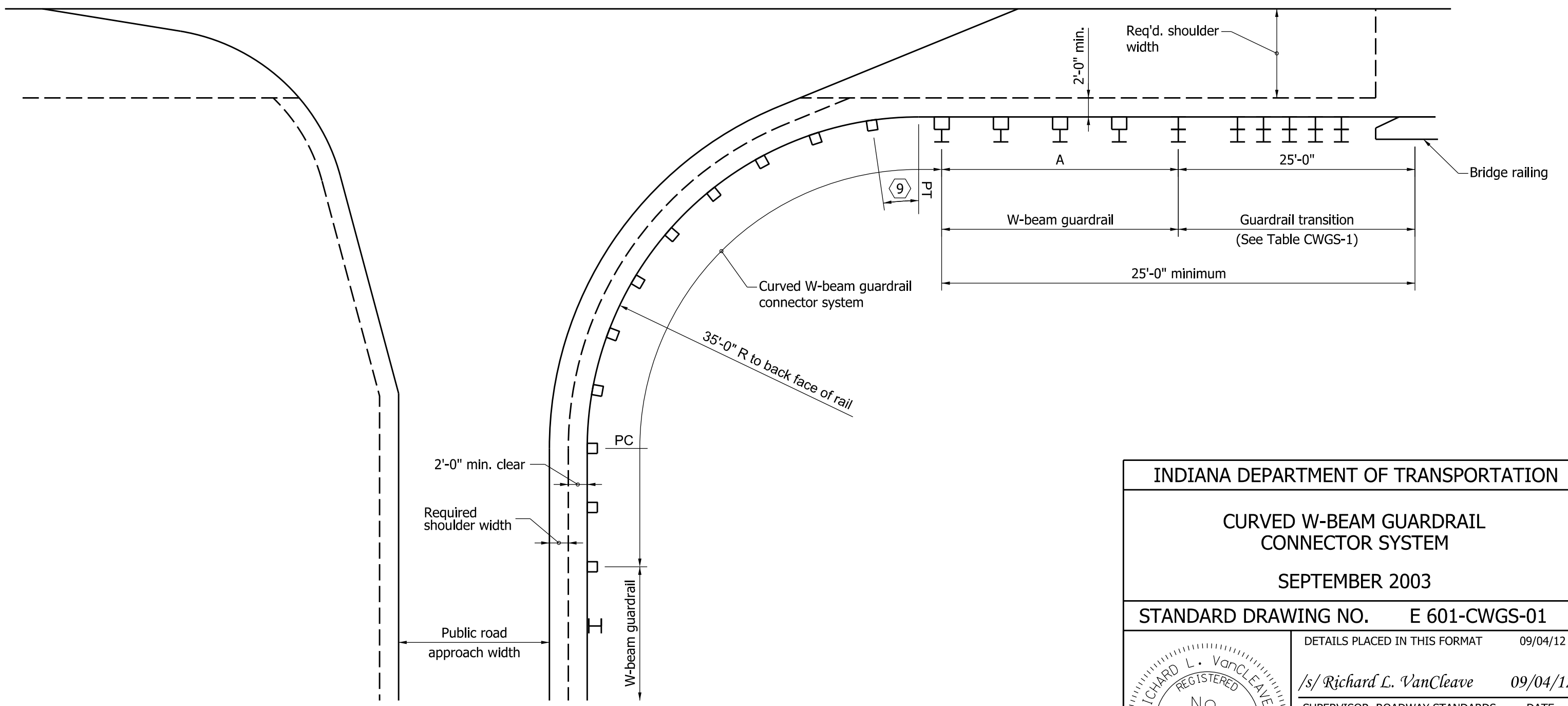


TABLE CWGS-1	
A	GUARDRAIL TRANSITION
< 25'	Type WGB
≥ 25'	Type TGB

NOTES:

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



**PUBLIC ROAD APPROACH INSTALLATION
AT BRIDGE END**

INDIANA DEPARTMENT OF TRANSPORTATION	
CURVED W-BEAM GUARDRAIL CONNECTOR SYSTEM	
SEPTEMBER 2003	
STANDARD DRAWING NO.	E 601-CWGS-01
	DETAILS PLACED IN THIS FORMAT 09/04/12
	/s/ <i>Richard L. VanCleave</i> 09/04/12
	SUPERVISOR, ROADWAY STANDARDS DATE
	/s/ <i>Mark A. Miller</i> 09/04/12
CHIEF ENGINEER	DATE

