

BOLT DIMENSIONS		
TYPE BOLT	D	L
Splice Bolt	5/16"	1 1/4"
Post Bolt for Conc. Post w/Double Wood Blocks	3/32"	25"
Rail Bolt for Metal Block	3/32"	2"
Post Bolt for Metal Post w/Metal Block	0"	1 3/4"
Post Bolt for Conc. Post w/Single Wood Block	3/32"	18"



SPLICE RAIL AND POST BOLTS

FLARED END

MEDIAN END

MEDIAN END DIMENSIONS

CURVED. END

RAIL ELEMENT SECTION

NOTE: Concrete post shall be precast

DETAIL OF CONCRETE POST

MEDIAL

TYPICAL GUARD RAIL DETAIL

SHOULDER

STANDARD DETAILS

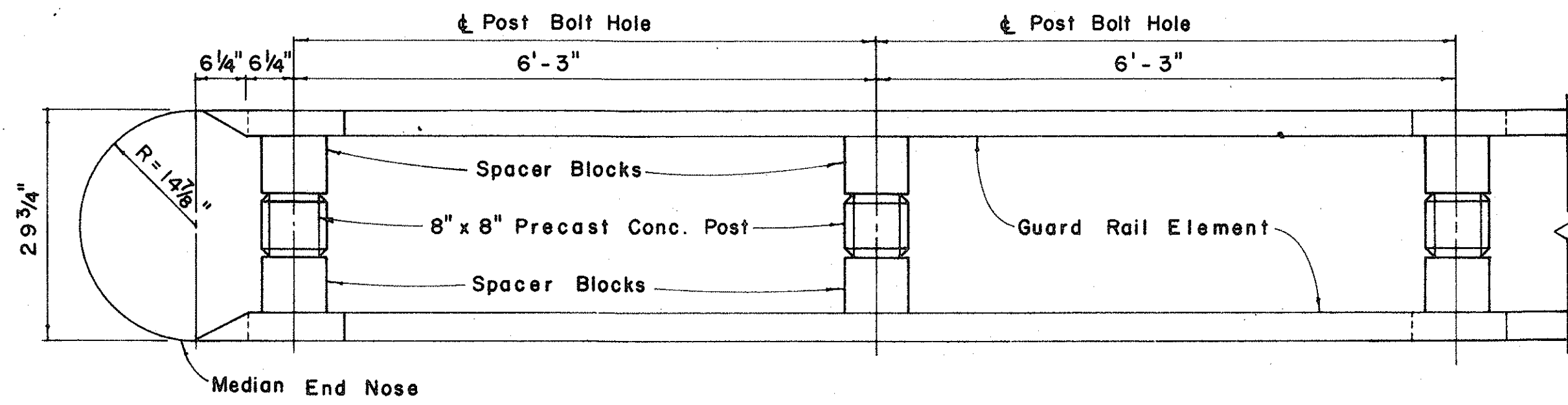
METAL GUARD RAIL

SHEET No. OF SHEETS

12

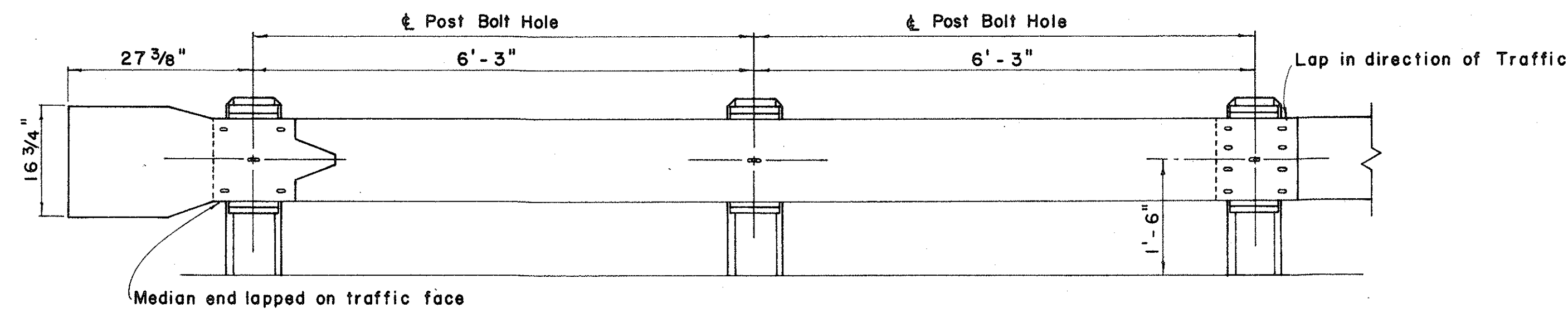
71

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-001-1(11)	1966	13	16



PLAN

Scale: $\frac{3}{4}$ " = 1' - 0"

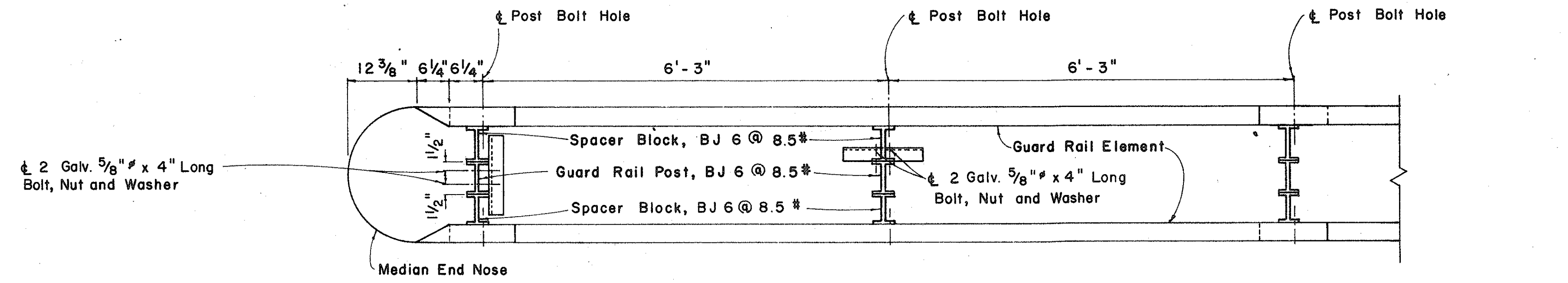


DIRECTION OF TRAFFIC →

ELEVATION

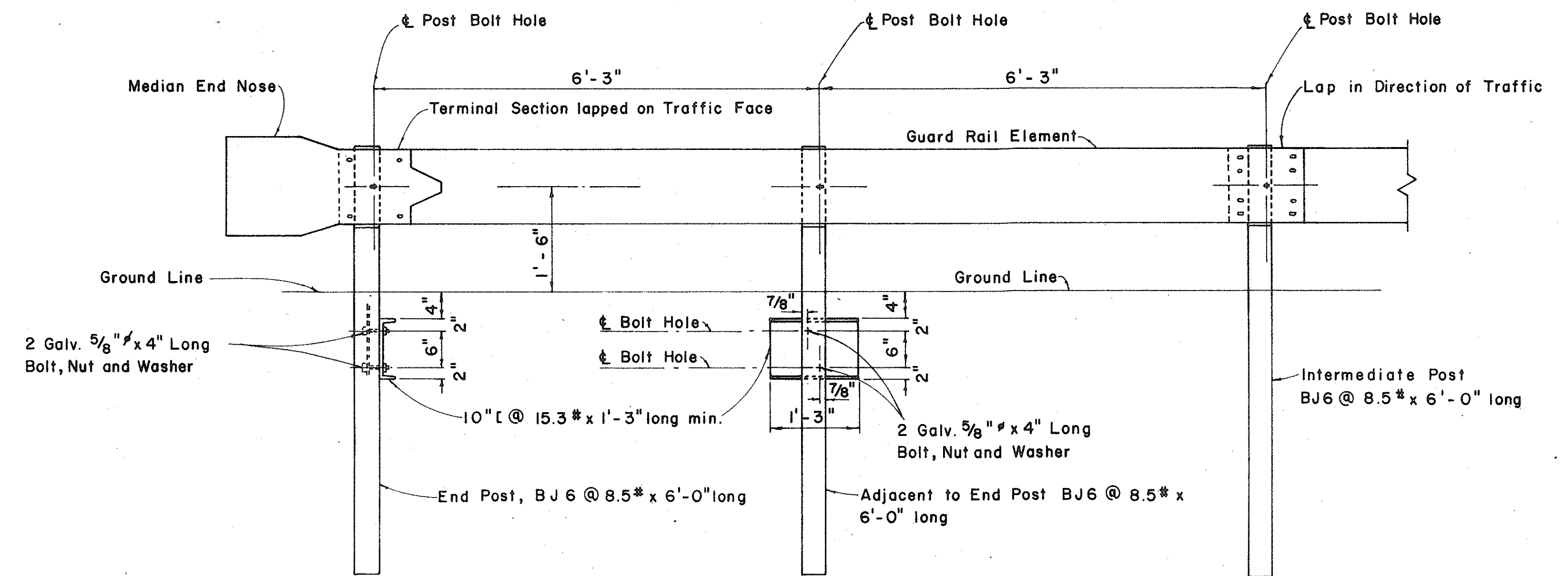
METAL GUARD RAIL ON CONCRETE POSTS AND WOOD SPACER BLOCKS

Scale: $\frac{3}{4}$ " = 1' - 0"



PLAN

Scale: $\frac{3}{4}$ " = 1' - 0"



ELEVATION

METAL GUARD RAIL ON METAL POSTS AND METAL SPACER BLOCKS

Scale: $\frac{3}{4}$ " = 1' - 0"

