONTROL FOR UNDERSEALING, CONCRETE PATCHING, PLACING UNDERDRAINS, AND RESURFACING

NEW BUSINESS

Item No. 01 05/19/11 (2010 SS) Mr. Boruff page 11

Recurring Special Provisions:

805-T-169	TRAFFIC SIGNALS
922-T-168	TRAFFIC SIGNAL MATERIALS AND EQUIPMENT

Standard Drawings:

805-SGDH-01	INSTALLATION DETAIL DETECTOR HOUSING
805-SGCF-01	CONTROLLER CABINET FOUNDATION TYPE P-1
805-SGCF-02	CONTROLLER CABINET FOUNDATION TYPE M
805-SGCF-05	EXISTING M FOUNDATION MODIFIED TO P-1 FOUNDATION
805-SGFB-01	FLASHING BEACON WITH WARNING SIGN
805-sgFB-02	FLASHING BEACON WITH WARNING SIGN DETAILS

Item No. 02 05/19/11 (2010 SS) Mr. Walker page 22

Recurring Special Provision:

904-R-560	SMA COARSE AGGREGATE REQUIREMENTS

Item No. 03 05/19/11 (2010 SS) Mr. Walker page 27

401.05	Volumetric Mix Design
401.06	Recycled Materials
402.04	Design Mix Formula
402.08	Recycled Materials
402.15	Compaction
409.03	HMA Laydown Operation
410.06	Recycled Materials

Item No. 04 05/19/11 (2010 SS) Mr. Pankow page 36

Standard Drawings:

706-BRPP-01	RAILING, PF-1
706-BRPP-02	RAILING, PF-2
706-BRPP-03	RAILING, PS-1
706-BRPP-04	RAILING, PS-2

706-BRPP-06	RAILING, PF & PS DETAILS
706-BRTF-09	CONCRETE BRIDGE RAILING TYPE TF-2
706-BRTM-02	RAILING, CF-1

cc: Committee Members (11)
FHWA (2)
ICA (1)

Mr. Pankow
Date: 05/19/11

SPECIFICATION REVISIONS (OLD BUSINESS ITEM)

REVISION TO RECURRING SPECIAL PROVISIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: A few Districts are inserting working restrictions around holidays into contracts.

PROPOSED SOLUTION: Delete the provisions that the various Districts are using and combine into one general working restriction special provision that would be used in all contracts in all Districts.

APPLICABLE STANDARD SPECIFICATIONS: None

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: Delete 108-C-202; propose to create new RSP

PAY ITEMS AFFECTED: None

Submitted By: Greg Pankow

Title: State Construction Engineer

Organization: INDOT

Phone Number: 2-5502

Date: March 15, 2011

APPLICABLE SUB-COMMITTEE ENDORSEMENT: An ad hoc committee consisting of: Roland Fegan, Jim Keefer, Jeff Logman, Mark Miller, Brad Minnick, Bart Mueller, Joe Novak, Greg Pankow, and Jim Reilman. ICA was provided an opportunity to review and comment.

REVISION TO RECURRING SPECIAL PROVISIONS (OLD BUSINESS ITEM)
108-C-XXX WORKING RESTRICTIONS DURING CERTAIN HOLIDAY PERIODS

108-C-XXX WORKING RESTRICTIONS DURING CERTAIN HOLIDAY PERIODS

(Adopted xx-xx-11)

The Standard Specifications are revised as follows:

SECTION 108, AFTER LINE 334, INSERT AS FOLLOWS:

Contractors will not be permitted to work during the following holiday periods unless prior written approval is received from the Engineer. All deliveries and traffic coming from suppliers shall cease during the Department-ordered suspensions of work listed below. No time extensions to closure periods, intermediate completion dates, or contract completion dates will be granted for suspending work during these holiday periods.

(a) New Year's Day. If New Year's Day falls on a Sunday, work shall be suspended from noon December 31 until sunrise January 3. If New Year's Day falls on a Monday through Saturday, work shall be suspended from noon December 31 until sunrise January 2.

(b) Good Friday. Work shall be suspended from noon on Good Friday until sunrise Monday.

(c) Memorial Day. Work shall be suspended from noon the Friday before Memorial Day until sunrise Tuesday, the day after Memorial Day.

(d) Independence Day. If Independence Day falls on a:

Sunday - Work shall be suspended from noon Friday, July 2, until sunrise Tuesday, July 6.

Monday - Work shall be suspended from noon Friday, July 1, until sunrise Tuesday, July 5.

Tuesday - Work shall be suspended from noon Friday, June 30, until sunrise Wednesday, July 5.

Wednesday - Work shall be suspended from sunset on Tuesday, July 3, until sunrise Thursday, July 5.

Thursday - Work shall be suspended from noon Wednesday, July 3, until sunrise Monday, July 8.

Friday - Work shall be suspended from noon Thursday, July 3, until sunrise Monday, July 7.

REVISION TO RECURRING SPECIAL PROVISIONS (OLD BUSINESS ITEM)

108-C-XXX WORKING RESTRICTIONS DURING CERTAIN HOLIDAY PERIODS

Saturday - Work shall be suspended from noon Thursday, July 2, until sunrise Monday, July 6.

(d) Labor Day. Work shall be suspended from noon the Friday before Labor Day until sunrise Tuesday, the day after Labor Day.

(e) Thanksgiving Day. Work shall be suspended from noon the Wednesday before Thanksgiving Day until sunrise the Monday after Thanksgiving Day.

(f) Christmas Day. Work shall be suspended from noon December 24 until sunrise December 27.

The Department may order the suspension of work, either wholly or in part, for a period of time for certain holidays *not already specified herein*. For such orders~~, if the contract suspension is not stated in the contract documents,~~ the contract completion time will be adjusted as follows:

REVISION TO RECURRING SPECIAL PROVISIONS (OLD BUSINESS ITEM)

104-R-168 SCHEDULE OF OPERATIONS AND TRAFFIC CONTROL FOR UNDERSEALING, CONCRETE PATCHING, PLACING UNDERDRAINS, AND RESURFACING

(Proposed changes shown as highlighted in gray. Basis for Use: Required for all pavement undersealing, patching, shoulder drain placement, and resurfacing specified.)

104-R-168 SCHEDULE OF OPERATIONS AND TRAFFIC CONTROL FOR UNDERSEALING, CONCRETE PATCHING, PLACING UNDERDRAINS, AND RESURFACING

(Revised XX-XX-XX)

The Standard Specifications are revised as follows:

SECTION 104, AFTER LINE 343, INSERT AS FOLLOWS:

(e) Schedule of Operations and Traffic Control for Undersealing, Concrete Patching, Placing Underdrains, and Resurfacing

Unless otherwise directed or permitted, the work specified shall be arranged and prosecuted in accordance with the applicable requirements of 107 and 801, and as set out herein.

All necessary barricades, flashing arrow signs, suitable lights, danger signals, signs, flaggers, and other traffic control devices shall be provided, erected and maintained for the protection of the workers and the safety of the public. Such protection shall be in accordance with 107.12 and as shown on the plans or as directed. Traffic shall be maintained such that the flow of traffic is interrupted for the shortest amount of time possible.

1. Construction Sequence

The construction shall be done in the following sequence, unless otherwise directed.

a. Undersealing shall be accomplished before all patching or other work within the pavement area is done.

b. The pavement patching shall be accomplished after undersealing is complete.

c. The underdrains shall be placed after the pavement patching is complete.

d. Resurfacing operations shall then begin.

The names and telephone numbers of the Superintendent and one other responsible employee shall be furnished. They shall be on call or available at night, on weekends, or during other non-working periods. These employees shall oversee the repair or replacement of all traffic control devices which may become damaged or inoperative.

2. Lane Closures

Only one lane in each direction shall be closed at a time, except as noted below. Traffic maintenance setups shall not be spaced closer than 3 mi (5 km) from one another on a one-way

REVISION TO RECURRING SPECIAL PROVISIONS (OLD BUSINESS ITEM)

104-R-168 SCHEDULE OF OPERATIONS AND TRAFFIC CONTROL FOR UNDERSEALING, CONCRETE PATCHING, PLACING UNDERDRAINS, AND RESURFACING

roadway. If a traffic maintenance setup extends beyond one or more ramps, an "Exits Right Lane Only" sign shall be placed.

~~*On all major holiday weekends,*~~ _____ *lanes of through traffic shall be maintained in each direction at all times for the holiday periods listed in 108.08.* ~~*from noon on the day before the weekend to 6:00 a.m. on the day after the weekend. Major holidays will be defined as New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, and Christmas Day.*~~ *Traffic shall be maintained on other holidays as directed.*

_____ *lanes of through traffic shall be maintained in each direction at all times during rush hour periods as directed. When work is performed during center lane closure on a three lane roadway, the median and center lanes may be closed during times other than rush hour periods as directed. Closure will be permitted for the center lane only at all other times.*

3. Patching

During the patching operation of the outside lane or ramps, closure of such ramps will be permitted for the shortest possible time while patching is being done in the outside lane in the vicinity of ramp exits or entrances. Ramp closures will not be permitted during rush hour periods as directed.

Maintenance of traffic shall include a taper plus an additional length, both as shown on the plans, prior to reaching the construction area. The taper and additional length shall be delineated by drums spaced at intervals of 50 ft (15 m). One flashing arrow sign shall be placed at the beginning of the taper. A minimum of two drums or barricades shall be placed on the traffic approach side of each concrete patch or open hole.

4. Resurfacing

During resurfacing operations, _____ *lanes of through traffic in each direction shall be maintained at all times from 5:00 a.m. to 9:00 p.m. A minimum on one lane of through traffic in each direction shall be maintained at all times from 9:00 p.m. to 5:00 a.m.*

During the paving operation of the outside lane or ramps, closure of such ramps will be permitted for the shortest possible time while paving is being done in the outside lane in the vicinity of ramp exits or entrances, or in acceleration lanes, deceleration lanes, or gore areas. Ramp closures will not be permitted during rush hour periods as directed. The ramps for two consecutive interchanges shall not be closed at the same time.

During HMA base placement, the paving operation shall be limited to a segment including not more than two interchanges. All HMA base placement shall be completed in such segment prior to commencing with the next segment. When an outside lane is being paved, the adjacent shoulder shall be paved simultaneously.

REVISION TO RECURRING SPECIAL PROVISIONS (OLD BUSINESS ITEM)

104-R-168 SCHEDULE OF OPERATIONS AND TRAFFIC CONTROL FOR UNDERSEALING, CONCRETE PATCHING, PLACING UNDERDRAINS, AND RESURFACING

Extension of a HMA course will be permitted for one lane, or one lane and shoulder, for a full day's placement. Such HMA course shall be placed on the adjacent lane and shoulder on the following day. If the Contractor does not plan to work on the following day, then such HMA course shall be placed on the adjacent lane and shoulder on the same day. An overnight lane closure shall be maintained on all courses over 165 lb/sq yd (90 kg/m^2). Such closure shall be as shown on the plans.

The beginning and ending of each course shall, at the end of each day's operations, be feathered as directed to provide a smooth transition to the driving surface.

SECTION 801, AFTER LINE 1155, INSERT AS FOLLOWS:

The costs of furnishing, placing, moving, removal, and maintenance of the "Exits Right Lane Only" sign shall be included in the cost of construction signs type A.

The cost of maintenance of traffic during underseal operations shall be included in the costs of asphalt material for underseal and drilled holes for underseal. The cost of maintenance of traffic during pavement edge drain installation shall be included in the cost of underdrains.

COMMENTS AND ACTION (OLD BUSINESS ITEM)

108-C-XXX WORKING RESTRICTIONS DURING CERTAIN HOLIDAY PERIODS
104-R-168 SCHEDULE OF OPERATIONS AND TRAFFIC CONTROL FOR UNDERSEALING, CONCRETE PATCHING, PLACING UNDERDRAINS, AND RESURFACING

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: NONE Recurring Special Provision affected: 108-C-202 WORKING RESTRICTIONS MEMORIAL DAY, JULY FOURTH, LABOR DAY WEEKENDS 104-R-168 SCHEDULE OF OPERATIONS AND TRAFFIC CONTROL FOR UNDERSEALING, CONCRETE PATCHING, PLACING UNDERDRAINS, AND RESURFACING Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

SPECIFICATION REVISIONS

REVISION TO RECURRING SPECIAL PROVISIONS AND STANDARD DRAWINGS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Steel conduit for traffic signal cables is used extensively at INDOT's signalized intersections but the industry has developed cheaper alternatives, namely fiberglass and PVC to replace steel conduit in many situations.

