

GUARD RAIL SCHEDULE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-01-82 360A-01-83M	1982	14	36

APPROXIMATE LIMITS	GUARD RAIL W/ STEEL POST	GUARD RAIL W/ STEEL POST EMBEDDED IN CONCRETE	RECONSTRUCTED GUARD RAIL	END CONDITION	APPROXIMATE LIMITS	GUARD RAIL W/ STEEL POST	GUARD RAIL W/ STEEL POST EMBEDDED IN CONCRETE	RECONSTRUCTED GUARD RAIL	END CONDITION	APPROXIMATE LIMITS	GUARD RAIL W/ STEEL POST	GUARD RAIL W/ STEEL POST EMBEDDED IN CONCRETE	RECONSTRUCTED GUARD RAIL	END CONDITION
STA. 74+50±Lt.				GR-2	STA. 262+25±Lt.				GR-2	STA. 289+00±Lt.				Connect to Exist. G.R.
TO	250'				TO	100'				TO	50'			
STA. 77+00±Lt.				GR-2	STA. 263+25±Lt.				Connect to Exist. G.R.	STA. 289+50±Lt.				GR-4
STA. 75+85±Rt.				GR-4	TO			90'		STA. 298+00±Lt.				GR-4
TO	80'				STA. 264+15±Lt.				Connect to Exist. G.R.	TO	300'			
STA. 76+65±Rt.				GR-4	TO	35'				STA. 302+00±Lt.				GR-2
STA. 165+00±Lt.				GR-3	STA. 264+50±Lt.				GR-2	STA. 305+00±Lt.				GR-3
TO		200'			STA. 273+25±Lt.				GR-2	TO	250'			
STA. 167+00±Lt.					TO	25'				STA. 307+50±Lt.				GR-2
TO	75'				STA. 273+50±Lt.				Connect to Exist. G.R.	STA. 310+00±Lt.				GR-2
STA. 167+75±Lt.				GR-2	TO			50'		TO	250'			
STA. 183+00±Lt.				GR-3	STA. 274+00±Lt.				Connect to Exist. G.R.	STA. 313+50±Lt.				GR-4
TO		100'			TO	150'				STA. 337+50±Lt.				GR-2
STA. 184+00±Lt.					STA. 275+50±Lt.				GR-2	TO	375'			
TO	75'				STA. 277+00±Lt.				GR-4	STA. 341+25±Lt.				GR-3
STA. 184+75±Lt.				GR-2	TO	50'				STA. 341+75±Lt.				GR-3
STA. 224+00±Lt.					STA. 277+50±Lt.				Connect to Exist. G.R.	TO	275'			
TO			60'		TO			200'		STA. 344+50±Lt.				Connect to Exist. G.R.
STA. 224+60±Lt.				Connect to Exist. G.R.	STA. 279+50±Lt.				Connect to Exist. G.R.	TO			50'	
TO	215'				TO	150'				STA. 345+00±Lt.				Connect to Exist. G.R.
STA. 226+75±Lt.					STA. 281+00±Lt.				Connect to Exist. G.R.	TO	400'			
TO		50'			TO			250'		STA. 349+00±Lt.				Connect to Exist. G.R.
STA. 227+25±Lt.					STA. 283+50±Lt.				Connect to Exist. G.R.	TO			50'	
TO	225'				TO	200'				STA. 349+50±Lt.				Connect to Exist. G.R.
STA. 229+50±Lt.				GR-2	STA. 285+50±Lt.				Connect to Exist. G.R.	TO	100'			
STA. 239+75±Lt.				GR-2	TO			25'		STA. 350+50±Lt.				Connect to Exist. G.R.
TO	300'				STA. 285+75±Lt.				Connect to Exist. G.R.	TO			50'	
STA. 242+75±Lt.				GR-2	TO		25'			STA. 351+00±Lt.				Connect to Exist. G.R.
STA. 247+50±Lt.				GR-2	STA. 286+00±Lt.					TO	100'			
TO	75'				TO	75'				STA. 352+00±Lt.				GR-2
STA. 248+25±Lt.					STA. 286+75±Lt.				GR-3	STA. 361+50±Lt.				GR-2
TO		50'			STA. 288+25±Lt.				GR-2	TO	1,150'			
STA. 248+75±Lt.					TO	25'				STA. 373+00±Lt.				GR-2
TO	175'				STA. 288+50±Lt.				Connect to Exist. G.R.					
STA. 250+50±Lt.				GR-2	TO				50'					

ORIGINAL SURVEY PLOTTED BY: _____ DATE: _____
 DRAWN BY: _____
 NOTE BOOK DESIGNED BY: _____
 QUANTITIES BY: _____
 CHECKED BY: _____

NOTE:
For Actual Guard Rail Installation, see Plan Sht. No. 145-1.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

GUARD RAIL SCHEDULE

HANA HIGHWAY
IMPROVEMENTS & RESURFACING
Proj. Nos. 360A-01-82 & 360A-01-83M

Date: June, 1982

SHEET NO. 1 OF 7 SHEETS

GUARD RAIL SCHEDULE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-01-83 360A-01-83M	1984	145-1	36

APPROXIMATE LIMITS	GUARD RAIL W/STEEL POST	RECONSTRUCTED GUARD RAIL	END CONDITION	APPROXIMATE LIMITS	GUARD RAIL W/STEEL POST	RECONSTRUCTED GUARD RAIL	END CONDITION	APPROXIMATE LIMITS	GUARD RAIL W/STEEL POST	RECONSTRUCTED GUARD RAIL	END CONDITION
STA. 73+00 ± Lt.			GR-2	STA. 247+38 ± Lt.			GR-2	STA. 289+01 ± Lt.			Connect to Exist. G.R.
TO	200'			TO	312.5'			TO	25'		
STA. 75+00 ± Lt.			GR-2	STA. 250+50 ± Lt.			GR-2	STA. 289+25 ± Lt.			GR-4
STA. 75+60 ± Lt.			GR-2	STA. 258+00 ± Lt.			GR-2	STA. 298+25 ± Lt.			GR-2
TO	112.5'			TO	150'			TO	375'		
STA. 70+73 ± Lt.			GR-2	STA. 259+50 ± Lt.			GR-2	STA. 302+00 ± Lt.			GR-2
STA. 75+90 ± Lt.			GR-3	STA. 263+28 ± Lt.			GR-2	STA. 305+12 ± Lt.			GR-3
TO	100'			TO	87.5'			TO	237.5'		
STA. 76+85 ± Lt.			GR-3	STA. 264+15 ± Lt.			GR-2	STA. 307+50 ± Lt.			GR-2
STA. 85+50 ± Lt.			GR-2	STA. 273+25 ± Lt.			GR-2	STA. 310+00 ± Lt.			GR-2
TO	325'			TO	25'			TO	237.5'		
STA. 88+75 ± Lt.			GR-2	STA. 273+50 ± Lt.			Connect to Exist. G.R.	STA. 312+38 ± Lt.			GR-2
STA. 93+75 ± Lt.			GR-2	TO	50'			STA. 338+00 ± Lt.			GR-2
TO	137.5'			STA. 274+00 ± Lt.			Connect to Exist. G.R.	TO	100'		
STA. 95+13 ± Lt.			GR-2	TO	150'			STA. 339+00 ± Lt.			GR-2
STA. 112+00 ± Lt.			GR-2	STA. 275+50 ± Lt.				STA. 341+75 ± Lt.			GR-3
TO	437.5'			STA. 276+83 ± Lt.			GR-2	TO	218.5'		
STA. 116+34 ± Lt.			GR-2	TO	62.5'			STA. 343+94 ± Lt.			Connect to Exist. G.R.
STA. 121+90 ± Lt.			GR-2	STA. 277+50 ± Lt.			Connect to Exist. G.R.	TO	50'		
TO	250'			TO	175'			STA. 344+44 ± Lt.			Connect to Exist. G.R.
STA. 124+40 ± Lt.			GR-2	STA. 279+25 ± Lt.			Connect to Exist. G.R.	TO	412.5'		
STA. 163+88 ± Lt.			GR-2	TO	37.5'			STA. 348+57 ± Lt.			Connect to Exist. G.R.
TO	387.5'			STA. 279+62 ± Lt.			GR-2	TO	37.5'		
STA. 167+75 ± Lt.			GR-2	STA. 280+37 ± Lt.			GR-2	STA. 348+93 ± Lt.			Connect to Exist. G.R.
STA. 183+00 ± Lt.			GR-3	TO	62.5'			TO	109'		
TO	175'			STA. 281+00 ±			Connect to Exist. G.R.	STA. 350+02 ± Lt.			Connect to Exist. G.R.
STA. 184+75 ± Lt.			GR-2	TO	225'			TO	50'		
STA. 224+00 ± Lt.			GR-3	STA. 283+25 ± Lt.			Connect to Exist. G.R.	STA. 350+52 ± Lt.			Connect to Exist. G.R.
TO	50'			TO	341.5'			TO	25'		
STA. 224+50 ± Lt.			Connect to Exist. G.R.	STA. 286+70 ± Lt.			GR-3	STA. 350+77 ± Lt.			GR-2
TO	493.8'			STA. 288+25 ± Lt.			GR-2	STA. 362+15 ± Lt.			GR-2
STA. 229+44 ± Lt.			GR-2	TO	37.5'			TO	50'		
STA. 239+75 ± Lt.				STA. 288+63 ± Lt.			Connect to Exist. G.R.	STA. 362+65 ± Lt.			GR-2
TO	325'			TO			37.5'				
STA. 243+00 ± Lt.			GR-2	STA. 289+01 ± Lt.			Connect to Exist. G.R.				

THIS GUARD RAIL SCHEDULE WAS PREPARED DURING "AS-BUILT" POSTING AND SUPERSEDES SCHEDULES SHOWN ON PLAN SHT. NOS. 14 & 15.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARD RAIL SCHEDULE

HANA HIGHWAY
IMPROVEMENTS & RESURFACING
Proj. Nos. 360A-01-82 & 360A-01-83M

Date: Sept., 1983

SHEET NO. 14 OF 7 SHEETS

SURVEY PLOTTED BY _____ DATE _____
 DRAWN BY _____
 DESIGNED BY _____
 CHECKED BY _____
 ORIGINAL PLAN NO. _____
 NOTE BOOK NO. _____

GUARD RAIL SCHEDULE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-01-82 360A-01-83M	1984	145-2	36

APPROXIMATE LIMITS	GUARD RAIL W/STEEL POST	RECONSTRUCTED GUARD RAIL	END CONDITION	APPROXIMATE LIMITS	GUARD RAIL W/STEEL POST	RECONSTRUCTED GUARD RAIL	END CONDITION	APPROXIMATE LIMITS	GUARD RAIL W/STEEL POST	RECONSTRUCTED GUARD RAIL	END CONDITION
STA. 364+50± Lt.			GR-2	STA. 457+75± Lt.			GR-3	STA. 605+41± Lt.			Connect to Exist. G.R.
TO	825'			TO	2025'			TO		50'	
STA. 372+75± Lt.			GR-2	STA. 478+00± Lt.			GR-2	STA. 605+95± Lt.			Connect to Exist. G.R.
STA. 375+30± Lt.			GR-3	STA. 494+25± Lt.			GR-2	TO	207'		
TO	675'			TO	550'			STA. 608+00± Lt.			GR-3
STA. 382+05± Lt.			GR-2	STA. 499+75± Lt.			GR-2				
STA. 384+25± Lt.			GR-2	STA. 503+50± Lt.			GR-2				
TO	150'			TO	3104'			TOTAL:	18,984.8'	1,237.5'	
STA. 385+75± Lt.			GR-2	STA. 534+00± Lt.			Connect to Exist. G.R.				
STA. 412+88± Lt.			GR-2	TO	150'						
TO	225'			STA. 535+50± Lt.			Connect to Exist. G.R.				
STA. 415+12± Lt.			GR-2	TO	345.5'						
STA. 420+25± Lt.			GR-2	STA. 539+50± Lt.			Connect to Exist. G.R.				
TO	175'			TO	112.5'						
STA. 422+00± Lt.			GR-2	STA. 540+50± Lt.			Connect to Exist. G.R.				
STA. 425+00± Lt.			GR-2	TO	50'						
TO	637.5'			STA. 541+00± Lt.			GR-2				
STA. 431+25± Lt.			GR-2	STA. 550+00± Lt.			GR-2				
STA. 435+62± Lt.			GR-2	TO	1025'						
TO	437.5'			STA. 560+12± Lt.			GR-2				
STA. 440+00± Lt.			Connect to Exist. G.R.	STA. 561+25± Lt.			GR-2				
TO		100'		TO	700'						
STA. 441+00± Lt.			Connect to Exist. G.R.	STA. 568+12± Lt.			GR-2				
TO	100'			STA. 590+00± Lt.			GR-2				
STA. 442+00± Lt.			GR-2	TO	350'						
STA. 447+00± Lt.			GR-2	STA. 593+50± Lt.			Connect to Exist. G.R.				
TO	275'			TO	75'						
STA. 449+75± Lt.			GR-2	STA. 594+25± Lt.			Connect to Exist. G.R.				
STA. 452+62± Lt.			GR-2	TO	928'						
TO	87.5'			STA. 603+50± Lt.			Connect to Exist. G.R.				
STA. 453+50± Lt.			GR-3	TO	75'						
				STA. 604+28± Lt.			Connect to Exist. G.R.				
				TO	112.5'						
				STA. 605+41± Lt.			Connect to Exist.				

THIS SCHEDULE PREPARED TO REFLECT INCREASE IN SCOPE OF WORK IN ACCORDANCE WITH SUBSECTION 103.01 "CONSIDERATION OF PROPOSALS" OF THE SPECIAL PROVISIONS

THIS GUARD RAIL SCHEDULE WAS PREPARED DURING "AS-BUILT" POSTING AND SUPERSEDES SCHEDULES SHOWN ON PLAN SHT. NOS. 15 & 15S-1.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARD RAIL SCHEDULE

HANA HIGHWAY
IMPROVEMENTS & RESURFACING
Proj. Nos. 360A-01-82 & 360A-01-83M

Date: Sept., 1983

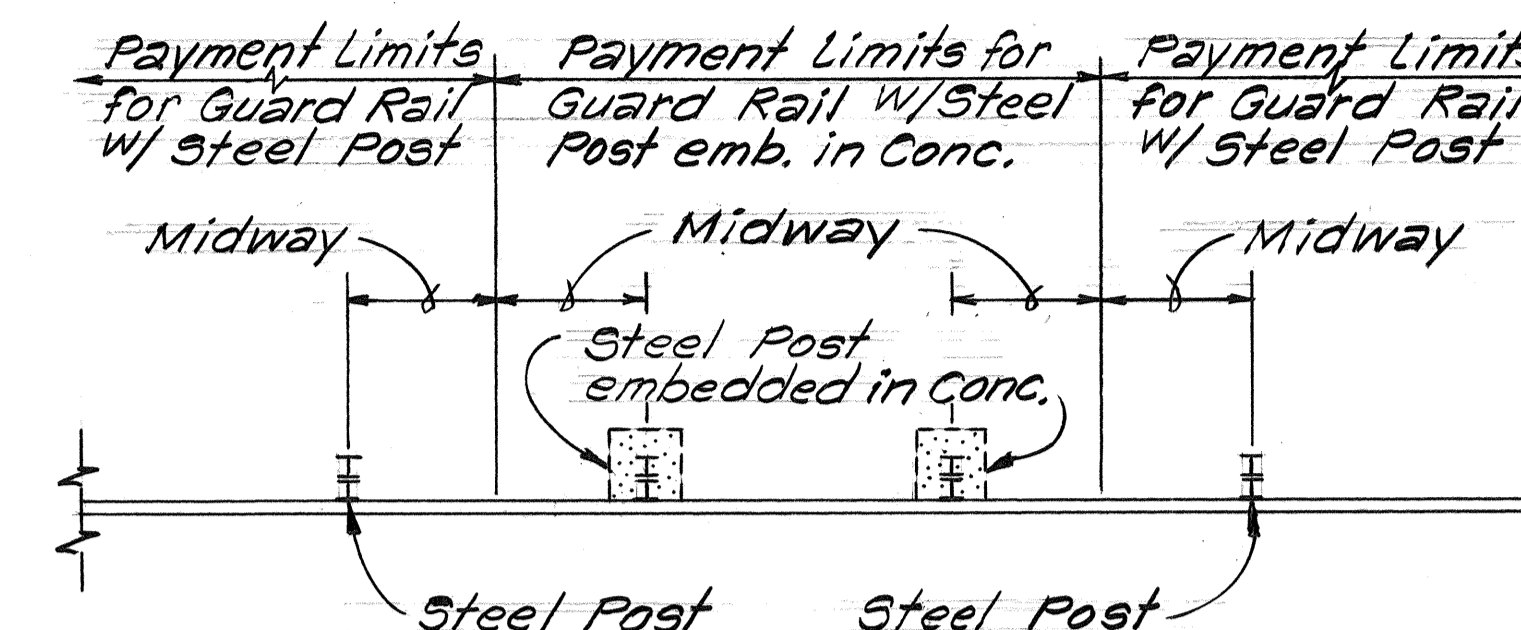
SHEET No. 18 OF 7 SHEETS

DATE: _____
SURVEY PLOTTED BY: _____
DRAWN BY: _____
DESIGNED BY: _____
QUANTITIES BY: _____
CHECKED BY: _____
ORIGINAL PLAN NO. _____
NOTE BOOK NO. _____

