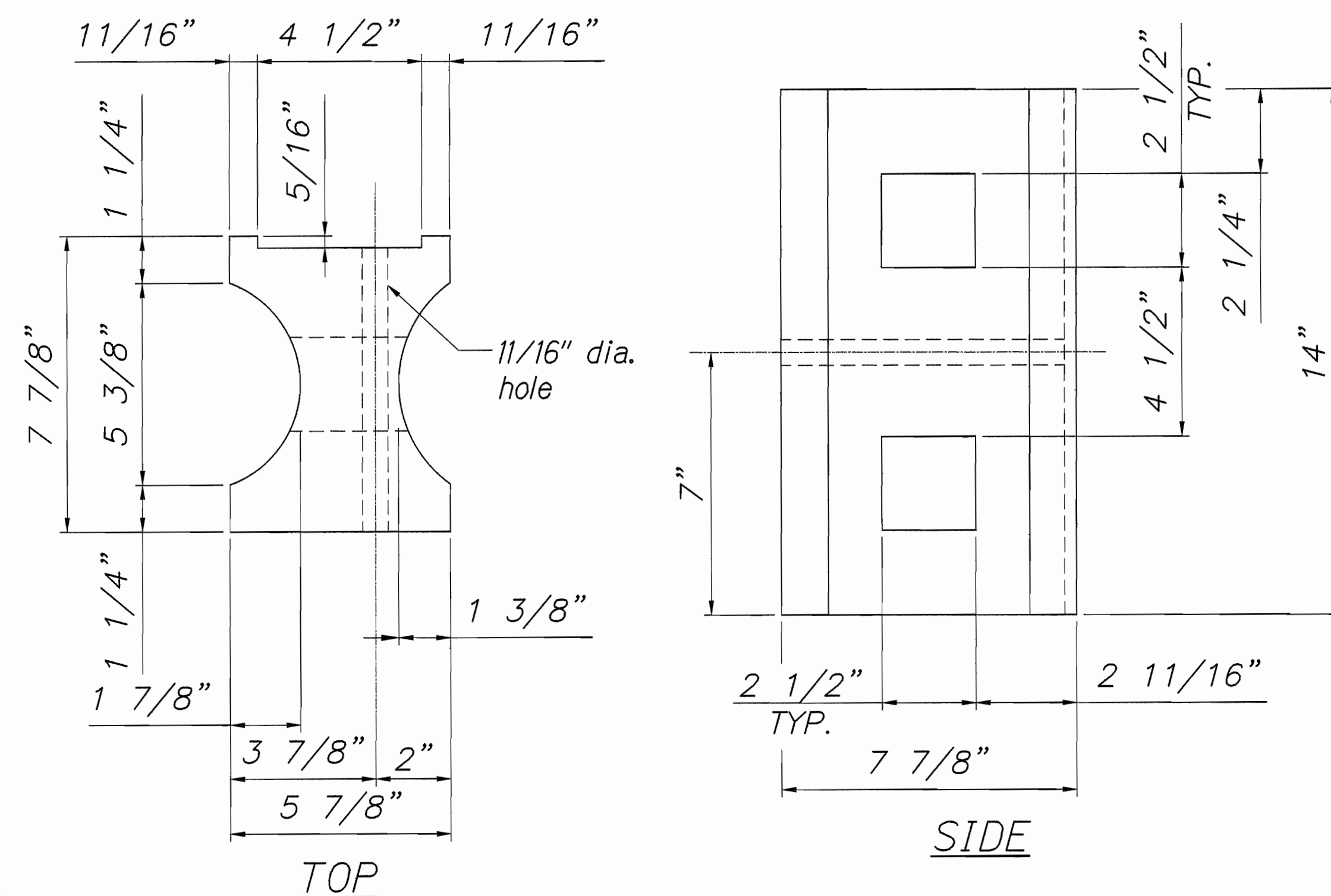
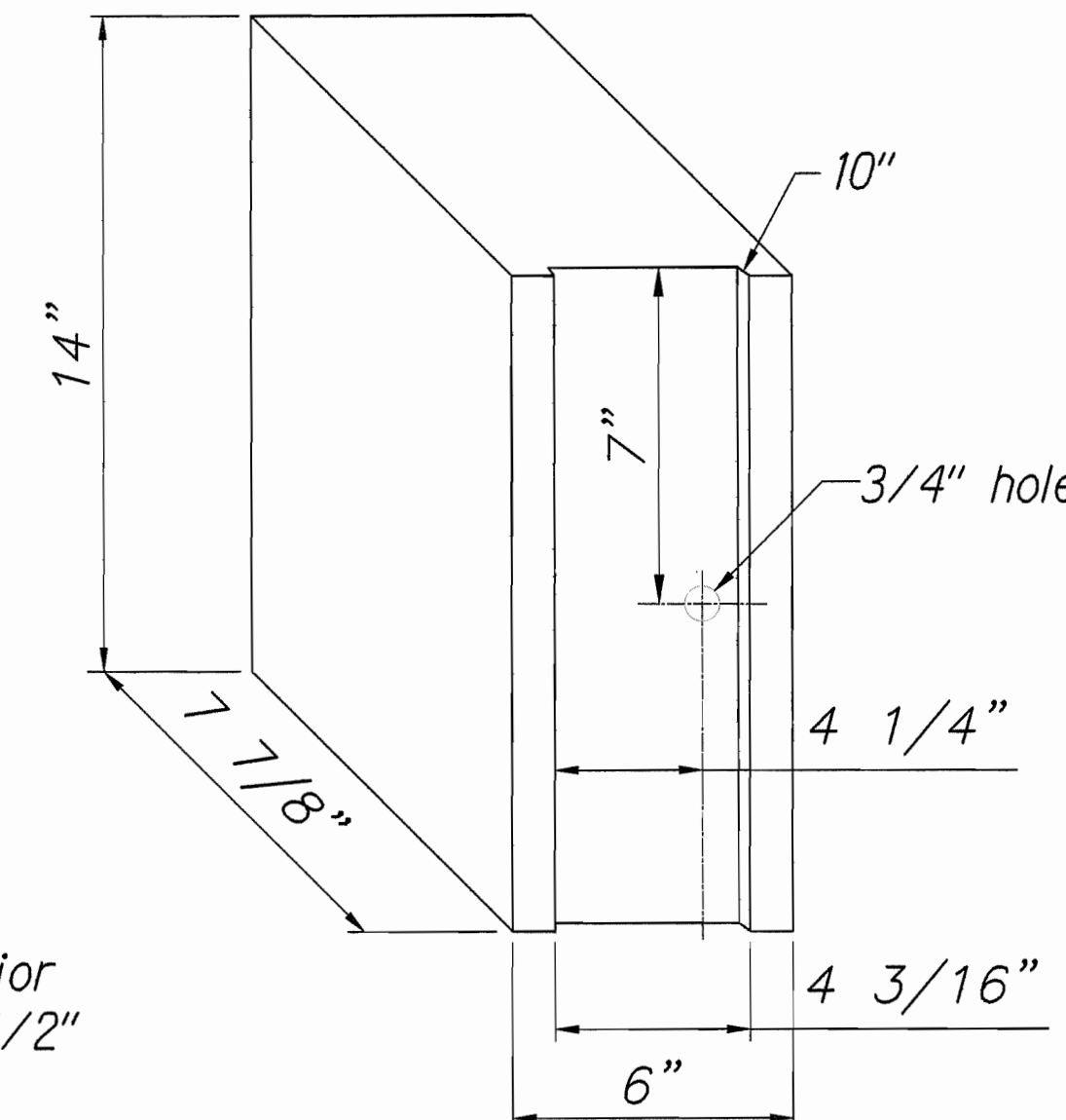


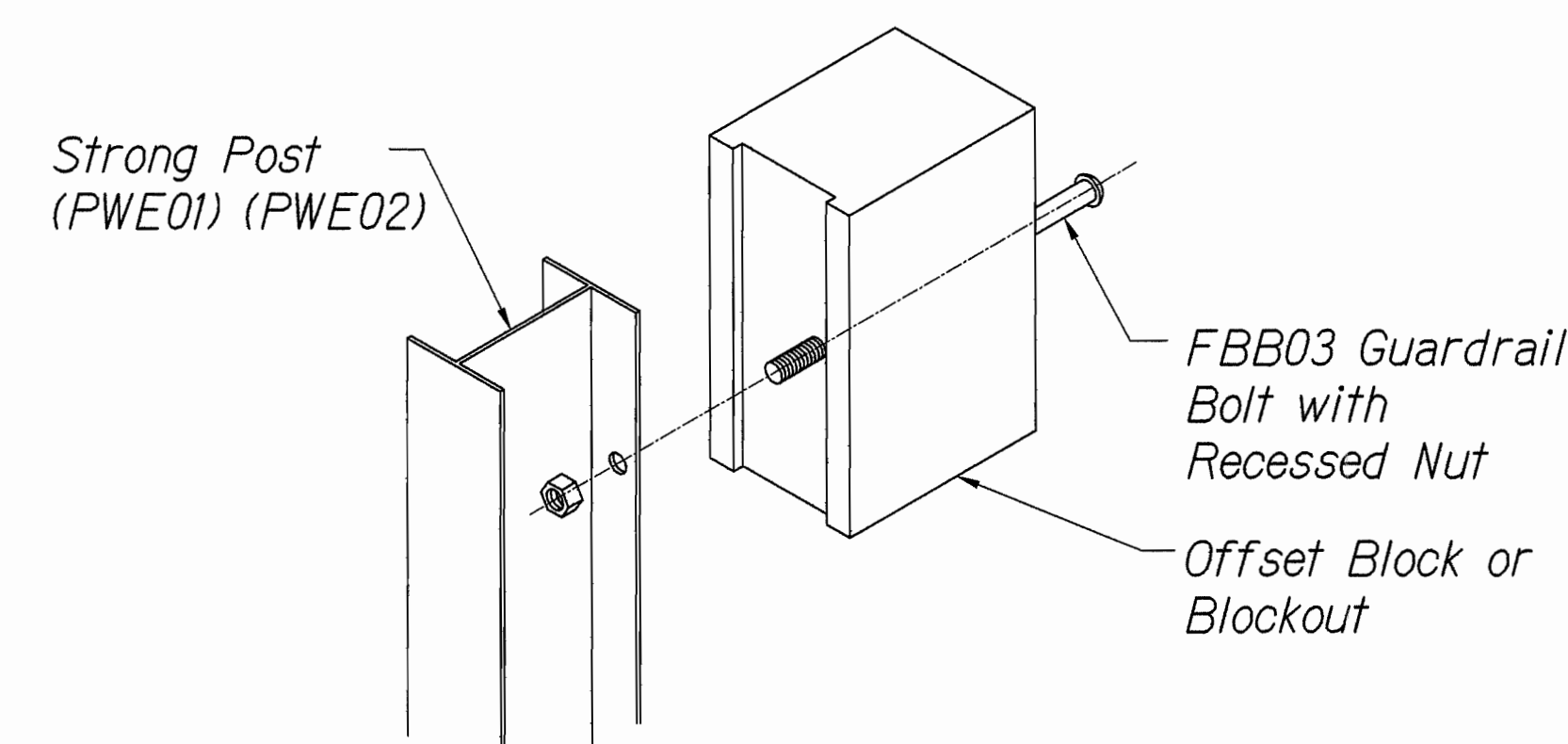
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(61)	2012	20	137



