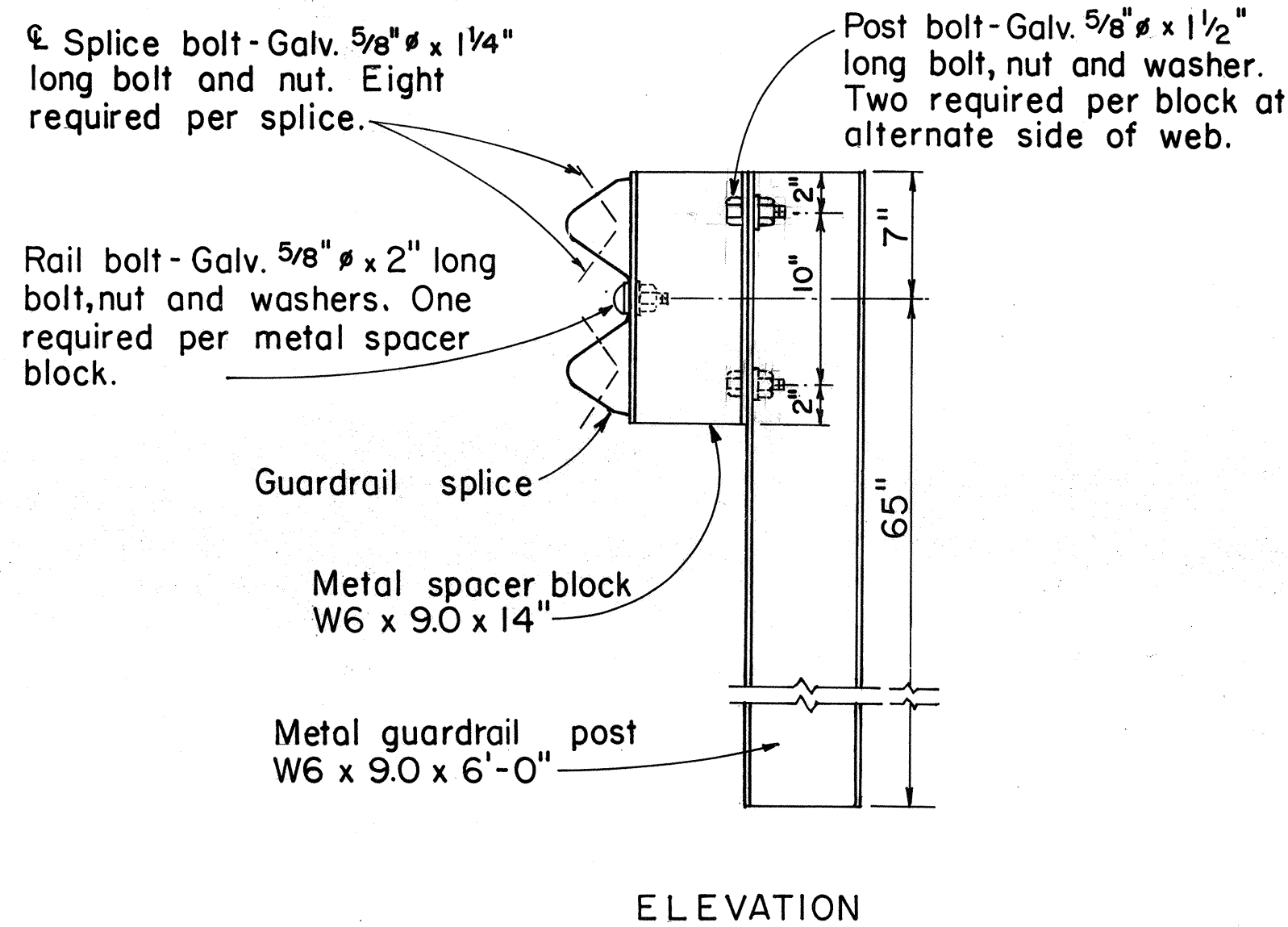
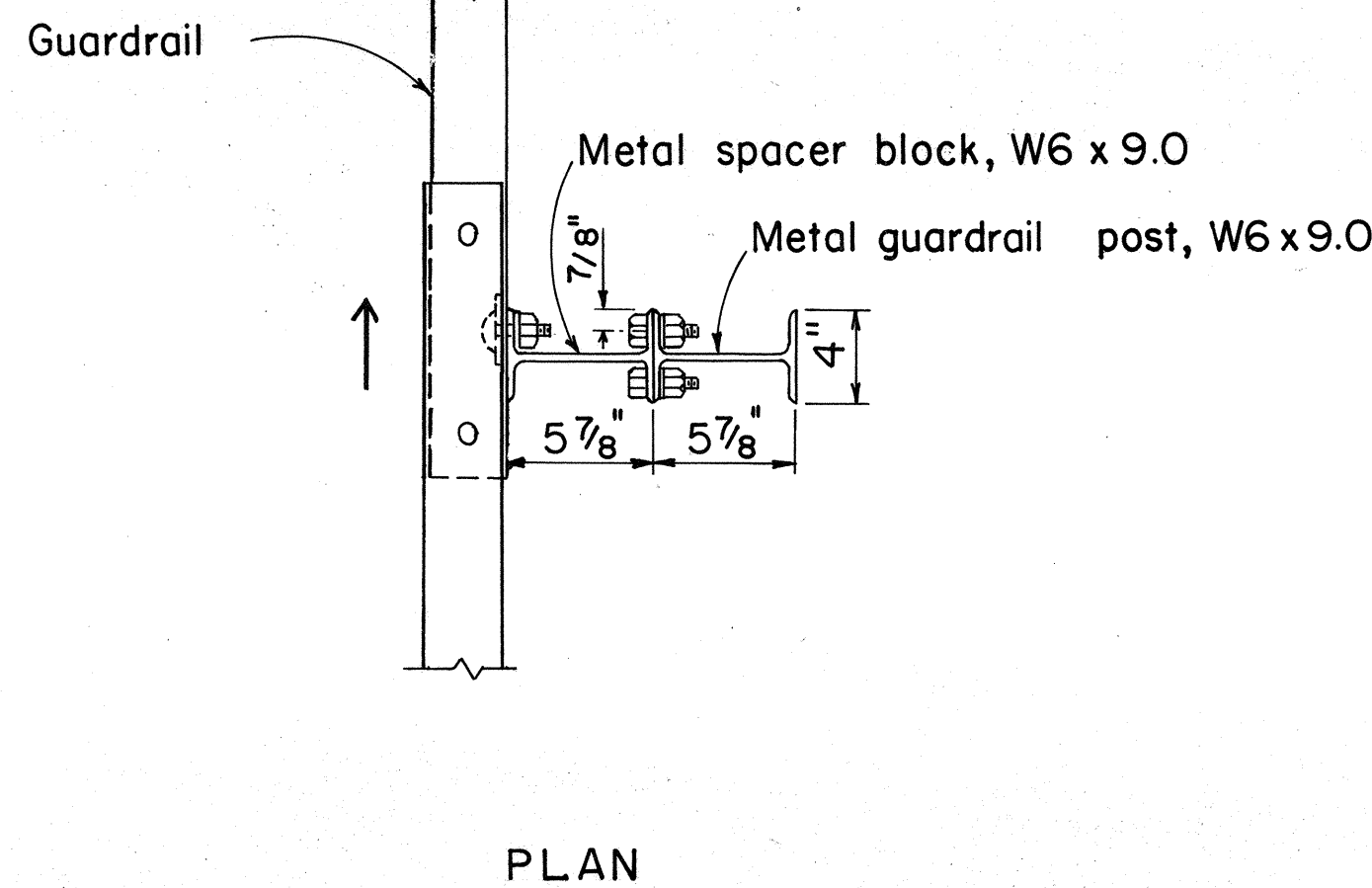


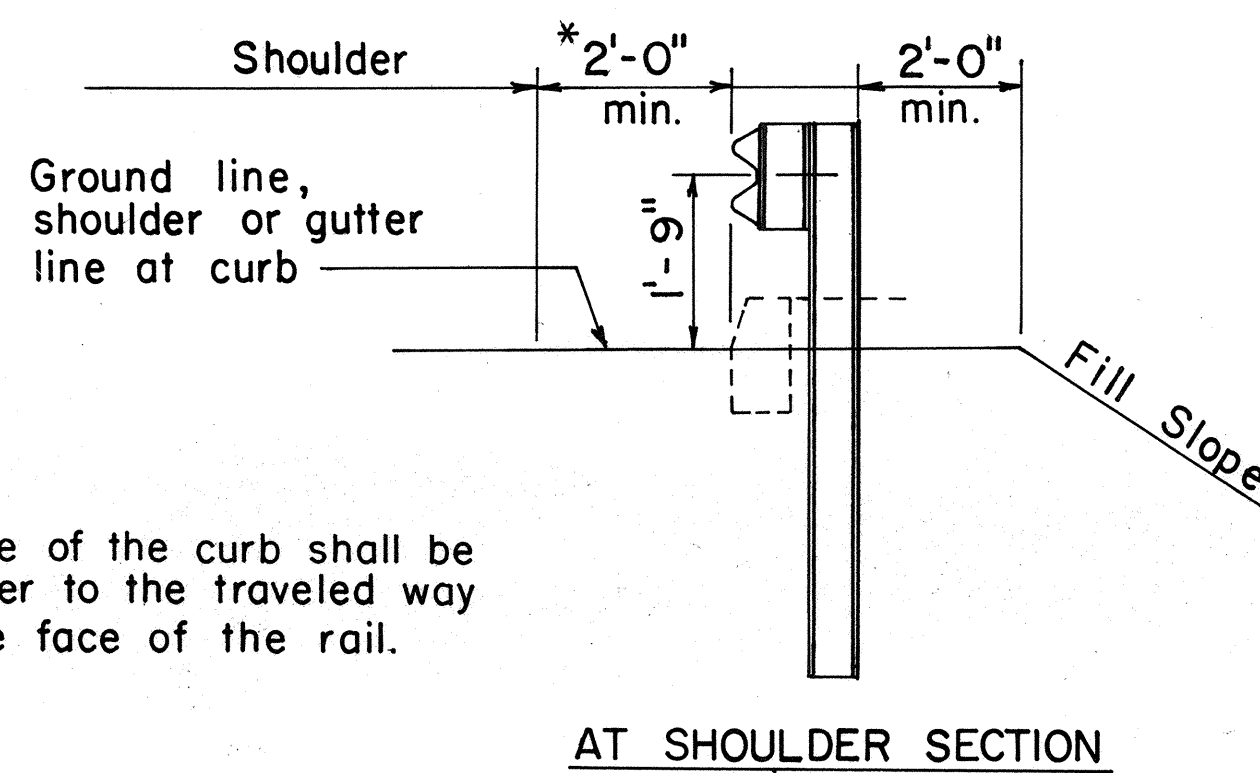
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HES-009-1(2)	1985	18	43

GENERAL NOTES

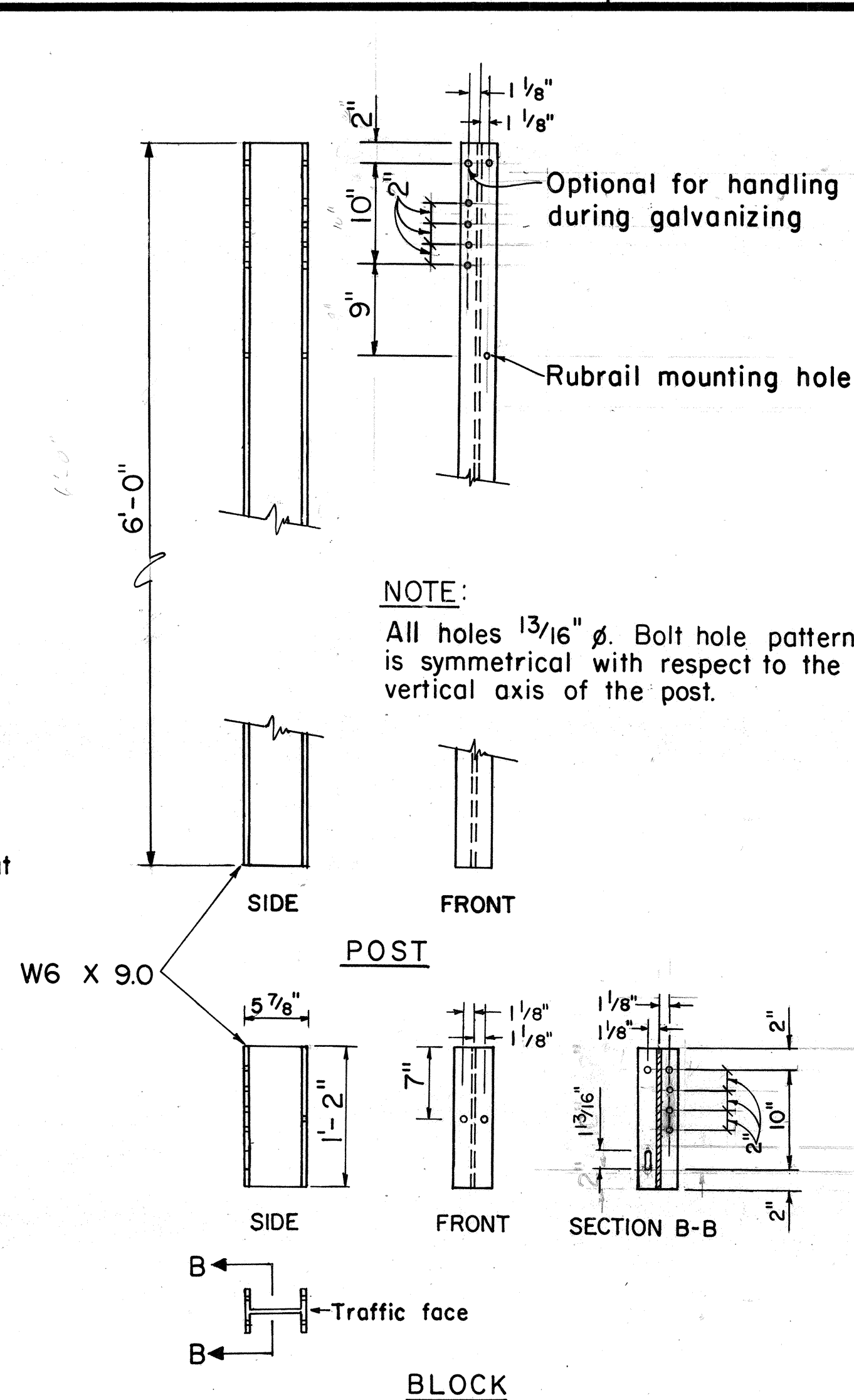
- Both of the alternate type posts may be used on any one project however, only one type of post shall be used in any single run of guardrail.
- All hardware, posts and blocks shall be galvanized. No punching, drilling or cutting will be permitted after galvanizing.
- Connection details for bent plate 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 501.
- 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.



