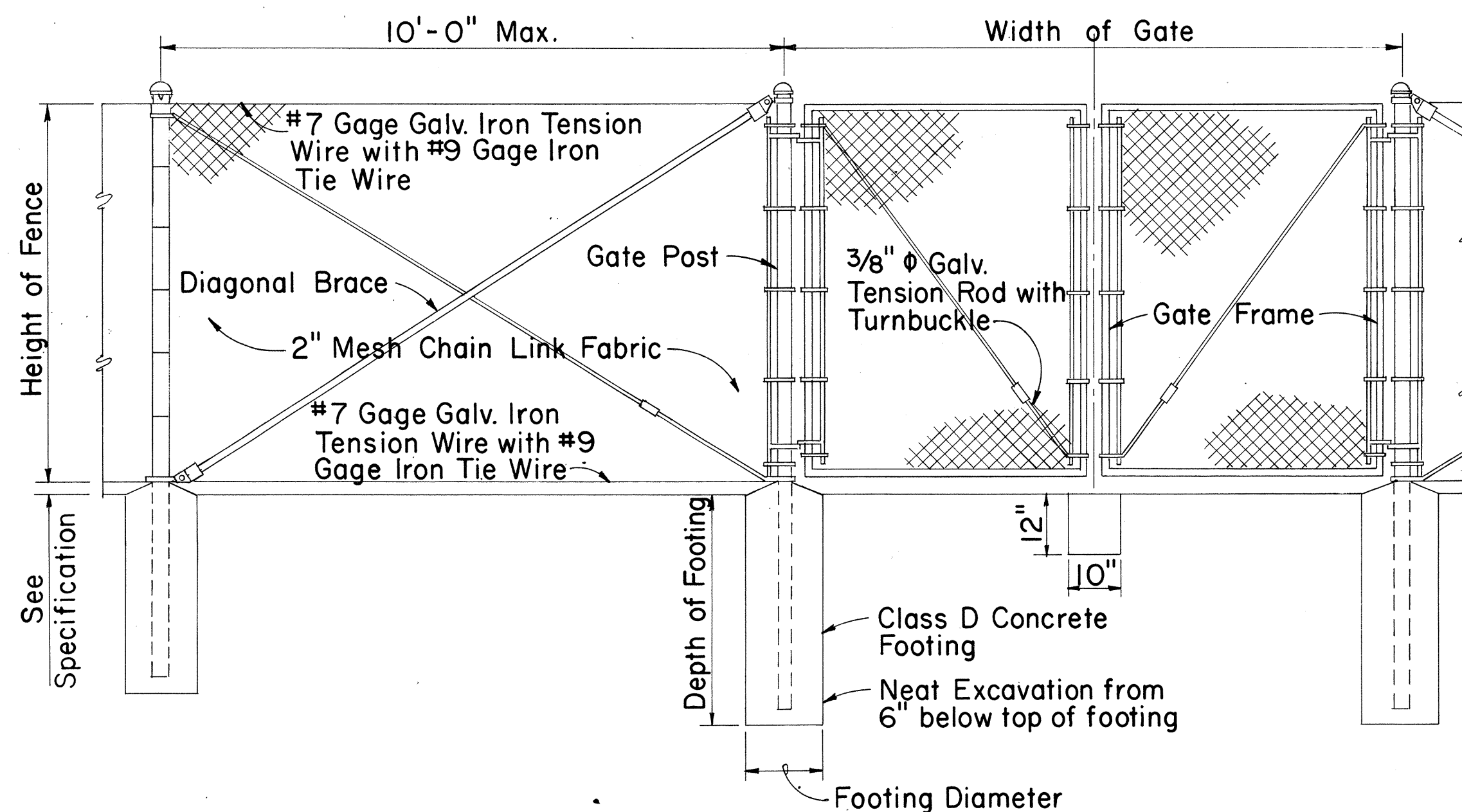


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01	1977	4	20



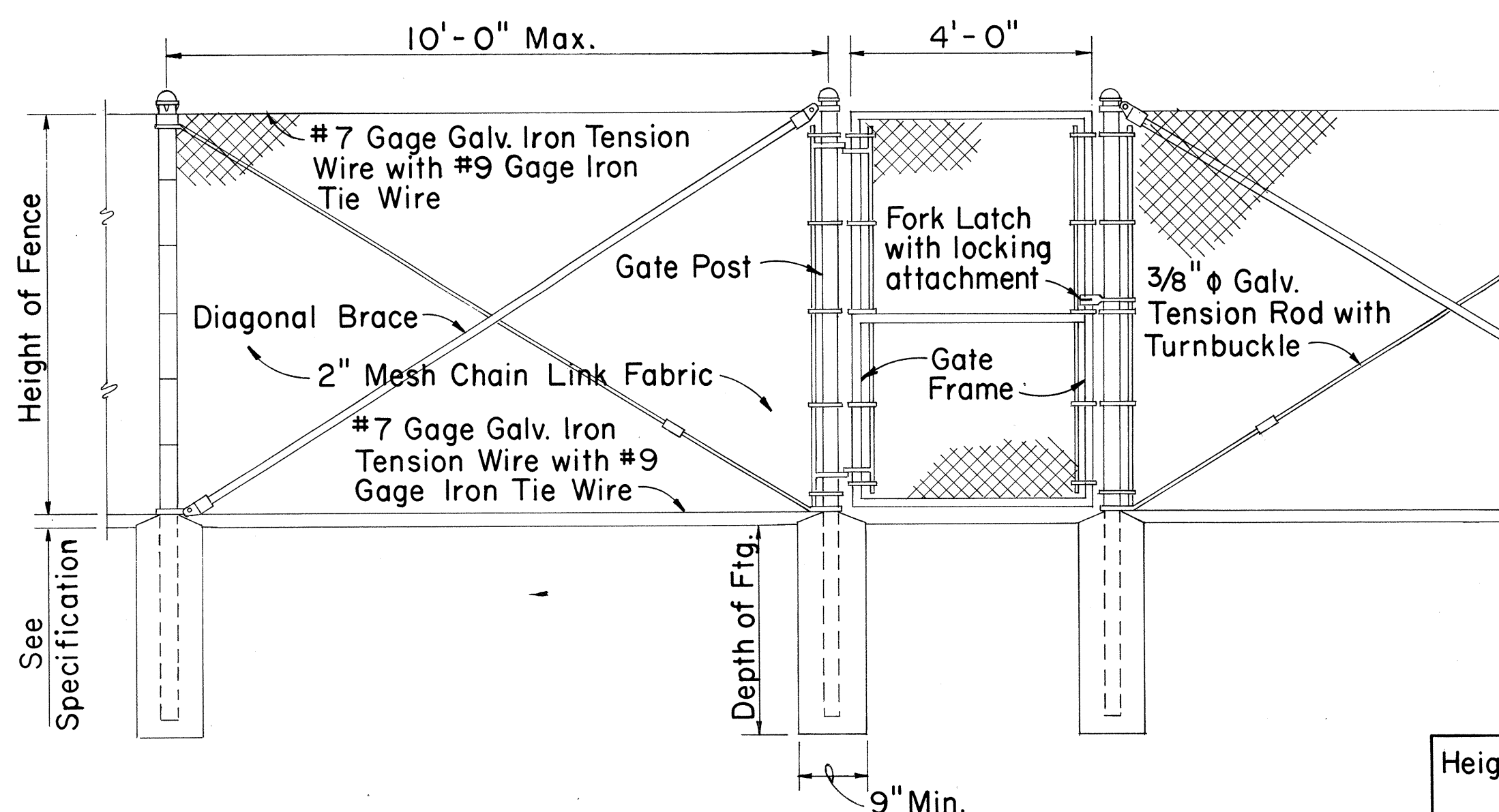
LINE POST

GATE POST

GATE POST

DETAIL OF CHAIN LINK GATE

- NOTE: 1. Gate fork latch and lock, flush plate and anchor, and plunger shall be installed with Gates, and shall be considered as incidental to Chain Link Fence Gate.
2. Gate frames shall be mitered and welded at corners.
3. Fence detail not shown shall be in accordance with the Standard Specifications.

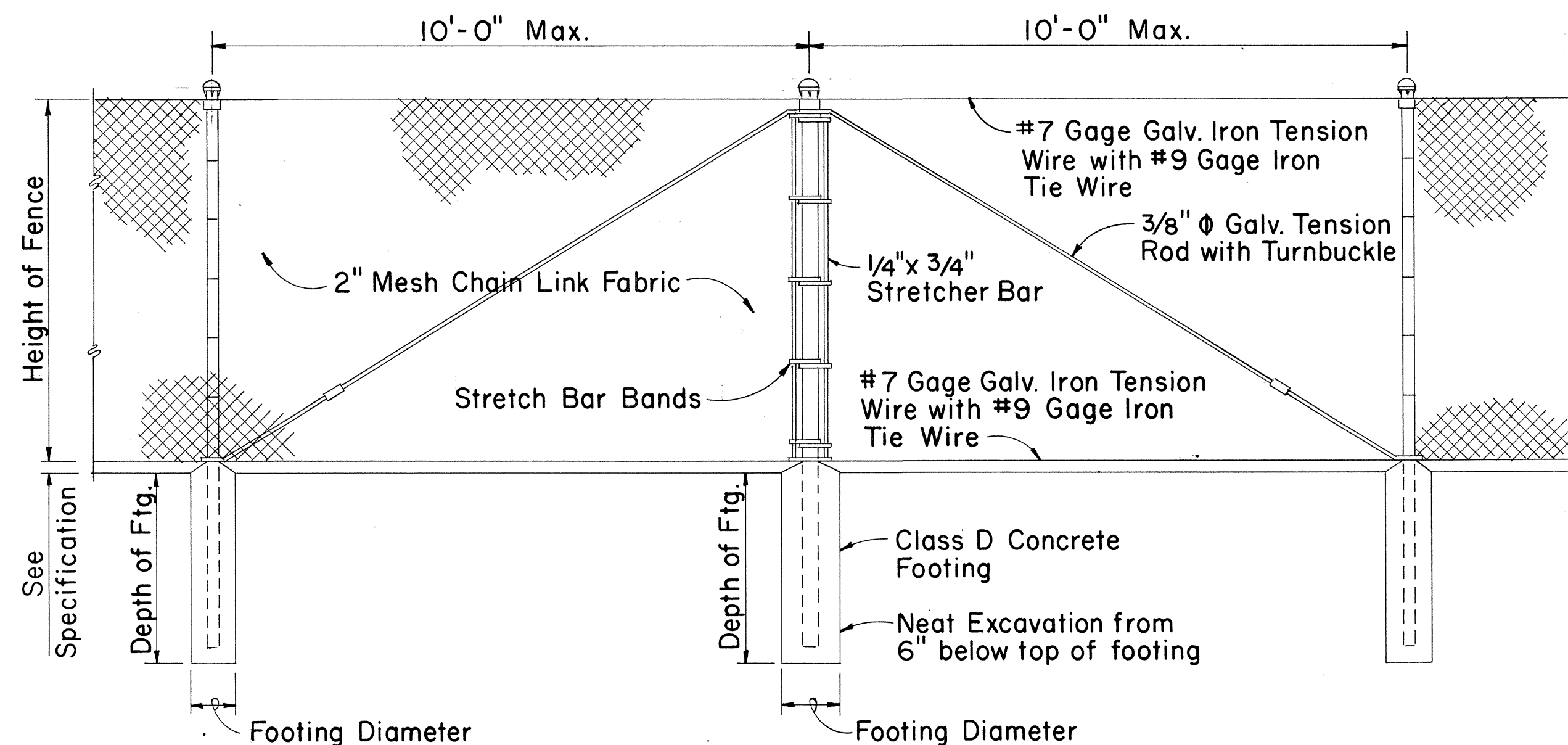


LINE POST

GATE POST

GATE POST

DETAIL OF 4 FT. CHAIN LINK GATE

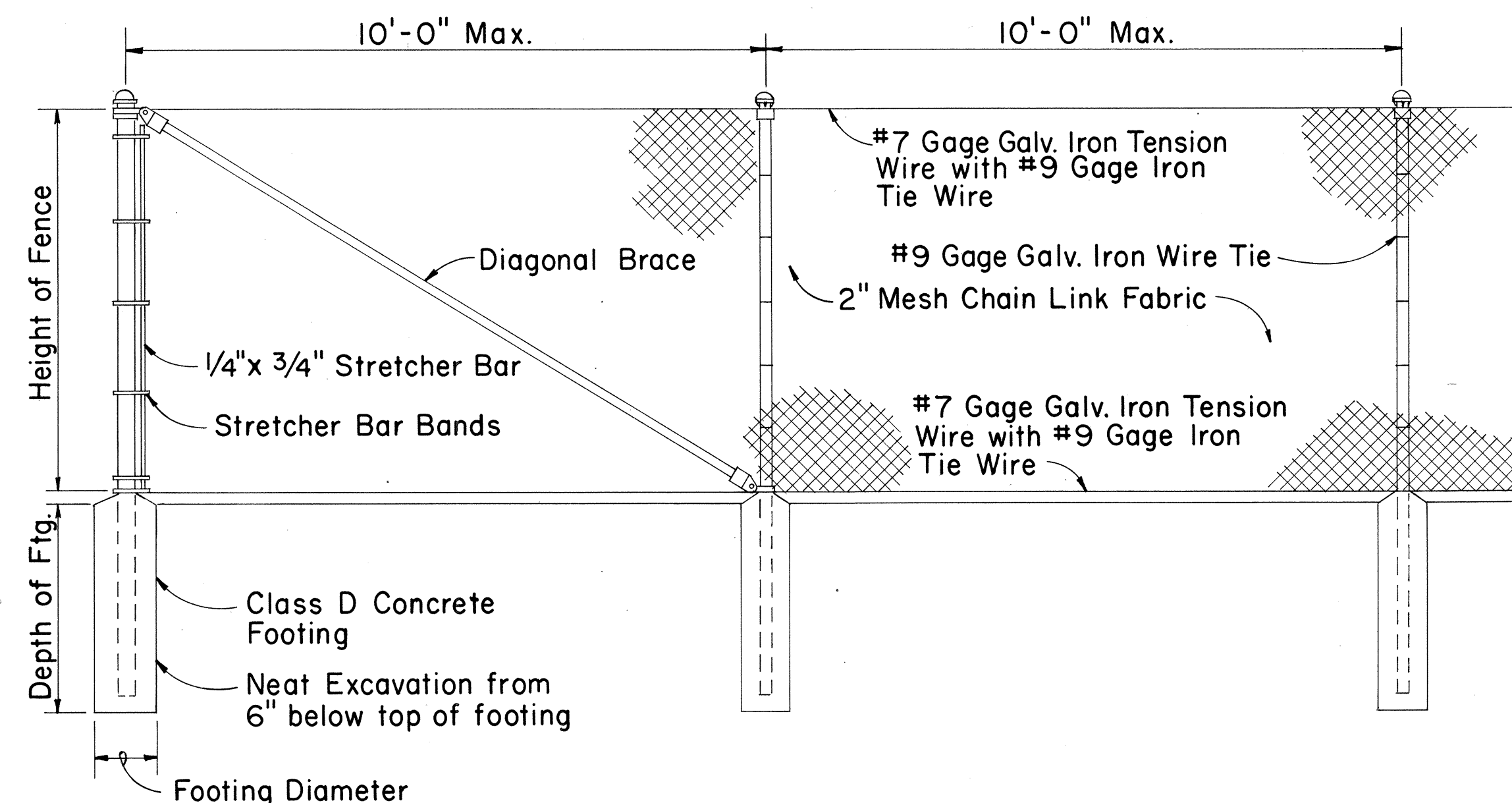


LINE POST

PULL POST

LINE POST

TYPICAL SECTION
(WITH CONCRETE FOOTING)



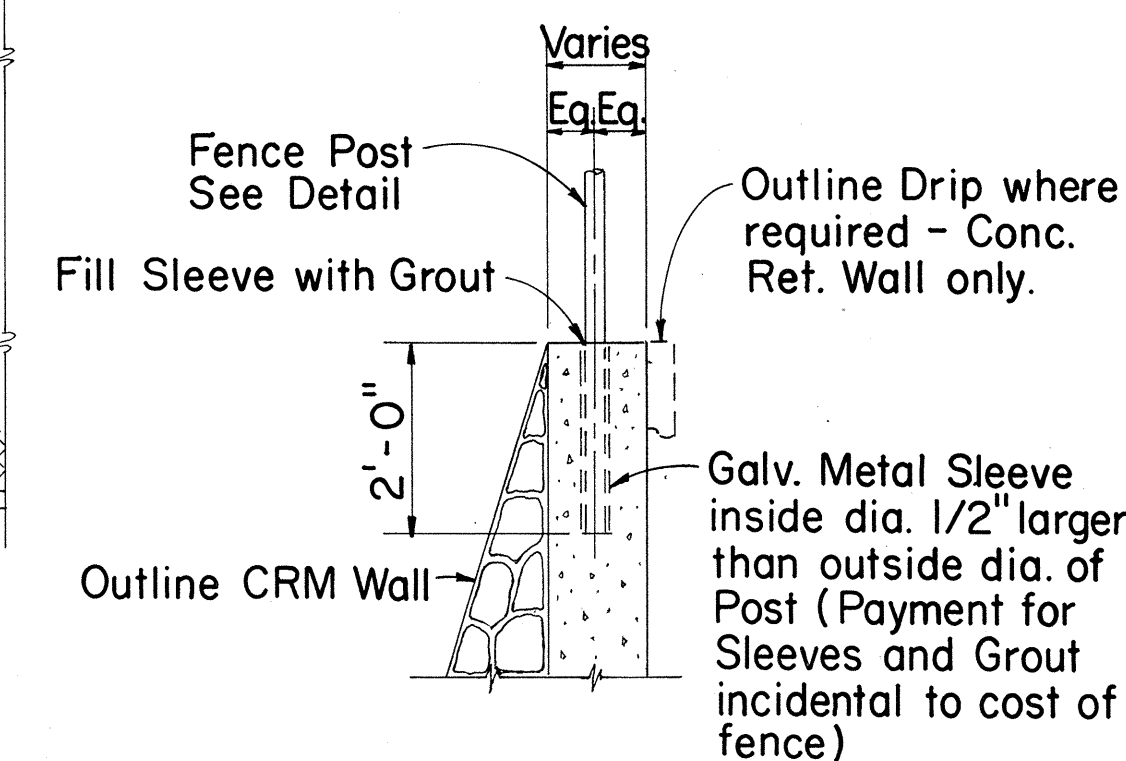
END POST

LINE POST

LINE POST

CHAIN LINK FENCE DETAILS

Height of Fence	Minimum Depth of Footing		Minimum Footing Diameter	
	Line Post	Corner, Pull, End and Gate Posts	Line Post	Corner, Pull and End Posts
3'	2'-0"	2'-6"	8"	8"
4'	2'-6"	2'-6"	8"	8"
5'	3'-0"	3'-0"	8"	8"
6'	3'-0"	3'-0"	8"	9"



TYPICAL SECTION
(ON CRM & CONC. RET. WALL)

APPROVAL RECOMMENDED:
M. H. H. H. 12-4-69
HIGHWAY DESIGN ENGINEER DATE

APPROVED:
M. H. H. H. 12-10-69
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

CHAIN LINK FENCE
(WITHOUT TOPRAIL)

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

SHEET No. 1 OF 11 SHEETS DD 607.2

DATE	
SURVEY PLOTTED BY	
DRAWN BY	
DESIGNED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	
No.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-77M	1977	5	20



CW20-1a 48" x 48"



CW20-2d 48" x 48"



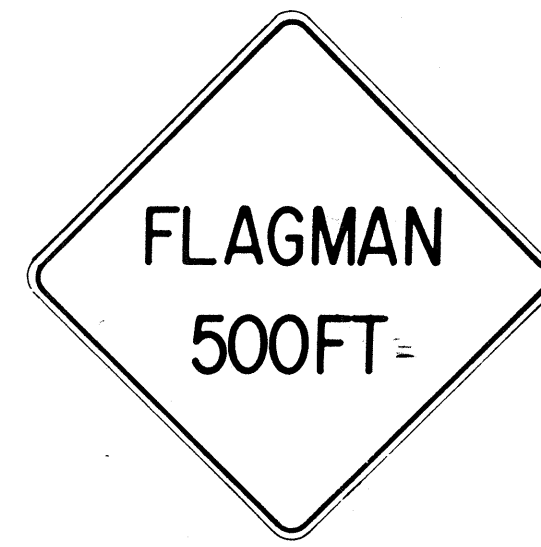
CW20-3b 48" x 48"



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"



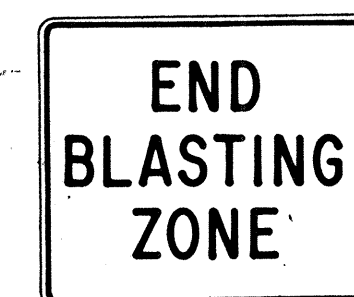
CW21-6 30" x 30"



CW22-1b 48" x 48"



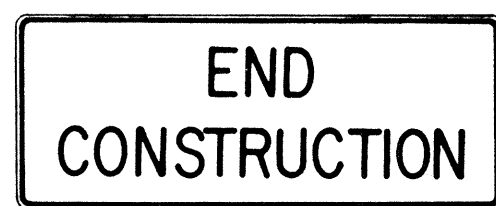
CW22-2 42" x 36"



CW22-3 42" x 36"



CG20-1(5) 60" x 36"



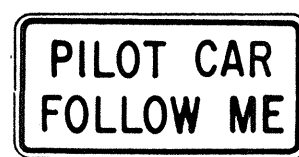
CG20-2 60" x 24"



CM4-9(R) 30" x 24"



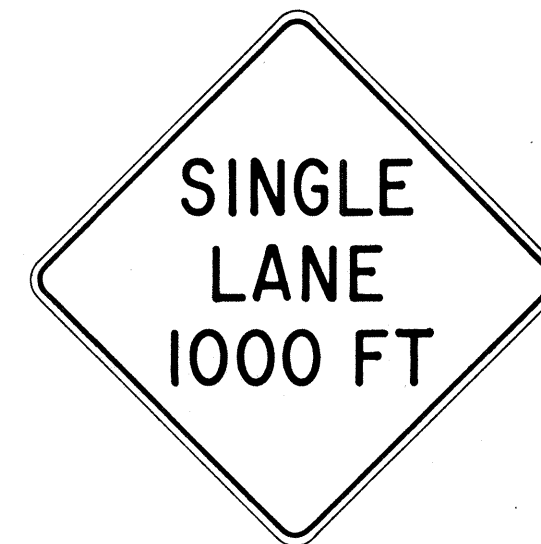
CM4-10(R) 48" x 18"



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 $\frac{3}{8}$ " 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:

TRAFFIC ENGINEER 3/21/72
DATE

APPROVED:

ASSISTANT CHIEF, ENGINEERING 3/23/72
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

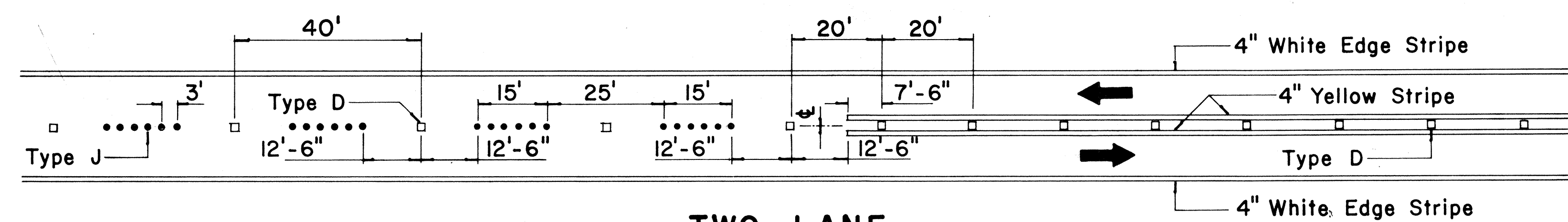
STANDARD DETAILS
CONSTRUCTION SIGNS

NOT TO SCALE

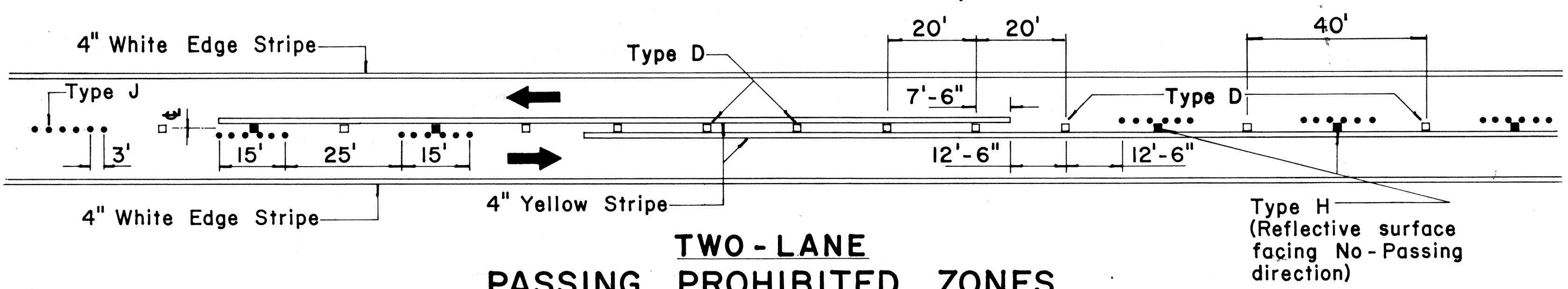
SHEET No. 2 OF 11 SHEETS DT 104

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

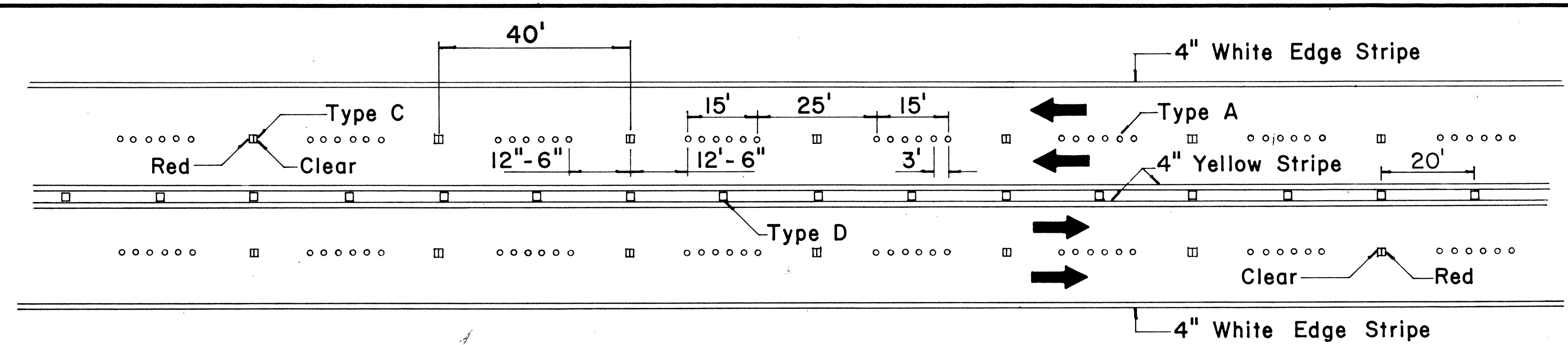
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-77M	1977	6	20



