Mr. Strain
Date: 03/15/12

SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD DRAWINGS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: In review of the bridge railing transition Standards inconsistances were found in presentation and minnor errors and omissions were present.

PROPOSED SOLUTION: The bridge railing Standards have been revised so that the Standards are consistent in detailing and overall presentation.

APPLICABLE STANDARD SPECIFICATIONS: none

APPLICABLE STANDARD DRAWINGS:

Current Standard Drawing	Transition	Proposed Drawing Designation
706-CBRT-01 thru 04		same
706-TPBT-01 thru 09	TF-2	706-TTTF-01 thru 04
706-TTBC-01 thru 03	FC	706-TTFC-01 thru 03
706-TTBP-01 thru 09	PF-1, PF-2, PS-1, PS-2	706-TTPP-01 thru 08
706-TTBT-01 thru 03	FT	706-TTFT-01 thru 03
706-TTTX-01 thru 04	TX	same
706-TWBC-01 thru 03	W-Beam	706-TWFC-01 thru 03
706-TWBC-04		to delete

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: None

SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO STANDARD DRAWINGS

Submitted By: Randy Strain

Title: INDOT Bridge Standard and Policy Engineer

Organization: INDOT

Phone Number: 232-3339

Date: Feb 14, 2012

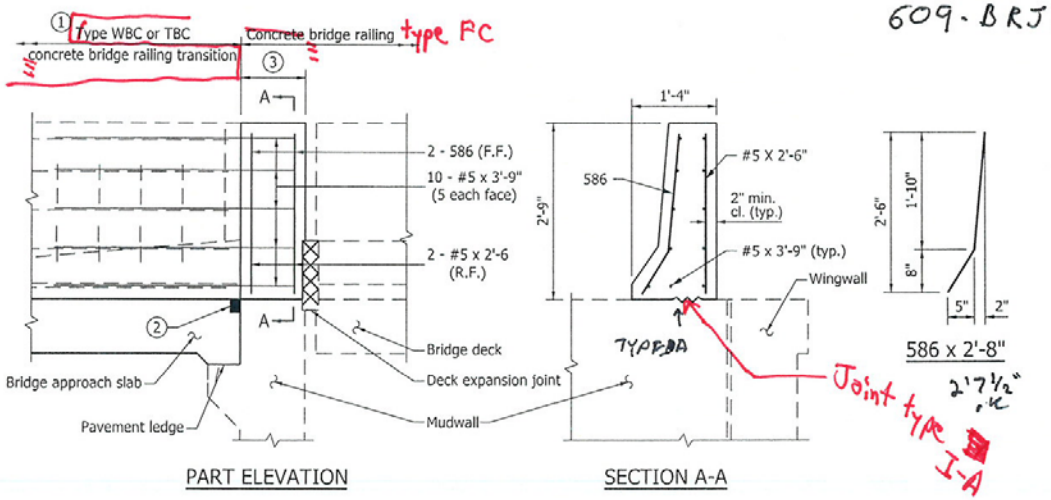
APPLICABLE SUB-COMMITTEE ENDORSEMENT: none

REVISION TO STANDARD DRAWINGS

EXISTING 706-CBRT-01 BRIDGE RAILING TRANSITION WBC OR TBC DETAILS AT END BENT (WITH MARKUPS)

BJTS-01 Does not exist

609-BRJT-01



NOTES:

① See Standard Drawings E 706-TWBC-01 through -03 for concrete bridge railing transition type WBC details. See Standard Drawings E 706-TTBC-01 & -02 for concrete bridge railing transition type TBC details.
609-BRJT-01 through -03
I-A

② See Standard Drawing E 724-BJTS-01 for type I joint details.

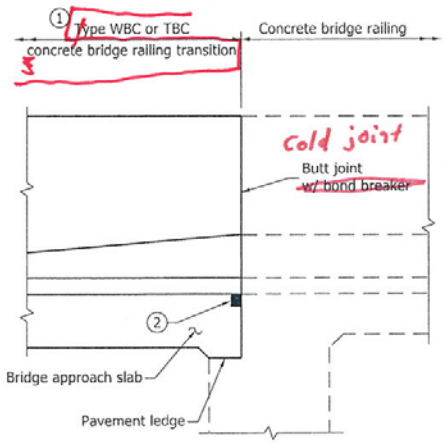
③ This shall be part of the concrete bridge railing, bu shall be poured with the concrete bridge-raili transition. The minimum length shall be equal to t width of the mudwall. See Standard Drawing E 70 BCBR-01 for bridge railing type FC dimensions.

Will be poured with Bridge Transition

good?

2" 22.091 1'-10" (22)

5 9.4339 8



DETAIL AT INTEGRAL END BENT

bond breaker not needed.

Butt joint only?

INDIANA DEPARTMENT OF TRANSPORTATION

BRIDGE RAILING TRANSITION WBC OR TBC DETAILS AT END BENT

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-CBRT-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

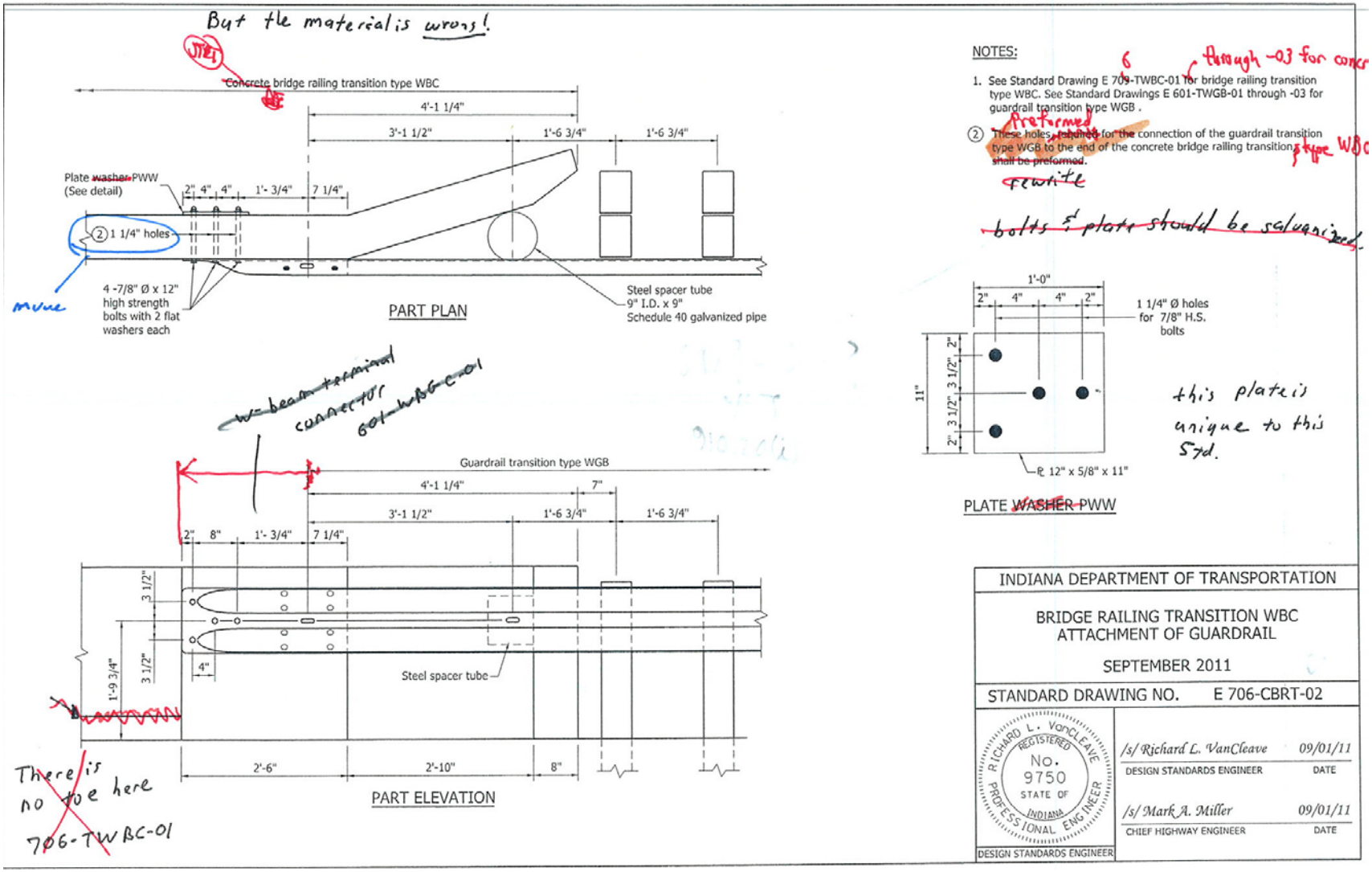
/s/ Mark A. Miller 09/01/11
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD DRAWINGS

EXISTING 706-CBRT-02 BRIDGE RAILING TRANSITION WBC ATTACHMENT OF GUARDRAIL (WITH MARKUPS)

we have enough shear force/capacity here to pull a large vessle

But the material is wrong!



NOTES:

1. See Standard Drawing E 706-TWBC-01 for bridge railing transition type WBC. See Standard Drawings E 601-TWGB-01 through -03 for guardrail transition type WGB .
2. These holes, required for the connection of the guardrail transition type WGB to the end of the concrete bridge railing transition, shall be preformed.

6 through -03 for concr
Preformed
type WBC
rewrite
bolts & plate should be galvanized

PLATE ~~WASHER~~ PWW

this plate is unique to this Std.

INDIANA DEPARTMENT OF TRANSPORTATION

BRIDGE RAILING TRANSITION WBC ATTACHMENT OF GUARDRAIL

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-CBRT-02

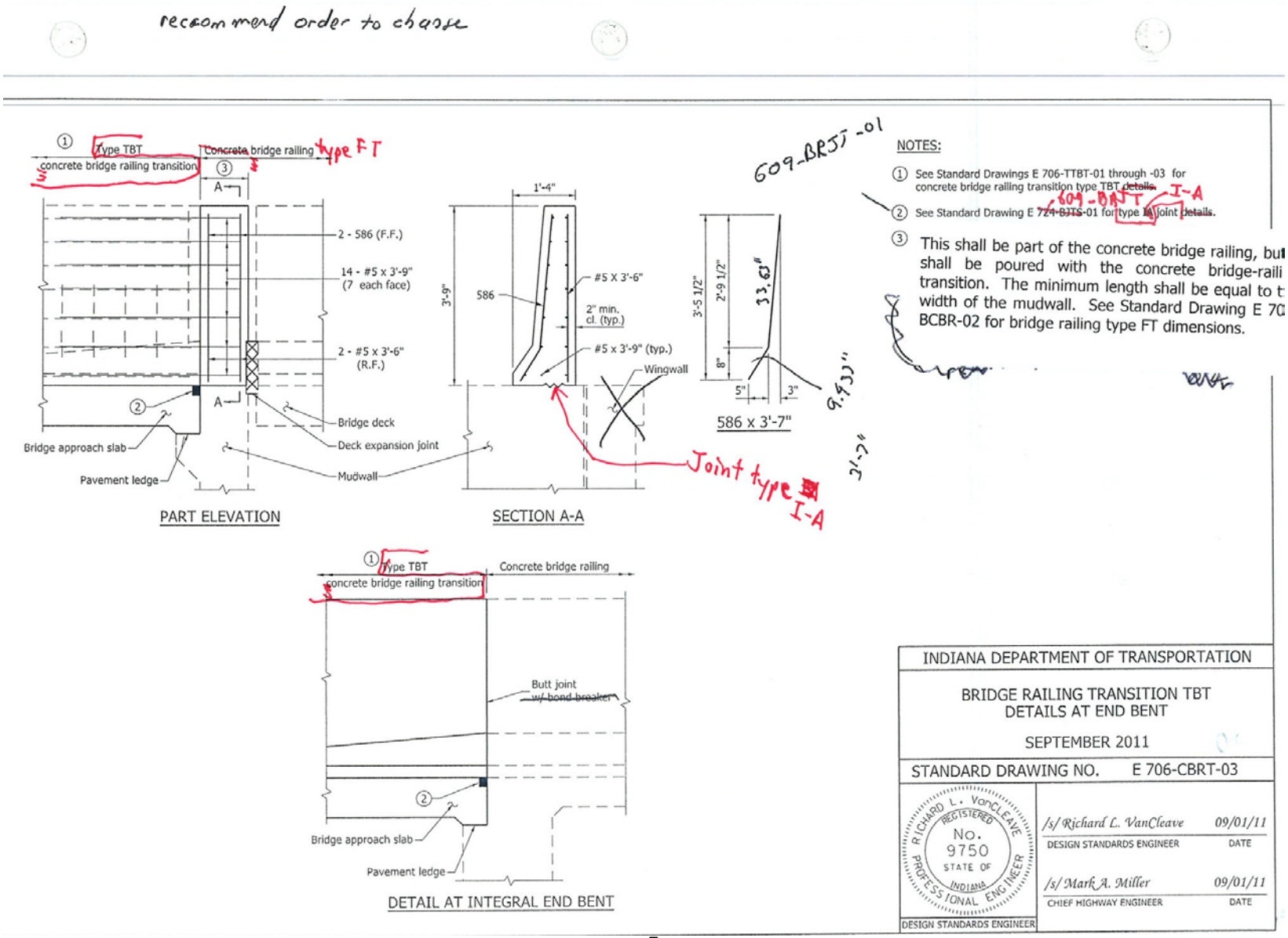
RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

/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

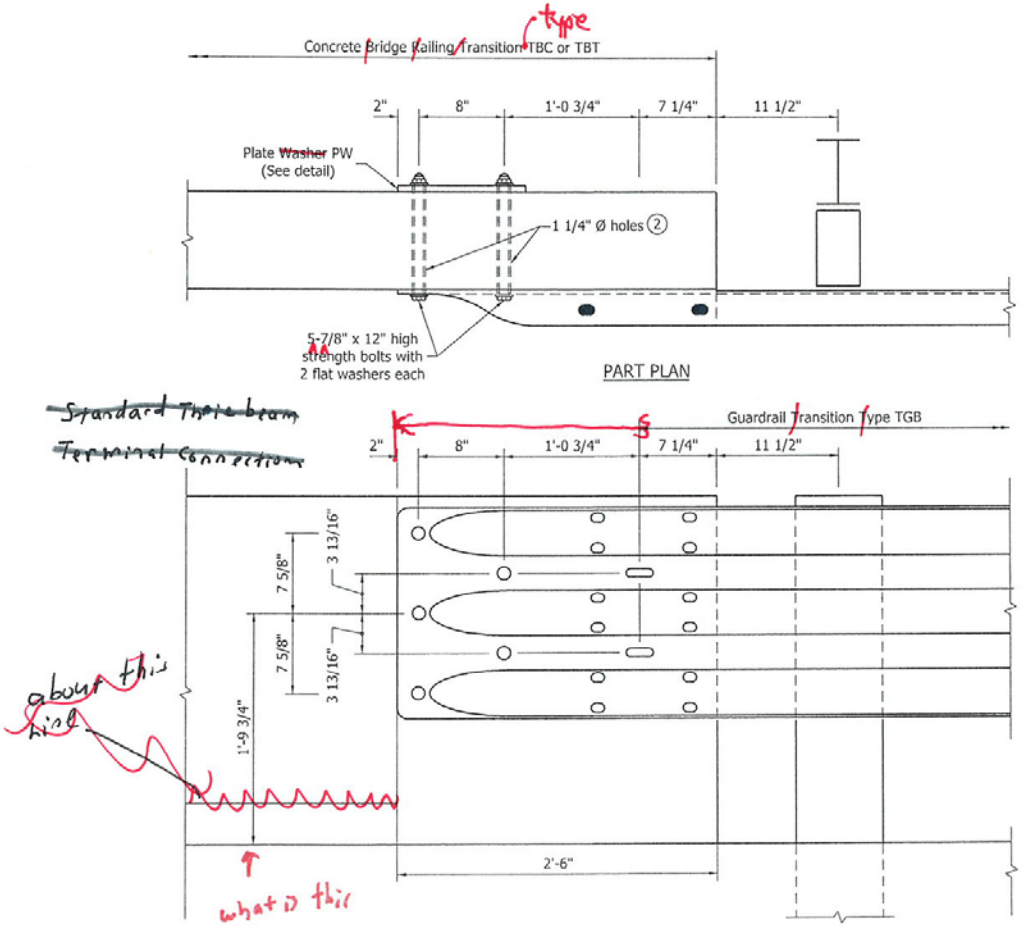
EXISTING 706-CBRT-03 BRIDGE RAILING TRANSITION TBT DETAILS AT END BENT (WITH MARKUPS)



REVISION TO STANDARD DRAWINGS

EXISTING 706-CBRT-04 BRIDGE RAILING TRANSITION TBC OR TBT ATTACHMENT OF GUARDRAIL (WITH MARKUPS)

706-CBRT-02



NOTES:

1. See Standard Drawing E 706-TTBC-01 for bridge railing transition type TBC. See Standard Drawing E 706-TTBT-01 for bridge railing transition type TBT. See Standard Drawing E 601-TTGB-01 for guardrail transition type TGB.
② These holes, required for the connection of the guardrail transition type TBC or TBT to the end of the concrete bridge railing transition, shall be preformed.

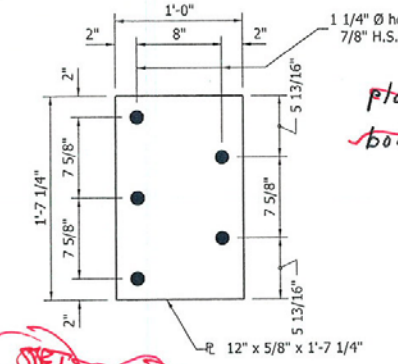


PLATE WASHER PW

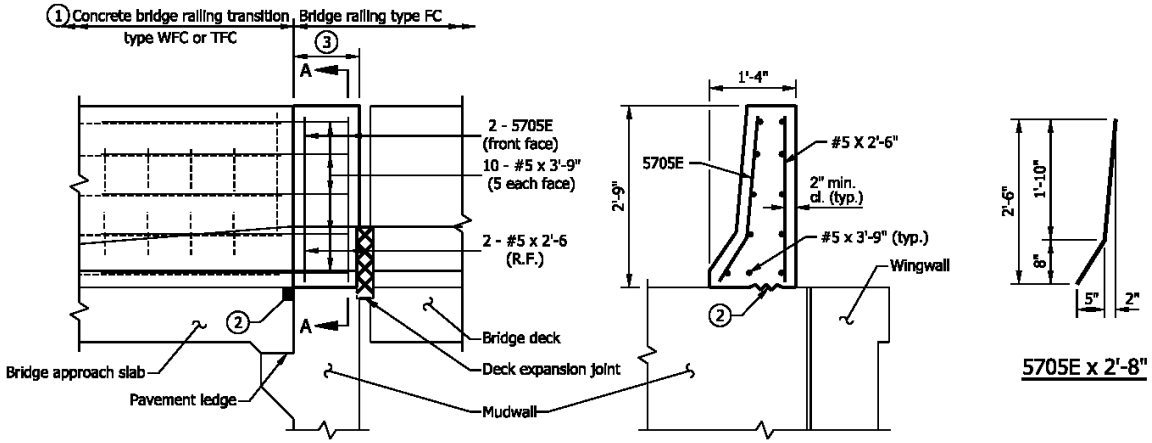
INDIANA DEPARTMENT OF TRANSPORTATION	
BRIDGE RAILING TRANSITION TBC OR TBT ATTACHMENT OF GUARDRAIL SEPTEMBER 2011	
STANDARD DRAWING NO. E 706-CBRT-04	
RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER DESIGN STANDARDS ENGINEER	/s/ Richard L. VanCleave 09/01/11 DESIGN STANDARDS ENGINEER DATE /s/ Mark A. Miller 09/01/11 CHIEF HIGHWAY ENGINEER DATE

THRIE-BEAM OR COMP
Shows Thrie Beam Terminal Connector

T GRT TO T BRT

REVISION TO STANDARD DRAWINGS

706-CBRT-01 BRIDGE RAILING TRANSITION WFC OR TFC DETAILS AT END BENT (DRAFT)



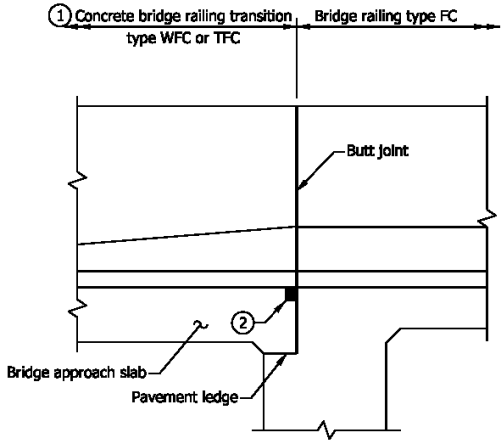
PART ELEVATION

SECTION A-A

5705E x 2'-8"

NOTES

1. See Standard Drawings E 706-TWFC-01 through -03 for concrete bridge railing transition type WFC. See Standard Drawings E 706-TTFC-01 through -03 for concrete bridge railing transition type TFC.
2. See Standard Drawing E 609-BRJT-01 for joint type I-A.
3. This shall be part of the concrete bridge railing, but it shall be poured with the concrete bridge-railing transition. The minimum length shall be equal to the width of the mudwall. See Standard Drawing E 706-GRSF-01 for bridge railing type FC dimensions.
4. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.



DETAIL AT INTEGRAL END BENT

INDIANA DEPARTMENT OF TRANSPORTATION

BRIDGE RAILING TRANSITION WFC OR TFC DETAILS AT END BENT

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-CBRT-01

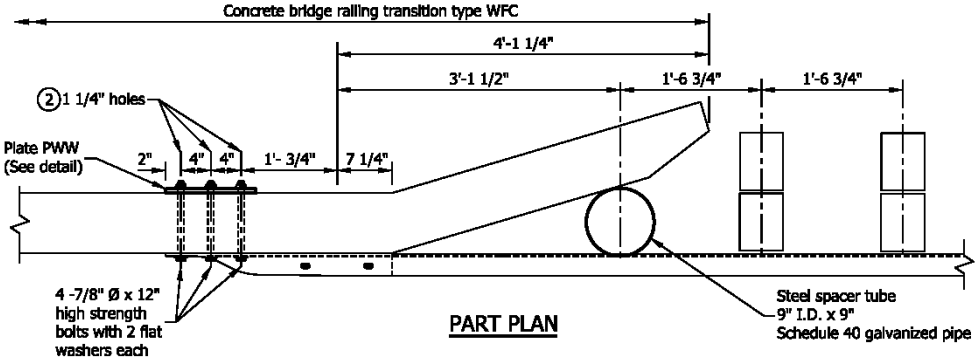
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

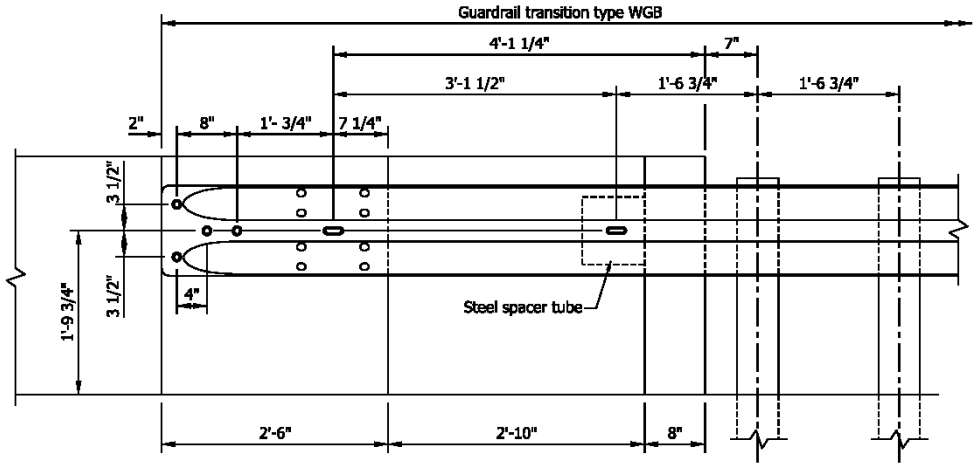
DESIGN STANDARDS ENGINEER

REVISION TO STANDARD DRAWINGS

706-CBRT-02 BRIDGE RAILING TRANSITION WFC ATTACHMENT OF GUARDRAIL (DRAFT)



PART PLAN



PART ELEVATION

NOTES

1. See Standard Drawing E 706-TWFC-01 through -03 for concrete bridge railing transition type WFC. See Standard Drawings E 601-TWGB-01 through -03 for guardrail transition type WGB .

(2) Preformed holes, for connection of the guardrail transition type WGB to the end of the concrete bridge railing transition type WFC.

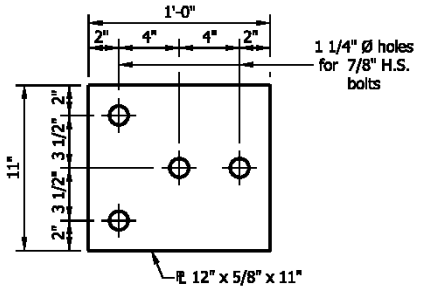


PLATE PWW

INDIANA DEPARTMENT OF TRANSPORTATION

BRIDGE RAILING TRANSITION WFC
ATTACHMENT OF GUARDRAIL

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-CBRT-02

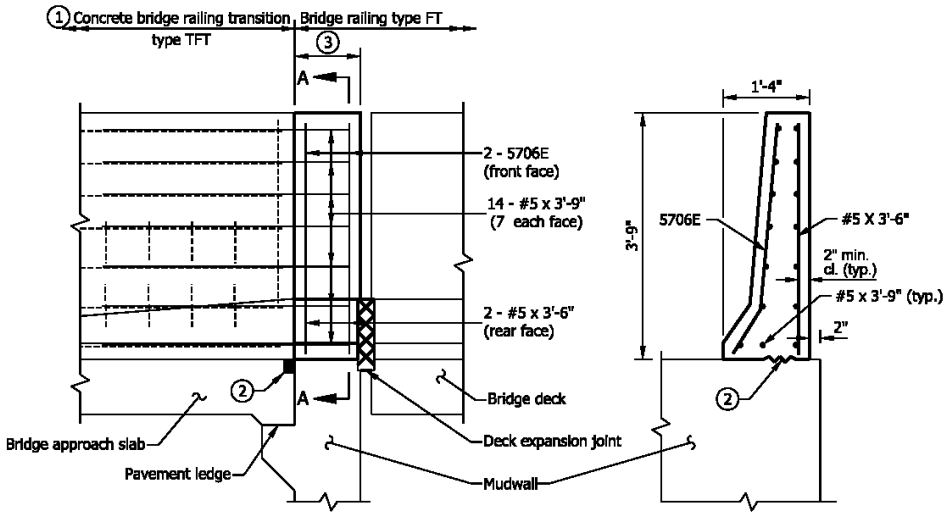
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

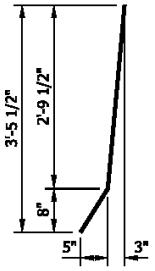
REVISION TO STANDARD DRAWINGS

706-CBRT-03 BRIDGE RAILING TRANSITION TFT DETAILS AT END BENT (DRAFT)



PART ELEVATION

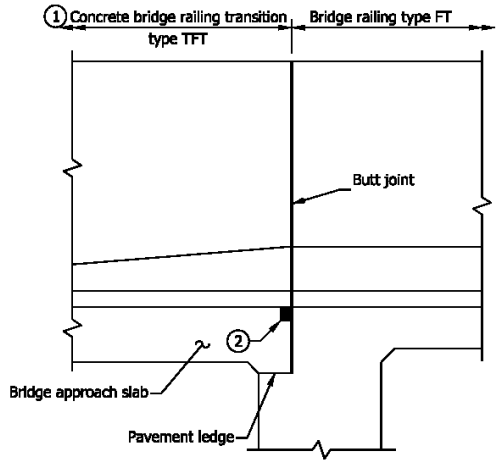
SECTION A-A



5706E x 3'-7"

NOTES

1. See Standard Drawings E 706-TTFT-01 through -03 for concrete bridge railing transition type TFT details.
2. See Standard Drawing E 609-BRJT-01 for joint type I-A.
3. This shall be part of the concrete bridge railing, but it shall be poured with the concrete bridge-railing transition. The minimum length shall be equal to the width of the mudwall. See Standard Drawing E 706-BRSF-02 for bridge railing type FT dimensions.
4. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending diagrams and notes.



