

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-85	1985	37	41

GUARD RAIL SCHEDULE		
APPROXIMATE LIMITS	GUARD RAIL W/ STEEL POST	END CONDITION
STA. 928+75 ± LT. TO STA. 943+50 ± LT.	1512.5' 1475'	GR-4 GR-2
STA. 949+25 ± LT. TO STA. 952+50 ± LT.	325'	GR-2 GR-3
STA. 961+80 ± LT. TO STA. 963+80 ± LT.	187.5' 200'	GR-4 GR-2 GR-4
STA. 966+55 ± LT. TO D E L +100' E T E D STA. 967+55 ± LT.		GR-3 GR-4
STA. 982+00 ± LT. TO STA. 983+00 ± LT.	212.5' 100'	GR-3 GR-3
STA. 983+40 ± LT. TO STA. 984+30 ± LT.	87.5' 90'	GR-3 GR-4
STA. 992+00 ± LT. TO STA. 994+15 ± LT.	225' 215'	GR-4 GR-3
STA. 1006+40 ± LT. TO STA. 1008+00 ± LT.	162.5' 160'	GR-3 GR-2

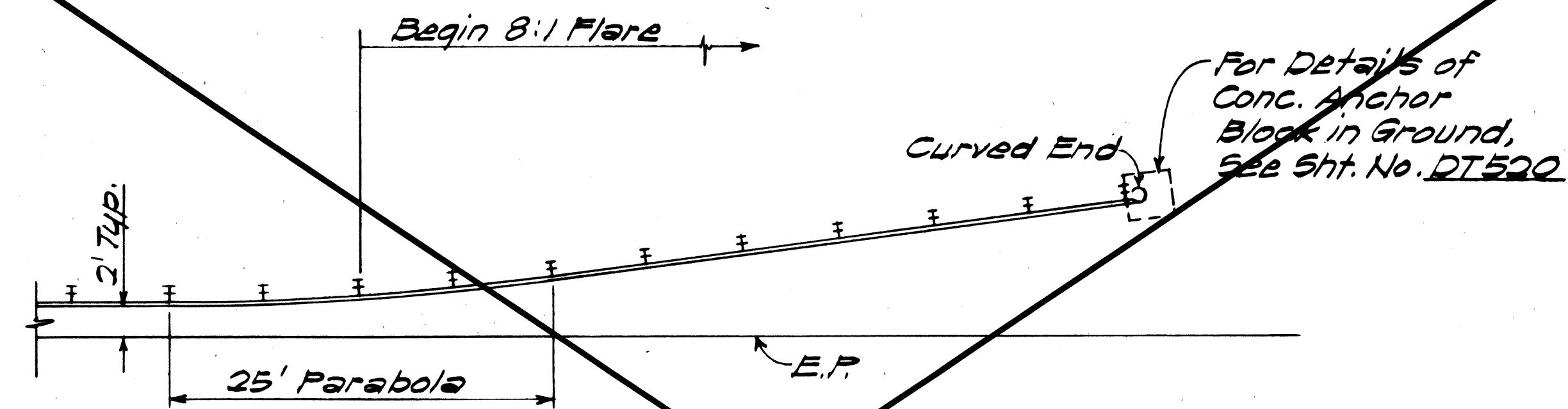
GUARD RAIL SCHEDULE		
APPROXIMATE LIMITS	GUARD RAIL W/ STEEL POST	END CONDITION
STA. 1041+60 ± LT. TO STA. 1042+10 ± LT.	50'	GR-2 GR-3
STA. 1084+00 ± LT. TO STA. 1084+65 ± LT.	75' 65'	GR-2 GR-2
TOTAL	2837.5' 2780'	

GUARD RAIL NOTES

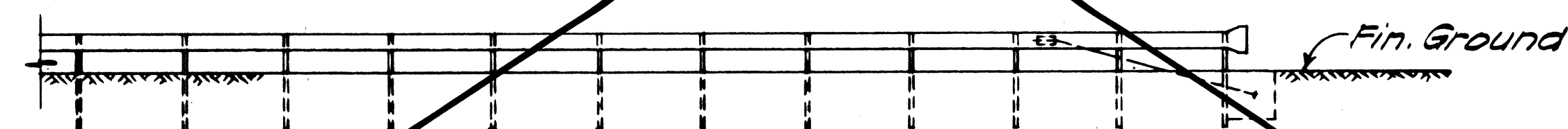
- The Guard Rail Schedule shows the approximate limits and lengths of guard rail to be installed. The actual locations shall be determined in the field by the Engineer.
- The GR-2, GR-3 and GR-4 End Conditions will be paid for as Guard Rail, by the linear feet actually installed. The Engineer may change the End Condition in the field.
- Any existing rock walls damaged by the Contractor while installing the guard rails shall be replaced or repaired at his expense, to its original condition as directed by the Engineer.
- Removal of any existing guard rail and/or posts, as directed by the Engineer in the field, shall be considered incidental to various contract items.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
GUARD RAIL
SCHEDULE AND NOTES
HANA HIGHWAY IMPROVEMENTS
WAILUA TOWARDS HANA, PHASE I
PROJ. NO. 360B-01-85
SCALE: AS SHOWN DATE: SEPT. 1984
SHEET No. 1 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-85	1985	38	41

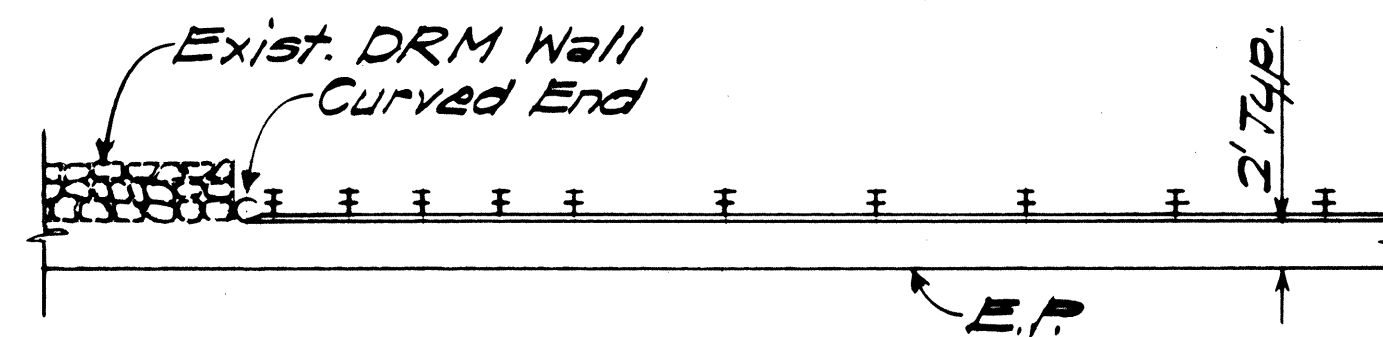


PLAN

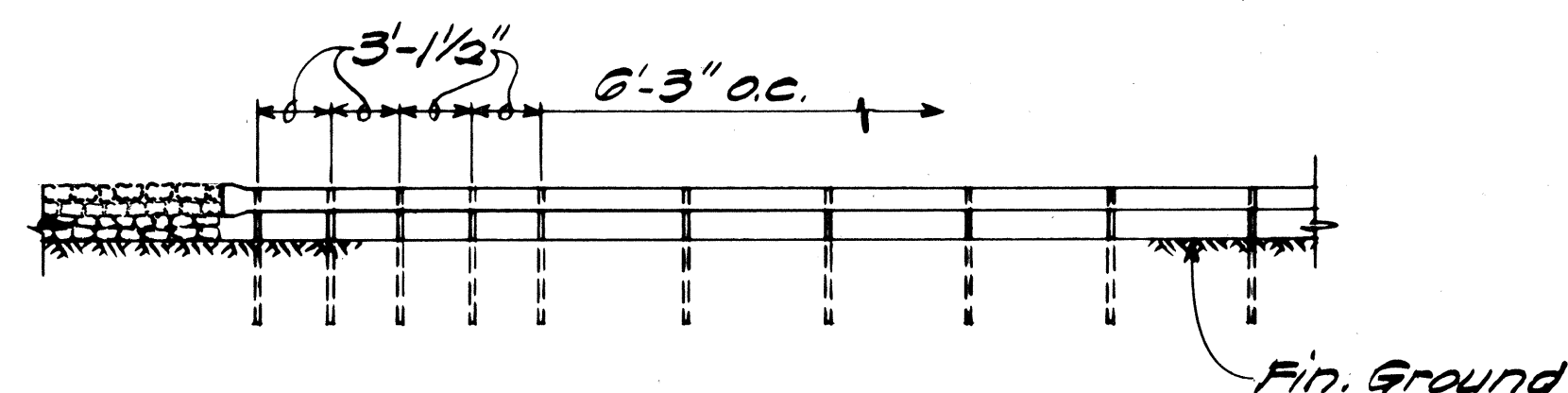


ELEVATION

TYPE GR-1 END CONDITION
Scale: 1/8" = 1'-0"

