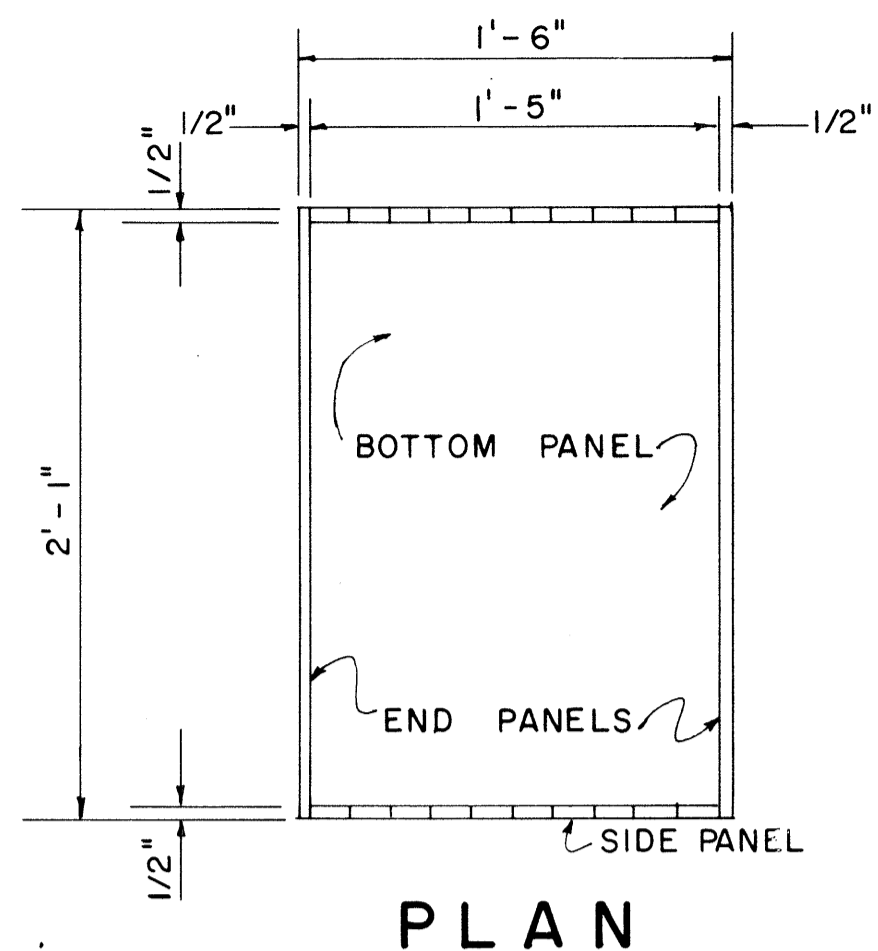
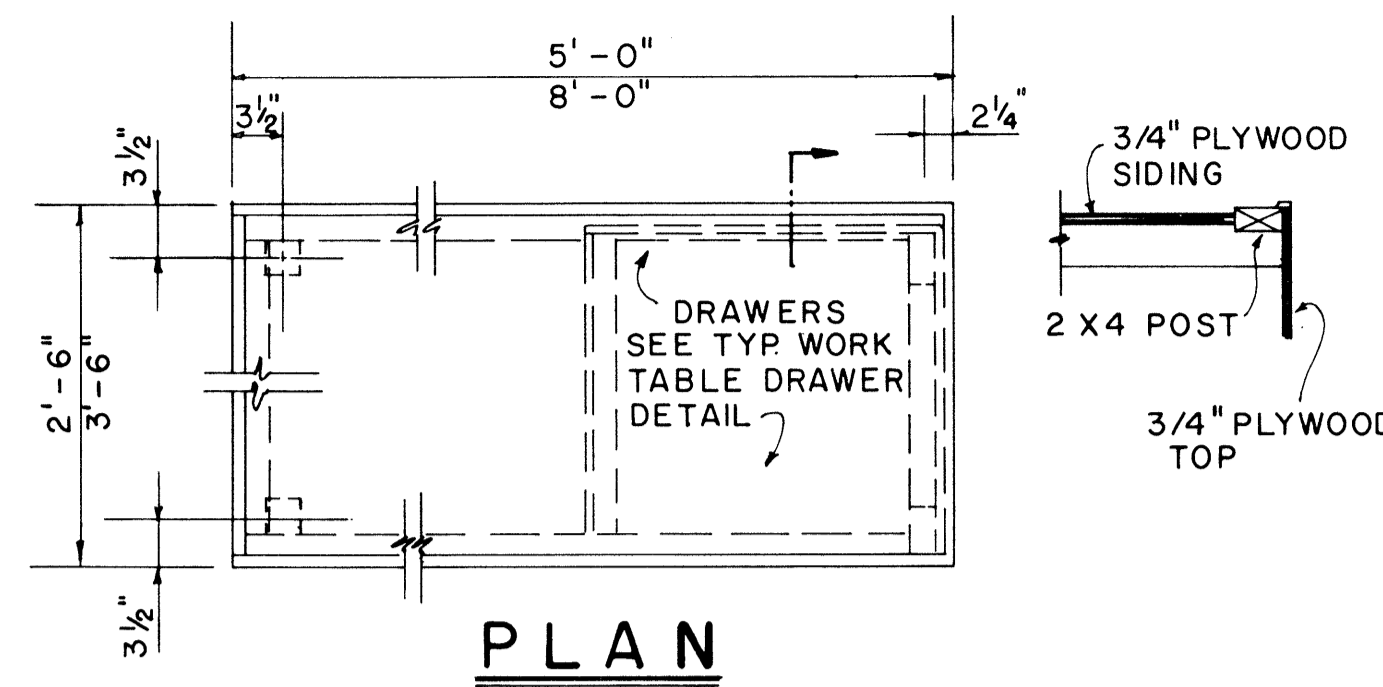




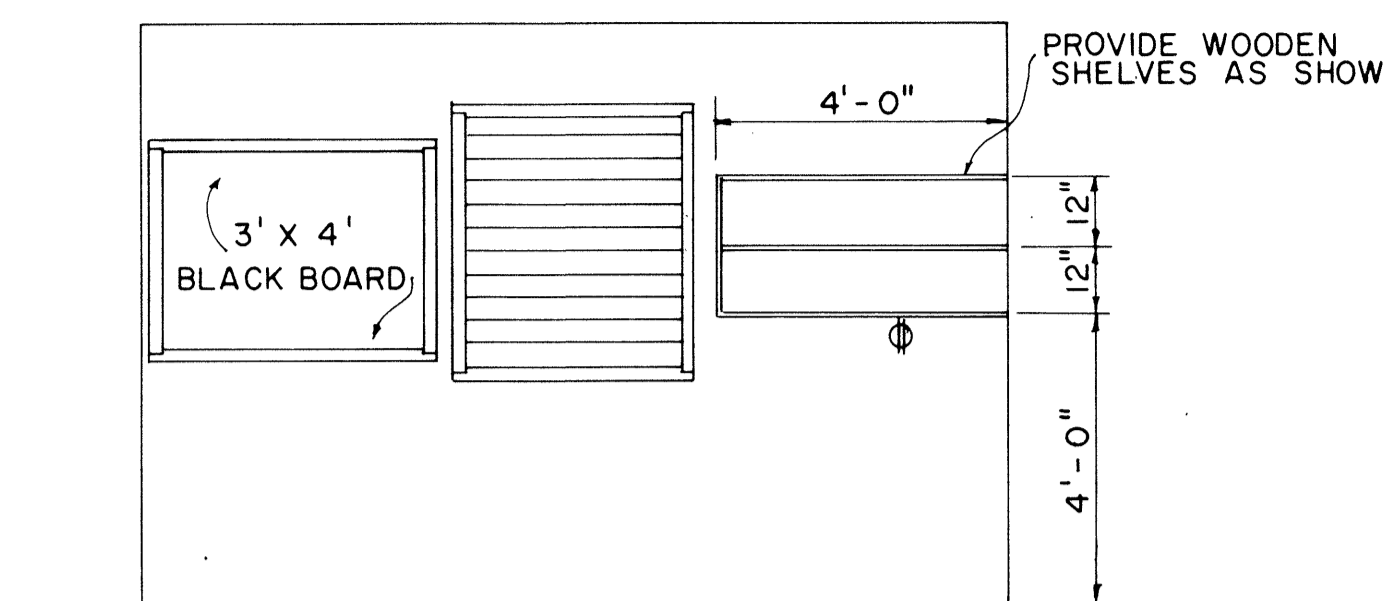
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	RS-0460(6)	1985	11	46



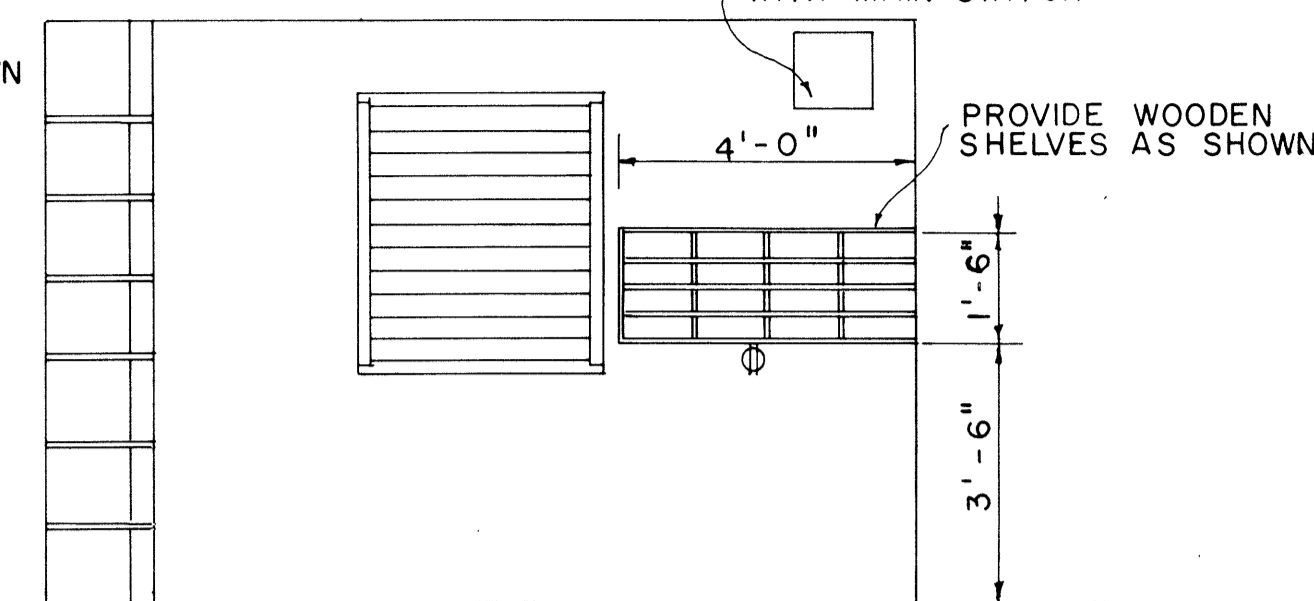
**PLAN**



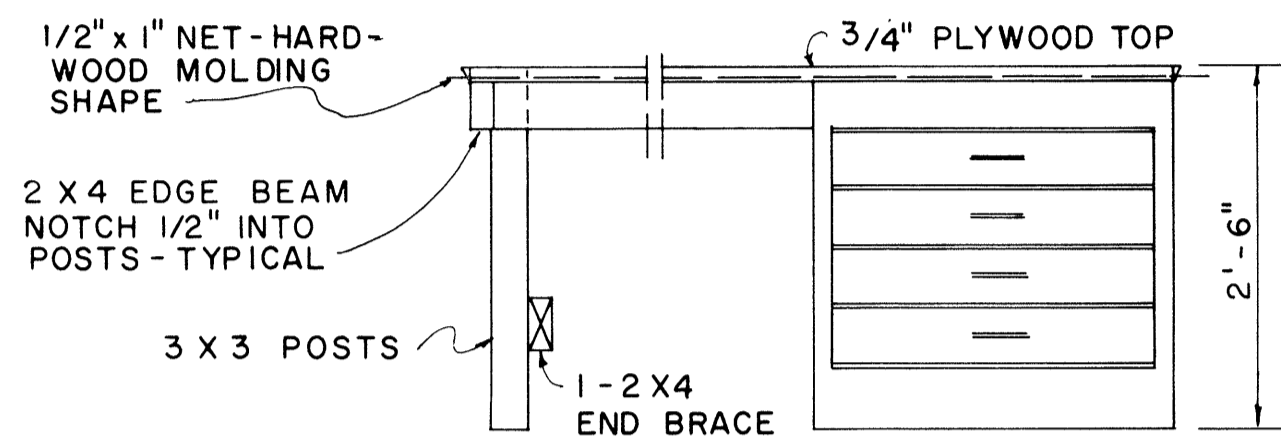
**PLAN**



**ELEVATION D1**  
SCALE: 3/8" = 1'-0"



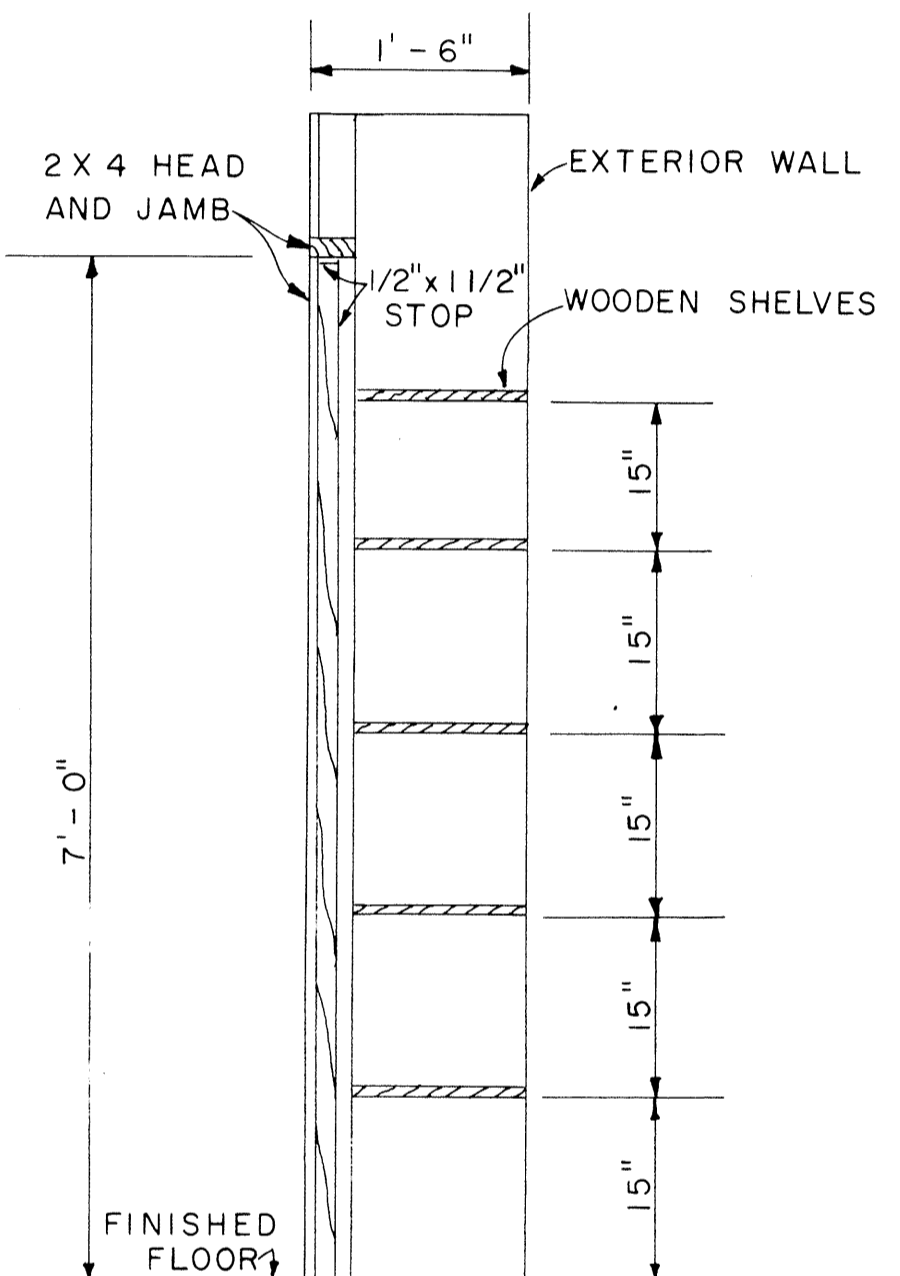
**ELEVATION B1**  
SCALE: 3/8" = 1'-0"



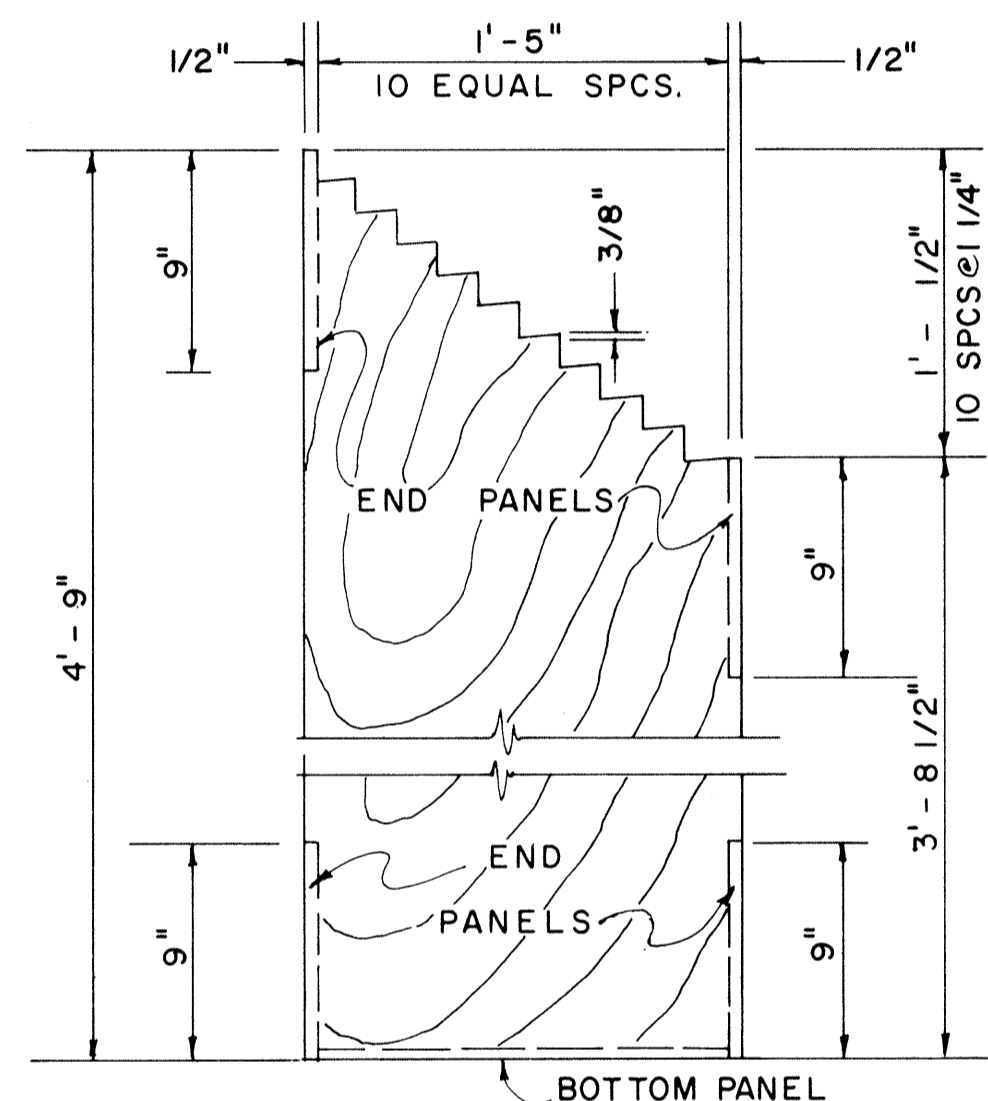
**ELEVATION**

2'-6" x 5'-0" 2 REQ'D.  
3'-6" x 8'-0" 1 REQ'D.  
2'-6" x 8'-0" 1 REQ'D.

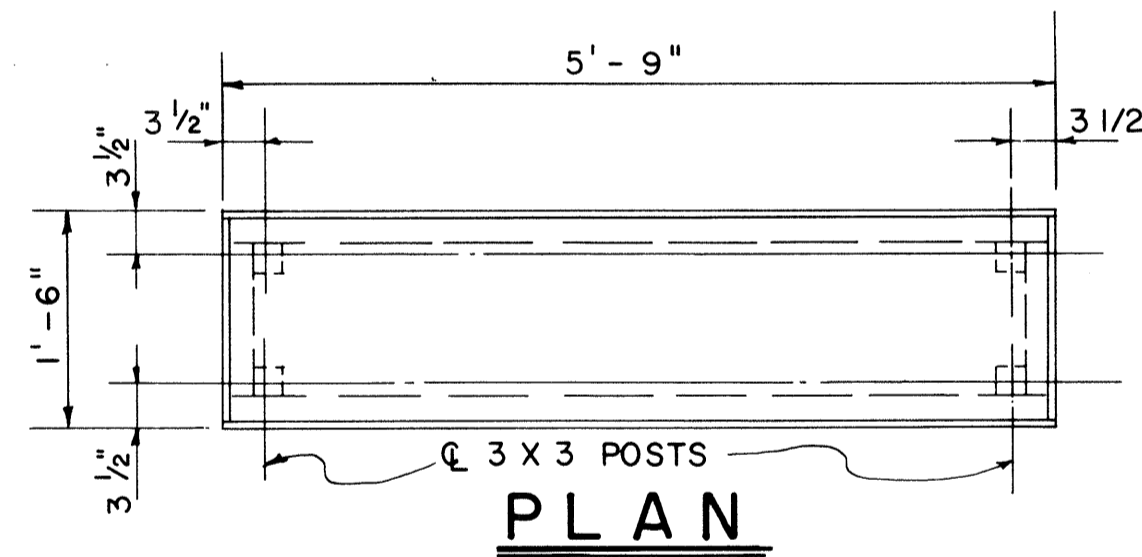
**PORTABLE WORK TABLE DETAIL**  
SCALE: 3/4" = 1'-0"



**SECTION G**  
SCALE: 3/4" = 1'-0"

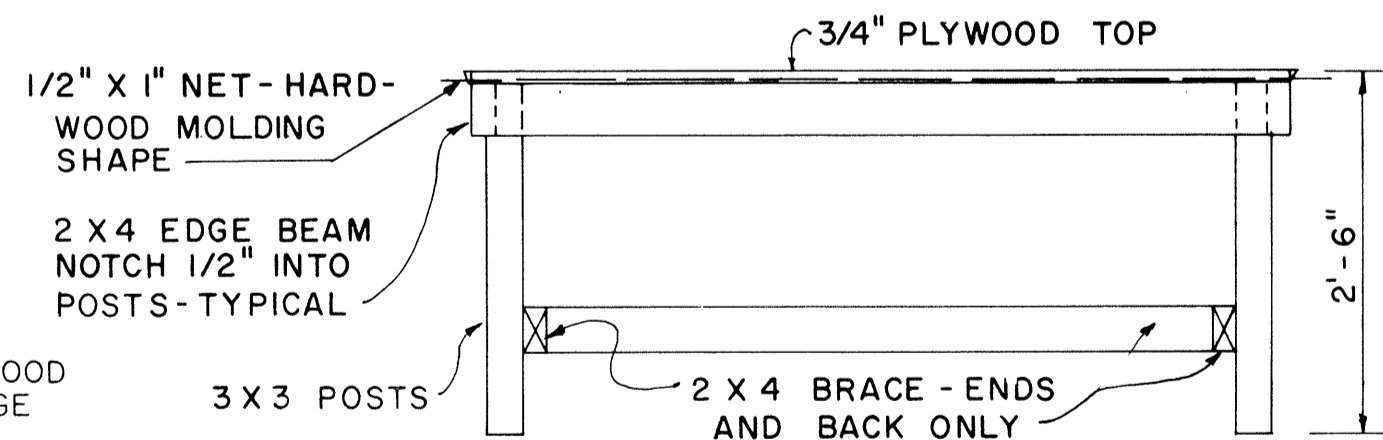


**END ELEVATION**



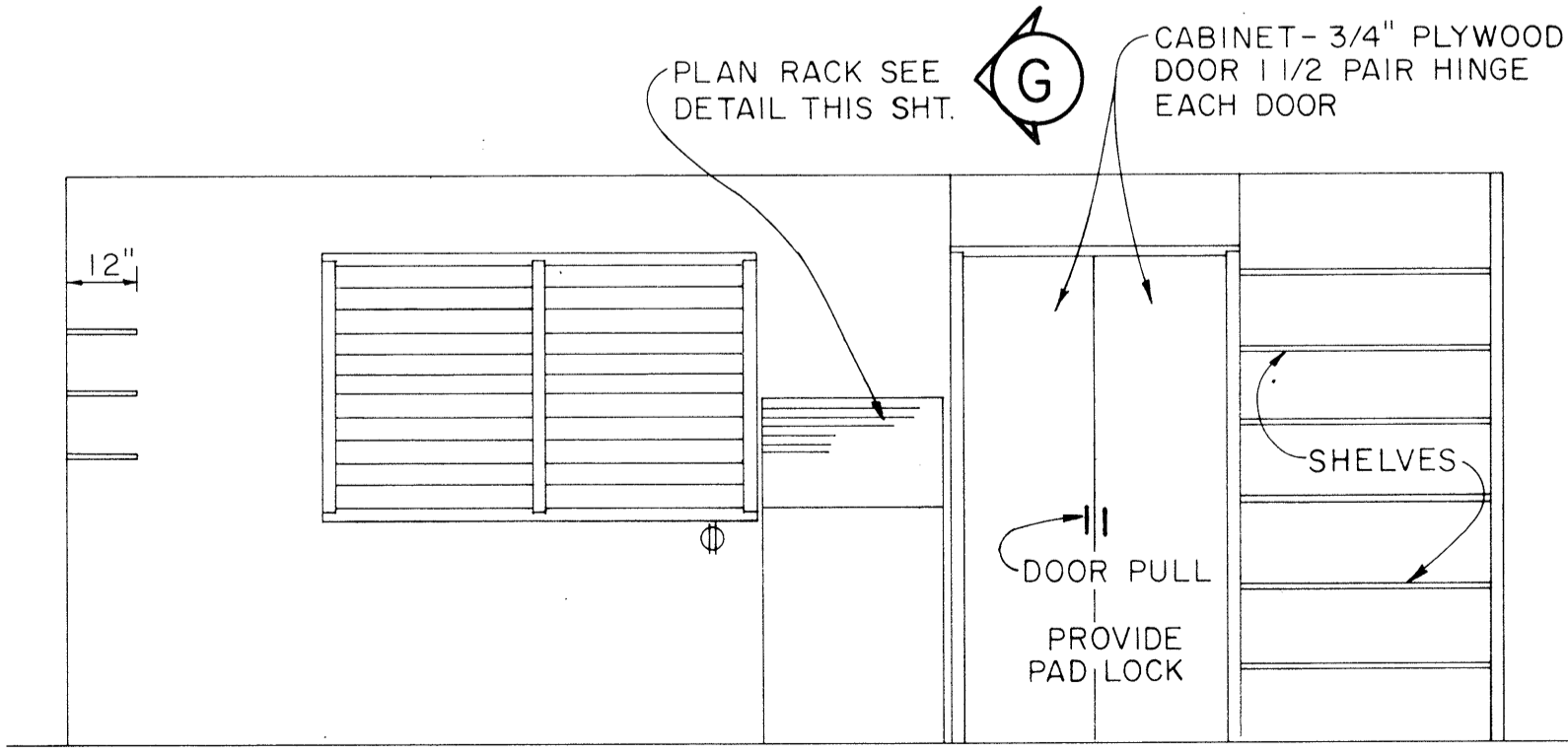
**PLAN**

**PLAN RACK DETAIL (ONE REQUIRED)**  
SCALE: 1 1/2" = 1'-0"



**ELEVATION**

**1'-6" x 5'-9" PORTABLE WORK TABLE DETAIL**  
SCALE: 3/4" = 1'-0"



**ELEVATION A1**  
SCALE: 3/8" = 1'-0"

APPROVAL RECOMMENDED.  
*[Signature]* 12-4-69  
HIGHWAY DESIGN ENGINEER DATE

APPROVED  
*[Signature]* 12-10-69  
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

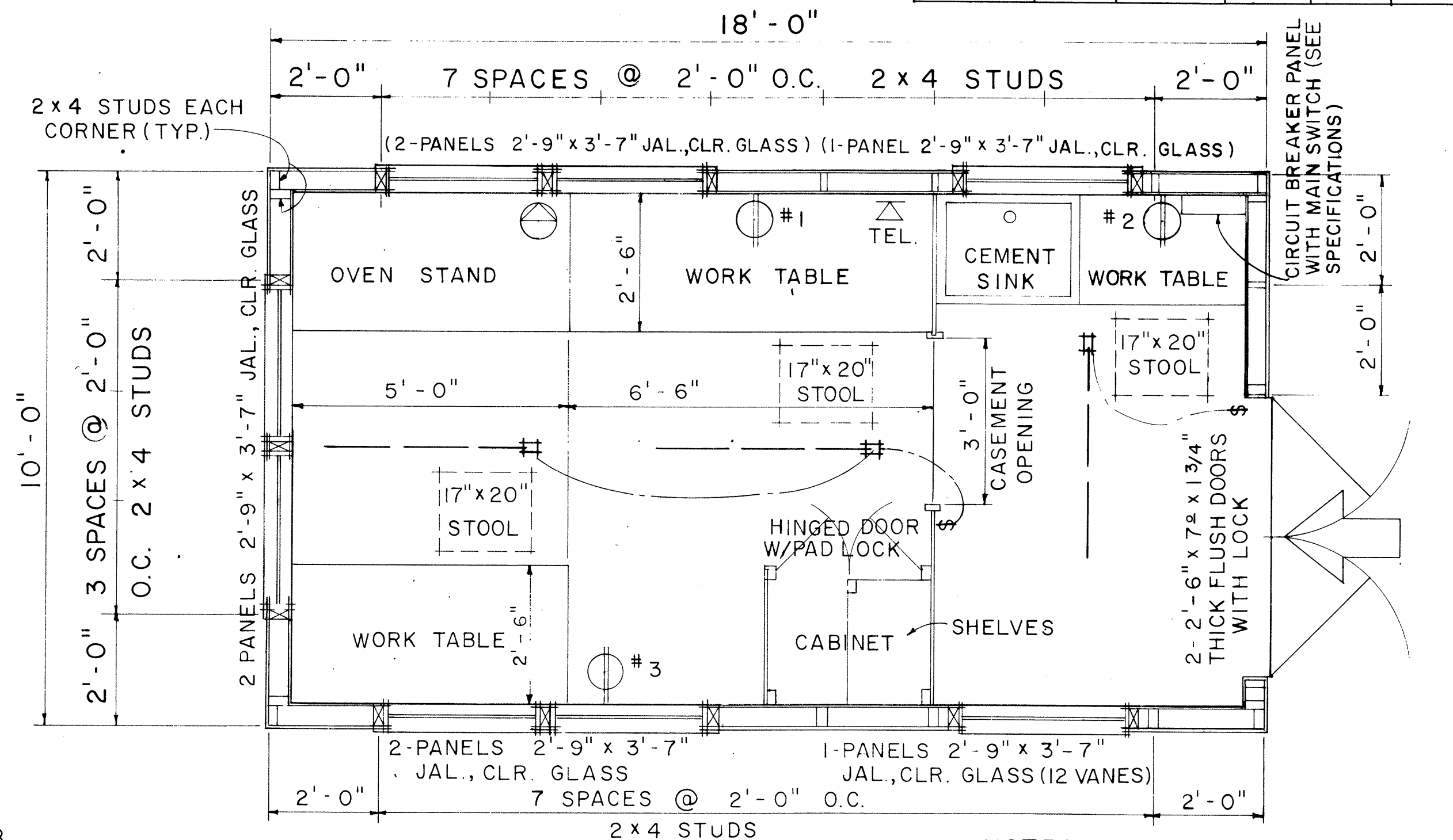
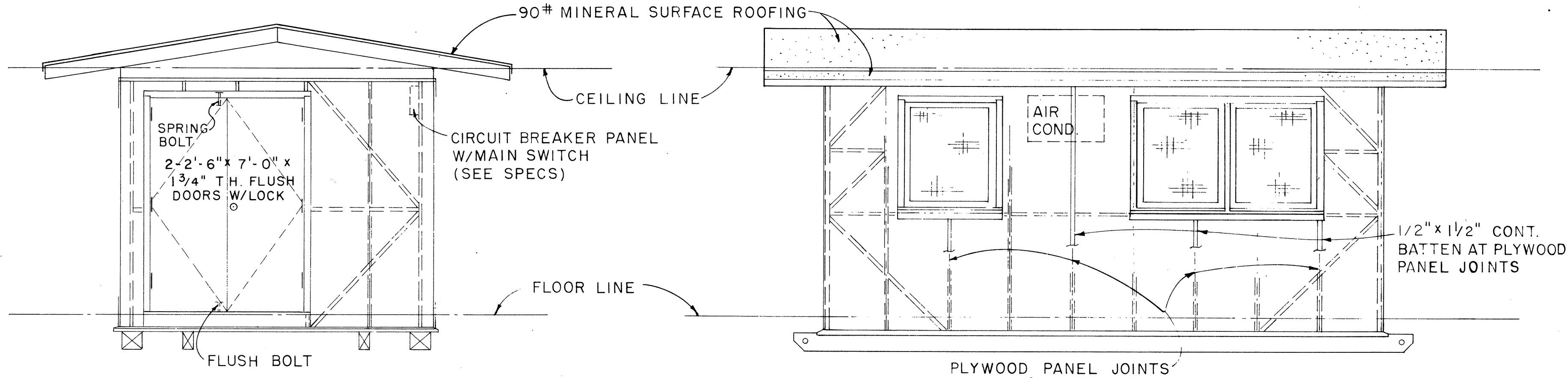
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**FIELD OFFICE**

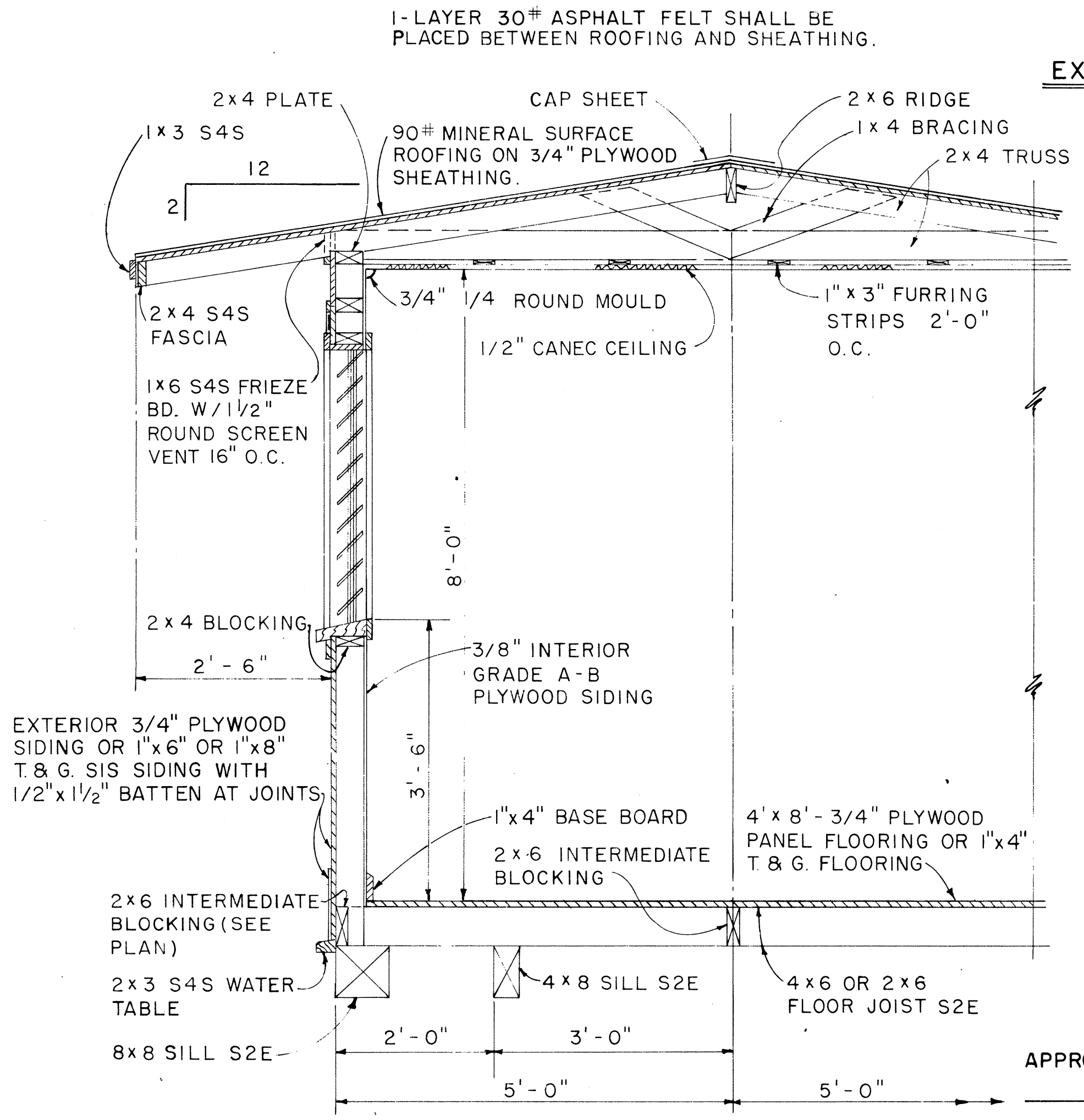
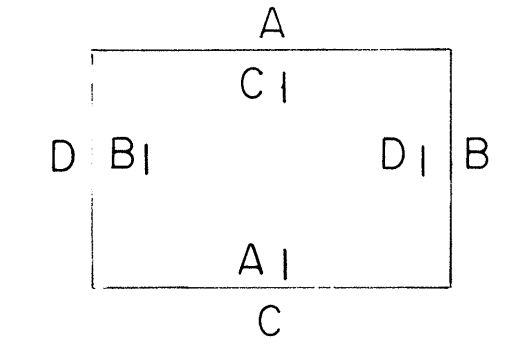
Scale: As Noted

DATE: \_\_\_\_\_  
SURVEY PLOTTED BY: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_  
DESIGNED BY: \_\_\_\_\_  
NOTE BOOK: \_\_\_\_\_  
QUANTITIES BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
No. \_\_\_\_\_

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	PS-0460(5)	1985	12	40



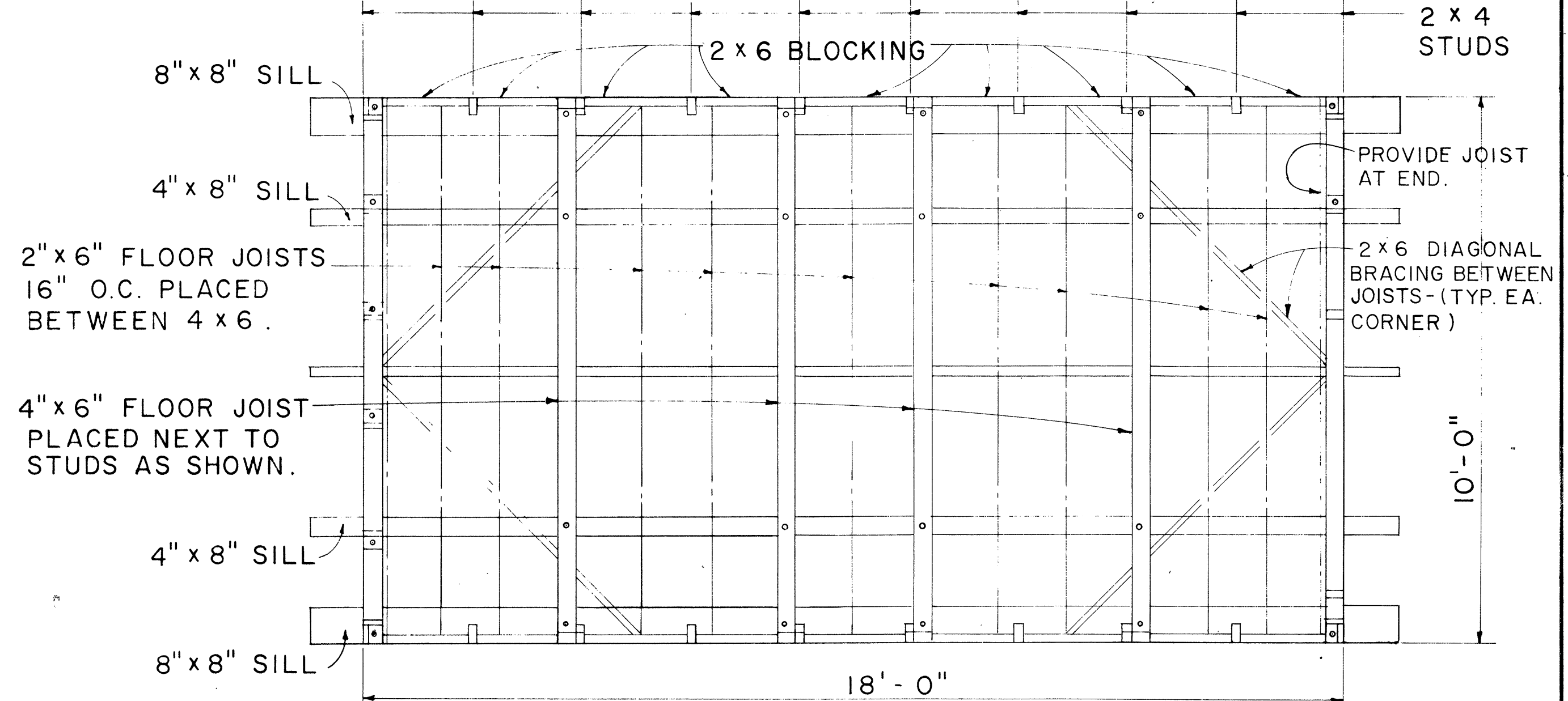
- NOTE:**
1. FLUORESCENT FIXTURE SHALL BE 48", 2 LAMP, 40 WATT, RAPID START.
  2. TELEPHONE AND WALL OUTLET 4'-0" ABOVE FLOOR.



