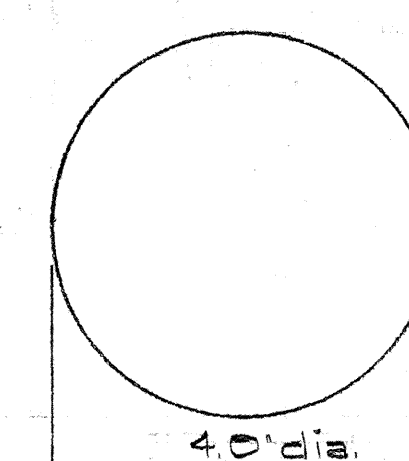
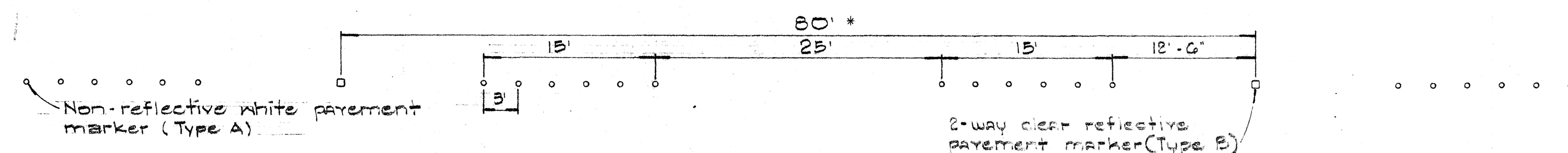
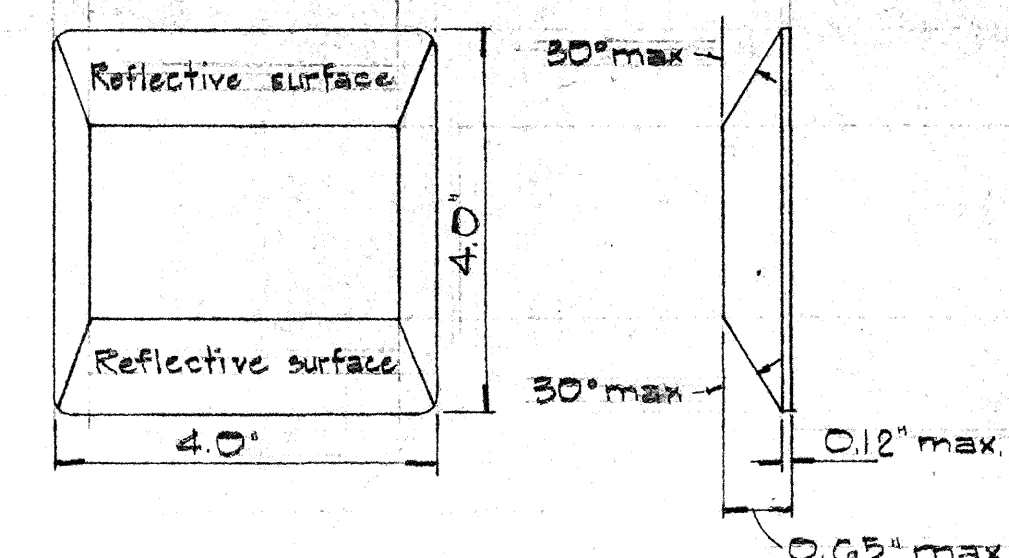
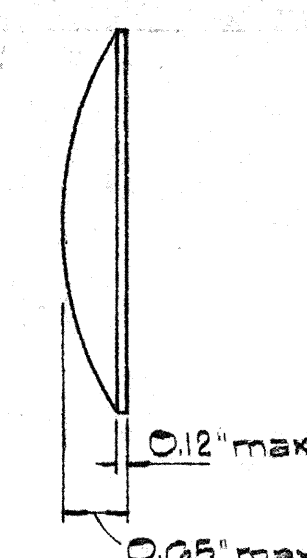


# ① CENTER LINES ON TWO-LANE RURAL ROADS AND CITY STREETS



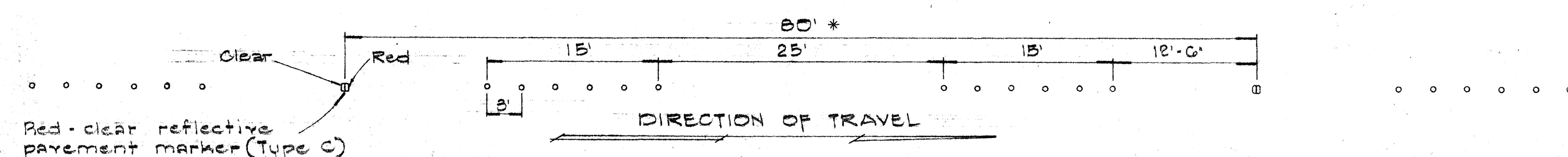
TYPE A  
Non-reflective white marker



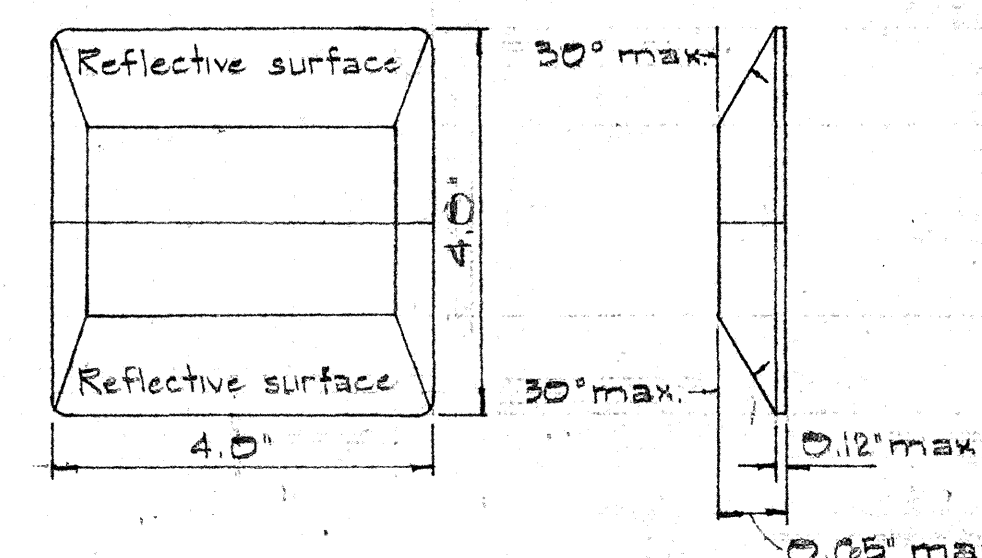
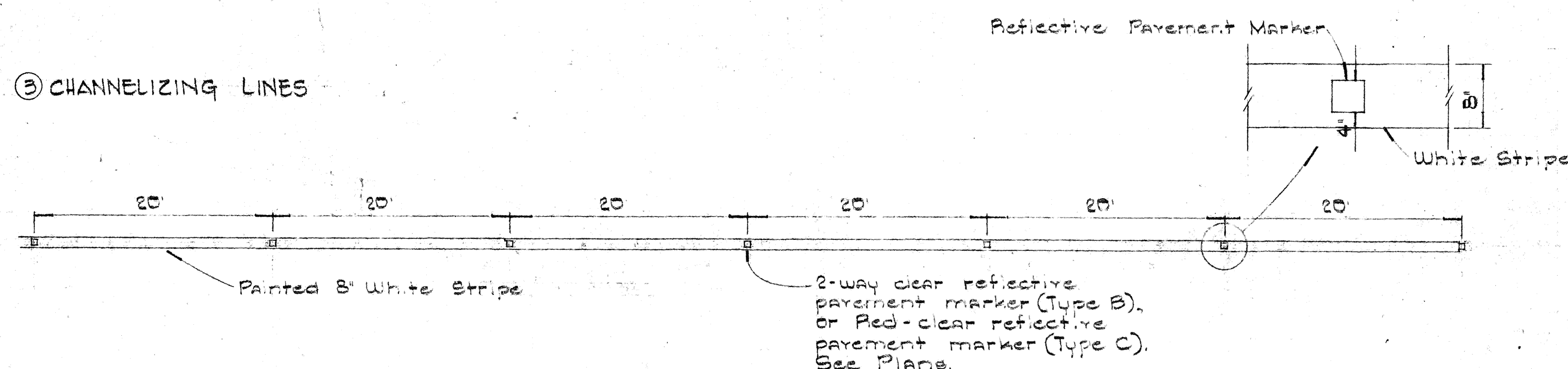
TYPE B  
2-way clear reflective surface

TYPE D  
2-way yellow reflective surface

# ② LANE LINES

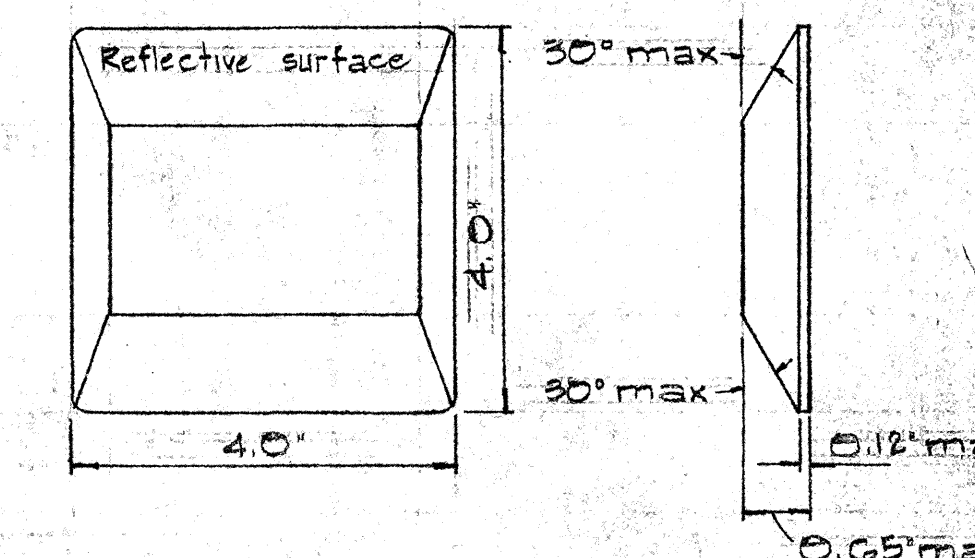


# ③ CHANNELIZING LINES



TYPE C  
Red-clear reflective surface

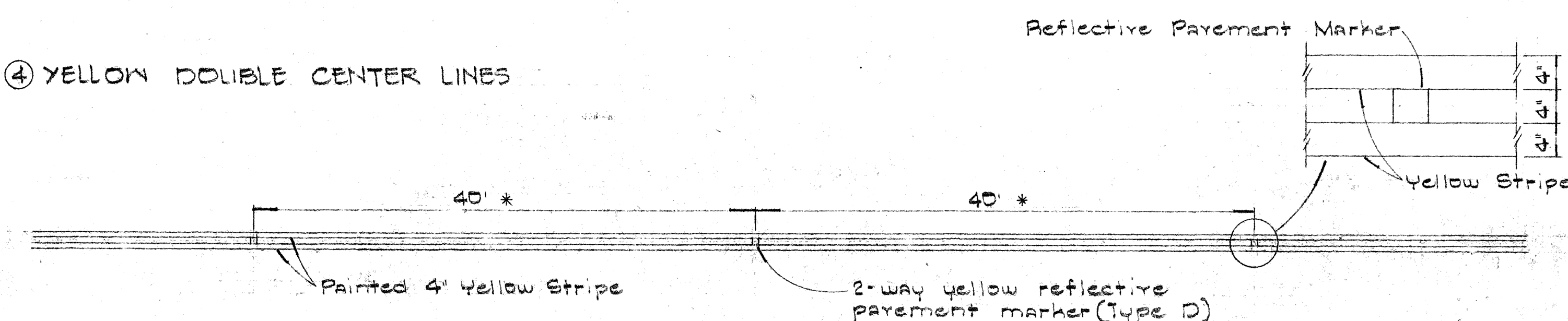
TYPE E  
Yellow-clear reflective surface



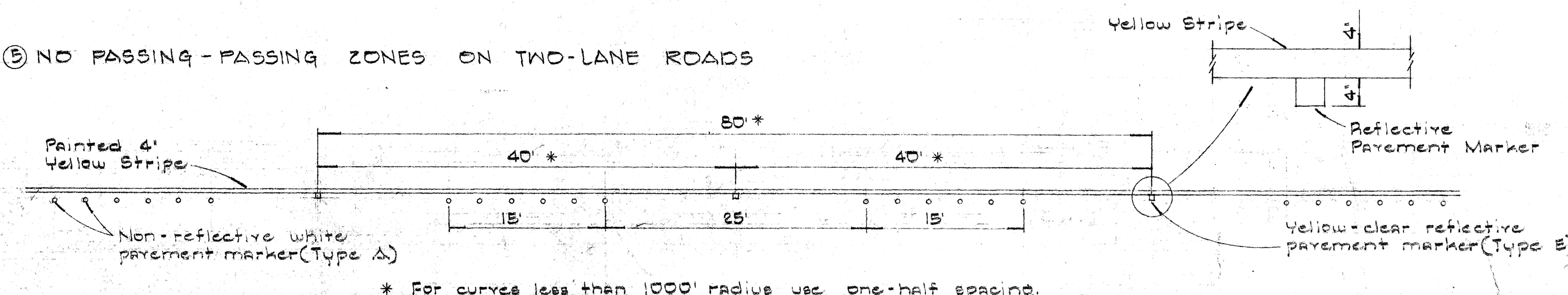
TYPE H  
One-way yellow reflective surface

TYPE G  
One-way clear reflective surface

# ④ YELLOW DOUBLE CENTER LINES



# ⑤ NO PASSING-PASSING ZONES ON TWO-LANE ROADS



\* For curves less than 1000' radius use one-half spacing.

## SUMMARY OF PAVEMENT MARKERS

| STATION               | MARKINGS     | QUANTITY |          |          |          |
|-----------------------|--------------|----------|----------|----------|----------|
|                       |              | TYPE "A" | TYPE "B" | TYPE "E" | TYPE "D" |
| Sta. 359+00 to 367+00 | No Pass-Pass | 120      | 0        | 20       |          |
| 367+00 to 369+00      | Center Line  | 30       | 0        | 21       |          |
| 369+00 to 376+00      | No Pass-Pass | 195      | 0        | 18       |          |
| 376+00 to 586+50      | Center Line  | 3,158    | 264      | 117      | 9        |
| TOTAL                 |              | 3,413    | 267219   | 38158    | 9        |

## NOTE:

Painted stripes shall be done by State forces.

Type "D" Pavement Markers Paid For Under Type "B" Pavement Markers.

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

STANDARD DETAILS  
RAISED PAVEMENT MARKERS

Not to Scale

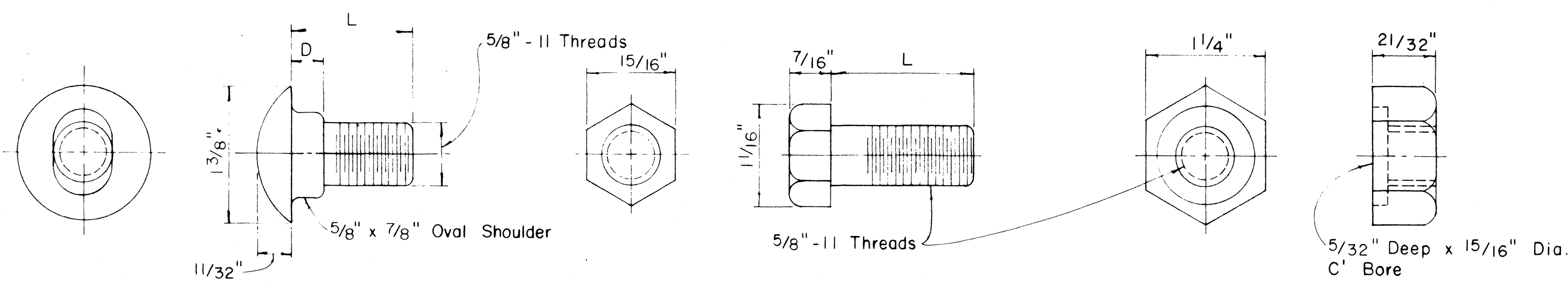
SHEET No. 1 OF 7 SHEETS

26



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

| BOLT DIMENSIONS<br>TYPE B BOLT           |  | L      |
|------------------------------------------|--|--------|
|                                          |  |        |
| Post Bolt for Conc. Post w/ Metal Blocks |  | 9 1/2" |
| Post Bolt for Metal Post w/ Metal Block  |  | 13/4"  |



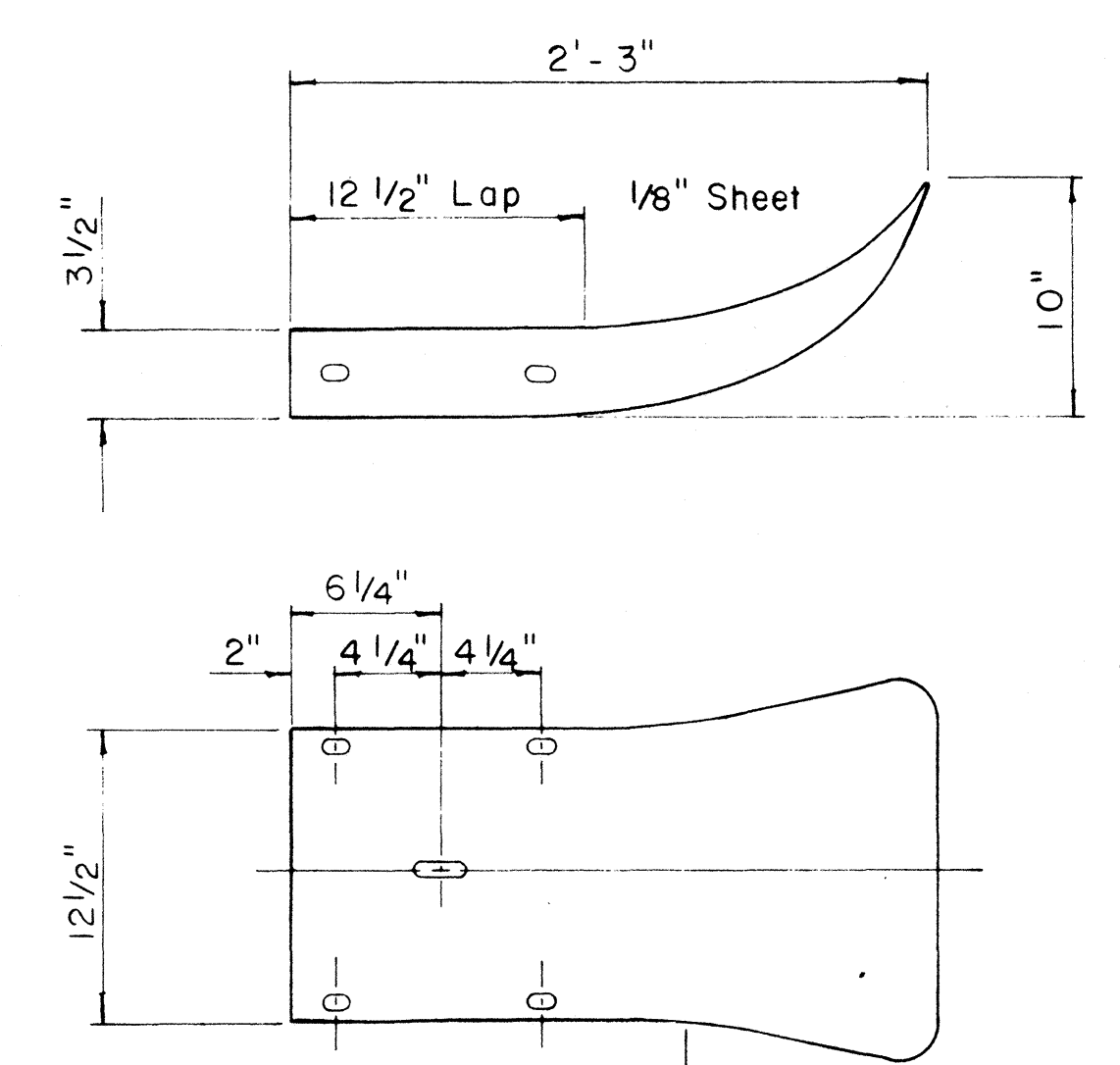
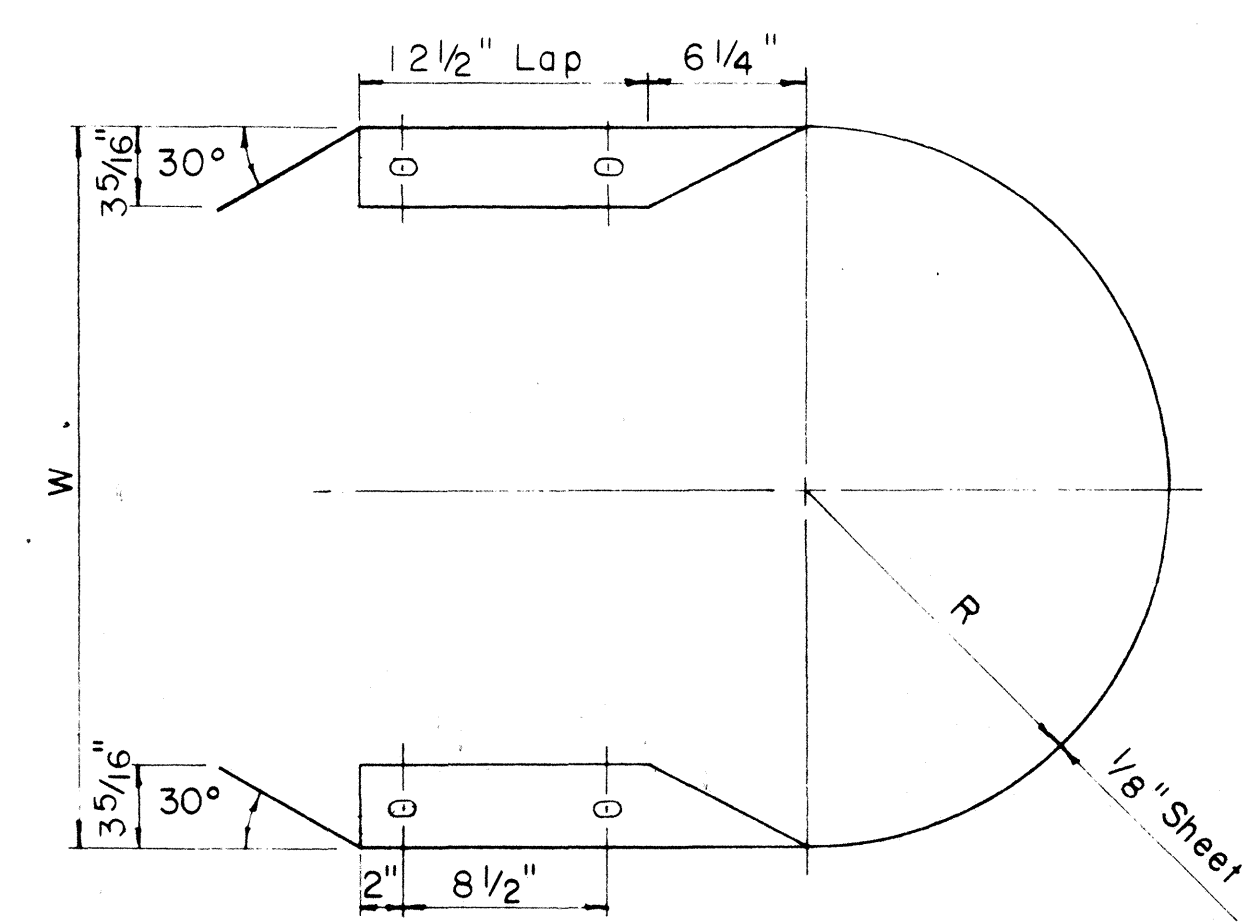
TYPE A BOLT