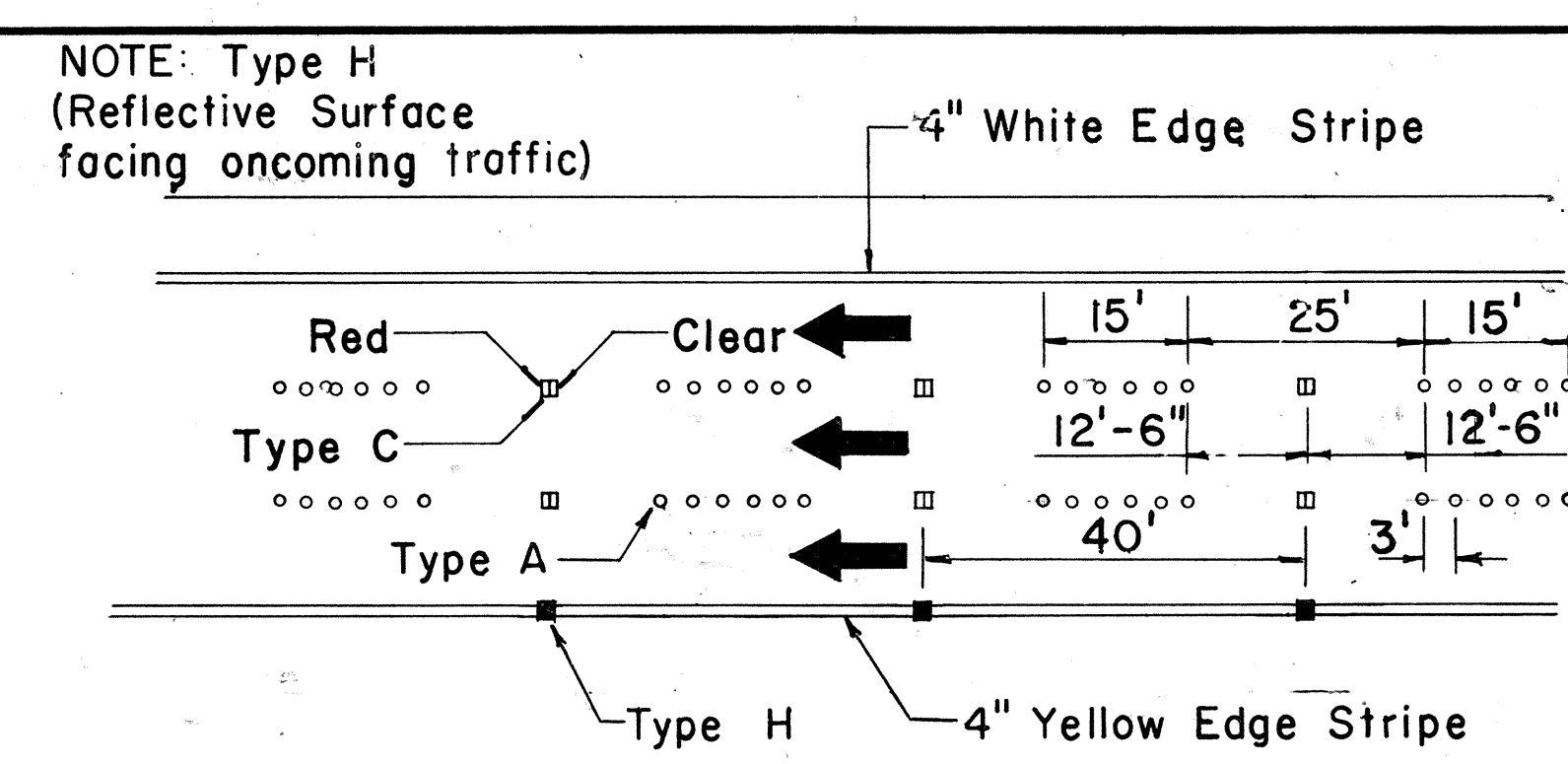
**TWO - LANE
PASSING PERMITTED AND PASSING PROHIBITED**



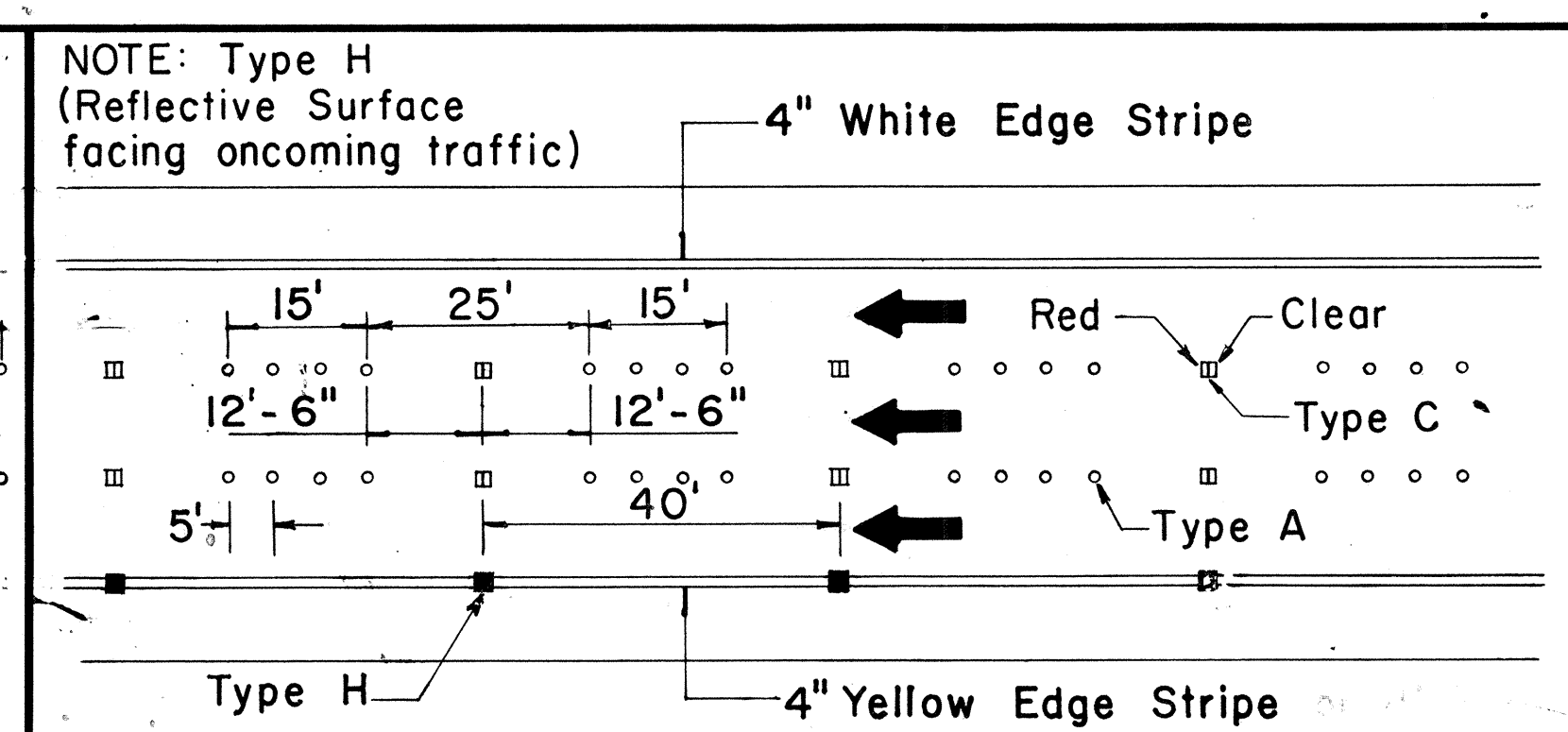
**TWO - LANE
PASSING PROHIBITED ZONES**



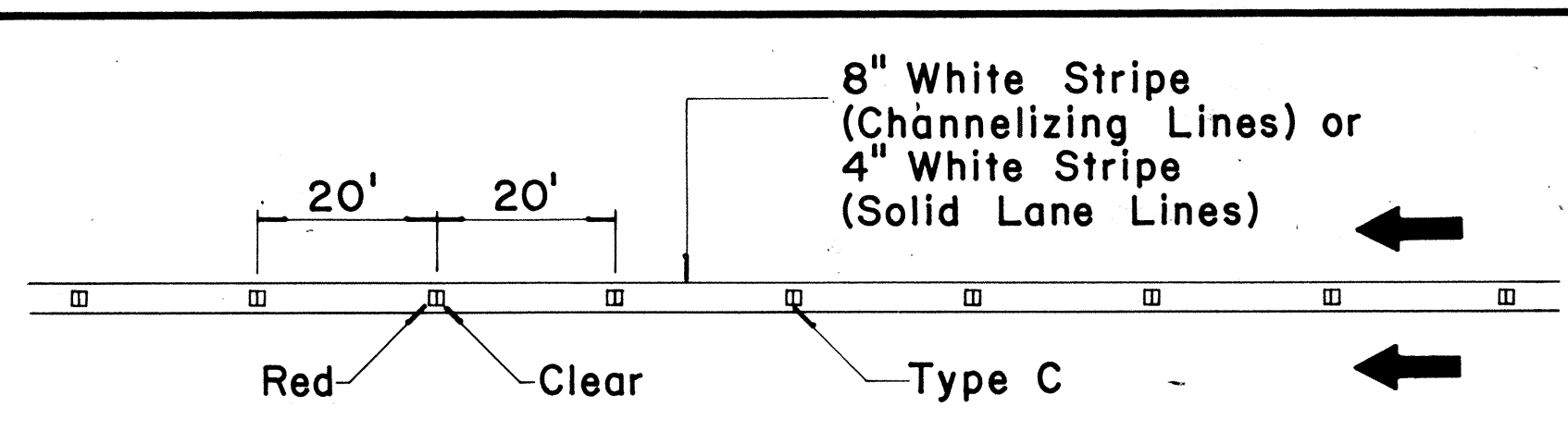
**MULTI - LANE
LANE LINES AND CENTER LINE**



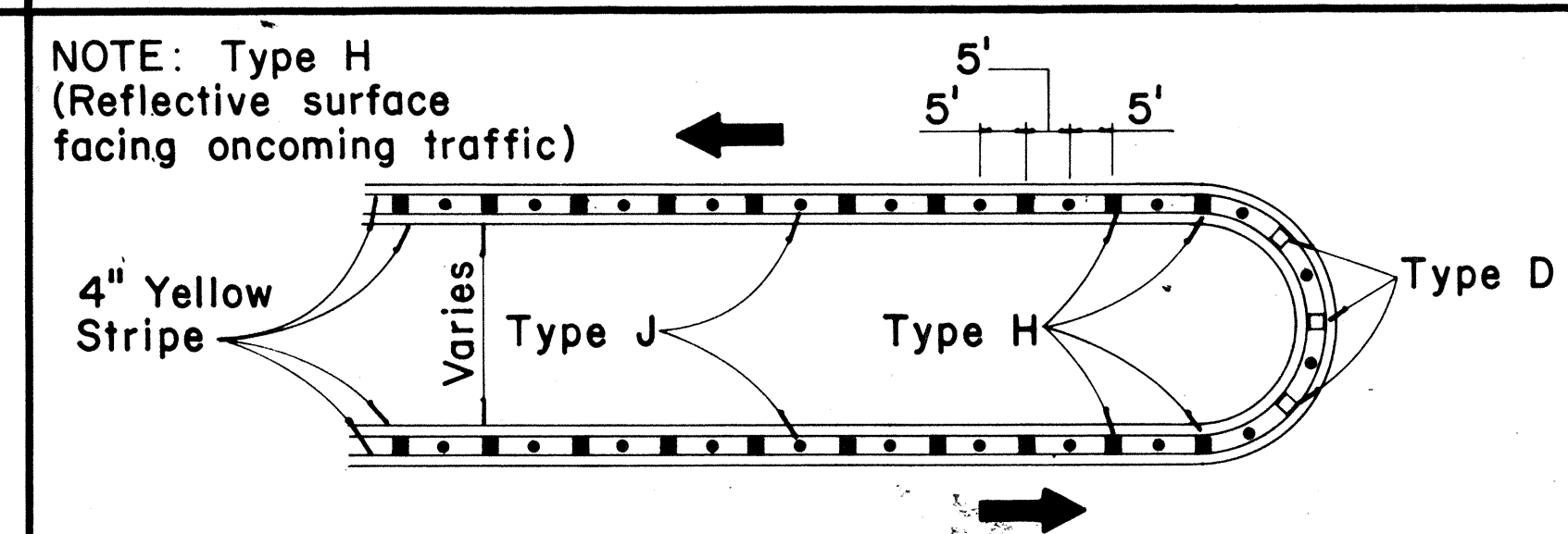
DIVIDED HIGHWAY LANE LINES



FREEWAY LANE LINES



**CHANNELIZING LINES
OR SOLID LANE LINES**



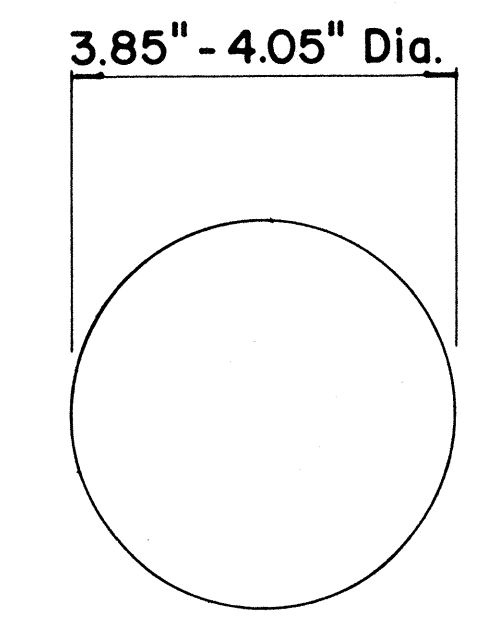
MEDIAN NOSE DELINEATION

TWO - LANE

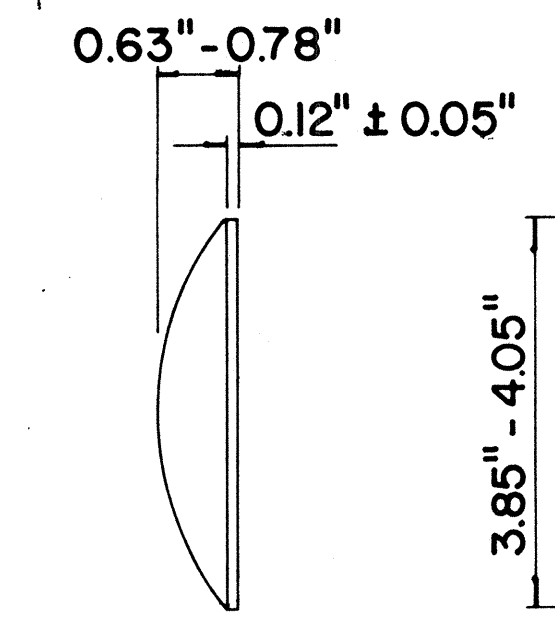
MULTI - LANE

**DIVIDED HIGHWAY
AND
FREEWAY**

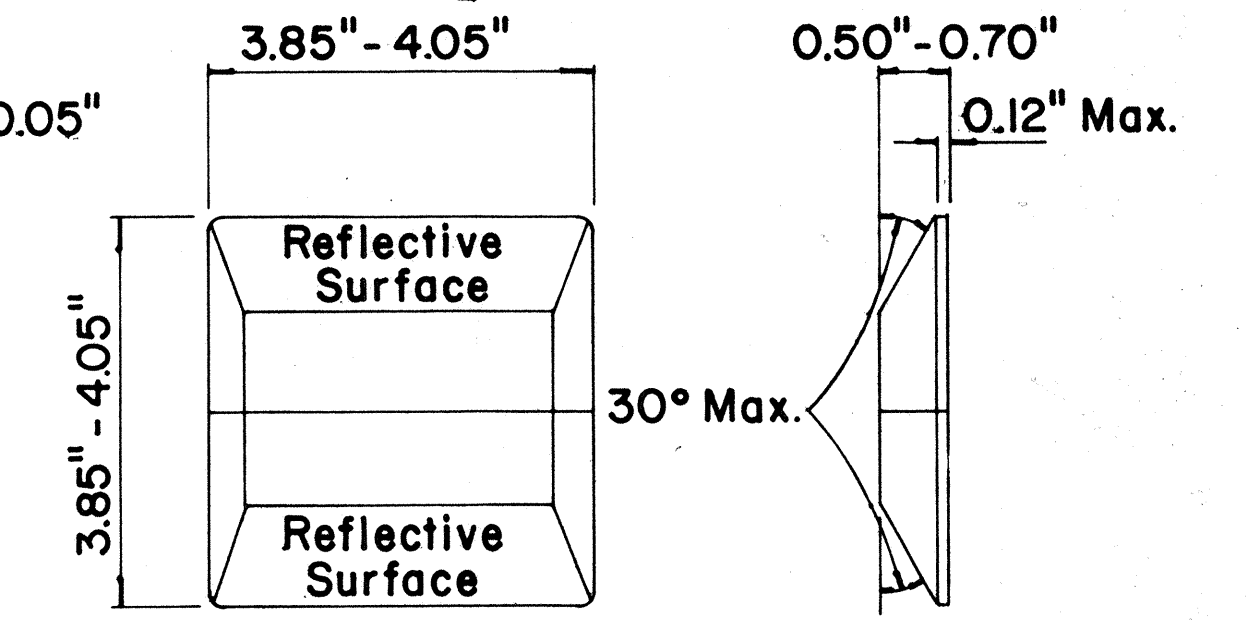
MISCELLANEOUS



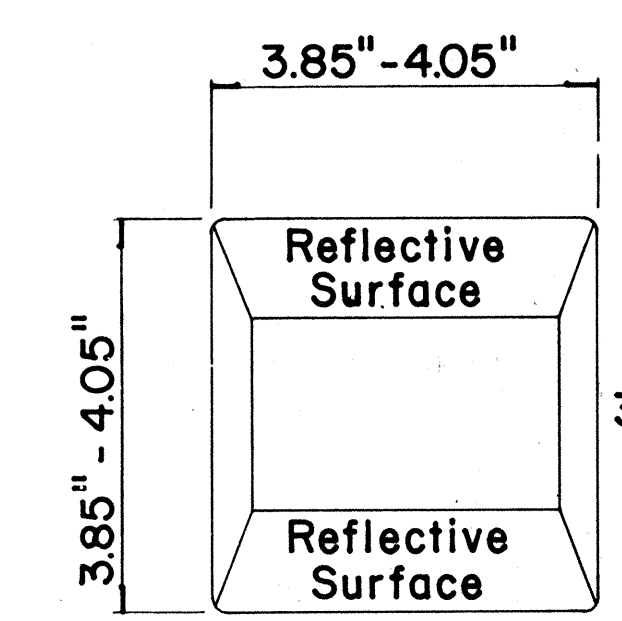
**TYPE A
NON-REFLECTIVE WHITE MARKER**



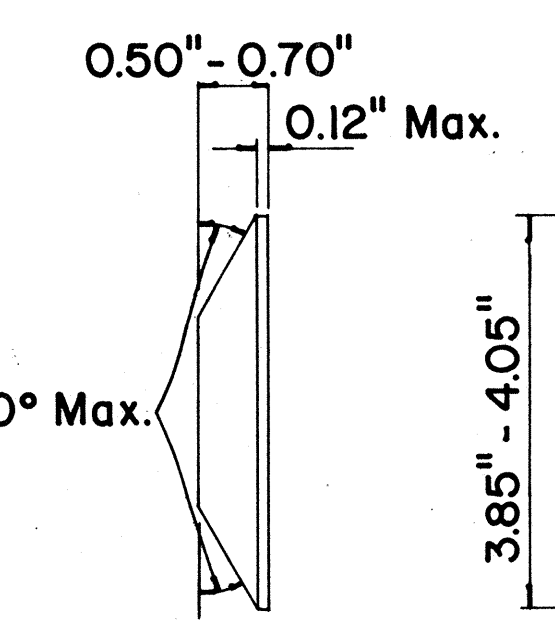
**TYPE J
NON-REFLECTIVE YELLOW MARKER**



**TYPE C
RED-CLEAR REFLECTIVE MARKER**



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



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

GENERAL NOTES

1. Painted stripes to be done by Contractor unless otherwise specified.

LEGEND

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

APPROVAL RECOMMENDED:
E. T. Tanaka 11/18/71
TRAFFIC ENGINEER DATE

APPROVED:
Shirley S. Sato 11/18/71
ASSISTANT CHIEF, ENGINEERING DATE

No.	REVISION	APPROVED BY	DATE
1	Add reflector marker in each line gap.	H.T.	10-21-72
2	Revised General Notes.	H.T.	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.T.	5-22-74

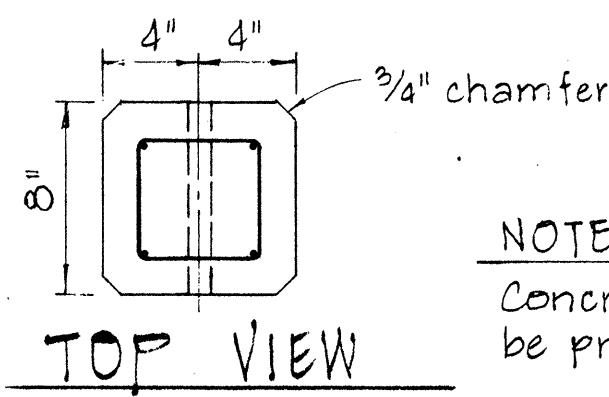
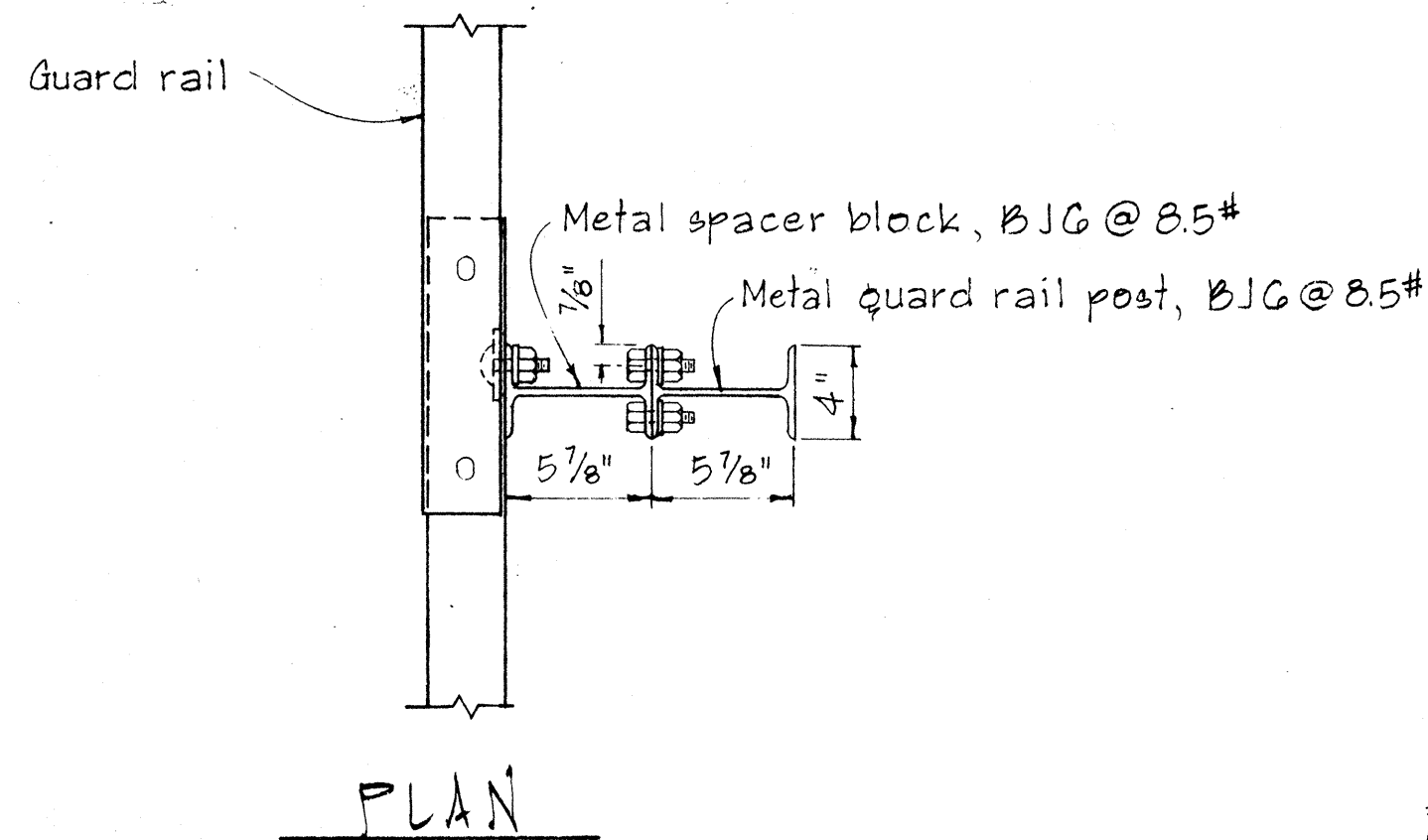
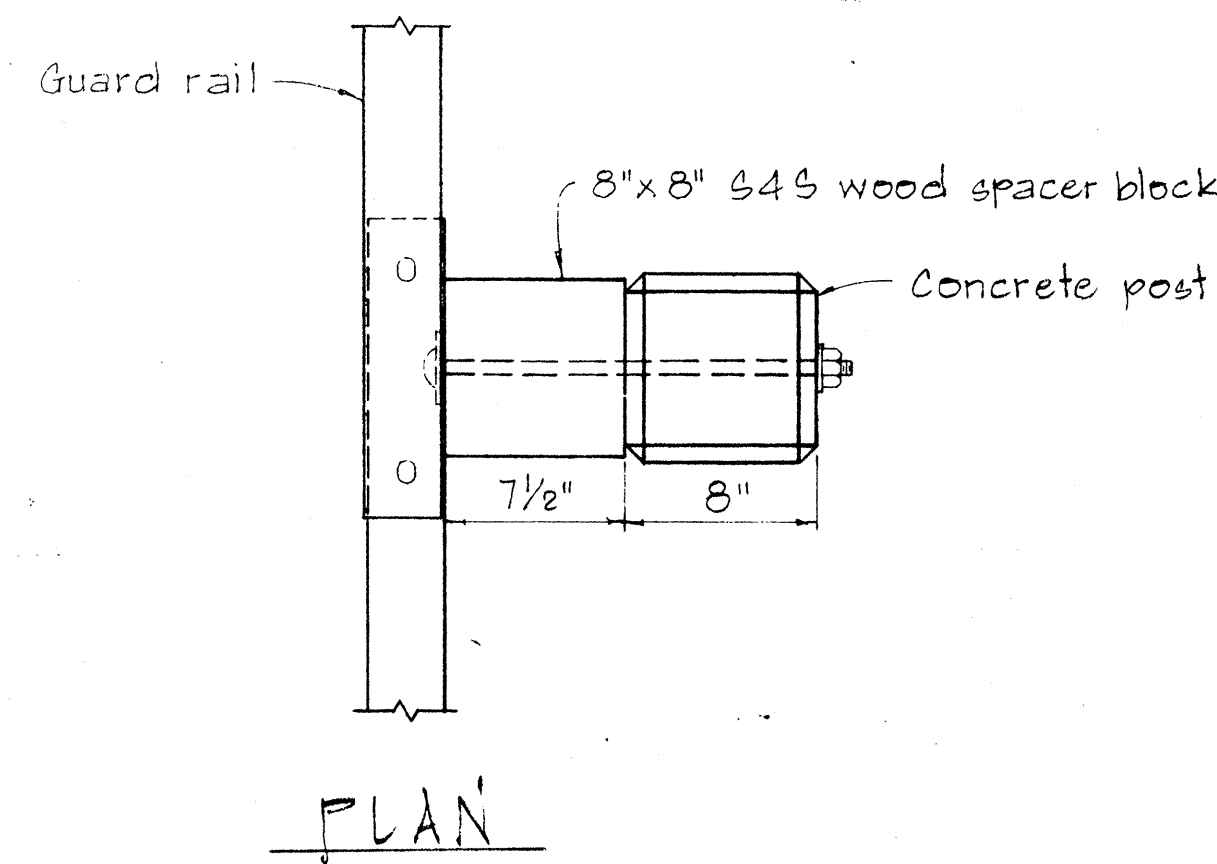
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**STANDARD DETAILS
RAISED PAVEMENT MARKERS**