DETAIL AT INTEGRAL END BENT

INDIANA DEPARTMENT OF TRANSPORTATION

BRIDGE RAILING TRANSITION TFT DETAILS AT END BENT

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-CBRT-03

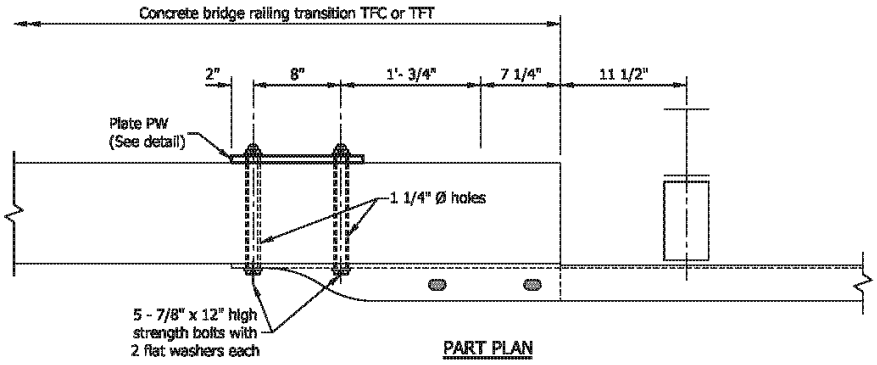
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

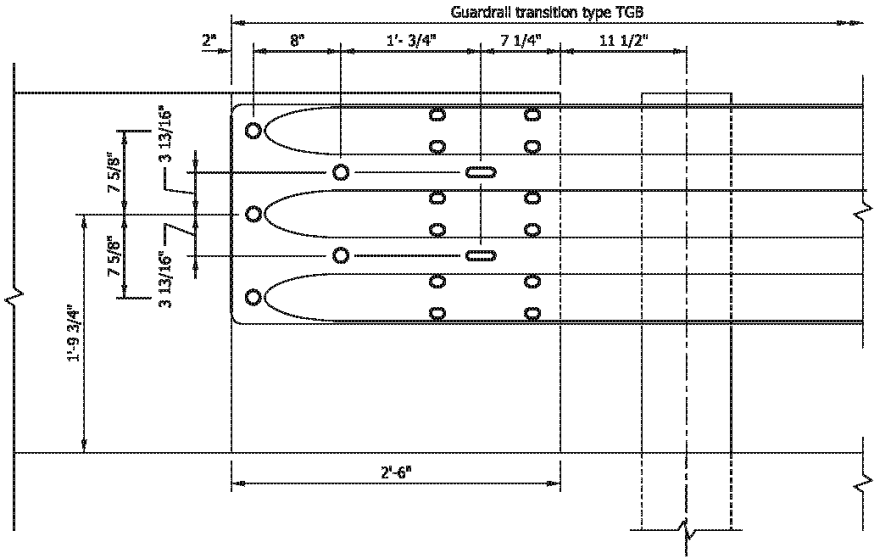
DESIGN STANDARDS ENGINEER

REVISION TO STANDARD DRAWINGS

706-CBRT-04 BRIDGE RAILING TRANSITION TFC OR TFT ATTACHMENT OF GUARDRAIL (DRAFT)



PART PLAN



PART ELEVATION

NOTES

1. See Standard Drawings E 706-TTFC-01 through -03 for concrete bridge railing transition type TFC. See Standard Drawings E 706-TTFT-01 through -03 for concrete bridge railing transition type TFT. See Standard Drawings E 601-TTGB-01 through -05 for guardrail transition type TGB.

2 Preformed holes, for connection of the guardrail transition type TGB to the end of the concrete bridge railing transition type TFC or TFT.

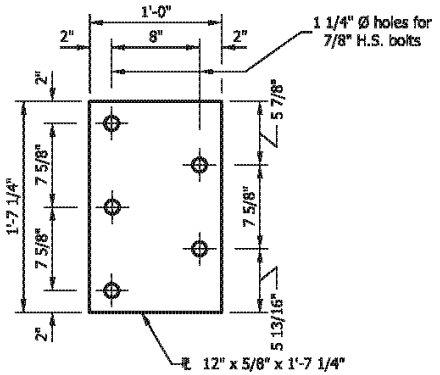


PLATE PW

INDIANA DEPARTMENT OF TRANSPORTATION

BRIDGE RAILING TRANSITION TFC OR TFT ATTACHMENT OF GUARDRAIL

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-CBRT-04

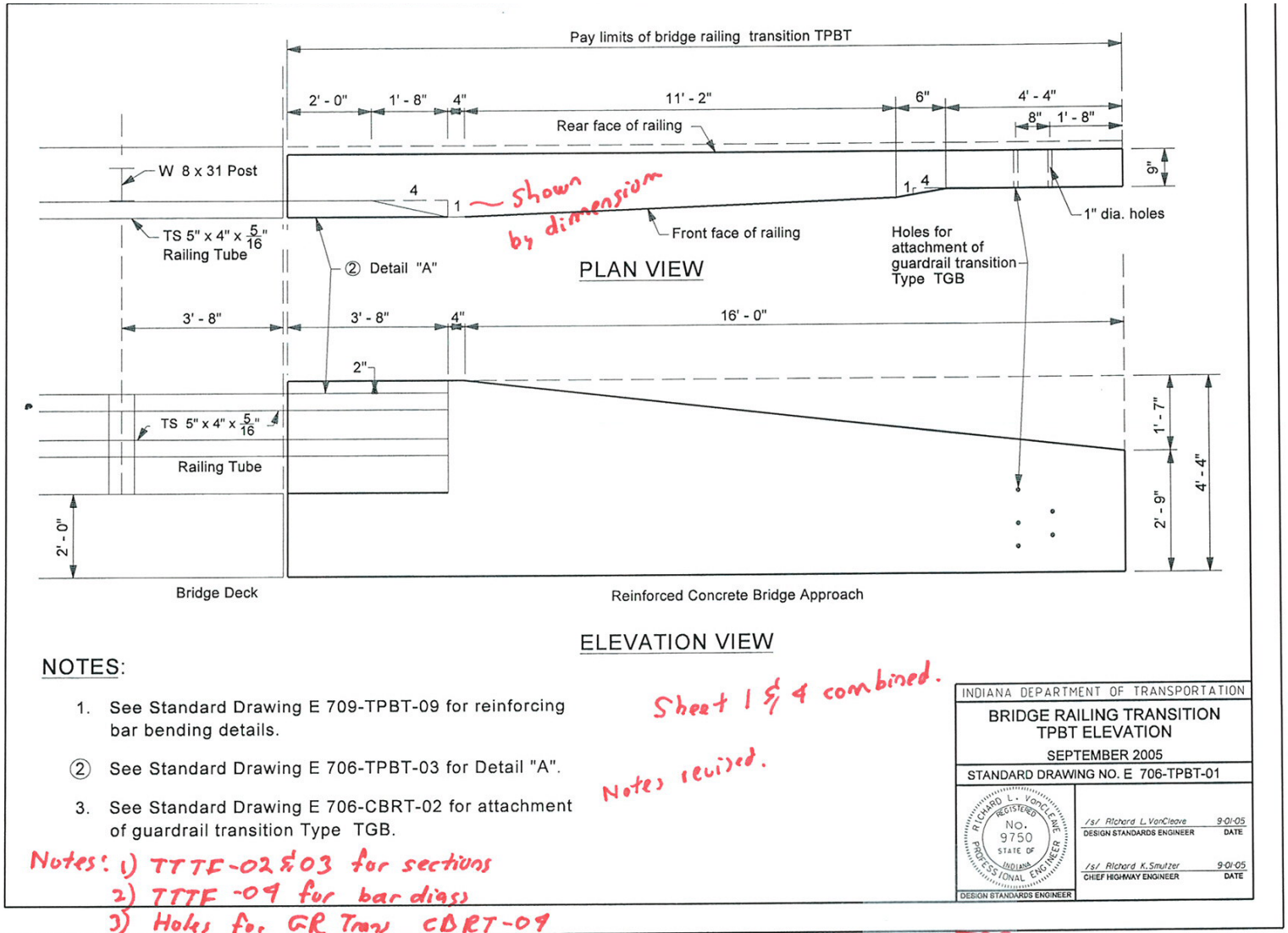
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

REVISION TO STANDARD DRAWINGS

EXISTING 706-TPBT-01 BRIDGE RAILING TRANSITION TPBT ELEVATION (WITH MARKUPS)



NOTES:

1. See Standard Drawing E 709-TPBT-09 for reinforcing bar bending details.
② See Standard Drawing E 706-TPBT-03 for Detail "A".
3. See Standard Drawing E 706-CBRT-02 for attachment of guardrail transition Type TGB.

Sheet 1 & 4 combined.

Notes revised.

INDIANA DEPARTMENT OF TRANSPORTATION
BRIDGE RAILING TRANSITION
TPBT ELEVATION
SEPTEMBER 2005
STANDARD DRAWING NO. E 706-TPBT-01

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

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

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

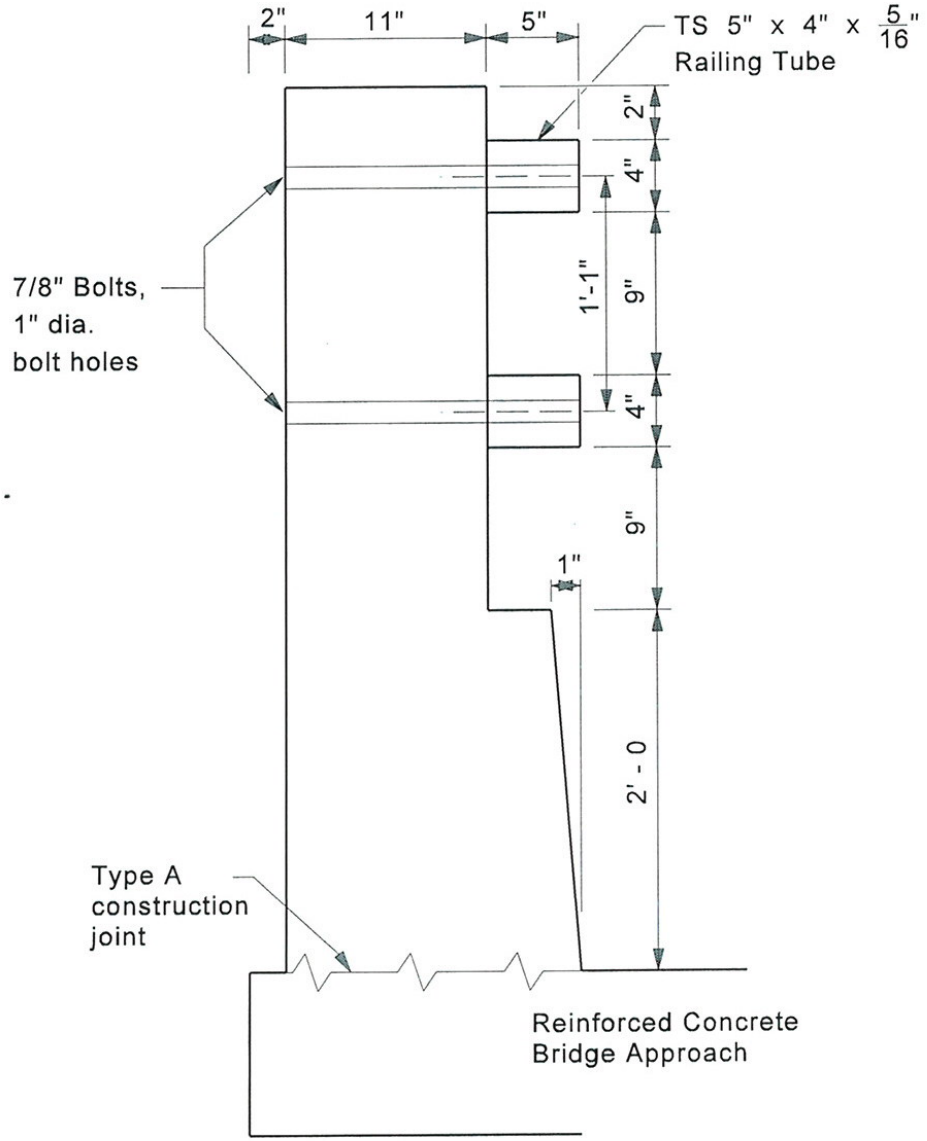
Concrete Bridge Rail Transition TTF-2

Notes: 1) TTF-02 & 03 for sections
2) TTF-09 for bar dias
3) Holes fo. GR Trans CBRT-09
4) RcBA - TBAE-02
5) holes - BRTF-01

706.

REVISION TO STANDARD DRAWINGS

EXISTING 706-TPBT-02 BRIDGE RAILING TRANSITION TPBT (PROPOSED TO DELETE)



NOTES:

1. Reinforcing steel not shown for clarity.
2. Bolts shall be $\frac{7}{8}$" diameter 1'-6" long Round heads.

holes shown on sheet 1
bolts shown in bridge Std.

Sheet deleted.

INDIANA DEPARTMENT OF TRANSPORTATION

BRIDGE RAILING TRANSITION TPBT

SEPTEMBER 2005

STANDARD DRAWING NO. E 706-TPBT-02

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

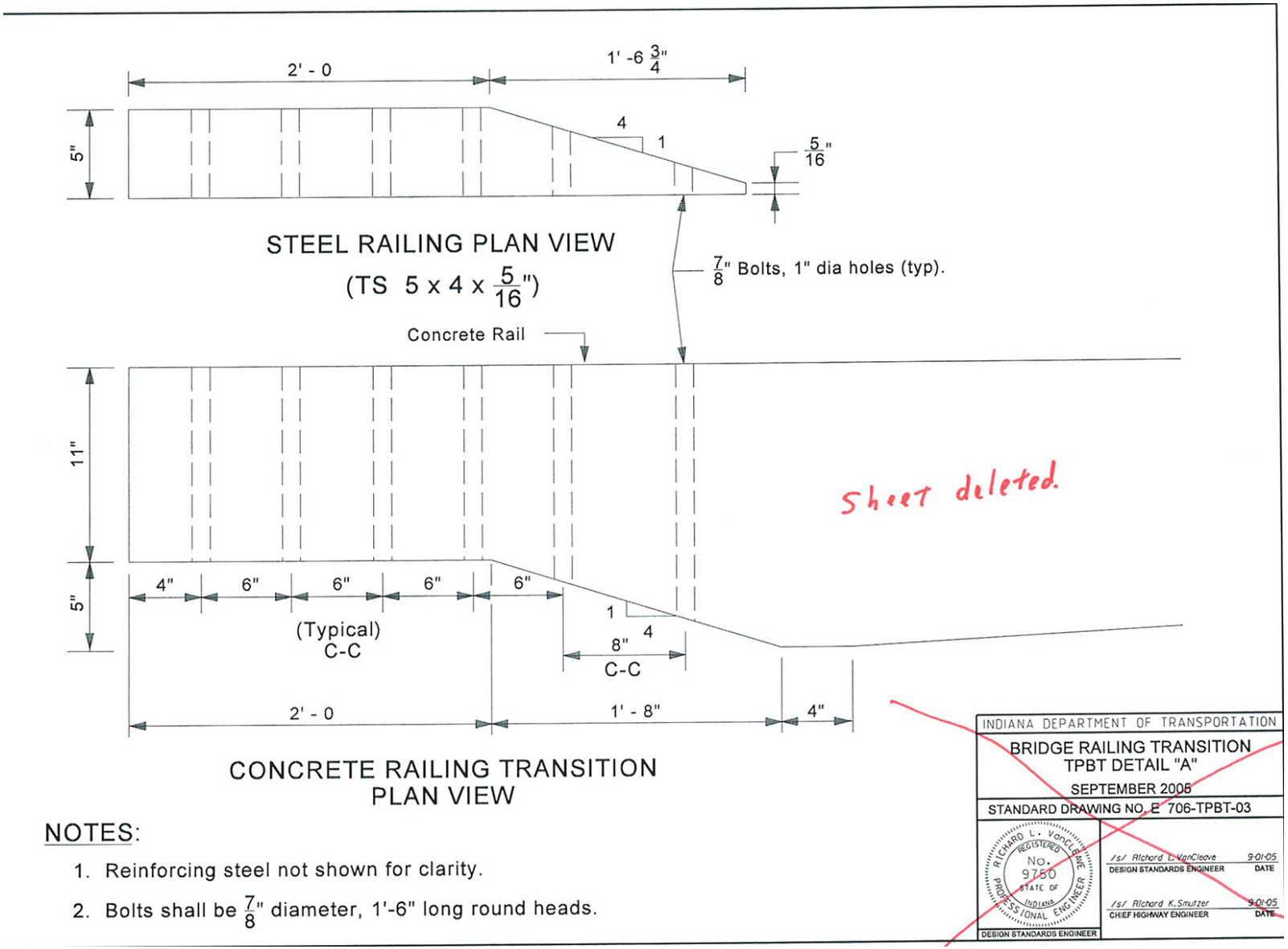
DESIGN STANDARDS ENGINEER

/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

EXISTING 706-TPBT-03 BRIDGE RAILING TRANSITION TPBT DETAIL "A" (PROPOSED TO DELETE)

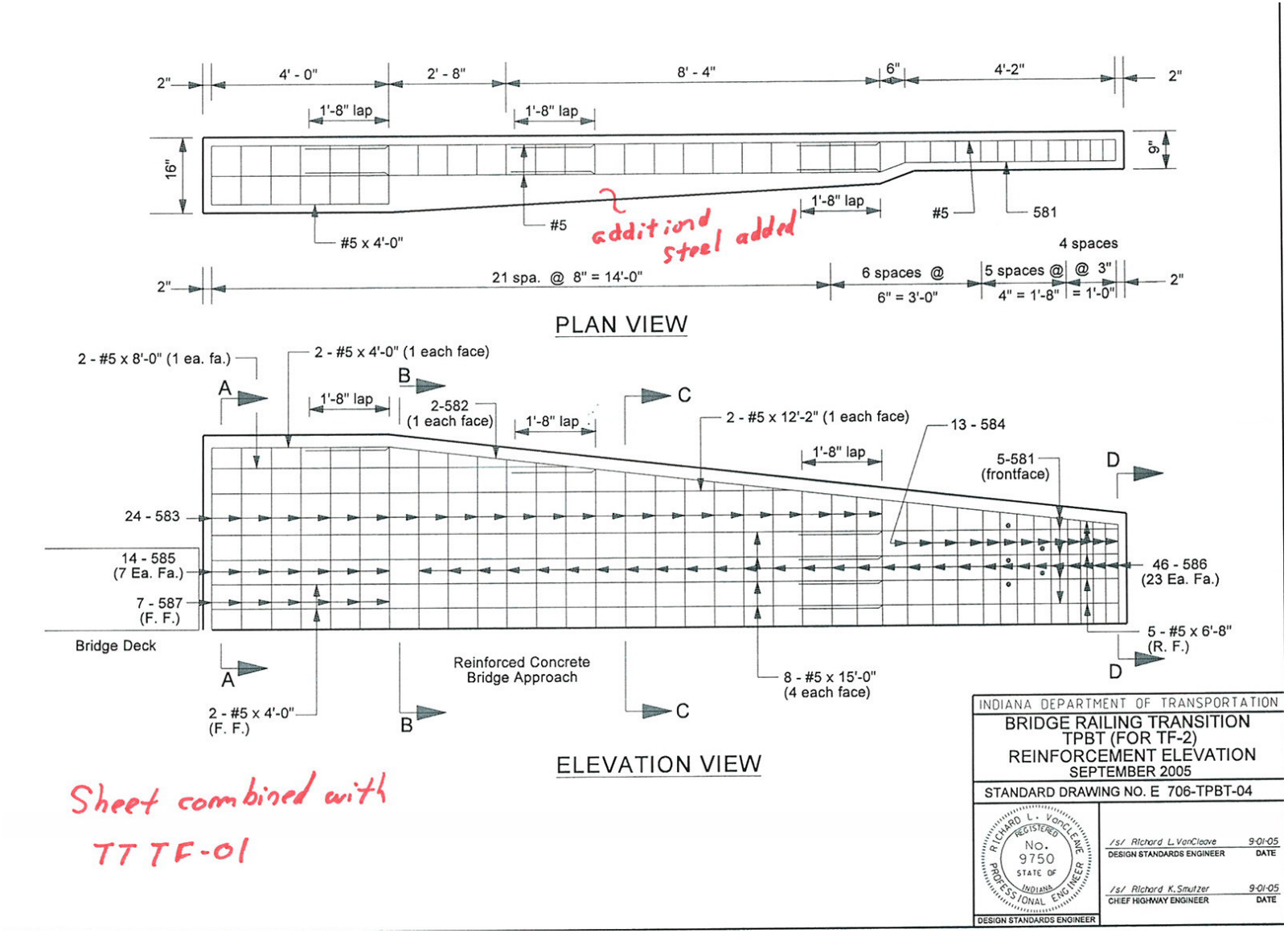


NOTES:

1. Reinforcing steel not shown for clarity.
2. Bolts shall be 7/8" diameter, 1'-6" long round heads.

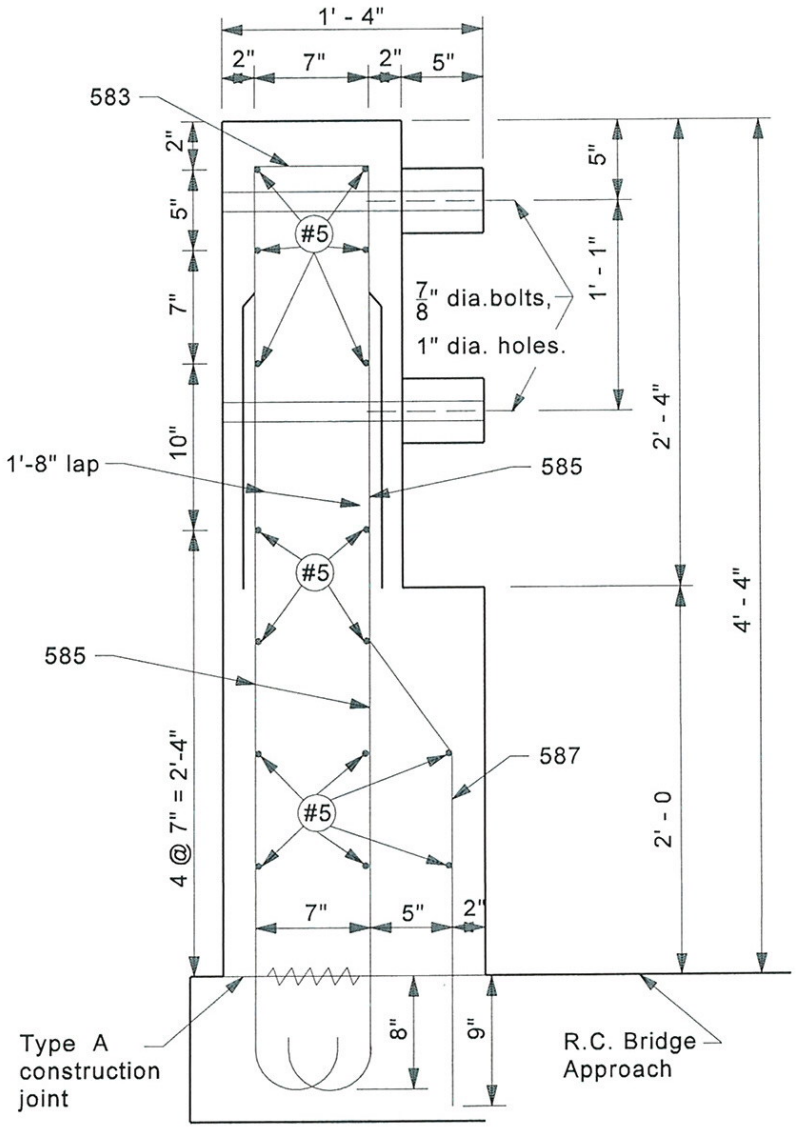
REVISION TO STANDARD DRAWINGS

EXISTING 706-TPBT-04 BRIDGE RAILING TRANSITION TPBT (FOR TF-2) REINFORCEMENT ELEVATION (WITH MARKUPS)



REVISION TO STANDARD DRAWINGS

EXISTING 706-TPBT-05 BRIDGE RAILING TRANSITION TPBT SECTION A-A WITH REINFORCEMENT (PROPOSED TO DELETE)



Sheet deleted.
Sections combined.

INDIANA DEPARTMENT OF TRANSPORTATION

BRIDGE RAILING TRANSITION
TPBT SECTION A-A WITH
REINFORCEMENT
SEPTEMBER 2005

STANDARD DRAWING NO. E 706-TPBT-05

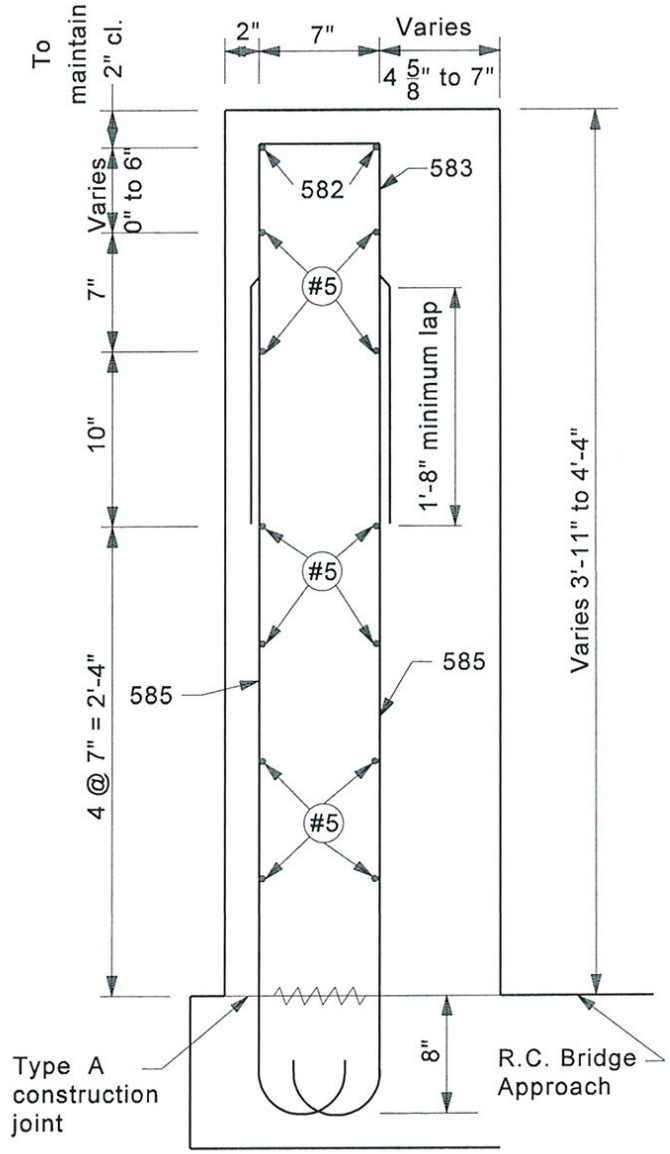
RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

/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

EXISTING 706-TPBT-06 BRIDGE RAILING TRANSITION TPBT SECTION B-B (WITH MARKUPS)



NOTES:

1. See Standard Drawing E 706-TPBT-04 for Section B-B location.

2. See Standard Drawing E 706-TPBT-09 and E 703-BRST-01 for reinforcing steel details.

Sections combined.