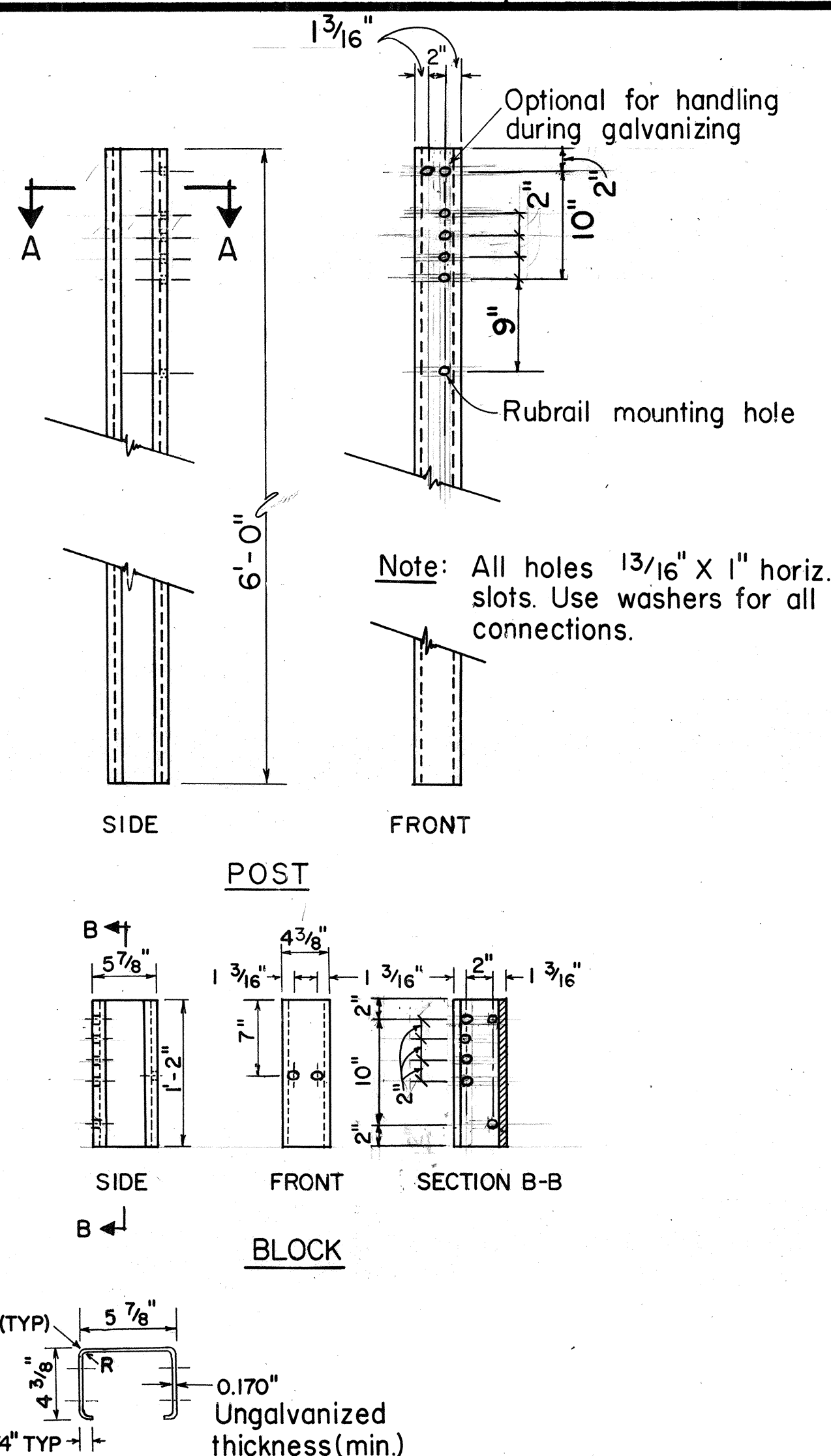
SINGLE METAL GUARDRAIL ON METAL POST WITH METAL SPACER BLOCK
SCALE: 1 1/2" = 1'-0"



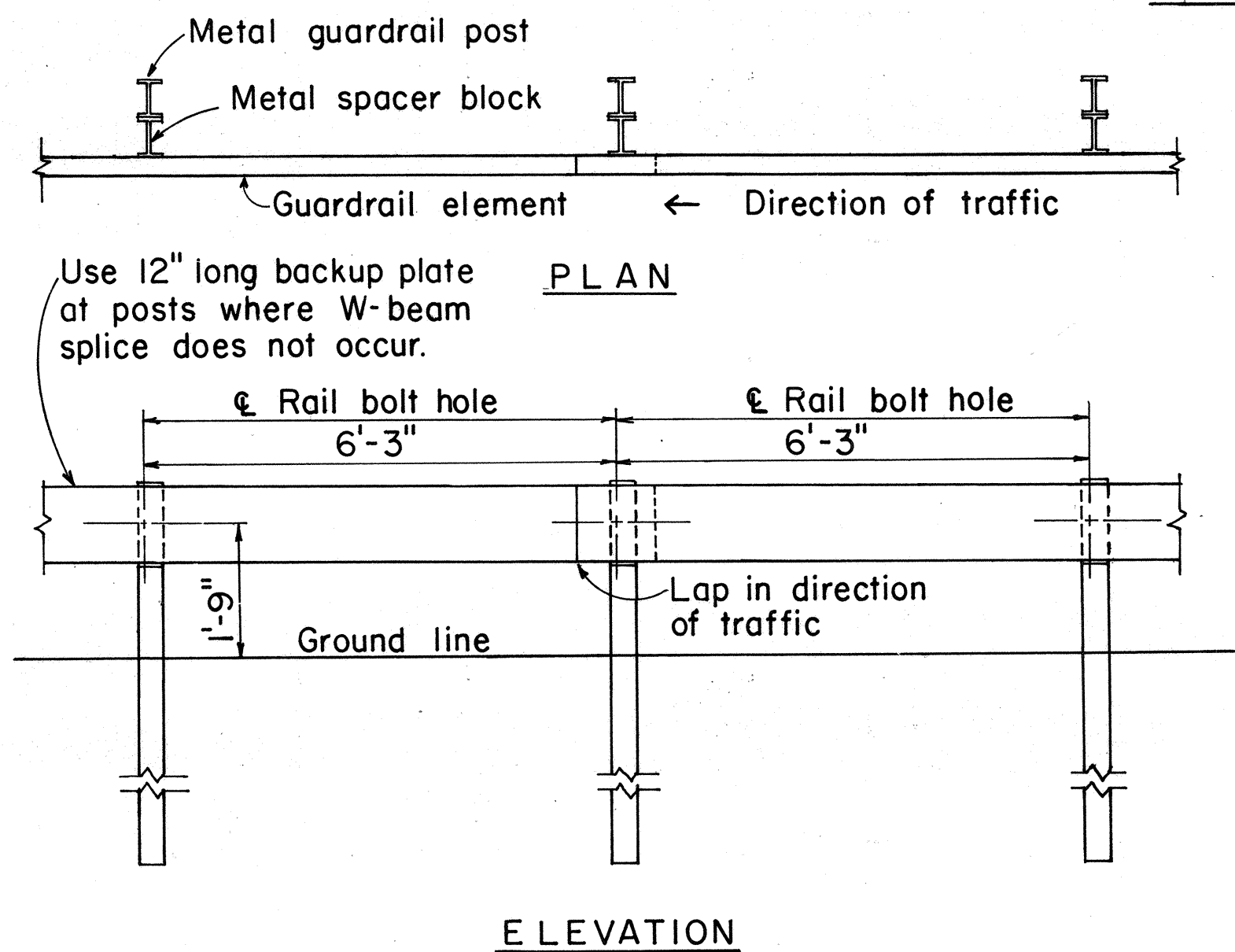
TYPICAL METAL GUARDRAIL DETAIL
SCALE: 1/2" = 1'-0"



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



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



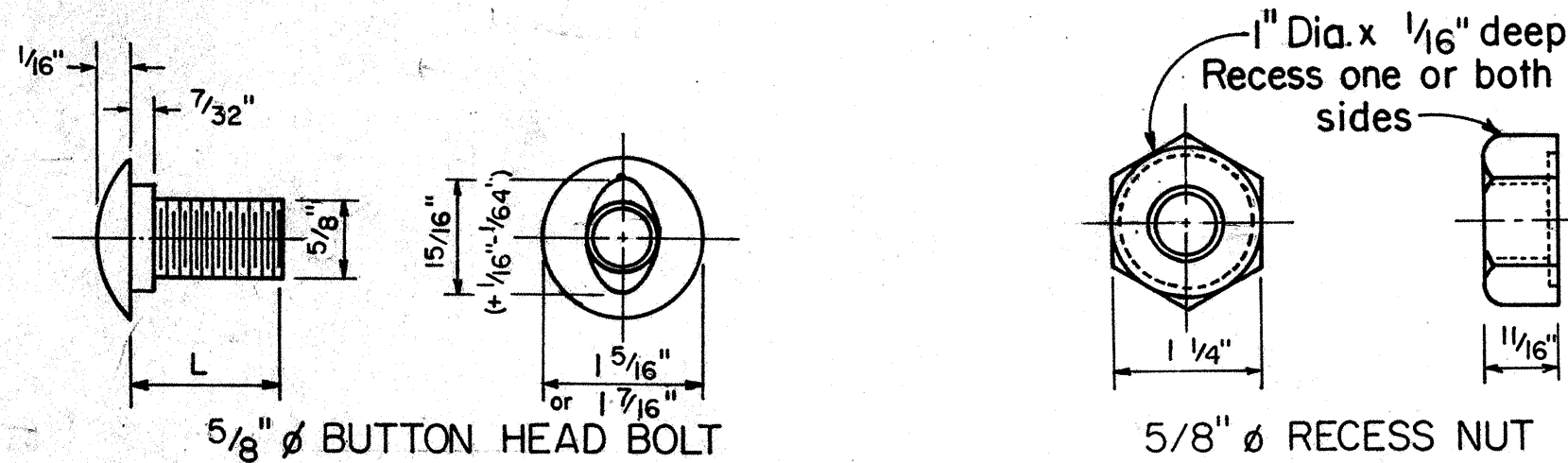
METAL GUARDRAIL ON METAL POST WITH METAL SPACER BLOCK
SCALE: 1/2" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAILS METAL GUARDRAIL

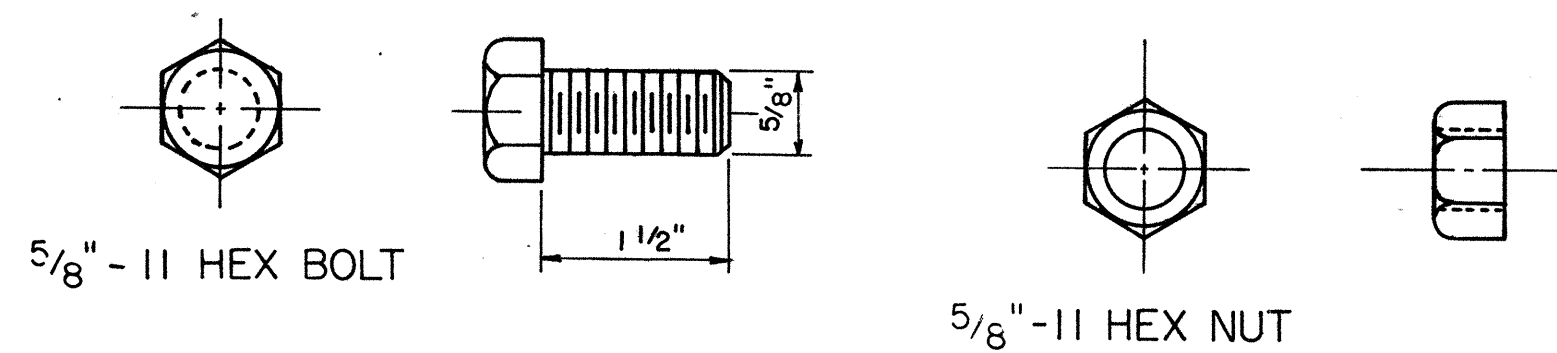
Scale: As Shown July, 1982
SHEET NO. / OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HE5-099-1(8)	1985	10	43

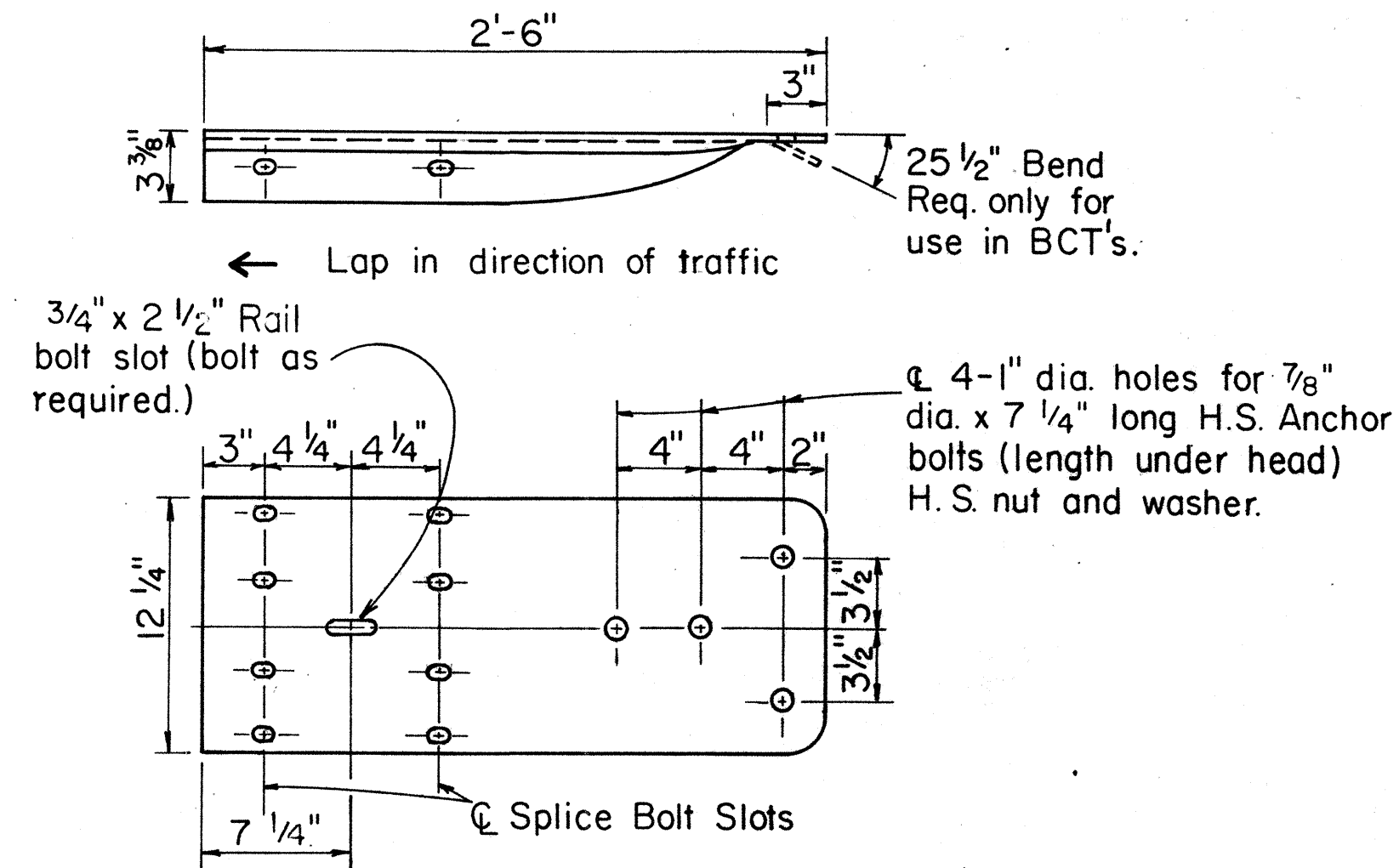


L	Thread Length	Intended Use
1 1/4"	Full length thread	Splice rail elements
2"	1 1/2" min. thread len.	Fasten rails to posts

