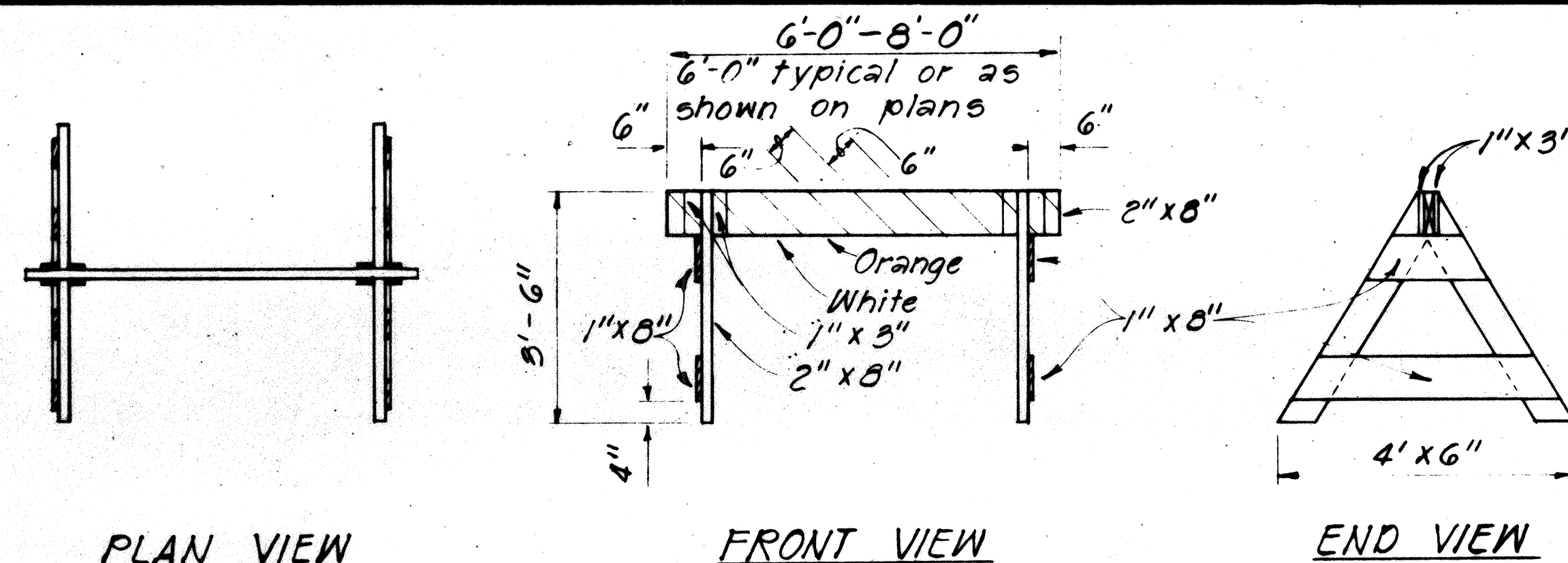
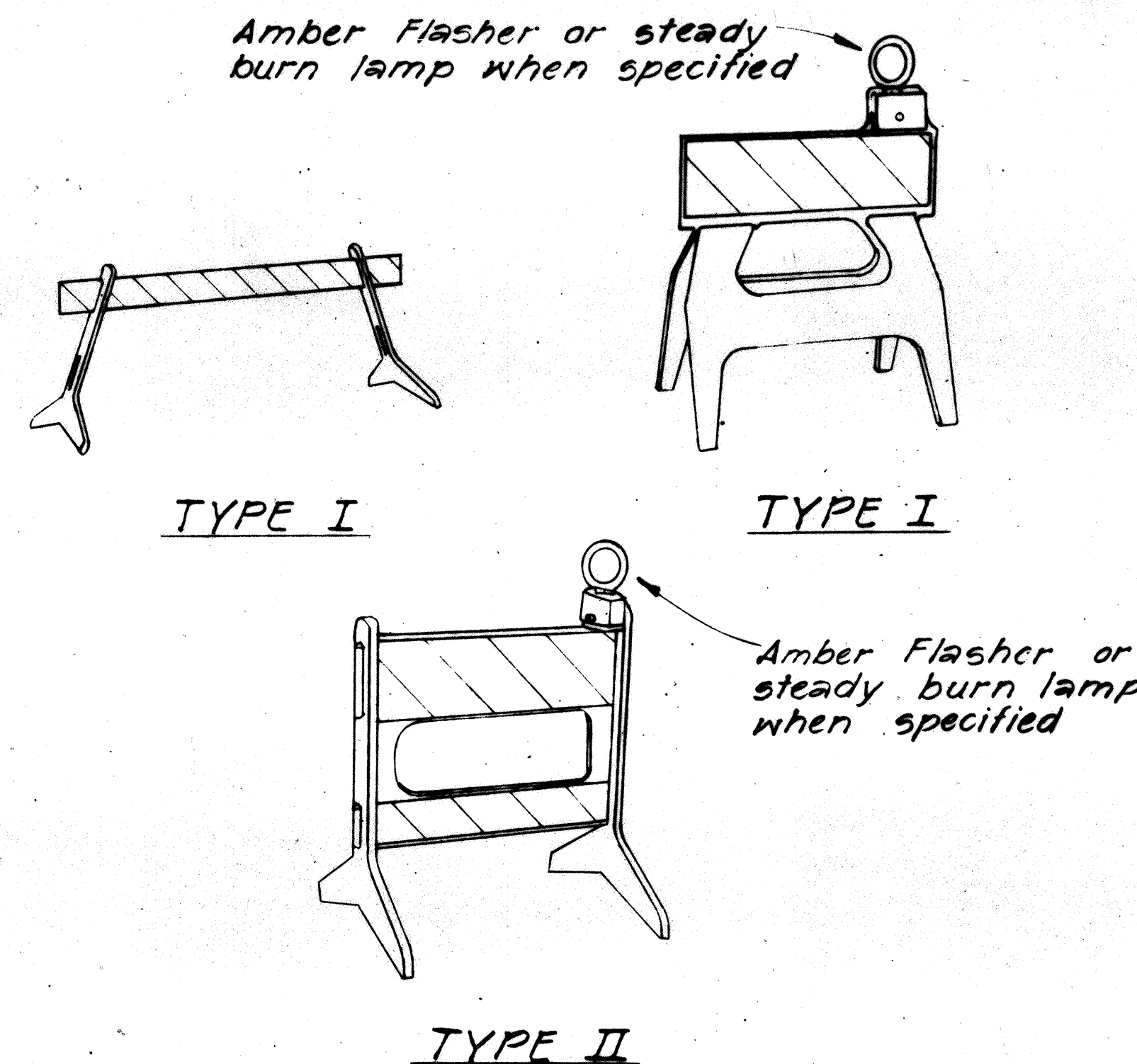


FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	L70-06-79	1980	9	45

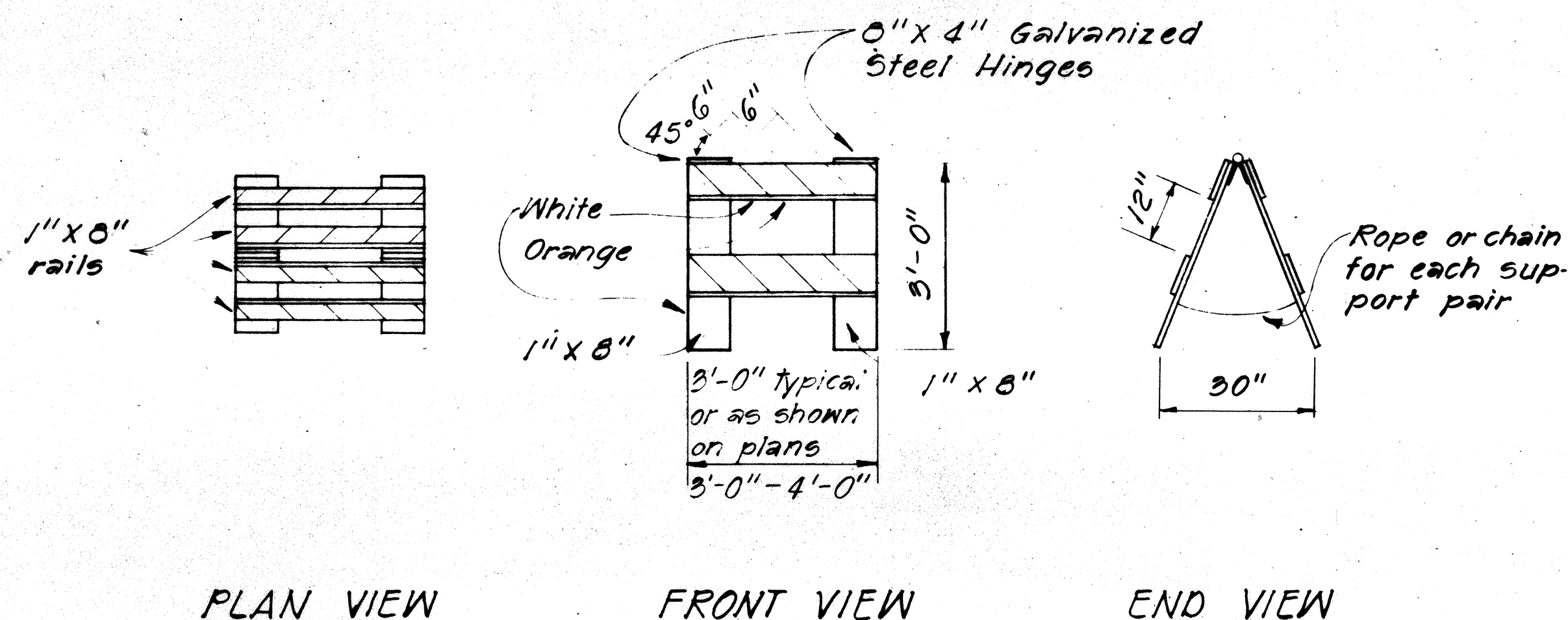


TYPE I BARRICADE
Scale: 1/2" = 1'-0"



GENERAL NOTES

- The Contractor shall construct, install and maintain the barricades at the locations shown on the Plans.
- The barricades shall be left in place or relocated upon completion of the project as ordered by the Engineer and are to become State property, unless otherwise specified.
- The orange and white stripes shall slant downward toward the side on which traffic is to pass and shall be reflectorized with reflective sheeting.
- Both faces of the barricade rails shall be striped. See Striping Detail Arrangement.
- Contractor may submit alternate designs for approval.
- Barricade details shall conform to the "Manual on Uniform Traffic Control Devices for Streets and Highways," 1971, by the Federal Highway Administration and as amended.
- If wooden rails are used, 26 ga. galv. steel sheet shall be first tacked on to the rails and then overlaid with reflective sheeting.

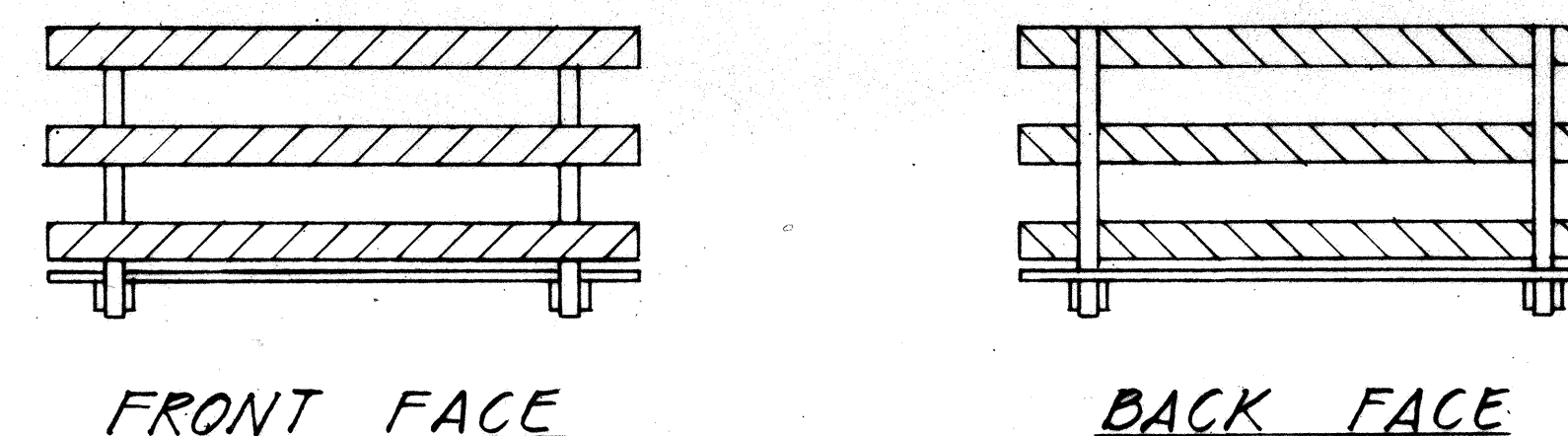


TYPE II BARRICADE
Scale: 1/2" = 1'-0"

PLASTIC MOLDED BARRICADE OPTIONS *

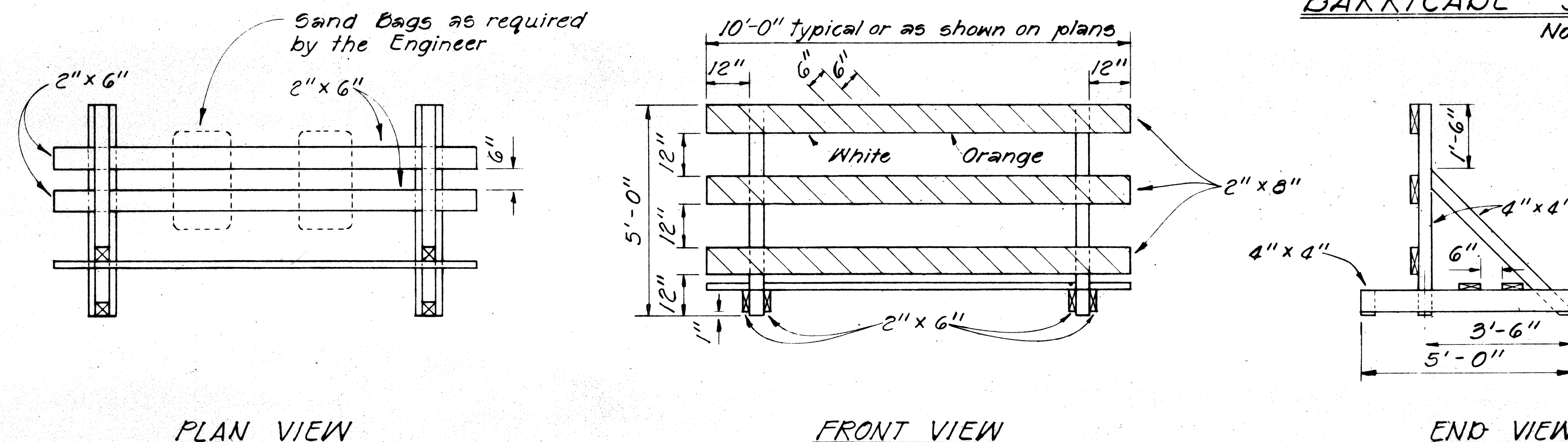
Not to Scale

* Shop Drawings must be submitted for approval.



BARRICADE STRIPING DETAILS

Not to Scale



TYPE III BARRICADE
Scale: 1/2" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAILS

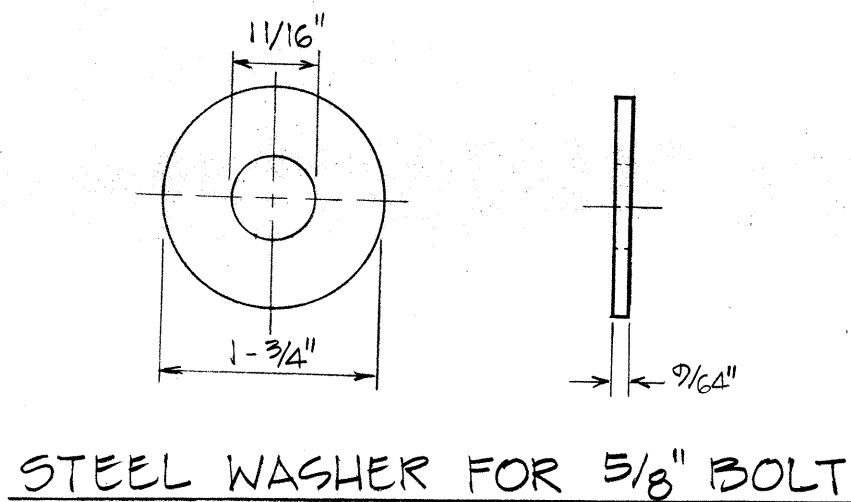
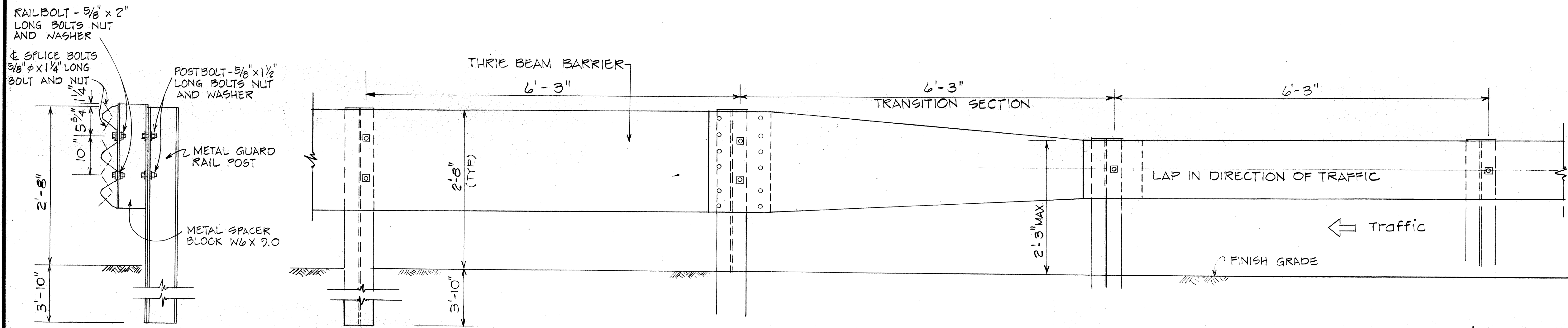
BARRICADES

SCALE: As Shown

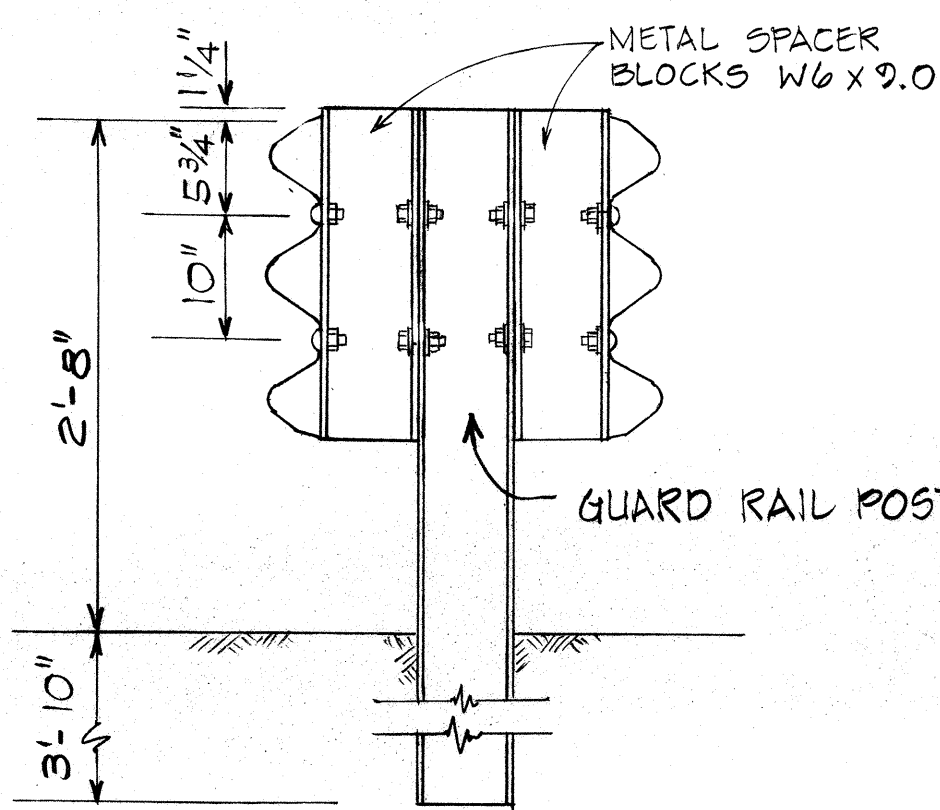
SHEET NO. 1 OF 11 SHEETS

DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
CHECKED BY	_____
NOTED BY	_____
APPROVED BY	_____

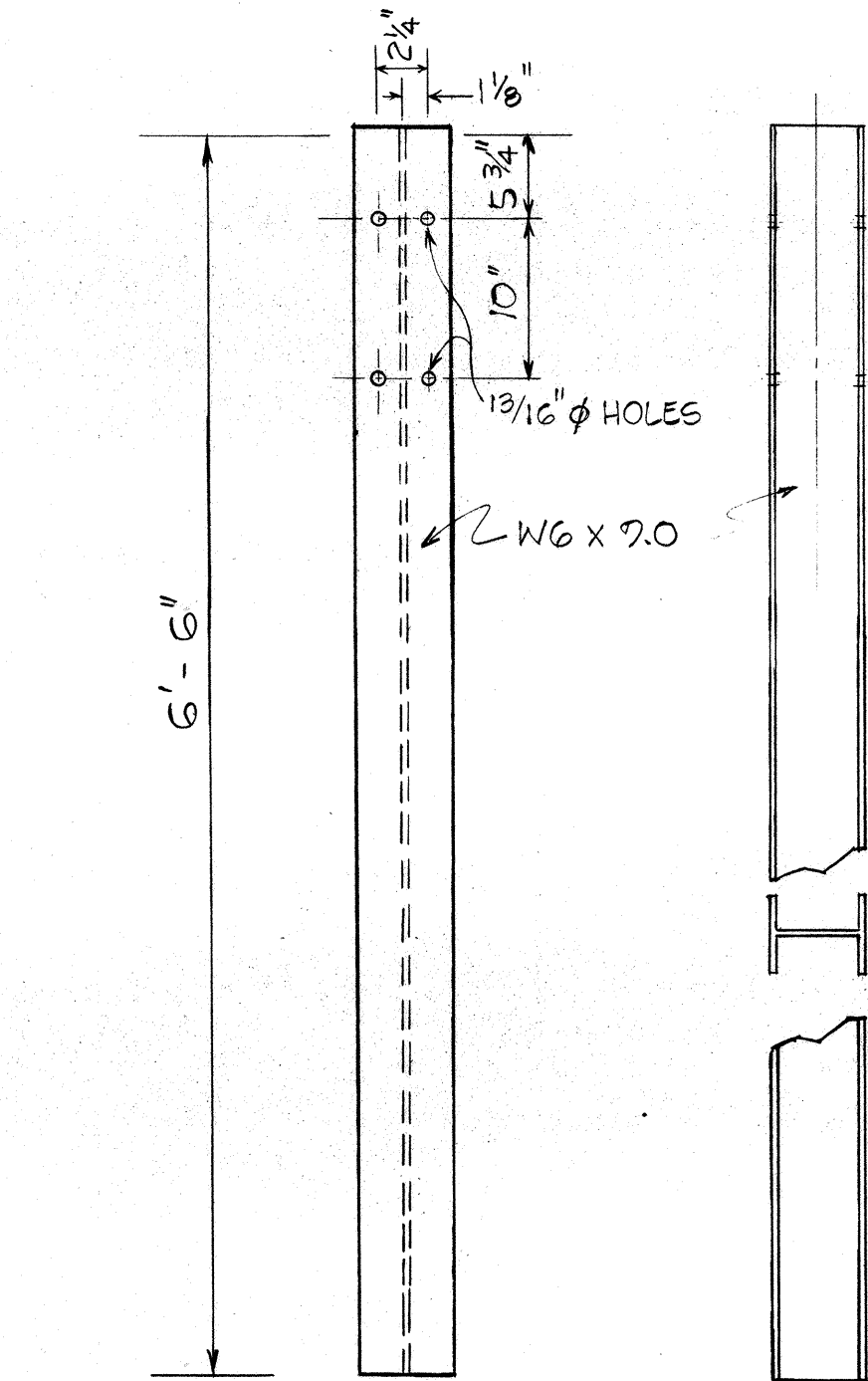
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	170-06-79	1980	11	45



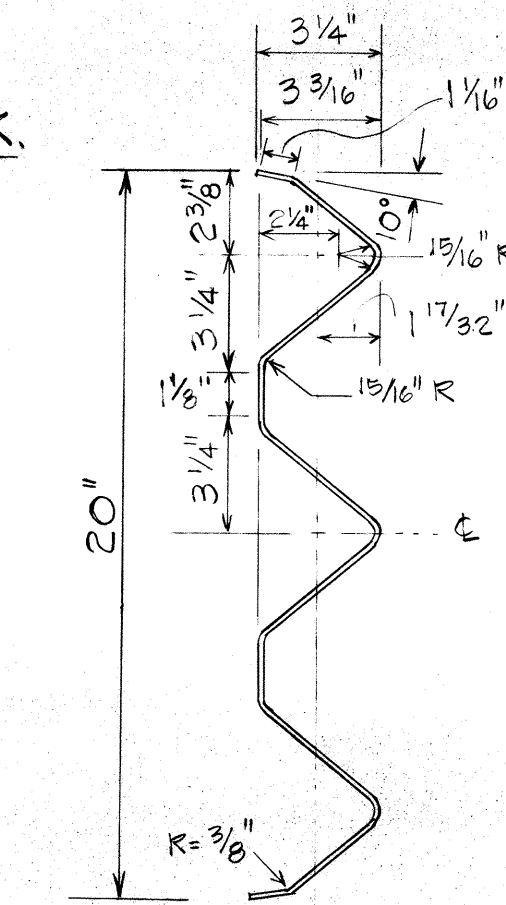
SINGLE METAL GUARD RAIL ON METAL POST W/METAL SPACER BLK.