706-TTTF-02 & 03

INDIANA DEPARTMENT OF TRANSPORTATION

BRIDGE RAILING TRANSITION
TPBT SECTION B-B

SEPTEMBER 2005

STANDARD DRAWING NO. E 706-TPBT-06

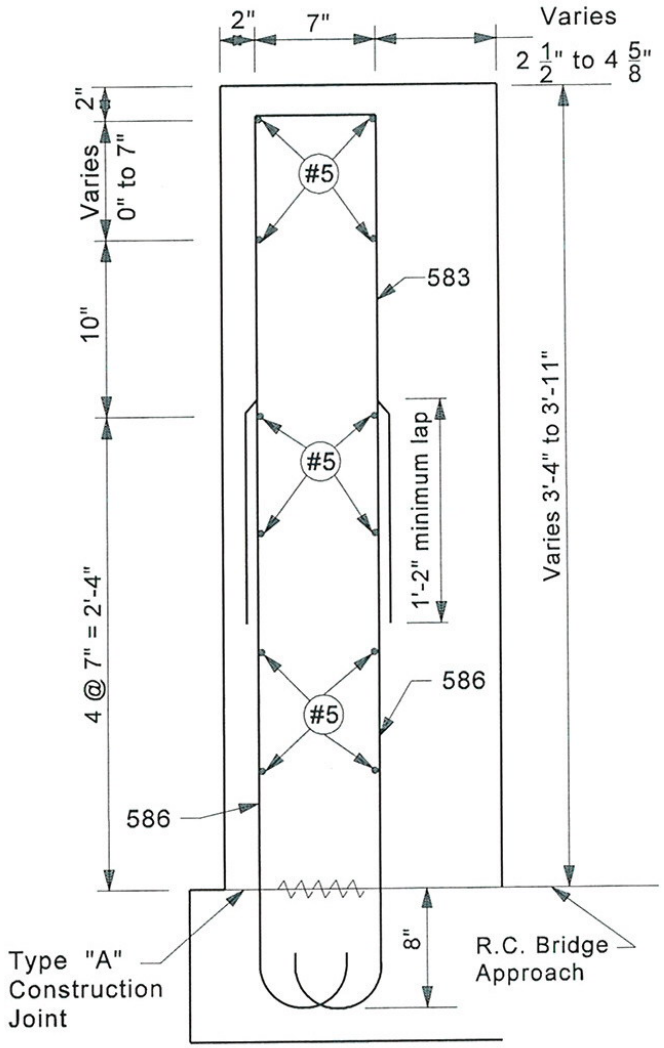
RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

/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

EXISTING 706-TPBT-07 BRIDGE RAILING TRANSITION TPBT SECTION C-C (WITH MARKUPS)



NOTES:

1. See Standard Drawing E 706-TPBT-04 for Section C-C location.

2. See Standard Drawing E 706-TPBT-09 and E 703-BRST-01 for reinforcing steel details.

Sections combined
706-TTTE-02 & 03

INDIANA DEPARTMENT OF TRANSPORTATION

BRIDGE RAILING TRANSITION
TPBT SECTION C-C

SEPTEMBER 2005

STANDARD DRAWING NO. E 706-TPBT-07

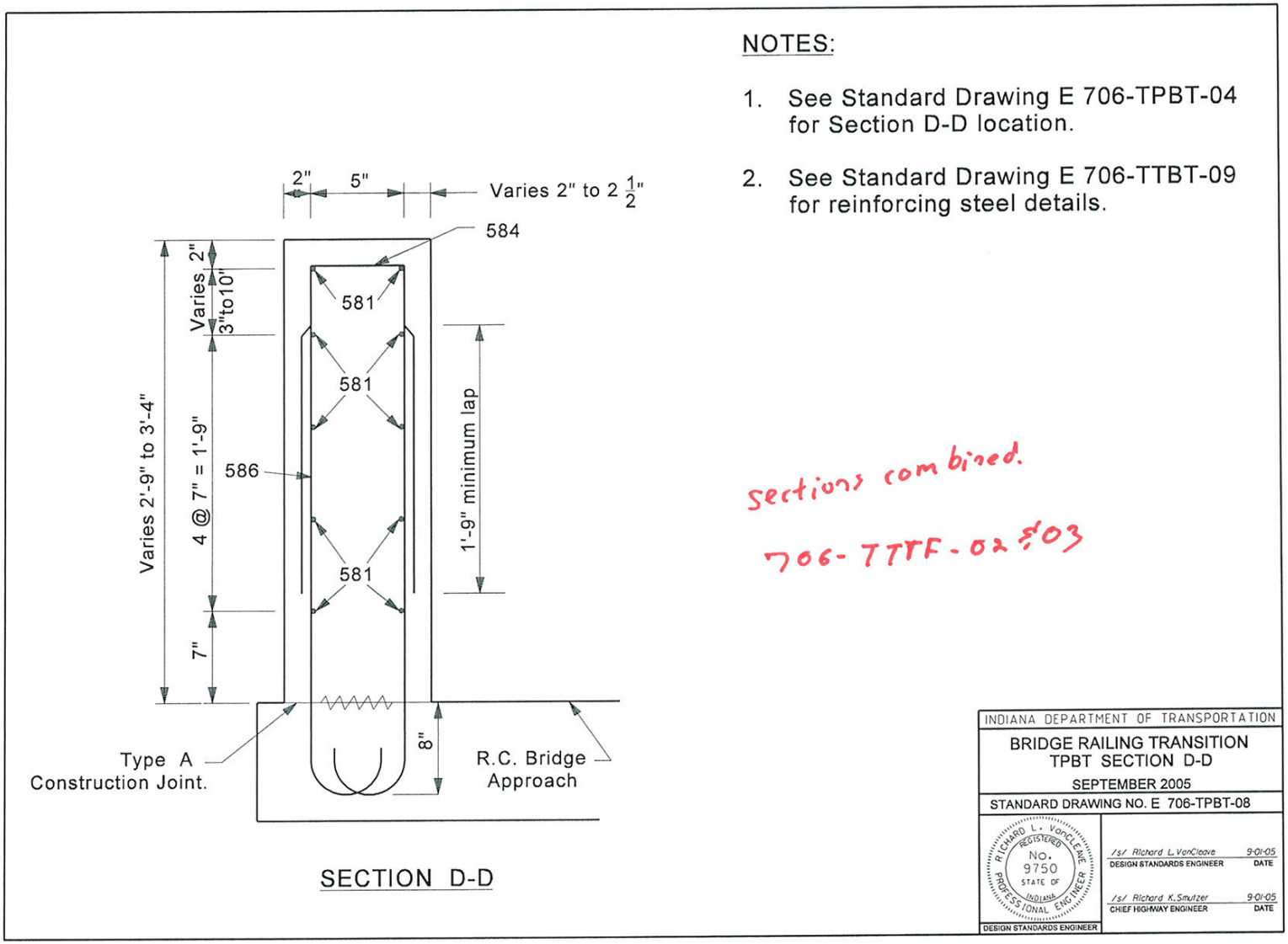
RICHARD L. VanCLEAVE REGISTERED NO. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

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

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

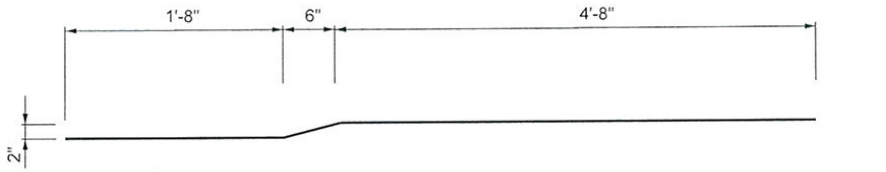
REVISION TO STANDARD DRAWINGS

EXISTING 706-TPBT-08 BRIDGE RAILING TRANSITION TPBT SECTION D-D (WITH MARKUPS)

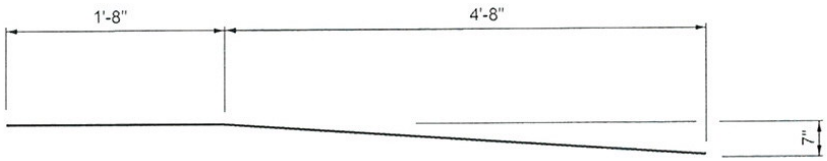


REVISION TO STANDARD DRAWINGS

EXISTING 706-TPBT-09 CONCRETE BRIDGE RAILING TRANSITION TYPE TPBT (WITH MARKUPS)



581 x 6'-10"



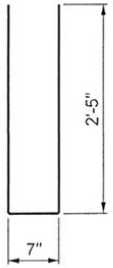
582 x 6'-4"

bent bar designations revised

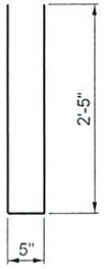
BILL OF MATERIALS			
These quantities are for one concrete bridge railing transition type TPBT.			
EPOXY COATED REINFORCING STEEL			
Size and Mark	No. of Bars	Length (ft.-in.)	Weight (lb.)
581	5	6'-10"	
582	2	6'-4"	
583	24	5'-5"	
584	13	5'-3"	
585	14	4'-8"	
586	46	3'-9"	
587	7	3'-1"	
#5	8	15'-0"	
#5	2	12'-2"	
#5	2	8'-2"	
#5	4	4'-0"	
#5	5	6'-8"	
Total #5 Bars			760
Total Epoxy Coated Steel			760
Concrete Class C in Railing			4.3 yd 3
Surface Seal			17.2 yd 2

Bill revised

orientation revised.

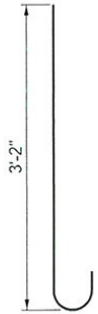


583 x 5'-5"

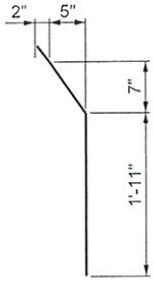


584 x 5'-3"

585 x 4'-8"



586 x 3'-9"



587 x 3'-1"

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION TYPE TPBT

SEPTEMBER 2005 TTF-2

STANDARD DRAWING NO. E 706-TPBT-09

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

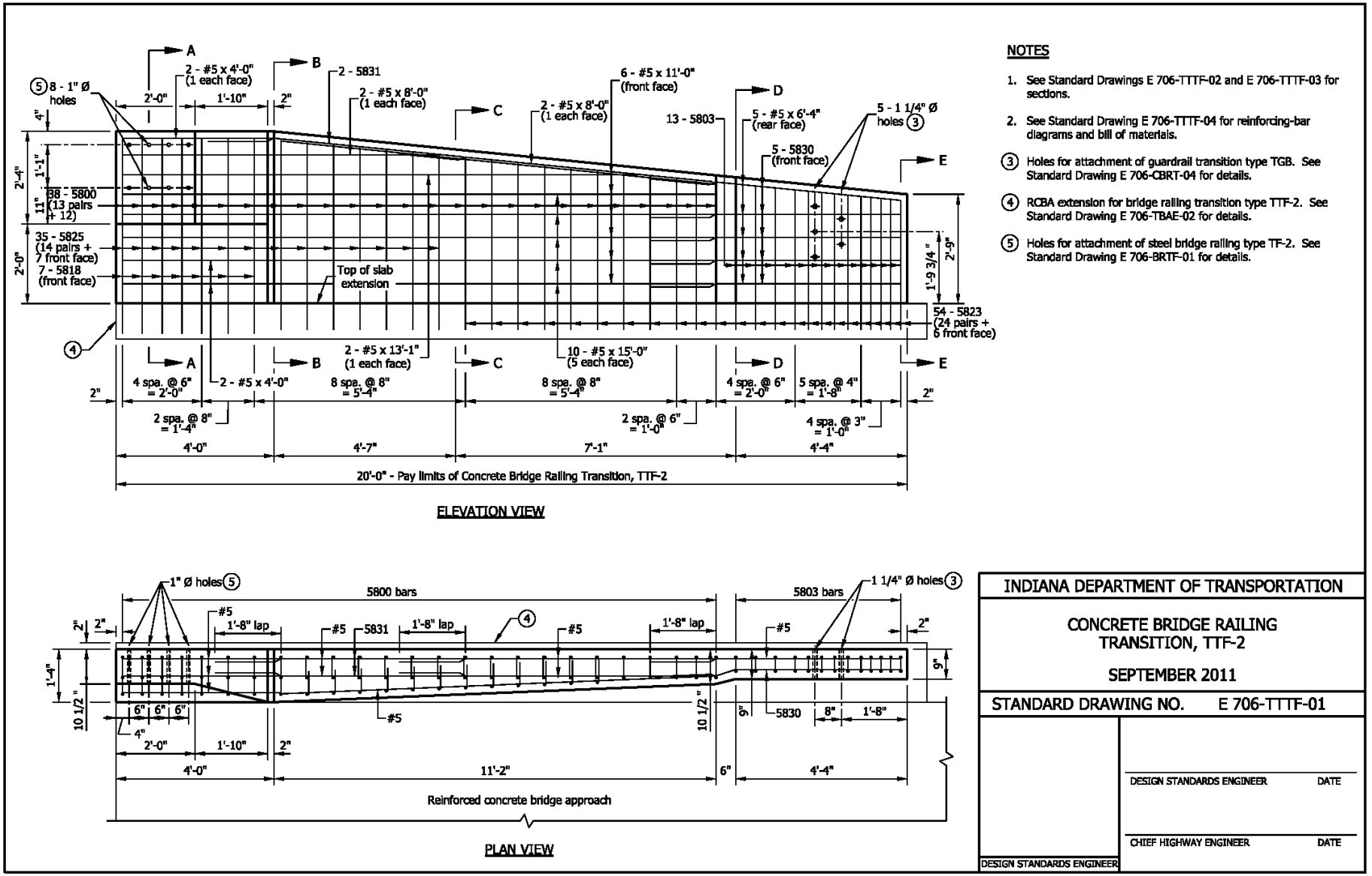
DESIGN STANDARDS ENGINEER

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

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

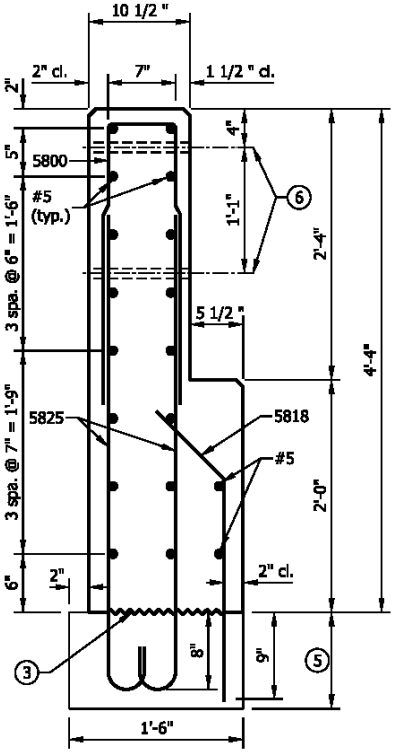
REVISION TO STANDARD DRAWINGS

706-TTTF-01 CONCRETE BRIDGE RAILING TRANSITION, TTF-2 (DRAFT)

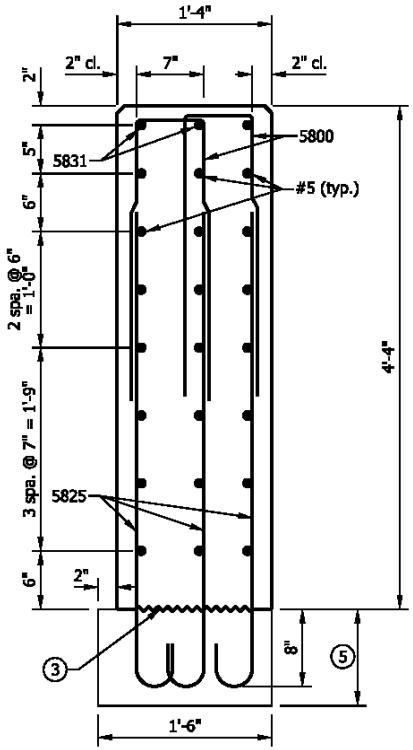


REVISION TO STANDARD DRAWINGS

706-TTTF-02 CONCRETE BRIDGE RAILING TRANSITION, TTF-2 (DRAFT)



SECTION A-A



SECTION B-B

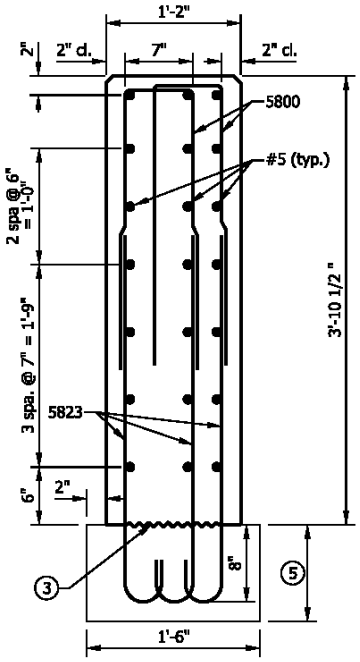
NOTES

1. See Standard Drawing E 706-TTTF-01 for elevation and plan.
2. All chamfered edges shall be 3/4".
3. Construction joint type A. See Standard Drawing E 702-CJTA-01 for details.
4. See Standard Drawing E 706-TTTF-04 for reinforcing-bar diagrams.
5. RCBA extension for bridge railing transition type TTF-2. See Standard Drawing E 706-TBAE-02 for details.
6. 1" Ø hole for attachment of steel bridge railing type TF-2. See Standard Drawing E 706-BRTF-01 for details.

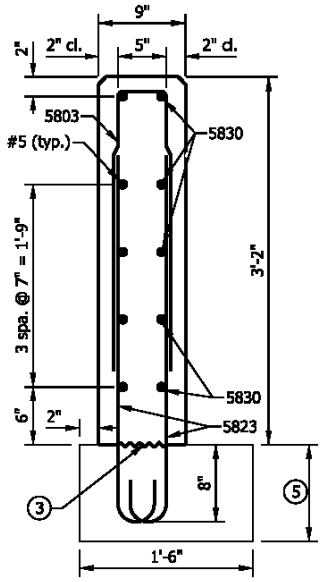
INDIANA DEPARTMENT OF TRANSPORTATION	
CONCRETE BRIDGE RAILING TRANSITION, TTF-2 SEPTEMBER 2005	
STANDARD DRAWING NO. E 706-TTTF-02	
DESIGN STANDARDS ENGINEER	DESIGN STANDARDS ENGINEER DATE CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD DRAWINGS

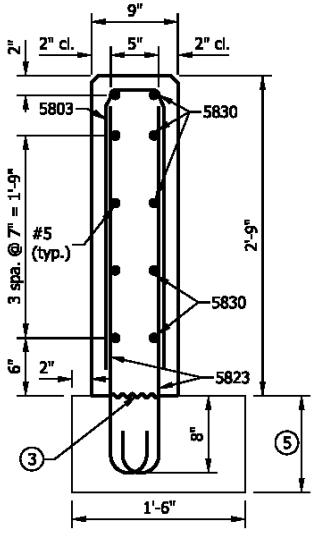
706-TTTF-03 CONCRETE BRIDGE RAILING TRANSITION, TTF-2 (DRAFT)



SECTION C-C



SECTION D-D



SECTION E-E

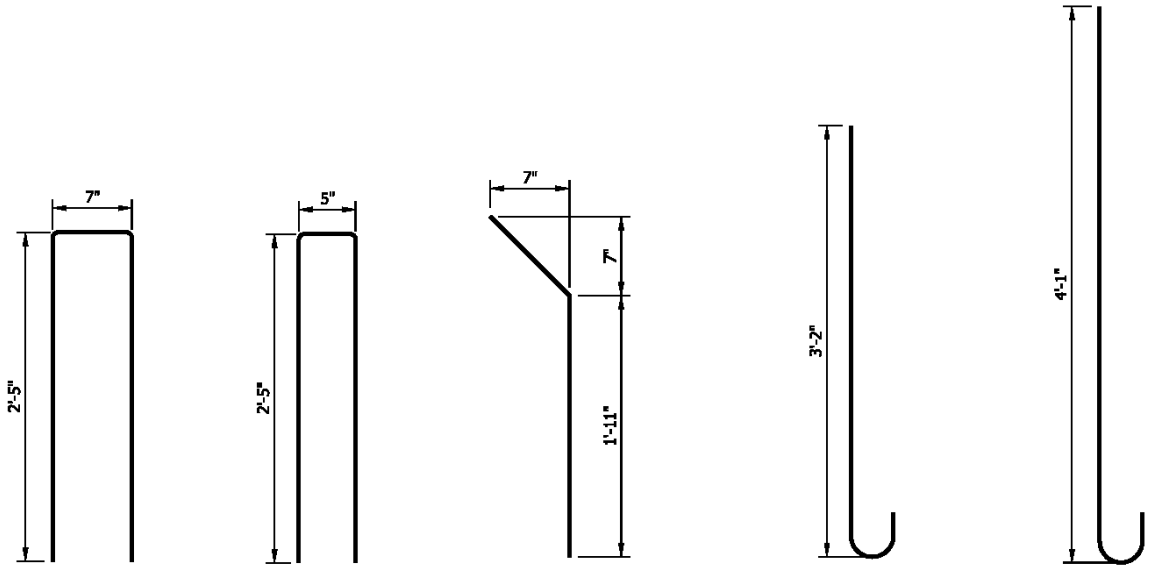
NOTES

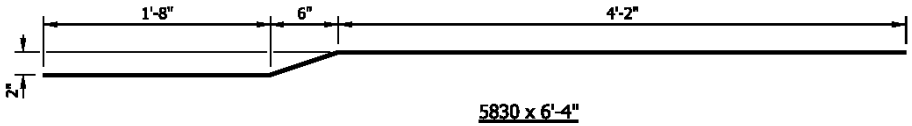
1. See Standard Drawing E 706-TTTF-01 for elevation and plan.
2. All chamfered edges shall be 3/4".
3. Construction joint type A. See Standard Drawing E 702-CJTA-01 for details.
4. See Standard Drawing E 706-TTTF-04 for reinforcing-bar diagrams.
5. RCBA extension for bridge railing transition type TTF-2. See Standard Drawing E 706-TASE-02 for details.

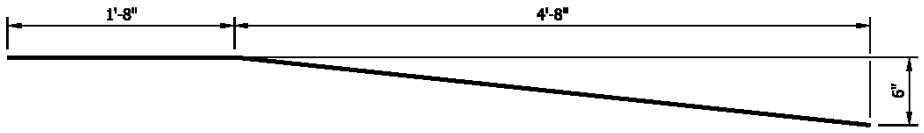
INDIANA DEPARTMENT OF TRANSPORTATION	
CONCRETE BRIDGE RAILING TRANSITION, TTF-2 SEPTEMBER 2005	
STANDARD DRAWING NO. E 706-TTTF-03	
	DESIGN STANDARDS ENGINEER DATE CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	

REVISION TO STANDARD DRAWINGS

706-TTTF-04 CONCRETE BRIDGE RAILING TRANSITION, TTF-2 (DRAFT)







NOTE

1. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.

BILL OF MATERIALS		
Quantities are for one concrete bridge railing transition type TTF-2		
EPOXY-COATED REINFORCING STEEL		
Mark / Size	No. of Bars	Weight
5800	38	
5803	13	
5818	7	
5823	54	
5825	35	
5830	5	
5831	2	
#5 x 15'-0"	10	
#5 x 13'-1"	2	
#5 x 11'-0"	6	
#5 x 8'-0"	4	
#5 x 6'-4"	5	
#5 x 4'-0"	4	
Total Epoxy-Coated Reinforcing Steel		1072 LBS
MISCELLANEOUS		
Concrete, Class C		2.9 CYS
Surface Seal		182 SFT

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION, TTF-2

SEPTEMBER 2005

STANDARD DRAWING NO. E 706-TTTF-04

DESIGN STANDARDS ENGINEER

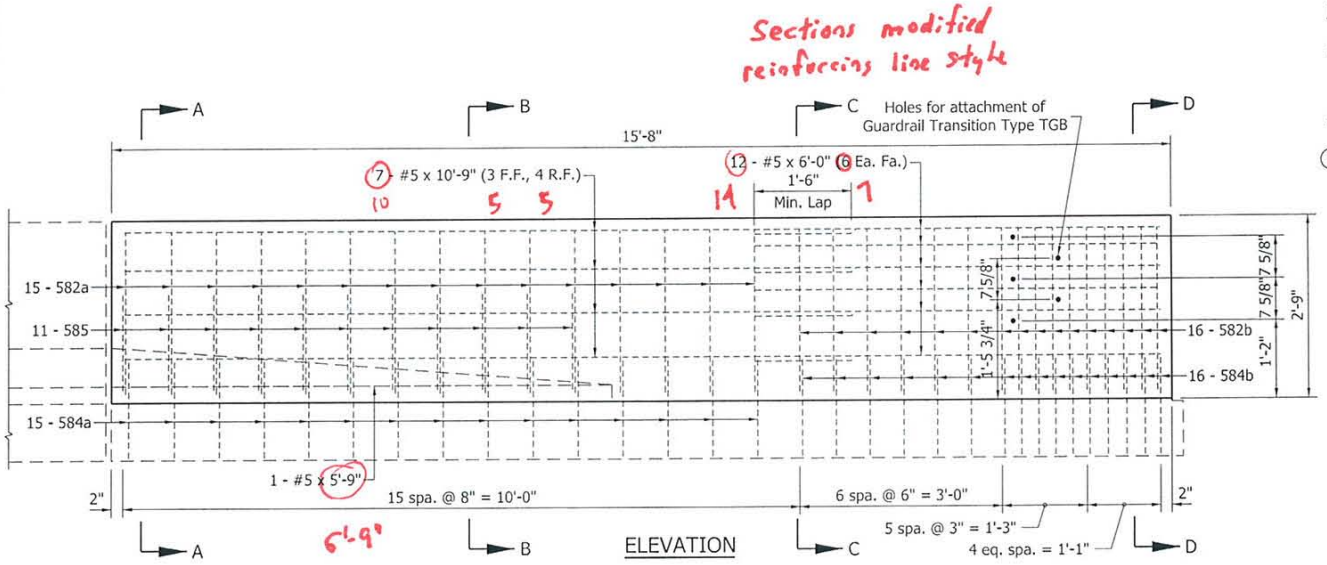
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD DRAWINGS

EXISTING 706-TTBC-01 CONCRETE BRIDGE RAILING TRANSITION TBC PLAN AND ELEVATION (WITH MARKUPS)

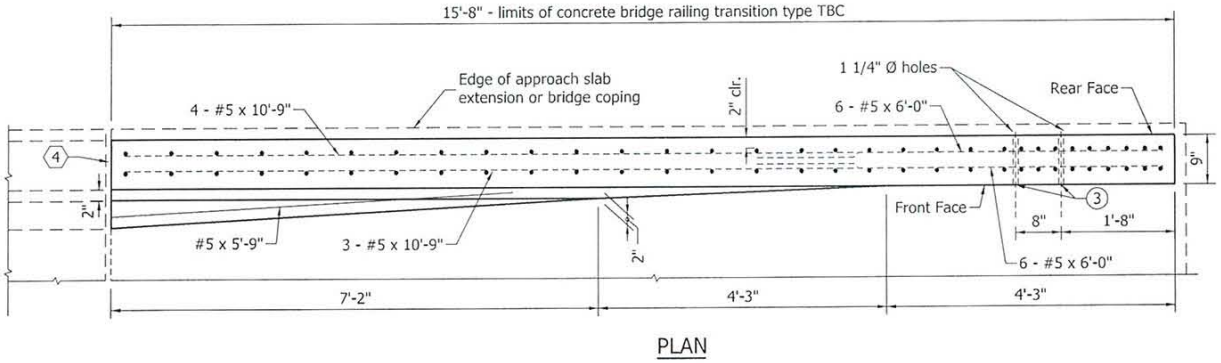
Sections modified reinforcing line style



NOTES:

1. See Standard Drawing E 706-TTBC-02 for Sections A-A, B-B, C-C and D-D and Drawing E 706-TTBC-03 for reinforcement and bill of materials. CBRT-04
2. See Standard Drawing E 706-TASE-05 for General Notes.
3. See Standard Drawing E 706-CBRT-04 for details of guardrail transition type TGB attachment.

1) TTFC-02 for sections
2) TTFC-03 for bill
3)
4) RCBA extension for TFC - TBAE-01



2'-9" COMMON HEIGHT THRIE BEAM/ CONCRETE BRIDGE RAILING TRANSITION

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION ~~TBC~~ TFC
PLAN AND ELEVATION
SEPTEMBER 2011 TTFC

STANDARD DRAWING NO. E 706-~~TTBC~~-01

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

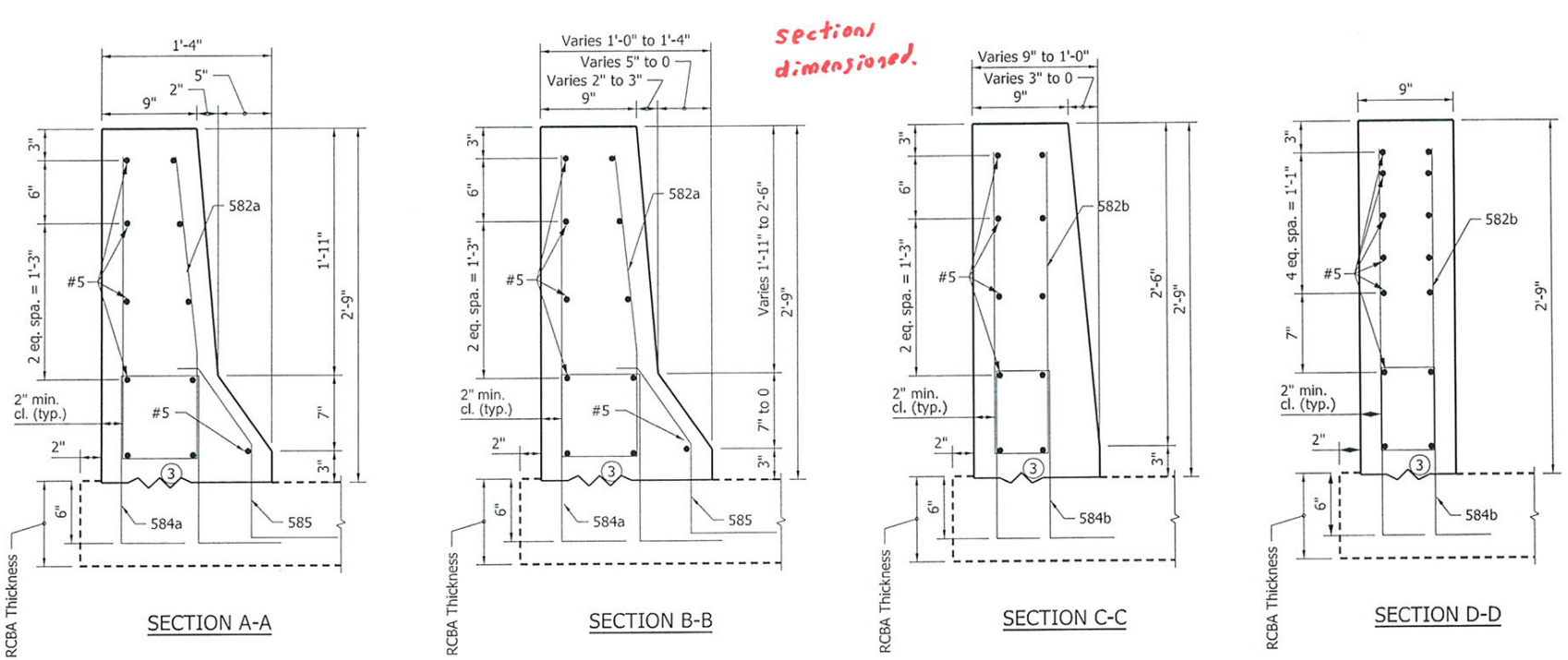
DESIGN STANDARDS ENGINEER

/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

EXISTING 706-TTBC-02 CONCRETE BRIDGE RAILING TRANSITION TYPE TBC SECTIONS (WITH MARKUPS)



section dimensioned.

