

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ROS-017-2(15)	1978	10	20



CW20-1a 48" x 48"



CW20-2d 48" x 48"



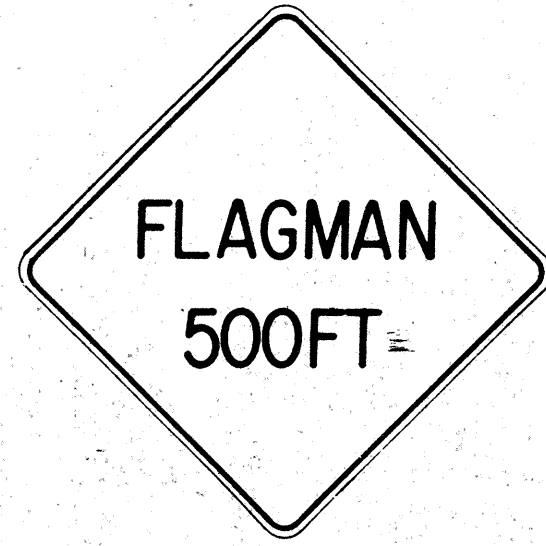
CW20-3b 48" x 48"



CW20-4d 48" x 48"



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



CW20-7c 48" x 48"



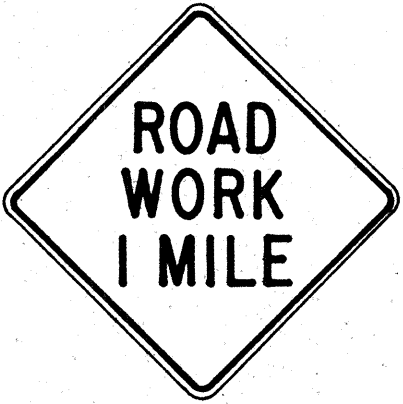
CW21-1 30" x 30"



CW21-2 30" x 30"



CW21-3 36" x 36"



CW21-4 36" x 36"



CW21-5 30" x 30"



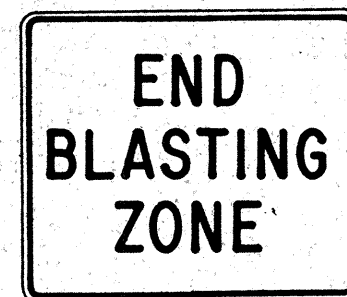
CW21-6 30" x 30"



CW22-1b 48" x 48"



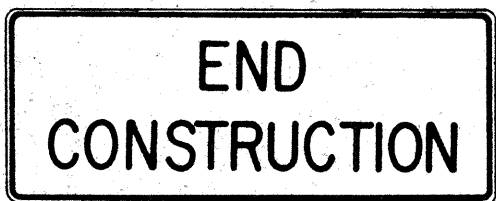
CW22-2 42" x 36"



CW22-3 42" x 36"



CG20-1(5) 60" x 36"



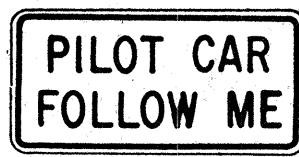
CG20-2 60" x 24"



CM4-9(R) 30" x 24"



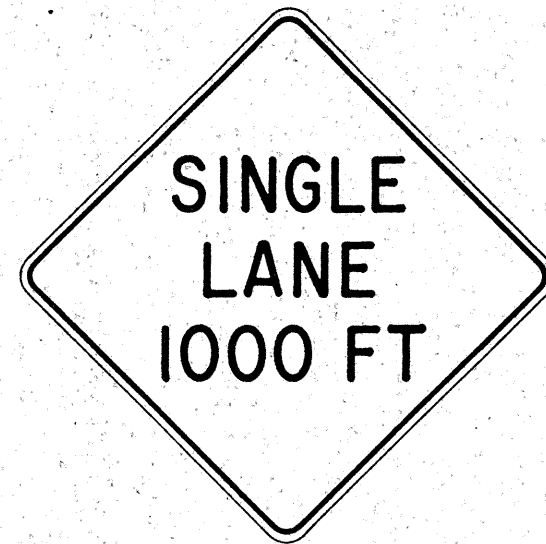
CM4-10(R) 48" x 18"



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 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.
- 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	M.H.	9-16-75
4	Revised General Note 2 and sign CG20-1(5)	H.T.	9-14-76

APPROVAL RECOMMENDED:
Erich Tanaka 3/21/72
TRAFFIC ENGINEER DATE

APPROVED:
Walter Salsich 2/22/72
ASSISTANT CHIEF, ENGINEERING DATE

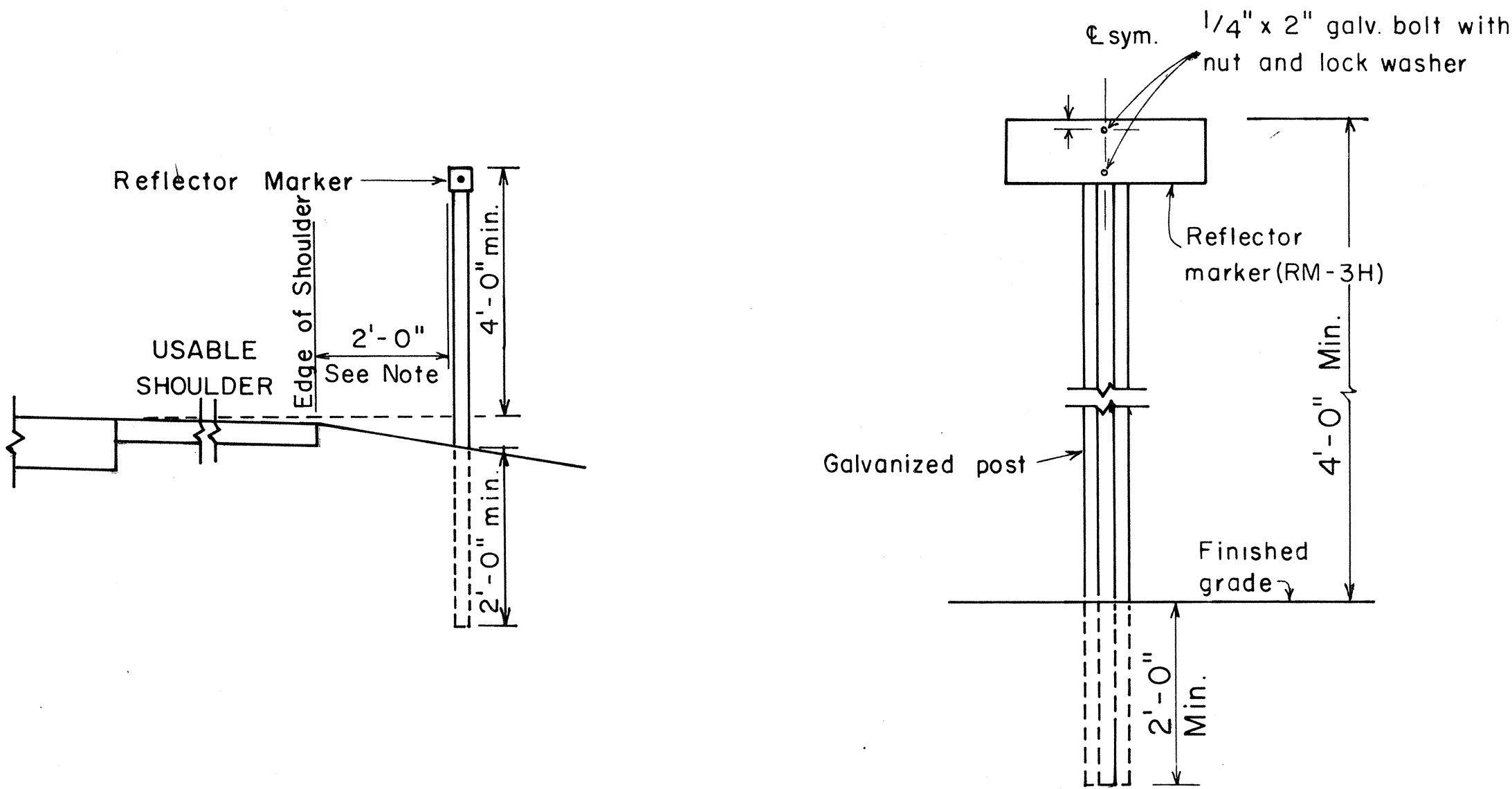
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION LAND TRANSPORTATION FACILITIES DIVISION STANDARD DETAILS CONSTRUCTION SIGNS NOT TO SCALE SHEET No. 1 OF 11 SHEETS DT 104

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
NO.	

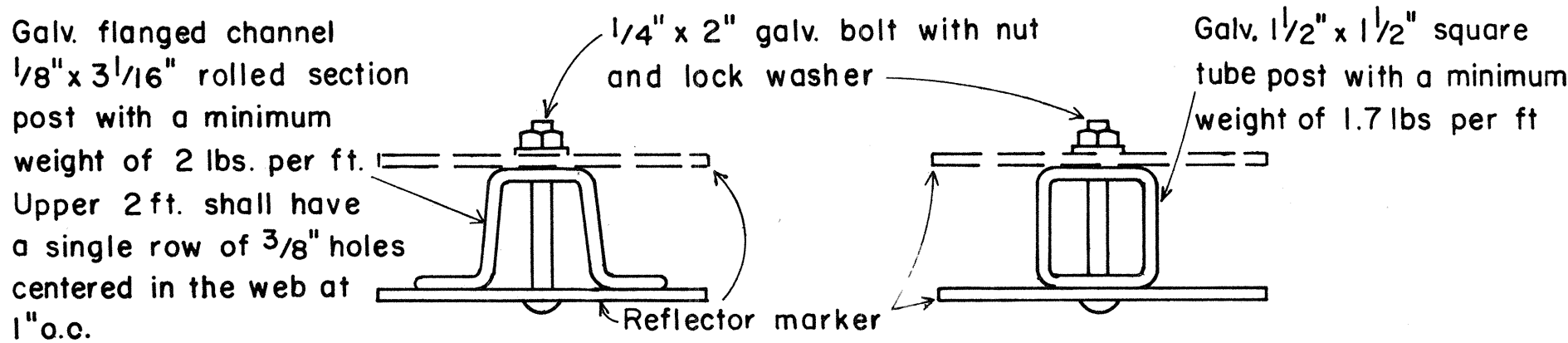
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ROS-019-2(15)	1978	11	20

GENERAL NOTES:

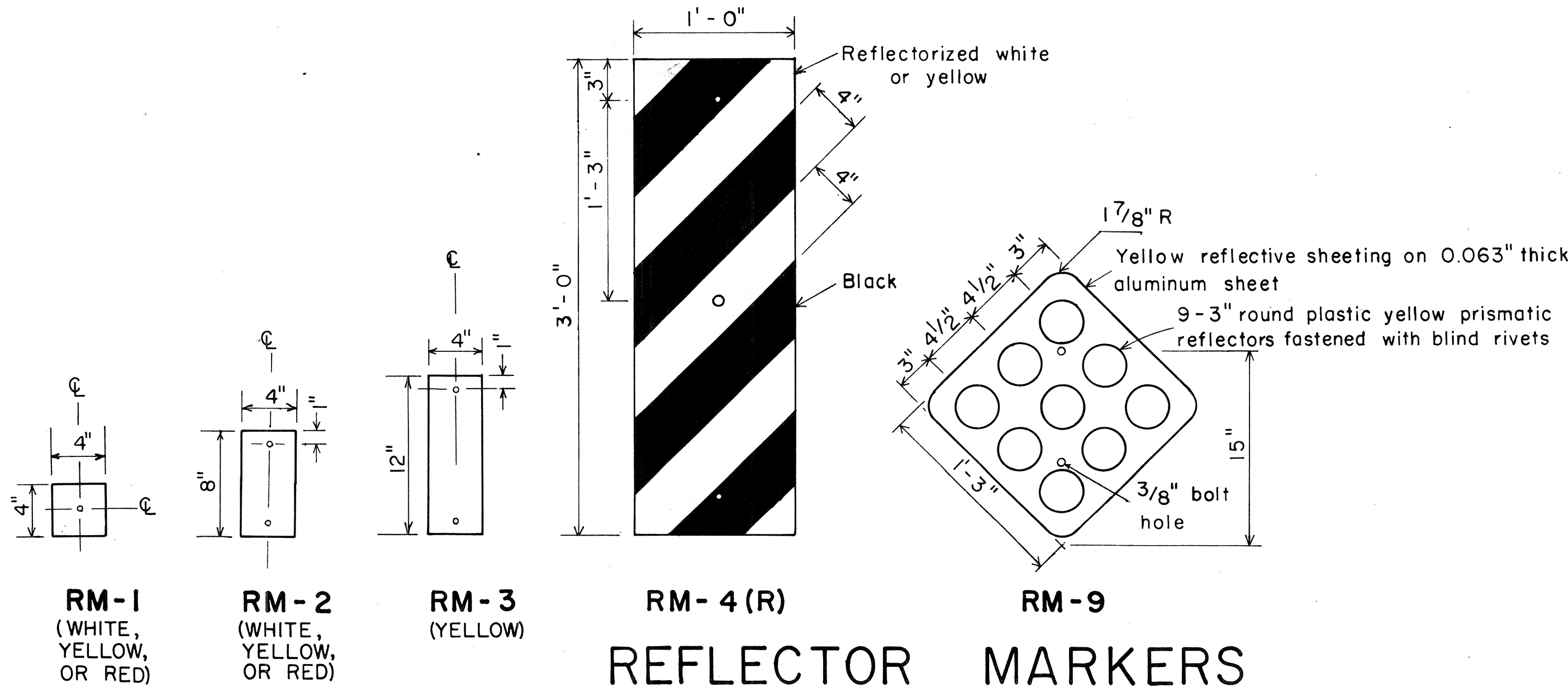
- Clearance markers (RM-3, RM-4) shall be installed with the edge of the marker in line with the inner edge of the obstruction.
- (R) or (L) indicates right or left and shall be as shown on the plans.
- Reflector markers RM-1 and RM-2 shall be:
 - Yellow if placed along the left edge of divided roadways, one-way roadways, and ramps in the direction of travel.
 - White if placed along the right edge of divided roadways, one-way roadways, and ramps in the direction of travel.
- For reflector marker RM-9, reflective sheeting material may be used as an alternate.
- For RM-4, the stripes shall slope downward at an angle of 45° in the direction of traffic.



REFLECTOR MARKER MOUNTING DETAIL



TYPICAL SECTION OF ROAD DELINEATOR



APPROVAL RECOMMENDED:

 TRAFFIC ENGINEER DATE

APPROVED:

 ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

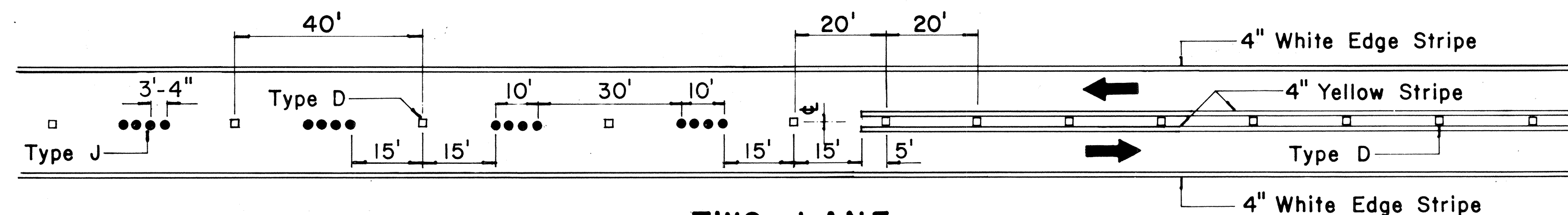
STANDARD DETAILS
MISCELLANEOUS REFLECTOR MARKERS

Not to scale
June, 1977

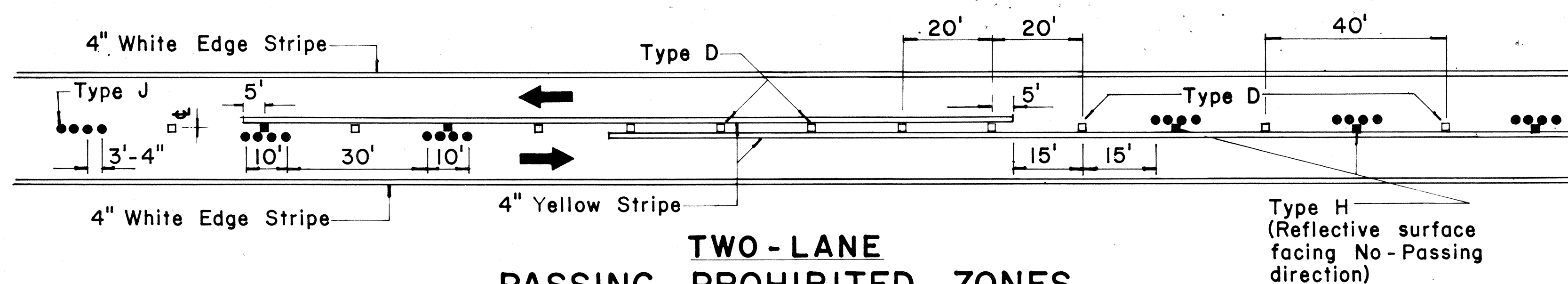
SHEET No. 2 OF 11 SHEETS DT 110

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

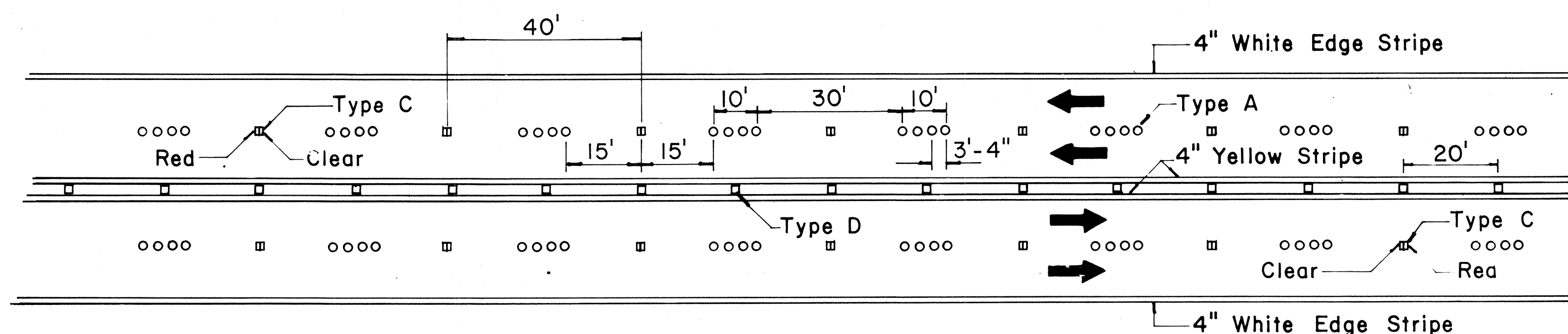
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ROS-017-2(15)	1978	12	20



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

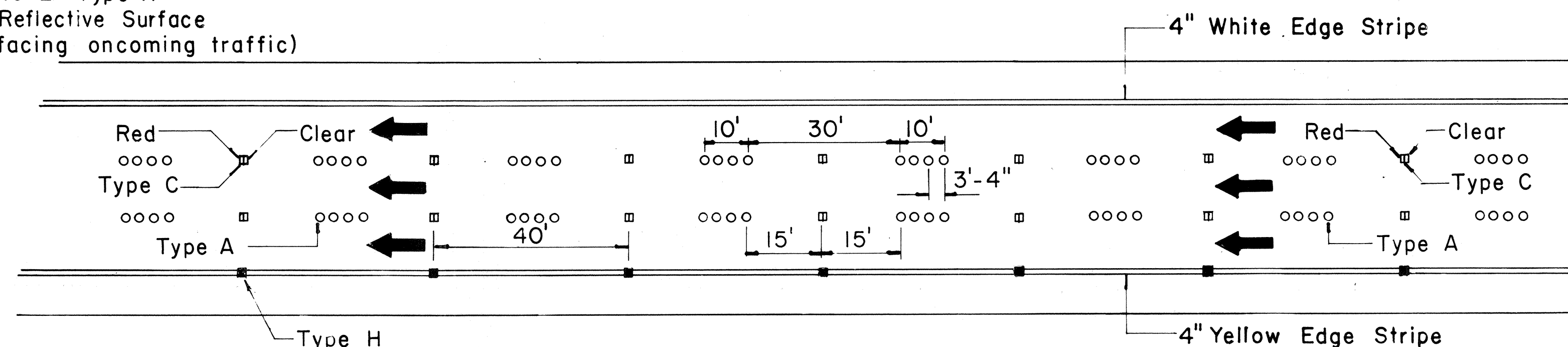


**TWO - LANE
PASSING PROHIBITED ZONES**

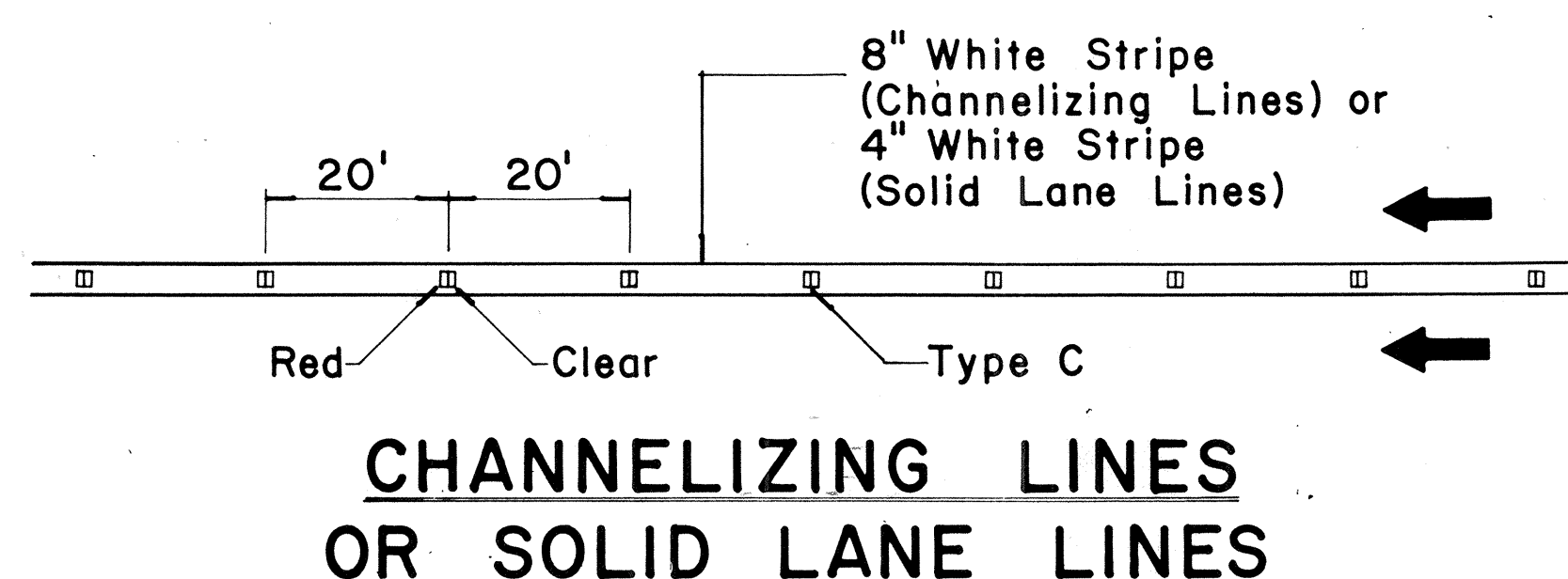


**MULTI - LANE
LANE LINES AND CENTER LINE**

NOTE: Type H
(Reflective Surface
facing oncoming traffic)