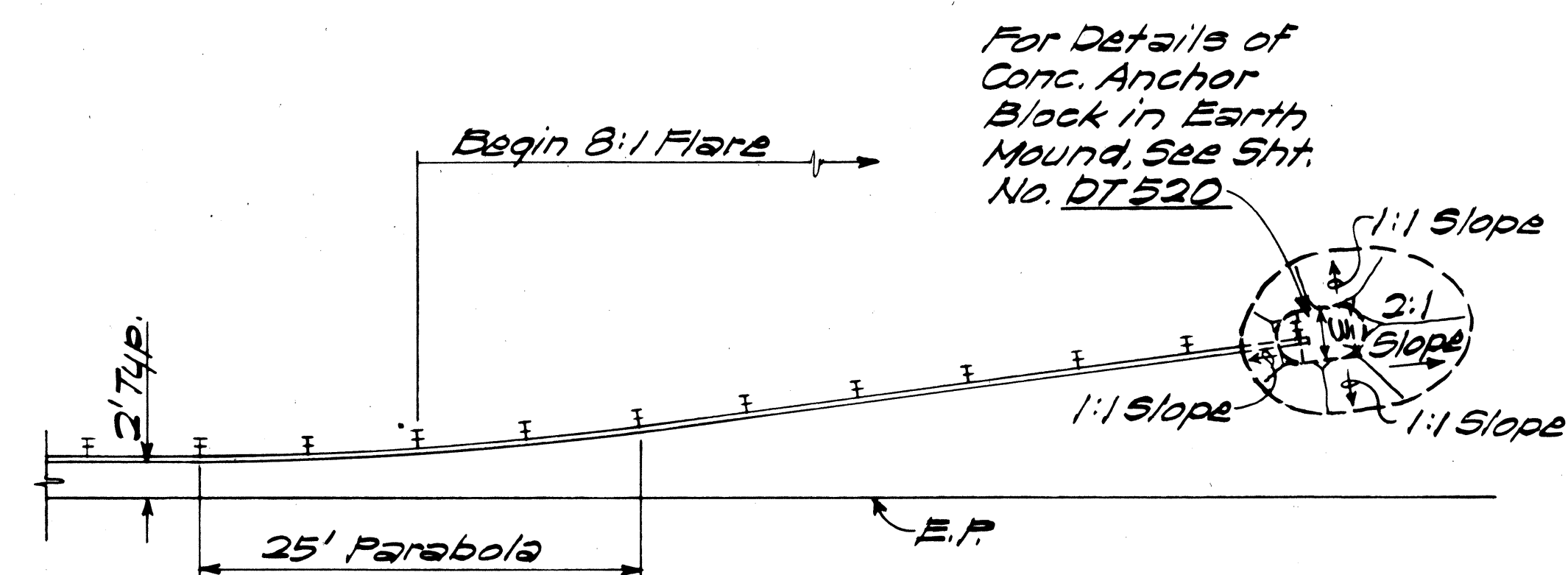


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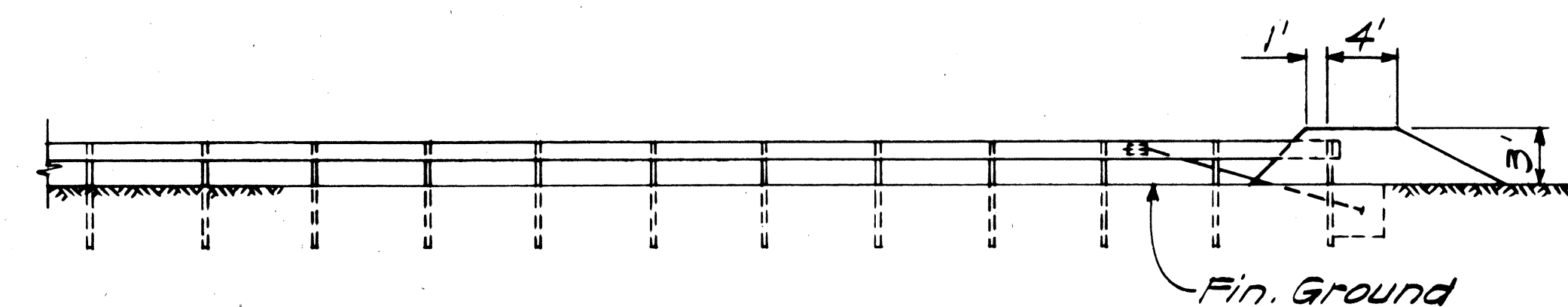


ELEVATION

TYPE GR-3 END CONDITION
Scale: 1/8" = 1'-0"

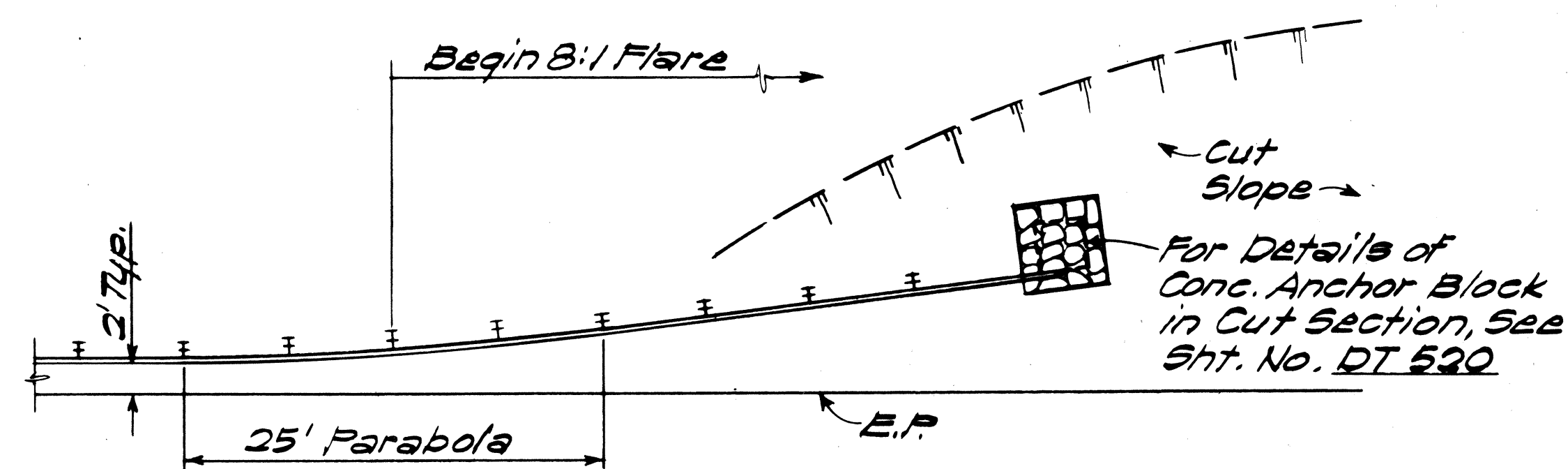


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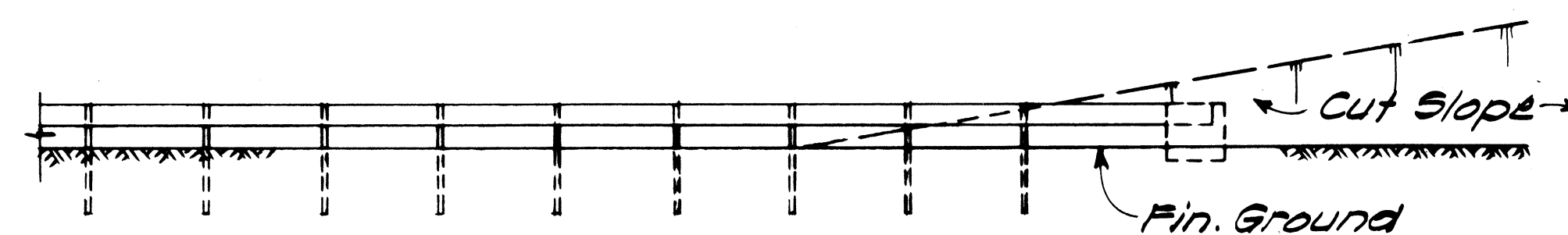


ELEVATION

TYPE GR-2 END CONDITION
Scale: 1/8" = 1'-0"



PLAN



ELEVATION

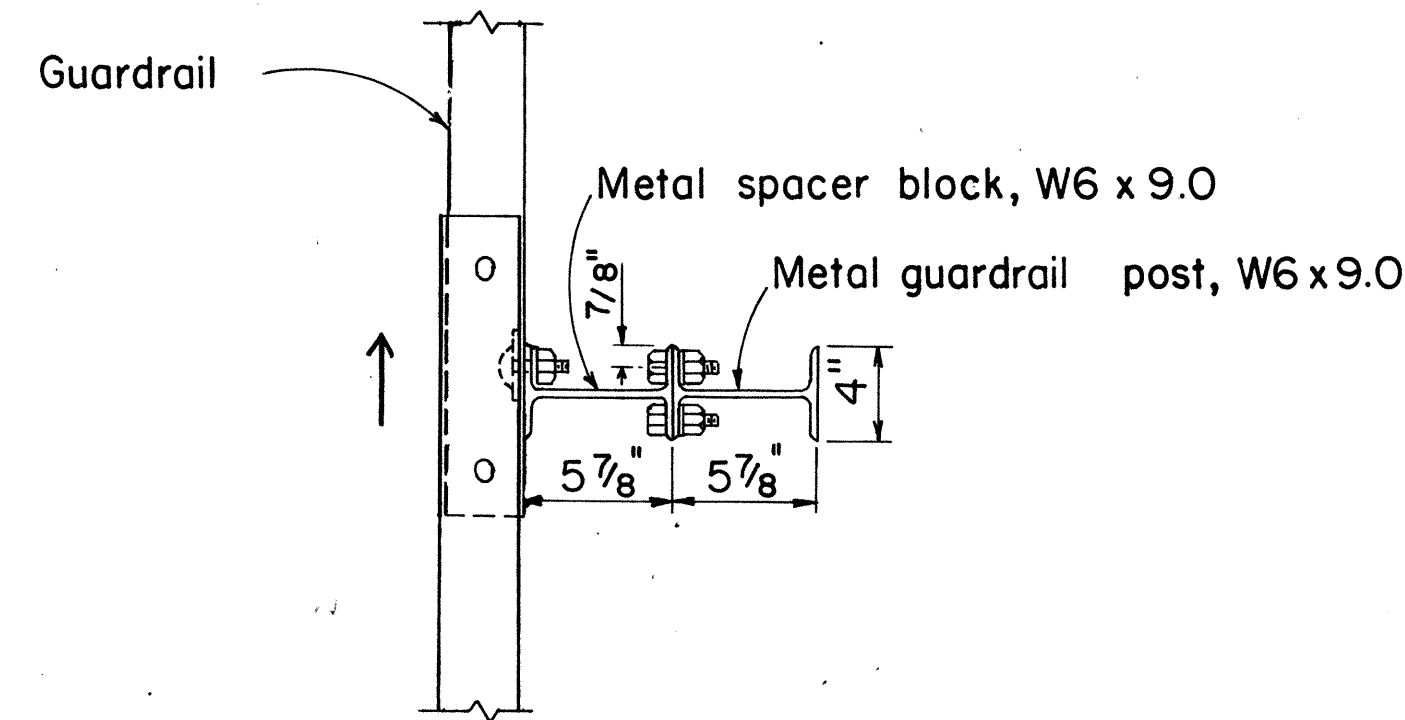
TYPE GR-4 END CONDITION
Scale: 1/8" = 1'-0"

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION LAND TRANSPORTATION FACILITIES DIVISION					
GUARD RAIL END CONDITIONS					
HANA HIGHWAY IMPROVEMENTS WAILUA TOWARDS HANA, PHASE I					
PROJ. NO. 360B-01-85					
Scale: As Shown Date: Jan. 1985					
SHEET NO. 2 OF 5 SHEETS					

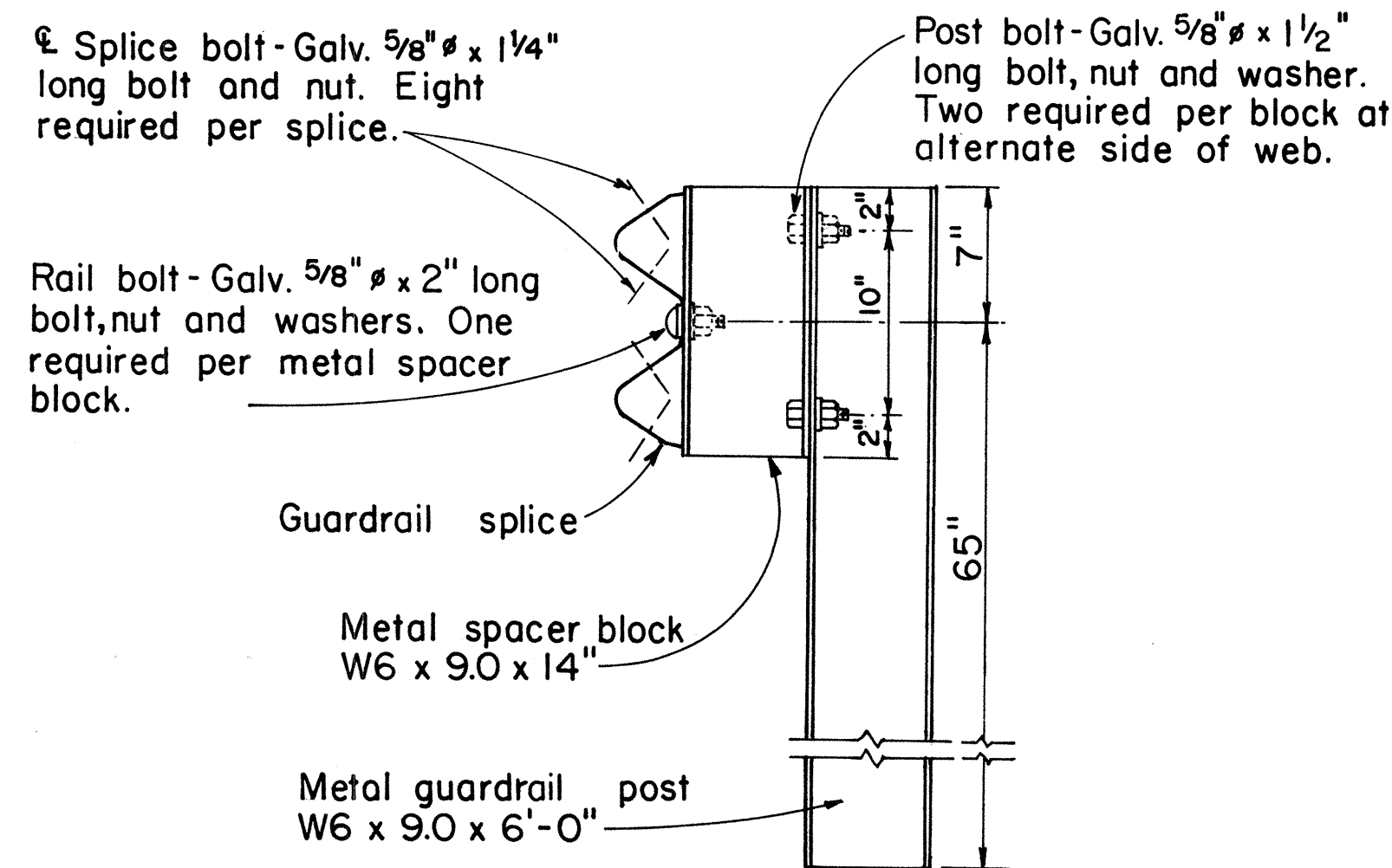
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360B-01-85	1985	39	41

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.