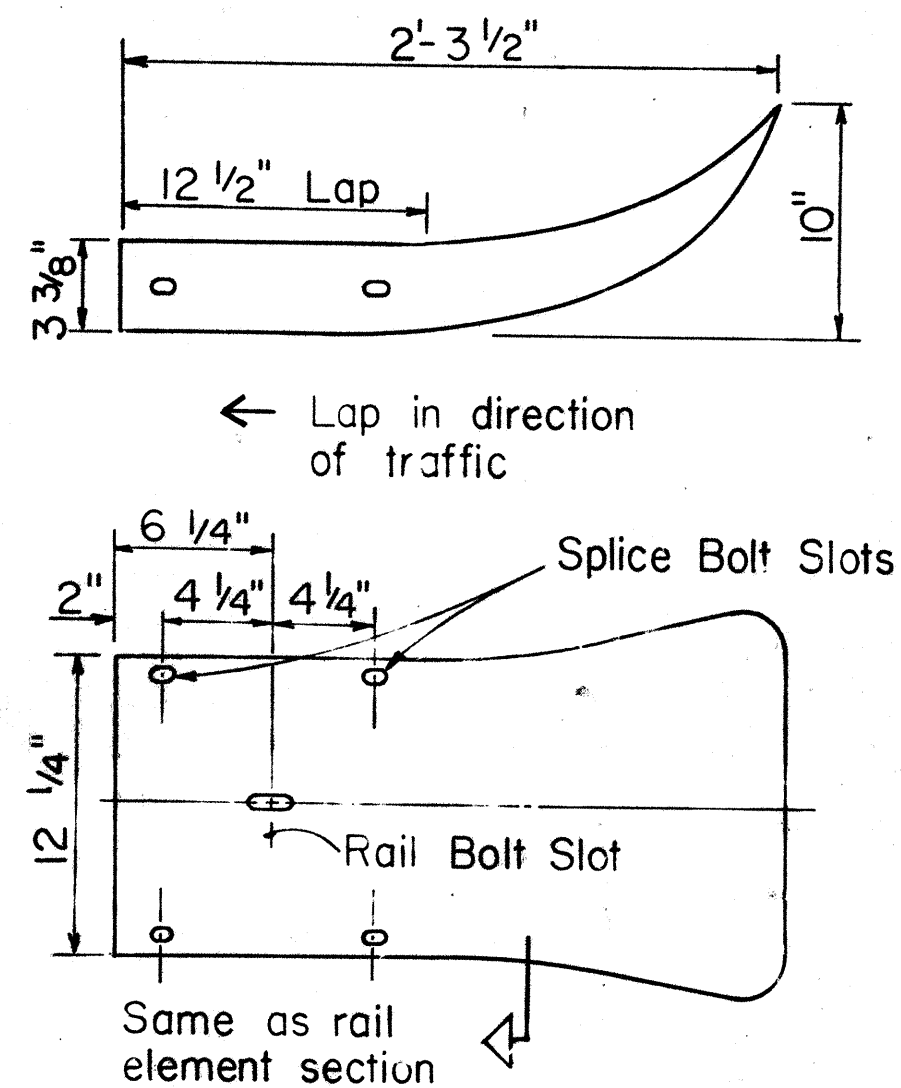
**5/8" BUTTON HEAD BOLT
AND RECESS NUT**
Scale: NTS



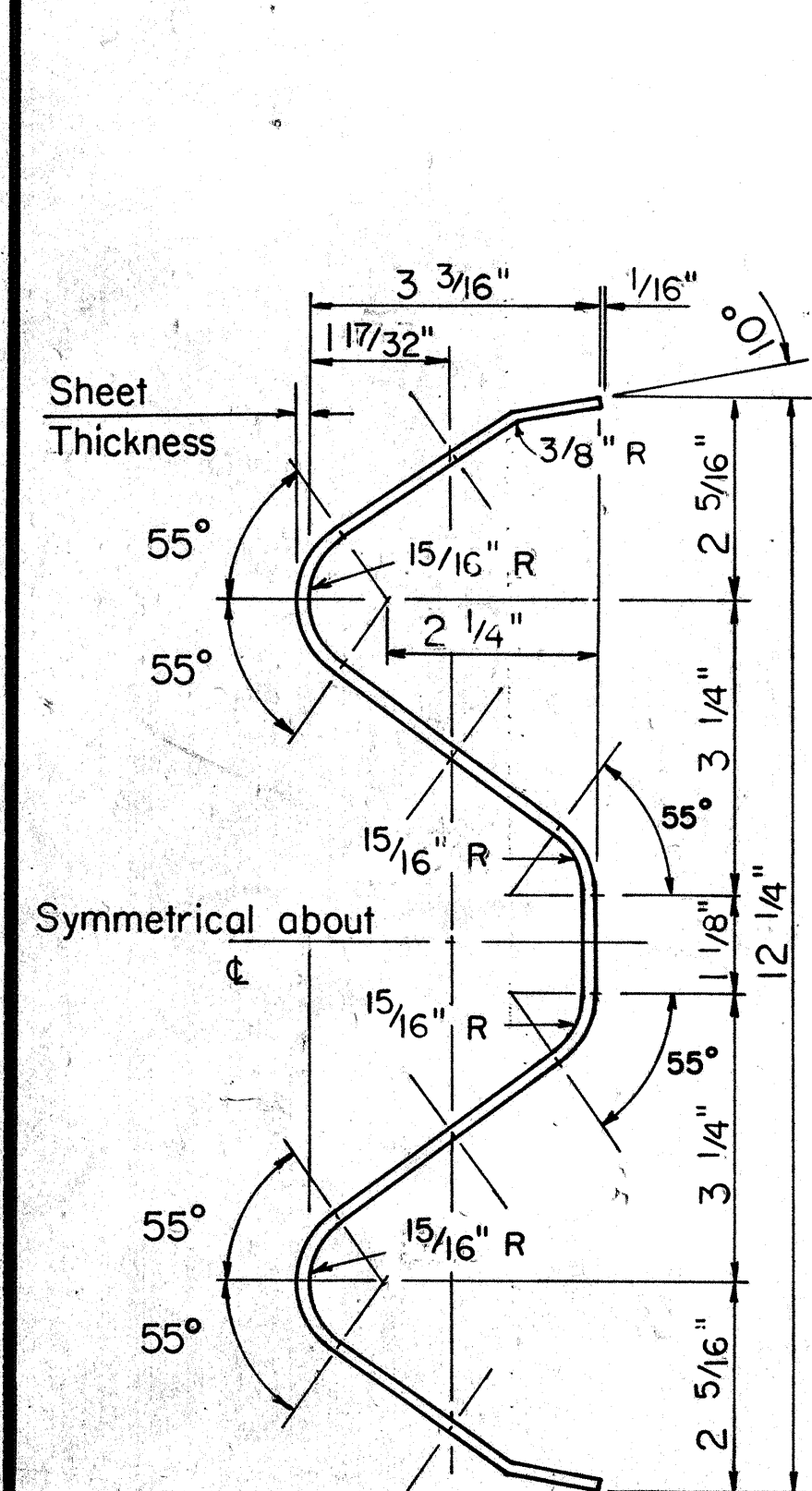
5/8" HEX POST BOLT AND NUT
Scale: N.T.S.



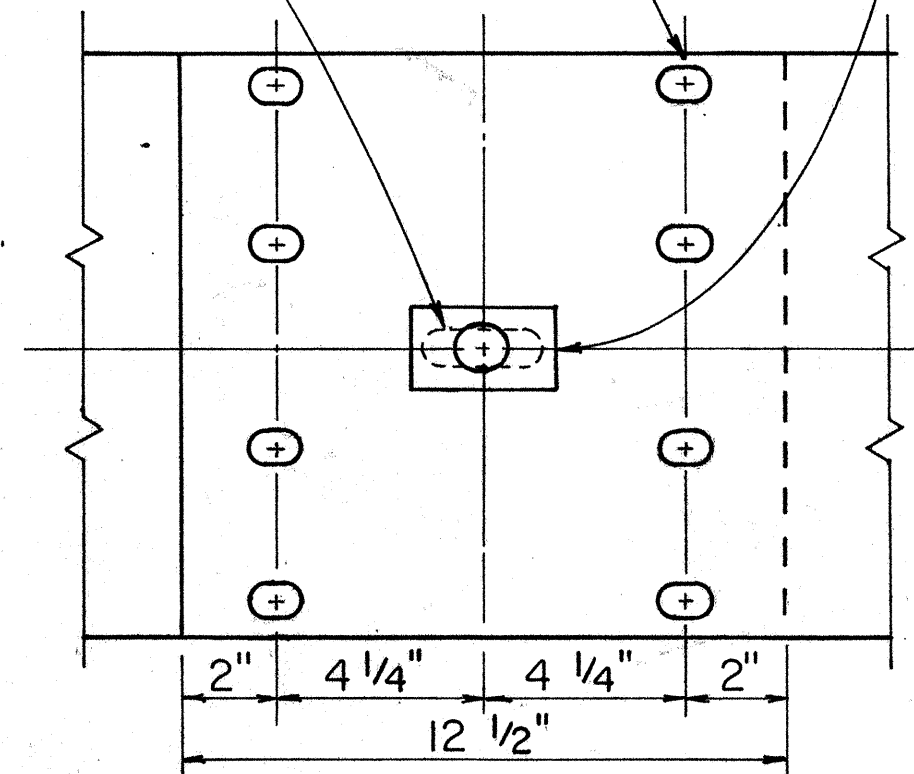
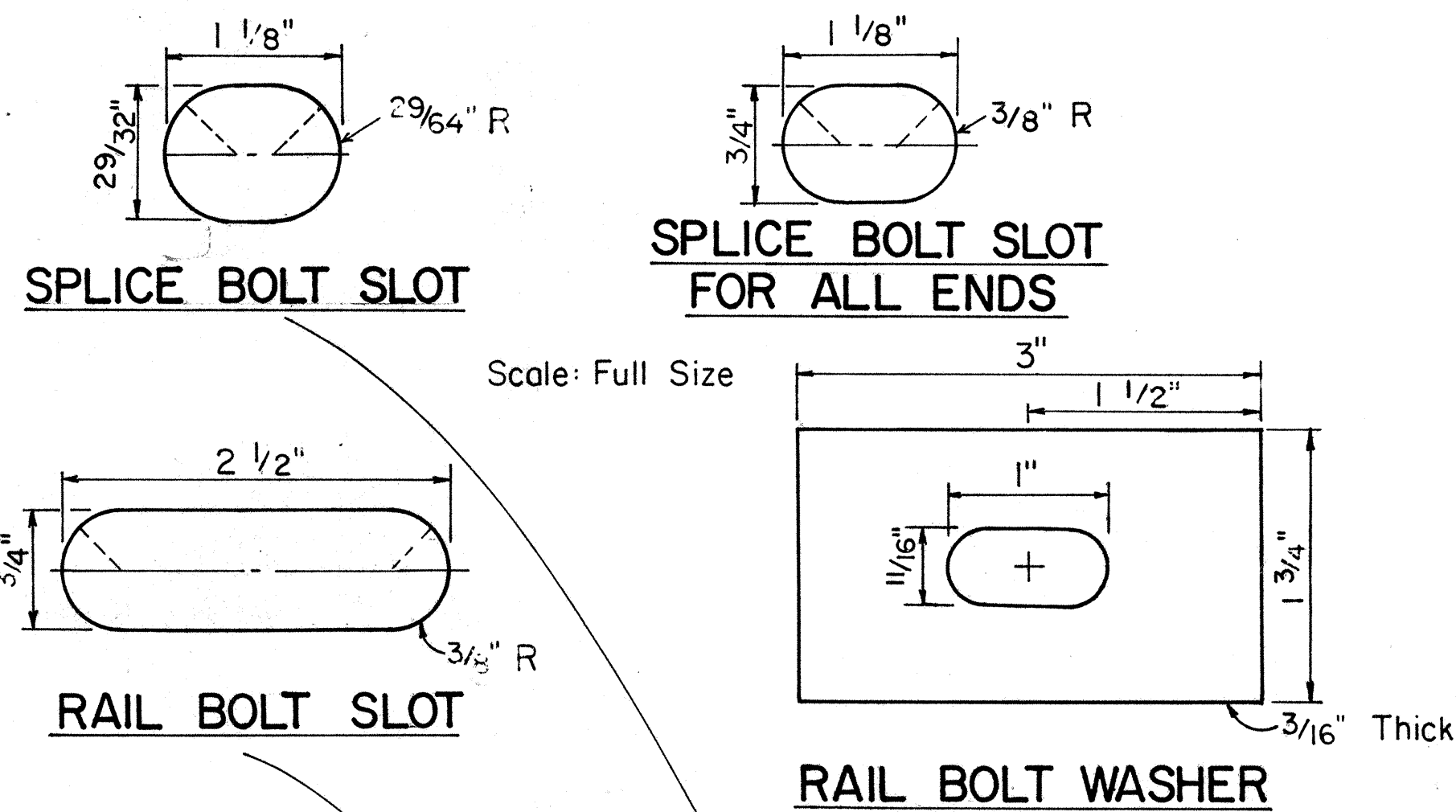
W BEAM TERMINAL CONNECTOR
Scale: 1 1/2" = 1'-0"
Lap in direction of traffic



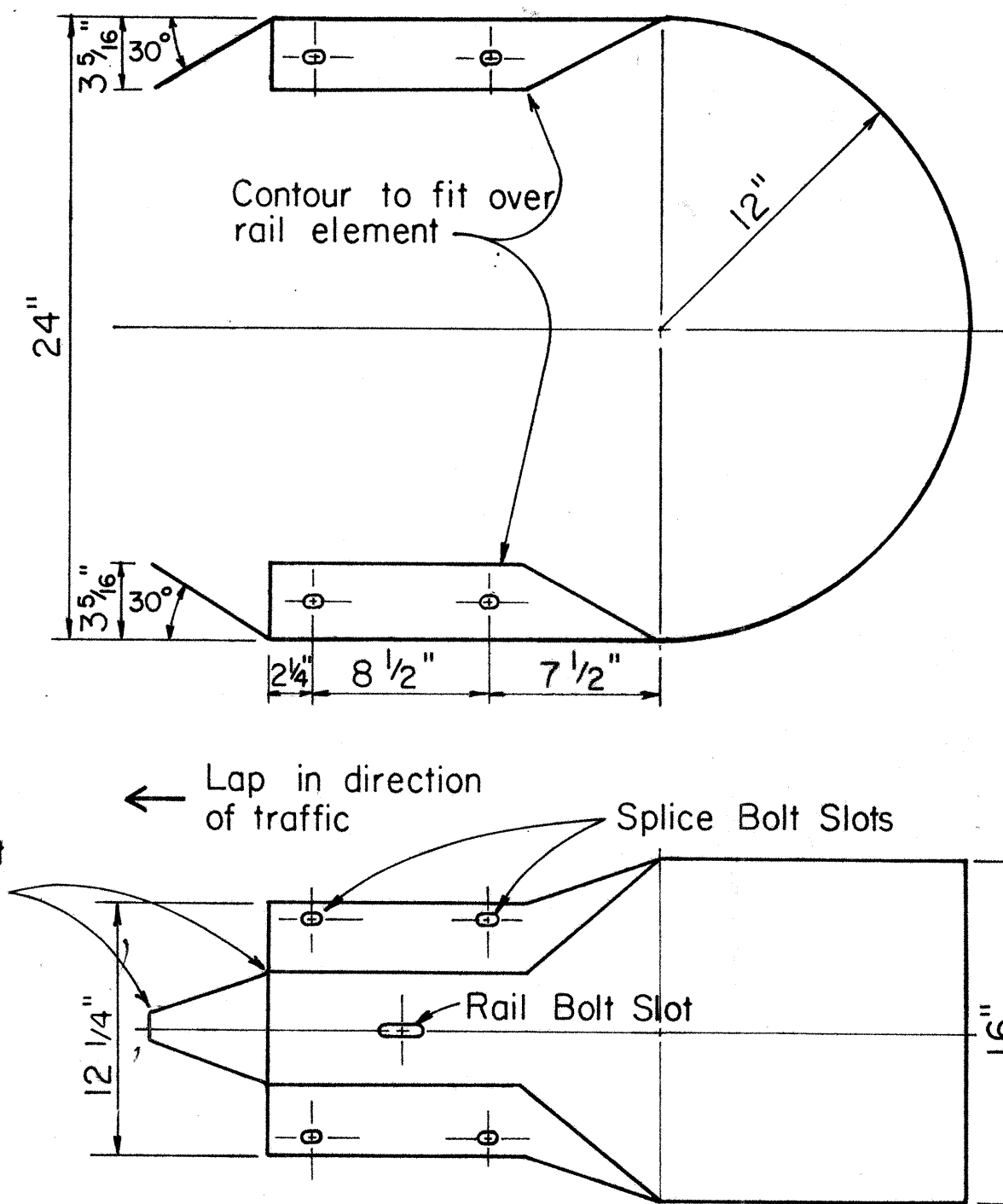
W BEAM END SECTION (FLARED)
Scale: 1 1/2" = 1'-0"



