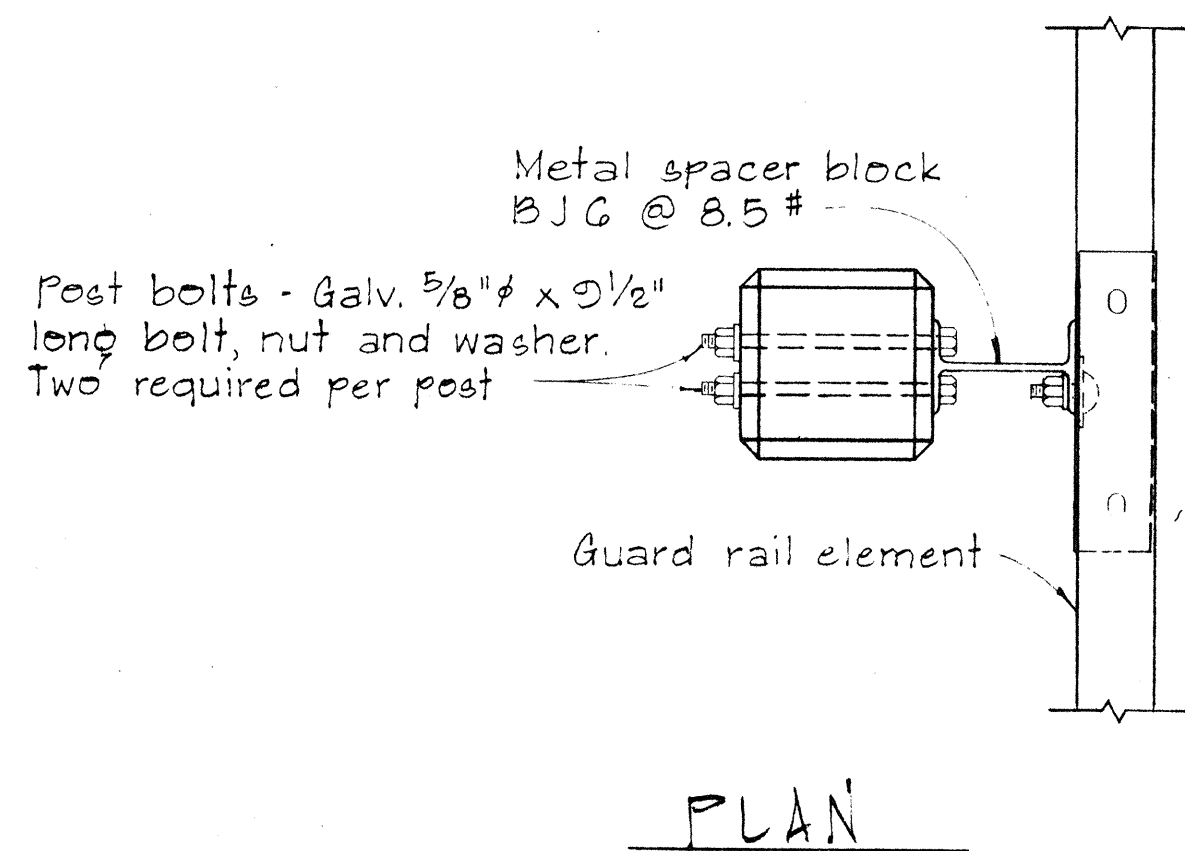
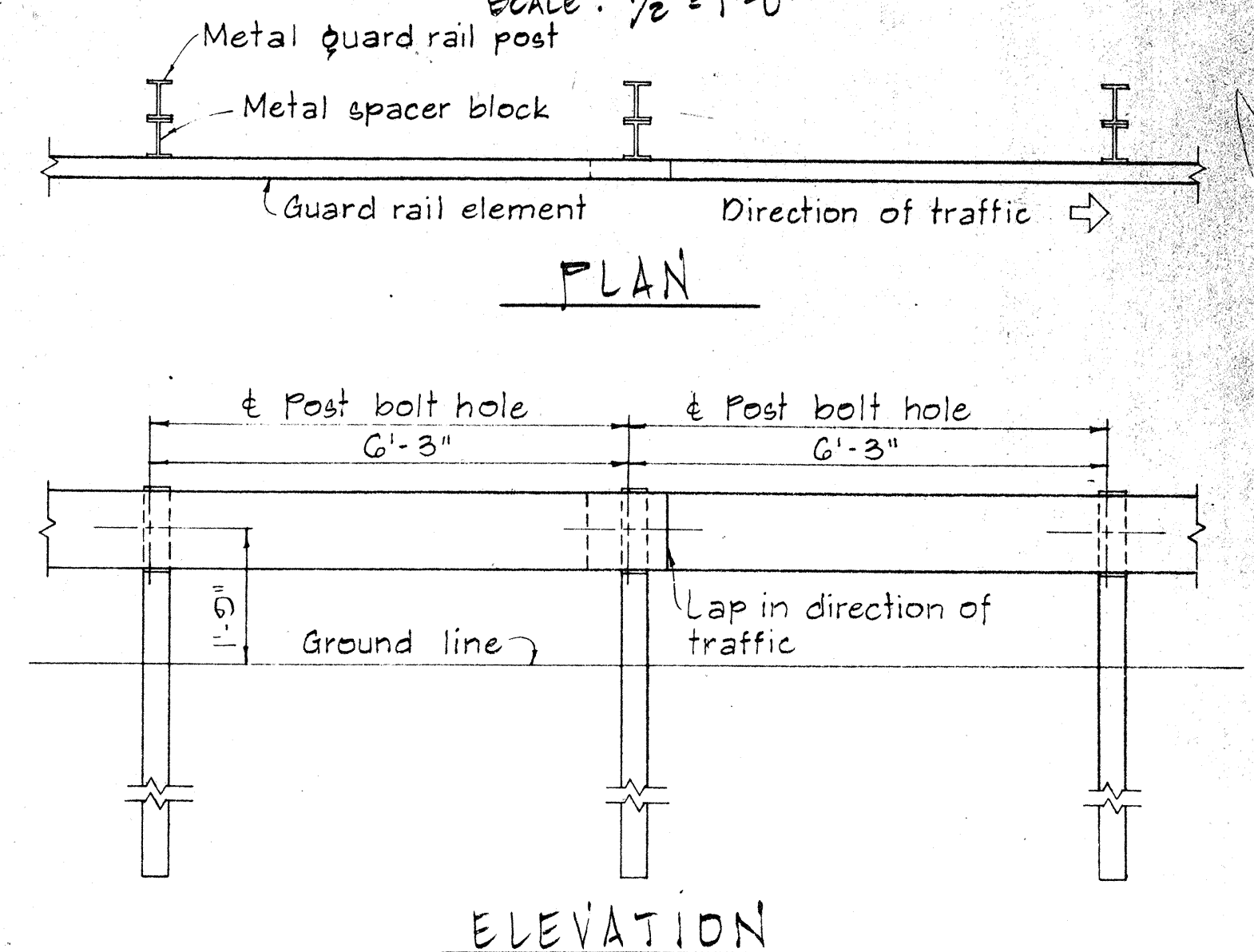
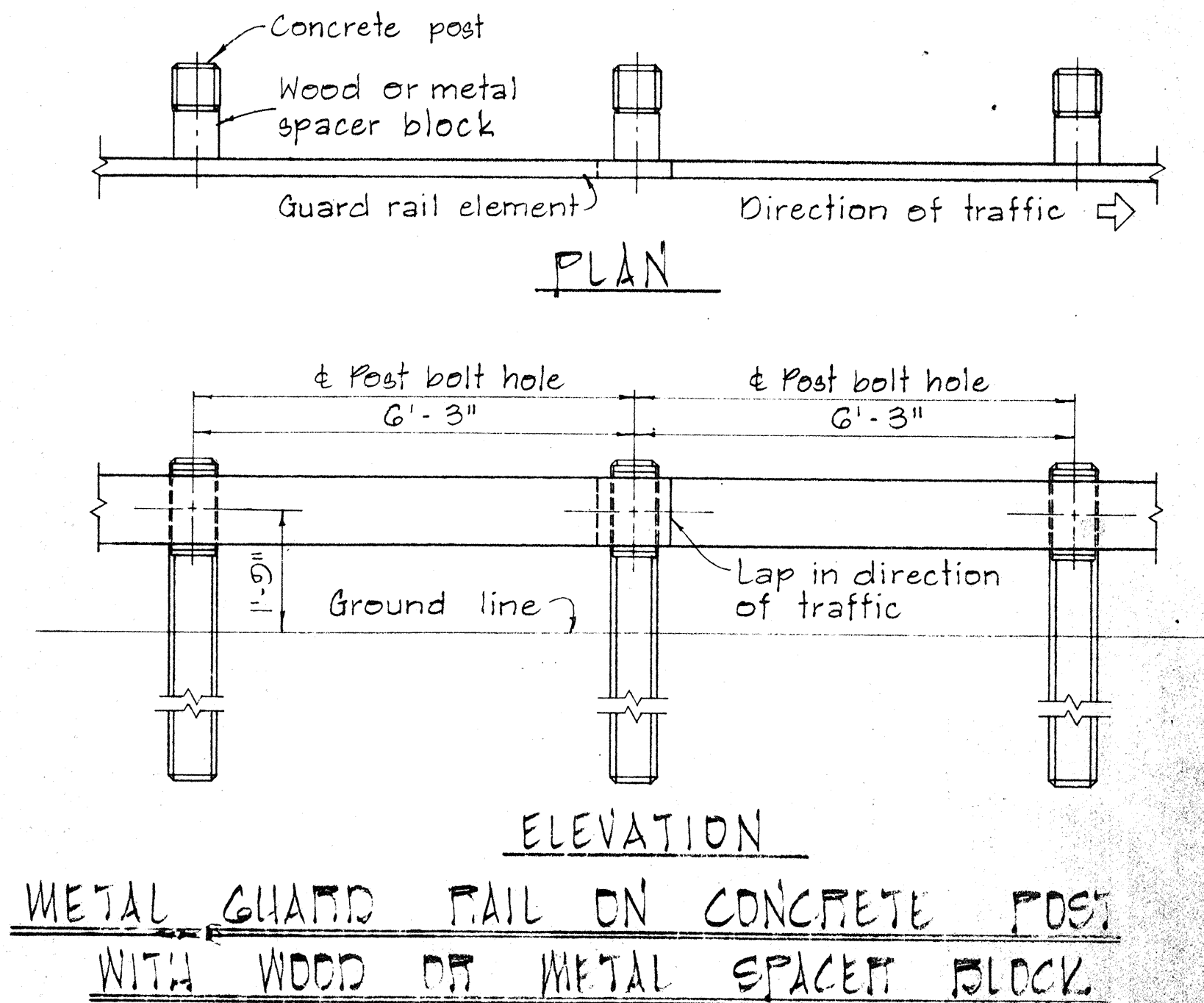
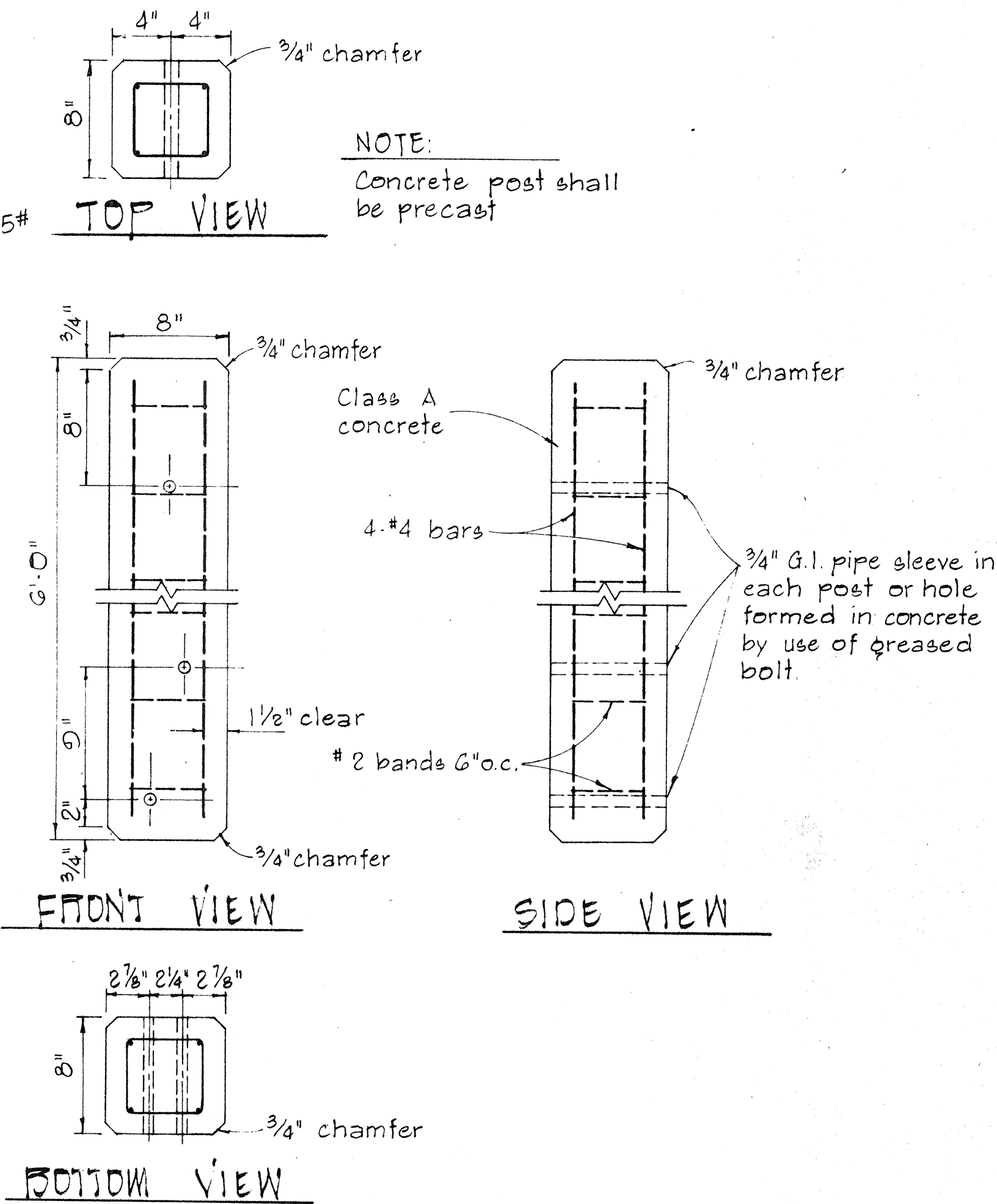
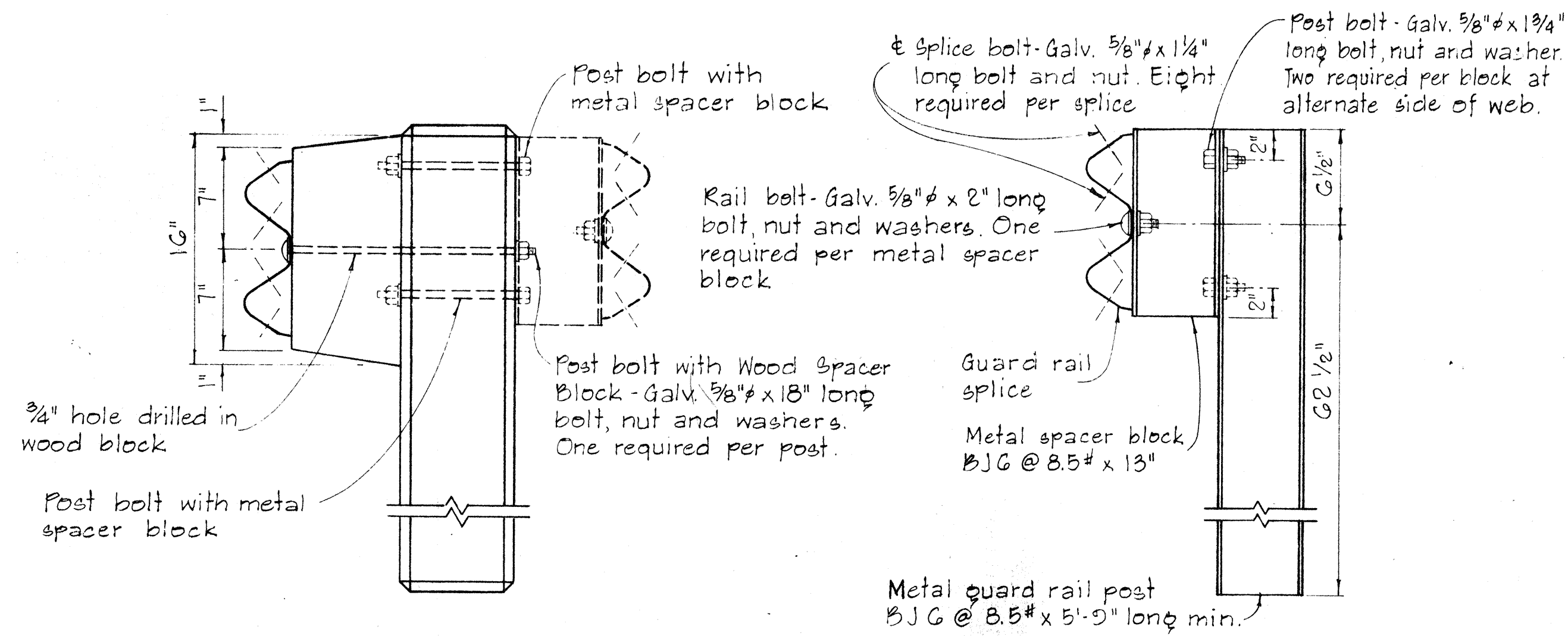
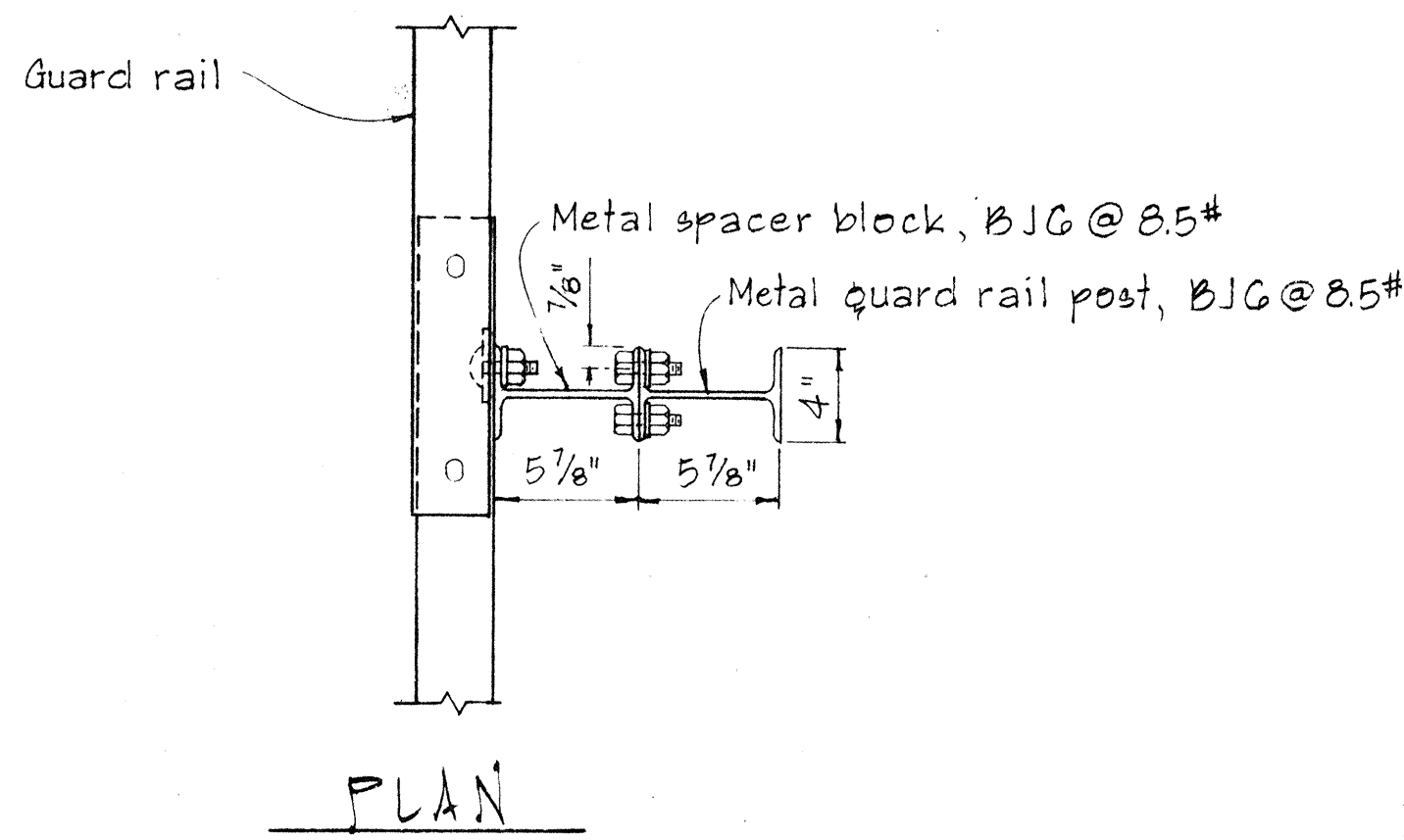
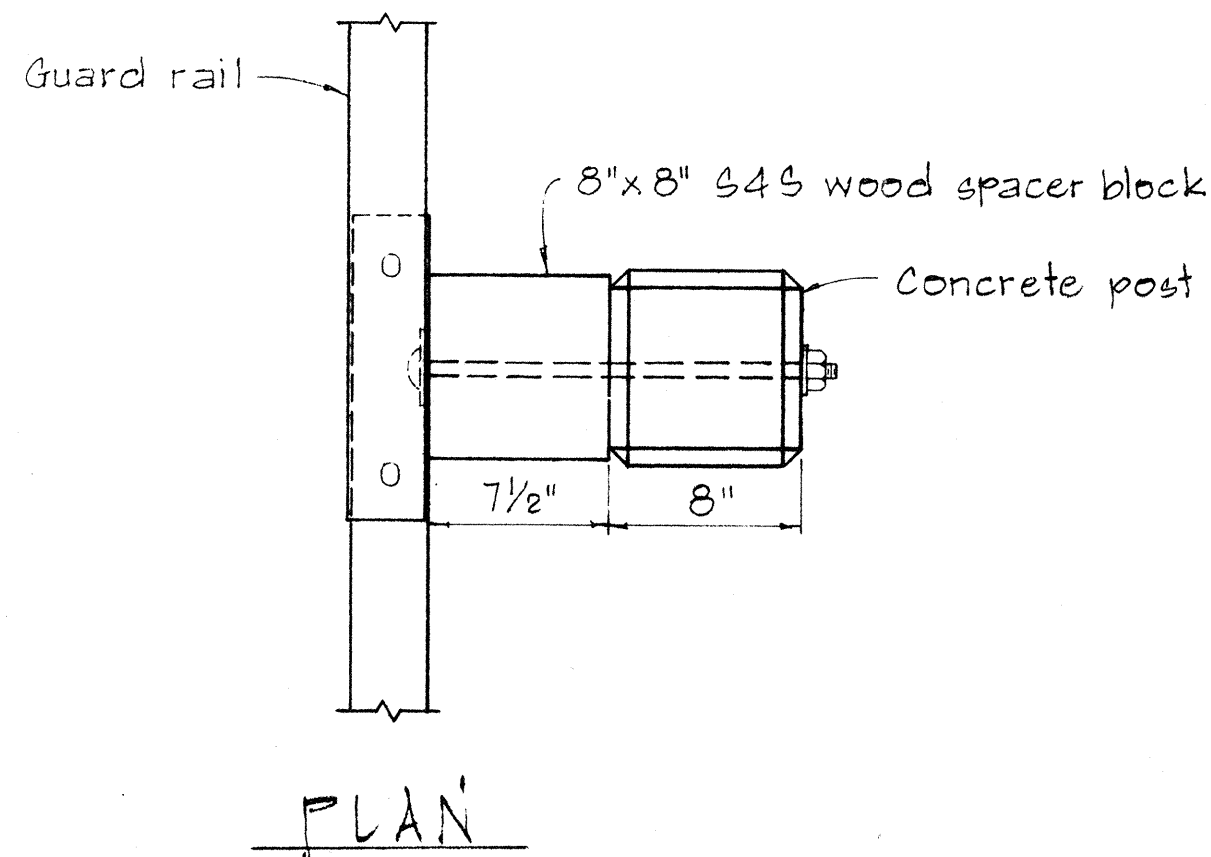
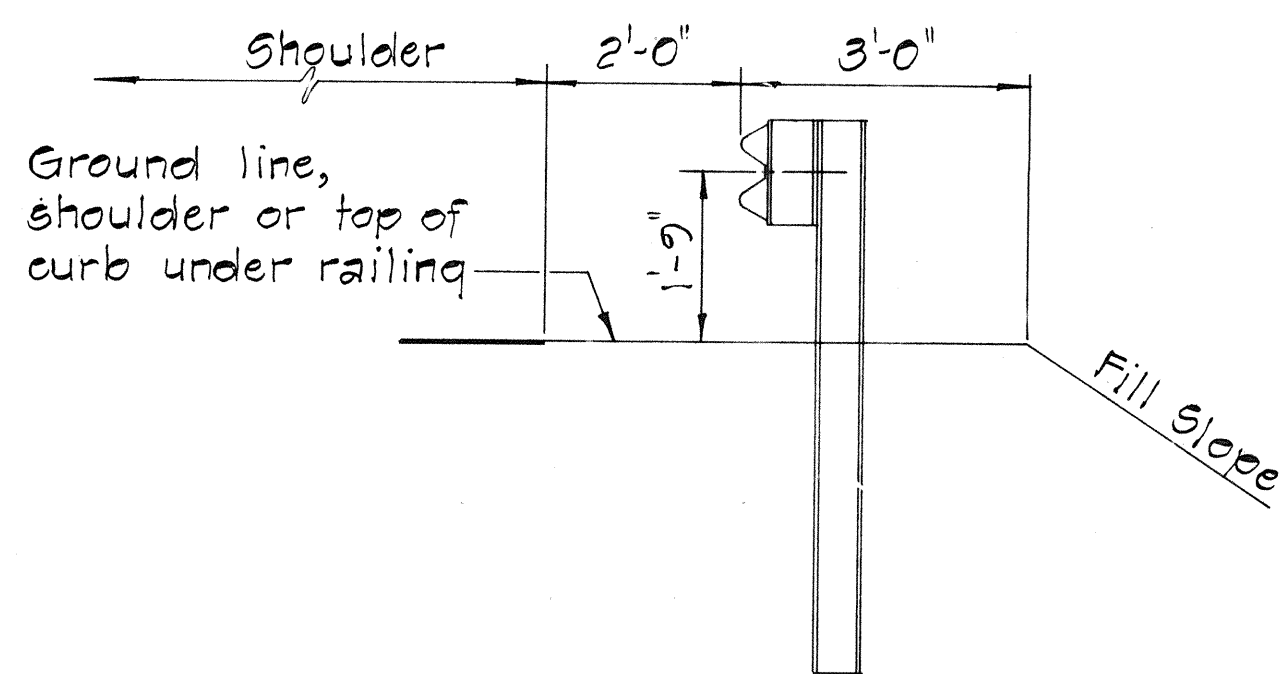