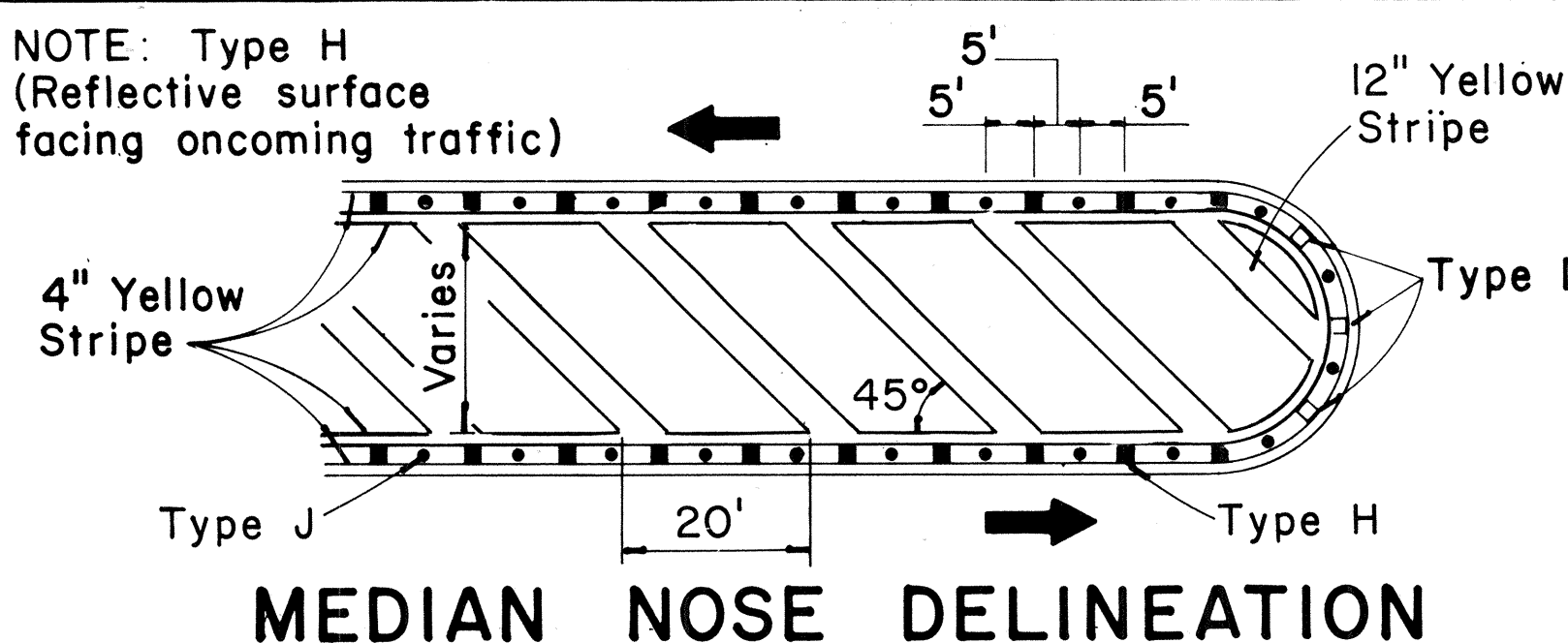


**DIVIDED HIGHWAY
AND
FREEWAY**



**CHANNELIZING LINES
OR SOLID LANE LINES**

NOTE: Type H
(Reflective surface
facing oncoming traffic)



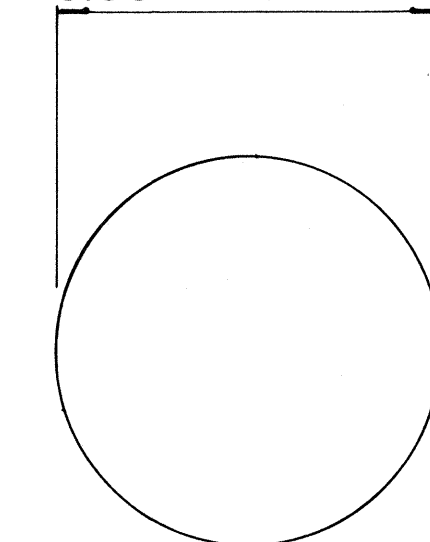
MEDIAN NOSE DELINEATION

MISCELLANEOUS

TWO - LANE

MULTI - LANE

3.85" - 4.05" Dia.



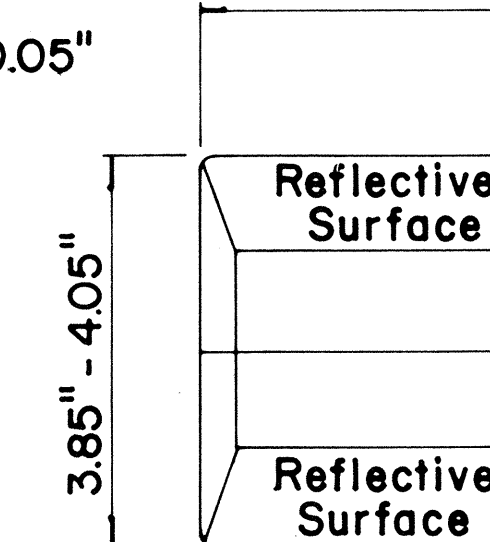
**TYPE A
NON - REFLECTIVE WHITE MARKER**

0.68" - 0.80"
0.12" ± 0.05"



**TYPE J
NON - REFLECTIVE YELLOW MARKER**

3.85" - 4.05"



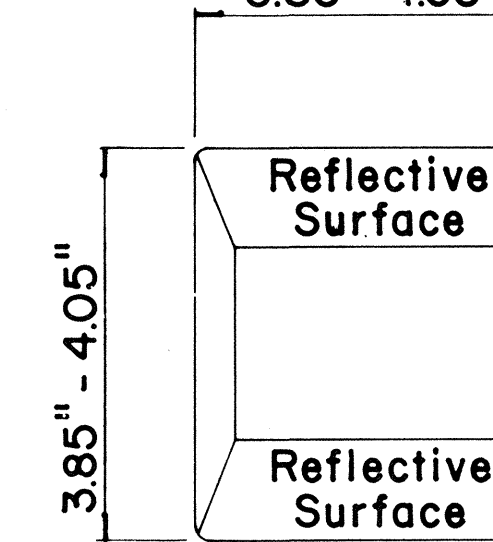
**TYPE C
RED - CLEAR REFLECTIVE MARKER**

0.50" - 0.70"
0.12" Max.



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

3.85" - 4.05"

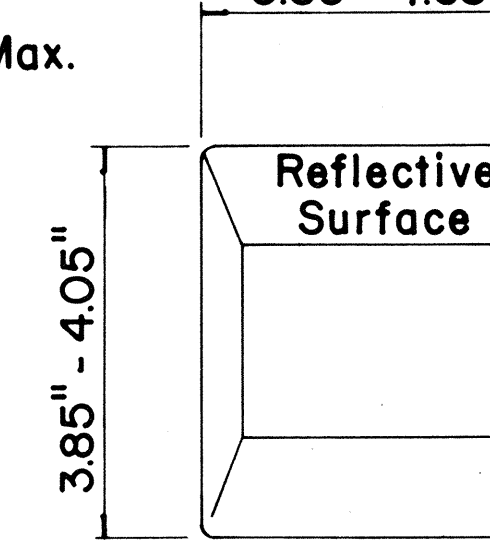


**TYPE D
TWO - WAY YELLOW REFLECTIVE MARKER**

0.50" - 0.70"
0.12" Max.



3.85" - 4.05"



0.50" - 0.70"
0.12" Max.



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.

LEGEND

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

APPROVAL RECOMMENDED:

Erich Tanaka
TRAFFIC ENGINEER

11/18/71
DATE

APPROVED:

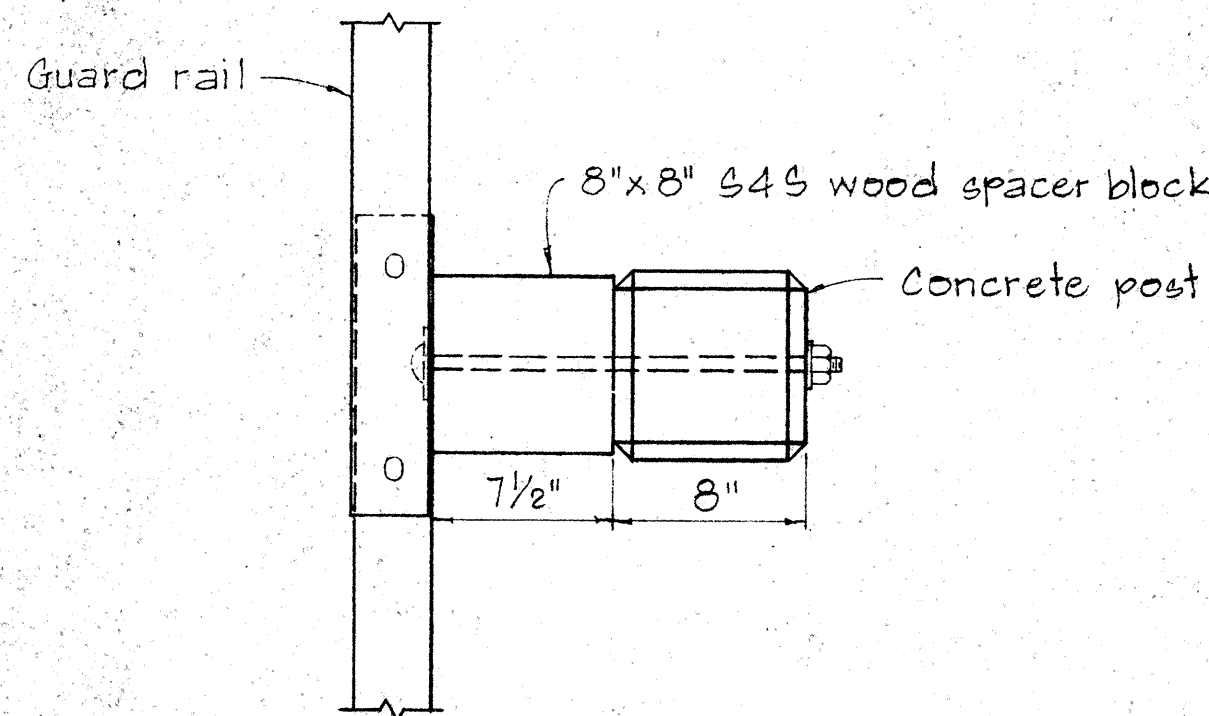
Shirley Zakeish
ASSISTANT CHIEF, ENGINEERING

11/18/71
DATE

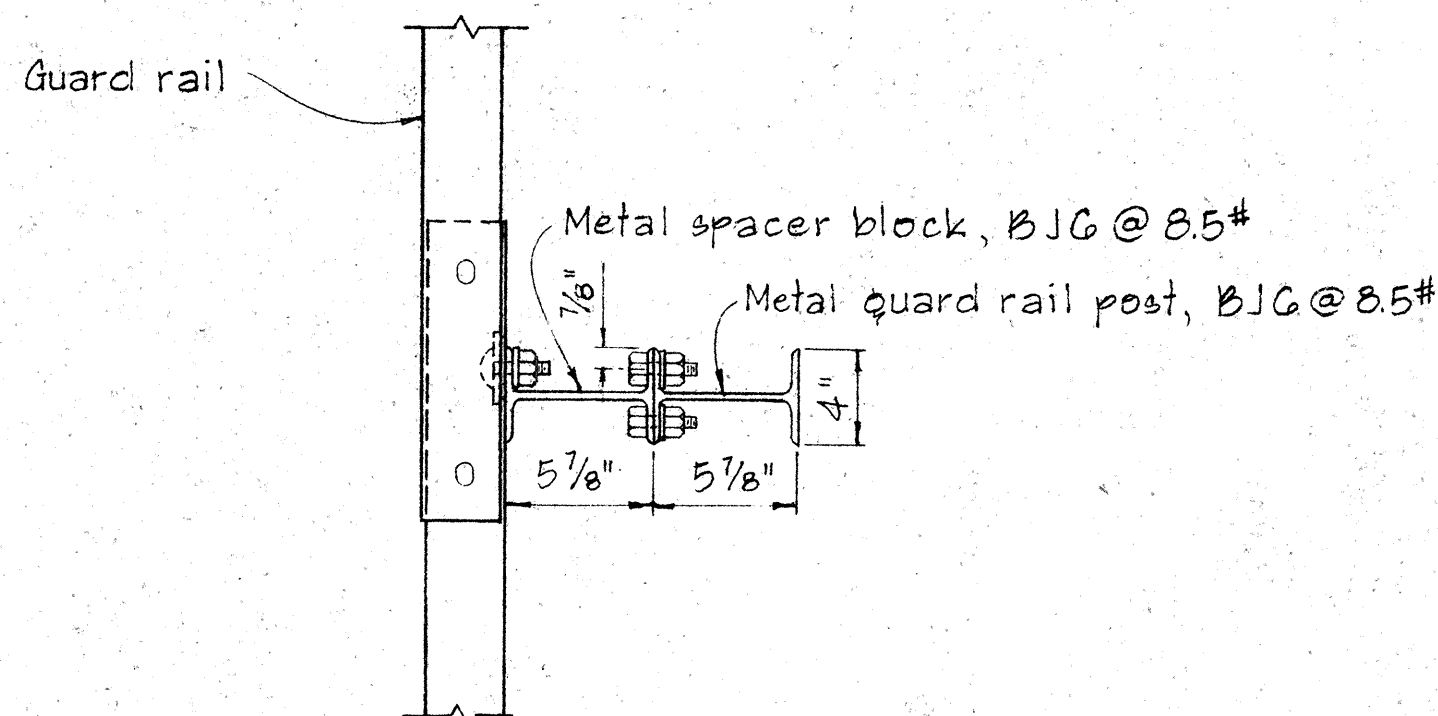
No.	REVISION	APPROVED BY	DATE
1	Add reflector marker in each line gap.	H.C.	10-21-72
2	Revised General Notes.	H.C.	10-21-72
3	Change 4" white edge stripe to 4" solid yellow edge stripe to left edge of a travel path and Add Type H Reflector Marker.	H.C.	5-22-74
4	Revised details, General Notes & Title Box.	H.C.	1-13-77
5	Revised dimensions on Type A & J Markers	H.C.	4-18-78

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION LAND TRANSPORTATION FACILITIES DIVISION	
STANDARD DETAILS RAISED PAVEMENT MARKERS AND STRIPING	
Not to Scale	October 1971
SHEET No. 3 OF 11 SHEETS DT 300	

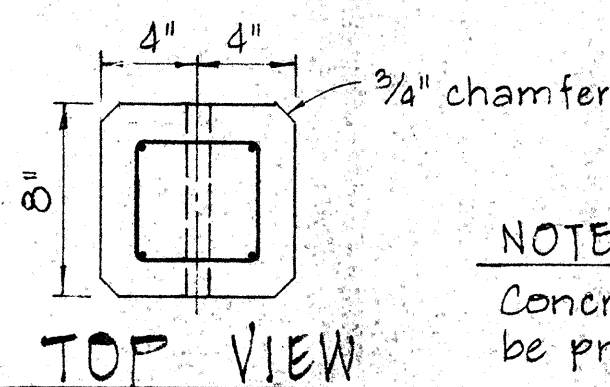
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ROS-017-2(15)	1978	13	20



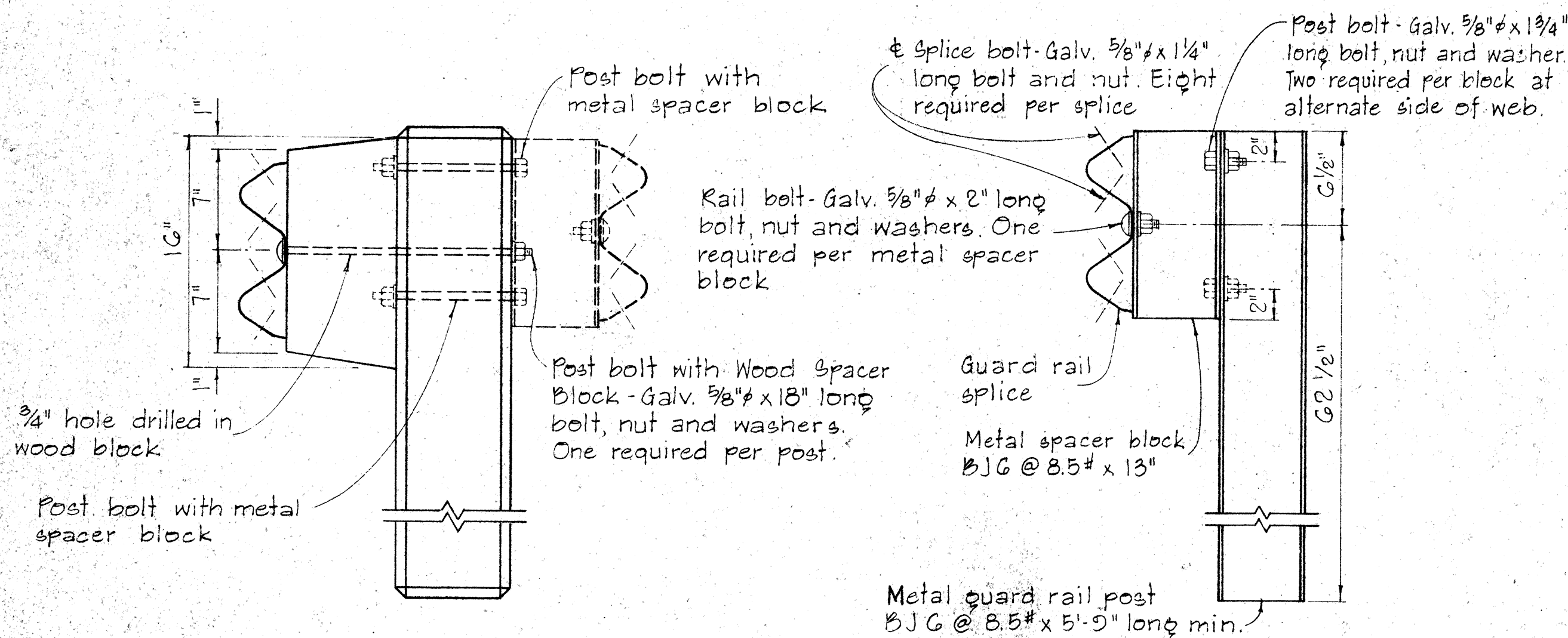
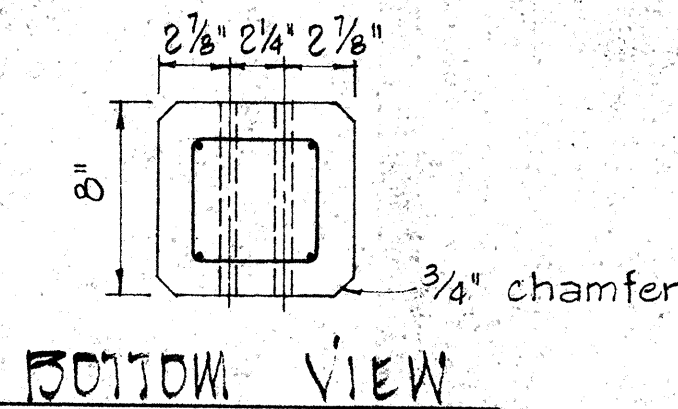
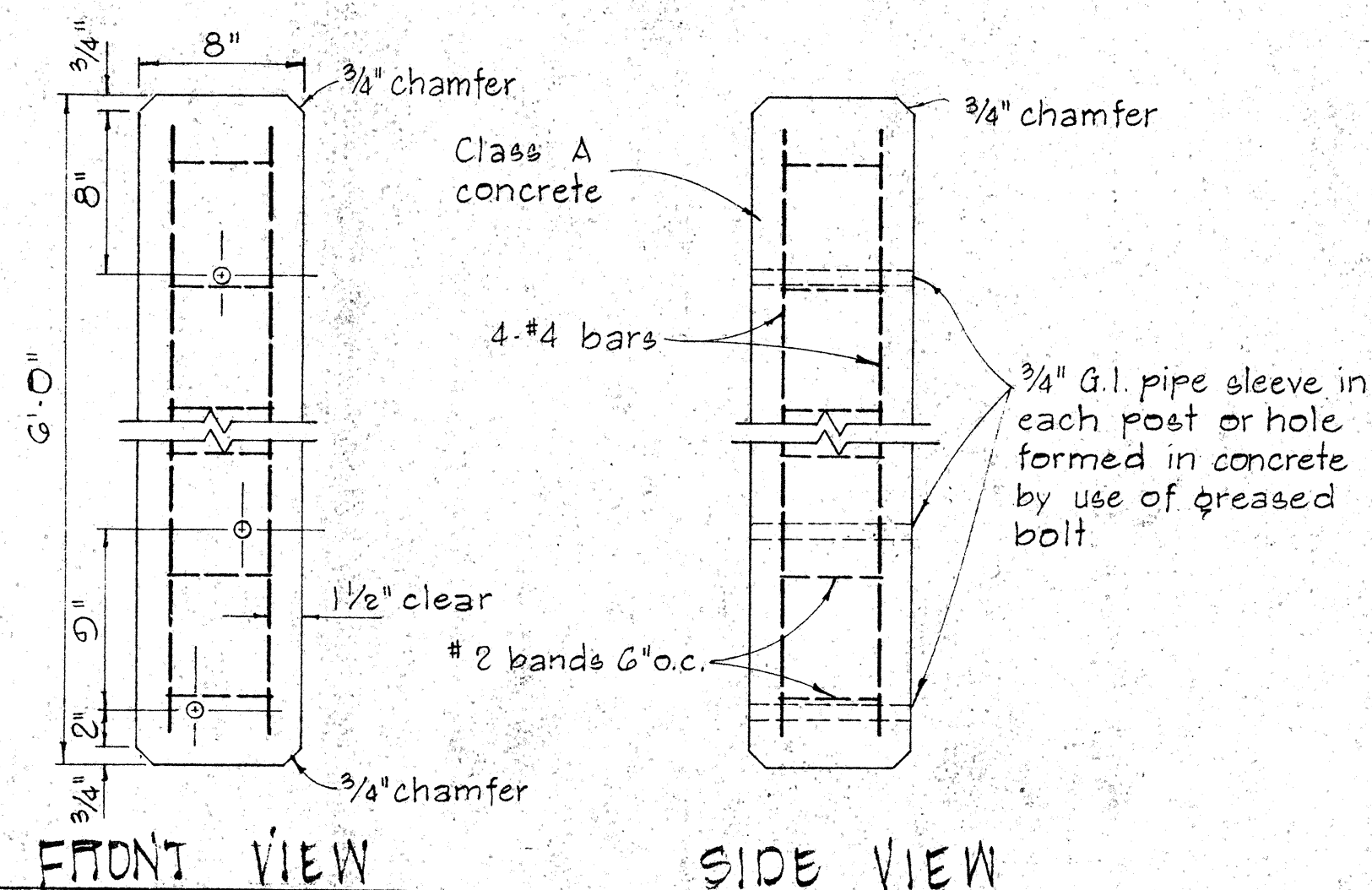
PLAN