DETAIL FOR DOUBLE METAL GUARD RAIL IN MEDIAN

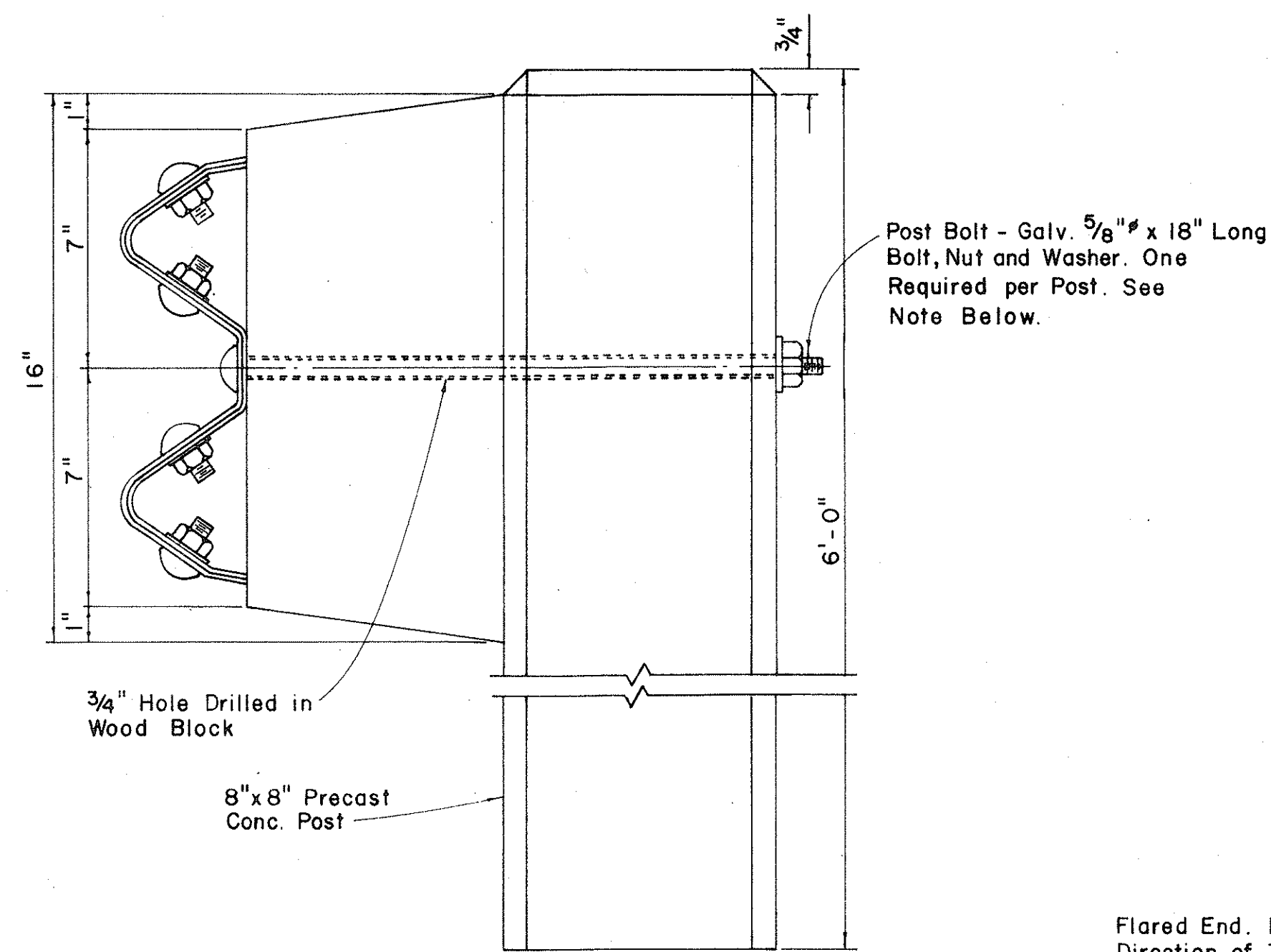
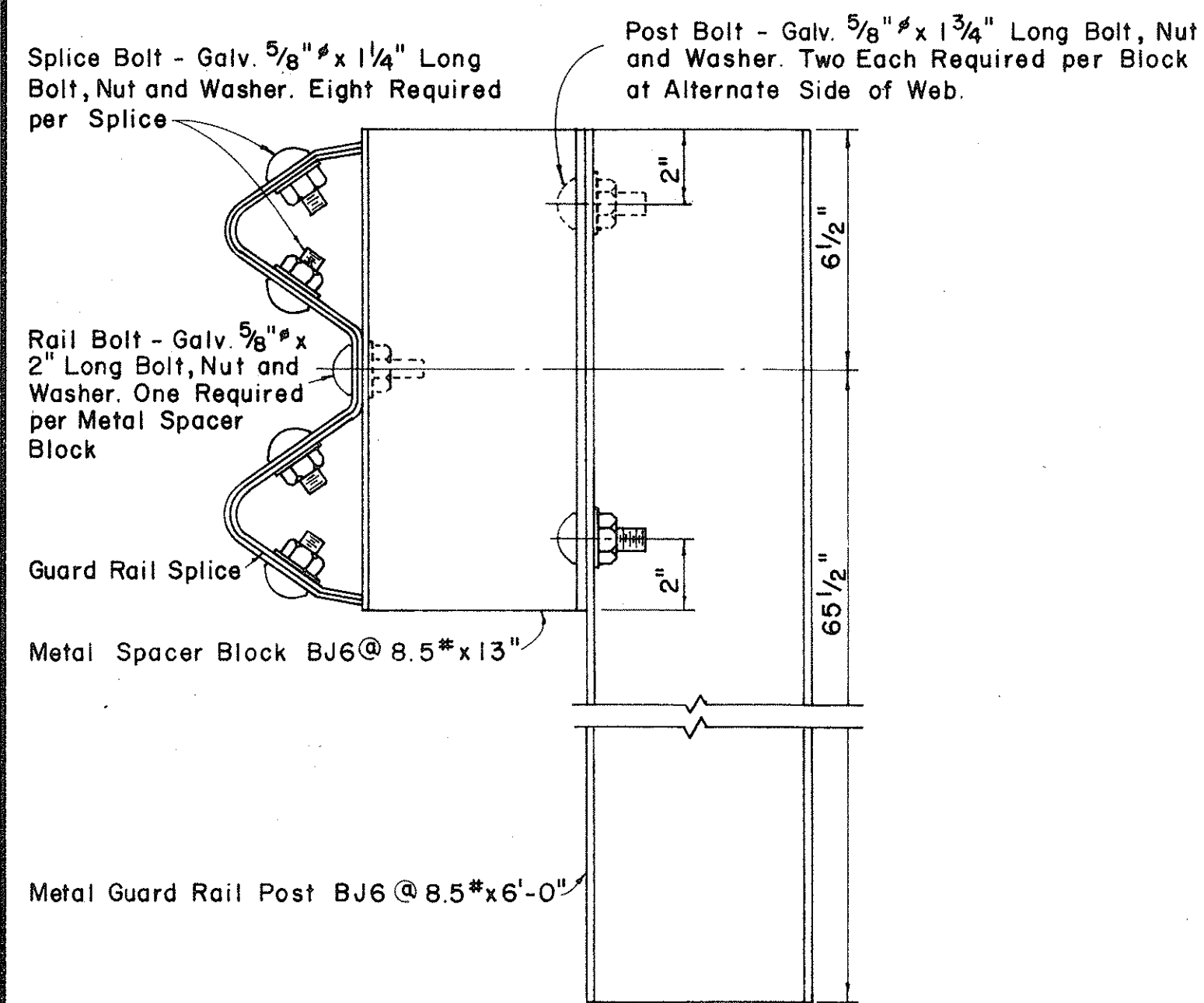
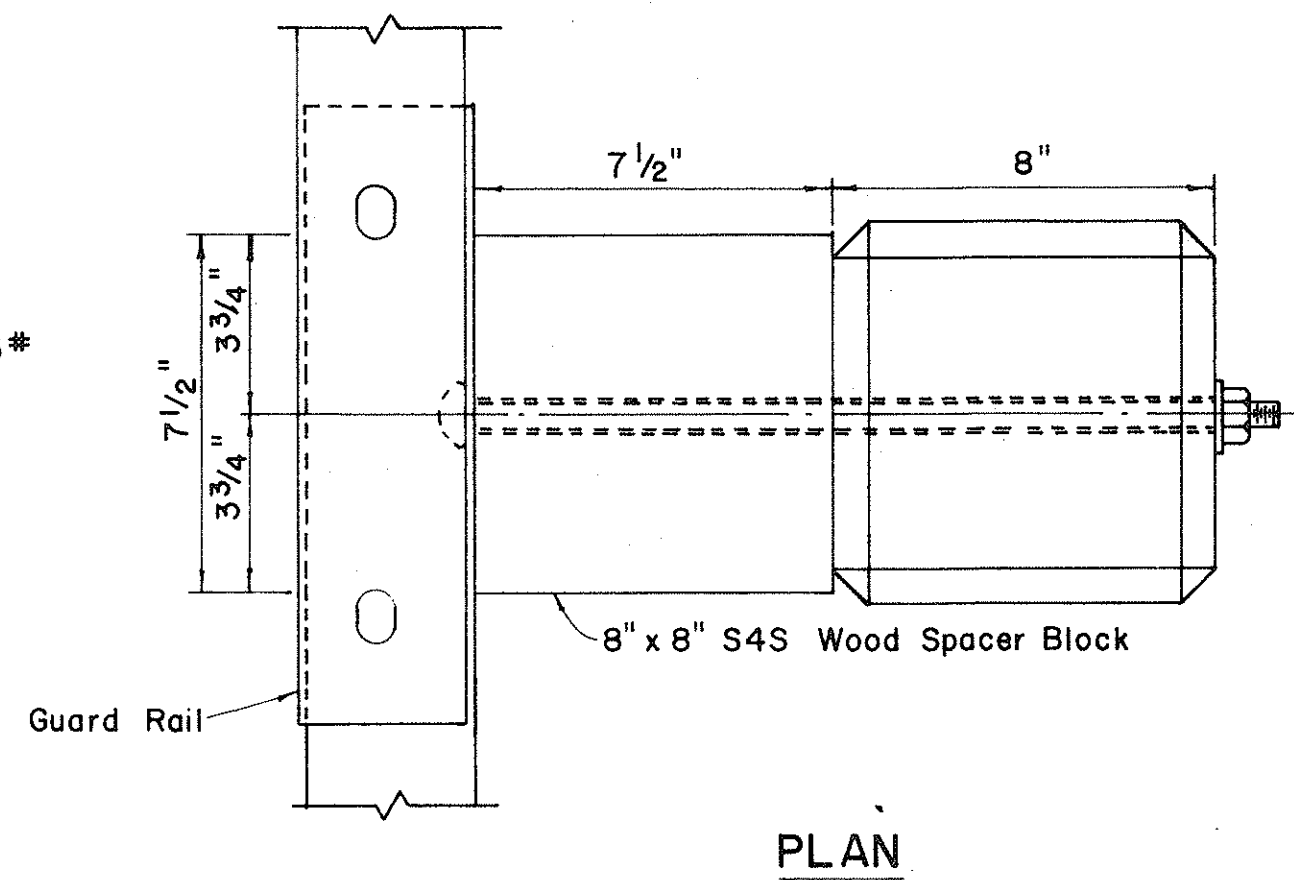
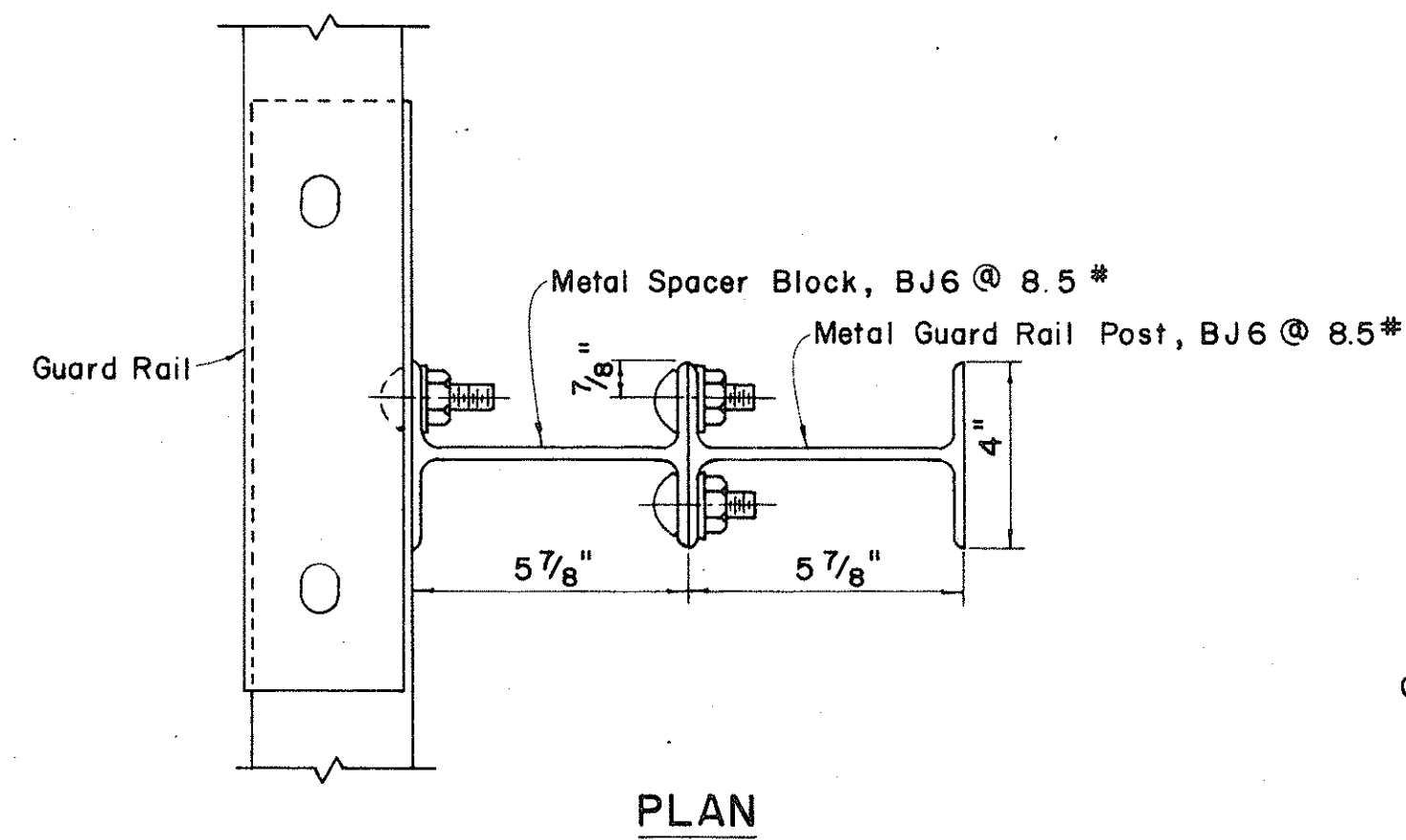
Scale: As Shown

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL GUARD RAIL

SHEET No. OF SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F096H(11)	1966	14	16



Wood Blocks shall be Douglas Fir, "Construction Grade - Posts and Timbers," 1200c, Pressure Treated with Preservative as called for in the Special Provisions.

