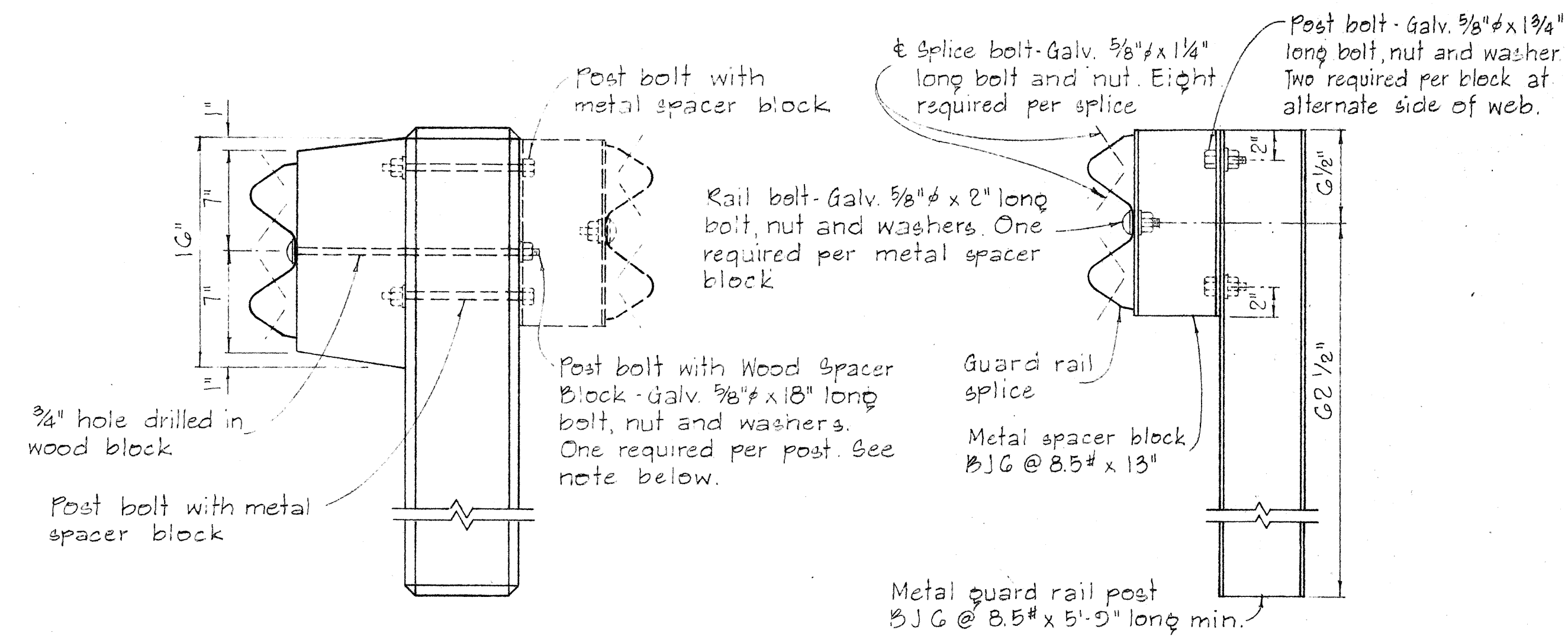
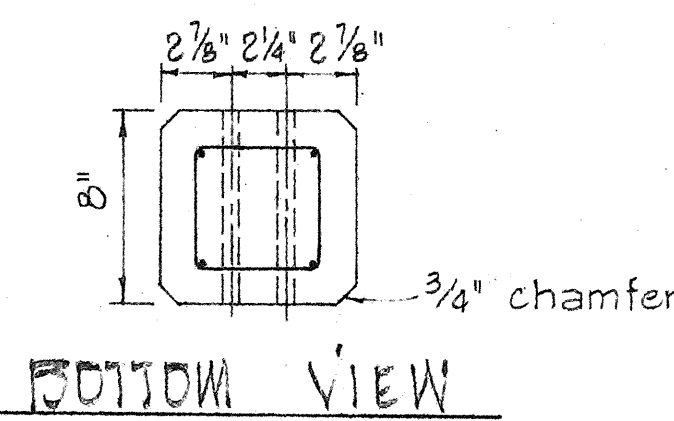
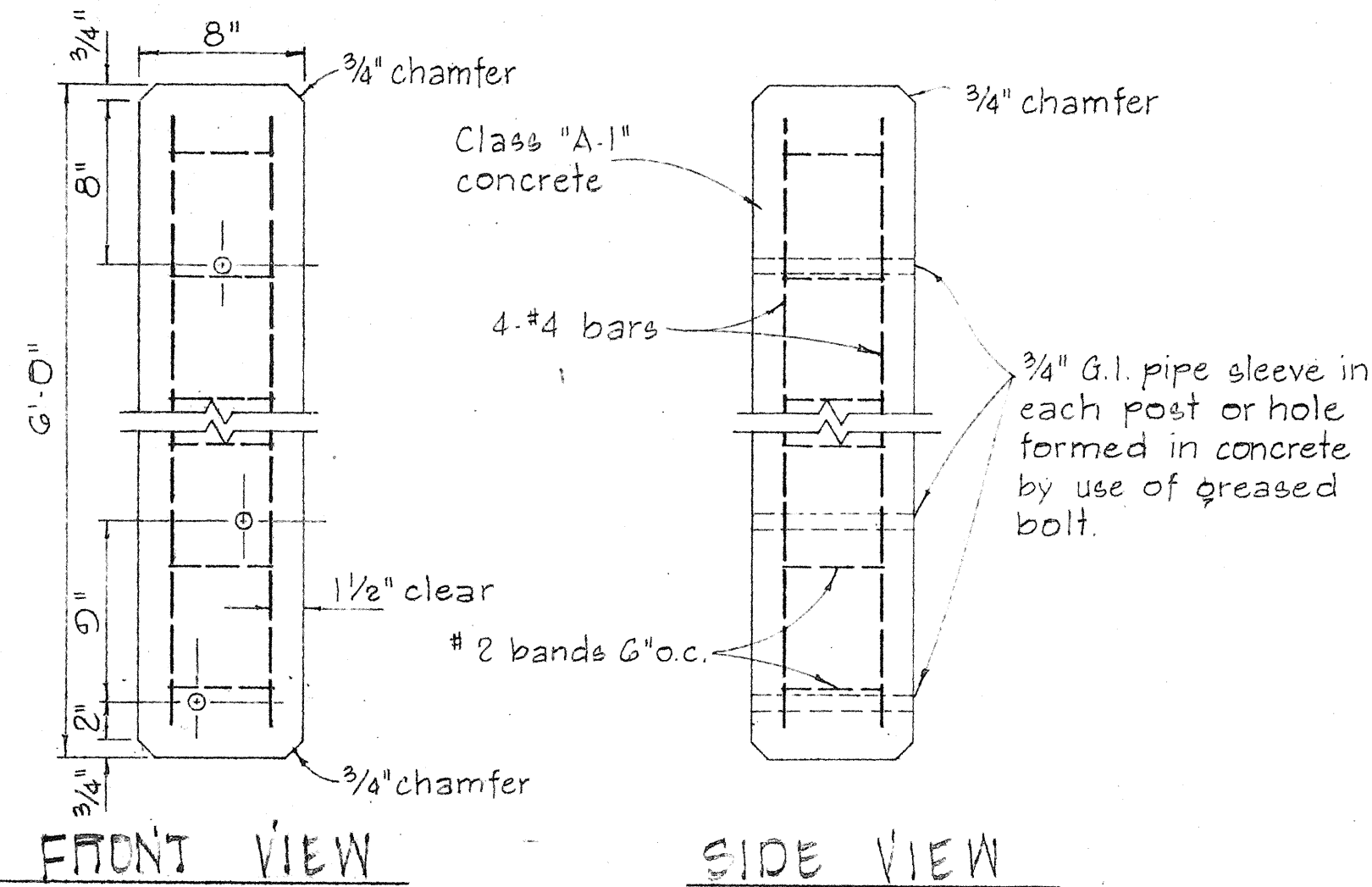
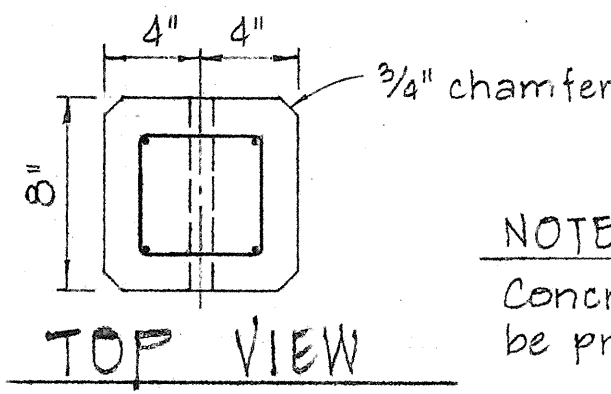
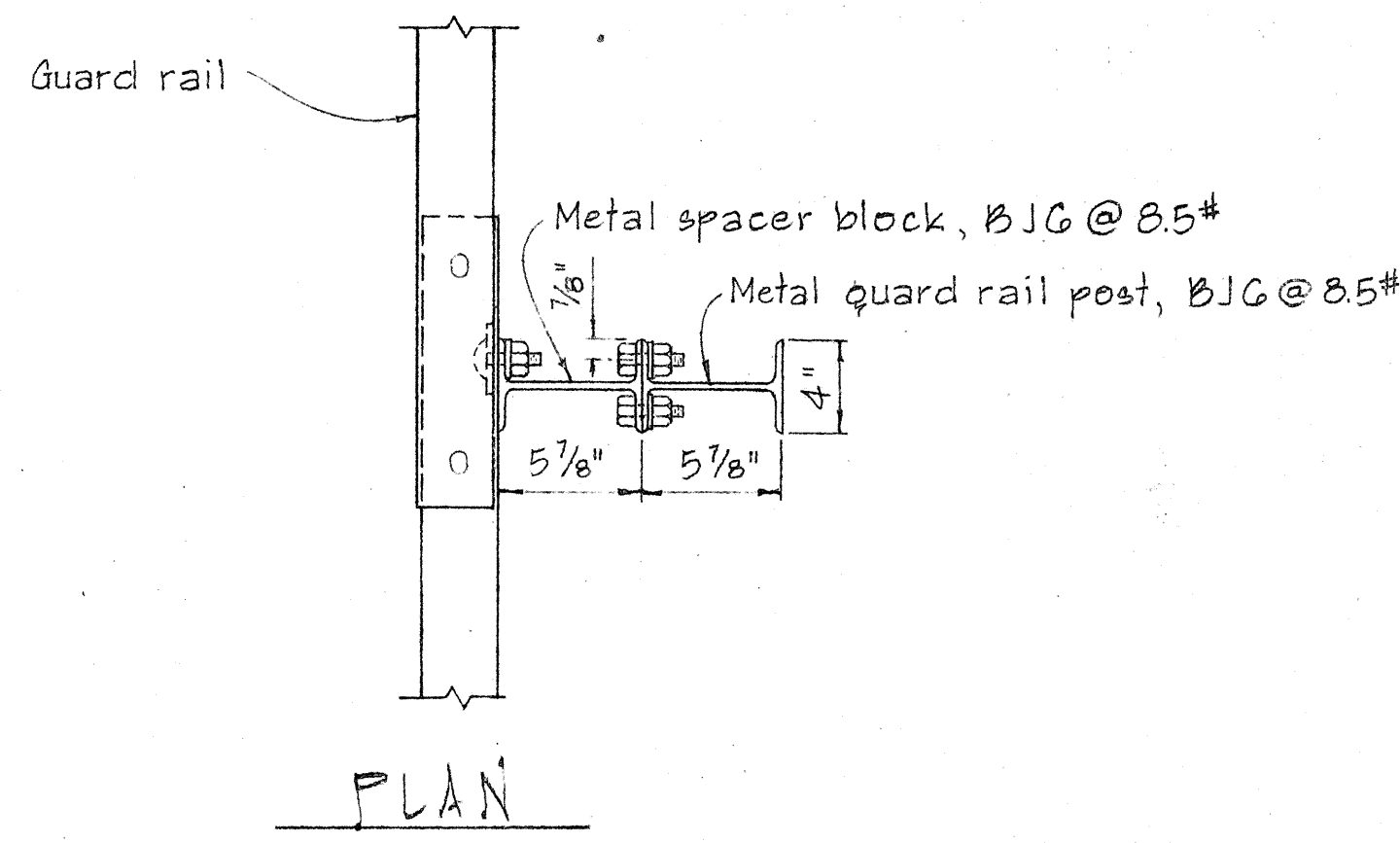
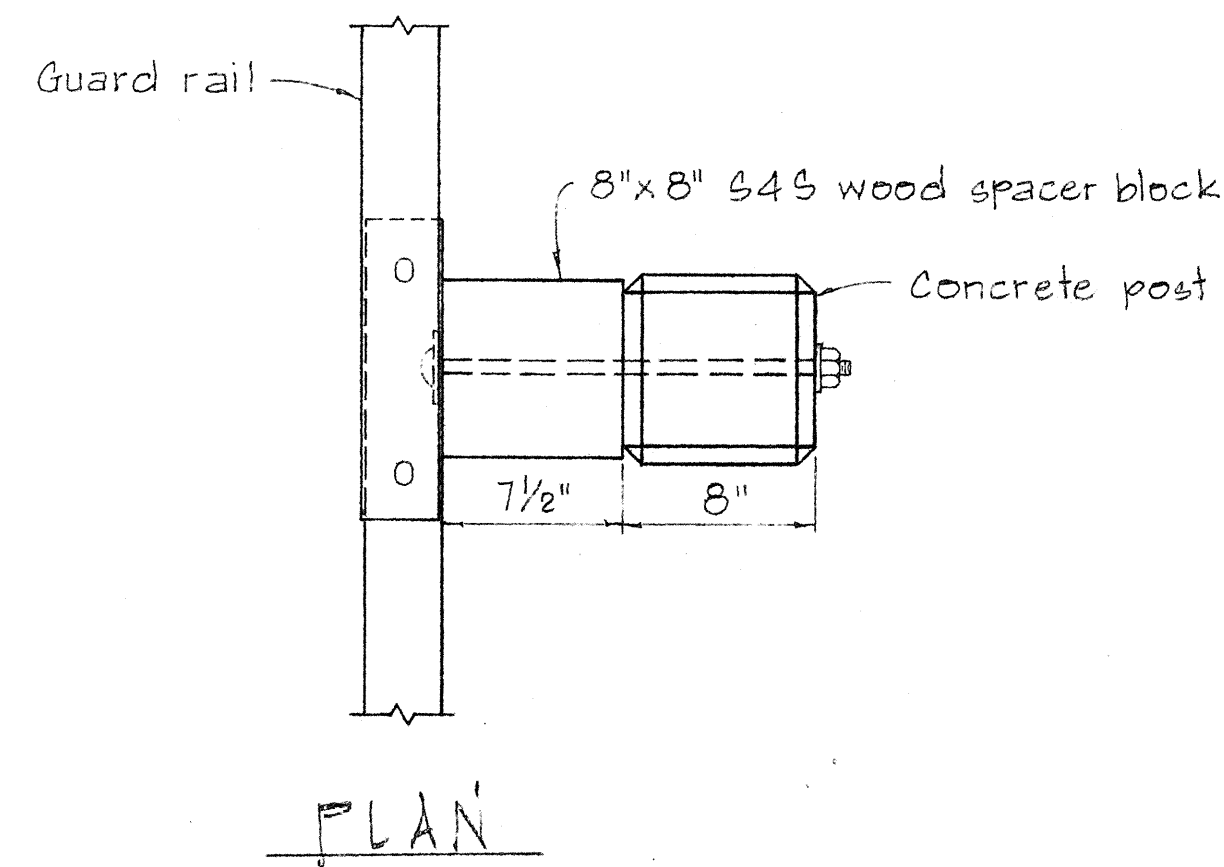
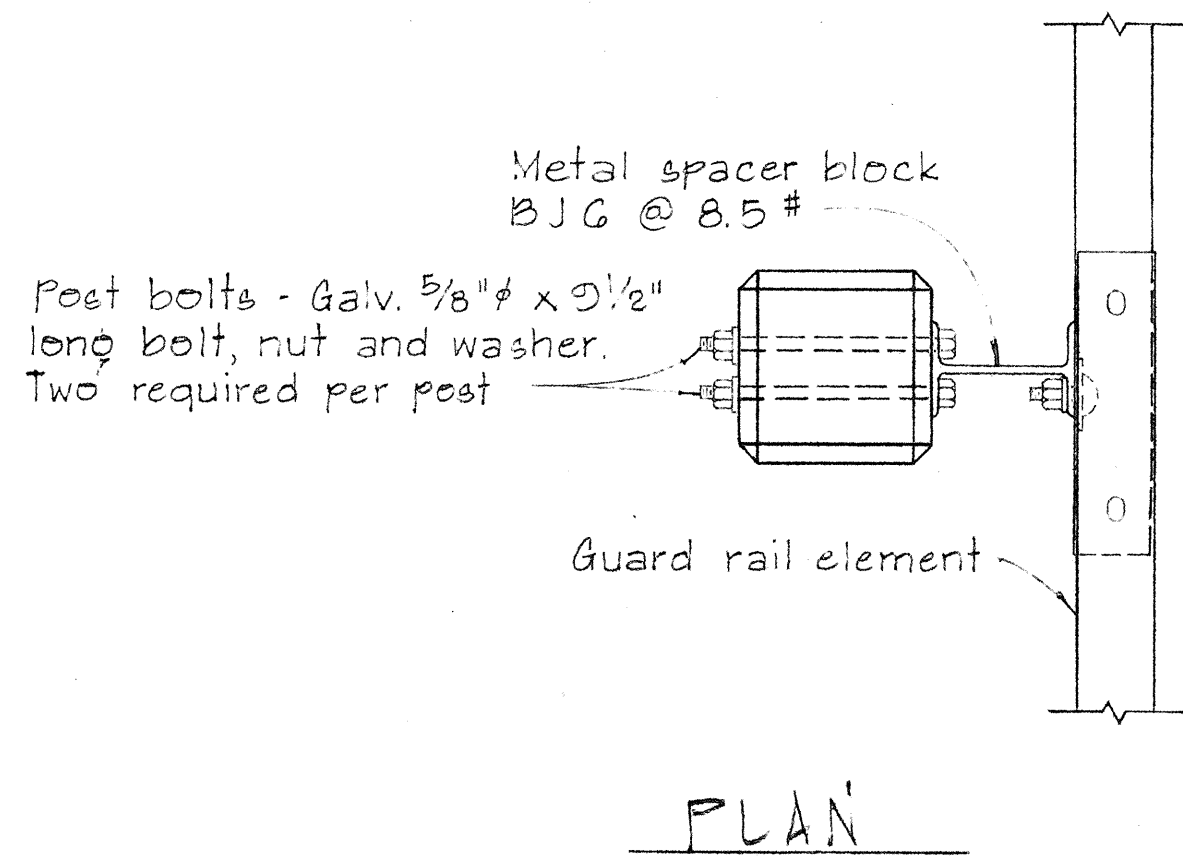