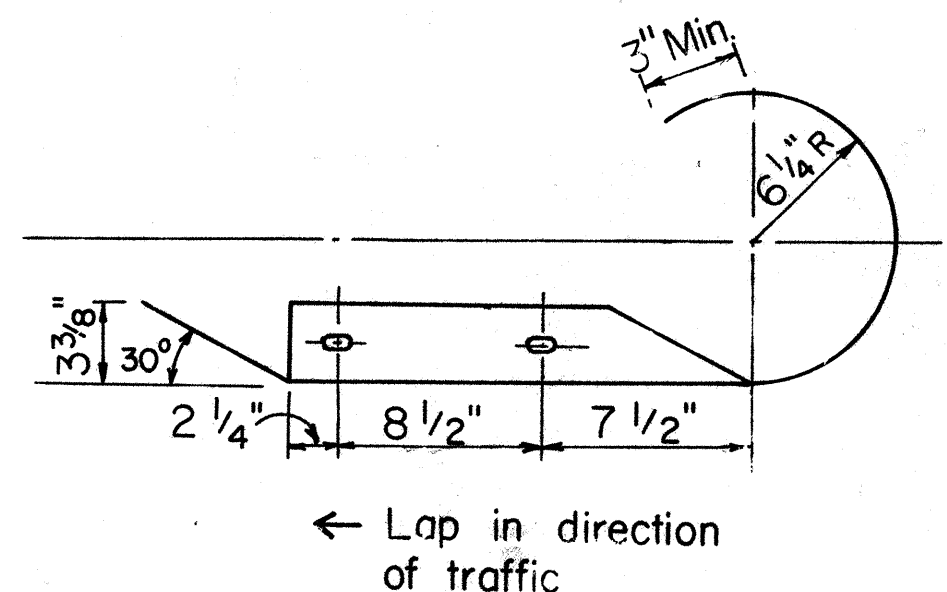
RAIL ELEMENT SECTION
Scale: 6" = 1'-0"



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



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



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

APPROVAL RECOMMENDED:
Erich Tanaka
TRAFFIC ENGINEER
9/20/82
DATE

APPROVED:
Shirley Selich
ASSISTANT CHIEF, ENGINEERING
9/22/82
DATE

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL GUARDRAIL

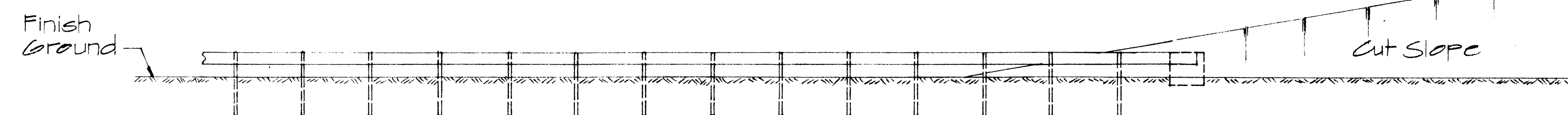
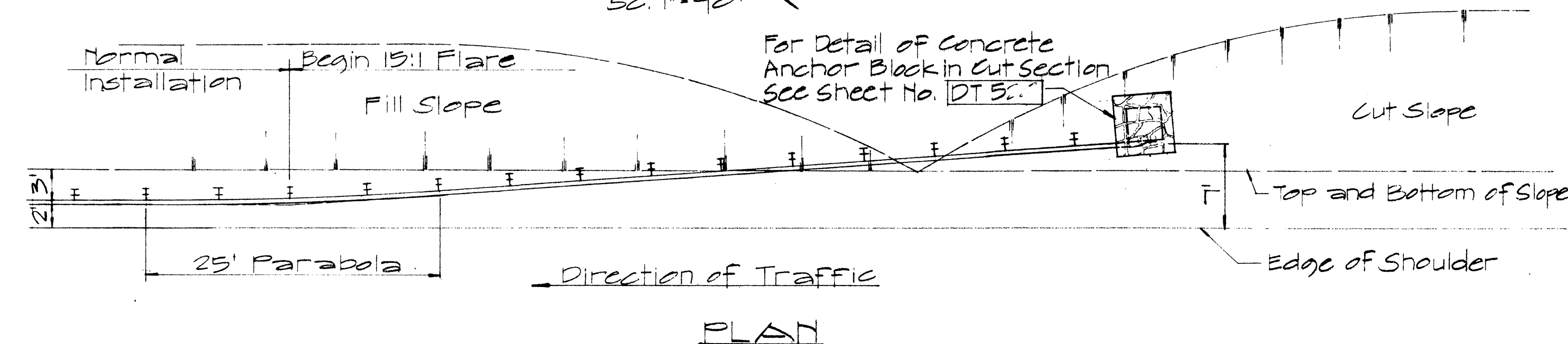
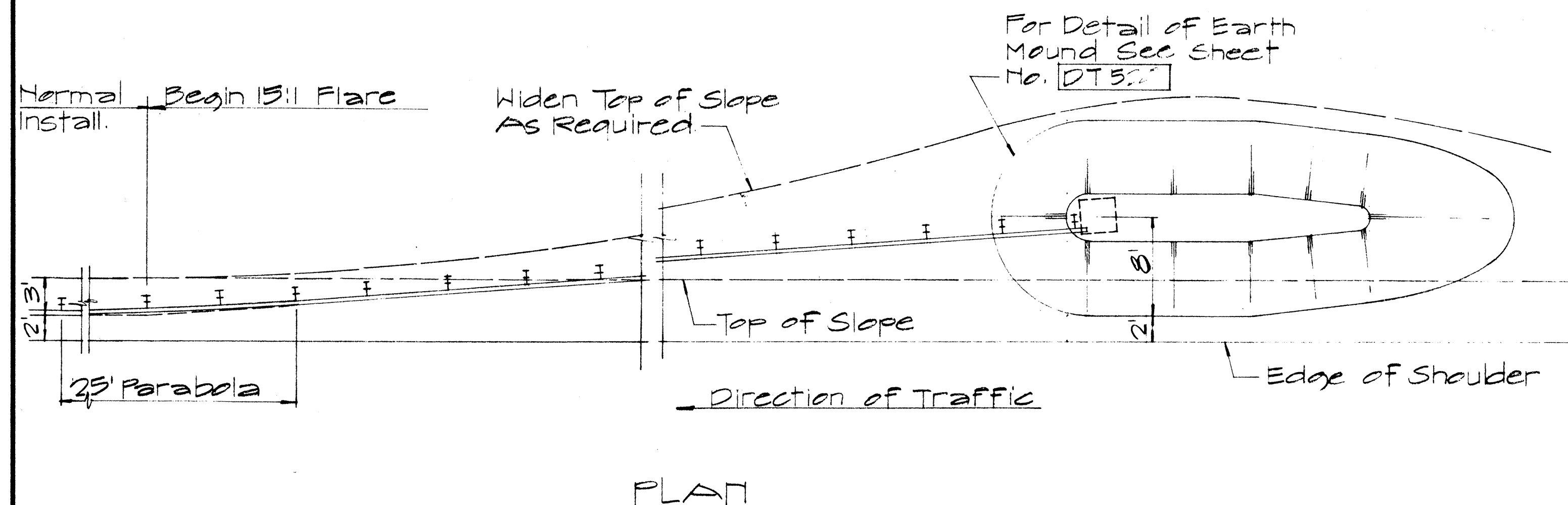
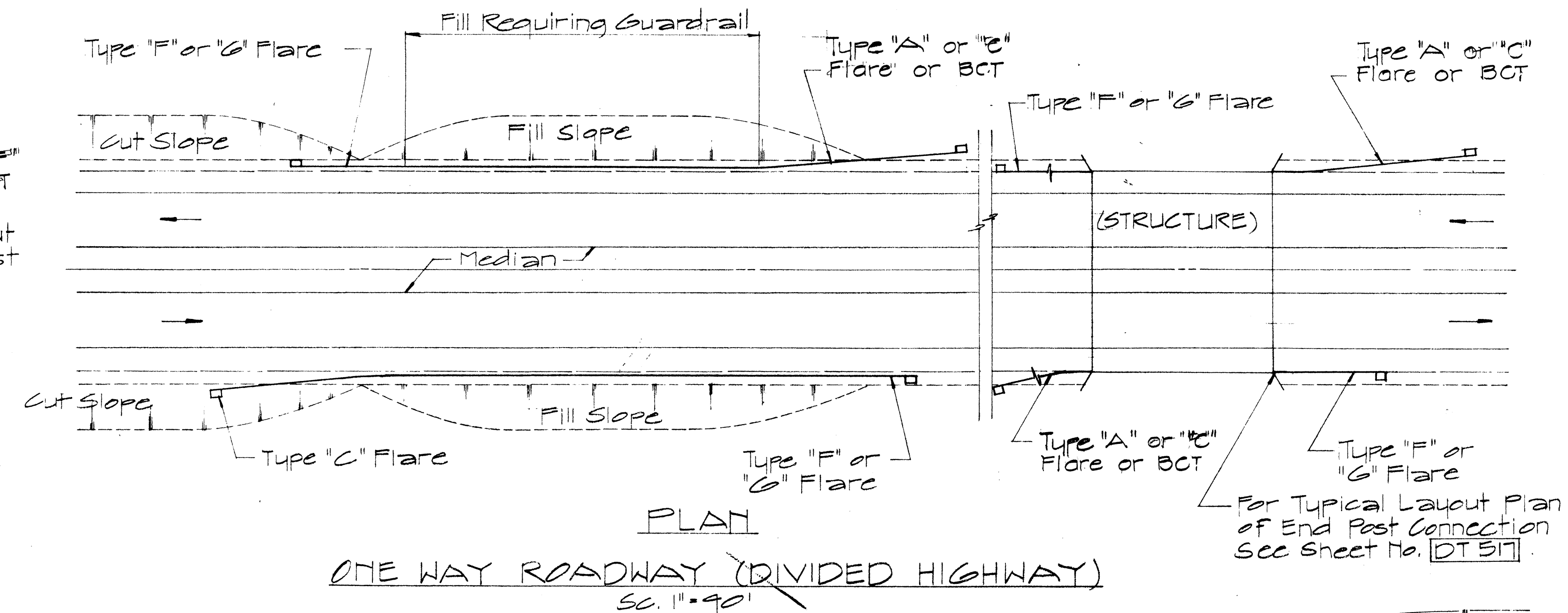
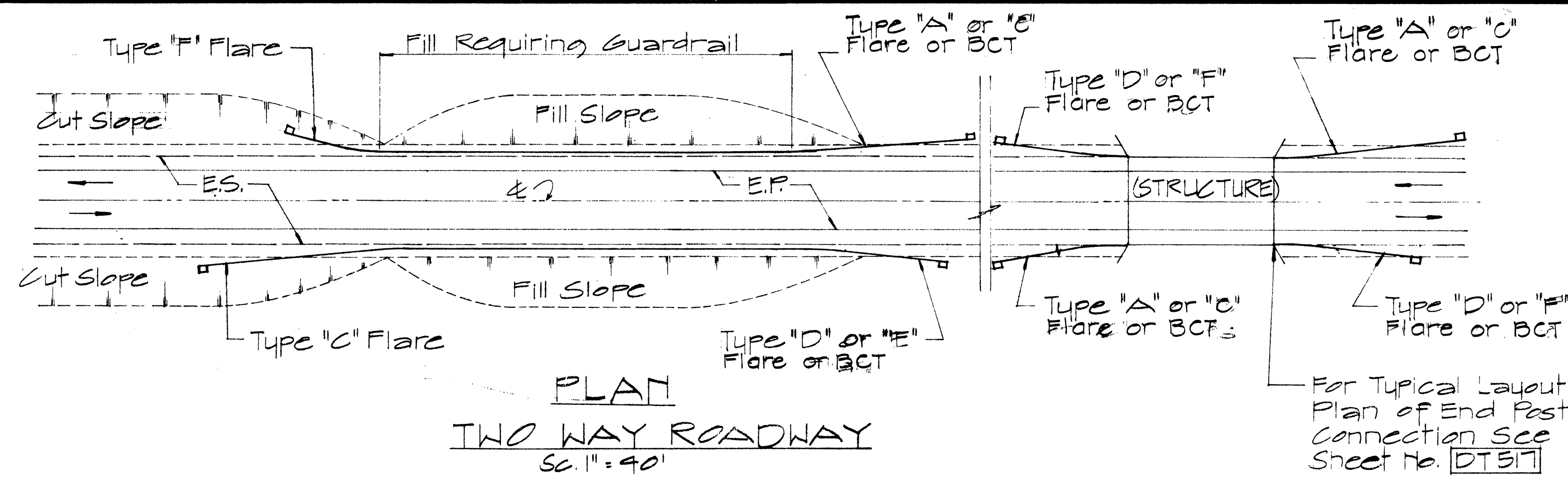
Scale: As Noted
July, 1982
SHEET NO. 9 OF 10 SHEETS DT 501

ORIGINAL PLAN	DATE
DESIGNED BY	
NOTED BY	
CHECKED BY	
QUANTITIES BY	
NO.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HES-099-1(B)	1985	20	43

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:
Erich Tanaka
TRAFFIC ENGINEER
12/29/69
DATE

APPROVED:
John B. B. B.
ASSISTANT CHIEF, ENGINEERING
12-20-69
DATE

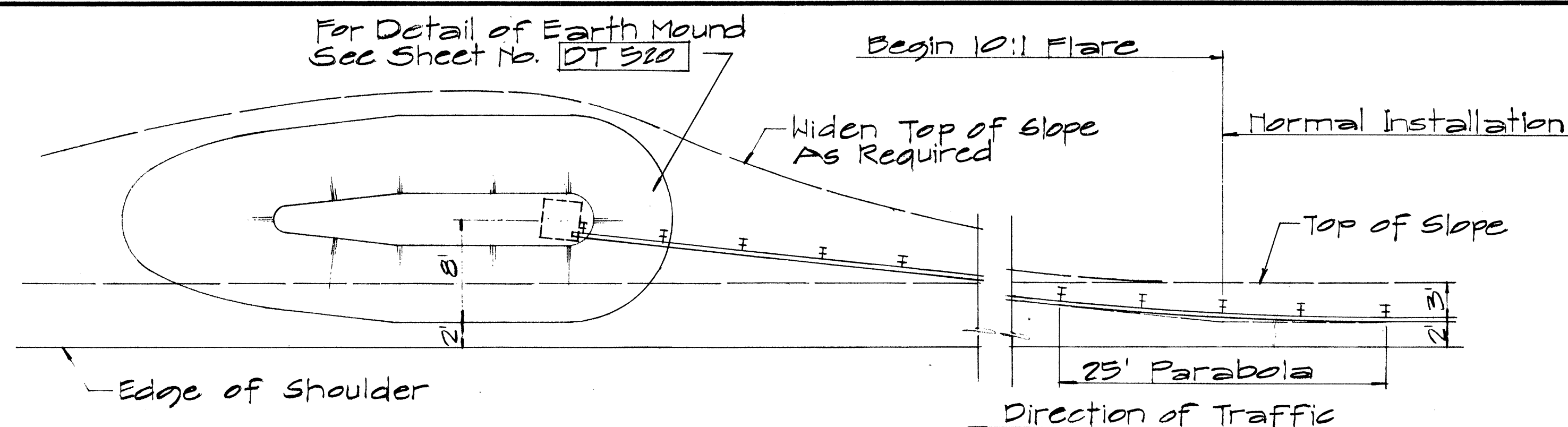
ELEVATION
TYPE "C" FLARE
SC. 1/8" = 1'-0"

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

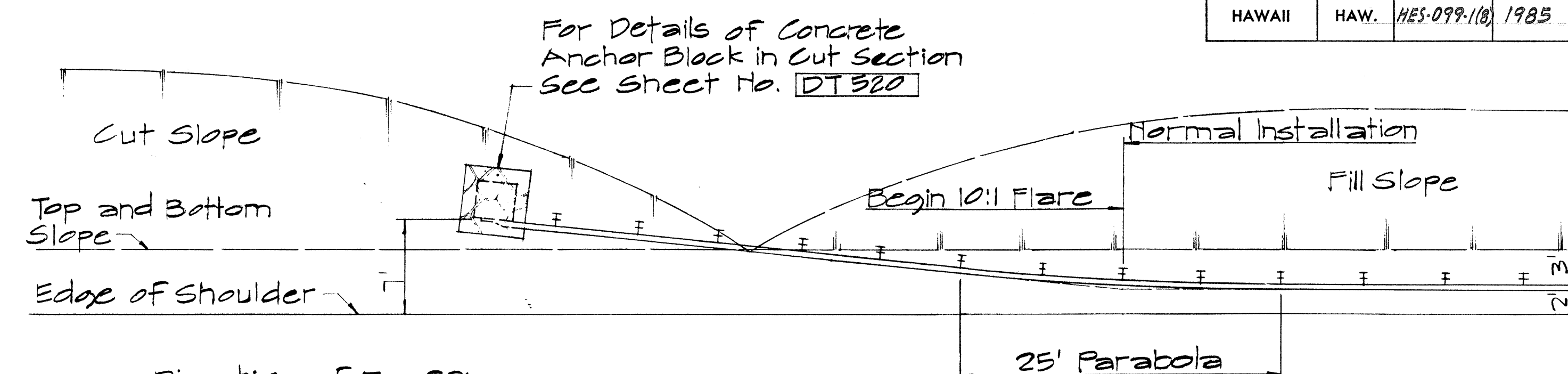
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**STANDARD DETAILS
OF APPROACH END
FLARE - ONE & TWO
WAY ROADWAY**
SC. As Noted
April 1969
SHEET No. 3 OF 6 SHEETS DT 516

SURVEY PLOTTED BY	DATE
DESIGNED BY	
TRACED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NO.	

