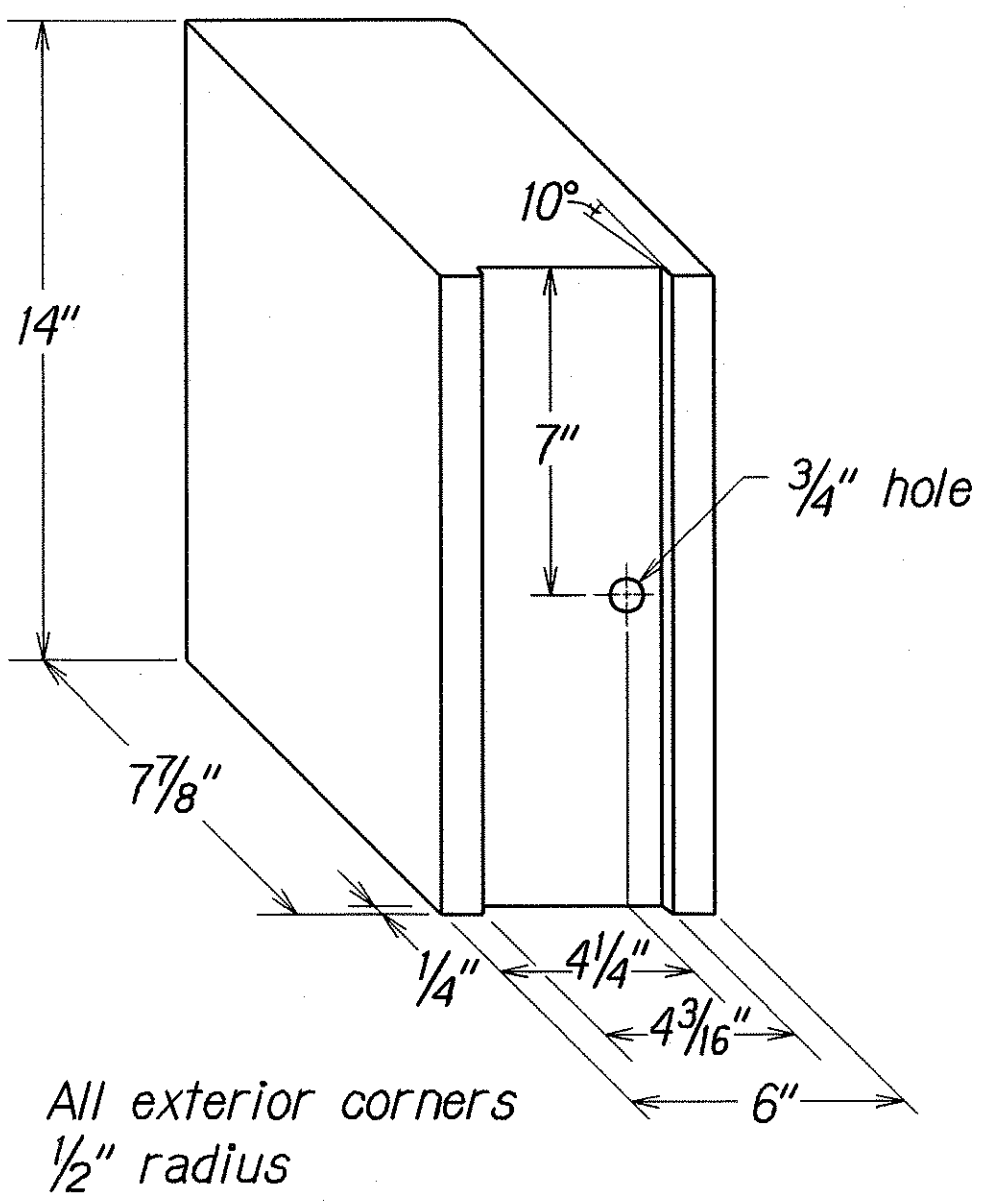
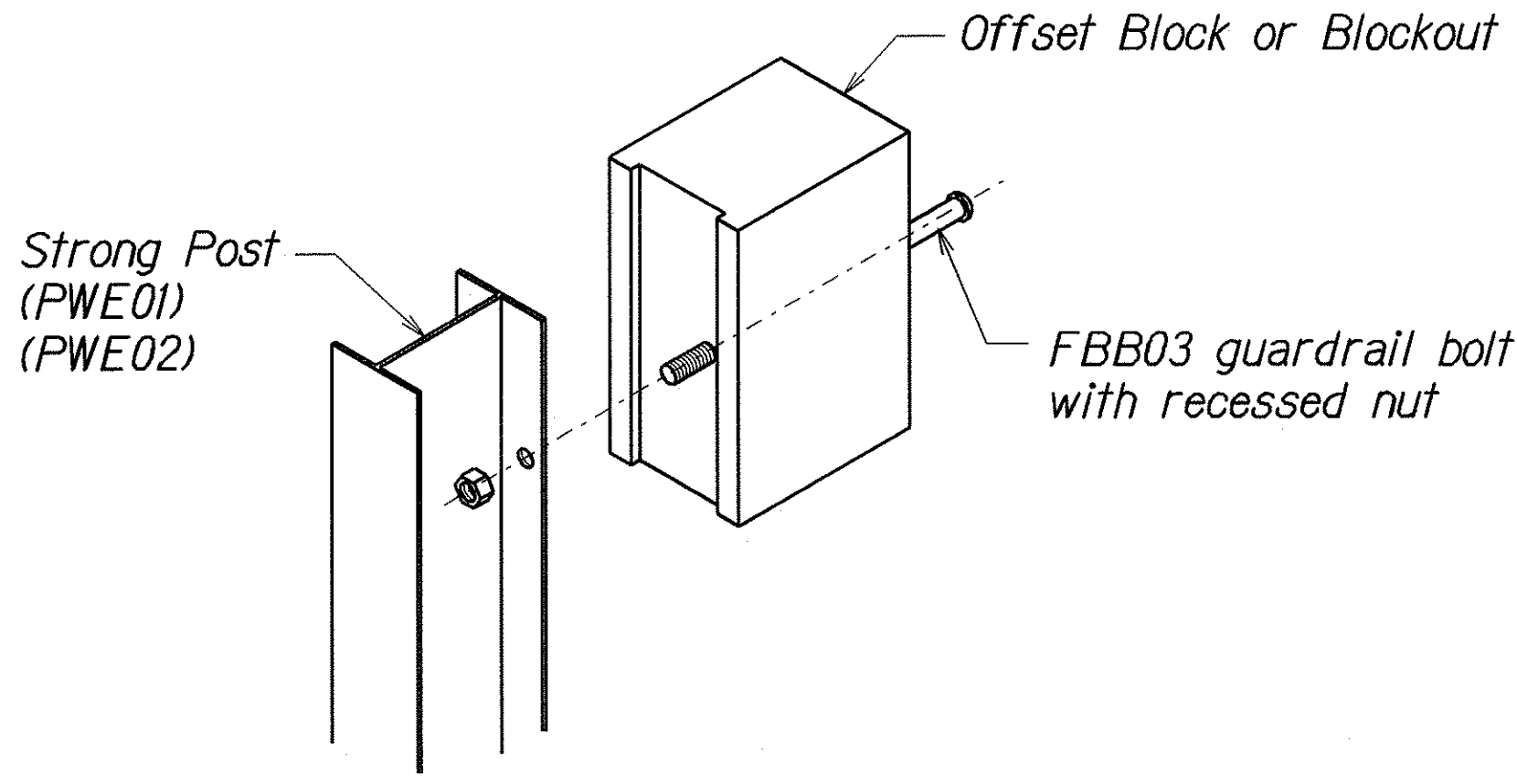


TOP
SIDE
RECYCLED PLASTIC BLOCKOUT (TYPE I)