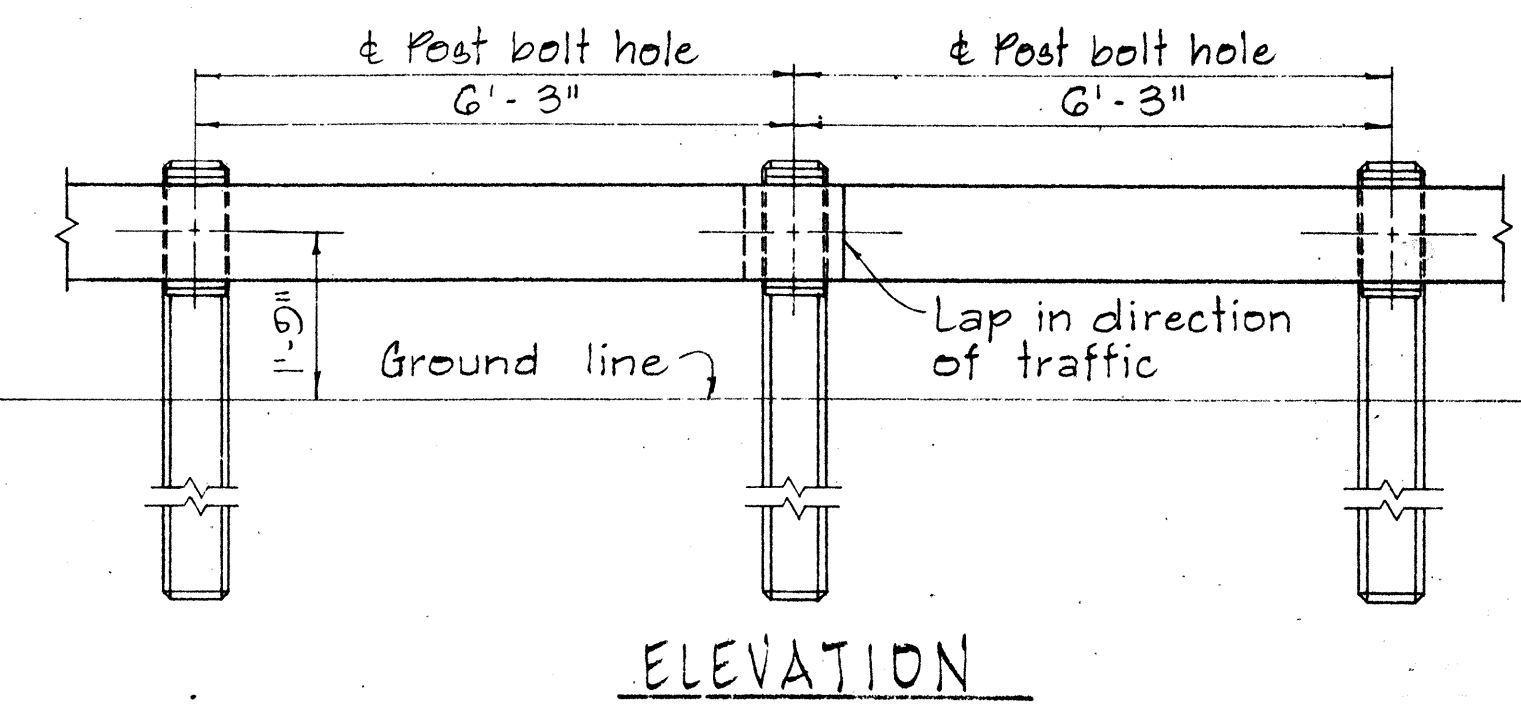
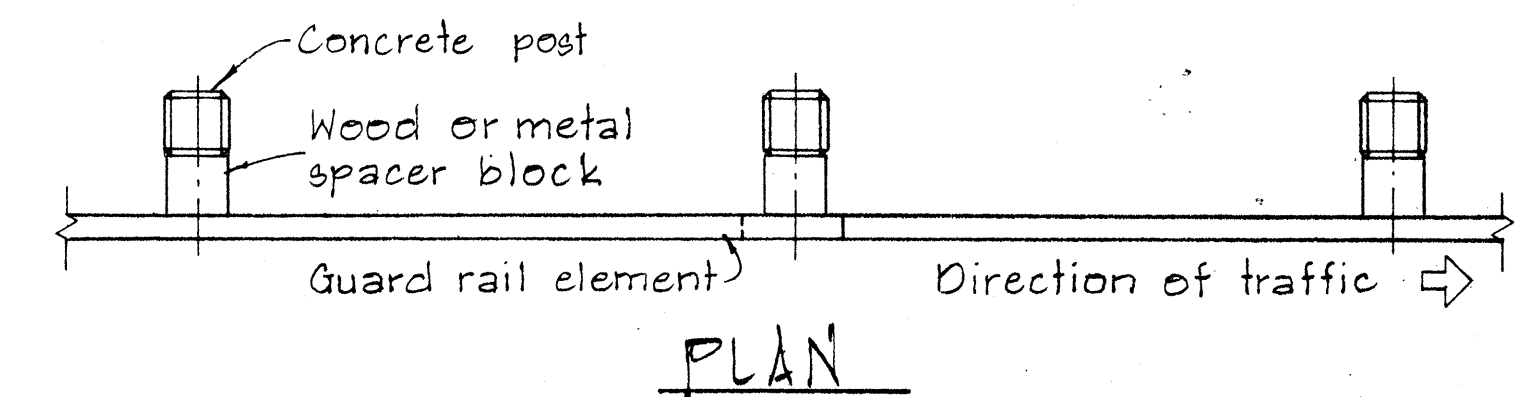
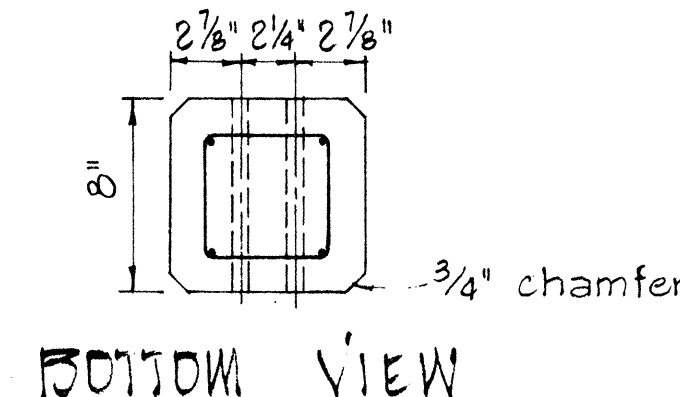
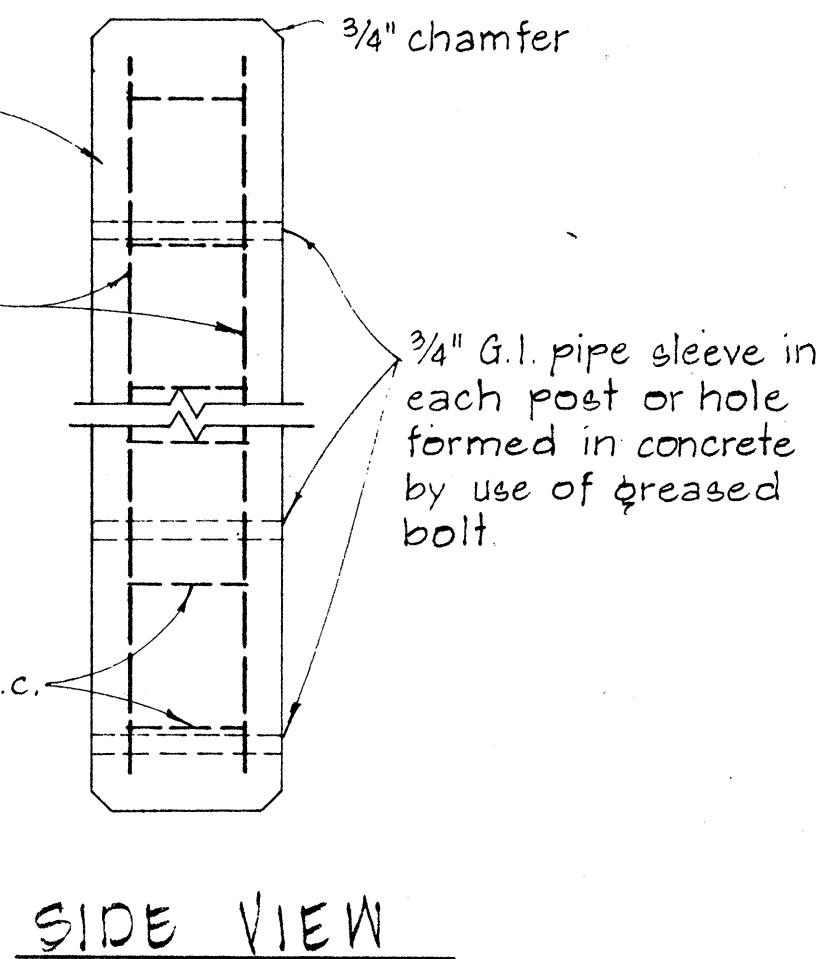
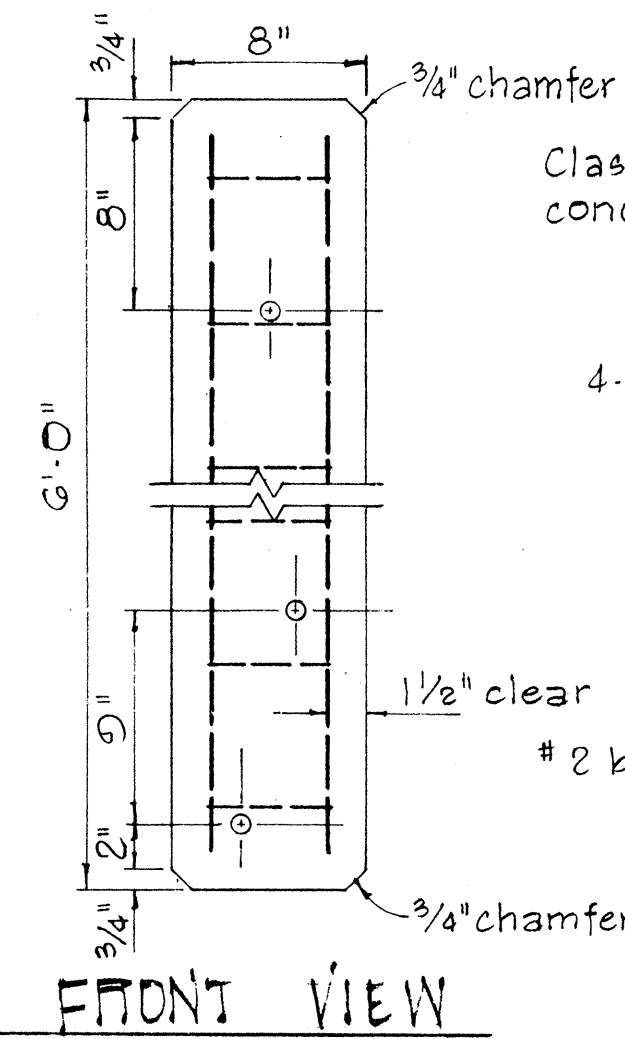
Not to Scale October 1971
SHEET No. 3 OF 11 SHEETS DT 300

ORIGINAL PLAN
DESIGNED BY
CHECKED BY
DATE

FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-77M	1977	7	20

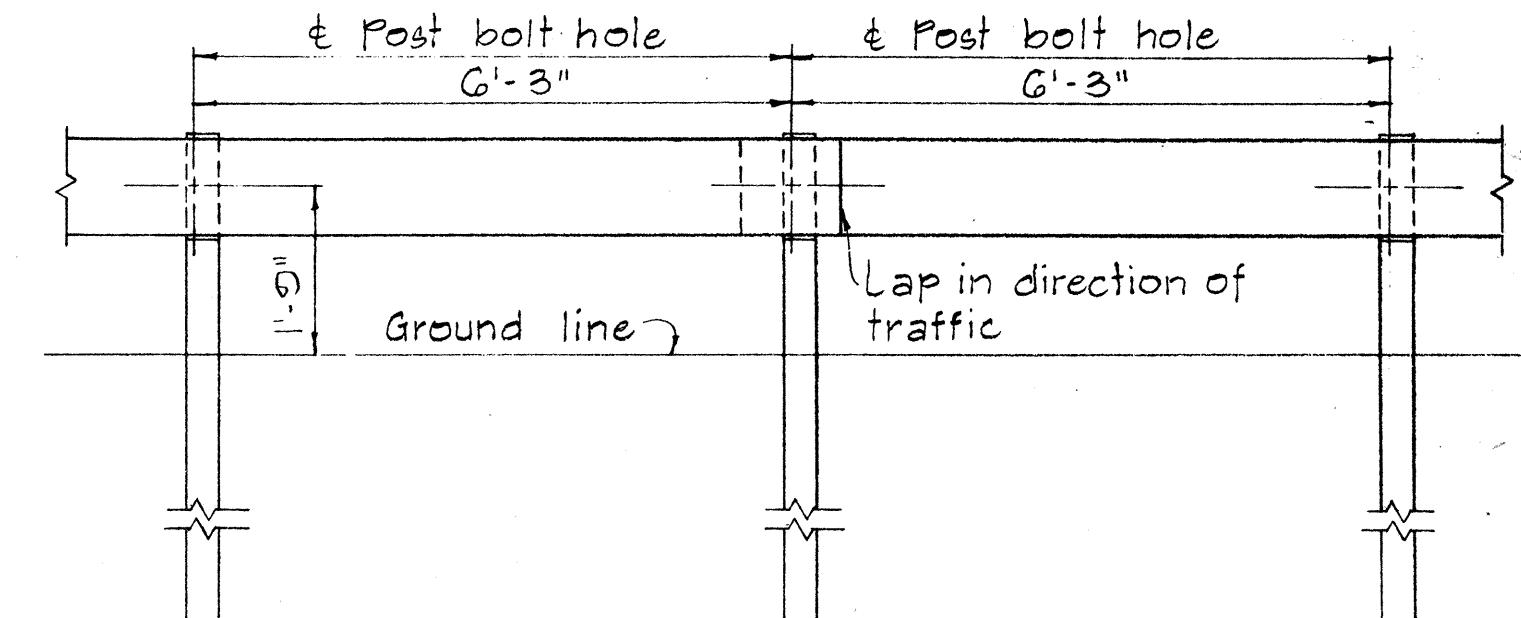
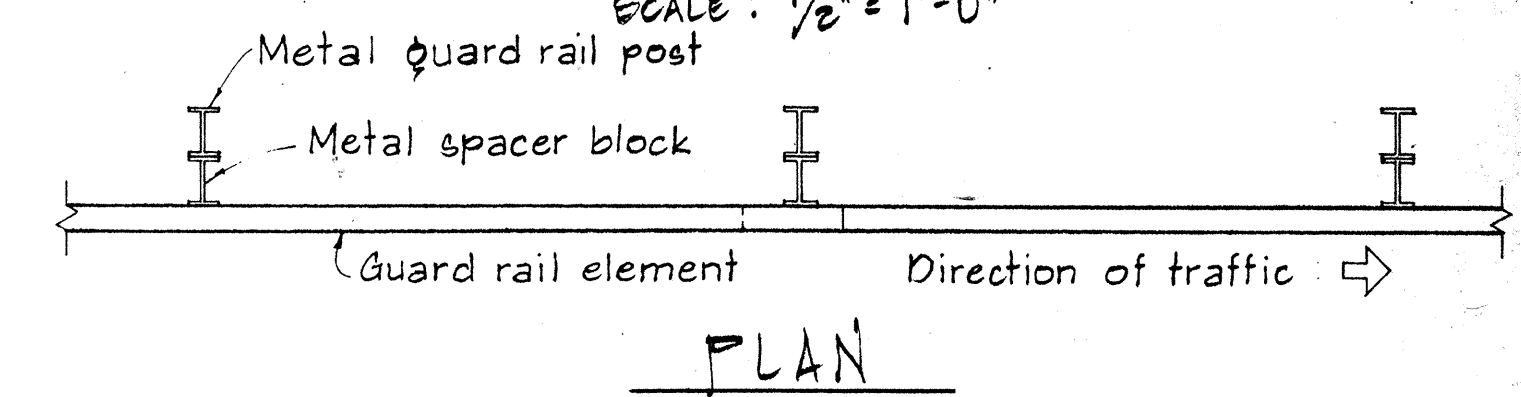


NOTE:
Concrete post shall be precast



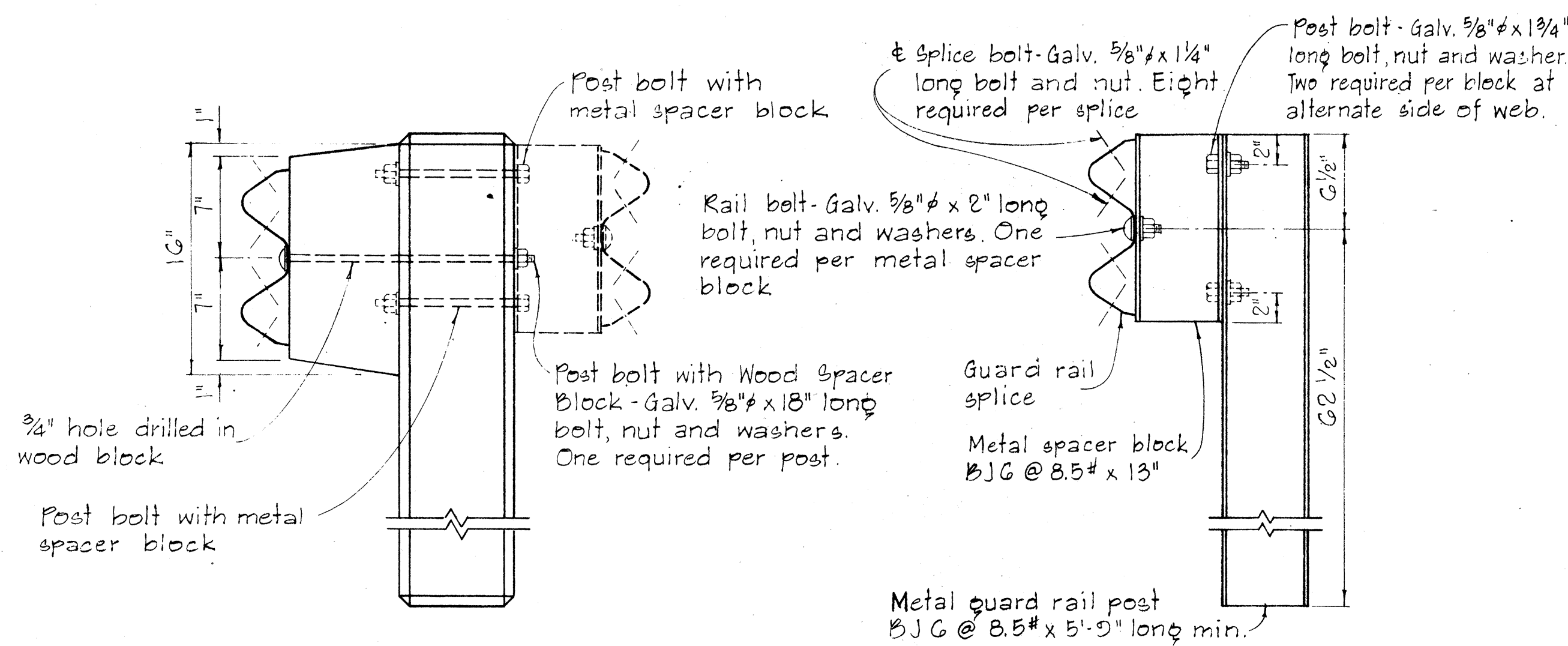
METAL GUARD RAIL ON CONCRETE POST WITH WOOD OR METAL SPACER BLOCK

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



METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK

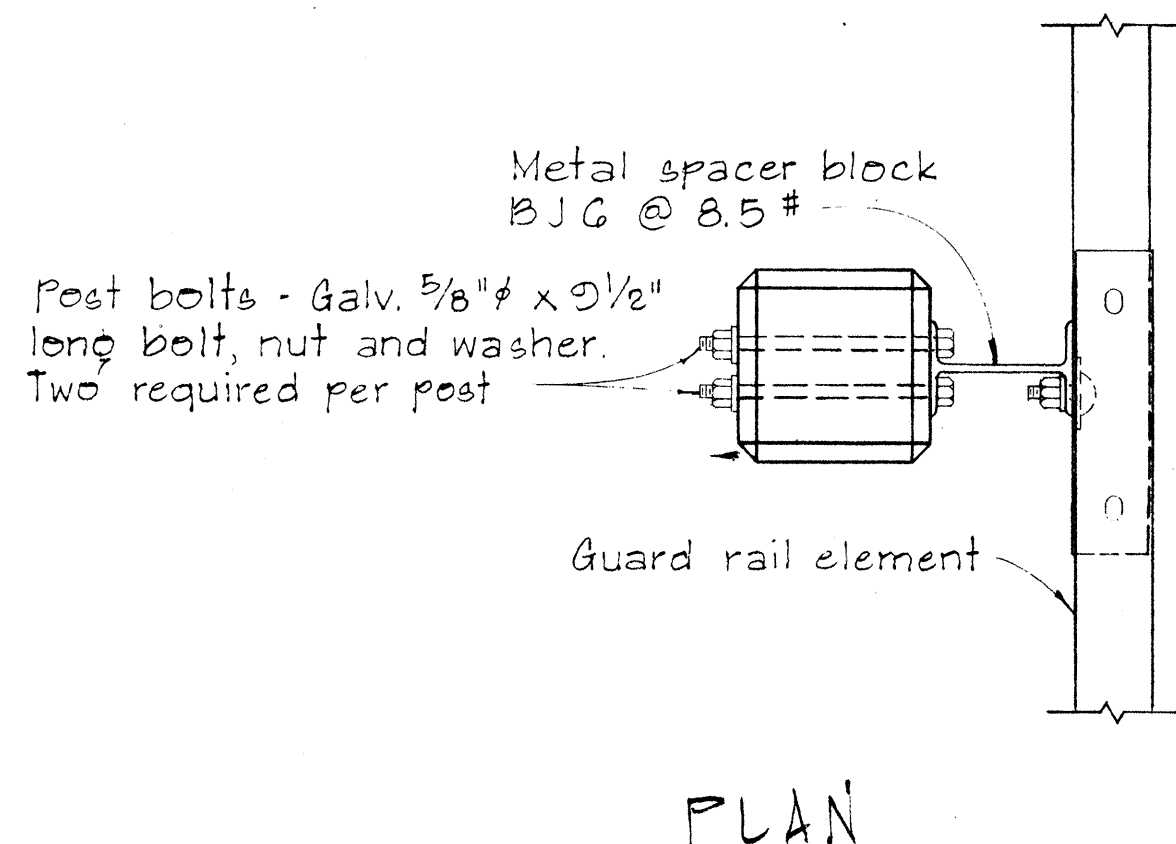
SCALE: 1/2" = 1'-0"



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

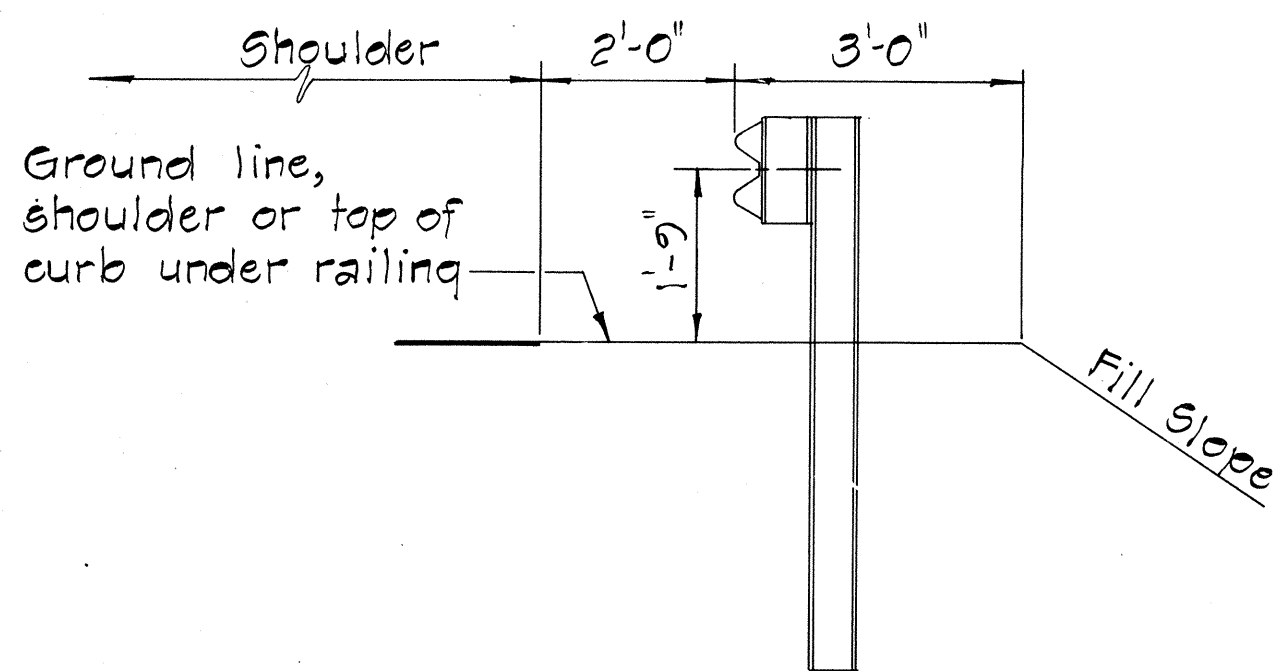
SINGLE METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK

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



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

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



TYPICAL METAL GUARD RAIL DETAIL

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

APPROVAL RECOMMENDED:

Eugene Tanaka
TRAFFIC ENGINEER

12/23/62
DATE

APPROVED:

Robert J. Selzer
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

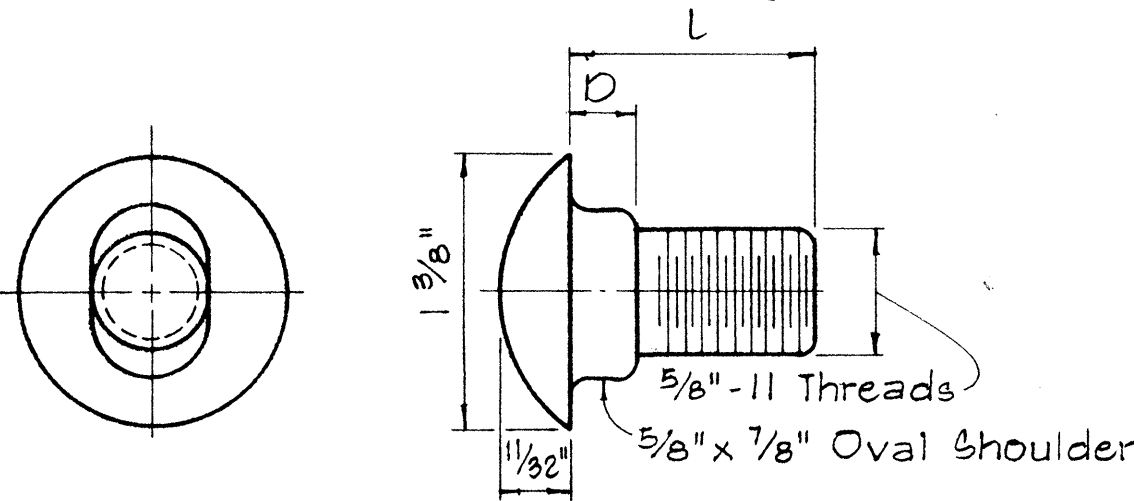
SHEET No. 4 OF 11 SHEETS DT 500

DATE	
SURVEY PLOTTED BY	
PLAN	
DESIGNED BY	
NOTED BY	
CHECKED BY	
NO.	