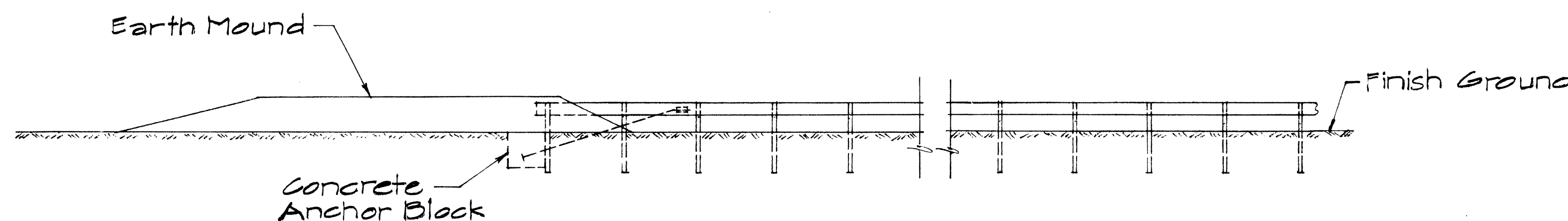
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HES-099-1(8)	1985	21	43



PLAN

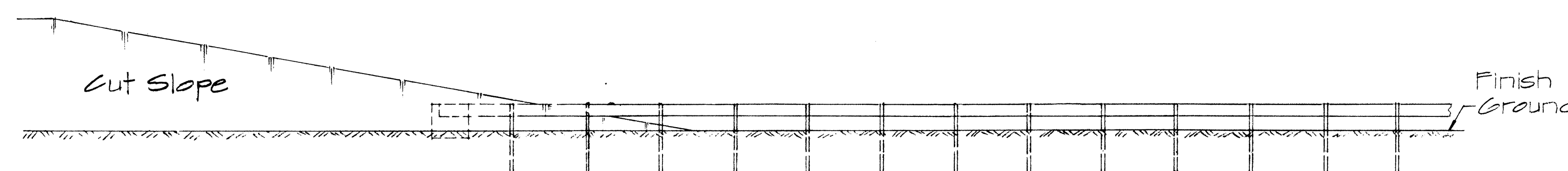


PLAN



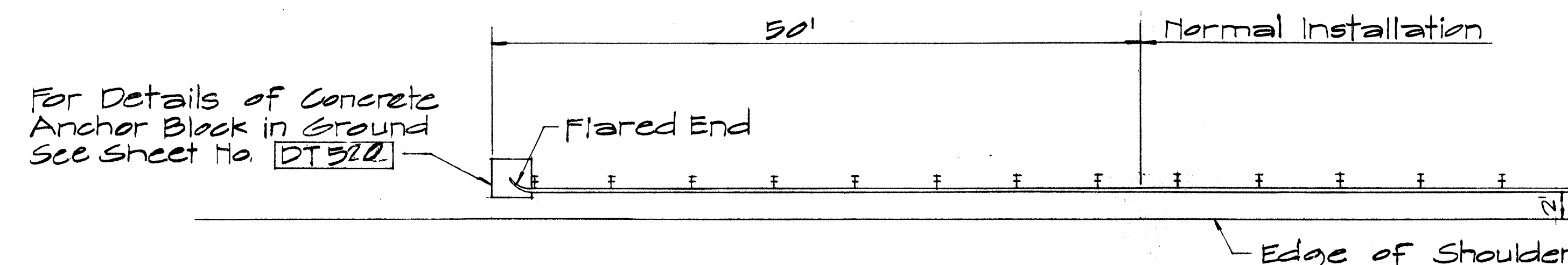
ELEVATION

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



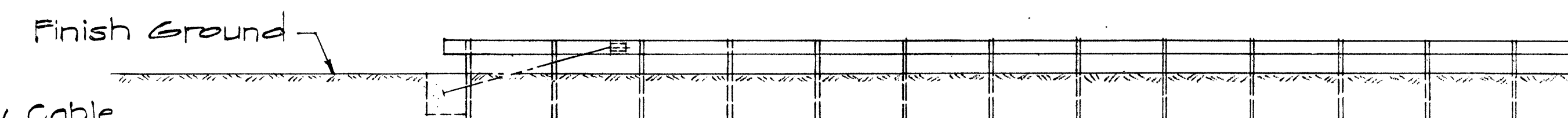
ELEVATION

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



PLAN

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

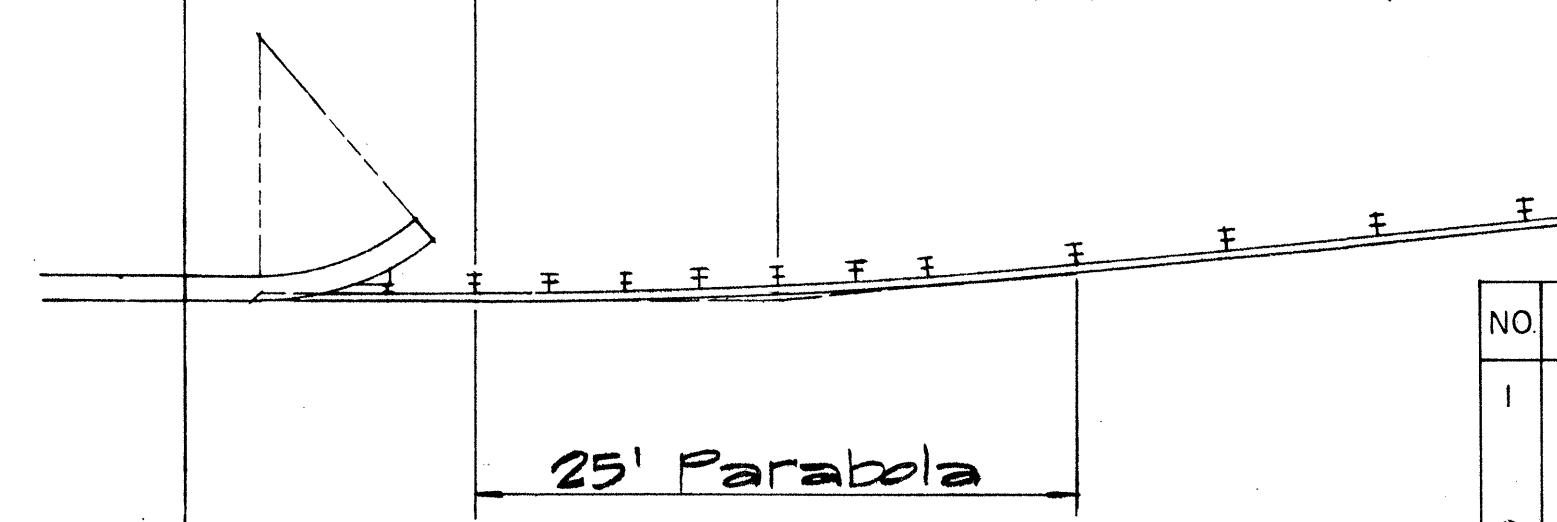


ELEVATION

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

Typical Conc. 11'-23/4"
Parapet

Begin Type "A", "C", "D"
or "F" Flare or BCT



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
2	Delete Type "B" Flare and Type "E" Flare	H.C.	6-15-78

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

APPROVED:
W. 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

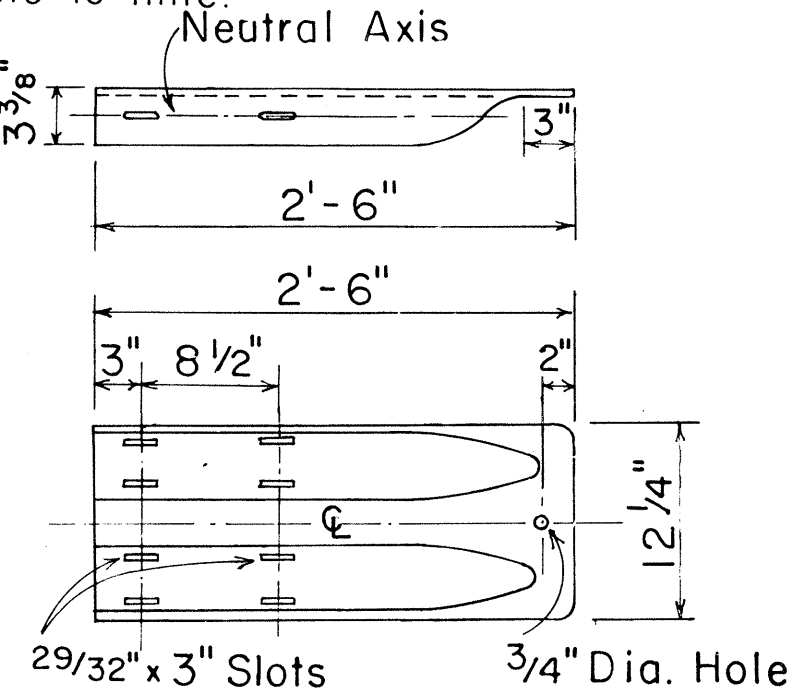
SHEET No. 4 OF 6 SHEETS DT 517

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HE-5-000-1 (8)	1985	22	43

NOTES:

- Anchor Plate and Anchor Cable Assembly (Standard Swaged Fitting and Stud). See Standard Detail Sheet No. DT 520.
- Other Anchor Cable Assemblies may be used. Minimum breaking strength of assembly should be 40,000 lbs.
- Second Terminal Post does not require holes to accomodate Anchor Cable.
- Slip Base Load shall be controlled with a Calibrated Torque Wrench - Torque 155 - 170 ft. lbs.
- Concrete shall be Class A.
- 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.



TERMINAL CONNECTOR
Scale: 1" = 1'-0"

APPROVAL RECOMMENDED:

Eichi Tanaka
TRAFFIC ENGINEER

6/15/78
DATE

APPROVED:

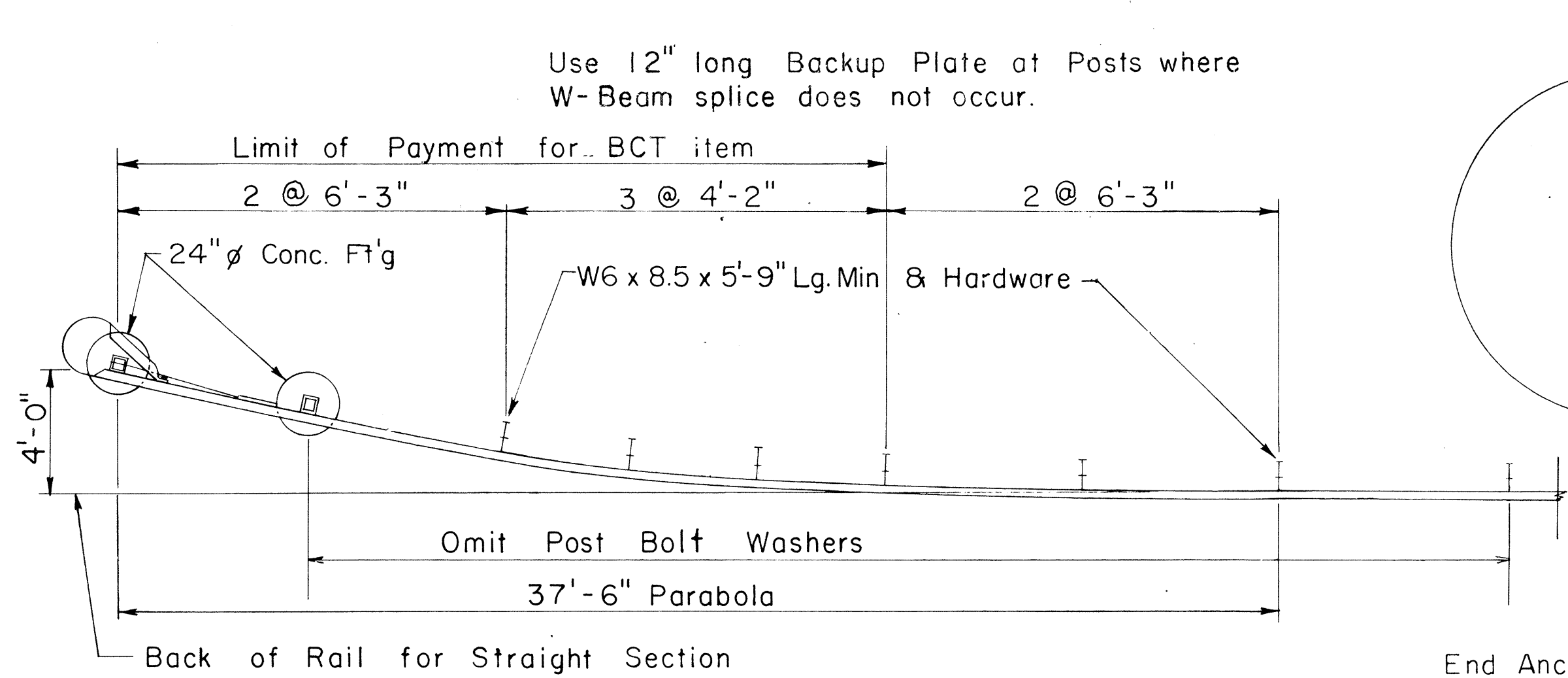
Heibor Zakeishi
ASSISTANT CHIEF, ENGINEERING