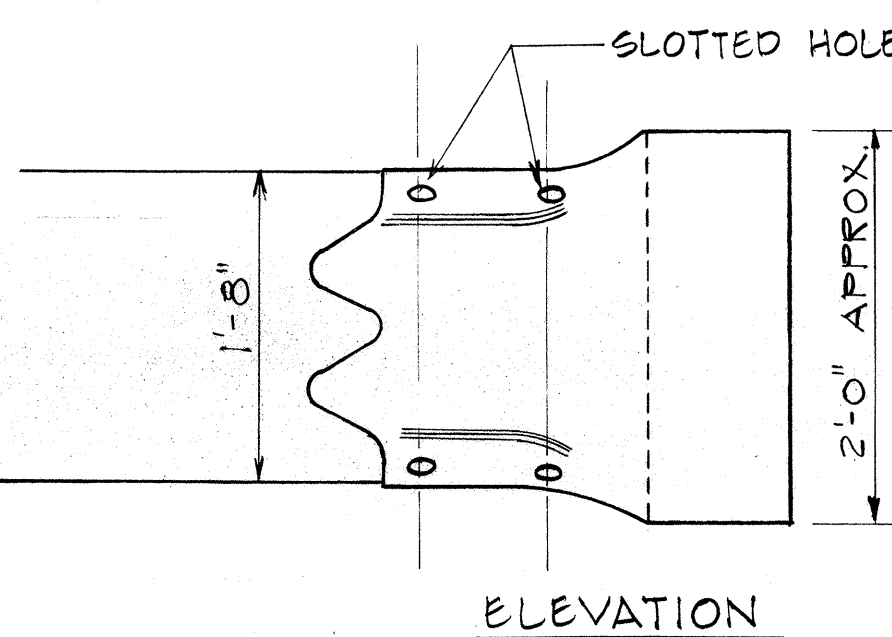
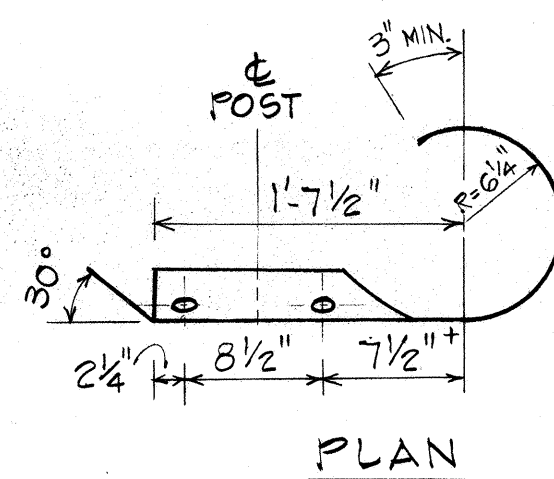
DOUBLE METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK



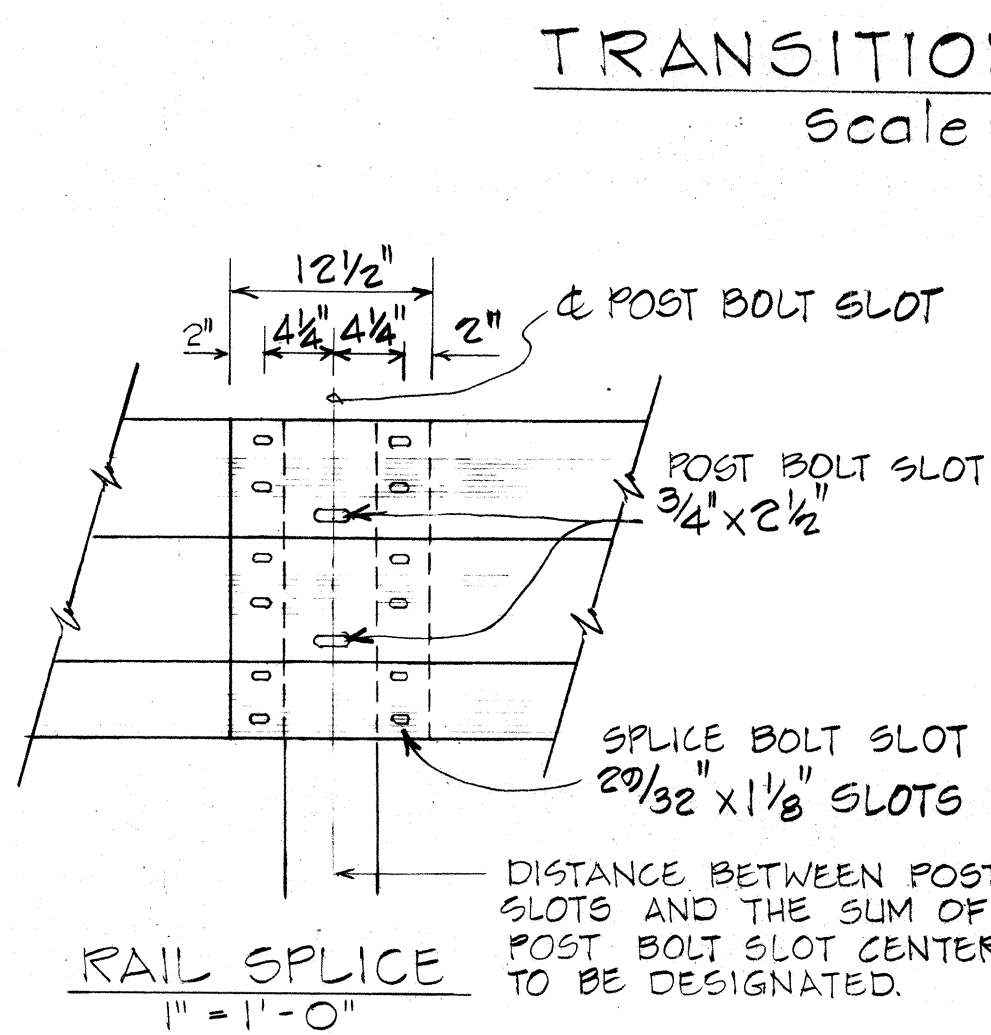
POST DETAILS
1" = 1'-0"



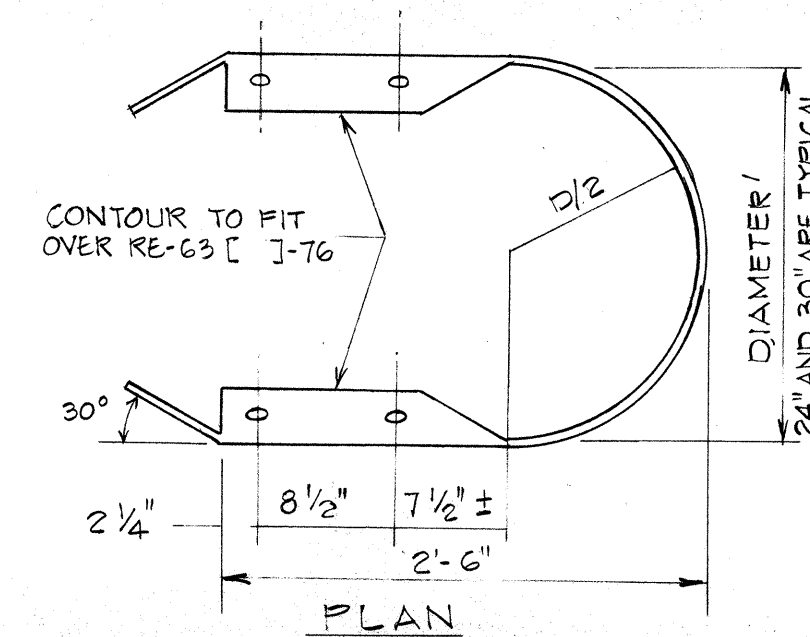
SECTION THRU RAIL ELEMENT
Scale: 1 1/2" = 1'-0"



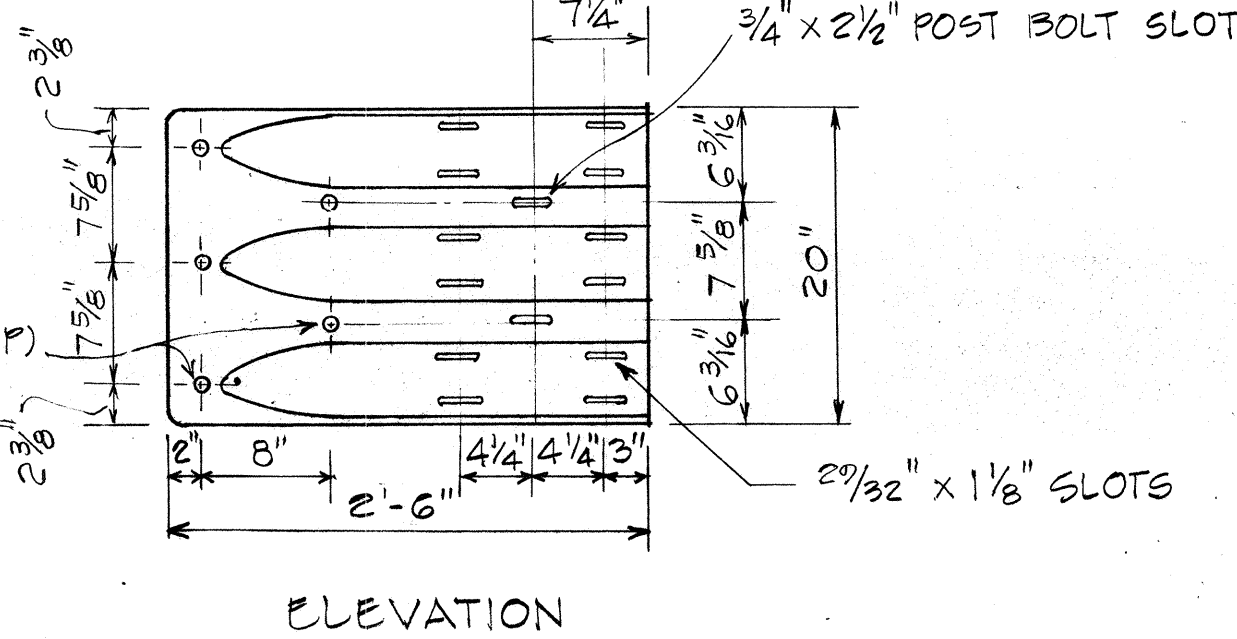
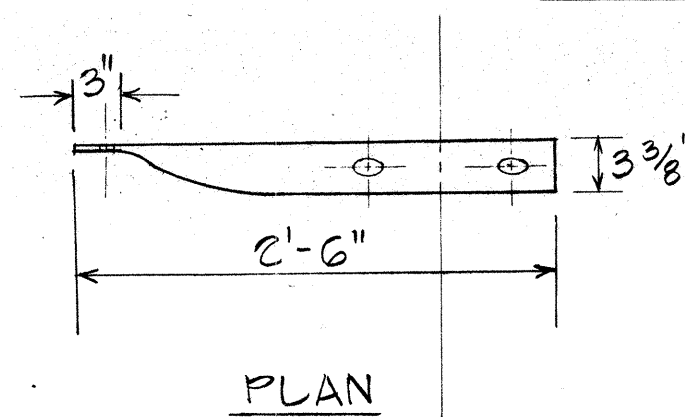
END SECTION (ROUNDED)
1" = 1'-0"



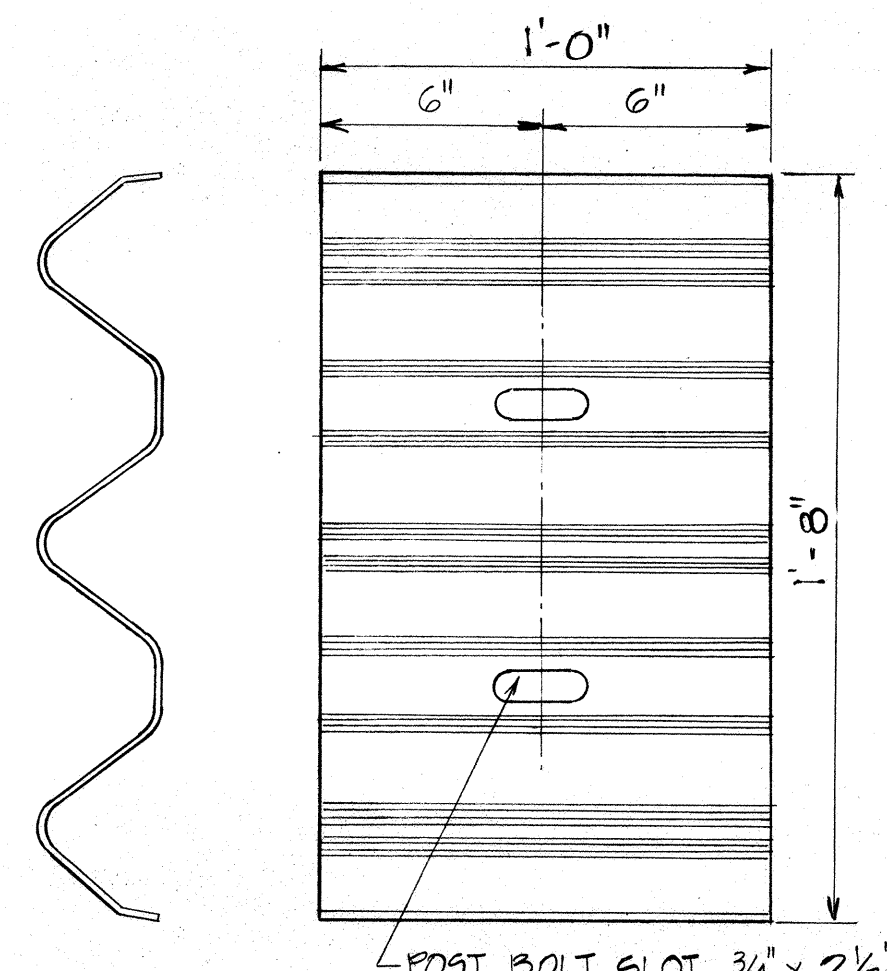
RAIL SPLICE
1" = 1'-0"



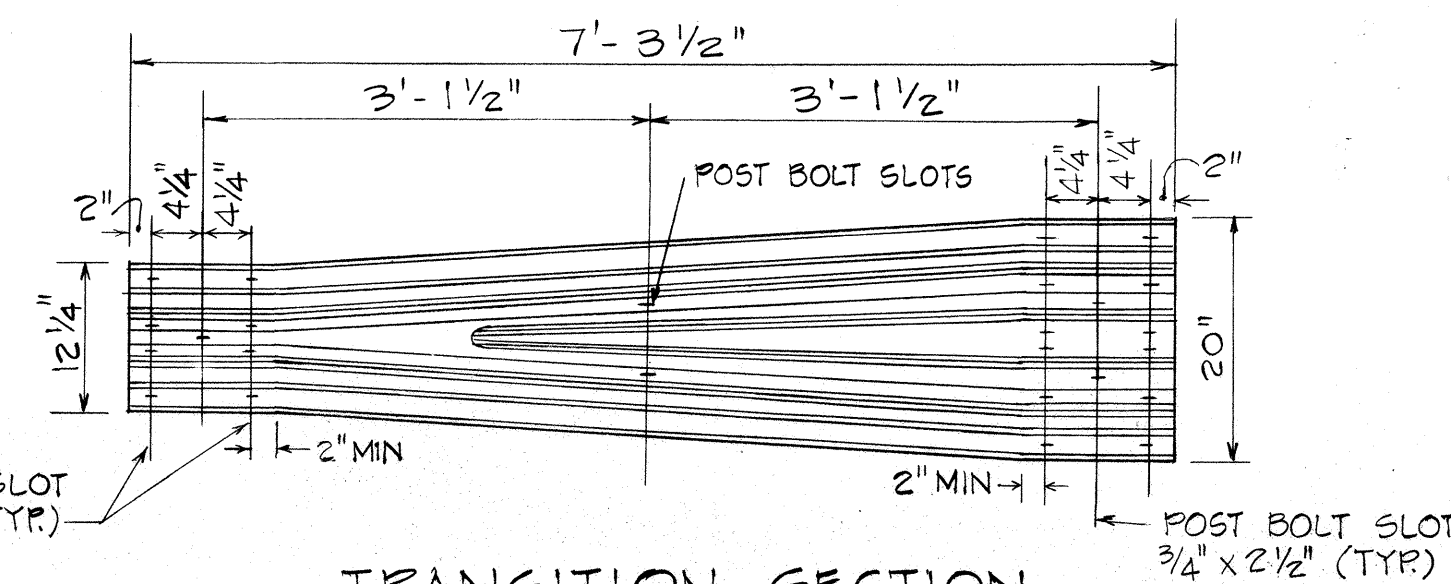
END SECTION (BUFFER)
Scale: 1" = 1'-0"



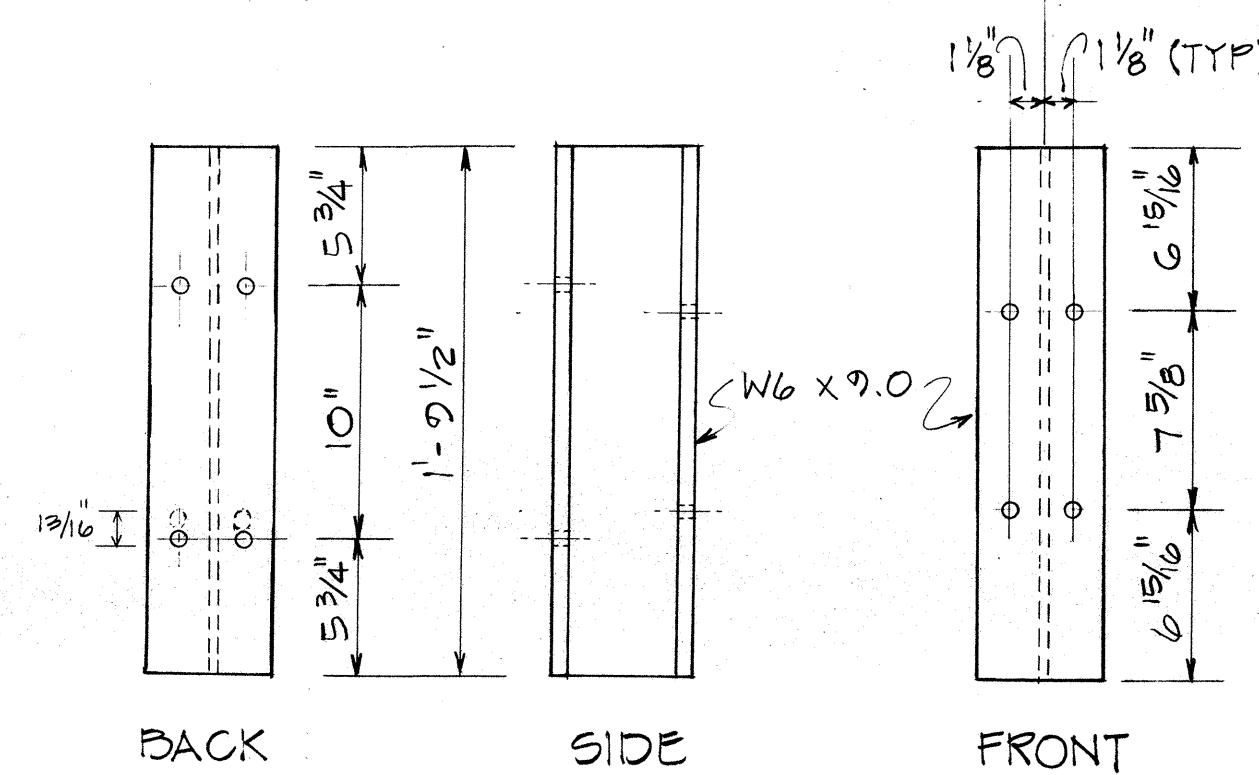
TERMINAL CONNECTOR
1" = 1'-0"



