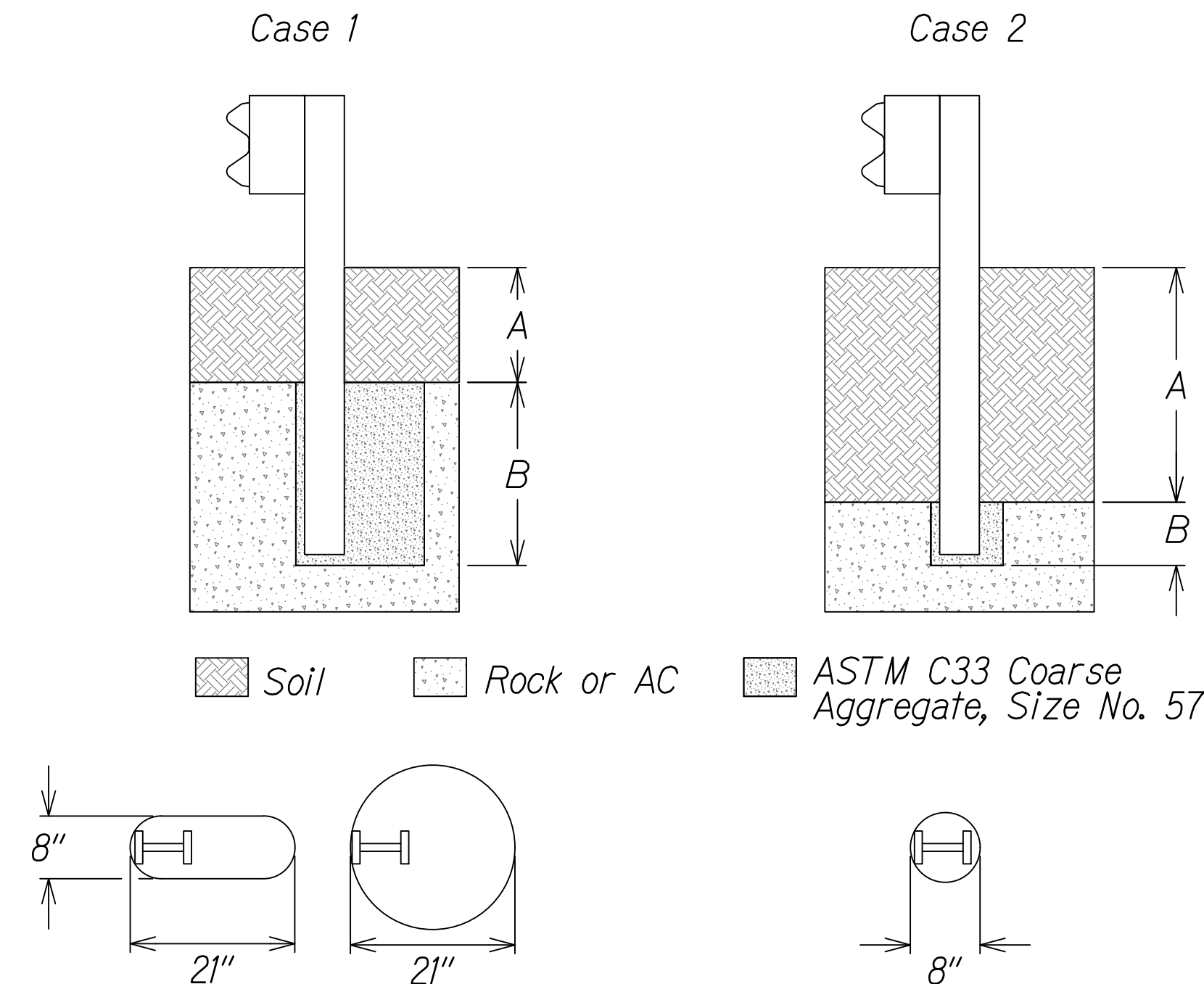


NOTES (STRONG POST W-BEAM IN ROCK):

1. Backfill of drilled holes shall be with compressible material, ASTM C33 Coarse Aggregate, Size No. 57.
2. Elongated 21-inch long hole can be accomplished by drilling three 8-inch diameter holes at 6 1/2-inches on center.