PROPOSED SOLUTION: Amend recurring special provision 805-T-169 and 922-T-168 so that the conduit pay item covers steel, PVC, and fiberglass conduit and provide instructions on when PVC or fiberglass conduit may be used on a project.

APPLICABLE STANDARD SPECIFICATIONS: 805, 922

APPLICABLE STANDARD DRAWINGS: 805-SGDH-01, 805-SGCF-01, 805-SGCF-02, 805-SGCF-05, 805-SGFB-01, 805-SGFB-02

APPLICABLE DESIGN MANUAL SECTION: 77-5.05 (502)

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: 805-T-169, 922-T-168

PAY ITEMS AFFECTED: Conduit _____ (LFT)
Type

Submitted By: Dave Boruff

Title: Traffic Administration Section Supervisor

Organization: INDOT

Phone Number: 317-234-7975

Date: 04/20/2011

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc review by industry, district traffic engineers, Traffic Systems Division, and Technical Services Division.

REVISION TO RECURRING SPECIAL PROVISIONS AND STANDARD DRAWINGS

805-T-169 TRAFFIC SIGNALS

(Only affected sections of the RSP 805-T-169 are shown.
Proposed changes shown as highlighted in gray.
Basis for Use: Required for all contracts with 805 pay items.)

The Standard Specifications are revised as follows:

SECTION 805, BEGIN LINE 422, INSERT AS FOLLOWS:

805.12 PVC *and Fiberglass* Conduit

The method of installing PVC *and rigid fiberglass* conduit underground shall be the same as for steel conduit where applicable except trenches for the conduit shall be backfilled with 2 in. (50 mm) of sand before the conduit is placed in the trench. Materials excavated may be used for backfill, if approved. If the Engineer deems it necessary, approved B borrow shall be placed over the conduit to a depth of 12 in. (300 mm) and the remainder of the trench shall be filled with excavated material.

Schedule 40 PVC or rigid fiberglass conduit may be used for conduit placed in trenches. Schedule 80 PVC shall be used for conduit that is jacked or bored.

SECTION 805, BEGIN LINE 509, INSERT AS FOLLOWS:

Payment will be made under:

Pay Item	**Pay Unit Symbol**
Conduit _____ type	*LFT (m)*
Controller and Cabinet, _____ type, _____ no. Phase	EACH
Controller and Cabinet, Flasher, _____ type	EACH
Controller Cabinet Foundation, _____ type	EACH

SECTION 805, BEGIN LINE 624, DELETE AS FOLLOWS:

The cost of aluminum casting, enclosure concrete, ~~steel~~ conduit and elbow, and all hardware required to complete the installation shall be included in the cost of signal detector housing.

REVISION TO RECURRING SPECIAL PROVISIONS AND STANDARD DRAWINGS

922-T-168 TRAFFIC SIGNAL MATERIALS AND EQUIPMENT

(Only affected section of the RSP 922-T-168 is shown.
Proposed changes are shown highlighted in gray.
Basis for Use: Required for all contracts with 805 pay items.)

The Standard Specifications are revised as follows:

SECTION 922, BEGIN LINE 1658, INSERT AS FOLLOWS:

922.19 Conduit and Fittings

(a) Steel Conduit

Steel conduit, couplings, and elbows shall be galvanized rigid steel conduit in accordance with UL 6. The conduit shall be galvanized by the hot dip method on the interior and exterior surfaces. Conduit threads shall be cut after galvanizing. The conduit shall be supplied with a threaded coupling attached to one end and the other threaded end protected by a suitable shield.

The various conduit fittings such as bands, bodies, straps, lock nuts, and threadless connectors, shall be in accordance with Federal Specifications A-A-50553 and shall be galvanized if not stainless steel. Conduit straps shall be two hole straps with a minimum thickness of 1/8 in. (3 mm). Conduit lock nuts 3/8 in. to 1 ½ in. (10 mm to 38 mm) in size shall be made of steel. Other sizes shall be made of either steel or malleable iron. All conduit lock nuts shall be galvanized. Other nuts shall be either stainless steel or galvanized steel.

(b) ~~Polyvinyl Chloride~~ Schedule 40 PVC Conduit

~~PVC conduit shall be schedule 40 in accordance with ASTM D 1785. The PVC conduit fittings shall be in accordance with ASTM D 2466.~~ Schedule 40 polyvinyl chloride, PVC, conduit, fittings and accessories shall be manufactured from polyvinyl chloride meeting ASTM D 1784 and shall comply with all the applicable requirements of NEMA TC2 and UL 651. Each length of pipe shall include a coupling.

(c) Schedule 80 PVC Conduit

Schedule 80 polyvinyl chloride, PVC, conduit, fittings and accessories shall be manufactured from polyvinyl chloride meeting ASTM D 1784 and shall comply with all the applicable requirements of NEMA TC2 and UL 651. Each length of pipe shall include a coupling.

(d) Fiberglass Conduit

Rigid fiberglass conduit and fittings shall be filament wound consisting of E-glass and corrosion resistant epoxy resin manufactured for use at temperatures from -40 ^{o}F to 230 ^{o}F. Rigid fiberglass conduit shall be pigmented with carbon black for ultraviolet protection and fire resistant per UL 94. All rigid fiberglass conduit shall be heavy walled, HW, and meet the specifications, labeling and testing of ANSI/NEMA TC14.

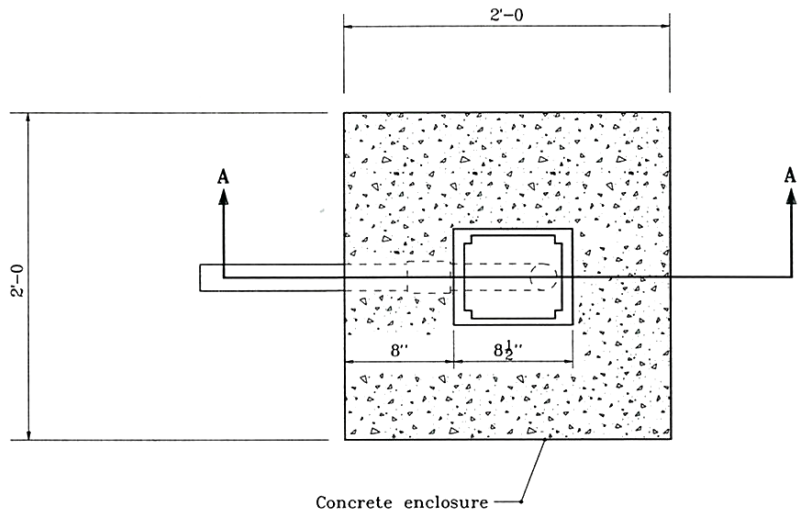
805.15 Method of Measurement

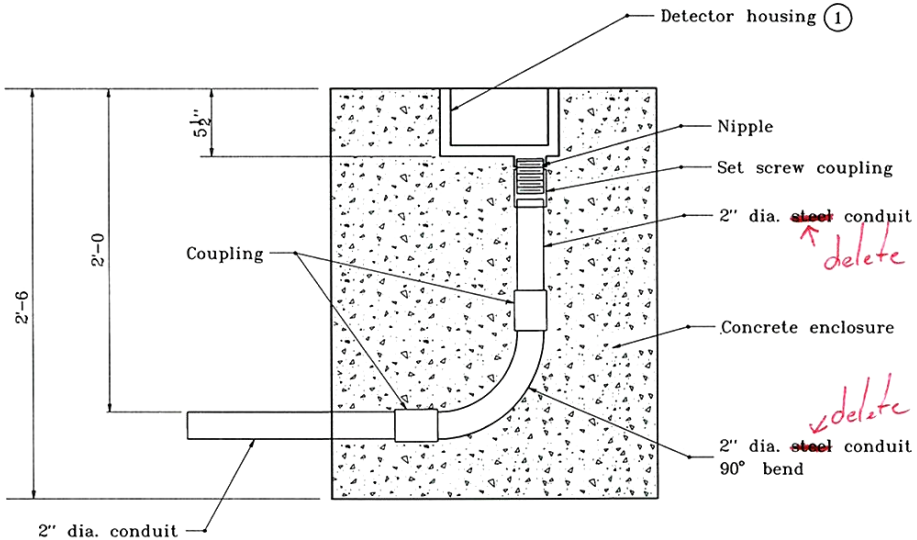
Traffic signal head, pedestrian signal head, pedestrian push button, controller cabinet foundation, M foundation modified to P-1 foundation signal steel strain pole, signal wood pole, signal cantilever structure, signal support foundation, signal service, disconnect hanger, magnetometer detector, microloop detector, loop detector delay amplifier, *loop detector delay counting amplifier, loop detector rack, auxiliary BIU panel,* signal handhole, signal detector housing, span catenary and tether, and span catenary for flasher will be measured by the number of units installed.

Conduit of the type specified will be measured by the linear foot (meter) from outside to outside of foundations. Signal cable and signal interconnect cable will be measured by the linear foot (meter).

REVISION TO RECURRING SPECIAL PROVISIONS AND STANDARD DRAWINGS

805-SGDH-01 INSTALLATION DETAIL DETECTOR HOUSING

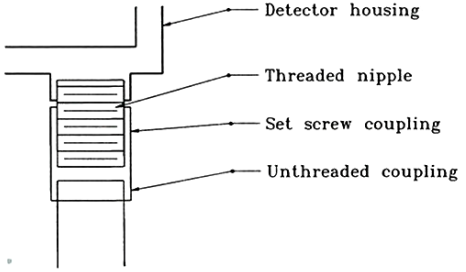




SECTION A–A

GENERAL NOTES

(1) See Standard Drawing E 805-SGDH-02 for detector housing detail.



DETECTOR HOUSING COUPLING DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

INSTALLATION DETAIL
DETECTOR HOUSING
SEPTEMBER 1998

STANDARD DRAWING NO. E 805-SGDH-01

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT 11-15-99

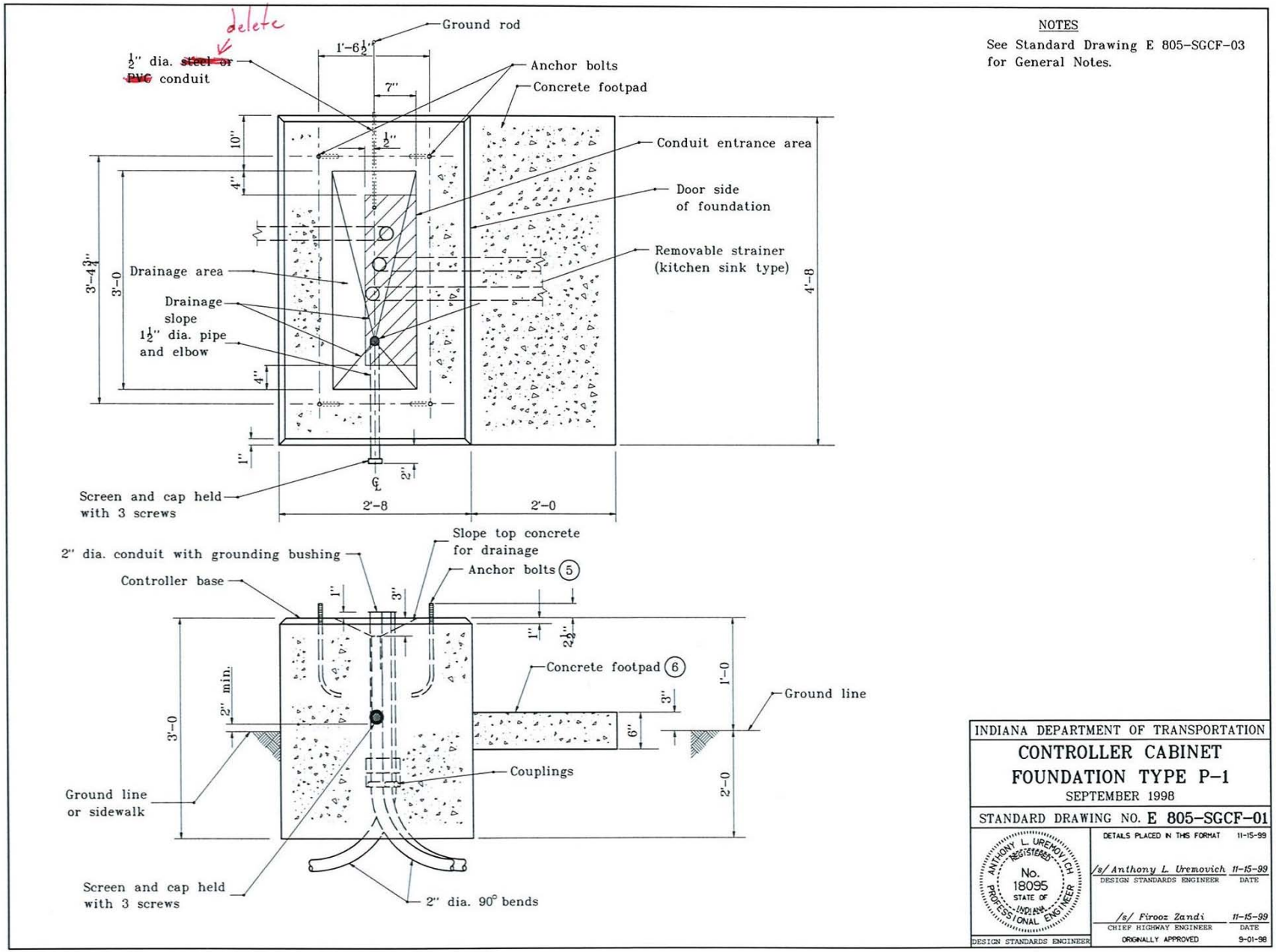
/s/ Anthony L. Uremovich 11-15-99
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99
CHIEF HIGHWAY ENGINEER DATE

ORIGINALLY APPROVED 9-01-98

REVISION TO RECURRING SPECIAL PROVISIONS AND STANDARD DRAWINGS

805-SGCF-01 CONTROLLER CABINET FOUNDATION TYPE P-1



NOTES

See Standard Drawing E 805-SGCF-03 for General Notes.

