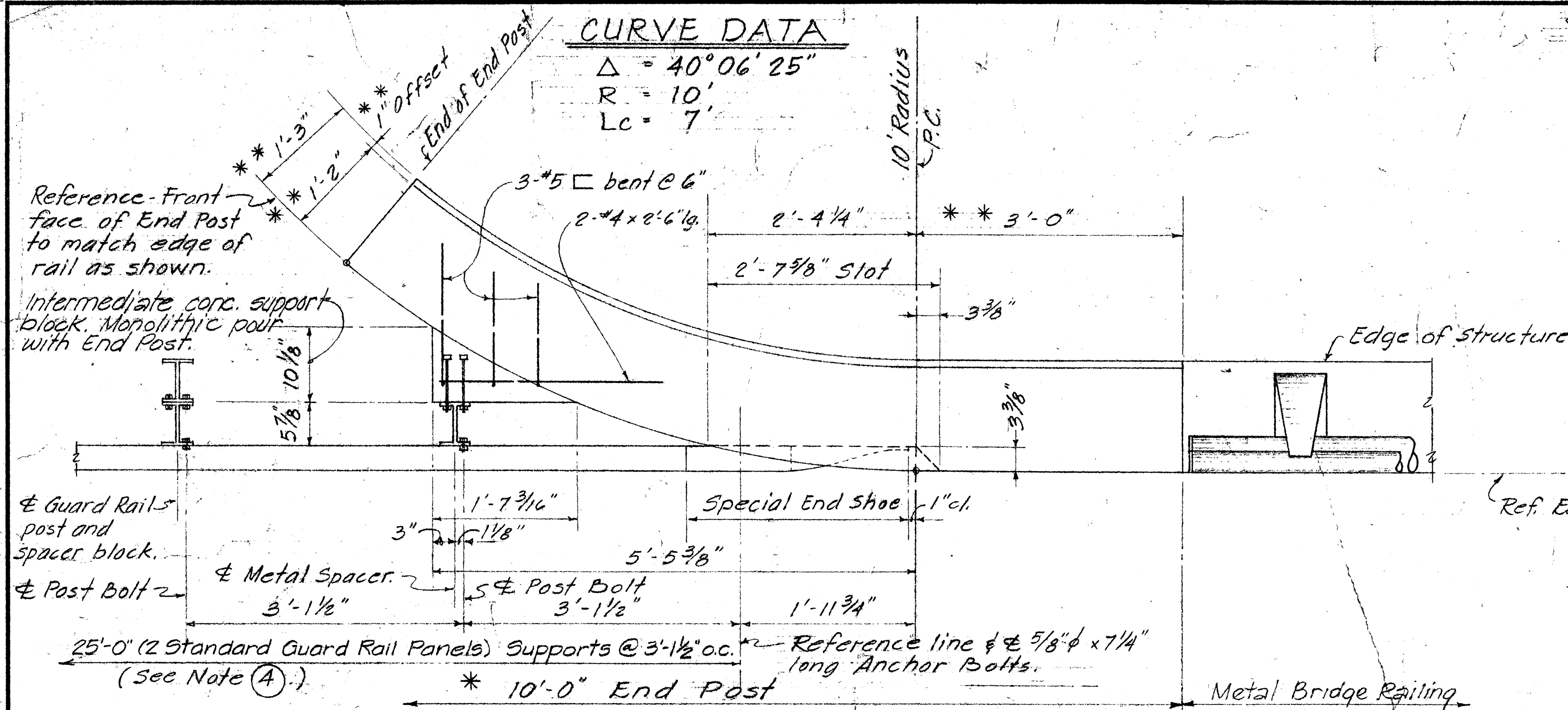


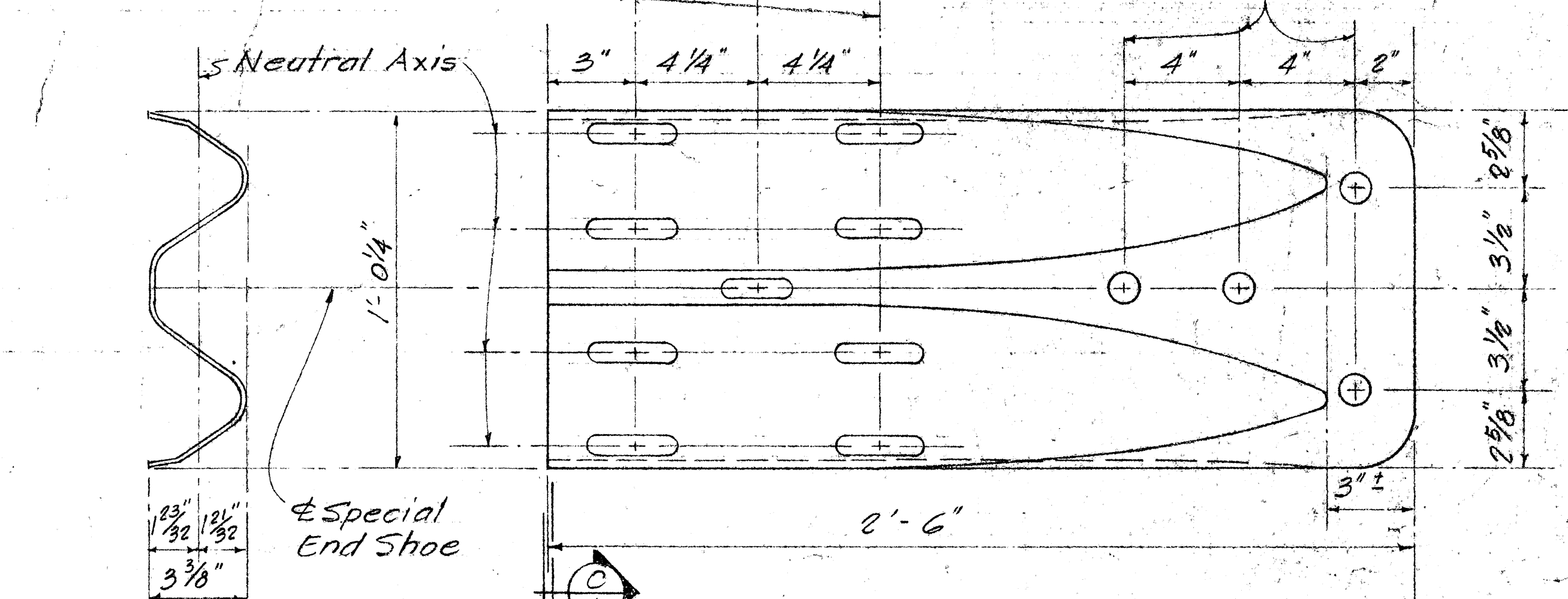
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | R05-030-102        | 1976        | 8         | 17           |



Reference line and 3/4" x 2 1/2" bolt slot for 5/8"  $\phi$  x 7/4" long Anchor Bolt.

3/32" x 3" slots. See "Standard Details Metal Guard Rail" for bolt dimensions.

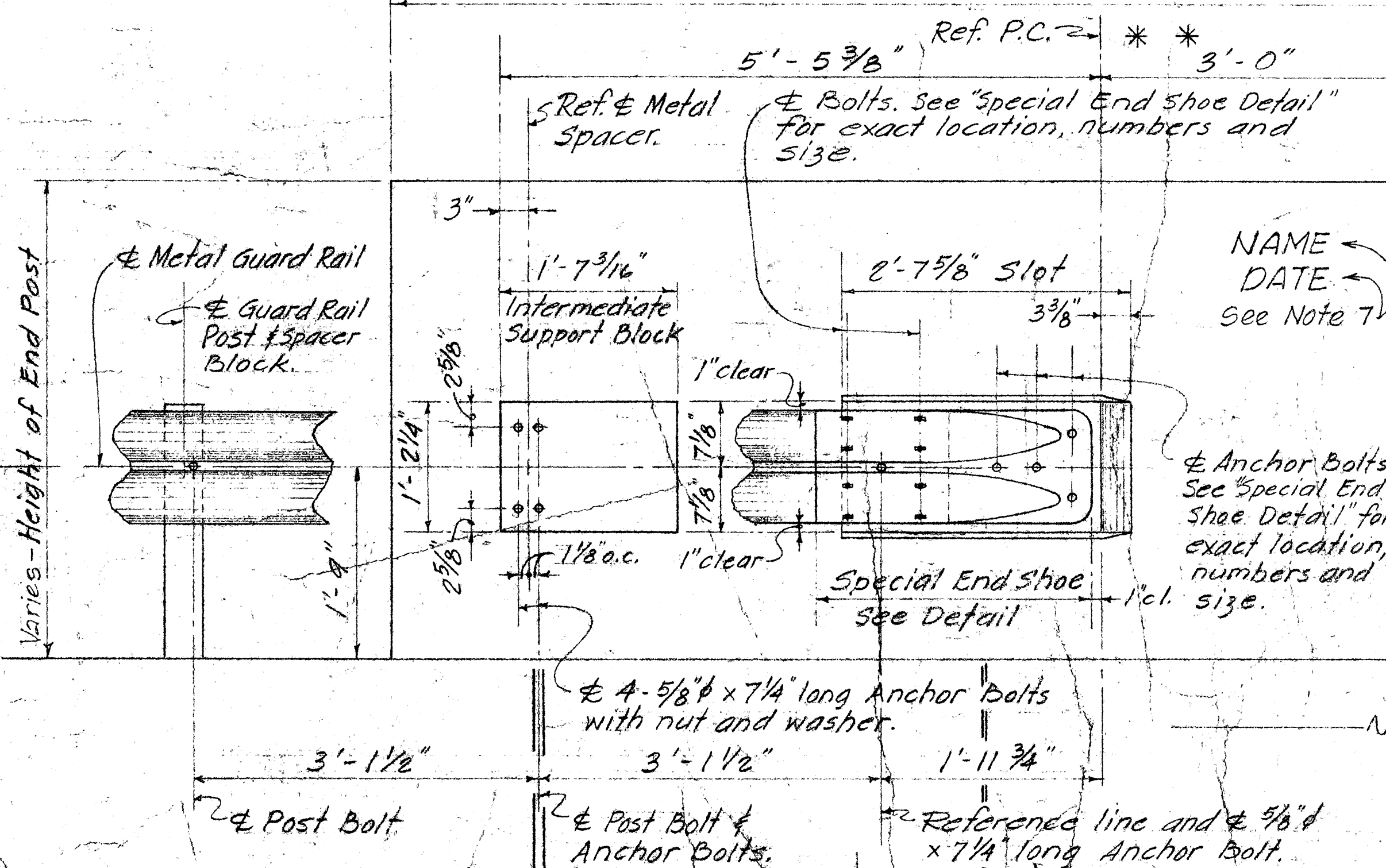
1"  $\phi$  holes for 7/8"  $\phi$  x 7/4" long Anchor Bolts.



## SECTION ② ELEVATION SPECIAL END SHOE DETAILS

\* Length given along front face of End Post.

## PLAN Scale: 1" = 1'-0"



Metal Bridge Railing -  
 (Two Rail or Three Rail)

Top of End Post will be 2" above Metal Rail Post as shown.

Reference - Top of Metal Rail Post (3-Rail, 2-Rail)

Condition at concrete parapet

Top of curb or sidewalk

Reference - Finish grade line.

\* Dimensions and Reinf. size and spacing to be as detailed except as otherwise noted on detail drawings.

Intermediate conc. support varies from 10'  $\phi$  end to 0.

Metal Spacer Block. BJC 8.5" x 13"

Ref. Front face of End Post

Ref. Top of End Post

3/4" cont. chamfer

#4 @ 12" cont. both faces

Varies - 3/8" @ P.C. to 0 @ end of Guard Rail Slot.

3/4" chamfer

4-7/8"  $\phi$  x 7/4" long Anchor Bolts with nut & washer.

Exact height of End Post to be determined in field.

#4 @ 12"

1" offset

Ref. Finish Grade line.

Edge of Structure

Note: Front face of End Post to match

## SECTION ③ Scale 1 1/2" = 1'-0"

## SECTION ④ Scale 1 1/2" = 1'-0"

| NO. | REVISION                                                                | APPROVED BY | DATE    |
|-----|-------------------------------------------------------------------------|-------------|---------|
| 1   | Note 4 revised, 3'-1 1/2" post spacing extended to 25'-0". Note T added | H.T.        | 2-27-76 |

APPROVAL RECOMMENDED:  
 Paul T. Yamashita  
 BRIDGE DESIGN ENGINEER

APPROVED  
 Paul T. Yamashita  
 for ASSISTANT CHIEF, ENGINEERING

1-23-76  
 DATE

1-27-76  
 DATE

| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION |
|----------------------------------------------------------------------|
| <b>STANDARD DETAILS</b>                                              |
| <b>METAL GUARD RAIL CONNECTION</b>                                   |
| <b>AT VERTICAL FACE TYPE END POST</b>                                |
| Scale: As shown                                                      |
| SHEET No. 1 OF 10 SHEETS DB-204                                      |

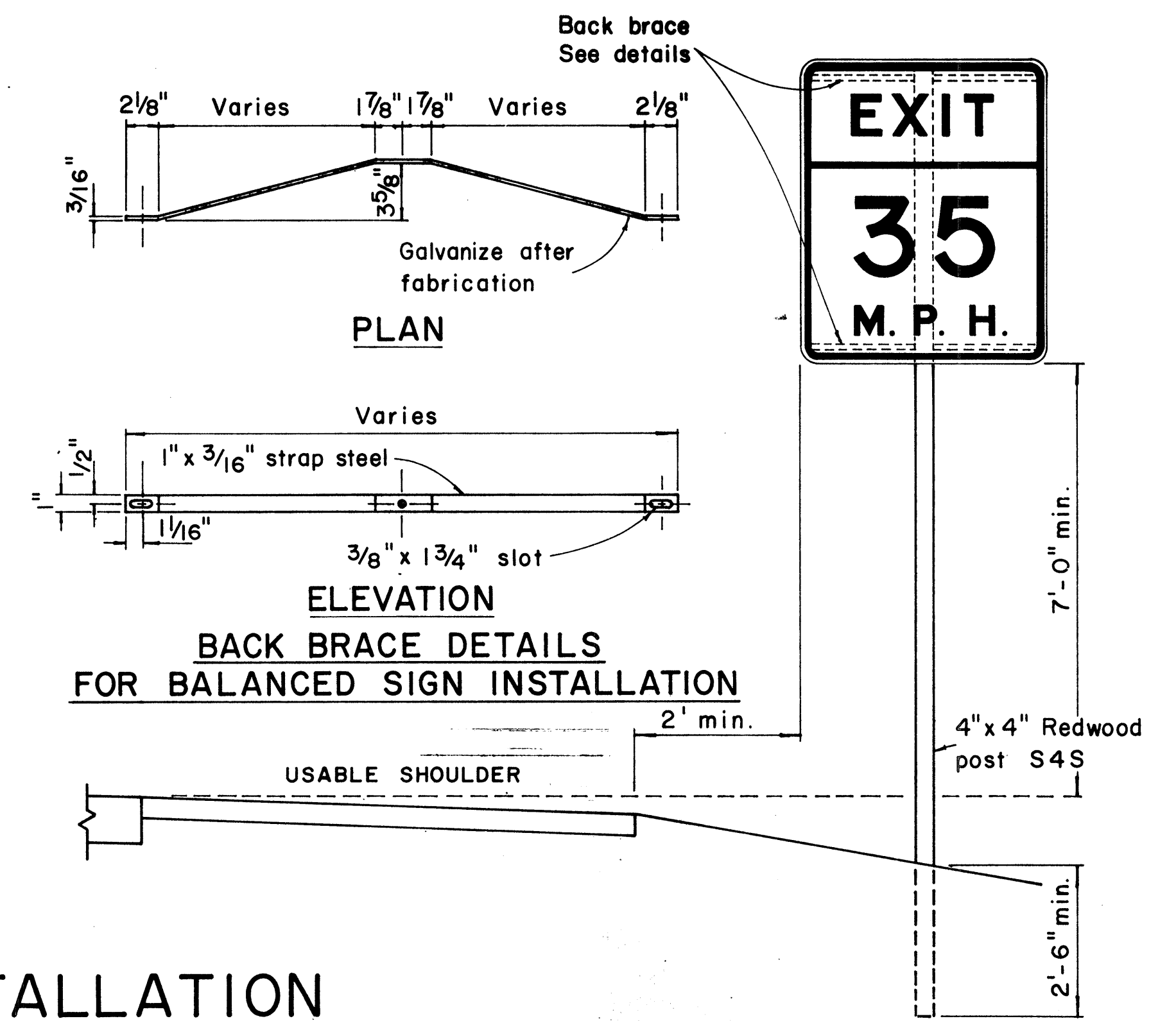
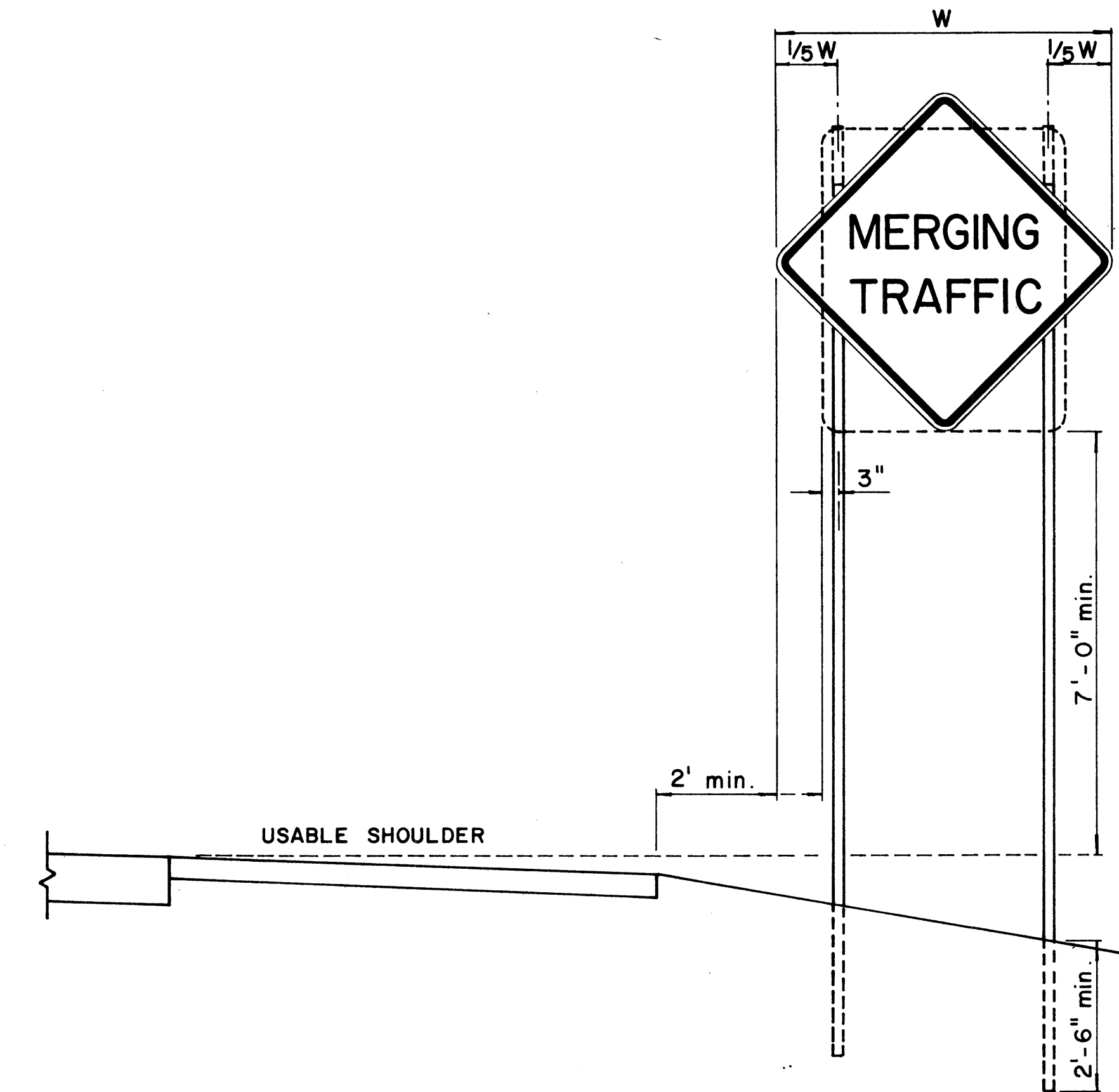
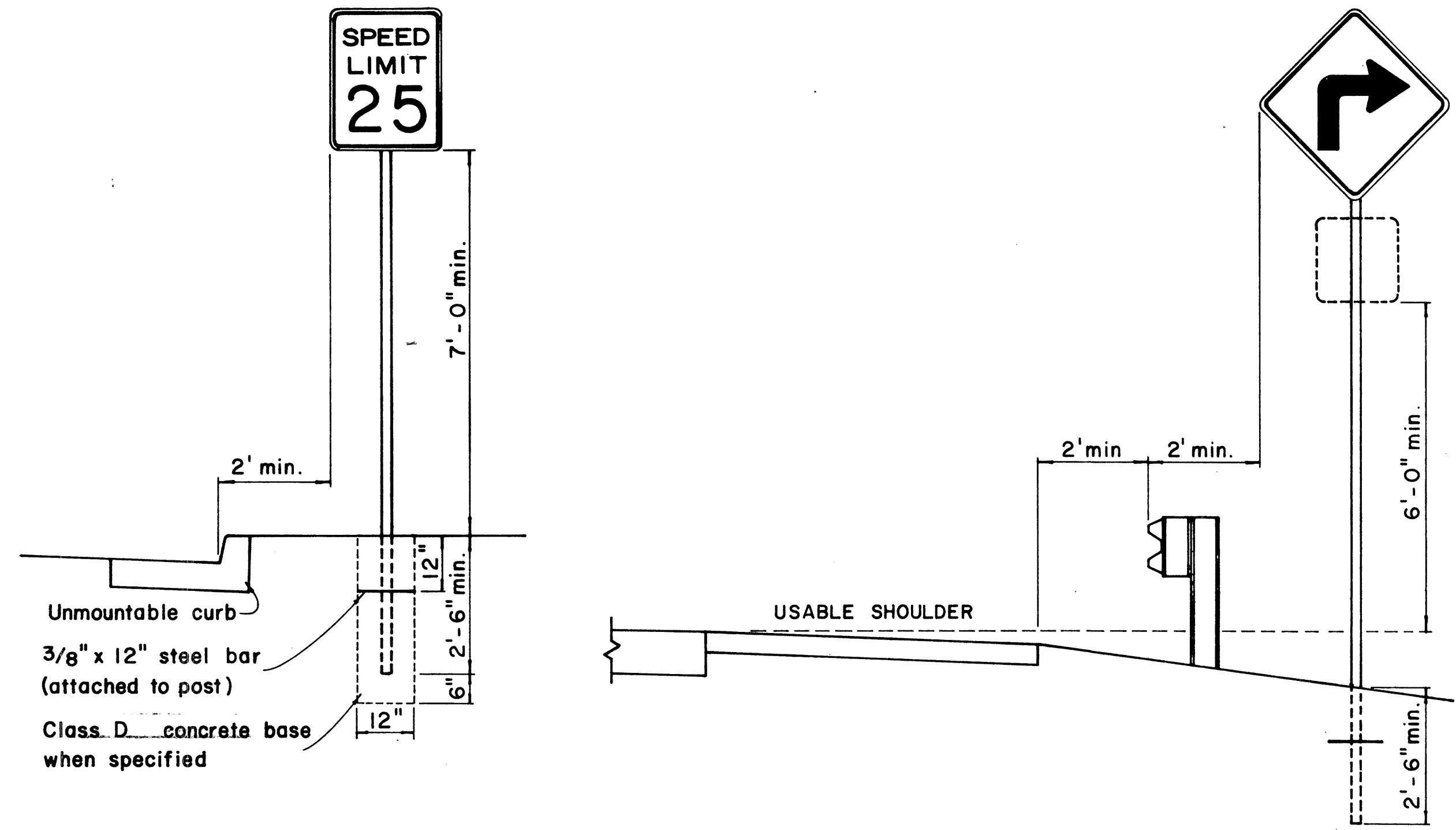
## ELEVATION Scale: 1" = 1'-0"

- NOTES:**
- All Anchor Bolts shall be High Strength bolts conforming to the requirements of ASTM A-325.
  - All shoe assembly, including anchor bolts, nuts and washers, shall be galvanized.
  - Special End Shoe shall be fabricated from 10 gage steel conforming to the requirements of AASHTO 180.

