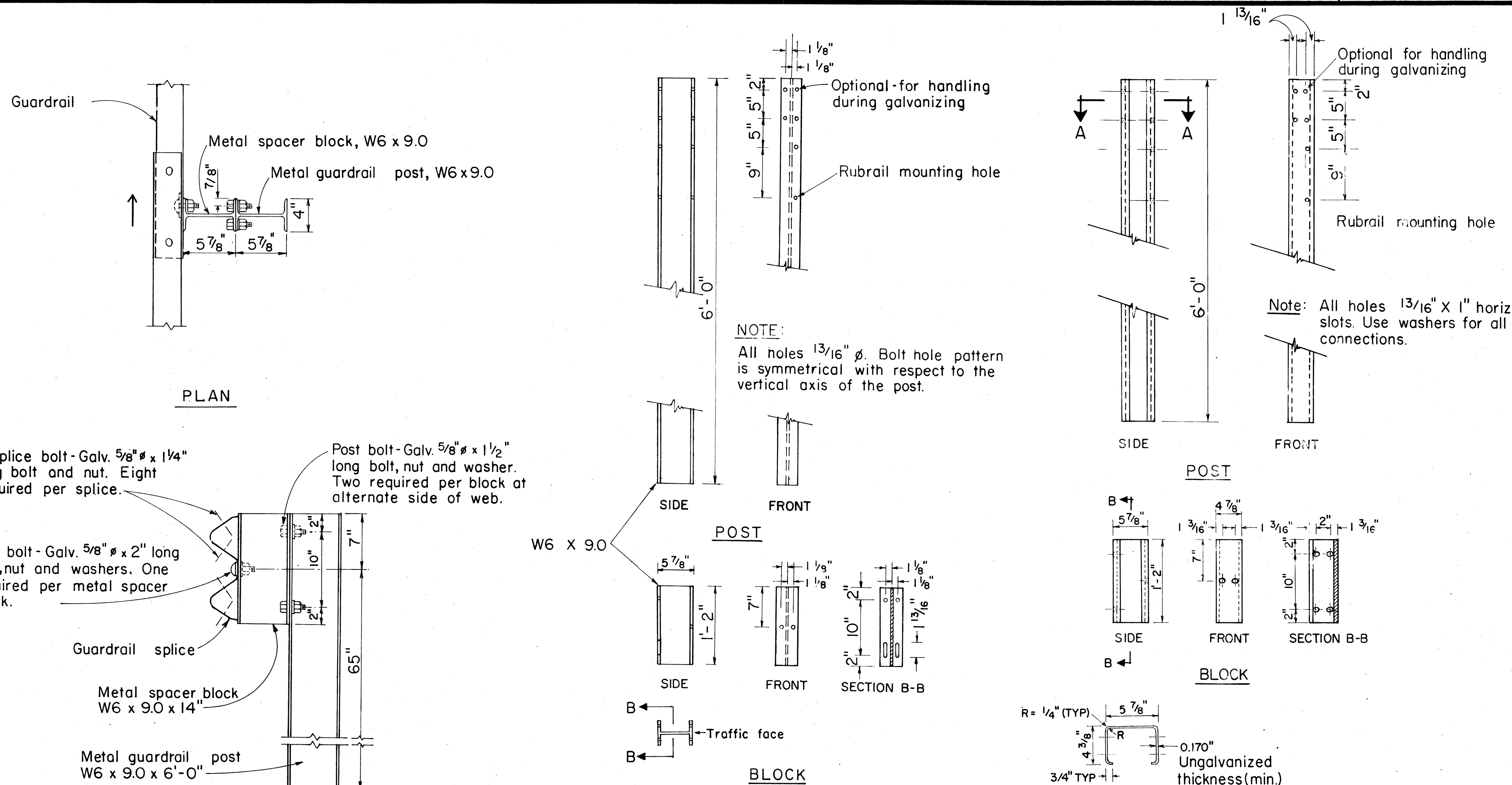


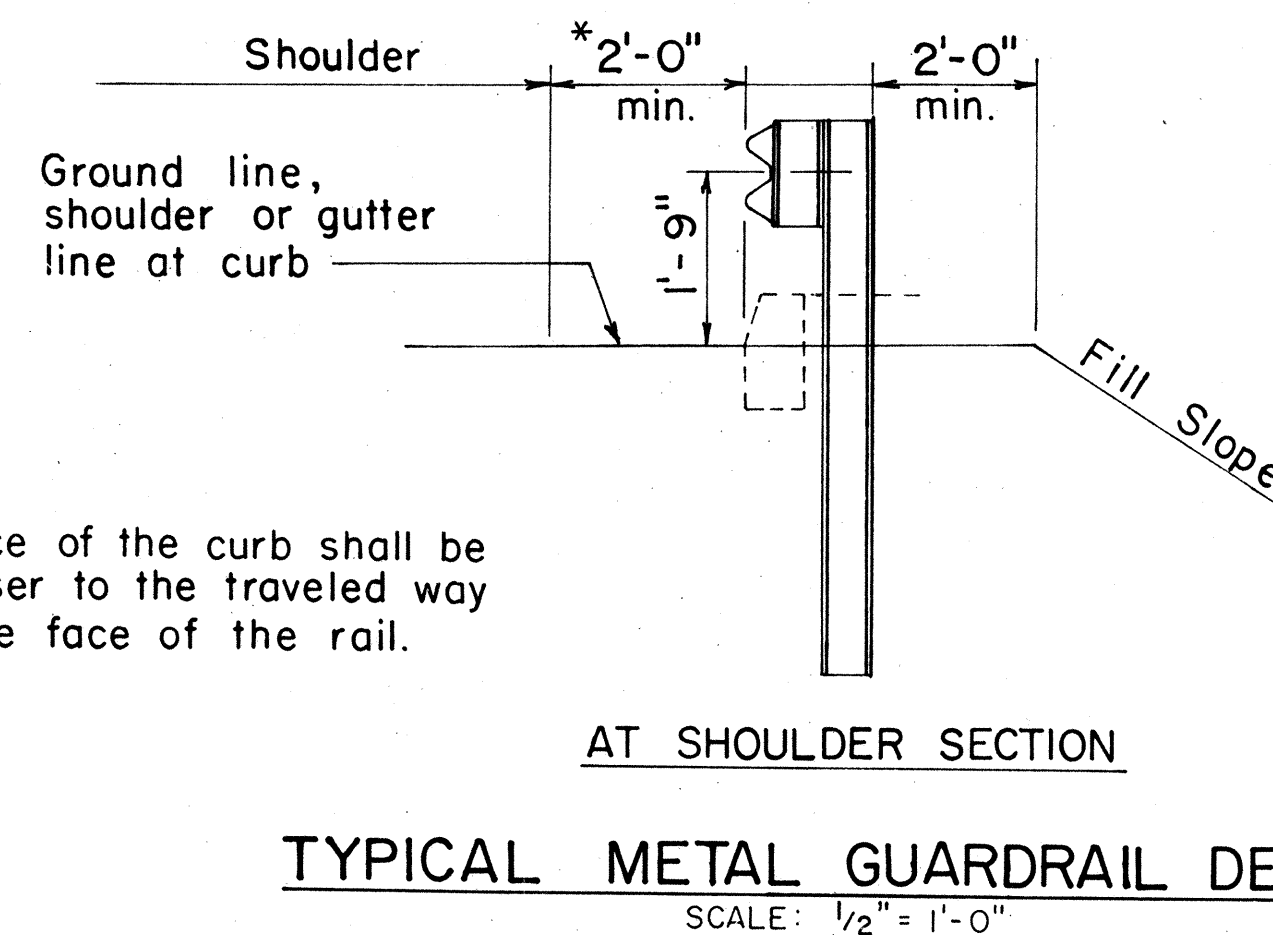
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HES-R03 083-T(12)	1984	25	63

GENERAL NOTES

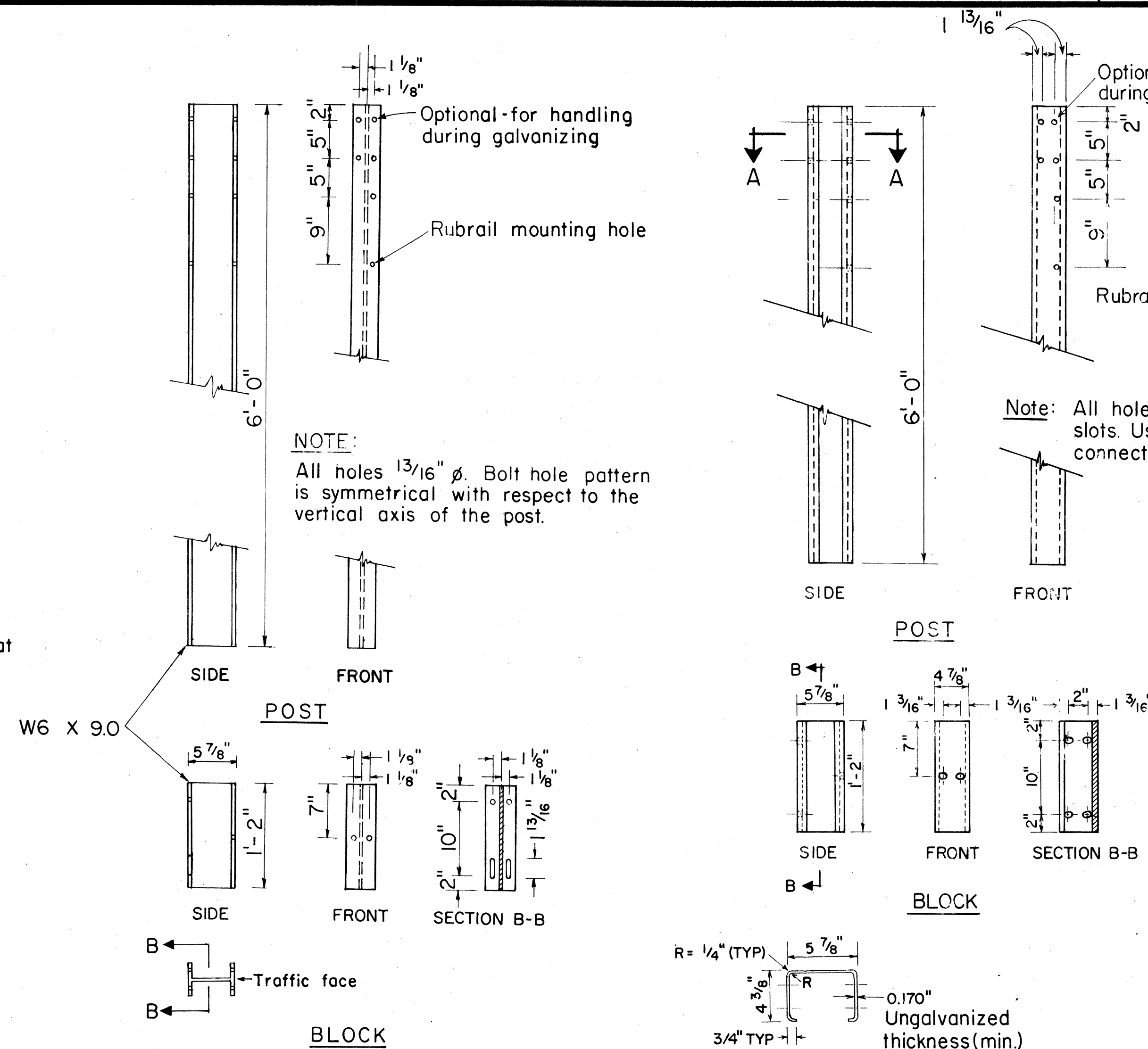
- Both of the alternate type posts may be used on any one project however, only one type of post shall be used in any single run of guardrail.
- All hardware, posts and blocks shall be galvanized. No punching, drilling or cutting will be permitted after galvanizing.
- Connection details for bent plate post and block shall be similar to the details shown for structural shape post, and block.
- Where conditions require, special post lengths in increments of 6 inches may be specified.
- For details of rail elements, bolts and nuts, see sheet DT 50I.
- All fasteners, posts, blocks and rail elements shall conform to the latest edition and amendments of "A Guide to Standardized Highway Barrier Rail Hardware," a report prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee.



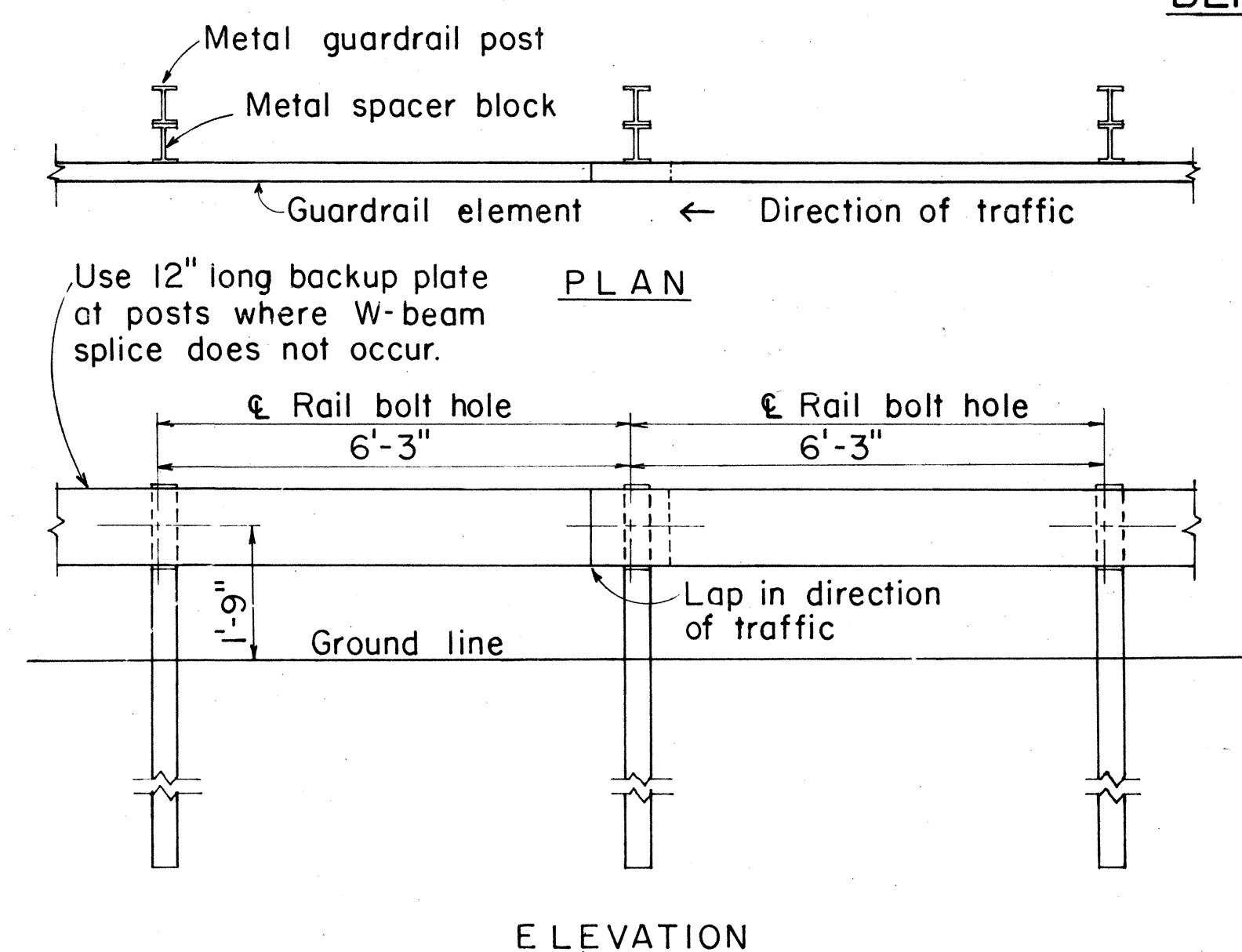
SINGLE METAL GUARDRAIL ON METAL POST WITH METAL SPACER BLOCK
SCALE: 1 1/2" = 1'-0"



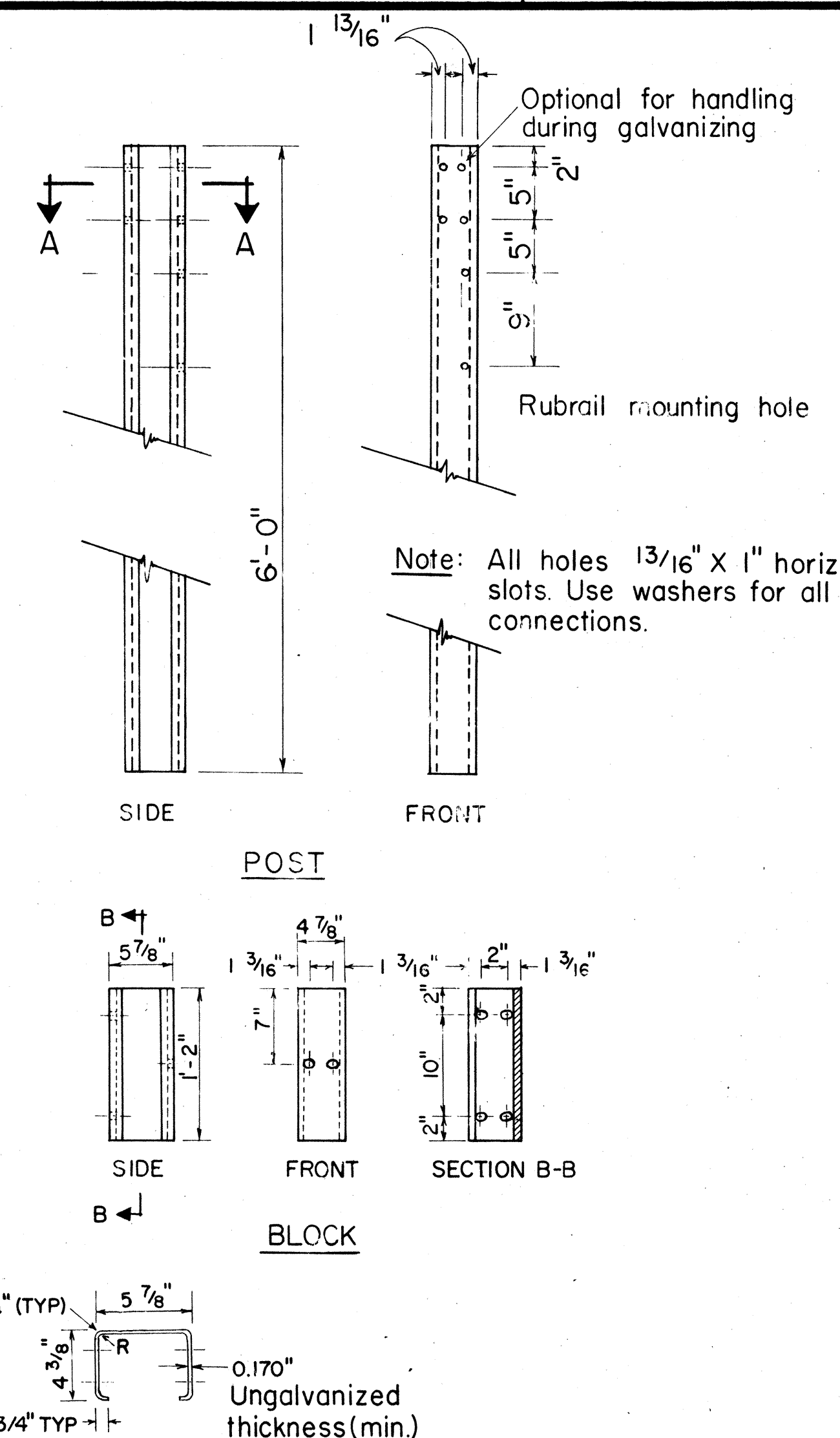
TYPICAL METAL GUARDRAIL DETAIL
SCALE: 1/2" = 1'-0"



STRUCTURAL SHAPE POST AND BLOCK
SCALE: 1" = 1'-0"



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



BENT PLATE POST AND BLOCK
SCALE: 1" = 1'-0"

APPROVAL RECOMMENDED:
Eichi Tanaka
TRAFFIC ENGINEER
DATE: 9/7/82

APPROVED:
[Signature]
ASSISTANT CHIEF, ENGINEERING
DATE: 9-28-83

NO.	REVISION	APPROVED BY	DATE
1	Supersedes sht. DT 500 approved 12/30/69.	<i>[Signature]</i>	11/21/82
2	Added General Notes No. 6	<i>[Signature]</i>	9-28-83

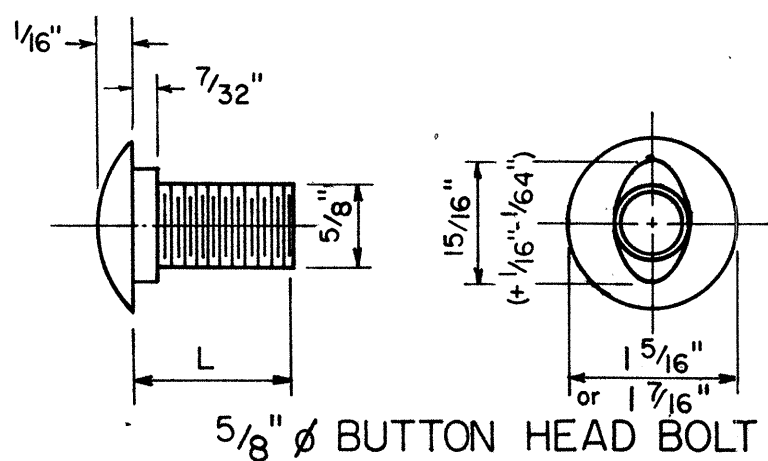
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL GUARDRAIL

