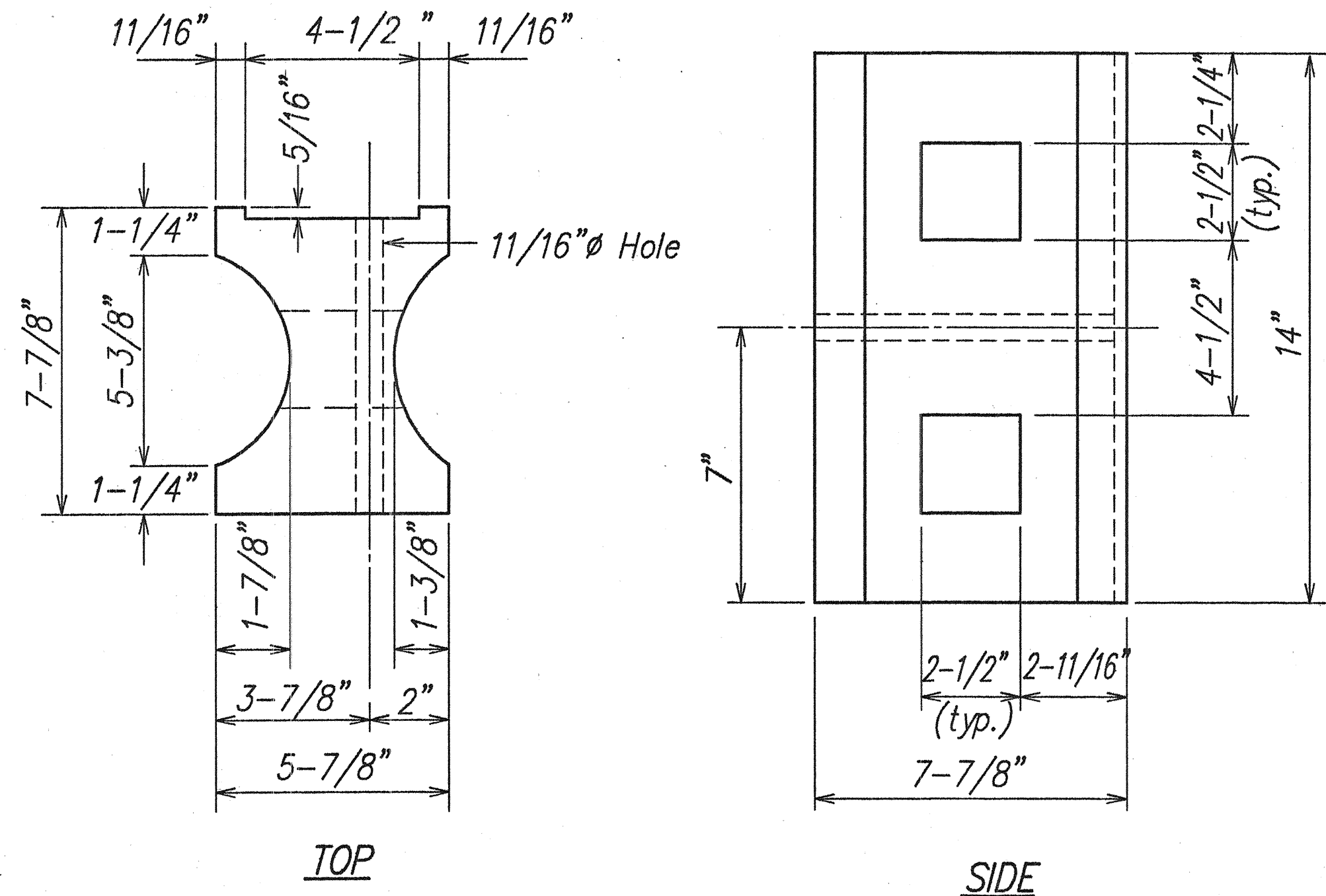
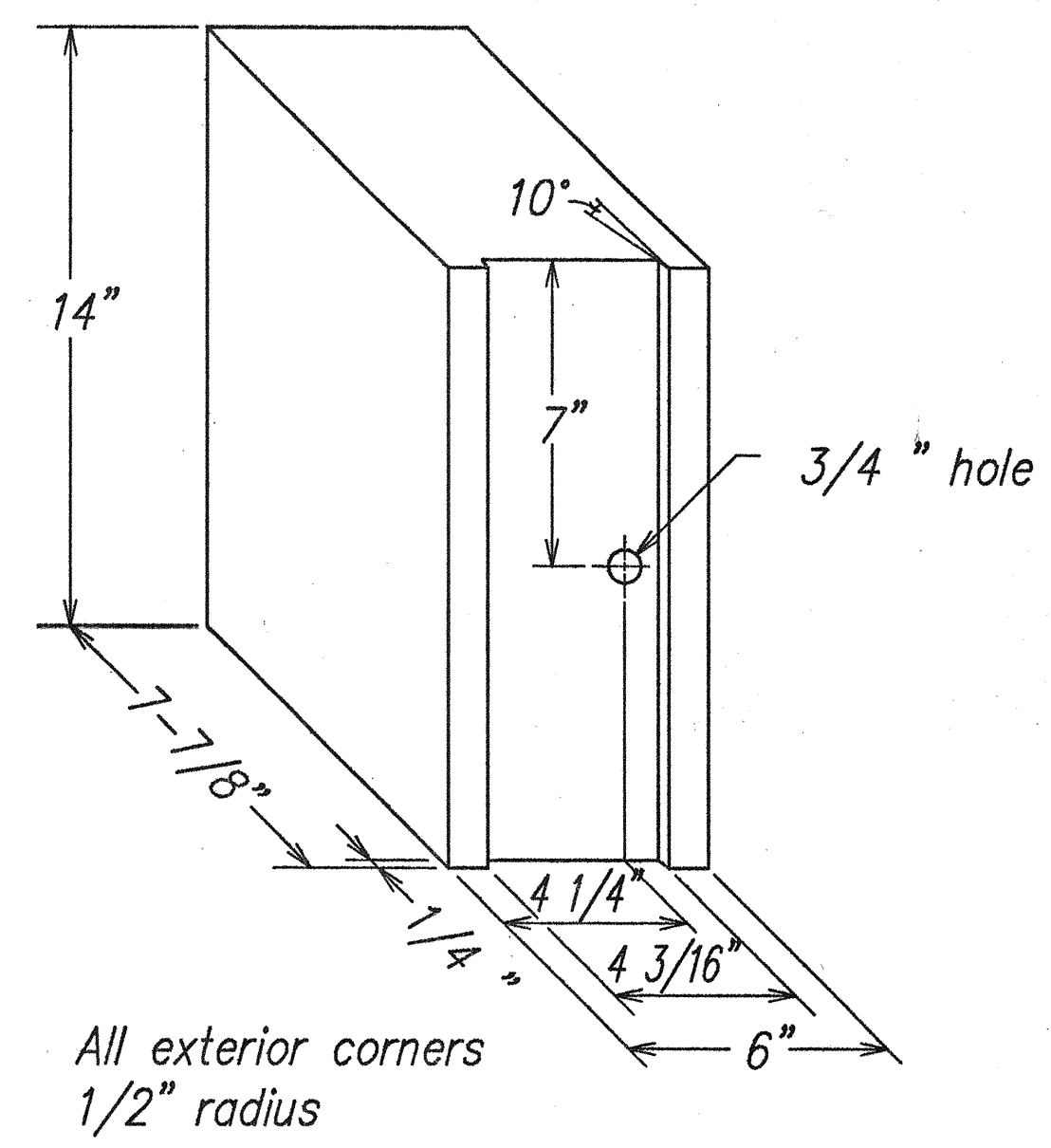


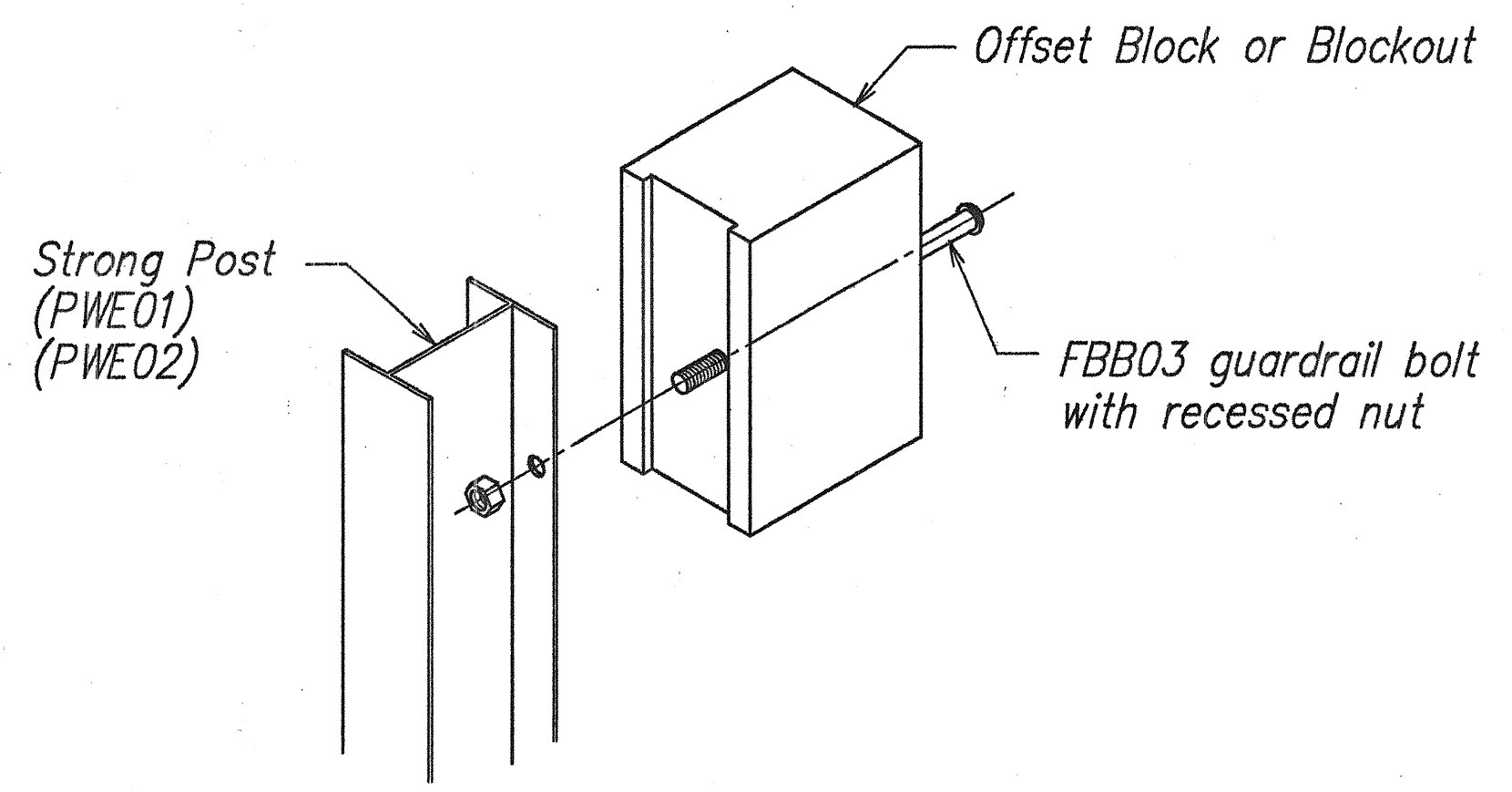
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-STP-0750(10)	1999	87	97