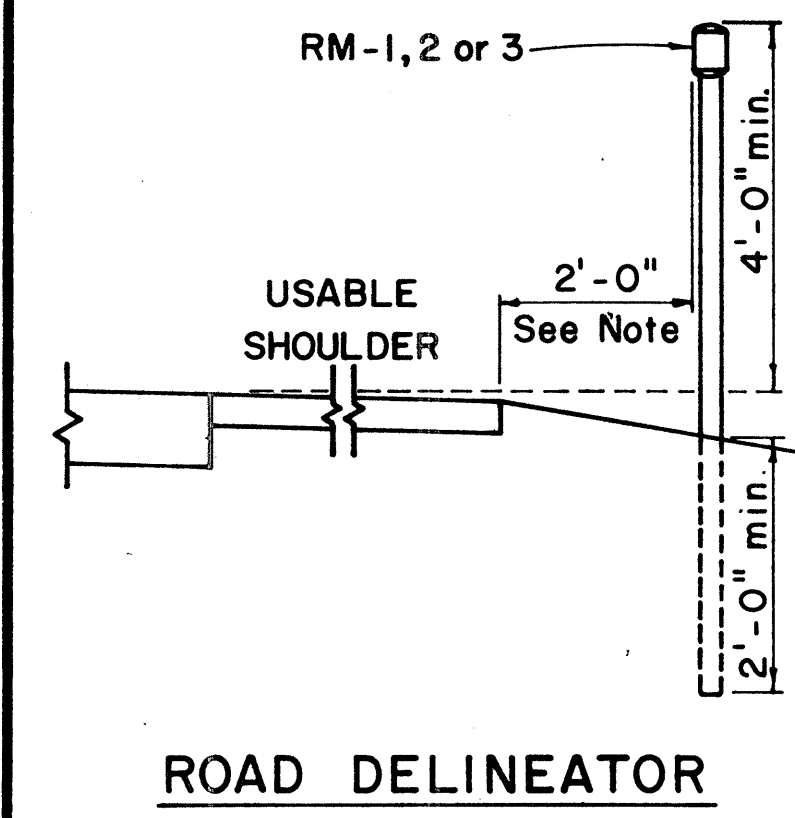
- First 25'-0' of guard rail adjoining "Special End Shoe" shall be galvanized steel.
- Anchor Bolt length given under bolt head.
- These details are applicable for connections to Retaining walls also.
- Place name of structure as shown. For location, see "Plan" on Contract Drawing. Date shown will be year structure is completed. Letter size and detail see standard Drawing DB-100.



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | R05-030-102        | 1976        | 9         | 17           |

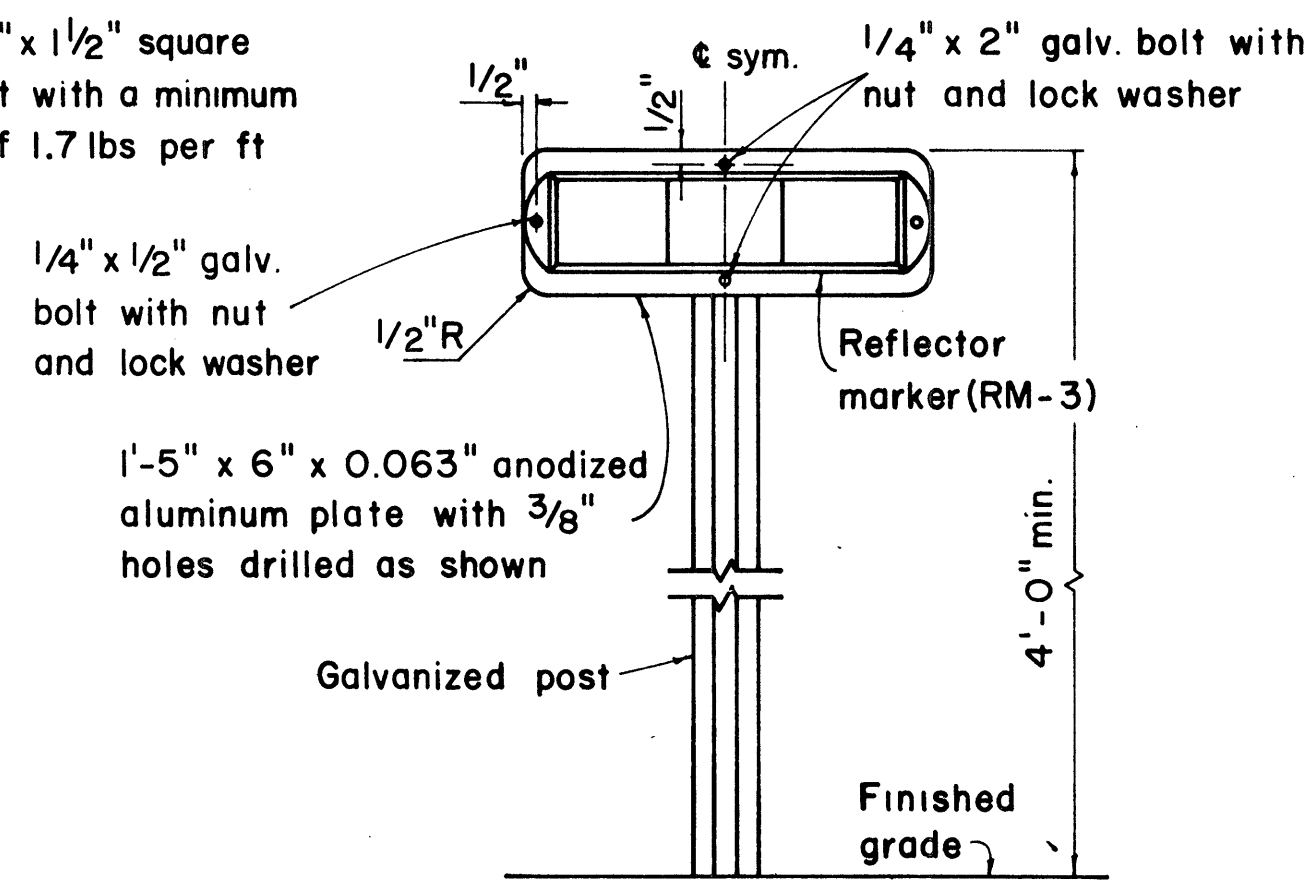
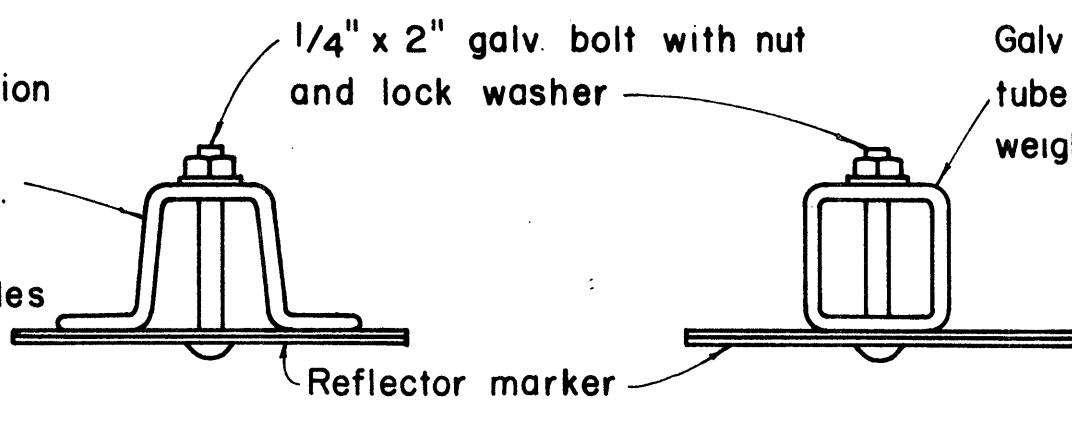


## HEIGHT AND LATERAL LOCATION OF SIGNS - TYPICAL INSTALLATION

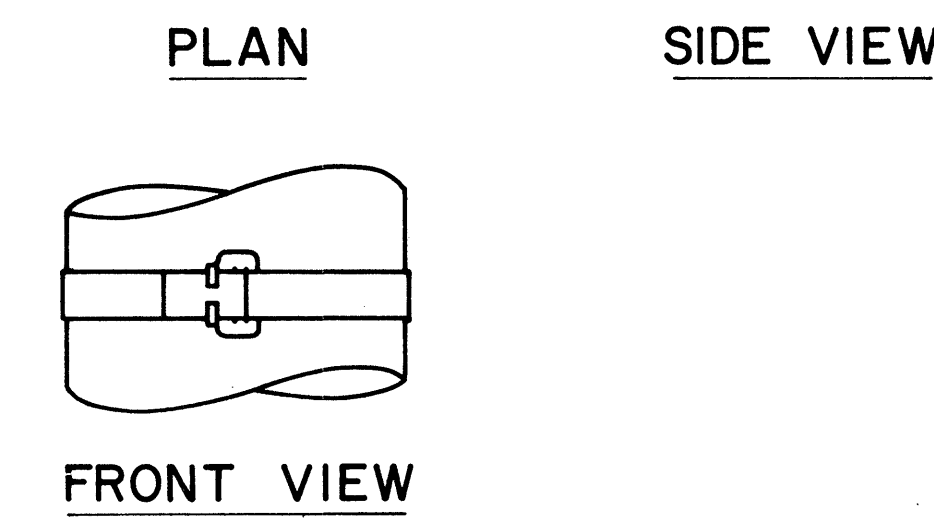
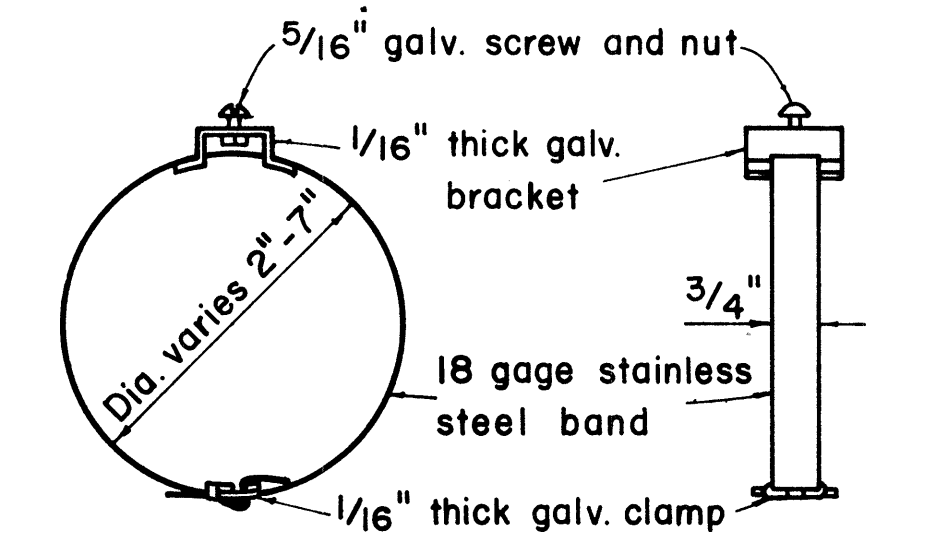


Galv. flanged channel 1/8" x 3/16" rolled section post with a minimum weight of 2 lbs. per ft.. Upper 2 ft. shall have a single row of 3/8" holes centered in the web at 1" o.c.

TYPICAL SECTION OF ROAD DELINEATOR



TYPICAL DETAIL HORIZONTAL REFLECTOR MARKER RM-3H



### GENERAL NOTES:

- Sign posts shall be 2" galv. standard pipe or 2" x 2" galv. sq. tube post.
- Signs 48" and wider or larger than 10 sq. ft. in area shall be mounted on two 2" galv. standard pipe or two 2" x 2" galv. sq. tube post or 4" x 4" redwood post S4S.
- Signs shall be attached to post with 5/16" galv. bolts with nuts and 7/8" x 0.06 stainless steel washers with neoprene rubber gasket.
- Sign posts shall extend 3 1/2" above sign where required for City and County street name signs.
- 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.
- Clearance markers (RM-3, RM-4) shall be installed with the edge of the marker in line with the inner edge of the obstruction.
- (R) or (L) indicates right or left and shall be as shown on the plans.

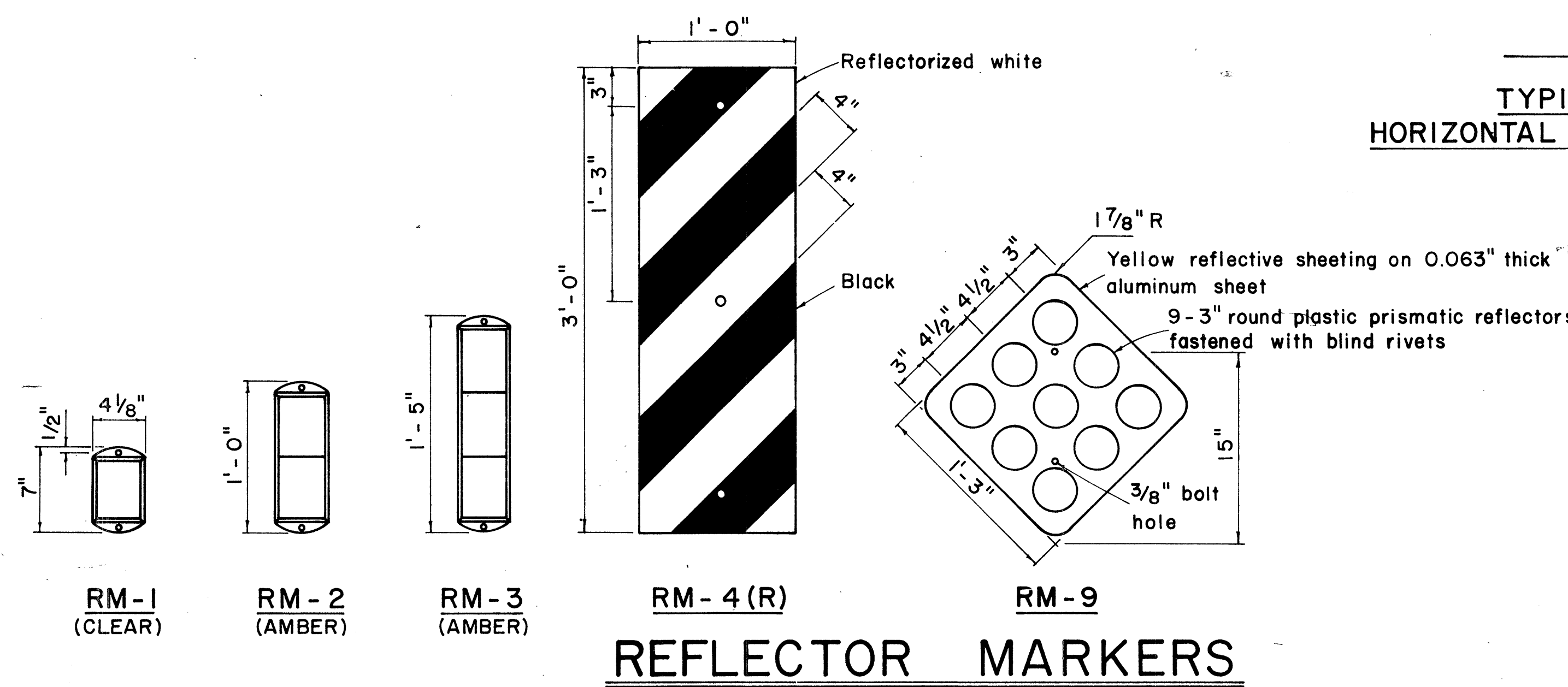
APPROVAL RECOMMENDED: *E. J. Tanaka* 12/29/69  
TRAFFIC ENGINEER DATE

APPROVED: *[Signature]* 12-30-69  
ASSISTANT CHIEF, ENGINEERING DATE

## TYPICAL BAND BRACKET FOR MOUNTING TRAFFIC SIGNS

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

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**STANDARD DETAILS**  
MISCELLANEOUS SIGN DETAILS  
Not to scale March, 1968  
SHEET No. 2 OF 10 SHEETS DT 100



ORIGINAL  
PLAN  
DATE  
DRAWN BY  
CHECKED BY  
NOTED BY  
QUANTITIES BY



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | R05-030-1(12)      | 1976        | 10        | 17           |



CW20-1a 48"x48"



CW20-2d 48"x48"



CW20-3b 48"x48"



CW20-4d 48"x48"



CW20-5d(L) 48"x48"



CW20-7c 48"x48"



CW21-1 30"x30"



CW21-2 30"x30"



CW21-3 36"x36"



CW21-4 36"x36"



CW21-5 30"x30"



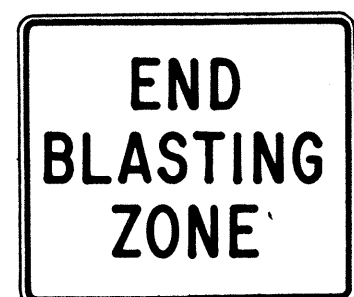
CW21-6 30"x30"



CW22-1b 48"x48"



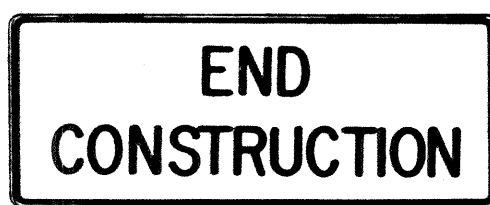
CW22-2 42"x36"



CW22-3 42"x36"



CG20-1(5) 60"x36"



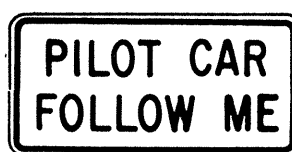
CG20-2 60"x24"



CM4-9(R) 30"x24"



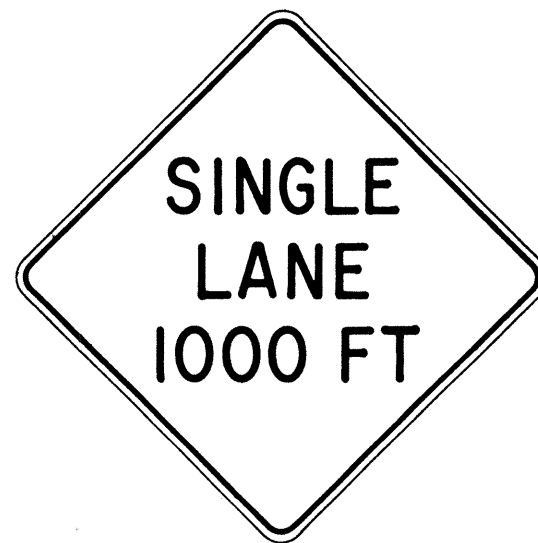
CM4-10(R) 48"x18"



CG20-4 36"x18"



CW23-1 36"x36"



CW23-2b 48"x48"



CW23-3(R) 48"x48"

#### GENERAL NOTES

- Sign details shall conform to the FHWA publications "Manual on Uniform Traffic Control Devices for Streets and Highways," 1971, and "Standard Highway Signs," 1972, and as amended.
- All construction signs shall be reflectorized with high intensity reflective sheeting.
- 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.

| NO. | REVISION                                 | APPROVED BY | DATE     |
|-----|------------------------------------------|-------------|----------|
| 1   | Supersedes Sht. DT 104 Approved 12-30-69 | H.T.        | 3/23/72  |
| 2   | Revised General Note 1                   | H.T.        | 10/16/74 |
| 3   | Revised General Note 2                   | MH          | 9-16-75  |