Plan View Steel Posts  
Either Hole Configuration Acceptable

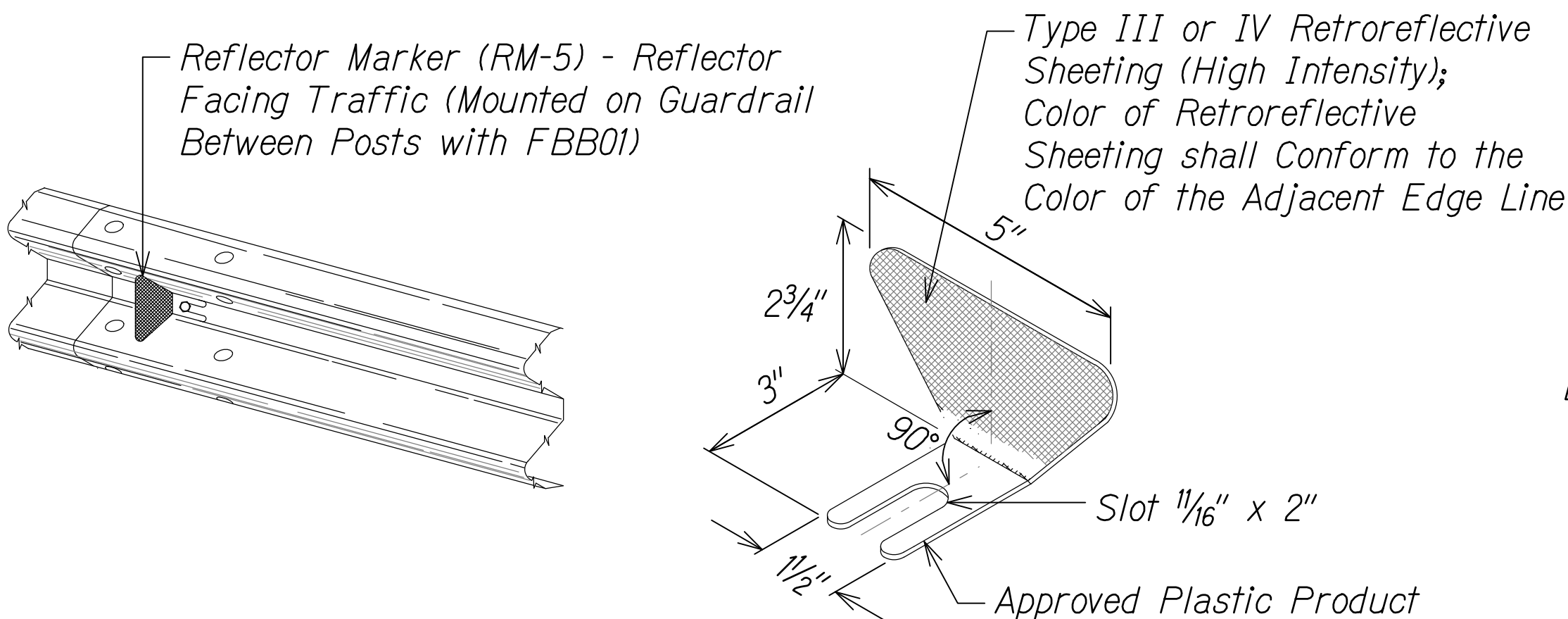
(A) Ranging from 0 to 18-inches,  
the Depth of Required Drilling  
(B) is Equal to 24-Inches.

(A) Ranging from 18-inches to the  
embedment depth of the post, depth  
of required drilling (B) is equal to  
either 12-inches or the desired  
embedment depth minus the depth  
of soil whichever is less.

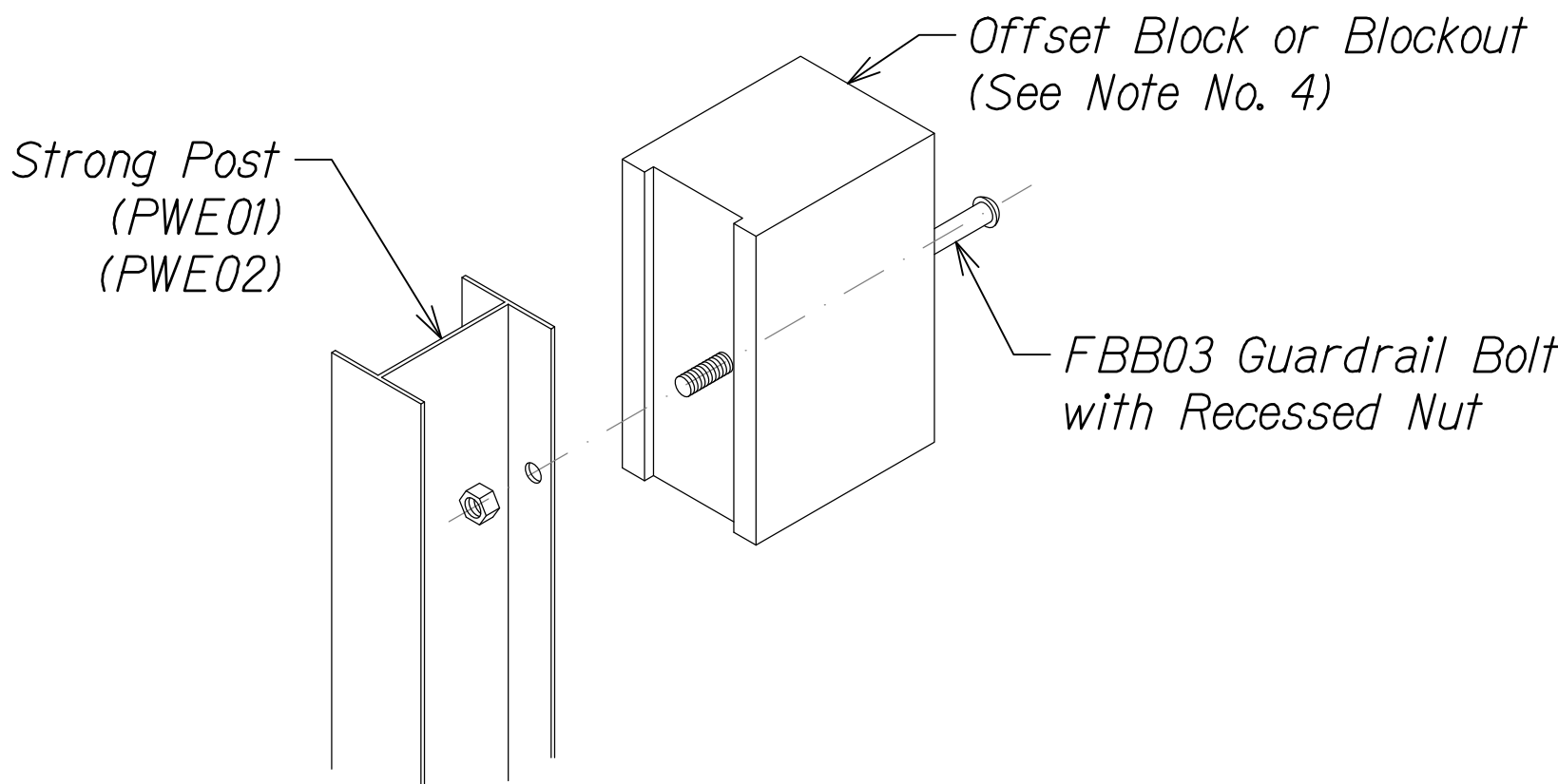
OVERLYING SOIL DEPTHS OF  
0 TO 18-INCHES