GUARD RAIL SCHEDULE

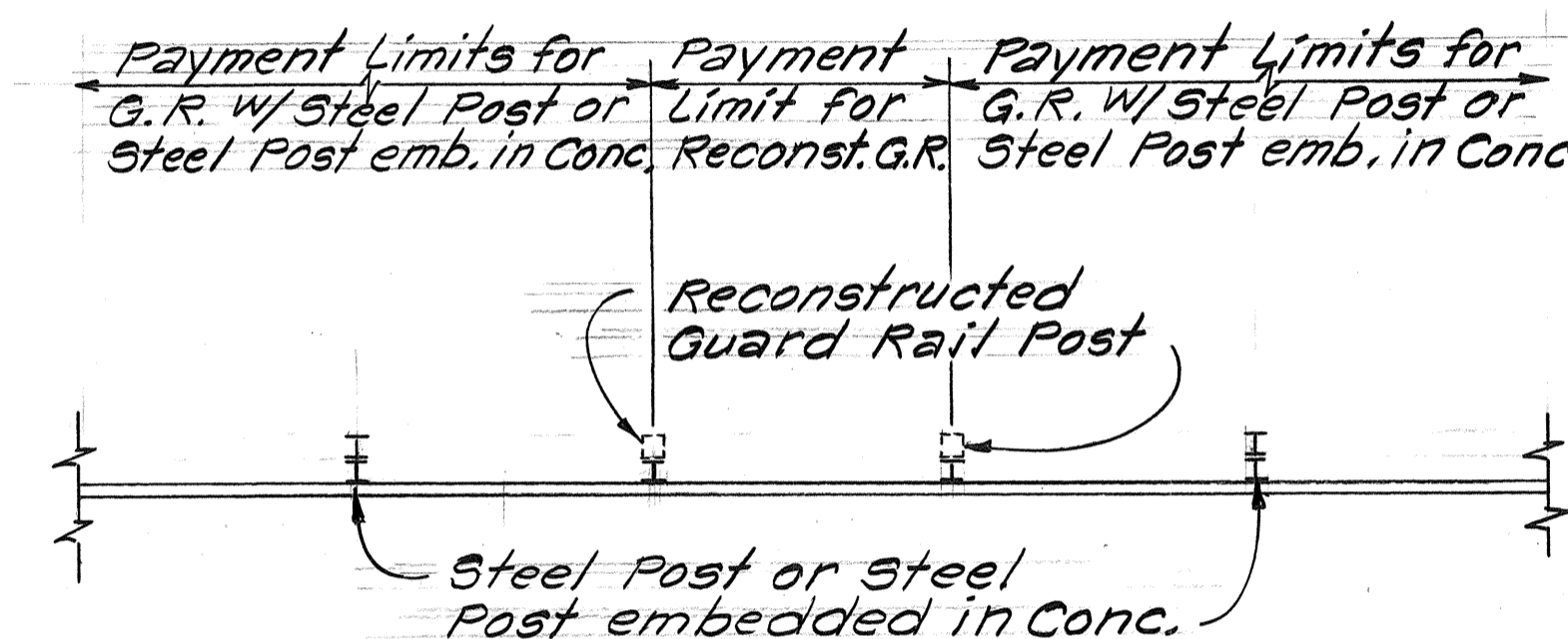
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-01-82 360A-01-83M	1982	15	36

APPROXIMATE LIMITS	GUARD RAIL W/ STEEL POST	GUARD RAIL W/ STEEL POST EMBEDDED IN CONCRETE	RECONSTRUCTED GUARD RAIL	END CONDITION	APPROXIMATE LIMITS	GUARD RAIL W/ STEEL POST	GUARD RAIL W/ STEEL POST EMBEDDED IN CONCRETE	RECONSTRUCTED GUARD RAIL	END CONDITION
STA. 375+25±Lt.				GR-3	STA. 445+75±Lt.				GR-4
TO	200'				TO	775'			
STA. 377+25±Lt.					STA. 453+50±Lt.				GR-3
TO		75'			STA. 454+50±Lt.				GR-3
STA. 378+00±Lt.					TO	125'			
TO	325'				STA. 455+75±Lt.				GR-2
STA. 381+25±Lt.					STA. 457+75±Lt.				GR-3
TO		50'			TO	2,025'			
STA. 381+75±Lt.					STA. 478+00±Lt.				GR-2
TO	25'				STA. 495+25±Lt.				GR-2
STA. 382+00±Lt.				GR-2	TO	425'			
STA. 384+25±Lt.				GR-2	STA. 499+50±Lt.				GR-2
TO	150'				STA. 504+00±Lt.				GR-2
STA. 385+75±Lt.				GR-2	TO	3,050'			
STA. 420+00±Lt.				GR-2	STA. 534+50±Lt.				Connect to Exist. G.R.
TO	200'				TO	100'			
STA. 422+00±Lt.				GR-2	STA. 535+50±Lt.				Connect to Exist. G.R.
STA. 425+50±Lt.				GR-2	TO	400'			
TO	50'				STA. 539+50±Lt.				Connect to Exist. G.R.
STA. 426+00±Lt.					TO	100'			
TO		100'			STA. 540+50±Lt.				Connect to Exist. G.R.
STA. 427+00±Lt.					TO	25'			
TO	400'				STA. 540+75±Lt.				GR-2
STA. 431+00±Lt.				GR-2	STA. 550+00±Lt.				GR-2
STA. 436+00±Lt.				GR-2	TO	300'			
TO	100'				STA. 553+00±Lt.				GR-2
STA. 437+00±Lt.				Connect to Exist. G.R.					
TO			125'						
STA. 438+25±Lt.				Connect to Exist. G.R.					
TO	75'								
STA. 439+00±Lt.				Connect to Exist. G.R.					
TO			200'						
STA. 441+00±Lt.				Connect to Exist. G.R.					
TO	100'								
STA. 442+00±Lt.				GR-2					



PAYMENT LIMITS FOR GUARD RAIL W/ STEEL POST EMBEDDED IN CONCRETE

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



PAYMENT LIMITS FOR RECONSTRUCTED GUARD RAIL

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

NOTE:
 For Actual Guard Rail Installation, see Plan Sht. Nos. 145-1 & 145-2.

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 LAND TRANSPORTATION FACILITIES DIVISION

GUARD RAIL SCHEDULE & DETAILS

HANA HIGHWAY
 IMPROVEMENTS & RESURFACING
 Proj. Nos. 360A-01-82 & 360A-01-83M

Scale: As Shown Date: June, 1982
 SHEET No. 2 OF 7 SHEETS

ORIGINAL PLAN
 SURVEY PLOTTED BY
 DRAWN BY
 TRACED BY
 DESIGNED BY
 CHECKED BY
 DATE
 NO.

GUARD RAIL SCHEDULE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-01-82 360A-01-83M	1982	15 S-1	36

APPROXIMATE LIMITS	GUARD RAIL W/ STEEL POST	GUARD RAIL W/ STEEL POST EMBEDDED IN CONCRETE	RECONSTRUCTED GUARD RAIL	END CONDITION	APPROXIMATE LIMITS	GUARD RAIL W/ STEEL POST	GUARD RAIL W/ STEEL POST EMBEDDED IN CONCRETE	RECONSTRUCTED GUARD RAIL	END CONDITION
STA. 1+00±				GR-2	STA. 63+50±				Connect to Exist. G.R.
TO	350'				TO	50'			
STA. 4+50±				Connect to Exist. G.R.	STA. 64+00±				GR-2
TO			150'		STA. 89+00±				GR-2
STA. 6+00±				Connect to Exist. G.R.	TO	150'			
TO	850'				STA. 90+50±				GR-2
STA. 14+50±				Connect to Exist. G.R.	STA. 94+50±				GR-2
TO			75'		TO	650'			
STA. 15+25±				Connect to Exist. G.R.	STA. 101+00±				Connect to Exist. G.R.
TO	125'				TO			150'	
STA. 16+50±				Connect to Exist. G.R.	STA. 102+50±				Connect to Exist. G.R.
TO			100'		TO	725'			
STA. 17+50±				Connect to Exist. G.R.	STA. 109+75±				
TO	100'				TO		125'		
STA. 18+50±				Connect to Exist. G.R.	STA. 111+00±				
TO			550'		TO	350'			
STA. 24+00±				Connect to Exist. G.R.	STA. 114+50±				Connect to Exist. G.R.
TO	150'				TO			50'	
STA. 25+50±				GR-2	STA. 115+00±				Connect to Exist. G.R.
STA. 32+50±				GR-2	TO	50'			
TO	450'				STA. 115+50±				GR-2
STA. 37+00±				GR-2	STA. 118+00±				GR-2
STA. 40+50±				GR-2	TO	350'			
TO	700'				STA. 121+50±				GR-2
STA. 47+50±				GR-2					
STA. 49+50±				GR-2					
TO	100'								
STA. 50+50±				GR-2					
STA. 55+50±				GR-2					
TO	300'								
STA. 58+50±				GR-2					
STA. 61+50±				GR-2					
TO	50'								
STA. 62+00±				Connect to Exist. G.R.					
TO			150'						

N.I.C.

NOTE:
For Actual Guard Rail Installation, see Plan Sht. No. 145-2.

NOTE:
This sheet prepared to reflect increase in scope of work in accordance with Subsection 103-01 Consideration of Proposals of the Special Provisions.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

GUARD RAIL SCHEDULE

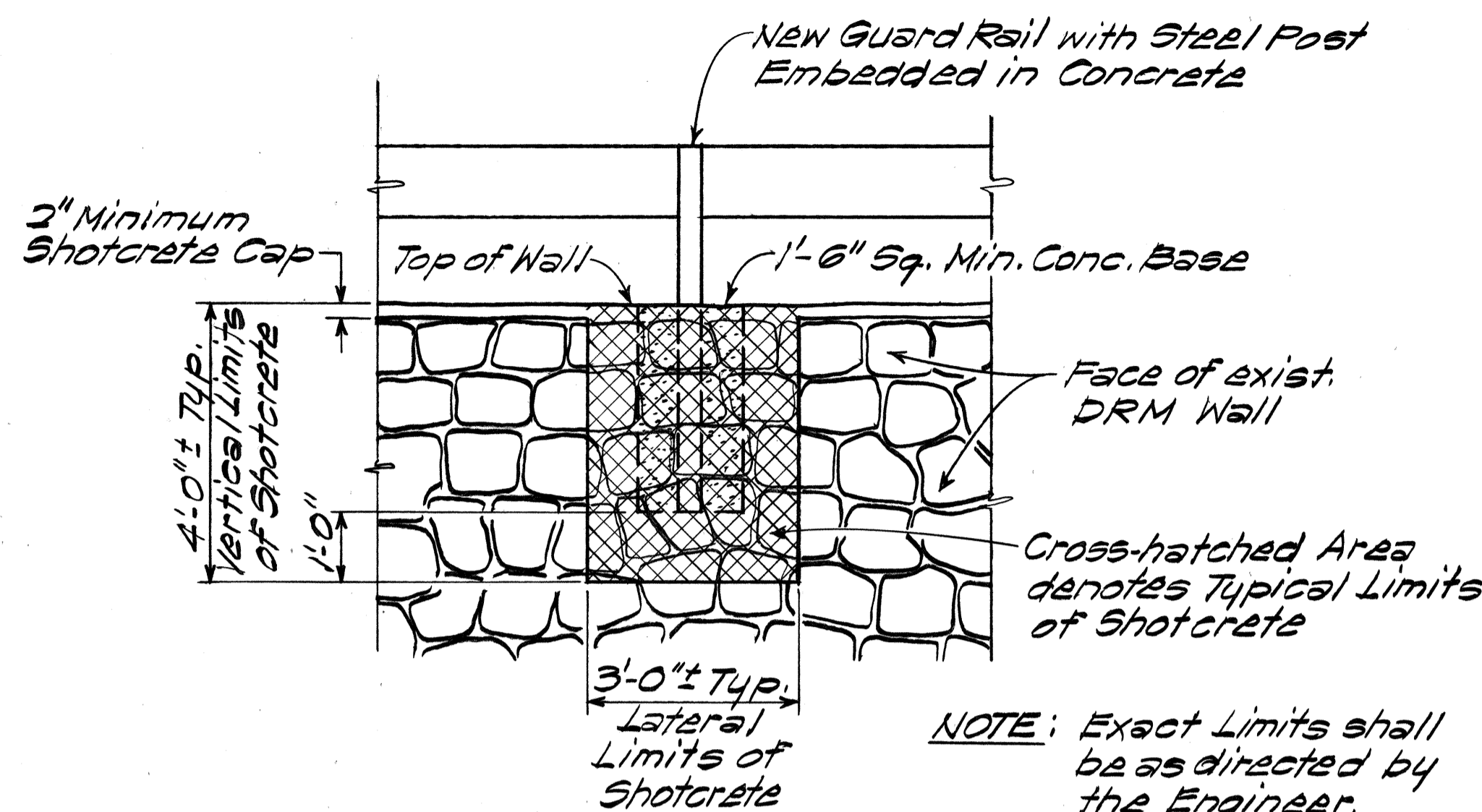
HANA HIGHWAY
IMPROVEMENTS & RESURFACING
Proj. Nos. 360A-01-82 & 360A-01-83M

Date: July, 1982

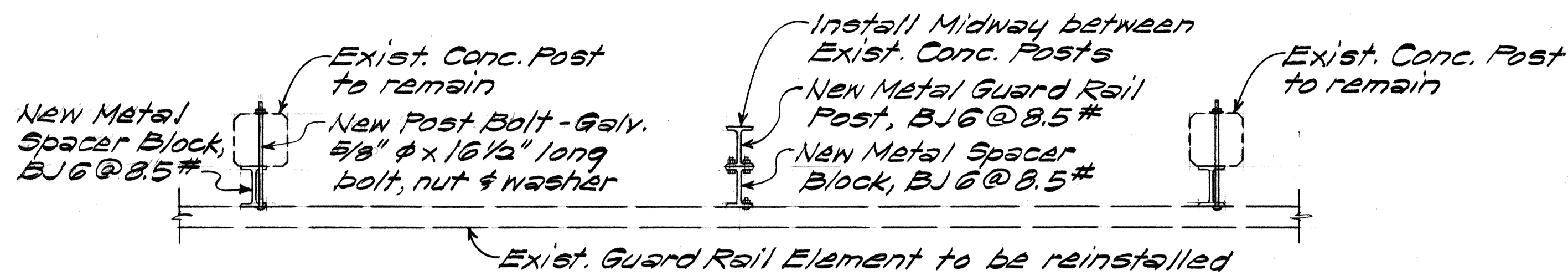
SHEET No. 2A OF 7 SHEETS

DATE: _____
SURVEY PLOTTED BY: _____
DRAWN BY: _____
DESIGNED BY: _____
CHECKED BY: _____
NOTE BOOK NO. _____

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-01-82 360A-01-83M	1982	16	36



ELEVATION



NOTES:

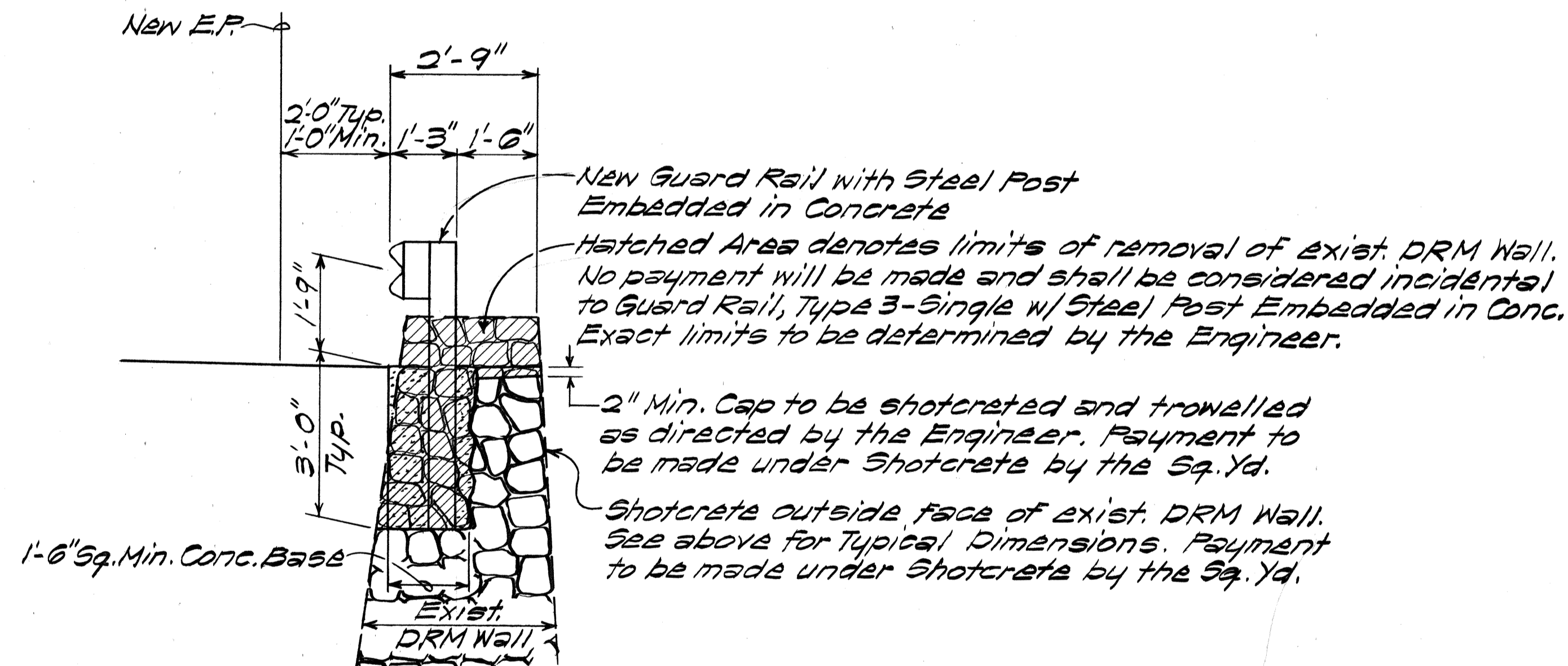
1. The Contractor may install new metal guard rail posts in lieu of the existing concrete posts. If the Contractor elects to use new metal guard rail posts, he shall remove all the existing concrete posts. No additional compensation will be made for this work but shall be considered as part of the work performed for Reconstructed Guard Rail.
2. If there is an existing DRM wall behind the existing guard rail, the new metal guard rail posts shall be embedded in concrete. No additional compensation will be made for this work but shall be considered as part of the work performed for Reconstructed Guard Rail. For details of Post Embedded in Concrete, see this sheet.

