

GENERAL NOTES:

1. All hardware, posts and fasteners shall be hot-dip zinc coated galvanized after fabrication. No punching, drillings or cutting will be permitted after galvanizing.

2. Where conditions require, special post lengths in increments of 6 inches may be specified by the Engineer.

3. All fasteners, posts, and rail elements (i.e. FBB03, PWE01, RWM04b, 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 Blockout or Offset Block shall be approved by the State.
5. All new guardrail systems (system consists of total length of guardrail including both end treatments) shall include the Additional Paved Area.

6. After the guardrail posts are installed in the paved area, the Contractor shall fill/seal around each guardrail post and all cracks in the paved area 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 filling/sealing. All costs associated with this work shall not be paid for separately, but shall be considered incidental to the various guardrail items.

7. When standards for the fill slope area cannot be met, a site specific, engineer approved design may be used.

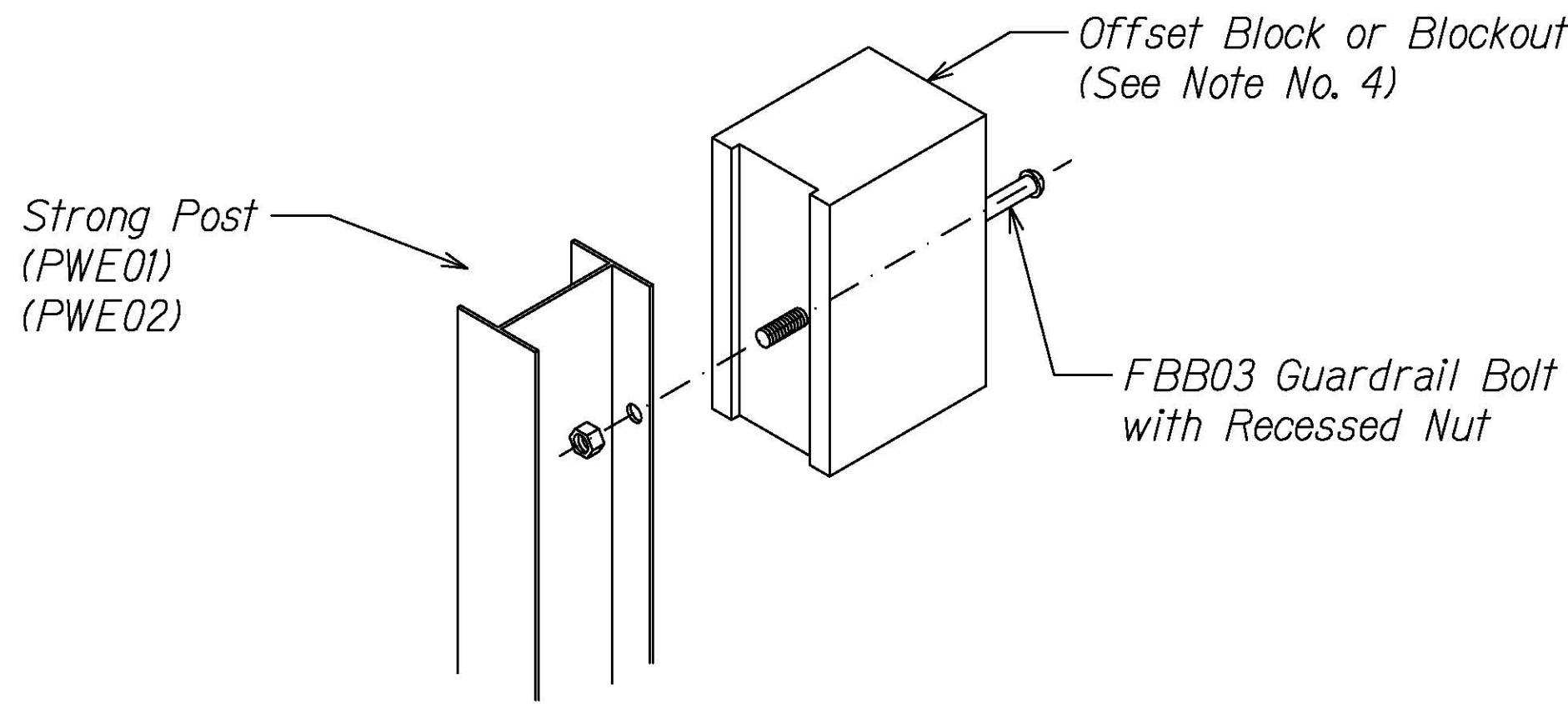
8. Minimum working width (clear distance) between back of MGS post to any fixed object is 4'-1" (49").
9. New Hot Mix Asphalt (HMA) pavement at guardrails shall extend 6 feet longitudinally beyond terminal ends.

10. Reflector Markers (RM-5) mounted on guardrails shall be spaced every 25 feet. RM-5's shall not be installed on terminal sections. Furnishing and installing of each RM-5 shall be considered incidental to the guardrail system.

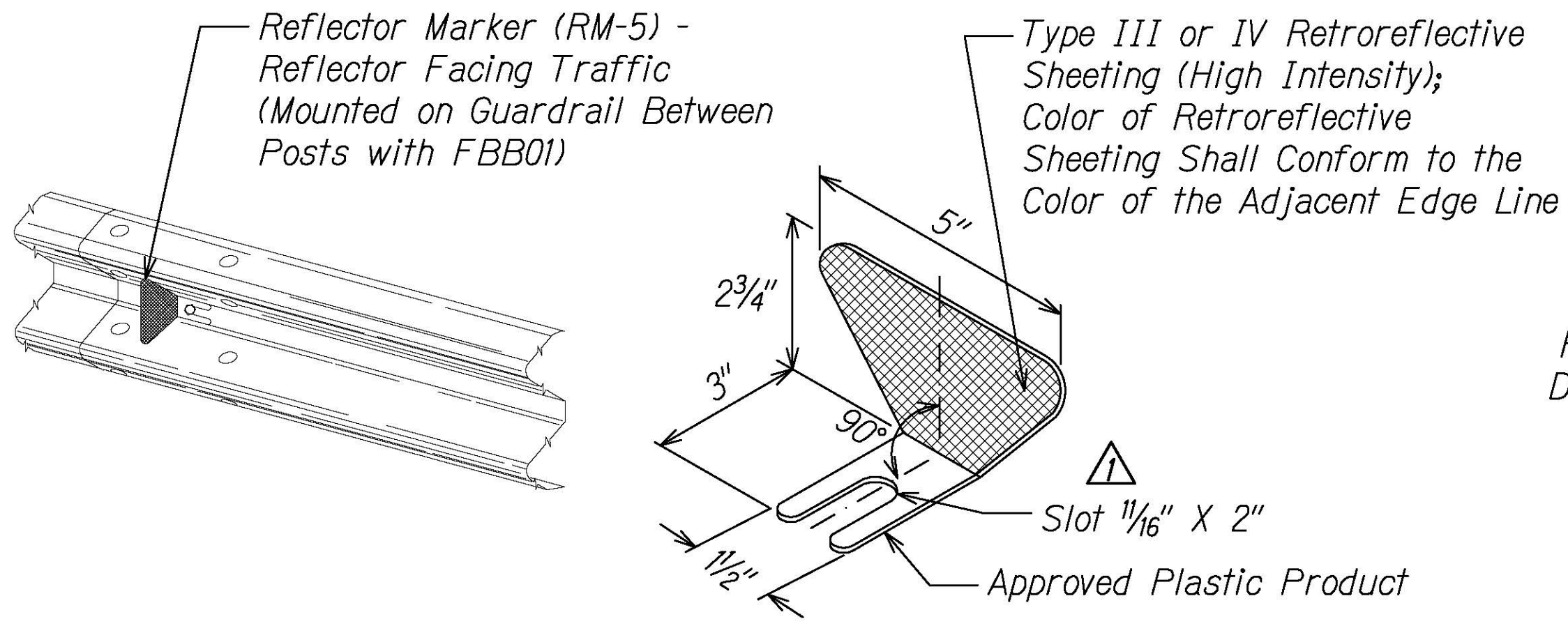
11. Polymer-Modified Asphalt (PMA) pavement shall be used in place of HMA when the adjacent roadway is paved with PMA.

