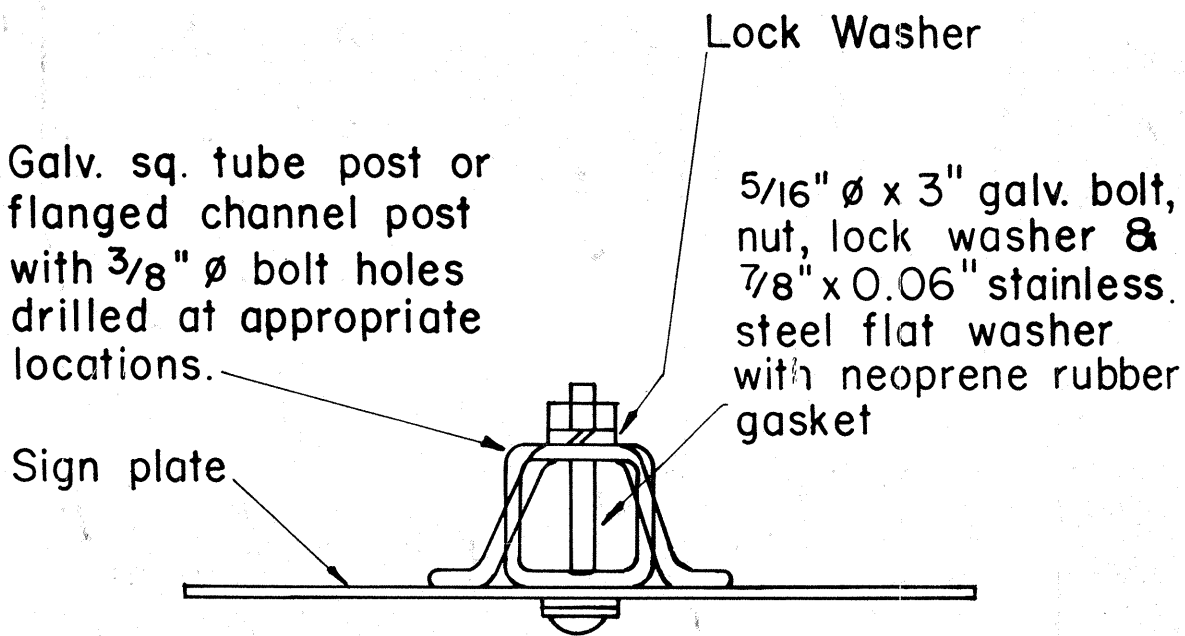


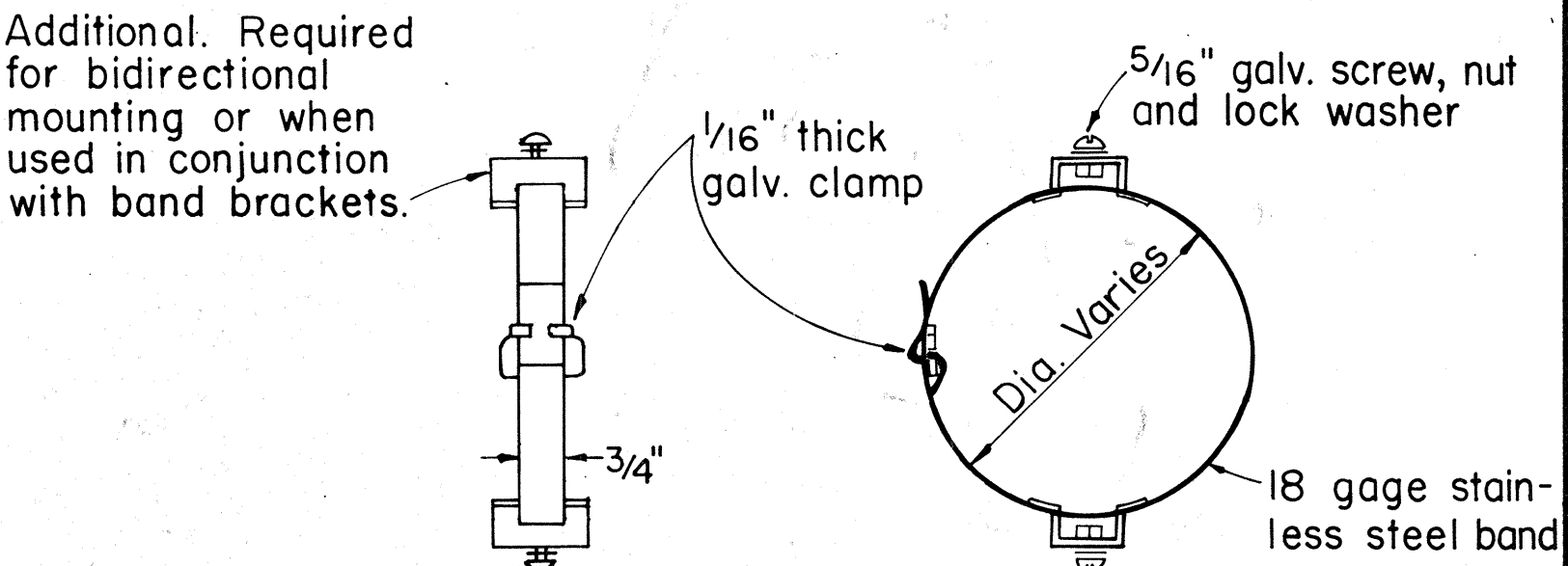
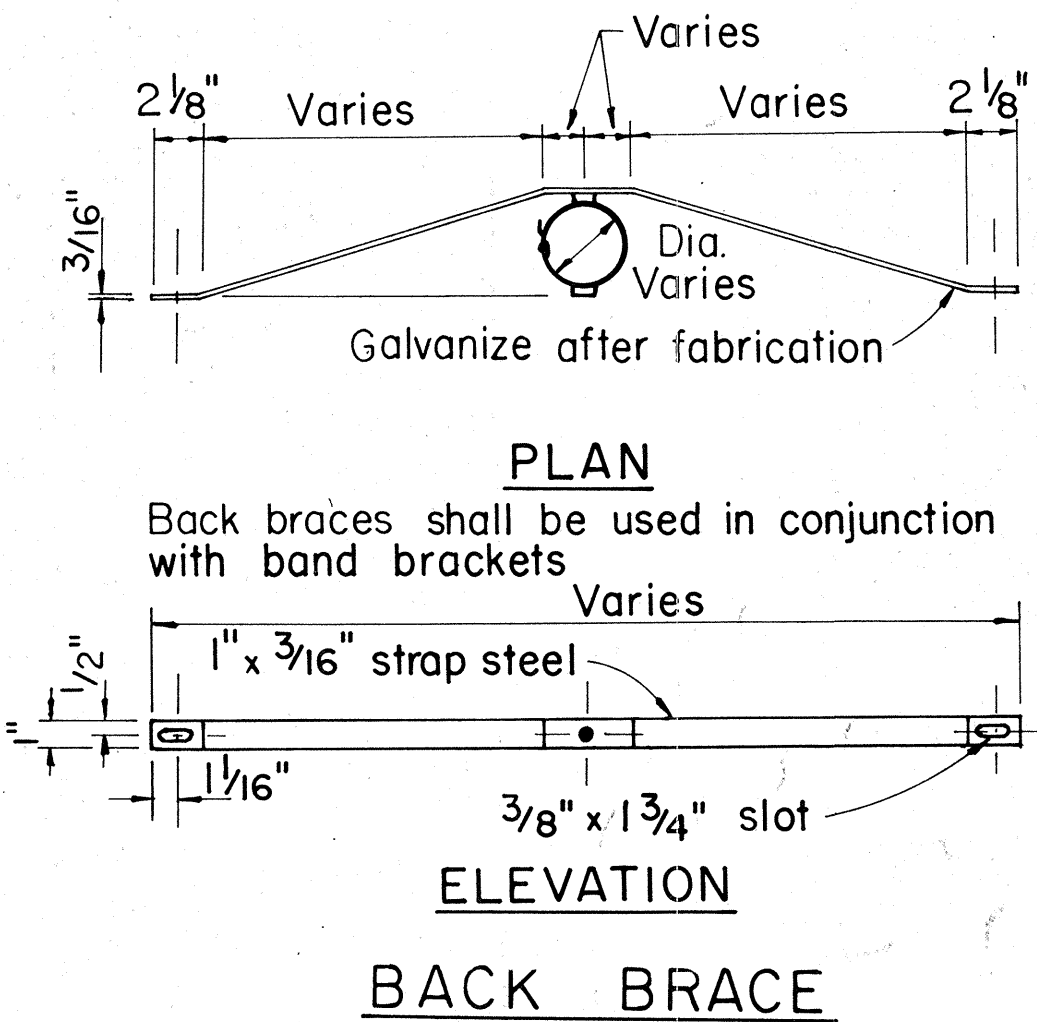
| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-86M | 1986        | 39        | 57           |

### GENERAL NOTES

- Signs shall be placed in conformance with positions shown and described in the "Manual on Uniform Traffic Control Devices for Streets and Highways", 1978, Part II, Section 2A-21, as amended, and as supplemented herein.
- Sign 48" and wider or larger than 10 sq. ft. in area shall be mounted on two or more sign posts except as noted below.
- Signs 48" and wider or larger than 10 sq. ft. in area may be mounted on objects other than sign posts (i.e. on highway lighting poles) as follows:
  - Signs 48" and wider but less than 10 sq. ft. in area shall be mounted with a minimum of two sets of band bracket and back braces.
  - Signs larger than 10 sq. ft. and less than 28 sq. ft. in area shall be mounted with a minimum of two sets of band brackets and back braces.
  - Signs larger than 28 sq. ft. in area shall be mounted with a minimum of three sets of band bracket and back braces.
- All parking restriction signs with arrows shall be mounted 45° to the line of traffic flow.
- Sign posts shall extend 3 1/2" above each sign, where required, for attachment of City and County street name signs.
- (R) or (L) indicates right or left and shown on the plans.
- See plans for special details of signs along bikeways.
- The minimum lateral distances shown are guidelines and shall be exceeded whenever possible. The Contractor shall place signs at the maximum practical lateral distance from the edge of the traveled way up to 30 feet and shall utilize protected locations whenever possible. Final locations of all signs shall be approved by the Engineer.
- Signs in medians shall be placed at midpoint of median up to a maximum distance of 30 feet from the edge of traveled way. When appropriate, signs for opposing directions shall be placed back to back.
- Anchor bases shall be installed for all signpost installations, unless otherwise shown or directed. See sheets DT 100A and DT 100B.



### GALVANIZED SQUARE TUBE OR FLANGED CHANNEL POST



### LEFT SIDE VIEW PLAN BAND BRACKET

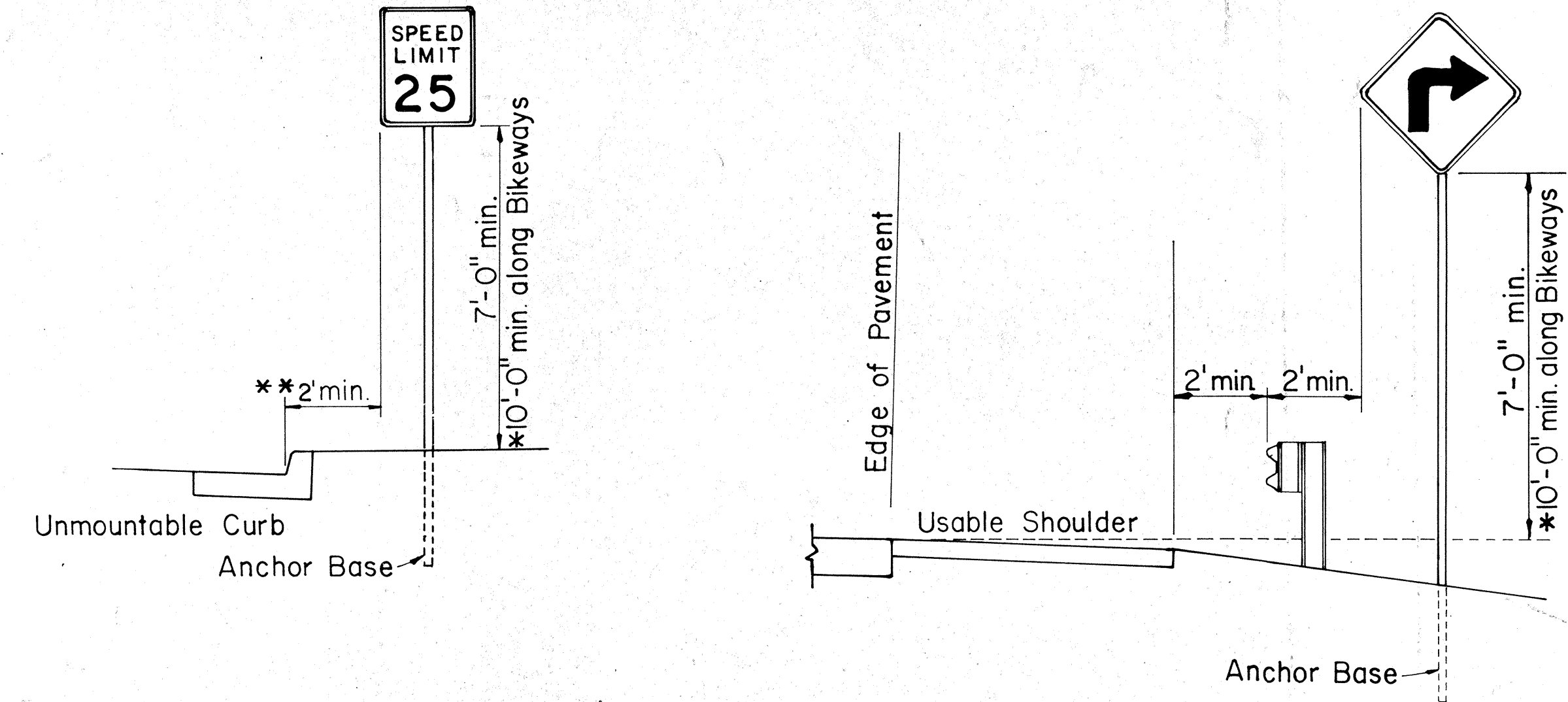
APPROVAL RECOMMENDED:  
*Eiichi Tanaka* 10/14/83  
 TRAFFIC ENGINEER DATE

APPROVED:  
*H. Fujiyama* 10-18-83  
 ASSISTANT CHIEF, ENGINEERING DATE

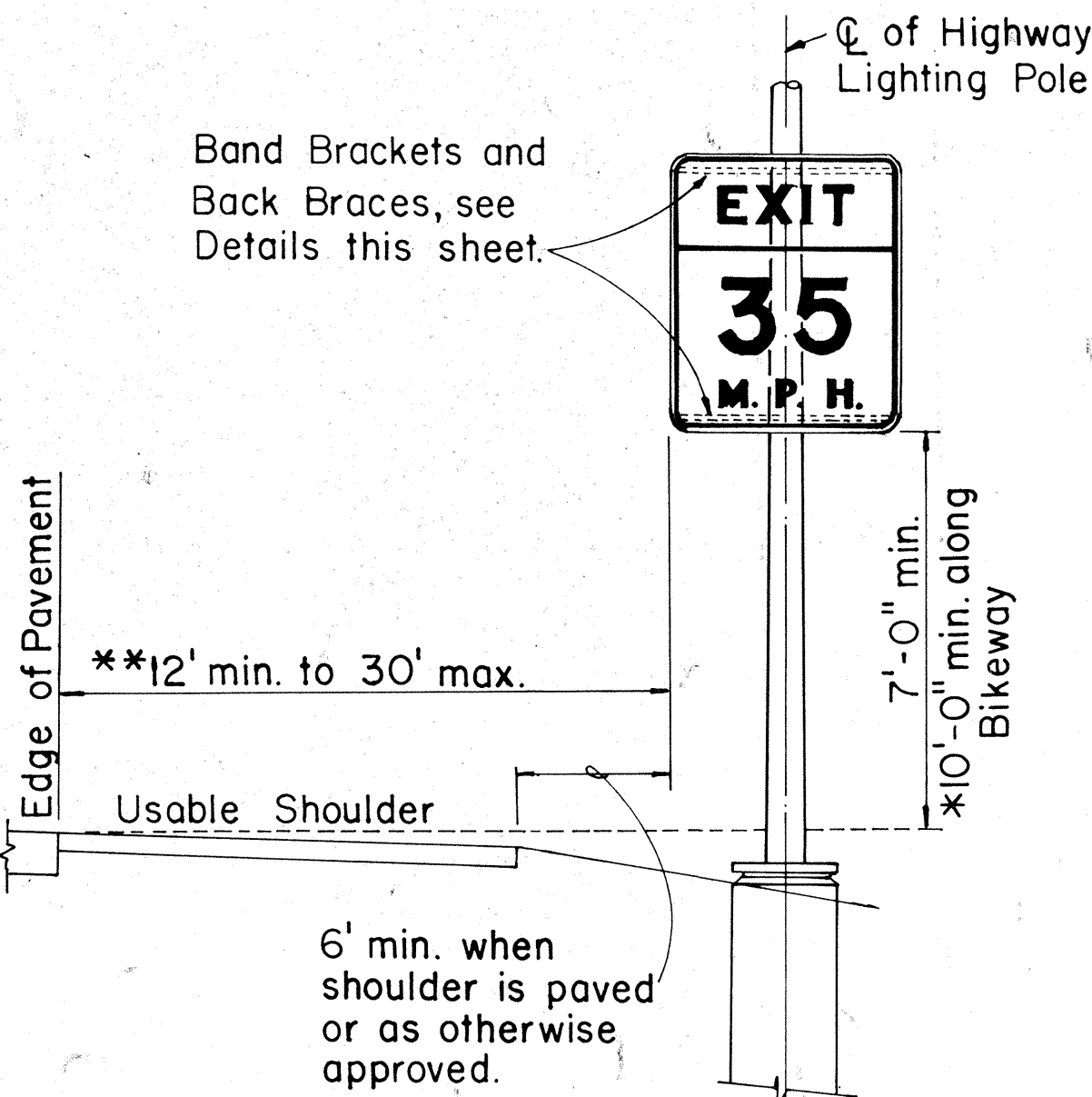
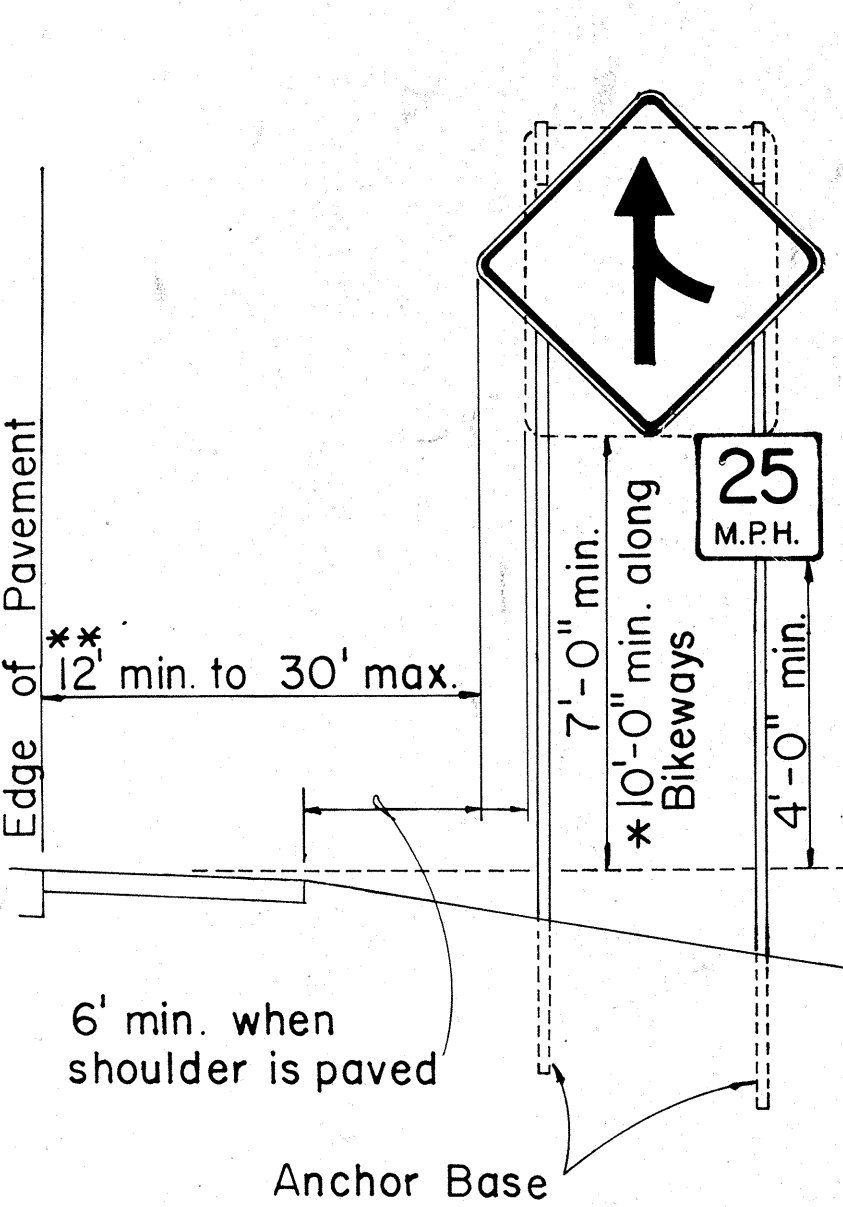
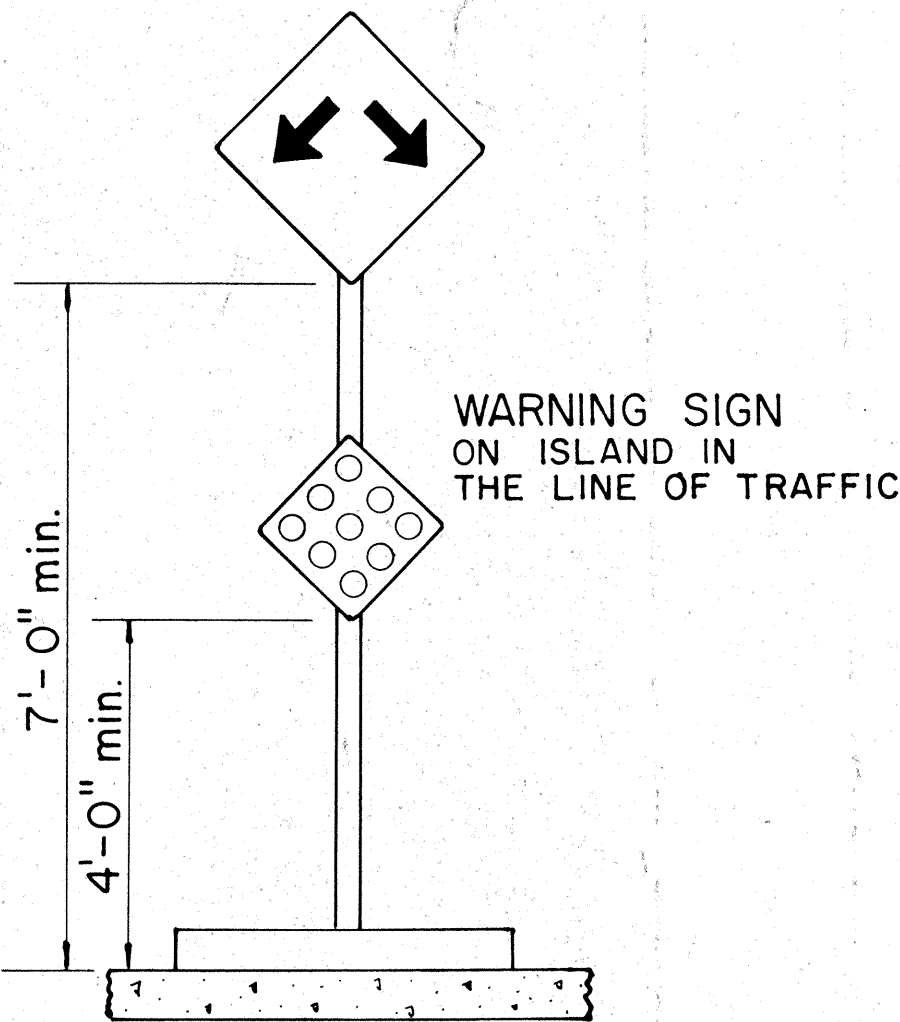
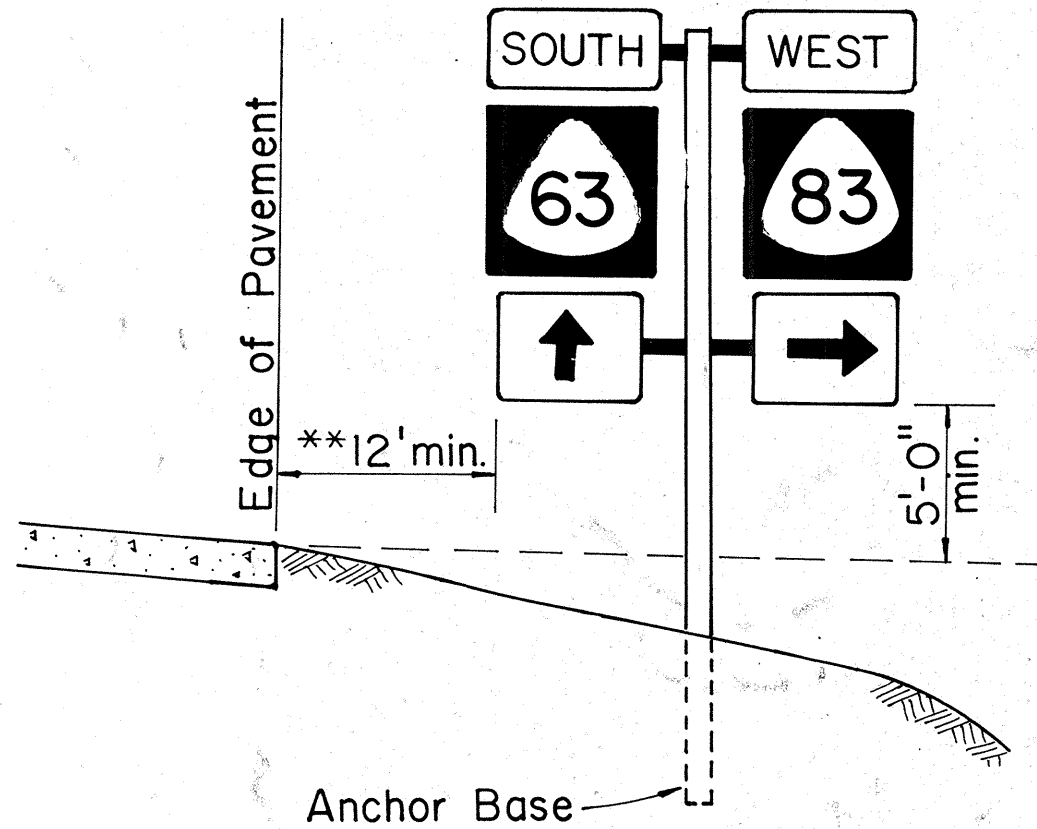
STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

### STANDARD DETAILS MISCELLANEOUS SIGN DETAILS

Not to Scale: Oct. 1983  
 SHEET NO. OF SHEETS DT 100



### ROADSIDE ASSEMBLY RURAL DISTRICT



### HEIGHT AND LATERAL LOCATION OF SIGNS TYPICAL INSTALLATION

|                   |      |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DRAWN BY          |      |
| TRACED BY         |      |
| QUANTITIES BY     |      |
| CHECKED BY        |      |
| ORIGINAL PLAN     | No.  |
| NOTE BOOK         |      |

| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-86M | 1980        | 40        | 57           |

| A or A <sub>1</sub> | C   | C <sub>1</sub> |
|---------------------|-----|----------------|
| 36"                 | 6"  | -              |
| 48"                 | 9"  | 19"            |
| 60"                 | 12" | 24"            |

NOTE: Frame stiffeners are required when D is greater than 24". See Gen. Note 4.

### GENERAL NOTES

- Sign posts and base posts shall be flanged channel type structural steel conforming to ASTM A 499 and galvanized in accordance with ASTM A 123.  
NOMINAL DIMENSIONS:  
2.50 lbs./ft. - 3.125" x 1.562"  
4.00 lbs./ft. - 3.500" x 1.750"
- Retainer - Spacer Strap shall be AISI 1020 steel and galvanized in accordance with ASTM A 123.
- Retainer and Connector Bolts shall be 5/16 - 18 UNC x 1.75" long hex. head, integral flange conforming to ASTM A 354 Grade BC. Nuts shall be 5/16 - 18 UNC hex. head, integral flange conforming to ASTM A 563 Grade D. All bolts and nuts shall be cadmium plated per Federal spec. QQP 416 B, Class 2, Type 2.
- All accessories, fittings and stiffener details (as required) shall be submitted to Engineer for approval 20 days prior to installation.
- For additional details see sht. DT 100.
- Basic formulas for use with the windload charts:  
Factor = A x B x H  
Therefore, if sign area (A x B) is known,  
Maximum H =  $\frac{\text{Factor}}{\text{sign area (A x B)}}$   
and if H is known,  
Maximum sign area (A x B) =  $\frac{\text{Factor}}{H}$

APPROVAL RECOMMENDED:

*Erich Tanaka* 9/21/82  
TRAFFIC ENGINEER DATE

APPROVED:

ASSISTANT CHIEF, ENGINEERING DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

STANDARD DETAILS  
GALVANIZED FLANGED CHANNEL  
SIGN POST MOUNTING

Scale: As Shown  
SHEET NO. OF SHEETS DT 100A

Date: Sept. 1982

| NO. | REVISION | APPROVED BY | DATE |
|-----|----------|-------------|------|
|     |          |             |      |

### WINDLOAD CHARTS

| FLANGED CHANNEL: 3-POST INSTALLATION |                    |                                    |       |       |       |       |       |
|--------------------------------------|--------------------|------------------------------------|-------|-------|-------|-------|-------|
| Post Size                            | A x B x H (Factor) | H = Ground Level to Midpoint (ft.) |       |       |       |       |       |
|                                      |                    | 7                                  | 8     | 9     | 10    | 11    | 12    |
| 2.50 lbs./ft.                        | 187                | 26.71                              | 23.38 | 20.78 | 18.70 | 17.00 | 15.58 |
| 4.00 lbs./ft.                        | 362                | 51.71                              | 45.25 | 40.22 | 36.20 | 32.91 | 30.17 |

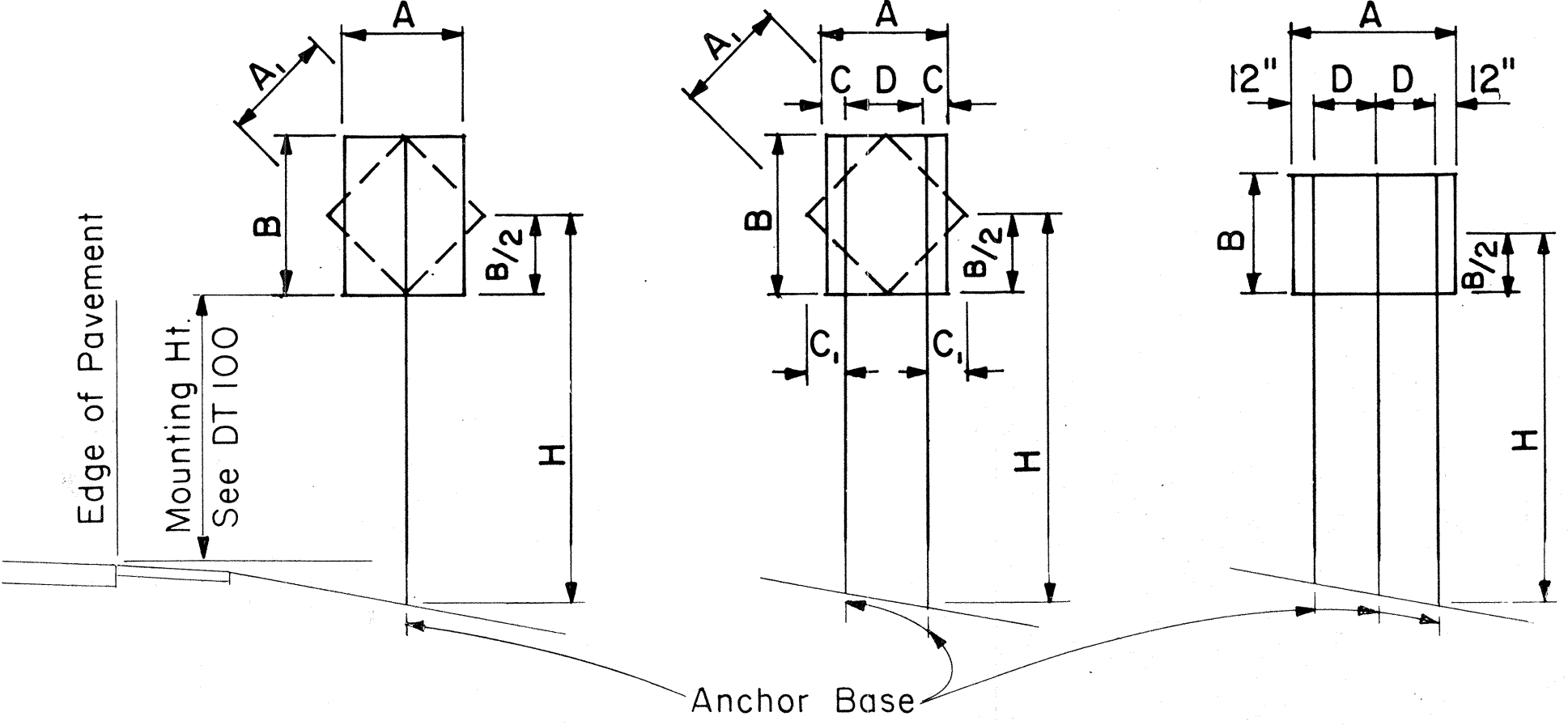
| FLANGED CHANNEL: 2-POST INSTALLATION |                    |                                    |       |       |       |       |       |
|--------------------------------------|--------------------|------------------------------------|-------|-------|-------|-------|-------|
| Post Size                            | A x B x H (Factor) | H = Ground Level to Midpoint (ft.) |       |       |       |       |       |
|                                      |                    | 7                                  | 8     | 9     | 10    | 11    | 12    |
| 2.50 lbs./ft.                        | 124                | 17.71                              | 15.50 | 13.77 | 12.40 | 11.27 | 10.33 |
| 4.00 lbs./ft.                        | 241                | 34.43                              | 30.13 | 26.78 | 24.10 | 21.91 | 20.08 |

| FLANGED CHANNEL: 1-POST INSTALLATION |                    |                                    |      |      |      |      |      |
|--------------------------------------|--------------------|------------------------------------|------|------|------|------|------|
| Post Size                            | A x B x H (Factor) | H = Ground Level to Midpoint (ft.) |      |      |      |      |      |
|                                      |                    | 7                                  | 8    | 9    | 10   | 11   | 12   |
| 2.50 lbs./ft.                        | 57                 | 8.14                               | 7.13 | 6.33 | 5.70 | 5.18 | 4.75 |
| 4.00 lbs./ft.                        | 112                | -                                  | -    | -    | -    | -    | 9.33 |

### TYPICAL INSTALLATION

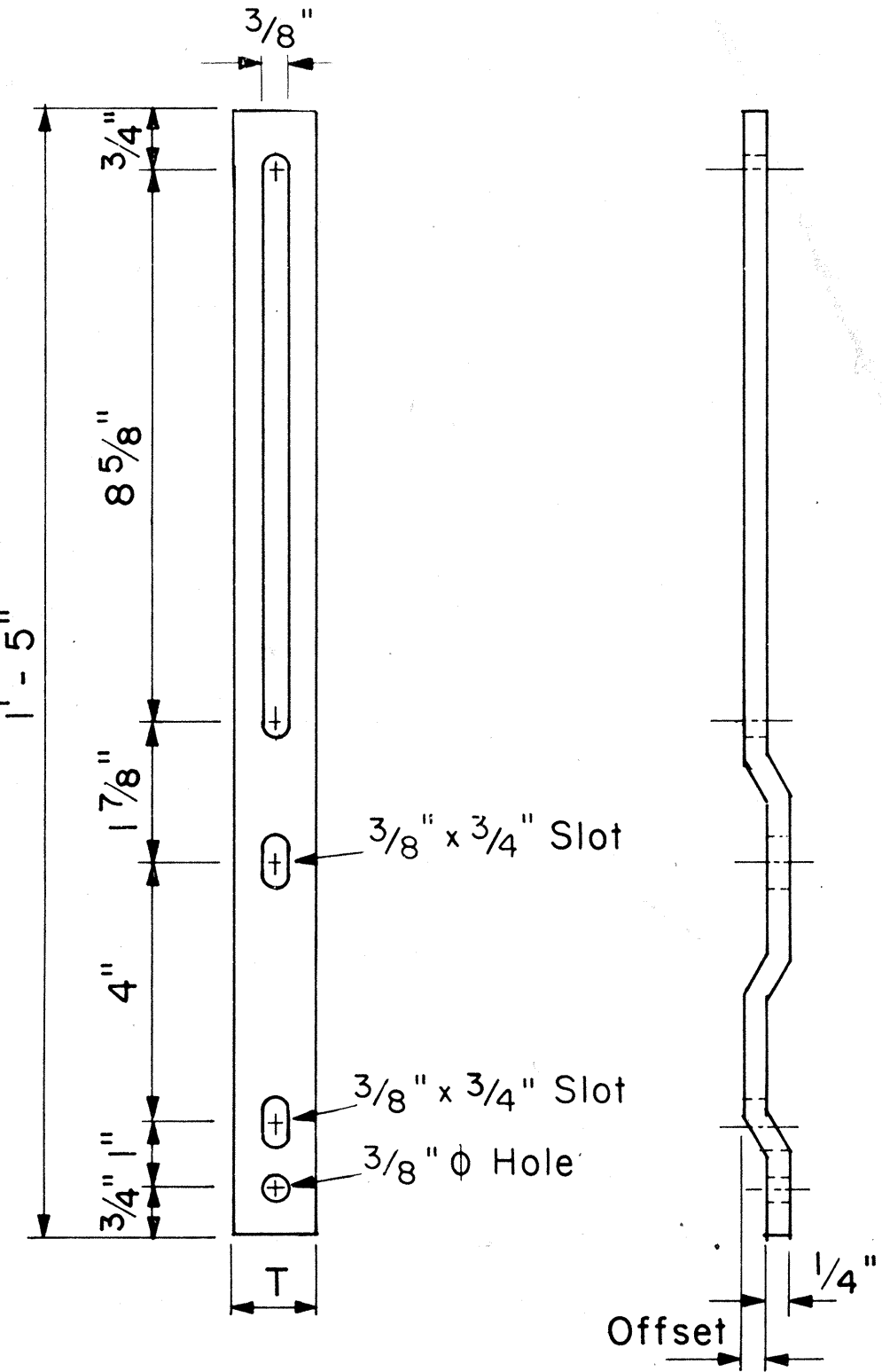
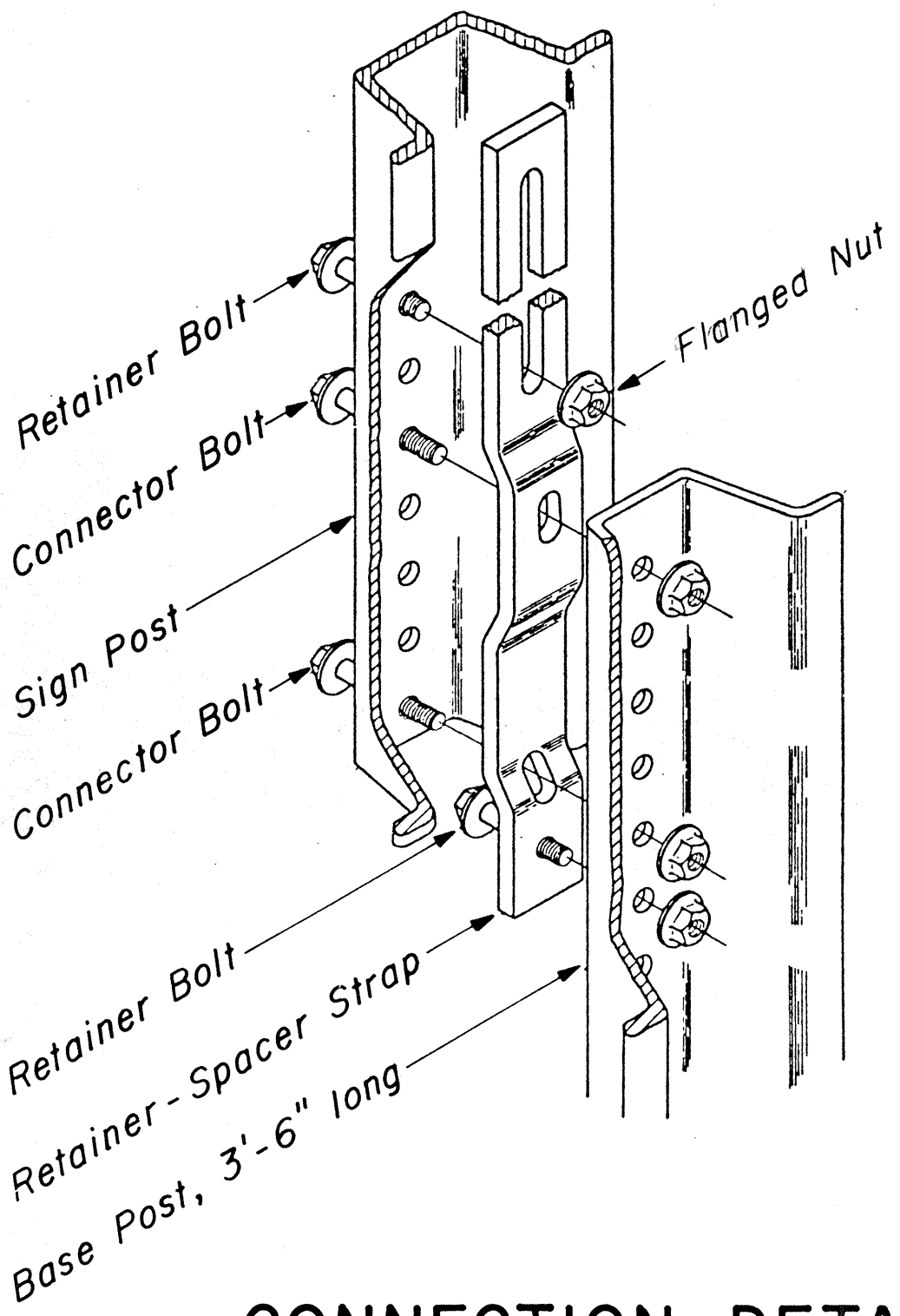
Not to Scale