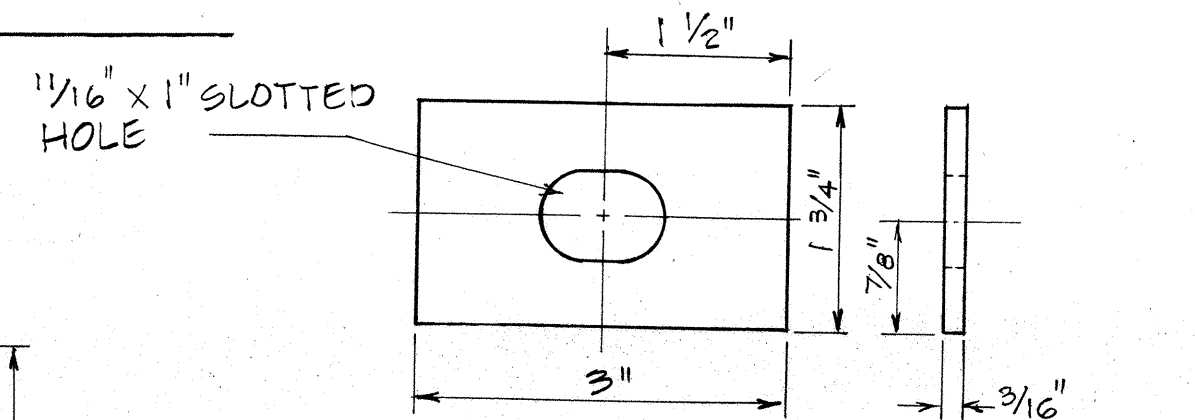
BACK UP PLATE



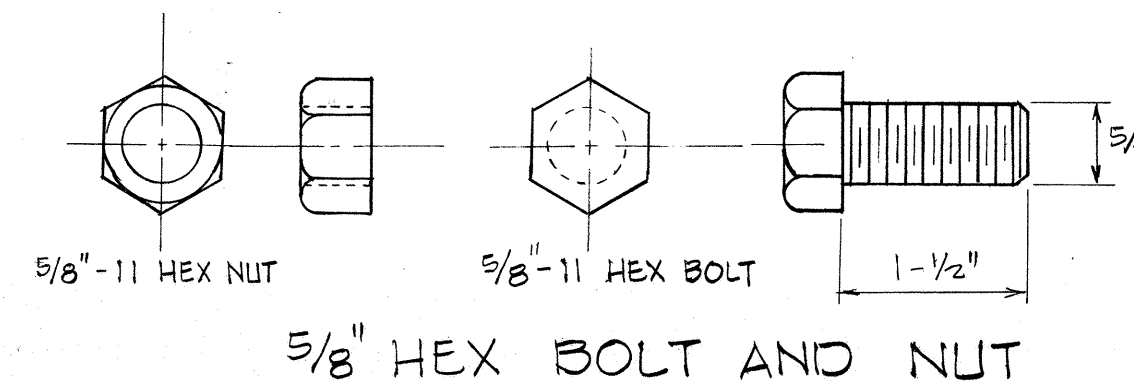
TRANSITION SECTION



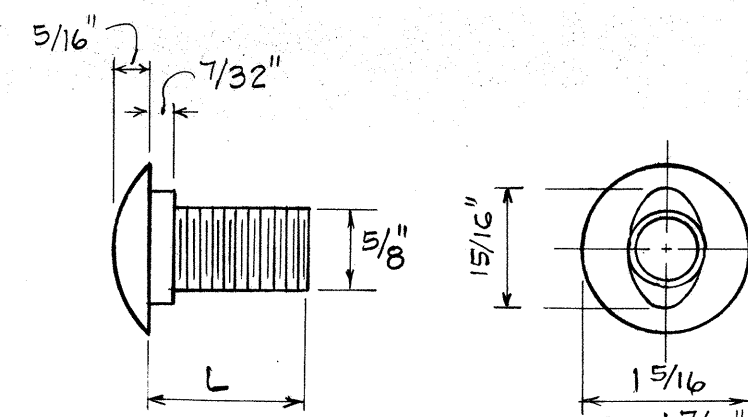
SPACER BLOCK



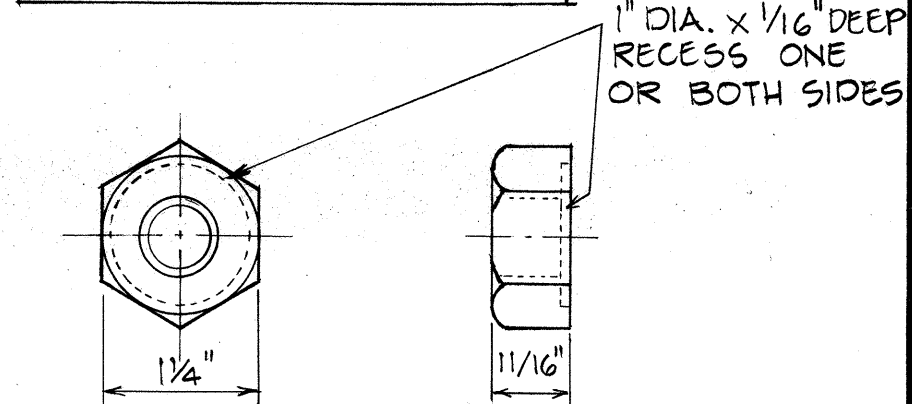
RECTANGULAR PLATE WASHER



5/8" HEX BOLT AND NUT



L	THREAD LENGTH
1 1/4"	FULL THREAD
2"	1 1/2" MIN THREAD LENGTH



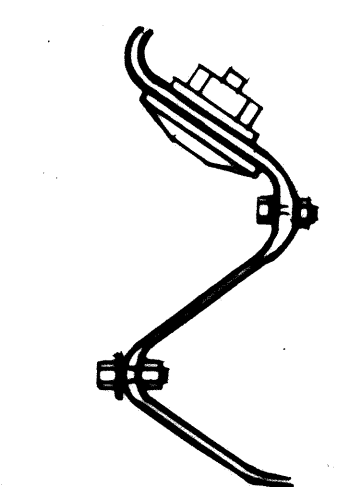
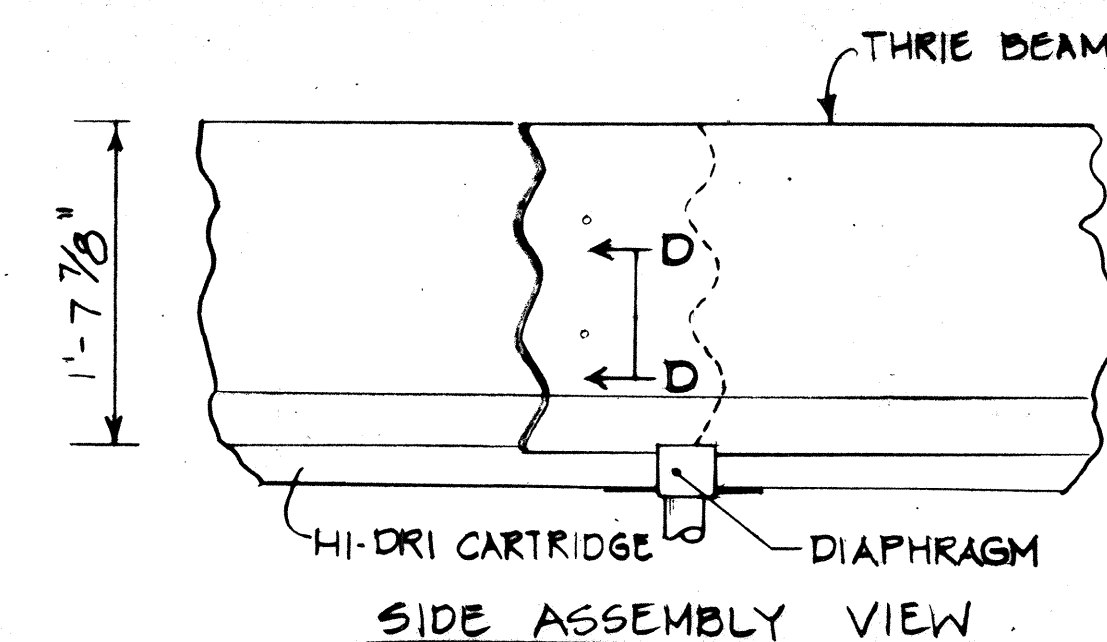
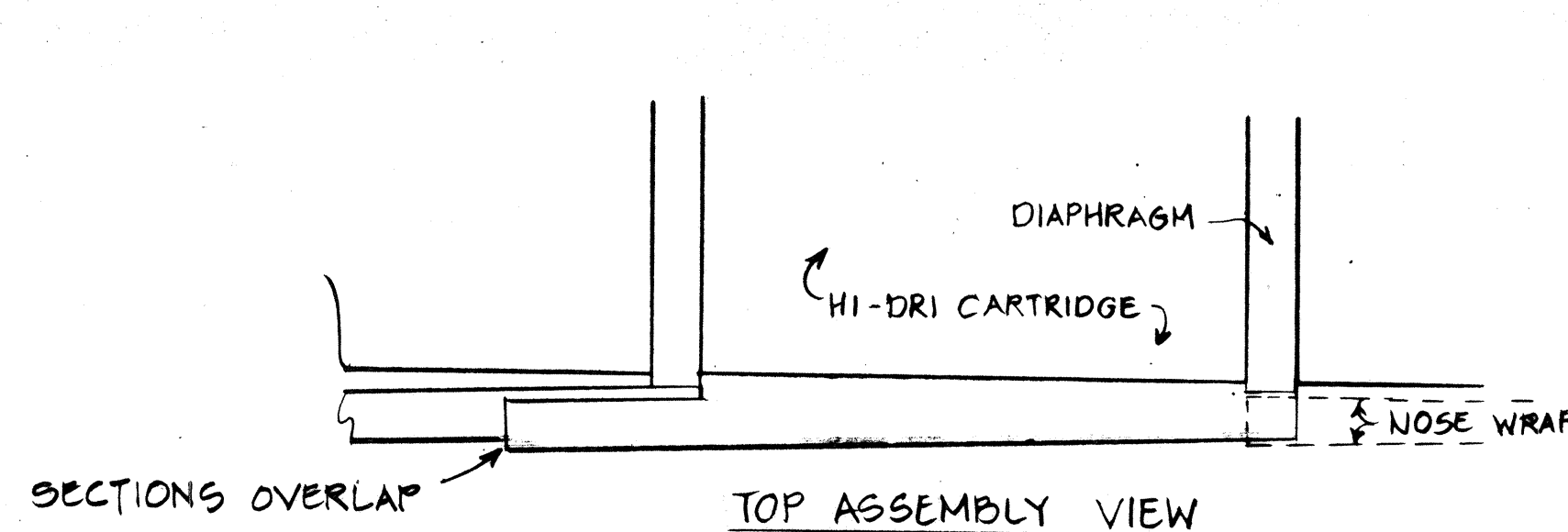
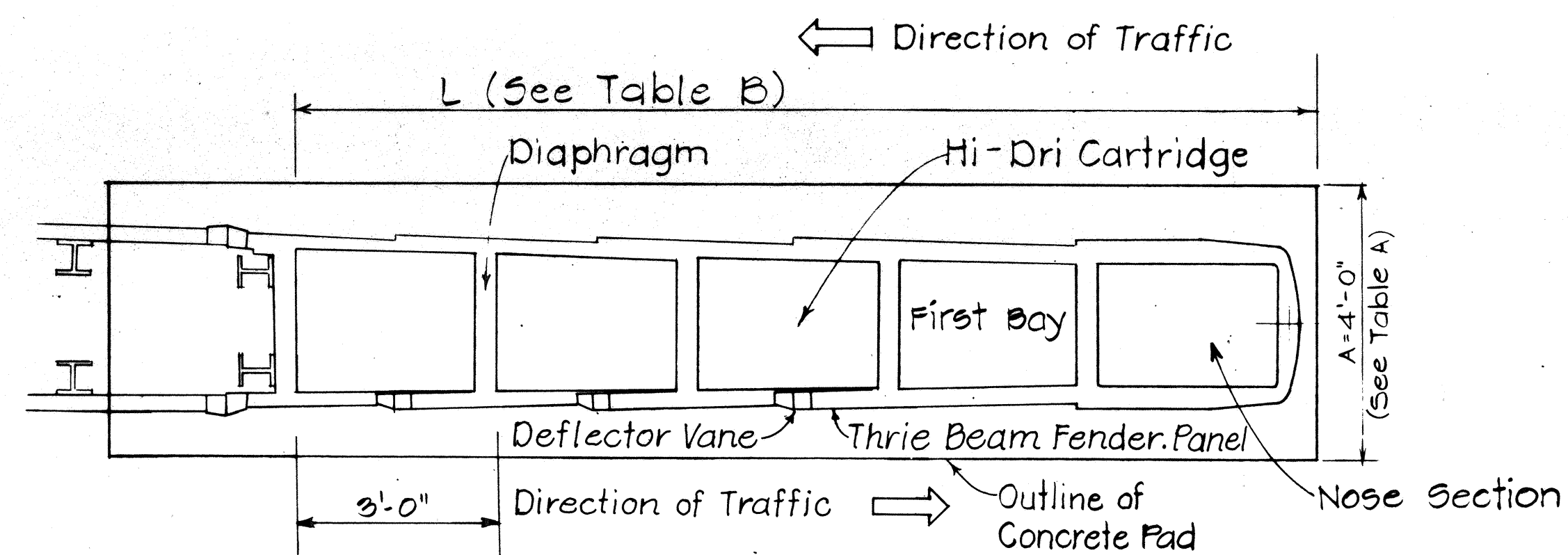
5/8" BUTTON HEAD BOLTS AND RECESS NUT

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

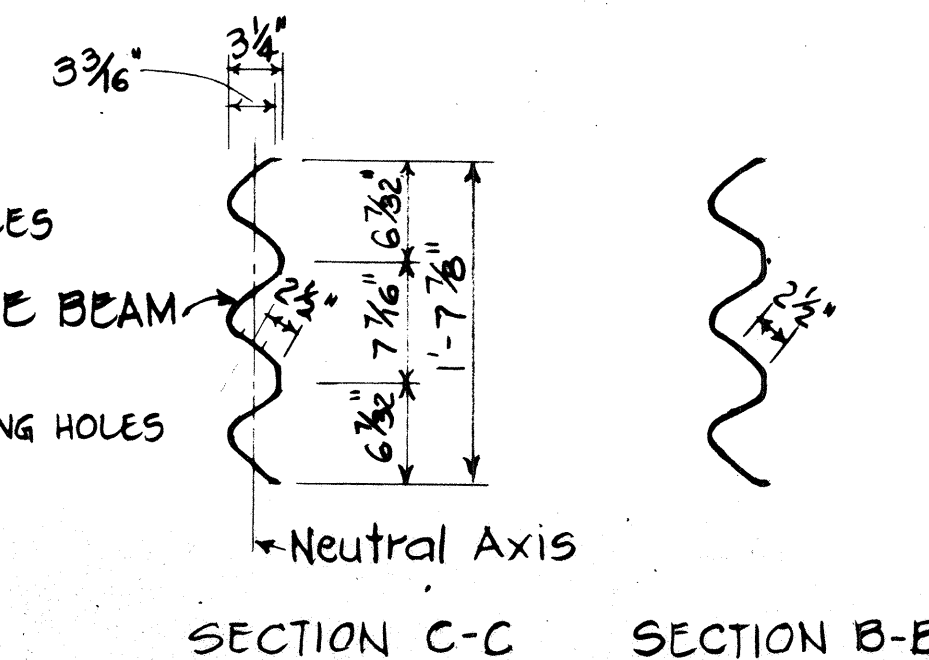
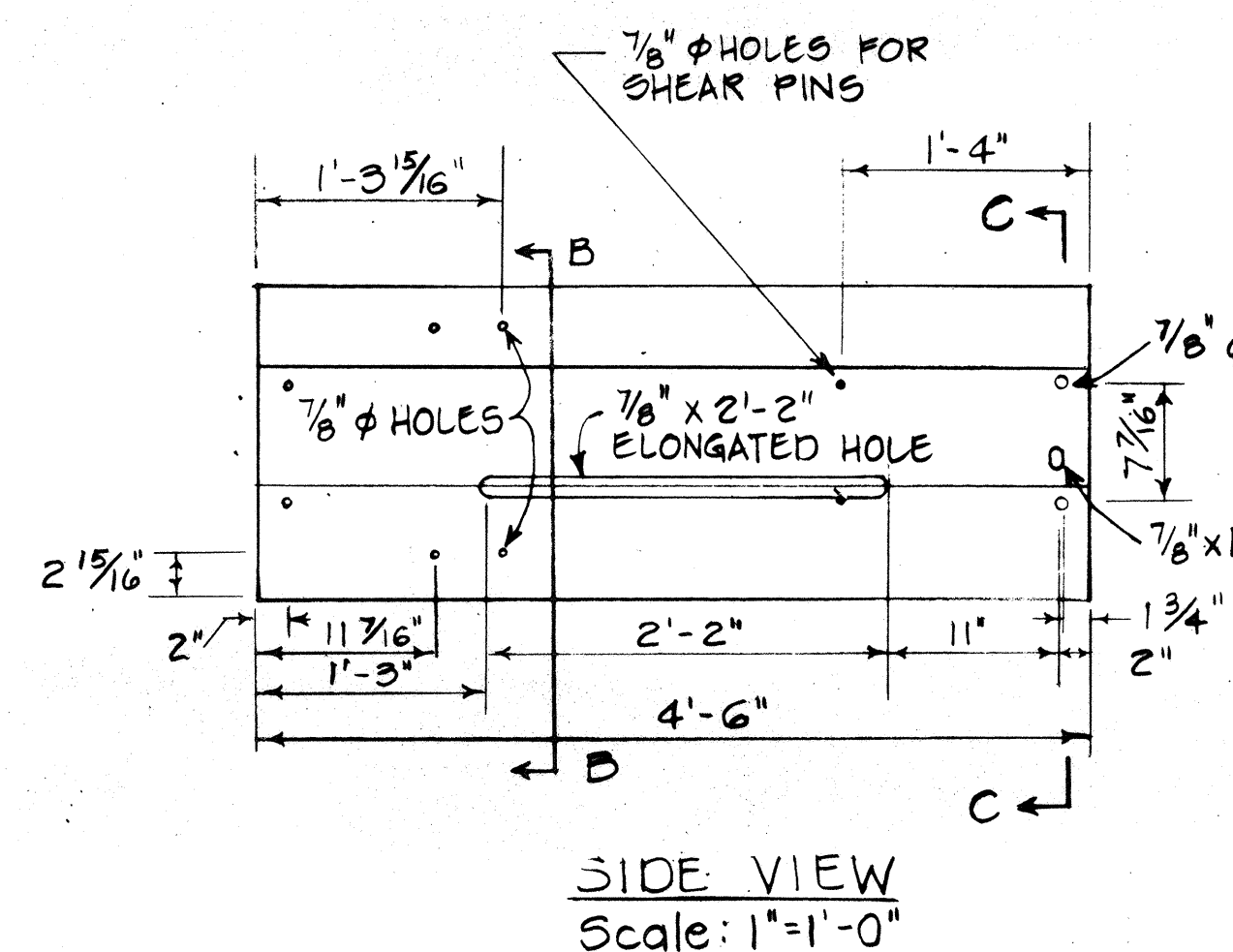
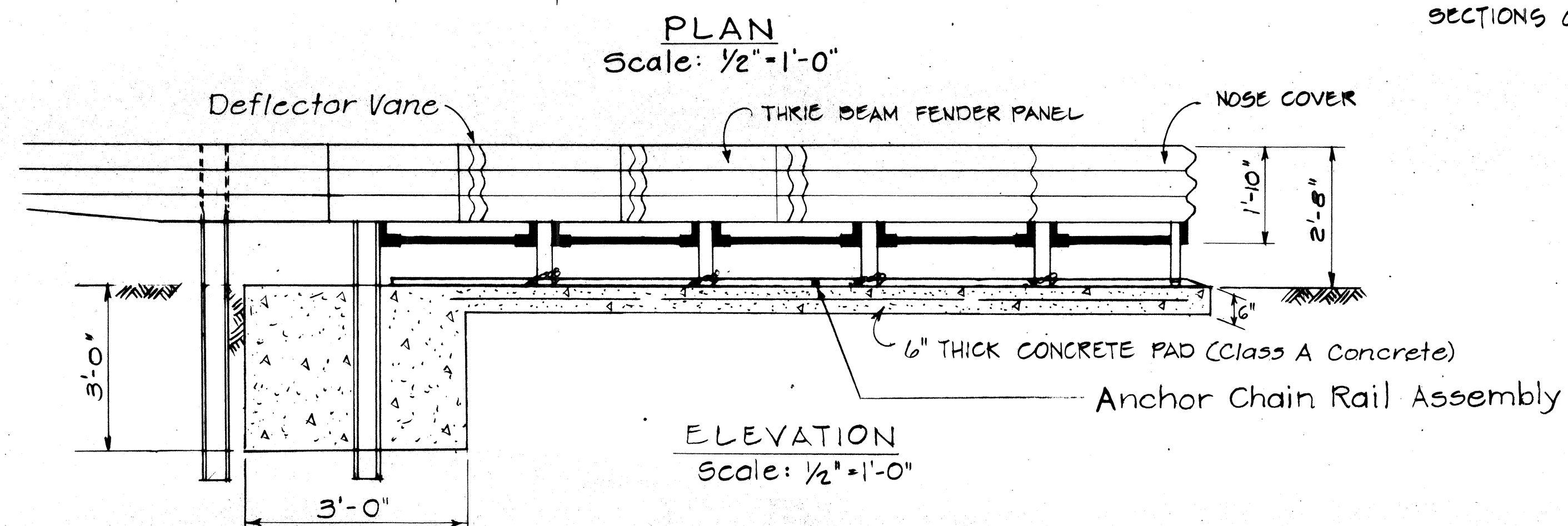
TYPICAL DETAIL
GUARD RAIL TYPE 3.
THRE BEAM

Scale: As Shown Date: April, 1980
SHEET No. 3 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	LT-0-06-79	1980	12	45

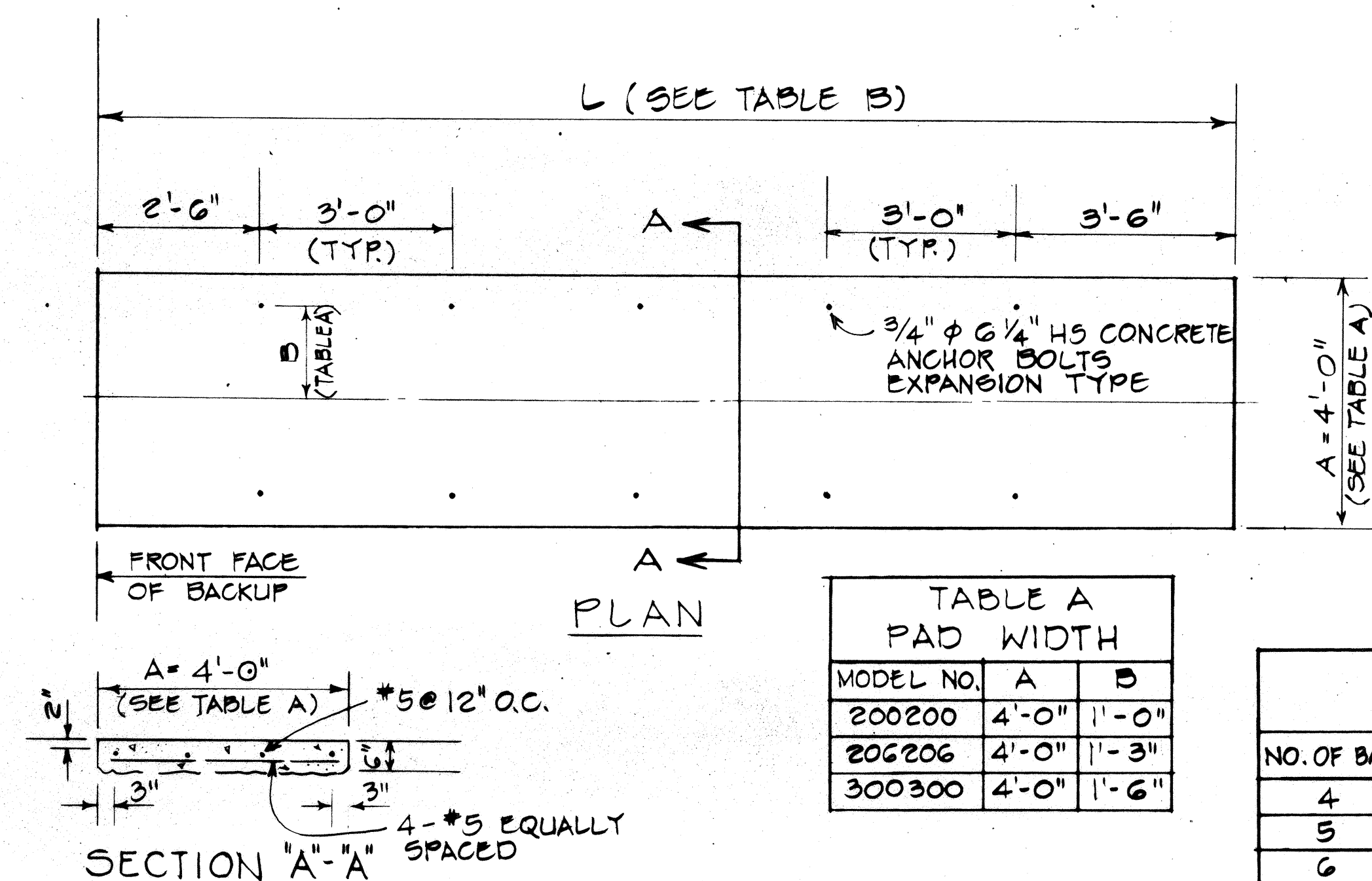


SECTION D-D



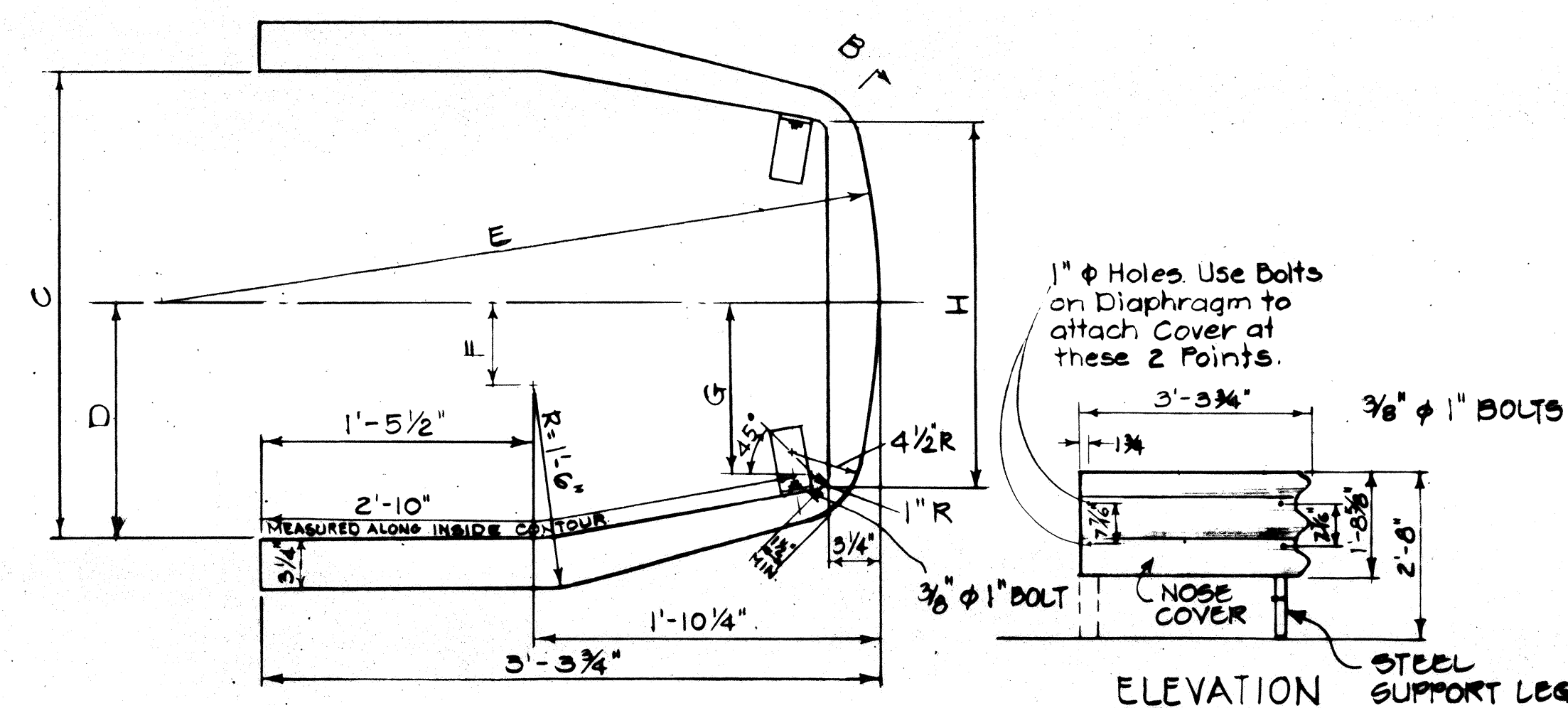
NOTE:

1. The Contractor shall verify with the manufacturer, any amendments or revisions thereof as may be made from time to time, shall be used in this project.
2. Constant longitudinal and transverse slope throughout Concrete Pad.
3. Concrete Pad cross slope shall not exceed 3%.
4. Outline of concrete pad shall match grades with surrounding median area.