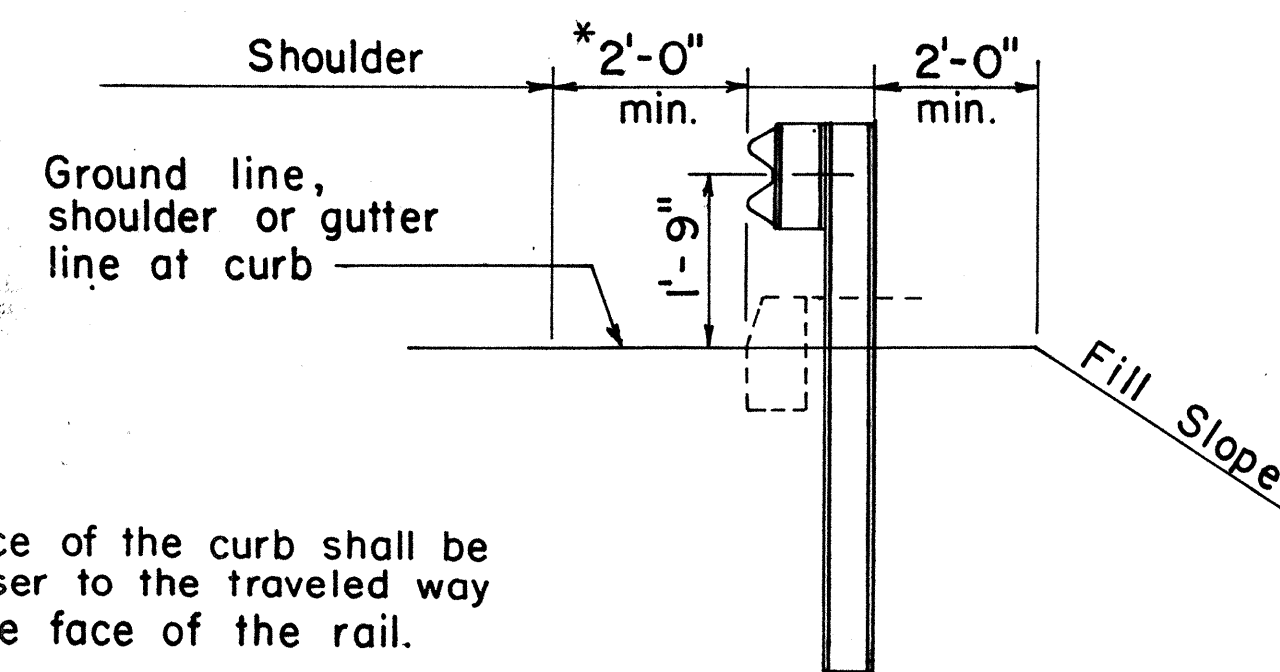
PLAN



ELEVATION

SINGLE METAL GUARDRAIL ON METAL POST WITH METAL SPACER BLOCK

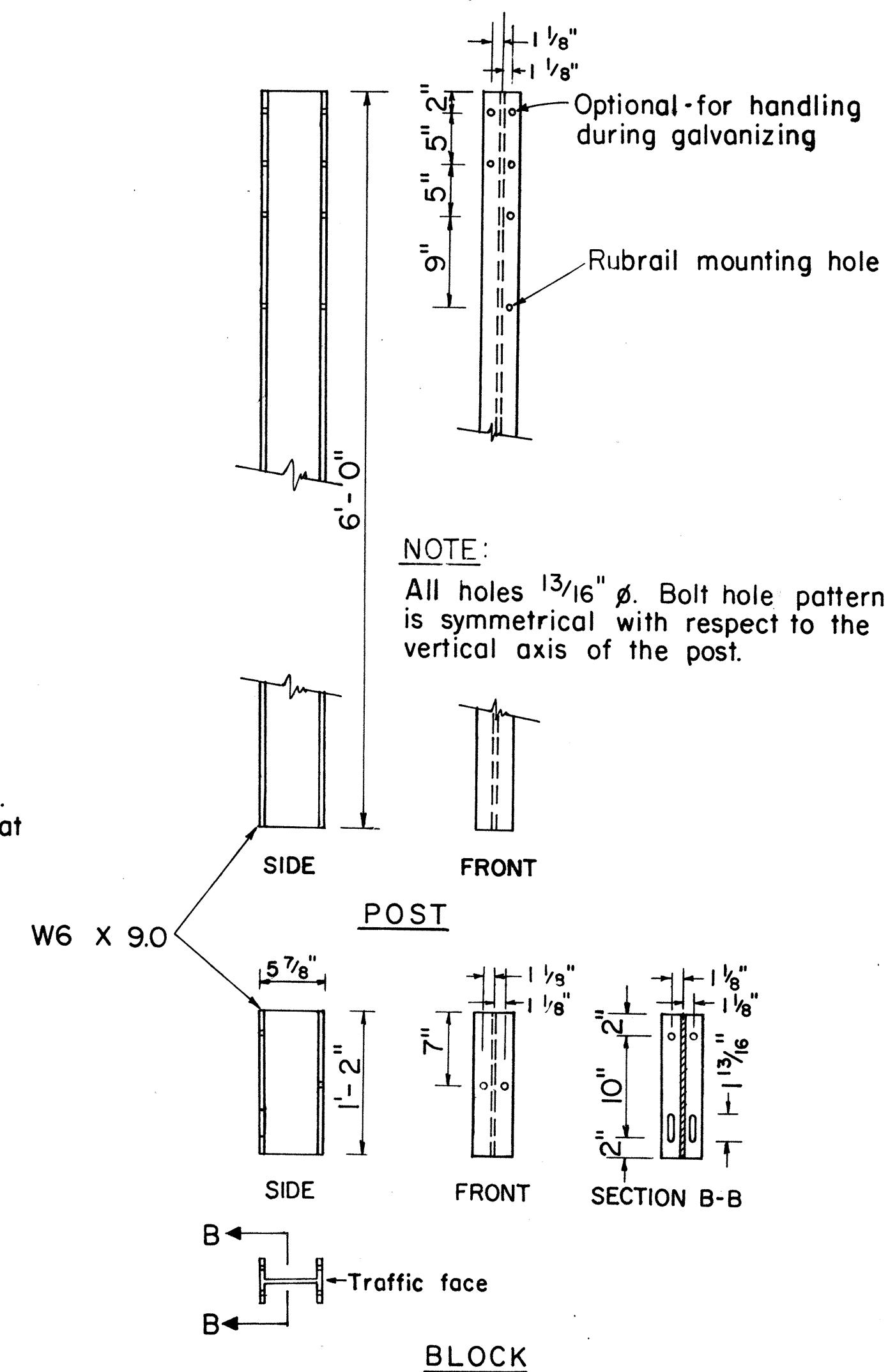
SCALE: 1 1/2" = 1'-0"