- 1-POST  
Sign area 10 sq.ft. and less
- 2-POST  
Sign area greater than 10 sq.ft. or A=48"-60"
- 3-POST  
A = greater than 60"



### CONNECTION DETAIL

Not to Scale

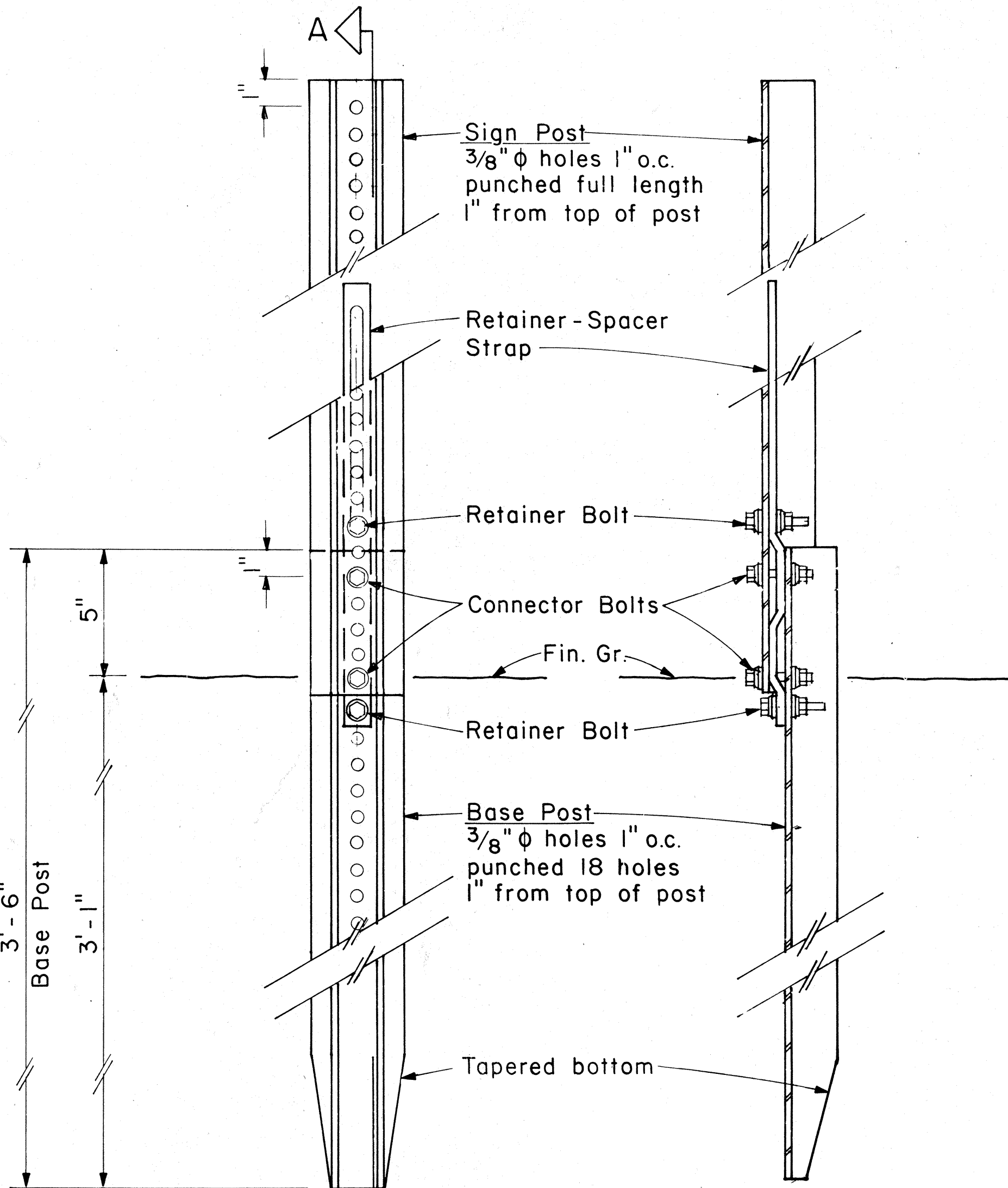
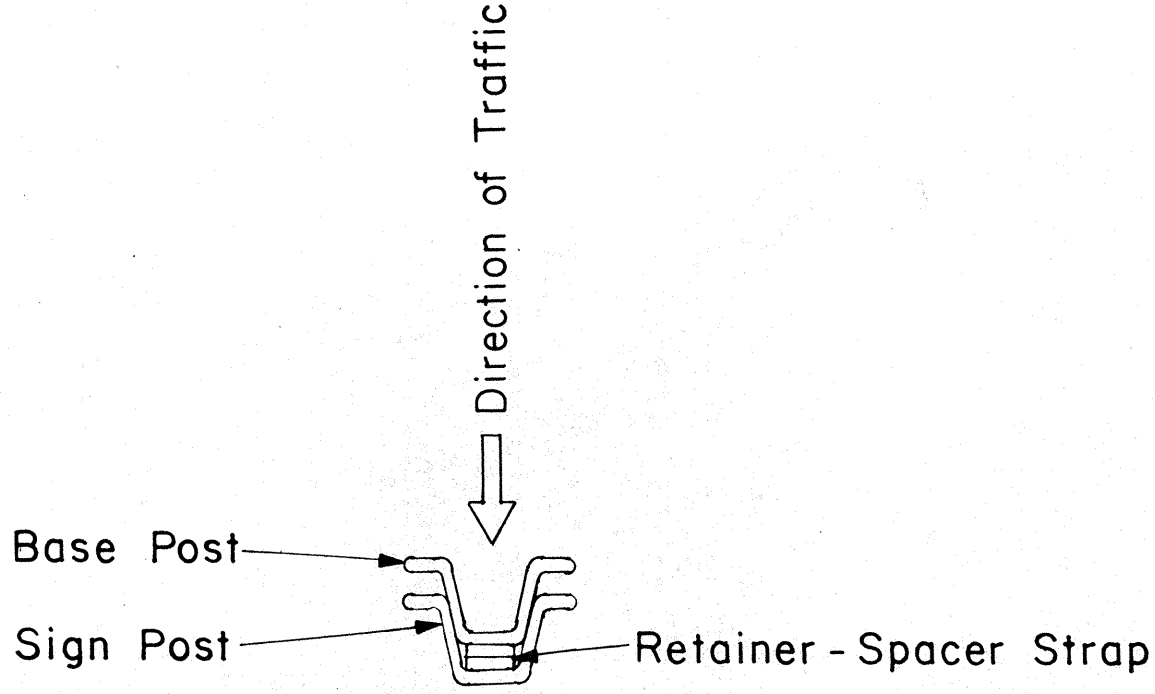


### RETAINER-SPACER STRAP

Not to Scale

| RETAINER-SPACER STRAP |       |        |
|-----------------------|-------|--------|
| Post Size             | T     | Offset |
| 2.50 lbs./ft.         | 1.00" | 0.145" |
| 4.00 lbs./ft.         | 1.12" | 0.280" |

### TOP VIEW



### SECTION "A-A"

### BACK VIEW

### ANCHOR BASE DETAIL

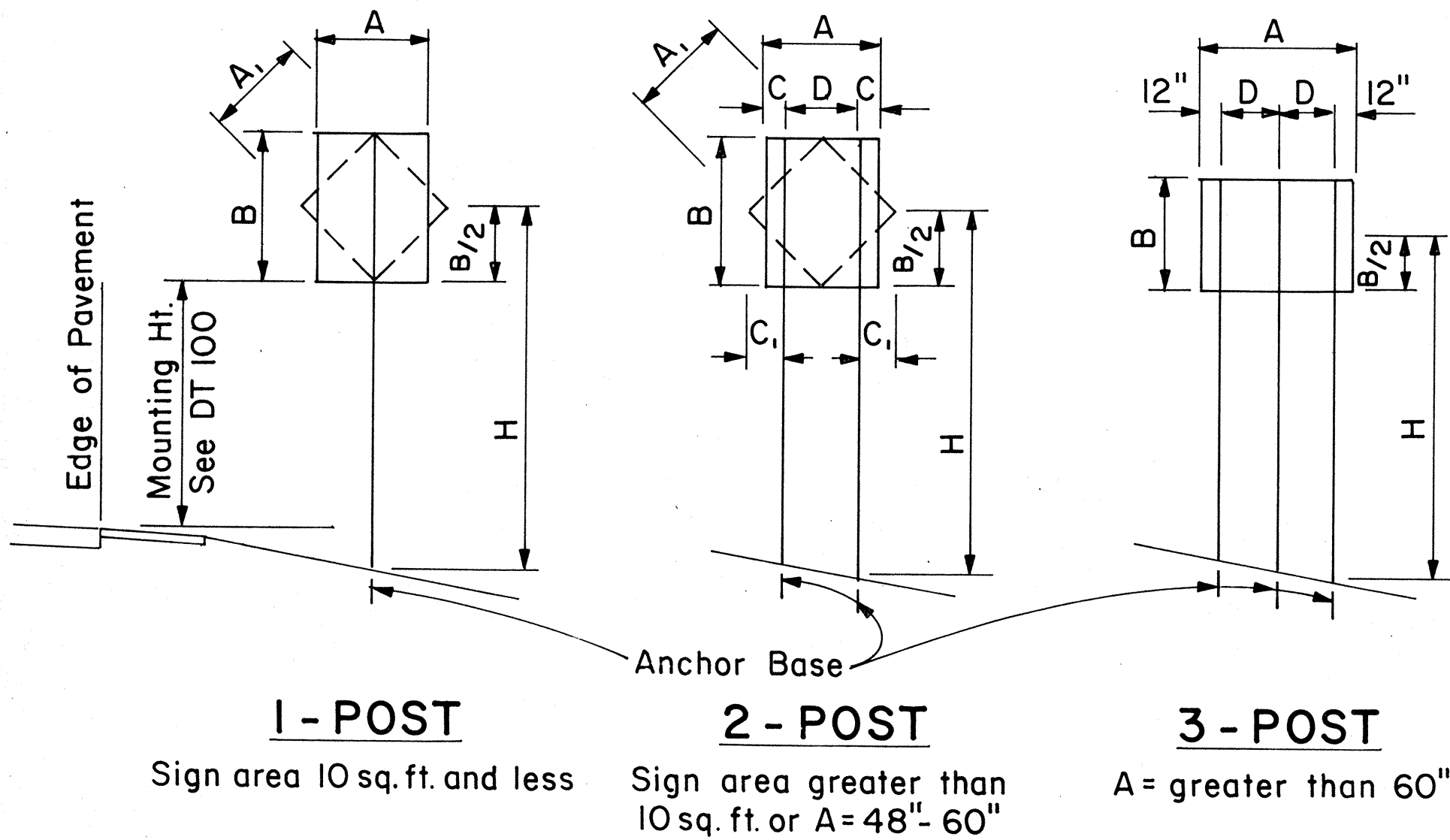
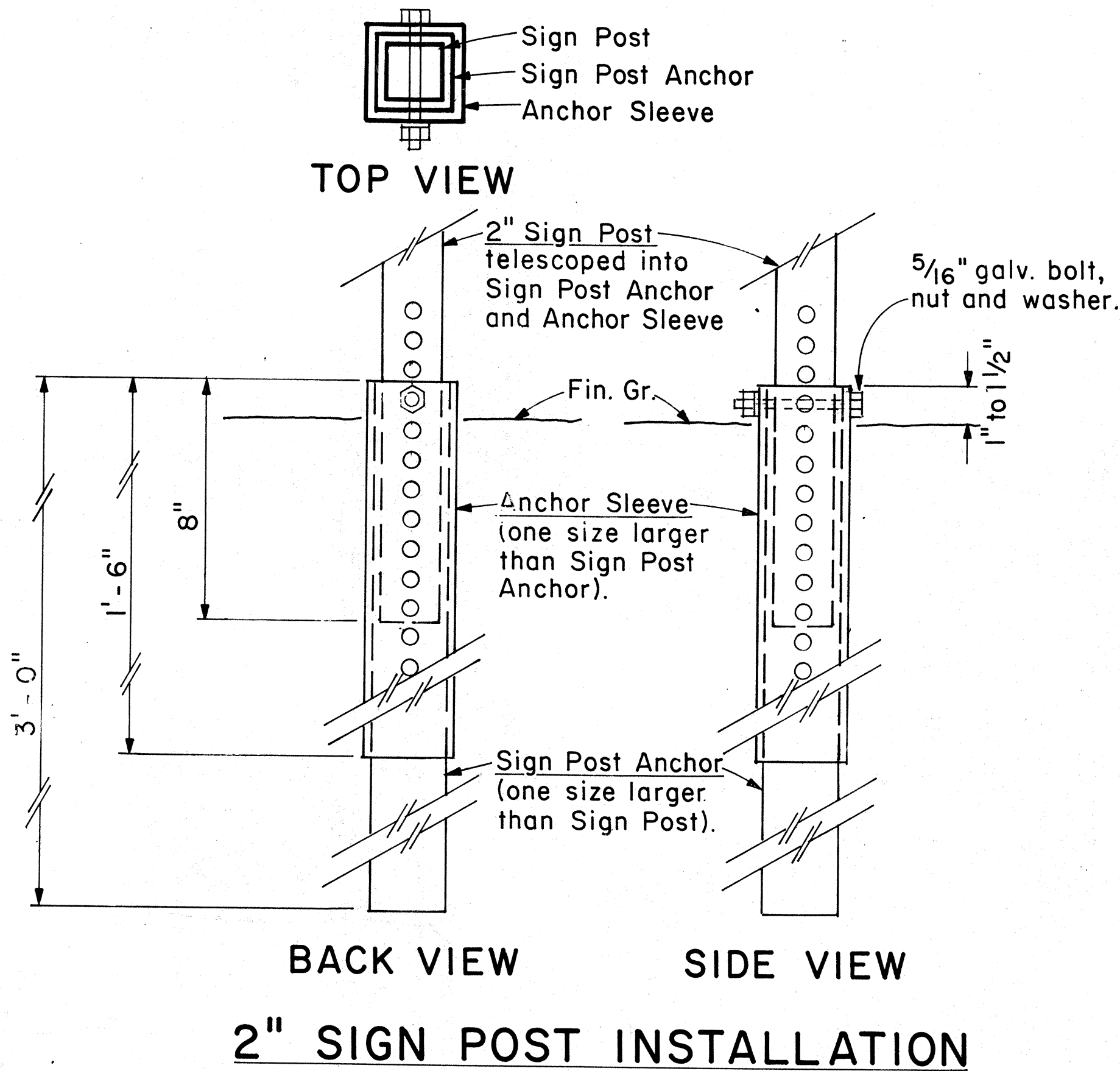
Scale: 3" = 1'-0"

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

| FED. ROAD DIST. NO. | STATE | PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-----------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83701-86M | 1986        | 41        | 57           |

## GENERAL NOTES

- Square tube sign posts shall conform to Subsection 713.11(C) Square Tube Posts of the Specifications.
- All accessories, fittings and stiffener details (as required) shall be submitted to Engineer for approval 20 days prior to installation.
- Square tube posts shall be perforated with  $\frac{7}{16}$ "  $\phi$  holes, 1" o.c., 4 sides, along entire length of post.
- All posts shall be 12 gage unless otherwise specified or shown on the plans.
- For additional details see sht. DT 100.
- Basic formulas for use with the windload charts:  
Factor =  $A \times B \times H$   
Therefore, if sign area ( $A \times B$ ) is known,  
Maximum  $H = \frac{\text{Factor}}{\text{sign area}(A \times B)}$   
and if H is known,  
Maximum sign area ( $A \times B$ ) =  $\frac{\text{Factor}}{H}$



## TYPICAL INSTALLATION

Not to Scale

| SQUARE TUBE: 1- POST INSTALLATION |                |                                    |     |     |     |     |     |                       |
|-----------------------------------|----------------|------------------------------------|-----|-----|-----|-----|-----|-----------------------|
| Post Size                         | AxBxH (Factor) | H = Ground Level to Midpoint (ft.) |     |     |     |     |     | A x B (Area, sq. ft.) |
|                                   |                | 7                                  | 8   | 9   | 10  | 11  | 12  |                       |
| 2"                                | 62             | 8.8                                | 7.7 | 6.8 | 6.1 | 5.6 | 4.8 |                       |
| 2 1/2"                            | 107            | -                                  | -   | -   | -   | 9.6 | 8.8 |                       |

| SQUARE TUBE: 2- POST INSTALLATION |                |                                    |      |      |      |      |      |                       |
|-----------------------------------|----------------|------------------------------------|------|------|------|------|------|-----------------------|
| Post Size                         | AxBxH (Factor) | H = Ground Level to Midpoint (ft.) |      |      |      |      |      | A x B (Area, sq. ft.) |
|                                   |                | 7                                  | 8    | 9    | 10   | 11   | 12   |                       |
| 2"                                | 122            | 17.4                               | 15.2 | 13.5 | 12.2 | 11.0 | 10.1 |                       |
| 2 1/2"                            | 212            | 30.2                               | 26.5 | 23.5 | 21.1 | 19.2 | 17.6 |                       |
| 2 1/2", 10 ga.                    | 260            | 37.0                               | 32.0 | 28.6 | 26.0 | 23.5 | 21.5 |                       |

| SQUARE TUBE: 3- POST INSTALLATION |                |                                    |      |      |      |      |      |                       |
|-----------------------------------|----------------|------------------------------------|------|------|------|------|------|-----------------------|
| Post Size                         | AxBxH (Factor) | H = Ground Level to Midpoint (ft.) |      |      |      |      |      | A x B (Area, sq. ft.) |
|                                   |                | 7                                  | 8    | 9    | 10   | 11   | 12   |                       |
| 2"                                | 183            | 26.0                               | 22.8 | 20.3 | 18.2 | 16.6 | 15.2 |                       |
| 2 1/2"                            | 318            | 45.4                               | 39.5 | 35.2 | 31.5 | 28.8 | 26.5 |                       |
| 2 1/2", 10 ga.                    | 388            | 55.0                               | 48.5 | 43.0 | 38.5 | 35.0 | 32.0 |                       |

## WINDLOAD CHARTS

APPROVAL RECOMMENDED:

*Eishi Tanaka* 9/21/82  
TRAFFIC ENGINEER DATE

APPROVED:

*Robert S. S. S. S.* 9/22/82  
ASSISTANT CHIEF, ENGINEERING DATE

| NO. | REVISION | APPROVED BY | DATE |
|-----|----------|-------------|------|
|     |          |             |      |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

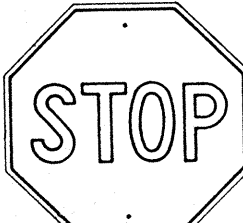
STANDARD DETAILS

GALVANIZED SQUARE TUBE  
SIGN POST MOUNTING

Scale: As Shown Date: Sept. 1982

SHEET NO. OF SHEETS DT100B

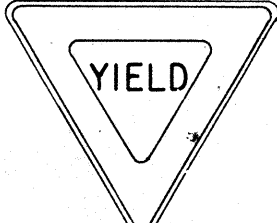
| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 837-01-86M | 1986        | 42        | 57           |



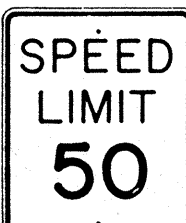
R1-1 30"x 30"  
R1-1-A 36"x 36"

4-WAY

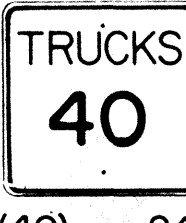
R1-3 12"x 6"  
R1-3-A 18"x 9"



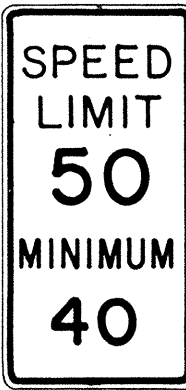
R1-2 36"x 36"x 36"  
R1-2-A 48"x 48"x 48"



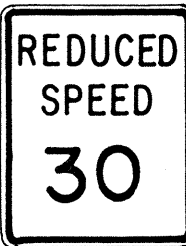
R2-1(50) 24"x 30"  
R2-1(50)-A 48"x 60"



R2-2(40) 24"x 24"  
R2-2(40)-A 48"x 48"



R2-4a(50/40) 24"x 48"  
R2-4a(50/40)-A 48"x 96"



R2-5b(30) 24"x 30"  
R2-5b(30)-A 48"x 60"



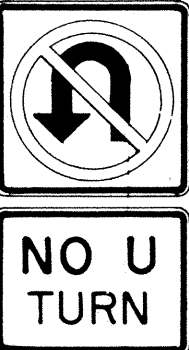
R3-1 24"x 24"  
24"x 18"  
R3-1-A 48"x 48"  
48"x 36"



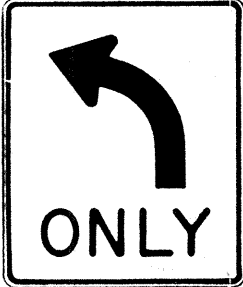
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24"x 18"  
R3-2-A 48"x 48"  
48"x 36"



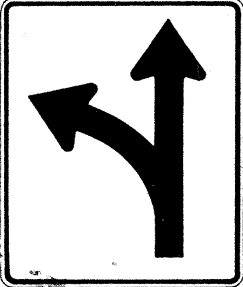
R3-3 24"x 24"  
R3-3-A 48"x 48"



R3-4 24"x 24"  
24"x 18"  
R3-4-A 4 "x 4f"  
48"x 36"



R3-5(L) 30"x 36"  
R3-5(L)-A 48"x 60"



R3-6(L) 30"x 36"  
R3-6(L)-A 48"x 60"



R3-7(R) 30"x 30"  
R3-7(R)-A 48"x 48"



R3-8(L) 30"x 30"  
R3-8(L)-A 36"x 36"  
R3-8(L)-B 48"x 48"



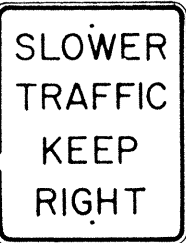
R3-9 24"x 30"



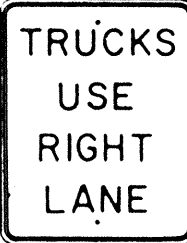
R4-1 24"x 30"  
R4-1-A 48"x 60"



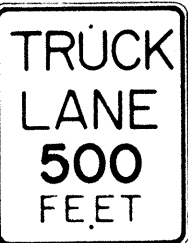
R4-2 24"x 30"  
R4-2-A 48"x 60"



R4-3 24"x 30"  
R4-3-A 48"x 60"



R4-5 24"x 30"  
R4-5-A 48"x 60"



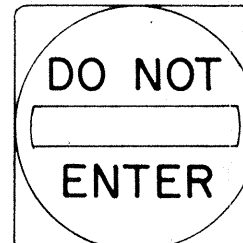
R4-6(500) 24"x 30"  
R4-6(500)-A 48"x 60"



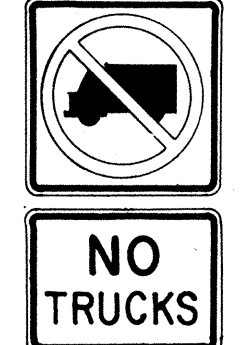
R4-7 24"x 30"  
24"x 18"  
R4-7-A 48"x 60"



R4-8 24"x 30"  
24"x 18"  
R4-8-A 48"x 60"



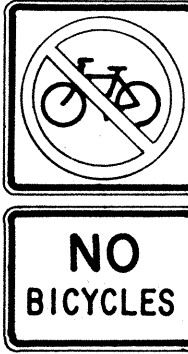
R5-1 30"x 30"  
R5-1-A 48"x 48"



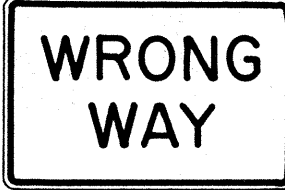
R5-2 24"x 24"  
24"x 18"



R5-4 24"x 30"  
R5-4-A 48"x 60"



R5-6 24"x 24"  
24"x 18"



R5-9 36"x 24"



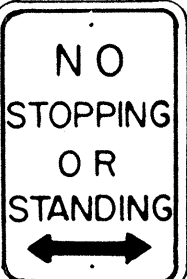
R6-1(R) 36"x 12"



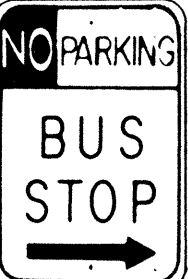
R6-2(R) 18"x 24"



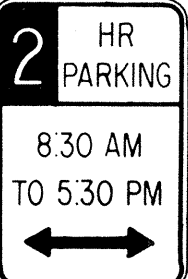
R7-1 12"x 18"  
R7-1-A 24"x 30"



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



R7-107(R) 12"x 18"



R7-108 12"x 18"



R7-201 12"x 6"  
R7-201-A 24"x 12"



R8-1 24"x 30"  
R8-1-A 48"x 60"



R8-2 24"x 30"  
R8-2-A 48"x 60"



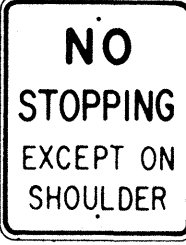
R8-3 24"x 30"  
R8-3-A 48"x 48"



R8-4 30"x 24"  
R8-4-A 48"x 36"



R8-5 24"x 30"  
R8-5-A 48"x 60"



R8-6 24"x 30"  
R8-6-A 48"x 60"



R8-7 30"x 24"  
R8 7-A 48"x 36"



R9-1 18"x 24"



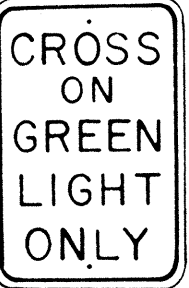
R9-2 12"x 18"



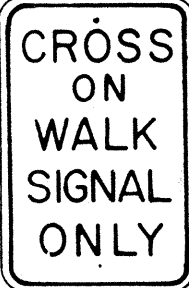
R9-3 12"x 18"



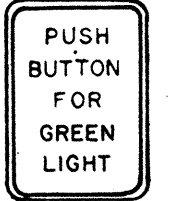
R9-4 18"x 24"



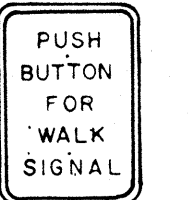
R10-1 12"x 18"



R10-2 12"x 18"



R10-3 9"x 12"



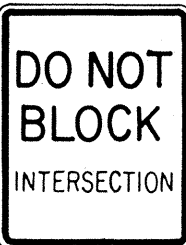
R10-4 9"x 12"



R10-5 24"x 30"



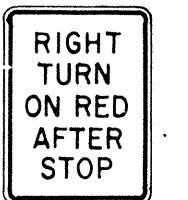
R10-6 24"x 36"



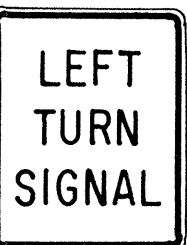
R10-7 24"x 30"



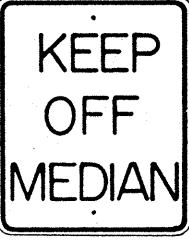
R10-8 24"x 30"



R10-9 24"x 30"



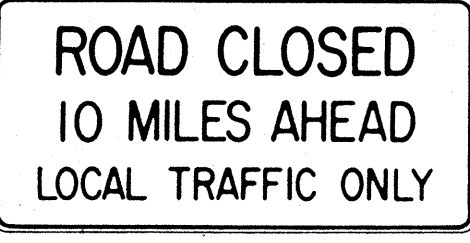
R10-10 24"x 30"



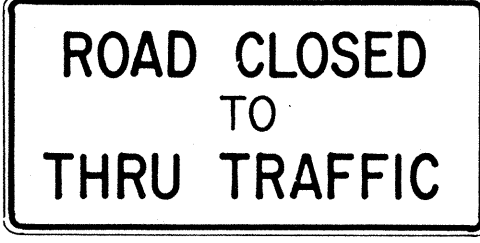
R11-1 24"x 30"



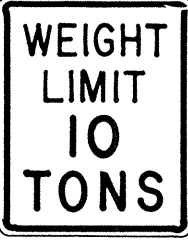
R11-2 48"x 30"



R11-3(10) 60"x 30"



R11-4 60"x 30"



R12-1(10) 24"x 30"

### GENERAL NOTES

- Sign details shall conform to the latest editions of FHWA publications "Manual on Uniform Traffic Control Devices for Streets and Highways," "Standard Alphabets for Highway Signs," and "Standard Highway Signs," and as amended.
- All regulatory signs shall be reflectorized unless otherwise specified.
- All regulatory signs shall have 3/8" bolt holes drilled at appropriate locations.
- Numerals in ( ) indicates numerals to be inserted for sign message. (R) or (L) indicates right or left.
- All signs shall be erected without educational plaques unless called for in the plans.

APPROVAL RECOMMENDED:  
*Etsuki Tanaka* 3/17/72  
 TRAFFIC ENGINEER DATE

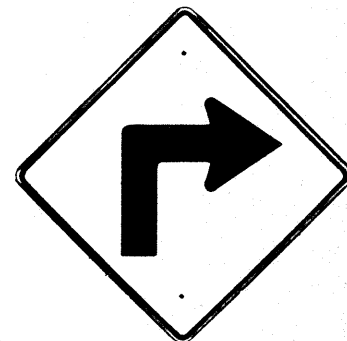
APPROVED:  
*Julius J. Roberts* 3-20-72  
 ASSISTANT CHIEF, ENGINEERING DATE

| NO. | REVISION                                 | APPROVED BY | DATE     |
|-----|------------------------------------------|-------------|----------|
| 1   | Supersedes Sht. DT 101 Approved 12-30-69 | H.I.        | 2/20/72  |
| 2   | Revised General Note 1                   | H.I.        | 10/14/74 |
| 3   | Added General Note 5                     | H.I.        | 11/1/77  |
| 4   | Revised Signs and General Note 1         | E.T.        | 3/18/85  |

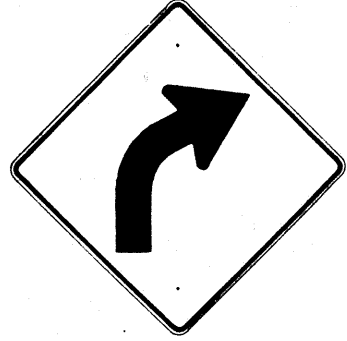
|                                                                      |                  |
|----------------------------------------------------------------------|------------------|
| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION |                  |
| <b>STANDARD DETAILS</b><br><b>REGULATORY SIGNS</b>                   |                  |
| NOT TO SCALE                                                         |                  |
| SHEET No.                                                            | OF SHEETS DT 101 |

|                   |       |
|-------------------|-------|
| DATE              | ..... |
| SURVEY PLOTTED BY | ..... |
| DESIGNED BY       | ..... |
| TRACED BY         | ..... |
| NOTE BOOK         | ..... |
| QUANTITIES BY     | ..... |
| CHECKED BY        | ..... |
| No.               | ..... |

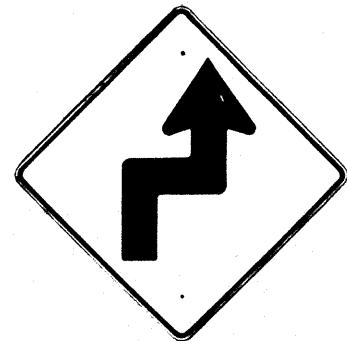
| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII *            | HAW.  | 83D-01-86M | 1986        | 43        | 57           |



W1-1(R) 30"x 30"  
W1-1(R)-A 48"x 48"



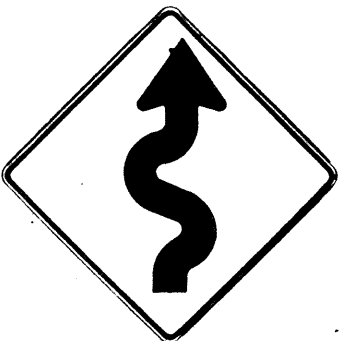
W1-2(R) 30"x 30"  
W1-2(R)-A 48"x 48"



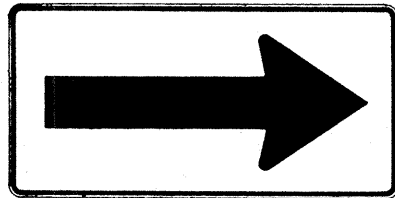
W1-3(R) 30"x 30"  
W1-3(R)-A 48"x 48"



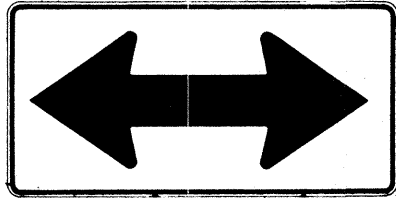
W1-4(R) 30"x 30"  
W1-4(R)-A 48"x 48"



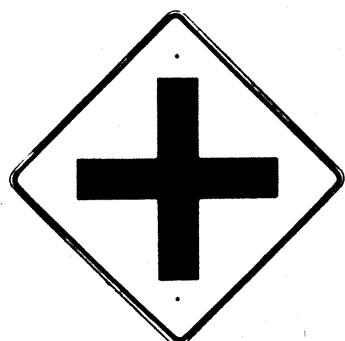
W1-5(R) 30"x 30"  
W1-5(R)-A 48"x 48"



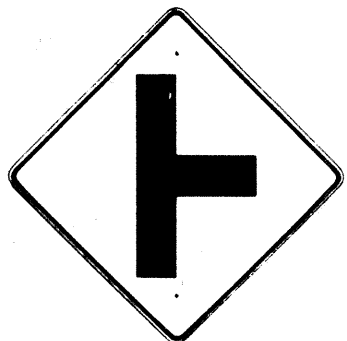
W1-6 48"x 24"



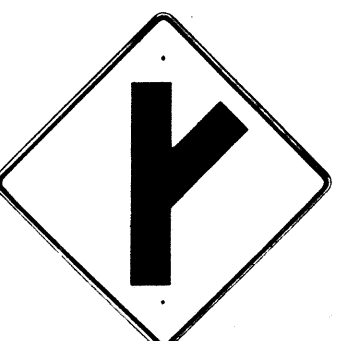
W1-7 48"x 24"



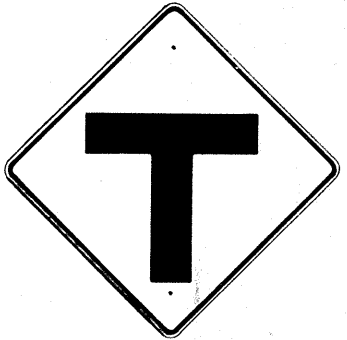
W2-1 30"x 30"  
W2-1-A 48"x 48"



W2-2 30"x 30"  
W2-2-A 48"x 48"



W2-3(R) 30"x 30"  
W2-3(R)-A 48"x 48"



W2-4 30"x 30"  
W2-4-A 48"x 48"



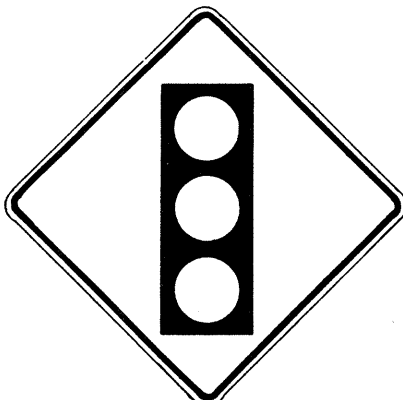
W2-5 30"x 30"  
W2-5-A 48"x 48"



W3-1 30"x 30"  
W3-1-A 36"x 36"



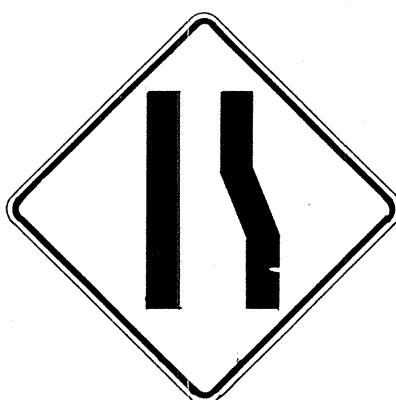
W3-2 30"x 30"  
W3-2-A 36"x 36"



SIGNAL  
AHEAD  
W3-3 36"x 36"  
24"x 18"