PLAN

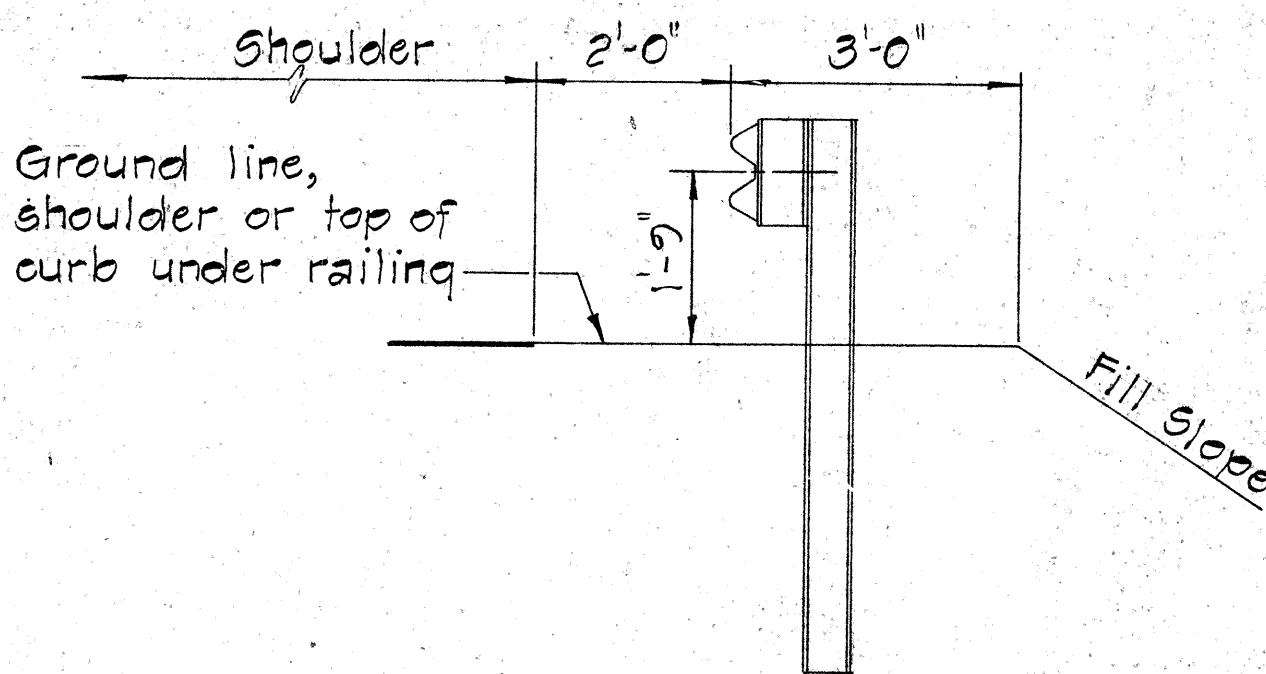


NOTE:
Concrete post shall be precast



SINGLE METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK

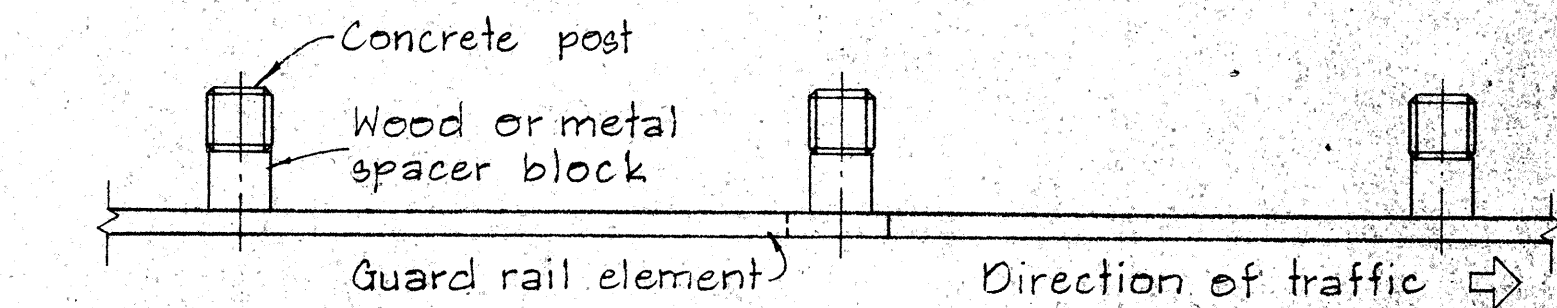
SCALE: 1 1/2" = 1'-0"



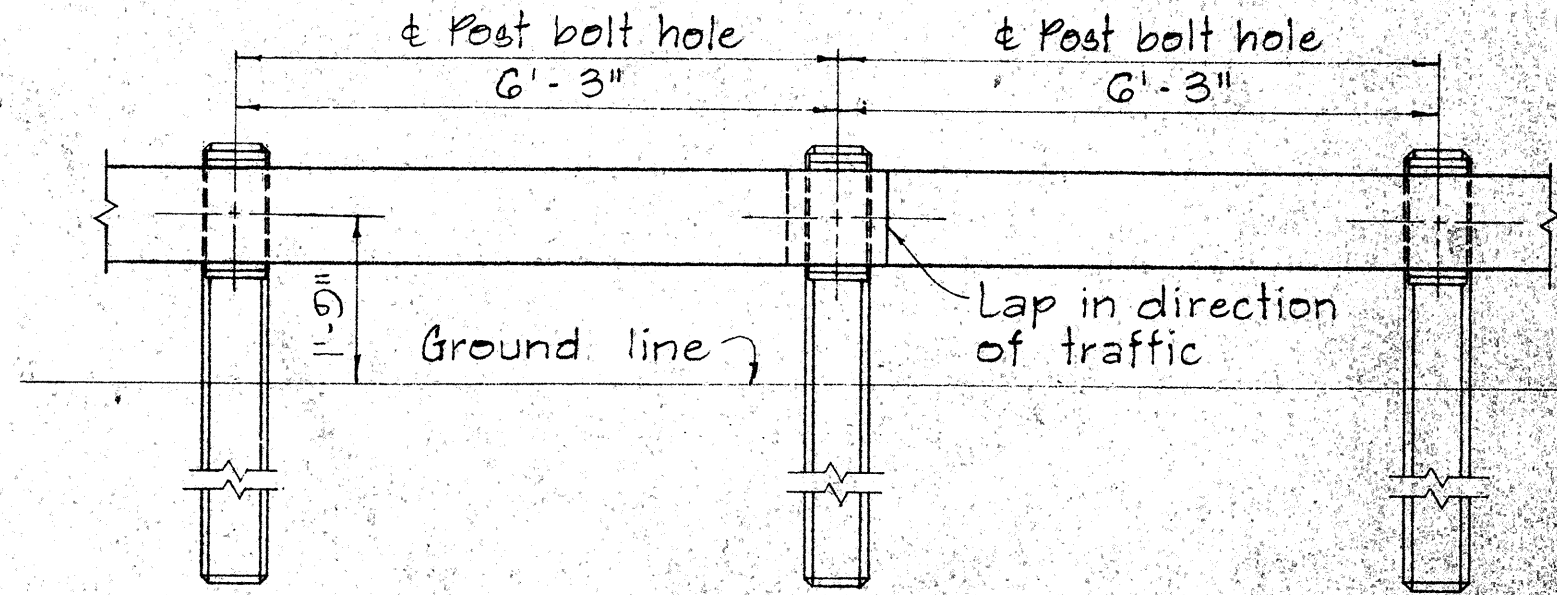
AT SHOULDER SECTION

TYPICAL METAL GUARD RAIL DETAIL

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



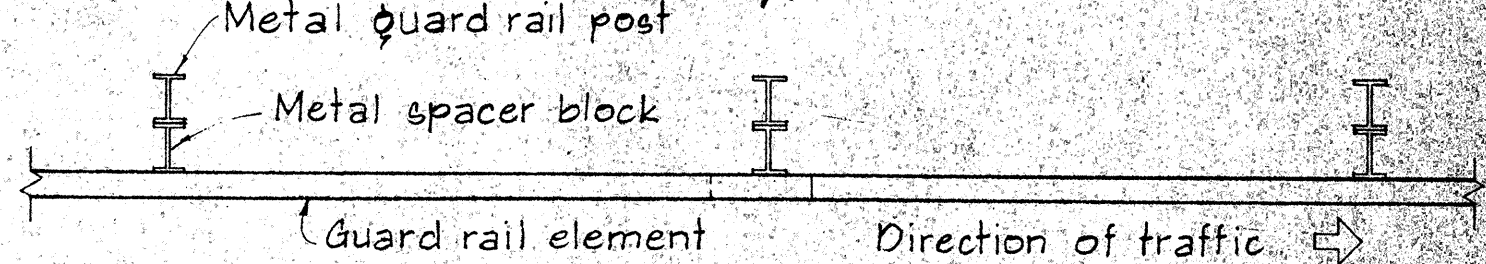
PLAN



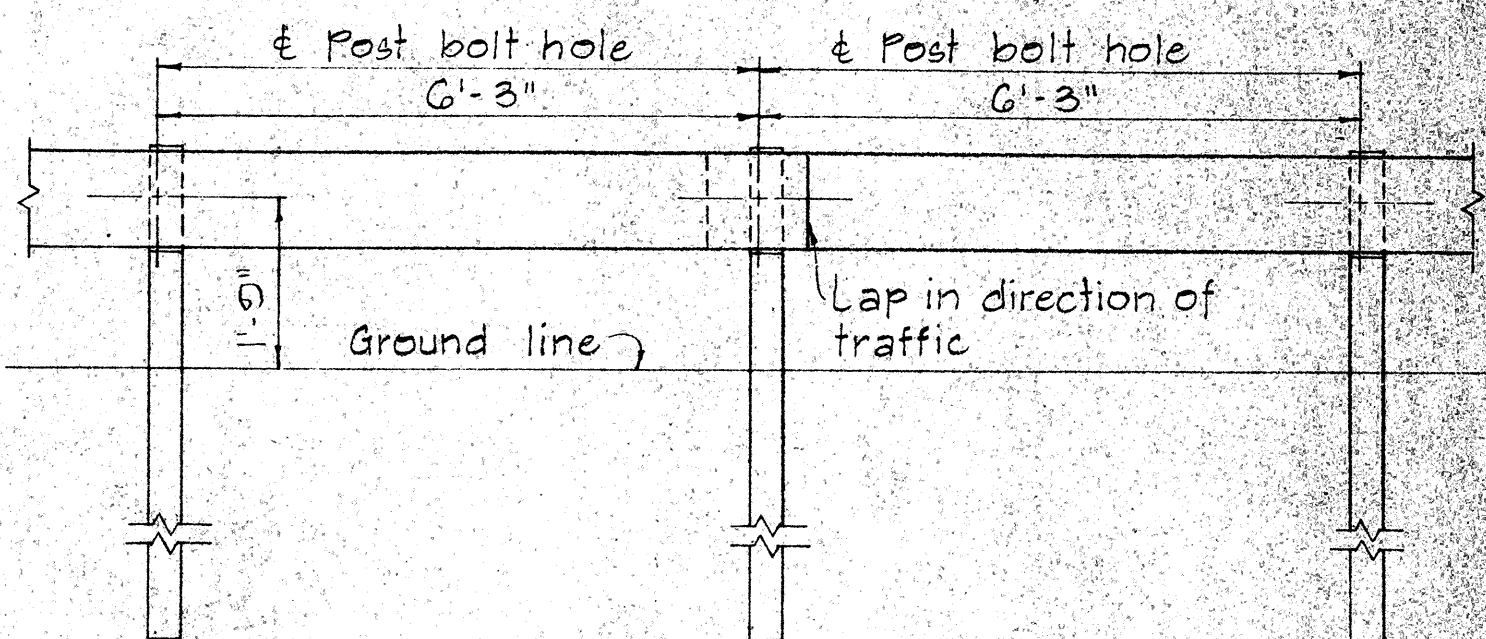
ELEVATION

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

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



PLAN



ELEVATION

METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK

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

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

STANDARD DETAILS

METAL GUARD RAIL

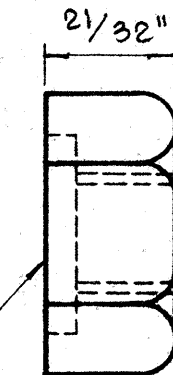
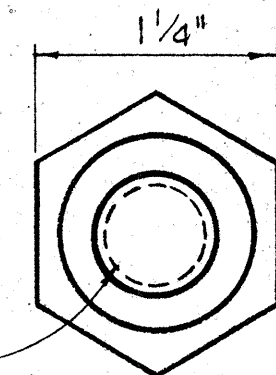
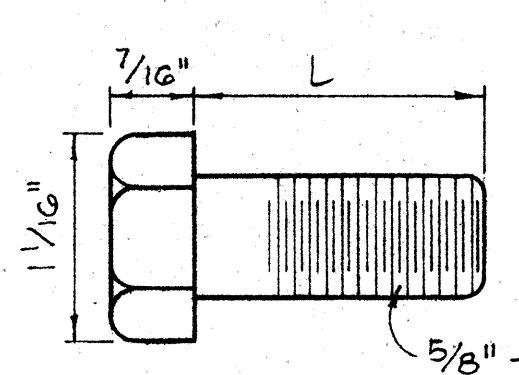
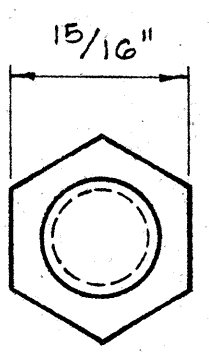
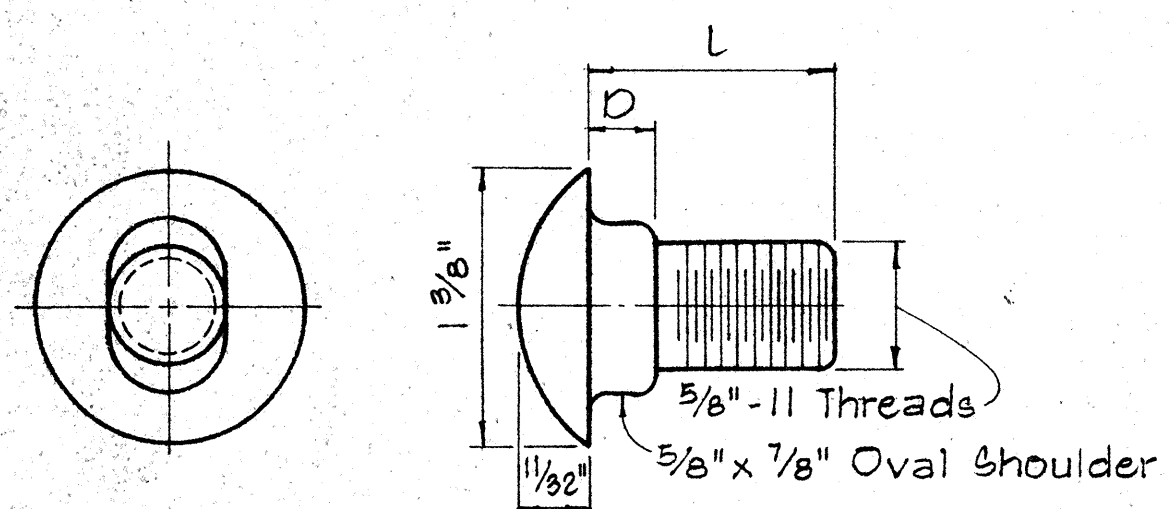
SCALE: AS SHOWN

NOV. 1968

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	R05-017-2(15)	1978	14	20

BOLT DIMENSIONS		
TYPE A BOLT		
Splice Bolt	D	L
Post Bolt for Conc. Post w/ Double Wood Blocks	5/16"	1 1/4"
Post Bolt for Conc. Post w/ Single Wood Block	3/32"	24"
Rail Bolt for Metal Block	3/32"	18"
Rail Bolt for Metal Block	3/32"	2"

BOLT DIMENSIONS		
TYPE B BOLT		
Post Bolt for Conc. Post w/ Metal Blocks	L	
Post Bolt for Metal Post w/ Metal Block	1 3/4"	



5/32" Deep x 1 5/16" Dia. C' Bore for Type A Bolt only.
Plain nut for Type B Bolt.

TYPE A BOLT

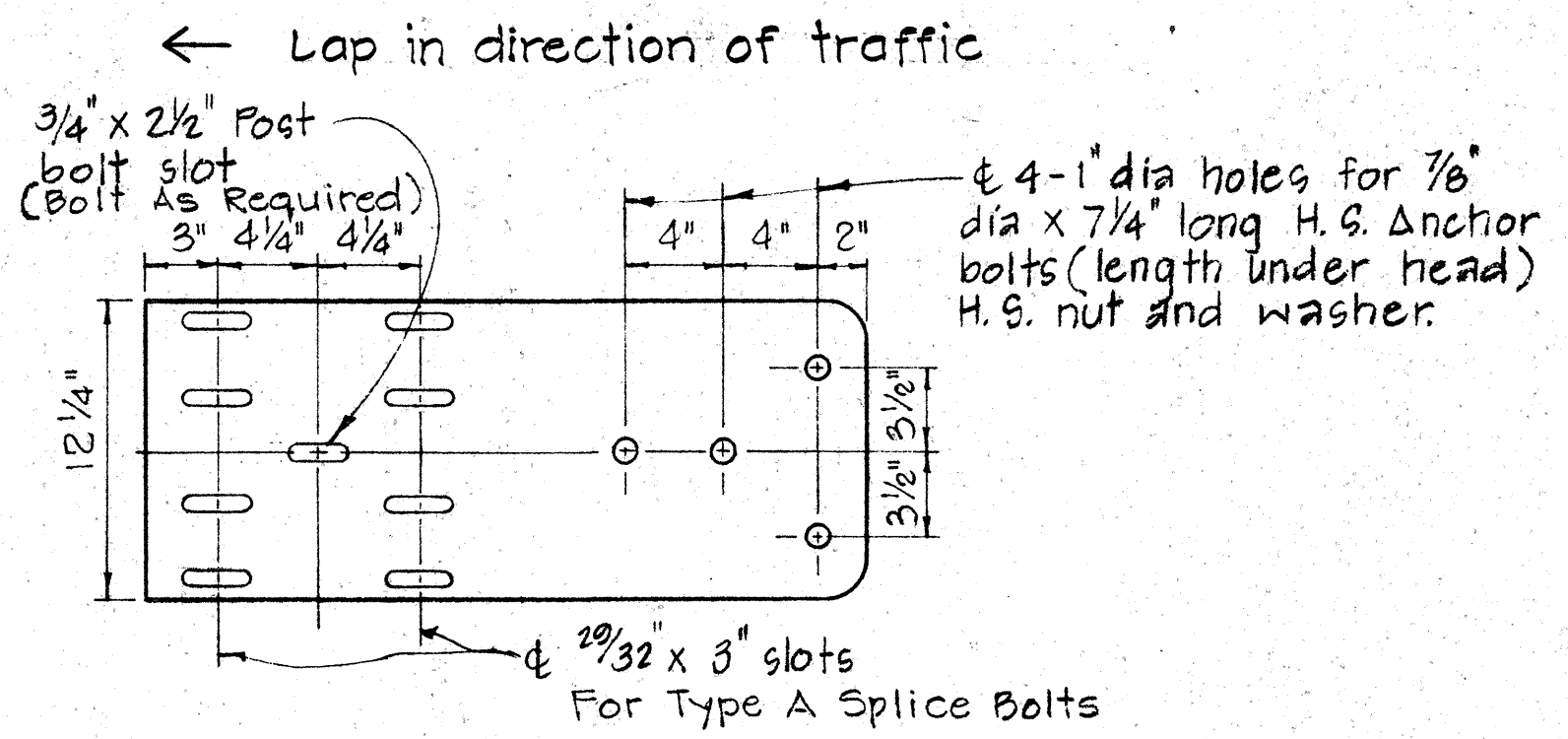
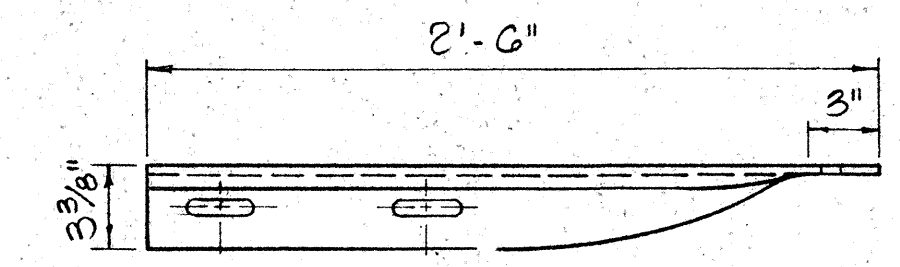
TYPE B BOLT