APPROVAL RECOMMENDED:  
*Erich Tanaka*  
TRAFFIC ENGINEER

3/21/72  
DATE

APPROVED:  
*Sheldon S. S. S.*  
ASSISTANT CHIEF, ENGINEERING

3/23/72  
DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

#### STANDARD DETAILS CONSTRUCTION SIGNS

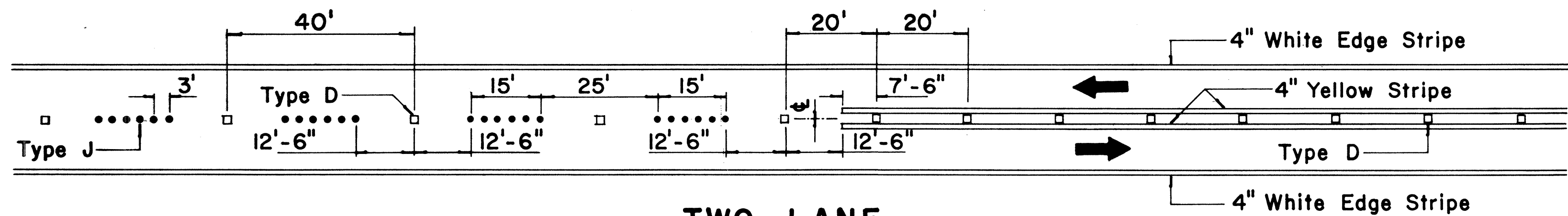
NOT TO SCALE

SHEET No. 3 OF 10 SHEETS DT 104

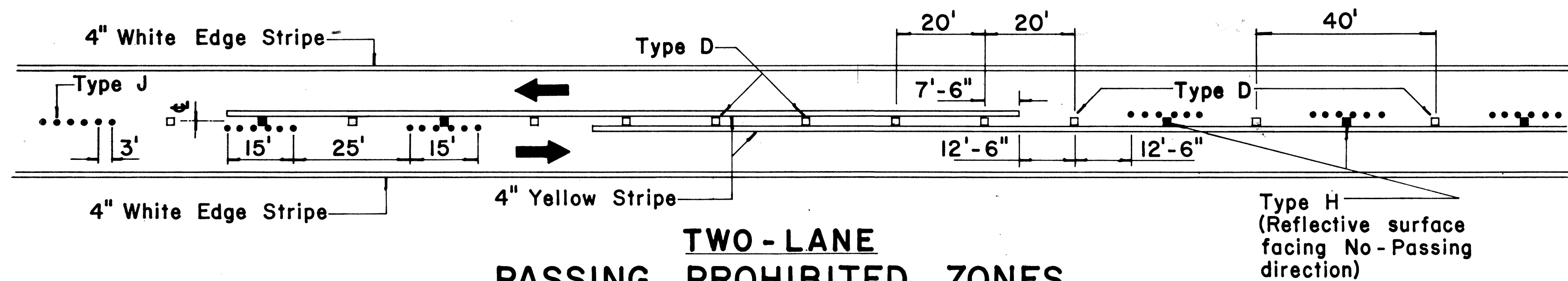
|                   |       |
|-------------------|-------|
| DATE              | _____ |
| SURVEY PLOTTED BY | _____ |
| DRAWN BY          | _____ |
| DESIGNED BY       | _____ |
| QUANTITIES BY     | _____ |
| CHECKED BY        | _____ |
| ORIGINAL PLAN     | _____ |
| NOTE BOOK         | _____ |
|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



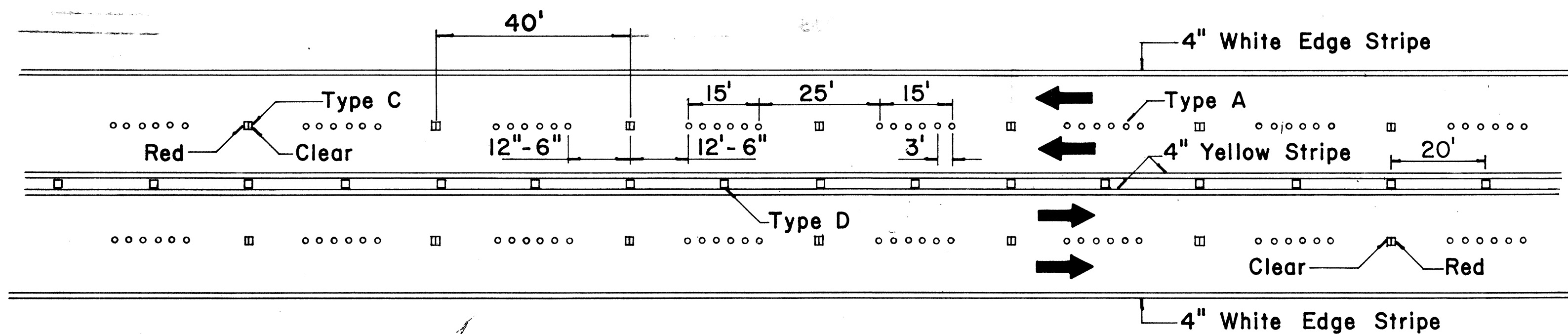
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | R05-030-1(12)      | 1976        | 11        | 17           |



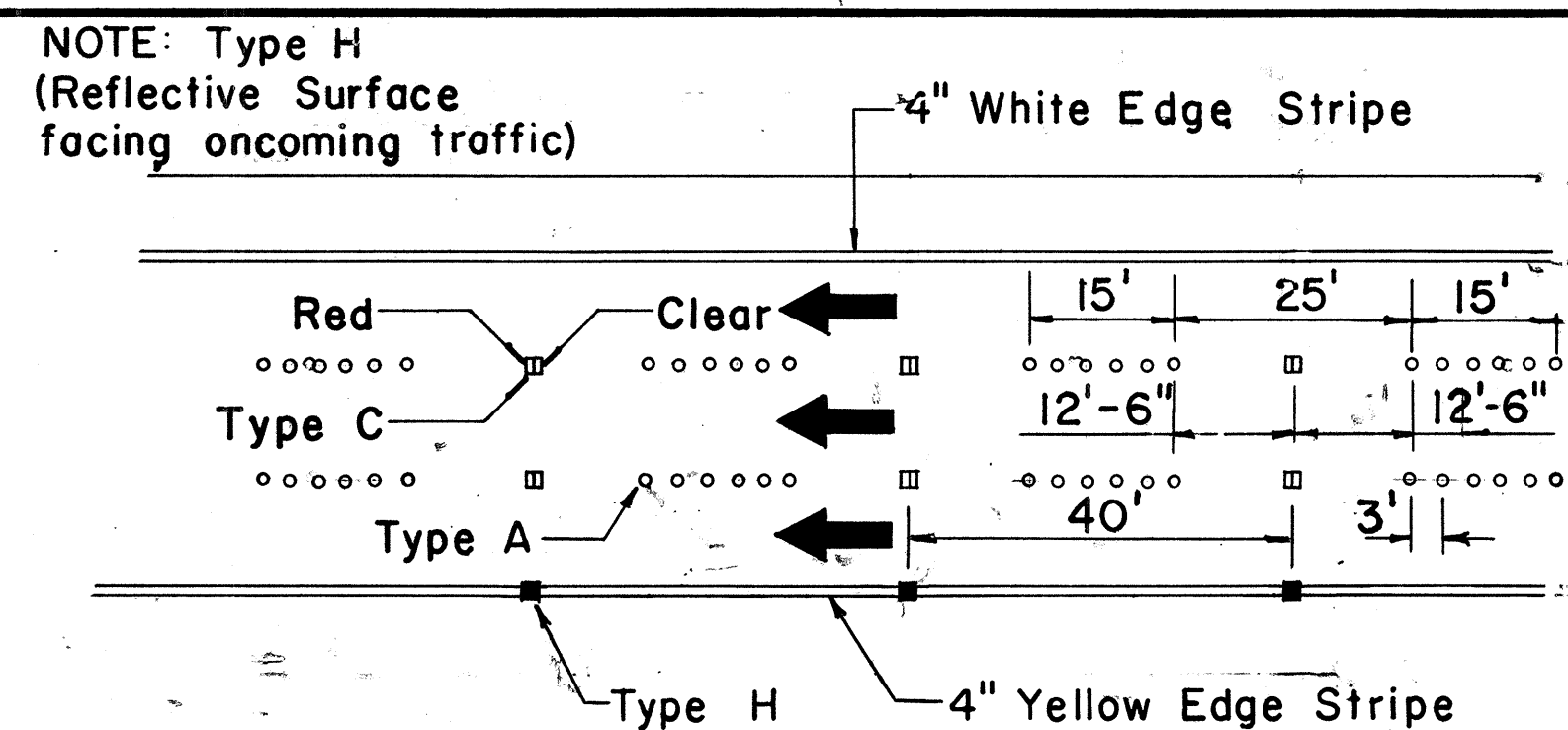
**TWO - LANE**  
**PASSING PERMITTED AND PASSING PROHIBITED**



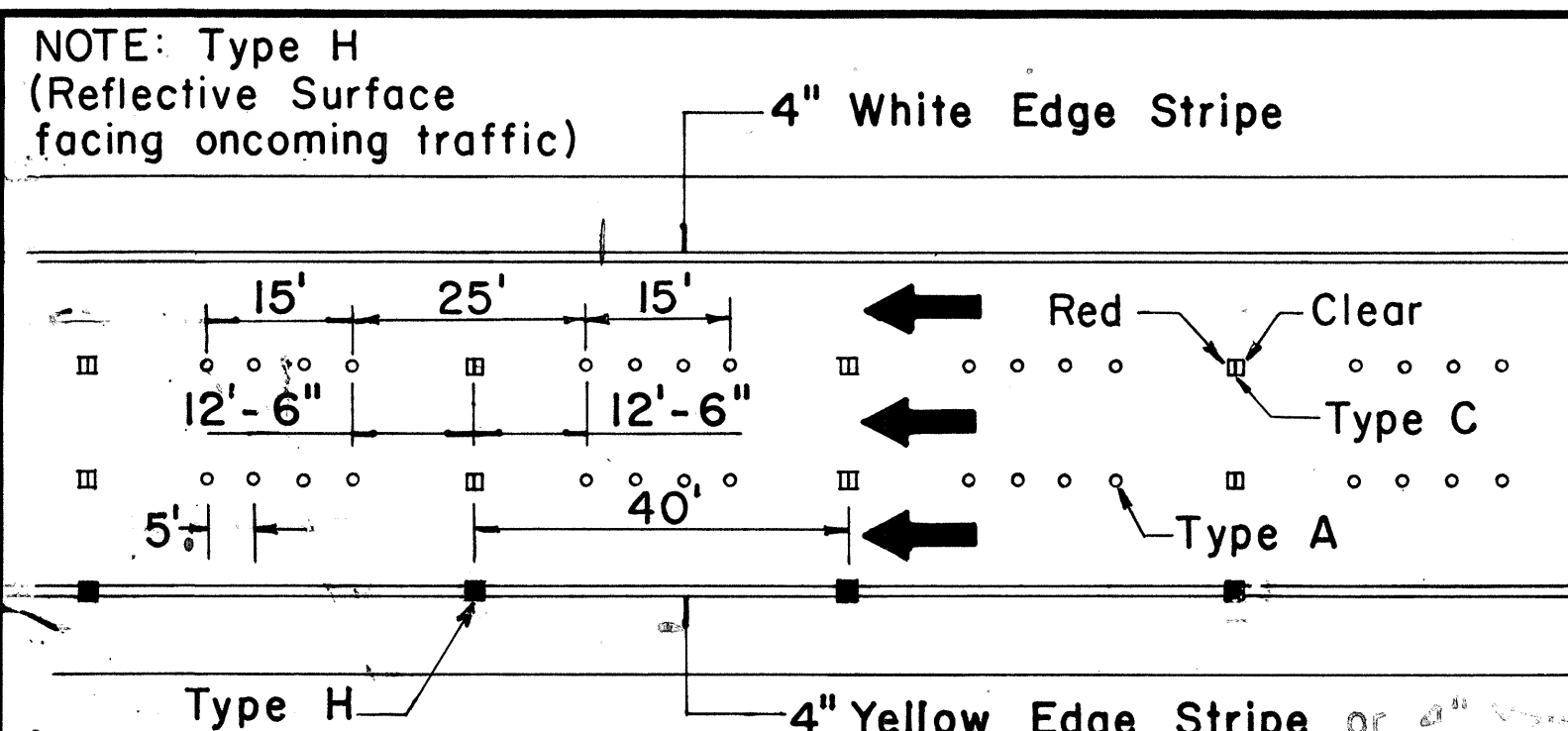
**TWO - LANE**  
**PASSING PROHIBITED ZONES**



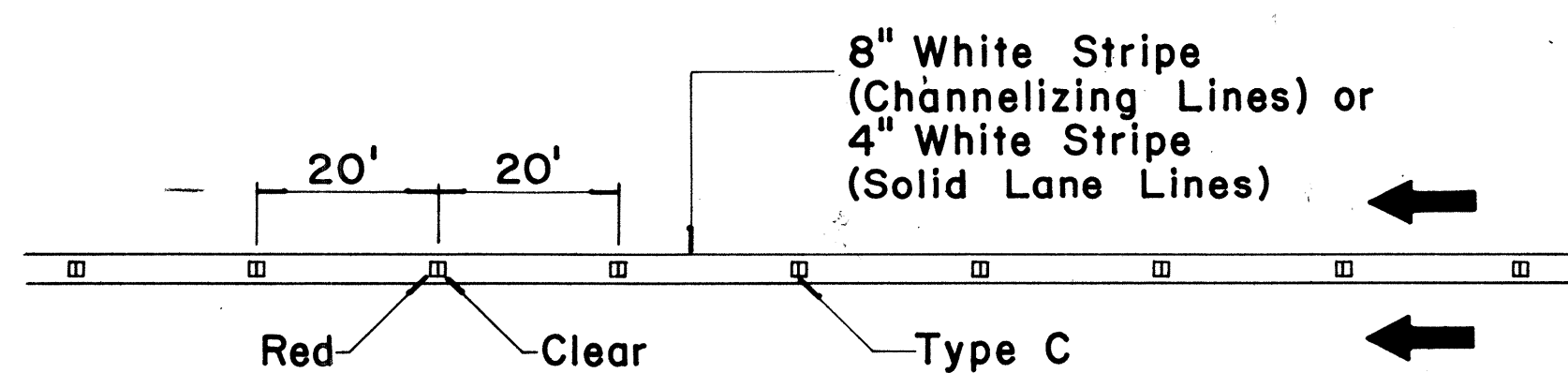
**MULTI - LANE**  
**LANE LINES AND CENTER LINE**



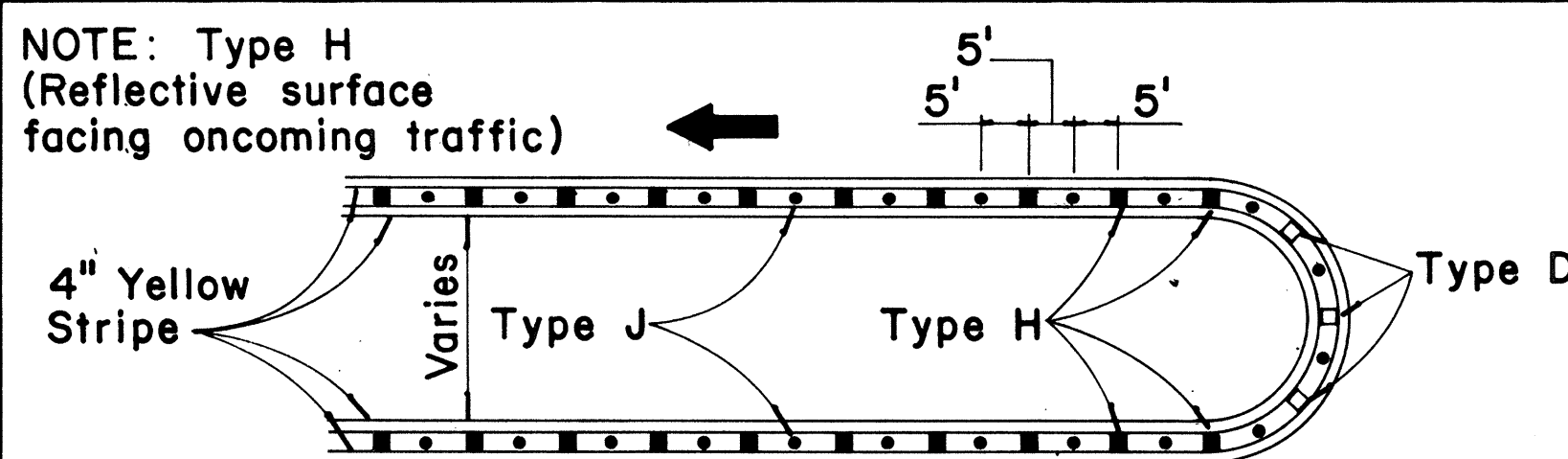
**DIVIDED HIGHWAY LANE LINES**



**FREEWAY LANE LINES**



**CHANNELIZING LINES**  
**OR SOLID LANE LINES**



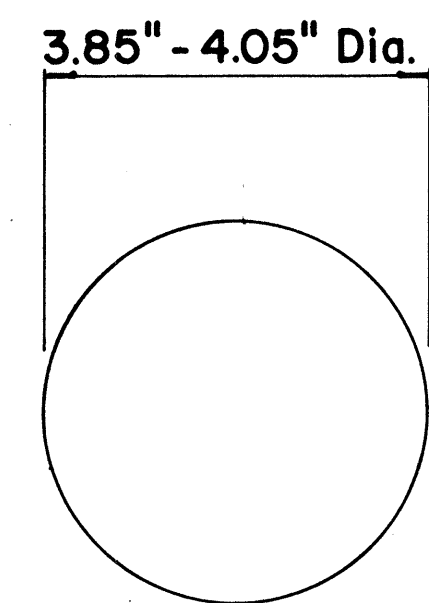
**MEDIAN NOSE DELINEATION**

**TWO - LANE**

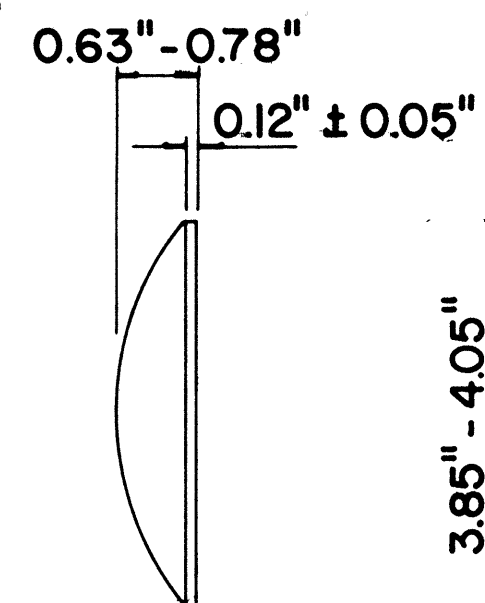
**MULTI - LANE**

**DIVIDED HIGHWAY AND FREEWAY**

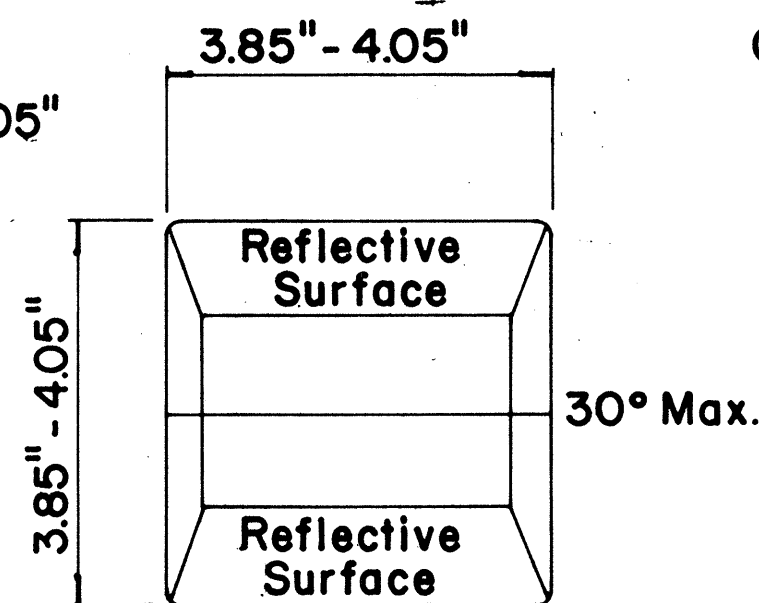
**MISCELLANEOUS**



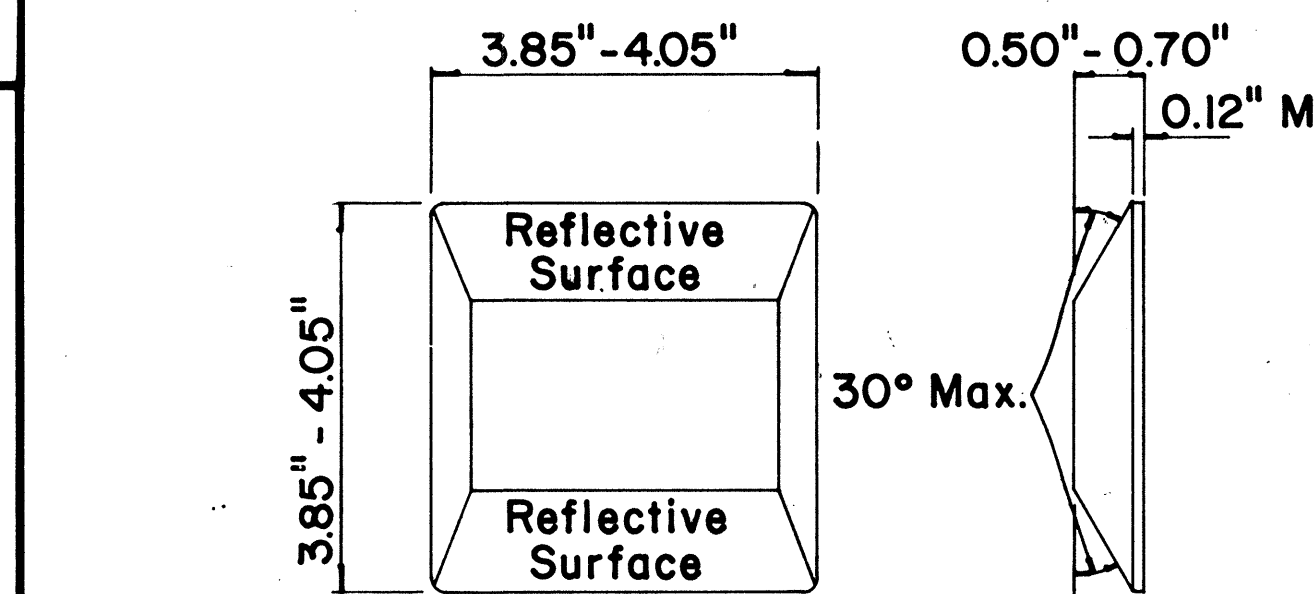
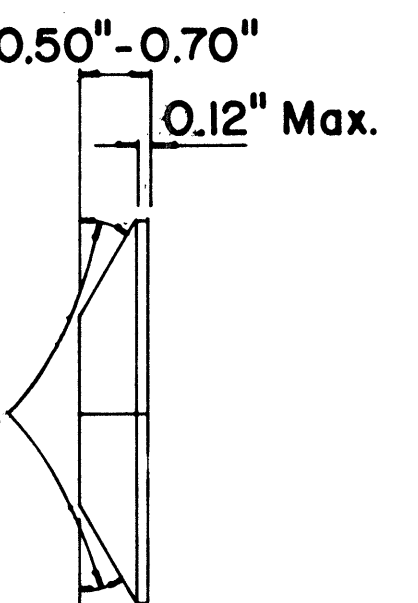
**TYPE A**  
**NON - REFLECTIVE WHITE MARKER**