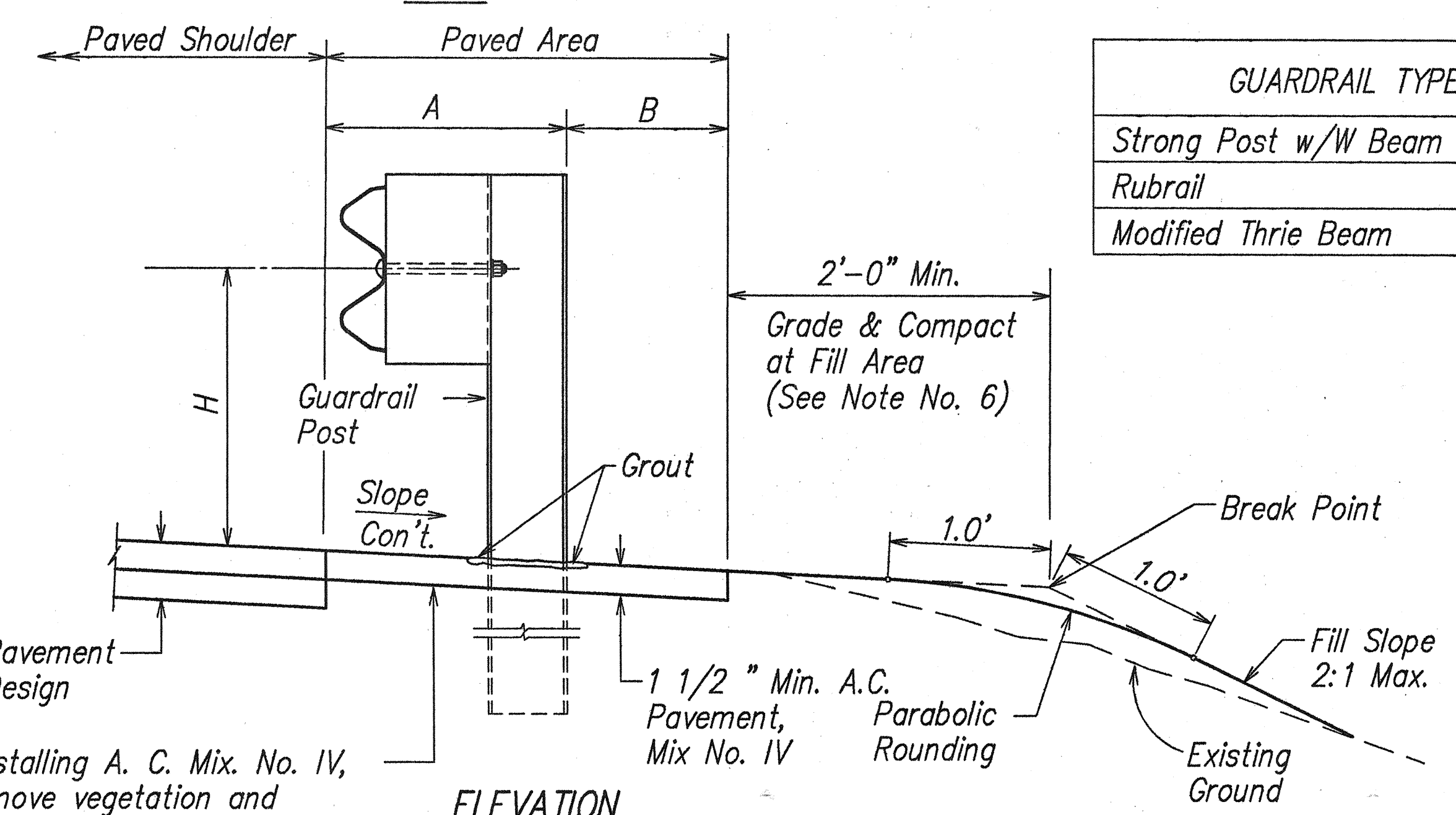
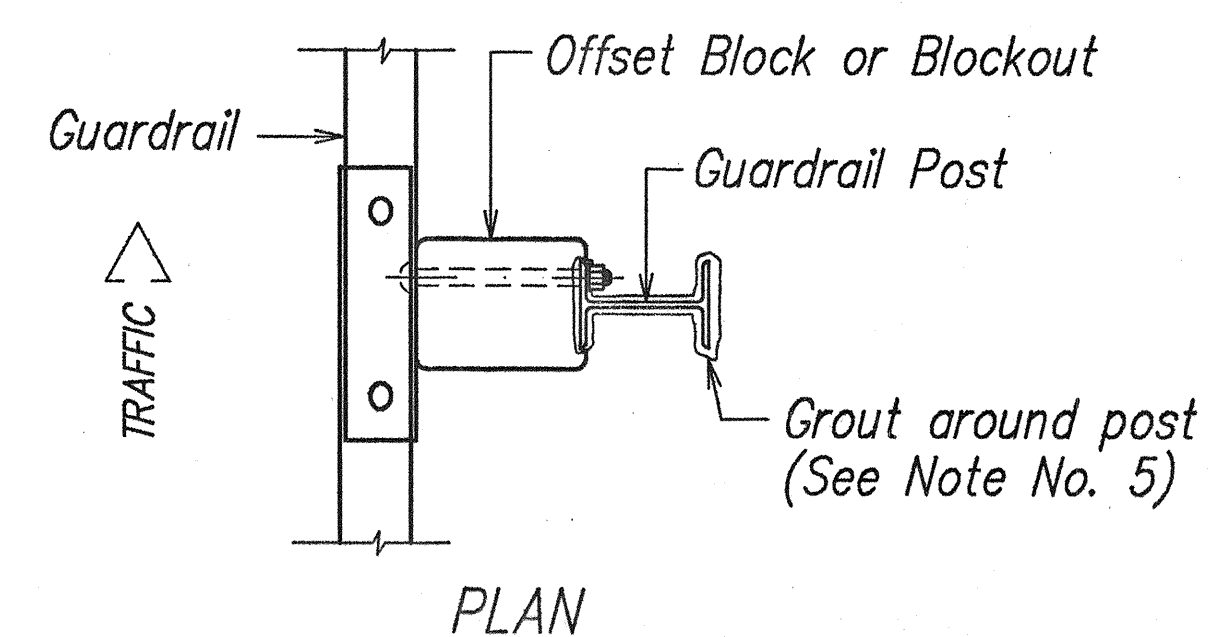
TOP
SIDE
RECYCLED PLASTIC BLOCKOUT (TYPE I)



RECYCLED POLYETHYLENE
OFFSET BLOCK (TYPE II)



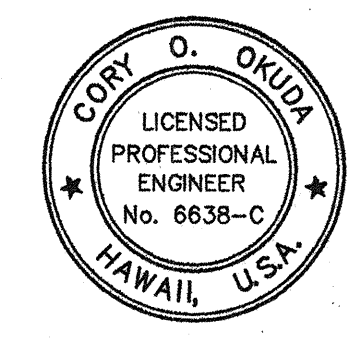
Exploded View
(Rail and washer not shown)
STEEL POST AND BLOCK DETAIL



ELEVATION
TYPICAL GUARDRAIL INSTALLATION

GUARDRAIL TYPE	DIMENSION		
	H	A	B
Strong Post w/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"

- GENERAL NOTES
1. All hardware, posts and fasteners shall be hot-dip zinc coated galvanized after fabrication. No punching, drilling or cutting will be permitted after galvanizing.
 2. Where conditions require, special post lengths in increments of 6 inches may be specified.
 3. 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.
 4. The Recycled Plastic Block or Offset Block shall be approved by the State.
 5. 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.
 6. When standards for the fill slope area cannot be met, a site specific, engineer approved design may be used.



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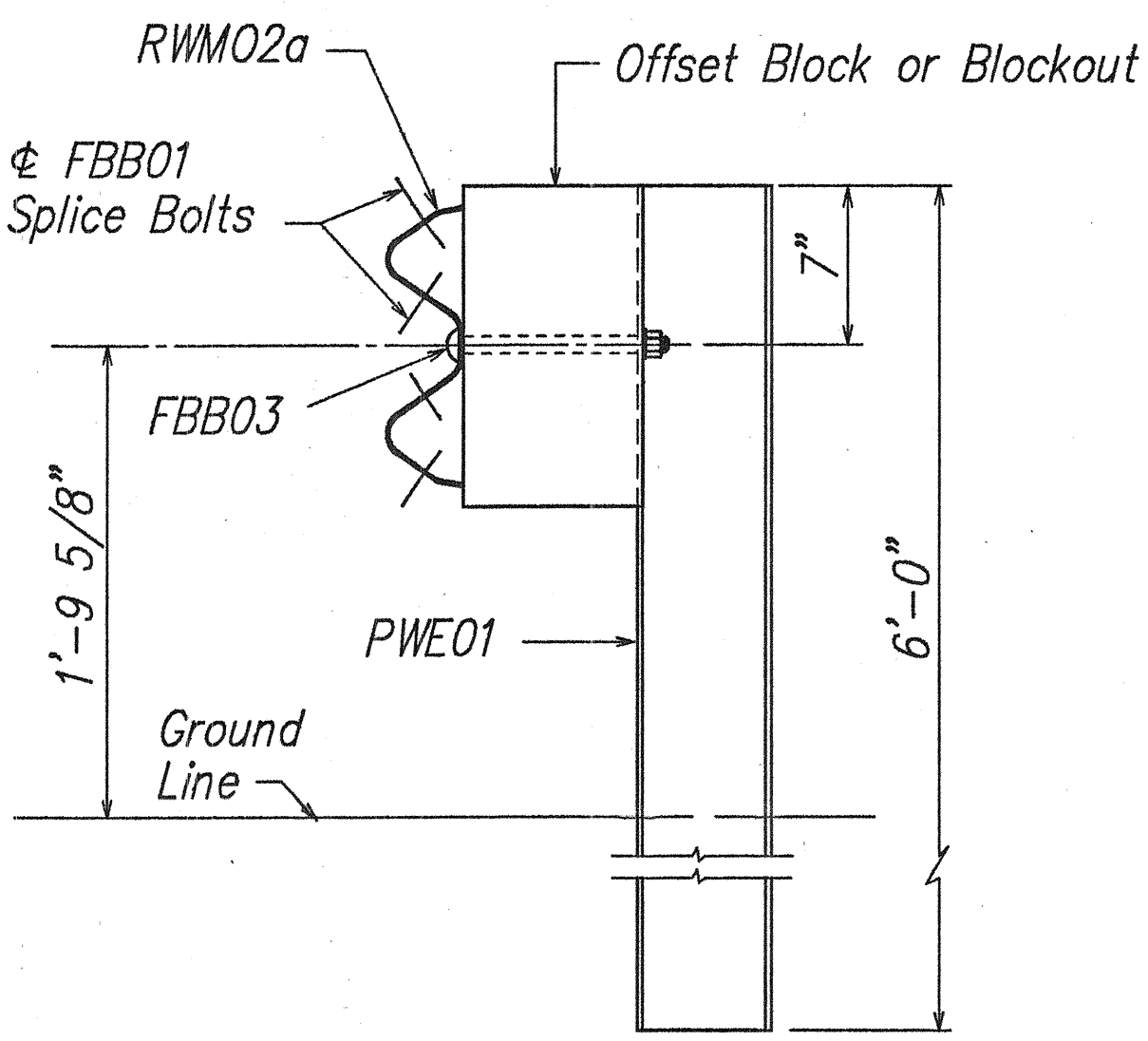
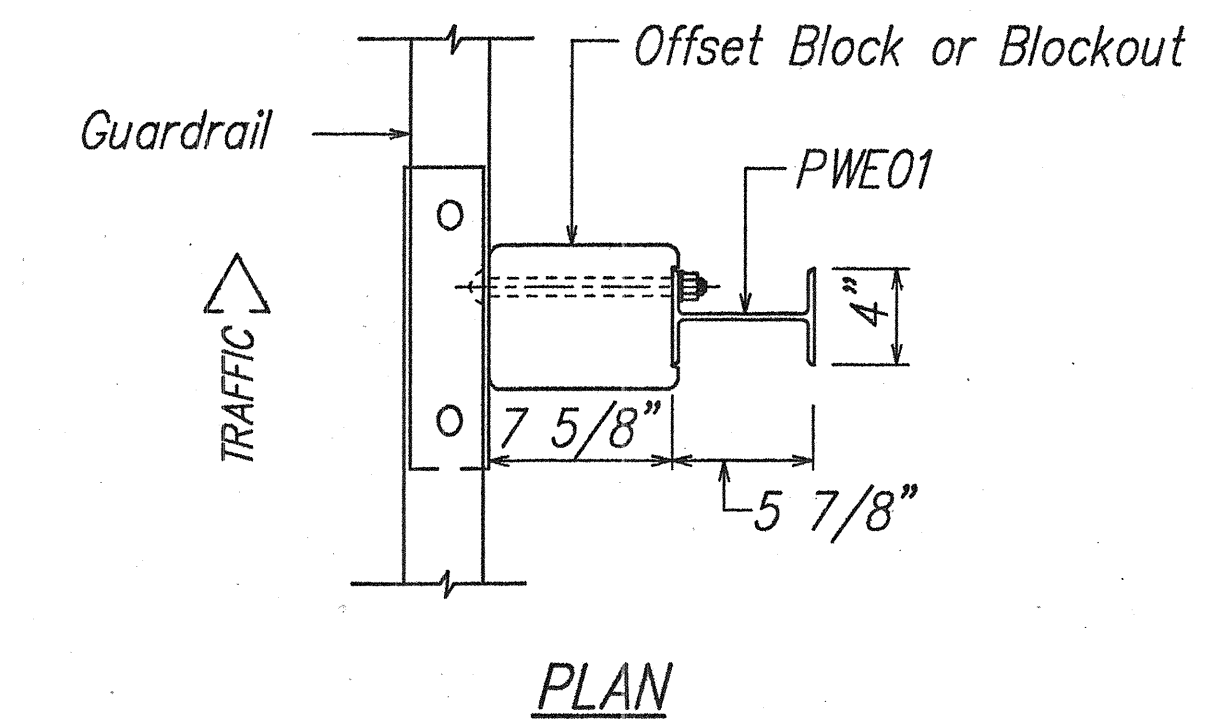
GUARDRAIL DETAILS & NOTES

KUNIA ROAD WIDENING; AND
H-1, KUNIA I.C. RAMP KO WIDENING
F.A.I. PROJECT NO. IM-STP-0750(10)