SPlice RAIL AND POST BOLTS

Scale: Full Size

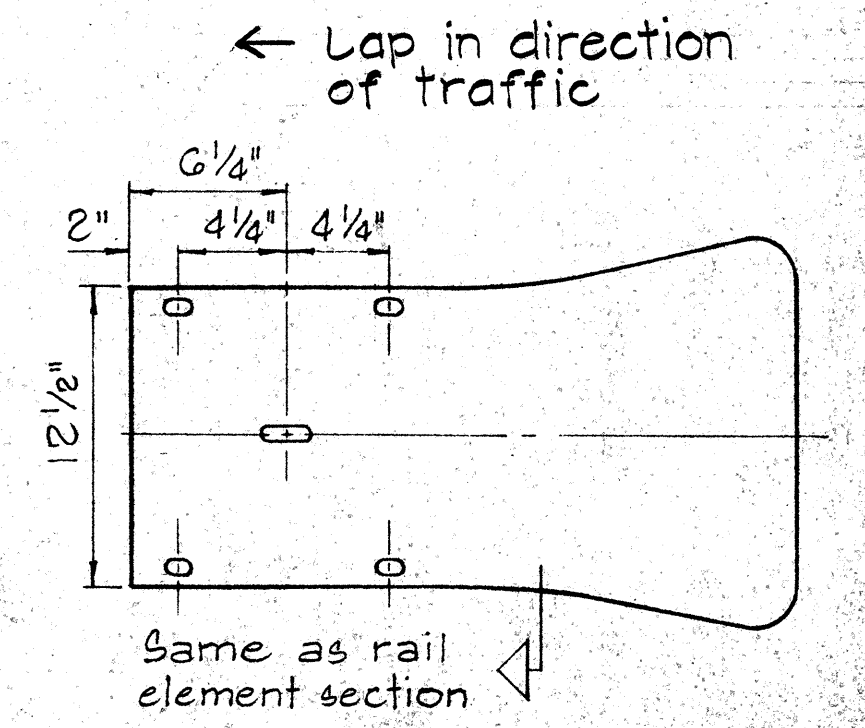
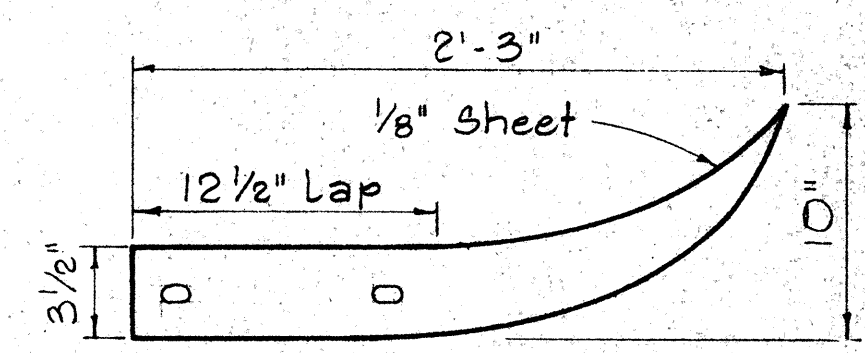
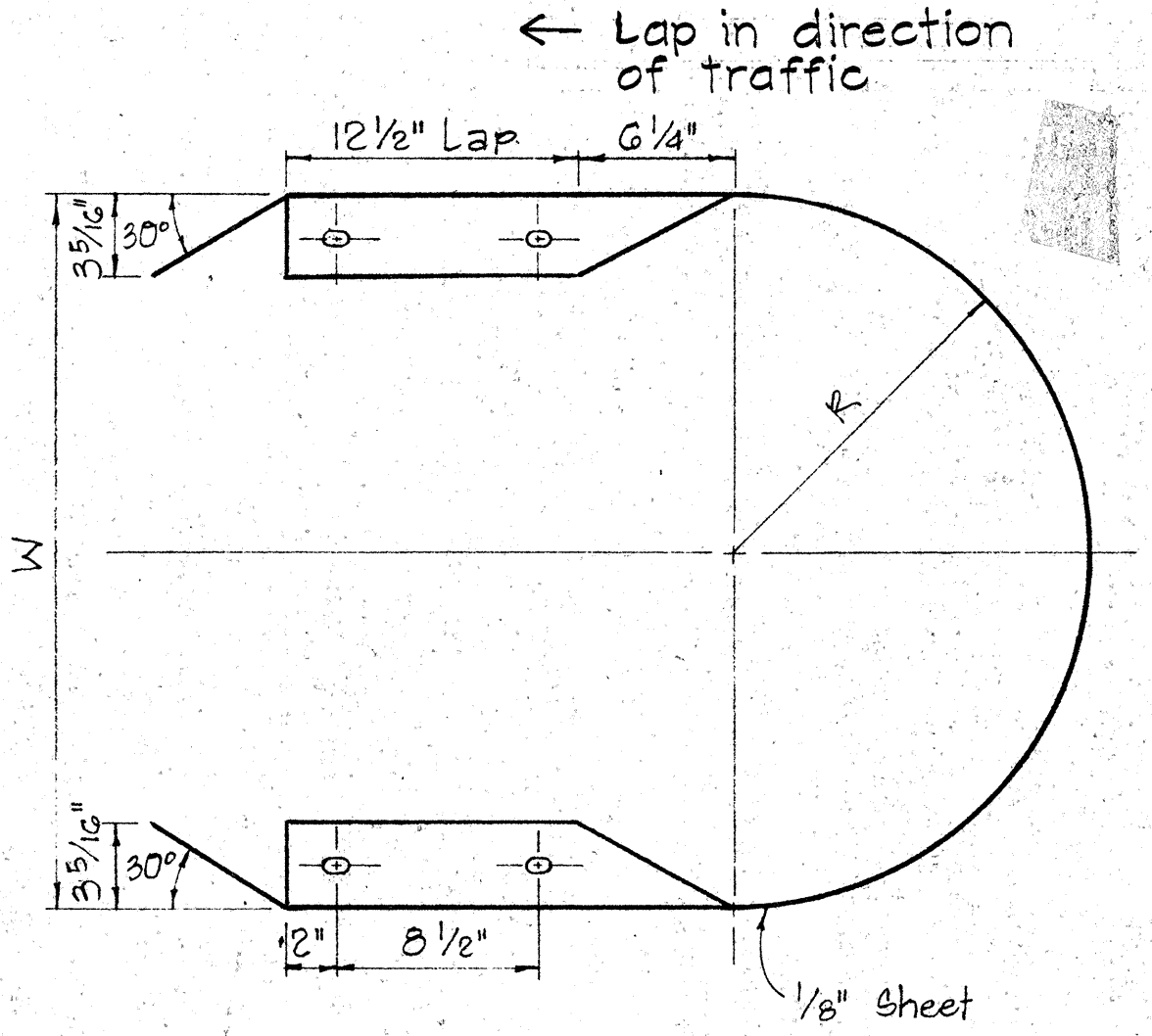
HEXAGON NUT

Scale: Full Size



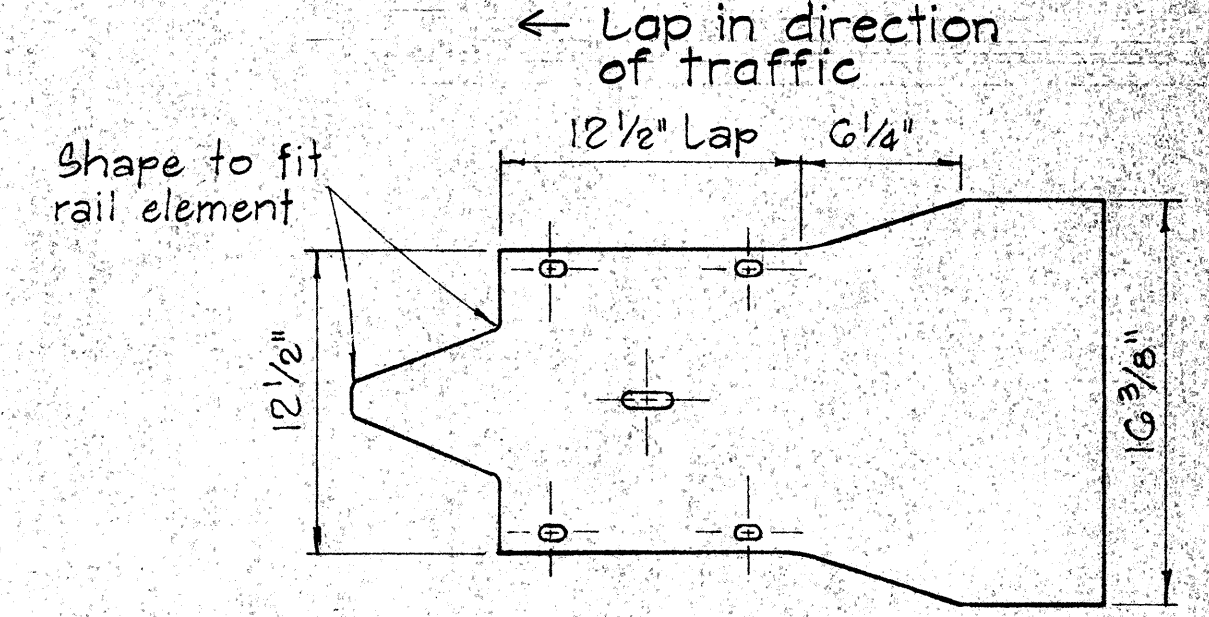
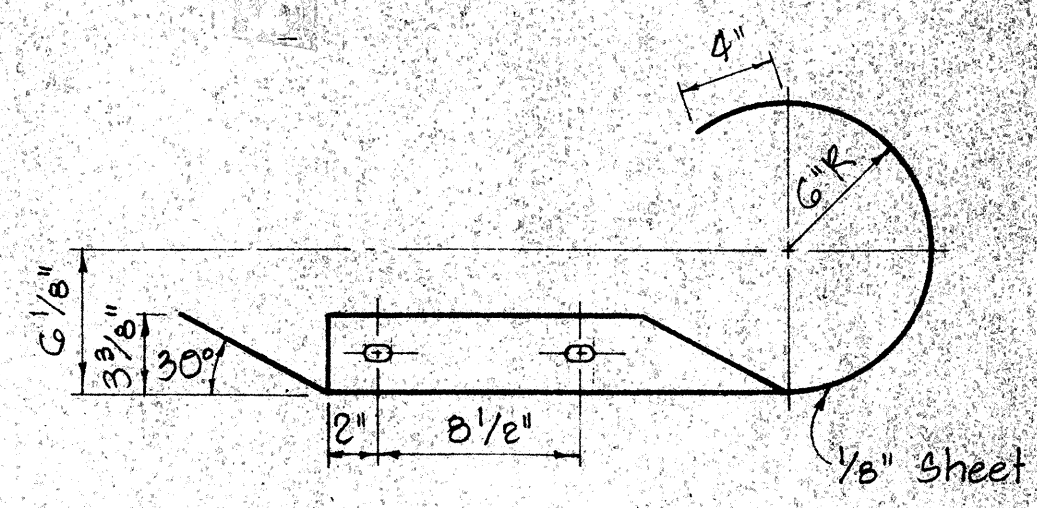
SPECIAL END SHOE

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



FLARED END

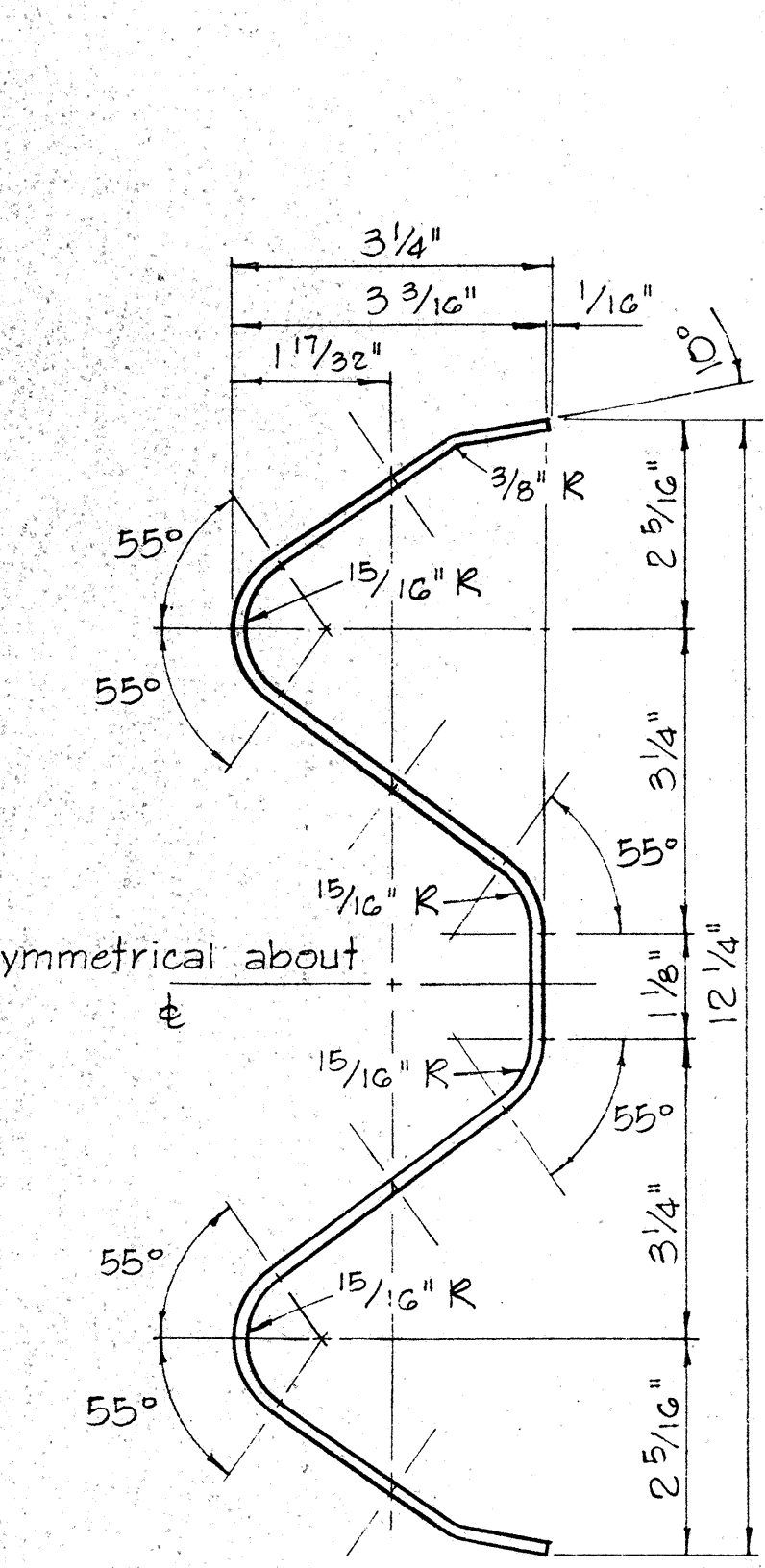
Scale: 1 1/2" = 1'-0"



CURVED END

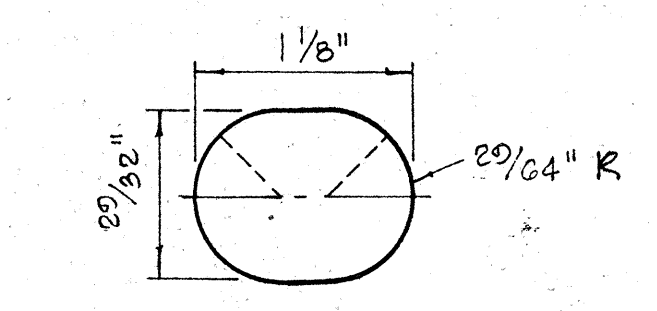
Scale: 1 1/2" = 1'-0"

APPROVAL RECOMMENDED:
TRAFFIC ENGINEER
APPROVED:
ASSISTANT CHIEF, ENGINEERING



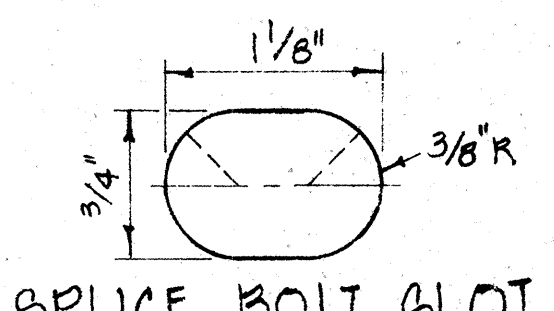
RAIL ELEMENT SECTION

Scale: 6" = 1'-0"

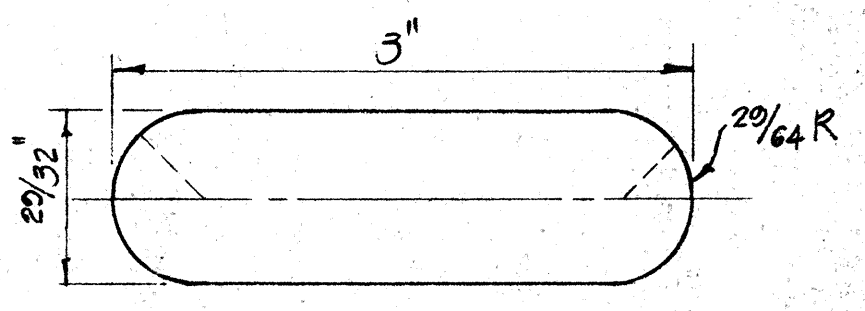


SPlice BOLT SLOT

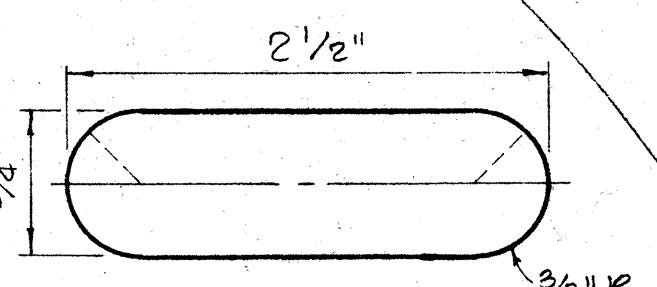
Scale: Full Size



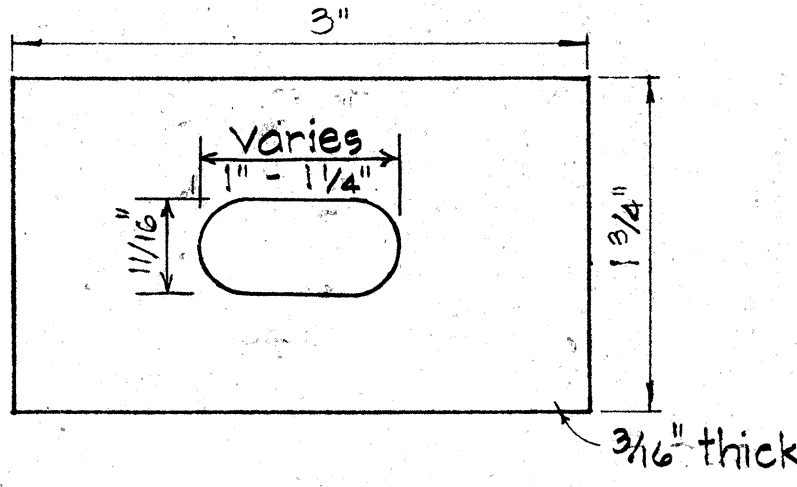
SPlice BOLT SLOT FOR ALL ENDS



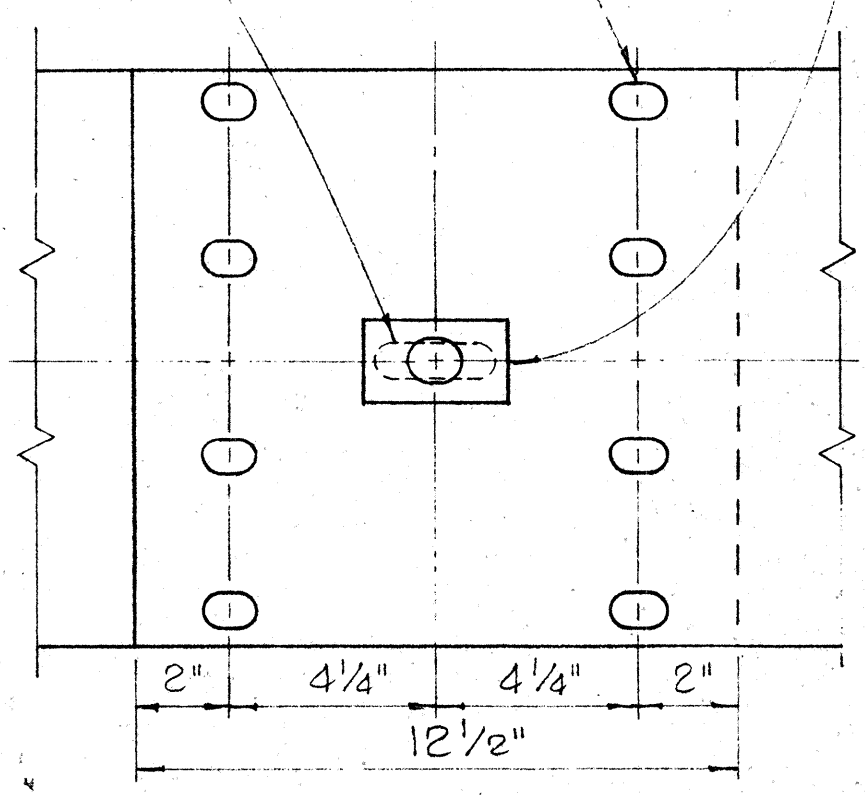
SPlice BOLT SLOT FOR SPECIAL END SHOE



POST BOLT SLOT



RAIL WASHER



RAIL SPlice

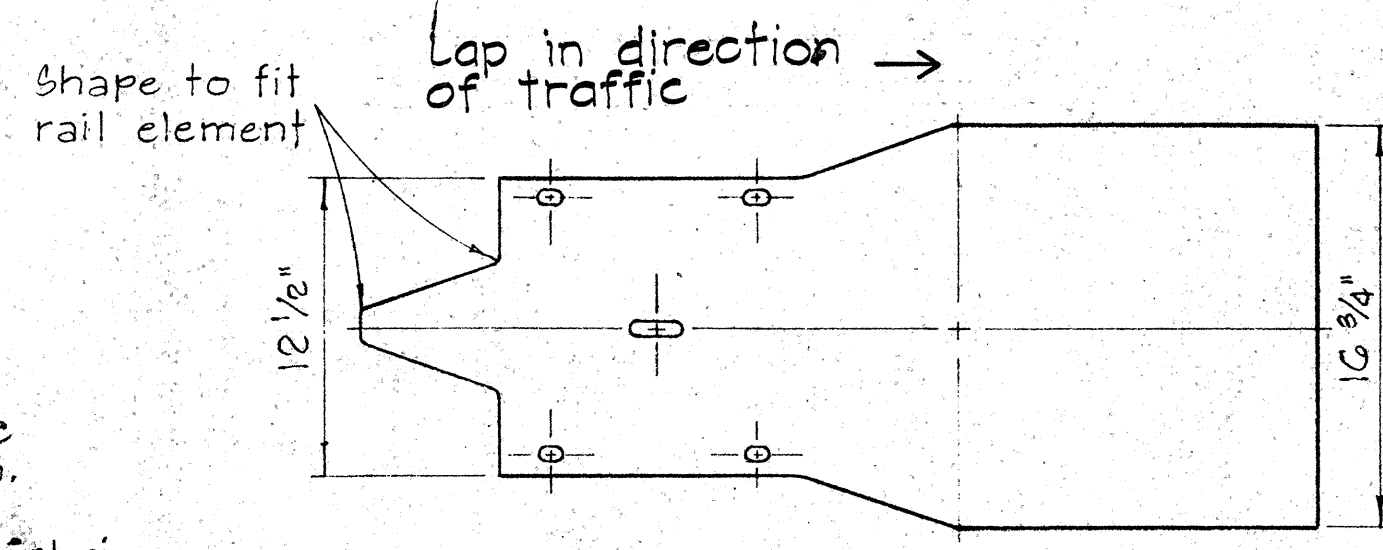
Scale: 3" = 1'-0"

- NOTES:
- H.S. Bolts shall conform to the requirements of ASTM A 325.
 - Special End Shoe shall be fabricated from 10 Gage steel conforming to the requirements of AASHTO 150.