SINGLE GUARD RAIL ON METAL POST
WITH METAL SPACER BLOCK
Scale: 3" = 1' - 0"

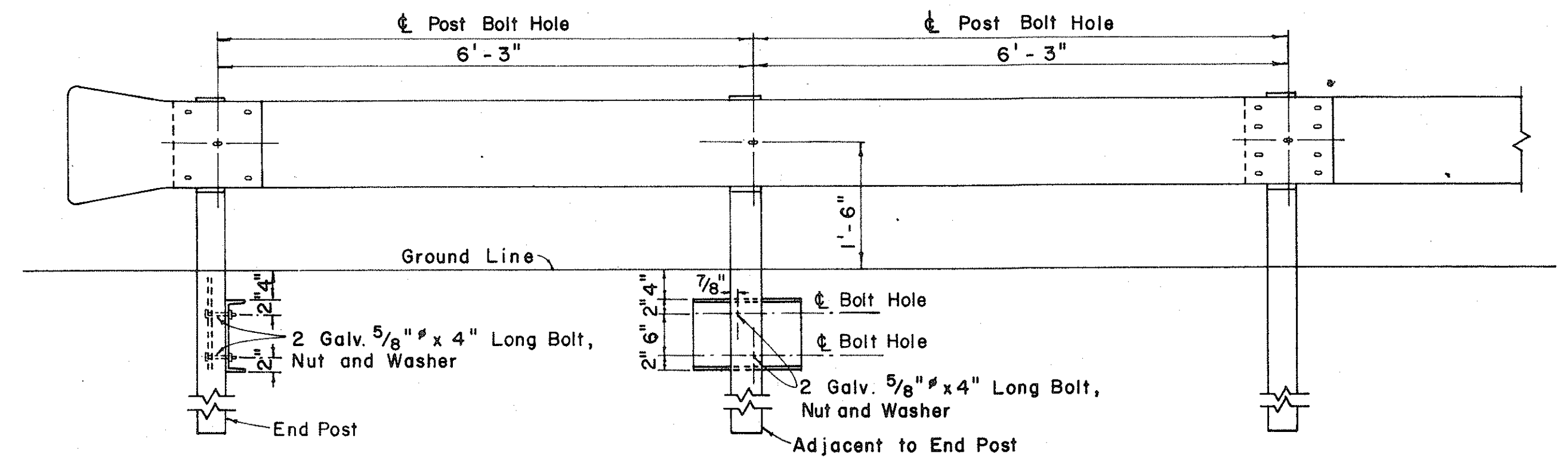
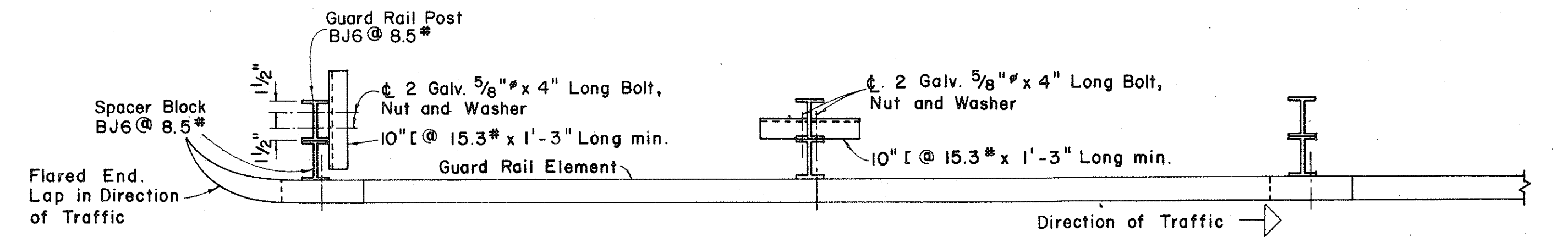
SINGLE GUARD RAIL ON PRECAST
CONCRETE POST WITH WOOD SPACER BLOCK
Scale: 3" = 1' - 0"

NOTE:

Single Guard Rails Shown. For Double Guard Rails Additional Spacer Blocks and Rail Elements Required on Opposite Side of Posts. See Bolt Schedule for Required Bolt Lengths.

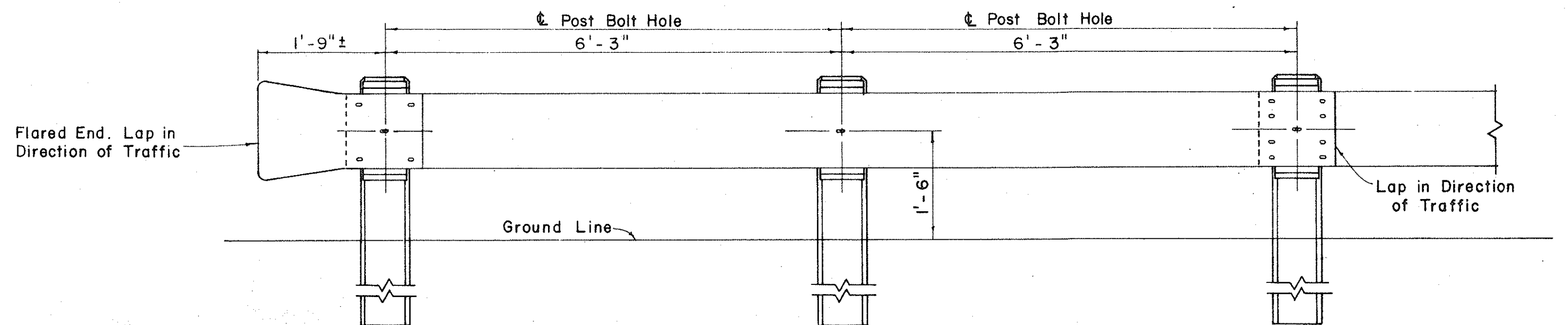
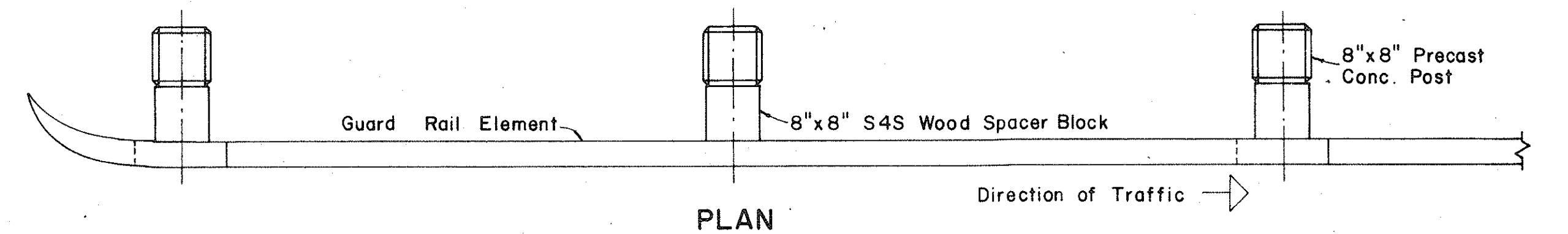
DETAILS FOR SINGLE GUARD RAIL

Scale: As Shown



METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK

Scale: 3/4" = 1' - 0"



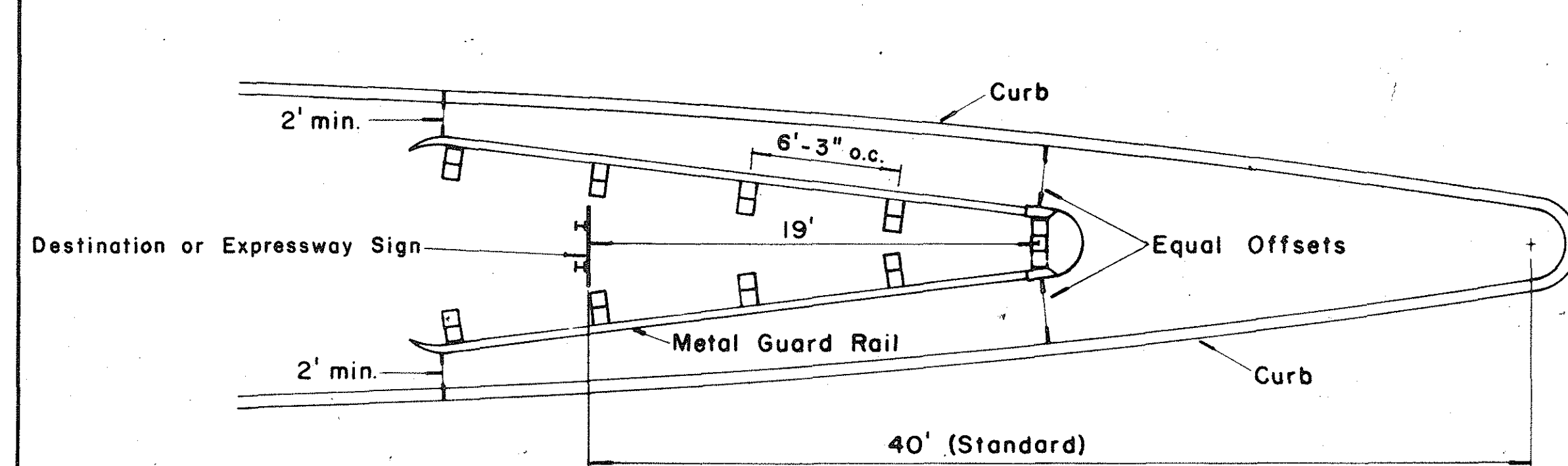
METAL GUARD RAIL ON CONCRETE POST WITH WOOD SPACER BLOCK

Scale: 3/4" = 1' - 0"