INDIANA DEPARTMENT OF TRANSPORTATION

CONTROLLER CABINET FOUNDATION TYPE P-1

SEPTEMBER 1998

STANDARD DRAWING NO. E 805-SGCF-01

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT 11-15-99

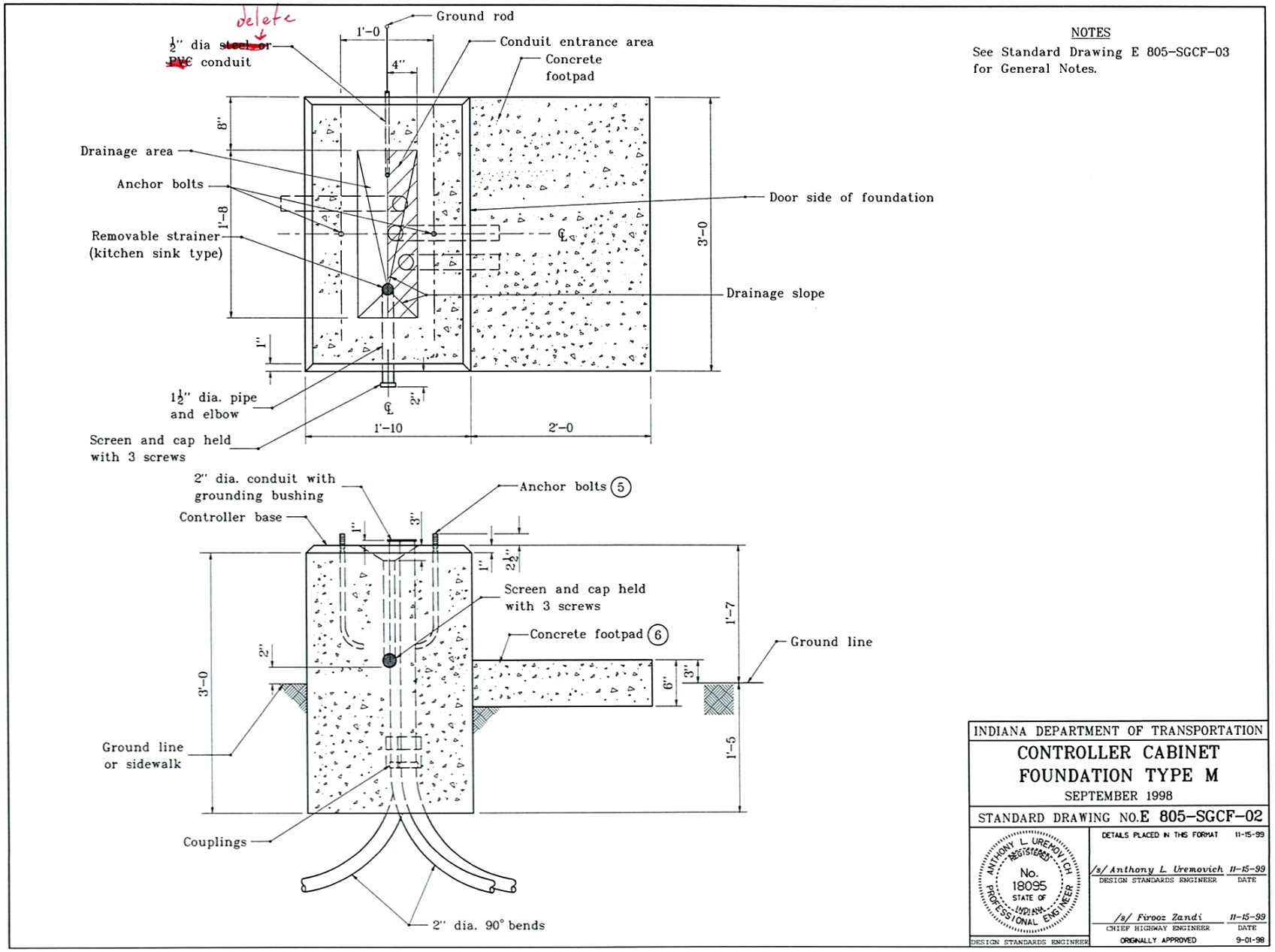
/s/ Anthony L. Uremovich 11-15-99
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99
CHIEF HIGHWAY ENGINEER DATE