6/15/78
DATE

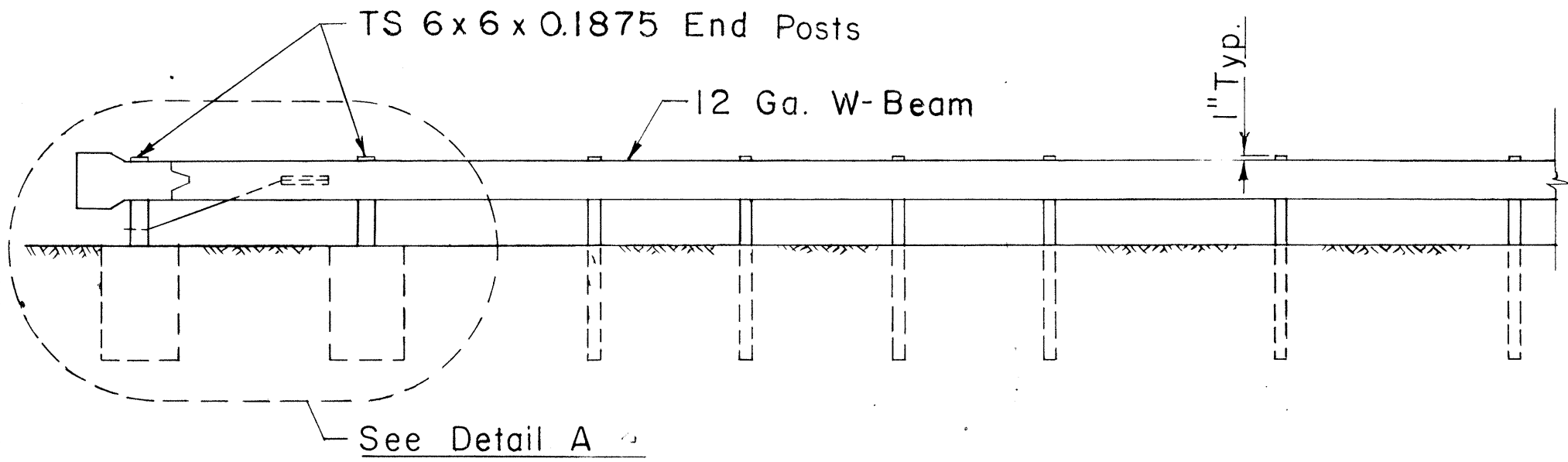
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAIL
BREAKAWAY CABLE TERMINAL (BCT)

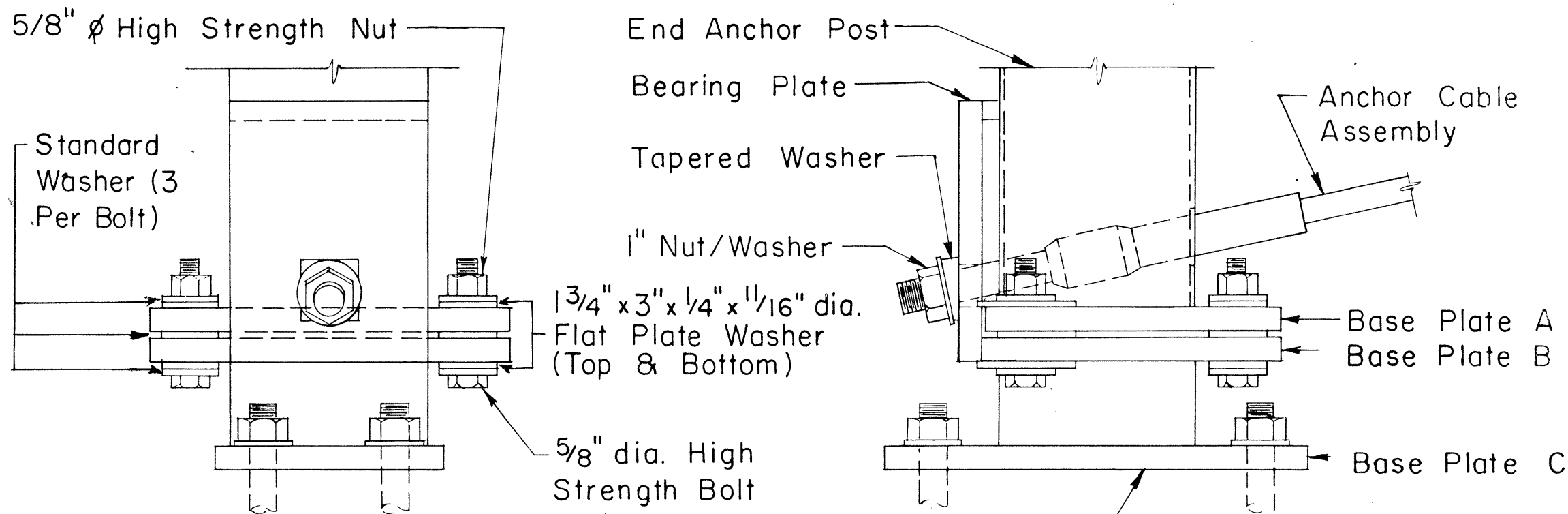
Scale: As Shown Date: June 1978
SHEET No. 5 OF 6 SHEETS DT 519



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



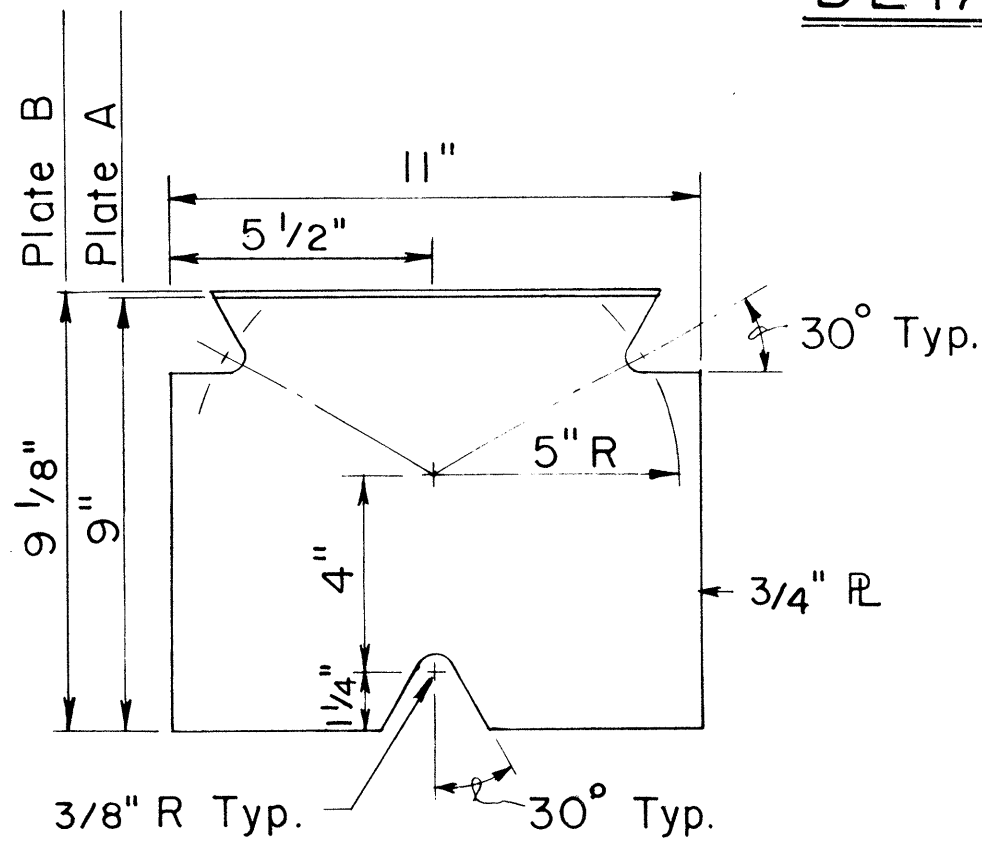
ELEVATION
Scale: 1/4" = 1'-0"



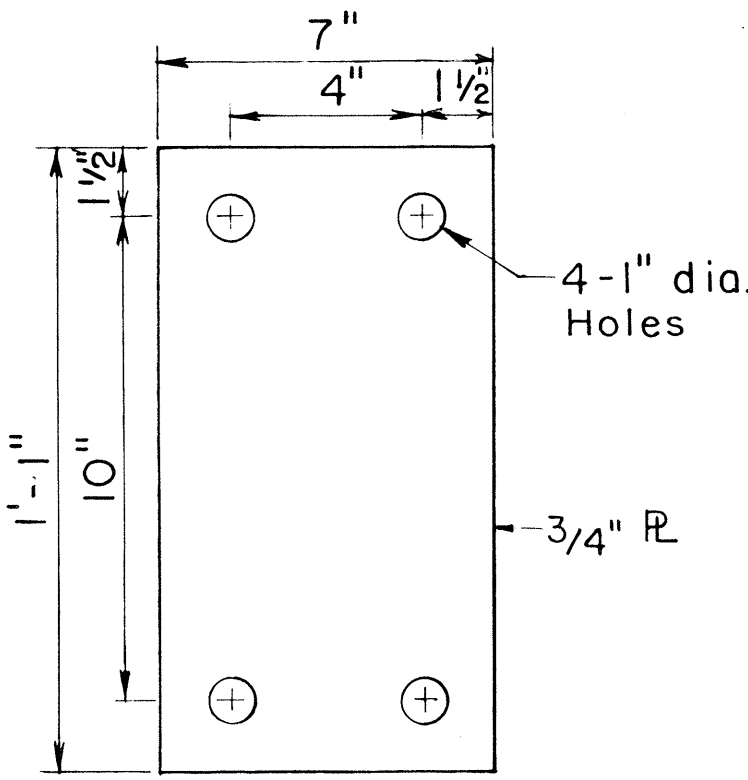
SIDE ELEVATION

DETAIL B

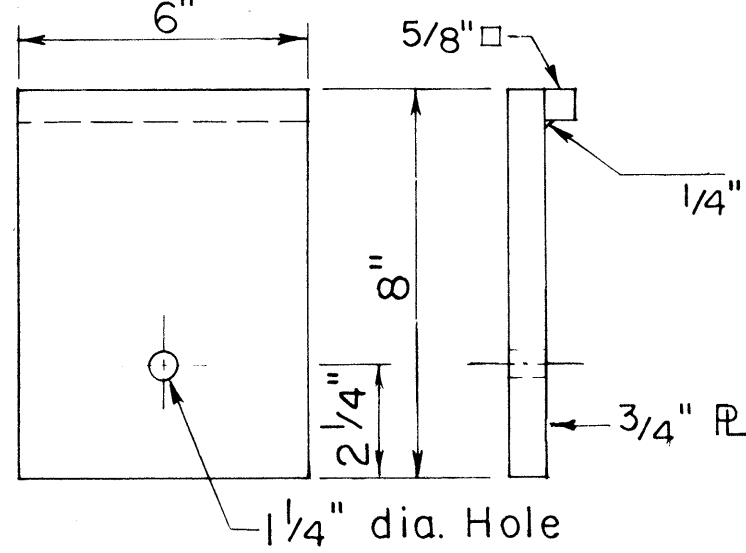
FRONT ELEVATION



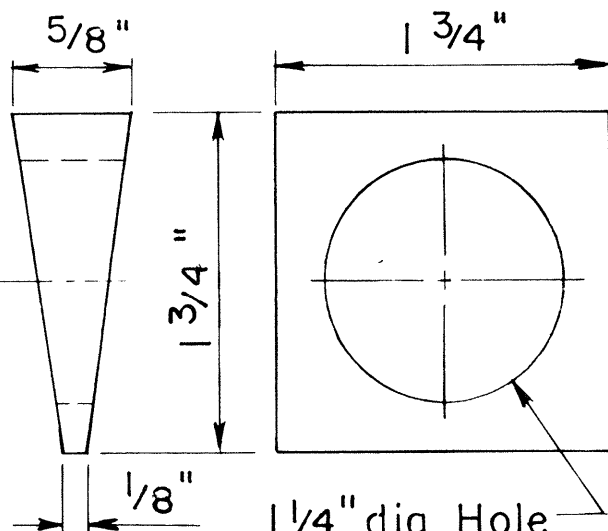
BASE PLATES A & B
Scale: 3" = 1'-0"



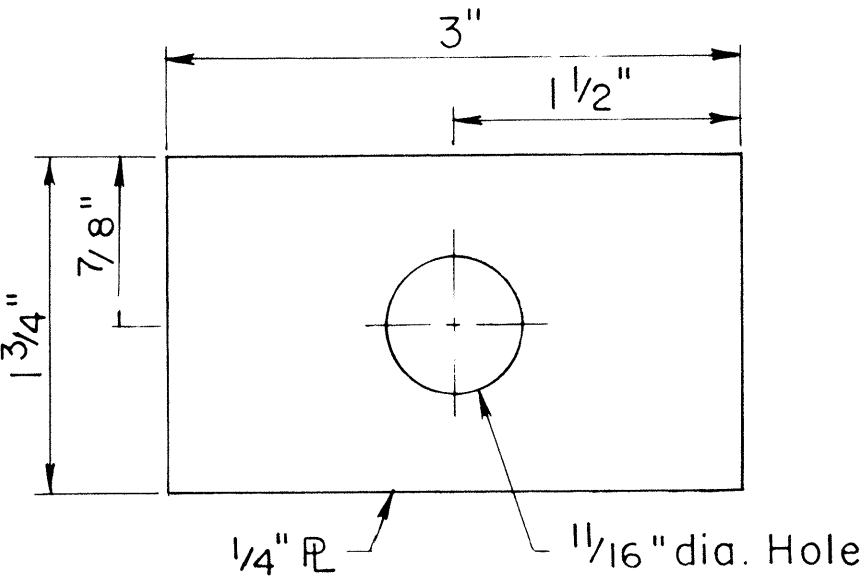
BASE PLATE C
Scale: 3" = 1'-0"



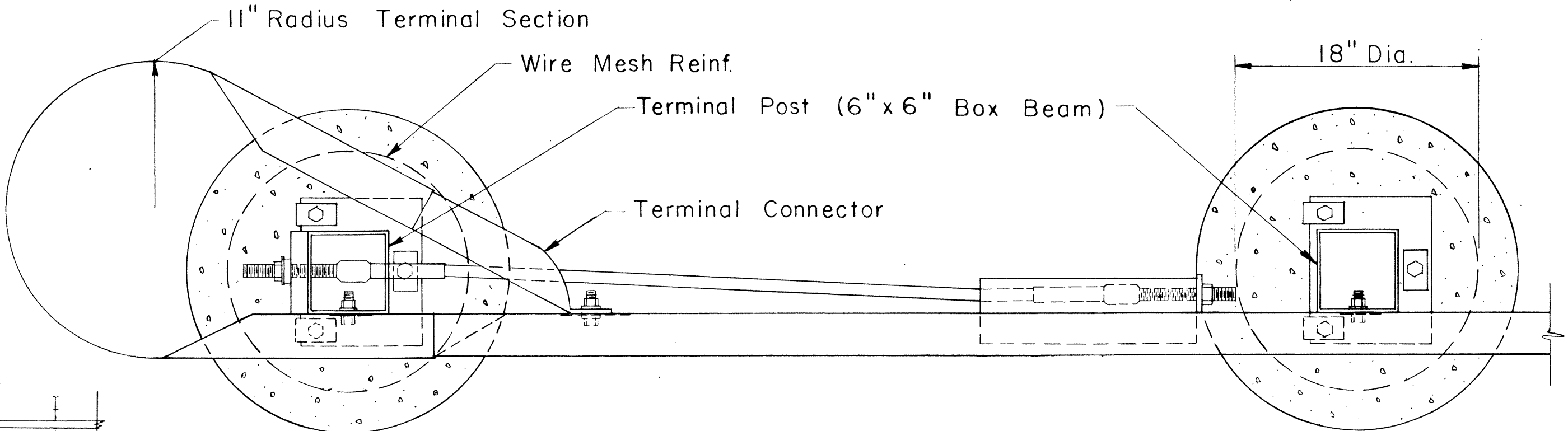
BEARING PLATE
Scale: 3" = 1'-0"