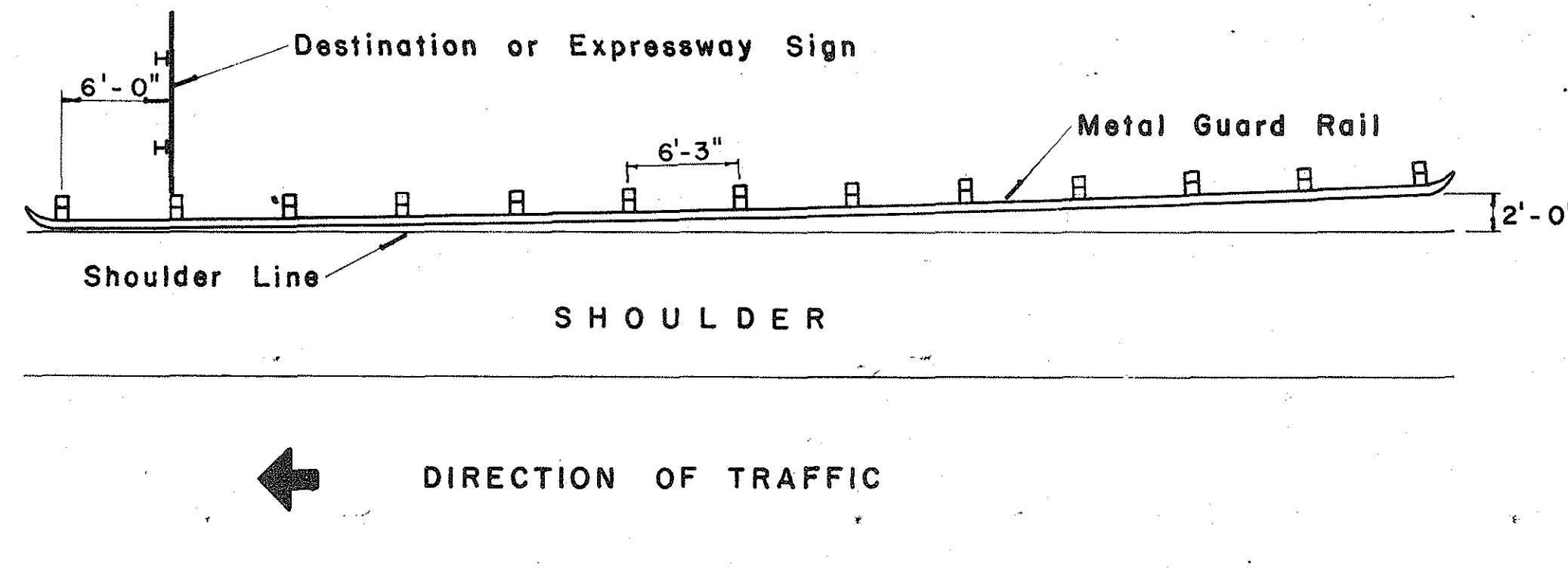
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL GUARD RAIL

SHEET No. OF SHEETS

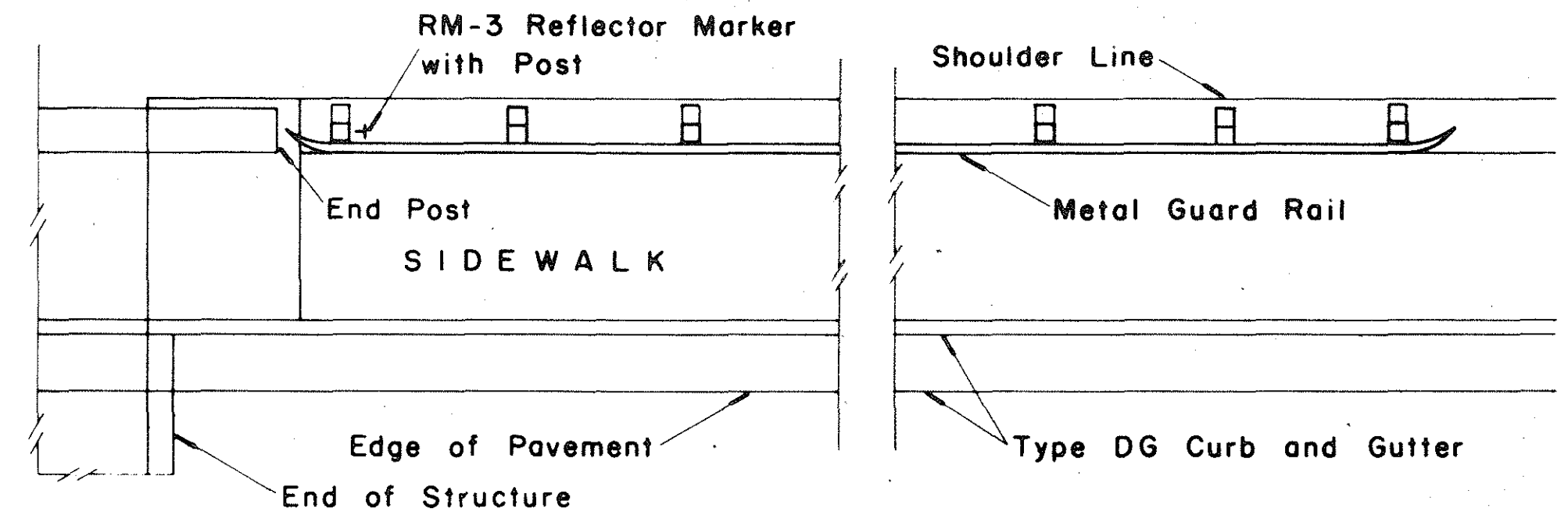


GORE MOUNTED SIGN
Scale: $\frac{3}{16}'' = 1' - 0''$

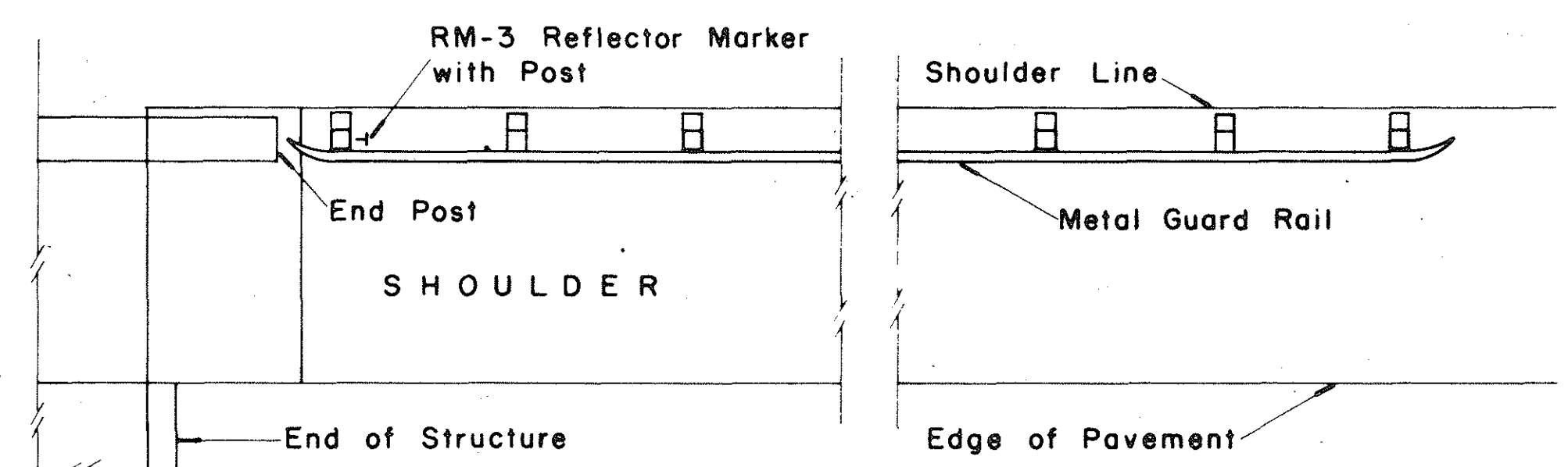


SHOULDER MOUNTED SIGN
Scale: $\frac{1}{8}'' = 1' - 0''$

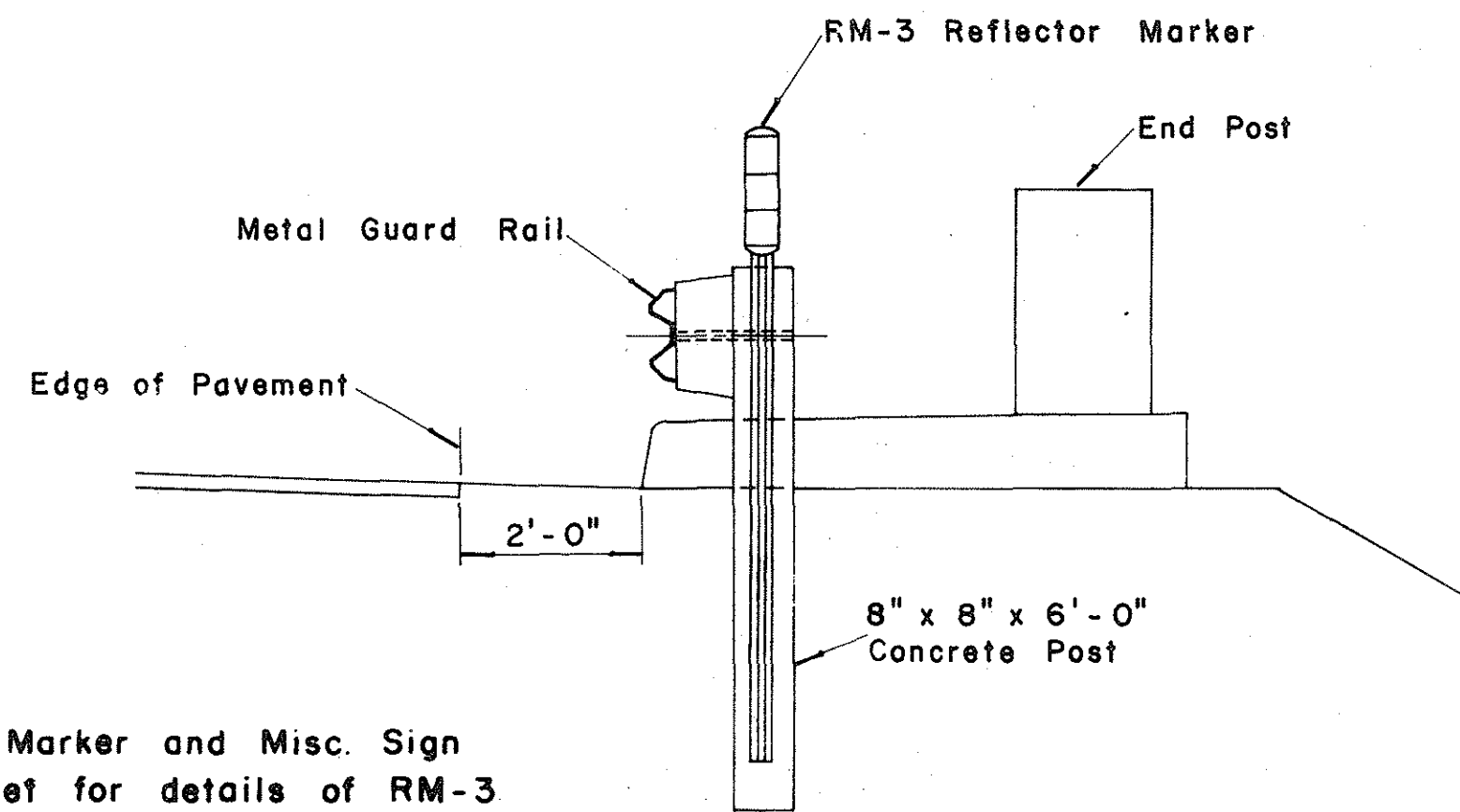
INSTALLATION OF METAL GUARD RAIL FOR DESTINATION AND EXPRESSWAY SIGNS



SIDEWALK CARRIED THROUGH STRUCTURE

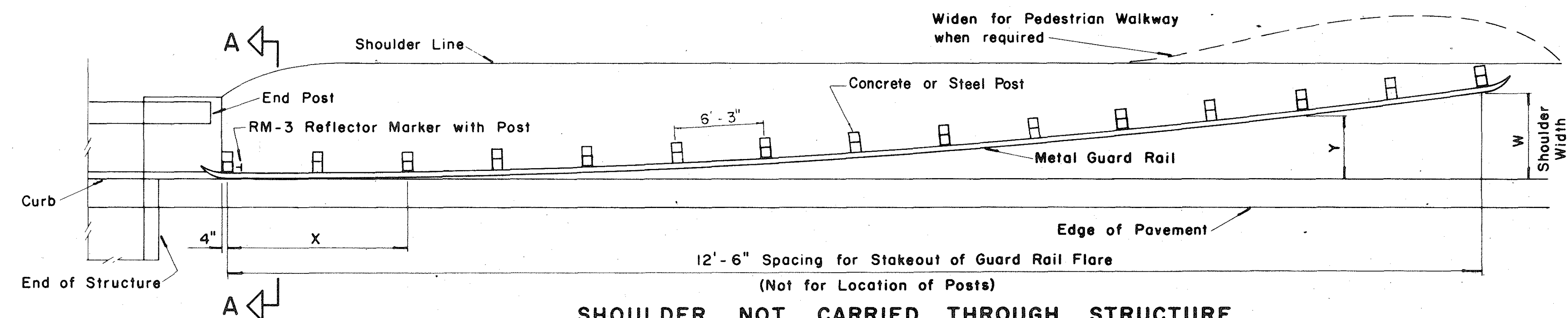


SHOULDER CARRIED THROUGH STRUCTURE



NOTE:
See F.A. Marker and Misc. Sign Detail sheet for details of RM-3 Reflector Marker with Post.