OVERLYING SOIL DEPTHS OF  
18 TO 42-INCHES

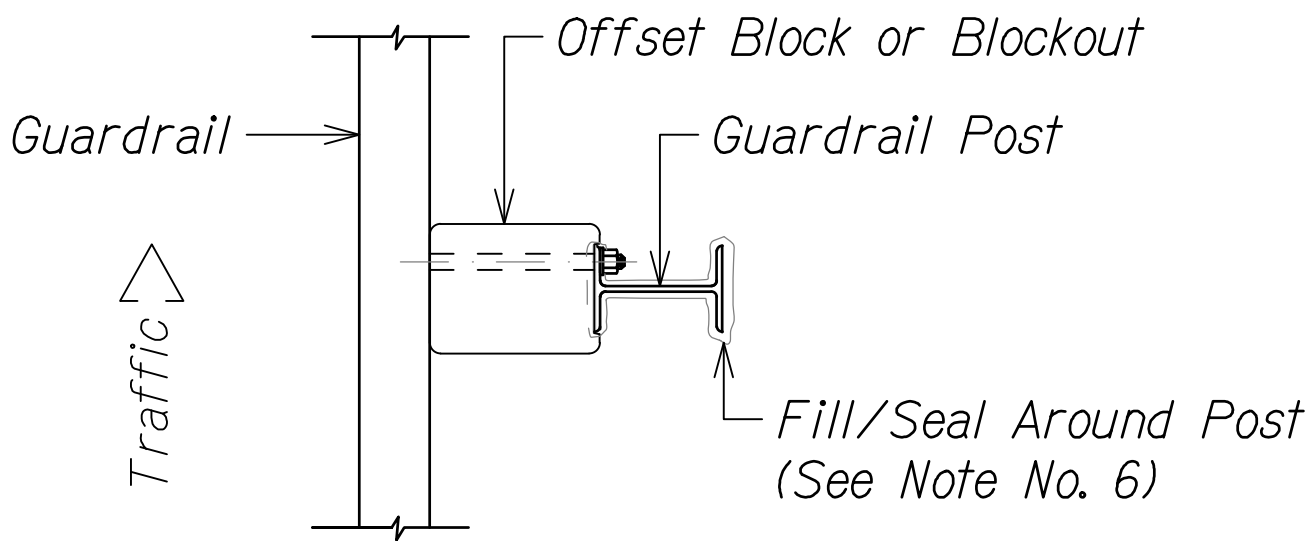
STRONG POST W-BEAM GUARDRAIL IN ROCK



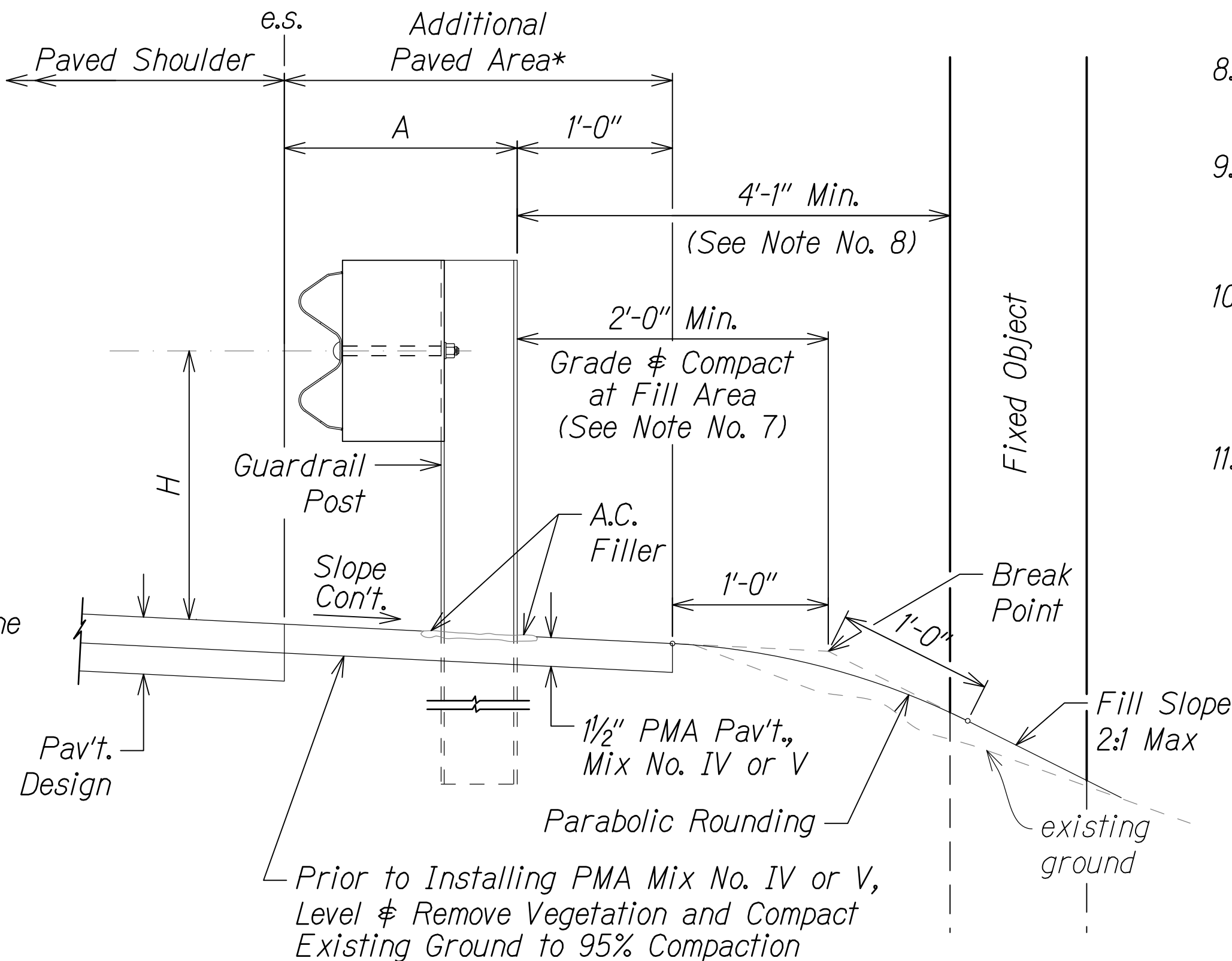
REFLECTOR MARKER (RM-5) DETAIL AND TYPICAL INSTALLATION