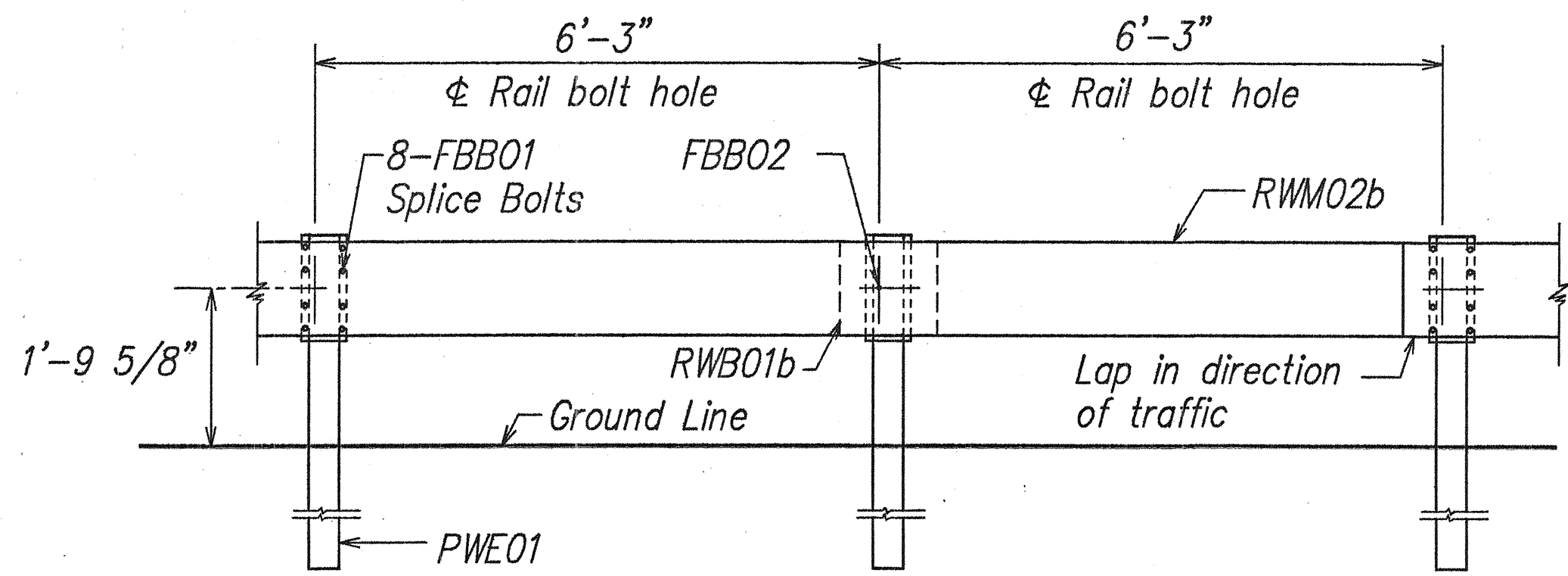
SCALE: AS NOTED DATE: APRIL 1999
SHEET No. 1 OF 6 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-STP-0750(10)	1999	88	97

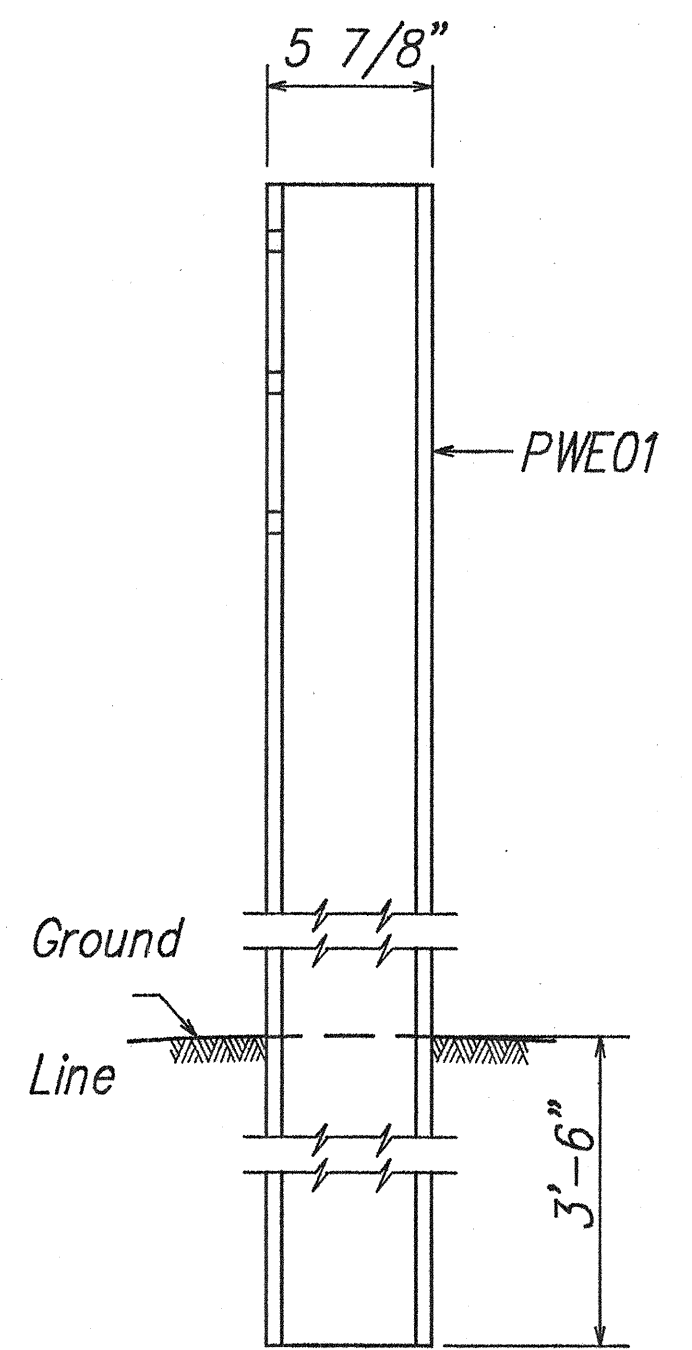


STRONG POST W-BEAM GUARDRAIL (SGR04a)

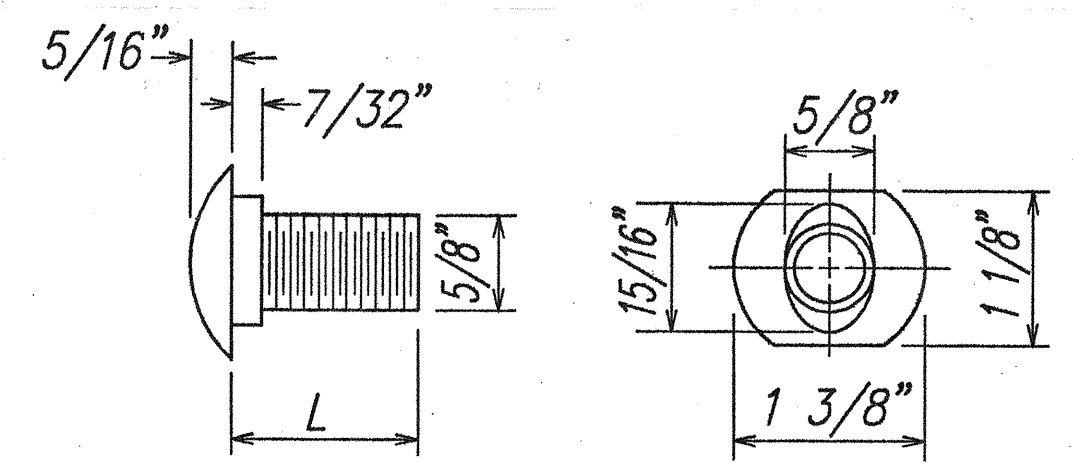
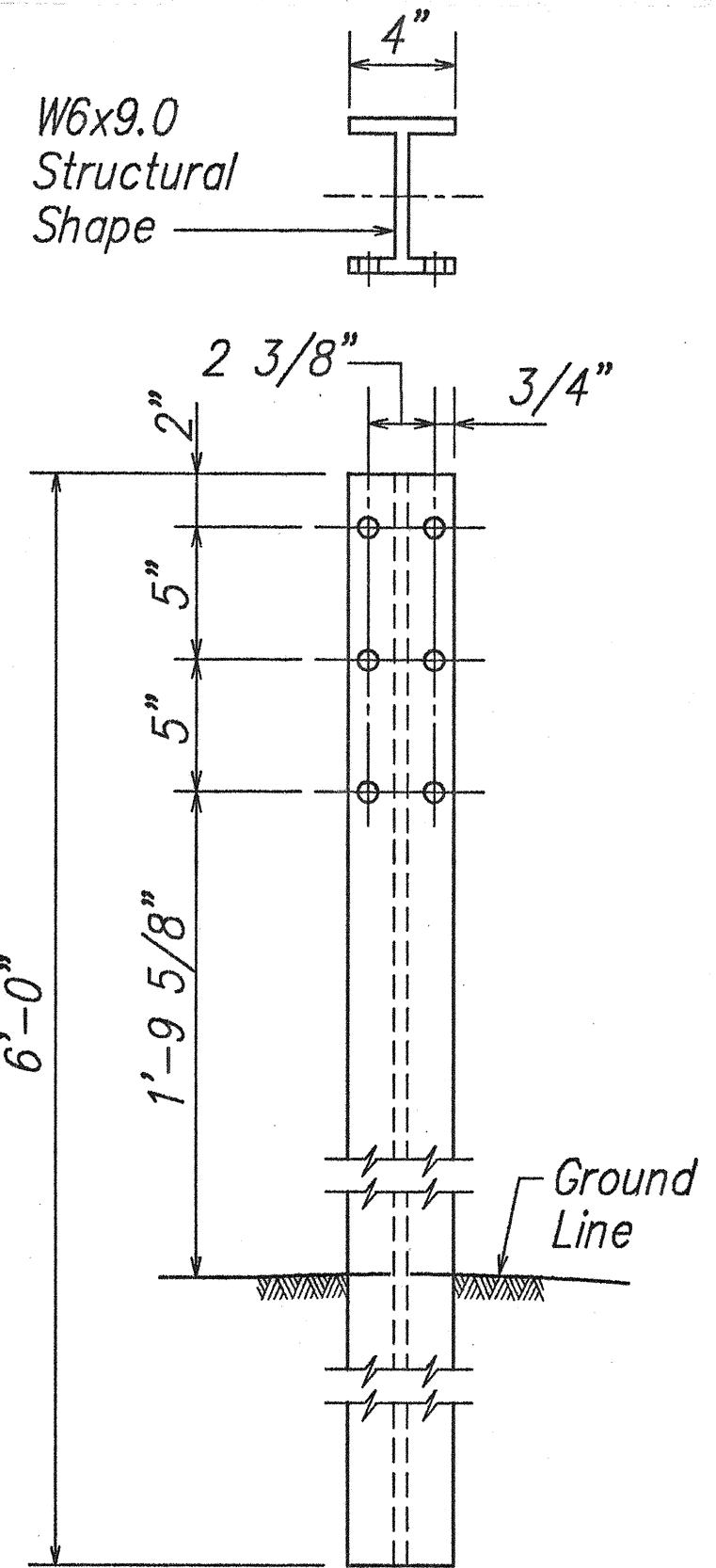


STRONG POST W-BEAM GUARDRAIL WITH RECYCLED OFFSET BLOCK OR PLASTIC BLOCKOUT

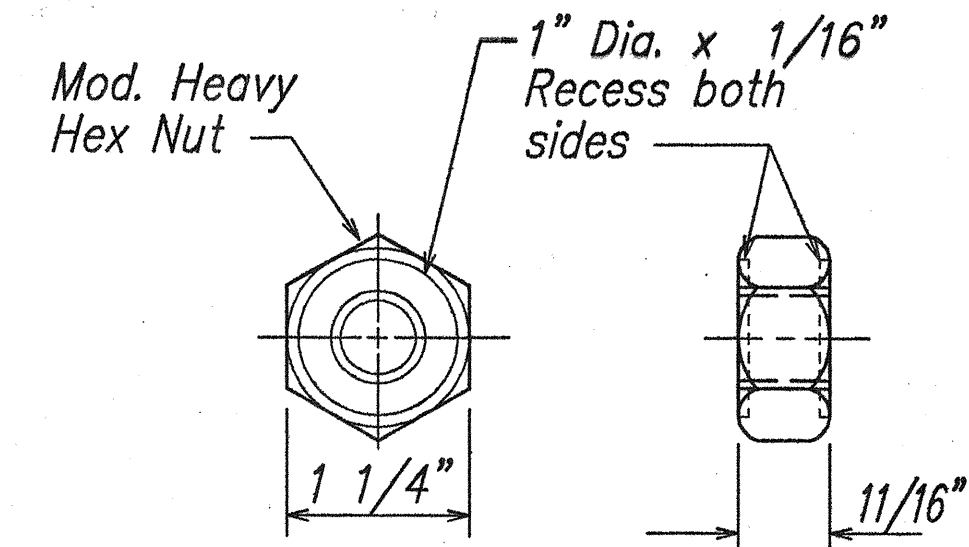
NOTE:
All Holes are 3/4" Dia.