**NOTE:**  
ALL 3/4" PLYWOOD SHALL BE EXTERIOR GRADE A-C OR BETTER.

APPROVAL RECOMMENDED:  
*[Signature]*  
HIGHWAY DESIGN ENGINEER  
DATE: 12-4-69

APPROVED:  
*[Signature]*  
ASSISTANT CHIEF, ENGINEERING  
DATE: 12-10-69



NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

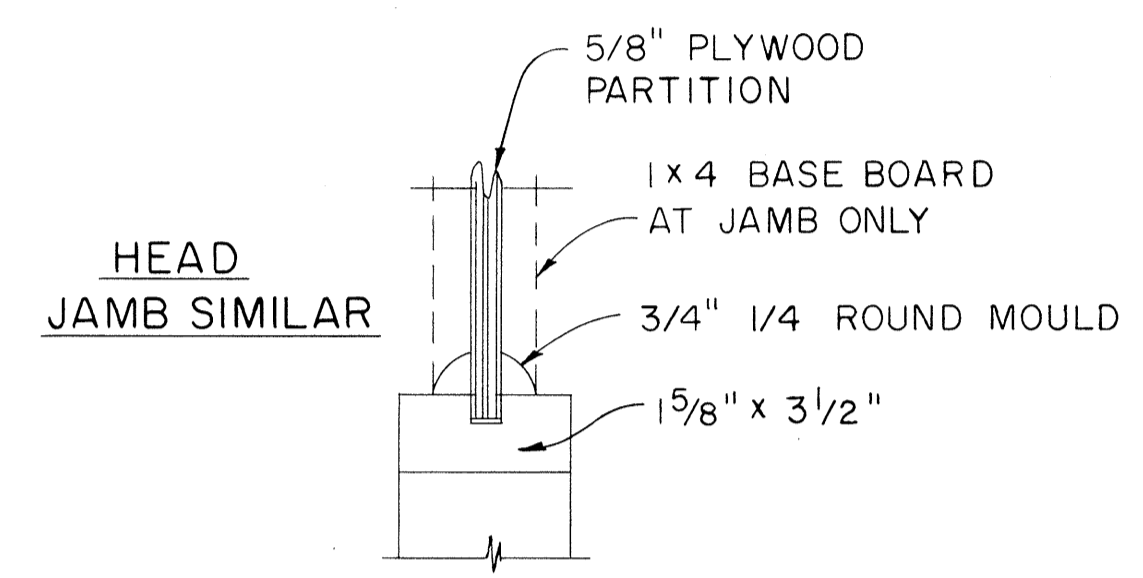
**PROJECT SITE LABORATORY**

Scale: As Noted

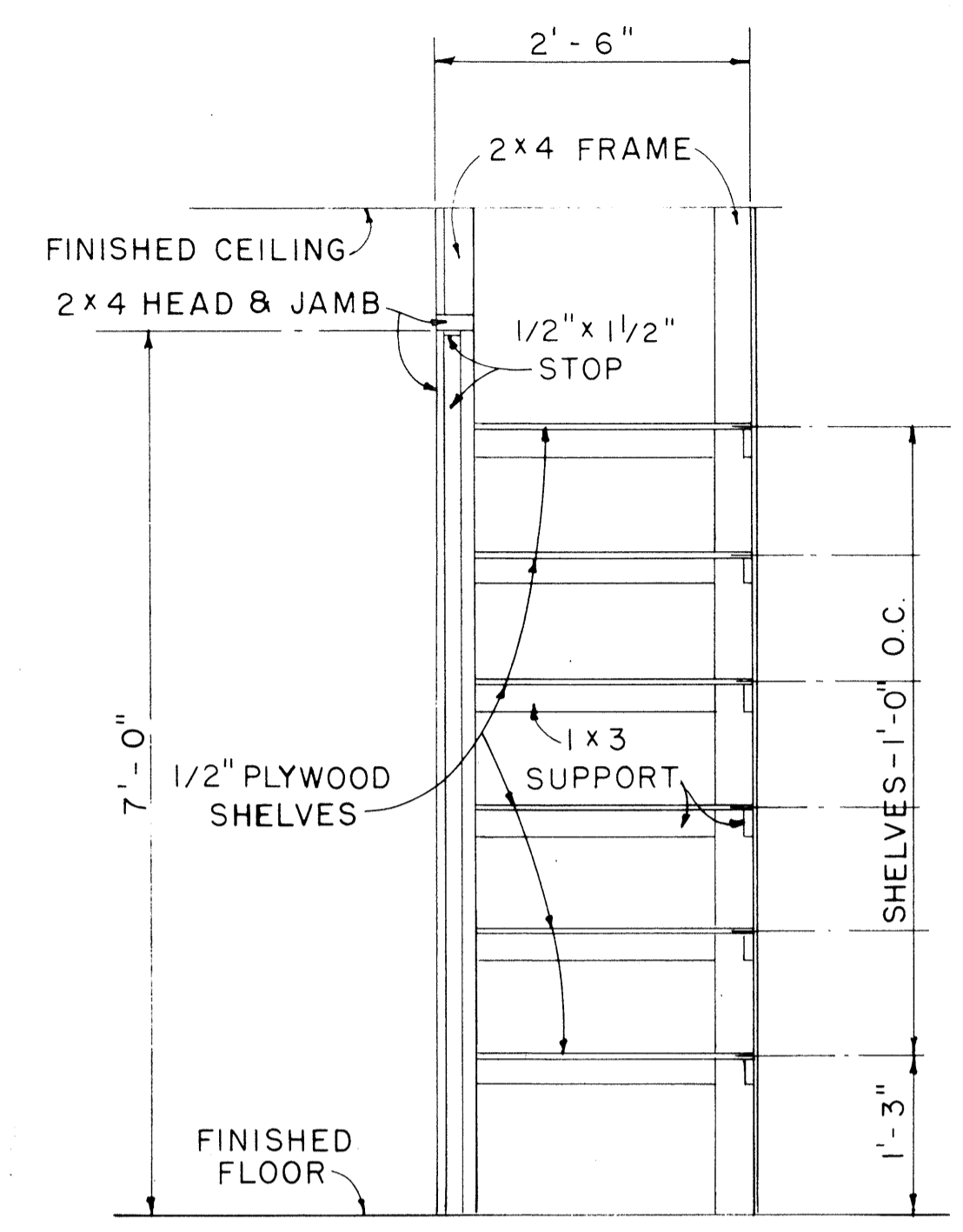
SHEET No. 3 OF 17 SHEETS DD 636.3

DATE: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
NO. \_\_\_\_\_

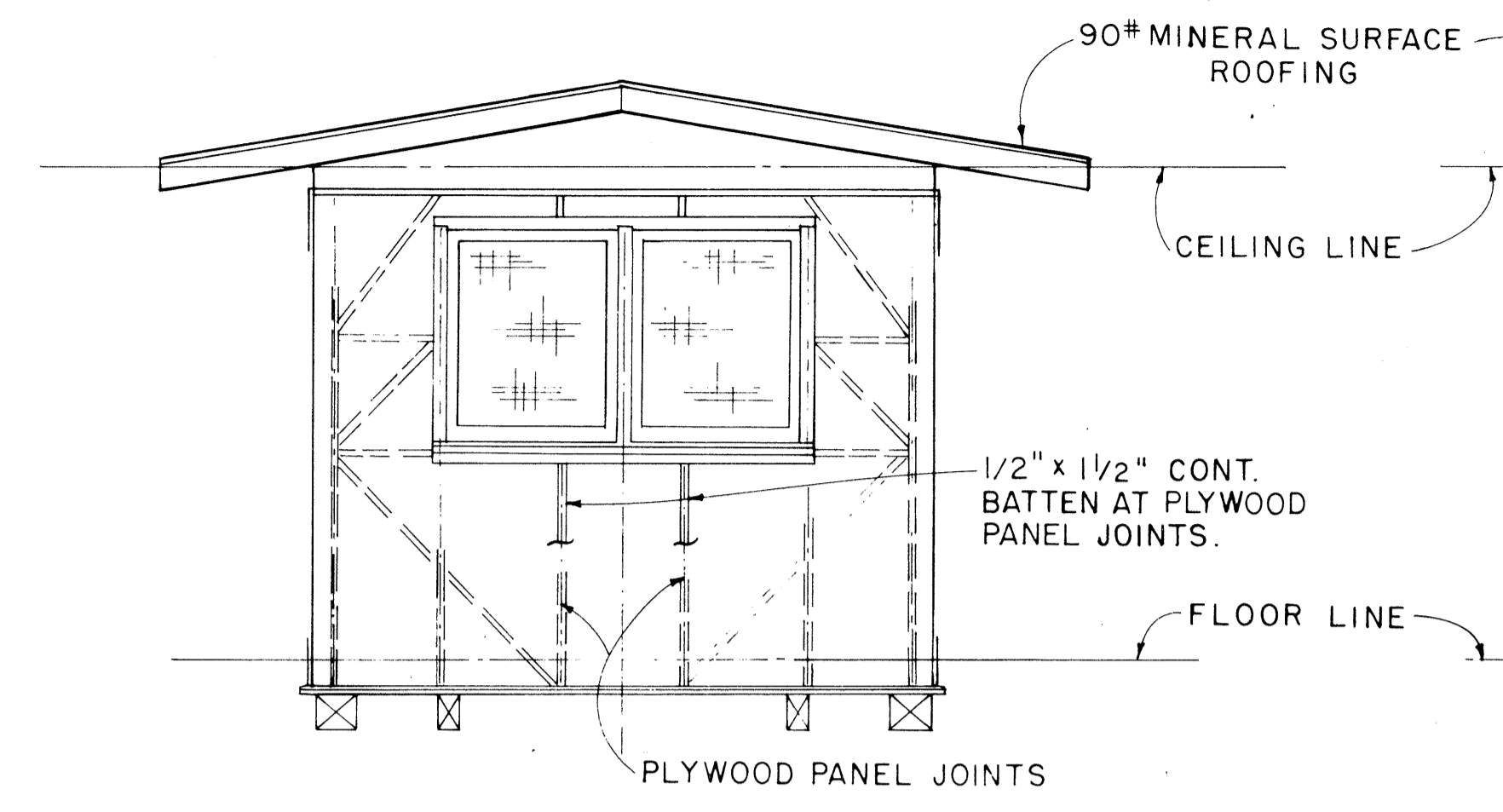
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460(9)	1985	13	46



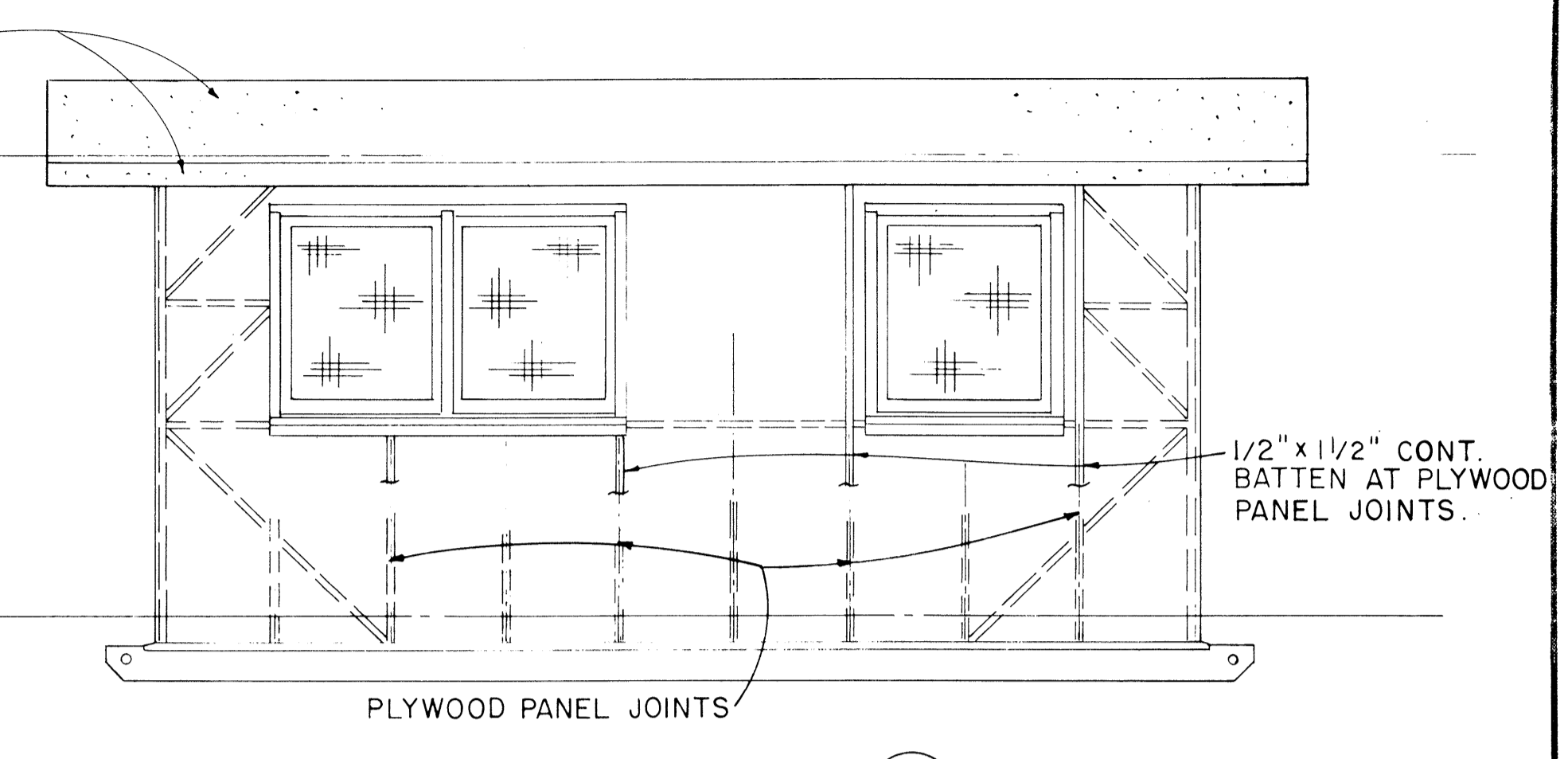
**CASEMENT DETAIL**  
SCALE: 3" = 1'-0"



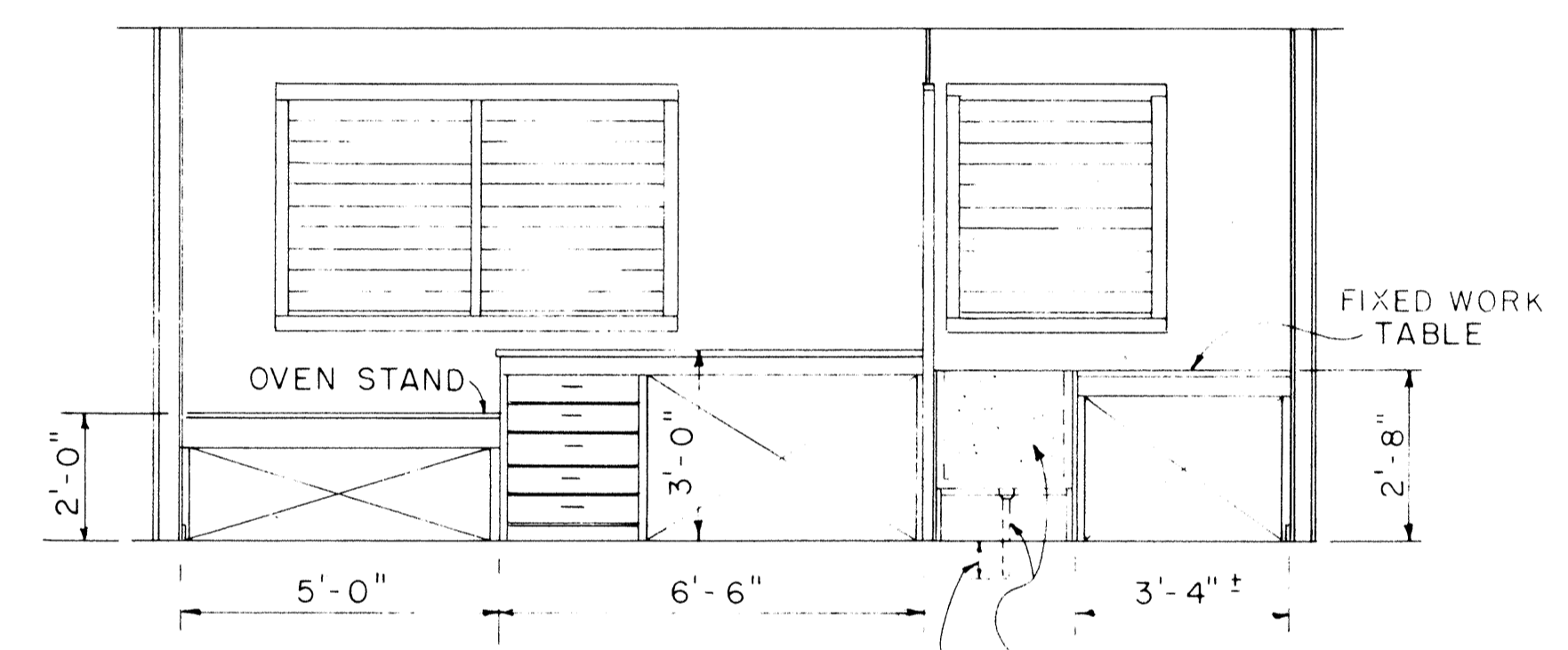
**CABINET DETAIL**  
SCALE: 3/4" = 1'-0"



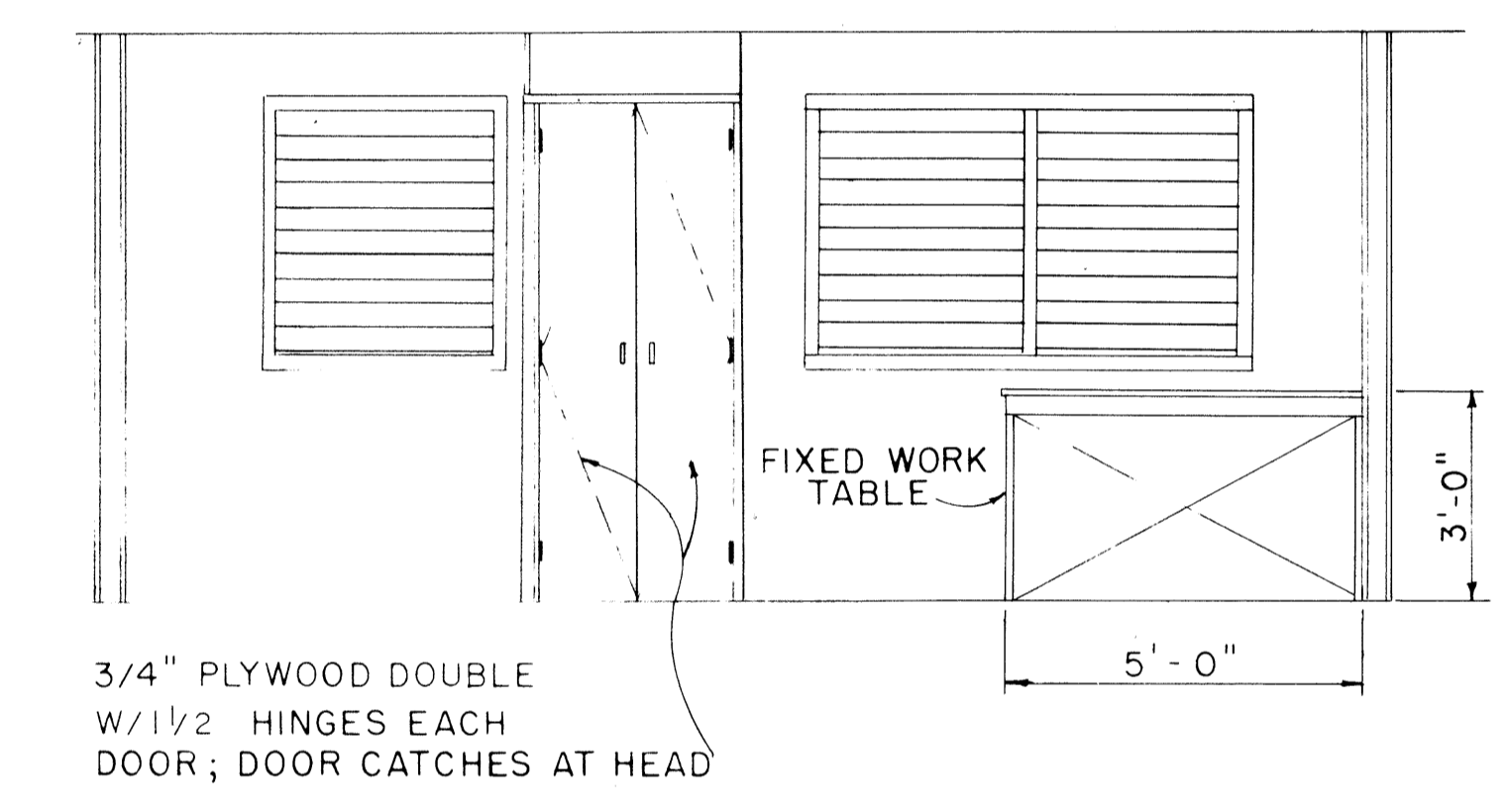
**ELEVATION D**  
SCALE: 3/8" = 1'-0"



**ELEVATION C**  
SCALE: 3/8" = 1'-0"

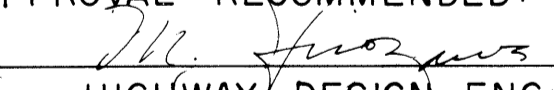


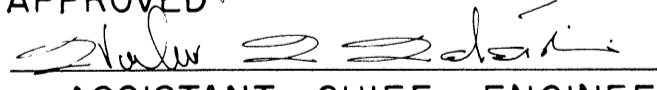
**ELEVATION C1**  
SCALE: 3/8" = 1'-0"



**ELEVATION A1**  
SCALE: 3/8" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
TRACED BY		
NOTE BOOK		
CHECKED BY		
No.		

APPROVAL RECOMMENDED:  
  
 HIGHWAY DESIGN ENGINEER 12-4-69 DATE

APPROVED:  
  
 ASSISTANT CHIEF, ENGINEERING 12-10-69 DATE

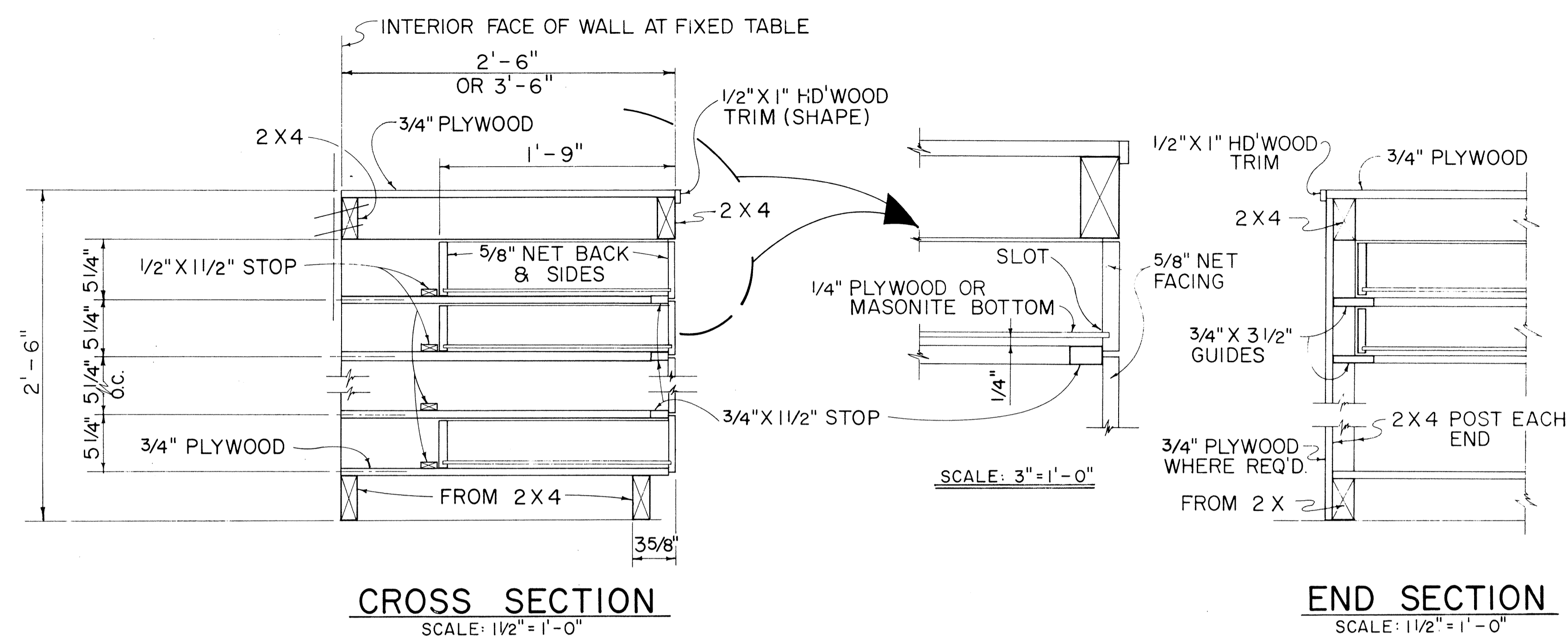
NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

**PROJECT SITE LABORATORY**

Scale: As Noted  
 SHEET No. 4 OF 17 SHEETS DD 636.4

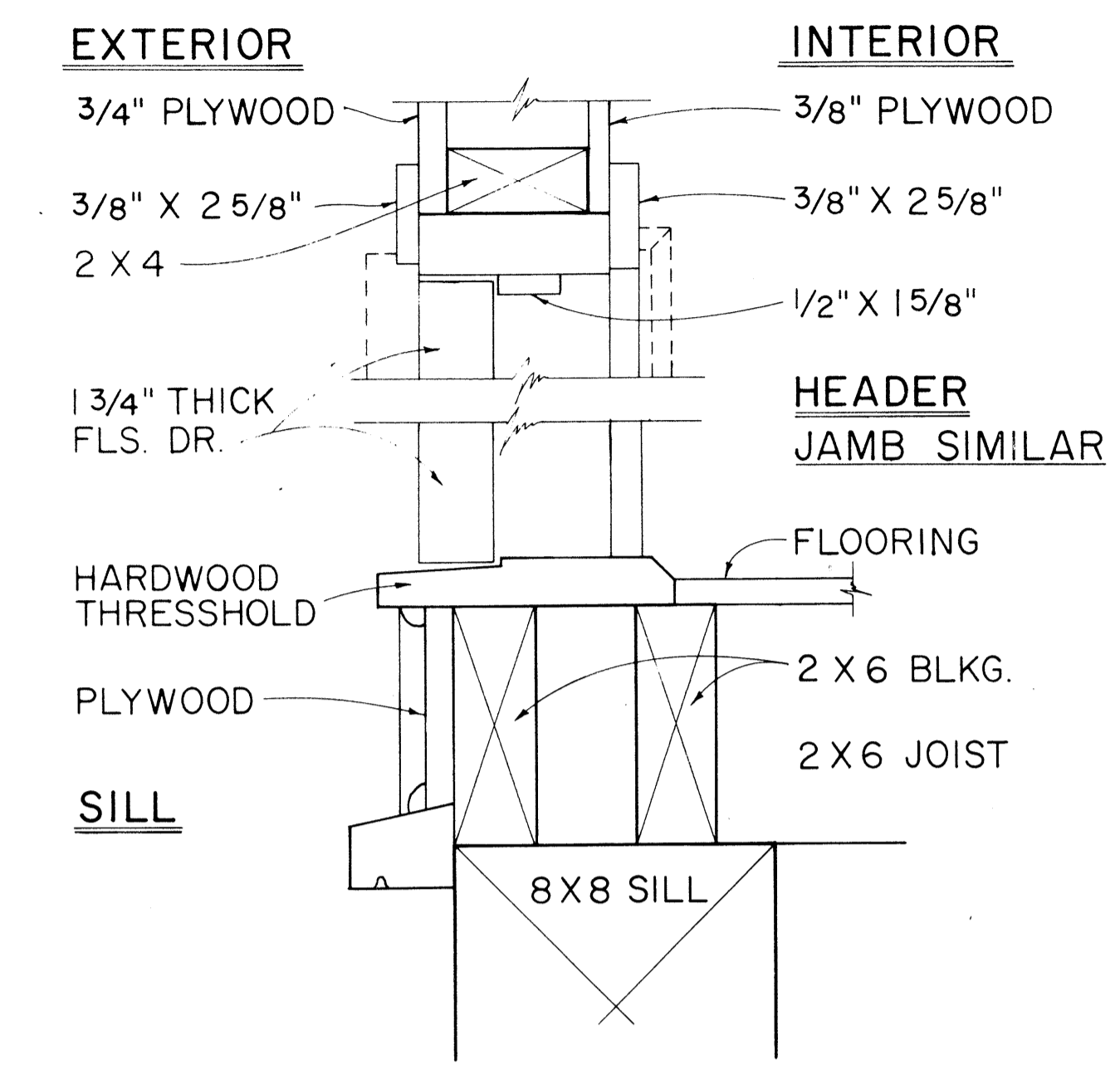
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	PS-0460(9)	1985	14	40



**CROSS SECTION**  
SCALE: 3" = 1'-0"

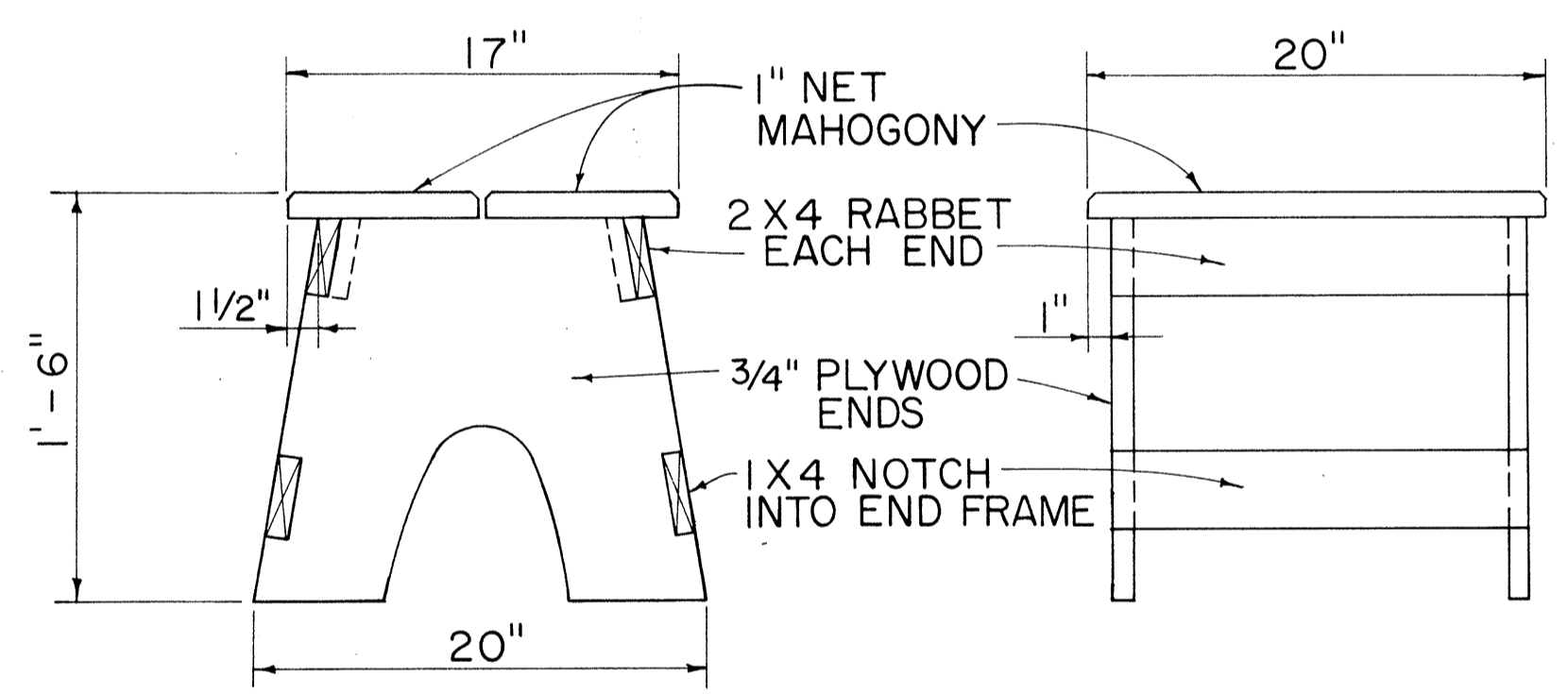
**END SECTION**  
SCALE: 1 1/2" = 1'-0"

**TYPICAL WORK TABLE DRAWER DETAIL**



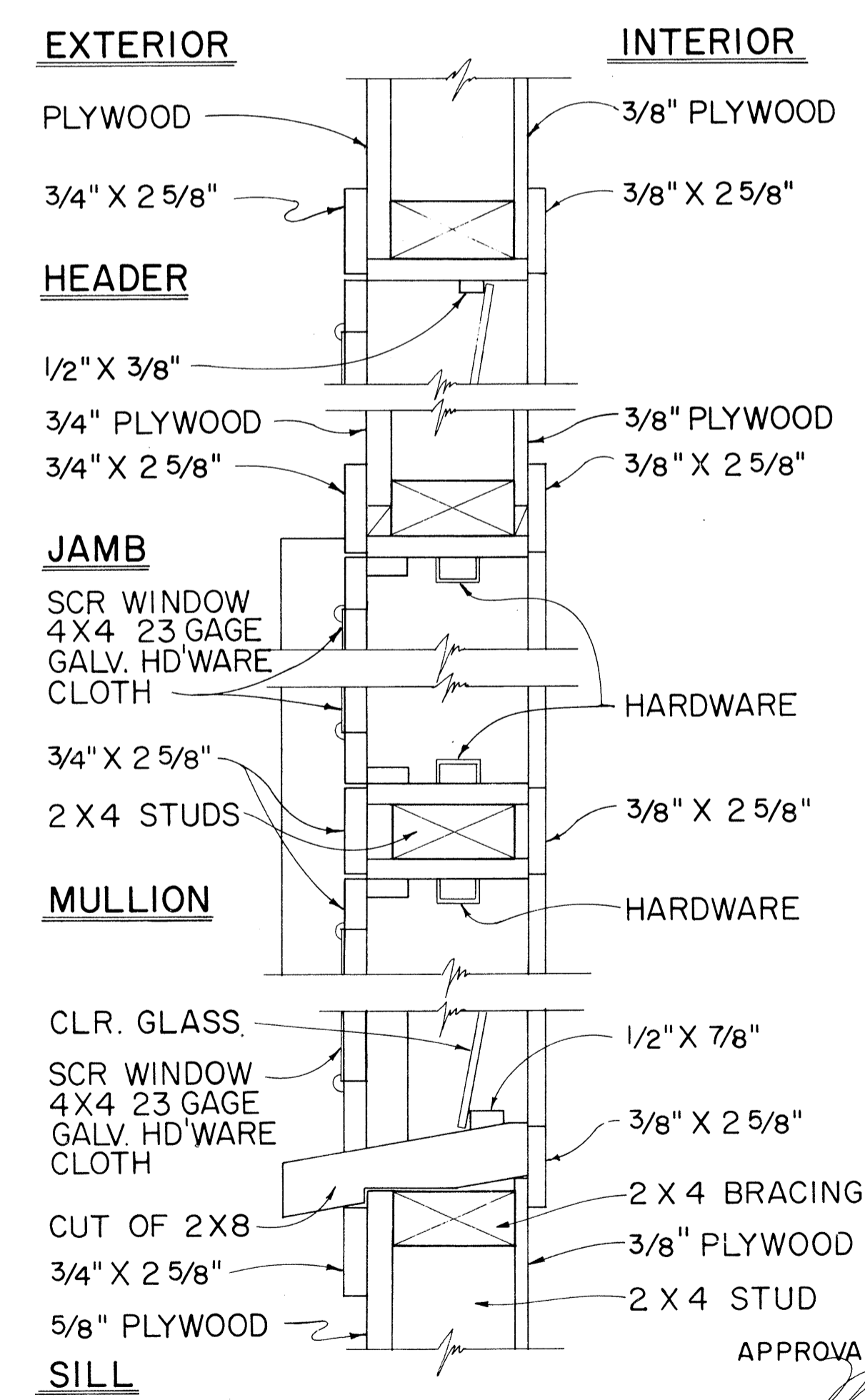
**TYP. SWING OUT DOOR**

**TYPICAL SINGLE OR DOUBLE EXTERIOR DOOR DETAIL**



**TYPICAL STOOL DETAIL**  
SCALE: 1 1/2" = 1'-0"

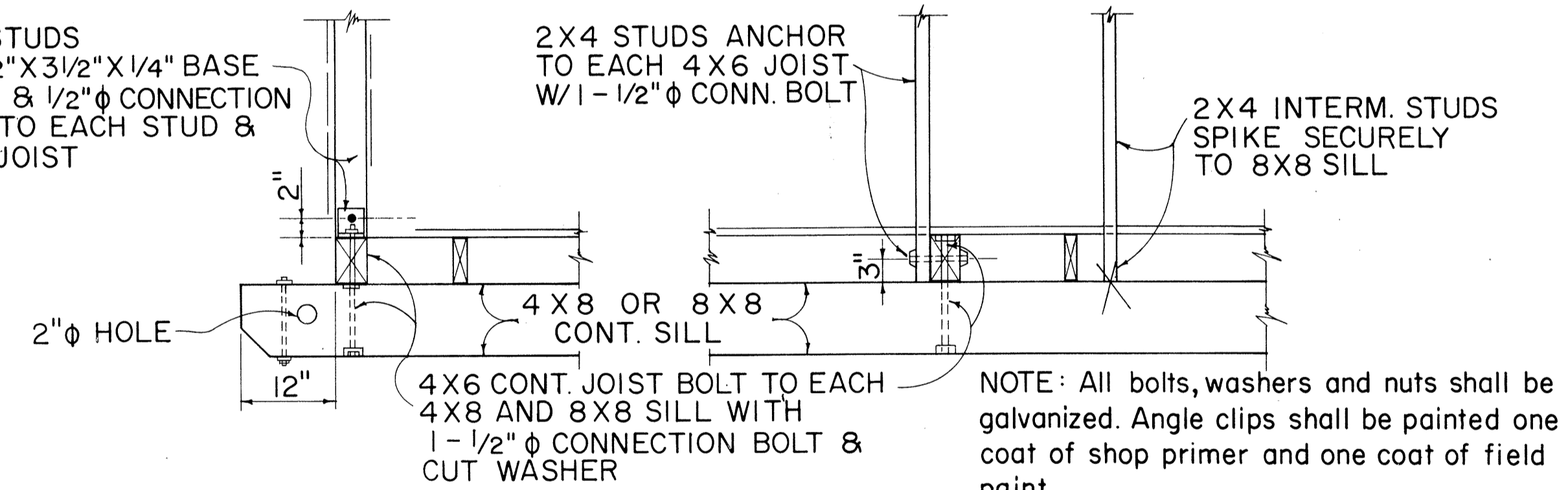
NOTE: CONTRACTOR MAY WITH THE APPROVAL OF THE ENGINEER FURNISH THE FIELD OFFICE OR PROJECT SITE LABORATORY WITH STOOLS OTHER THAN THE TYPE SHOWN IN THE DETAIL.