12. All guardrail, guardrail posts and appurtenances (both new and existing) shall be painted in accordance to Note 35 Guardrail Paint on Sheet N-3. Payment for painting shall be considered incidental to the various guardrail items. Top coat paint color shall be brown and match existing guardrails.

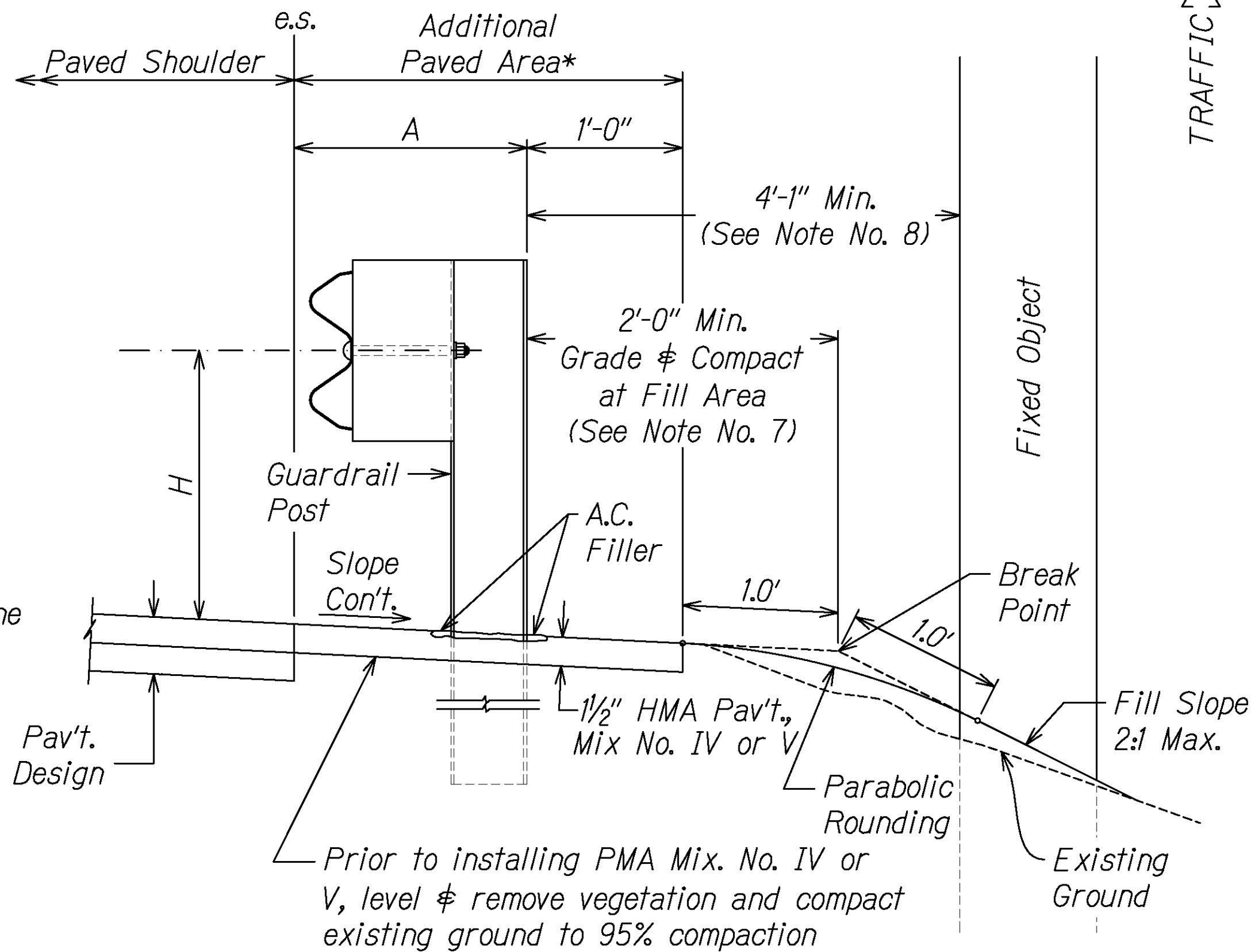
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0560(017)	2023	ADD.29	92



STEEL POST AND BLOCK DETAIL



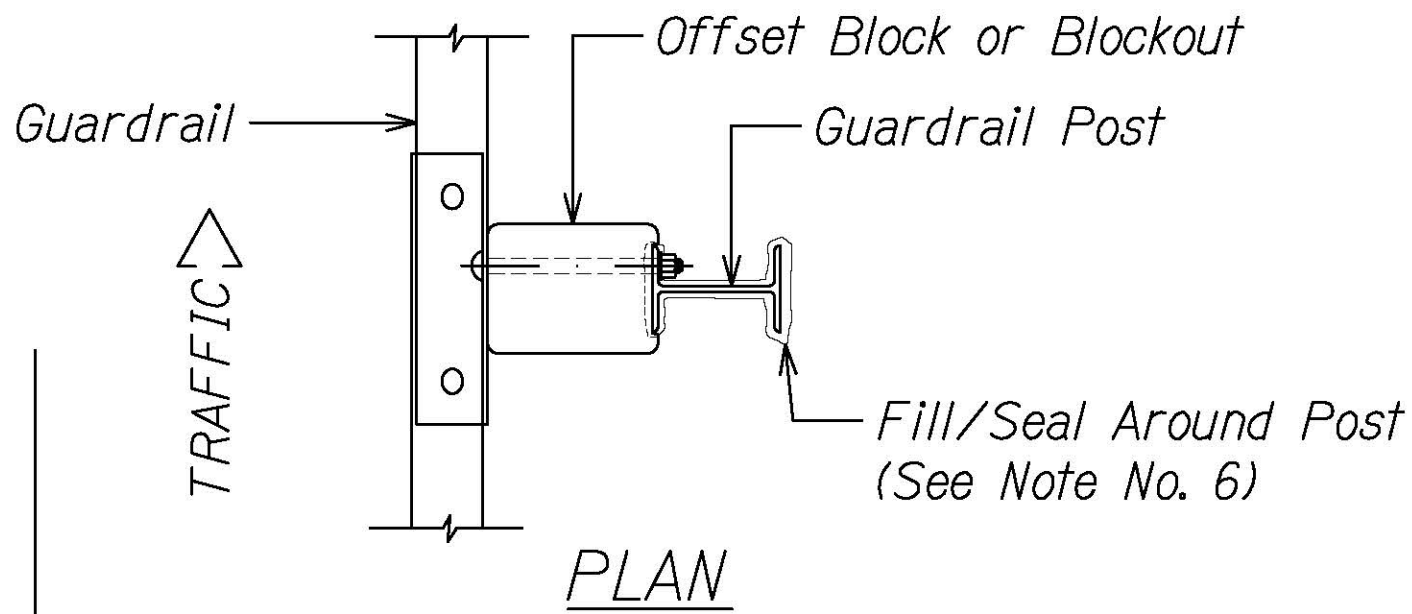
REFLECTOR MARKER (RM-5) DETAIL AND TYPICAL INSTALLATION