SECTION "A-A"
Scale: $\frac{1}{2}'' = 1' - 0''$



SHOULDER NOT CARRIED THROUGH STRUCTURE
INSTALLATION OF METAL GUARD RAIL FLARE AT STRUCTURES
Scale: $\frac{3}{16}'' = 1' - 0''$

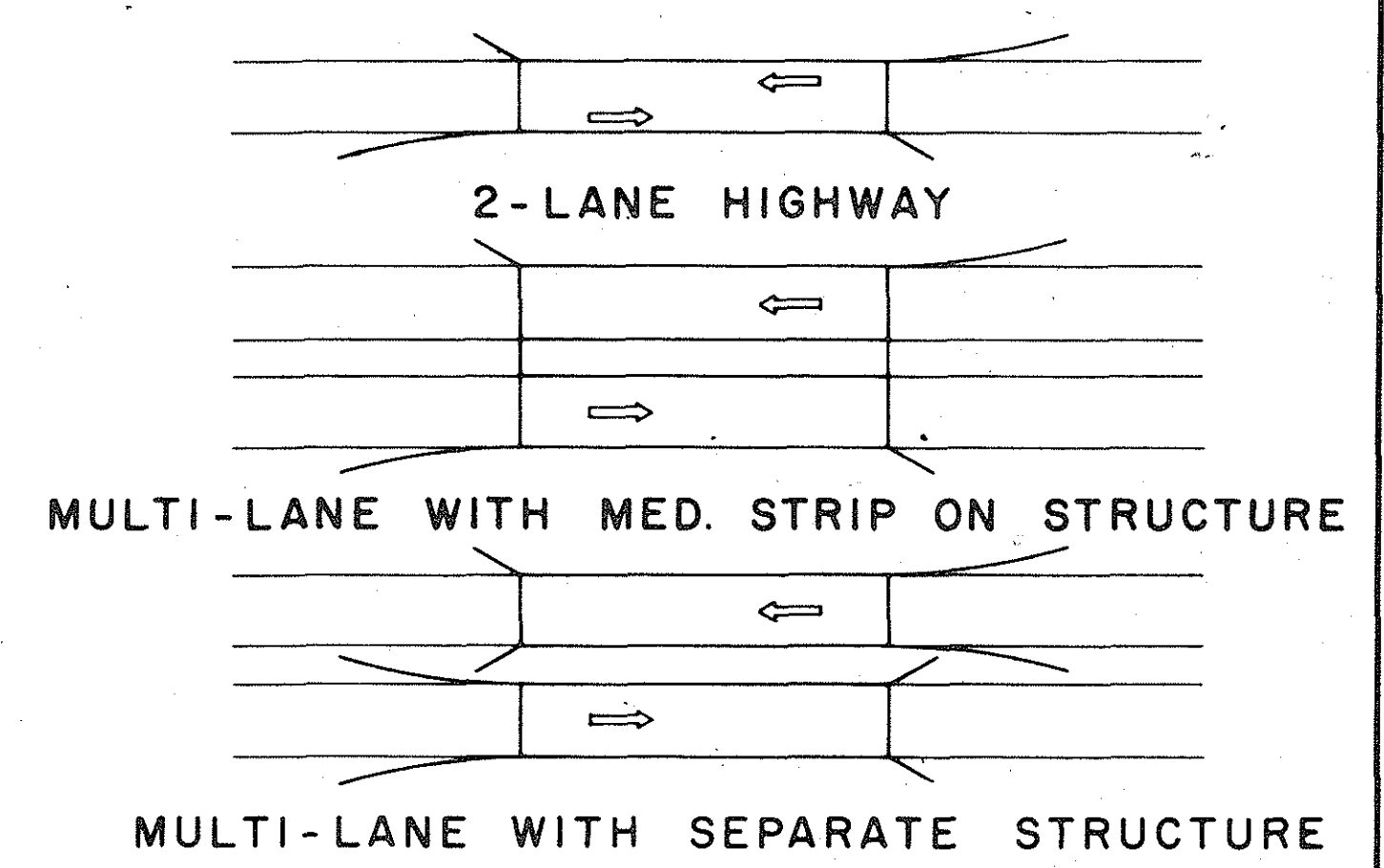
X	Y					
	W=3'	W=4'	W=5'	W=6'	W=7'	W=8'
12.5	0.19	0.16	0.14	0.12	0.09	0.08
25.0	0.75	0.64	0.55	0.49	0.35	0.32
37.5	1.69	1.44	1.25	1.10	0.78	0.72
50.0	3.00	2.56	2.22	1.96	1.38	1.28
62.5		4.00	3.47	3.06	2.16	2.00
75.0			5.00	4.41	3.11	2.85
87.5				6.00	4.23	3.92
100.0					5.53	5.12
112.5					7.00	6.48
125.0						8.00