**TYPICAL DETAIL JALOUSIES WINDOWS**  
SCALE: 3" = 1'-0"

APPROVAL RECOMMENDED:  
*M. [Signature]* 12-4-69  
HIGHWAY DESIGN ENGINEER DATE

APPROVED:  
*A. [Signature]* 12-10-69  
ASSISTANT CHIEF, ENGINEERING DATE



**TYPICAL 2X4 STUD & 4X6 FLOOR JOIST BASE CONNECTION DETAILS**

AT ENDS OF BLDG. ALONG SIDES OF BLDG.

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

FIELD OFFICE  
&  
PROJECT SITE LABORATORY

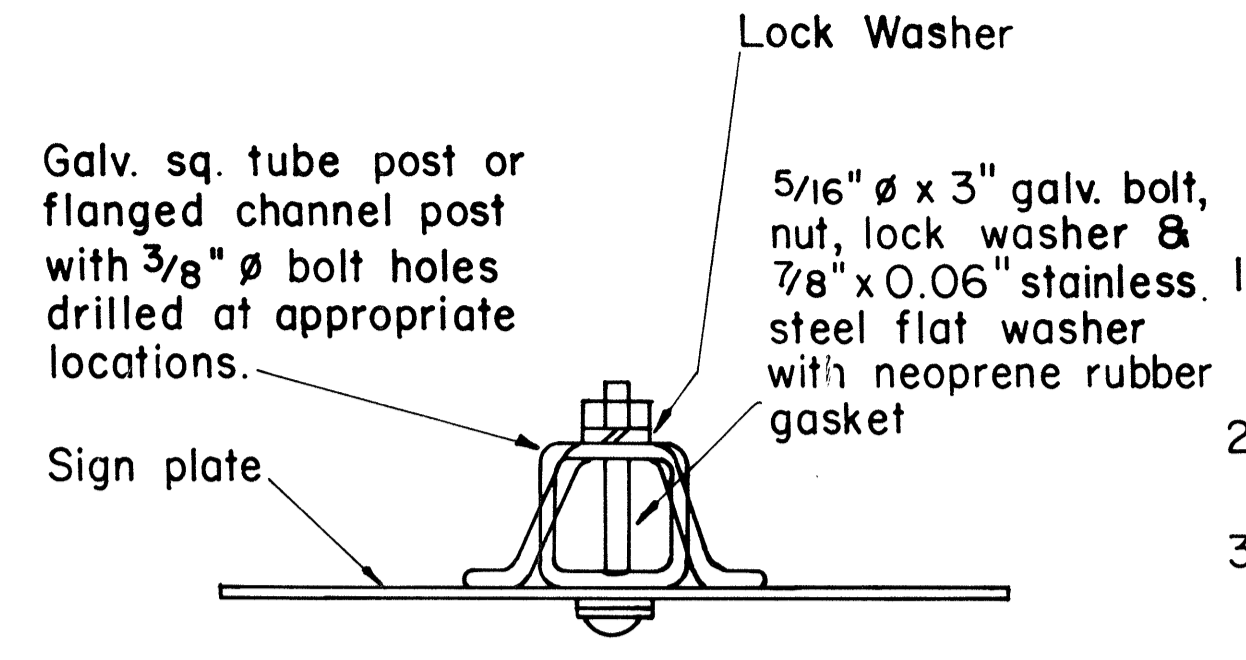
Scale: As Noted

DATE: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
NO. \_\_\_\_\_

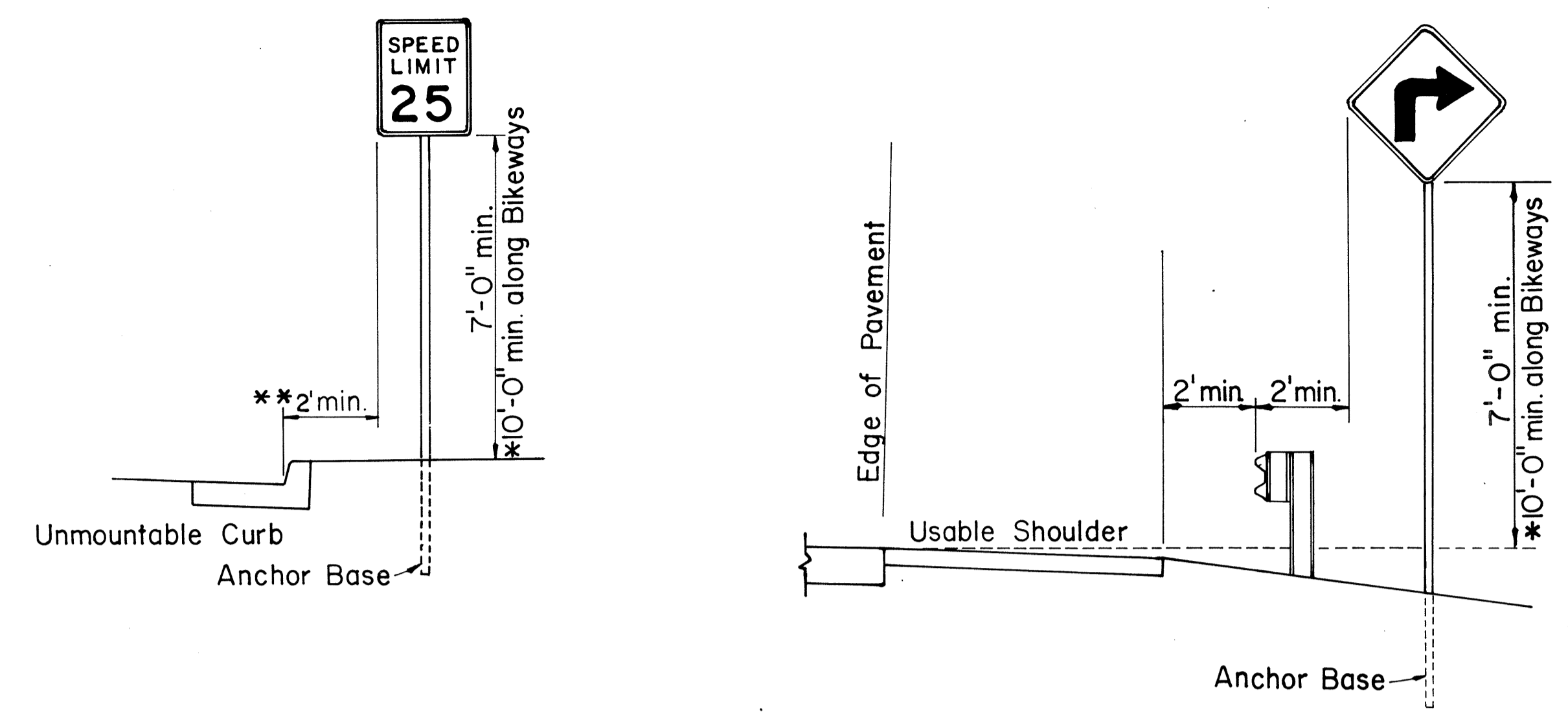
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460 (5)	1985	15	46

**GENERAL NOTES**

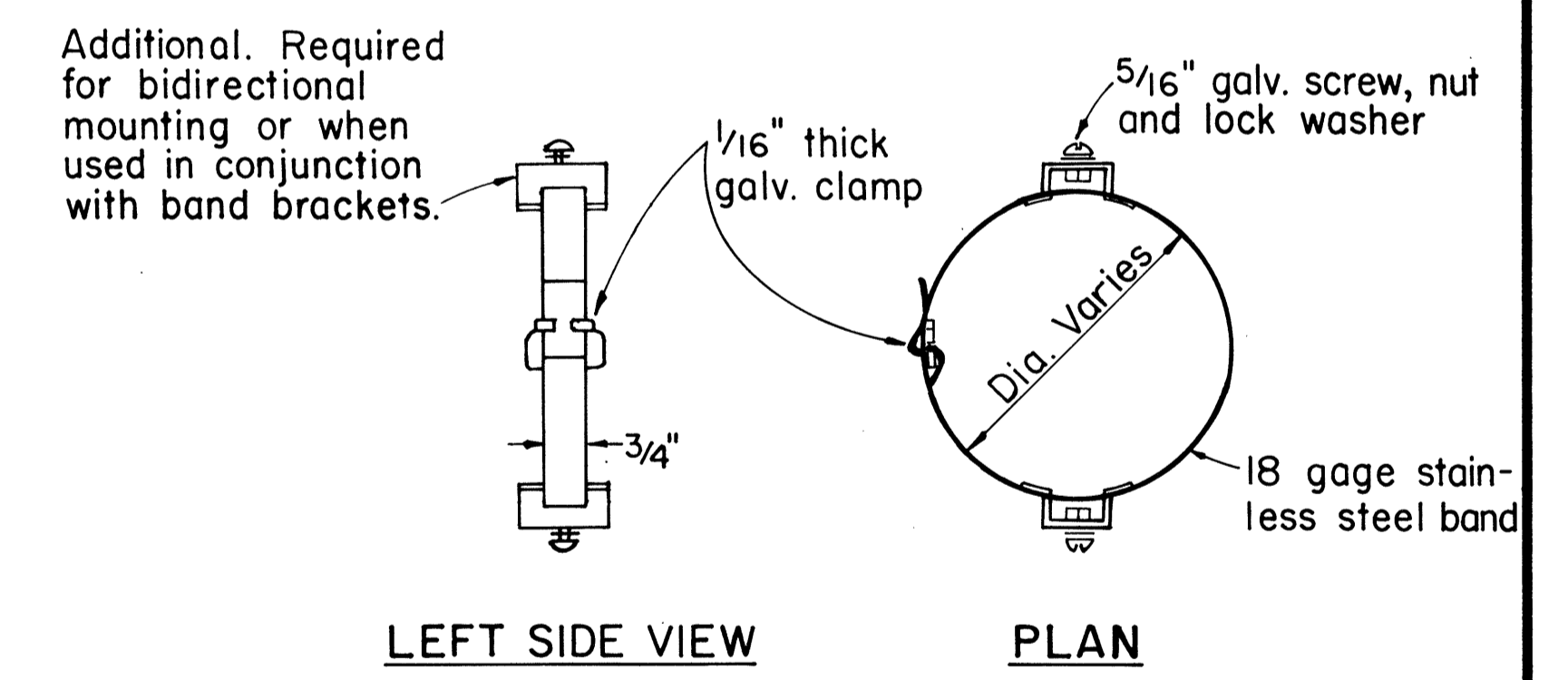
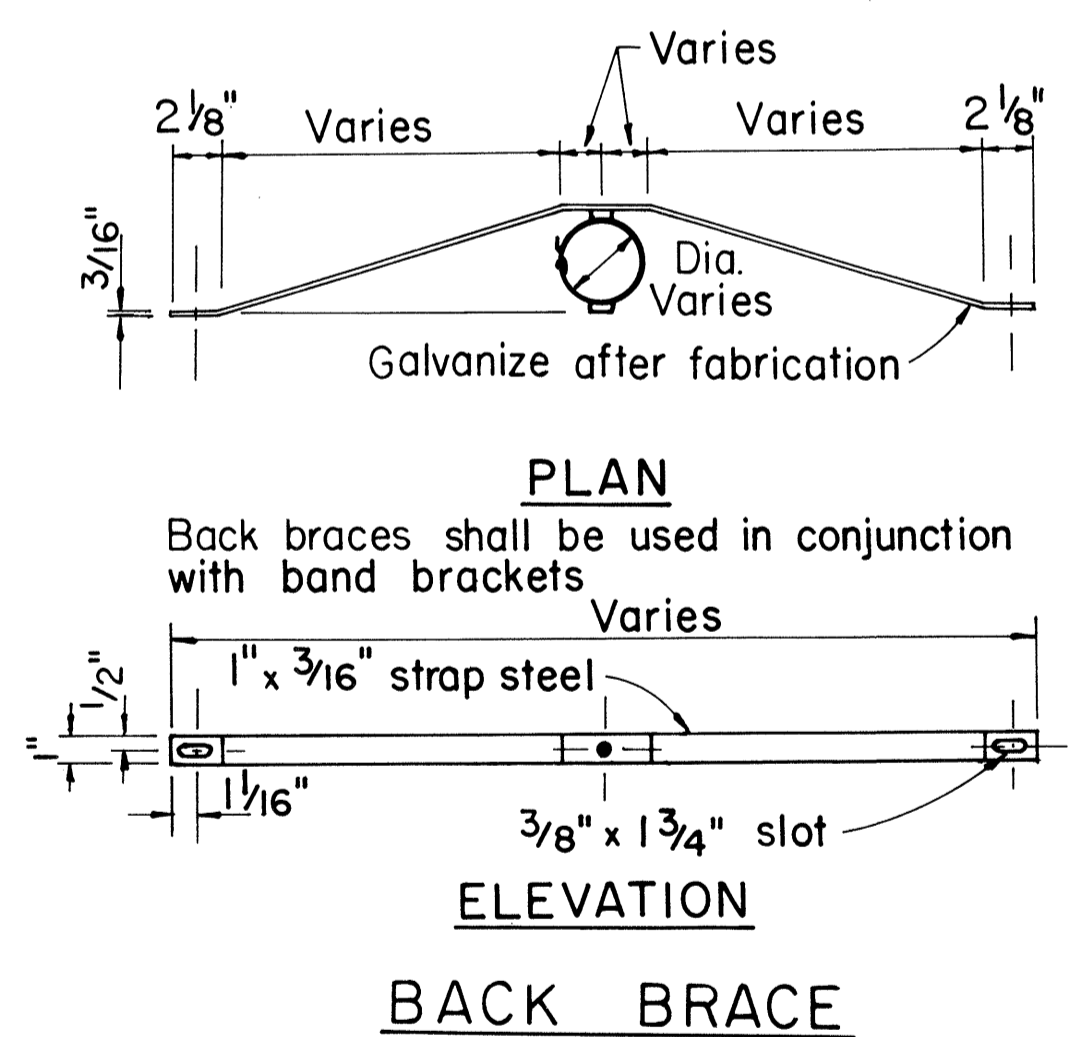
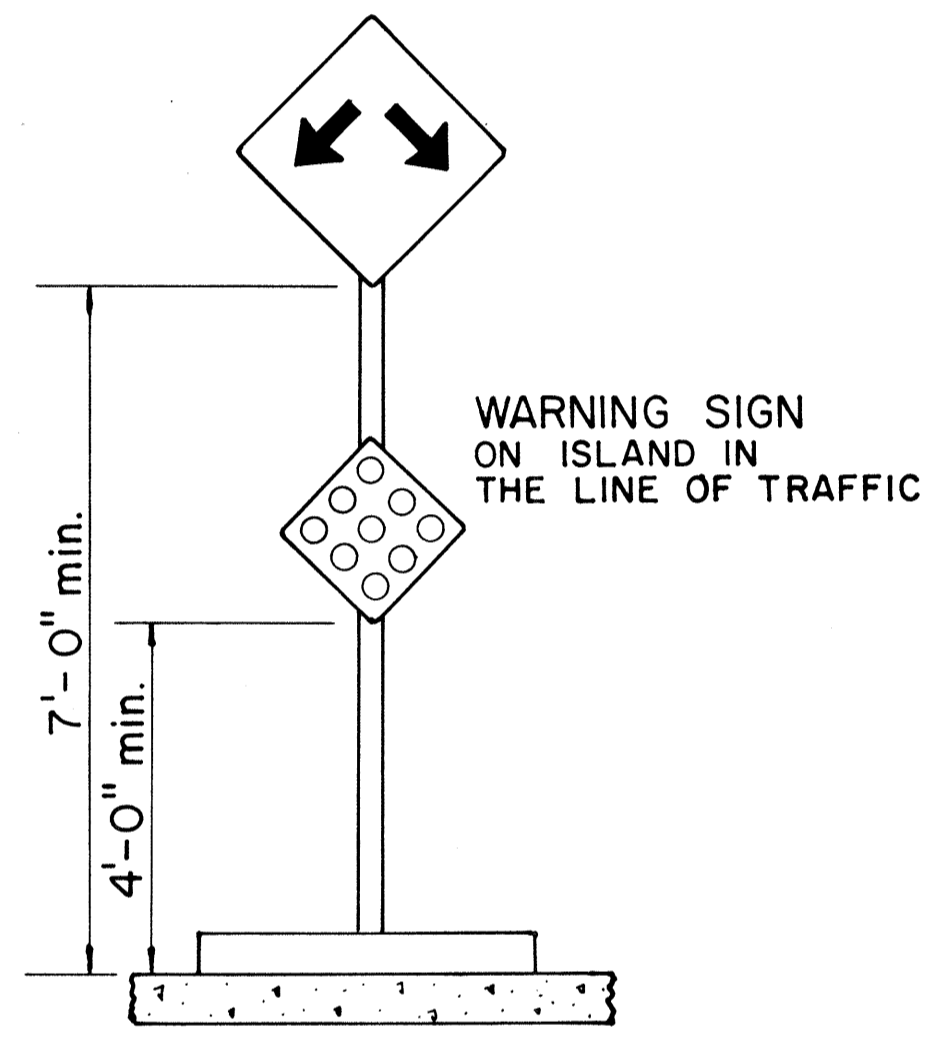
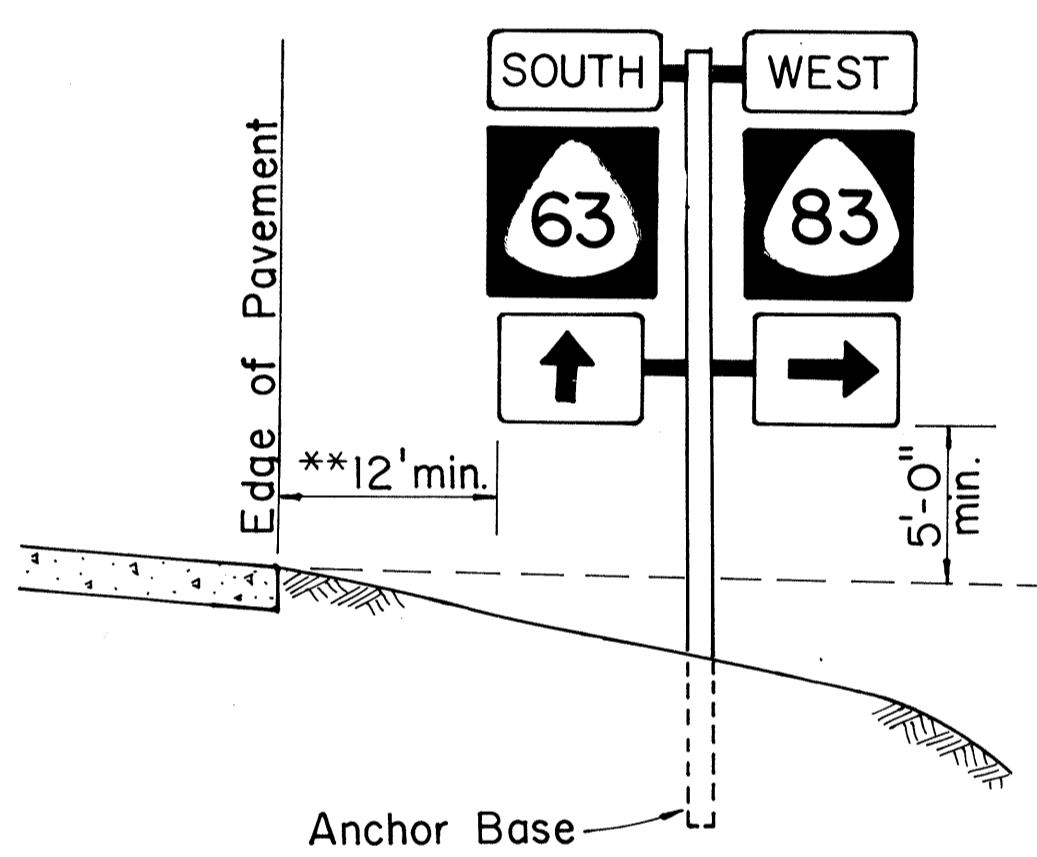
- Signs shall be placed in conformance with positions shown and described in the "Manual on Uniform Traffic Control Devices for Streets and Highways", 1978, Part II, Section 2A-2I, as amended, and as supplemented herein.
- Sign 48" and wider or larger than 10 sq. ft. in area shall be mounted on two or 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**



**ROADSIDE ASSEMBLY RURAL DISTRICT**



**TYPICAL MOUNTING DETAILS**

NO.	REVISION	APPROVED BY	DATE
1	Supersedes Sht. DT 100 approved 11/15/77	[Signature]	10-18-83

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

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

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

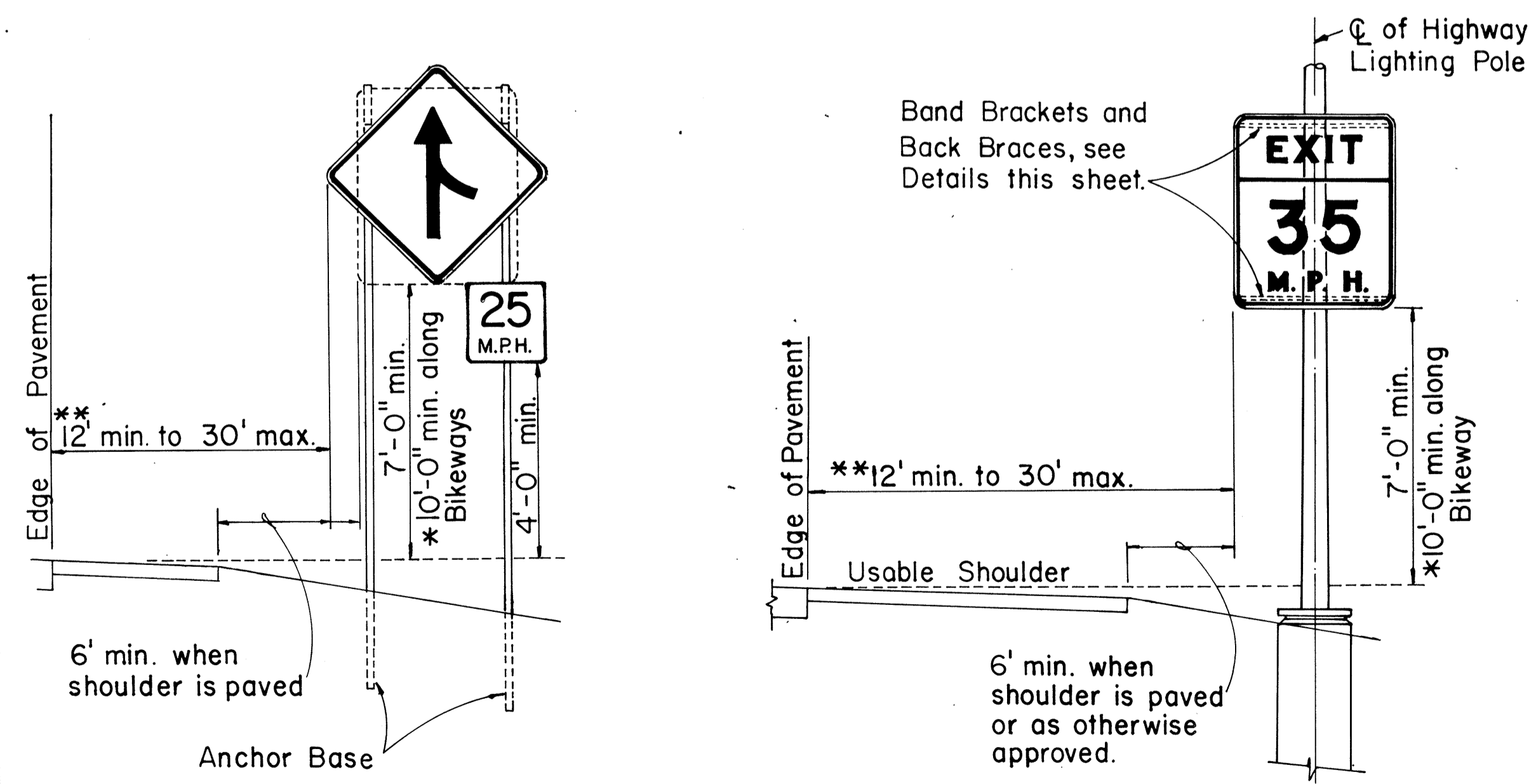
**STANDARD DETAILS**

**MISCELLANEOUS SIGN DETAILS**

Not to Scale: Oct. 1983  
 SHEET NO. 6 OF 17 SHEETS DT 100

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

**HEIGHT AND LATERAL LOCATION OF SIGNS TYPICAL INSTALLATION**



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460(5)	1985	16	40

A or A,	C	C,
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 =  $\frac{\text{Factor}}{\text{sign area}(A \times B)}$   
and if H is known,  
Maximum sign area (A x B) =  $\frac{\text{Factor}}{H}$

APPROVAL RECOMMENDED:

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

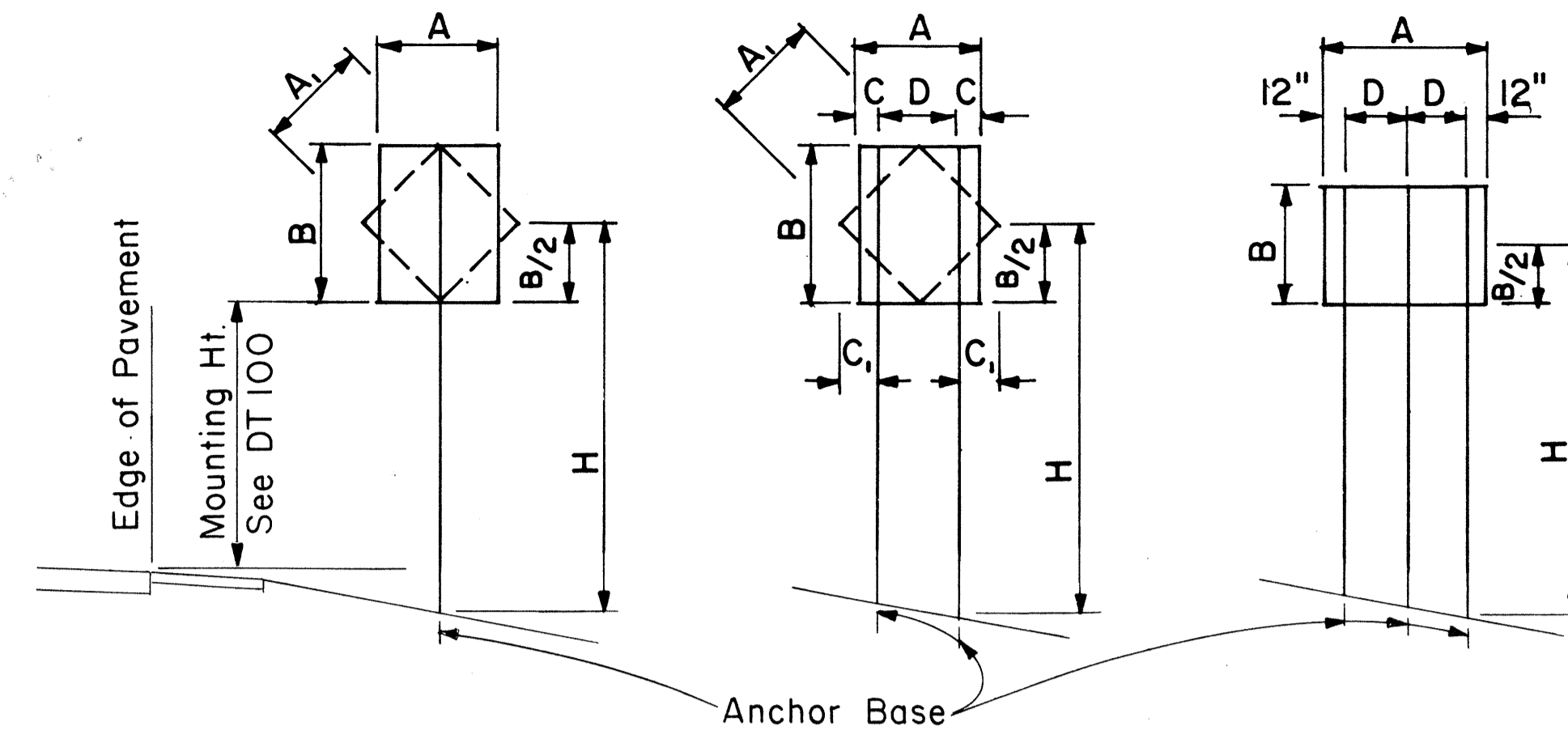
APPROVED:

*[Signature]* 9/21/82  
ASSISTANT CHIEF, ENGINEERING DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**STANDARD DETAILS**  
**GALVANIZED FLANGED CHANNEL**  
**SIGN POST MOUNTING**

Scale: As Shown Date: Sept. 1982

SHEET NO. 7 OF 17 SHEETS DT 100A



**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"

### TYPICAL INSTALLATION

Not to Scale

#### FLANGED CHANNEL: 1-POST INSTALLATION

Post Size	A x B x H (Factor)	H = Ground Level to Midpoint (ft.)						A x B (Area, sq. ft.)
		7	8	9	10	11	12	
2.50 lbs./ft.	57	8.14	7.13	6.33	5.70	5.18	4.75	A x B (Area, sq. ft.)
4.00 lbs./ft.	112	-	-	-	-	-	9.33	

#### FLANGED CHANNEL: 2-POST INSTALLATION

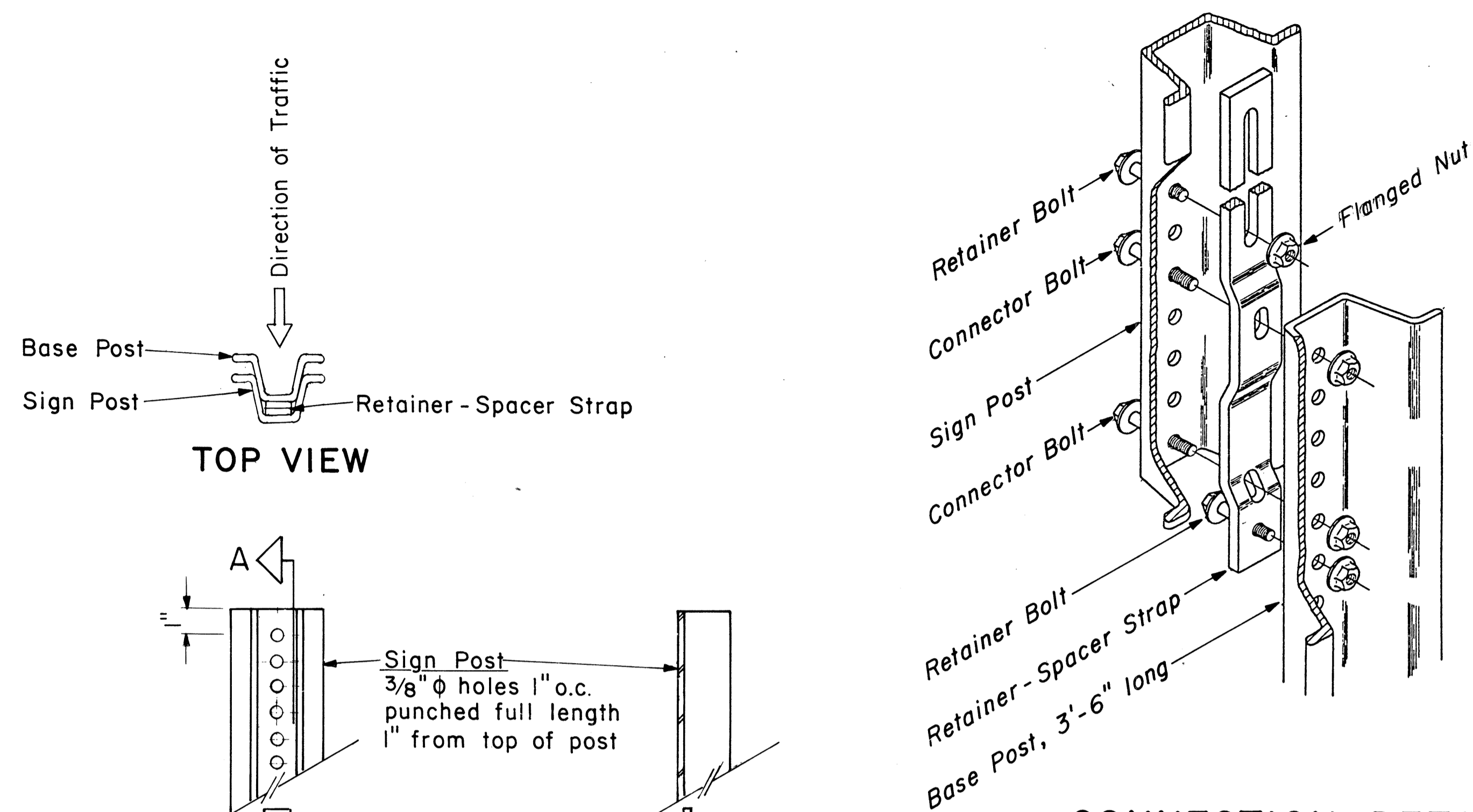
Post Size	A x B x H (Factor)	H = Ground Level to Midpoint (ft.)						A x B (Area, sq. ft.)
		7	8	9	10	11	12	
2.50 lbs./ft.	124	17.71	15.50	13.77	12.40	11.27	10.33	A x B (Area, sq. ft.)
4.00 lbs./ft.	241	34.43	30.13	26.78	24.10	21.91	20.08	

#### FLANGED CHANNEL: 3-POST INSTALLATION

Post Size	A x B x H (Factor)	H = Ground Level to Midpoint (ft.)						A x B (Area, sq. ft.)
		7	8	9	10	11	12	
2.50 lbs./ft.	187	26.71	23.38	20.78	18.70	17.00	15.58	A x B (Area, sq. ft.)
4.00 lbs./ft.	362	51.71	45.25	40.22	36.20	32.91	30.17	

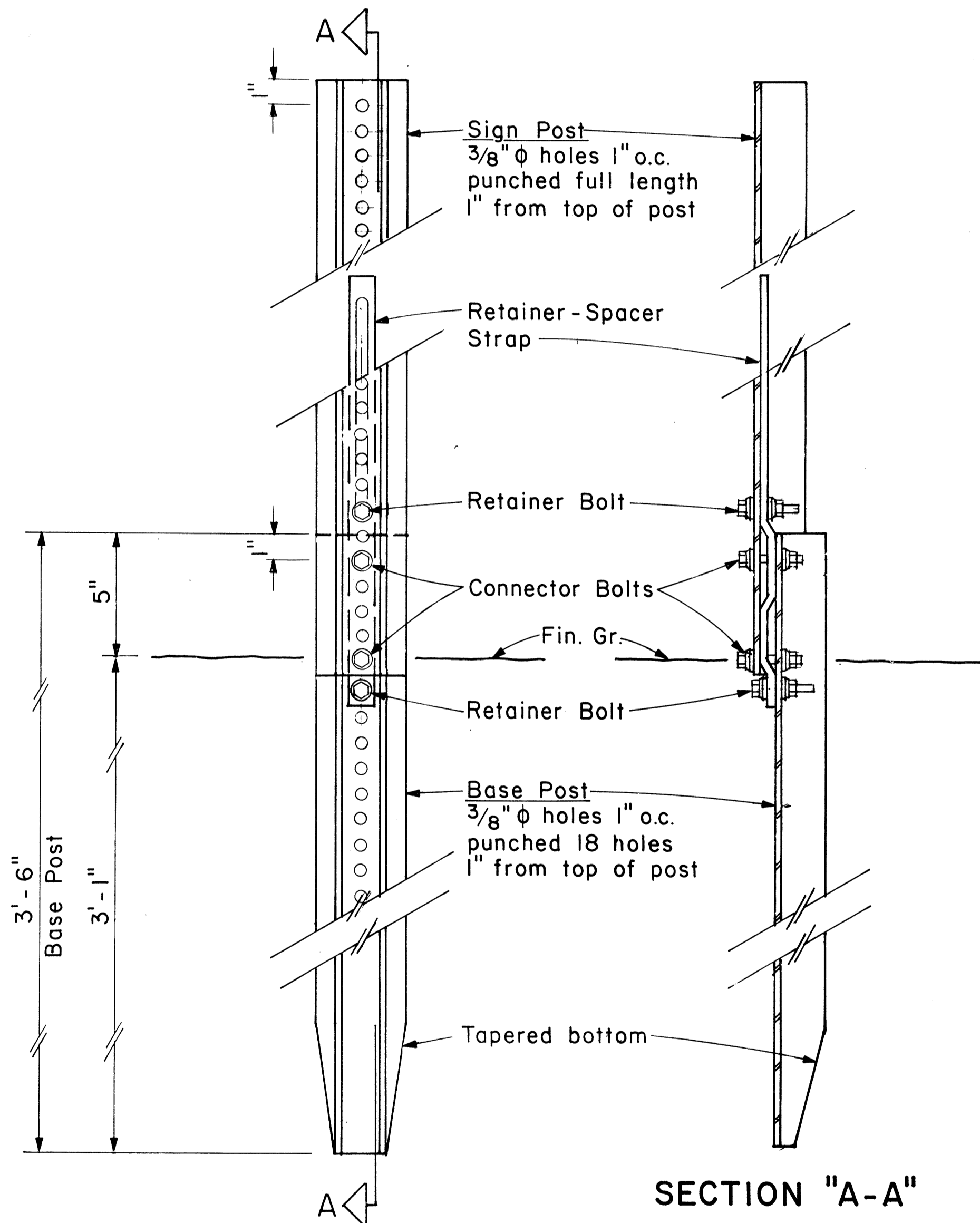
### WINDLOAD CHARTS

NO.	REVISION	APPROVED BY	DATE



### CONNECTION DETAIL

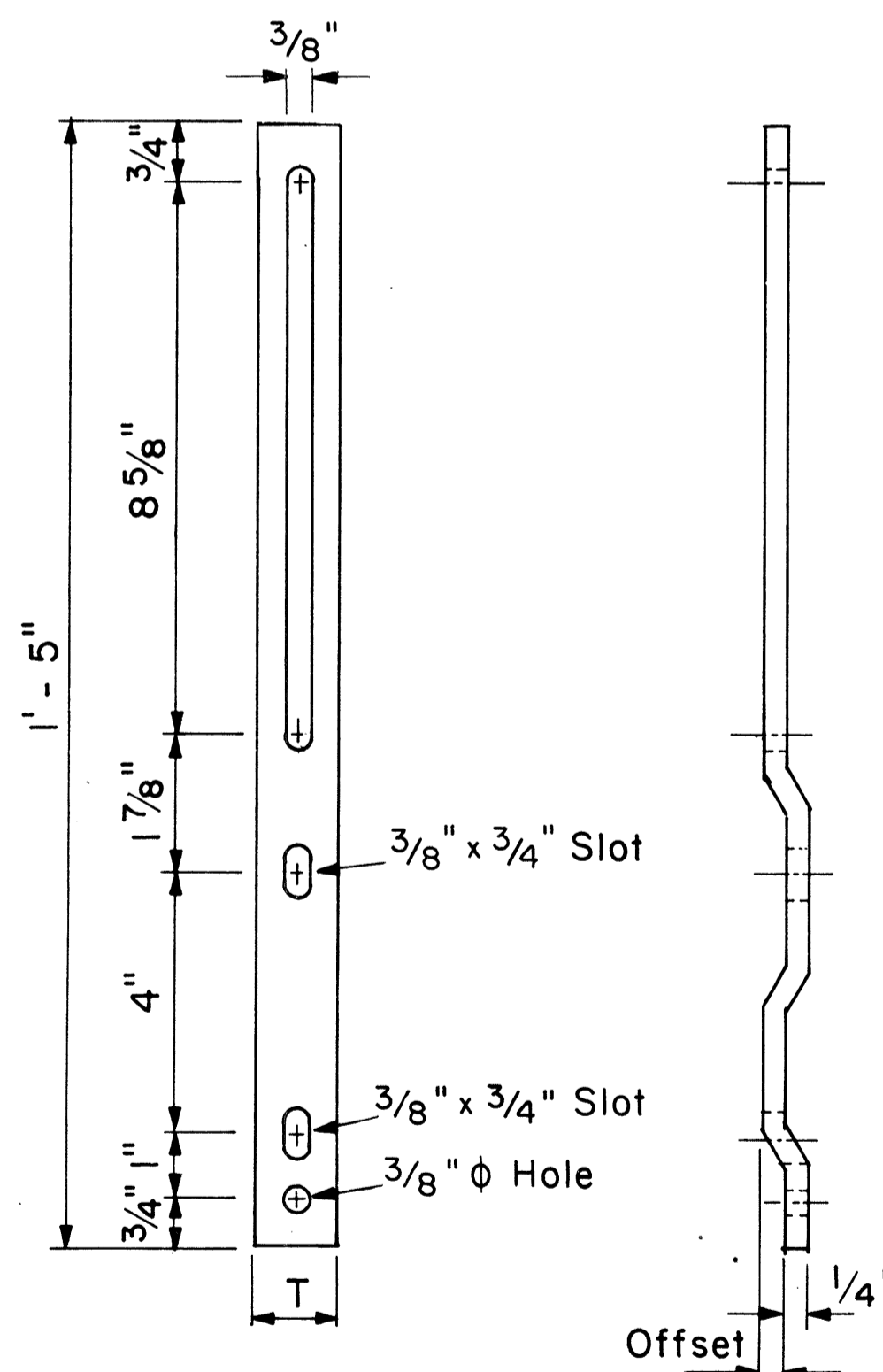
Not to Scale



BACK VIEW

### ANCHOR BASE DETAIL

Scale: 3" = 1'-0"