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(6)B	1968	58	144

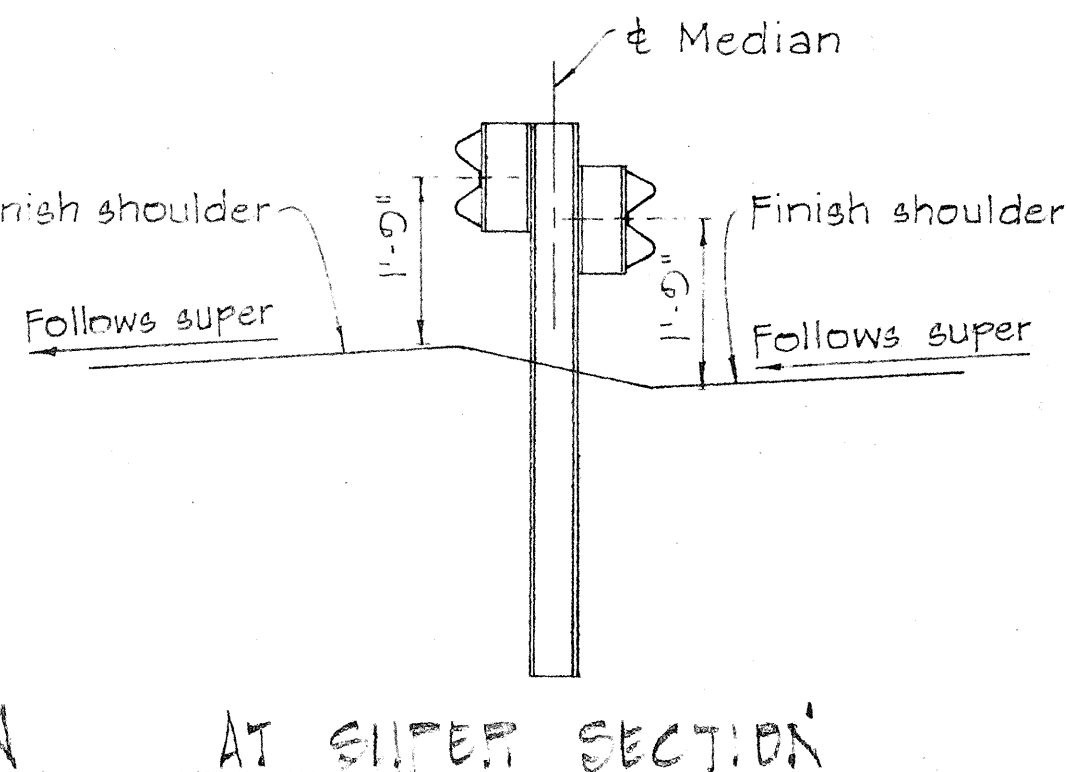
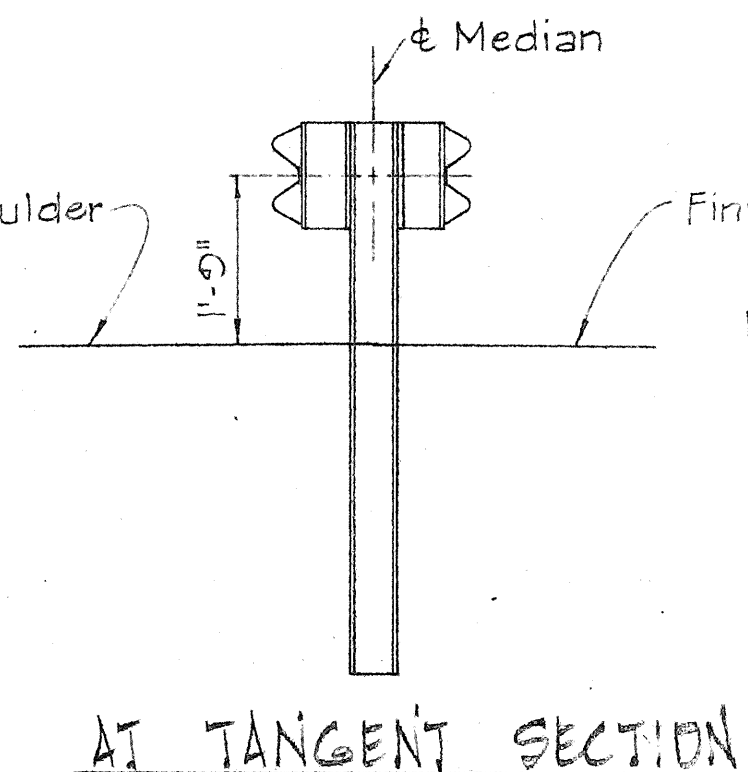
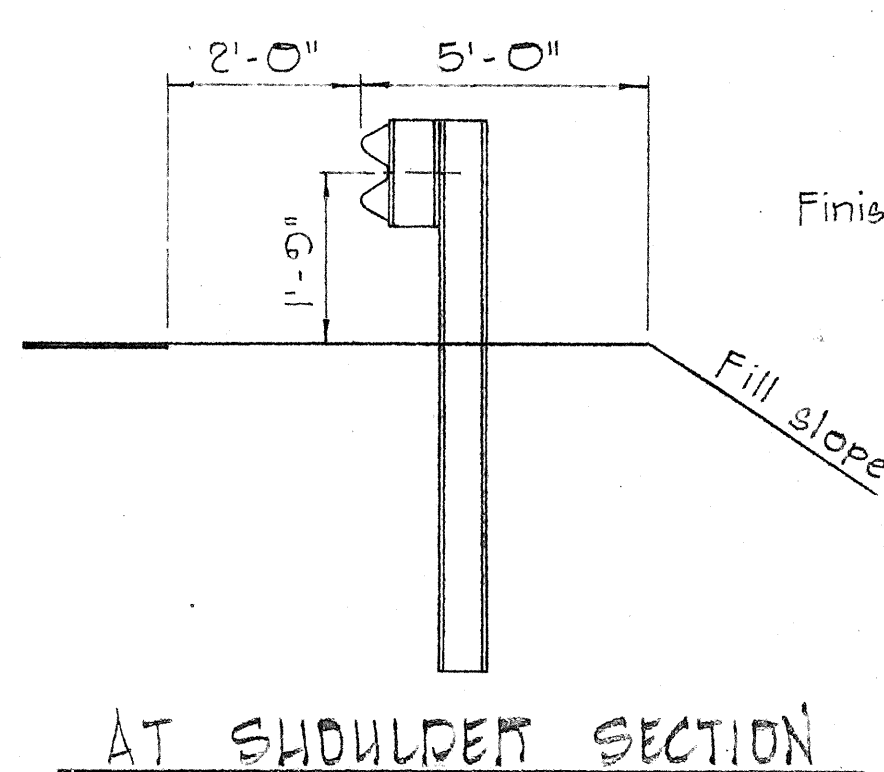