TYPE B BOLT

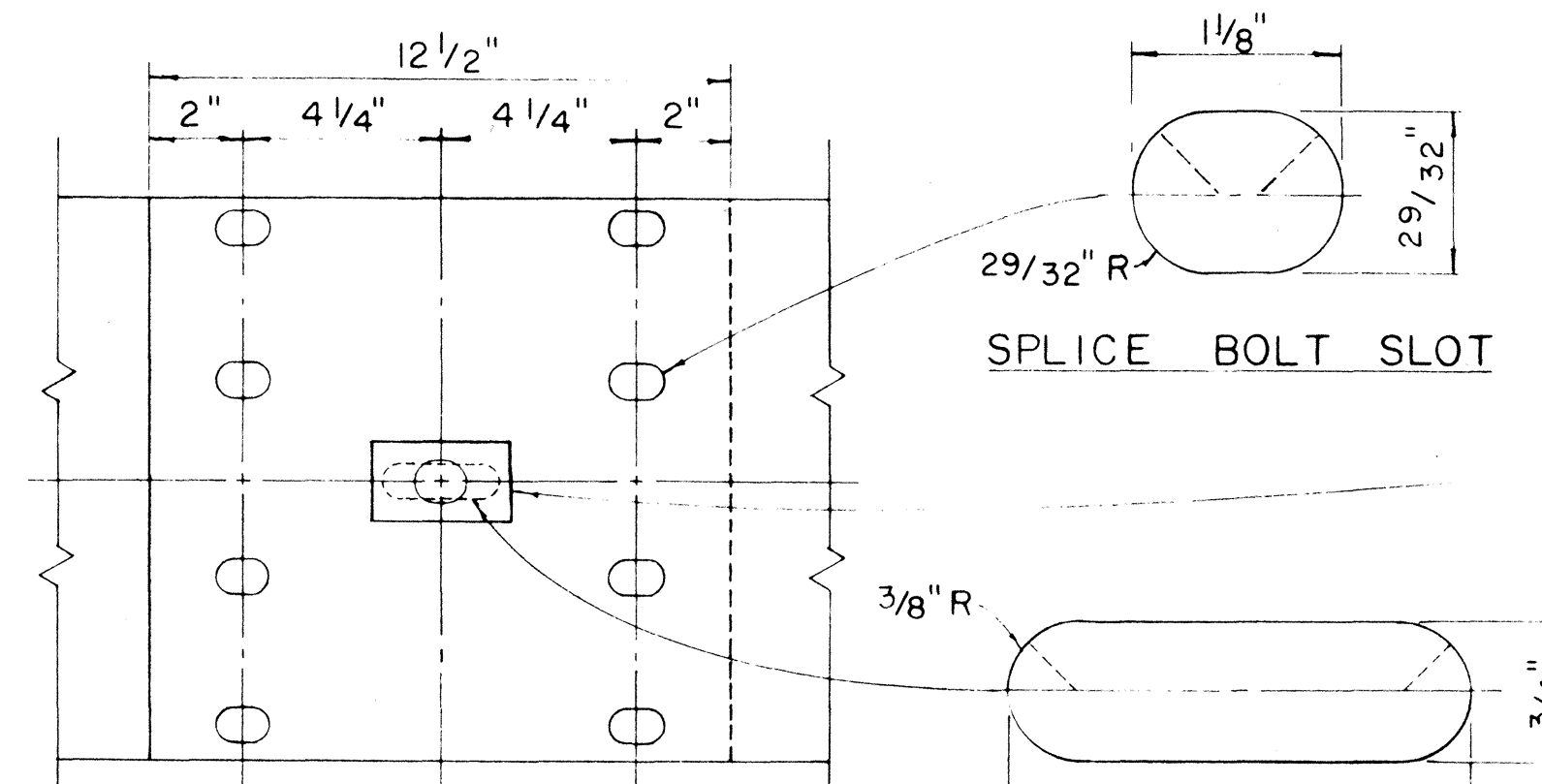
HEXAGON NUT

SPLICE RAIL AND POST BOLTS  
Scale: Full Size

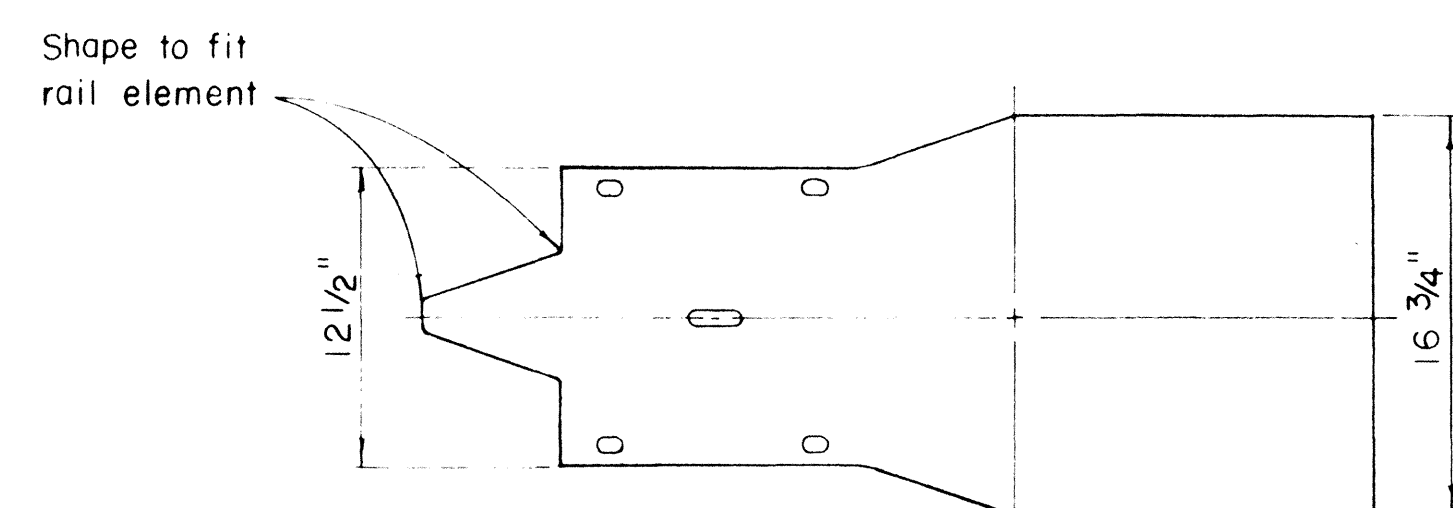
Scale: Full Size



FLARED END  
Scale: 1 1/2" = 1' - 0"



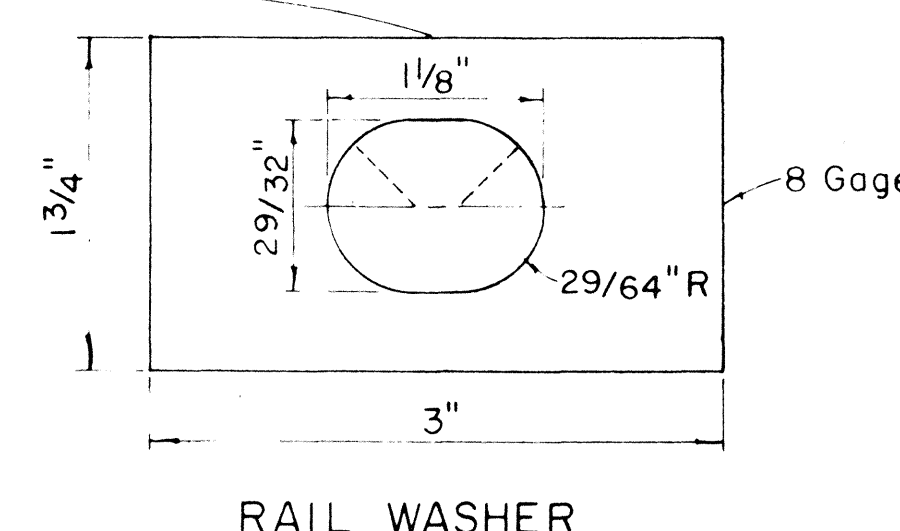
SPLICE BOLT SLOT  
FOR ALL ENDS  
Scale: Full Size



MEDIAN END  
Scale: 1 1/2" = 1' - 0"

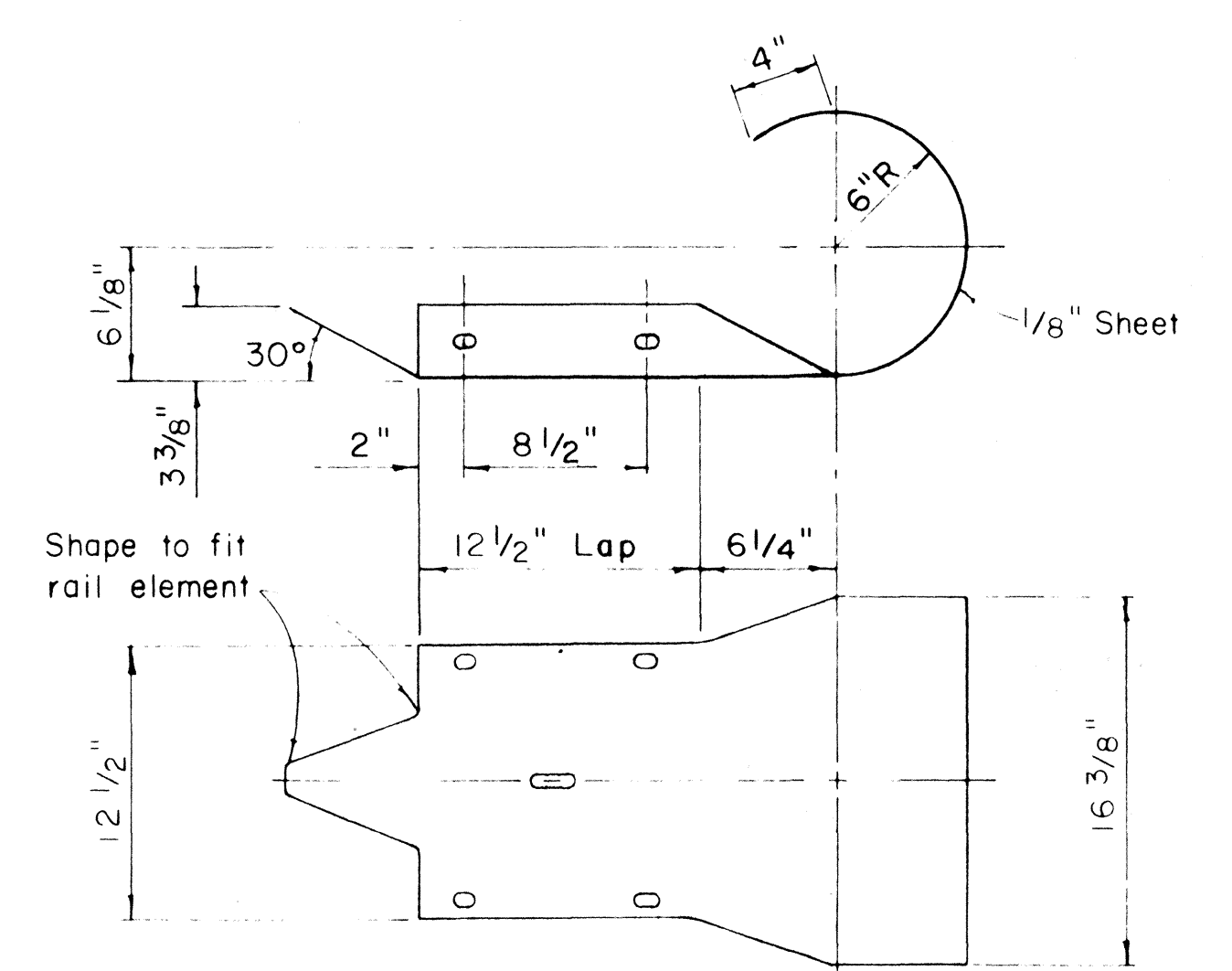
RAIL SPLICE  
Scale: 3" = 1' - 0"

POST BOLT SLOT

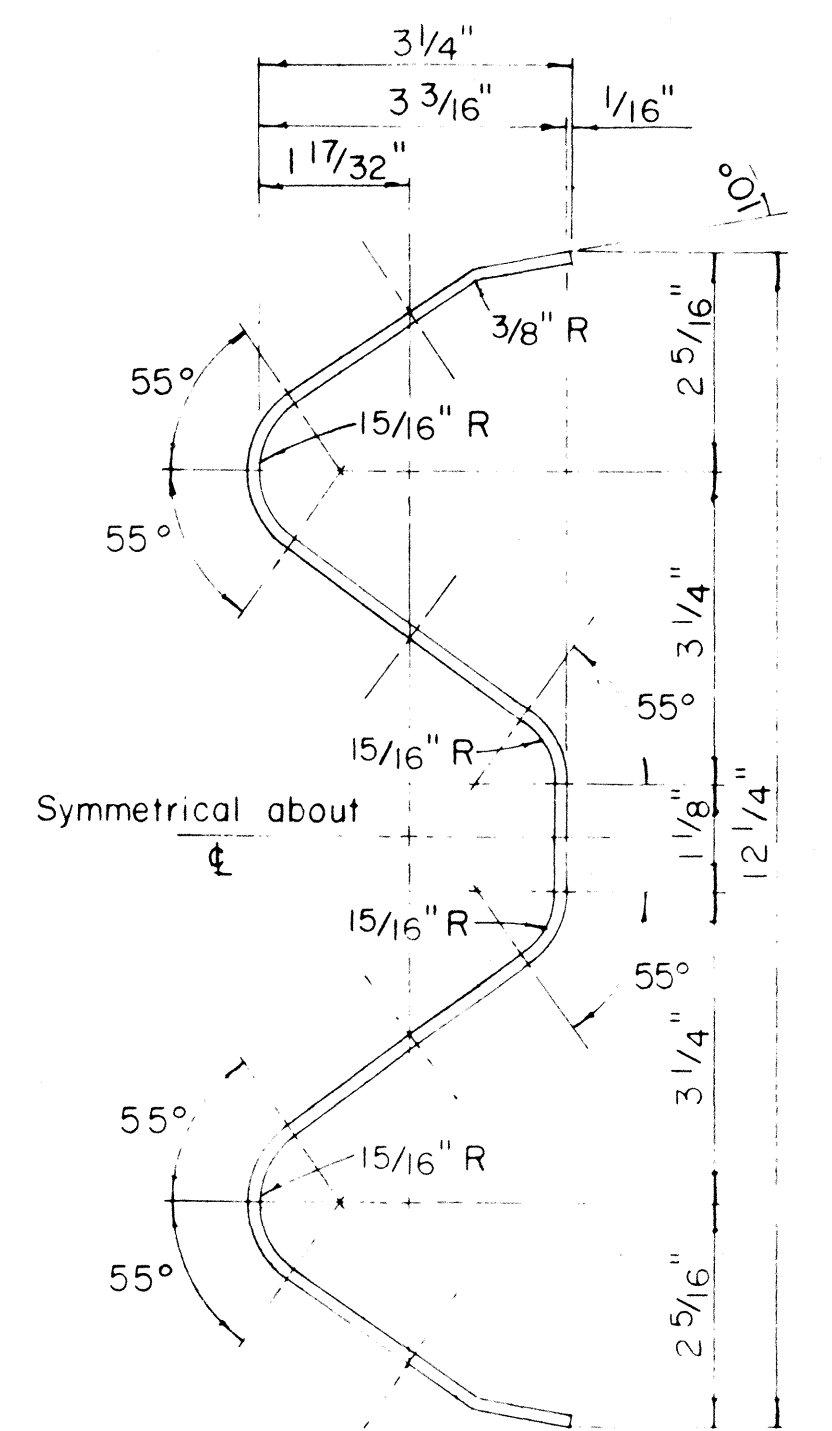


RAIL WASHER

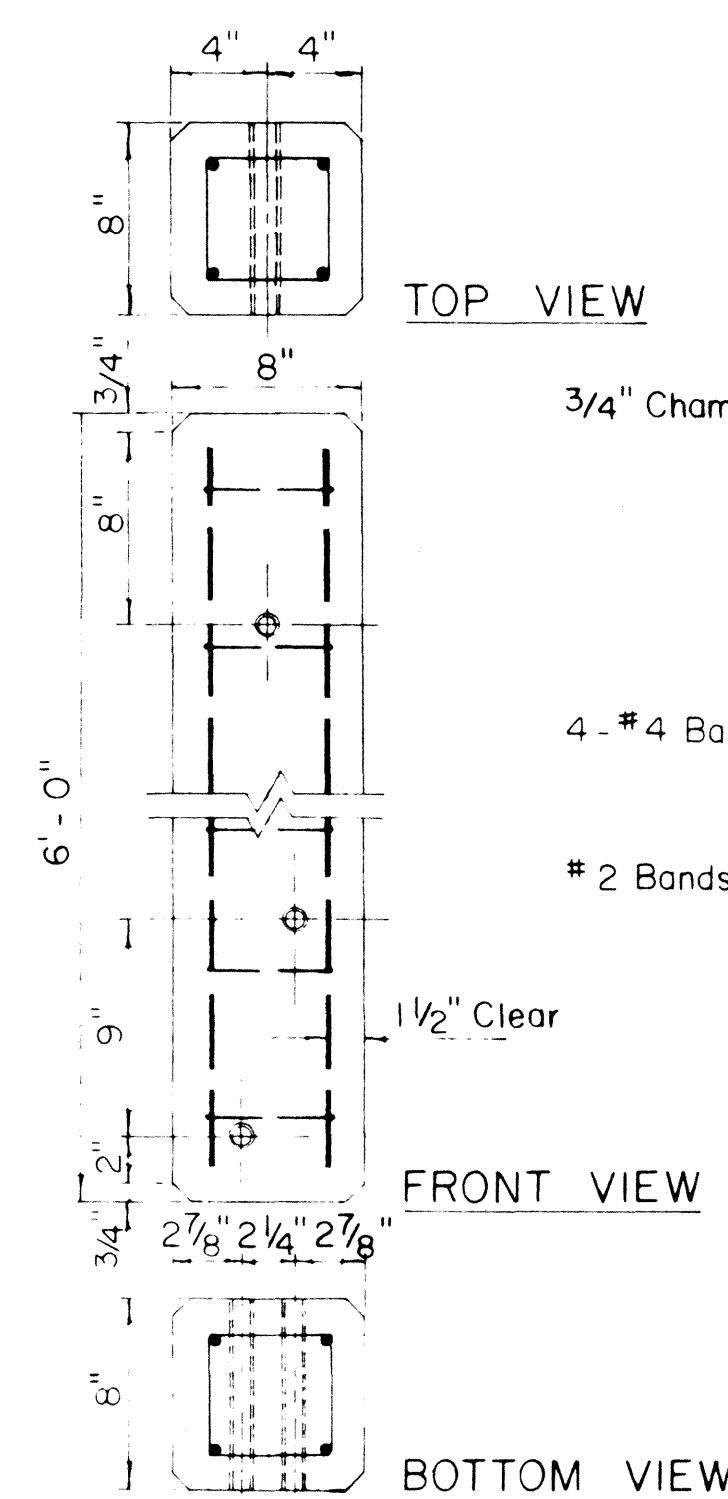
| TYPE OF POST AND BLOCK                                           | W       | R        |
|------------------------------------------------------------------|---------|----------|
| Double Metal Guard Rail on Concrete Post with Wood Blocks        | 29 3/4" | 14 7/8"  |
| Double Metal Guard Rail on Concrete Post with Metal Blocks (BJ6) | 26 1/2" | 13 1/4"  |
| Double Metal Guard Rail on Metal Post with Metal Blocks (BJ6)    | 24 3/8" | 12 3/16" |