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	445-027-1(1)	1978	10	25



SINGLE METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK

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



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

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

TYPICAL METAL GUARD RAIL DETAIL

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

APPROVAL RECOMMENDED:
TRAFFIC ENGINEER
12/22/69
DATE

APPROVED:
ASSISTANT CHIEF, ENGINEERING
12-30-69
DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

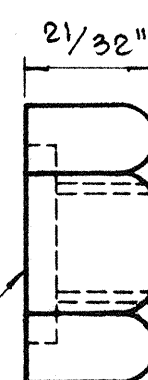
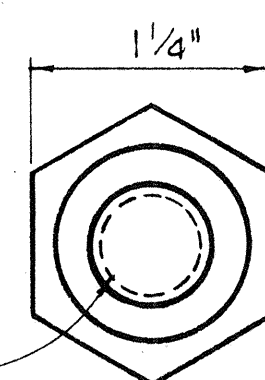
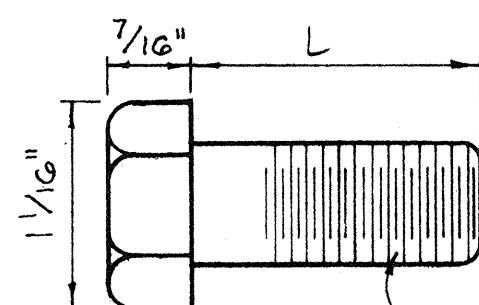
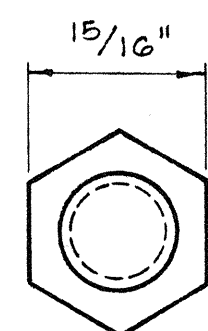
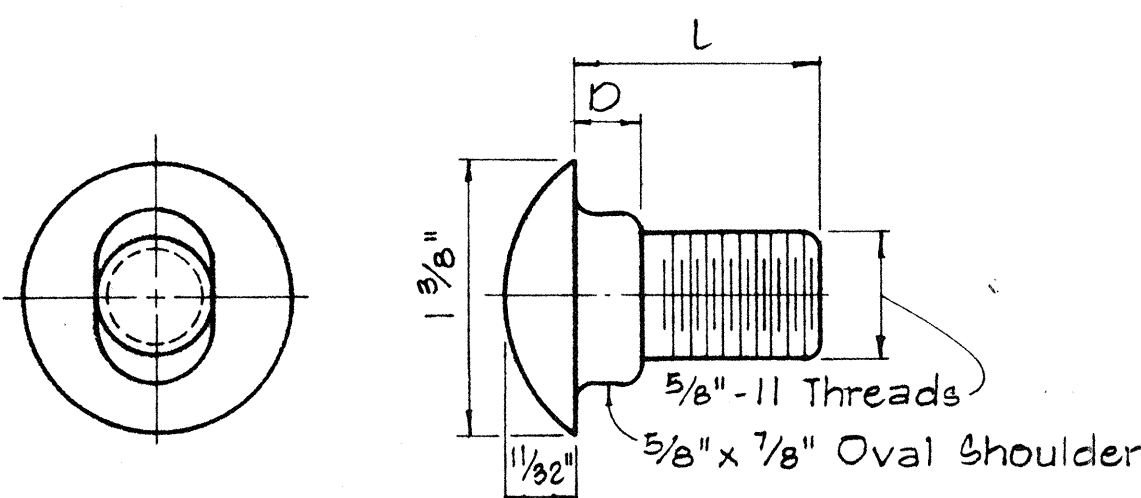
STANDARD DETAILS
METAL GUARD RAIL

SCALE: AS SHOWN
NOV. 1968
SHEET No. 1 OF 5 SHEETS DT 500

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HHS-027-1(1)	1978	11	25

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

BOLT DIMENSIONS		
TYPE B BOLT		
		L
Post Bolt for Conc. Post w/ Metal Blocks		9 1/2"
Post Bolt for Metal Post w/ Metal Block		1 3/4"



5/32" Deep x 15/16" Dia. C' Bore for Type A Bolt only.
Plain nut for Type B Bolt.