RECONSTRUCTED GUARD RAIL PLAN

Scale: 3/4" = 1'-0"

GUARD RAIL NOTES

1. The Guard Rail Schedule shows the approximate limits and lengths of the type (i.e. G.R. w/ Steel Post, G.R. w/ Steel Post Embedded in Concrete or Reconstr. G.R.) of guard rail to be installed. The actual locations shall be determined in the field by the Engineer. The Engineer may change the type of guard rail shown in the Guard Rail Schedule in the field and the Contractor will be paid for the type of guard rail actually installed.
2. The GR-1, GR-2, GR-3 and GR-4 End Conditions will be paid for as Guard Rail, by the linear feet of the type (i.e. G.R. w/ Steel Post, G.R. w/ Steel Post Embedded in Concrete or Reconstr. G.R.) actually installed.
3. If the Engineer determines there is not adequate area to construct the mound for the GR-2 End Condition, the Contractor shall construct the GR-1 End Condition.
4. 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.
5. Existing guard rail and concrete posts that are not to be reconstructed shall be removed and stockpiled as directed by the Engineer. No payment will be made for this work but shall be considered incidental to New Guard Rail.



TYPICAL SECTION

GUARD RAIL WITH STEEL POST EMBEDDED IN CONCRETE

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

DATE	_____
DESIGNED BY	_____
CHECKED BY	_____
QUANTITIES BY	_____
NOTE BOOK	_____
PLANNED BY	_____
ORIGINAL PLAN	_____
NO.	_____

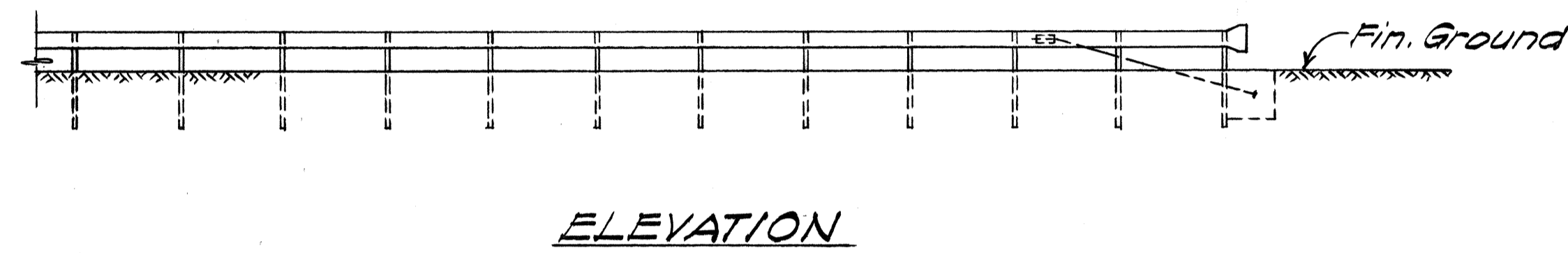
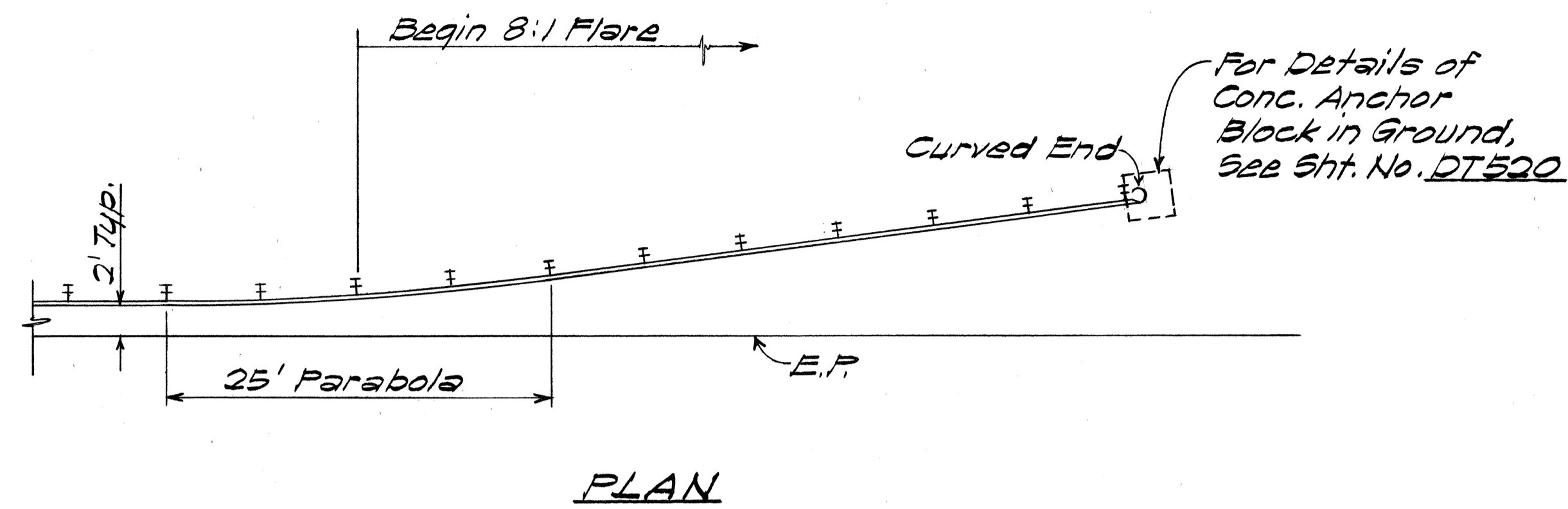
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

GUARD RAIL DETAILS AND NOTES

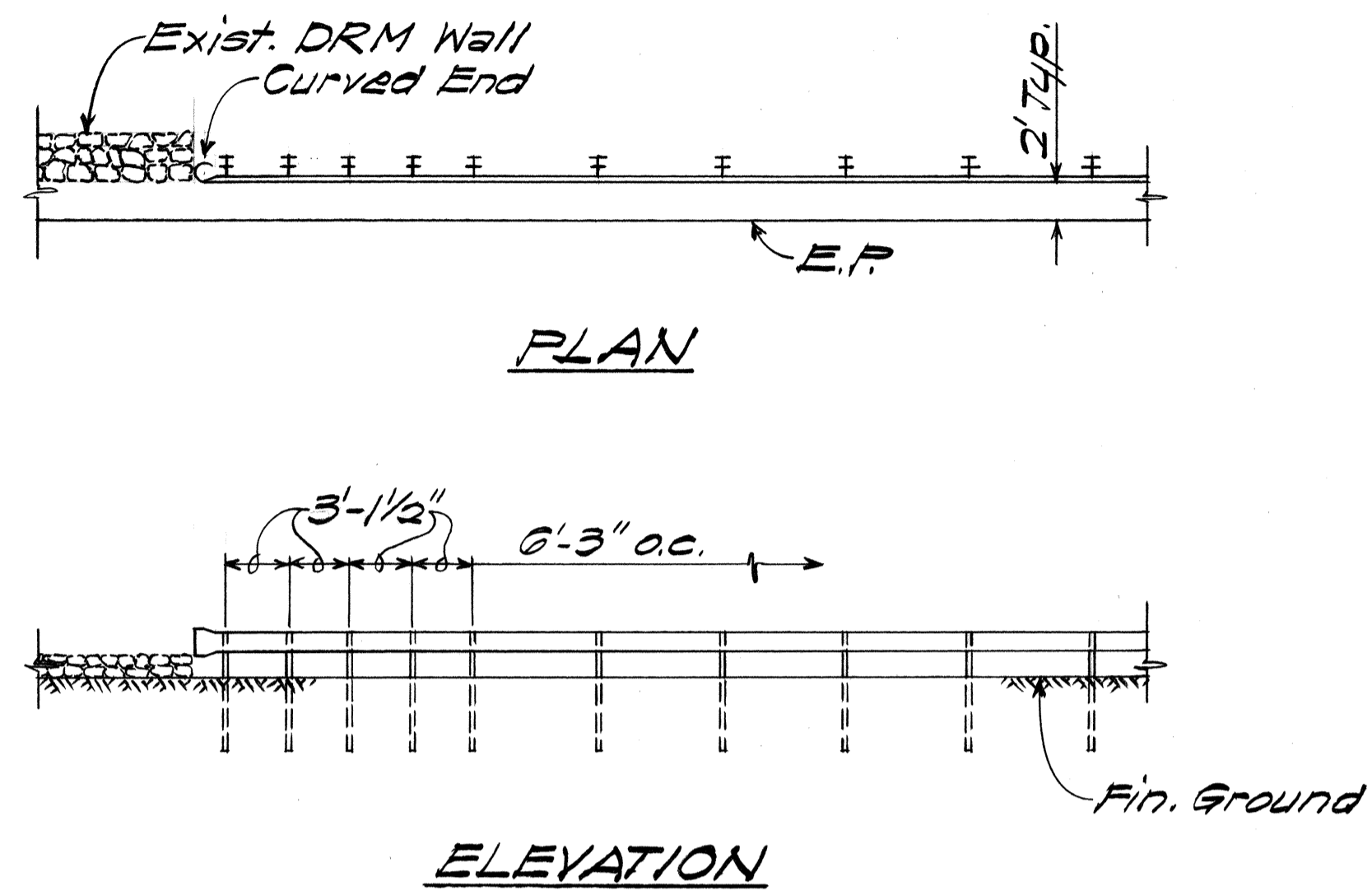
HANA HIGHWAY
IMPROVEMENTS & RESURFACING
Proj. Nos. 360A-01-82 & 360A-01-83M

Scale: As Shown Date: June, 1982
SHEET NO. 3 OF 7 SHEETS

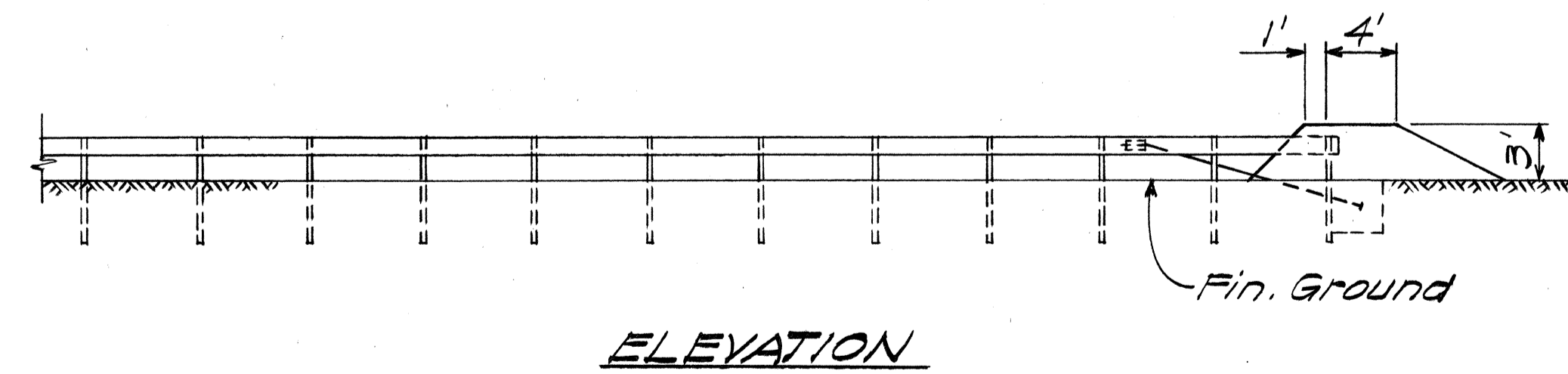
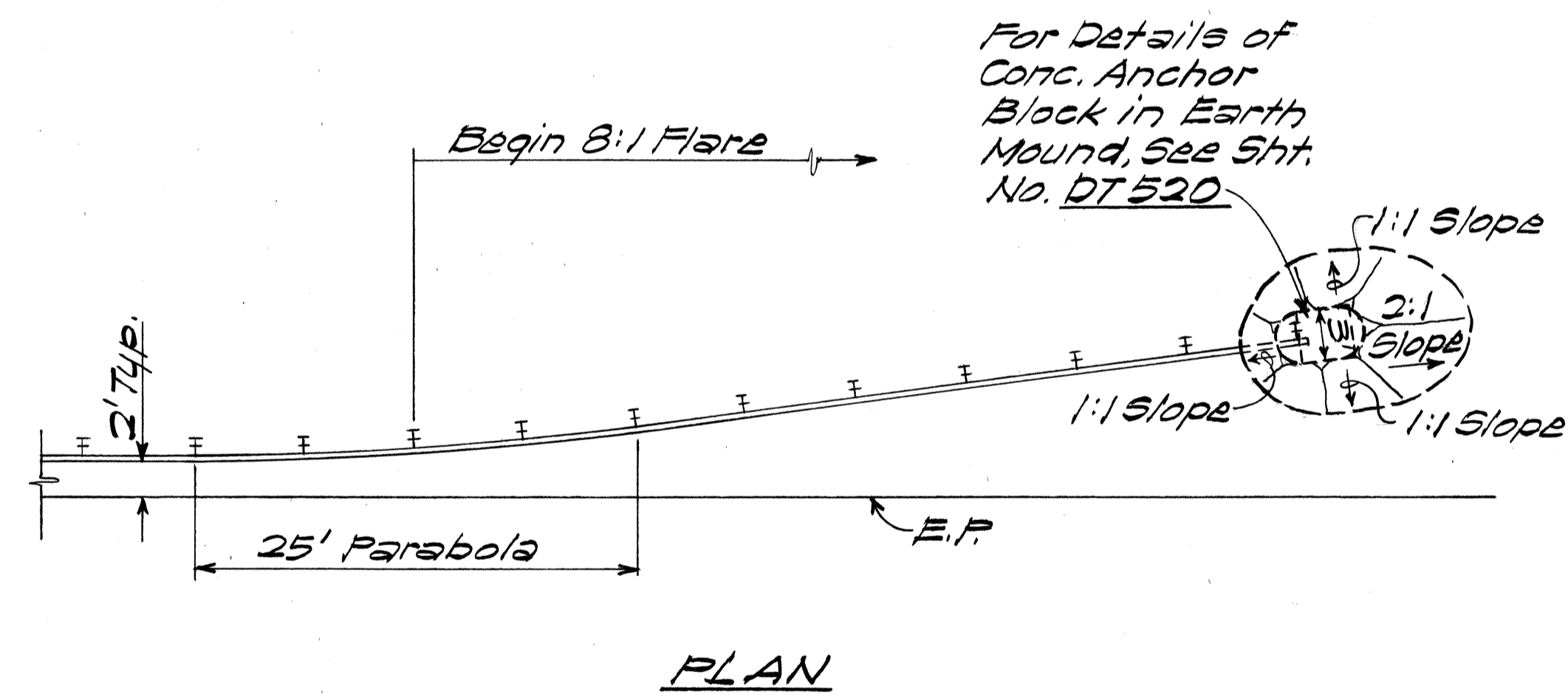
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-01-82 360A-01-83M	1982	17	36



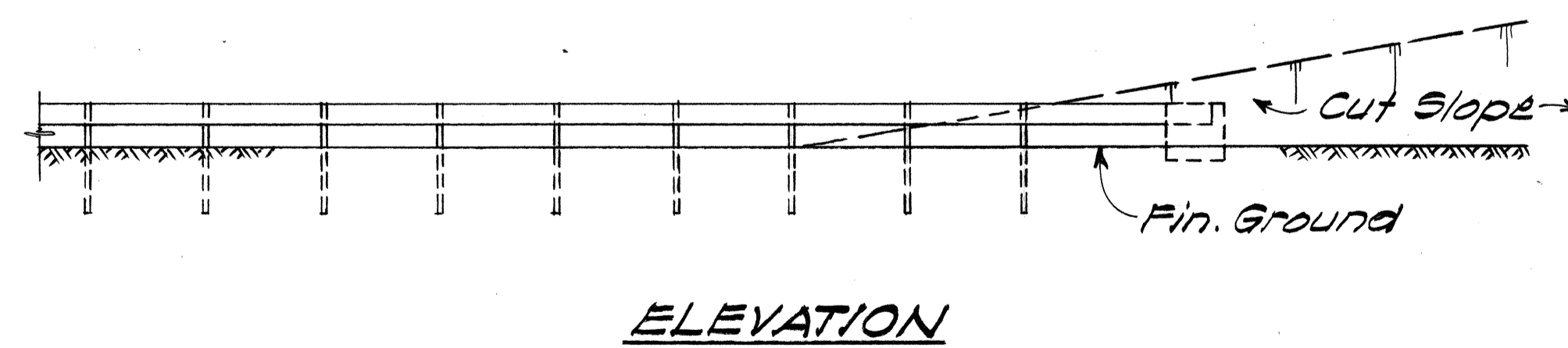
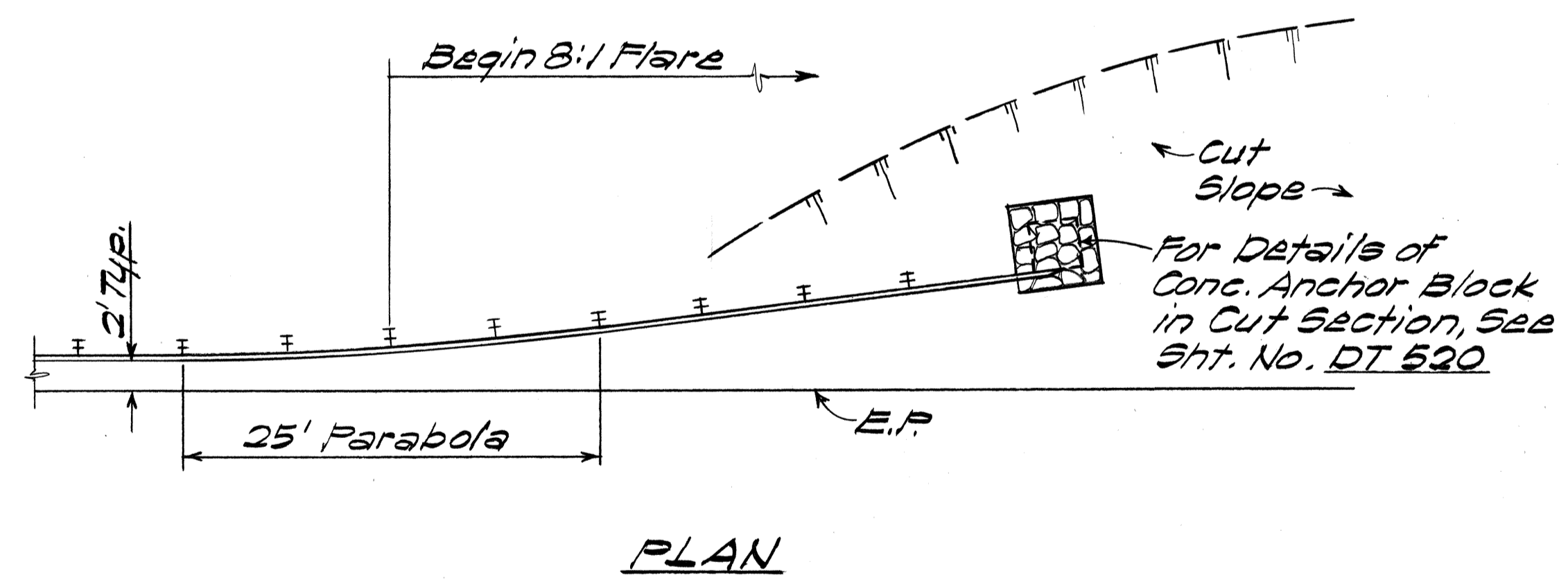
TYPE GR-1 END CONDITION
Scale: 1/8"=1'-0"