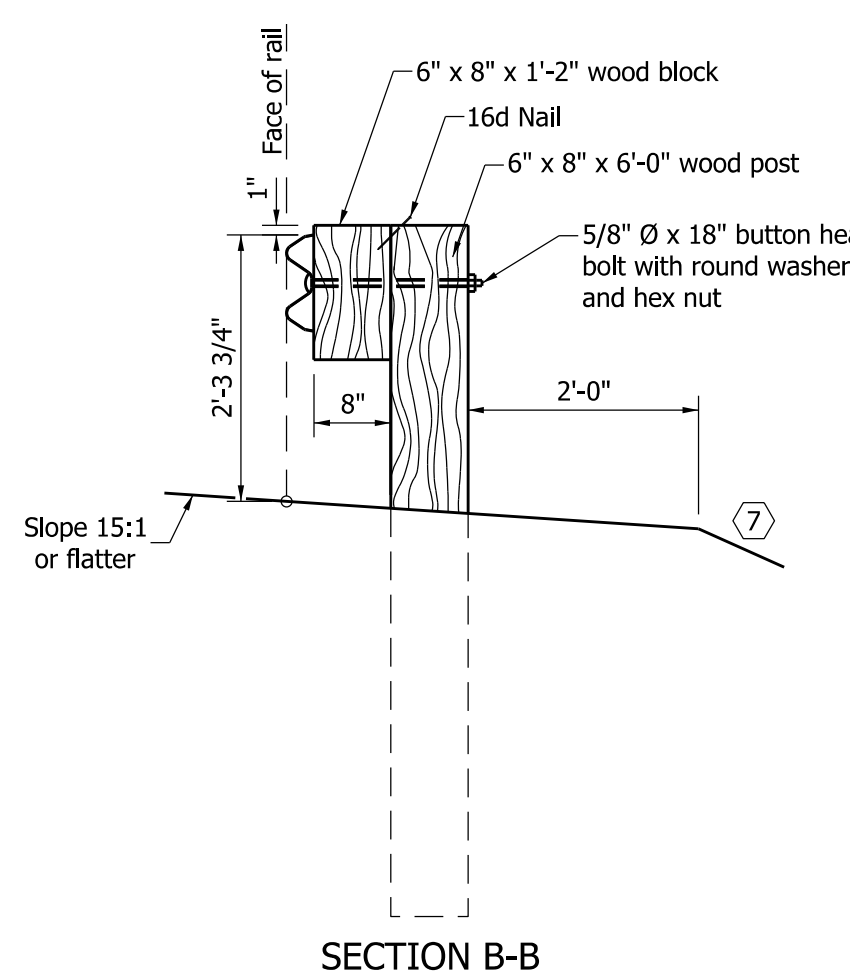
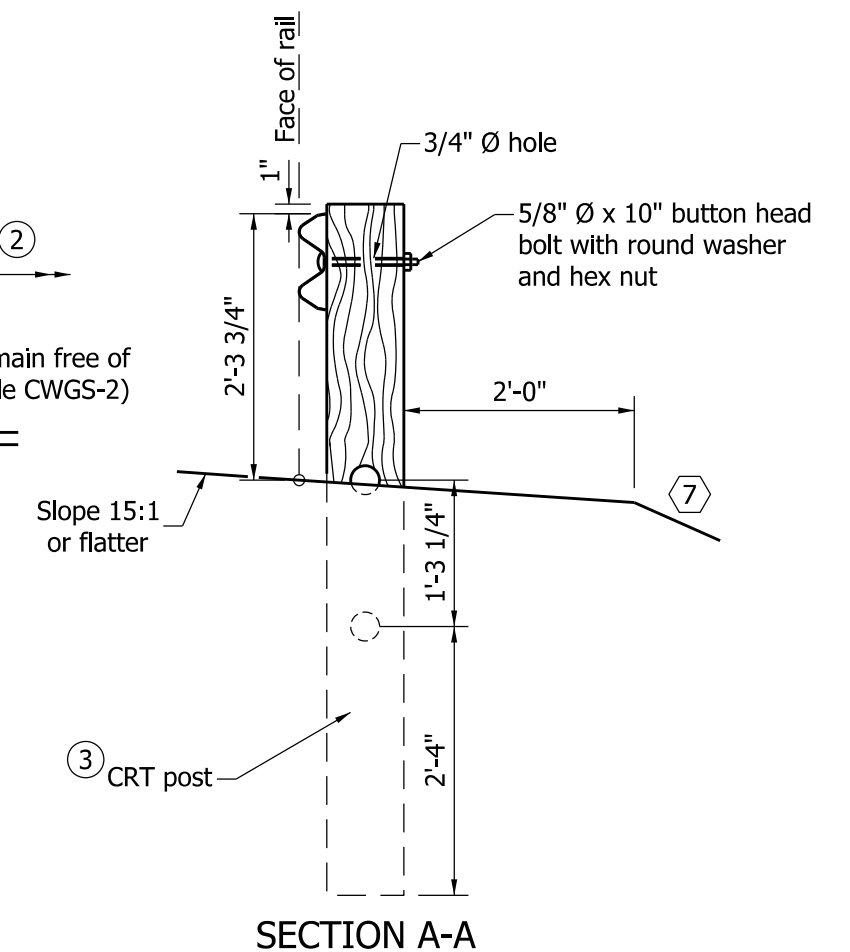
