INDIANA DEPARTMENT OF TRANSPORTATION
Driving Indiana's Economic Growth

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Indianapolis, Indiana 46204

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

APPROVED MINUTES

December 16, 2010 Standards Committee Meeting

January 28, 2011

TO: Standards Committee

FROM: Scott Trammell, Secretary

RE: Minutes for the December 16, 2010 Standards Committee Meeting

The Standards Committee meeting was called to order by Mr. Miller at 1:02 p.m. on December 16, 2010 in the 9th Floor Conference Center. The meeting was adjourned at 3:02 p.m.

The following committee members were in attendance:

Mark Miller, Chairman
Bob Cales, Contract Admin.
Yadu Shah*, Rdway Services
Randy Strain, Str. Services
Ron Walker, Office of Materials Mgmt.
Greg Pankow, Constr. Mgmt.
Tom Caplinger, Crawfordsville Dist.
Dave Boruff, Traffic Admin.
Jim Keefer, Fort Wayne Dist.

**Proxy for John Wright*

Also in attendance were the following:

Bren George, FHWA
Scott Trammell, Secretary
Dan M^{c}Queen, INDOT
Nayyar Siddiki, INDOT, OMM
John Hardesty, INDOT (General item 02)
Lana Podorvanova, INDOT
Jim Reilman, INDOT
Steve Fisher, INDOT Sitemanager
Paul Berebitsky, ICA
David Schilling (General item 02)
Eric Banschbach, INDOT
Tony Uremovich, INDOT

The following items were considered:

A. GENERAL BUSINESS ITEMS Page No.

OLD BUSINESS

(No items considered)

NEW BUSINESS

1. Approval of the November 18, 2010 Minutes.

Mr. Miller addressed the note which was added to page 20 of the minutes of the November 18, 2010 Standards Committee meeting. The note is the result of the efforts by Mr. Carlton and Mr. Reilman concerning item No. 4, the welding of reinforcing bars, to provide clarification for that item.

The motion was made by Mr. Cales to approve the minutes as revised. Mr. Boruff seconded that motion. All agreed and the motion passed.

2. Demonstration of the application "Tech Writer Assistant" used by the Contract Administration.

Mr. Hardesty demonstrated to the committee how the software application works. The application is designed so that incorrect RSP's cannot be selected. Further clarification and discussion with Mr. Cales revealed that this new software application is intended to save time and reduce the number of errors.

B. CONCEPTUAL PROPOSAL ITEMS

OLD BUSINESS

(No items considered)

NEW BUSINESS

1. Changes to the AASHTO LRFD Bridge Design Specifications 2010 (Fifth Edition) page 05

DISCUSSIONS: This item was presented and explained by Mr. Strain.

Mr. Miller confirmed that this is being presented to the committee for information, and that no changes have been made to the specs. Mr. Strain confirmed this, reminding everyone that the actual version is not specified in the Design Manual or in the Standard Specifications. The specified version will be noted on the plans.

2. Revisions to Part 3 "Location Surveys" of the IDM page 09

DISCUSSIONS: This item was explained by Mr. Banschbach.

Updating to inroads, to our current design software, as detailed in the attached Memorandum on page 09 of these minutes.

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

OLD BUSINESS

Item No. 05 09/16/10 (2010 SS) Mr. Wright page 10

STANDARD DRAWINGS:

601-CWGS-02	CURVED W-BEAM GUARDRAIL SYSTEM
601-CWGS-04	CURVED W-BEAM GUARDRAIL SYSTEM
601-CWGS-06	CURVED W-BEAM GUARDRAIL SYSTEM

601-MTGR-01	THRIE BEAM GUARDRAIL DETAILS
601-TBGC-01	THRIE-BEAM GUARDRAIL COMPONENTS
601-TMTT-01	THRIE BEAM GUARDRAIL TO THRIE BEAM GUARDRAIL TRANSITION, TTT
601-TTGB-01	GUARDRAIL TRANSITION TYPE TGB
601-TTGB-03	GUARDRAIL TRANSITION TYPE TGB
601-TTGB-04	GUARDRAIL TRANSITION TYPE TGB
601-TTGB-05	GUARDRAIL TRANSITION TYPE TGB
601-TTGP-01	GUARDRAIL TRANSITION TYPE GP
601-TTGP-02	GUARDRAIL TRANSITION TYPE GP
601-TTGT-01	GUARDRAIL TRANSITION, TGT
601-TTGT-02	GUARDRAIL TRANSITION, TGT
601-TTMS-01	DOUBLE FACED THRIE BEAM GUARDRAIL TRANSITION TO GRET TYPE MS
601-TTVH-01	GUARDRAIL TRANSITION TYPE VH
601-TTVH-02	GUARDRAIL TRANSITION TYPE VH
601-TWGB-03	GUARDRAIL TRANSITION TYPE WGB
601-TWGT-01	W-BEAM GUARDRAIL TO THRIE BEAM GUARDRAIL TRANSITION, WGT
601-WBGA-01	W-BEAM GUARDRAIL ASSEMBLIES
601-WBGA-02	W-BEAM GUARDRAIL ASSEMBLIES
601-WBGA-06	WR-BEAM GUARDRAIL
706-CBRT-02	BRIDGE RAILING TRANSITION WBC
706-CBRT-04	BRIDGE RAILING TRANSITION TBC OR TBT ATTACHMENT OF GUARDRAIL
706-TBRC-01	RETROFIT THRIE BEAM BRIDGE RAILING TR
706-TBRC-02	RETROFIT THRIE BEAM BRIDGE RAILING TR COMPONENTS
706-TBRF-01	RETROFIT THRIE BEAM BRIDGE RAILING TR COMPONENTS
706-TTBC-01	CONCRETE BRIDGE RAILING TRANSITION TBC
706-TTBC-03	CONCRETE BRIDGE RAILING TRANSITION TYPE TBC
706-TTBP-01	CONCRETE BRIDGE RAILING TRANSITION, TPF-1
706-TTBO-03	CONCRETE BRIDGE RAILING TRANSITION, TPF-2
706-TTBP-05	CONCRETE BRIDGE RAILING TRANSITION, TPS-1
706-TTBP-07	CONCRETE BRIDGE RAILING TRANSITION, TPS-2
706-TTBT-01	CONCRETE BRIDGE RAILING TRANSITION TYPE TBT
706-TTBT-03	CONCRETE BRIDGE RAILING TRANSITION TYPE TBT
706-TTTX-01	CONCRETE BRIDGE RAILING TRANSITION, TTX
706-TWBC-01	CONCRETE BRIDGE RAILING TRANSITION TYPE WBC

RECURRING PLAN DETAILS:

706-B-140d (3 SHEETS)	BRIDGE RAILING TYPE TS-1 & GUARDRAIL TRANSITION TYPE TGS-1

ACTION: PASSED AS SUBMITTED

Item No. 01 11/18/10 (2010 SS) Mr. Walker page 54

Recurring Special Provision:

203-R-XXX	*LIGHT WEIGHT DEFLECTOMETER*

ACTION: WITHDRAWN

NEW BUSINESS

Item No. 01 12/16/10 (2010 SS) Mr. Pankow page 57

101.74	Working Drawings
105.02	Plans and Working Drawings
206.09	Cofferdams and Temporary Construction Dikes
601.07	Guardrail End Treatments
601.08	Impact Attenuators
702.14	Falsework and Centering
711.05	~~Shop~~*Working* Drawings
711.23	Reamed or Drilled Holes
711.60	Field Assembly of Steel
711.73(b)	Unit Weight Basis
724.02	Materials
724.03	General Requirements
801.10.1	Construction Zone Energy Absorbing Terminal, Cz
802.04	~~Shop~~*Working* Drawings
803.01	Description
805.04	Pole Installation
~~807.02~~	~~Maintenance of Highway Illumination~~
807.0~~3~~*2*	Materials
807.03	*Working Drawings*
807.17	Pay Item and Installation Summary Sheets
920.01(g)	~~Shop Drawings~~*Blank*

Recurring Special Provisions:

627-R-546	CABLE BARRIER SYSTEM
707-B-085	ALTERNATE PRESTRESSED PRECAST CONCRETE I-BEAM TO STANDARD AASHTO TYPE IV PRESTRESSED PRECAST CONCRETE I-BEAM
724-B-145	EXPANSION JOINT SEALING SYSTEM
732-R-310	MODULAR CONCRETE BLOCK RETAINING WALL
922-T-168	TRAFFIC SIGNAL MATERIALS AND EQUIPMENT

ACTION: PASSED AS REVISED

Item No. 02 12/16/10 (2010 SS) Mr. Pankow page 76

Recurring Special Provision:

207-R-577	SUBGRADE AND CHEMICALLY MODIFIED SOILS

ACTION: PASSED AS SUBMITTED

Item No. 03 12/16/10 (2010 SS) Mr. Pankow page 85

628	FIELD OFFICE, FIELD LABORATORY, COMPUTER SYSTEMS, ~~AND~~ OFFICE MACHINES *AND COMMUNICATIONS*
628.04	*Cellular Telephones/Radios*
628.0~~4~~*5*	Method of Measurement
628.0~~5~~*6*	Basis of Payment

ACTION: PASSED AS REVISED

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

CONCEPTUAL PROPOSAL

CHANGES TO THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 2010(FIFTH EDITION)

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: AASHTO Load Resistance Factor Design (LRFD) Bridge Design Specifications have been revised. A Fifth Edition has been published. Some current bridge-design practices may be out of accordance with it.

PROPOSED SOLUTION: Permit bridge designs to ultimately be in accordance with it by having INDOT adopt it, so as to base bridge designs on it. The entire Design Manual is now undergoing a rewrite process. The timing is perfect for rewriting appropriate Manual portions to complement the new LRFD document.

APPLICABLE STANDARD SPECIFICATIONS: n/a

APPLICABLE STANDARD DRAWINGS: n/a

APPLICABLE DESIGN MANUAL SECTION: All of Part 6, Structural Design

APPLICABLE SECTION OF GIFE: n/a

Submitted By: Randy Strain

Title: Bridge Policy and Standards Engineer,
Bridge Design, Inspection, Hydraulics, and Technical Support Division

Organization: INDOT

Phone Number: 232-3339

Date: 11/12/10

Changes to the AASHTO LRFD Bridge Design Specifications 2010
Fifth Edition

Item #	Specifications Reference	Notes
1	Construction	
2	Guide Spec	
3	Construction	
4	4.6.2.2.1 4.6.2.2.2b 4.6.2.2.3a	Simplification of LL distribution factors
5	Pedestrian Guide Spec	
6	Pedestrian Guide Spec	
7	3.6.5.1 3.6.5.2 3.6.5.3	Delete Delete Language change for vehicular collision force
8	Bride Preservation Strategic Plan	
9	5.14.2.3.3-1 5.14.2.3.4	Clarification
10	5.8.2.6 5.8.3.3 5.11.2.6.1	Language change on stirrups
11	5.12.2	Concrete mix comments
12	5.9.5.3	Refined estimate of time dependant losses
13	5.7.3.4 5.7.3.4-2	Skin reinforcement Eq added
14	5.6.3	Crack control - pier walls
15	5.8.3.4.2	Simplified procedures for non-prestressed sections
16	Proposed research statement	
17/18	12.12.3.4	Culvert embankment or wide trench
19	Construction Spec	Trench widths
20	6.4.1 6.6.2	Grade Spec Changes
21	C6.8.2.3	Tee's double Tee's used in steel design (Eq modifications)
22	6.9.1 6.9.4.2 6.9.4.3.2	New equation for torsional buckling (6.9.4.1.1-1) New table for Pn (6.9.4.1.1-2)
23	6.7.4.2 6.10.6.2.3	Diaphragm placement - Lateral moments and Restrict use of Appendix A

CONCEPTUAL PROPOSAL (CONTINUED)

CHANGES TO THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 2010(FIFTH EDITION)

24	6.12	Misc. Steel members; square, rectangular, and circular
25	6.6.1.2.3-1 6.8.2.1-2 6.13.4-1	Fatigue prone category for punched holes and Block shear equation
26	11.3 11.4 11.8	High performance steel
27	Construction	
28	10.5 LRFD Pile Design	Resistance factor for pile group Site variability resistance factor
29	10.7 Pile driving 10.7.2.4-1	Minor subject revisions Pile P Multipliers changed
30	C11.6.2.3	Confusion regarding slope stability
31	Timber	Glulam
32-40	Welding	
41-48	Bridge Rehab	
49	Computers	
50	Tunnels	

AASHTO LRFD Bridge Design Specifications
Fifth Editions 2010 - Interims

Spec Ref. **Notes**

1.3.2.1 Additional paragraph regarding probability of exceedance for strength 1 limit state
2.5.2.6.2 Reference to ped guide spec inserted.
3.4.1 Load Factor for thermoplastic culverts changed to 1.3
3.6.1.6 Minor change in app for ped loads
3.8.3.1 Minor change in verbiage aeroelastic force
3.14.11 Barge Collision Force - paragraph added
5.11.5.2.1 Lap splice - anchors into over sized shafts - non-continuous

STEEL

6.2 Def - Effective Net Arm - Net area modified to account for the effect of shear lag.
6.7.4.2 I section members - diaphragms placed on skew

CONCEPTUAL PROPOSAL (CONTINUED)

CHANGES TO THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 2010(FIFTH EDITION)

6.8.2.2	Reduction Factor U - minor revision
6.12.2.2	Equation for slenderness ratio for compact section changed
6.12.2.2.7-1	Equation corrected
12.4	Thermoplastic culverts
13.7.2	Test level selection criteria - table added AASHTO MASH
14.7.6.2	Material properties - minor revision

Review Notes:

The review and the attached notes of the AASHTO 2010 Bridge Specifications (and interims) is intended to be nothing more than a quick check to see if any change is significant and if any change impacts our design procedure.

Two significant changes were noted. The first one is to pile driving. Some of the factors and equations etc. were changed. Mir Zaheer is aware of the changes and I just spoke to him on the phone to confirm our intent to implement this March 1, 2011 for stage 2. Mir was fine with that decision.

The second change found was in the steel section. The changes were not major but by implementing at stage 2, these changes can easily be implemented into the designs.

There was one change that was found that was in the 2008 interims and that has to do with the toll road loadings. The Strength II which is not available in our beam design software is what should be used for the owner specified vehicles (as directed in the code). The load factor is 1.35 which is significantly lower than 1.75 which is used in strength I. The design manual currently specifies strength I. This is a little over conservative for a known truck.

MEMORANDUM RE: PROPOSED REVISIONS TO PART 3 OF THE INDIANA DESIGN MANUAL

INDIANA DEPARTMENT OF TRANSPORTATION
Driving Indiana's Economic Growth

Land & Aerial Survey Office
120 South Shortridge Rd.
Indianapolis, IN 46219-6705

PHONE: (317) 610-7251
FAX: (317) 356-9351

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

Memorandum

To: John Wright, Highway Design & Tech Support Director

From: Eric Banschbach, Land & Aerial Survey Office Manager

cc: Anthony Uremovich, Design Resource Engineer

Date: 11/23/2010

Re: Proposed Revisions to Part 3 of the Indiana Design Manual

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Due to INDOT's migration to Bentleys InRoads software and the integration of InRoads Survey for all new in-house survey project work, in addition to consultants assimilating to the new format, there is a definitive and urgent need to establish standards for survey file requirements and transmittals.

The current version of the Indiana Design Manual does not reflect any requirements or even an option for InRoads formatting. Considering INDOT has made the commitment to switch from MX to InRoads, it is imperative that the IDM provide and accurately reflect established standards for InRoads Survey file submittals.

The Land & Aerial Survey Office, the CAD Support team, and the district Survey Operations Managers have discussed this issue at length and have developed the necessary standards to ensure consistency and completeness of survey file submittals. Our intent is to revise Part 3 of the current IDM to reflect the following:

- Establishing file naming conventions for survey file submittals based on InRoads formatting (Ch. 26)
- Establish required files for all survey submittals based on InRoads formatting (Ch. 26)
- Establish required content and definition of each required file based on InRoads format (Ch. 26)
- Eliminate current option of collection and submission of "Conventional Engineering Survey Data" (CH. 22 & 26)
  - "Conventional surveying", as currently referenced in the IDM, is an antiquated method that is no longer a standard in data collection.
  - Allowing this option creates a significant amount of additional work for INDOT to translate into a functional format
- Eliminate option to provide survey data in other formats, e.g. MOSS (or MX), DXF. (Ch. 23 & 26)
  - Allowing submittal in formats other than InRoads will still require translation of files into InRoads format by INDOT
  - The option to submit other formats should **not** be left to the consultant, but only based on approval from INDOT
  - In rare situations where submittals in previous formats may be desired (i.e. resurvey of small structure that used older formats), that should only be an option for INDOT to allow.
- Provide statement that submittals in formats other than the current may only be acceptable at the discretion of INDOT, and would require written approval prior to start of survey work. (Ch. 26)

This revision should be implemented as soon as possible in order to provide necessary guidance to consultants and establish uniformity and compatibility. A suggested implementation date would be 1 January, 2011. If additional information is required, please contact Eric Banschbach, LASO and/or Scott Robinson, CAD Support.

SPECIFICATION REVISIONS (OLD BUSINESS ITEM)

REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: FHWA Memorandum from David A. Nicol, P.E. dated May 17, 2010 provides guidance to all state DOTs on the height of generic guardrail G4 (1S). Recent research on standard 27 inch guardrail shows that it does not meet NCHRP Report 350 Test Level 3(TL-3) criteria. This requires a revision of current policy with regard to new guardrail installation height. The FHWA guidance requires that transportation agencies should ensure the minimum height of newly-installed generic G4 (1S) W-beam guardrail is at least 27¾ inches to the top of the rail.

PROPOSED SOLUTION: Revise applicable INDOT Standard Drawings to show the installation height from 27 inches to 27¾ inches to the top of the rail. The proposed change will result into ¾ inch reduced embedment length of the guardrail post which is insignificant and will not impact the strength of the post as the INDOT guardrail posts are 7 feet long compared to 6 feet required for NCHRP 350 TL-3. Also INDOT already has Approved guardrail end treatments that can be used for the 27¾ inches height. The attached drawings are corrected for the changes and the changes are marked on the drawings.

APPLICABLE STANDARD SPECIFICATIONS: N/A

APPLICABLE STANDARD DRAWINGS: See attached list.

APPLICABLE DESIGN MANUAL SECTION: N/A

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

Submitted By: John Wright

Title: Highway Design and Technical Support Director

Organization: INDOT

Phone Number: 232-5147

Date: 12/01/2010

APPLICABLE SUB-COMMITTEE ENDORSEMENT? Reviewed by Tony Uremovich (Design resources), Changes discussed with and endorsed by Ken Leuderalbert and Rick Drumm (FHWA).

SPECIFICATION REVISIONS (OLD BUSINESS ITEM)

REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS

LIST OF PROPOSED REVISIONS TO STANDARD DRAWINGS.

E 601-CWGS-02
E 601-CWGS-04
E 601-CWGS-06
E 601-MTGR-01
E 601-TBGC-01
E 601-TMTT-01
E 601-TTGB-01
E 601-TTGB-03
E 601-TTGB-04
E 601-TTGB-05
E 601-TTGP-01
E 601-TTGP-02
E 601-TTGT-01
E 601-TTGT-02
E 601-TTMS-01
E 601-TTVH-01
E 601-TTVH-02
E 601-TWGB-03
E 601-TWGT-01
E 601-WBGA-01
E 601-WBGA-02
E 601-WBGA-06
E 706-CBRT-02
E 706-CBRT-04
E 706-TBRC-01
E 706-TBRC-02
E 706-TBRF-01
E 706-TTBC-01
E-706-TTBC-03
E 706-TTBP-01
E 706-TTBP-03
E 706-TTBP-05
E 706-TTBP-07
E 706-TTBT-01
E-706-TTBT-03
E 706-TTTX-01
E 706-TWBC-01

RECURRING PLAN DETAILS:
E 706-B-140d 1 of 3
E 706-B-140d 2 of 3
E 706-B-140d 3 of 3

SPECIFICATION REVISIONS (OLD BUSINESS ITEM)

REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS

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REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-CWGS-02 CURVED W-BEAM GUARDRAIL SYSTEM

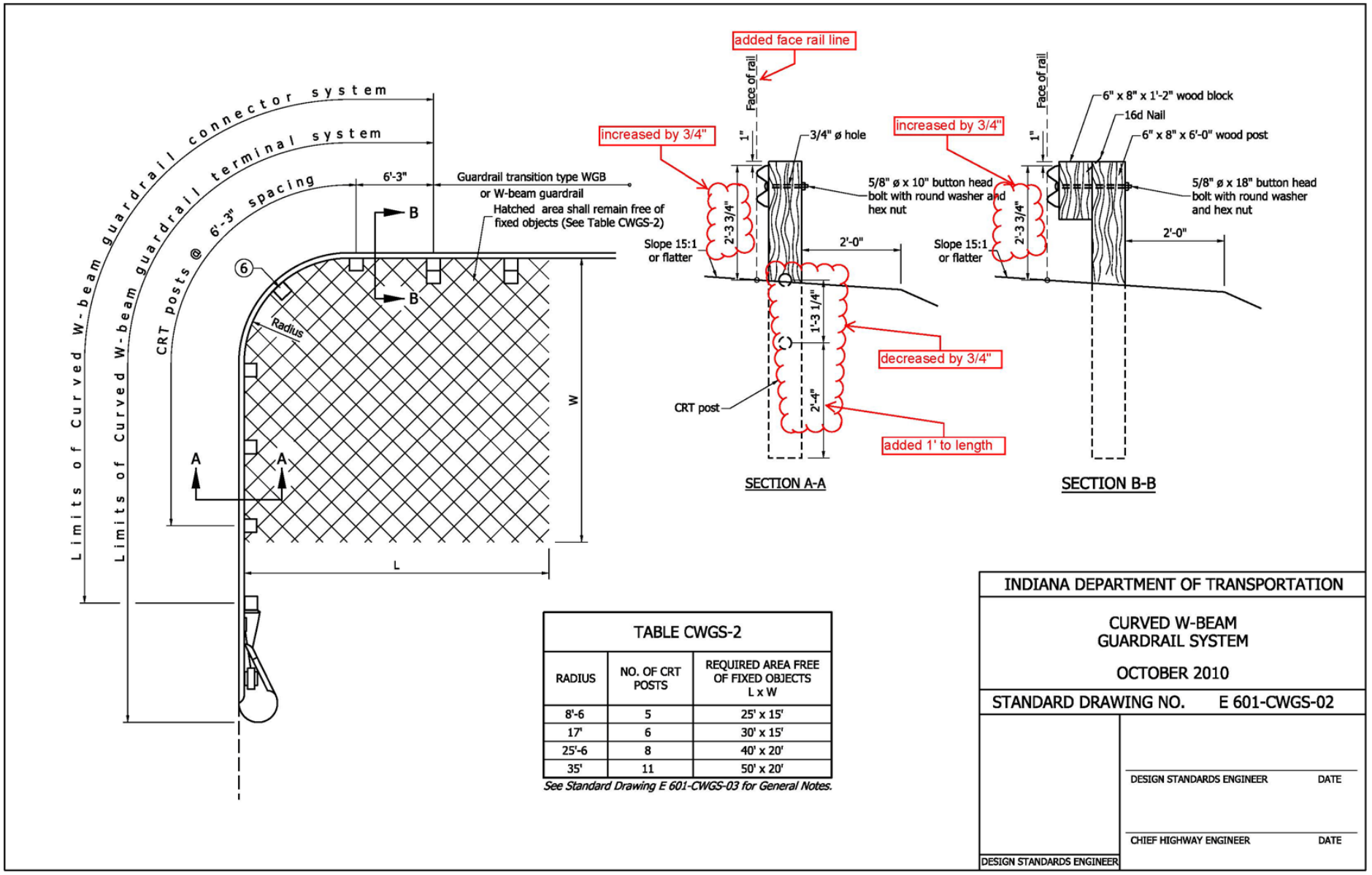


TABLE CWGS-2		
RADIUS	NO. OF CRT POSTS	REQUIRED AREA FREE OF FIXED OBJECTS L x W
8'-6	5	25' x 15'
17'	6	30' x 15'
25'-6	8	40' x 20'
35'	11	50' x 20'

See Standard Drawing E 601-CWGS-03 for General Notes.

INDIANA DEPARTMENT OF TRANSPORTATION

CURVED W-BEAM
GUARDRAIL SYSTEM

OCTOBER 2010

STANDARD DRAWING NO. E 601-CWGS-02

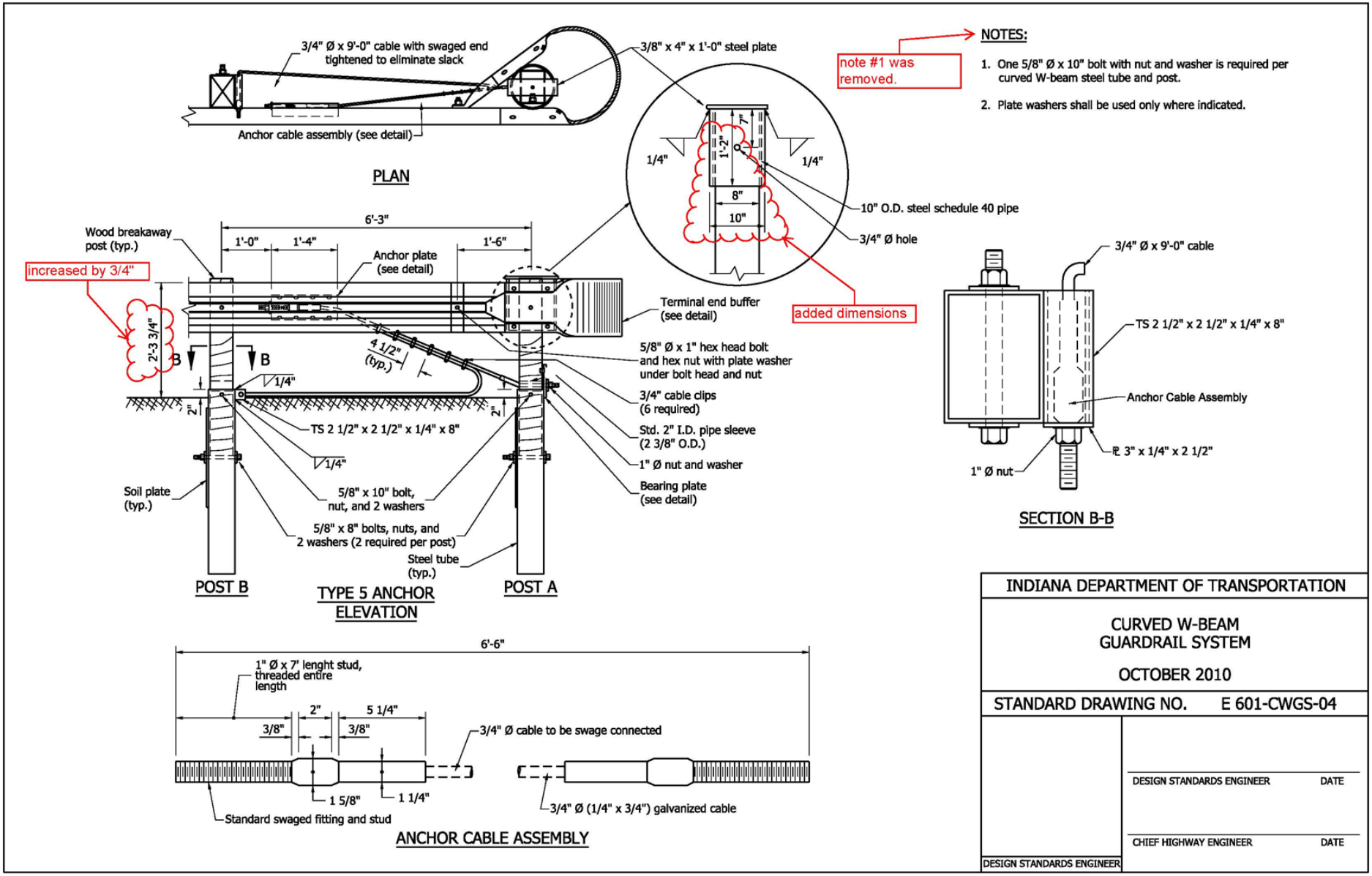
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