**1** RECYCLED PLASTIC BLACKOUT (TYPE I)  
C-5/C-5 NOT TO SCALE



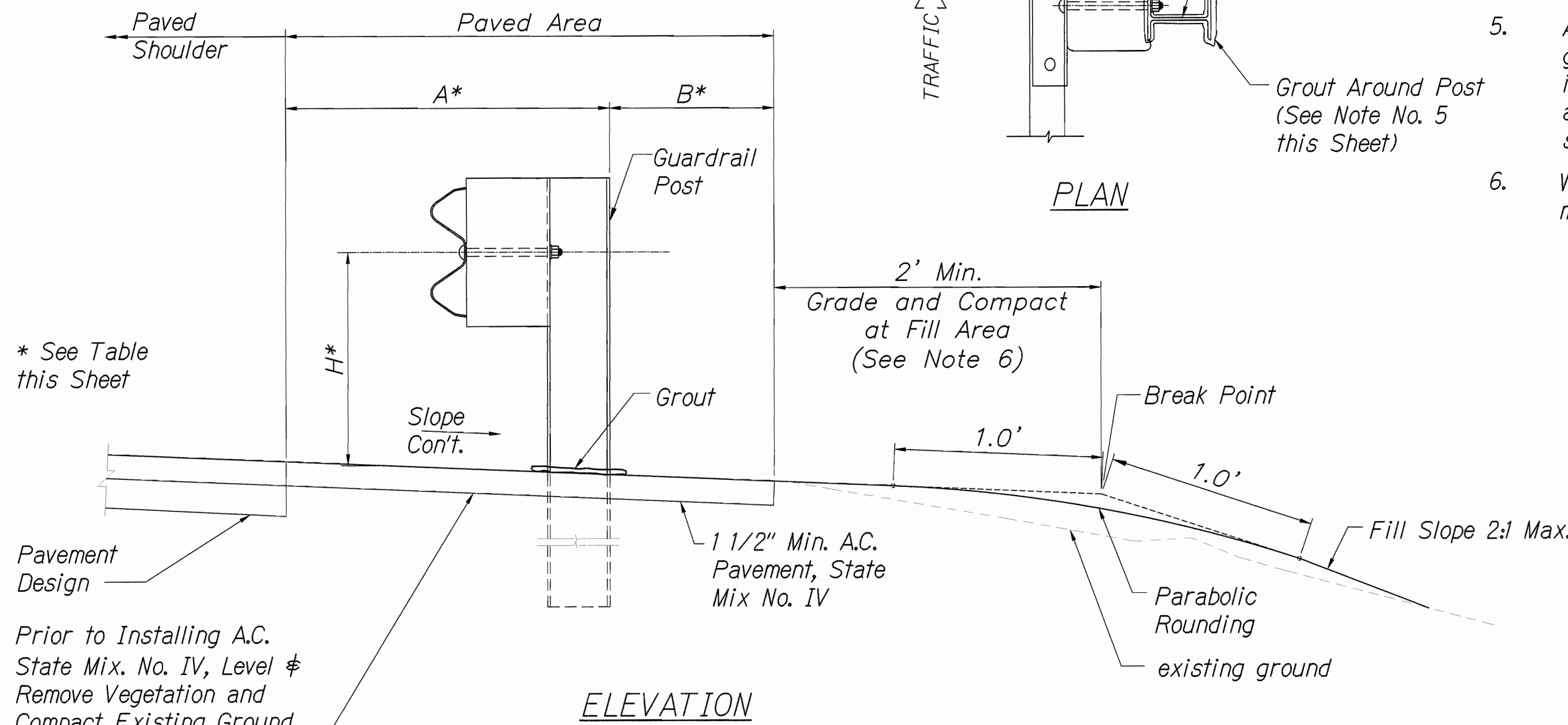
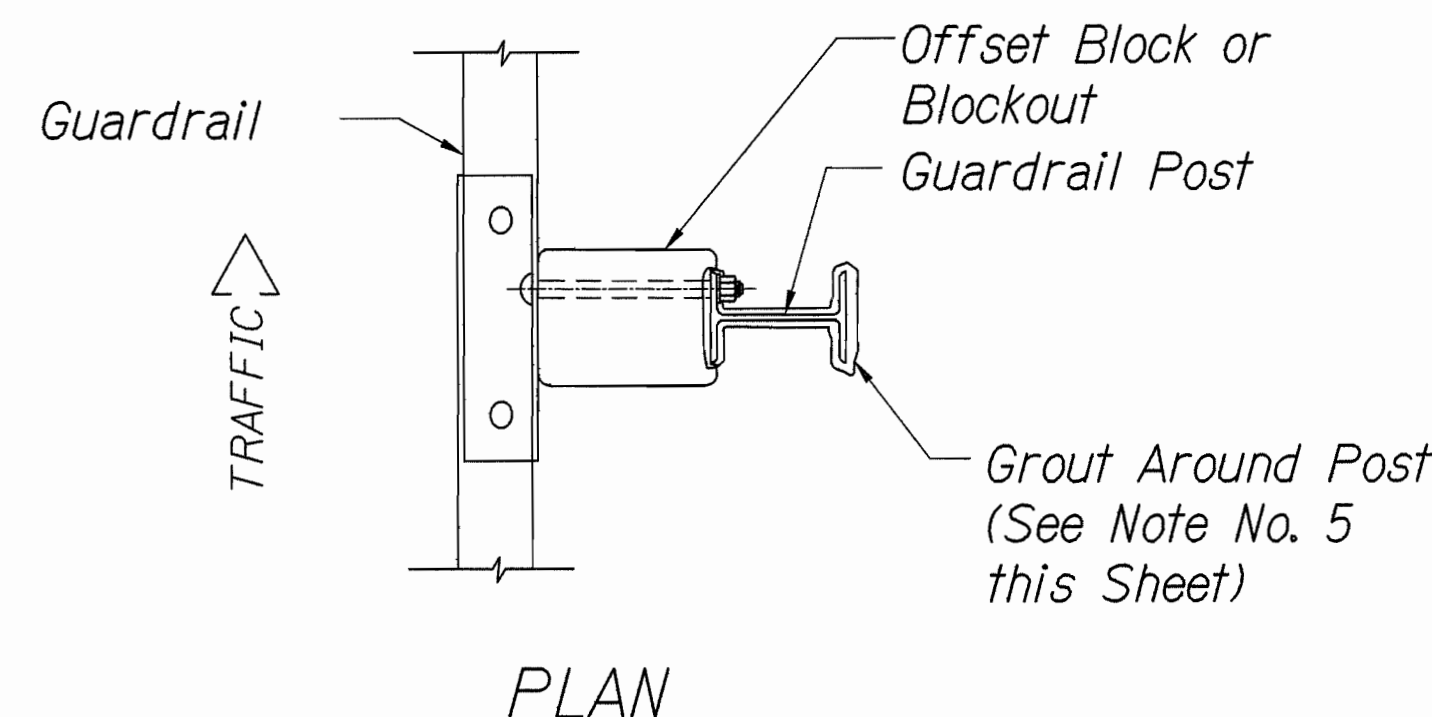
**2** RECYCLED POLYETHYLENE OFFSET BLOCK (TYPE II)  
C-5/C-5 NOT TO SCALE



**3** STEEL POST AND BLOCK DETAIL  
C-5/C-5 NOT TO SCALE

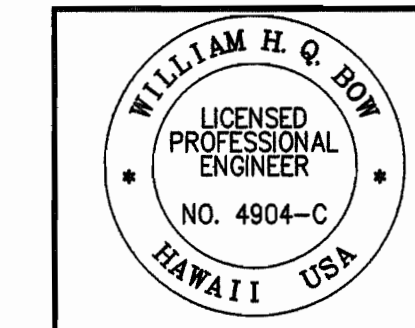
### GENERAL NOTES

- All hardware, posts and fasteners shall be hot-dip zinc coated galvanized after fabrication. no punching, drilling or cutting will be permitted after galvanizing.
- Where conditions require, special post lengths in increments of 6 inches may be specified.
- All fasteners, posts, and rail elements (i.e. FBB03, PWE01, RWM02B, etc.) shall conform to the latest edition and amendments of "A Guide to Standardized Highway Barrier Rail Hardware," a report prepared and approved by the AASHTO-AGC-ARTBA joint cooperative Committee, Subcommittee on new highway materials, task force 13 report. Dimensions of fasteners, posts and rail elements have been converted from metric units into their present form.
- The recycled plastic block or offset block shall be approved by the State.
- After the guardrail posts are installed in the paved area, the contractor shall grout around the guardrail post and seal all cracks in the paved area that was caused during the guardrail post installation. If required by the Inspector/Engineer, the Contractor shall tamper the paved area around the guardrail post prior to grouting. The cost for this work shall not be paid for separately, but shall be considered incidental to the various guardrail items.
- When standards for the fill slope area cannot be met, a site specific, Engineer approved design may be used.