W = GUARD RAIL FLARE

X = DISTANCE FROM POST AT BRIDGE TO OFFSET POINTS

Y = GUARD RAIL FLARE OFFSET

GUARD RAIL OFFSET



TYPICAL GUARD RAIL FLARES AT STRUCTURE APPROACHES

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

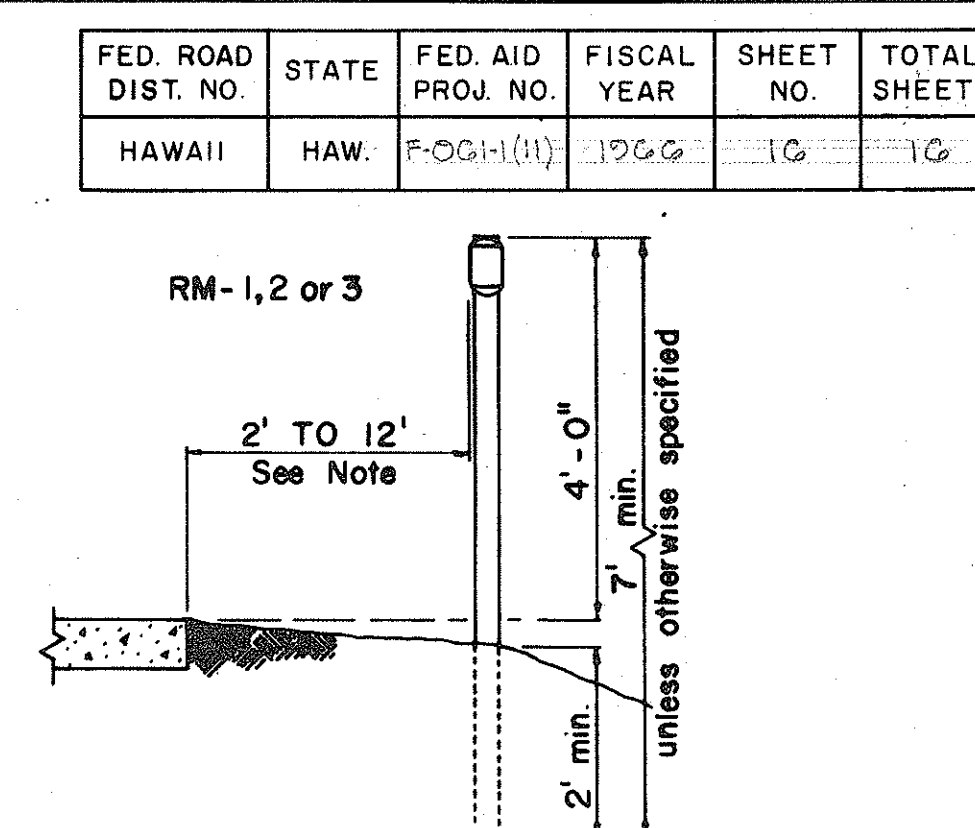
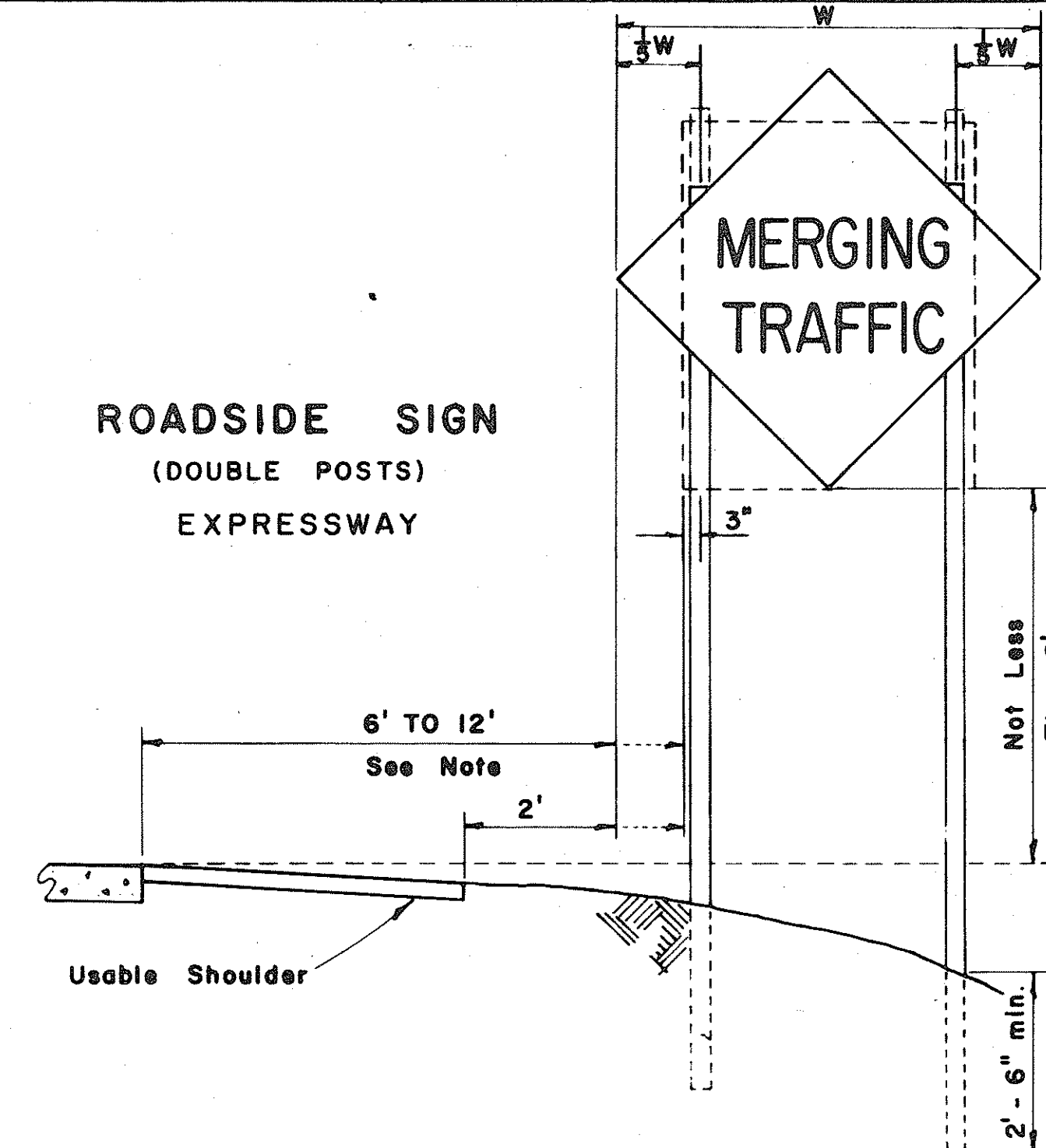
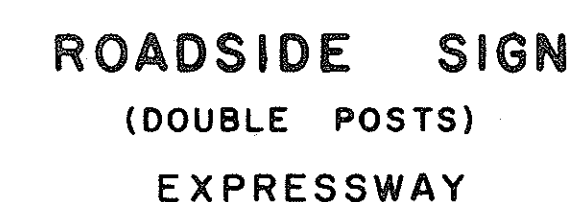
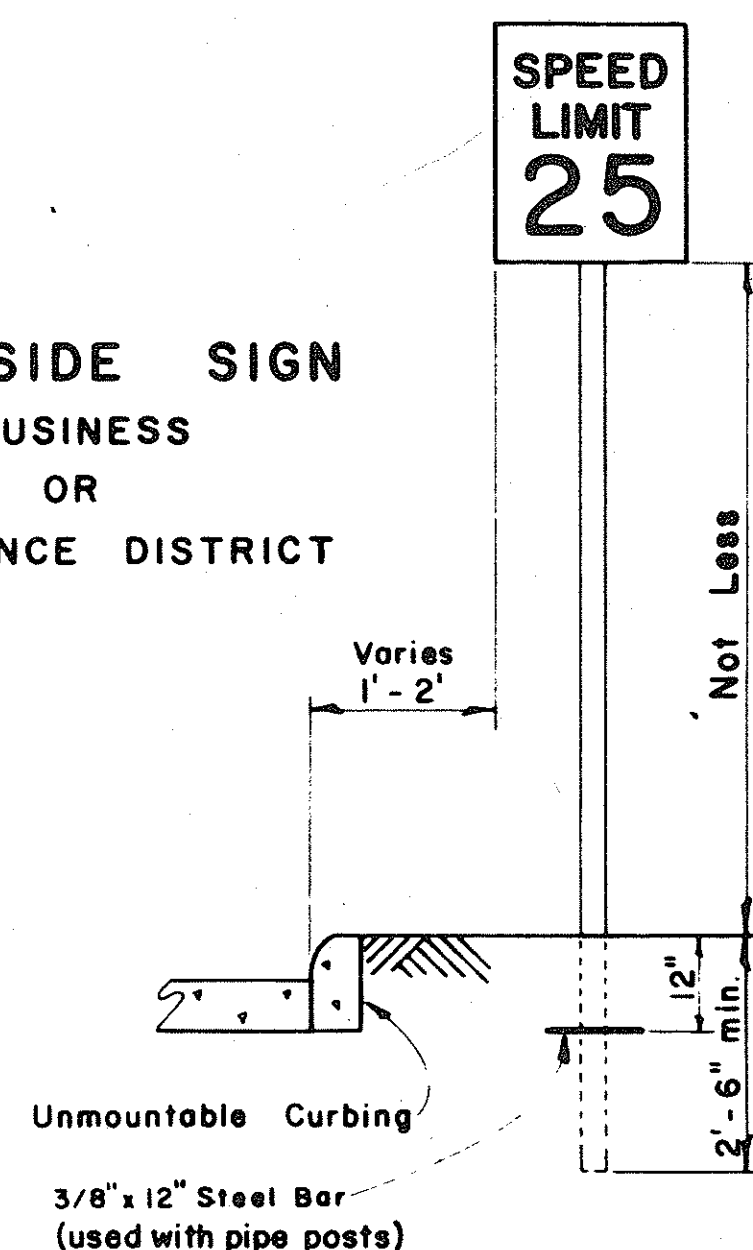
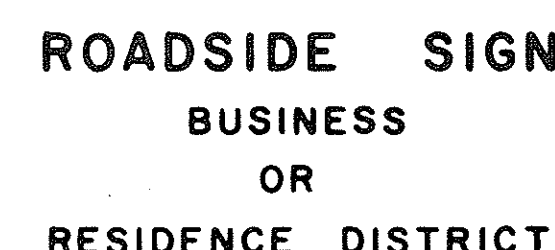
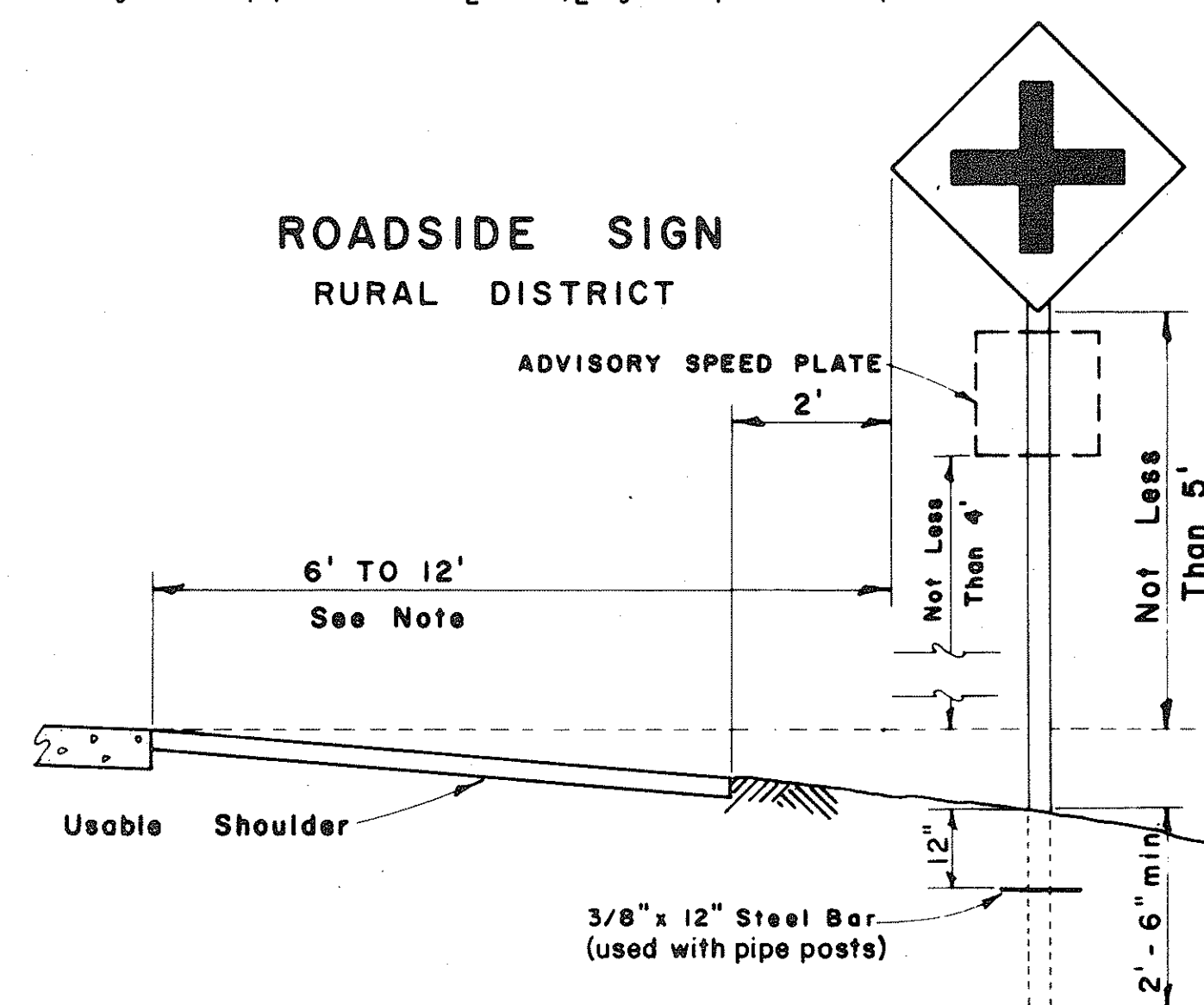
**TYPICAL DETAILS
METAL GUARD RAILS
AT
STRUCTURES & GUIDE SIGNS**

Scale: As Noted

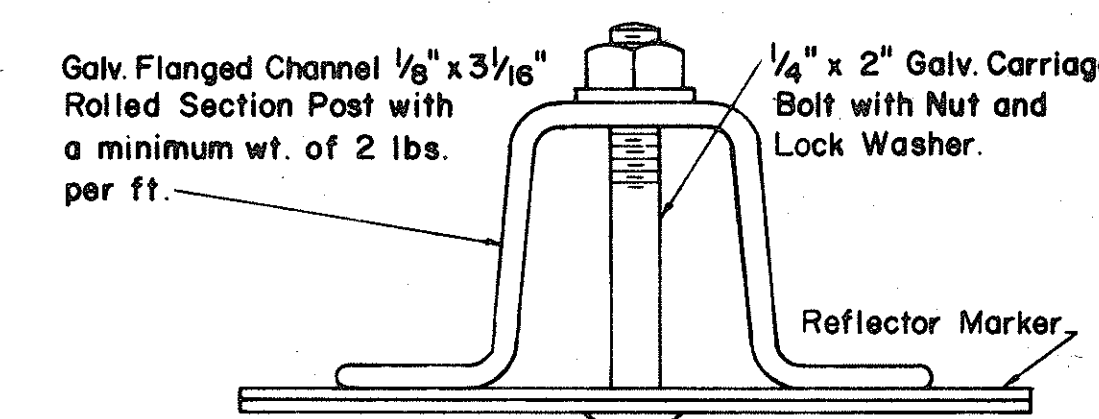
SHEET No. OF SHEETS

NOTE:

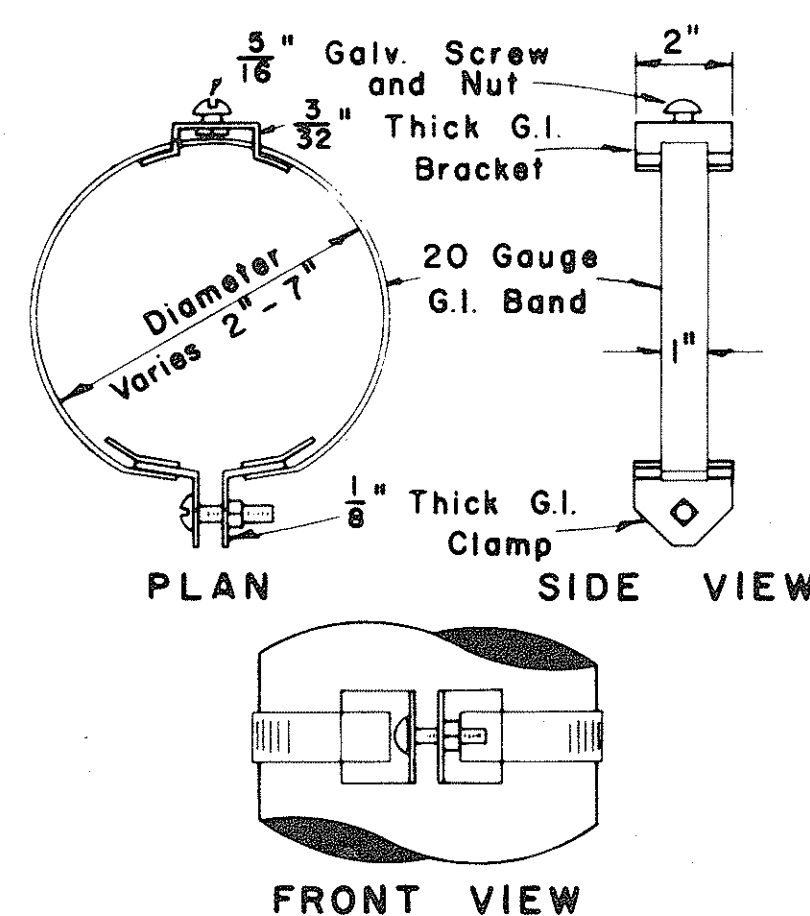
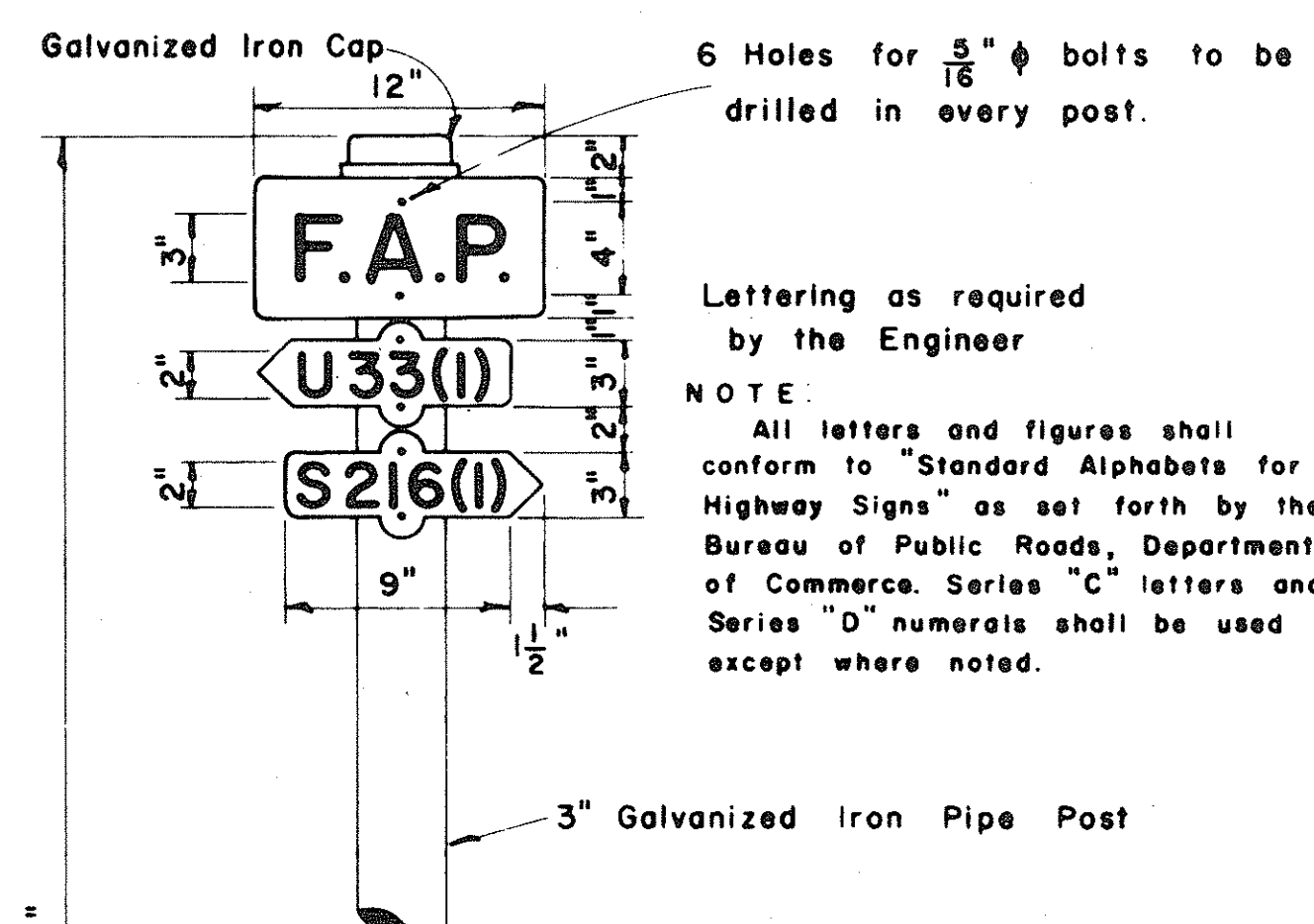
1. All signs and road delineators shall be placed 2' outside the usable roadway shoulder or 1' outside unmountable curbing present and within the limits shown below.
2. Except as noted below, sign posts shall be either 3" galv. std. pipe or 2 1/2" x 2 1/2" galv. square tube posts for signs larger than 24" in any dimension; 2" galv. std. pipe or 2" x 2" galv. square tube posts for signs 24" or less in any dimension.
3. Sign shall be attached to post with 5/16" galvanized bolts with nuts and 7/8" x 7/8" x .120" stainless-steel washers with neoprene rubber gasket.
4. Clearance Markers (RM-3, RM-4) shall be installed with the inside edge of the marker in line with the inner edge of the obstruction.
5. Signs 48" and wider or larger than 10 sq. ft. in area shall be mounted on two 3" galv. std. pipe or two 2 1/2" x 2 1/2" galv. square tube posts.