MERGE  
W4-1(R) 30"x 30"  
24"x 18"  
W4-1(R)-A 48"x 48"  
24"x 18"



W4-2(R) 36"x 36"  
W4-2(R)-A 48"x 48"



W5-1 36"x 36"  
W5-1-A 48"x 48"



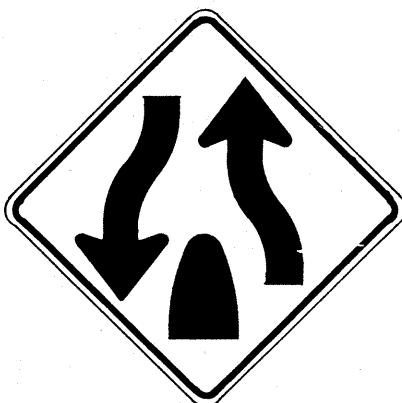
W5-2 30"x 30"  
W5-2-A 36"x 36"



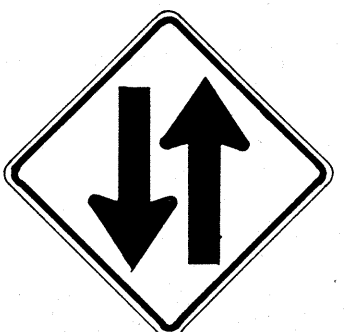
W5-3 36"x 36"  
W5-3-A 48"x 48"



DIVIDED  
HIGHWAY  
W6-1 36"x 36"  
24"x 18"  
W6-1-A 48"x 48"  
24"x 18"



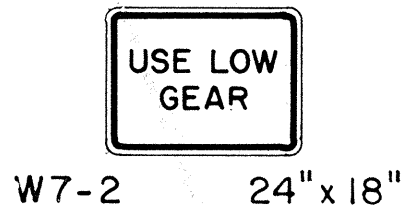
DIVIDED  
HIGHWAY  
ENDS  
W6-2 36"x 36"  
24"x 18"  
W6-2-A 48"x 48"  
24"x 18"



TWO WAY  
TRAFFIC  
W6-3 30"x 30"  
24"x 18"  
W6-3-A 36"x 36"  
24"x 18"  
W6-3-B 48"x 48"  
24"x 18"



HILL  
W7-1 30"x 30"  
24"x 18"  
W7-1-A 48"x 48"  
24"x 18"



USE LOW  
GEAR  
W7-2 24"x 18"



BUMP  
W8-1 30"x 30"  
W8-1-A 36"x 36"  
W8-1-B 48"x 48"



DIP  
W8-2 30"x 30"  
W8-2-A 36"x 36"  
W8-2-B 48"x 48"



PAVEMENT  
ENDS  
W8-3 30"x 30"  
W8-3-A 36"x 36"



SOFT  
SHOULDER  
W8-4 30"x 30"  
W8-4-A 36"x 36"



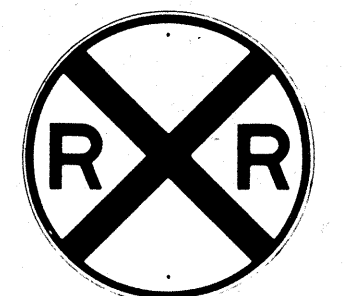
SLIPPERY  
WHEN WET  
W8-5 30"x 30"  
24"x 18"  
W8-5-A 36"x 36"  
24"x 18"



RIGHT  
LANE  
ENDS  
W9-1(R) 30"x 30"  
W9-1(R)-A 36"x 36"  
W9-1(R)-B 48"x 48"



LANE ENDS  
MERGE  
LEFT  
W9-2(L) 36"x 36"  
W9-2(L)-A 48"x 48"



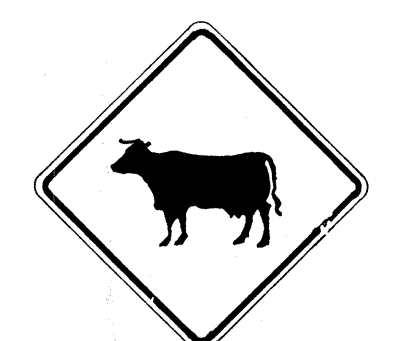
W10-1 36" Diameter



BIKE  
XING  
W11-1 30"x 30"  
24"x 18"  
W11-1-A 36"x 36"  
24"x 18"  
W11-1-B 48"x 48"  
24"x 18"



PED  
XING  
W11A-2 30"x 30"  
24"x 18"  
W11A-2-A 36"x 36"  
24"x 18"  
W11A-2-B 48"x 48"  
24"x 18"



CATTLE  
XING  
W11-4 30"x 30"  
24"x 18"  
W11-4-A 36"x 36"  
24"x 18"  
W11-4-B 48"x 48"  
24"x 18"



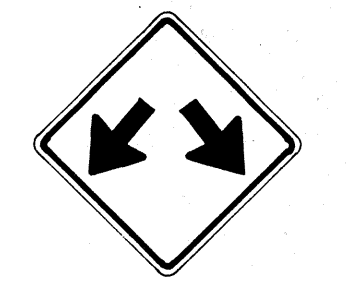
FARM  
MACHINERY  
W11-5 30"x 30"  
24"x 18"  
W11-5-A 36"x 36"  
24"x 18"  
W11-5-B 48"x 48"  
24"x 18"



W14-1 30"x 30"  
W14-1-A 36"x 36"



W14-3 36"x 48"x 48"  
W14-3-A 48"x 64"x 64"



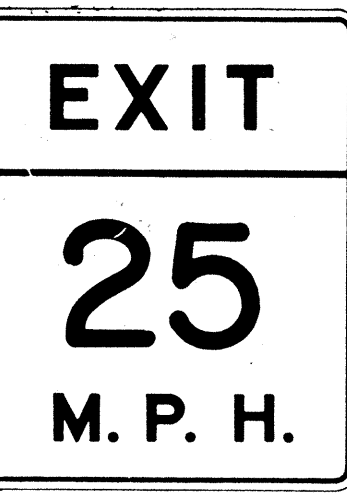
W12-1 24"x 24"  
W12-1-A 36"x 36"  
W12-1-B 48"x 48"



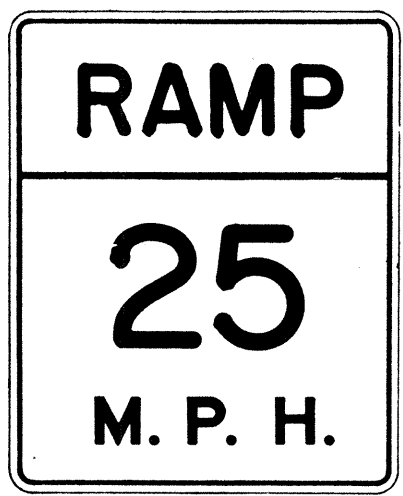
LOW  
CLEARANCE  
W12-2(12'-6") 36"x 36"  
24"x 18"  
W12-2(12'-6") 48"x 48"



W13-1(25) 18"x 18"  
W13-1(25)-A 24"x 24"



W13-2(25) 48"x 60"



W13-3(25) 48"x 60"

#### NOTE

1. All signs shall be erected without educational plaques unless called for in the plans.

#### GENERAL NOTES

- Sign details shall conform to the latest editions of FHWA publications, "Manual on Uniform Traffic Control Devices for Streets and Highways", "Standard Alphabet for Highway Signs", and "Standard Highway Signs", and as amended.
- All warning signs shall be reflectorized unless otherwise specified.
- All warning signs shall have 3/8" bolt holes drilled at appropriate locations.
- Numerals in ( ) indicates numerals to be inserted for sign message. (R) or (L) indicates right or left.
- Signs prefixed with "CW" on the plans shall indicate orange and black construction signs, and shall be reflectorized.

APPROVAL RECOMMENDED:  
*Enrique Tanaka*  
TRAFFIC ENGINEER

3/17/82  
DATE

APPROVED:  
*John P. Davis*  
ASSISTANT CHIEF, ENGINEERING

3-20-82  
DATE

| NO. | REVISION                                 | APPROVED BY | DATE     |
|-----|------------------------------------------|-------------|----------|
| 1   | Supersedes Sht. DT 102 Approved 12-30-69 | H.T.        | 3/20/82  |
| 2   | Revised General Note 1                   | H.T.        | 10/10/82 |
| 3   | Revised General Note 5                   | MA          | 9-16-85  |
| 4   | Revised General Note 5                   | H.T.        | 9-14-85  |
| 5   | Added Note 1                             | H.T.        | 11-1-85  |
| 6   | Revised Signs & General Note 1           | E.T.        | 9/18/85  |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

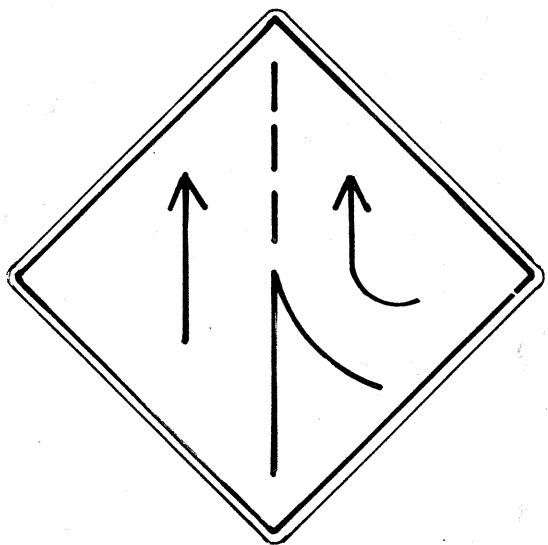
#### STANDARD DETAILS WARNING SIGNS

NOT TO SCALE

SHEET No. OF SHEETS DT 102

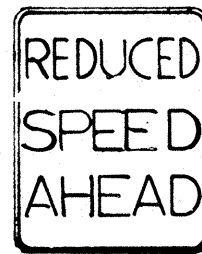
General Notes

- Sign details shall conform to the latest editions of the following FHWA publications:
  - "Standard Alphabets for Highway Signs," and as amended.
  - "Standard Highway Signs," and as amended.
  - "Manual on Uniform Traffic Control Devices for Streets and Highways," and as amended.
- All signs shall be reflectorized with reflective sheeting, unless otherwise specified.
- All signs shall have  $\frac{3}{8}$ " bolt holes drilled at appropriate locations.
- Numerals in ( ) indicate numerals to be inserted for sign message. (R) or (L) indicates right or left.
- Signs prefixed with "CW" on the plans shall indicate orange and black construction signs, and shall be reflectorized with reflective sheeting.
- All signs shall be erected without educational plaques unless called for in the plans.

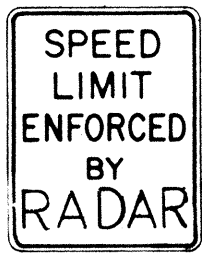


W4-3 36"x36"  
W4-3-A 48"x48"

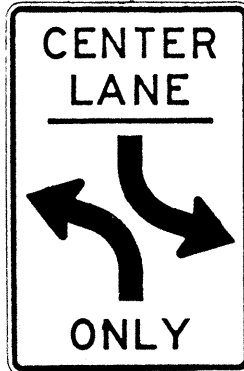
ALL WAY  
R1-4 18"x6"



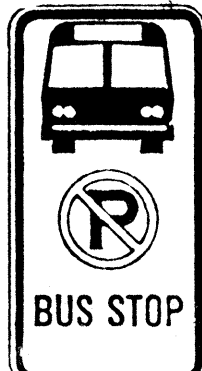
R2-5a 24"x30"  
R2-5a-A 48"x60"



R2-10 24"x30"



R3-9b 24"x36"



R7-107 12"x24"



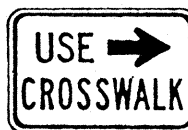
R7-8 12"x18"  
R7-8-A 24"x30"



ANY TIME - 4" Series C  
R8-3a 24"x24"  
24"x18"  
R8-3a-A 48"x48"



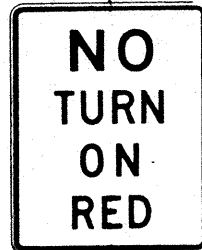
R9-3a 18"x18"  
18"x12"  
R9-3a-A 24"x24"  
24"x18"



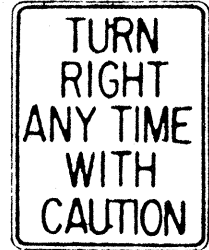
R9-3b(R) 18"x12"



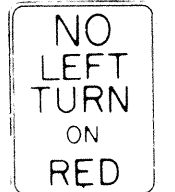
R9-3b(L) 18"x12"



R10-11a 24"x30"



R16-1 24"x30"



4" Series D -  
3" Series D -  
2" Series D -  
3" Series D -

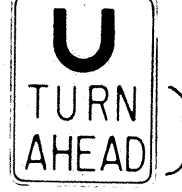
R16-3 18"x24"



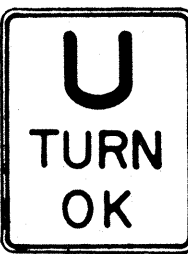
R16-4 18"x24"



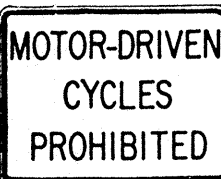
R16-5 36"x42"



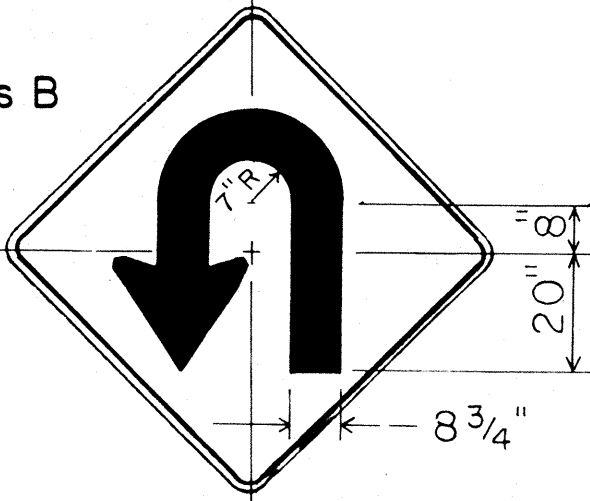
8" Series F  
5" Series D  
R16-6 24"x30"



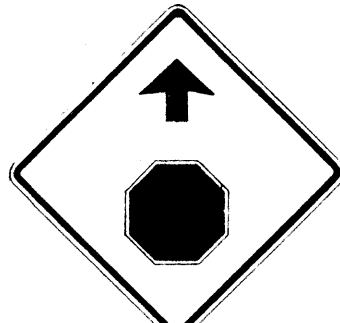
8" Series F  
5" Series D  
R16-7 24"x30"



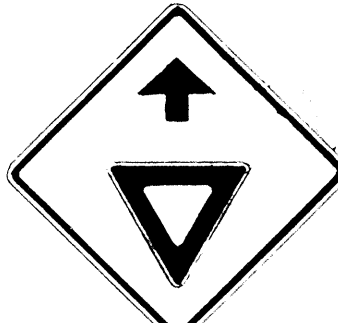
4" Series B  
R5-8 30"x24"



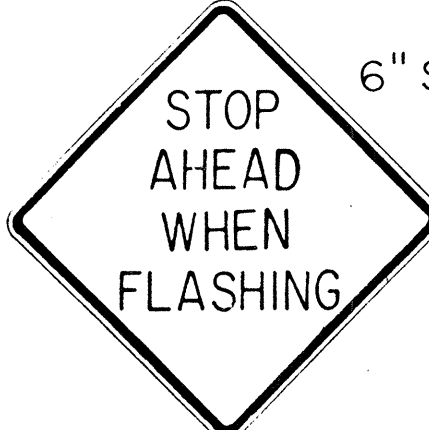
W17-1(L) 60"x60"



W3-1a 36"x36"  
24"x18"  
W3-1a-A 48"x48"  
24"x18"



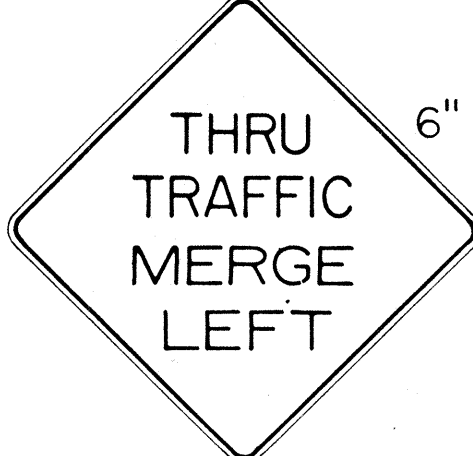
W3-2a 36"x36"  
24"x18"  
W3-2a-A 48"x48"  
24"x18"



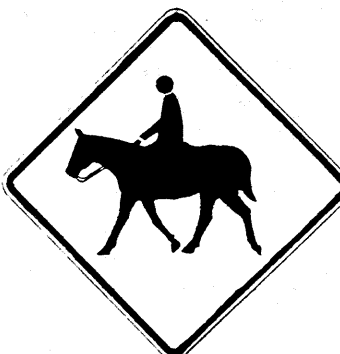
W3-4 48"x48"



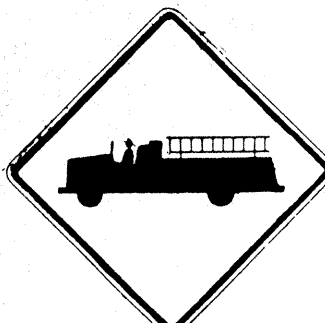
W8-6 30"x30"  
W8-6-A 36"x36"  
W8-6-B 48"x48"



W9-3(L) 48"x48"



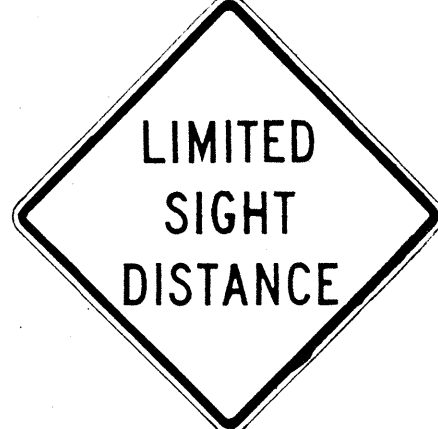
W11-7 36"x36"  
24"x18"  
W11-7-A 48"x48"  
24"x18"



W11-8 36"x36"  
24"x18"  
W11-8-A 48"x48"  
24"x18"



W11-9 36"x36"  
W11-9-A 48"x48"



W14-4 36"x36"  
W14-4-A 48"x48"



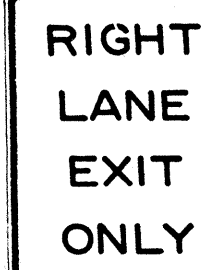
W15-1 24"x24"



W15-2 24"x24"



CW16-1(1/2) 60"x60"



8" Series E  
W18-1 48"x60"



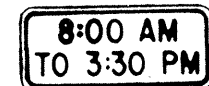
S1-1 36"x36"  
S1-1-A 48"x48"



S2-1 36"x36"  
S2-1-A 48"x48"



S3-1 30"x30"  
S3-1-A 36"x36"



S4-1 24"x10"



S4-2 24"x10"



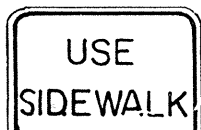
S4-3 24"x8"



S4-4 24"x10"



CW23-4 48"x48"



4" Series C  
R18-1 24"x18"

| NO. | REVISION                                | APPROVED BY | DATE    |
|-----|-----------------------------------------|-------------|---------|
| 1   | Supersedes Sht. DT 103 approved 3/20/72 | H.T.        | 5/2/78  |
| 2   | Added General Note 6                    | H.T.        | 11/1/78 |
| 3   | Revised Signs and added Sign W4-3       | E.T.        | 2/2/82  |

APPROVAL RECOMMENDED:  
Etschi Tanaka 5/2/78  
TRAFFIC ENGINEER DATE

APPROVED:  
Robert J. Dakeishi 5/2/78  
ASSISTANT CHIEF, ENGINEERING DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**STANDARD DETAILS**  
MISCELLANEOUS SIGNS  
NOT TO SCALE DATE: MAY, 1978  
SHEET NO. OF SHEETS DT 103

| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-86M | 1986        | 45        | 57           |



CW20-1a 48" x 48"



CW20-2d 48" x 48"



CW20-3b 48" x 48"



CW20-4d 48" x 48"



CW20-5d(L) 48" x 48"



CW20-7c 36" x 36"  
24" x 18"  
CW20-7c-A 48" x 48"  
24" x 18"



CW21-1 30" x 30"



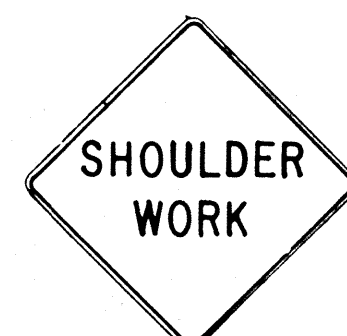
CW21-2 30" x 30"



CW21-3 36" x 36"



CW21-4 36" x 36"



CW21-5 30" x 30"



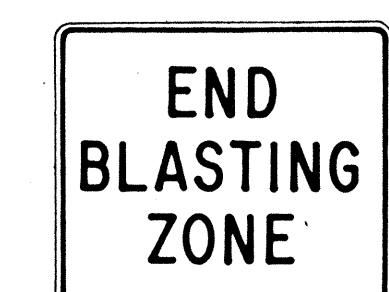
CW21-6 30" x 30"



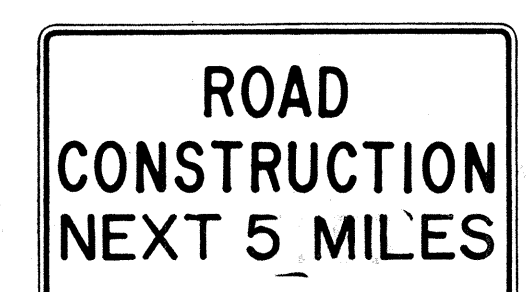
CW22-1b 48" x 48"



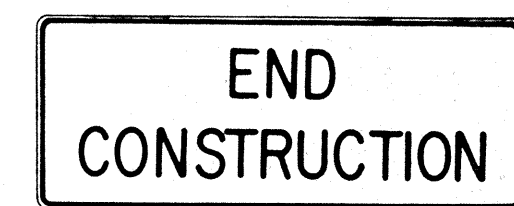
CW22-2 42" x 36"



CW22-3 42" x 36"



CG20-1(5) 60" x 36"



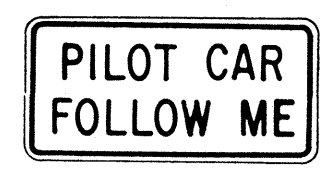
CG20-2 60" x 24"



CM4-9(R) 30" x 24"



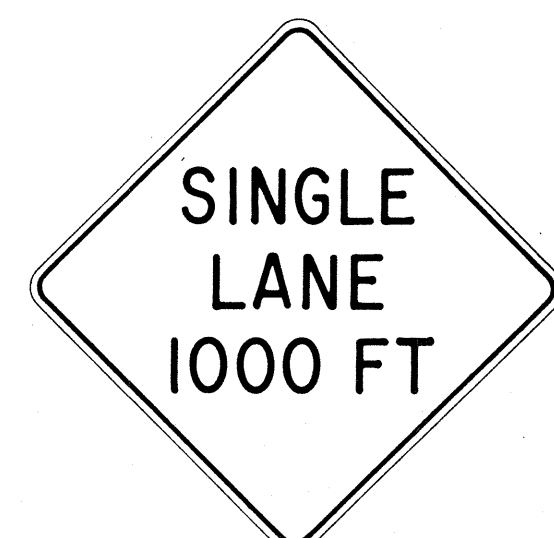
CM4-10(R) 48" x 18"



CG20-4 36" x 18"



CW23-1 36" x 36"



CW23-2b 48" x 48"



CW23-3(R) 48" x 48"

### GENERAL NOTES

- Sign details shall conform to the latest editions of FHWA publications "Manual on Uniform Traffic Control Devices for Streets and Highways," "Standard Alphabets for Highway Signs," and "Standard Highway Signs," and as amended.
- All construction signs shall be reflectorized.
- All construction signs shall have 3/8" bolt holes drilled at appropriate locations.
- Numerals in ( ) indicates numerals to be inserted for sign message. (R) or (L) indicates right or left.
- For "CW" series signs, suffixes a,b,c and d are as follows:  
a-1500 FT, b-1000 FT,  
c-500 FT and d-AHEAD.

APPROVAL RECOMMENDED:  
*Evelyn Tanaka* 3/21/72  
TRAFFIC ENGINEER DATE

APPROVED:  
*William J. Salas* 2/22/72  
ASSISTANT CHIEF, ENGINEERING DATE

| NO. | REVISION                                  | APPROVED BY | DATE     |
|-----|-------------------------------------------|-------------|----------|
| 1   | Supersedes Sht. DT 104 Approved 12-30-69  | H.T.        | 2/23/72  |
| 2   | Revised General Note 1                    | H.T.        | 10/16/74 |
| 3   | Revised General Note 2                    | M.H.        | 9-16-75  |
| 4   | Revised General Note 2 and sign CG20-1(5) | H.T.        | 9-14-76  |
| 5   | Revised General Note 1 and sign CW20-7c   | E.T.        | 9/18/85  |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**STANDARD DETAILS**  
**CONSTRUCTION SIGNS**

NOT TO SCALE

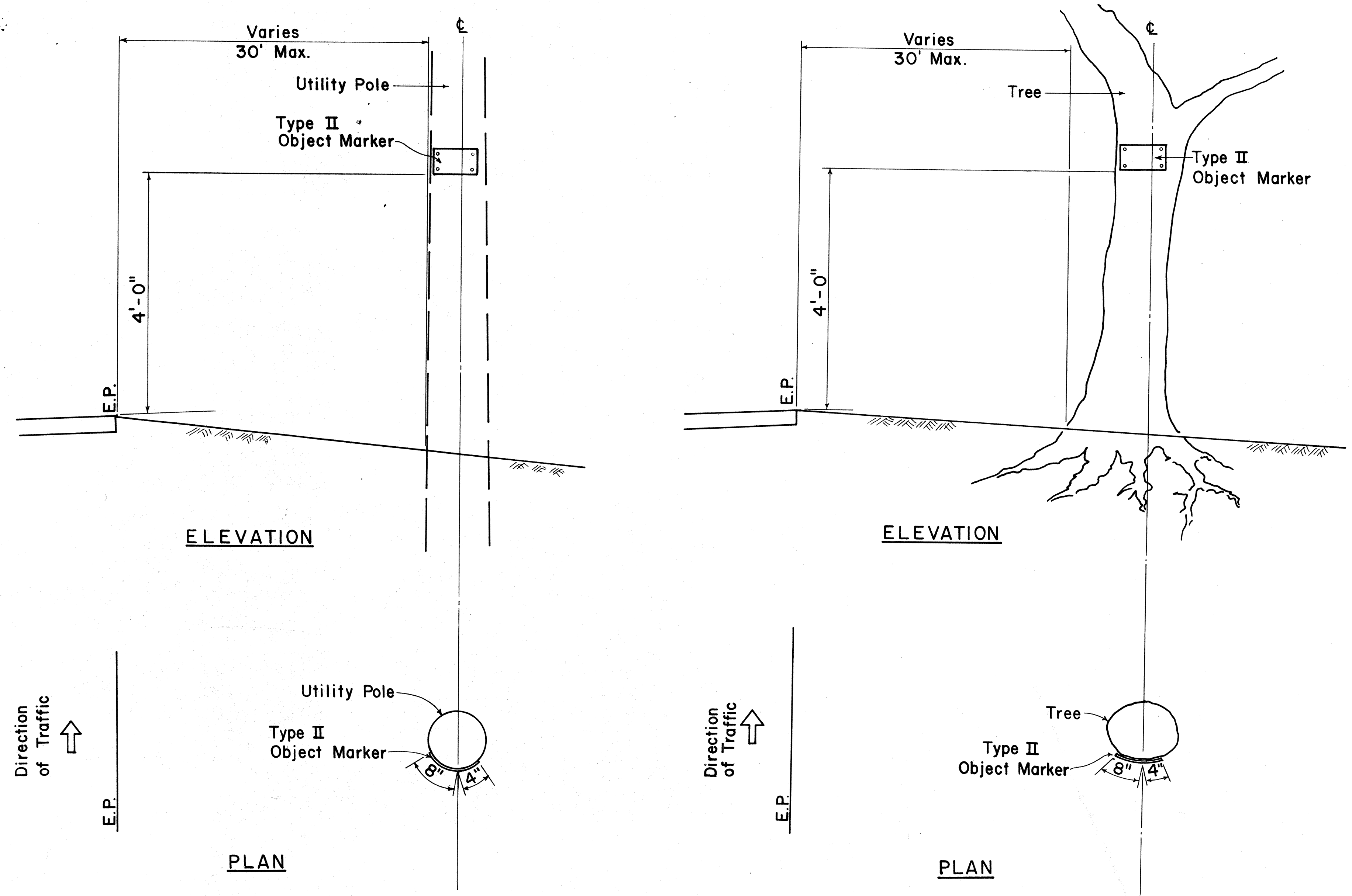
SHEET No. OF SHEETS DT 104

|             |      |
|-------------|------|
| DESIGNED BY | DATE |
| DRAWN BY    |      |
| CHECKED BY  |      |
| NOTED BY    |      |
| NO.         |      |

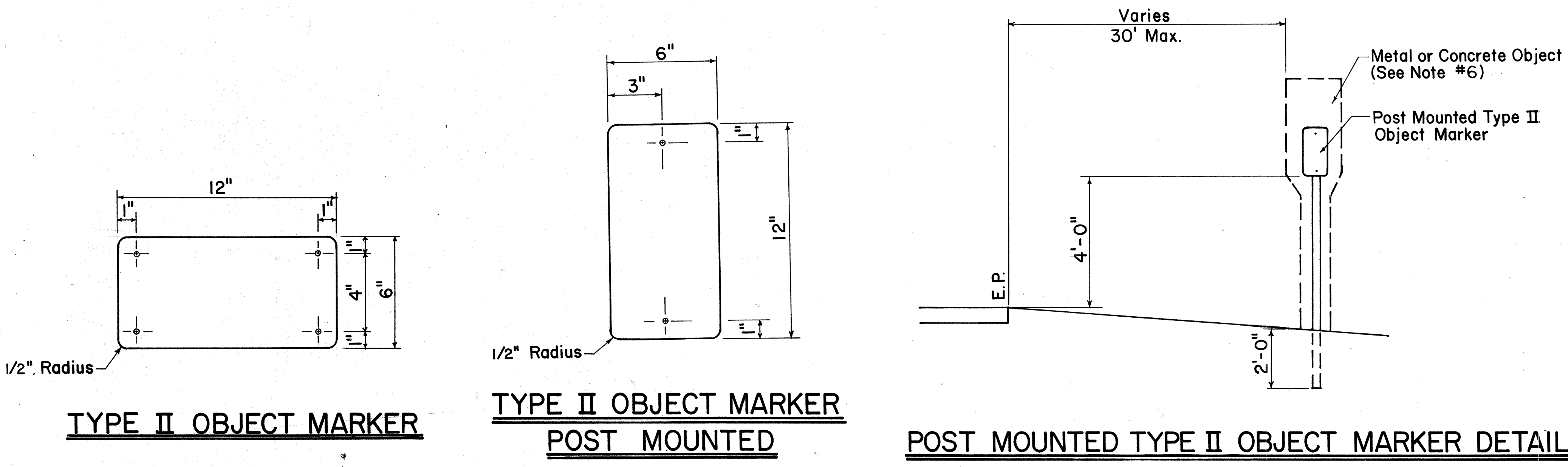
| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-86M | 1986        | 46        | 57           |

GENERAL NOTES

1. All objects (utility poles or trees) that are within the State highway right of way and within 30 feet of the roadway edge of pavement shall be marked as directed by the Engineer.
2. The Contractor shall prepare the mounting surface of each object as directed by the Engineer and place the Type II Object Marker as shown on this plan.
3. Type II Object Markers shall be mounted on utility poles and trees with 1 3/4" galv. roofing nails (4 ea.).
4. Branches of trees which obscure the object markers shall be trimmed. (Payment shall be incidental to Type II Object Markers as shown in the proposal).
5. Type II Object Markers for utility poles and trees, etc., shall be made of amber reflective sheeting material overlayed on 0.020" aluminum sheeting.
6. Objects such as concrete posts, concrete or rock walls and boxes, metal posts (greater than 2" in diameter), or metal boxes shall be marked with post mounted object markers. Post mounted Type II Object Markers shall conform to the following requirements:
  - a. It shall consist of amber reflective sheeting material overlayed on 0.063" thick sheet aluminum backing of the dimensions shown on the plans.
  - b. It shall be mounted on either metal posts or flexible delineator posts with 1/4"x2" galv. bolts, nuts and washers. Metal posts shall be galvanized and shall be either 1 1/2"x1 1/2", 12 gage square tube posts or 1.12 lbs. per ft. flanged channel posts.