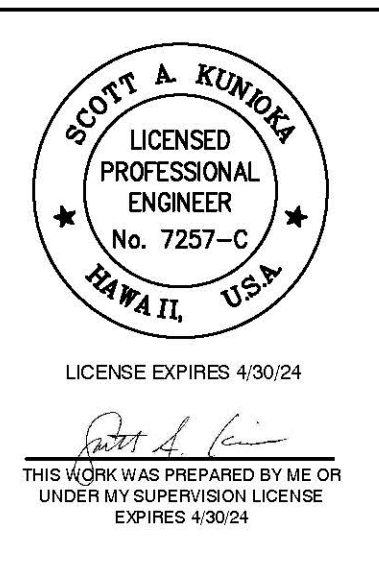
ELEVATION

TYPICAL GUARDRAIL INSTALLATION

GUARDRAIL TYPE	DIMENSION	
	H	A
MGS w/ Standard 8" Offset Block	2'-1"	1'-6"
MGS w/ No Blockout	2'-7/8"	9 1/4"



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



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

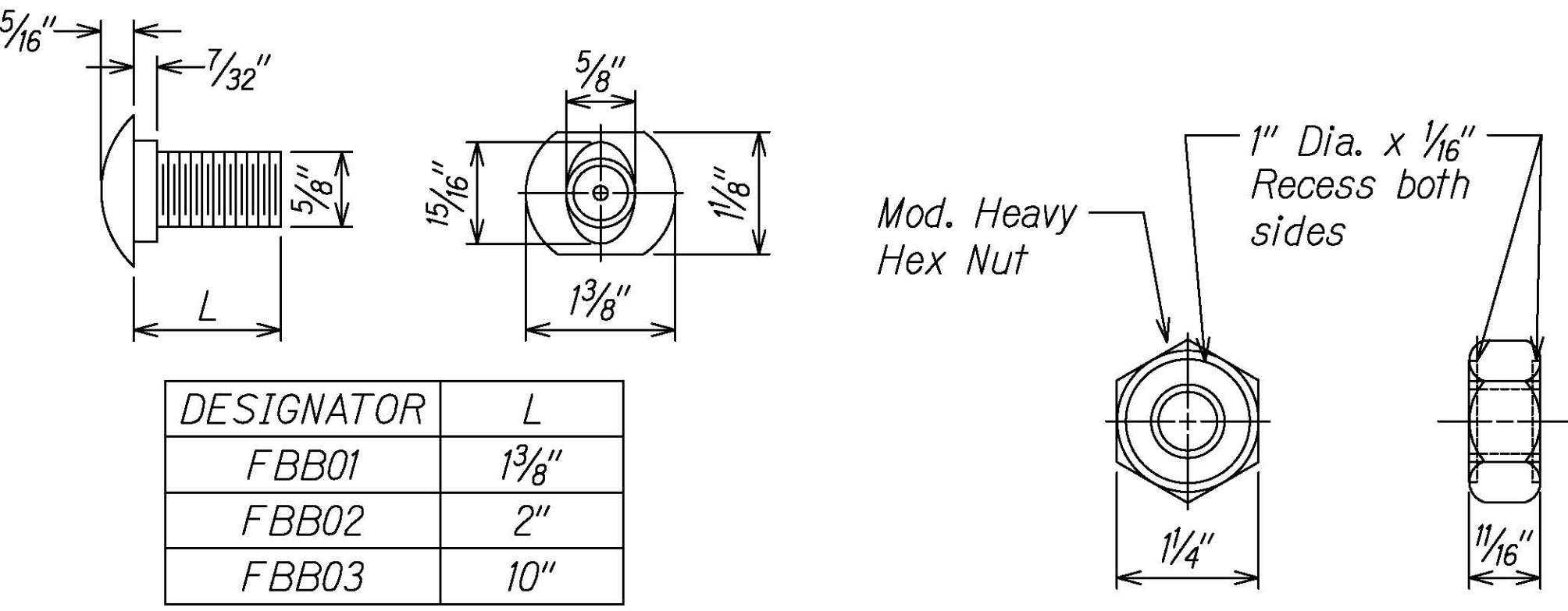
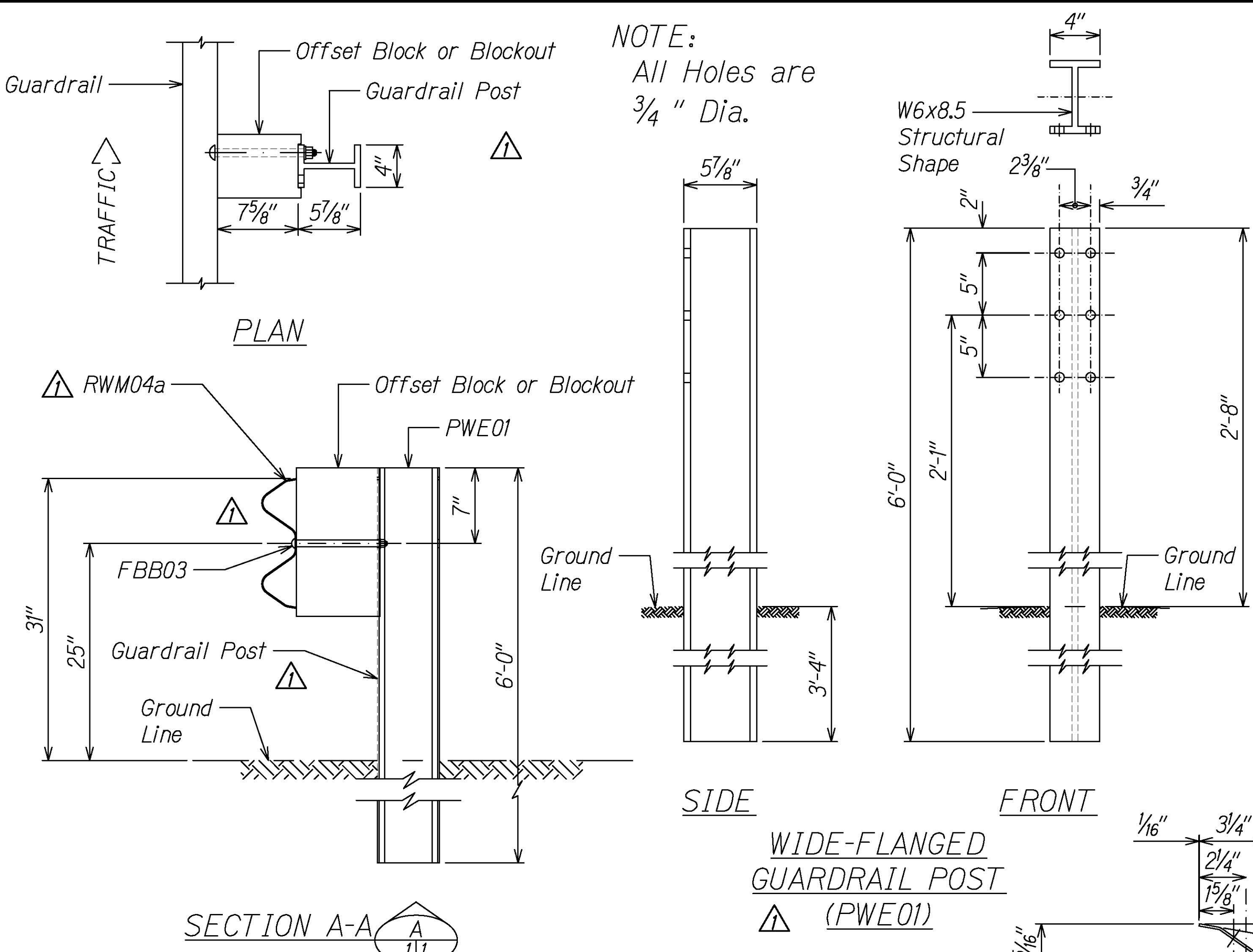
GUARDRAIL DETAILS
KUHIO HIGHWAY RESURFACING AND SAFETY IMPROVEMENTS
Route 560 M.P. 0.0 to M.P. 4.5
Fed. Aid Proj. No. STP-0560(017)