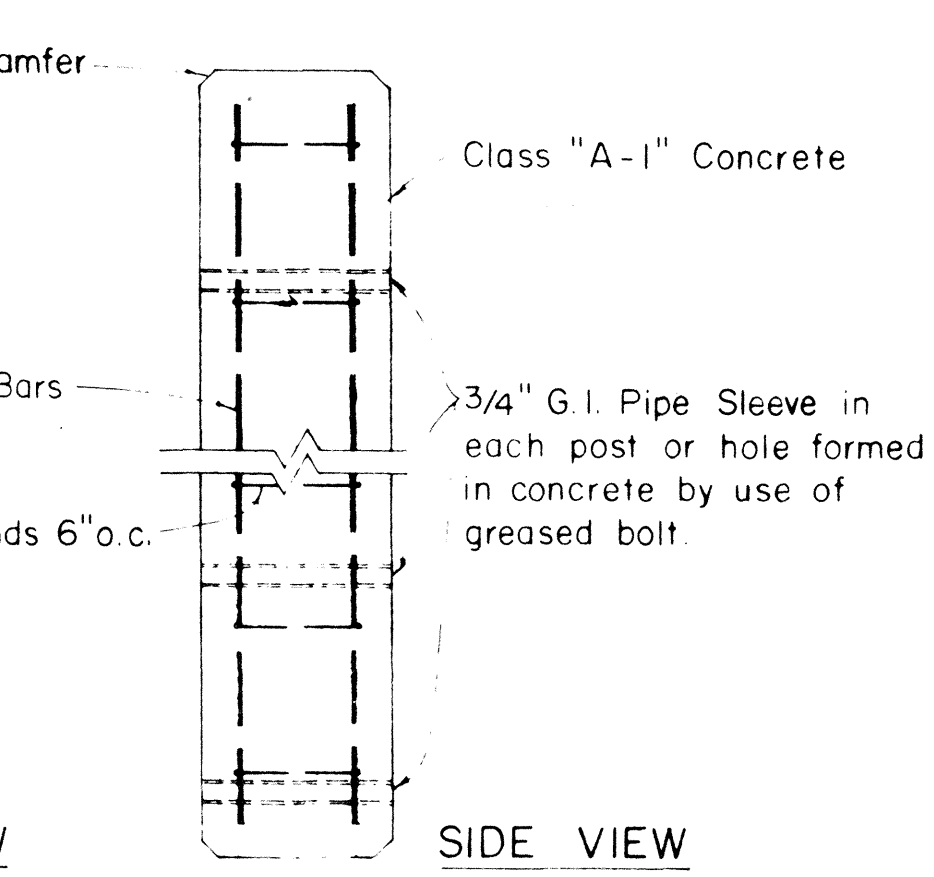
CURVED END  
Scale: 1 1/2" = 1' - 0"



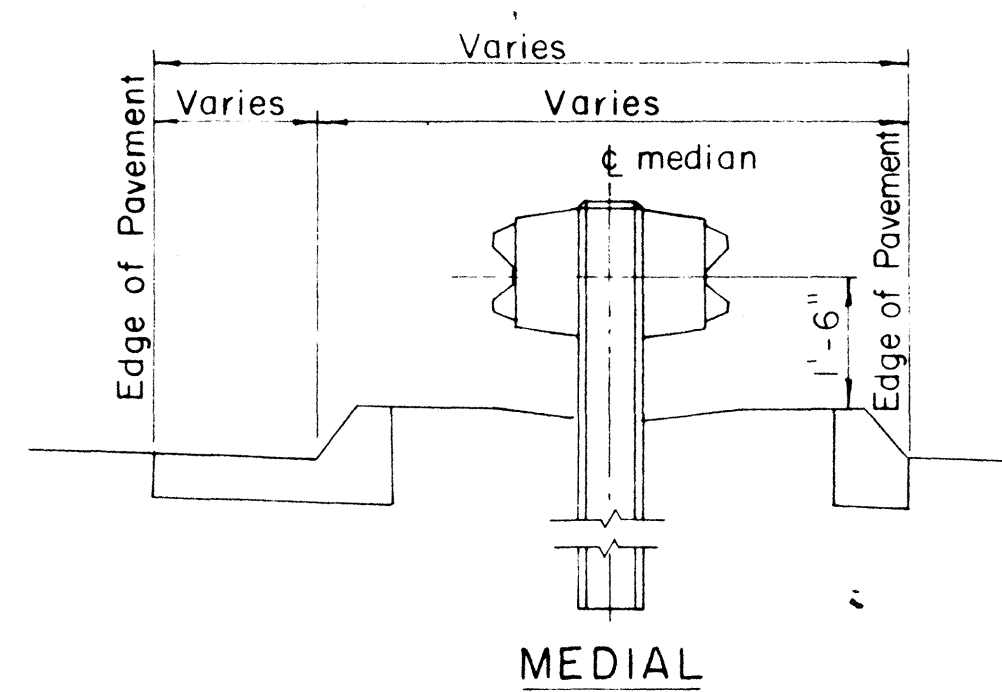
RAIL ELEMENT SECTION  
Scale: 6" = 1' - 0"



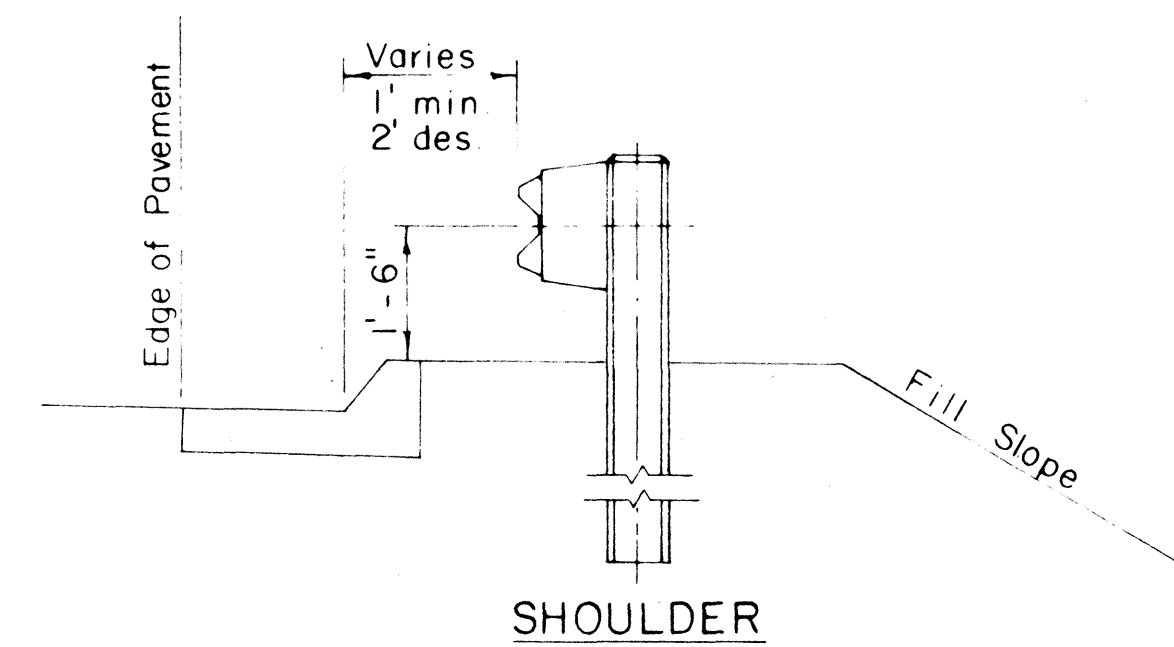
NOTE:  
Concrete post shall be precast



DETAIL OF CONCRETE POST  
Scale: 1 1/2" = 1' - 0"



TYPICAL GUARD RAIL DETAIL  
Scale: 1/2" = 1' - 0"



SHOULDER

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

STANDARD DETAILS  
METAL GUARD RAIL

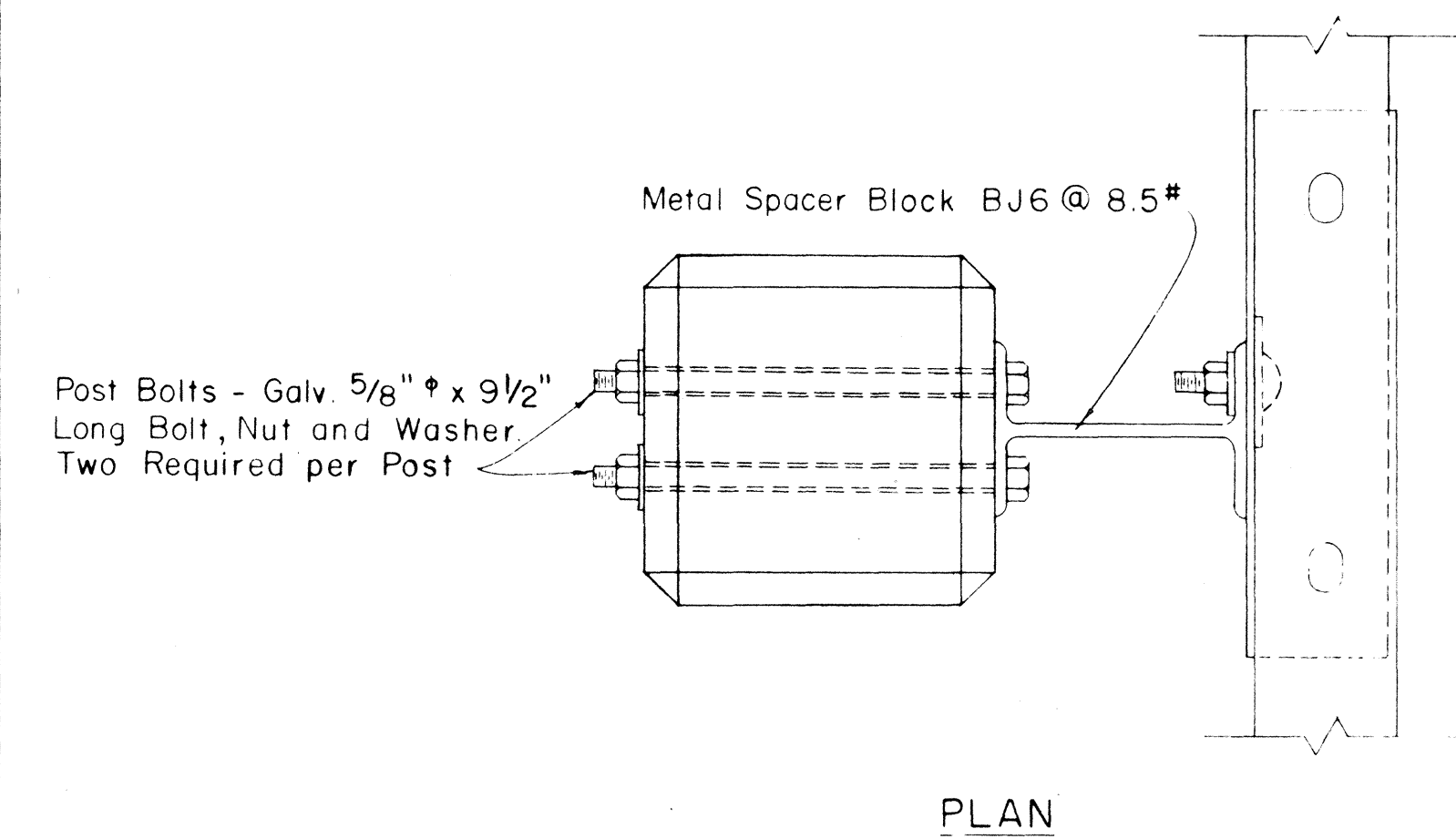
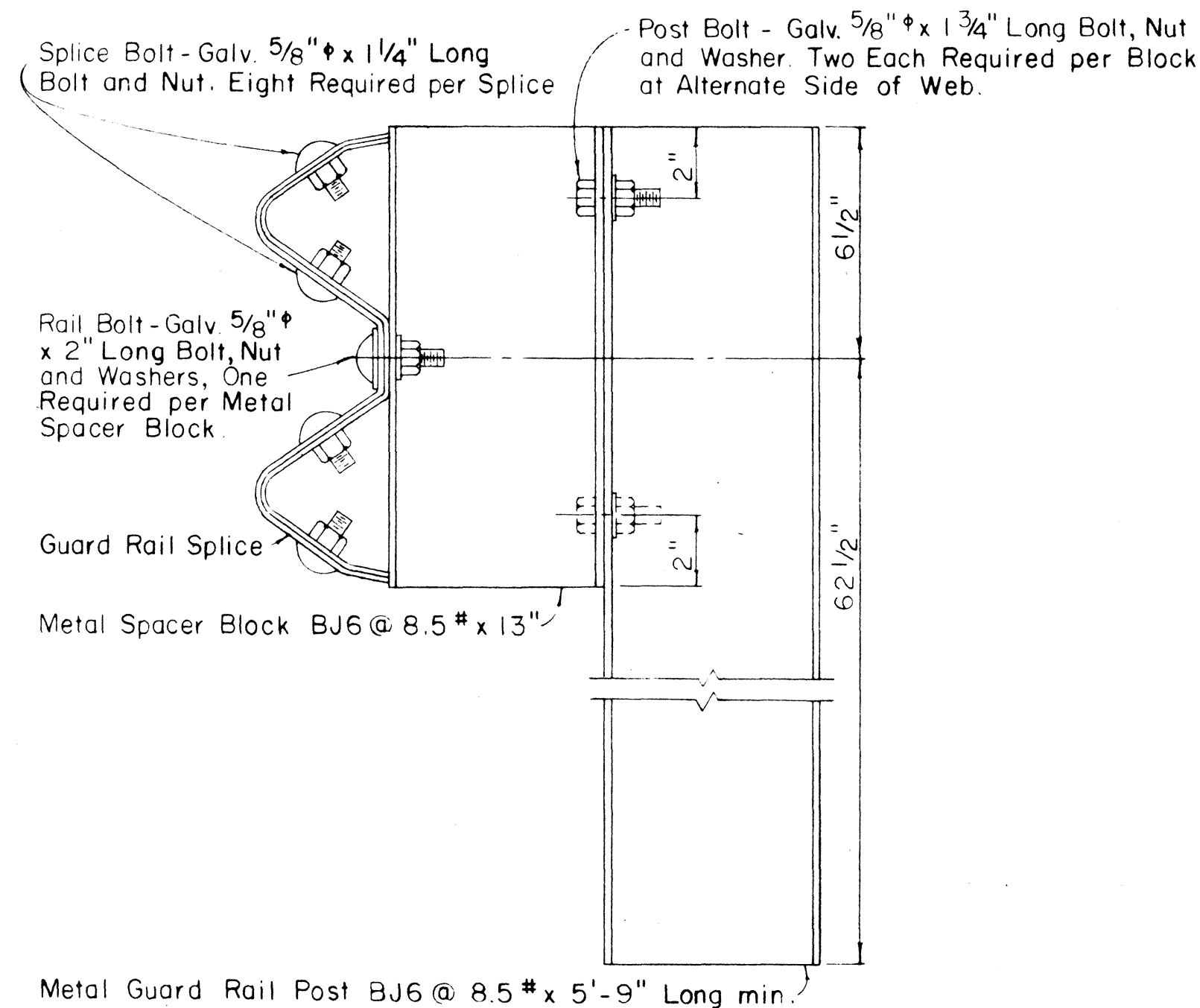
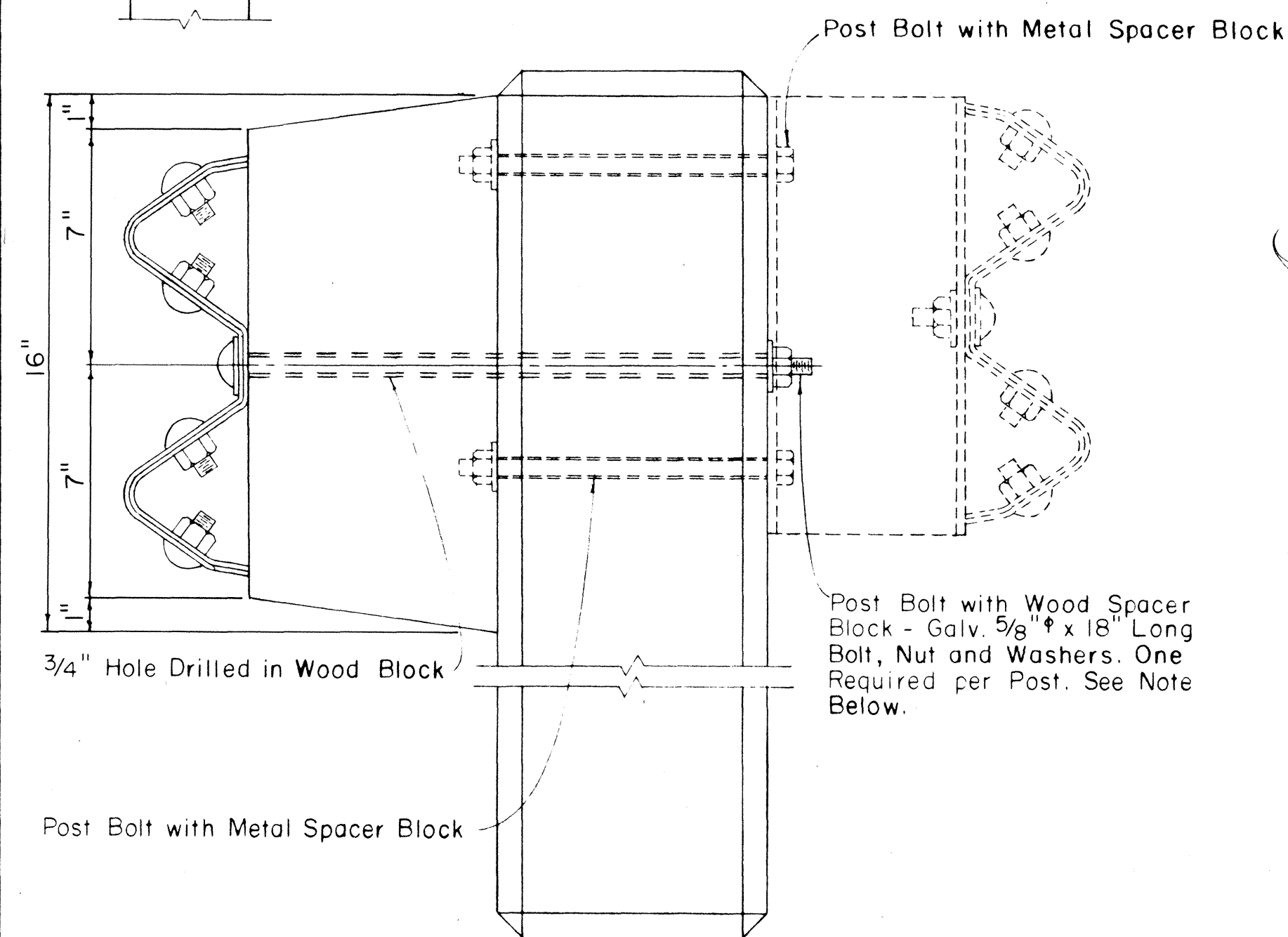
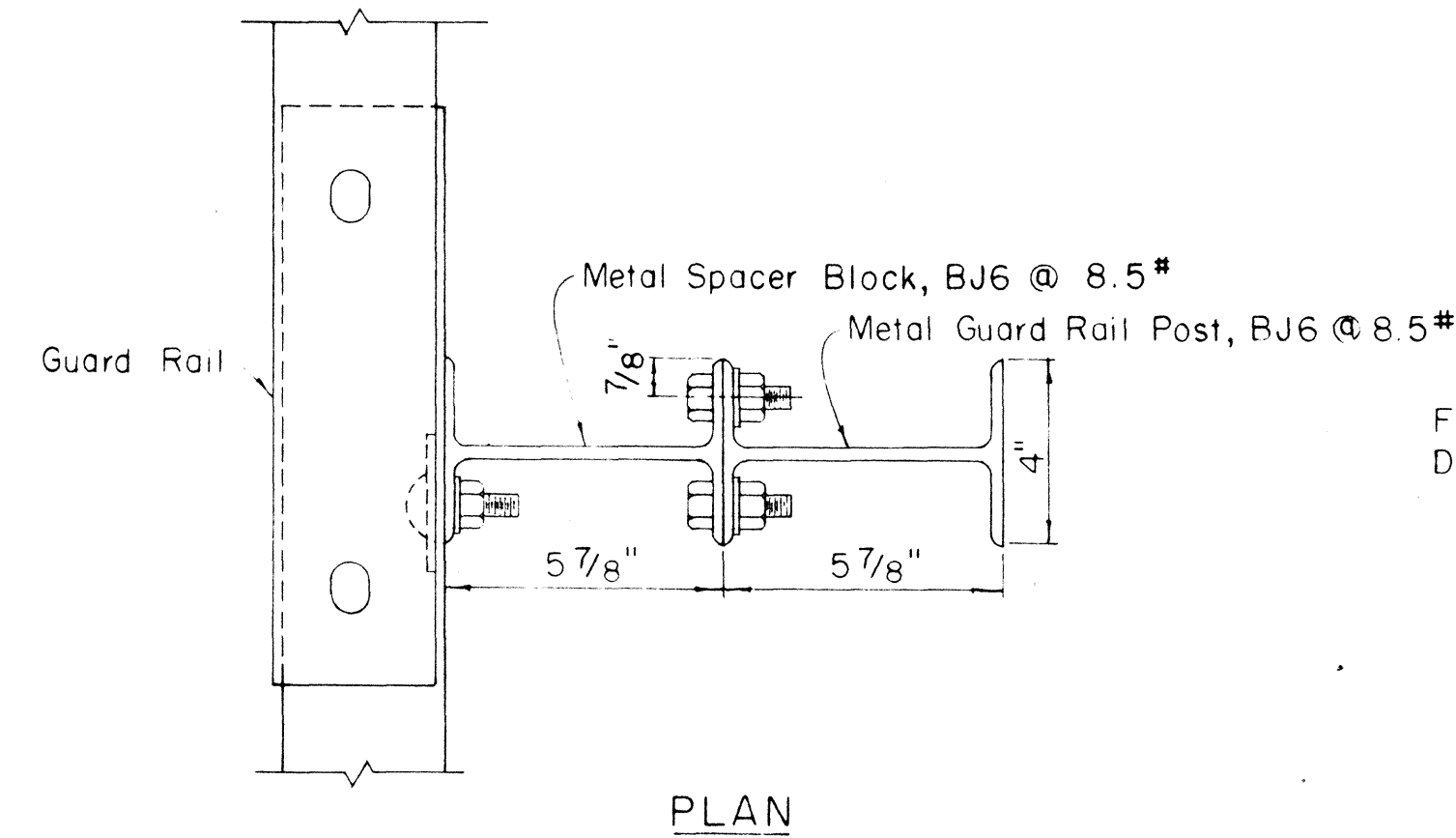
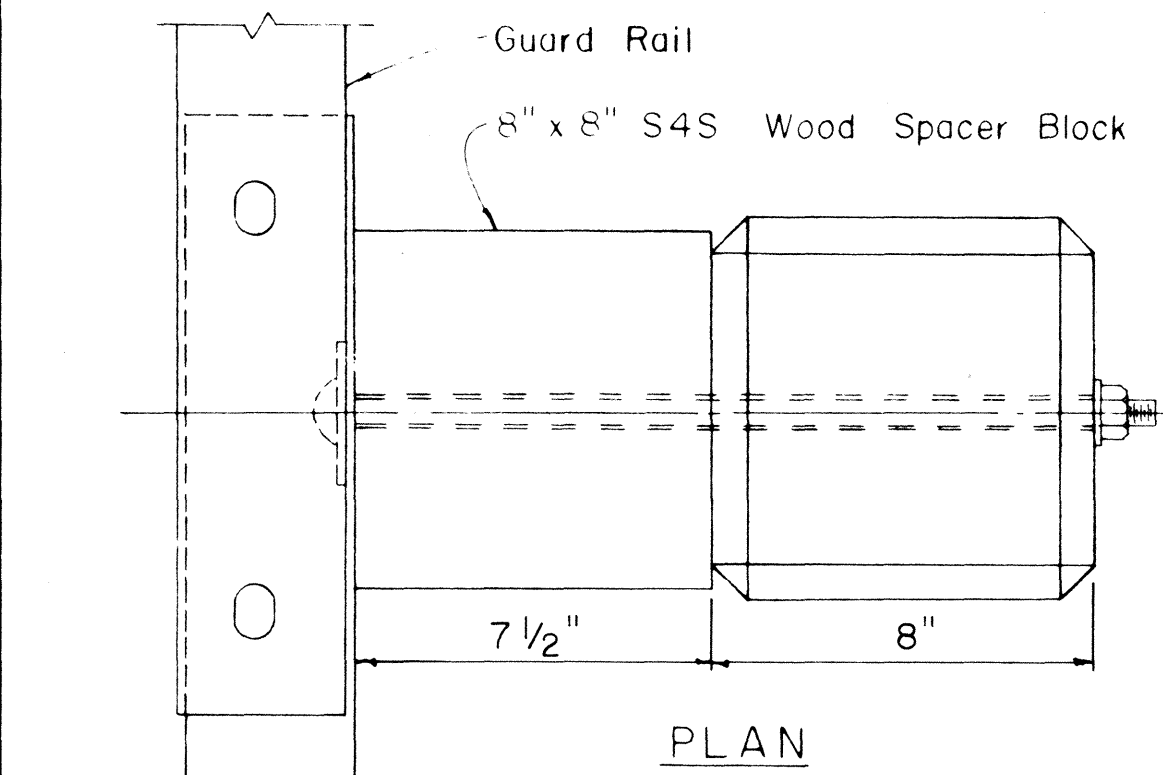
Scale: as noted