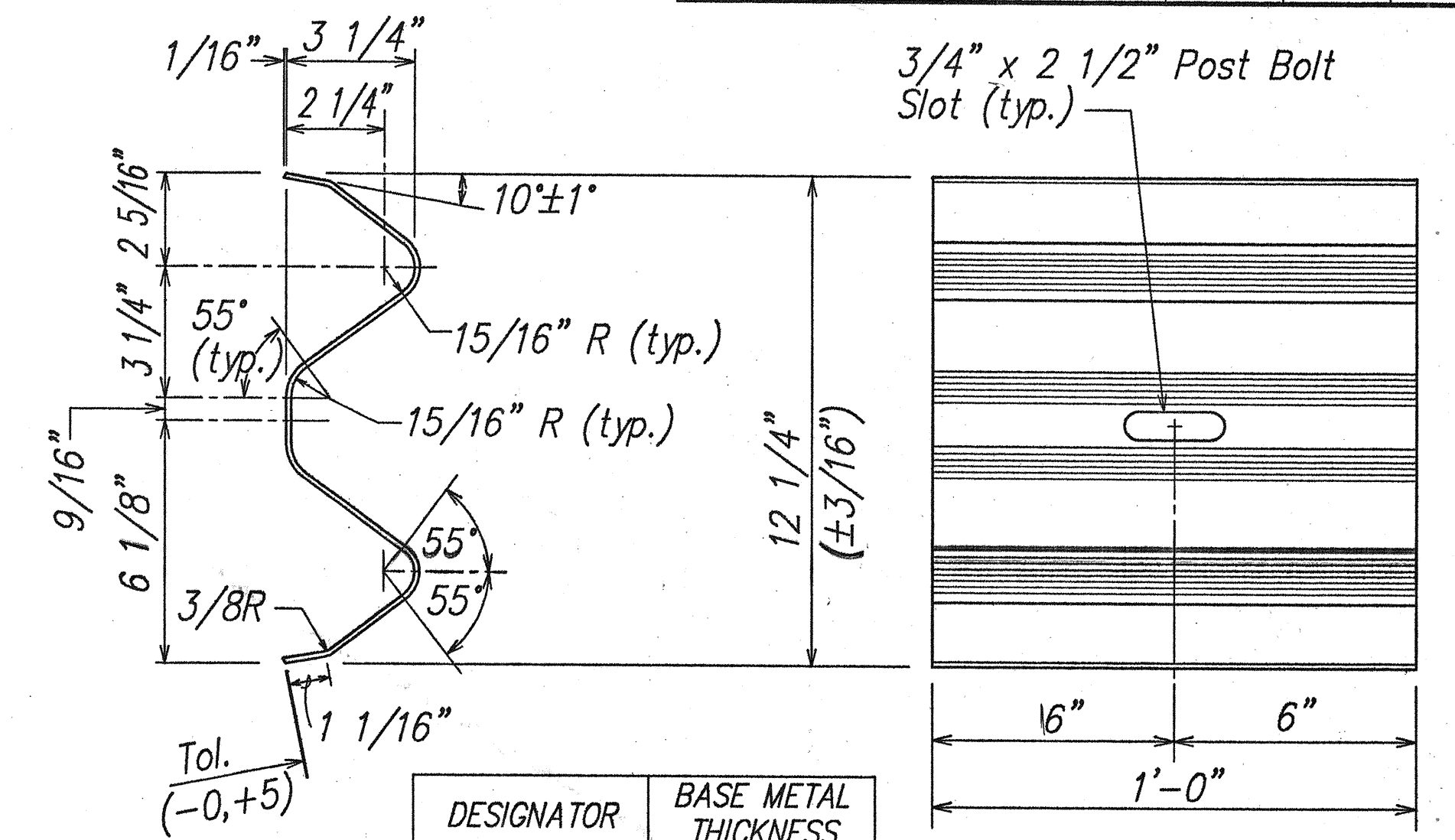
W-BEAM STRONG POST (PWE01)



DESIGNATOR	L
FBB01	1 3/8"
FBB02	2"
FBB03	10"

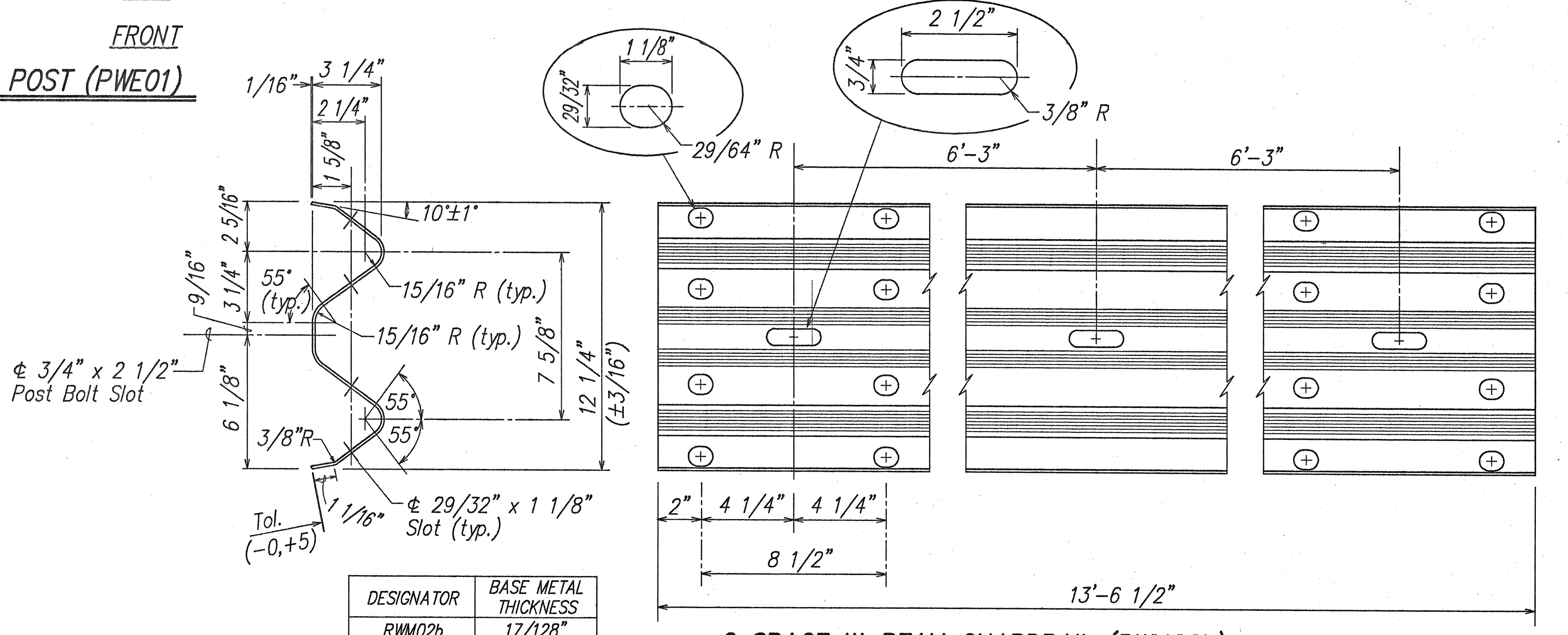


GUARDRAIL BOLTS AND RECESSED NUT



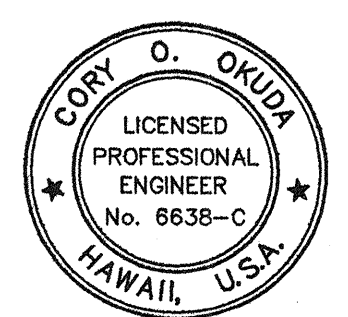
DESIGNATOR	BASE METAL THICKNESS
RWB01b	17/128"

W-BEAM BACK-UP-PLATE (RWB01b)



DESIGNATOR	BASE METAL THICKNESS
RWM02b	17/128"

2 SPACE W-BEAM GUARDRAIL (RWM02b)



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P.O. Box 100
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HIGHWAYS DIVISION

GUARDRAIL DETAILS
STRONG POST W-BEAM GUARDRAIL

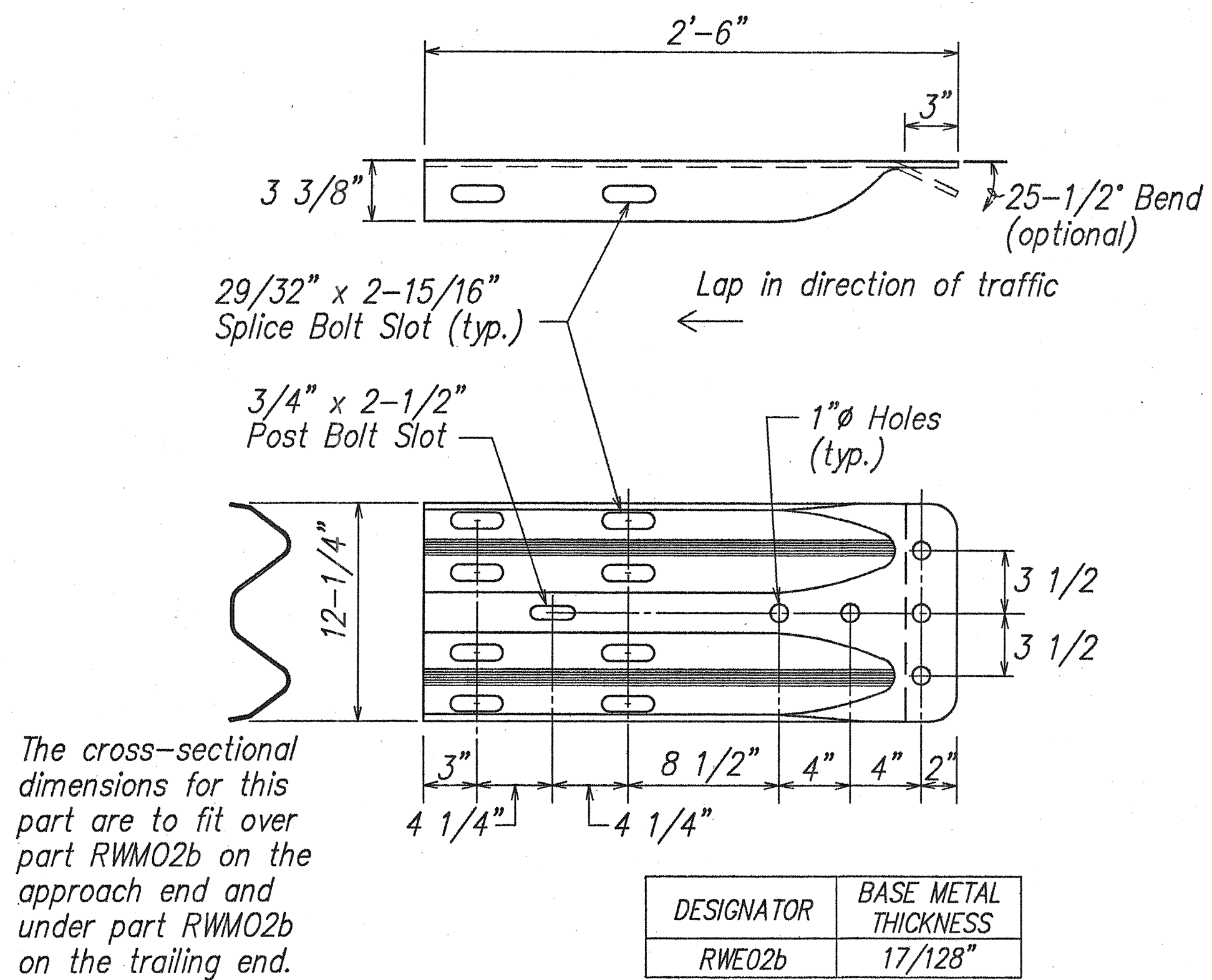
KUNIA ROAD WIDENING; AND
H-1, KUNIA I.C. RAMP KO WIDENING
F.A.I. PROJECT NO. IM-STP-0750(10)