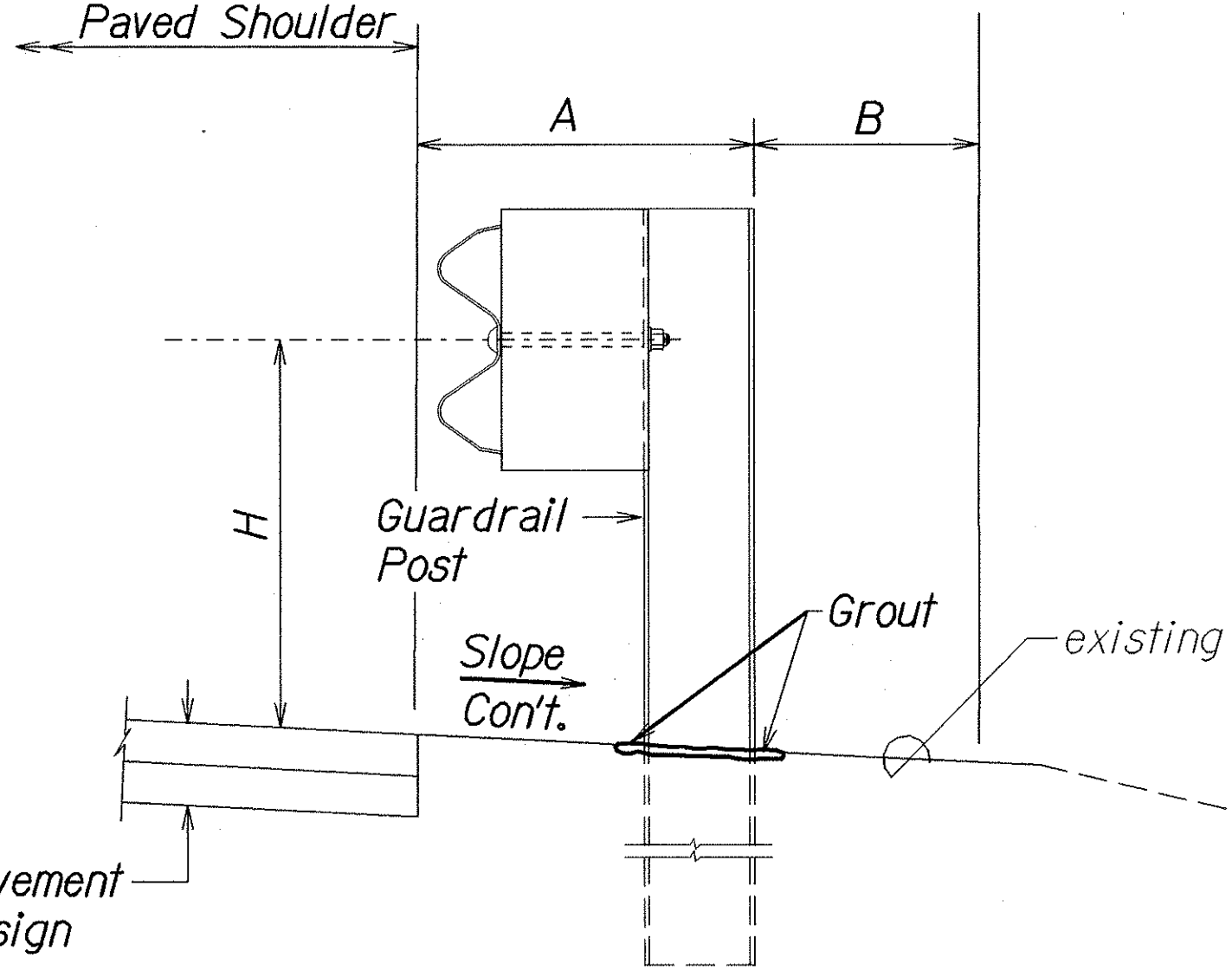
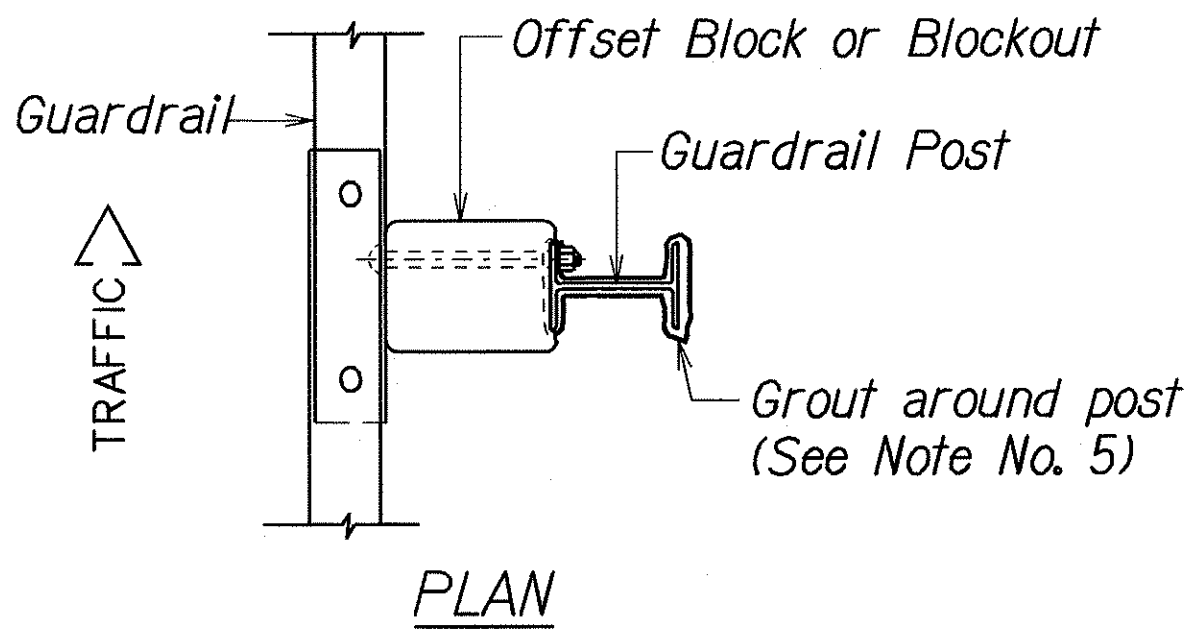


RECYCLED POLYETHYLENE
OFFSET BLOCK (TYPE II)

- 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 fastners, 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.



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"

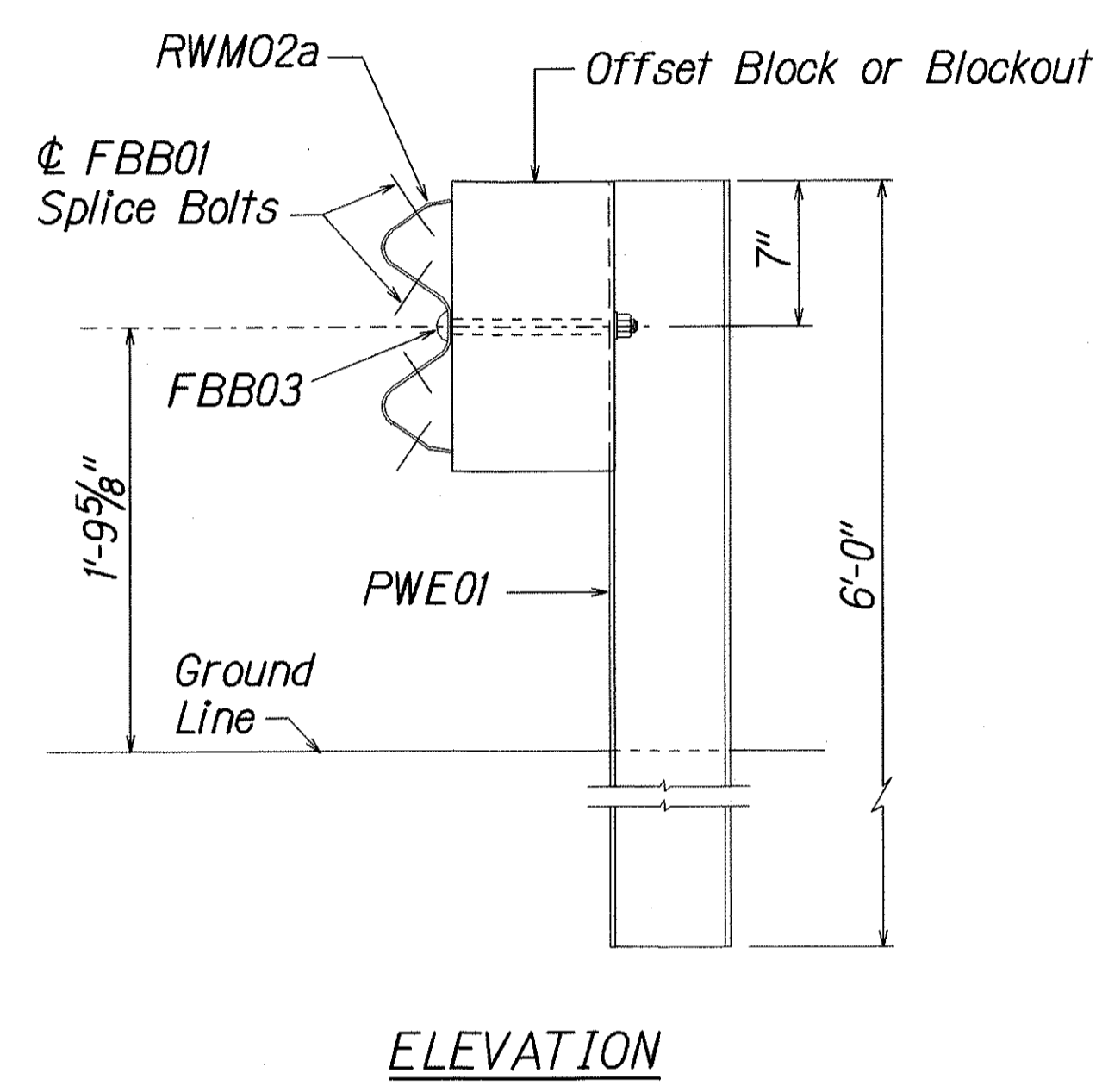
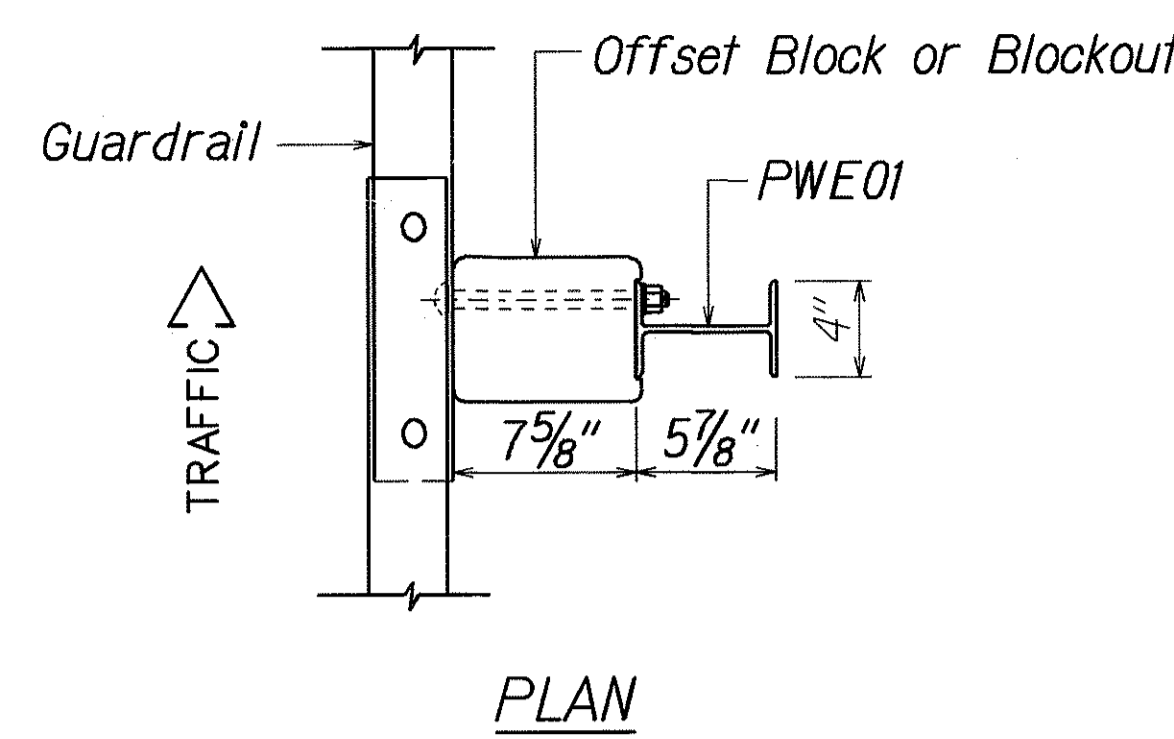
DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
REVISIONS	

Standard plan TE-50 (03/06/87)