**4** TYPICAL GUARDRAIL INSTALLATION  
C-5/C-5 NOT TO SCALE

GUARDRAIL TYPE	DIMENSION		
	H	A	B
Strong Post with W Beam	1'-9 5/8"	1'-6"	1'-0"
Rubrail	2'-0"	1'-6"	2'-0"
Modified Thrie Beam	2'-0"	2'-0"	1'-0"



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**GUARDRAIL DETAILS**

**HAWAII BELT ROAD**  
**Rehabilitation of Umauma Stream Bridge**  
**Federal Aid Project No. BR-019-2(61)**

Scale: None Date: July 25, 2012

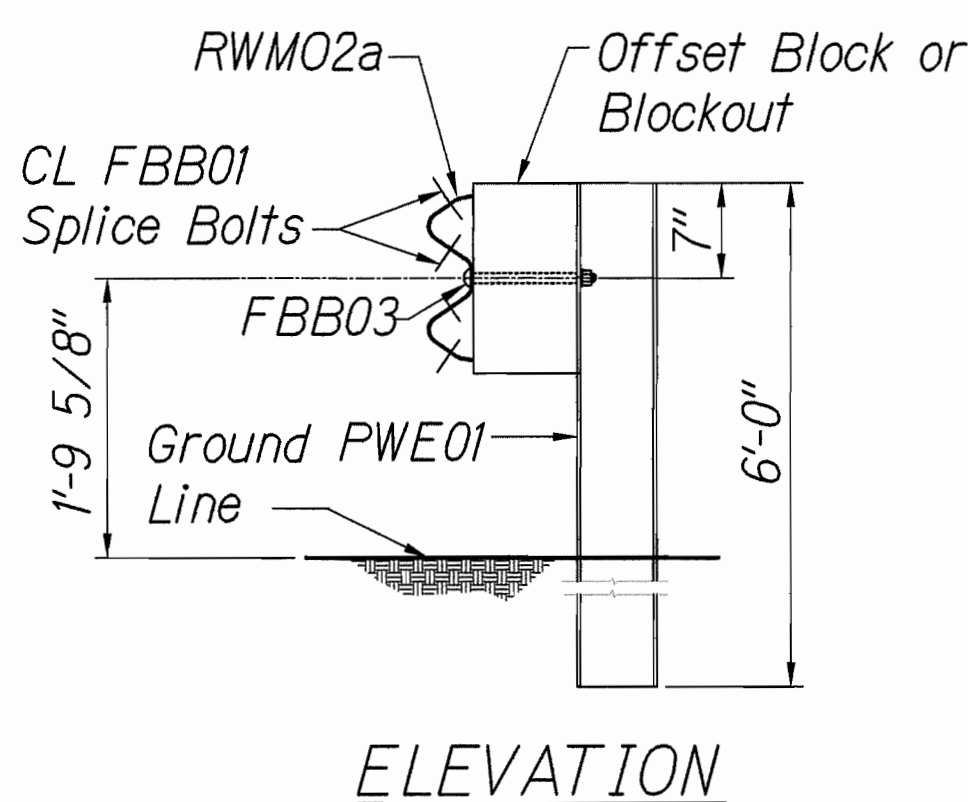
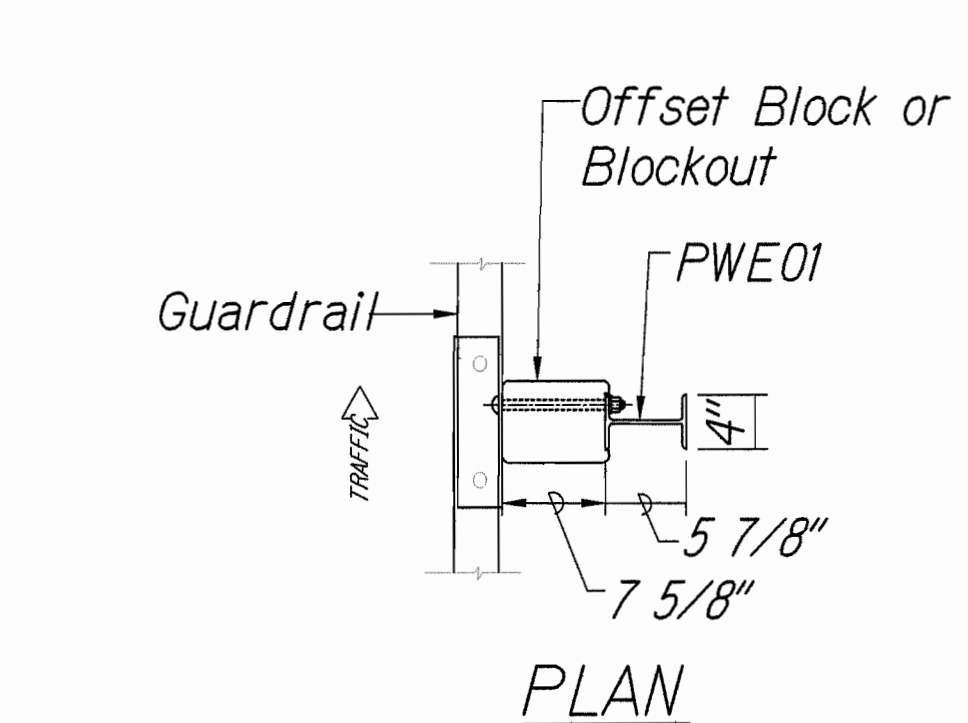
SHEET No. C-5 OF 19 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
NO.	

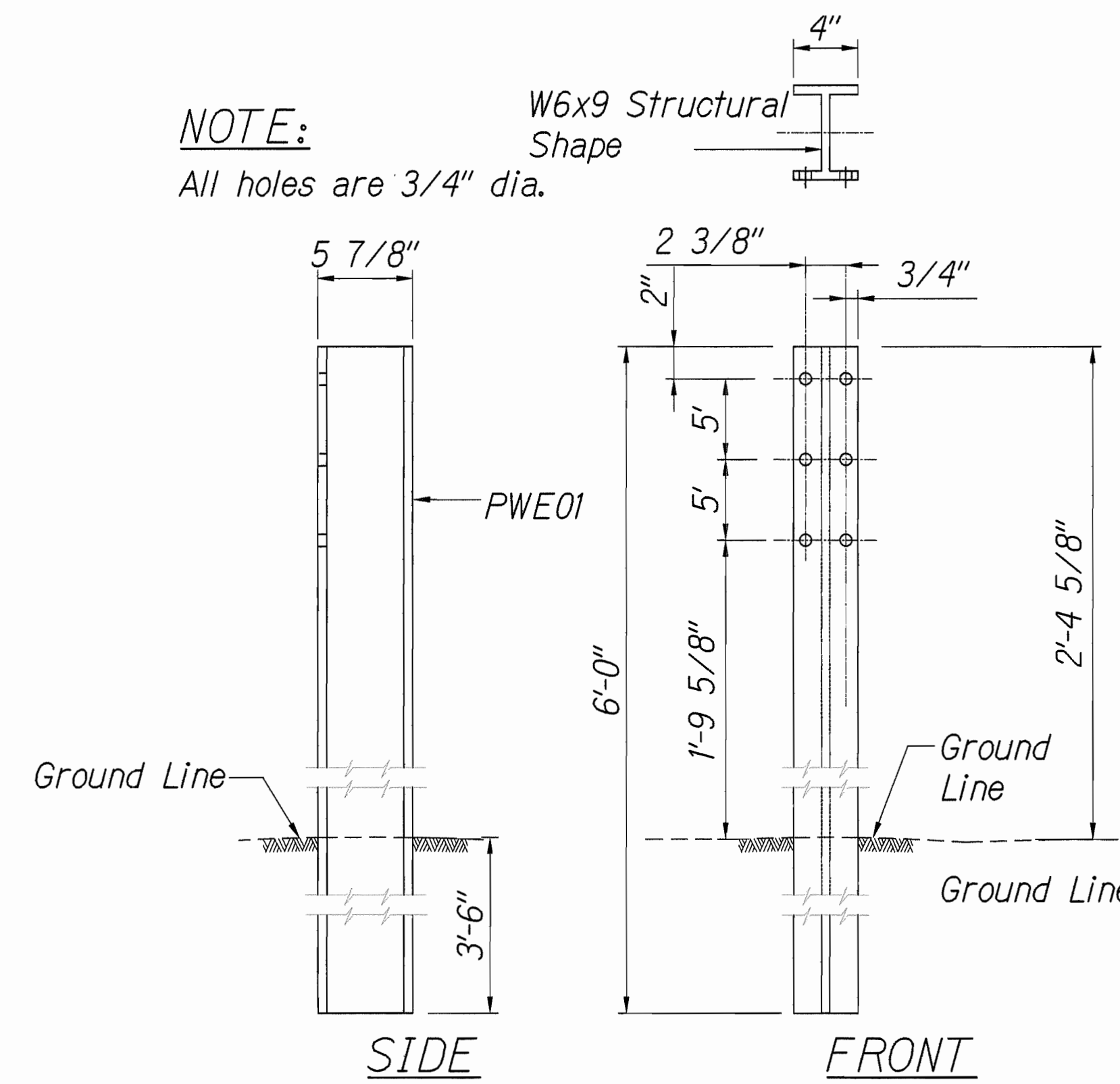
\* See Table this Sheet

Prior to Installing A.C. State Mix. No. IV, Level # Remove Vegetation and Compact Existing Ground to 95% Compaction.