TYPICAL TYPE II OBJECT MARKER MOUNTING DETAIL



APPROVAL RECOMMENDED:  
*Eishi Tanaka* 3/30/83  
 TRAFFIC ENGINEER DATE

APPROVED:  
*S. Fujiyama* 3-31-83  
 ASSISTANT CHIEF, ENGINEERING DATE

| NO. | REVISION | APPROVED BY | DATE |
|-----|----------|-------------|------|
|     |          |             |      |

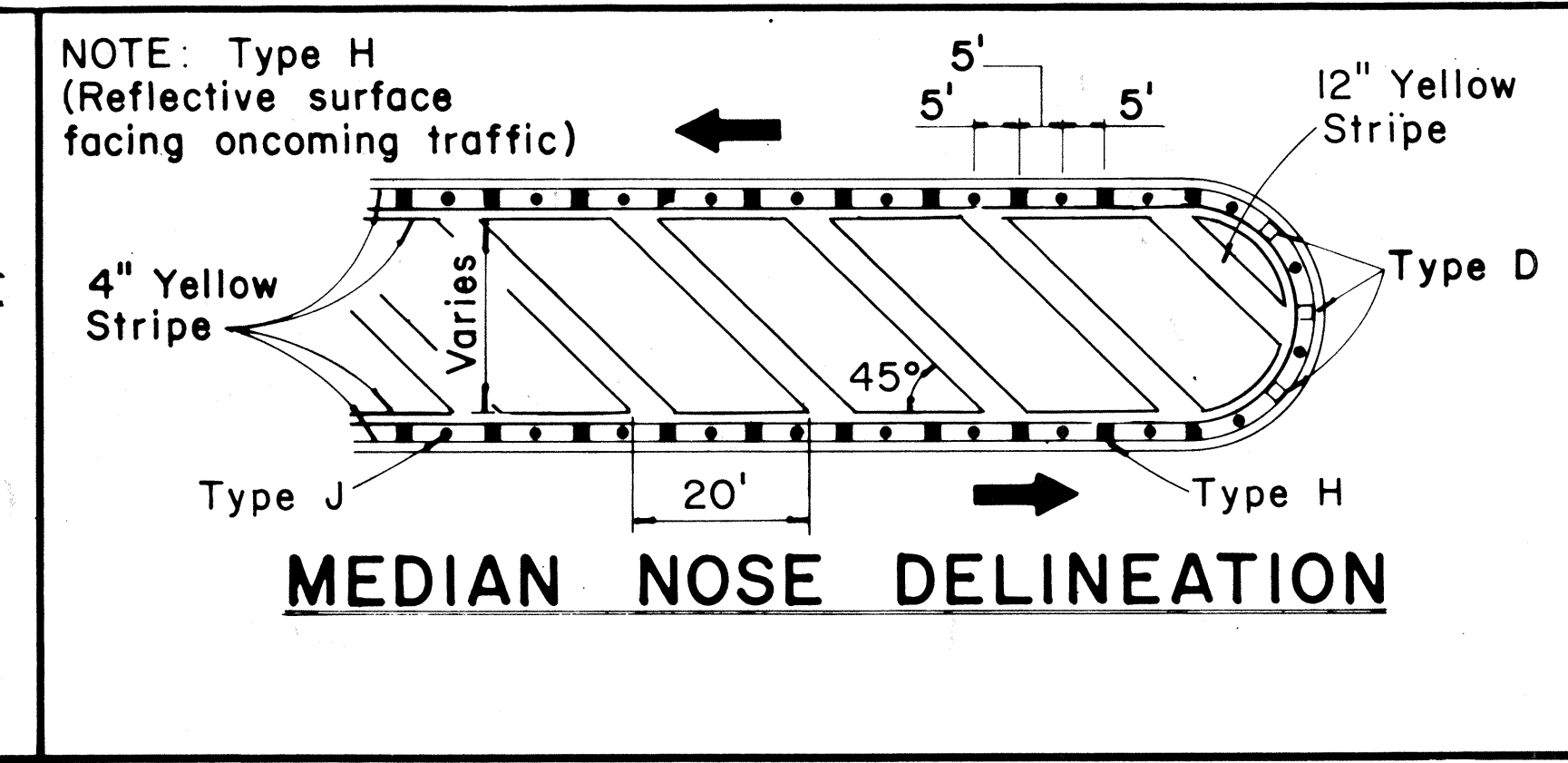
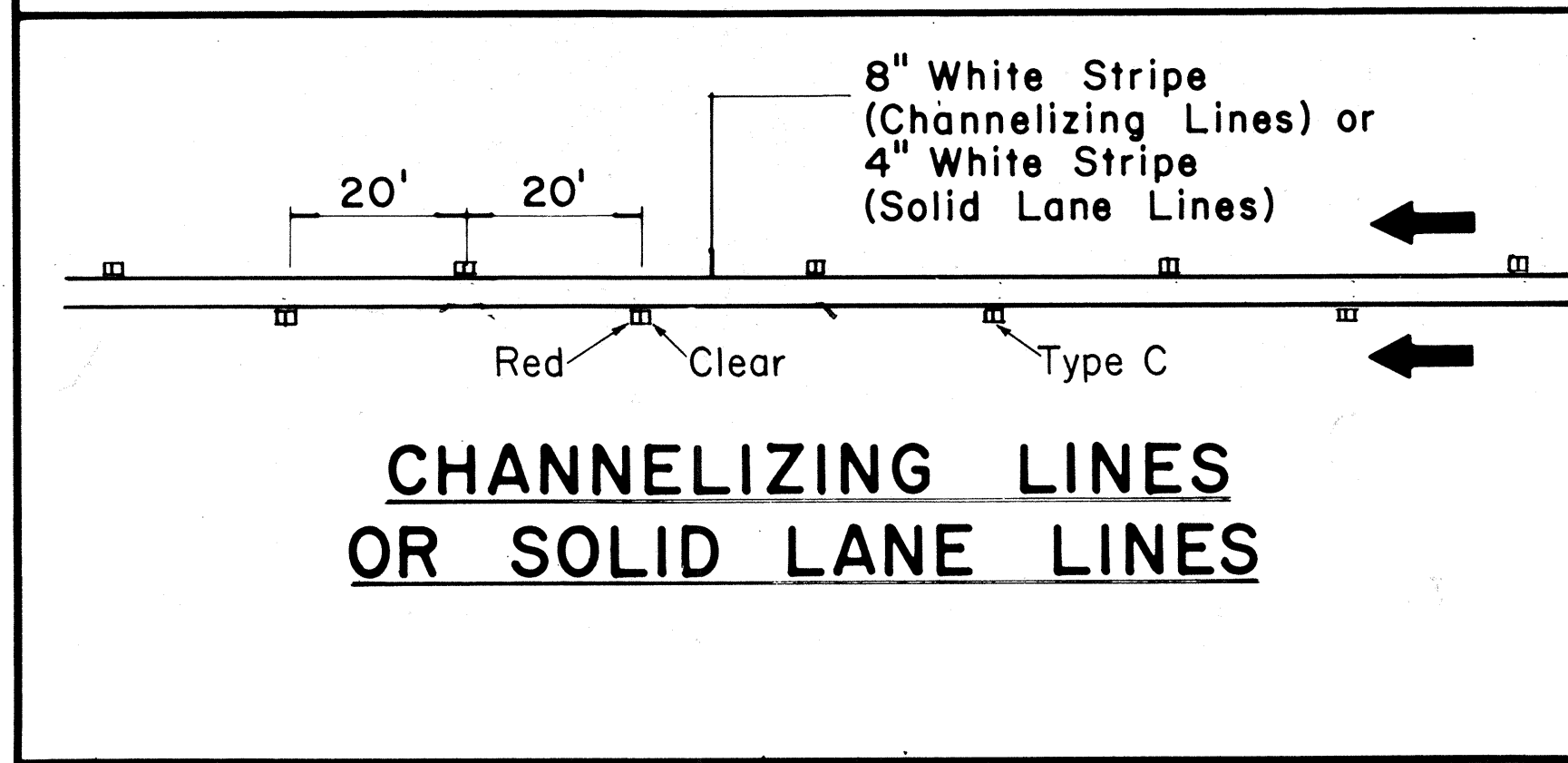
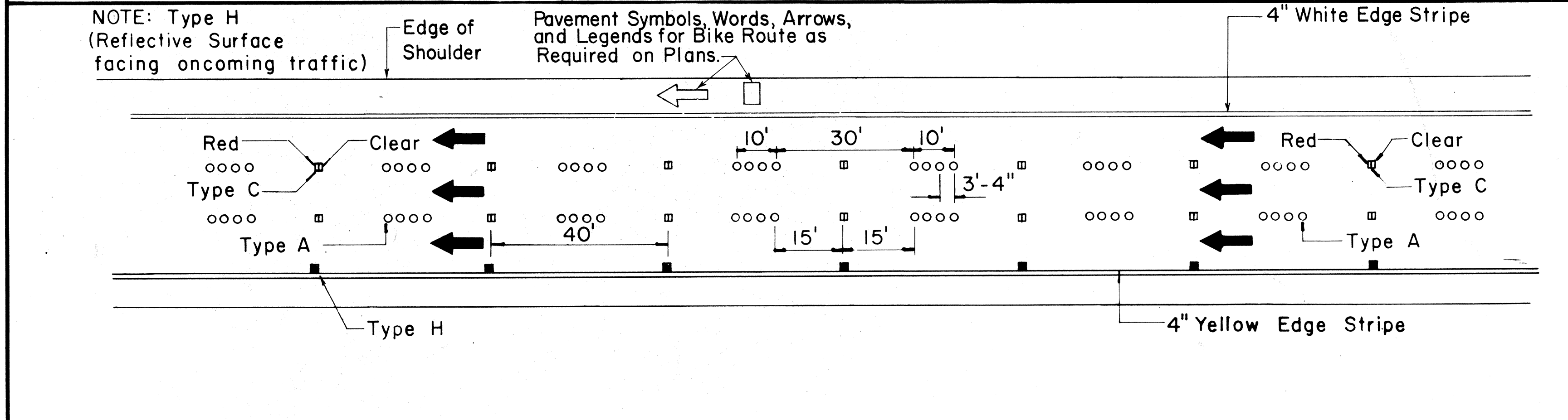
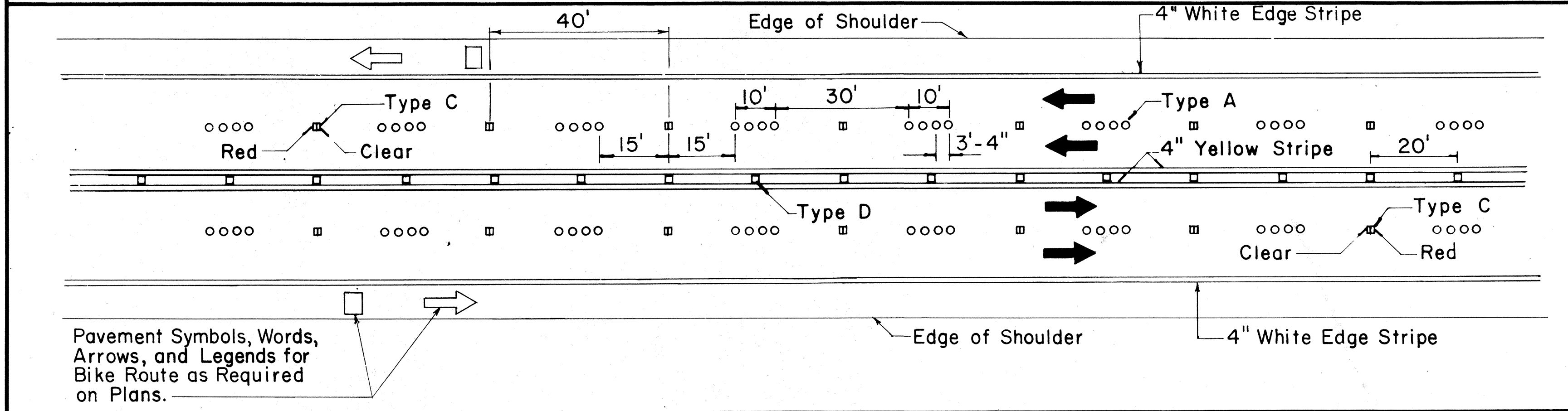
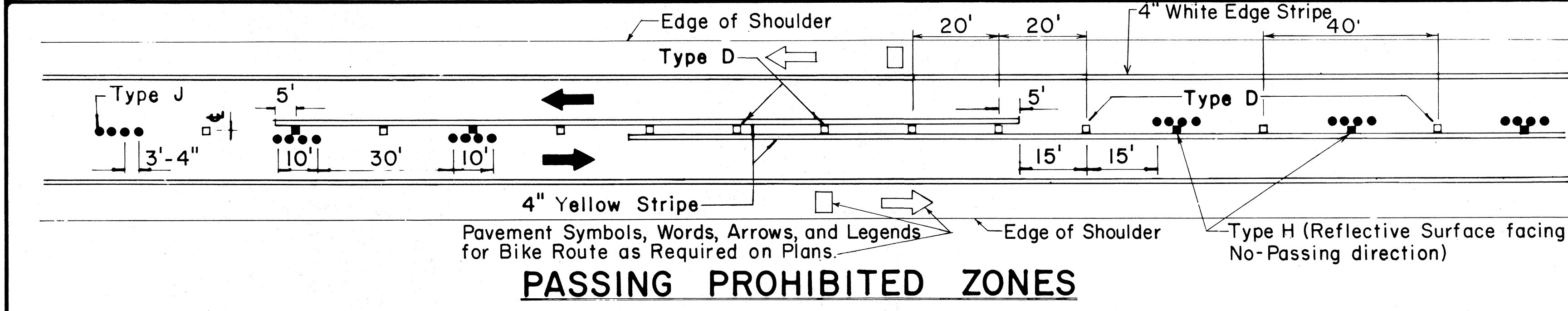
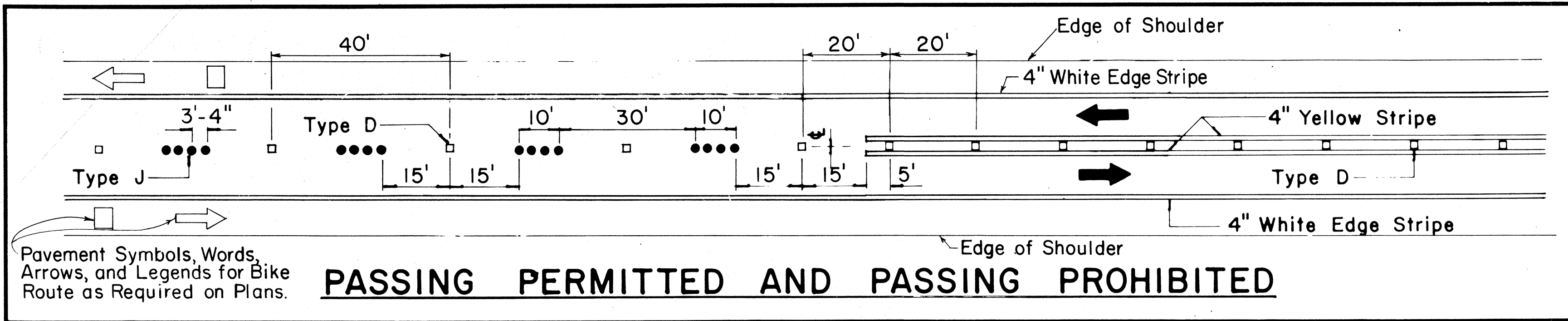
STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

**STANDARD DETAILS**  
**TYPE II OBJECT MARKERS**

Scale: Not to scale Date: March 1983  
 SHEET NO. OF SHEETS DT III

|                   |      |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DRAWN BY          |      |
| TRACED BY         |      |
| CHECKED BY        |      |
| NOTE BOOK         |      |
| NO.               |      |

| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-80M | 1986        | 47        | 57           |

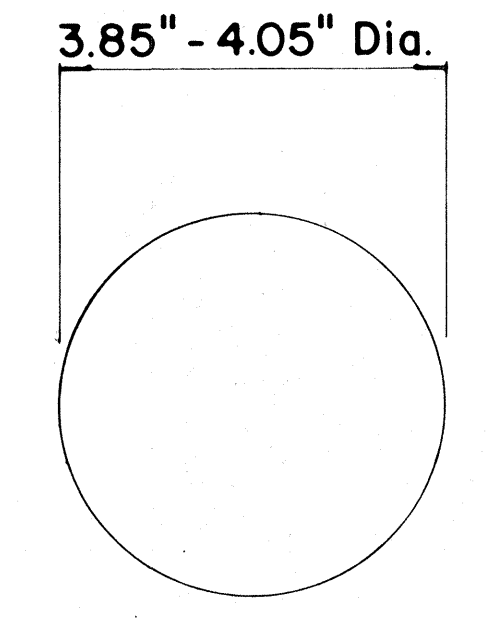


TWO - LANE

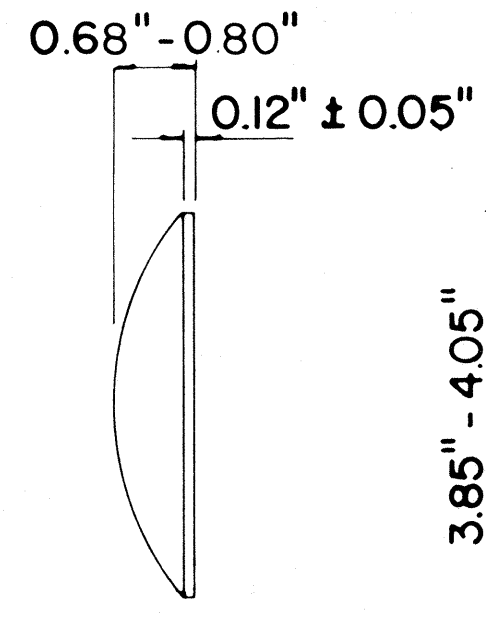
MULTI - LANE

DIVIDED HIGHWAY AND FREEWAY

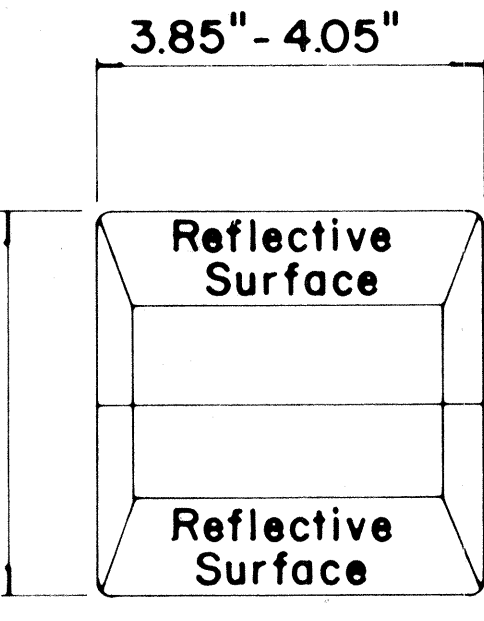
MISCELLANEOUS



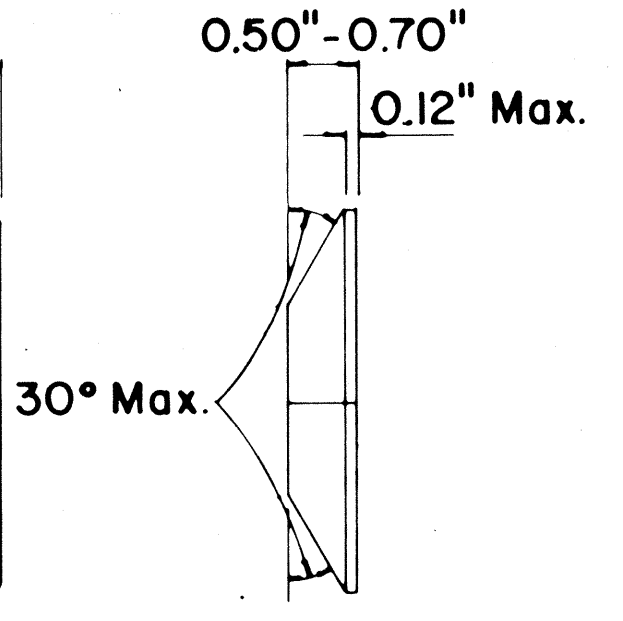
**TYPE A**  
NON-REFLECTIVE WHITE MARKER



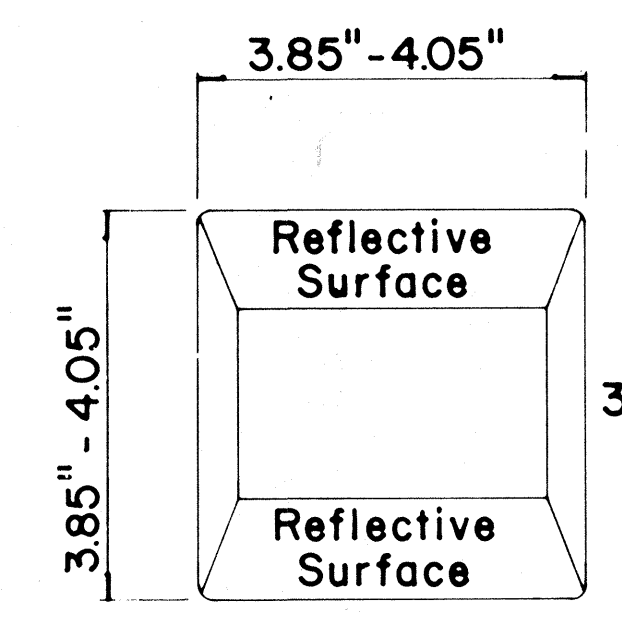
**TYPE J**  
NON-REFLECTIVE YELLOW MARKER



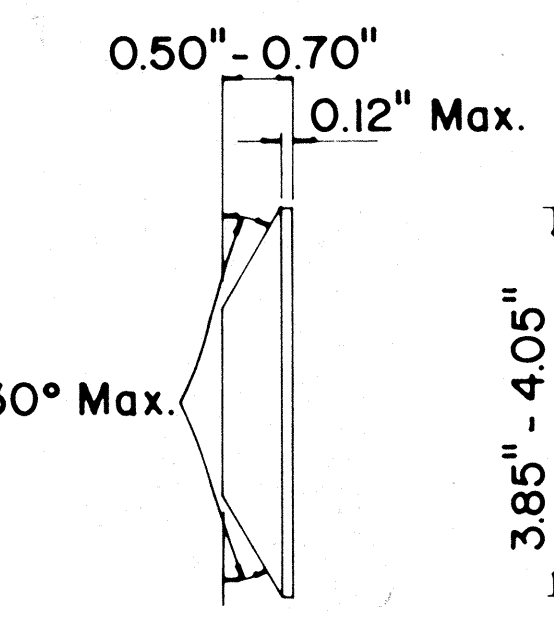
**TYPE C**  
RED-CLEAR REFLECTIVE MARKER



**TYPE H**  
ONE-WAY YELLOW REFLECTIVE MARKER



**TYPE D**  
TWO-WAY YELLOW REFLECTIVE MARKER



**GENERAL NOTES**

- Pavement marking and striping shall conform to the latest "Manual on Uniform Traffic Control Devices for Streets and Highways," and as amended.
- Layout and installation of pavement marking and striping shall be done by the Contractor. The Contractor shall check the layouts with the Engineer prior to performing work.
- Edge lines shall not be continued through intersections and shall not be broken for driveways unless otherwise shown or directed.

**LEGEND**

- Type A
- Type C
- Type D
- Type H
- Type J

APPROVAL RECOMMENDED:  
*Erich Tanaka* 7/21/78  
 TRAFFIC ENGINEER DATE

APPROVED:  
*Harbert J. Zalewski* 7/24/78  
 ASSISTANT CHIEF, ENGINEERING DATE

| No. | REVISION                                           | APPROVED BY | DATE     |
|-----|----------------------------------------------------|-------------|----------|
| 1   | Supersedes DT 300 approved 11/18/71.               | H.T.        | 1/24/78  |
| 2   | Delete Type A Markers from Bike Route Delineation. | H.T.        | 10/15/79 |
| 3   | Added General Note 3. Revised left edge stripe.    | H.T.        | 9-28-83  |
| 4   | Revised Channelizing Lines or Solid Lane Lines.    | H.T.        | 3/18/85  |

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

**STANDARD DETAILS**  
**RAISED PAVEMENT MARKERS**  
**AND STRIPING**

Not to Scale July 1978

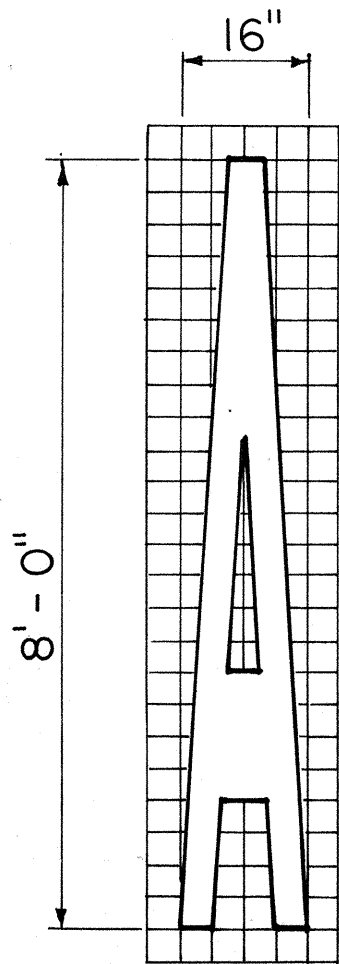
SHEET No. 47 OF SHEETS DT 300

|             |         |
|-------------|---------|
| DATE        | 1/24/78 |
| DESIGNED BY | H.T.    |
| TRACED BY   | H.T.    |
| NOTE BOOK   |         |
| CHECKED BY  | H.T.    |

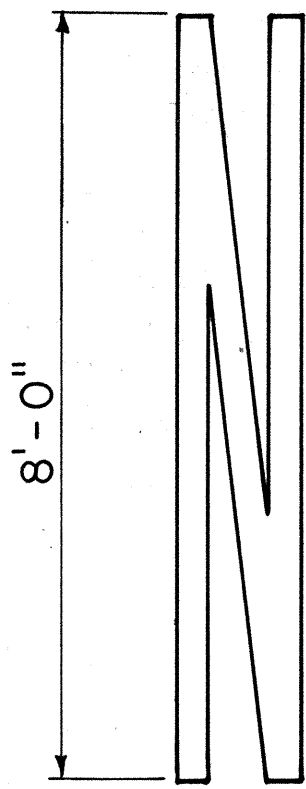
|                        |       |                       |                |              |                 |
|------------------------|-------|-----------------------|----------------|--------------|-----------------|
| FED. ROAD<br>DIST. NO. | STATE | FED. AID<br>PROJ. NO. | FISCAL<br>YEAR | SHEET<br>NO. | TOTAL<br>SHEETS |
| HAWAII                 | HAW.  | 83D-01-86M            | 1986           | 48           | 57              |

GENERAL NOTES

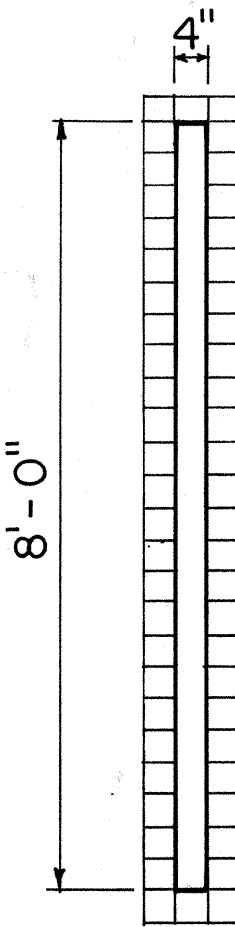
1. Pavement Alphabets, Numbers and Symbols shall conform to the latest edition of the FHWA publication, "Manual on Uniform Traffic Control Devices for Streets and Highways" and its amendments.
2. The characters are based on a 24x4 (height x width) grid system to facilitate enlarging. Horizontal strokes are 4 units high and verticle strokes are 1 unit wide.
3. Unless otherwise noted, the typical height and width of each character shall respectively be 8'-0" and 1'-4". The horizontal strokes shall be 16" high and the vertical strokes shall be 4" wide.
4. All pavement messages and symbols shall be laid out by the Contractor and and approved by the Engineer prior to installation.



B C D E F G H I J K L M



O P Q R S T U V W X Y Z



2 3 4 5 6 7 8 9 0

|                  |                   |      |
|------------------|-------------------|------|
| ORIGINAL<br>PLAN | SURVEY PLOTTED BY | DATE |
| NOTE BOOK        | DRAWN BY          |      |
| No.              | DESIGNED BY       |      |
|                  | QUANTITIES BY     |      |
|                  | CHECKED BY        |      |

APPROVAL RECOMMENDED:

*Eishi Tanaka* 1/28/83  
TRAFFIC ENGINEER DATE

APPROVED:

*S. S. Fujiyama* 1-31-83  
ASSISTANT CHIEF, ENGINEERING DATE

| NO. | REVISION | APPROVED<br>BY | DATE |
|-----|----------|----------------|------|
|     |          |                |      |

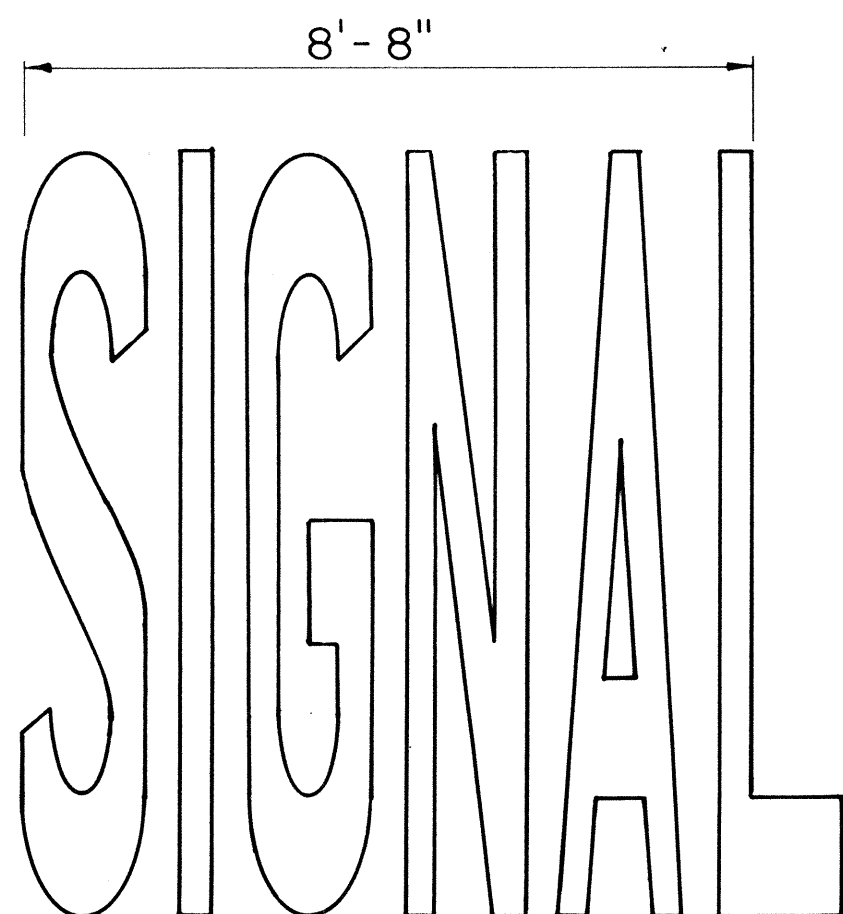
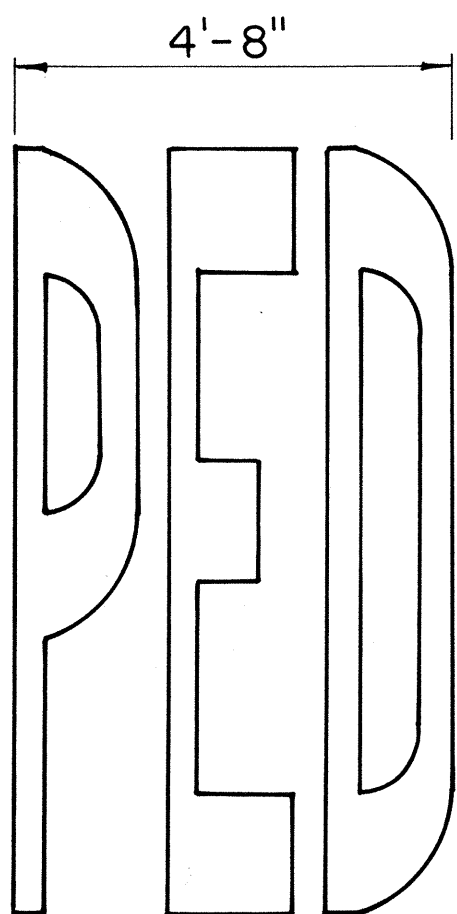
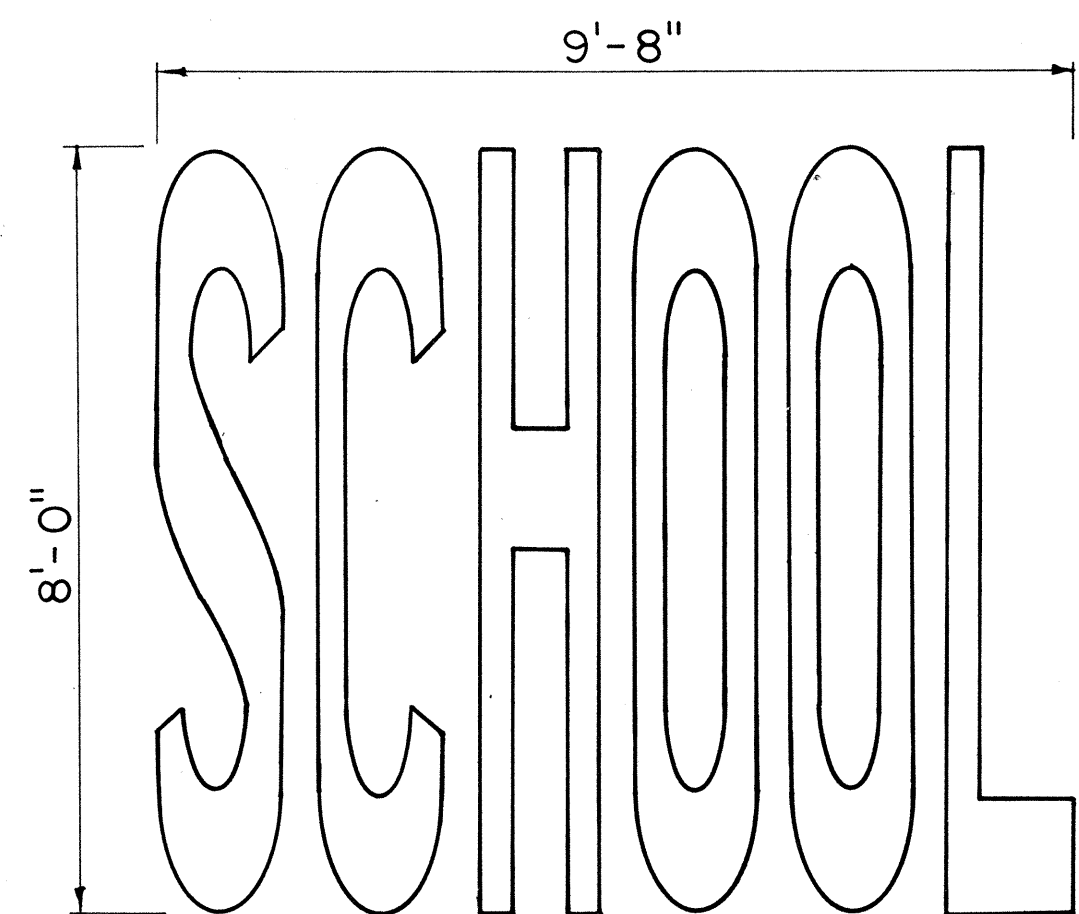
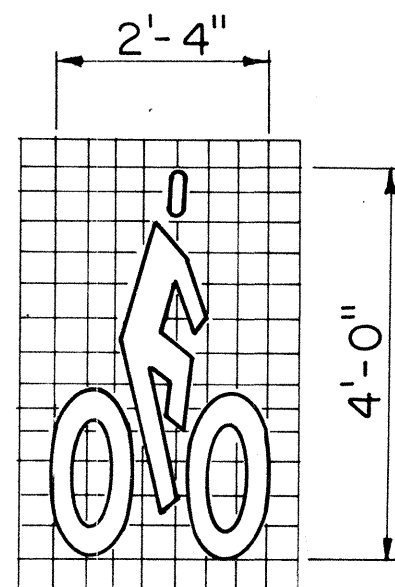
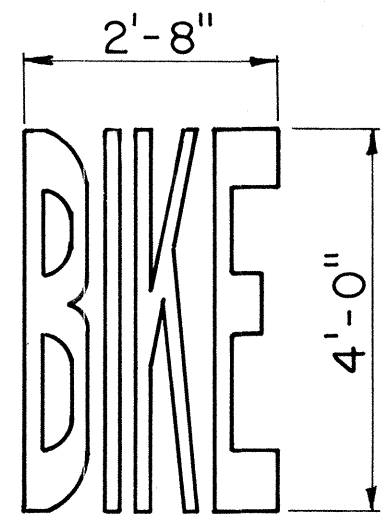
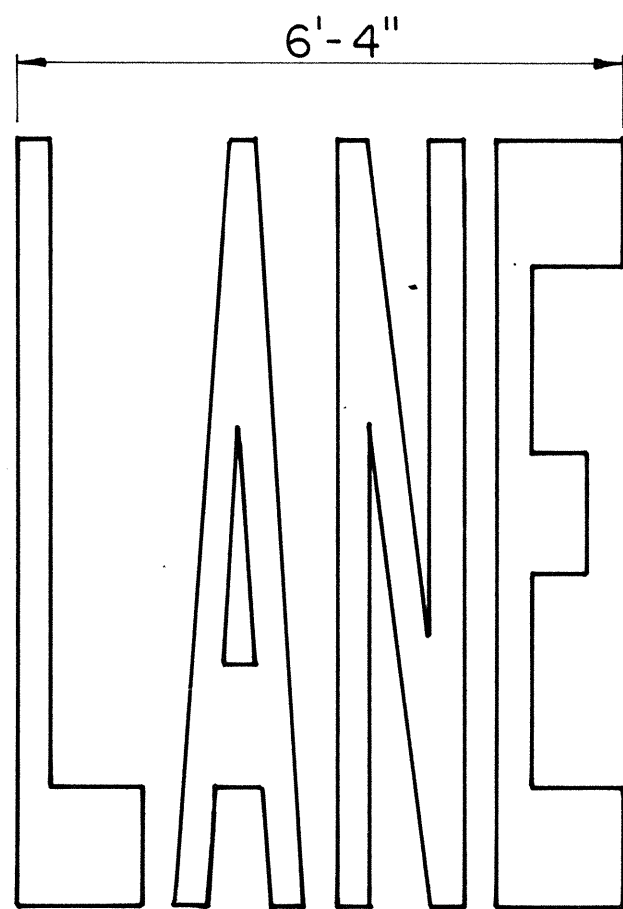
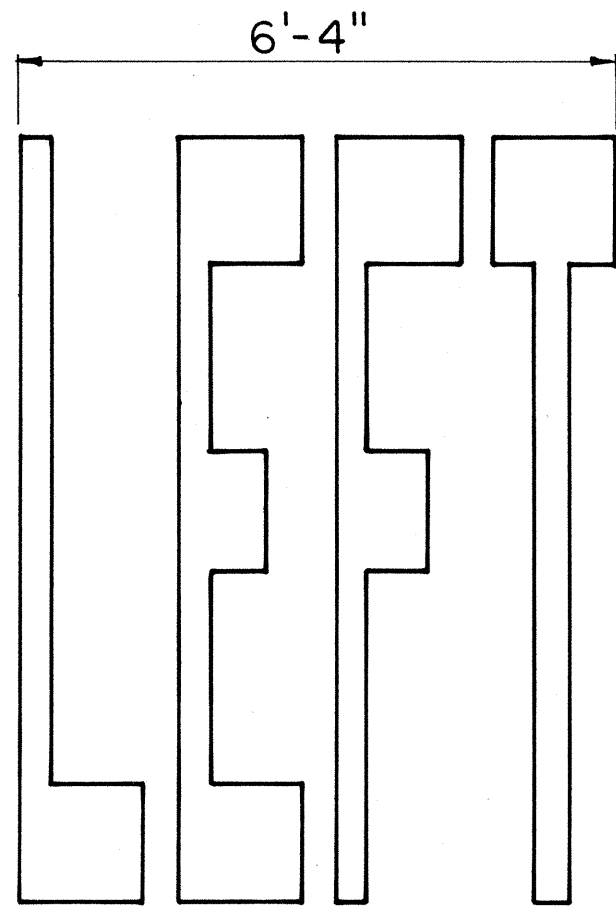
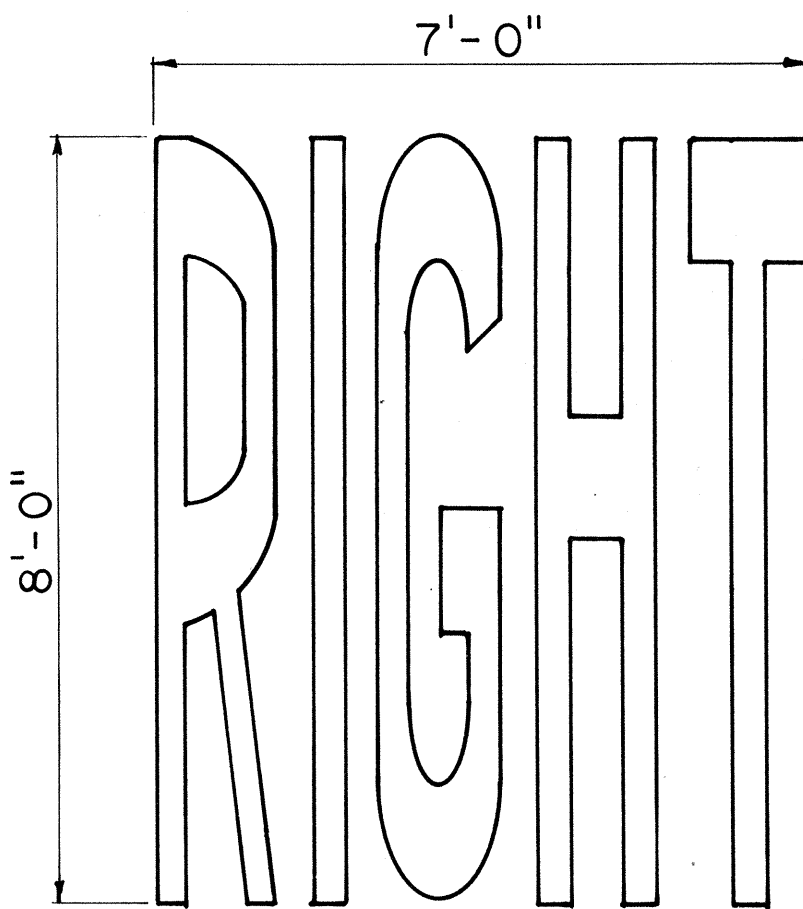
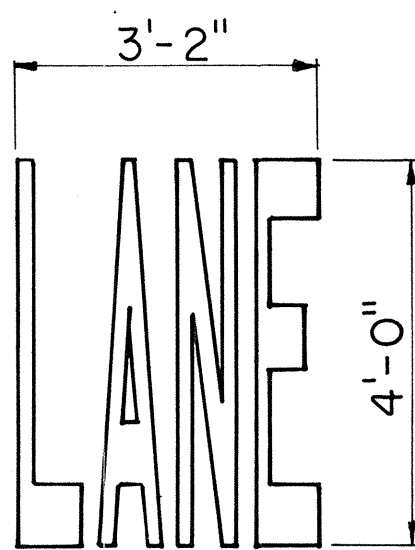
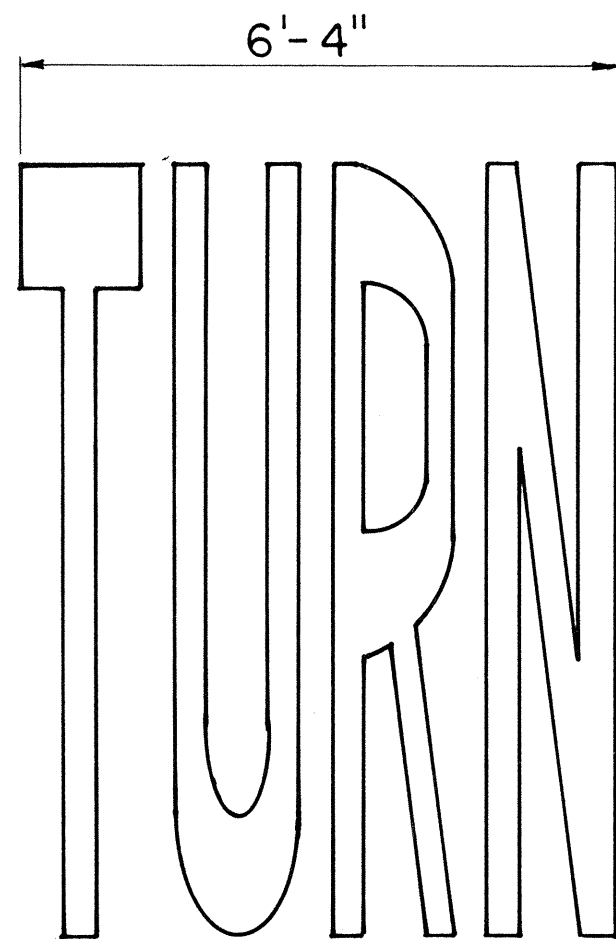
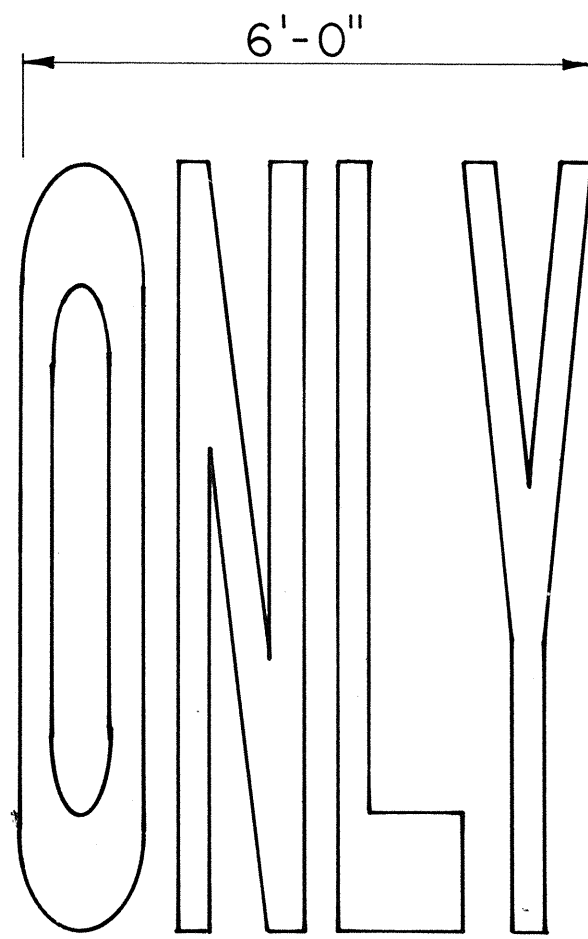
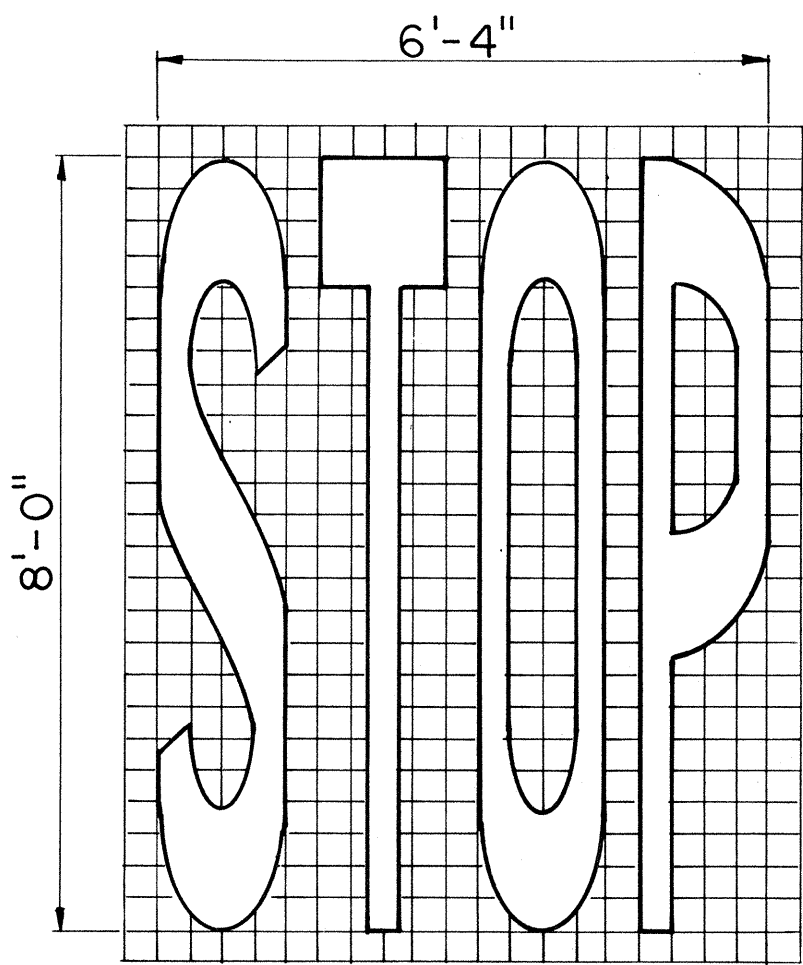
|                                                                      |
|----------------------------------------------------------------------|
| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION |
| STANDARD DETAILS                                                     |
| PAVEMENT ALPHABETS,<br>NUMBERS & SYMBOLS                             |
| Not to Scale                                                         |

SHEET NO. 1 OF 2 SHEETS DT 307

|                        |       |                       |                |              |                 |
|------------------------|-------|-----------------------|----------------|--------------|-----------------|
| FED. ROAD<br>DIST. NO. | STATE | FED. AID<br>PROJ. NO. | FISCAL<br>YEAR | SHEET<br>NO. | TOTAL<br>SHEETS |
| HAWAII                 | HAW.  | 83D-01-86M            | 1986           | 49           | 57              |

GENERAL NOTES

- All messages not shown must be approved by the Engineer prior to installation.
- The space between characters in a message shall be 1 grid unit unless otherwise shown or directed.
- All pavement messages shall be white in color.