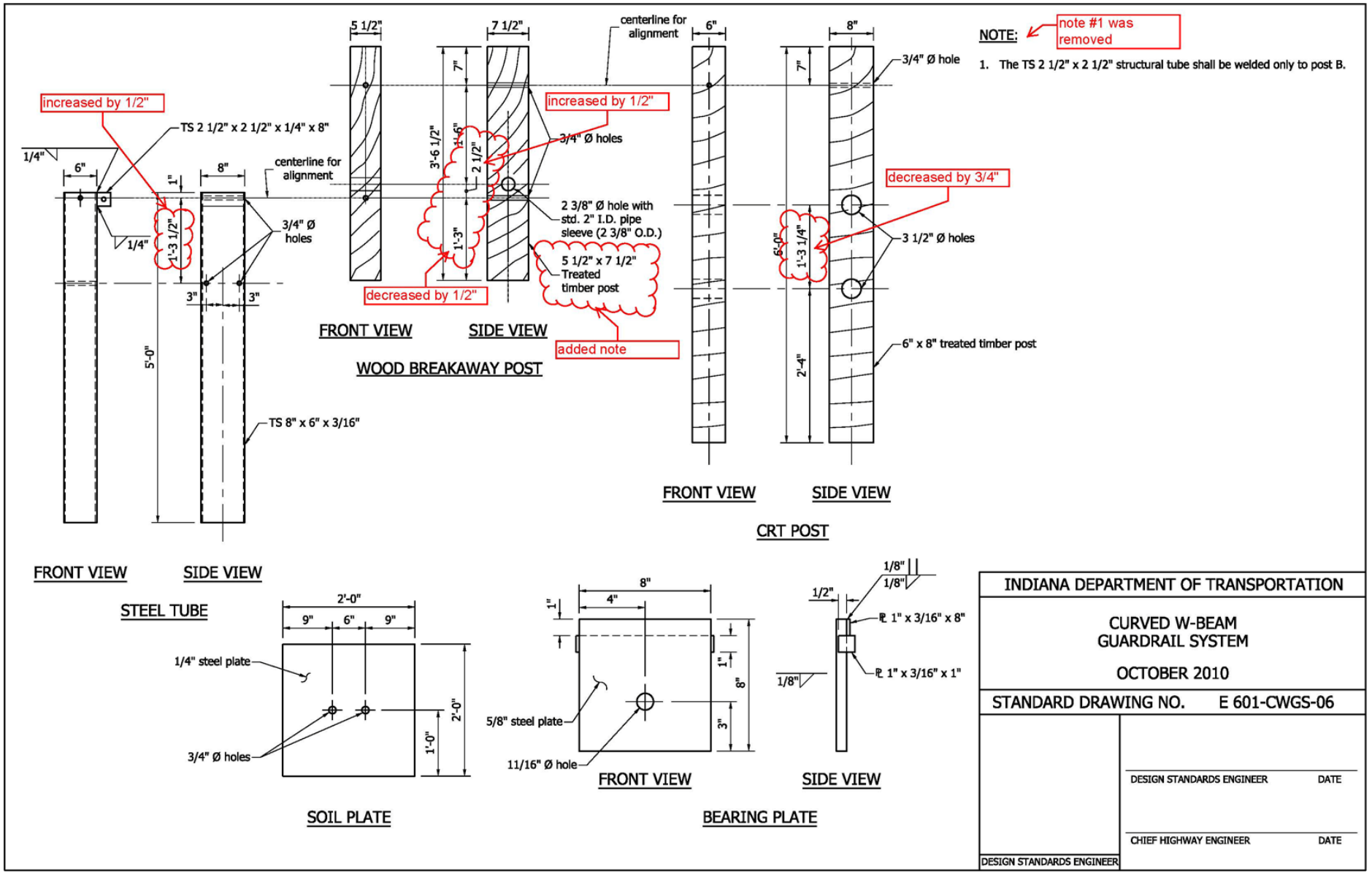
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-CWGS-04 CURVED W-BEAM GUARDRAIL SYSTEM



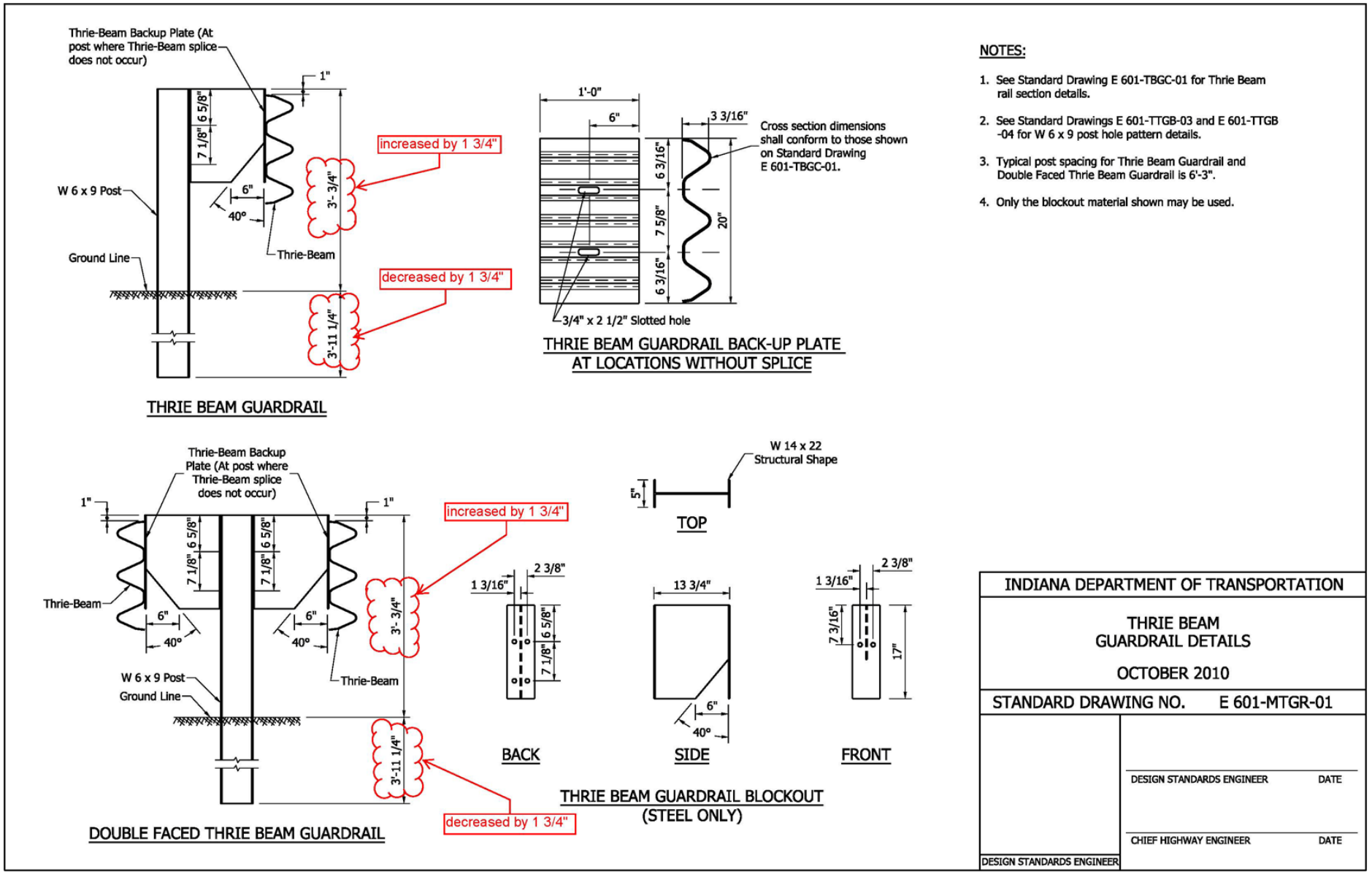
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-CWGS-06 CURVED W-BEAM GUARDRAIL SYSTEM



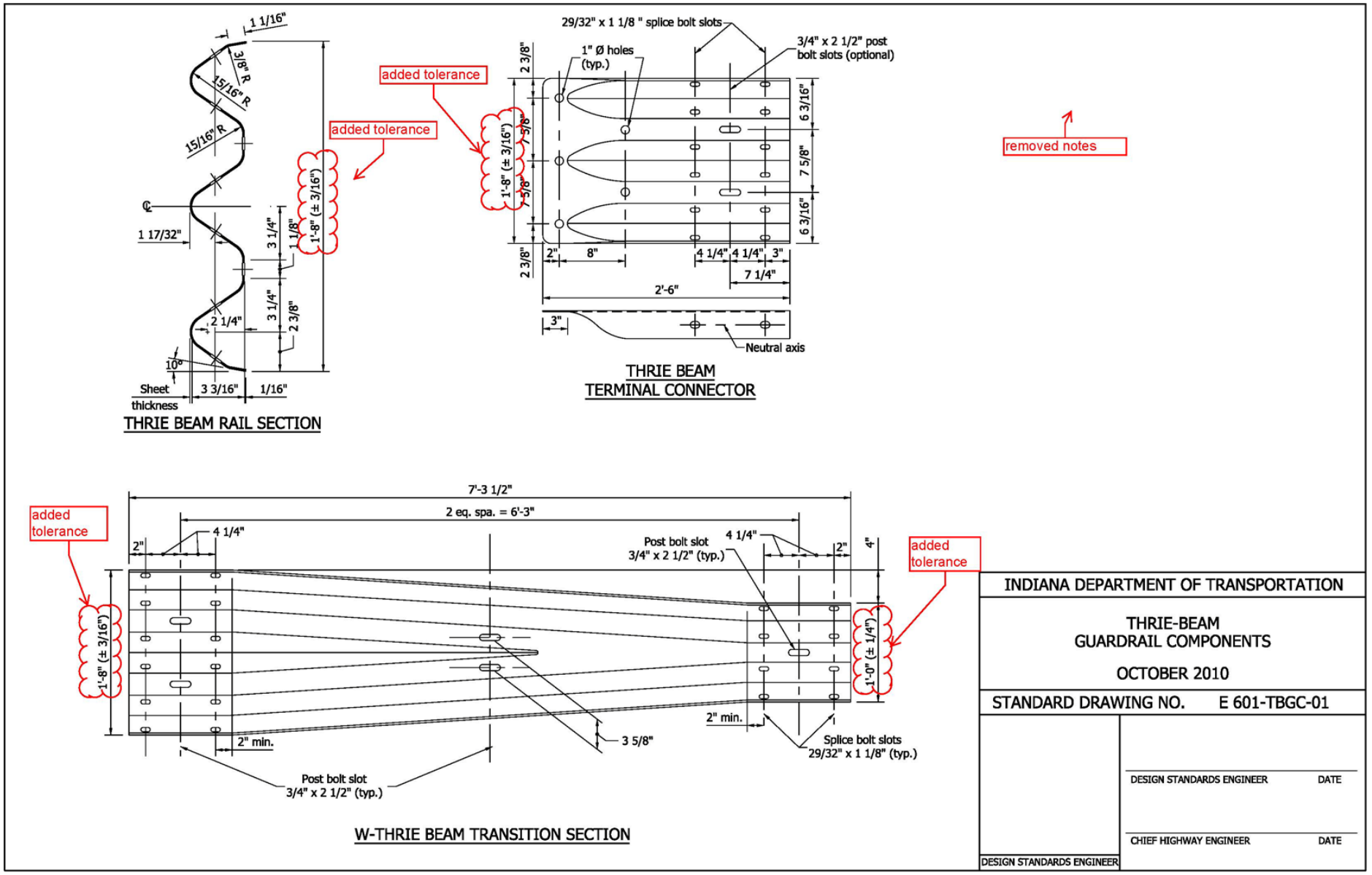
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-MTGR-01 THRIE BEAM GUARDRAIL DETAILS



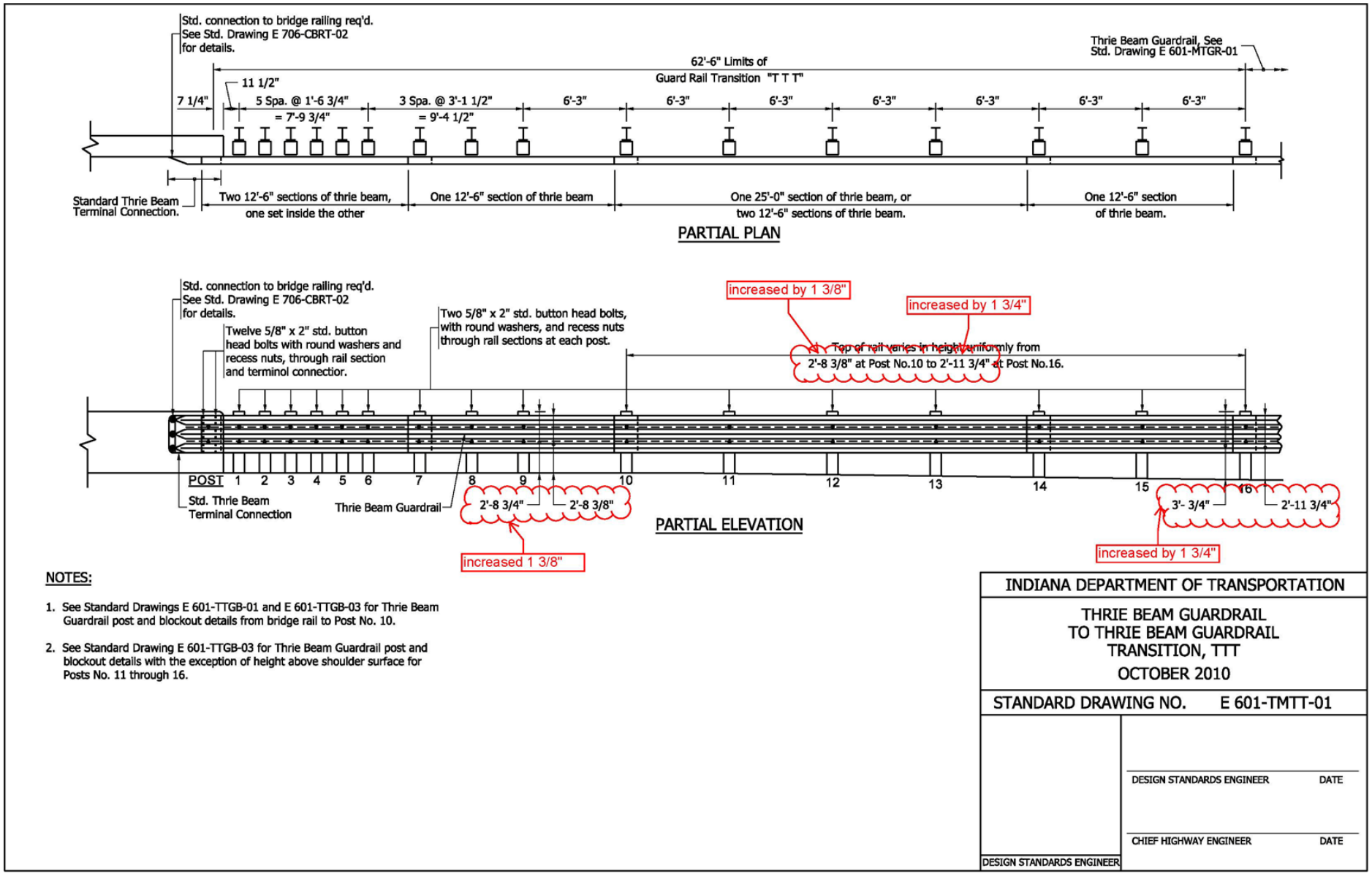
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-TBGC-01 THRIE-BEAM GUARDRAIL COMPONENTS



REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-TMTT-01 THRIE BEAM GUARDRAIL TO THRIE BEAM GUARDRAIL TRANSITION, TTT



NOTES:

1. See Standard Drawings E 601-TTGB-01 and E 601-TTGB-03 for Thrie Beam Guardrail post and blockout details from bridge rail to Post No. 10.
2. See Standard Drawing E 601-TTGB-03 for Thrie Beam Guardrail post and blockout details with the exception of height above shoulder surface for Posts No. 11 through 16.

INDIANA DEPARTMENT OF TRANSPORTATION

THRIE BEAM GUARDRAIL TO THRIE BEAM GUARDRAIL TRANSITION, TTT

OCTOBER 2010

STANDARD DRAWING NO. E 601-TMTT-01

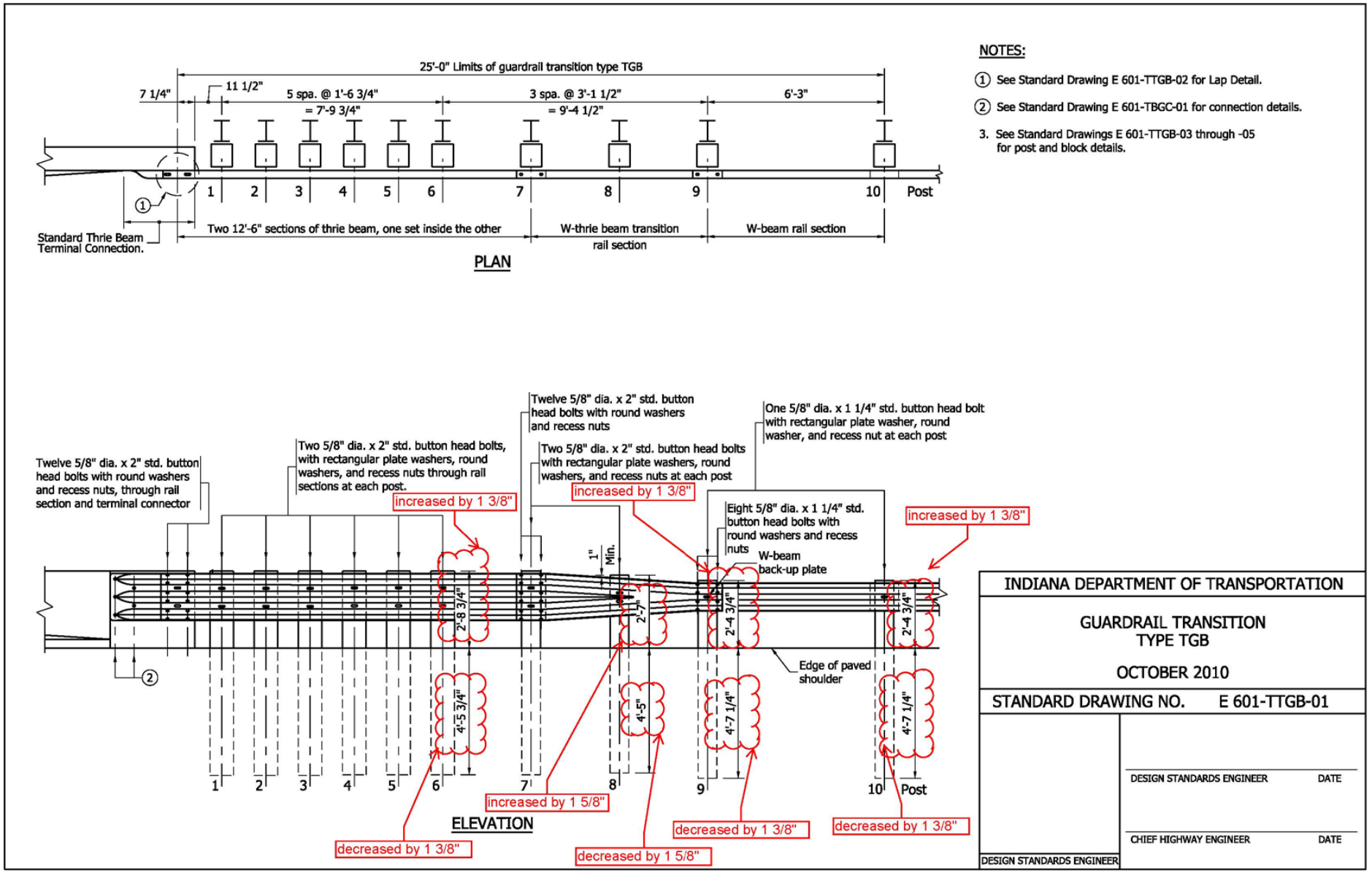
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

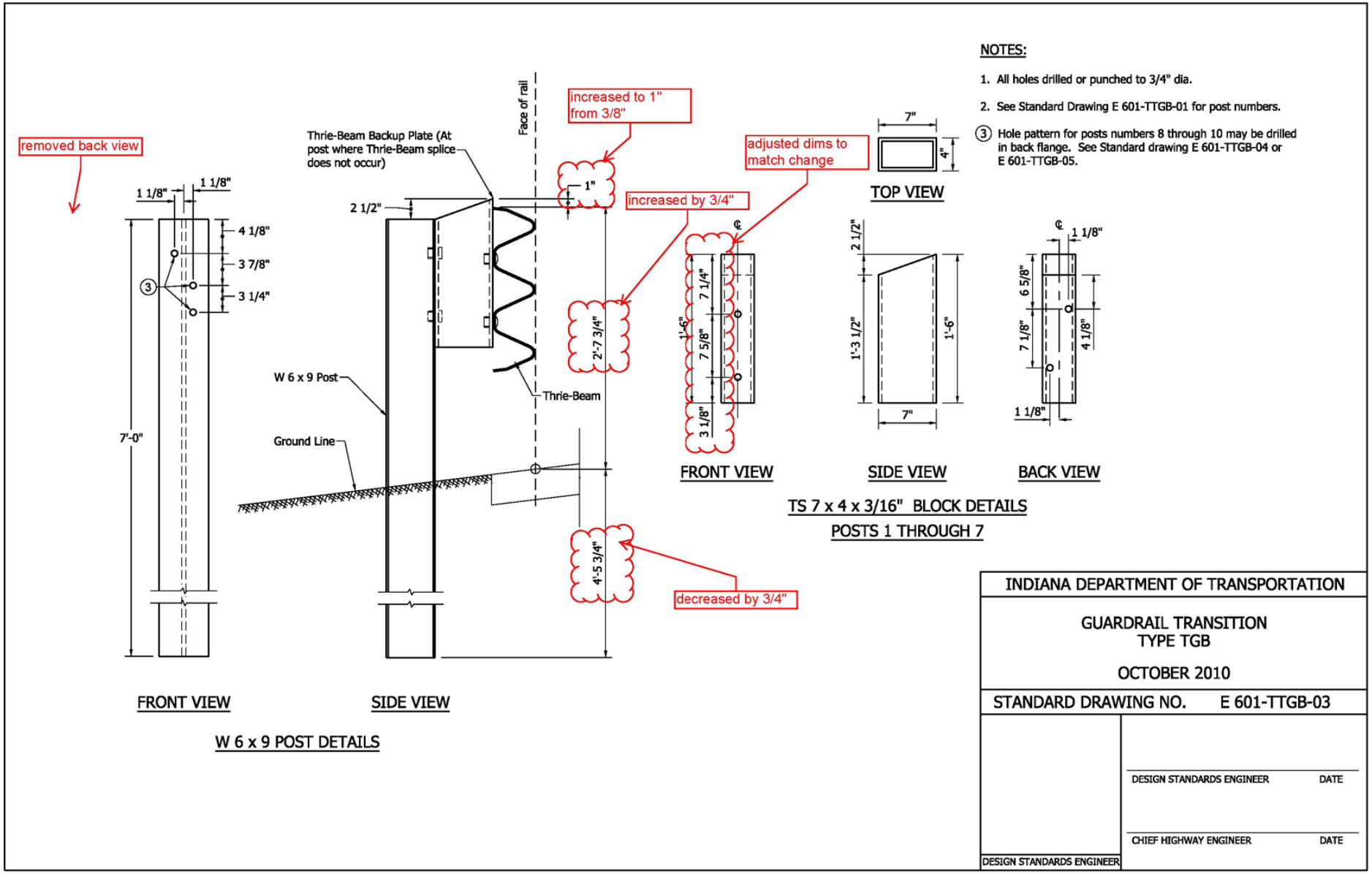
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-TTGB-01 GUARDRAIL TRANSITION TYPE TGB



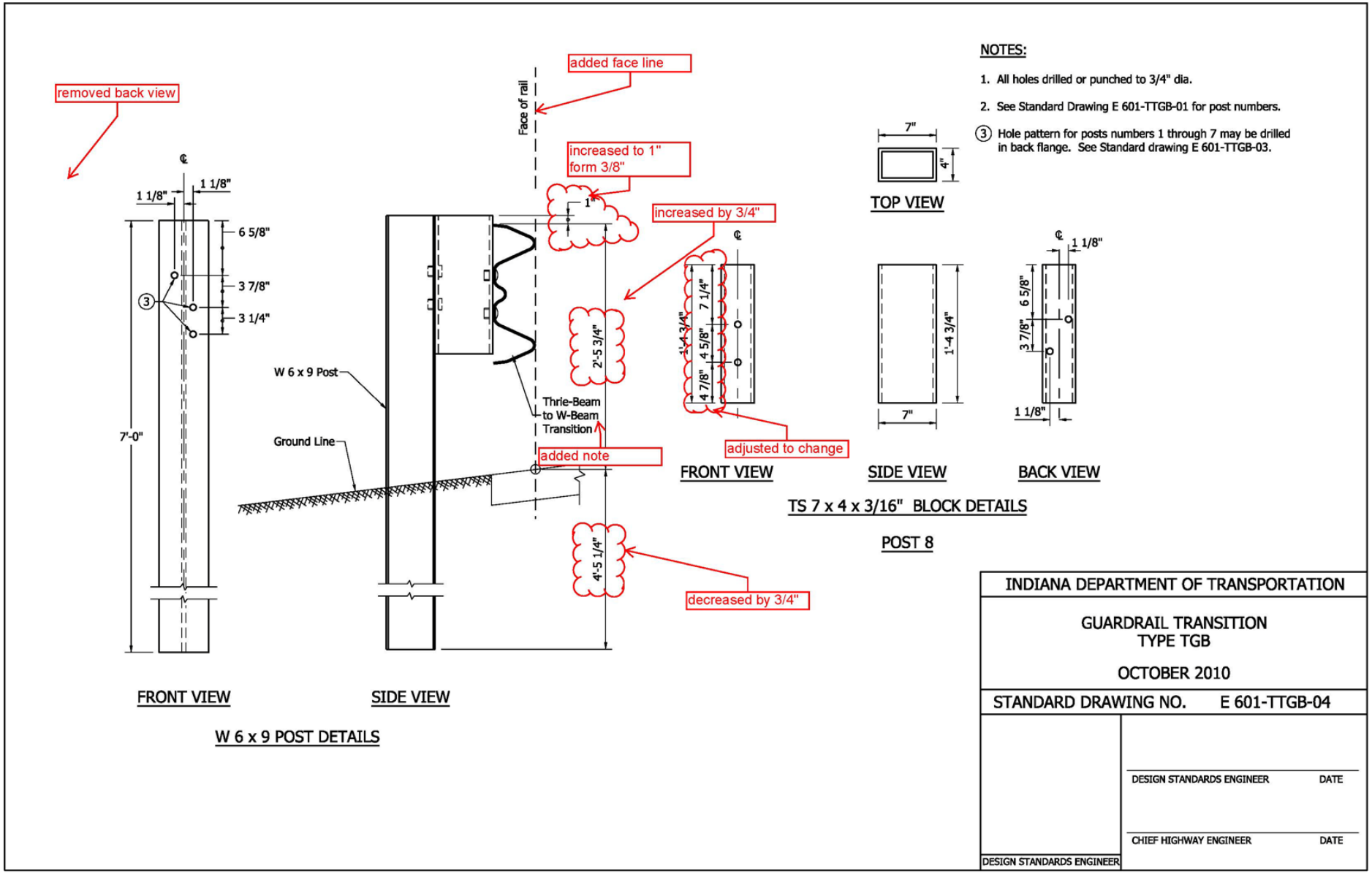
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-TTGB-03 GUARDRAIL TRANSITION TYPE TGB