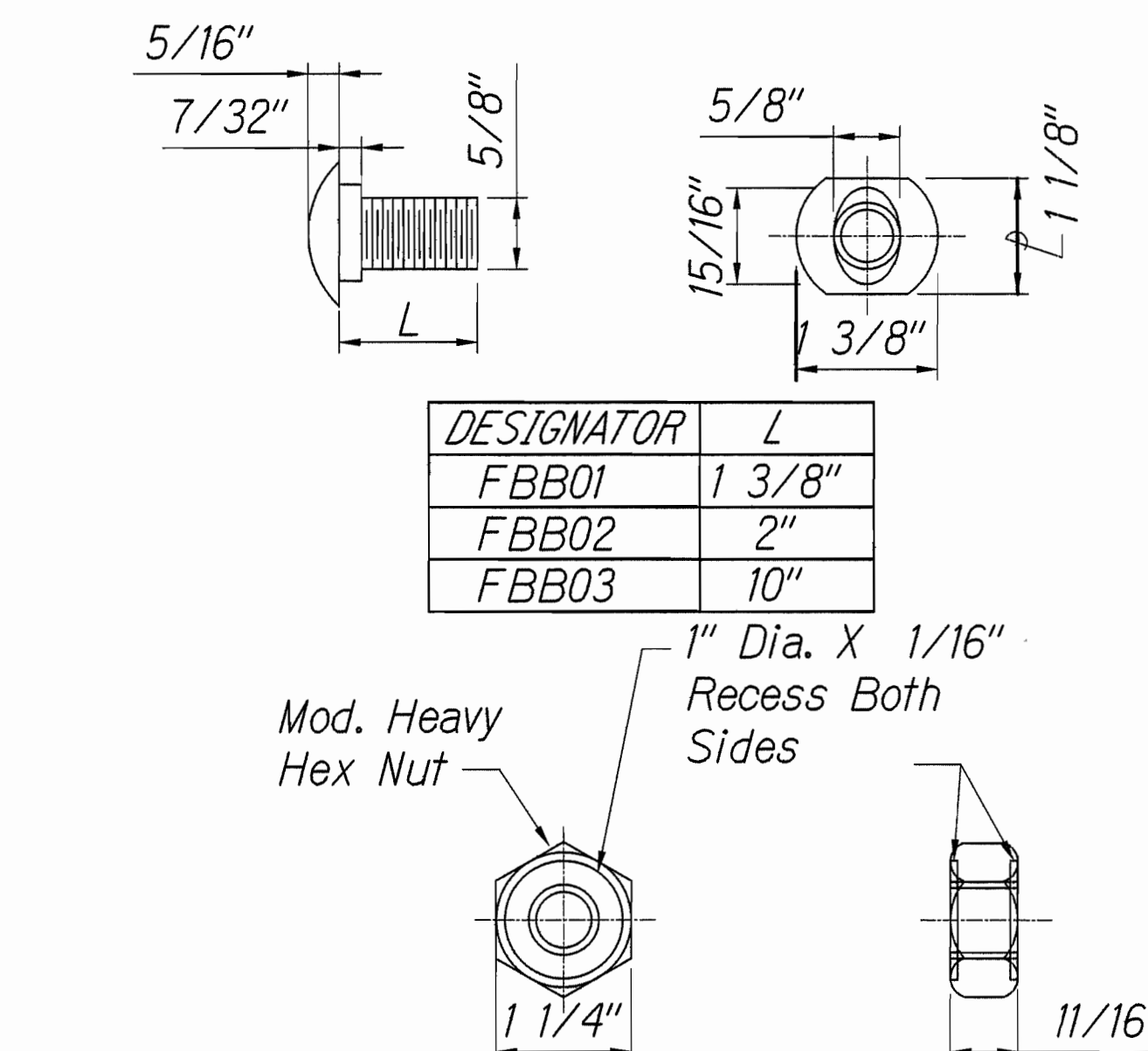
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(61)	2012	21	137



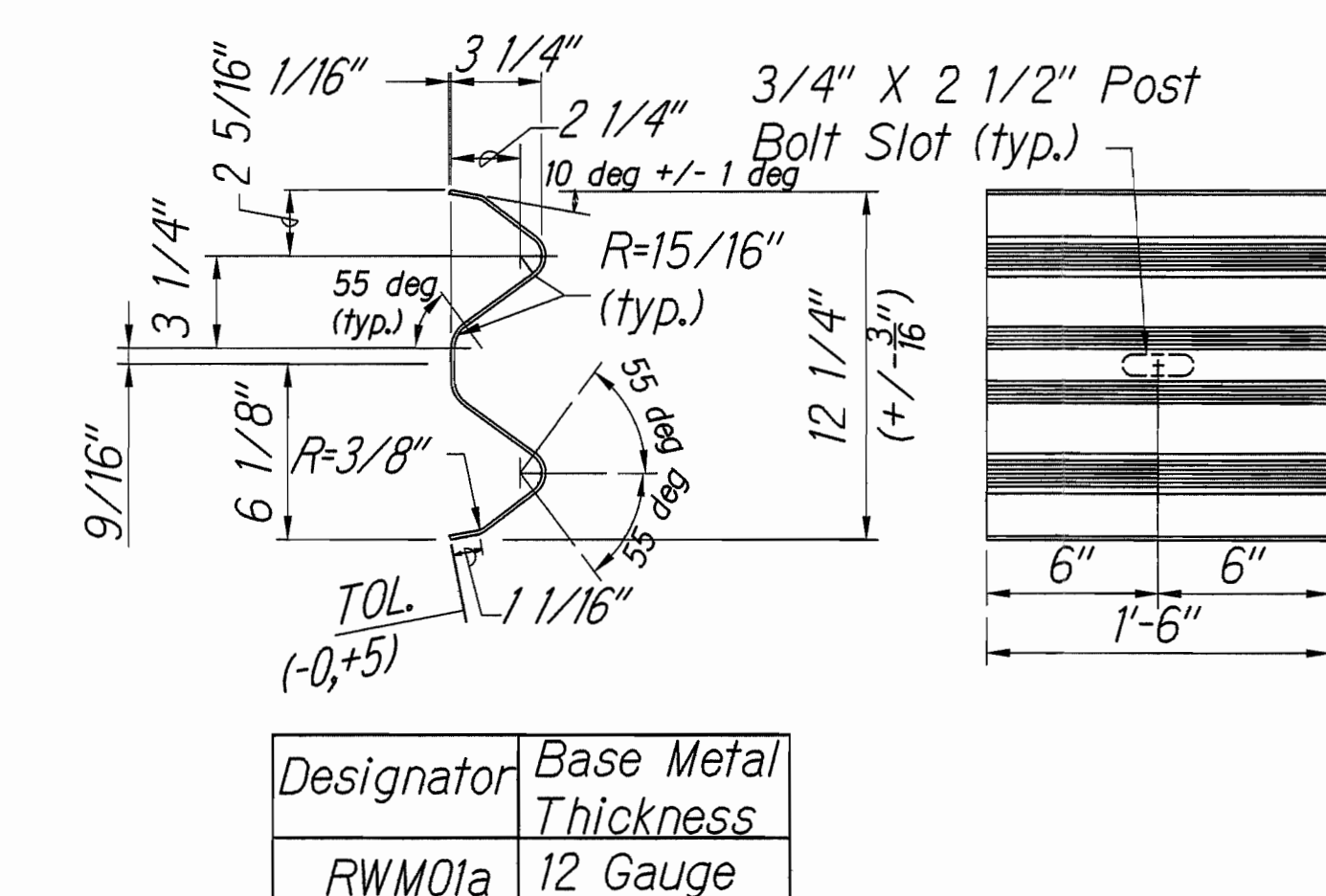
**1**  
C-6 C-6  
**STRONG POST W-BEAM GUARDRAIL (SGR04a)**  
NOT TO SCALE