APPROVAL RECOMMENDED:

*Eichi Tanaka*  
TRAFFIC ENGINEER

1/28/83  
DATE

APPROVED:

*J. Fujiyama*  
ASSISTANT CHIEF, ENGINEERING

1-31-83  
DATE

| NO. | REVISION | APPROVED<br>BY | DATE |
|-----|----------|----------------|------|
|     |          |                |      |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

STANDARD DETAILS

PAVEMENT ALPHABETS,  
NUMBERS & SYMBOLS

Not to Scale

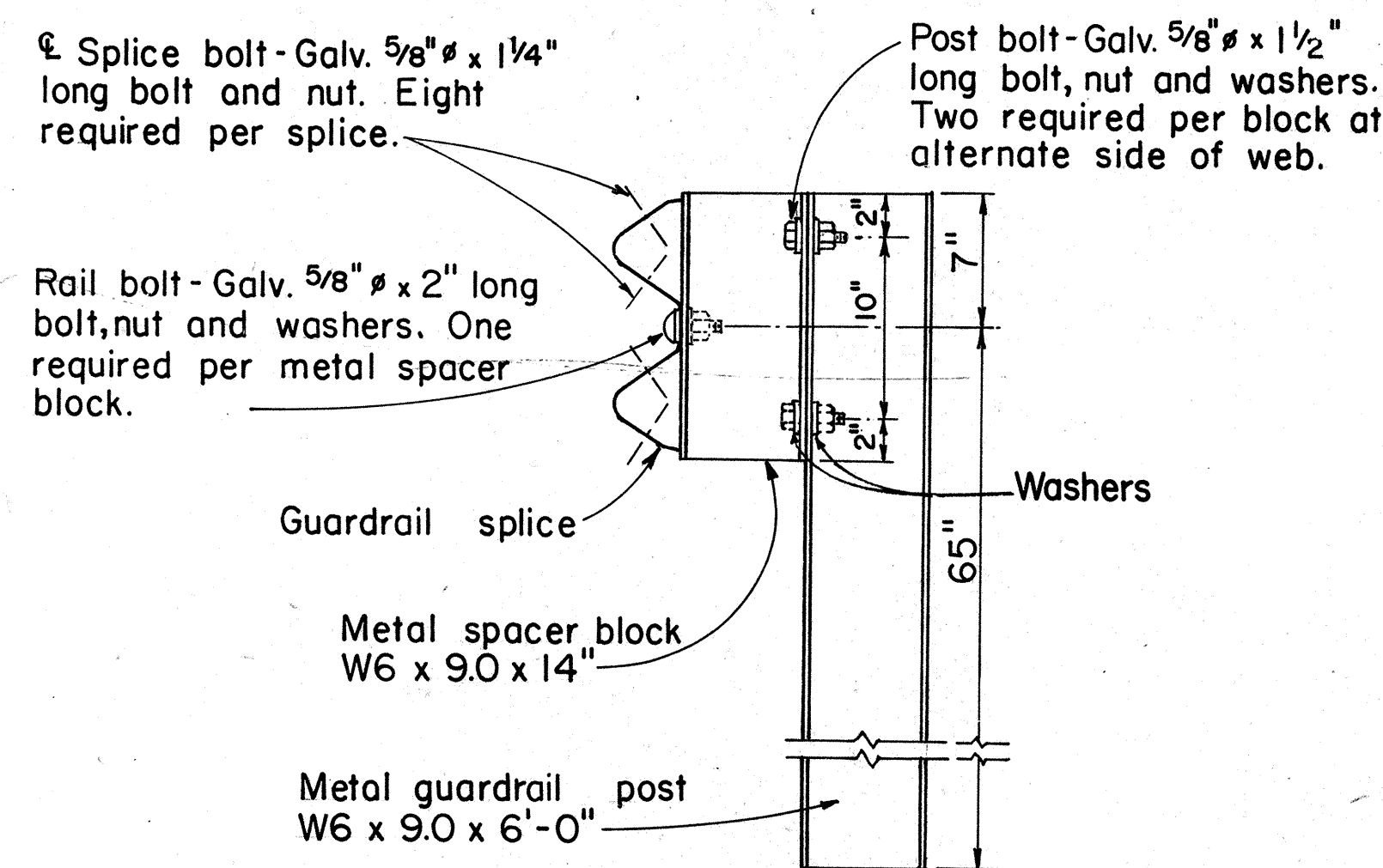
SHEET NO. 2 OF 2 SHEETS DT 308

|                  |                   |      |
|------------------|-------------------|------|
| ORIGINAL<br>PLAN | SURVEY PLOTTED BY | DATE |
| NOTE BOOK        | DRAWN BY          |      |
| No.              | TRACED BY         |      |
|                  | DESIGNED BY       |      |
|                  | QUANTITIES BY     |      |
|                  | CHECKED BY        |      |

### GENERAL NOTES

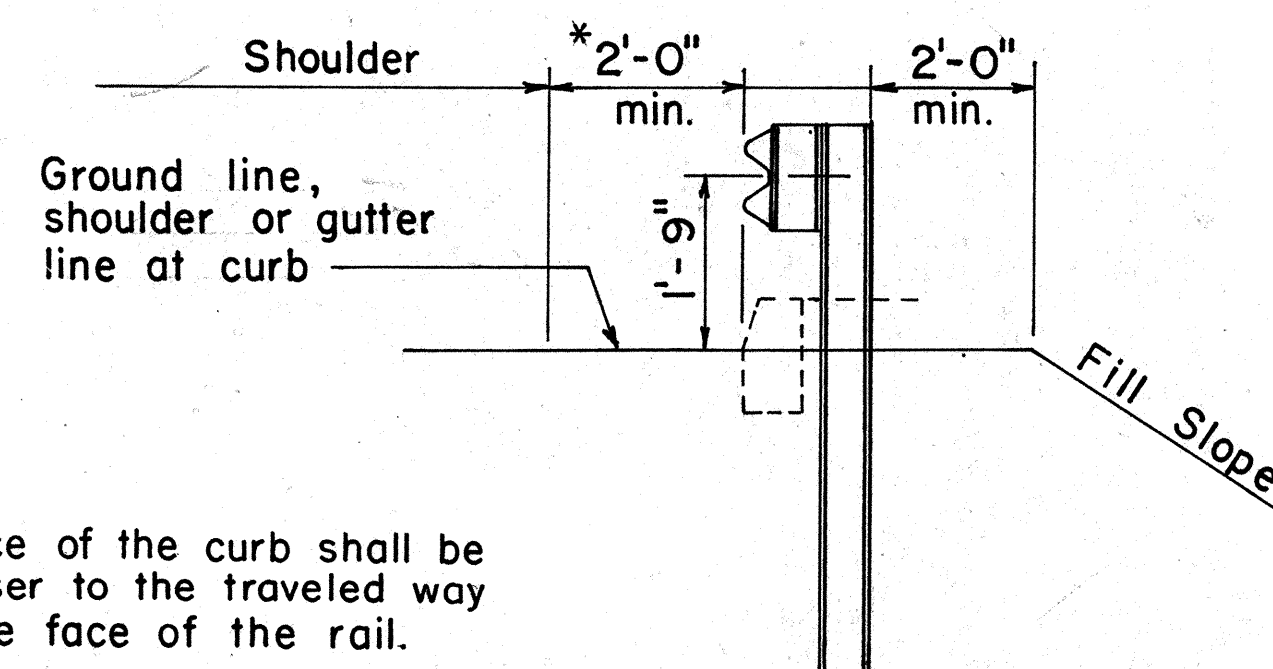
- 
- Guardrail
- Metal spacer block, W6 x 9.0
- Metal guardrail post, W6 x 9.0
- 7/8"
- 5 7/8"
- 5 7/8"
- 4"
- ↑

## PLAN



ELEVATION

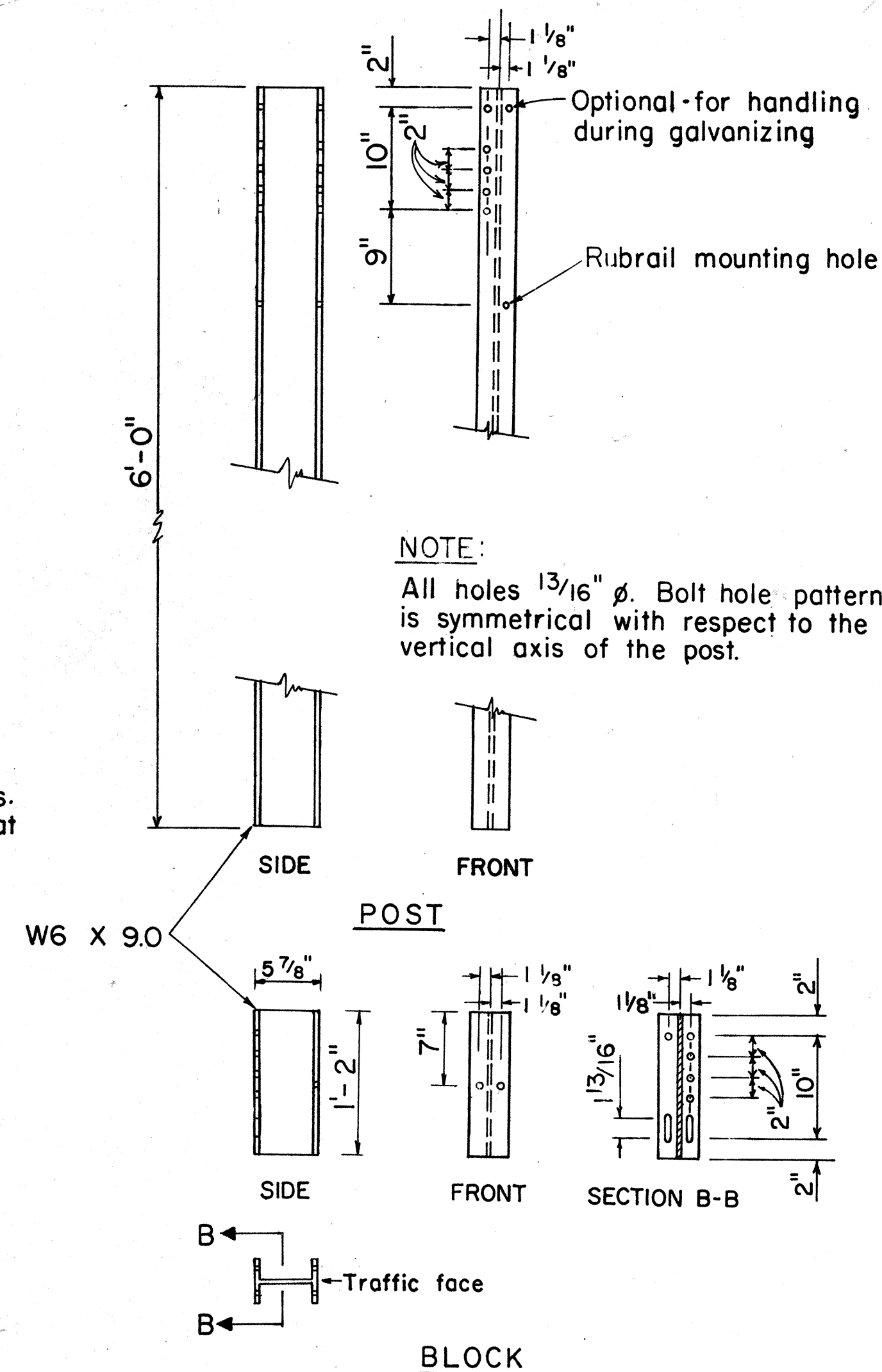
SCALE:  $1\frac{1}{2}" = 1'-0"$



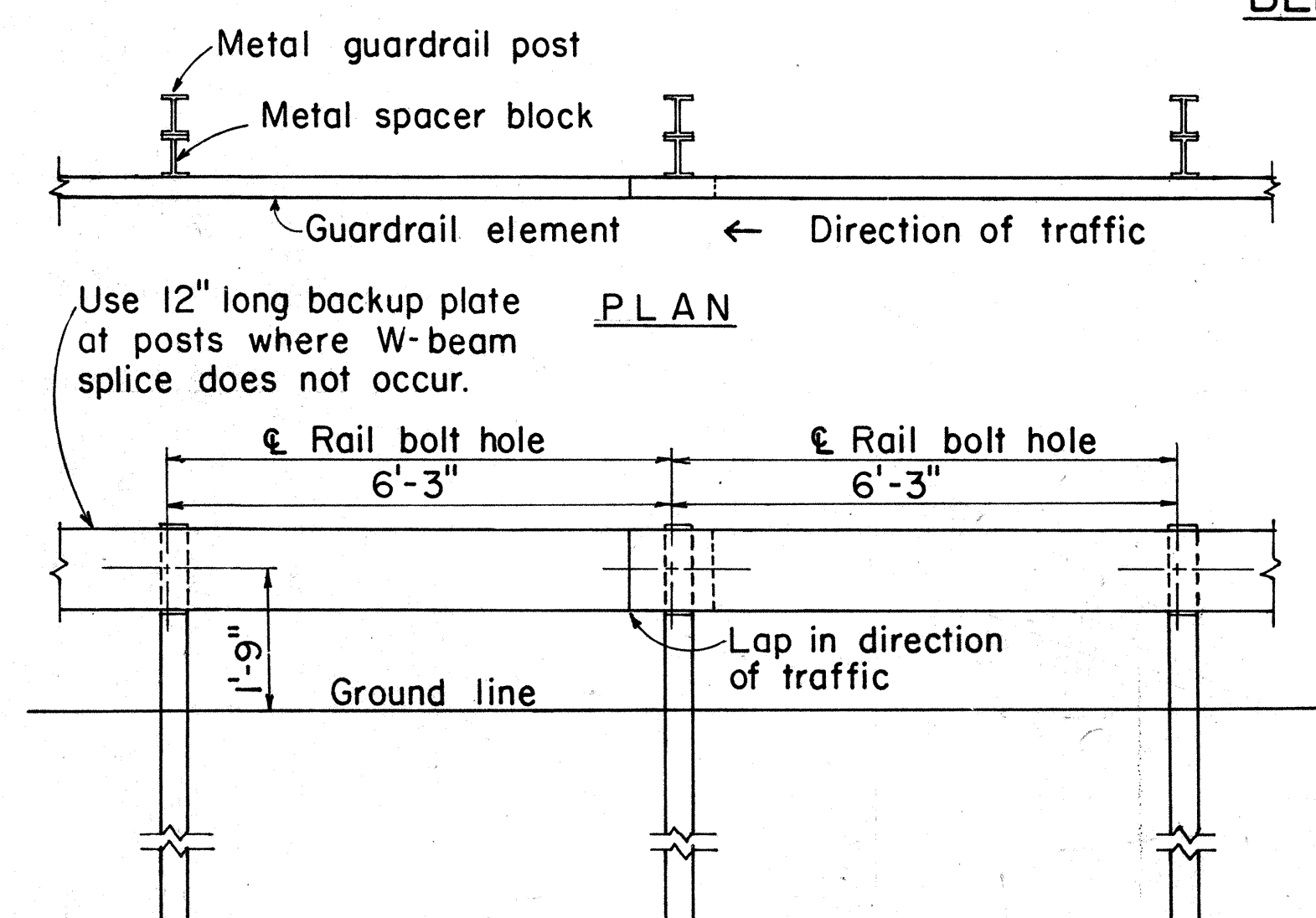
AT SHOULDER SECTION

SCALE:  $1/2" = 1'-0"$

Note:  
The face of the curb shall be no closer to the traveled way than the face of the rail.

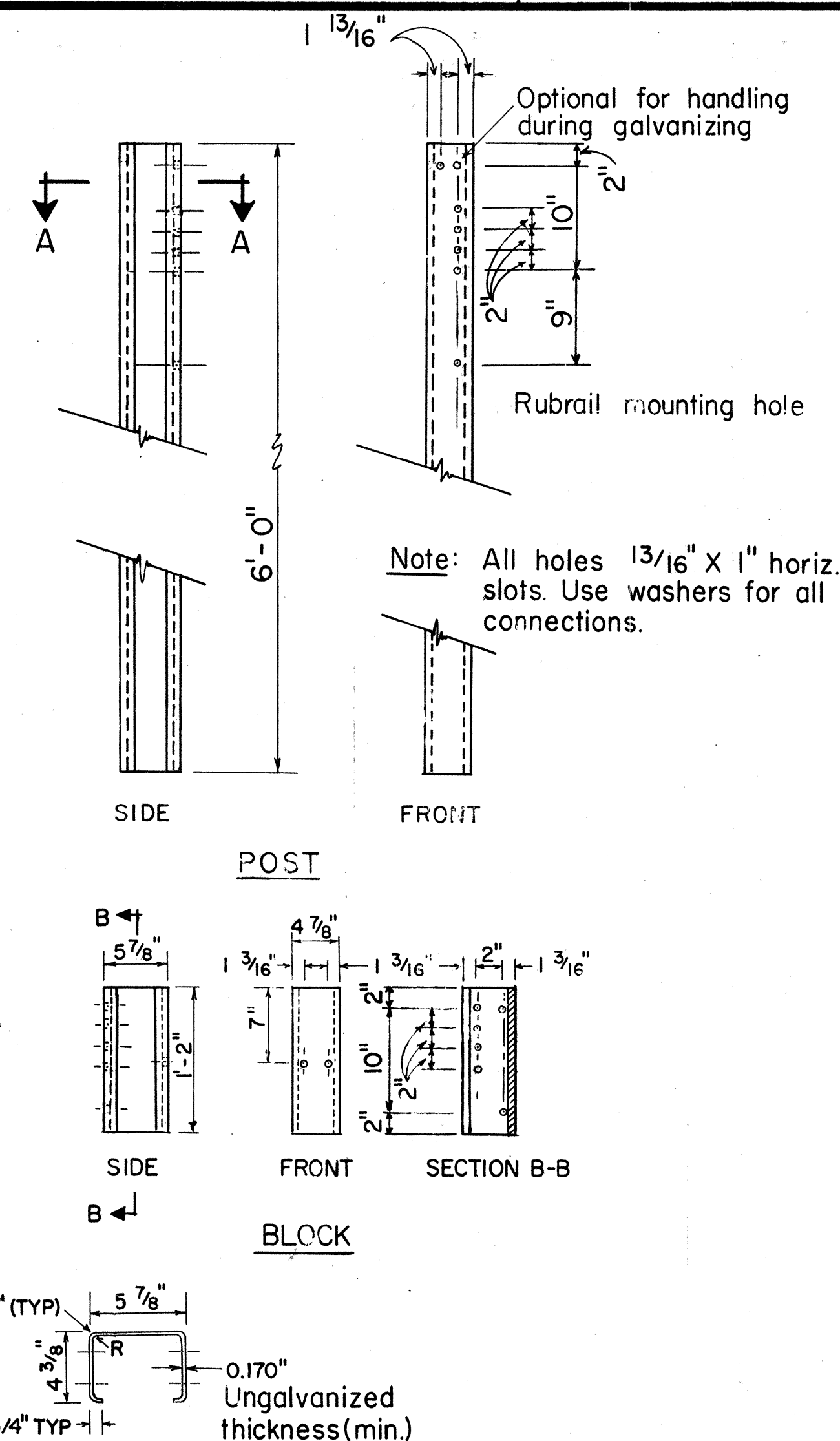


SCALE: 1" = 1'-0"



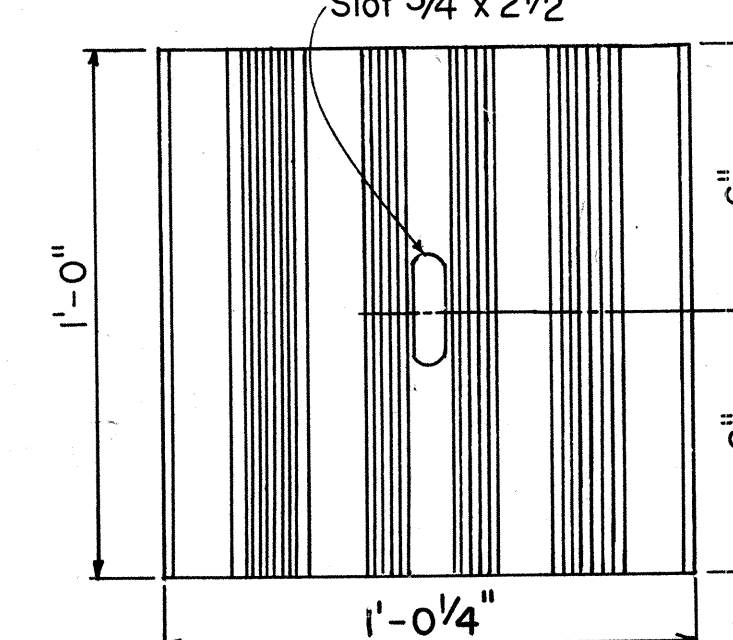
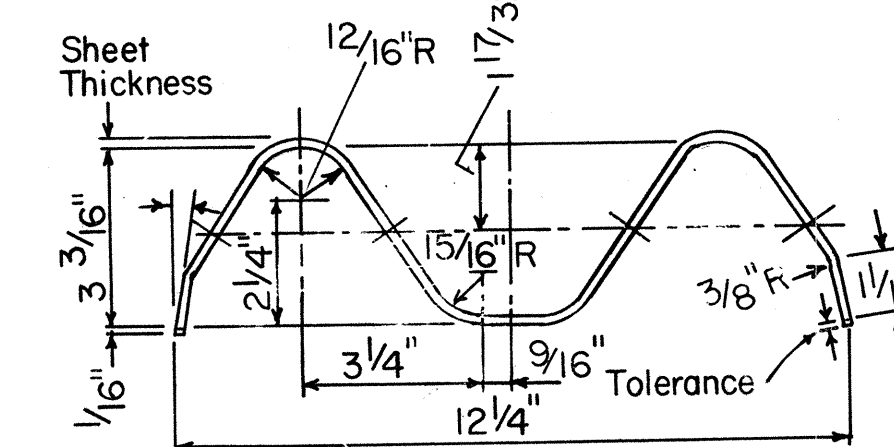
ELEVATION

SCALE:  $1/2" = 1'-0"$



SECTION A-A  
N.T.S.

SCALE: 1" = 1'-0"



BACK-UP-PLATE  
N.T.S.

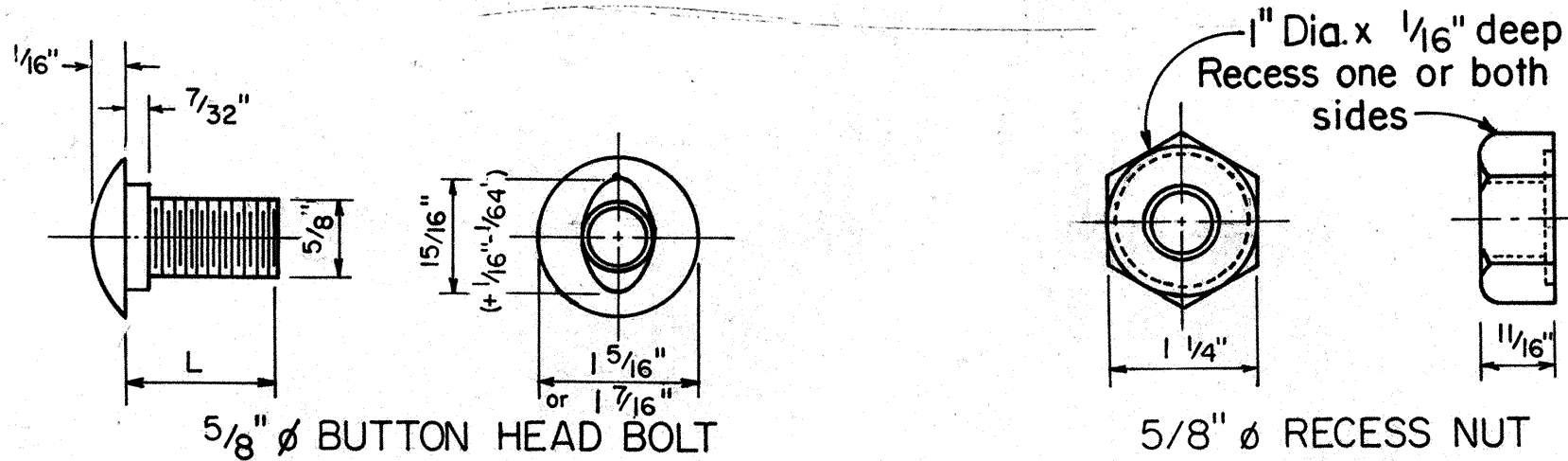
APPROVAL RECOMMENDED:  
Enichi Tanaka  
TRAFFIC ENGINEER

9/7/82  
DATE

APPROVED: Robert Zalski 9/22/82  
ASSISTANT CHIEF, ENGINEERING DATE

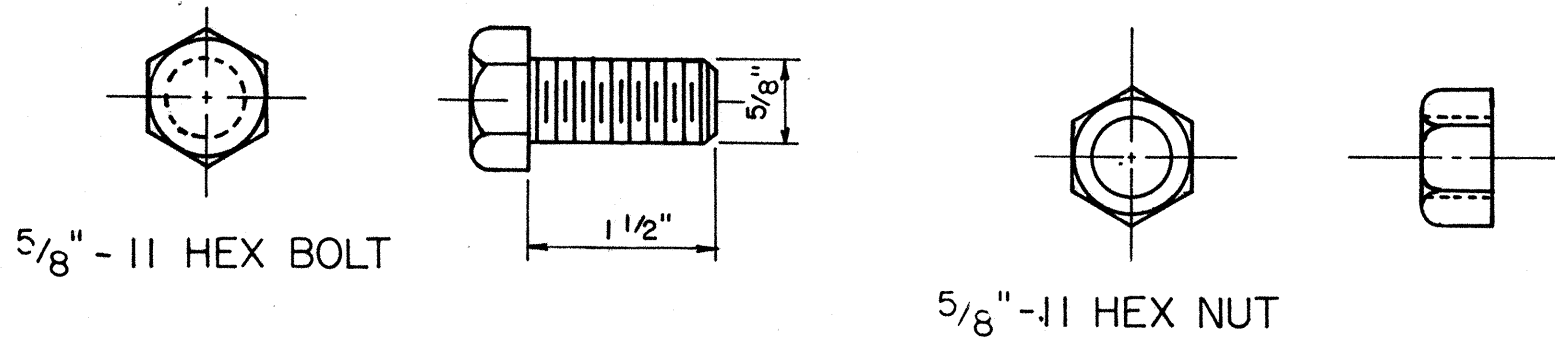
Scale: As Shown July, 1982  
SHEET No. OF SHEETS DT 500

| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-86M | 1986        | 51        | 57           |

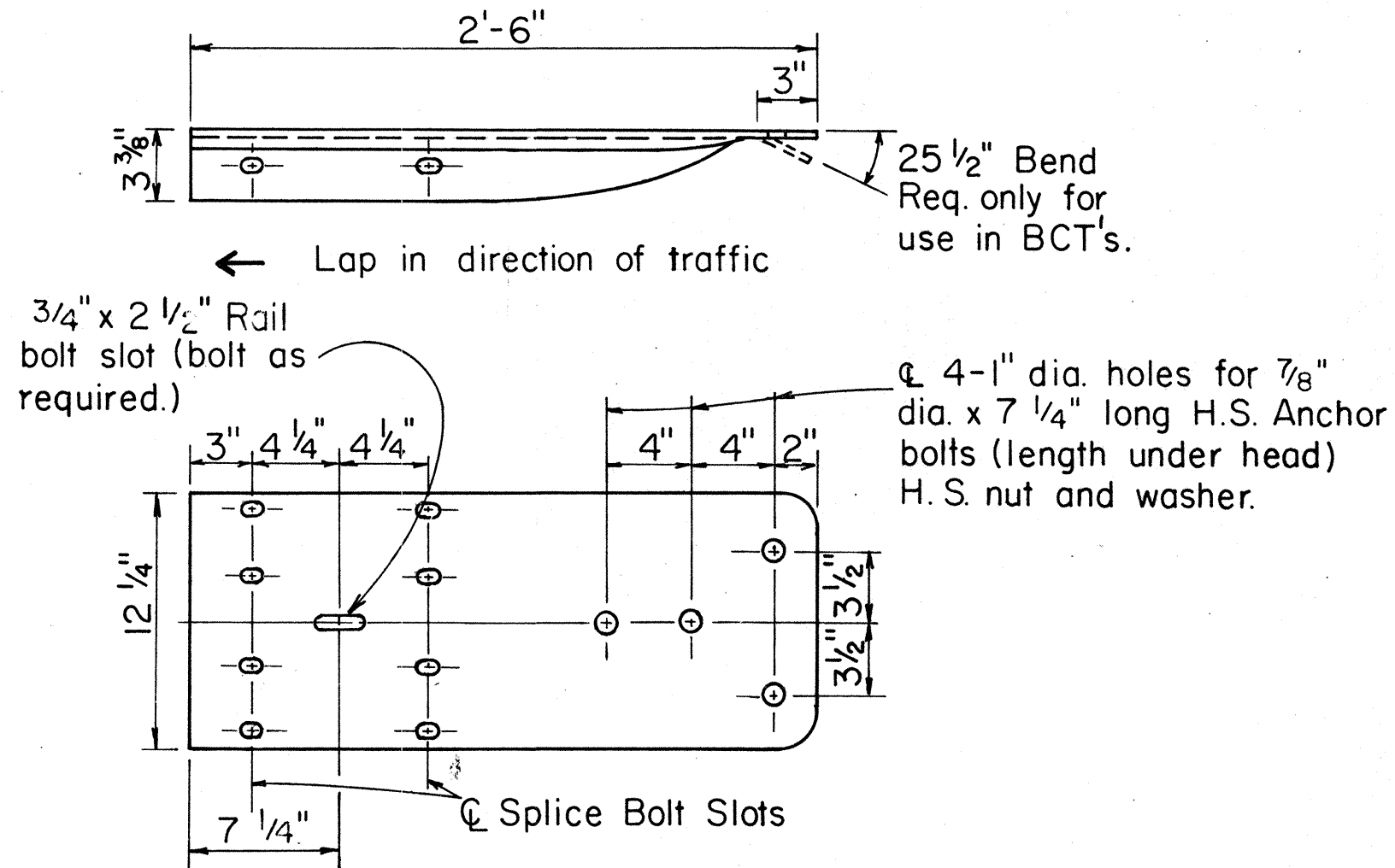


| L      | Thread Length           | Intended Use          |
|--------|-------------------------|-----------------------|
| 1 1/4" | Full length thread      | Splice rail elements  |
| 2"     | 1 1/2" min. thread len. | Fasten rails to posts |

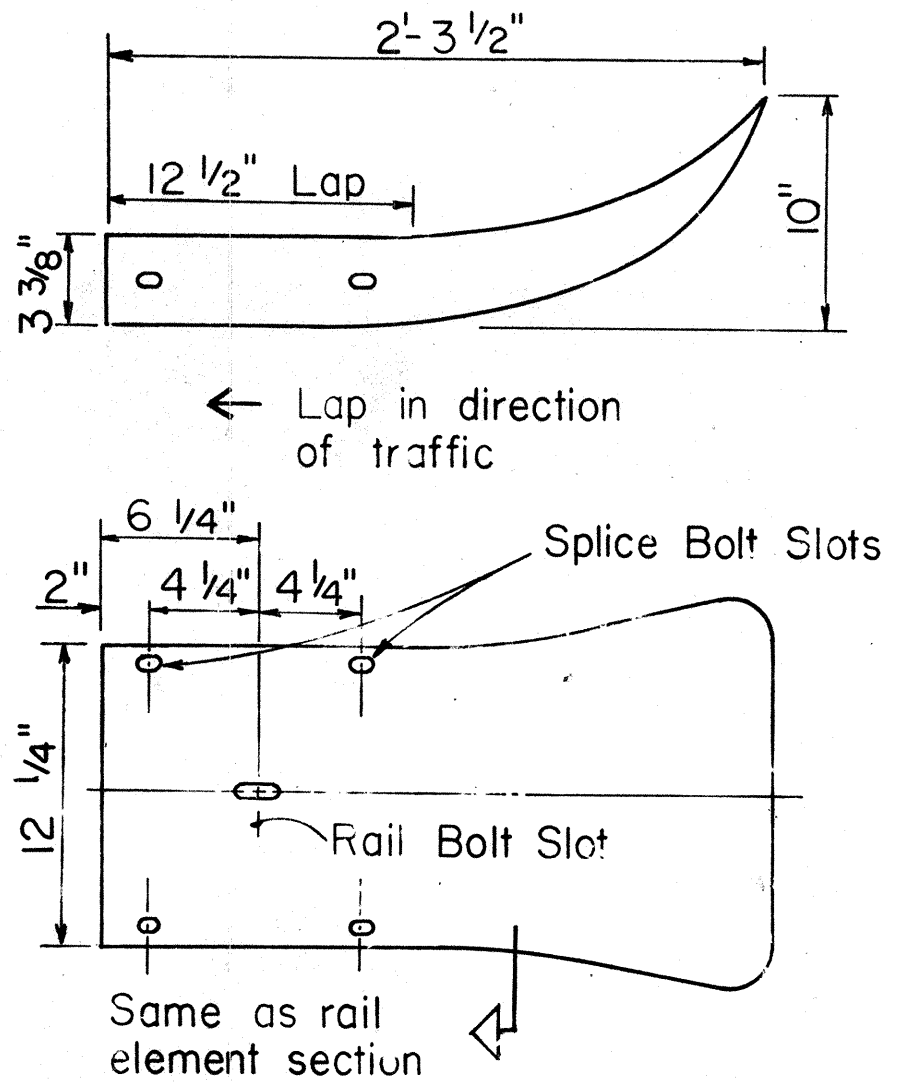
**5/8" BUTTON HEAD BOLT  
AND RECESS NUT**  
Scale: N.T.S.