MODEL NO.	A	B
200200	4'-0"	1'-0"
206206	4'-0"	1'-3"
300300	4'-0"	1'-6"

NO. OF BAYS	L	ANCHOR BOLTS QUAN
4	15'-6"	14
5	18'-6"	16
6	21'-6"	20
7	24'-6"	22
8	27'-6"	24
9	30'-6"	26
10	33'-6"	30
3	12'-6"	12



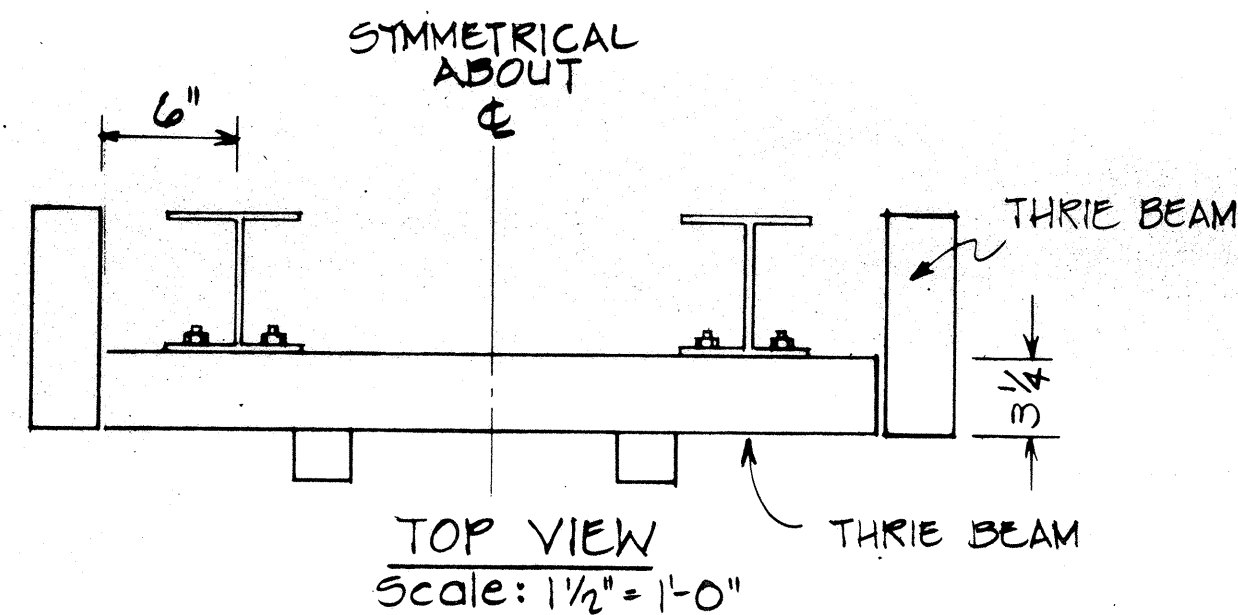
PLAN
N.T.S.

UNIT SIZE	ASSY. NO	C	D	E	F	G	H
2' - 0"	35-02-031	2'-0"	1'-0"	2'-1 1/2"	3 1/4"	8"	1'-6"
2' - 6"	35-02-032	2'-6"	1'-3"	3'-10"	6 1/4"	11"	2'-0"
3' - 0"	35-02-032	2'-6"	1'-3"	3'-10"	6 1/4"	11"	2'-0"

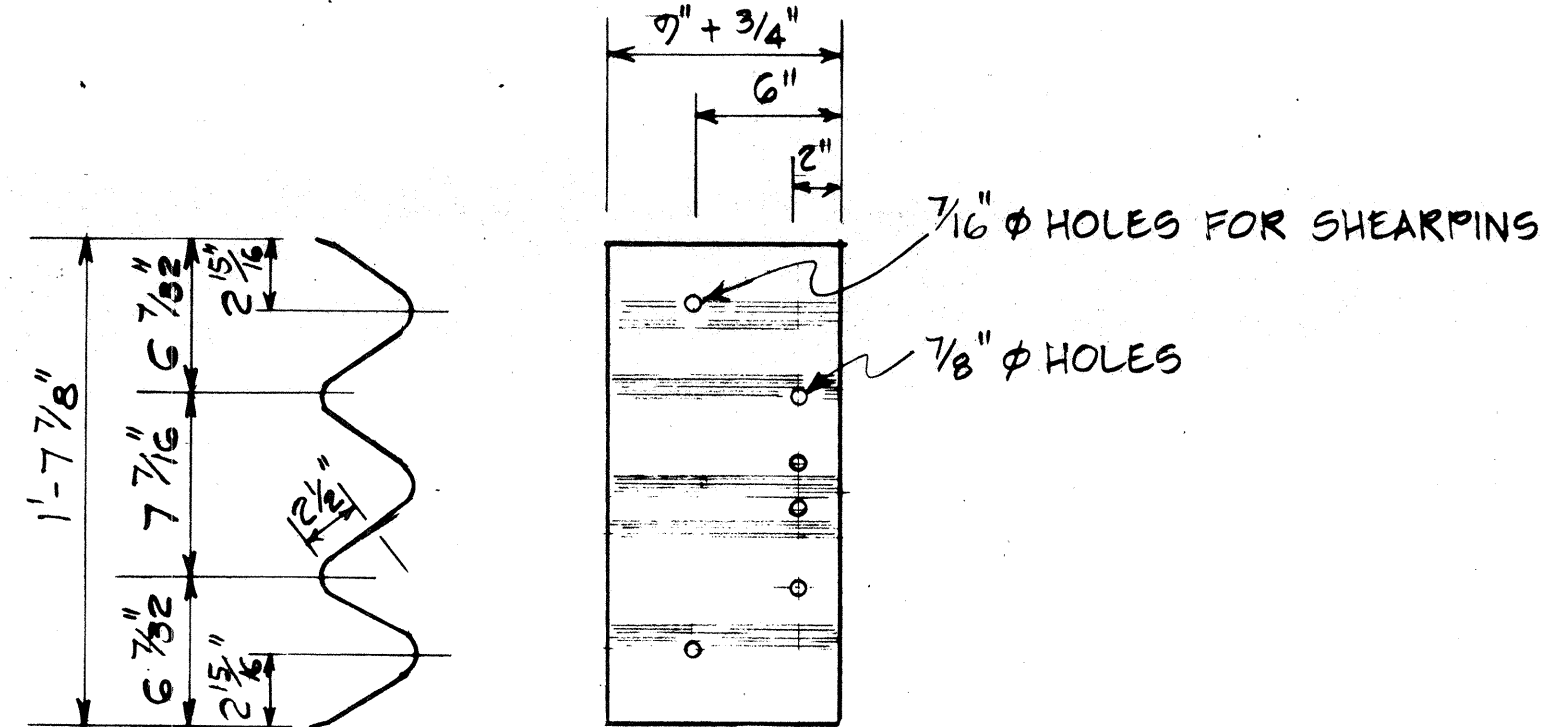
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION-FACILITIES DIVISION
DETAILS OF GUARD RAIL
ENERGY ABSORBING TERMINAL

Scale: As Shown Date: 1978
SHEET NO. 4 OF 11 SHEETS

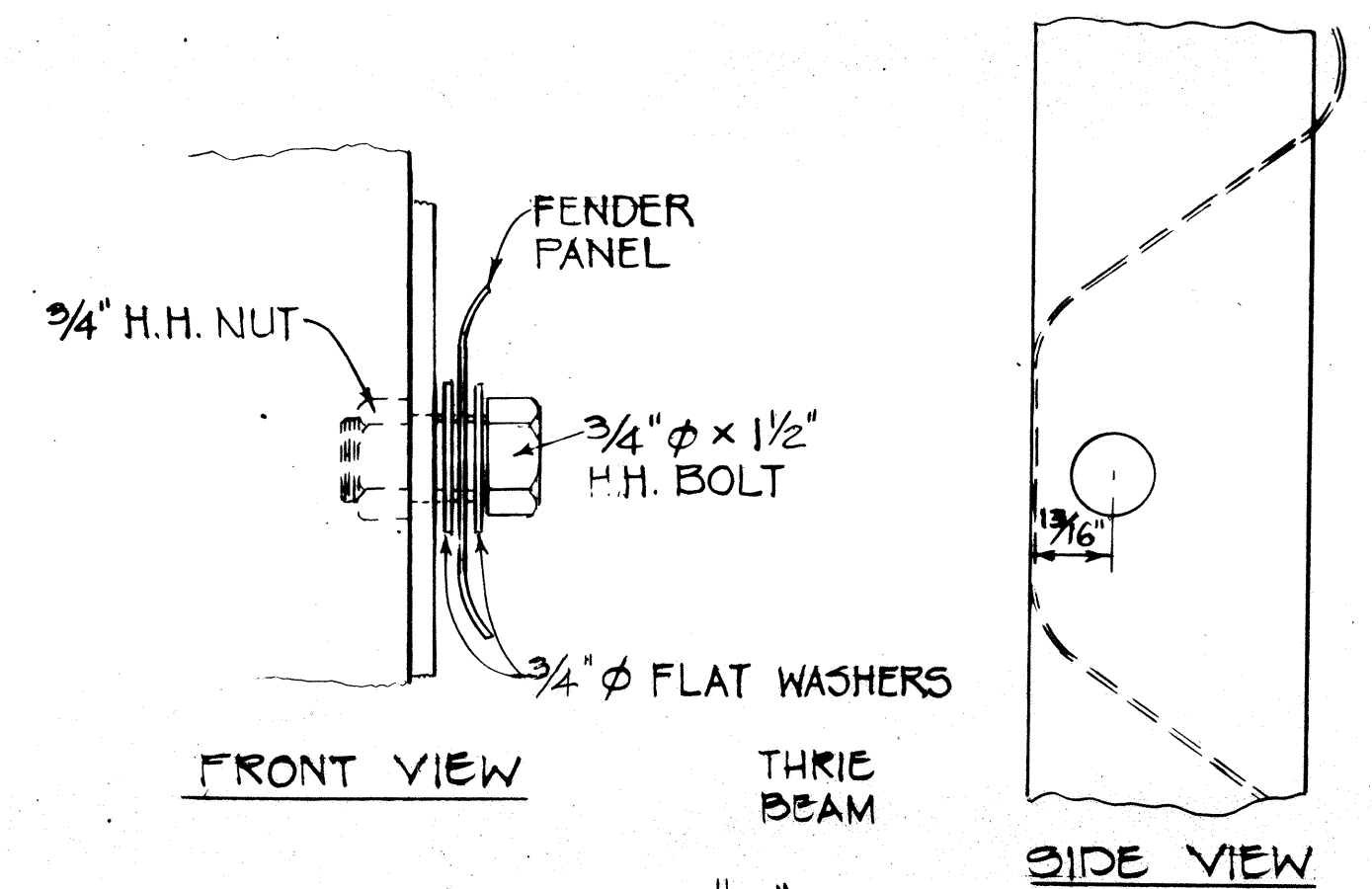
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	LT-0-06-79	1980	13	45



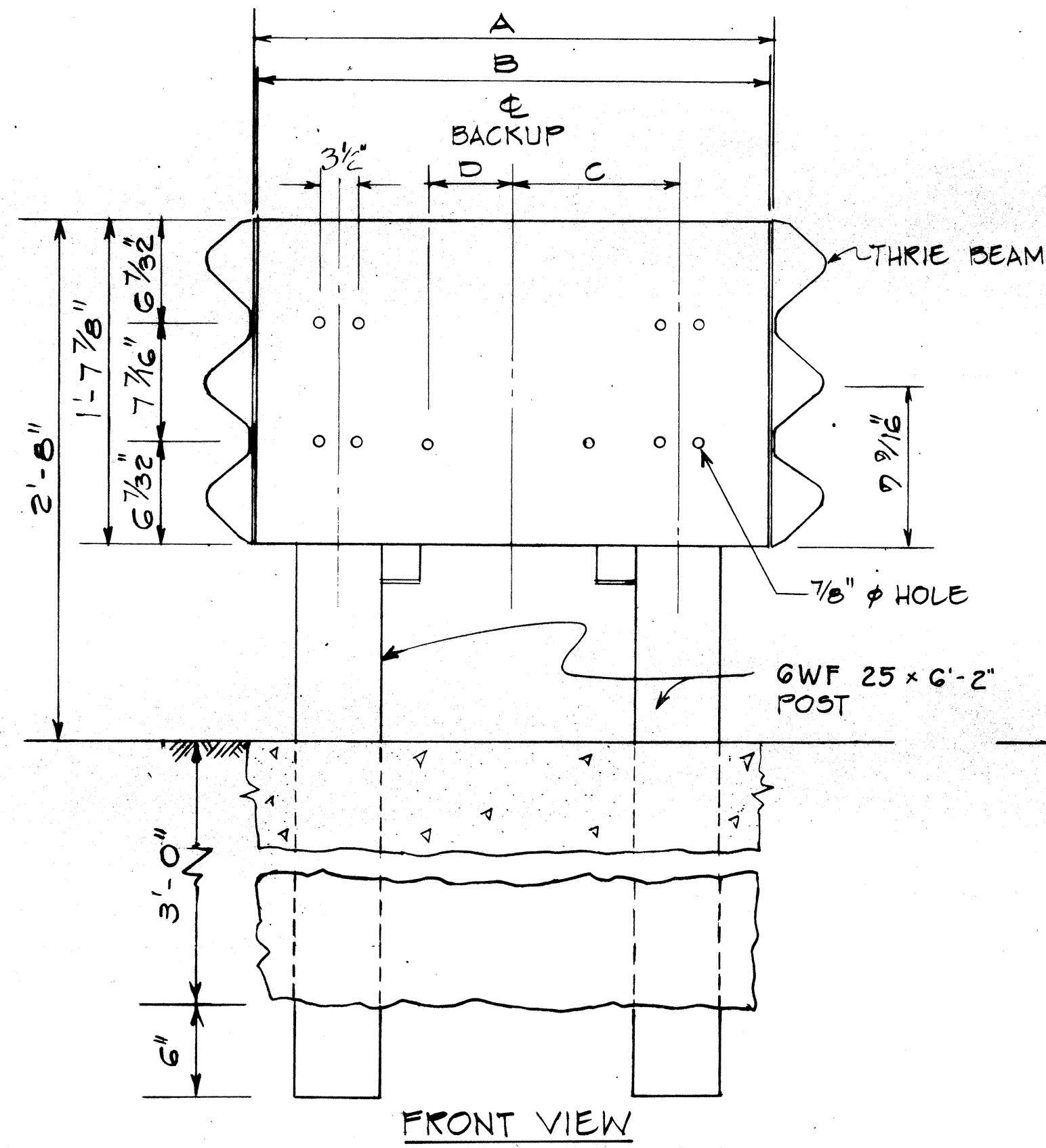
UNIT WIDTH	A	B	C	D
2'-0"	2'-0"	1'-11 1/2"	0'-6"	2"
2'-6"	2'-6"	2'-5 1/2"	0'-7"	5"
3'-0"	3'-0"	2'-11 1/2"	1'-0"	8"



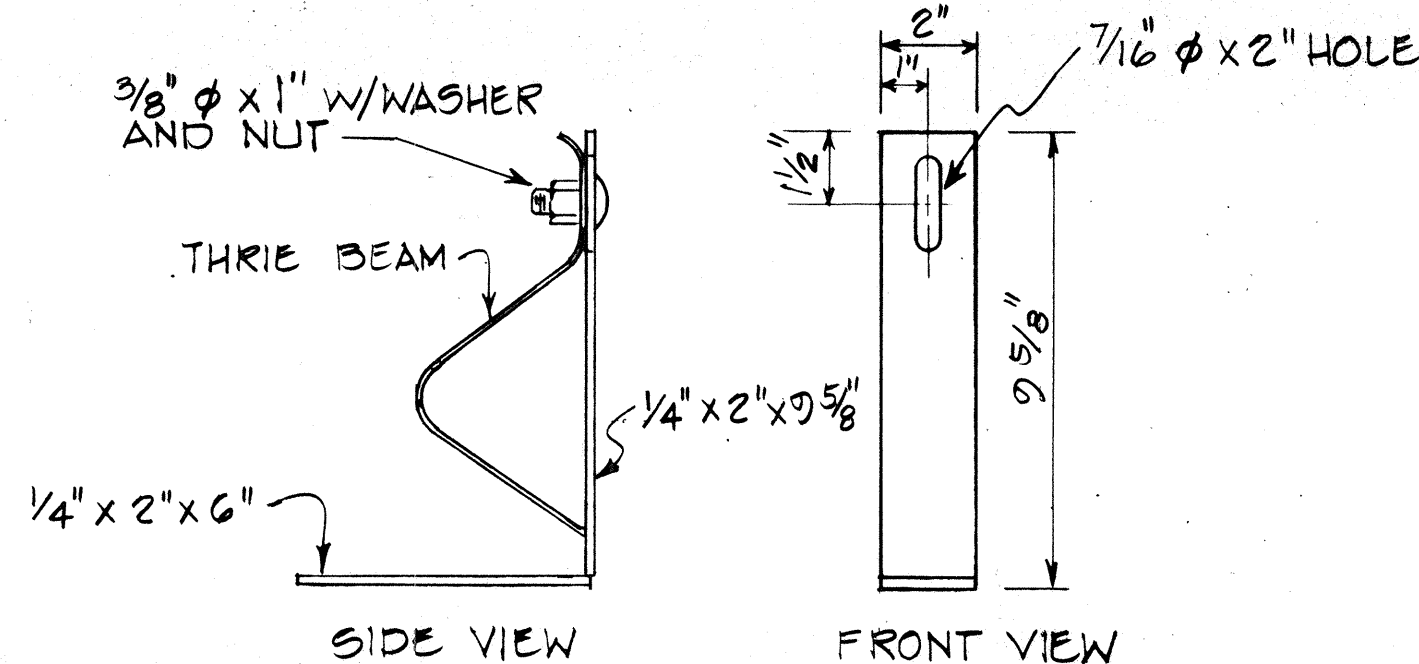
DETAIL OF THRIE BEAM
LEFT SIDE PANEL SHOWN
RIGHT SIDE OPPOSITE



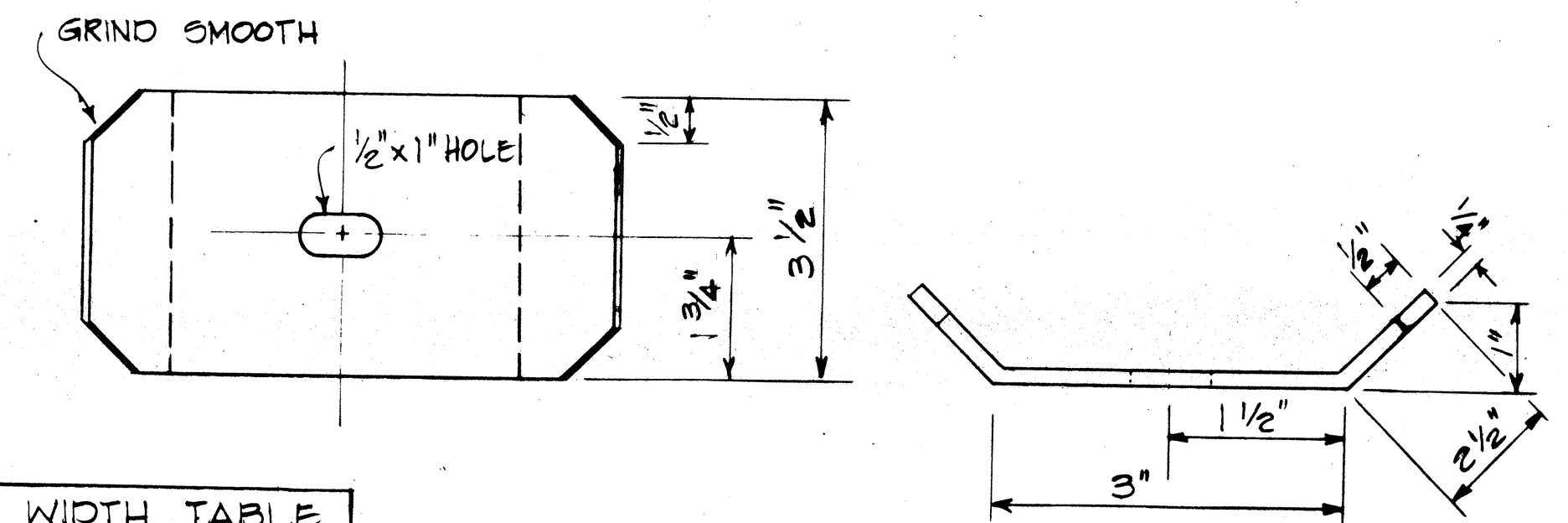
DETAIL "A"
Scale: 1/2" = 1"



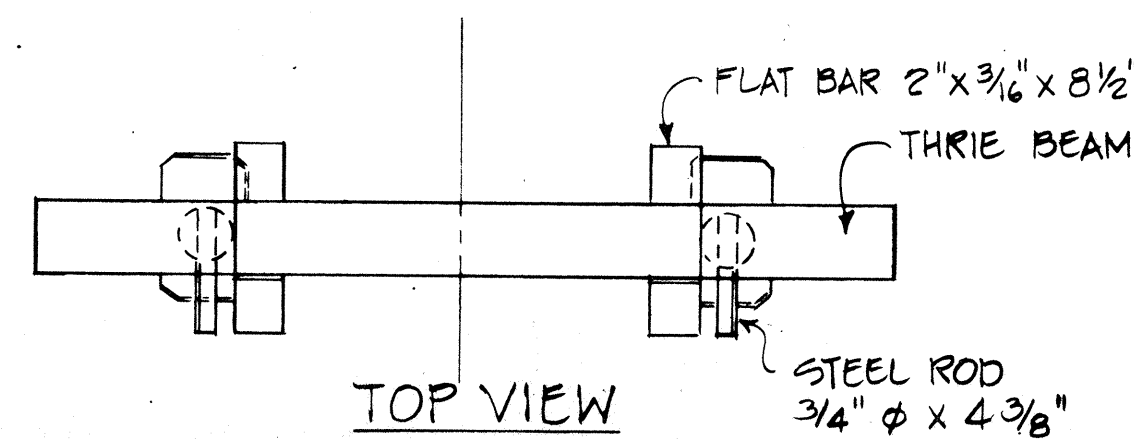
WIDE FLANGE BACKUP
(FOR NARROW UNITS)
Scale: 1 1/2" = 1'-0"



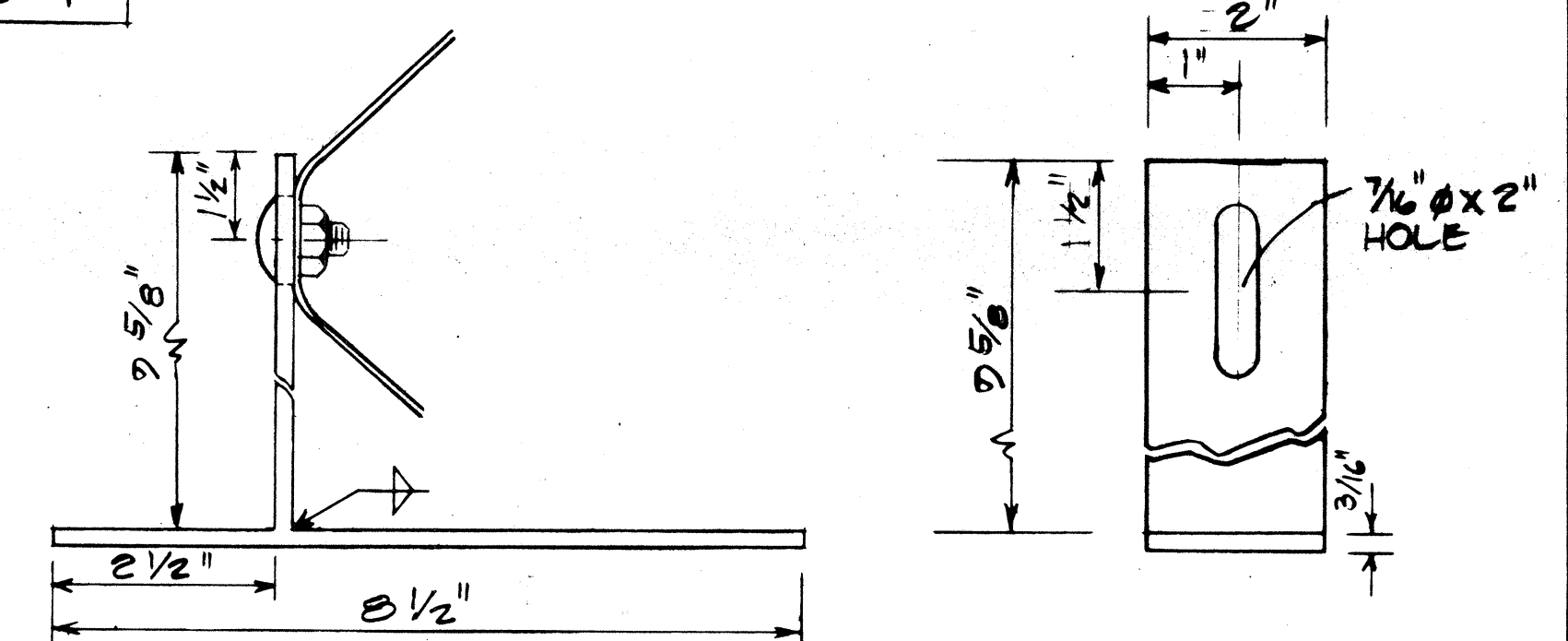
CARTRIDGE CLIP DETAIL
Scale: 3" = 1'-0"