Scale: Not to Scale Date: July, 2023

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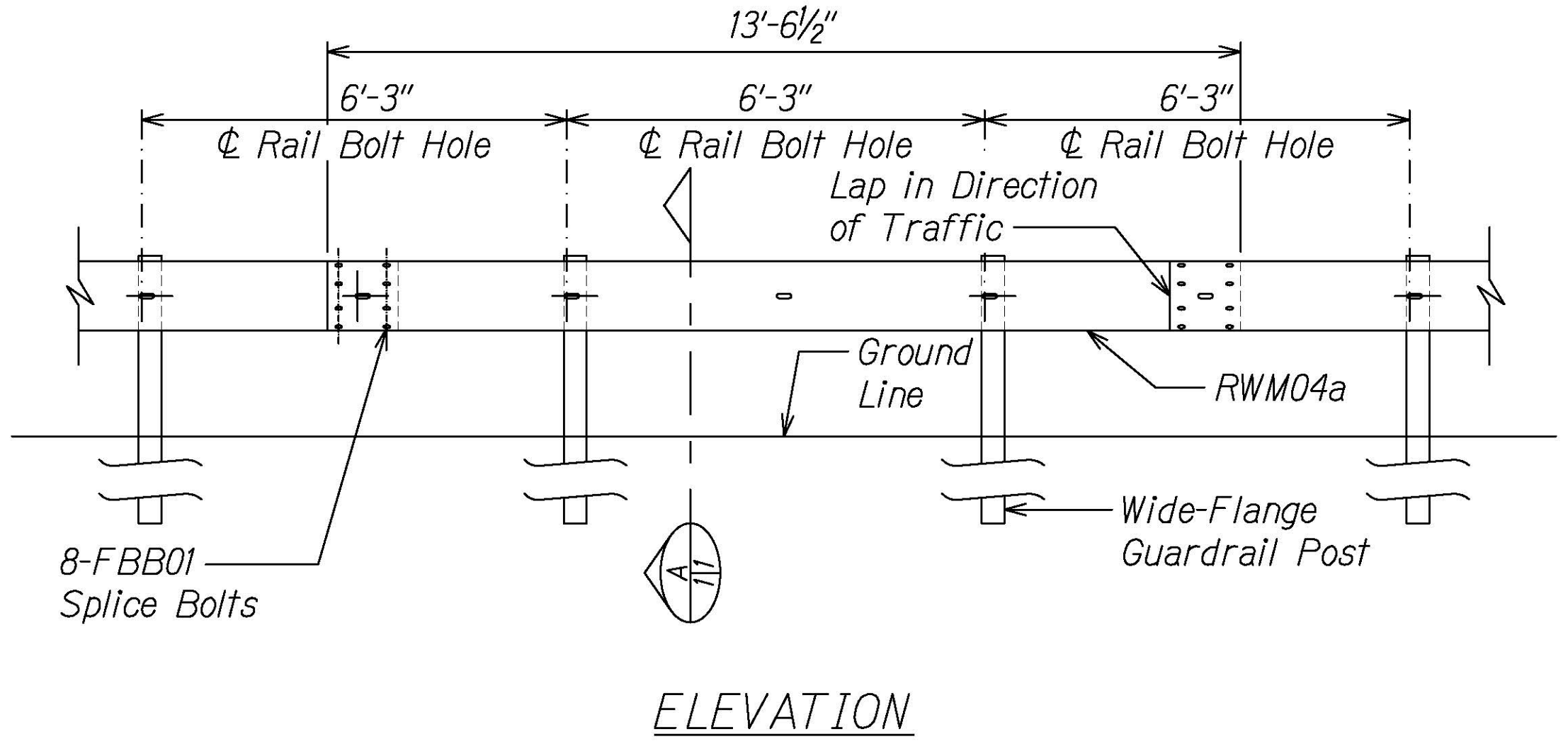
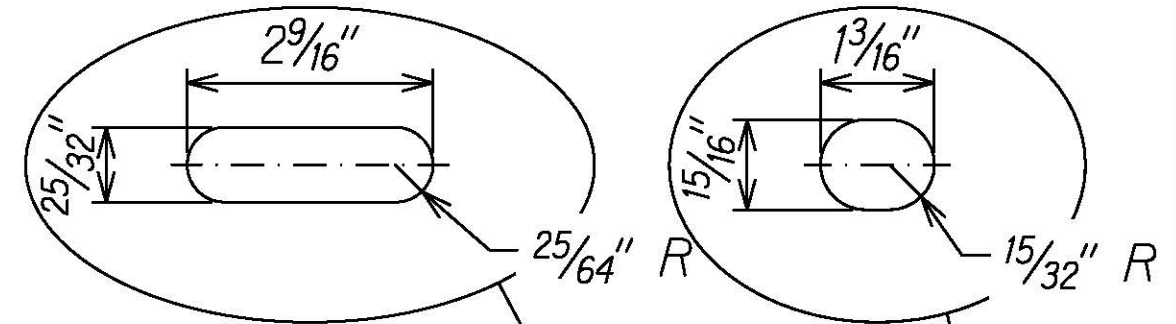
10/12/23	△ - Revised RM-5 Detail
DATE	REVISION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0560(017)	2023	ADD.30	92