AT SHOULDER SECTION

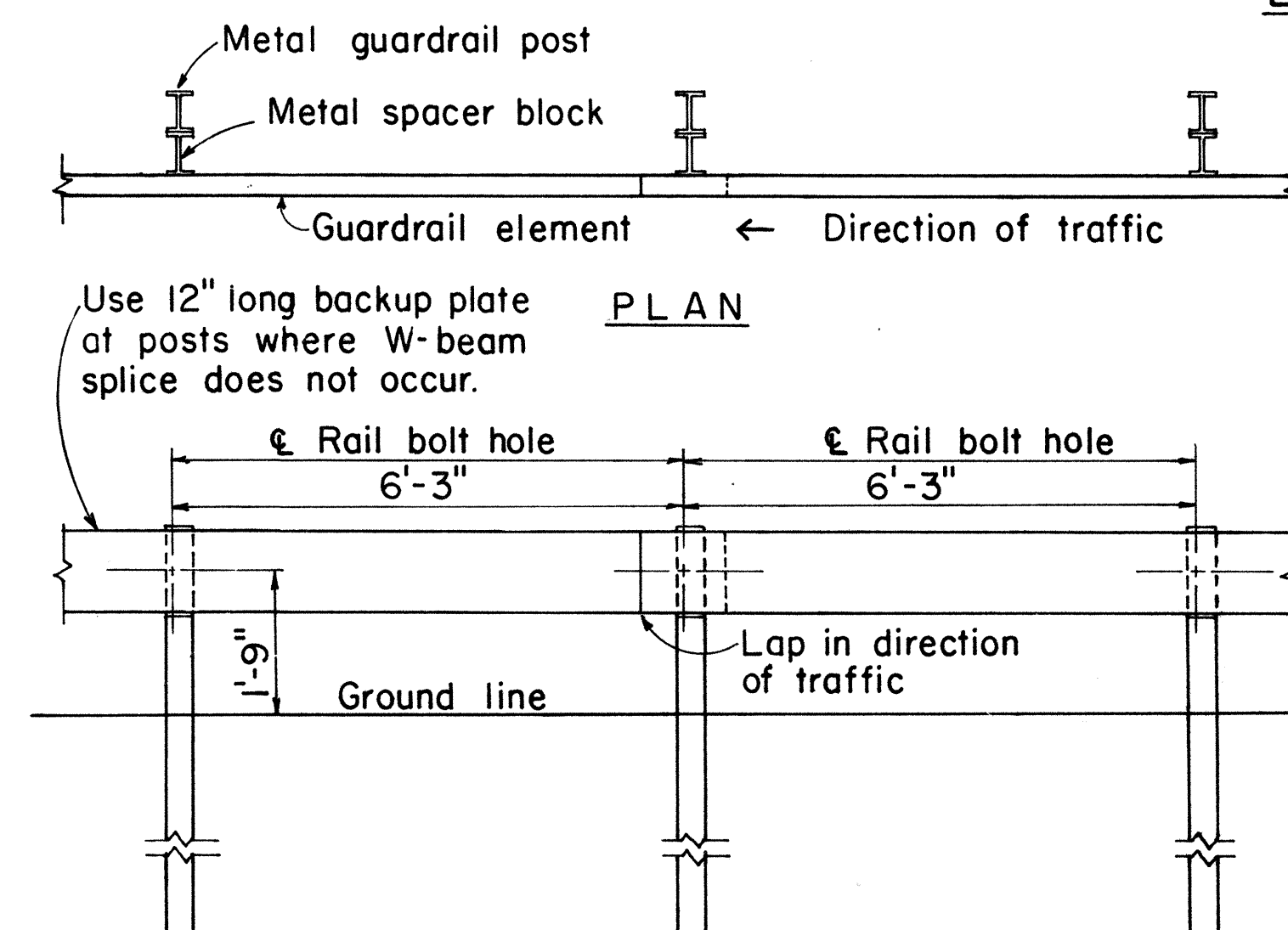
TYPICAL METAL GUARDRAIL DETAIL

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



STRUCTURAL SHAPE POST AND BLOCK

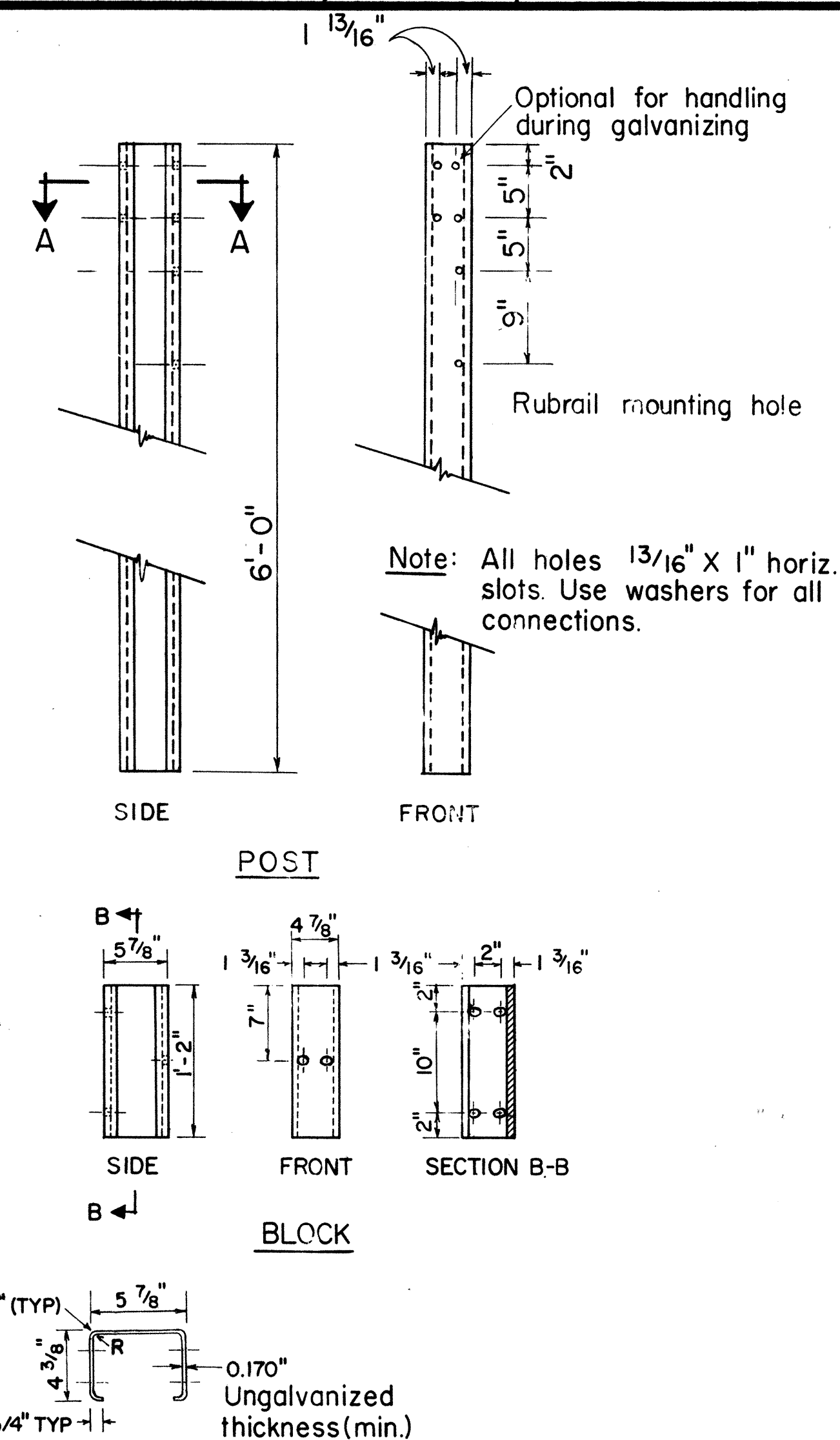
SCALE: 1" = 1'-0"



ELEVATION

METAL GUARDRAIL ON METAL POST WITH METAL SPACER BLOCK

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



POST

BLOCK

SECTION A-A

N.T.S.

BENT PLATE POST AND BLOCK

SCALE: 1" = 1'-0"

APPROVAL RECOMMENDED:

Erich Tanaka
TRAFFIC ENGINEER

9/1/82
DATE

APPROVED:

Robert Zalski
ASSISTANT CHIEF, ENGINEERING

9/22/82
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	<i>[Signature]</i>	9-28-83

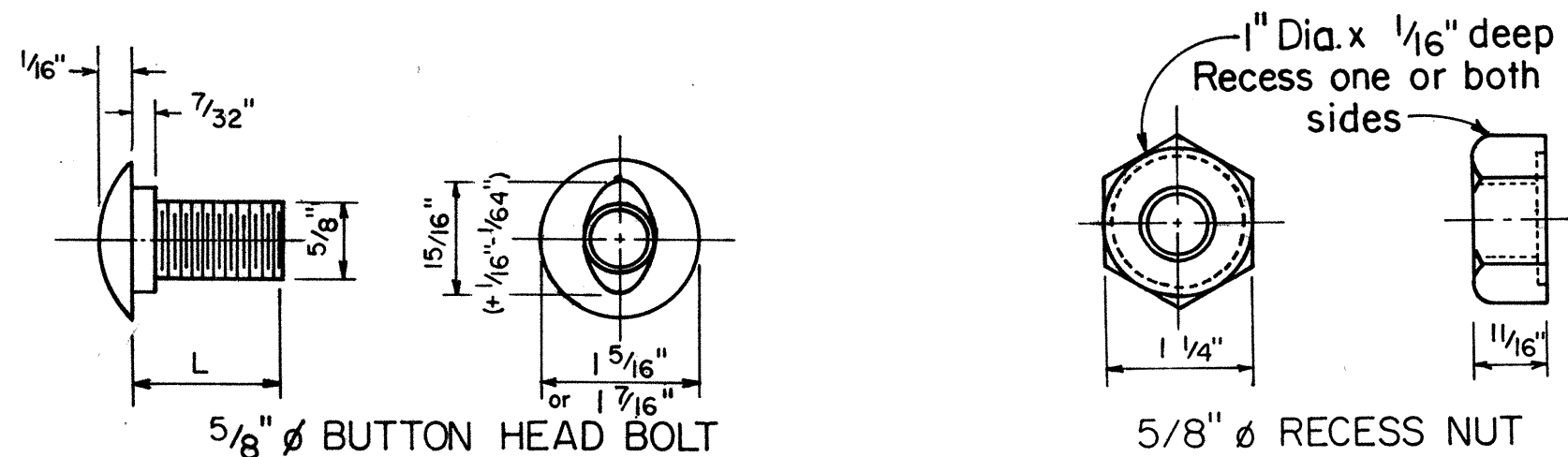
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS METAL GUARDRAIL