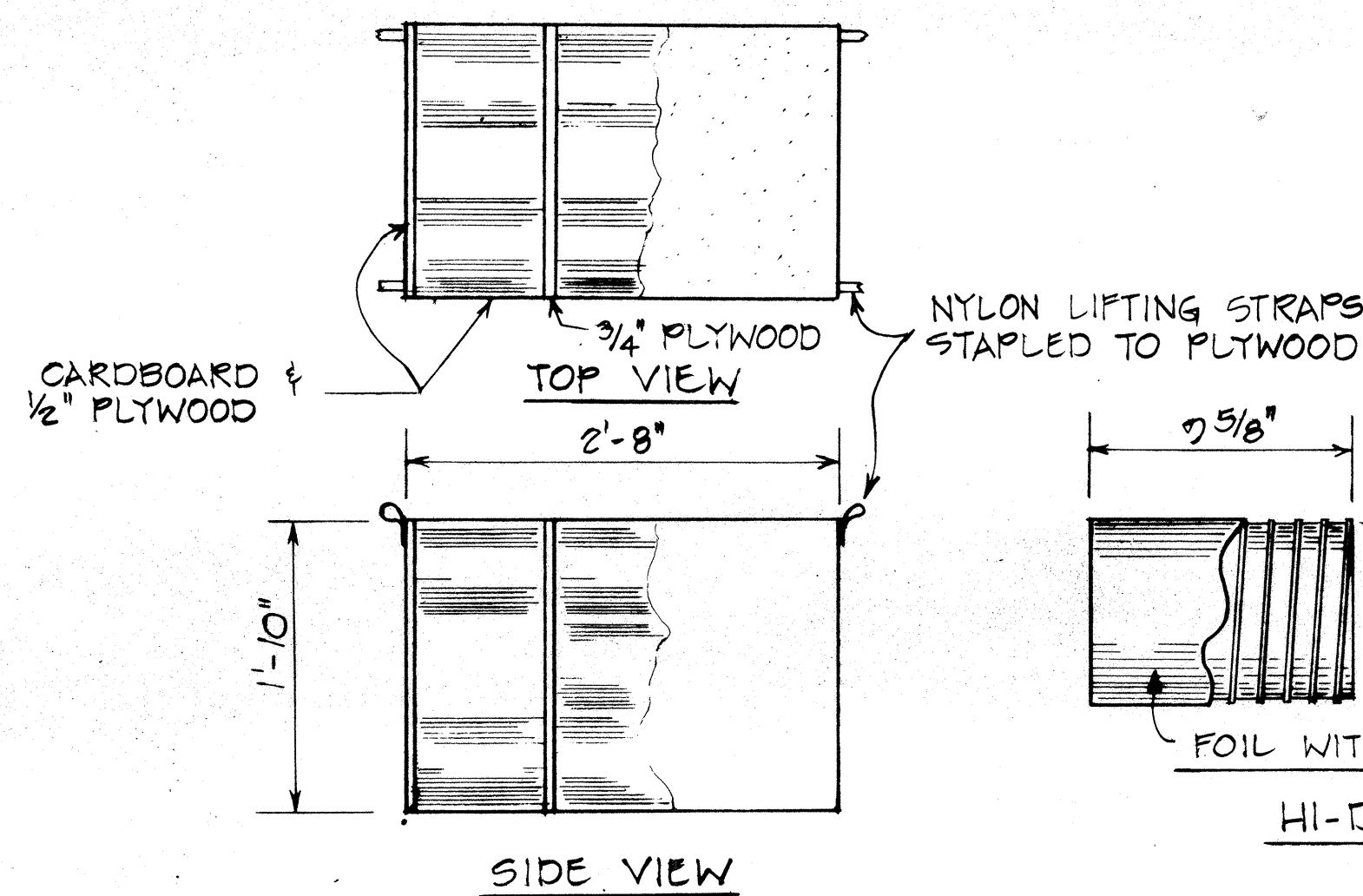
DETAIL B
Scale: 6" = 1'-0"



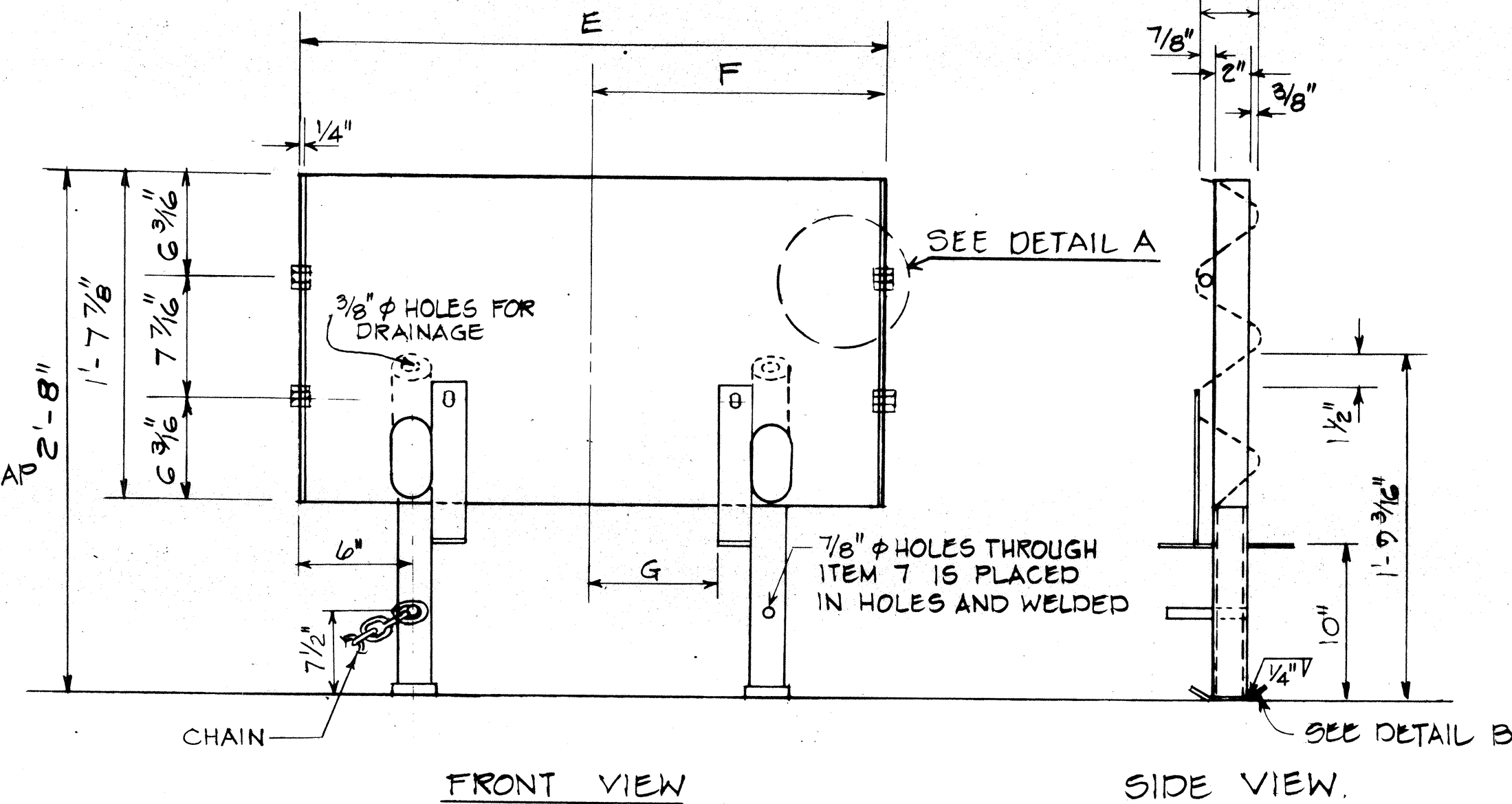
MODEL NO	E	F	G
2002005	2'-0"	1'-0"	
2062063	2'-6"	1'-3"	5 3/4"
3003005	3'-0"	1'-6"	8 3/4"



CARTRIDGE CLIP DETAIL
Scale: 6" = 1'-0"



HI-DRI CARTRIDGE
Not to Scale



THRIE BEAM DIAPHRAGM DETAILS
Scale: 1 1/2" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

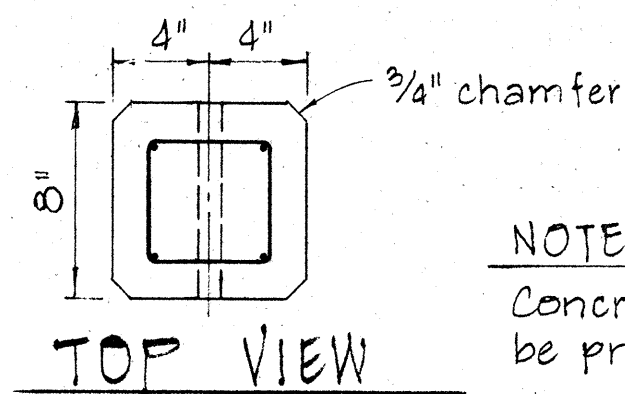
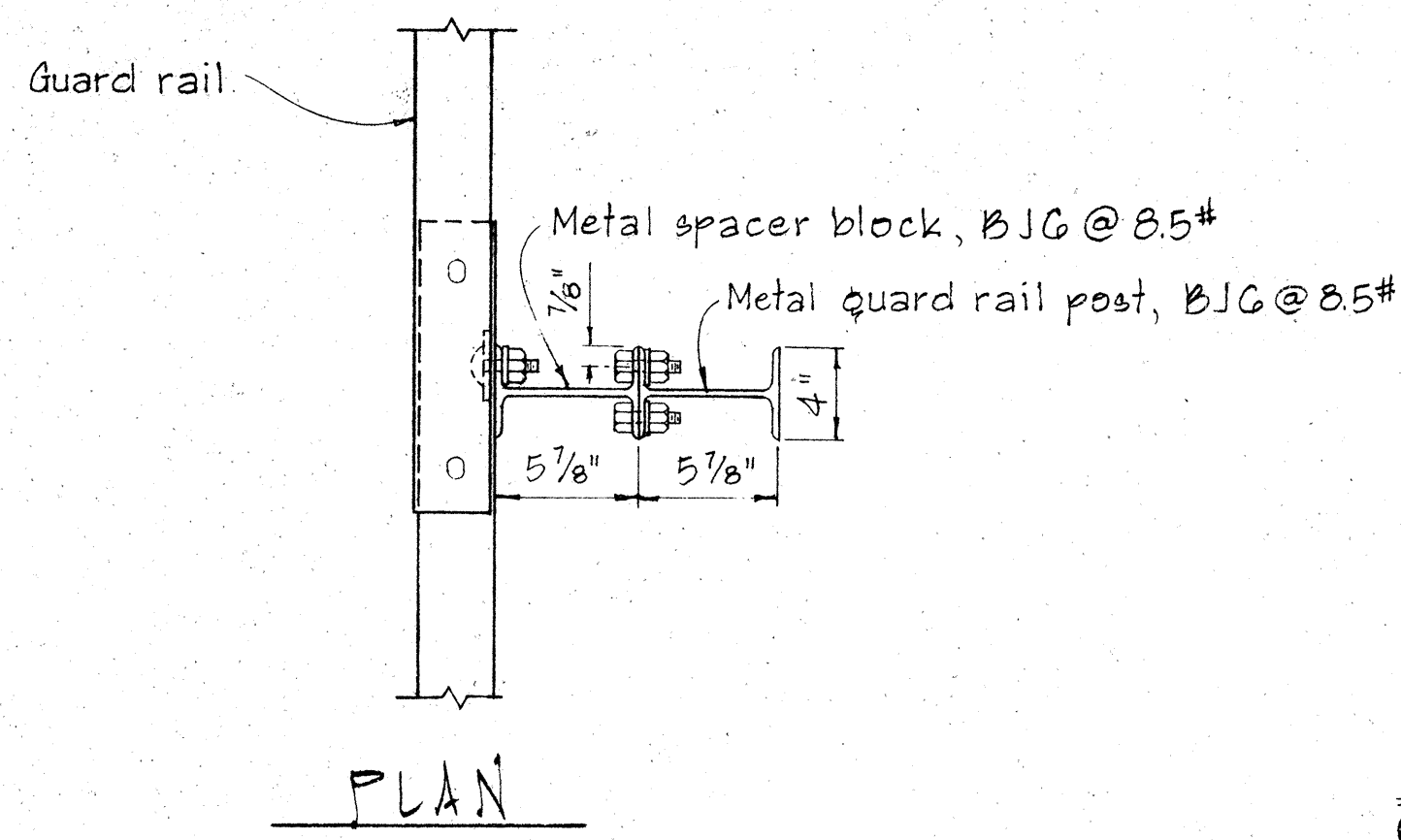
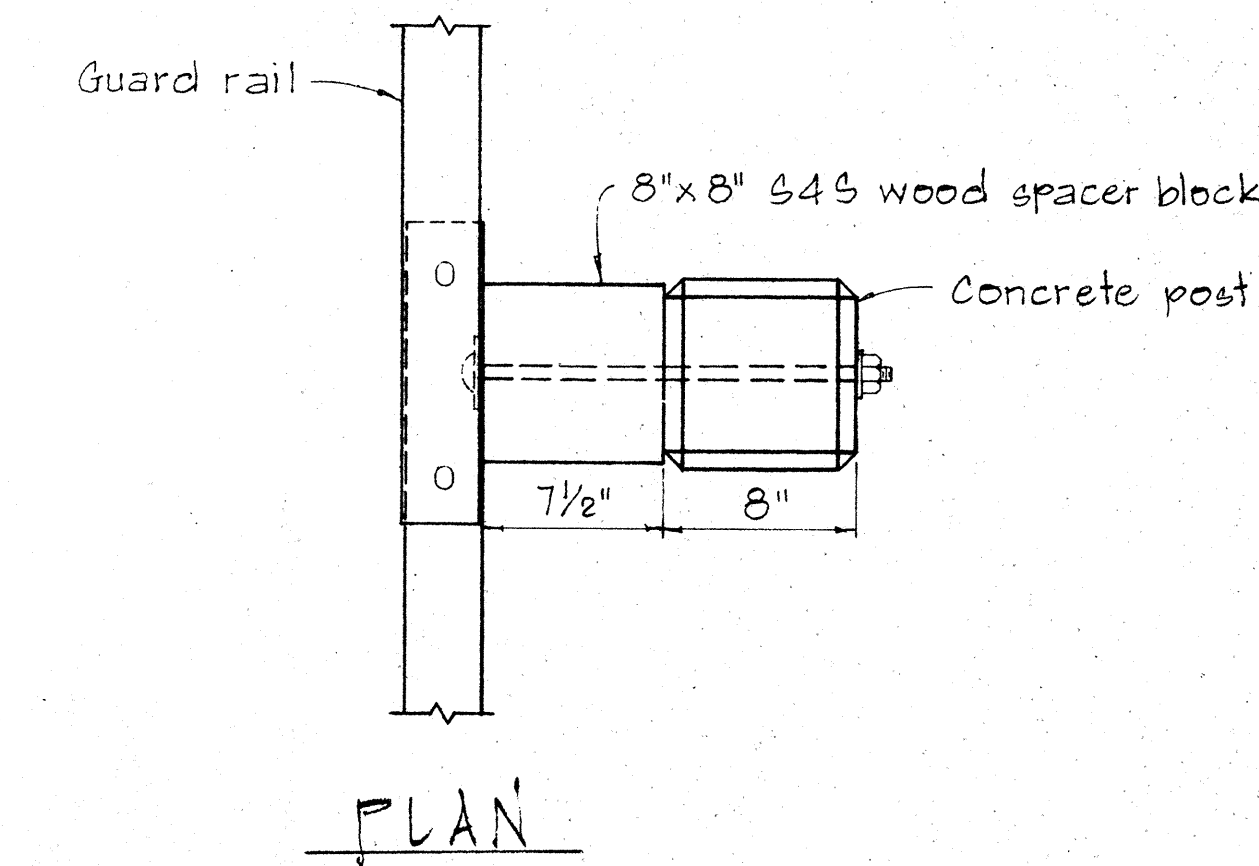
**DETAILS OF GUARD RAIL
ENERGY ABSORBING TERMINAL**

Scale: As Shown Date: 1978

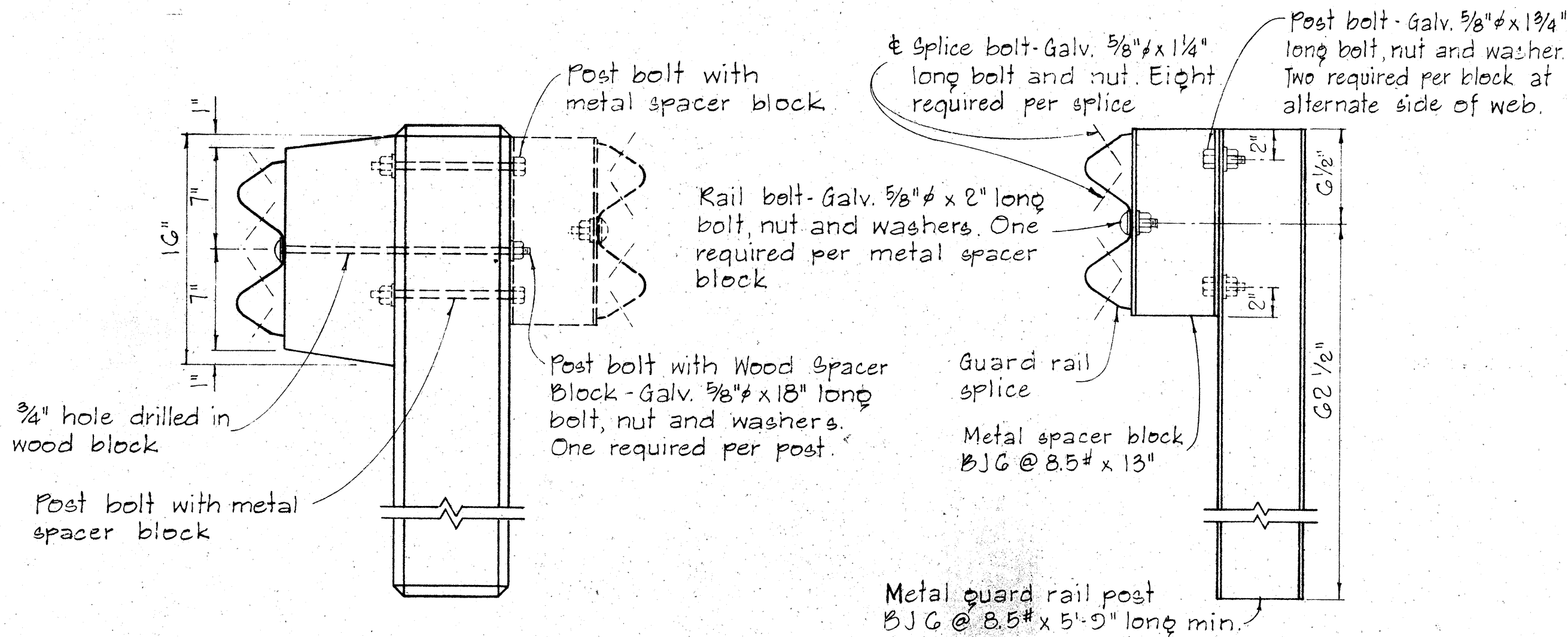
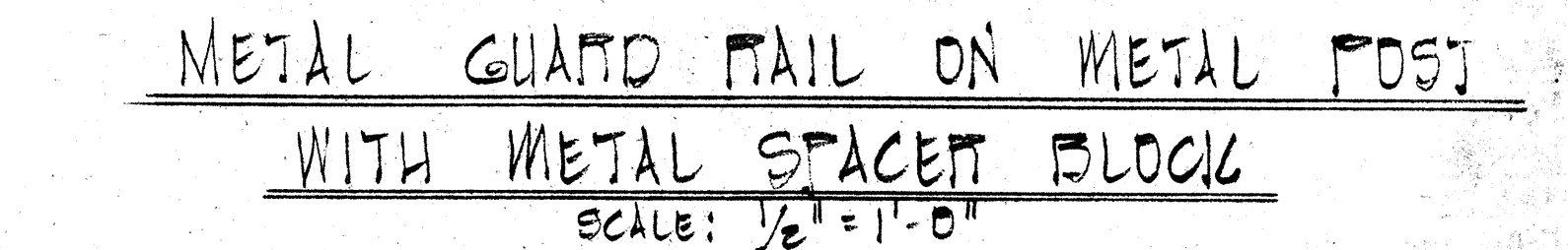
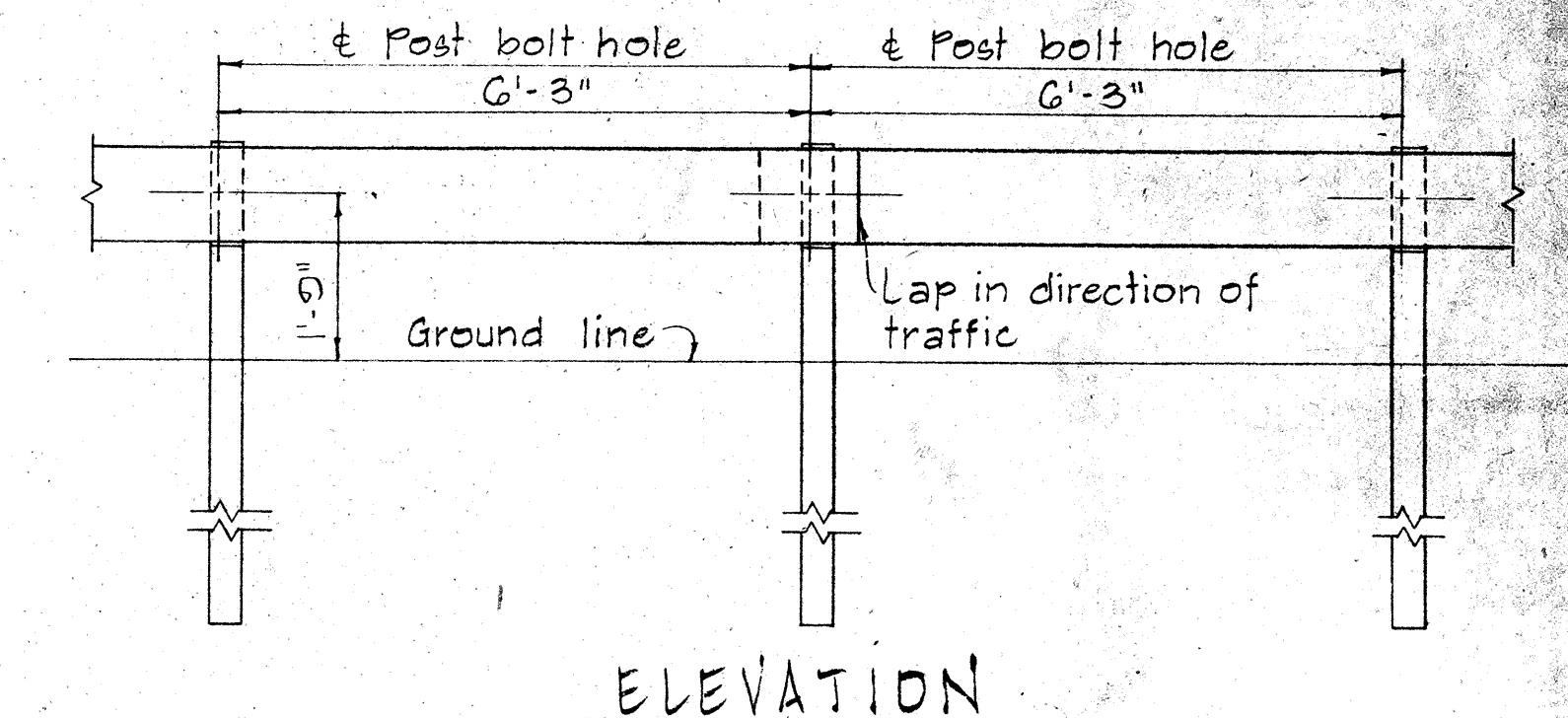
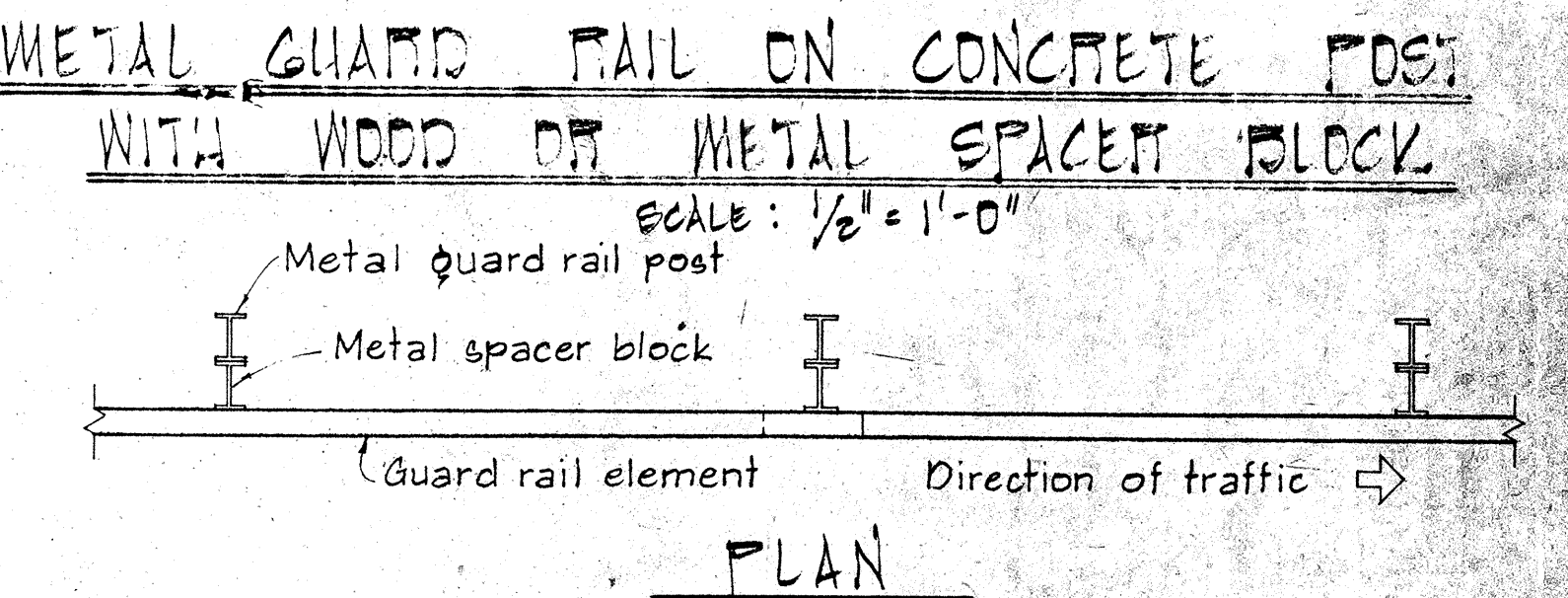
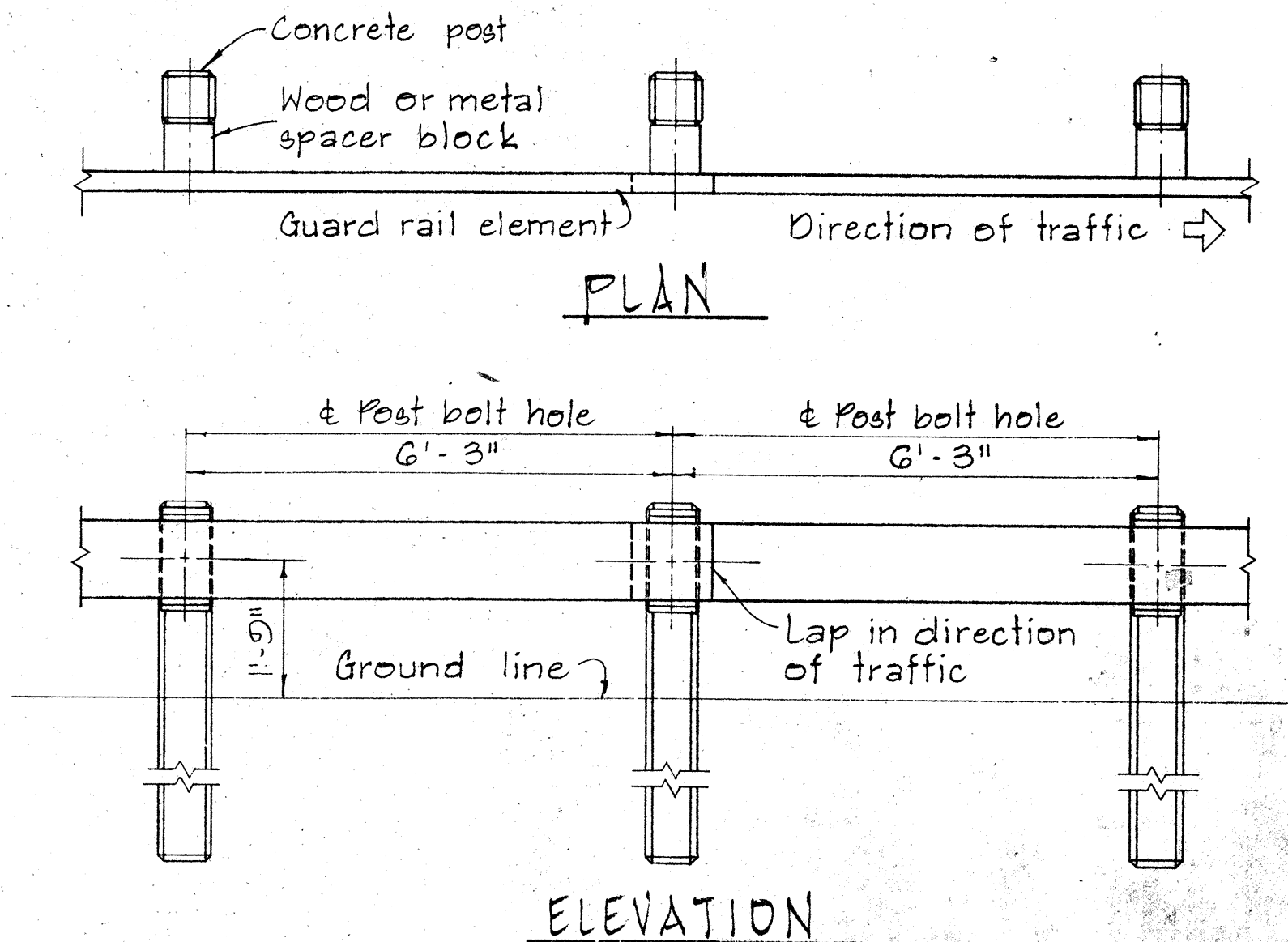
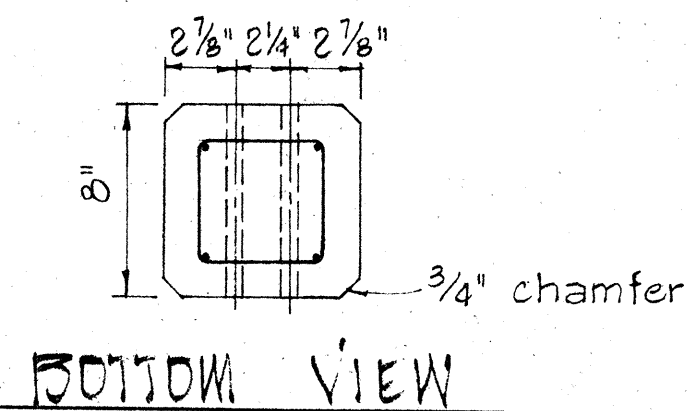
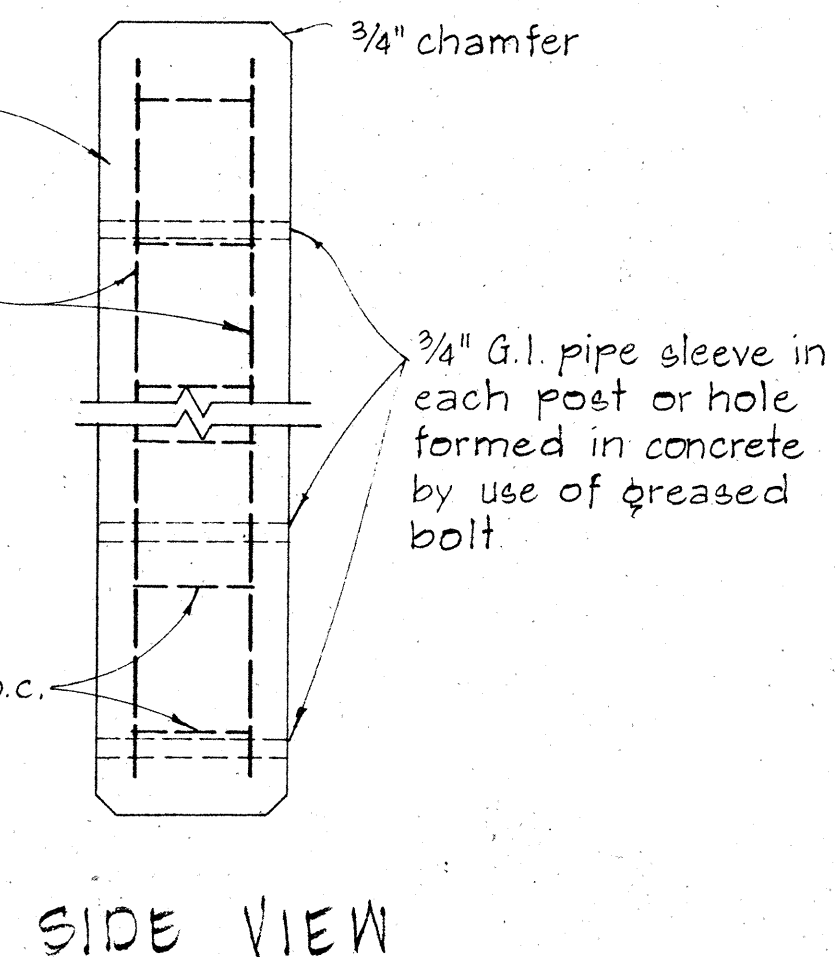
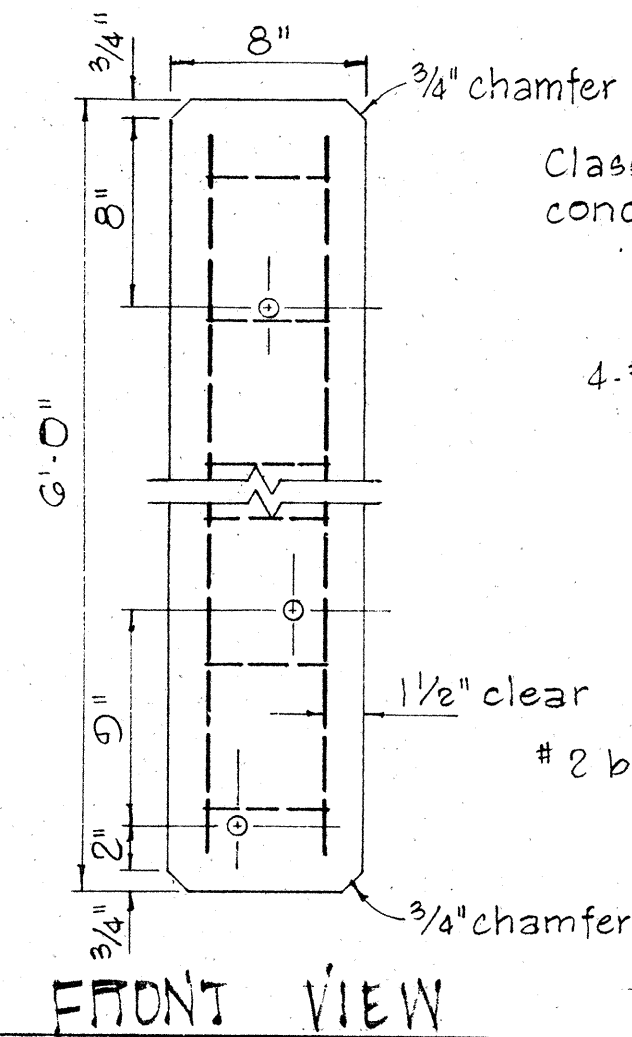
SHEET No. 5 OF 11 SHEETS