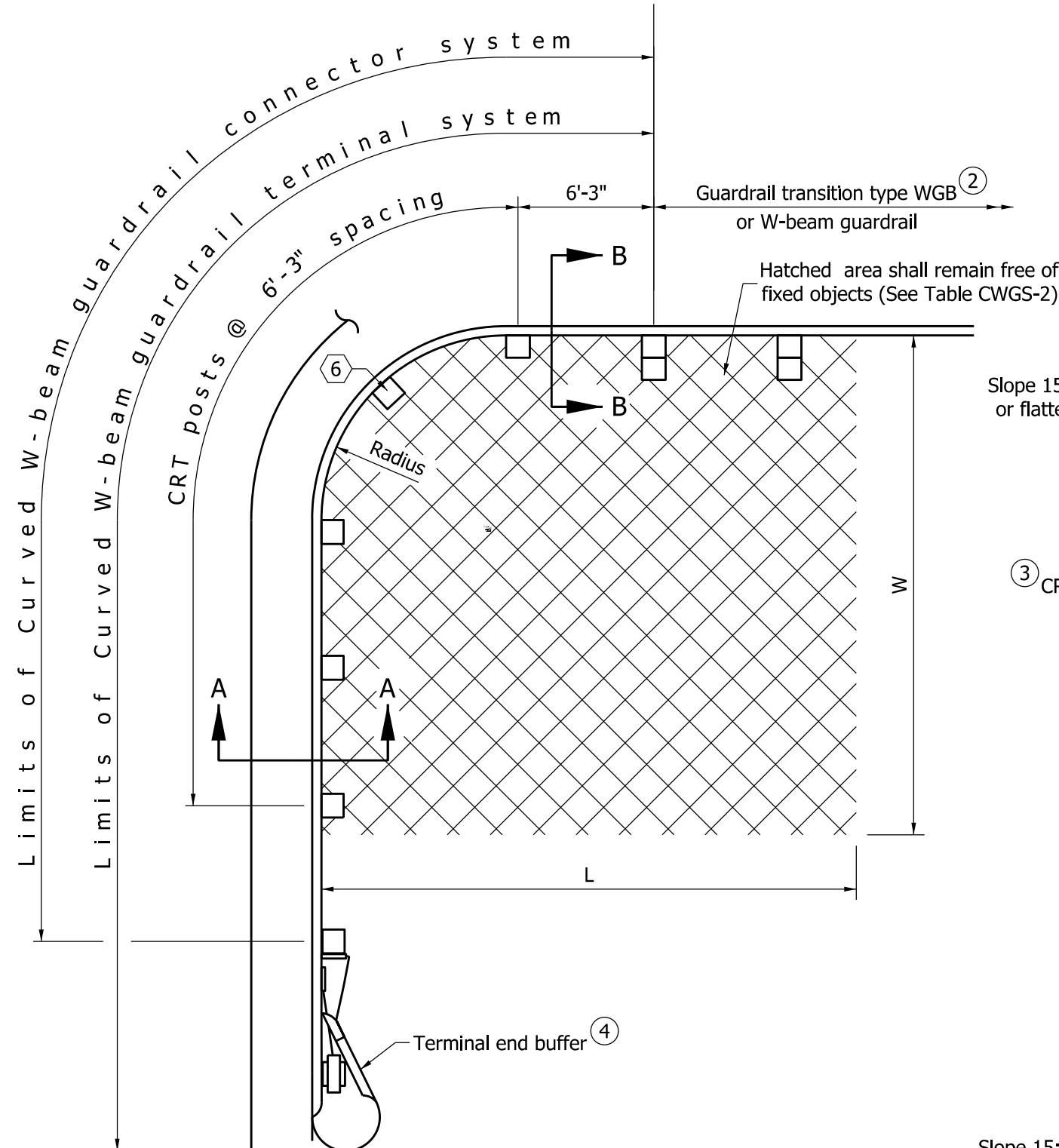