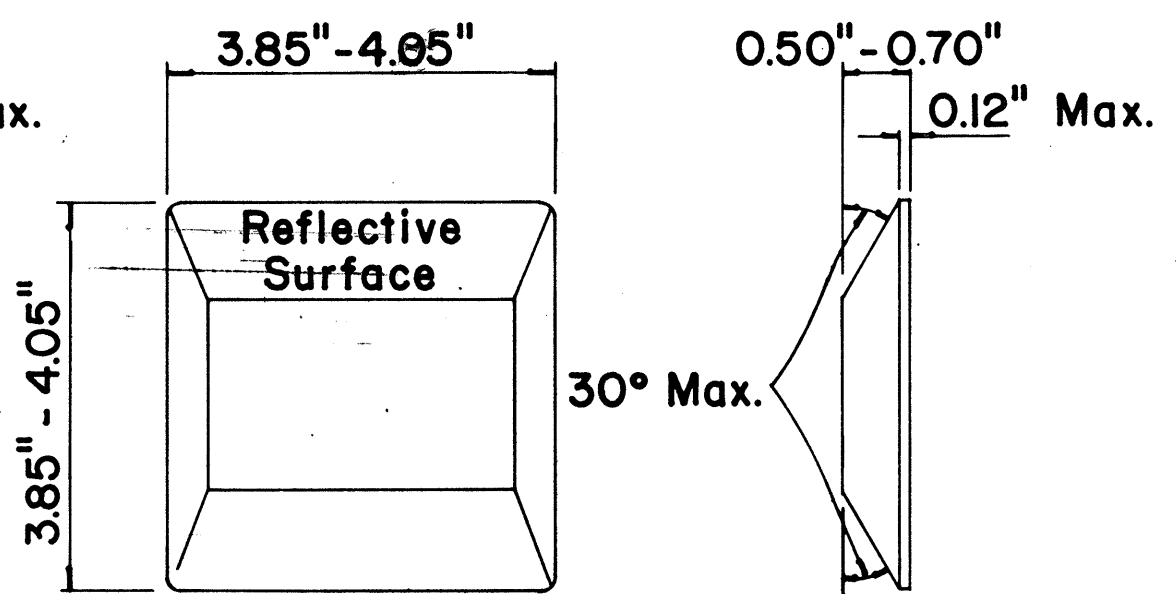
**TYPE J**  
**NON - REFLECTIVE YELLOW MARKER**



**TYPE C**  
**RED - CLEAR REFLECTIVE MARKER**



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



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

**GENERAL NOTES**

1. Painted stripes to be done by Contractor unless otherwise specified.

**LEGEND**

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

APPROVAL RECOMMENDED:  
*Erich Tanaka* 11/18/71  
TRAFFIC ENGINEER DATE

APPROVED:  
*Blair Zaleski* 11/18/71  
ASSISTANT CHIEF, ENGINEERING DATE

| No. | REVISION                                                                                                                 | APPROVED BY | DATE     |
|-----|--------------------------------------------------------------------------------------------------------------------------|-------------|----------|
| 1   | Add reflector marker in each line gap.                                                                                   | H.C.        | 10-21-72 |
| 2   | Revised General Notes.                                                                                                   | H.C.        | 10-21-72 |
| 3   | Change 4" white edge stripe to 4" solid yellow edge stripe to left edge of a travel path and Add Type H Reflector Marker | H.C.        | 5-22-74  |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**STANDARD DETAILS**  
**RAISED PAVEMENT MARKERS**

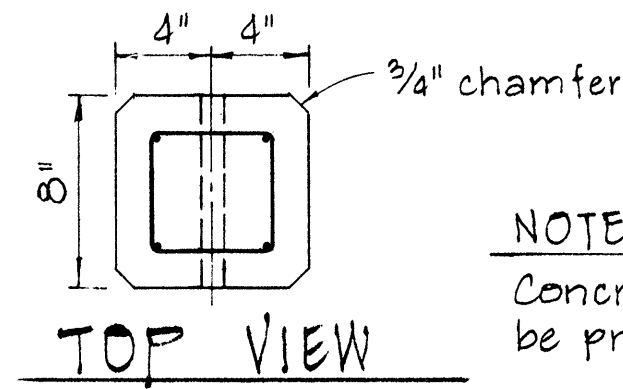
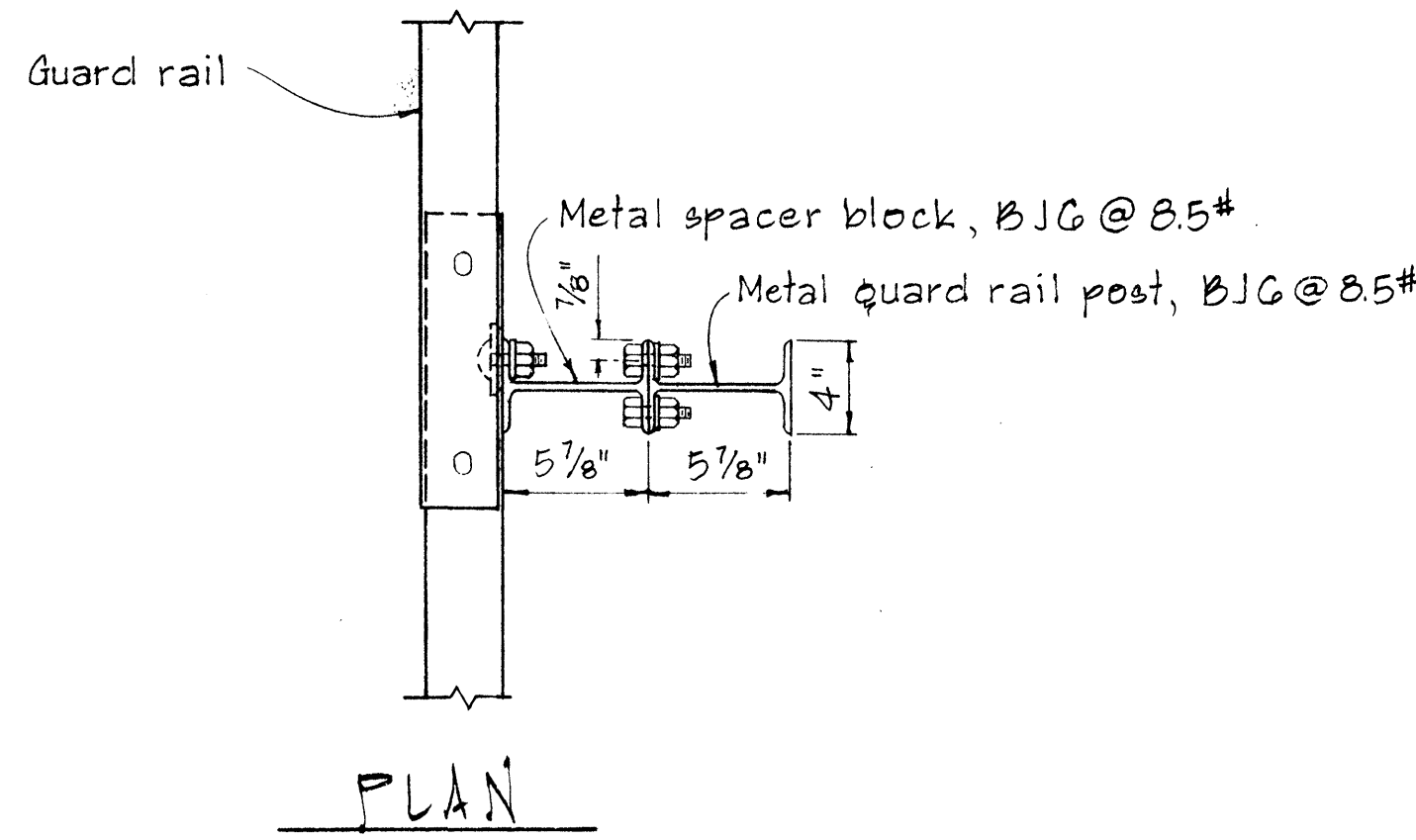
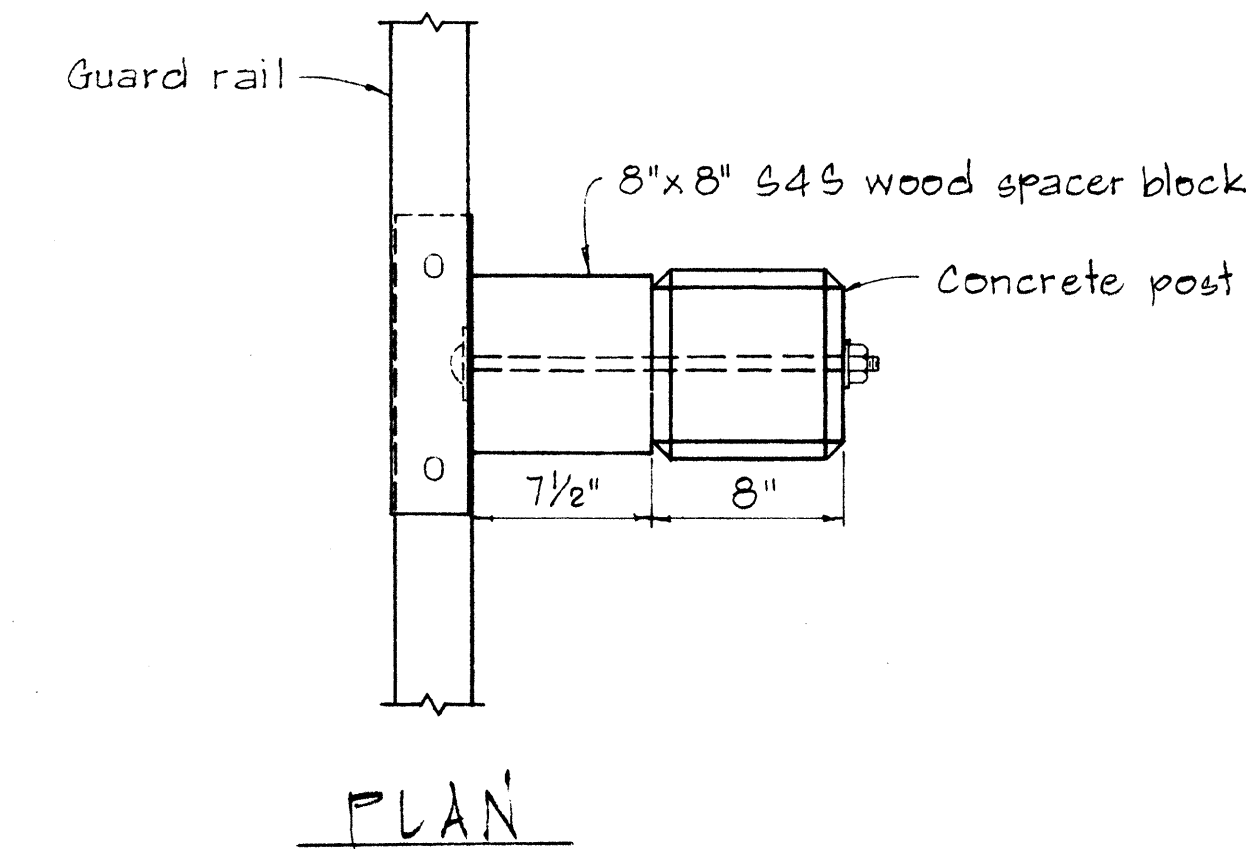
Not to Scale October 1971

SHEET No. 4 OF 10 SHEETS DT 300

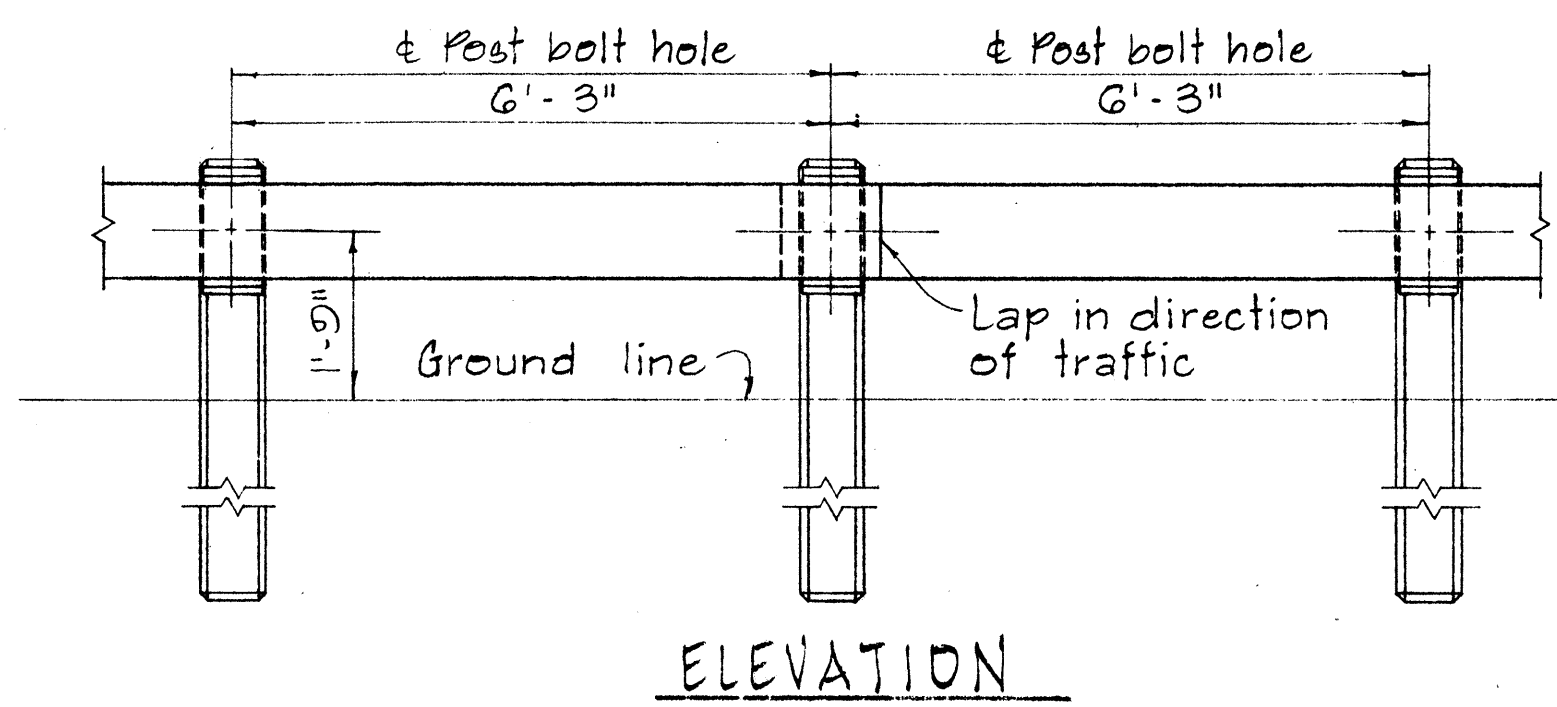
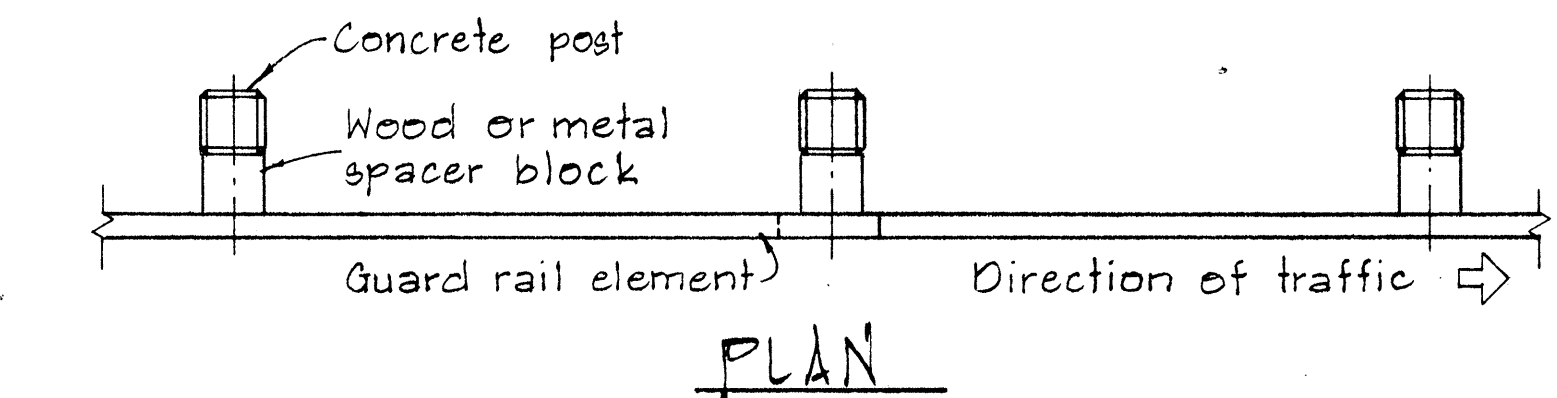
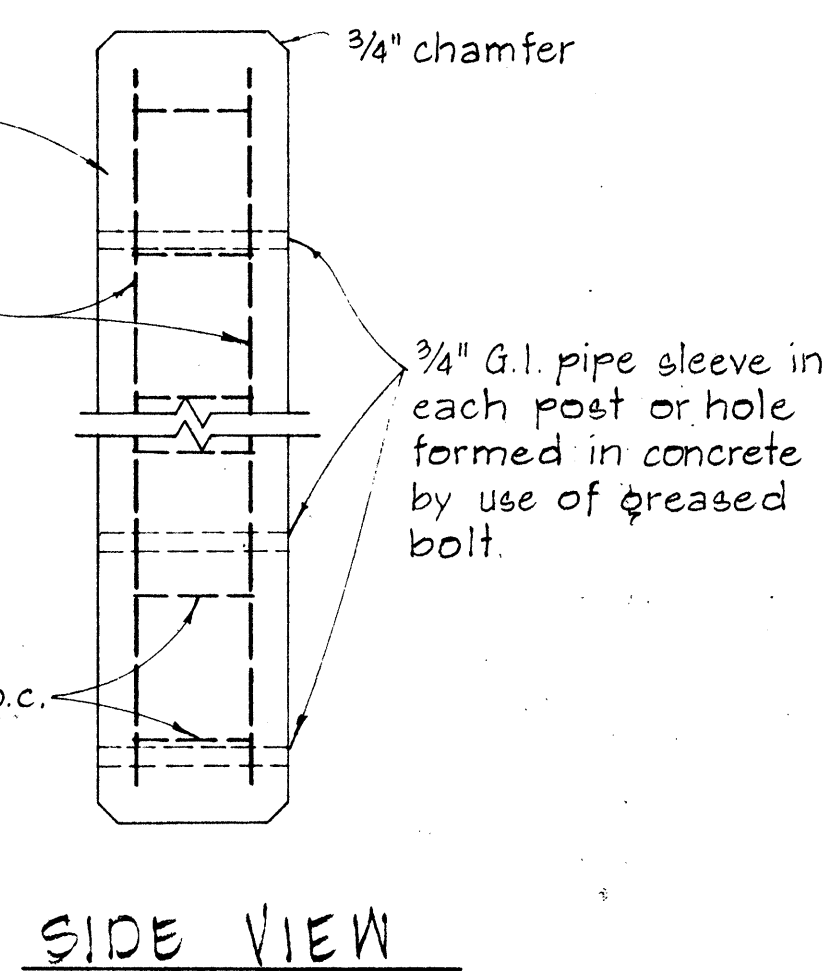
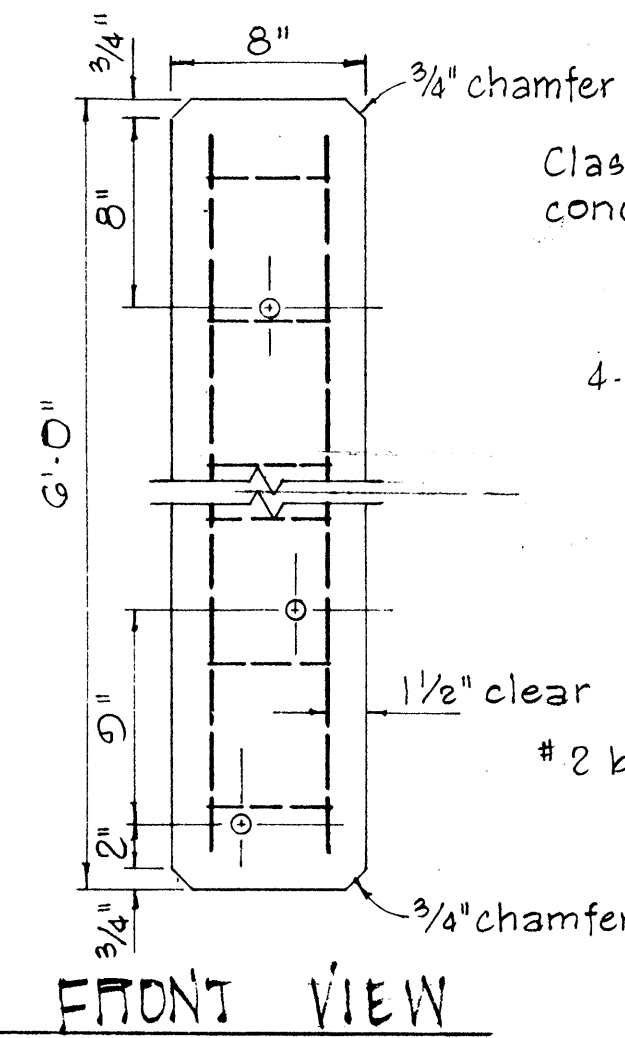
|             |  |
|-------------|--|
| DATE        |  |
| DESIGNED BY |  |
| CHECKED BY  |  |
| NO.         |  |