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



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



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

DATE _____
 SURVEY PLOTTED BY _____
 PLAN _____
 TRACED BY _____
 NOTE BOOK _____
 DESIGNED BY _____
 QUANTITIES BY _____
 CHECKED BY _____
 No. _____

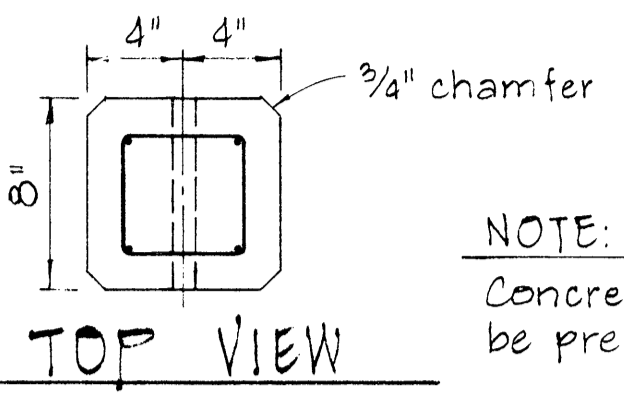
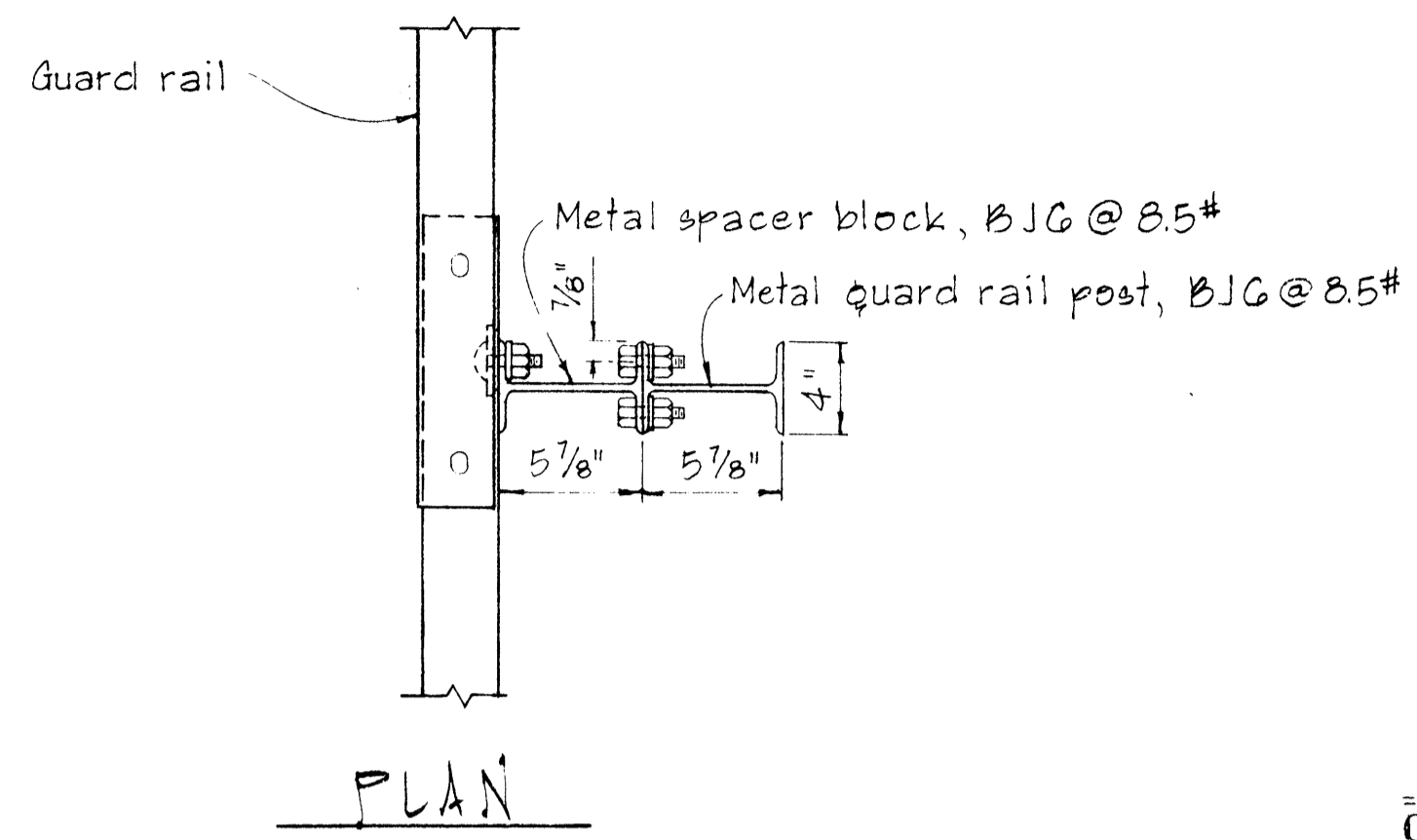
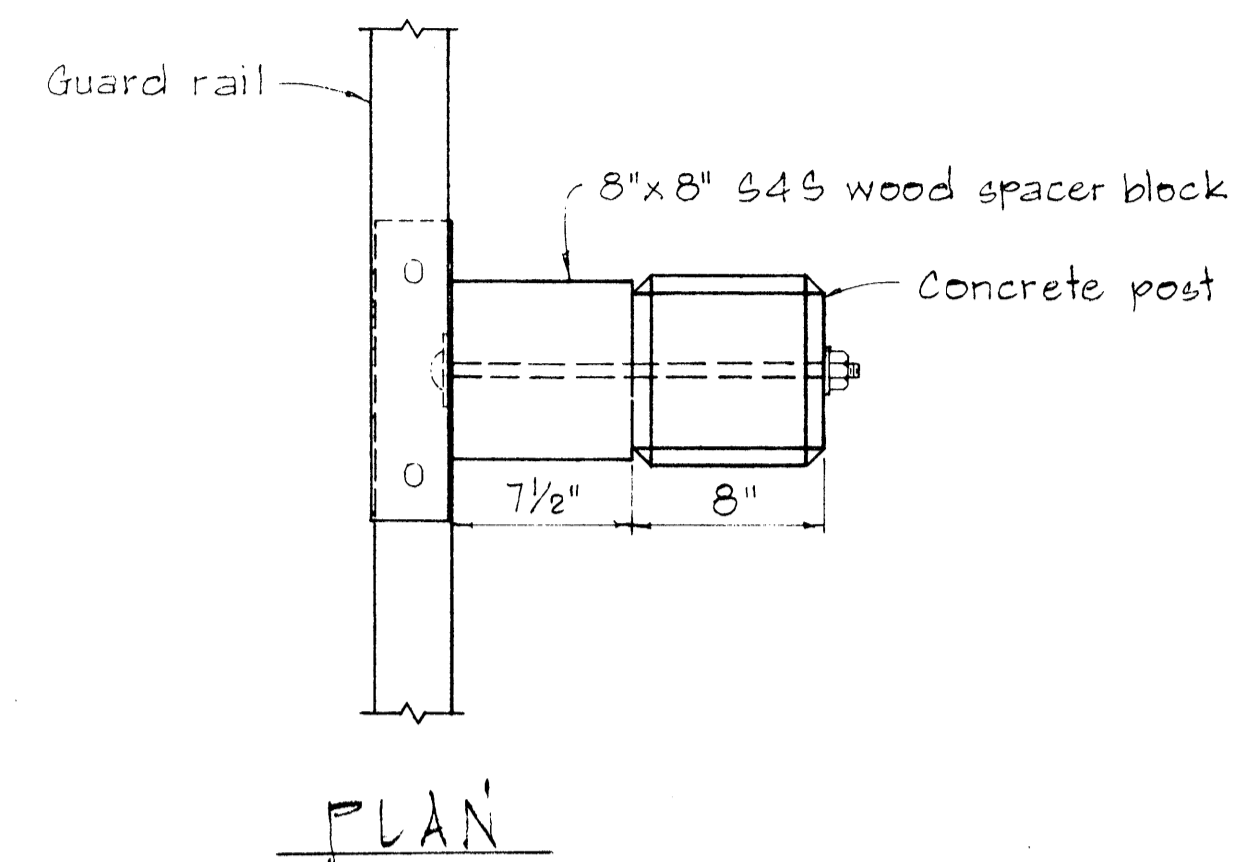
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 LAND TRANSPORTATION FACILITIES DIVISION

GUARD RAIL END CONDITIONS

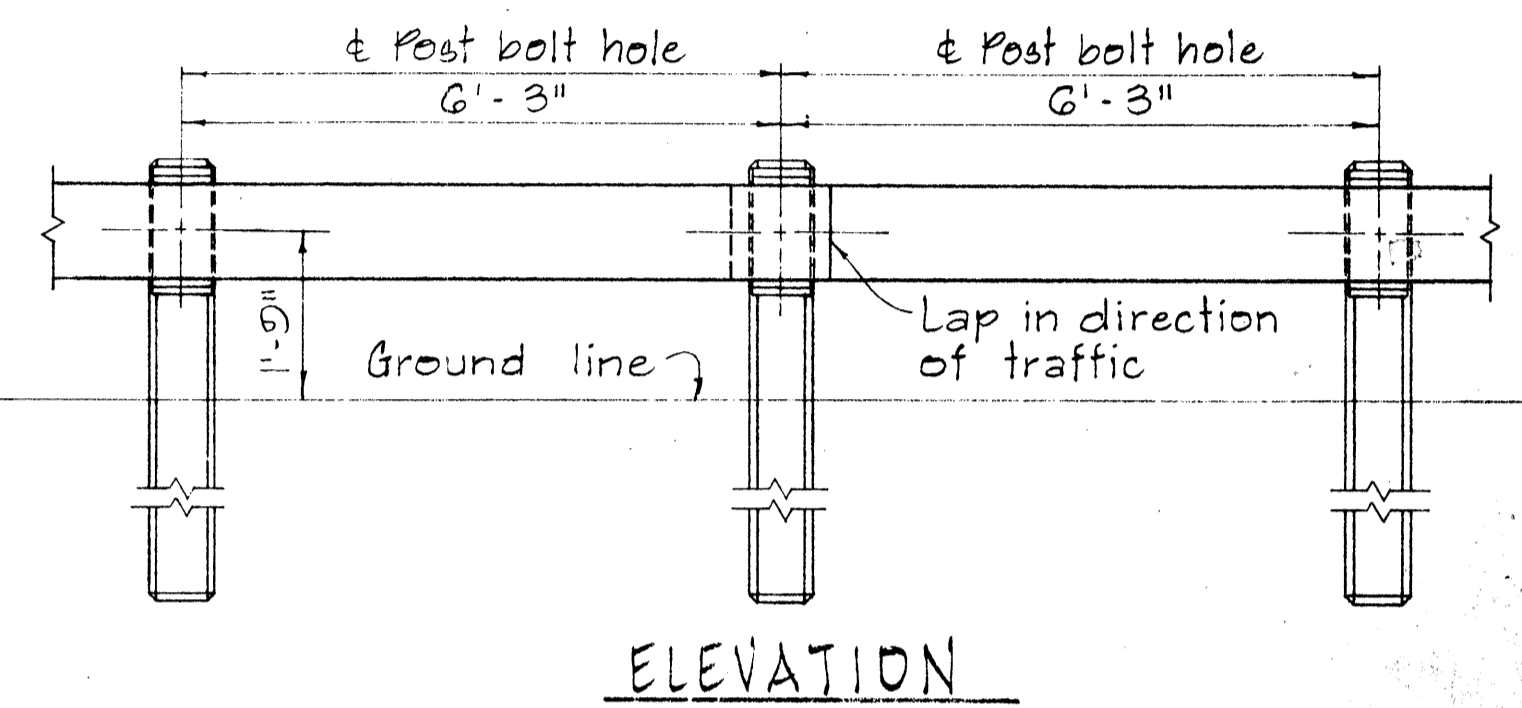
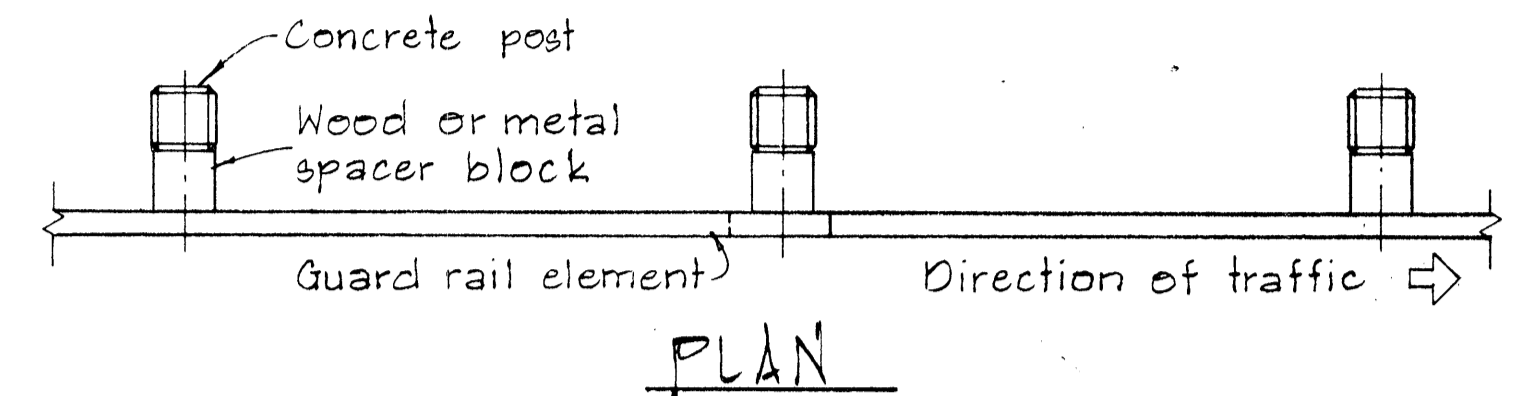
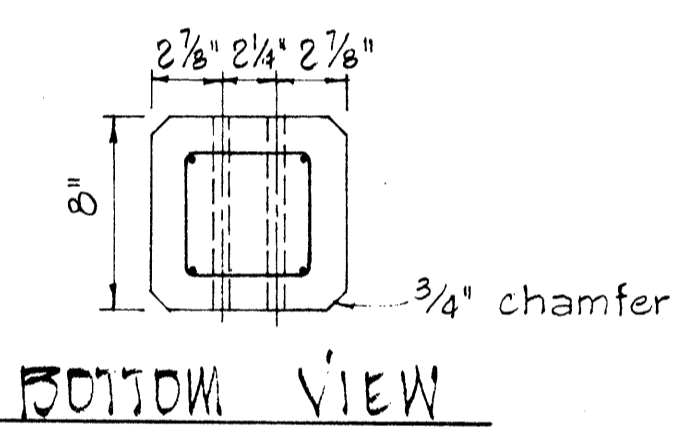
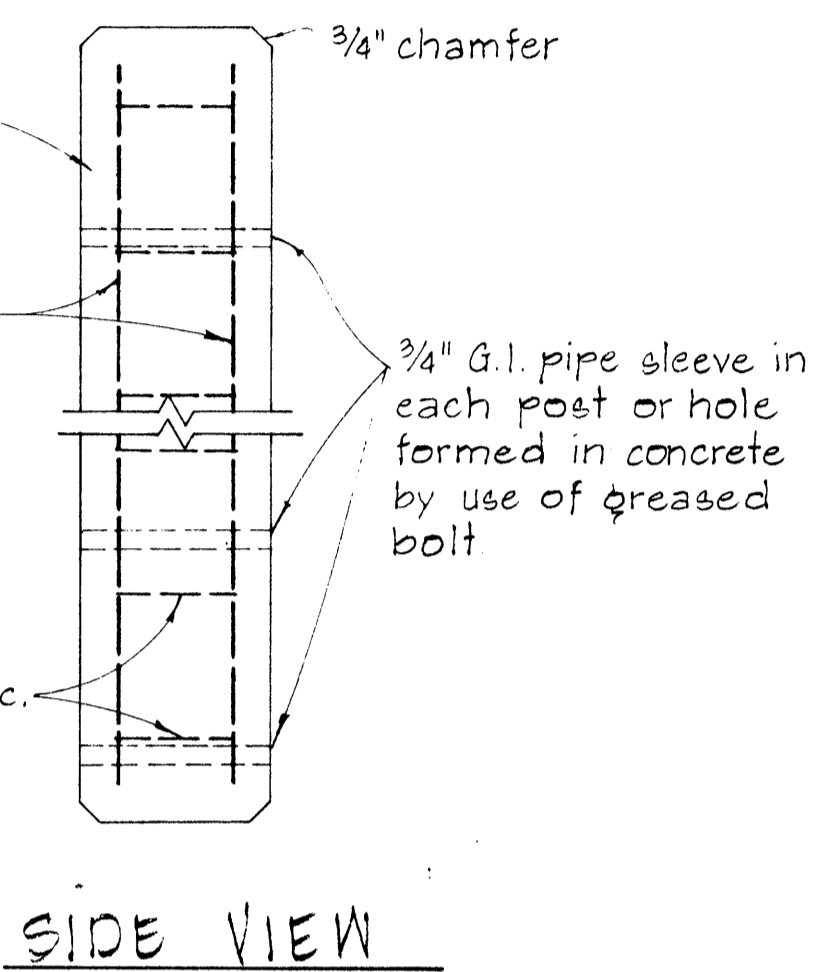
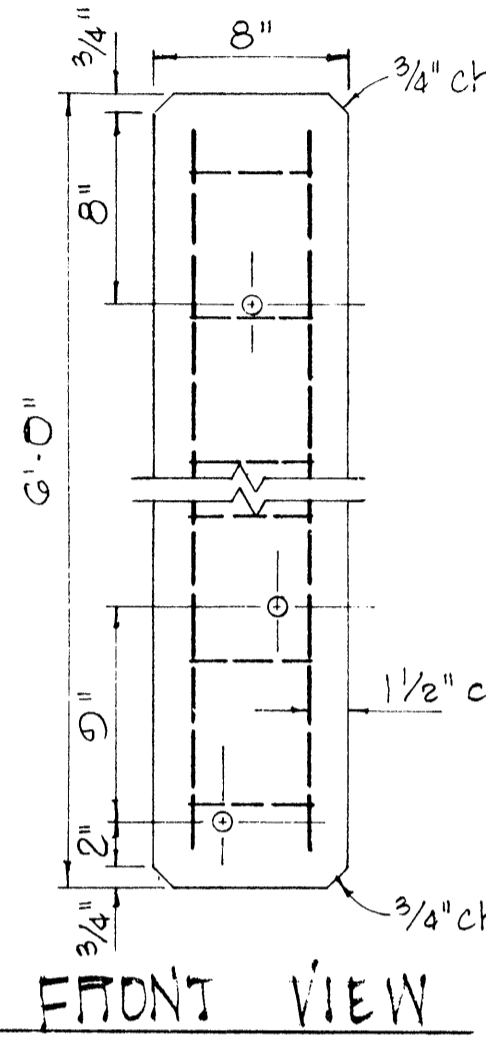
HANA HIGHWAY
 IMPROVEMENTS & RESURFACING
 Proj. Nos. 360A-01-82 & 360A-01-83M