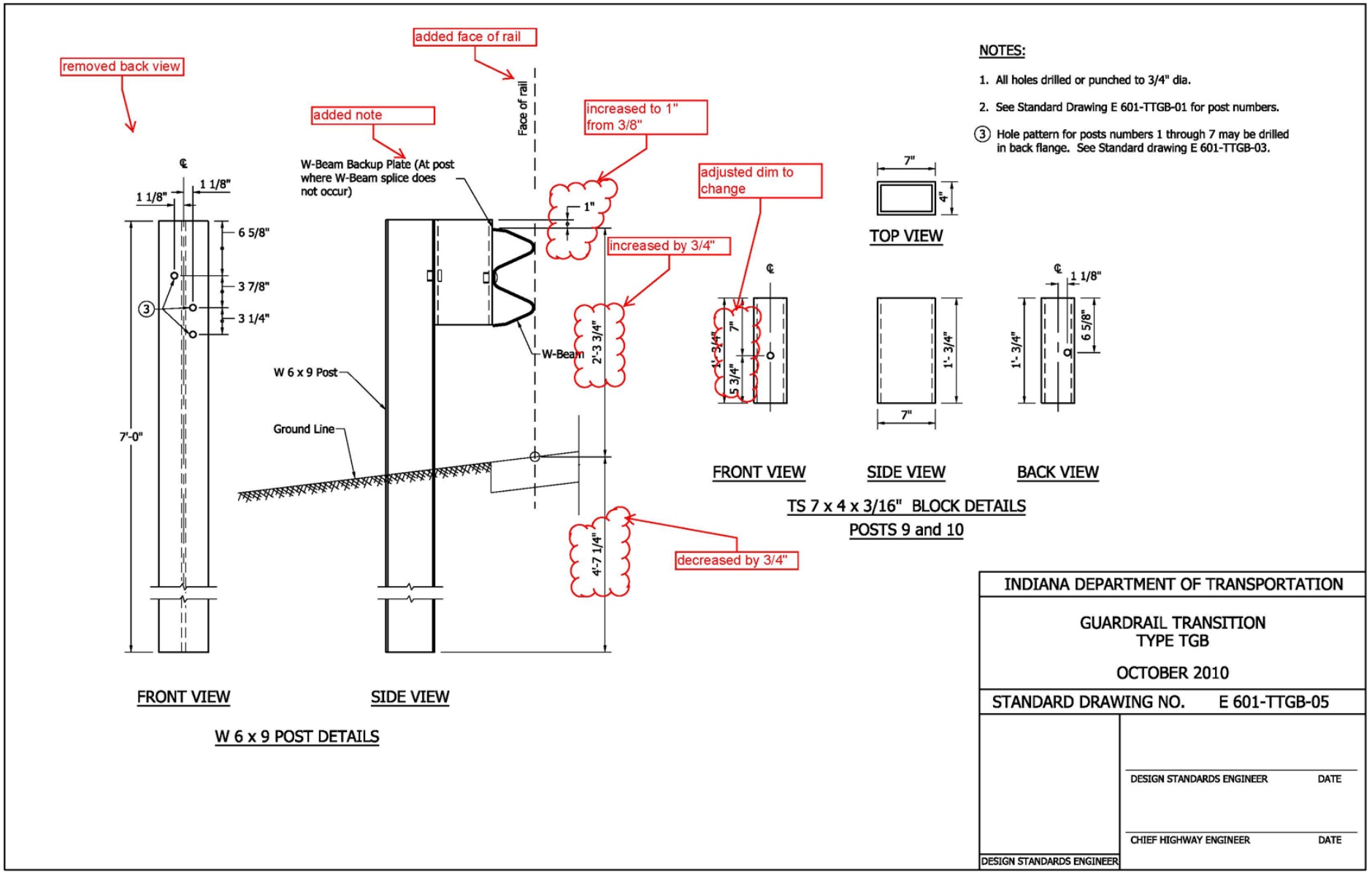
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-TTGB-04 GUARDRAIL TRANSITION TYPE TGB



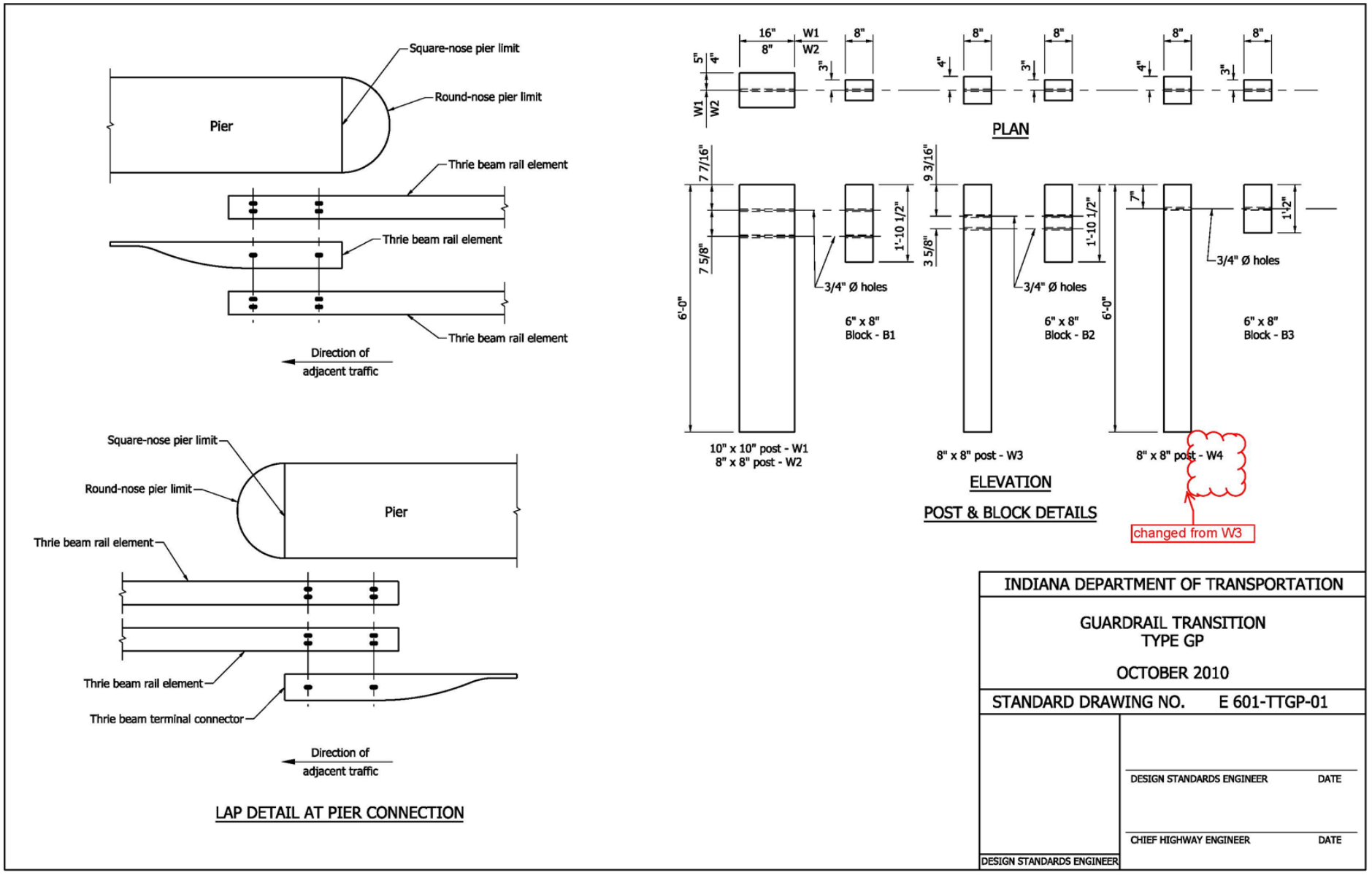
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-TTGB-05 GUARDRAIL TRANSITION TYPE TGB



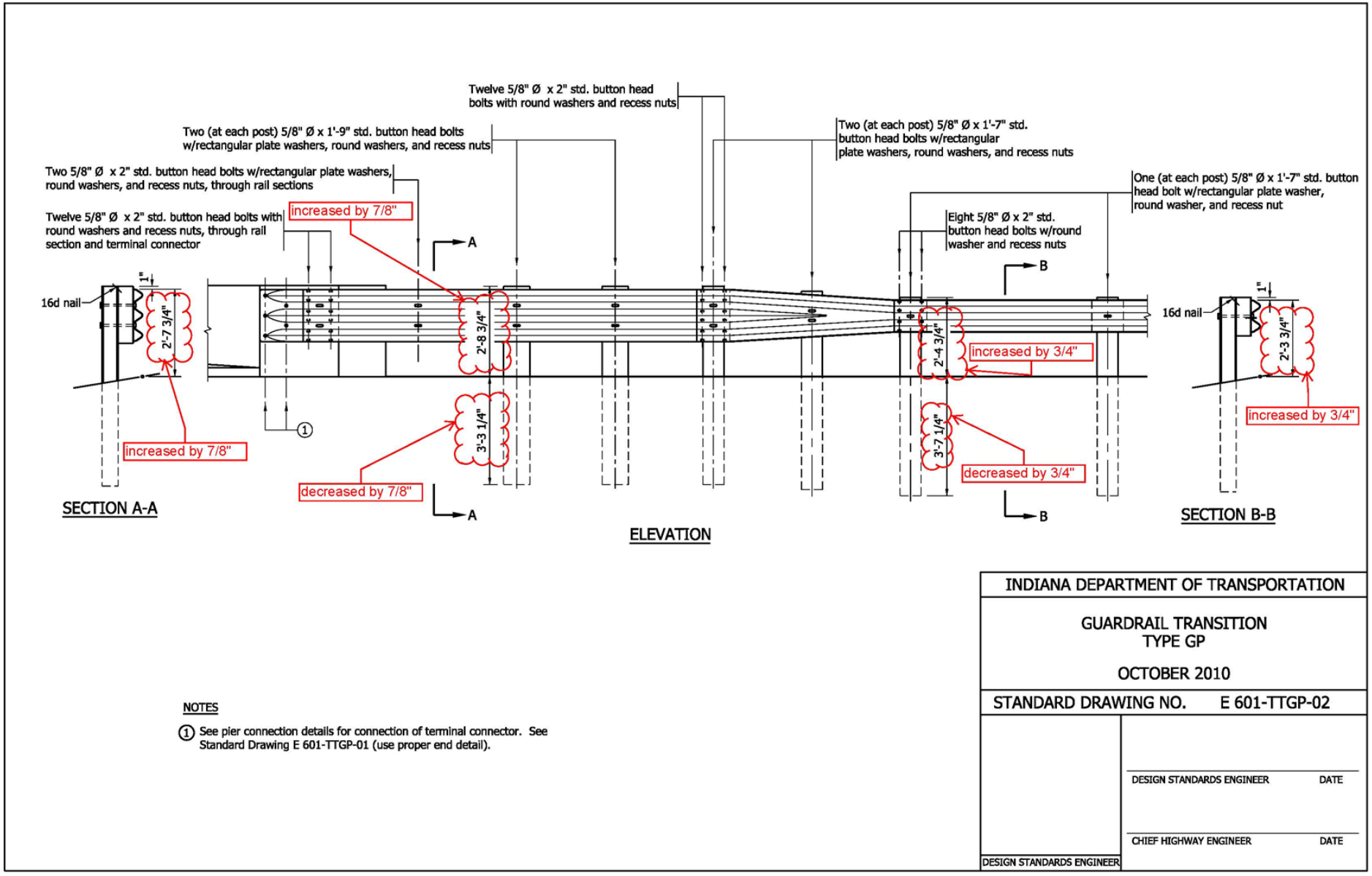
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-TTGP-01 GUARDRAIL TRANSITION TYPE GP



REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-TTGP-02 GUARDRAIL TRANSITION TYPE GP



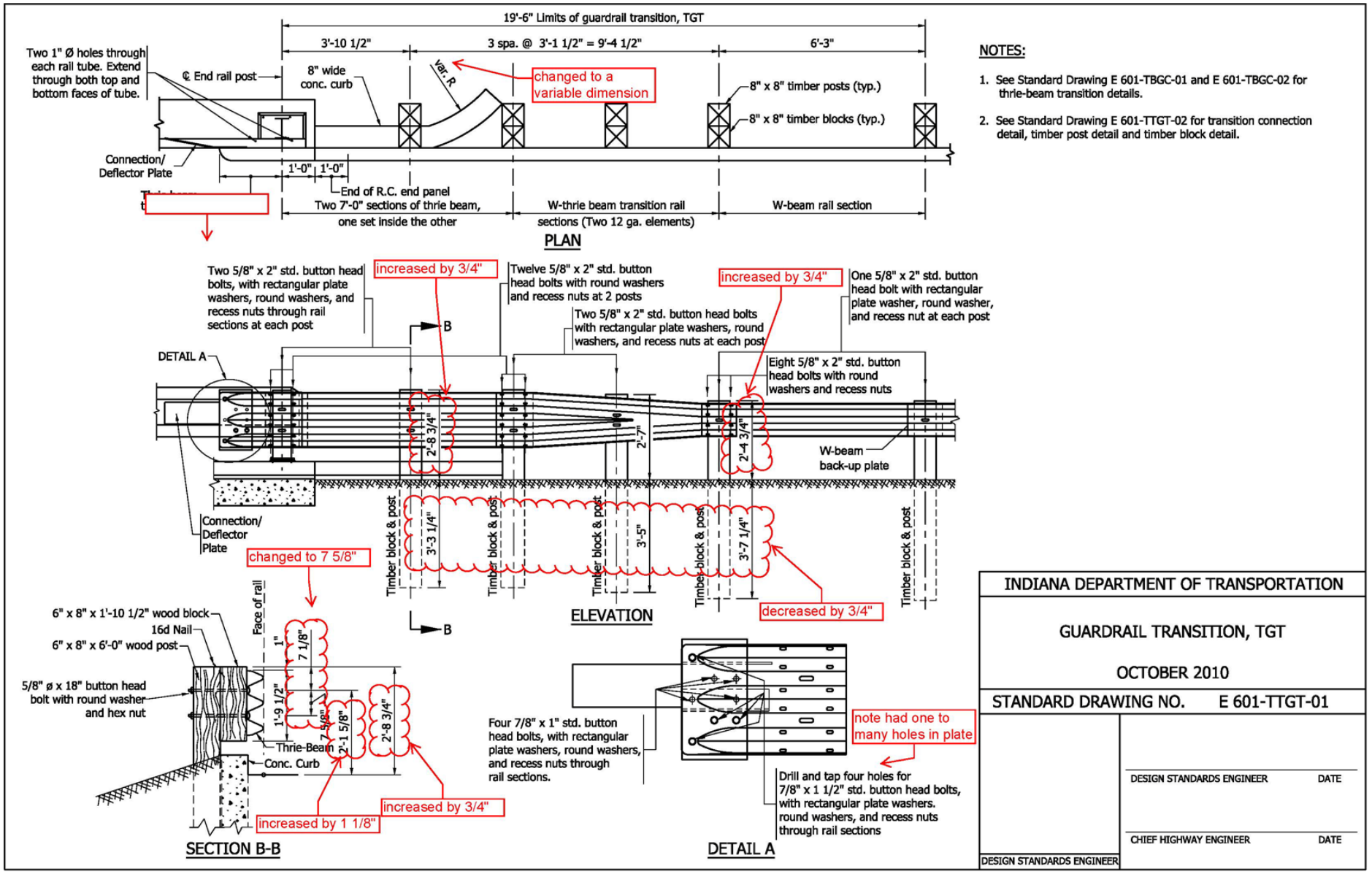
NOTES

(1) See pier connection details for connection of terminal connector. See Standard Drawing E 601-TTGP-01 (use proper end detail).

INDIANA DEPARTMENT OF TRANSPORTATION	
GUARDRAIL TRANSITION TYPE GP OCTOBER 2010	
STANDARD DRAWING NO. E 601-TTGP-02	
DESIGN STANDARDS ENGINEER	DESIGN STANDARDS ENGINEER DATE CHIEF HIGHWAY ENGINEER DATE

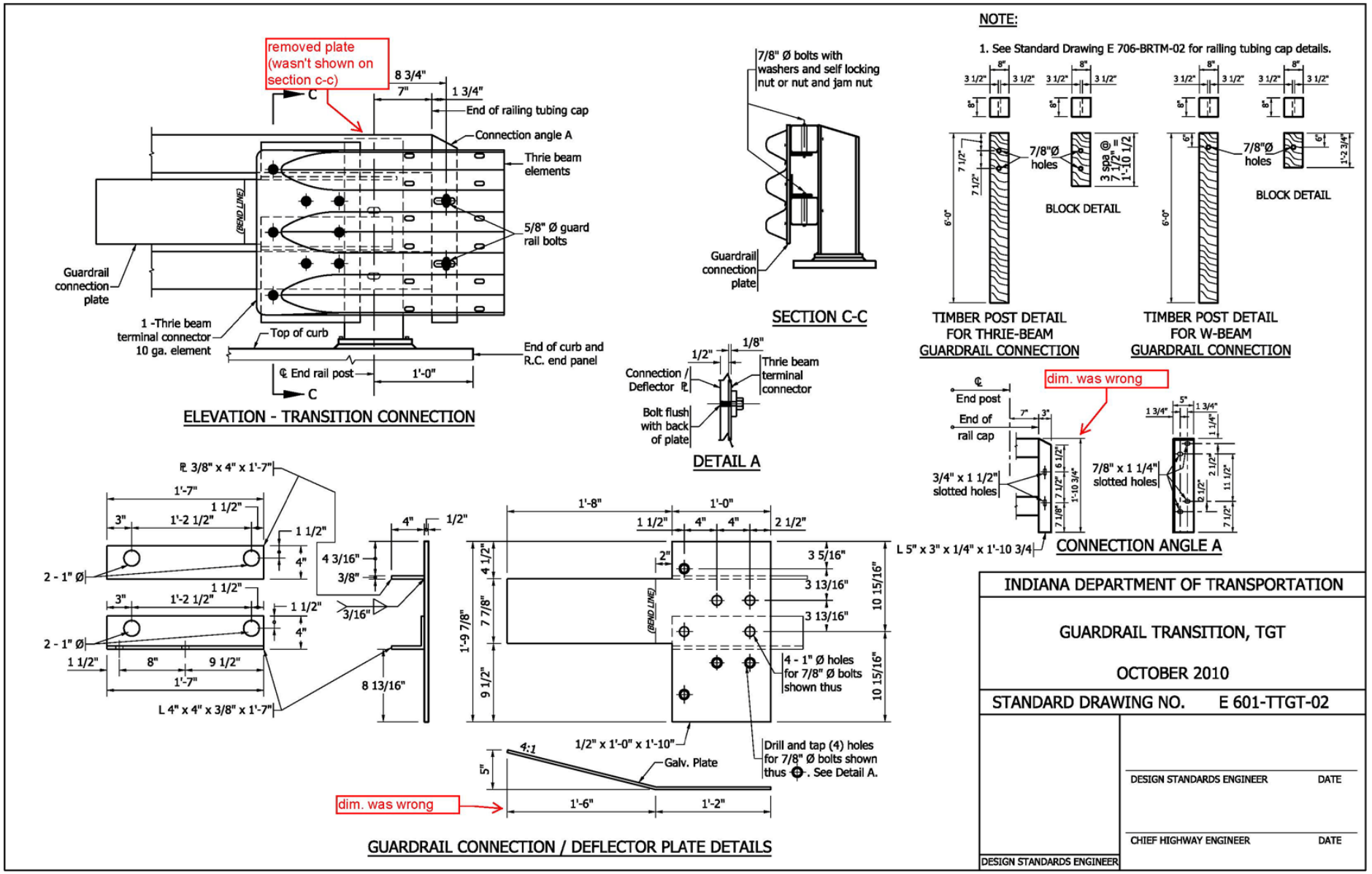
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-TTGT-01 GUARDRAIL TRANSITION, TGT



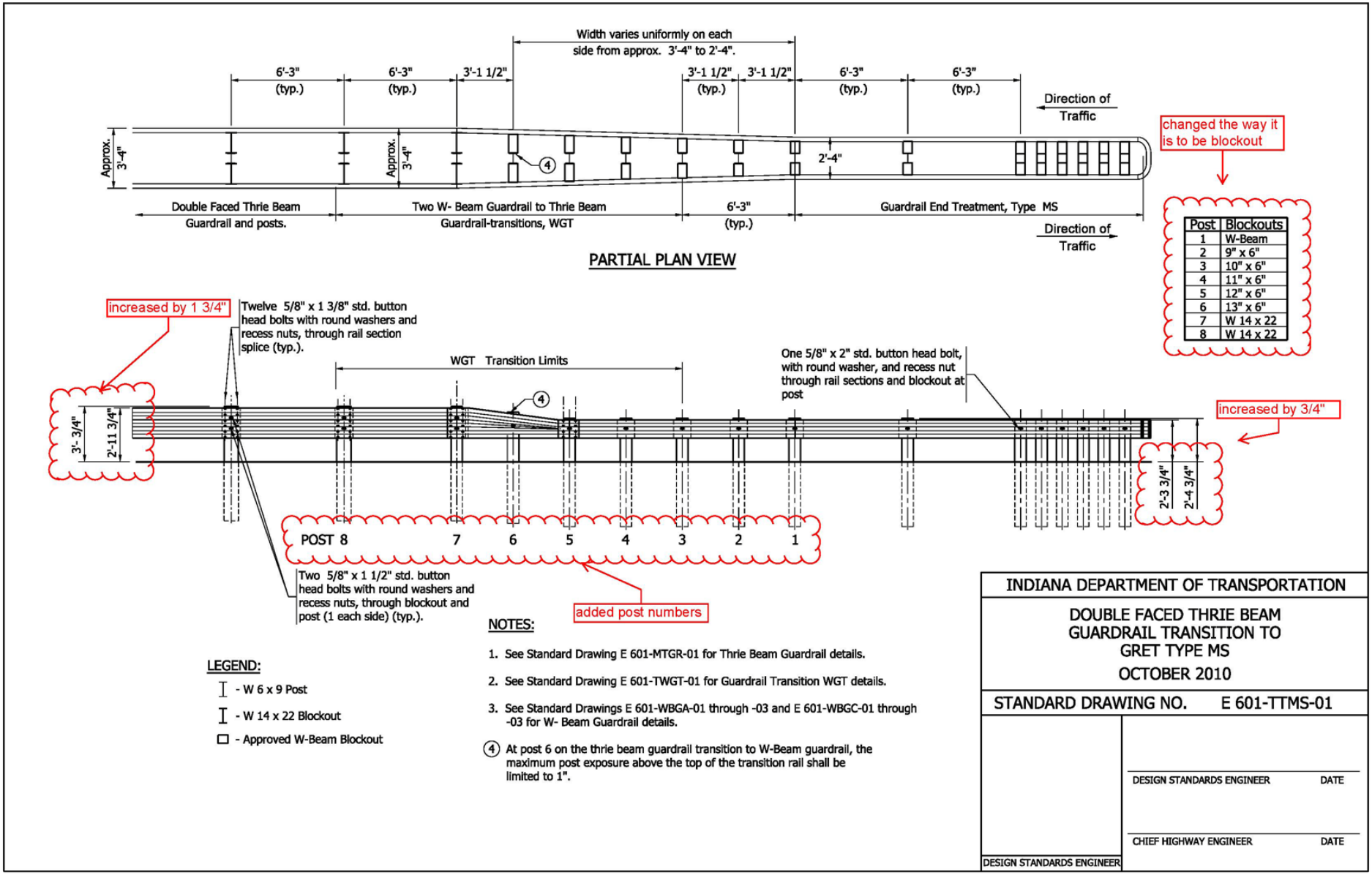
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-TTGT-02 GUARDRAIL TRANSITION, TGT



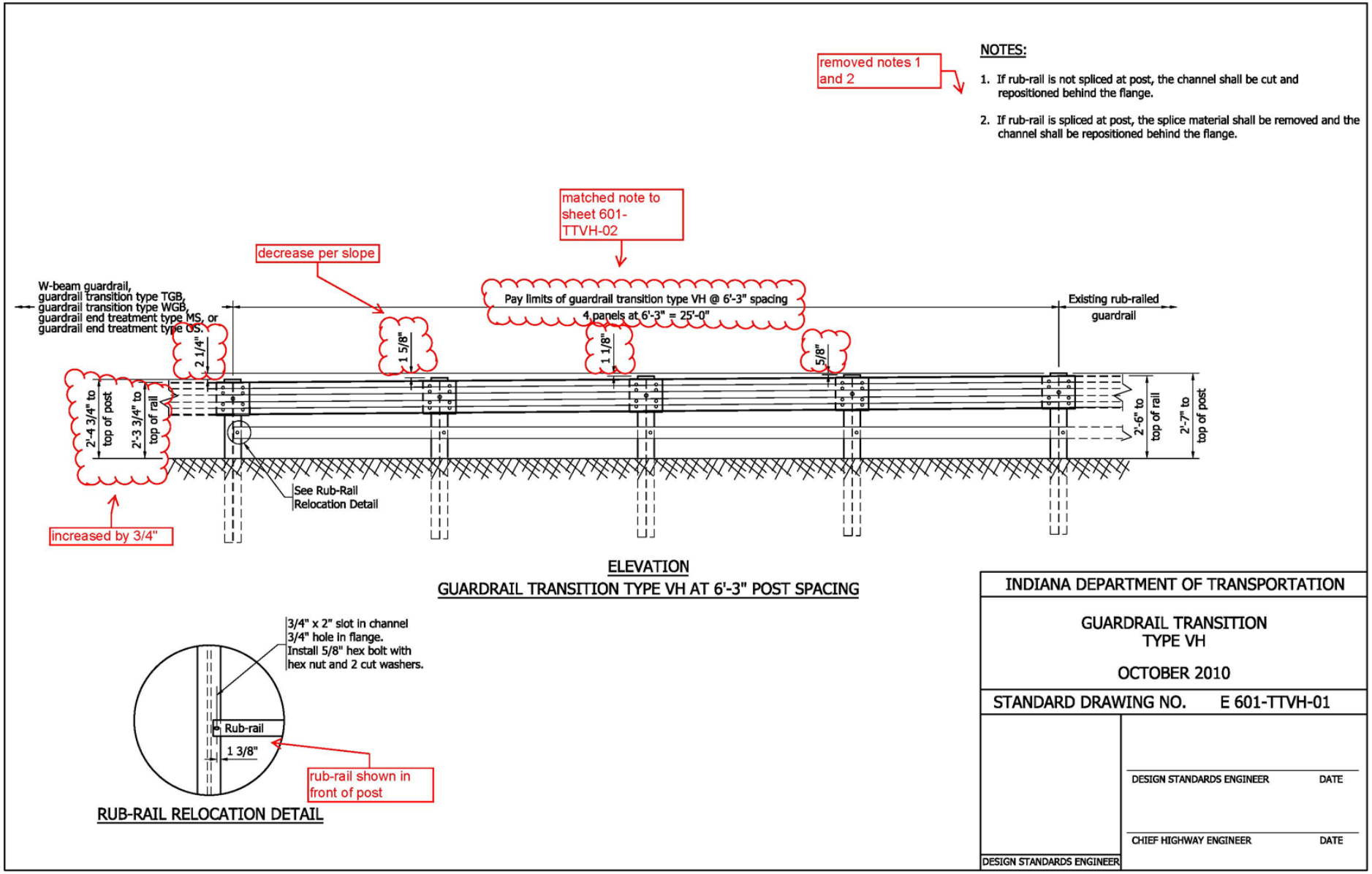
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-TTMS-01 DOUBLE FACED THRIE BEAM GUARDRAIL TRANSITION TO GRET TYPE MS



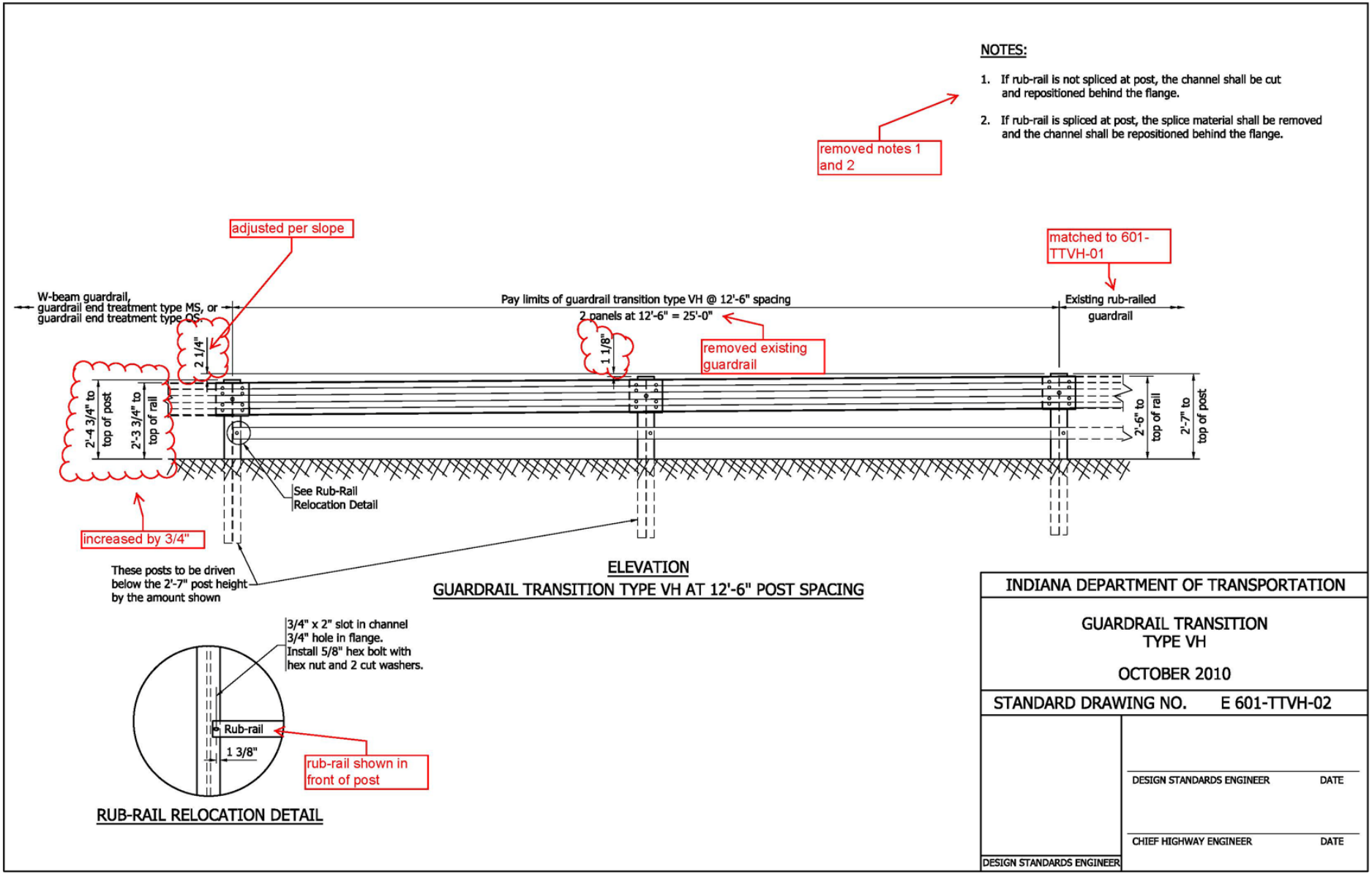
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-TTVH-01 GUARDRAIL TRANSITION TYPE VH