SCALE: AS NOTED DATE: APRIL 1999

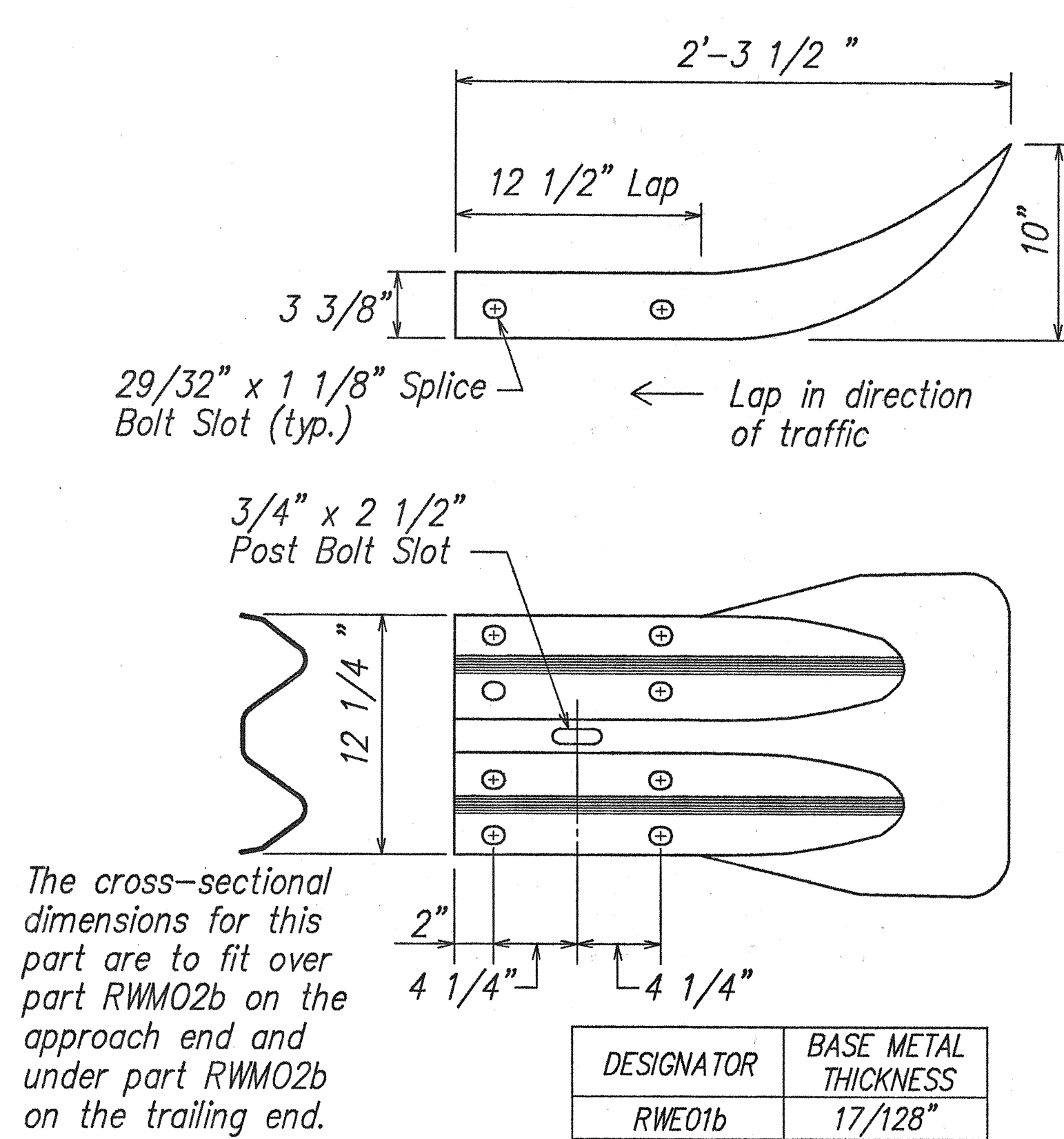
SHEET No. 2 OF 6 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

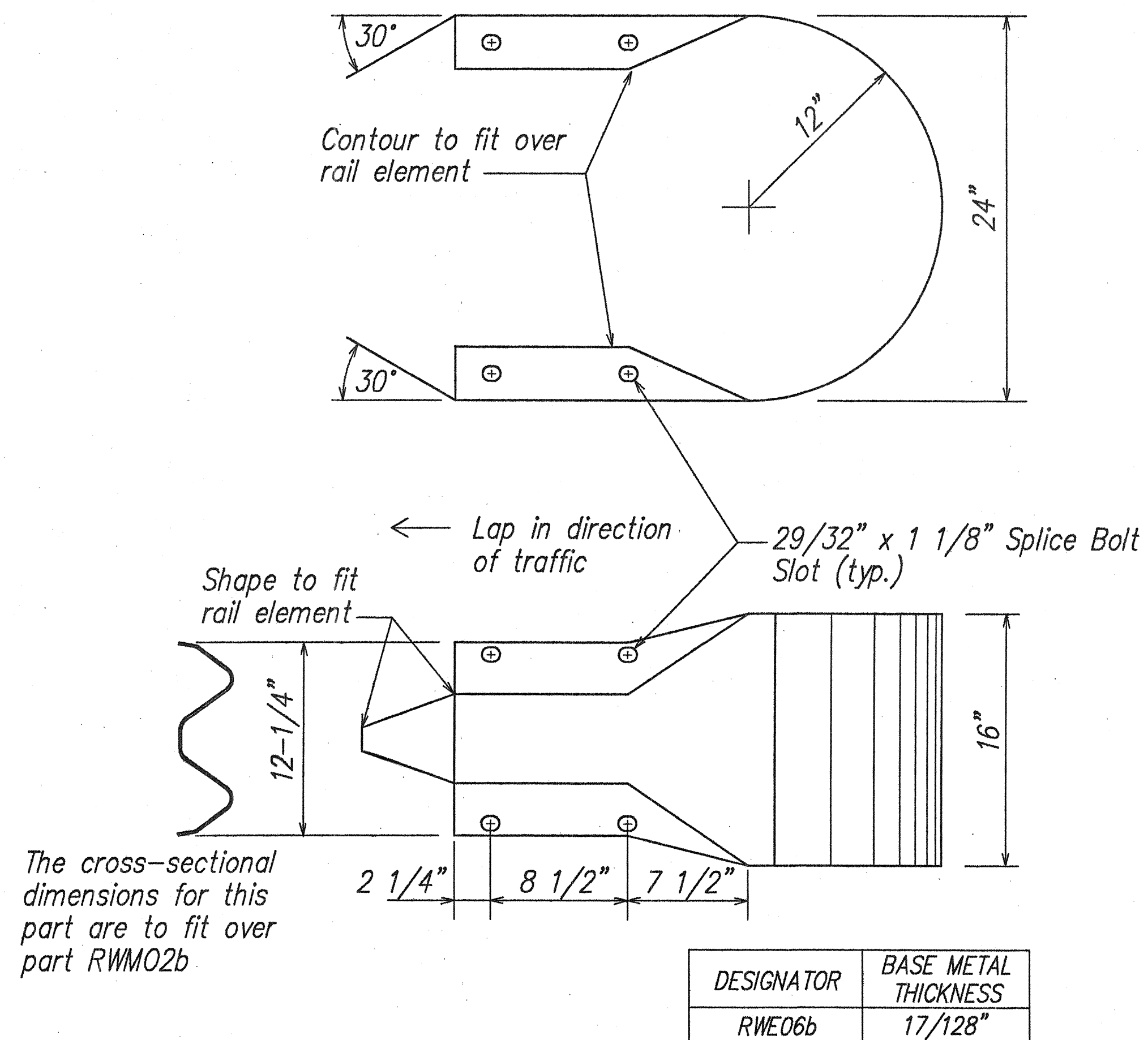
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-STP-0750(10)	1999	89	97



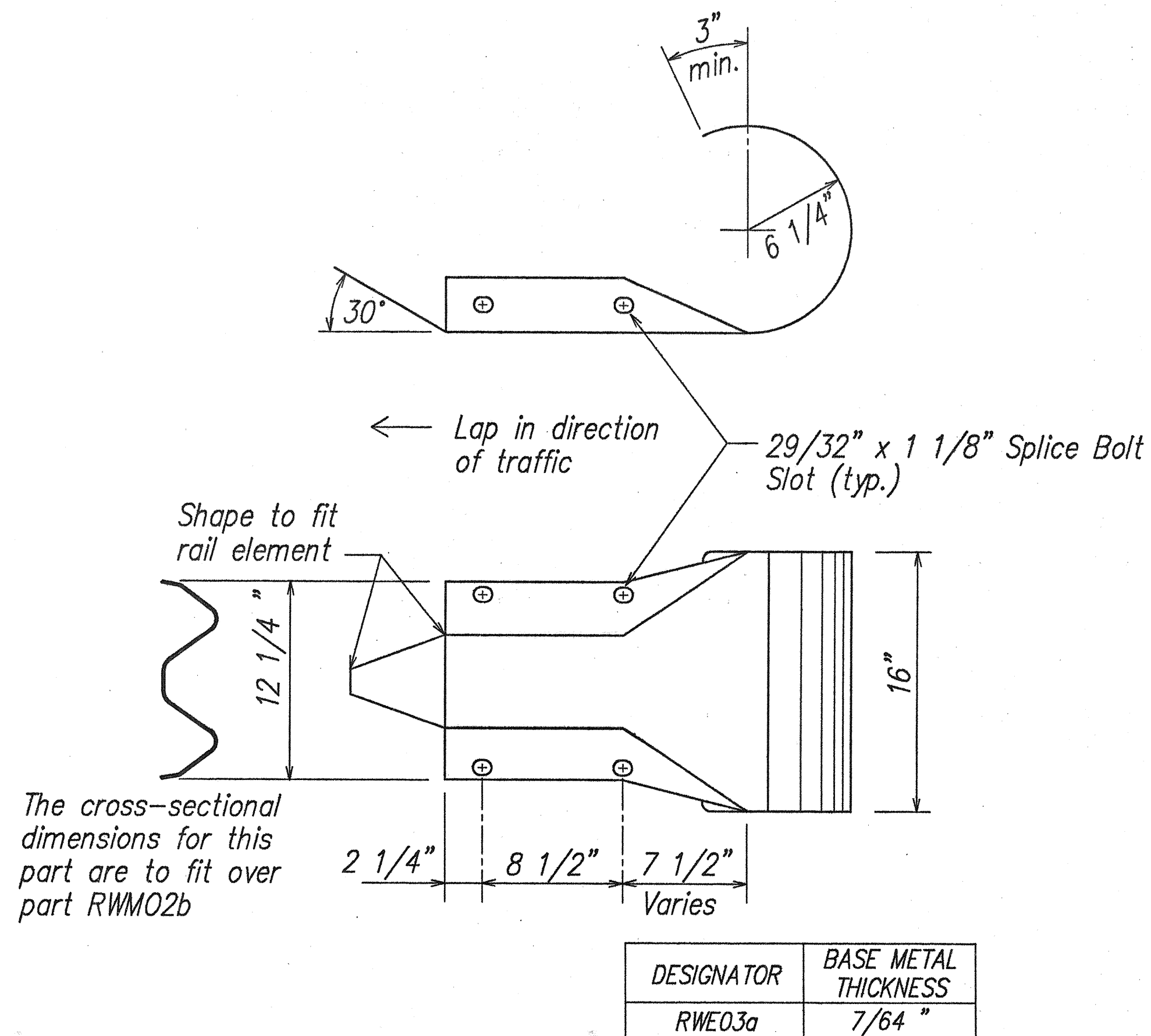
W-BEAM TERMINAL CONNECTOR (RWE02b)



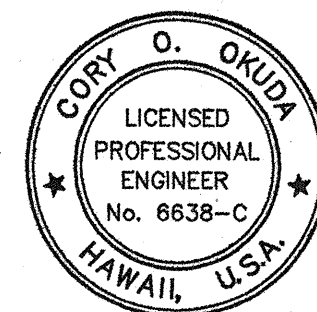
W-BEAM END SECTION (FLARED RWE01b)



W-BEAM END SECTION (BUFFER RWE06b)



W-BEAM END SECTION (ROUNDED RWE03a)



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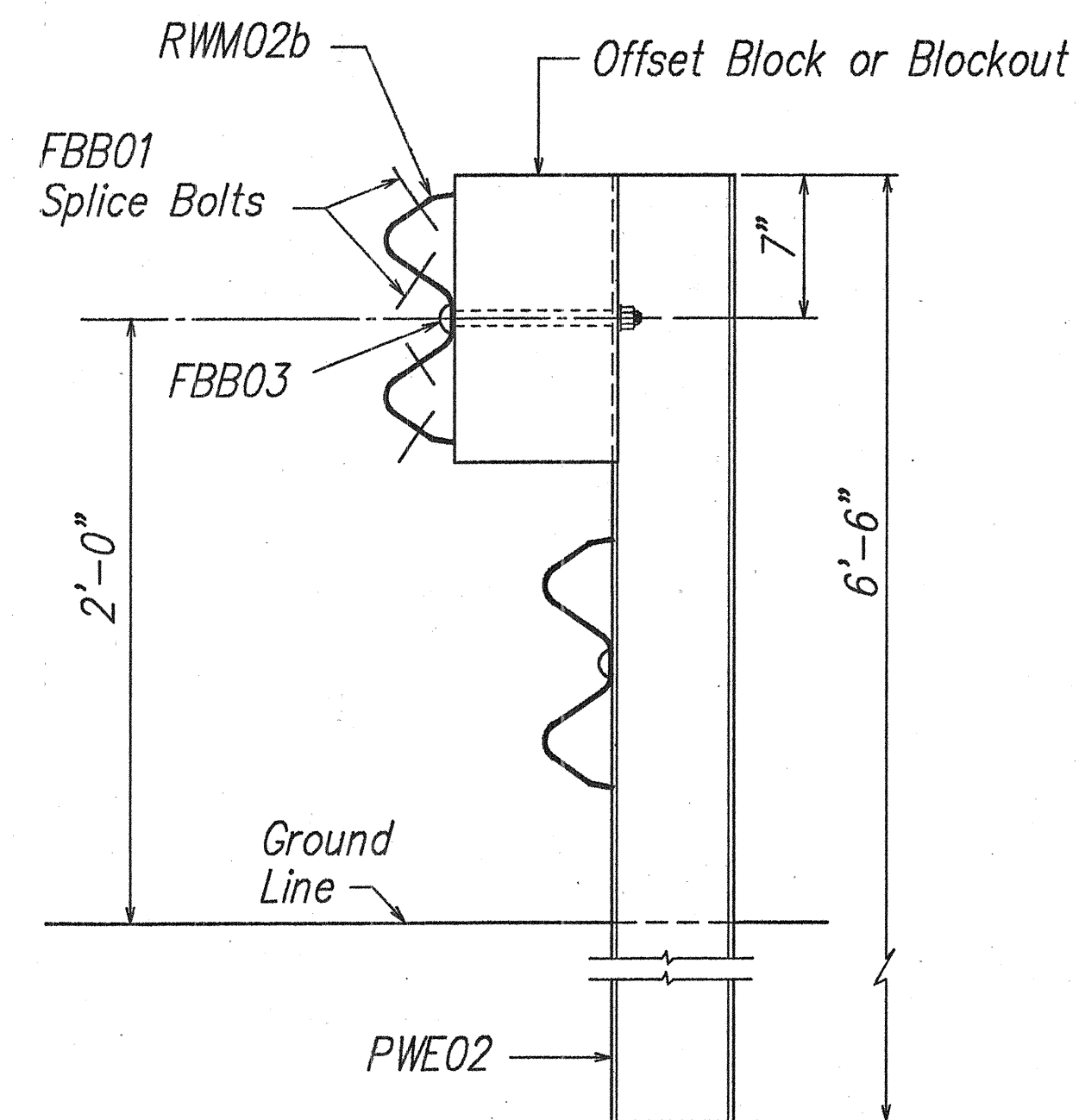
GUARDRAIL DETAILS
STRONG POST W-BEAM GUARDRAIL