TYPE A BOLT

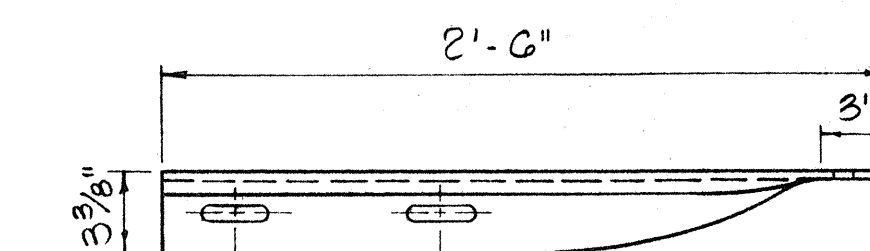
TYPE B BOLT

SPUCE RAIL AND POST BOLTS

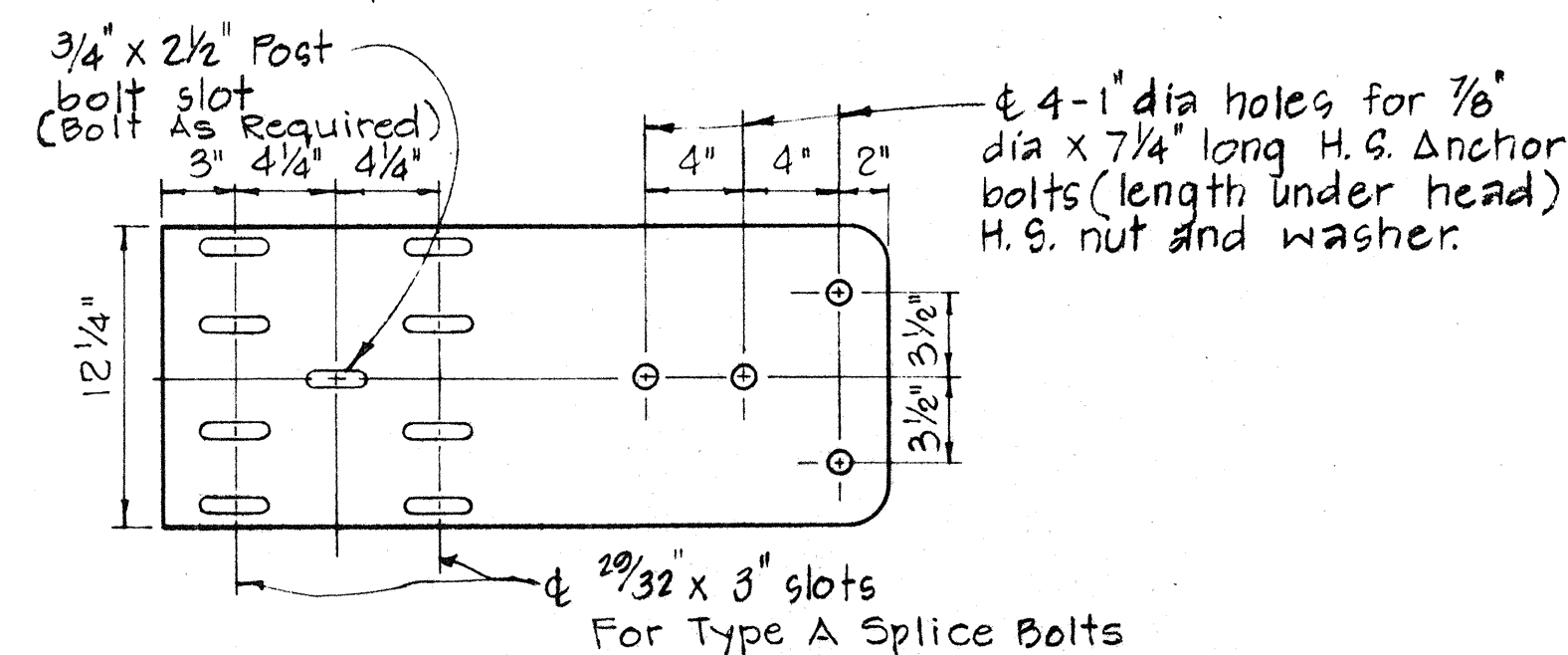
Scale: Full Size

HEXAGON NUT

Scale: Full Size



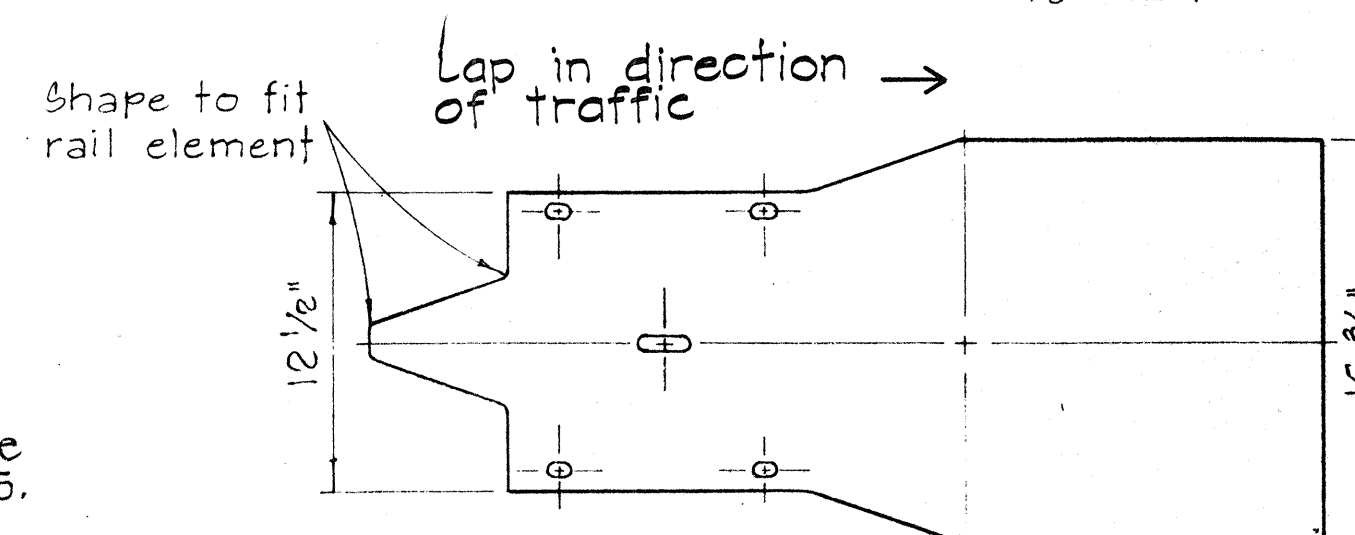
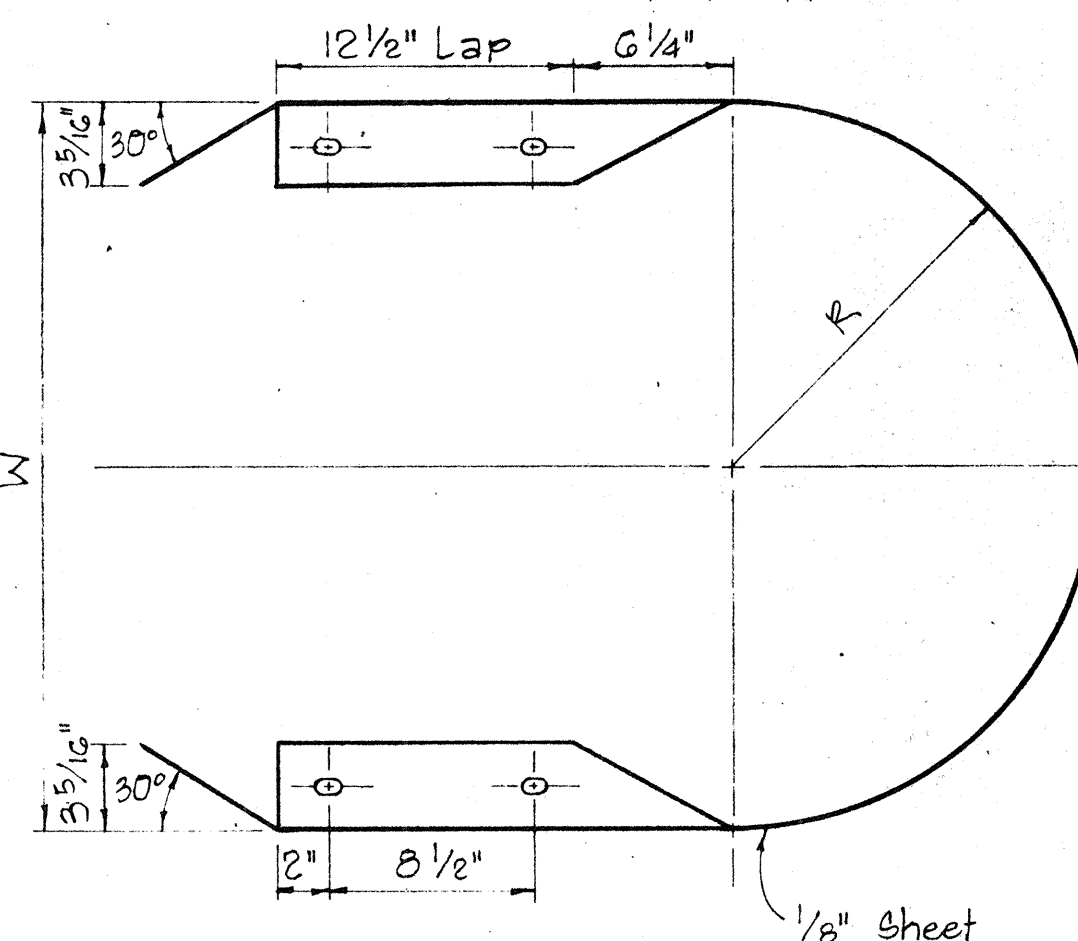
← Lap in direction of traffic



SPECIAL END SHOE

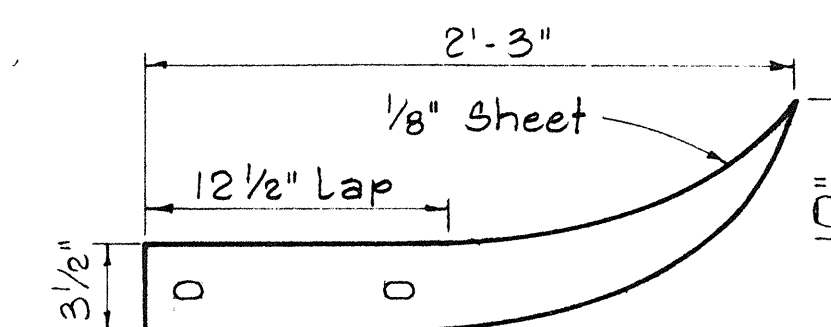
Scale: 1 1/2" = 1'-0"

← Lap in direction of traffic

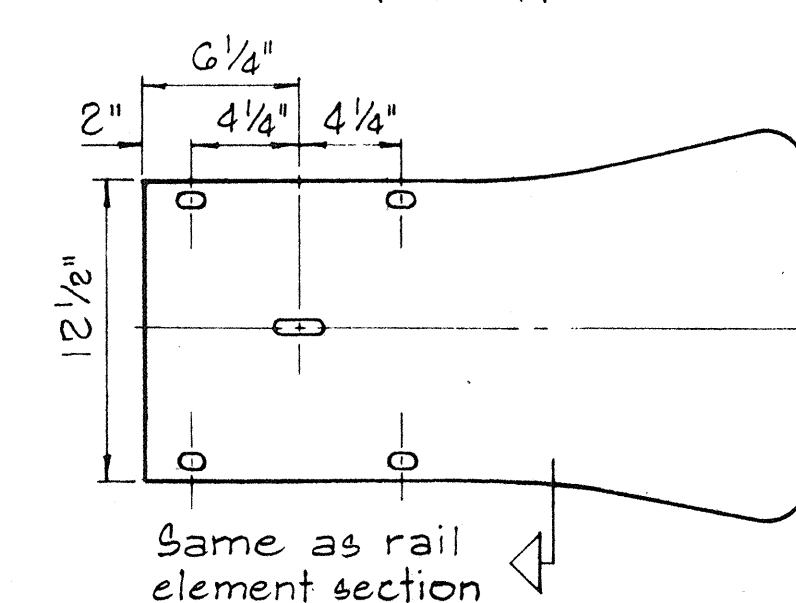


MEDIAN END

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

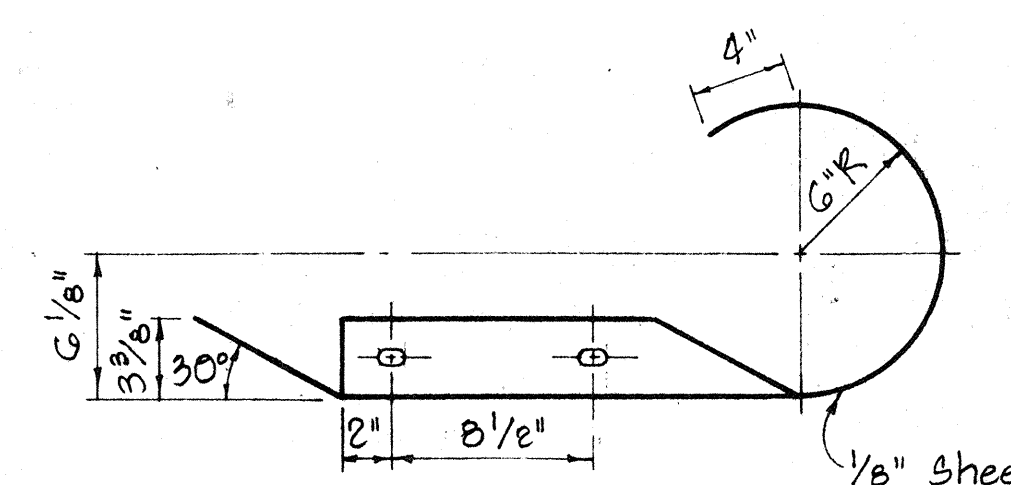


← Lap in direction of traffic

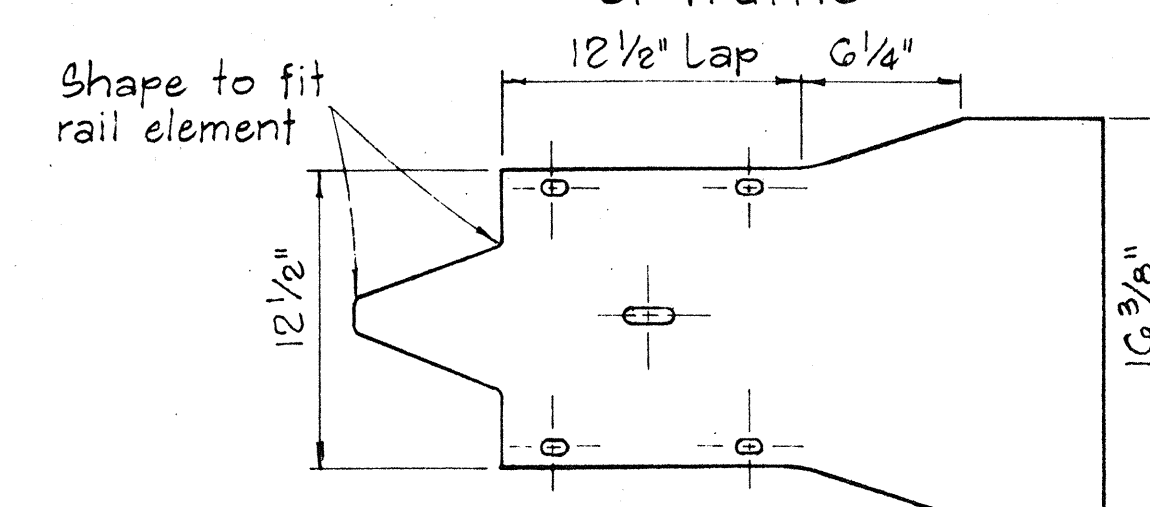


FLARED END

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



← Lap in direction of traffic



CURVED END

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

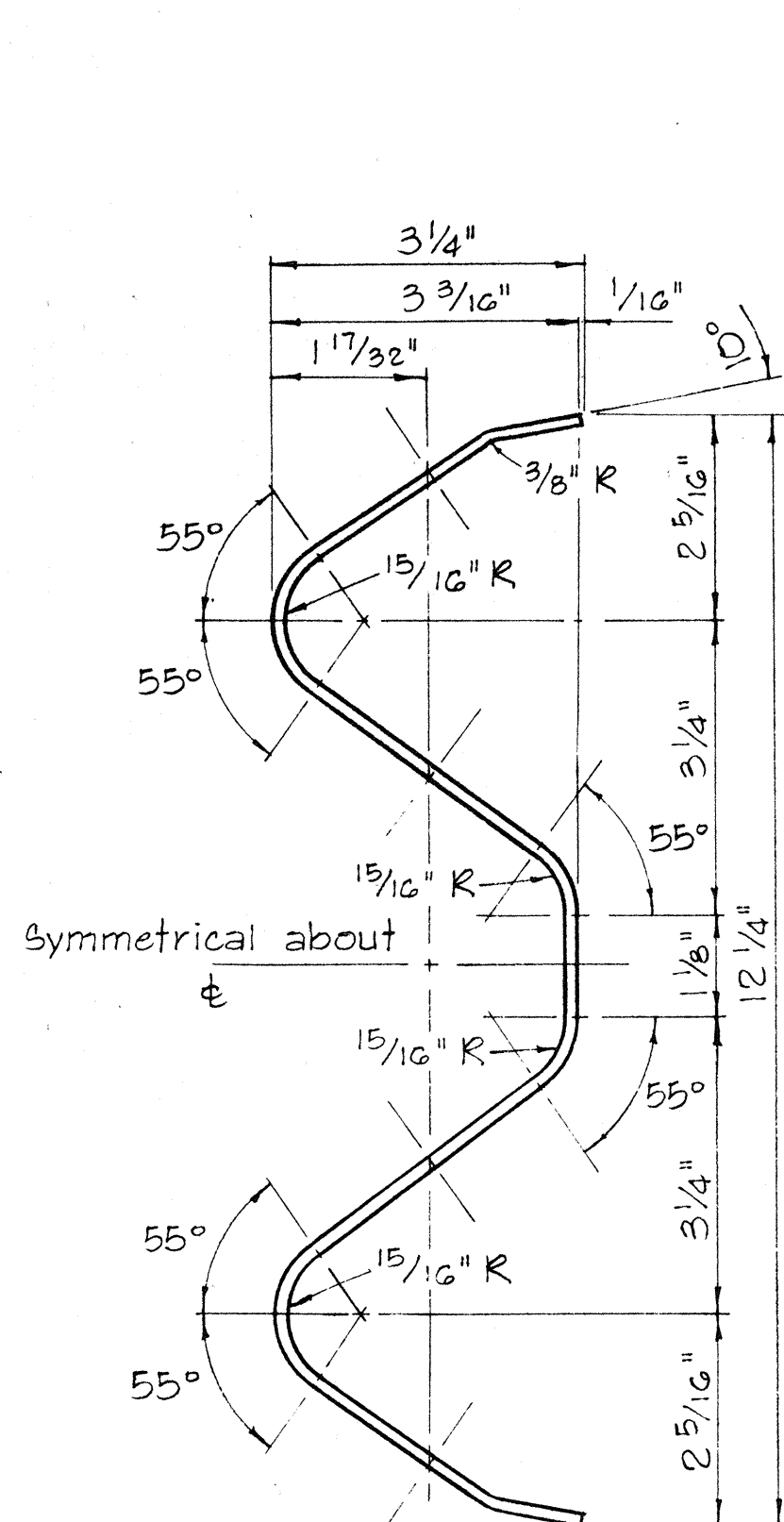
APPROVAL RECOMMENDED: E. Tanaka 12/22/63
TRAFFIC ENGINEER DATE
APPROVED: W. J. J. J. 12-20-63
ASSISTANT CHIEF, ENGINEERING DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