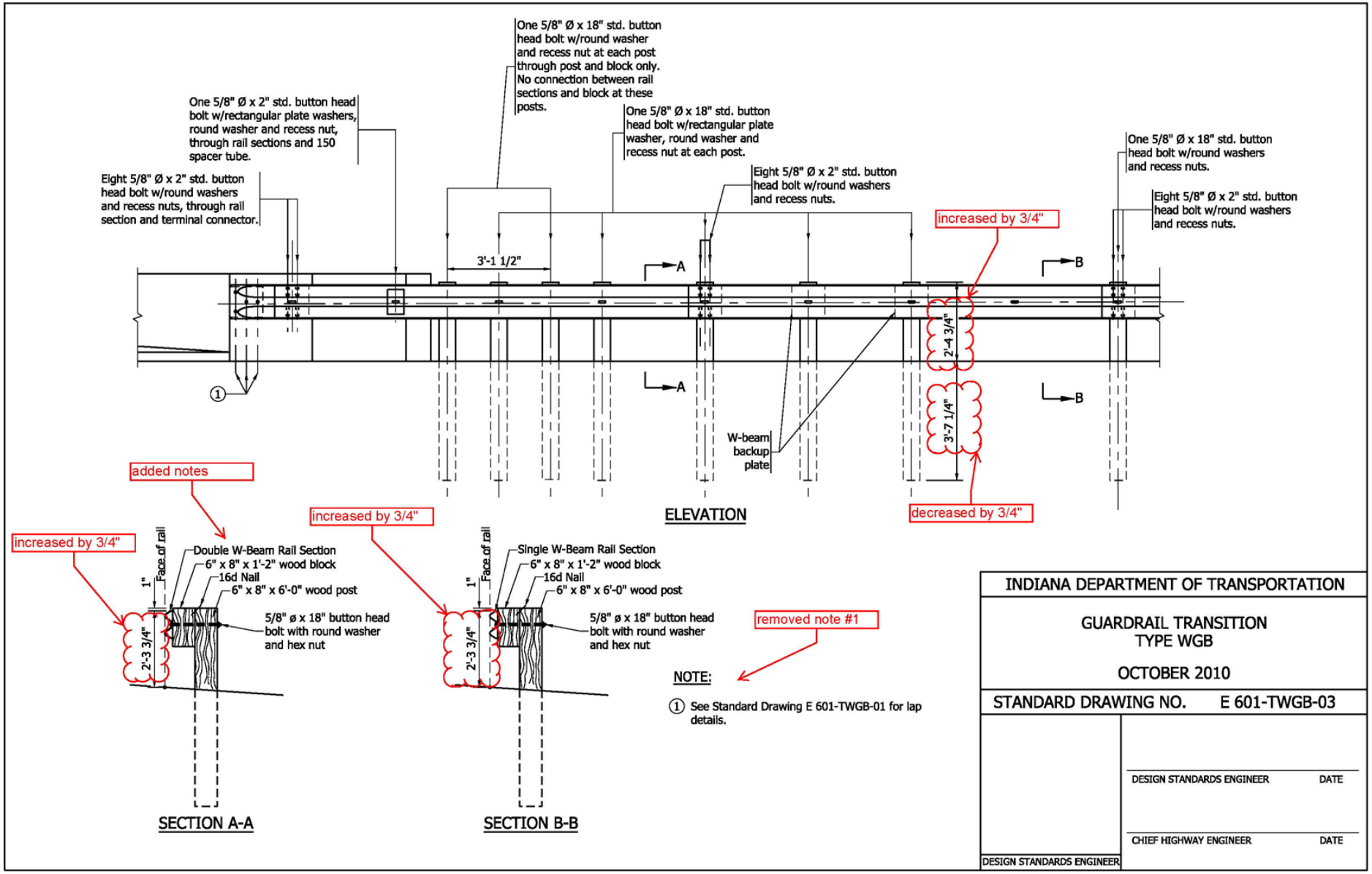
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-TTVH-02 GUARDRAIL TRANSITION TYPE VH



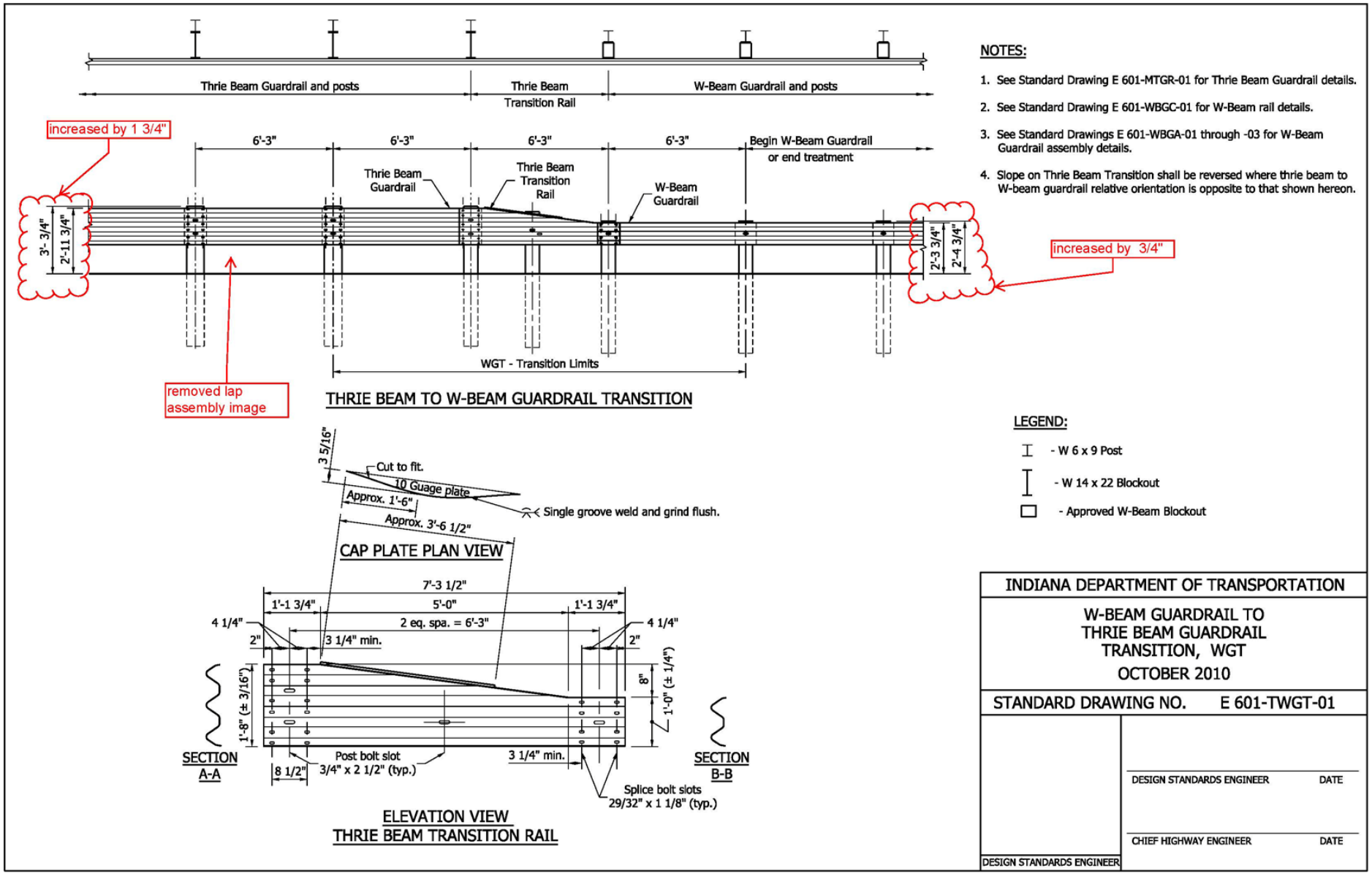
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-TWGB-03 GUARDRAIL TRANSITION TYPE WGB



REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-TWGT-01 W-BEAM GUARDRAIL TO THRIE BEAM GUARDRAIL TRANSITION, WGT



NOTES:

1. See Standard Drawing E 601-MTGR-01 for Thrie Beam Guardrail details.
2. See Standard Drawing E 601-WBGC-01 for W-Beam rail details.
3. See Standard Drawings E 601-WBGA-01 through -03 for W-Beam Guardrail assembly details.
4. Slope on Thrie Beam Transition shall be reversed where thrie beam to W-beam guardrail relative orientation is opposite to that shown hereon.

LEGEND:

- W 6 x 9 Post
- W 14 x 22 Blockout
- Approved W-Beam Blockout

INDIANA DEPARTMENT OF TRANSPORTATION

W-BEAM GUARDRAIL TO THRIE BEAM GUARDRAIL TRANSITION, WGT

OCTOBER 2010

STANDARD DRAWING NO. E 601-TWGT-01

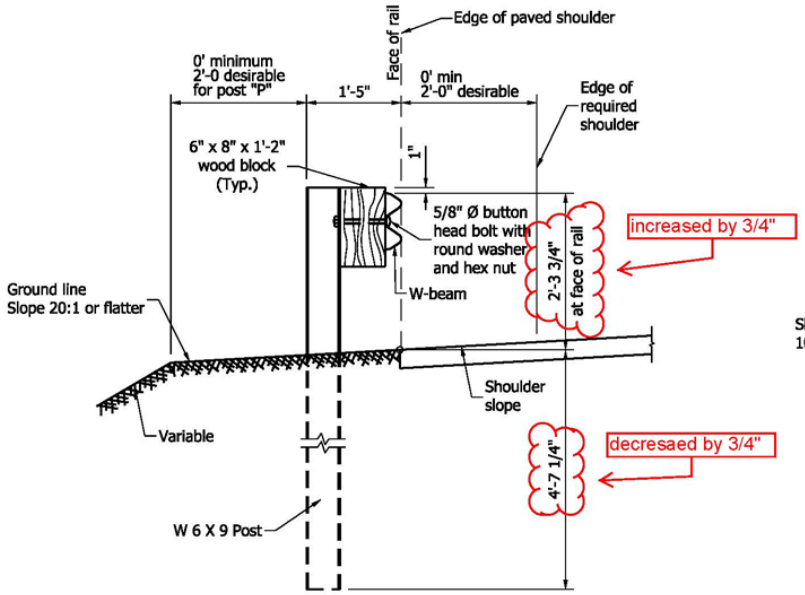
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

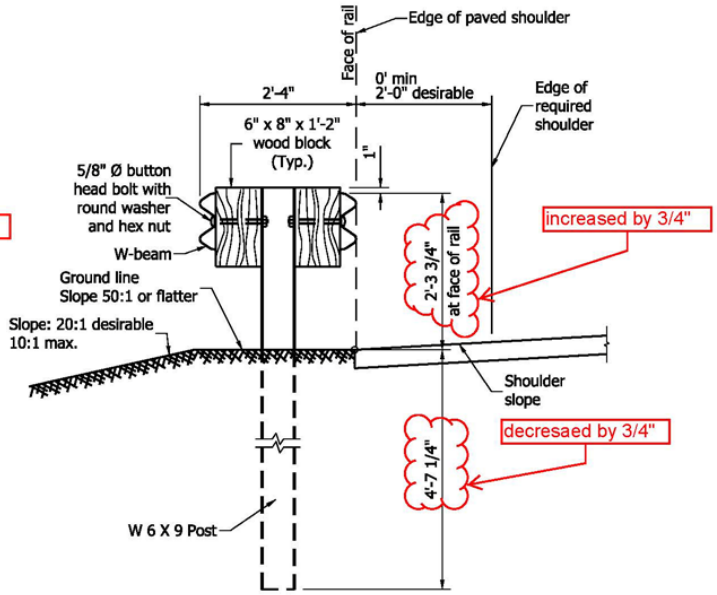
DESIGN STANDARDS ENGINEER

REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-WBGA-01 W-BEAM GUARDRAIL ASSEMBLIES



TYPICAL W-BEAM INSTALLATION



TYPICAL DOUBLE FACED W-BEAM INSTALLATION

INDIANA DEPARTMENT OF TRANSPORTATION

W-BEAM
GUARDRAIL ASSEMBLIES

OCTOBER 2010

STANDARD DRAWING NO. E 601-WBGA-01

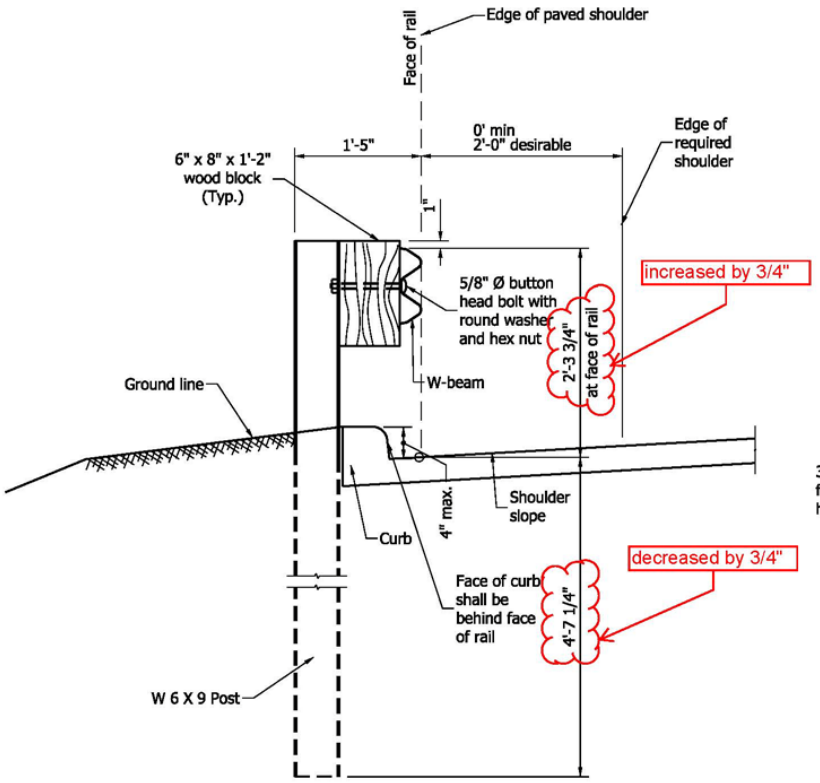
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

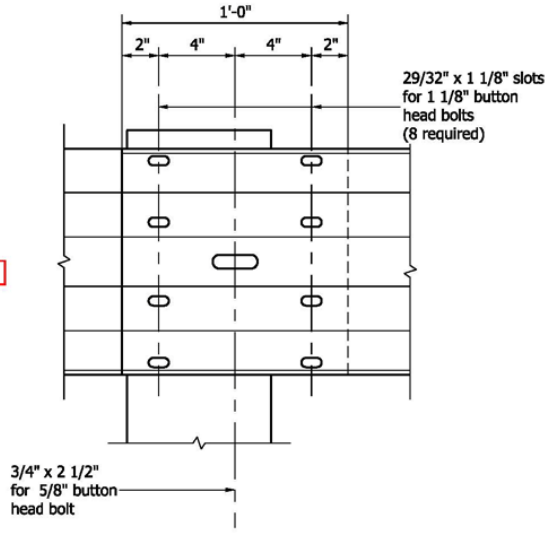
DESIGN STANDARDS ENGINEER

REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-WBGA-02 W-BEAM GUARDRAIL ASSEMBLIES



TYPICAL W-BEAM INSTALLATION AT CURB



STEEL W-BEAM SPLICE DETAIL

INDIANA DEPARTMENT OF TRANSPORTATION

W-BEAM
GUARDRAIL ASSEMBLIES

OCTOBER 2010

STANDARD DRAWING NO. E 601-WBGA-02

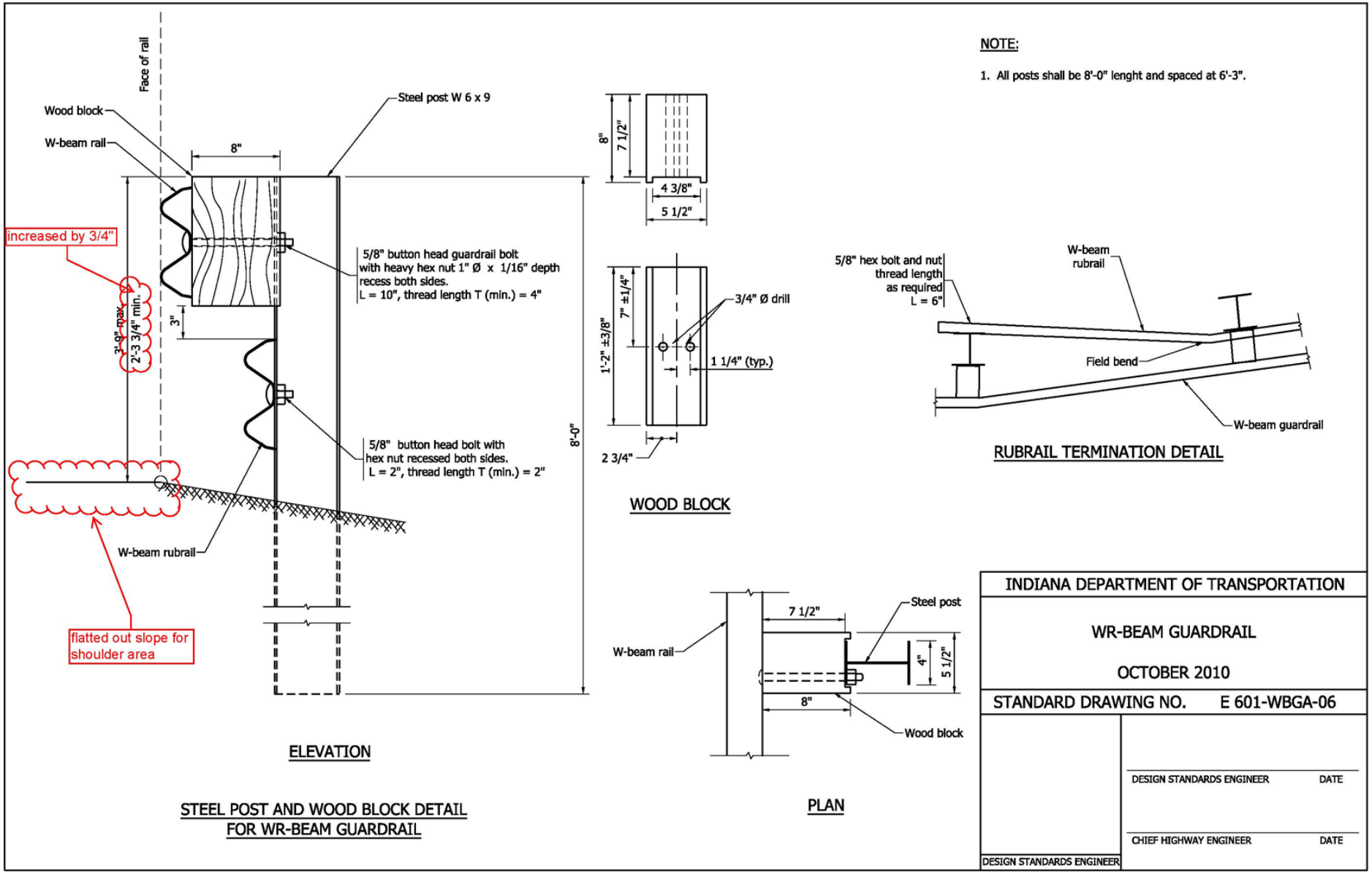
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

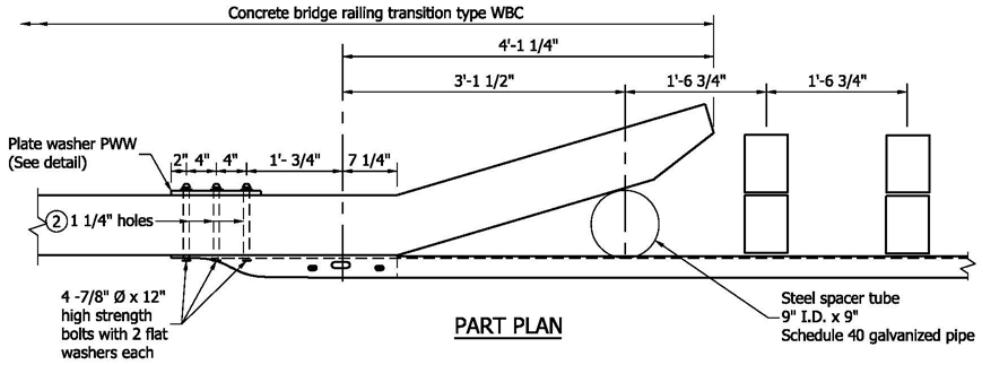
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 601-WBGA-06 WR-BEAM GUARDRAIL



REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 706-CBRT-02 BRIDGE RAILING TRANSITION WBC ATTACHMENT OF GUARDRAIL



PART PLAN

NOTES:

1. See Standard Drawing E 709-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.

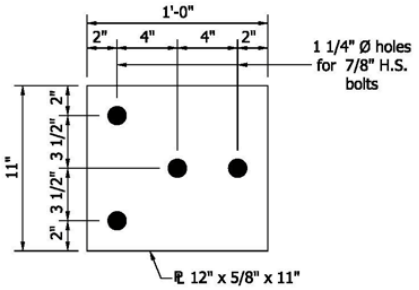
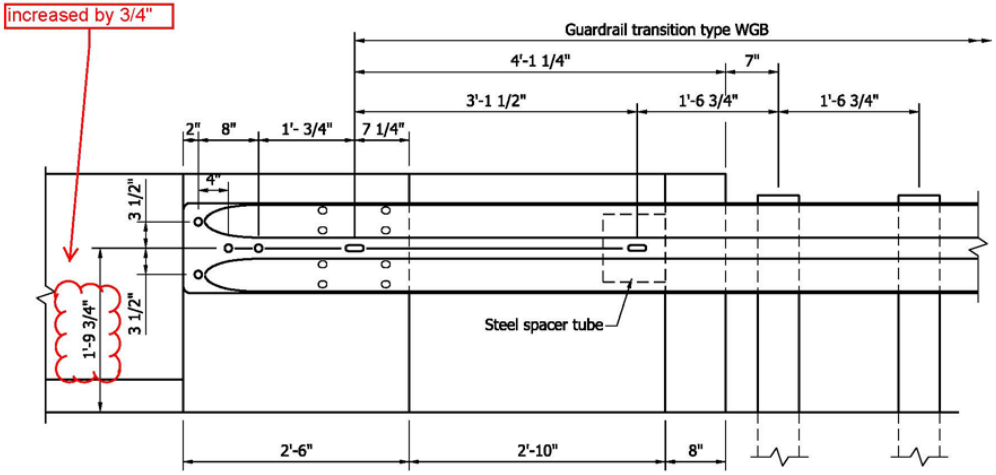


PLATE WASHER PWW

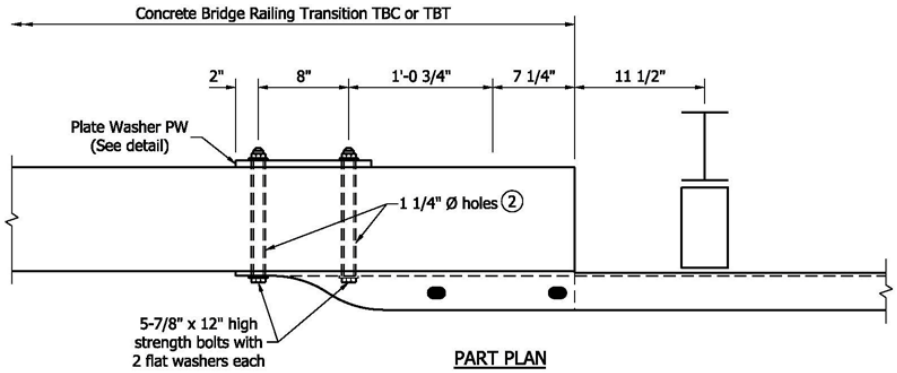


PART ELEVATION

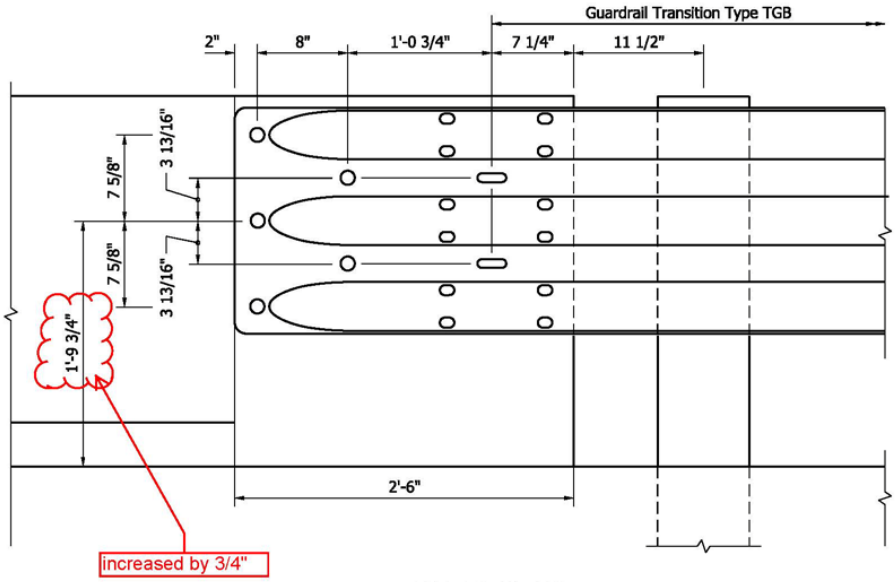
INDIANA DEPARTMENT OF TRANSPORTATION	
BRIDGE RAILING TRANSITION WBC ATTACHMENT OF GUARDRAIL NOVEMBER 2010	
STANDARD DRAWING NO. E 706-CBRT-02	
DESIGN STANDARDS ENGINEER	DESIGN STANDARDS ENGINEER DATE CHIEF HIGHWAY ENGINEER DATE

REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 706-CBRT-04 BRIDGE RAILING TRANSITION TBC OR TBT ATTACHMENT OF GUARDRAIL



PART PLAN



PART ELEVATION

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.