KUNIA ROAD WIDENING; AND
H-1, KUNIA I.C. RAMP KO WIDENING
F.A.I. PROJECT NO. IM-STP-0750(10)

SCALE: AS NOTED DATE: APRIL 1999

SHEET No. 3 OF 6 SHEETS

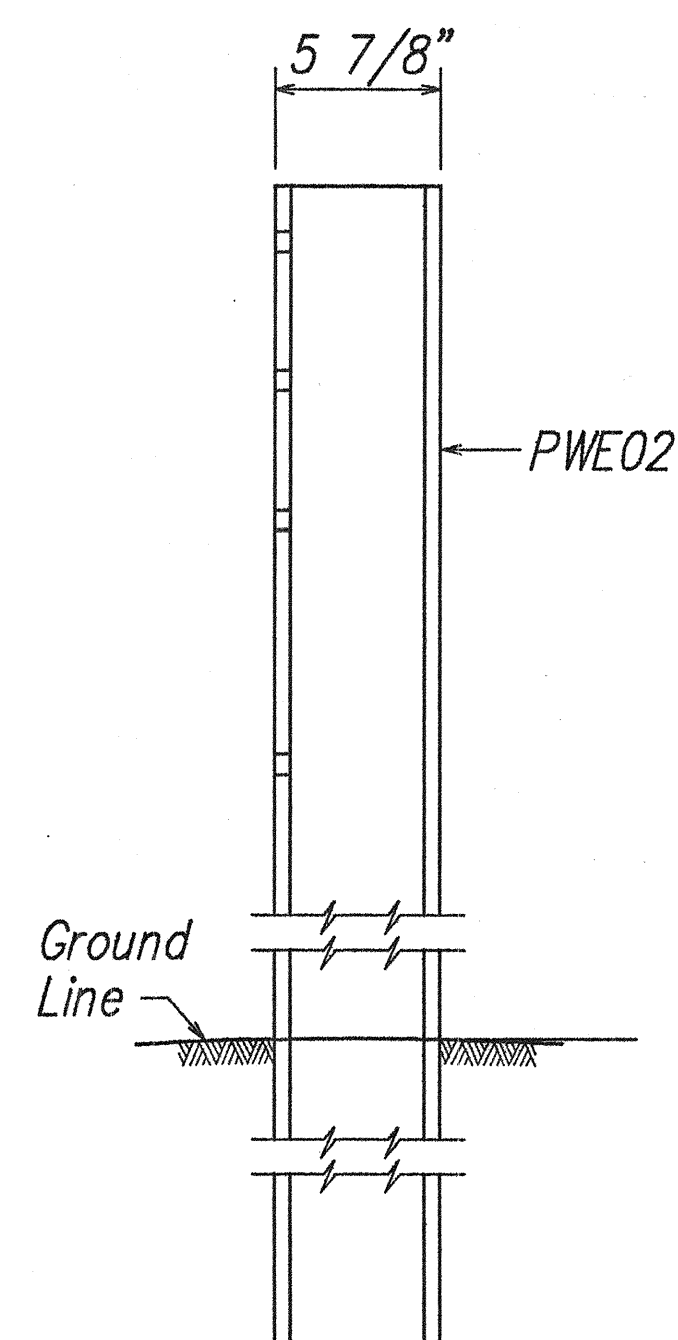
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-STP-0750(10)	1999	90	97



ELEVATION

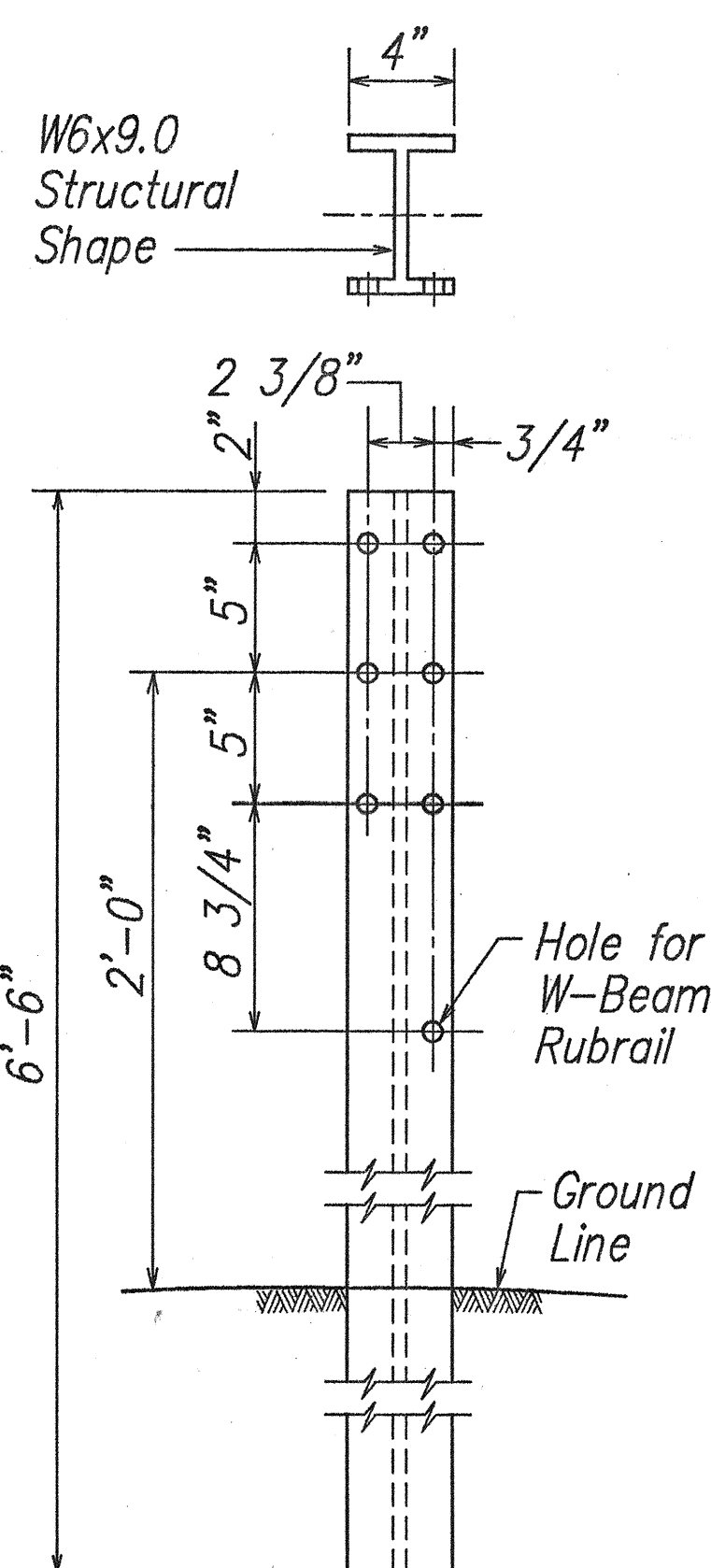
**STRONG POST RUBRAIL
(W-BEAM) GUARDRAIL**

NOTE:
All Holes are
3/4" Dia.

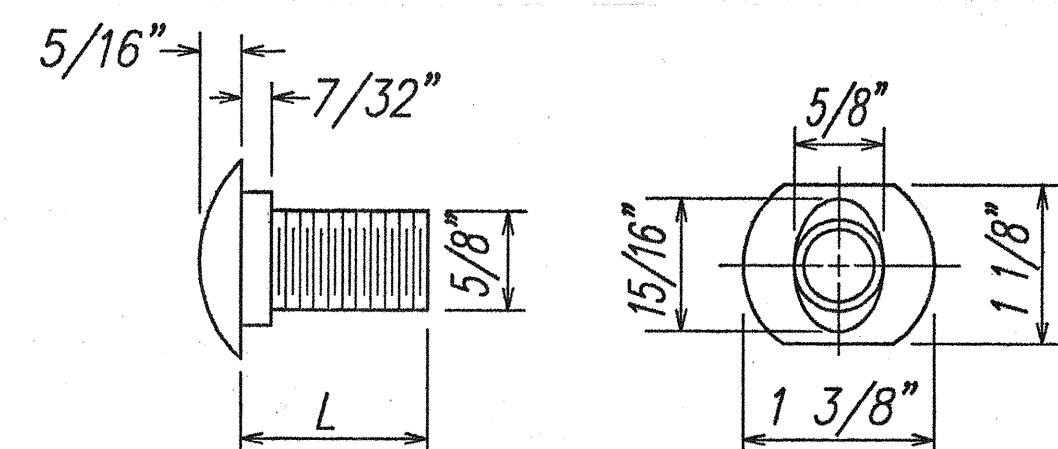


SIDE

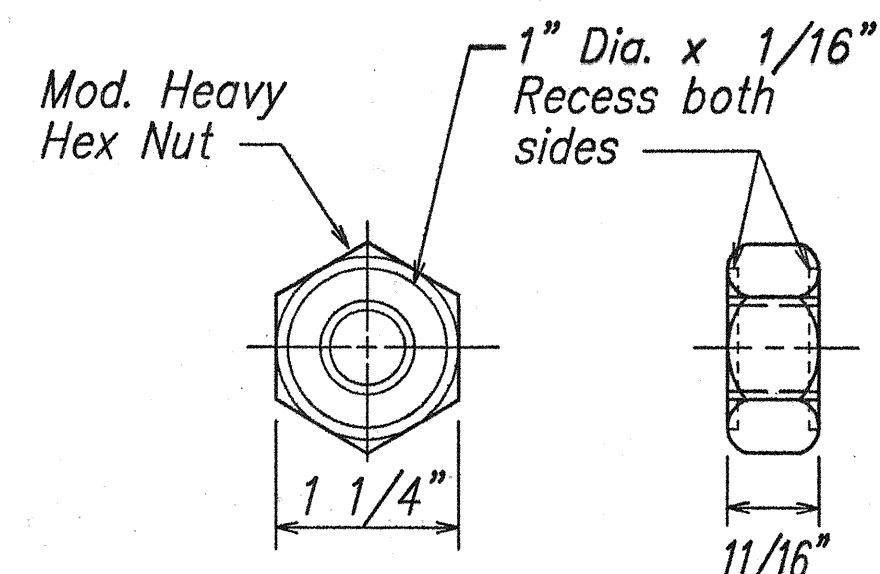
W-BEAM STRONG POST (PWE02)