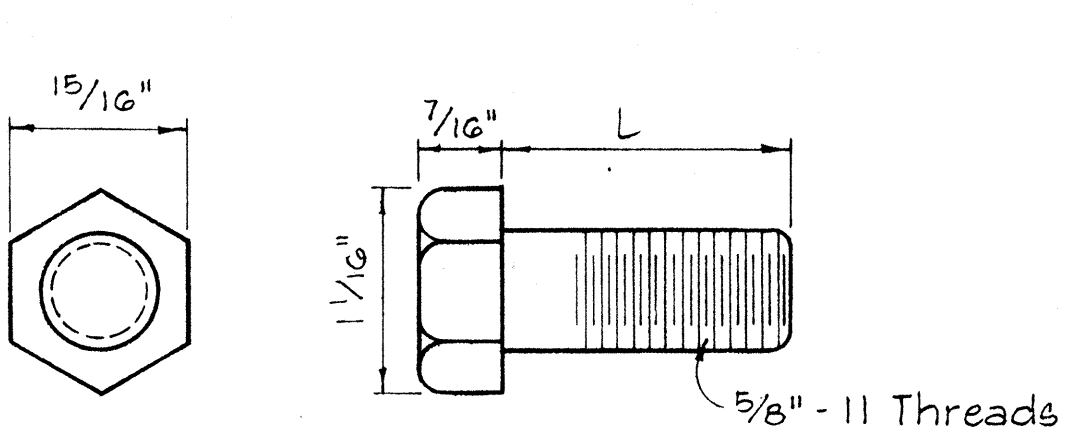
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-77M	1977	8	20

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



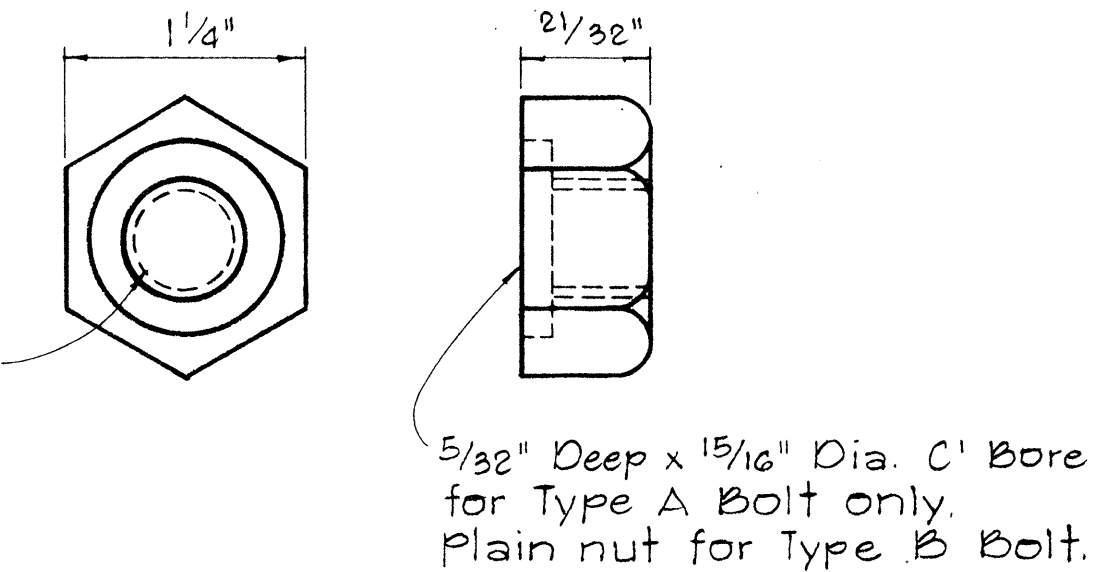
TYPE A BOLT



TYPE B BOLT

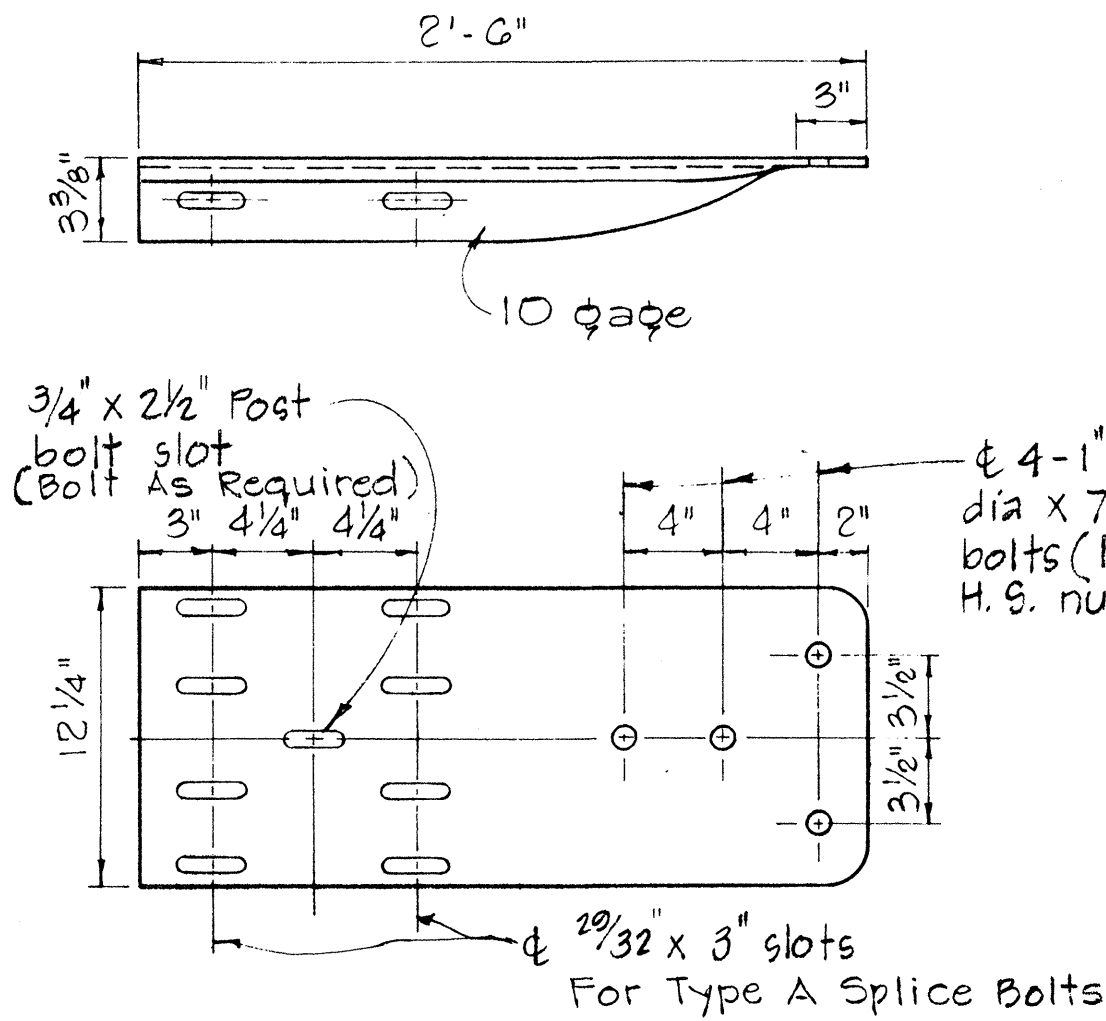
SPLICE RAIL AND POST BOLTS

Scale: Full Size



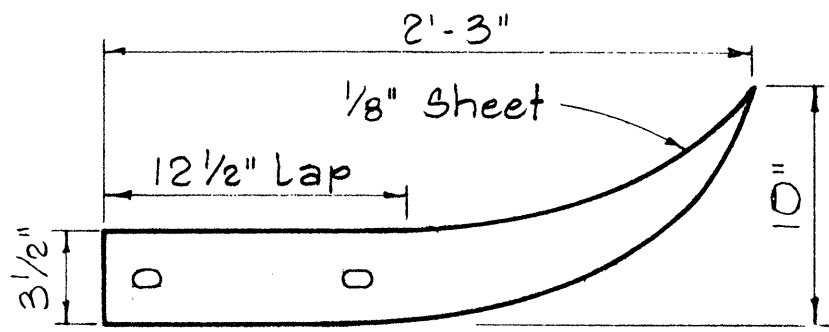
HEXAGON NUT

Scale: Full Size



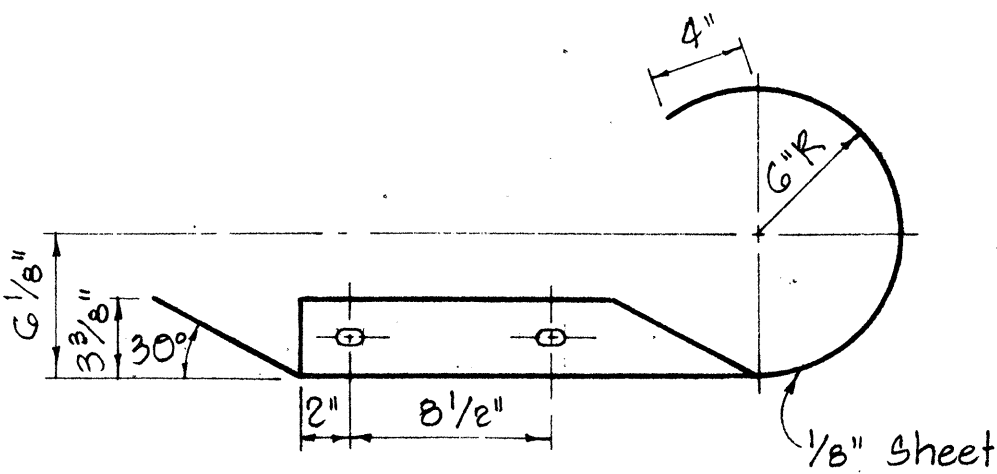
SPECIAL END SHOE

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



FLARED END

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



CURVED END

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

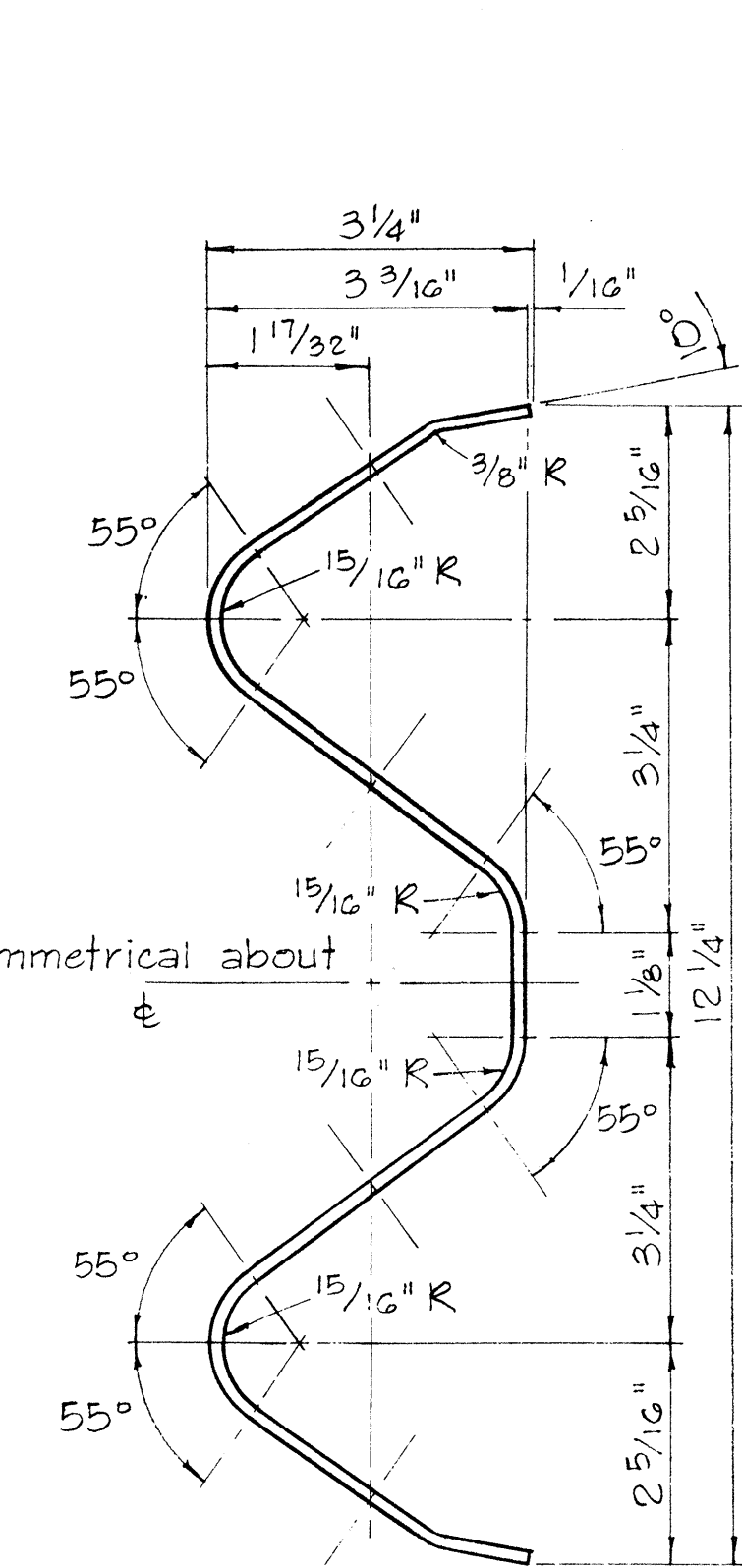
APPROVAL RECOMMENDED:
Erich Tanaka 12/29/69
 TRAFFIC ENGINEER DATE
 APPROVED:
William J. J. J. 12-30-69
 ASSISTANT CHIEF, ENGINEERING DATE

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

STANDARD DETAILS
 METAL GUARD RAIL

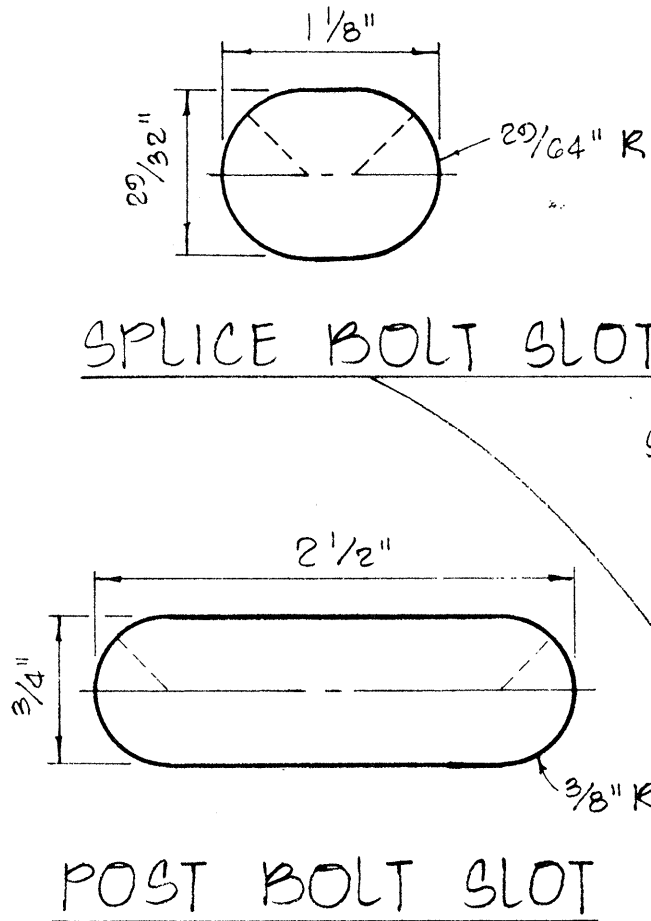
Scale: As Noted August, 1968

SHEET No. 5 OF 11 SHEETS DT 501



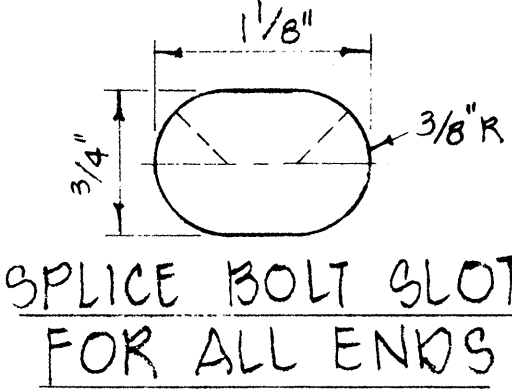
RAIL ELEMENT SECTION

Scale: 6" = 1'-0"