584, 585 revised.

NOTES:

1. See Standard Drawing E 706-TTBC-01 for Plan and Elevation.
2. See Standard Drawing E 703-BRST-01 for bar bending details and reinforcing bar notes.
3. Type A construction joint. See Standard Drawing E 702-CJTA-01 for details.
4. See Standard Drawing E 706-TTBC-03 for reinforcement details.

5 slab ext added.

2'-9" COMMON HEIGHT THRIE BEAM CONCRETE BRIDGE RAILING TRANSITION

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION TYPE TBC SECTIONS

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-TTBC-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

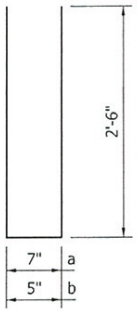
/s/ Mark A. Miller 09/01/11
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD DRAWINGS

EXISTING 706-TTBC-03 CONCRETE BRIDGE RAILING TRANSITION TYPE TBC (WITH MARKUPS)

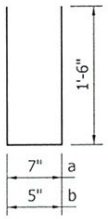
NOTE:

1. See Standard Drawing E 706-TASE-05 for General Notes.



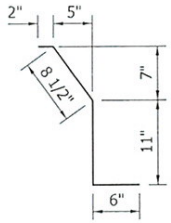
582a x 5'-7

582b x 5'-5



584a x 3'-7

584b x 3'-5



585 x 2'-4

B:1 revised.

BILL OF MATERIALS			
These quantities are for one concrete bridge railing transition type TBC.			
EPOXY COATED REINFORCING STEEL			
Size and Mark	No. of Bars	Length (Ft.-in.)	Weight (Lbs.)
582a	15	5'-7"	
582b	16	5'-5"	
584a	15	3'-7"	
584b	16	3'-5"	
585	11	2'-4"	
#5	13	6'-0"	
#5	7	10'-9"	
Total #5 Bars			477
Total Epoxy Coated Steel			477
Concrete Class C in Railing			1.2 yd³
Surface Seal			100 ft²

584 revised to be equivalent to bridge rail steel

585 embedment increased

2'-9" COMMON HEIGHT THRIE BEAM / CONCRETE BRIDGE RAILING TRANSITION

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION TYPE TBC

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-TTBC-03

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

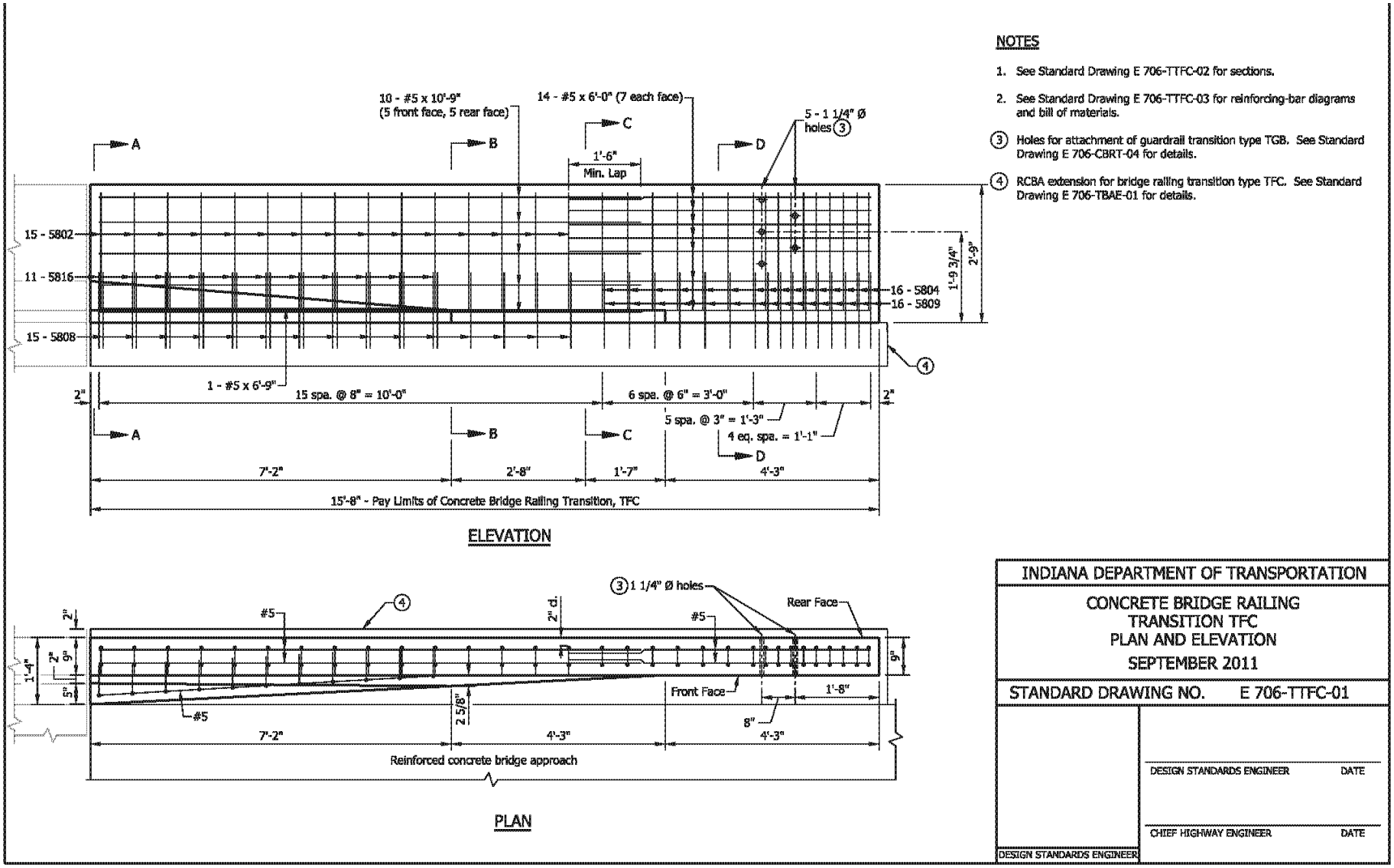
DESIGN STANDARDS ENGINEER

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

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

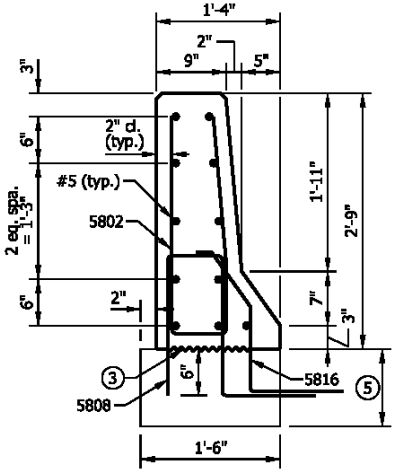
REVISION TO STANDARD DRAWINGS

706-TTFC-01 CONCRETE BRIDGE RAILING TRANSITION TFC PLAN AND ELEVATION (DRAFT)

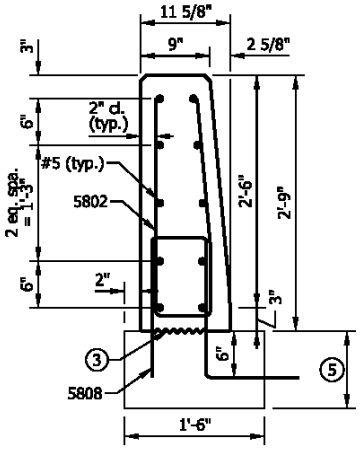


REVISION TO STANDARD DRAWINGS

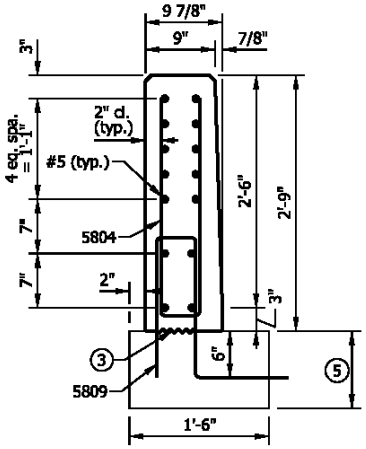
706-TTFC-02 CONCRETE BRIDGE RAILING TRANSITION, TFC SECTIONS (DRAFT)



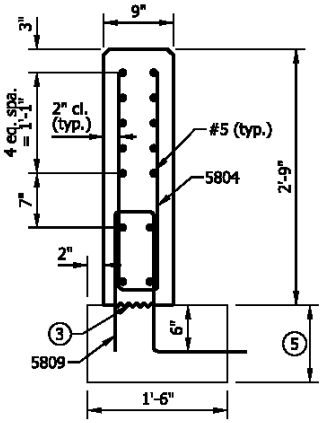
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

NOTES

1. See Standard Drawing E 706-TTFC-01 for elevation and plan.
2. All chamfered edges shall be 3/4".
3. Construction joint type A. See Standard Drawing E 702-CJTA-01 for details.
4. See Standard Drawing E 706-TTFC-03 for reinforcing-bar diagrams.
5. RCBA extension for bridge railing type TFC. See Standard Drawing E 706-TBAE-01 for details.

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING
TRANSITION, TFC
SECTIONS

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-TTFC-02

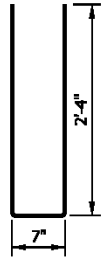
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

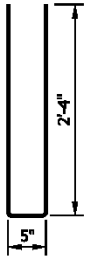
DESIGN STANDARDS ENGINEER

REVISION TO STANDARD DRAWINGS

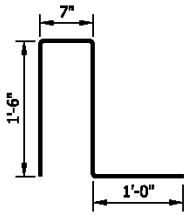
706-TTFC-03 CONCRETE BRIDGE RAILING TRANSITION, TFC (DRAFT)



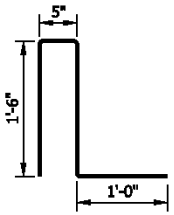
5802 x 5'-3"



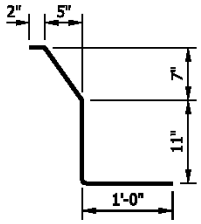
5804 x 5'-1"



5808 x 4'-7"



5809 x 4'-5"



5816 x 2'-10"

NOTE

1. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.

BILL OF MATERIALS		
Quantities are for one concrete bridge railing transition type TFC		
EPOXY-COATED REINFORCING STEEL		
Mark / Size	No. of Bars	Weight
5802	15	
5804	16	
5808	15	
5809	16	
5816	11	
#5 x 10'-9"	10	
#5 x 6'-9"	1	
#5 x 6'-0"	14	
Total Epoxy-Coated Reinforcing Steel		552 LBS
MISCELLANEOUS		
Concrete, Class C		1.2 CYS
Surface Seal		100 SFT

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION, TFC

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-TTFC-03

DESIGN STANDARDS ENGINEER

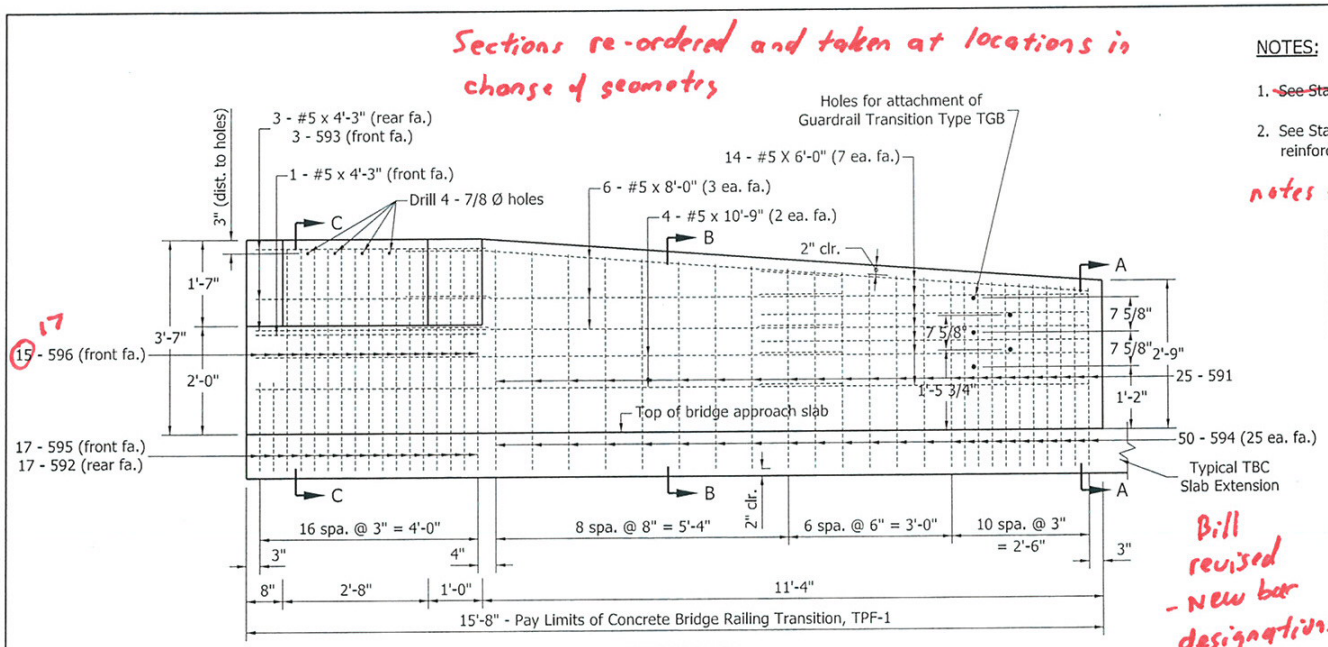
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

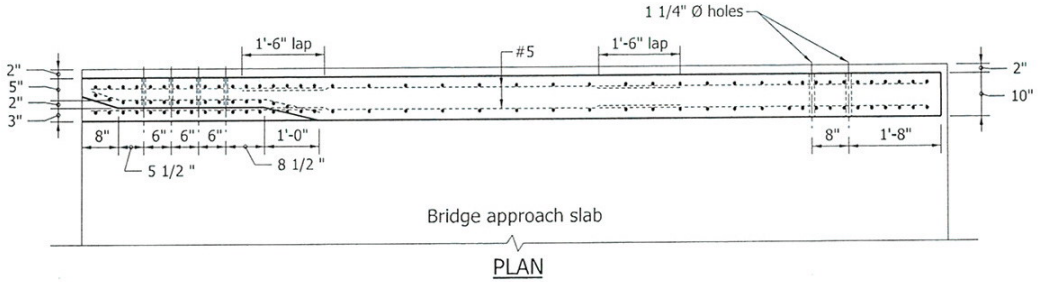
REVISION TO STANDARD DRAWINGS

EXISTING 706-TTBP-01 CONCRETE BRIDGE RAILING TRANSITION, TPF-1 (WITH MARKUPS)

Sections re-ordered and taken at locations in change of geometry



ELEVATION



PLAN

NOTES:

1. ~~See Standard Drawing E 706-TTBP-09 for general notes.~~ TTPP
2. See Standard Drawing E 706-~~TTBP~~TTPP-02 for sections and reinforcing-bar diagrams.

notes added. 3) RCBA TBAE-01 4) Holes - BRPP-01

BILL OF MATERIALS, TPF-1
EPOXY-COATED REINFORCING STEEL

Mark / Size	No. of Bars	Total Length	Weight
591 x 5'-4"	25	133'-4"	
592 x 4'-8"	17	79'-4"	
593 x 4'-3"	3	12'-9"	
594 x 3'-7"	50	179'-2"	
595 x 3'-1"	17	52'-5"	
596 x 3'-0"	15	43'-0"	
#5 x 10'-9"	4	43'-0"	
#5 x 8'-0"	6	48'-0"	
#5 x 6'-0"	14	84'-0"	
#5 x 4'-3"	4	17'-0"	
Total Epoxy-Coated Reinforcing Steel		694'-2"	724 lb
MISCELLANEOUS			
Concrete, Class C			1.5 cys
Surface Seal			121 sft

Bill revised - New bar designations

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION, TPF-1

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-TTBP-01

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

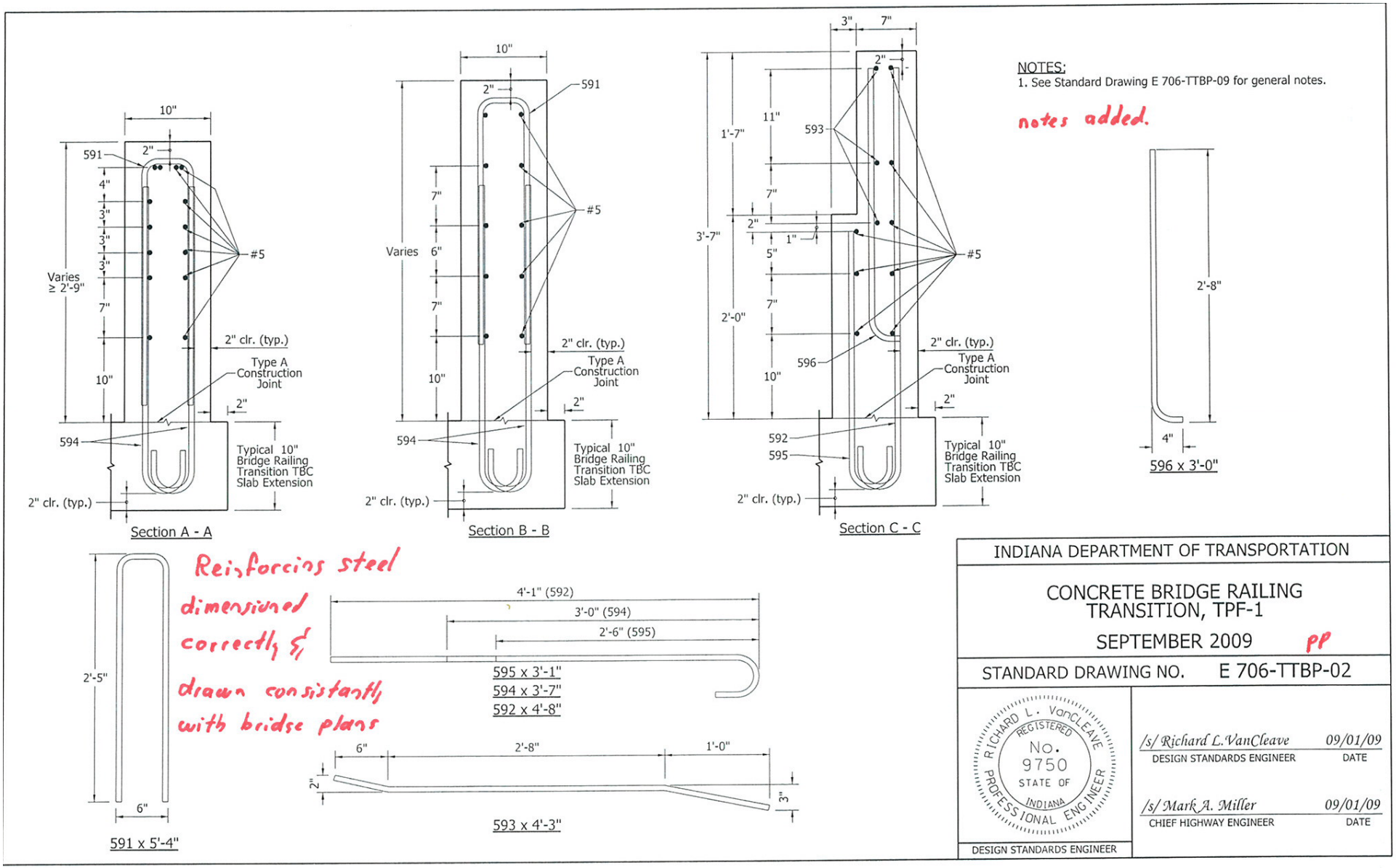
DESIGN STANDARDS ENGINEER

/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

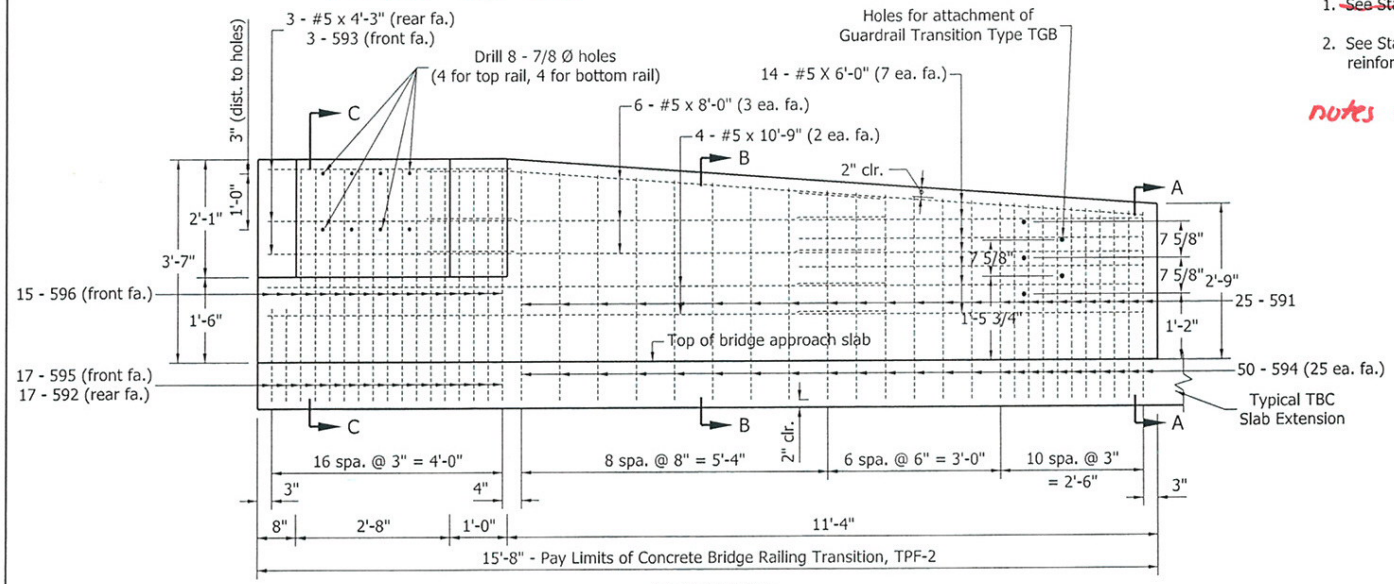
EXISTING 706-TTBP-02 CONCRETE BRIDGE RAILING TRANSITION, TPF-1 (WITH MARKUPS)



REVISION TO STANDARD DRAWINGS

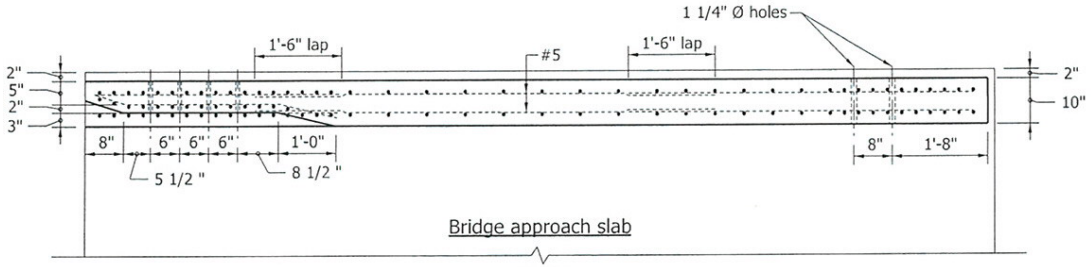
EXISTING 706-TTBP-03 CONCRETE BRIDGE RAILING TRANSITION, TPF-2 (WITH MARKUPS)

Section reordered.



ELEVATION

rescaled/redrawn for clarity



PLAN

NOTES:

1. ~~See Standard Drawing E 706-TTBP-09 for general notes.~~ PP
2. See Standard Drawing E 706-TTBP-04 for sections and reinforcing-bar diagrams.

notes added

3) RCBA - TBAE-04

4) holes- BRPP-02

BILL OF MATERIALS, TPF-2
EPOXY-COATED REINFORCING STEEL

Mark / Size	No. of Bars	Total Length	Weight
591 x 5'-4"	25	133'-4"	
592 x 4'-8"	17	79'-4"	
593 x 4'-3"	3	12'-9"	
594 x 3'-7"	50	179'-2"	
595 x 2'-7"	17	43'-11"	
596 x 3'-0"	15	43'-0"	
#5 x 10'-9"	4	43'-0"	
#5 x 8'-0"	6	48'-0"	
#5 x 6'-0"	14	84'-0"	
#5 x 4'-3"	3	12'-9"	
Total Epoxy-Coated Reinforcing Steel		679'-3"	711 lb
MISCELLANEOUS			
Concrete, Class C			1.5 cys
Surface Seal			121 sft

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION, TPF-2

SEPTEMBER 2011 PP

STANDARD DRAWING NO. E 706-TTBP-03

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

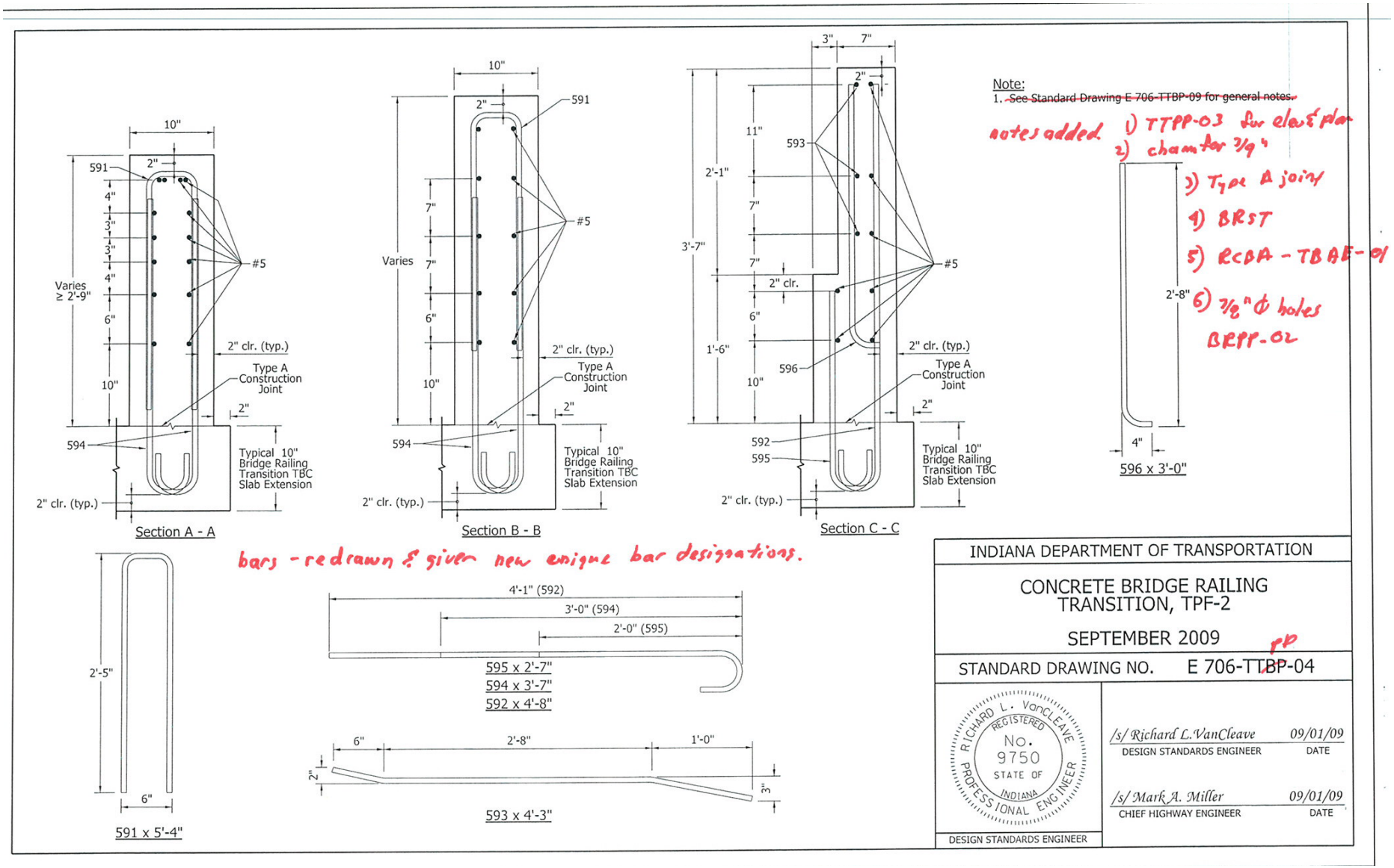
DESIGN STANDARDS ENGINEER

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

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

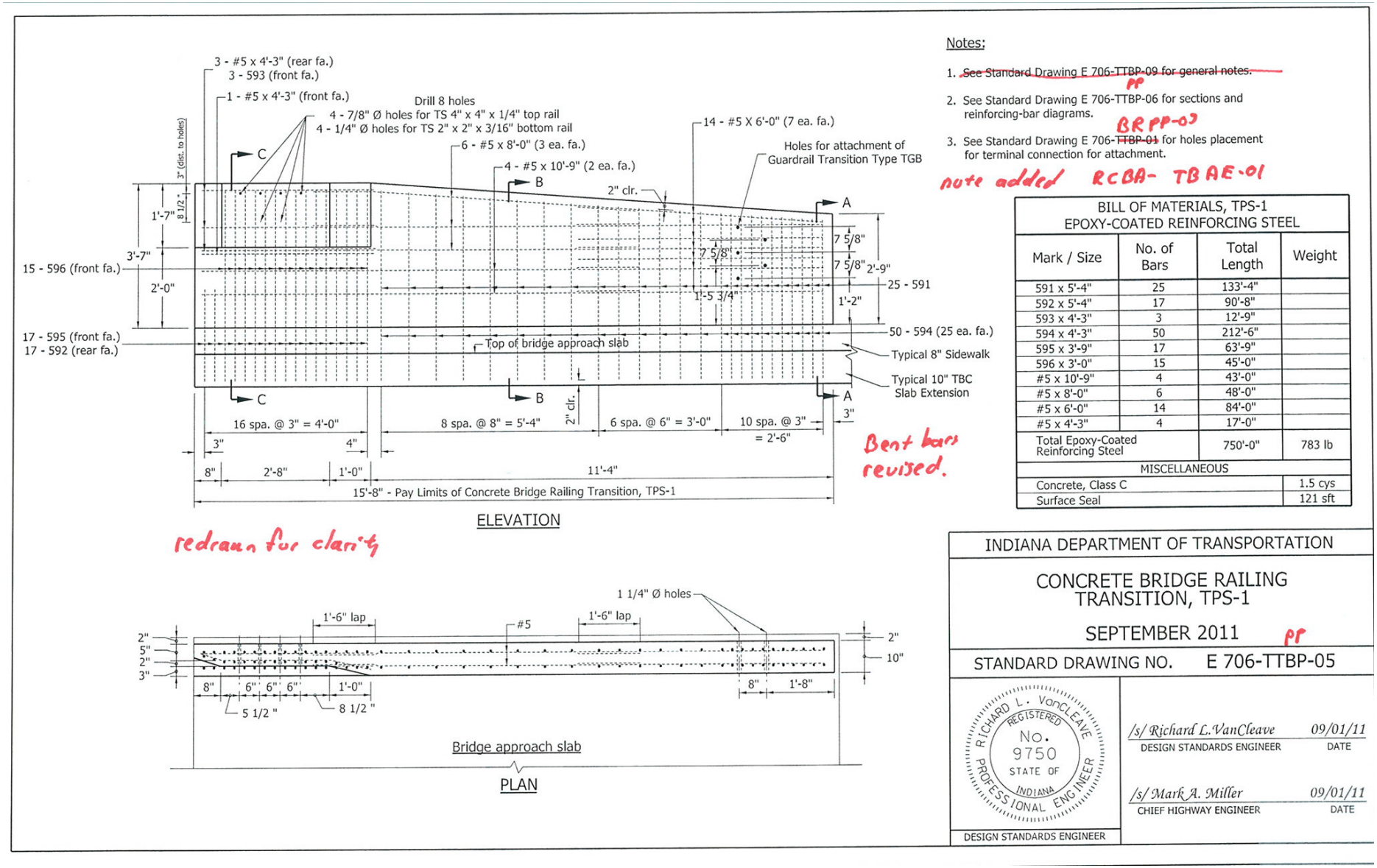
REVISION TO STANDARD DRAWINGS

EXISTING 706-TTBP-04 CONCRETE BRIDGE RAILING TRANSITION, TPF-2 (WITH MARKUPS)