Scale: As Shown Date: June, 1982
 SHEET No. 4 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-01-82 360A-01-83M	1982	18	36

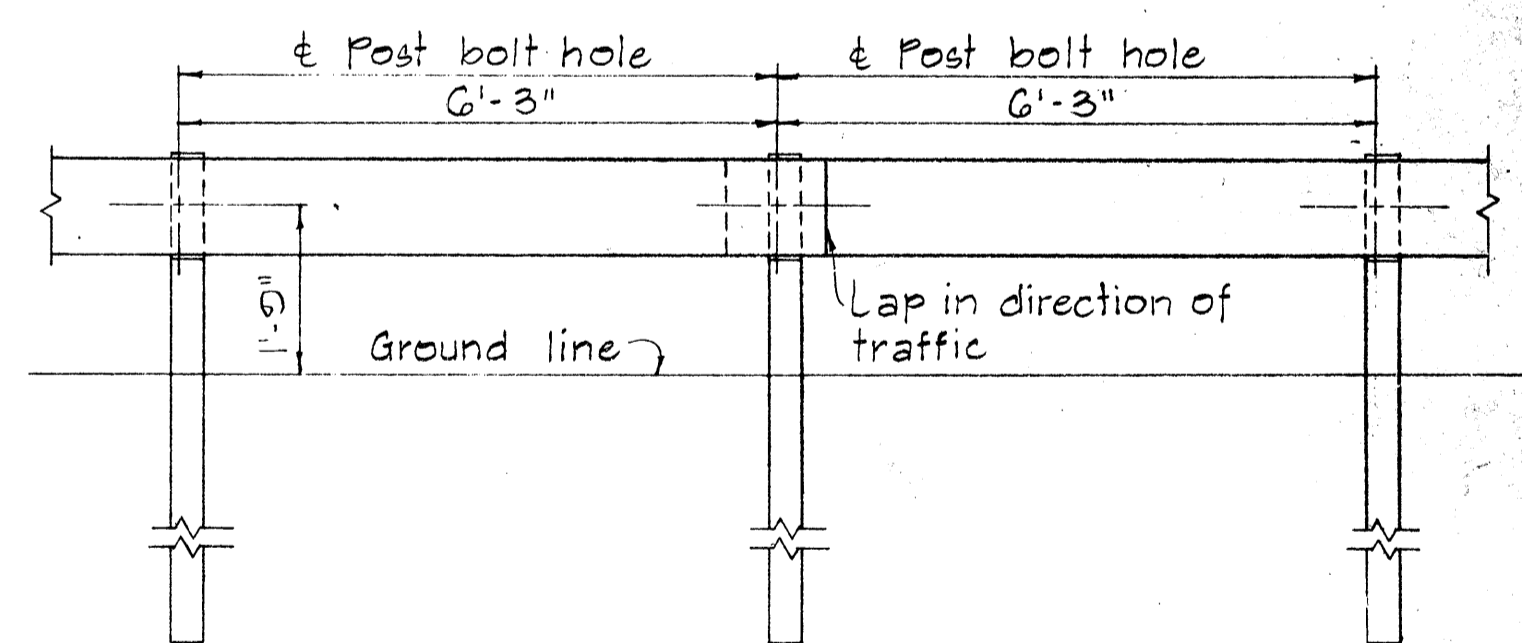
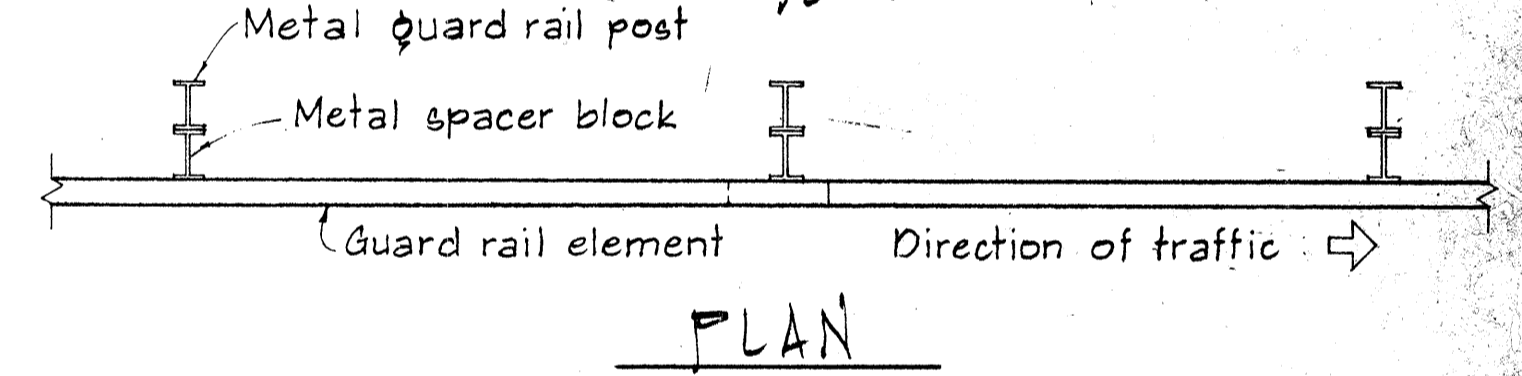


NOTE:
Concrete post shall be precast



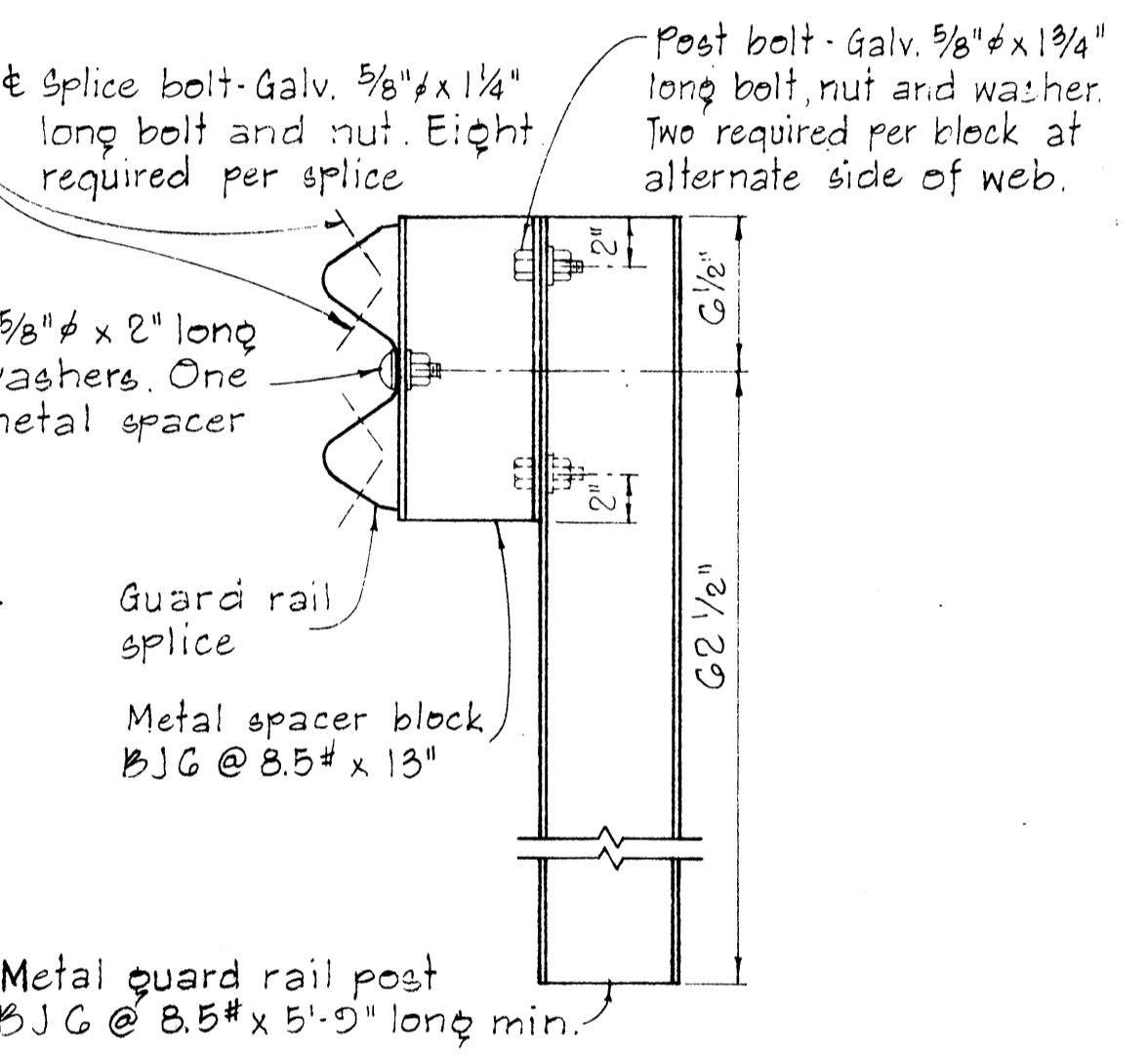
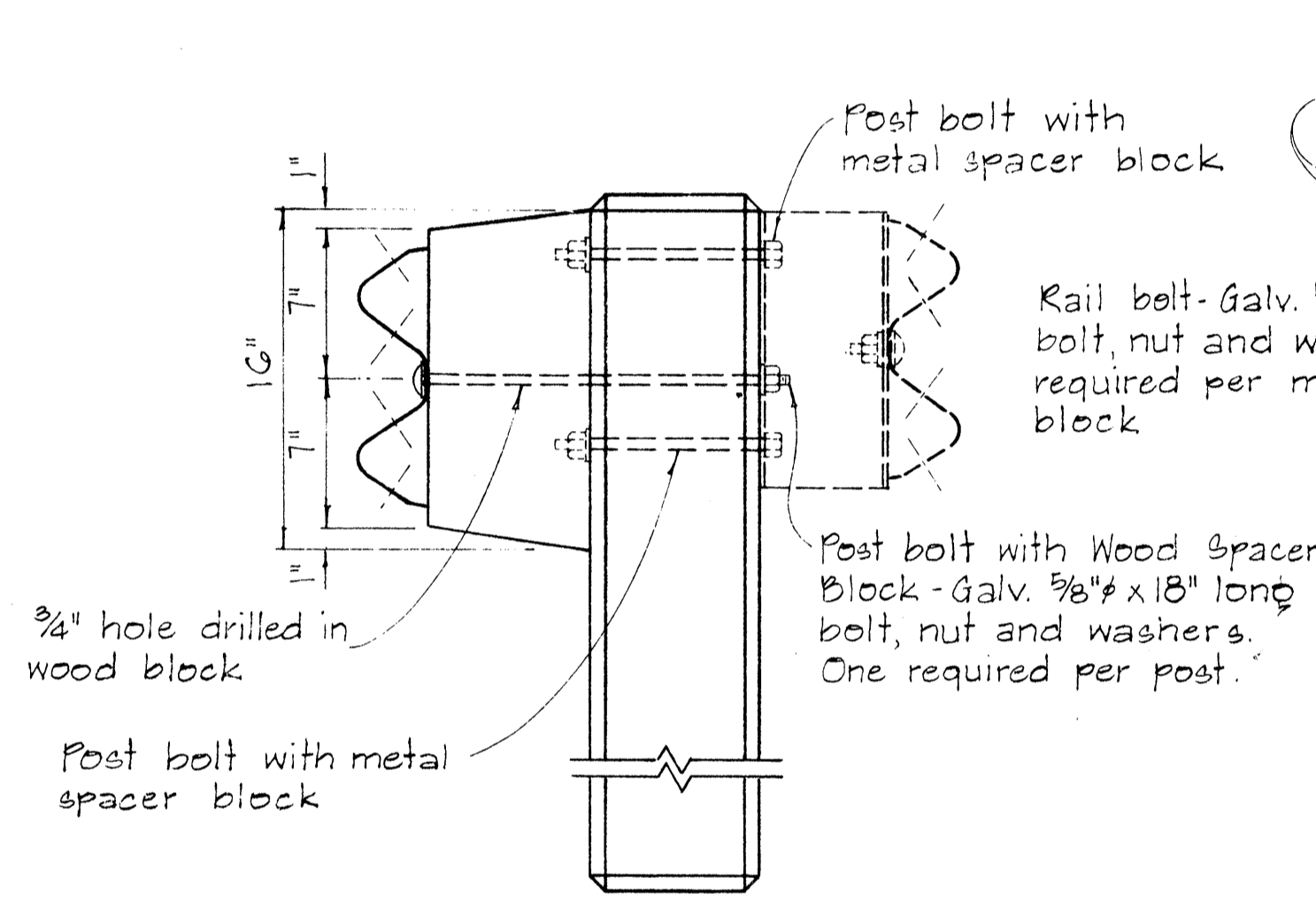
METAL GUARD RAIL ON CONCRETE POST WITH WOOD OR METAL SPACER BLOCK