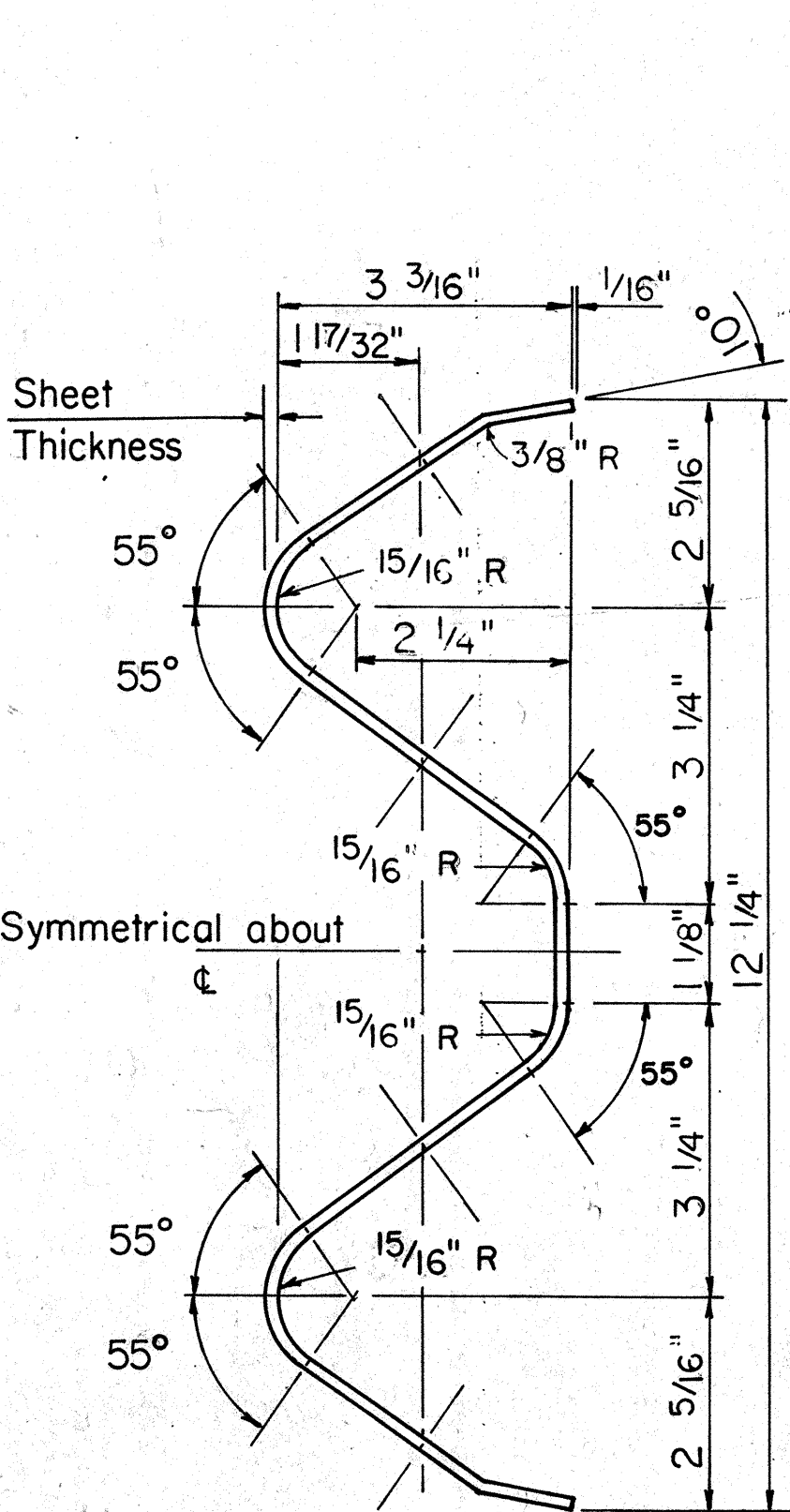
**5/8" HEX POST BOLT AND NUT**  
Scale: N.T.S.



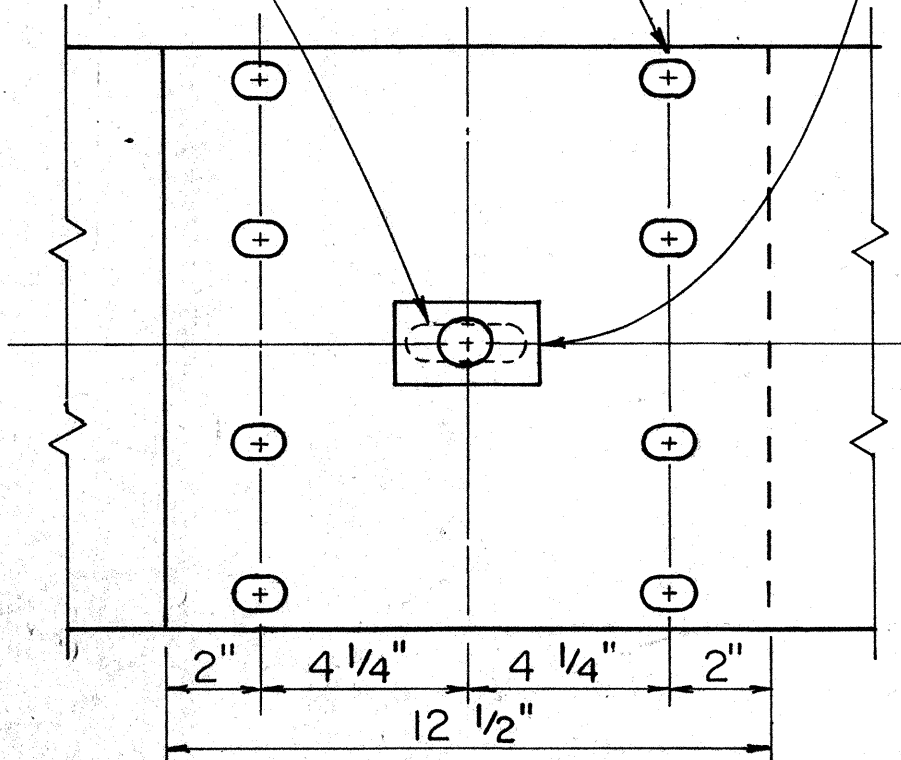
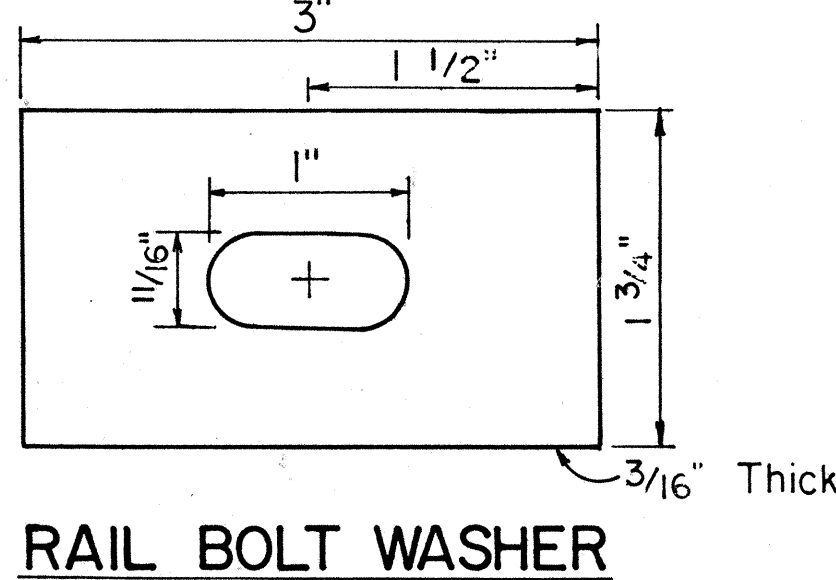
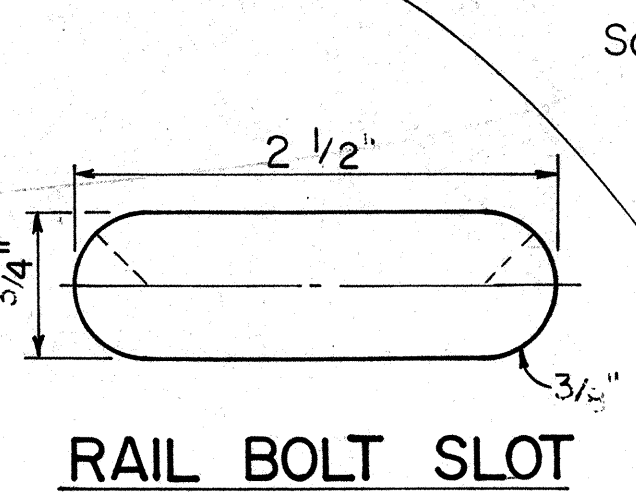
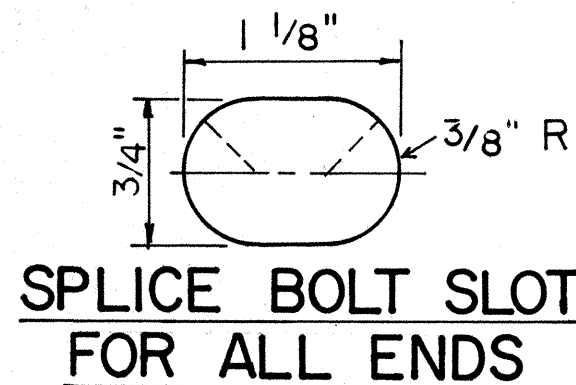
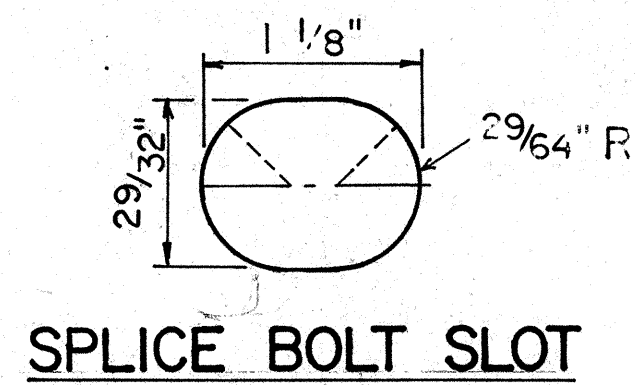
**W BEAM TERMINAL CONNECTOR**  
Scale: 1 1/2" = 1'-0"



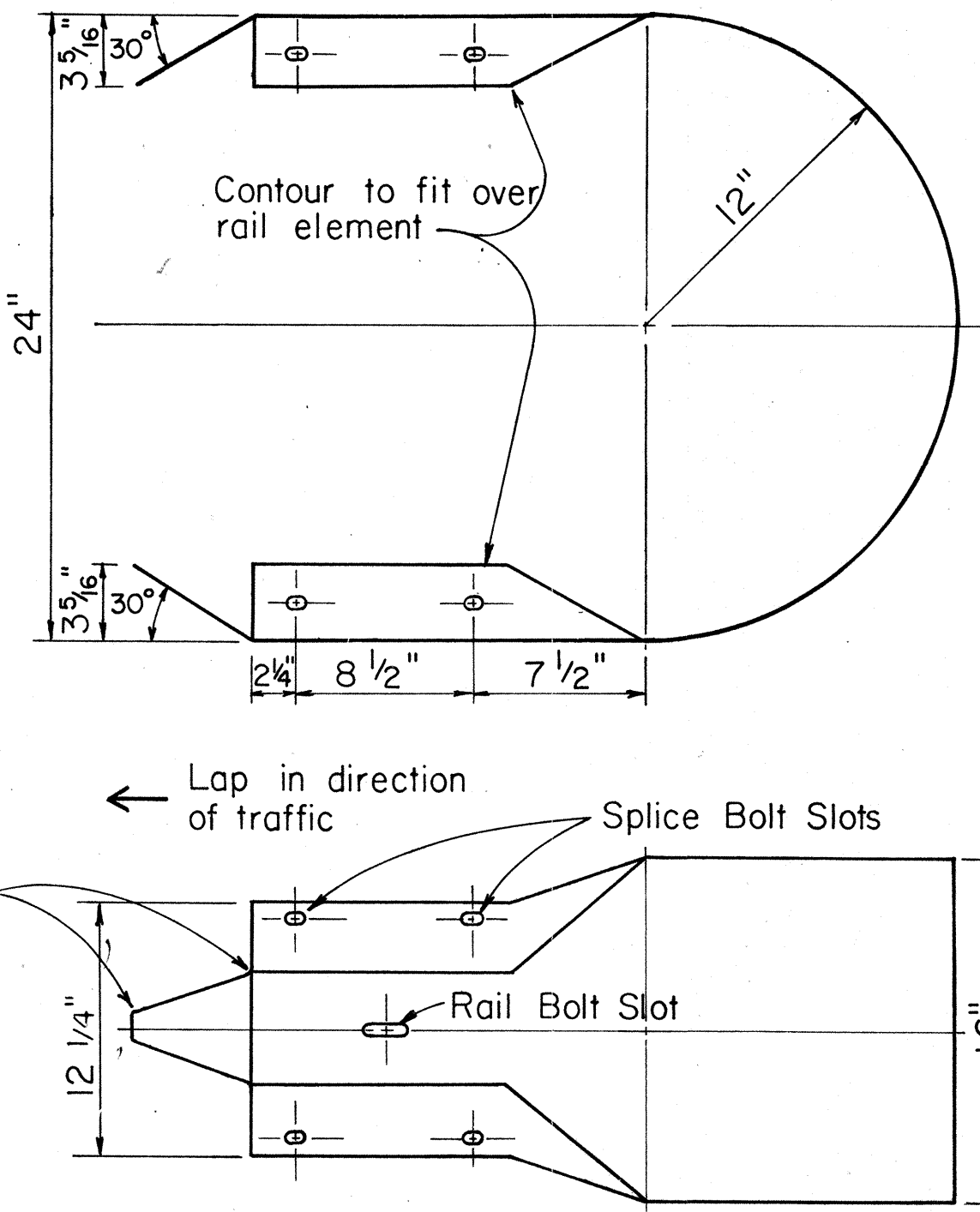
**W BEAM END SECTION (FLARED)**  
Scale: 1 1/2" = 1'-0"



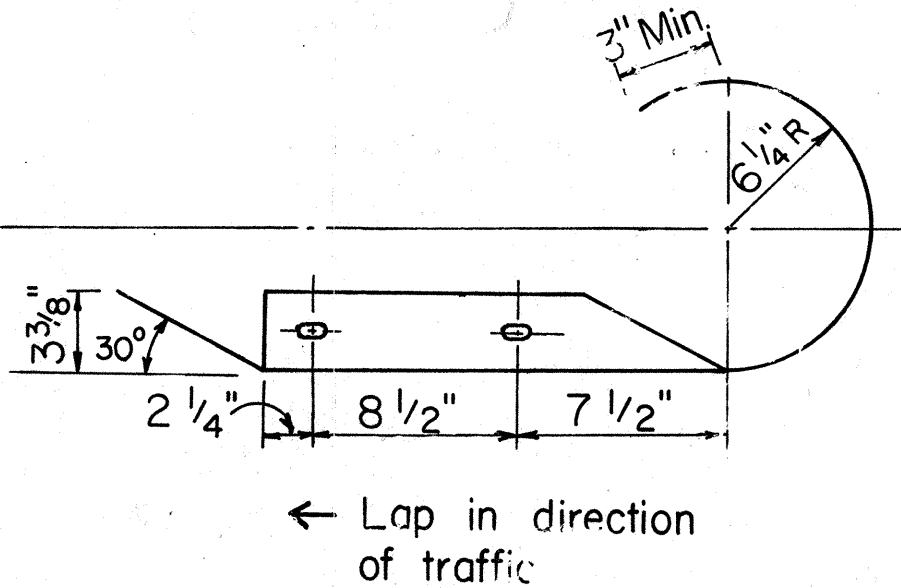
**RAIL ELEMENT SECTION**  
Scale: 6" = 1'-0"



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



**W BEAM END SECTION (BUFFER)**  
Scale: 1 1/2" = 1'-0"



**W BEAM END SECTION (ROUNDED)**  
Scale: 1 1/2" = 1'-0"

APPROVAL RECOMMENDED:  
*Erich Tanaka*  
TRAFFIC ENGINEER  
9/20/82  
DATE

APPROVED:  
*Shirley Delish*  
ASSISTANT CHIEF, ENGINEERING  
9/22/82  
DATE

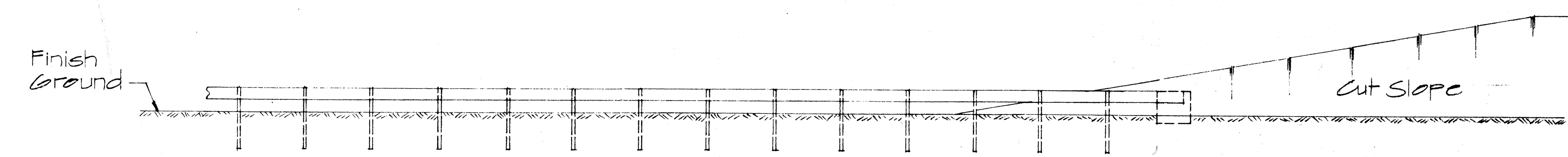
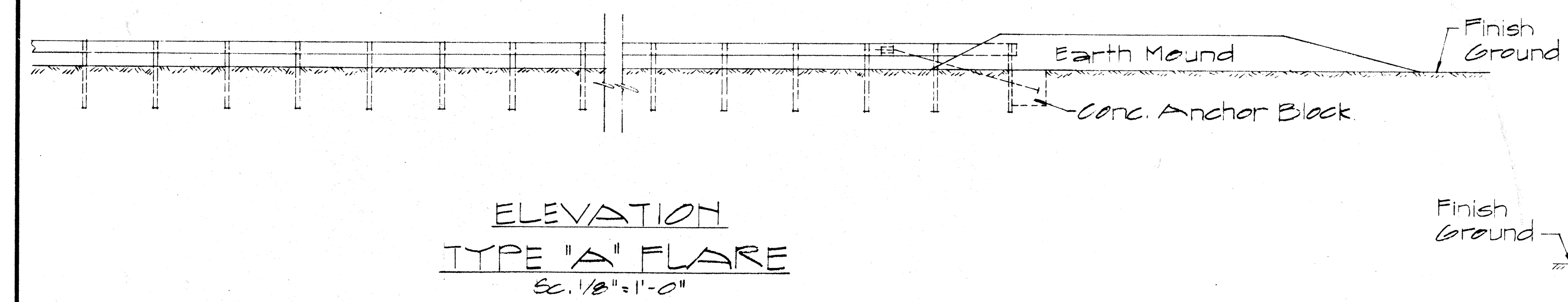
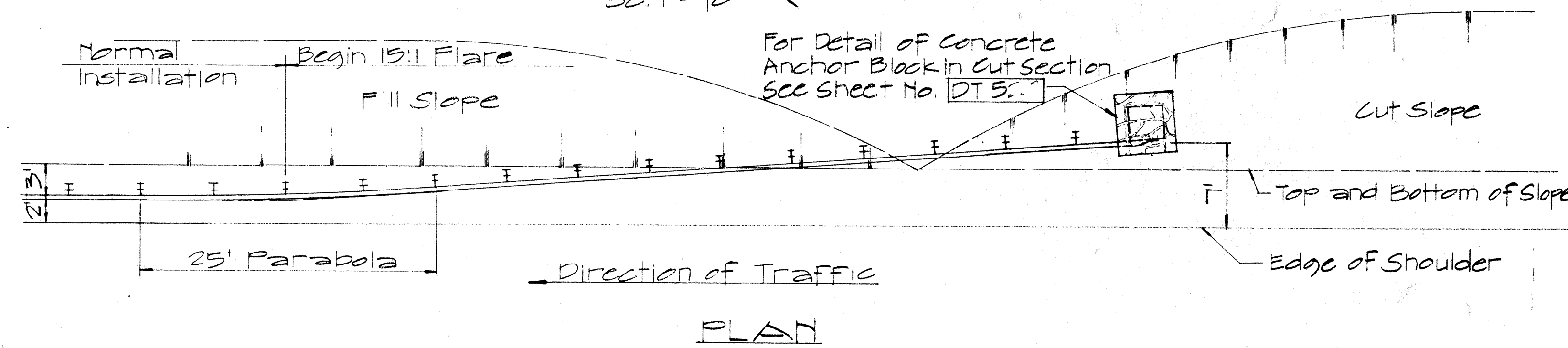
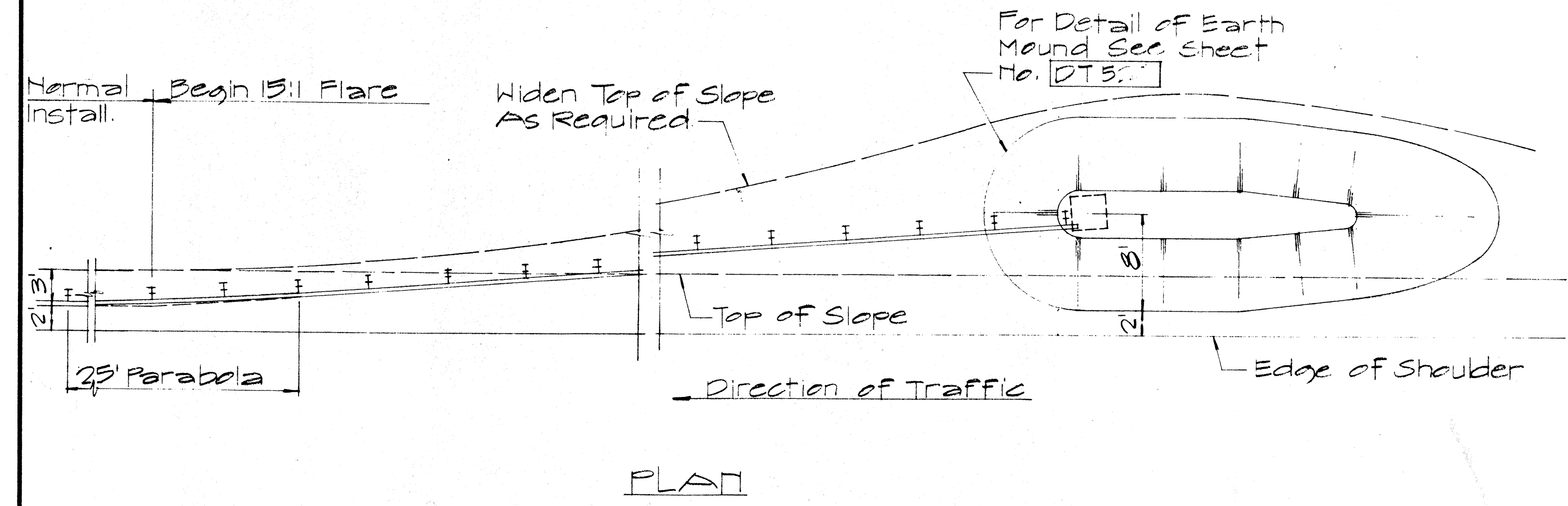
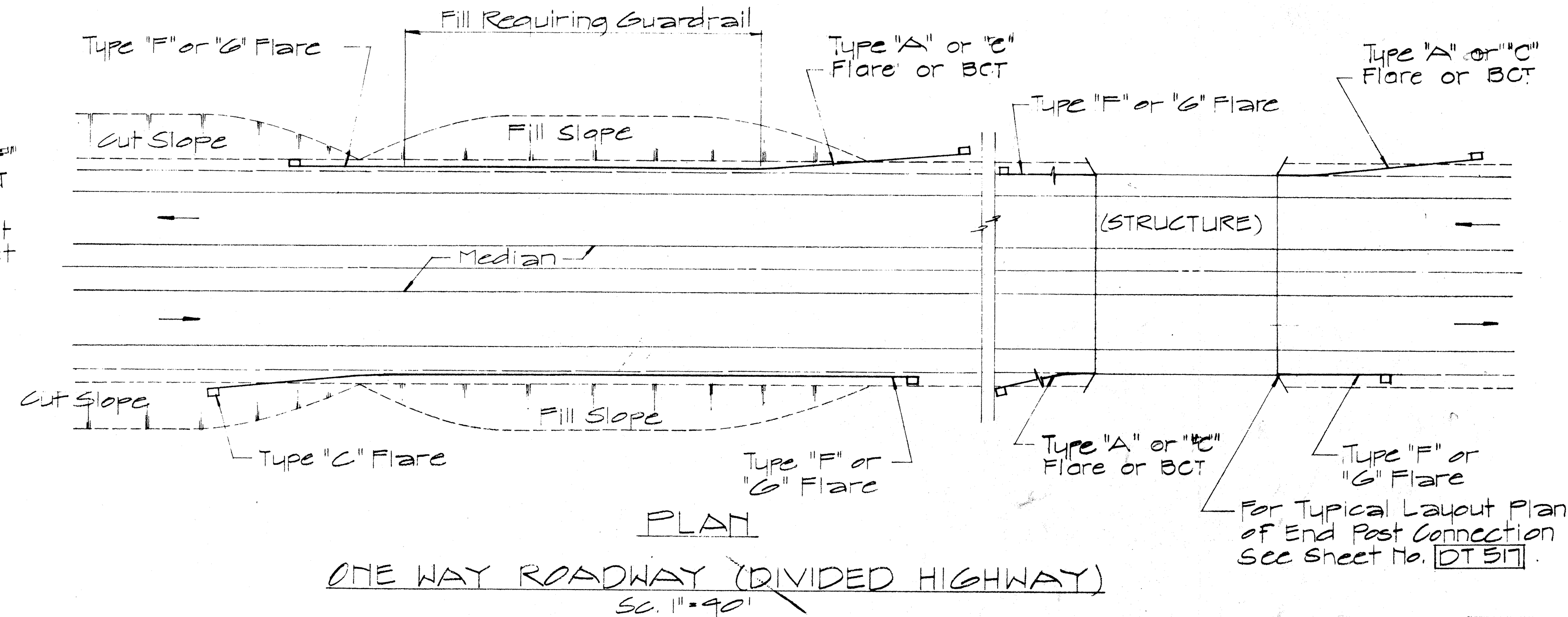
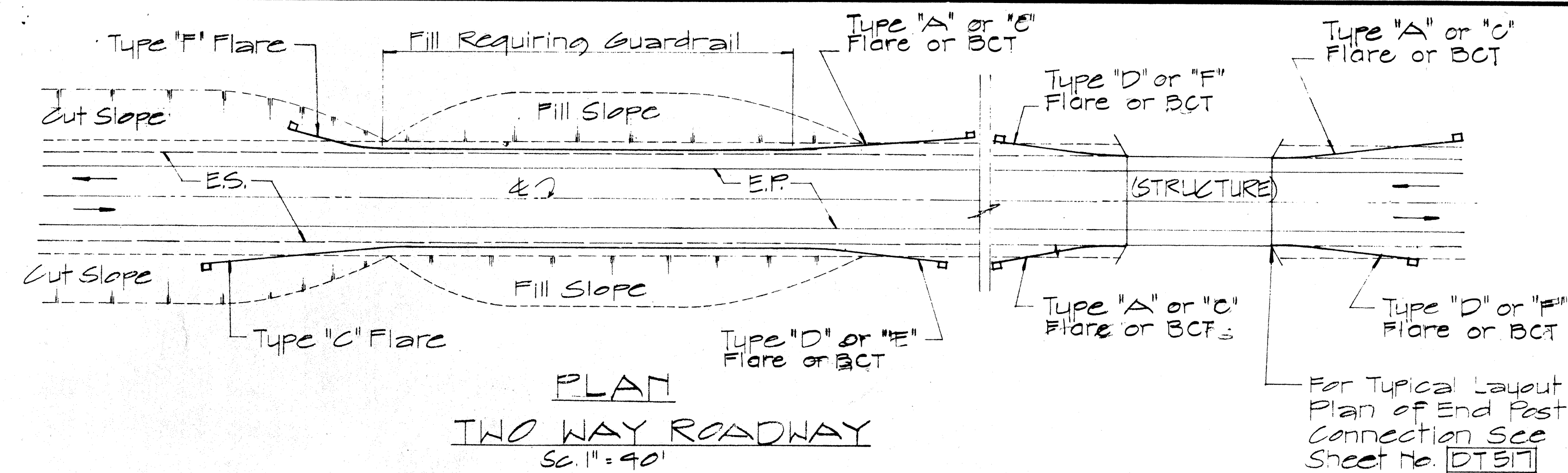
| NO. | REVISION                                 | APPROVED BY | DATE    |
|-----|------------------------------------------|-------------|---------|
| 1   | Supersedes sht. DT 501 approved 12/30/69 | H.f.        | 9/22/82 |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**STANDARD DETAILS**  
**METAL GUARDRAIL**

Scale: As Noted  
SHEET No. OF SHEETS DT 501

| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-86M | 1986        | 52        | 57           |

NOTE:  
 1. Metal guard rail connection to structures requires End Post Connection. See structure plans.  
 2. For detail of Breakaway Cable Terminal (BCT) See sheet No. DT 519



APPROVAL RECOMMENDED:  
*Ericki Tanaka* 12/29/62  
 TRAFFIC ENGINEER DATE

APPROVED  
*John J. Delaney* 12-30-69  
 ASSISTANT CHIEF, ENGINEERING DATE

| NO. | REVISION                                 | APPROVED BY | DATE    |
|-----|------------------------------------------|-------------|---------|
| 1   | Delete Type "B" Flare and Type "E" Flare | H.T.        | 6/15/88 |

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

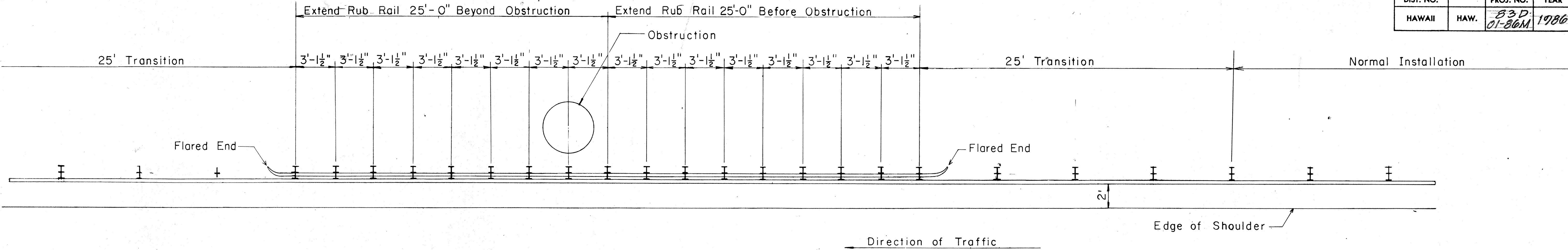
**STANDARD DETAILS  
 OF APPROACH END  
 FLARE - ONE & TWO  
 WAY ROADWAY**

Sc. As Noted April 1967

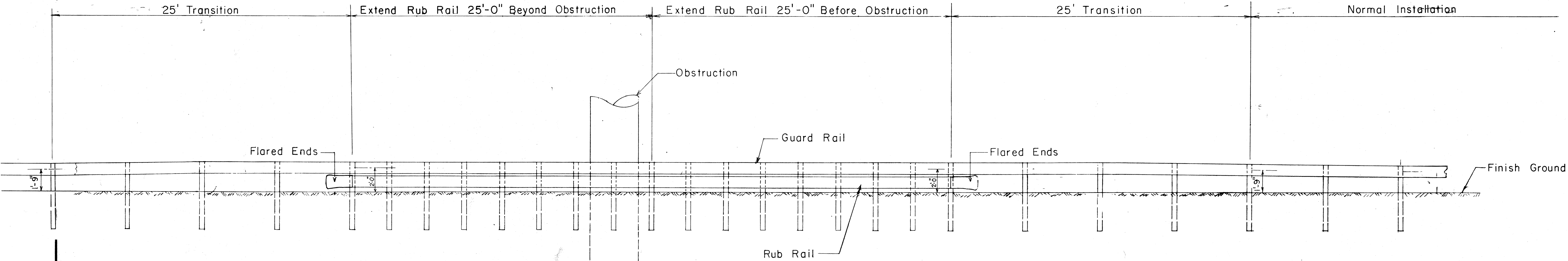
SHEET No. OF SHEETS DT 516

|                   |       |
|-------------------|-------|
| DATE              | _____ |
| SURVEY PLOTTED BY | _____ |
| DRAWN BY          | _____ |
| DESIGNED BY       | _____ |
| NOTED BY          | _____ |
| CHECKED BY        | _____ |
| ORIGINAL PLAN     | _____ |
| NOTE BOOK         | _____ |
| No.               | _____ |

| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-86M | 1986        | 53        | 57           |



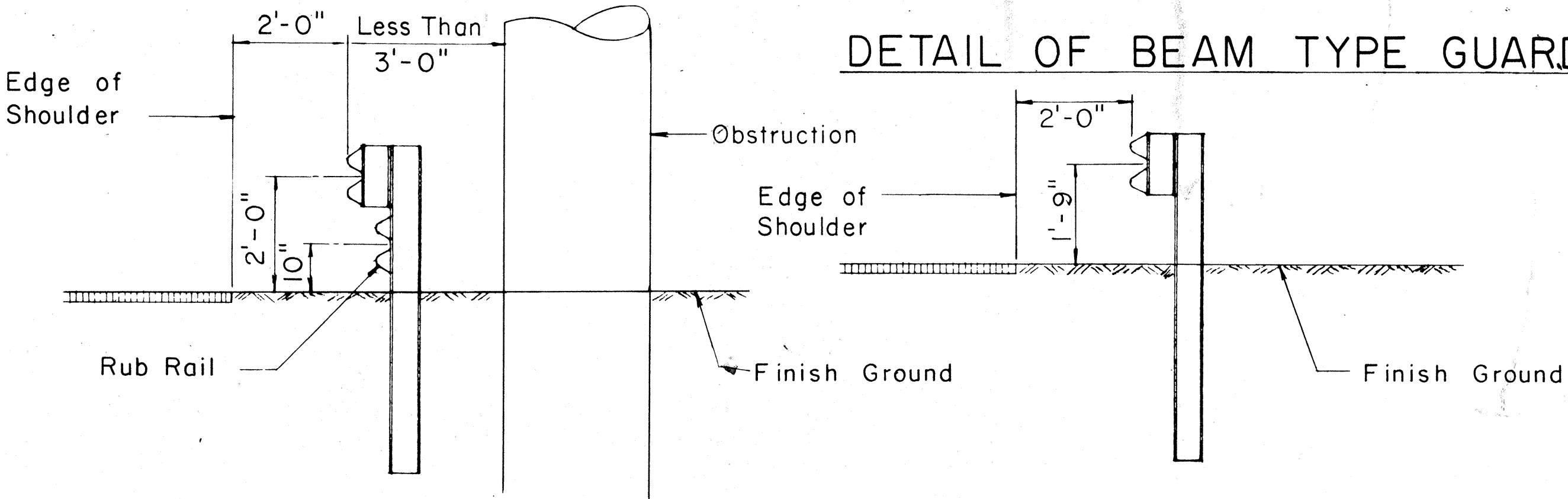
PLAN



ELEVATION

DETAIL OF BEAM TYPE GUARD RAIL WITH RUB RAIL AT OBSTRUCTION

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



TYP. SEC. AT OBSTRUCTION

TYP. SEC. AT NORMAL INSTALLATION

TYP. GUARD RAIL SECTIONS

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

APPROVAL RECOMMENDED:  
*Erich Tanaka* 12/29/69  
 TRAFFIC ENGINEER DATE

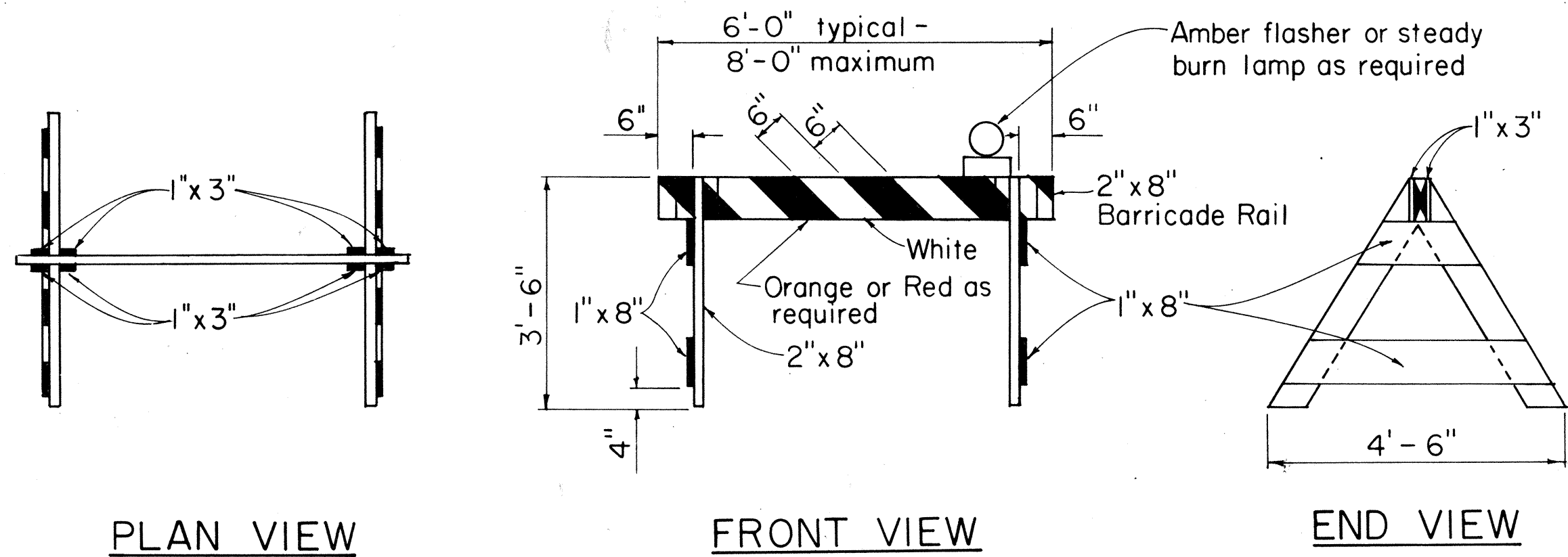
APPROVED:  
*John J. Zales* 12-30-69  
 ASSISTANT CHIEF, ENGINEERING DATE

| NO | REVISION                                                                       | APPROVED BY | DATE    |
|----|--------------------------------------------------------------------------------|-------------|---------|
| 1  | Added Additional Guard Rail Posts and Installed Flared Ends at end of Rub Rail | etc.        | 5/12/80 |