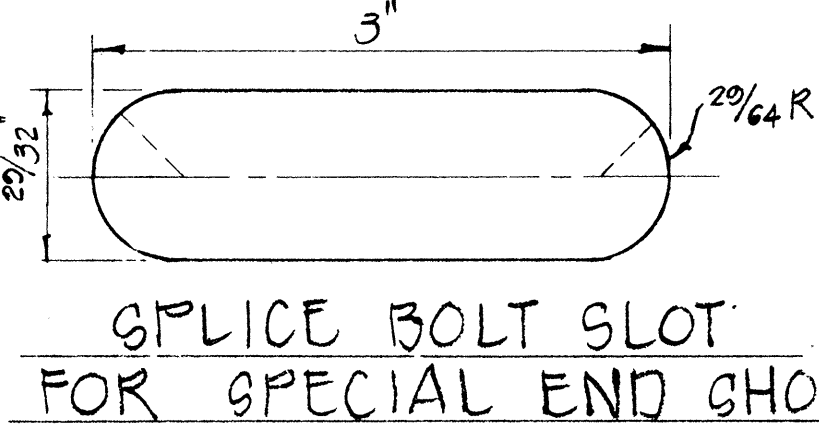


SPLICE BOLT SLOT

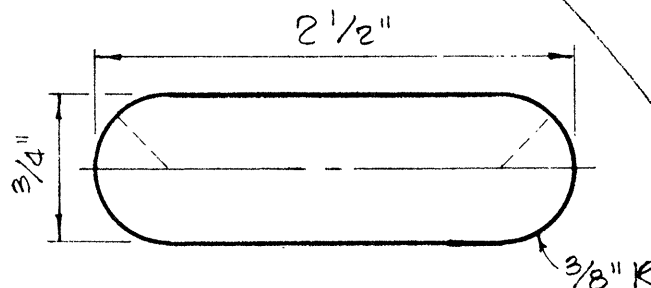
Scale: Full Size



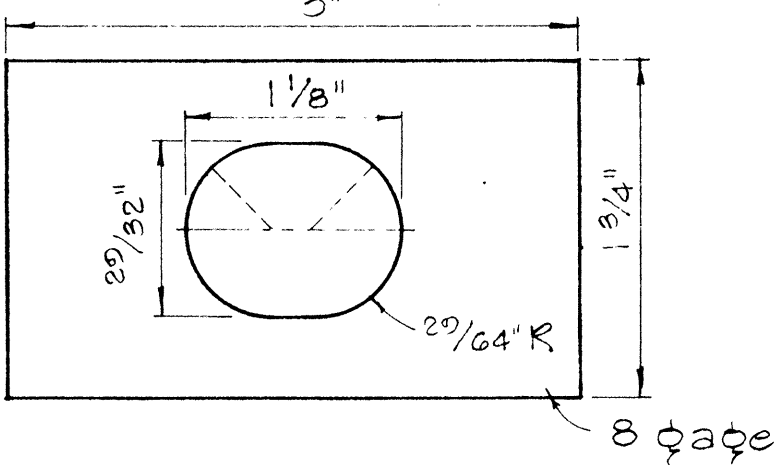
SPLICE BOLT SLOT FOR ALL ENDS



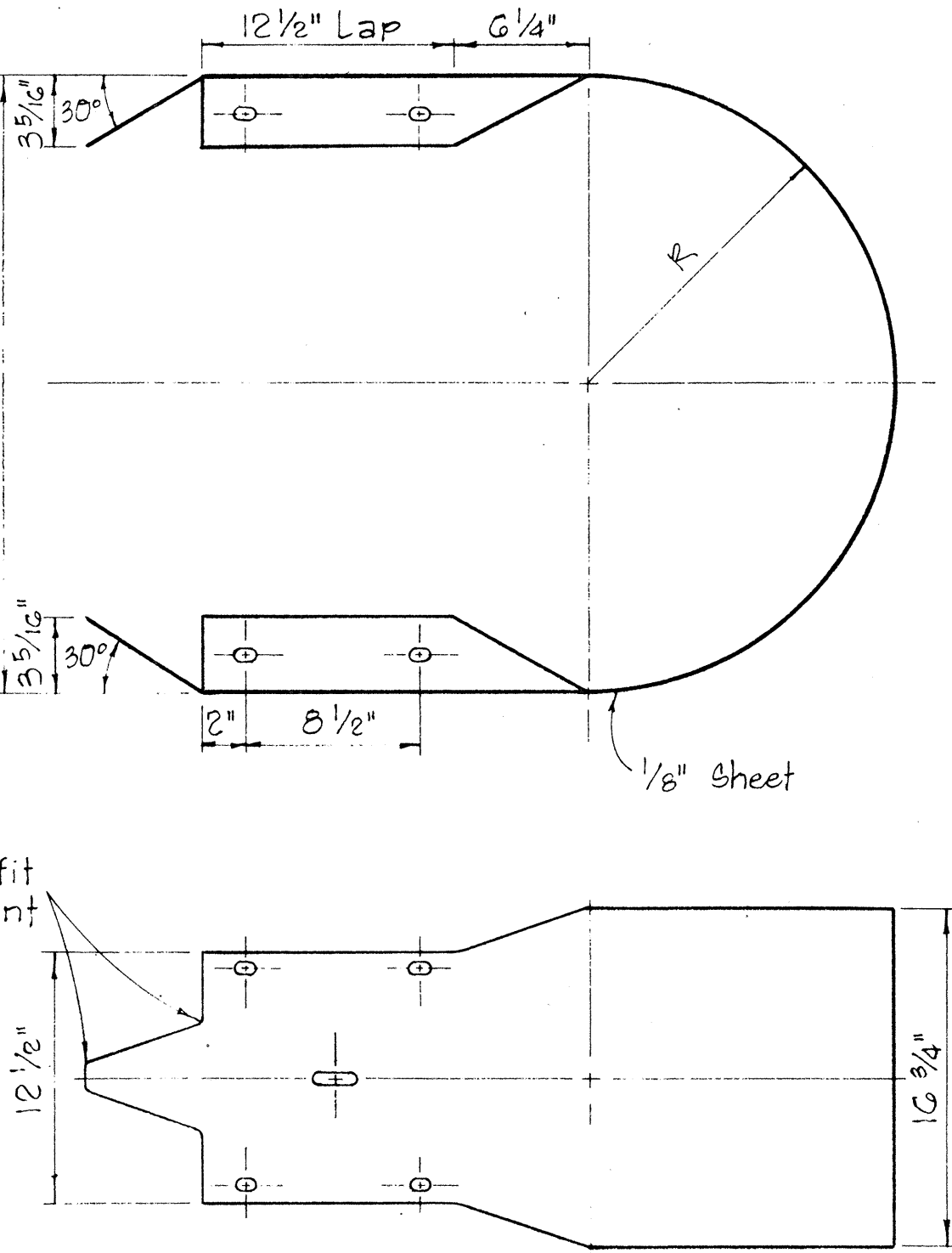
SPLICE BOLT SLOT FOR SPECIAL END SHOE



POST BOLT SLOT



RAIL WASHER



MEDIAN END

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

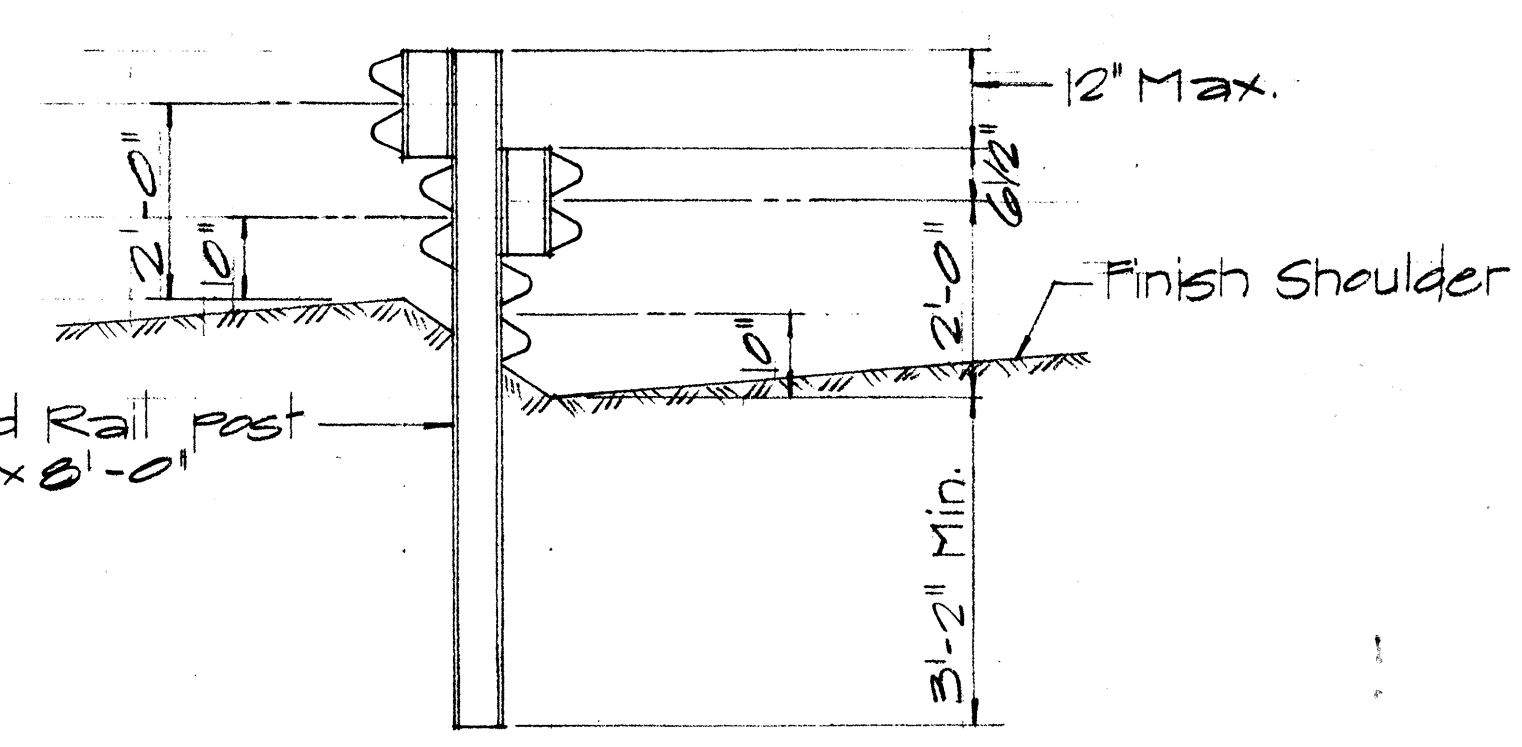
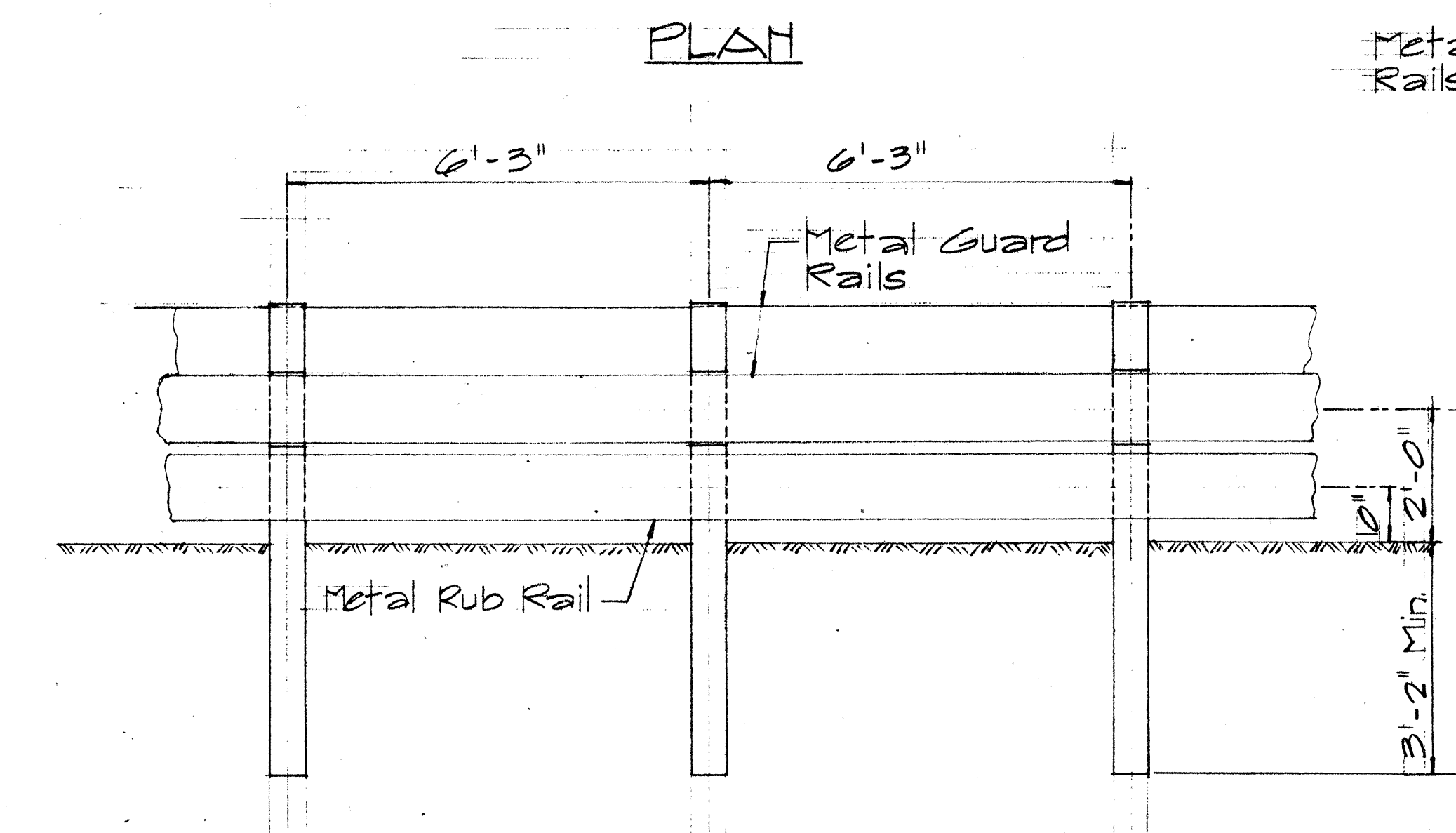
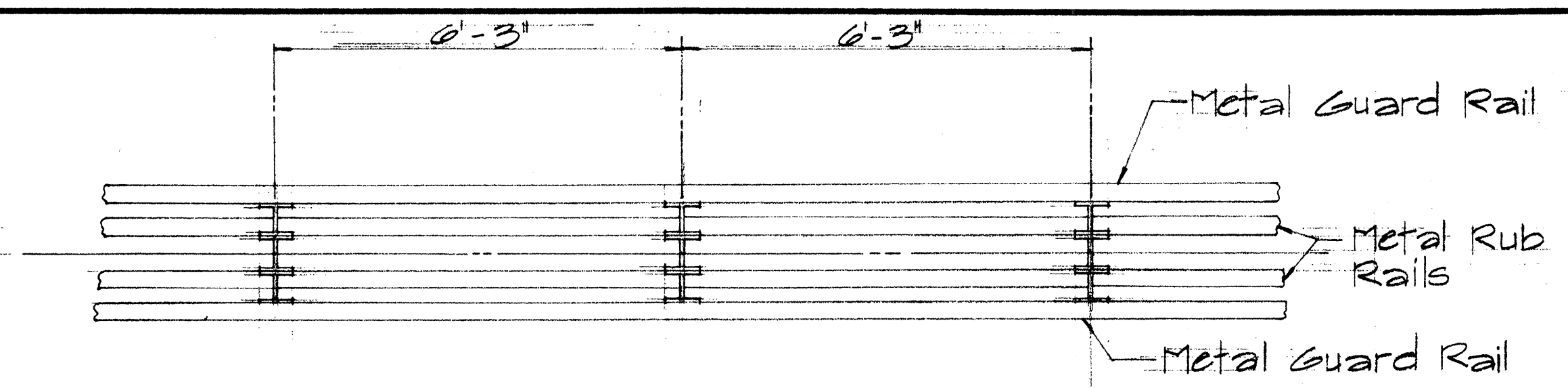
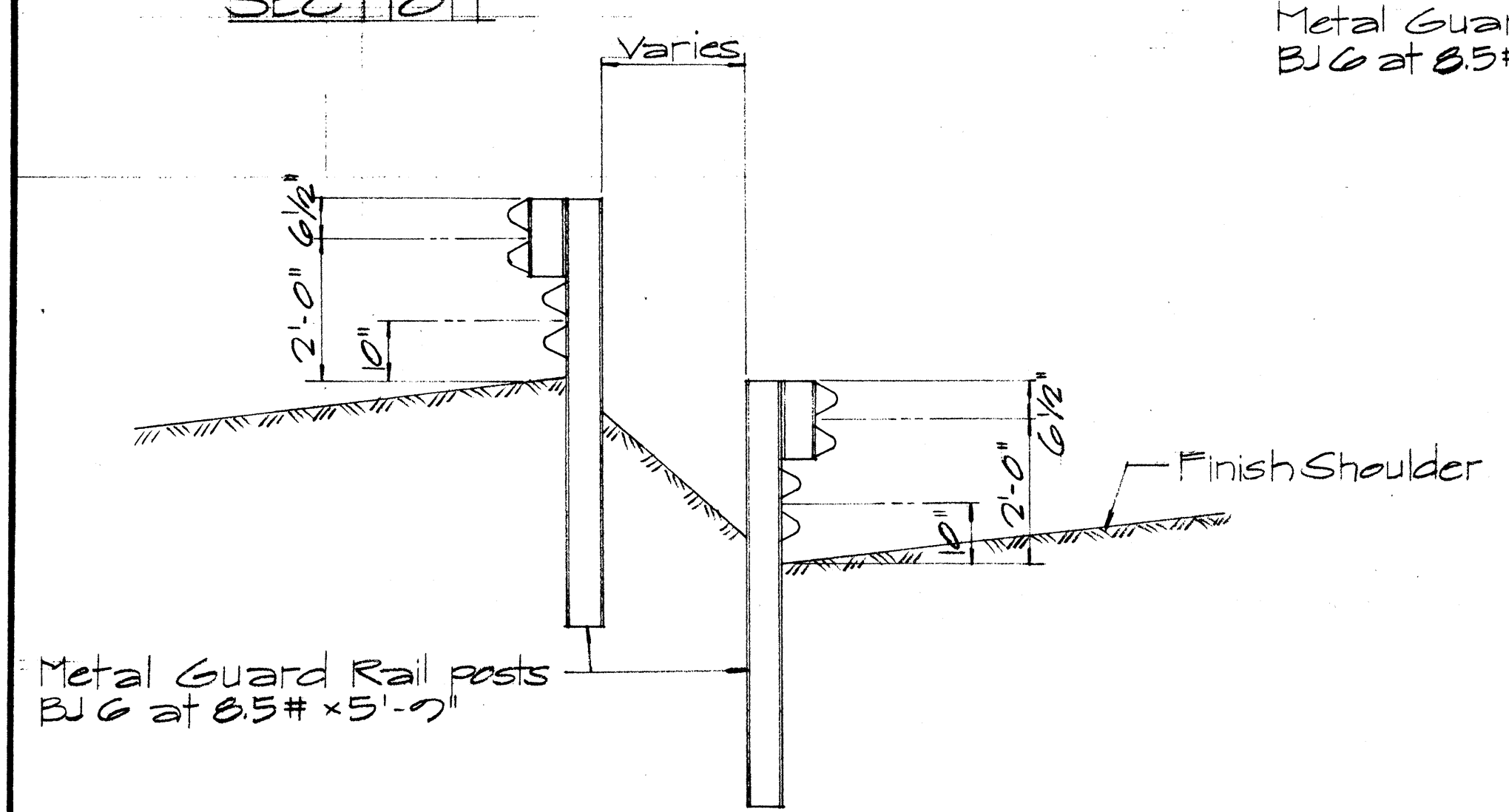
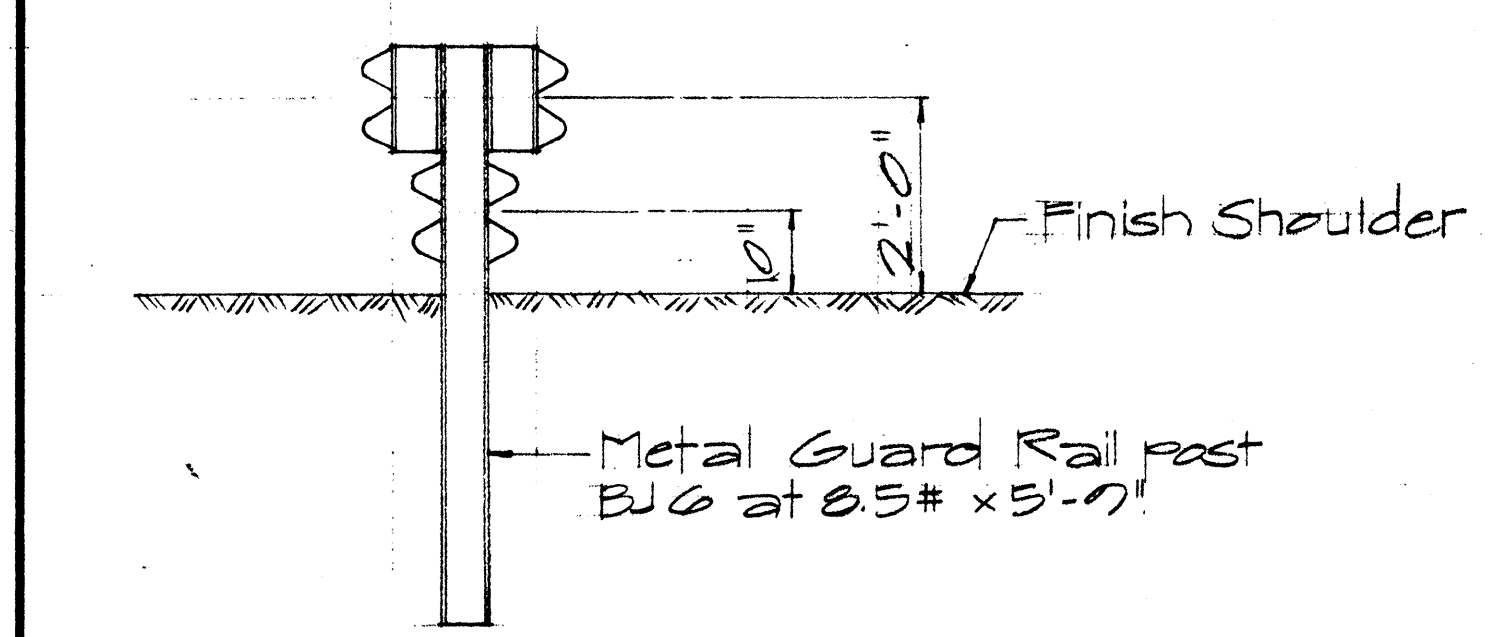
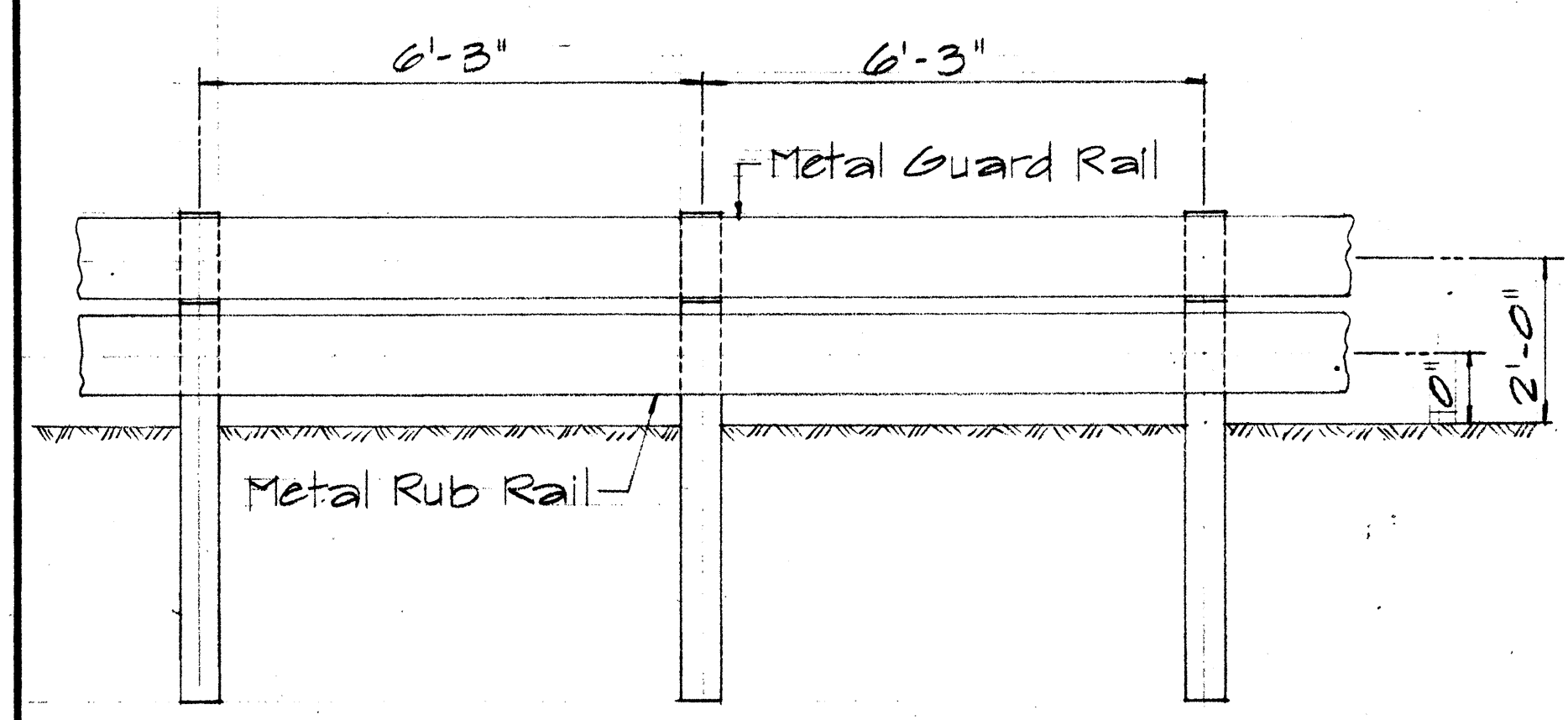
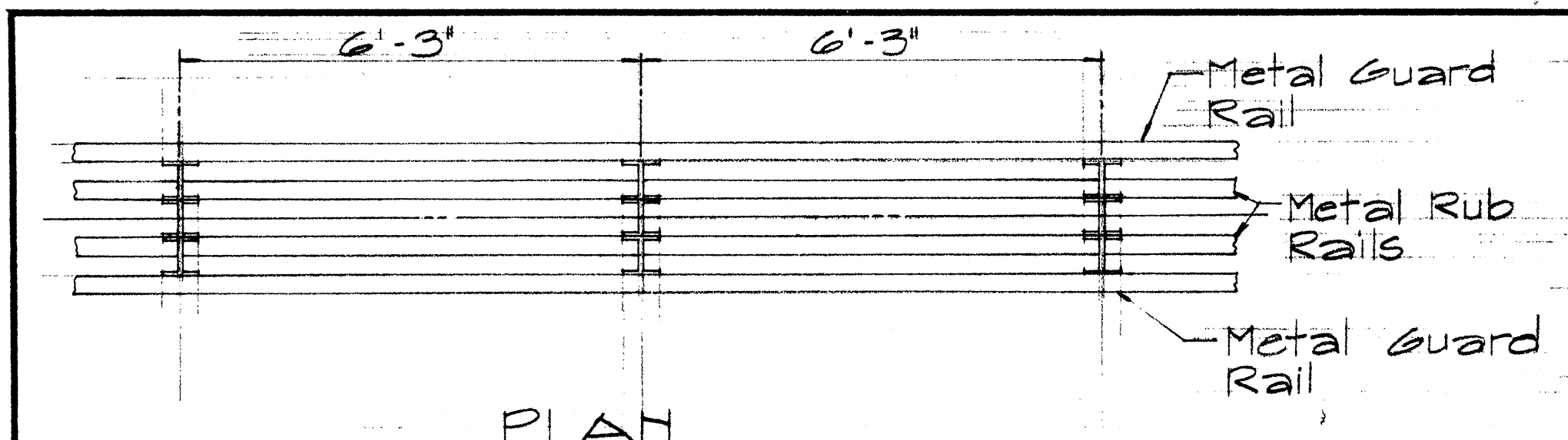
- NOTES:
1. H.S. Bolts shall conform to the requirements of ASTM A 325.
 2. Special End Shoe shall be fabricated from 10 Gage steel conforming to the requirements of AASHTO 180.

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"

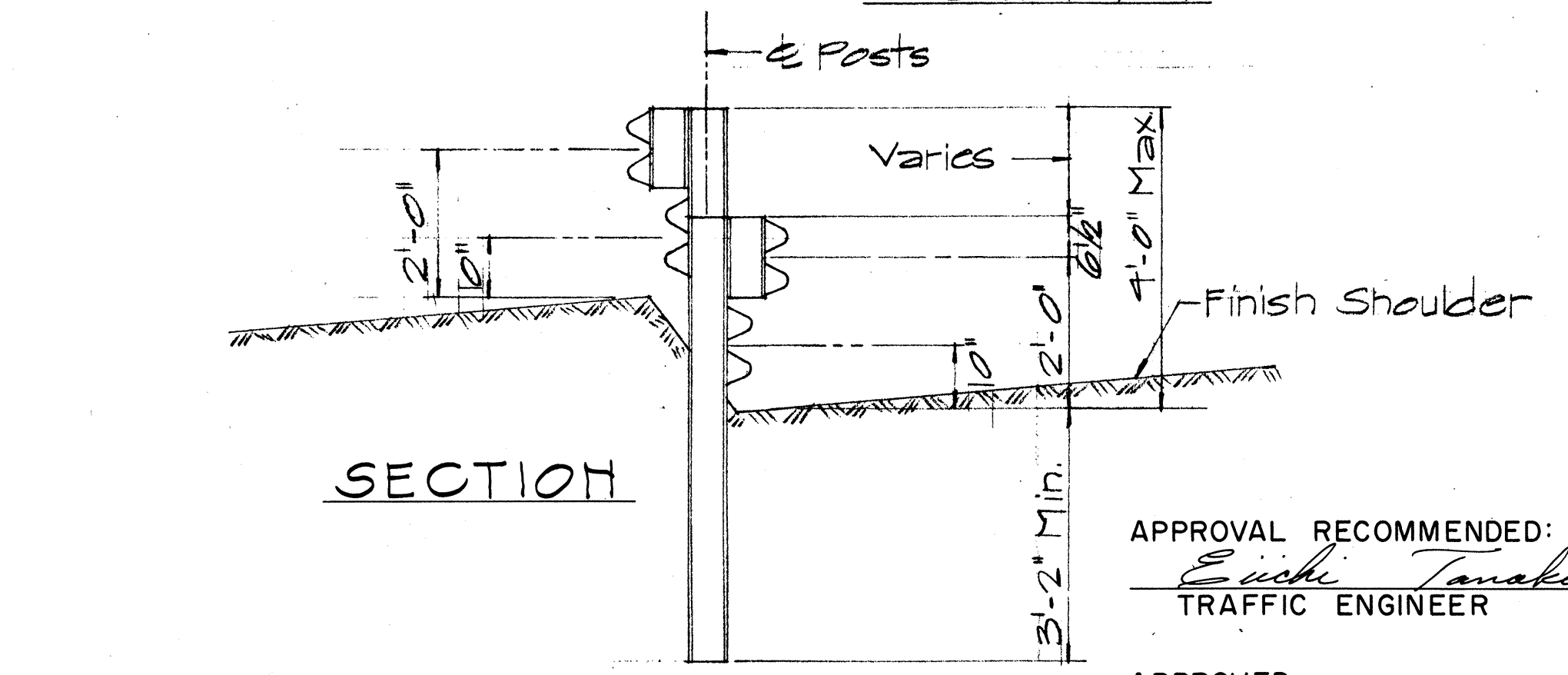
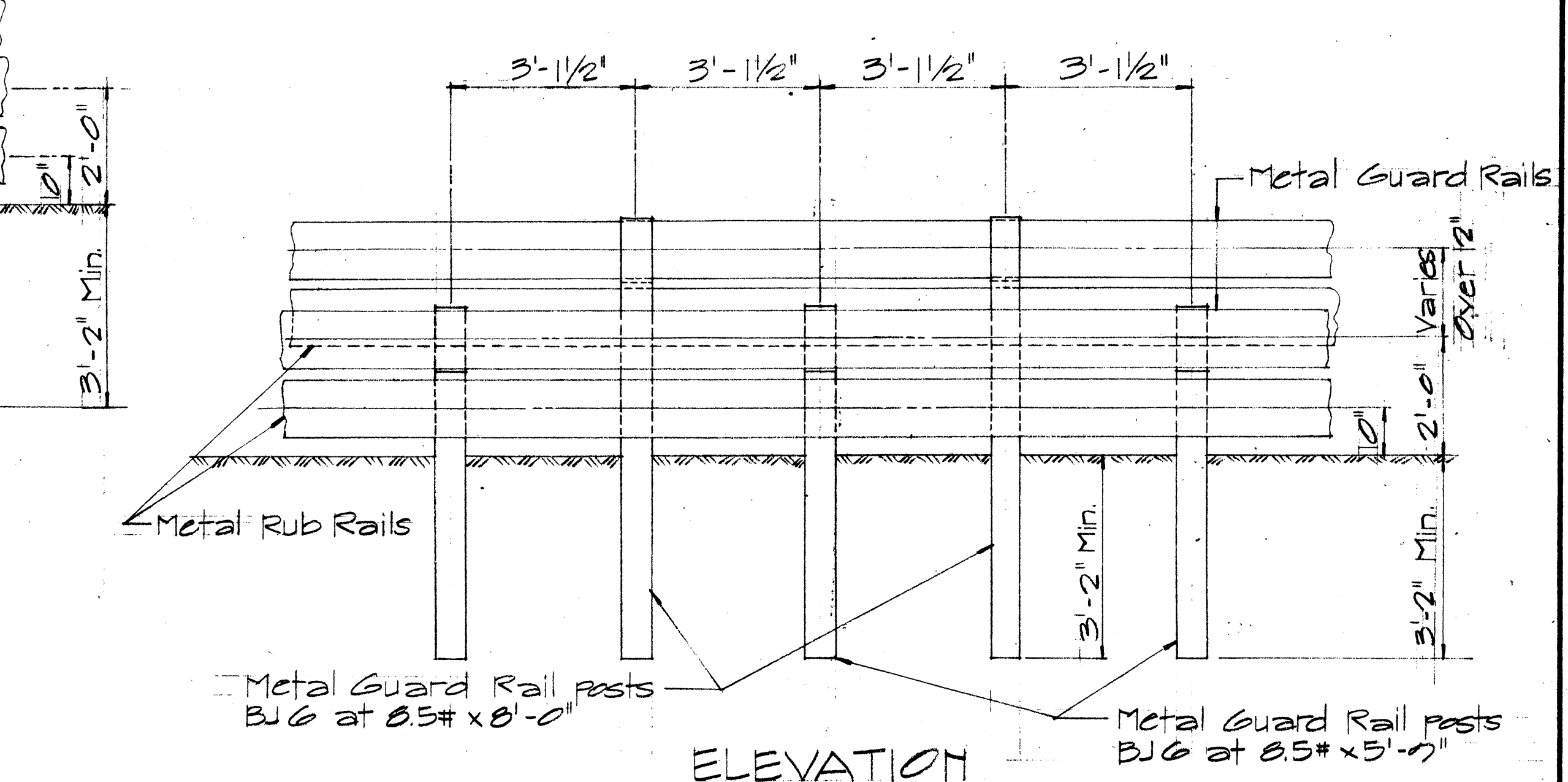
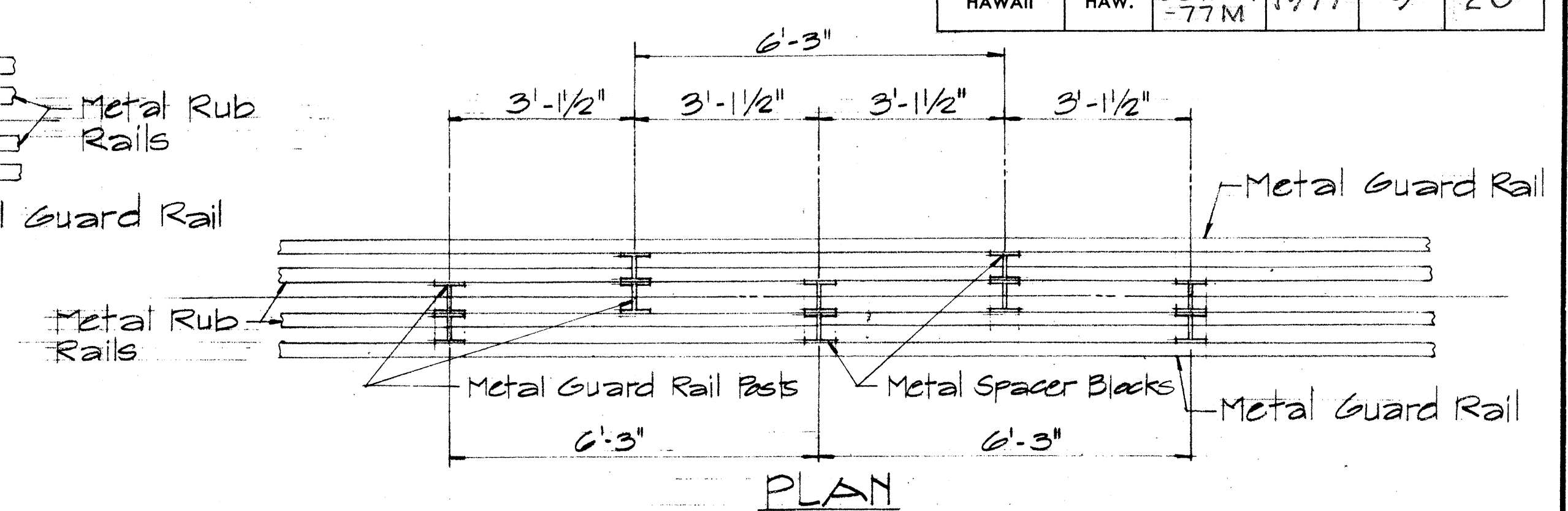
NO	REVISION	APPROVED BY	DATE

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-77M	1977	9	20



TYPICAL SAW TOOTH INSTALLATION
Sc. 1/2" = 1'-0"



TYPICAL STAGGERED INSTALLATION
Sc. 1/2" = 1'-0"

APPROVAL RECOMMENDED:
TRAFFIC ENGINEER
12/29/69
DATE

APPROVED:
ASSISTANT CHIEF, ENGINEERING
12-20-69
DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAIL
METAL GUARD RAIL
WITH RUB RAIL