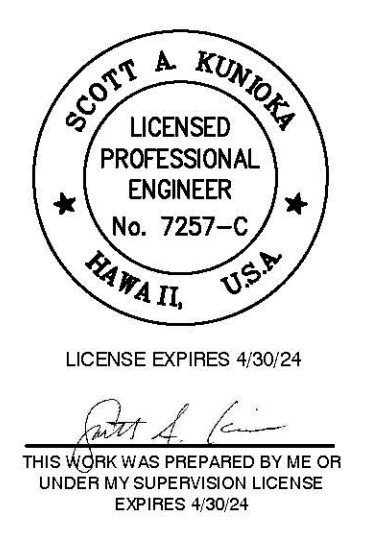
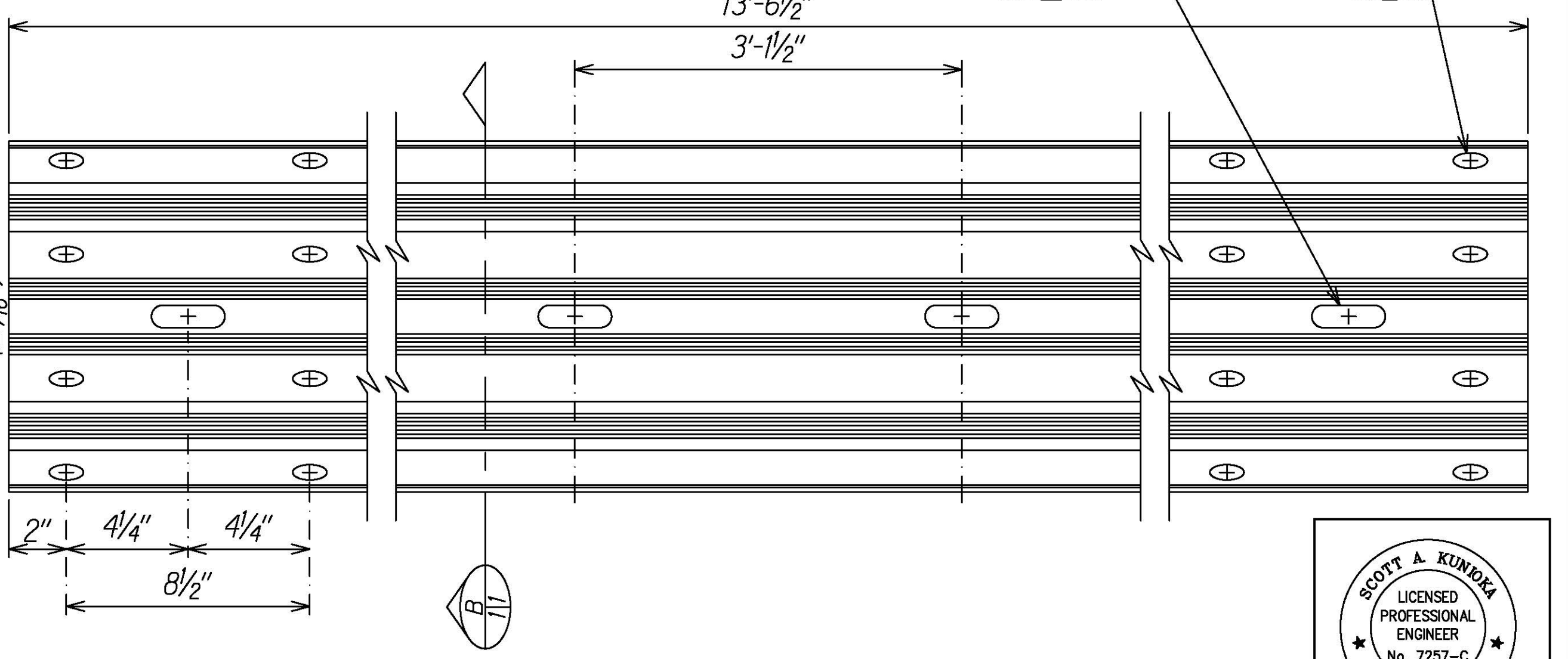
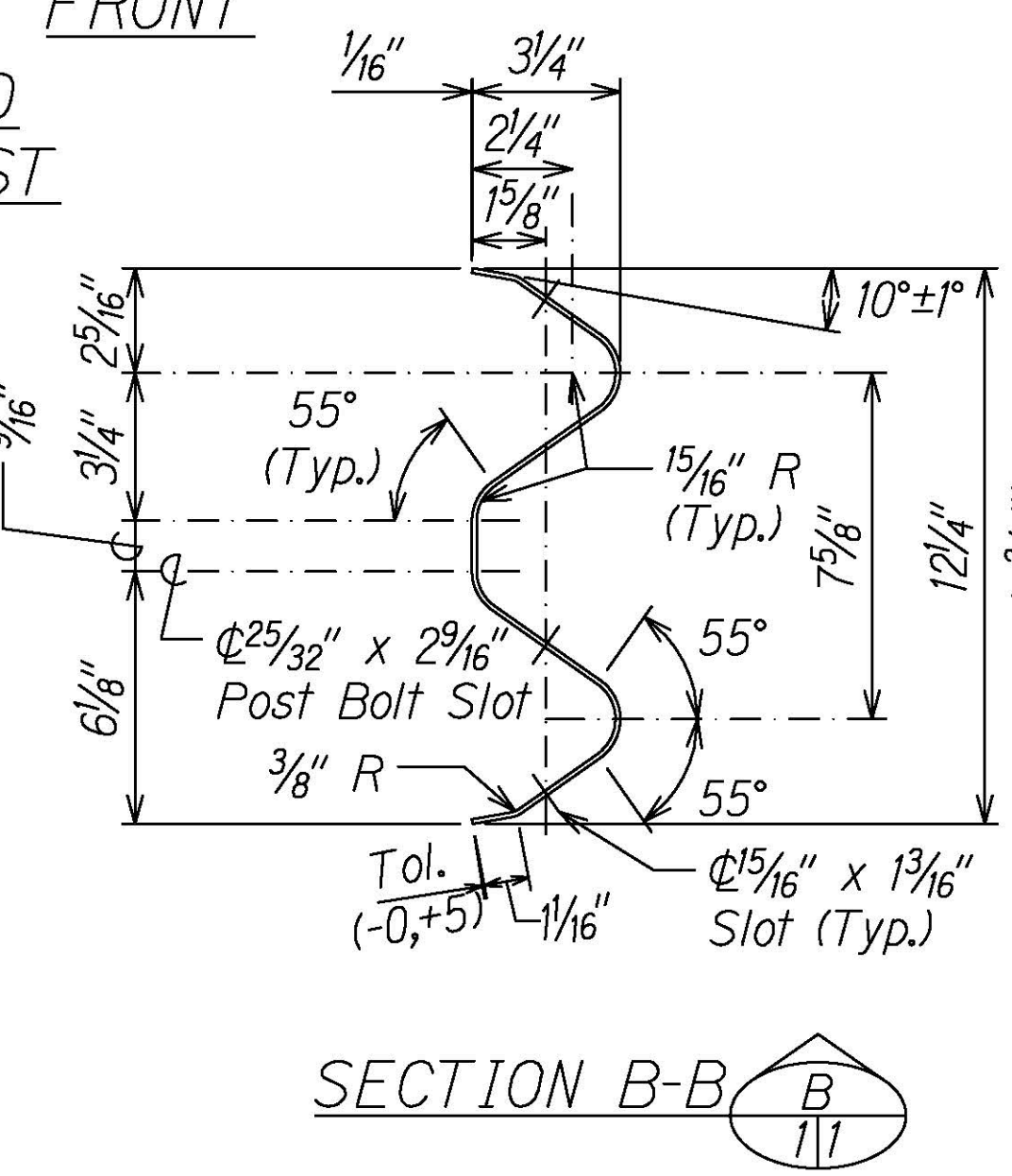