TABLE CWGS-2

RADIUS	NO. OF CRT POSTS	REQUIRED AREA FREE OF FIXED OBJECTS L x W
8'-6"	5	25' x 15'
17'-0"	6	30' x 15'
25'-6"	8	40' x 20'
35'-0"	11	50' x 20'

- NOTES:**
1. See Standard Drawing E 601-CWGS-03 for General Notes.
 - ② See Standard Drawing E 601-TWGB-02 for guardrail transition type WBG details.
 - ③ See Standard Drawing E 601-CWGS-06 for CRT post details.
 - ④ See Standard Drawing E 601-CWGS-04 and 05 for terminal end buffer details.

INDIANA DEPARTMENT OF TRANSPORTATION

**CURVED W-BEAM
GUARDRAIL SYSTEM**

SEPTEMBER 2011


STANDARD DRAWING NO. E 601-CWGS-02

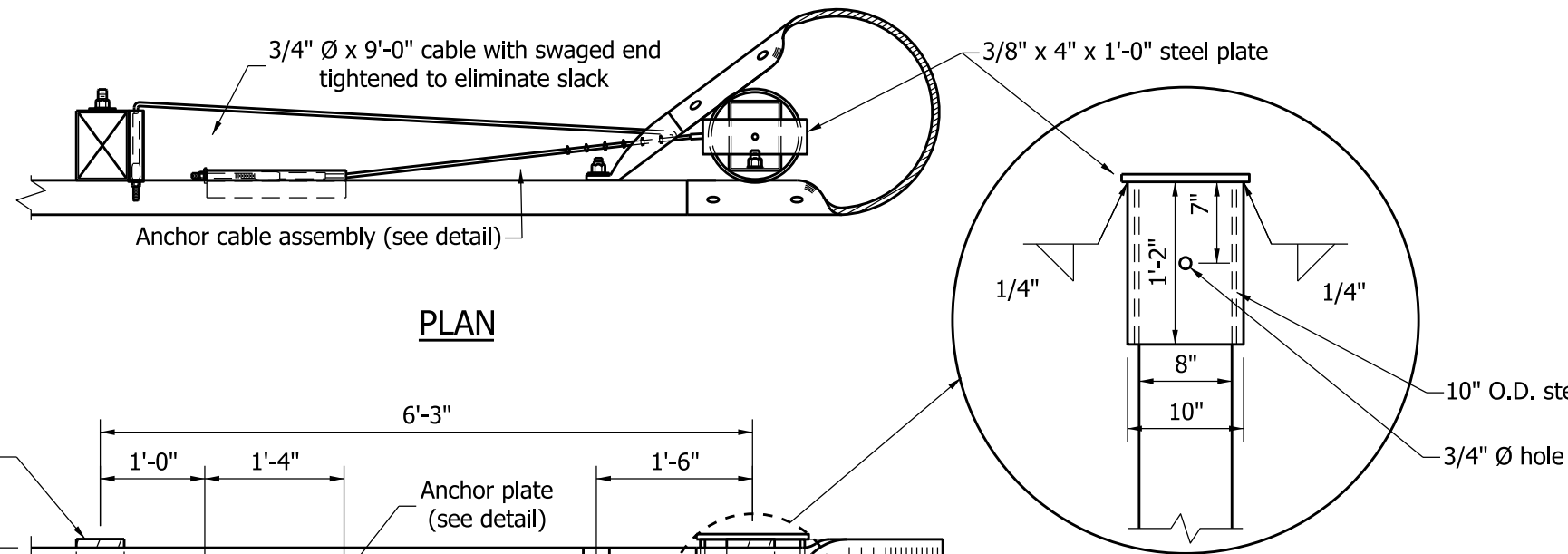
	<p>DETAILS PLACED IN THIS FORMAT 09/04/12</p> <p><i>/s/ Richard L. VanCleave</i> 09/04/12</p> <p>SUPERVISOR, ROADWAY STANDARDS DATE</p> <hr/> <p><i>/s/ Mark A. Miller</i> 09/04/12</p> <p>CHIEF ENGINEER DATE</p>
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GENERAL NOTES

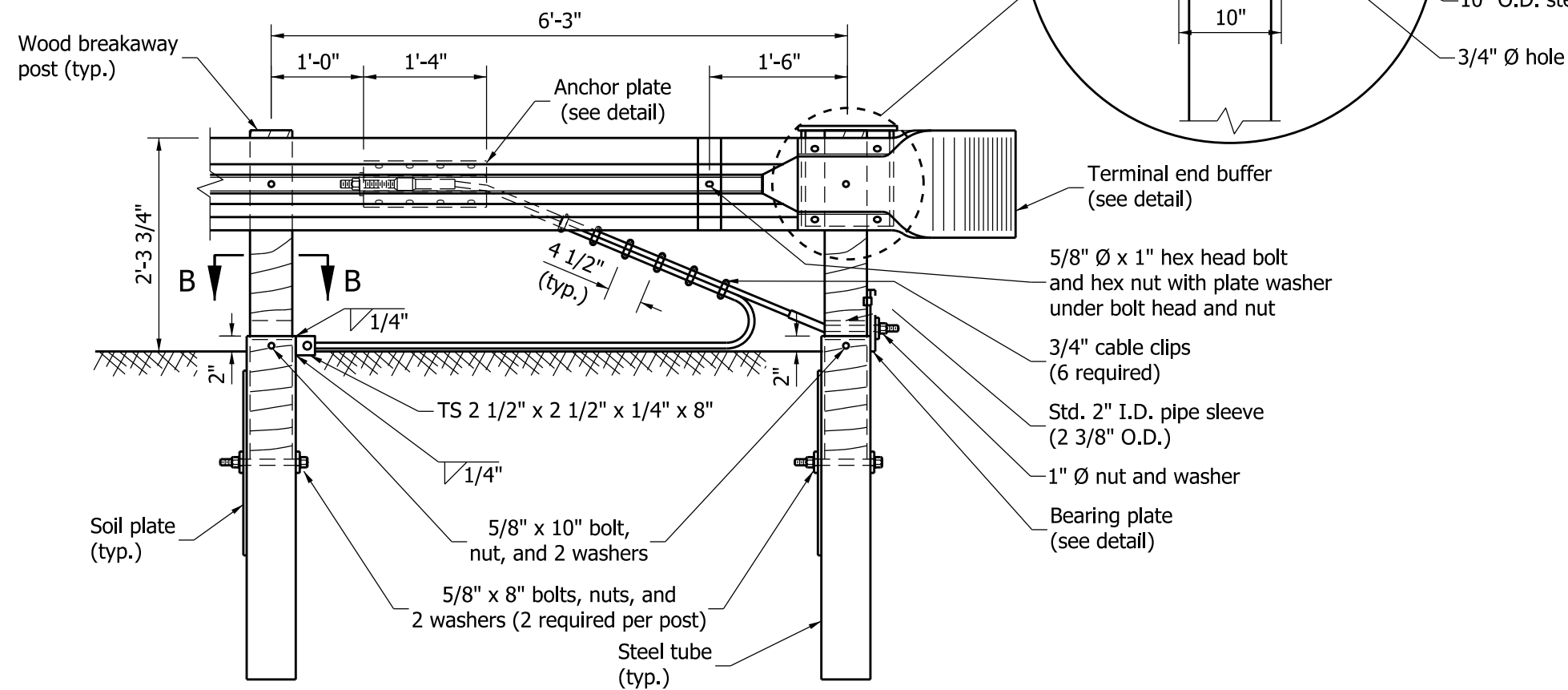
1. This drawing shall be used in conjunction with Standard Drawings E 601-CWGS-01 through -06, and E 601-CWGT-01 and -02 where a curved W-beam guardrail system is specified.
 2. The type of curved W-beam guardrail system to be used shall be as shown on the plans in accordance with Table CWGS-3.
 3. Except where otherwise shown, all hardware and installation shall be the same as for the guardrail specified for the adjacent run.
 4. A curved W-beam guardrail terminal system shall be used to terminate a run of guardrail only at a driveway. For a public road approach, a curved W-beam guardrail connector system shall be used.
 5. A maximum of two guardrail panels may be omitted from the curved W-beam guardrail terminal system only where the bridge railing falls outside of the clear zone and the plans specifically state that panels are to be omitted. See Table CWGS-03 for the number of guardrail panels to be removed for each type of curved W-beam guardrail system.
- ⑥ For the 8'-6" radius curved W-beam guardrail terminal system, guardrail shall not be bolted to this post.
- ⑦ The embankment slope behind the curved W-beam guardrail system shall be 2:1 or flatter.
- ⑧ A minimum 4 ft width shoulder shall be used with a 15 ft minimum drive radius.
- ⑨ This dimension shall be 5 ft for the 35 ft radius curved W-beam guardrail connector system.