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

MEDIAN END

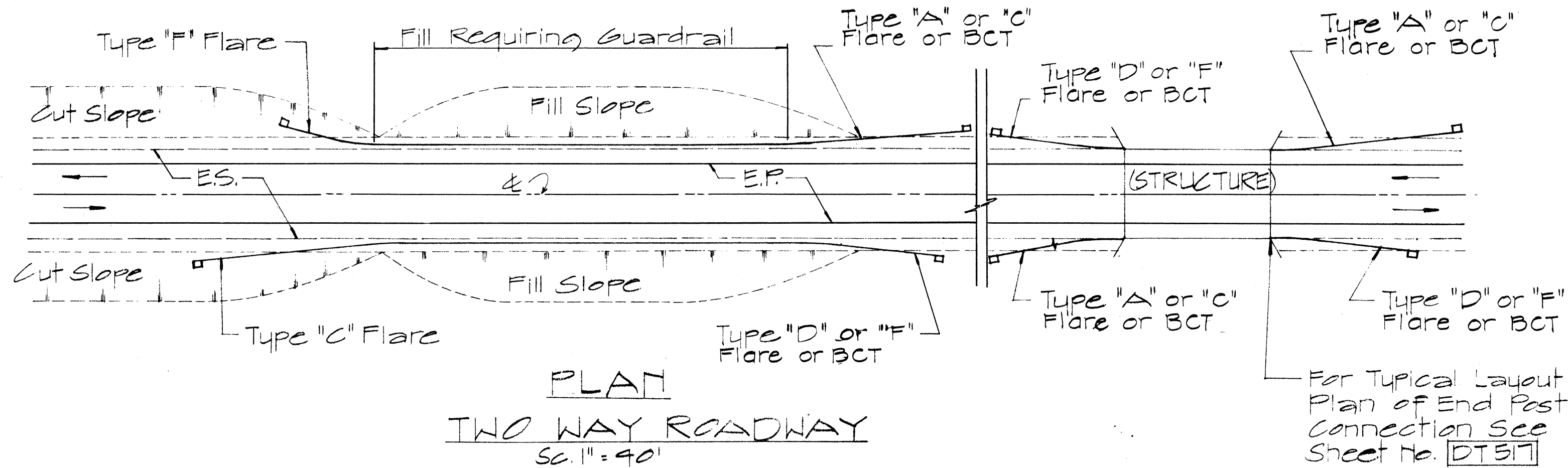
Scale: 1 1/2" = 1'-0"



NO	REVISION	APPROVED BY	DATE
1	Revised Hole Size for Rectangular Rail Washer	H.F.	8/10/77

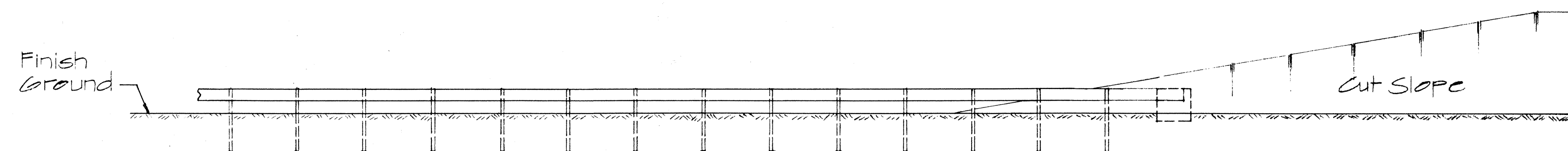
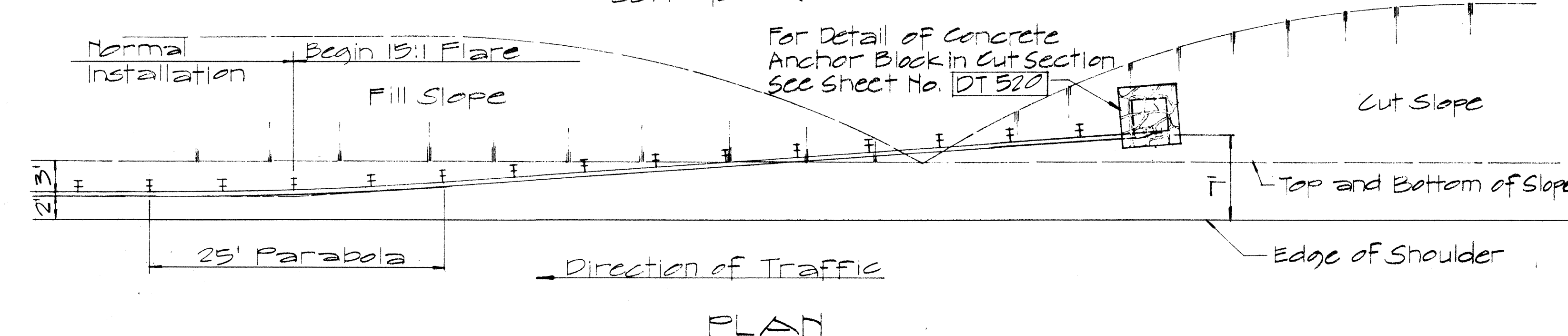
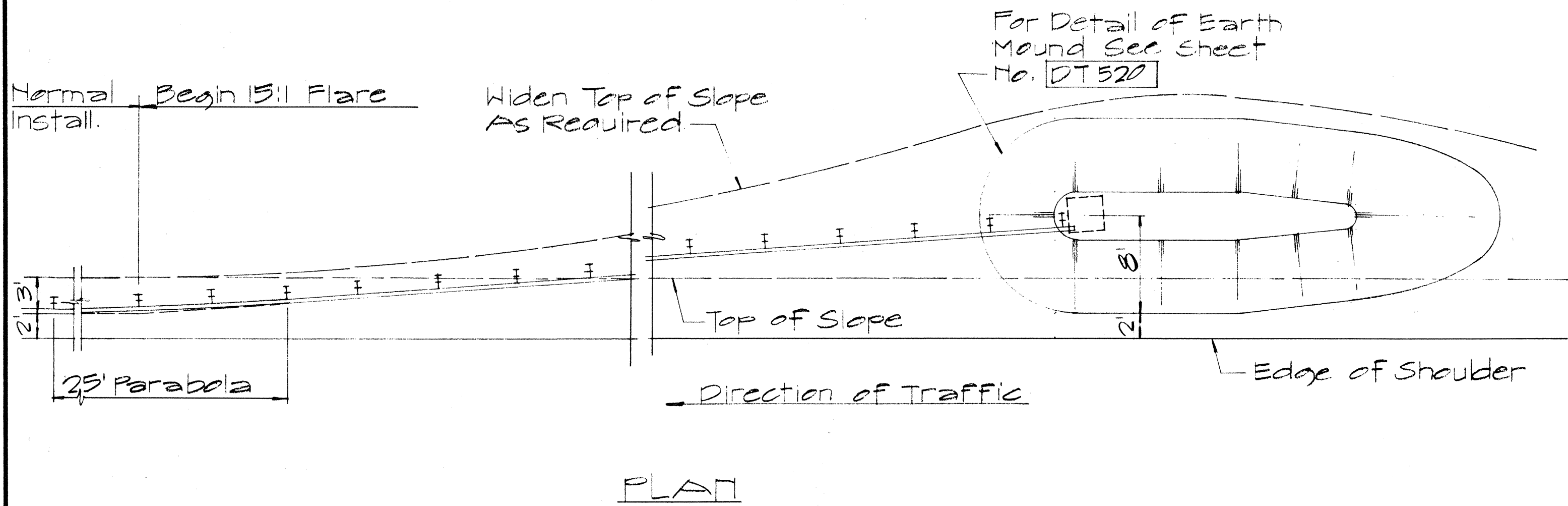
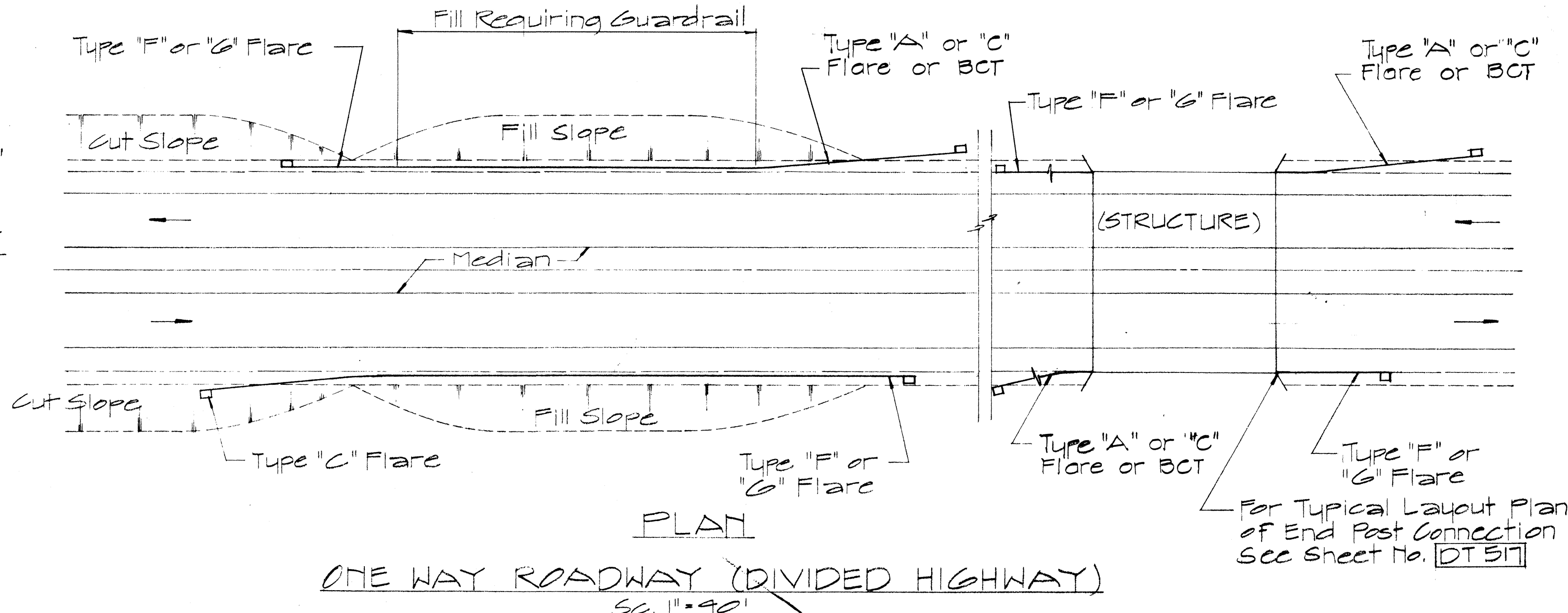
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION
STANDARD DETAILS
METAL GUARD RAIL

Scale: As Noted
August, 1968
SHEET No. 5 OF 11 SHEETS



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]

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	R05-017-2(19)	1978	15	20



APPROVAL RECOMMENDED:
Erich Tanaka 12/23/62
TRAFFIC ENGINEER DATE

APPROVED:
Alvin S. Delia 12-20-69
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE
1	Delete Type "B" Flare and Type "E" Flare	H.T.	6/15/78

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

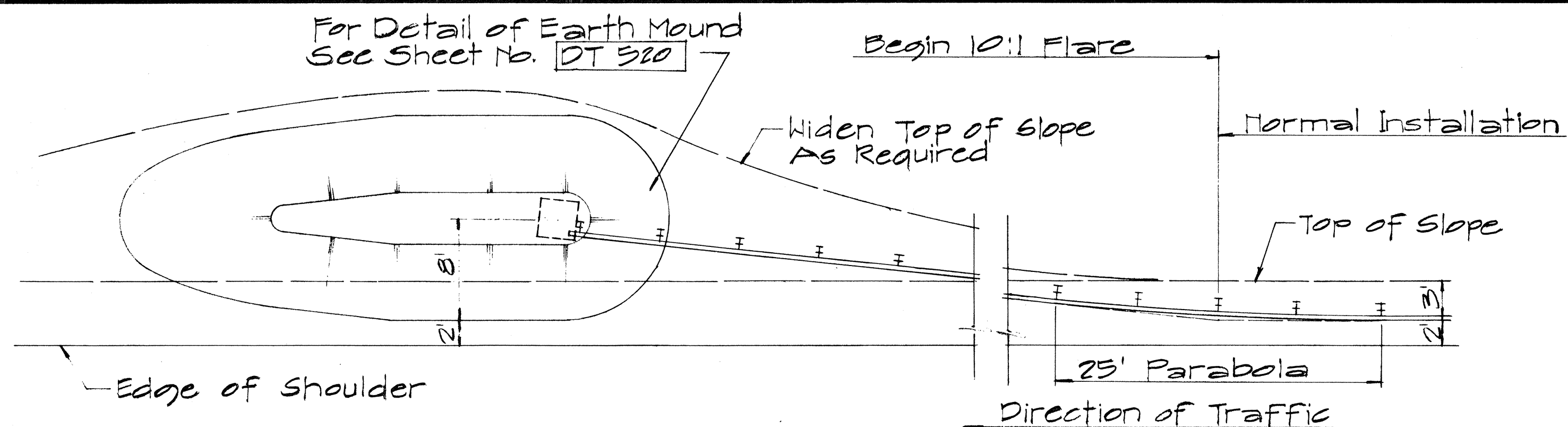
**STANDARD DETAILS
OF APPROACH END
FLARE - ONE & TWO
WAY ROADWAY**

Sc. As Noted April 1969

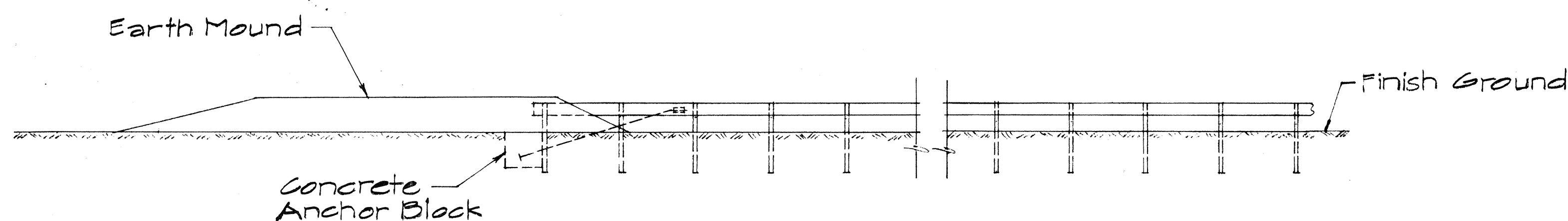
SHEET No. 6 OF 11 SHEETS [DT 516]

ORIGINAL PLAN	DATE
NOTED BY	
DESIGNED BY	
CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ROS-019-2(15)	1978	16	20



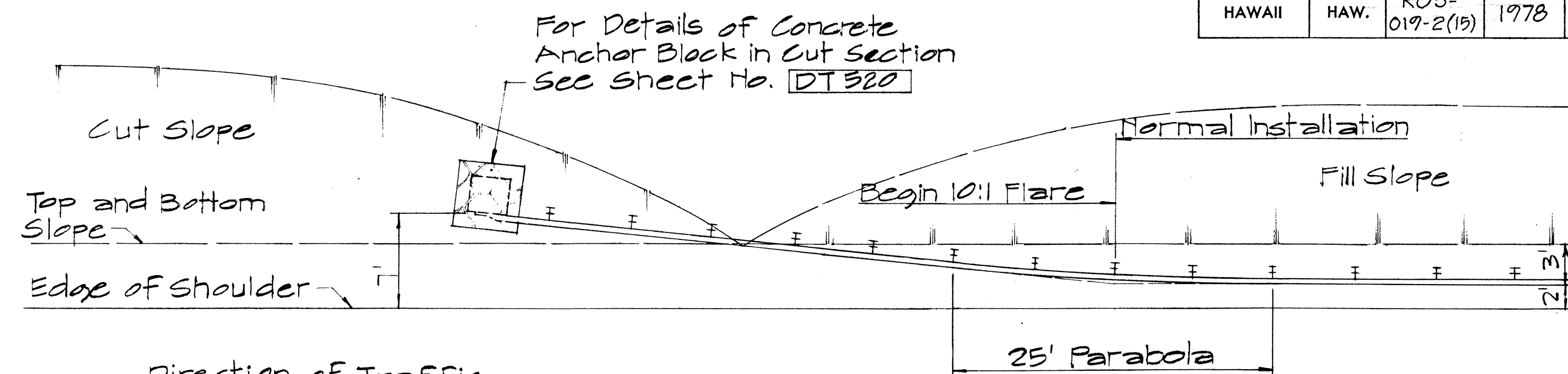
PLAN



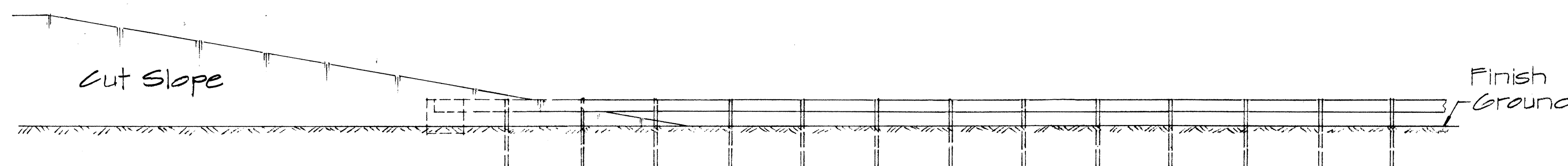
ELEVATION

TYPE "D" FLARE

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



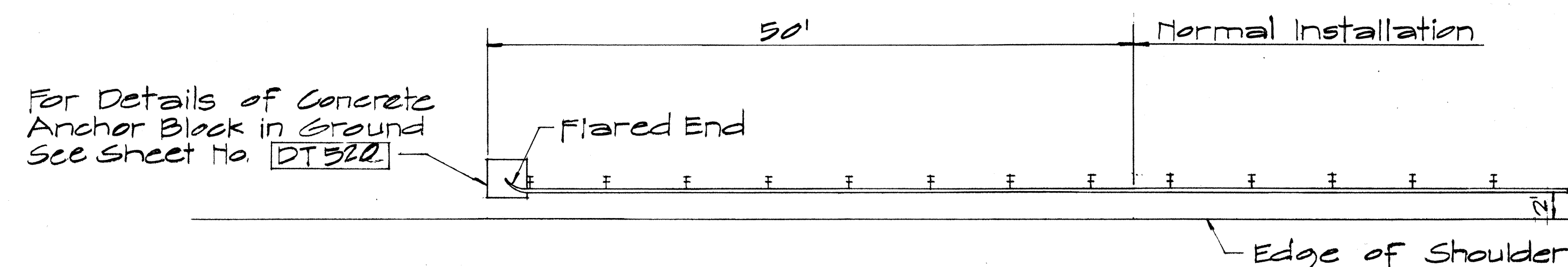
PLAN



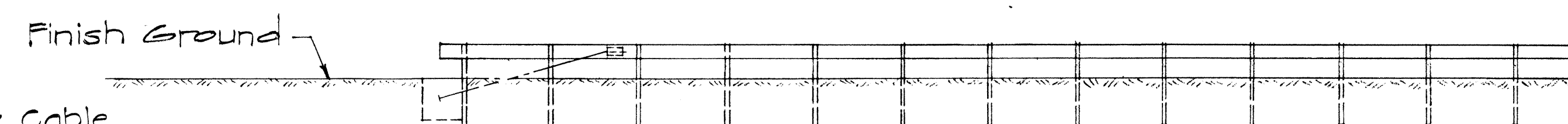
ELEVATION

TYPE "F" FLARE

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



PLAN

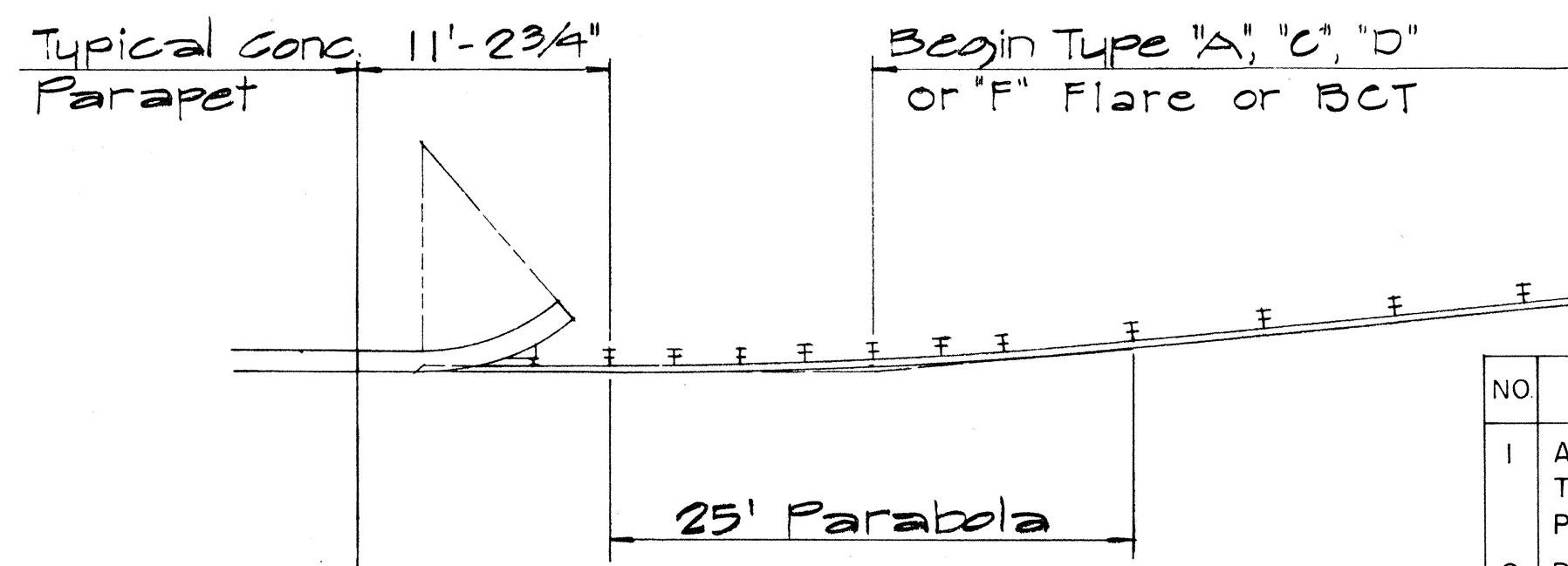


ELEVATION

TYPE "G" FLARE

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

NOTE:
For detail of Breakaway Cable Terminal (BCT) See Sheet No. DT 517



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.C.	4-12-72
2	Delete Type "B" Flare and Type "E" Flare	H.C.	6-15-78