SHEET No. 2 OF 7 SHEETS

ORIGINAL PLAN  
DATE  
DRAWN BY  
CHECKED BY  
NOTED BY  
QUANTITIES BY  
No.



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | F-011-25           | 1961        | 28        | 47           |

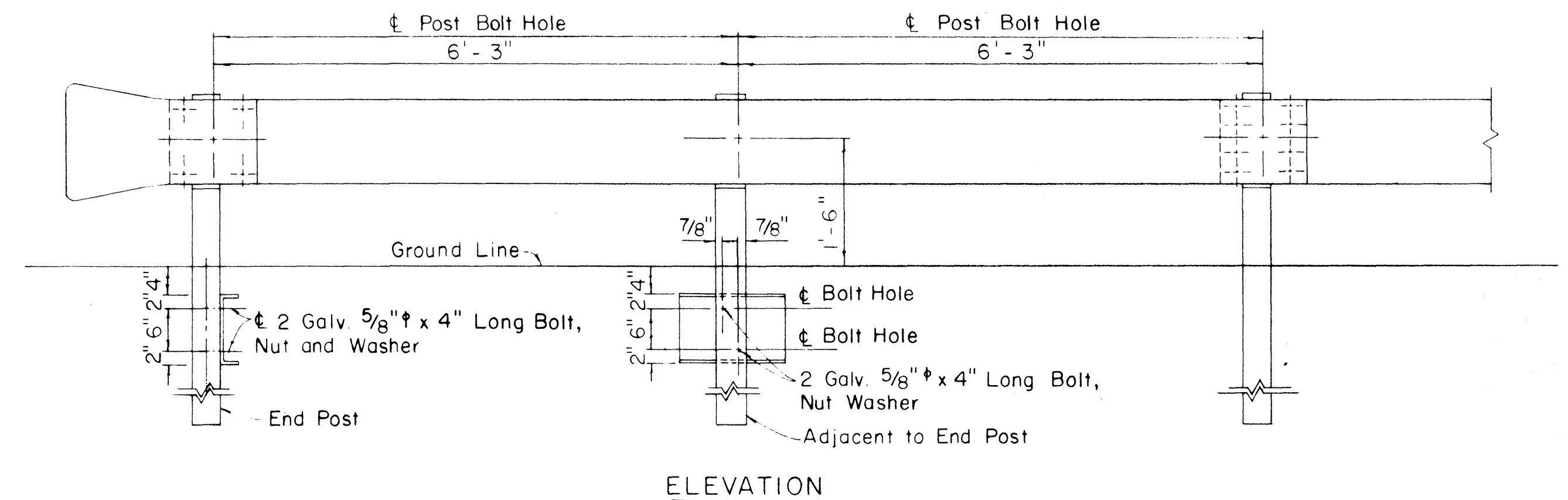
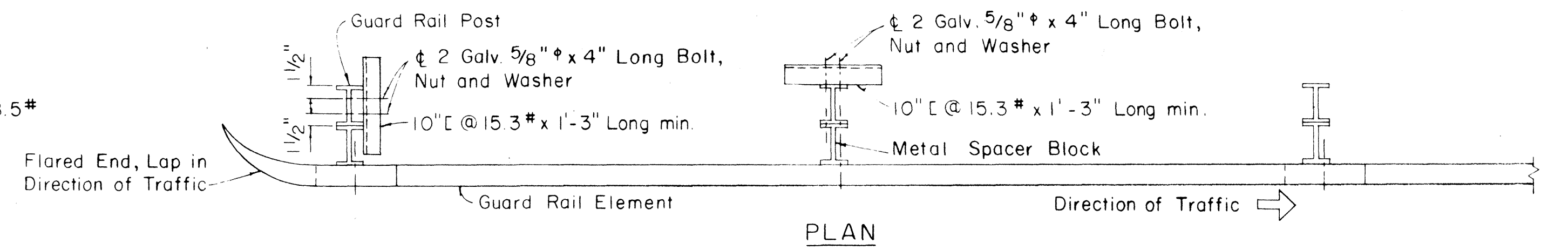


SINGLE METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK  
Scale: 3" = 1' - 0"

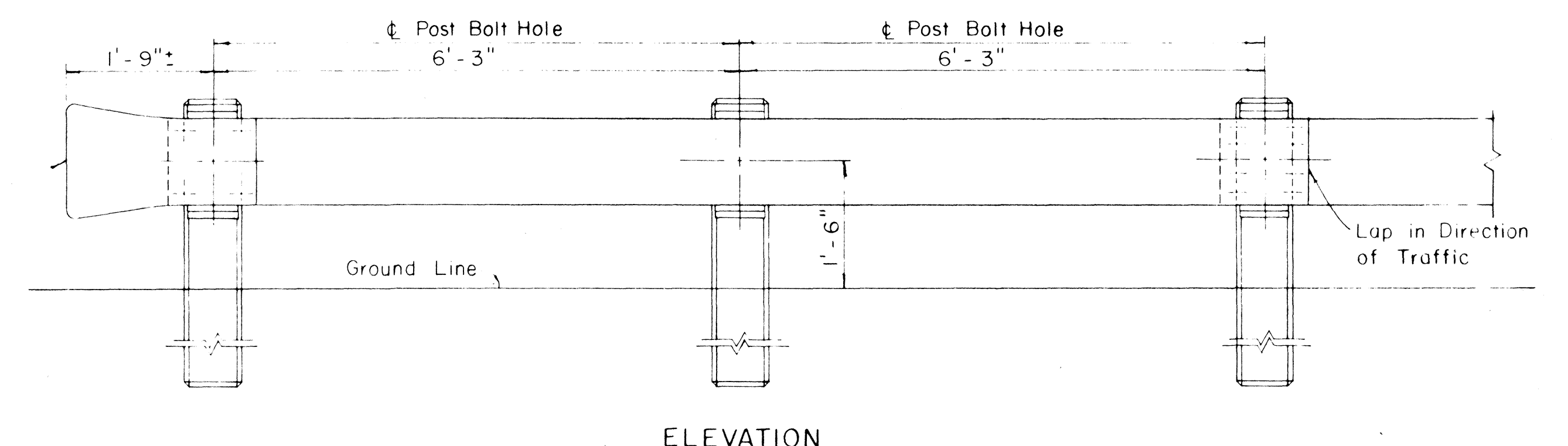
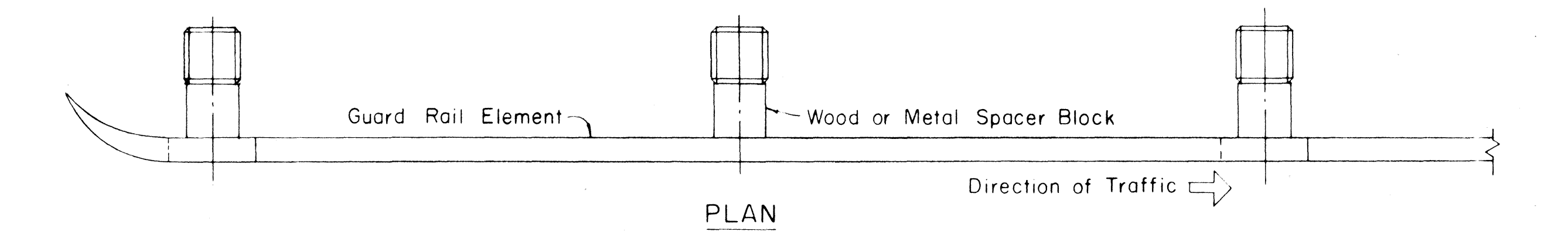
SINGLE METAL GUARD RAIL ON PRECAST CONCRETE POST WITH WOOD OR METAL SPACER BLOCK  
Scale: 3" = 1' - 0"

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



METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK  
Scale: 3/4" = 1' - 0"



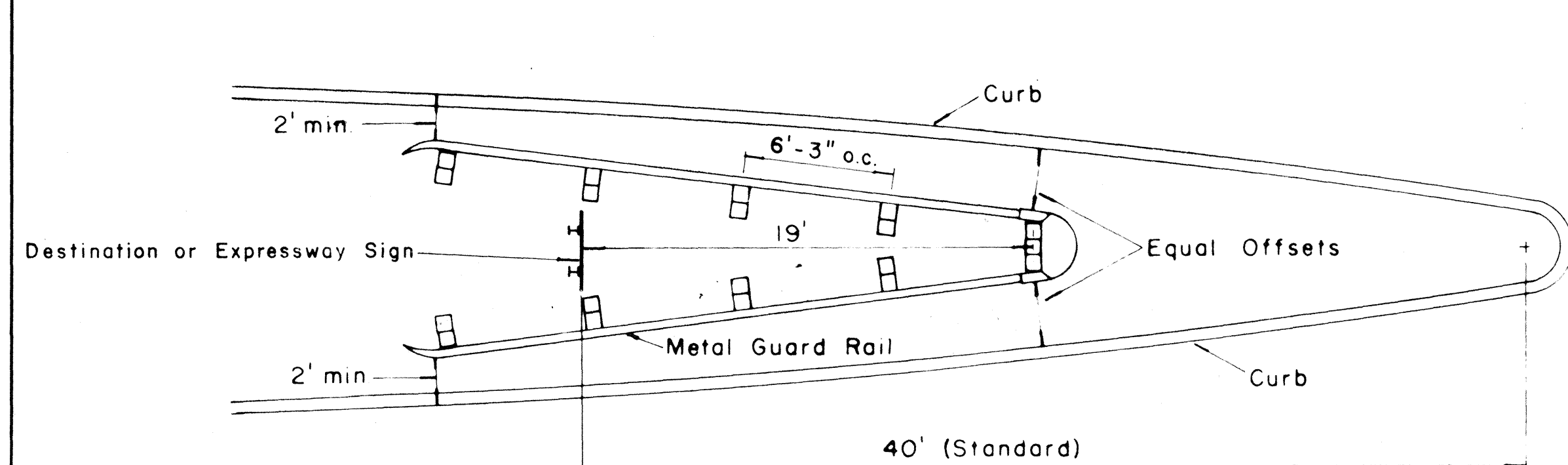
METAL GUARD RAIL ON CONCRETE POST WITH WOOD OR METAL SPACER BLOCK  
Scale: 3/4" = 1' - 0"

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
  
STANDARD DETAILS  
  
METAL GUARD RAIL

Scale: as noted  
SHEET No. 3 OF 7 SHEETS

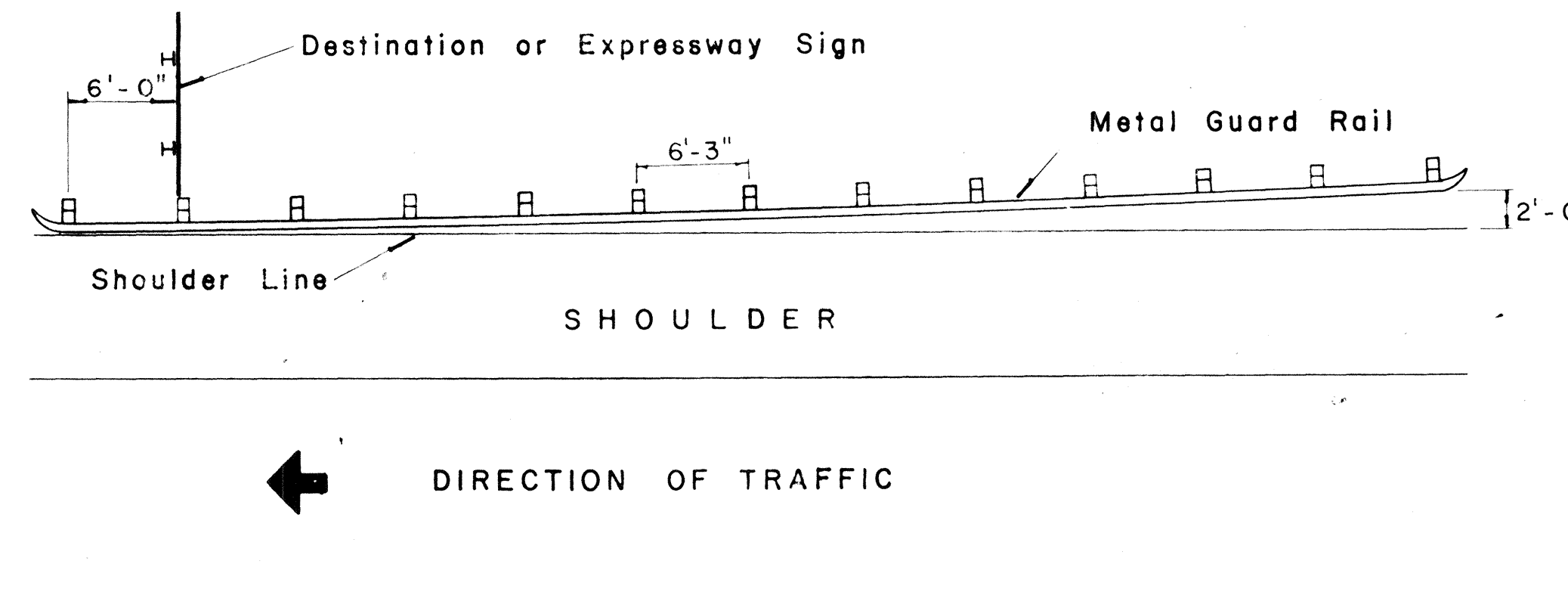
|                   |       |
|-------------------|-------|
| DATE              | _____ |
| SURVEY PLOTTED BY | _____ |
| DRAWN BY          | _____ |
| DESIGNED BY       | _____ |
| NOTED BY          | _____ |
| CHECKED BY        | _____ |
| NO.               | _____ |