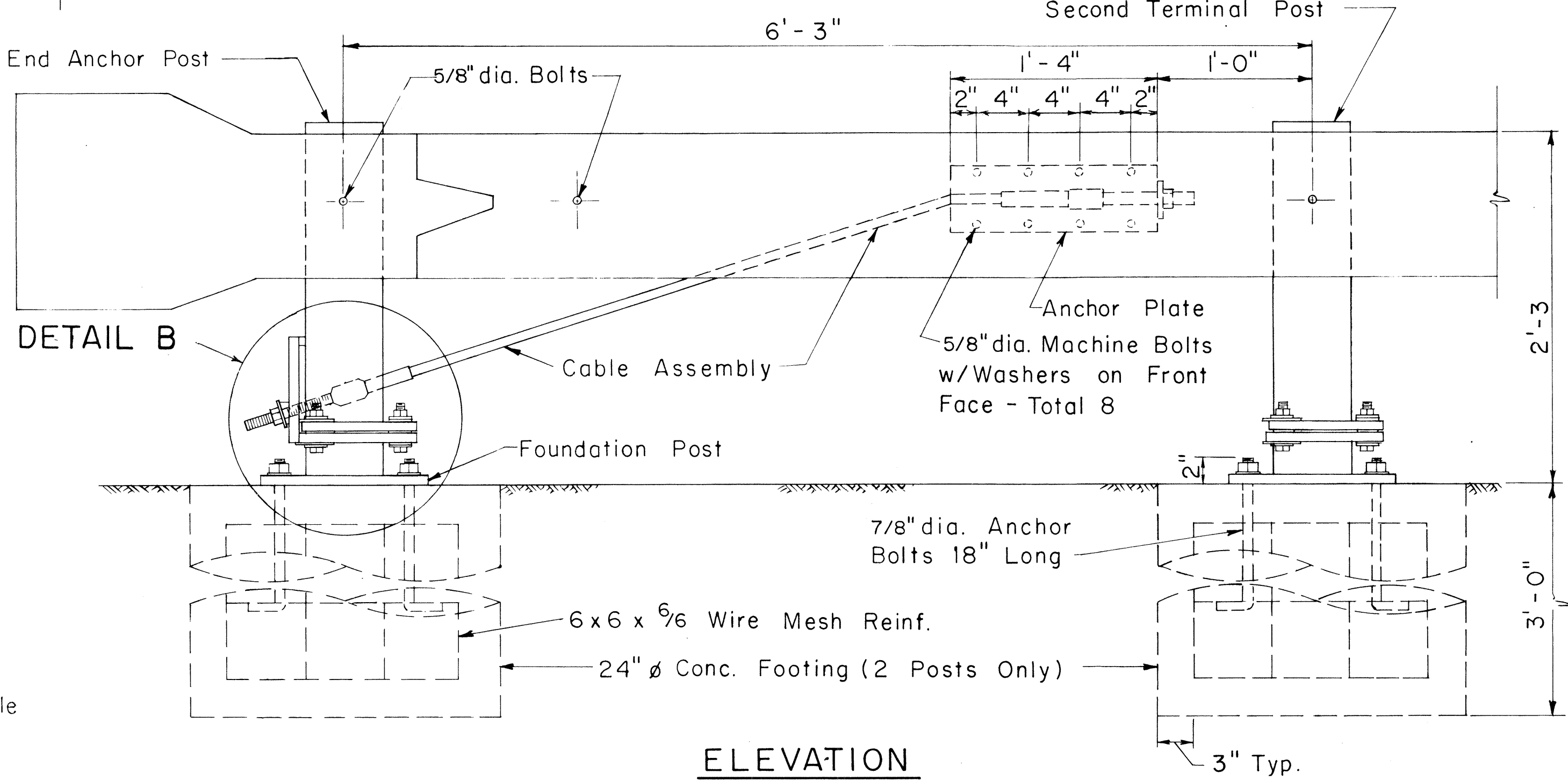
TAPERED WASHER
Scale: Full Size



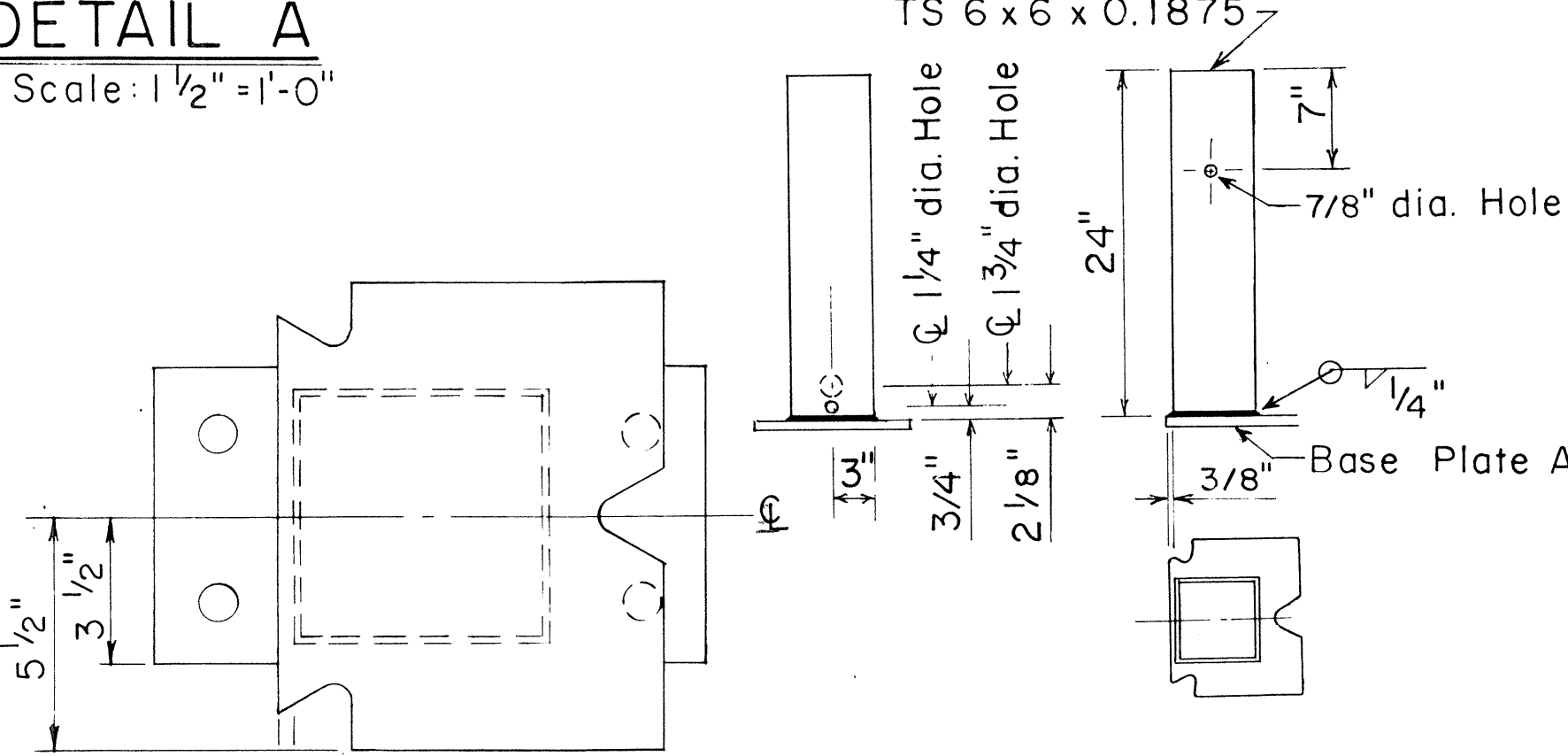
FLAT PLATE WASHER
Scale: Full Size



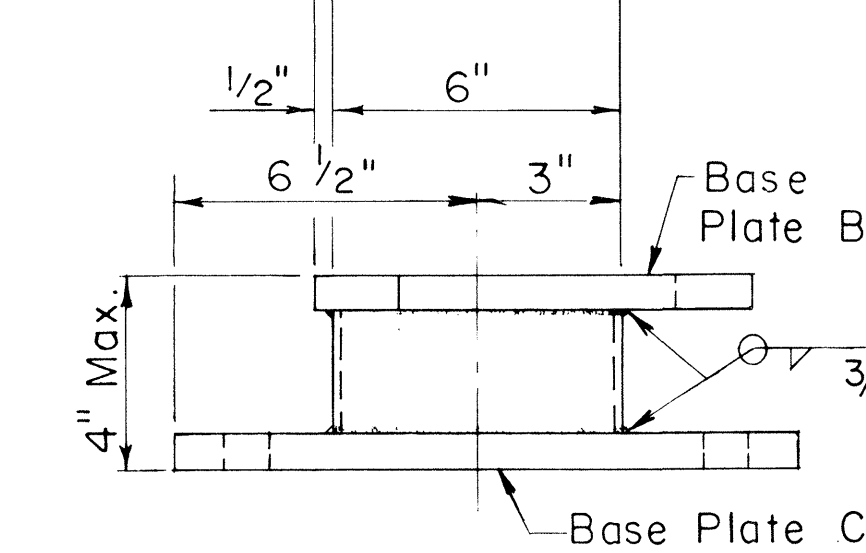
PLAN



ELEVATION
DETAIL A
Scale: 1 1/2" = 1'-0"



TERMINAL POST
Scale: 1" = 1'-0"