TABLE CWGS-3		
CURVED W-BEAM GUARDRAIL SYSTEMS		
TYPE	RADIUS	NUMBER OF 6'-3" PANELS REMOVED
TERMINAL SYSTEM		
1	8'-6"	0
2	8'-6"	1
3	8'-6"	2
4	17'-0"	0
5	17'-0"	1
6	17'-0"	2
7	25'-0"	0
8	25'-0"	1
9	25'-0"	2
CONNECTOR SYSTEM		
1	25'-0"	0
2	35'-0"	0

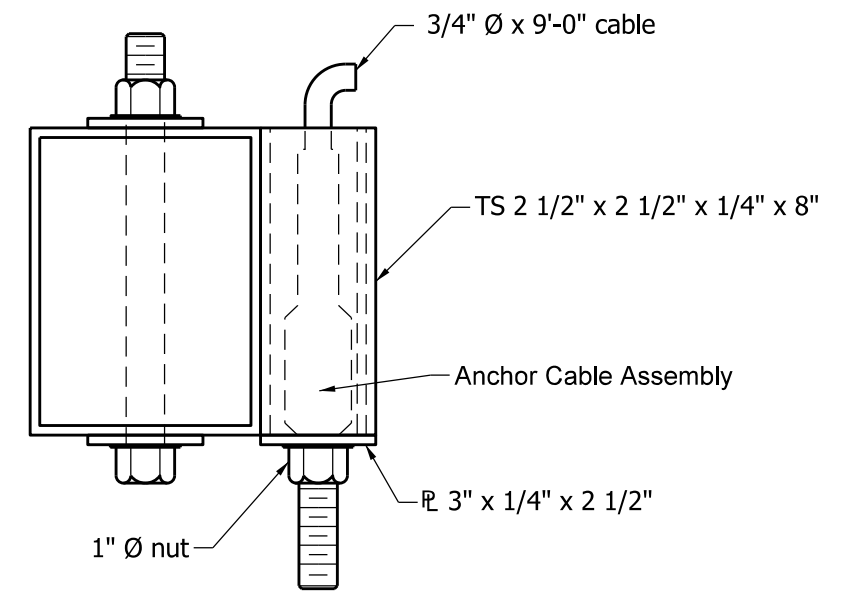
INDIANA DEPARTMENT OF TRANSPORTATION	
CURVED W-BEAM GUARDRAIL SYSTEM	
SEPTEMBER 1999	
STANDARD DRAWING NO. E 601-CWGS-03	
	DETAILS PLACED IN THIS FORMAT 09/04/12
	<i>/s/ Richard L. VanCleave</i> 09/04/12 SUPERVISOR, ROADWAY STANDARDS DATE
	<i>/s/ Mark A. Miller</i> 09/04/12 CHIEF ENGINEER DATE
	(Empty signature line)