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



METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK

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

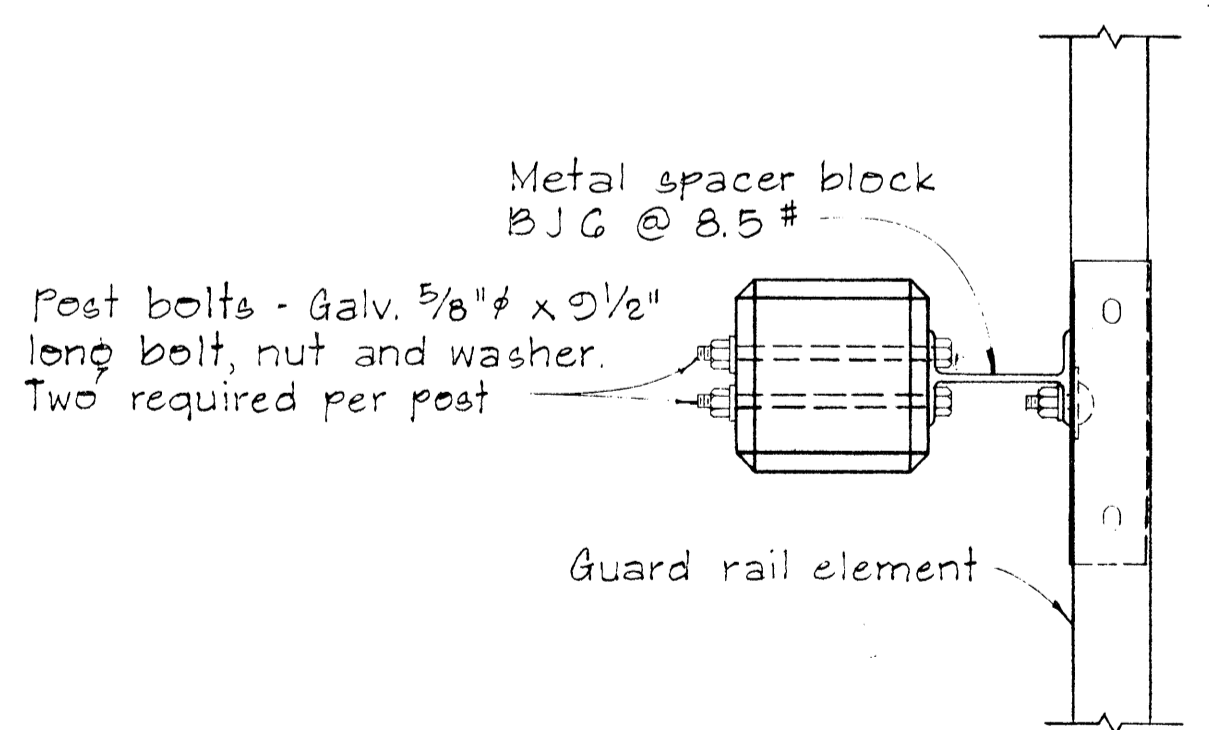


DETAIL OF CONCRETE POST

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

SINGLE METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK

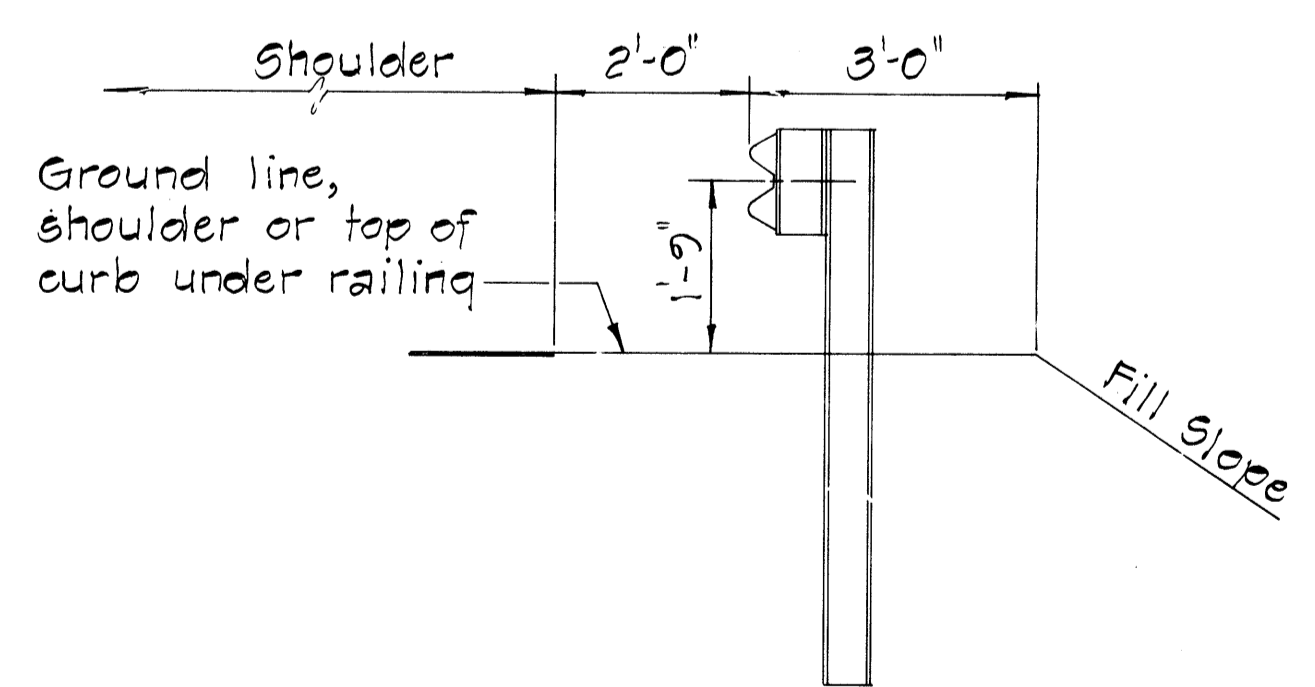
SCALE: 1 1/2" = 1'-0"



PLAN

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

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



AT SHOULDER SECTION

TYPICAL METAL GUARD RAIL DETAIL

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

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

APPROVED:
Hubert J. DeLeon
ASSISTANT CHIEF, ENGINEERING
12-30-62
DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL GUARD RAIL

SCALE: AS SHOWN
NOV. 1968

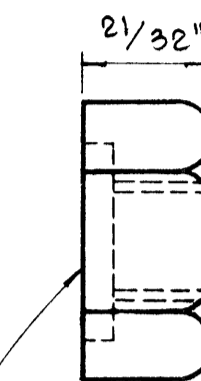
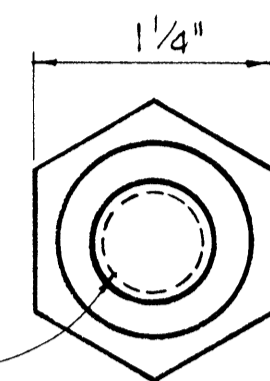
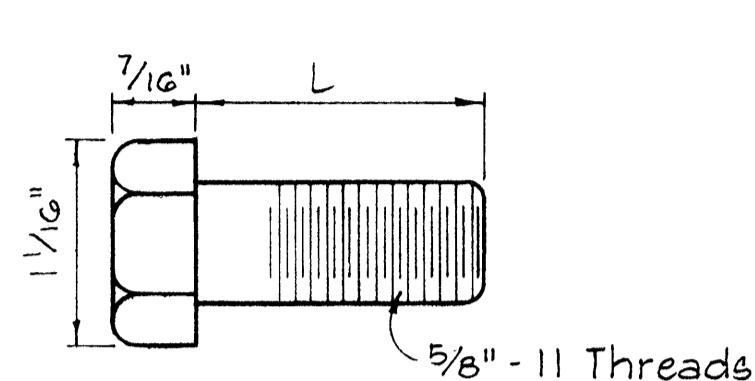
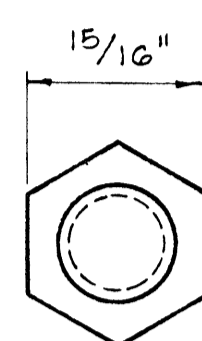
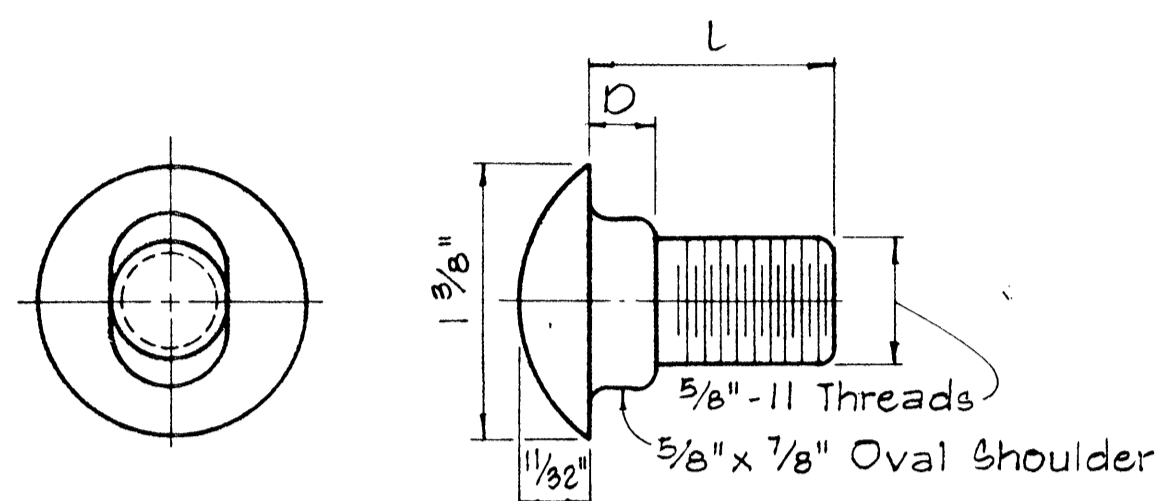
SHEET No. 5 OF 7 SHEETS DT 500

DATE
SURVEY PLOTTED BY
PLAN
DESIGNED BY
NOTED BOOK
QUANTITIES BY
CHECKED BY

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-01-82 360A-01-83M	1982	19	32

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"	2"

BOLT DIMENSIONS	
TYPE B BOLT	
Post Bolt for Conc. Post w/ Metal Blocks	5 1/2"
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

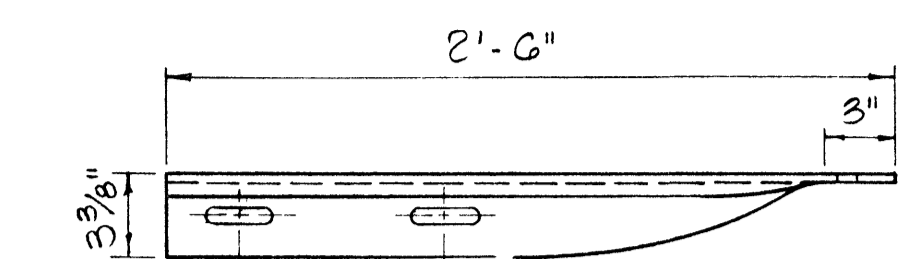
TYPE B BOLT

SPlice RAIL AND POST BOLTS

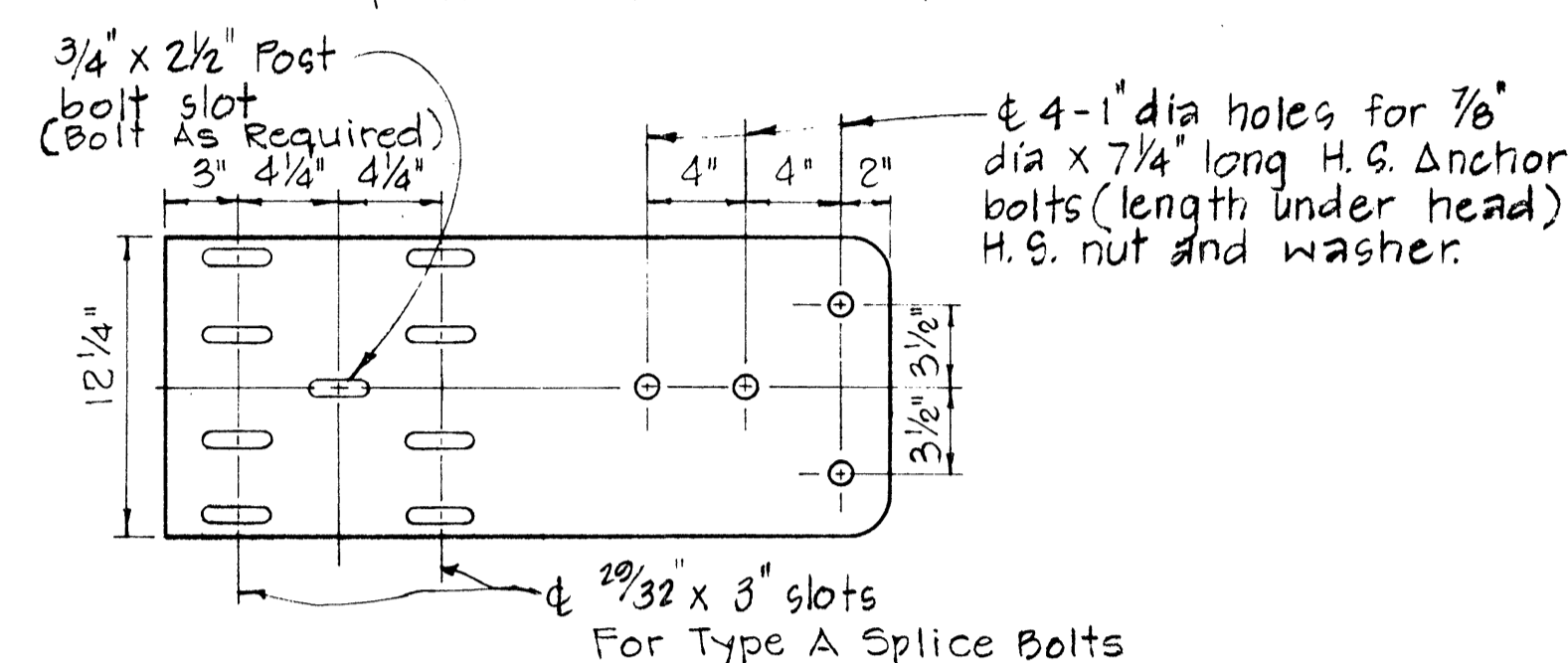
Scale: Full Size

HEXAGON NUT

Scale: Full Size



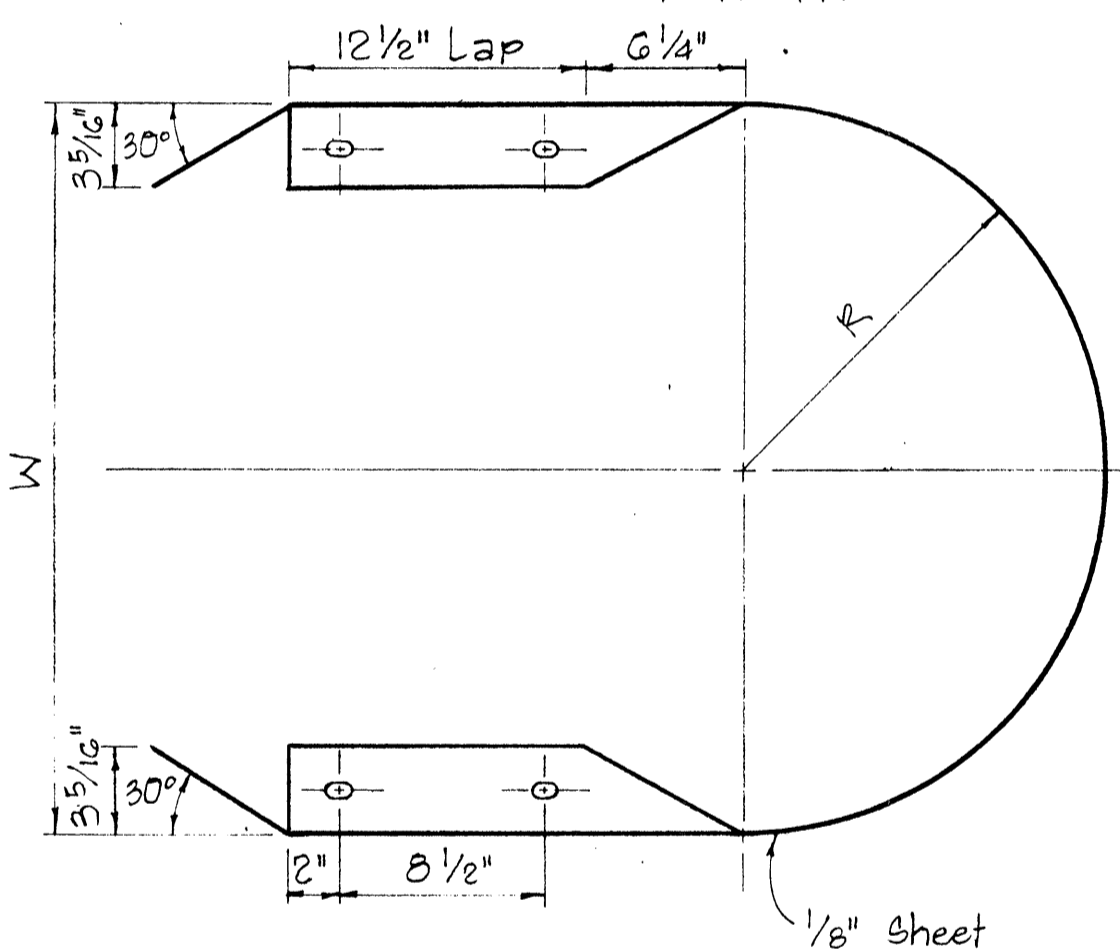
Lap in direction of traffic



SPECIAL END SHOE

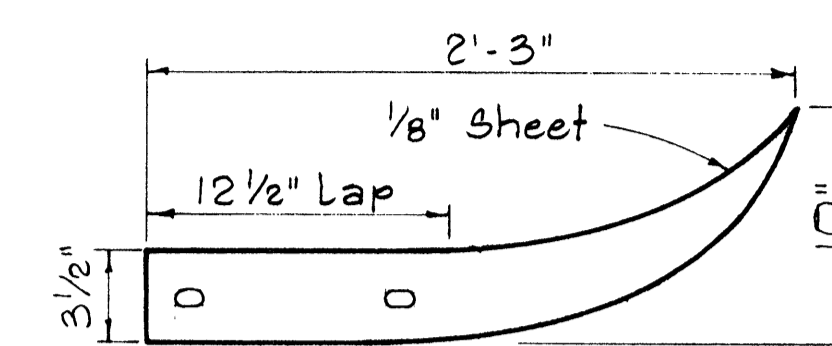
Scale: 1 1/2" = 1'-0"

