

FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	11C-01-73 230A-01-73 10H-01-73	1973	10	14



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"



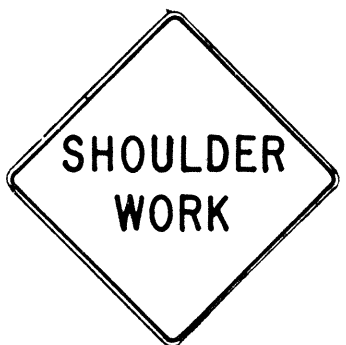
CW21-2 30" x 30"



CW21-3 36" x 36"



CW21-4 36" x 36"



CW21-5 30" x 30"



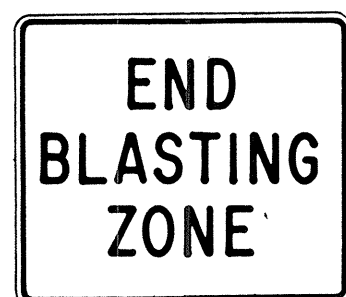
CW21-6 30" x 30"



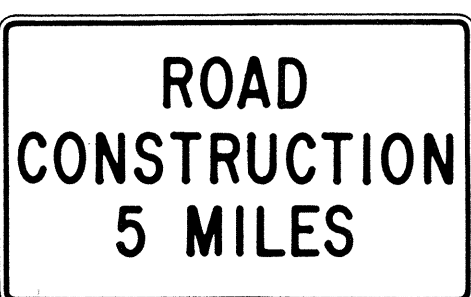
CW22-1b 48" x 48"



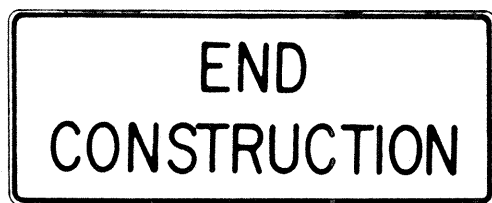
CW22-2 42" x 36"



CW22-3 42" x 36"



CG20-1(5) 60" x 36"



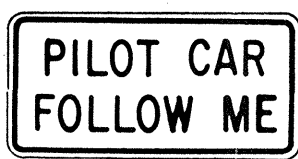
CG20-2 60" x 24"



CM4-9(R) 30" x 24"



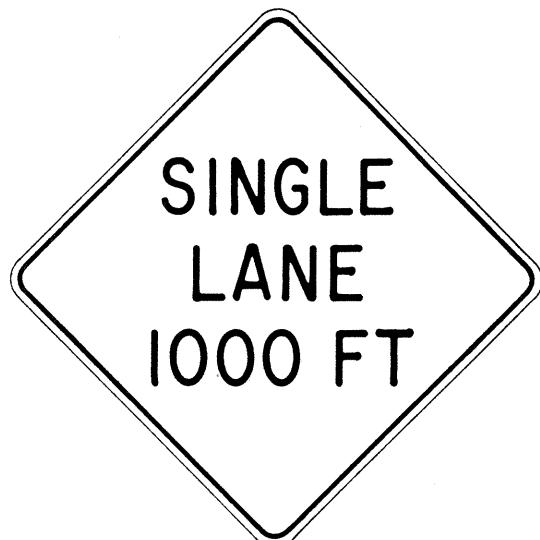
CM4-10(R) 48" x 18"



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."
- All construction signs shall be reflectorized unless otherwise specified.
- 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

APPROVAL RECOMMENDED:

Erich Tanaka
TRAFFIC ENGINEER

3/21/72
DATE

APPROVED:

Sheldon Salsich
ASSISTANT CHIEF, ENGINEERING

3/23/72
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

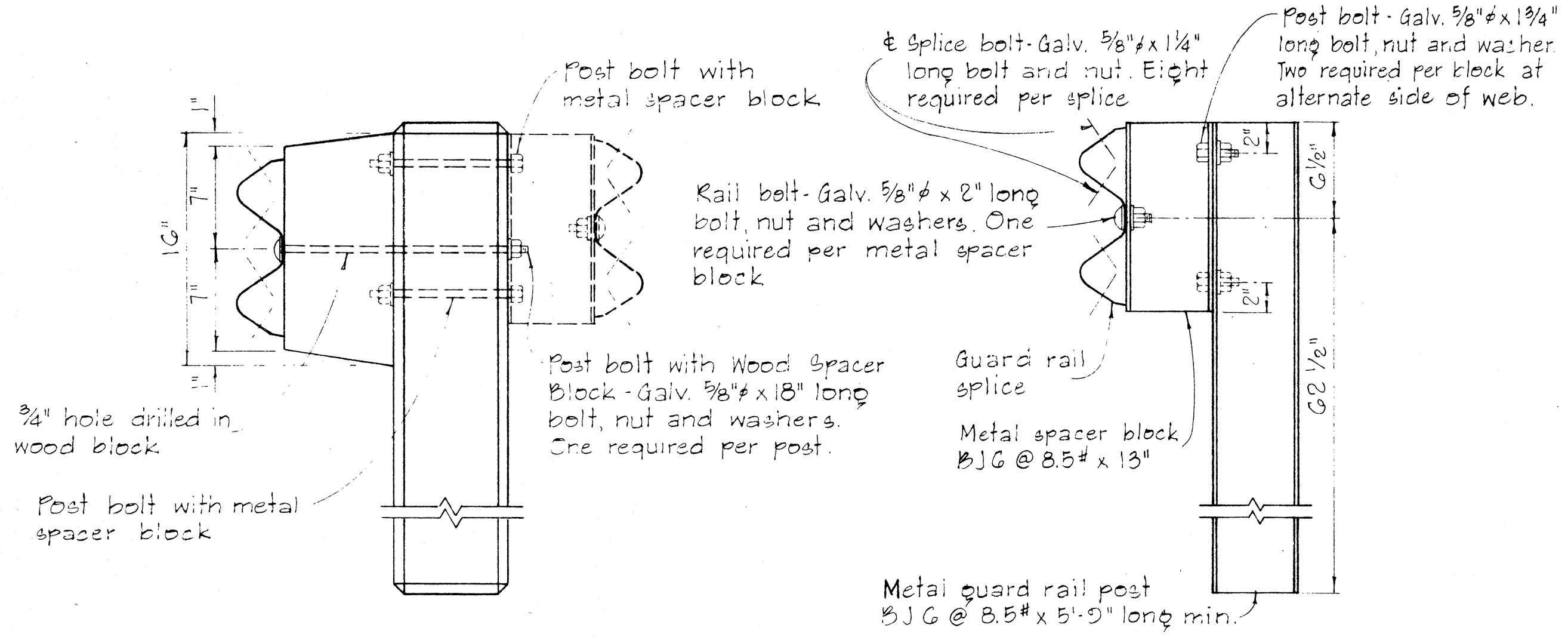
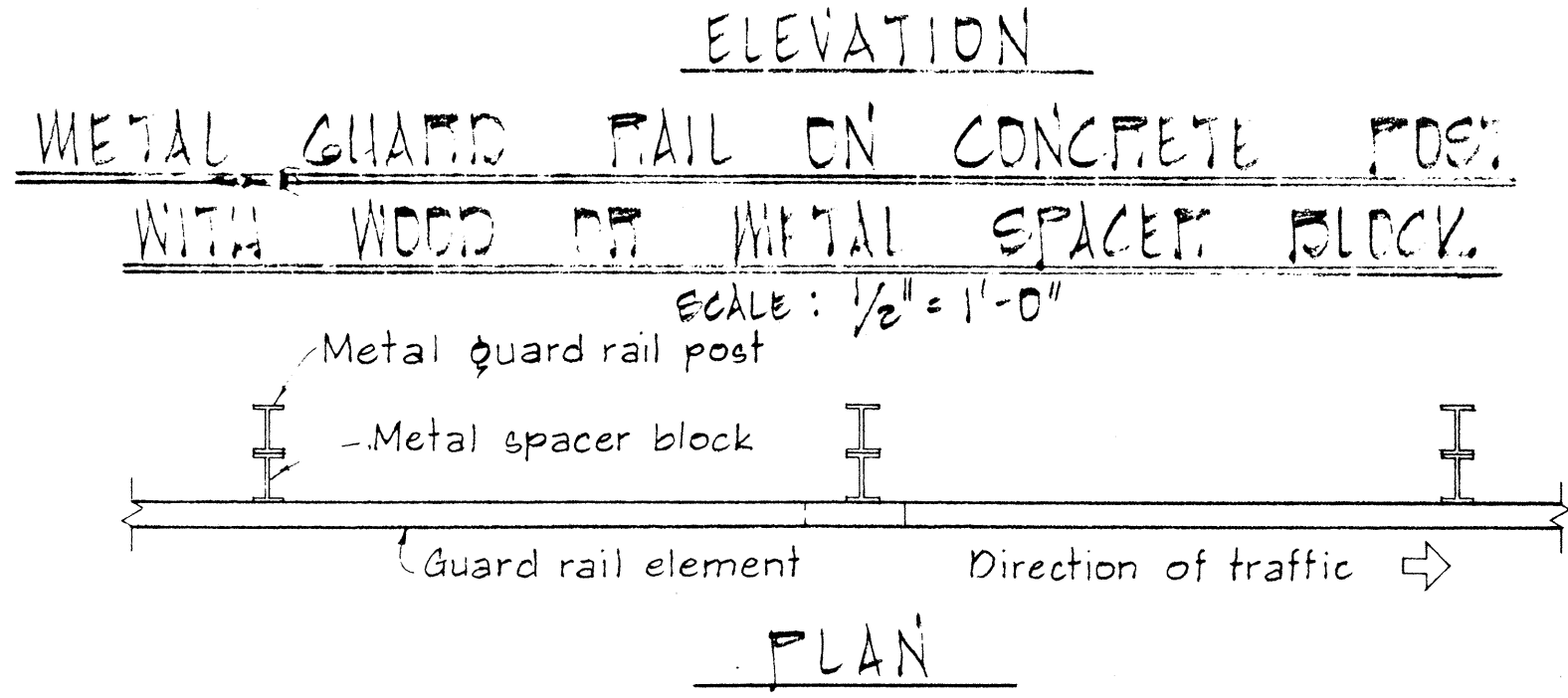
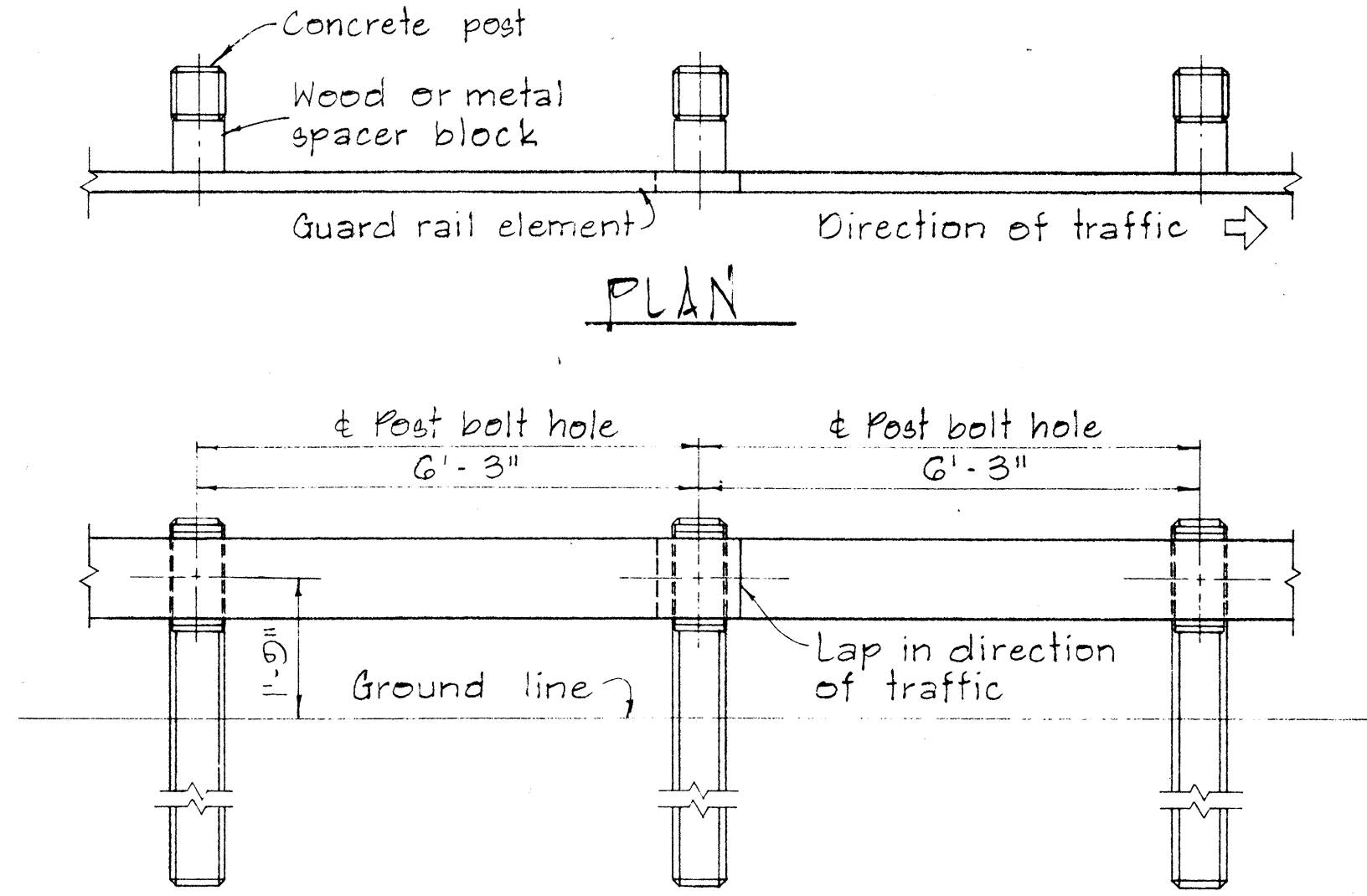
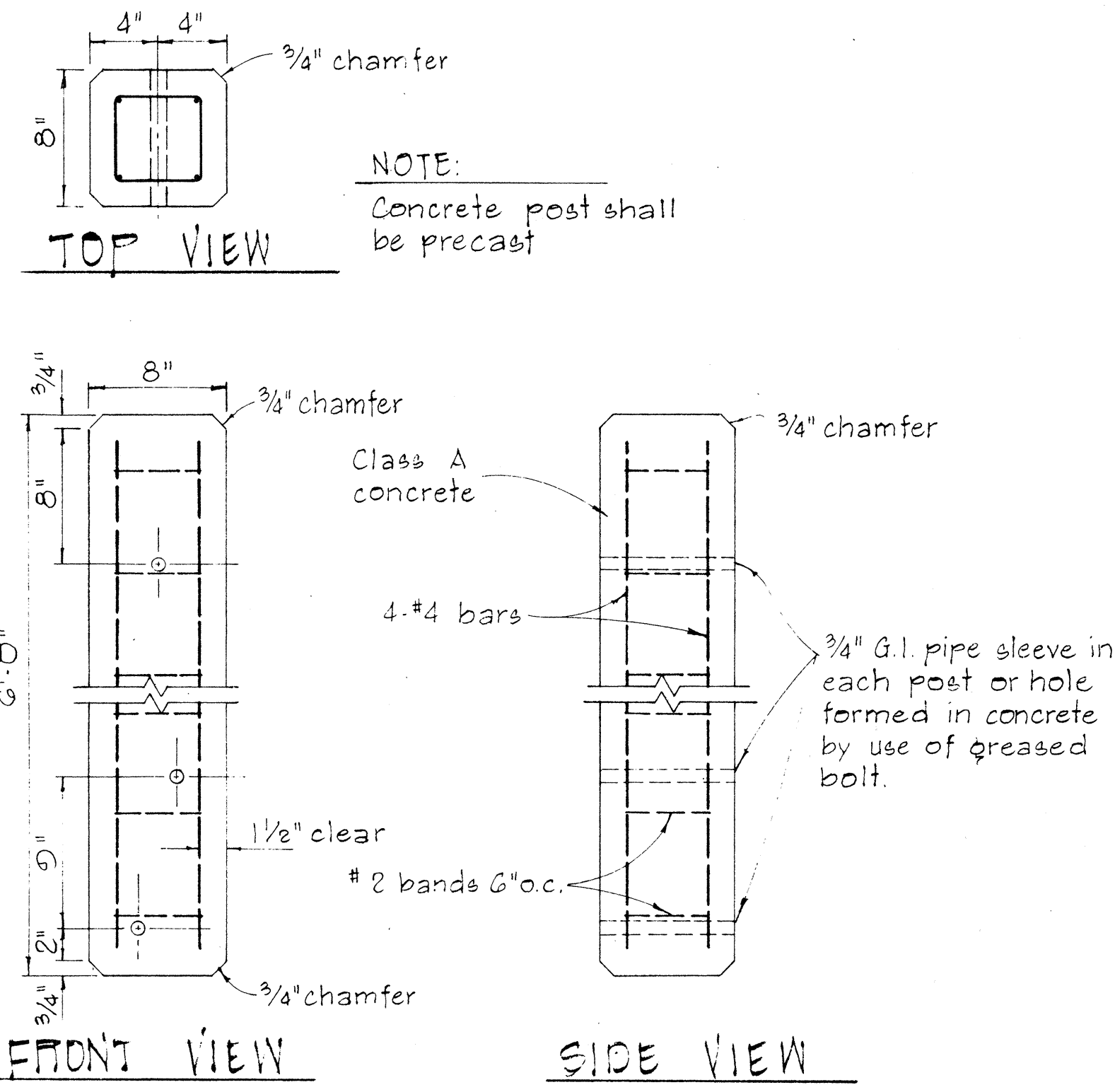
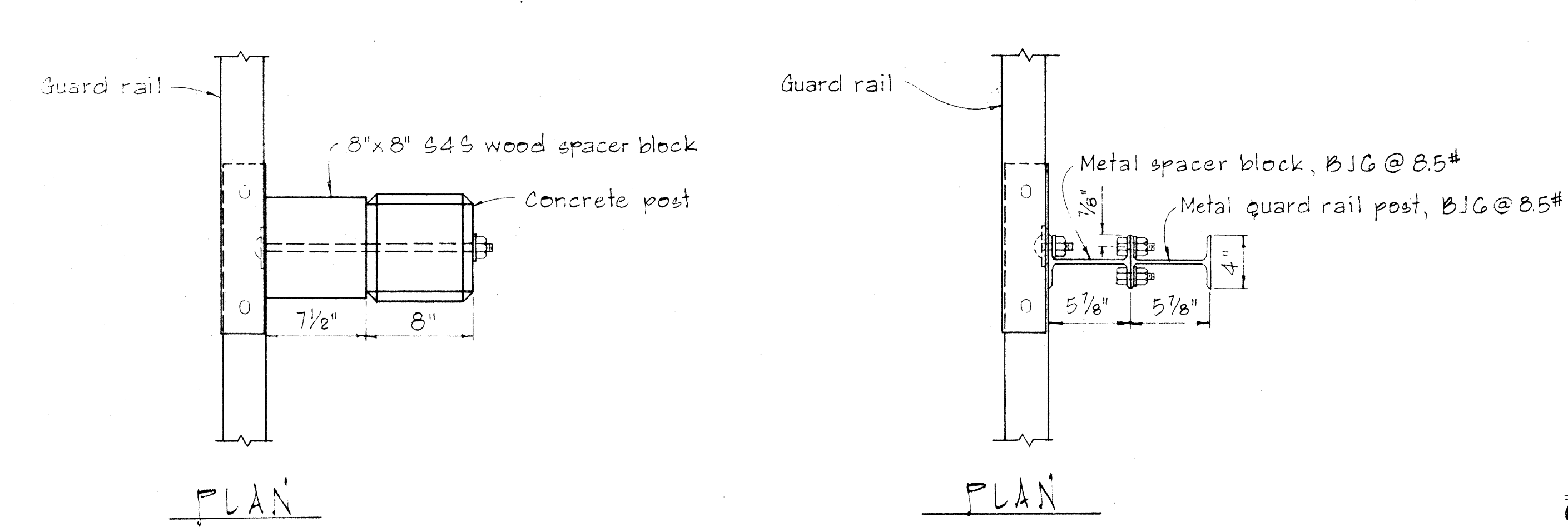
STANDARD DETAILS
CONSTRUCTION SIGNS

NOT TO SCALE

SHEET No. 1 OF 5 SHEETS DT 104

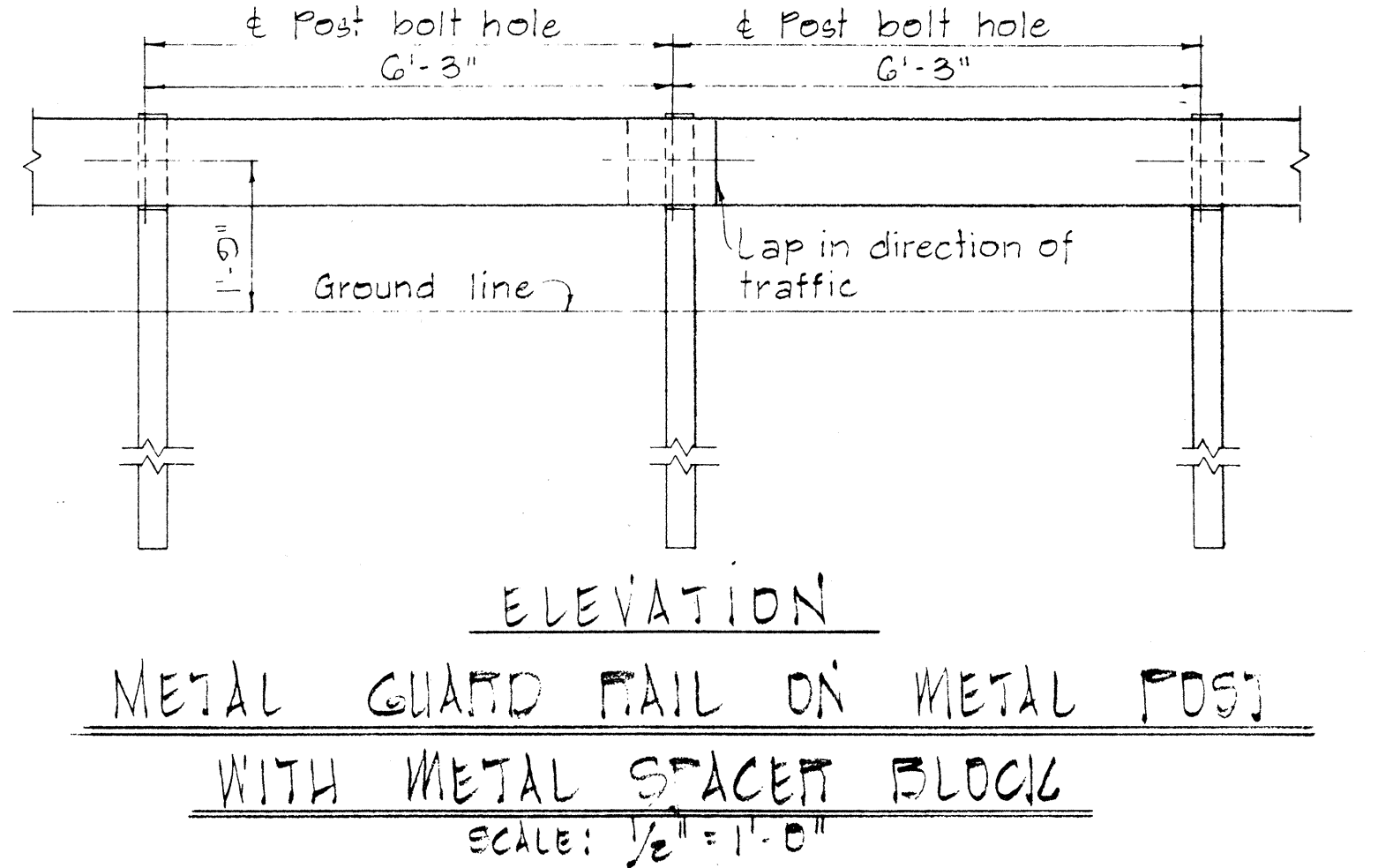
ORIGINAL	SURVEY PLOTTED BY	DATE
PLAN	DRAWN BY	" "
NOTE BOOK	REVIEWED BY	" "
No.	CHECKED BY	" "