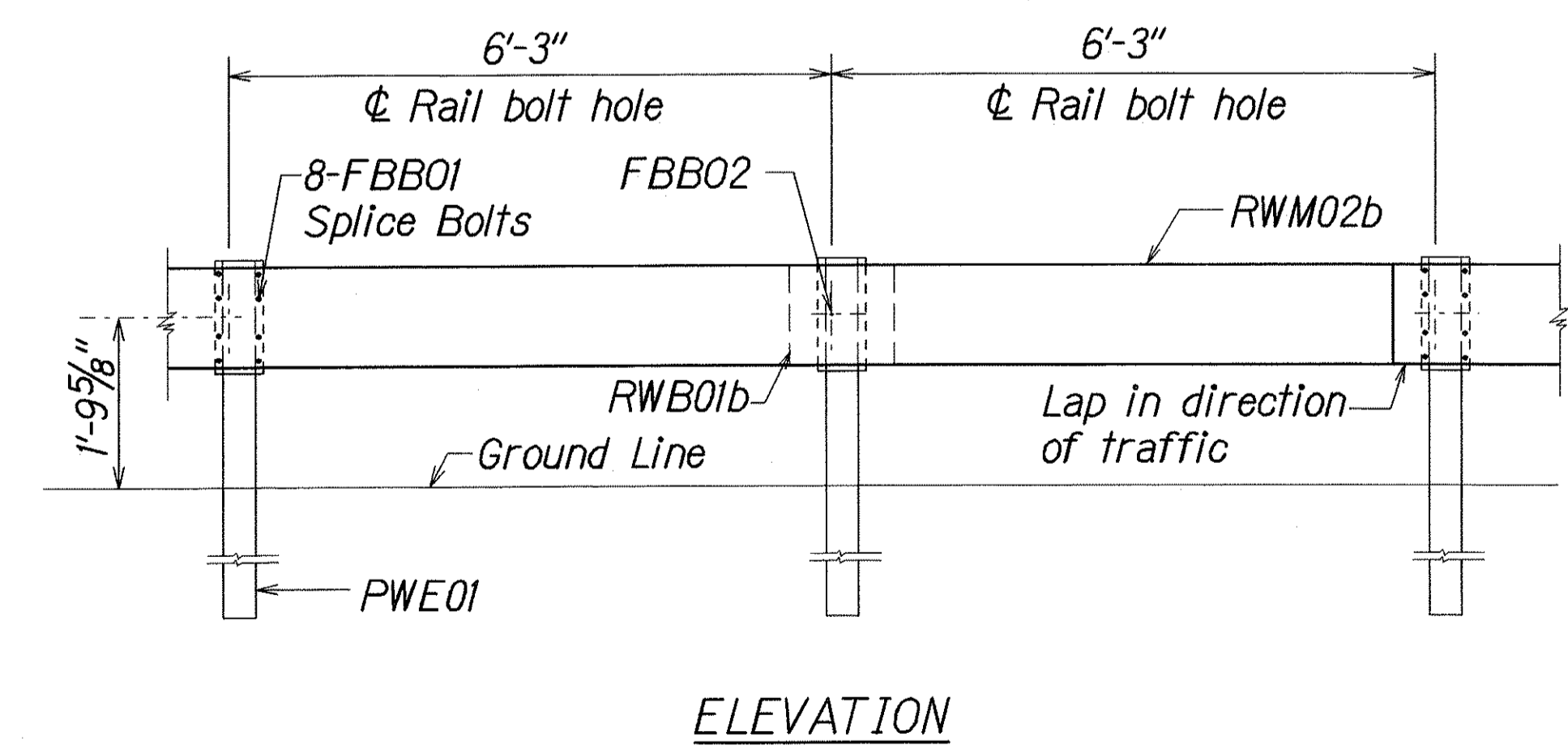
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL DETAILS & NOTES
INTERSTATE ROUTE H-1
GUARDRAIL AND SHOULDER IMPROVEMENTS
Airport Viaduct to Middle Street
Federal Aid Project No. IM-HI-1(240)
Scale: NTS
Date: Dec., 2002

SHEET No. 1 OF 3 SHEETS

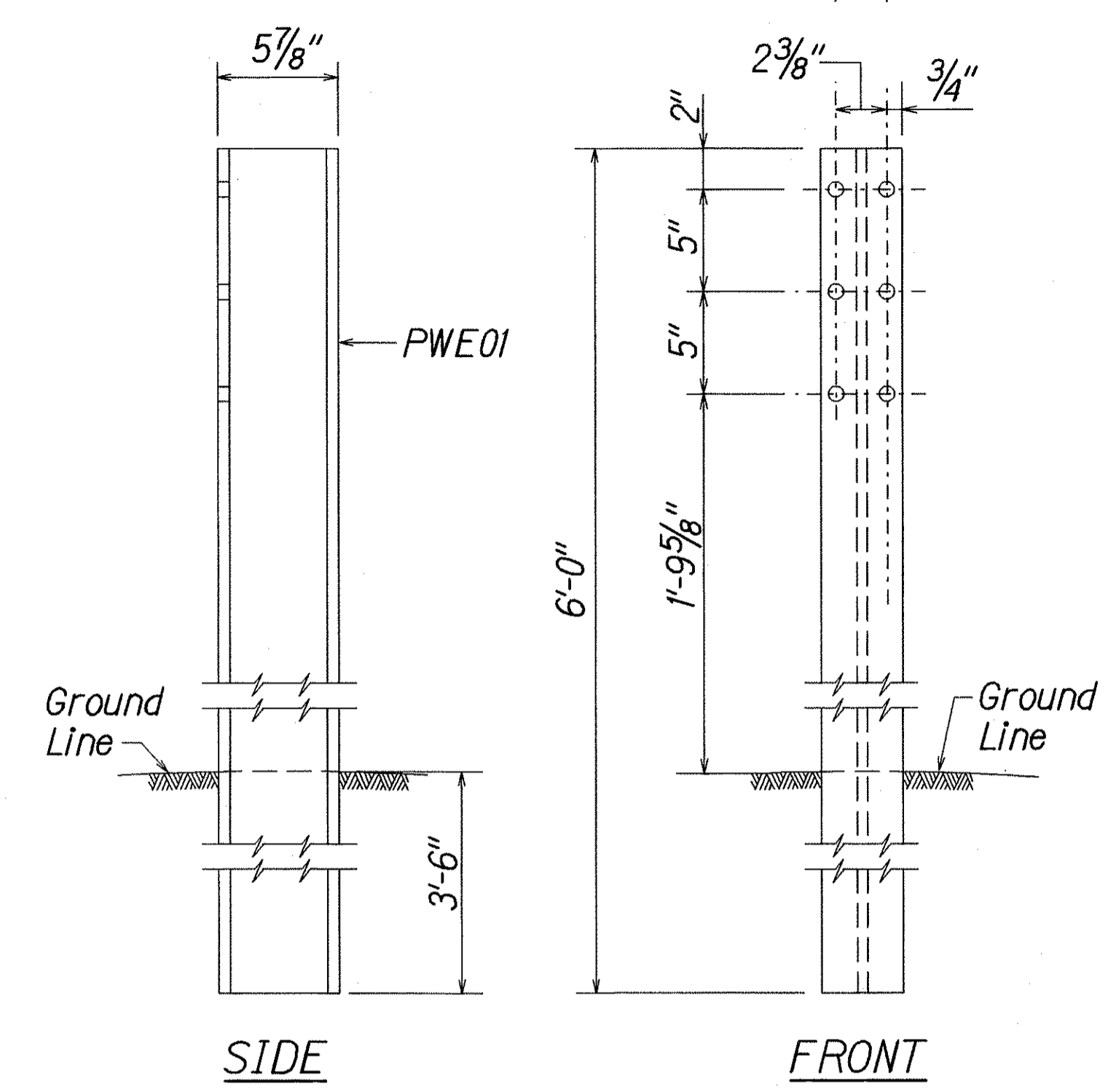


STRONG POST W-BEAM GUARDRAIL (SGR04a)

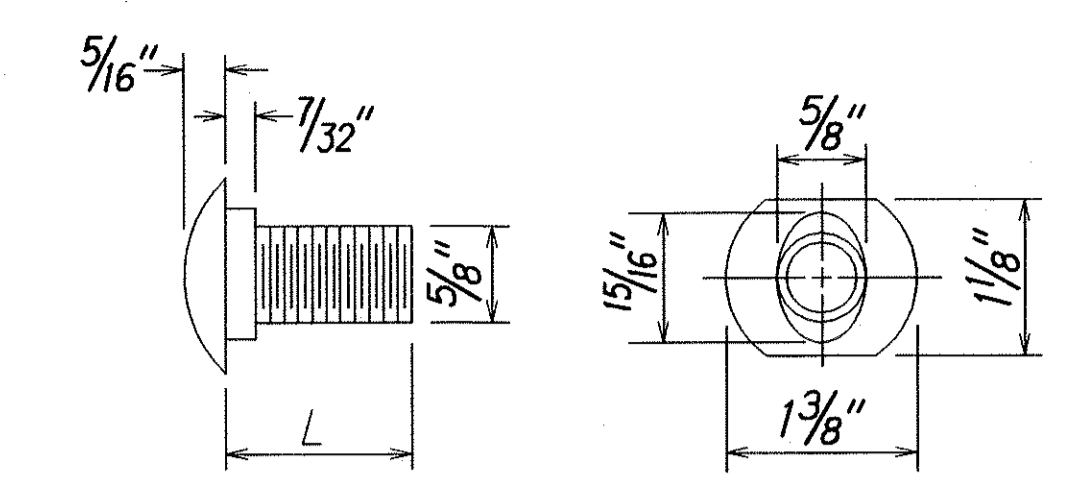


STRONG POST W-BEAM GUARDRAIL WITH RECYCLED OFFSET BLOCK OR PLASTIC BLOCKOUT

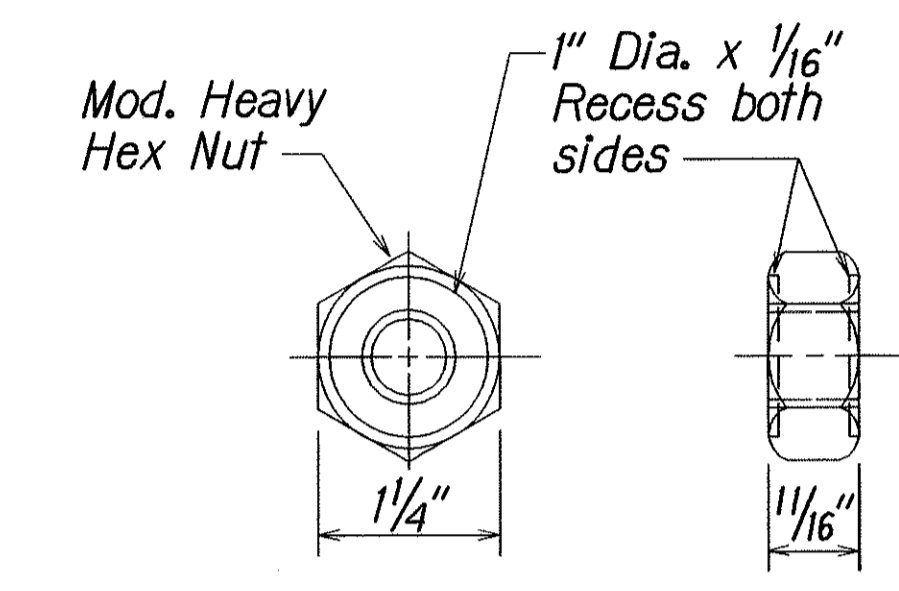
NOTE:
All Holes are 3/4" Dia.