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

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

STANDARD DETAILS
TRAILING END
FLARE - ONE & TWO
WAY ROADWAY

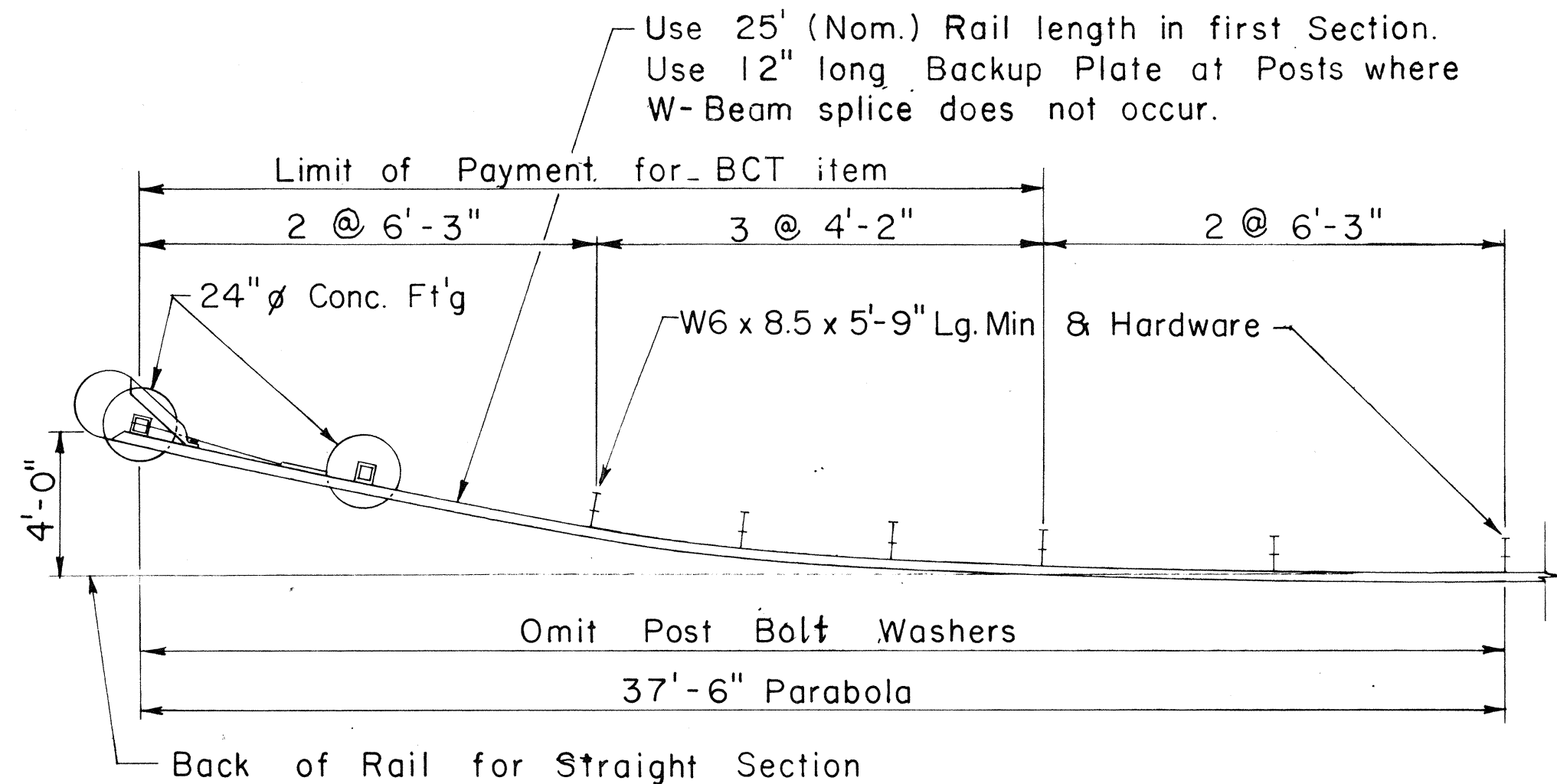
Scale: As Noted April 1969

SHEET No. 7 OF 11 SHEETS DT 517

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ROS-017-2(15)	1978	17	20

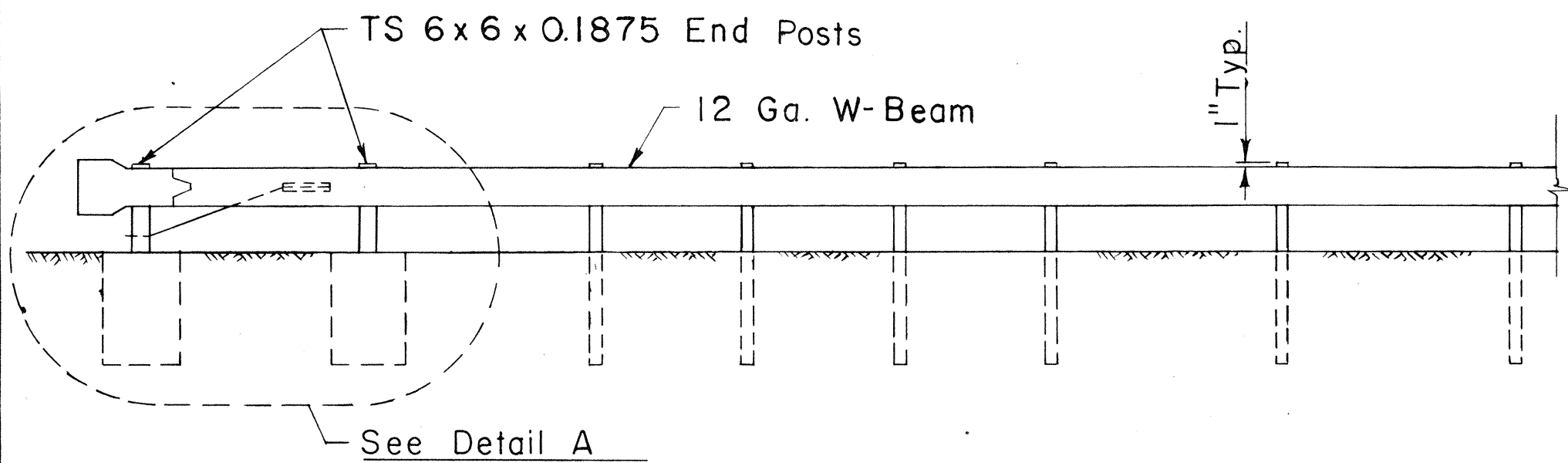
NOTES:

1. Anchor Plate and Anchor Cable Assembly (Standard Swaged Fitting and Stud). See Standard Detail Sheet No. DT 520.
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.



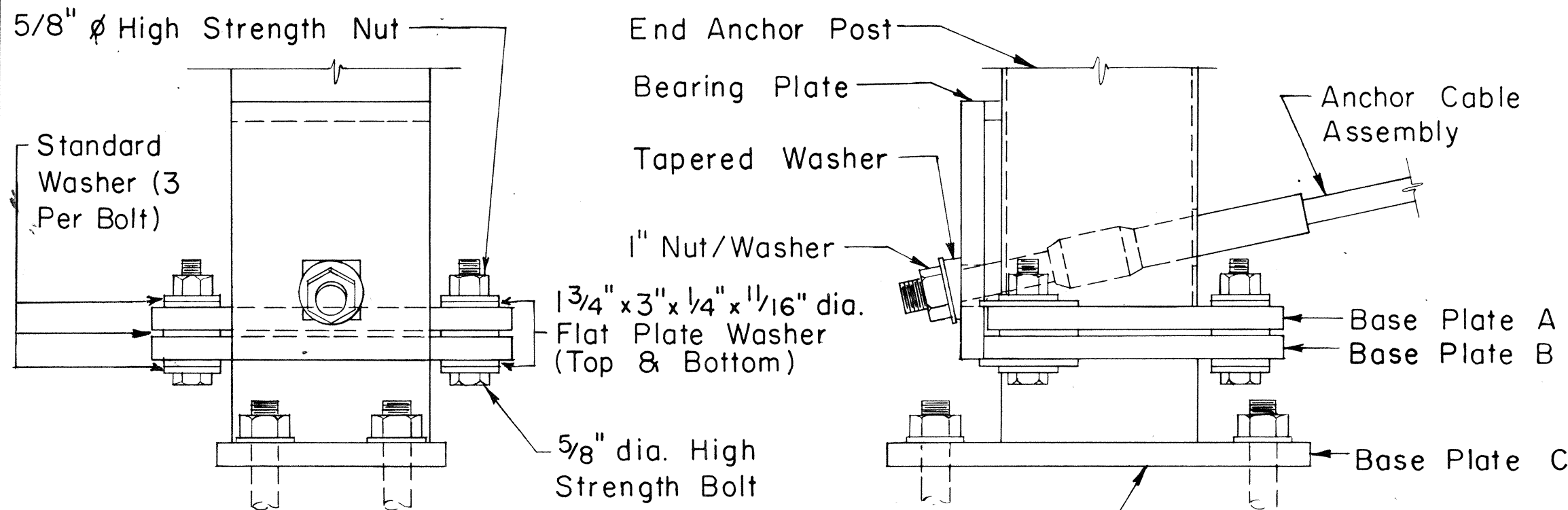
PLAN

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



ELEVATION

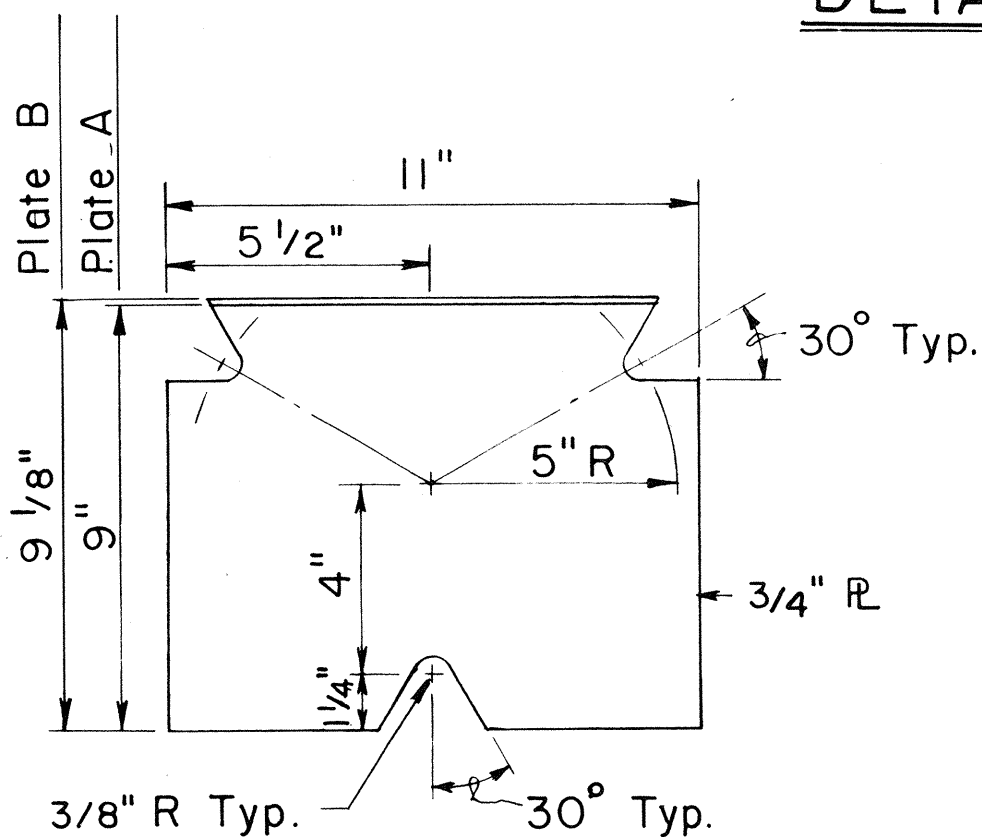
Scale: 1/4" = 1'-0"



SIDE ELEVATION

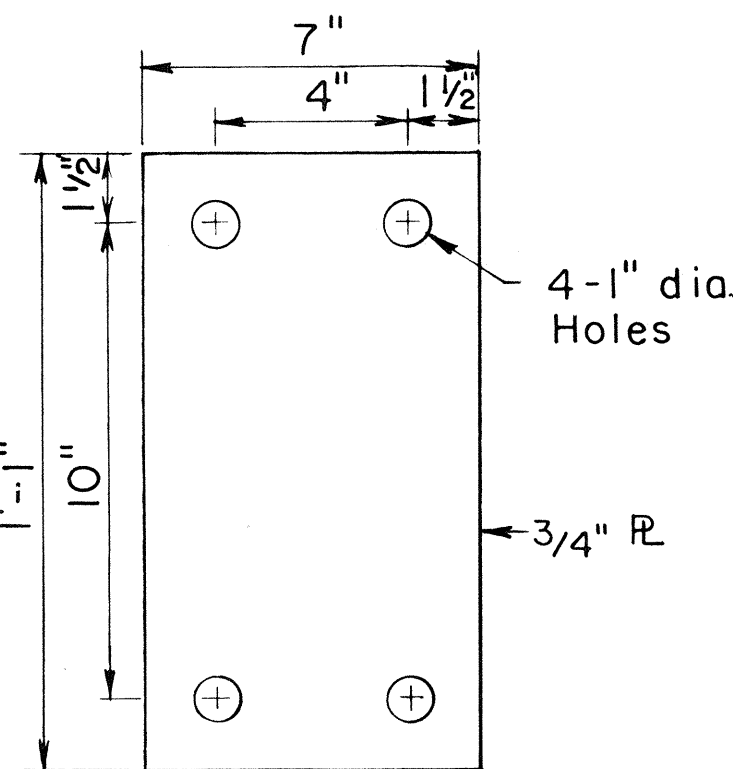
DETAIL B

FRONT ELEVATION



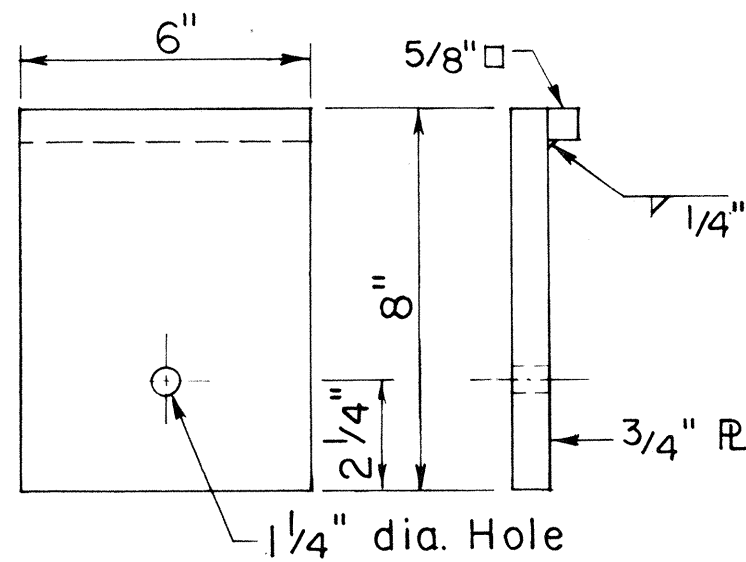
BASE PLATES A & B

Scale: 3" = 1'-0"



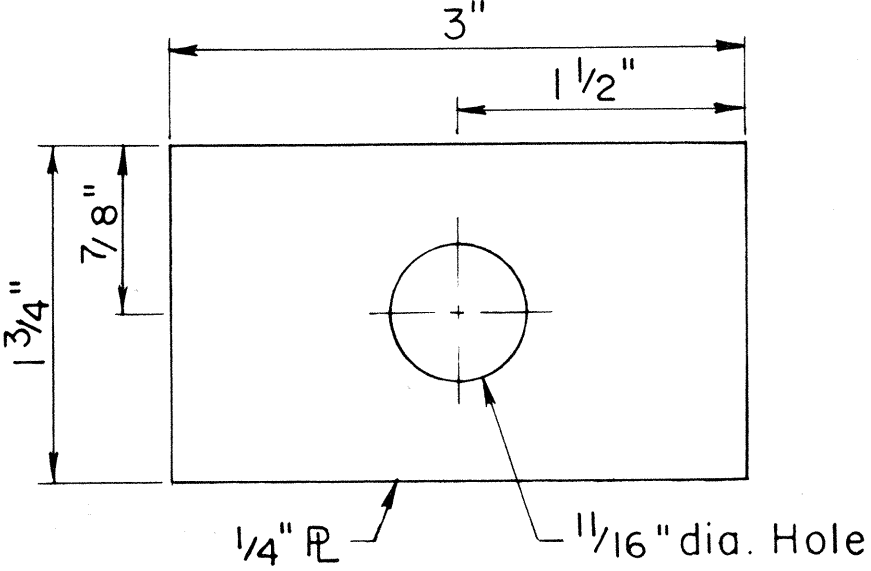
BASE PLATE C

Scale: 3" = 1'-0"



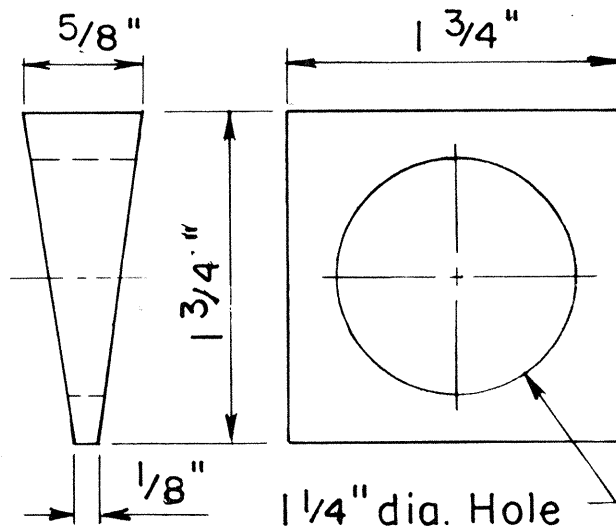
BEARING PLATE

Scale: 3" = 1'-0"