SINGLE METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK
SCALE: 1 1/2" = 1'-0"

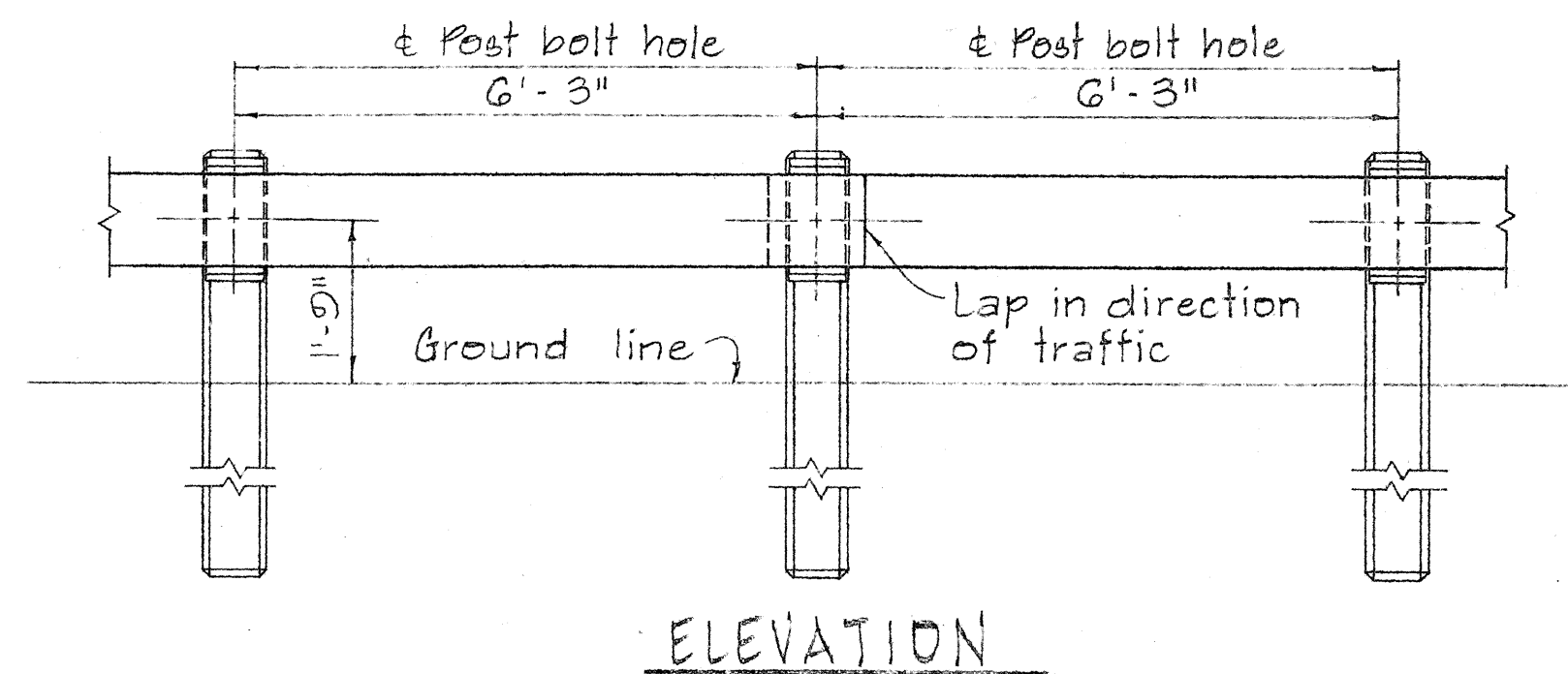
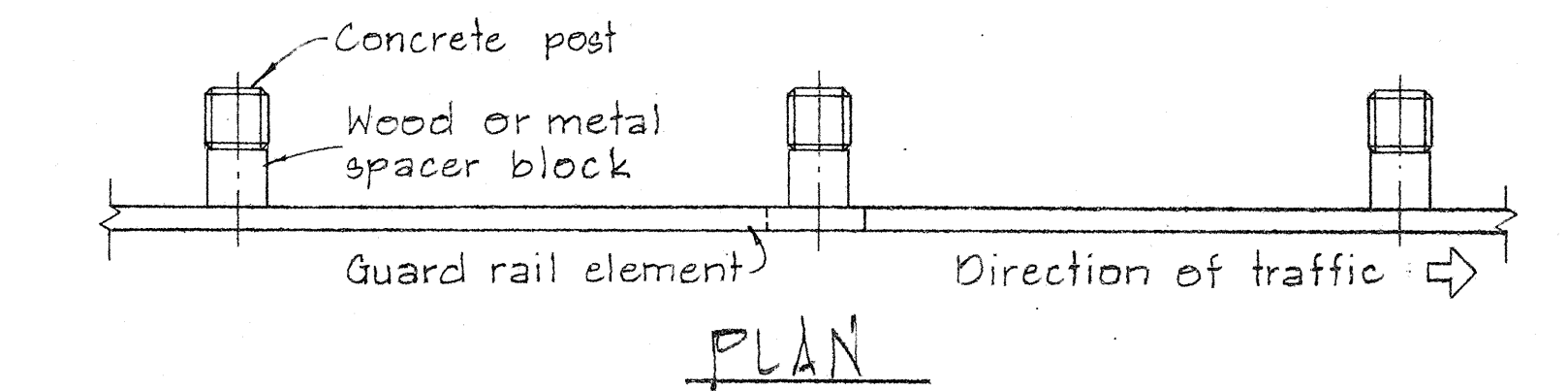
DETAIL OF CONCRETE POST
SCALE: 1 1/2" = 1'-0"



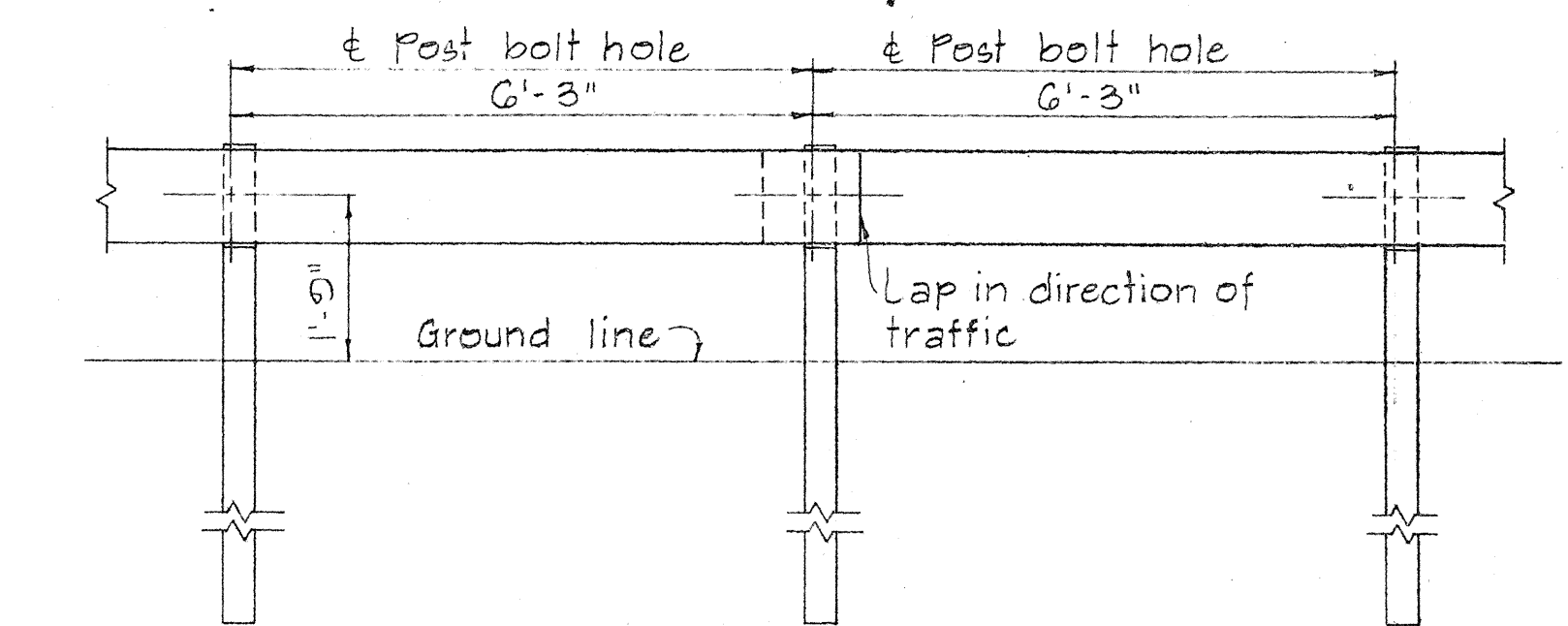
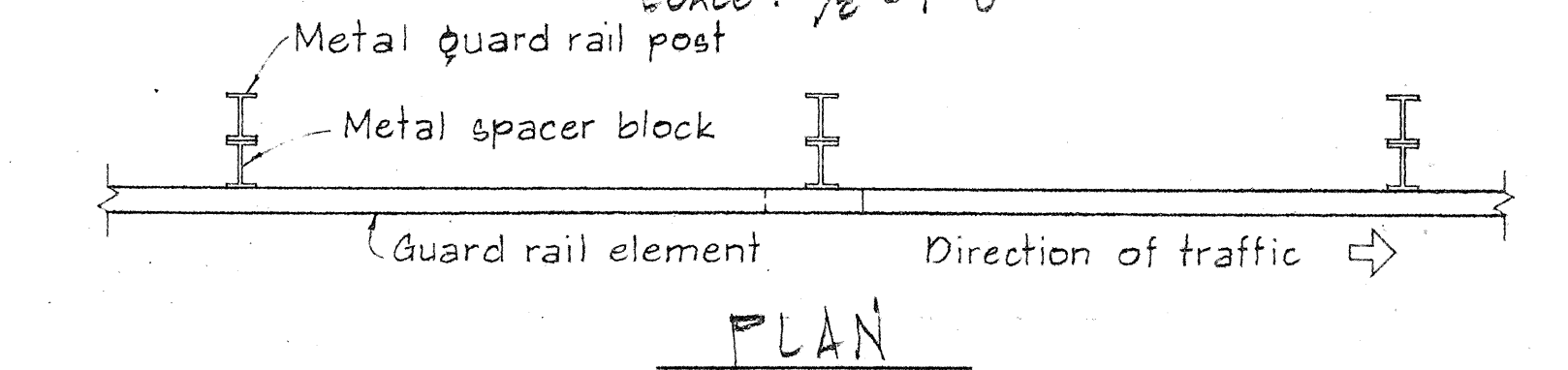
SINGLE METAL GUARD RAIL ON PRECAST CONCRETE POST WITH WOOD OR METAL SPACER BLOCK
SCALE: 1 1/2" = 1'-0"



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



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"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL GUARD RAIL