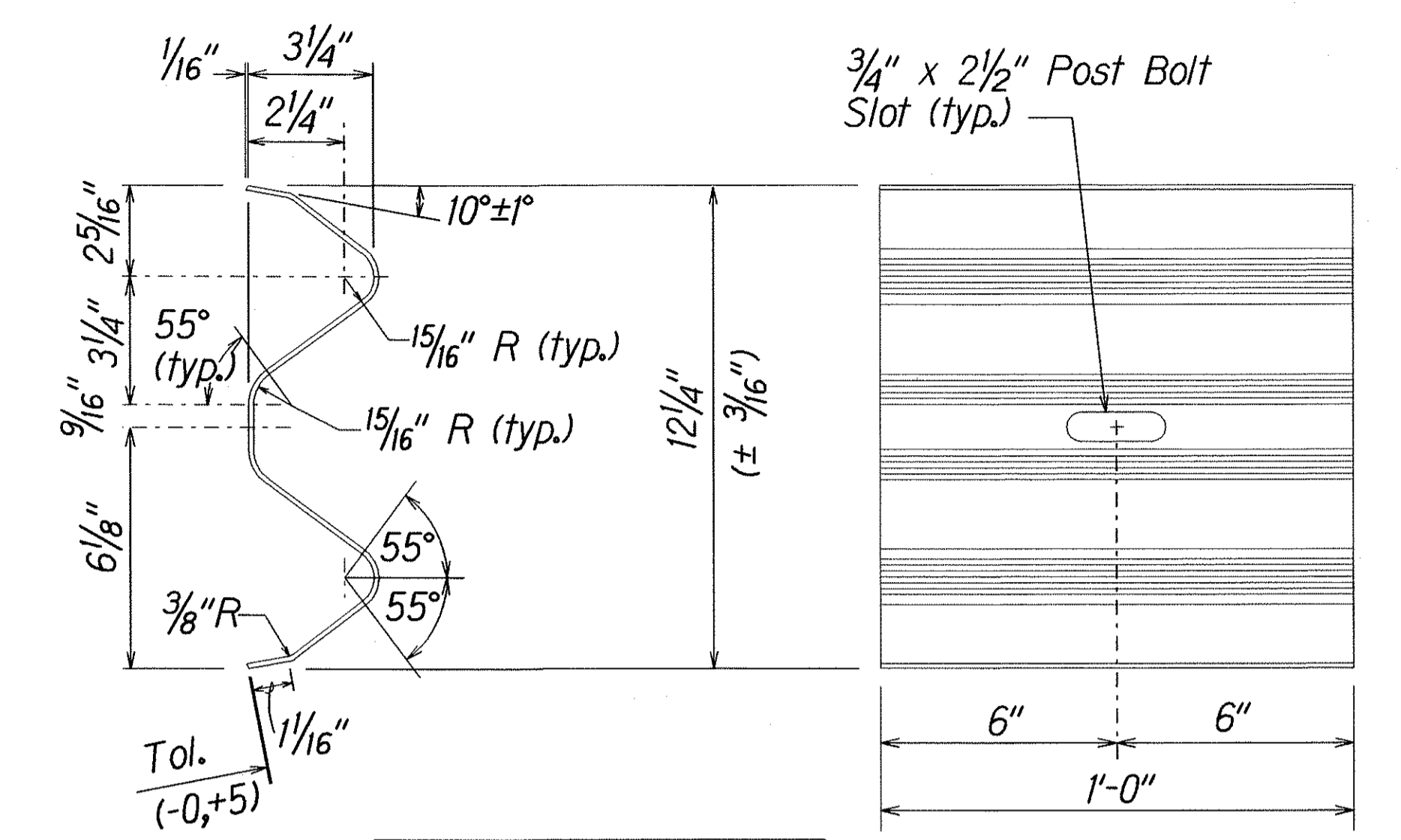
W-BEAM STRONG POST (PWE01)



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

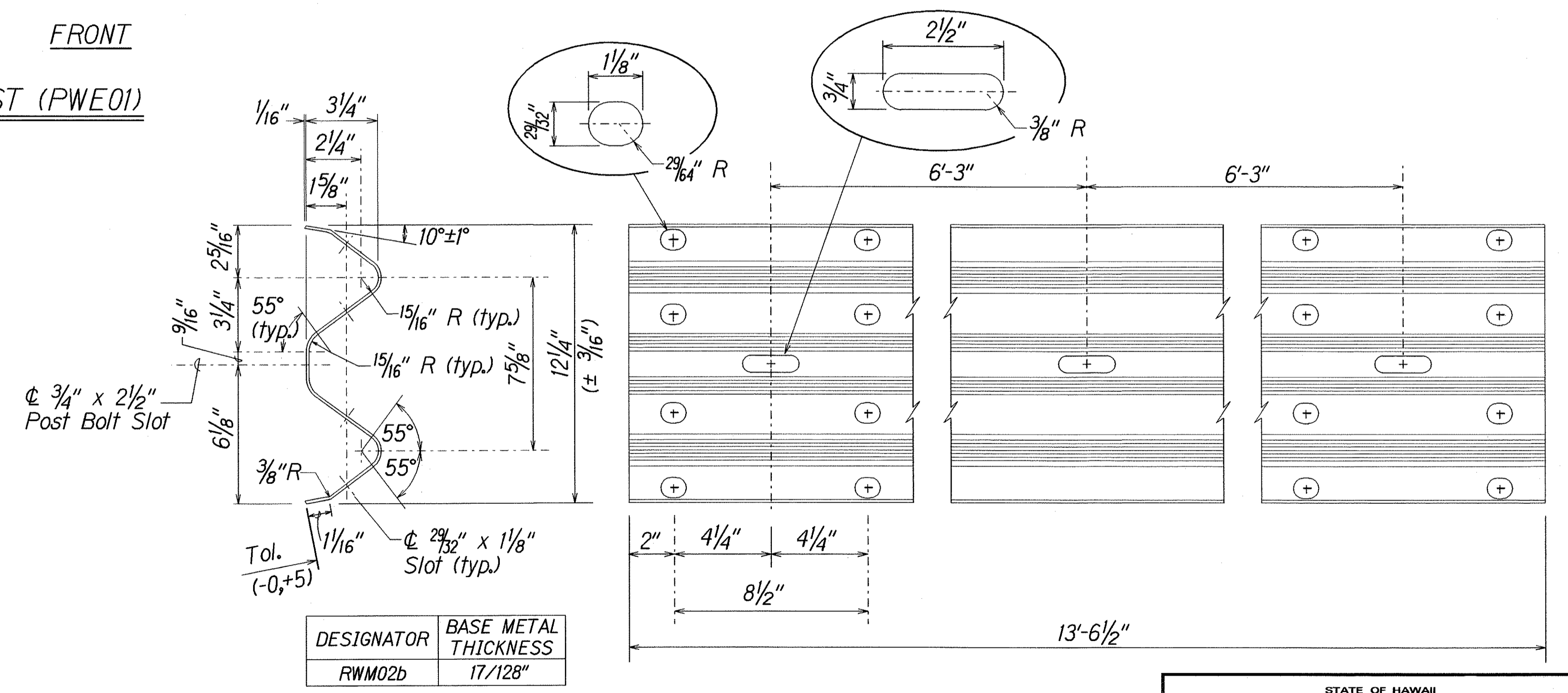


GUARDRAIL BOLTS AND RECESSED NUT



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)

DESIGNED BY: [Signature]
CHECKED BY: [Signature]
DATE: [Date]
PROJECT: [Project Name]
SHEET: 131 OF 143

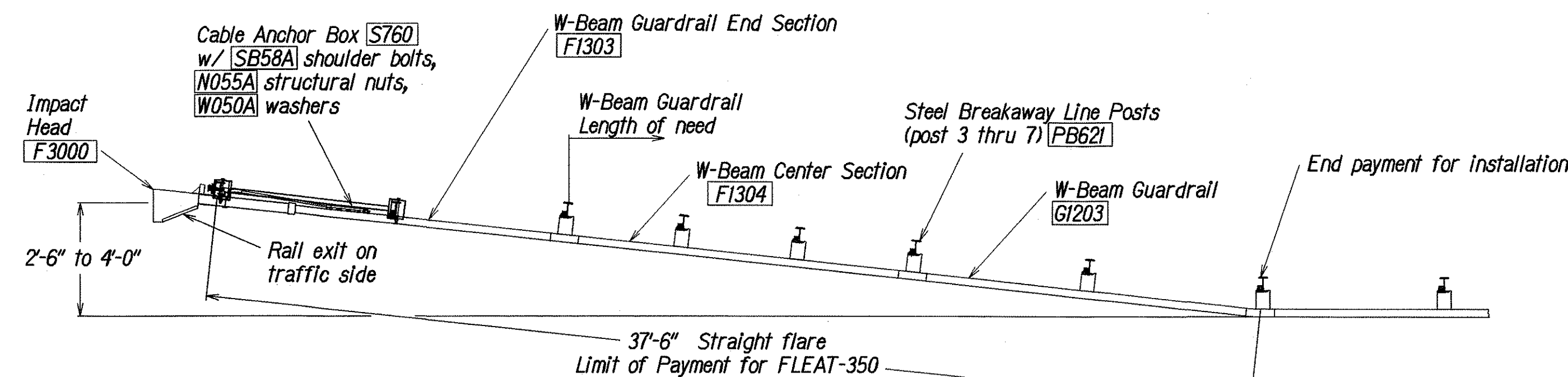
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRONG POST W-BEAM GUARDRAIL