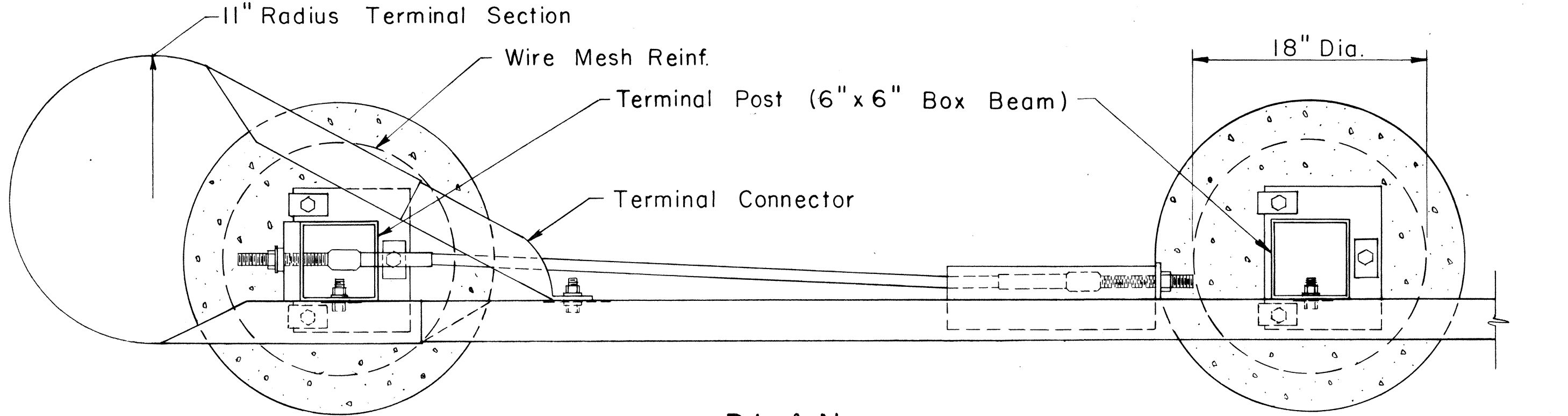
FLAT PLATE WASHER

Scale: Full Size

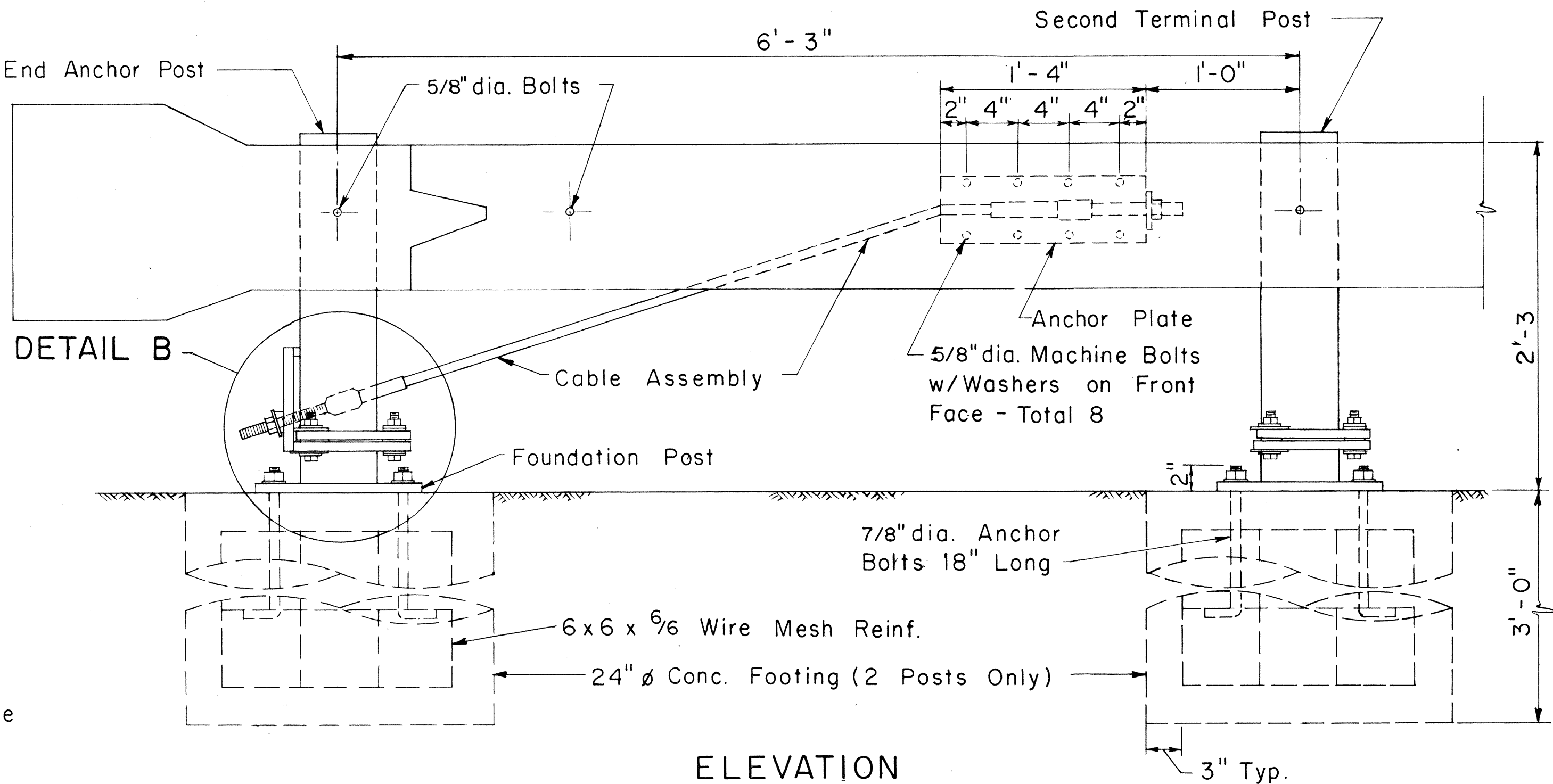


TAPERED WASHER

Scale: Full Size



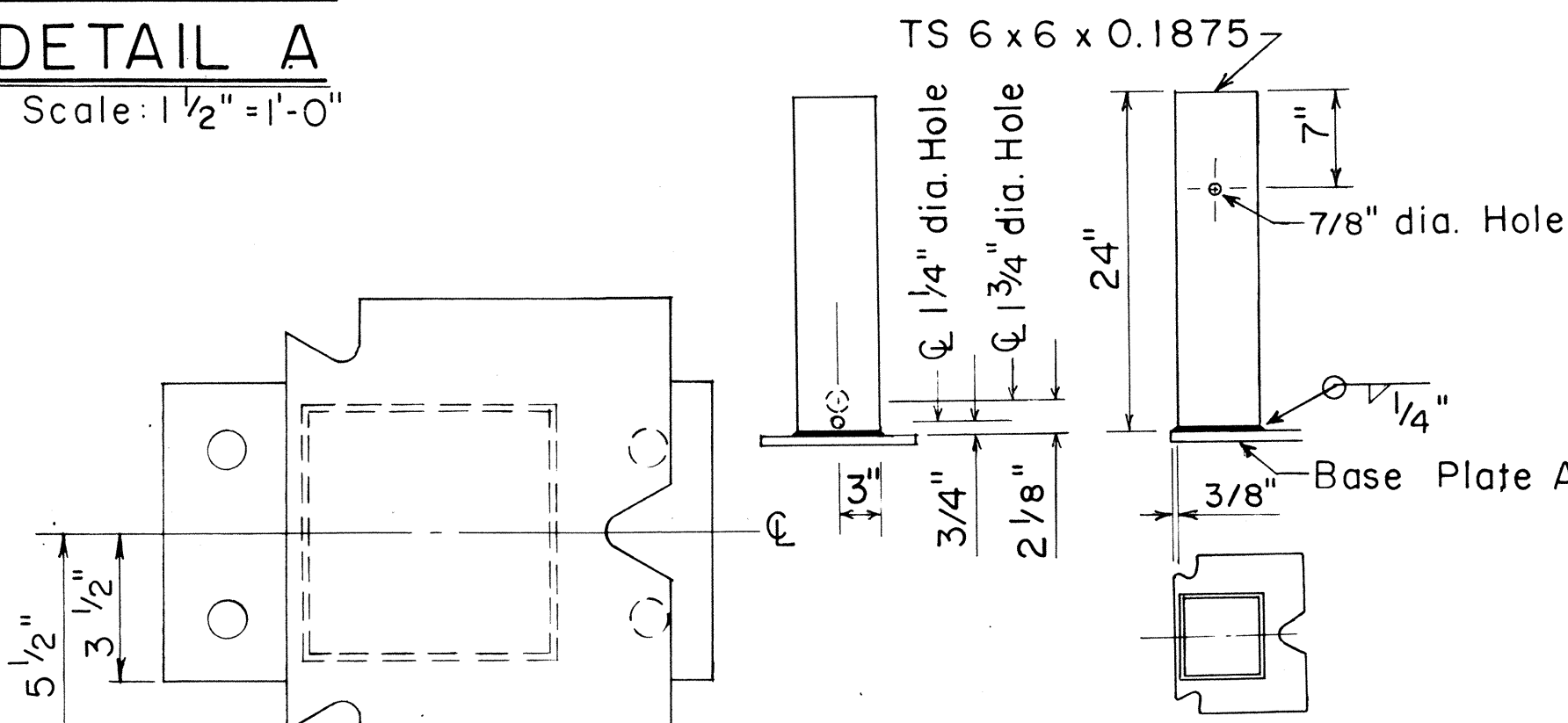
PLAN



ELEVATION

DETAIL A

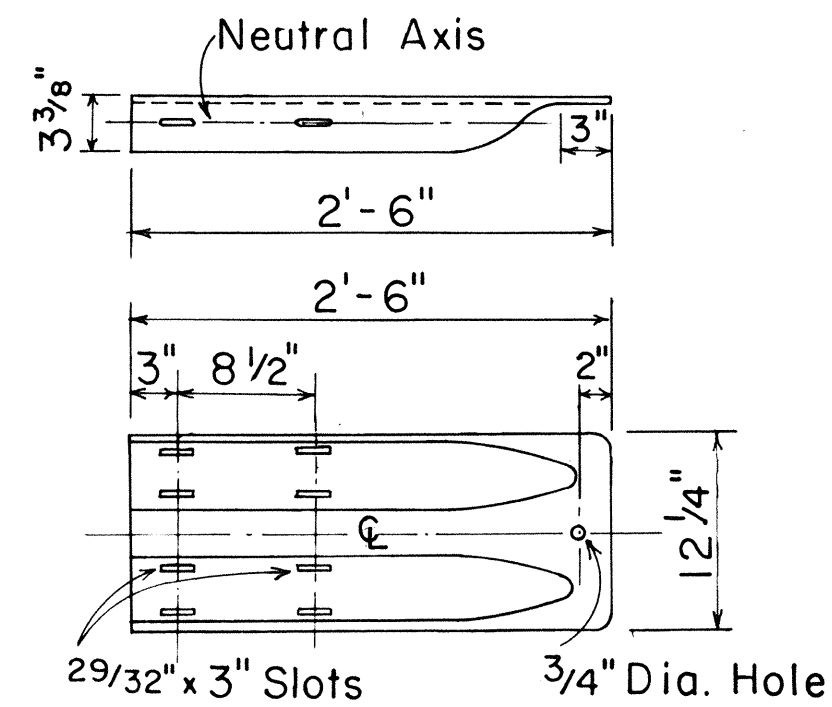
Scale: 1/2" = 1'-0"



TERMINAL POST

Scale: 1" = 1'-0"

NO.	REVISION	APPROVED BY	DATE
1	Supersedes Sht. DT 519 Approved 12/30/69	H.T.	6/15/78



TERMINAL CONNECTOR

Scale: 1" = 1'-0"

APPROVAL RECOMMENDED:

Eiichi Tanaka
TRAFFIC ENGINEER

6/14/78
DATE

APPROVED:

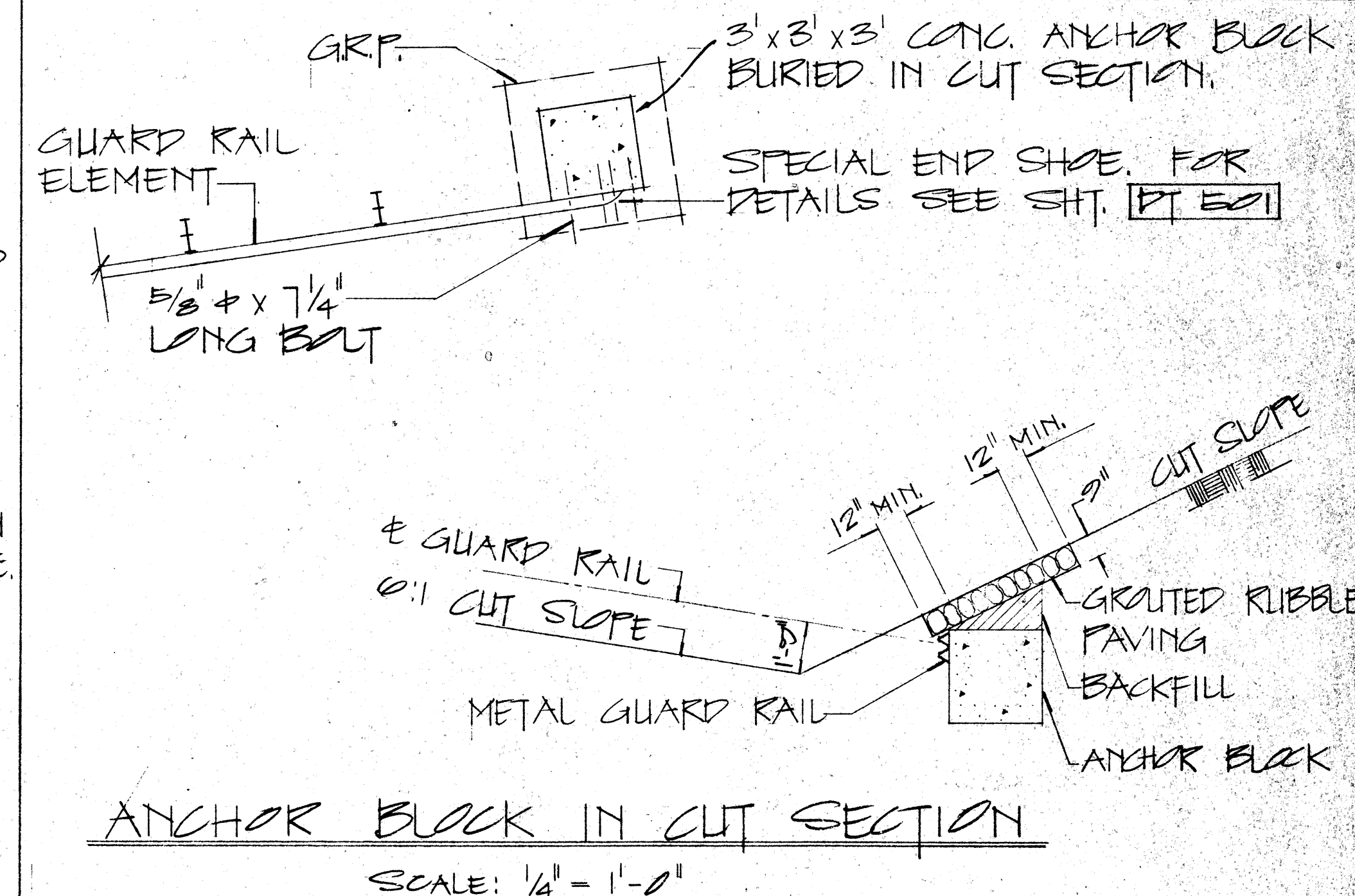
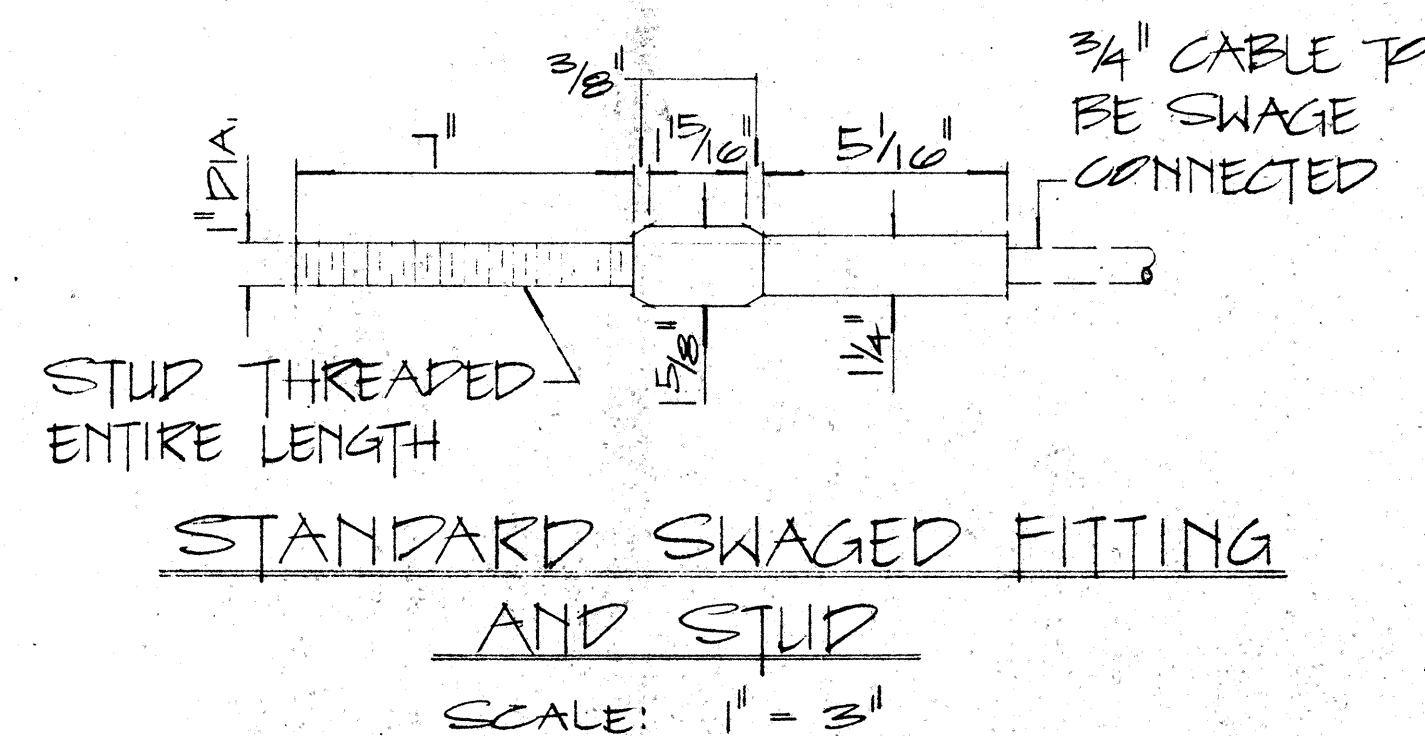
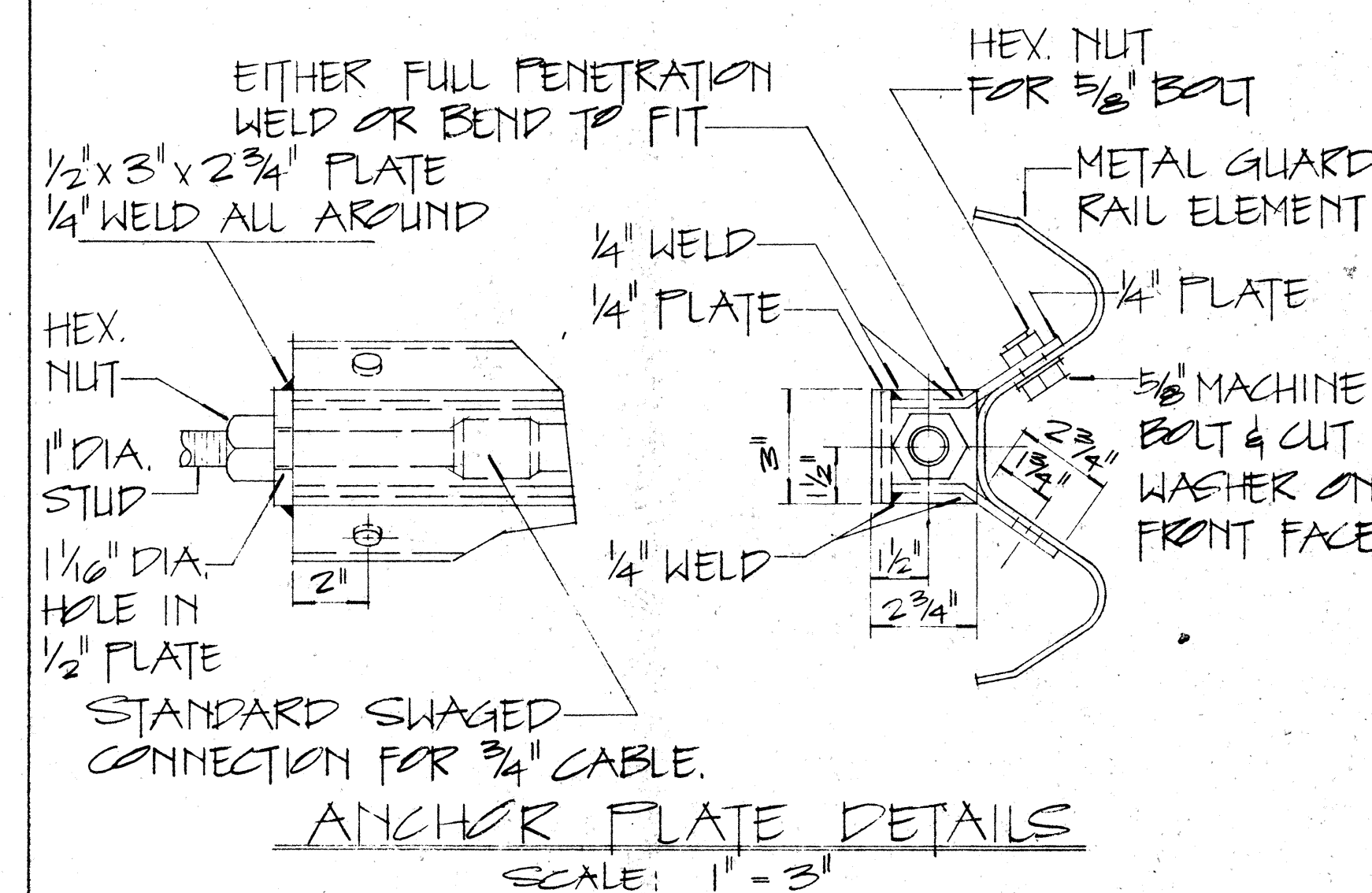
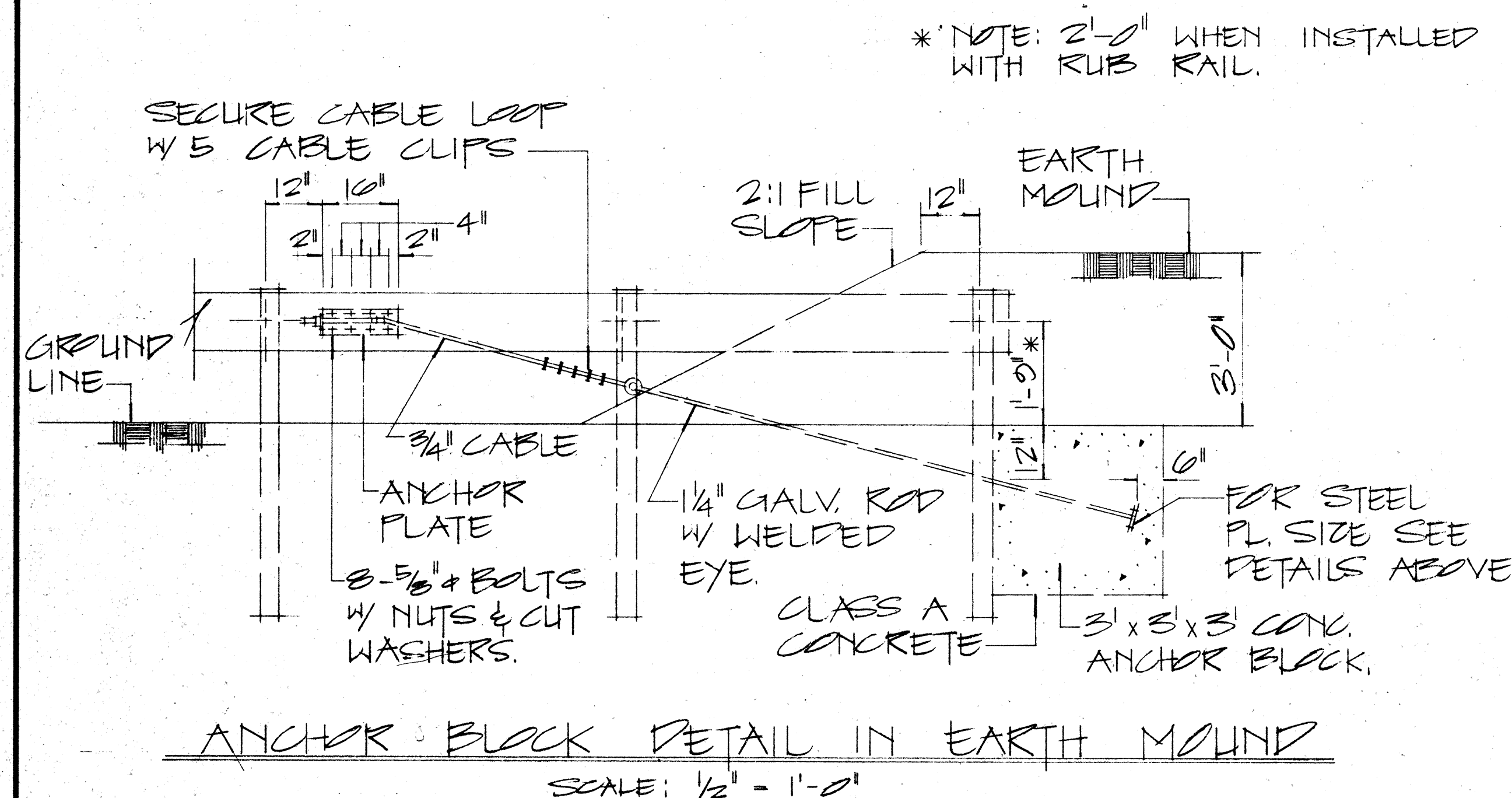
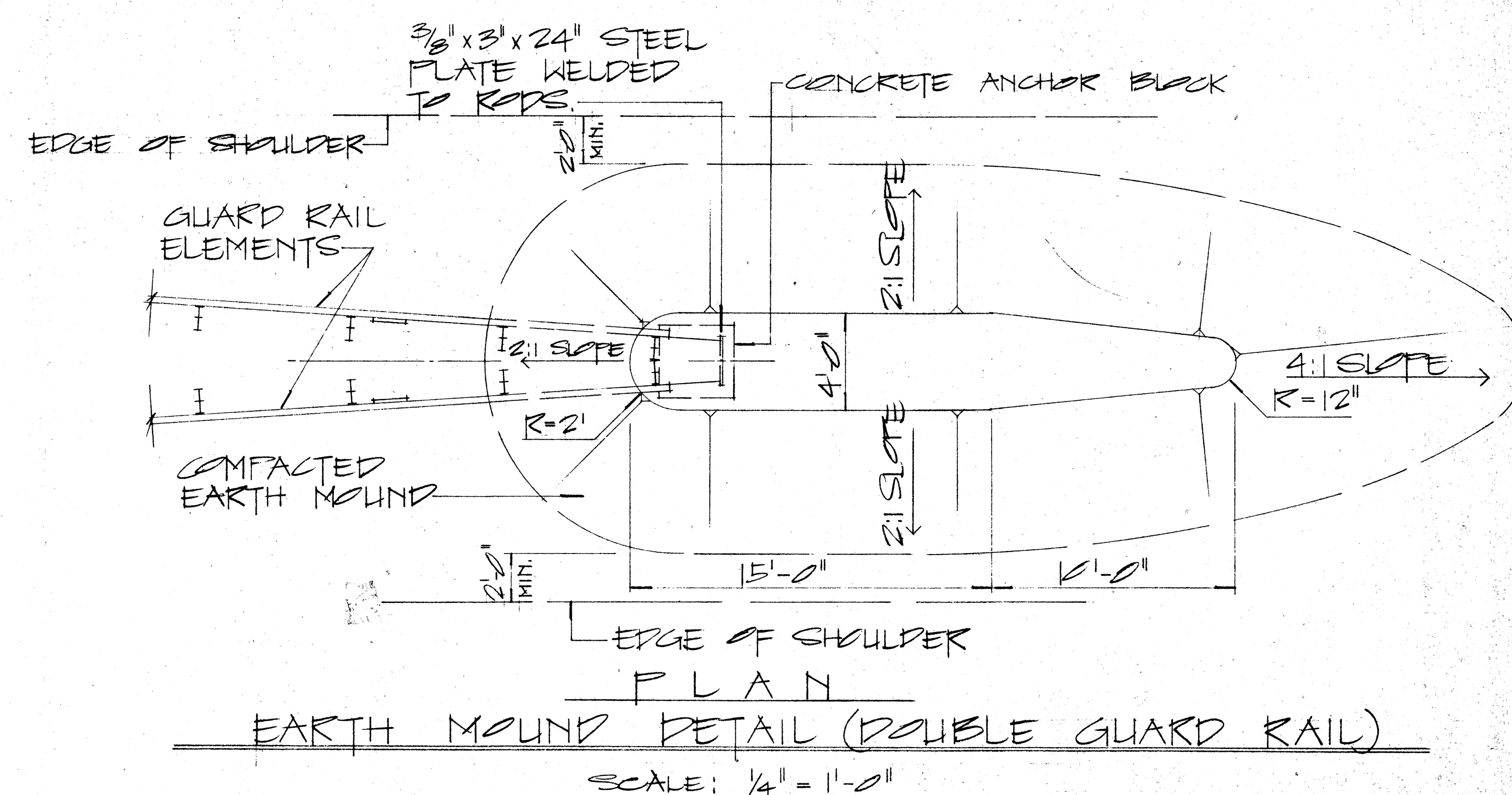
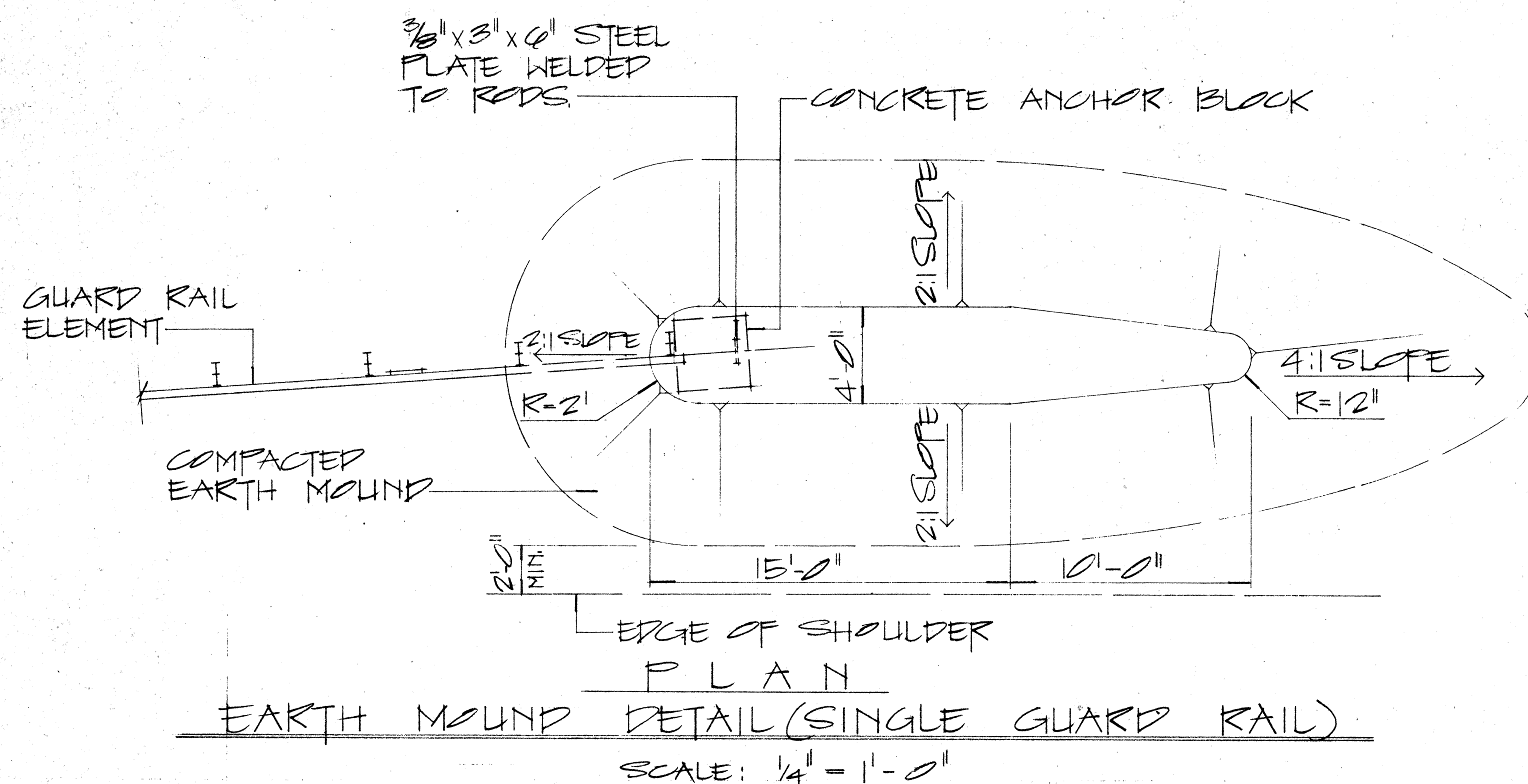
Harbour Zakeishi
ASSISTANT CHIEF, ENGINEERING