STANDARD DETAILS
METAL GUARD RAIL

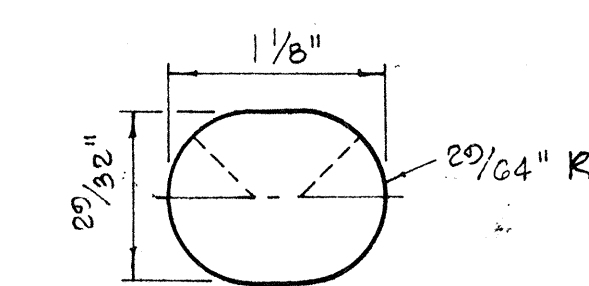
Scale: As Noted August, 1968

SHEET No. 2 OF 5 SHEETS DT 501



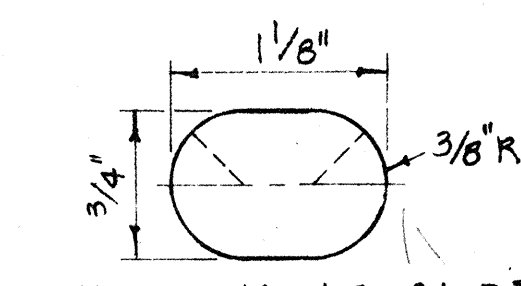
RAIL ELEMENT SECTION

Scale: 6" = 1'-0"

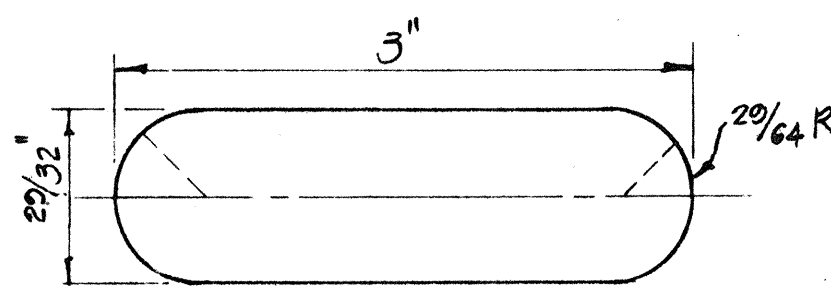


SPUCE BOLT SLOT

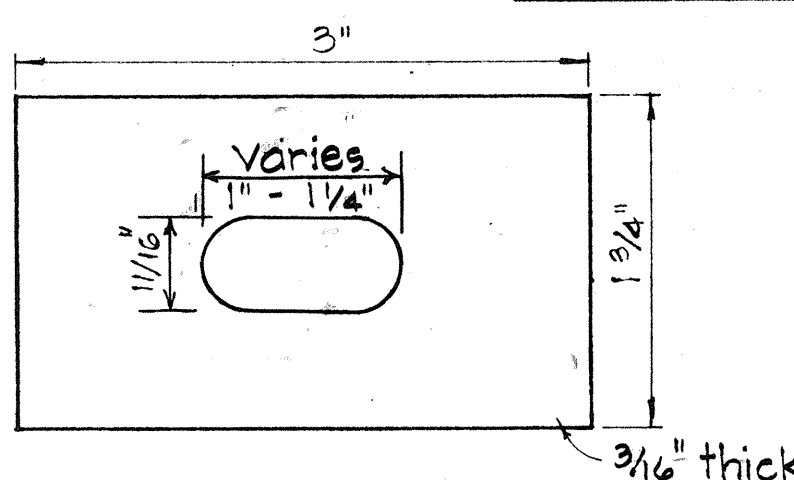
Scale: Full Size



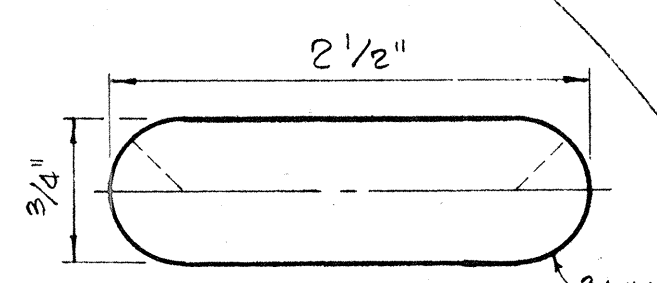
SPUCE BOLT SLOT FOR ALL ENDS



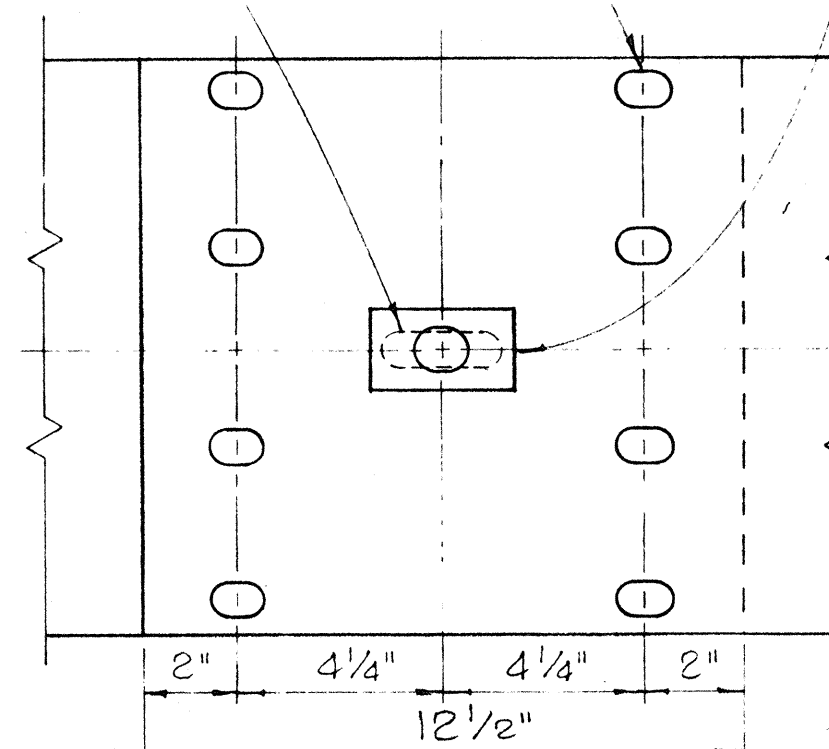
SPUCE BOLT SLOT FOR SPECIAL END SHOE



RAIL WASHER



POST BOLT SLOT



RAIL SPLICE

Scale: 3" = 1'-0"