PLAN



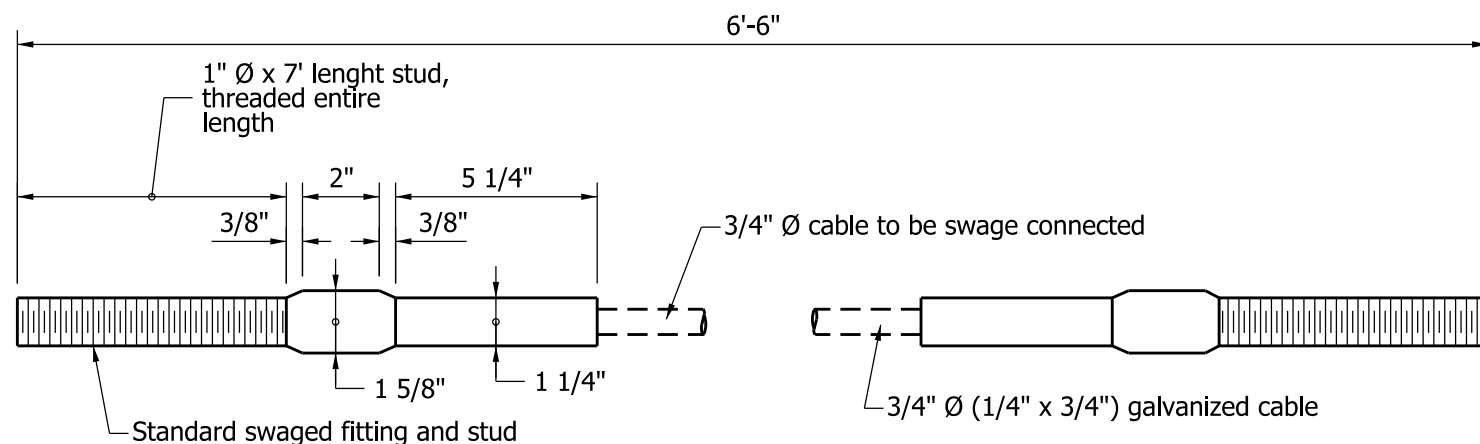
TYPE 5 ANCHOR ELEVATION



SECTION B-B

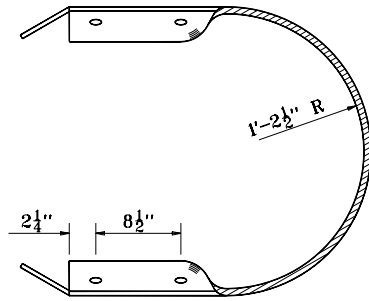
NOTES:

1. One 5/8" \varnothing x 10" bolt with nut and washer is required per curved W-beam steel tube and post.
2. Plate washers shall be used only where indicated.



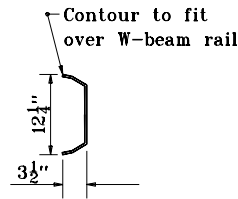
ANCHOR CABLE ASSEMBLY

INDIANA DEPARTMENT OF TRANSPORTATION	
CURVED W-BEAM GUARDRAIL SYSTEM	
SETEMBER 2011	
STANDARD DRAWING NO.	E 601-CWGS-04
	/s/ <i>Richard L. VanCleave</i> 09/01/11
	DESIGN STANDARDS ENGINEER DATE
	/s/ <i>Mark A. Miller</i> 09/01/11
DESIGN STANDARDS ENGINEER	CHIEF HIGHWAY ENGINEER DATE

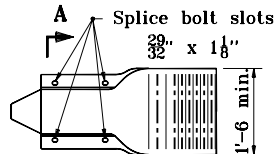


TOP VIEW

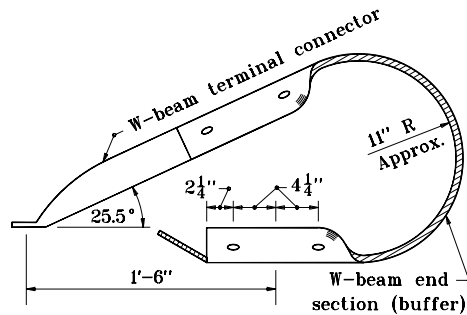
W-BEAM END SECTION (BUFFER)