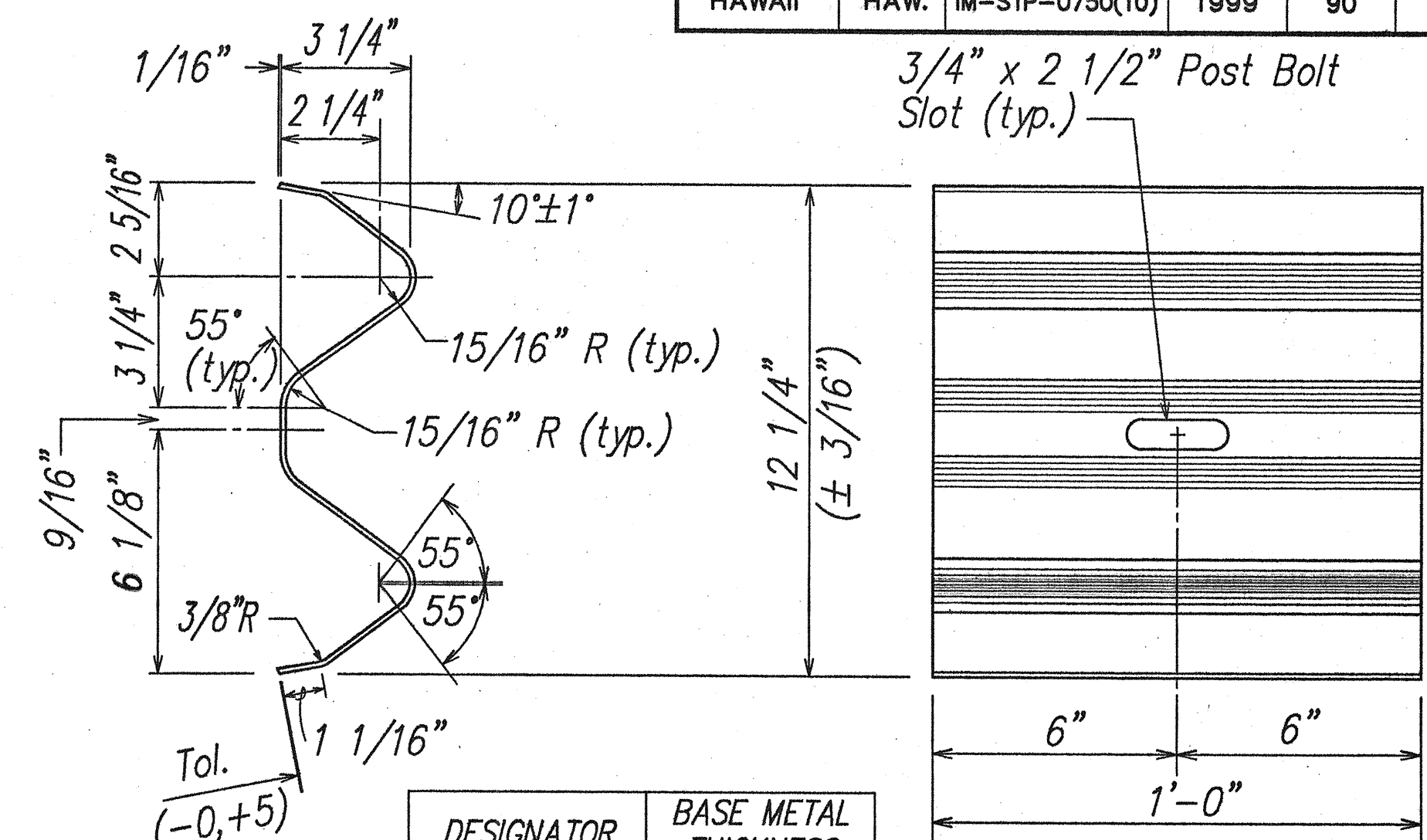
FRONT



DESIGNATOR	L
FBB01	1 3/8"
FBB02	2"
FBB03	10"

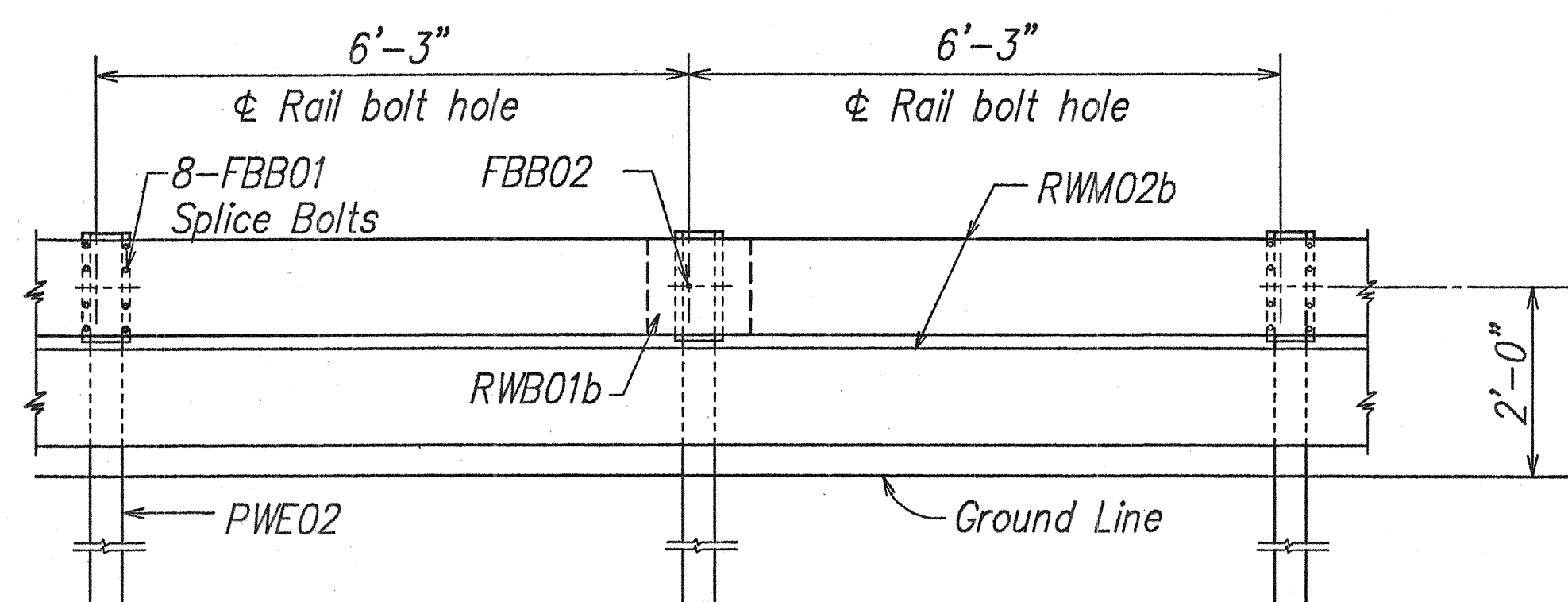


**GUARDRAIL BOLTS AND
RECESSED NUT**



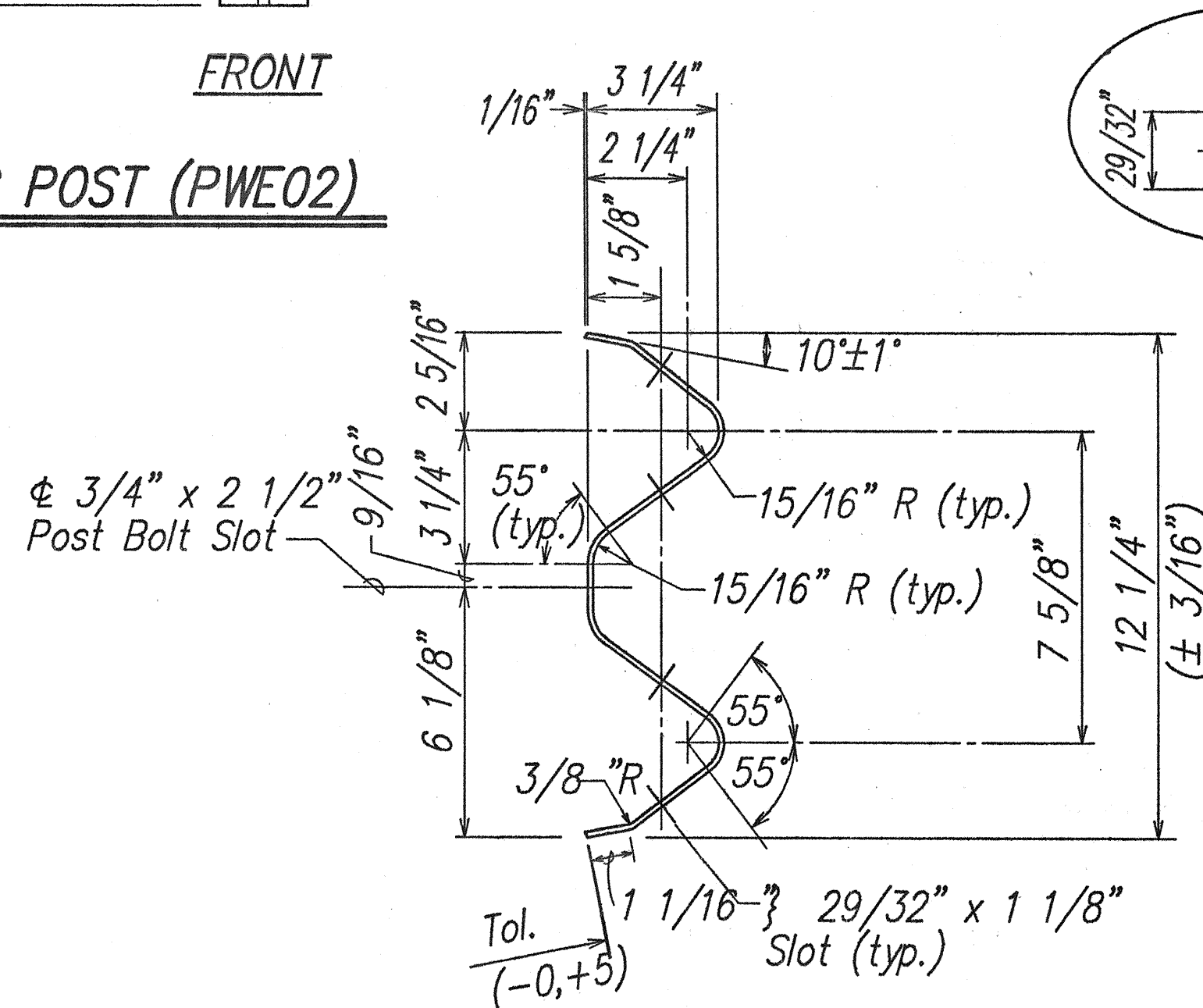
DESIGNATOR	BASE METAL THICKNESS
RWB01b	17/128"

W-BEAM BACK-UP-PLATE (RWB01b)



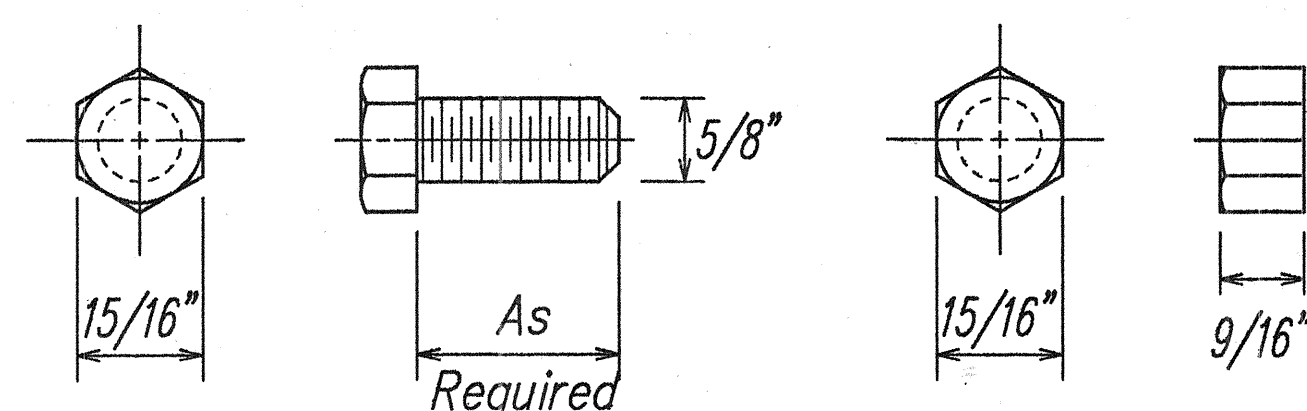
ELEVATION

**STRONG POST RUBRAIL (W-BEAM) GUARDRAIL WITH
RECYCLED OFFSET BLOCK OR PLASTIC BLOCKOUT**

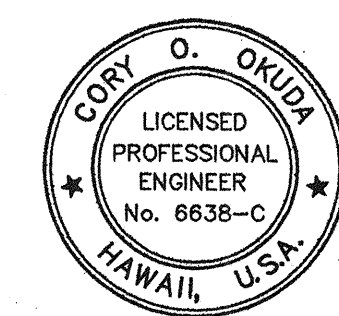


DESIGNATOR	BASE METAL THICKNESS
RWM02b	17/128"

2 SPACE W-BEAM GUARDRAIL (RWM02b)



HEX BOLT & NUT (FBX16a)