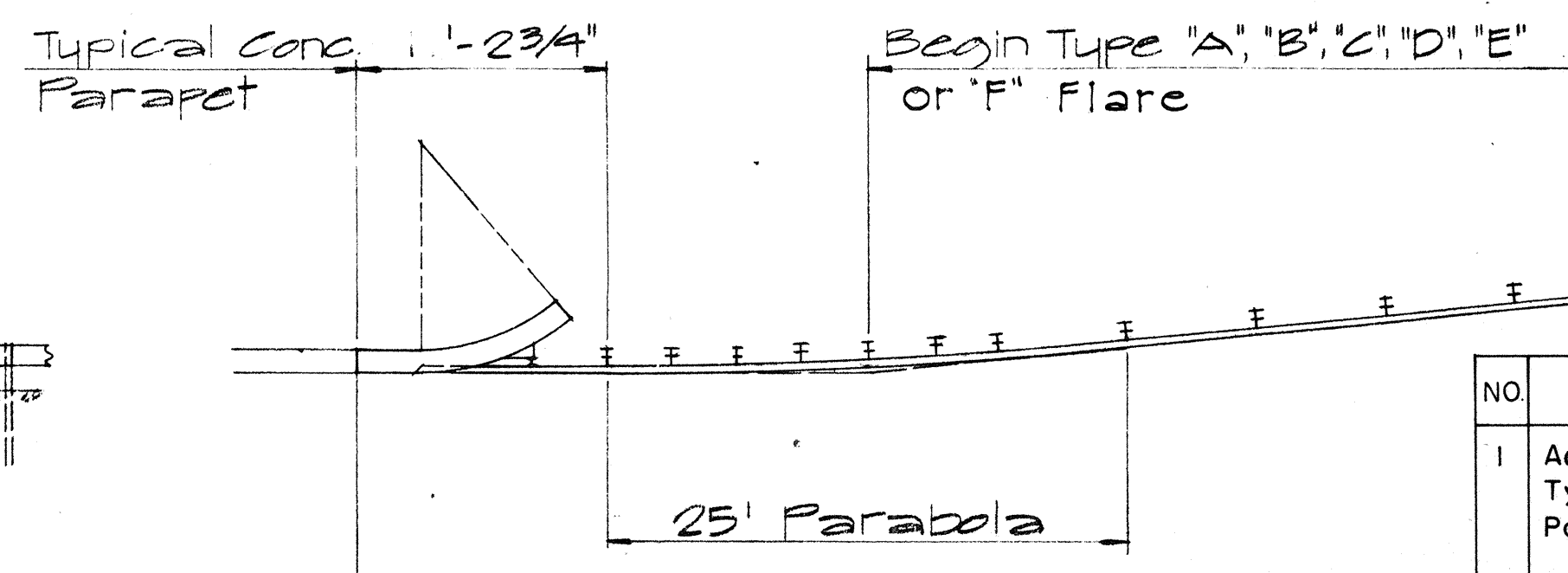
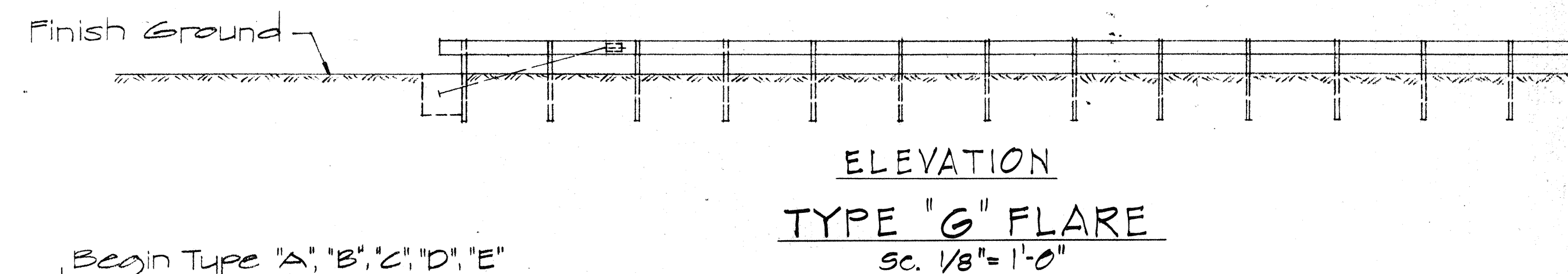
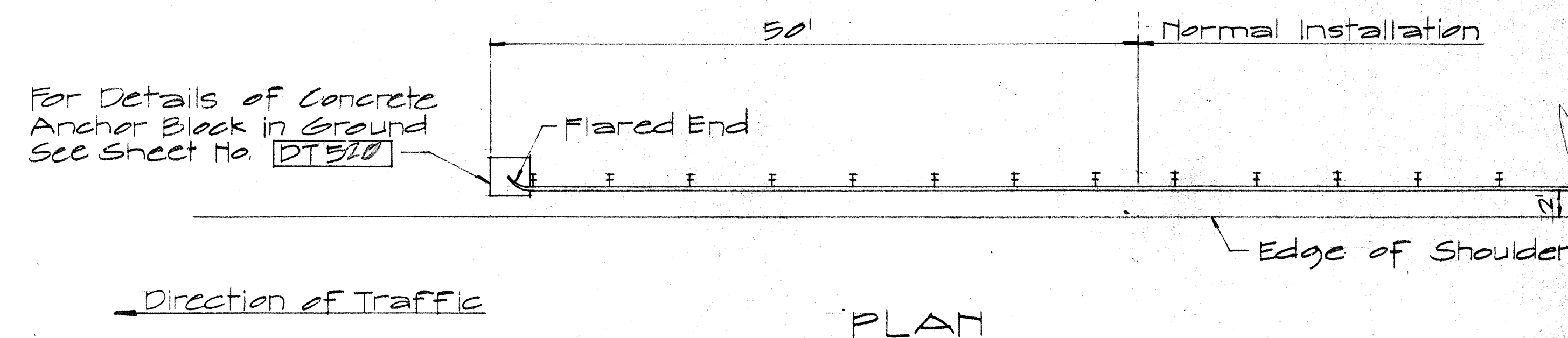
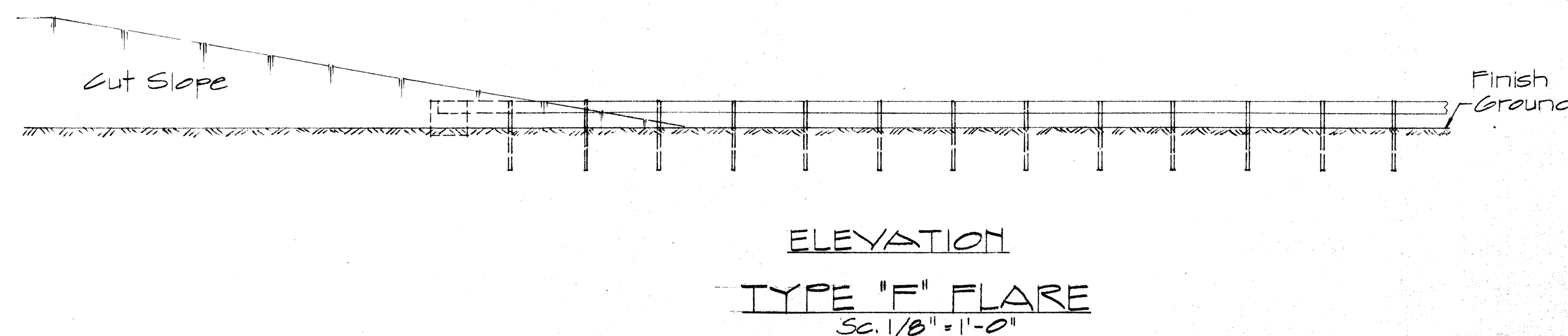
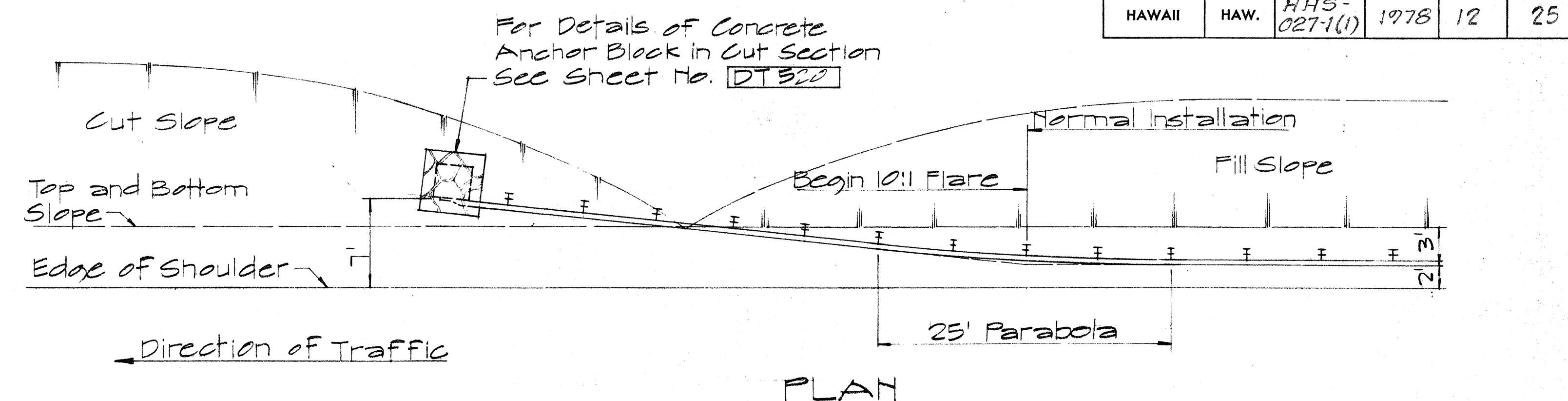
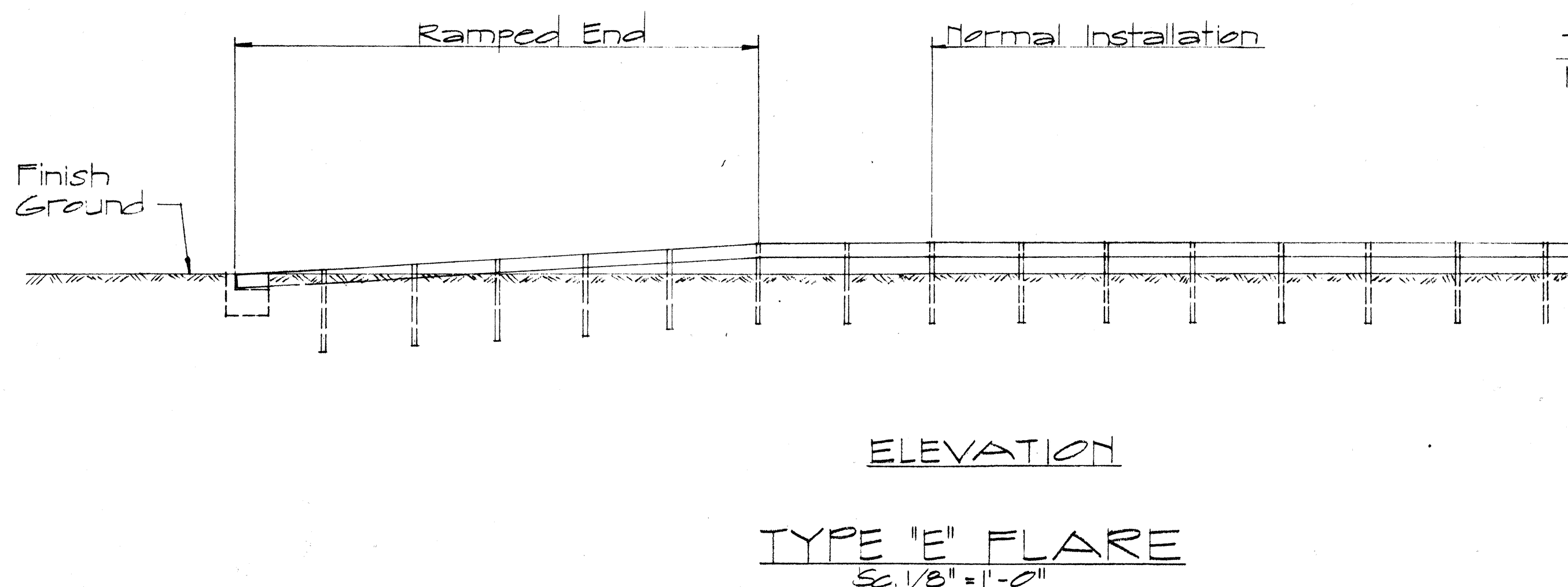
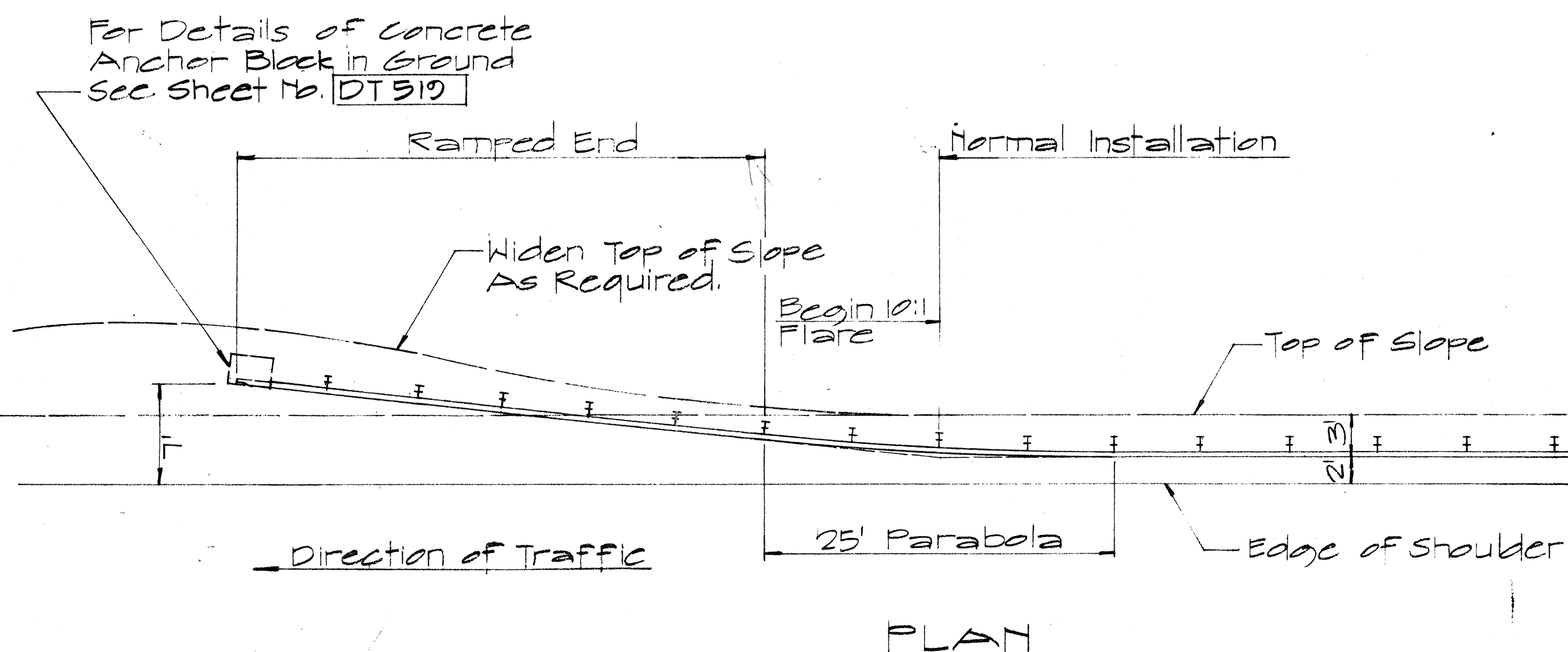
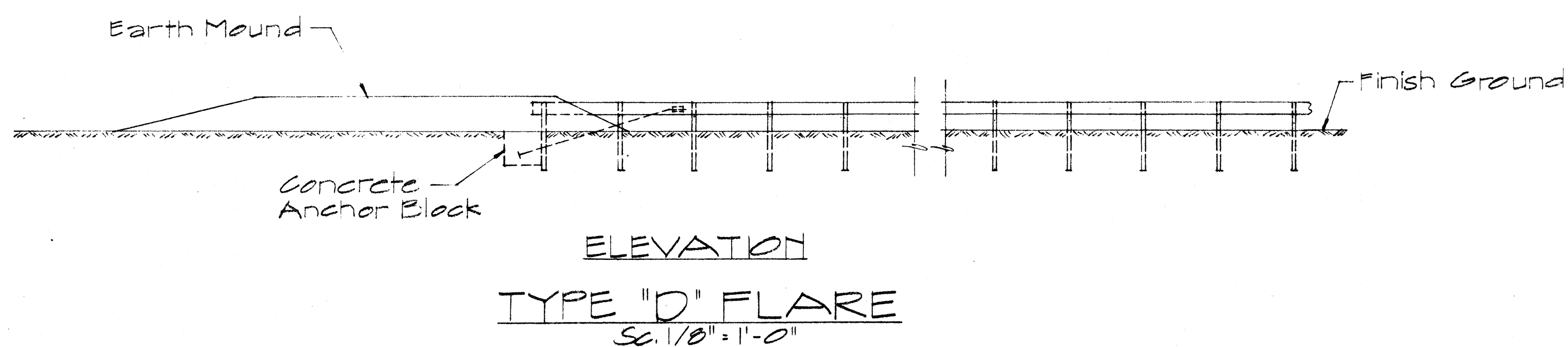
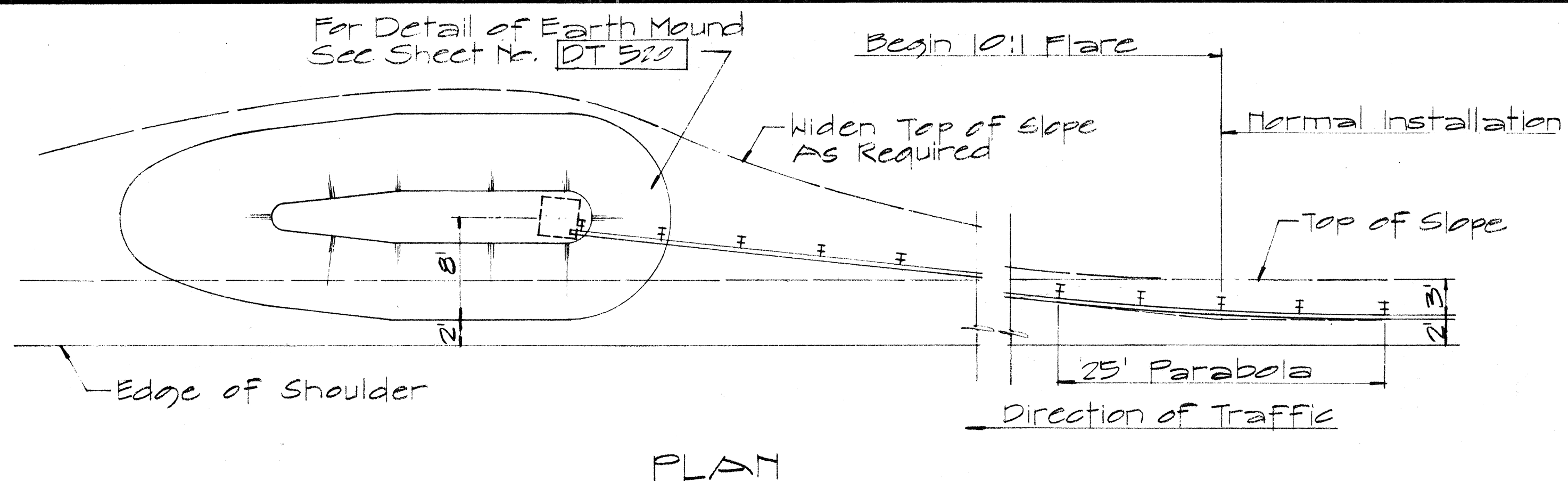
- NOTES:
1. H.S. Bolts shall conform to the requirements of ASTM A 325.
 2. Special End Shoe shall be fabricated from 10 Gage steel conforming to the requirements of AASHTO 180.

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	K.T.	8/10/68

SURVEY PLOTTED BY	DATE
DESIGNED BY	
TRAFFIC ENGINEER	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
NO.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HHS-027-1(1)	1978	12	25