SECTION A-A

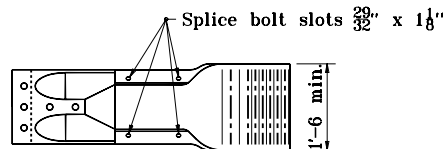


A SIDE VIEW

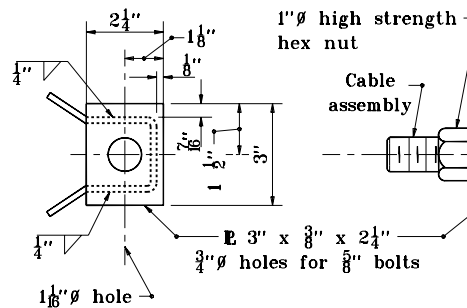


TOP VIEW

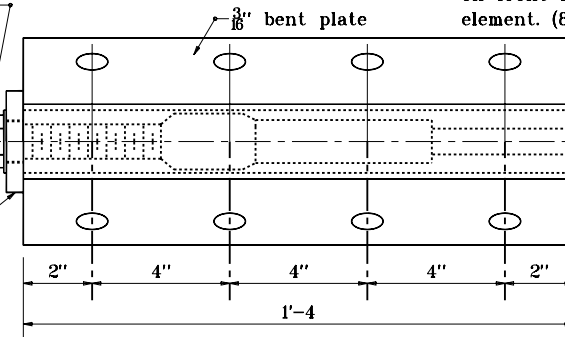
TERMINAL END BUFFER



SIDE VIEW

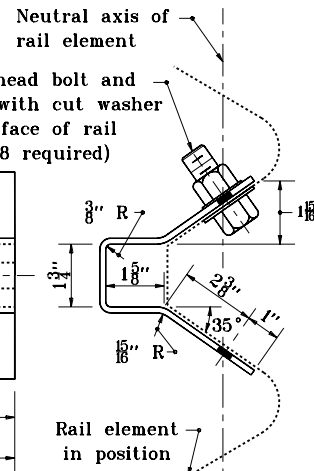


LEFT END VIEW



ANCHOR PLATE

M10 hex head bolt and hex nut with cut washer on front face of rail element. (8 required)



RIGHT END VIEW

GENERAL NOTES

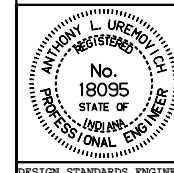
1. This sheet shall be used in conjunction with Standard Drawings E 601-CWGS-01, 02, 03, and 06.
2. An alternate single piece having a similar dimensional shape to the terminal end buffer and mating with the W-beam guardrail may be used.
3. The W-beam terminal connector shall be steel of 0.138 inch thickness (10 gauge).
4. If the W-beam terminal connector is lapped on the outside of the guardrail, a galvanized 1" I.D. 2" O.D., 0.134" thick, narrow plain washer shall be placed under the splice bolt heads.
5. Attach the W-beam to the steel pipe with a 3/8" diameter x 1 1/4" length button head bolt with no washer. No connection to the post is required.
6. Nuts for the anchor cable assembly shall be hand tightened, plus one complete turn at the anchor plate end. All other nuts shall be torqued to 50 ft.-lbs.