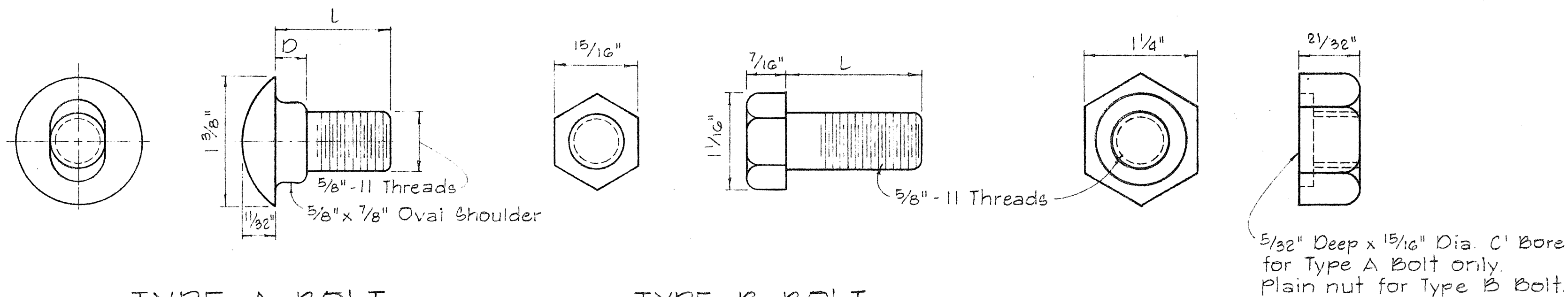
SCALE: AS SHOWN

NOV. 1968

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-11-1608	1968	59	144

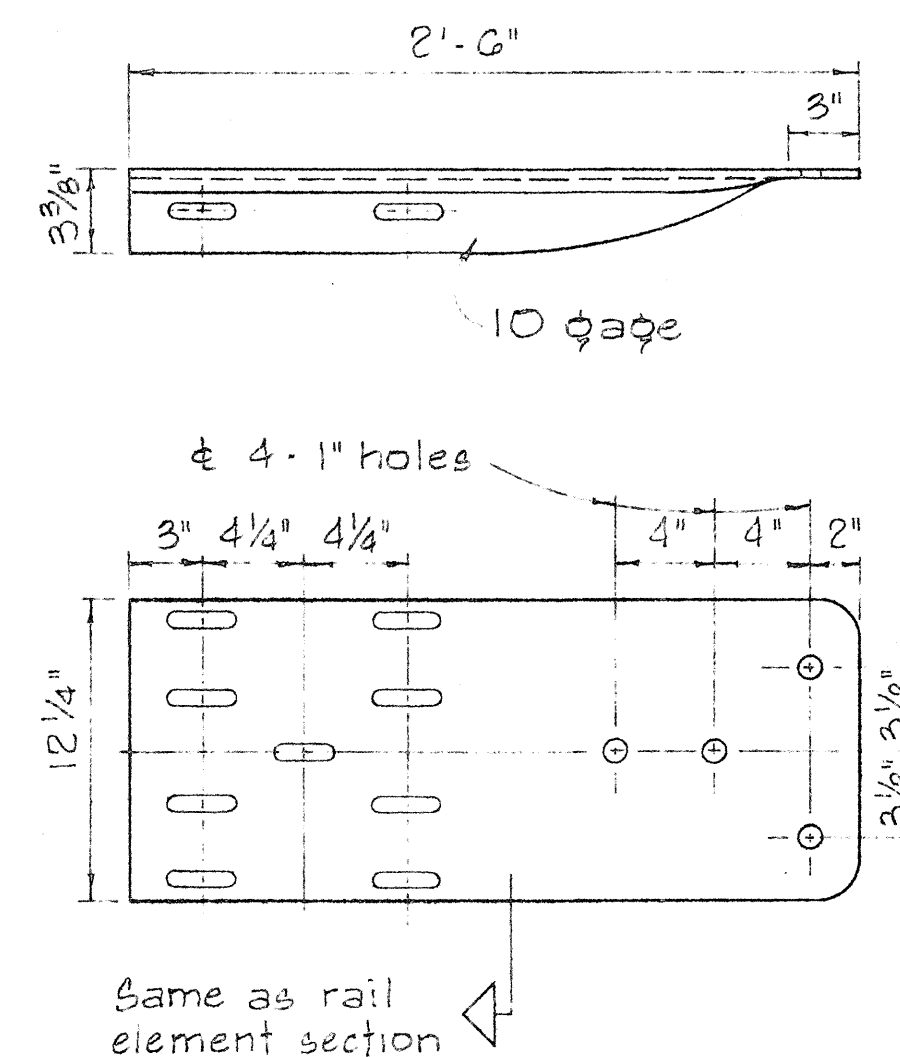
BOLT DIMENSIONS		
TYPE A BOLT		
Splice Bolt	D	L
Post Bolt for Conc. Post w/ Double Wood Blocks	5/16"	1 1/4"
Post Bolt for Conc. Post w/ Single Wood Block	3/32"	24"
Post Bolt for Conc. Post w/ Single Wood Block	3/32"	18"
Rail Bolt for Metal Block	3/32"	2"

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

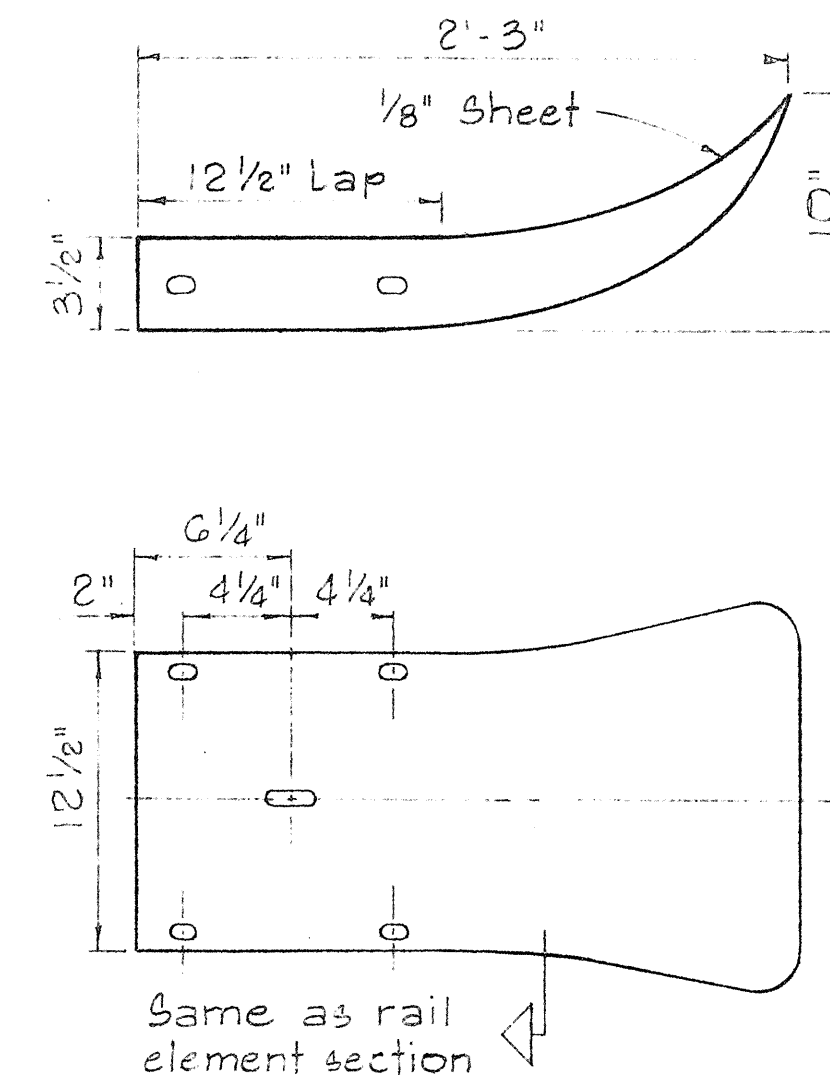


TYPE A BOLT
SPUCE RAIL AND POST BOLTS
Scale: Full Size

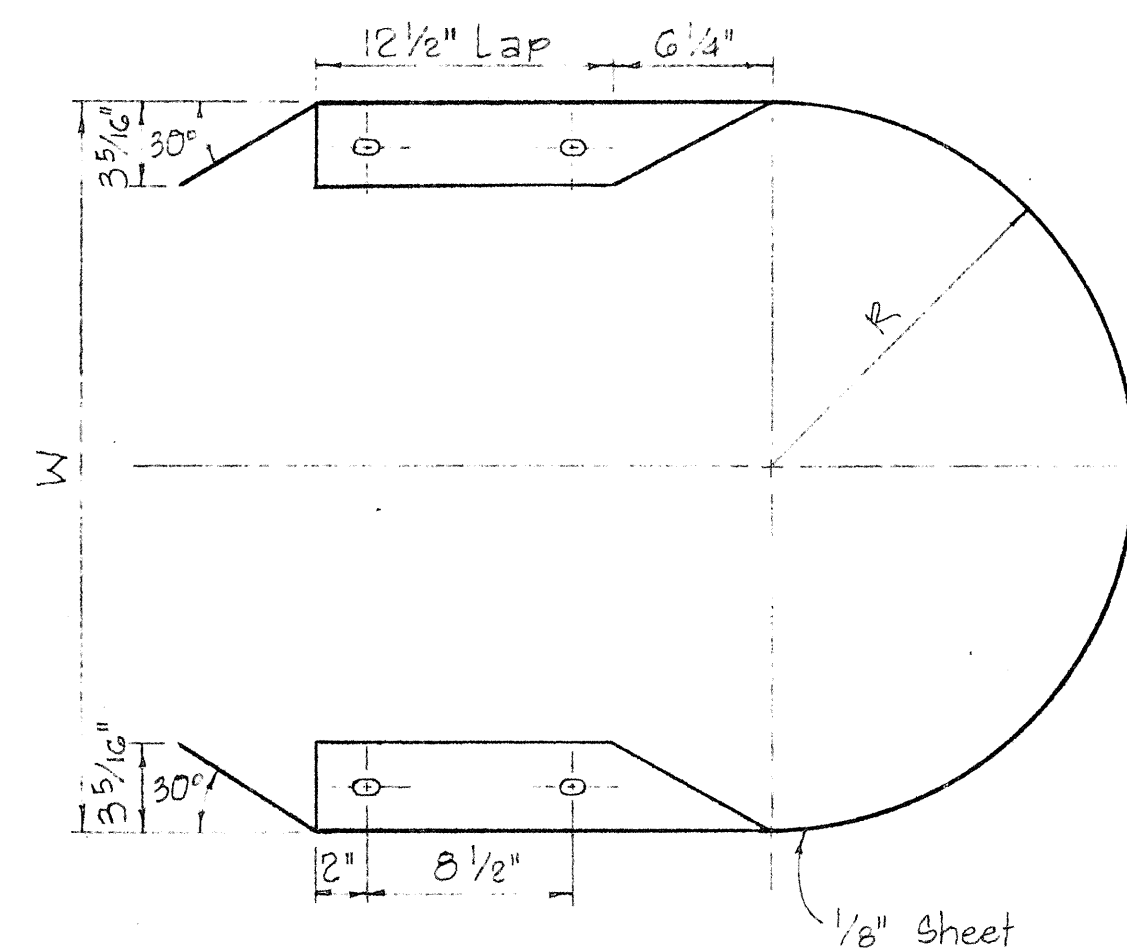
HEXAGON NUT
Scale: Full Size



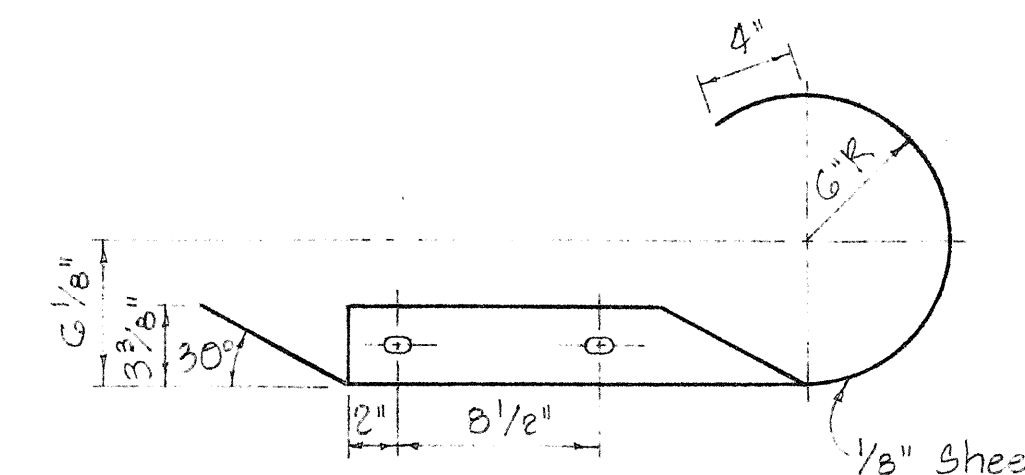
SPECIAL END SHOE
Scale: 1 1/2" = 1'-0"