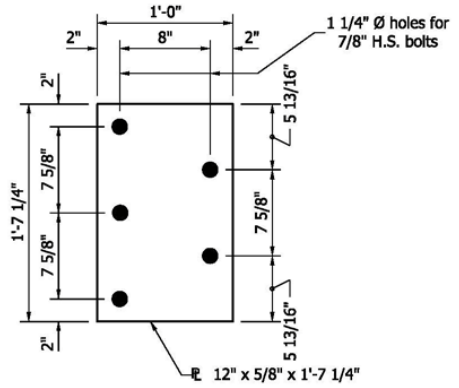


PLATE WASHER PW

INDIANA DEPARTMENT OF TRANSPORTATION

BRIDGE RAILING TRANSITION TBC OR TBT ATTACHMENT OF GUARDRAIL

OCTOBER 2010

STANDARD DRAWING NO. E 706-CBRT-04

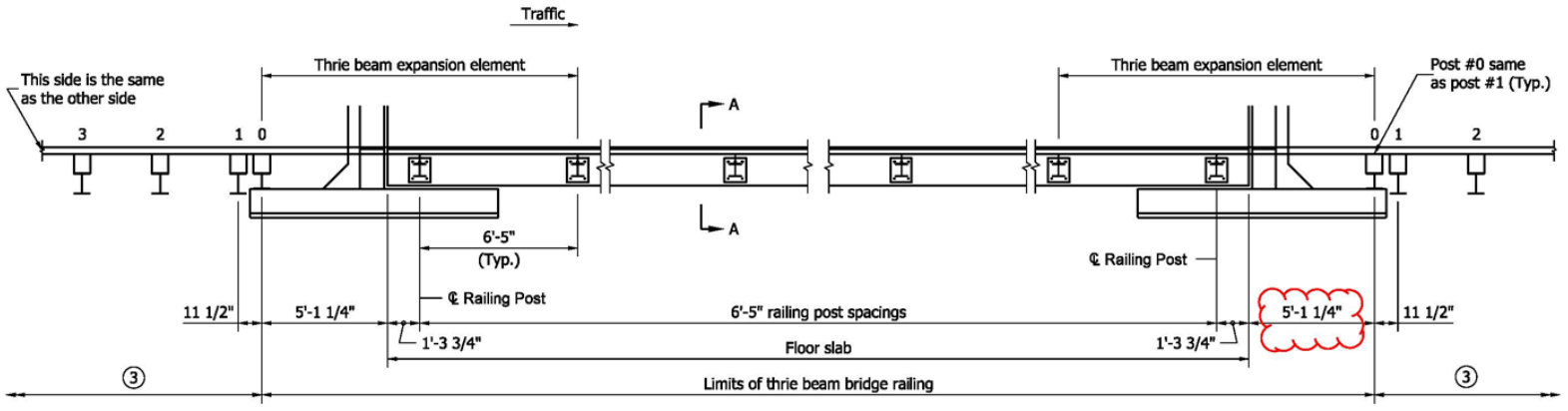
DESIGN STANDARDS ENGINEER DATE

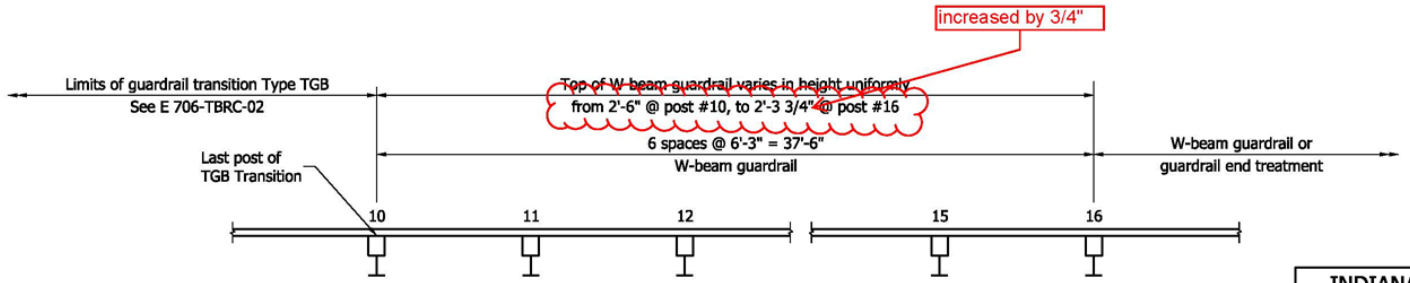
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 706-TBRC-01 RETROFIT THRIE BEAM BRIDGE RAILING TR





removed note #1

BRIDGE RAILING / GUARDRAIL HEIGHT TRANSITION

NOTES:

1. See Standard Drawings E 706-TBRC-02 and -03, E 706-TBRF-01 and -02, and E 706-TBRE-01 for thrie beam bridge railing components of curb mounted or deck mounted railings.
2. See Standard Drawings E 706-TBRC-02 and E 706-TBRF-01 for Section A-A.

③ See Standard Drawing E 706-TBRC-02, Note 4. 25'-0" limits of guardrail transition Type TGB, modified to include post #0 and to exclude thrie beam terminal connector.

INDIANA DEPARTMENT OF TRANSPORTATION

RETROFIT THRIE BEAM BRIDGE RAILING TR

OCTOBER 2010

STANDARD DRAWING NO. E 706-TBRC-01

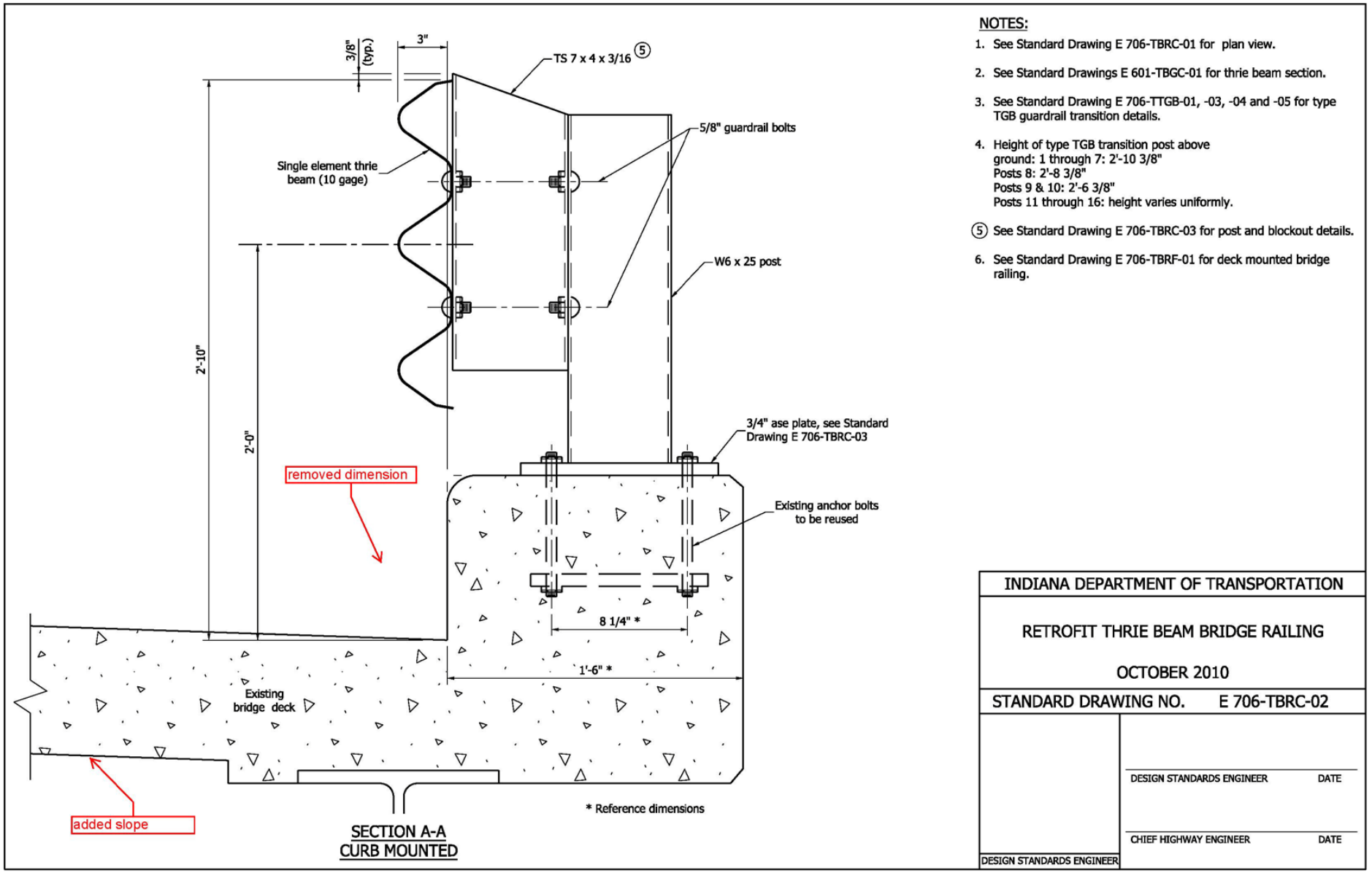
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 706-TBRC-02 RETROFIT THRIE BEAM BRIDGE RAILING TR COMPONENTS



NOTES:

1. See Standard Drawing E 706-TBRC-01 for plan view.
2. See Standard Drawings E 601-TBGC-01 for thrie beam section.
3. See Standard Drawing E 706-TTGB-01, -03, -04 and -05 for type TGB guardrail transition details.
4. Height of type TGB transition post above ground: 1 through 7: 2'-10 3/8"
   Posts 8: 2'-8 3/8"
   Posts 9 & 10: 2'-6 3/8"
   Posts 11 through 16: height varies uniformly.

⑤ See Standard Drawing E 706-TBRC-03 for post and blockout details.

6. See Standard Drawing E 706-TBRF-01 for deck mounted bridge railing.

INDIANA DEPARTMENT OF TRANSPORTATION

RETROFIT THRIE BEAM BRIDGE RAILING

OCTOBER 2010

STANDARD DRAWING NO. E 706-TBRC-02

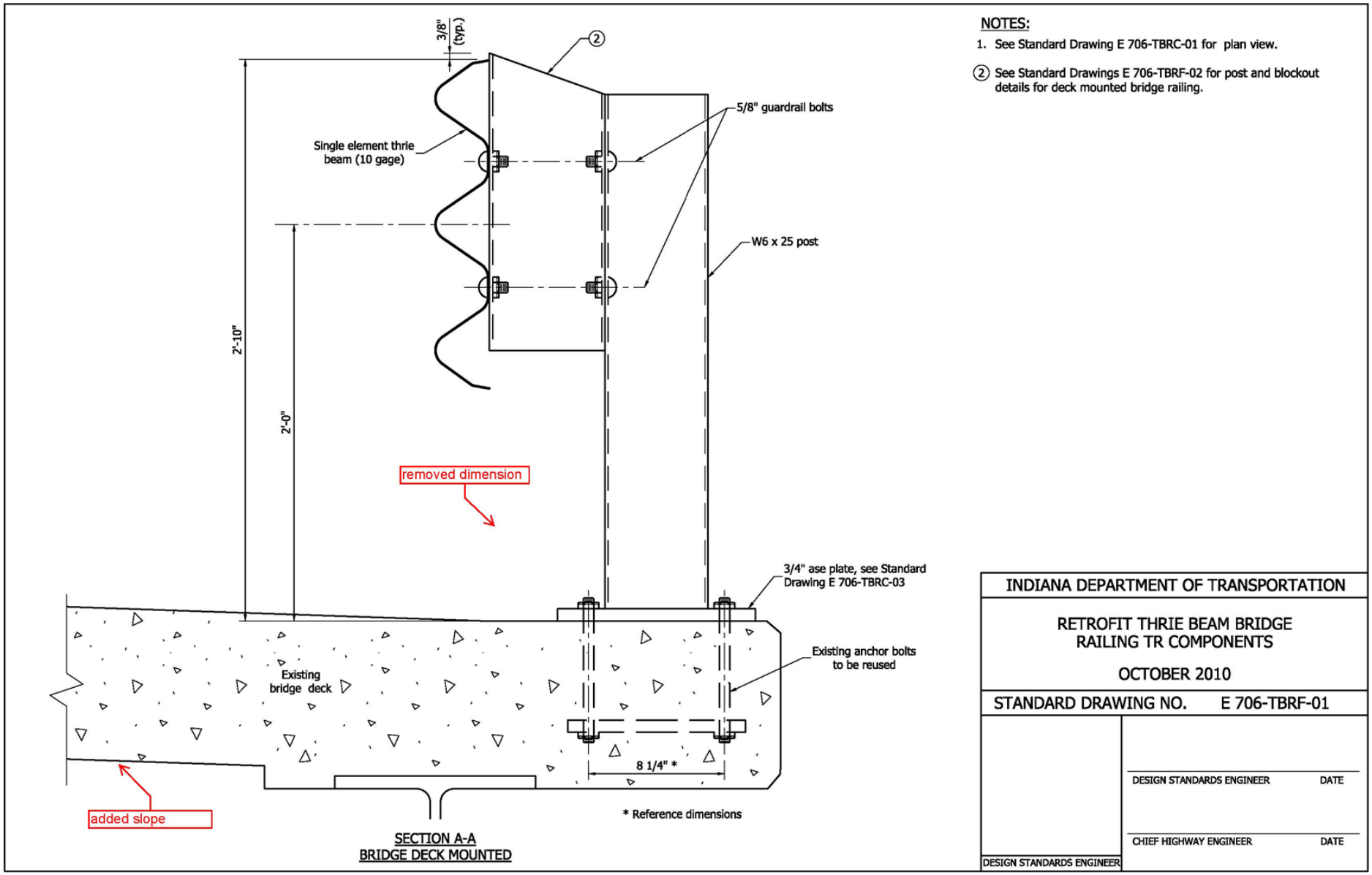
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

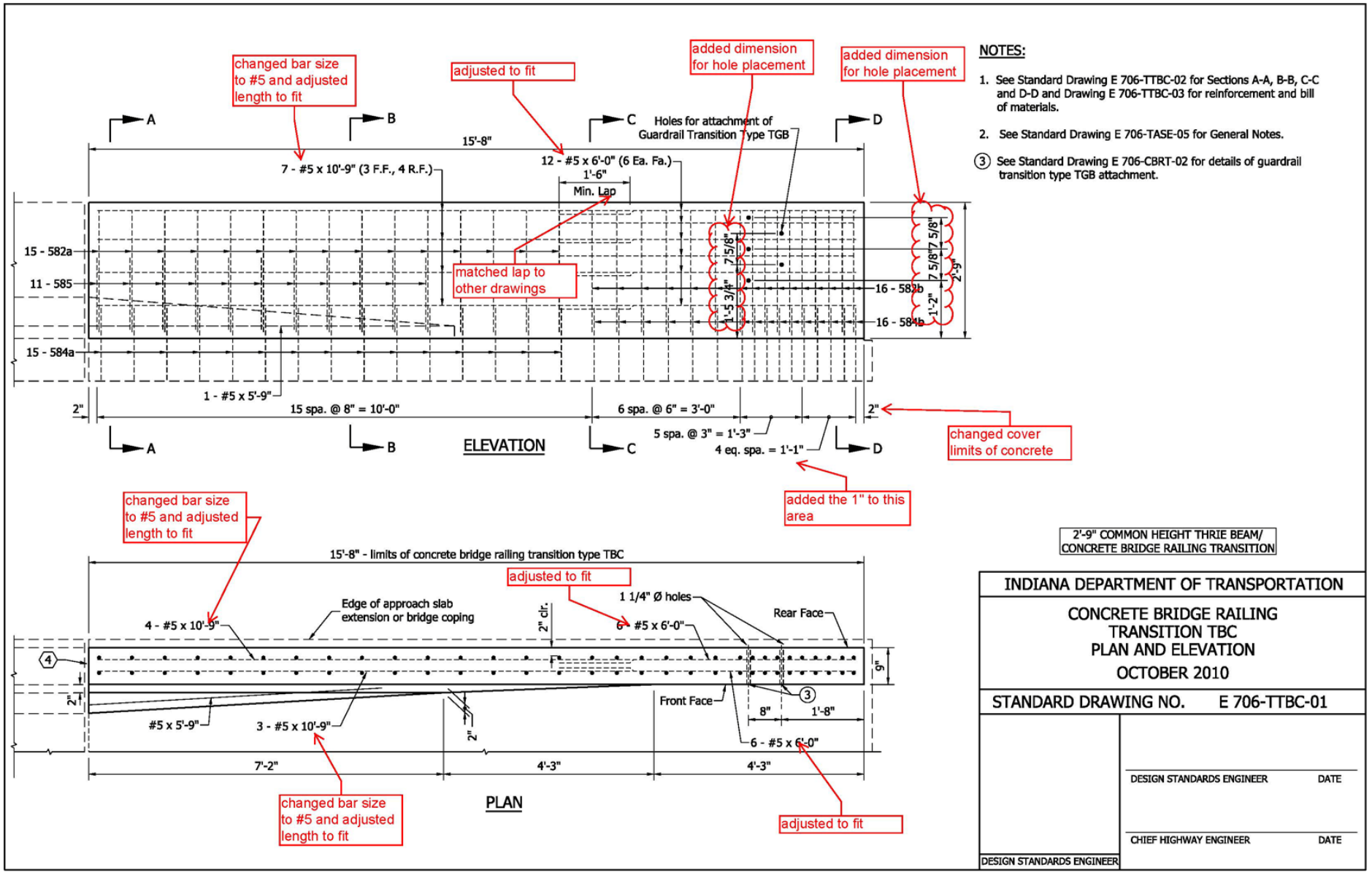
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 706-TBRF-01 RETROFIT THRIE BEAM BRIDGE RAILING TR COMPONENTS



REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 706-TTBC-01 CONCRETE BRIDGE RAILING TRANSITION TBC

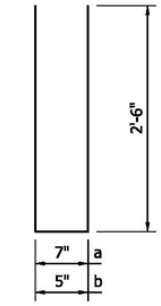


REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 706-TTBC-03 CONCRETE BRIDGE RAILING TRANSITION TYPE TBC

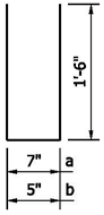
NOTE:

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



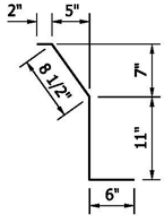
582a x 5'-7

582b x 5'-5



584a x 3'-7

584b x 3'-5



585 x 2'-4

changed bill of materials

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

33" COMMON HEIGHT THRIE BEAM / CONCRETE BRIDGE RAILING TRANSITION

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION TYPE TBC

OCTOBER 2010

STANDARD DRAWING NO. E 706-TTBC-03

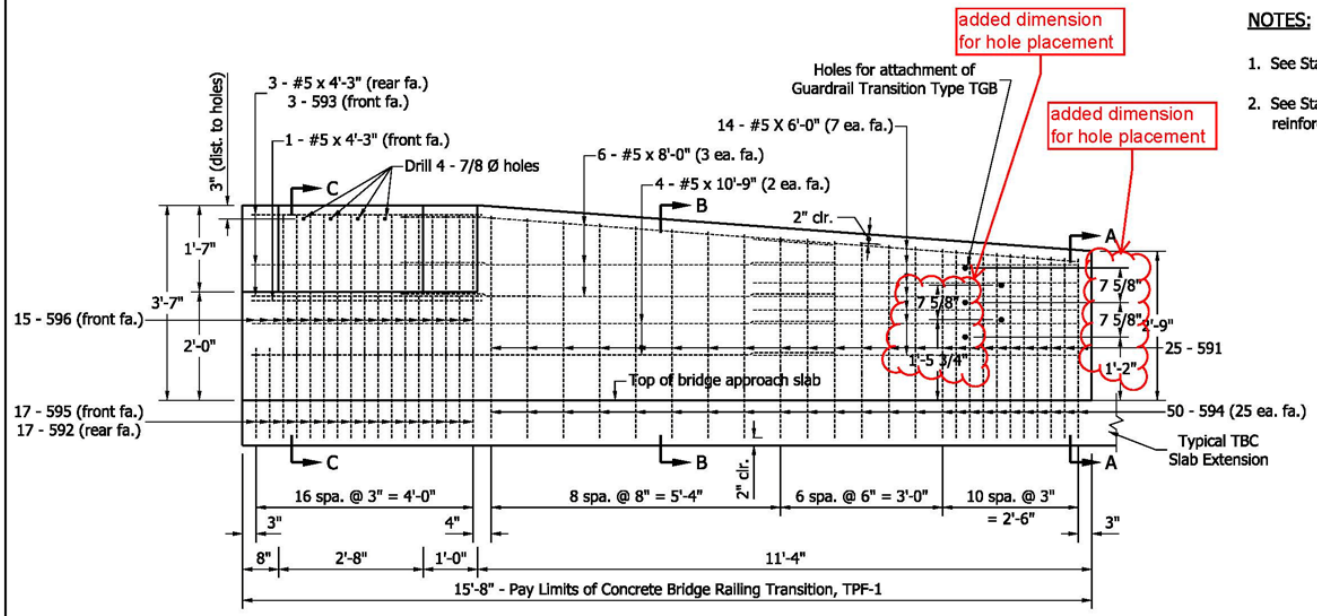
DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

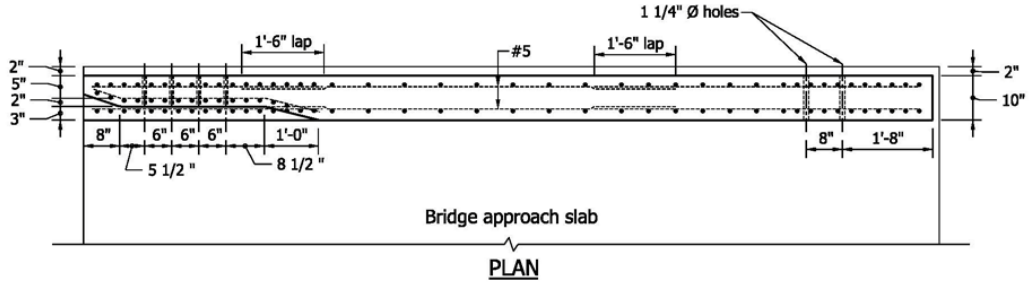
CHIEF HIGHWAY ENGINEER DATE

REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 706-TTBP-01 CONCRETE BRIDGE RAILING TRANSITION, TPF-1



ELEVATION



PLAN

NOTES:

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

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

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION, TPF-1

OCTOBER 2010

STANDARD DRAWING NO. E 706-TTBP-01

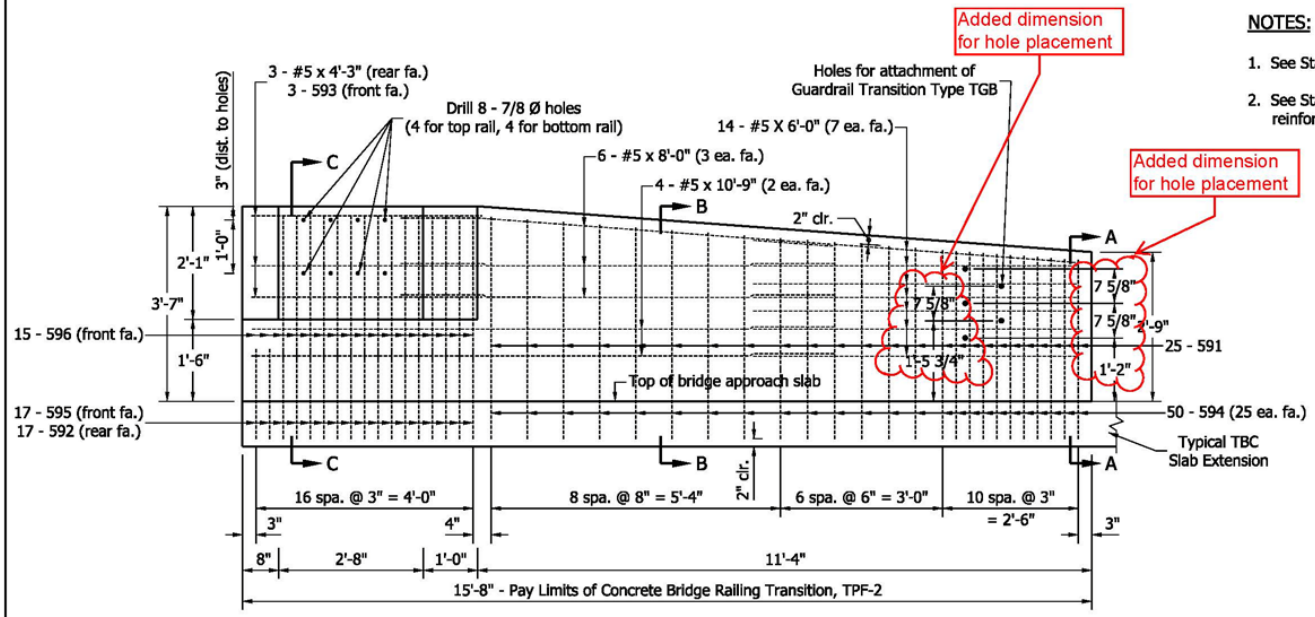
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 706-TTBP-03 CONCRETE BRIDGE RAILING TRANSITION, TPF-2



NOTES:

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

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

OCTOBER 2010

STANDARD DRAWING NO. E 706-TTBP-03

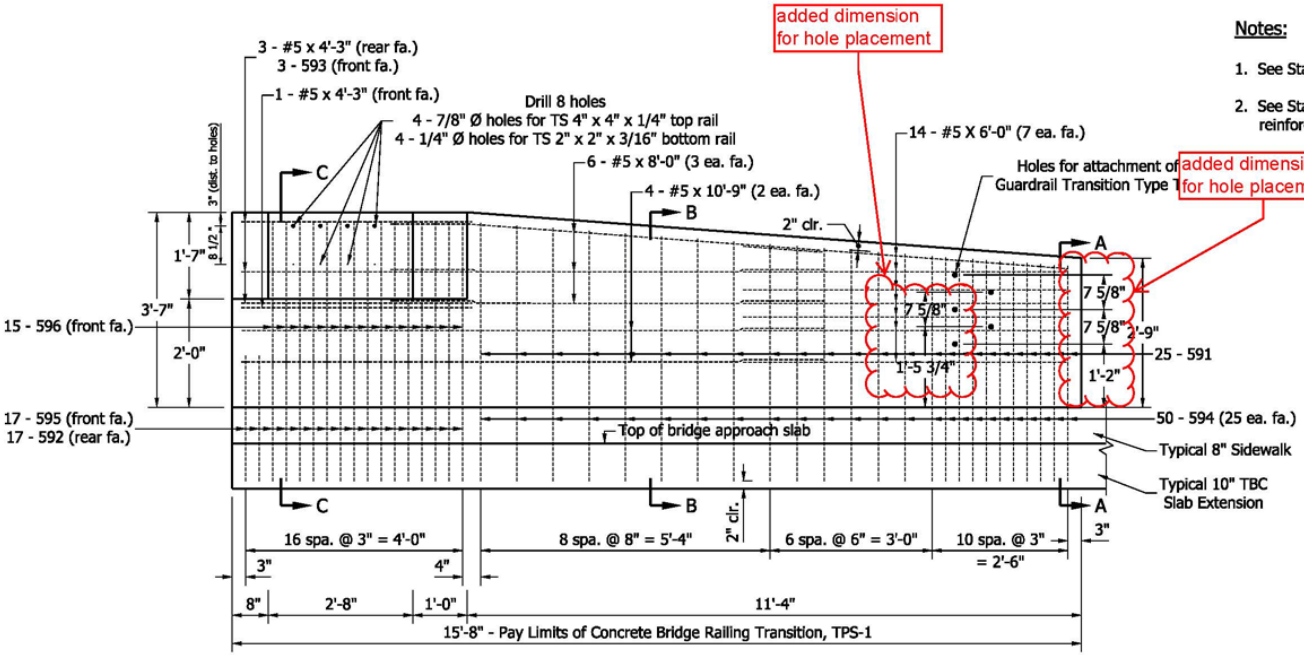
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

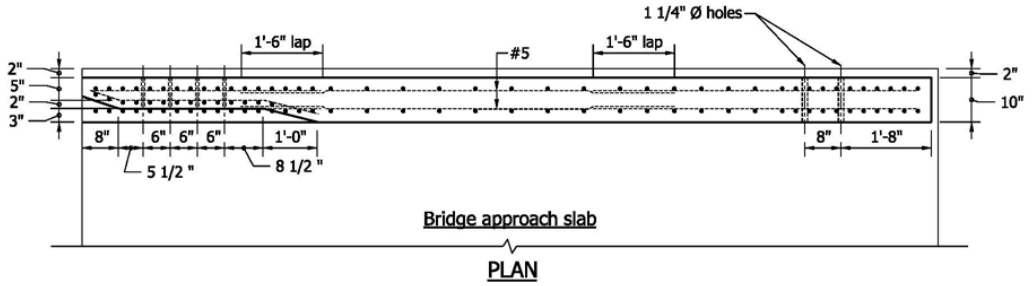
DESIGN STANDARDS ENGINEER

REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 706-TTBP-05 CONCRETE BRIDGE RAILING TRANSITION, TPS-1



ELEVATION



PLAN

Notes:

1. See Standard Drawing E 706-TTBP-09 for general notes.
2. See Standard Drawing E 706-TTBP-06 for sections and reinforcing-bar diagrams.

Drawing E 706-TTBP-01 for holes placement connection for attachment.