INDIANA DEPARTMENT OF TRANSPORTATION

**CURVED W-BEAM
GUARDRAIL SYSTEM**

APRIL 1996

STANDARD DRAWING NO. E 601-CWGS-05



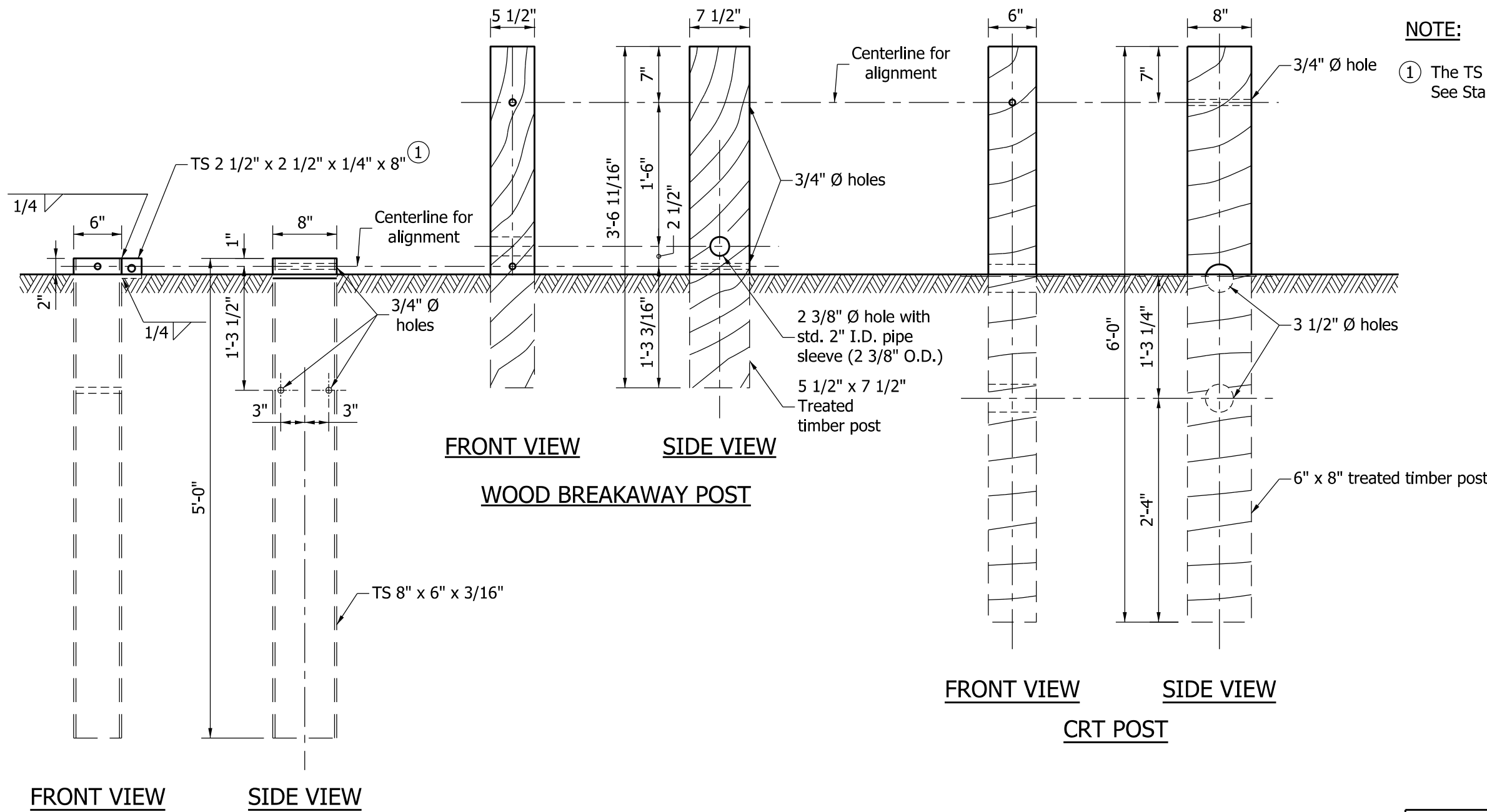
DETAILS PLACED IN THIS FORMAT 11-15-99

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

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

DESIGN STANDARDS ENGINEER

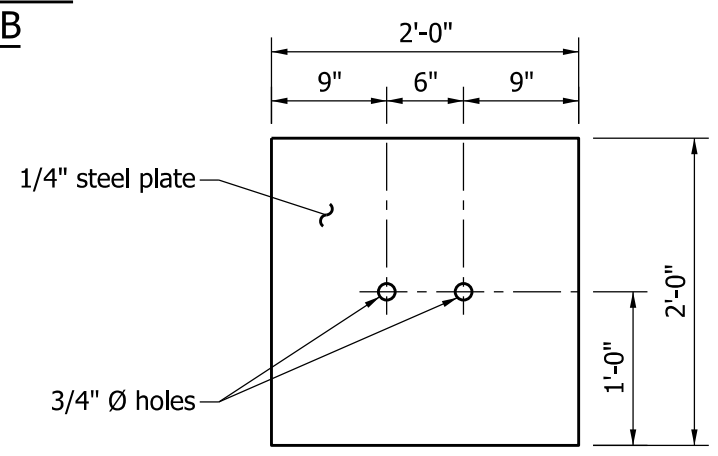
ORIGINALLY APPROVED 4-01-96



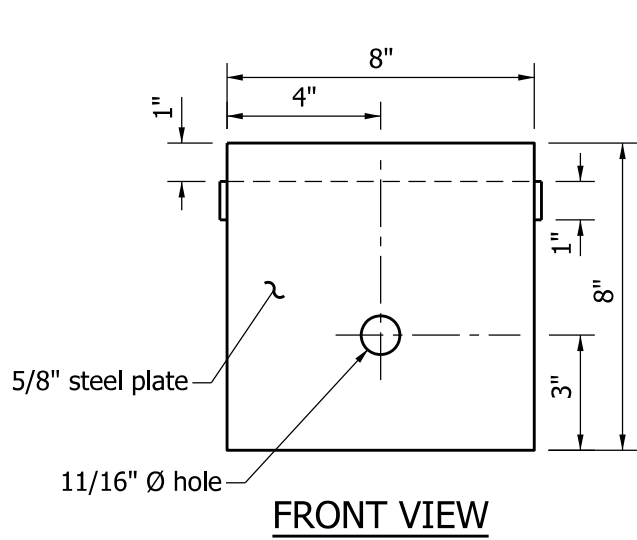
NOTE:
 ① The TS 2 1/2" x 2 1/2" structural tube shall be welded to Post B only. See Standard Drawing E 601-CWGS-04 for location of Post B.

FRONT VIEW SIDE VIEW

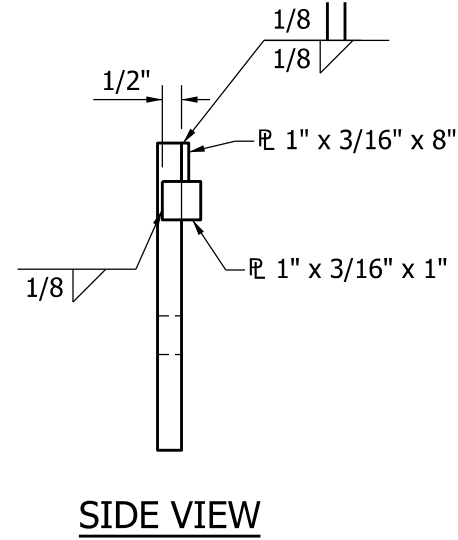
STEEL TUBE POST B



SOIL PLATE



FRONT VIEW



SIDE VIEW

BEARING PLATE

INDIANA DEPARTMENT OF TRANSPORTATION	
CURVED W-BEAM GUARDRAIL SYSTEM	
SEPTEMBER 2011	
STANDARD DRAWING NO.	E 601-CWGS-06
	DETAILS PLACED IN THIS FORMAT 09/04/12 /s/ <i>Richard L. VanCleave</i> 09/04/12 SUPERVISOR, ROADWAY STANDARDS DATE /s/ <i>Mark A. Miller</i> 09/04/12 CHIEF ENGINEER DATE