Scale: As Shown
SHEET NO. OF SHEETS DT 500

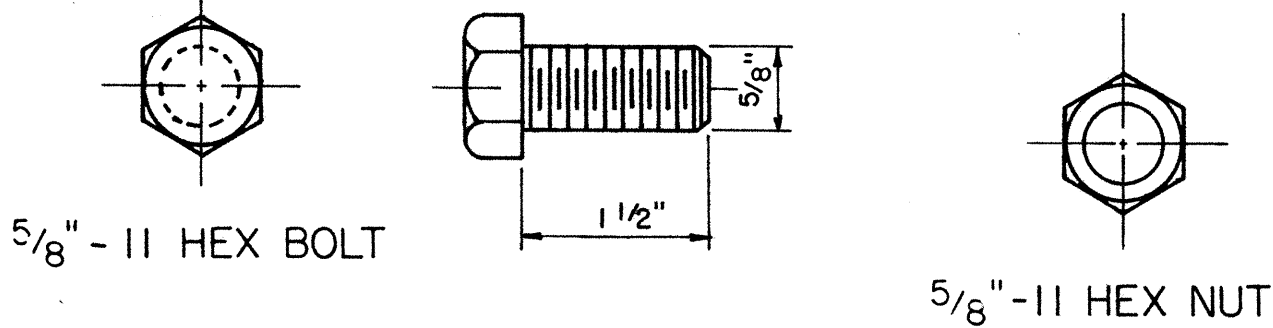
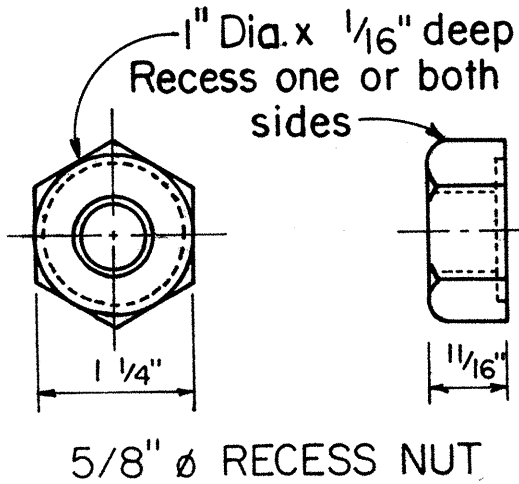
July, 1982

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HS-R05-081-1(12)	1984	26	63

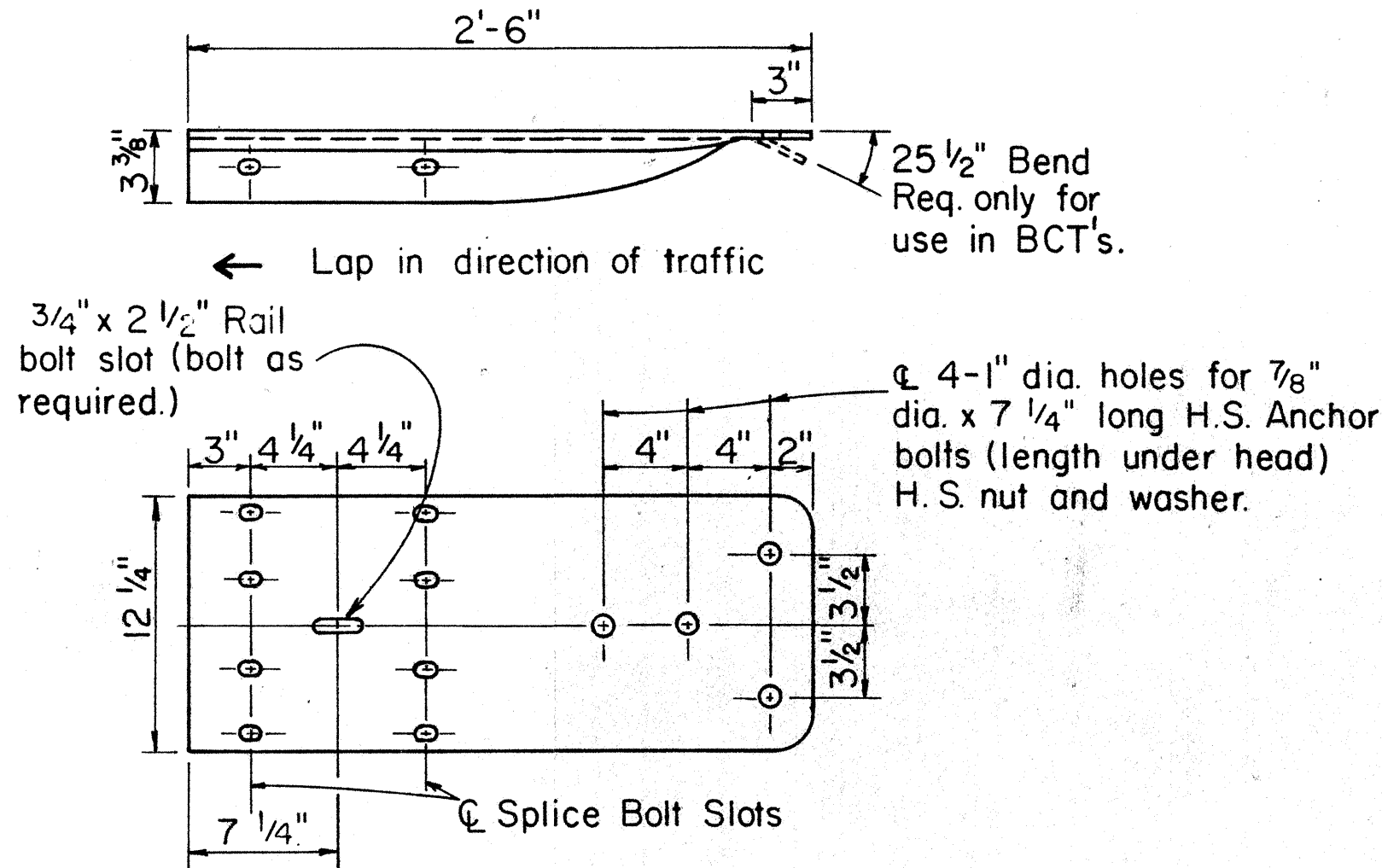


L	Thread Length	Intended Use
1 1/4"	Full length thread	Splice rail elements
2"	1 1/2" min. thread len.	Fasten rails to posts

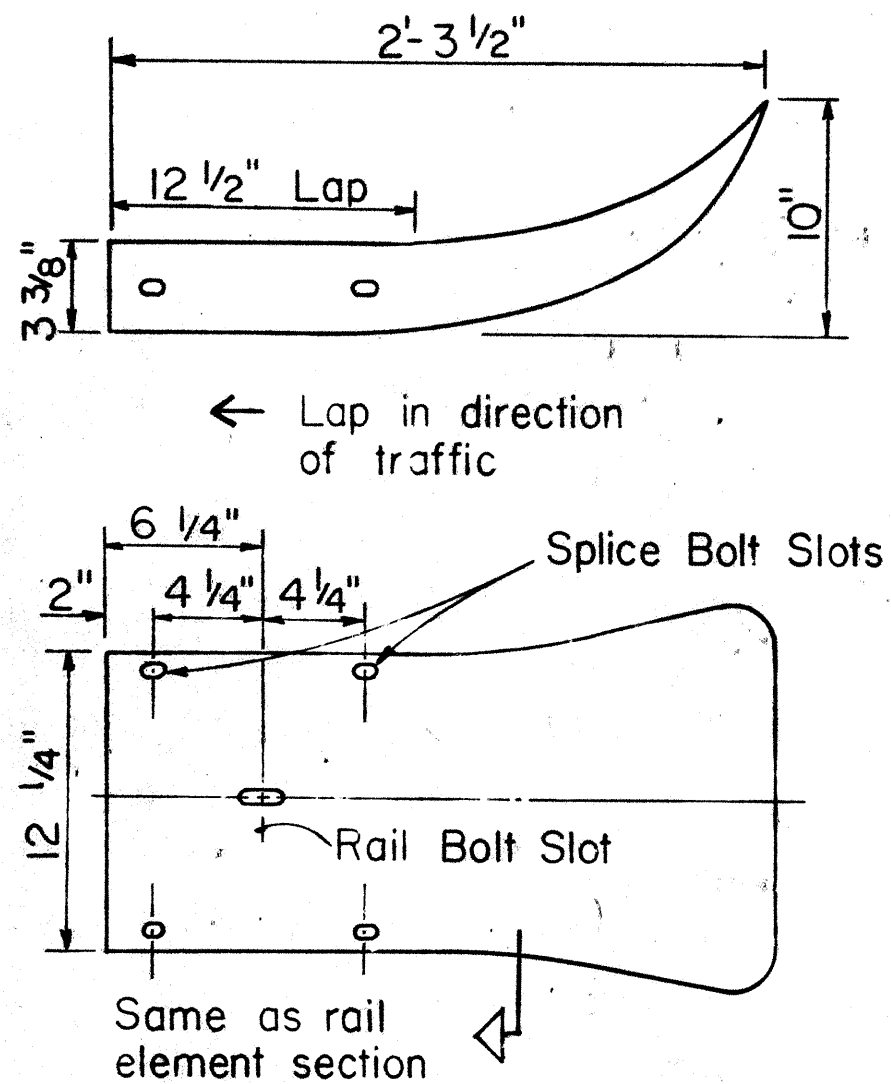
**5/8" BUTTON HEAD BOLT
AND RECESS NUT**
Scale: N.T.S.



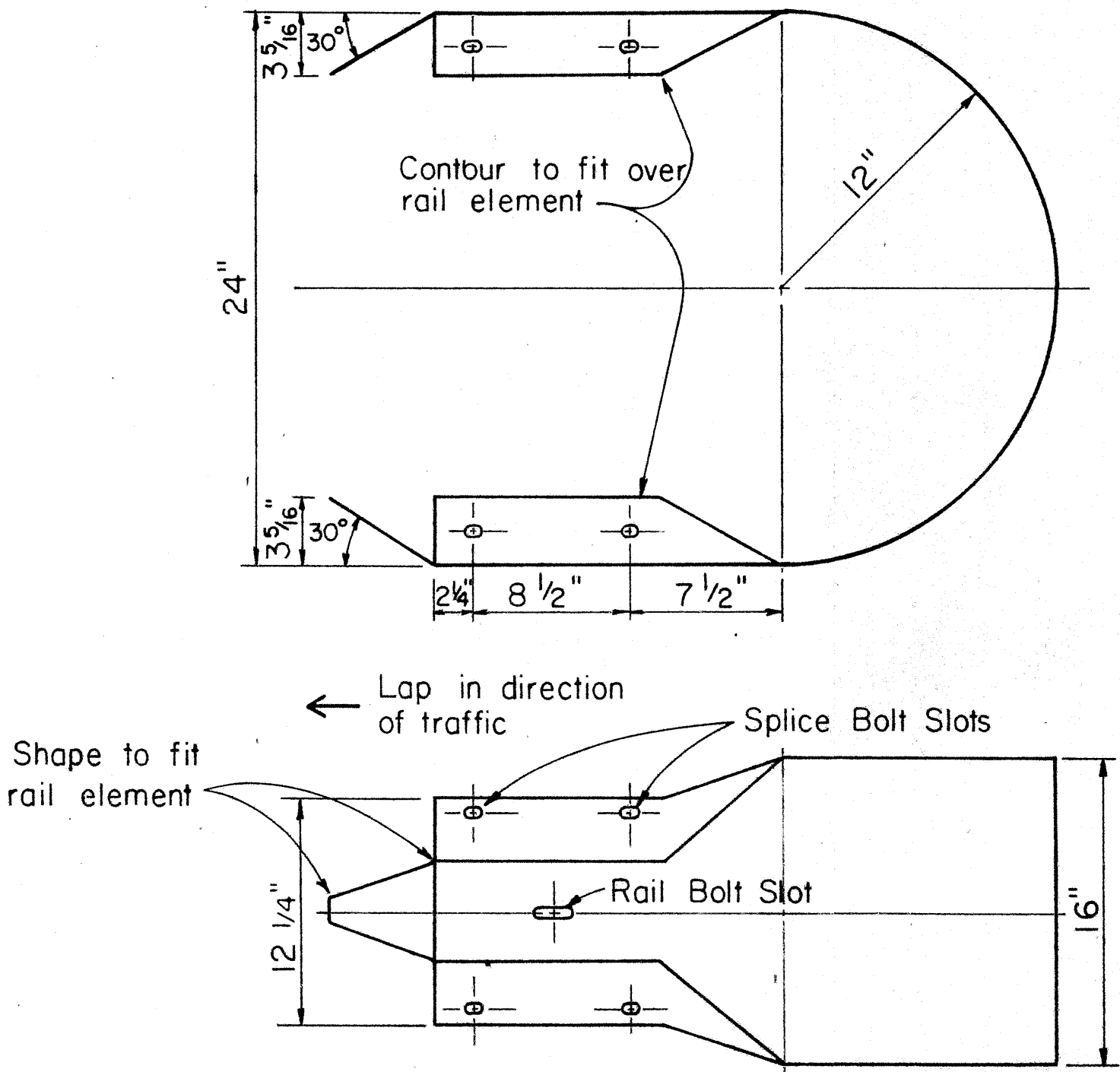
5/8" HEX POST BOLT AND NUT
Scale: N.T.S.



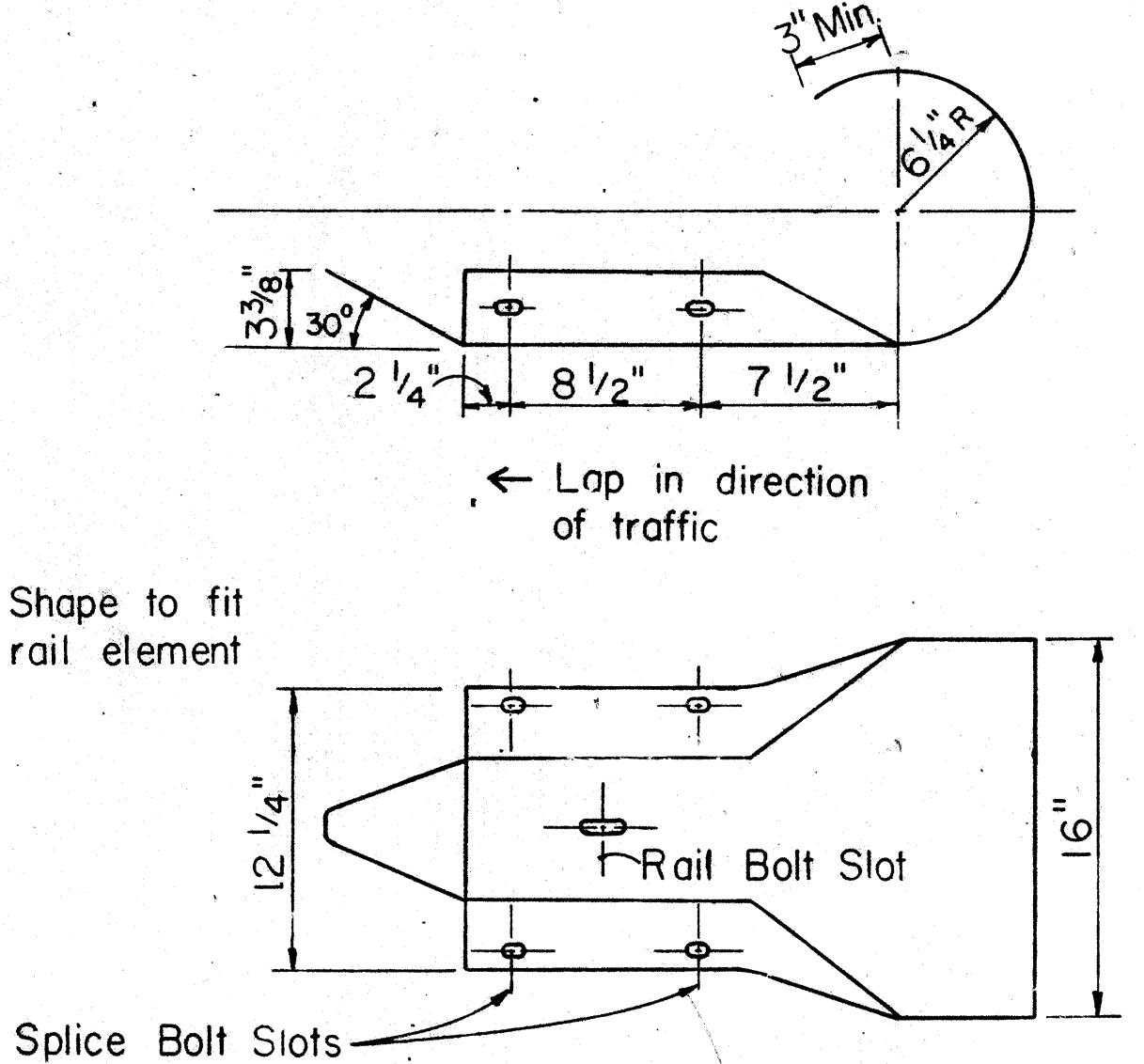
W BEAM TERMINAL CONNECTOR
Scale: 1 1/2" = 1'-0"



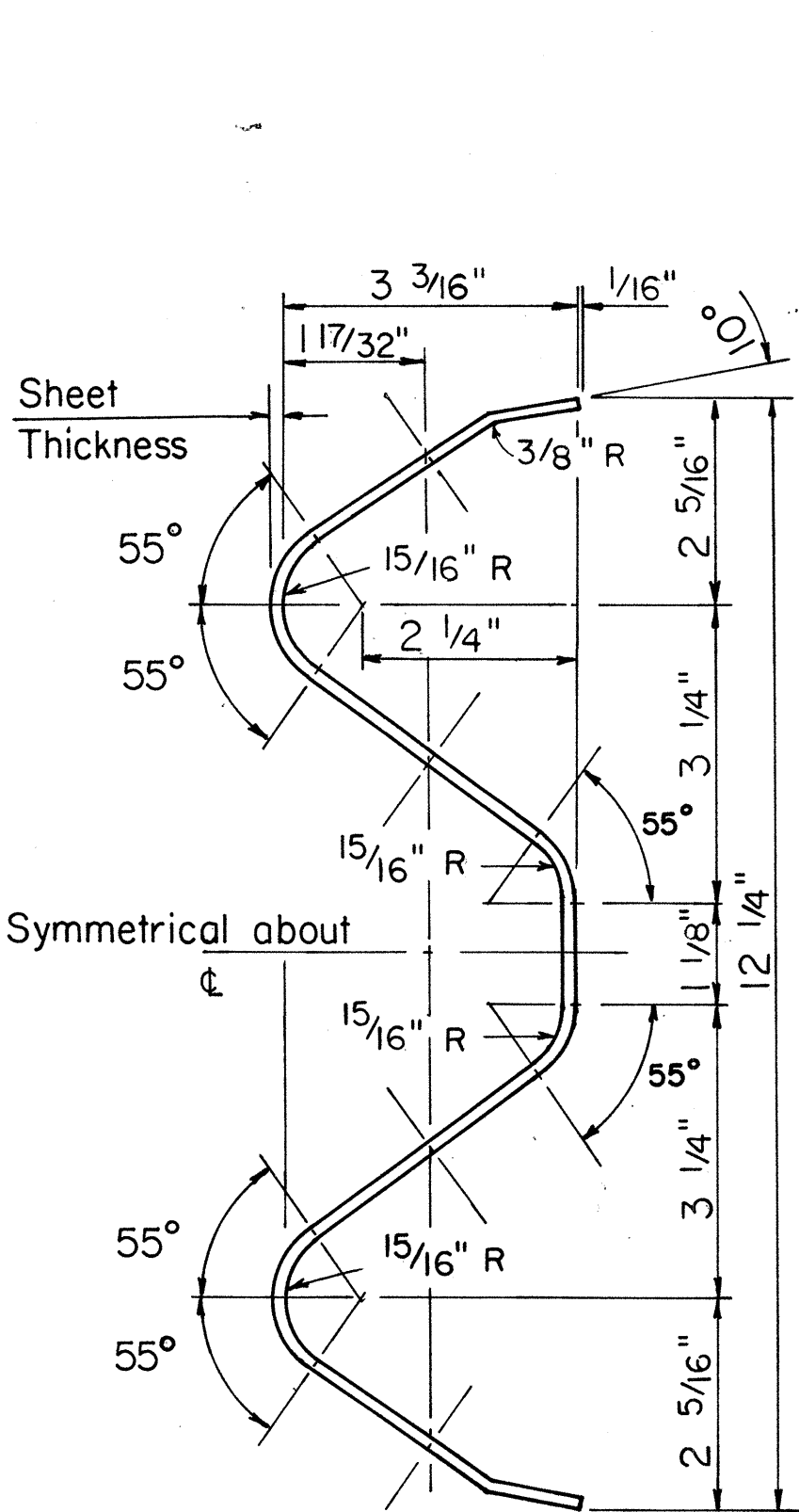
W BEAM END SECTION (FLARED)
Scale: 1 1/2" = 1'-0"