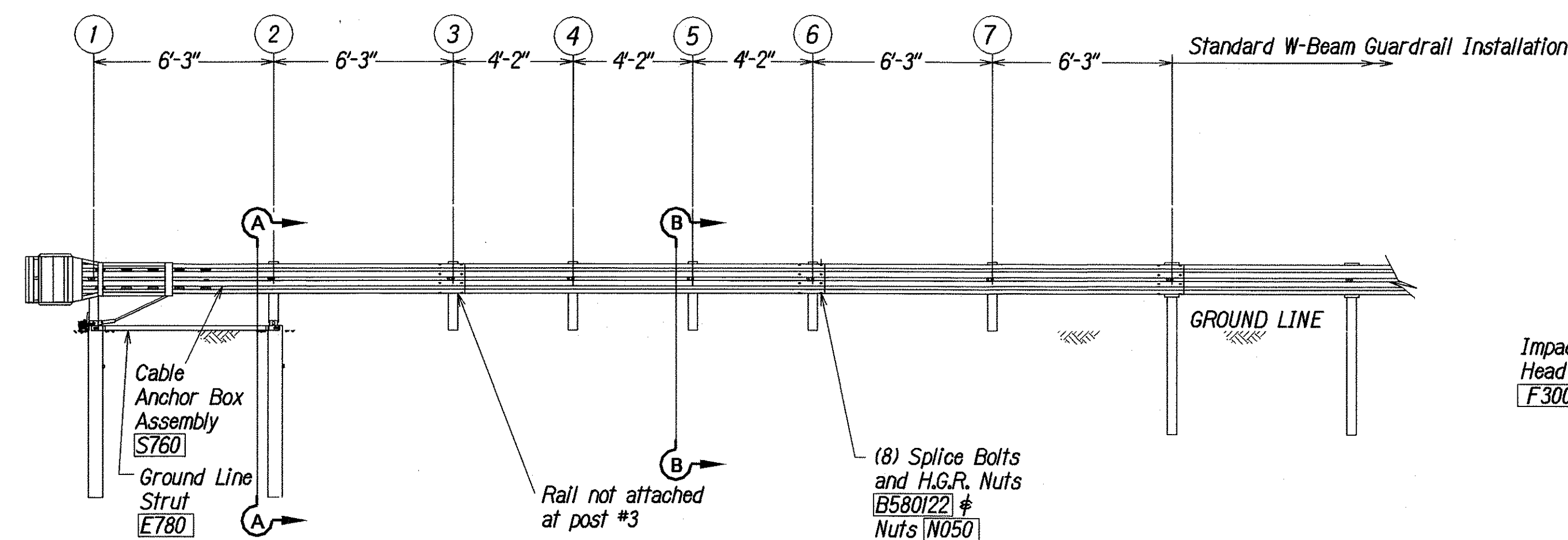
INTERSTATE ROUE H-1
GUARDRAIL AND SHOULDER IMPROVEMENTS
Airport Viaduct to Middle Street
Federal Aid Project No. IM-HI-1(240)
Scale: NTS Date: Dec., 2002

SHEET No. 2 OF 3 SHEETS

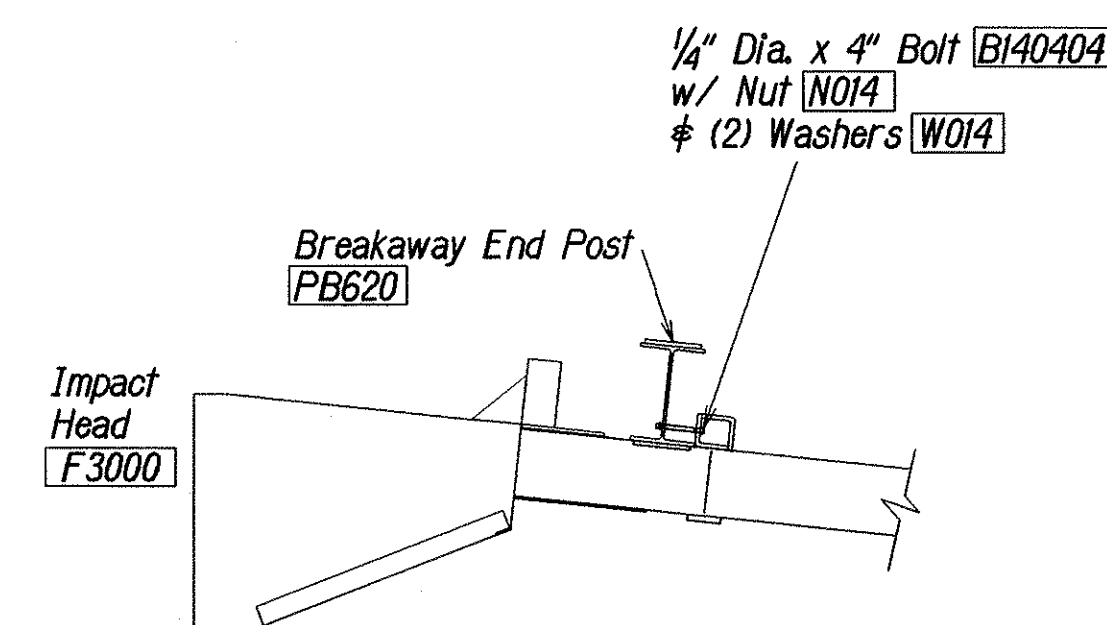
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HAWAII	HAW.	1M-HI-K(240)	2004	132	143