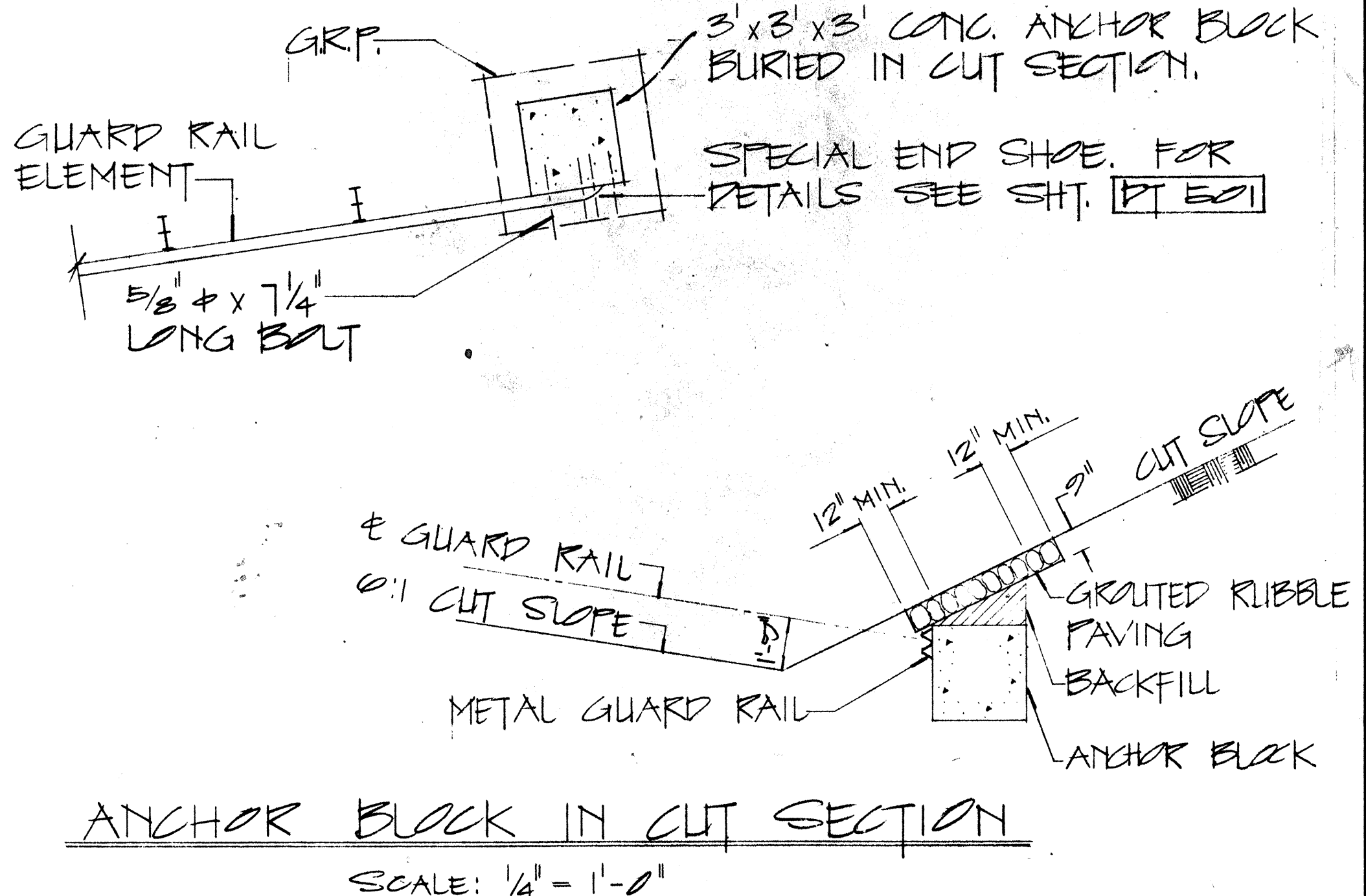
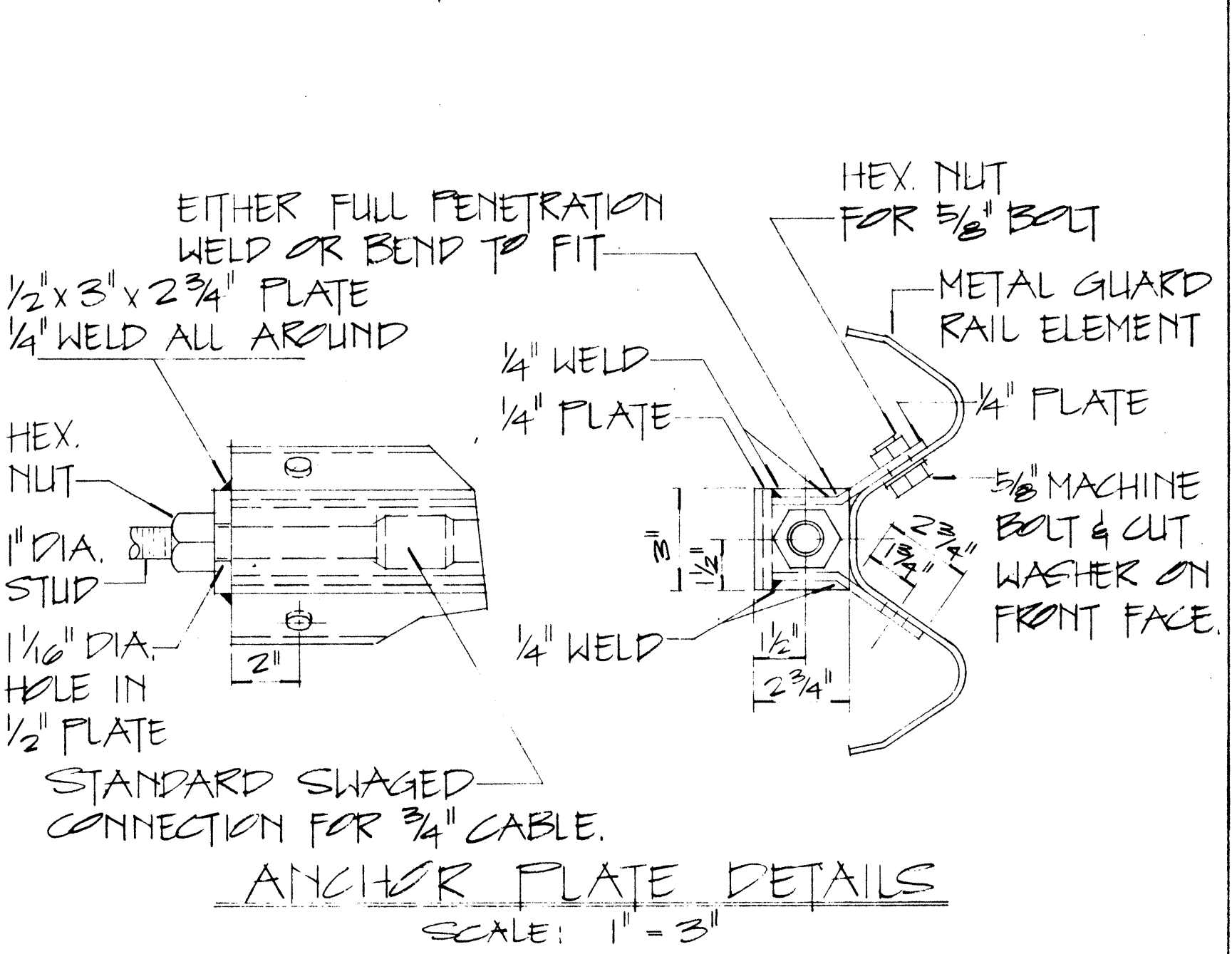
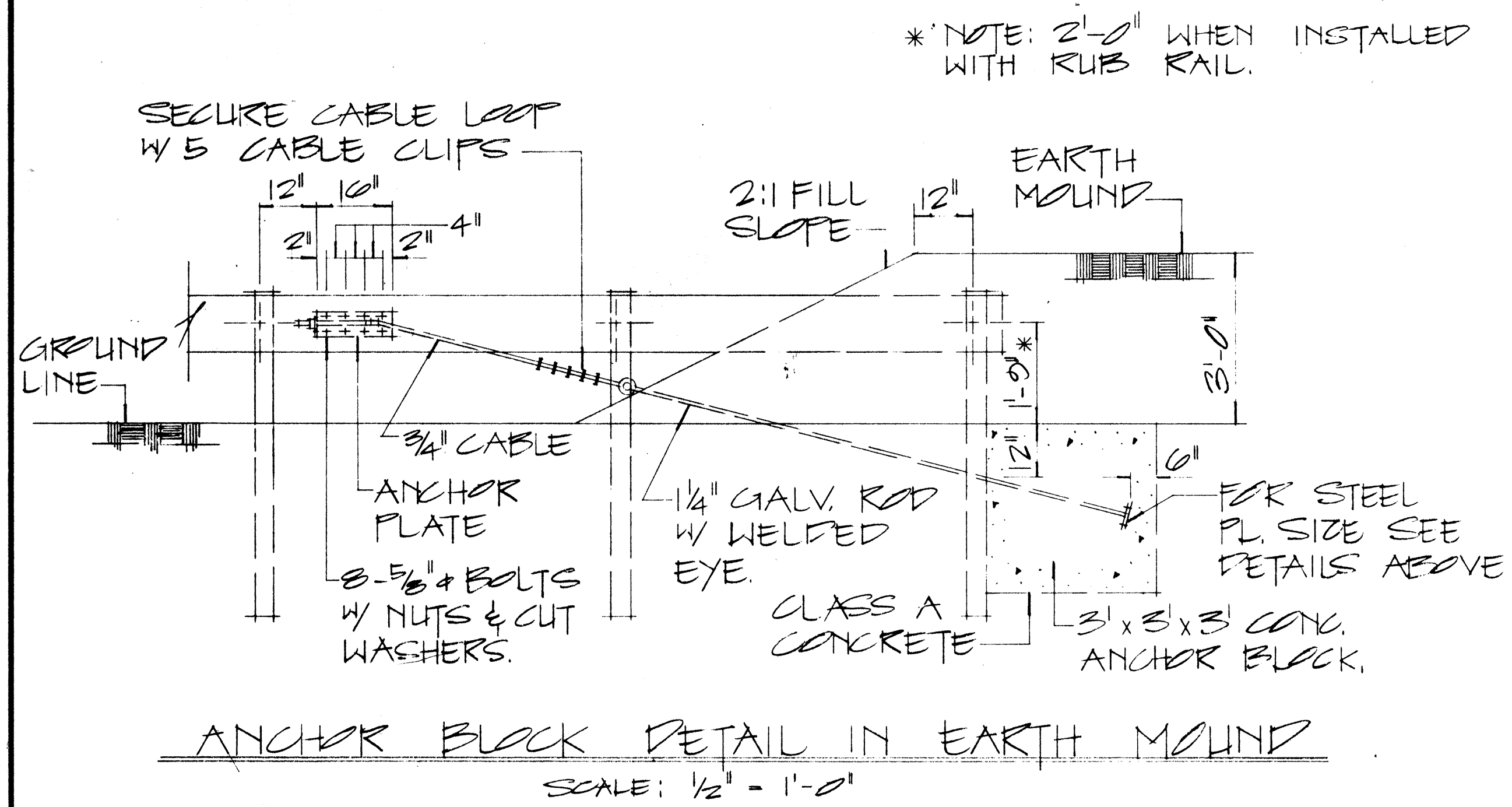
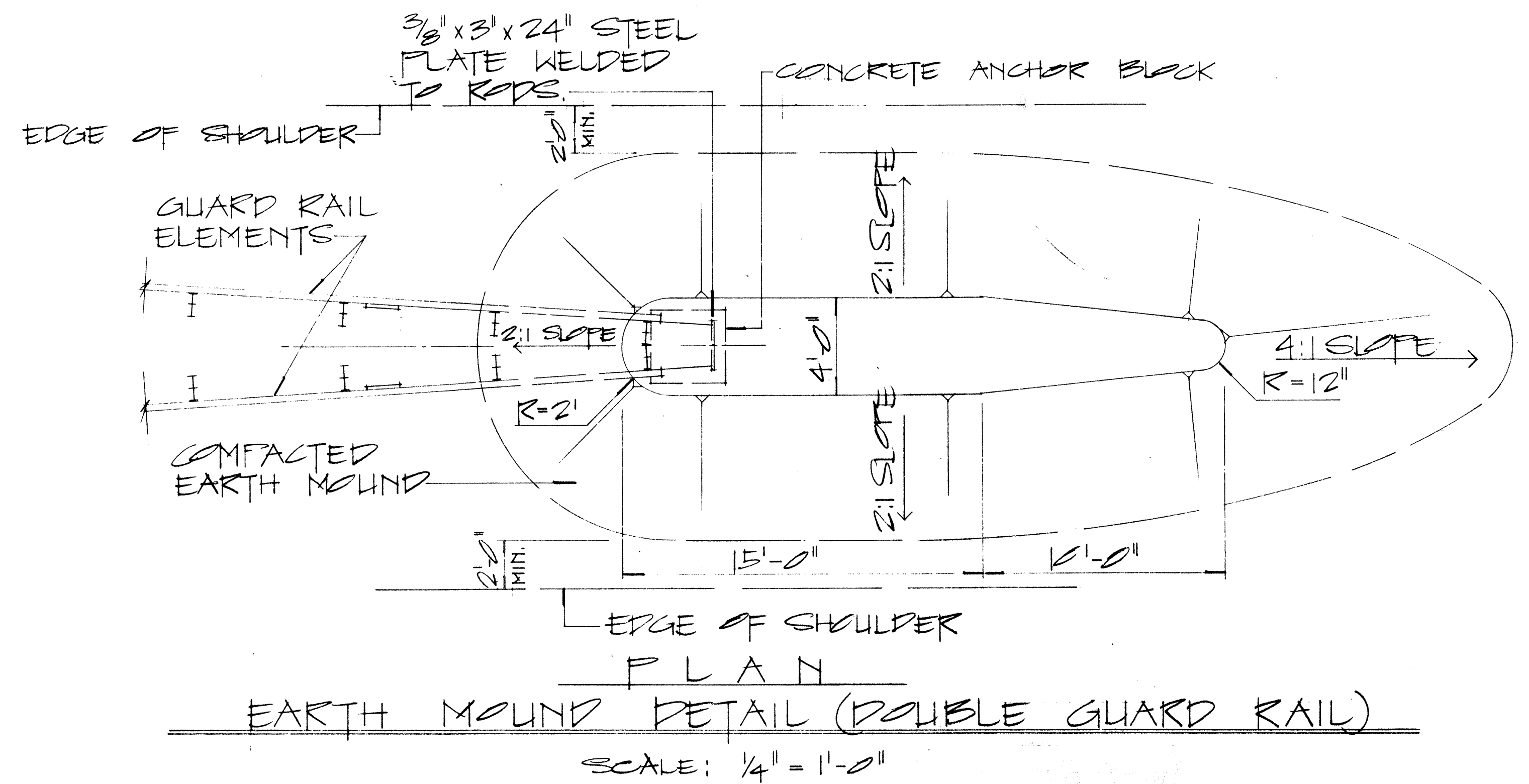
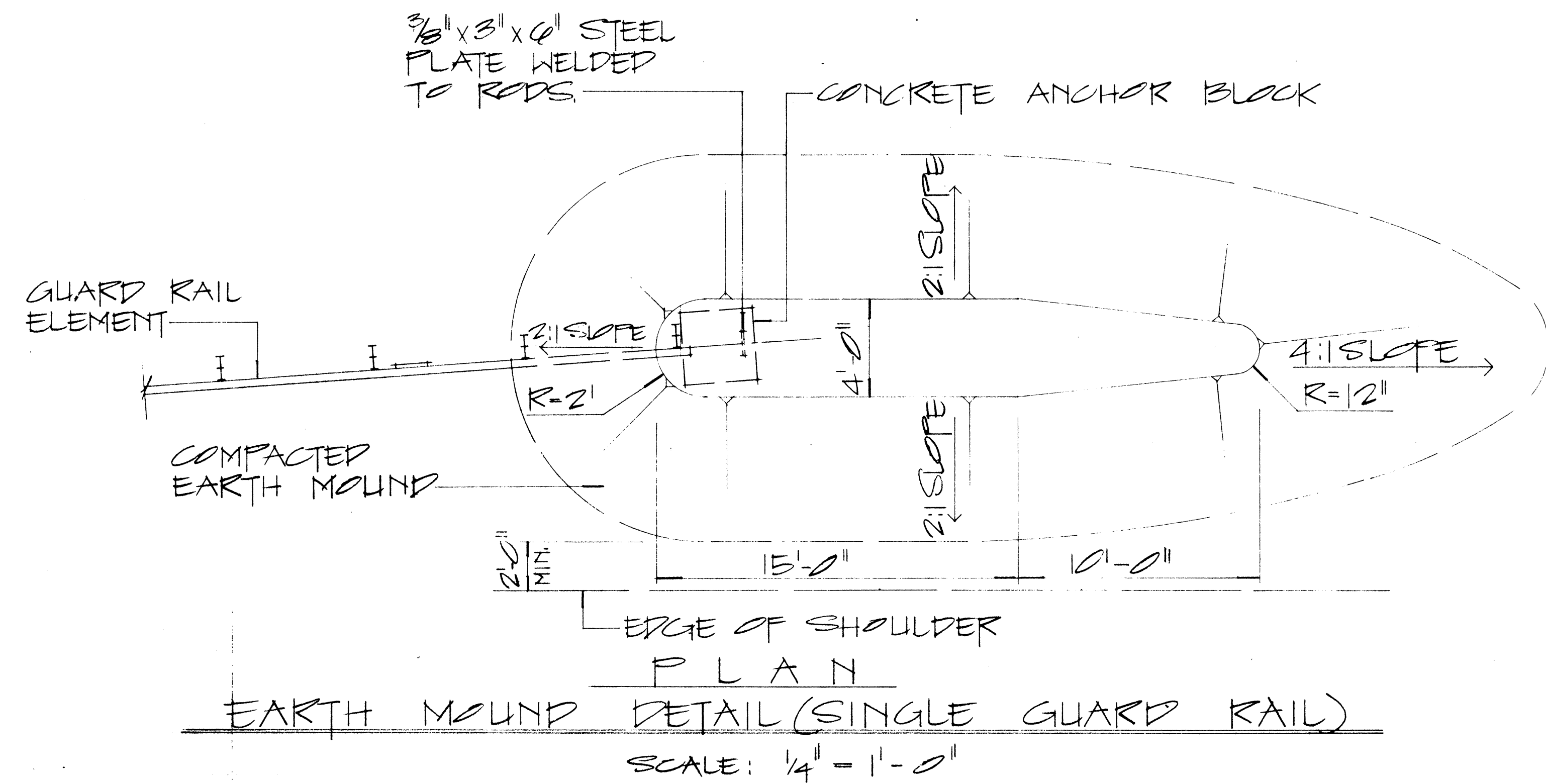


FOUNDATION POST
Scale: 3" = 1'-0"

NO.	REVISION	APPROVED BY	DATE
1	Supersedes Sht. DT 519 Approved 12/30/69	H.T.	6/15/78
2	Added Note 6	H.T.	12/1/80
3	Eliminated requirement of 25' rail	NO	1-31-85

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
DESIGNED BY	DRAWN BY	
CHECKED BY	TRACED BY	
NO.	NOTED BY	

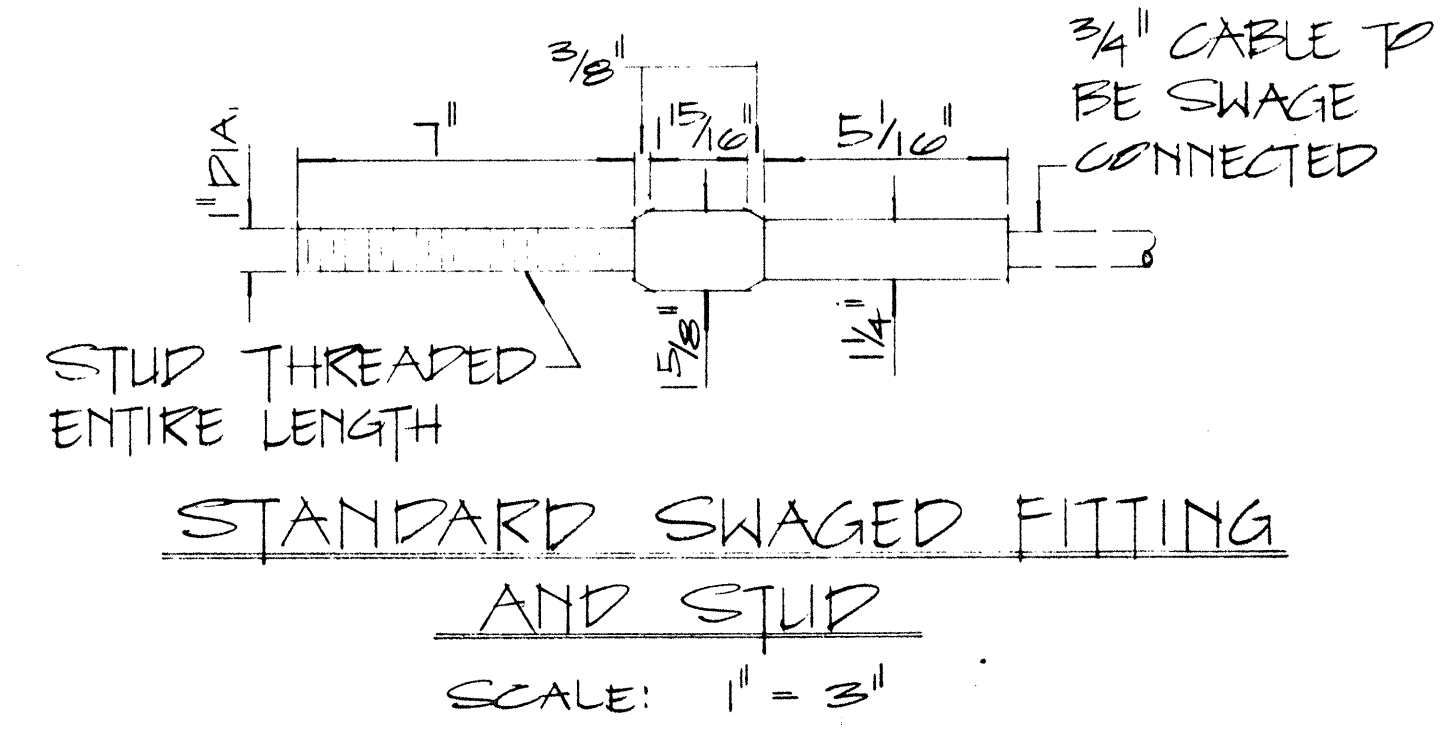
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HS099-1(8)	1985	23	43



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: *Eishi Tanaka* 12/22/69
TRAFFIC ENGINEER DATE

APPROVED: *[Signature]* 12-30-69
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 OCT 1969

SHEET No. 6 OF 6 SHEETS PT 520

DATE: _____

DESIGNED BY: _____

CHECKED BY: _____

NOTED BY: _____

ORIGINAL PLAN: _____

NOTE BOOK: _____

NO. _____