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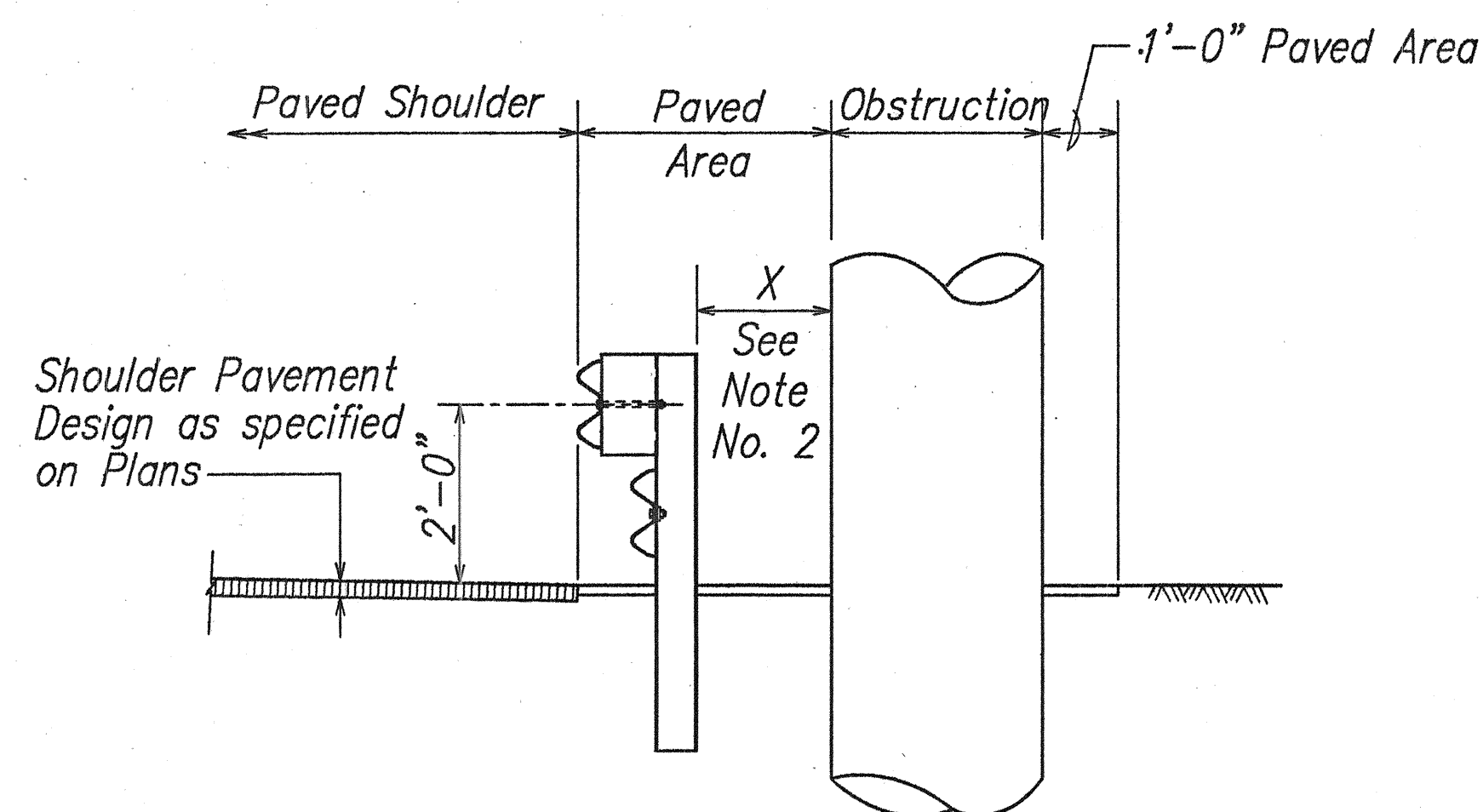
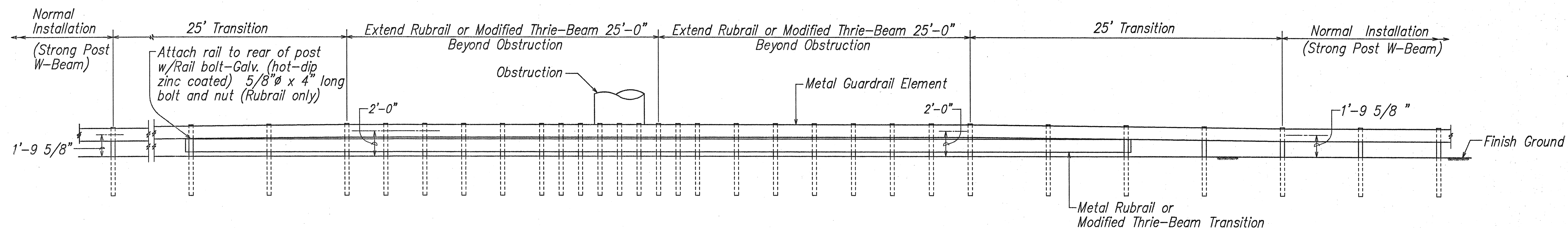
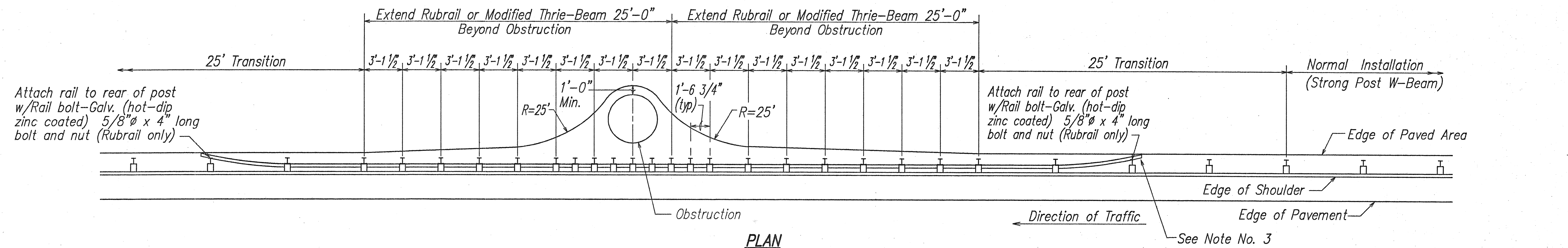
**GUARDRAIL DETAILS
STRONG POST RUBRAIL
(W-BEAM) GUARDRAIL**

KUNIA ROAD WIDENING; AND
H-1, KUNIA I.C. RAMP KO WIDENING
F.A.I. PROJECT NO. IM-STP-0750(10)

SCALE: AS NOTED DATE: APRIL 1999

SHEET No. 4 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-STP-0750(10)	1999	91	97

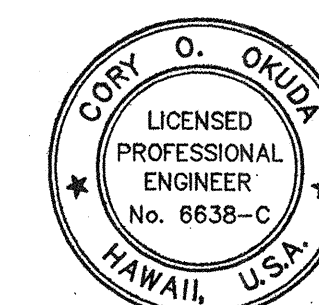


TYPICAL SECTION AT OBSTRUCTION

DETAIL OF GUARDRAIL INSTALLATION AT OBSTRUCTION

NOTES:

1. All Guardrail and Concrete Barrier Designs at Obstructions shall be approved by the Engineer.
2. If $X < 2'-0"$, Concrete Barrier or special guardrail design.
 $2'-0" \leq X < 3'-0"$, Strong Post Rubrail or Modified Thrie-Beam with reduced post spacing.
 $3'-0" \leq X$, Strong Post W-Beam or Modified Thrie-Beam with 6'-3" post spacing. (Normal Installation)
3. If a pedestrian walkway or bicycle route is located behind the guardrail, the Engineer should install the Modified Thrie-Beam System. The rubrail termini may become a hazard to pedestrians & bicyclists.



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HIGHWAYS DIVISION

**GUARDRAIL DETAILS
(AT OBSTRUCTION)**

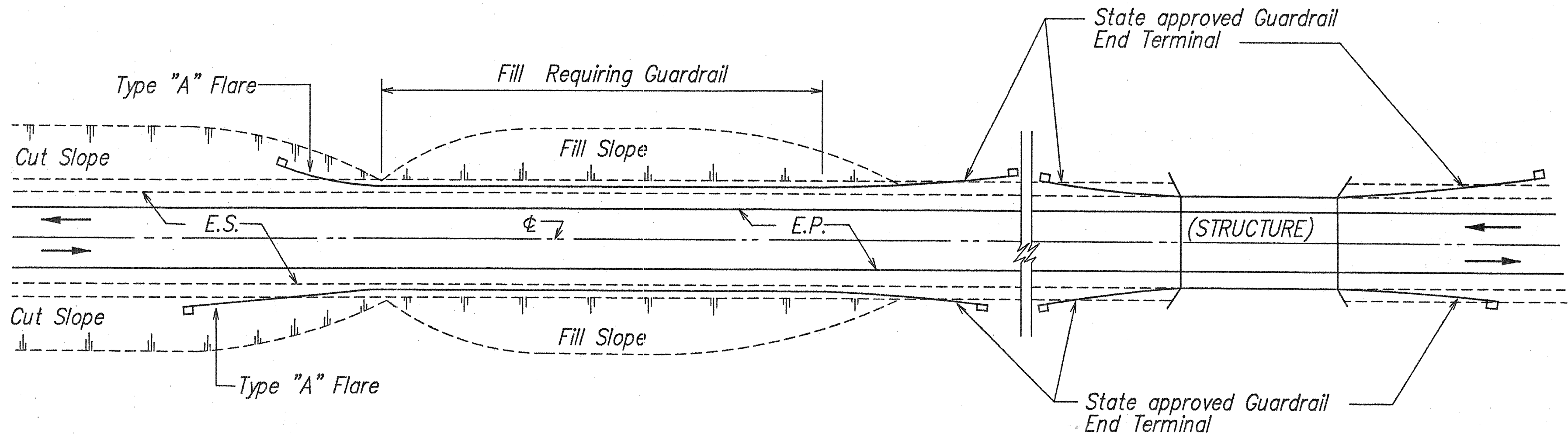
KUNIA ROAD WIDENING AND
H-1 KUNIA I.C. RAMP KO WIDENING
F.A.I. PROJECT NO. IM-STP-0750(10)

SCALE: AS NOTED DATE: APRIL 1999
SHEET No. 5 OF 6 SHEETS

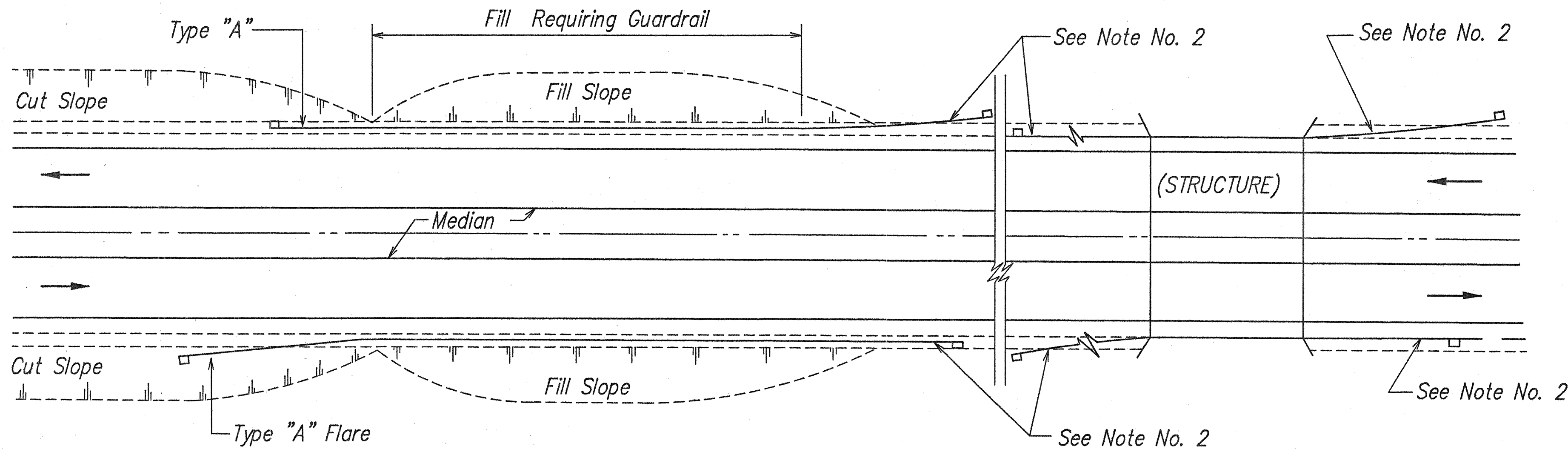
ORIGINAL PLAN	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	

(Standard plan TE-53 03/01/87 & TE-54 11/03/89)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-STP-0750(10)	1999	92	97



PLAN
TWO WAY ROADWAY
NO SCALE



PLAN
ONE WAY ROADWAY (DIVIDED HIGHWAY)
NO SCALE

NOTES:

1. Metal Guardrail connection to concrete structures requires End Post Connection. See Structure Plans.
2. Depending on the existing field conditions, the Engineer shall determine which guardrail end terminal should be installed.
3. Refer to State's most current approved Product List for NCHRP 350 approved Guardrail End Terminals.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	TRACED BY	
	QUANTITIES BY	
	CHECKED BY	

(Standard plan TE-59 rev 01/86)



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GUARDRAIL DETAILS

KUNIA ROAD WIDENING; AND
H-1, KUNIA I.C. RAMP KO WIDENING
F.A.I. PROJECT NO. IM-STP-0750(10)

SCALE: AS NOTED DATE: APRIL 1999

SHEET No. 6 OF 6 SHEETS