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

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING TRANSITION, TPS-1

OCTOBER 2010

STANDARD DRAWING NO. E 706-TTBP-05

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

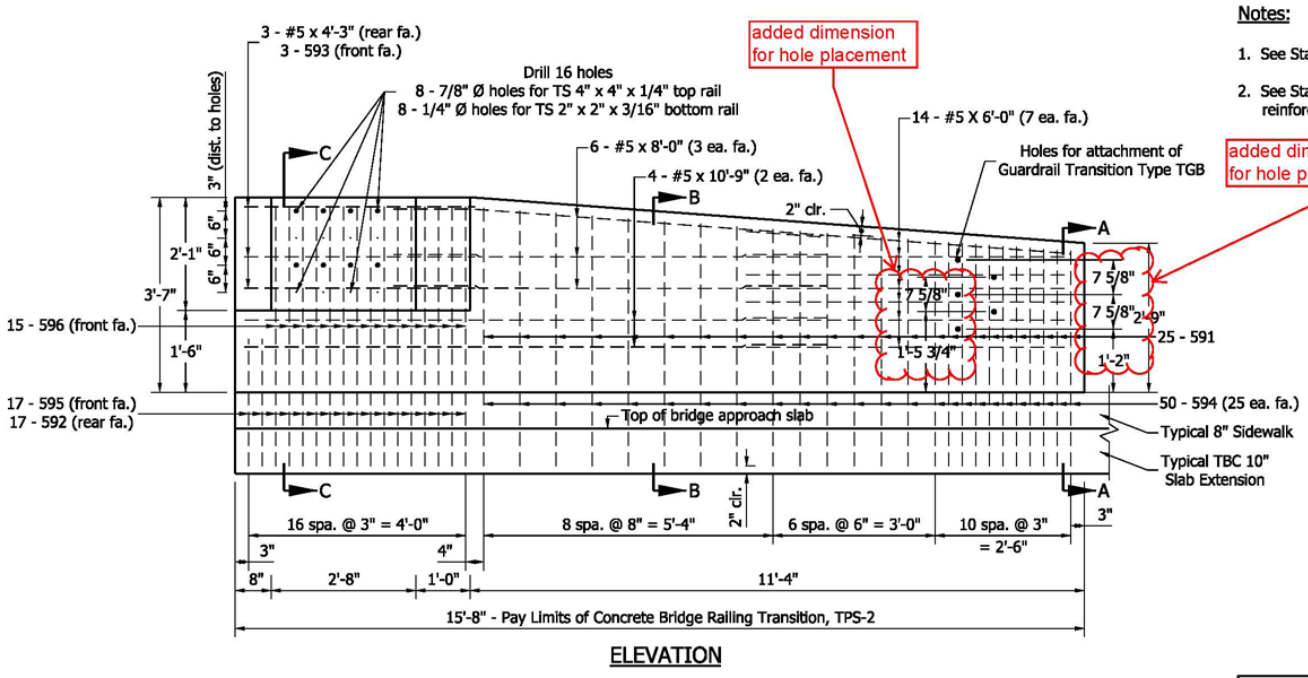
DESIGN STANDARDS ENGINEER

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

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

REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 706-TTBP-07 CONCRETE BRIDGE RAILING TRANSITION, TPS-2



Notes:

1. See Standard Drawing E 706-TTBP-09 for general notes.
2. See Standard Drawing E 706-TTBP-08 for sections and reinforcing-bar diagrams.

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

OCTOBER 2010

STANDARD DRAWING NO. E 706-TTBP-07

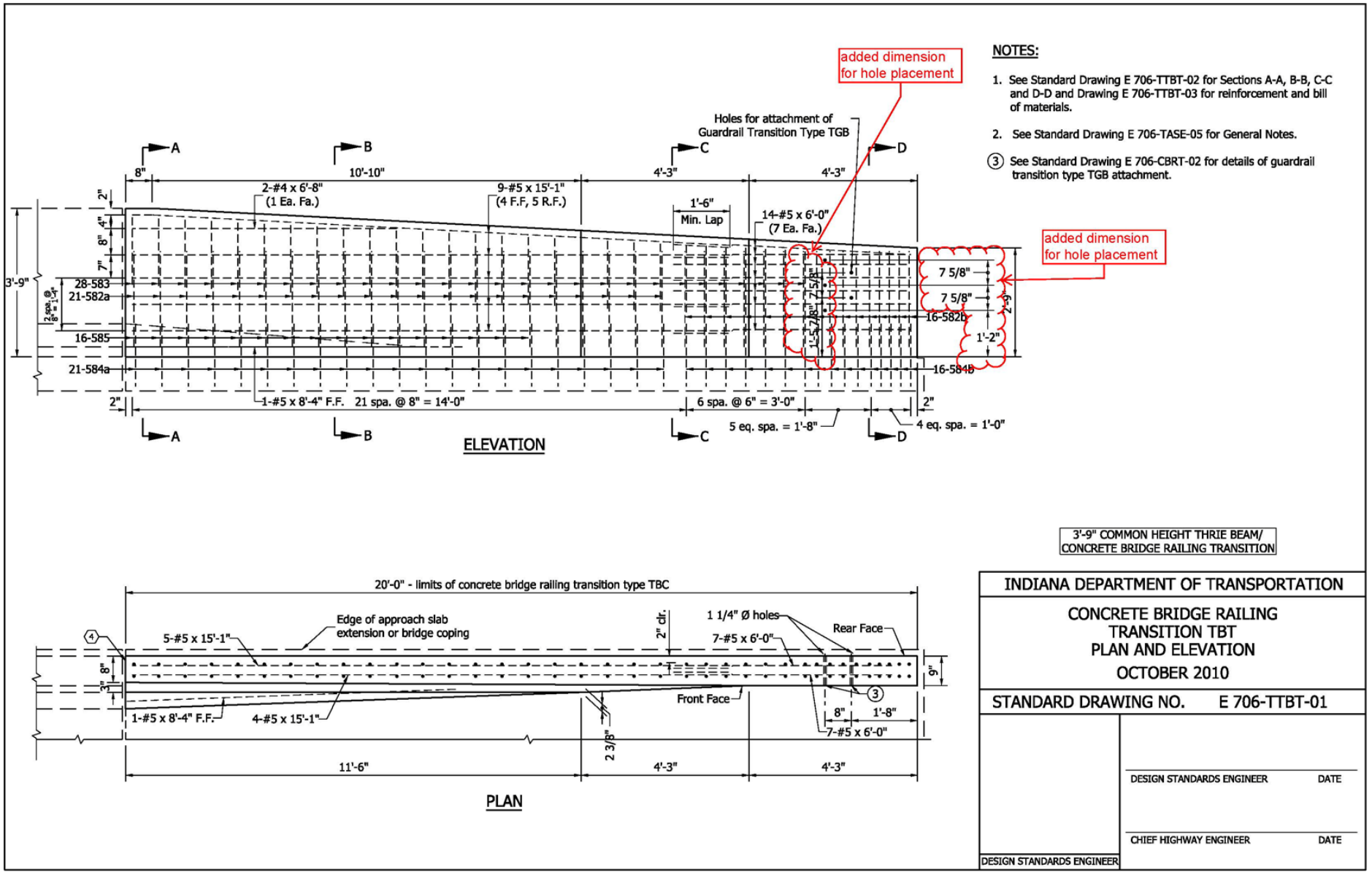
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 706-TTBT-01 CONCRETE BRIDGE RAILING TRANSITION TYPE TBT

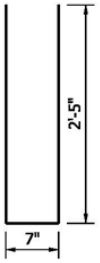


REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

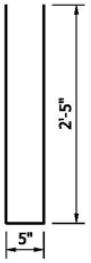
REVISION TO 706-TTBT-03 CONCRETE BRIDGE RAILING TRANSITION, TBT

NOTE:

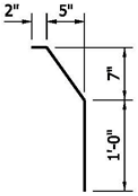
1. See Standard Drawing E 706-TASE-05 for General Notes.



582b x 5'-5"



582b x 5'-3"

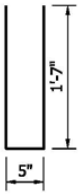


585 x 2'-0"

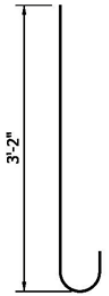
changed bill of materials

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

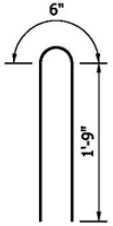
584a x 3'-9"



584b x 3'-7"



589 x 3'-9"



583 x 4'-0"

45" TRUCK HEIGHT THRIE BEAM/
CONCRETE BRIDGE RAILING TRANSITION

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING
TRANSITION TYPE TBT

OCTOBER 2010

STANDARD DRAWING NO. E 706-TTBT-03

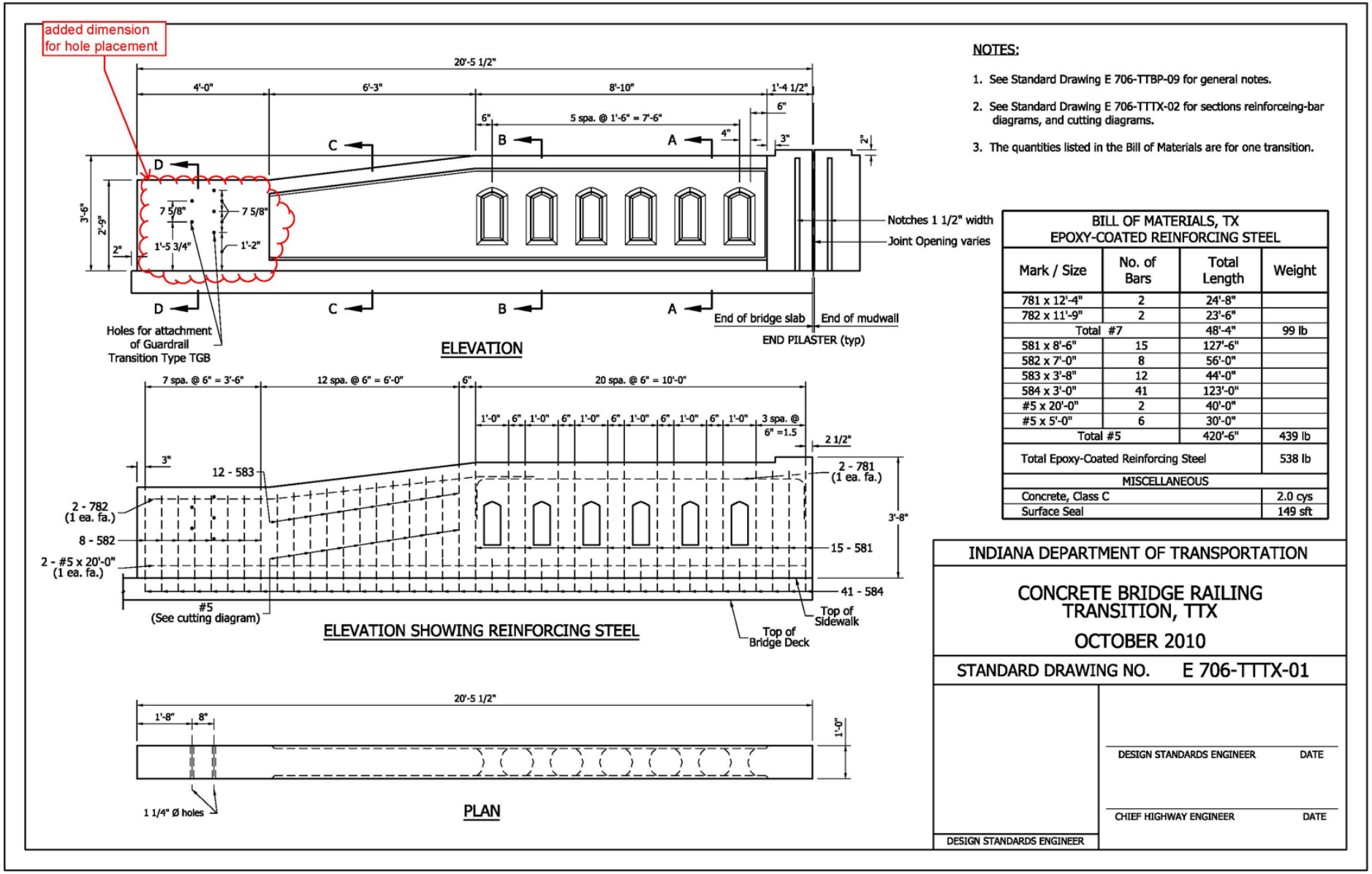
DESIGN STANDARDS ENGINEER

DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 706-TTTX-01 CONCRETE BRIDGE RAILING TRANSITION, TTX



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.

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

OCTOBER 2010

STANDARD DRAWING NO. E 706-TTTX-01

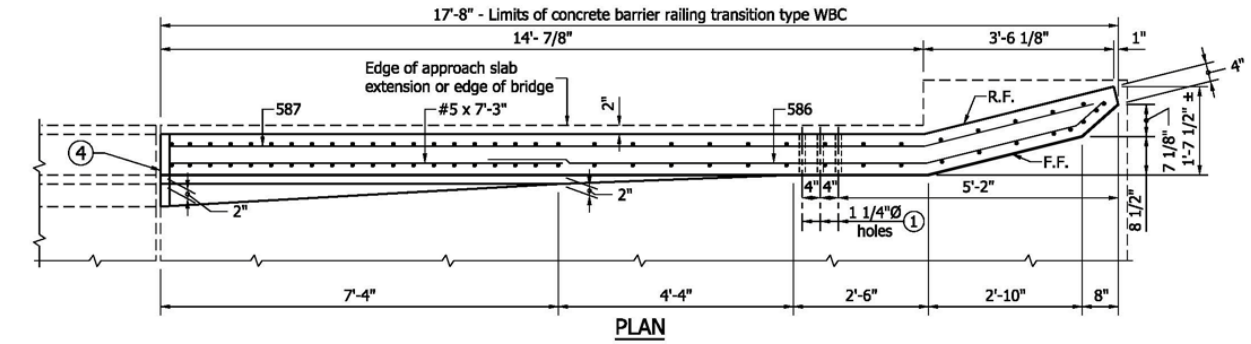
DESIGN STANDARDS ENGINEER DATE

CHIEF HIGHWAY ENGINEER DATE

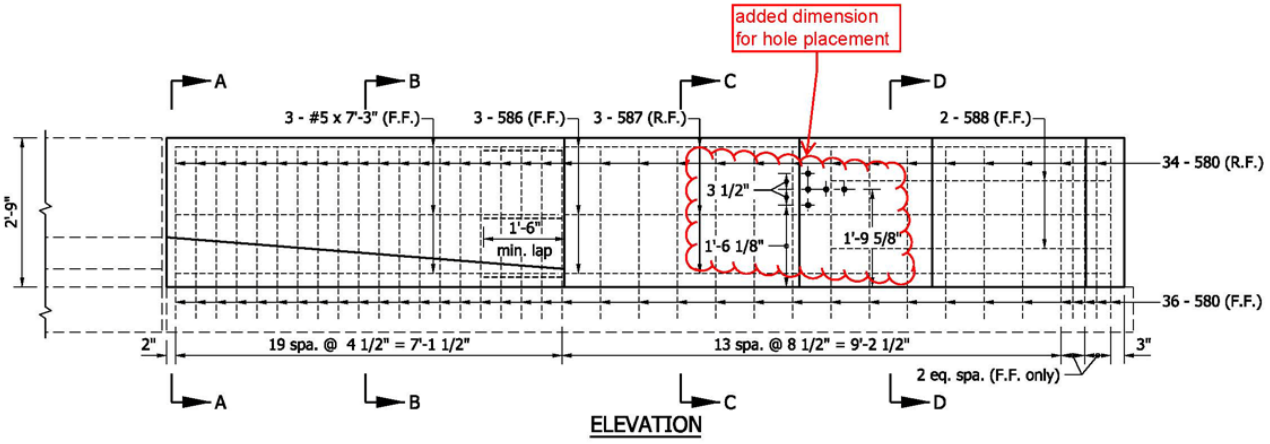
DESIGN STANDARDS ENGINEER

REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO 706-TWBC-01 CONCRETE BRIDGE RAILING TRANSITION TYPE WBC



PLAN



ELEVATION

NOTES:

1. See Standard Drawing E 706-CBRT-03 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'-9" COMMON HEIGHT W-BEAM/
CONCRETE BRIDGE RAILING TRANSITION

INDIANA DEPARTMENT OF TRANSPORTATION

CONCRETE BRIDGE RAILING
TRANSITION TYPE WBC

OCTOBER 2010

STANDARD DRAWING NO. E 706-TWBC-01

DESIGN STANDARDS ENGINEER DATE

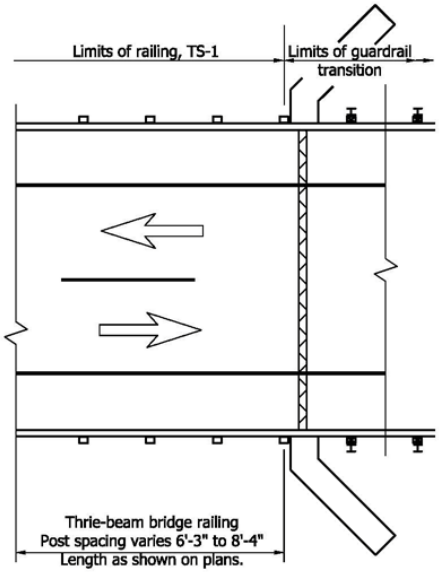
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER

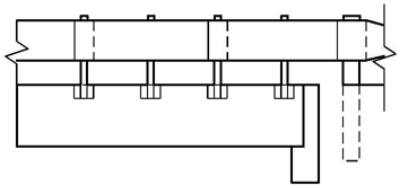
REVISION TO THE STANDARD DRAWINGS AND RECURRING PLAN DETAILS (OLD BUSINESS ITEM)

REVISION TO RECURRING PLAN DETAILS 706-B-140d BRIDGE RAILING TYPE TS-1 & GUARDRAIL TRANSITION TYPE TGS-1 (PAGE 1 OF 3)

E 706-B-140d 1 of 3



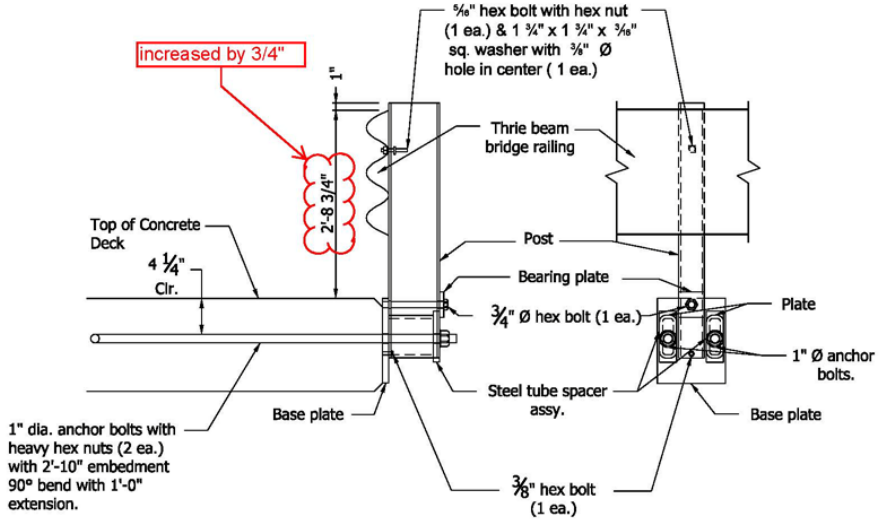
PLAN VIEW



ELEVATION VIEW

NOTE:

1.See Standard Drawings E 601-TBGC-01 and -02 for thrie beam rail section.



THRIE-BEAM BRIDGE RAILING ASSEMBLY DETAILS

INDIANA DEPARTMENT OF TRANSPORTATION

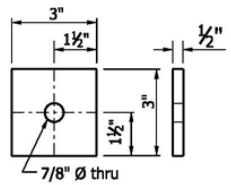
RAILING, TS-1

7-25-05

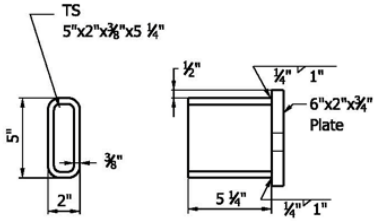
E 706-B-140d 2 of 3

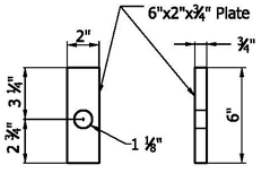
NOTE:

① Post length may vary. If the 1" Ø anchor bolts in the deck must be lowered to accommodate the deck reinforcing steel, the steel base plate shall be lowered and the post length increased.

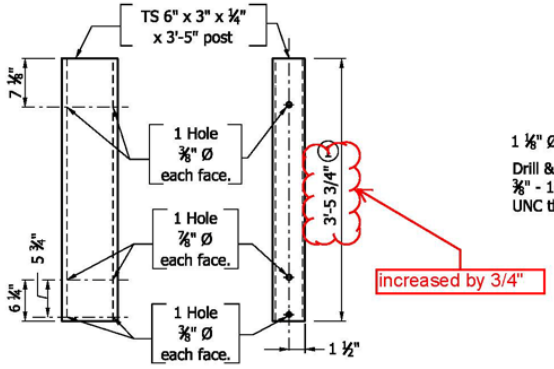


BEARING PLATE



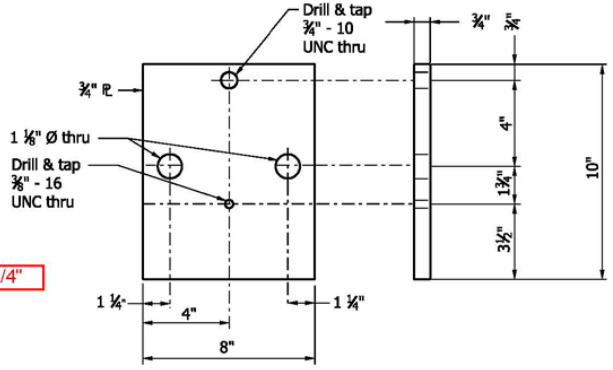


STEEL TUBE SPACER ASSEMBLY



SECTION REAR VIEW

BRIDGE STEEL POST DETAIL



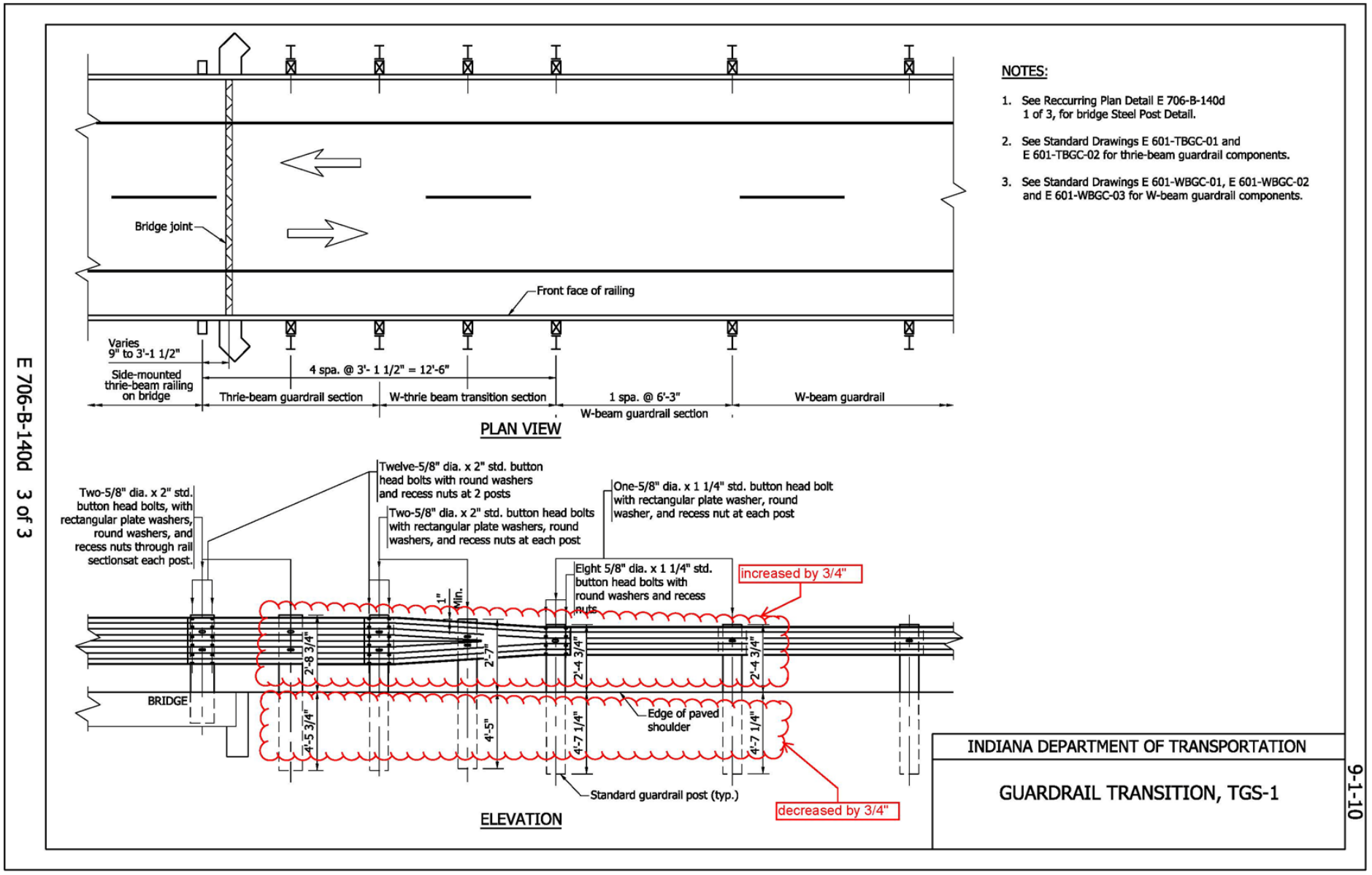
BASE PLATE

INDIANA DEPARTMENT OF TRANSPORTATION

RAILING, TS-1

7-25-05

REVISION TO RECURRING PLAN DETAILS 706-B-140d BRIDGE RAILING TYPE TS-1 & GUARDRAIL TRANSITION TYPE TGS-1 (PAGE 3 OF 3)



COMMENTS AND ACTION (OLD BUSINESS ITEM)

STANDARD DRAWINGS AS LISTED IN PROPOSAL SHEET
RPD 706-B-140d BRIDGE RAILING TYPE TS-1 & GUARDRAIL TRANSITION TYPE TGS-1
(3 SHEETS)

DISCUSSIONS: Presented and explained by Mr. Shah. The corrections and revisions to these drawings were incorporated in accordance with the comments made from the September Standards Committee meeting. Most of the revisions were simply editorial changes to correct dimensions to 27 ¾ inches. (max is 28 inches). This will be for new projects, 100% new construction. Standard drawings will show 27 ¾ in.

After much discussion, Mr. Miller suggested the need for a design memo addressing these changes.

Mr. Caplinger inquired as to the effective date for this change. Mr. Miller suggested making it effective with the next standard drawings. The drawings need to be ready for the September 2011 lettings so they will be posted by March 2011, per Mr. Uremovich. Mr. Shah said that he will distribute the guidelines.

Motion: Mr. Shah Second: Mr. Cales Ayes: 8 Nays: 0	Action: __X__ Passed as Submitted ____ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: NONE Recurring Plan Details affected: 706-B-140d Standard Sheets affected: AS LISTED IN PROPOSAL SHEET Design Manual Sections affected: None GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ ____ Revise RSP (No.____) Effective ____Letting RSP Sunset Date: ____ Standard Drawing Effective Sept. 01, 2011 ____ 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? X

Mr. Walker
Date: 12/16/10

SPECIFICATIONS REVISIONS (OLD BUSINESS ITEM)

REVISION TO THE RECURRING SPECIAL PROVISION

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: A Recurring Special Provision for Light Weight Deflectometer (LWD) testing is needed to determine the stiffness of granular materials used for embankments and compacted aggregates. The Dynamic Cone Penetrometer is not capable of measuring the stiffness of these materials because of the restriction of penetration of the cone by the larger aggregate sizes in these materials

PROPOSED SOLUTION: Adopt a Recurring Special Provision for LWD testing that would be used for granular materials.

APPLICABLE STANDARD SPECIFICATIONS: 203.23 and 203.24

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

Submitted By: Ron Walker

Title: Manager, Office of Materials Management

Organization: INDOT

Phone Number: 317-610-7251x204

Date: December 3, 2010

APPLICABLE SUB-COMMITTEE ENDORSEMENT?INDOT/ICA Soils Technical Committee

REVISION TO THE RECURRING SPECIAL PROVISION (OLD BUSINESS ITEM)

PROPOSED RECURRING SPECIAL PROVISION *203-R-XXX LIGHT WEIGHT DEFLECTOMETER TESTING*

203-R-XXX LIGHT WEIGHT DEFLECTOMETER TESTING

(Adopted xx-xx-xx)

The Standard Specifications are revised as follows:

SECTION 203, BEGIN LINE 831, DELETE AS FOLLOWS:

203.23 Embankment Other Than Rock and Shale, With Density Control

~~Unless otherwise specified, all embankments shall be compacted to at least 95% of their maximum dry density. The moisture content shall be controlled within - 2 and +1 percentage points of optimum moisture content. Maximum density and optimum moisture content shall be determined in accordance with AASHTO T 99 using method A for soil and method C for granular materials.~~

SECTION 203, BEGIN LINE 909, INSERT AS FOLLOWS:

203.24.1 Compaction Acceptance with Light Weight Deflectometer

The compaction will be determined by testing with a Light Weight Deflectometer, LWD, in accordance with ITM 508. The moisture content shall be controlled within -3 and -1 percentage points of the optimum moisture content determined in accordance with AASHTO T 99 Method C.