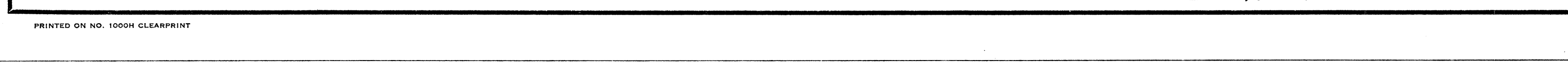
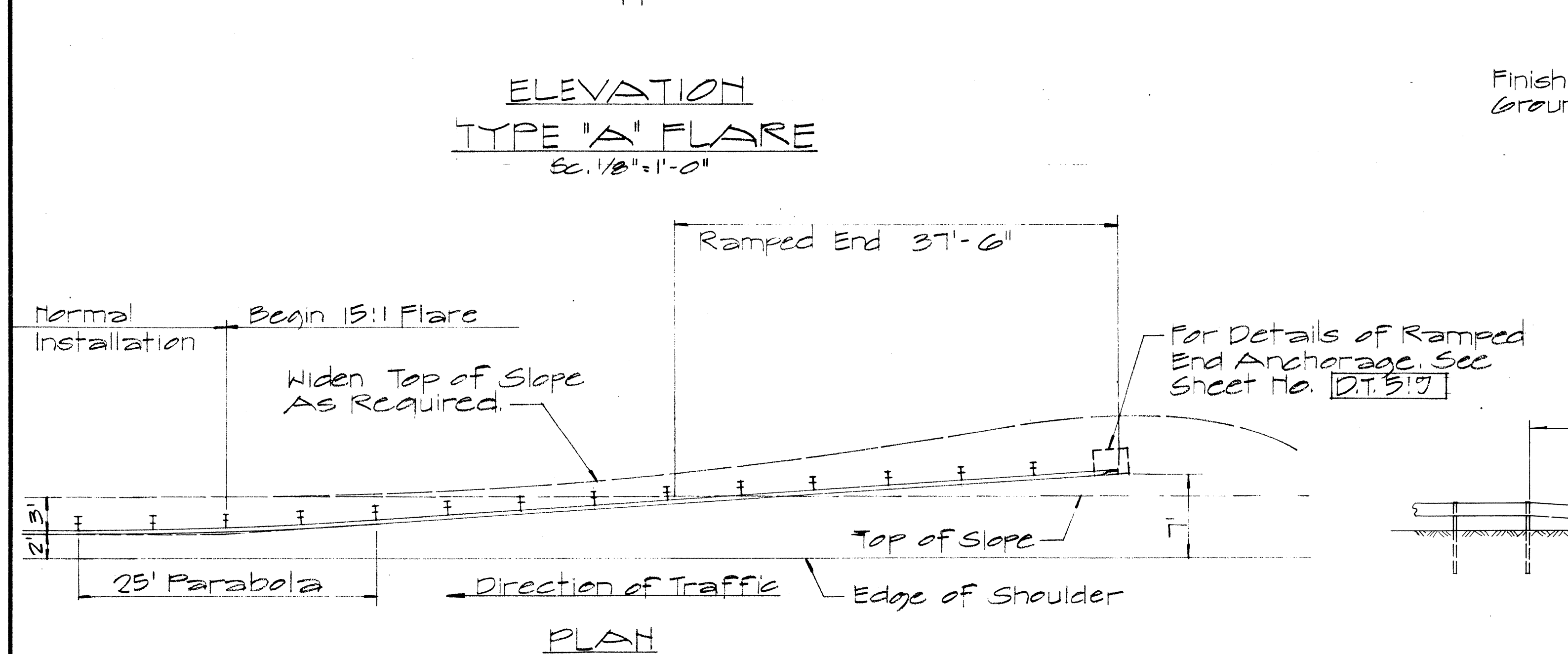
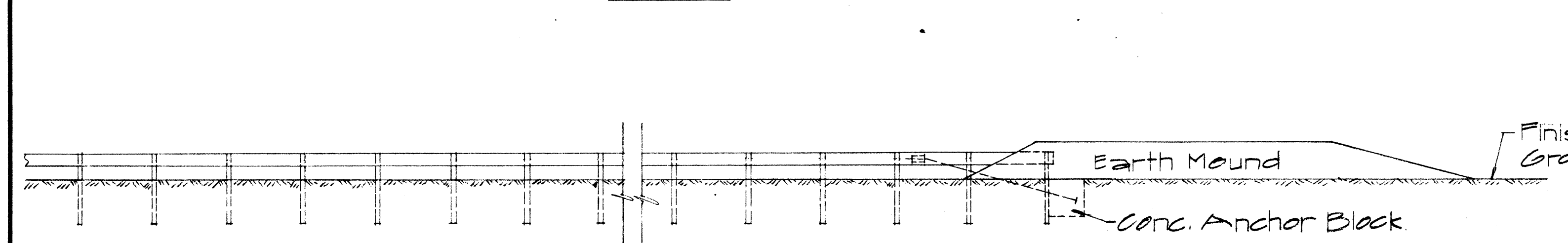
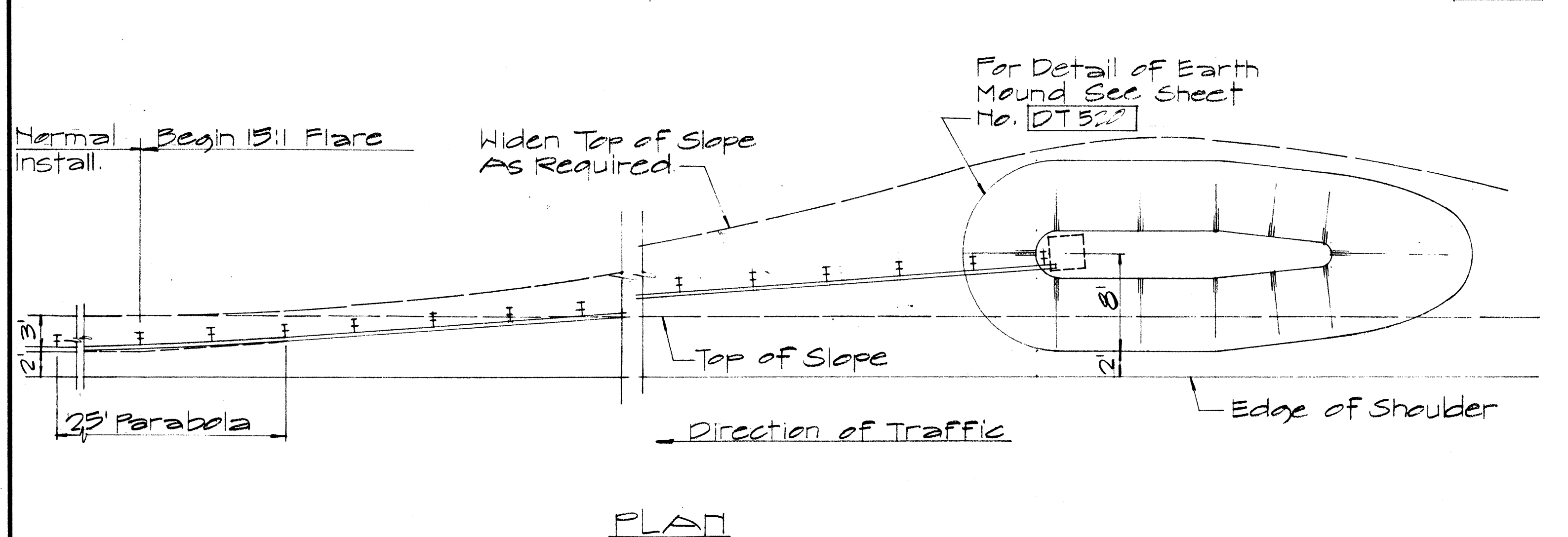
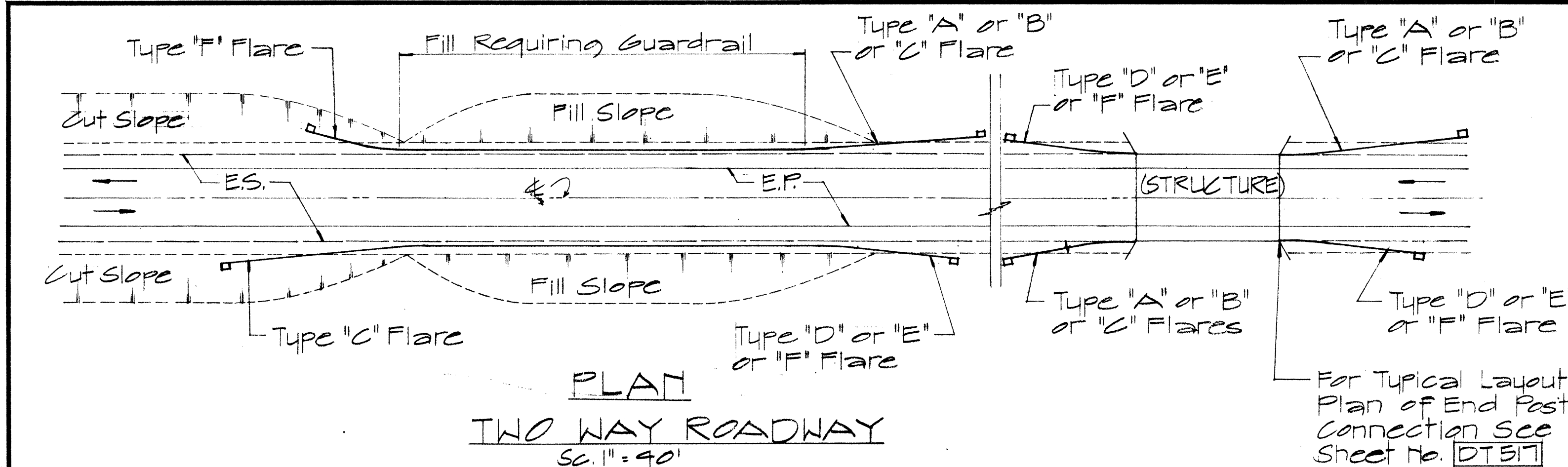
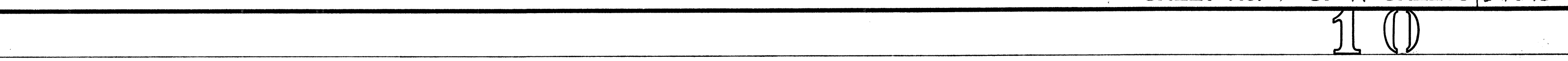
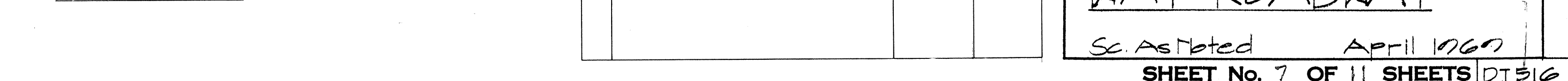
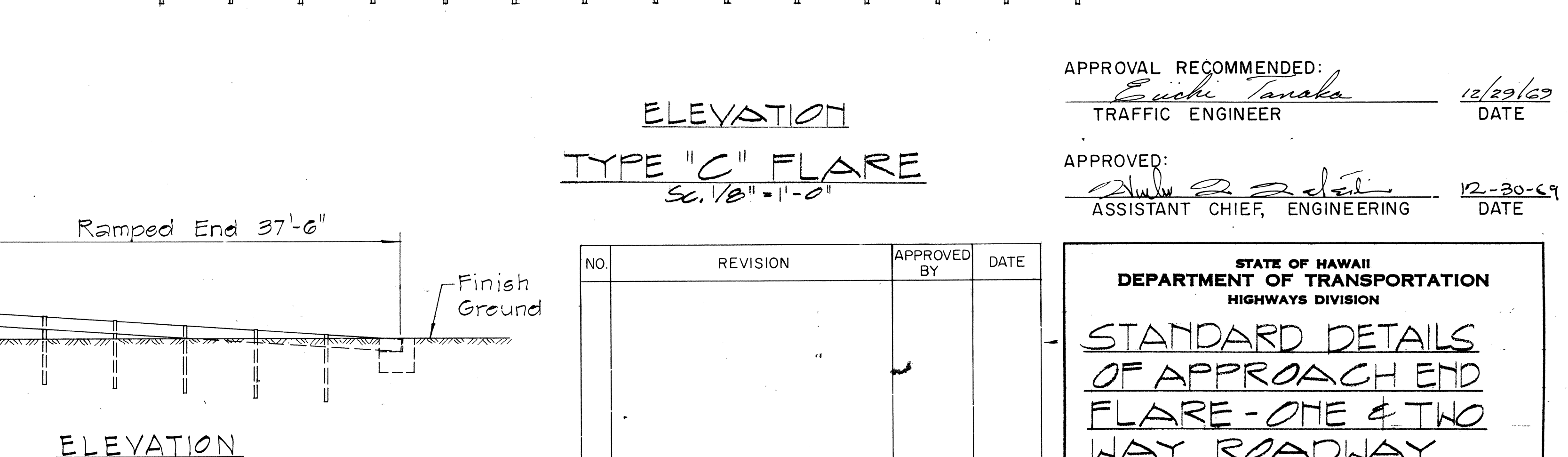
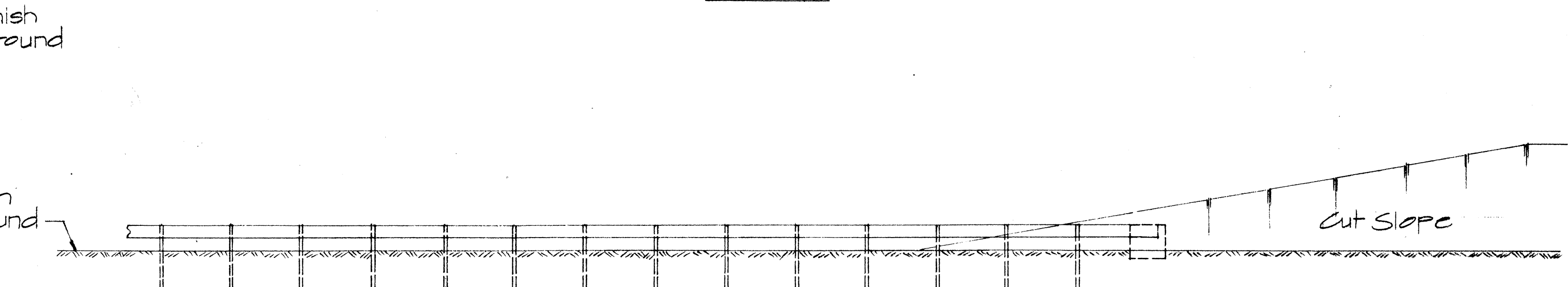
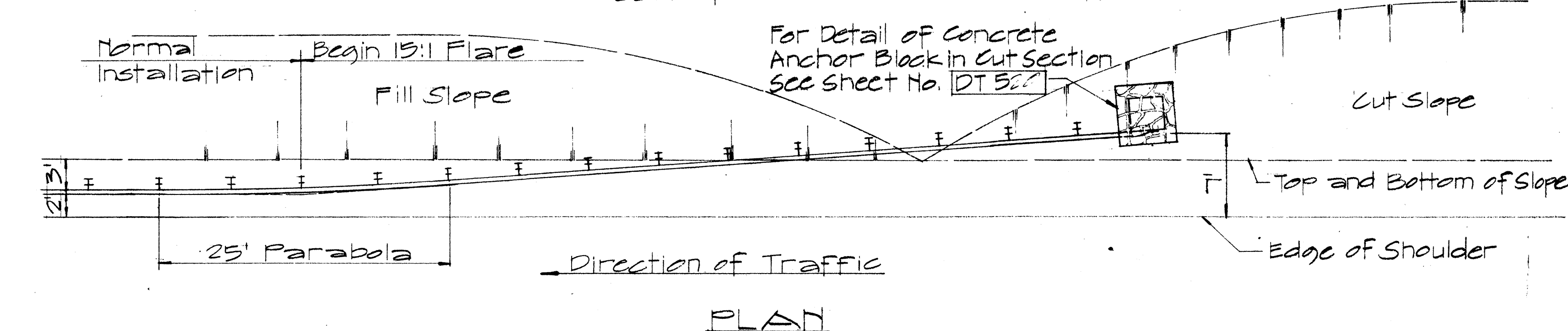
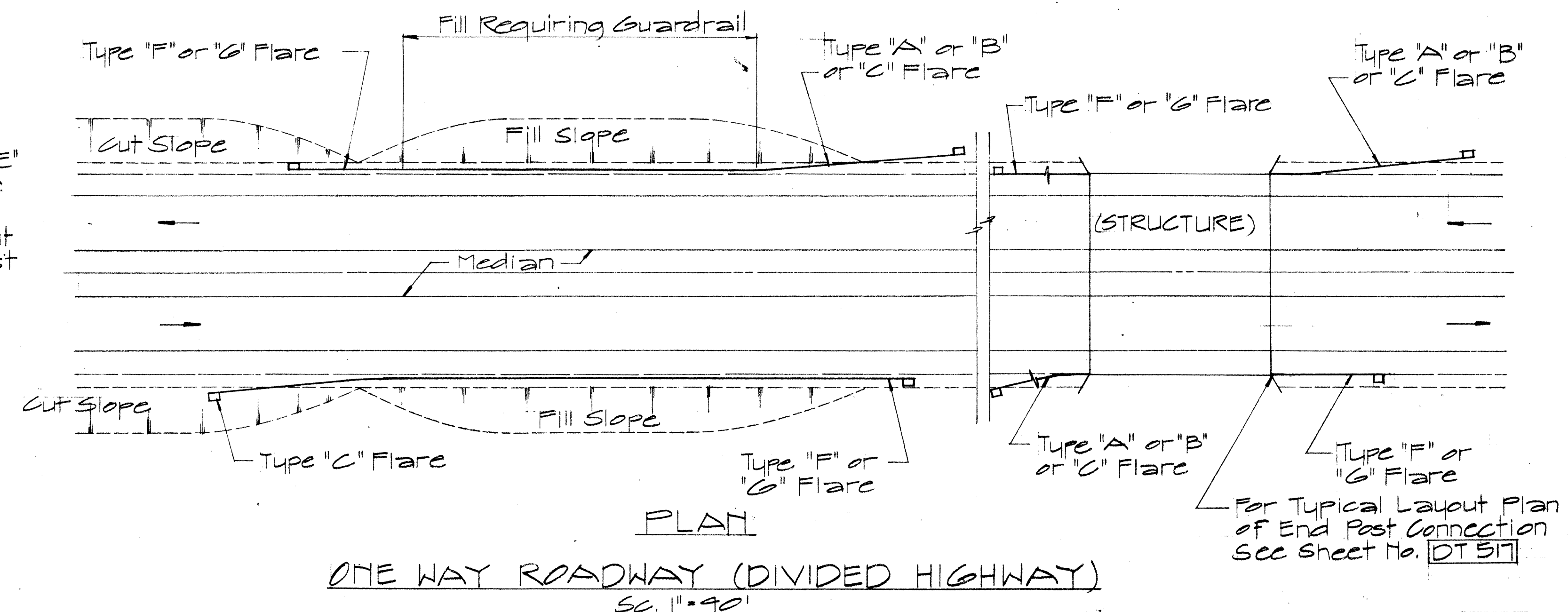
Scale: 1/2" = 1'-0" Feb. 10, 1969

DATE	
DESIGNED BY	
CHECKED BY	
NOTED BY	
ORIGINAL PLAN	

FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-77M	1977	10	20

NOTE:

Metal guard rail connection to structures requires End Post Connection. See structure plans.