### RETAINER-SPACER STRAP

Not to Scale

#### RETAINER-SPACER STRAP

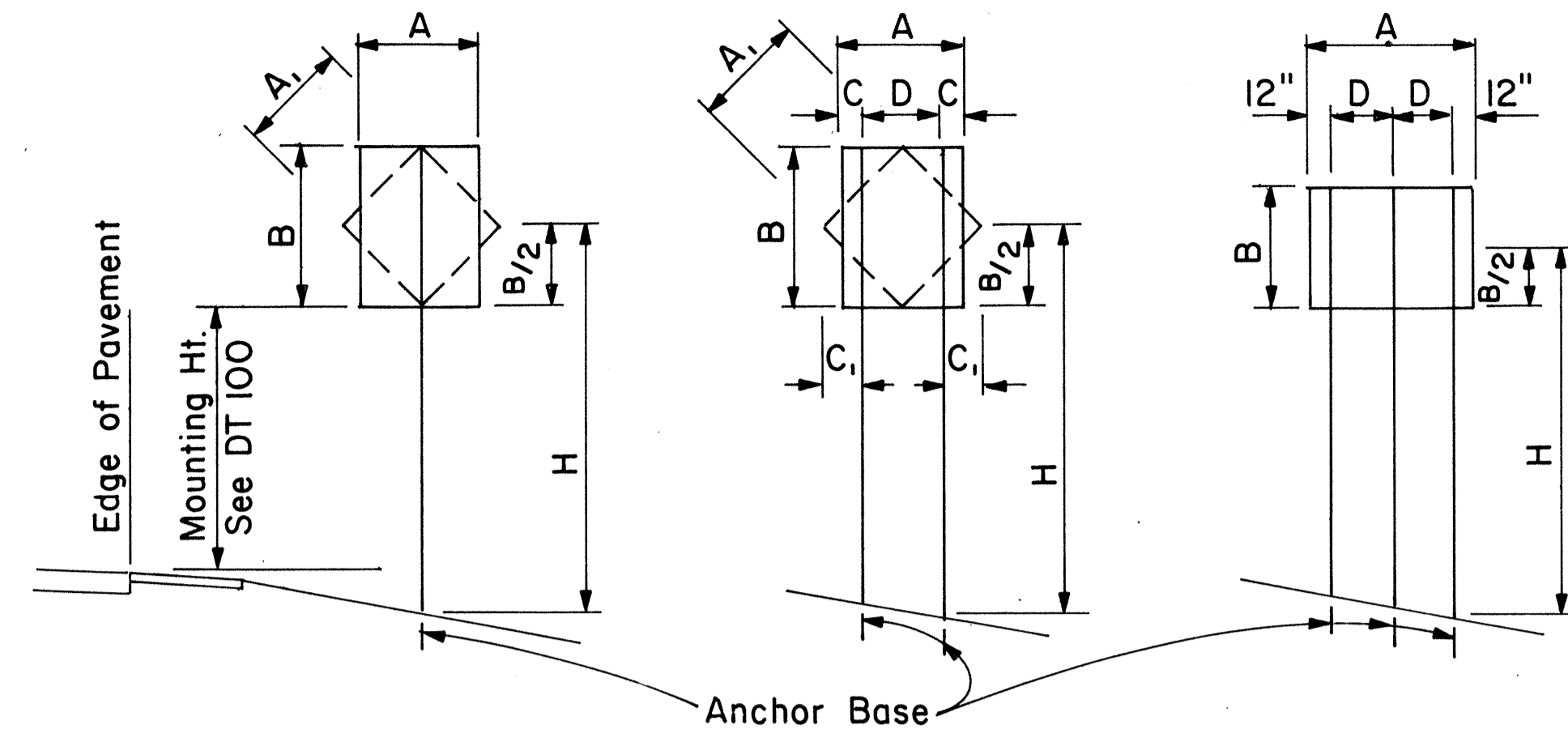
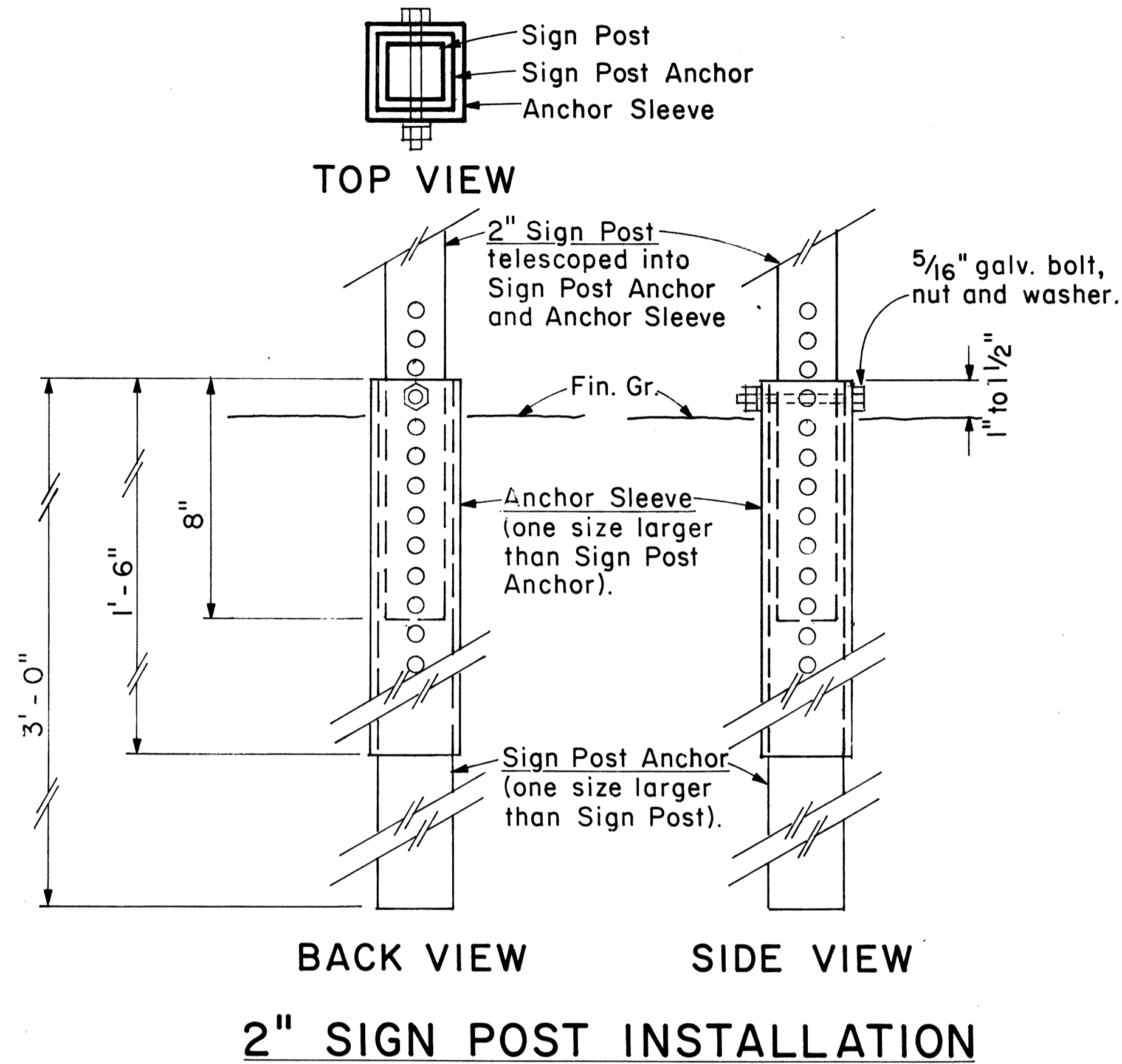
Post Size	T	Offset
2.50 lbs./ft.	1.00"	0.145"
4.00 lbs./ft.	1.12"	0.280"

DATE: \_\_\_\_\_  
SURVEY PLOTTED BY: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_  
DESIGNED BY: \_\_\_\_\_  
NOTE BOOK QUANTITIES BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
No. \_\_\_\_\_

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460(5)	1985	17	40

### 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 x B) is known,  
 $Maximum\ H = \frac{Factor}{sign\ area(A \times B)}$   
and if H is known,  
 $Maximum\ sign\ area(A \times B) = \frac{Factor}{H}$



**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"

### TYPICAL INSTALLATION

Not to Scale

SQUARE TUBE: 1- POST INSTALLATION							
Post Size	A x B x H (Factor)	H = Ground Level to Midpoint (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

A x B (Area, sq. ft.)

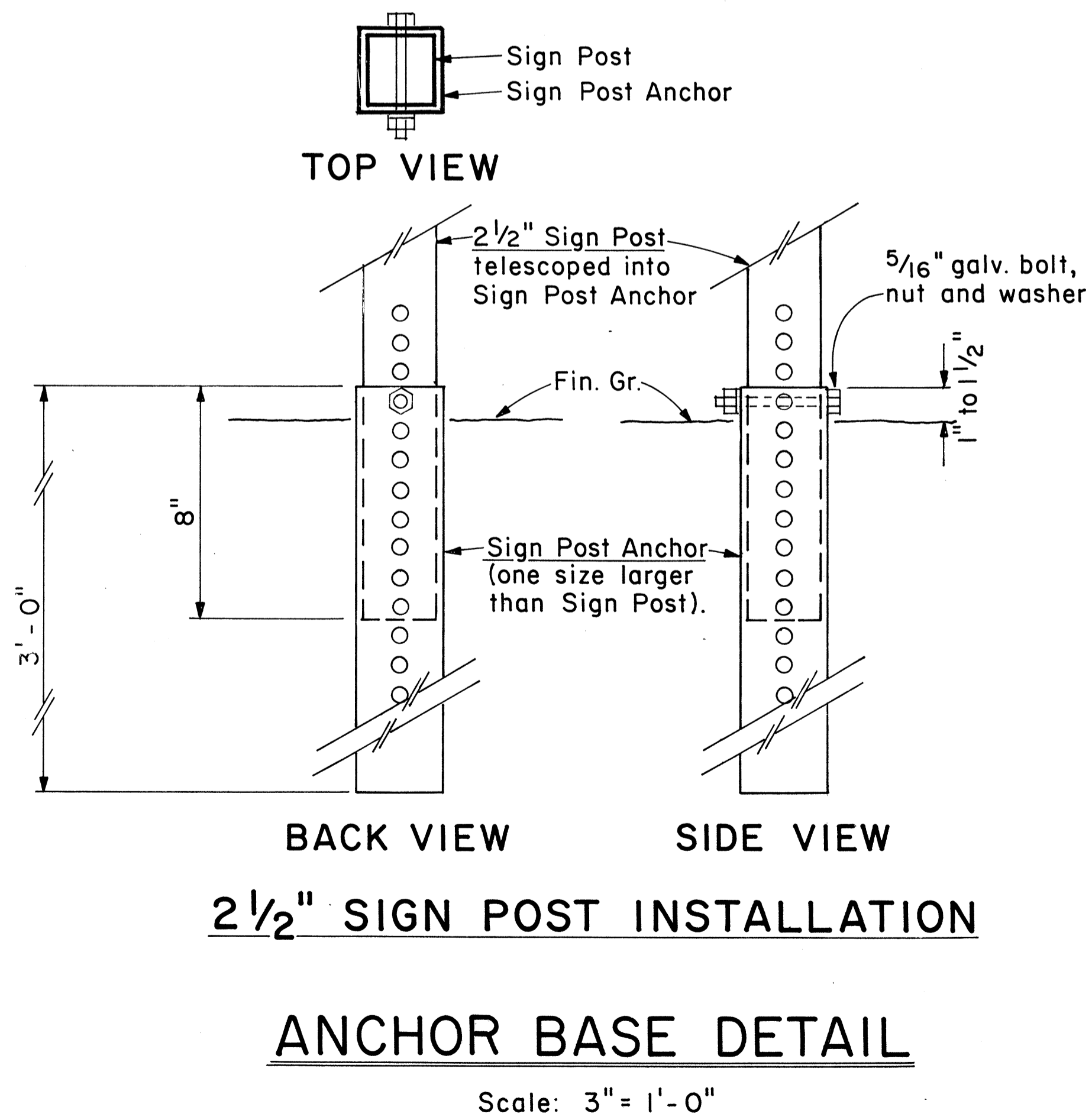
SQUARE TUBE: 2- POST INSTALLATION							
Post Size	A x B x H (Factor)	H = Ground Level to Midpoint (ft.)					
		7	8	9	10	11	12
2"	122	17.4	15.2	13.5	12.2	11.0	10.1
2 1/2"	212	30.2	26.5	23.5	21.1	19.2	17.6
2 1/2", 10 ga.	260	37.0	32.0	28.6	26.0	23.5	21.5

A x B (Area, sq. ft.)

SQUARE TUBE: 3- POST INSTALLATION							
Post Size	A x B x H (Factor)	H = Ground Level to Midpoint (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

A x B (Area, sq. ft.)

### WINDLOAD CHARTS



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 2.

APPROVAL RECOMMENDED:  
*Eishi Tanaka* 9/21/82  
TRAFFIC ENGINEER DATE

APPROVED:  
*Harbor Salsishi* 9/20/82  
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

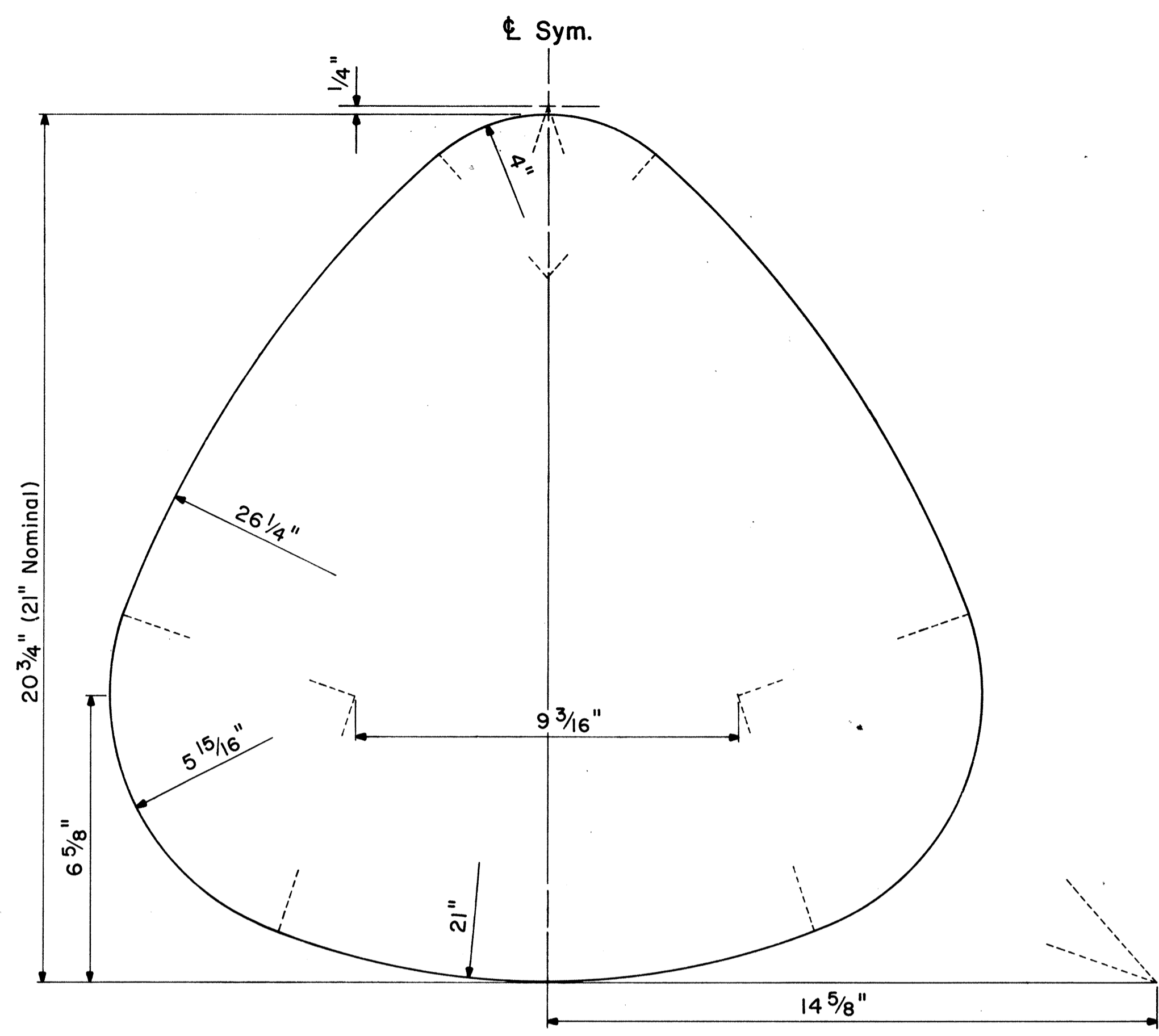
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

STANDARD DETAILS  
GALVANIZED SQUARE TUBE  
SIGN POST MOUNTING

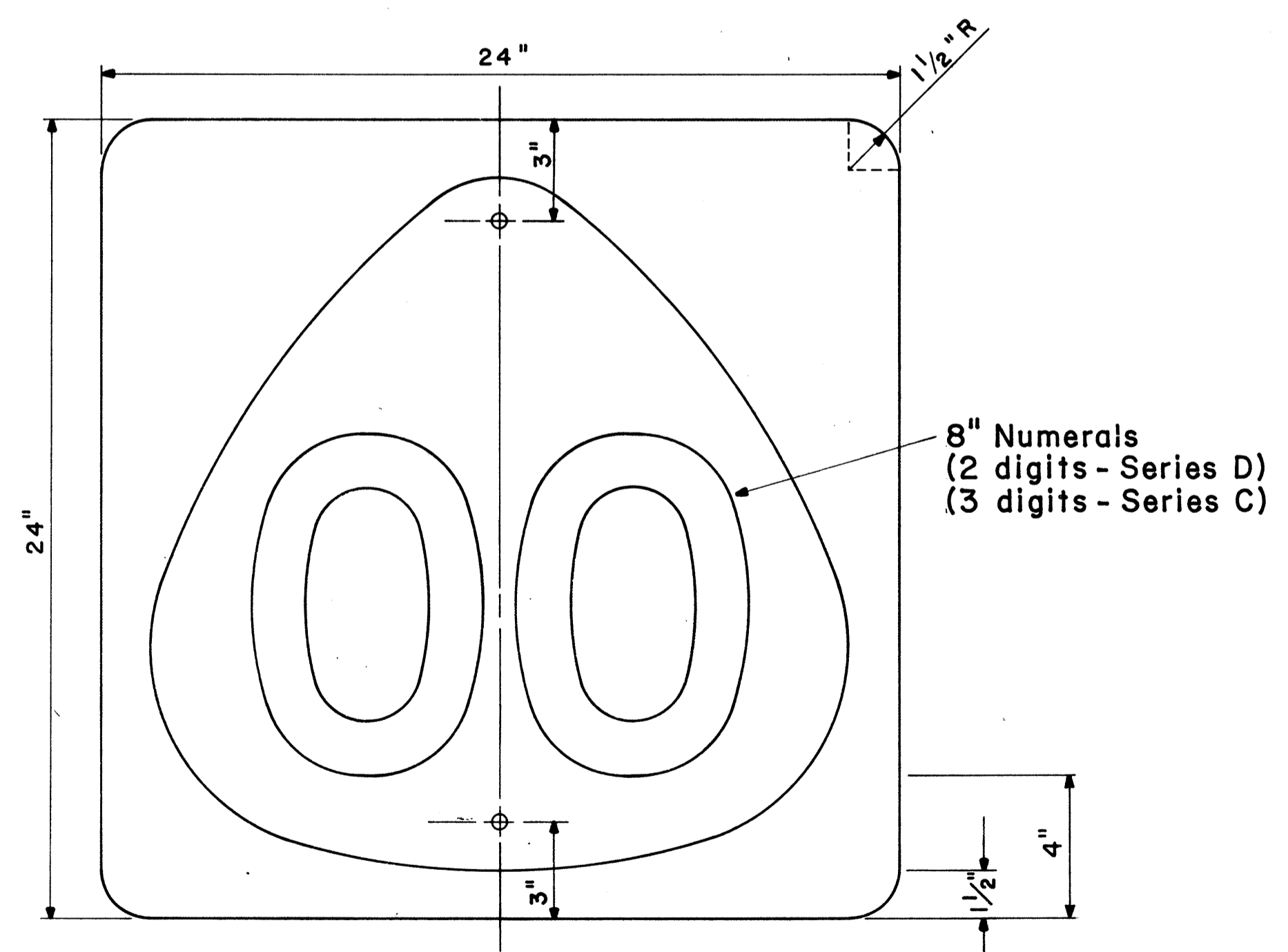
Scale: As Shown Date: Sep. 1982

DATE: \_\_\_\_\_  
SURVEY PLOTTED BY: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_  
DESIGNED BY: \_\_\_\_\_  
QUANTITIES BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
ORIGINAL PLAN No. \_\_\_\_\_

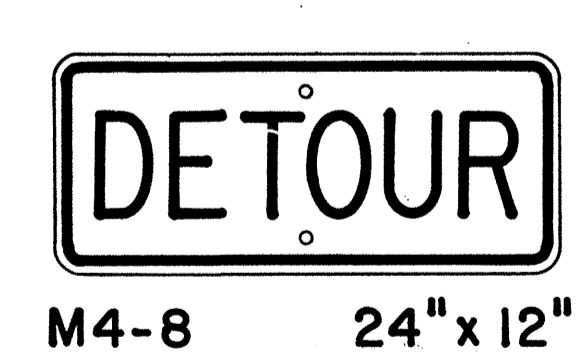
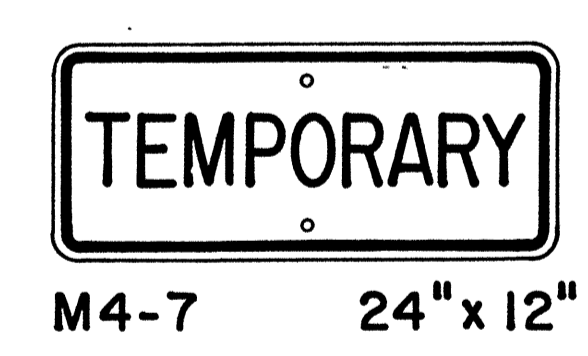
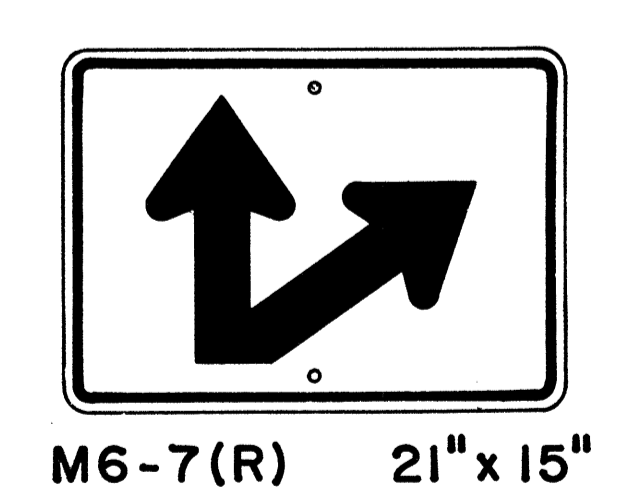
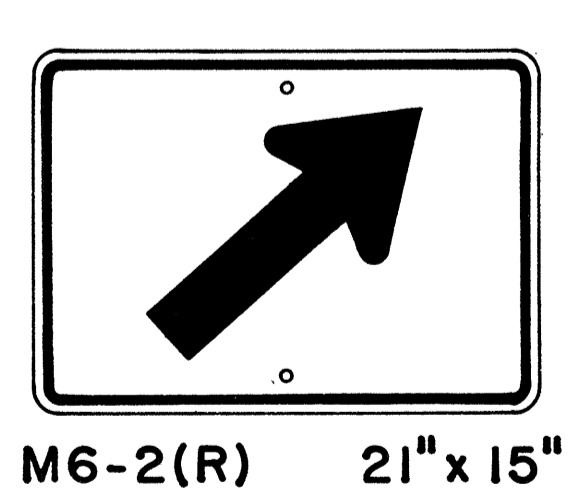
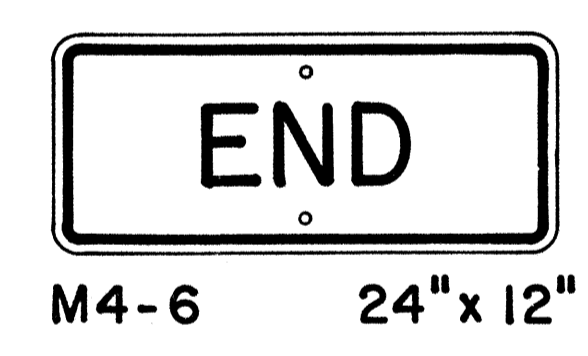
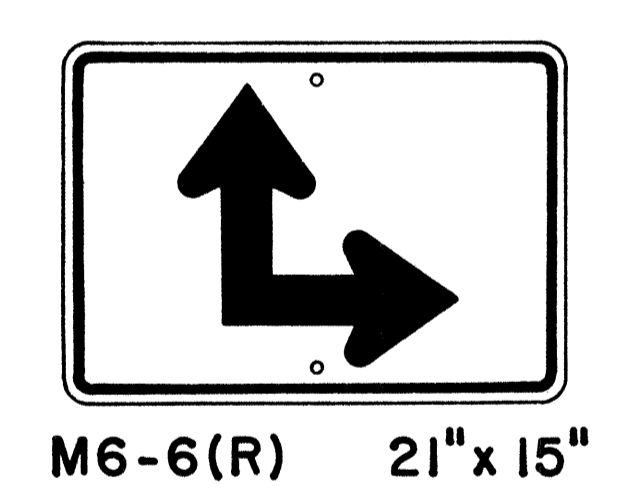
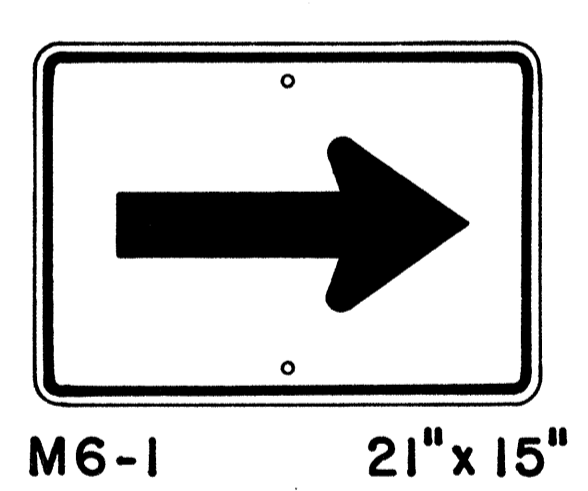
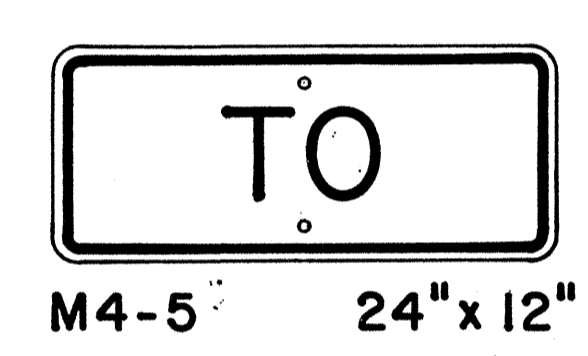
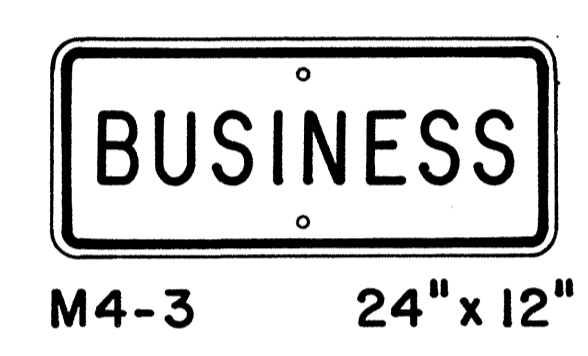
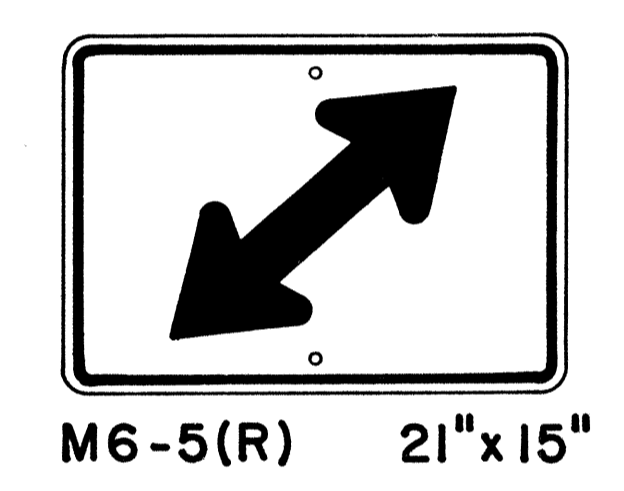
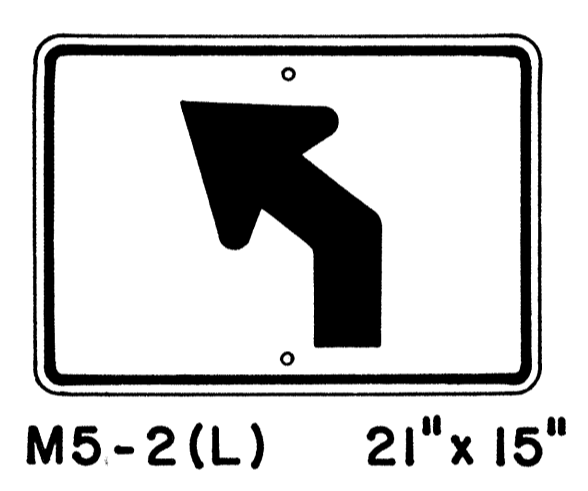
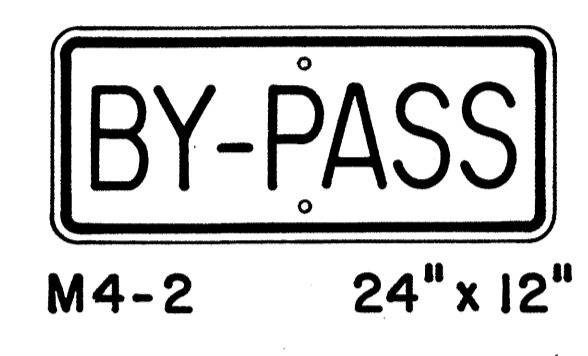
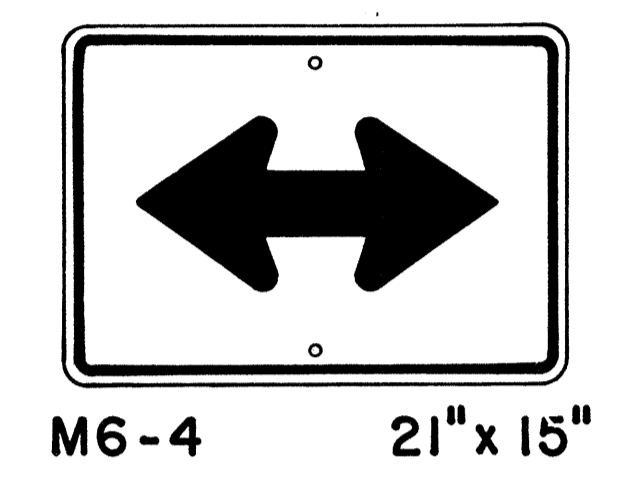
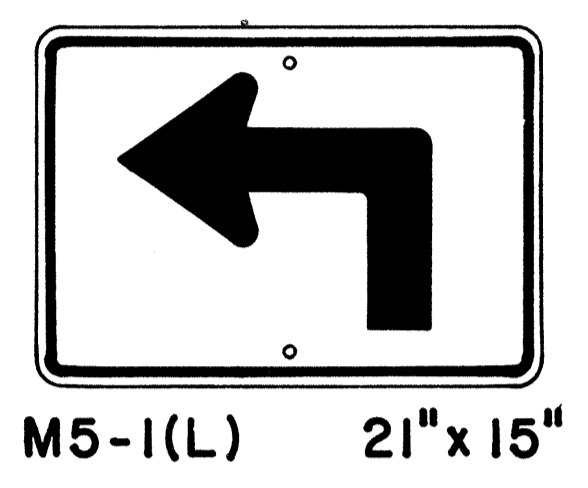
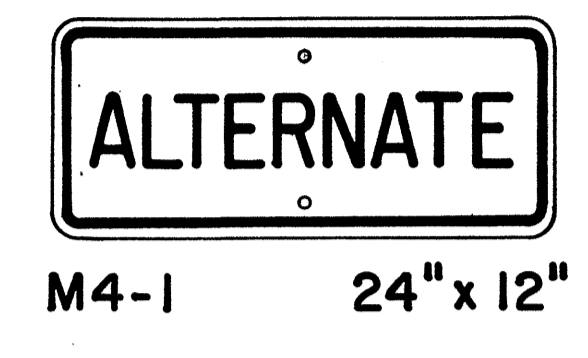
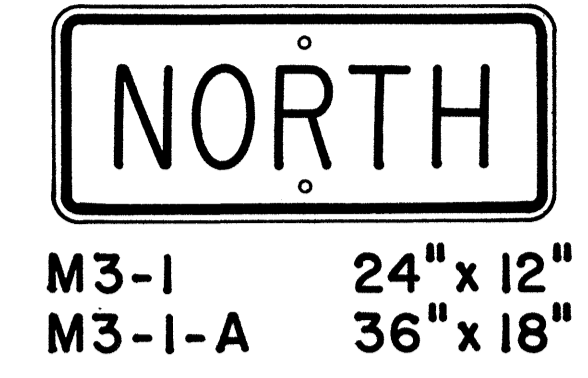
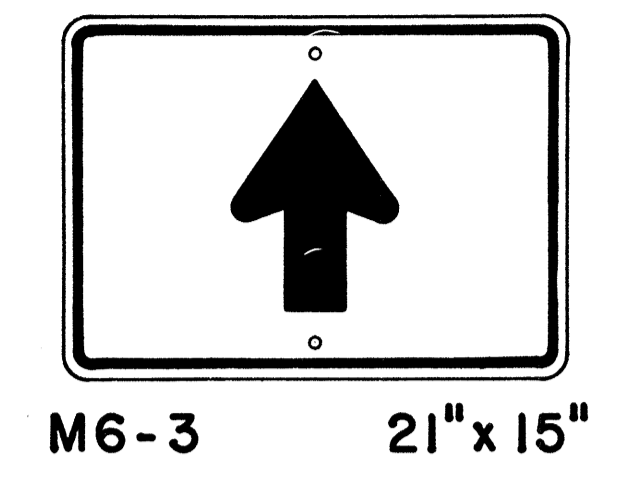
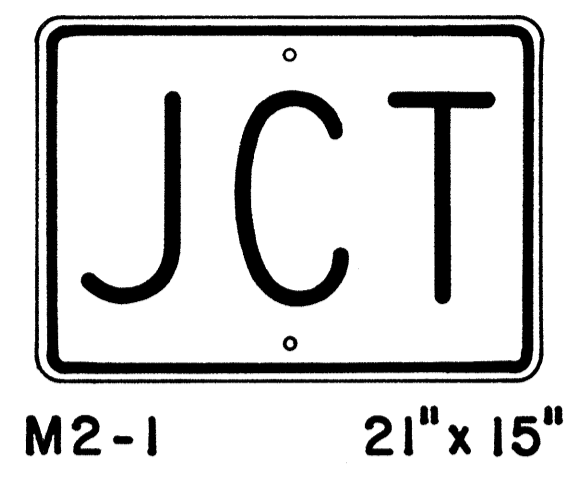
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460(5)	1985	18	46



**STATE ROUTE MARKER DETAIL**  
Not to Scale



**STATE ROUTE MARKER**  
MI-6 (00) 24" x 24"  
Scale: 1/4" = 1"



**AUXILIARY MARKERS**  
Not to Scale

**GENERAL NOTES**

- Marker details shall conform to the FHWA publications "Manual on Uniform Traffic Control Devices for Streets and Highways," 1971, "Standard Alphabets for Highway Signs," 1966, and "Standard Highway Signs," 1972, and as amended.
- All markers shall be reflectorized unless otherwise specified.
- All markers shall have 3/8" bolt holes drilled at appropriate locations.
- Numerals in ( ) indicates numerals to be inserted for marker message. (R) or (L) indicates right or left.
- Sign message of Cardinal Direction Marker (M3 series) shall be denoted by the following:  
M3-1 : NORTH  
M3-2 : EAST  
M3-3 : SOUTH  
M3-4 : WEST
- Markers prefixed with "IM" on the plans shall have a white legend on a blue background.