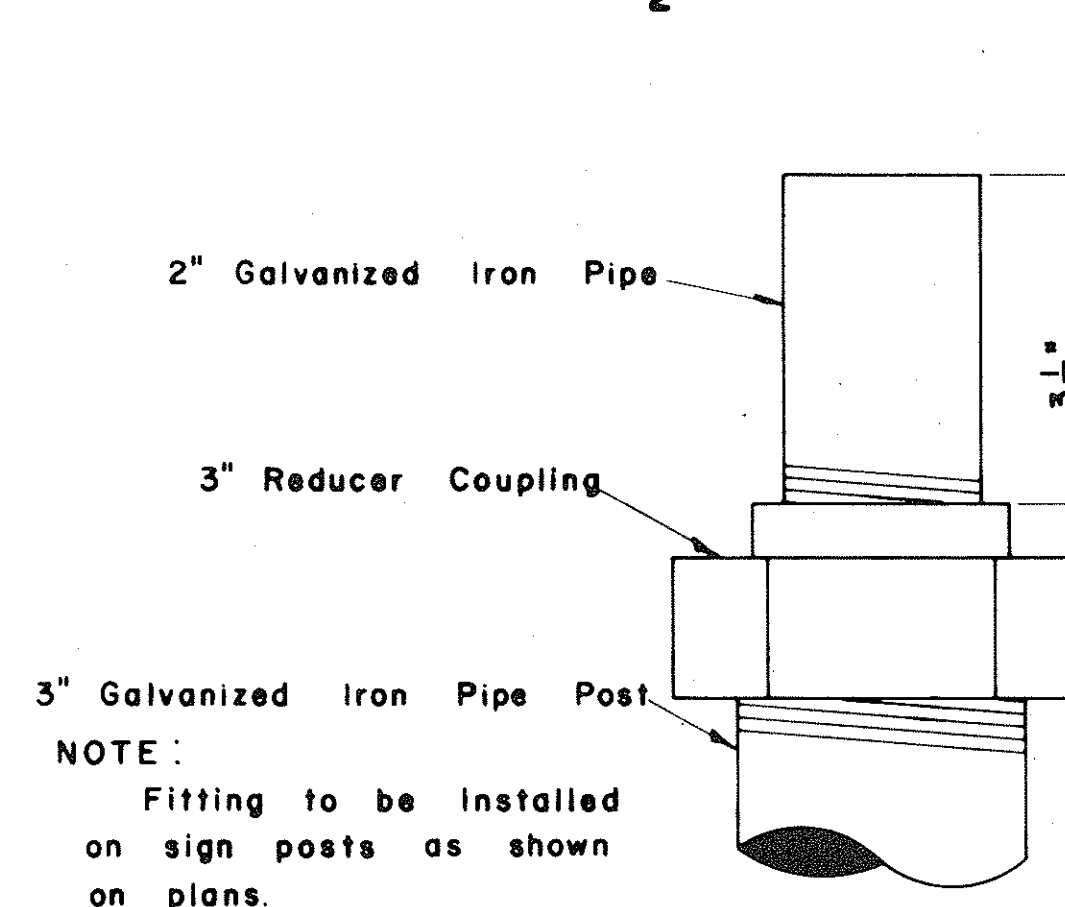
Scale: $\frac{1}{2}'' = 1' - 0''$



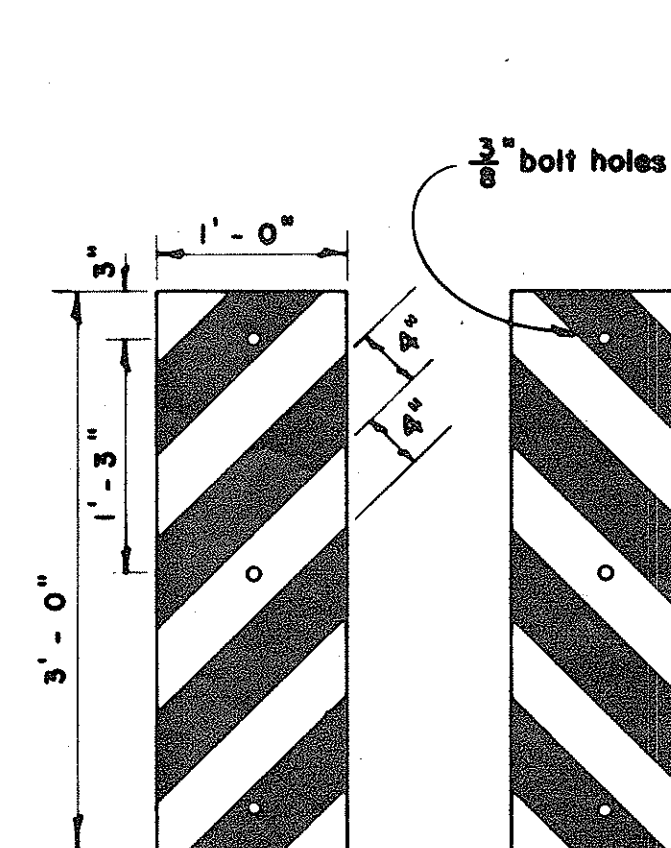
Scale: $\frac{1}{2}'' = 1' - 0''$



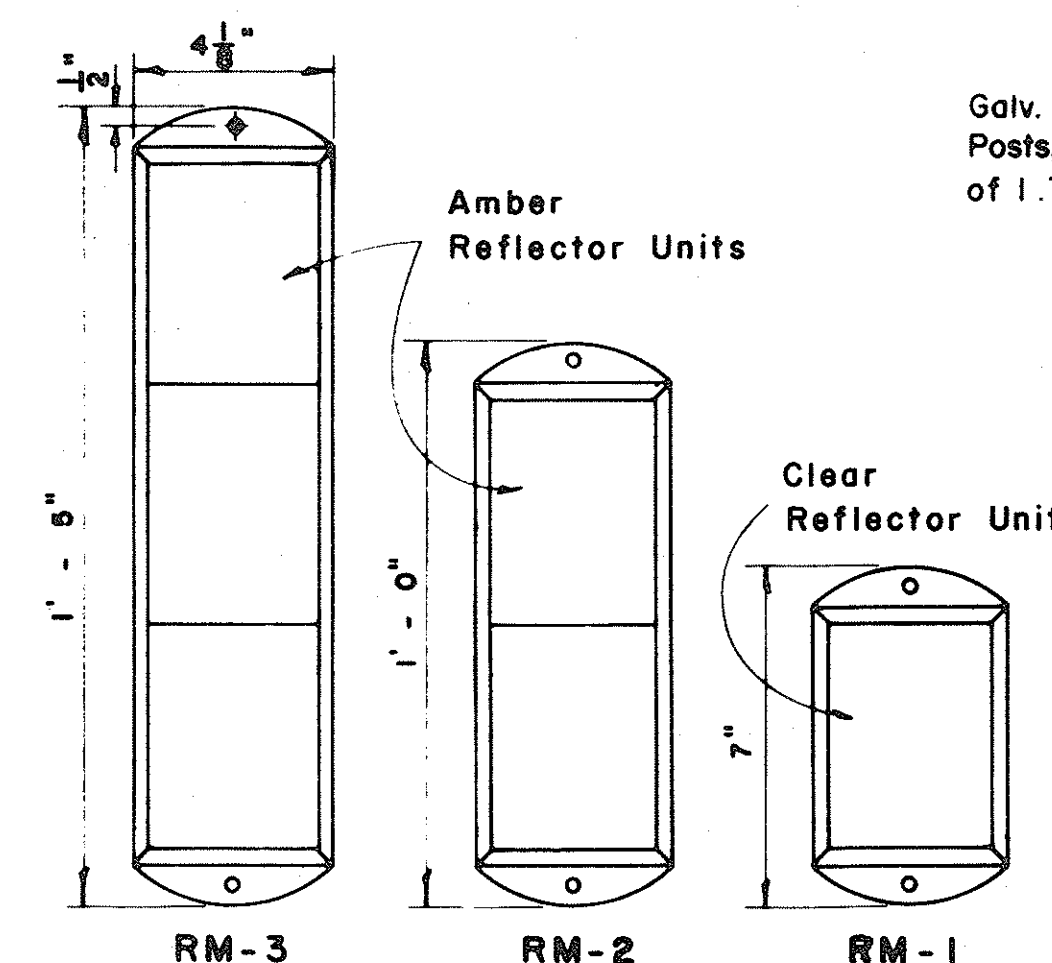
**TYPICAL BAND BRACKET
FOR MOUNTING TRAFFIC SIGNS**
Scale: 3" = 1' - 0"



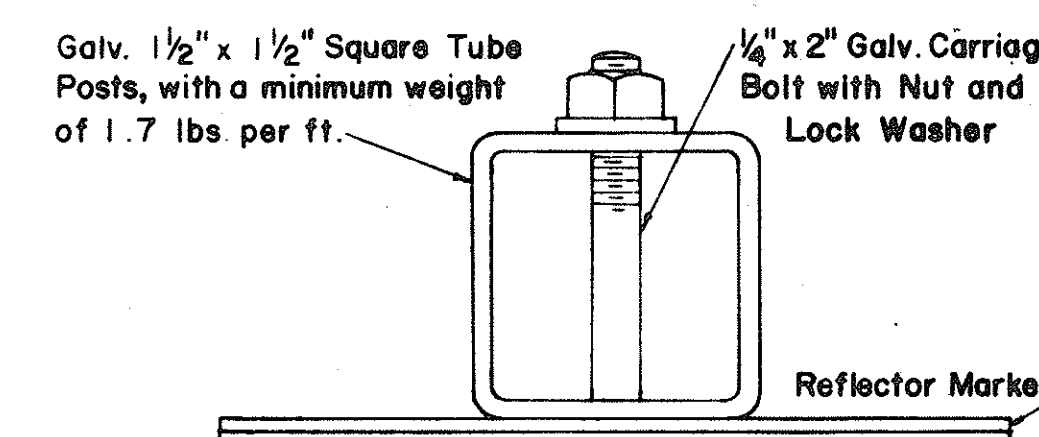
DETAIL OF SIGN POST FITTING
FOR CITY & COUNTY
STREET NAME SIGNS



Scale: 1" = 1' - 0"



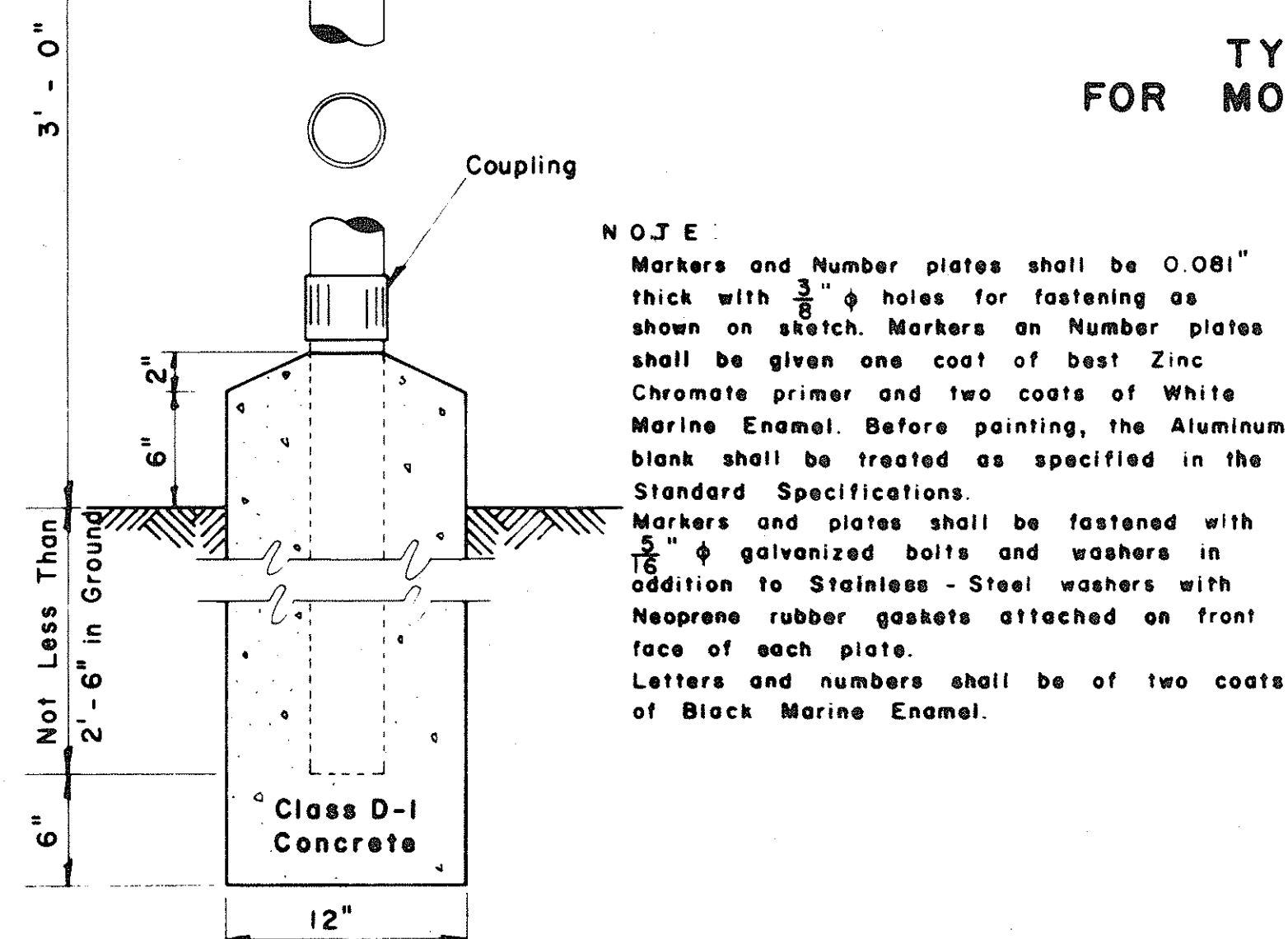
Scale: 3" = 1' - 0"



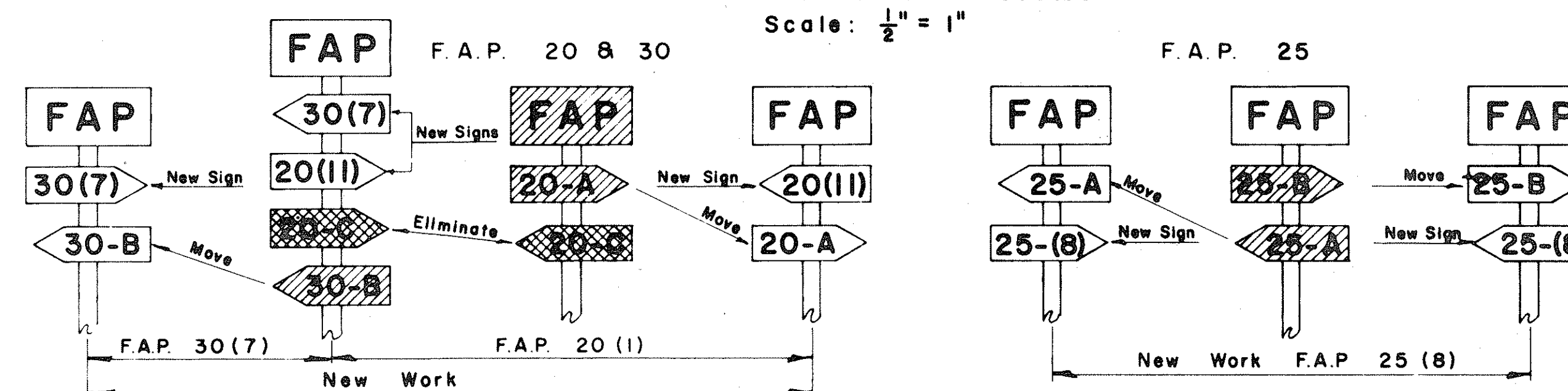
TYPICAL SECTION
OF ROAD DELINEATOR

NOTE:

Reflector Markers RM-1,2,3 shall be glass sphere reflector markers with 4" x 5" reflector units (as shown) or plastic prismatic reflector markers with 3" diameter reflector units.



FEDERAL AID MARKER
Scale: $\frac{1}{2}'' = 1' - 0''$

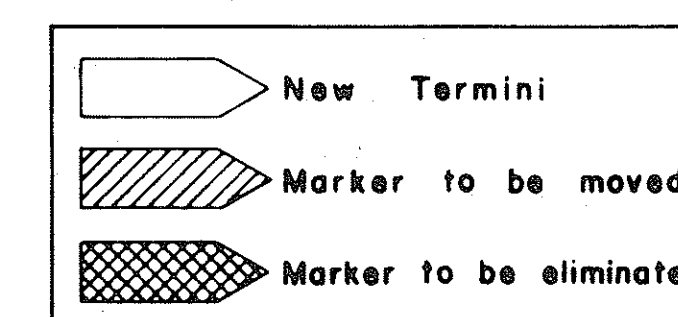


NOTE: Federal Aid Markers should be placed at the terminl of suffix designated sections. Intermediate letter designated markers of adjacent sections located within the limits of new improvements should be moved to the terminl of the new work. The same procedure should be followed on each successive improvement until all markers for letter designated sections are eventually eliminated.

METHOD OF MARKING F.A. PROJECTS AT OVERLAPS

(USING NUMBER SUFFIX ON NEW WORK)

REFLECTOR MARKERS
Scale: As Shown



APPROVED : _____ DATE 11/2/61

Green
DIRECTOR OF TRANSPORTATION

DECEMBER 8, 1964
REVISED: FEBRUARY 25, 1964

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
F. A. MARKER
AND
MISCELLANEOUS SIGN
DETAILS

SHEET No. OF SHEETS