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | ROS-030-102        | 1976        | 12        | 17           |

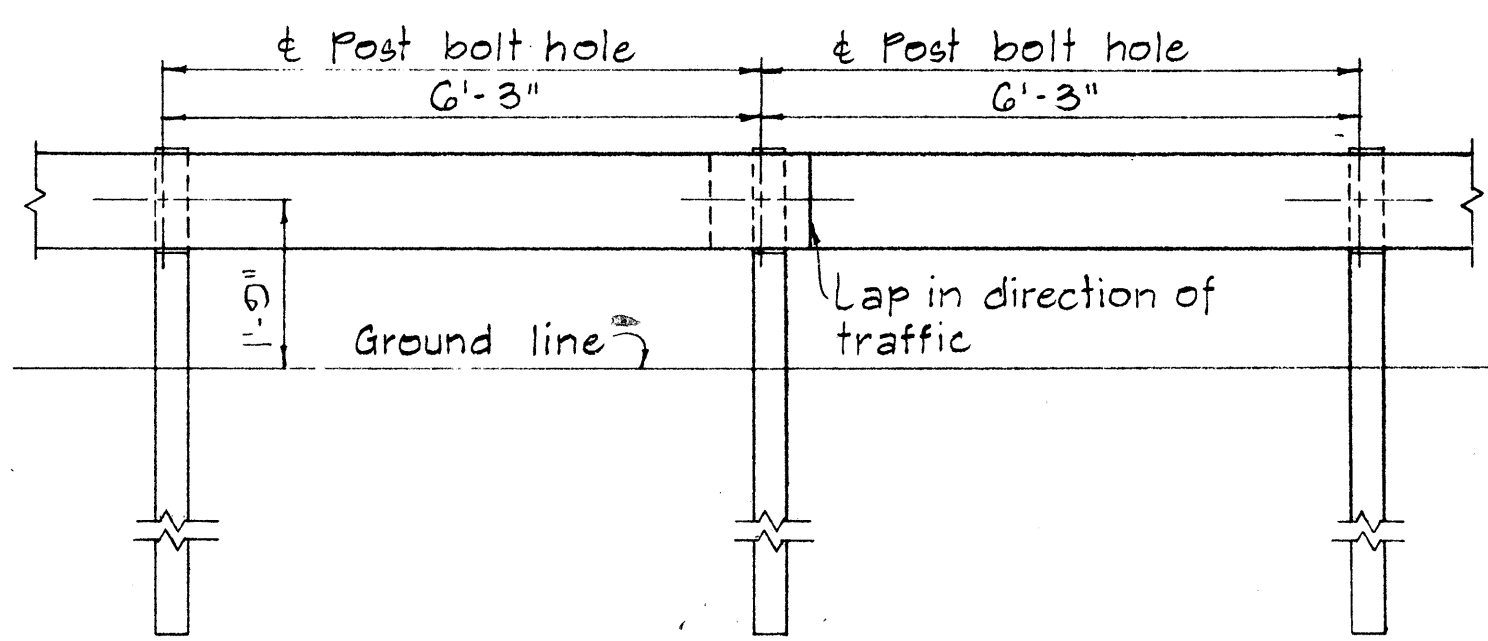
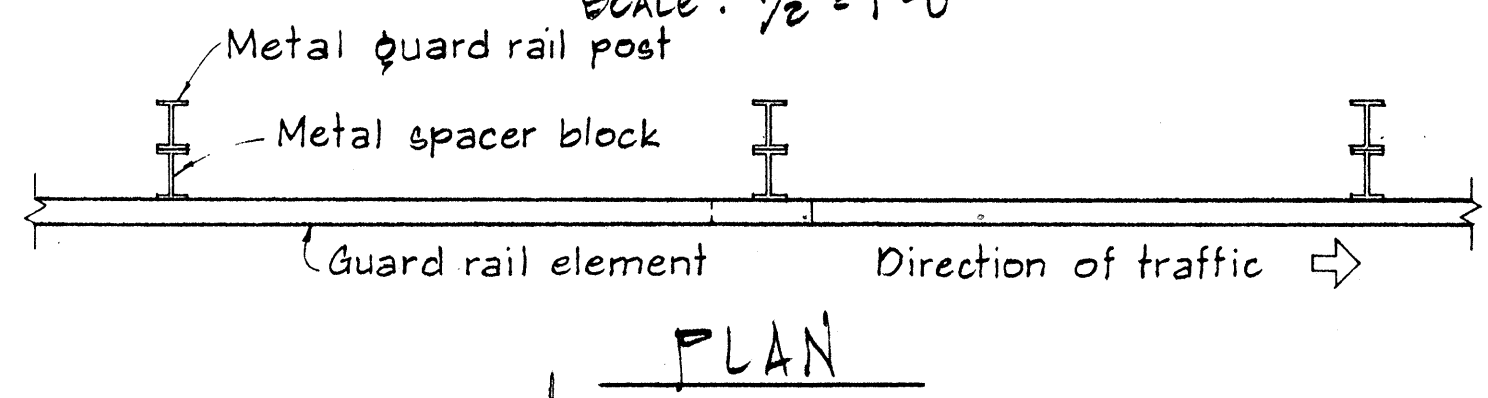


NOTE:  
Concrete post shall be precast



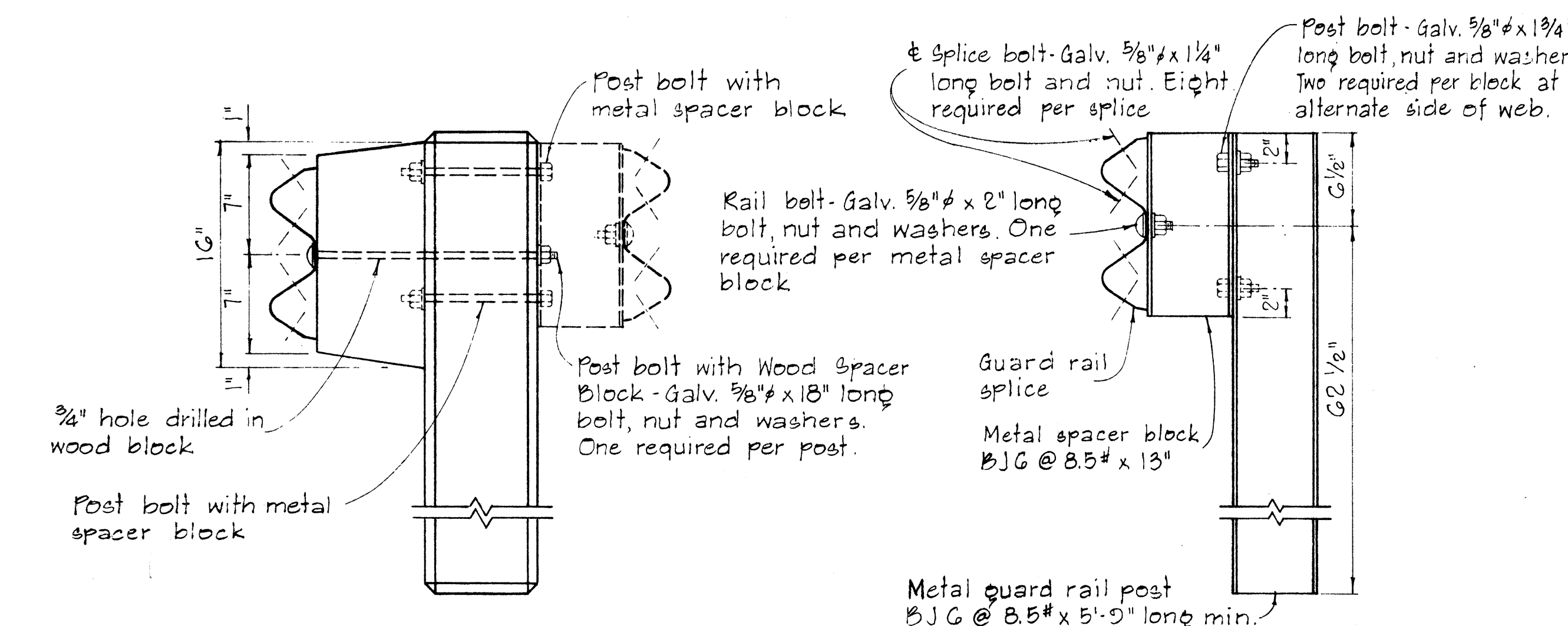
METAL GUARD RAIL ON CONCRETE POST WITH WOOD OR METAL SPACER BLOCK.

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



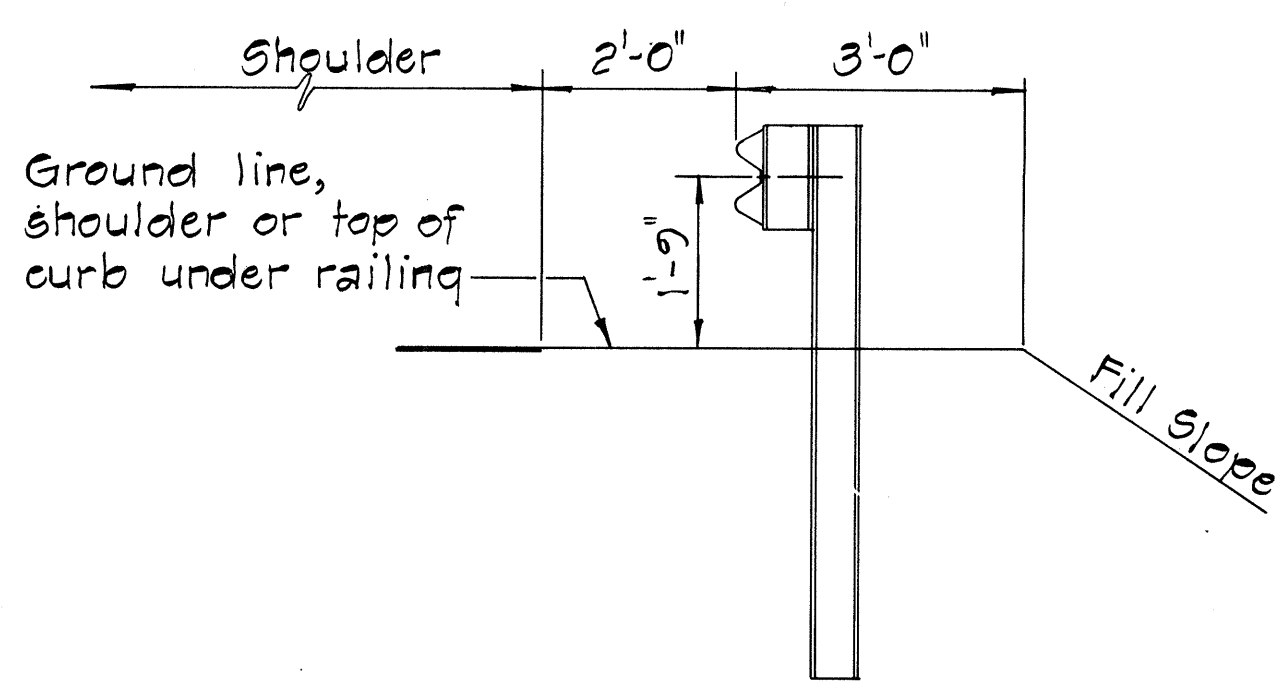
METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK

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



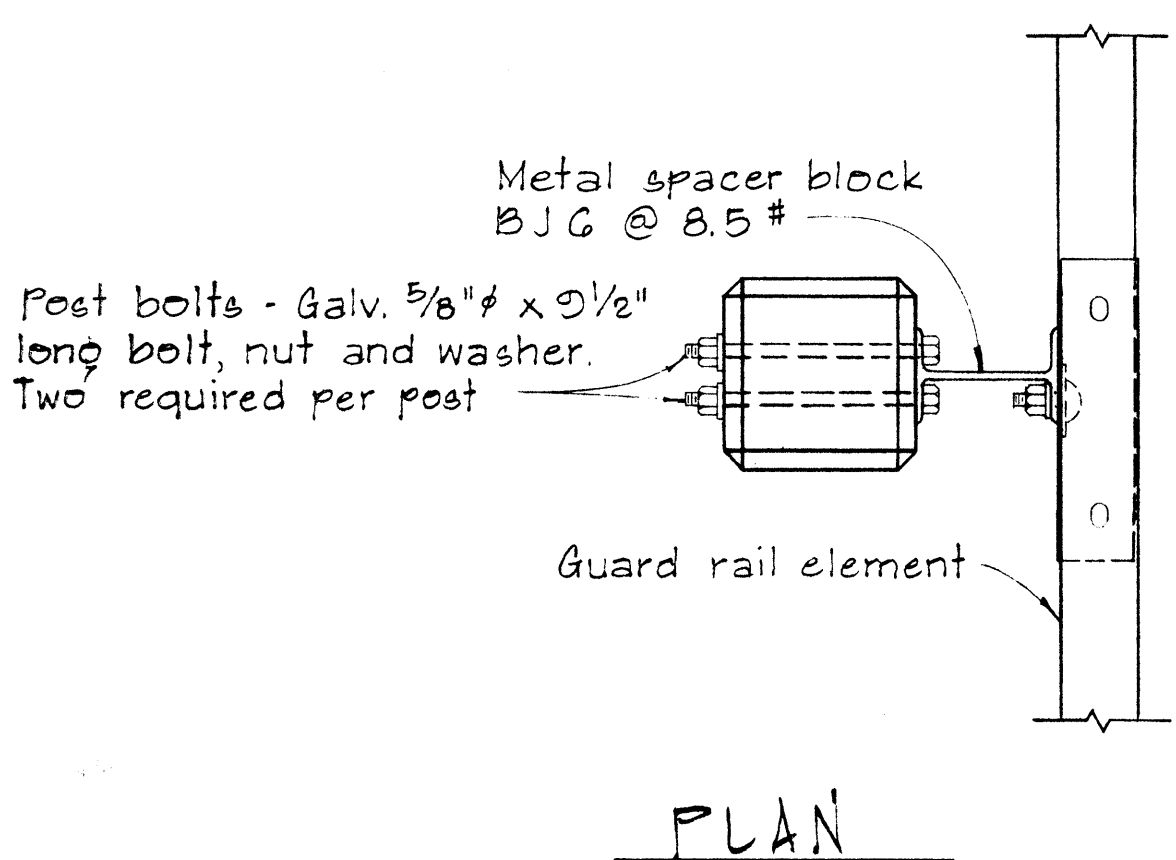
SINGLE METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK

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



TYPICAL METAL GUARD RAIL DETAIL

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



SINGLE METAL GUARD RAIL ON PRECAST CONCRETE POST WITH WOOD OR METAL SPACER BLOCK

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

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

APPROVED:  
*Hubert J. Zelen*  
ASSISTANT CHIEF, ENGINEERING  
12-30-69  
DATE

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

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

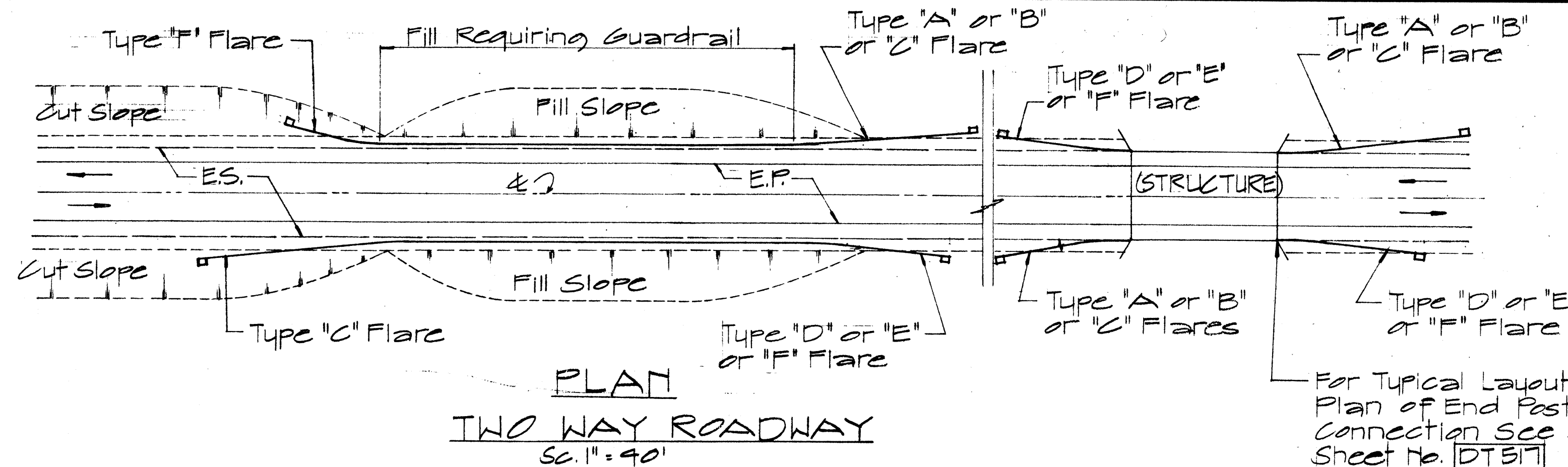
STANDARD DETAILS  
METAL GUARD RAIL

SCALE: AS SHOWN  
NOV. 1968



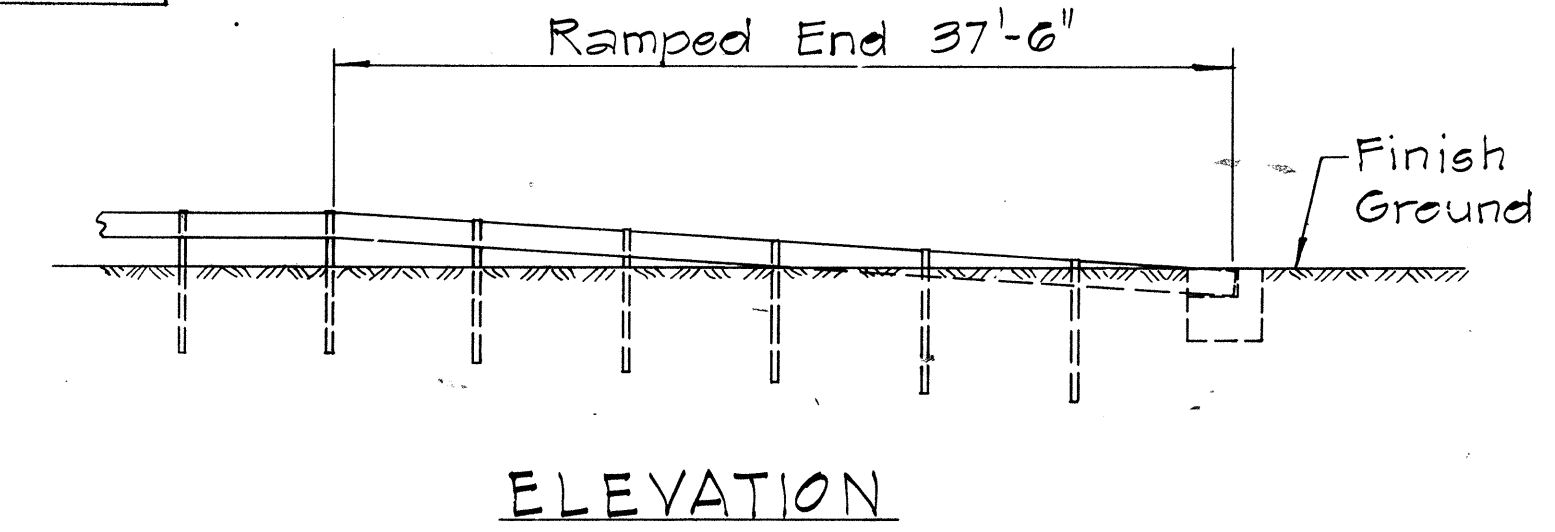
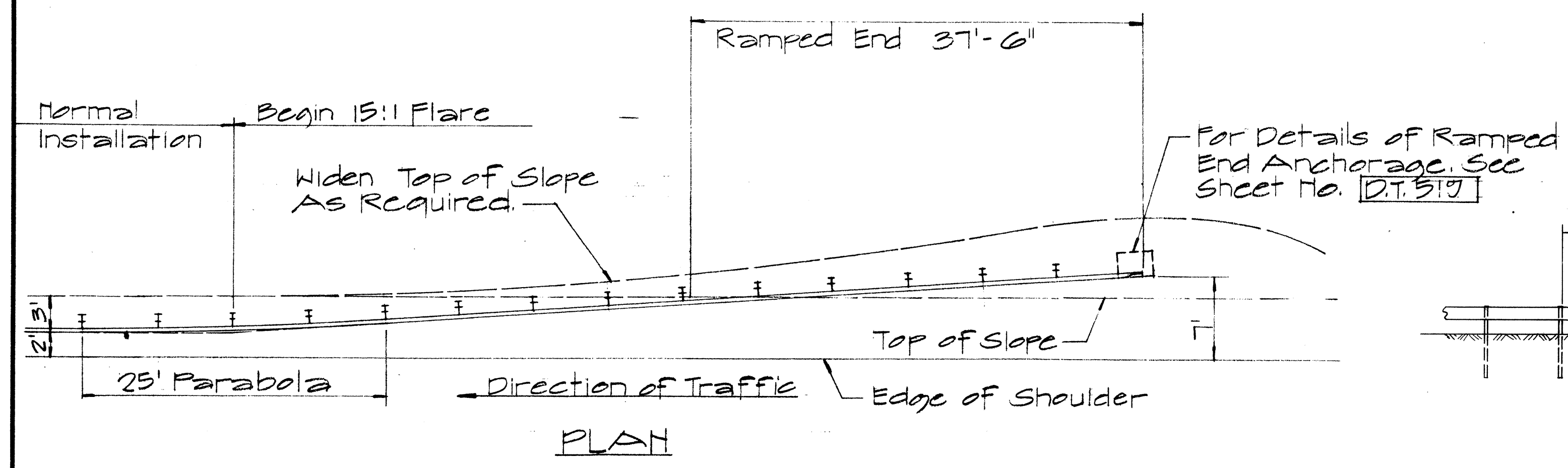
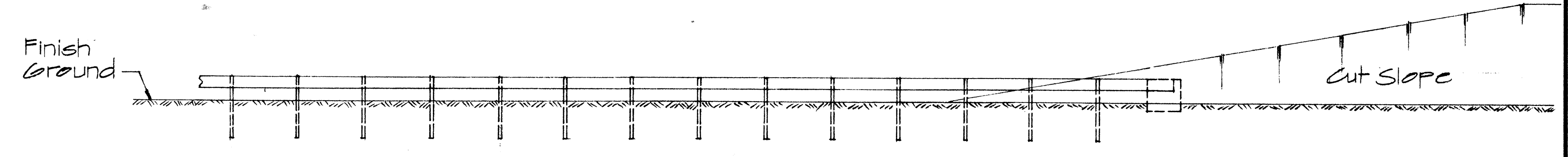
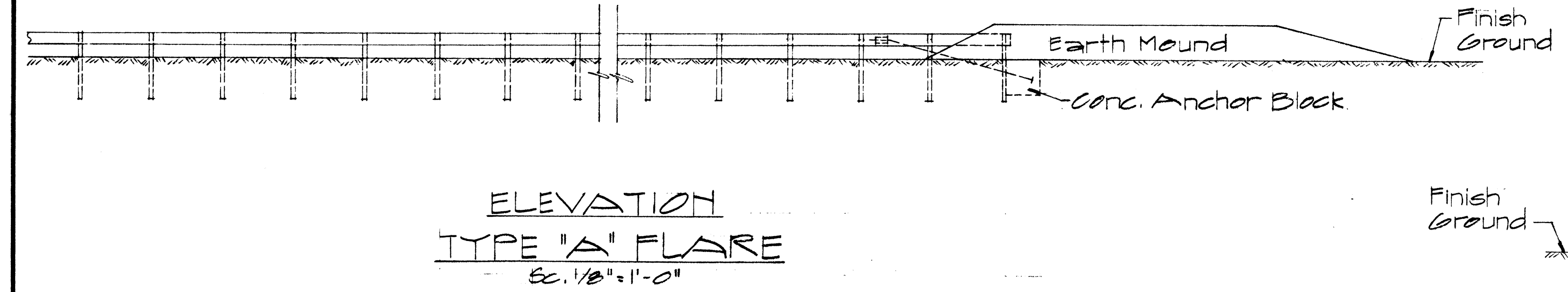
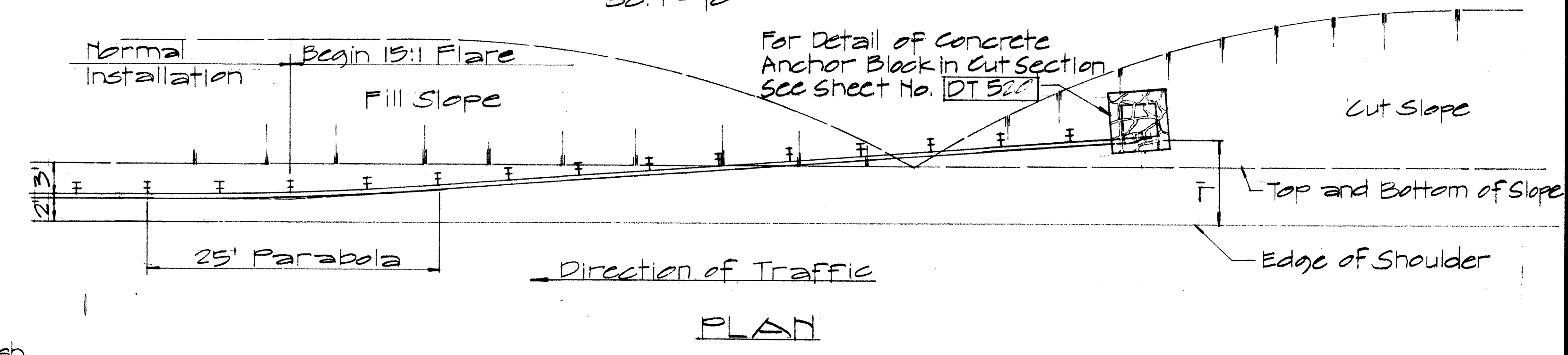
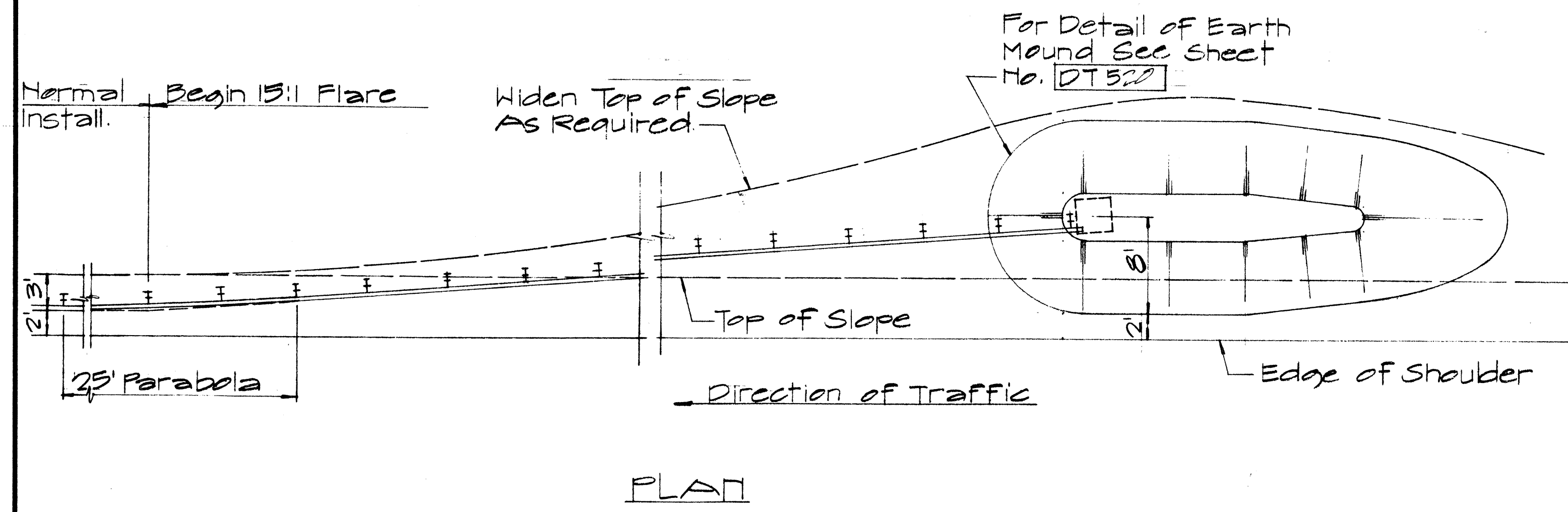
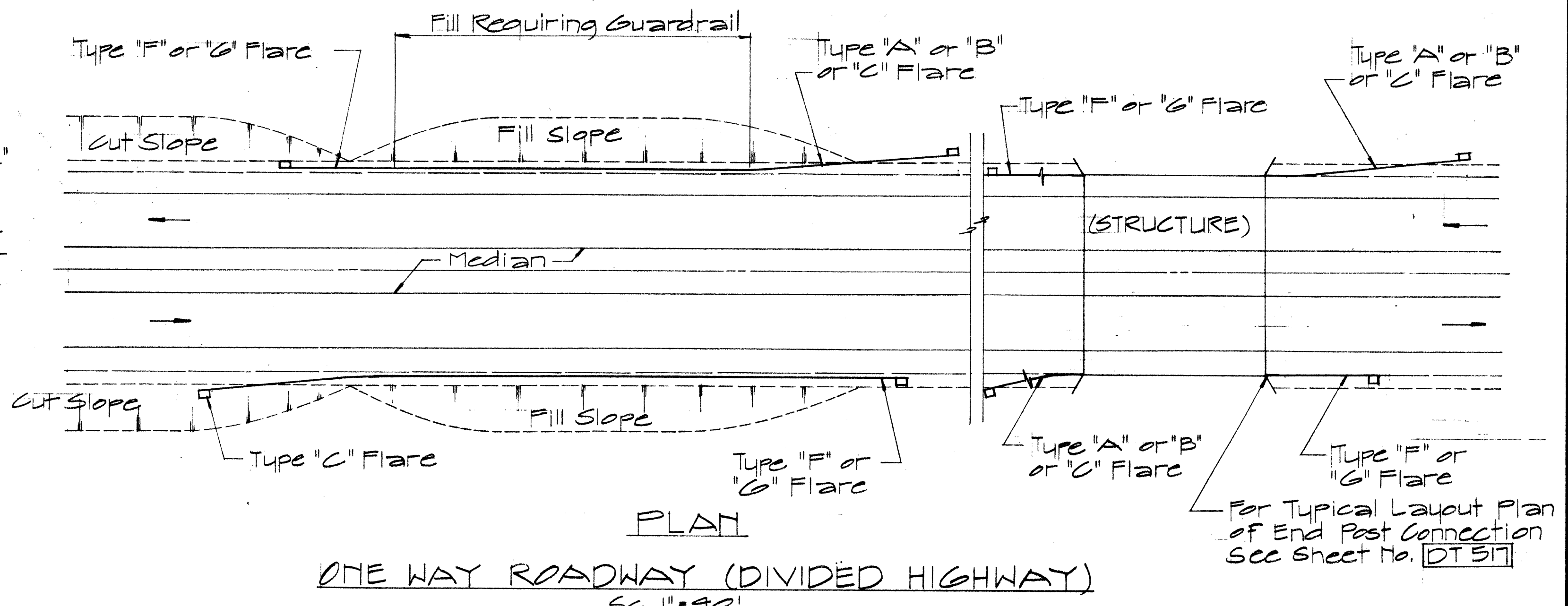






NOTE:  
Metal guard rail connection to structures requires End Post Connection. See structure plans.

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | R05-030-118        | 1976        | 14        | 17           |



ELEVATION  
TYPE "C" FLARE  
Sc. 1/8" = 1'-0"

APPROVAL RECOMMENDED:  
*Euski Tanaka* 12/29/62  
TRAFFIC ENGINEER DATE  
APPROVED:  
*W. B. B. B.* 12-30-69  
ASSISTANT CHIEF, ENGINEERING DATE

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

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

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

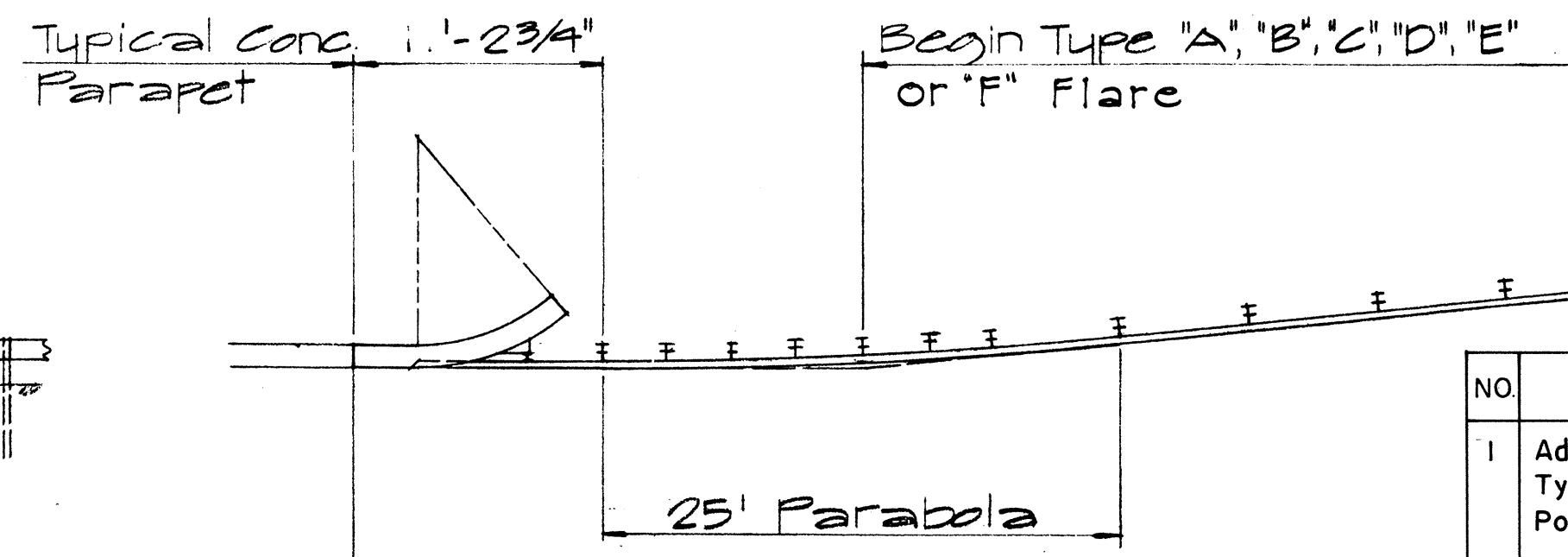
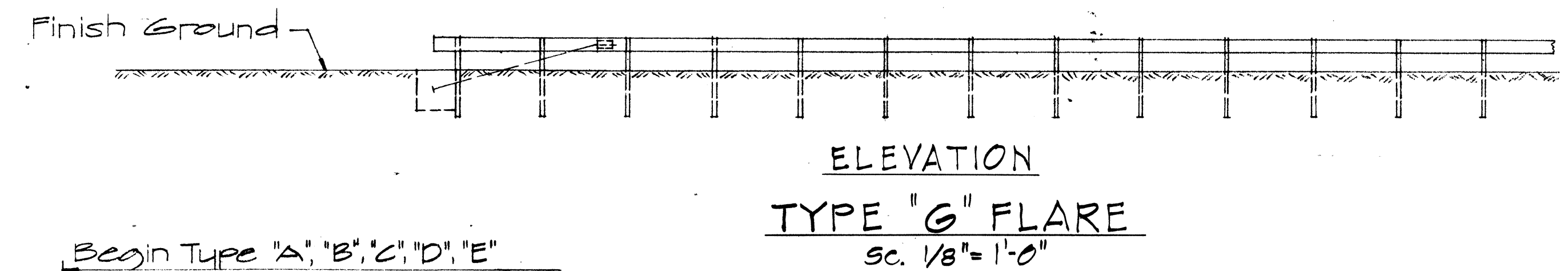
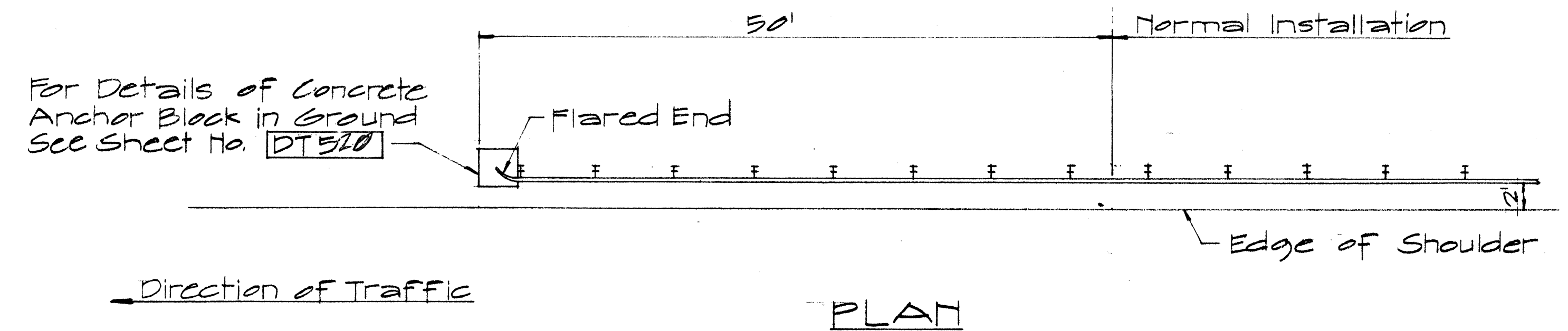
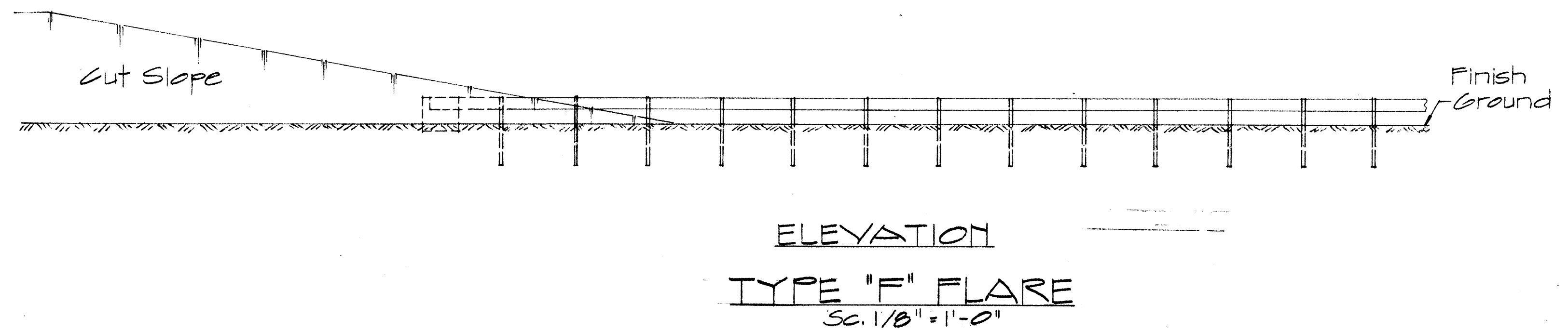
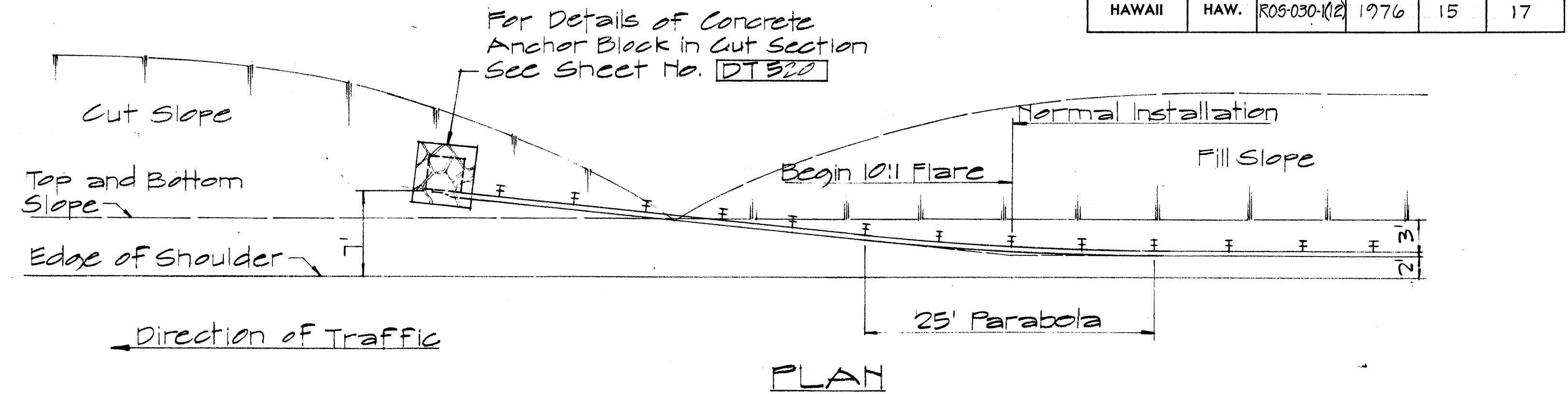
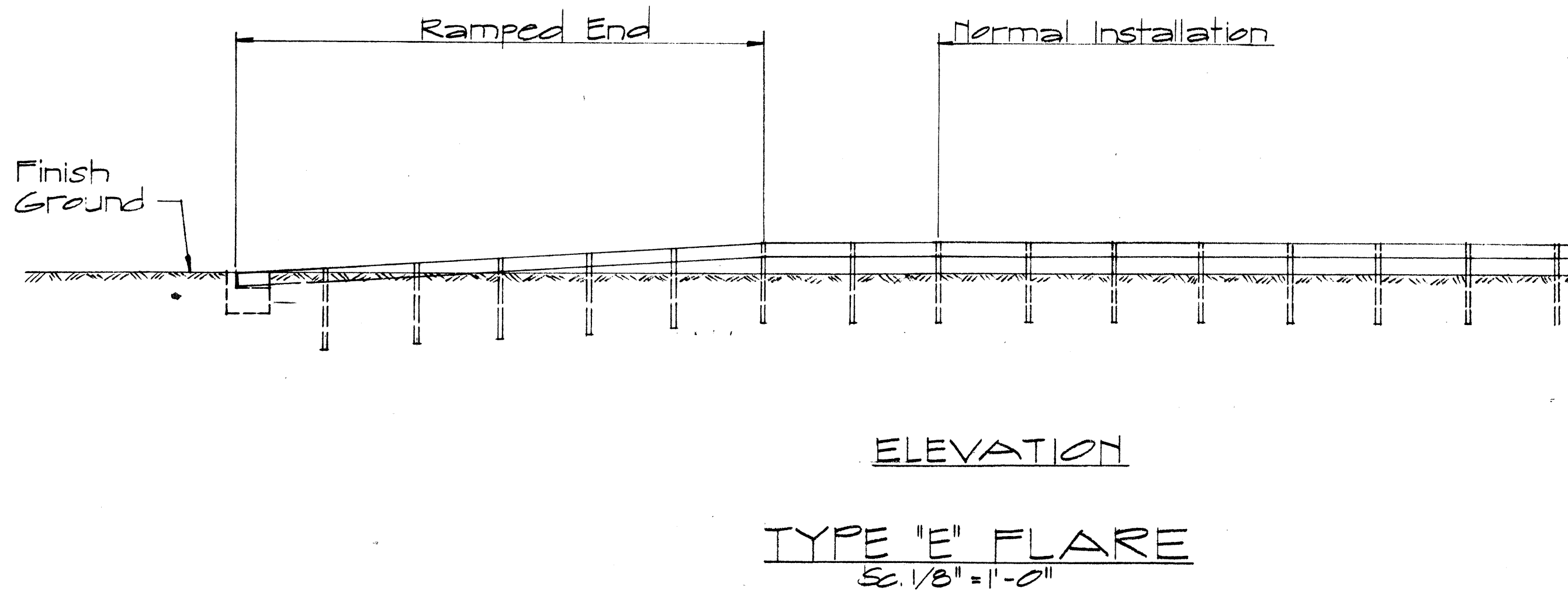
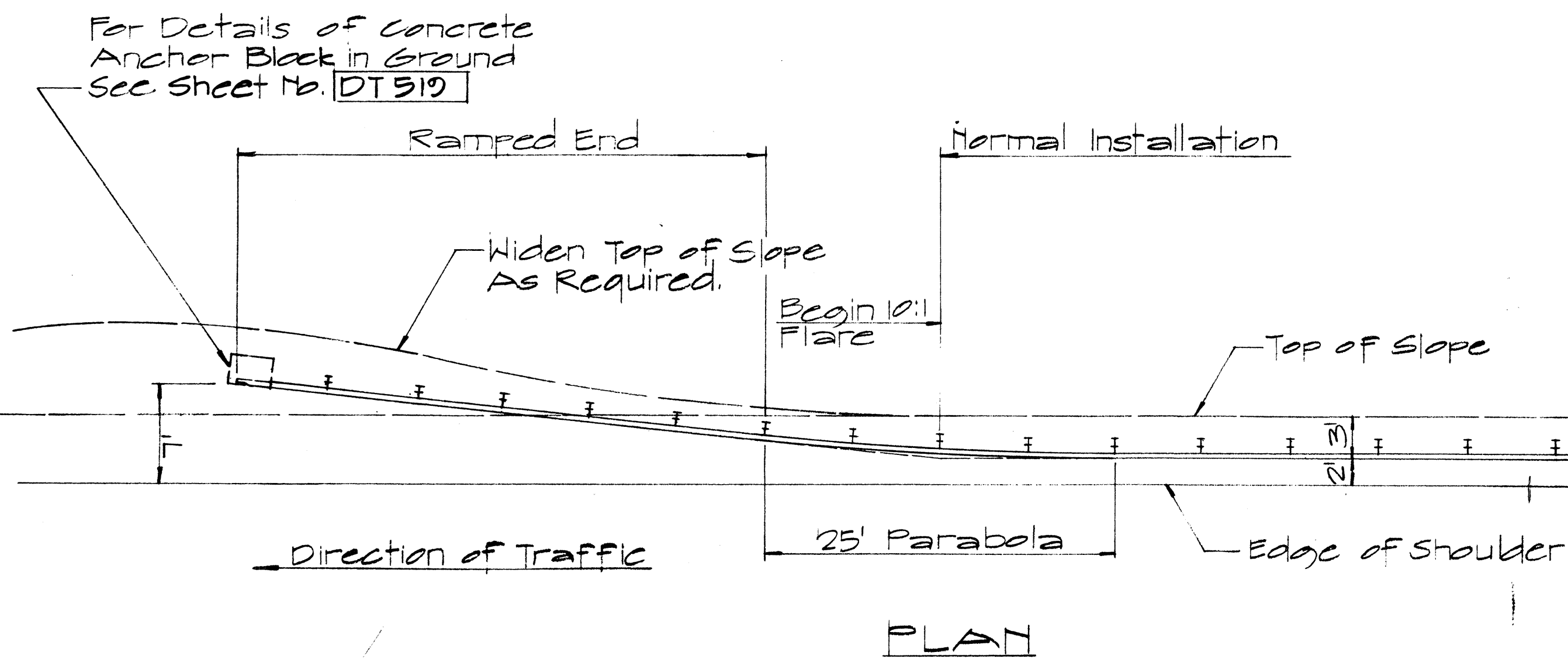
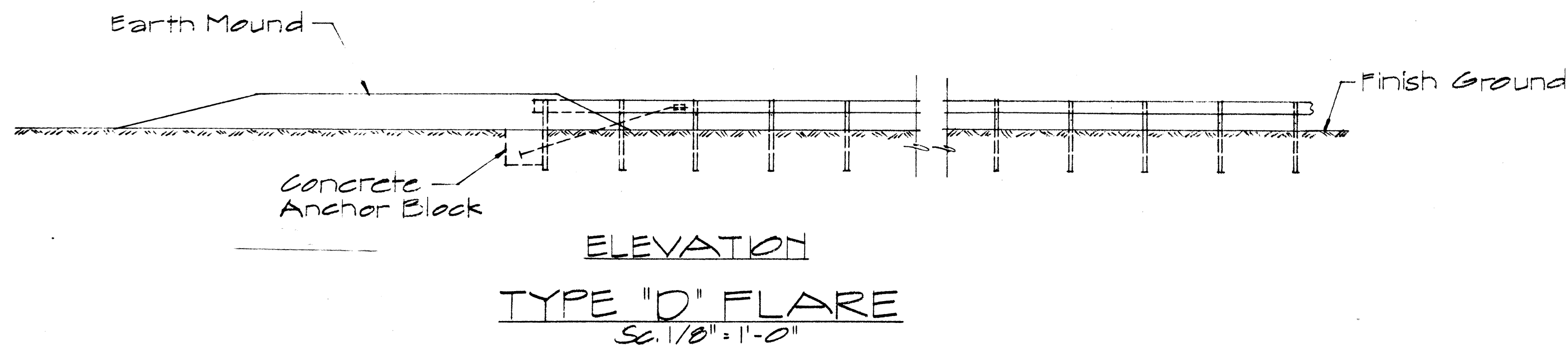
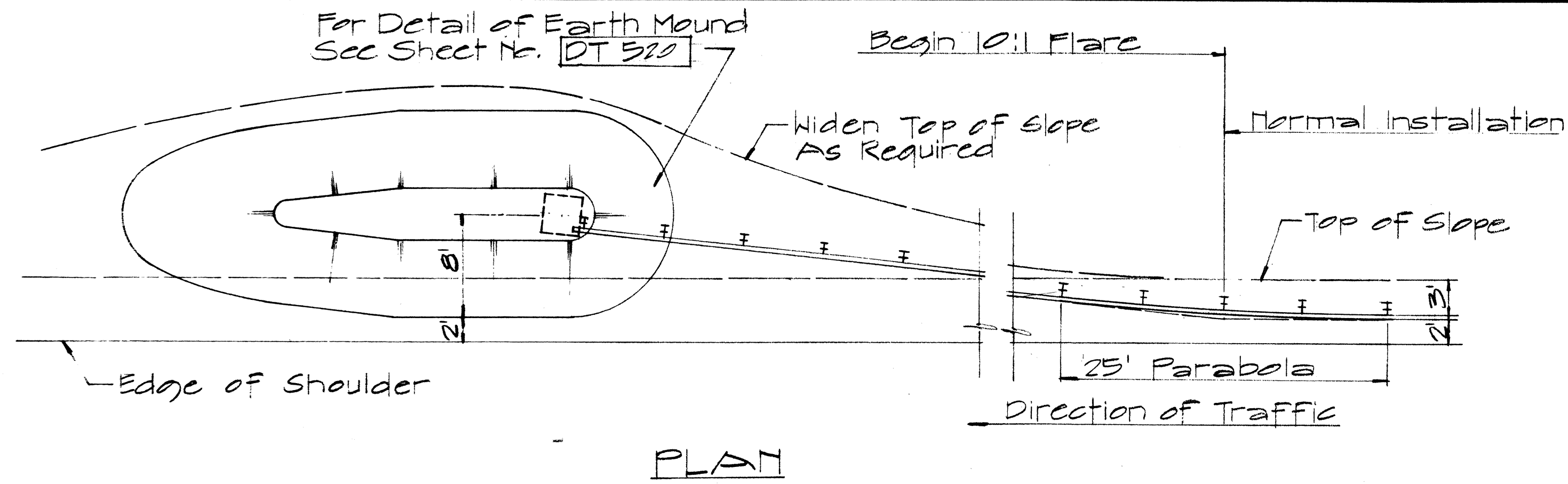
Sc. As Noted April 1969