APPROVAL RECOMMENDED:  
*Eishi Tanaka* 6/6/72  
TRAFFIC ENGINEER DATE

APPROVED:  
*Abdul S. Saleh* 6-1-72  
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE
1	Supersedes Sht. DT 105 Approved 12-30-69	H.T.	6/1/72
2	Revised General Note 1	H.T.	10/16/74

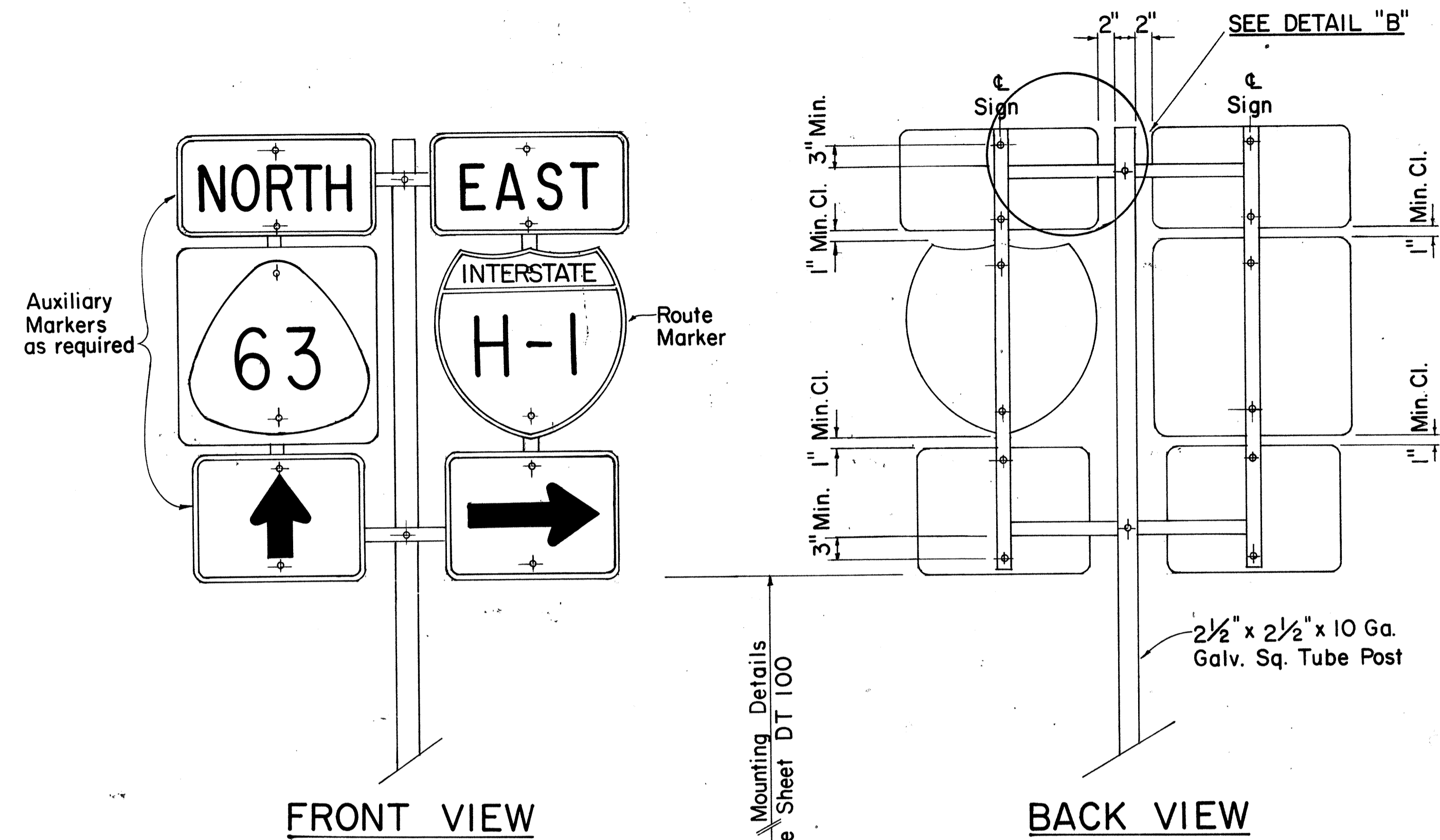
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
LAND TRANSPORTATION FACILITIES DIVISION

**STANDARD DETAILS**  
**STATE ROUTE MARKER**  
**AND AUXILIARY MARKERS**

Scale: As Shown  
SHEET No. 18 OF 17 SHEETS DT105

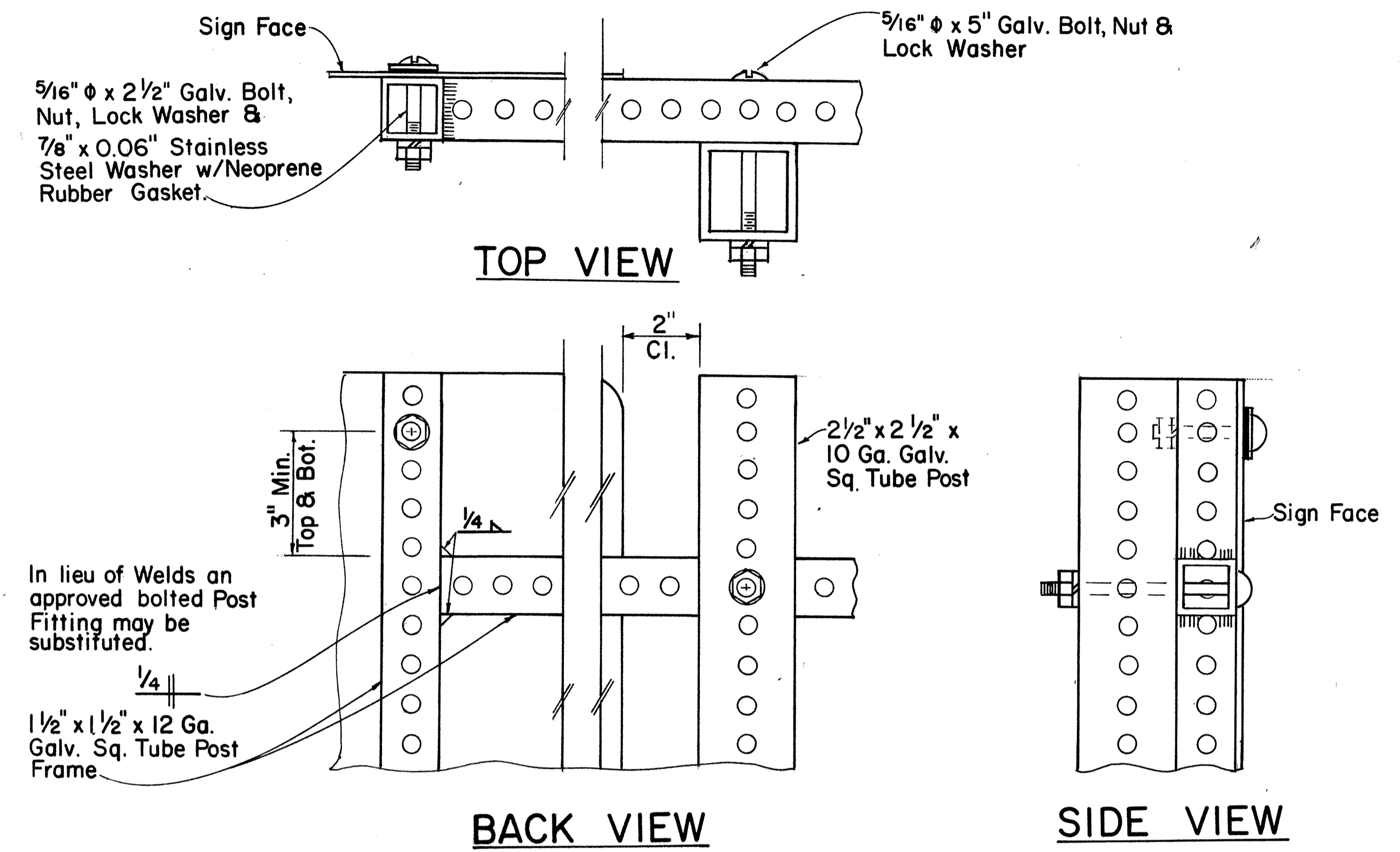
DATE: \_\_\_\_\_  
SURVEY PLOTTED BY: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_  
DESIGNED BY: \_\_\_\_\_  
NOTED BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
No. \_\_\_\_\_

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0660(5)	1985	19	46



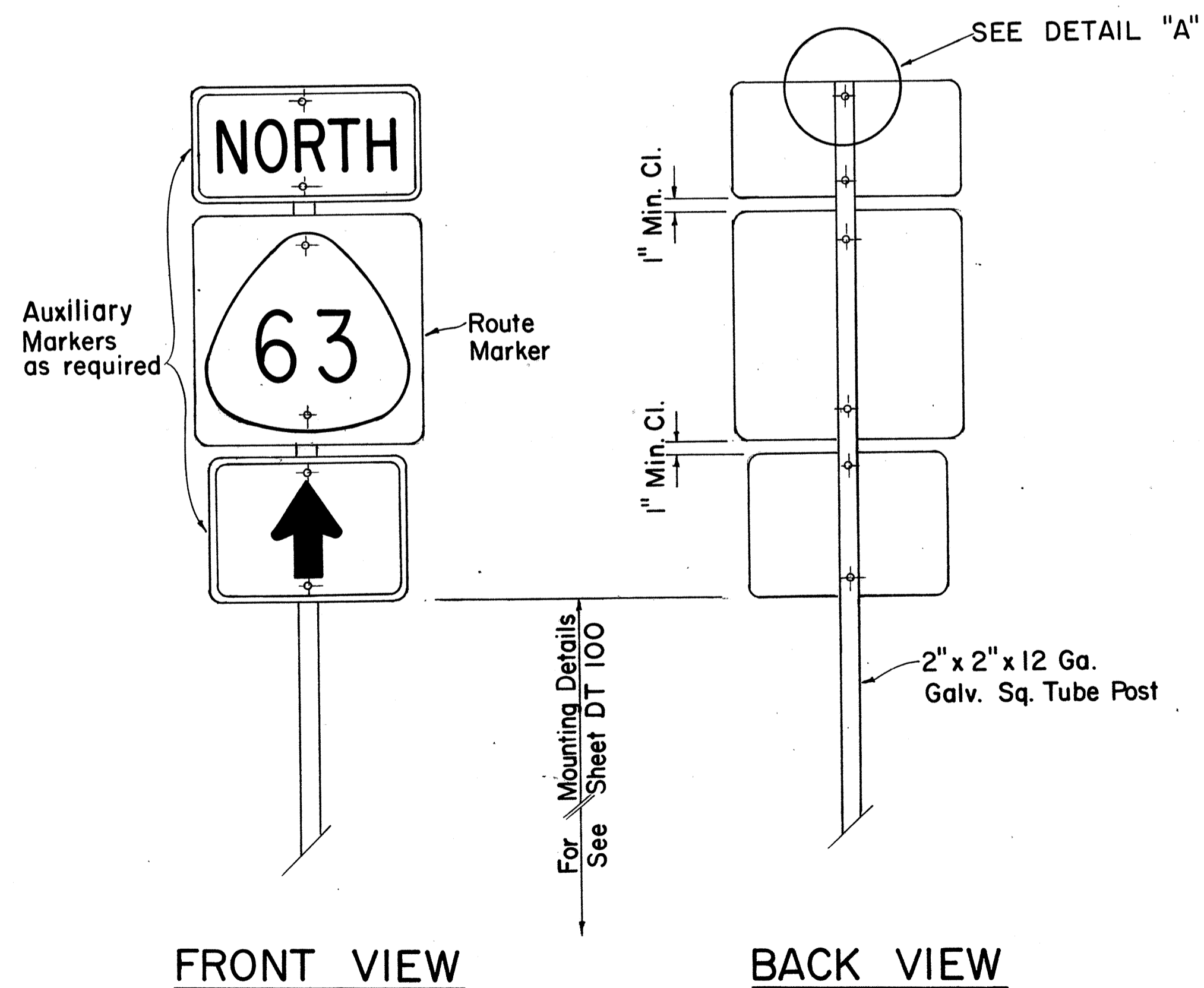
**TYPE "B" ASSEMBLY**

SCALE: 1" = 1'-0"



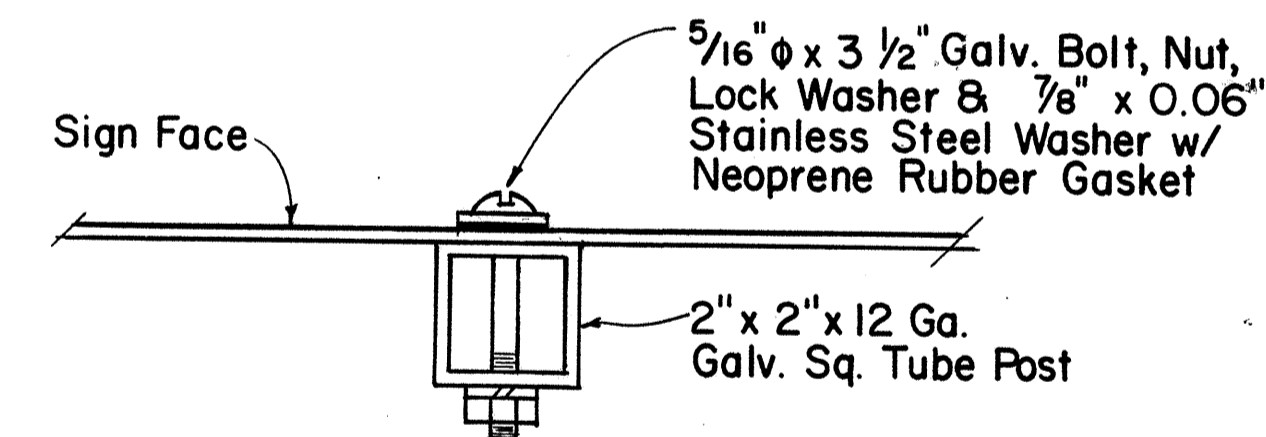
**DETAIL "B"**

SCALE: 3/8" = 1"



**TYPE "A" ASSEMBLY**

SCALE: 1" = 1'-0"



**DETAIL "A"**

SCALE: 3/8" = 1"

APPROVAL RECOMMENDED:

*Eiichi Tanaka* 7/31/80  
TRAFFIC ENGINEER DATE

APPROVED:

*Herbert Zaleski* 7/31/80  
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE
1	Supersedes Sht. DT 107 dated 12/30/69.	H.T.	7/31/80

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**STANDARD DETAILS**  
**ROUTE MARKER**  
**ASSEMBLIES**

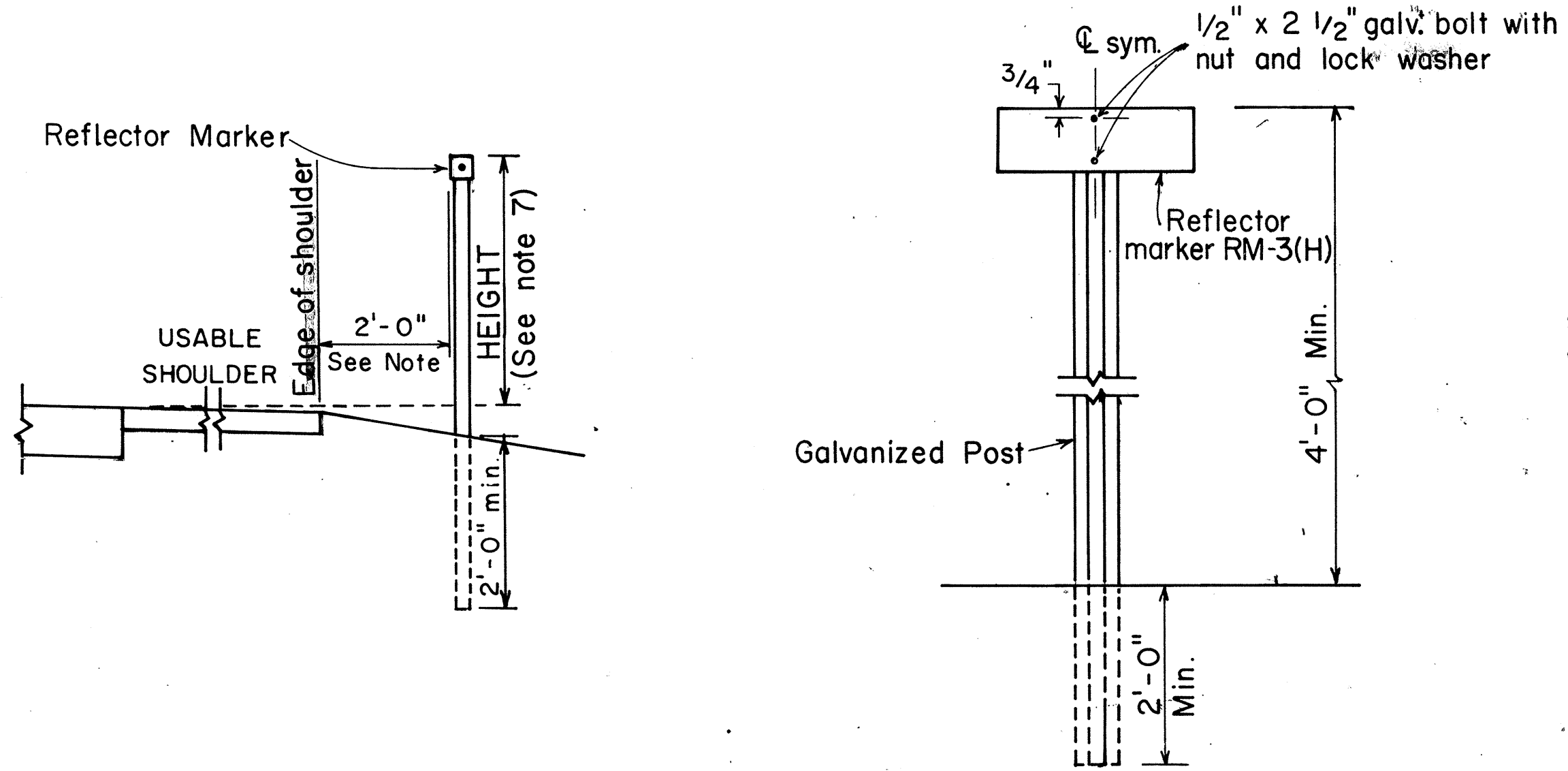
SCALE: AS SHOWN

SHEET NO. 10 OF 17 SHEETS DT 107

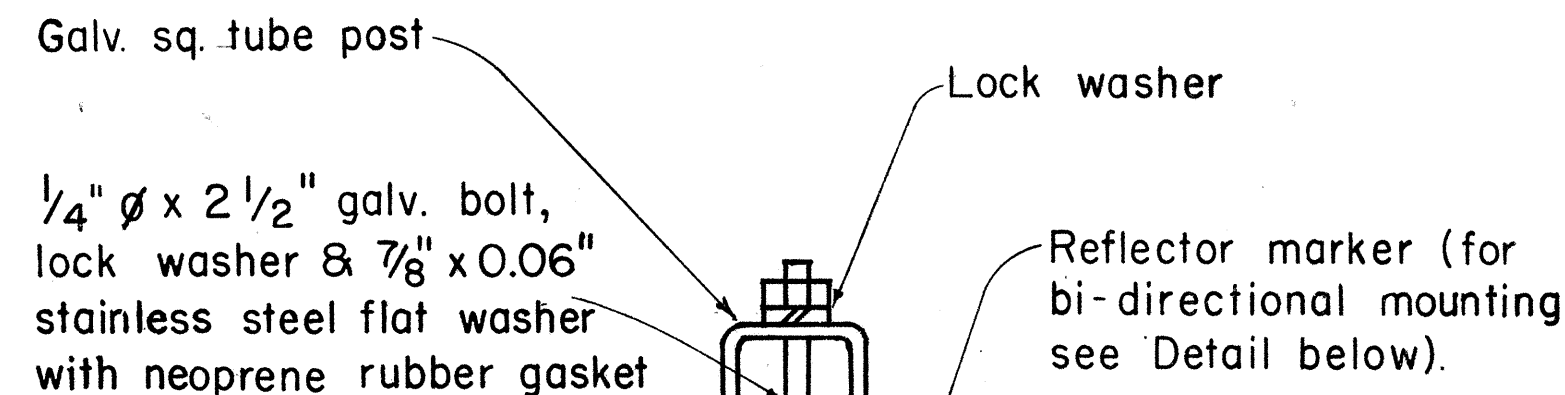
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	25-0460(B)	1985	20	40

**GENERAL NOTES:**

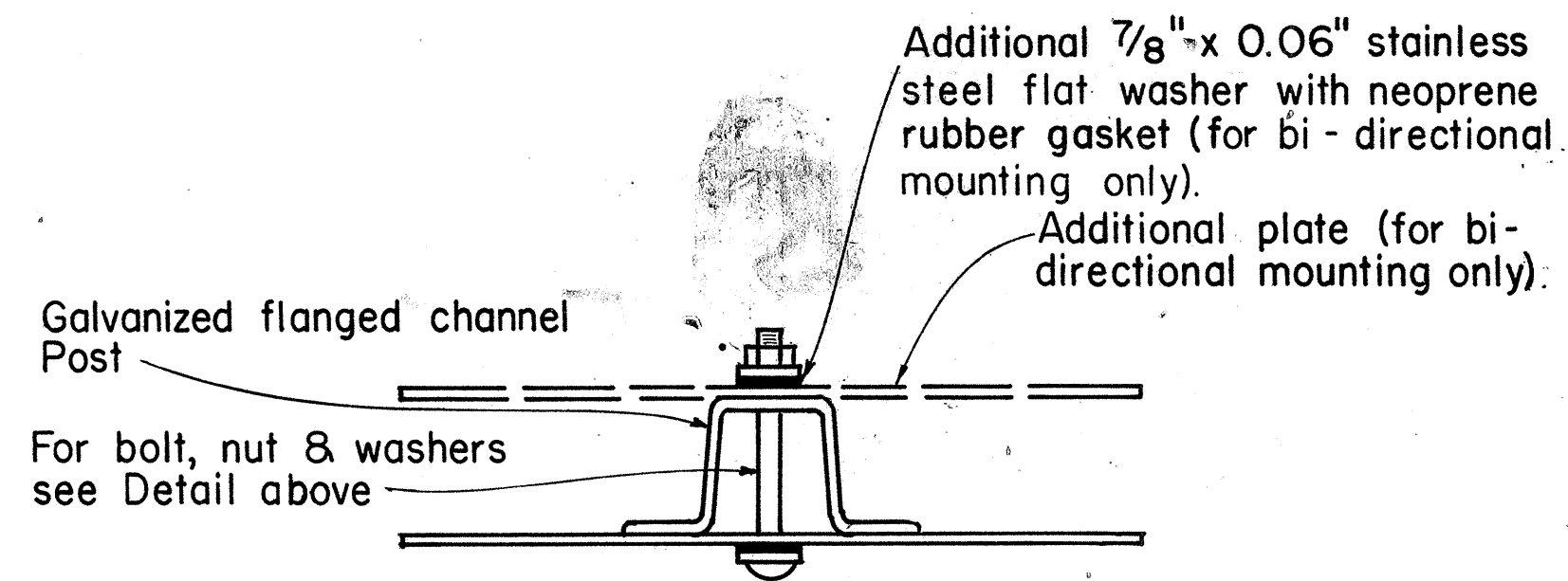
1. Clearance markers (RM-3, RM-4) shall be installed with the edge of the marker in line with the inner edge of the obstruction.
2. (R) or (L) indicates right or left and shall be as shown on the plans.
3. Reflector markers RM-1 and RM-2 shall be:
  - a) Yellow if placed along the left edge of divided roadways, one-way roadways, and ramps in the direction of travel.
  - b) White if placed along the right edge of divided roadways, one-way roadways, and ramps in the direction of travel.
4. For RM-4, the stripes shall slope downward at an angle of 45° toward the side of the obstruction that traffic is to pass.
5. For reflector marker RM-9, reflective sheeting material may be used as an alternate.
6. (H) indicates horizontal mounting of reflector marker.
7. Height = 4'-0" min. for RM-1, RM-2 and RM-3.  
Height = 5'-6" min. for RM-4 and RM-9.
8. Final locations of reflector markers shall be approved by the Engineer.



**REFLECTOR MARKER MOUNTING DETAIL**

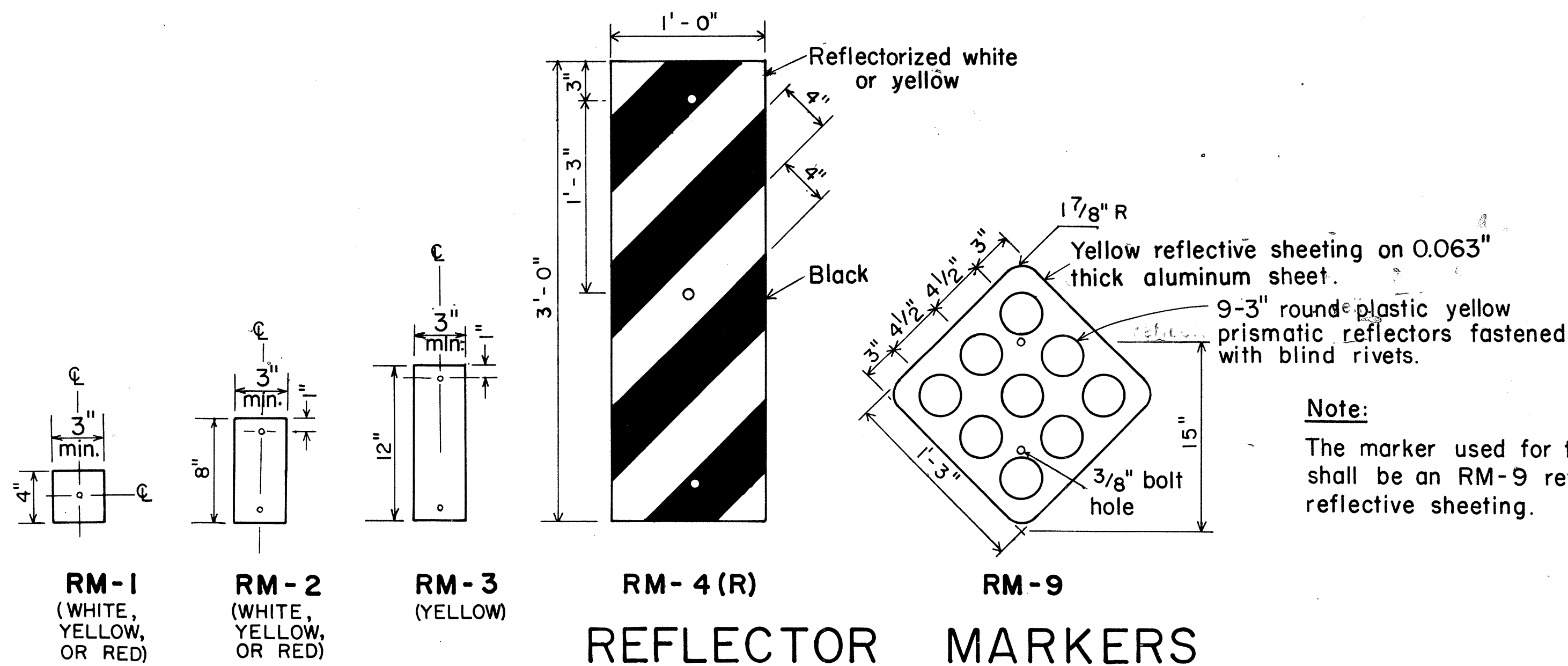


**GALVANIZED SQUARE TUBE POST**



**GALVANIZED FLANGED CHANNEL POST**

**TYPICAL MOUNTING DETAILS**



**REFLECTOR MARKERS**

APPROVAL RECOMMENDED:  
*Erich Tanaka* 11/2/77  
 TRAFFIC ENGINEER DATE

APPROVED:  
*Herbert S. Sakai* 11/15/77  
 ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE
1	Revised Mounting Details	H.T.	4/23/80
2	Revised General Notes, Mounting Details and Reflector Markers.	H.T.	9-28-83

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

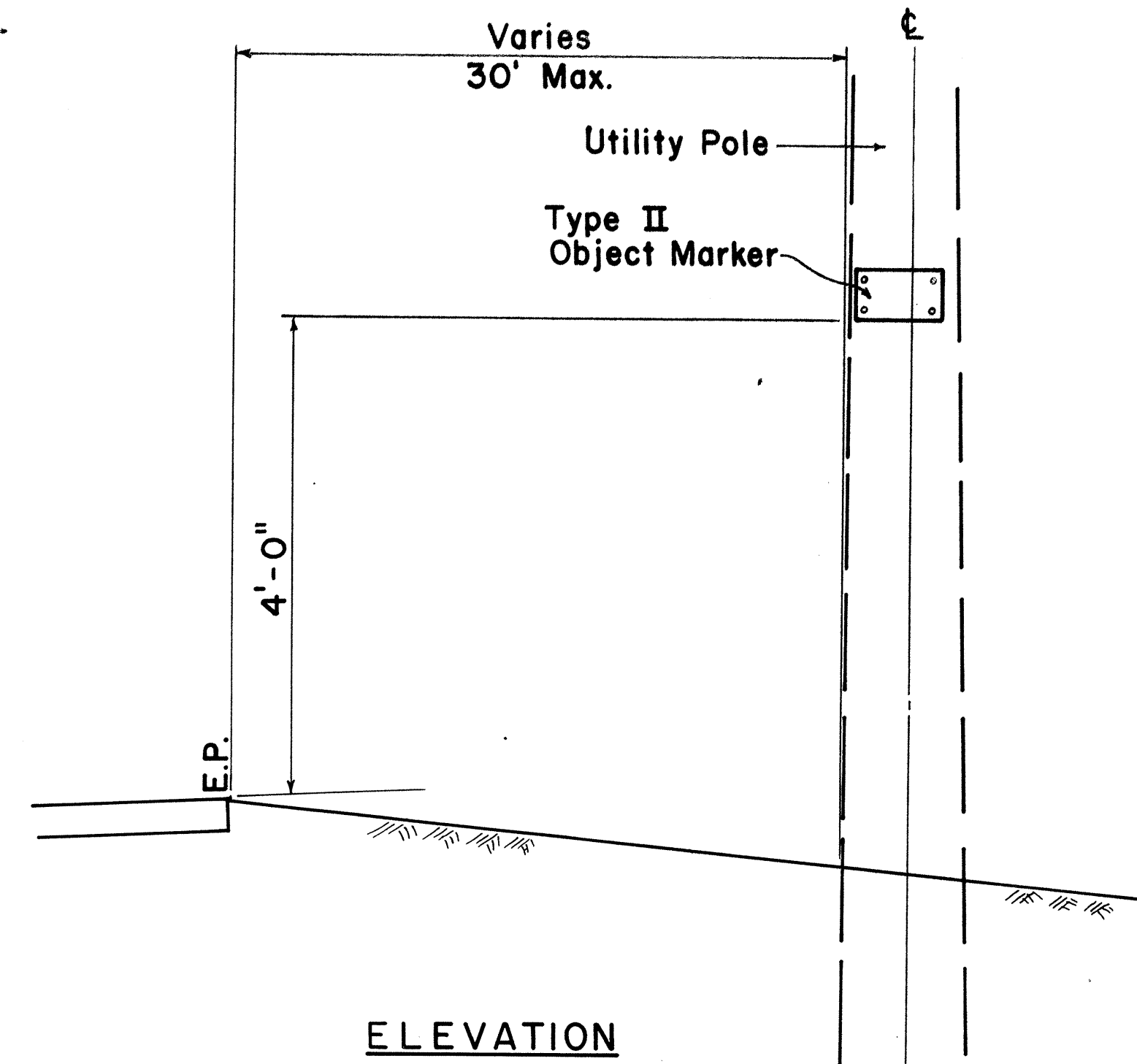
**STANDARD DETAILS**  
 MISCELLANEOUS REFLECTOR MARKERS

Not to scale June, 1977

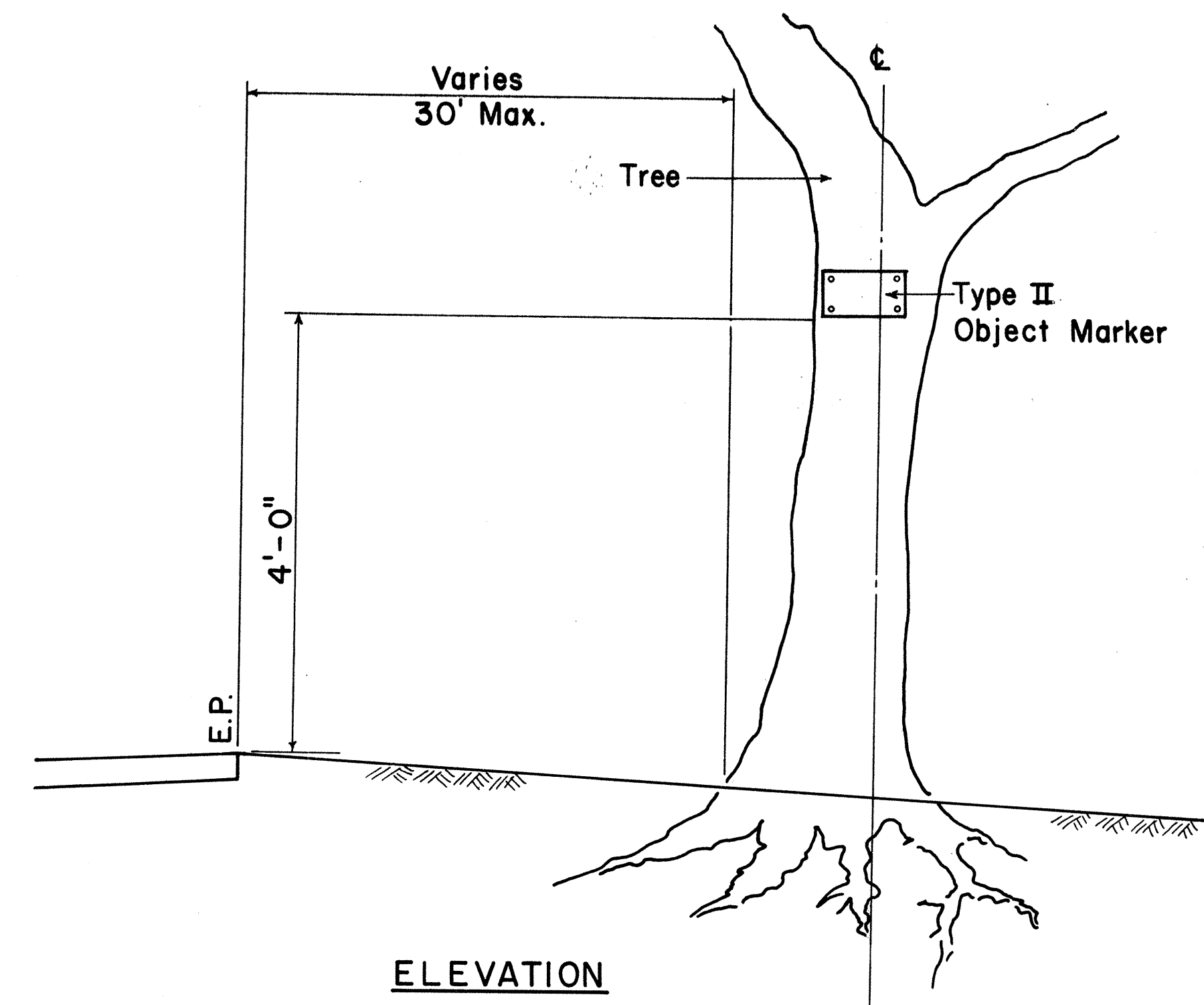
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460(5)	1985	21	46

### GENERAL NOTES

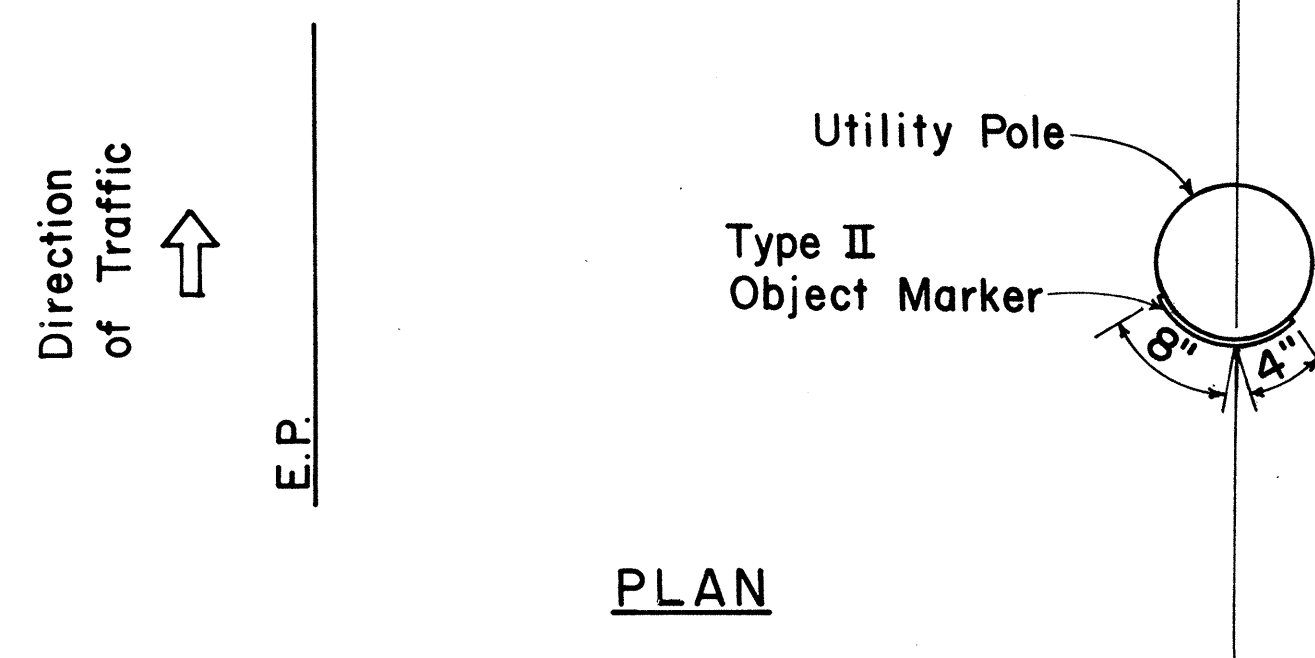
- All objects (utility poles or trees) that are within the State highway right of way and within 30 feet of the roadway edge of pavement shall be marked as directed by the Engineer.
- The Contractor shall prepare the mounting surface of each object as directed by the Engineer and place the Type II Object Marker as shown on this plan.
- Type II Object Markers shall be mounted on utility poles and trees with 1 3/4" galv. roofing nails (4 ea.).
- 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).
- Type II Object Markers for utility poles and trees, etc., shall be made of amber reflective sheeting material overlaid on 0.020" aluminum sheeting.
- 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:
  - It shall consist of amber reflective sheeting material overlaid on 0.063" thick sheet aluminum backing of the dimensions shown on the plans.
  - It shall be mounted on either metal posts or flexible delineator posts with 1/4" x 2" galv. bolts, nuts and washers. Metal posts shall be galvanized and shall be either 1 1/2" x 1 1/2", 12 gage square tube posts or 1.12 lbs. per ft. flanged channel posts.