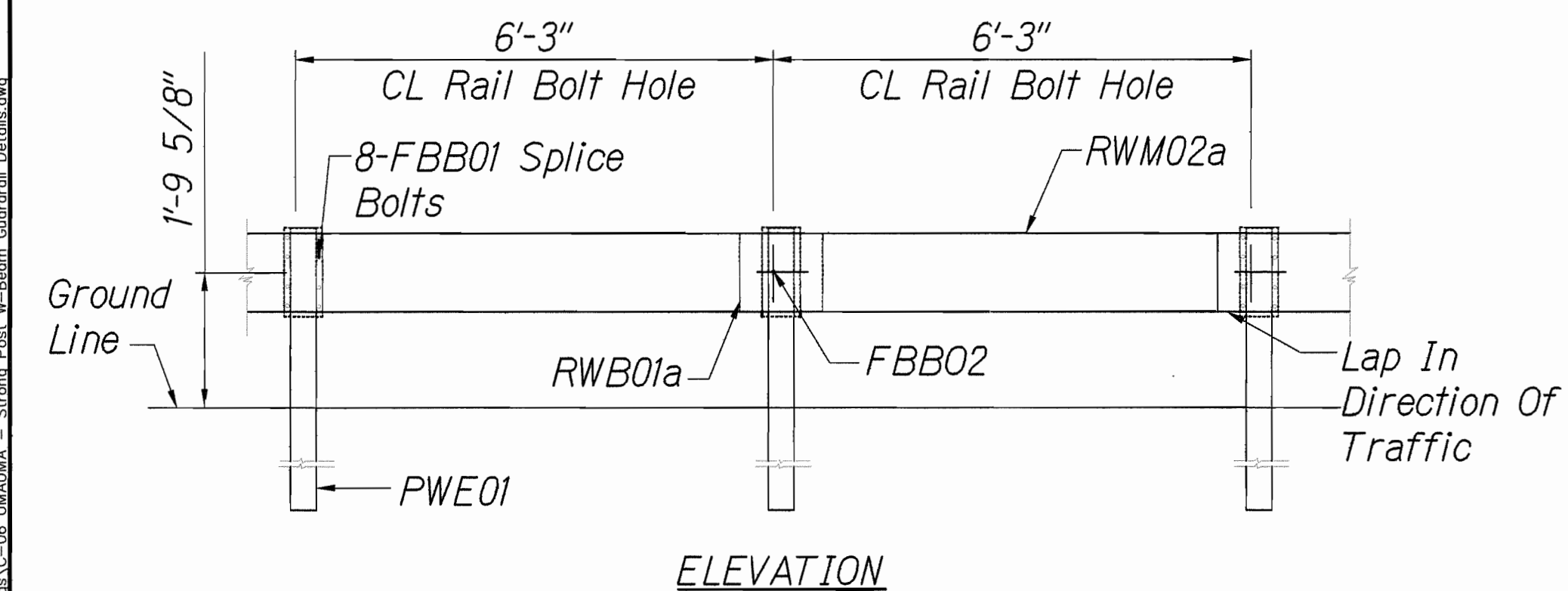
**2**  
C-6 C-6  
**W-BEAM STRONG POST (PWE01)**  
NOT TO SCALE



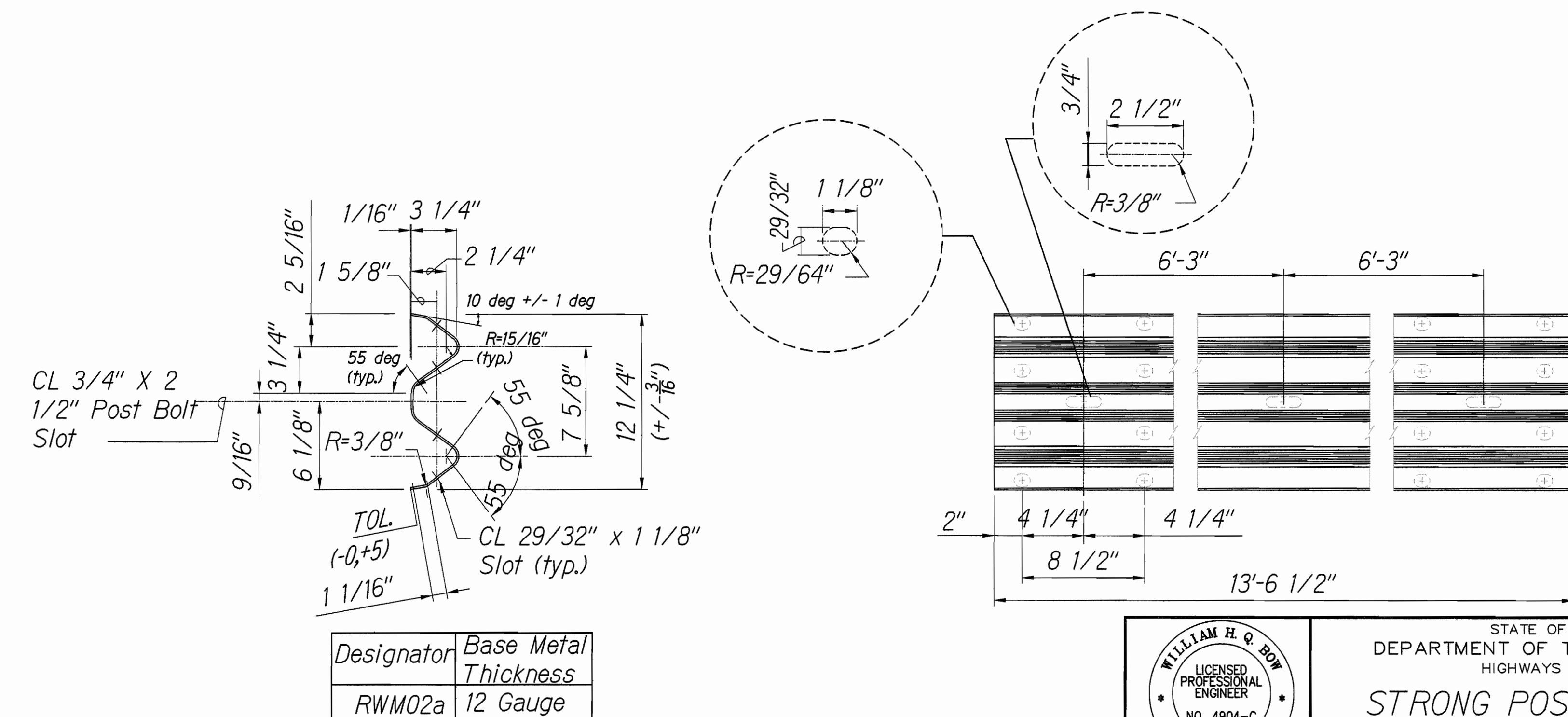
**3**  
C-6 C-6  
**GUARDRAIL BOLTS AND RECESSED**  
NOT TO SCALE



**4**  
C-6 C-6  
**W-BEAM BACK UP PLATE (RWB01a)**  
NOT TO SCALE



**5**  
C-6 C-6  
**STRONG POST W-BEAM WITH RECYCLED OFFSET BLOCK OR PLASTIC BLOCKOUT**  
NOT TO SCALE



**6**  
C-6 C-6  
**2 SPACE W-BEAM GUARDRAIL (RWM02a)**  
NOT TO SCALE

LICENSE EXPIRES: 4/30/14  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*William H. Q. Bow*

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

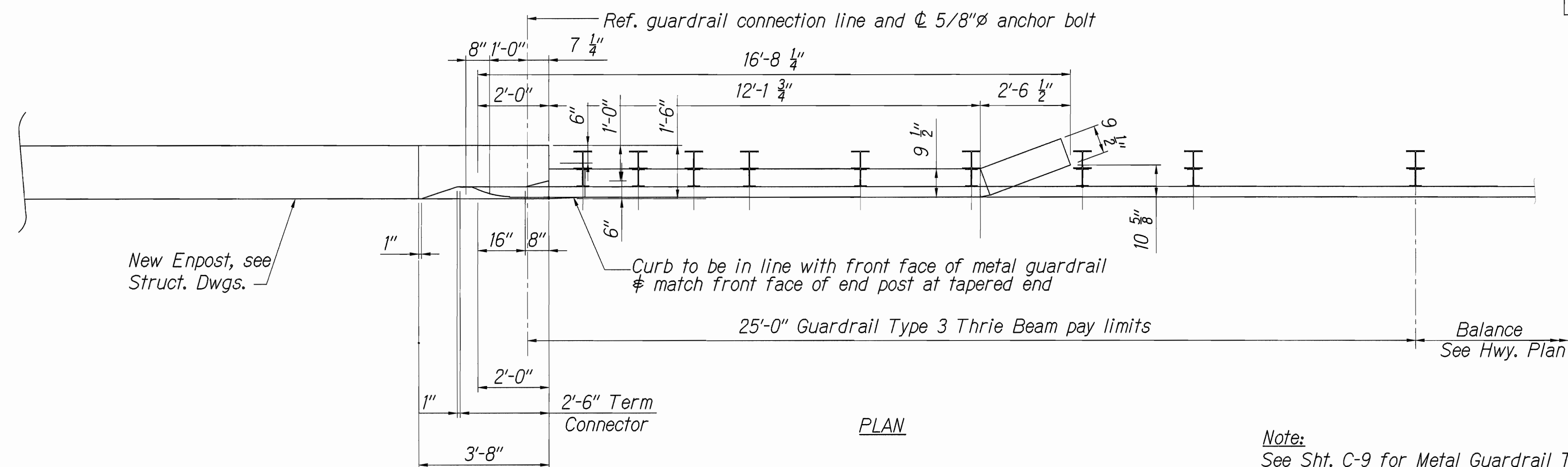
**STRONG POST W-BEAM GUARDRAIL DETAILS**