REVISION TO STANDARD DRAWINGS

EXISTING 706-TTBP-05 CONCRETE BRIDGE RAILING TRANSITION, TPS-1 (WITH MARKUPS)



Notes:

1. ~~See Standard Drawing E 706-TTBP-09 for general notes.~~ PP
2. See Standard Drawing E 706-TTBP-06 for sections and reinforcing-bar diagrams. BRPP-03
3. See Standard Drawing E 706-~~TTBP-01~~ for holes placement for terminal connection for attachment.

note added RCBA- TBAE-01

BILL OF MATERIALS, TPS-1
EPOXY-COATED REINFORCING STEEL

Mark / Size	No. of Bars	Total Length	Weight
591 x 5'-4"	25	133'-4"	
592 x 5'-4"	17	90'-8"	
593 x 4'-3"	3	12'-9"	
594 x 4'-3"	50	212'-6"	
595 x 3'-9"	17	63'-9"	
596 x 3'-0"	15	45'-0"	
#5 x 10'-9"	4	43'-0"	
#5 x 8'-0"	6	48'-0"	
#5 x 6'-0"	14	84'-0"	
#5 x 4'-3"	4	17'-0"	
Total Epoxy-Coated Reinforcing Steel		750'-0"	783 lb
MISCELLANEOUS			
Concrete, Class C			1.5 cys
Surface Seal			121 sft

Bent bars revised.

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION, TPS-1

SEPTEMBER 2011 PP

STANDARD DRAWING NO. E 706-TTBP-05

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

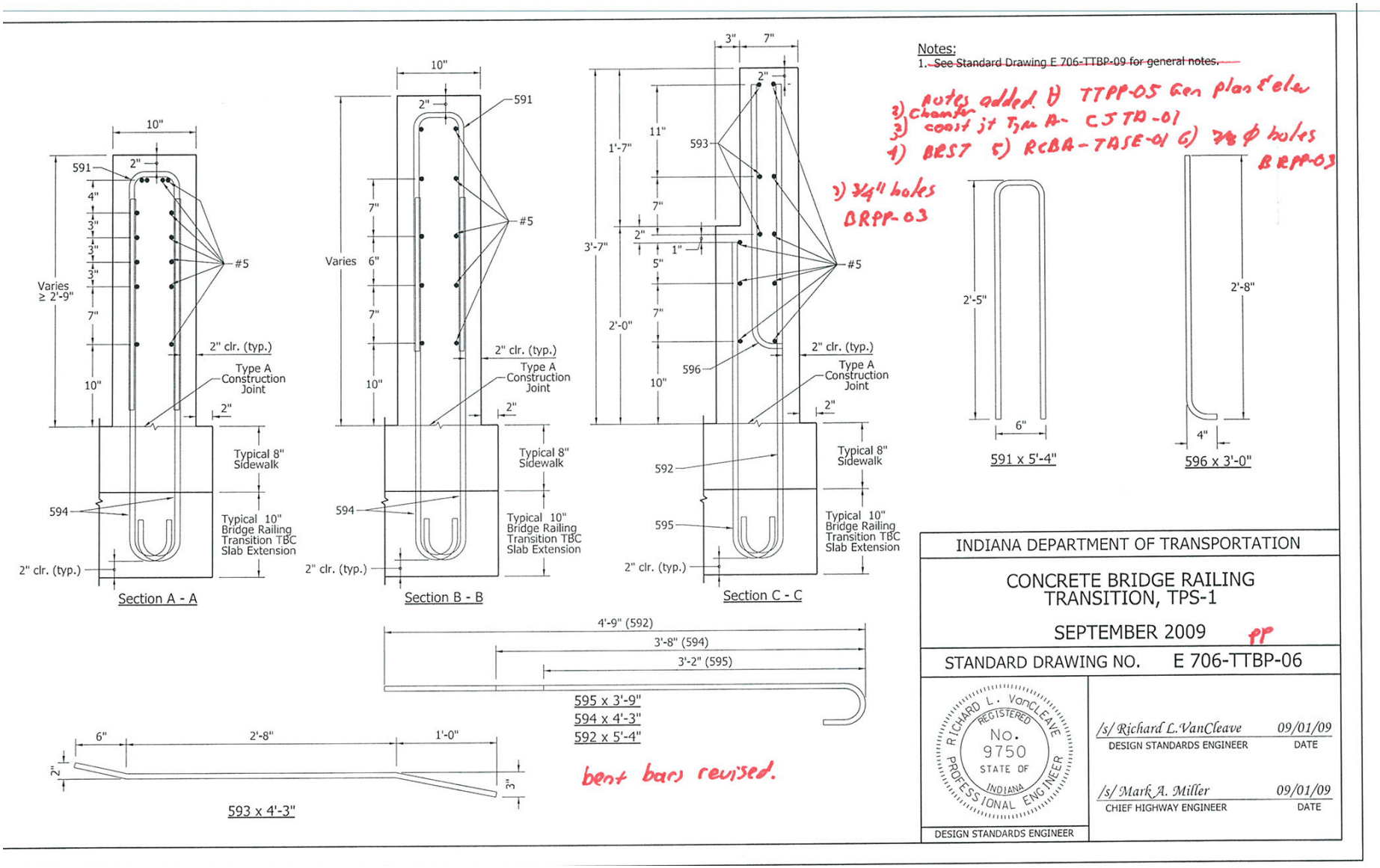
DESIGN STANDARDS ENGINEER

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

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

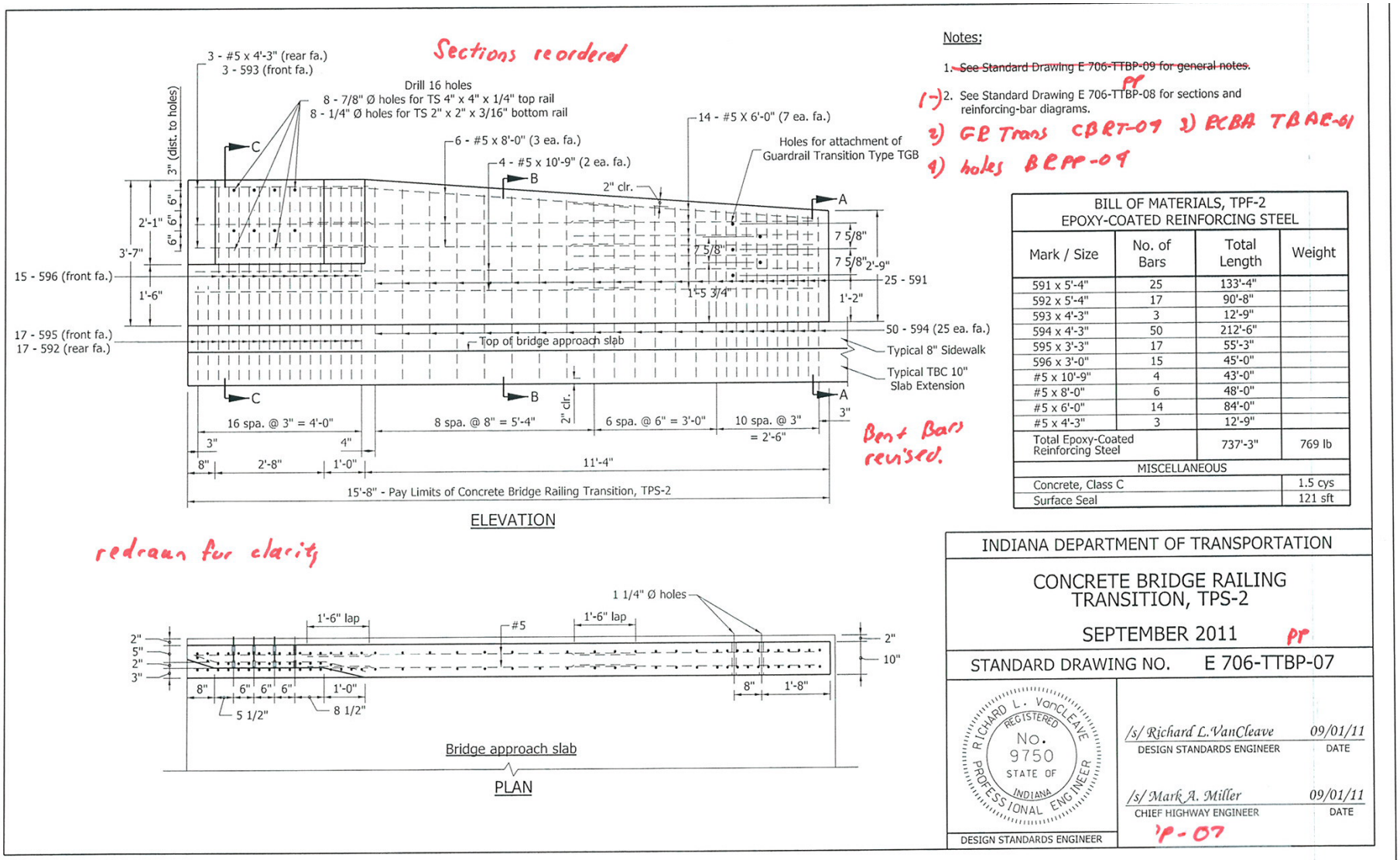
REVISION TO STANDARD DRAWINGS

EXISTING 706-TTBP-06 CONCRETE BRIDGE RAILING TRANSITION, TPS-1 (WITH MARKUPS)



REVISION TO STANDARD DRAWINGS

EXISTING 706-TTBP-07 CONCRETE BRIDGE RAILING TRANSITION, TPS-2 (WITH MARKUPS)



BILL OF MATERIALS, TPF-2
EPOXY-COATED REINFORCING STEEL

Mark / Size	No. of Bars	Total Length	Weight
591 x 5'-4"	25	133'-4"	
592 x 5'-4"	17	90'-8"	
593 x 4'-3"	3	12'-9"	
594 x 4'-3"	50	212'-6"	
595 x 3'-3"	17	55'-3"	
596 x 3'-0"	15	45'-0"	
#5 x 10'-9"	4	43'-0"	
#5 x 8'-0"	6	48'-0"	
#5 x 6'-0"	14	84'-0"	
#5 x 4'-3"	3	12'-9"	
Total Epoxy-Coated Reinforcing Steel		737'-3"	769 lb
MISCELLANEOUS			
Concrete, Class C			1.5 cys
Surface Seal			121 sft

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION, TPS-2

SEPTEMBER 2011 pr

STANDARD DRAWING NO. E 706-TTBP-07

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

DESIGN STANDARDS ENGINEER

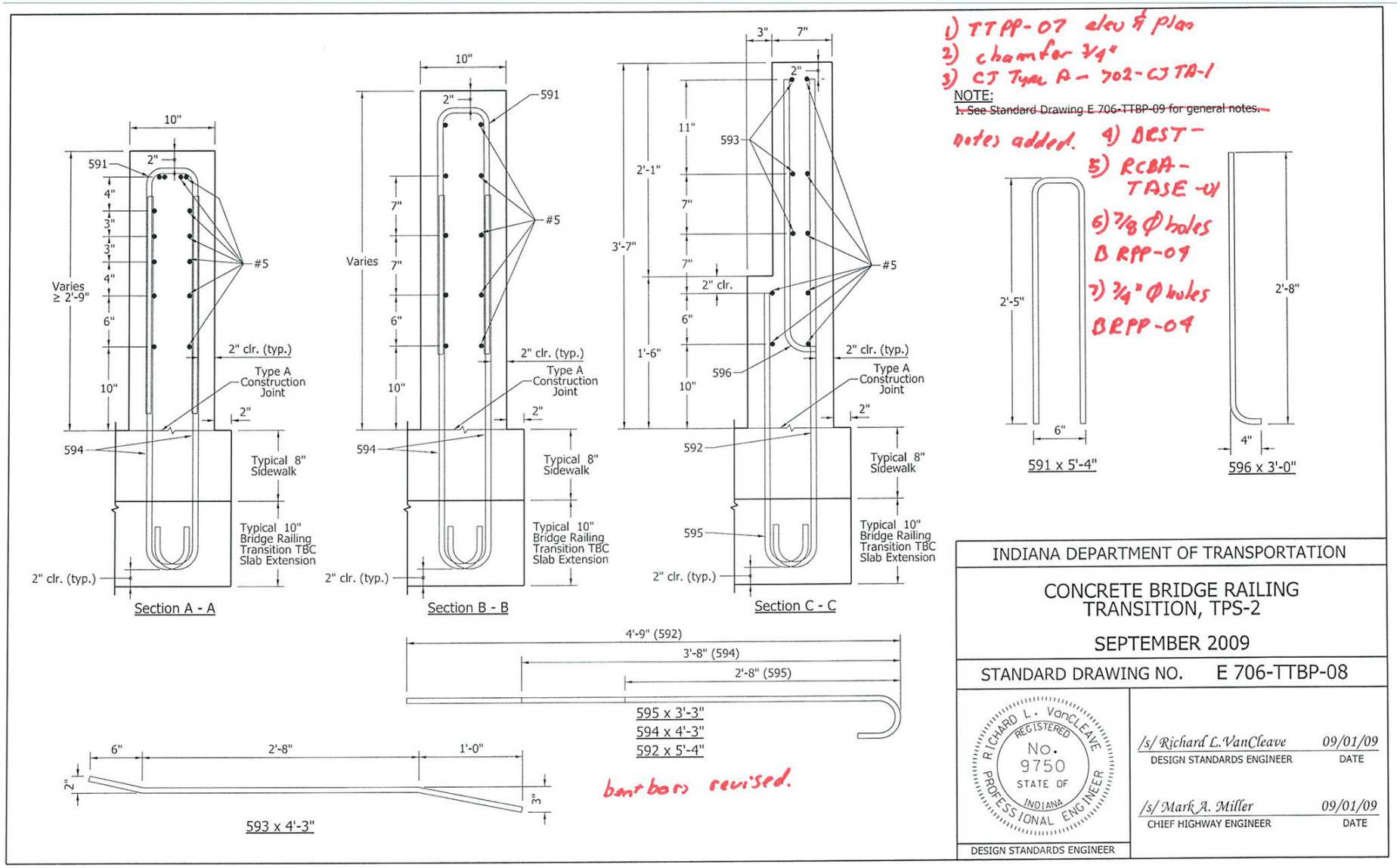
/s/ Richard L. VanCleave 09/01/11
DESIGN STANDARDS ENGINEER DATE

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

TP-07

REVISION TO STANDARD DRAWINGS

EXISTING 706-TTBP-08 CONCRETE BRIDGE RAILING TRANSITION, TPS-2 (WITH MARKUPS)



REVISION TO STANDARD DRAWINGS

EXISTING 706-TTBP-09 CONCRETE BRIDGE RAILING TRANSITION TYPE TPF, TPS, OR TTX (PROPOSED TO DELETE)

GENERAL NOTES:

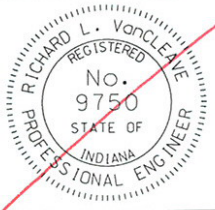
1. All reinforcing-bars shall be epoxy coated.
2. Concrete shall be class C.
3. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details.
4. See Standard Drawing E 706-CBRT-02 for attachment of guardrail transition type TGB.
5. See Standard Drawing E 706-TASE-01, -02 and -05 for bridge-railing transition type TBC slab extension.

Sheet deleted.

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING
TRANSITION TYPE
TPF, TPS, OR TTX
SEPTEMBER 2009

STANDARD DRAWING NO. E 706-TTBP-09



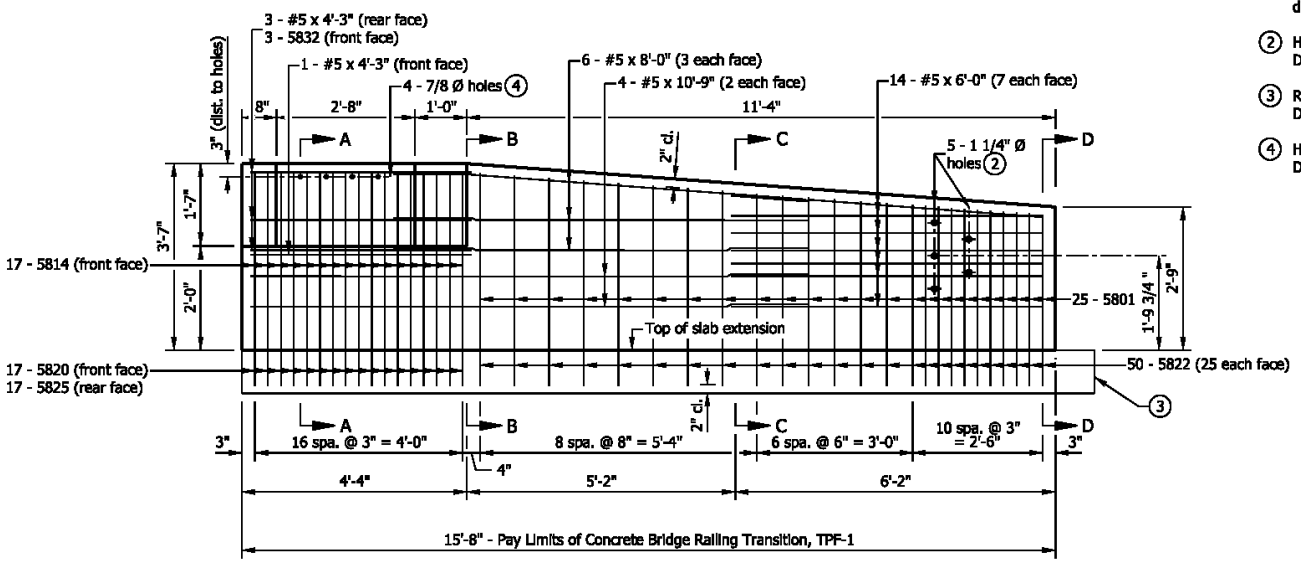
DESIGN STANDARDS ENGINEER

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

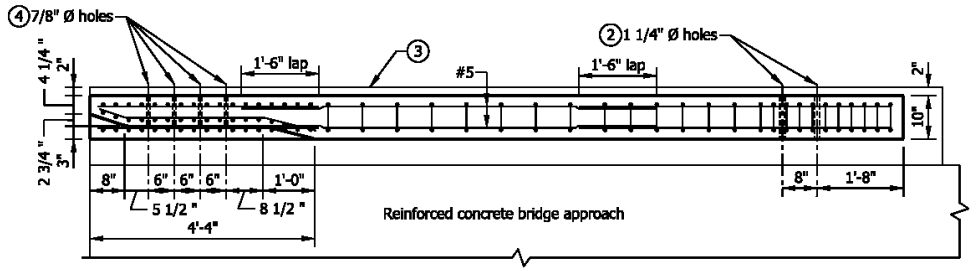
/s/ Mark A. Miller 09/01/09
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD DRAWINGS

706-TTPP-01 CONCRETE BRIDGE RAILING TRANSITION, TPF-1 (DRAFT)



ELEVATION



PLAN

NOTES

1. See Standard Drawing E 706-TTPP-02 for sections and reinforcing bar diagrams.
2. Holes for attachment of guardrail transition type TGB. See Standard Drawing E 706-CBRT-04 for details.
3. RCBA extension for bridge railing transition type TPF-1. See Standard Drawing E 706-TBAE-01 for details.
4. Holes for attachment of steel bridge railing type PF-1. See Standard Drawing E 706-BRPP-01 for details.

BILL OF MATERIALS		
Quantities are for one concrete bridge railing transition type TPF-1.		
EPOXY-COATED REINFORCING STEEL		
Mark / Size	No. of Bars	Weight
5801	25	
5814	17	
5820	17	
5822	50	
5825	17	
5832	3	
#5 x 10'-9"	4	
#5 x 8'-0"	6	
#5 x 6'-0"	14	
#5 x 4'-3"	4	
Total Epoxy-Coated Reinforcing Steel		730 LBS
MISCELLANEOUS		
Concrete, Class C		1.5 CYS
Surface Seal		119 SFT

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION, TPF-1

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-TTPP-01

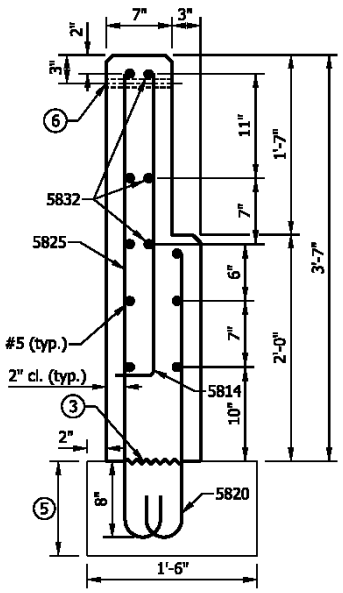
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

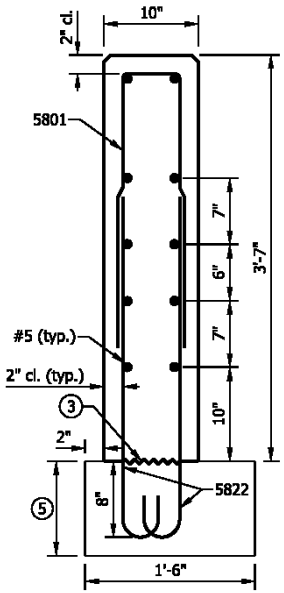
DESIGN STANDARDS ENGINEER

REVISION TO STANDARD DRAWINGS

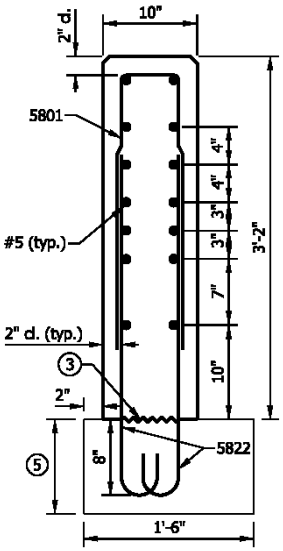
706-TTPP-02 CONCRETE BRIDGE RAILING TRANSITION, TPF-1 (DRAFT)



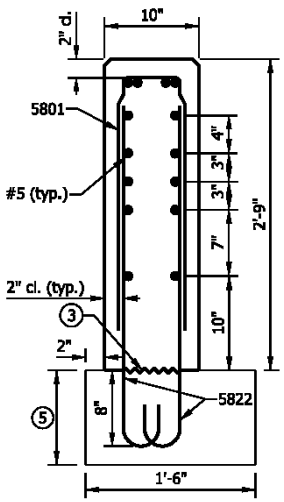
SECTION A-A



SECTION B-B



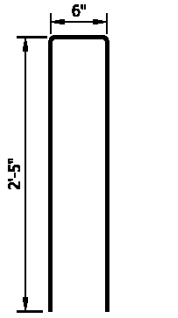
SECTION C-C



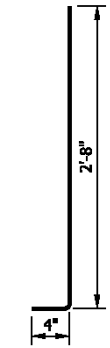
SECTION D-D

NOTES

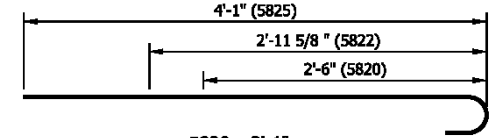
1. See Standard Drawing E 706-TTPP-01 for elevation and plan.
2. All chamfered edges shall be 3/4".
3. Construction joint type A. See Standard Drawing E 702-CJTA-01 for details.
4. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.
5. RCBA extension for bridge railing transition type TPF-1. See Standard Drawing E 706-TBAE-01 details.
6. 7/8" Ø hole for attachment of steel bridge railing type PF-1. See Standard Drawing E 706-BRPP-01 for details.