GUARDRAIL BOLTS AND RECESSED NUT

DESIGNATOR	BASE METAL THICKNESS
RWM04a	12 Gauge



MIDWEST GUARDRAIL SYSTEM WITH
STANDARD 8" OFFSET BLOCK (SGR47)



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GUARDRAIL DETAILS

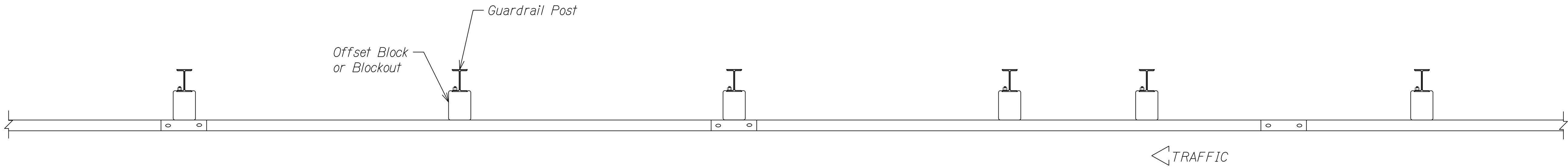
**KUHIO HIGHWAY RESURFACING
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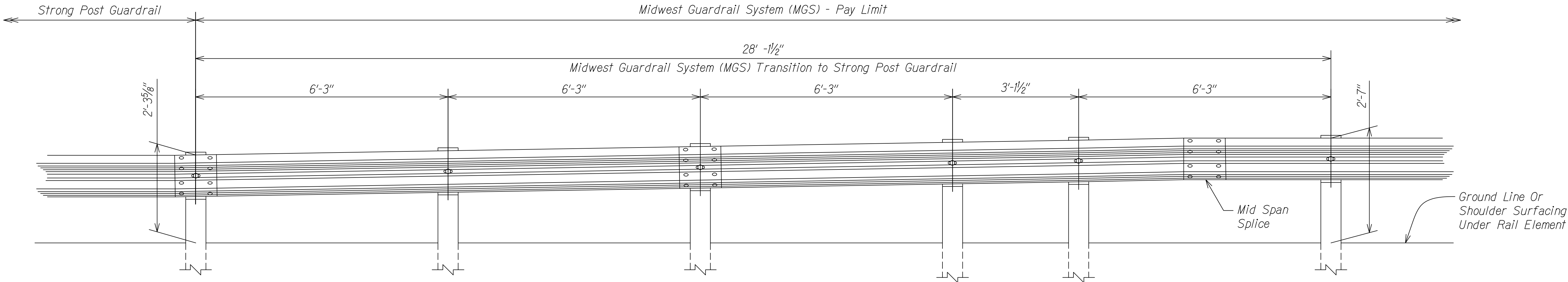
SHEET No. R-11A OF 28 SHEETS

10/12/23	1 - Revised Guardrail Details
DATE	REVISION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0560(017)	2023	31	92