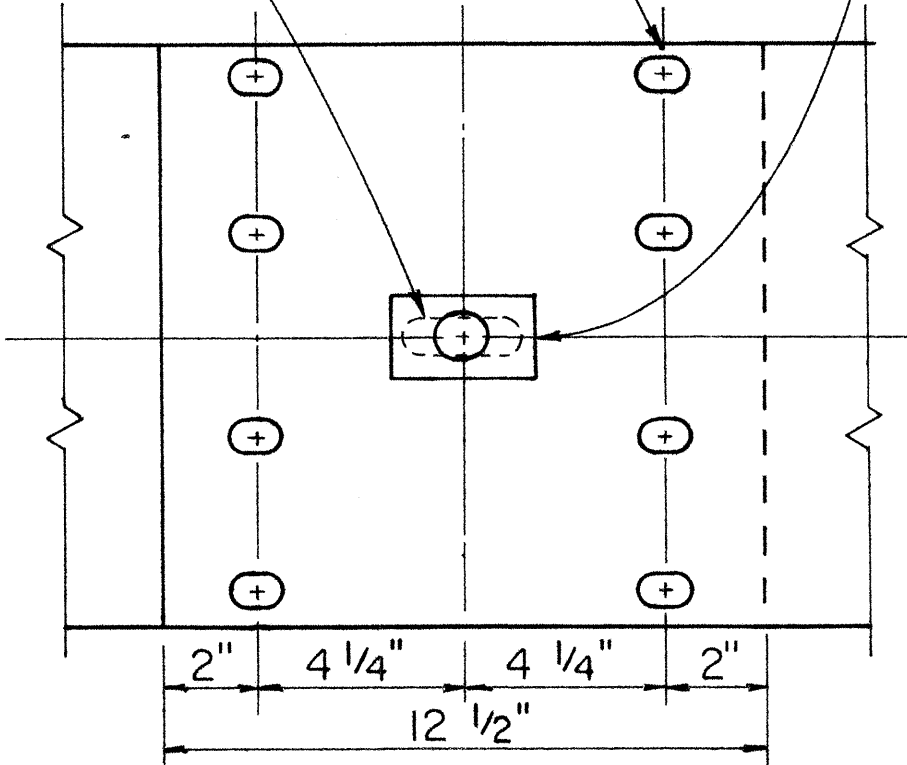
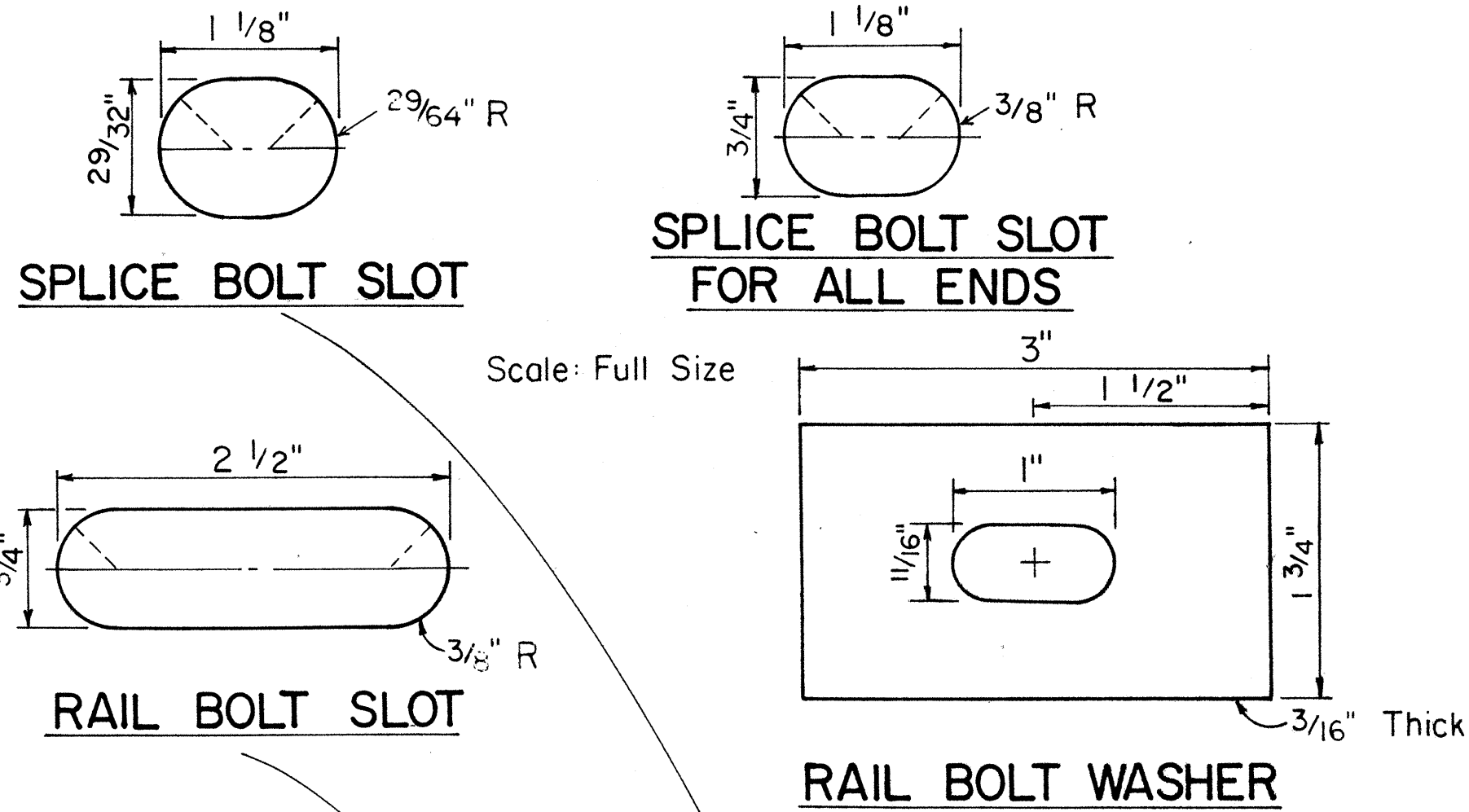
W BEAM END SECTION (BUFFER)
Scale: 1 1/2" = 1'-0"



W BEAM END SECTION (ROUNDED)
Scale: 1 1/2" = 1'-0"



RAIL ELEMENT SECTION
Scale: 6" = 1'-0"



RAIL SPLICE
Scale: 3" = 1'-0"

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

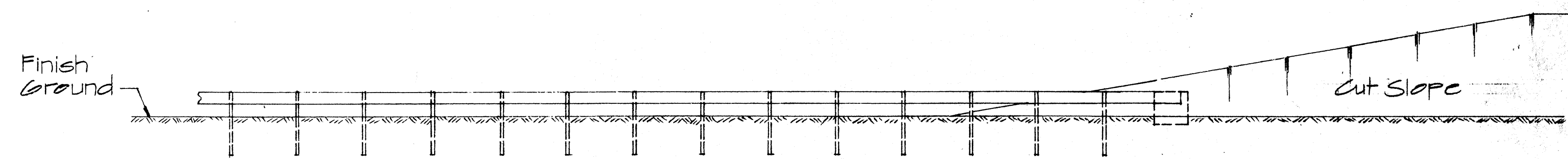
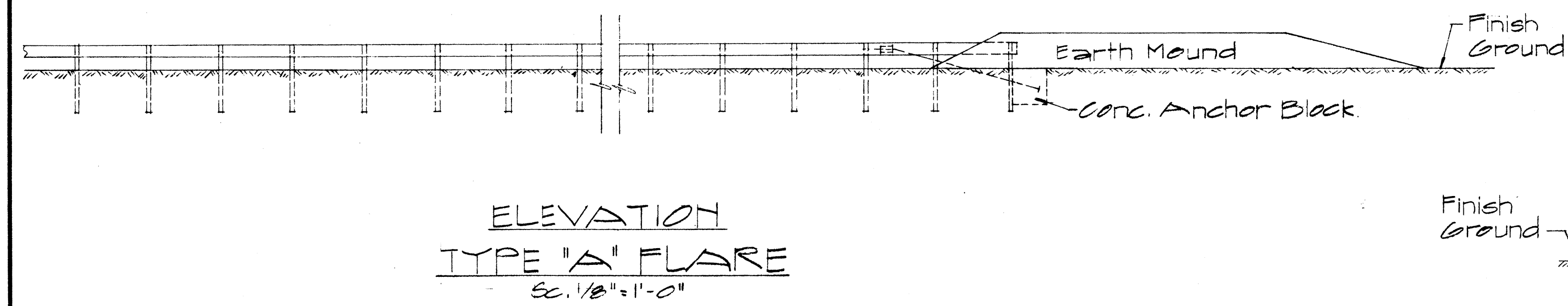
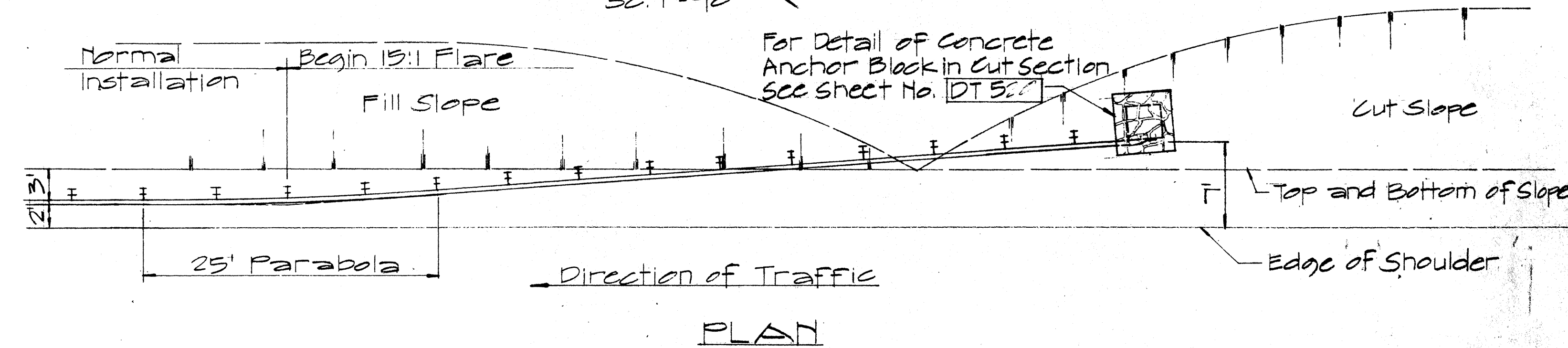
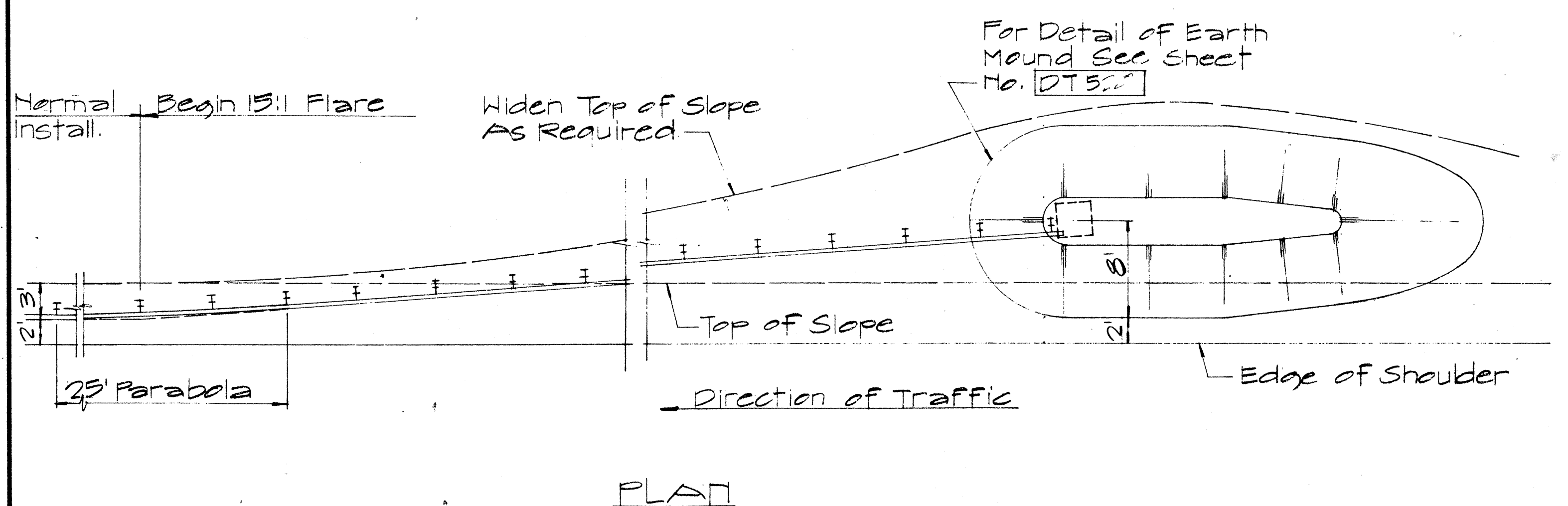
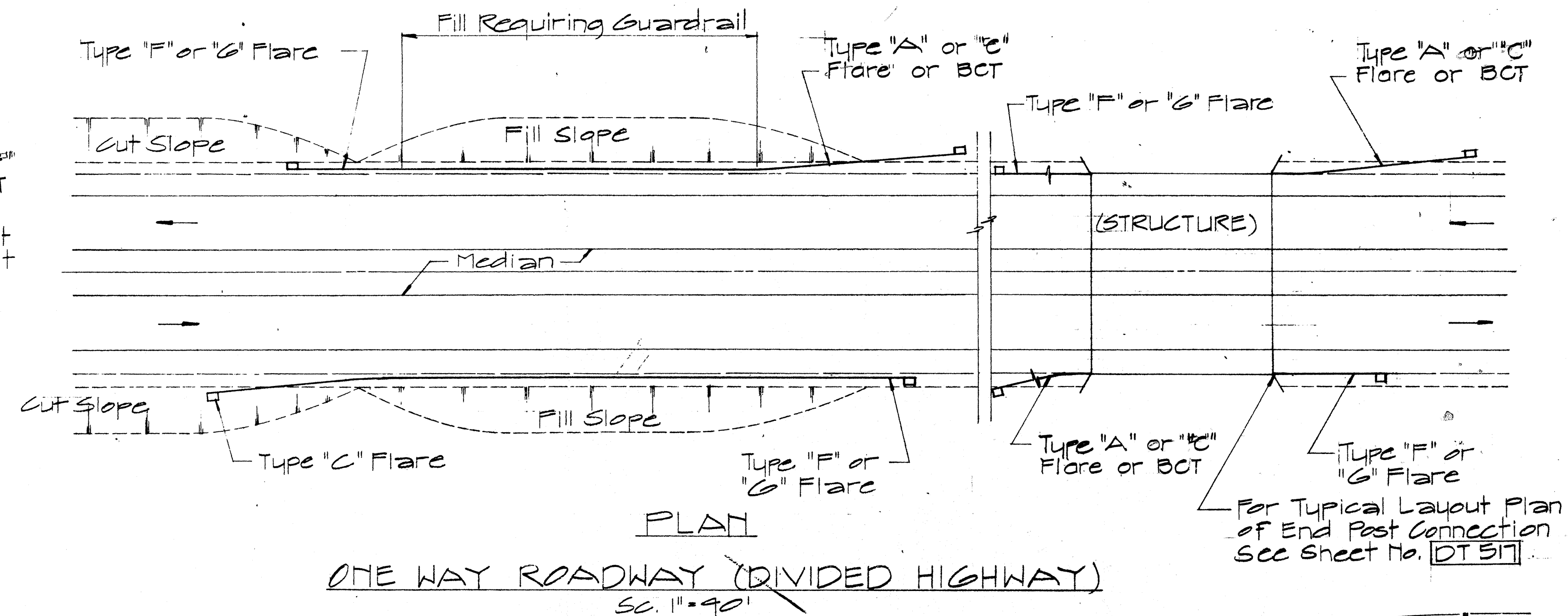
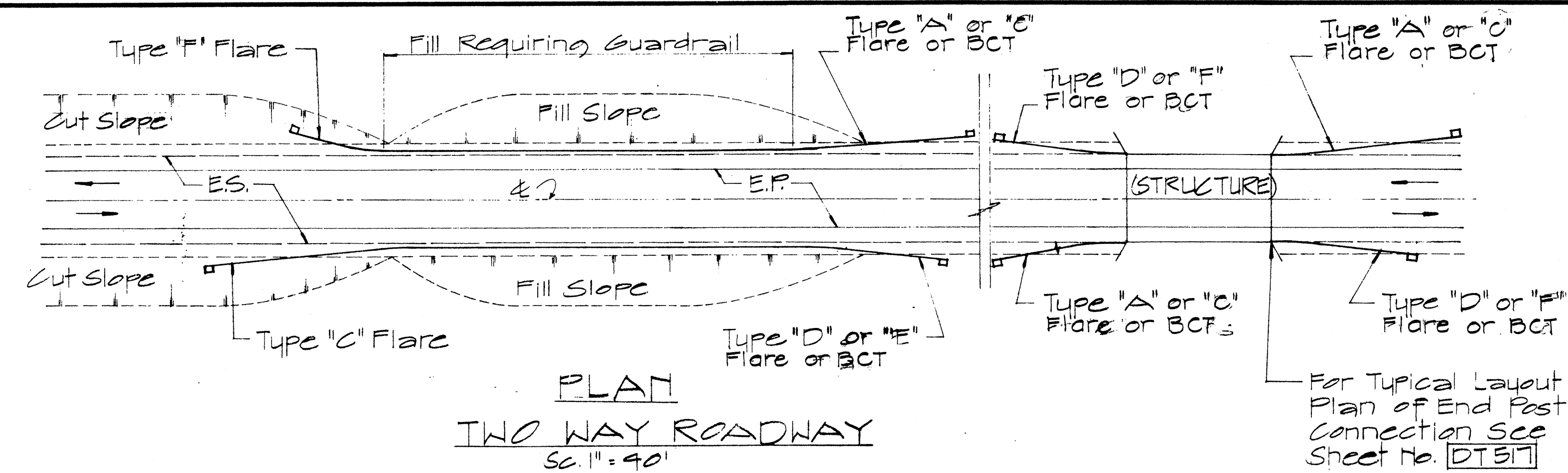
NO.	REVISION	APPROVED BY	DATE
1	Supersedes sht. DT 501 approved 12/30/69	H.T.	9/22/82

APPROVAL RECOMMENDED:	9/20/82
<i>Erich Tanaka</i>	DATE
TRAFFIC ENGINEER	
APPROVED:	9/22/82
<i>Harold Zelenka</i>	DATE
ASSISTANT CHIEF, ENGINEERING	

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
STANDARD DETAILS
METAL GUARDRAIL
Scale: As Noted
July, 1982
SHEET NO. OF SHEETS DT 501

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HE5-R05 0831(12)	1984	27	63

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 12/29/69
 TRAFFIC ENGINEER DATE

APPROVED:
[Signature] 12-30-69
 ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE
1	Delete Type "B" Flare and Type "E" Flare	H.T.	6/15/83