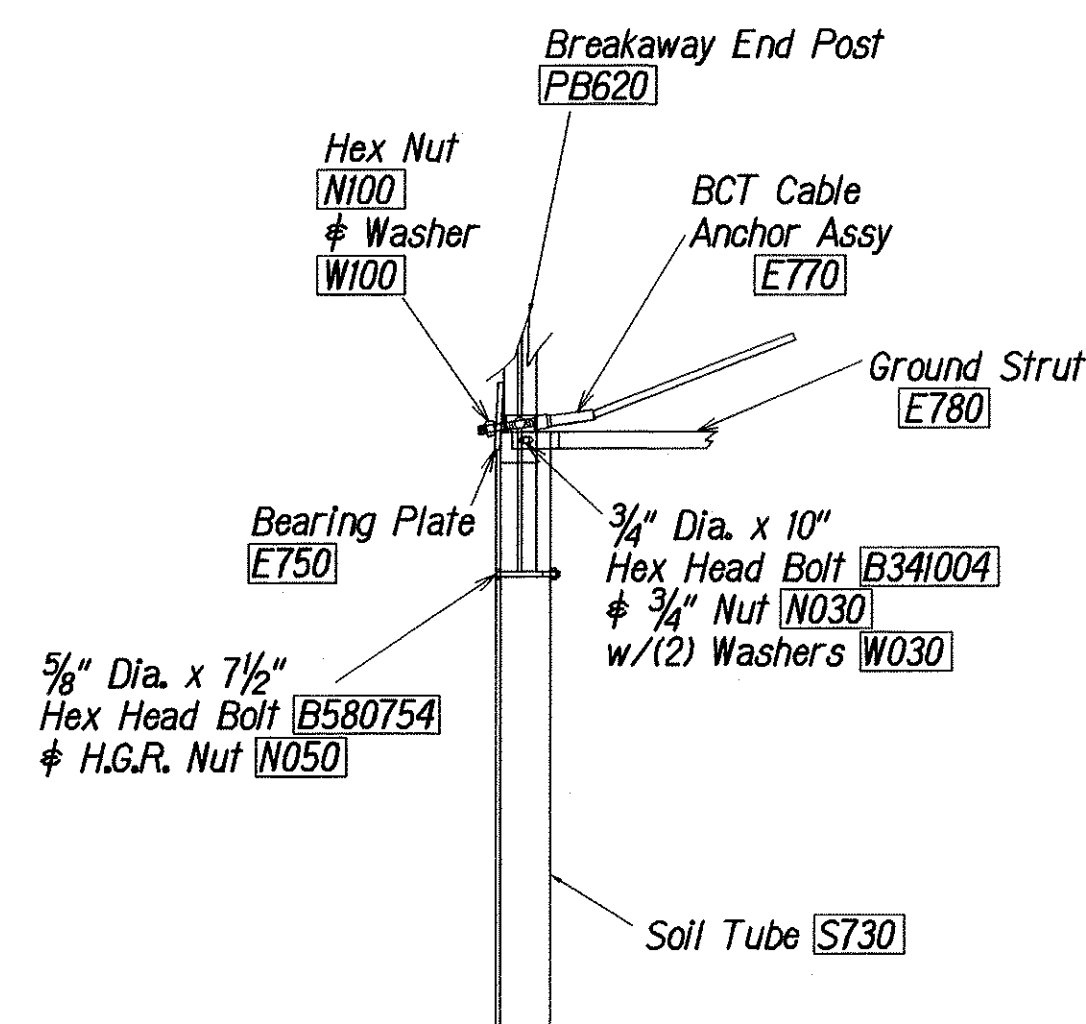
PLAN



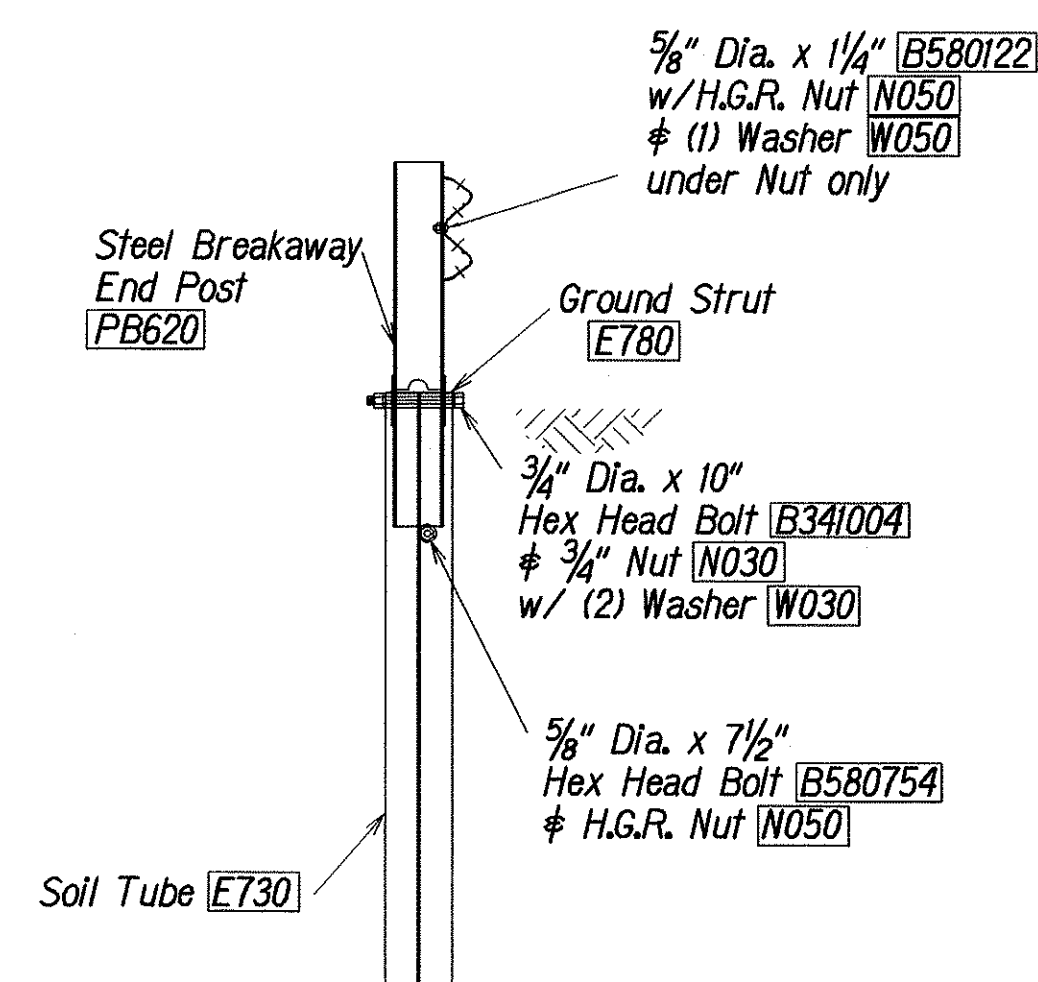
ELEVATION



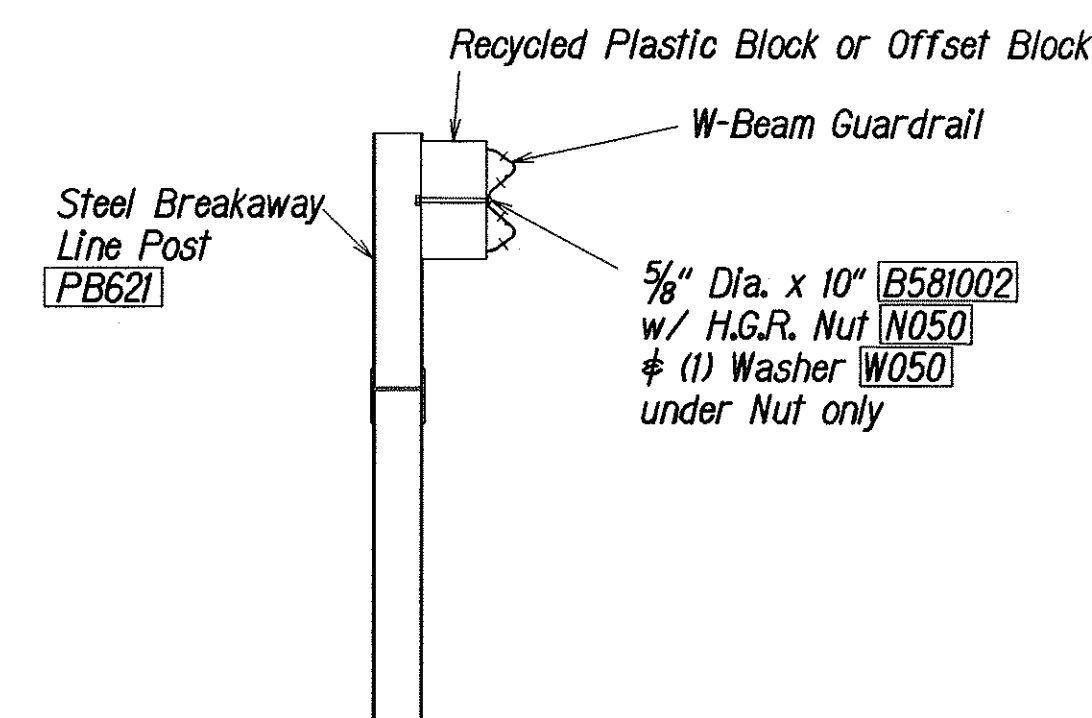
IMPACT HEAD CONNECTING DETAIL



PARTIAL VIEW OF POST 1



SECTION A-A
(at Post #2)



SECTION B-B
(Typical at Post 3 - 7)
NOTE: RAIL NOT BOLTED at POST #3

- GENERAL NOTES**
1. Breakaway posts are required with the FLEAT Terminal.
 2. All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
 3. The soil tubes shall not protrude more than 4" above ground (measured along a 5' cord). Site grading may be necessary to meet this requirement.
 4. The soil tubes may be driven with an approved driving head. Soil tubes should not be driven with the post in the tube. If the tubes are placed in drilled holes, the backfill material must be satisfactorily compacted to prevent settlement.
 5. When rock is encountered during excavation, a 12" Dia. post hole, 20" deep may be used if approved by the engineer. Granular material will be placed in the bottom of the hole approx. 2 1/2" deep to provide drainage. The soil tubes will be field cut to length, placed in the hole and backfilled with adequately compacted material excavated from the hole.
 6. The breakaway cable assembly must be taut. A locking device, (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening nuts.

ITEM NO.	QTY	BILL OF MATERIALS
F3000	1	IMPACT HEAD
F1303	1	W-BEAM GUARDRAIL END SECTION, 12 GA.
F1304	1	W-BEAM GUARDRAIL CENTER SECTION, 12 GA.
G1203	1	W-BEAM GUARDRAIL, 12 GA.
S730	2	*FOUNDATION SOIL TUBE, 6" x 8" x 72"
E750	1	BEARING PLATE
S760	1	CABLE ANCHOR BOX
E770	1	BCT CABLE ANCHOR ASSEMBLY
E780	1	GROUND STRUT
PB620	2	STEEL BREAKAWAY END POST
PB621	5	STEEL BREAKAWAY LINE POST
	5	RECYCLED PLASTIC BLOCKOUT OR OFFSET BLOCK
HARDWARE		
B580122	25	5/8" Dia. x 1 1/4" SPLICE BOLT, POST #2
B580754	2	5/8" Dia. x 7 1/2" HEX BOLT
B341004	2	3/4" Dia. x 10" HEX BOLT
B581002	5	5/8" Dia. x 10" H.G.R. BOLT (POST 3 THRU 7)
N050	32	5/8" Dia. H.G.R. NUT (SPLICE 24, SOIL TUBES 2, POST 2 THRU 7, 6)
N030	2	3/4" Dia. HEX NUT
W050	6	H.G.R. WASHER
W030	4	3/4" ID WASHER
N100	2	1" ANCHOR CABLE HEX NUT
W100	2	1" ANCHOR CABLE WASHER
B140404	2	1/4" x 4" HEX BOLT
N014	2	1/4" HEX NUT
W014	4	1/4" WASHER
SB58A	8	CABLE ANCHOR BOX SHOULDER BOLT
N055A	8	1/2" A325 STRUCTURAL NUT
W050A	16	1 1/16" OD x 9/16" ID A325 STR. WASHER

Foundation Tube Options For Posts 1 & 2

- *6'-0" Split Foundation Tubes S730
- *6'-0" Solid Foundation Tubes E731
- *5'-0" Foundation Tubes S735 W/Soil Plates SP600
- *4'-6" Foundation Tubes E735 W/Soil Plates SP600

ORIGINAL PLAN	DATE	BY
SURVEY PLOTTED BY		
DRAWN BY		
DESIGNED BY		
CHECKED BY		

11/31/2000/rubyl/guardrail/fleat350.dgn Standard plan TE-61 rll/03/89 & TE-62 r09/01/87

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

FLEAT - 350 FLARED ENERGY ABSORBING TERMINAL

INTERSTATE ROUTE H-1
GUARDRAIL AND SHOULDER IMPROVEMENTS

Airport Viaduct to Middle Street
Federal Aid Project No. 1M-HI-K(240)

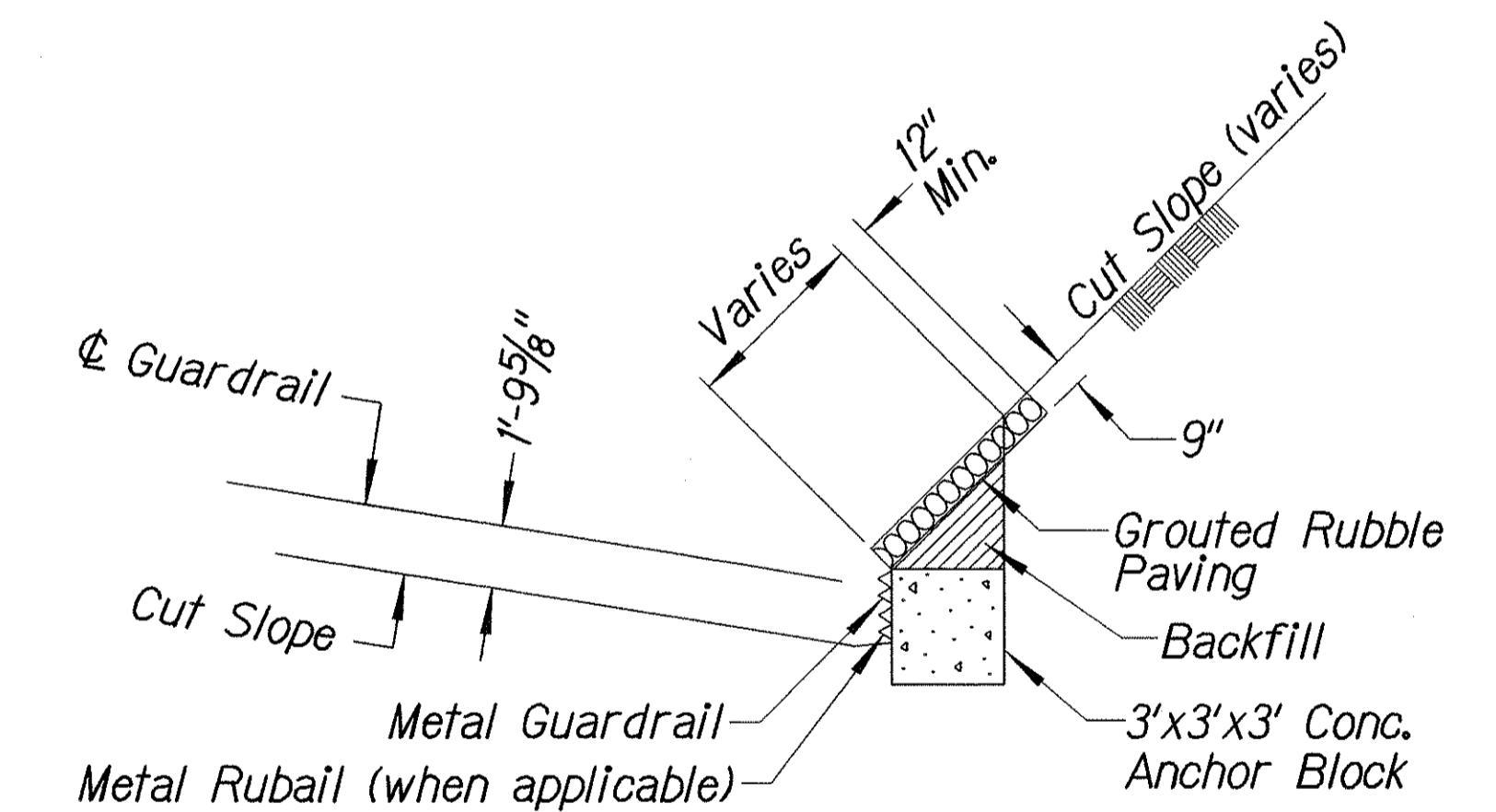
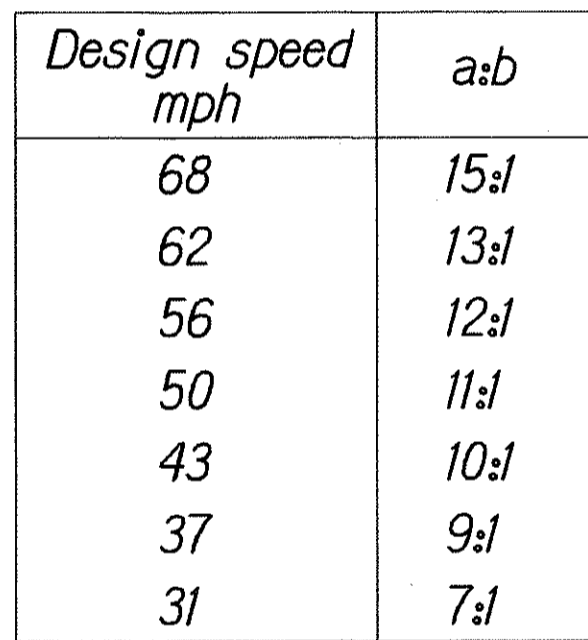
Scale: NTS Date: Dec., 2002