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	11C-01-73 250A-01-73 10H-01-73	1973	11	14

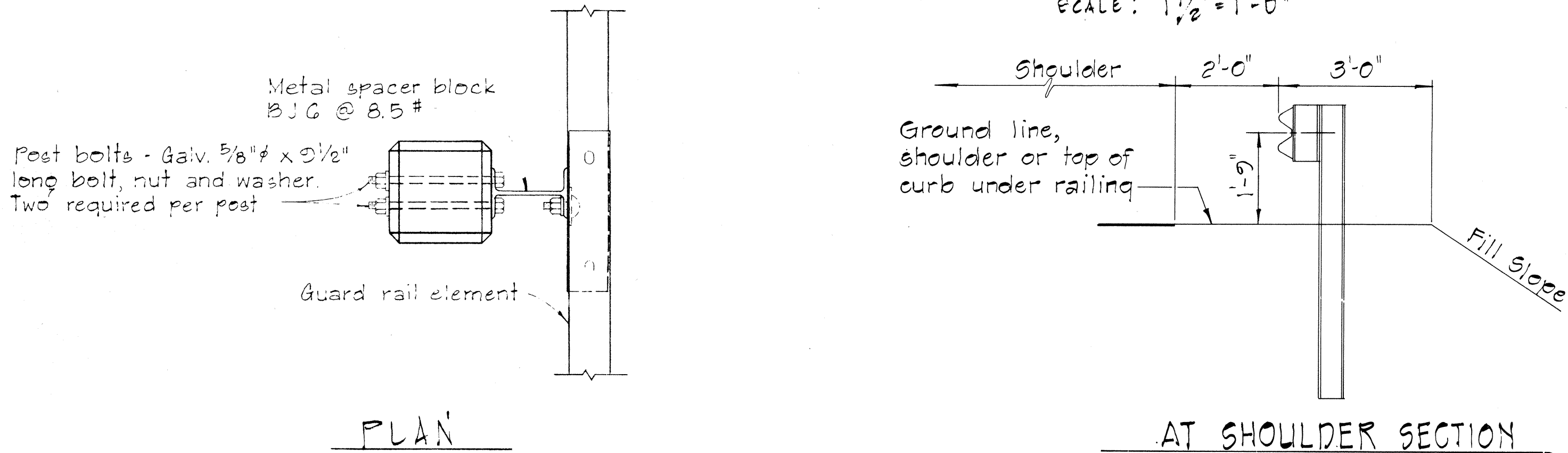


DETAIL OF CONCRETE POST
SCALE: 1 1/2" = 1'-0"

SINGLE METAL GUARD RAIL ON METAL POST
WITH METAL SPACER BLOCK
SCALE: 1 1/2" = 1'-0"



ELEVATION
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:
Eishi Tanaka
TRAFFIC ENGINEER
12/29/62
DATE

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

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

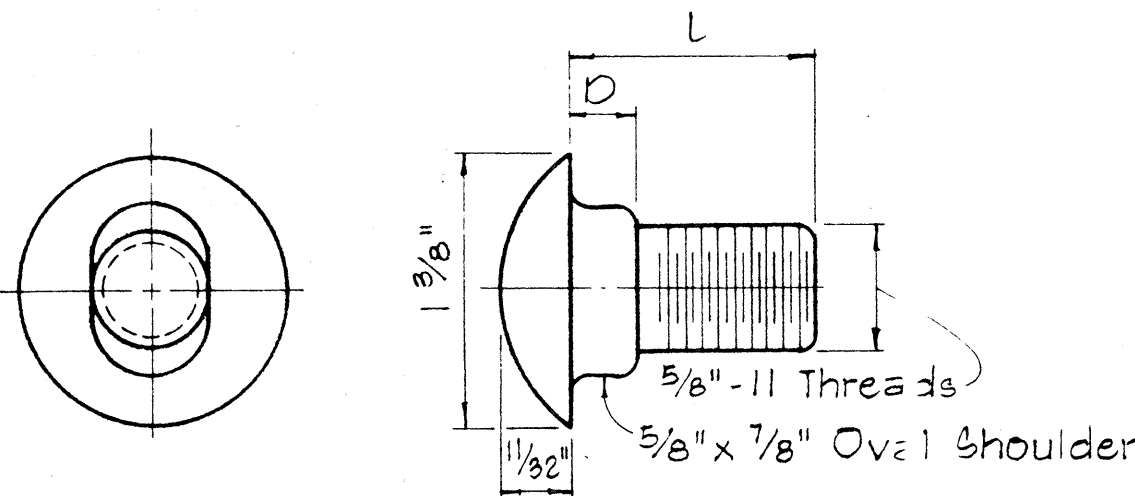
STANDARD DETAILS
METAL GUARD RAIL
SCALE: AS SHOWN
NOV. 1968

ORIGINAL PLAN	DATE
SURVEY PLATTED BY	
DRAWN BY	
TRACED BY	
NOTE BOOK	
CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	11C-01-73 250A-01-73 12H-01-73	1973	12	14

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"

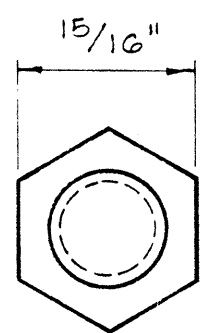
BOLT DIMENSIONS	
TYPE B BOLT	
	L
Post Bolt for Conc. Post w/ Metal Blocks	5 1/2"
Post Bolt for Metal Post w/ Metal Block	1 3/4"



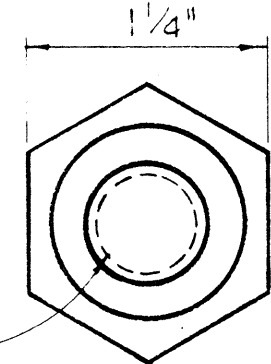
TYPE A BOLT

SPlice RAIL AND POST BOLTS

Scale: Full Size

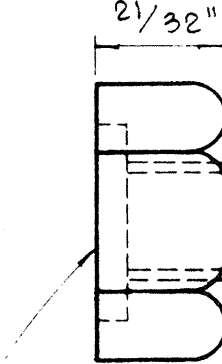


TYPE B BOLT

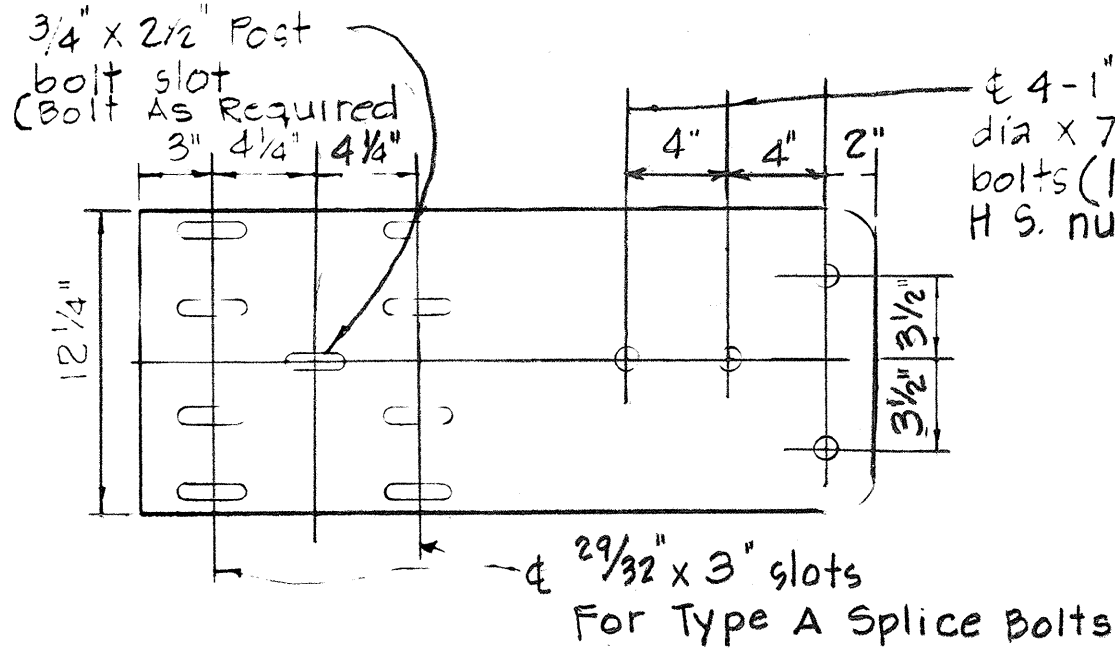
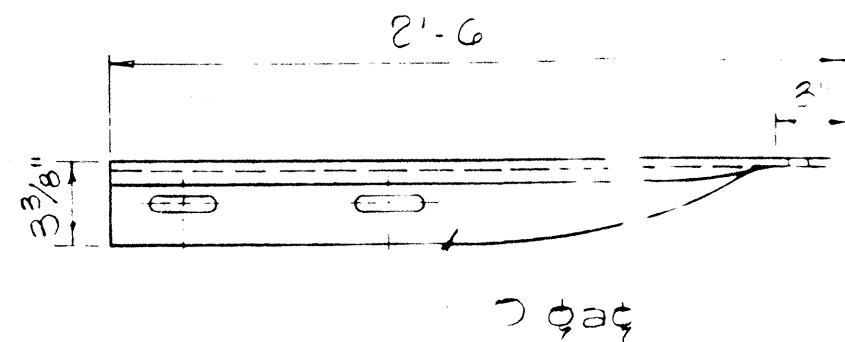


HEXAGON NUT

Scale: Full Size

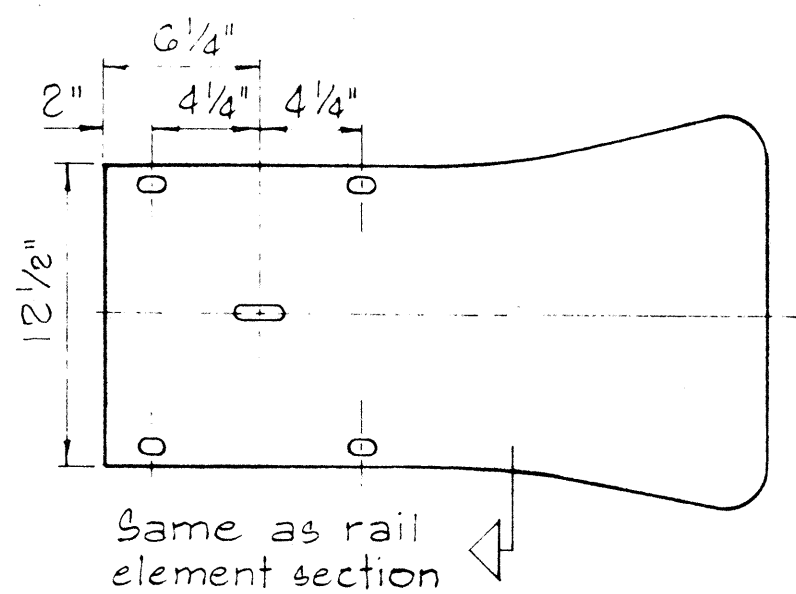
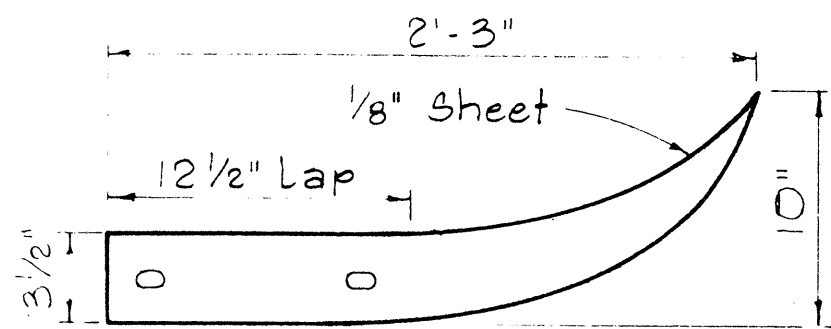


5/32" Deep x 15/16" Dia. C' Bore for Type A Bolt only
Plain nut for Type B Bolt.