Lap in direction of traffic

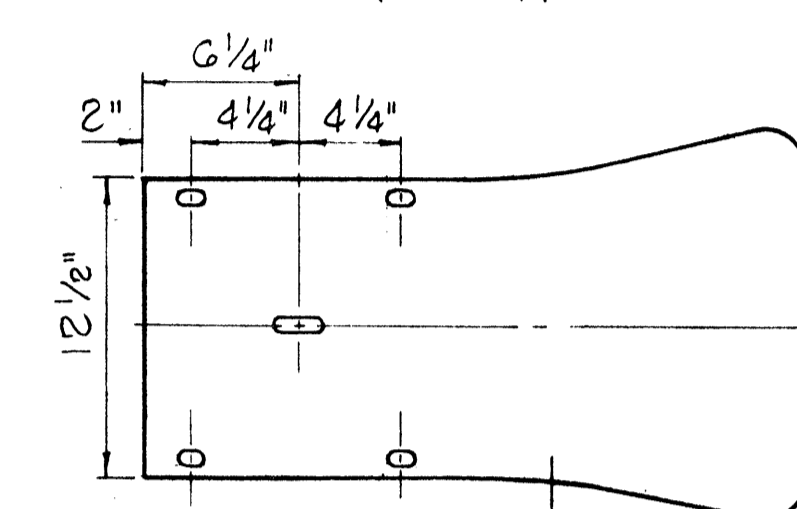


MEDIAN END

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



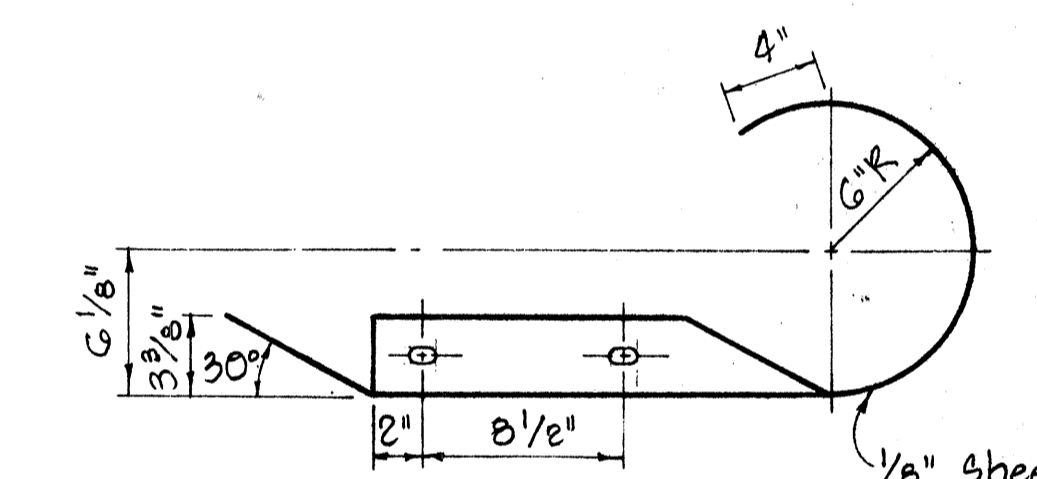
Lap in direction of traffic



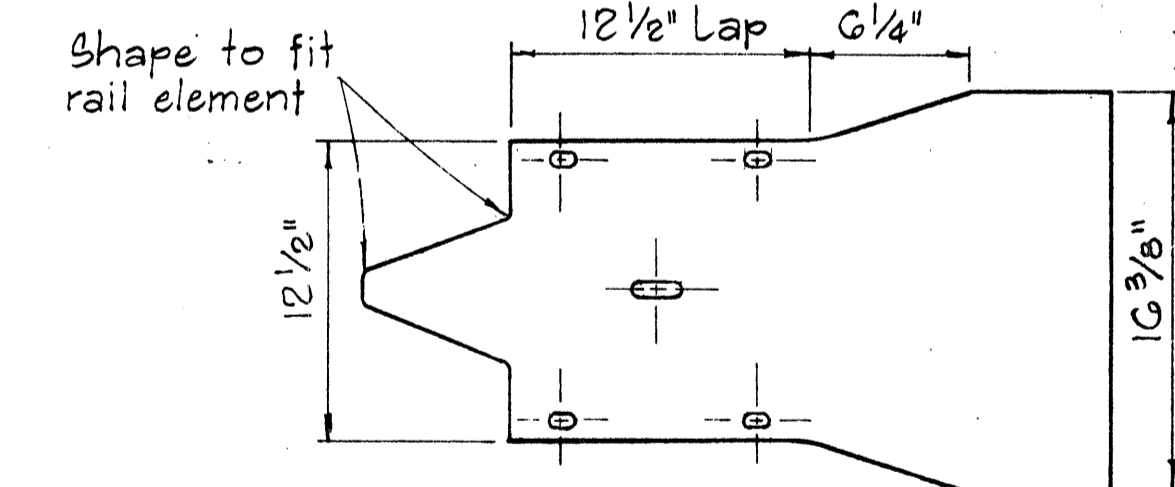
Same as rail element section

FLARED END

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



Lap in direction of traffic



CURVED END

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

APPROVAL RECOMMENDED:

Eishi Tanaka 12/29/82
TRAFFIC ENGINEER DATE

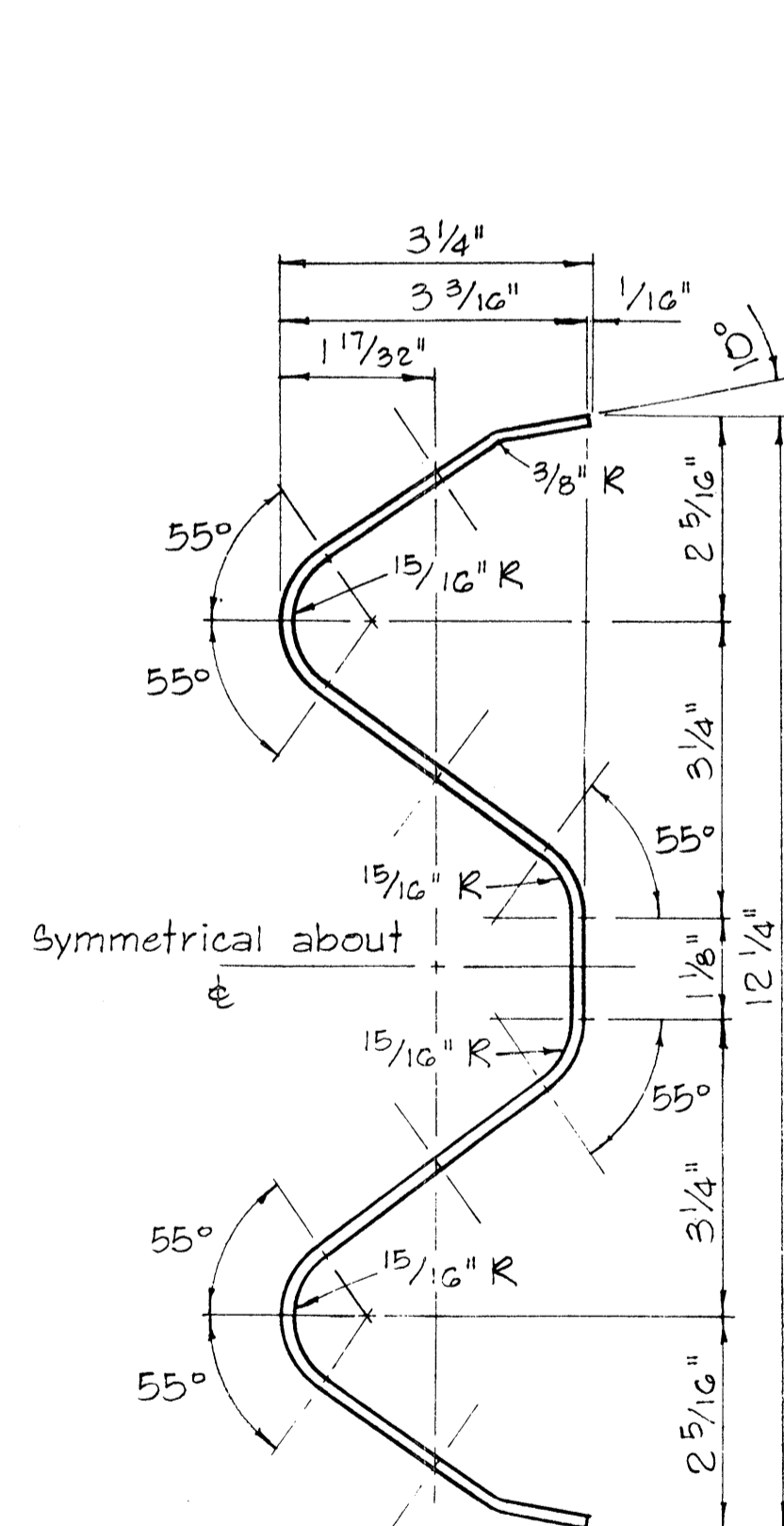
APPROVED: *William S. Sol* 12-30-82
ASSISTANT CHIEF, ENGINEERING DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL GUARD RAIL

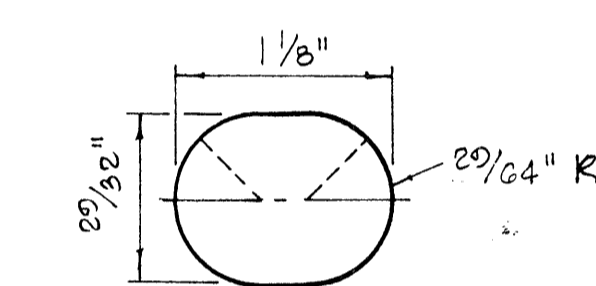
Scale: As Noted August, 1968

SHEET No. 6 OF 7 SHEETS DT 501



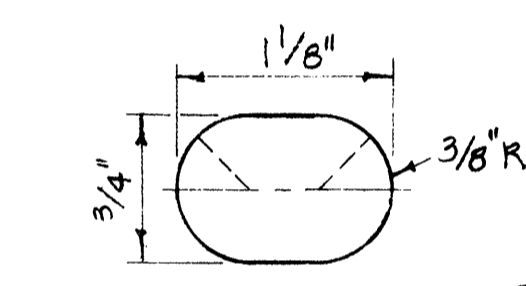
RAIL ELEMENT SECTION

Scale: 6" = 1'-0"

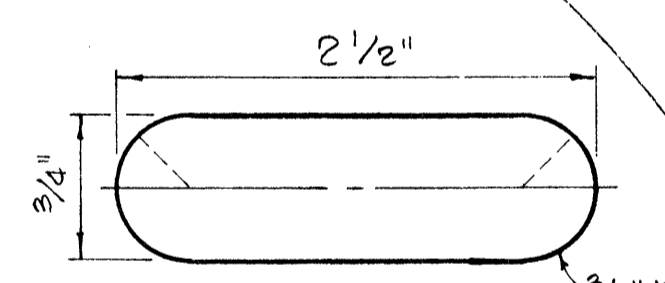


SPlice BOLT SLOT FOR ALL ENDS

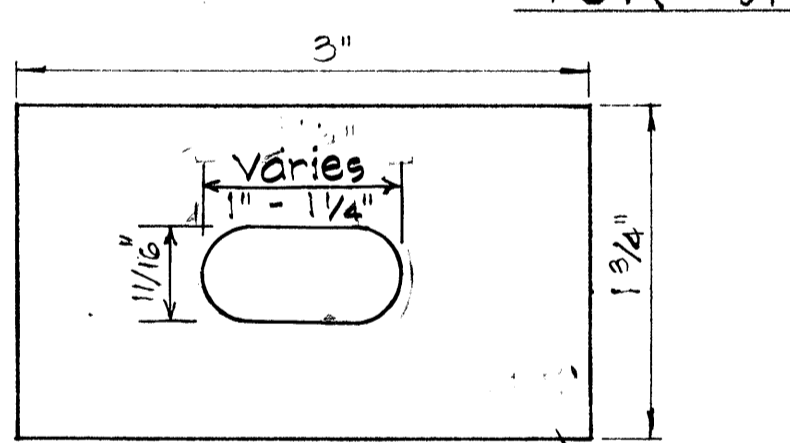
Scale: Full Size



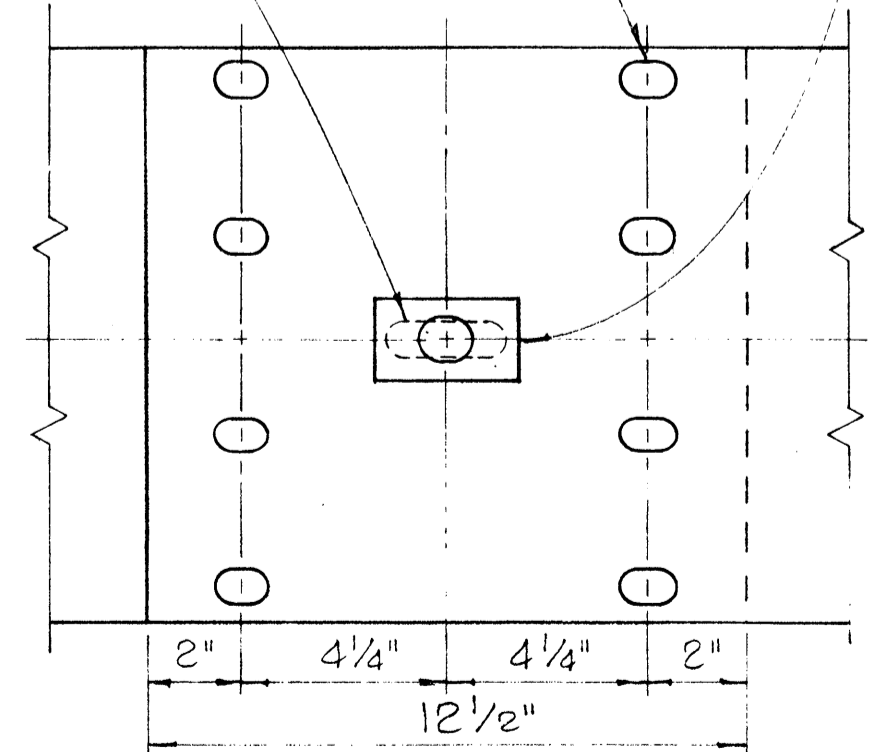
SPlice BOLT SLOT FOR SPECIAL END SHOE



POST BOLT SLOT



RAIL WASHER



RAIL SPlice

Scale: 3" = 1'-0"

NOTES:

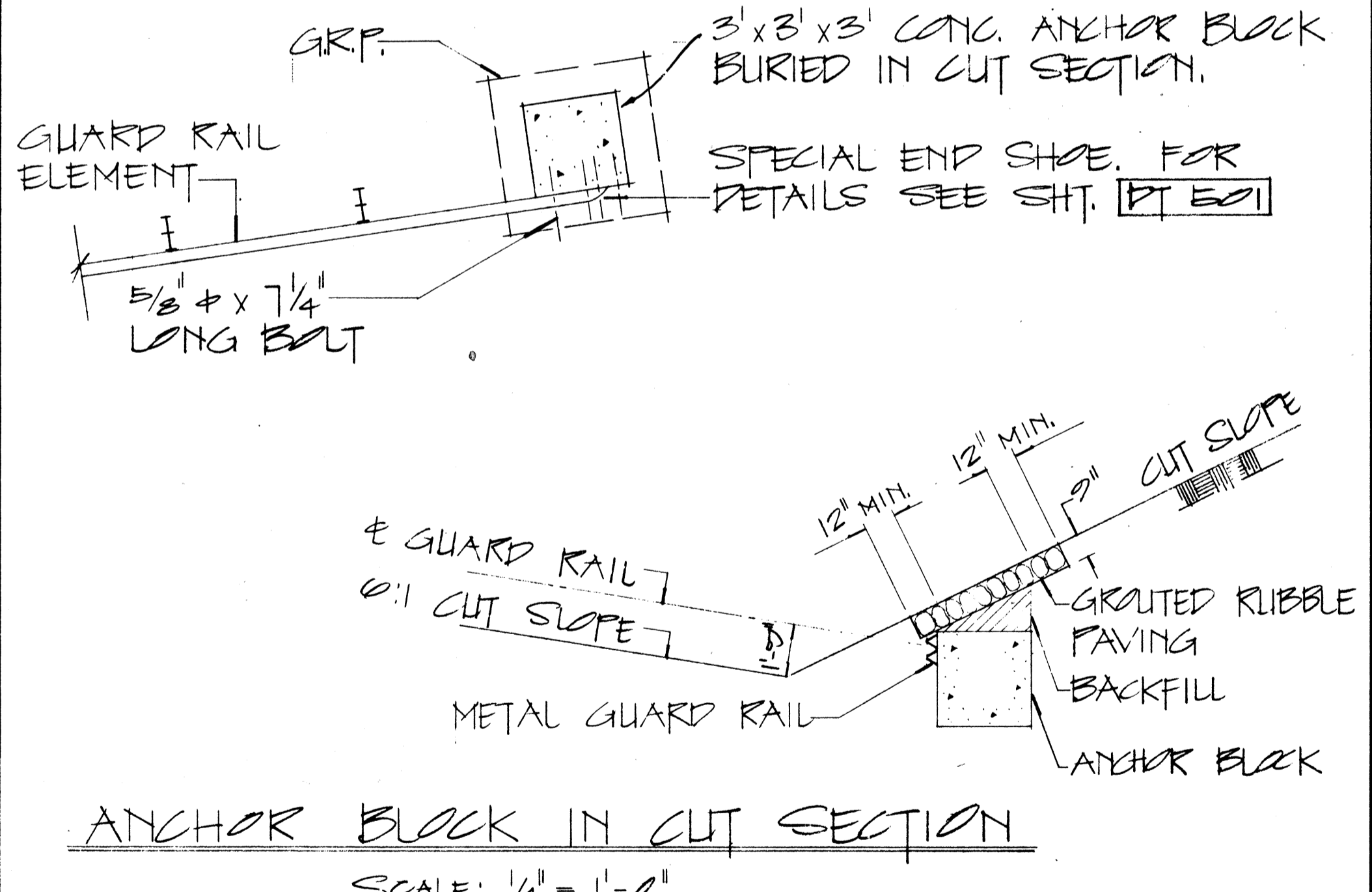
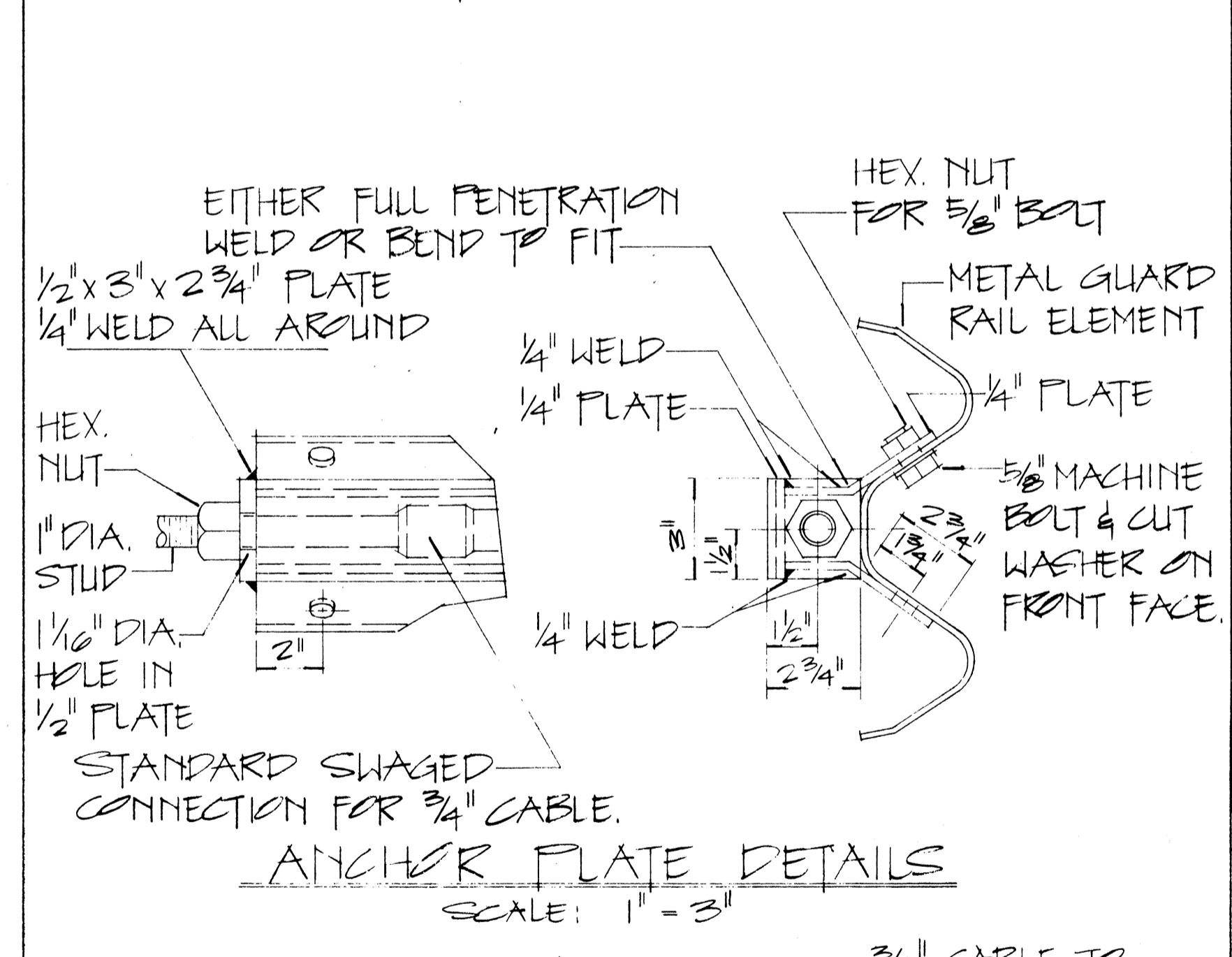
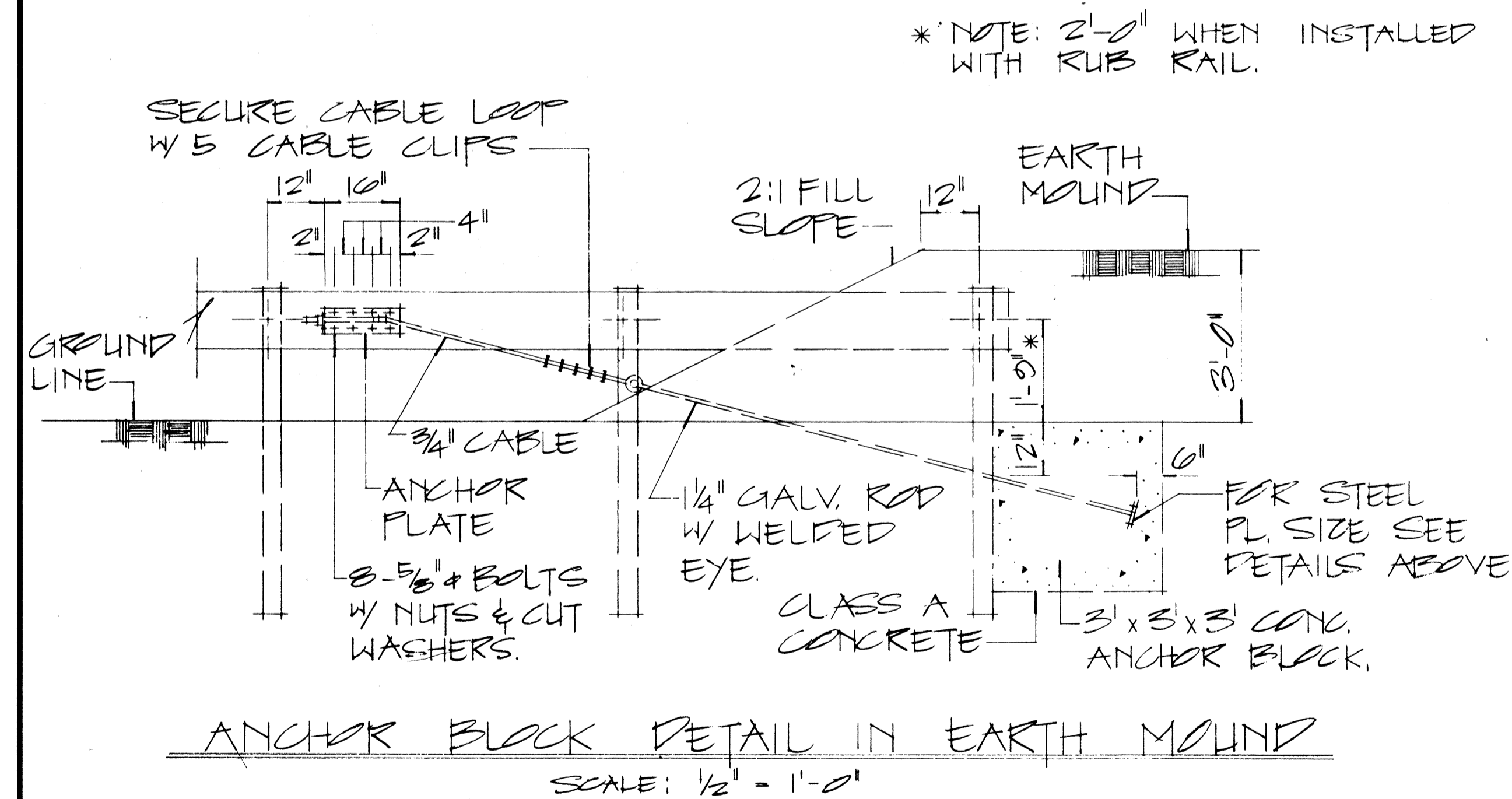
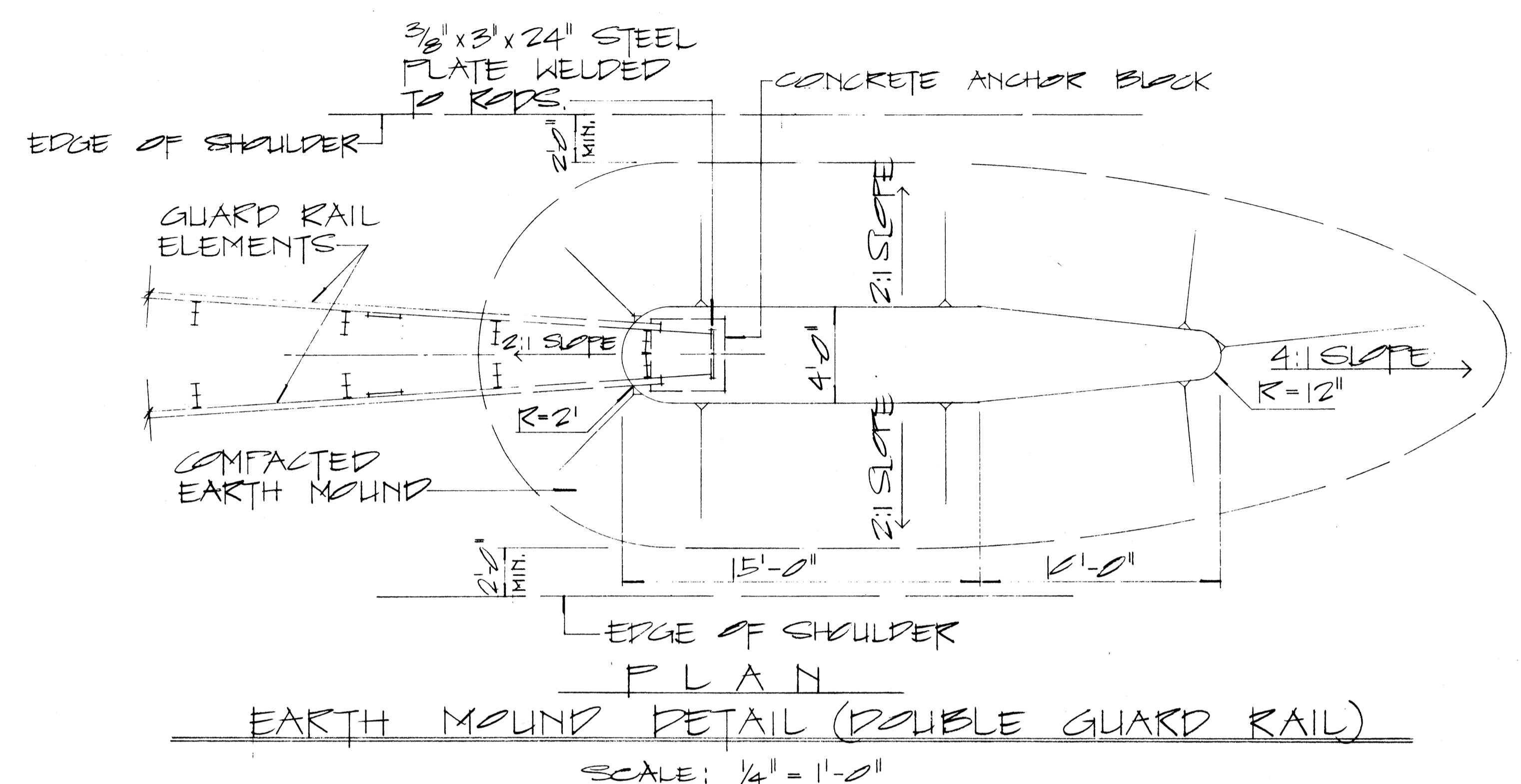
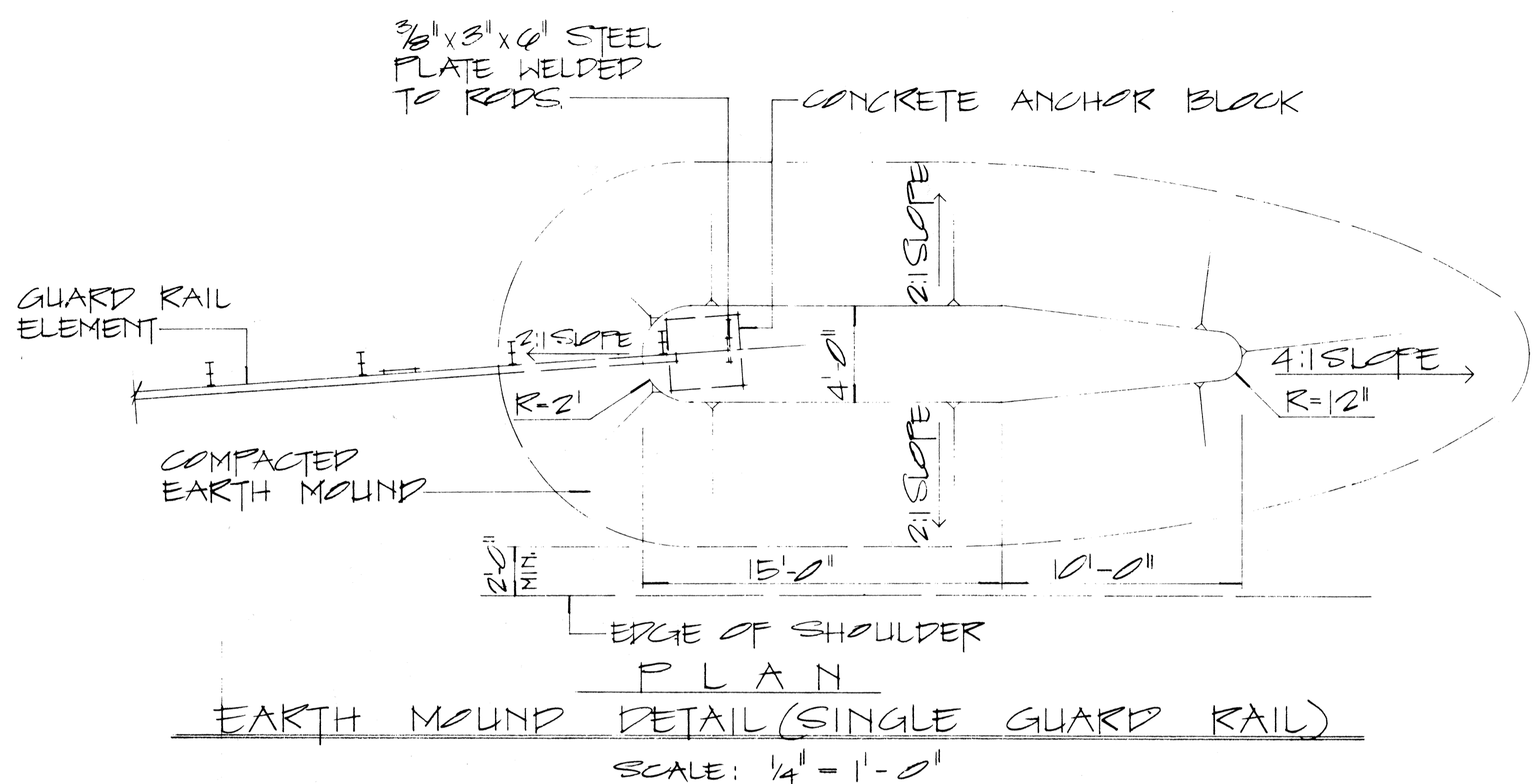
- H.S. Bolts shall conform to the requirements of ASTM A 325.
- Special End Shoe shall be fabricated from 10 Gage steel conforming to the requirements of AASHTO 180.

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"

NO.	REVISION	APPROVED BY	DATE
1	Revised Hole Size for Rectangular Rail Washer	H.T.	3/10/81

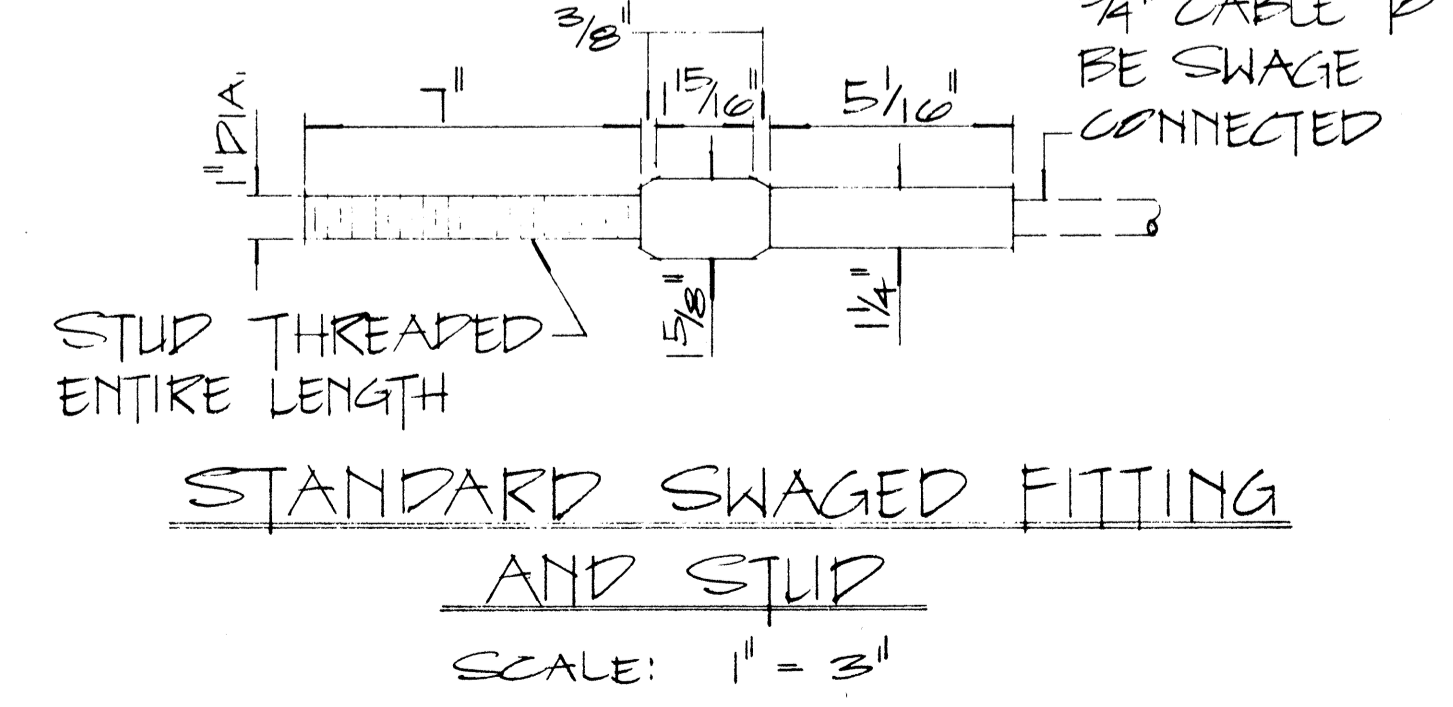
DATE
SURVEY PLATTED BY
DRAWN BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
ORIGINAL PLAN
NOTE BOOK
NO.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360A-01-82 360A-01-83M	1982	20	30



NOTE:

1. GALVANIZED ANCHOR ROD, METAL GUARD RAIL AND FAST 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:

Eiichi Tanaka 12/29/62
TRAFFIC ENGINEER DATE

APPROVED:

John J. ... 12-30-62
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. 7 OF 7 SHEETS

DATE

SURVEY PLOTTED BY

DRAWN BY

TRACED BY

QUANTITIES BY

CHECKED BY

ORIGINAL PLAN

NOTE BOOK

No.