GCRE MOUNTED SIGN

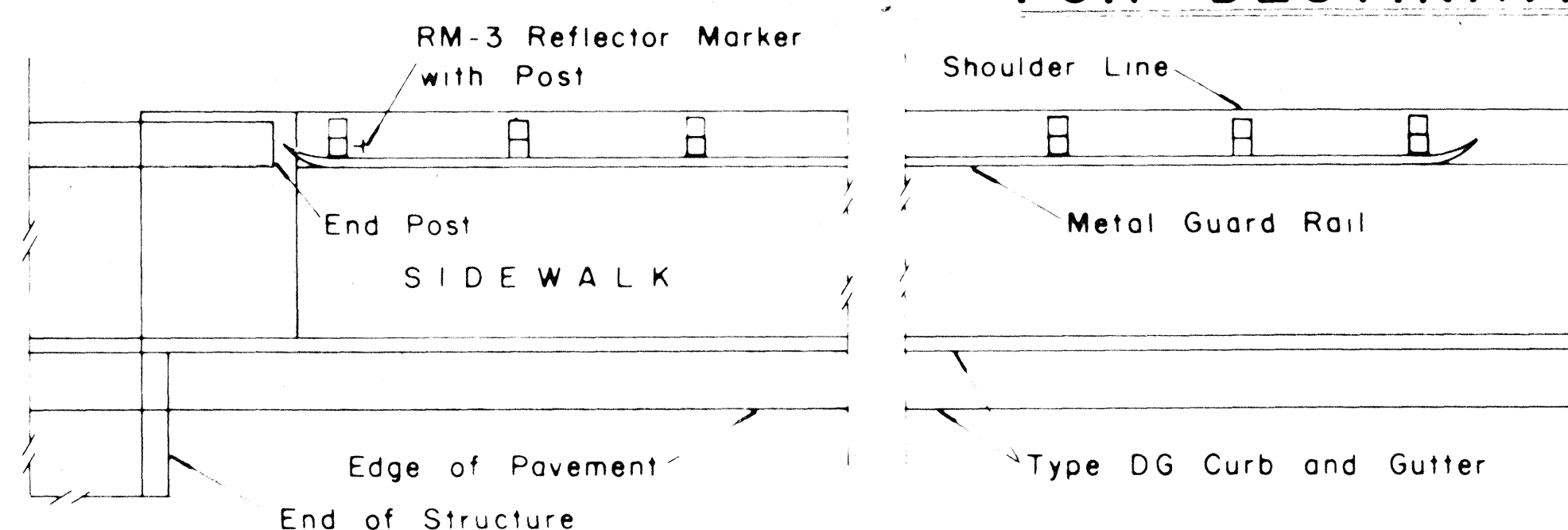
Scale:  $\frac{3}{16}$ " = 1' - 0"



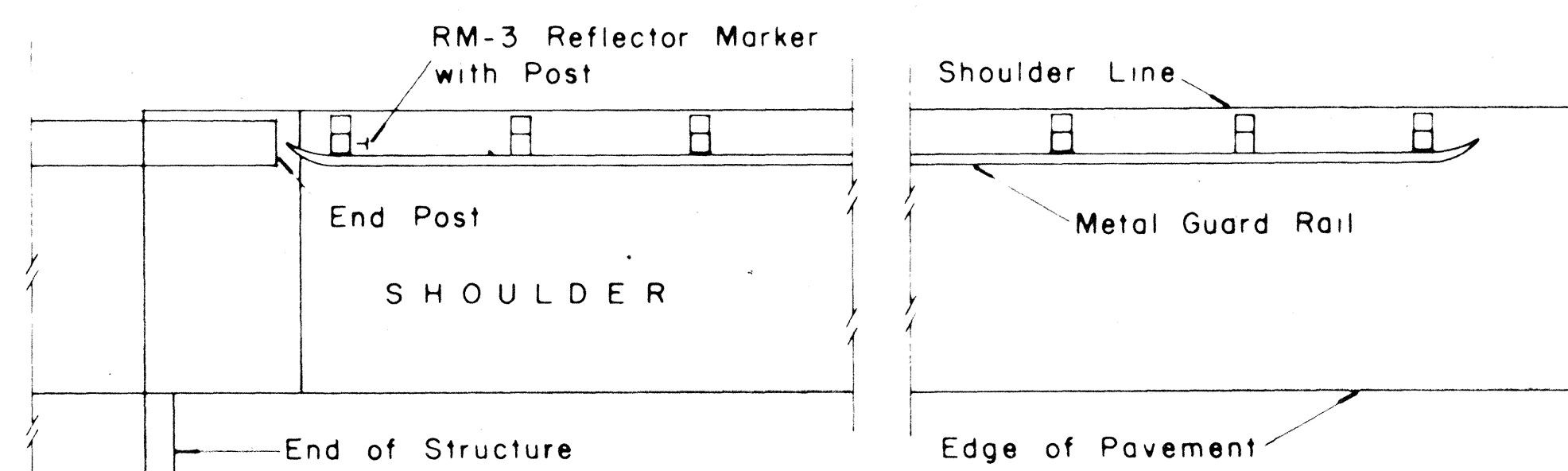
SHOULDER MOUNTED SIGN

Scale:  $\frac{1}{8}$ " = 1' - 0"

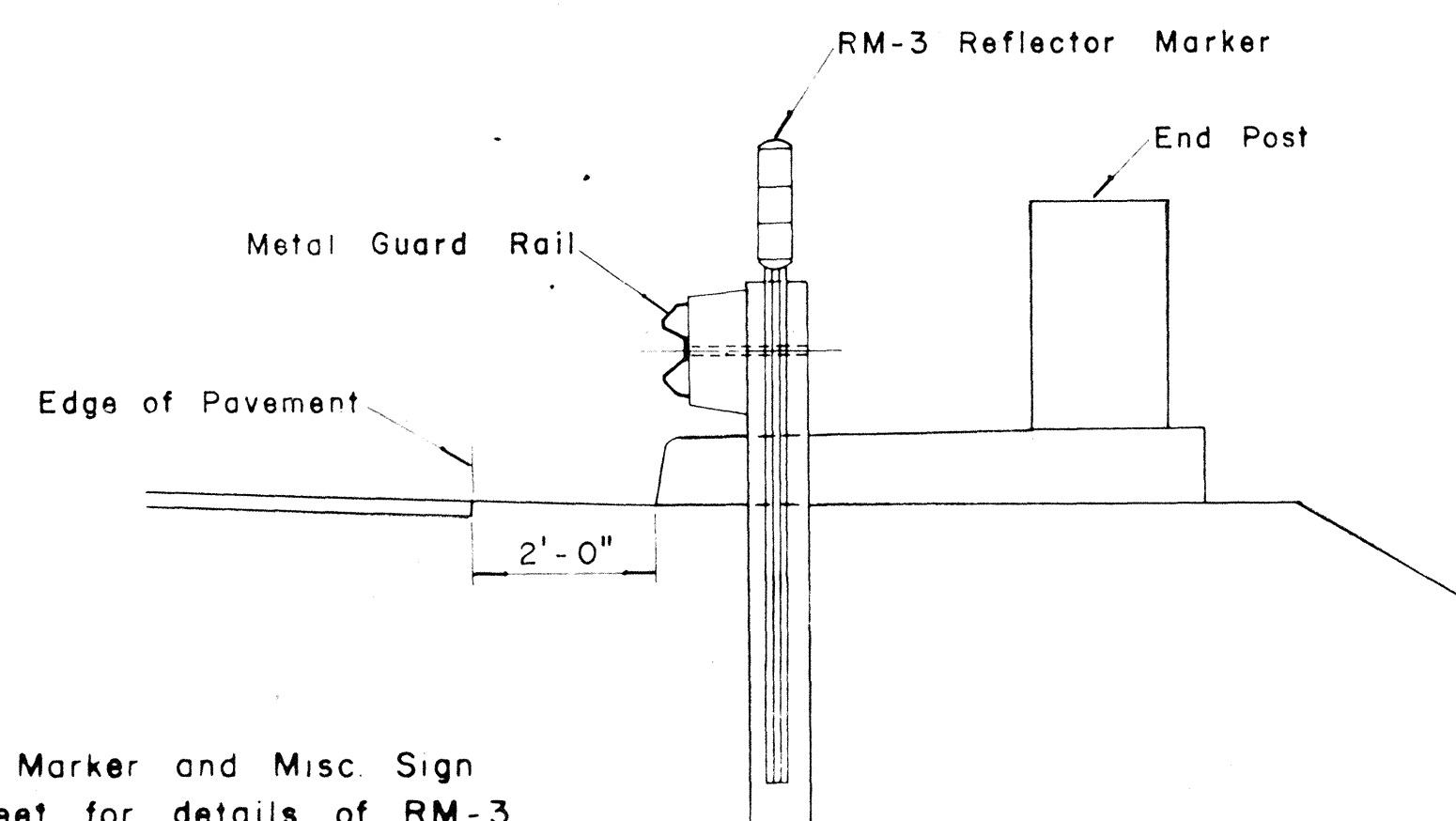
## INSTALLATION OF METAL GUARD RAIL FOR DESTINATION AND EXPRESSWAY SIGNS



SIDEWALK CARRIED THROUGH STRUCTURE



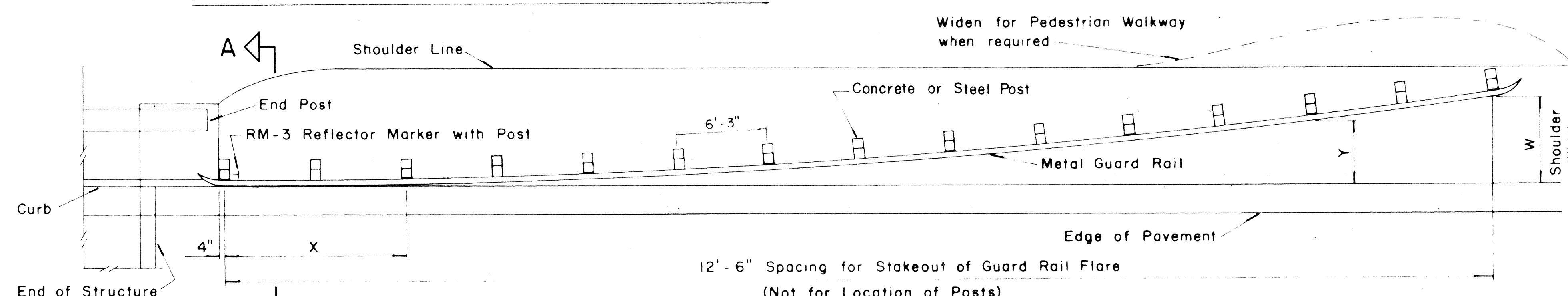
SHOULDER CARRIED THROUGH STRUCTURE



SECTION "A-A"

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

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



SHOULDER NOT CARRIED THROUGH STRUCTURE

## INSTALLATION OF METAL GUARD RAIL FLARE AT STRUCTURES

Scale:  $\frac{3}{16}$ " = 1' - 0"

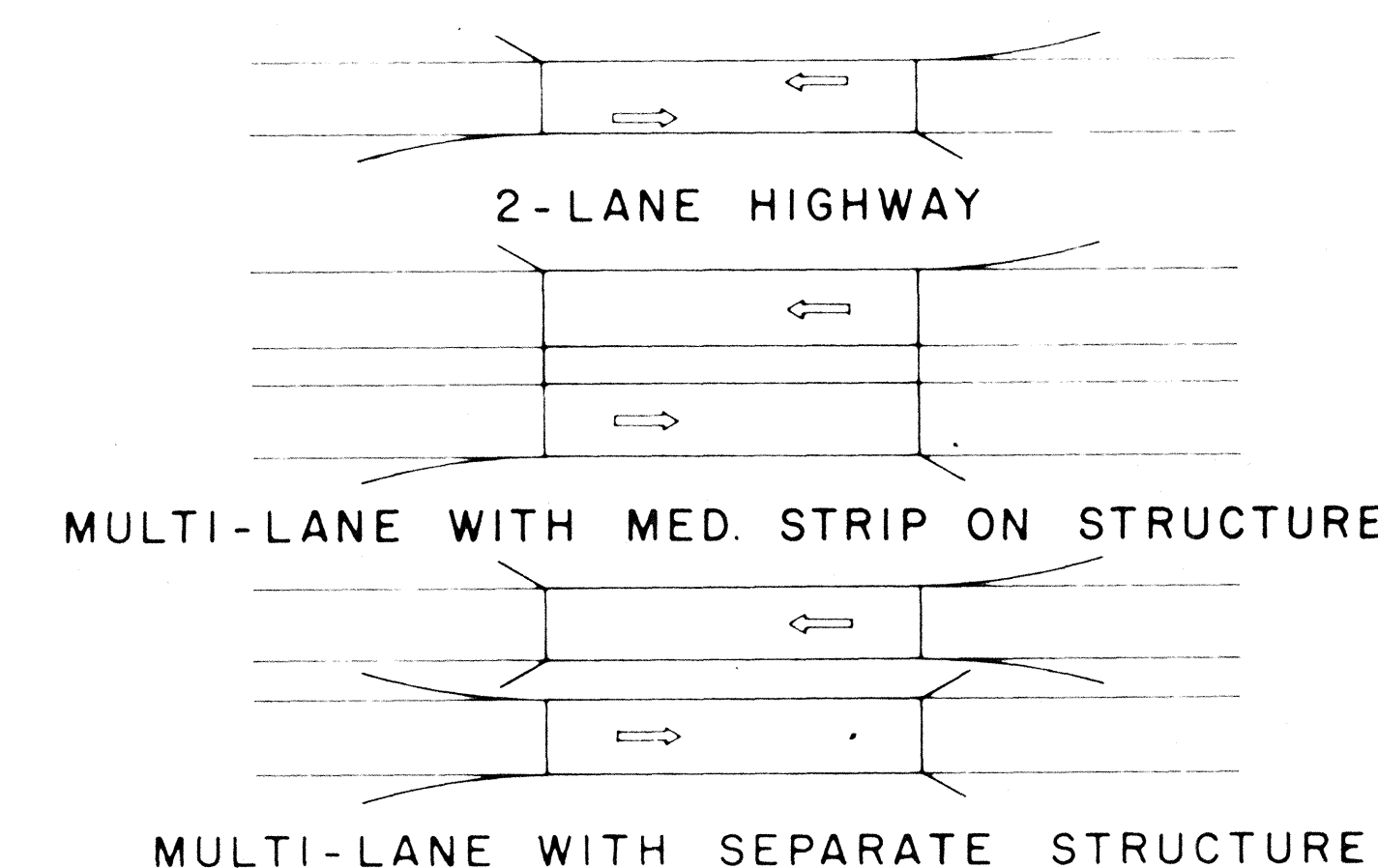
| X     | Y    |      |      |      |      |      |
|-------|------|------|------|------|------|------|
|       | W=3' | W=4' | W=5' | W=6' | W=7' | W=8' |
| 12.5  | 0.19 | 0.16 | 0.14 | 0.12 | 0.09 | 0.08 |
| 25.0  | 0.75 | 0.64 | 0.55 | 0.49 | 0.35 | 0.32 |
| 37.5  | 1.69 | 1.44 | 1.25 | 1.10 | 0.78 | 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

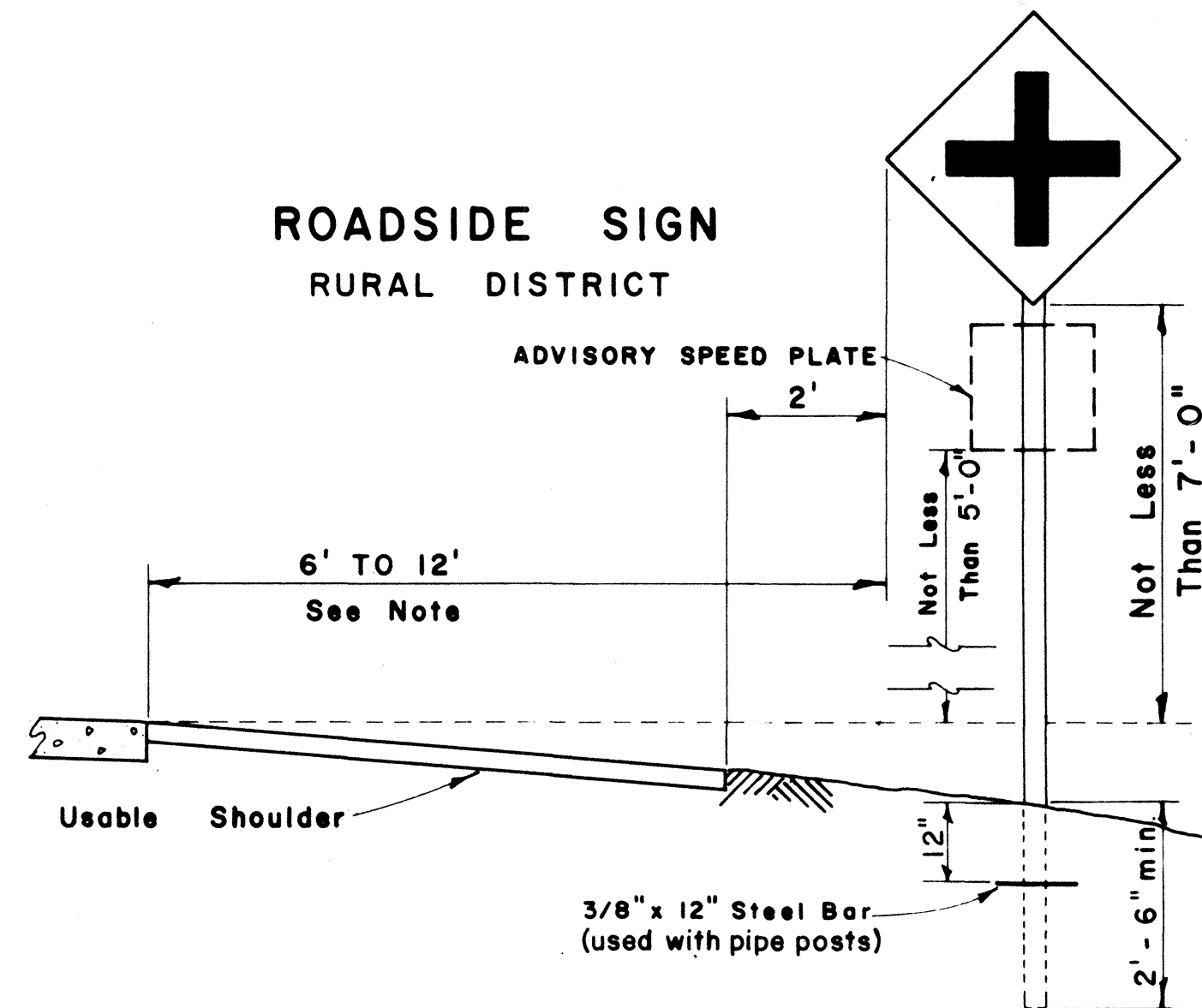
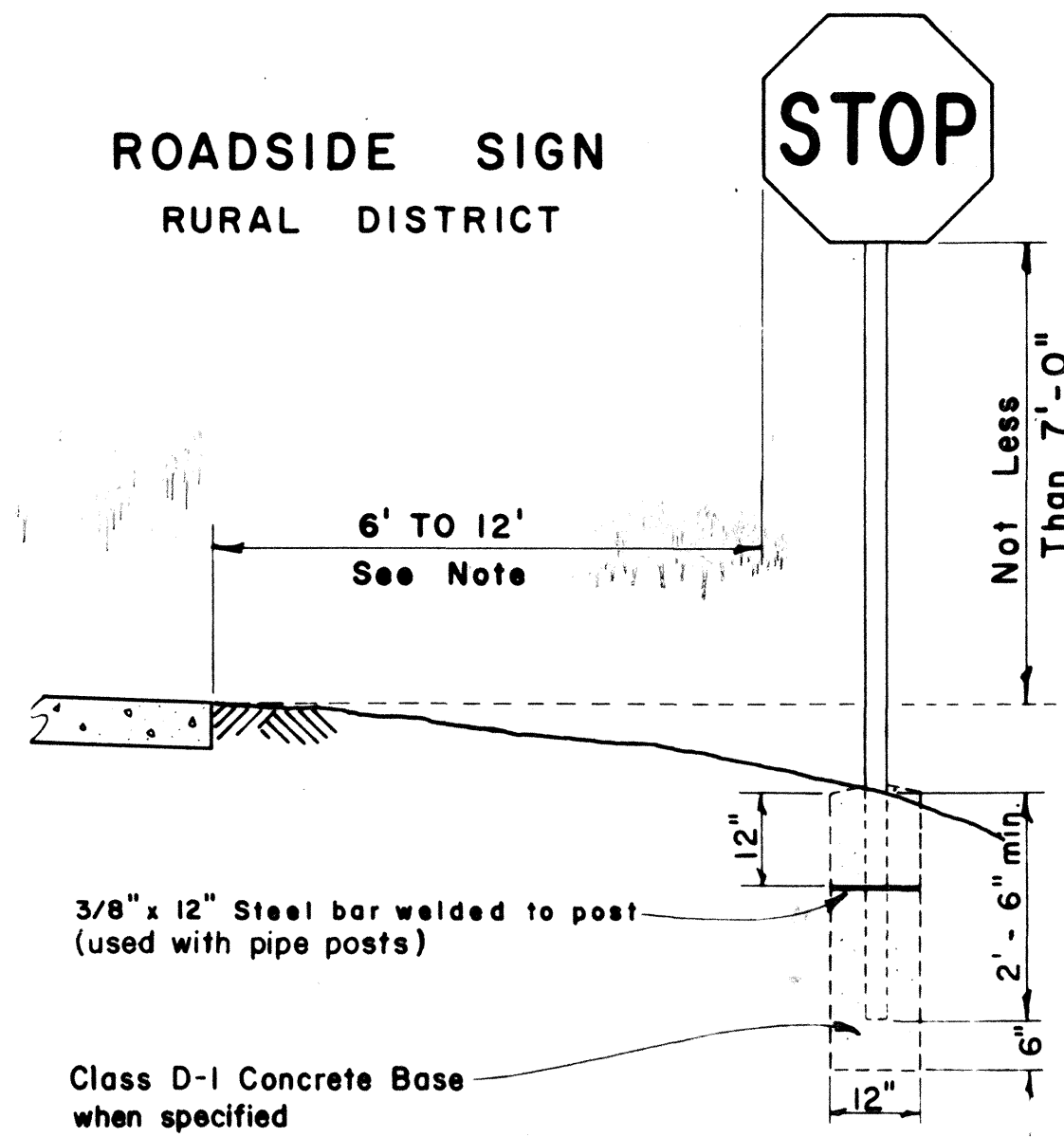
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**STANDARD DETAILS**  
**METAL GUARD RAILS**  
**AT**  
**STRUCTURES & GUIDE SIGNS**