The Department will establish the criteria for LWD acceptance of compaction by performing optimum moisture, maximum density, and gradation testing in accordance with AASHTO T 99 Method C, T11, and T 27 respectively, on representative samples of the material. The minimum deflection required will be determined based on a test section for each material type.

Test sections shall be constructed in the presence of a representative of the Office of Geotechnical Engineering with the available equipment of the Contractor to determine the roller type, pattern, and number of passes for the minimum required deflection. The Engineer will select an area approximately 100 ft (33 m) by 20 ft (6 m) for the test section. The subgrade shall be proofrolled in accordance with 203.26 prior to construction of the lift.

In the test section, moisture tests will be performed in accordance with ITM 506 at 2 random locations, and LWD testing will be performed at 10 random locations concurrently with density testing performed in accordance with AASHTO T 310. The locations will be determined in accordance with ITM 802. The density shall meet the requirements of 301.06. The moisture content shall be controlled within -3 and -1 percentage points of the optimum moisture content. The average deflection will be determined from the 10 LWD tests.

ACTION AND COMMENTS (OLD BUSINESS ITEM)

PROPOSED RECURRING SPECIAL PROVISION *203-R-XXX LIGHT WEIGHT DEFLECTOMETER TESTING*

DISCUSSIONS: Presented and explained by Mr. Walker, who also made the motion to approve this item. Mr. Cales seconded that motion. Mr. Walker also stated that the intent is to only use this provision on projects selected by the Office of Materials Management.

Mr. Siddiki presented explanation and clarification of testing criteria and expectations. Mr. Keefer requested clarification that the RSP does not change the criteria set forth in the standard specifications regarding moisture content (*"several" vs. -3 and -1 percentage points of optimum*). Clarifications were given by Mr. Walker and Mr. Siddiki as to the language chosen for this provision.

Mr. Miller stated that if this Special Provision is only for selective projects, if we make it a Recurring Special Provision then anyone can access it and use it. Mr. Walker suggested keeping it as a Unique Special Provision.

Mr. Miller and Mr. Walker agreed to call it a Unique Special Provision and not pass it as a RSP at this time. It was agreed that this item may be brought back for consideration in the future.

This item was withdrawn.

Motion: Mr. Walker Second: Mr. Cales Ayes: Nays:	Action: ____ Passed as Submitted ____ Passed as Revised __X__ Withdrawn
Standard Specifications Sections affected: 203.23 pg 156 Recurring Special Provision with same affected sections: 203-R-562 DYNAMIC CONE PENETROMETER TESTING FOR EMBANKMENT Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	____ 20__ Standard Specifications Book ____ 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 REVISION

REVISIONS TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Several places in the spec book contain language that provide requirements for shop drawings.

PROPOSED SOLUTION: Locate the requirements for the shop drawing submittals in the 105 section and have the other spec sections reference the 105 section.

Section 101.74 defines shop drawings as a subset of working drawings. As such, the terminology throughout the spec book has been changed to reflect this. While all applicable standard specification sections and recurring special provision sections are listed below, only the sections that had more than editorial changes have been provided with this agenda item.

APPLICABLE STANDARD SPECIFICATIONS: 101.74, 105.02, 206.09, 206.11(b), 601.07, 601.08, 701.04(a)1, 702.13(e)2, 702.14, 711.02, 711.05, 711.08, 711.23, 711.44(b), 711.60, 711.73(b), 714.04(c), 723.04(c), 723.05, 724.02, 724.02(b), 724.03, 801.10.1, 802.04, 802.07(b)2, 803.01, 805.04, 807.03, 807.17, 906.07, 906.07(b), 920.01(a)1, 920.01(b)7, 920.01(g), 922.05(a), 922.05(c)9

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: Section 29

APPLICABLE RECURRING SPECIAL PROVISIONS: 108-C-215, 627-R-546, 703-C-138, 707-B-085, 717-R-152, 724-B-145, 732-R-310, 805-T-169; 807-T-087, 920-T-162, 922-T-168

PAY ITEMS AFFECTED: None

Submitted By: Greg Pankow

Title: State Construction Engineer

Organization: INDOT

Phone Number: 2-5502

Date: November 19, 2010

APPLICABLE SUB-COMMITTEE ENDORSEMENT: ACEC, ICA, and INDOT Bridge Design & Highway Design were provided an opportunity to review & comment.

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

SECTION 101 – DEFINITIONS AND TERMS
101.74 WORKING DRAWINGS
SECTION 105 – CONTROL OF WORK
105.02 PLANS AND WORKING DRAWINGS

The Standard Specifications are revised as follows:

SECTION 101, BEGIN LINE 509, INSERT AS FOLLOWS:

101.74 Working Drawings

S*upplementary bridge plans,* stress sheets, shop drawings, erection plans, falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcement, or any other supplementary plans*, detailed drawings, design drawings*, or similar data which the Contractor is required to submit for approval.

SECTION 105, BEGIN LINE 18, DELETE AND INSERT AS FOLLOWS:

105.02 Plans and Working Drawings

Road plans ~~shall~~*will* show in detail structures of up to and including 20 ft (6.1 m) spans, lines, grades, typical cross sections of the improvement, and general cross sections. They may also show general features of bridges. *Bridge plans will show general plans and details of bridges.*

~~Bridge plans will show general plans and details of bridges. Supplementary bridge plans, shop details, erection and w~~*W*orking drawings *as defined in 101.74*~~, falsework and centering plans, cofferdam plans, or other detailed drawings as may be required and as in accordance with 711.05,~~ shall be furnished. ~~The approval of such drawings will relate only to the requirements for strength and detail. Such approval will not relieve the Contractor from responsibility for errors, adequacy or safety of falsework, cofferdams, or other temporary work.~~

Working drawings required for approval for construction purposes shall be submitted as soon as practical after contract award in a format acceptable to the Department. Working drawings will be reviewed for design features only. The Contractor shall be responsible for dimensions, accuracy, and fit of work. Welding symbols used on working drawings shall be those shown in AWS A2.4, Standard Symbols for Welding, Brazing, and Nondestructive examination.

Design calculations required for approval for construction purposes shall be submitted as soon as practical after contract award in a format acceptable to the Department. When requested by the Department, a longhand example of the design methodology shall be furnished to the Department if the design calculations are in a computer-printout format.

Working drawings and design calculations shall be signed by and shall bear the seal of a professional engineer as defined in 101.37. All working drawings and design calculations shall include the contract number, contractor's name, and contact person.

Working drawings are required for patented devices that are on a Department-developed approved list and are commercially available products. The drawings shall be signed by and shall bear the seal of a licensed professional engineer. However, the professional engineer signing and stamping these drawings may be licensed in any state. Manufacturer's installation

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

SECTION 101 – DEFINITIONS AND TERMS
101.74 WORKING DRAWINGS
SECTION 105 – CONTROL OF WORK
105.02 PLANS AND WORKING DRAWINGS

manuals shall be provided with the working drawings and will remain the property of the Department.

The working drawings and design calculations will be returned either approved or showing changes or corrections required within 14 calendar days of receipt. If required to be changed or corrected, the drawings shall be resubmitted until they receive approval. The Department is entitled to an additional 7 calendar days to review resubmittals. Time extensions will not be considered for delays incurred by the Contractor waiting for working drawing or design calculation approval within the 14 or 7 calendar day review periods.

Fabrication or construction shall not start on ~~a phase~~ an item of work before the submitted working drawings for that ~~phase~~ item of work are approved. No deviations will be permitted from the approved working drawings without written consent. Authorized alterations will be endorsed on approved plans or shown on supplementary sheets. All work done *on that item* or material ordered prior to the approval of such plans and drawings shall be at the risk of the Contractor. *Working-drawing approval shall not release the Contractor from the responsibility for errors, adequacy or safety of falsework, cofferdams, or other temporary work or risk in connection with the work. Upon completion of the shop fabrication and before the contract is completed, a copy of approved working drawings with all as-built modifications shall be furnished in a format acceptable to the Department.*

~~Plans required for approval and for construction purposes shall be submitted as soon as practicable after contract award, and shall be drawn on vellum or similar material suitable for reproducing copies of working drawings by the white print process. No direct payment will be made for such tracings. When detailed plans for falsework, cofferdams, or other detailed drawings are submitted for approval, they shall be signed by and bear the seal of a registered professional engineer.~~

No direct payment will be made for development, furnishing, or resubmitting working drawings, or for providing longhand or computer-generated design calculations.

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

SECTION 206 – STRUCTURE EXCAVATION
206.09 COFFERDAMS AND TEMPORARY CONSTRUCTION DIKES

SECTION 206, BEGIN LINE 186, DELETE AND INSERT AS FOLLOWS:

206.09 Cofferdams and Temporary Construction Dikes

~~Cofferdam~~*Working* drawings shall be submitted in accordance with 105.02. They shall show the proposed method of cofferdam construction and other details left open to choice or not fully shown on the plans. ~~Cofferdam construction shall not start before these submitted drawings are approved. Such approval shall be only for insuring the Department against inadequate and insufficient cofferdams and shall not release the Contractor from any risk or responsibility in connection with this part of the work.~~

~~Drawings of~~*Working drawings for* dikes to be used in lieu of cofferdams or to be used for access to the work shall be submitted *in accordance with 105.02*, if such dikes are to be constructed within the waterway. Approval of such drawings ~~will not relieve responsibilities as set out elsewhere in the contract documents and~~ will only be given if the probability of stream pollution and stream flow restriction is minimal.

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

SECTION 601 – INCIDENTAL CONSTRUCTION
601.07 GUARDRAIL END TREATMENTS
601.08 IMPACT ATTENUATORS

SECTION 601, BEGIN LINE 154, DELETE AND INSERT AS FOLLOWS:

The Contractor shall provide the Department with original copies of all necessary current manufacturer's installation manuals and ~~shop~~*working* drawings *in accordance with 105.02.* ~~prior to beginning installation work. Shop drawings shall be a minimum of 22 by 34 in. (550 by 850 mm) in size. No installation work shall begin prior to the Department's receipt of such manuals and drawings. Such manuals and drawings will remain the property of the Department. If there is a discrepancy between the shop drawings and the plans, the shop drawings shall govern.~~

SECTION 601, BEGIN LINE 189, DELETE AND INSERT AS FOLLOWS:

The Contractor shall provide the Department with original copies of all necessary current manufacturer's installation manuals and ~~shop~~*working* drawings *in accordance with 105.02.* ~~prior to beginning installation work. Shop drawings shall be a minimum of 22 by 34 in. (55 by 850 mm) in size. No installation work shall begin prior to the Department's receipt of such manuals and drawings. Such manuals and drawings will remain the property of the Department. If there is a discrepancy between the shop drawings and the plans, the shop drawings shall govern.~~

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

SECTION 702 – STRUCTURAL CONCRETE
702.14 FALSEWORK AND CENTERING
SECTION 711 – STEEL STRUCTURES
711.05 SHOP DRAWINGS
711.23 REAMED OR DRILLED HOLES
711.60 FIELD ASSEMBLY OF STEEL
711.73(b) UNIT WEIGHT BASIS
SECTION 724 – STRUCTURAL EXPANSION JOINTS
724.02 MATERIALS
724.03 GENERAL REQUIREMENTS

SECTION 702, BEGIN LINE 798, DELETE AND INSERT AS FOLLOWS:

702.14 Falsework and Centering

Detailed ~~plans~~*working drawings* for falsework and arch centering ~~signed by and bearing the seal of a registered professional engineer~~ shall be submitted *in accordance with 105.02*. ~~These plans shall be in such form that they may be readily reproduced by white printing or some similar process. They shall be approved before falsework and centering is started. Responsibility will not be relieved by the use of these plans.~~ Since the quality of the lumber is not known and because of the uncertainty of computing nailed joints, no responsibility will be assumed *by the Department* for the strength of falsework and centering.

~~The~~*Working drawings for* falsework ~~drawings~~ shall include details for support of interior bent caps, hammerhead piers, and the portion of the bridge floor and coping beyond ~~facia~~*fascia* girders or beams if the overhang is 18 in. (460 mm), or more, or if a finishing machine, concrete spreader, or other equipment is to be supported by the overhang.

SECTION 711, BEGIN LINE 89, DELETE AND INSERT AS FOLLOWS:

711.05 ~~Shop~~*Working* Drawings

~~Five sets of detailed shop~~*Working* drawings shall be submitted ~~for approval~~*in accordance with 105.02*. ~~Fabrication shall not begin until the shop drawings are approved. These shop drawings will be reviewed for design features only. The Contractor shall be responsible for dimensions, accuracy, and fit of work. One set will be returned either approved or showing changes or corrections required. If required to be changed or corrected, copies shall be resubmitted until they receive approval. No deviations will be allowed from the approved working drawings without written consent.~~

~~Shop~~*Working* drawings shall include a detailed bill of materials showing weights of materials completed in accordance with 711.73(b) ~~when~~*if* payment is on a unit weight basis. ~~On completion of the shop fabrication and before the contract is completed, the tracings of all approved shop drawings shall be furnished. The tracings shall be linen cloth or a suitable reproduction, subject to approval. Drawings or tracings shall be 22 in. by 34 in. (560 mm by 860 mm) in overall size.~~ *The working drawings shall indicate whether reaming is to be done in the shop or in the field. The working drawings shall indicate which splices are proposed to be eliminated.*

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

SECTION 702 – STRUCTURAL CONCRETE
702.14 FALSEWORK AND CENTERING
SECTION 711 – STEEL STRUCTURES
711.05 SHOP DRAWINGS
711.23 REAMED OR DRILLED HOLES
711.60 FIELD ASSEMBLY OF STEEL
711.73(b) UNIT WEIGHT BASIS
SECTION 724 – STRUCTURAL EXPANSION JOINTS
724.02 MATERIALS
724.03 GENERAL REQUIREMENTS

If the contract plans include detailed structural steel drawings, they may be used. ~~These detailed structural steel~~*Such* drawings ~~in the plans~~ shall be checked~~, and the~~. *The* Contractor shall provide notification in writing that ~~he~~*it* is assuming responsibility for their correctness.

SECTION 711, BEGIN LINE 331, DELETE AND INSERT AS FOLLOWS:

~~The shop drawings shall indicate whether reaming is to be done in the shop or in the field.~~ If beams or girders are shop reamed or drilled, progressive beam or girder assembly will be permitted in accordance with 711.44 unless otherwise directed.

SECTION 711, BEGIN LINE 880, DELETE AND INSERT AS FOLLOWS:

All field splices are optional, except as shown on the plans. ~~The shop drawings shall indicate which splices are to be eliminated.~~ Splice elevations have been calculated to include structural steel dead load only, with falsework removed. The tops of beam or girder splice plates shall be adjusted to the splice elevations shown on the plans before bolting field splices.

SECTION 711, BEGIN LINE 1208, DELETE AND INSERT AS FOLLOWS:

(b) Unit Weight Basis

The weight (mass) of materials will be shown in the bill of materials on the plans when ~~shop details are~~*this information is* included in such plans, or as computed from the fabricator's approved ~~shop details~~*working drawings*~~,~~ when ~~shop details are~~*this information is* not included in the plans. In either case, such weight (mass) shall include all changes ordered.

SECTION 724, BEGIN LINE 28, DELETE AND INSERT AS FOLLOWS:

The joint manufacturer shall prepare and submit ~~four sets of shop~~*working* drawings ~~showing~~*in accordance with 105.02. The working drawings shall include* details of the assembly, *installation details for where changes in the joint direction are required,* manufacturer's specifications, and joint setting data~~, for approval, prior to manufacture of the joints~~.

SECTION 724, BEGIN LINE 47, DELETE AND INSERT AS FOLLOWS:

724.03 General Requirements

~~Joint installation and the replacement of existing joints shall be in accordance with the manufacturer's recommendations, the plans, and the approved shop drawings. If there is a dispute between the plans and the approved shop drawings, the approved shop drawings shall govern. The Contractor shall submit, for approval, the manufacturer's installation instructions prior to the placement of these joints. The instructions must be approved before installation begins.~~

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

SECTION 702 – STRUCTURAL CONCRETE
702.14 FALSEWORK AND CENTERING
SECTION 711 – STEEL STRUCTURES
711.05 SHOP DRAWINGS
711.23 REAMED OR DRILLED HOLES
711.60 FIELD ASSEMBLY OF STEEL
711.73(b) UNIT WEIGHT BASIS
SECTION 724 – STRUCTURAL EXPANSION JOINTS
724.02 MATERIALS
724.03 GENERAL REQUIREMENTS

~~The installation of the joint assembly, where changes in joint direction are required, shall be in accordance with the plans and the approved shop drawings.~~ All welding shall be in accordance with 711.32. All splice welds shall develop full strength. All welds which come in contact with the seals shall be ground smooth. All metal surfaces in direct contact with the seal shall be cleaned and properly treated in accordance with the manufacturer's recommendations. Lubricants and adhesives shall be used in accordance with the joint manufacturer's recommendations. All excess lubricant and adhesive shall be removed before it has set.

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

SECTION 801 – TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE OPERATIONS
801.10.1 CONSTRUCTION ZONE ENERGY ABSORBING TERMINAL, CZ
SECTION 802 – SIGNS
802.04 SHOP DRAWINGS
SECTION 803 – WELDING ALUMINUM ALLOYS
803.01 DESCRIPTION
SECTION 805 – TRAFFIC SIGNALS
805.04 POLE INSTALLATION
SECTION 807 – HIGHWAY ILLUMINATION
807.02 MAINTENANCE OF HIGHWAY ILLUMINATION
807.03 MATERIALS
807.17 PAY ITEM AND INSTALLATION SUMMARY SHEETS

SECTION 801, BEGIN LINE 513 DELETE AND INSERT AS FOLLOWS:

The Contractor shall provide the Department with ~~original copies of~~ all necessary ~~current~~ manufacturer's installation manuals and ~~shop~~*working* drawings ~~prior to beginning installation work~~ *in accordance with 105.02*. ~~Shop drawings shall be a minimum of 22 in. x 34 in. (560 mm x 865 mm) in size. No installation work shall begin prior to the Department's receipt of such manuals and drawings. Such manuals and drawings will remain the property of the Department. If there is a discrepancy between shop drawings and the plans, the shop drawings shall govern.~~

SECTION 802, BEGIN LINE 48, DELETE AND INSERT AS FOLLOWS:

802.04 ~~Shop~~*Working* Drawings

~~Prior to fabrication, six sets of shop drawings in accordance with 711.05~~*Working drawings* shall be submitted *in accordance with 105.02* for all strain poles and structural frames, except breakaway posts. Roadway cross sections and bridge dimensions shall be checked, as applicable, in the field prior to preparation of ~~shop~~*working* drawings. ~~Notice of all discrepancies shall be provided to the Engineer so necessary design revisions can be made prior to preparation of the shop drawings.~~ If the no-load camber is not shown on the plans, the Contractor shall furnish this ~~camber in~~*information on* the ~~shop~~*working* drawings.

SECTION 803, BEGIN LINE 3, DELETE AND INSERT AS FOLLOWS:

803.01 Description

This work shall consist of welding aluminum alloys for highway structures. The welding terms used shall be in accordance with definitions included in the AWS Definitions "MD" Welding and Cutting, AWS A3.0. ~~The welding symbols to be used on shop drawings shall be those shown in the Standard Welding Symbols, AWS A2.0.~~ Special conditions shall be fully explained by *means of* added notes or details.

SECTION 805, BEGIN LINE 140, DELETE AND INSERT AS FOLLOWS:

805.04 Pole Installation

Working drawings for strain poles or cantilever structures shall be provided in accordance with 105.02. Metal poles shall be erected on concrete foundations and shall be reasonably plumb after installation of signal heads. The handhole side of the pole shall be at right angles to the direction of the mast arm or span, catenary, and tether.

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

SECTION 801 – TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE OPERATIONS
801.10.1 CONSTRUCTION ZONE ENERGY ABSORBING TERMINAL, CZ
SECTION 802 – SIGNS
802.04 SHOP DRAWINGS
SECTION 803 – WELDING ALUMINUM ALLOYS
803.01 DESCRIPTION
SECTION 805 – TRAFFIC SIGNALS
805.04 POLE INSTALLATION
SECTION 807 – HIGHWAY ILLUMINATION
807.02 MAINTENANCE OF HIGHWAY ILLUMINATION
807.03 MATERIALS
807.17 PAY ITEM AND INSTALLATION SUMMARY SHEETS

SECTION 807, BEGIN LINE 10, DELETE AND INSERT AS FOLLOWS:

~~**807.02 Maintenance of Highway Illumination**~~

~~Existing highway illumination shall be maintained on all projects unless discontinuance of the highway illumination is specifically permitted.~~

MATERIALS

807.03*2* **Materials**

Materials shall be in accordance with the following:

Casting for Handholes	922.08
Coarse Aggregate, Class D or Higher, Size No. 53	904
Concrete, Class A	702
Conduit	922.10
Highway Illumination Materials	920.01
Line Hardware	922.06(a)
Paint	909
Reinforced Concrete Pipe	907.02
Reinforcing Bars	910.01

Manufacturers' descriptive and technical literature for major items shall be submitted for approval. Where it is normal trade practice to furnish a warranty, a warranty shall be furnished on all major items such as luminaires, lamps, poles, brackets, cable-duct, wire and cable, fuse connectors, and ballasts. The effective date of the warranty shall commence on the date of final acceptance. These items shall bear the seal of approval of the UL.

All flexible conduit shall be galvanized steel, polyvinyl jacketed, and watertight.

Reinforcing bars shall be epoxy coated.

CONSTRUCTION REQUIREMENTS

Existing highway illumination shall be maintained on all projects unless discontinuance of the highway illumination is specifically permitted.

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

SECTION 801 – TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE OPERATIONS
801.10.1 CONSTRUCTION ZONE ENERGY ABSORBING TERMINAL, CZ
SECTION 802 – SIGNS
802.04 SHOP DRAWINGS
SECTION 803 – WELDING ALUMINUM ALLOYS
803.01 DESCRIPTION
SECTION 805 – TRAFFIC SIGNALS
805.04 POLE INSTALLATION
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807.02 MAINTENANCE OF HIGHWAY ILLUMINATION
807.03 MATERIALS
807.17 PAY ITEM AND INSTALLATION SUMMARY SHEETS

807.03 Working Drawings

Working drawings shall be submitted in accordance with 105.02 for lighting-standard assemblies, luminaires, ~~service points, circuit-breaker enclosures,~~ and external drive assemblies, ~~and multiple relay switches~~.

Working drawings for conventional lighting standards shall show the outside shaft diameter, height, wall thickness, arm length and rise, size, handhole details, grinding details, materials required, and complete anchor-bolt details including bolt circle-projection and hardware. If a breakaway base is required, its details shall be shown. ~~Service-point working drawings shall show the arrangement and brand name of each component.~~

When requested, sufficient design data shall be furnished with the drawings to verify that conventional lighting standards are in accordance with wind load, deflection, vibration, and breakaway requirements. All of the above shall be based on the lighting-standards details shown on the plans. After approval, the Engineer shall be advised of where changes to the Installation Summary sheets ~~must be~~ are being made because of existing roadside conditions. Where necessary, additional lighting-standard working drawings shall be submitted for approval.

If a lighting standard is designed to support a larger luminaire than that specified, such information shall be shown on the working drawings. A Type C certification from the manufacturer shall be furnished with the working drawings stating that the breakaway devices are in accordance with the breakaway criteria of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals.

Working drawings for high mast standards shall show the pole height, number of sections, the pole shaft data for each section, luminaire lowering ring assembly, handhole details, materials required, and complete anchor bolt details including bolt circle-projection and hardware.

Unless calculations are on file with the Department, the following design calculations and data shall be submitted for approval prior to the fabrication of a high-mast pole.

(a) general dimensions of all component parts;

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

SECTION 801 – TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE OPERATIONS
801.10.1 CONSTRUCTION ZONE ENERGY ABSORBING TERMINAL, CZ
SECTION 802 – SIGNS
802.04 SHOP DRAWINGS
SECTION 803 – WELDING ALUMINUM ALLOYS
803.01 DESCRIPTION
SECTION 805 – TRAFFIC SIGNALS
805.04 POLE INSTALLATION
SECTION 807 – HIGHWAY ILLUMINATION
807.02 MAINTENANCE OF HIGHWAY ILLUMINATION
807.03 MATERIALS
807.17 PAY ITEM AND INSTALLATION SUMMARY SHEETS

(b) the maximum moments, the section modulus required, and the section modulus furnished at the base of the pole, at all splices, at the connection of the ring, and at least every 20 ft (6.1 m);

(c) calculation of stresses in the base plate, connection attachment, and anchor bolts;

(d) maximum deflection at the top of the structure under the specified loading; and

(e) the dimensions and wiring diagrams of the external drive system connection to the pole in accordance with 920.01(b)7.

The working drawings shall include the dimensions and wiring diagram of the standard connections of the external drive system.

SECTION 807, BEGIN LINE 662, DELETE AND INSERT AS FOLLOWS:

807.17 Pay Item and Installation Summary Sheets

Prior to final inspection, two sets each of ~~shop drawings,~~ installation summary~~,~~ and pay item summary, *each* marked Final Record, shall be furnished for the light*ing* standards as installed. The installation summary shall show the effective mounting height, arm length, foundation elevation, pay item, type of base, and catalog number or drawing for each light standard furnished.

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

SECTION 920 – HIGHWAY ILLUMINATION MATERIALS
920.01(g) SHOP DRAWINGS

SECTION 920, BEGIN LINE 616, DELETE AND INSERT AS FOLLOWS:

(g) ~~Shop Drawings~~

~~Six sets of shop drawings shall be submitted for lighting standard assemblies, luminaires, and external drive assemblies. A copy of the transmittal shall be given to the Engineer. These items shall not be ordered or installed until shop drawings have been approved.~~

~~These drawings will be reviewed for design features only. The Contractor shall be responsible for dimensions, accuracy, and fit of work. The drawings for conventional light standards shall show the shaft outside diameter, height, wall thickness, the arm length rise, size, handhole details, grinding details, materials used, and complete anchor bolt details including bolt circle projection and hardware. When a breakaway base is required, details shall be shown.~~

~~When requested, sufficient design data shall be furnished with the drawings to verify the conventional light standards meet wind load, deflection, vibration, and breakaway requirements. All of the above shall be based upon the lighting standards as shown on the plans. After approval, the Engineer shall be advised of where changes to the Installation Summary Sheets must be made because of existing roadside conditions. Where necessary, additional light standard drawings shall be submitted for approval.~~

~~Unless calculations are on file with the Department, the following design calculations and data shall be submitted for approval prior to the fabrication of any parts of the high mast pole.~~

1. ~~general dimensions of all component parts;~~

2. ~~the maximum moments, the section modulus required, and the section modulus furnished at the base of the pole, at all splices, at the connection of the ring and at least every 20 ft (6.1 m);~~

3. ~~computation of stresses in base plate, connection attachment, and anchor bolts;~~

4. ~~maximum deflection at the top of the structure under the specified loading; and~~

5. ~~the dimensions and wiring diagrams of the external drive system connection to the pole in accordance with 920.01(b)7.~~

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

RECURRING SPECIAL PROVISION 627-R-546 CABLE BARRIER SYSTEM

Note: Only affected sections of the Recurring Special Provision are shown.
Currently active RSP 627-R-546 *(Revised 04-08-09).*

RSP 627-R-546, BEGIN LINE 20, DELETE AND INSERT AS FOLLOWS:

The Contractor shall provide the following to the Engineer a minimum of 14 days prior to installation of the system:

(a) A copy of the FHWA acceptance letter for the cable barrier system.

(b) Two copies of the manufacturer's product brochure, specifications and installation and maintenance manuals.

(c) ~~Four copies of~~ Working drawings for erection in accordance with 105.02 ~~clearly~~ depicting installation details, including safety terminals, terminal transitions, intermediate line posts and cables.

(d) ~~A copy of the~~ ~~design~~Working drawings and design calculations in accordance with 105.02 for safety terminal and intermediate line post foundations for the soil conditions on the project. ~~Design~~Working drawings and ~~calculations~~design calculations shall be stamped by a professional engineer.