ORIGINALLY APPROVED 9-01-98

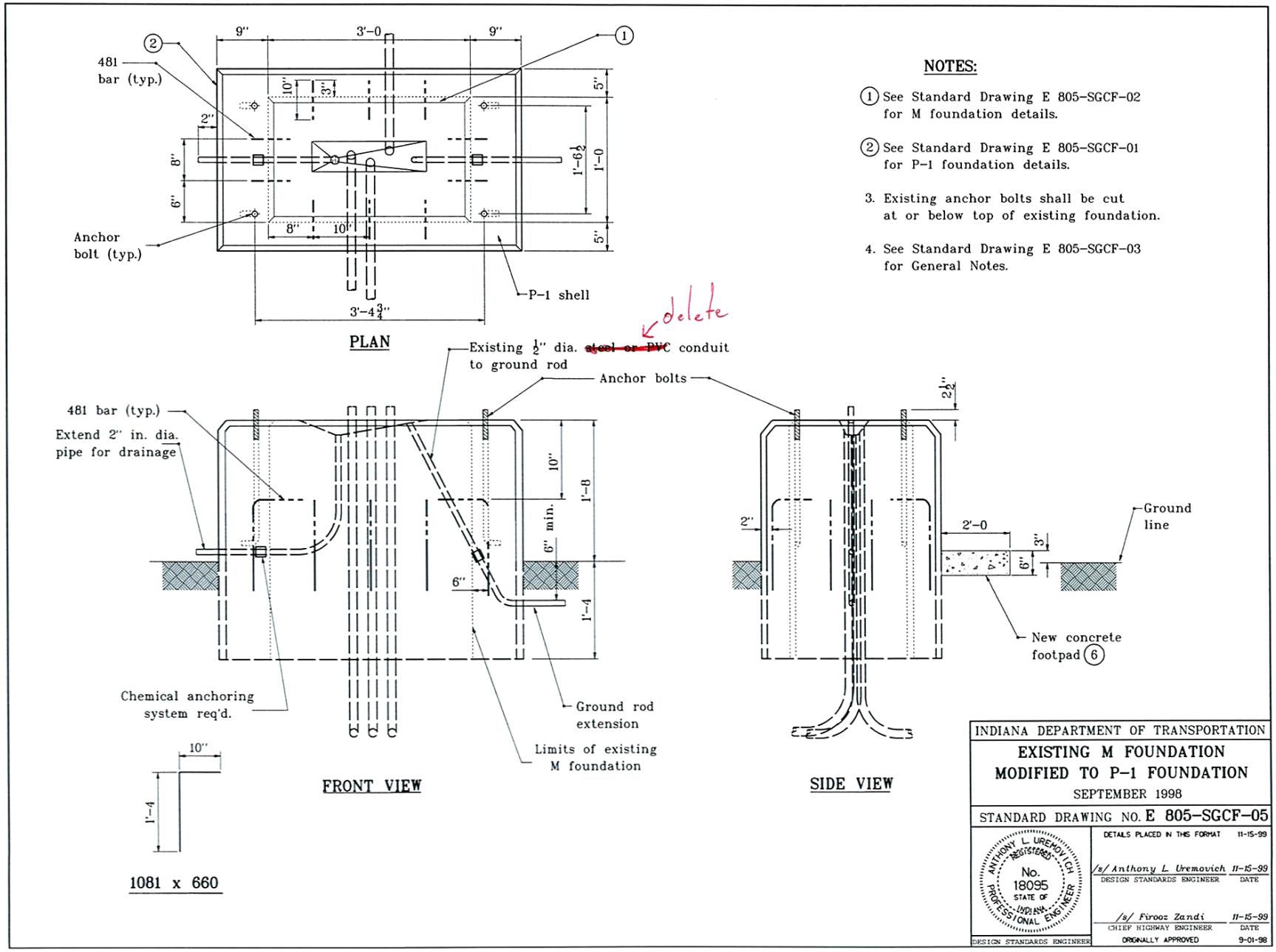
REVISION TO RECURRING SPECIAL PROVISIONS AND STANDARD DRAWINGS

805-SGCF-02 CONTROLLER CABINET FOUNDATION TYPE M



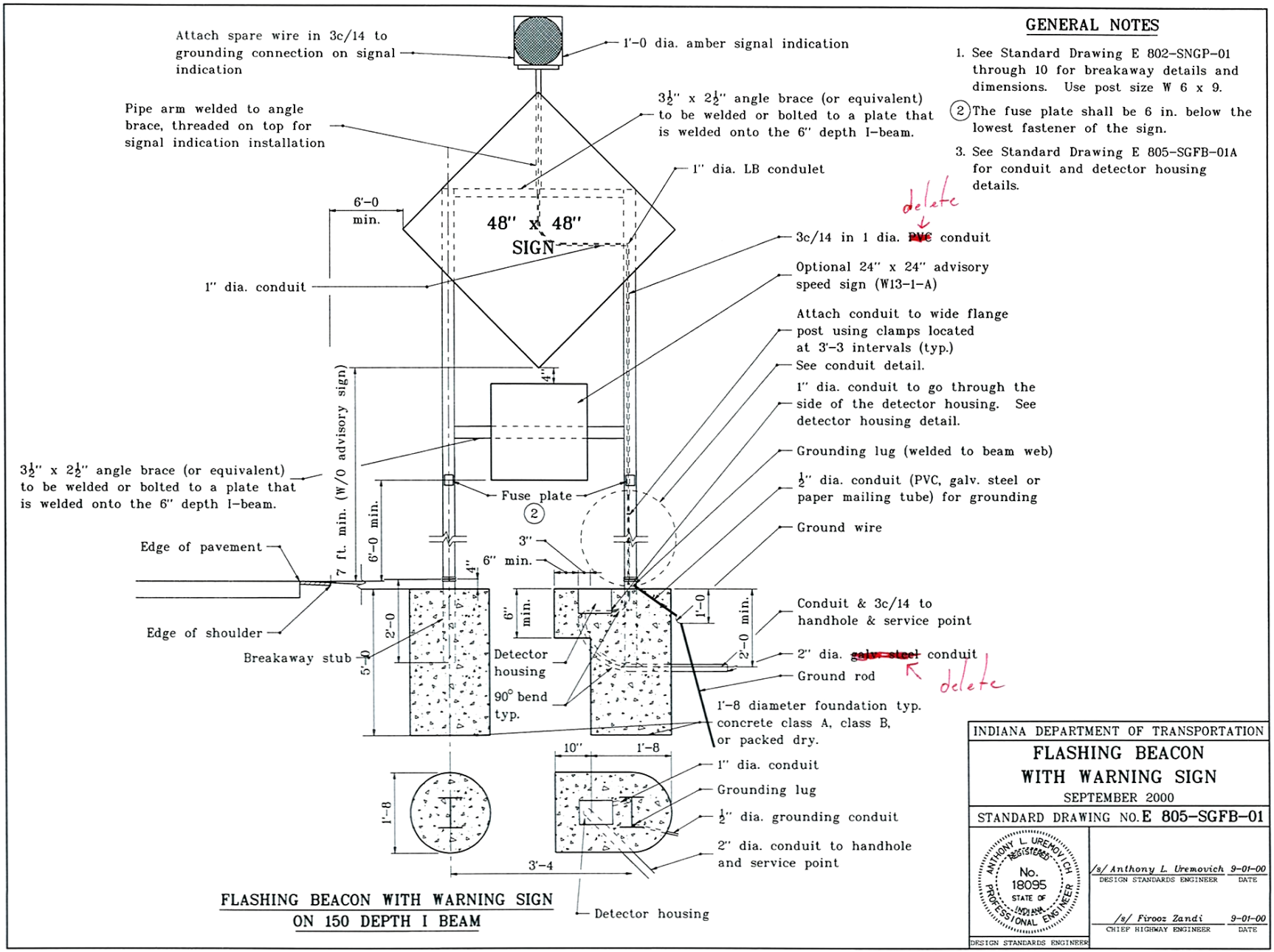
REVISION TO RECURRING SPECIAL PROVISIONS AND STANDARD DRAWINGS

805-SGCF-05 EXISTING M FOUNDATION MODIFIED TO P-1 FOUNDATION



REVISION TO RECURRING SPECIAL PROVISIONS AND STANDARD DRAWINGS

805-SGFB-01 FLASHING BEACON WITH WARNING SIGN



GENERAL NOTES

1. See Standard Drawing E 802-SNGP-01 through 10 for breakaway details and dimensions. Use post size W 6 x 9.
2. The fuse plate shall be 6 in. below the lowest fastener of the sign.
3. See Standard Drawing E 805-SGFB-01A for conduit and detector housing details.

INDIANA DEPARTMENT OF TRANSPORTATION

FLASHING BEACON WITH WARNING SIGN

SEPTEMBER 2000

STANDARD DRAWING NO. E 805-SGFB-01

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

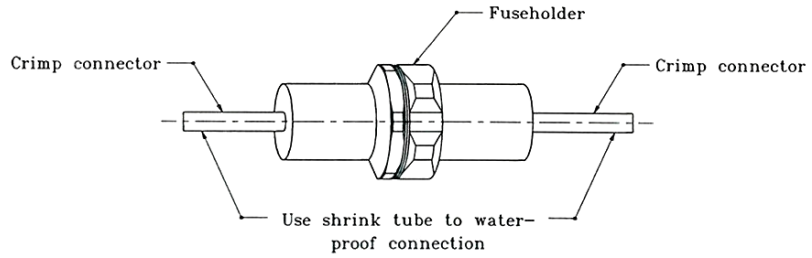
DESIGN STANDARDS ENGINEER

/s/ Anthony L. Uremovich 9-01-00
DESIGN STANDARDS ENGINEER DATE

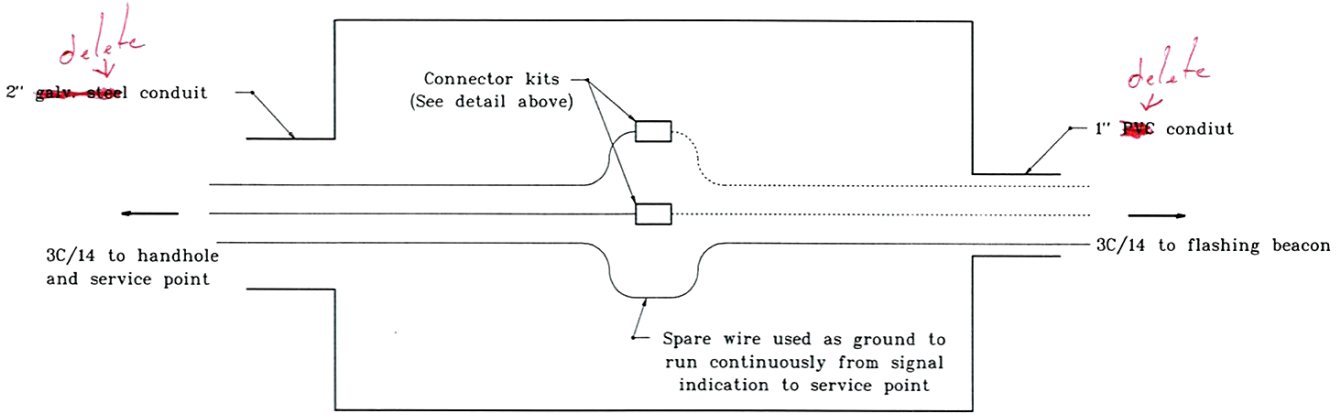
/s/ Firooz Zandi 9-01-00
CHIEF HIGHWAY ENGINEER DATE

REVISION TO RECURRING SPECIAL PROVISIONS AND STANDARD DRAWINGS

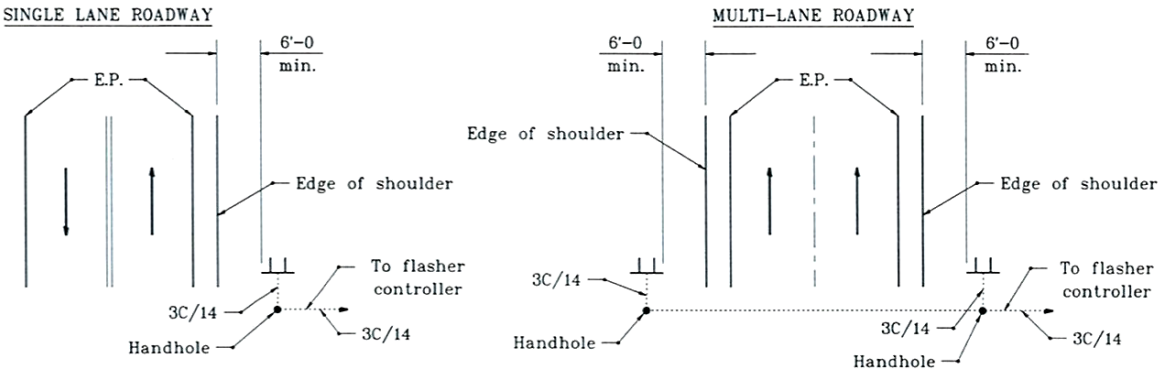
805-SGFB-02 FLASHING BEACON WITH WARNING SIGN DETAILS



DISCONNECT CONNECTOR KIT
TO BE USED IN DETECTOR HOUSING



DETECTOR HOUSING CONNECTIONS DETAIL



TYPICAL FLASHING BEACON CONFIGURATION

INDIANA DEPARTMENT OF TRANSPORTATION

FLASHING BEACON WITH WARNING SIGN DETAILS

MAY 1998

STANDARD DRAWING NO. E 805-SGFB-02

ANTHONY L. UREMOVICH REGISTERED No. 18095 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

DETAILS PLACED IN THIS FORMAT 11-15-99

/s/ Anthony L. Uremovich 11-15-99
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 11-15-99
CHIEF HIGHWAY ENGINEER DATE

ORIGINALLY APPROVED 5-01-98

COMMENTS AND ACTION

805-T-169 TRAFFIC SIGNALS
922-T-168 TRAFFIC SIGNAL MATERIALS AND EQUIPMENT
805-SGDH-01 INSTALLATION DETAIL DETECTOR HOUSING
805-SGCF-01 CONTROLLER CABINET FOUNDATION TYPE P-1
805-SGCF-02 CONTROLLER CABINET FOUNDATION TYPE M
805-SGCF-05 EXISTING M FOUNDATION MODIFIED TO P-1 FOUNDATION
805-SGFB-01 FLASHING BEACON WITH WARNING SIGN
805-SGFB-02 FLASHING BEACON WITH WARNING SIGN DETAILS

Motion:
Second:
Ayes:
Nays:

Action:
____ Passed as Submitted
____ Passed as Revised
____ Withdrawn

Standard Specifications Sections affected:

805; 922

Recurring Special Provision affected:

805-T-169 TRAFFIC SIGNALS
922-T-168 TRAFFIC SIGNAL MATERIALS AND EQUIPMENT

Standard Sheets affected:

805-SGDH-01, 805-SGCF-01, 805-SGCF-02, 805-SGCF-05, 805-SGFB-01, 805-SGFB-02

Design Manual Sections affected:

77-5.05 (502)

GIFE Sections cross-references:

NONE

____ 20__ Standard Specifications Book
____ Revise Pay Items List

____ Create RSP (No.____)
Effective ____Letting
RSP Sunset Date: ____

____ Revise RSP (No.____)
Effective ____Letting
RSP Sunset Date: ____

Standard Drawing Effective ____
____ Create RPD (No. ____)
Effective ____Letting
____ Technical Advisory

GIFE Update Req'd.? Y ___ N ___
By ____ Addition or ____ Revision

Frequency Manual Update Req'd? Y__N__
By ____ Addition or ____ Revision

Received FHWA Approval? ____

Mr. Walker
Date: 05/19/11

SPECIFICATION REVISIONS

REVISION TO RECURRING SPECIAL PROVISION

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The following Aggregate item requires revision to section 904-R-560:

1. Classification of Aggregates (904.03(a)) -- Clarification is needed for the Micro-Deval Abrasion and Aggregate Degradation test requirements for Class AS aggregates used in SMA mixtures. The Micro-Deval test is required for each coarse aggregate used in the SMA mixture and if a blend of coarse aggregates is used then the blend is required to meet a maximum of 18.0% as determined by ITM 220. When there is a blend of coarse aggregates, each individual coarse aggregate is not required to have a Micro-Deval value less than 18.0%. A similar requirement also applies for the Aggregate Degradation value for Class AS coarse aggregates used in SMA mixtures.

PROPOSED SOLUTION: The following revision is recommended to be authorized .

1.Revise the table and Notes 9 and 10 in 904.03(a) to designate that the Micro-Deval requirement of a maximum of 18.0% and Aggregate Degradation requirement of a maximum of 3.0% is intended for the blend of coarse aggregates when more than one coarse aggregate is used for SMA mixtures. These requiremants also apply to the AS aggregate if only one coarse aggregate is used in the SMA mixture.

APPLICABLE STANDARD SPECIFICATIONS: 904.03

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: 904-R-560

Submitted By: Ron Walker

Title: Manager, Office of Materials Management

Organization: INDOT

Phone Number: 317-610-7251 x 204

Date: 4-29-11

APPLICABLE SUB-COMMITTEE ENDORSEMENT? This specification revision is recommended by the INDOT/IMAA Technical Committee.