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

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

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

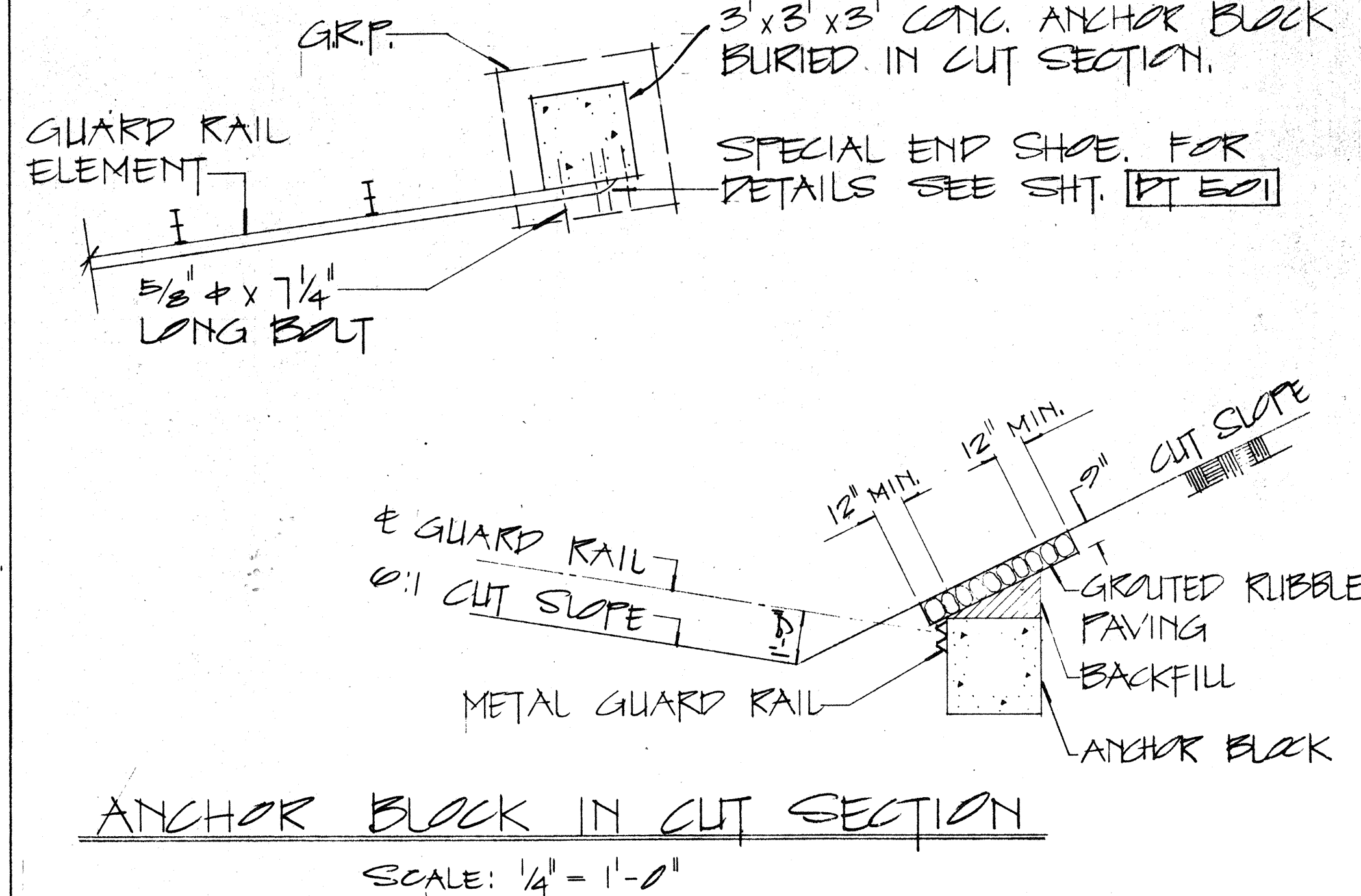
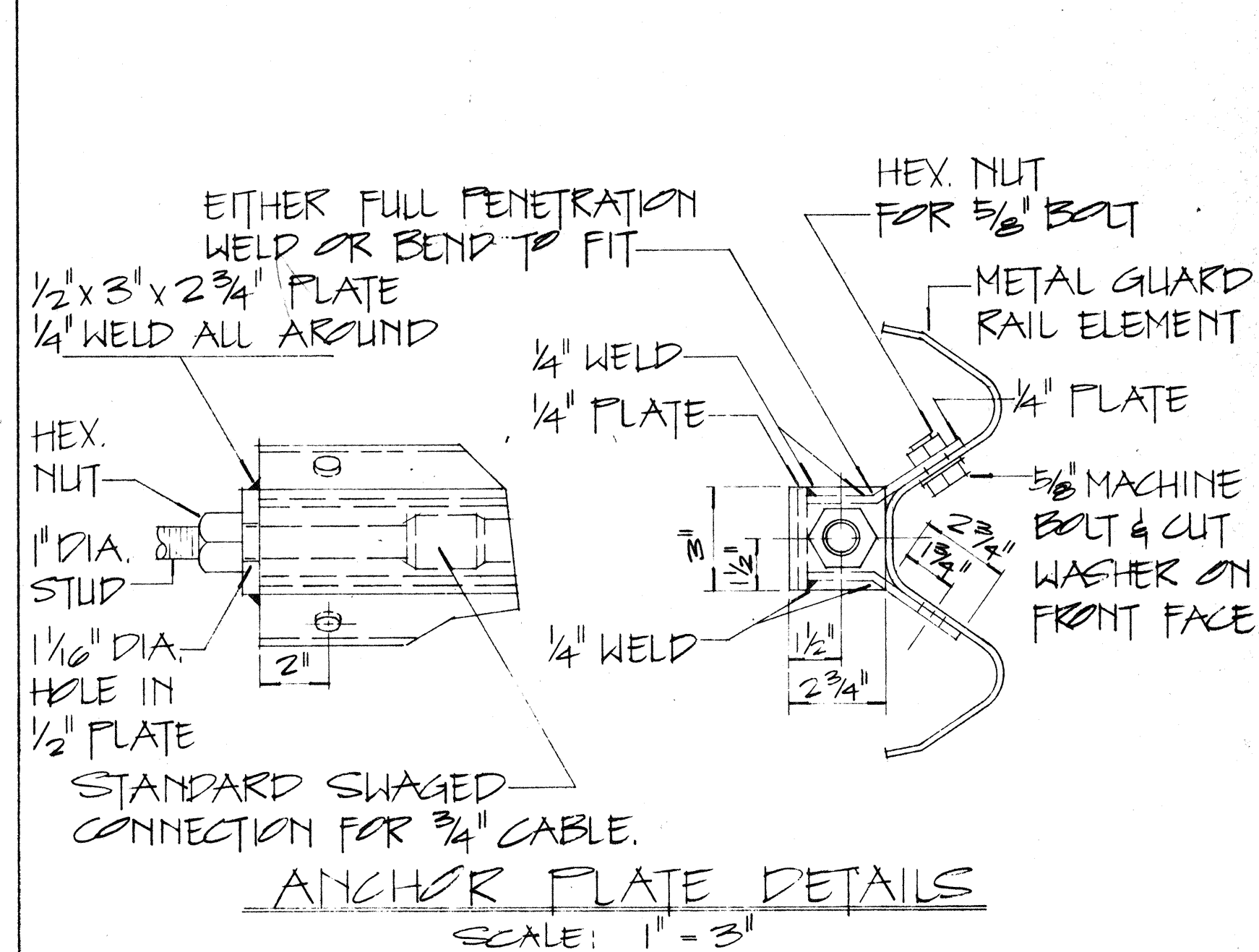
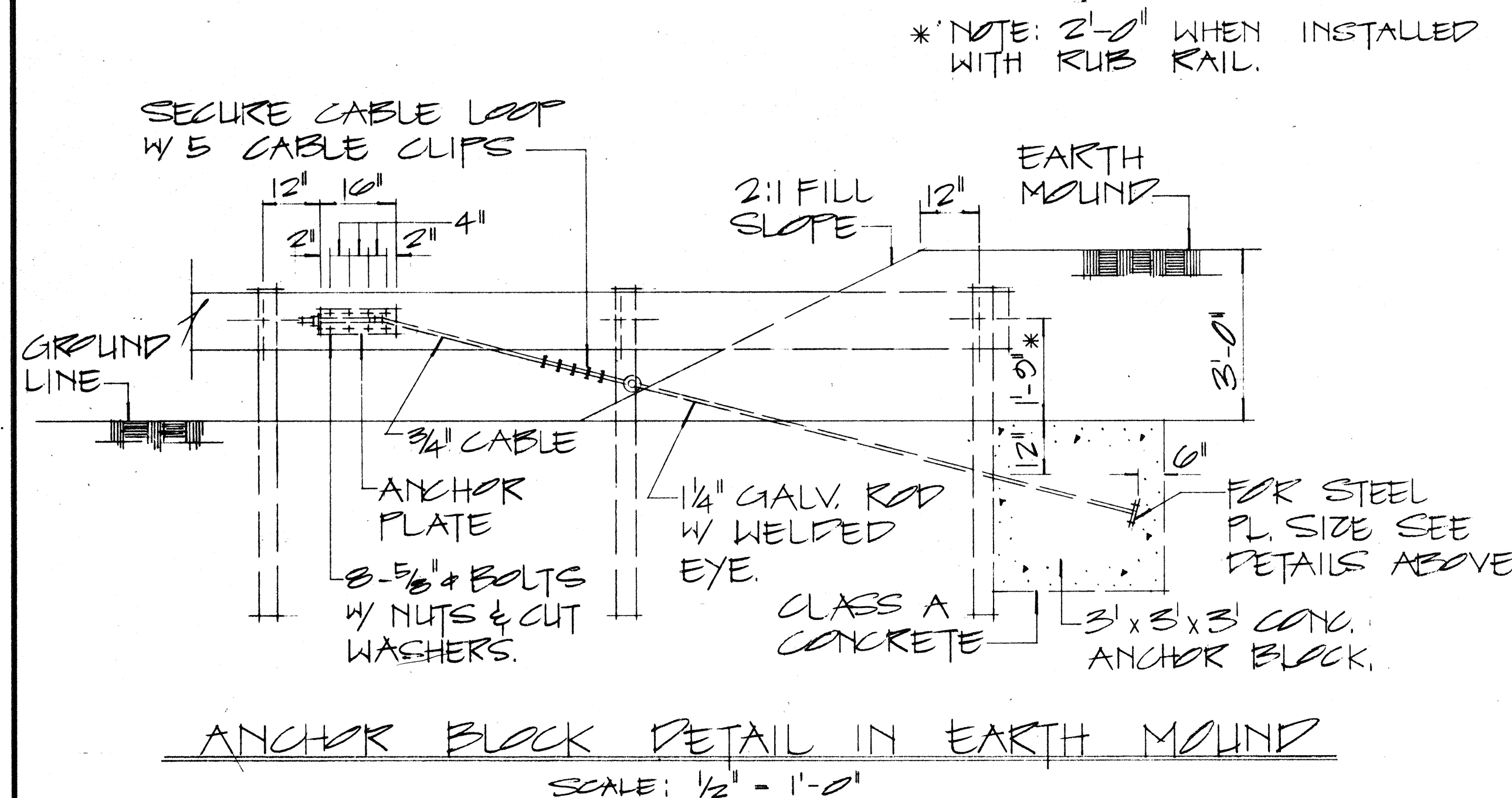
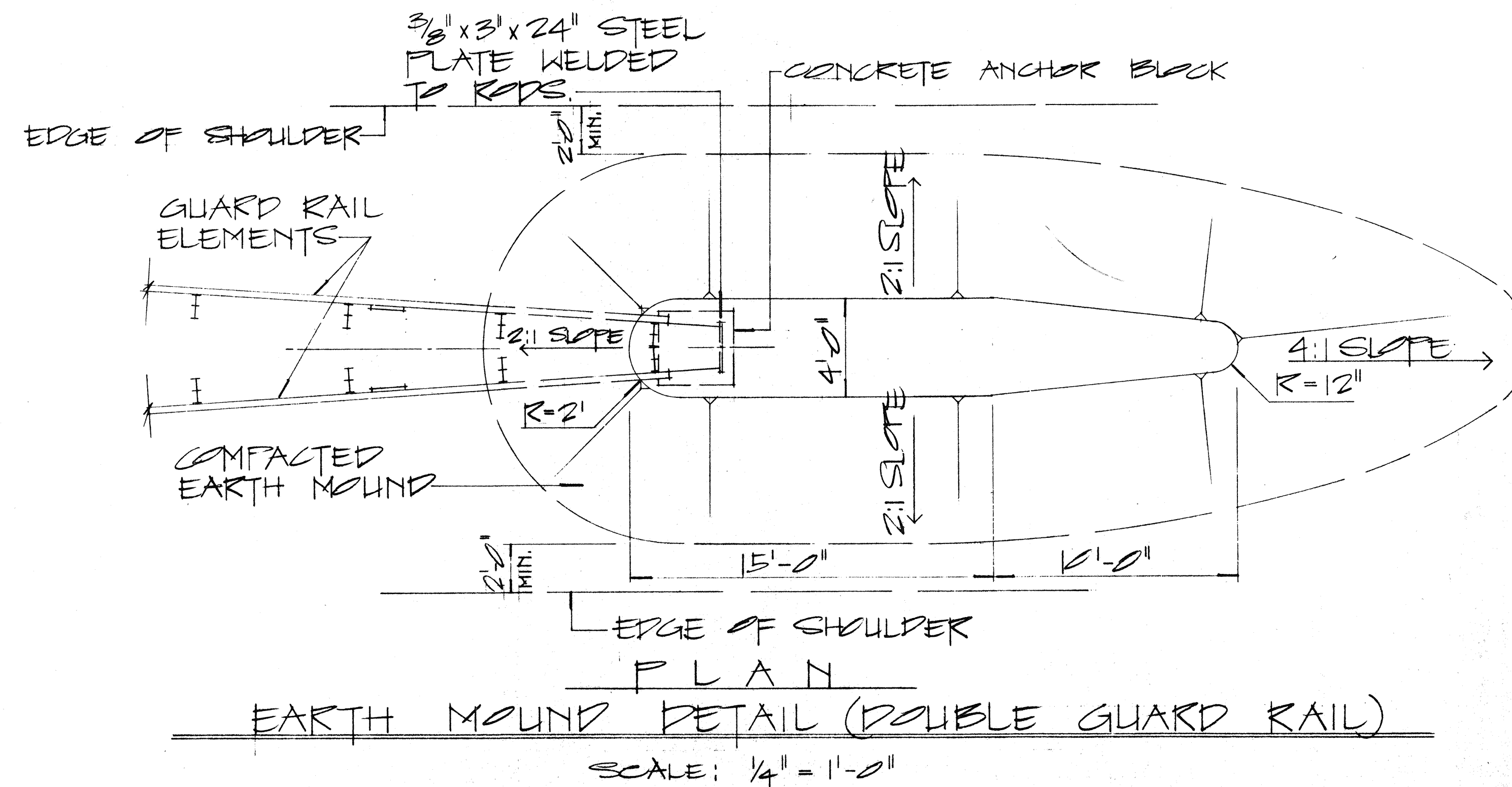
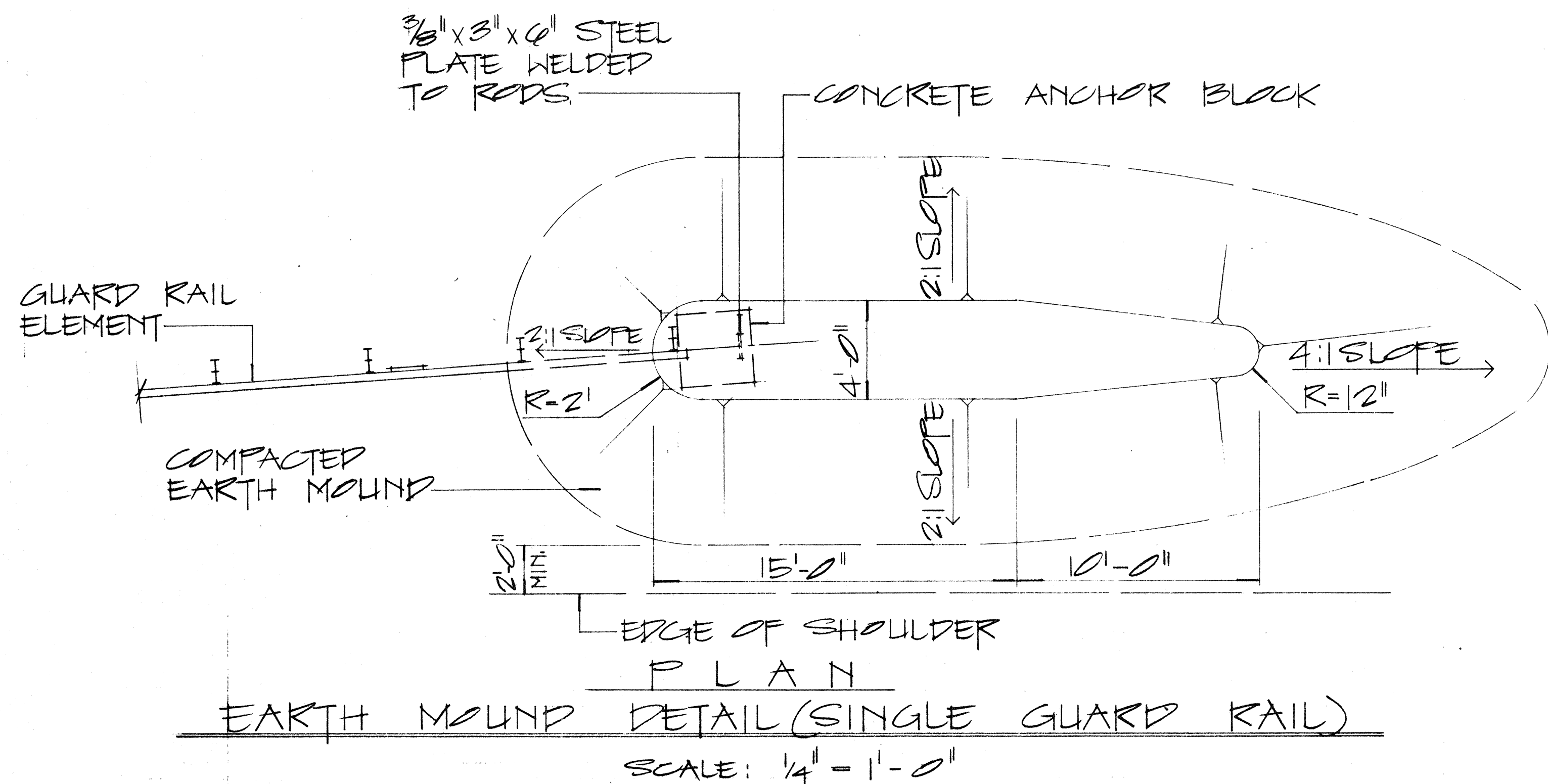
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 LAND TRANSPORTATION FACILITIES DIVISION

STANDARD DETAILS
TRAILING END
FLARE - ONE & TWO
WAY ROADWAY

Scale: As Noted April 1969

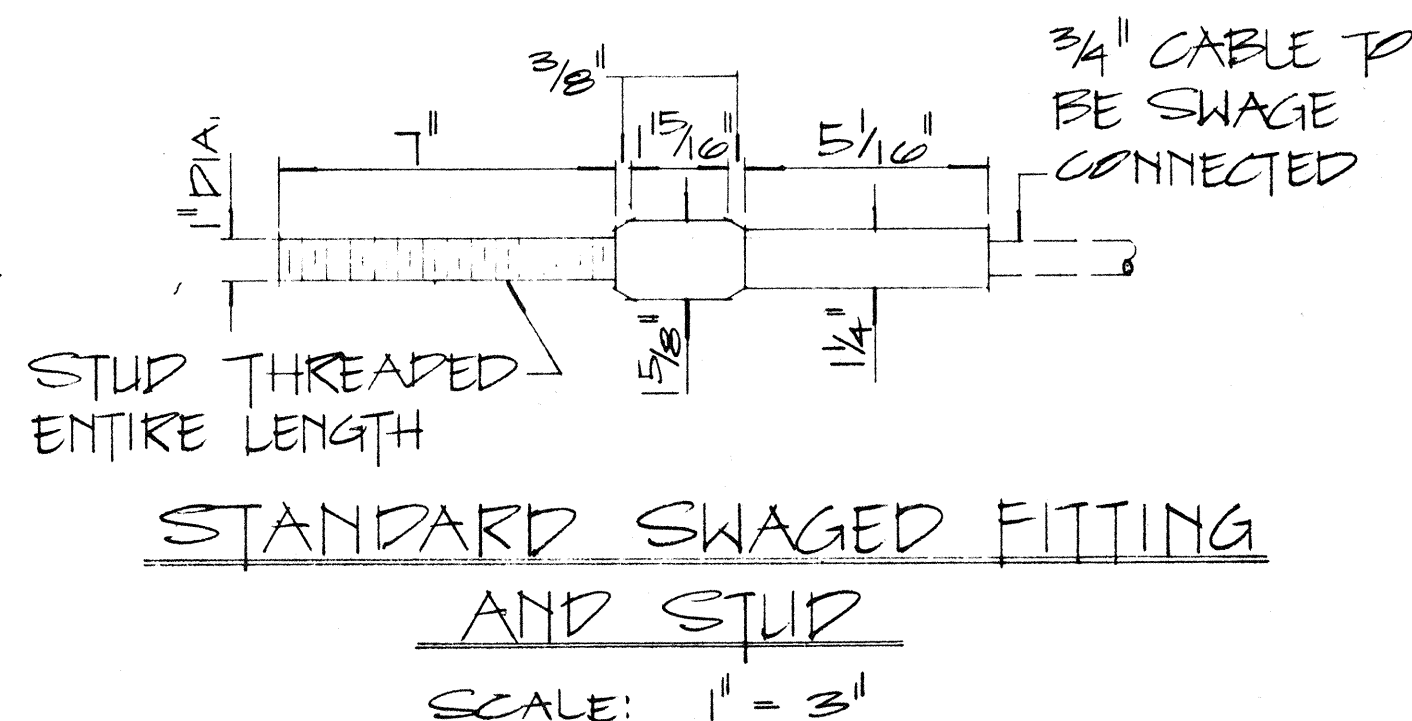
SHEET No. 3 OF 5 SHEETS DT 517

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HH5-027-1(1)	1978	13	25



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, 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:			
Traffic Engineer		12/23/62	
DATE			
APPROVED:			
Assistant Chief, Engineering		12-30-69	
DATE			
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