APPROVAL RECOMMENDED:
Traffic Engineer
DATE 12/29/62

APPROVED:
Assistant Chief, Engineering
DATE 12-30-62

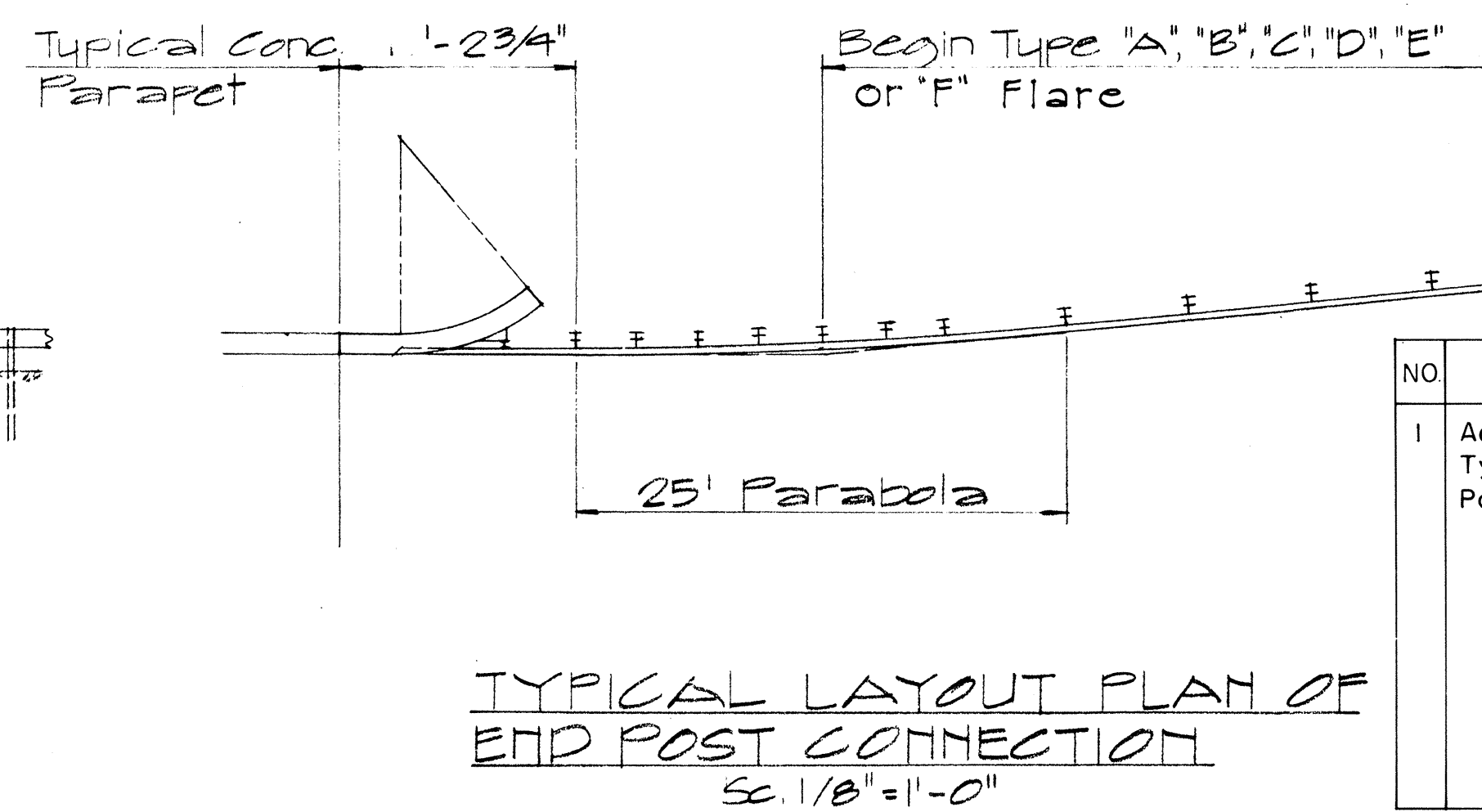
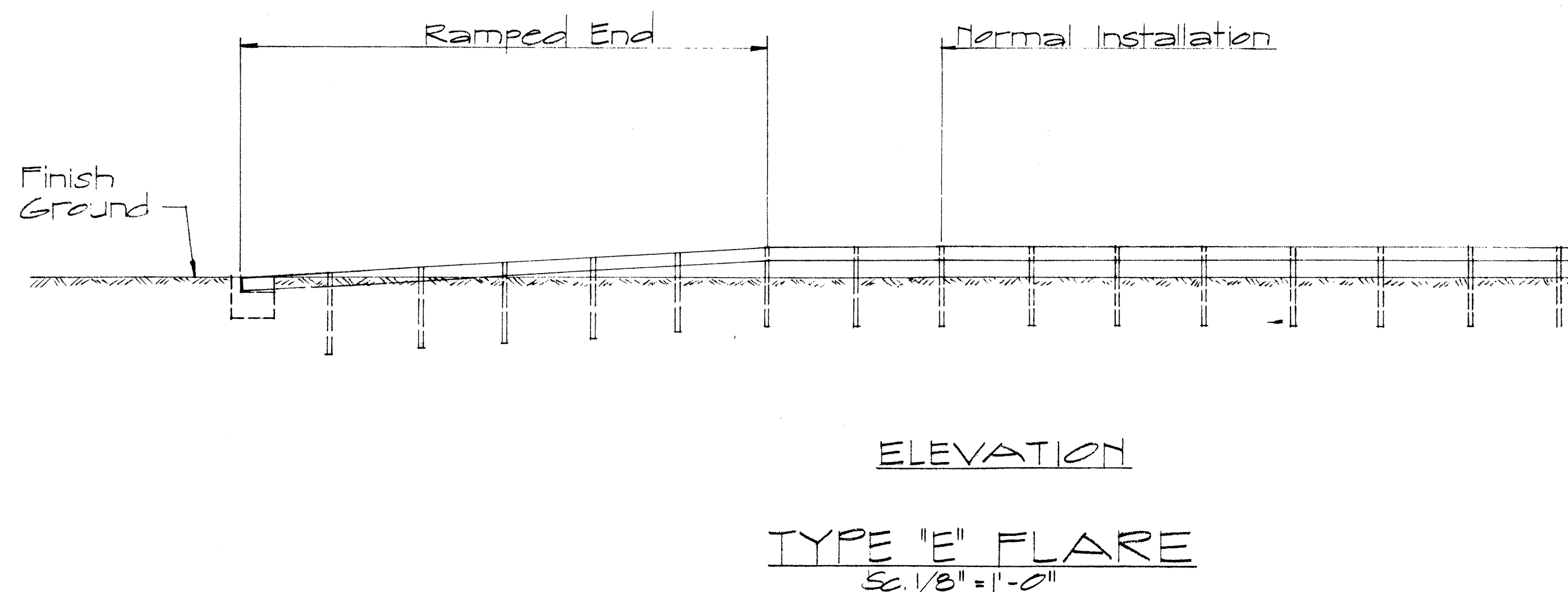
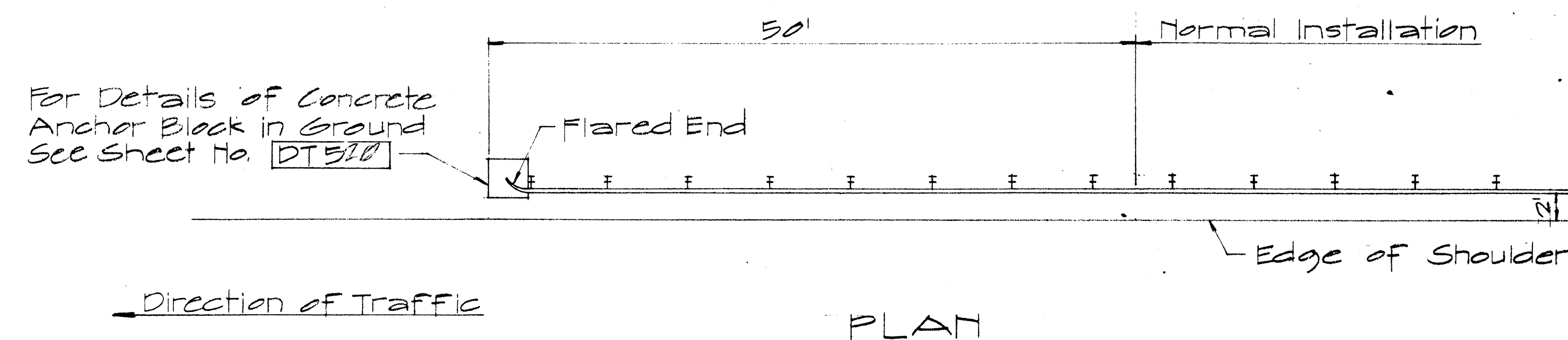
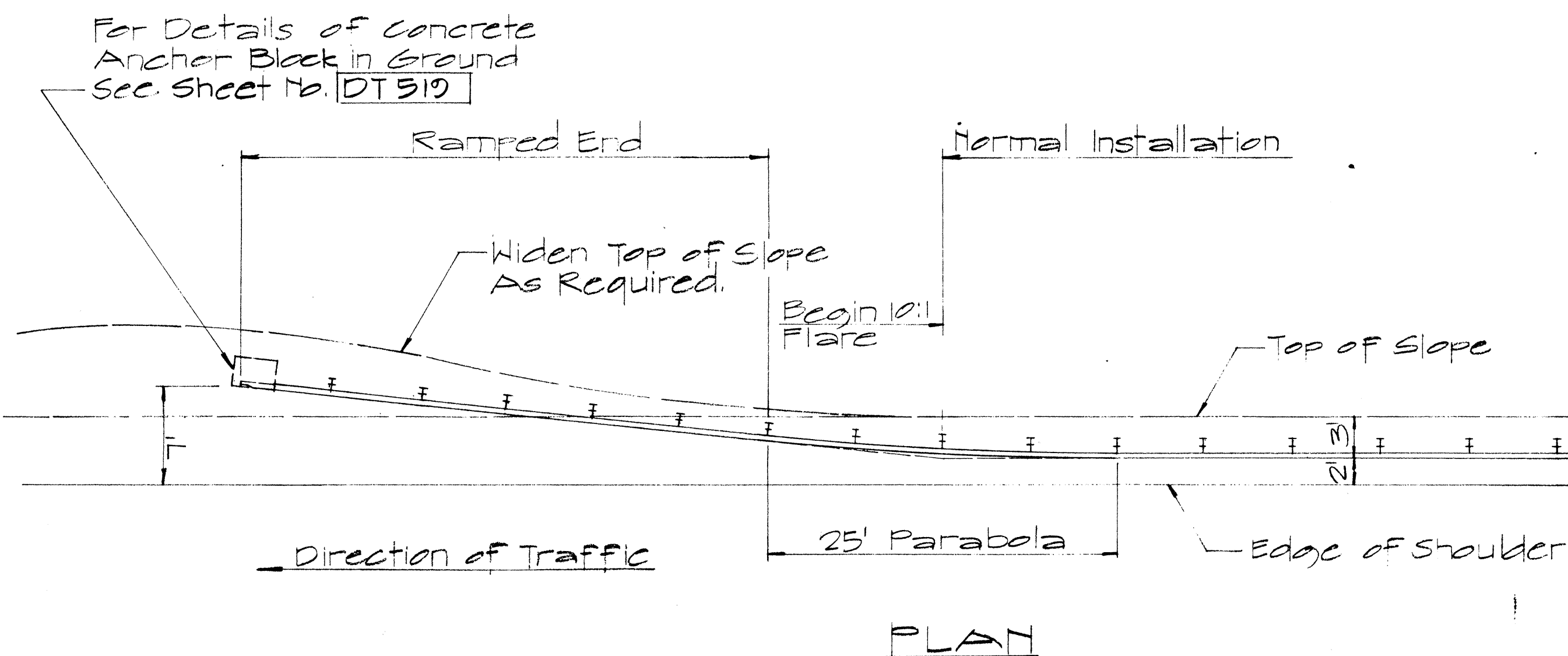
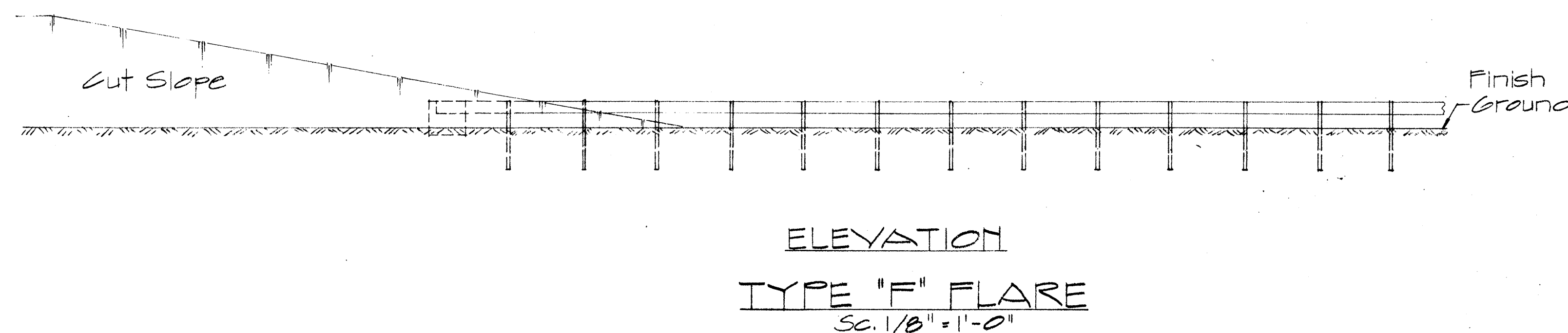
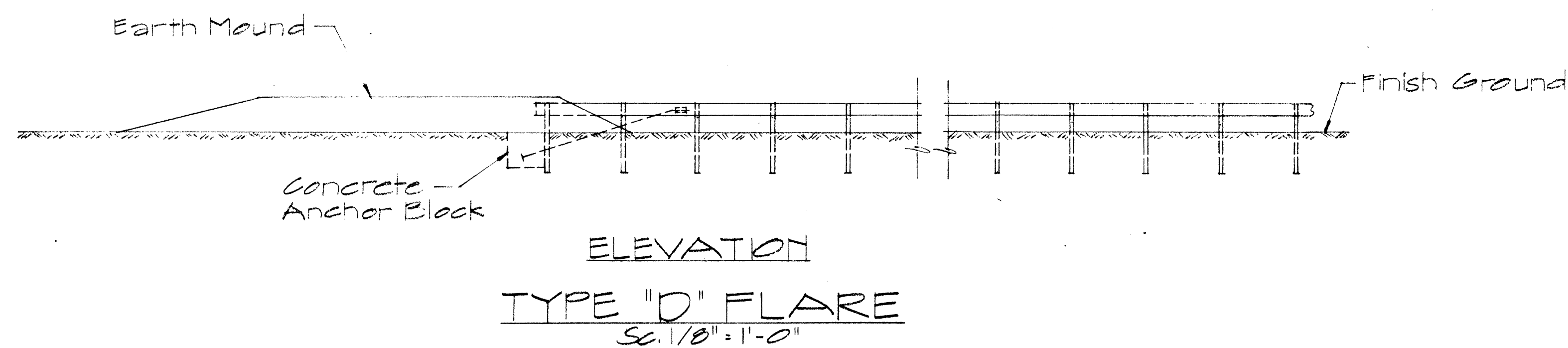
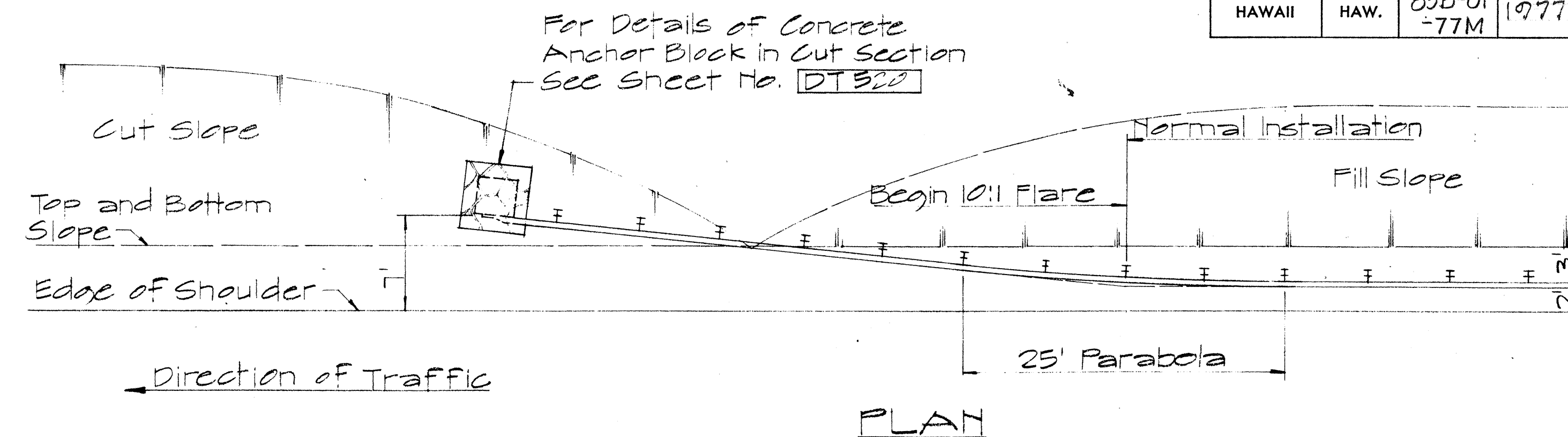
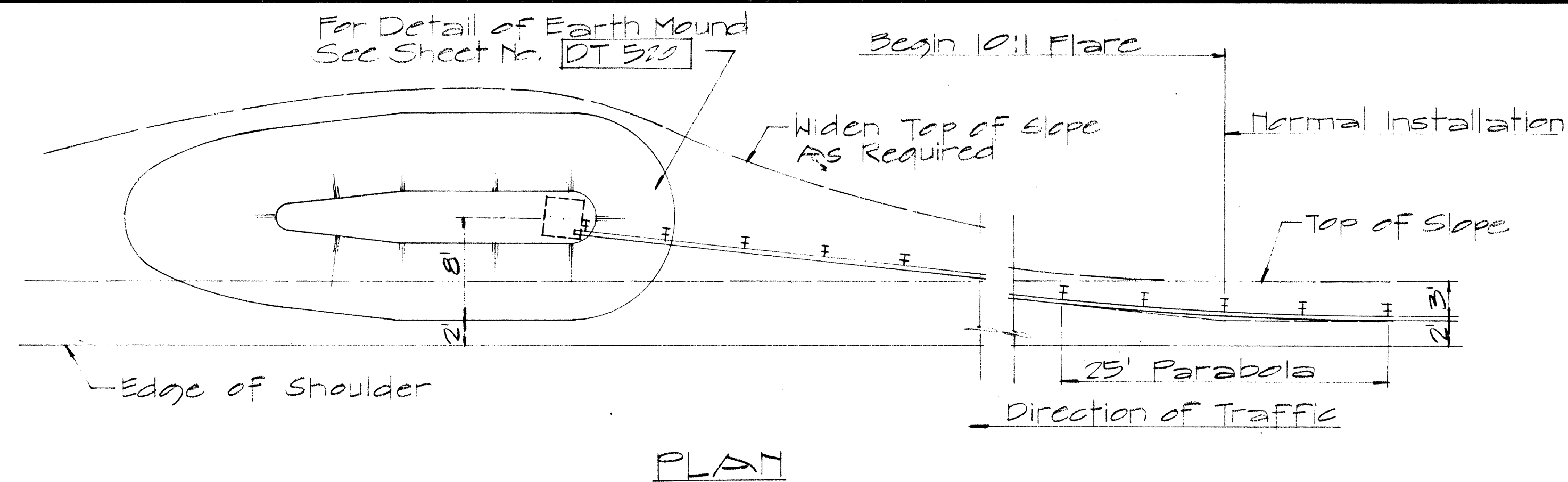
ELEVATION
TYPE "C" FLARE
Sc. 1/8" = 1'-0"

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
OF APPROACH END
FLARE - ONE & TWO
WAY ROADWAY
Sc. As Noted April 1967
SHEET No. 7 OF 11 SHEETS DT 516

DATE	
DESIGNED BY	
TRACED BY	
NOTED BY	
CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-77M	1977	11	20



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

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

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

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

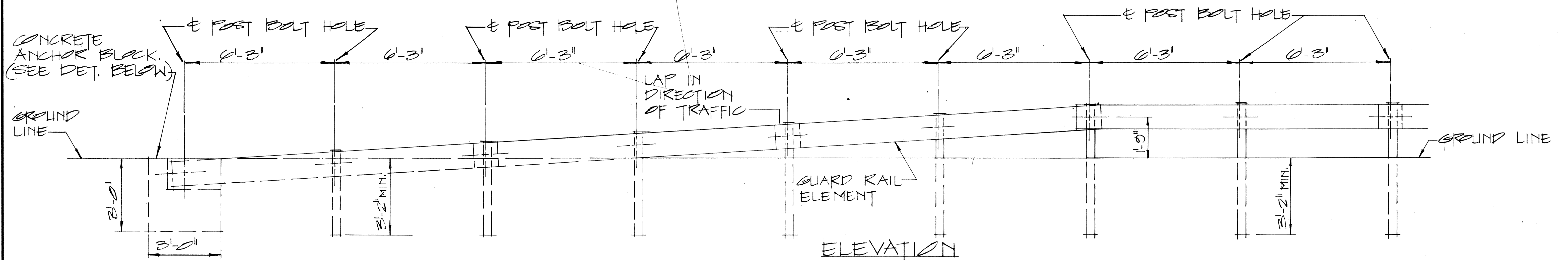
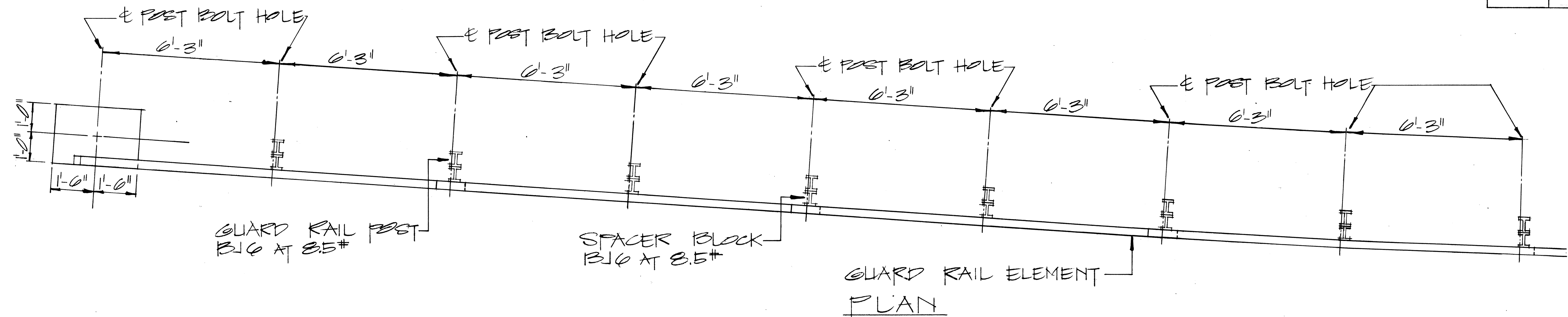
STANDARD DETAILS
 TRAILING END
 FLARE - ONE & TWO
 WAY ROADWAY

Scale: As Noted April 1969

SHEET No. 8 OF 11 SHEETS DT 517

DATE	
DESIGNED BY	
CHECKED BY	
NO.	

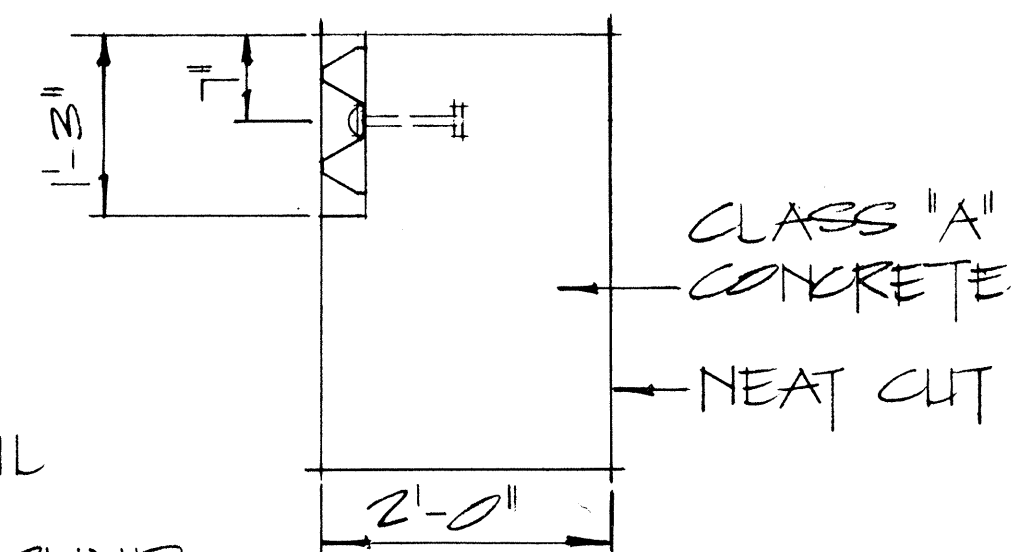
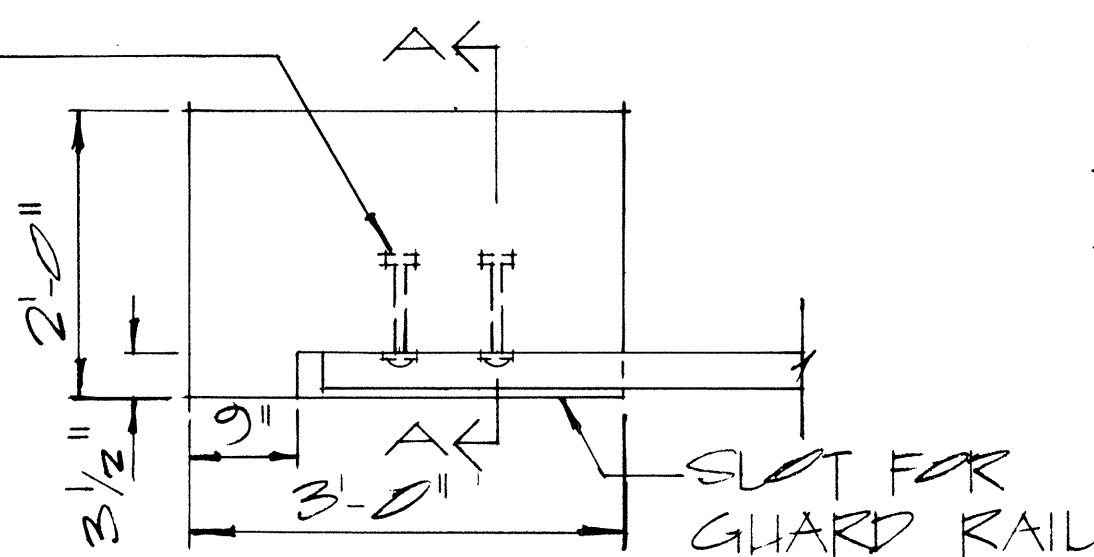
FED. ROAD DIST. NO.	STATE	FED-AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-77M	1977	12	20



RAMP END ANCHORAGE

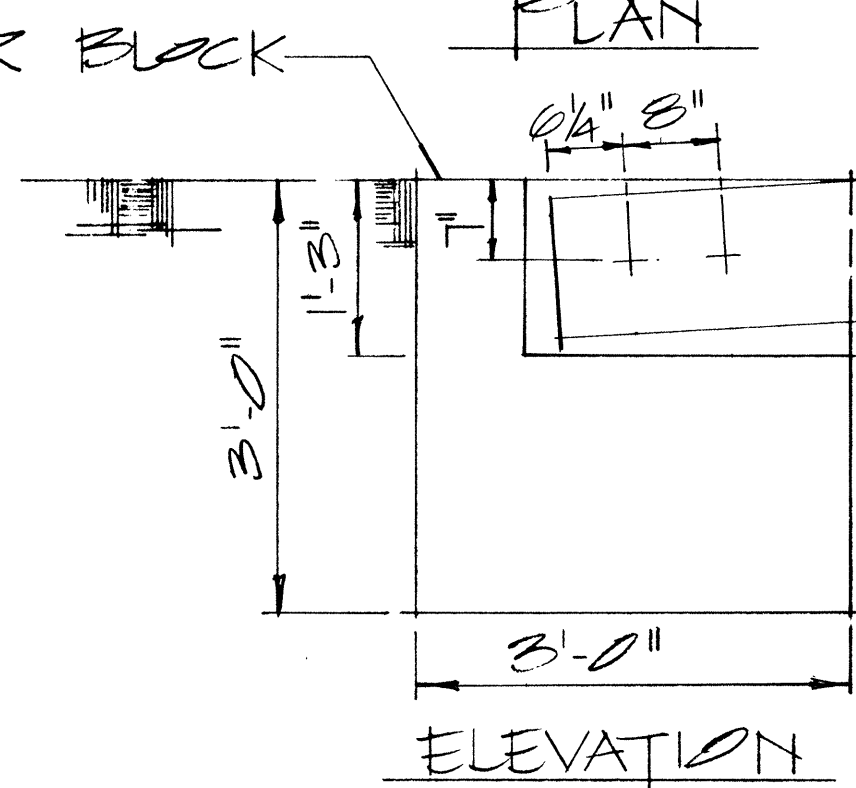
SCALE: $\frac{1}{2}" = 1'-0"$

2-5/8" x 7/4" LONG BOLTS, W/ NUTS & WASHERS INCIDENTAL TO METAL GUARD RAIL. ALL METAL PIECES SHALL BE GALVANIZED.



SECTION "A-A"

TOP OF ANCHOR BLOCK TO BE FLUSH W/ GROUND.



GROUND LINE

NOTE: CONCRETE, EXCAVATION AND MISCELLANEOUS APPURTENANCES NECESSARY TO ANCHOR THE GUARD RAIL ENDS, SHALL BE INCIDENTAL TO THE METAL GUARD RAIL.

CONCRETE ANCHOR BLOCK

SCALE: $\frac{3}{4}" = 1'-0"$

APPROVAL RECOMMENDED:
TRAFFIC ENGINEER
DATE: 12/20/69

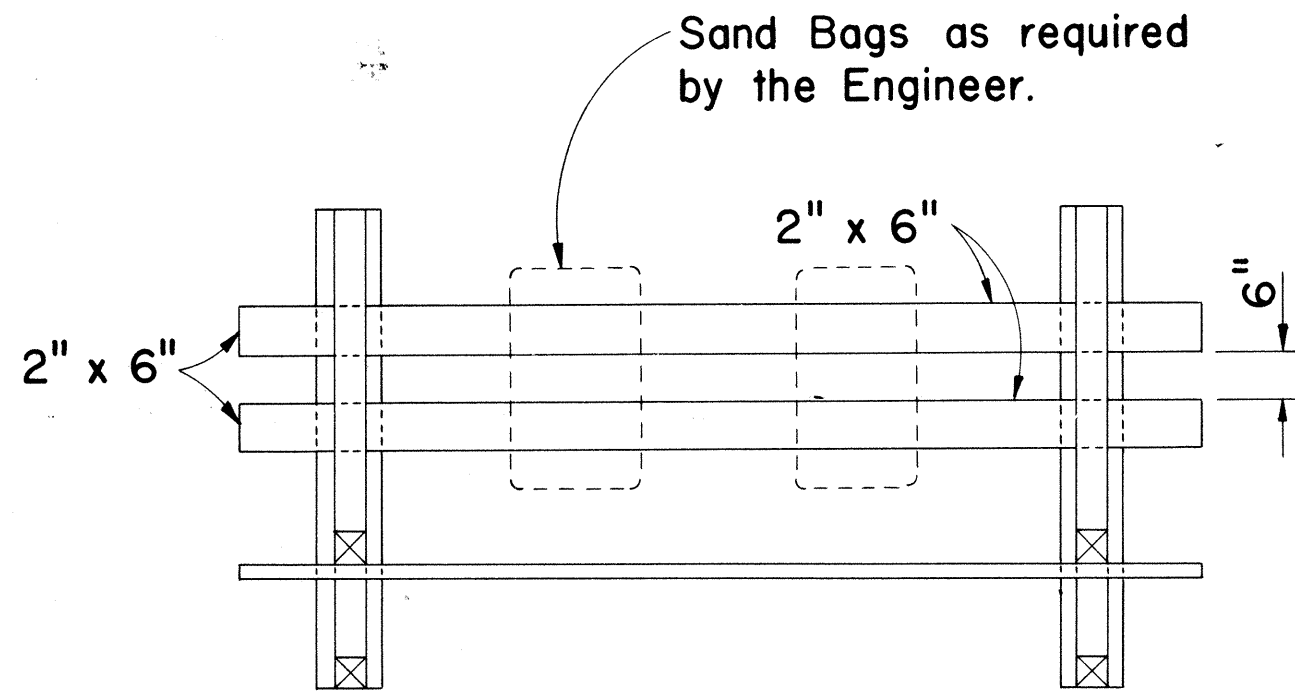
APPROVED:
ASSISTANT CHIEF, ENGINEERING
DATE: 12-30-69

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
GUARD RAIL, TYPE 3
RAMP END ANCHORAGE
SCALE: AS SHOWN

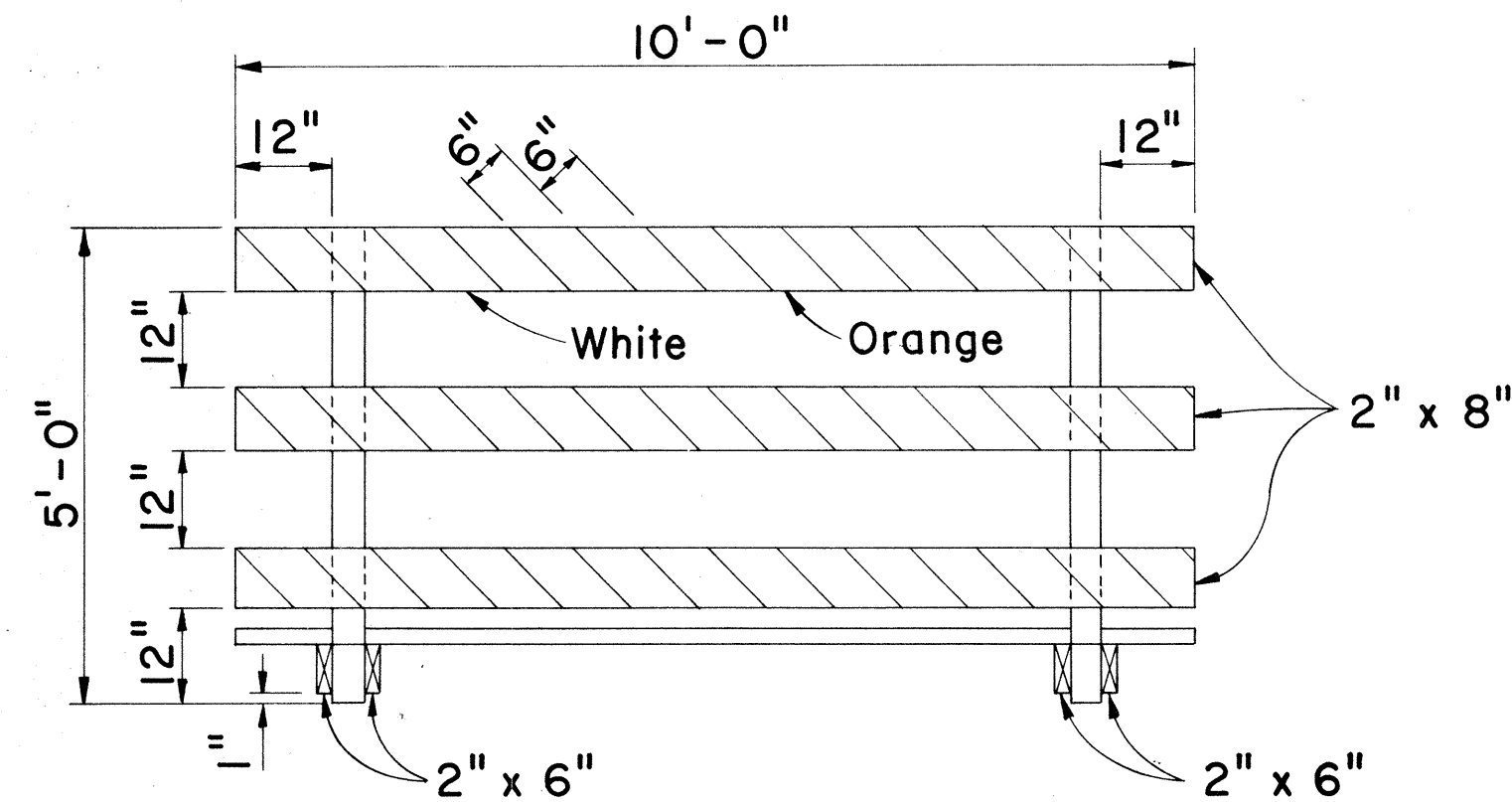
SHEET No. 9 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-77M	1977	13	20

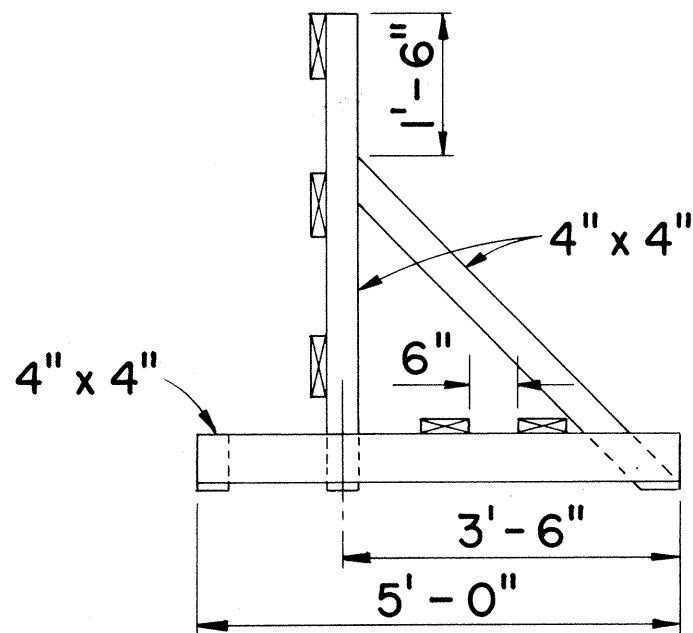


PLAN VIEW

- GENERAL NOTES**
1. The Contractor shall construct, install and maintain the wood barricades at the locations shown on the Plans.
 2. The permanent wood barricades shall be left in place or relocated upon completion of the project as ordered by the Engineer and are to become State property.
 3. The orange and white stripes shall slant downward toward the side on which traffic is to pass and shall be reflectorized with high intensity reflective sheeting.