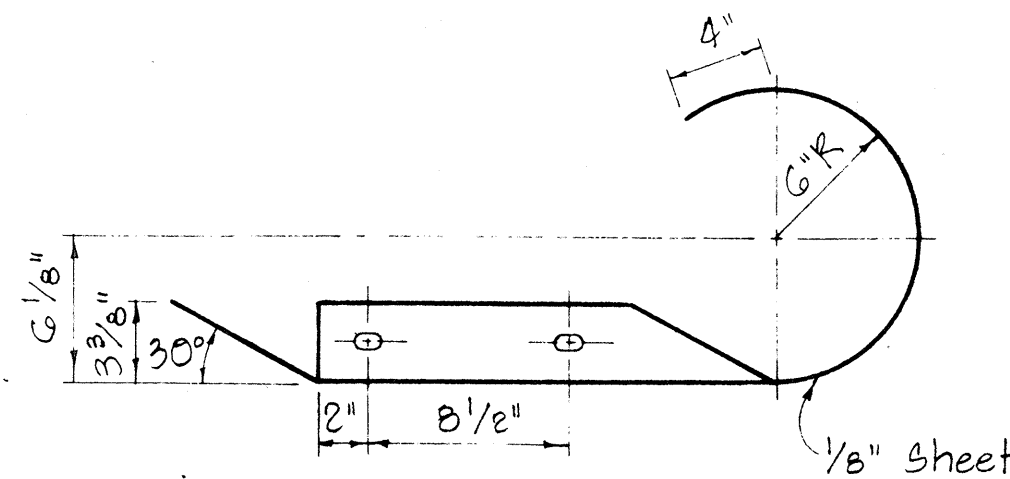
SPECIAL END SHOE

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

12/29/69

DATE

12-30-69

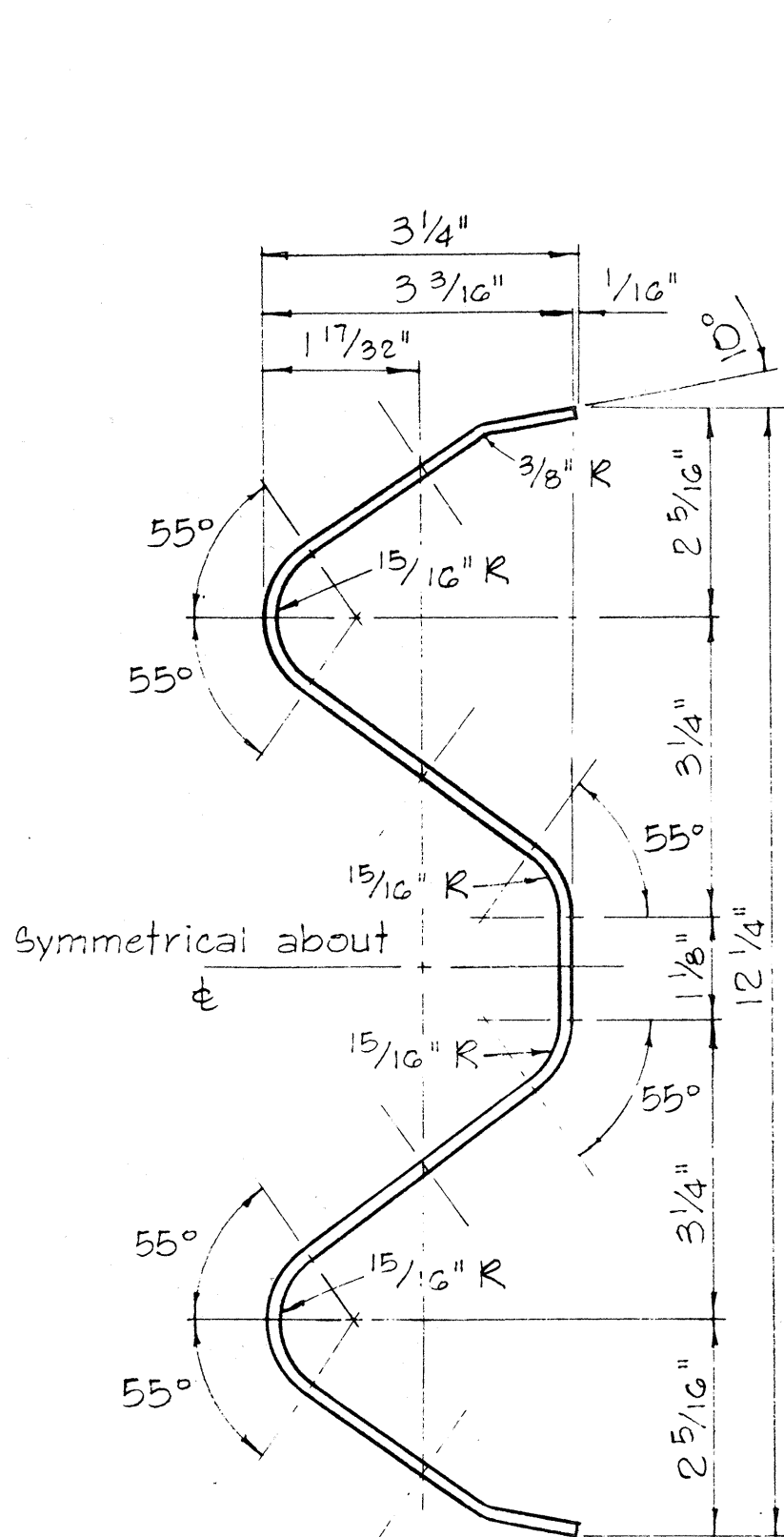
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL GUARD RAIL

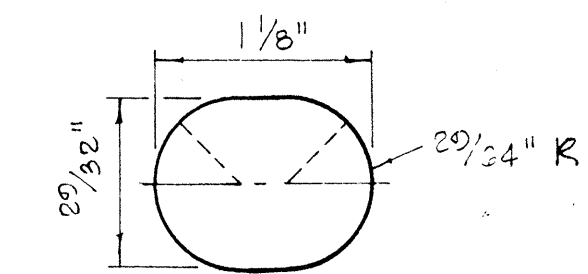
Scale: As Noted August, 1968

SHEET No. 3 OF 5 SHEETS DT 501



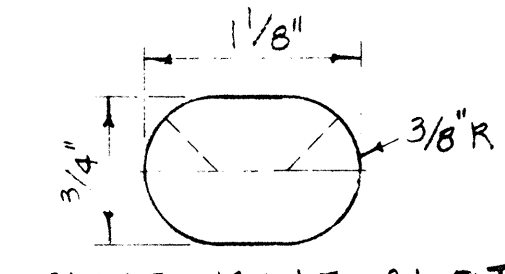
RAIL ELEMENT SECTION

Scale: 6" = 1'-0"