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

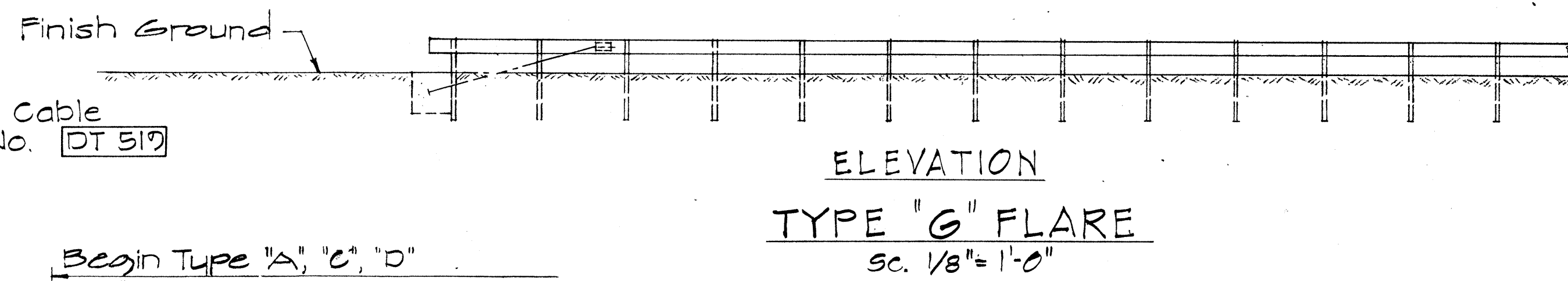
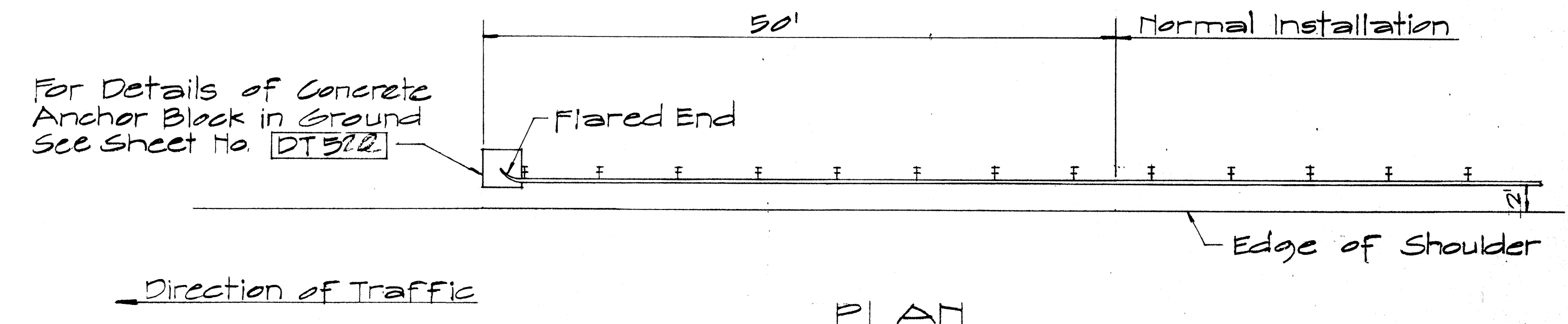
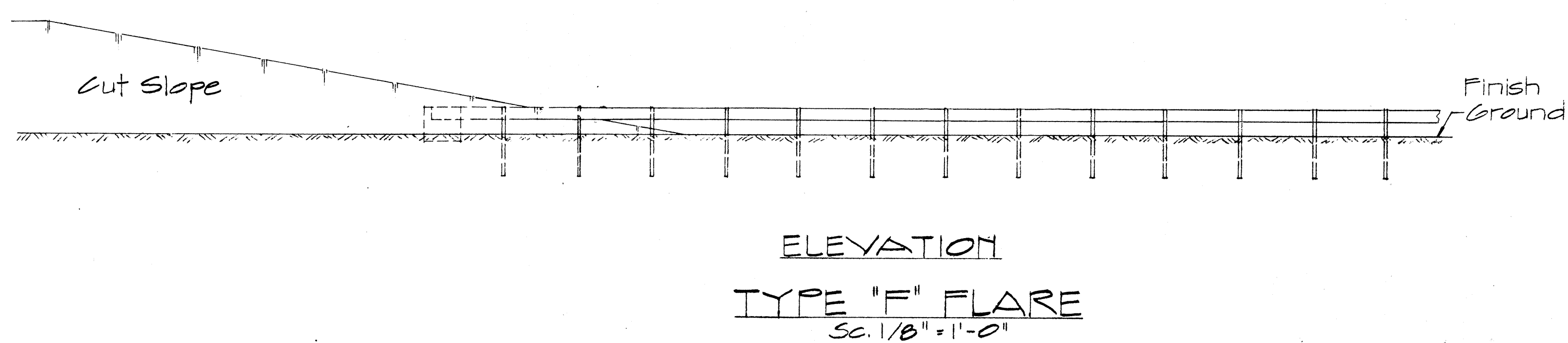
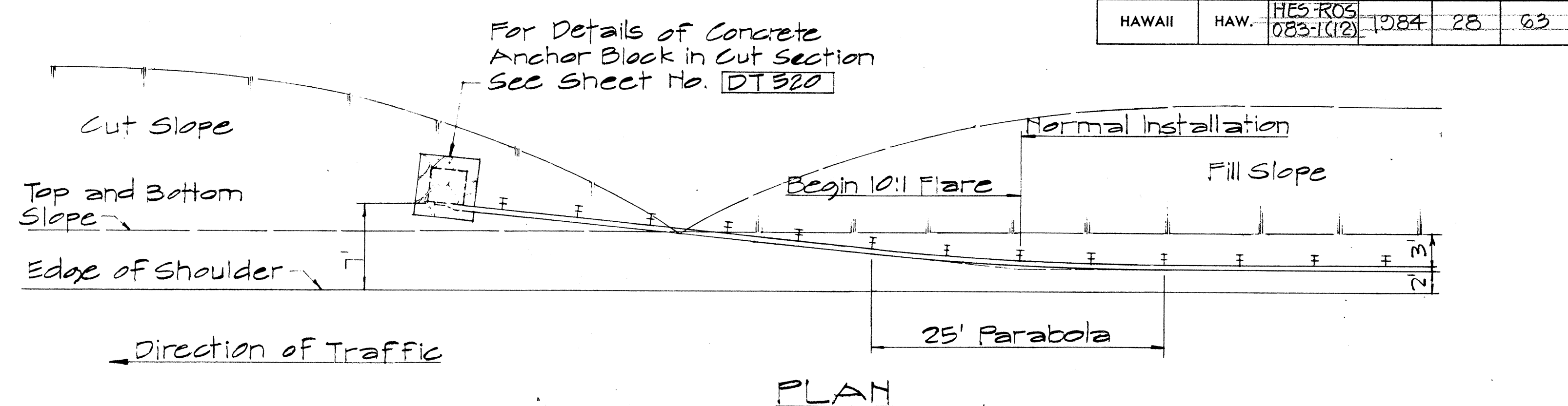
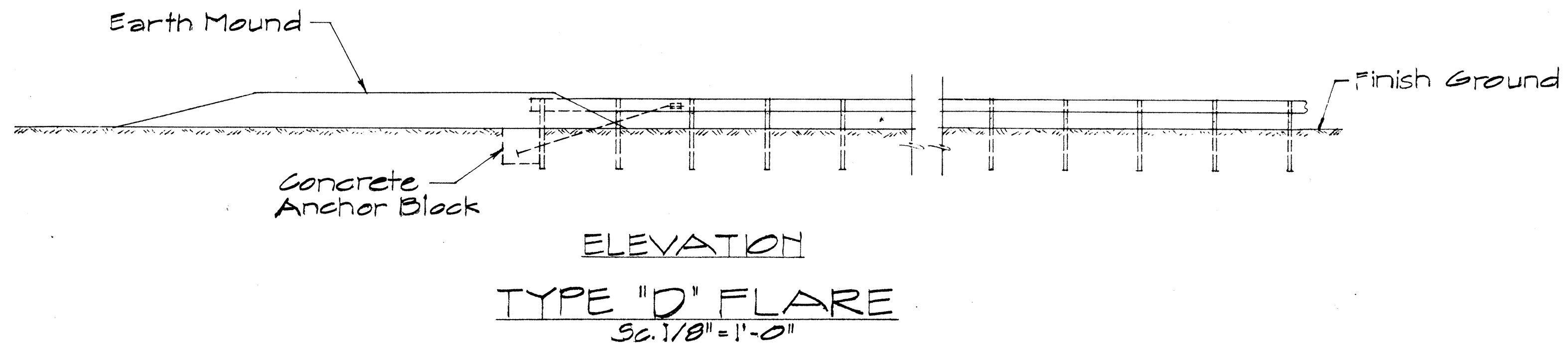
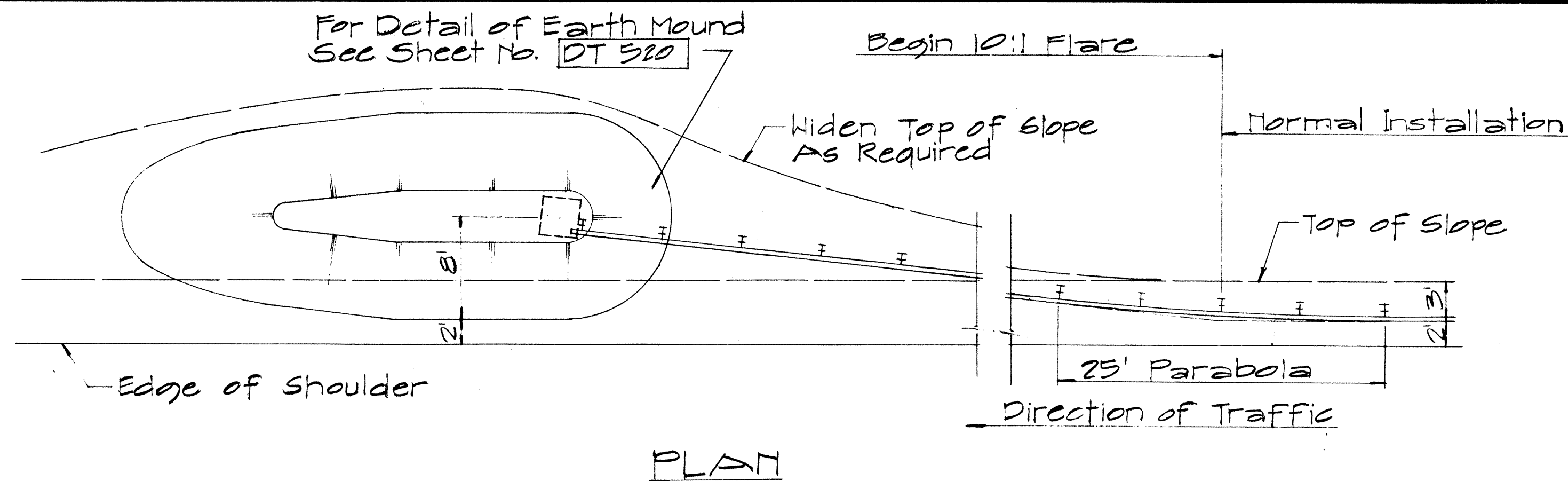
**STANDARD DETAILS
 OF APPROACH END
 FLARE - ONE & TWO
 WAY ROADWAY**

SC. As Noted April 1969

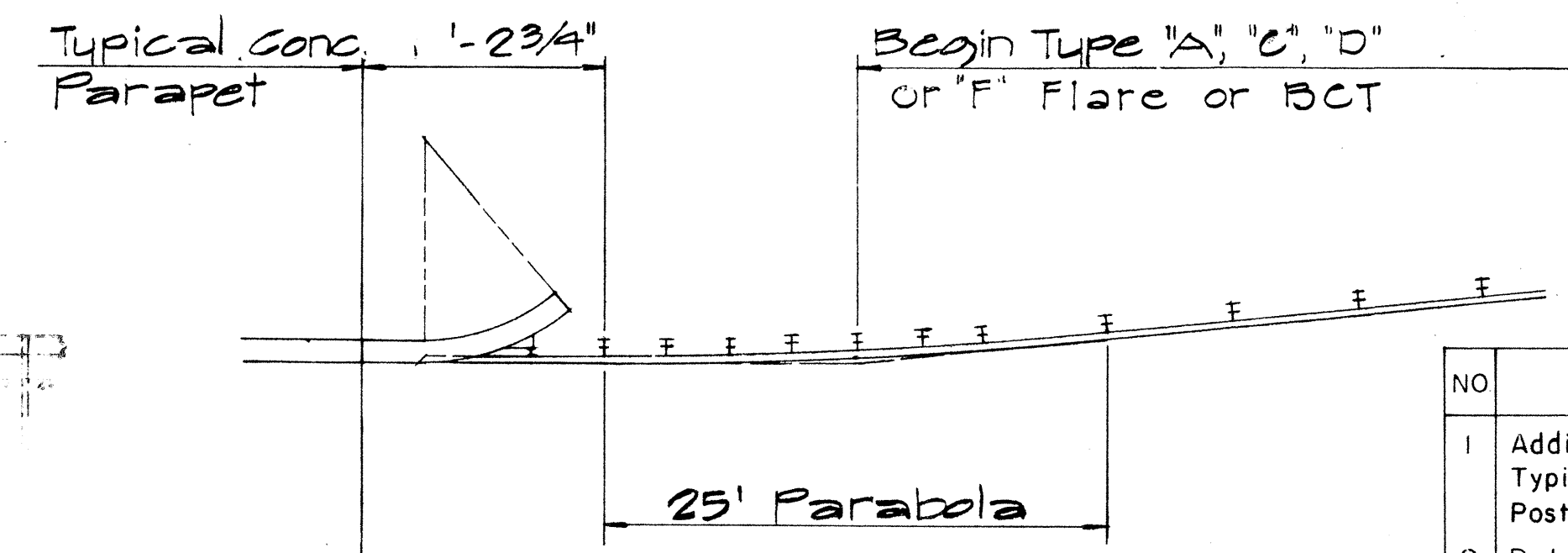
SHEET No. OF SHEETS DT 516

DATE	
SURVEY PLOTTED BY	
PLAN	
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.	HES-R05 083-1(12)	1984	28	63



NOTE:
For detail of Breakaway Cable Terminal (BCT) See Sheet No. DT 510



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

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

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

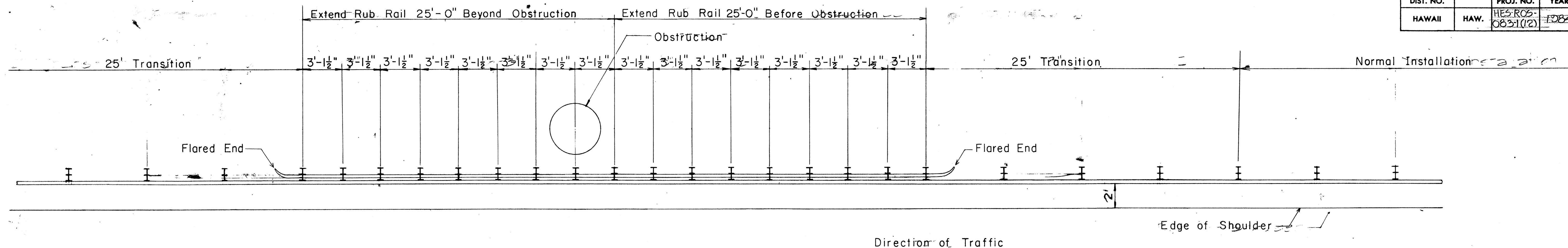
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
TRAILING END
FLARE - ONE & TWO
WAY ROADWAY
Scale: As Noted April 1969

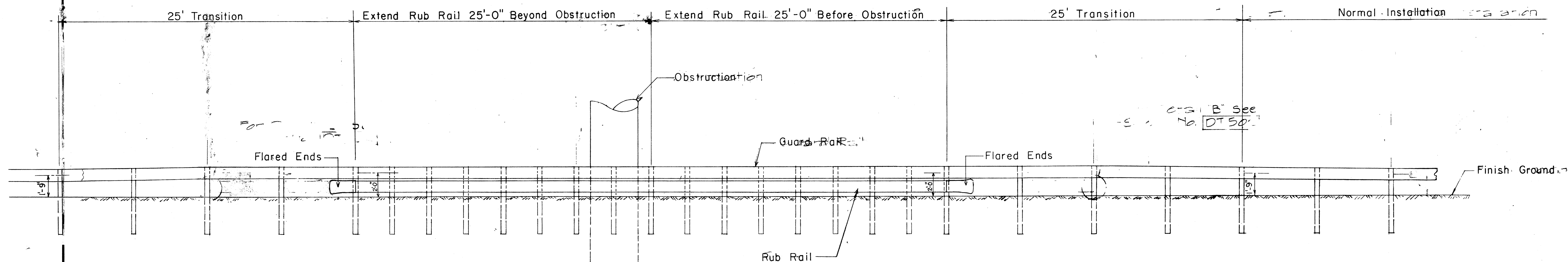
SHEET No. OF SHEETS DT 517

DATE	12/29/69
DESIGNED BY	H.C.
DRAWN BY	H.C.
CHECKED BY	H.C.
NOTED BY	H.C.
APPROVED BY	H.C.
DATE	12/29/69

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HE-ROB-0031(12)	1984	22	63



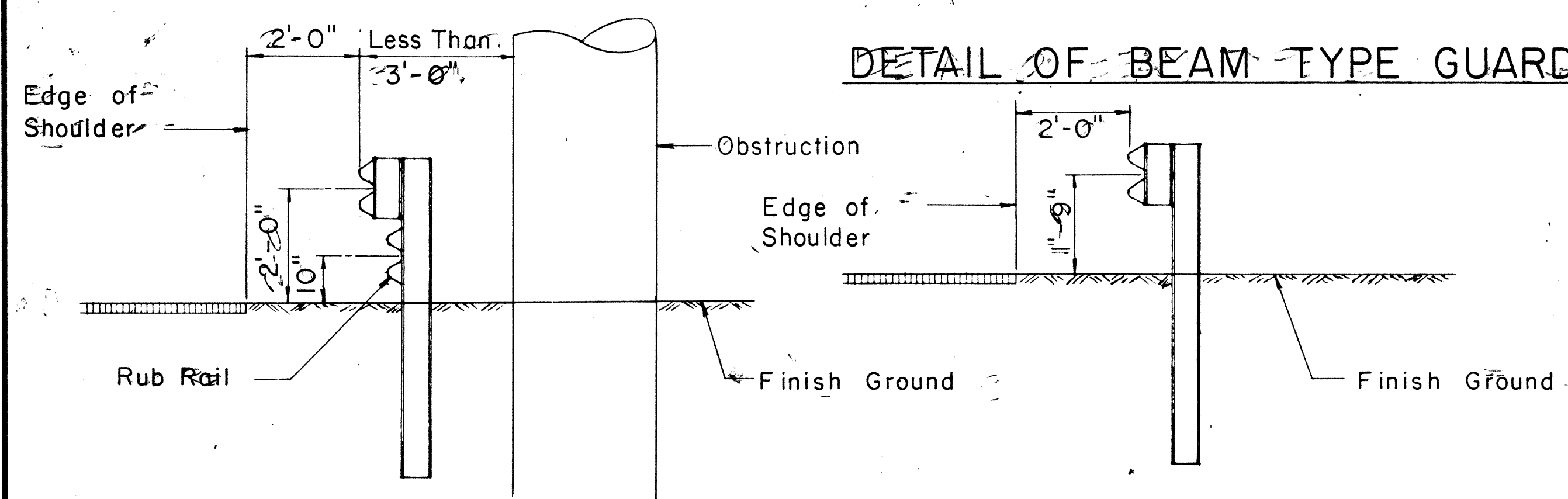
PLAN



ELEVATION

DETAIL OF BEAM TYPE GUARD RAIL WITH RUB RAIL AT OBSTRUCTION

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



TYP. SEC. AT OBSTRUCTION

TYP. SEC. AT NORMAL INSTALLATION

TYP. GUARD RAIL SECTIONS

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

APPROVAL RECOMMENDED:
E.ichi Tanaka 12/29/69
 TRAFFIC ENGINEER DATE

APPROVED:
John S. S. S. 12/29/69
 ASSISTANT CHIEF, ENGINEERING DATE

NO	REVISION	APPROVED BY	DATE
1	Added Additional Guard Rail Posts and Installed Flared Ends at end of Rub Rail	H.M.	5/14/80

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 LAND TRANSPORTATION FACILITIES DIVISION
STANDARD DETAIL
 BEAM TYPE GUARD RAIL WITH
 RUB RAIL AT OBSTRUCTION
 SHOULDER INSTALLATION

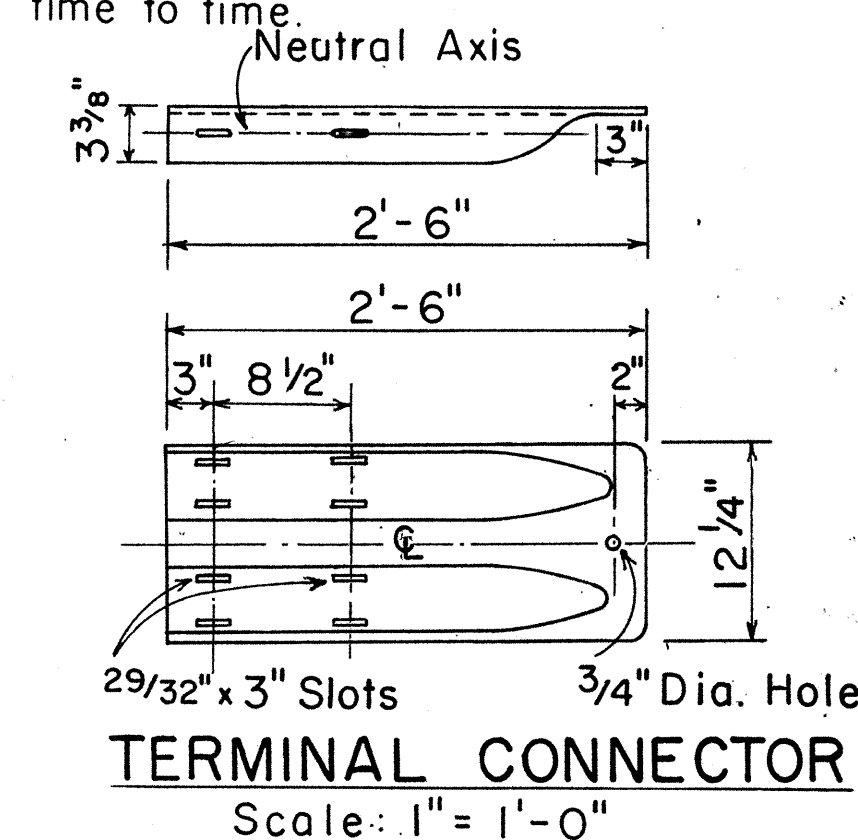
SCALE: AS SHOWN DATE: JUNE, 1969

SHEET No. OF SHEETS DT 518

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HE-5-R05-0857(12)	1984	30	63

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.
6. B.C.T. Hardware has been superseded by "A Guide Standardized Highway Barrier Rail Hardware," A report prepared and approved by the AASHTO-AGC-ARTBA joint cooperation committee. All hardware shall conform to above mentioned publication and as revised from time to time.