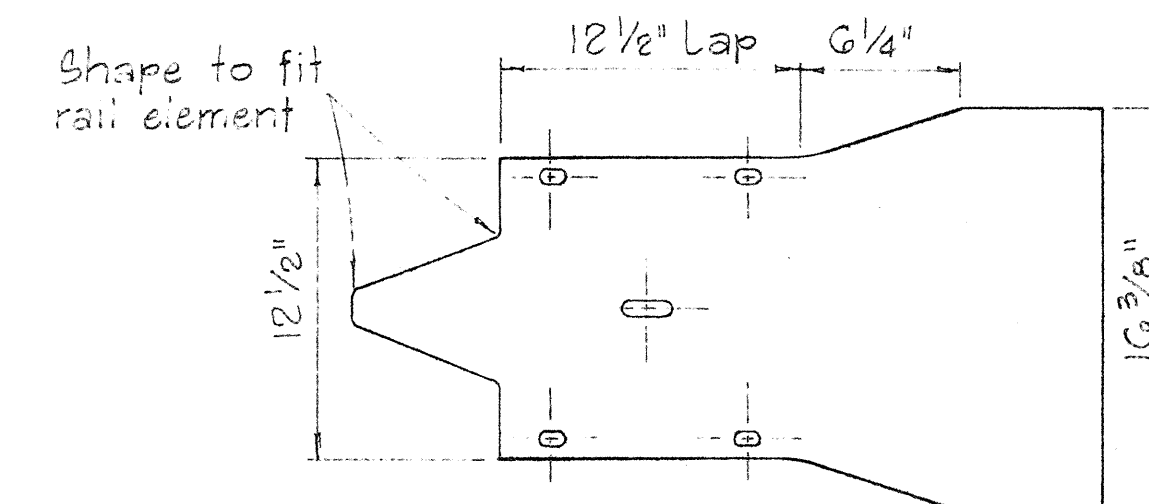
FLARED END
Scale: 1 1/2" = 1'-0"



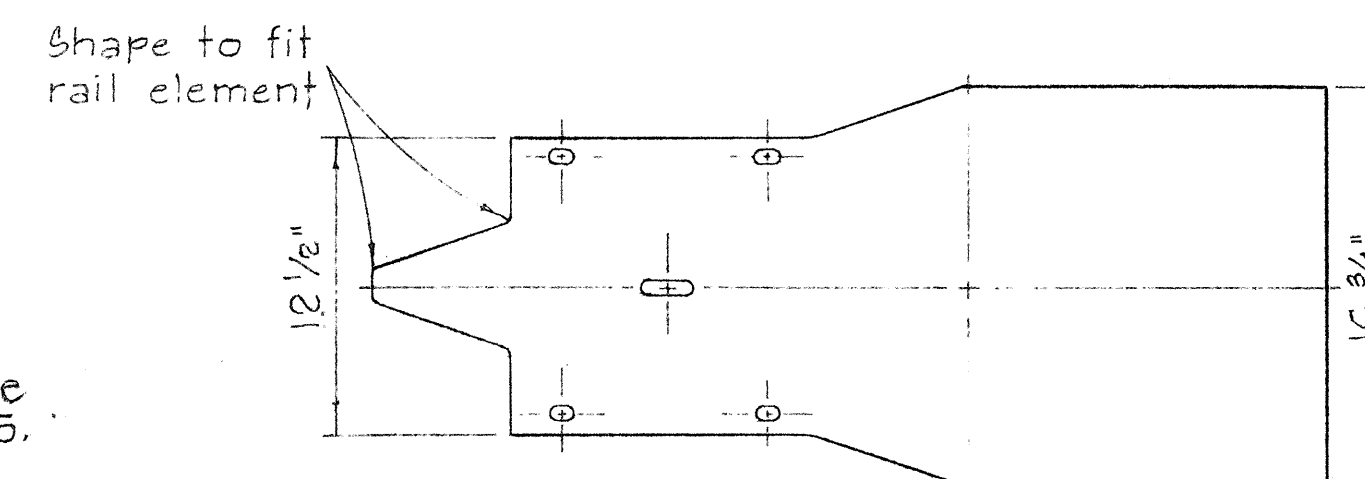
MEDIAN END
Scale: 1 1/2" = 1'-0"



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



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



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

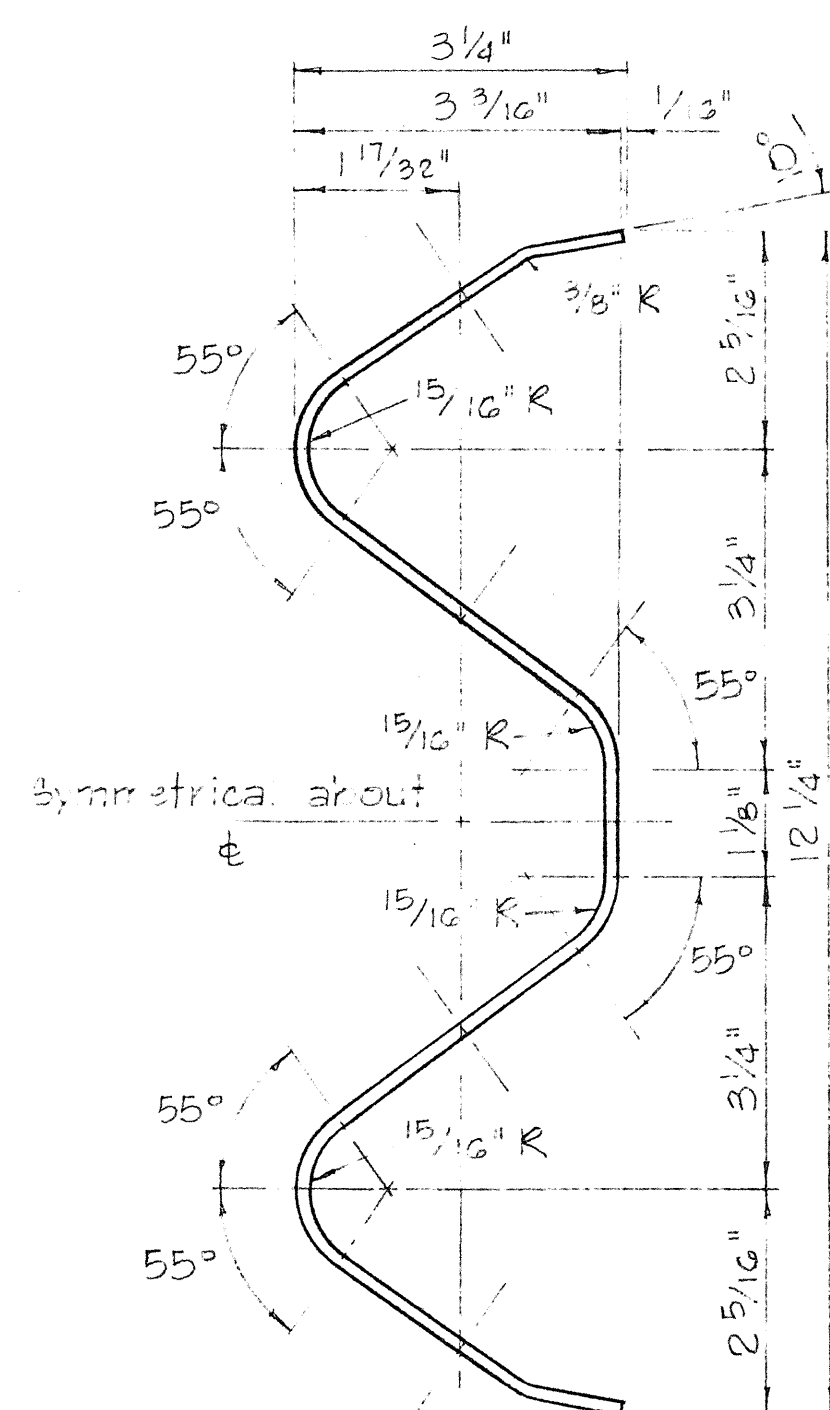
MEDIAN END DIMENSIONS		
TYPE OF POST AND BLOCK	W	R
Double Metal Guard Rail on Concrete Post with Wood Blocks	20 3/4"	14 7/8"
Double Metal Guard Rail on Concrete Post with Metal Blocks (BJG)	20 1/2"	13 1/4"
Double Metal Guard Rail on Metal Post with Metal Blocks (BJG)	24 3/8"	12 3/16"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