**HAWAII BELT ROAD**  
**Rehabilitation of Umauma Stream Bridge**  
**Federal Aid Project No. BR-019-2(61)**

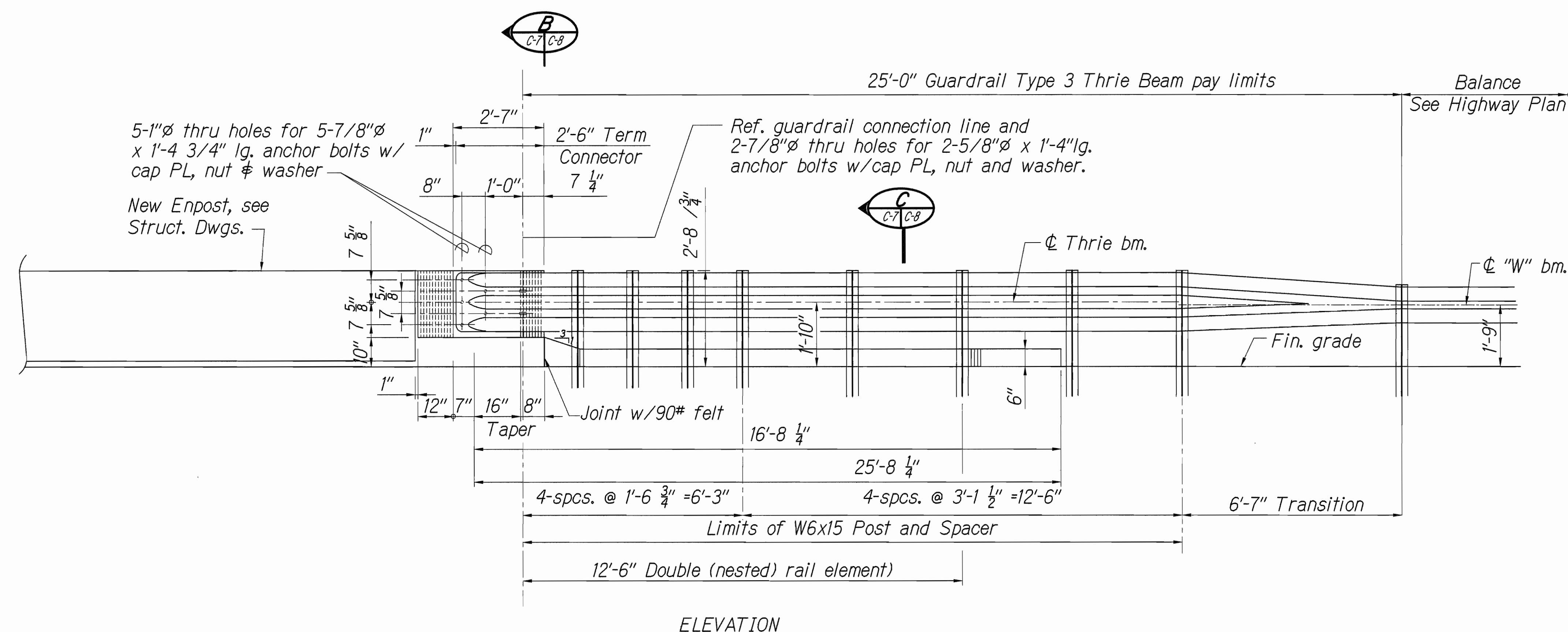
Scale: None Date: July 25, 2012



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(61)	2012	22	137



Note:  
See Sht. C-9 for Metal Guardrail Type 3 Thrie Beam and Appurtenances details.



TYPICAL TYPE 3 THRIE BEAM METAL GUARDRAIL  
NOT TO SCALE

WILLIAM H. Q. BOW  
LICENSED PROFESSIONAL ENGINEER  
NO. 4904-C  
HAWAII USA

LICENSE EXPIRES: 4/30/14  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

*William H. Q. Bow*

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

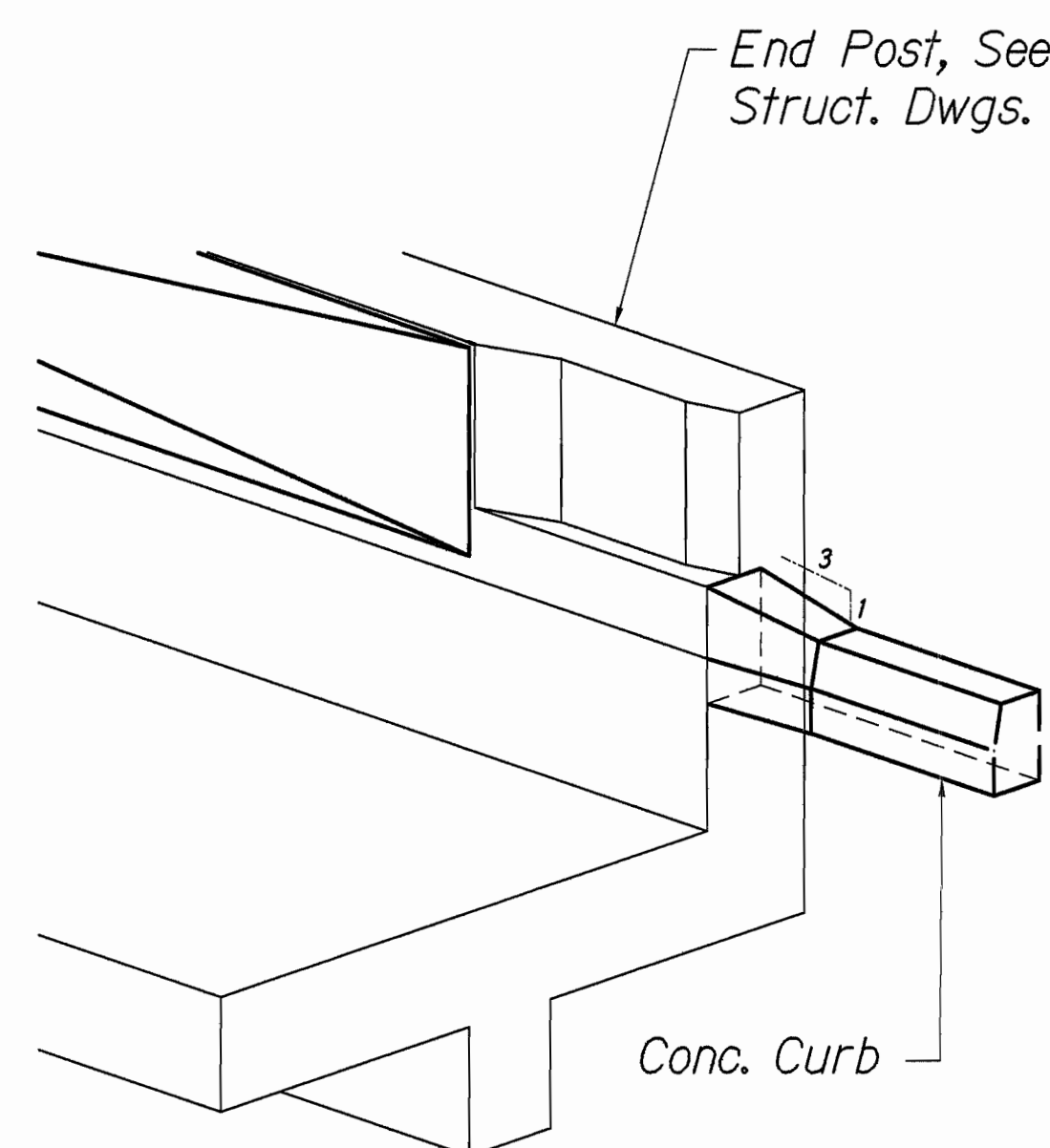
**TYPICAL TYPE 3 THRIE BEAM METAL GUARDRAIL**

**HAWAII BELT ROAD**  
**Rehabilitation of Umauma Stream Bridge**  
**Federal Aid Project No. BR-019-2(61)**

Scale: None Date: July 25, 2012

SHEET No. C-7 OF 19 SHEETS

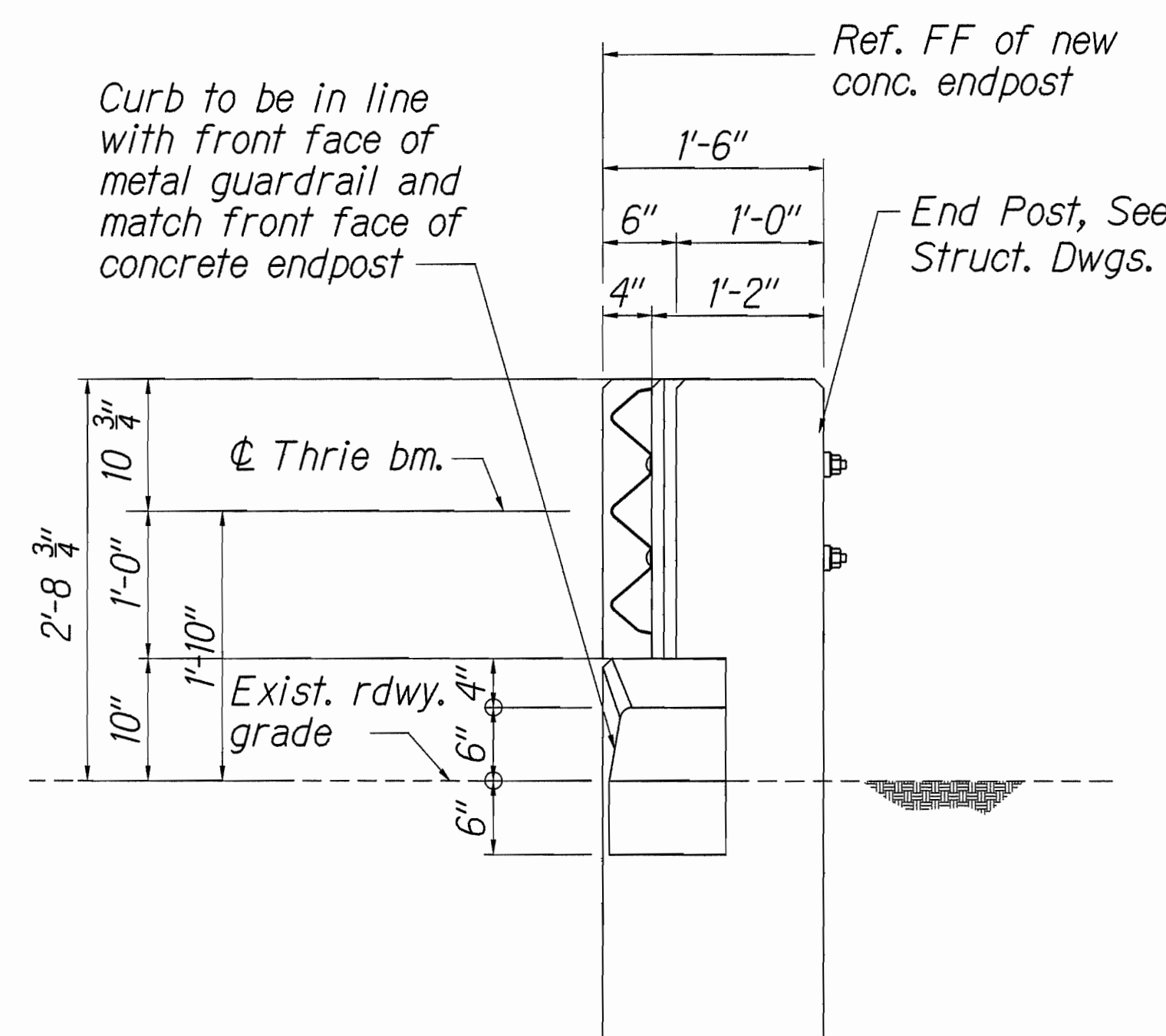
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(61)	2012	23	137