SHEET No. 7 OF 10 SHEETS DT 516

TYPE "B" FLARE  
Sc. 1/8" = 1'-0"



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | ROS-030-112        | 1976        | 15        | 17           |



TYPICAL LAYOUT PLAN OF END POST CONNECTION

Sc. 1/8" = 1'-0"

APPROVAL RECOMMENDED: E. J. Tanaka 12/29/69  
TRAFFIC ENGINEER DATE

APPROVED: W. J. Kal 12-30-69  
ASSISTANT CHIEF, ENGINEERING DATE

| NO. | REVISION                                                             | APPROVED BY | DATE    |
|-----|----------------------------------------------------------------------|-------------|---------|
| 1   | Additional Posts Added to Typical Layout Plan Of End Post Connection | H.C.        | 4-12-72 |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

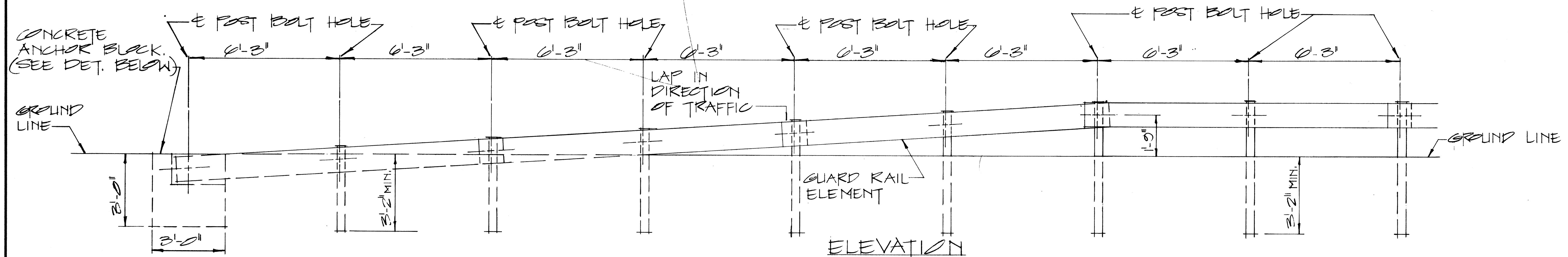
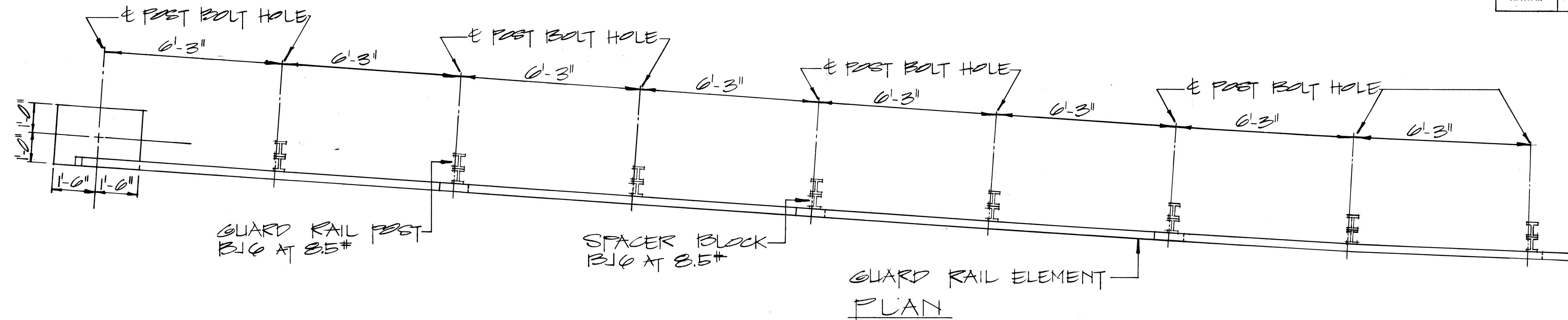
STANDARD DETAILS  
TRAILING END  
FLARE - ONE & TWO  
WAY ROADWAY

Scale: As Noted April 1969

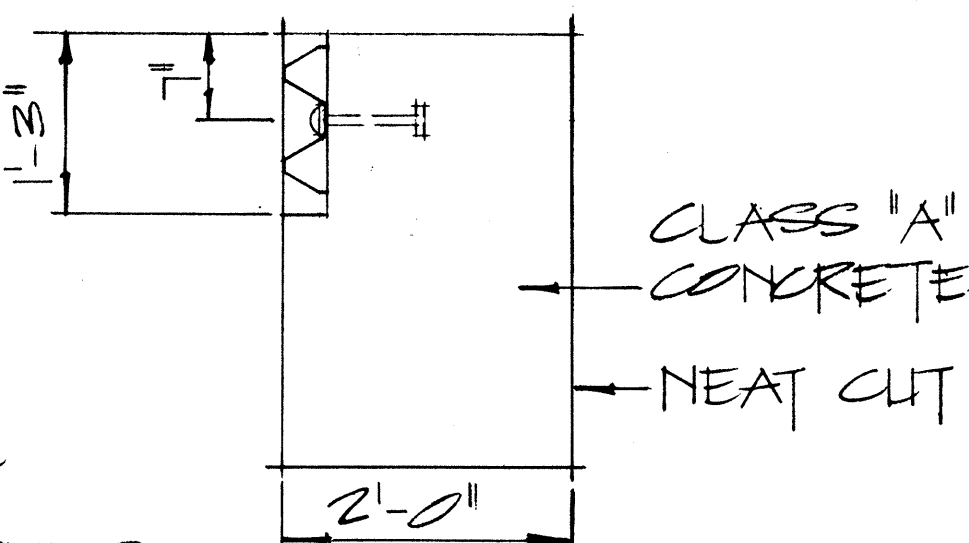
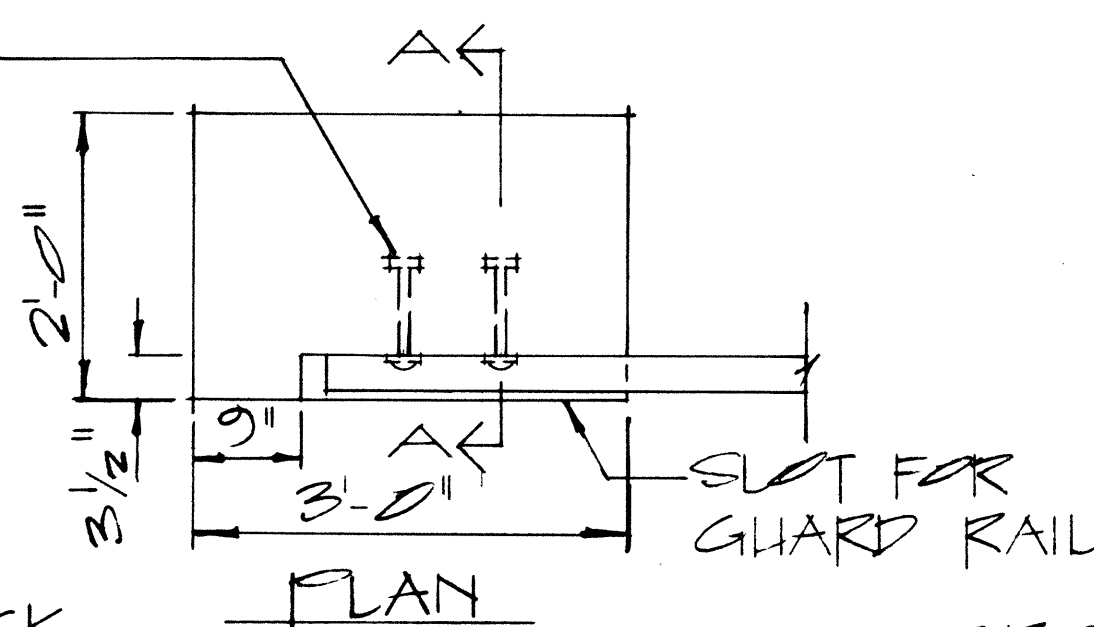
SHEET No. 8 OF 10 SHEETS DT 517



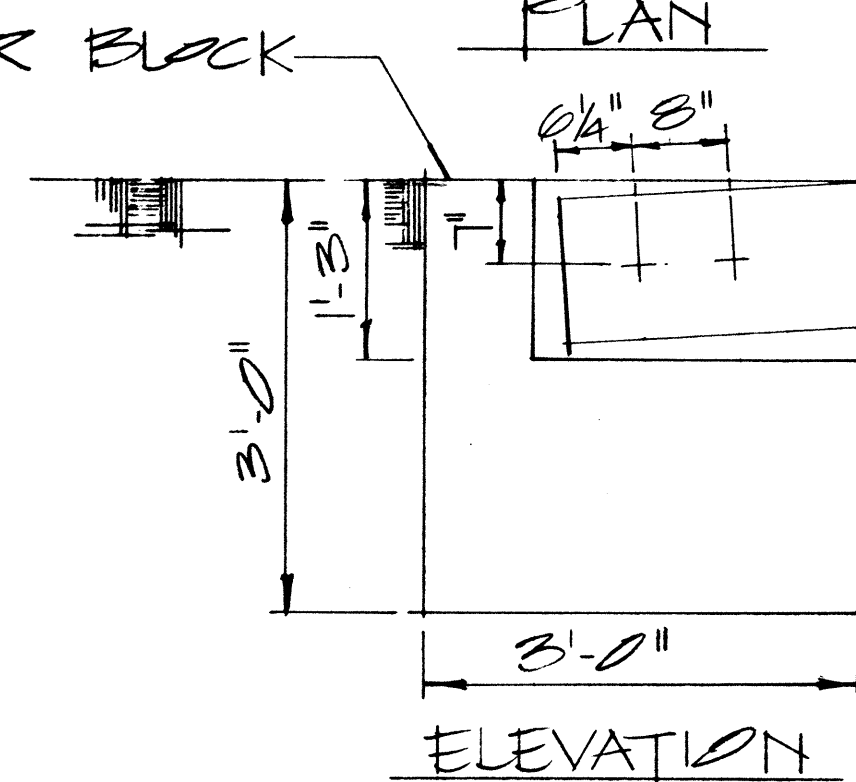
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | ROS-030-102        | 1976        | 16        | 17           |



2-5/8" x 7/4" LONG BOLTS, w/ NUTS & WASHERS INCIDENTAL TO METAL GUARD RAIL. ALL METAL PIECES SHALL BE GALVANIZED.



TOP OF ANCHOR BLOCK TO BE FLUSH w/ GROUND.



NOTE: CONCRETE, EXCAVATION AND MISCELLANEOUS APPURTENANCES NECESSARY TO ANCHOR THE GUARD RAIL ENDS, SHALL BE INCIDENTAL TO THE METAL GUARD RAIL.