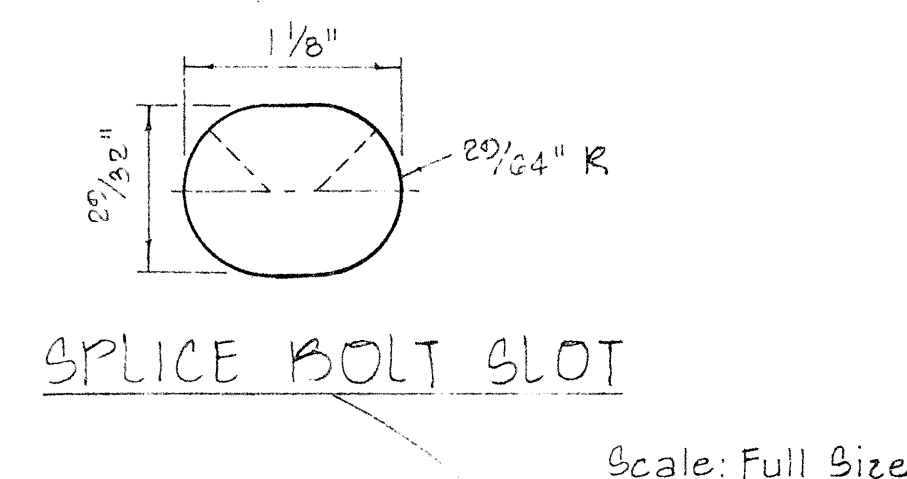
STANDARD DETAILS METAL GUARD RAIL

Scale: As Noted August, 1968

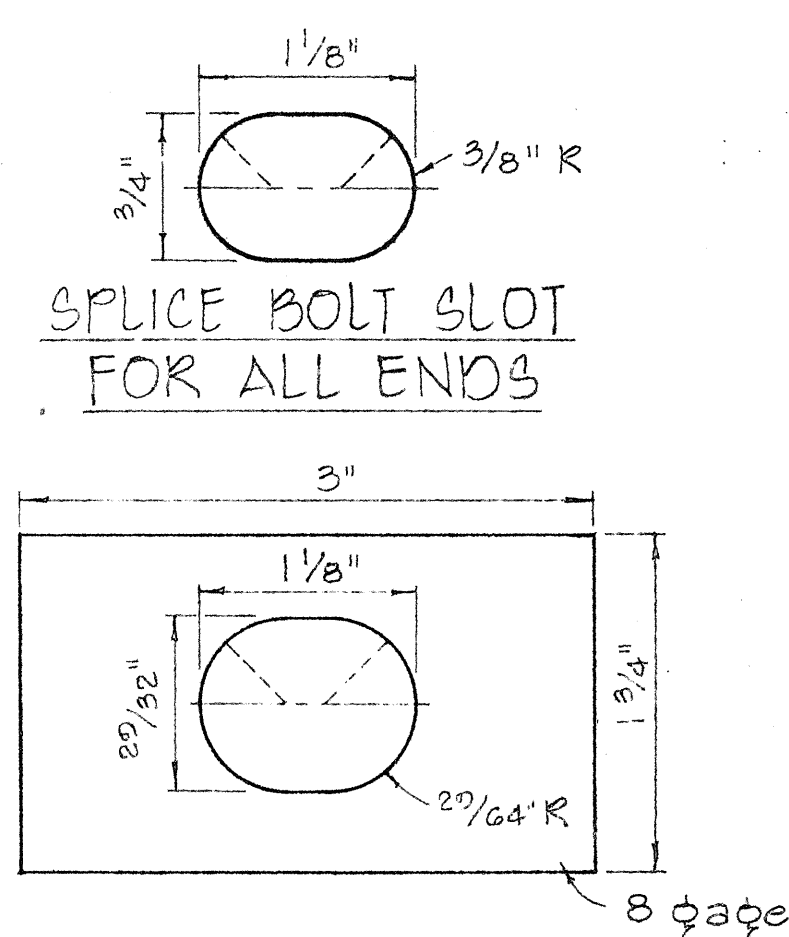
SHEET No. 2 OF 4 SHEETS DT 501



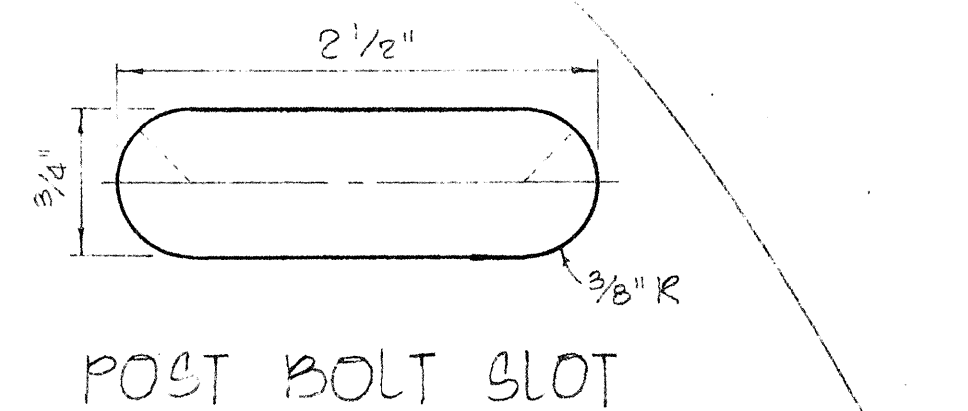
RAIL ELEMENT SECTION
Scale: 6" = 1'-0"



SPUCE BOLT SLOT
Scale: Full Size

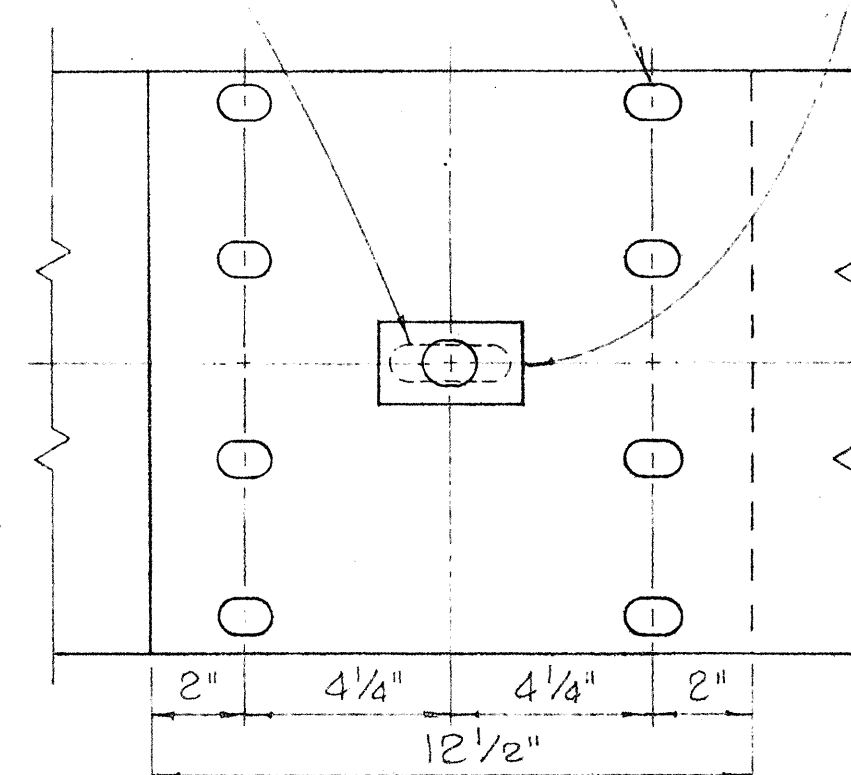


SPUCE BOLT SLOT
FOR ALL ENDS
Scale: Full Size



POST BOLT SLOT
Scale: Full Size

RAIL WASHER
Scale: Full Size



RAIL SPLICE
Scale: 3" = 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.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
TRACED BY		
DESIGNED BY		
CHECKED BY		
No.		

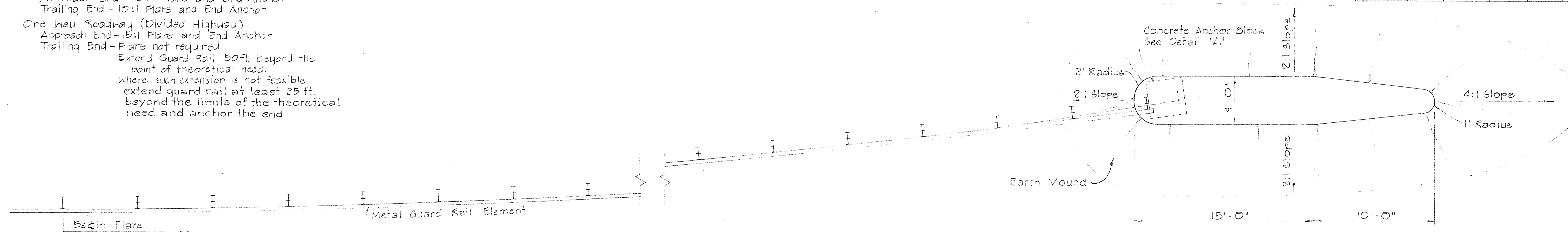
NOTE:

Two Way Roadway:
Approach End - 15:1 Flare and End Anchor
Trailing End - 10:1 Flare and End Anchor

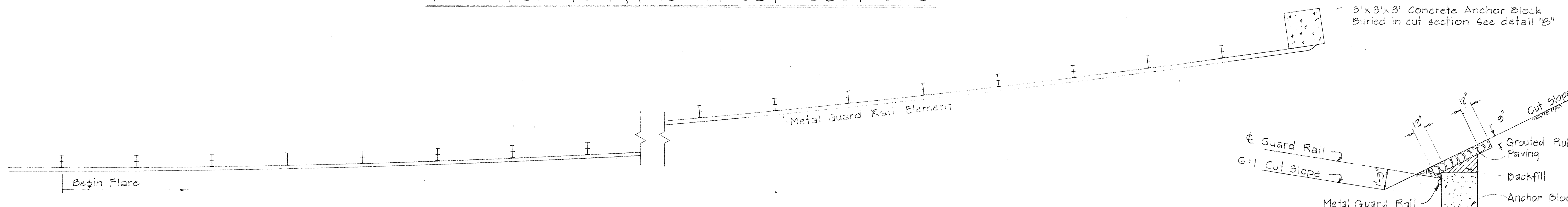
One Way Roadway (Divided Highway)
Approach End - 15:1 Flare and End Anchor
Trailing End - Flare not required

Extend Guard Rail 50 ft. beyond the point of theoretical need.
Where such extension is not feasible, extend guard rail at least 25 ft. beyond the limits of the theoretical need and anchor the end.

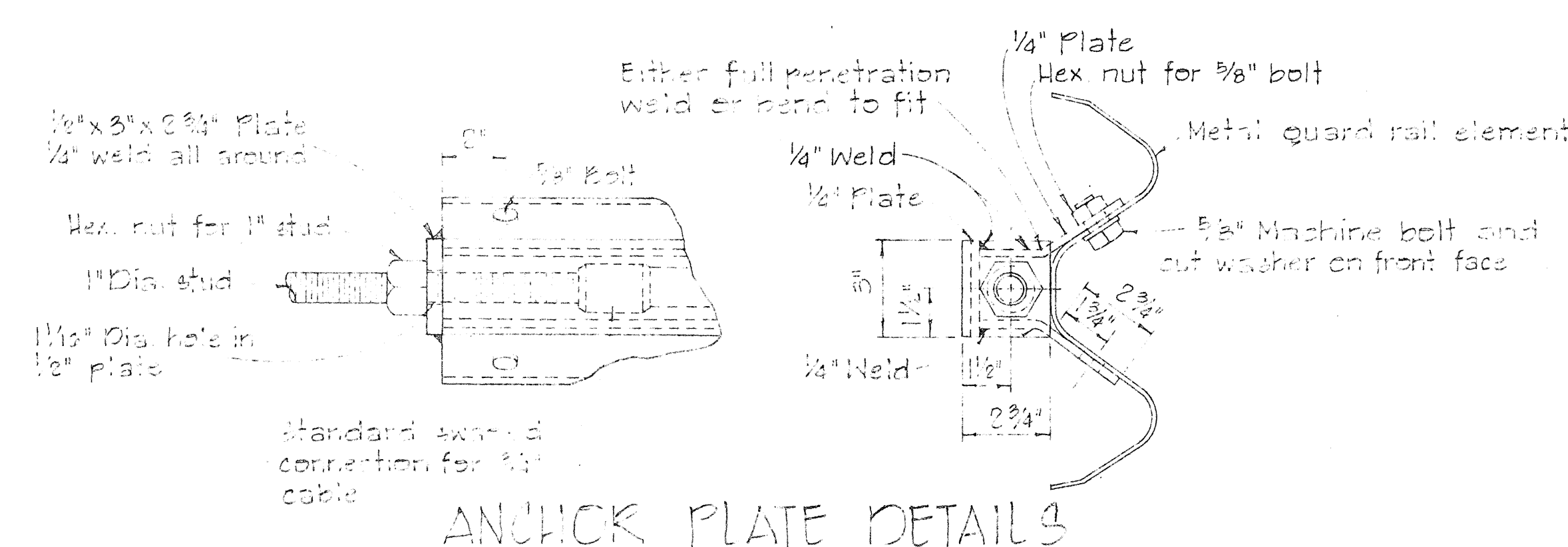
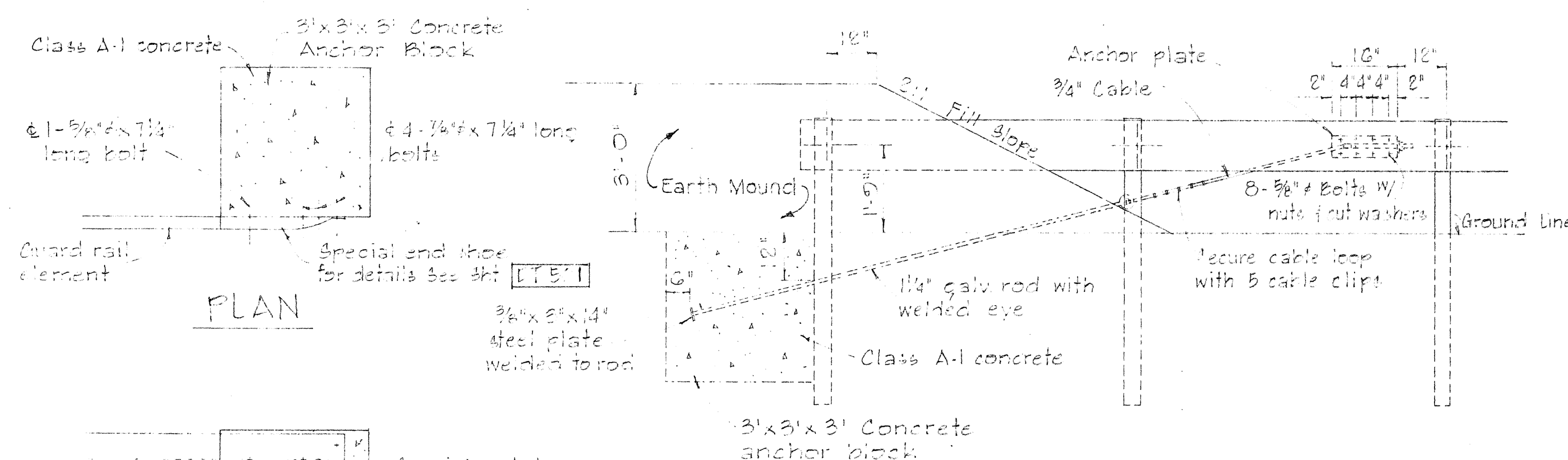
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-11-1(60)B	1968	60	144



