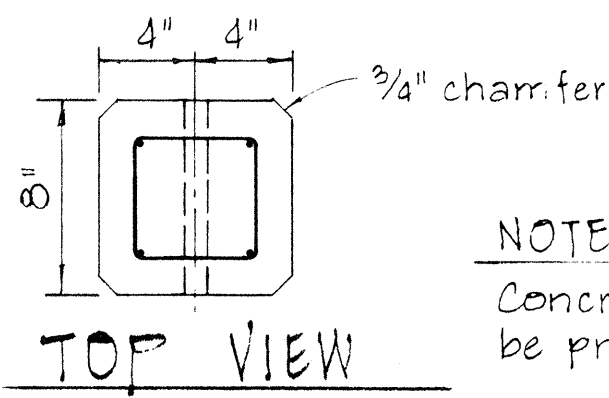
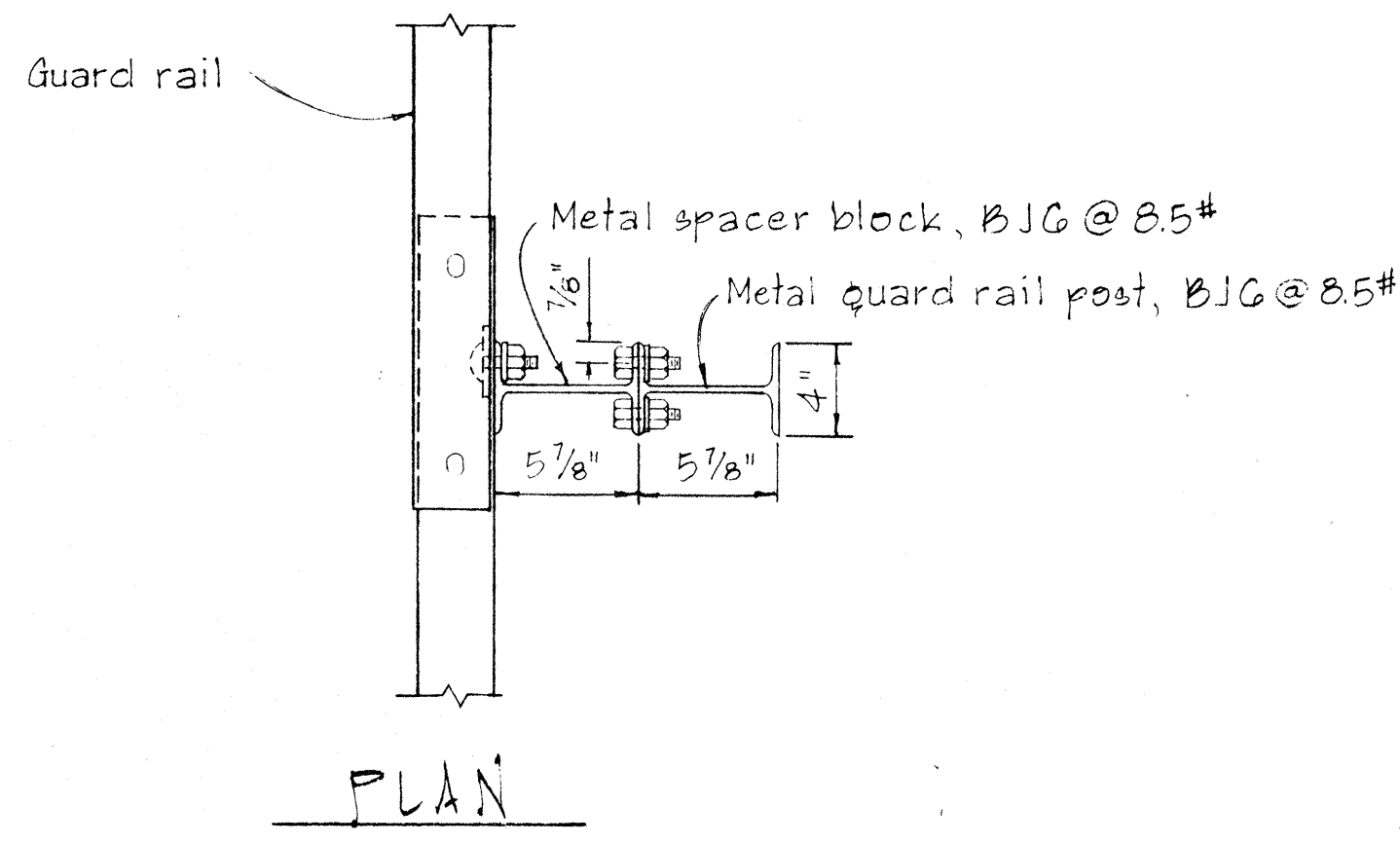
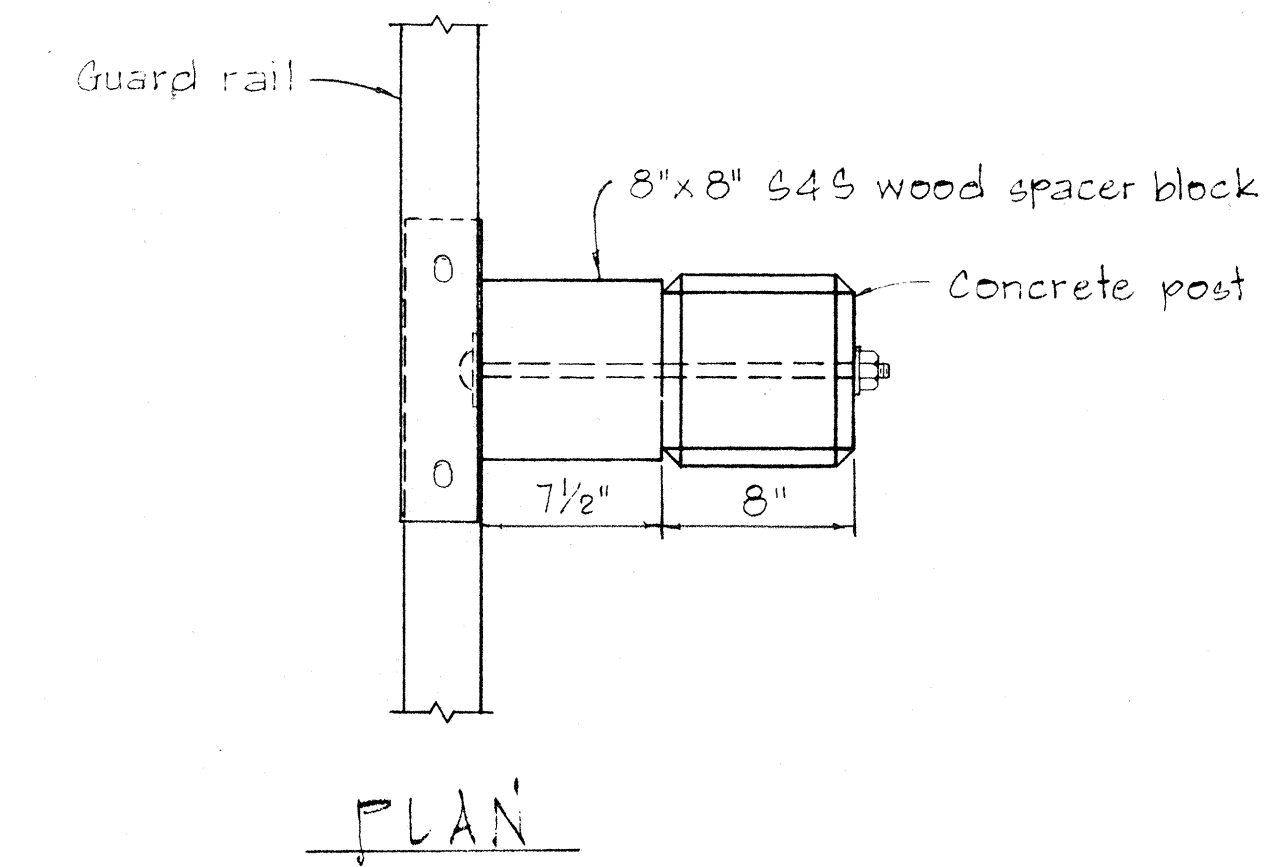