SHEET No. 3 OF 3 SHEETS

General Notes

1. All posts are 6'-0" in length within the 50'-0" pay limit for the Modified Type "A-I" Flare without rubrail.
2. Whenever swales or a change in grade is encountered within the 50'-0" pay limit for the Modified Type "A-I" Flare, a rubrail shall be installed and all posts shall have a minimum embedment of 4'-0". Post lengths shall be adjusted to provide the minimum embedment.
3. All fasteners, posts, blocks and rail elements 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-AGCARTBA Joint Cooperative Committee and HDOT's Statewide Guideline for Permanent Highway Safety Hardware.
4. Limit of payment for Modified Type "A-I" Flare shall be 50'-0" from End Shoe including Rubrail (when applicable), Anchor Block and GRP work.
5. Excavation, Anchor Block, Backfill and GRP work shall be considered incidental to the Modified Type "A-I" Flare.

1. *All posts are 6'-0" in length within the 50'-0" pay limit for the Modified Type "A-1" Flare without rubrail.*
2. *Whenever swales or a change in grade is encountered within the 50'-0" pay limit for the Modified Type "A-1" Flare, a rubrail shall be installed and all posts shall have a minimum embedment of 4'-0". Post lengths shall be adjusted to provide the minimum embedment.*
3. *All fasteners, posts, blocks and rail elements 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-AGCARTBA Joint Cooperative Committee and HDOT's Statewide Guideline for Permanent Highway Safety Hardware.*
4. *Limit of payment for Modified Type "A-1" Flare shall be 50'-0" from End Shoe including Rubrail (when applicable), Anchor Block and GRP work.*
5. *Excavation, Anchor Block, Backfill and GRP work shall be considered incidental to the Modified Type "A-1" Flare.*



Section A-A

Section B-B



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPE "A" FLARE

INTERSTATE ROUTE H-1

GUARDRAIL AND SHOULDER IMPROVEMENTS

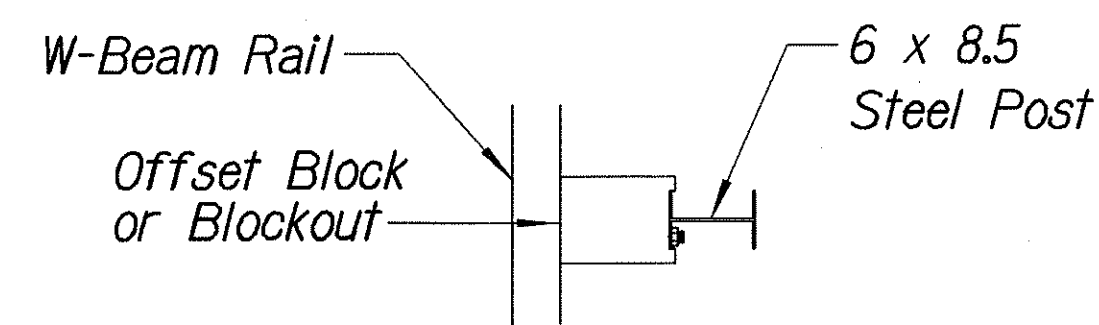
Airport Viaduct to Middle Street

Federal Aid Project No. IM-H1-1(240)

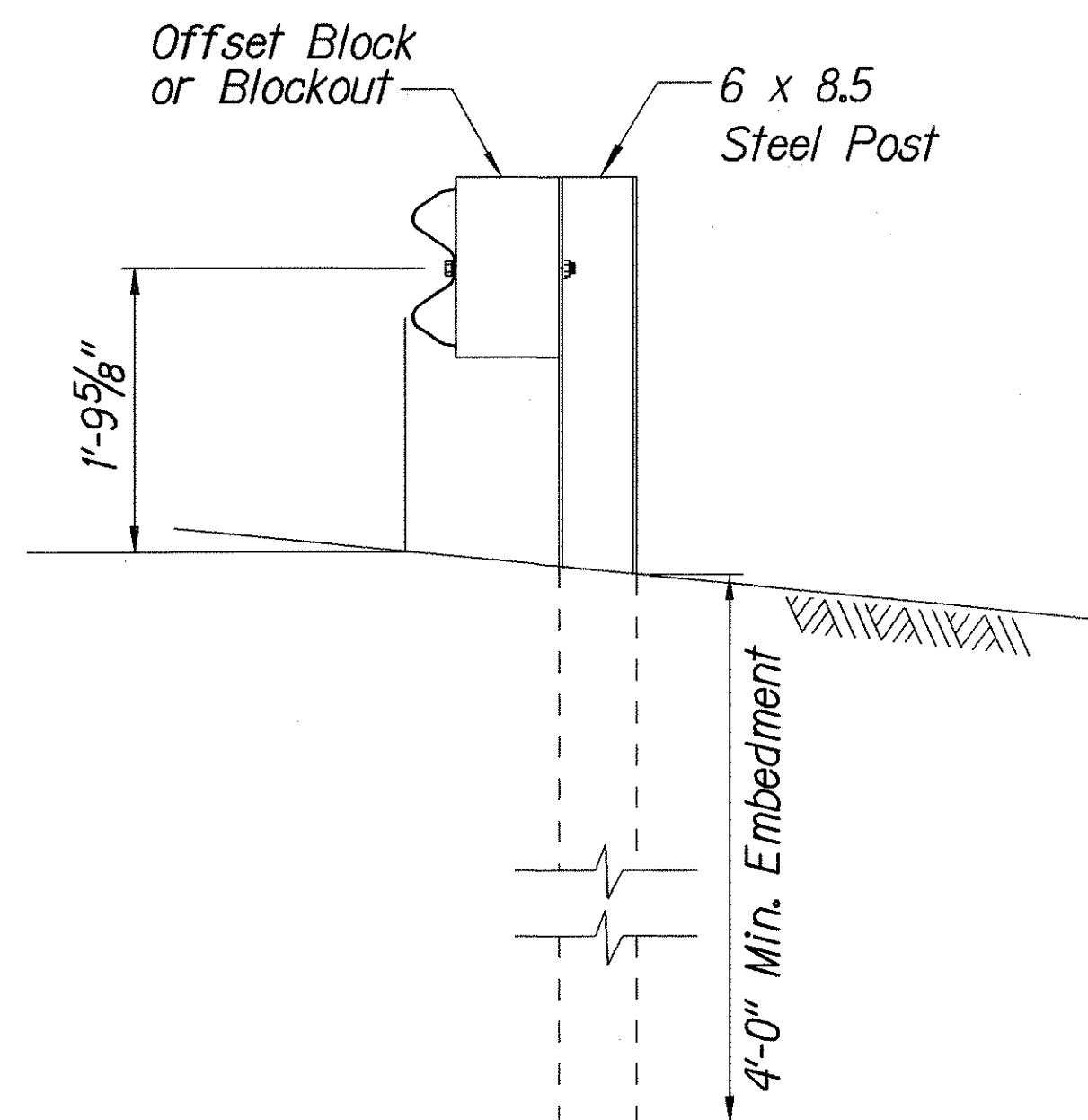
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SHEET No. 1 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1M-HI-1(240)	2004	135	143