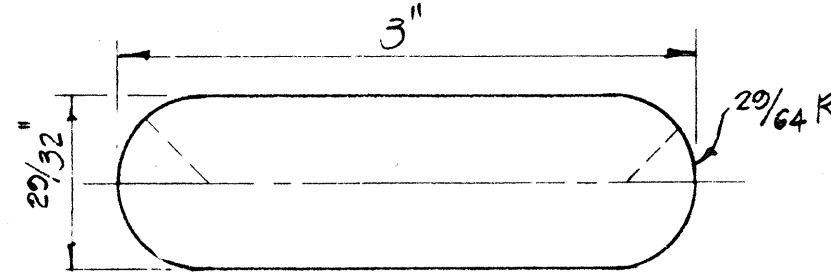


SPlice BOLT SLOT

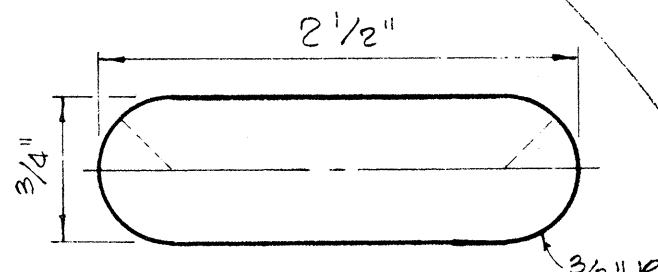
Scale: Full Size



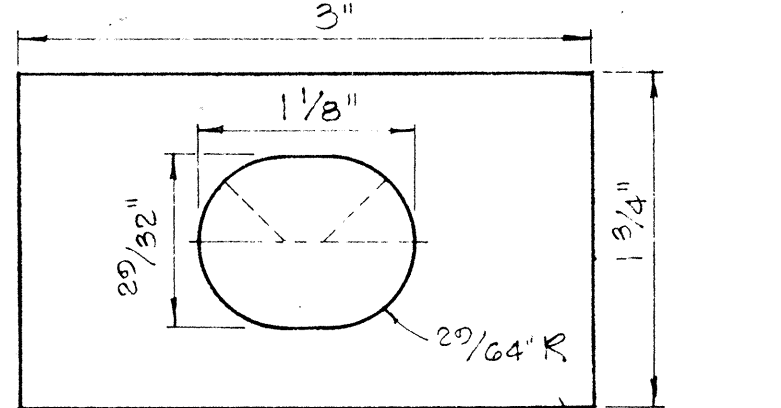
SPlice BOLT SLOT FOR ALL ENDS



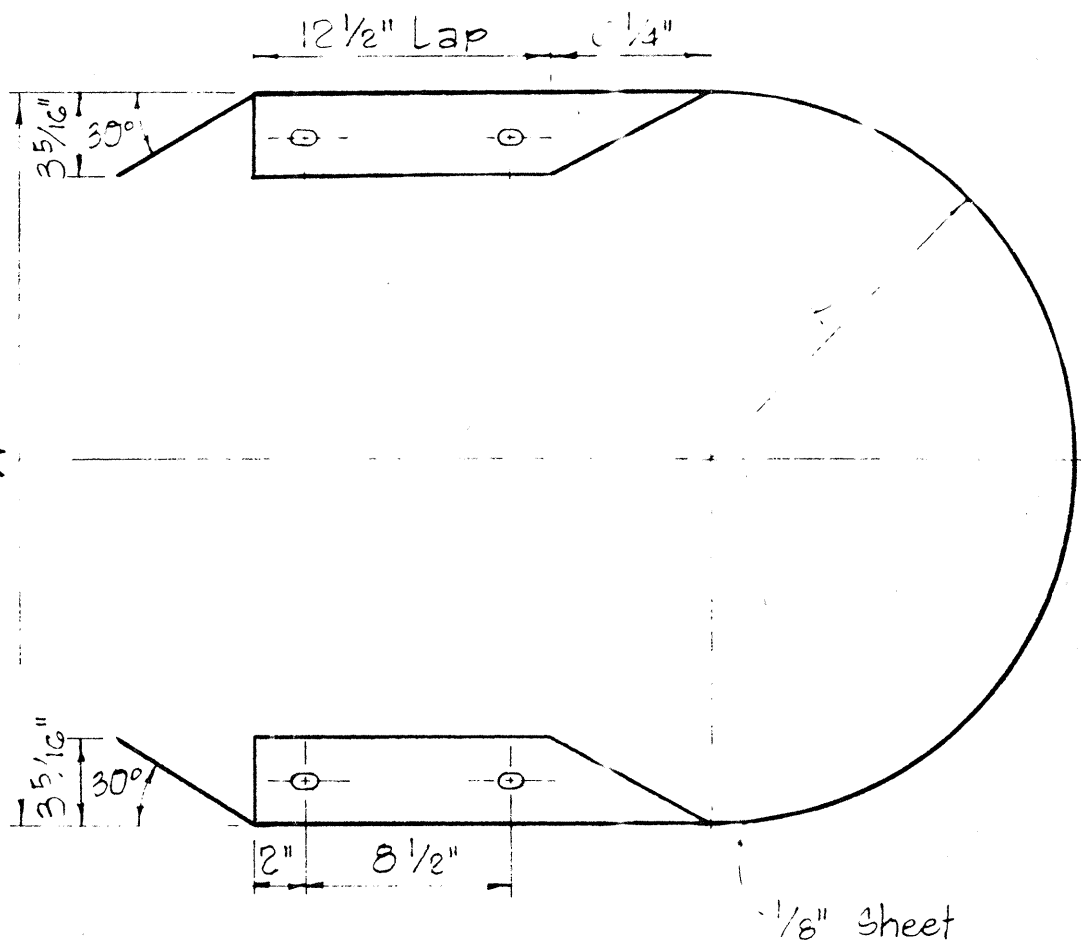
SPlice BOLT SLOT FOR SPECIAL END SHOE



POST BOLT SLOT

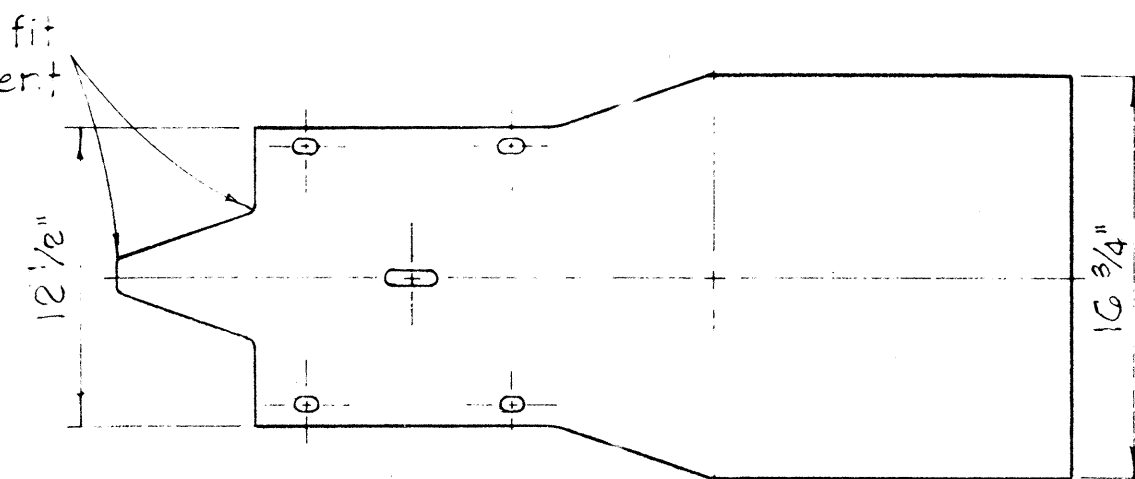


RAIL WASHER



MEDIAN END

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



NOTES:

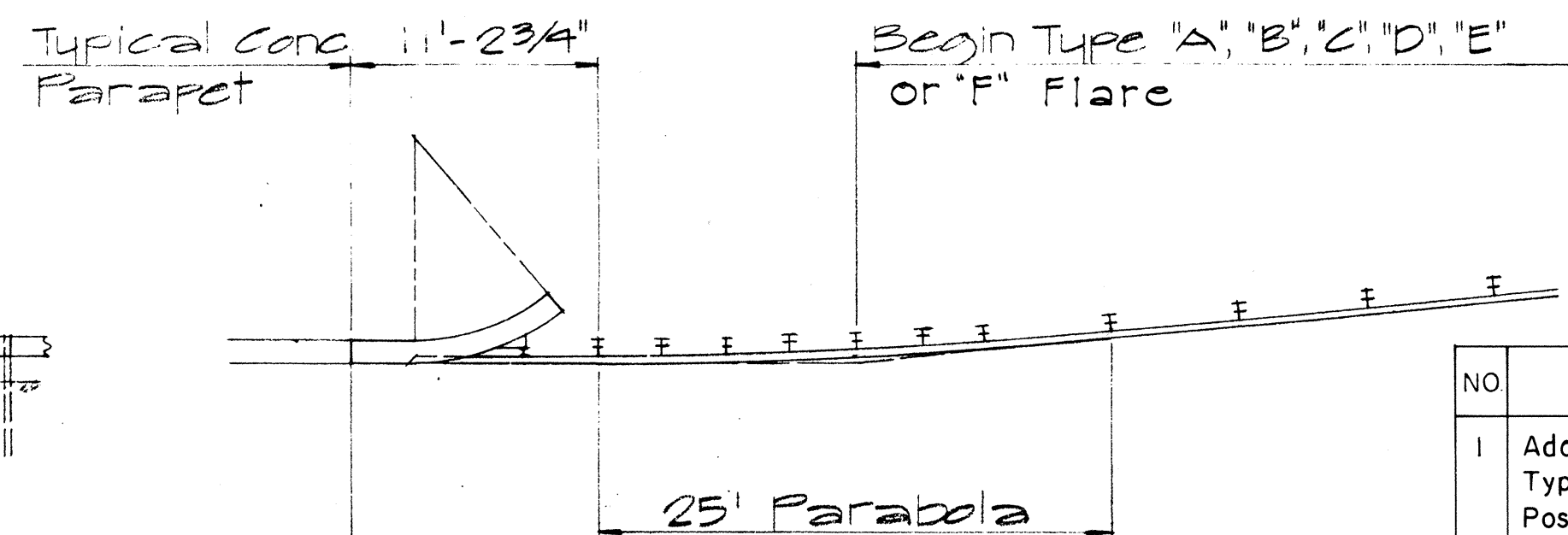
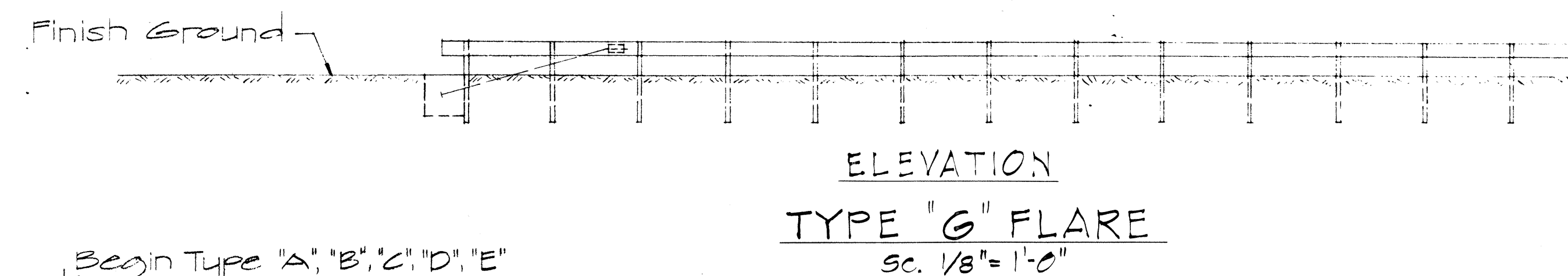
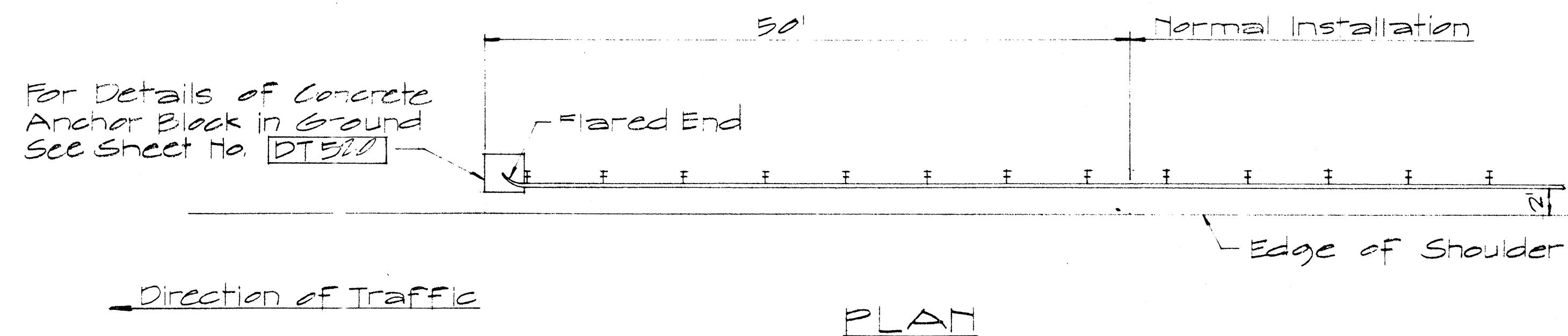
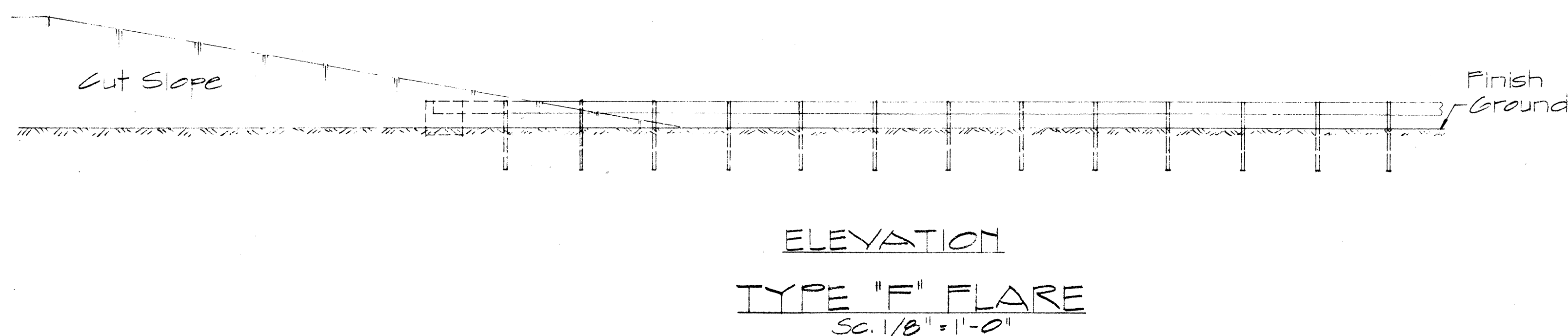
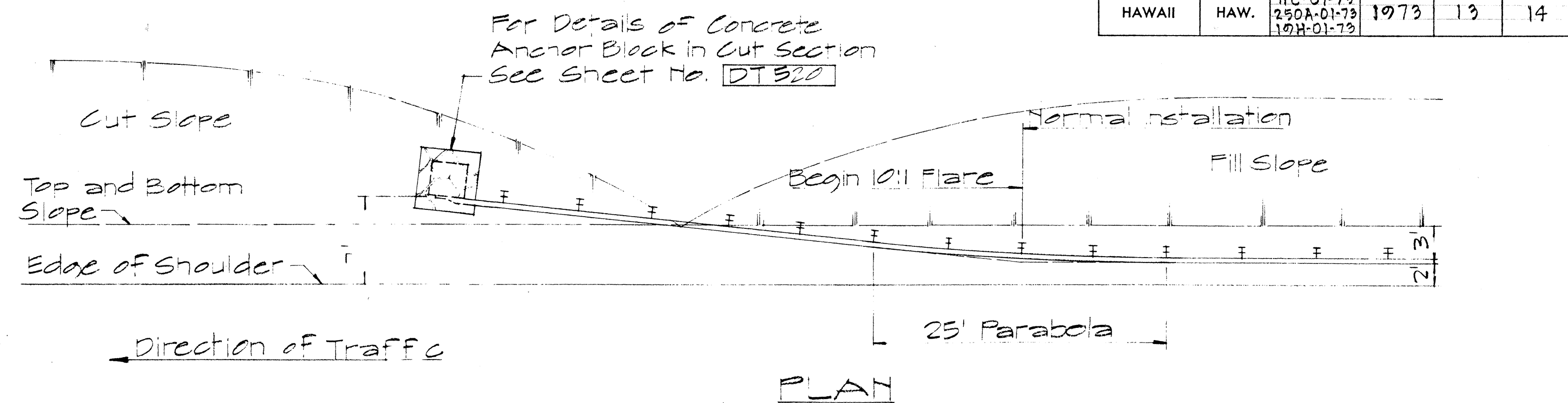
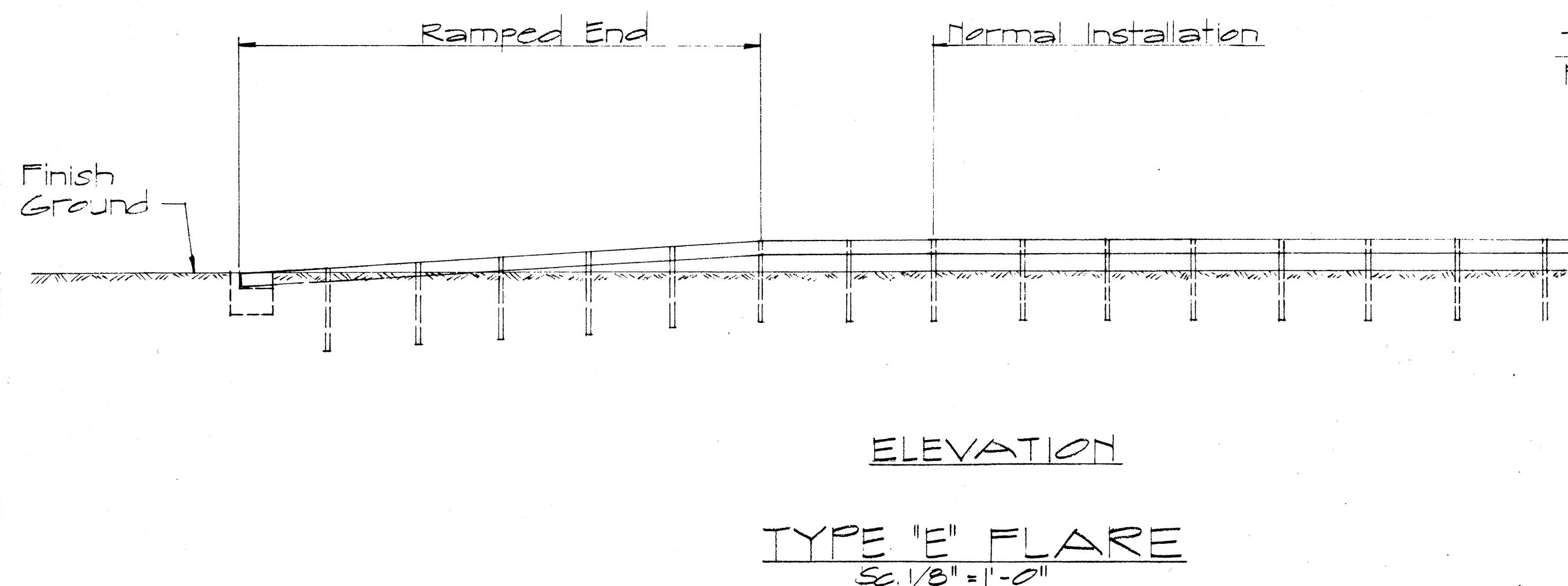
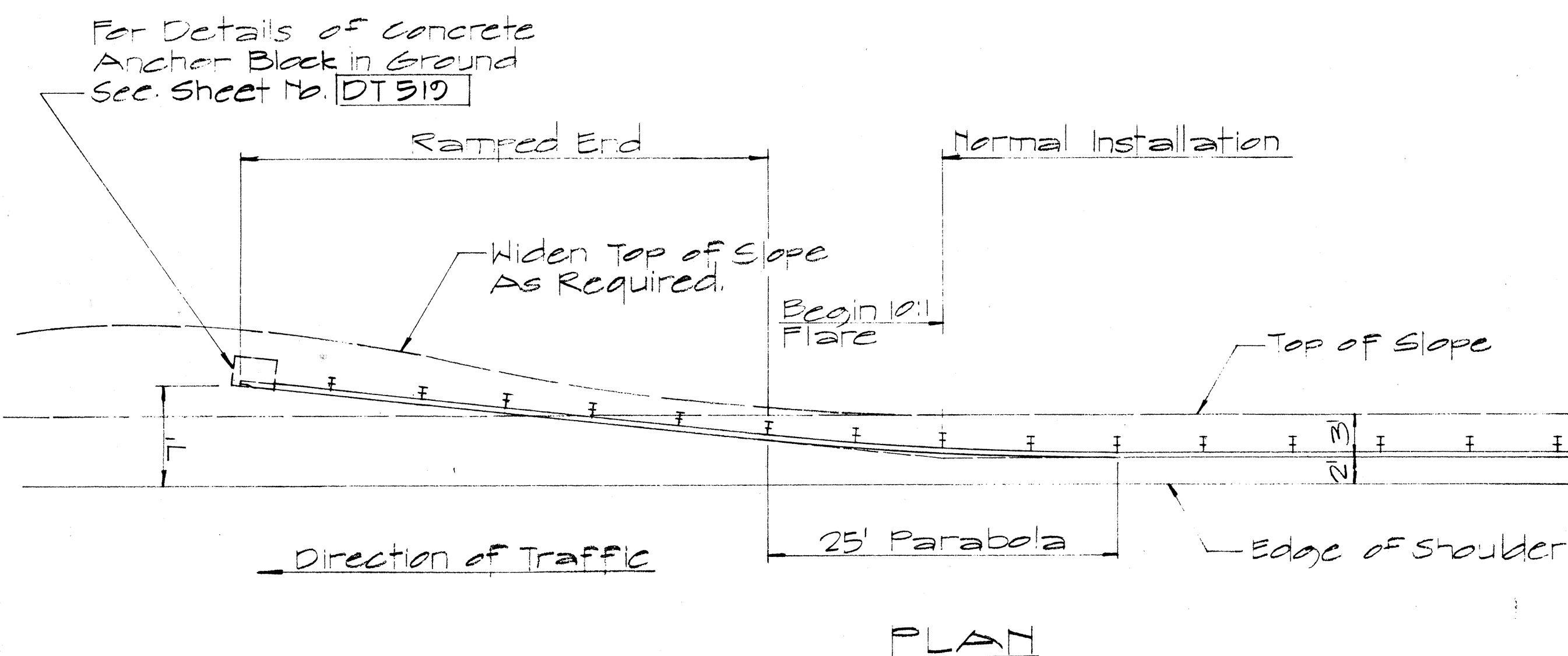
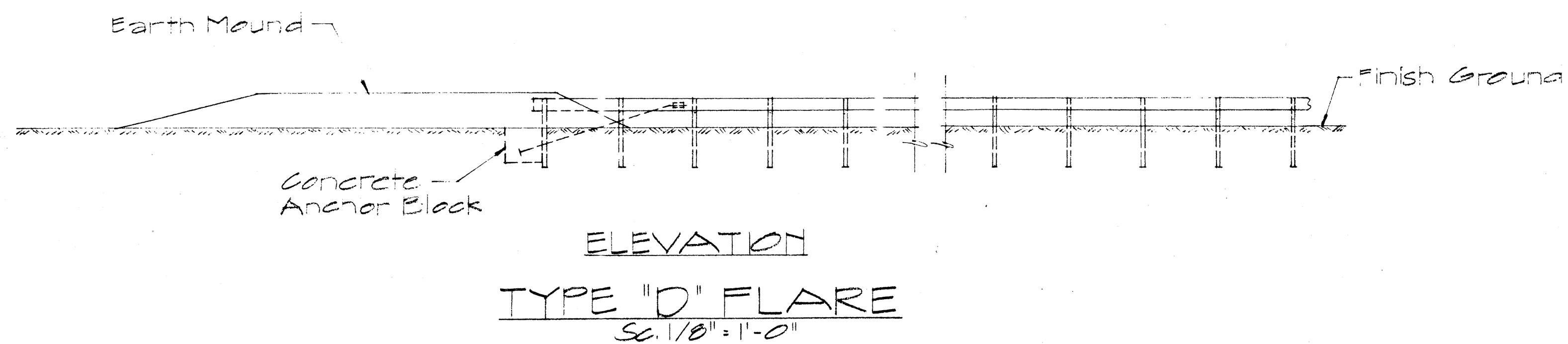
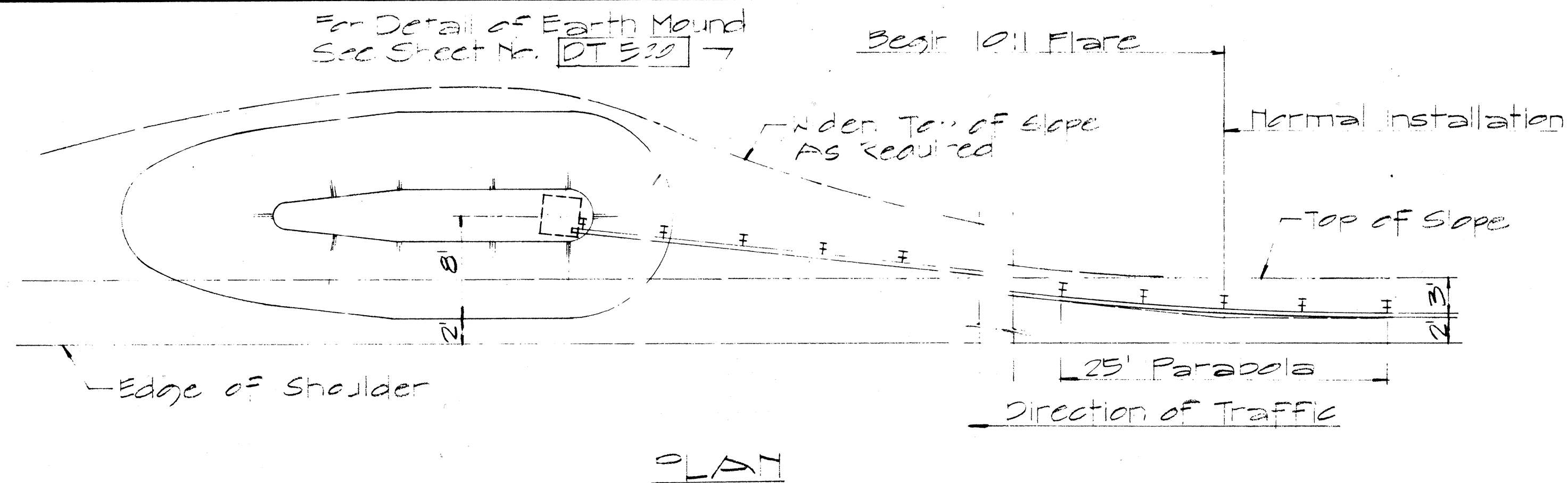
1. H.S. Bolts shall conform to the requirements of ASTM A 325.
2. Special End Shoe shall be fabricated from 10 Gage steel conforming to the requirements of AASHTO 150.