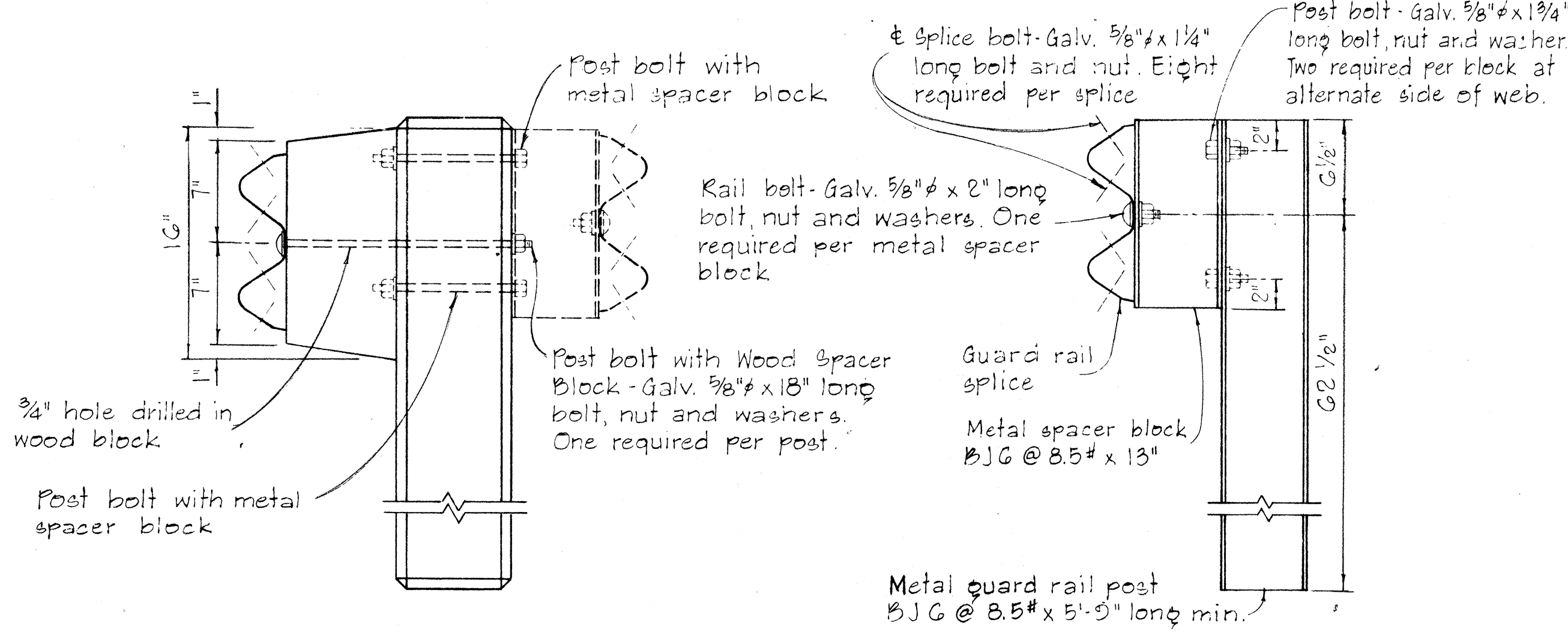