Scale: As Shown July, 1982

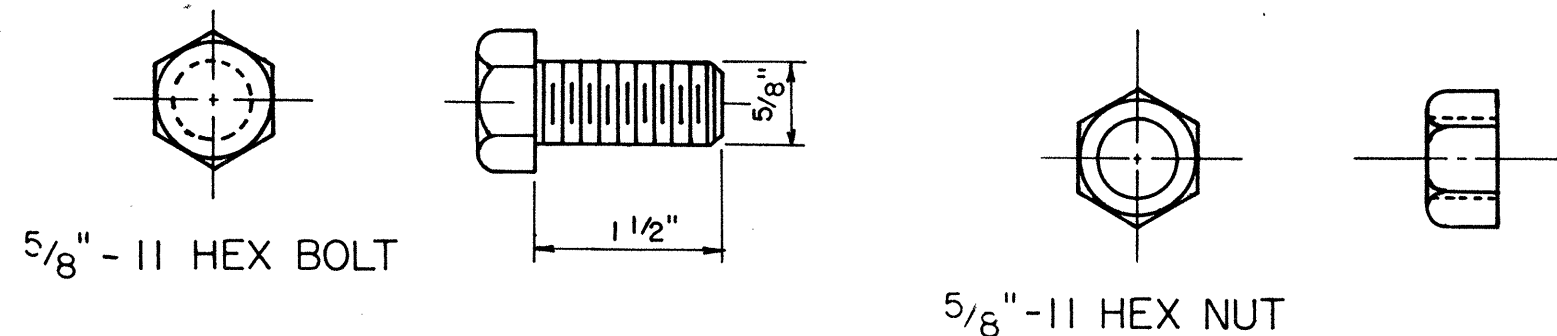
SHEET NO. 3 OF 5 SHEETS DT 500

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360 B-01-85	1985	40	41

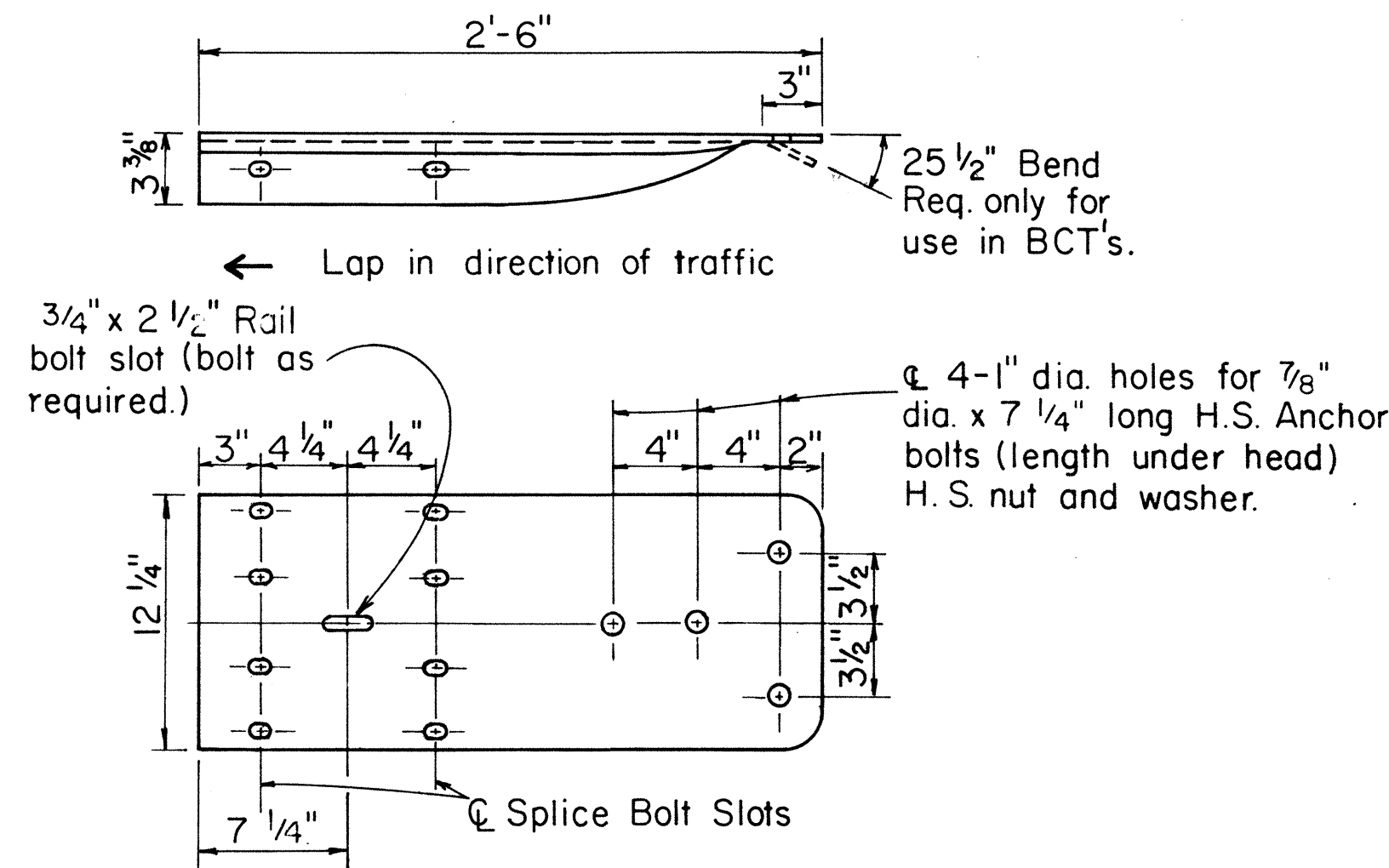


L	Thread Length	Intended Use
1 1/4"	Full length thread	Splice rail elements
2"	1 1/2" min. thread len.	Fasten rails to posts

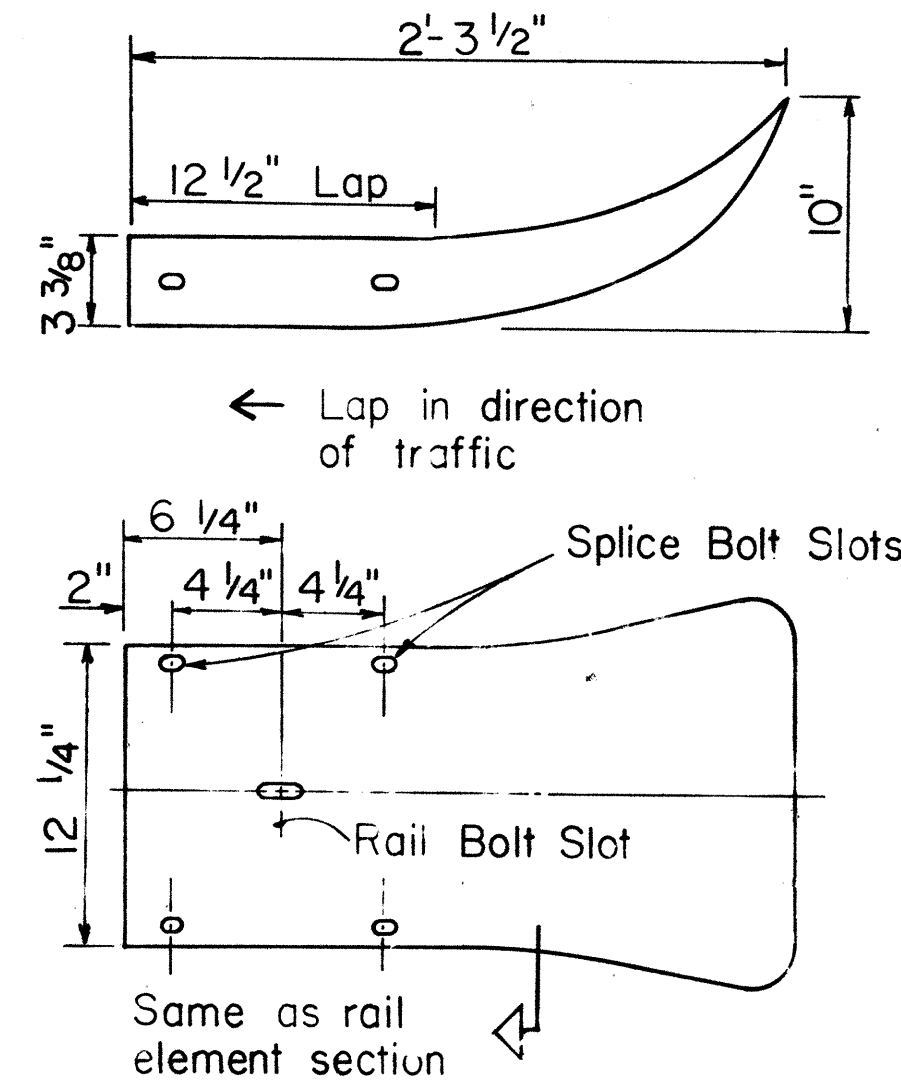
**5/8" BUTTON HEAD BOLT
AND RECESS NUT**
Scale: NTS



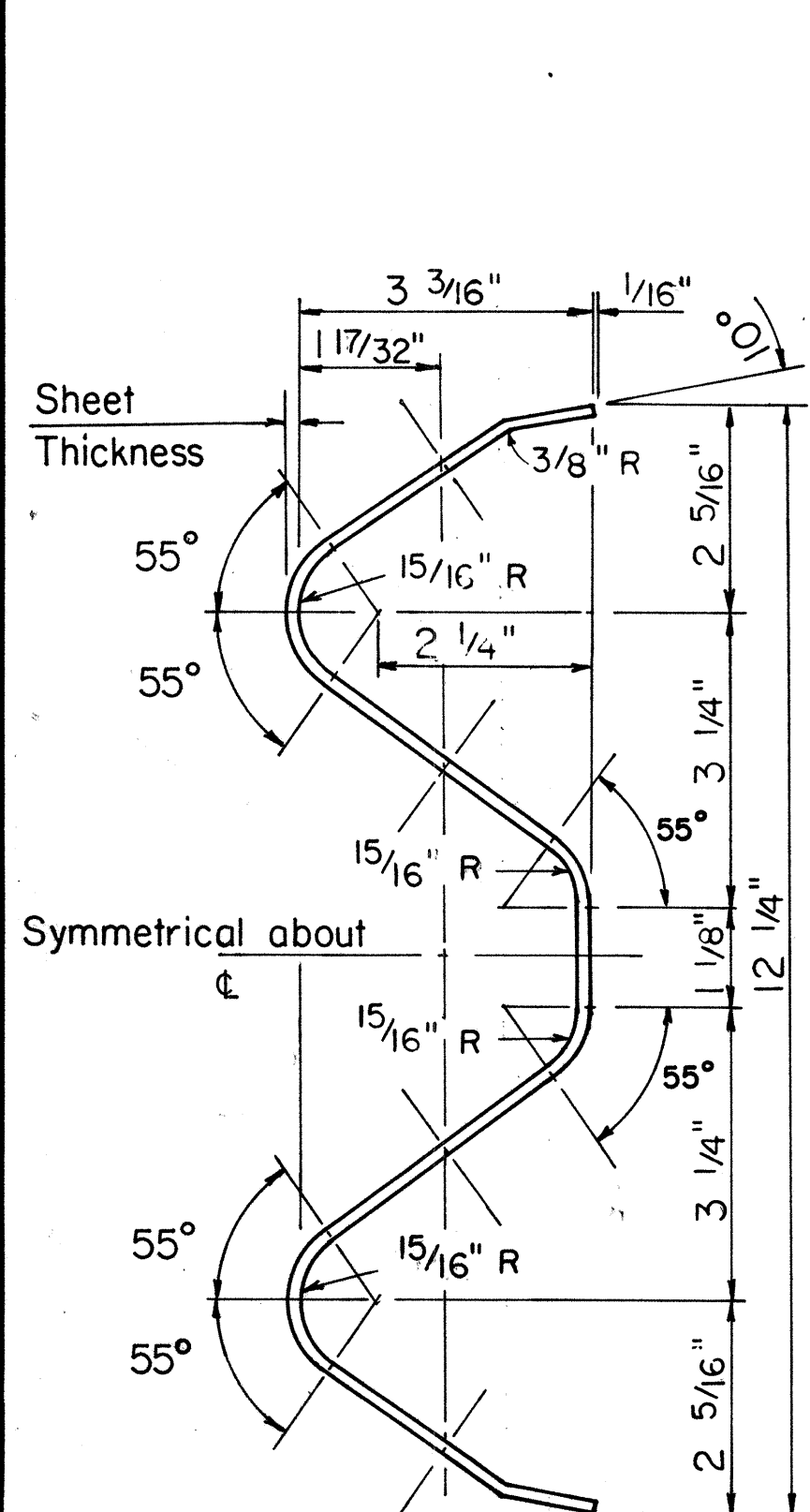
5/8" HEX POST BOLT AND NUT
Scale: N.T.S.