Scale: As Noted

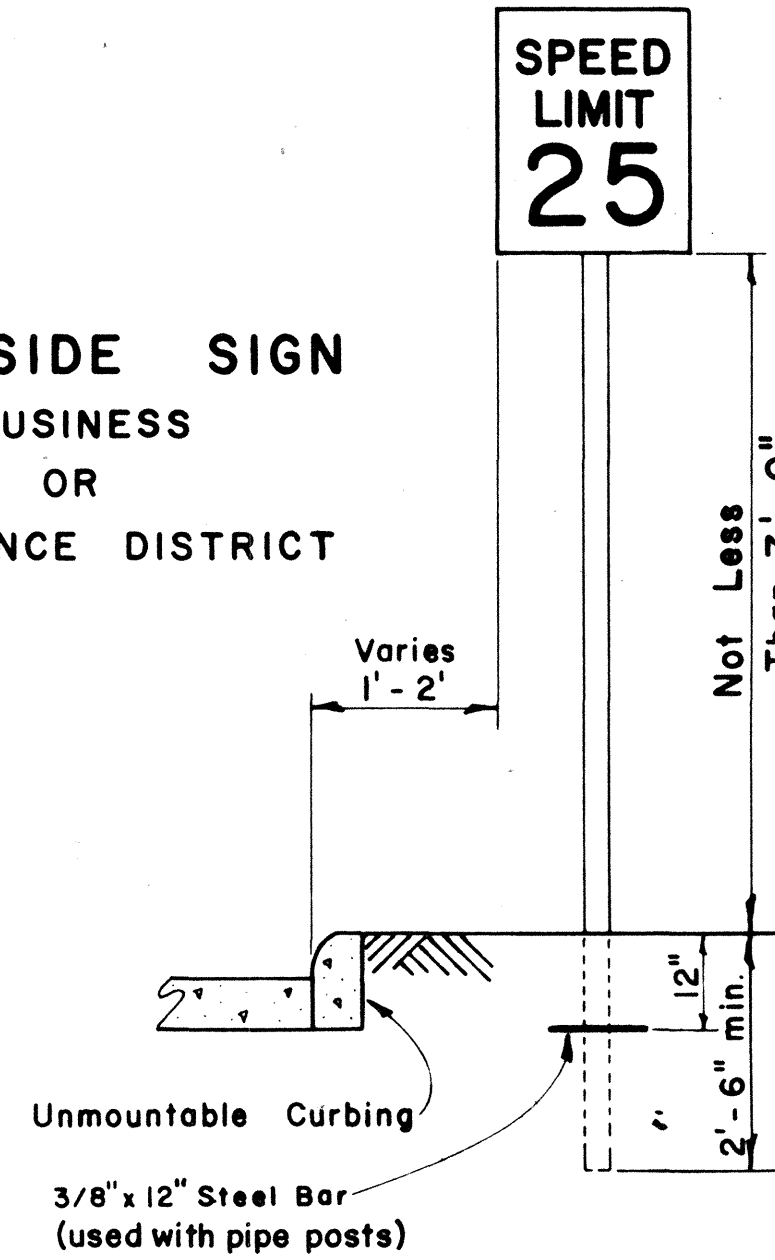
SHEET No. 4 OF 7 SHEETS



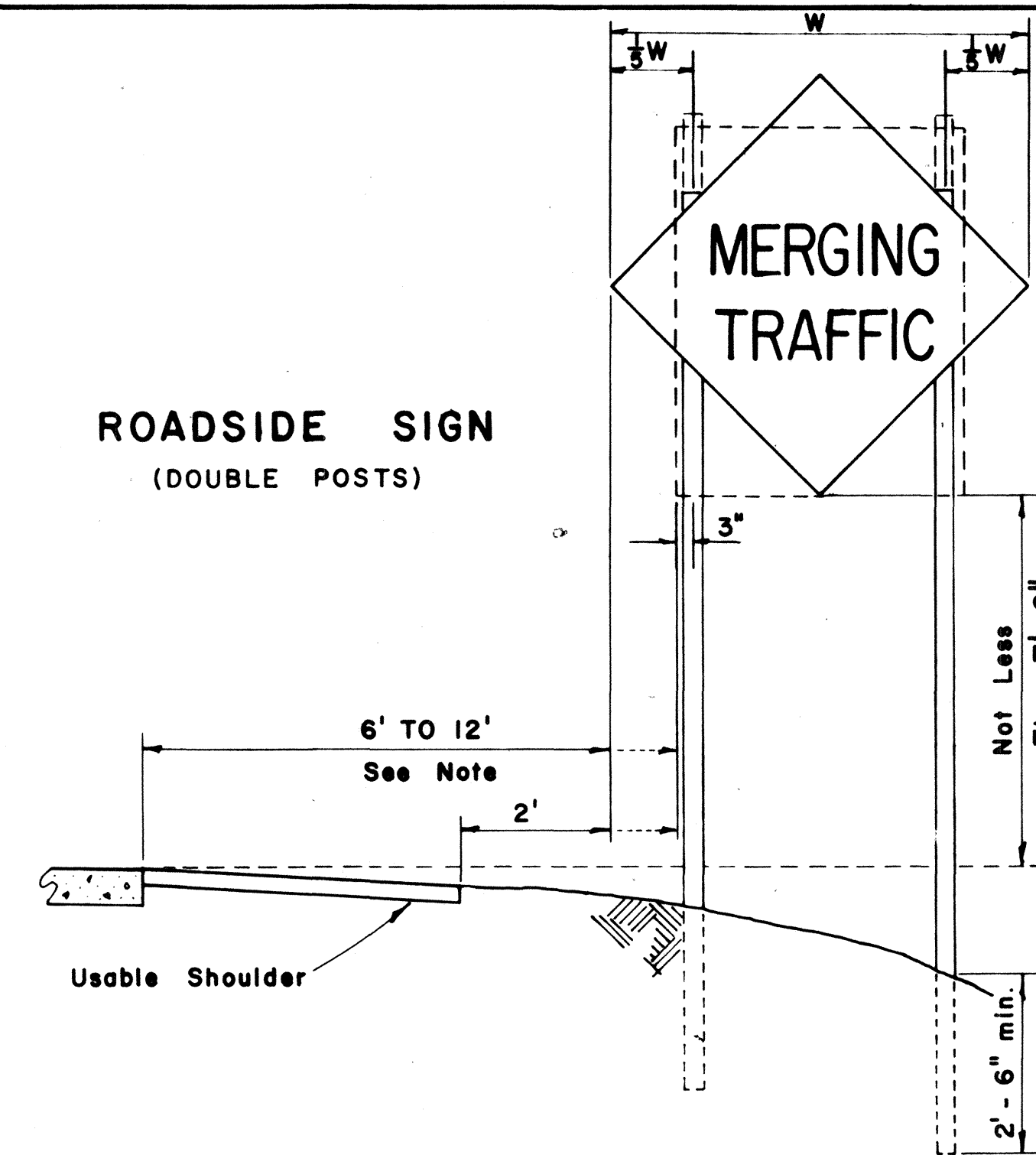
- NOTE:
- All signs and road delineators shall be placed 2' outside the usable roadway shoulder or 1' outside unmountable curbing present and within the limits shown below.
  - Except as noted below, sign posts shall be either 3" galv. std. pipe or 2 1/2" x 2 1/2" galv. square tube posts for signs larger 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.
  - 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.
  - 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.
  - 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.



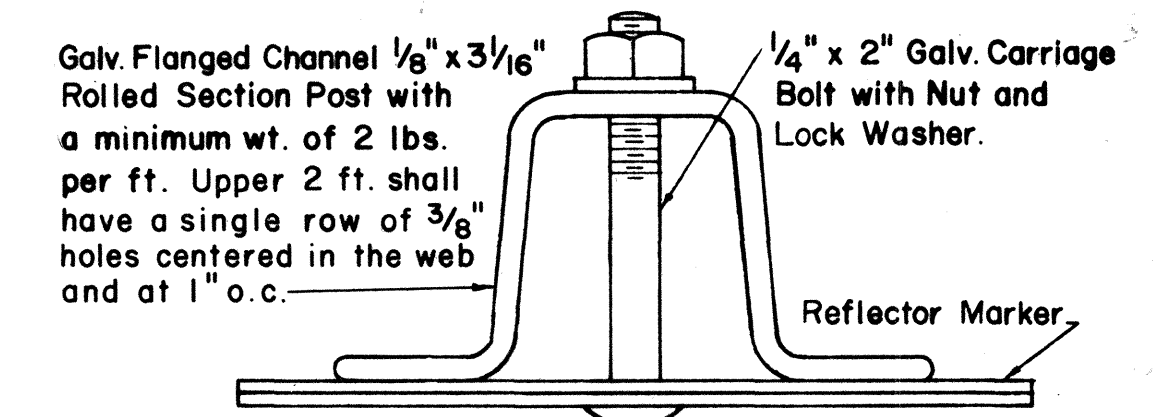
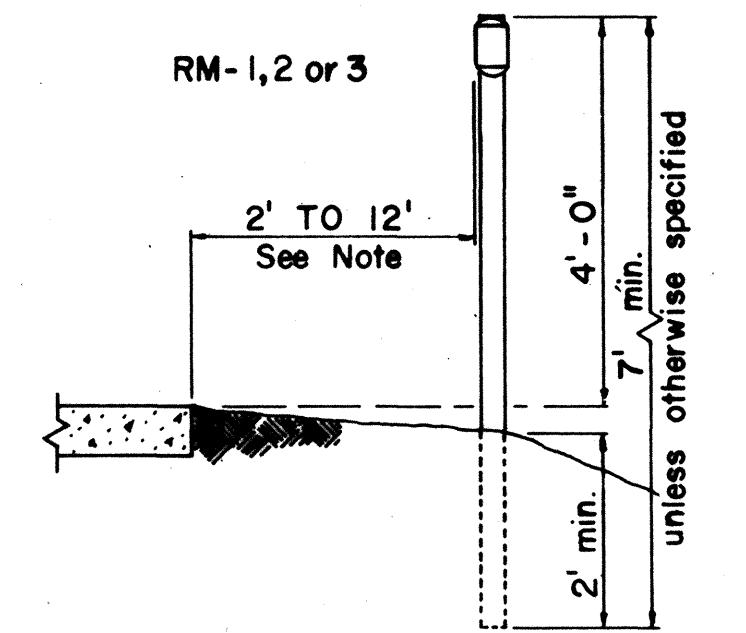
ROADSIDE SIGN  
BUSINESS  
OR  
RESIDENCE DISTRICT



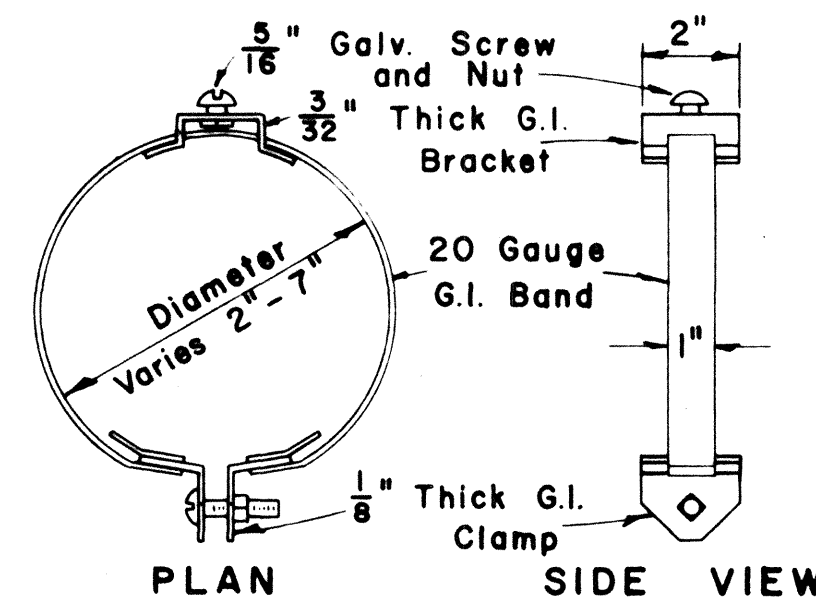
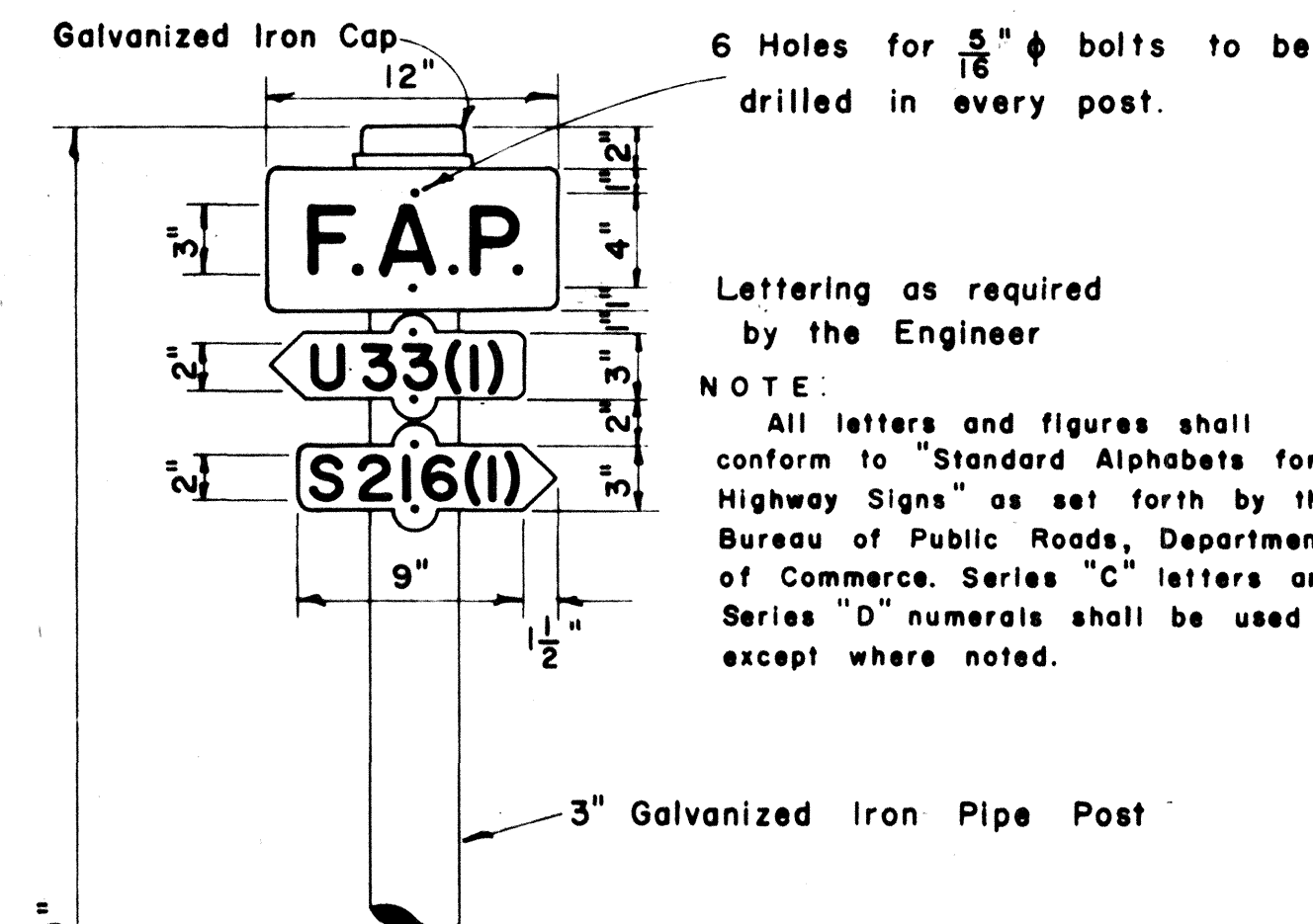
ROADSIDE SIGN  
(DOUBLE POSTS)



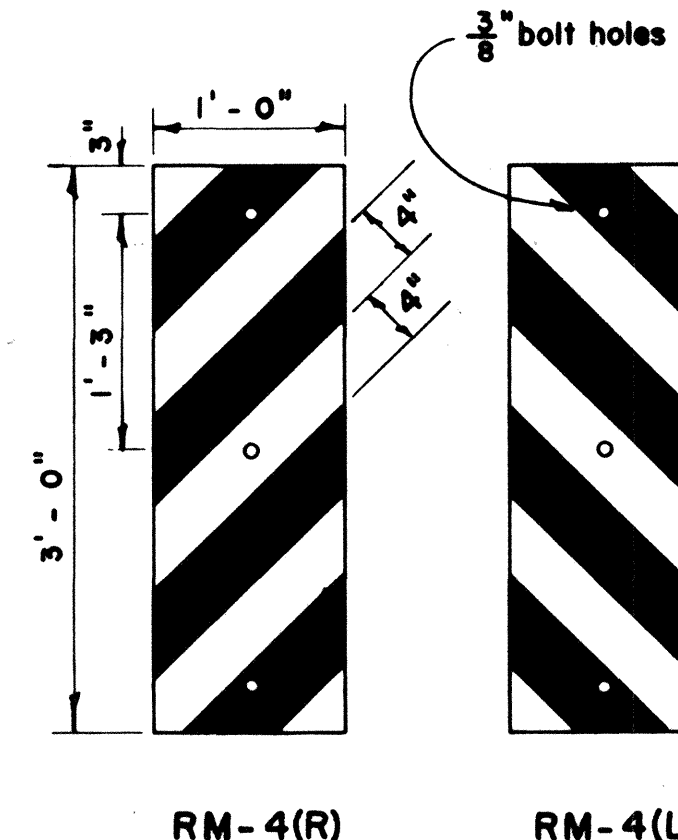
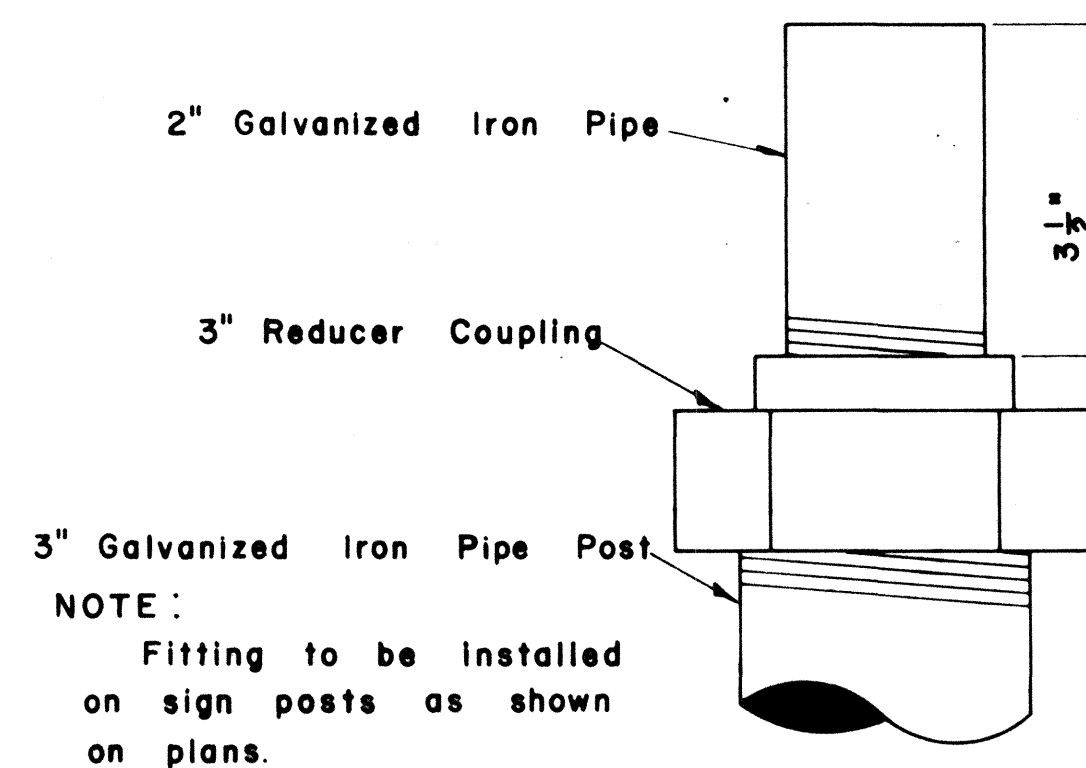
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | F-011-2(5)         | 1967        | 30        | 47           |