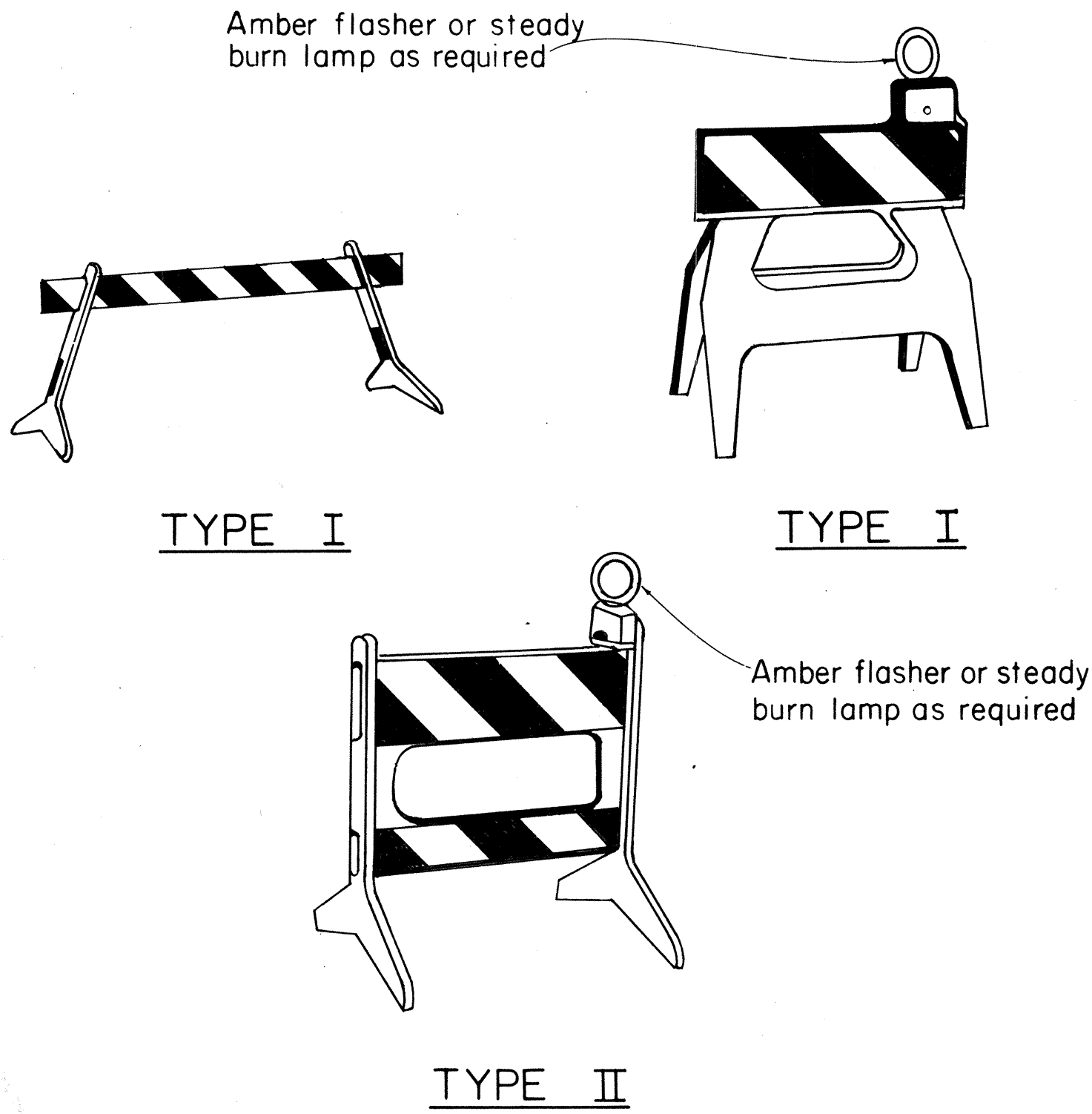
STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 LAND TRANSPORTATION FACILITIES DIVISION  
**STANDARD DETAIL**  
 BEAM TYPE GUARD RAIL WITH  
 RUB RAIL AT OBSTRUCTION  
 SHOULDER INSTALLATION

SCALE: AS SHOWN DATE: JUNE, 1969  
 SHEET No. OF SHEETS DT 518

| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-86M | 1986        | 54        | 57           |

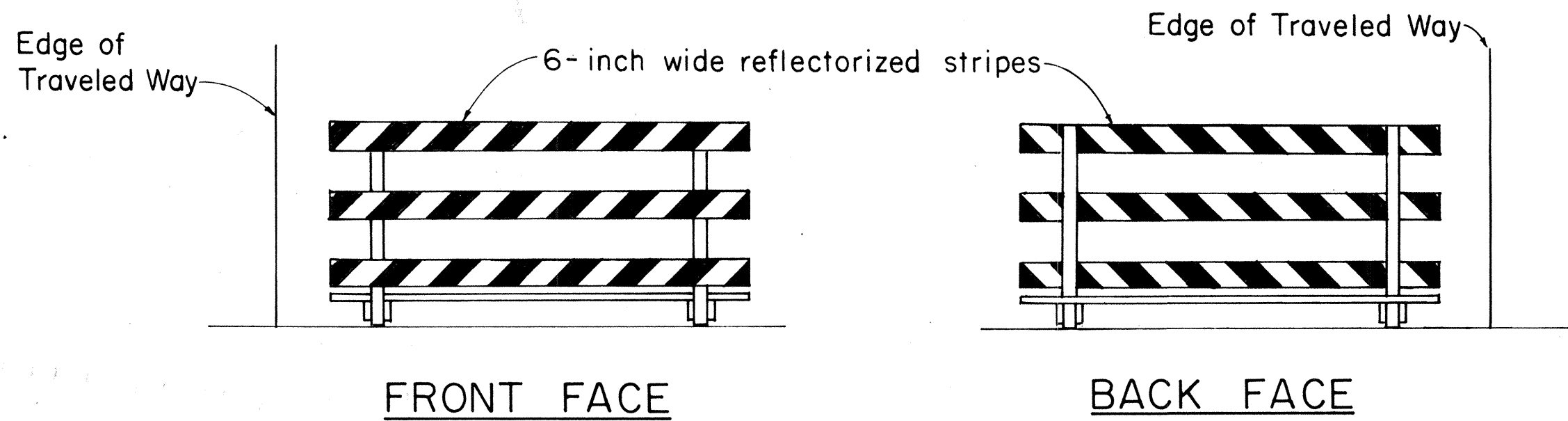


TYPE I BARRICADE  
Scale: 1/2" = 1'-0"



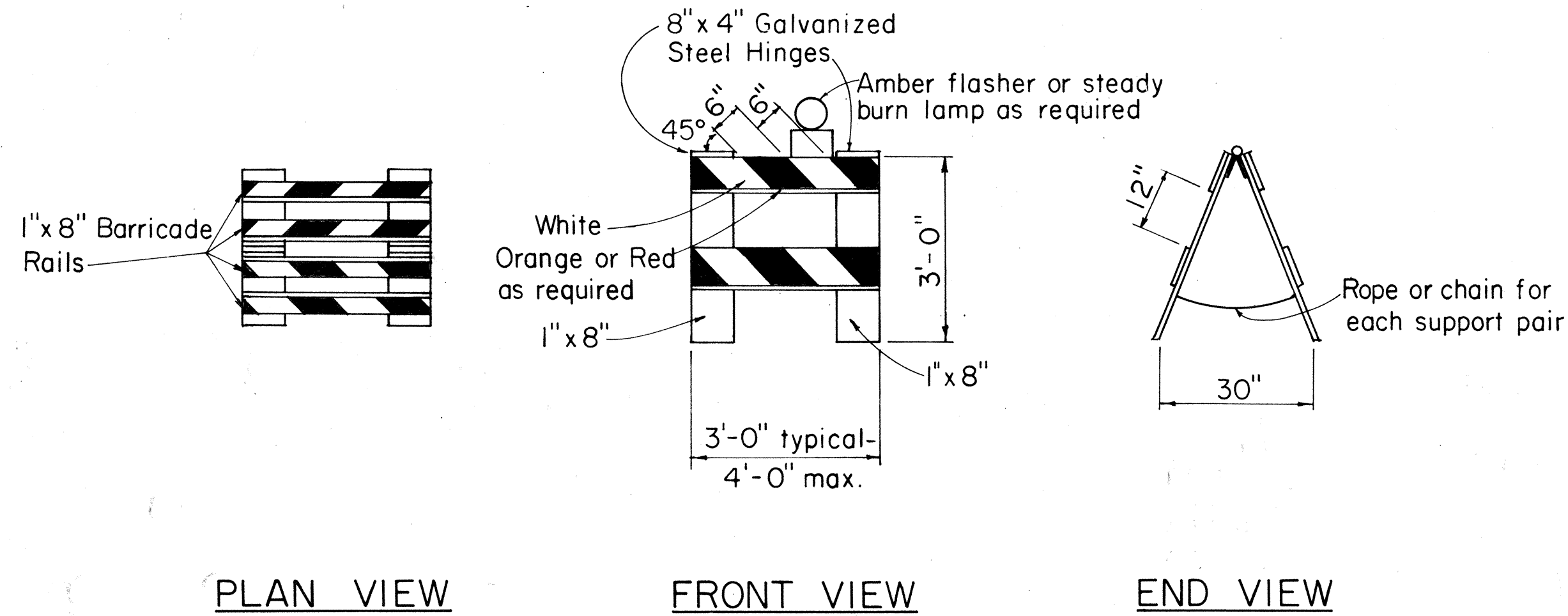
PLASTIC MOLDED BARRICADE OPTIONS\*  
Not to Scale

\*Shop Drawings must be submitted for approval.

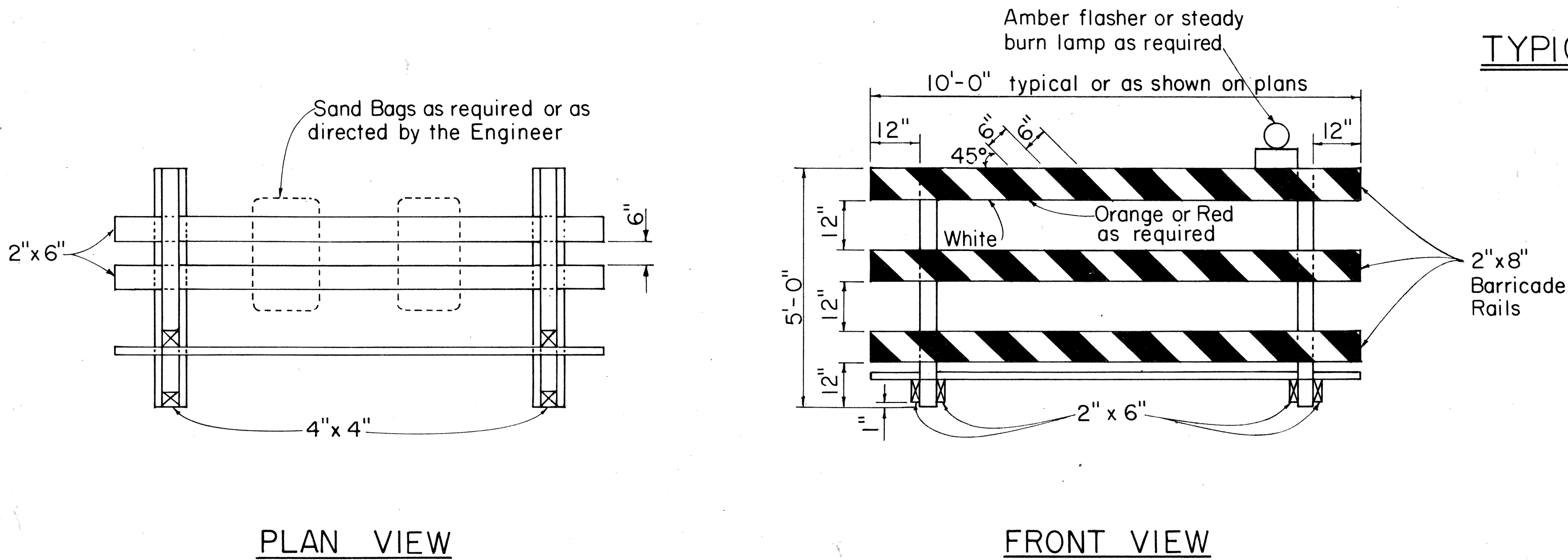


TYPICAL BARRICADE STRIPING DETAILS\*\*  
Not to Scale

\*\* Similar for Types I & II



TYPE II BARRICADE  
Scale: 1/2" = 1'-0"



TYPE III BARRICADE  
Scale: 1/2" = 1'-0"

APPROVAL RECOMMENDED:  
*Eiichi Tanaka* 10/21/81  
TRAFFIC ENGINEER DATE

APPROVED:  
*Hubert S. Scheraga* 10/23/81  
ASSISTANT CHIEF, ENGINEERING DATE

| NO. | REVISION                               | APPROVED BY | DATE     |
|-----|----------------------------------------|-------------|----------|
| 1   | Supersedes DT 800<br>Approved 12/30/69 | H.T.        | 10/23/81 |

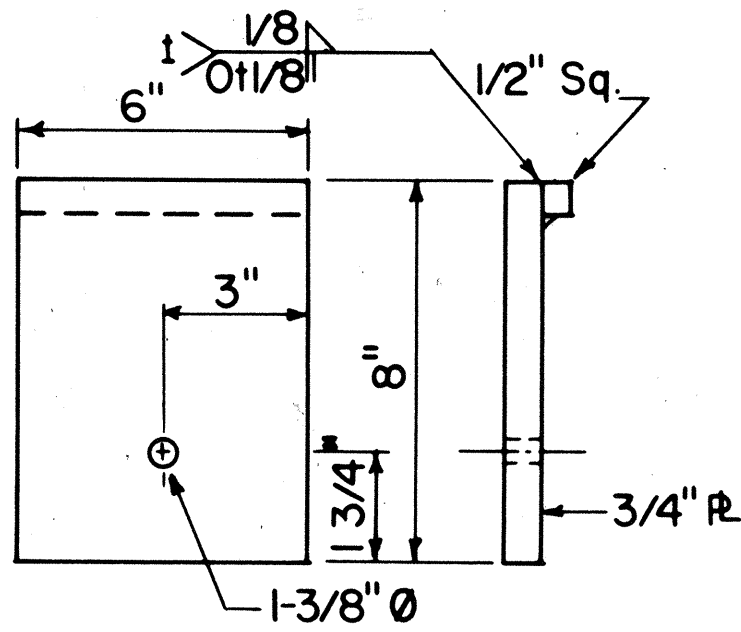
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

STANDARD DETAILS  
BARRICADES

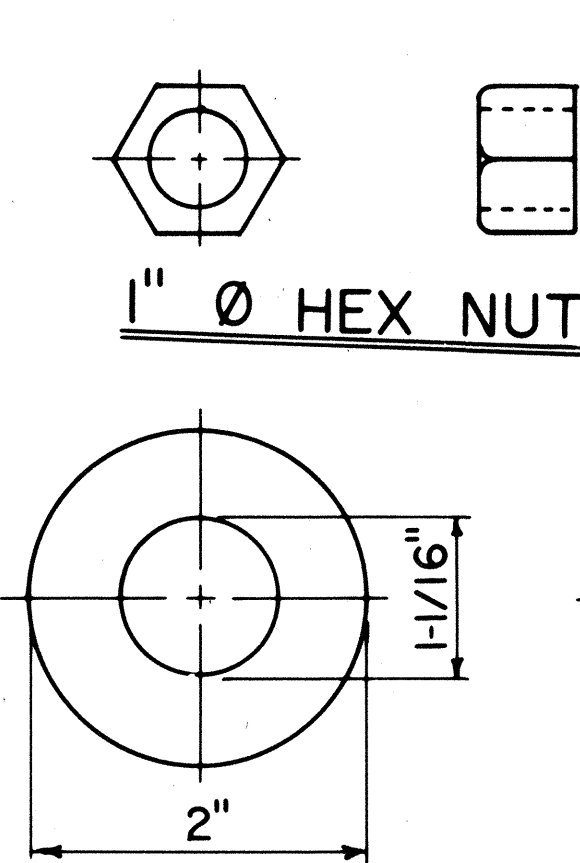
SCALE: As Shown  
SHEET No. 54 OF 57 SHEETS DT 800

|               |                   |      |
|---------------|-------------------|------|
| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
| NOTE BOOK     | DRAWN BY          | " "  |
| No.           | DESIGNED BY       | " "  |
|               | CHECKED BY        | " "  |

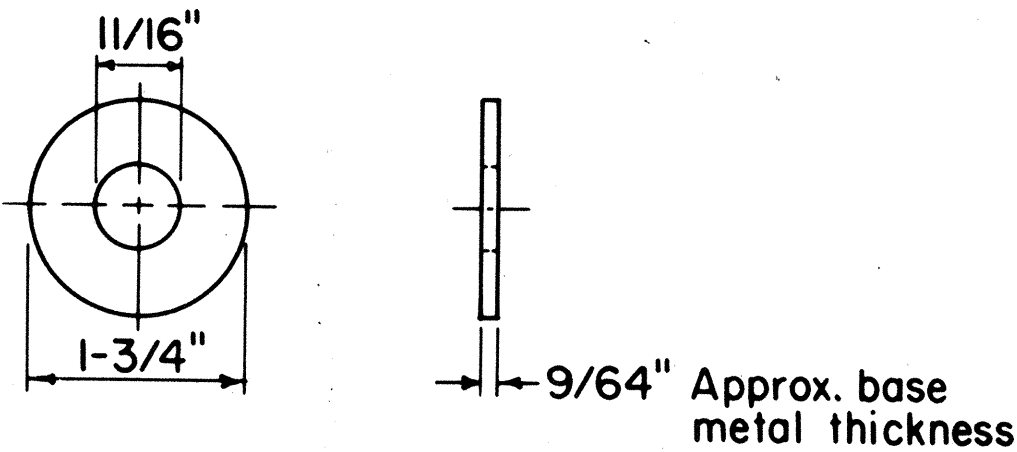
| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-86M | 1986        | 55        | 57           |



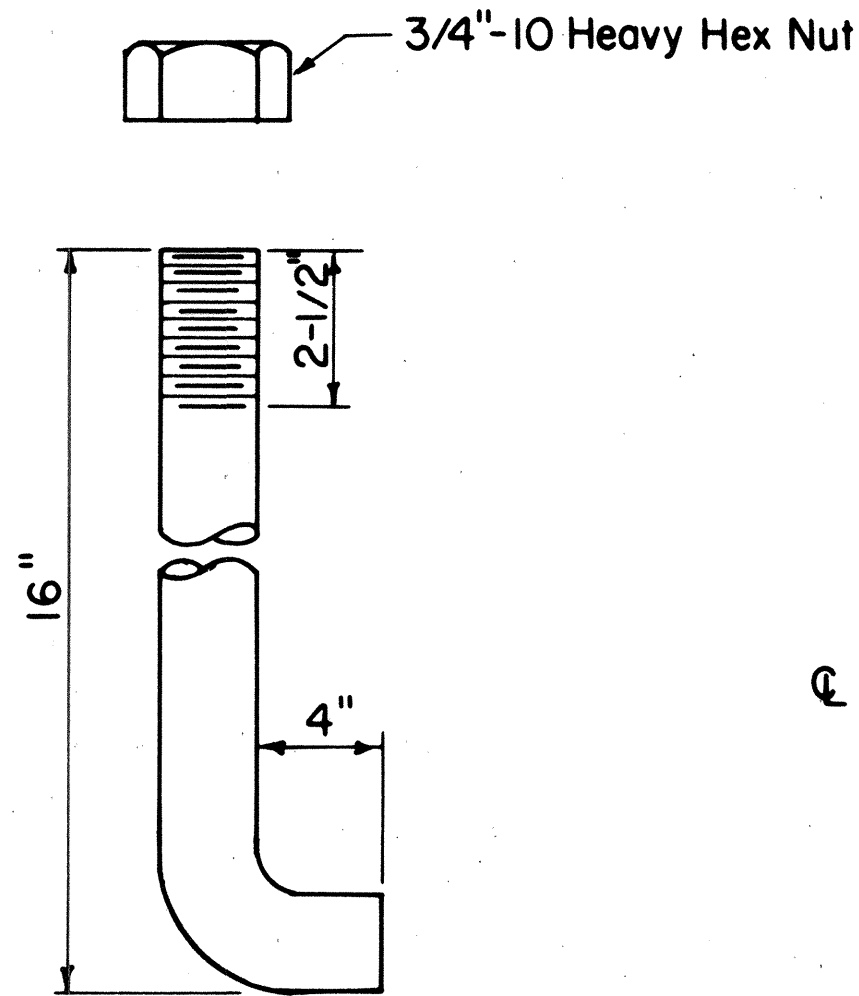
BEARING PLATE



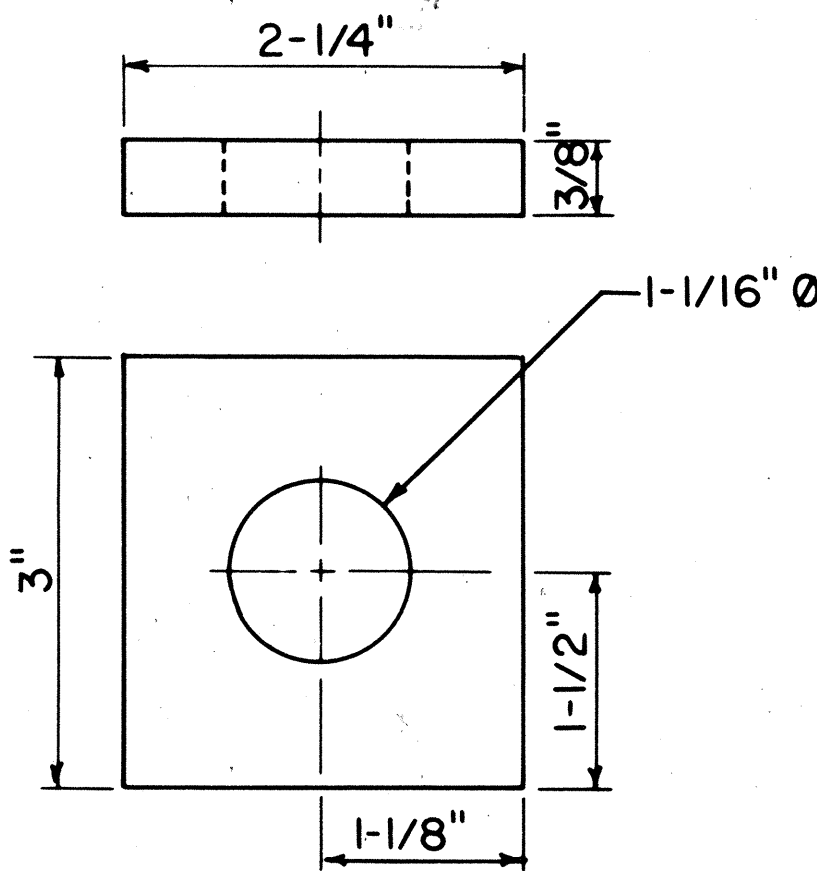
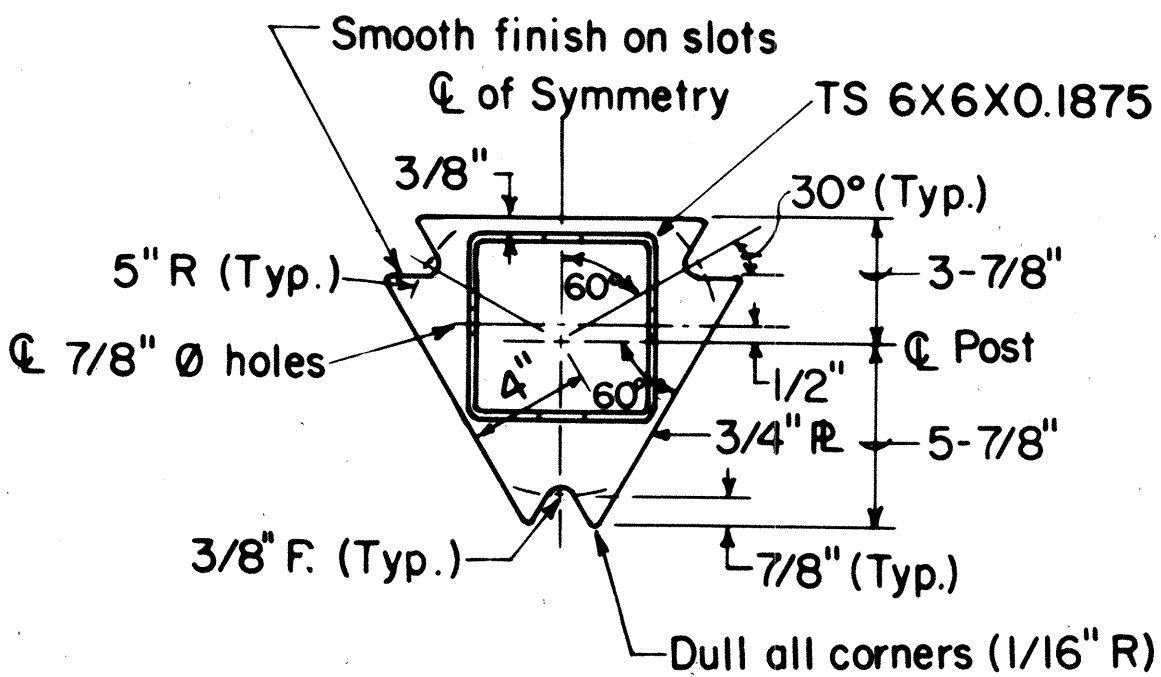
STEEL WASHER