ORIGINAL PLAN	DATE
DRAWN BY	
TRACED BY	
NOTED BY	
CHECKED BY	
NO.	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	LT-0-06-79	1980	14	45

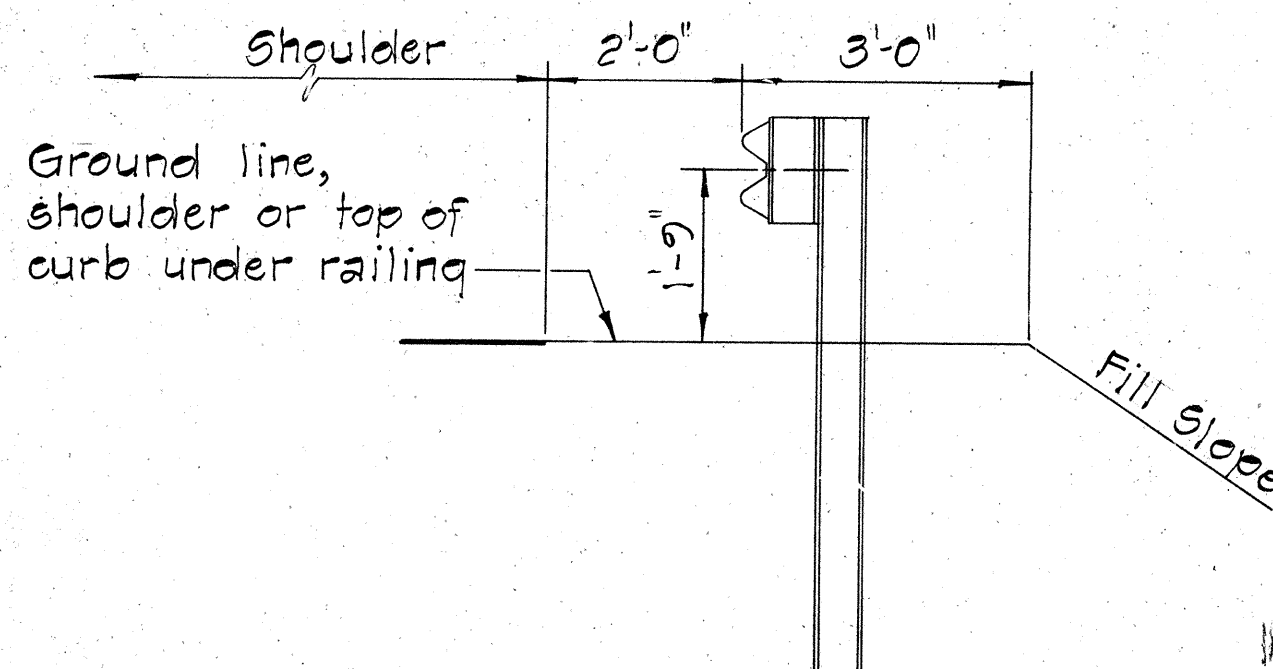
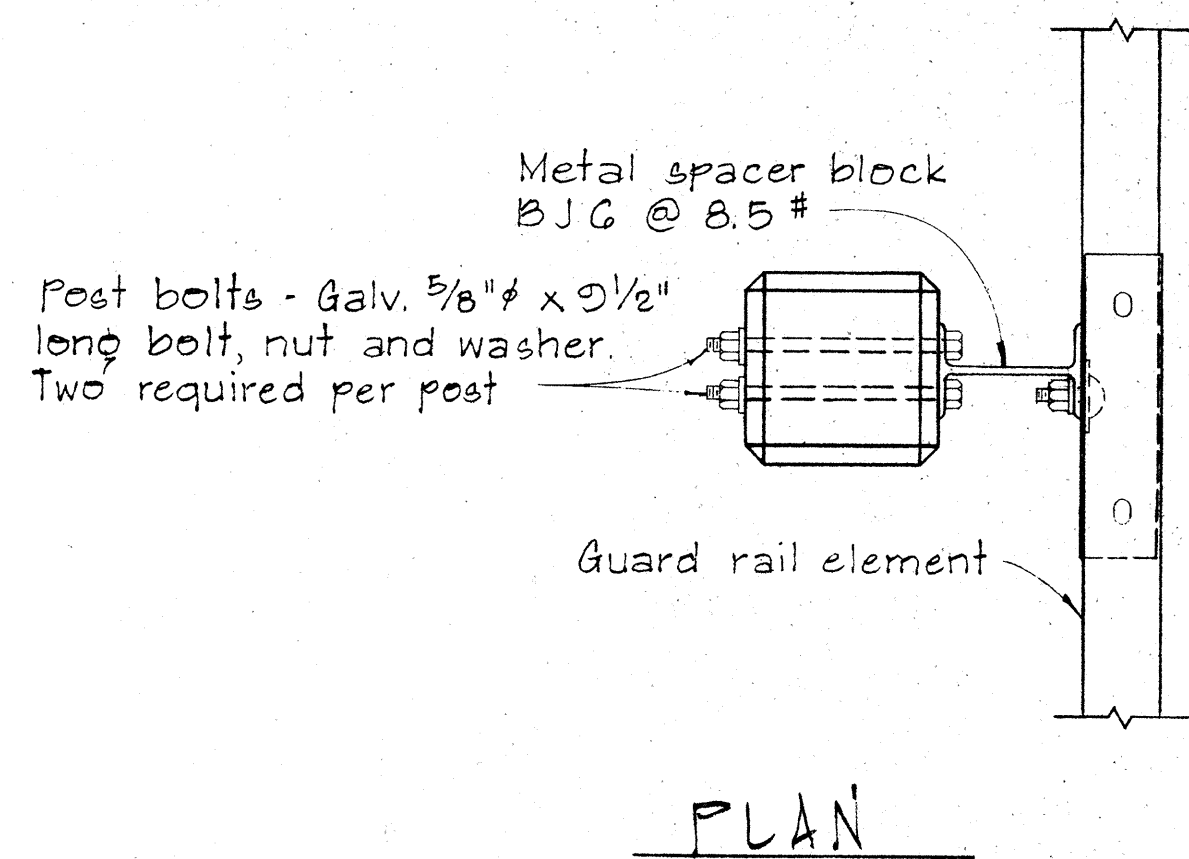


NOTE:
Concrete post shall be precast



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

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



AT SHOULDER SECTION
TYPICAL METAL GUARD RAIL DETAIL
SCALE: 1/2" = 1'-0"

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

APPROVAL RECOMMENDED:
Erich Tanaka
TRAFFIC ENGINEER
DATE: 12/29/62

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

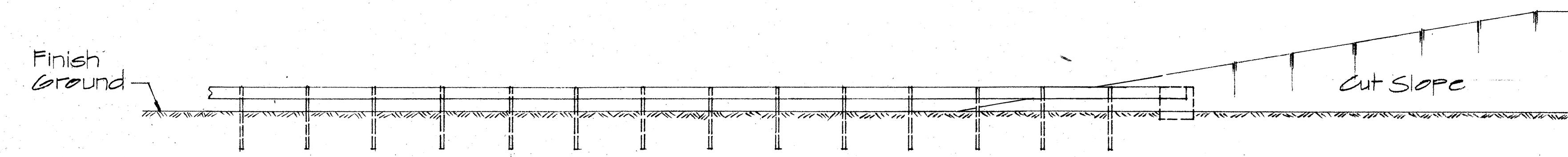
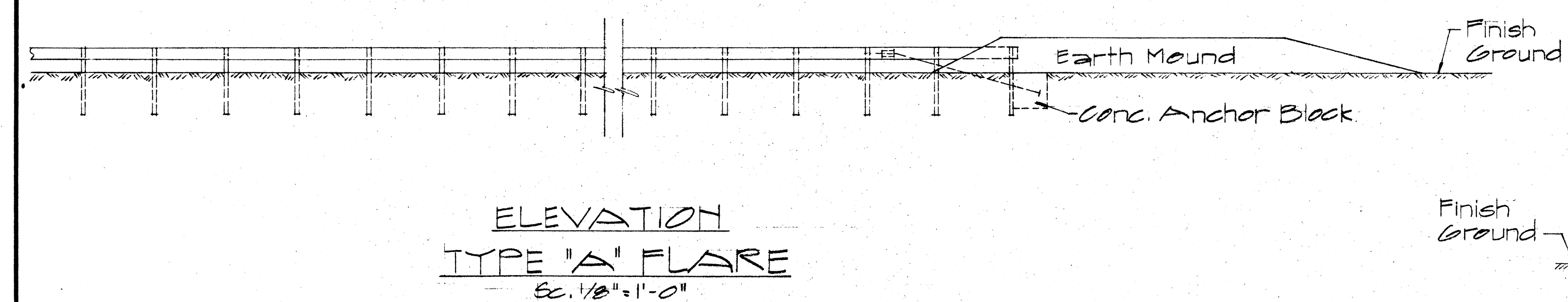
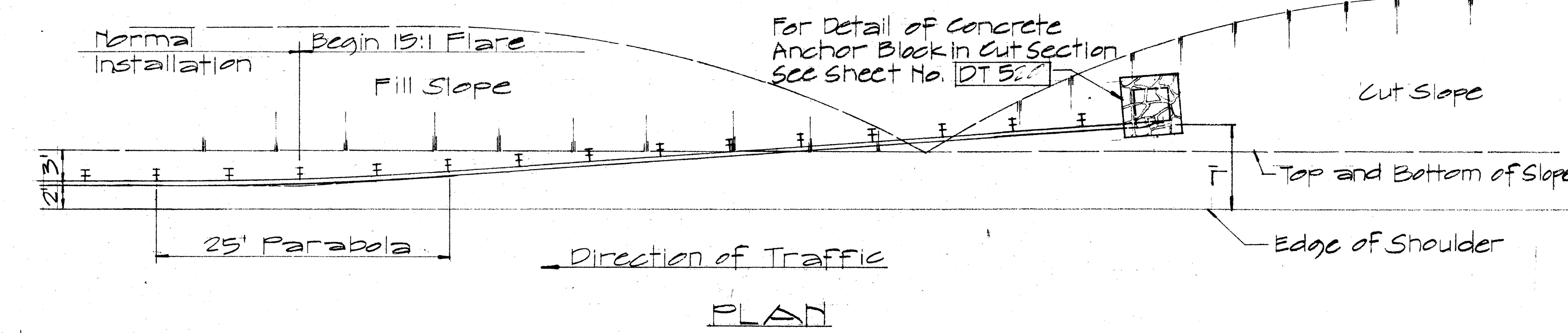
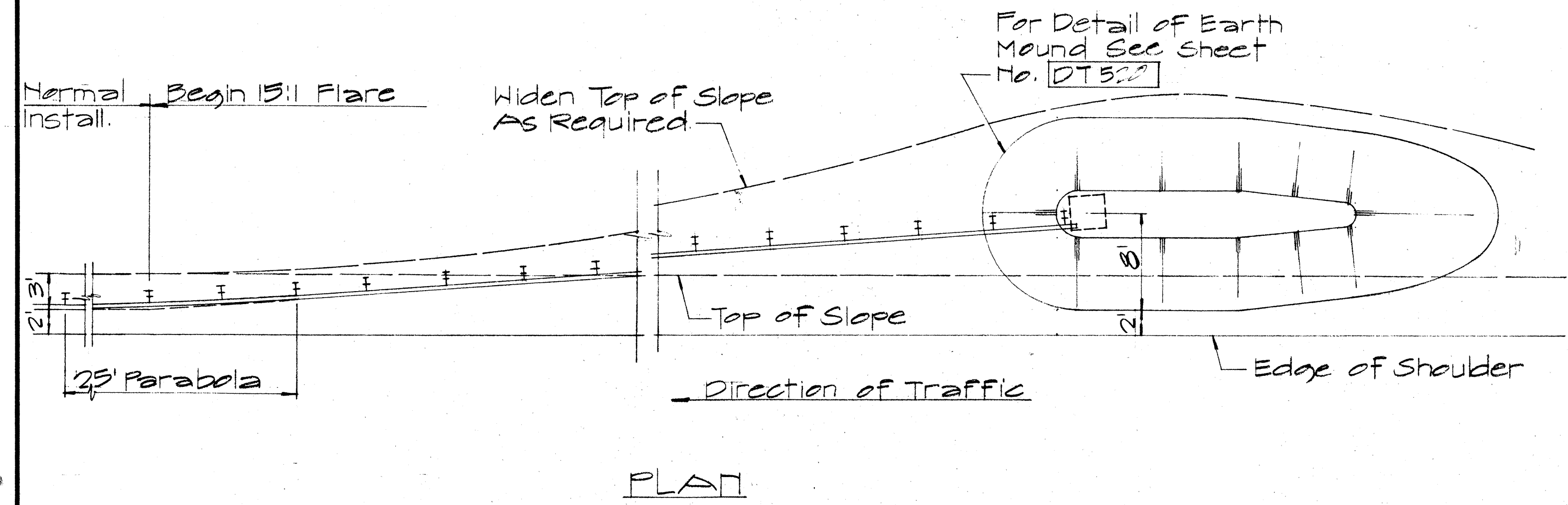
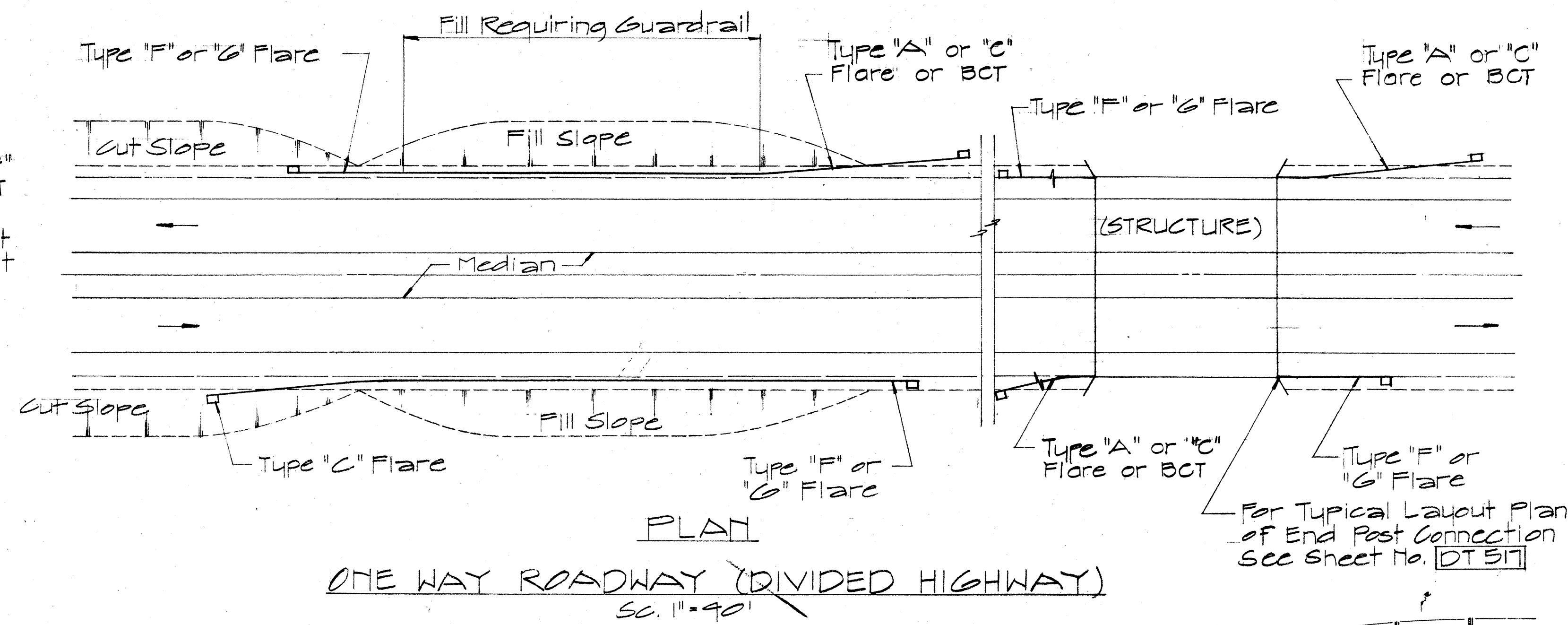
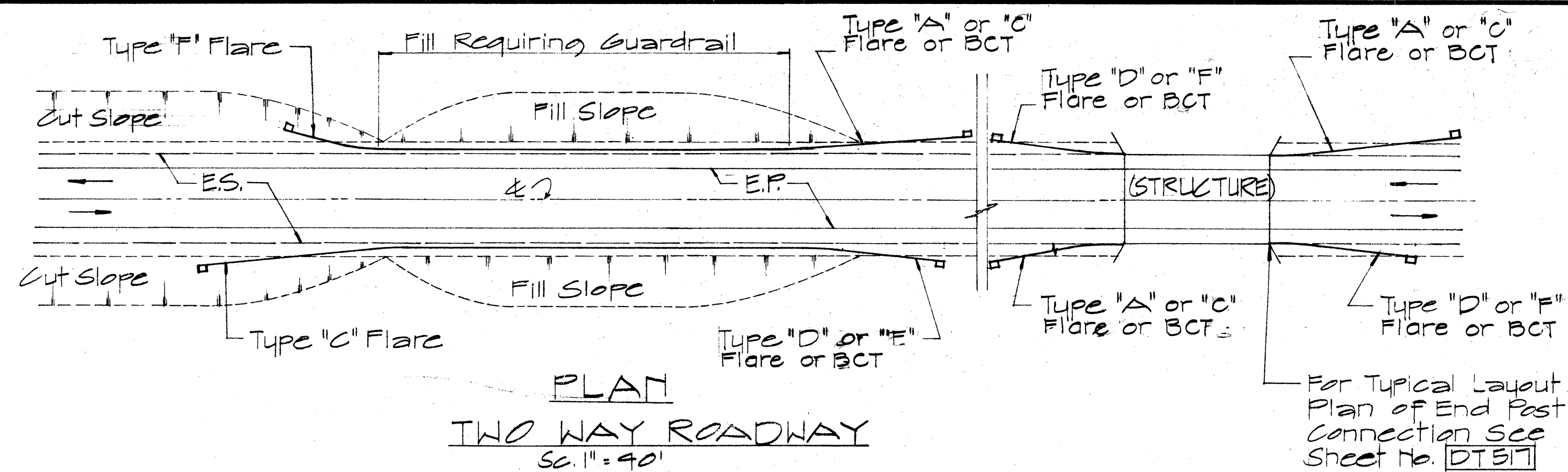
NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION
STANDARD DETAILS
METAL GUARD RAIL
SCALE: AS SHOWN
NOV. 1968
SHEET No. 6 OF 11 SHEETS PT 500