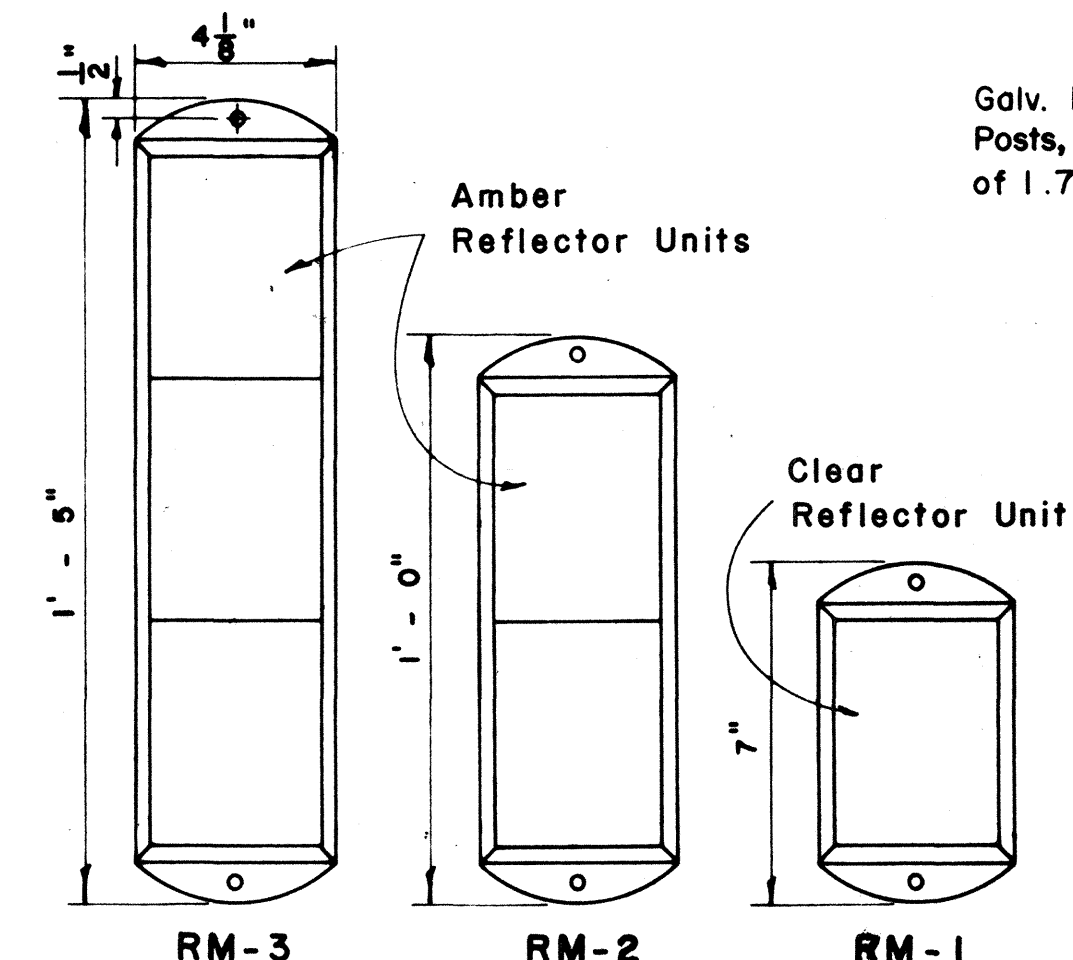
## HEIGHT AND LATERAL LOCATION OF SIGNS - TYPICAL INSTALLATIONS



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

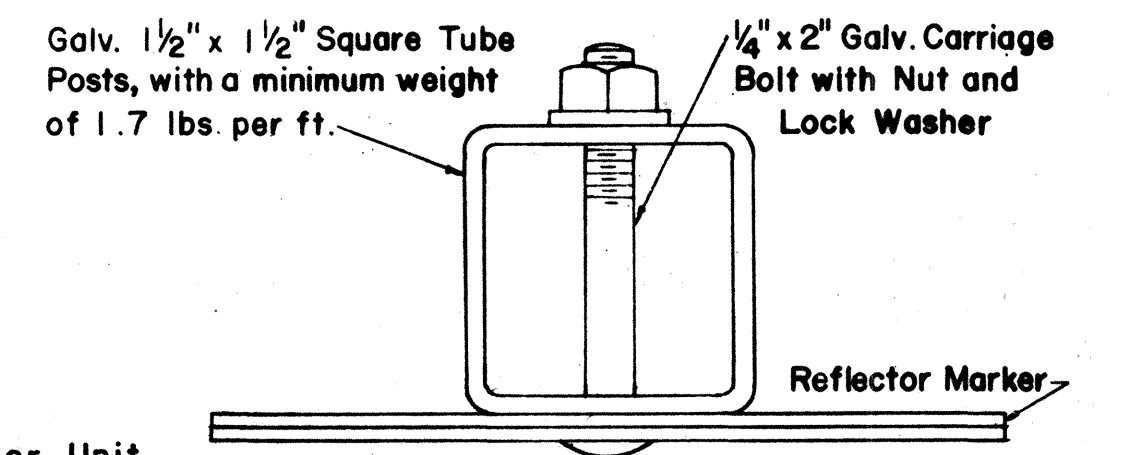


Scale: 1" = 1'-0"



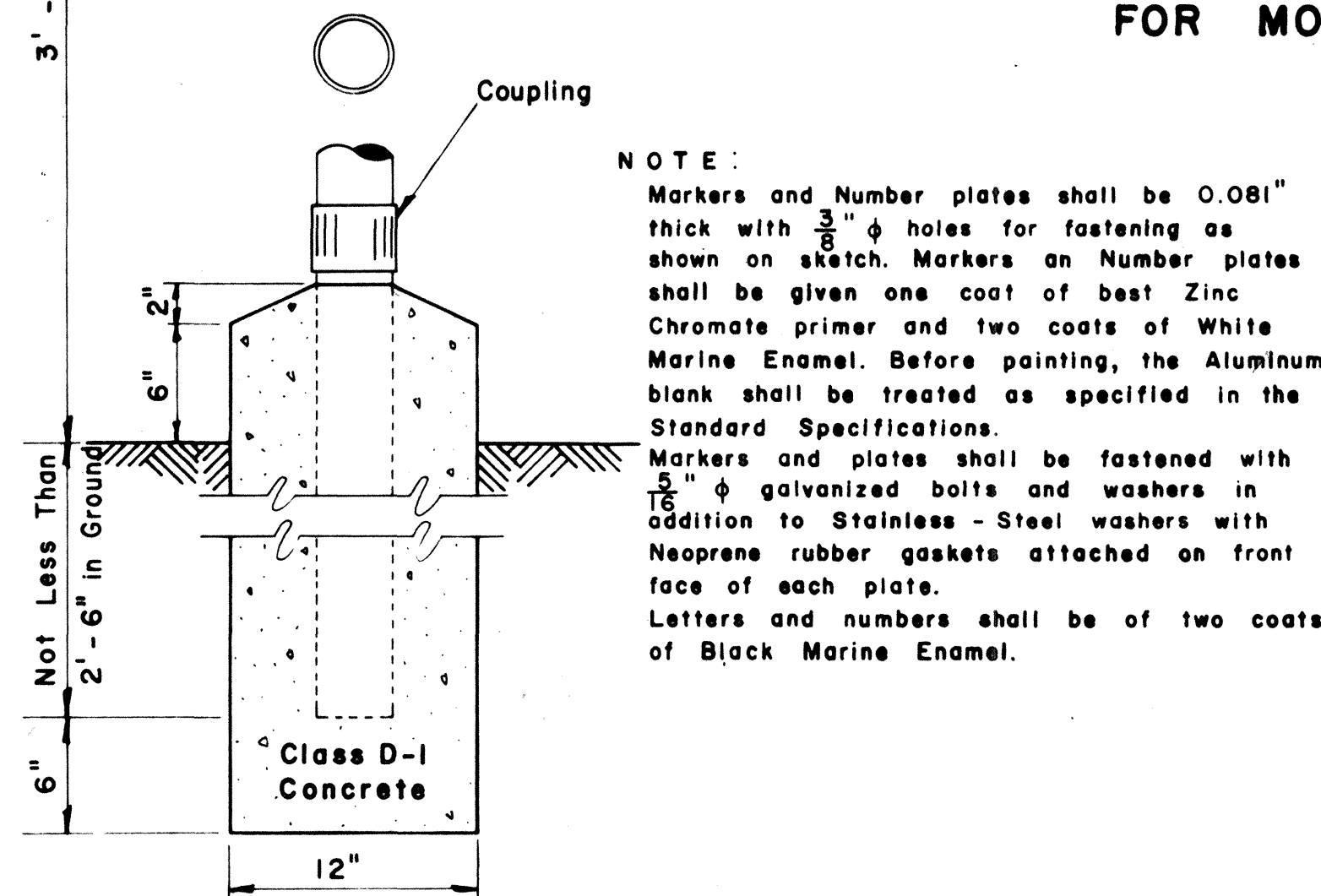
Scale: 3" = 1'-0"

REFLECTOR MARKERS  
Scale: As Shown

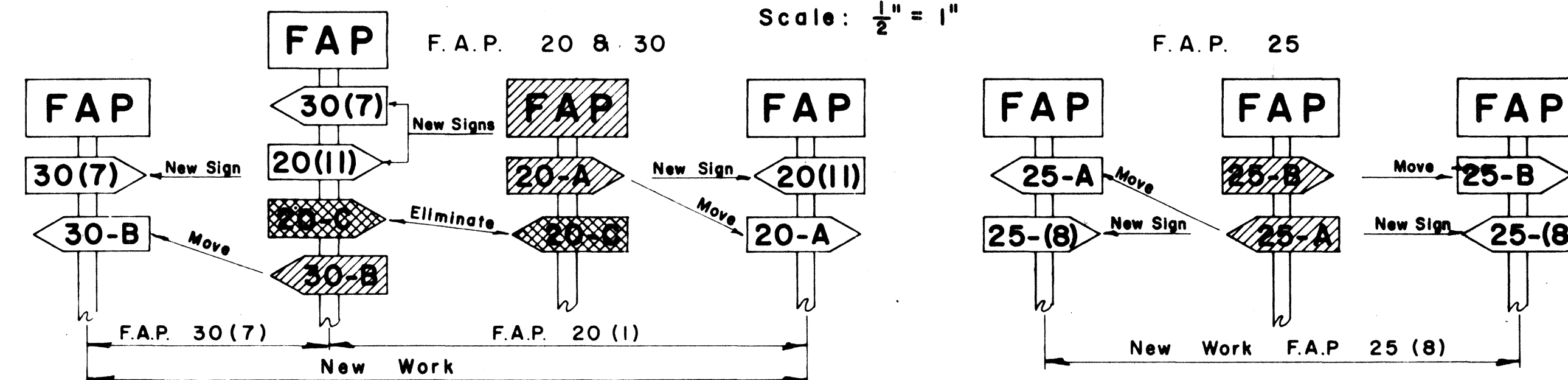


TYPICAL SECTION  
OF ROAD DELINEATOR  
Full Size

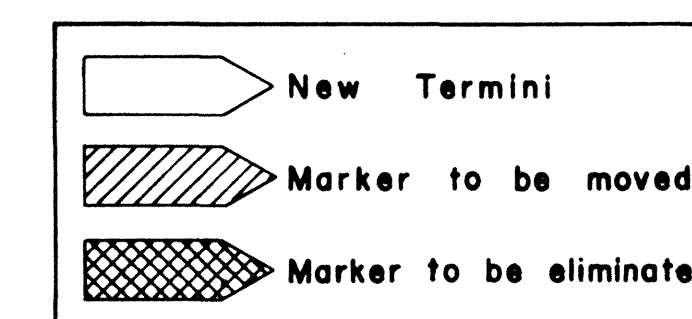
NOTE: Reflector Markers RM-1,2,3 shall be glass sphere reflector markers with 4" x 5" reflector units (as shown) or plastic prismatic reflector markers with 3" diameter reflector units.



FEDERAL AID MARKER  
Scale: 1/2" = 1'-0"



METHOD OF MARKING F.A. PROJECTS AT OVERLAPS  
(USING NUMBER SUFFIX ON NEW WORK)

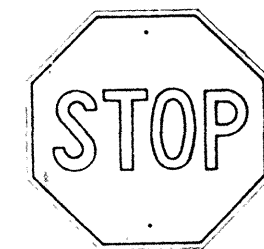


APPROVED: \_\_\_\_\_ DATE: 1/10/67  
DIRECTOR OF TRANSPORTATION

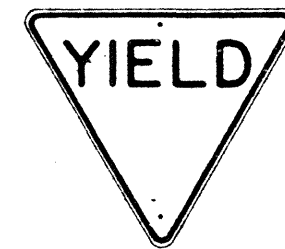
JANUARY 27, 1967  
DECEMBER 8, 1964  
REVISED: FEBRUARY 25, 1964

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

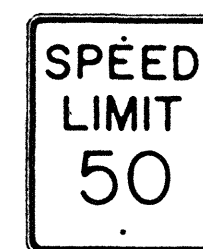




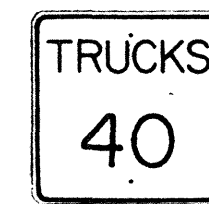
R1-1 30"x 30"



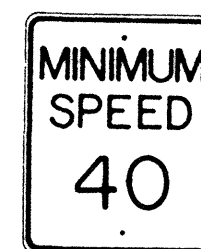
R1-2 36"x 36"x 36"  
R1-2-E 48"x 48"x 48"  
R1-2-I 60"x 60"x 60"



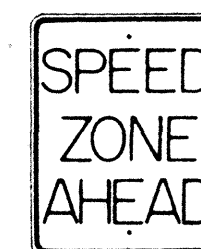
R2-1(50) 24"x 30"  
R2-1(50)-E 36"x 48"  
R2-1(50)-I 48"x 60"



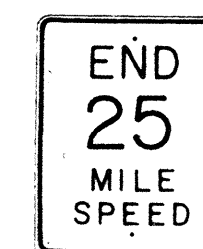
R2-2(40) 24"x 24"  
R2-2(40)-E 36"x 36"  
R2-2(40)-I 48"x 48"



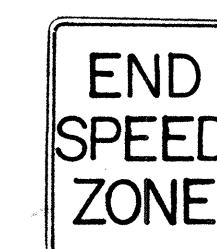
R2-4(40) 24"x 30"  
R2-4(40)-E 36"x 48"  
R2-4(40)-I 48"x 60"



R2-5 24"x 30"  
R2-5-E 36"x 48"  
R2-5-I 48"x 60"



R2-6(25) 24"x 30"  
R2-6(25)-E 36"x 48"  
R2-6(25)-I 48"x 60"



R2-7 24"x 30"  
R2-7-E 36"x 48"  
R2-7-I 48"x 60"



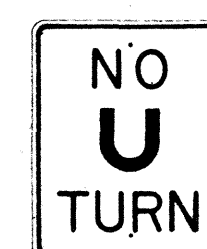
R3-1 24"x 30"  
R3-1-E 36"x 48"



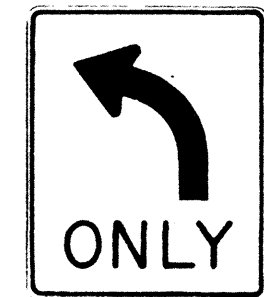
R3-2 24"x 30"  
R3-2-E 36"x 48"



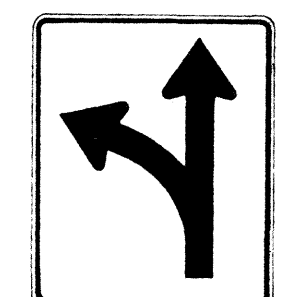
R3-3 24"x 24"



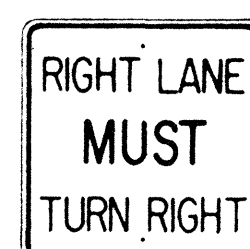
R3-4 24"x 30"  
R3-4-E 36"x 48"  
R3-4-I 48"x 60"



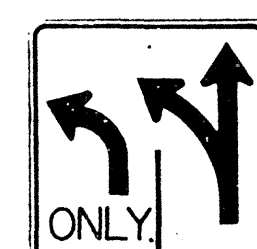
R3-5(L) 30"x 36"



R3-6(L) 30"x 36"



R3-7(R) 30"x 30"



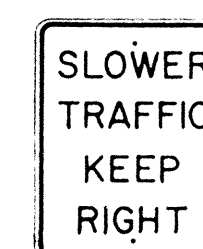
R3-8(L) 30"x 30"



R4-1 24"x 30"



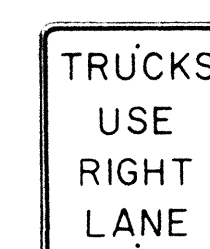
R4-2 24"x 30"



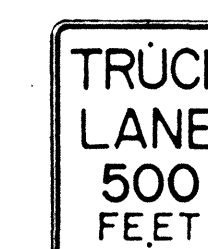
R4-3 24"x 30"  
R4-3-E 36"x 48"  
R4-3-I 48"x 60"



R4-4 24"x 30"  
R4-4-E 36"x 48"  
R4-4-I 48"x 60"



R4-5 24"x 30"  
R4-5-E 36"x 48"



R4-6 24"x 30"  
R4-6-E 36"x 48"



R4-7(R) 24"x 30"  
R4-7(R)-E 36"x 48"



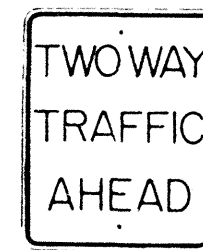
R5-1 24"x 24"



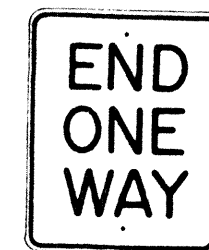
R6-1(R) 36"x 12"



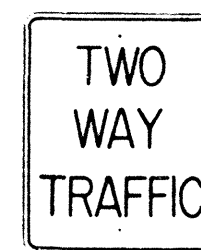
R6-2(R) 18"x 24"



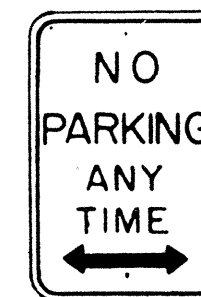
R6-3 24"x 30"



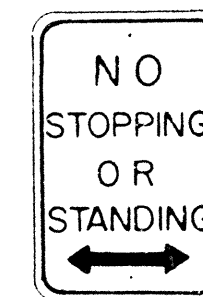
R6-4 24"x 30"



R6-5 24"x 30"



R7-1 12"x 18"



R7-4 12"x 18"  
R7-4-E 24"x 30"



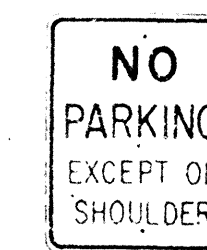
R7-107(R) 12"x 18"



R7-201 12"x 6"



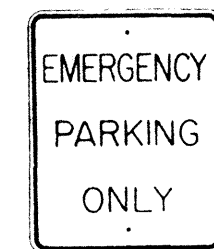
R8-1 24"x 30"  
R8-1-E 36"x 48"  
R8-1-I 48"x 60"



R8-2 24"x 30"  
R8-2-E 36"x 48"



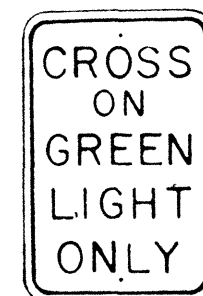
R8-3 24"x 30"  
R8-3-E 36"x 48"



R8-4 24"x 30"  
R8-4-E 36"x 48"  
R8-4-I 48"x 36"



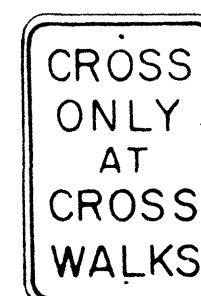
R9-1 18"x 24"



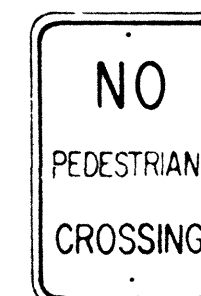
R9-2 12"x 18"



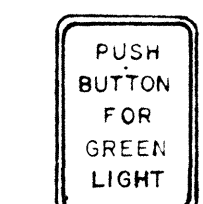
R9-3 12"x 18"



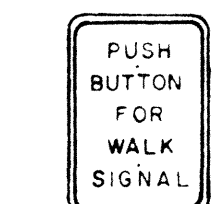
R9-4 12"x 18"



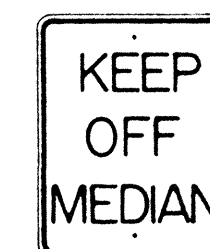
R9-5 12"x 18"



R9-6 9"x 12"



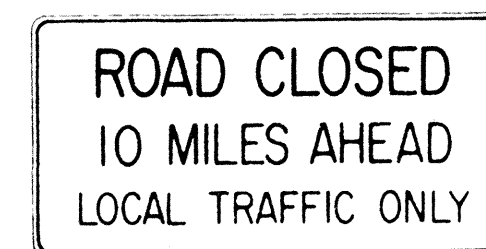
R9-7 9"x 12"



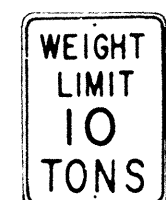
R10-1 24"x 30"  
R10-1-E 36"x 48"  
R10-1-I 48"x 60"



R10-2 48"x 30"



R10-3(10) 60"x 30"



R10-4(10) 18"x 24"



W13-1(45)  
18"x 18"



W8-5  
30"x 30"

NOTE:

1. The shape, color, dimensions, symbols, wording, lettering and reflectorization of all signs shall be in accordance with the "Manual on Uniform Traffic Control Devices for Streets and Highways," dated June 1961 and the BPR manual "Standard Highway Signs," dated September 1961 unless otherwise specified.
2. All regulatory signs shall be reflectorized unless otherwise specified.
3. All regulatory signs shall have 3/8" bolt holes drilled at appropriate locations unless otherwise noted.
4. The suffix "E" denotes Expressway signs and "I" denotes Interstate signs.
5. For R2 signs, number in ( ) indicates speed and shall be as shown on the plans.
6. (R) or (L) indicates right or left and shall be as shown on the plans.
7. For R10-4 sign, number in ( ) indicates weight and shall be as shown on the plan.
8. Notes 1, 2, and 3 shall be applicable to Warning Signs W13-1(45) and W8-5.