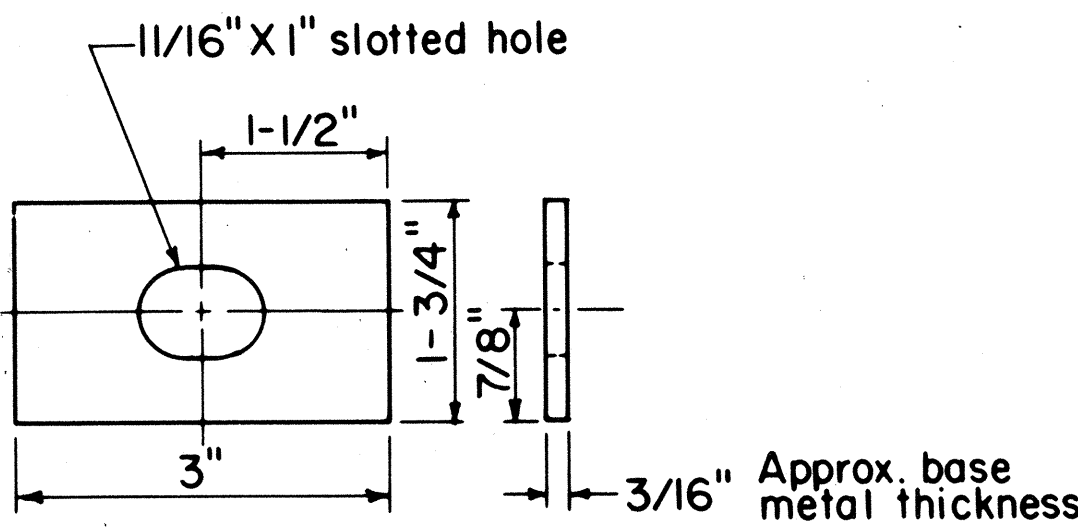
STANDARD STEEL WASHER



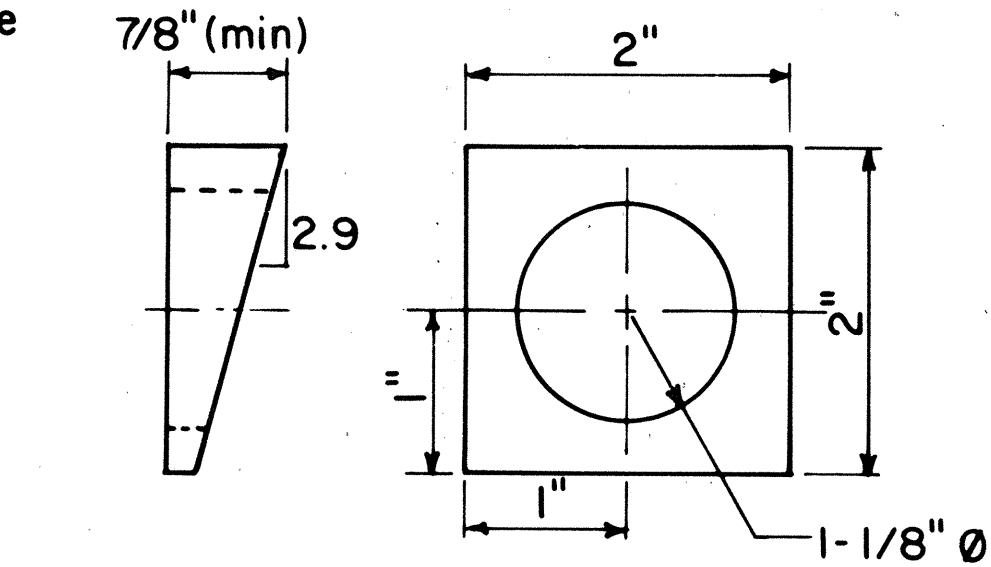
3/4" Ø ANCHOR BOLT X 16" LONG



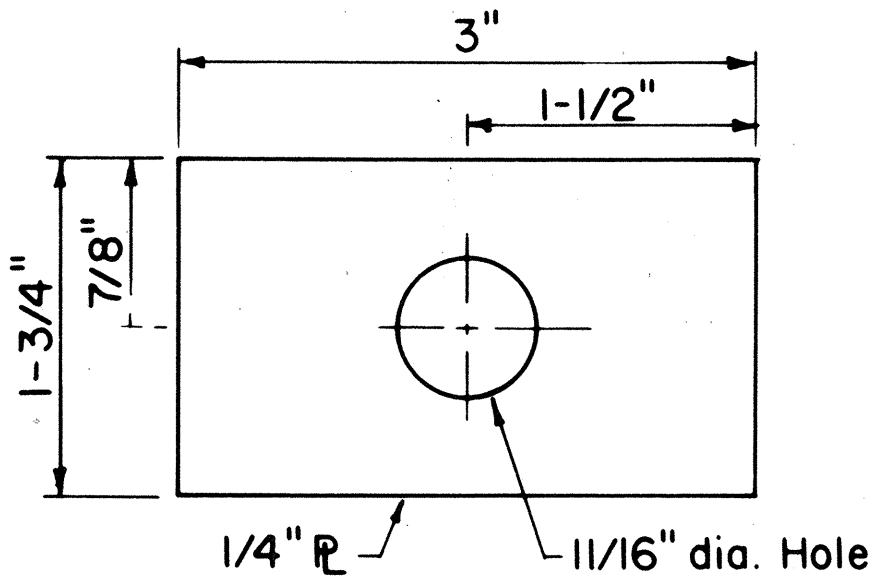
END PLATE



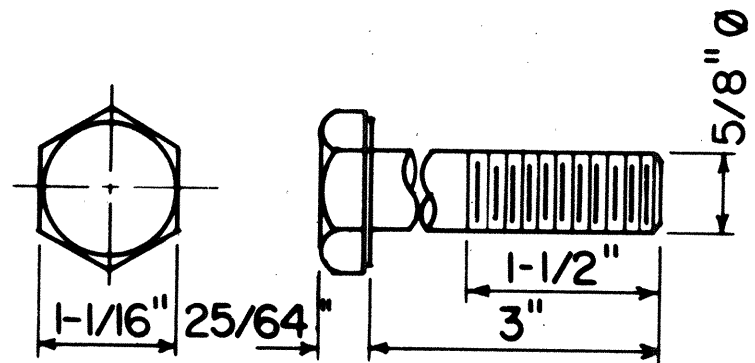
RECTANGULAR PLATE WASHER



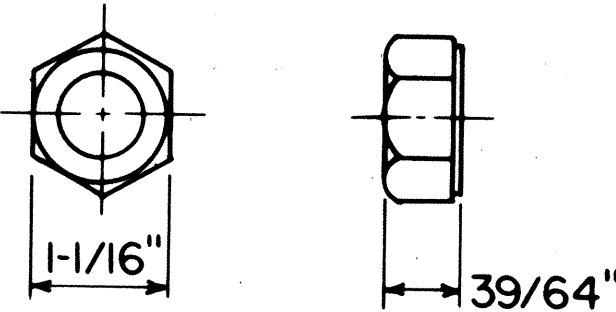
TAPERED WASHER



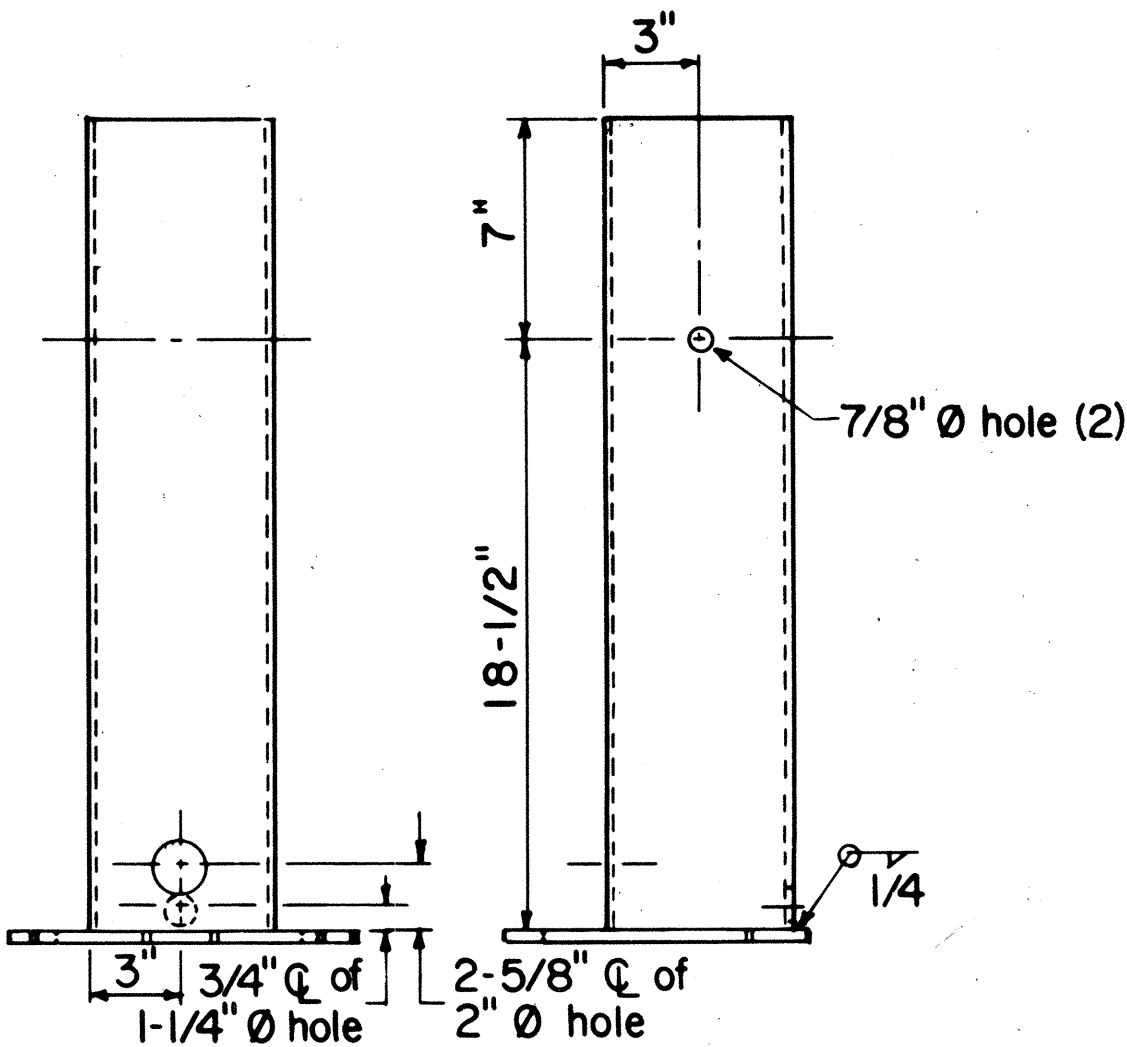
FLAT PLATE WASHER



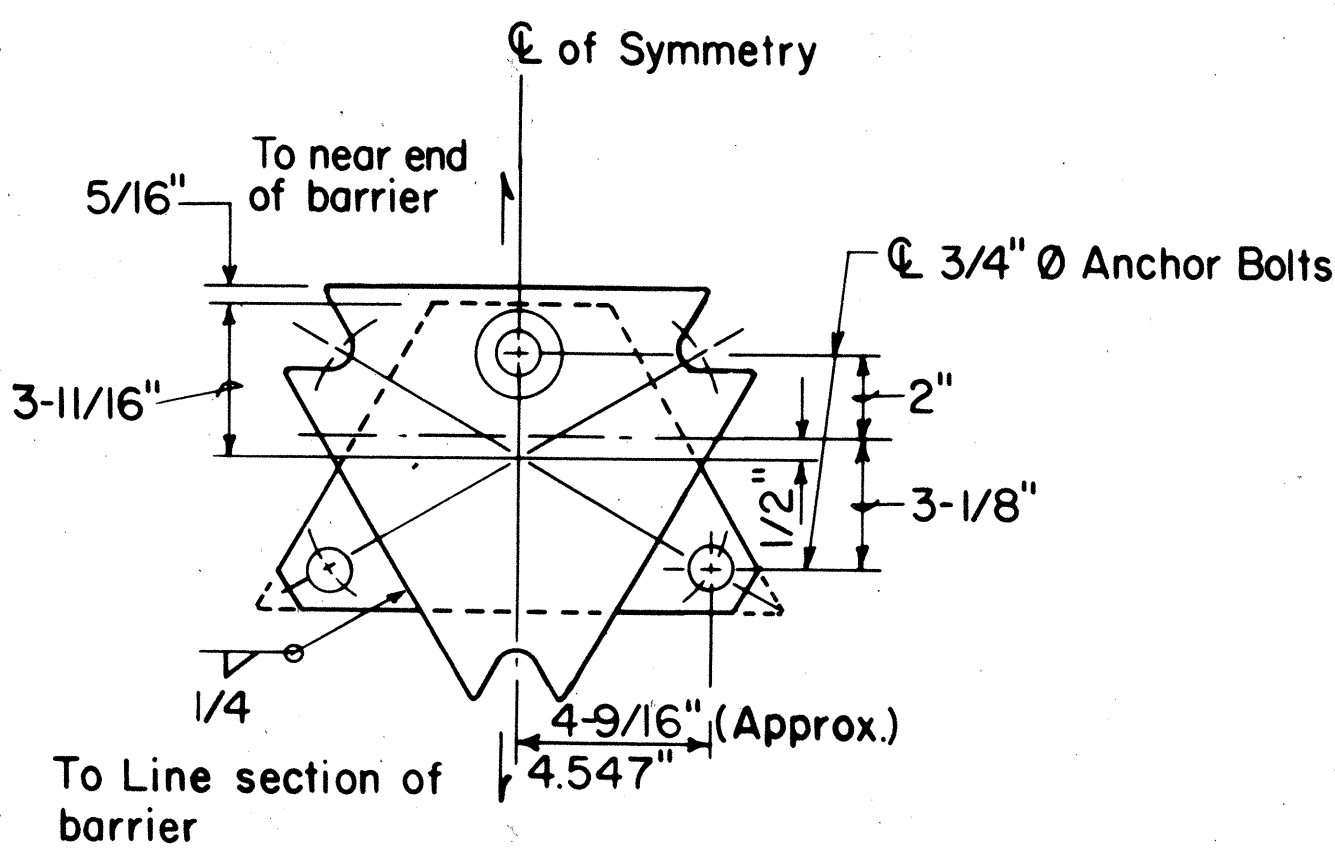
5/8" Ø HS BOLT



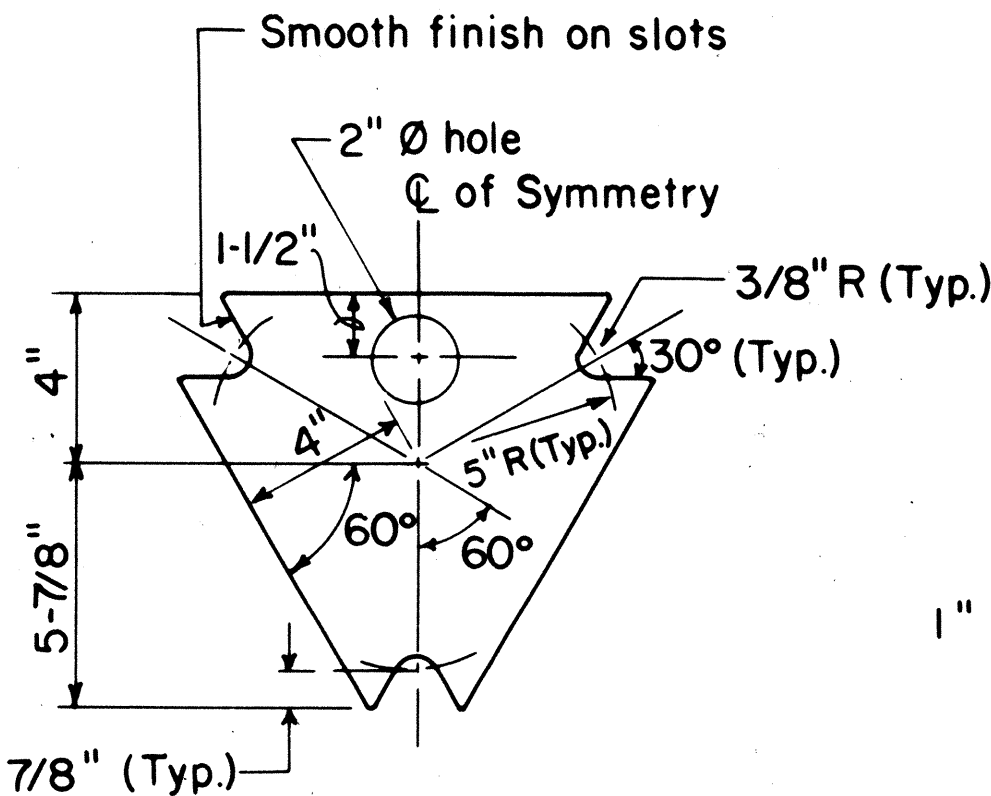
5/8" Ø HS NUT



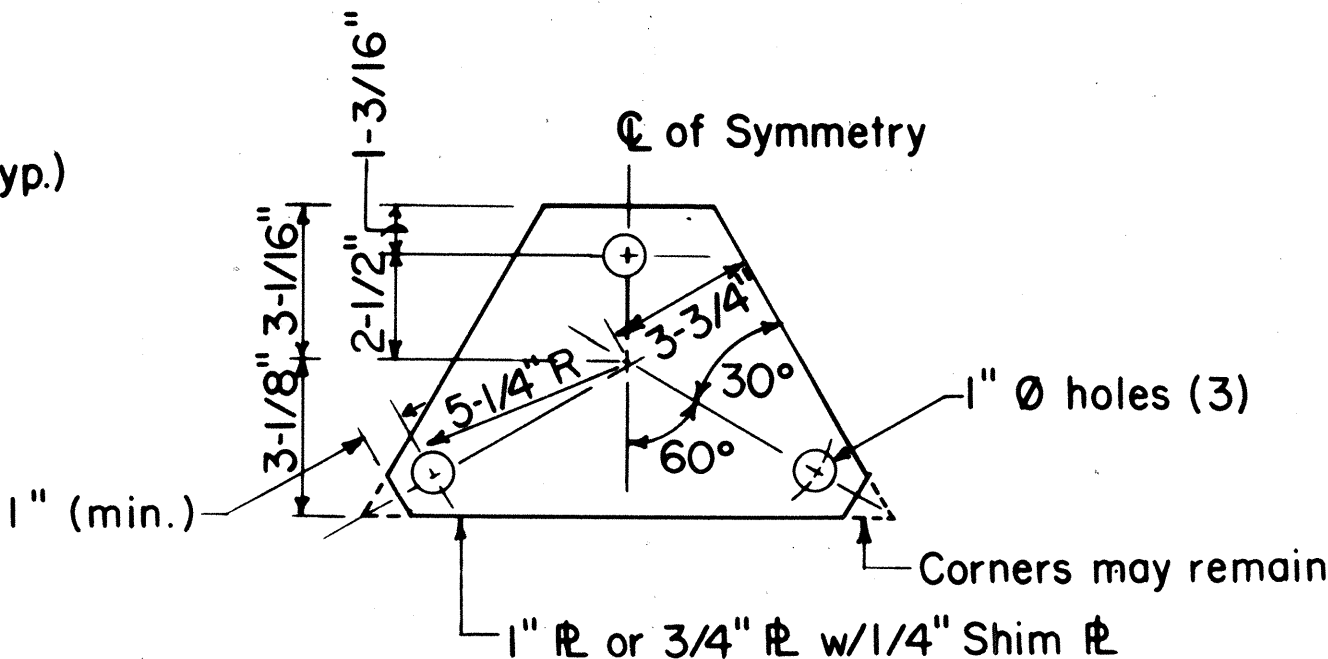
TERMINAL POST



TOP VIEW



TOP PLATE



BOTTOM PLATE

FOUNDATION PLATES

| DATE | REVISION | APP'D. |
|------|----------|--------|
|      |          |        |

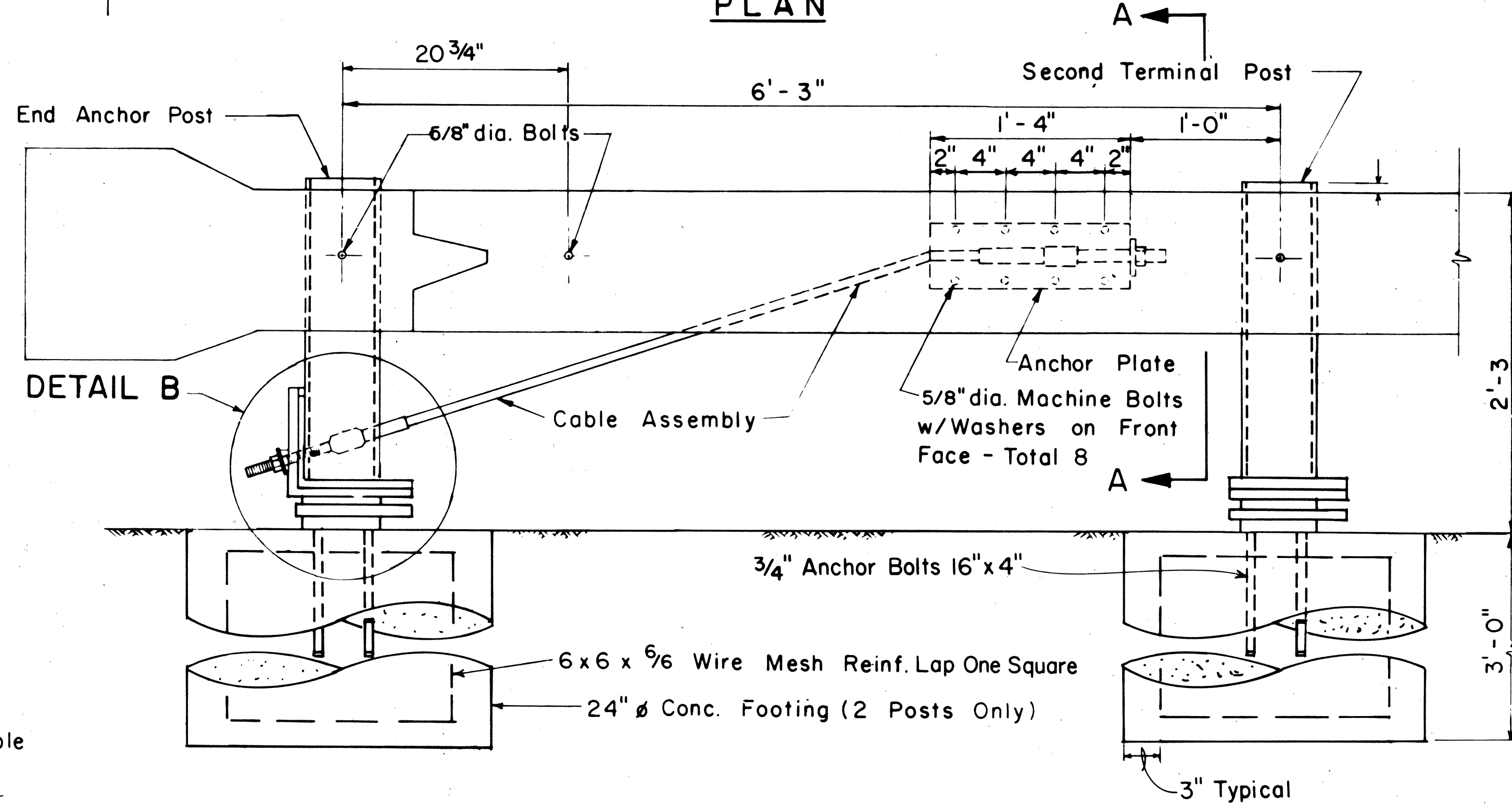
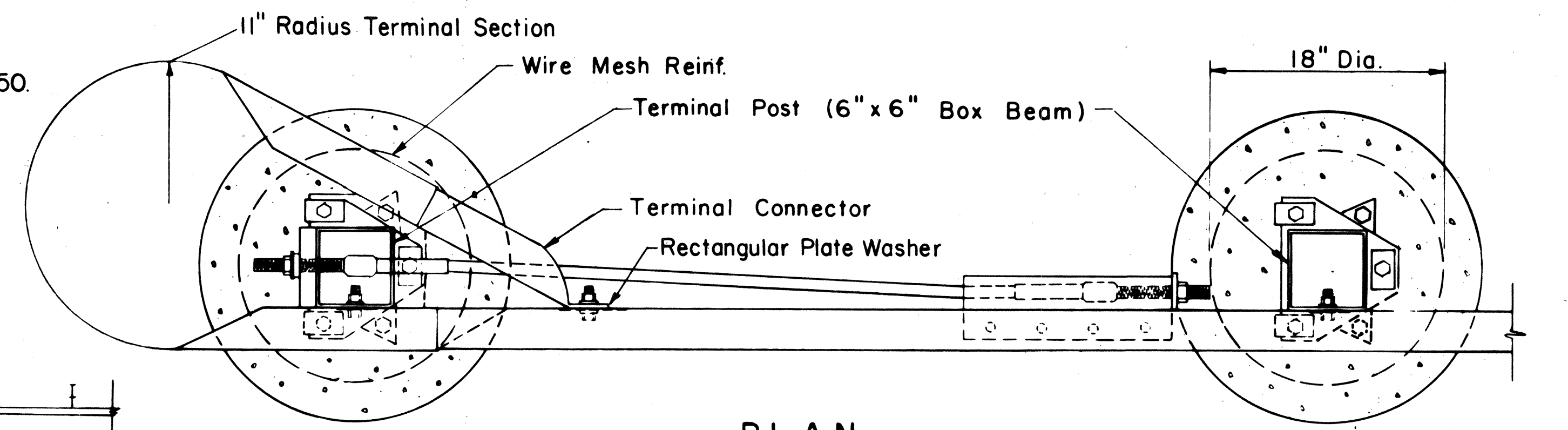
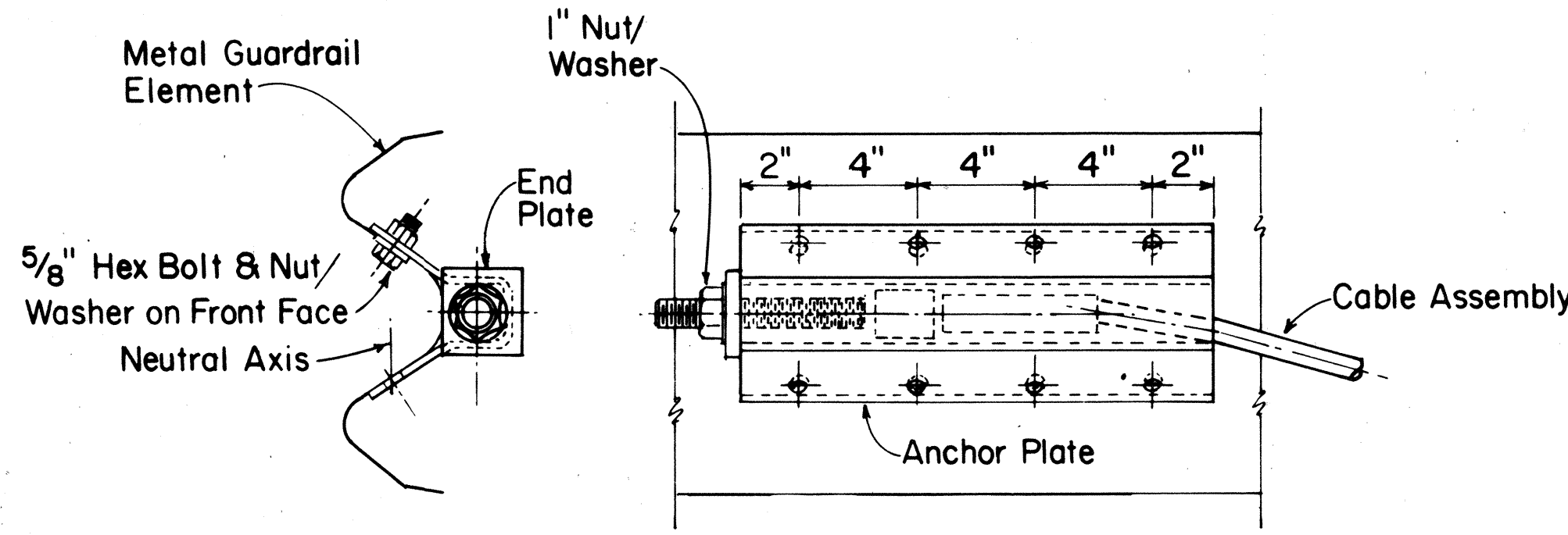
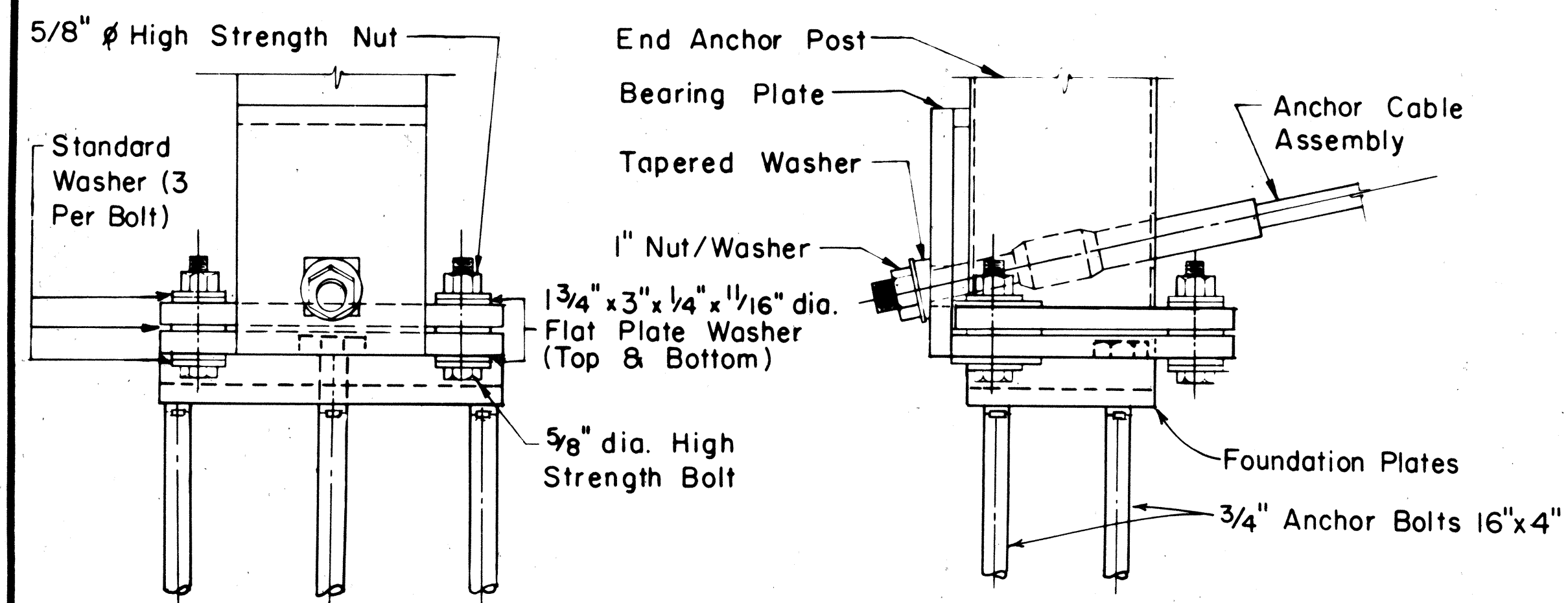
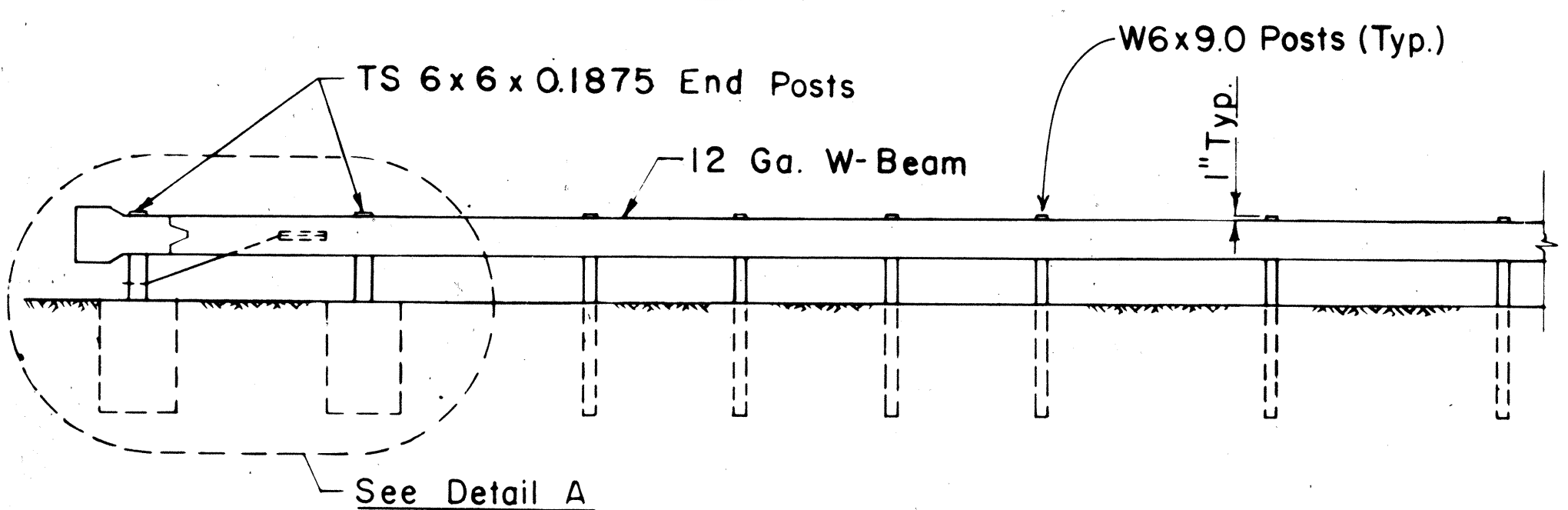
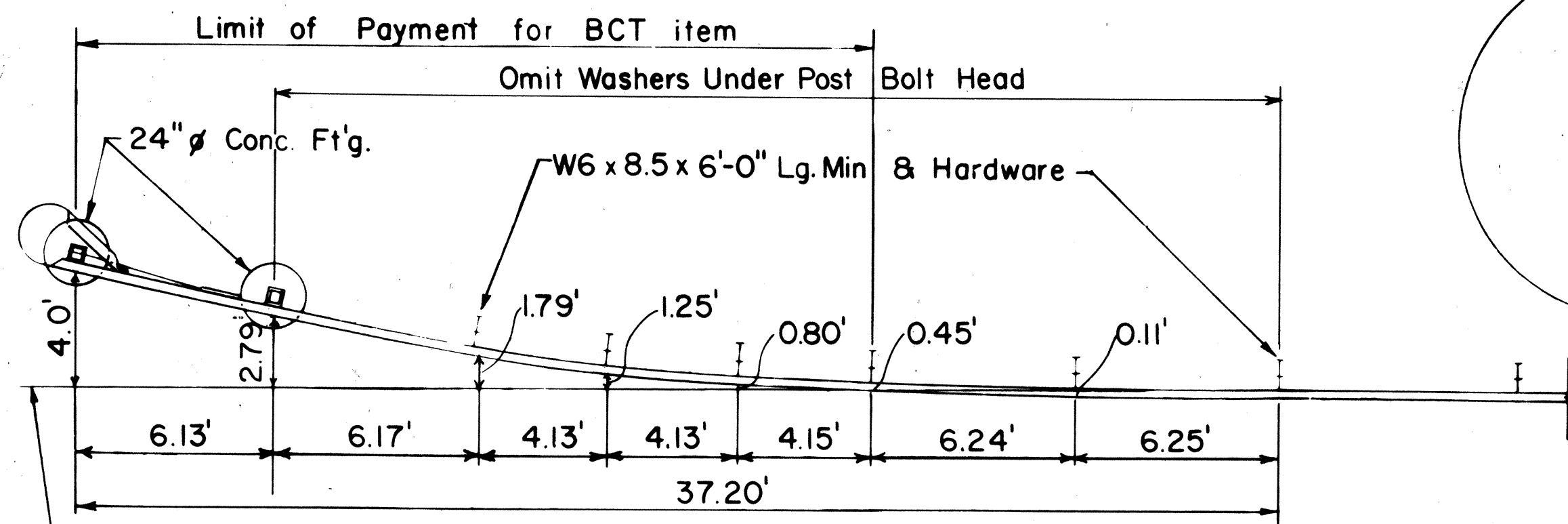
|                                                                      |
|----------------------------------------------------------------------|
| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION |
| <b>TYPICAL DETAIL</b>                                                |
| <b>BREAKAWAY CABLE TERMINAL (BCT)</b>                                |
| SHEET NO. OF SHEETS                                                  |

| FED. ROAD DIST. NO. | STATE | PROJ. NO.  | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 83D-01-86M | 1986        | 56        | 57           |

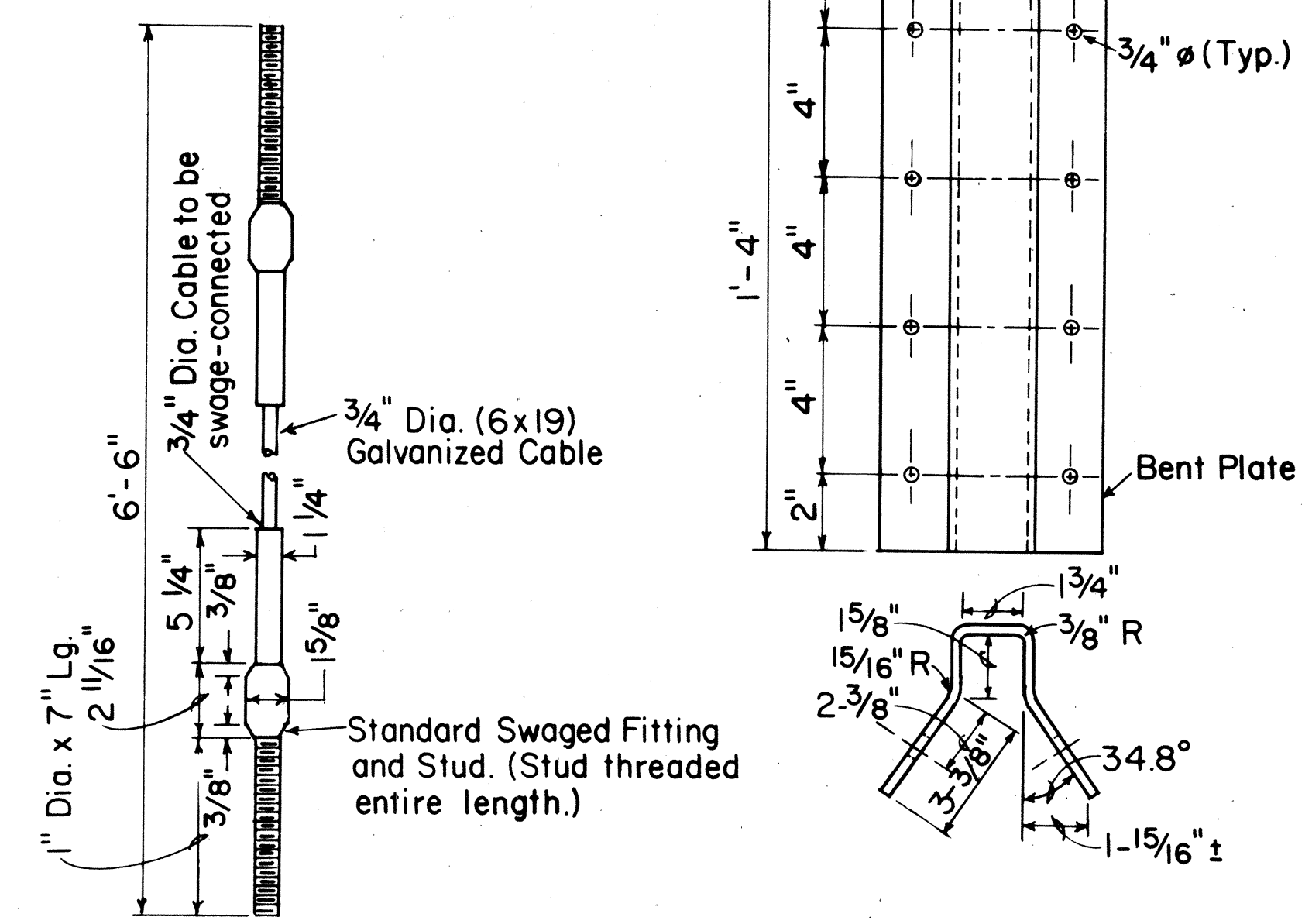
NOTES:

- 1. For Details of 5/8" Button Head Bolt and Nut, 5/8" Hex Bolt and Nut, and W Beam Terminal Connector, refer to Standard Detail DT 501.
- 2. Other Anchor Cable Assemblies may be used. Minimum breaking strength of assembly should be 40,000 lbs.
- 3. Second Terminal Post does not require holes to accomodate Anchor Cable.
- 4. Slip Base Load shall be controlled with a Calibrated Torque Wrench - Torque 155 - 170 ft. lbs.
- 5. Concrete shall be Class A.
- 6. For additional and or revised BCT Details to "A Guide to Standardized Highway Barrier Rail Hardware," a report prepared and approved by the AASHTO-AGC-ARTBA joint cooperation committee. All hardware shall conform to above mentioned publication and as revised from time to time.

Grade End Treatment area to a max. 10:1 slope  
Use 12" long Backup Plate at Posts where W-Beam splice does not occur. For Details see Sht. No. TE-50.



ELEVATION  
DETAIL A



| DATE | REVISION | APP'D. |
|------|----------|--------|
|      |          |        |

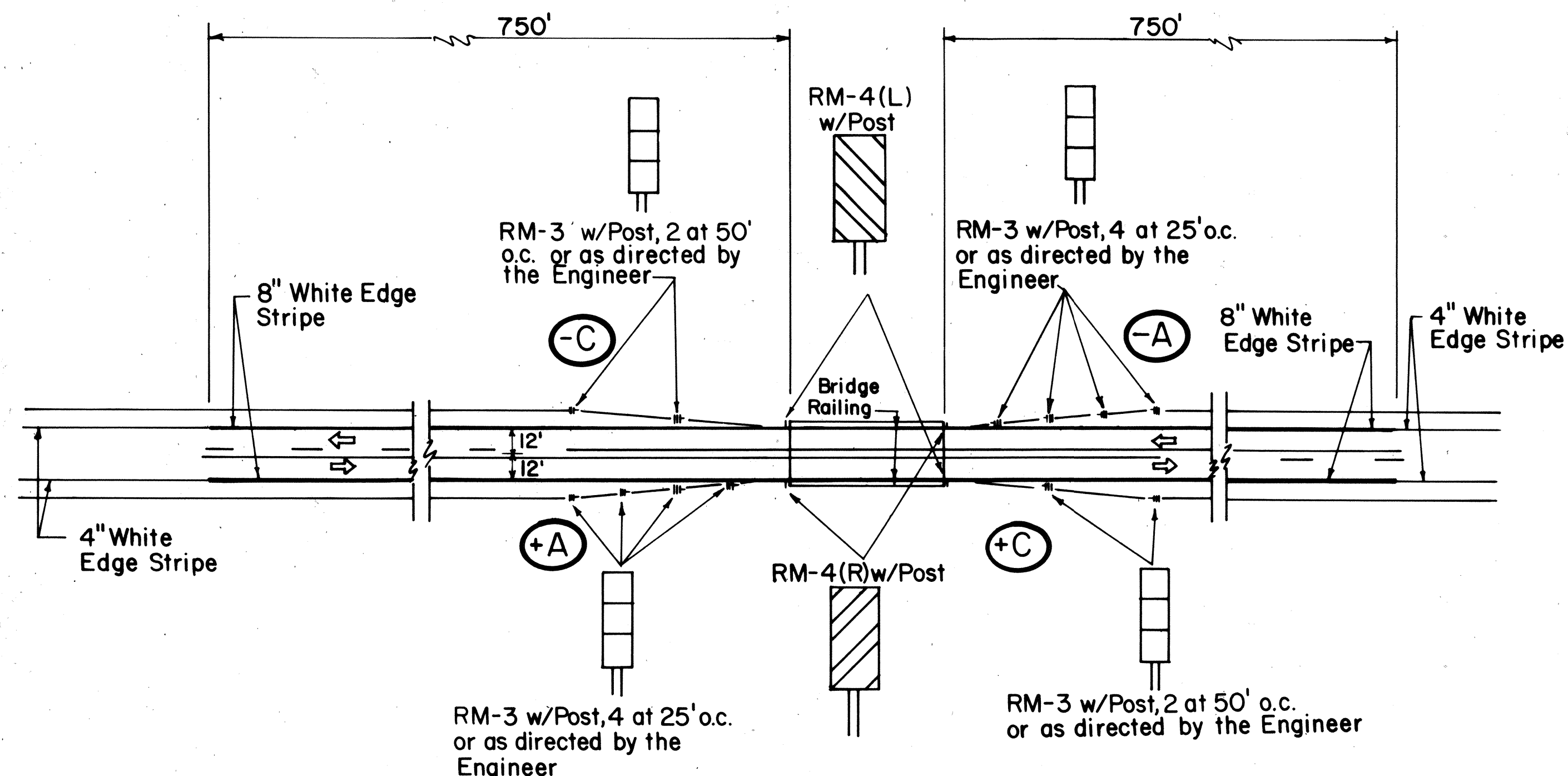
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

TYPICAL DETAIL  
BREAKAWAY CABLE TERMINAL (BCT)

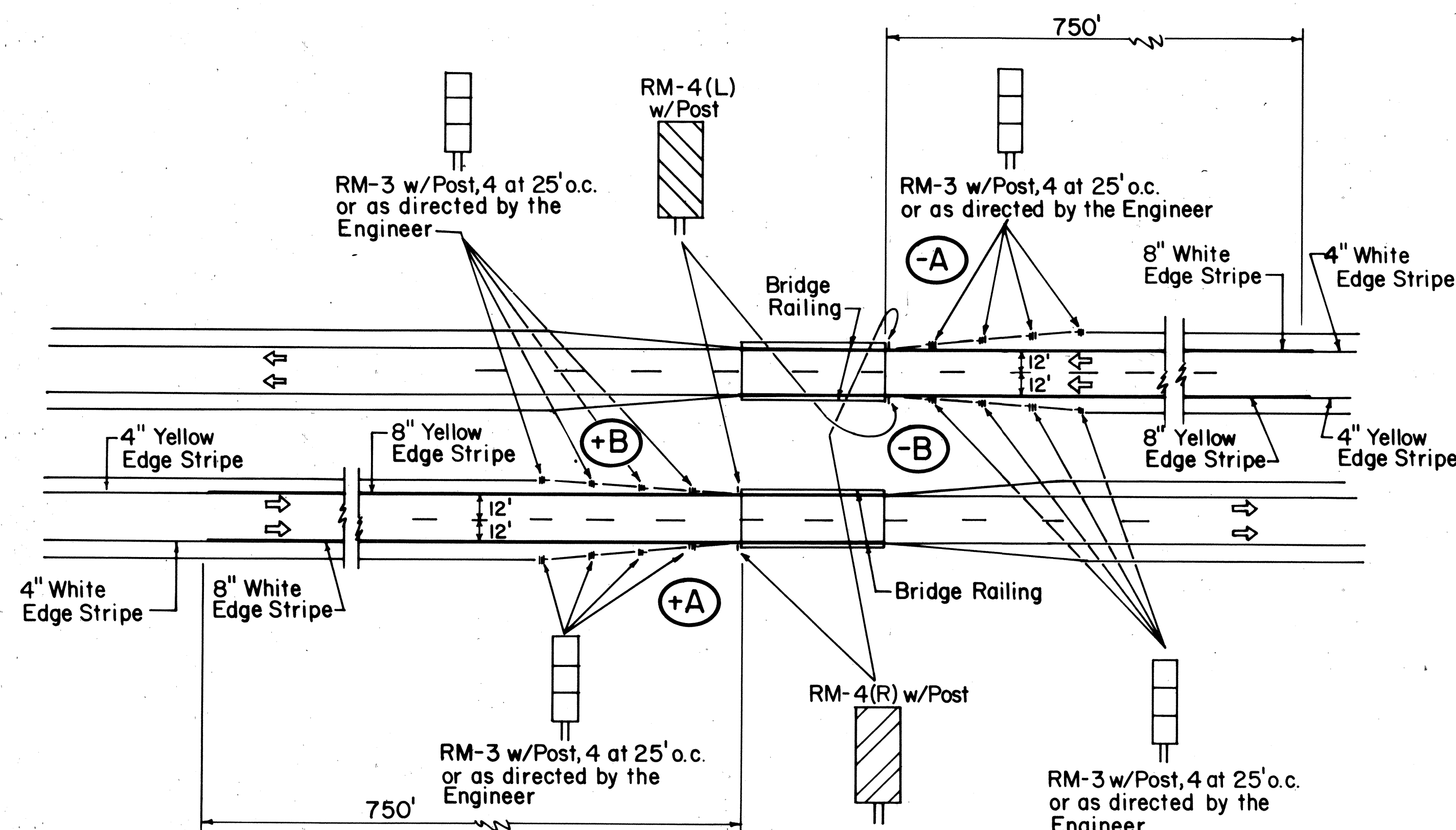
SHEET No. OF SHEETS  
56

|                   |      |
|-------------------|------|
| SURVEY PLOTTED BY | DATE |
| DRAWN BY          |      |
| DESIGNED BY       |      |
| NOTED BY          |      |
| CHECKED BY        |      |
| ORIGINAL PLAN     |      |
| NOTE BOOK         |      |
| No.               |      |

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 830-01-86M         | 1986        | 57        | 57           |



UNDIVIDED HIGHWAY

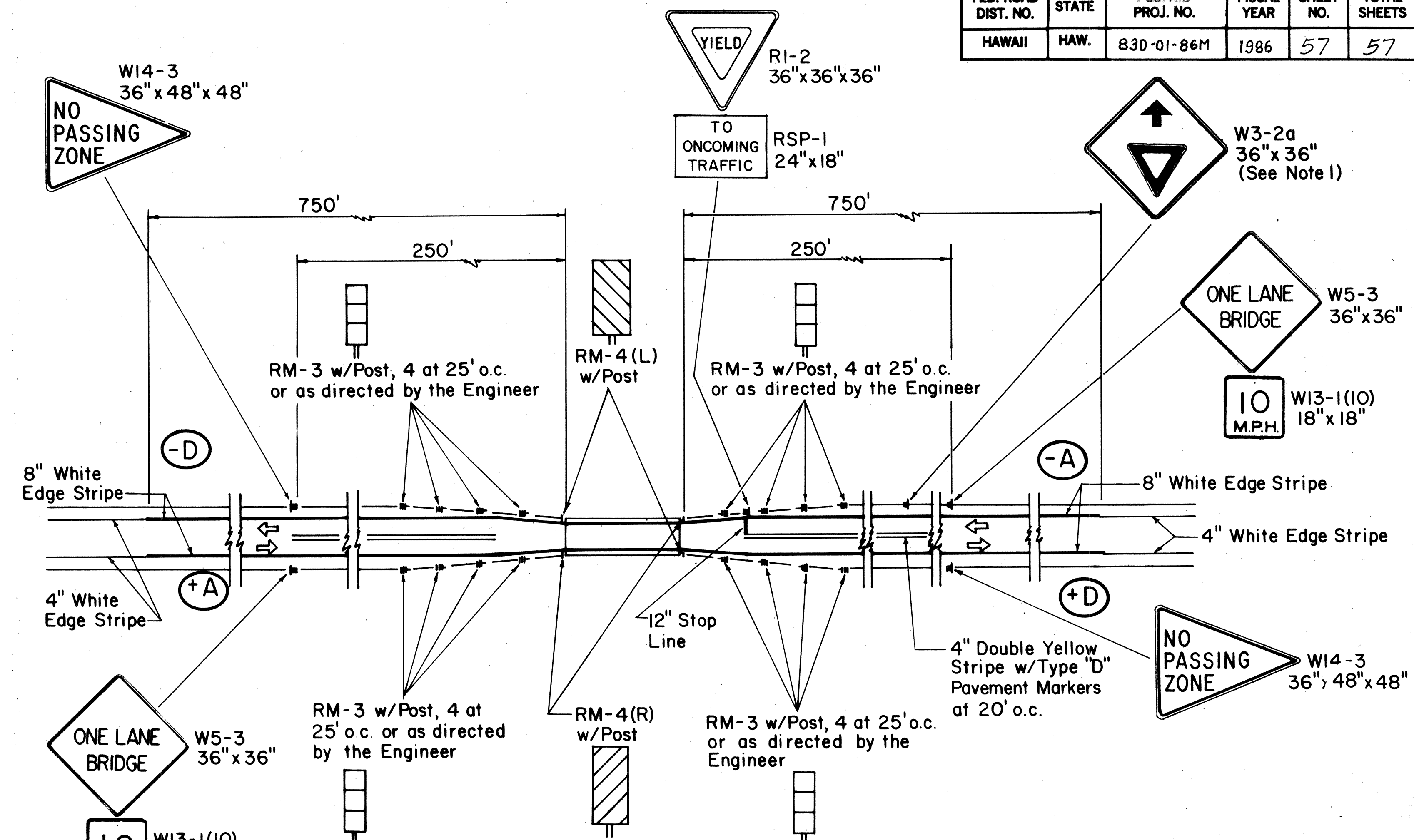


DIVIDED HIGHWAY

TYPICAL NARROW BRIDGE DELINEATION

### LEGEND

- Direction of traffic
- + Increasing Log Miles
- Decreasing Log Miles
- +A Type of reflector marker treatment



TYPICAL ONE LANE BRIDGE DELINEATION

### NOTES:

- YIELD AHEAD sign (W3-2a) shall be installed only on approaches to a YIELD sign (RI-2) that is not visible for a sufficient distance to permit a driver to bring his vehicle to a stop at the YIELD sign. Final location will be determined in the field by the Engineer.
- Stop line and YIELD signs shall be installed on the approach that has the longer or better sight distance. Final location will be determined in the field by the Engineer.
- Signs shall be spaced a minimum of 125 feet apart in the same direction of traffic.

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

STANDARD DETAIL-67

DELINEATION AND PAVEMENT  
MARKINGS AT BRIDGES

APPROVED DATE

SHEET NO. OF SHEETS