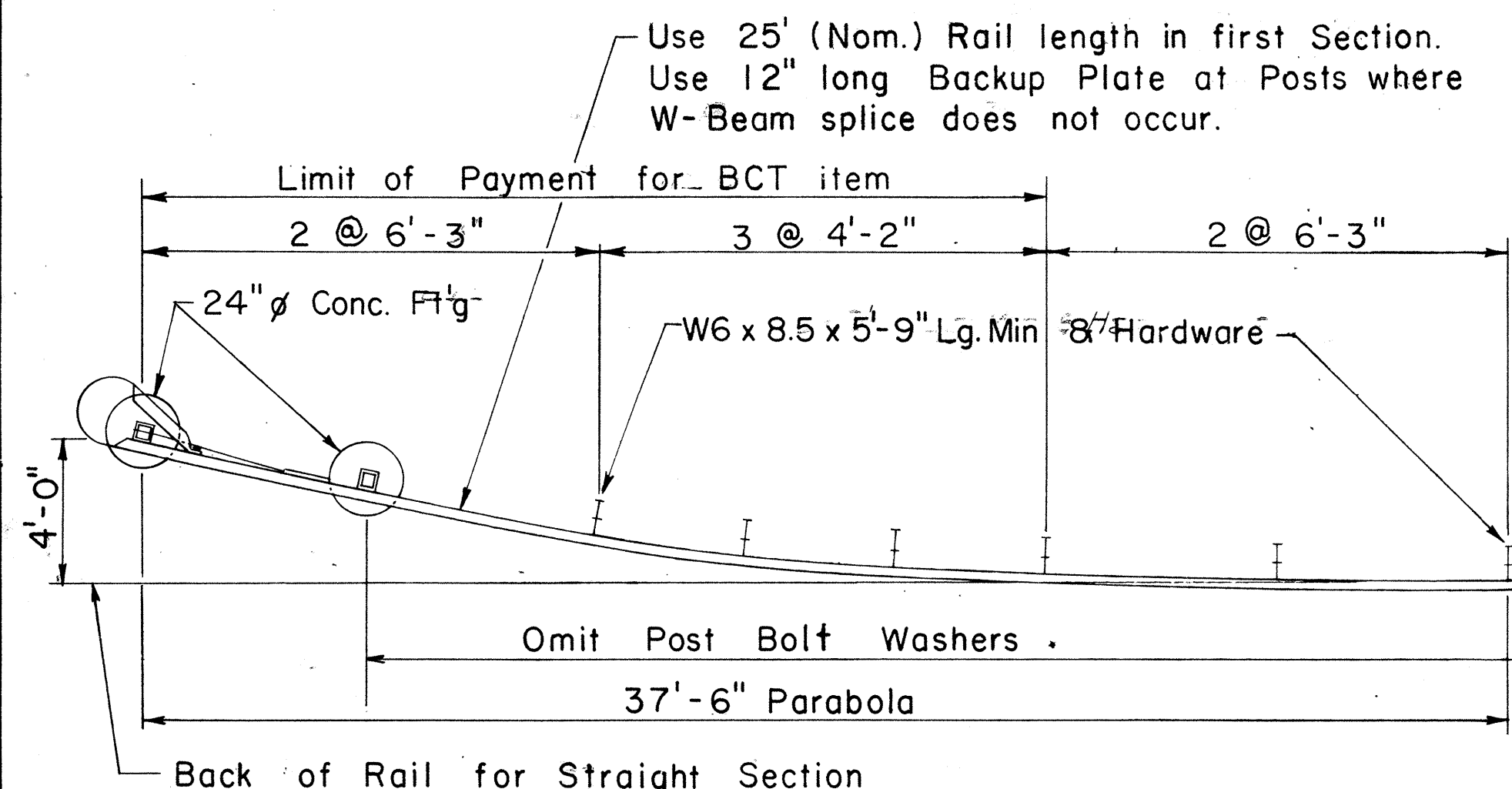
APPROVAL RECOMMENDED:

Erich Tanaka
TRAFFIC ENGINEER
6/14/78
DATE

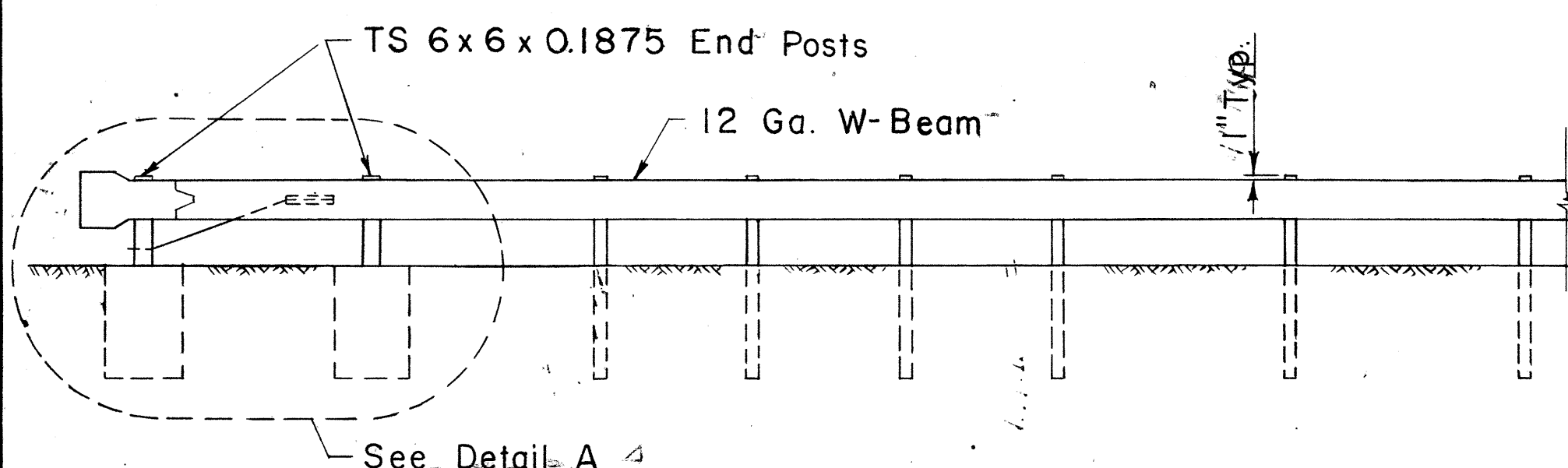
APPROVED:

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

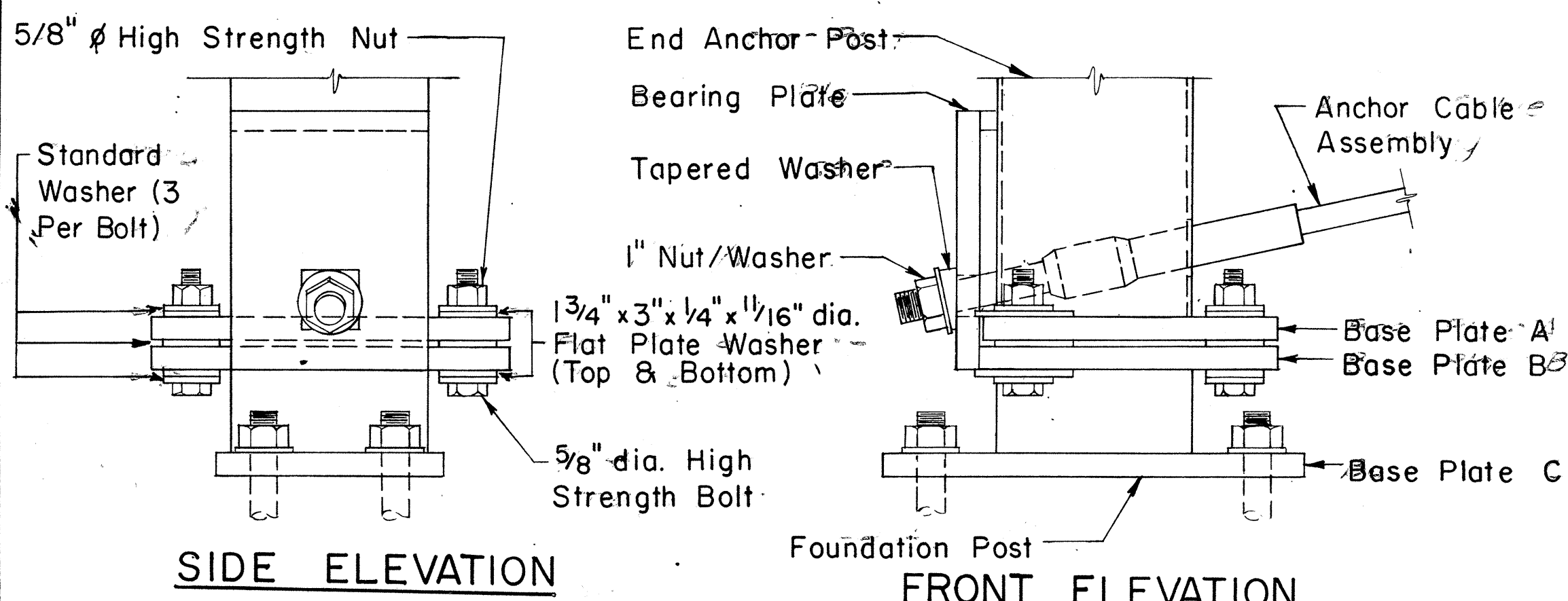
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION			
STANDARD DETAIL			
BREAKAWAY CABLE TERMINAL (BCT)			
Scale: As Shown		Date: June 1978	
SHEET No. OF		SHEETS DT 519	



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



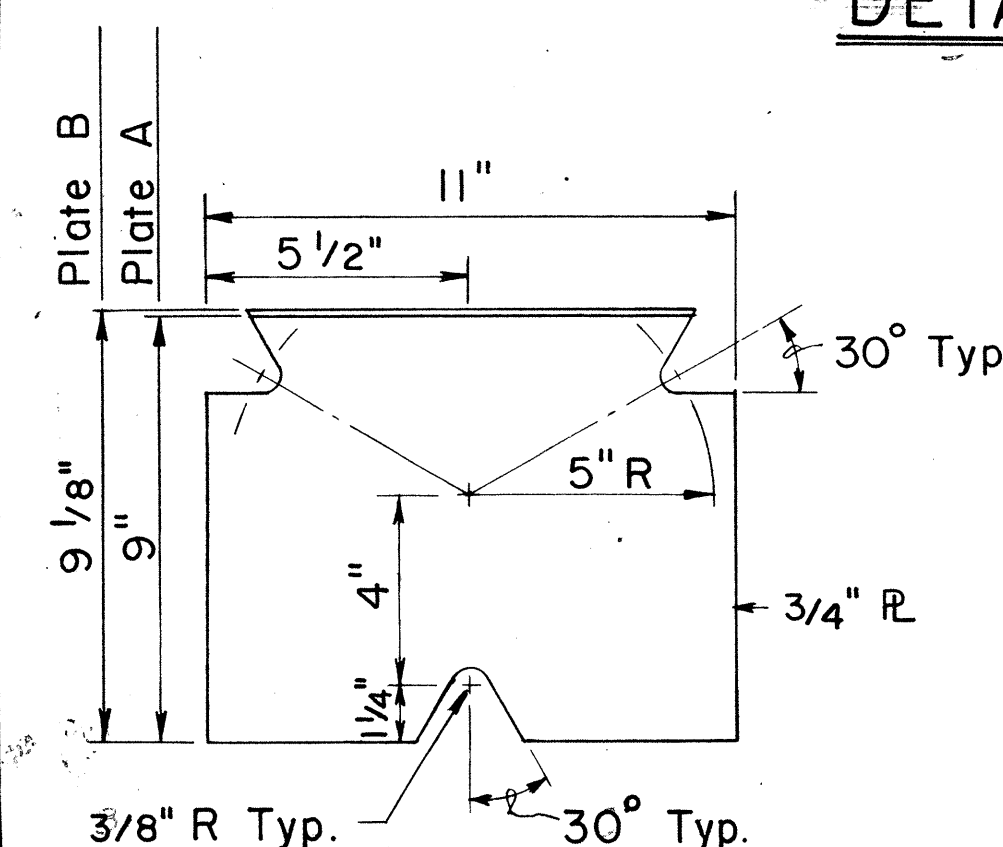
ELEVATION
Scale: 1/4" = 1'-0"



SIDE ELEVATION

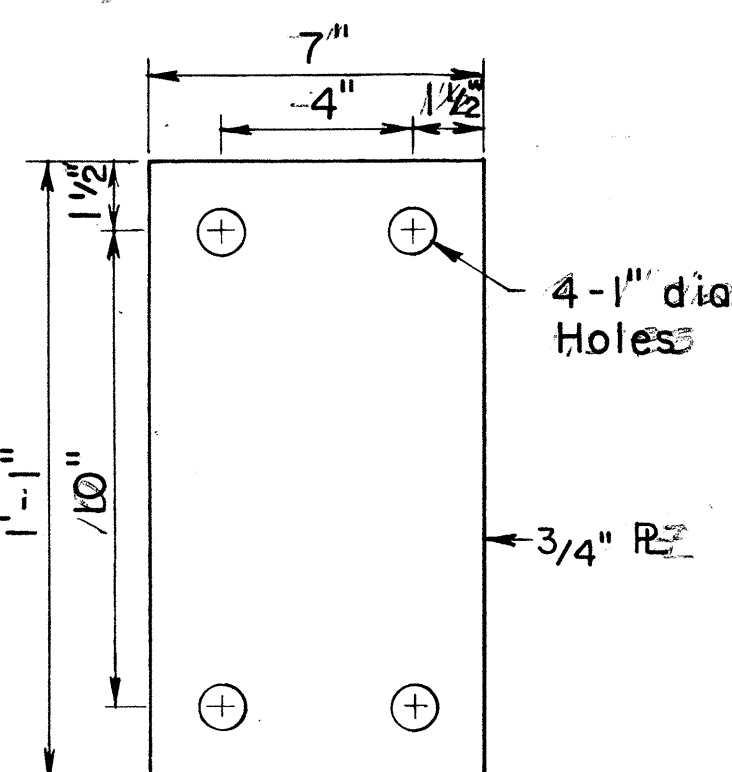
DETAIL B

FRONT ELEVATION



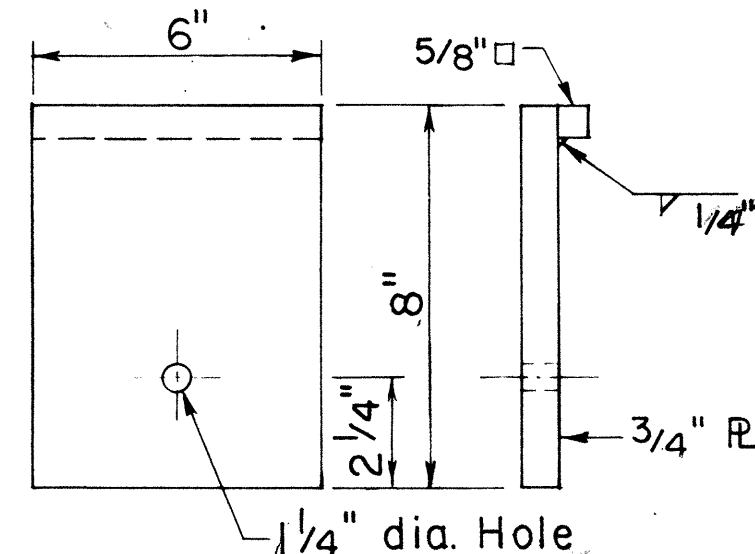
BASE PLATES A & B

Scale: 3" = 1'-0"



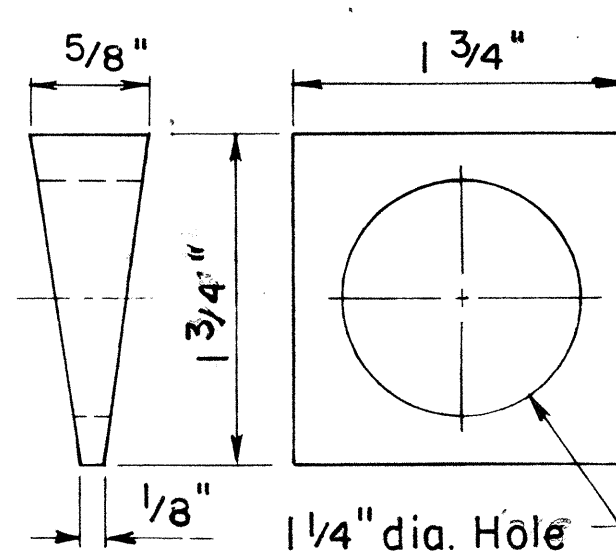
BASE PLATE C

Scale: 3" = 1'-0"



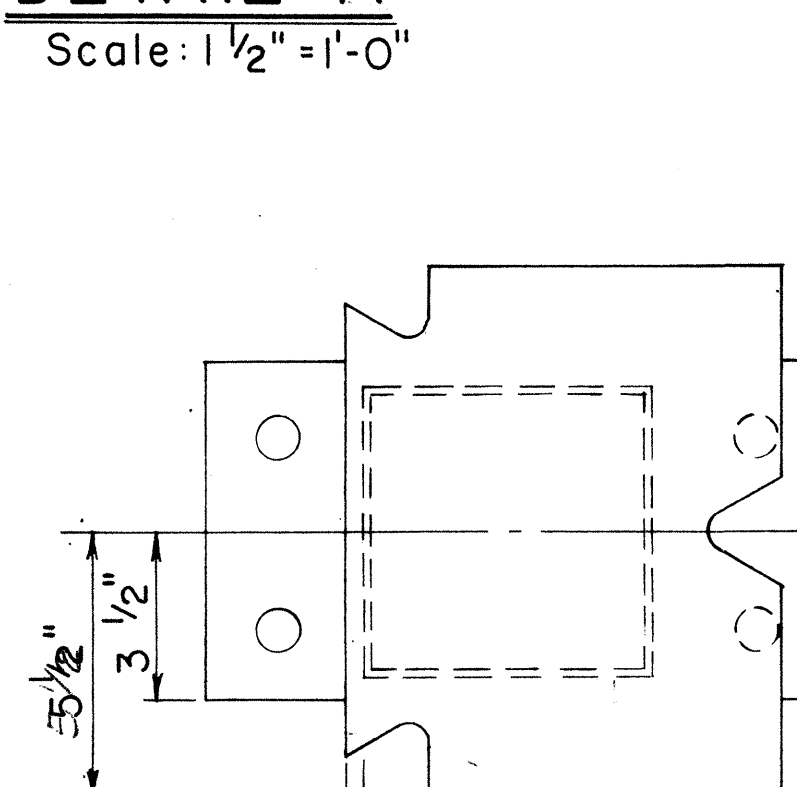
BEARING PLATE

Scale: 3" = 1'-0"



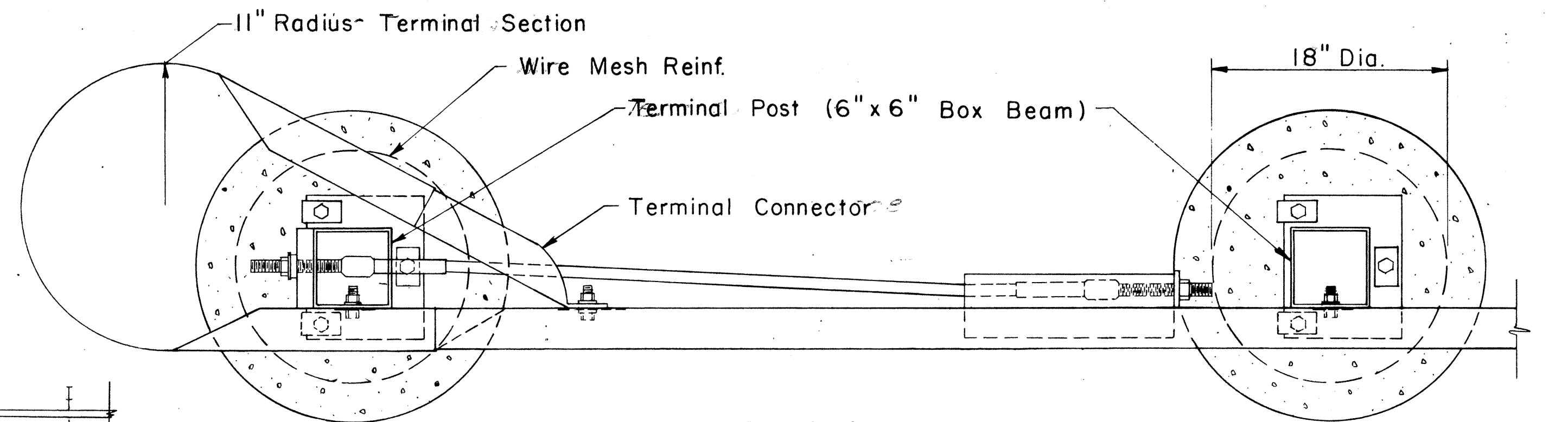
TAPERED WASHER

Scale: Full Size

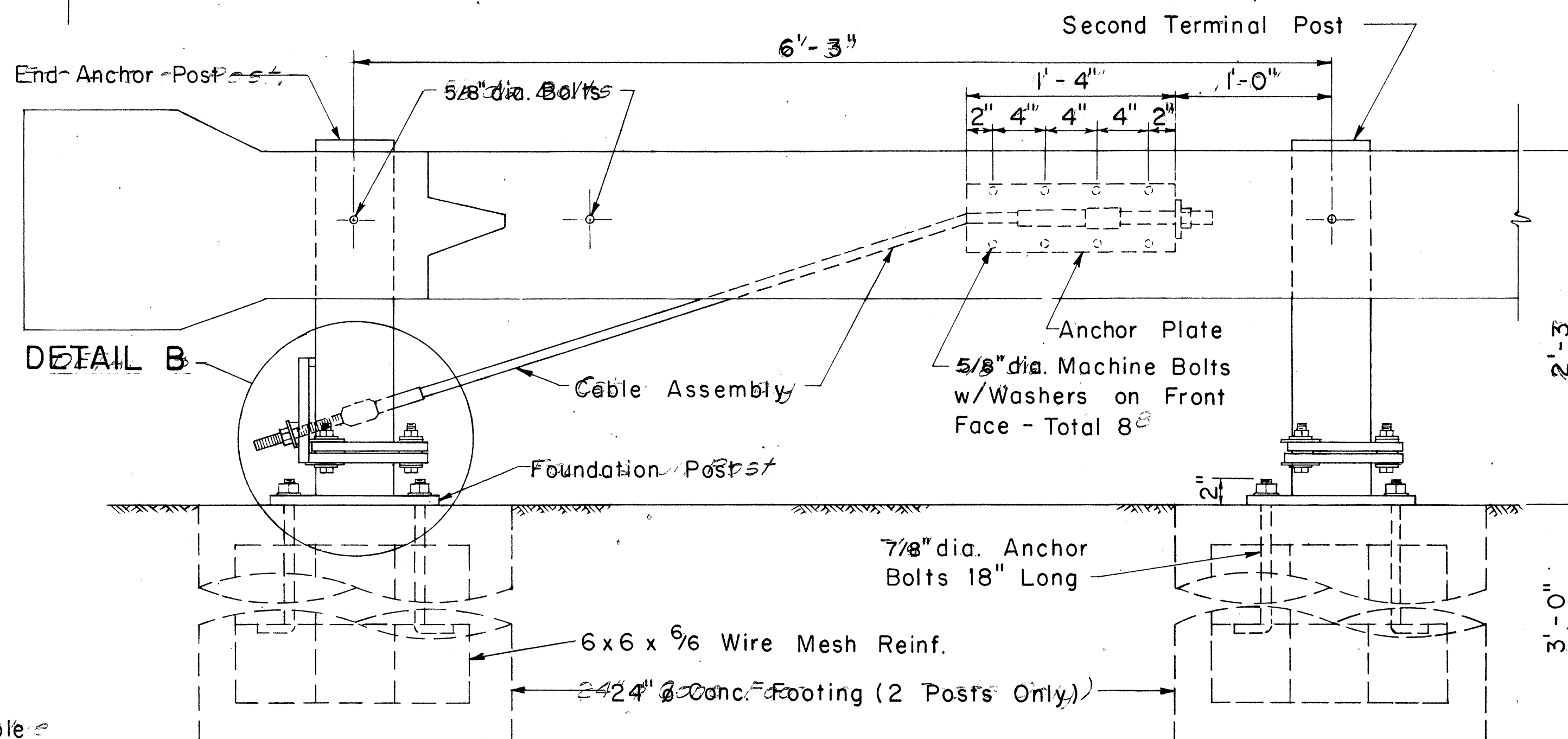


FOUNDATION POST

Scale: 3" = 1'-0"