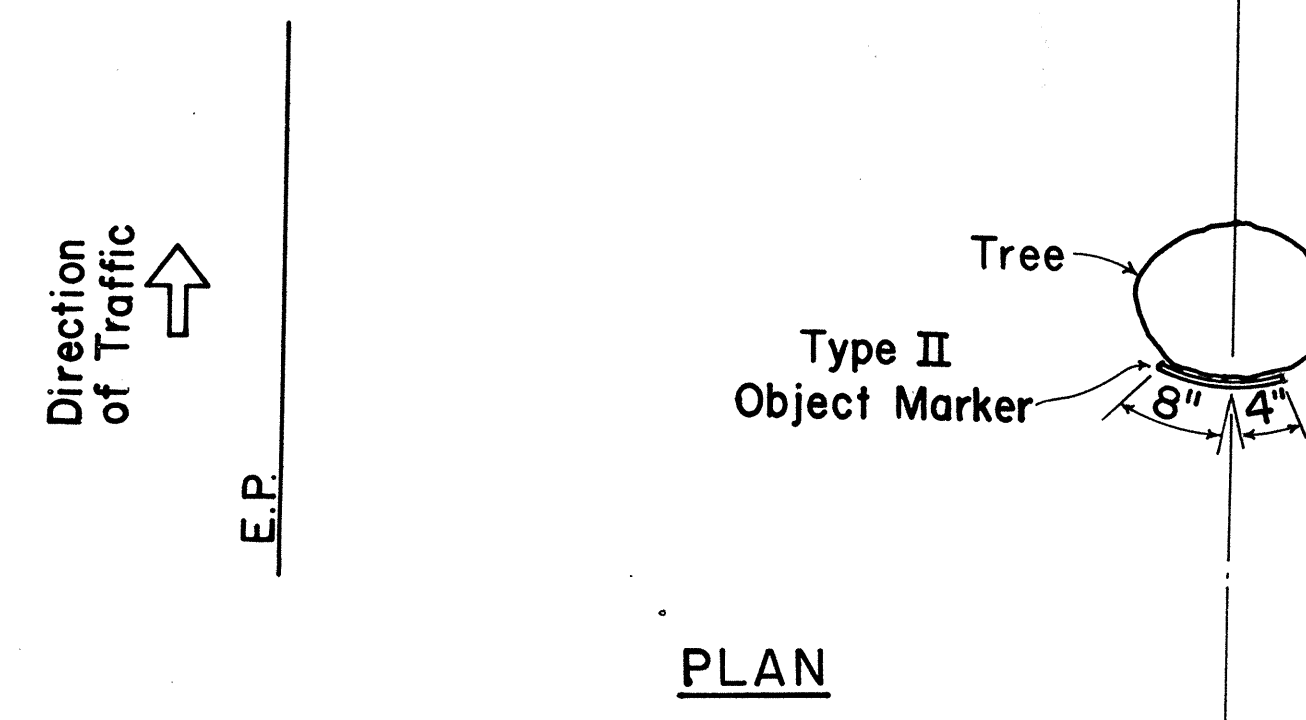
ELEVATION



ELEVATION

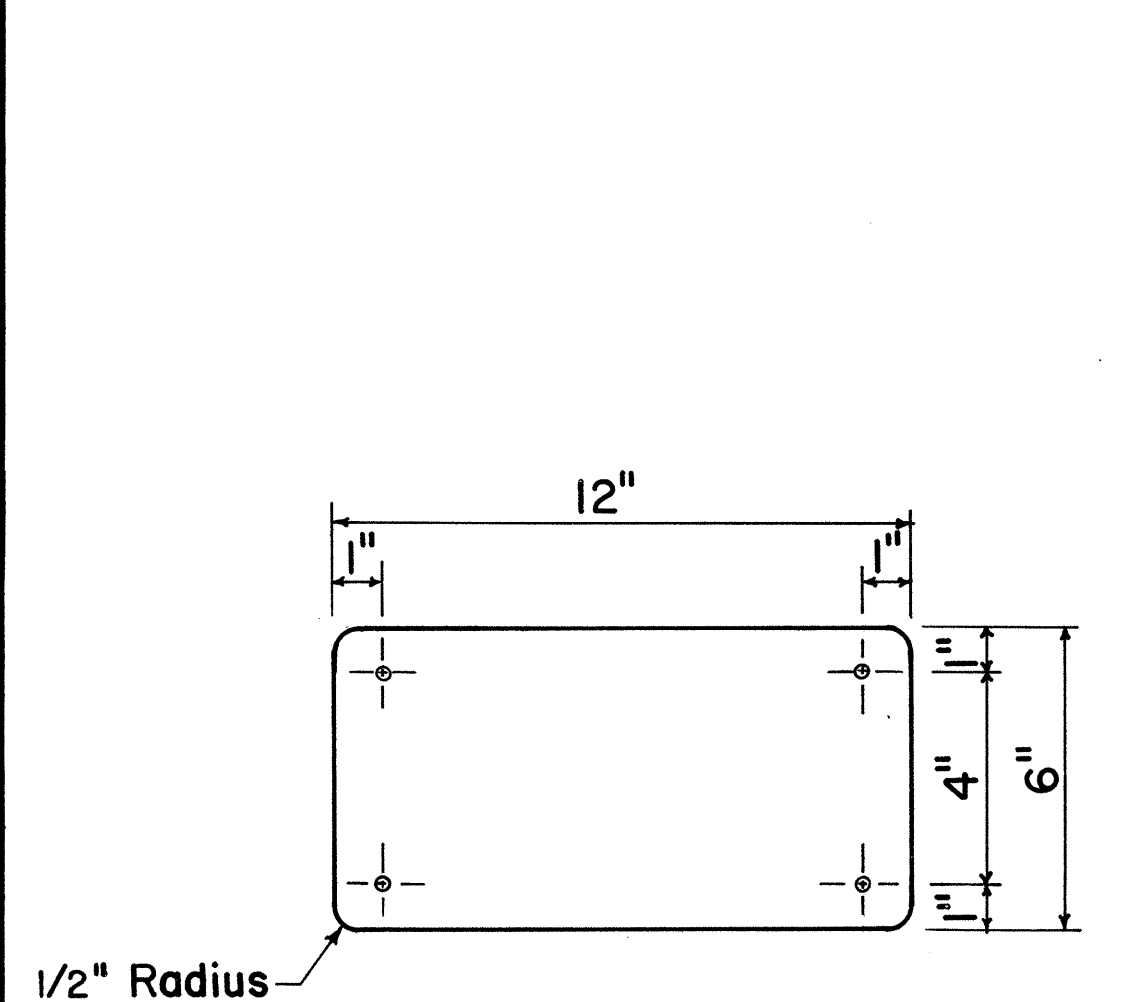


PLAN

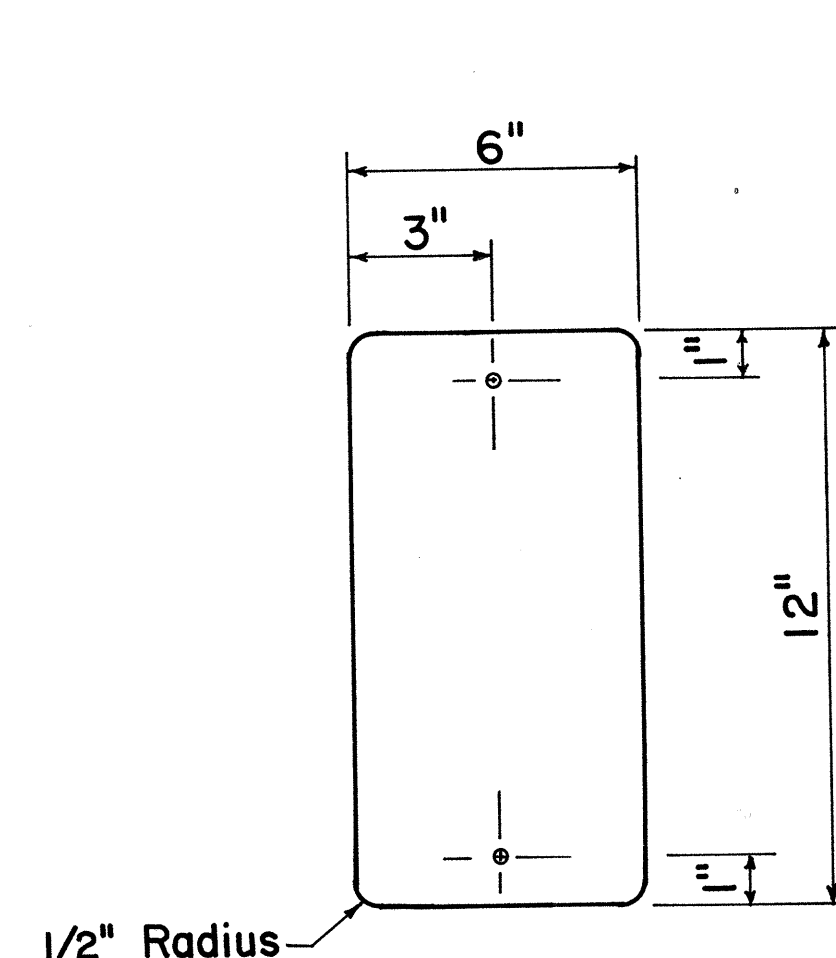


PLAN

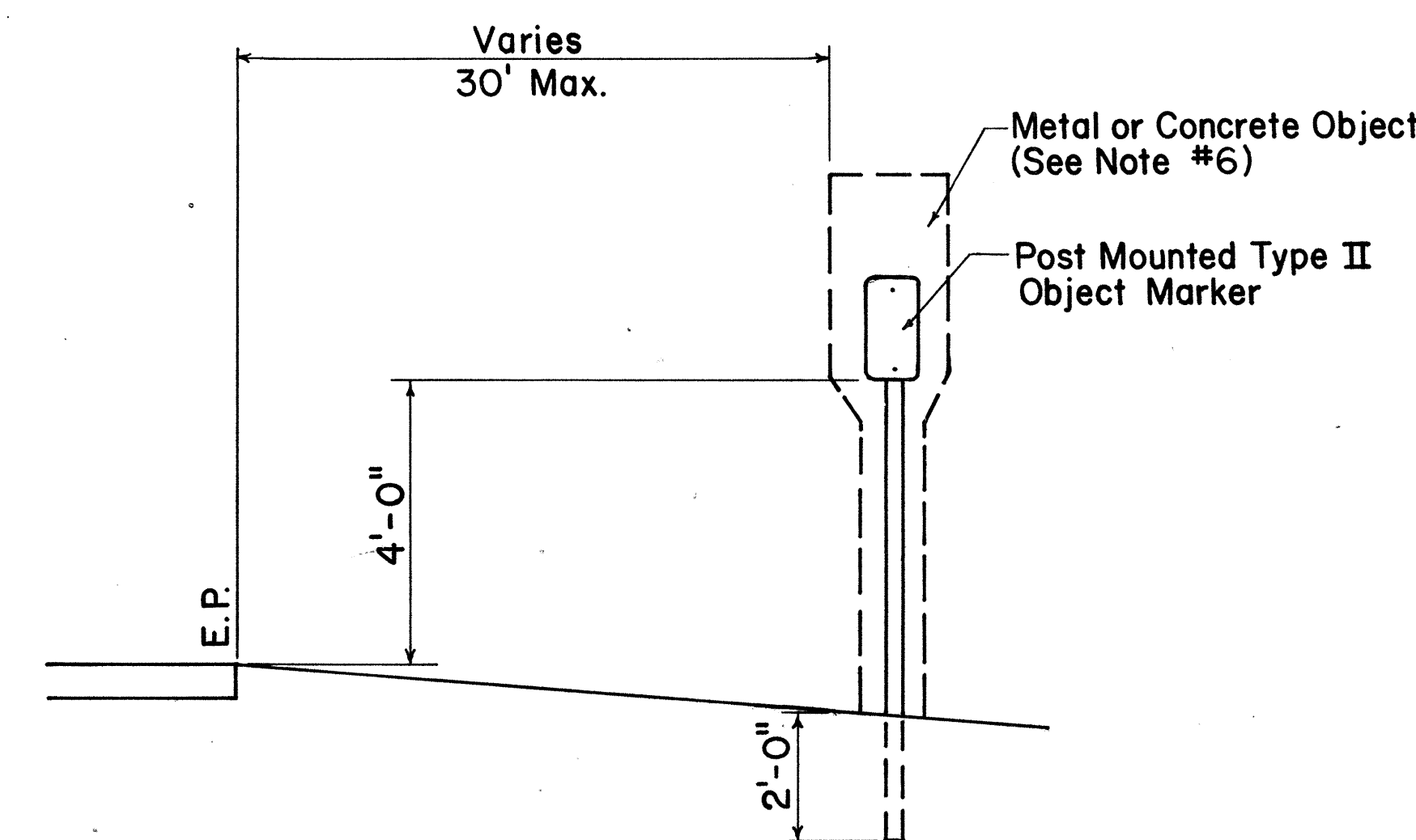
### TYPICAL TYPE II OBJECT MARKER MOUNTING DETAIL



TYPE II OBJECT MARKER



TYPE II OBJECT MARKER  
POST MOUNTED



POST MOUNTED TYPE II OBJECT MARKER DETAIL

APPROVAL RECOMMENDED:

*Eishi Tanaka* 3/30/83  
TRAFFIC ENGINEER DATE

APPROVED:

*J. 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

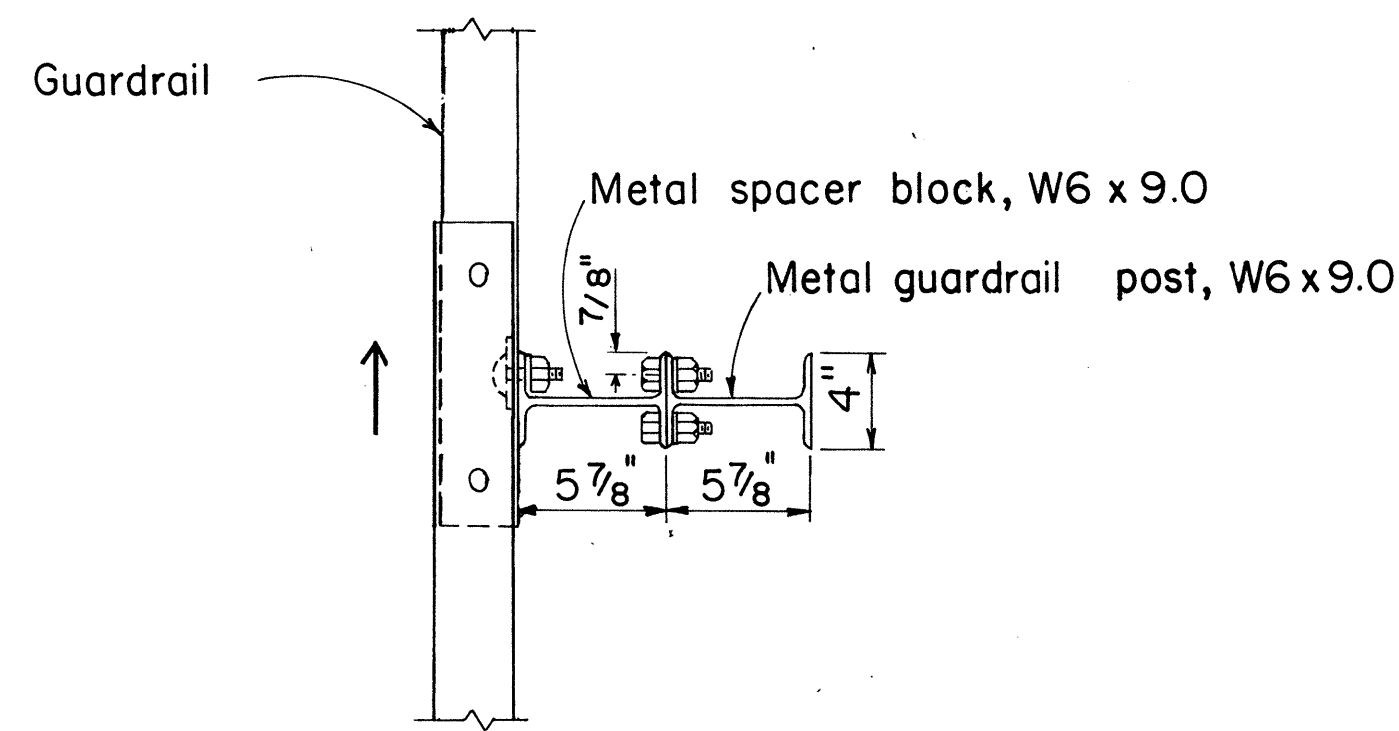
Scale: Not to scale Date: March 1983  
SHEET NO. 12 OF 17 SHEETS DT III

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
DESIGNED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

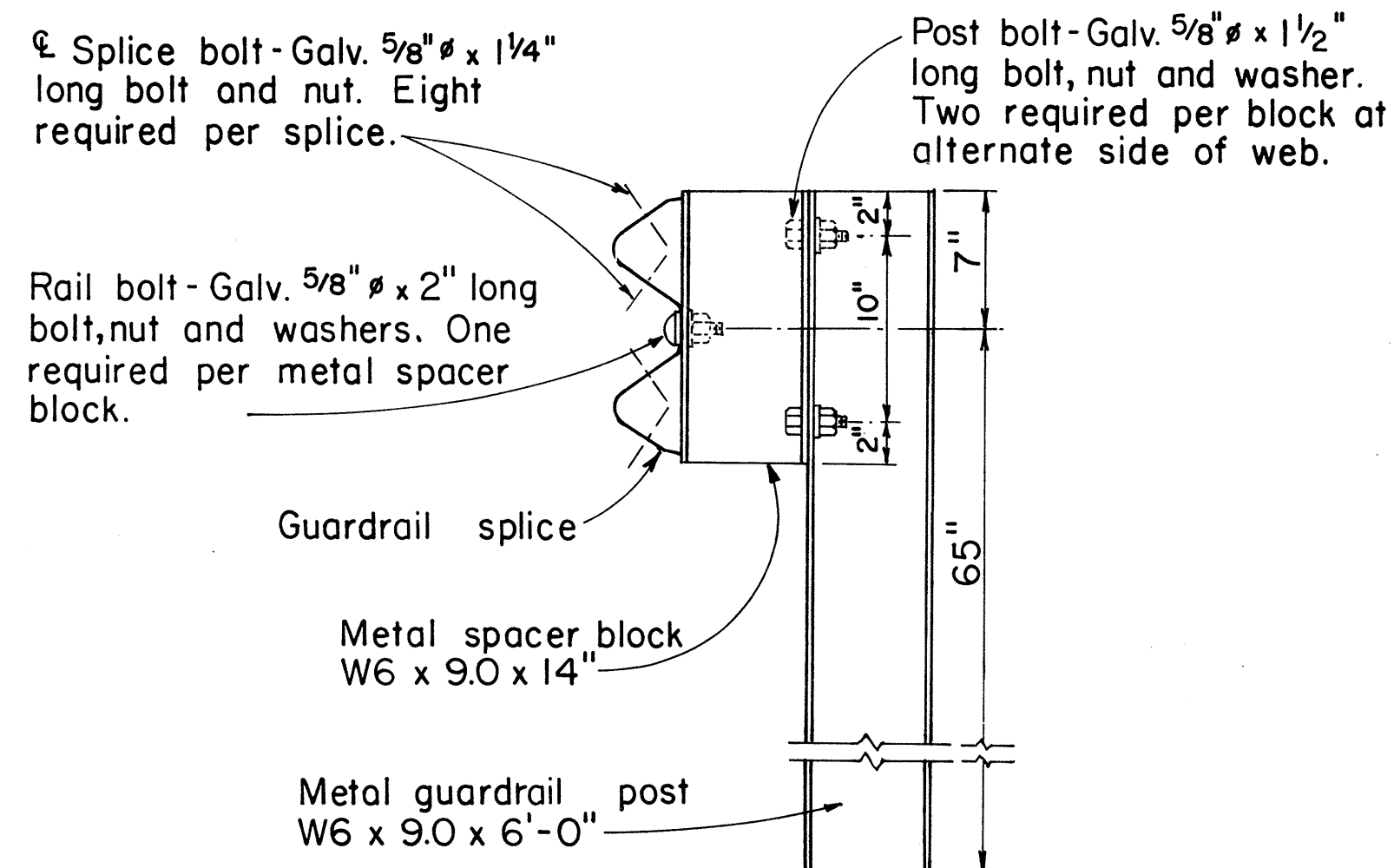
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460 (5)	1985	22	46

**GENERAL NOTES**

- Both of the alternate type posts may be used on any one project however, only one type of post shall be used in any single run of guardrail.
- All hardware, posts and blocks shall be galvanized. No punching, drilling or cutting will be permitted after galvanizing.
- Connection details for bent plate post and block shall be similar to the details shown for structural shape post, and block.
- Where conditions require, special post lengths in increments of 6 inches may be specified.
- For details of rail elements, bolts and nuts, see sheet DT 501.
- All fasteners, posts, blocks and rail elements shall conform to the latest edition and amendments of "A Guide to Standardized Highway Barrier Rail Hardware", a report prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee.



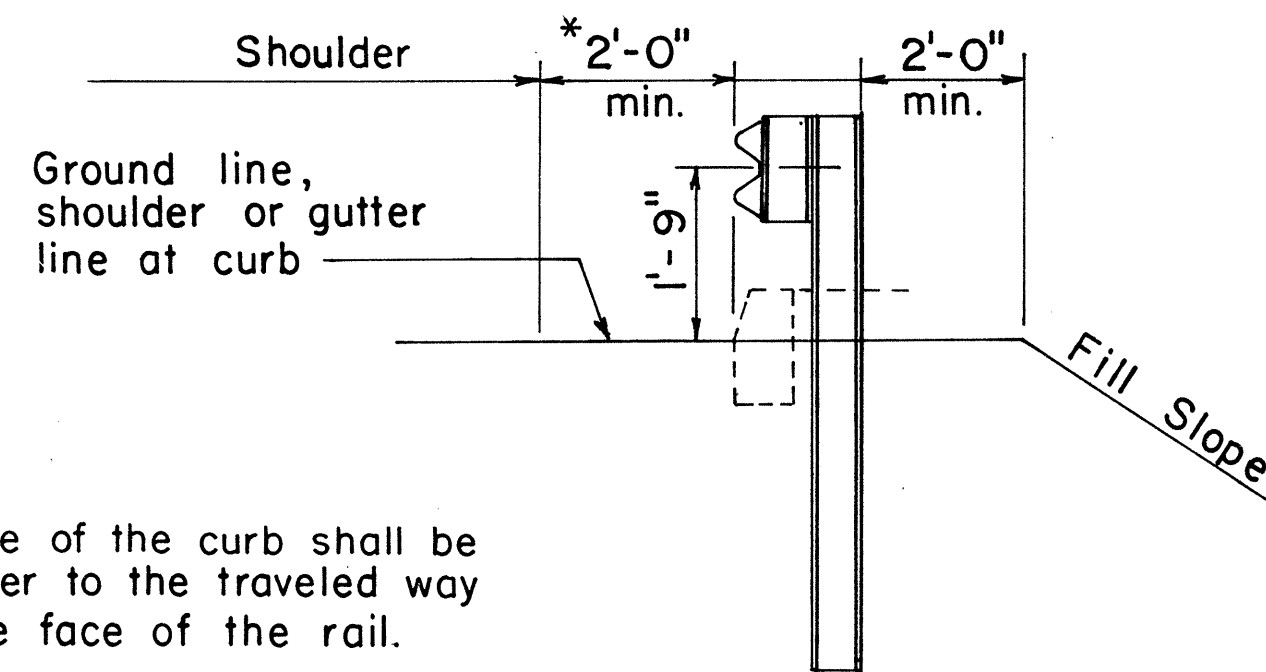
PLAN



ELEVATION

**SINGLE METAL GUARDRAIL ON METAL POST WITH METAL SPACER BLOCK**

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

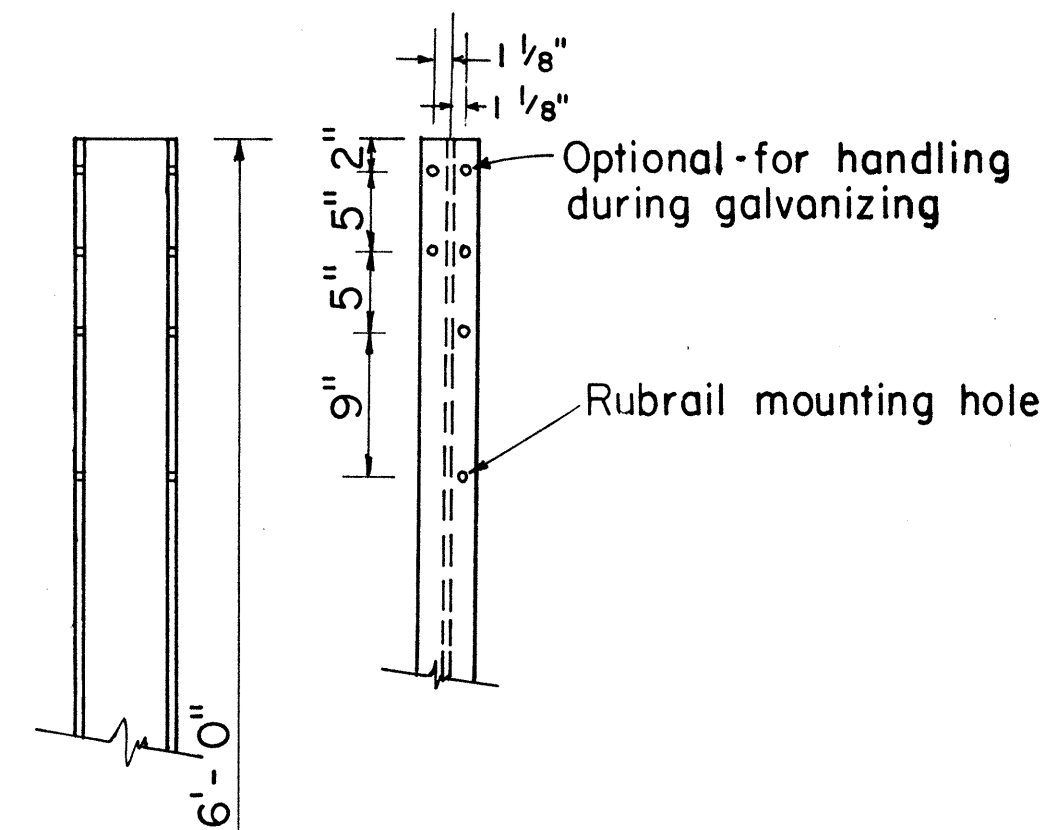


AT SHOULDER SECTION

**TYPICAL METAL GUARDRAIL DETAIL**

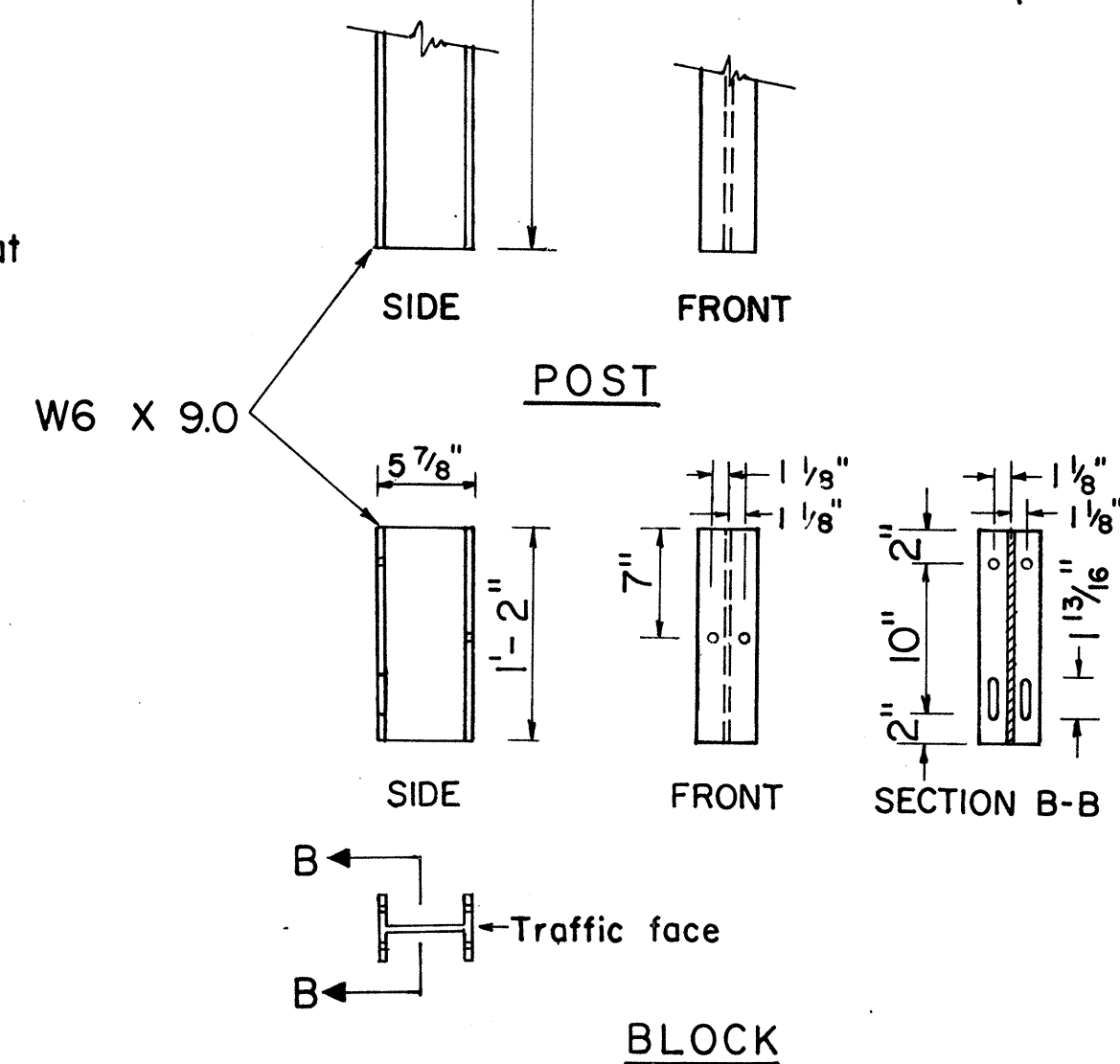
SCALE: 1/2" = 1'-0"

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



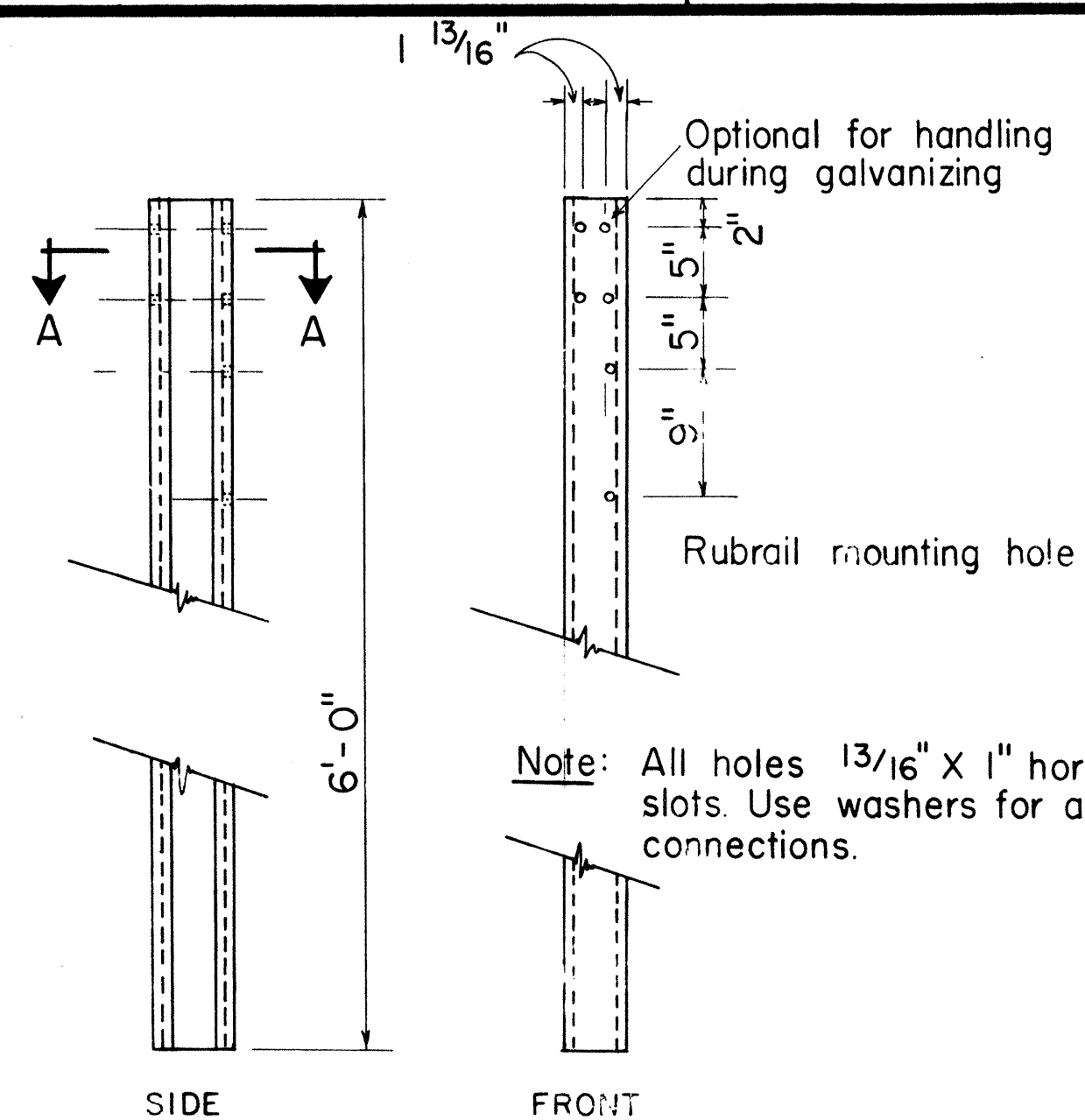
**NOTE:**

All holes 13/16"  $\phi$ . Bolt hole pattern is symmetrical with respect to the vertical axis of the post.

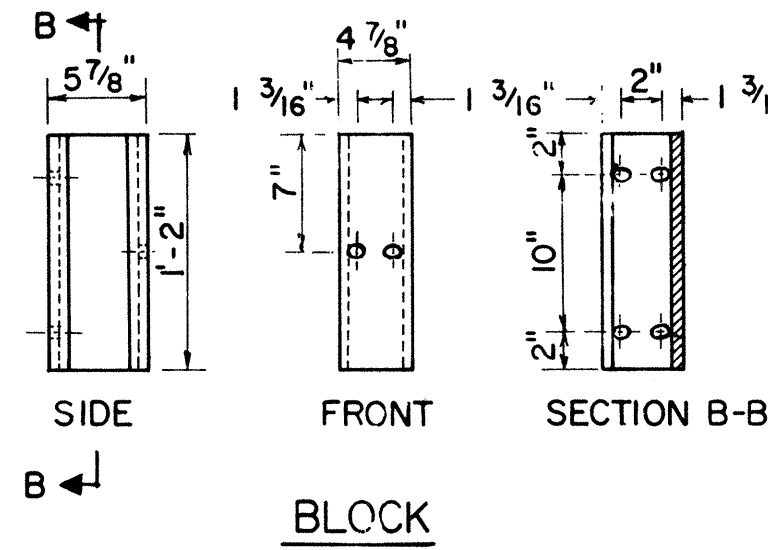


**STRUCTURAL SHAPE POST AND BLOCK**

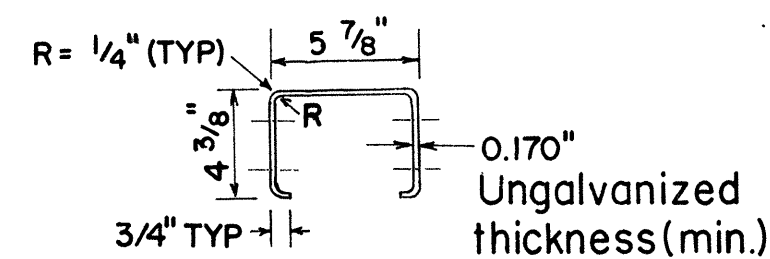
SCALE: 1" = 1'-0"



Note: All holes 13/16" x 1" horiz. slots. Use washers for all connections.



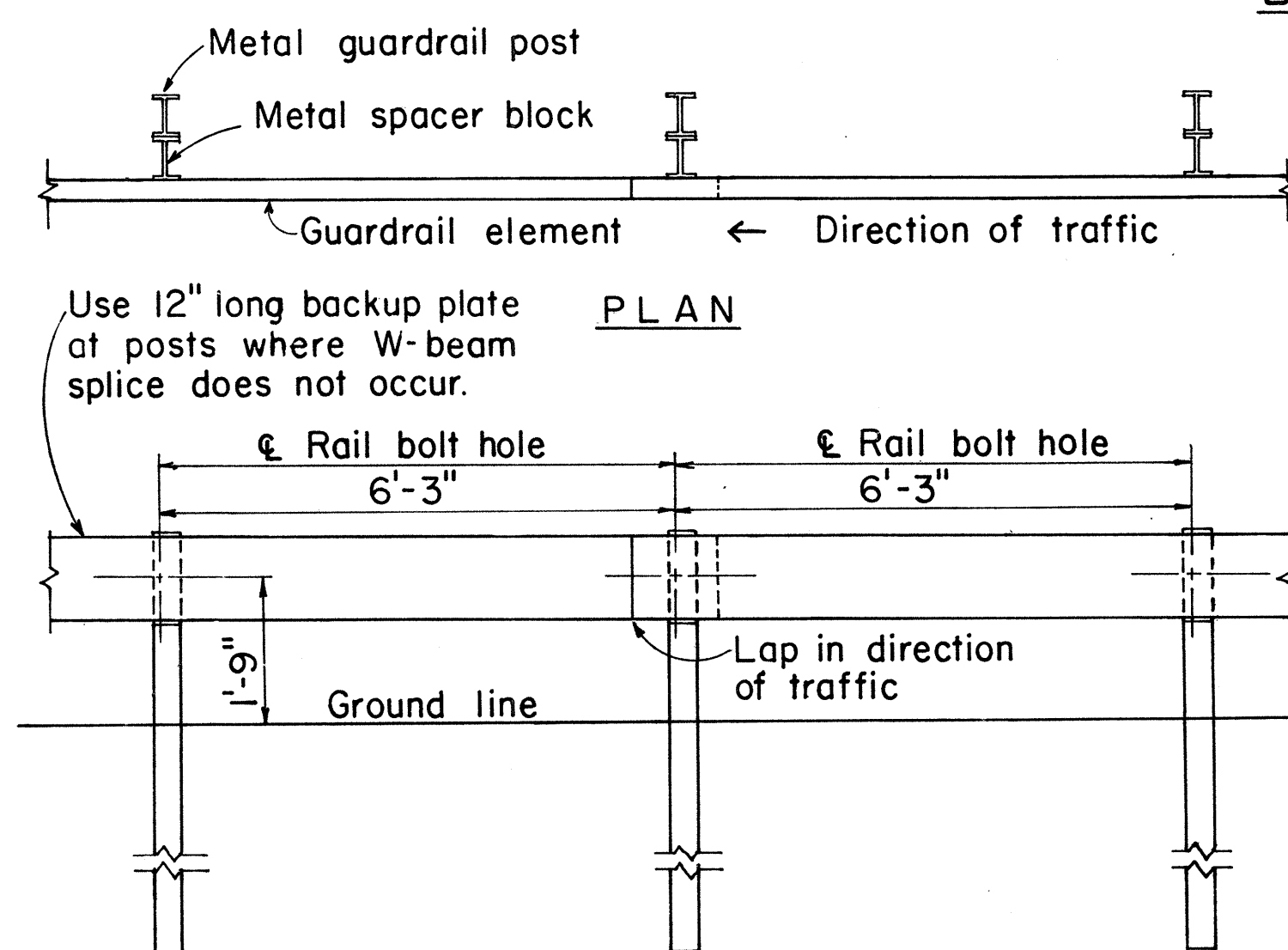
BLOCK



SECTION A-A  
N.T.S.