STEEL POST AND BLOCK DETAIL



PLAN



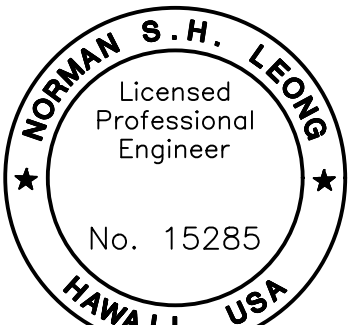
ELEVATION

TYPICAL GUARDRAIL INSTALLATION

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 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 and shall be incidental to new guardrail systems.
8. Minimum working width (clear distance) between back of MGS post to any fixed object is 4'-1" (49").
9. New Polymer Modified Asphalt (PMA) pavement at guardrails shall extend 6 feet longitudinally beyond terminal ends and shall be considered incidental to new guardrail systems.
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 new guardrail systems.
11. Where Reflector Markers (RM-5) are to be installed on existing guardrail systems, RM-5's shall be paid for under Item No. 632.9000 - Reflector Marker RM-5 Mounted on Existing Guardrail.

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



This work was prepared by me or under my supervision and construction of this project will be under my observation.  
*Norman S. H. Leong*  
Expiration Date of License: 4/24

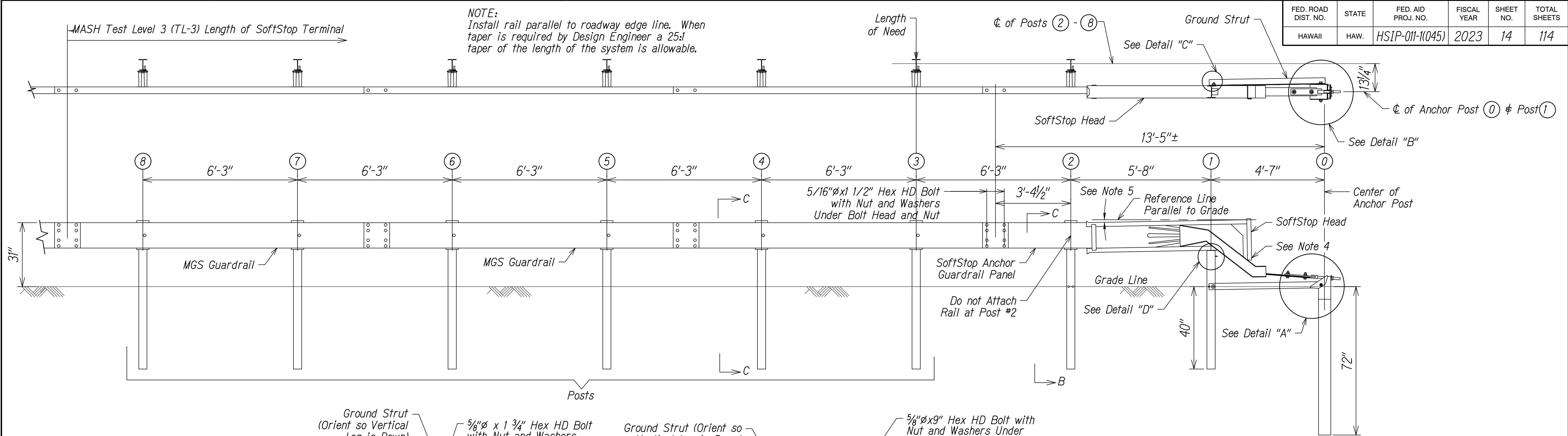
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**GUARDRAIL DETAILS AND NOTES**