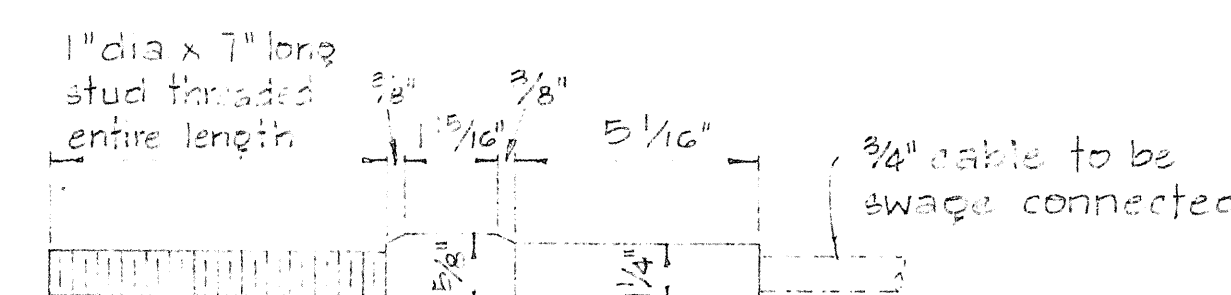
FLARE FOR FLAT, FILL OR CUT SECTIONS



FLARE FOR CUT SECTION



STANDARD WAGED FITTING AND STUD



DETAIL "B"

Not to Scale

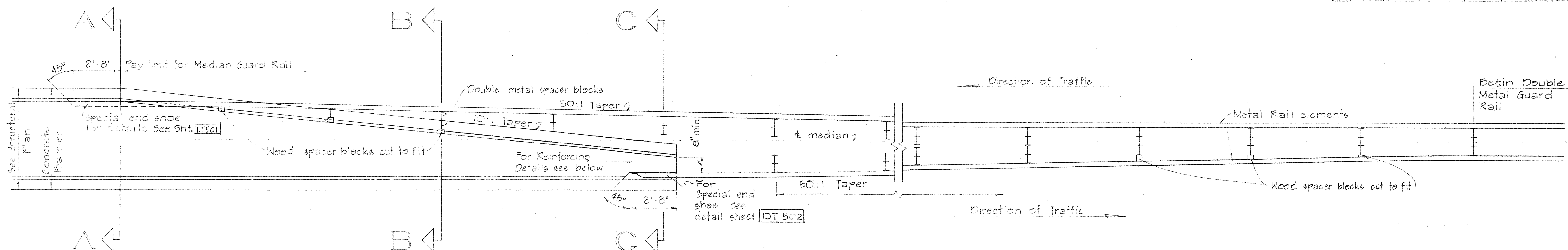
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

METAL GUARD RAIL FLARE DETAIL

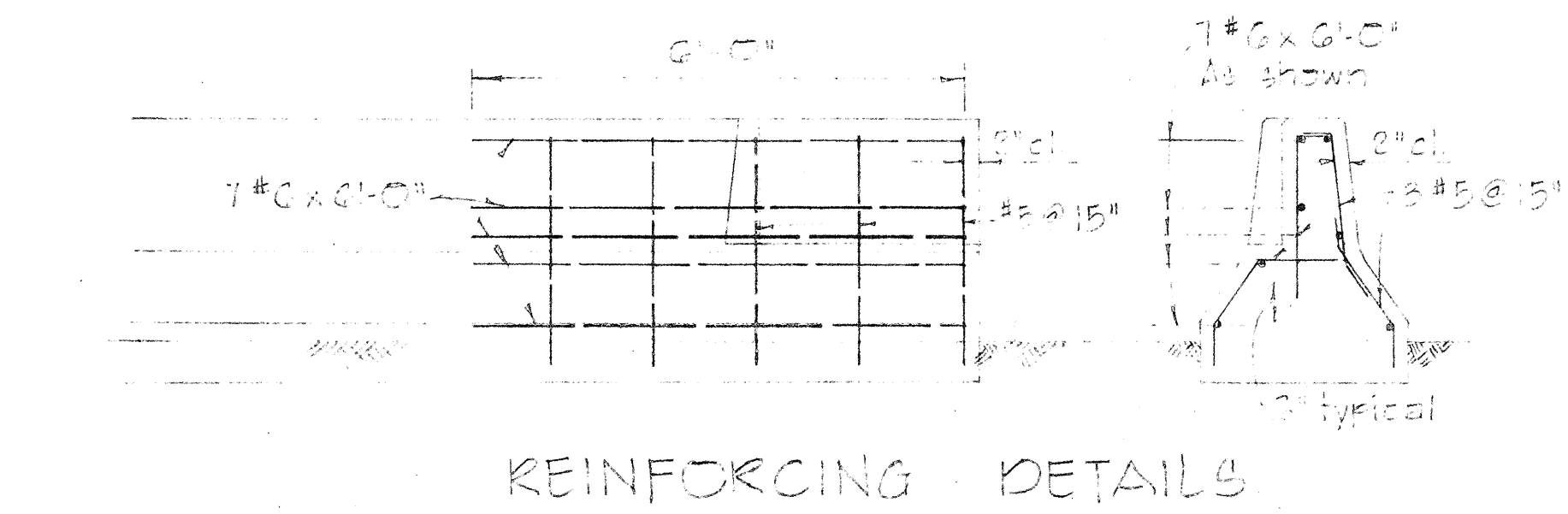
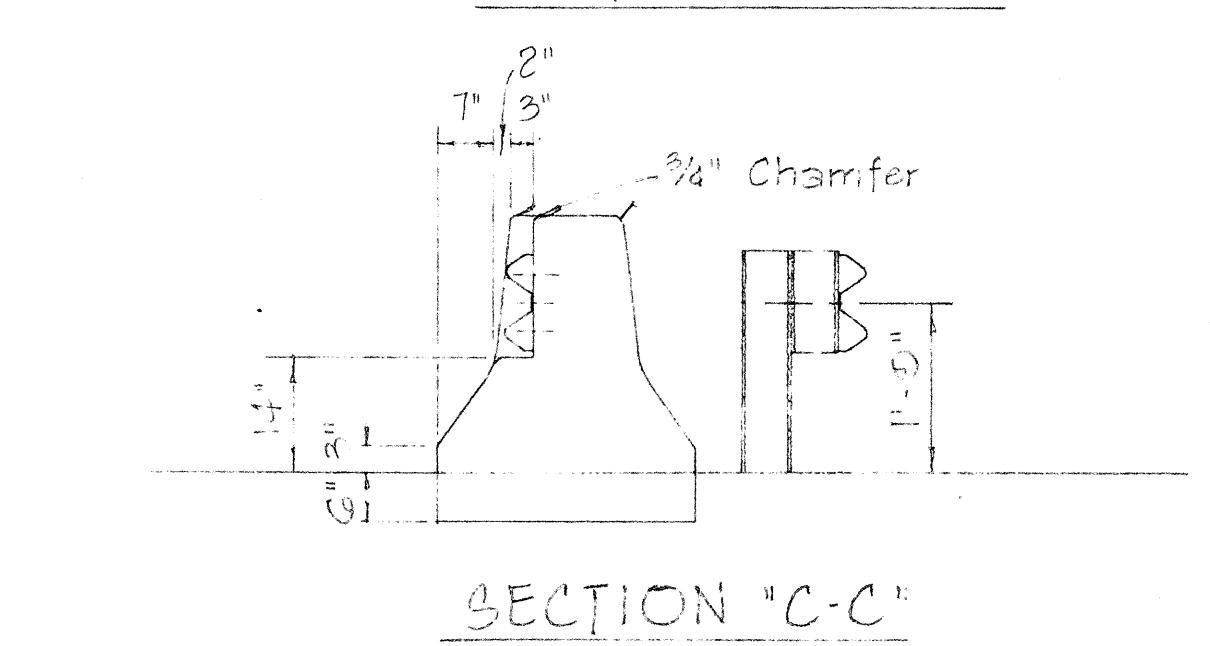
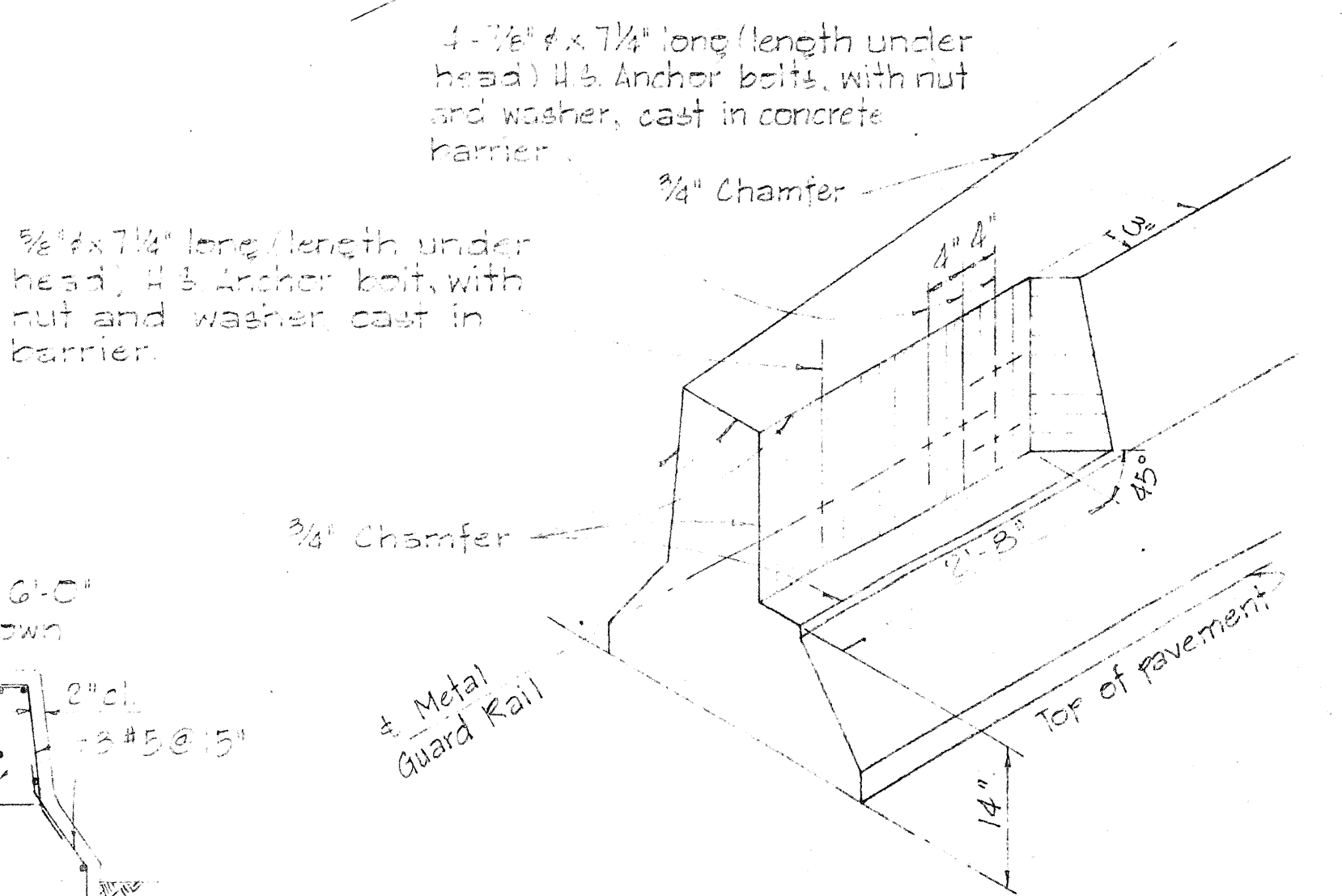
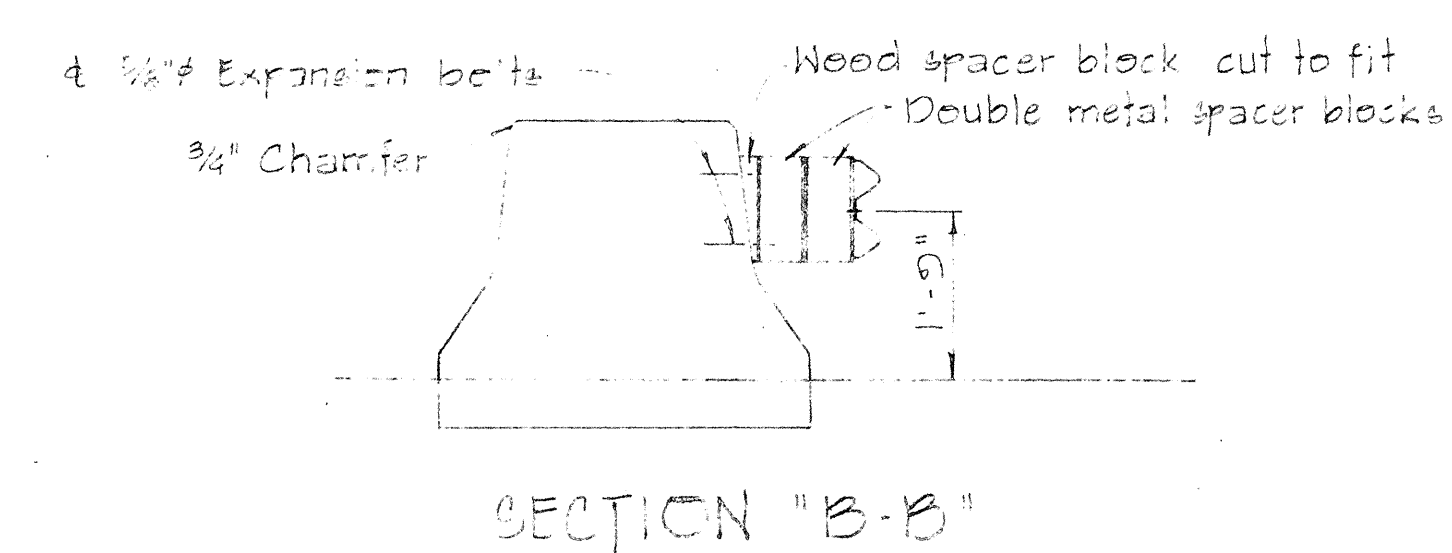
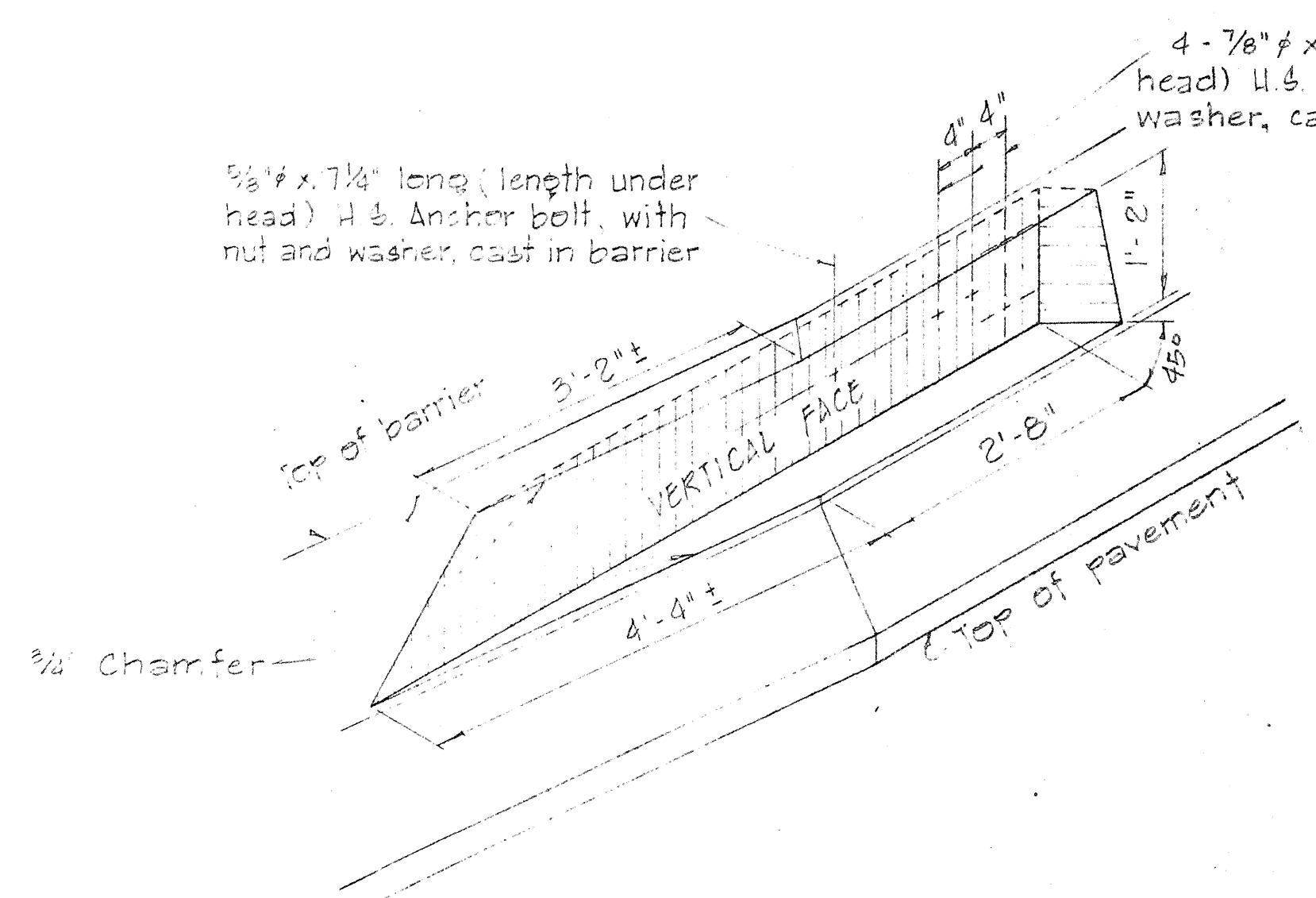
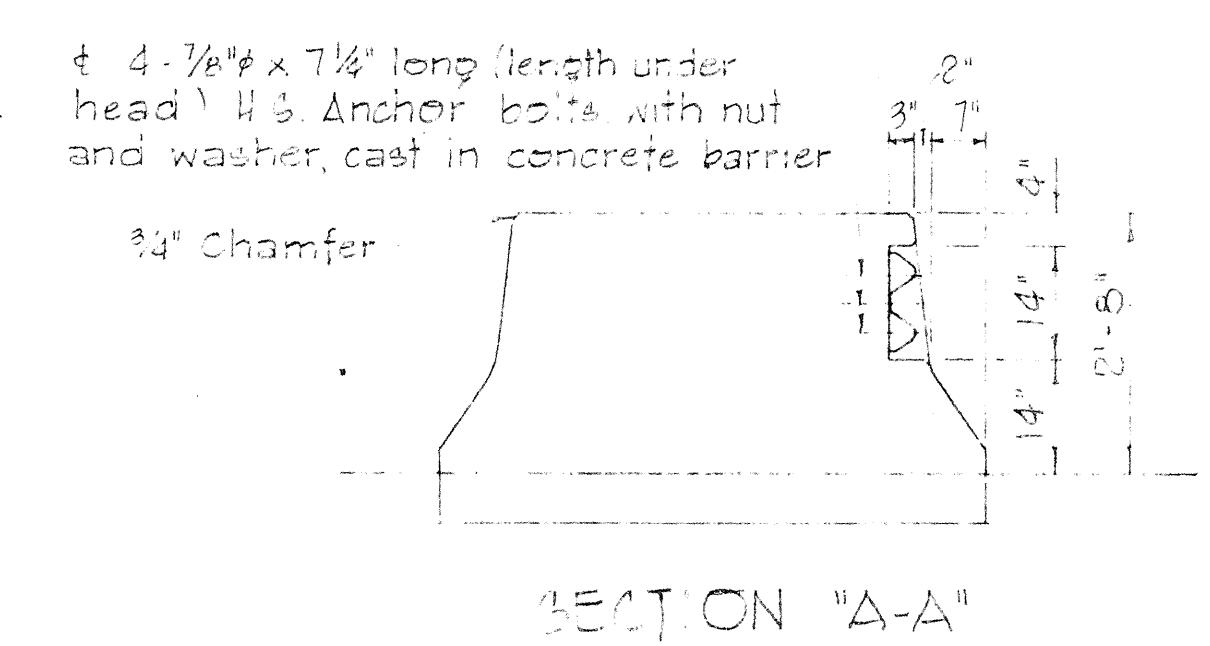
Scale: As Shown Nov. 1968