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"

NO	REVISION	APPROVED BY	DATE

DATE	
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.	11C-01-73 250A-01-73 10H-01-73	1973	13	14



TYPICAL LAYOUT PLAN OF END POST CONNECTION

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

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

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

NO.	REVISION	APPROVED BY	DATE
1	Additional Posts Added to Typical Layout Plan of End Post Connection	H.T.	4-12-72

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

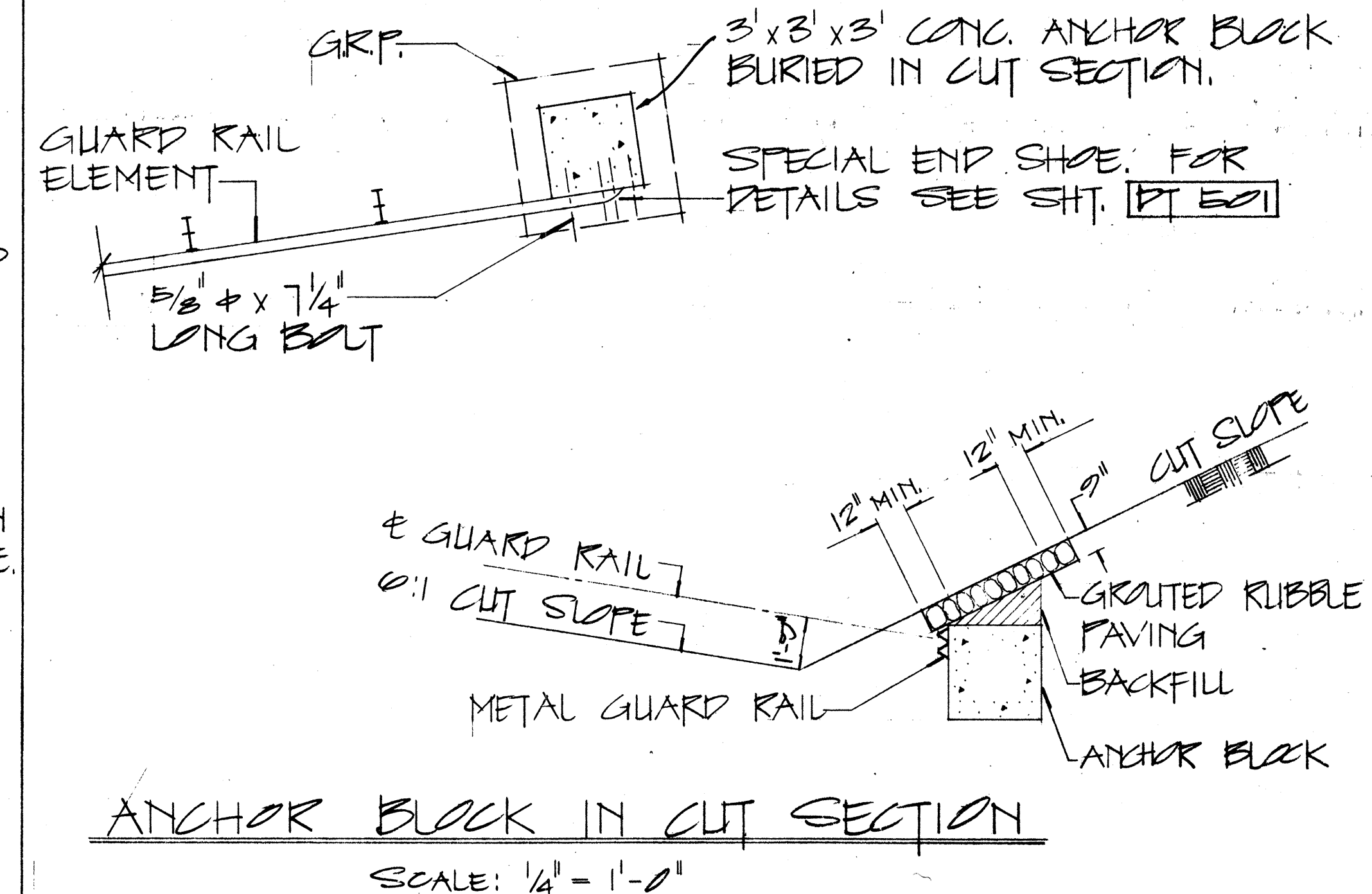
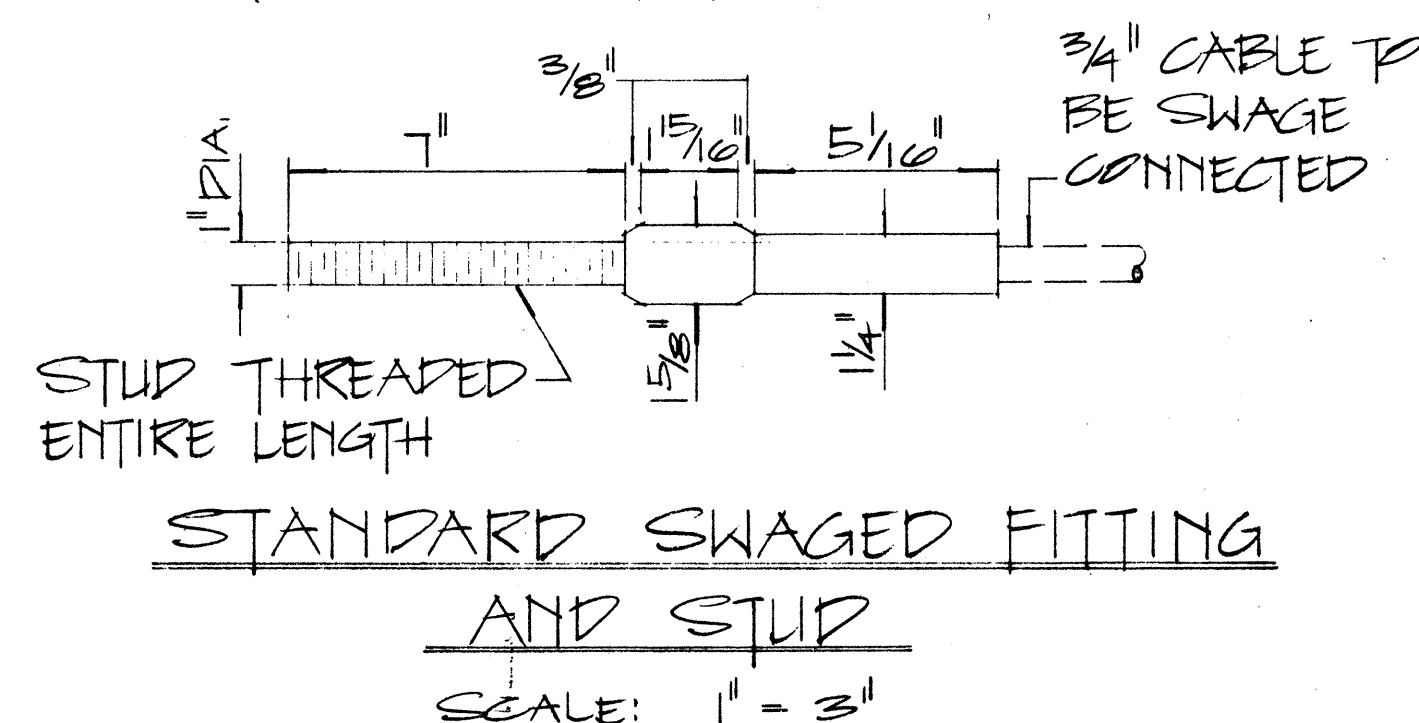
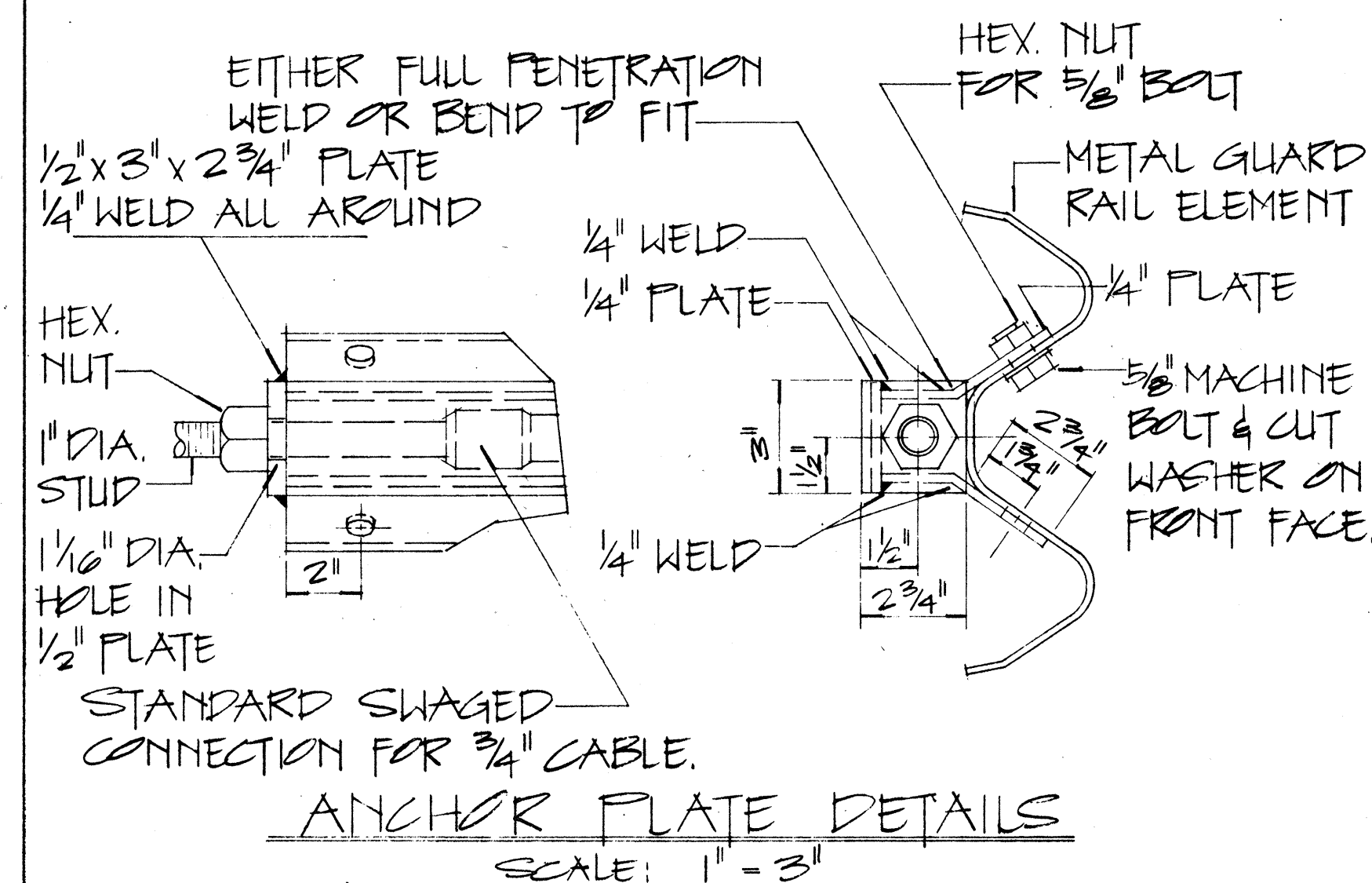