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

RECURRING SPECIAL PROVISION 707-B-085 ALTERNATE PRESTRESSED PRECAST CONCRETE I-BEAM TO STANDARD AASHTO TYPE IV PRESTRESSED PRECAST CONCRETE I-BEAM

Note: Only affected sections of the Recurring Special Provision are shown.
Currently active RSP 707-B-085 *(Revised 09-01-05).*

RSP 707-B-085, BEGIN SECTION (a), DELETE AND INSERT AS FOLLOWS:

(a) Design ~~Computations~~Calculations and ~~Shop~~*Working* Drawing Submissions

The Contractor shall submit ~~one set of~~ design ~~computations~~*calculations* and ~~four sets of~~ detailed ~~shop~~*working* drawings of the Illinois 54 inch I-beam *in accordance with 105.02* for approval. The alternate beams shall not be fabricated until design ~~computations~~*calculations* and ~~shop~~*working* drawings are approved. The design and details of the end region reinforcement shall be as required to resist the bursting stresses. ~~Shop~~*Working* drawings shall show revised plan dimensions for the location of the 1 in. (25 mm) diameter holes through the beams and the 3/4 in. (19 mm) diameter inserts in the interior face of the exterior beams at the diaphragm locations on skewed structures.

One set of design ~~computations~~*calculations* and four sets of detailed ~~shop~~*working* drawings of the elastomeric bearing pads shall be submitted for approval. The elastomeric bearing pads shall not be fabricated until the design ~~computations~~*calculations* and ~~shop~~*working* drawings are approved.

Design ~~computations~~*calculations* for the Illinois 54 inch I-beam and the elastomeric bearing pads, and the ~~computations~~*calculations* for the screed elevations, the adjusted bridge seat elevations, and related substructure elevations shall be prepared by an approved consulting engineering firm and checked by another approved consulting engineering firm prior to submission for approval. All ~~computation~~*calculation* sheets shall be signed, sealed, and dated by a professional engineer registered in the State. These signatures, seals, and dates shall be required for both the design and the checking of the design.

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

RECURRING SPECIAL PROVISION 724-B-145 EXPANSION JOINT SEALING SYSTEM

Note: Only affected sections of the Recurring Special Provision are shown.
Currently active RSP 724-B-145 *(Revised 07-14-06).*

RSP 724-B-145, BEGIN "CONSTRUCTION REQUIREMENTS", DELETE AND INSERT AS FOLLOWS:

Construction Requirements

The location and general appearance of the installed joint shall be as shown on the plans. Additional details shall be in accordance with the manufacturer's drawings. ~~D~~*Working d*rawings, specifications, and other details *in accordance with 105.02* shall be provided to the Engineer prior to commencing joint installation. A qualified representative of the sealant and polymer mortar manufacturer shall be present at the beginning of the work to ensure adequate workmanship and inspection of the sealing operation.

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

RECURRING SPECIAL PROVISION 732-R-310 MODULAR CONCRETE BLOCK RETAINING WALL

Note: Only affected paragraphs of the Recurring Special Provision are shown.
Currently active RSP 732-R-310 *(Revised 06-17-10).*

RSP 732-R-310, BEGIN LINE 110, DELETE AND INSERT AS FOLLOWS:

732.04 Submittals

The Contractor shall submit ~~one copy of the design computations for approval. An analysis of settlement, sliding, bearing capacity and overall slope stability shall be included with the design computations. If the computations are computer generated, one sample set of hand calculations, for one wall location, shall also be submitted. The Contractor shall submit eight sets of design drawings for approval after the design computations are approved and before beginning wall construction operations. Design computations and design drawings shall be signed and sealed by a professional engineer.~~working drawings and design calculations in accordance with 105.02. Wall construction operations shall not begin until the Contractor receives written notice that the working drawings are approved.

~~RSP 732-R-310, BEGIN LINE 166, DELETE AND INSERT AS FOLLOWS:~~

~~*Design calculations and shopworking drawings shall be submitted to the Engineer for review and approvalin accordance with 105.02.*~~

RSP 732-R-310, BEGIN LINE 361, DELETE AND INSERT AS FOLLOWS:

~~*Where excavation for the wall is adjacent to a traveled way, t*~~*The method for shoring, sheeting, or bracing the excavation opening shall be shown on the working drawings and shall be submitted and will be approved before beginning the excavation.~~ ~~*The Contractor shall submit 5 copies of drawings in accordance with 206.09 showing details of the proposed method of excavation protection.*~~

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

RECURRING SPECIAL PROVISION 922-T-168 TRAFFIC SIGNAL MATERIALS AND EQUIPMENT

Note: Only affected paragraphs of the Recurring Special Provision are shown.
Currently active RSP 922-T-168 *(Adopted 05-05-08).*

RSP 922-T-168, BEGIN LINE 1430, DELETE AND INSERT AS FOLLOWS:

j. ~~Shop~~Working Drawings

~~Five sets of shop~~Working drawings and ~~a set of~~ design calculations shall be submitted ~~to the Design Division for approval~~in accordance with 105.02.~~ A copy of the transmittal letter shall be sent to the Engineer. The approved drawings will be distributed by the Design Division.~~

COMMENTS AND ACTION

101.74; 105.02; 206.09; 601.07; 601.08; 702.14; 711.05; 711.23; 711.60; 711.73(b); 724.02; 724.03; 801.10.1; 802.04; 803.01; 805.04; 807.02; 807.03; 807.17; 920.01(g).
RECURRING SPECIAL PROVISIONS: 627-R-546; 707-B-085; 724-B-145; 732-R-310; 922-T-168.

DISCUSSIONS: Presented and explained by Mr. Pankow. The intent is to get all references to shop drawings, plans, sheets and working drawings to be in accordance with 101.74. Revisions to this proposal were handed out and explained by Mr. Reilman. The revisions are the result of comments already received concerning the proposed changes.

Those changes are reflected in the preceding pages of this agenda, and are shown highlighted in yellow.

Mr. Keefer addressed the reference to 14 calendar days shown on page 54. Mr. Reilman explained that is was based on industry standard and was approved by Ms. Rearick and Mr. Wright previously. All involved in the discussion concurred.

An editorial changes were done after the meeting and are shown as highlighted in gray.

Motion: Mr. Pankow Second: Mr. Boruff Ayes: 8 Nays: 0	Action: ____ Passed as Submitted __X__ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: 101.74, 105.02, 206.09, 206.11(b), 601.07, 601.08, 701.04(a)1, 702.13(e)2, 702.14, 711.02, 711.05, 711.08, 711.23, 711.44(b), 711.60, 711.73(b), 714.04(c), 723.04(c), 723.05, 724.02, 724.02(b), 724.03, 801.10.1, 802.04, 802.07(b)2, 803.01, 805.04, 807.03, 807.17, 906.07, 906.07(b), 920.01(a)1, 920.01(b)7, 920.01(g), 922.05(a), 922.05(c)9 Recurring Special Provision with same referenced sections: 108-C-215, 627-R-546, 703-C-138, 707-B-085, 717-R-152, 724-B-145, 732-R-310, 805-T-169; 807-T-087, 920-T-162, 922-T-168 Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: SECTION 29	__X__ 2012 Standard Specifications Book ____ Revise List of Pay Items ____ Create RSP (No.____) Effective ____Letting RSP Sunset Date: ____ __X__ Revise RSP (No. affected) Effective Sep. 01, 2011 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? X

Mr. Pankow
Date: 12/16/10

SPECIFICATION REVISION

REVISIONS TO THE RECURRING SPECIAL PROVISIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Concern has been raised that the current Section 207, as revised by RSP 207-R-577 does not adequately prevent placement of undesireable material within the top 24" of subgrade. As written, the defined material could be placed as close as 6" from the top of finished subgrade in fill sections. The specifications for borrow in 203.08 do not prohibit this type of material.

PROPOSED SOLUTION: Revise the specification to differentiate between cut and fill sections, and then prohibit the unsuitable material in the top 24" in fill sections. If the material is present in a cut section, this should be discovered during the geotech investigation and can be dealt with on a contract-by-contract basis to select the correct subgrade treatment type.

APPLICABLE STANDARD SPECIFICATIONS: 207

APPLICABLE STANDARD DRAWINGS: NA

APPLICABLE DESIGN MANUAL SECTION: NA

APPLICABLE SECTION OF GIFE:

APPLICABLE RECURRING SPECIAL PROVISIONS: 207-R-577

PAY ITEMS AFFECTED: NA

Submitted By: R. Heustis for M. Zaheer

Title: Project Manager

Organization: INDOT

Phone Number: 317-234-2777

Date: 11/19/10

APPLICABLE SUB-COMMITTEE ENDORSEMENT: None - Discussed with Mir Zaheer and Greg Pankow.

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

RECURRING SPECIAL PROVISION 207-R-577 SUBGRADE AND CHEMICALLY MODIFIED SOILS

Basis for Use: Required for all contracts with a 207 or 215 pay items.

207-R-577 SUBGRADE AND CHEMICALLY MODIFIED SOILS

(Adopted 04-15-10)

The Standard Specifications are revised as follows:

SECTION 207, BEGIN LINE 9, INSERT AS FOLLOWS:

207.02 Materials

Materials shall be in accordance with the following.

Chemical Modifiers
Cement By-Products *913.05*
Fly Ash.....901.02
Lime .....913.04(b)
Portland Cement, Type I .....901.01(b)

SECTION 207, BEGIN LINE 26, DELETE AS FOLLOWS:

207.03 General Requirements

The subgrade shall be constructed uniformly transversely across the width of the pavement including ~~2 ft (0.6 m) outside the edge of~~ shoulders or curbs unless shown otherwise on the plans, by one of the following methods:

SECTION 207, BEGIN LINE 43, DELETE AND INSERT AS FOLLOWS:

Soils containing greater than 3% by dry weight calcium, magnesium carbonate or organic material, or with a maximum dry density of less than 100 pcf (1600 kg/m3), or with liquid limit of greater than 50, will not be permitted within the specified thickness of the subgrade *treatment in cut sections and will not be permitted within 24 in. (600 mm) of the finished subgrade elevation in fill sections*. Density shall be determined in accordance with AASHTO T 99 and loss of ignition shall be determined in accordance with AASHTO T 267. Liquid limits shall be determined in accordance with AASHTO T 89.

SECTION 207, BEGIN LINE 82, DELETE AND INSERT AS FOLLOWS:

Type I. ~~16~~ *14* in. (~~400~~ *350* mm) chemical soil modification, 12 in. (300 mm) of the subgrade excavated and replaced with coarse aggregate No. 53, or by 24 in. (600 mm) of soil compacted to density and moisture requirements.

Type IA. ~~16~~ *14* in. (~~400~~ *350* mm) chemical soil modification or 12 in. (300 mm) of the subgrade excavated and replaced with coarse aggregate No. 53.

Type IB. 14 in. (350 mm) chemical soil modification.

Type IC. *12 in. (300 mm) of the subgrade excavated and replaced with coarse aggregate No. 53.*

Type II. 8 in. (200 mm) chemical soil modification, 6 in. (150 mm) of the subgrade excavated and replaced with coarse aggregate No. 53, or 12 in. (300 mm) of soil compacted to density and moisture requirements.

Type IIA. 8 in. (200 mm) chemical soil modification or 6 in. (150 mm) of the subgrade excavated and replaced with coarse aggregate No. 53.

SECTION 215, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 215 – CHEMICAL MODIFICATION OF SOILS

215.01 Description

This work shall consist of the modification of soils by uniformly mixing ~~dry~~ portland cement, fly ash, lime, *cement by-product* or a combination of the materials with soil to aid in achieving the workability of soils having excessive moisture content.

MATERIALS

215.02 Materials

Materials shall be in accordance with the following:

Cement By-Products.....*913.05*
Fly Ash.....901.02
Lime.....913.04(b)
Portland Cement, Type I.....901.01(b)
Water.....913.01

Soils containing greater than 6% by dry weight calcium, magnesium carbonate or organic material, or having a maximum dry density of less than 95 pcf (1520 kg/m3), or with a soluble sulfate content greater than 1000 ppm will not be permitted in the subgrade. The density shall be determined in accordance with AASHTO T 99, the loss on ignition shall be determined in accordance with AASHTO T 267, and the sulfate content shall be determined in accordance with AASHTO T 289.

CONSTRUCTION REQUIREMENTS

215.03 Testing and Mix Design

The Contractor shall be responsible for all tests required to determine the chemical modifier type and optimum chemical modifier content for modification of the soils. The modifier selection, laboratory testing, and mix design shall be performed by an approved geotechnical

consultant in accordance with the Department's Design Procedures for Soil Modification or Stabilization.

The quantities for hydrated lime, quicklime, or portland cement shall be based on 4.0 ± 0.5% by dry unit weight (mass) of the soils. The quantities for lime *and cement* by-products shall be based on 5.0 ± 1.0% by dry unit weight (mass) of the soils. The quantities for fly ash class C shall be based on 12.0 ± 2.0% by dry unit weight (mass) of the soils. Class F fly ash shall not be used except in combination with lime or cement.

If hydrated lime, quick lime, or *portland* cement are used, test results *and the geotechnical consultant* recommendations~~, and a type A certification for the chemical modifiers, except for cement,~~ shall be submitted to the Engineer prior to use. If fly ash, ~~lime~~, lime by-products, *cement by-products* or any combination of chemical modifiers are used, *the* test results~~,~~ *and the geotechnical consultant* recommendations~~, and type A certifications for the chemical modifiers~~ shall be submitted to the Engineer and to the ~~Materials and Tests Division~~ *Office of Geotechnical Engineering* for approval at least ~~five~~5 business days prior to use. *If the modifier as bid is not an appropriate chemical modifier for the soils encountered on the project, a cement by-product shall be tested if the cement by-product was not the modifier as bid by the Contractor. If the cement by-product is not appropriate, portland cement shall be used. Portland* ~~C~~cement, *fly ash, lime and cement by-products* ~~if used~~, shall be from the Department's list of approved ~~Cement~~ Sources.

The quantity of chemical modifier may be adjusted for different soil types. However, the source or type of chemical modifier shall not be changed during the progress of the work without approval. A change in source or type shall require a new mix design.

215.04 Storage and Handling

The chemical modifier shall be stored and handled in accordance with the manufacturer's recommendations.

215.05 Weather Limitations

The chemical soil modification shall be performed when the soil has a minimum temperature of 45°F (7°C), measured 4 in. (100 mm) below the surface, and with the air temperature rising. The chemical modifier shall not be mixed with frozen soils or with soil containing frost.

215.06 Preparation of Soils

The soils shall be prepared in accordance with 207.03. All aggregates which are larger than approximately 3 in. (75 mm) encountered before or after mixing the soils and chemical modifiers shall be removed.

215.07 Spreading of Chemical Modifiers

Where type A-6 or A-7 soils are used or encountered, the surface shall be scarified or disked to the specified depth prior to distribution of the chemical modifier. If a combination of modifiers is used, it shall be mixed mechanically prior to being incorporated. The chemical

modifier shall be distributed uniformly by a cyclone, screw-type, or pressure manifold type distributor. The chemical modifier shall not be applied when wind conditions create problems in adjacent areas or create a hazard to traffic on any adjacent roadway. The spreading of the chemical modifier shall be limited to an amount which can be incorporated into the soil within the same work day. If weather causes stoppage of work or exposes the chemical modifier to washing or blowing, additional chemical modifier may be spread when the work resumes.

215.08 Mixing

The chemical modifier, soil, and water when necessary, shall be thoroughly mixed by rotary speed mixers or a disc harrow. The mixing shall continue until a homogenous layer of the required thickness has been obtained. One hundred percent of the material, exclusive of rock particles, shall pass a 1 in. (25 mm) sieve and at least 60% shall pass a No. 4 (4.75 mm) sieve. The mixing depth shall be ~~16~~*14* in. (~~400~~*350* mm).

215.09 Compaction

The moisture content of the mixture shall be at the optimum moisture content or above the optimum moisture content as determined by the mix design in accordance with 215.03. Moisture content will be determined in accordance with ITM 506. Aeration or drying by further mixing, or the addition of water and further mixing, may be done to obtain the required moisture content.

Compaction of the mixture shall begin as soon as practicable after mixing. Compaction after mixing shall be as follows:

(a) For *portland* cement modified soils, mixing shall be completed within 30 min of *portland* cement placement and compaction shall be completed within 3 h after mixing.

(b) Fly ash *or cement by-product* modified soils shall be compacted within 4 h.

(c) Lime modified soils shall be compacted within 24 h.

Compactive efforts shall be in accordance with 203 or 207.03 as applicable.

~~Maximum dry densities will be determined in accordance with AASHTO T 272 at the same time and location as each in-place density test is performed when in-place densities do not meet AASHTO T 99. The field in-place dry density shall be in accordance with AASHTO T 191 or AASHTO T 310.~~

~~The moisture content of the mixture shall be between the optimum moisture and the optimum moisture plus 2.0% Aeration or drying by further mixing, or the addition of water and further mixing, may be required to obtain the optimum moisture content.~~

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

RECURRING SPECIAL PROVISION 207-R-577 SUBGRADE AND CHEMICALLY MODIFIED SOILS

Acceptance testing for compaction of chemically modified soils will be performed on the finished grade with a Dynamic Cone Penetrometer (DCP) in accordance with ASTM D 6951. A 17.6 lbm (8 kg) hammer and disposable cone tip shall be used. The chemically modified soil lift shall meet the following requirements for compaction:

(a) A minimum DCP blow count of 17 for the top 6 in. (150 mm) of a 14 in. (350 mm) lift

(b) A minimum DCP blow count of 16 for the bottom 8 in. (200 mm) of a 14 in. (350 mm) lift

(c) A minimum DCP blow count of 20 for an 8 in. (200 mm) lift

(d) A minimum of one passing test for each 1500 lft (450 m) of chemically modified soil for each two-lane pavement

Construction traffic or equipment shall not be on the treated soils within 72 h after compaction.

215. 10 Method of Measurement

The accepted quantity of chemically modified soils will be measured by the square yard (square meter), complete in place. All excavation required to modify the soils below the specified depth will be measured in accordance with 203.27(b).

215. 11 Basis of Payment

The accepted quantity of chemically modified soils will be paid for by the square yard (square meter), complete in place. All excavation required to modify the soils below the specified depth will be paid for in accordance with 203.28.

Adjustment of materials for chemical modification that exceeds the limits of 215.03 will be included in a change order for materials only and paid for as chemical modifier adjustments. If mix design test results show that ~~hydrated lime, quicklime, lime by-products, or fly ash are~~ *the chemical modifier as bid by the Contractor is* not appropriate and *the strength of the modified soil* ~~moisture-density compaction~~ can not be achieved, a price adjustment will be made for the use of *a cement by-product or portland* cement, *whichever is appropriate*. The price adjustment will be calculated at a cost equal to the difference in the invoice cost of the ~~cement~~ *chemical modifier found to be appropriate for use* and the invoice *or quoted delivered* cost of the ~~hydrated lime~~ *chemical modifier as bid by the Contractor*. This adjustment will be included in a change order and will be paid for as chemical modifier adjustments. Payment for chemical modifier adjustments will be made for direct *delivered* material costs incurred by the Contractor and shall not include any other markups.

Payment will be made under:

Pay Item	**Pay Unit Symbol**

REVISION TO THE STANDARD SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

RECURRING SPECIAL PROVISION 207-R-577 SUBGRADE AND CHEMICALLY MODIFIED SOILS

Chemical Modification, Soils..... SYS (m2)

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

SECTION 913, BEGIN LINE 33, DELETE AND INSERT AS FOLLOWS:

913.04 Lime

Lime shall be a hydrated lime when used in masonry or a hydrated lime, quicklime, or lime by-product when used for soil modification.

(a) Hydrated Lime for Masonry

Hydrated lime used in masonry shall be in accordance with ASTM C 207, Type N.

(b) Lime for Soil Modification

Hydrated lime, quicklime, or lime by-product used for soil modification shall be approved in accordance with ITM 806, Procedure P and shall meet the following requirements.

1. Hydrated Lime and Quicklime

Hydrated lime and quicklime shall be in accordance with AASHTO M 216.

2. Lime By-Products

Lime by-products shall be hydrated lime or quicklime by-products in accordance with ASTM C 25 having the following requirements.

a. The lime by-products shall contain a minimum of 60% total ~~available~~ calcium and magnesium oxides (non-volatile basis).

b. Available calcium hydroxide plus magnesium oxide calculated as calcium hydroxide shall be a minimum of 30%.

c. Sieve analysis shall be performed in accordance with ASTM C 110. The lime by-products gradation shall be as follows:

Sieve	% Retained (Max)
No. 4 (4.75 mm)	5
No. 30 (600 µm)	10
No. 100 (150 µm)	25

913.05 Cement By-Products

Cement by-products used for soil modification shall be approved in accordance with ITM 806, Procedure P and shall meet the following requirements.

(a) The cement by-product shall contain a minimum of 50% calcium oxide as reported.

(b) Available free lime (CaO) shall be a minimum of 5%.

(c) Loss on ignition shall be a maximum of 30%.

Sieve analysis shall be performed in accordance with ASTM C 110. The cement by-products gradation shall be as follows:

Sieve	*% Retained (Max)*
No.4 (4.75 mm)	*5*
No. 30 (600 μm)	*10*
No. 100 (150 μm)	*25*

COMMENTS AND ACTION

RECURRING SPECIAL PROVISION 207-R-577 SUBGRADE AND CHEMICALLY MODIFIED SOILS

DISCUSSIONS: Presented and explained by Mr. Pankow, as described in the proposal above.

Mr. Pankow made the motion to accept this proposal and Mr. Keefer seconded the motion. The motion passed, and will be effective for the April 2011 letting.

Motion: Mr. Pankow Second: Mr. Keefer Ayes: 8 Nays: 0	Action: __X__ Passed as Submitted _____ Passed as Revised _____ Withdrawn
Standard Specifications Sections affected: 207.03 pg 187. Recurring Special Provision with same referenced sections: 207-R-577 SUBGRADE AND CHEMICALLY MODIFIED SOILS Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: SECTION 7	__X__ 2012 Standard Specifications Book _____ Revise List of Pay Items _____ Create RSP (No._____) Effective _____Letting RSP Sunset Date: _____ __X__ Revise RSP (No.207-R-577) Effective April 01, 2011 Letting RSP Sunset Date: Sep. 01, 2011 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? X

SPECIFICATION REVISION

REVISIONS TO THE STANDARD SPECIFICATIONS

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: RSP 628-C-164 (supersedes 105-C-164) was approved for use in the January 15, 2009 Standards Committee meeting. At that time, Recurring Special Provision 628-R-522 was approved by the committee for inclusion into the 2010 spec book. That RSP included specifications for Field Office, Laboratory, Computers and Internet service. The recommendation for the cell phone RSP was to change it to a 600 section RSP, but was left out of the 2010 spec book.

PROPOSED SOLUTION: RSP 628-C-164 has been reformatted and edited for inclusion into the 2012 spec book. The proposal is to include the contents of RSP 628-C-164, Cellular Telephones/Radios, into the 2012 Spec Book with the proposed edits.

APPLICABLE STANDARD SPECIFICATIONS: 628.04

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: 628-C-164

PAY ITEMS AFFECTED: as shown

Submitted By: Greg Pankow

Title: State Construction Engineer

Organization: INDOT

Phone Number: 317-232-5502

Date: 11/23/2010

APPLICABLE SUB-COMMITTEE ENDORSEMENT: None

REVISION TO THE STANDARD SPECIFICATIONS

SECTION 628 - FIELD OFFICE, FIELD LABORATORY, COMPUTER SYSTEMS, AND OFFICE MACHINES
628.04 METHOD OF MEASUREMENT
628.05 BASIS OF PAYMENT

The Standard Specifications are revised as follows:

SECTION 628, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 628 – FIELD OFFICE, FIELD LABORATORY, COMPUTER SYSTEMS, ~~AND~~ OFFICE MACHINES *AND COMMUNICATIONS*

SECTION 628, AFTER LINE 421, INSERT AS FOLLOWS:

628.04 Cellular Telephones/Radios

The Contractor shall provide radio or cellular telephone/radio equipment and services, as specified below, for use by the Department on the contract.

Each radio or cellular telephone/radio unit shall be capable of 2-way radio communication with all other units provided under this contract. Each radio or cellular telephone/radio unit shall have a service coverage area that includes the ~~limits of the contract~~project limits. Each radio or cellular telephone/radio unit shall include a belt clip system, a 120v AC charger, and a 12v DC mobile charger.

All equipment shall be covered by normal manufacturer's warranties. All radio or cellular telephone/radio units and associated equipment will remain the property of the Contractor and will be returned to the Contractor upon completion of the contract.

The Contractor shall provide the following services for each radio or cellular telephone/radio unit.

(a) Radio Service

Radio service shall include the following:

1. *unlimited direct connect radio service;*
2. *no cellular telephone service.*

(b) Cellular Telephone/Radio Service

Cellular telephone/radio service shall include the following:

1. *cellular telephone anytime minutes per month as shown in the schedule of pay items;*
2. *unlimited nights and weekends service;*
3. *unlimited direct connect radio service;*
4. *voice mail and caller ID.*

REVISION TO THE STANDARD SPECIFICATIONS

SECTION 628 - FIELD OFFICE, FIELD LABORATORY, COMPUTER SYSTEMS, AND OFFICE MACHINES
628.04 METHOD OF MEASUREMENT
628.05 BASIS OF PAYMENT

The Department will be responsible for damage and/or loss of the units beyond that covered by normal manufacturer's warranties, while in use by the Department. The Contractor shall provide replacement cellular telephone/radio units, batteries, chargers, etc within one business day of notification of need for the item.

The Contractor shall not enter into any agreement with any service provider or purchase any radio or cellular telephone/radio units for use by the Department until authorized by the Engineer. The Engineer will notify the Contractor a minimum of 10 business days prior to the need for the units.

628.04*5* Method of Measurement

Field office and field laboratory will be measured by the month for the specified type. Partial months will be rounded up to the next half or whole month. The Department will provide two weeks advanced notice prior to when the facility will be vacated.

If a field laboratory is specified and is included in the same space as the field office, the field laboratory will not be measured for payment.

Additional field office computer system, mobile laptop computer system, ~~and~~ mobile internet service *and cellular telephone/radio service* will be measured by the month for each system or service provided. Partial months will be rounded up to the next 1/2 or whole month. The Department will provide 2 weeks advanced notice prior to when mobile internet service *and cellular telephone/radio service* will no longer be required.

Department will provide two weeks advanced notice prior to when mobile internet service will no longer be required.

628.05*6* Basis of Payment

Field office and field laboratory will be paid for at the contract unit price per month, complete in place until released.

Additional field office computer system, mobile laptop computer system and mobile internet service will be paid by the month for each system or service provided.

Radio and cellular telephone/radio units will be paid for at the contract unit price per each. Radio and cellular telephone/radio service will be paid for at the contract unit price per month per each phone. Monthly charges for cellular telephone minutes in excess of those specified in the contract will be paid for by the dollar amount for the invoiced price per each occurrence as cellular telephone/radio, additional charges.

Payment will be made under:

REVISION TO THE STANDARD SPECIFICATIONS

SECTION 628 - FIELD OFFICE, FIELD LABORATORY, COMPUTER SYSTEMS, AND OFFICE MACHINES
628.04 METHOD OF MEASUREMENT
628.05 BASIS OF PAYMENT

Pay Item	**Pay Unit Symbol**
Cellular Telephone/Radio Service, _____ anytime minutes	*MOS*
Cellular Telephone/Radio	*EACH*
Cellular Telephone/Radio, Additional Minutes	*DOL*
Field Laboratory, _____ type	MOS
Field Office Computer System, Additional, _____ Each qty	MOS
Field Office, _____ type	MOS
Mobile Internet Service, _____ Each qty	MOS
Mobile Laptop Computer System, _____ Each qty	MOS
Radio Only Service	*MOS*
Radio	*EACH*

SECTION 628, AFTER LINE 506, INSERT AS FOLLOWS:

The Contractor shall provide a copy of the detailed invoice from the service provider for each cellular telephone/radio or radio unit each month.

COMMENTS AND ACTION

SECTION 628 - FIELD OFFICE, FIELD LABORATORY, COMPUTER SYSTEMS, AND OFFICE MACHINES
628.04 METHOD OF MEASUREMENT
628.05 BASIS OF PAYMENT

DISCUSSIONS: Presented and explained by Mr. Pankow. This RSP had been previously approved by the committee for content, but had not yet received approval for incorporation into the Standard Specifications.

Mr. Uremovich suggested changing "*limits of the contract*" to simply say "*project limits*".

Corrected spelling to "*manufacturer's*" warranties, instead of "*manufacture's*" warranties, per Mr. Uremovich, on page 83.

Revised motion was made by Mr. Pankow, and seconded by Mr. Keefer.

Motion: Mr. Pankow Second: Mr. Keefer Ayes: 8 Nays: 0	Action: ____ Passed as Submitted _X_ Passed as Revised ____ Withdrawn
Standard Specifications Sections affected: 628 pg 441; 628.04 pg 450; 628.05 pg 451, 452. Recurring Special Provision with same referenced sections: 628-R-164 CELLULAR TELEPHONES/RADIOS (Basis For Use: As Determined necessary by District Construction) Standard Sheets affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE	_X_ 2012 Standard Specifications Book _X_ Revise List of Pay Items ____ 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? _X_