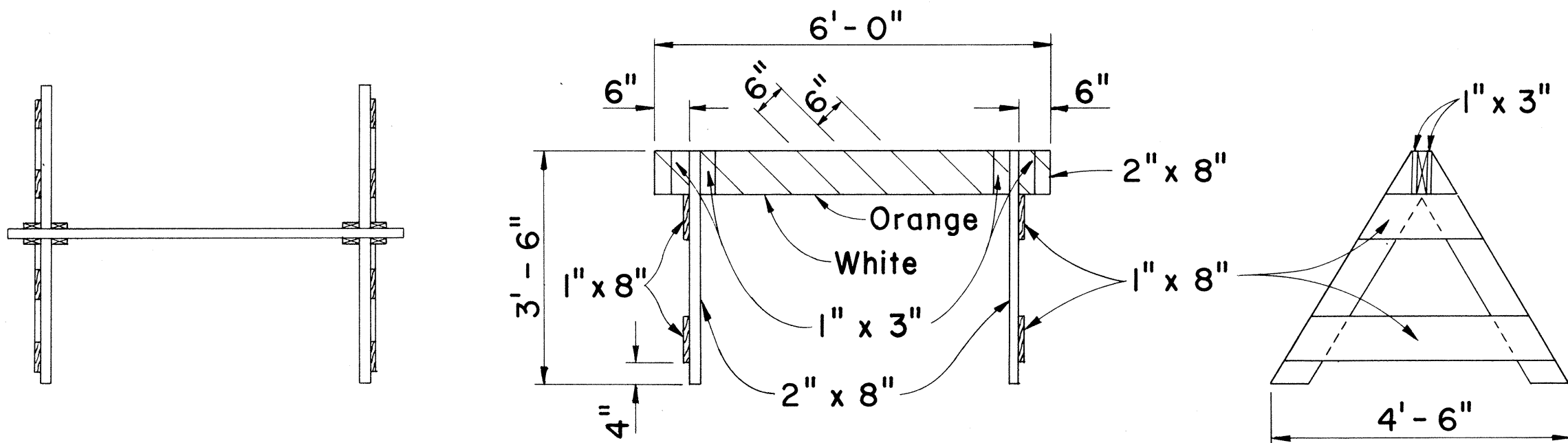
FRONT VIEW



END VIEW

CLASS I BARRICADE

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



PLAN VIEW

FRONT VIEW

END VIEW

CLASS II BARRICADE

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

APPROVAL RECOMMENDED:
Eishi Tanaka 12/29/79
 TRAFFIC ENGINEER DATE

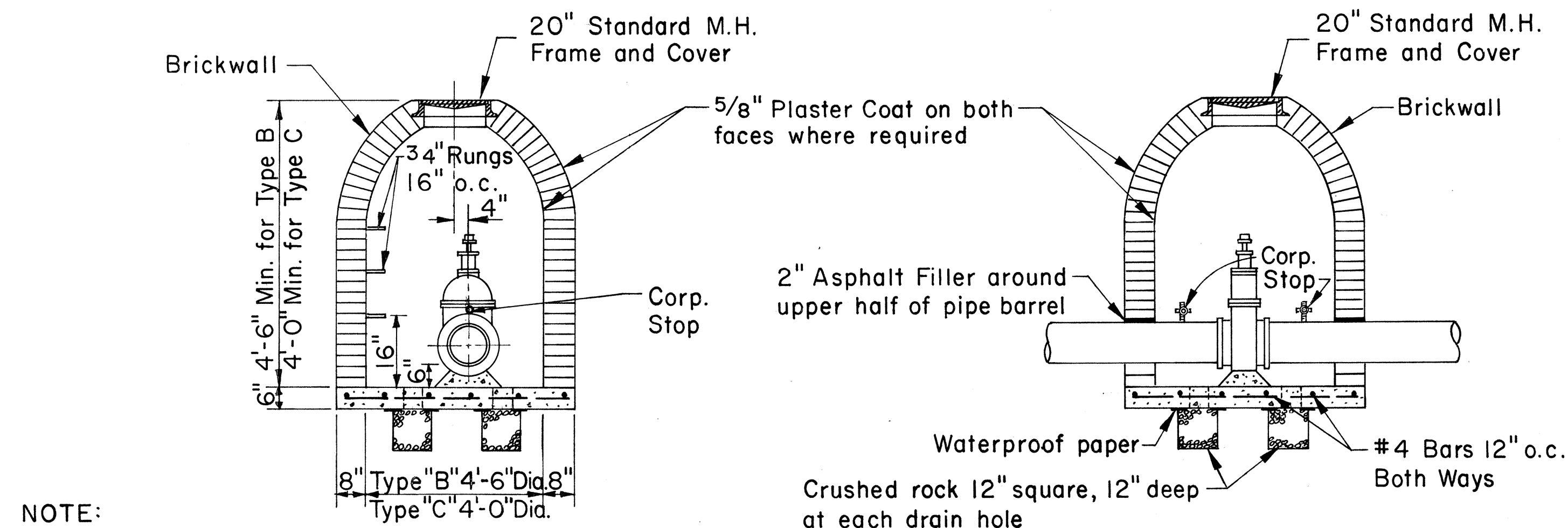
APPROVED:
John J. J. J. 12-30-79
 ASSISTANT CHIEF, ENGINEERING DATE

NO	REVISION	APPROVED BY	DATE
1	Reduce sign width to 12'-0"	H.T.	9-3-10
2	Delete "Bureau of Public Roads"	H.T.	9-29-10
3	Add Note No. 3 for Barricades	H.T.	5-4-11
4	Revise stripe color for Barricades	H.T.	10-21-12

NO.	REVISION	APPROVED BY	DATE
5	Revise General Note 3 for Barricades. Delete details of Construction Identification Sign.	H.T.	9-16-75

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
TYPICAL DETAILS
 CONSTRUCTION IDENTIFICATION SIGN
 AND
 WOOD BARRICADES

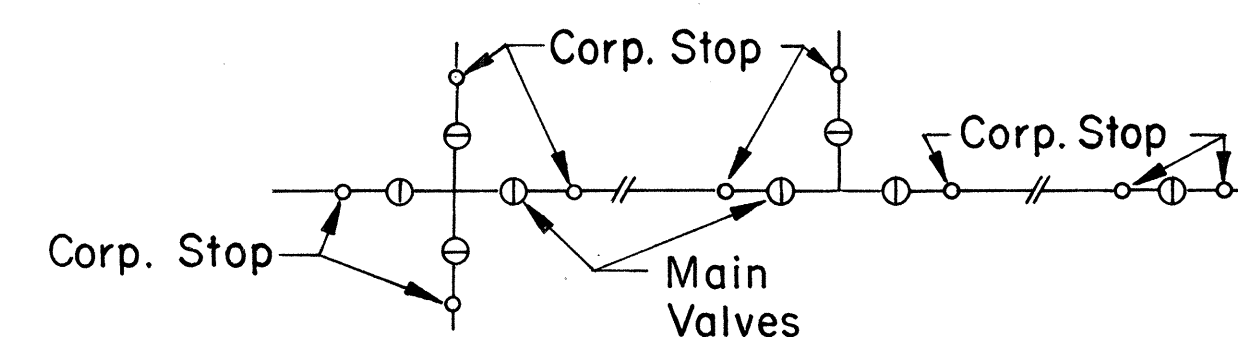
SCALE: As Shown DATE:



- NOTE:
1. Refer to Figure 8 for Details.
 2. Refer to Figure 9 for Corp. Stop Layout and required Corp. Stop sizes.
 3. Omit Drain Holes and Crushed Rock for Waterproofed Manholes.
 4. Concrete shall be Class B

TYPE B & C MANHOLES GENERAL ARRANGEMENT

FIGURE 7



CORPORATION STOP LAYOUT

TABLE A
REQUIRED CORP. STOP SIZES AT MAIN VALES

DIA. OF MAINS (INCHES)	SIZE OF CORP. STOP
4	1" x 1 1/4"
6	1" x 1 1/4"
8	1" x 1 1/4"
12	1" x 1 1/4"
16	1" x 1 1/4"
20	1" x 1 1/4"
24	1 1/2" x 2"
30	1 1/2" x 2"
36	1 1/2" x 2"

NOTE:

For Valves on the "run" the size of one Corp. Stop shall be as shown in Table A. The other Corp. Stop shall be 1" x 1 1/4" for all sizes of pipes.

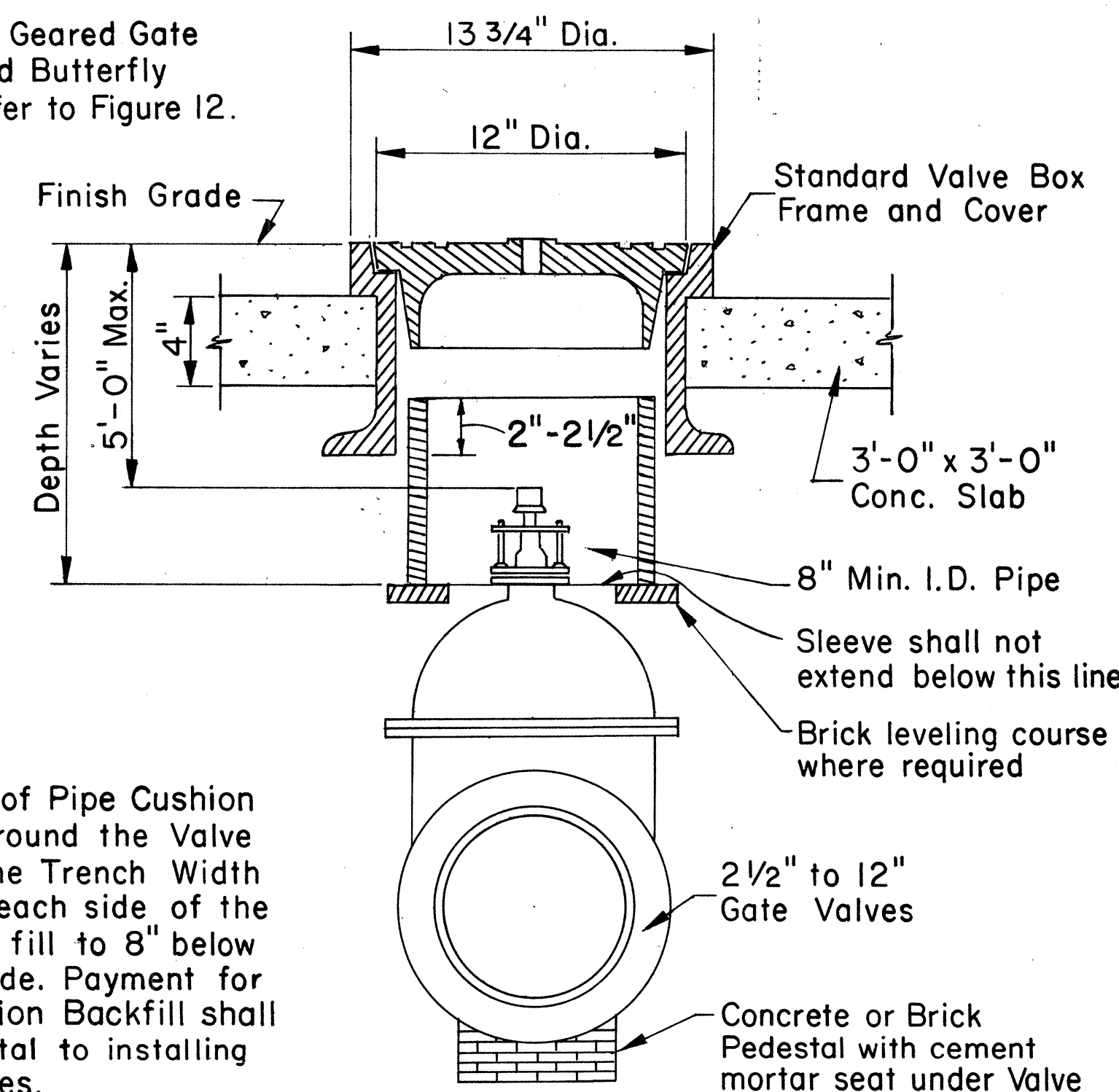
Whenever the Corp. Stop at the Valve must be used for flushing the main, the size of the Corp. Stop shall be the maximum size permitted for the main.

CORPORATION STOP LAYOUT AND SIZES

FIGURE 9

NOTE:

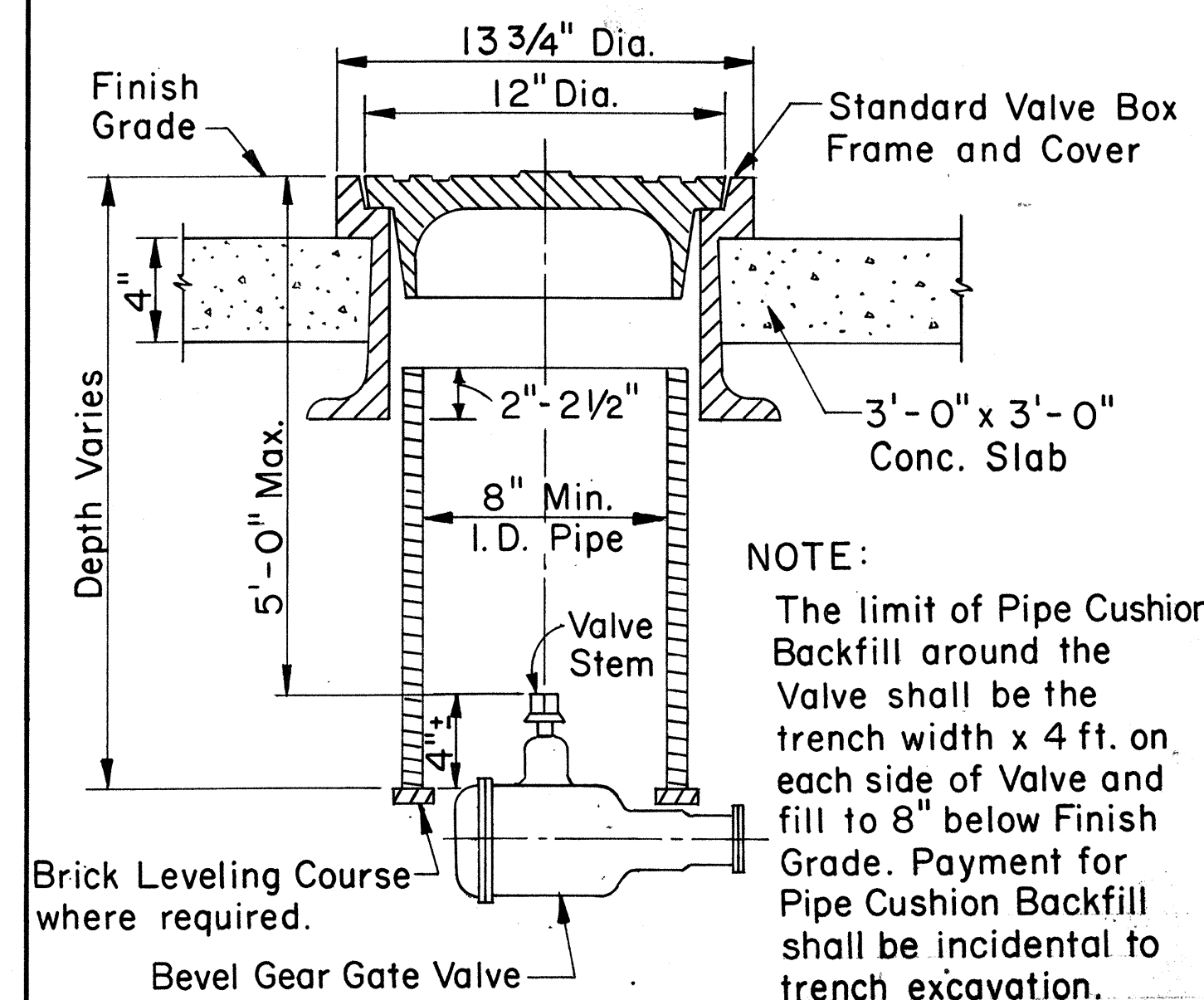
For Bevel Geared Gate Valves and Butterfly Valves refer to Figure 12.



The limit of Pipe Cushion Backfill around the Valve shall be the Trench Width x 4 ft. on each side of the Valve and fill to 8" below Finish Grade. Payment for Pipe Cushion Backfill shall be incidental to installing valve boxes.

VALVE BOX INSTALLATION FOR GATE VALVES

FIGURE 11



NOTE:

The limit of Pipe Cushion Backfill around the Valve shall be the trench width x 4 ft. on each side of Valve and fill to 8" below Finish Grade. Payment for Pipe Cushion Backfill shall be incidental to trench excavation.

VALVE BOX INSTALLATION FOR BGGV AND BUTTERFLY VALVES

FIGURE 12

APPROVED:

S. Kawakami 1/24/73
ASSISTANT CHIEF ENGINEER
BOARD OF WATER SUPPLY

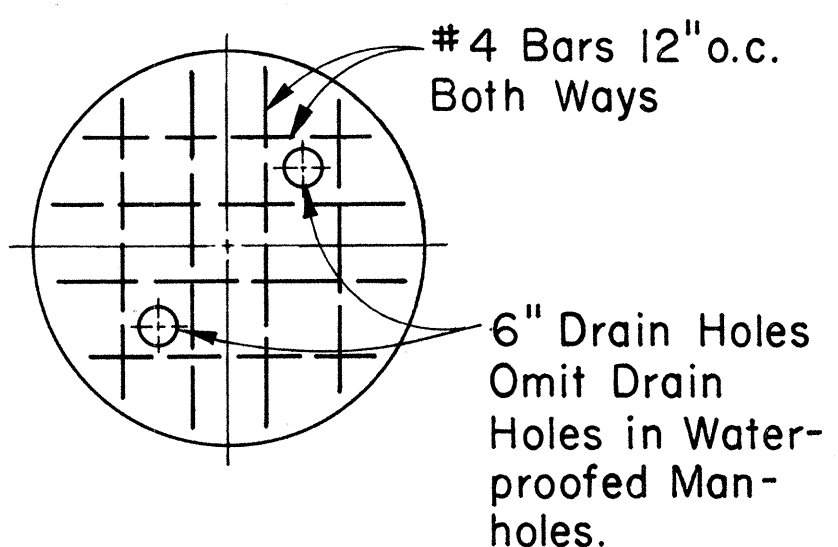
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
BOARD OF WATER SUPPLY

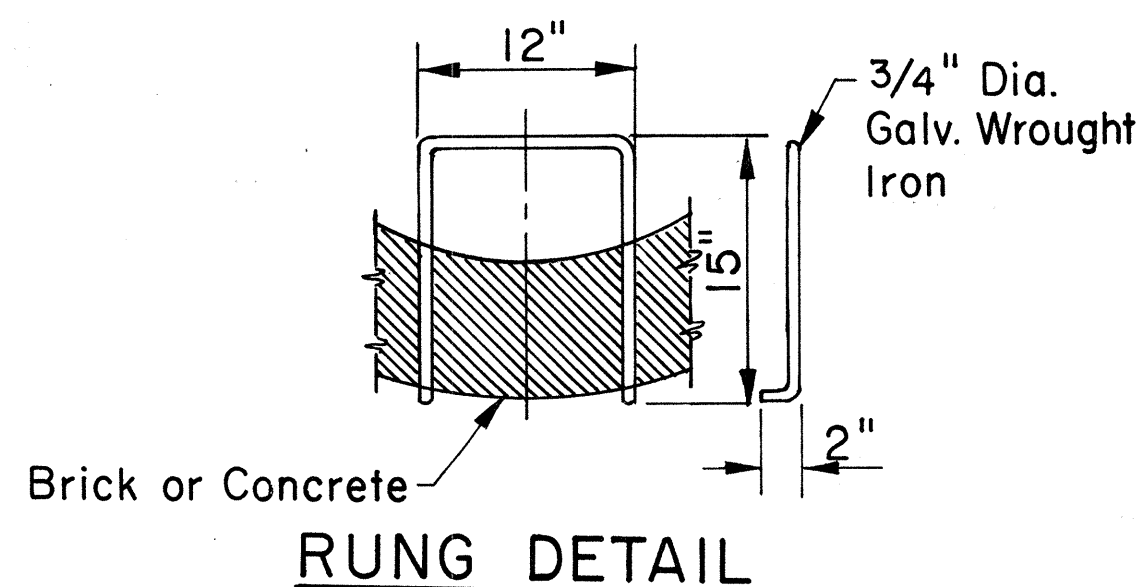
SHEET No. 11 OF 11 SHEETS

2" Asphalt Filler around upper half of pipe barrel

FILLER DETAIL



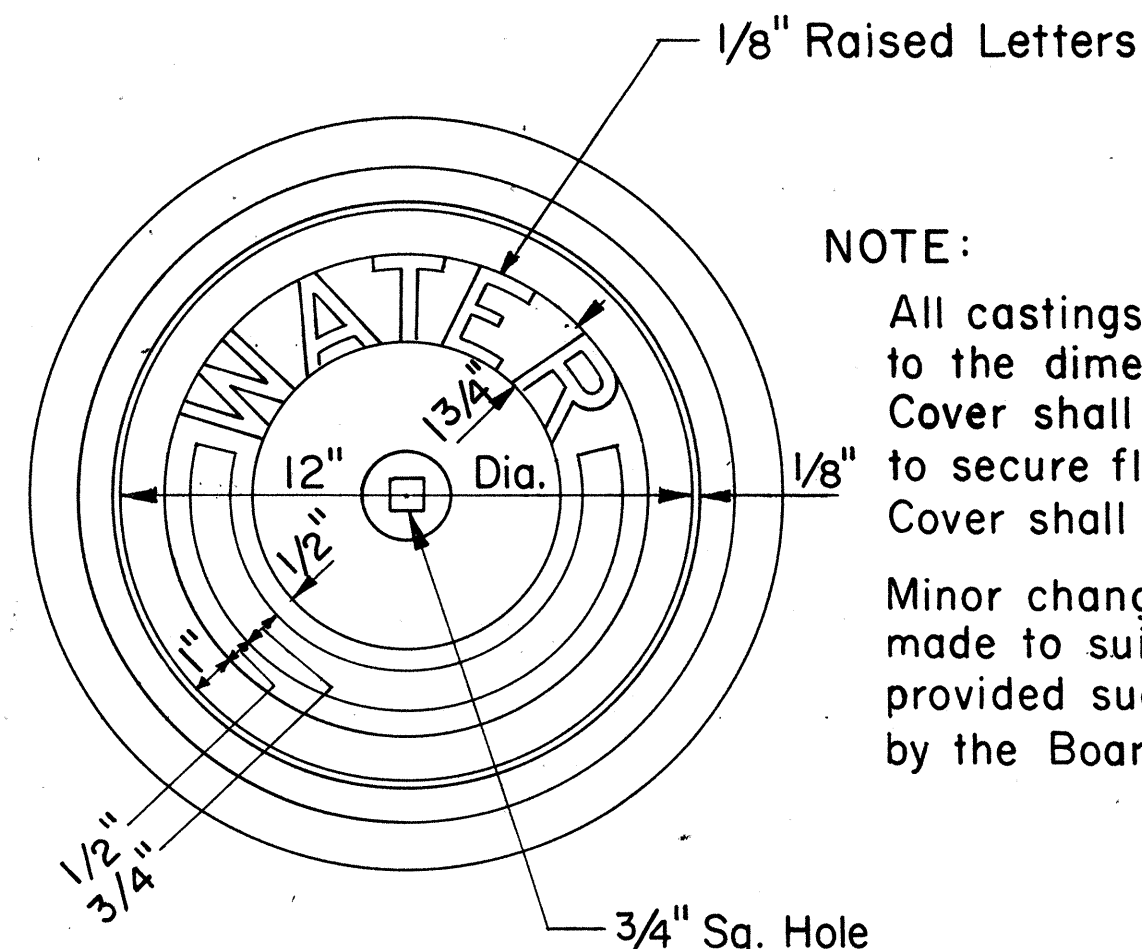
BOTTOM SLAB PLAN



RUNG DETAIL

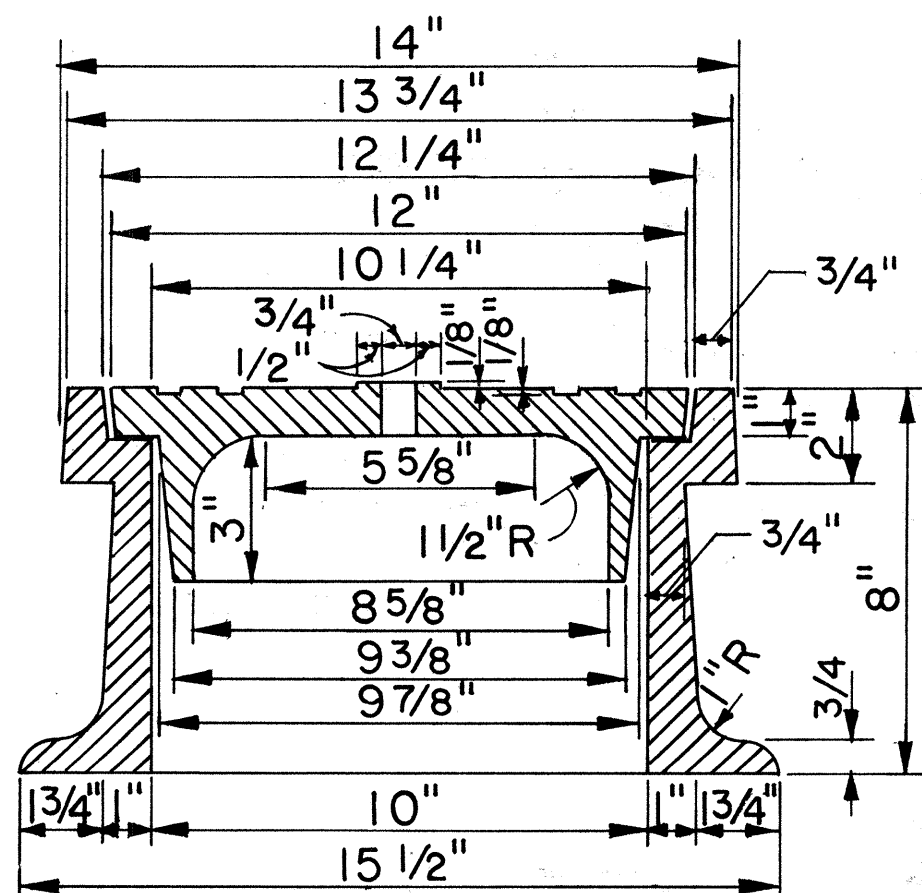
TYPE B & C MANHOLES DETAILS

FIGURE 8



NOTE:

All castings shall be made accurately to the dimensions shown. Seat and Cover shall be machined, not ground to secure flat and true surfaces. The Cover shall not rattle in any position. Minor changes in dimensions may be made to suit foundry conditions provided such changes are approved by the Board of Water Supply.



VALVE BOX FRAME AND COVER

FIGURE 10