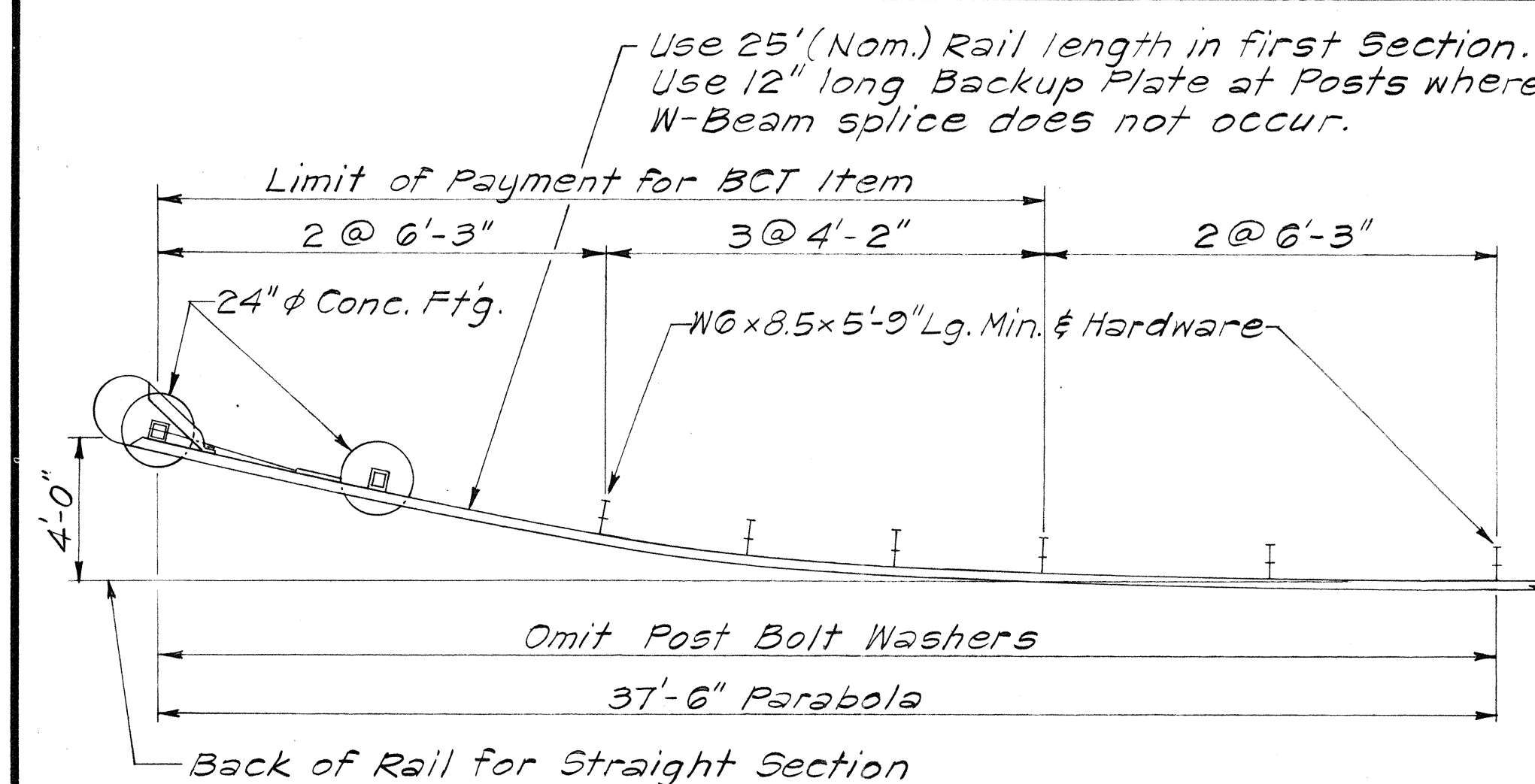
oct 1969

SHEET No. 4 OF 5 SHEETS

1520

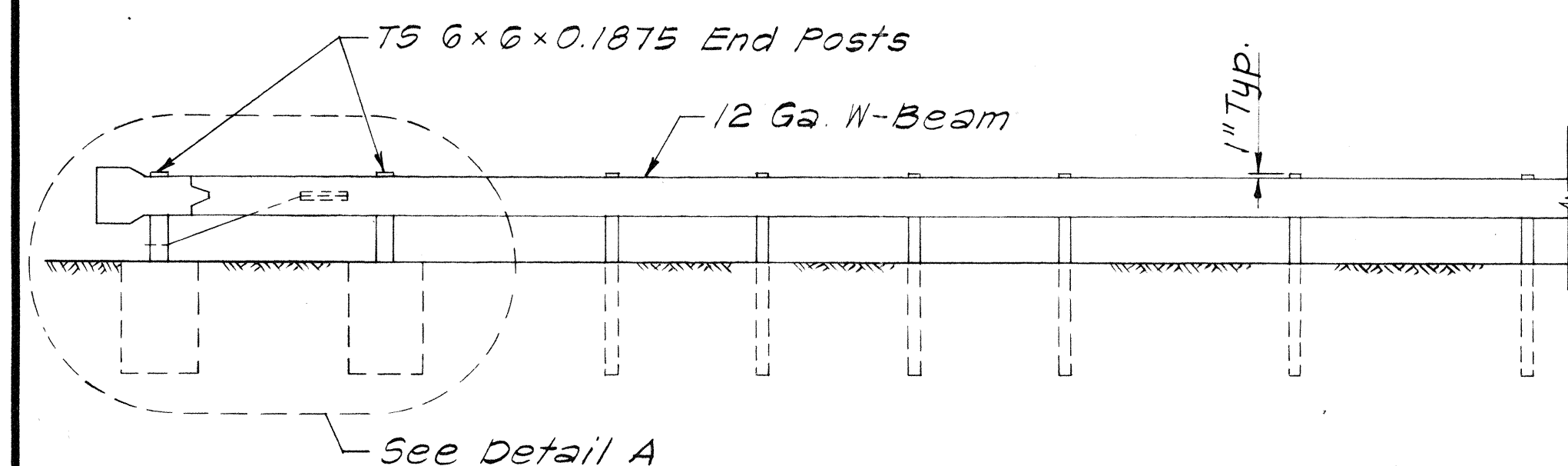
DATE	
SURVEY PLATTED BY	
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HH5-027-1(1)	1978	14	25



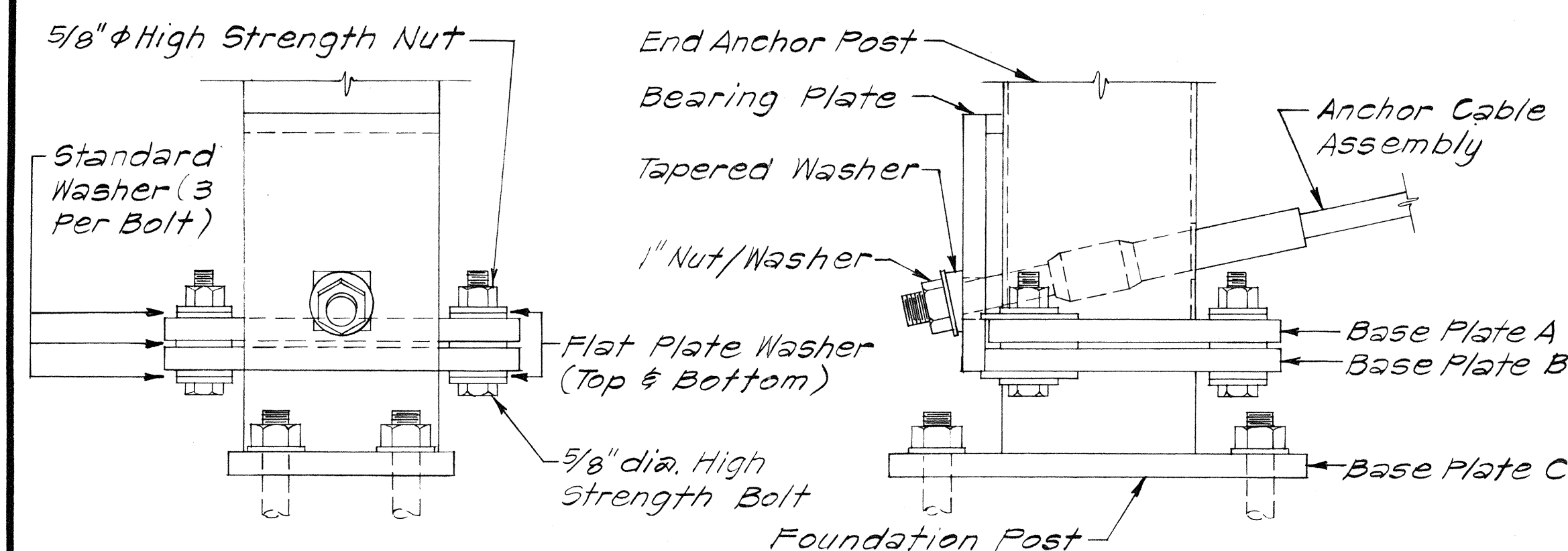
PLAN

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



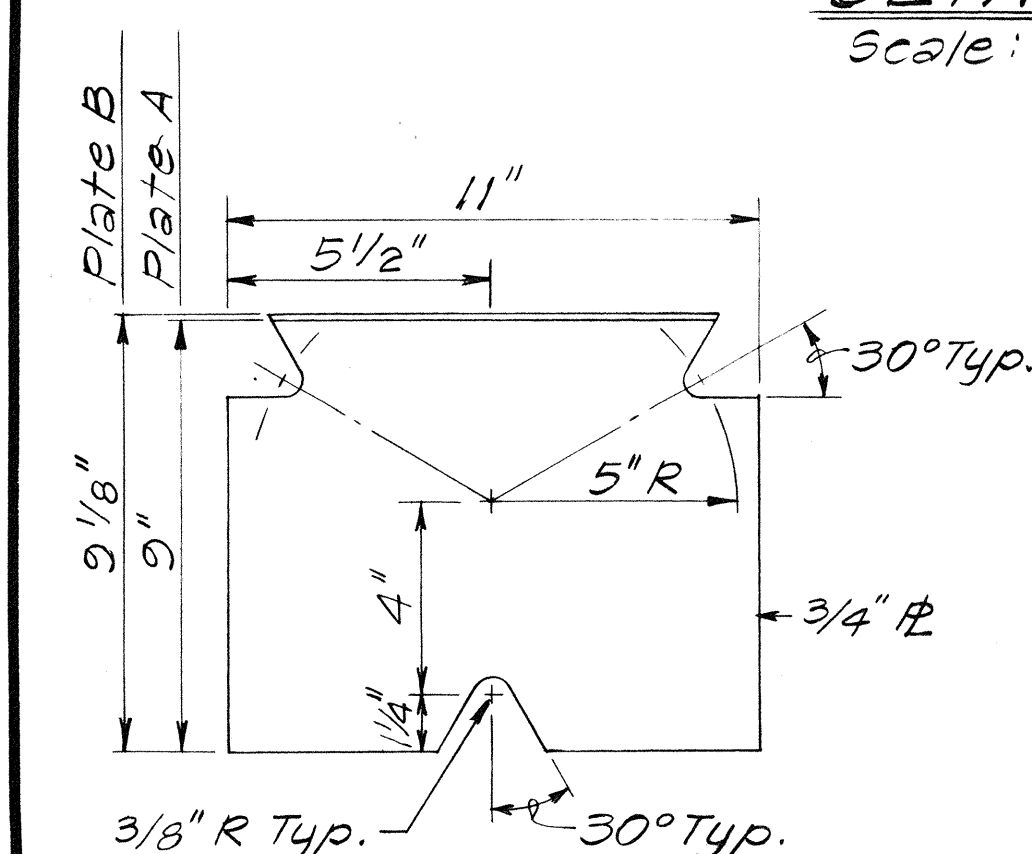
ELEVATION

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



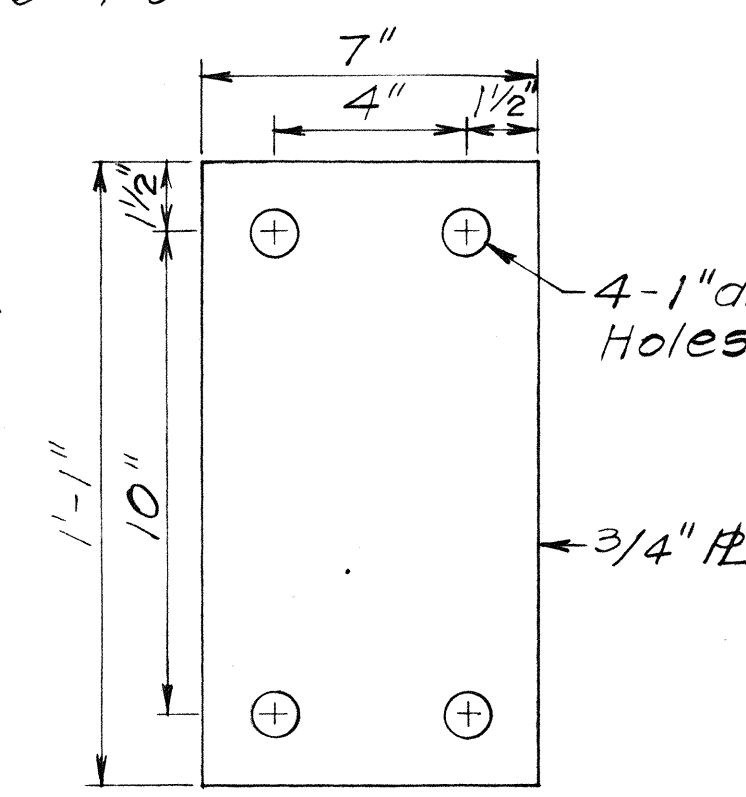
DETAIL B

Scale: 3" = 1'-0"



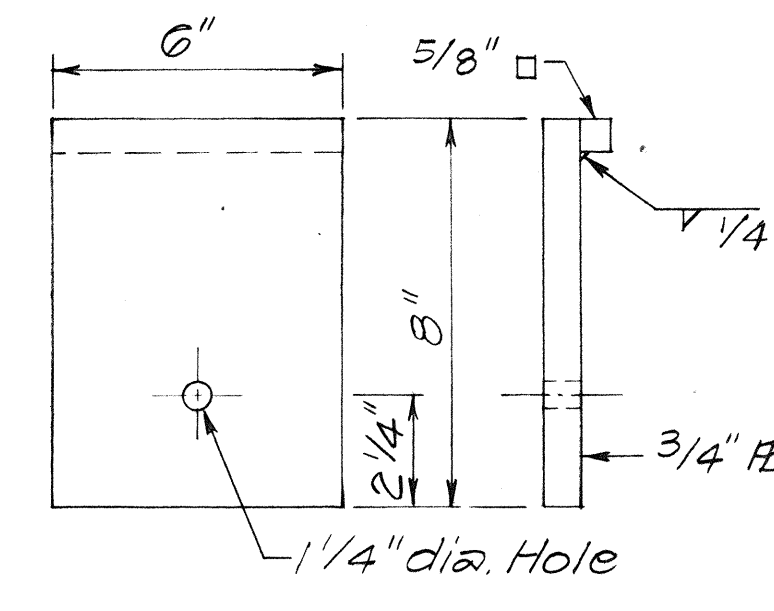
BASE PLATES A & B

Scale: 3" = 1'-0"