6/15/78
DATE

STATE OF HAWAII	
DEPARTMENT OF TRANSPORTATION	
LAND TRANSPORTATION FACILITIES DIVISION	
STANDARD DETAIL	
BREAKAWAY CABLE TERMINAL (BCT)	
Scale: As Shown	Date: June 1978
SHEET No. 8 OF 11 SHEETS DT 519	

ORIGINAL	DATE
PLAN	
DESIGNED BY	
TRACED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ROS-017-2(19)	1975	18	20

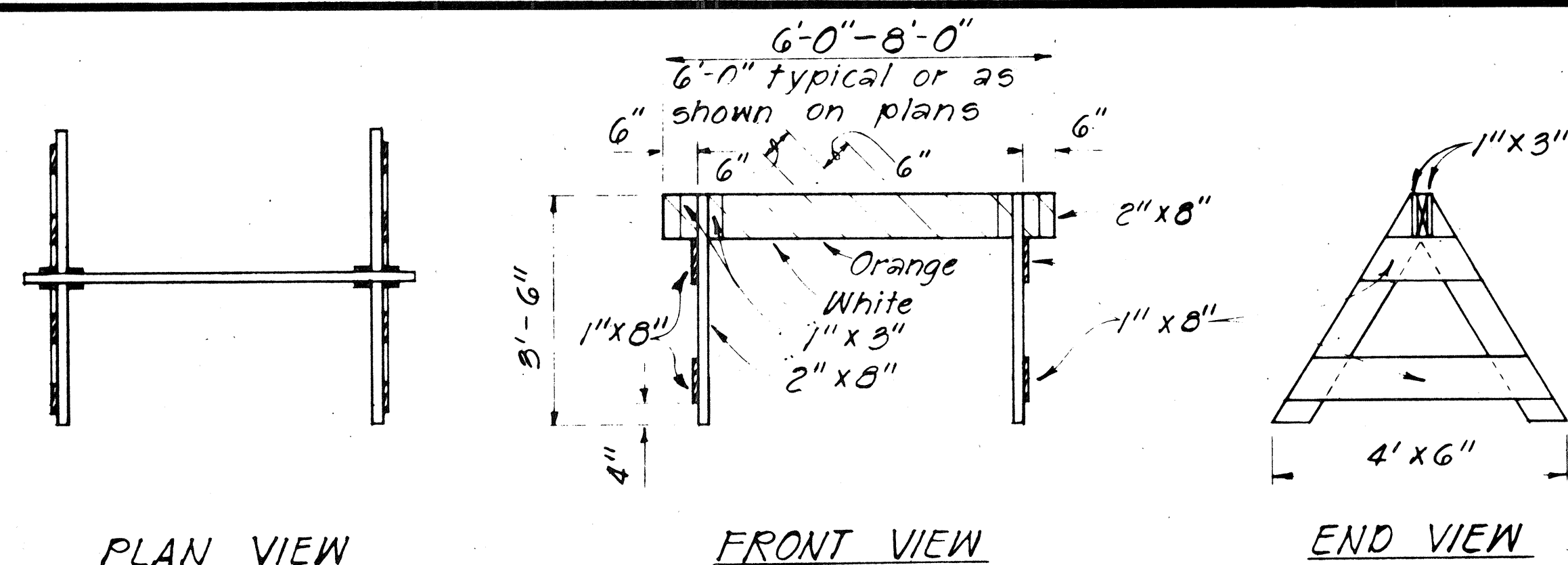


APPROVAL RECOMMENDED:		DATE
<u>Eusebio Tanaka</u>		12/29/62
TRAFFIC ENGINEER		
APPROVED:		DATE
<u>W. J. J. J.</u>		12-30-62
ASSISTANT CHIEF, ENGINEERING		

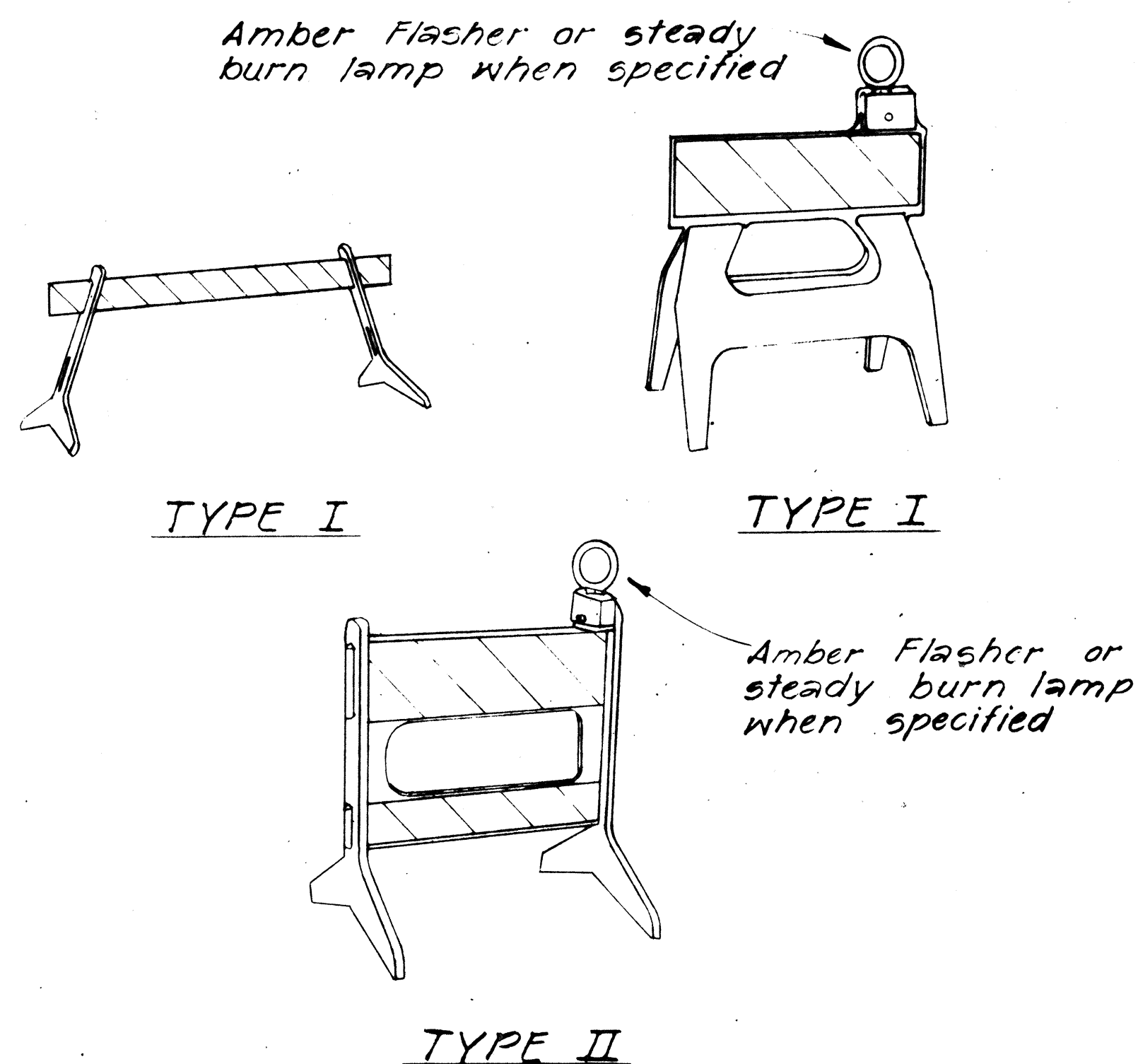
NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION
STANDARD DETAILS
EARTH MOUND AND ANCHOR BLOCK DETAILS
SCALE: AS SHOWN
SHEET NO. 9 OF 11 SHEETS

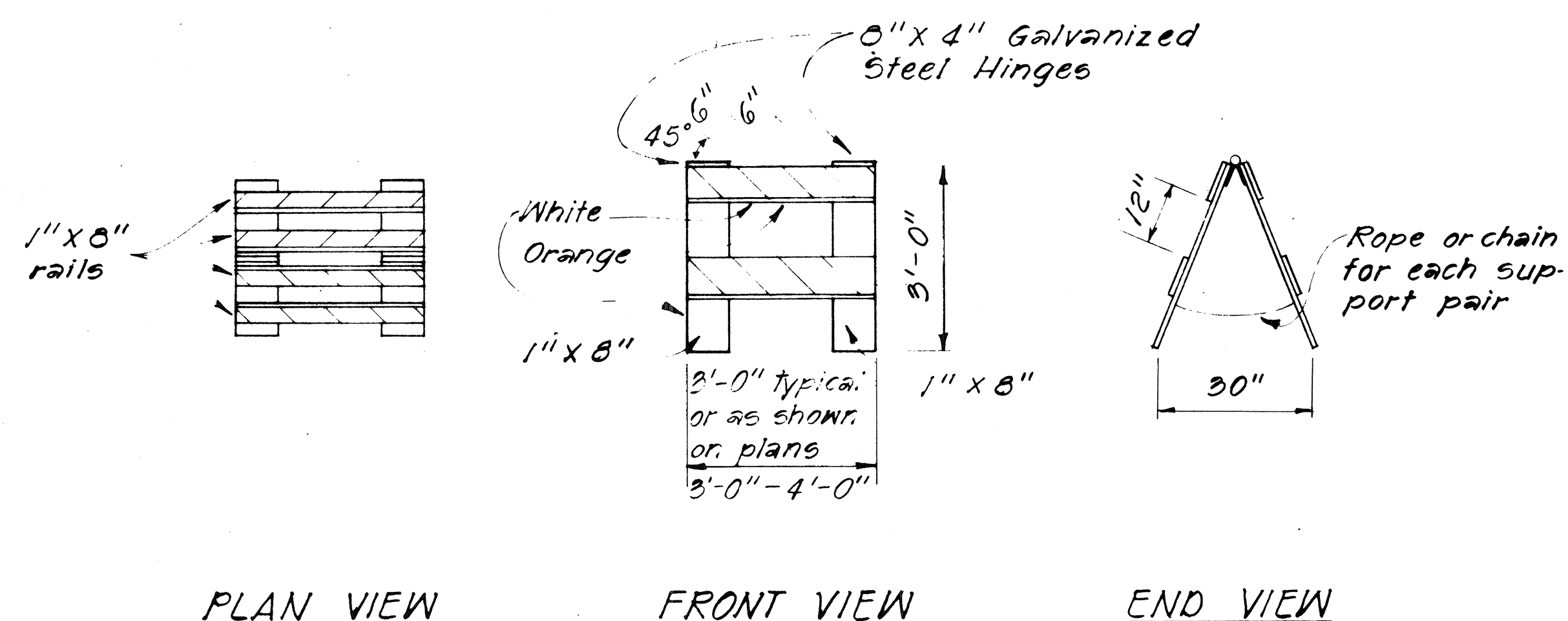
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	R03-019-2(12)	1978	19	20



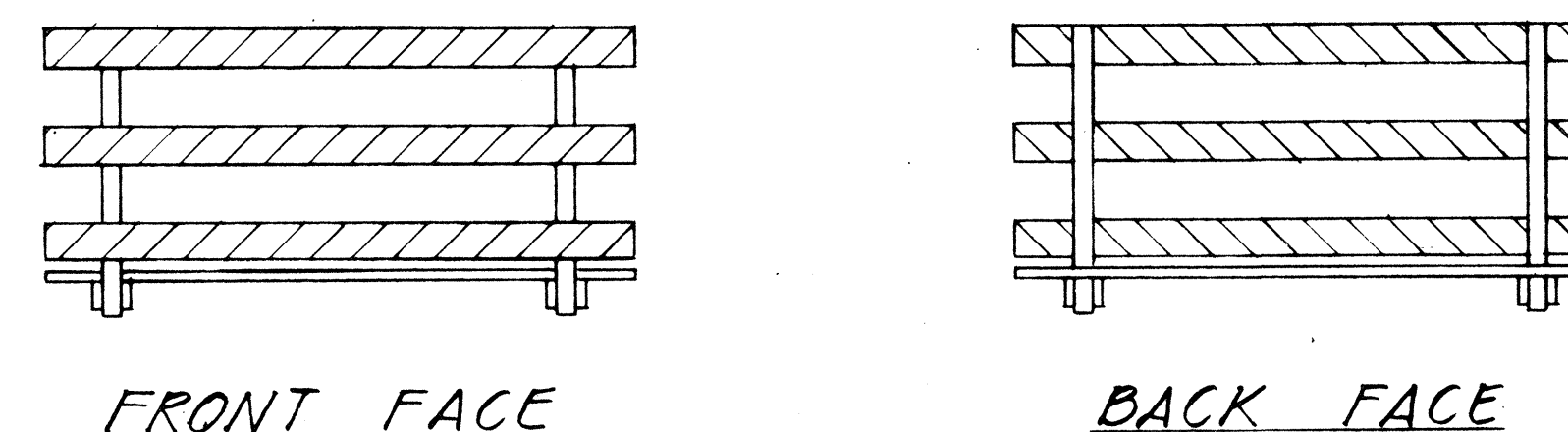
TYPE I BARRICADE
Scale: 1/2" = 1'-0"



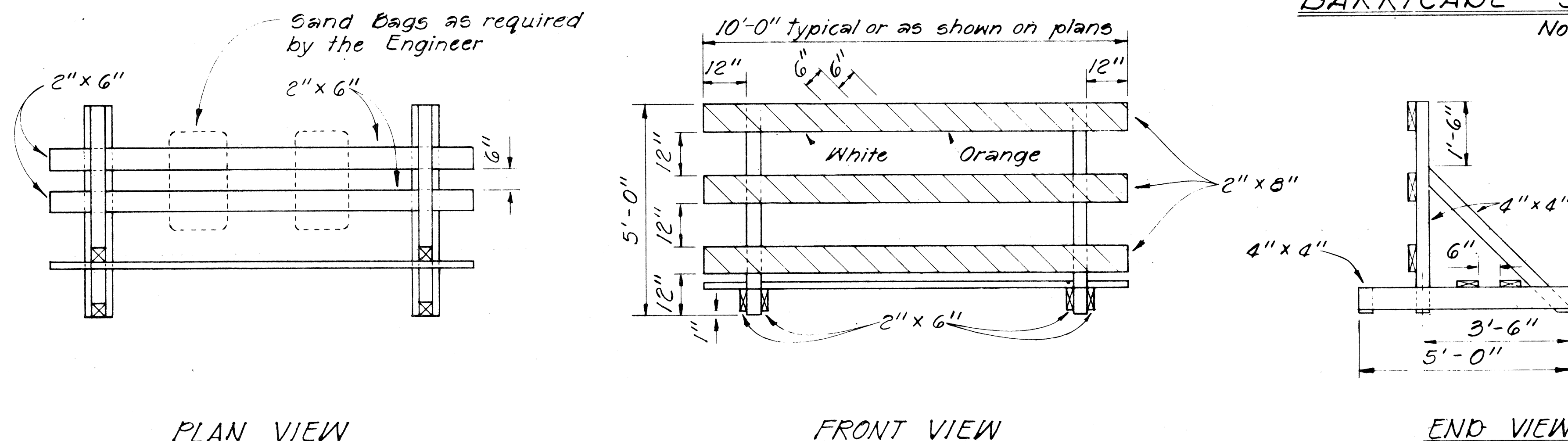
PLASTIC MOLDED BARRICADE OPTIONS *
Not to Scale
* Shop Drawings must be submitted for approval.



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



BARRICADE STRIPING DETAILS
Not to Scale



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

- GENERAL NOTES**
- The Contractor shall construct, install and maintain the barricades at the locations shown on the Plans.
 - The barricades shall be left in place or relocated upon completion of the project as ordered by the Engineer and are to become State property, unless otherwise specified.
 - The orange and white stripes shall slant downward toward the side on which traffic is to pass and shall be reflectorized with reflective sheeting.
 - Both faces of the barricade rails shall be striped. See Striping Detail Arrangement.
 - Contractor may submit alternate designs for approval.
 - Barricade details shall conform to the "Manual on Uniform Traffic Control Devices for Streets and Highways," 1971, by the Federal Highway Administration and as amended.
 - If wooden rails are used, 26 ga. galv. steel sheet shall be first tacked on to the rails and then overlayed with reflective sheeting.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
TYPICAL DETAILS
BARRICADES
SCALE: As Shown
SHEET NO. 10 OF 11 SHEETS