**BENT PLATE POST AND BLOCK**

SCALE: 1" = 1'-0"



ELEVATION

**METAL GUARDRAIL ON METAL POST WITH METAL SPACER BLOCK**

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

APPROVAL RECOMMENDED:  
*Erich Tanaka* 9/1/82  
TRAFFIC ENGINEER DATE

APPROVED:  
*Robert P. Sisk* 9/22/82  
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE
1	Supersedes sht. DT 500 approved 12/30/69.	H.P.	9/22/82
2	Added General Notes No. 6	SD	9-28-83

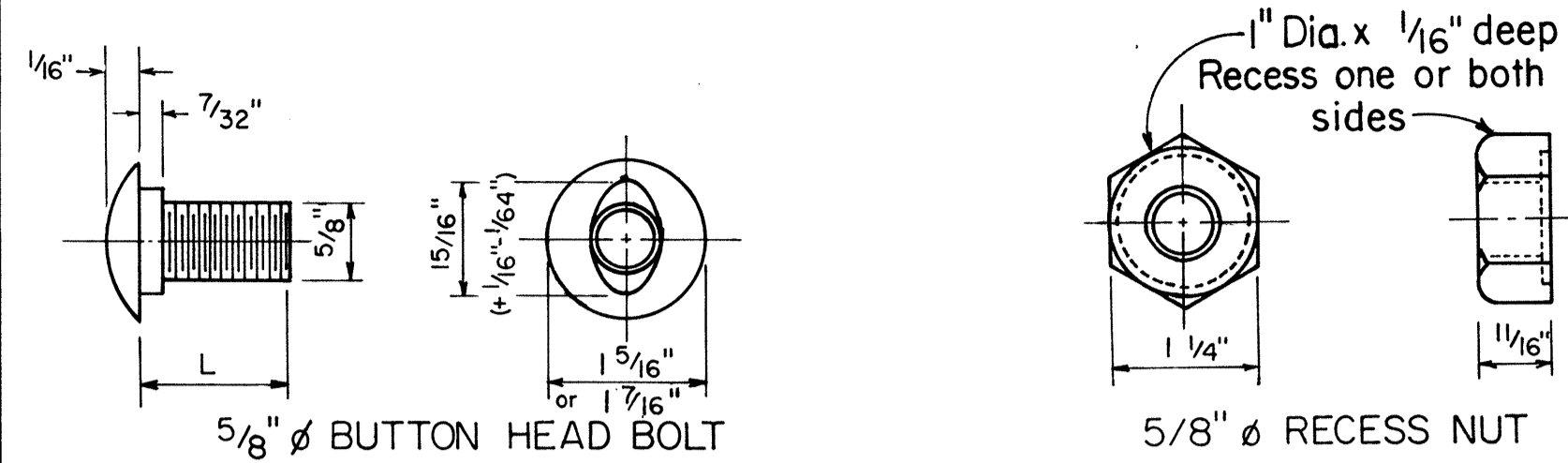
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**STANDARD DETAILS**  
**METAL GUARDRAIL**

Scale: As Shown July, 1982  
SHEET No. 13 OF 17 SHEETS DT 500

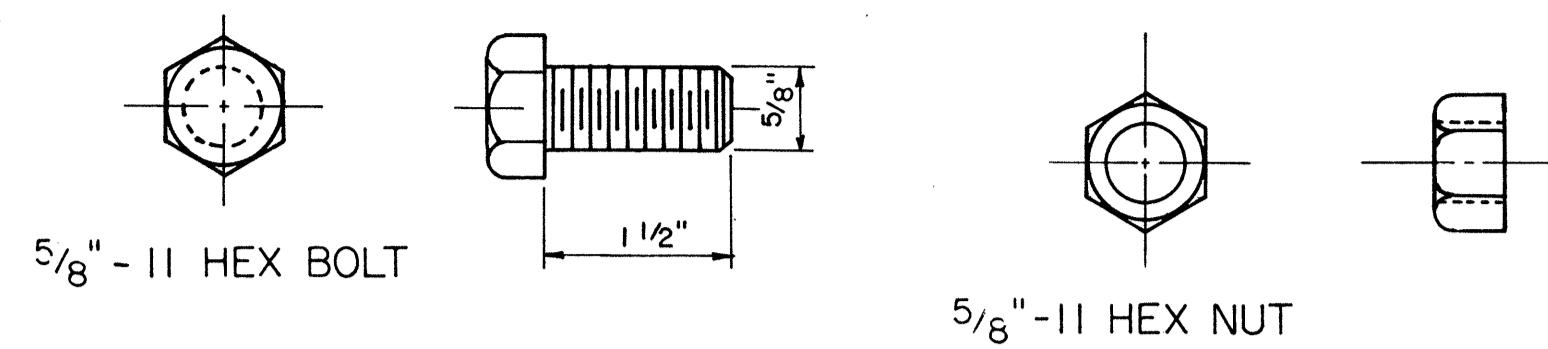
DATE: \_\_\_\_\_  
SURVEY PLOTTED BY: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_  
TRACED BY: \_\_\_\_\_  
DESIGNED BY: \_\_\_\_\_  
NOTE BOOK NO. \_\_\_\_\_  
QUANTITIES BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	R5-0460(5)	1985	23	46

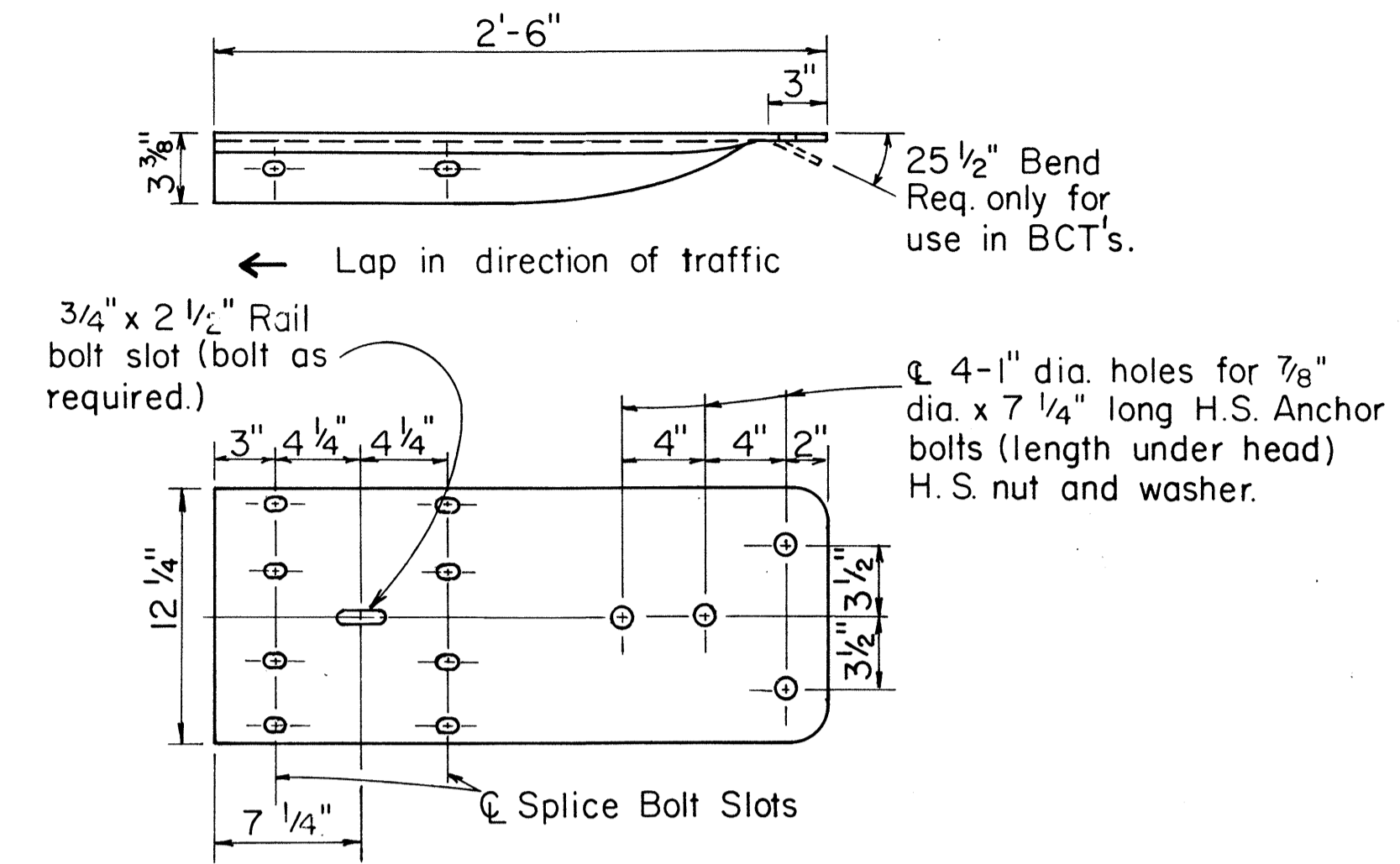


L	Thread Length	Intended Use
1 1/4"	Full length thread	Splice rail elements
2"	1 1/2" min. thread len.	Fasten rails to posts

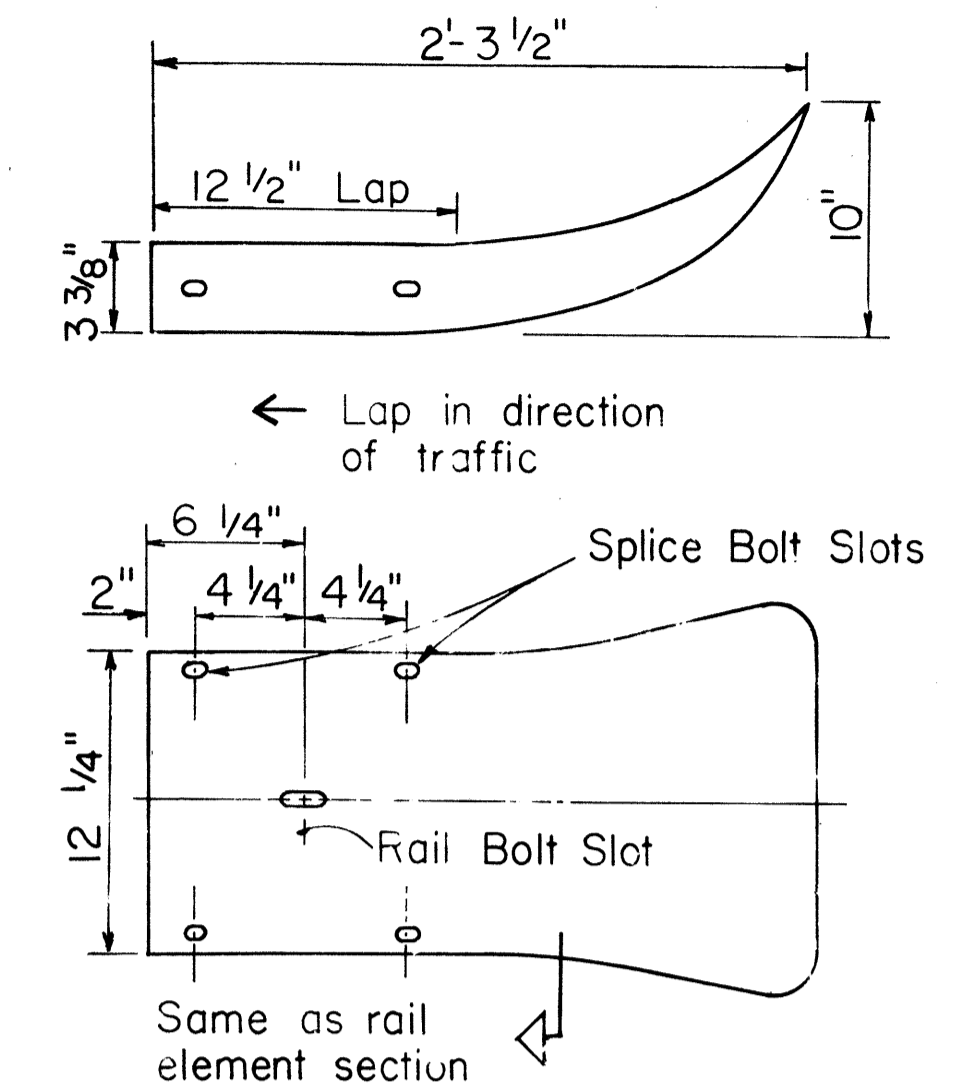
**5/8" BUTTON HEAD BOLT AND RECESS NUT**  
Scale: NTS



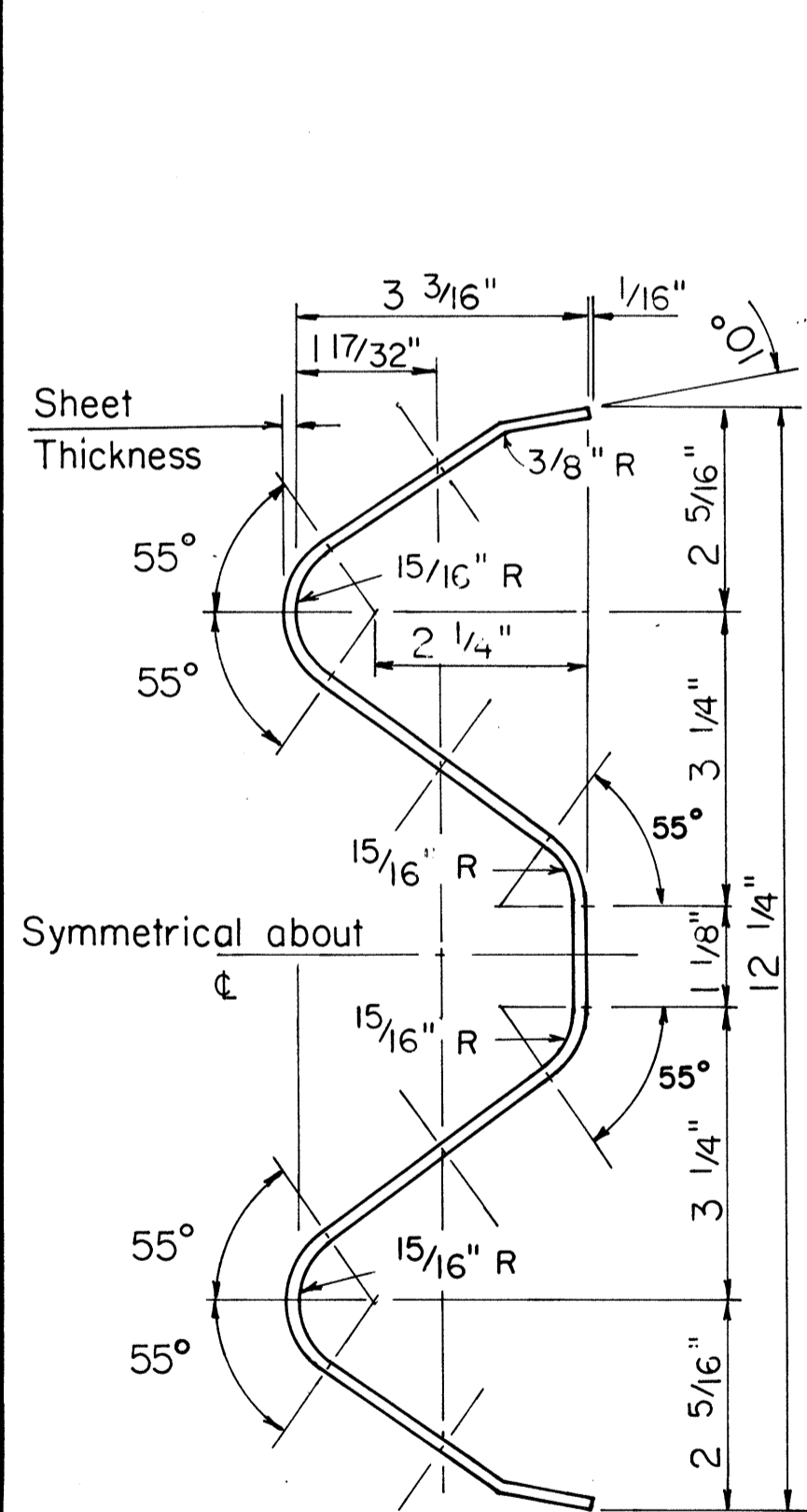
**5/8" HEX POST BOLT AND NUT**  
Scale: N.T.S.



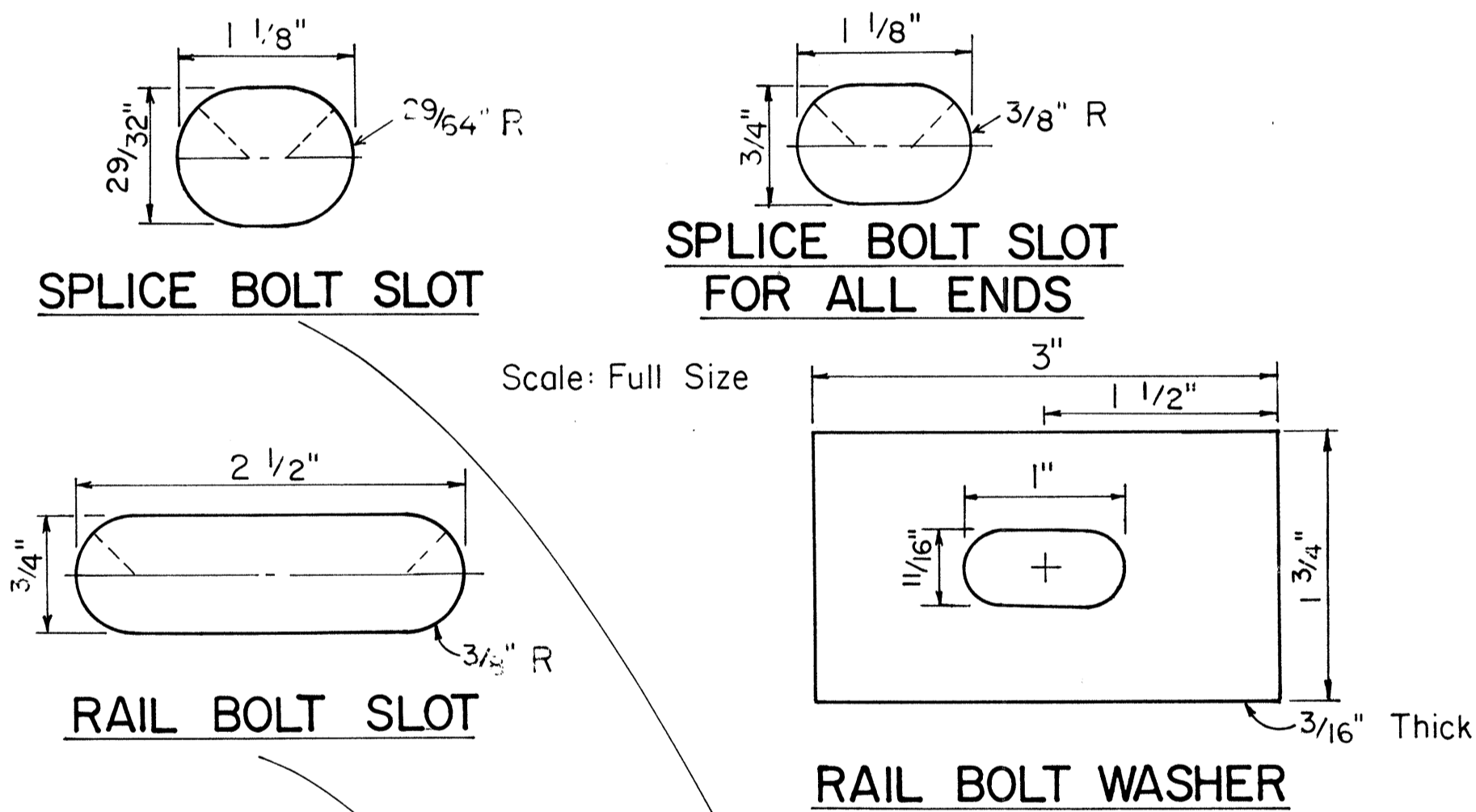
**W BEAM TERMINAL CONNECTOR**  
Scale: 1 1/2" = 1'-0"



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



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

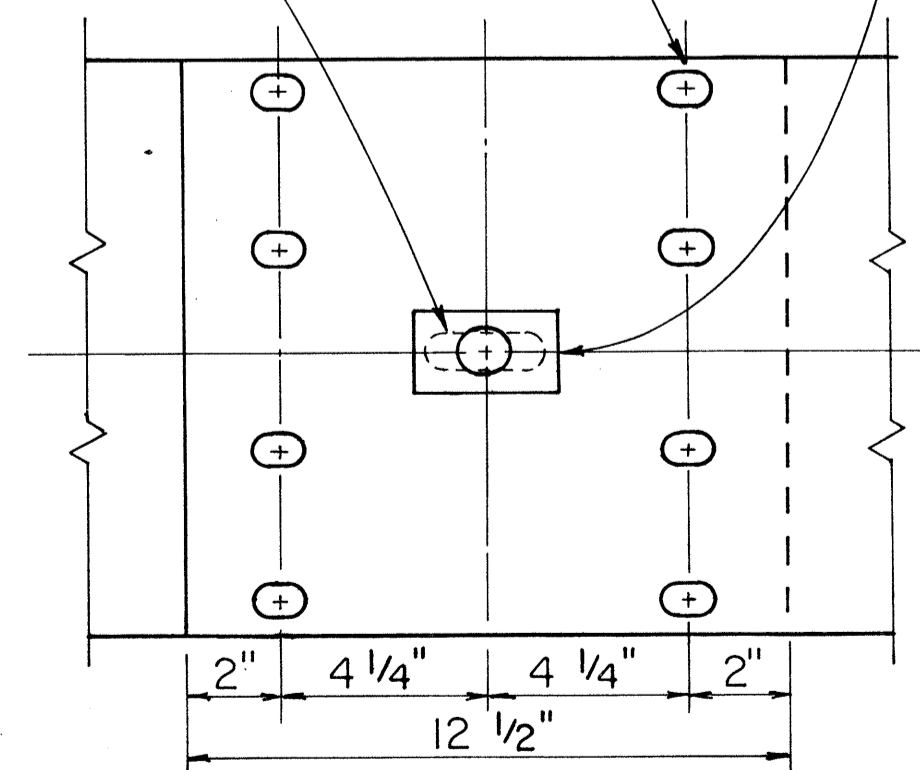


**SPLICE BOLT SLOT**

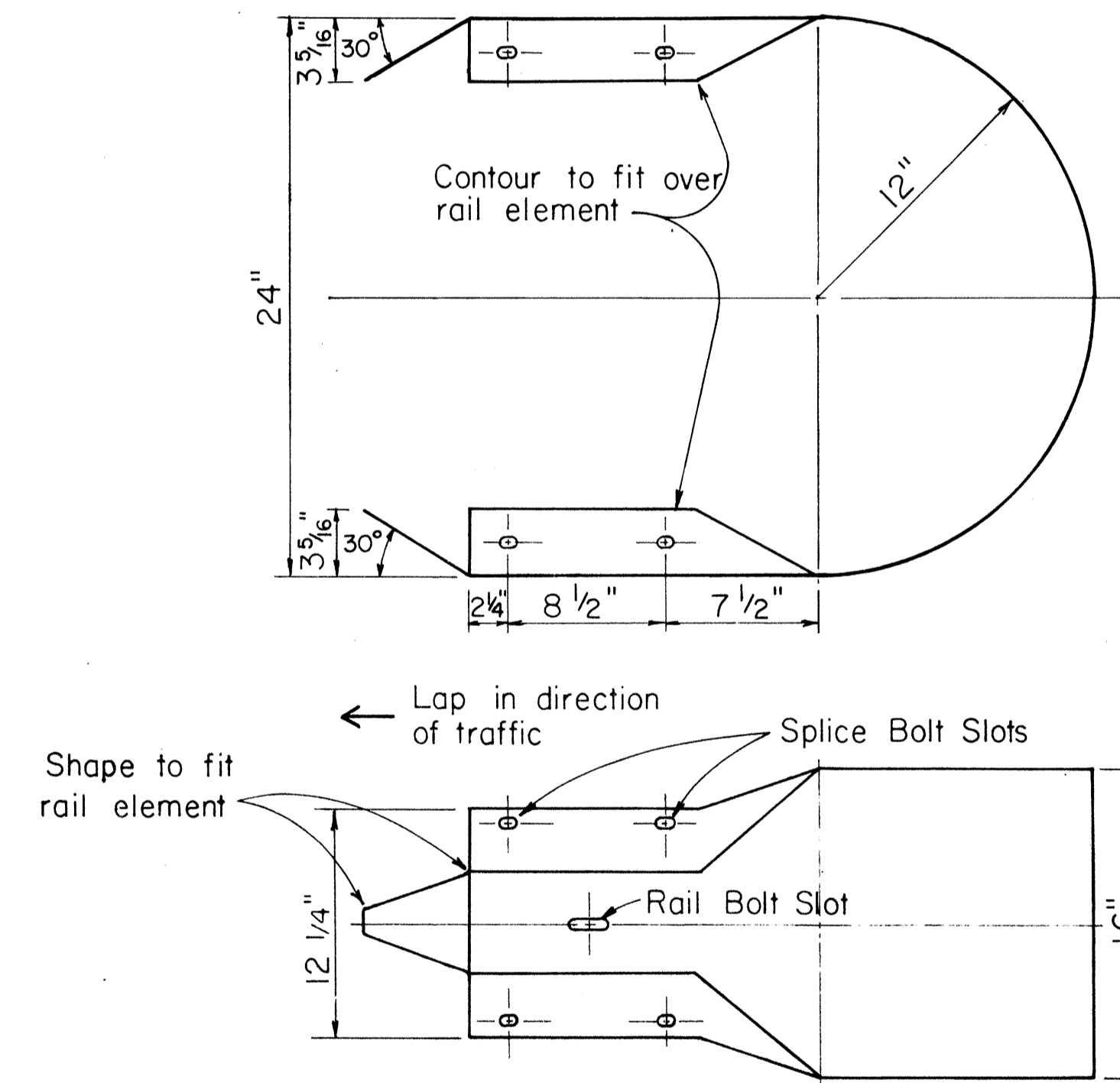
**SPLICE BOLT SLOT FOR ALL ENDS**

**RAIL BOLT SLOT**

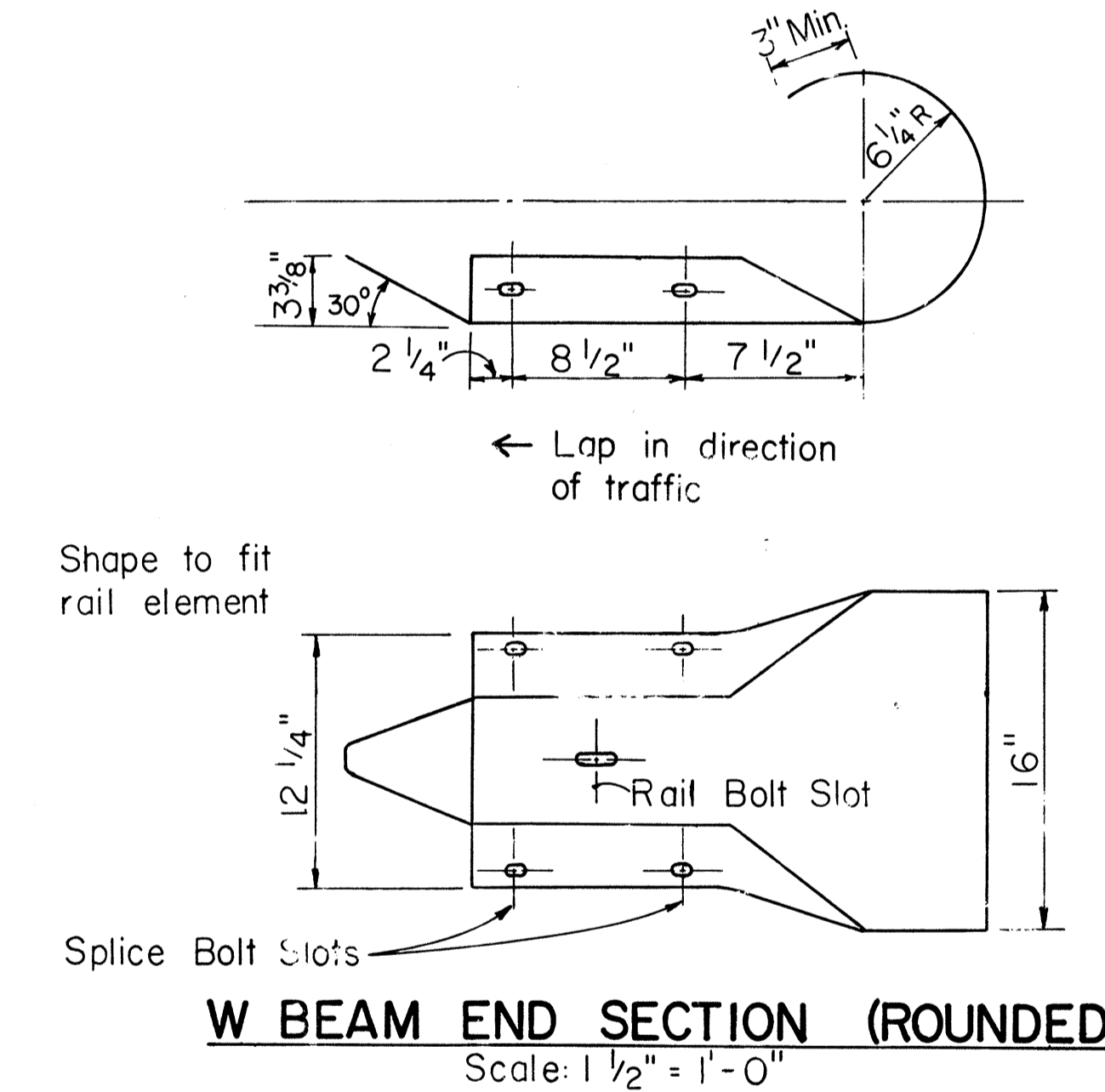
**RAIL BOLT WASHER**



**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:  
*Eichi Tanaka* 9/20/82  
TRAFFIC ENGINEER DATE

APPROVED:  
*Shiroh Sato* 9/22/82  
ASSISTANT CHIEF, ENGINEERING 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

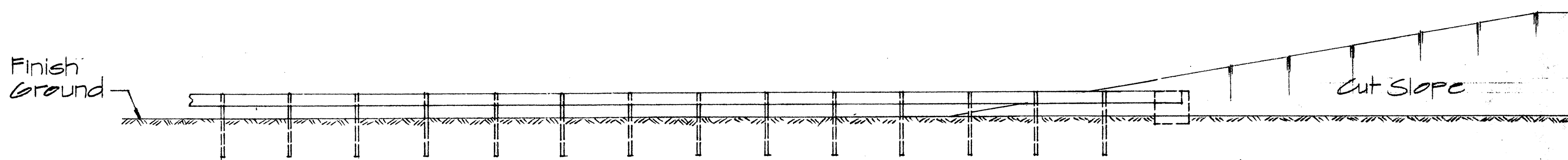
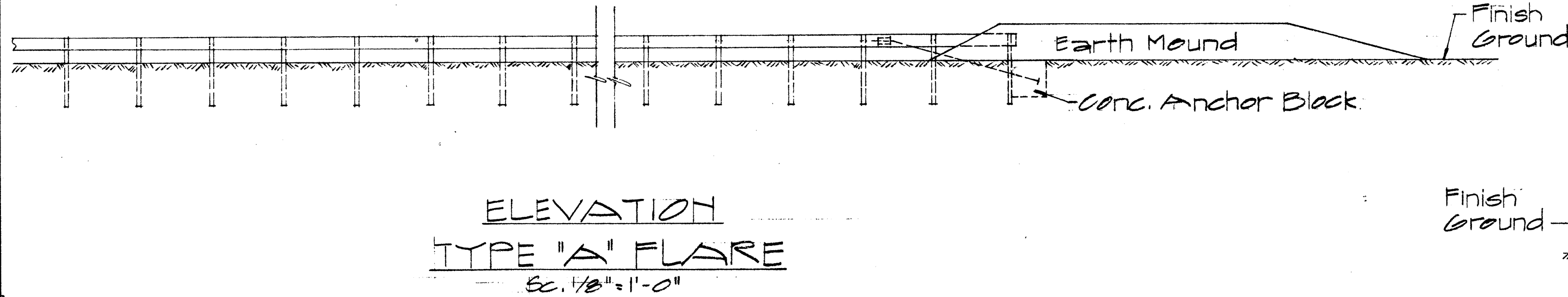
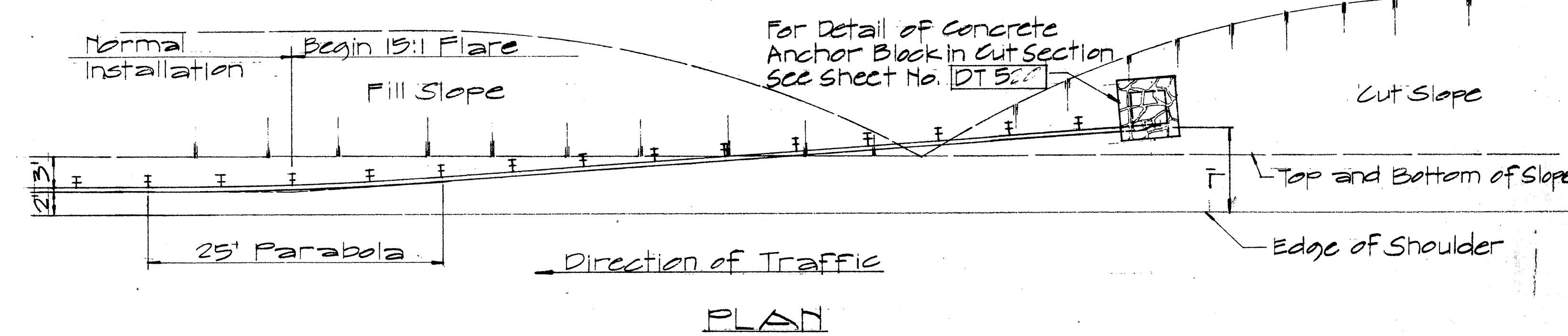
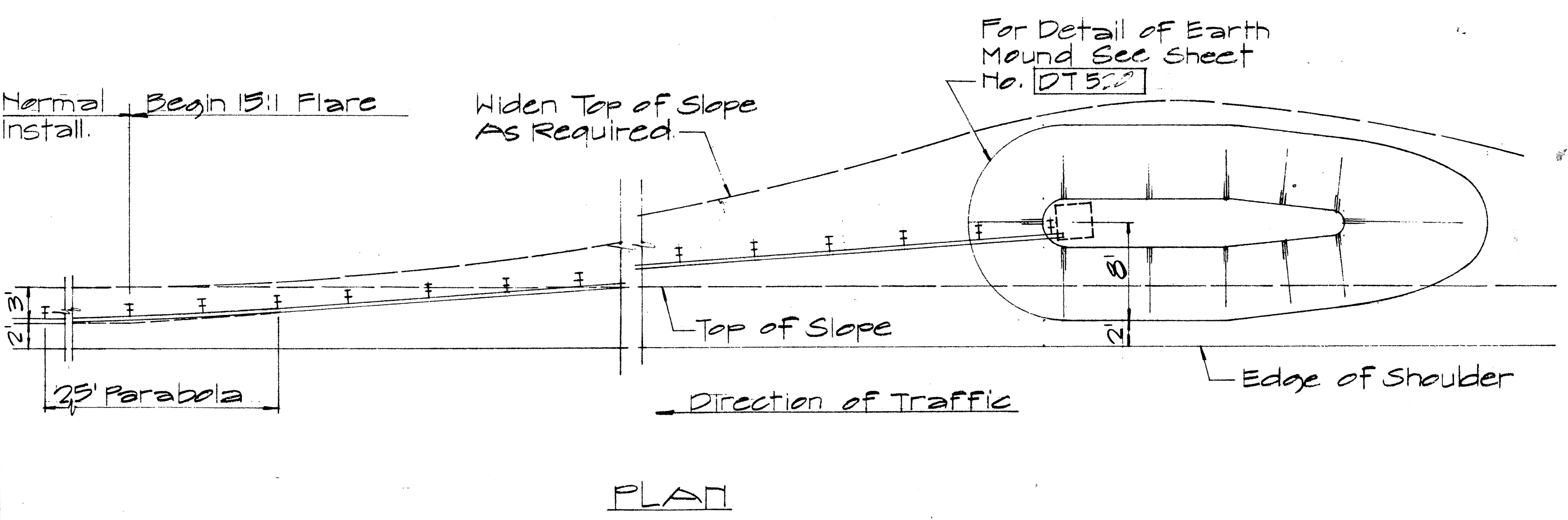
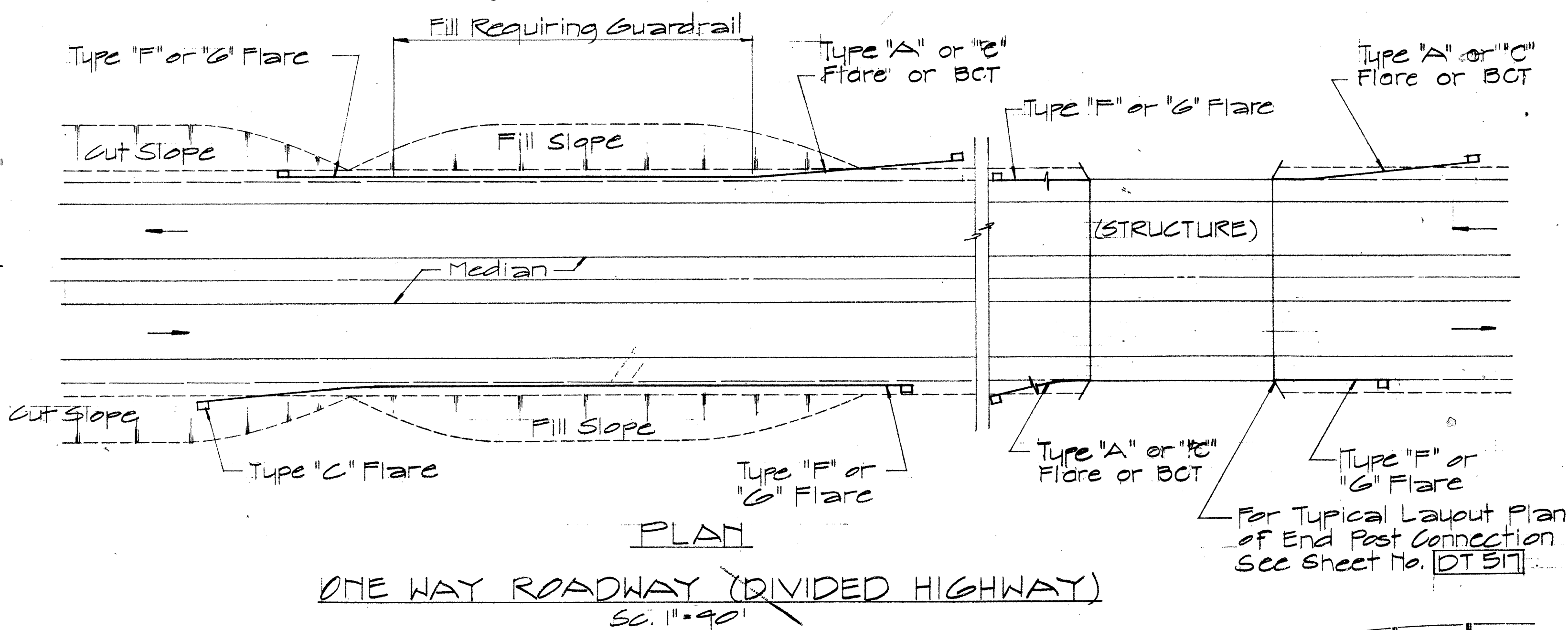
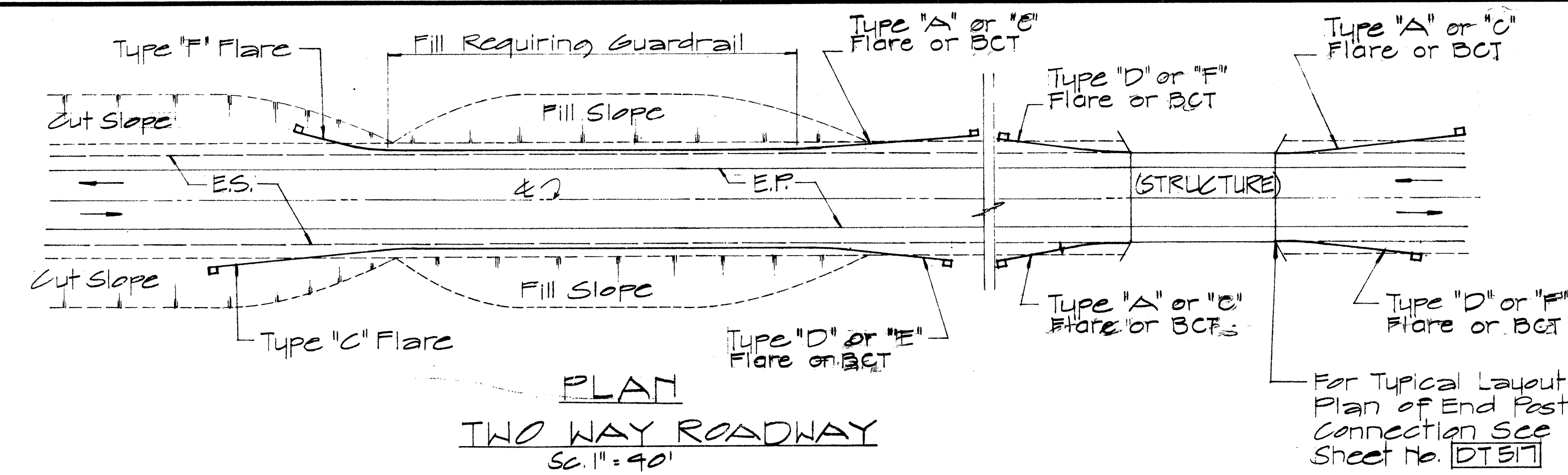
**STANDARD DETAILS**  
**METAL GUARDRAIL**