DATE	
ORIGINAL PLAN	
DRAWN BY	
TRACED BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	
NO.	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	LT0-06-79	1980	16	45

NOTE:
 1. Metal guard rail connection to structures requires End Post Connection. See structure plans.
 2. For detail of Breakaway Cable Terminal (BCT) See Sheet No. DT 519



APPROVAL RECOMMENDED:
E. Tanaka 12/29/63
 TRAFFIC ENGINEER DATE
 APPROVED:
W. S. S. S. 12-30-69
 ASSISTANT CHIEF, ENGINEERING DATE

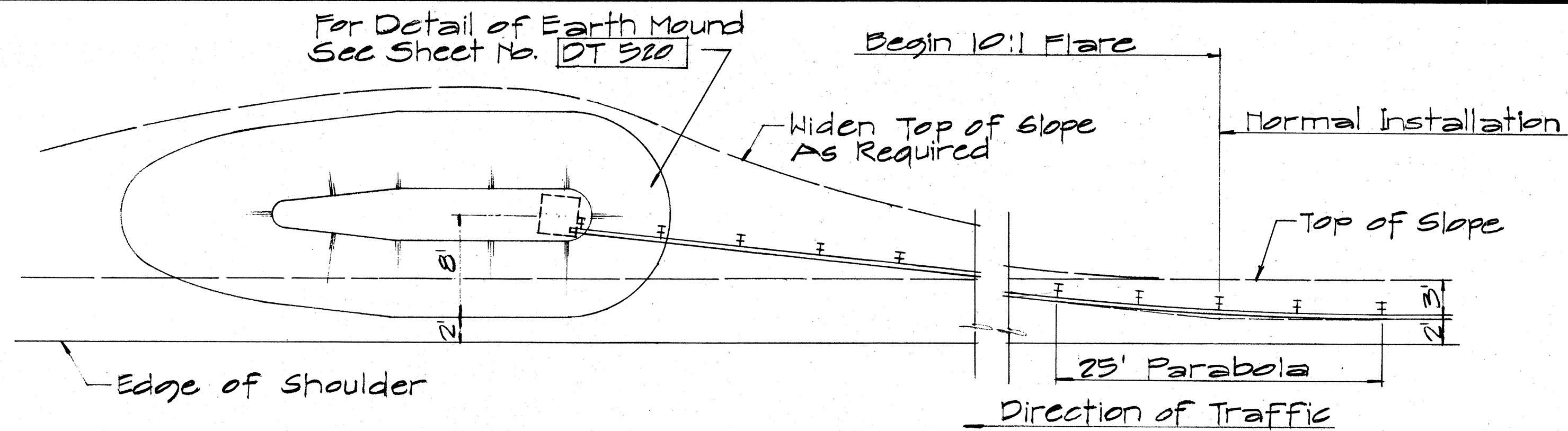
ELEVATION
 TYPE "C" FLARE
 SC. 1/8" = 1'-0"

NO.	REVISION	APPROVED BY	DATE
1	Delete Type "B" Flare and Type "E" Flare	H.T.	6/15/80

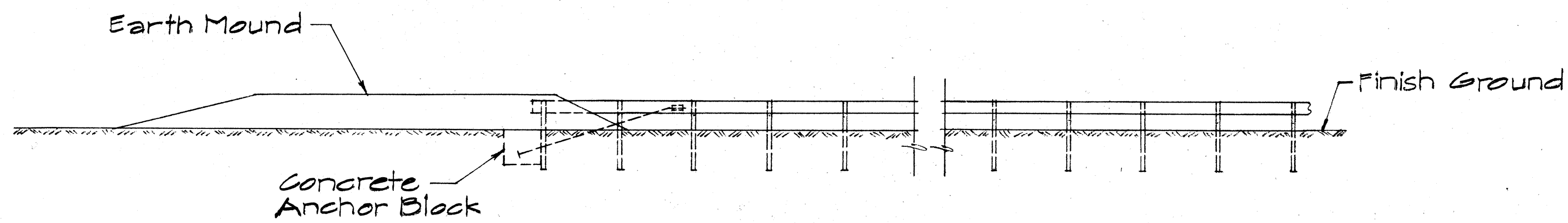
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 LAND TRANSPORTATION FACILITIES DIVISION
**STANDARD DETAILS
 OF APPROACH END
 FLARE - ONE & TWO
 WAY ROADWAY**
 SC. AS NOTED April 1969
 SHEET No. 8 OF 11 SHEETS DT 516

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

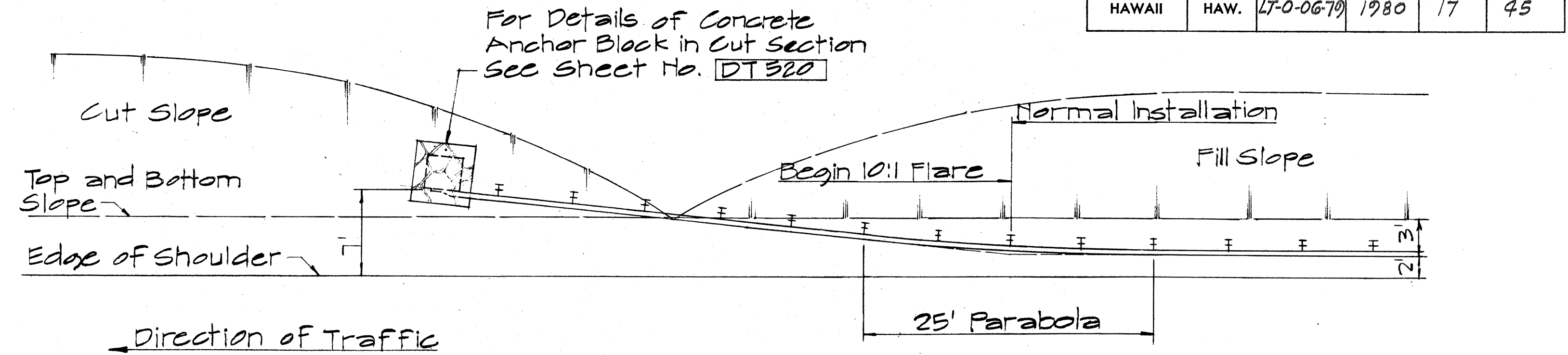
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	17-0-06-79	1980	17	45



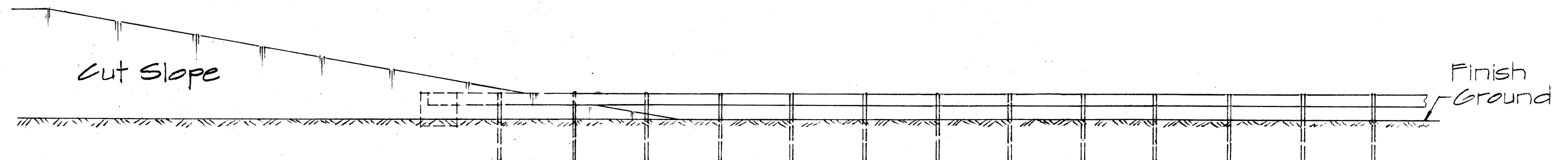
PLAN



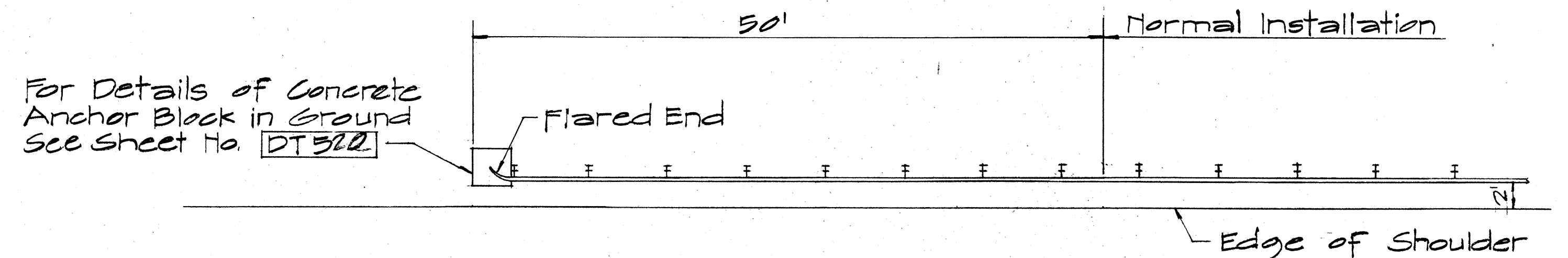
ELEVATION
TYPE "D" FLARE
Sc. 1/8" = 1'-0"



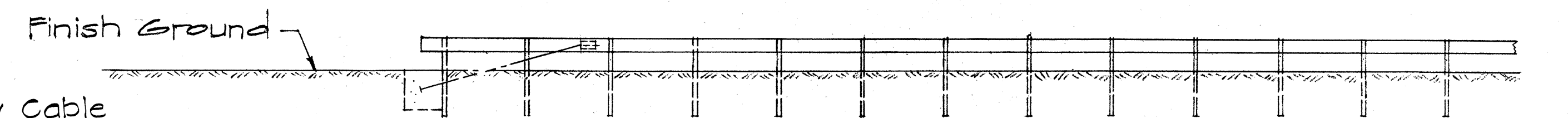
PLAN



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

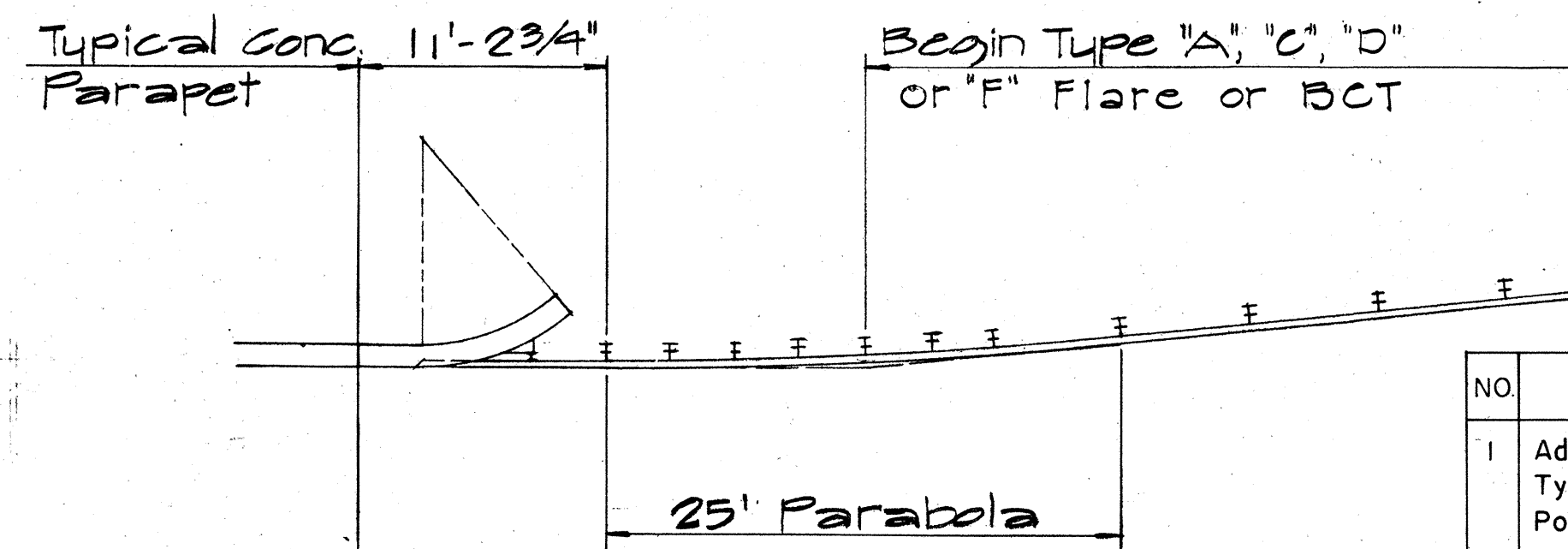


PLAN



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

NOTE:
For detail of Breakaway Cable Terminal (BCT) See Sheet No. DT 519



TYPICAL LAYOUT PLAN OF
END POST CONNECTION
Sc. 1/8" = 1'-0"

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

APPROVED:
Wm. J. Sal 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.C.	4-12-72
2	Delete Type "B" Flare and Type "E" Flare	H.C.	6-15-78

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

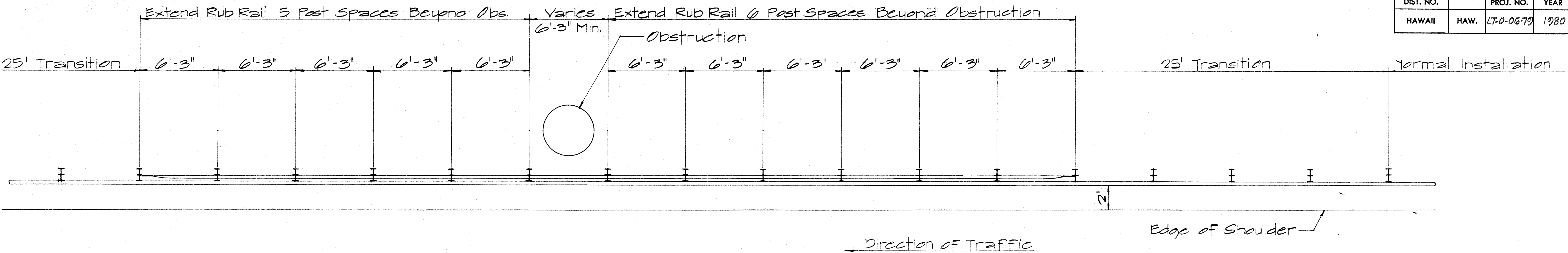
STANDARD DETAILS
TRAILING END
FLARE - ONE & TWO
WAY ROADWAY

Scale: As Noted April 1969

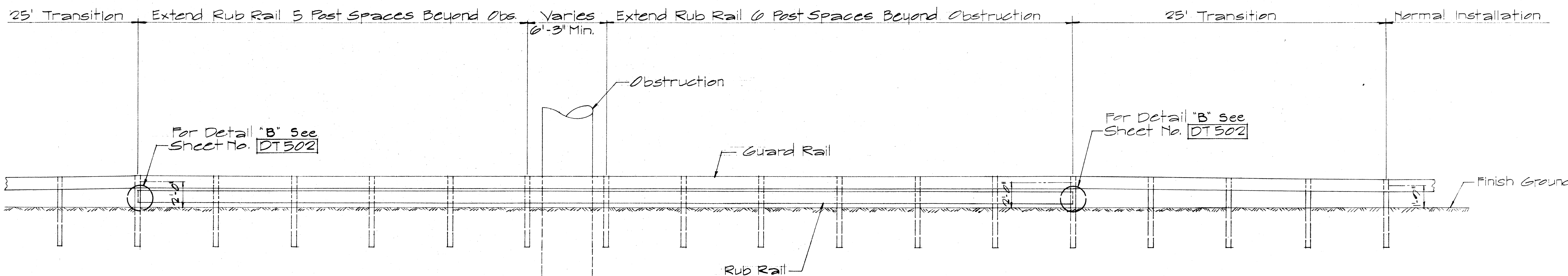
SHEET No. 9 OF 11 SHEETS DT 517

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
CHECKED BY	
NOTED BY	
NO.	

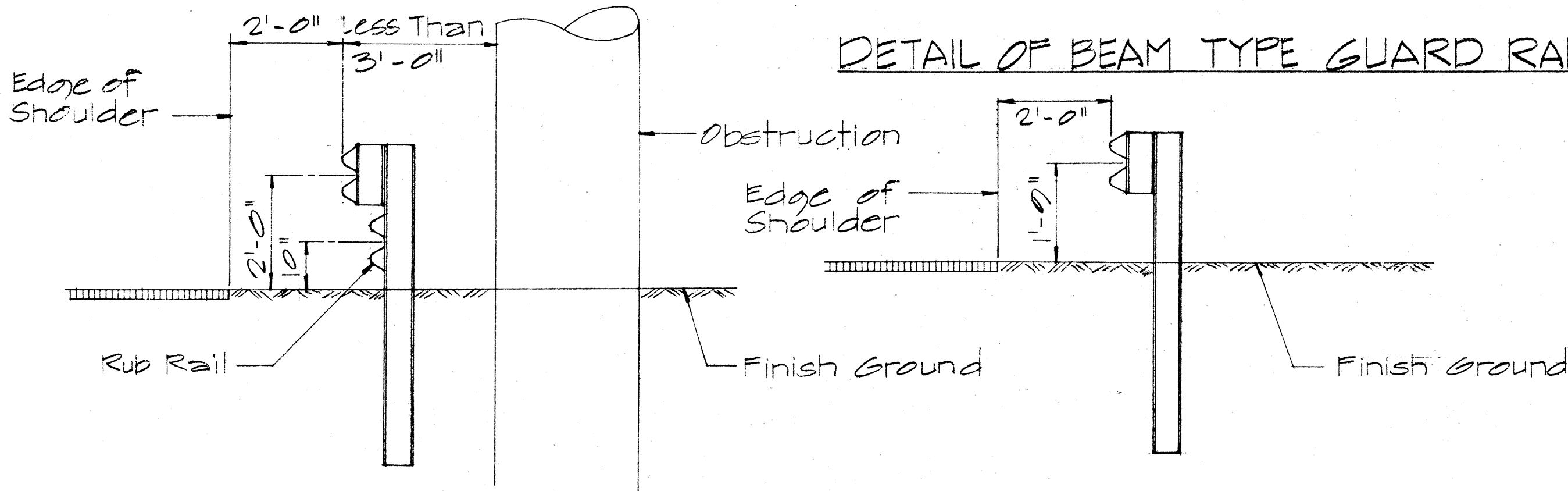
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	LT-0-06-70	1980	18	45



PLAN



ELEVATION



TYP. SEC. AT OBSTRUCTION TYP. SEC. AT NORMAL INSTALLATION

TYP. GUARD RAIL SECTIONS
SC. 1/2" = 1'-0"

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

APPROVED:
Shirley S. S. S.
 ASSISTANT CHIEF, ENGINEERING 12-30-69
 DATE

NO.	REVISION	APPROVED BY	DATE

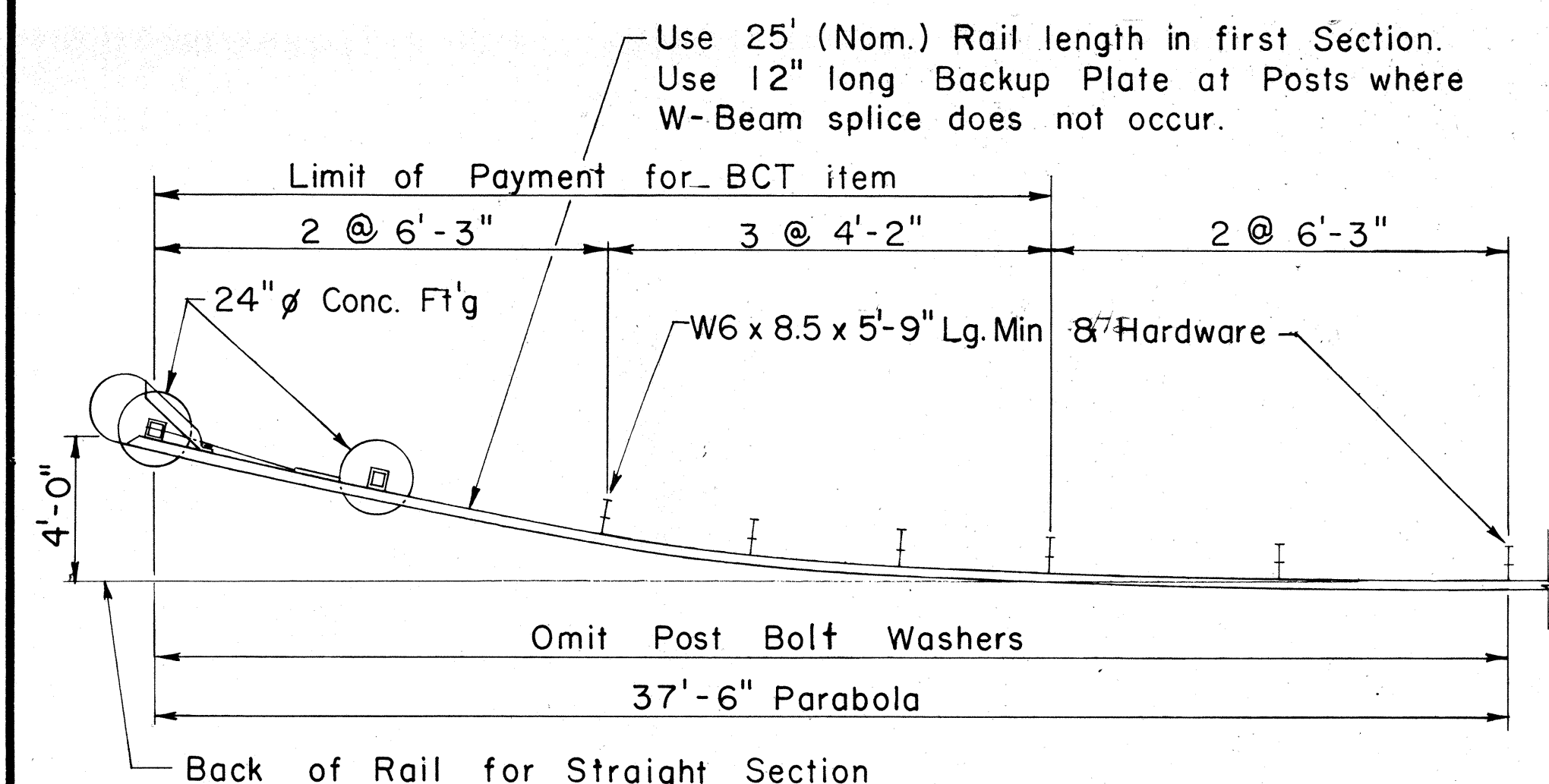
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 LAND TRANSPORTATION FACILITIES DIVISION
STANDARD DETAIL
BEAM TYPE GUARD RAIL
WITH RUB RAIL AT OB-
STRUCTION (SHOULDER INSTALL)
 SC. AS SHOWN DATE: JUNE 1969
SHEET No. 10 OF 11 SHEETS DT 50

DATE
 DRAWN BY
 DESIGNED BY
 CHECKED BY
 ORIGINAL
 PLAN
 NOTE BOOK
 No.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	LT-0-06-79	1980	19	45

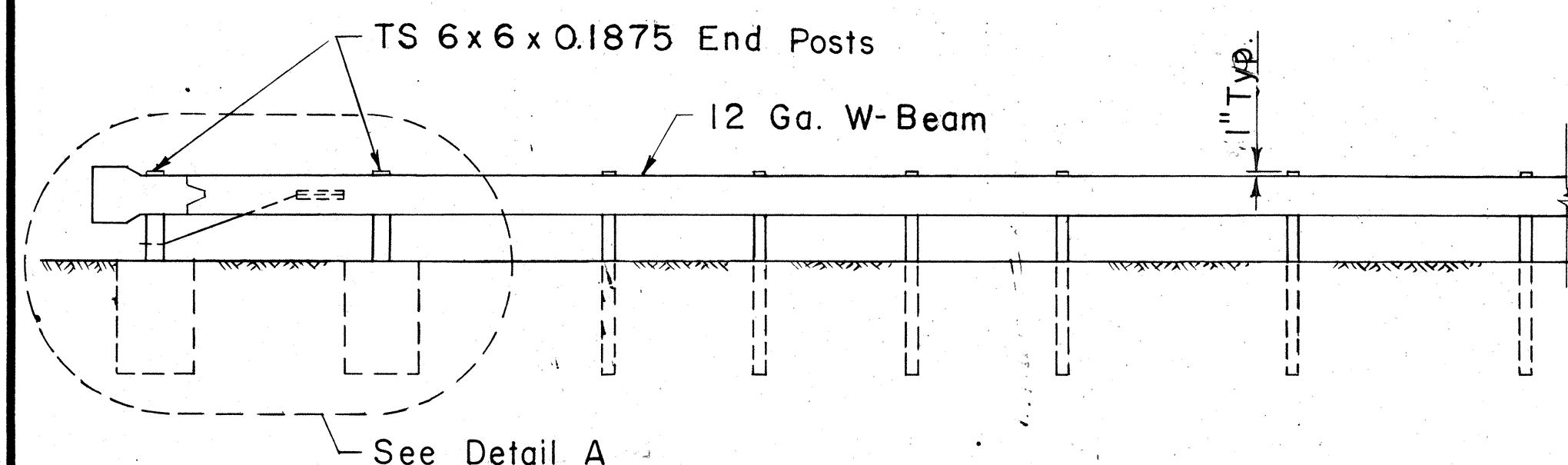
NOTES:

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 shall be Class A.