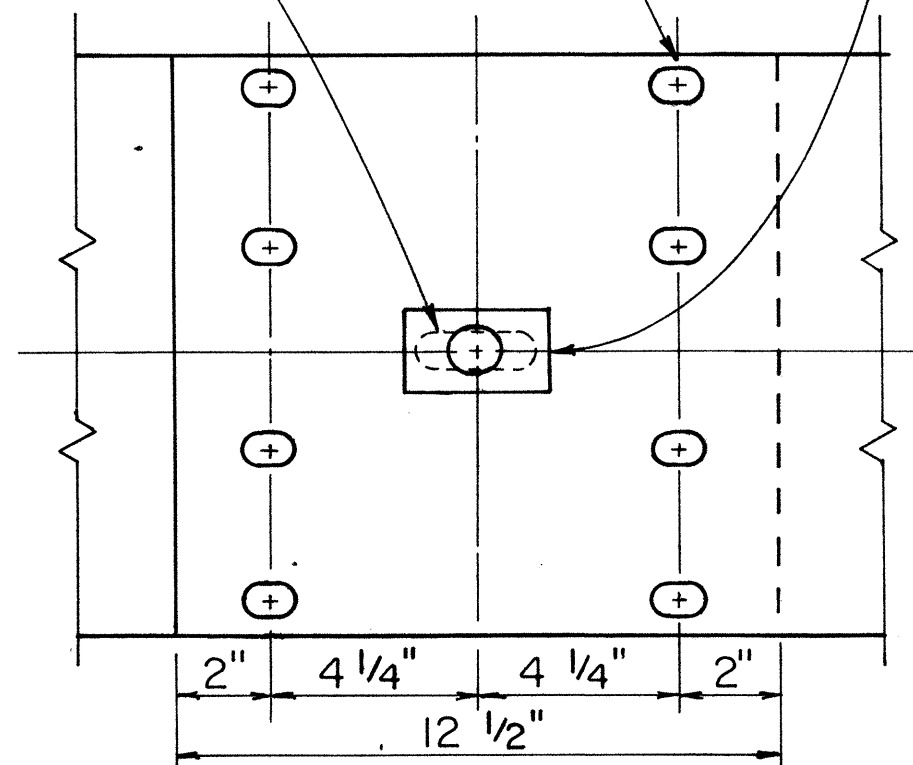
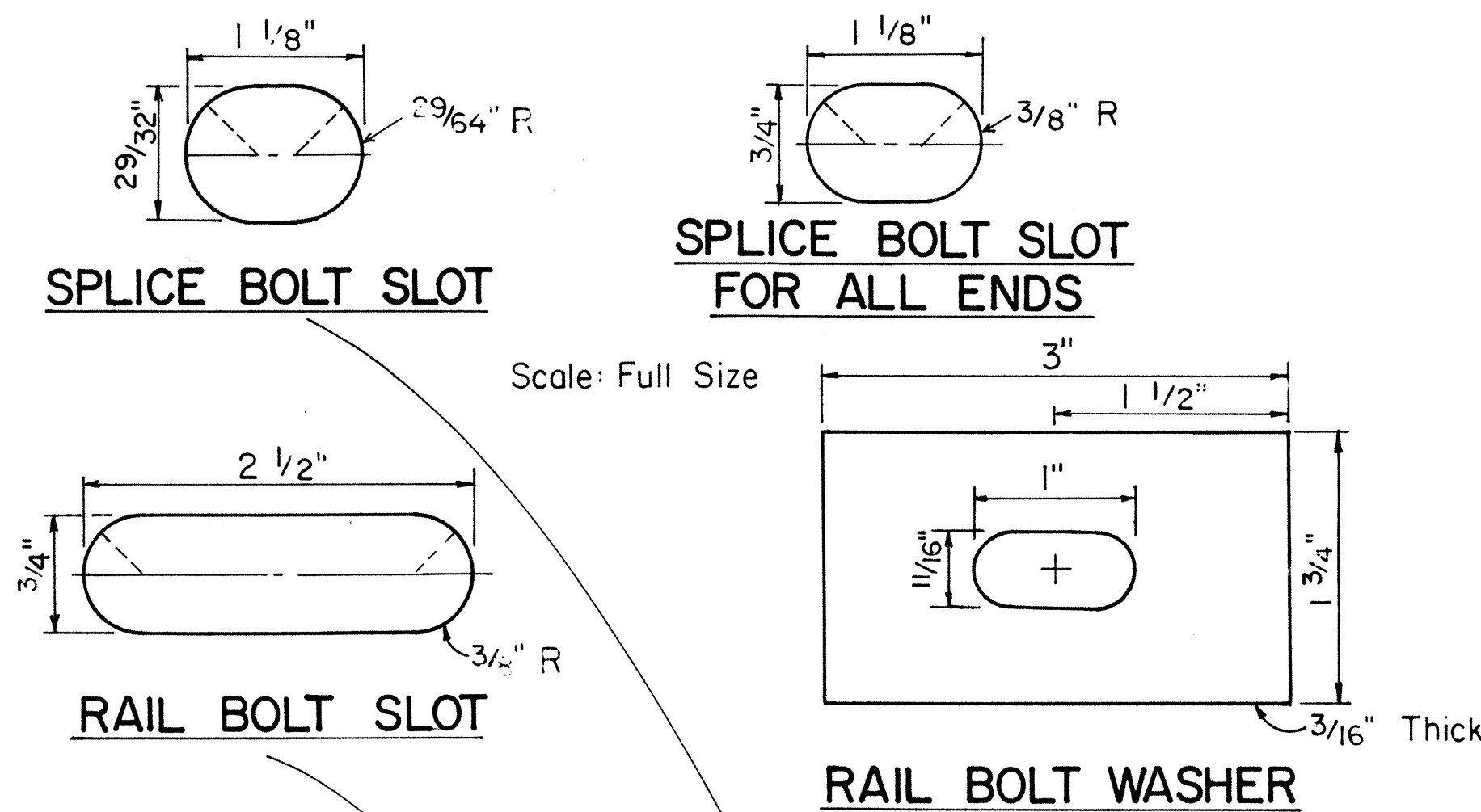
W BEAM TERMINAL CONNECTOR
Scale: 1 1/2" = 1'-0"



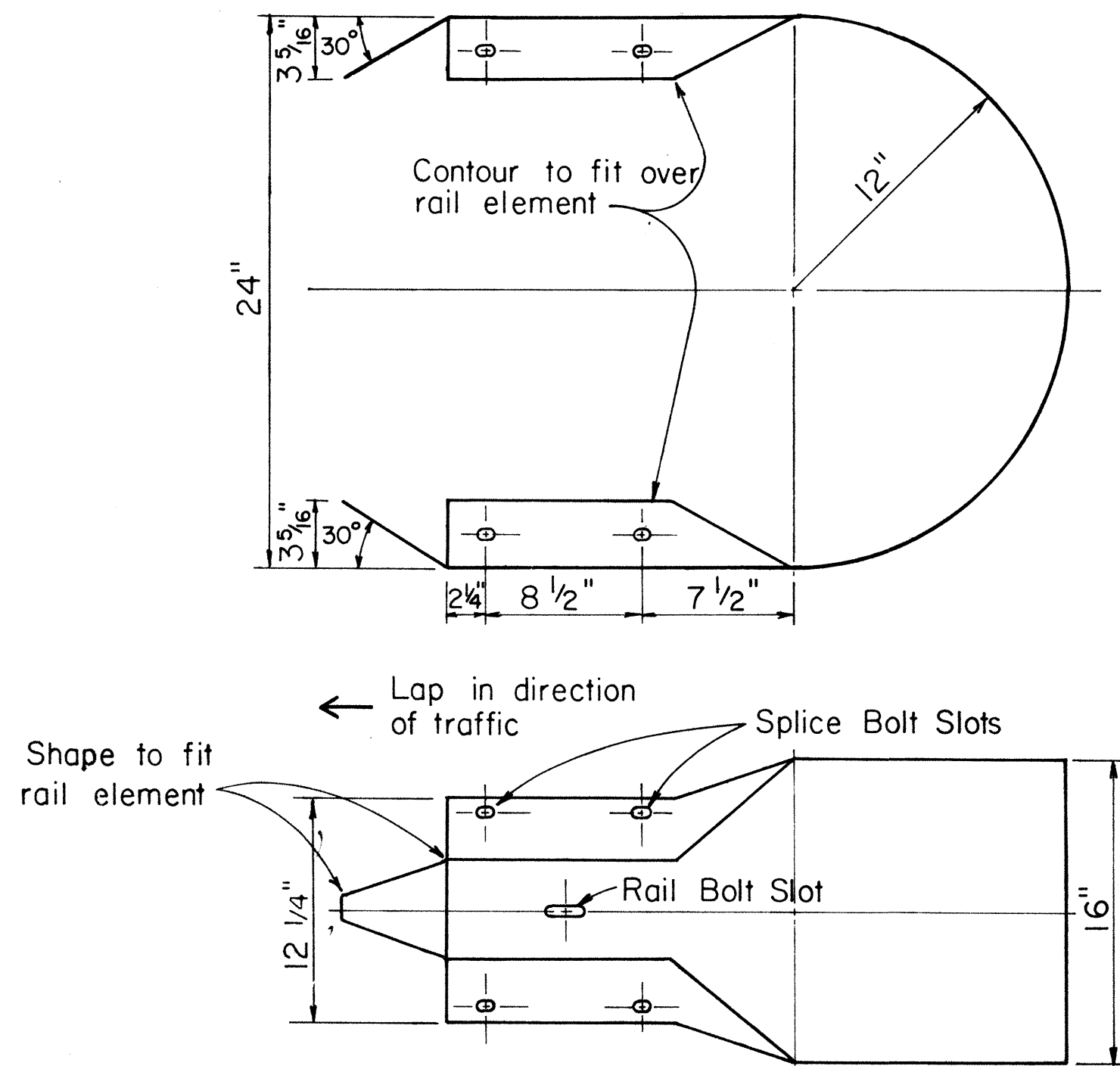
W BEAM END SECTION (FLARED)
Scale: 1 1/2" = 1'-0"



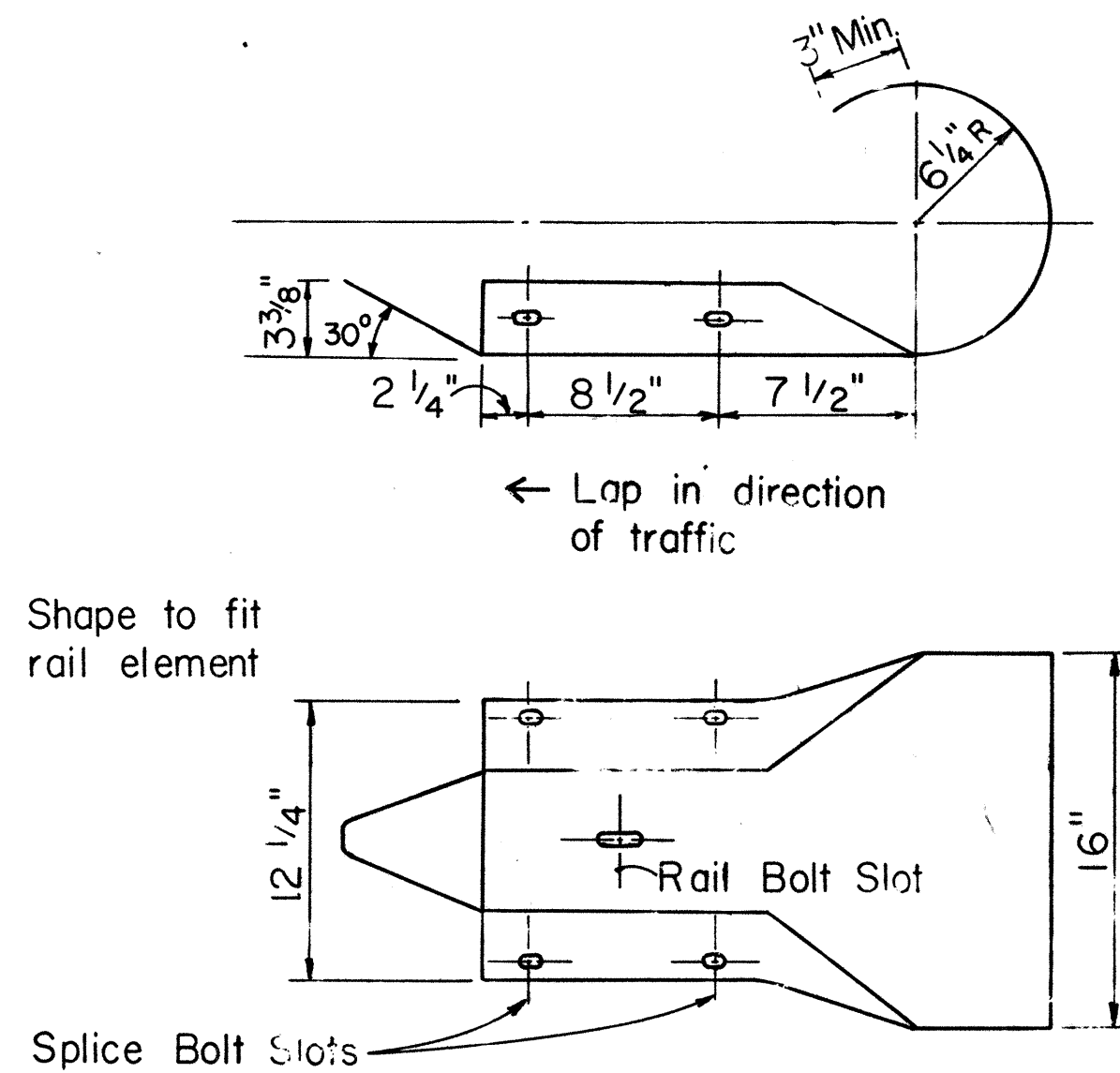
RAIL ELEMENT SECTION
Scale: 6" = 1'-0"