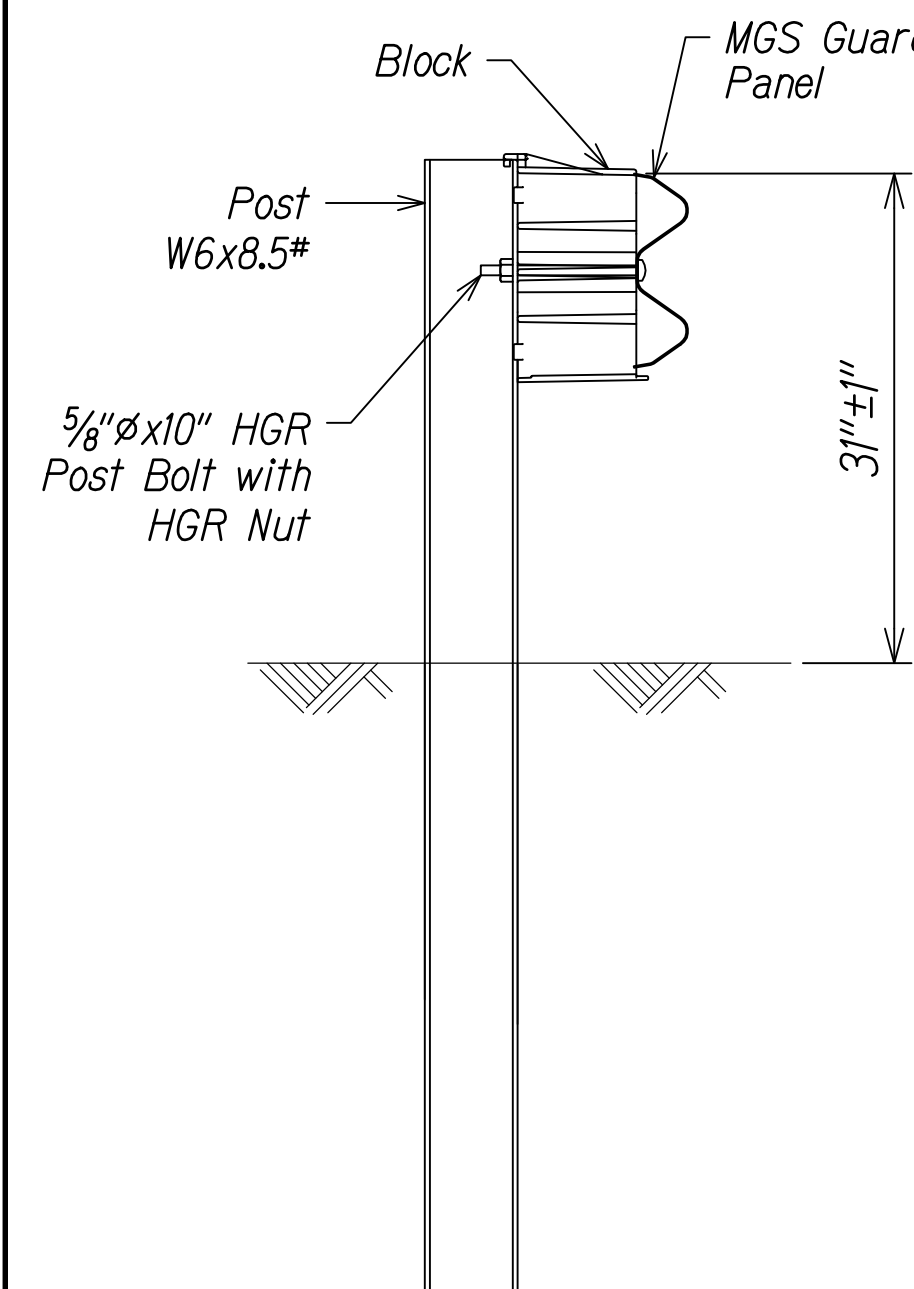
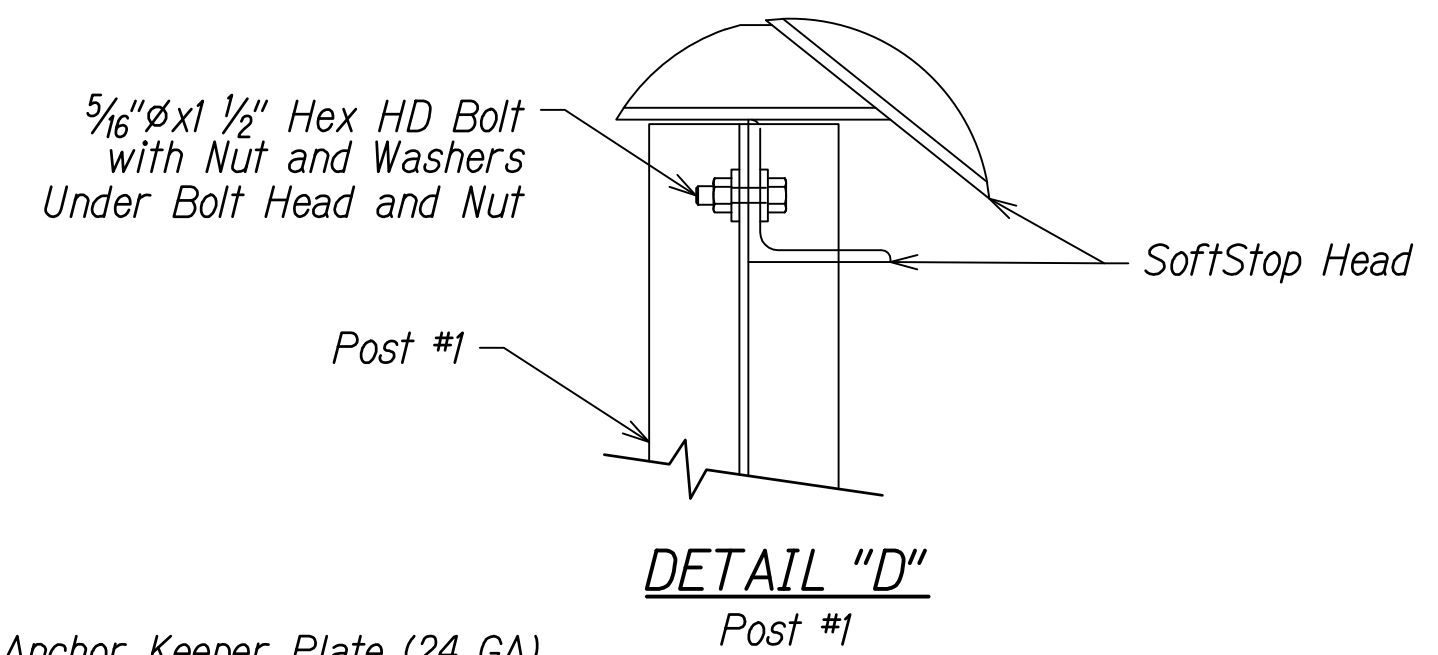
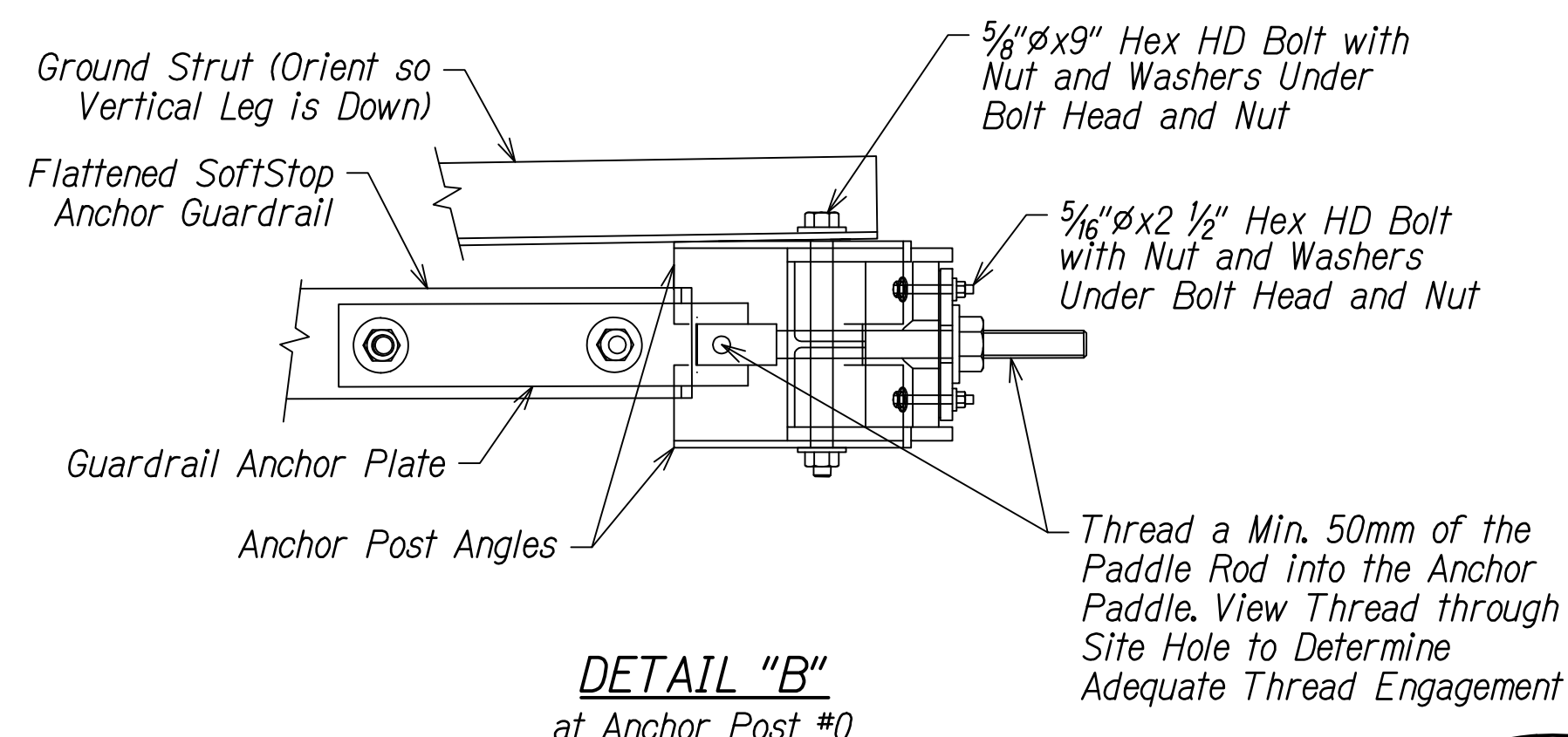
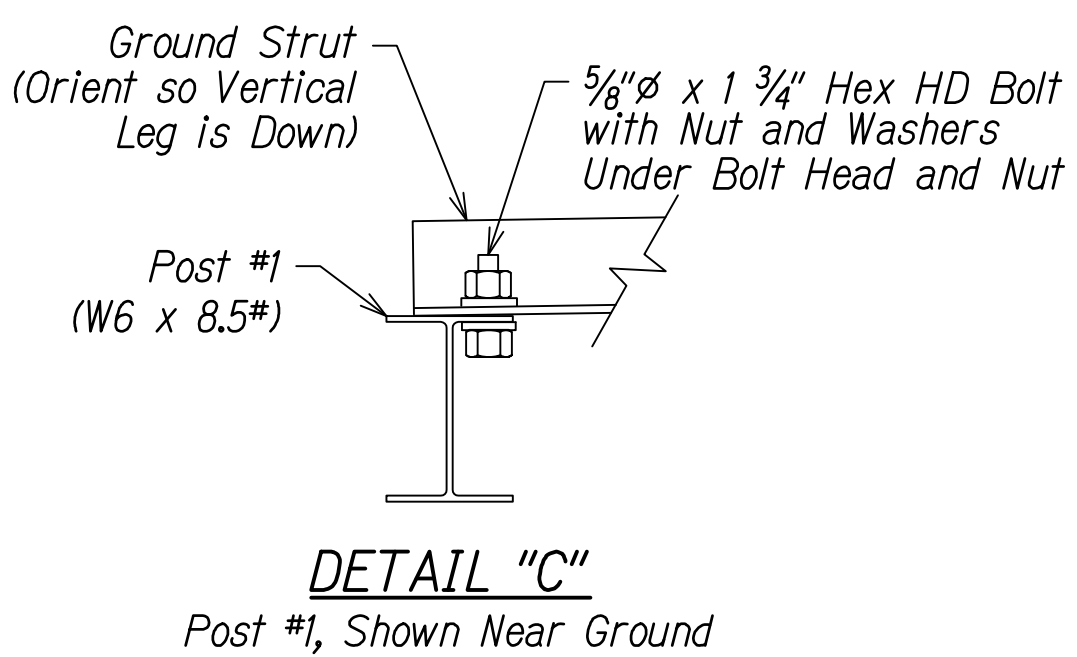
MAMALAHOA HIGHWAY  
SAFETY IMPROVEMENTS  
Vicinity of Haleili Street and Bruner Road  
Federal-Aid Project No. HS1P-011-1(045)  
Scale: NTS Date: September 2023