Scale: As Noted July, 1982  
SHEET No. 14 OF 17 SHEETS DT 501

ORIGINAL PLAN  
DRAWN BY  
TRACED BY  
NOTE BOOK  
DESIGNED BY  
QUANTITIES BY  
CHECKED BY  
DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-046015	1985	24	40

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:  
*Eiichi Tanaka* 12/29/69  
 TRAFFIC ENGINEER DATE

APPROVED:  
*Walter S. ...* 12-30-69  
 ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE
1	Delete Type "B" Flare and Type "E" Flare.	H.J.	6/15/68

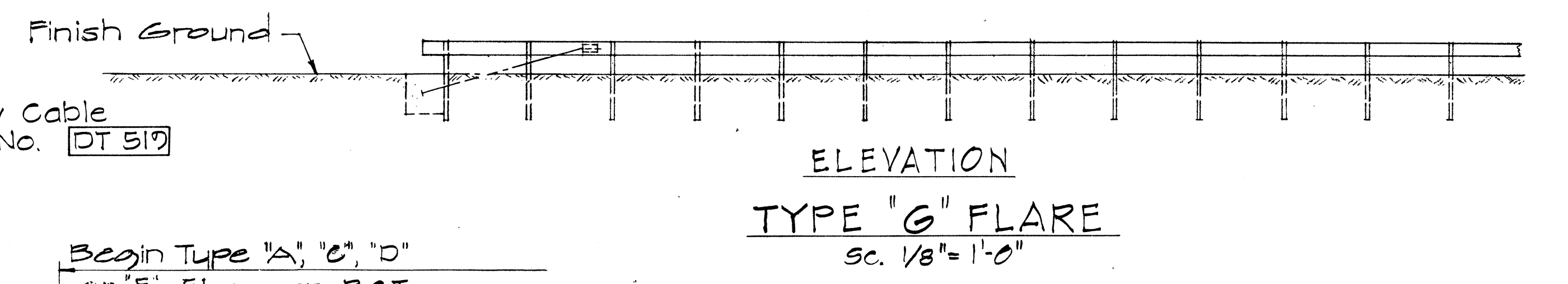
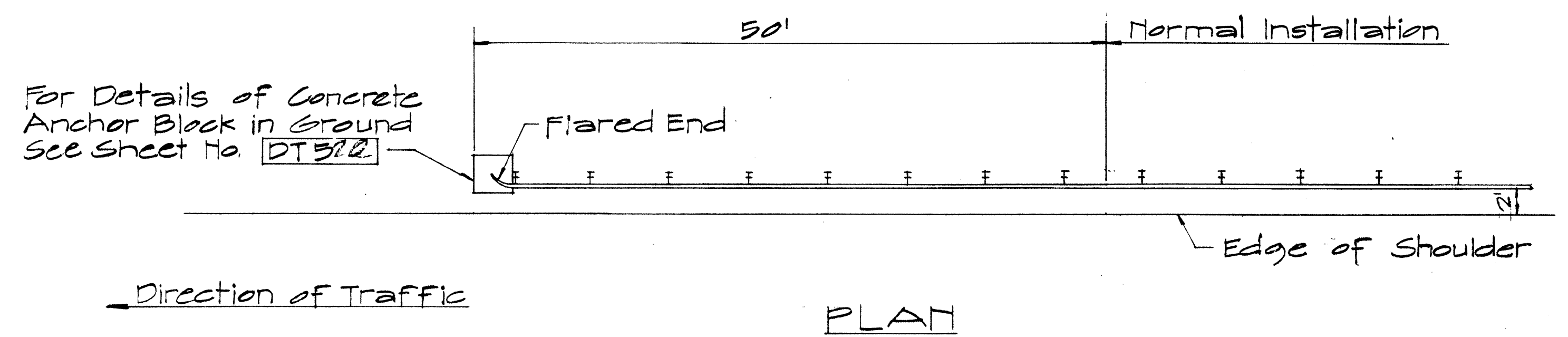
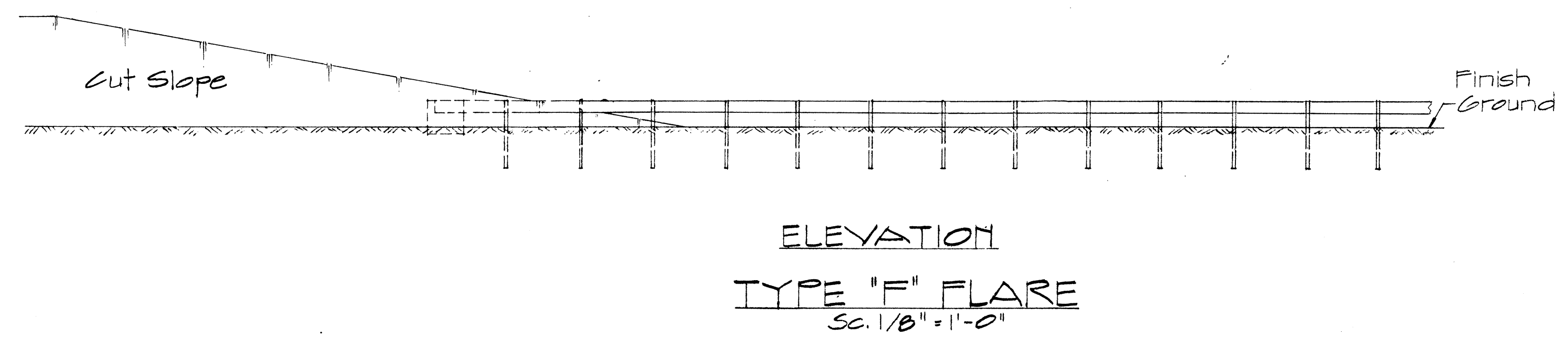
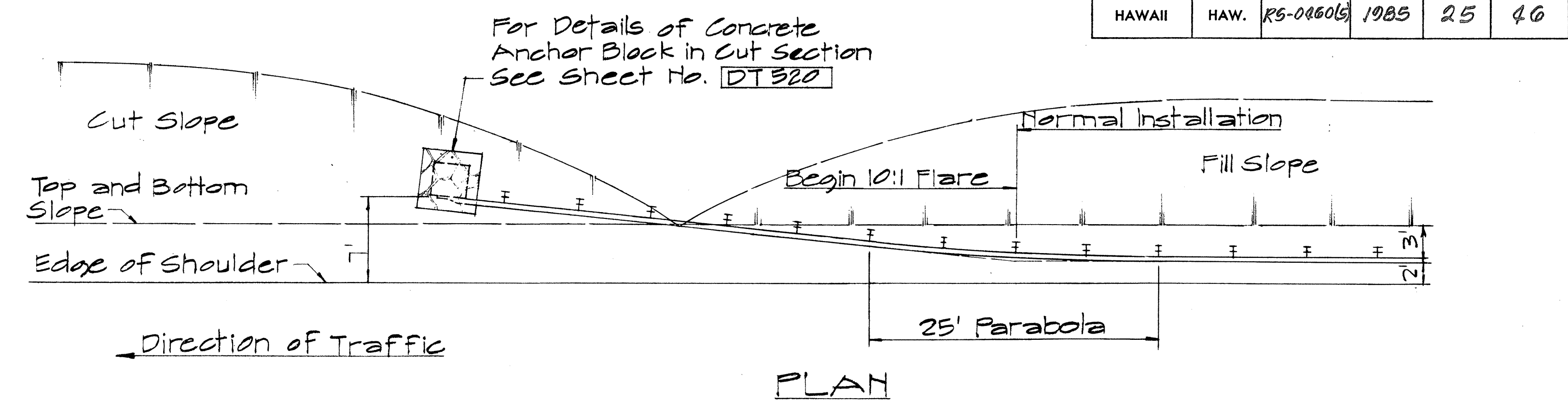
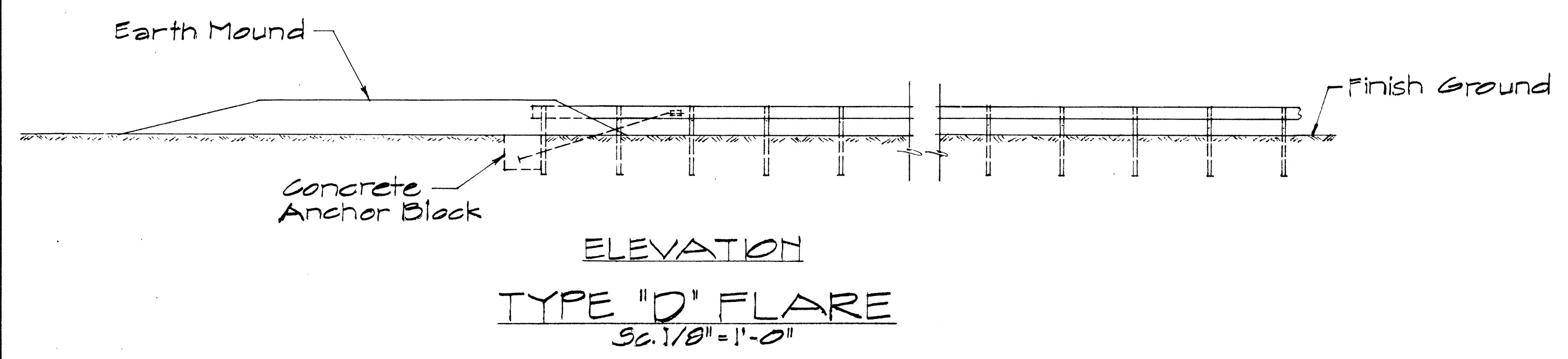
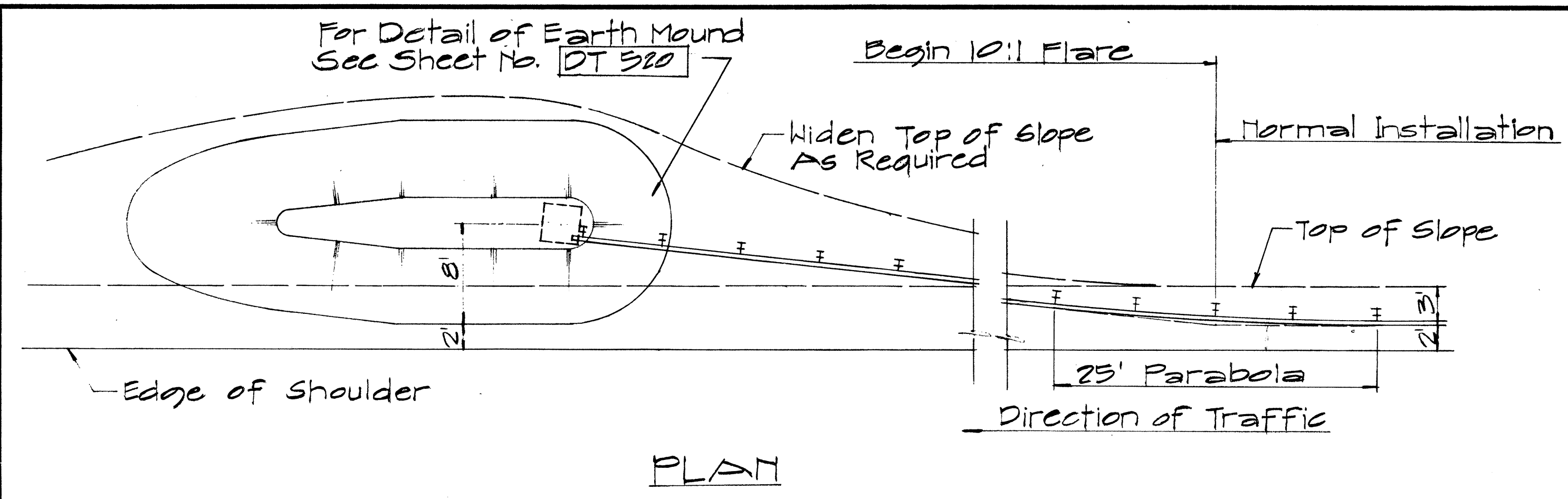
STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

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

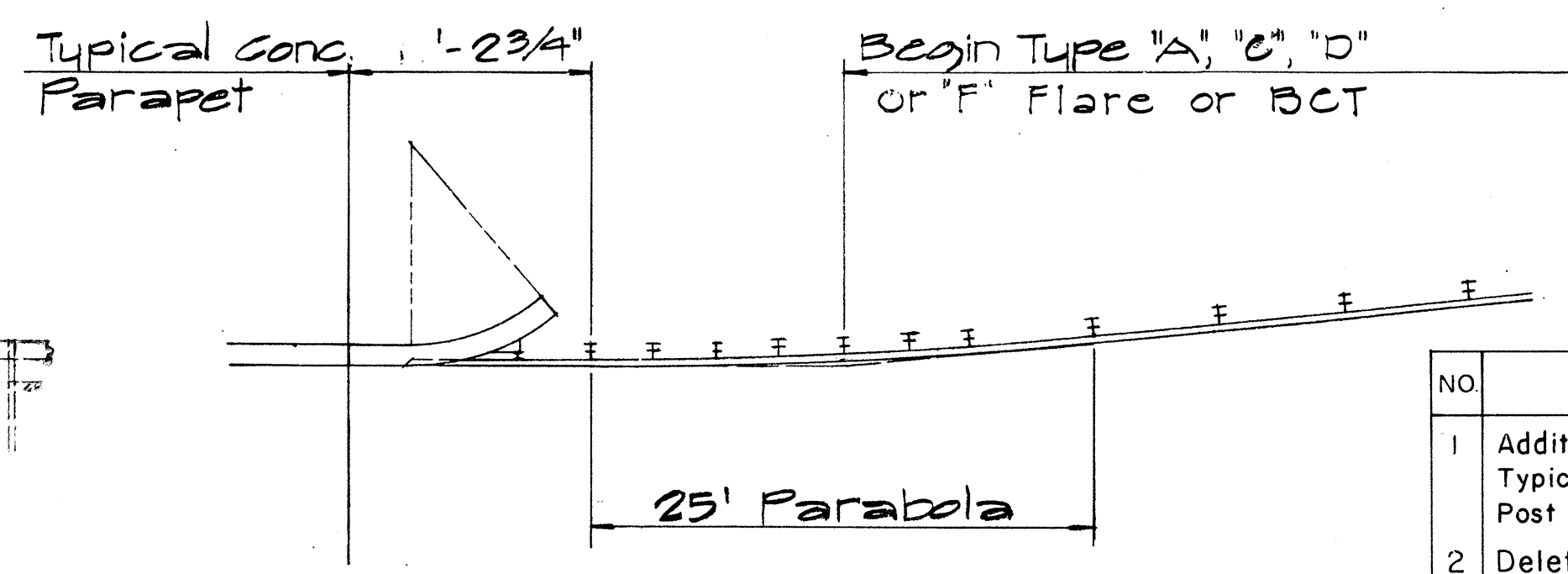
Sc. As Noted April 1969  
 SHEET No. 15 OF 17 SHEETS DT 516

DATE  
 SURVEY PLANNED BY  
 DRAWN BY  
 TRACED 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.	RS-04606	1985	25	46



NOTE:  
For detail of Breakaway Cable Terminal (BCT) See Sheet No. DT 319



TYPICAL LAYOUT PLAN OF END POST CONNECTION

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

NO.	REVISION	APPROVED BY	DATE
1	Additional Posts Added to Typical Layout Plan Of End Post Connection	H.T.	4-12-72
2	Delete Type "B" Flare and Type "E" Flare	H.T.	6-15-78

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

APPROVED:  
*[Signature]* 12-20-69  
ASSISTANT CHIEF, ENGINEERING DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

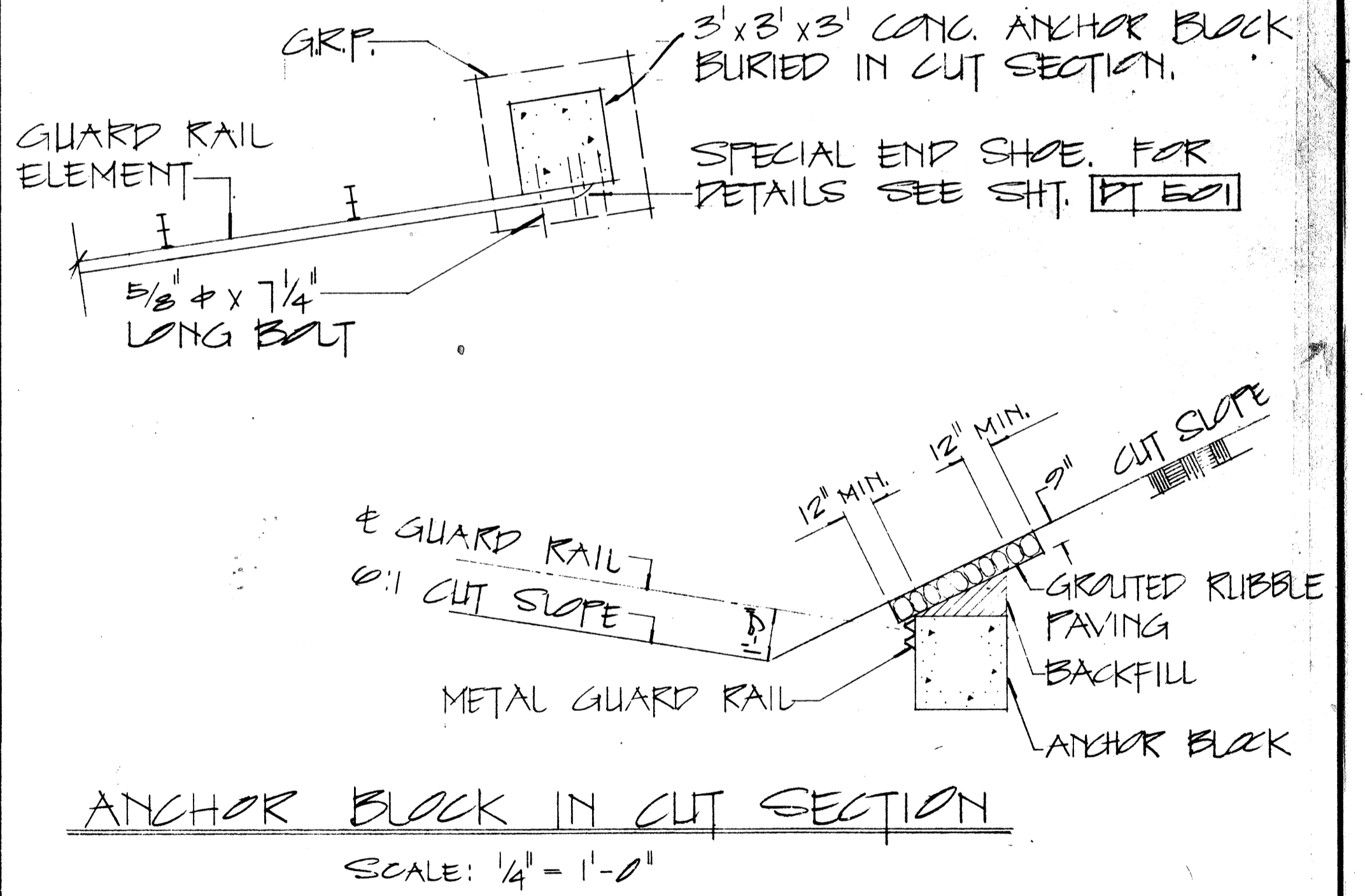
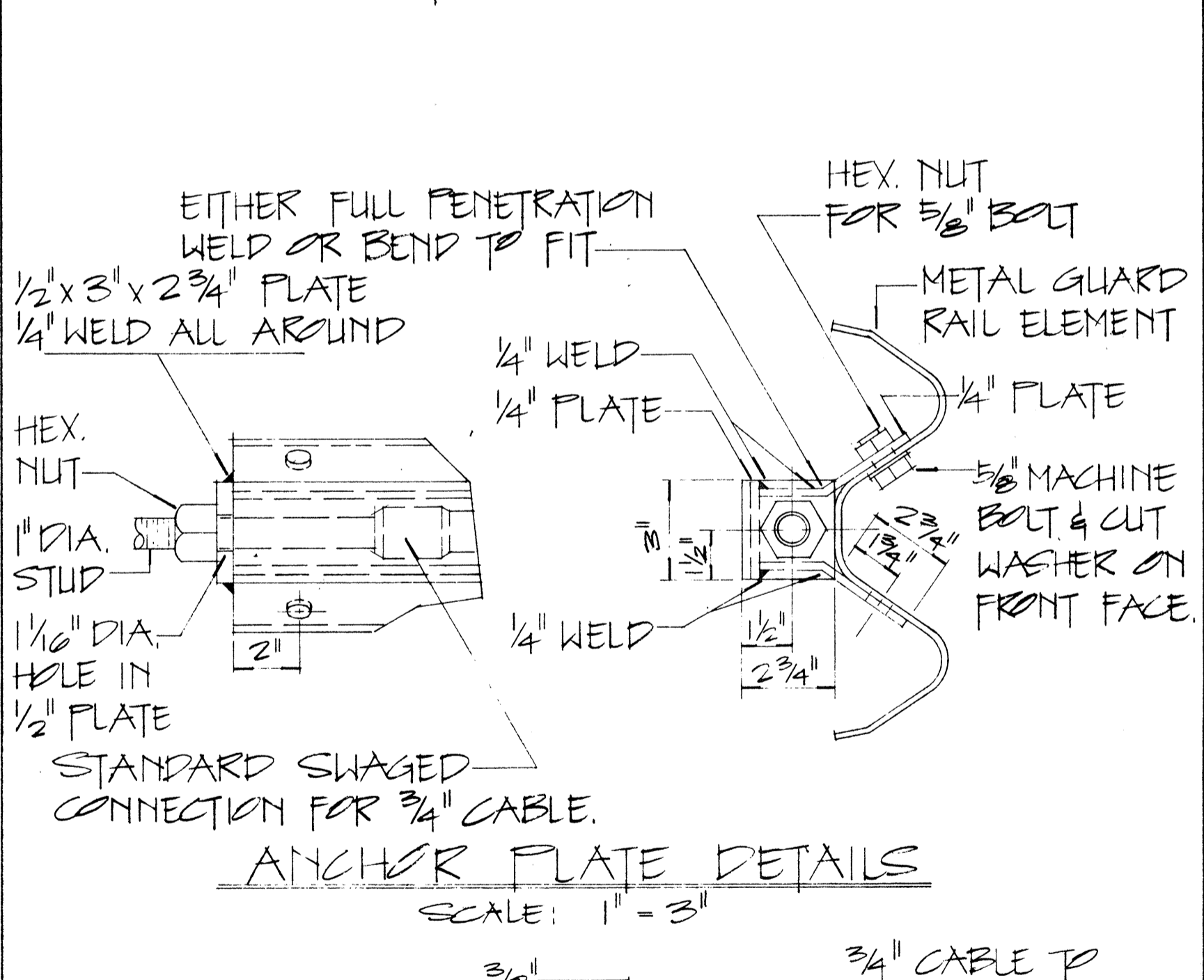
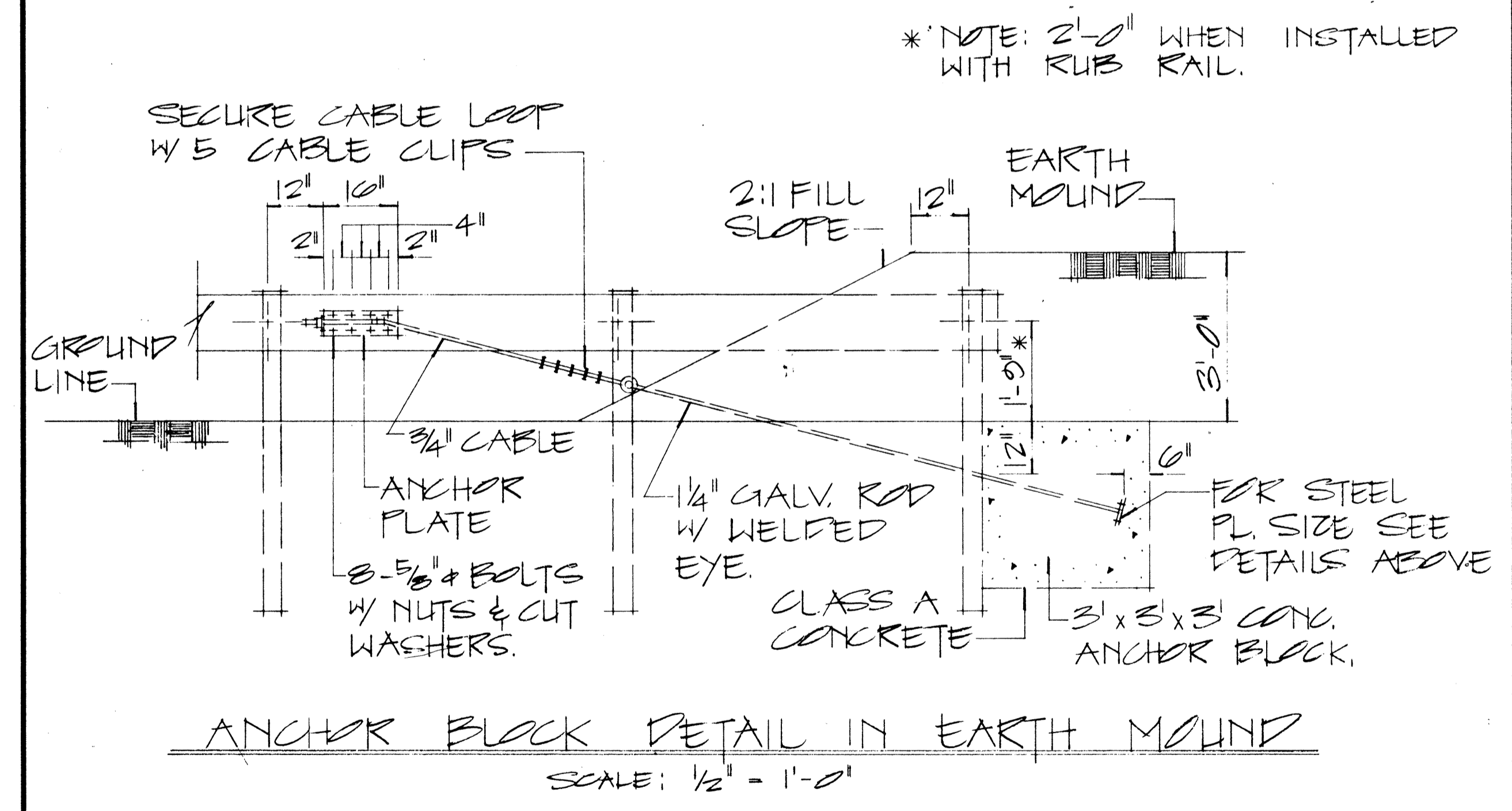
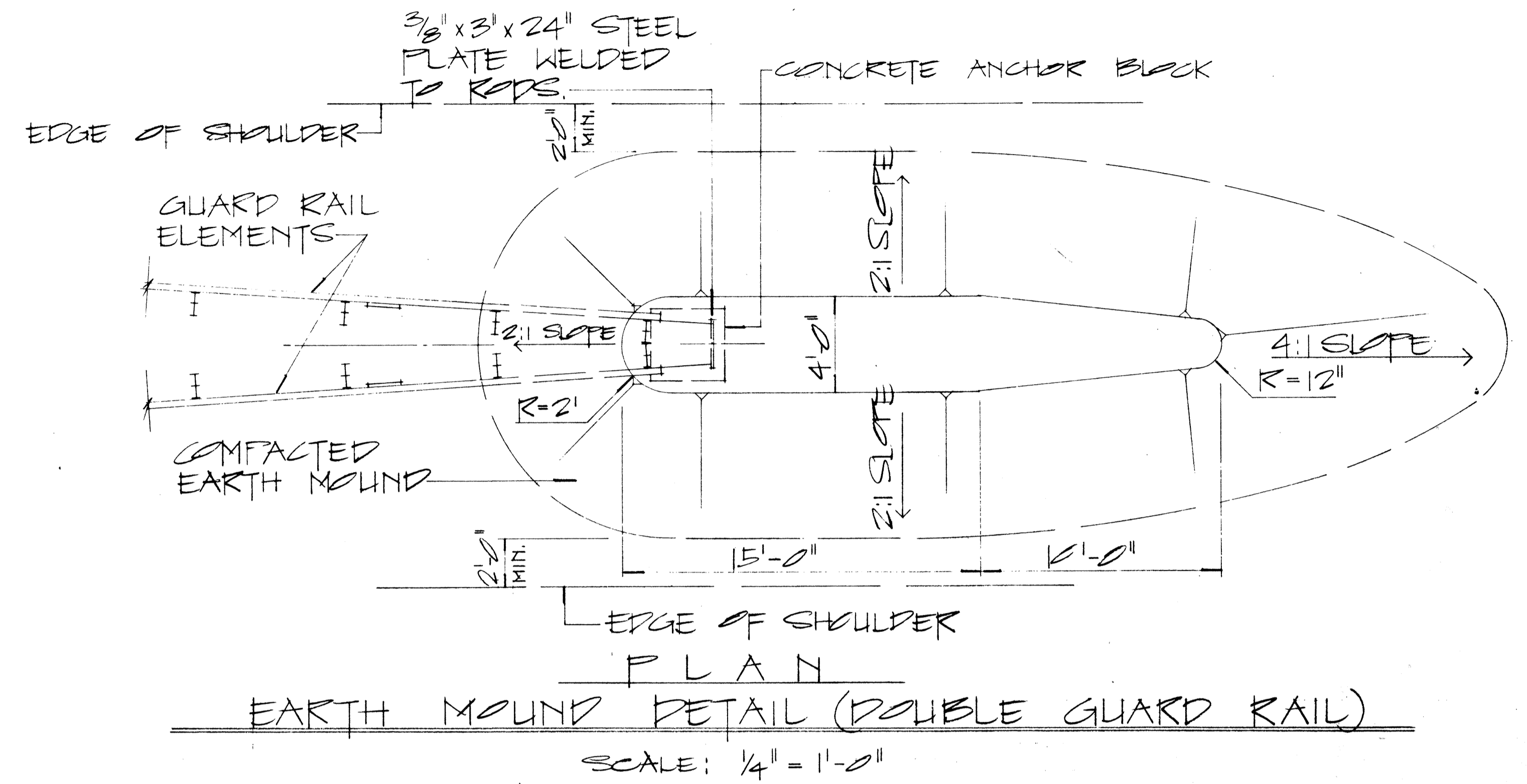
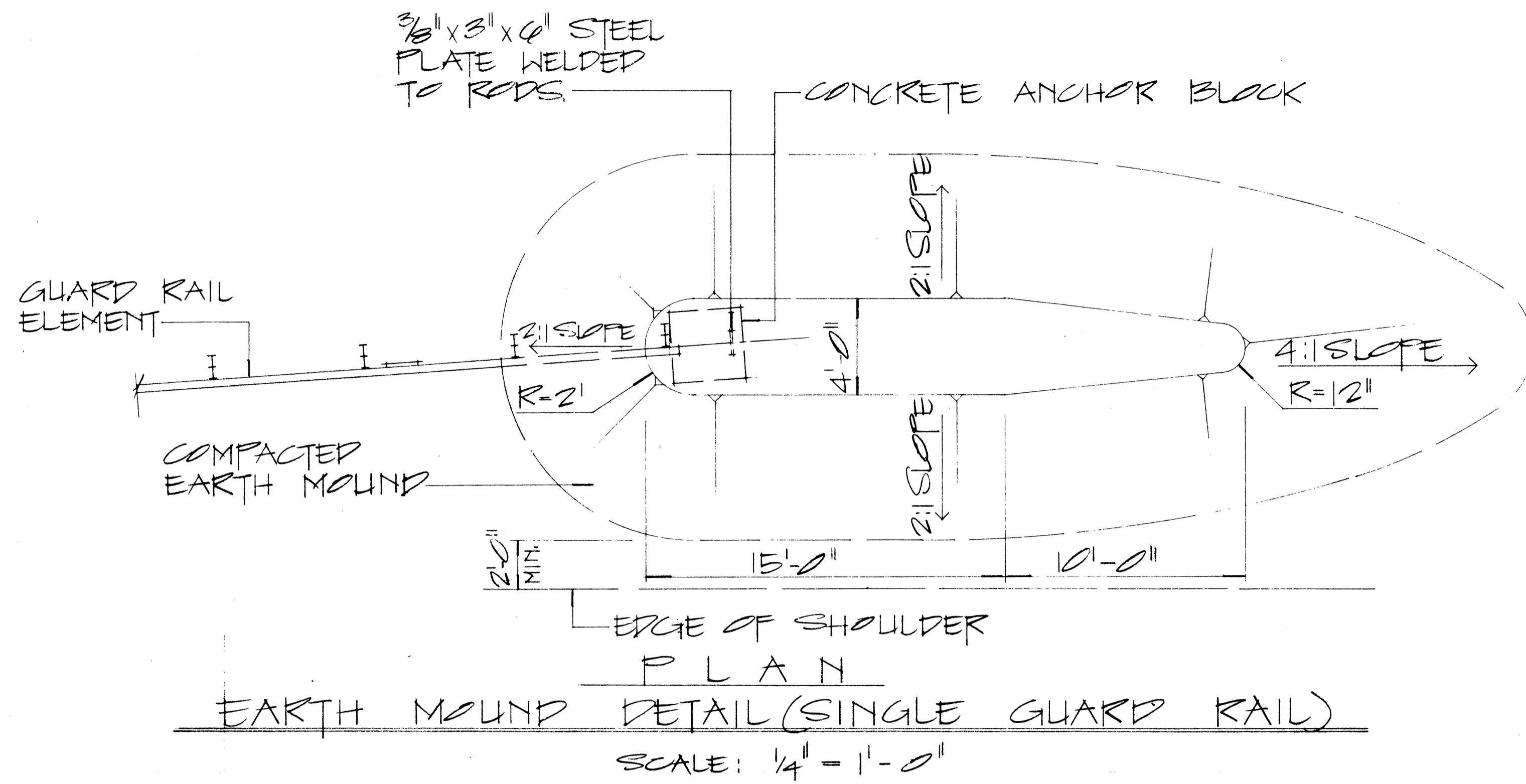
**STANDARD DETAILS**  
**TRAILING END**  
**FLARE - ONE & TWO**  
**WAY ROADWAY**

Scale: As Noted April 1969

SHEET No. 16 OF 17 SHEETS DT 517

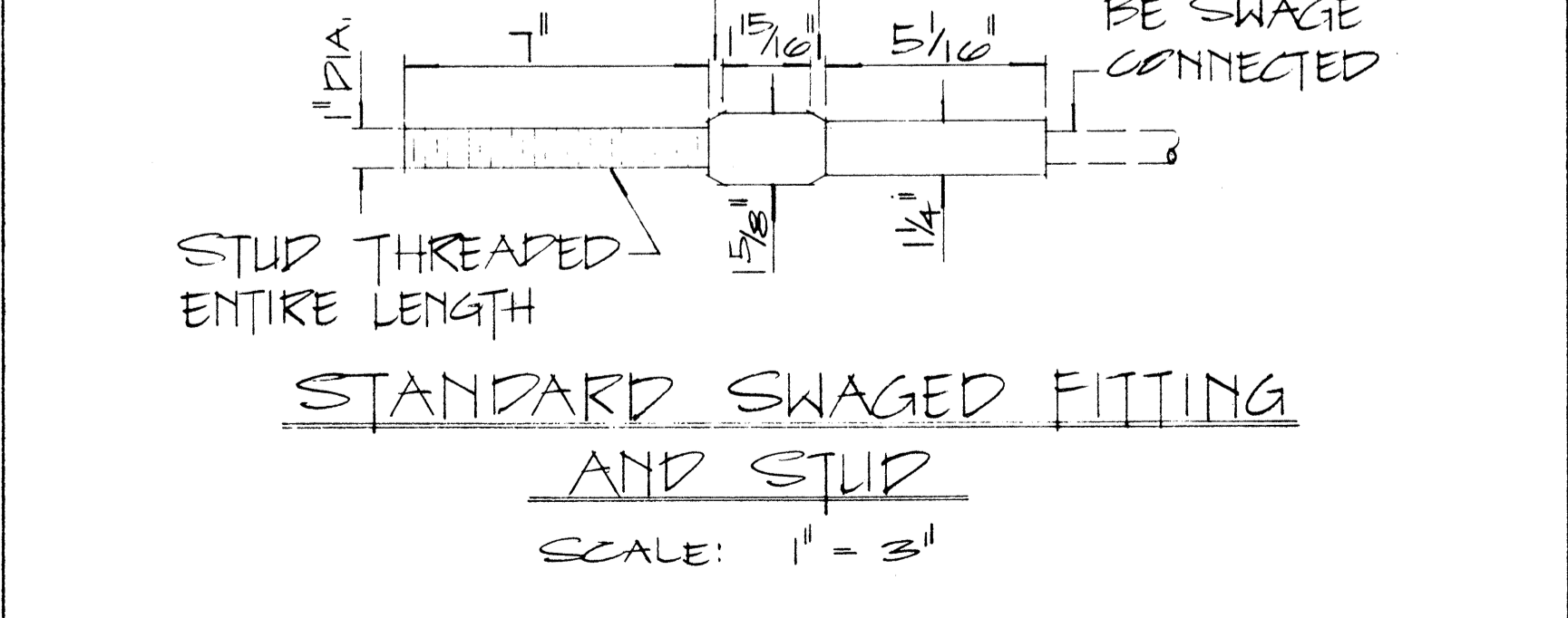
DATE  
SURVEY PLOTTED BY  
DRAWN BY  
DESIGNED BY  
QUANTITIES BY  
CHECKED BY  
ORIGINAL PLAN  
NOTE BOOK  
No.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	RS-0460(6)	1985	26	46



**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 ANWA standard: C 203
2. CONCRETE, GRP, 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:  
*Etsuko Tanaka* 12/29/62  
 TRAFFIC ENGINEER DATE

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

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION

**STANDARD DETAILS**  
**EARTH MOUND AND ANCHOR BLOCK DETAILS**

SCALE: AS SHOWN OCT 1960

SHEET No. 17 OF 17 SHEETS DT 520

DATE	.....
ORIGINAL PLAN	.....
TRACED BY	.....
DESIGNED BY	.....
CHECKED BY	.....
NO.	.....