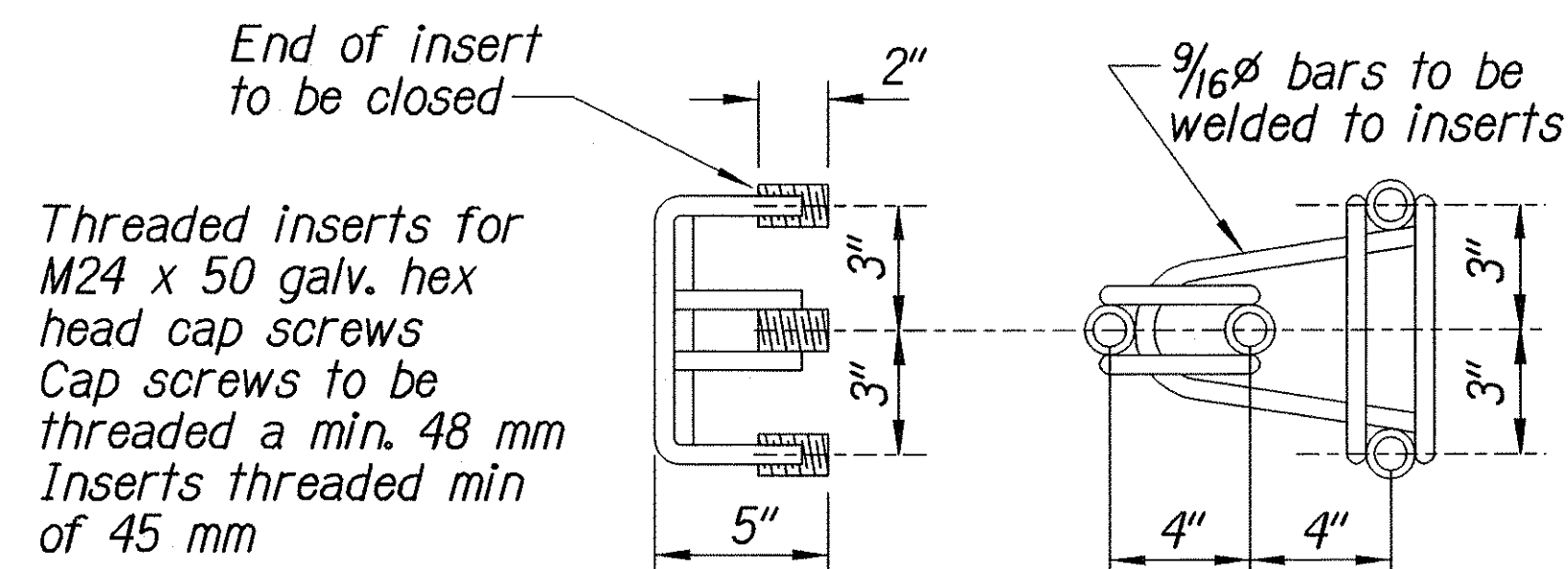


Plan

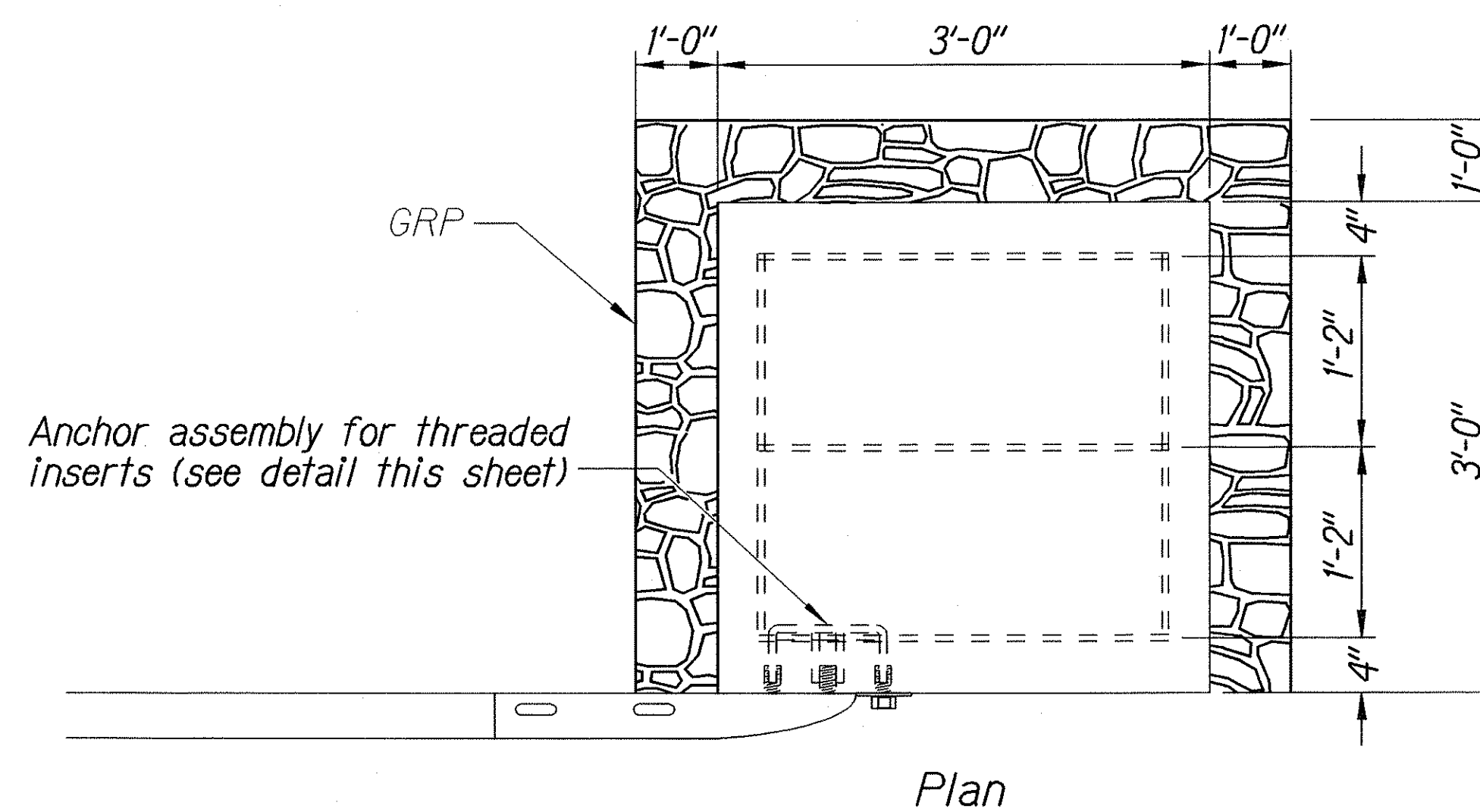


Elevation

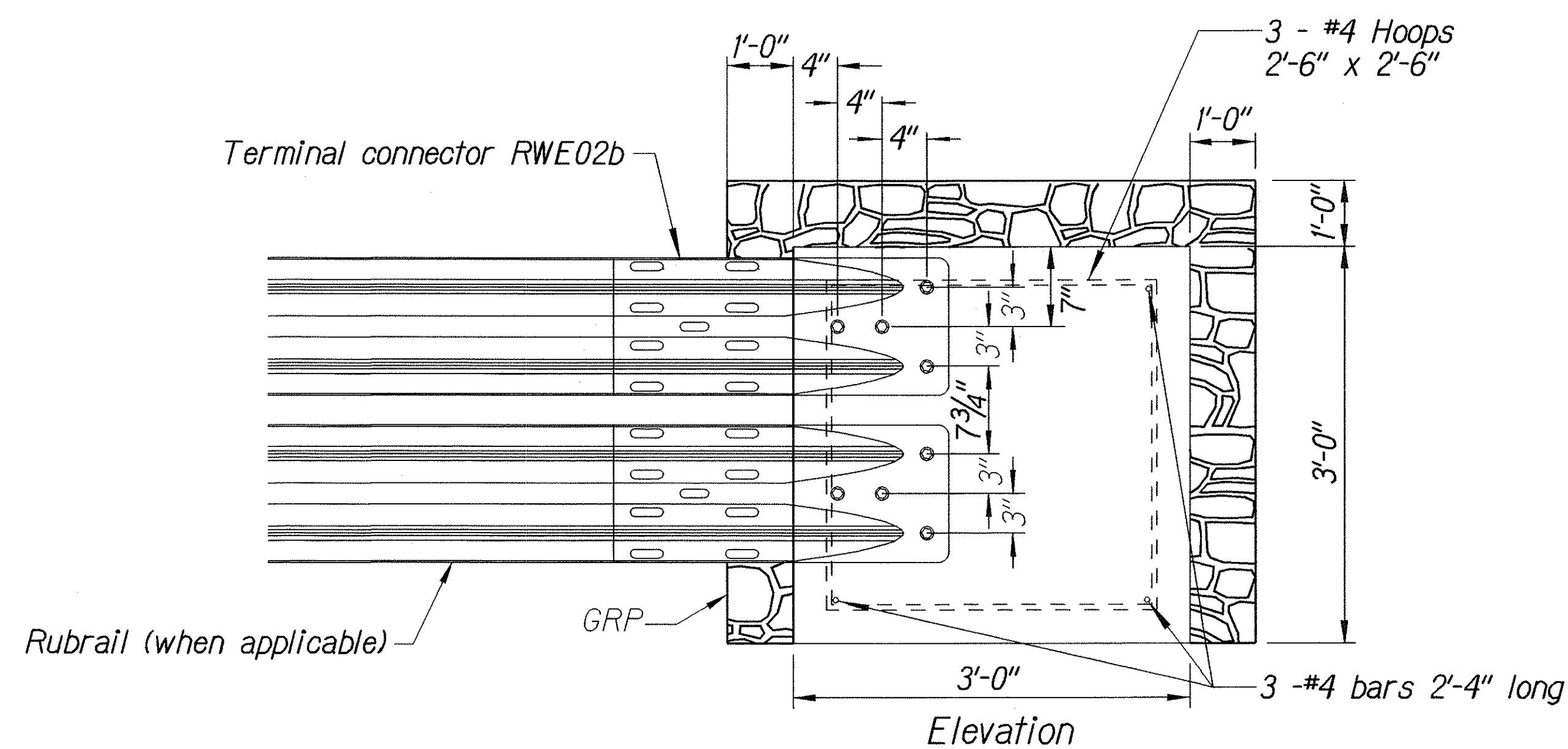
STRONG POST W-BEAM GUARDRAIL



**ANCHOR ASSEMBLY
CONCRETE BLOCK ANCHOR**



Plan



**CONCRETE BLOCK ANCHOR
(3' X 3' X 3')**

**BACKSLOPE ANCHOR TERMINAL END ANCHORAGE DETAILS
MODIFIED TYPE "A-1" FLARE**

Note:

All fasteners, posts, blocks and rail elements 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-AGCARTBA Joint Cooperative Committee and HDOT's Statewide Guideline for Permanent Highway Safety Hardware.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
DRAWN BY		
DESIGNED BY		
CHECKED BY		
NOTED BY		
QUANTITIES BY		
CHECKED BY		

15/2/01 TEL: 643-2111 FAX: 643-2112 (Standard plan TE-58 07/01/86, TE-59 11/03/89 & TE-60 07/01/86)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
TYPE "A" FLARE
INTERSTATE ROUTE H-1
GUARDRAIL AND SHOULDER IMPROVEMENTS
Airport Viaduct to Middle Street
Federal Aid Project No. 1M-HI-1(240)
Scale: NTS Date: Oct., 2003
SHEET No. 2 OF 3 SHEETS