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



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



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

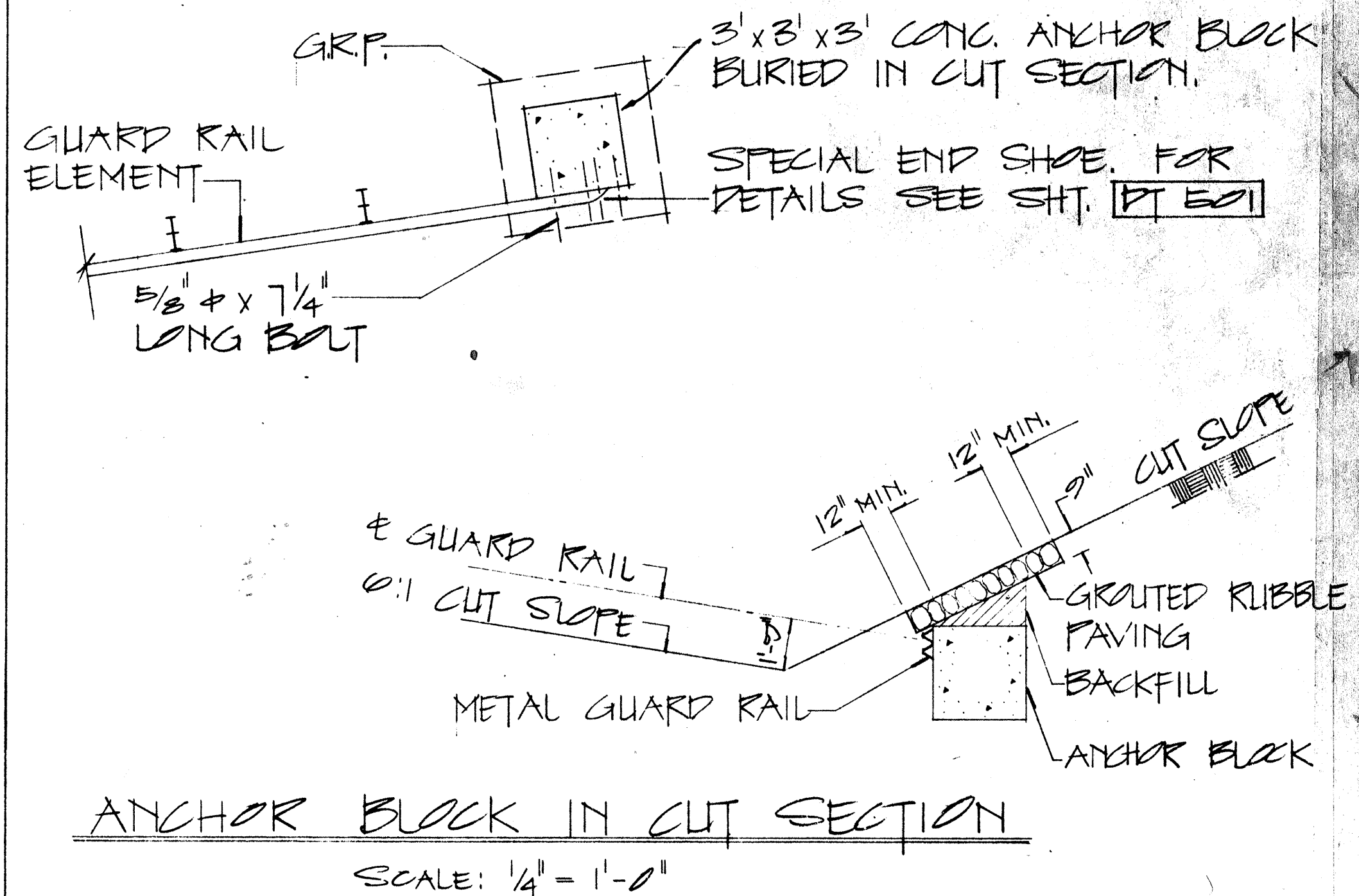
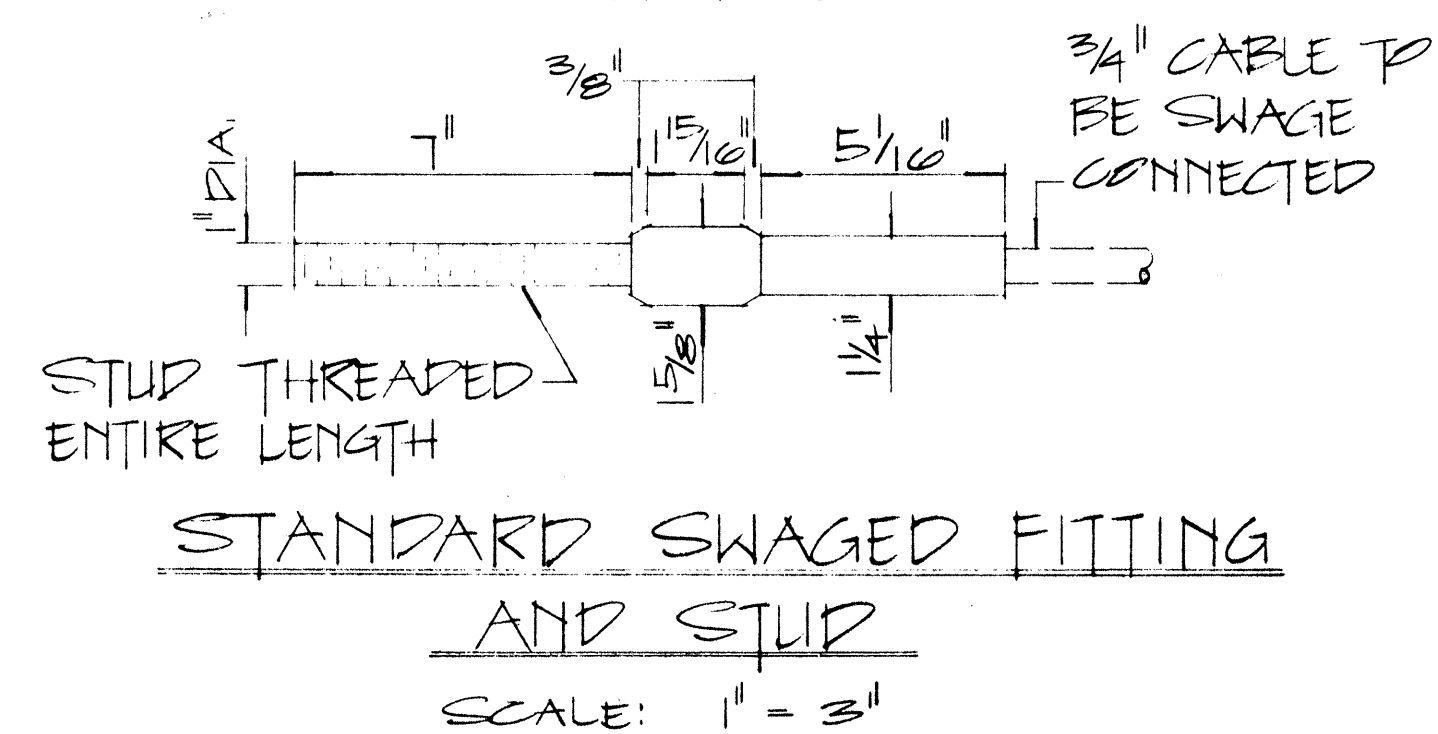
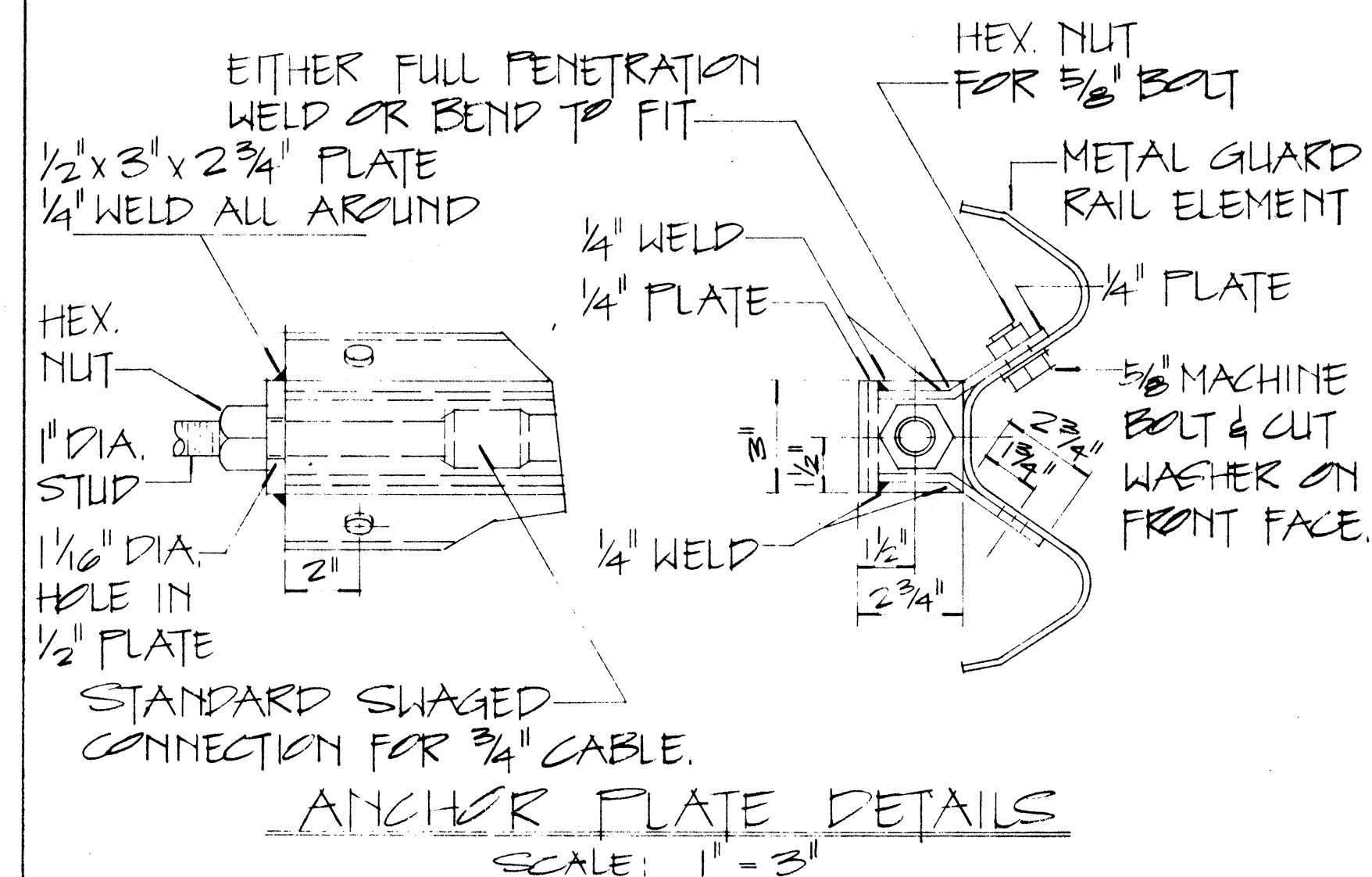
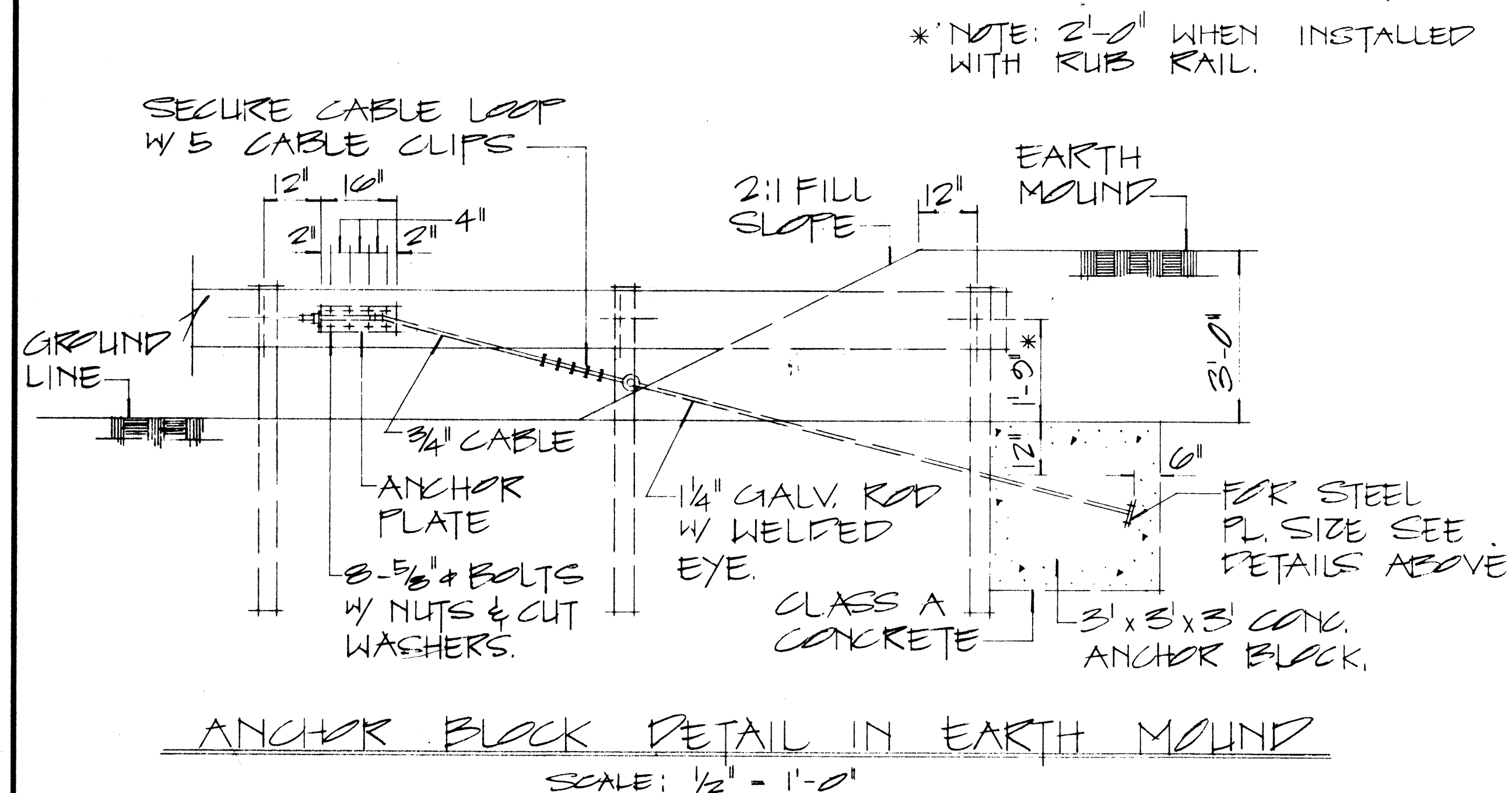
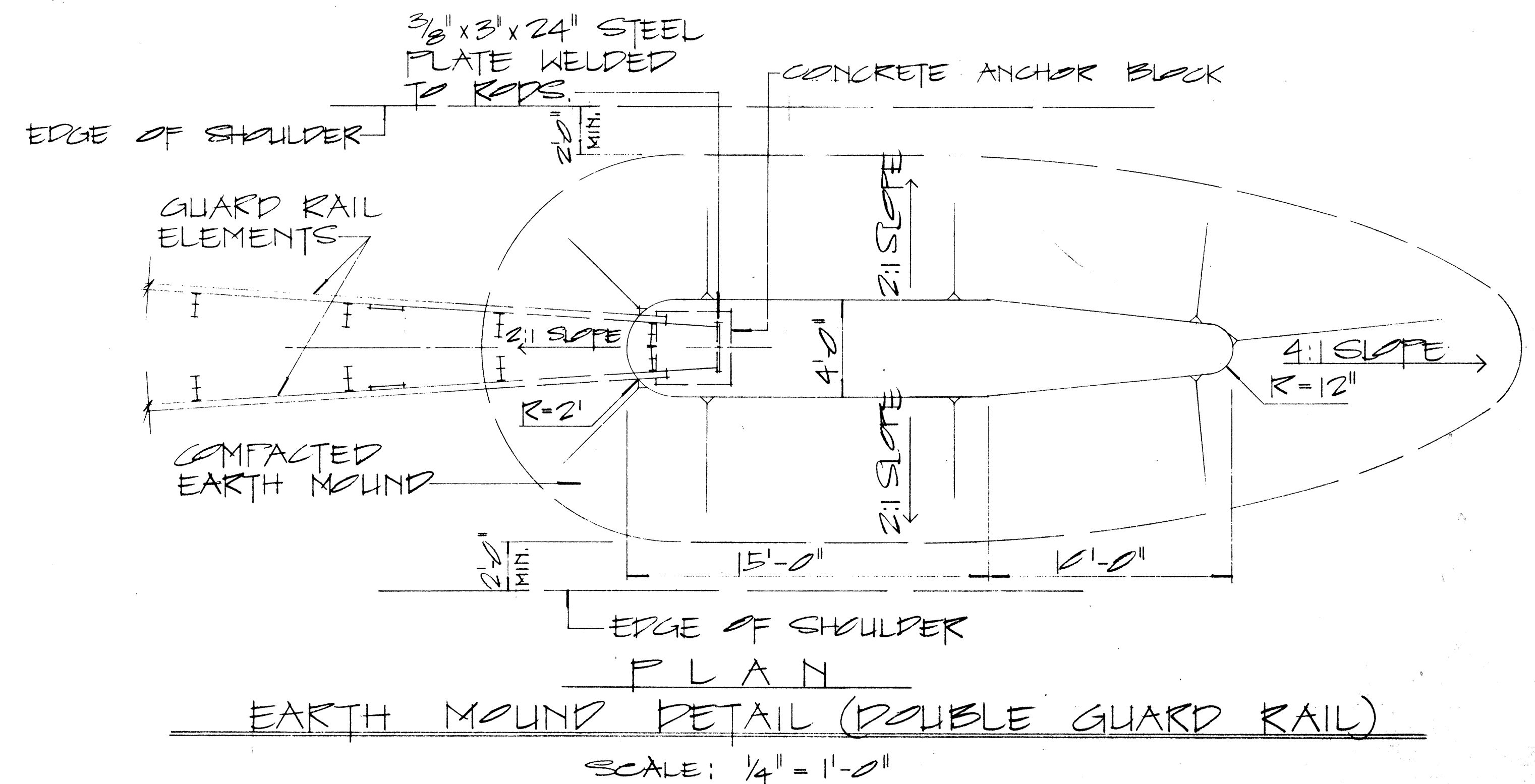
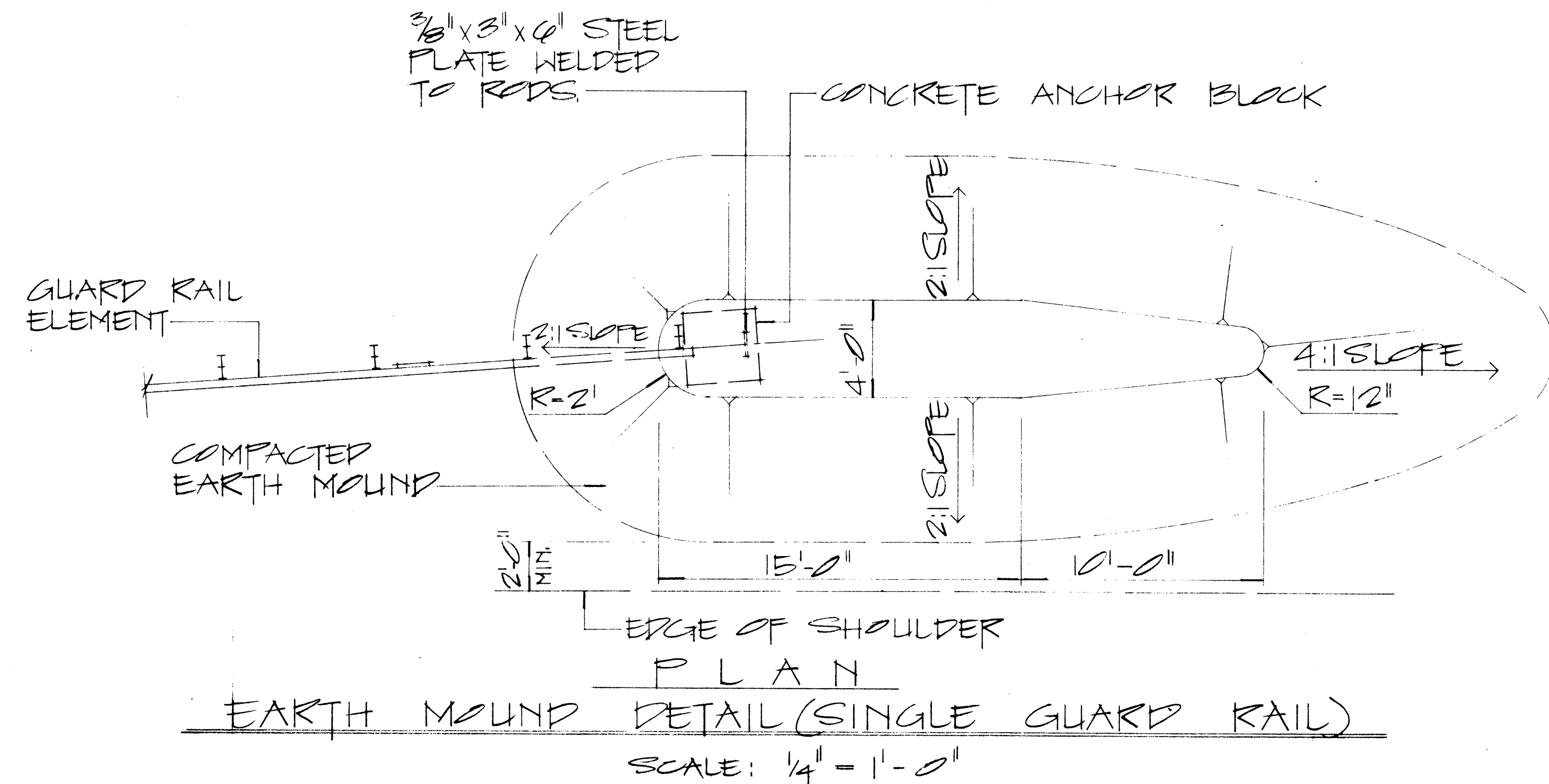
APPROVAL RECOMMENDED:
Erich Tanaka 9/20/82
TRAFFIC ENGINEER DATE

APPROVED:
Robert Delich 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. 4 OF 5 SHEETS DT 501

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	3608-01-85	1985	41	41



- 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:			
TRAFFIC ENGINEER		DATE	
APPROVED:		DATE	
ASSISTANT CHIEF, ENGINEERING		DATE	
NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII	
DEPARTMENT OF TRANSPORTATION	
HIGHWAYS DIVISION	
STANDARD DETAILS	
EARTH MOUND AND ANCHOR BLOCK DETAILS	
SCALE: AS SHOWN	
SHEET No. 5 OF 5 SHEETS	

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