CONCRETE ANCHOR BLOCK  
SCALE: 3/4" = 1'-0"

APPROVAL RECOMMENDED:  
*Enishi Tanaka*  
TRAFFIC ENGINEER  
DATE: 12/23/69

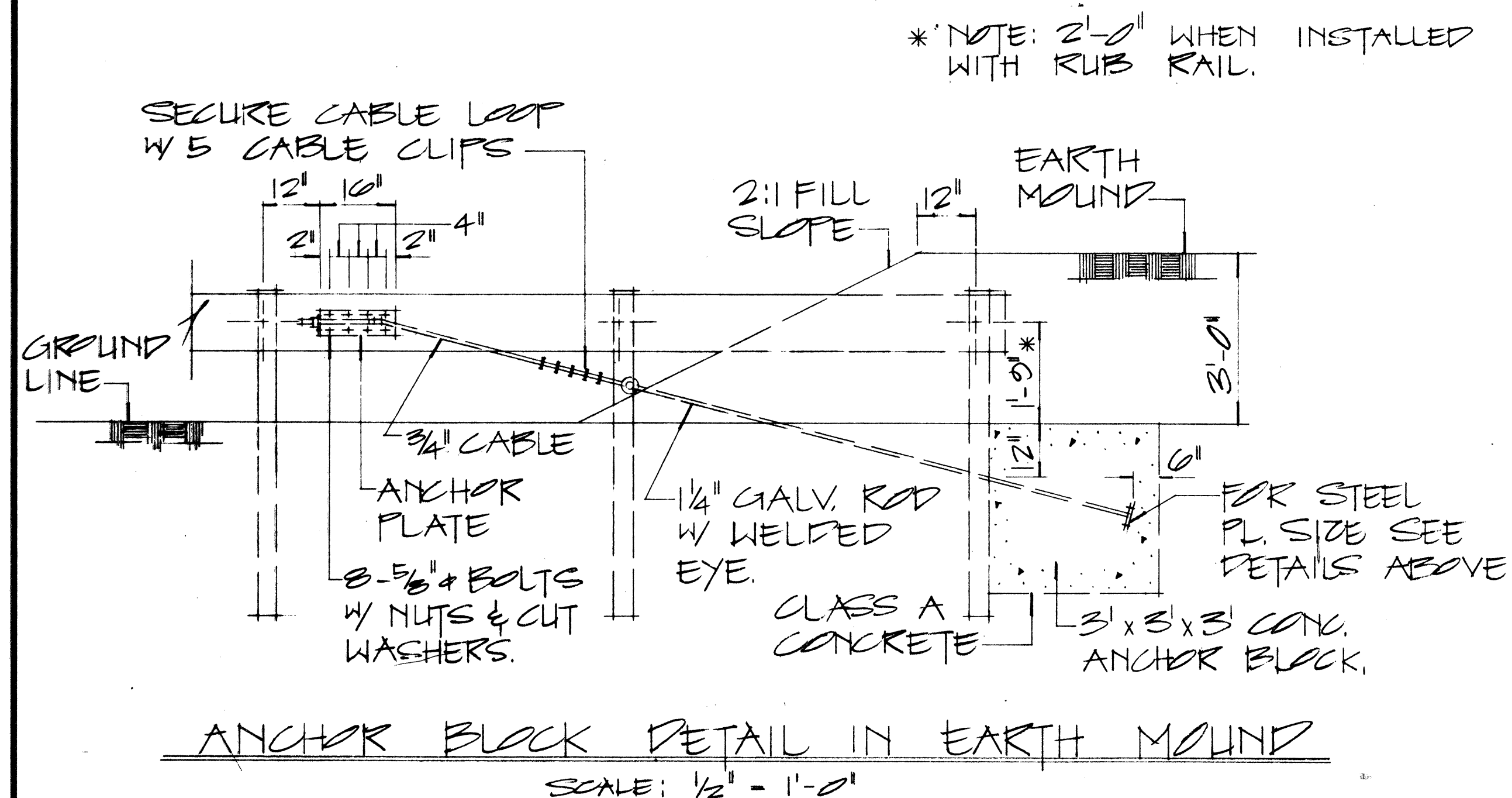
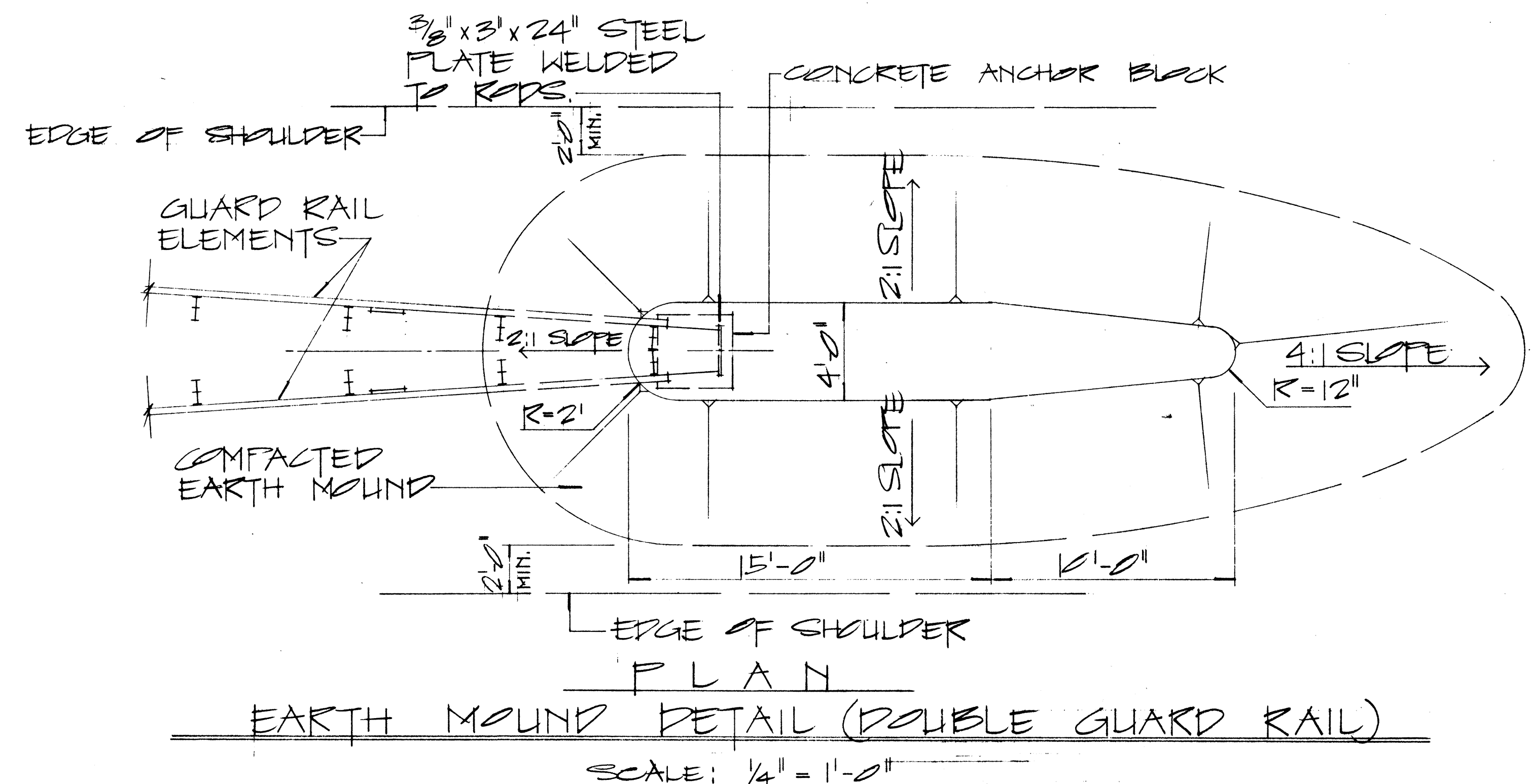
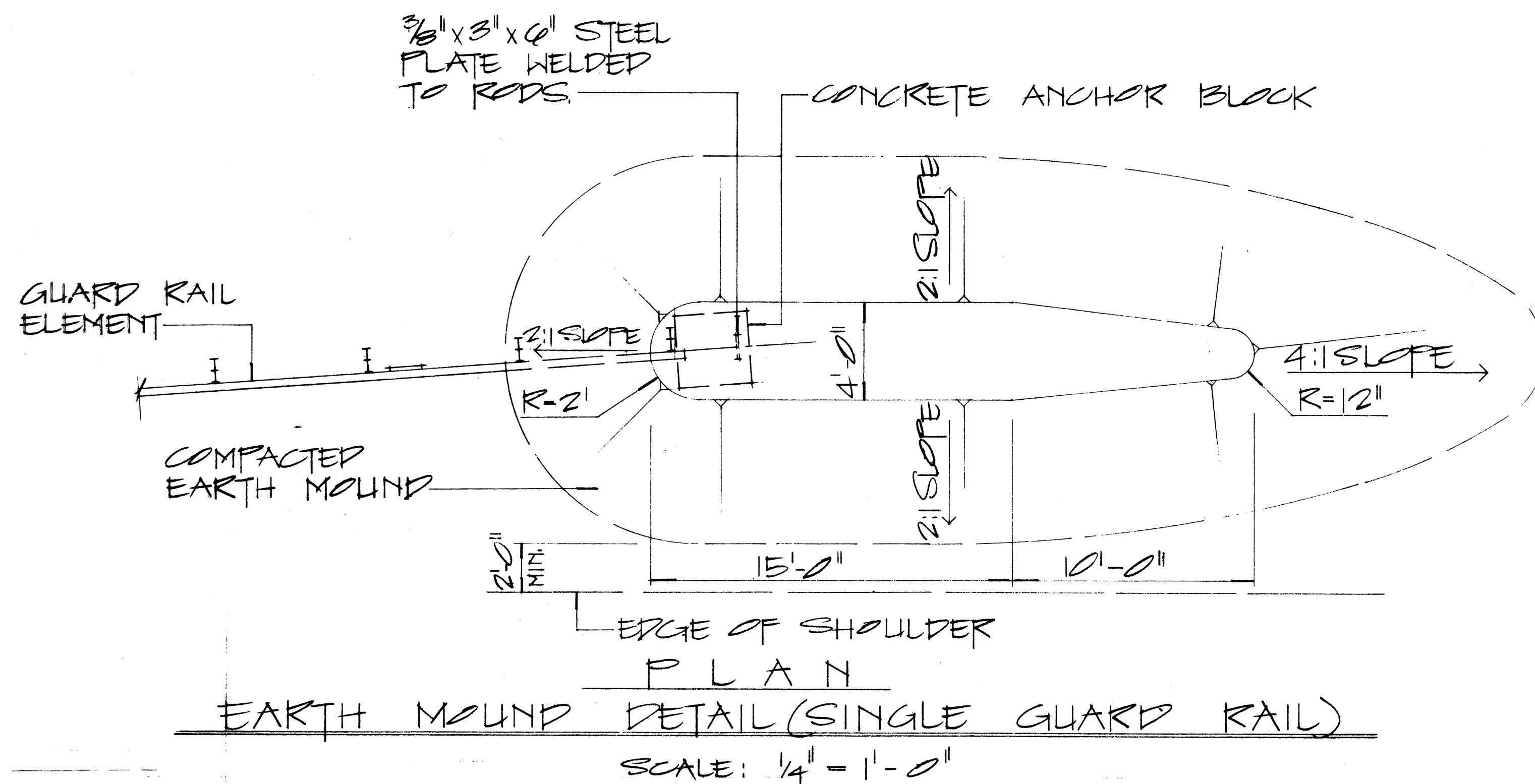
APPROVED:  
*John J. J. J.*  
ASSISTANT CHIEF, ENGINEERING  
DATE: 12-30-69

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

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
STANDARD DETAILS  
GUARD RAIL, TYPE 3  
RAMP END ANCHORAGE  
SCALE: AS SHOWN  
SHEET No. 9 OF 10 SHEETS

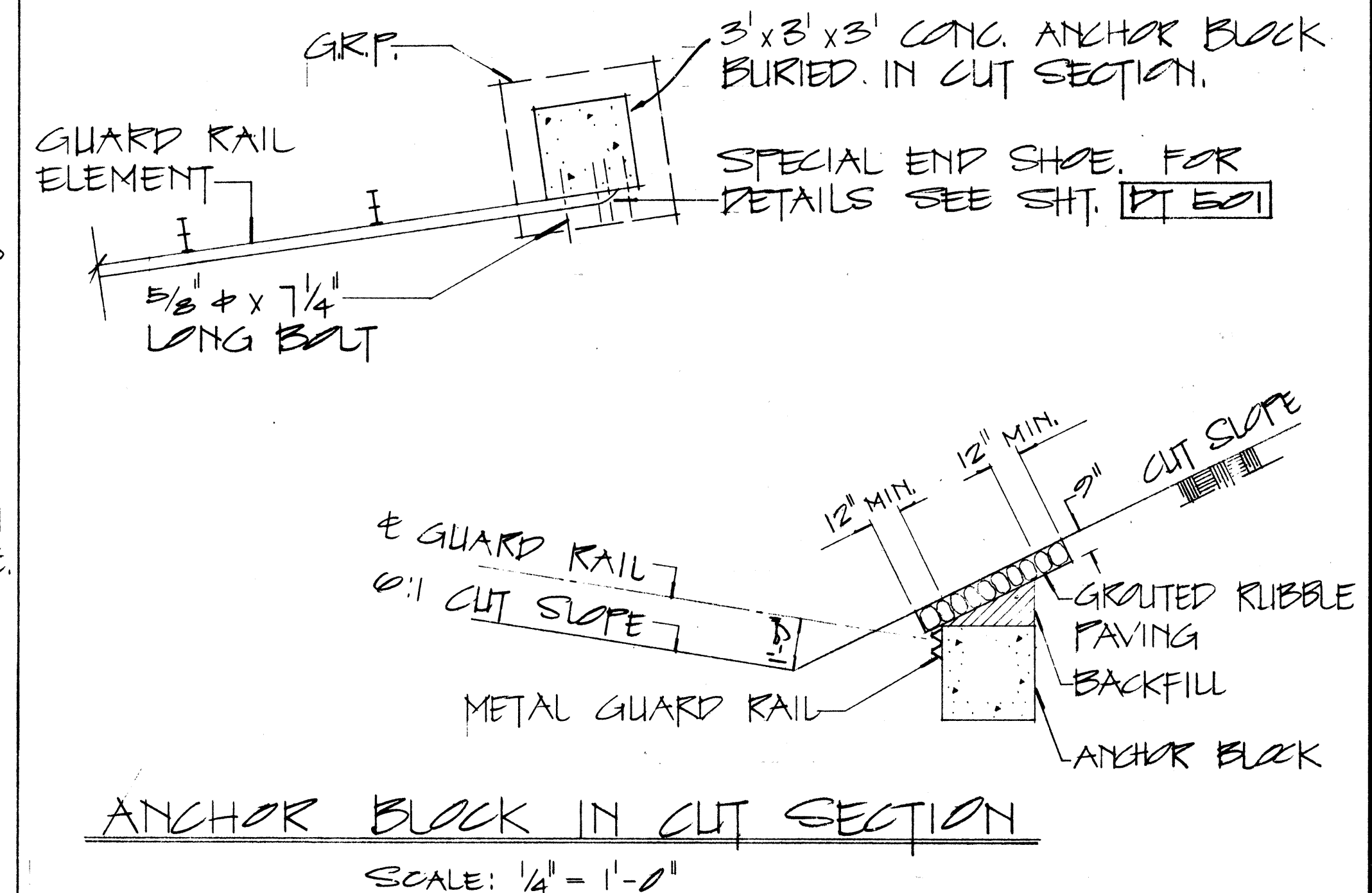
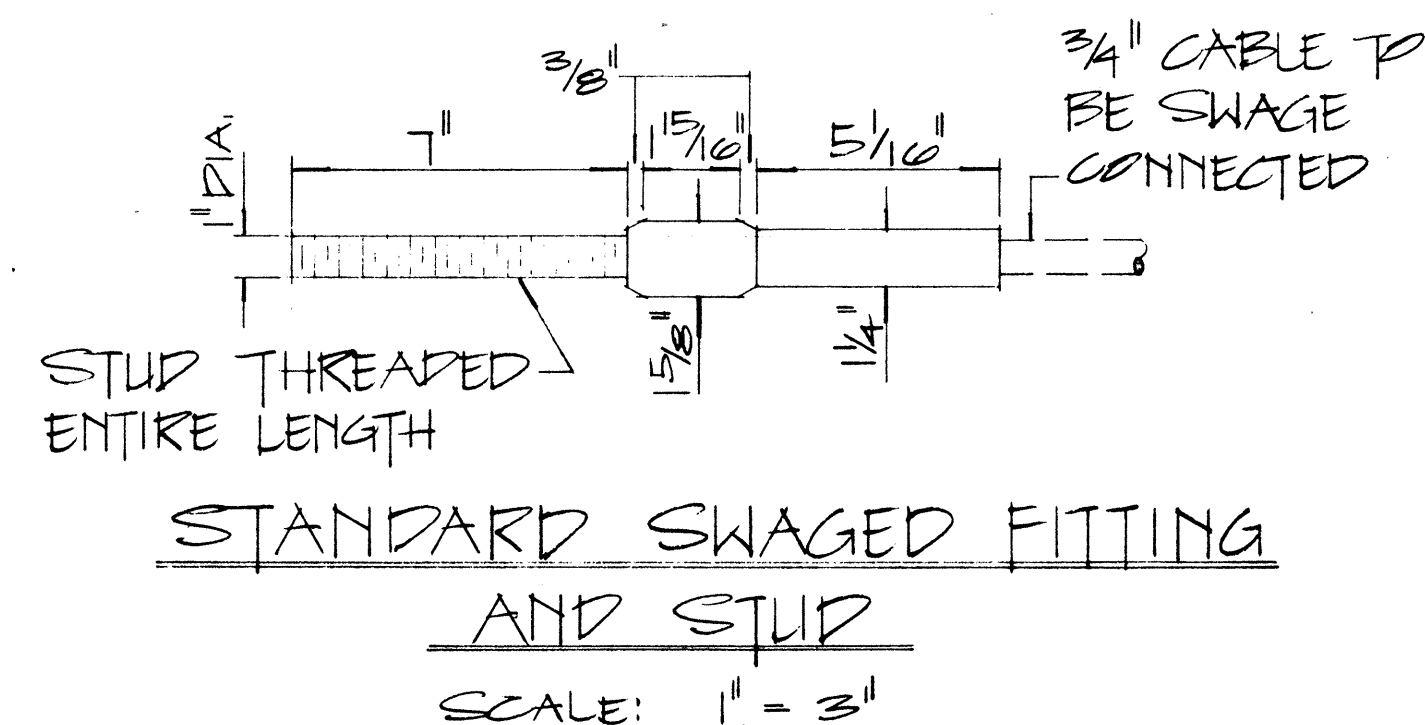
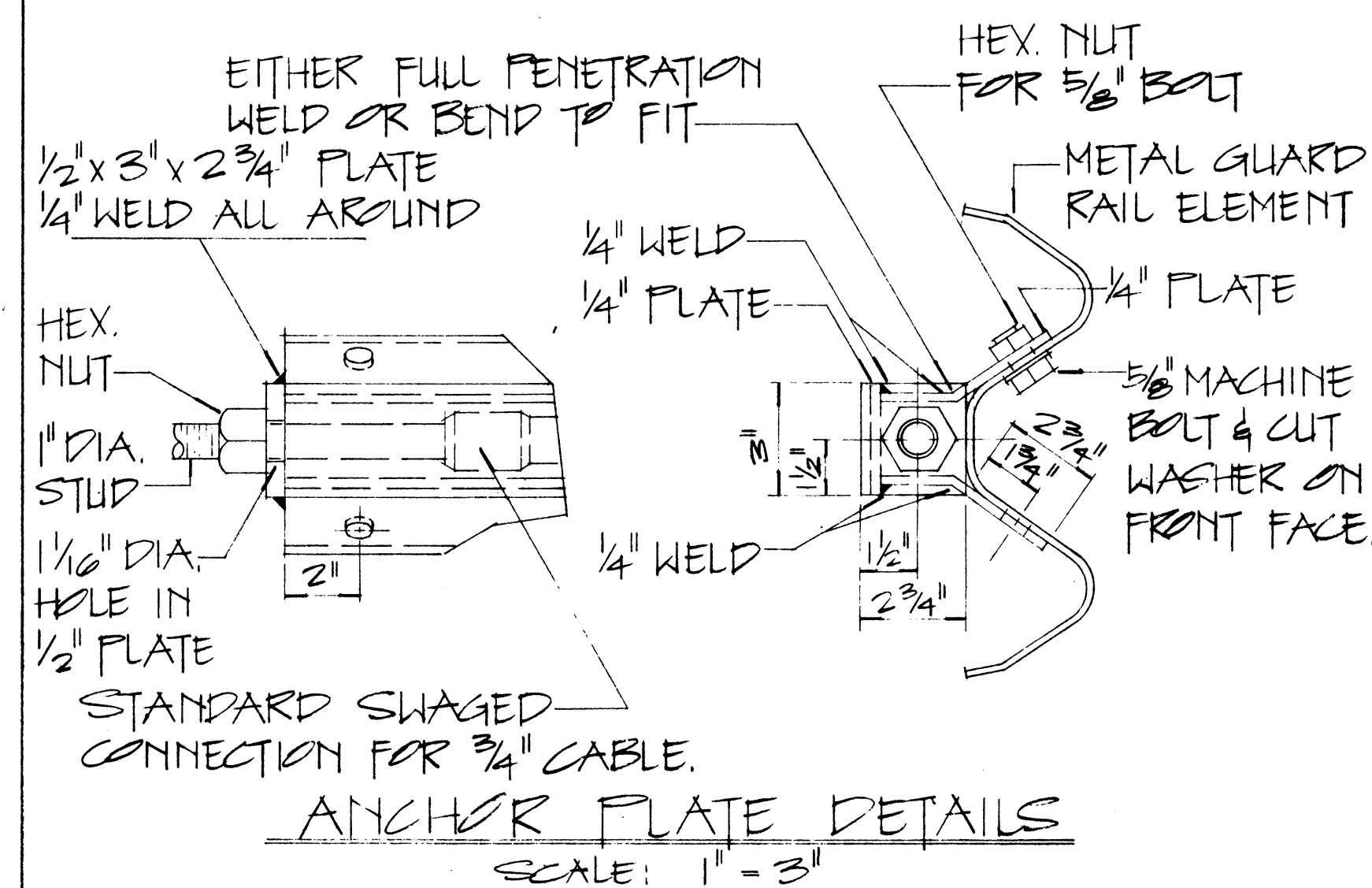


| FED. ROAD<br>DIST. NO. | STATE | FED. AID<br>PROJ. NO. | FISCAL<br>YEAR | SHEET<br>NO. | TOTAL<br>SHEETS |
|------------------------|-------|-----------------------|----------------|--------------|-----------------|
| HAWAII                 | HAW.  | R05-030-1(12)         | 1976           | 17           | 17              |



NOTE:

1. GALVANIZED ANCHOR ROD, METAL GUARD RAIL AND POST BURIED IN GROUND SHALL BE COVERED WITH a Min. 20-Mil thickness of Coal TAR ENAMEL, conforming to AWWA standard: C 203
2. CONCRETE, G.R.P., EXCAVATION, EARTH MOUND, ANCHOR RODS AND MISCELLANEOUS APPURTENANCES NECESSARY TO ANCHOR THE GUARD RAIL ENDS SHALL BE INCIDENTAL TO THE METAL GUARD RAIL.



APPROVAL RECOMMENDED:  
Eishi Tanaka 12/29/69  
TRAFFIC ENGINEER DATE

APPROVED:  
W. H. 22221 12-30-69  
ASSISTANT CHIEF, ENGINEERING DATE

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

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

STANDARD DETAILS  
EARTH MOUND AND  
ANCHOR BLOCK DETAILS

SCALE: AS SHOWN      OCT 1960

SHEET No. 10 OF 10 SHEETS 17520