REVISION TO RECURRING SPECIAL PROVISION

904-R-560 SMA COARSE AGGREGATE REQUIREMENTS

(Proposed changes shown as highlighted in gray.
Basis for Use: Pay items: 401-09086, -09530 or -09877 SMA)

904-R-560 SMA COARSE AGGREGATE REQUIREMENTS

The Standard Specifications are revised as follows:

SECTION 904, BEGIN LINE 210, INSERT AS FOLLOWS:

a) Classification of Aggregates

Characteristic Classes	AP	AS	A	B	C	D	E	F
Quality Requirements								
Freeze and Thaw Beam Expansion, % Max. (Note 1)	.060							
Los Angeles Abrasion, %, Max. (Note 2)	40.0	30.0	40.0	40.0	45.0	45.0	50.0	
Freeze and Thaw, AASHTO T 103, Procedure A, % Max (Note 3)	12.0	12.0	12.0	12.0	16.0	16.0	20.0	25.0
Sodium Sulfate Soundness, %, Max. (Note 3)	12.0	12.0	12.0	12.0	16.0	16.0	20.0	25.0
Brine Freeze and Thaw Soundness, %, Max. (Note 3)	30	30	30	30	40	40	50	60
Absorption, % Max. (Note 4)	5.0	5.0	5.0	5.0	5.0			
Additional Requirements								
Deleterious, %, Max.								
Clay Lumps and Friable Particles	1.0	1.0	1.0	1.0	2.0	4.0		
Non-Durable (Note 5)	4.0	*2.0* ~~4.0~~	4.0	4.0	6.0	8.0		
Coke					(See	Note 6)		
Iron					(See	Note 6)		
Chert (Note 7)	3.0	3.0	3.0	5.0	8.0	10.0		
Weight per Cubic Foot for Slag, (lbs), Min.	75.0		75.0	75.0	70.0	70.0	70.0	
(Mass per Cubic Meter for Slag, (kg))	(1200)		(1200)	(1200)	(1120)	(1120)	(1120)	
Crushed Particles, % Min. (Note 8)								
Asphalt Seal Coats			70.0	70.0				
Compacted Aggregates			20.0	20.0	20.0	20.0		
Additional SMA Mixture Requirements								
Micro-Deval Abrasion, %, Max. ~~(Note 9)~~		*~~18.0~~ (Note 9)*						
Aggregate Degradation, %, Max. ~~(Note 10)~~		*~~3.0~~ (Note 10)*						

Notes:
1. Freeze and thaw beam expansion shall be tested and re-tested in accordance with ITM 210.
2. Los Angeles abrasion requirements shall not apply to BF.
3. Aggregates may, at the option of the Engineer, be accepted by the Sodium Sulfate Soundness or Brine Freeze and Thaw Soundness requirements.
4. Absorption requirements apply only to aggregates used in PCC and HMA mixtures except they shall not apply to BF. When crushed stone coarse aggregates from Category I sources consist of production from ledges whose absorptions differ by more than two percentage points, the absorption test will be performed every three months on each size of material proposed for use in PCC or HMA mixtures. Materials having absorption values between 5.0 and 6.0 that pass AP testing may be used in PCC. If variations in absorption preclude satisfactory production of PCC or HMA mixtures, independent stockpiles of materials will be sampled, tested, and approved prior to use.
5. Non-durable particles include soft particles as determined by ITM 206 and other particles which are structurally weak, such as soft sandstone, shale, limonite concretions, coal, weathered schist, cemented gravel, ocher, shells, wood, or other objectionable material. Determination of non-durable particles shall be made from the total weight (mass) of material retained on the 3/8 in. (9.5 mm) sieve. Scratch Hardness Test shall not apply to crushed stone coarse aggregate.
6. ACBF and SF coarse aggregate shall be free of objectionable amounts of coke, iron, and lime agglomerates.
7. The bulk specific gravity of chert shall be based on the saturated surface dry condition. The amount of chert less than 2.45 bulk specific gravity shall be determined on the total weight (mass) of material retained on the 3/8 in. (9.5 mm) sieve for sizes 2 through 8, 43, 53, and 73 and on the total weight (mass) of material retained on the No. 4 (4.75 mm) sieve for sizes 9, 11, 12, and 91.

REVISION TO RECURRING SPECIAL PROVISION

904-R-560 SMA COARSE AGGREGATE REQUIREMENTS

8. Crushed particle requirements apply to gravel coarse aggregates used in compacted aggregates, and seal coats except seal coats used on shoulders. Determination of crushed particles shall be made from the weight (mass) of material retained on the No. 4 (4.75 mm) sieve in accordance with ASTM D 5821.
9. *Micro-Deval ~~a~~Abrasion ~~requirements shall apply to~~ testing will be required for each coarse aggregate. A coarse aggregate or a blend of coarse aggregates shall have ~~the~~ a maximum Micro-Deval ~~a~~Abrasion loss value of 18.0% as determined in accordance with ITM 220.*
10. *A coarse aggregate or a blend of coarse aggregates shall have a maximum Aggregate ~~d~~Degradation ~~shall be~~ loss value of 3.0% as determined in accordance with ITM 220.*

SECTION 904, BEGIN LINE 246, DELETE AND INSERT AS FOLLOWS:

2. SMA Coarse Aggregate

Coarse Aggregate Type	Traffic ESALs		
	< 3,000,000	< 10,000,000	≥ 10,000,000
Air-Cooled Blast Furnace Slag	No	No	No
Steel Furnace Slag	~~Yes~~ *Note 1*	~~Yes~~ *Note 1*	Yes
Sandstone	~~Yes~~ *Note 1*	~~Yes~~ *Note 1*	Yes
Crushed Dolomite	~~No~~ *Note 1*	~~No~~ *Note 1*	~~No~~ *Note 2*
Polish Resistant Aggregates	~~No~~ *Note 1*	~~No~~ *Note 1*	~~No~~ *Note 2*
Crushed Stone	No	No	No
Gravel	No	No	No

Notes:
1. *Steel furnace slag, sandstone, crushed dolomite, polish resistant aggregates or any blend of these aggregates may be used provided the aggregates are in accordance with 904.03(a).*
2. *Polish resistant aggregates or crushed dolomite may be used when blended with sandstone but shall not exceed 50% of the coarse aggregate by weight (mass), or shall not exceed 40% of the coarse aggregate by weight (mass) when blended with steel furnace slag. The aggregates shall be in accordance with 904.03(a).*

SECTION 904, BEGIN LINE 253, INSERT AS FOLLOWS:

(f) Sampling and Testing

Sampling and testing will be in accordance with the following AASHTO, ASTM, and ITMs.

Los Angeles Abrasion.....AASHTO T 96
*Amount of Material finer than No. 200 (75 µm) Sieve .....AASHTO T 11
Brine Freeze and Thaw Soundness. .....ITM 209
Clay Lumps and Friable Particles. .....AASHTO T 112
Control Procedures for Classification of Aggregates.....ITM 203
Crushed Particles.....ASTM D 5821
Dolomite Aggregates. .....ITM 205
Flat and Elongated Particles.....ASTM D 4791
Freeze and Thaw Beam Expansion.....ITM 210
*Lightweight Pieces in Aggregates.....AASHTO T 113
Micro-Deval Abrasion. .....*AASHTO T 327*
Polished Resistant Aggregates .....ITM 214
*Sampling Aggregates .....AASHTO T 2
Sampling Stockpiled Aggregates .....ITM 207

REVISION TO RECURRING SPECIAL PROVISION

904-R-560 SMA COARSE AGGREGATE REQUIREMENTS

Scratch Hardness	ITM 206
*Sieve Analysis	AASHTO T 27
*Soundness	AASHTO T 103, T 104
*Specific Gravity and Absorption	AASHTO T 85
Unit Weight and Voids in Aggregates	AASHTO T 19

*Except as noted in 904.06

COMMENTS AND ACTION

904-R-560 SMA COARSE AGGREGATE REQUIREMENTS

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: 904.03 (2010 SS) pg 773. Recurring Special Provision affected: 904-R-560 SMA COARSE AGGREGATE REQUIREMENTS *(Note: Incorporated into 2012 SS)* Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The following HMA items require revisions to sections 401, 402, 409, and 410:

1. Volumetric Mix design (401.05) -- Recent projects using 60% fine aggregate and 40% blended coarse aggregate meeting the requirements of 904.03(d)1 and 401.05 resulted in low friction numbers after approximately one year of service. Subsequent lab and field studies determined that the poor pavement surface macrotexture caused by a mixture that was too fine-graded was the probable cause and that 9.5mm category 4 and 5 HMA surface mixtures should require more coarse aggregate . A revision was made to require the amount passing the No. 8 sieve to be less than the PCS Control Point. Similar problems have been observed for 9.5mm category 3 mixtures and this restriction should also be applied to the category 3, 9.5mm mixtures.

2. Volumetric mix Design (401.05) -- A new DMF should not be required for a binder grade change since a new mix design is not required when this change is made.

3.Recycled Materials (401.06, 402.08, 410.06) A study of the impact on friction resistance of 15.0% binder replacement in high traffic volume HMA surface mixtures placed in 2009 was done and results indicated no detrimental effect to skid resistance. The RAP in these mixtures is required to be 100% passing the 3/8 in. sieve and 95-100% passing the No. 4 sieve. An increase to 25.0% binder replacement for category 3,4, and 5 HMA surface mixtures should be made because there would be a small risk in reduction of friction resistance with this increase of binder replacement.

4. Design mix formula (402.04) Limitations on the lay rates for 4.75mm and 12.5mm HMA surface mixtures should be designated because of the difficulty in placement and compaction of these mixtures with the designated equipment and procedures of 402.

5. Compaction (402.15, 409.03(d)) A definition of an oscillatory roller is needed. This is a roller that does not fit the definition of a vibratory roller because of the capability to impact horizontal and vertical impact forces with one or both drums of the roller. A vibratory roller or one drum of the oscillatory roller that impacts a vertical impact force may be restricted for use if directed by the Engineer.

PROPOSED SOLUTION: The following revisions are recommended to be authorized .

1.Add the PCS gradation requirements to 9.5mm category 3 mixtures

2. Remove the requirement of a new DMF when there is a change in the binder grade

SPECIFICATION REVISIONS

REVISION TO STANDARD SPECIFICATIONS

3. Increase the allowable amount of binder replacement in dense graded category 3,4, and 5 surface mixtures

4. Require that 4.75 mm surface mixtures in accordance with 402 not be used when the plan lay rate is greater than 100 #/syd and 12.5mm surface mixtures in accordance with 402 not be used when the plan lay rate is less than 195#/syd.

5. Add a definition for oscillatory rollers.

APPLICABLE STANDARD SPECIFICATIONS: 401.05, 401.06, 402.04, 402.08, 402.15, 409.03, 410.06

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION:

APPLICABLE SECTION OF GIFE: Section 13

APPLICABLE RECURRING SPECIAL PROVISIONS:

Submitted By: Ron Walker

Title: Manager, Office of Materials Management

Organization: INDOT

Phone Number: 317-610-7251 x 204

Date: 4-29-11

APPLICABLE SUB-COMMITTEE ENDORSEMENT? These specification revisions are recommended by the INDOT/APAI Technical Committee.

REVISION TO STANDARD SPECIFICATIONS

SECTION 401 – QUALITY CONTROL/QUALITY ASSURANCE, QC/QA, HOT MIX ASPHALT, HMA PAVEMENT
401.05 VOLUMETRIC MIX DESIGN
401.06 RECYCLED MATERIALS

(Changes that are shown in italics have been approved on previous meetings.
New proposed changes shown as highlighted in gray.)

The Standard Specifications are revised as follows:

SECTION 401, BEGIN LINE 62, INSERT AS FOLLOWS:

The single percentage of aggregate passing each required sieve shall be within the limits of the following gradation tables:

	Dense Graded, Mixture Designation – Control Point (Percent Passing)				
	25.0 mm	19.0 mm	12.5 mm	9.5 mm	4.75 mm
Sieve Size					
50.0 mm					
37.5 mm	100.0				
25.0 mm	90.0 - 100.0	100.0			
19.0 mm	< 90.0	90.0 - 100.0	100.0		
12.5 mm		< 90.0	90.0 - 100.0	100.0	100.0
9.5 mm			< 90.0	90.0 - 100.0	95.0 - 100.0
4.75 mm				< 90.0	90.0 - 100.0
2.36 mm	19.0 - 45.0	23.0 - 49.0	28.0 - 58.0	32.0 - 67.0*	
1.18 mm					30.0 - 60.0
600 µm					
300 µm					
75 µm	1.0 - 7.0	2.0 - 8.0	2.0 - 10.0	2.0 - 10.0	6.0 - 12.0
** The mix design gradation shall be less than or equal to the PCS control point for 9.5 mm category 3, 4 and 5 surface mixtures.*					

PCS Control Point for Mixture Designation (Percent Passing)					
Mixture Designation	25.0 mm	19.0 mm	12.5 mm	9.5 mm	4.75 mm
Primary Control Sieve	4.75 mm	4.75 mm	2.36 mm	2.36 mm	NA
PCS Control Point	40	47	39	47	NA

SECTION 401, BEGIN LINE 97, DELETE AND INSERT AS FOLLOWS:

A PG binder grade or source change will not require a new mix design. If the upper temperature classification of the PG binder is lower than the original PG grade, a new TSR value is required. ~~A new DMF shall be submitted for a binder grade change and shall reference the originating DMF/JMF number.~~

SECTION 401, BEGIN LINE 157, DELETE AND INSERT AS FOLLOWS:

The recycled material percentages shall be as specified on the DMF. HMA mixtures utilizing recycled materials shall be limited to the binder replacement percentages in the following table:

REVISION TO STANDARD SPECIFICATIONS

SECTION 401 – QUALITY CONTROL/QUALITY ASSURANCE, QC/QA, HOT MIX ASPHALT, HMA PAVEMENT
401.05 VOLUMETRIC MIX DESIGN
401.06 RECYCLED MATERIALS

HMA mixtures utilizing RAP or RAS or a blend of RAP and RAS

Maximum Binder Replacement, %									
Mixture Category	*Base and Intermediate*						*Surface*		
	Dense Graded				*Open Graded*		*Dense Graded*		
	25.0 mm	*19.0 mm*	*12.5 mm*	*9.5 mm*	*25.0 mm*	*19.0 mm*	*12.5 mm*	*9.5 mm*	*4.75 mm*
1	*40.0**				*25.0*		*40.0**		
2	*40.0**				*25.0*		*40.0**		
3	*40.0**				*25.0*		~~*15.0*~~ *25.0*		
4	*40.0**				*25.0*		~~*15.0*~~ *25.0*		
5	*40.0**				*25.0*		~~*15.0*~~ *25.0*		

**RAS materials shall not contribute more than 25% by weight (mass) of the total binder content for any HMA mixture.*

REVISION TO STANDARD SPECIFICATIONS

SECTION 402 – HOT MIX ASPHALT, HMA, PAVEMENT
402.04 DESIGN MIX FORMULA
402.08 RECYCLED MATERIALS
402.15 COMPACTION

(Changes that are shown in italics have been approved on previous meetings.
New proposed changes shown as highlighted in gray.)