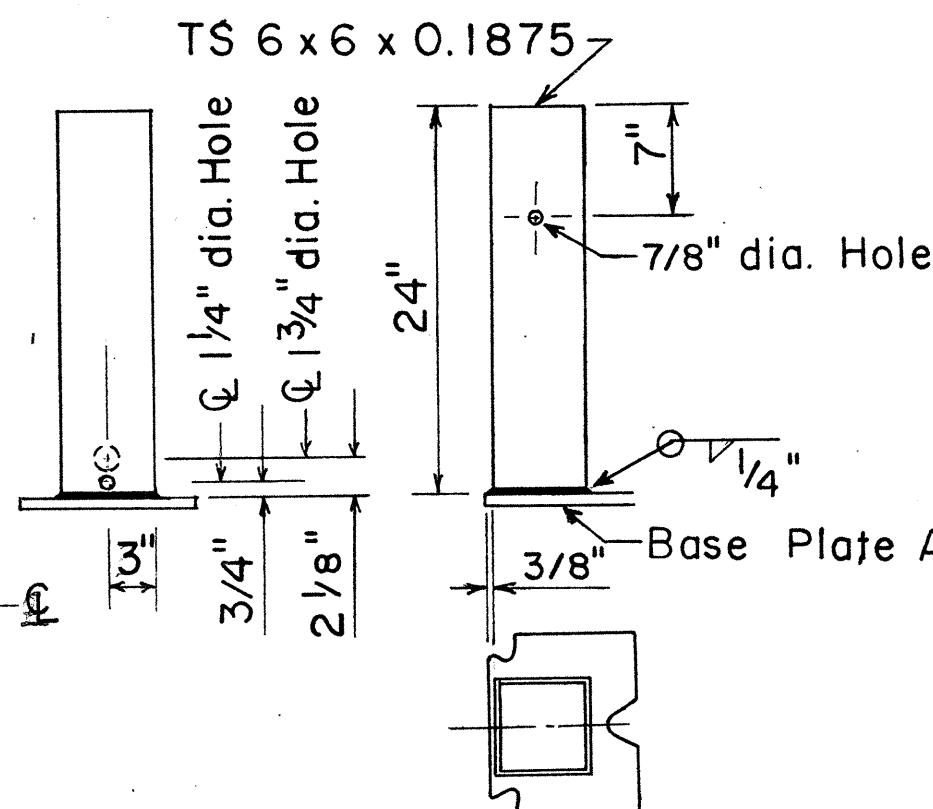


PLAN



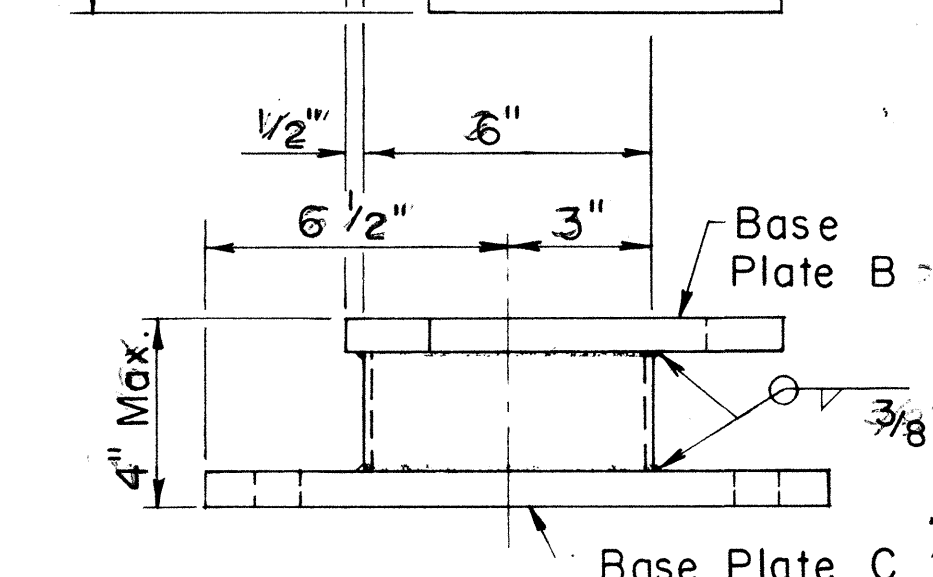
ELEVATION
DETAIL A

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



TERMINAL POST

Scale: 1" = 1'-0"

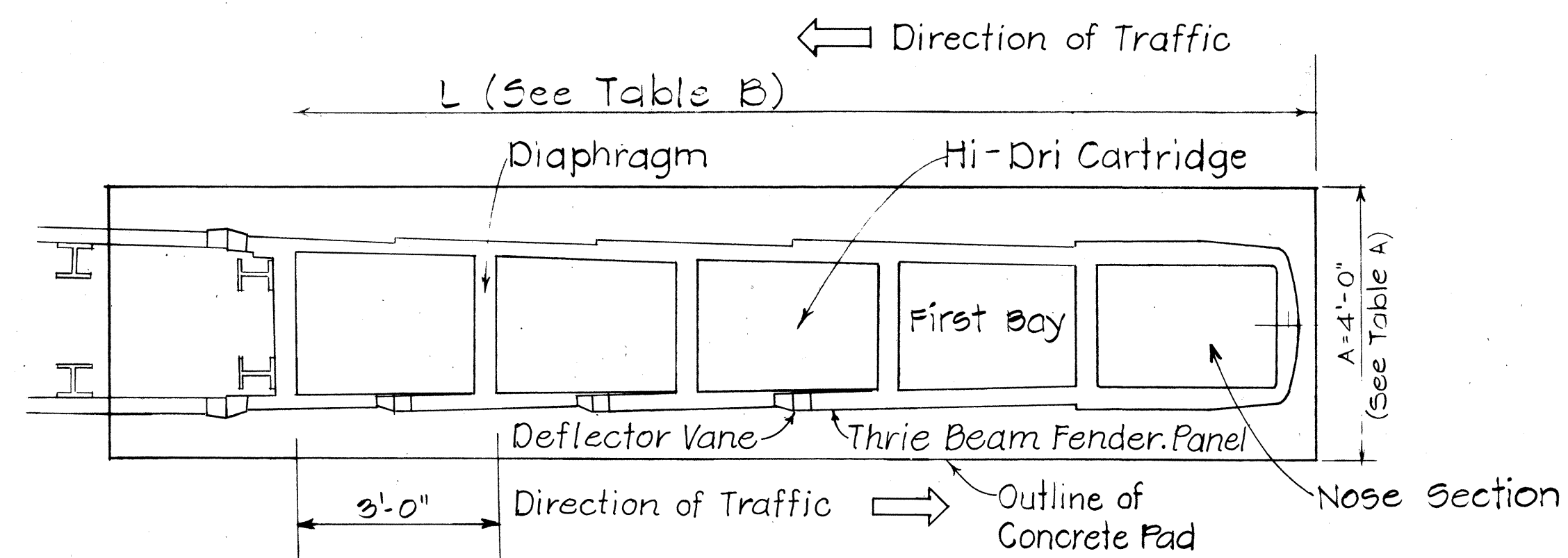


FOUNDATION POST

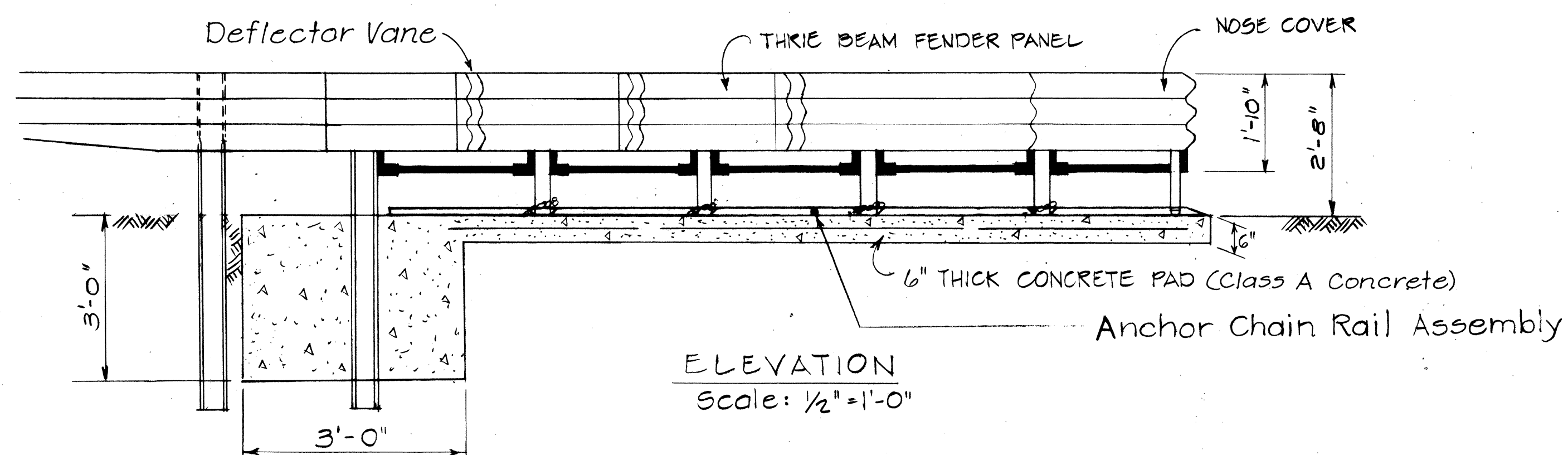
Scale: 3" = 1'-0"

ORIGINAL	DATE
FILED	
DESIGNED BY	
TRACED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	

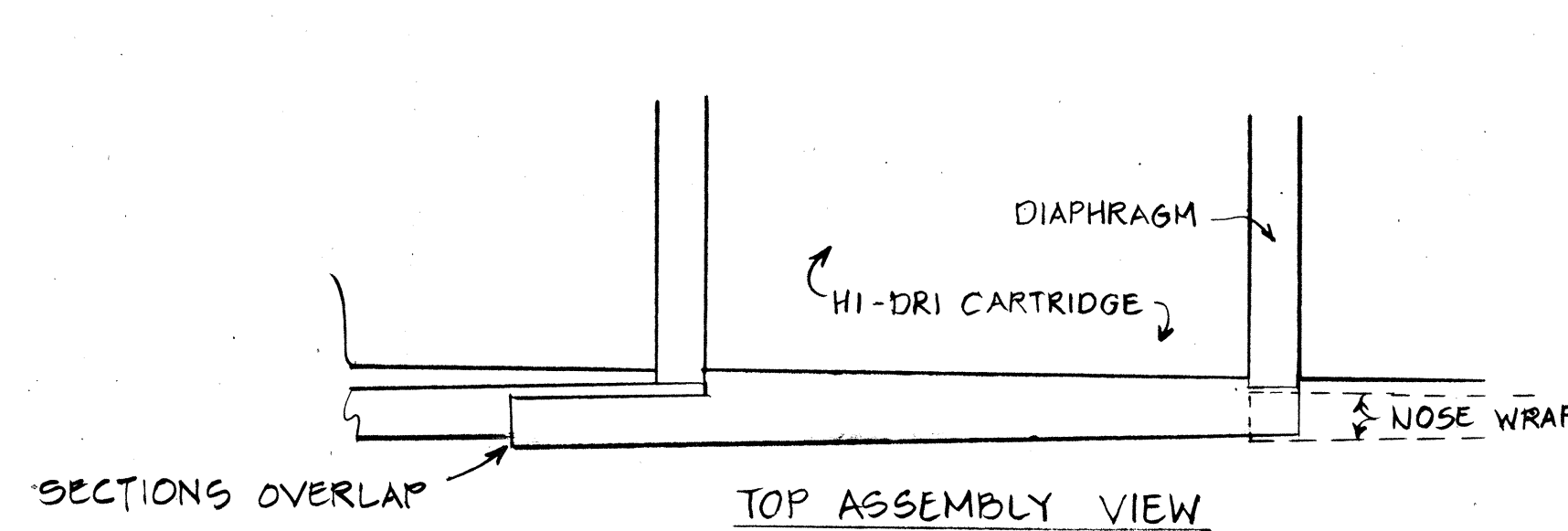
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HE5-R09- 083-1(12)	1984	32	63



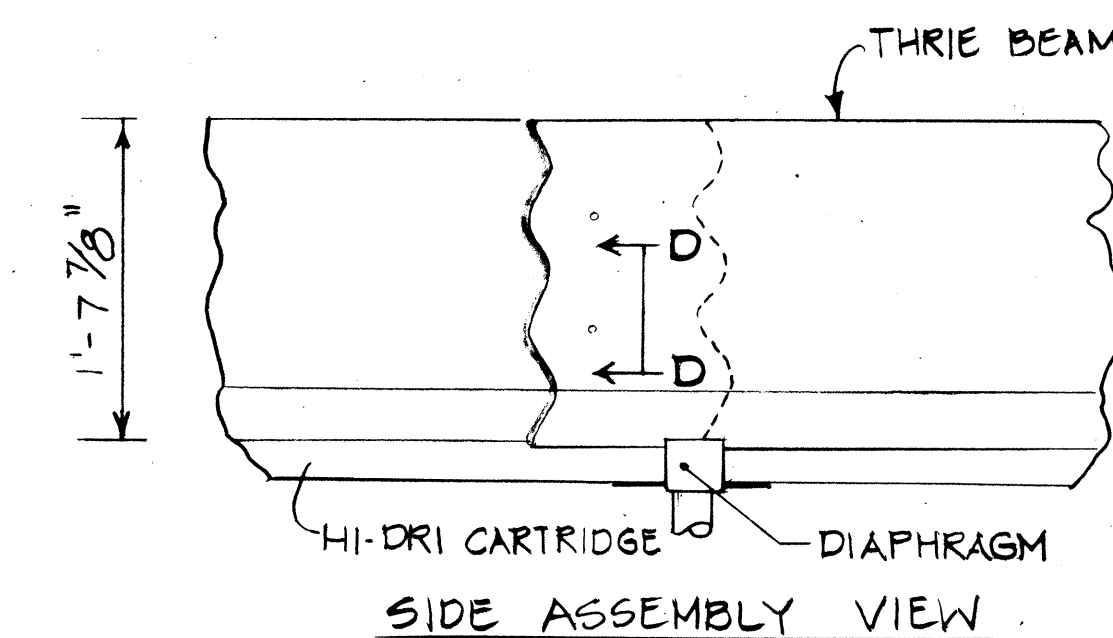
PLAN
Scale: $\frac{1}{2}" = 1'-0"$



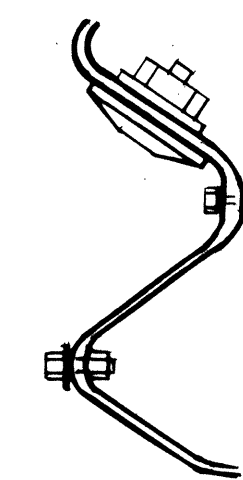
ELEVATION
Scale: $\frac{1}{2}" = 1'-0"$



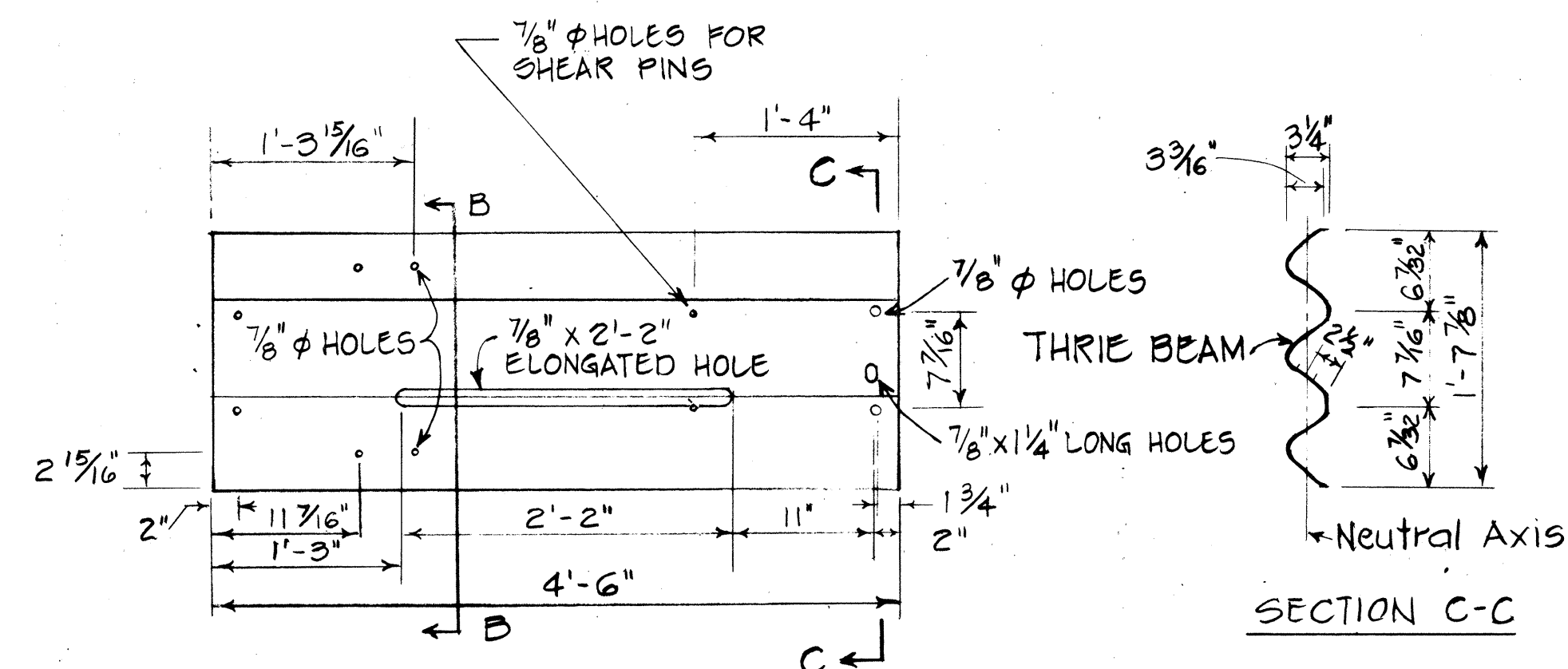
TOP ASSEMBLY VIEW



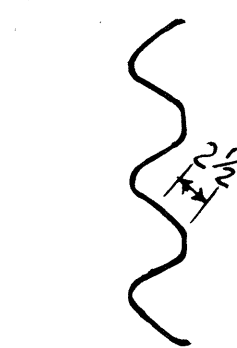
SIDE ASSEMBLY VIEW



SECTION D-D



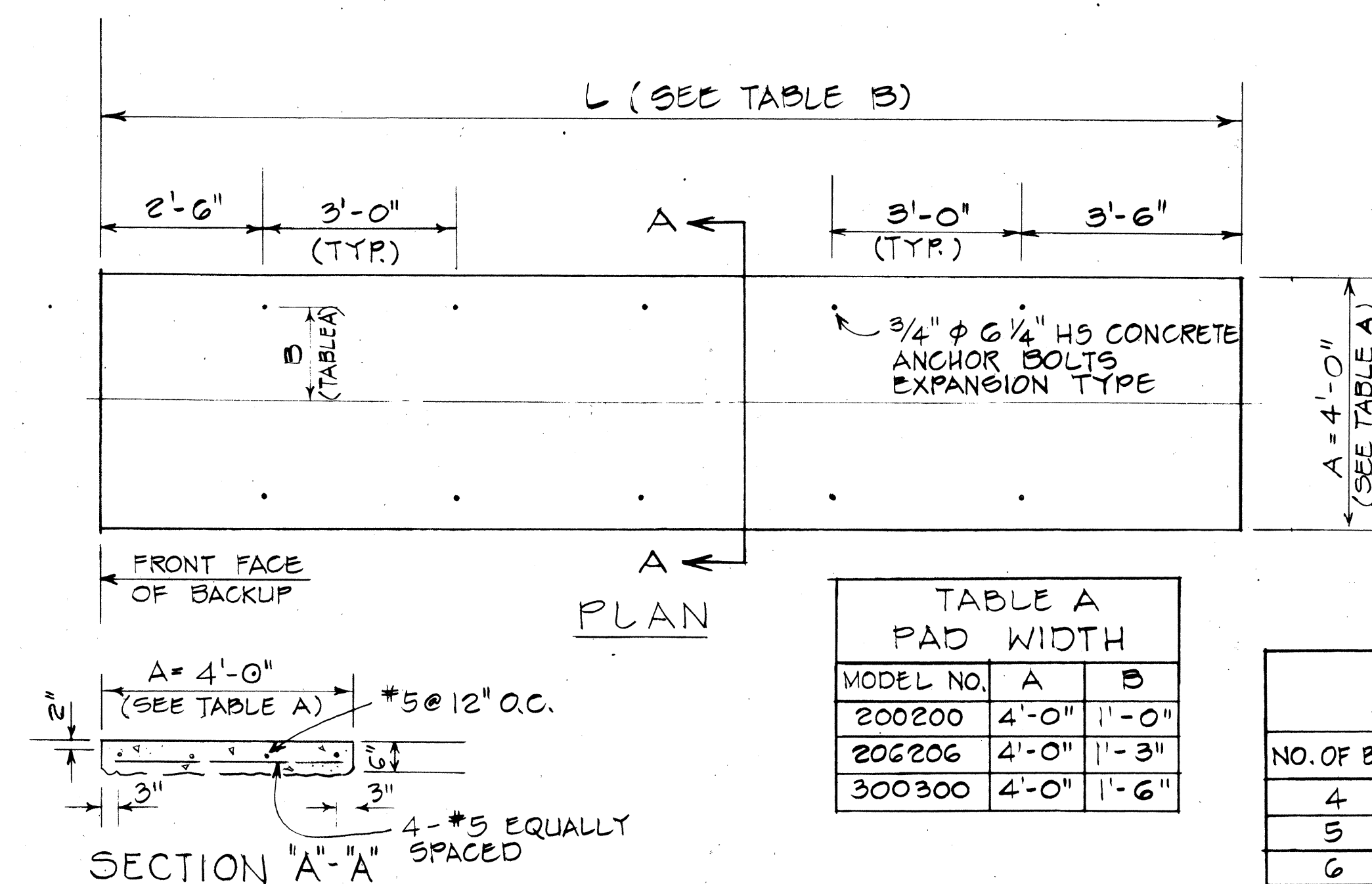
SIDE VIEW
Scale: 1"=1'-0"