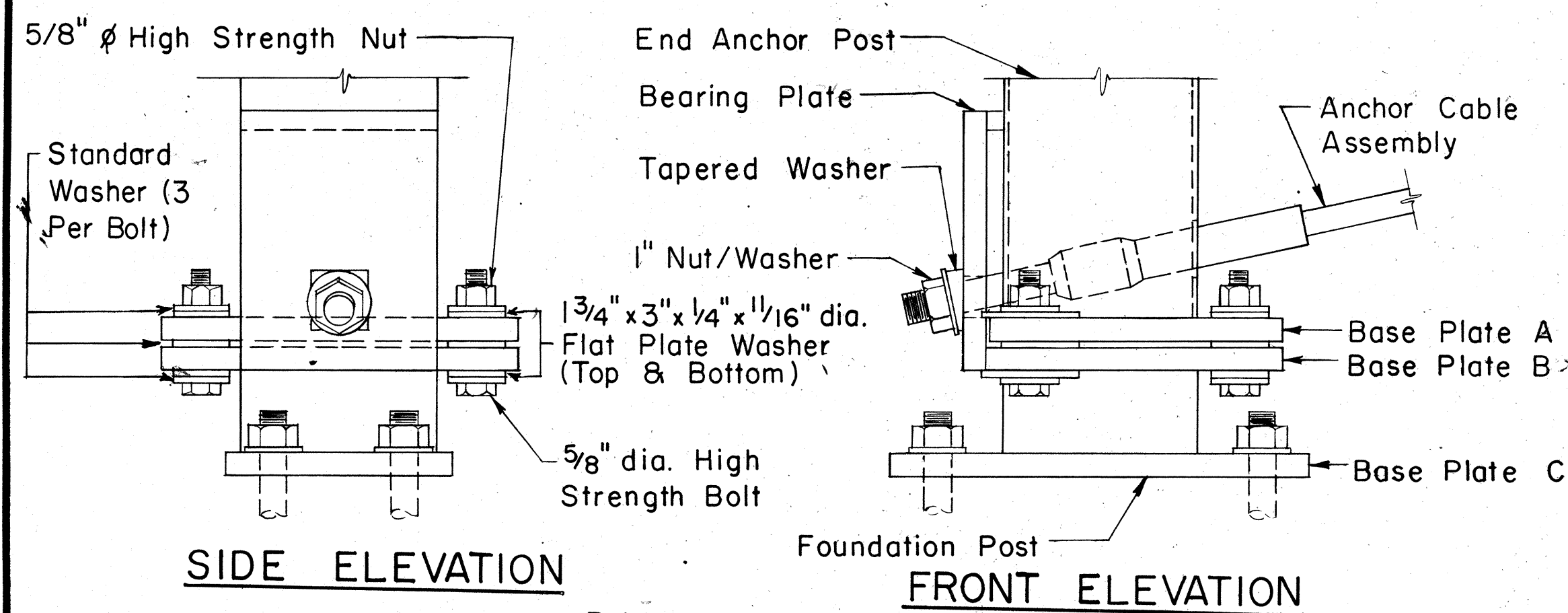
PLAN

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



ELEVATION

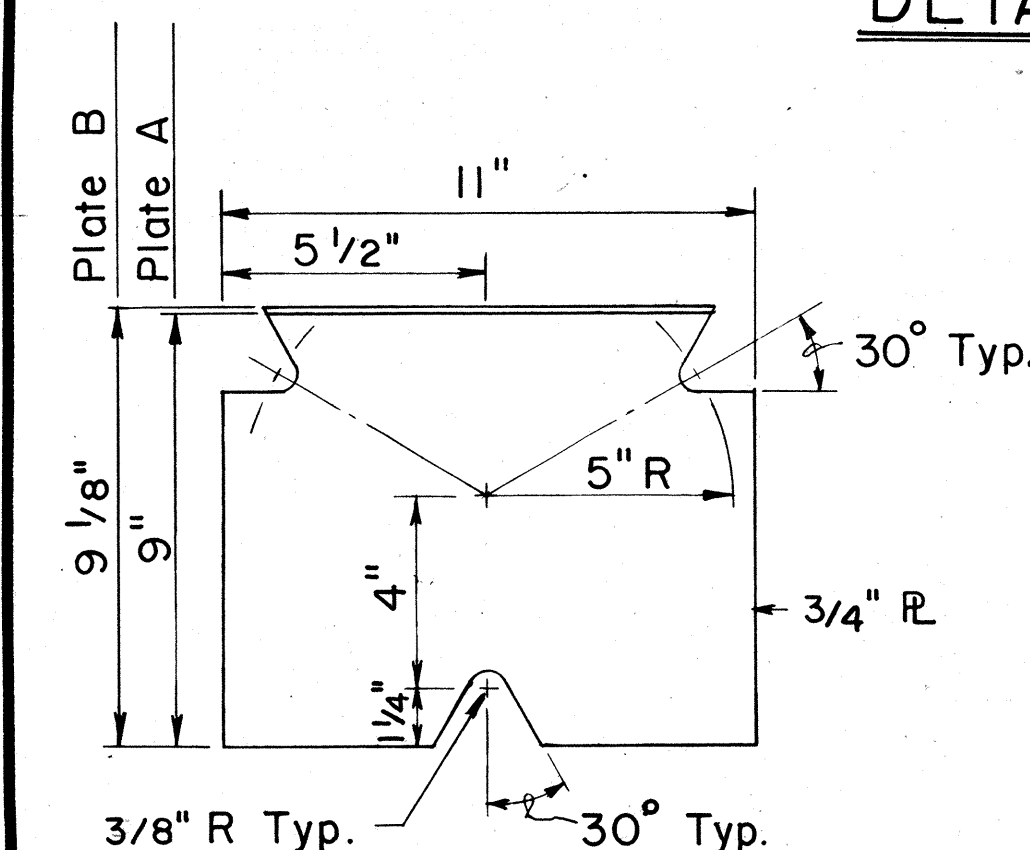
Scale: 1/4" = 1'-0"



SIDE ELEVATION

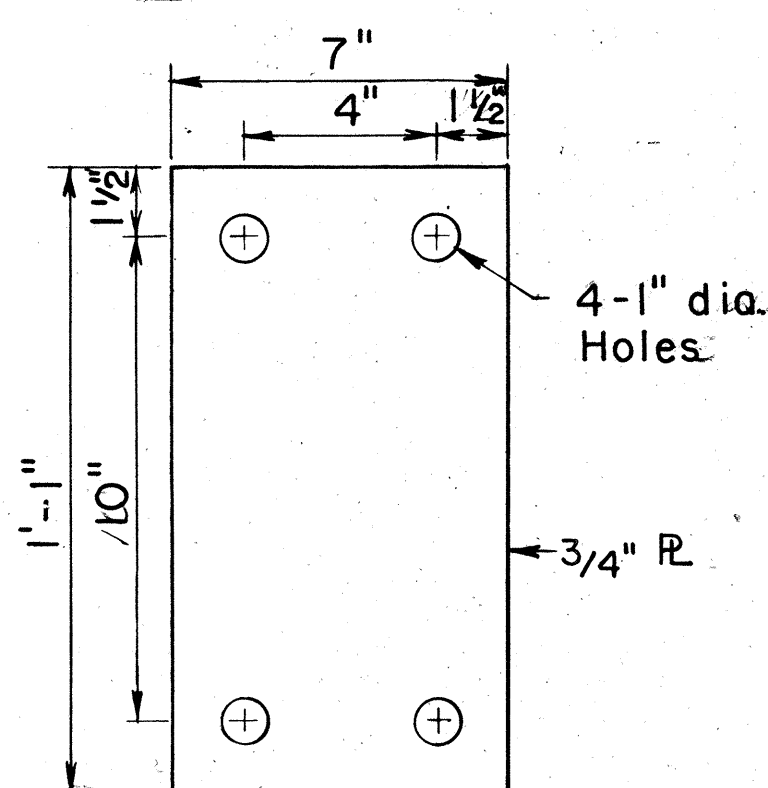
FRONT ELEVATION

DETAIL B



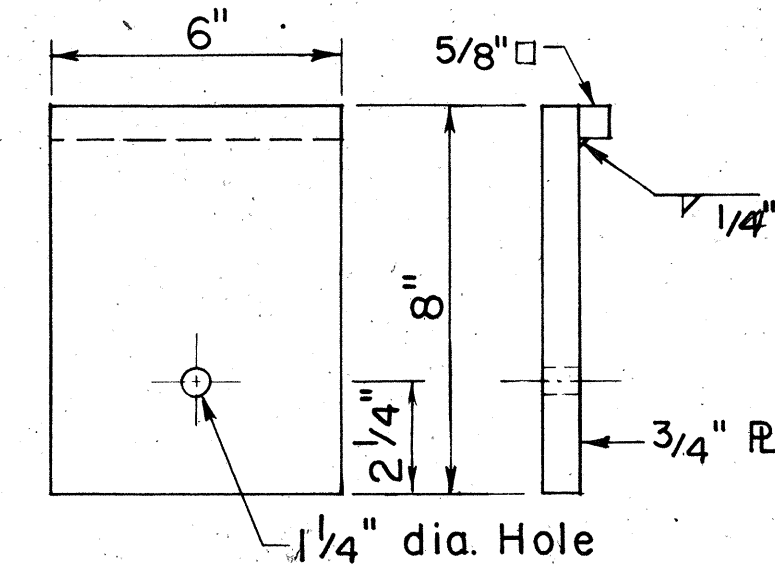
BASE PLATES A & B

Scale: 3" = 1'-0"



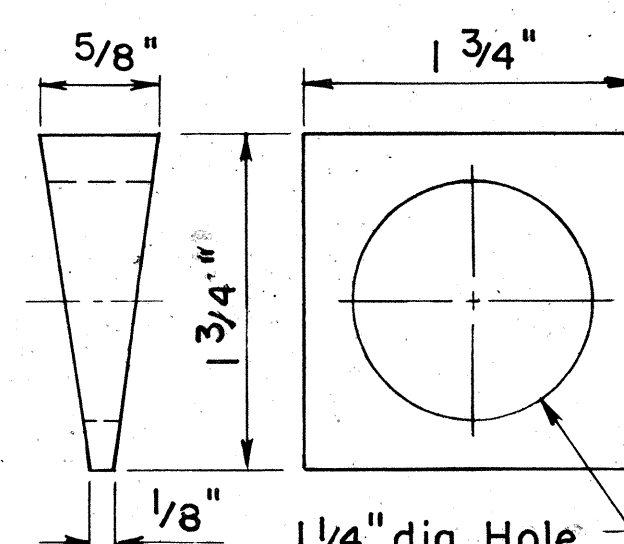
BASE PLATE C

Scale: 3" = 1'-0"



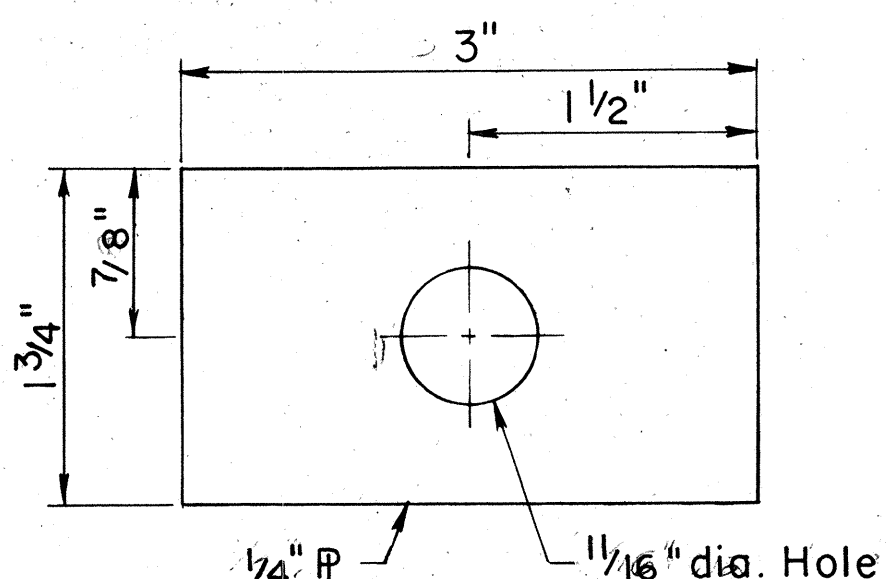
BEARING PLATE

Scale: 3" = 1'-0"



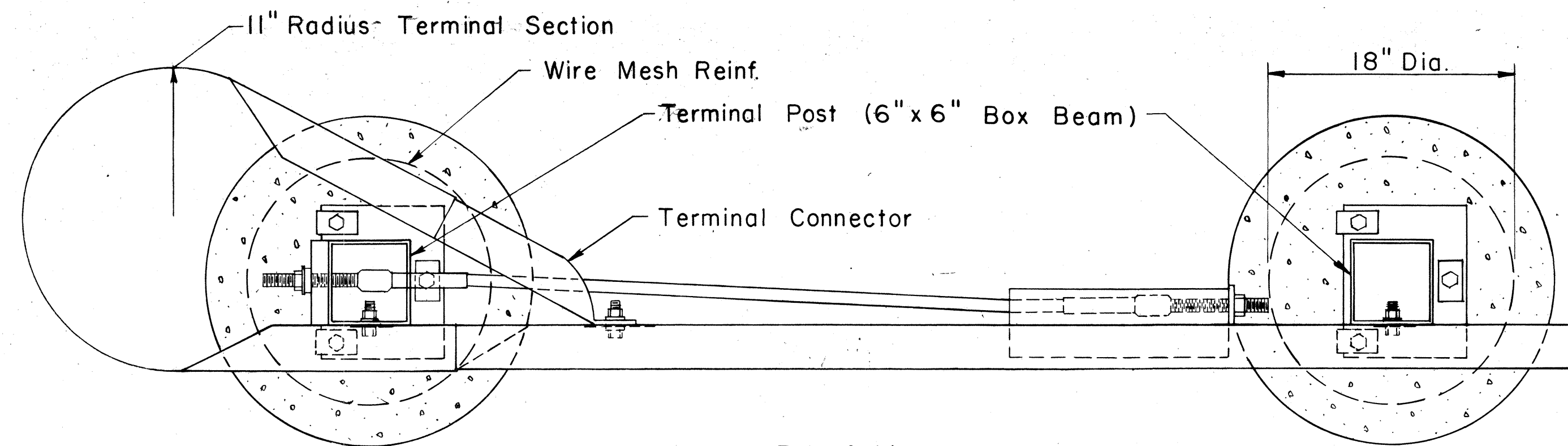
TAPERED WASHER

Scale: Full Size

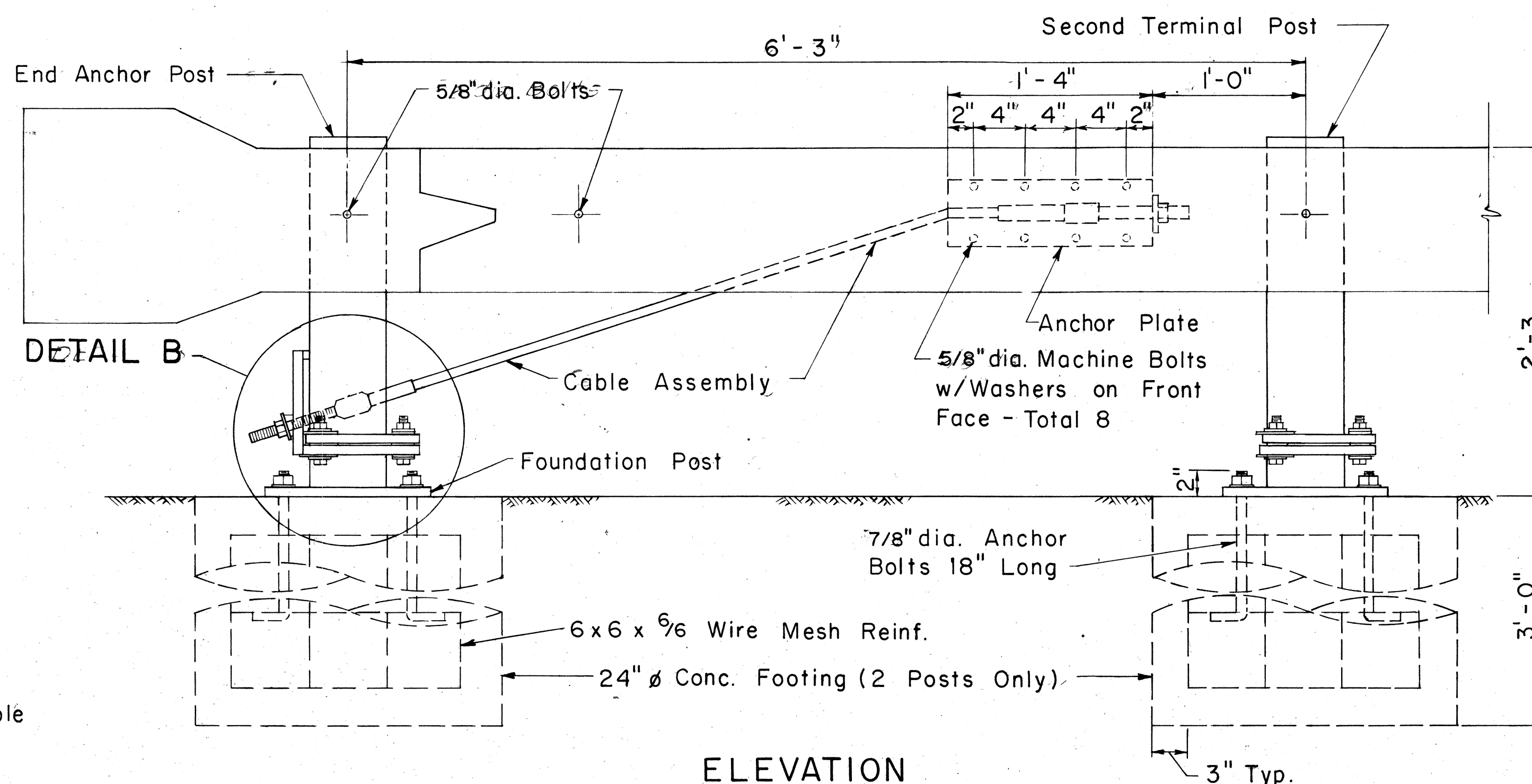


FLAT PLATE WASHER

Scale: Full Size



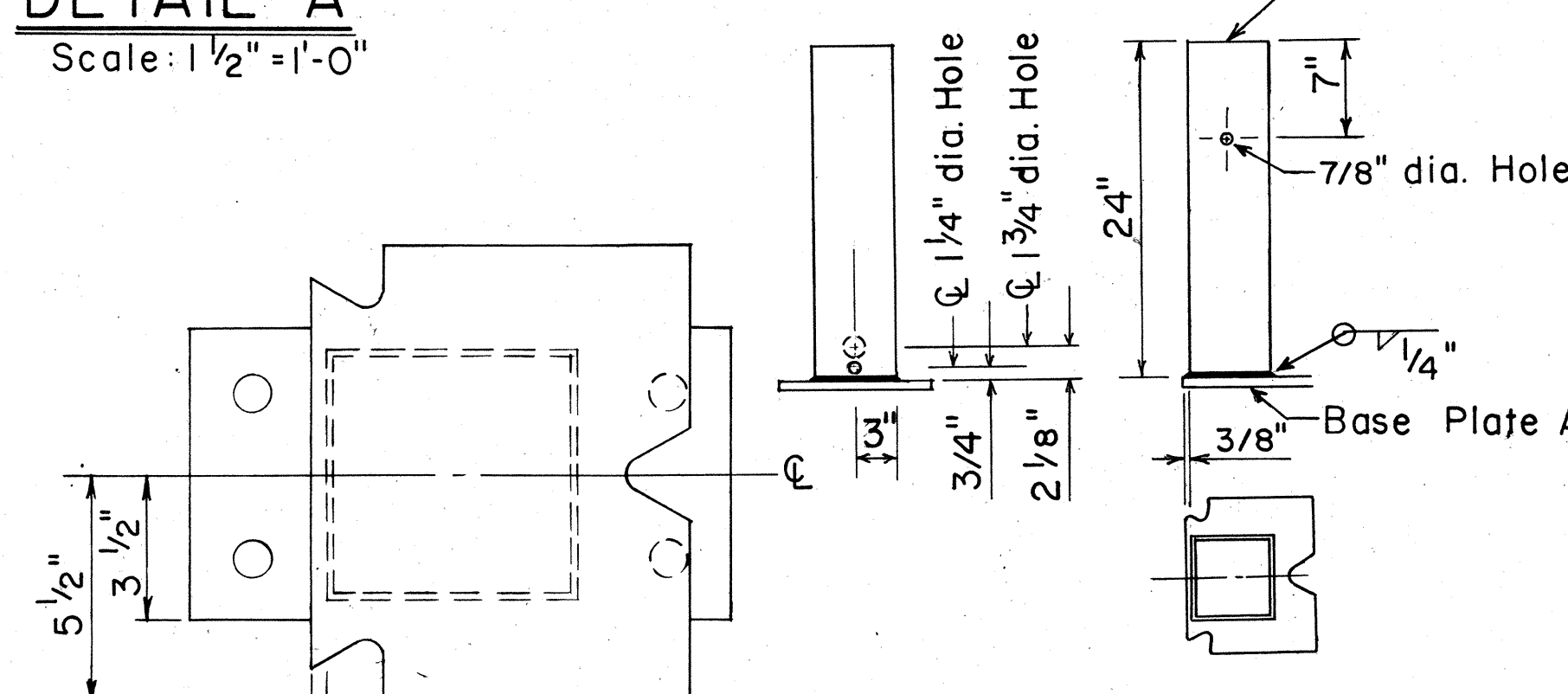
PLAN



ELEVATION

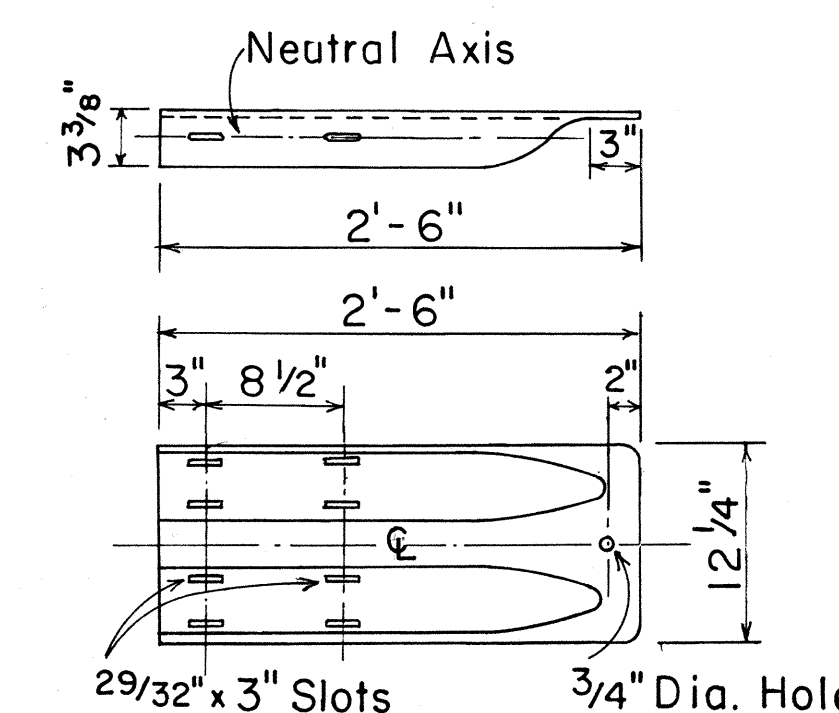
DETAIL A

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



TERMINAL POST

Scale: 1" = 1'-0"



TERMINAL CONNECTOR

Scale: 1" = 1'-0"

APPROVAL RECOMMENDED:

Eishi Tanaka
TRAFFIC ENGINEER
6/14/78
DATE

APPROVED:

Harbor Sakishi
ASSISTANT CHIEF, ENGINEERING
6/15/78
DATE

NO.	REVISION	APPROVED BY	DATE
	Supersedes Sht. DT 519 Approved 12/30/69	H-1	6/15/78

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

STANDARD DETAIL

BREAKAWAY CABLE TERMINAL (BCT)

Scale: As Shown Date: June 1978

SHEET No. // OF // SHEETS DT 519