The Standard Specifications are revised as follows:

SECTION 402, BEGIN LINE 39, INSERT AS FOLLOWS:

Mixture Type	Type A	Type B	Type C	Type D
Design ESAL	200,000	2,000,000	9,000,000	11,000,000
Surface	*4.75 mm*	*4.75 mm*	*4.75 mm*	*4.75 mm*
	9.5 mm	9.5 mm	9.5 mm	9.5 mm
	12.5 mm	12.5 mm	12.5 mm	12.5 mm
Surface – PG Binder	64-22	64-22	70-22	70-22
Intermediate	*9.5 mm*	*9.5 mm*	*9.5 mm*	*9.5 mm*
	12.5 mm	12.5 mm	12.5 mm	12.5 mm
	19.0 mm	19.0 mm	19.0 mm	19.0 mm
	25.0 mm	*25.0 mm*	*25.0 mm*	*25.0 mm*
Intermediate – PG Binder	64-22	64-22	64-22	70-22
Base	19.0 mm	19.0 mm	19.0 mm	19.0 mm
	25.0 mm	25.0 mm	25.0 mm	25.0 mm
Base – PG Binder	64-22	64-22	64-22	64-22

Surface 4.75 mm mixtures shall not be used when the required lay rate shown on the plans is greater than 100 lb/sq yd. Surface 12.5 mm mixtures shall not be used when the required lay rate shown on the plans is less than 195 lb/sq yd.

SECTION 402, BEGIN LINE 138, DELETE AND INSERT AS FOLLOWS:

The recycled material percentages shall be as specified on the DMF. HMA mixtures utilizing recycled materials shall be limited to the binder replacement percentages in the following table:

HMA mixtures utilizing RAP or RAS or a blend of RAP and RAS

Maximum Binder Replacement, %							
Mixture Category	*Base and Intermediate*				*Surface*		
	Dense Graded				*Dense Graded*		
	25.0 mm	*19.0 mm*	*12.5 mm*	*9.5 mm*	*12.5 mm*	*9.5 mm*	*4.75 mm*
A	*40.0**				*40.0**		
B	*40.0**				*40.0**		
C	*40.0**				~~*15.0*~~ *25.0*		
D	*40.0**				~~*15.0*~~ *25.0*		

**RAS materials shall not contribute more than 25% by weight (mass) of the total binder content for any HMA mixture.*

REVISION TO STANDARD SPECIFICATIONS

SECTION 402 – HOT MIX ASPHALT, HMA, PAVEMENT
402.04 DESIGN MIX FORMULA
402.08 RECYCLED MATERIALS
402.15 COMPACTION

SECTION 402, BEGIN LINE 267, INSERT AS FOLLOWS:

Number of Roller Applications							
Rollers	Courses ≤ 440 lb/syd (240 kg/m^2)					Courses > 440 lb/syd (240 kg/m^2)	
	Option 1	Option 2	Option 3	Option 4	*Option 5*	Option 1	Option 2
Three Wheel	2		4			4	
Pneumatic Tire	2	4				4	
Tandem	2	2	2			4	
Vibratory ~~Roller~~ *				6			8
*Oscillatory**					*6*	-	-

**Vertical impact force shall not be used if directed by the Engineer.*

REVISION TO STANDARD SPECIFICATIONS

SECTION 409 – EQUIPMENT
409.03 HMA LAYDOWN OPERATION

(New proposed changes shown as highlighted in gray.)

The Standard Specifications are revised as follows:

SECTION 409, BEGIN LINE 105, INSERT AS FOLLOWS:

4. Vibratory Roller

A vibratory roller ~~shall be equipped with~~ *is a roller that has both drums equipped for vertical impact forces,* a variable amplitude system, a speed control device, and have a minimum vibration frequency of 2000 vibrations per min. A reed tachometer shall be provided for verifying the frequency of vibrations. *The vertical impact forces of both drums shall not be used if directed by the Engineer.*

5. Oscillatory Roller

An oscillatory roller is a roller that has both drums equipped for horizontal and vertical shear forces or one drum equipped for horizontal and vertical shear force and the other drum equipped for a vertical impact force. The vertical impact force shall not be used if directed by the Engineer.

~~5~~ *6*. Trench Roller

A trench roller shall have a compaction wheel bearing of no less than 300 lb/in (5.3 kg/mm)

~~6~~ *7*. Specialty Roller/Compactor

Inaccessible or short sections of HMA may be compacted with specialty equipment approved by the Engineer

REVISION TO STANDARD SPECIFICATIONS

SECTION 410 – QUALITY CONTROL/QUALITY ASSURANCE, GC/GA, HMA SURFACE –SMA PAVEMENT
410.06 RECYCLED MATERIALS

(Changes that are shown in italics have been approved on previous meetings.
New proposed changes shown as highlighted in gray.)

The Standard Specifications are revised as follows:

SECTION 410, BEGIN LINE 124, DELETE AND INSERT AS FOLLOWS:

The recycled material percentages shall be as specified on the DMF. SMA mixtures utilizing recycled materials shall be limited to the binder replacement percentages in the following table:

SMA mixtures utilizing RAP or RAS or a blend of RAP and RAS

Maximum Binder Replacement, %		
SMA Surface		
Mixture Category	*12.5 mm*	*9.5 mm*
1	*40.0**	*40.0**
2	*40.0**	*40.0**
3	~~*15.0*~~ *25.0*	~~*15.0*~~ *25.0*
4	~~*15.0*~~ *25.0*	~~*15.0*~~ *25.0*
5	~~*15.0*~~ *25.0*	~~*15.0*~~ *25.0*

**RAS materials shall not contribute more than 25% by weight (mass) of the total binder content for any HMA mixture.*

COMMENTS AND ACTION

401.05 VOLUMETRIC MIX DESIGN
401.06 RECYCLED MATERIALS
402.04 DESIGN MIX FORMULA
402.08 RECYCLED MATERIALS
402.15 COMPACTION
409.03 HMA LAYDOWN OPERATION
410.06 RECYCLED MATERIALS

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: 401.05; .06;402.04; .08;.15; 409.03; 410.06. Recurring Special Provision affected: 400-R-553 HMA PROVISIONS *(Note: Incorporated into 2012 SS)* Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: SECTION 13	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____

Mr. Pankow
Date: 05/19/11

SPECIFICATION REVISIONS

REVISION TO STANDARD DRAWINGS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Some welding requirements are missing from some of the bridge railing standard drawings.

PROPOSED SOLUTION: Show the welding requirements where necessary.

APPLICABLE STANDARD SPECIFICATIONS: None

APPLICABLE STANDARD DRAWINGS: 706-BRPP-01, 706-BRPP-02, 706-BRPP-03, 706-BRPP-04, 706-BRPP-06, 706-BRTF-09, 706-BRTM-02

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

Submitted By: Greg Pankow

Title: State Construction Engineer

Organization: INDOT

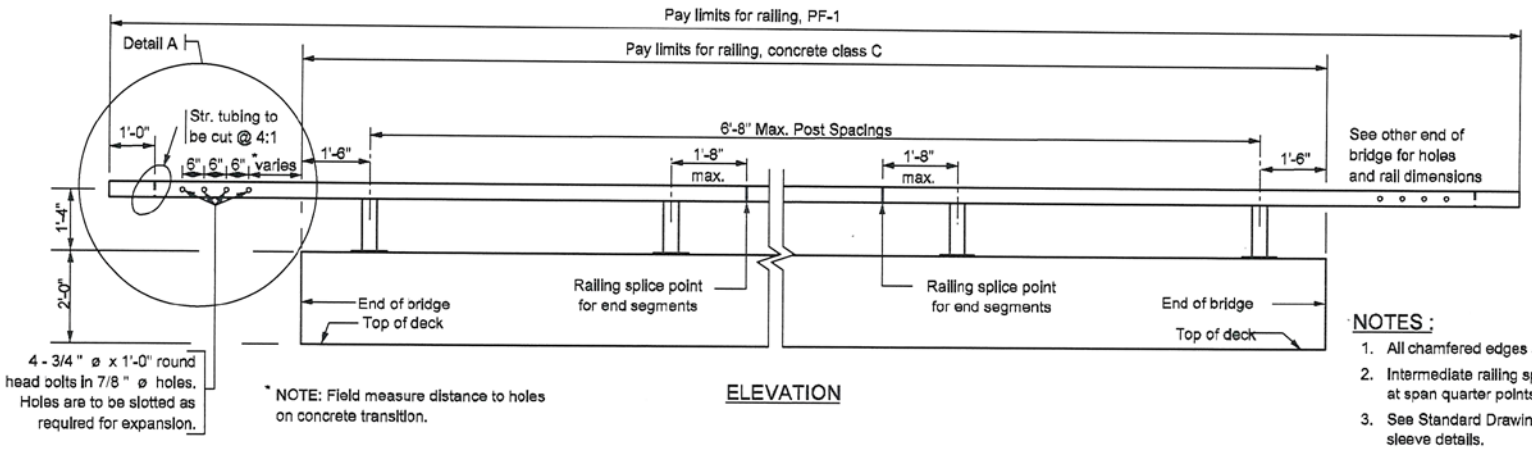
Phone Number: 2-5502

Date: May 4, 2011

APPLICABLE SUB-COMMITTEE ENDORSEMENT? None

REVISION TO STANDARD DRAWINGS

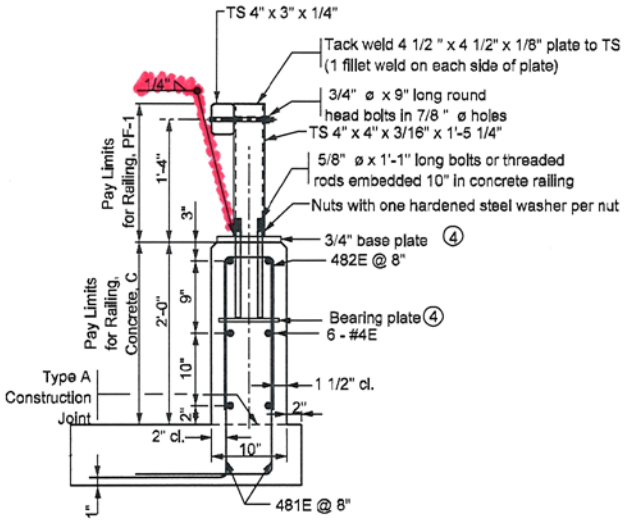
706-BRPP-01 RAILING, PF-1



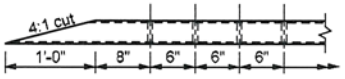
ELEVATION

NOTES :

1. All chamfered edges shall be 1".
2. Intermediate railing splices shall be placed every 20 ft. with center of connection at span quarter points.
3. See Standard Drawing E 706-BRPP-05 for railing tube details and inner sleeve details.
4. See Standard Drawing E 706-BRPP-06 for base plate detail, bearing plate detail, and reinforcing steel bar bends.
5. See Standard Drawings E 706-TTBP-01, and E 706-TTBP-02 for Concrete Bridge RailingTransition, TPF-1.
6. See Standard Drawing E 703-BRST-01 for standard 180° bar bending details.
7. All reinforcing bars designated "E" shall be epoxy coated.