SECTION B-B

- NOTE:

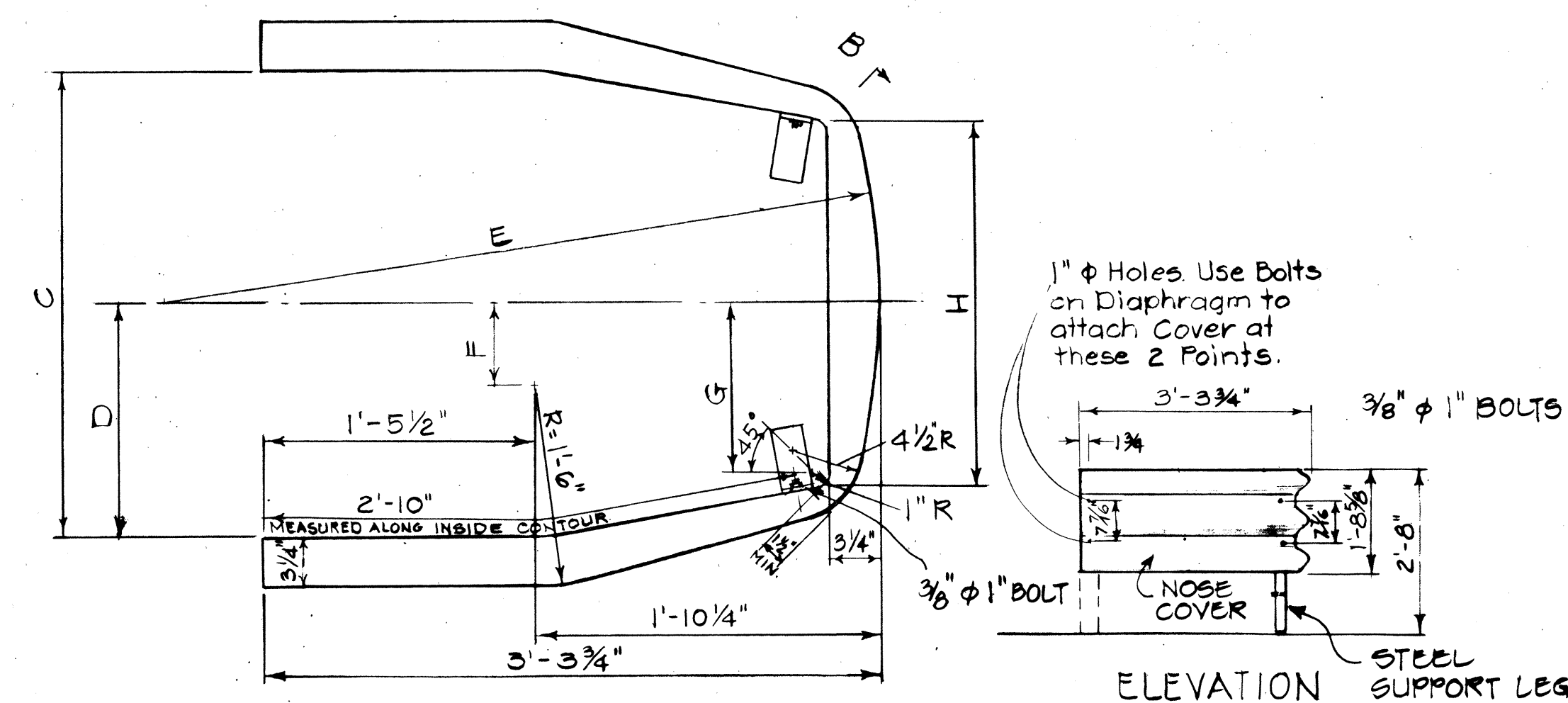
1. The Contractor shall verify with the manufacturer, any amendments or revisions thereof as may be made from time to time, shall be used in this project.
2. Constant longitudinal and transverse slope throughout Concrete Pad.
3. Concrete Pad cross slope shall not exceed 3%.
4. Outline of concrete pad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



PLAN

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



ELEVATION

SUPPORT LEG

PLAN
N.T.S.

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

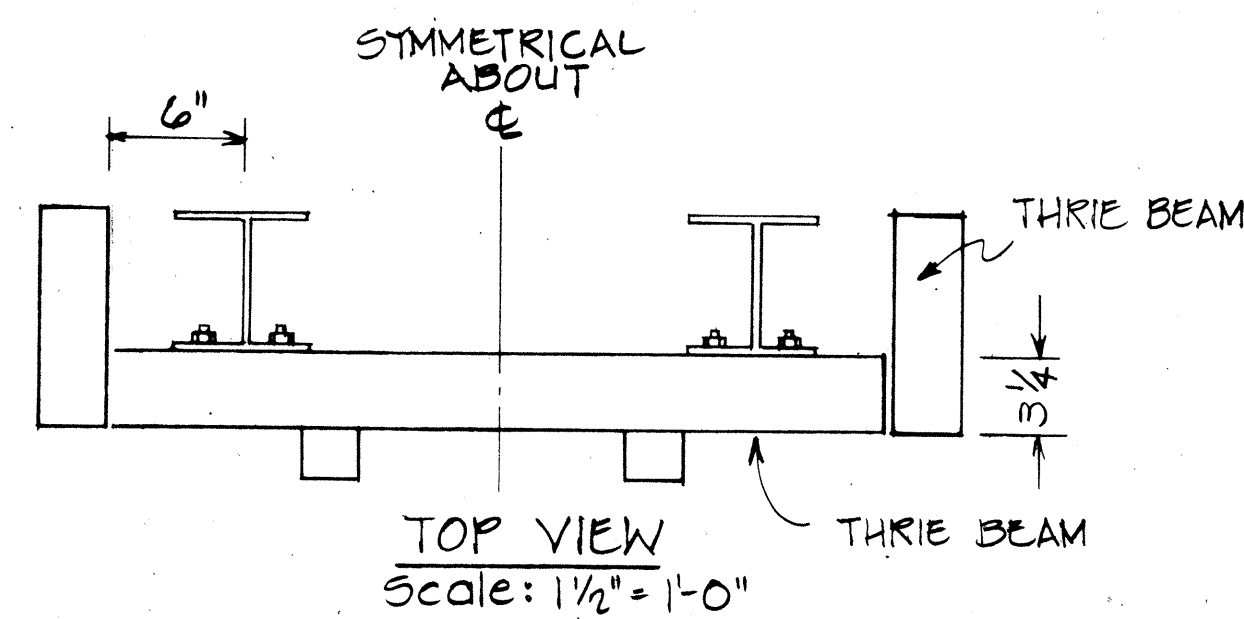
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DETAILS OF GUARD RAIL
ENERGY ABSORBING TERMINAL

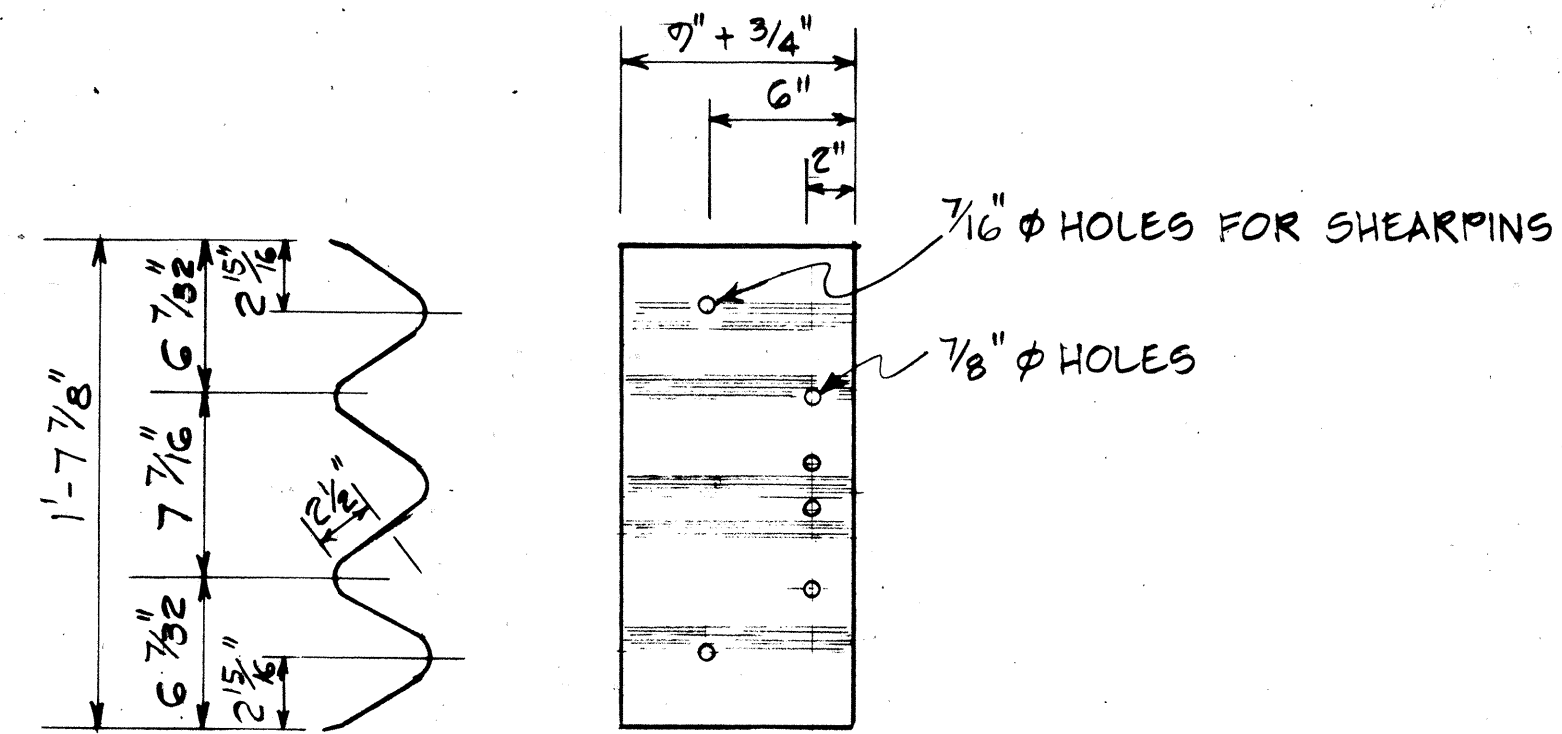
Scale: As Shown Date: 1978

SHEET No. 1 OF 2 SHEETS

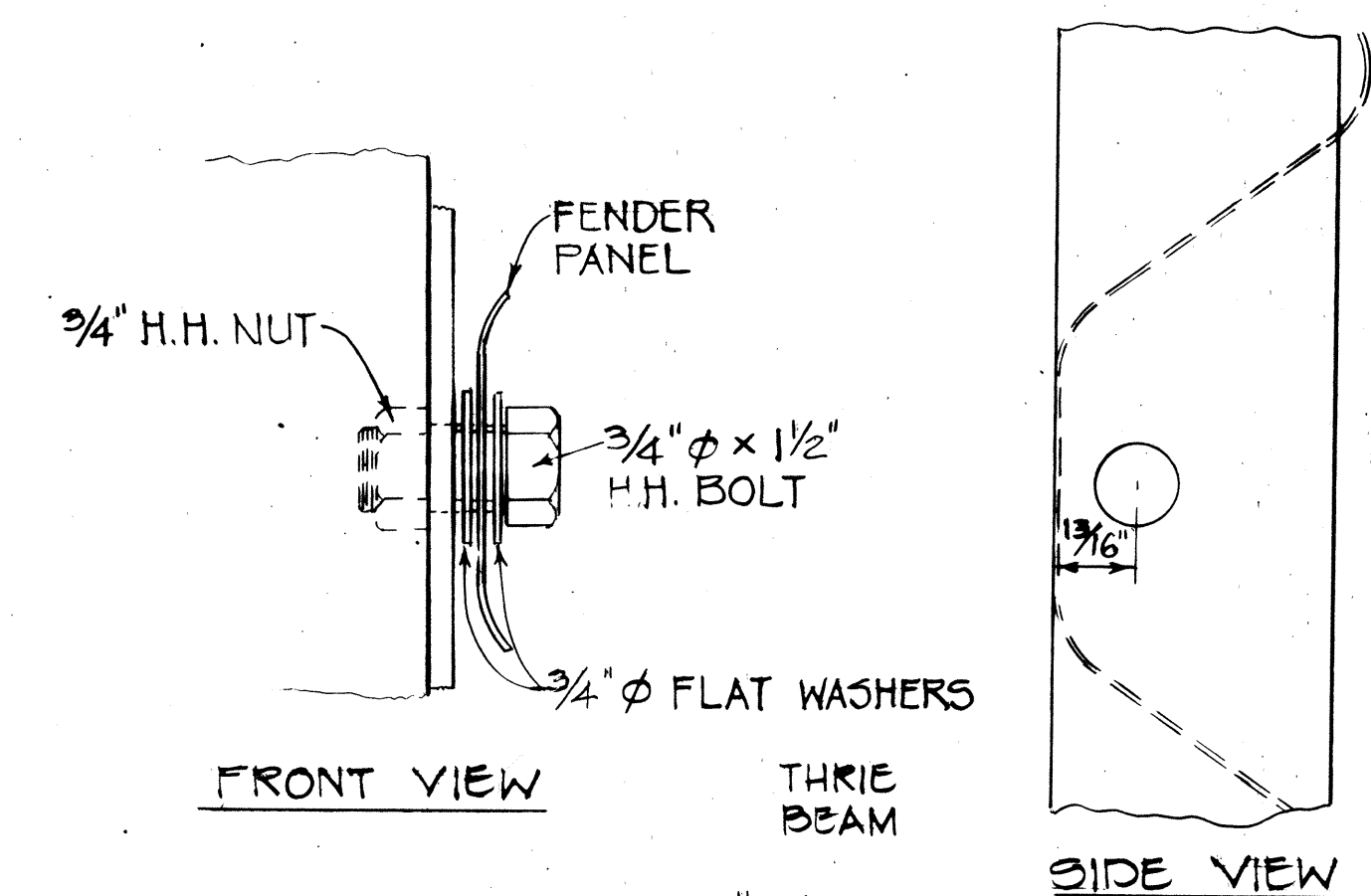
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HE5-R05-0831(12)	1984	33	63



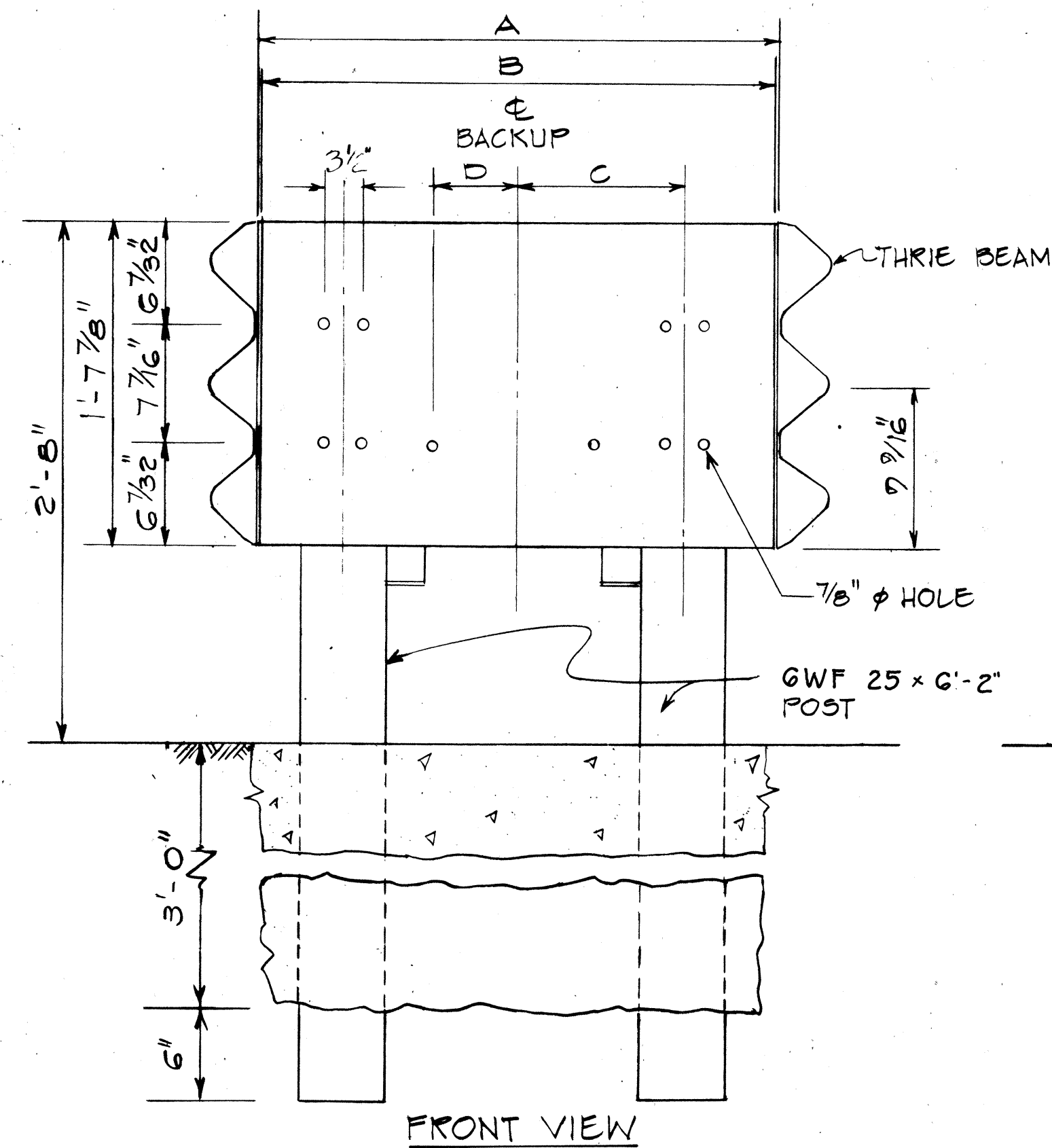
UNIT WIDTH	A	B	C	D
2'-0"	2'-0"	1'-11 1/2"	0'-6"	2"
2'-6"	2'-6"	2'-5 1/2"	0'-9"	5"
3'-0"	3'-0"	2'-11 1/4"	1'-0"	8"