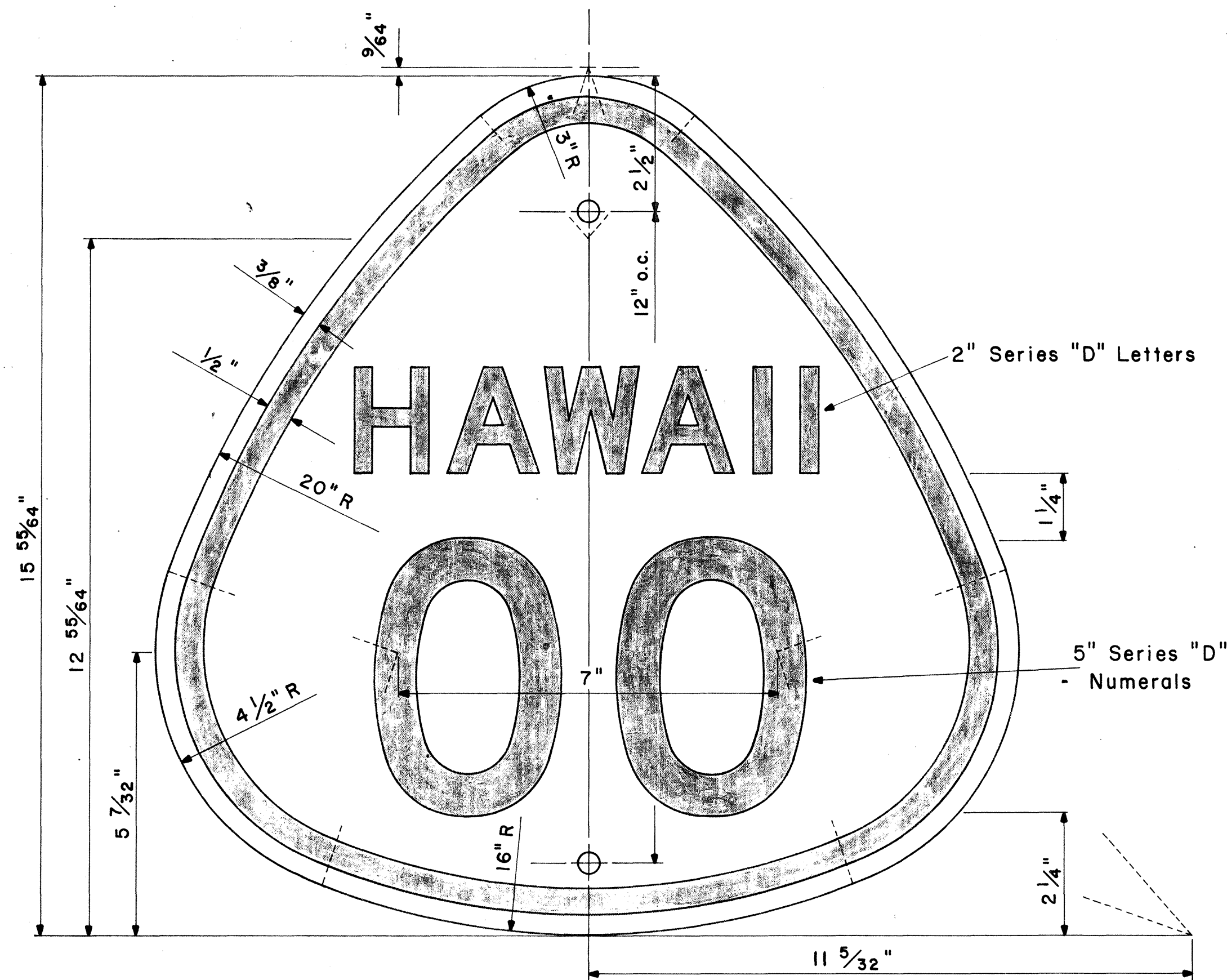
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

STANDARD DETAILS  
REGULATORY AND  
WARNING SIGNS

NOT TO SCALE

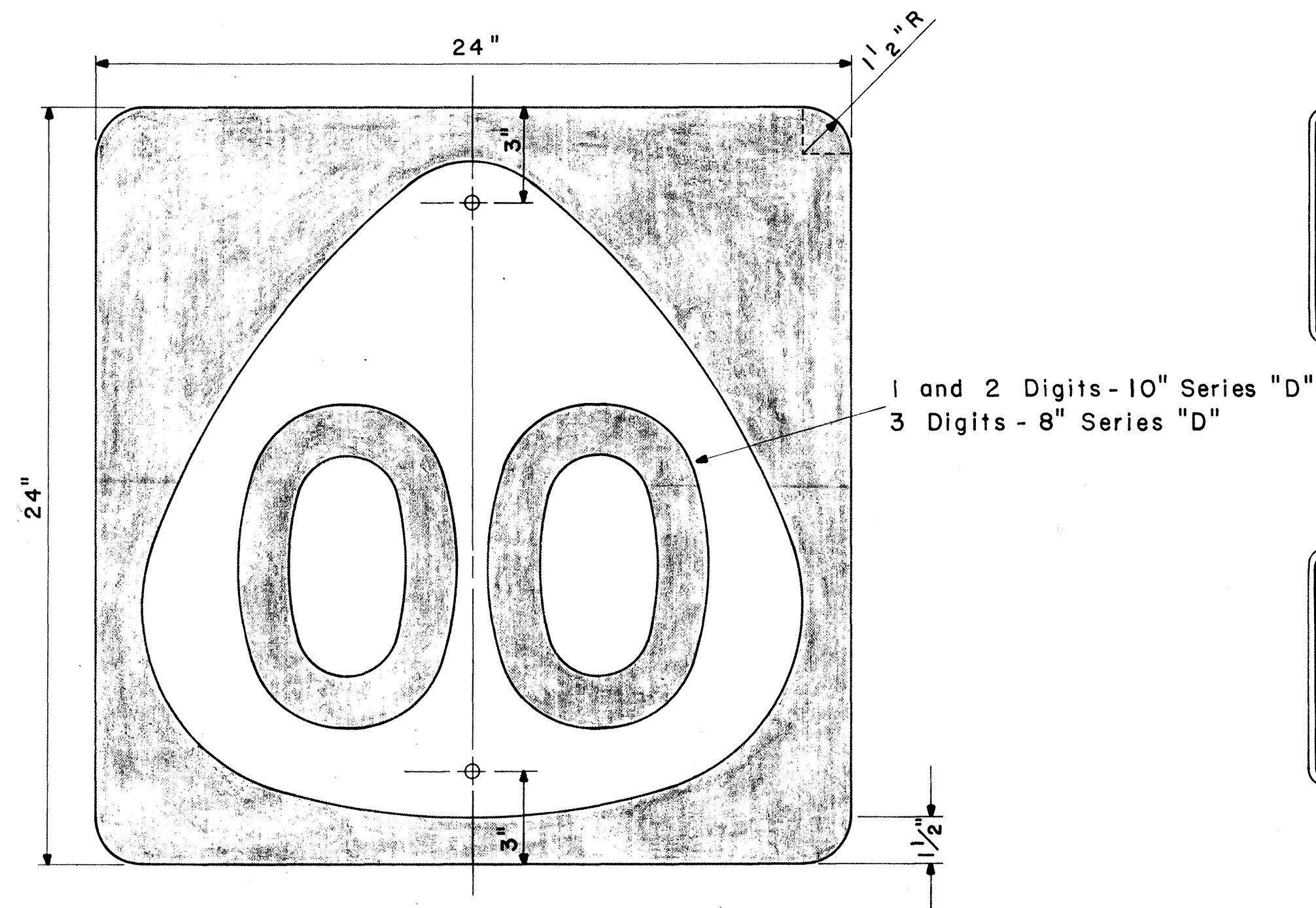
SHEET No. 6 OF 7 SHEETS





**STATE ROUTE MARKER  
M1-3(OO)**

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

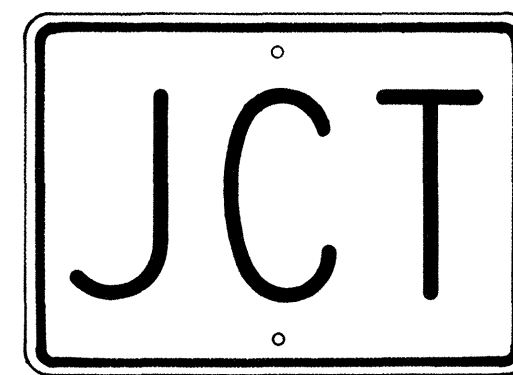


**STATE ROUTE MARKER  
M1-4(OO)**

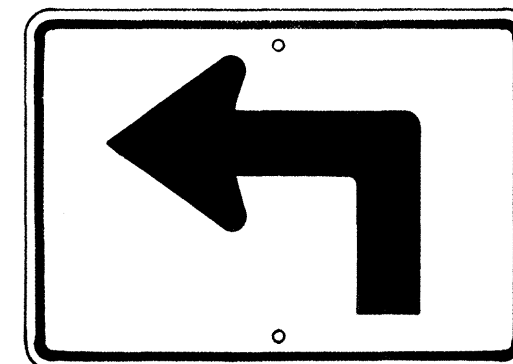
Scale:  $\frac{1}{4}'' = 1''$

NOTE:

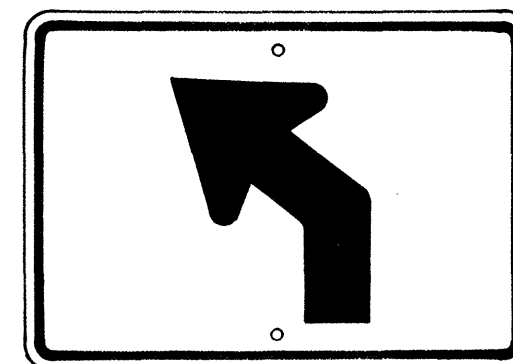
Multiply all dimensions of State Route Marker M1-3 by 1.3 for the dimensions of the shield for M1-4.



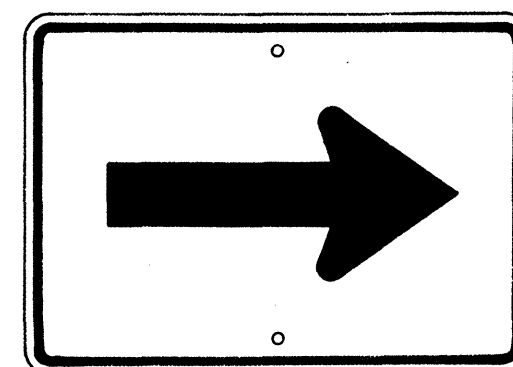
**M2-1**  
21" x 15"



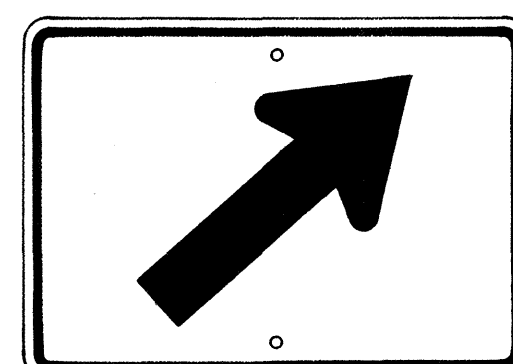
**M3-1-L**  
**\* M3-1-R**  
21" x 15"



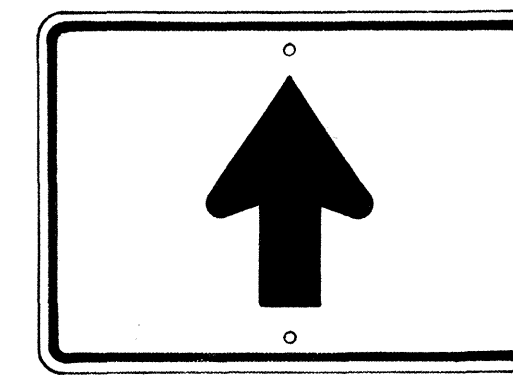
**M3-2-L**  
**\* M3-2-R**  
21" x 15"



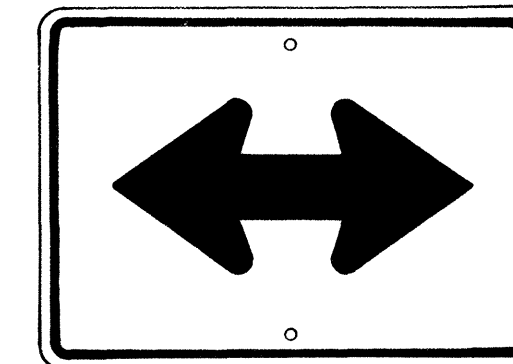
**M4-1**  
21" x 15"



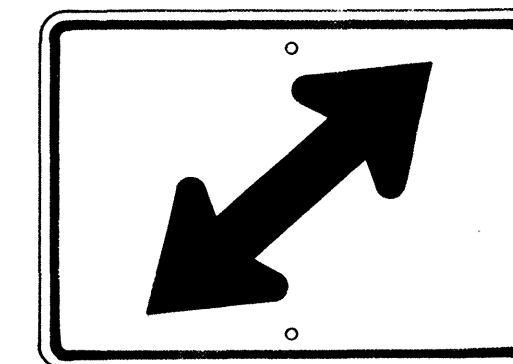
**M4-2-R**  
**\* M4-2-L**  
21" x 15"



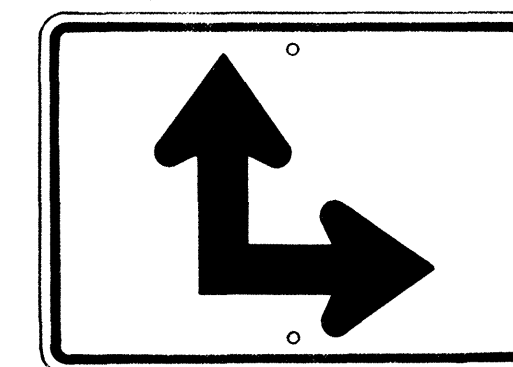
**M4-3**  
21" x 15"



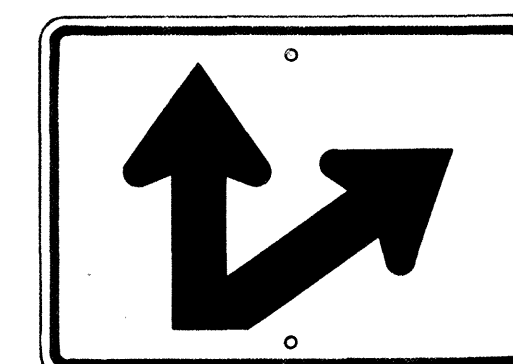
**M4-4**  
21" x 15"



**M4-5-R**  
**\* M4-5-L**  
21" x 15"



**M4-6-R**  
**\* M4-6-L**  
21" x 15"



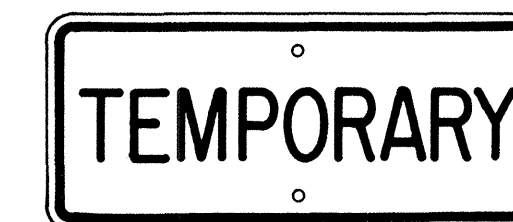
**M4-7-R**  
**\* M4-7-L**  
21" x 15"

### AUXILIARY MARKERS

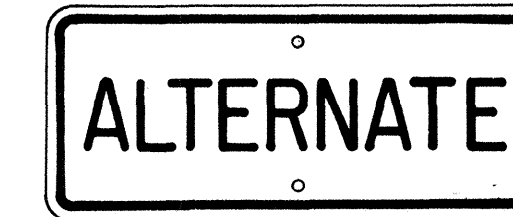
Scale:  $\frac{1}{8}'' = 1''$

\* NOTE:

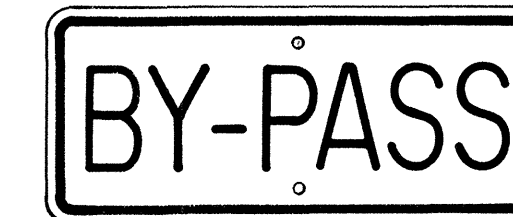
Signs shall be similar but opposite in direction.



**M5-1**  
21" x 9"



**M5-2**  
21" x 9"



**M5-3**  
21" x 9"



**M5-4**  
21" x 9"



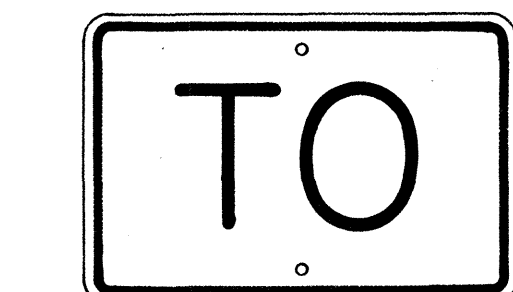
**M5-5**  
21" x 9"



**M5-6**  
21" x 9"



**M6-1-N**  
21" x 9"  
(See Note 6)



**M7-1**  
18" x 12"

### GENERAL NOTES

- The shape, color, dimensions, symbols, wording, lettering and reflectorizing of all signs shall be in accordance with the "Manual on Uniform Traffic Control Devices for Streets and Highways," dated June 1961 and the BPR manual "Standard Highway Signs," dated September 1961, unless otherwise specified.
- All letters and figures shall conform to the manual "Standard Alphabets for Highway Signs," Dept. of Commerce, Bureau of Public Roads, 1952.
- All markers shall be reflectorized unless otherwise specified.
- All markers shall have  $\frac{3}{8}''$  bolt holes drilled at appropriate locations unless otherwise specified.
- All markers shall have a black legend on a white background unless otherwise specified.
- Sign message of Cardinal Direction Marker (M6-1) shall be denoted by the following suffixes:  
M6-1-N : NORTH  
M6-1-E : EAST  
M6-1-S : SOUTH  
M6-1-W : WEST
- Auxiliary markers denoted with the suffix "I": (M4-1-I) shall have a white legend on a blue background.
- Cardinal Direction Marker (M6-1) with suffix I(3) shall have a white legend on a blue background and shall be 30" x 15" in size.
- For M1-3, and M1-4 signs, number in ( ) indicates route number and shall be as shown on the plan.

|               |      |
|---------------|------|
| ORIGINAL PLAN | DATE |
| TRACED BY     |      |
| REVIEWED BY   |      |
| QUANTITY BY   |      |
| CHECKED BY    |      |
| No.           |      |

APPROVED:

DATE:

DIRECTOR OF TRANSPORTATION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**STANDARD DETAILS**  
STATE ROUTE MARKERS  
AND  
AUXILIARY MARKERS  
Scale: As Noted  
SHEET NO 7 OF 7 SHEETS