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HS1P-011-1(045)	2023	14	114

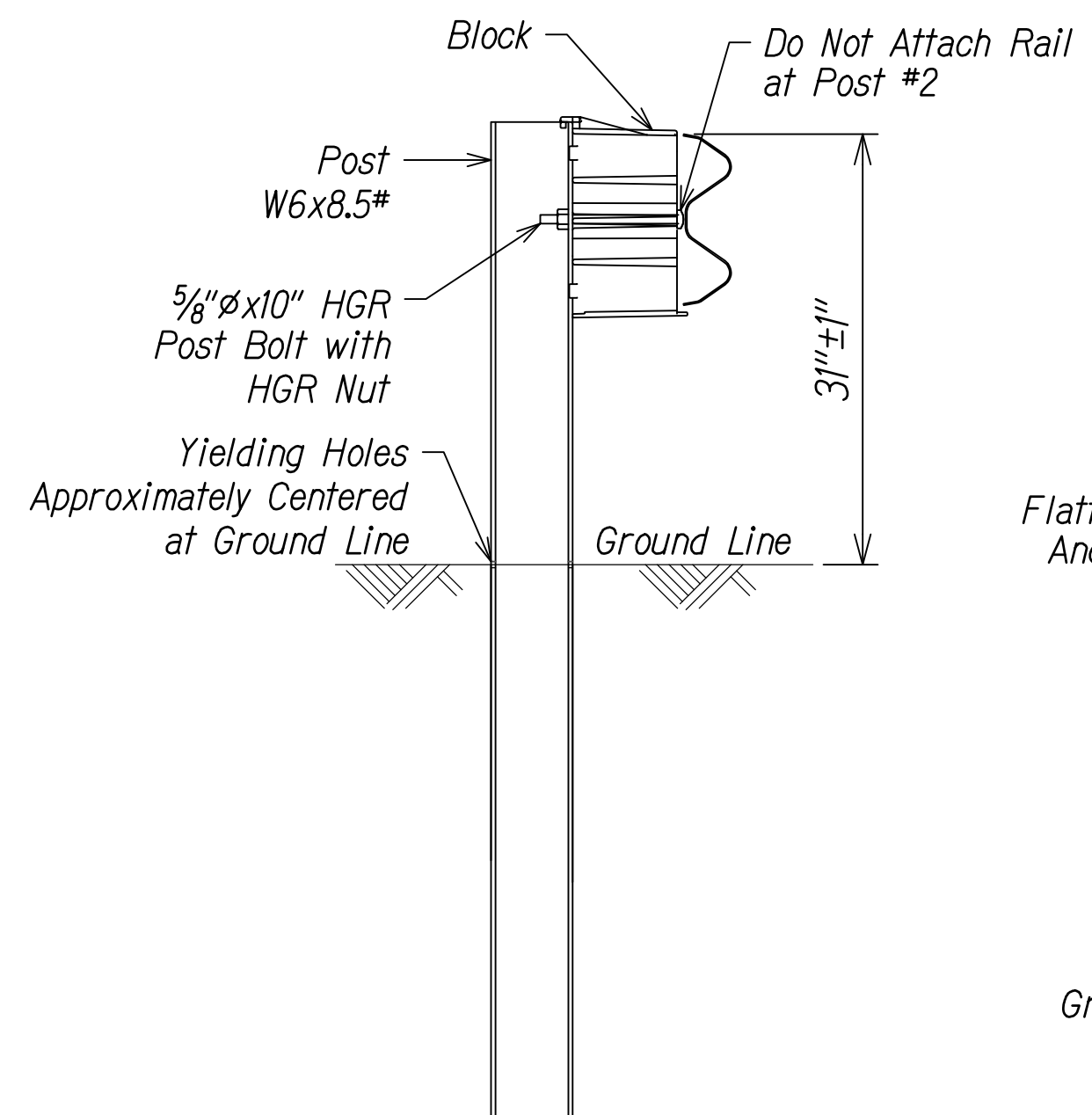


- NOTES:
1. Refer to SoftStop Assembly Manual.
  2. SoftStop is a MASH Test Level 3 (TL-3) End Treatment
  3. All steel components HDG to AS/NZS4680.
  4. Manufacturer suggests customer to provide reflectorization of the terminal.
  5. It is acceptable to install the SoftStop head parallel to the grade line or with an upward tilt. See SoftStop Assembly Manual for specific details.
  6. All posts installed in any thickness of rigid pavement material shall have drilled holes and backfilled as shown on Sheet 12. Follow Manufacturer's Recommendations.