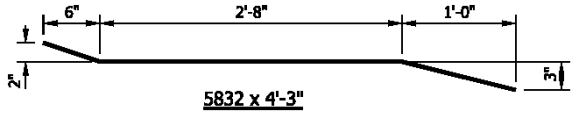
5801 x 5'-4"



5814 x 3'-0"



5820 x 3'-1"
5822 x 3'-7"
5825 x 4'-8"



5832 x 4'-3"

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING
TRANSITION, TPF-1

SEPTEMBER 2009

STANDARD DRAWING NO. E 706-TTPP-02

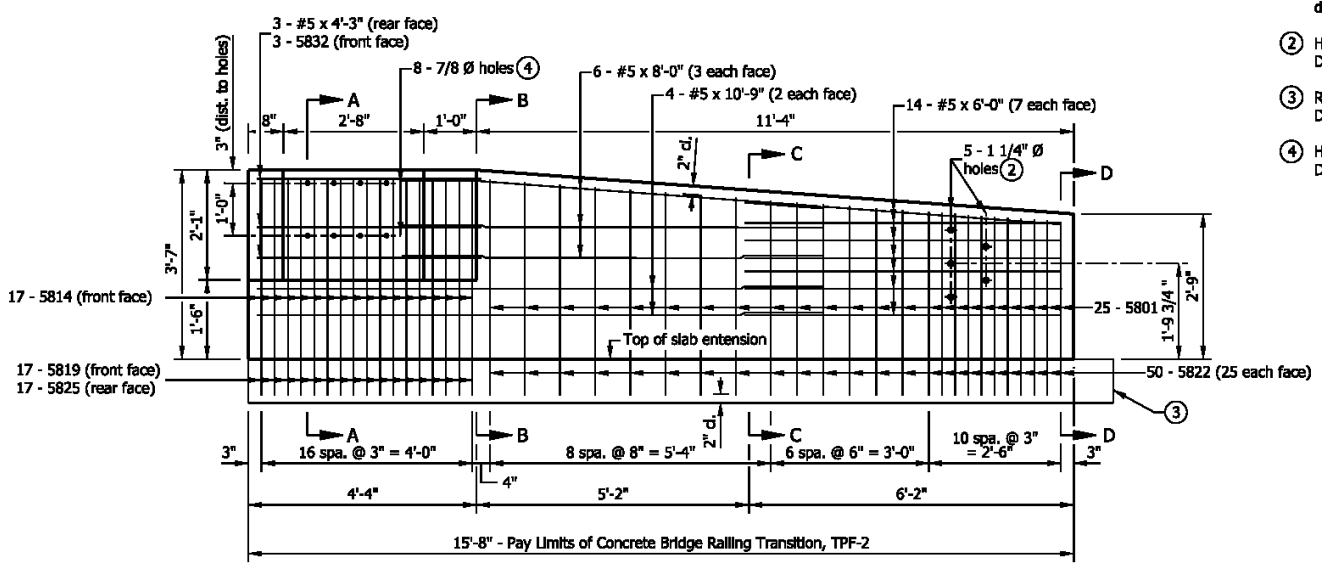
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

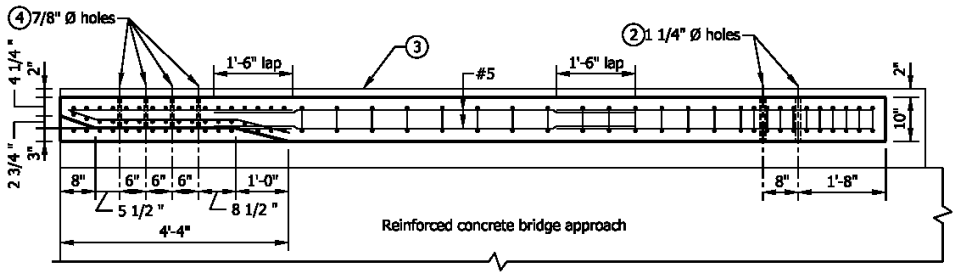
DESIGN STANDARDS ENGINEER

REVISION TO STANDARD DRAWINGS

706-TTPP-03 CONCRETE BRIDGE RAILING TRANSITION, TPF-2 (DRAFT)



ELEVATION



PLAN

NOTES

1. See Standard Drawing E 706-TTPP-04 for sections and reinforcing bar diagrams.
2. Holes for attachment of guardrail transition type TGB. See Standard Drawing E 706-CBRT-04 for details.
3. RCBA extension for bridge railing transition type TPF-2. See Standard Drawing E 706-TBAE-01 for details.
4. Holes for attachment of steel bridge railing type PF-2. See Standard Drawing E 706-BRPP-02 for details.

BILL OF MATERIALS		
Quantities are for one concrete bridge railing transition type TPF-2.		
EPOXY-COATED REINFORCING STEEL		
Mark / Size	No. of Bars	Weight
5801	25	
5814	17	
5819	17	
5822	50	
5825	17	
5832	3	
#5 x 10'-9"	4	
#5 x 8'-0"	6	
#5 x 6'-0"	14	
#5 x 4'-3"	3	
Total Epoxy-Coated Reinforcing Steel		717 LBS
MISCELLANEOUS		
Concrete, Class C		1.5 CYS
Surface Seal		119 SFT

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION, TPF-2

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-TTPP-03

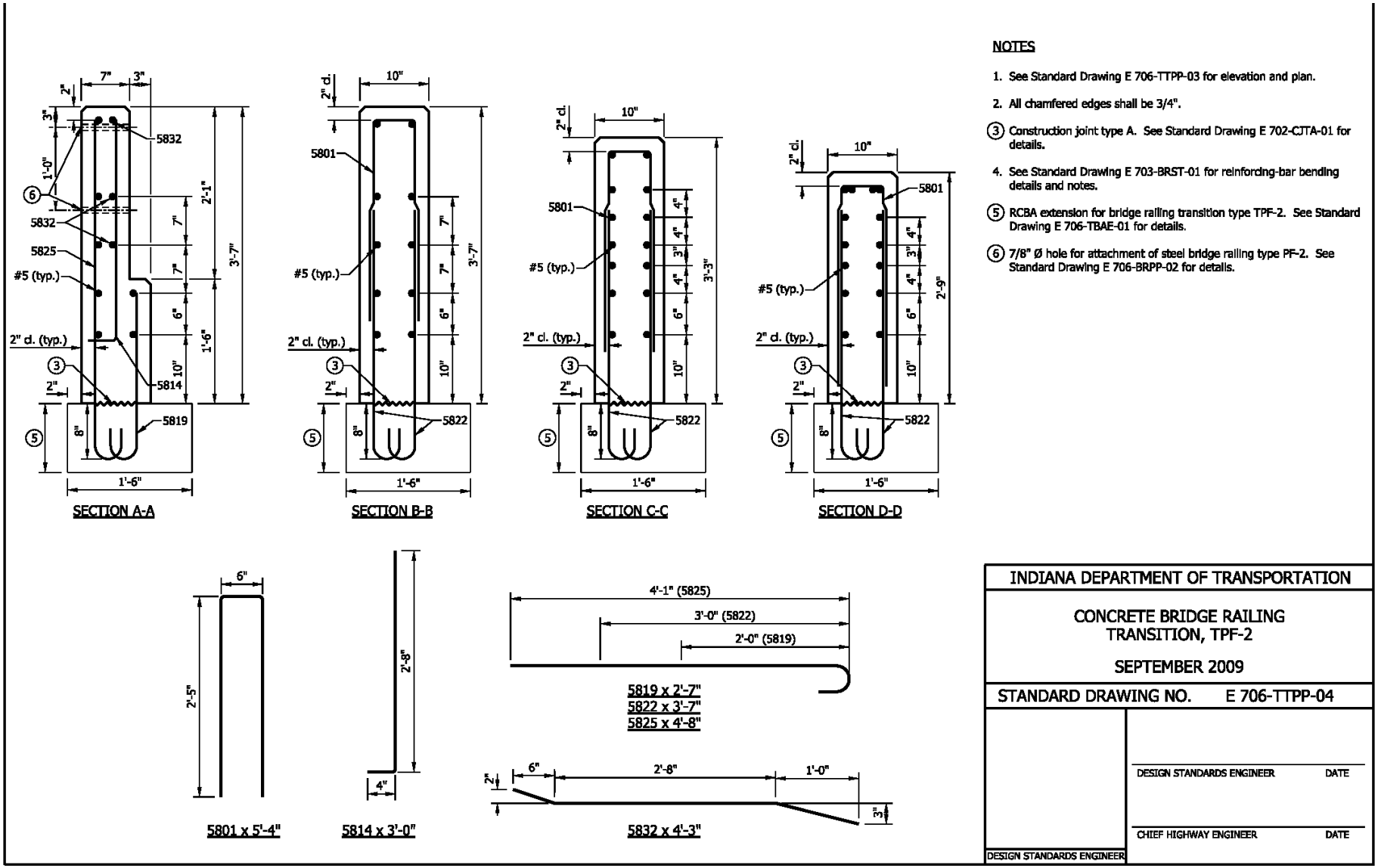
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

REVISION TO STANDARD DRAWINGS

706-TTPP-04 CONCRETE BRIDGE RAILING TRANSITION, TPF-2 (DRAFT)



NOTES

1. See Standard Drawing E 706-TTPP-03 for elevation and plan.
2. All chamfered edges shall be 3/4".
3. Construction joint type A. See Standard Drawing E 702-CJTA-01 for details.
4. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.
5. RCBA extension for bridge railing transition type TPF-2. See Standard Drawing E 706-TBAE-01 for details.
6. 7/8" Ø hole for attachment of steel bridge railing type PF-2. See Standard Drawing E 706-BRPP-02 for details.

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION, TPF-2

SEPTEMBER 2009

STANDARD DRAWING NO. E 706-TTPP-04

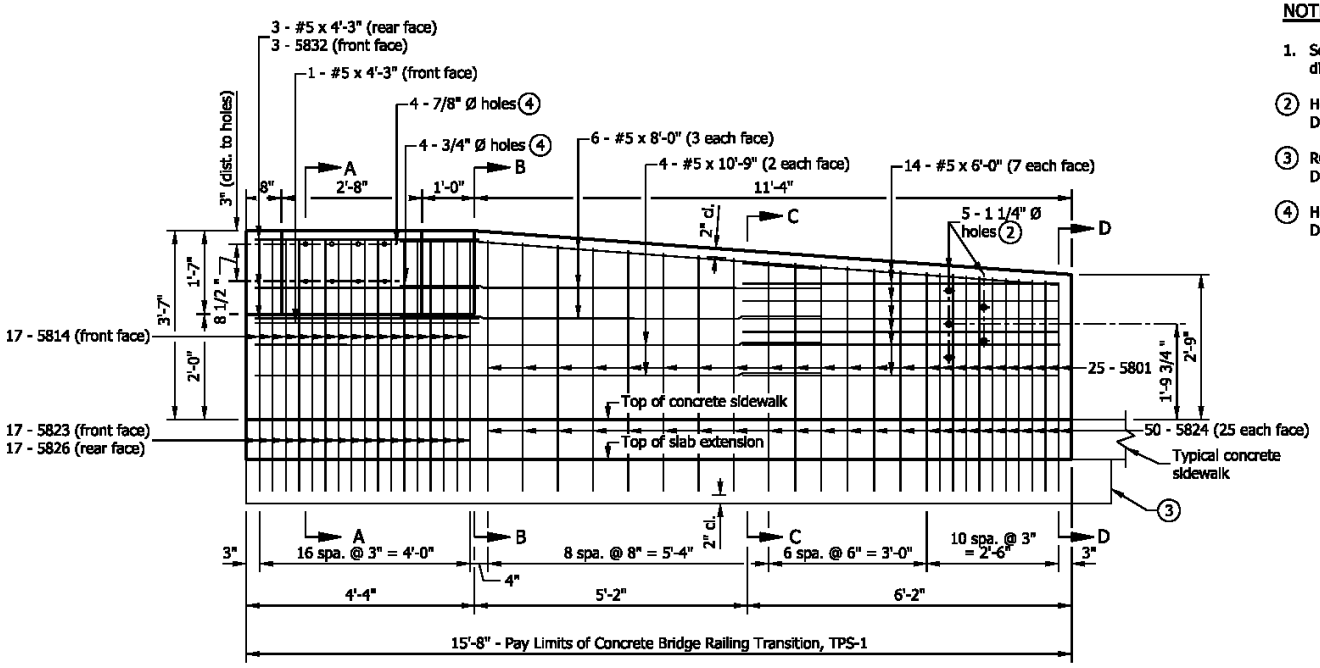
DESIGN STANDARDS ENGINEER DATE

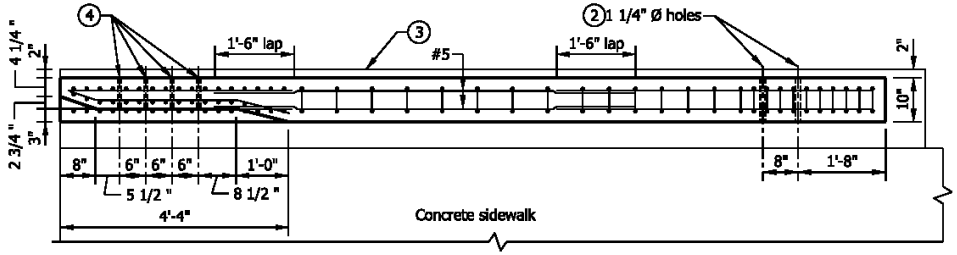
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

REVISION TO STANDARD DRAWINGS

706-TTPP-05 CONCRETE BRIDGE RAILING TRANSITION, TPS-1 (DRAFT)





NOTES

1. See Standard Drawing E 706-TTPP-06 for sections and reinforcing bar diagrams.
2. Holes for attachment of guardrail transition type TGB. See Standard Drawing E 706-CBRT-04 for details.
3. RCBA extension for bridge railing transition type TPS-1. See Standard Drawing E 706-TBAE-01 for details.
4. Holes for attachment of steel bridge railing type PS-1. See Standard Drawing E 706-BRPP-03 for details.

BILL OF MATERIALS		
Quantities are for one concrete bridge railing transition type TPS-1.		
EPOXY-COATED REINFORCING STEEL		
Mark / Size	No. of Bars	Weight
5801	25	
5814	17	
5823	17	
5824	50	
5826	17	
5832	3	
#5 x 10'-9"	4	
#5 x 8'-0"	6	
#5 x 6'-0"	14	
#5 x 4'-3"	4	
Total Epoxy-Coated Reinforcing Steel		789 LBS
MISCELLANEOUS		
Concrete, Class C		1.9 CYS
Surface Seal		131 SFT

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION, TPS-1

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-TTPP-05

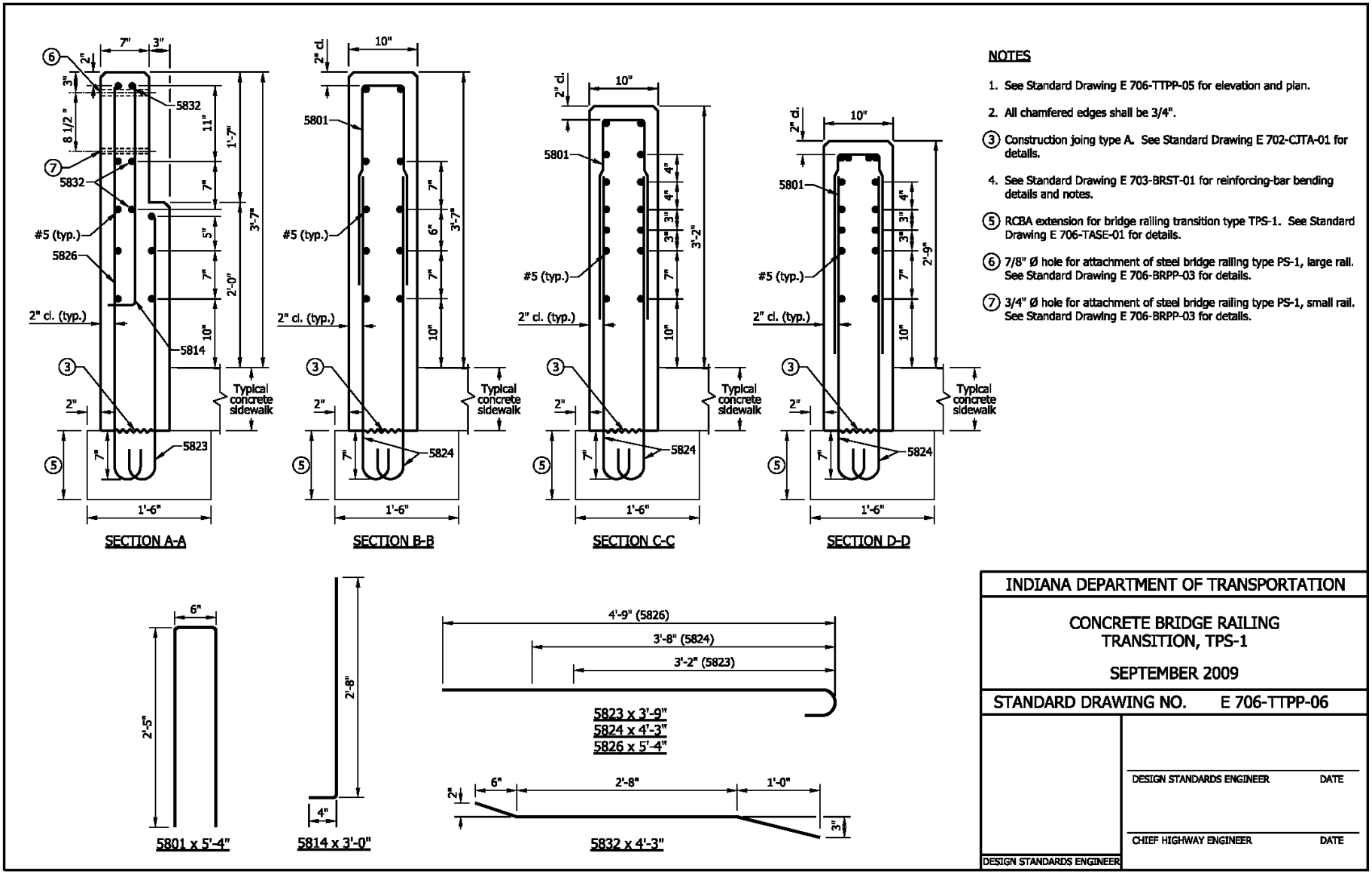
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

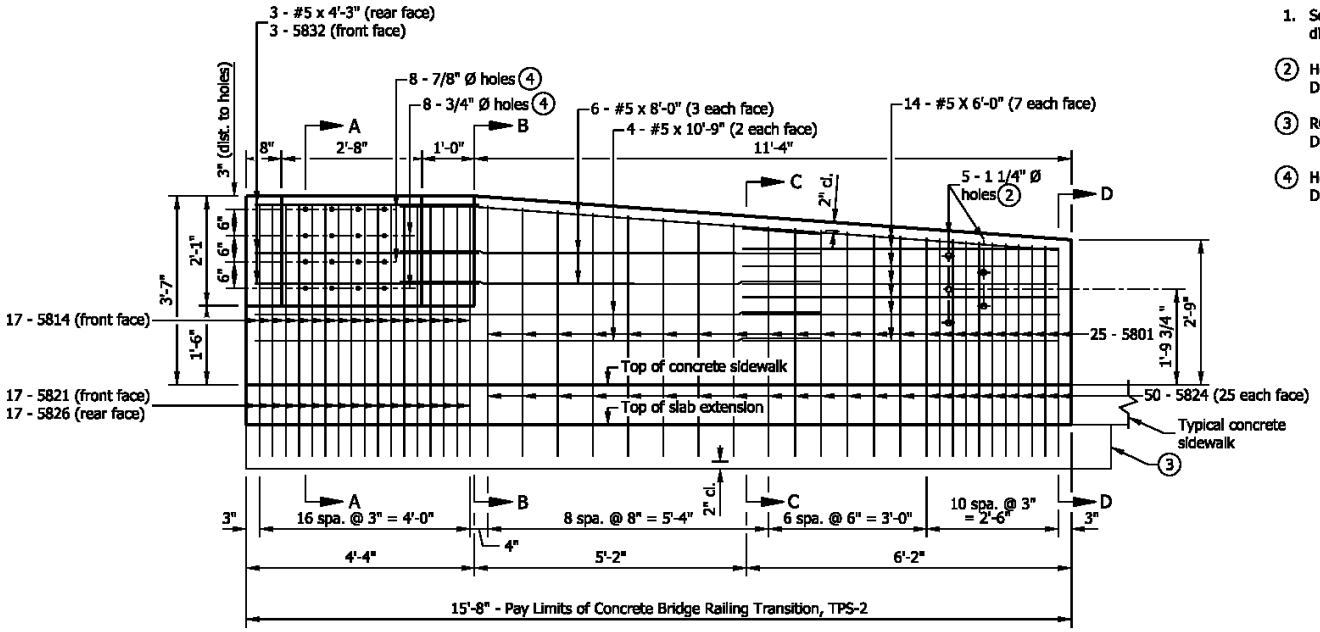
REVISION TO STANDARD DRAWINGS

706-TTPP-06 CONCRETE BRIDGE RAILING TRANSITION, TPS-1 (DRAFT)



REVISION TO STANDARD DRAWINGS

706-TTPP-07 CONCRETE BRIDGE RAILING TRANSITION, TPS-2 (DRAFT)



NOTES

1. See Standard Drawing E 706-TTPP-08 for sections and reinforcing bar diagrams.
2. Holes for attachment of guardrail transition type TGB. See Standard Drawing E 706-CBRT-04 for details.
3. RCBA extension for bridge railing transition type TPS-2. See Standard Drawing E 706-TBAE-01 for details.
4. Holes for attachment of steel bridge railing type PS-2. See Standard Drawing E 706-BRPP-04 for details.

BILL OF MATERIALS		
Quantities are for one concrete bridge railing transition type TPS-2.		
EPOXY-COATED REINFORCING STEEL		
Mark / Size	No. of Bars	Weight
5801	25	
5814	17	
5821	17	
5824	50	
5826	17	
5832	3	
#5 x 10'-9"	4	
#5 x 8'-0"	6	
#5 x 6'-0"	14	
#5 x 4'-3"	3	
Total Epoxy-Coated Reinforcing Steel		775 LBS
MISCELLANEOUS		
Concrete, Class C		1.9 CYS
Surface Seal		131 SFT

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION, TPS-2

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-TTPP-07

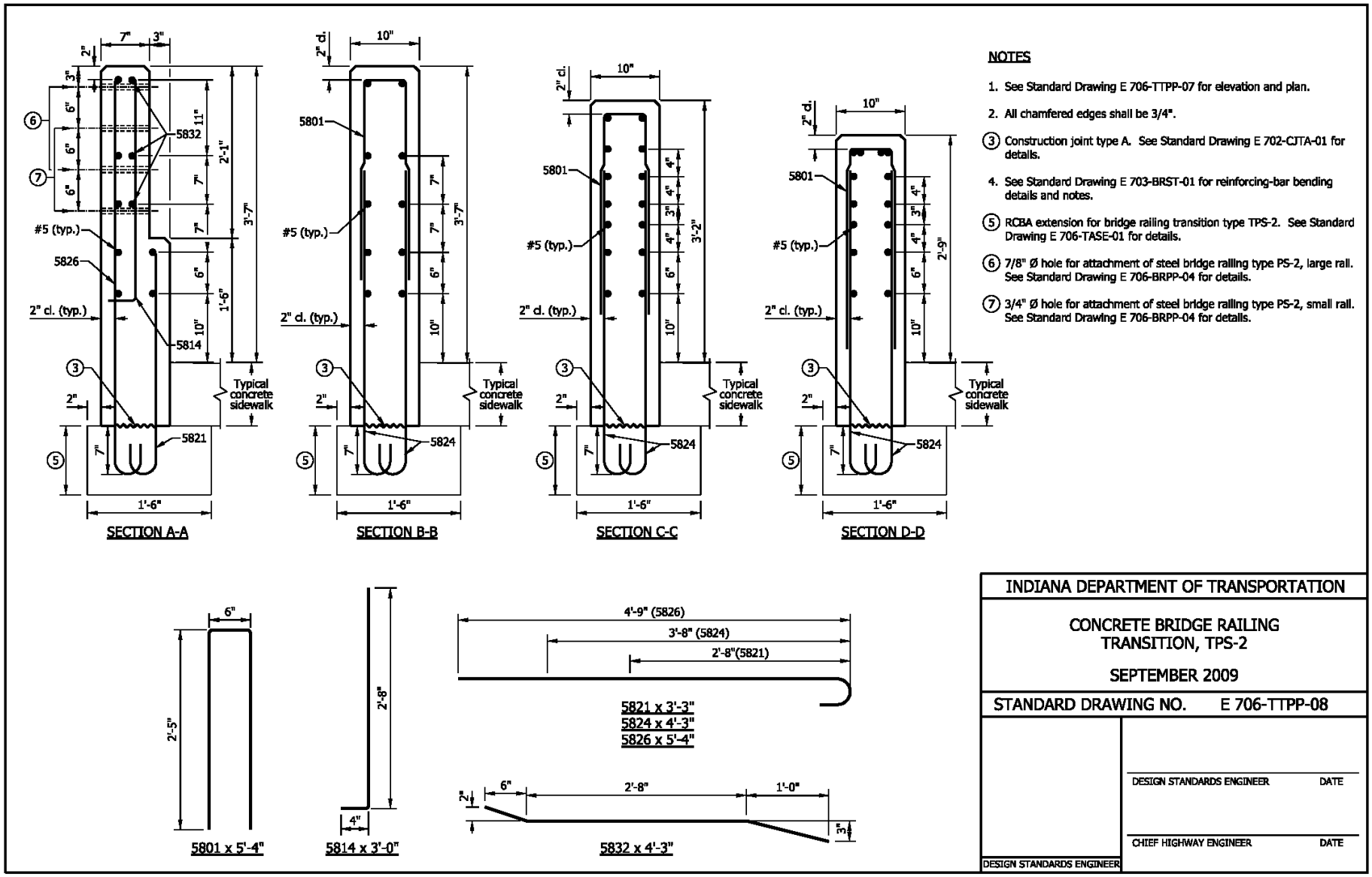
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

REVISION TO STANDARD DRAWINGS

706-TTPP-08 CONCRETE BRIDGE RAILING TRANSITION, TPS-2 (DRAFT)



NOTES

1. See Standard Drawing E 706-TTPP-07 for elevation and plan.
2. All chamfered edges shall be 3/4".
3. Construction joint type A. See Standard Drawing E 702-CJTA-01 for details.
4. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.
5. RCBA extension for bridge railing transition type TPS-2. See Standard Drawing E 706-TASE-01 for details.
6. 7/8" Ø hole for attachment of steel bridge railing type PS-2, large rail. See Standard Drawing E 706-BRPP-04 for details.
7. 3/4" Ø hole for attachment of steel bridge railing type PS-2, small rail. See Standard Drawing E 706-BRPP-04 for details.

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION, TPS-2

SEPTEMBER 2009

STANDARD DRAWING NO. E 706-TTPP-08

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

REVISION TO STANDARD DRAWINGS

EXISTING 706-TTBT-01 CONCRETE BRIDGE RAILING TRANSITION TBT PLAN AND ELEVATION (WITH MARKUPS)

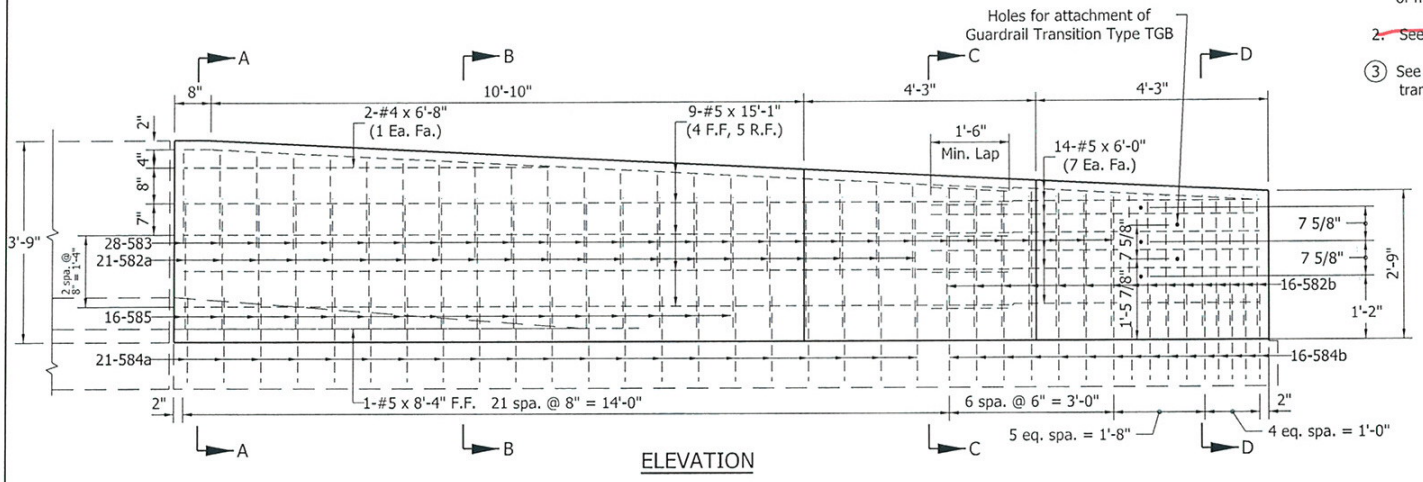
NOTES:

TTFT

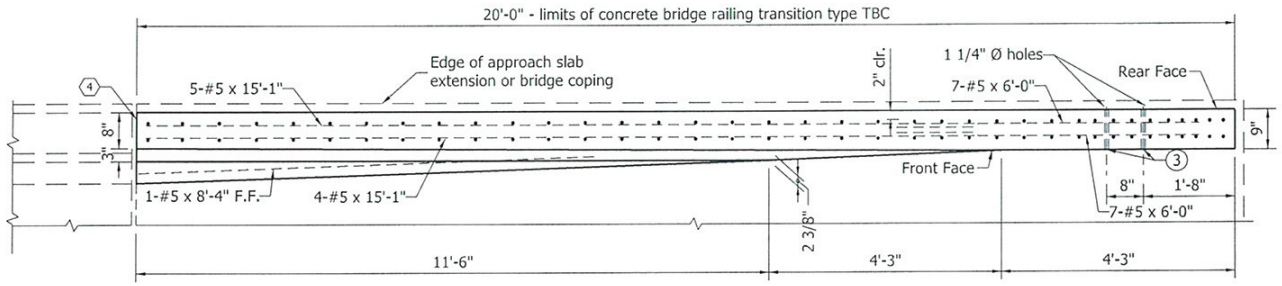
1. See Standard Drawing E 706-~~TTBT~~-02 for Sections A-A, B-B, C-C and D-D and Drawing E 706-~~TTBT~~-03 for reinforcement and bill of materials.
2. ~~See Standard Drawing E 706-TASE-05 for General Notes.~~
3. See Standard Drawing E 706-CBRT-02 for details of guardrail transition type TGB attachment.