TYPICAL SECTION



DETAIL A
(Plan View of top rail)

INDIANA DEPARTMENT OF TRANSPORTATION

RAILING, PF-1

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-BRPP-01

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

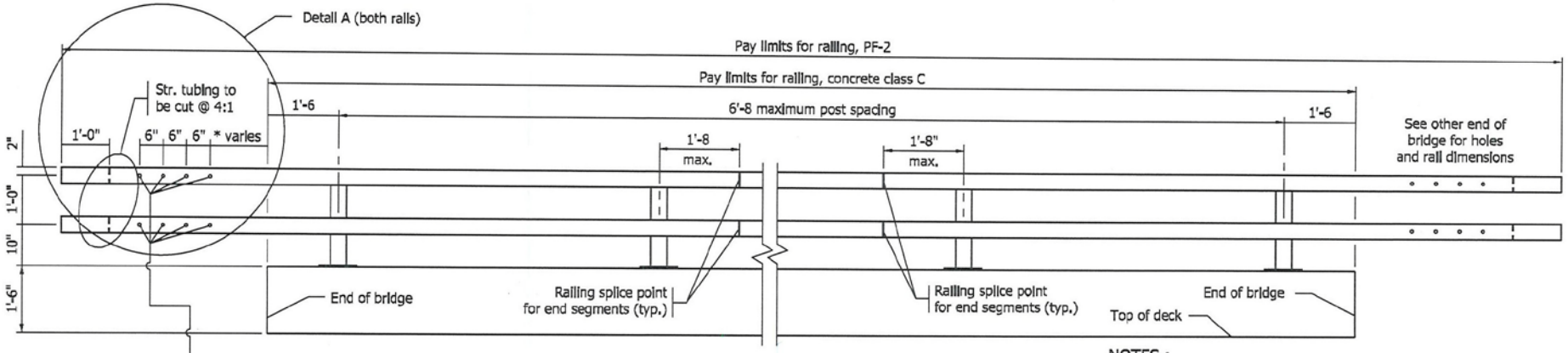
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/01/11
DESIGN STANDARDS ENGINEER DATE

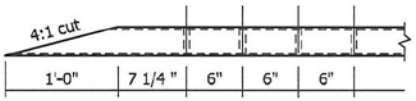
/s/ Mark A. Miller 09/01/11
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD DRAWINGS

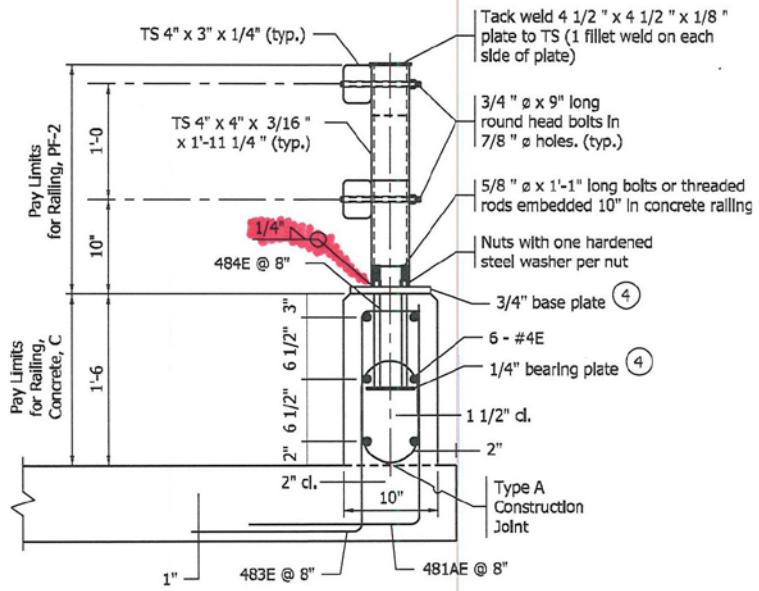
706-BRPP-02 RAILING, PF-2



ELEVATION



DETAIL A
(Plan view of both rails)



TYPICAL SECTION

NOTES :

1. All chamfered edges shall be 1".
2. Intermediate railing splices shall be placed every 20 ft. with center of connection at span quarter points.
3. See Standard Drawing E 706-BRPP-05 for railing tube details and Inner sleeve details.
4. See Standard Drawing E 706-BRPP-06 for base plate detail, bearing plate detail, and reinforcing steel bar bends.
5. See Standard Drawings E 706-TTBP-03, and E 706-TTBP-04 for Concrete Bridge RailingTransition, TPF-2.
6. See Standard Drawing E 703-BRST-01 for standard 180° bar bending details.
7. All reinforcing bars designated "E" shall be epoxy coated.

INDIANA DEPARTMENT OF TRANSPORTATION

RAILING, PF-2

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-BRPP-02

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

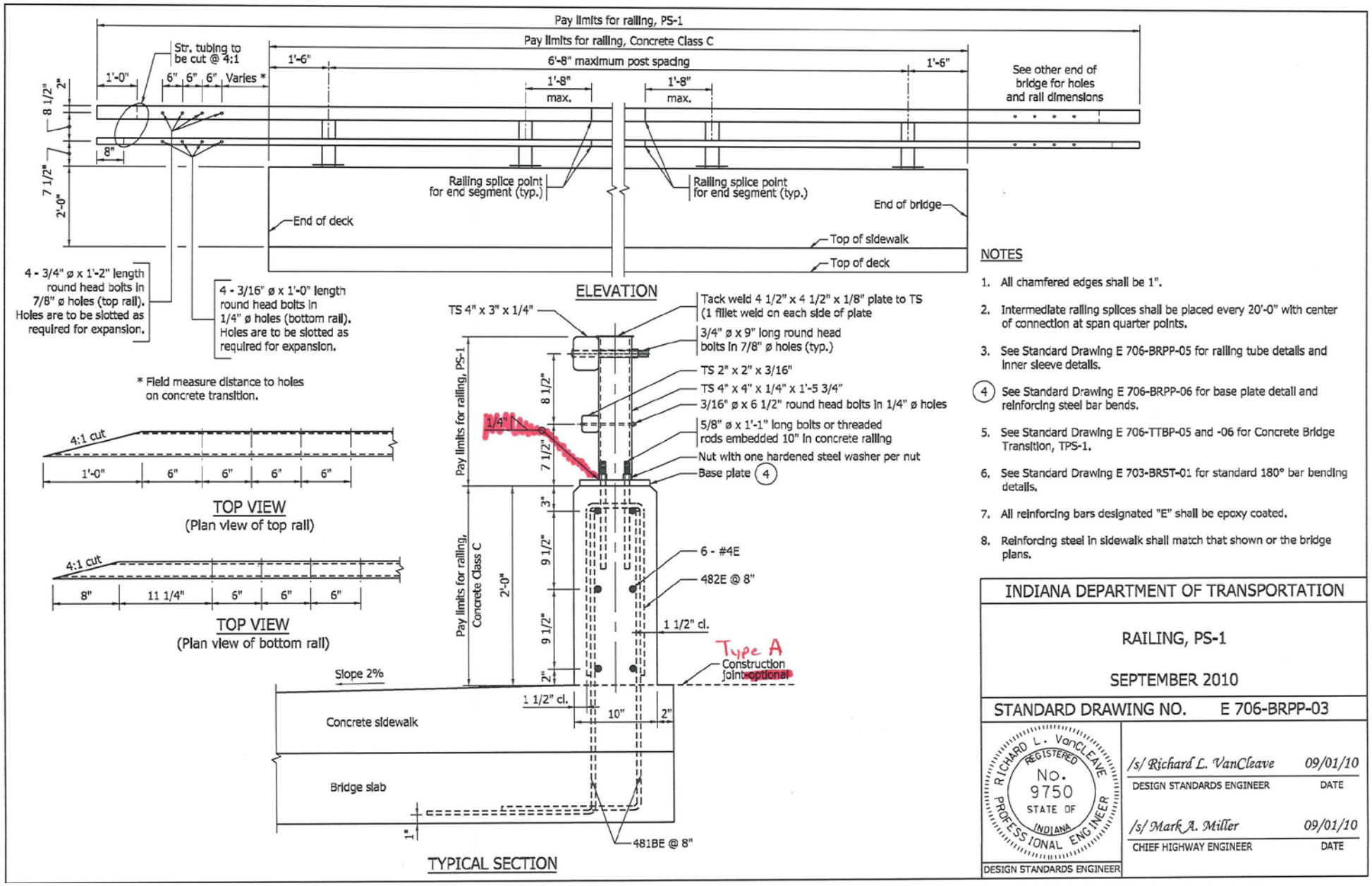
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/01/11
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/11
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD DRAWINGS

706-BRPP-03 RAILING, PS-1



NOTES

1. All chamfered edges shall be 1".
2. Intermediate railing splices shall be placed every 20'-0" with center of connection at span quarter points.
3. See Standard Drawing E 706-BRPP-05 for railing tube details and inner sleeve details.
4. See Standard Drawing E 706-BRPP-06 for base plate detail and reinforcing steel bar bends.
5. See Standard Drawing E 706-TTBP-05 and -06 for Concrete Bridge Transition, TPS-1.
6. See Standard Drawing E 703-BRST-01 for standard 180° bar bending details.
7. All reinforcing bars designated "E" shall be epoxy coated.
8. Reinforcing steel in sidewalk shall match that shown or the bridge plans.

INDIANA DEPARTMENT OF TRANSPORTATION

RAILING, PS-1

SEPTEMBER 2010

STANDARD DRAWING NO. E 706-BRPP-03

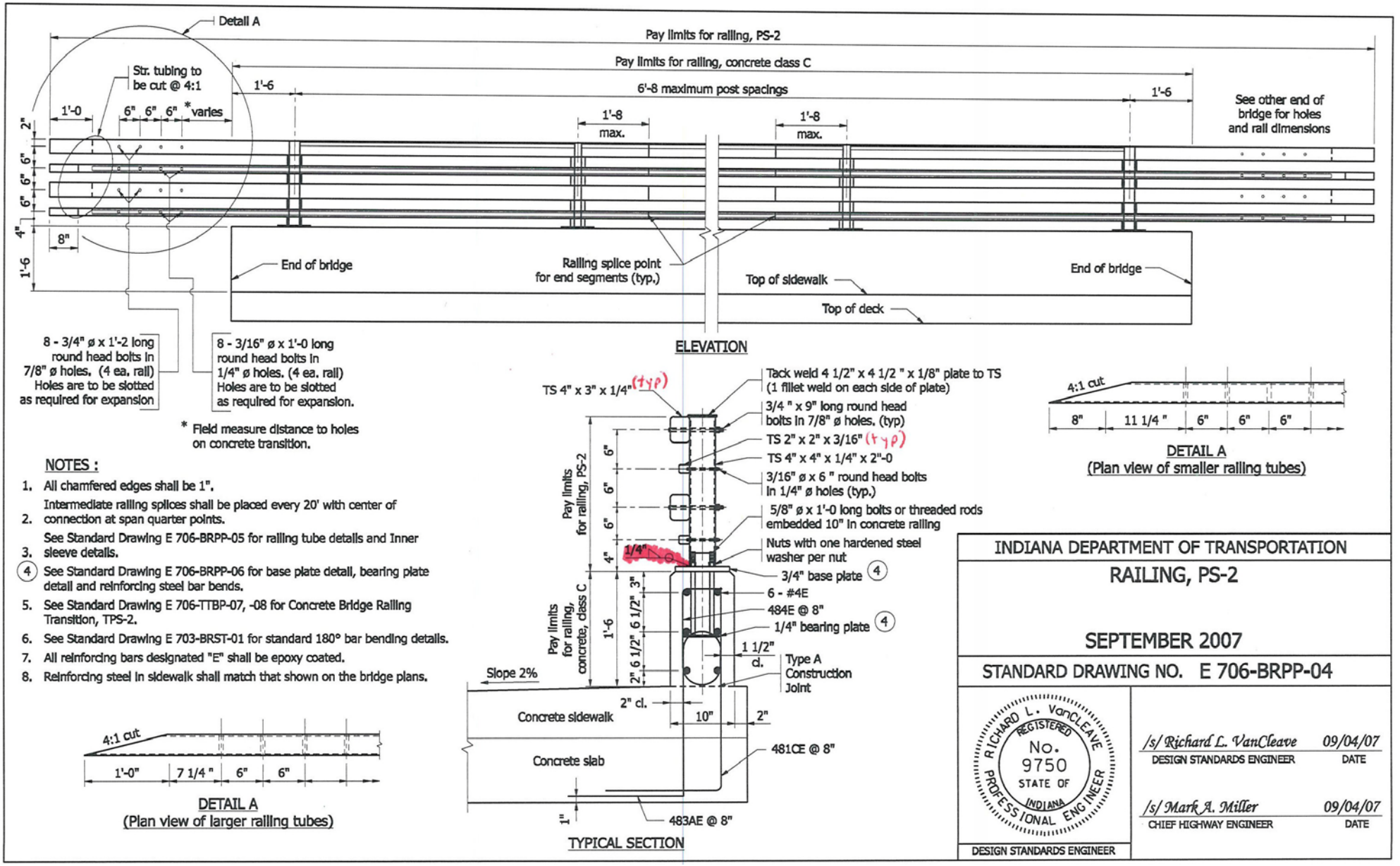
RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 09/01/10
DESIGN STANDARDS ENGINEER DATE