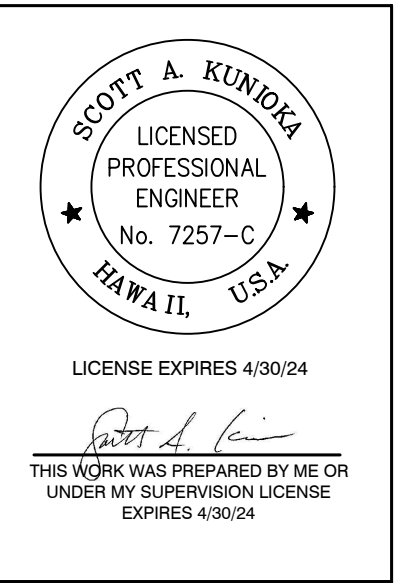


PLAN



ELEVATION

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
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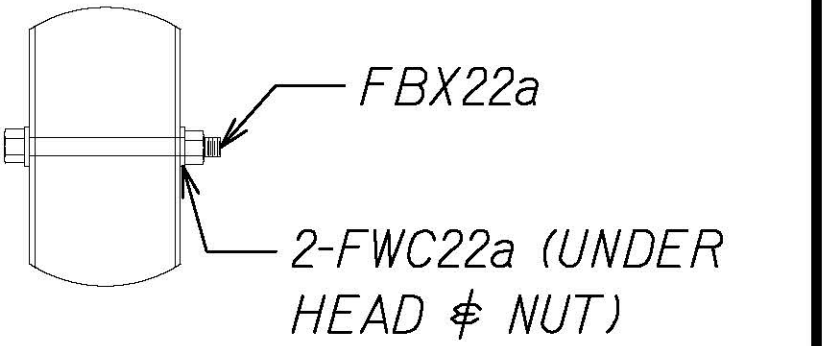
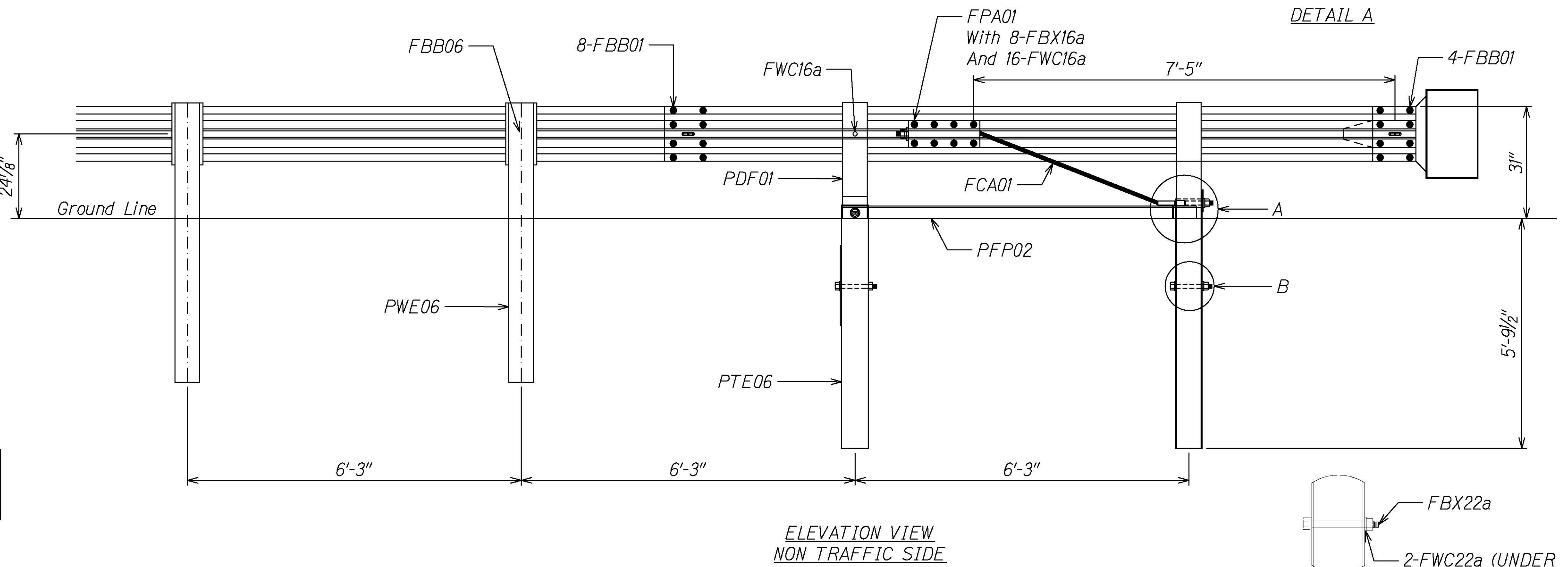
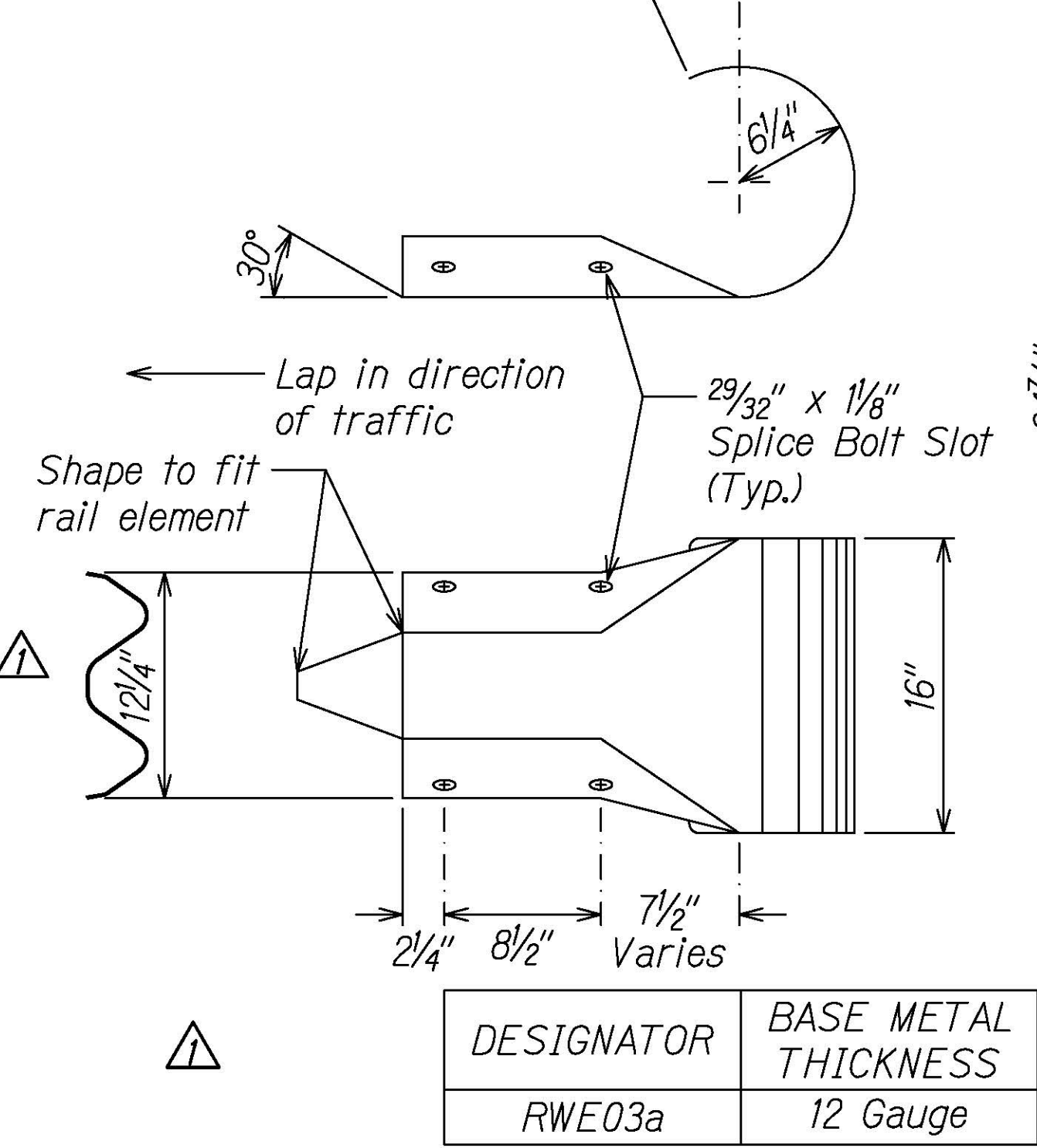
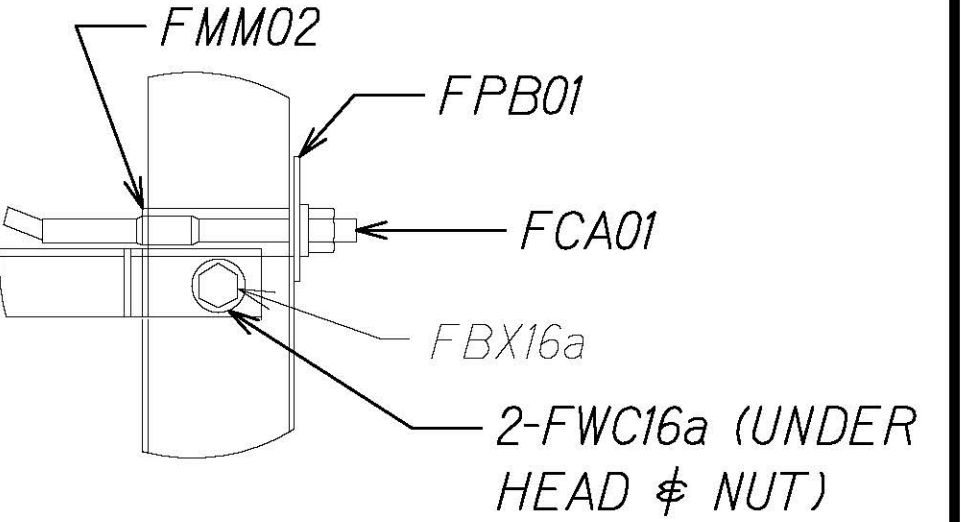
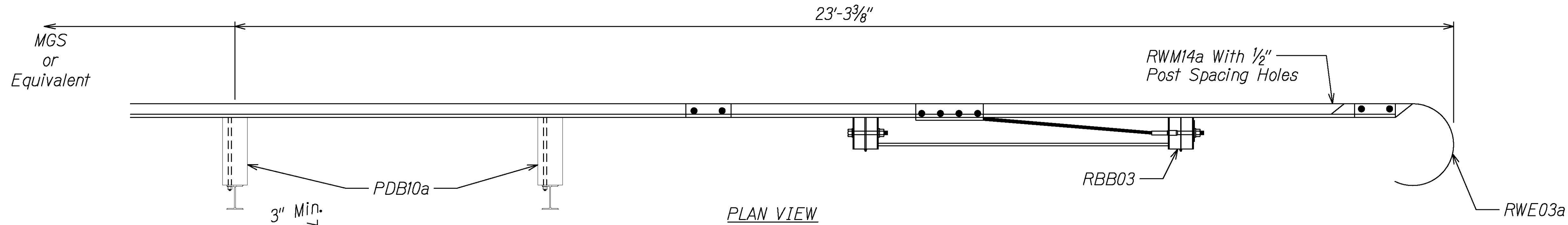
GUARDRAIL DETAILS