TTGB-01

RCBA TBAC-02



ELEVATION



PLAN

3'-9" TRUCK HEIGHT THRIE BEAM/ CONCRETE BRIDGE RAILING TRANSITION

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION ~~TBT~~ TFT PLAN AND ELEVATION

SEPTEMBER 2011 TTFT

STANDARD DRAWING NO. E 706-TTBT-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

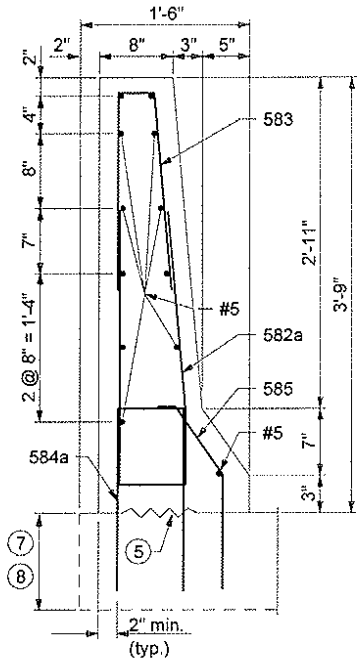
/s/ Mark A. Miller 09/01/11
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD DRAWINGS

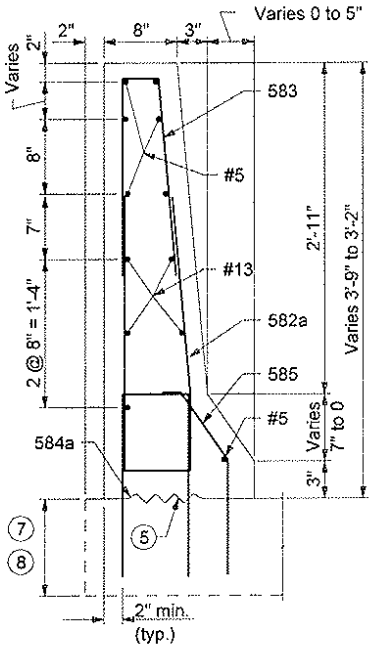
EXISTING 706-TTBT-02 CONCRETE BRIDGE RAILING TRANSITION TYPE TBT

NOTES:

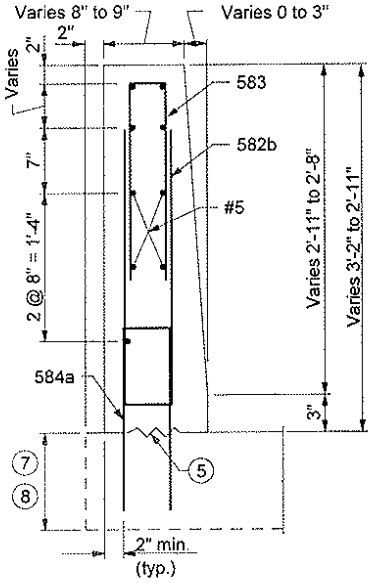
1. See Standard Drawing E 706-TASE-05 for General Notes.



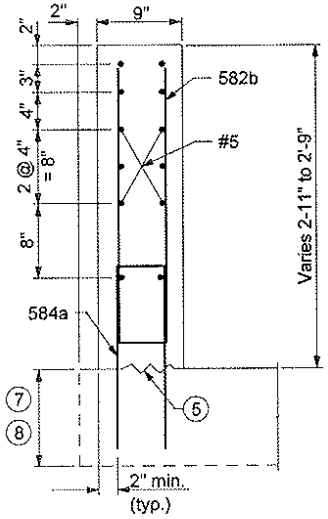
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

45" TRUCK HEIGHT THRIE BEAM/
CONCRETE BRIDGE RAILING TRANSITION

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING
TRANSITION TYPE TBT

SEPTEMBER 2006

STANDARD DRAWING NO. E 706-TTBT-02

RICHARD L. VANCLEAVE REGISTERED NO. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

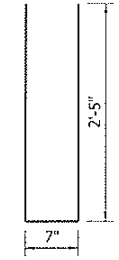
DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 9-01-06
DESIGN STANDARDS ENGINEER DATE

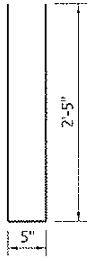
/s/ Richard K. Shutter 9-01-06
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD DRAWINGS

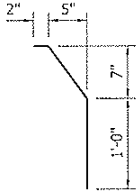
EXISTING 706-TTBT-03 CONCRETE BRIDGE RAILING TRANSITION TYPE TBT



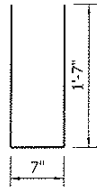
582b x 5'-5"



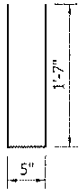
582b x 5'-3"



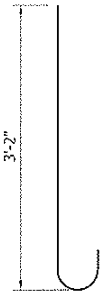
585 x 2'-0"



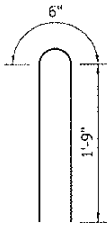
584a x 3'-9"



584b x 3'-7"



589 x 3'-9"



583 x 4'-0"

NOTE:

1. See Standard Drawing E 706-TASE-05 for General Notes.

BILL OF MATERIALS			
These quantities are for one concrete bridge railing transition type TBT.			
EPOXY COATED REINFORCING STEEL			
Size and Mark	No. of Bars	Length (Ft.-in.)	Weight (Lbs.)
582a	21	5'-5"	
582b	16	5'-3"	
583	28	4'-0"	
584a	21	3'-9"	
584b	16	3'-7"	
585	16	2'-0"	
#5	9	15'-1"	
#5	1	8'-4"	
#5	2	6'-8"	
#5	14	6'-0"	
Total #5 Bars			1133
Total Epoxy Coated Steel			1133
Concrete Class C in Railing			2.0 yd³
Surface Seal			13.4 yd²

3'-9" TRUCK HEIGHT THRIE BEAM/
CONCRETE BRIDGE RAILING TRANSITION

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING
TRANSITION TYPE TBT

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-TTBT-03

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

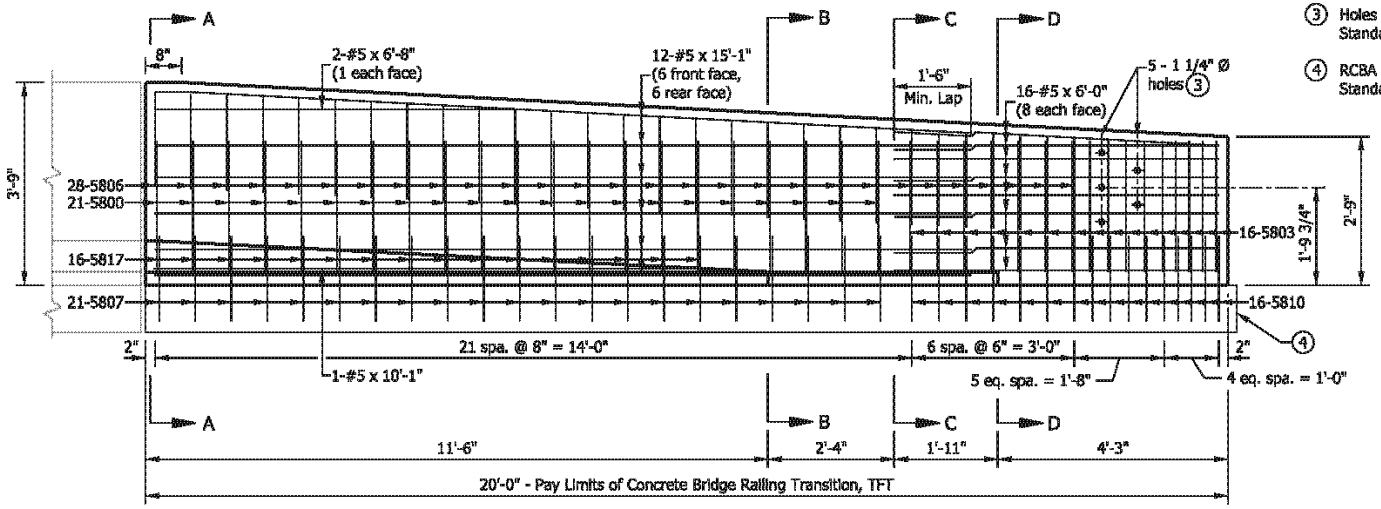
/s/ Mark A. Miller 09/01/11
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD DRAWINGS

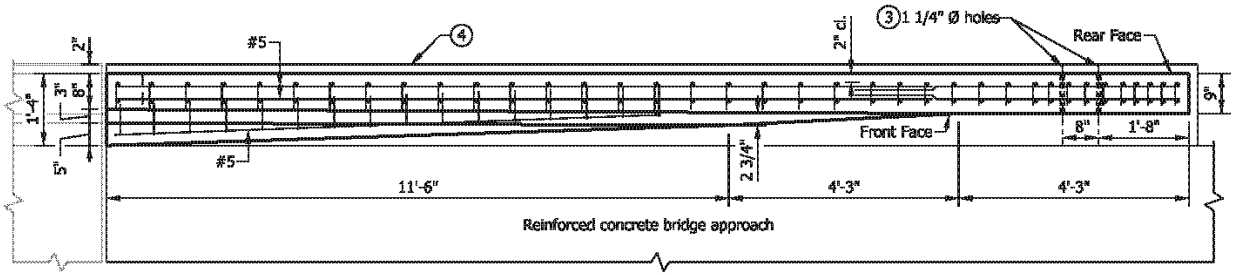
706-TTFT-01 CONCRETE BRIDGE RAILING TRANSITION TFT PLAN AND ELEVATION (DRAFT)

NOTES

1. See Standard Drawing E 706-TTFT-02 for sections.
2. See Standard Drawing E 706-TTFT-03 for reinforcing-bar diagrams and bill of materials.
3. Holes for attachment of guardrail transition type TGB. See Standard Drawing E 601-TTGB-01 for details.
4. RCBA extension for bridge railing transition type TFT. See Standard Drawing E 706-TBAE-02 for details.



ELEVATION



PLAN

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING
TRANSITION TFT
PLAN AND ELEVATION

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-TTFT-01

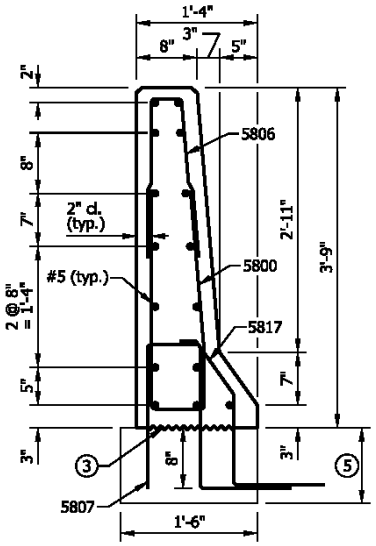
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

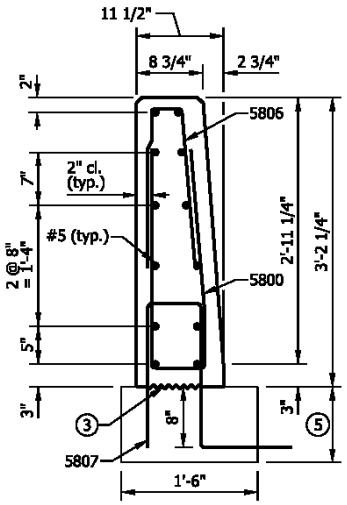
DESIGN STANDARDS ENGINEER

REVISION TO STANDARD DRAWINGS

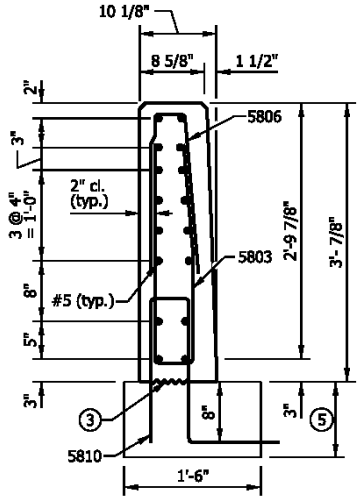
706-TTFT-02 CONCRETE BRIDGE RAILING TRANSITION, TFT (DRAFT)



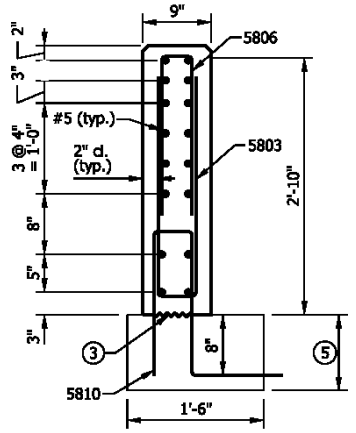
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

NOTES

1. See Standard Drawing E 706-TTFT-01 for elevation and plan.
2. All chamfered edges shall be 3/4".
3. Construction joint type A. See Standard Drawing E 702-CJTA-01 for details.
4. See Standard Drawing E 706-TTFT-03 for reinforcing-bar diagrams.
5. RCBA extension for bridge railing transition type TFT. See Standard Drawing E 706-TBAE-02 for details.

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION, TFT

SEPTEMBER 2006

STANDARD DRAWING NO. E 706-TTFT-02

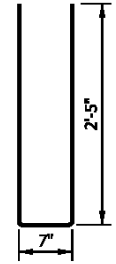
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

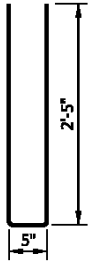
DESIGN STANDARDS ENGINEER

REVISION TO STANDARD DRAWINGS

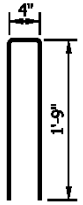
706-TTFT-03 CONCRETE BRIDGE RAILING TRANSITION TYPE TFT (DRAFT)



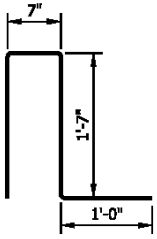
5800 x 5'-5"



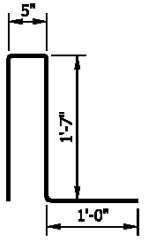
5803 x 5'-3"



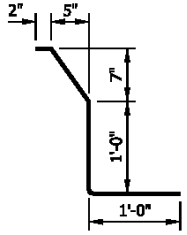
5806 x 3'-10"



5807 x 4'-9"



5810 x 4'-7"



5817 x 3'-0"

NOTE

1. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.

BILL OF MATERIALS		
Quantities are for one concrete bridge railing transition type TFT		
EPOXY-COATED REINFORCING STEEL		
Mark / Size	No. of Bars	Weight
5800	21	
5803	16	
5806	28	
5807	21	
5810	16	
5817	16	
#5 x 15'-1"	12	
#5 x 10'-1"	1	
#5 x 6'-8"	2	
#5 x 6'-0"	16	
Total Epoxy-Coated Reinforcing Steel		862 LBS
MISCELLANEOUS		
Concrete, Class C		2.0 CYS
Surface Seal		13.4 SYS

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING
TRANSITION TYPE TFT

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-TTFT-03

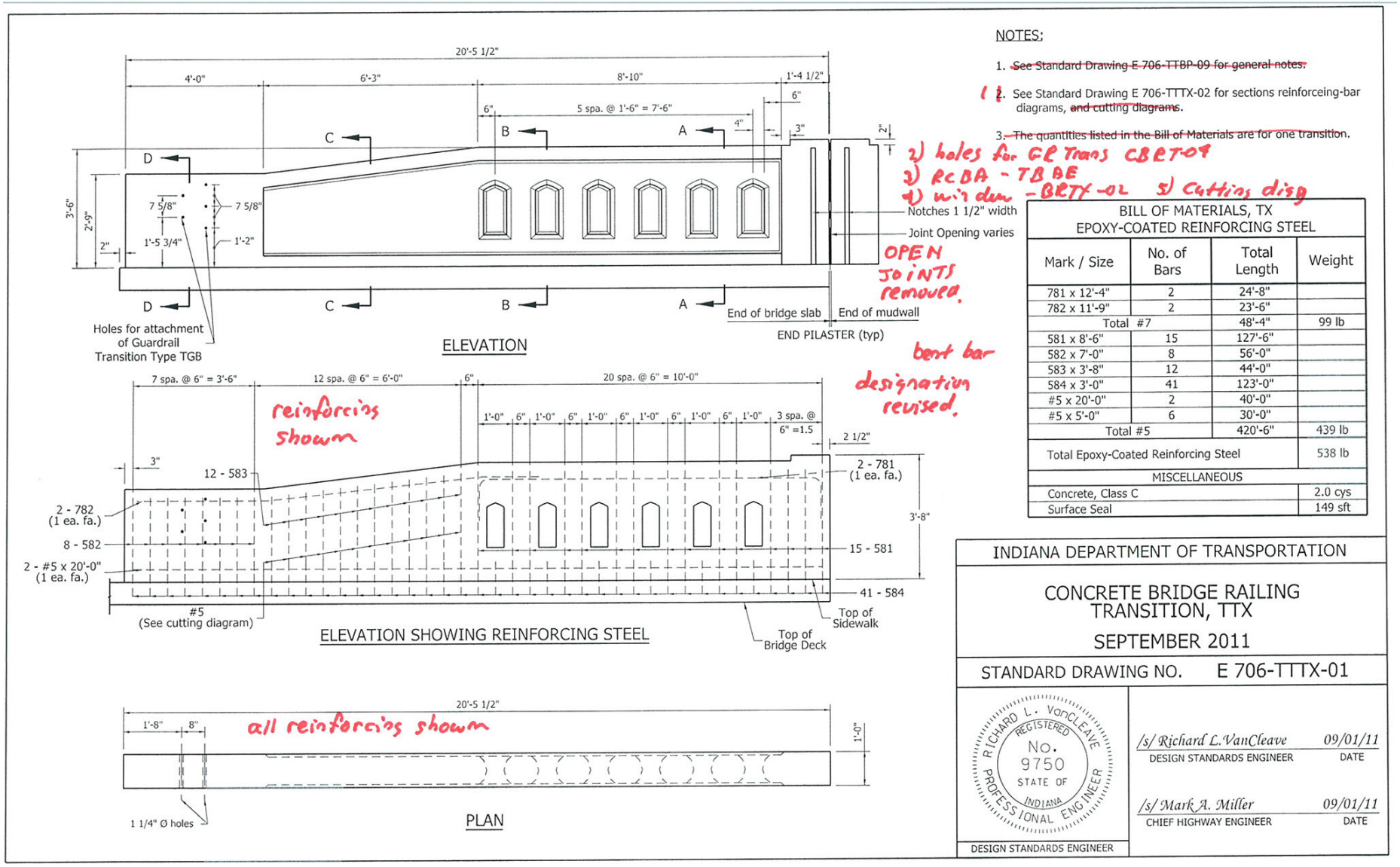
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

REVISION TO STANDARD DRAWINGS

EXISTING 706-TTTX-01 CONCRETE BRIDGE RAILING TRANSITION, TTX (WITH MARKUPS)



NOTES:

1. ~~See Standard Drawing E 706-TTBP-09 for general notes.~~
2. See Standard Drawing E 706-TTTX-02 for sections reinforceing-bar diagrams, ~~and cutting diagrams~~.
3. ~~The quantities listed in the Bill of Materials are for one transition.~~

2) holes for GR Trans CBRT-04
3) RCBA - TBBE
4) min dim - BRTX-02 5) Cutting diag

OPEN JOINTS removed.

bent bar designation revised.

reinforcing shown

all reinforcing shown

BILL OF MATERIALS, TX
EPOXY-COATED REINFORCING STEEL

Mark / Size	No. of Bars	Total Length	Weight
781 x 12'-4"	2	24'-8"	
782 x 11'-9"	2	23'-6"	
Total #7		48'-4"	99 lb
581 x 8'-6"	15	127'-6"	
582 x 7'-0"	8	56'-0"	
583 x 3'-8"	12	44'-0"	
584 x 3'-0"	41	123'-0"	
#5 x 20'-0"	2	40'-0"	
#5 x 5'-0"	6	30'-0"	
Total #5		420'-6"	439 lb
Total Epoxy-Coated Reinforcing Steel			538 lb
MISCELLANEOUS			
Concrete, Class C			2.0 cys
Surface Seal			149 sft

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION, TTX

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-TTTX-01

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

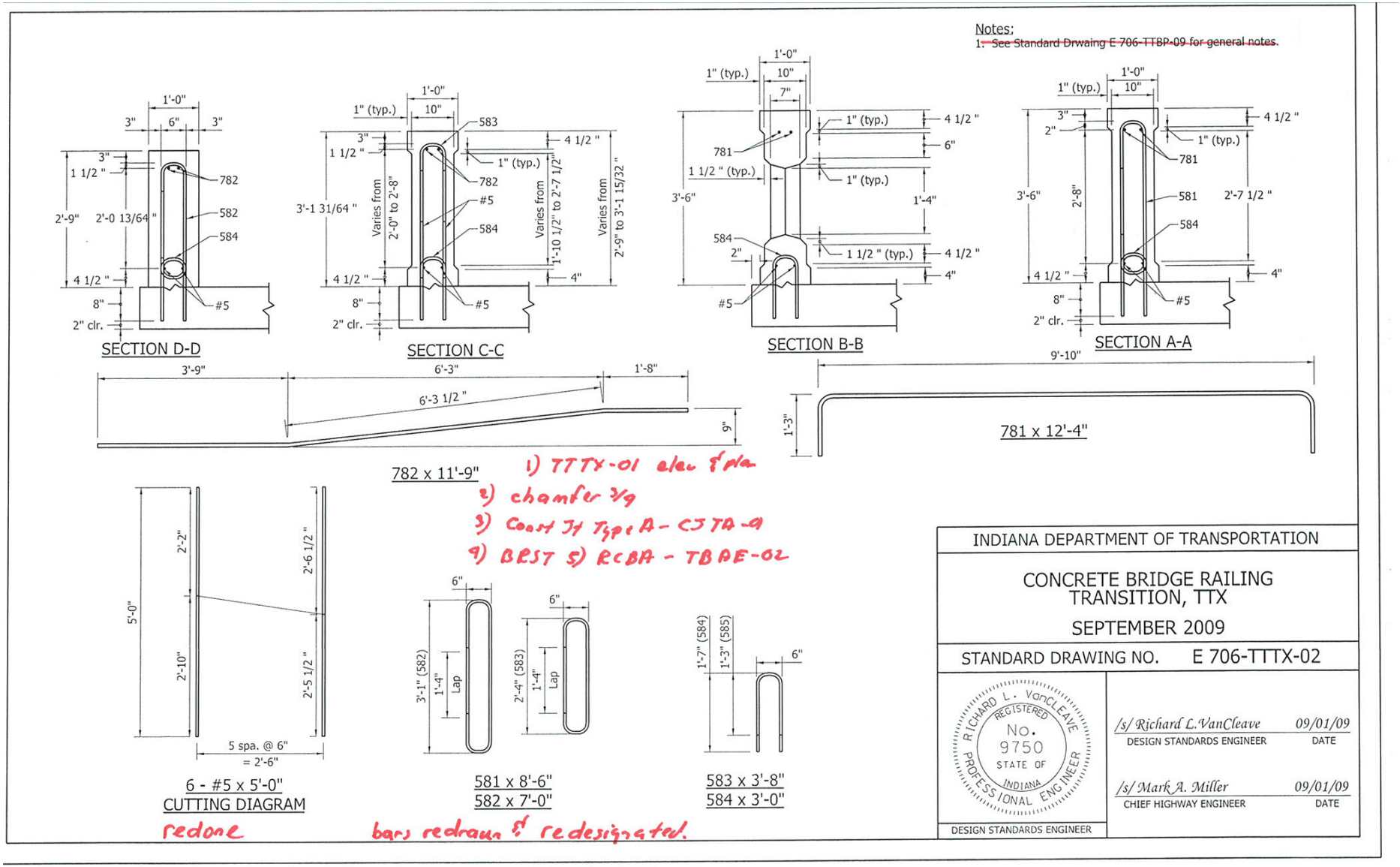
DESIGN STANDARDS ENGINEER

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

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

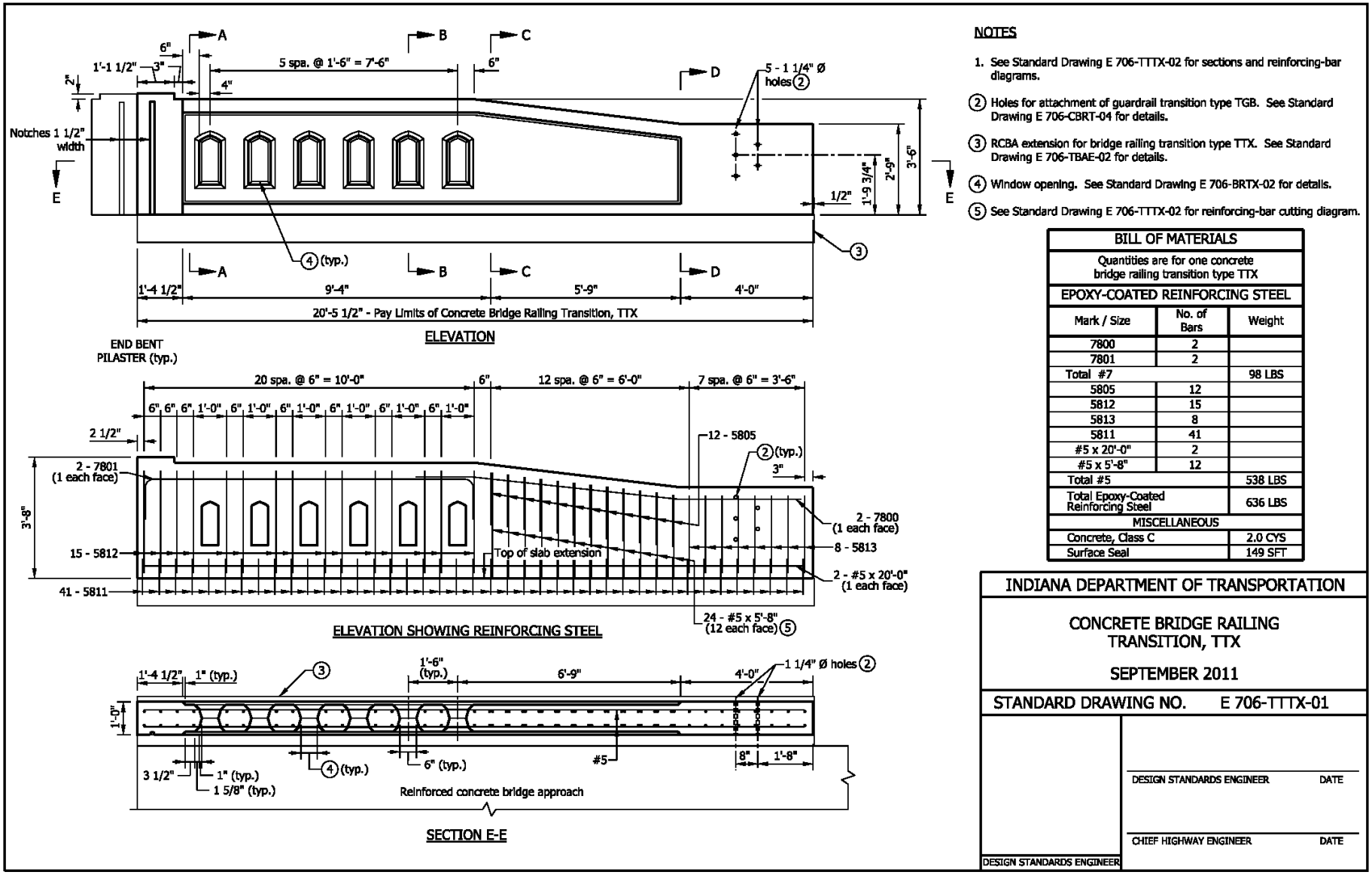
REVISION TO STANDARD DRAWINGS

EXISTING 706-TTTX-02 CONCRETE BRIDGE RAILING TRANSITION, TTX (WITH MARKUPS)



REVISION TO STANDARD DRAWINGS

706-TTTX-01 CONCRETE BRIDGE RAILING TRANSITION, TTX (DRAFT)



NOTES

1. See Standard Drawing E 706-TTTX-02 for sections and reinforcing-bar diagrams.
2. Holes for attachment of guardrail transition type TGB. See Standard Drawing E 706-CBRT-04 for details.
3. RCBA extension for bridge railing transition type TTX. See Standard Drawing E 706-TBAE-02 for details.
4. Window opening. See Standard Drawing E 706-BRTX-02 for details.
5. See Standard Drawing E 706-TTTX-02 for reinforcing-bar cutting diagram.