/s/ Mark A. Miller 09/01/10
CHIEF HIGHWAY ENGINEER DATE

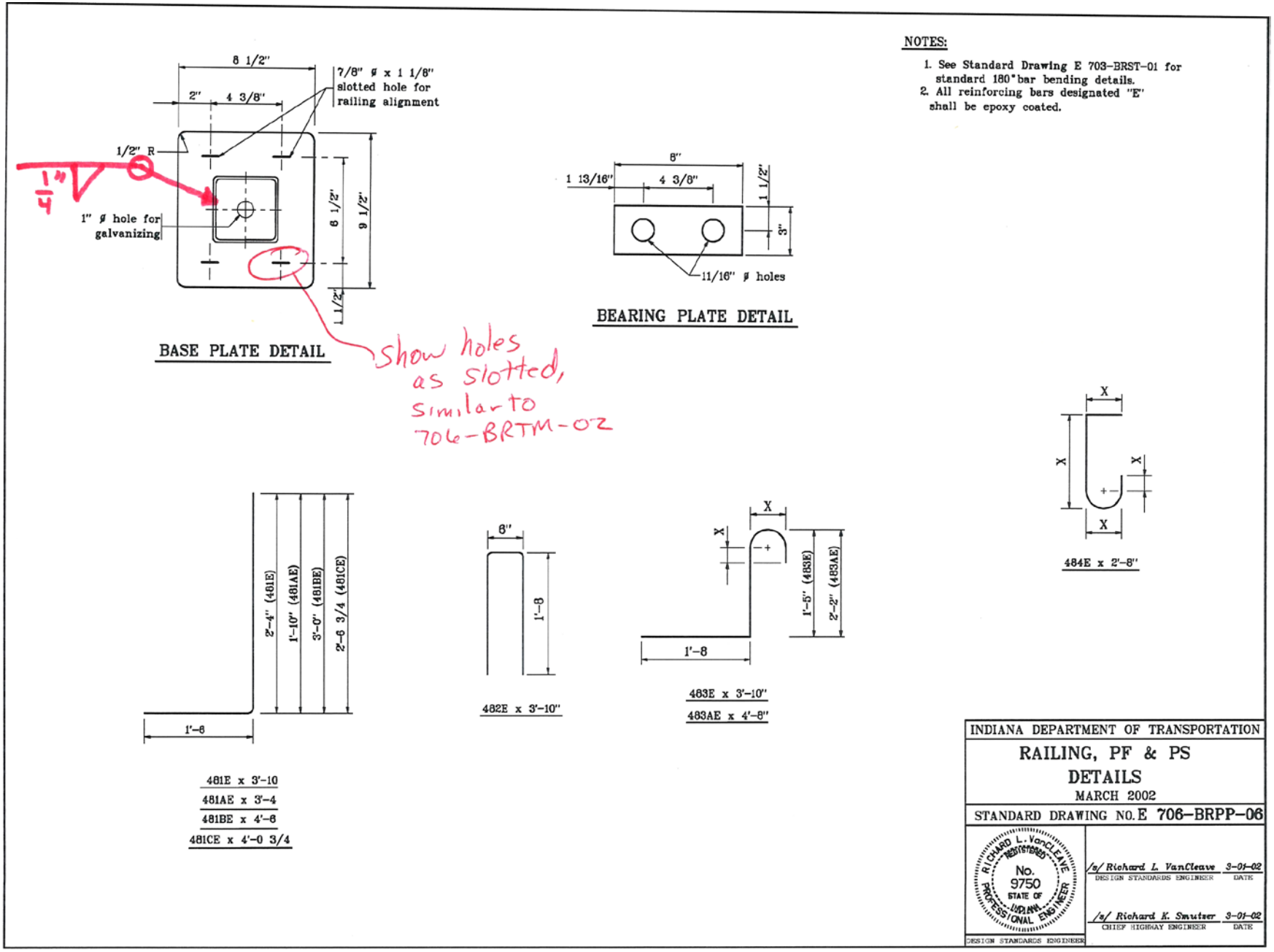
REVISION TO STANDARD DRAWINGS

706-BRPP-04 RAILING, PS-2



REVISION TO STANDARD DRAWINGS

706-BRPP-06 RAILING, PF & PS DETAILS



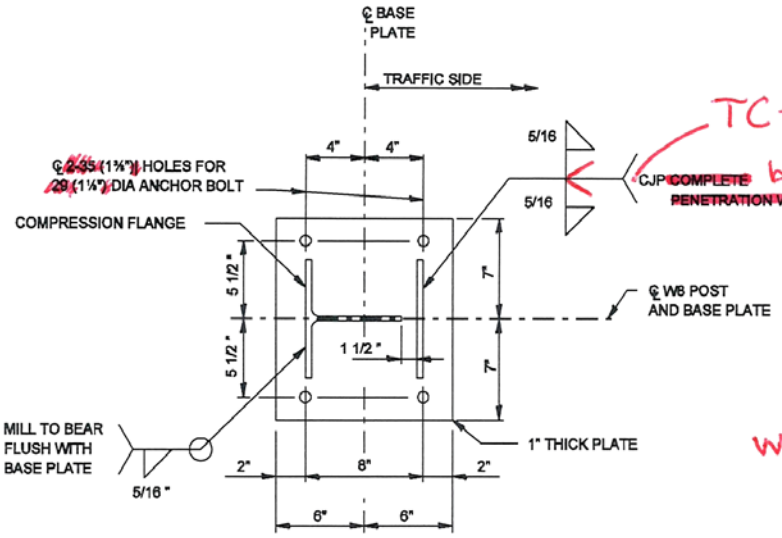
REVISION TO STANDARD DRAWINGS

706-BRTF-09 CONCRETE BRIDGE RAILING TYPE TF-2

NOTES:

1. $1\frac{3}{8}$" HOLES FOR $1\frac{1}{8}$" ANCHOR BOLT.

2. SEE STANDARD SPECIFICATION 711.36



POST TO BASE PLATE DETAIL

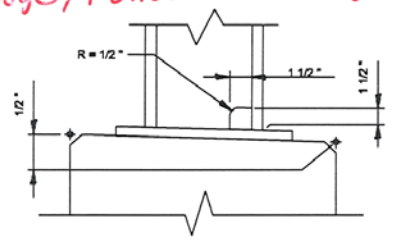
TC-U5b

5/16

5/16

CJP COMPLETE PENETRATION WELD.

backgouge; runoff tabs required



WELD ACCESS DRAIN HOLE DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING
TYPE TF-2

SEPTEMBER 2005

STANDARD DRAWING NO. E 706-BRTF-09

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

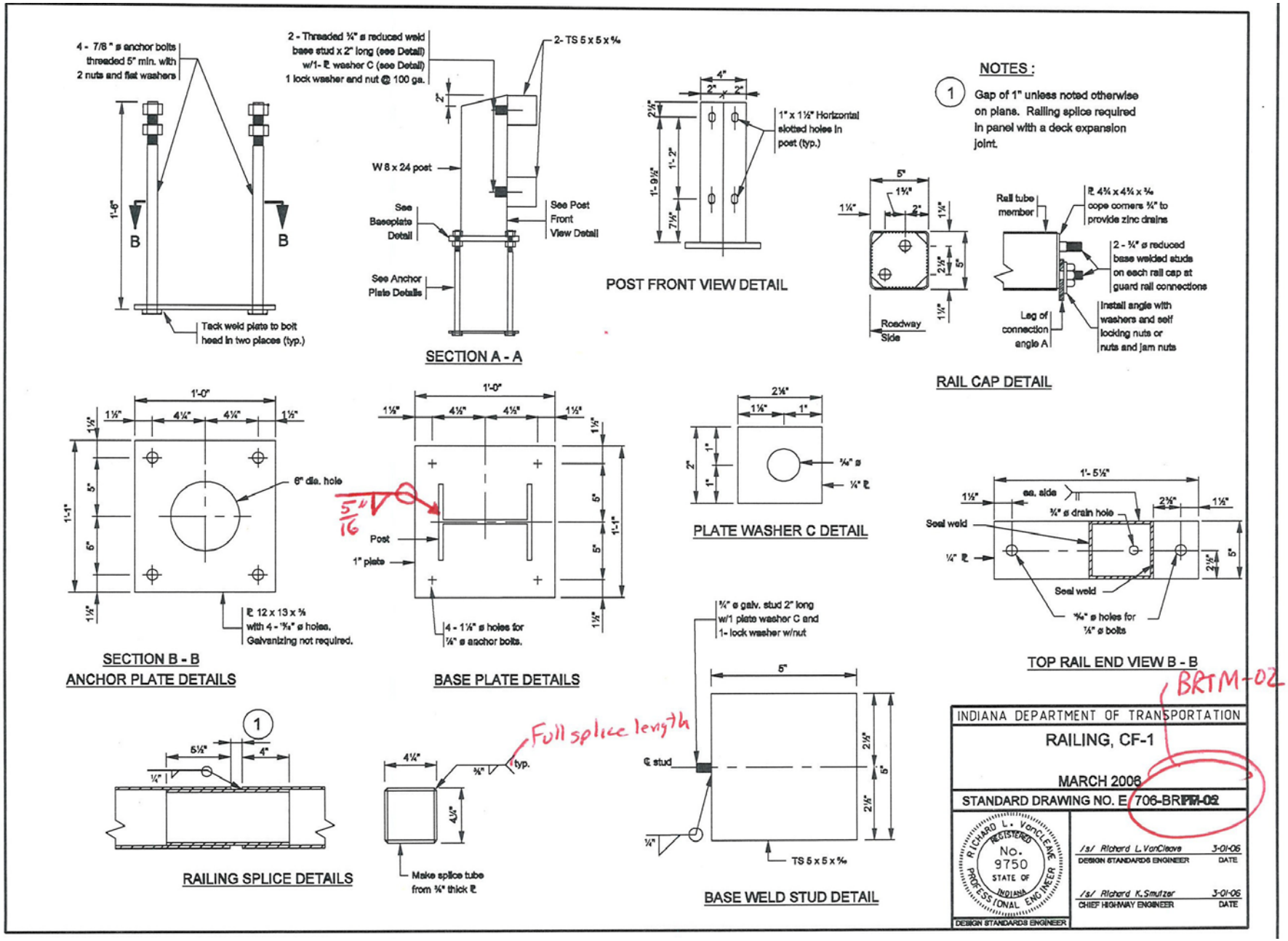
DESIGN STANDARDS ENGINEER

/s/ Richard L VanCleave 9-01-05
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K Smutzer 9-01-05
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD DRAWINGS

706-BRTM-02 RAILING, CF-1



REVISION TO STANDARD DRAWINGS

706-BRTM-02 RAILING, CF-1

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REVISION TO STANDARD DRAWINGS

706-BRPP-01 RAILING, PF-1
706-BRPP-02 RAILING, PF-2
706-BRPP-03 RAILING, PS-1
706-BRPP-04 RAILING, PS-2
706-BRPP-06 RAILING, PF & PS DETAILS
706-BRTF-09 CONCRETE BRIDGE RAILING TYPE TF-2
706-BRTM-02 RAILING, CF-1

Motion: Second: Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: NONE Recurring Special Provision affected: NONE Standard Sheets affected: 706-BRPP-01, 706-BRPP-02, 706-BRPP-03, 706-BRPP-04, 706-BRPP-06, 706-BRTF-09, 706-BRTM-02 Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Revise Pay Items List ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective ____ ____ Create RPD (No. ____) Effective ____Letting ____ Technical Advisory GIFE Update Req'd.? Y ___ N ___ By ____ Addition or ____ Revision Frequency Manual Update Req'd? Y__N__ By ____ Addition or ____ Revision Received FHWA Approval? ____