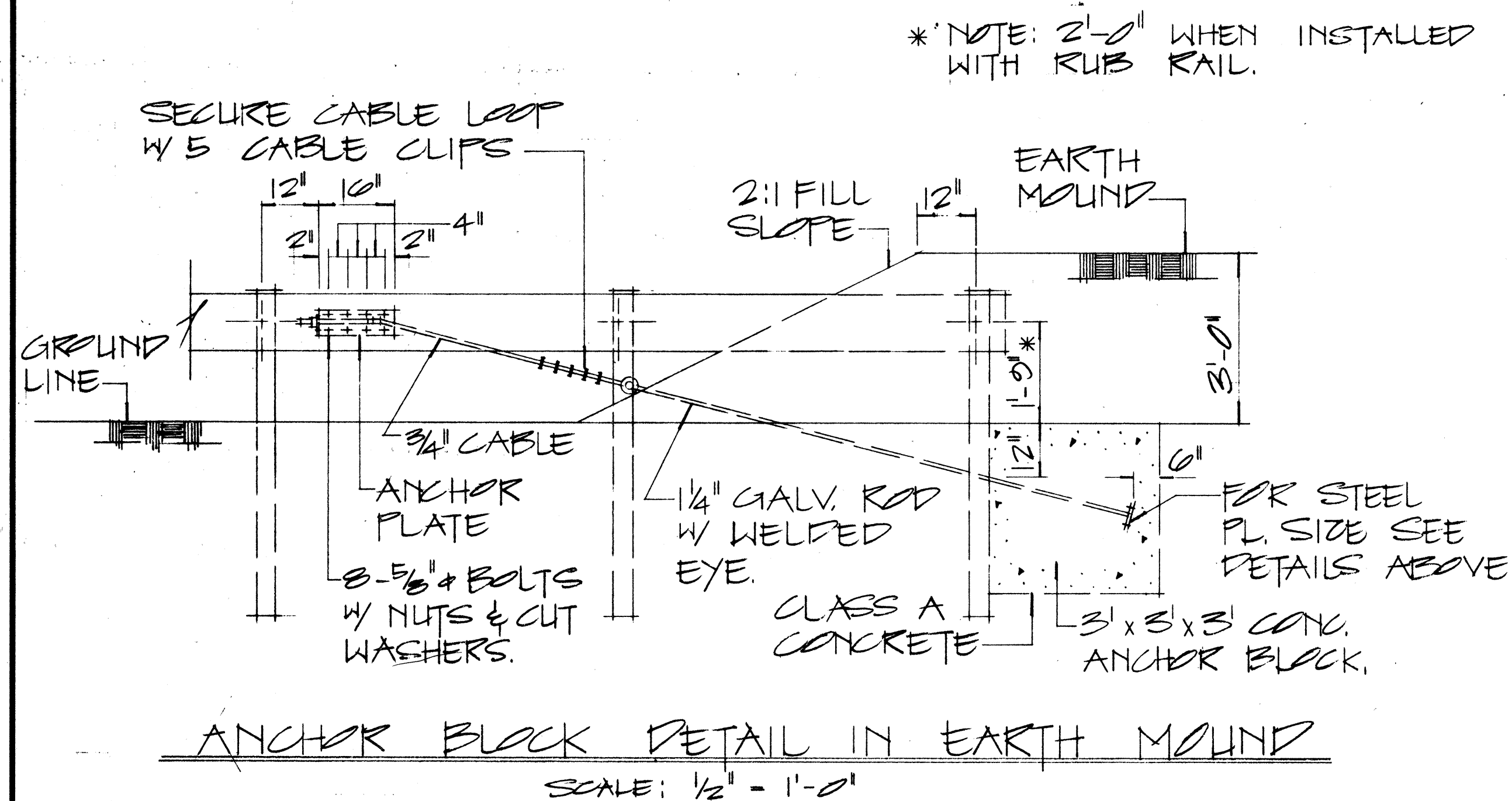
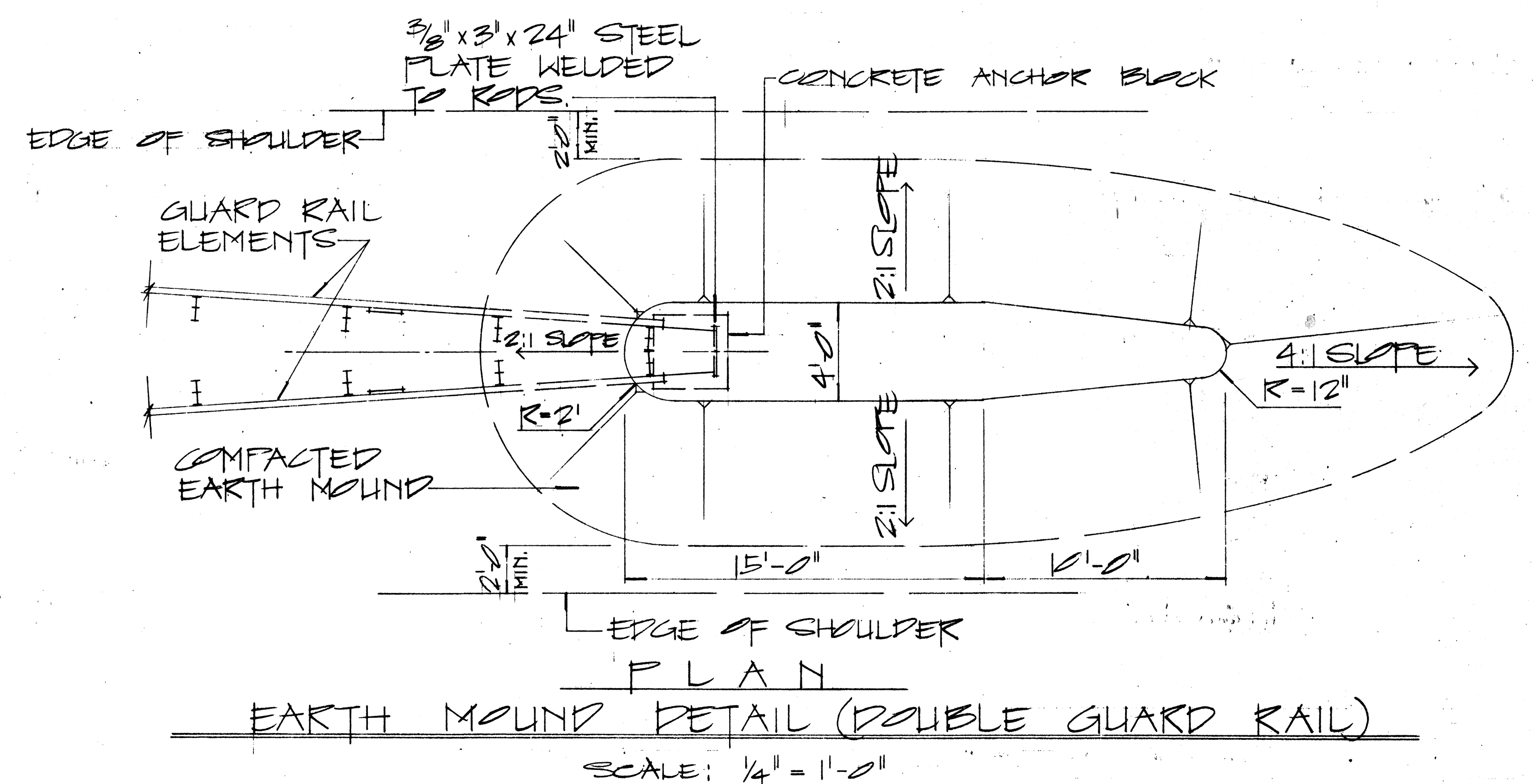
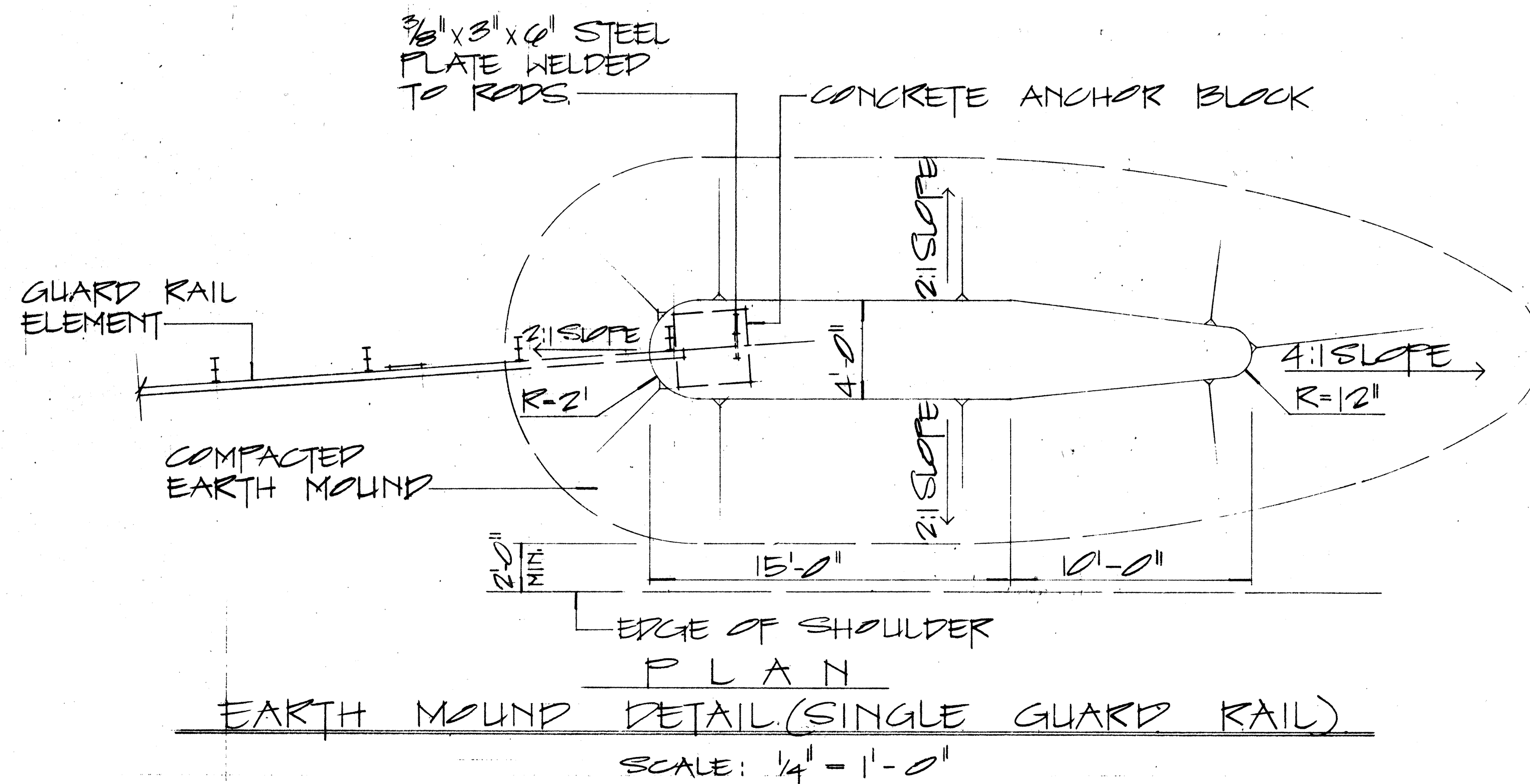
STANDARD DETAILS
 TRAILING END
 FLARE - ONE & TWO
 WAY ROADWAY

Scale: As Noted April 1969

SHEET No. 4 OF 5 SHEETS DT 517

DATE
 DRAWN BY
 DESIGNED BY
 NOTE BOOK
 CHECKED BY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	116-01-73 250A-01-73 10H-01-73	1973	14	14



- 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 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:

Eishi Tanaka 12/29/62
TRAFFIC ENGINEER DATE

APPROVED:

W. J. J. 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. 5 OF 5 SHEETS

DATE

DESIGNED BY

CHECKED BY

NOTED BY

ORIGINAL PLAN

NOTE BOOK