SHEET No. 3 OF 4 SHEETS DT 503

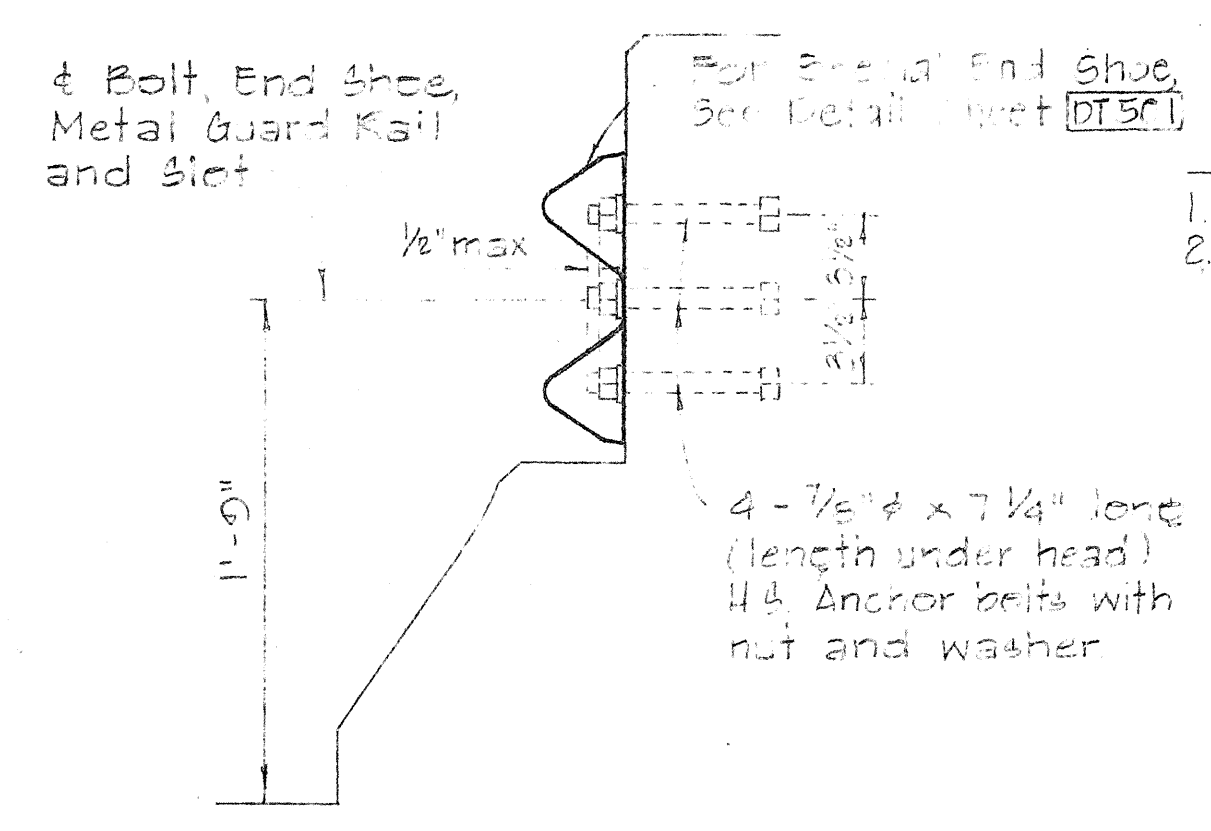
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-HI-1(60)B	1968	61	144



TYPICAL TRANSITION PLAN FROM CONCRETE BARRIER TO METAL GUARD RAILS



DETAILS OF NOTCH IN CONCRETE BARRIER



TYPICAL END SHOE CONNECTION

- NOTES:
1. U.S. Bolts shall conform to the requirements of ASTM A-325.
 2. All shoe assembly, including anchor bolts, nuts and washers, shall be galvanized.

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

METAL GUARD RAIL

CONNECTION DETAILS

AT CONCRETE BARRIER

Not to Scale

Aug. 1968

SHEET No. 4 OF 4 SHEETS

DT 504

DATE	
DESIGNED BY	
DRAWN BY	
CHECKED BY	
NOTED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO.	