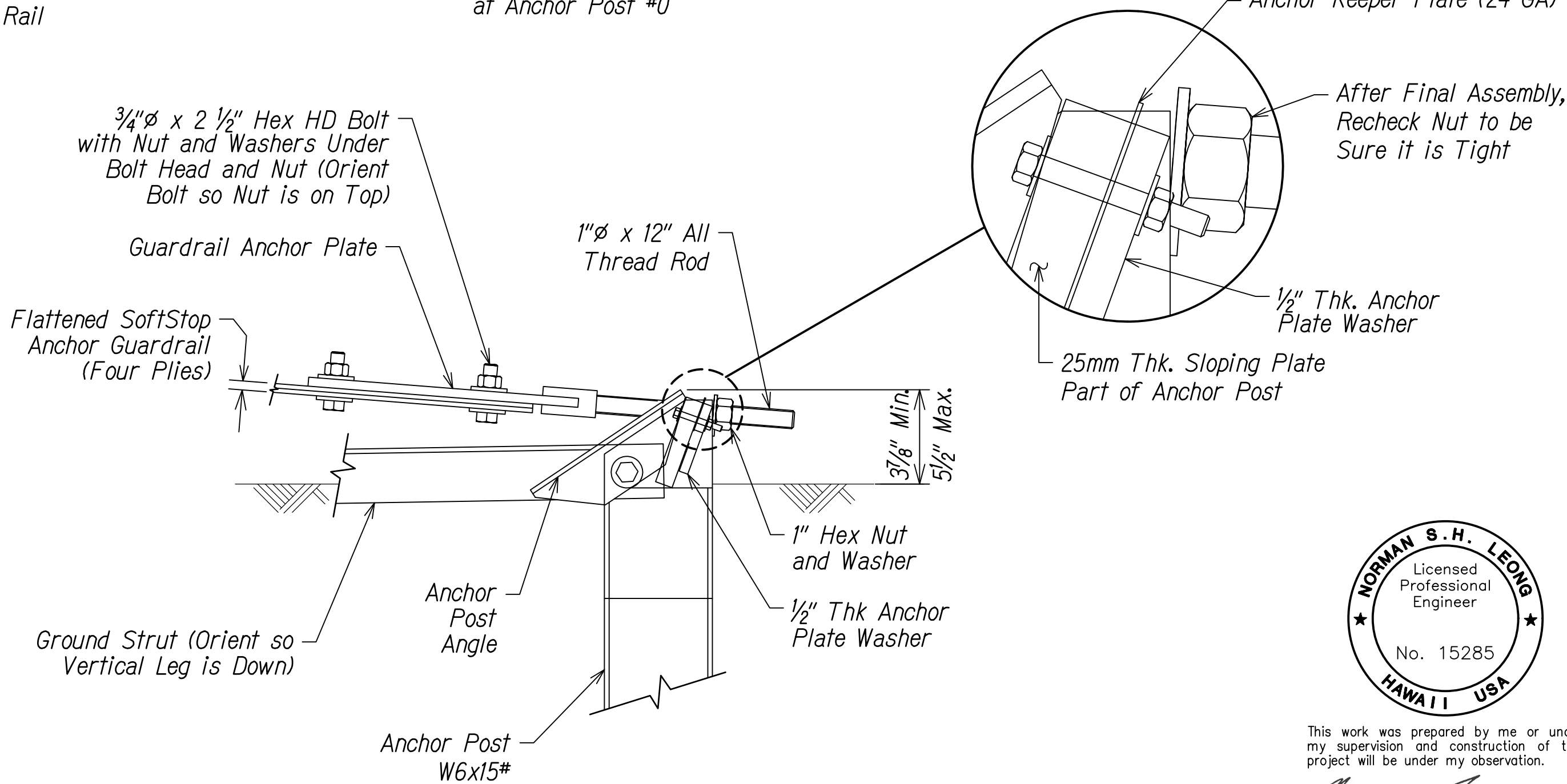
**SECTION "C-C"**

Posts #3 - #8



**SECTION "B-B"**

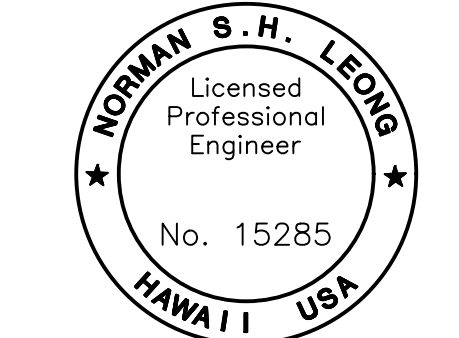
Post #2



**DETAIL "A"**

At Anchor Post #0

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



This work was prepared by me or under my supervision and construction of this project will be under my observation.

*Norman S. H. Leong*

Expiration Date of License 4/24

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**SOFTSTOP END TERMINAL**

MAMALAHOA HIGHWAY  
SAFETY IMPROVEMENTS  
Vicinity of Haleili Street and Bruner Road  
Federal-Aid Project No. HS1P-011-1(045)

Scale: NTS Date: September 2023

SHEET No. 4 OF 4 SHEETS