PARTIAL ISOMETRIC

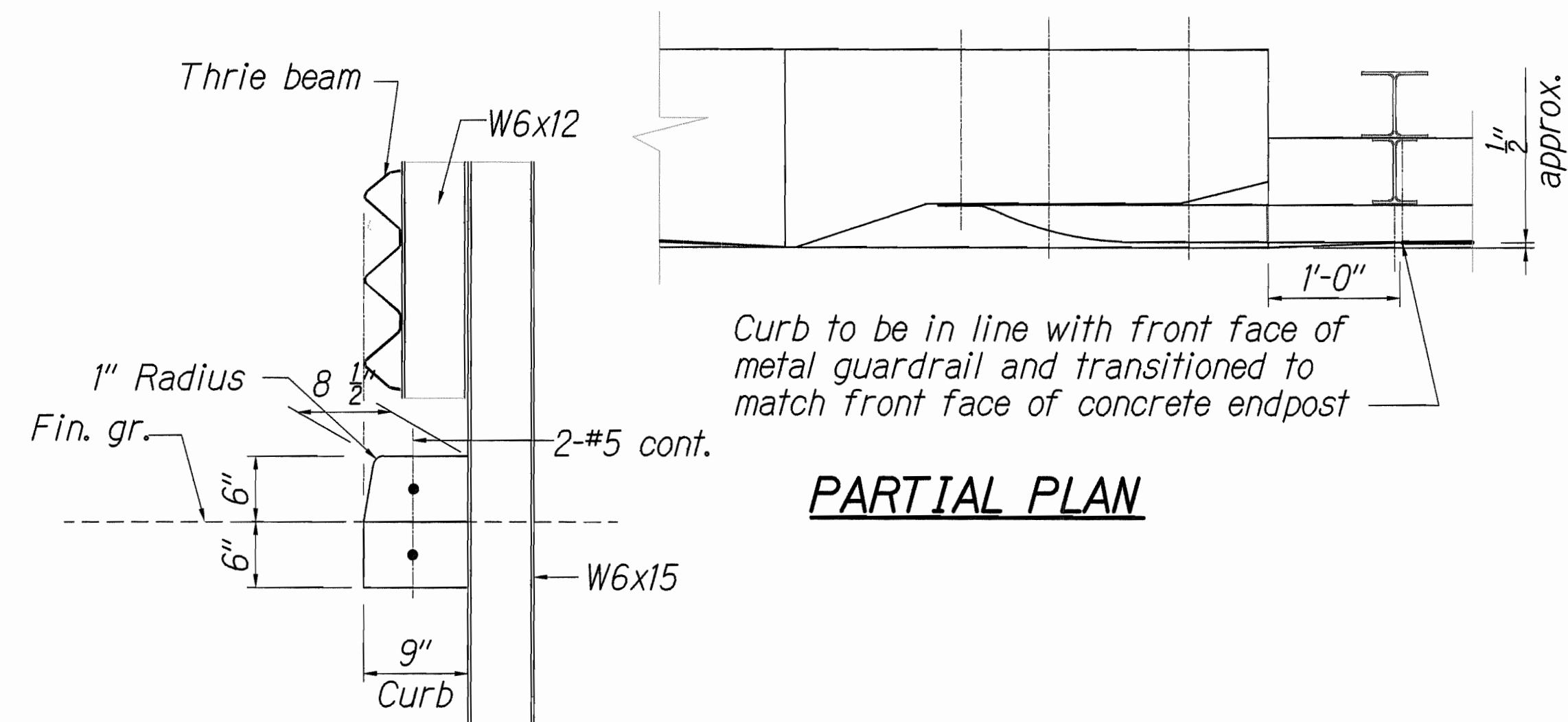
VIEW TYPE "D2" ENDPOST

A  
C-7|C-8 NOT TO SCALE



B SECTION

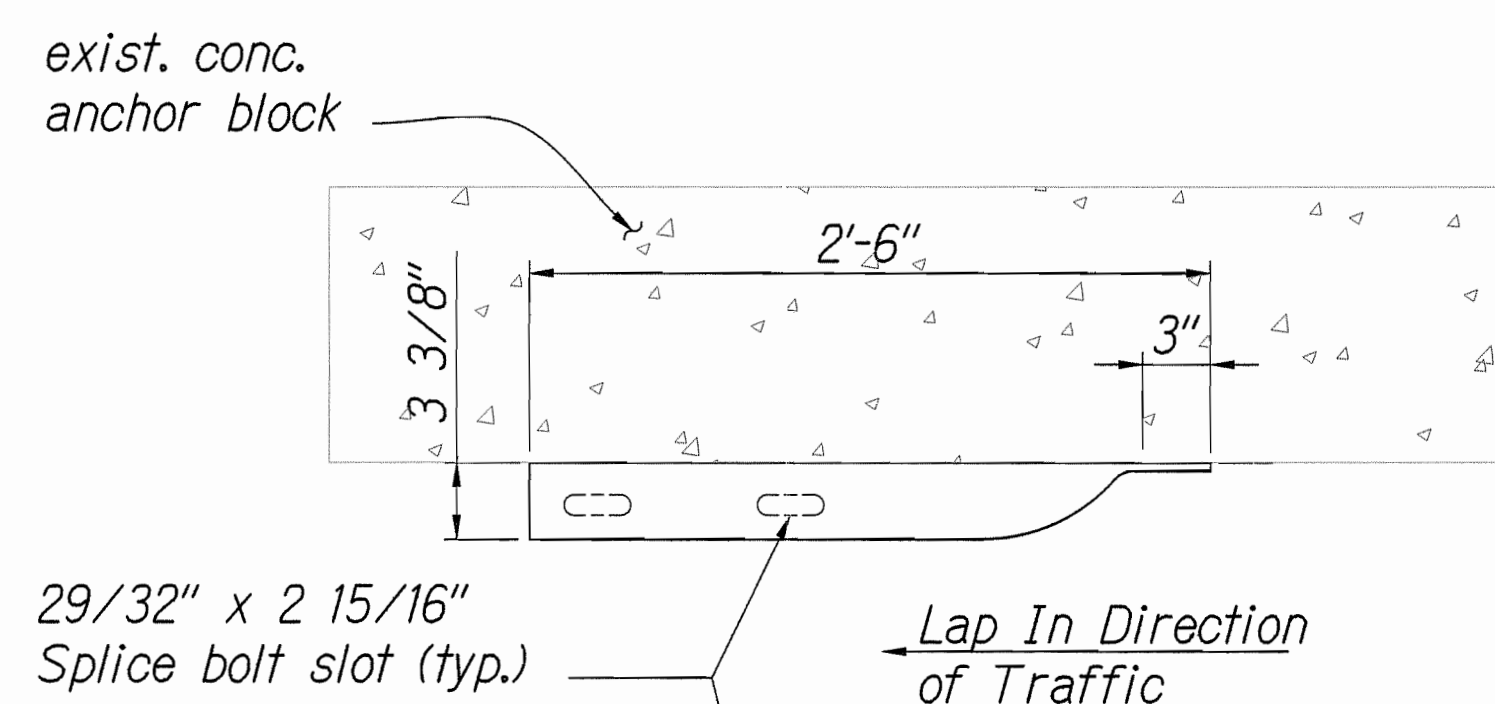
C-7|C-8 NOT TO SCALE



PARTIAL PLAN

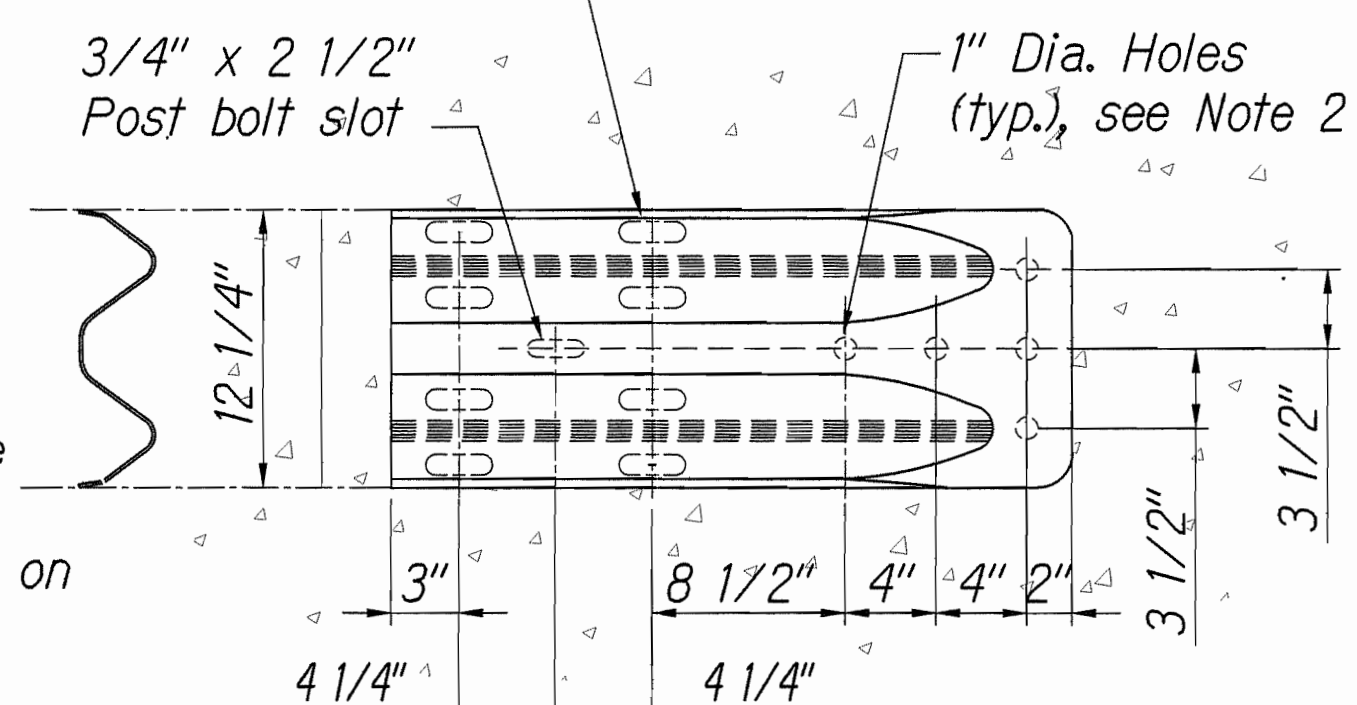
C SECTION

C-7|C-8 NOT TO SCALE



Notes:

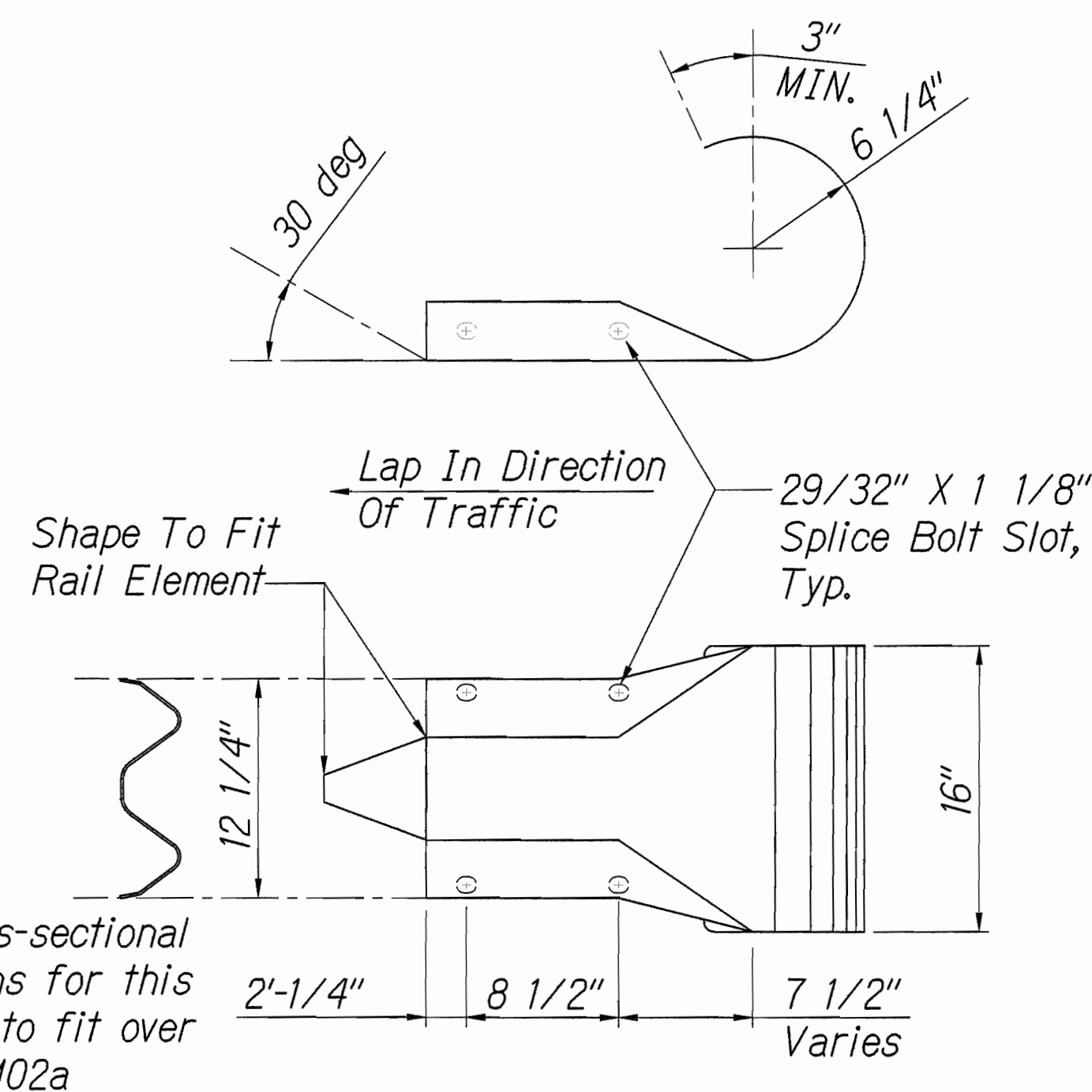
- The cross-sectional dimensions for this part are to fit over part RWM02b on the approach end and under part RWM02b on the trailing end.
- Re-use existing anchor block bolts. Adjust hole size and location to match.



Designator	Base Metal Thickness
RWM02b	10 Gauge

1 W-BEAM TERMINAL CONNECTOR (RWE02b)

C-12|C-8 NOT TO SCALE

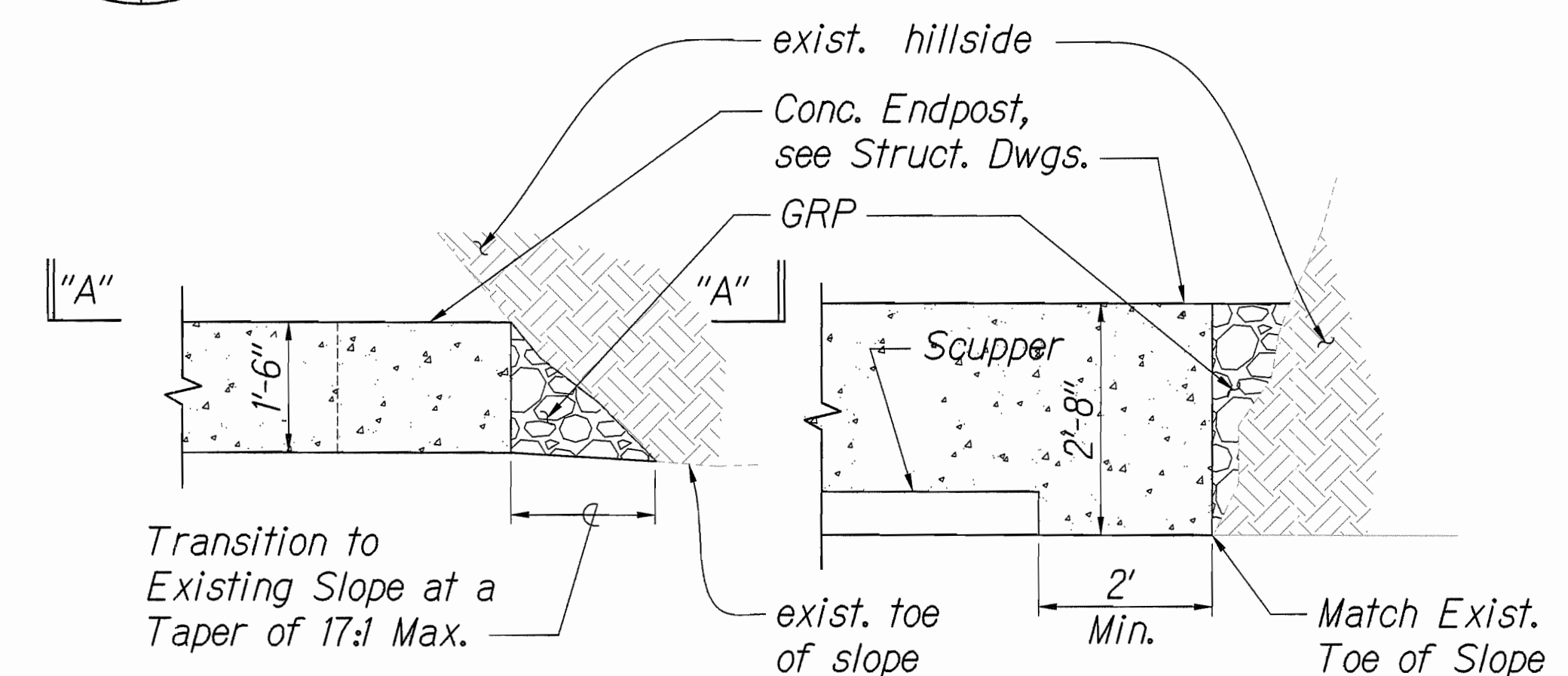


The cross-sectional dimensions for this part are to fit over part RWM02a

Designator	Base Metal Thickness
RWM02a	12 Gauge

2 W-BEAM END SECTION (ROUNDED RWE03a)

C-12|C-8 NOT TO SCALE



PLAN

SECTION A-A

(Northeast Endpost Similar)

3 NORTHWEST ENDPOST HILLSIDE CONNECTION

C-12|C-8 NOT TO SCALE

LICENSE EXPIRES: 4/30/14  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*William H. Q. Dow*

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**GUARDRAIL TERMINAL CONN**  
**END SECTION DETAIL**

**HAWAII BELT ROAD**  
**Rehabilitation of Umauma Stream Bridge**  
**Federal Aid Project No. BR-019-2(61)**

Scale: None Date: July 25, 2012

SHEET No. C-8 OF 19 SHEETS