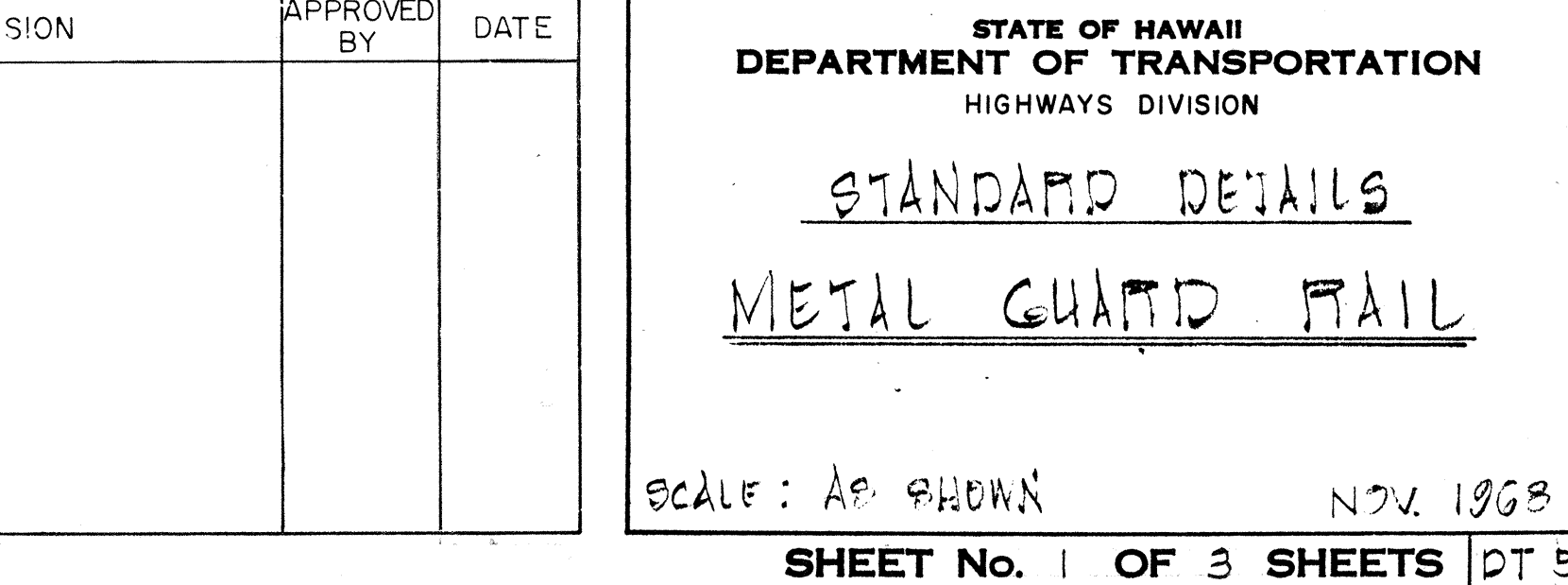
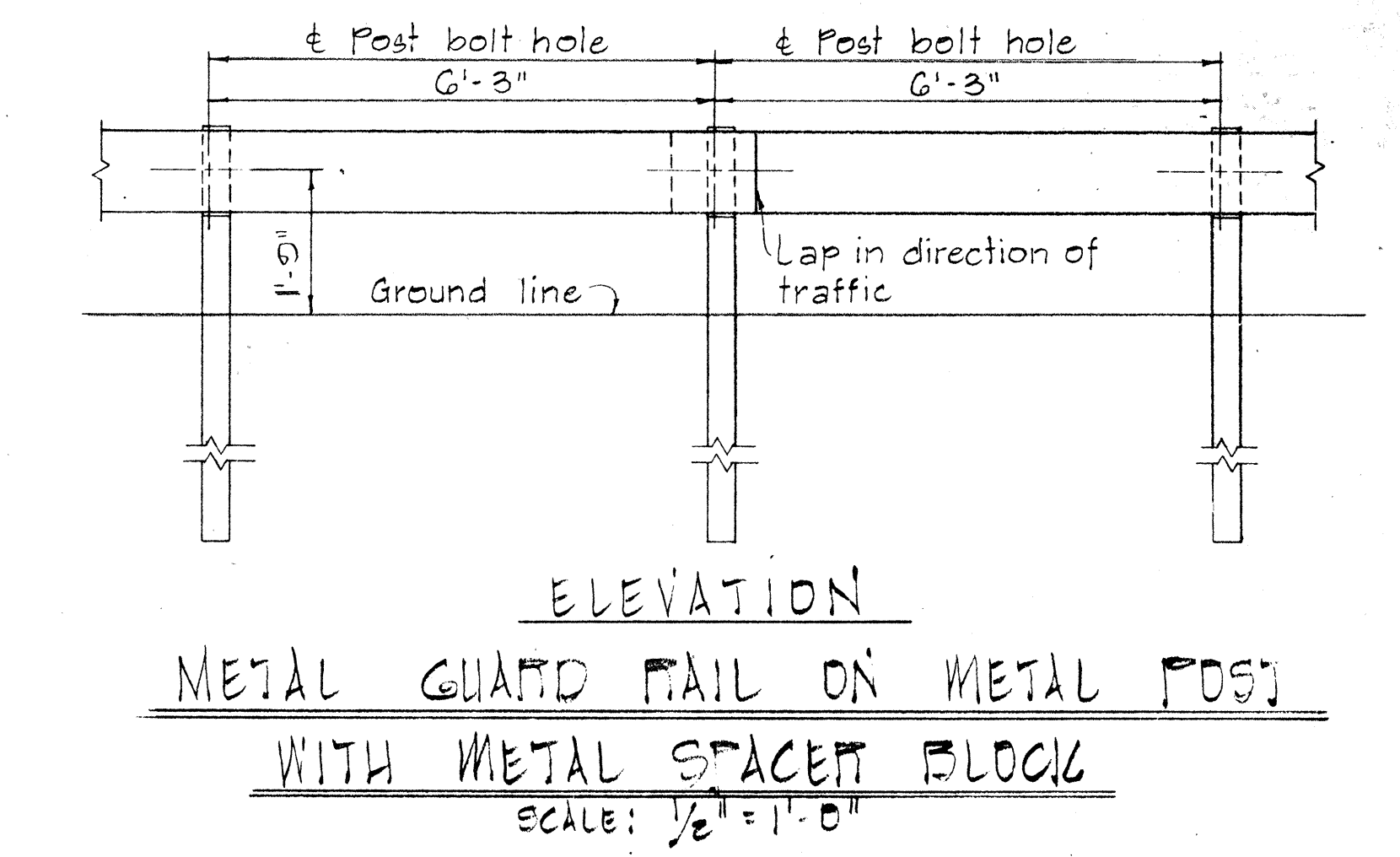