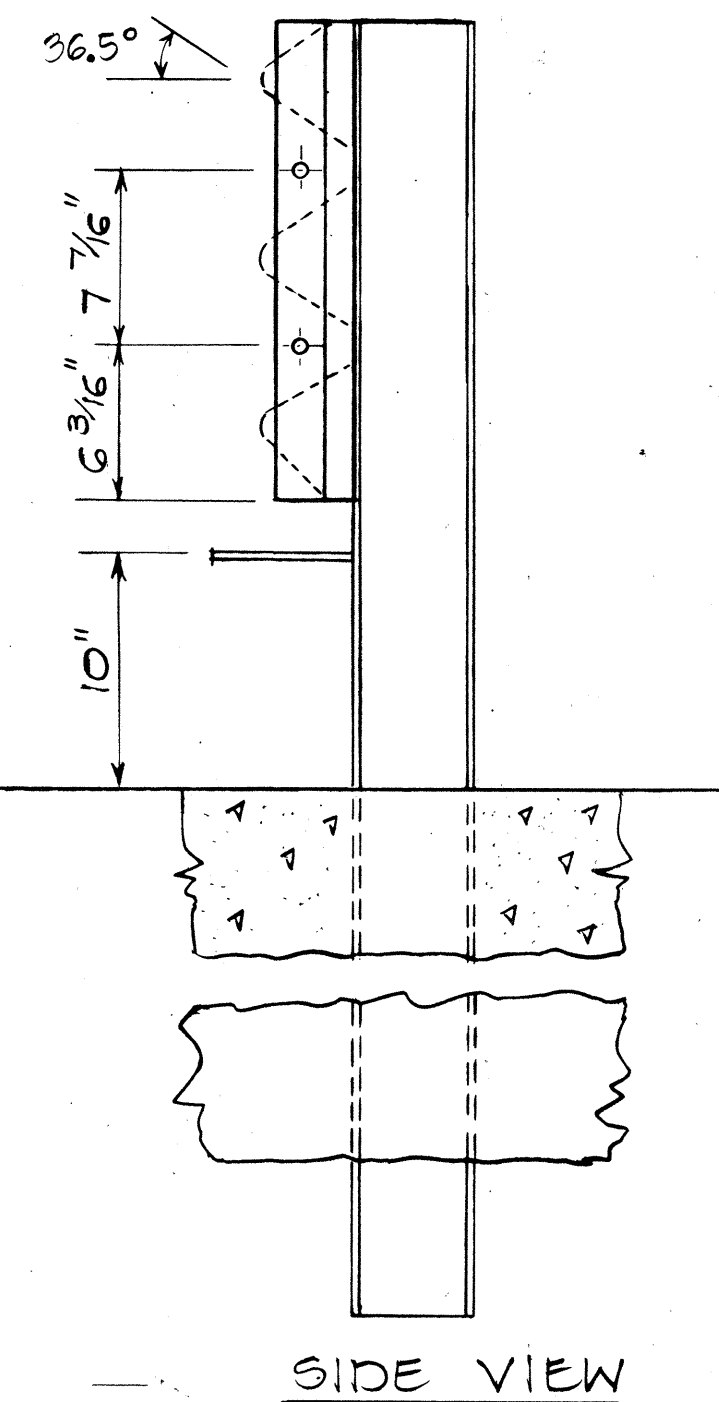
DETAIL OF THIRIE BEAM
LEFT SIDE PANEL SHOWN
RIGHT SIDE OPPOSITE



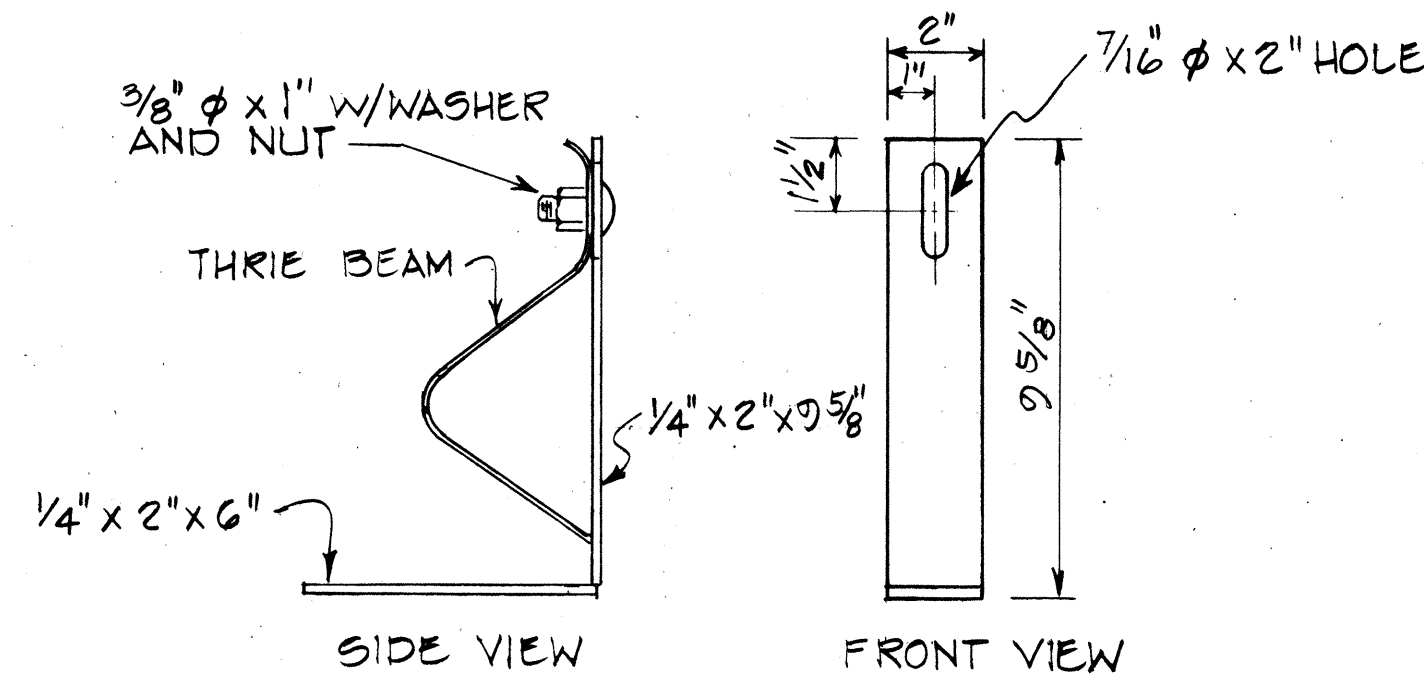
DETAIL "A"
Scale: $\frac{1}{2}'' = 1''$



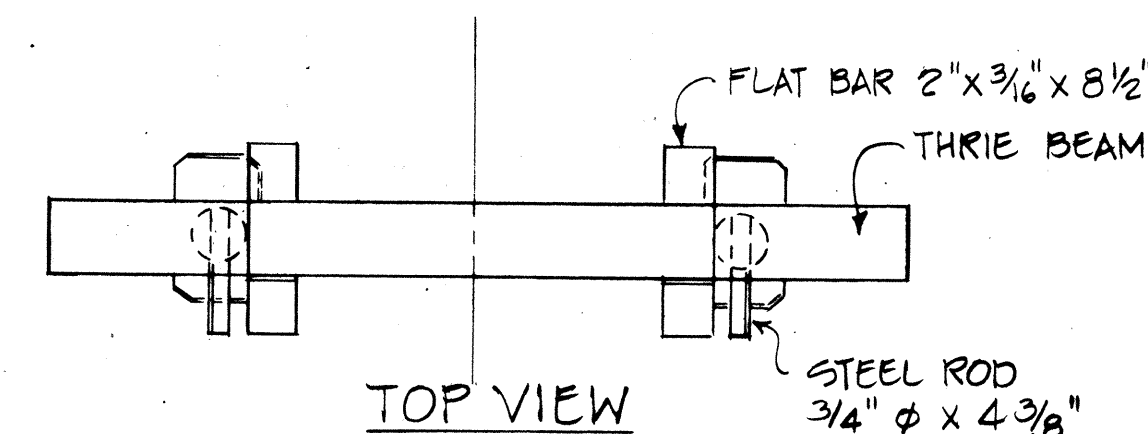
WIDE FLANGE BACKUP
(FOR NARROW UNITS)
Scale: $1\frac{1}{2}" = 1'-0"$



SIDE VIEW

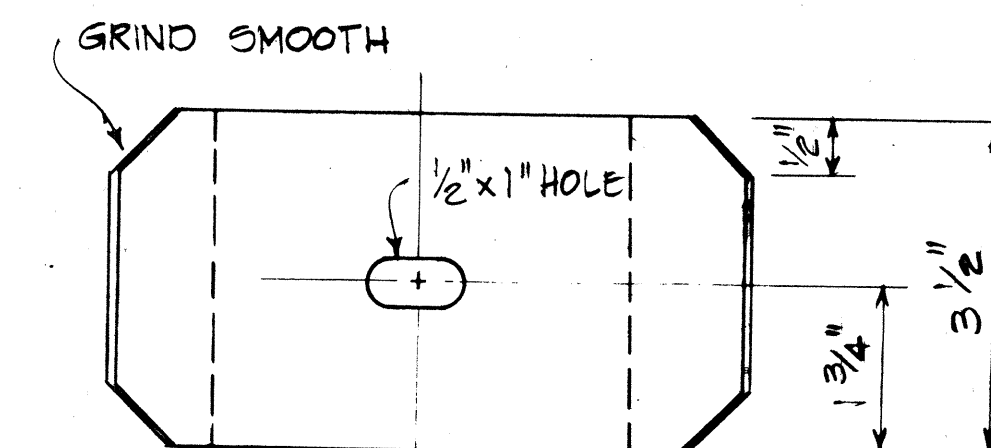


CARTRIDGE CLIP DETAIL
Scale: 3" = 1'-0"

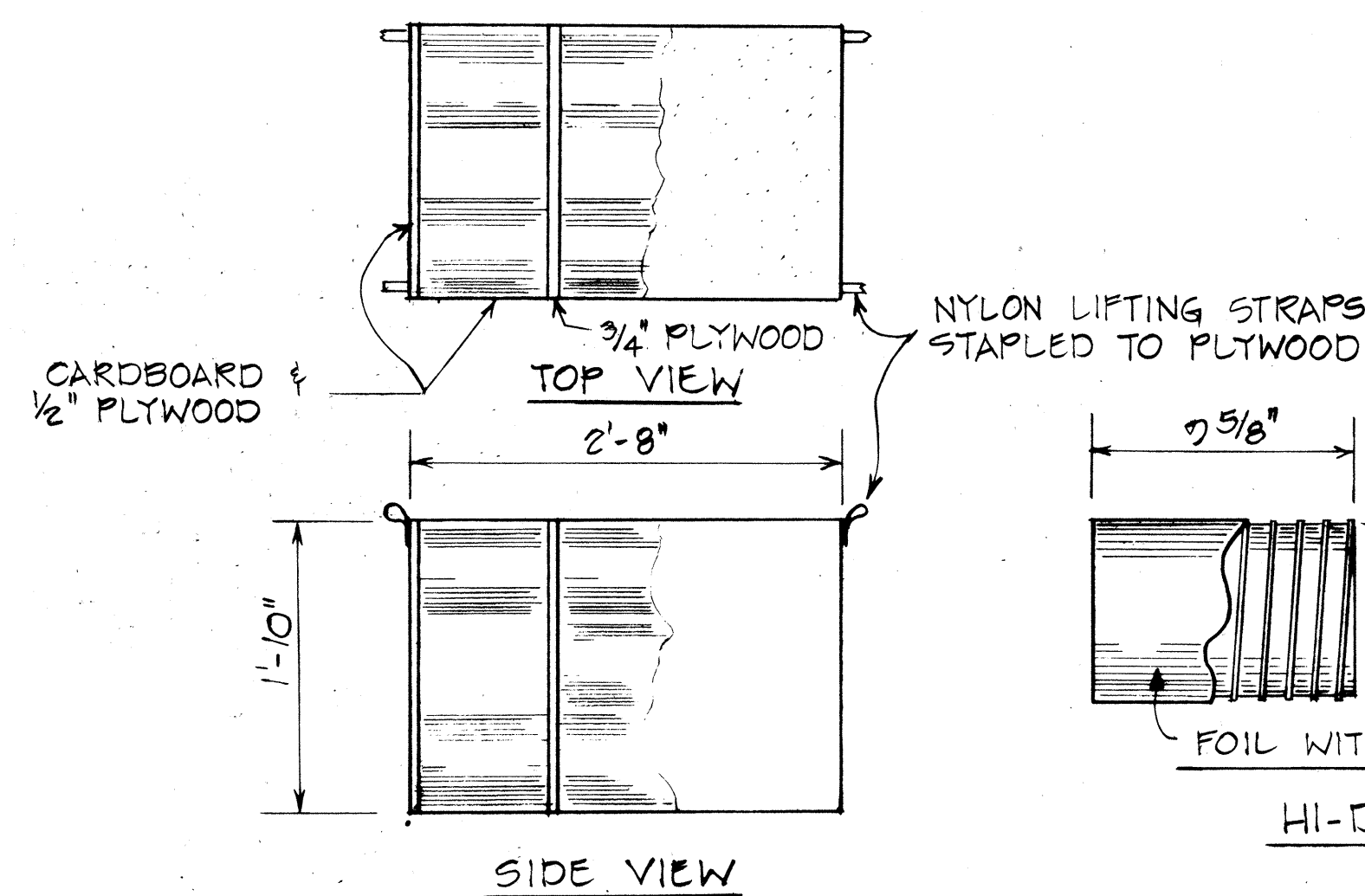
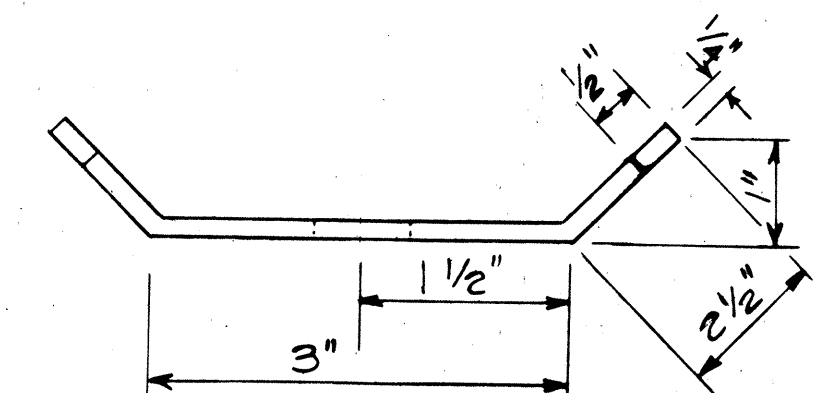


TOP VIEW

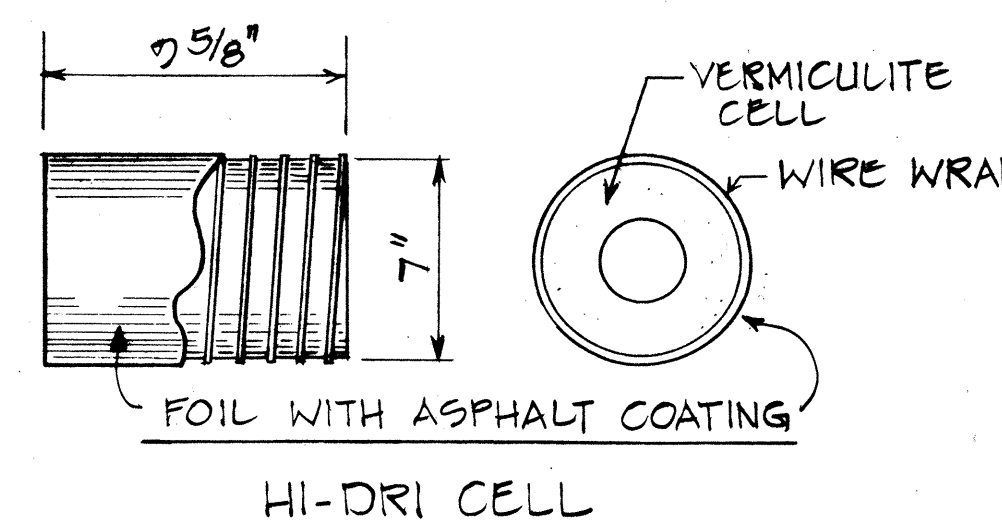
MODEL NO	E	F	G
2002005	2'-0"	1'-0"	
2062063	2'-6"	1'-3"	5 3/4"
3003005	3'-0"	1'-6"	8 3/4"



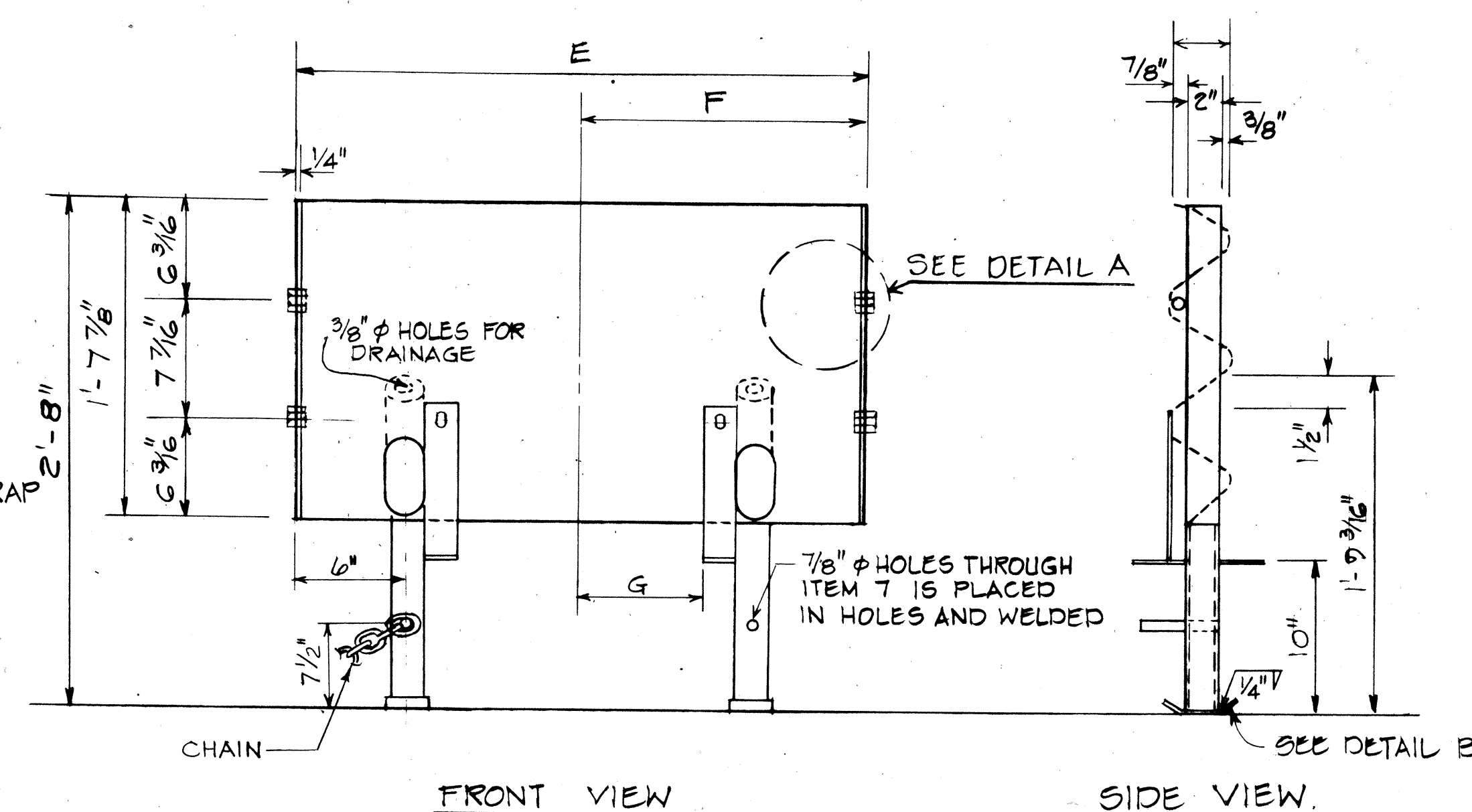
DETAIL B
Scale: 6" = 1'-0"



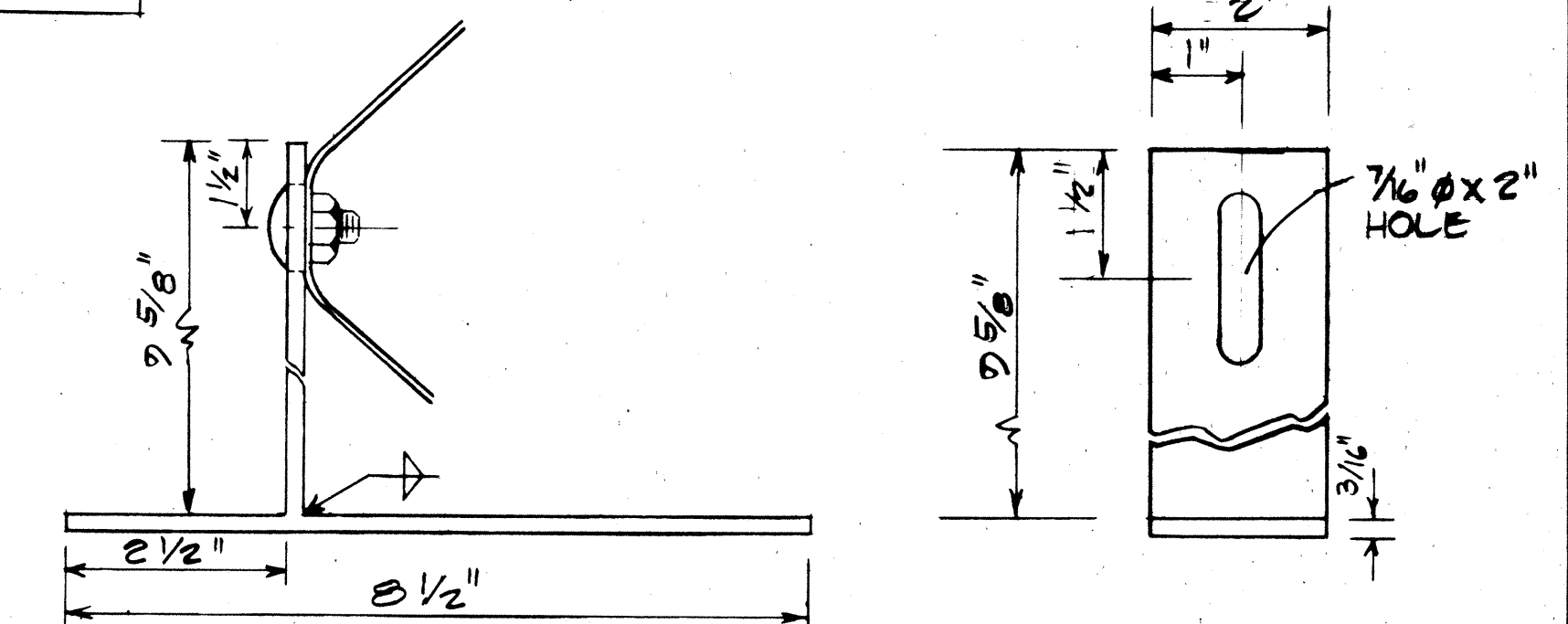
HI - DRI CARTRIDGE
Not to Scale



HI-DRI CELL



THREE BEAM DIAPHRAGM DETAILS
Scale: $1\frac{1}{2}" = 1'-0"$



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

**STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION**

DETAILS OF GUARD RAIL ENERGY ABSORBING TERMINAL

Scale: As Shown Date: 1978

SHEET No. 2 OF 2 SHEETS

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