**KUHIO HIGHWAY RESURFACING
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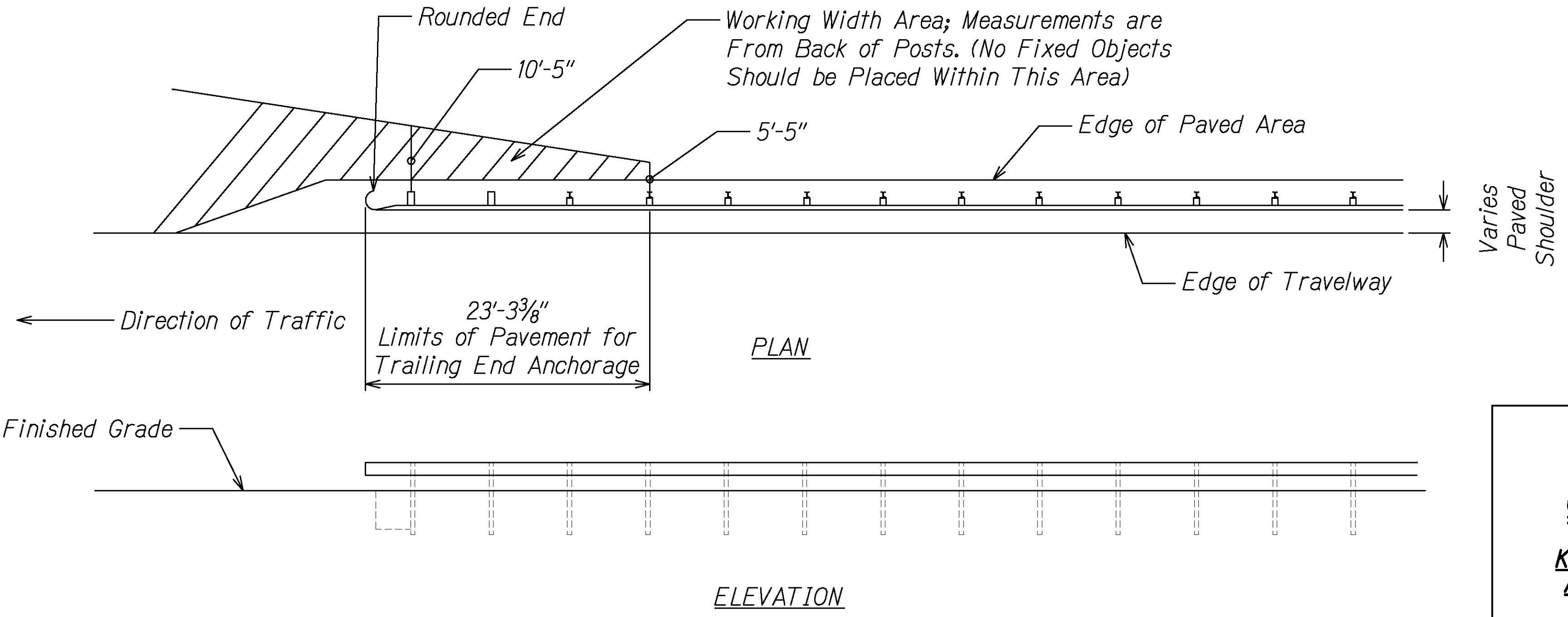
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SHEET No. R-12 OF 28 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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ITEM NO.	QTY	COMPONENTS
FBB01	12	Guardrail Bolt and Nut
FBB03	2	Guardrail Bolt and Nut
FBB06	1	Guardrail Bolt and Nut
FBX16a	2	Hex Head Bolt (10") and Nut
FBX16a	8	Hex Head Bolt (1 1/2") and Nut
FBX22a	2	Hex Head Bolt (7 1/2") and Nut
FCA01	1	BCT Anchor Cable Assembly
PDB10a	2	MGS Timber Blockout
PFP02	1	Strut and Yoke Assembly
PWE06	1	Wide-Flange Guardrail Post
FMM02	1	BCT Post Sleeve
FPA01	1	Anchor Bracket Assembly
FPB01	1	BCT Bearing Plate
FWC16a	22	Circular Washer
FWC22a	4	Circular Washer
PDF01	2	BCT Timber Post
PTE06	2	Foundation Tube
RWE03a	1	W-Beam Rounded End Section
RWM14a	1	W-Beam MGS End Section



TRAILING-END ANCHORAGE SYSTEM DETAILS
Not to Scale

10/12/23	△ - Revised Guardrail Details
DATE	REVISION

SCOTT A. KUNIK

LICENSED PROFESSIONAL ENGINEER

No. 7257-C

HAWAII, U.S.A.

LICENSE EXPIRES 4/30/24

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION LICENSE EXPIRES 4/30/24

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

GUARDRAIL DETAILS

KUHIO HIGHWAY RESURFACING AND SAFETY IMPROVEMENTS

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