BILL OF MATERIALS		
Quantities are for one concrete bridge railing transition type TTX		
EPOXY-COATED REINFORCING STEEL		
Mark / Size	No. of Bars	Weight
7800	2	
7801	2	
Total #7		98 LBS
5805	12	
5812	15	
5813	8	
5811	41	
#5 x 20'-0"	2	
#5 x 5'-8"	12	
Total #5		538 LBS
Total Epoxy-Coated Reinforcing Steel		636 LBS
MISCELLANEOUS		
Concrete, Class C		2.0 CYS
Surface Seal		149 SFT

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION, TTX

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-TTTX-01

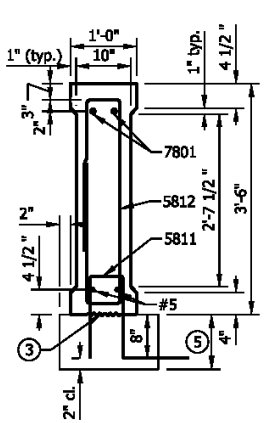
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

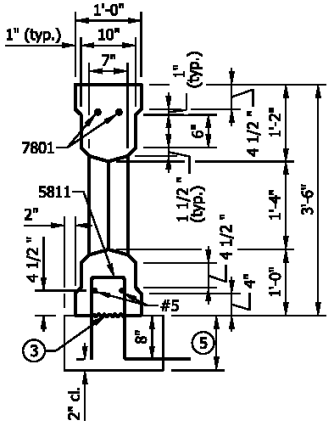
DESIGN STANDARDS ENGINEER

REVISION TO STANDARD DRAWINGS

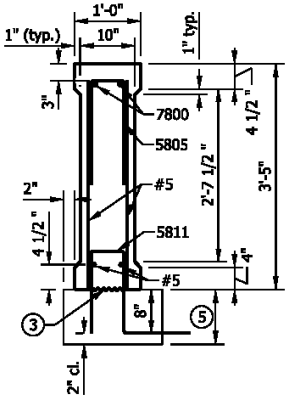
706-TTTX-02 CONCRETE BRIDGE RAILING TRANSITION, TTX (DRAFT)



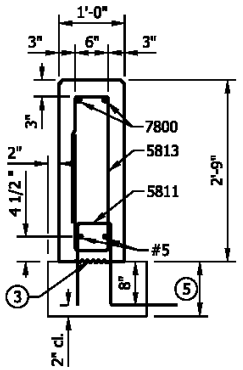
SECTION A-A



SECTION B-B



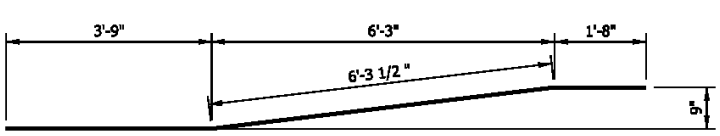
SECTION C-C



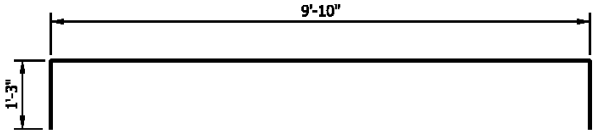
SECTION D-D

NOTES

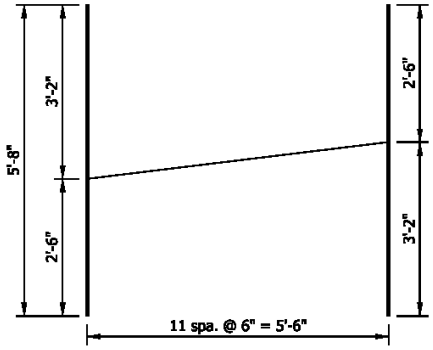
1. See Standard Drawing E 706-TTTX-01 for elevations and plan.
2. All chamfered edges shall be 3/4".
3. Construction joint type A. See Standard Drawing E 702-CJTA-01 for details.
4. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.
5. RCBA extension for bridge railing transition type TTX. See Standard Drawing E 706-TBAE-02 for details.



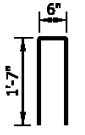
7800 x 11'-9"



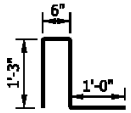
7801 x 12'-4"



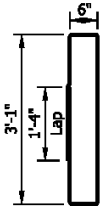
12 - #5 x 5'-8"
CUTTING DIAGRAM



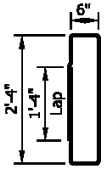
5805 x 4'-8"



5811 x 4'-0"



5812 x 8'-6"



5813 x 7'-0"

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING
TRANSITION, TTX

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-TTTX-02

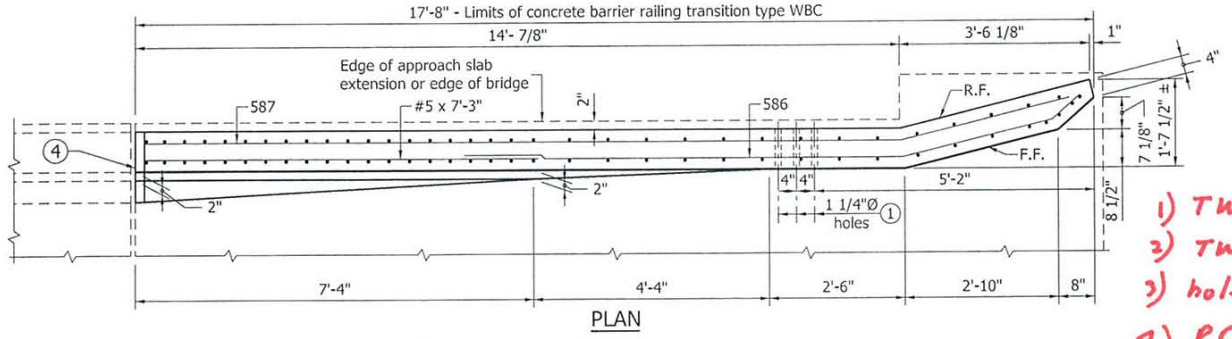
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

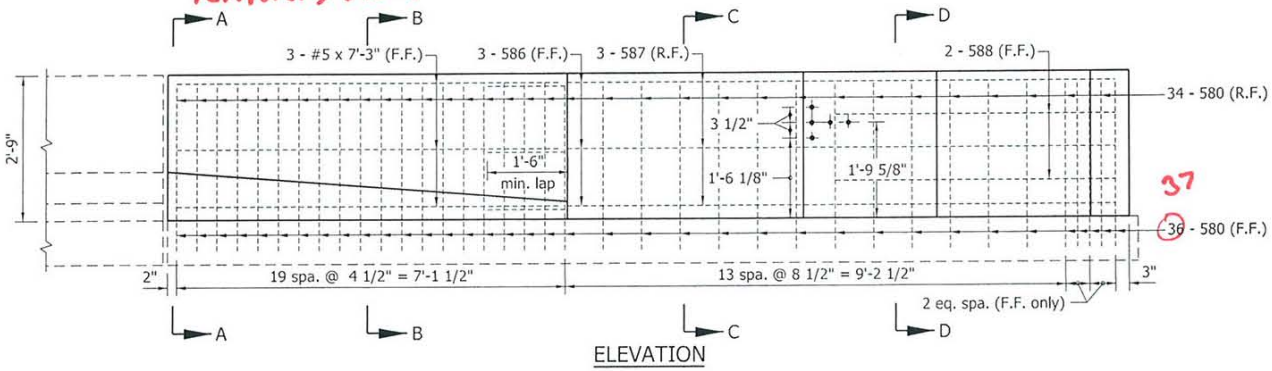
REVISION TO STANDARD DRAWINGS

EXISTING 706-TWBC-01 CONCRETE BRIDGE RAILING TRANSITION TYPE WBC (WITH MARKUPS)



PLAN

Sections revised. reinforcing shown



ELEVATION

NOTES:

1. See Standard Drawing E 706-CBRT-02 for details of guardrail transition type WGB attachment.
2. See Standard Drawing E 706-TWBC-02 for Section A-A, B-B, C-C and D-D and Drawing E 706-TWBC-03 for reinforcement and bill of materials.
3. See Standard Drawing E 706-TASE-05 for General Notes.

LEGEND :

F.F. = Front Face
R.F. = Rear Face

2 & 3 combined

Ext info added.

1) TWFC-02 for sections
2) TWFC-03 reinforcing dims
3) holes OR Trans CBRT-02
4) RCBA-TBAE-03

2'-9" COMMON HEIGHT W-BEAM/ CONCRETE BRIDGE RAILING TRANSITION

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INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION TYPE WBC

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-TWBC-01

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

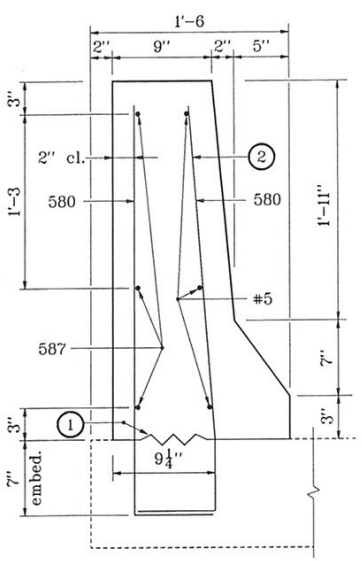
DESIGN STANDARDS ENGINEER

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

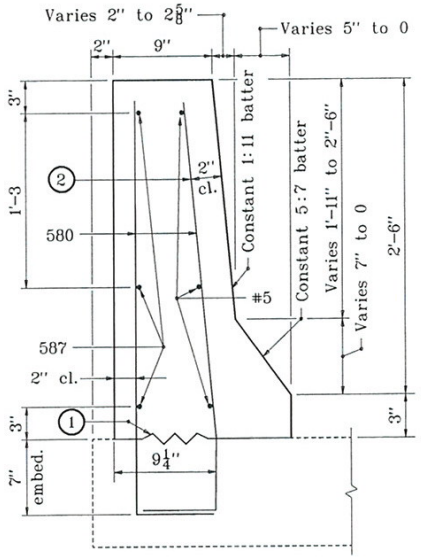
/s/ Mark A. Miller 09/01/11
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD DRAWINGS

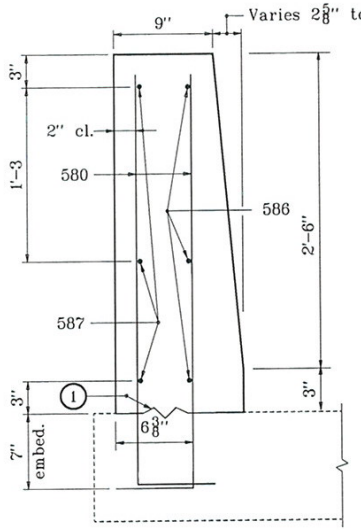
EXISTING 706-TWBC-02 CONCRETE BRIDGE RAILING TRANSITION TYPE WBC (WITH MARKUPS)



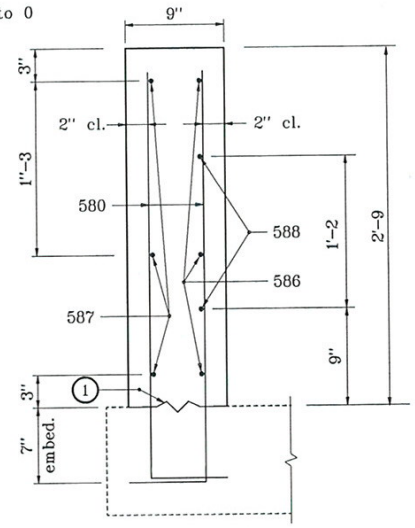
SECTION A–A



SECTION B–B



SECTION C–C



SECTION D–D

NOTES :

(1) Type A construction joint.

(2) These bars shall be field bent to provide 2" clearance along the batter (constant 1:11), front face bridge rail.

1) 3. See Standard Drawing E 706-~~TWBC~~-01 TWFC for Plan and Elevation.

2) Chamfer ¾ 3) Const JNT - CJTA 4) TWFC-03 for bar diags

5) RCBA-TBAE-03 6) Bar bendins for clearance 7), 8) batter call outs

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION TYPE ~~WBC~~ TWFC

SEPTEMBER 2001

STANDARD DRAWING NO. E 706-TWBC-02 TWFC

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

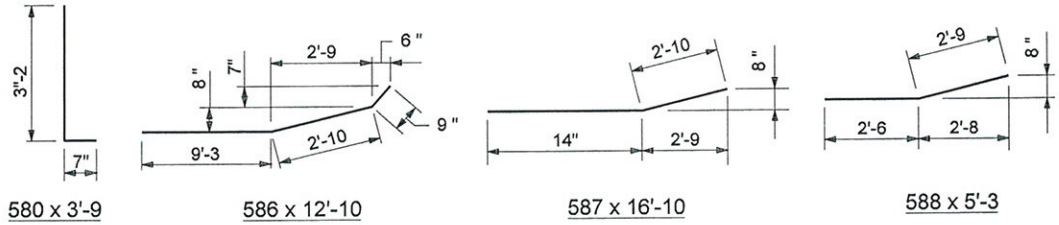
DESIGN STANDARDS ENGINEER

/s/ Anthony L. Uremovich 9-04-01
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 9-04-01
CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD DRAWINGS

EXISTING 706-TWBC-03 CONCRETE BRIDGE RAILING TRANSITION TYPE WBC (WITH MARKUPS)



reinforcing drawn to scale

bent bars redesignated.

Bill revised

BILL OF MATERIALS			
These quantities are for one concrete bridge railing transition type WBC. The concrete quantity is provided for information only and is not the pay item.			
EPOXY COATED REINFORCING STEEL			
Size & type	No. of Bars	Length ft-in	Weight lb
580	68	3'-9	
586	3	12'-10	
587	3	16'-10	
588	2	5'-3	
#5	3	7'-3	
Total Epoxy Coated Steel			393
MISCELLANEOUS			
Concrete, Class C (yd^3)			1.6
Surface Seal (ft^2)			113

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION TYPE WBC

MARCH 2006 TWBC

STANDARD DRAWING NO. E 706-TWBC-03

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

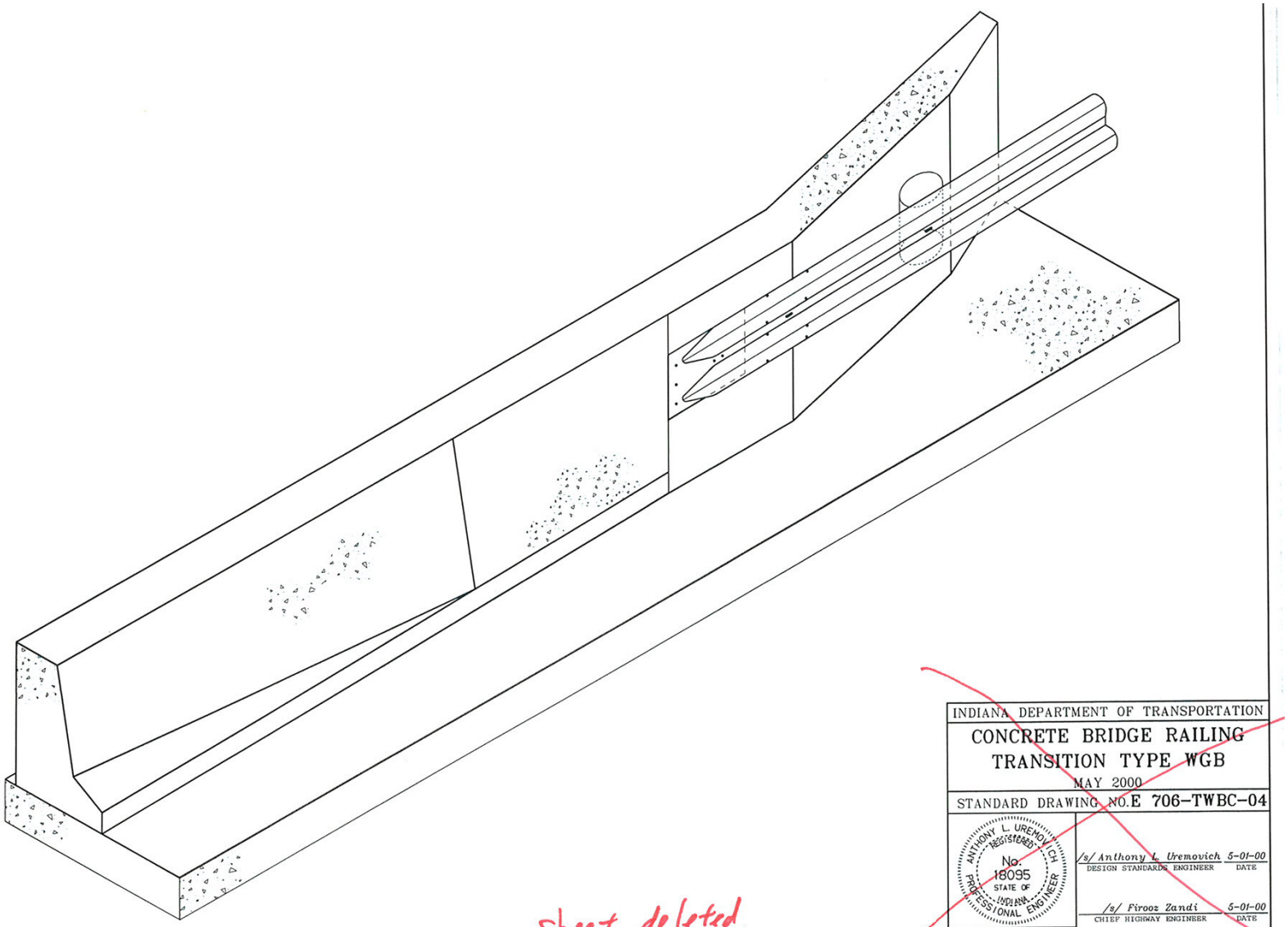
DESIGN STANDARDS ENGINEER

/s/ Richard L VonCleave 3-01-06
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 3-01-06
CHIEF HIGHWAY ENGINEER DATE

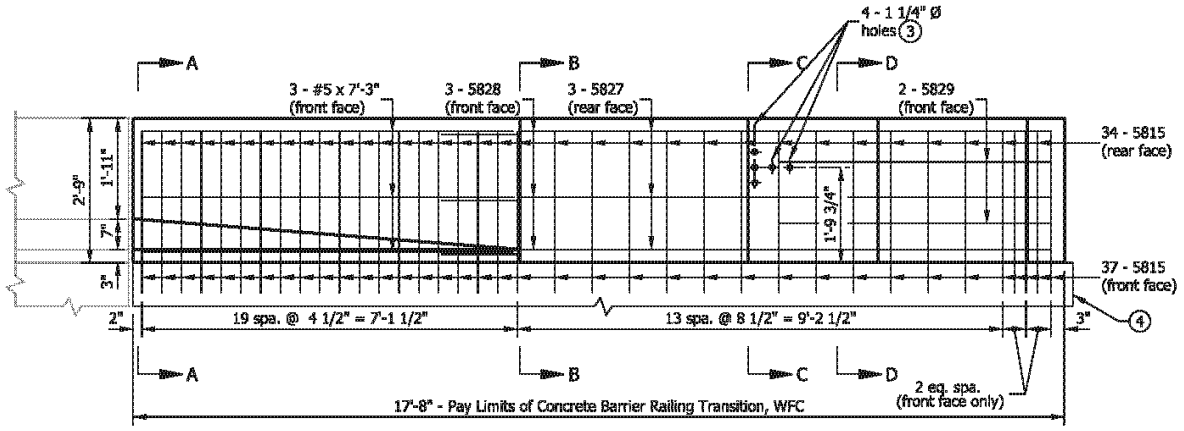
REVISION TO STANDARD DRAWINGS

EXISTING 706-TWBC-04 CONCRETE BRIDGE RAILING TRANSITION TYPE WGB (PROPOSED TO DELETE)

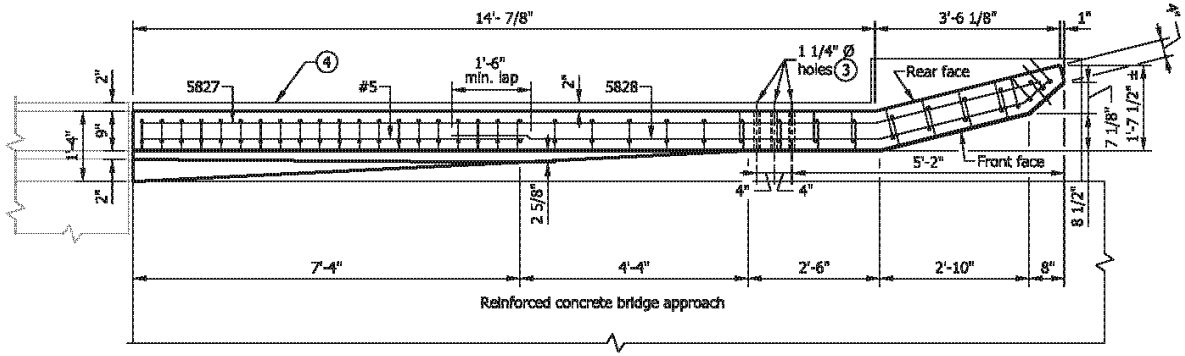


REVISION TO STANDARD DRAWINGS

706-TWFC-01 CONCRETE BRIDGE RAILING TRANSITION TYPE WFC (DRAFT)



ELEVATION



PLAN

NOTES

1. See Standard Drawing E 706-TWFC-02 for sections.
2. See Standard Drawing E 706-TWFC-03 for reinforcing-bar diagrams and bill of materials.

(3) Holes for attachment of guardrail transition type WGB. See Standard Drawing E 706-CBRT-02 for details.

(4) RCBA extension for bridge railing transition type WFC. See Standard Drawing E 706-TBAE-03 for details.

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION TYPE WFC

SEPTEMBER 2011

STANDARD DRAWING NO. E 706-TWFC-01

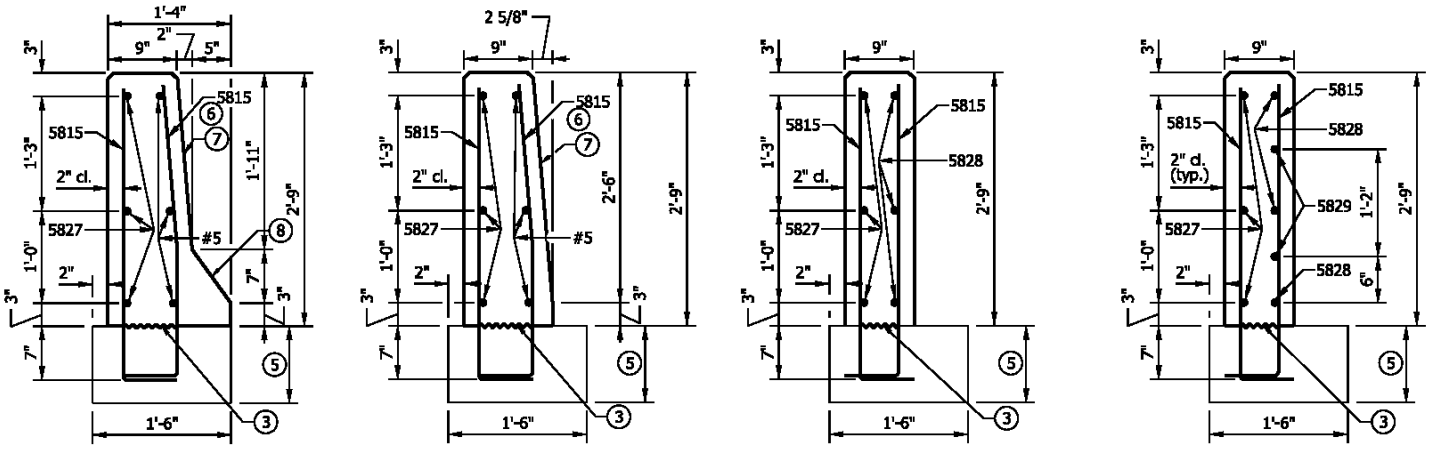
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

REVISION TO STANDARD DRAWINGS

706-TWFC-02 CONCRETE BRIDGE RAILING TRANSITION TYPE WFC (DRAFT)



SECTION A-A SECTION B-B SECTION C-C SECTION D-D

NOTES

1. See Standard Drawing E 706-TWFC-01 for elevation and plan.
2. All chamfered edges shall be 3/4".
3. Construction joint type A. See Standard Drawing E 702-CJTA-01 for details.
4. See Standard Drawing E 706-TWFC-03 for reinforcing-bar diagrams.
5. RCBA extension for bridge railing transition type WFC. See Standard Drawing E 706-TBAE-03 for details.
6. These bars shall be field bent to provide 2" clearance along the front face batter.
7. Constant 1:11 batter.
8. Constant 5:7 batter.

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING
TRANSITION TYPE WFC

STANDARD DRAWING NO. E 706-TWFC-02

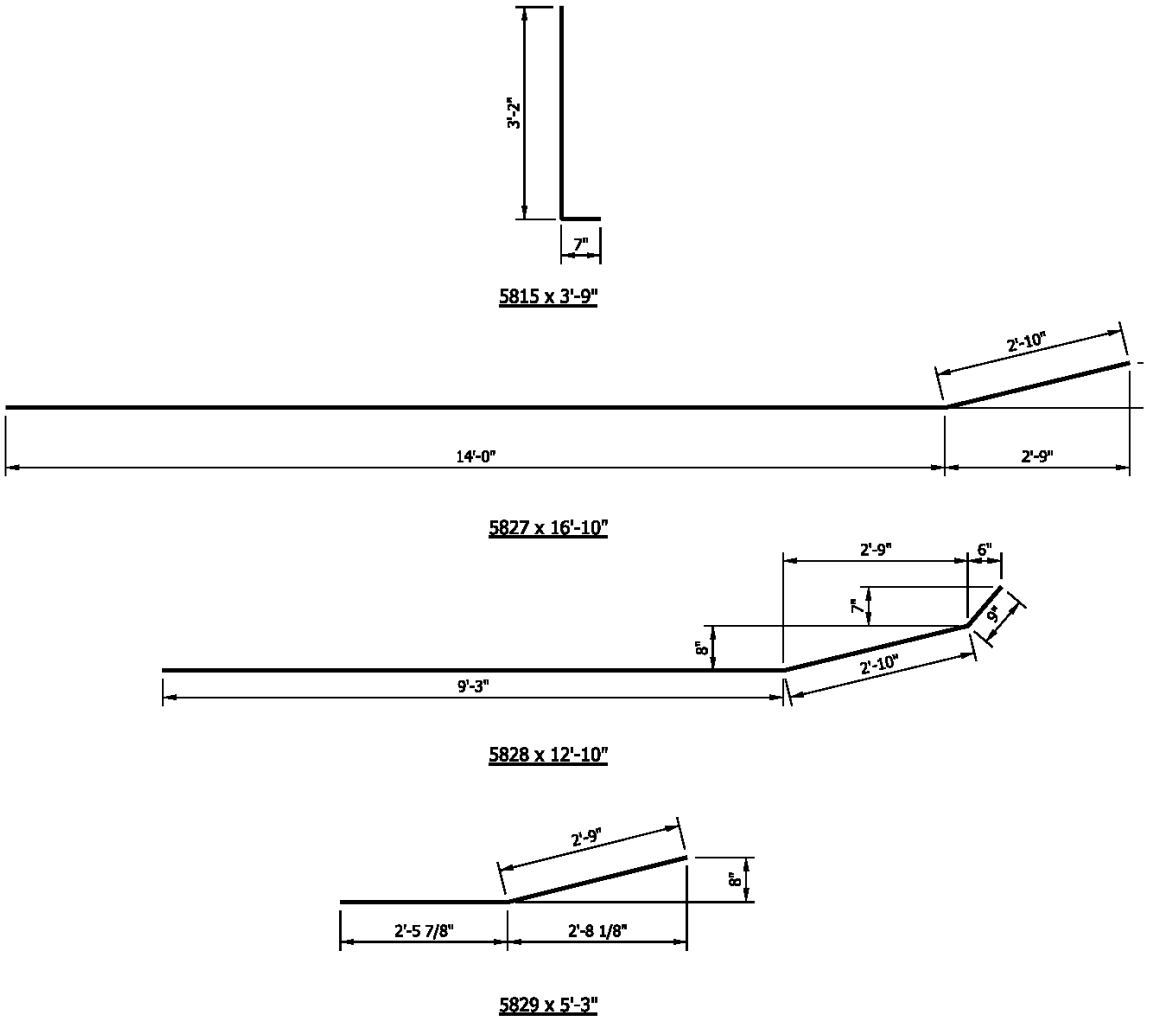
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

REVISION TO STANDARD DRAWINGS

706-TWFC-03 CONCRETE BRIDGE RAILING TRANSITION TYPE WFC (DRAFT)



NOTE

1. See Standard Drawing E 703-BRST-01 for reinforcing-bar bending details and notes.

BILL OF MATERIALS		
Quantities are for one concrete bridge railing transition type WFC		
EPOXY-COATED REINFORCING STEEL		
Mark / Size	No. of Bars	Weight
5815	71	
5827	3	
5828	3	
5829	2	
#5 x 7'-3"	3	
Total Epoxy-Coated Reinforcing Steel		404 LBS
MISCELLANEOUS		
Concrete, Class C		1.6 CYS
Surface Seal		113 SYS

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING
TRANSITION TYPE WFC

MARCH 2006

STANDARD DRAWING NO. E 706-TWFC-03

DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

REVISION TO STANDARD DRAWINGS

EXISTING 7 (WITH MARKUPS)

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REVISION TO STANDARD DRAWINGS

706-CBRT-01 – 04; 706-TPBT-01 – 09; 706-TTBC-01 – 03;
706-TTBP-01 – 09; 706-TTBT-01 – 02; 706-TTTX-01 – 02; 706-TWBC-01 - 04

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-CBRT-01 – 04 706-TPBT-01 - 09 706-TTBC-01 – 03 706-TTBP-01 - 09 706-TTBT-01 - 02 706-TTTX-01 - 02 706-TWBC-01 - 04 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? ____