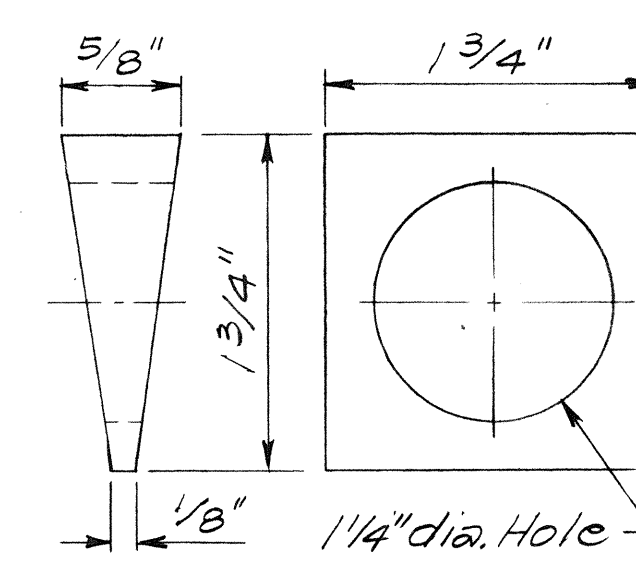
BASE PLATE C

Scale: 3" = 1'-0"



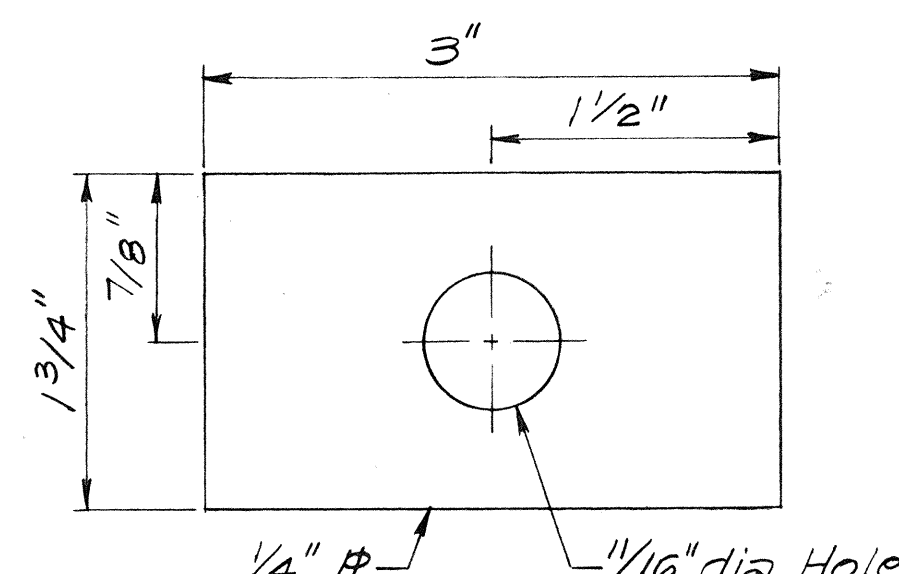
BEARING PLATE

Scale: 3" = 1'-0"



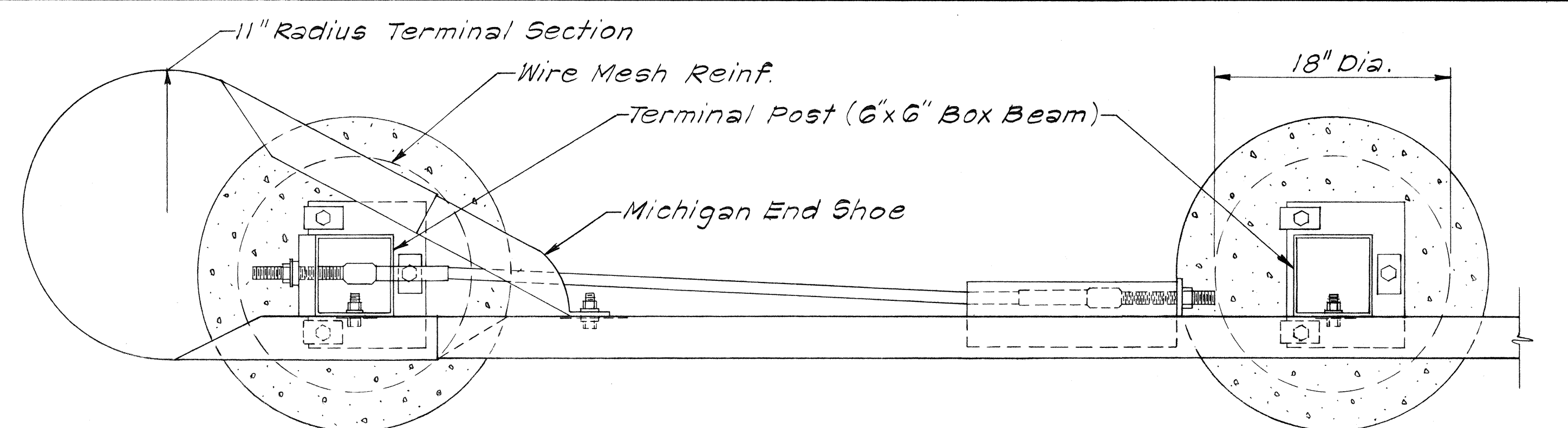
TAPERED WASHER

Scale: Full Size

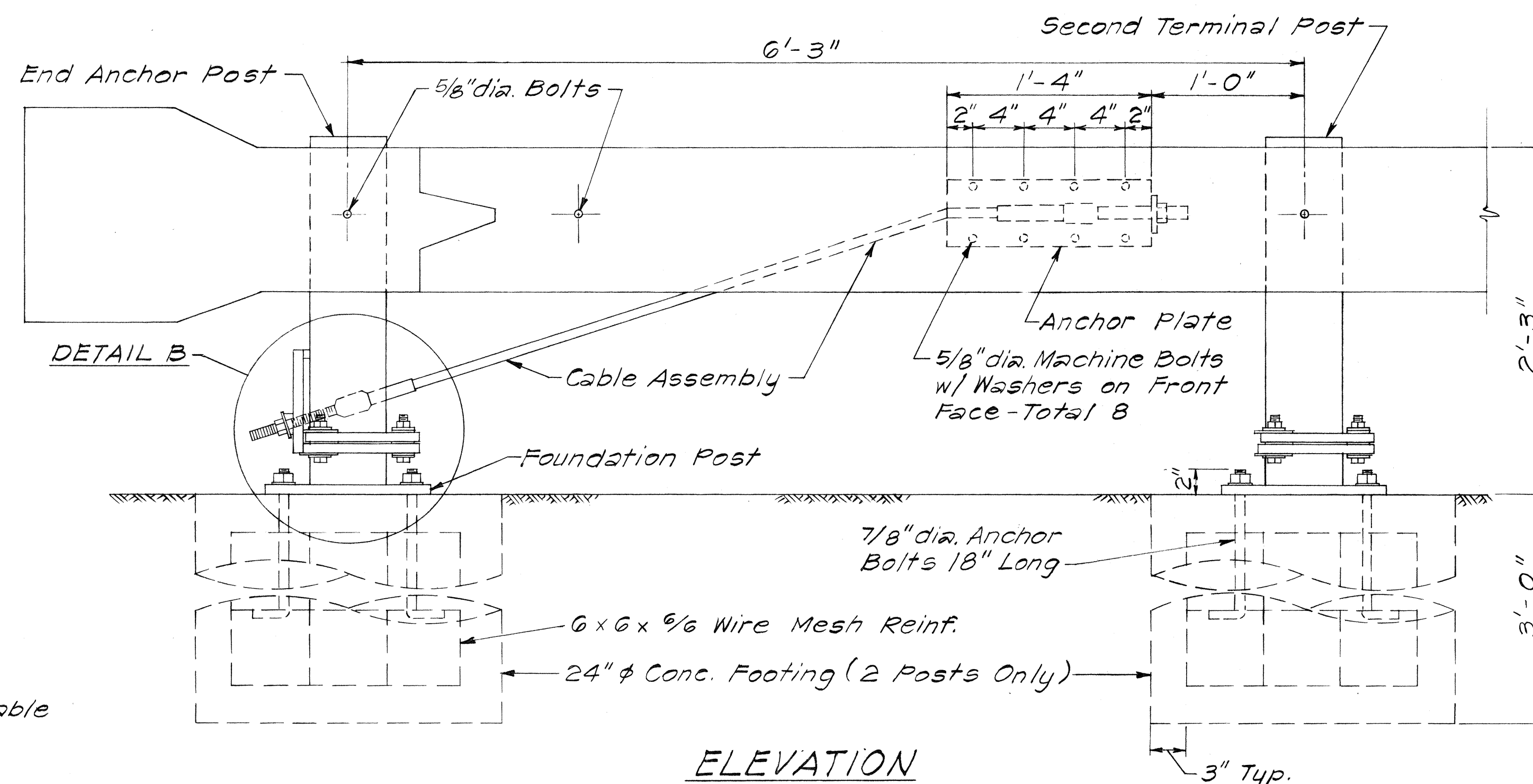


FLAT PLATE WASHER

Scale: Full Size

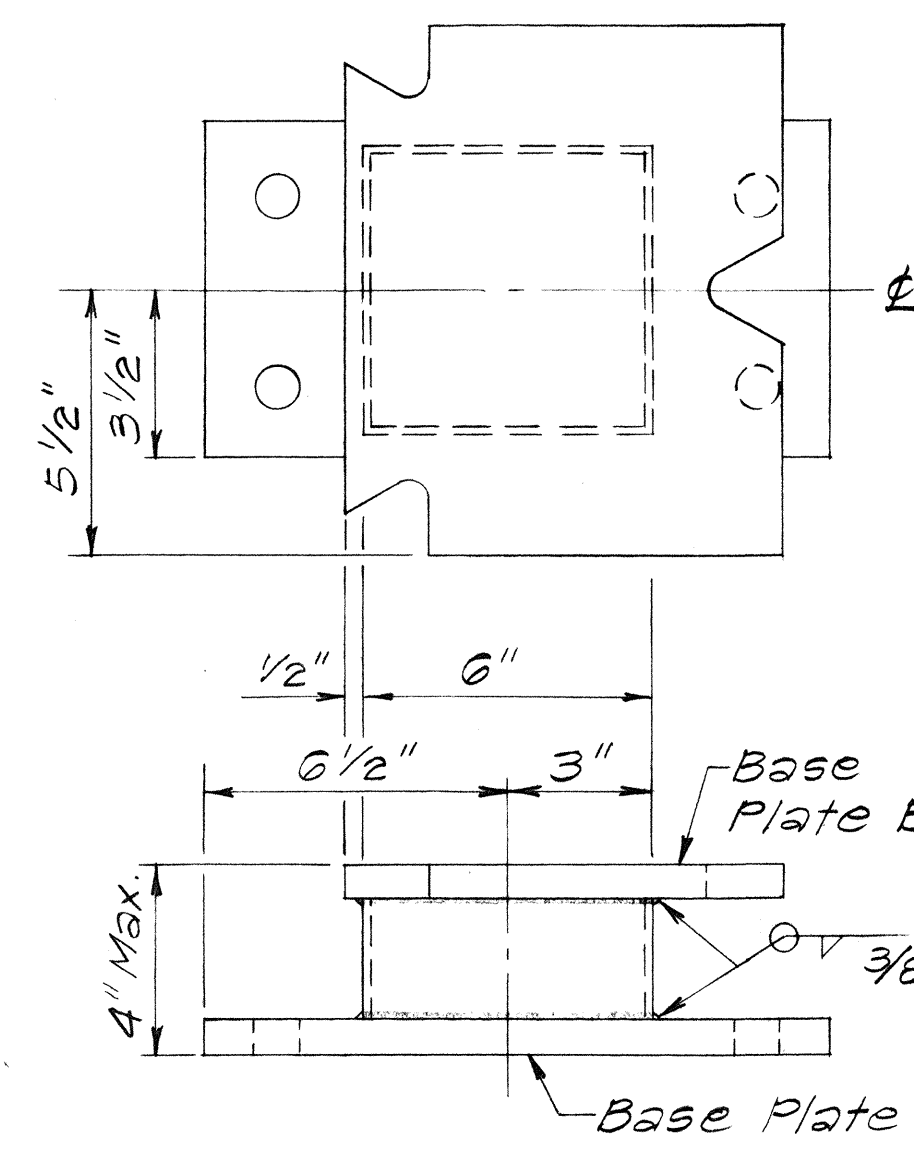


PLAN



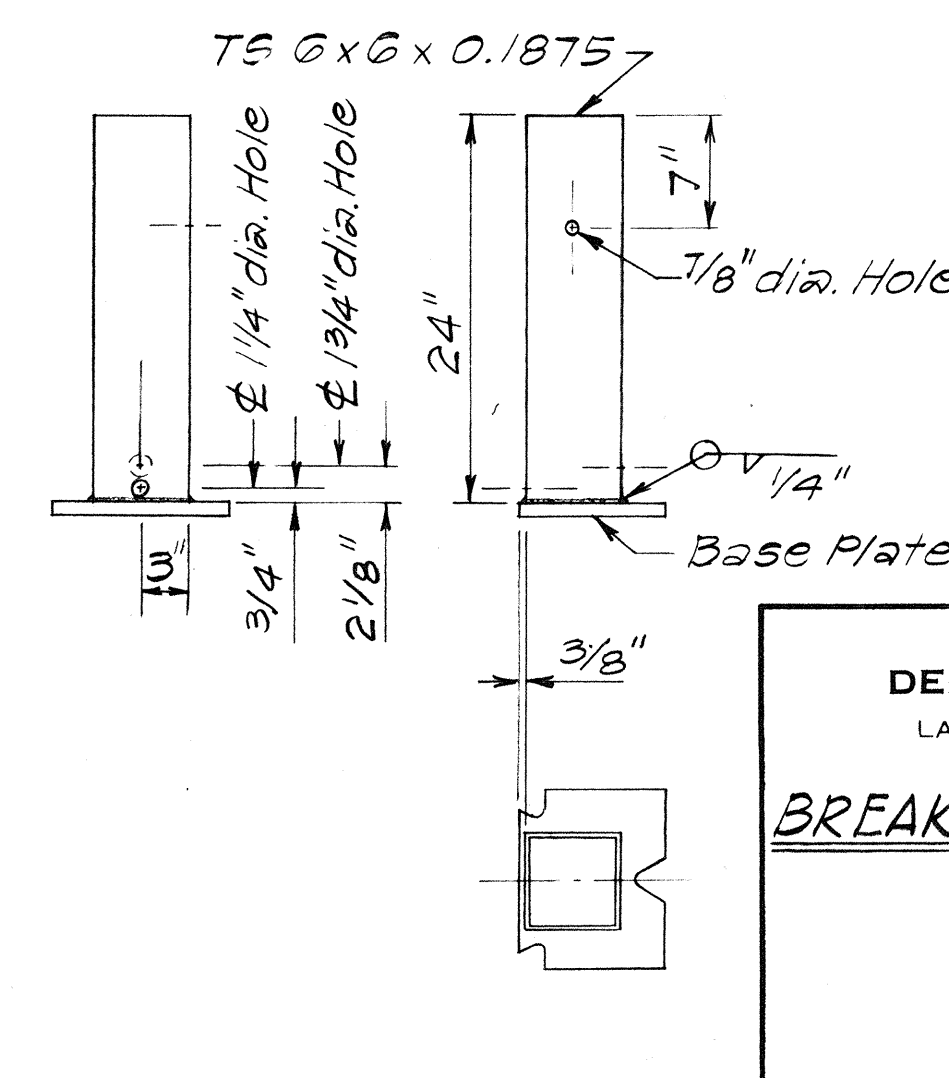
ELEVATION

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



FOUNDATION POST

Scale: 3" = 1'-0"



TERMINAL POST

Scale: 1" = 1'-0"

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 accommodate Anchor Cable.
4. Slip Base Load shall be controlled with a Calibrated Torque Wrench ~ Torque 155-170 ft.-lbs.
5. Concrete Footing Class A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

BREAKAWAY CABLE TERMINAL (BCT)

Scale: As Shown Date: _____

SHEET No. 5 OF 5 SHEETS