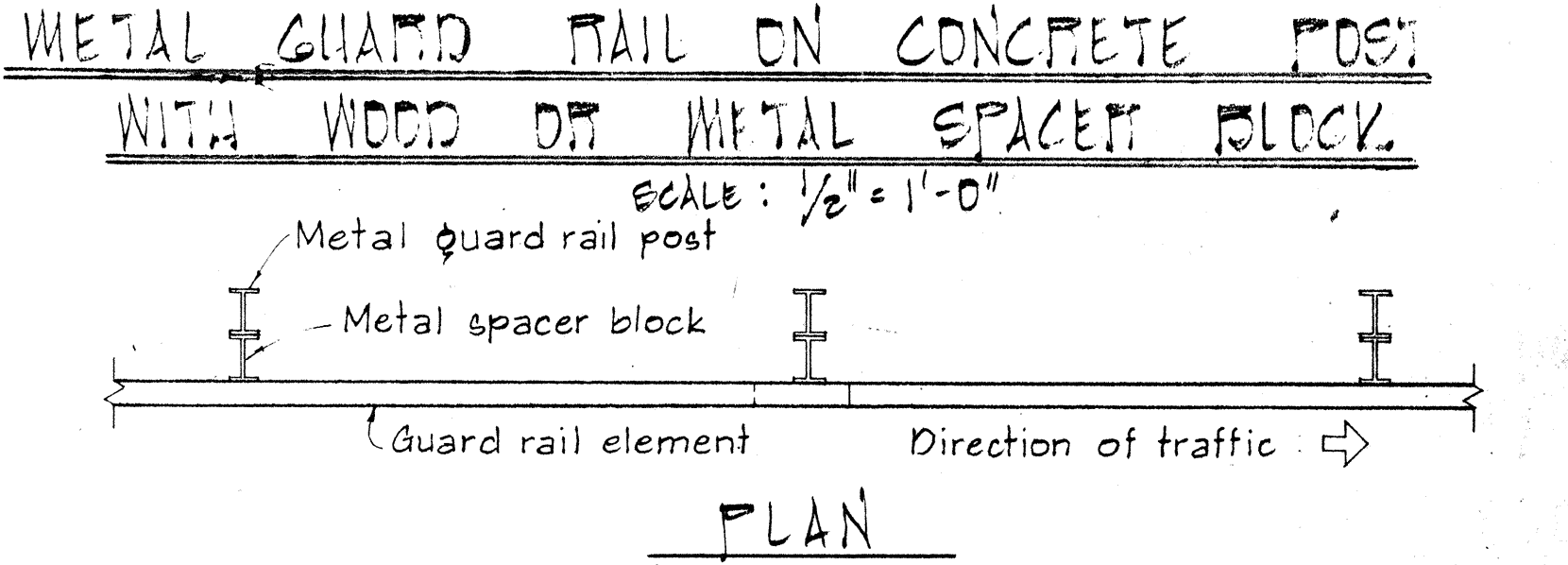
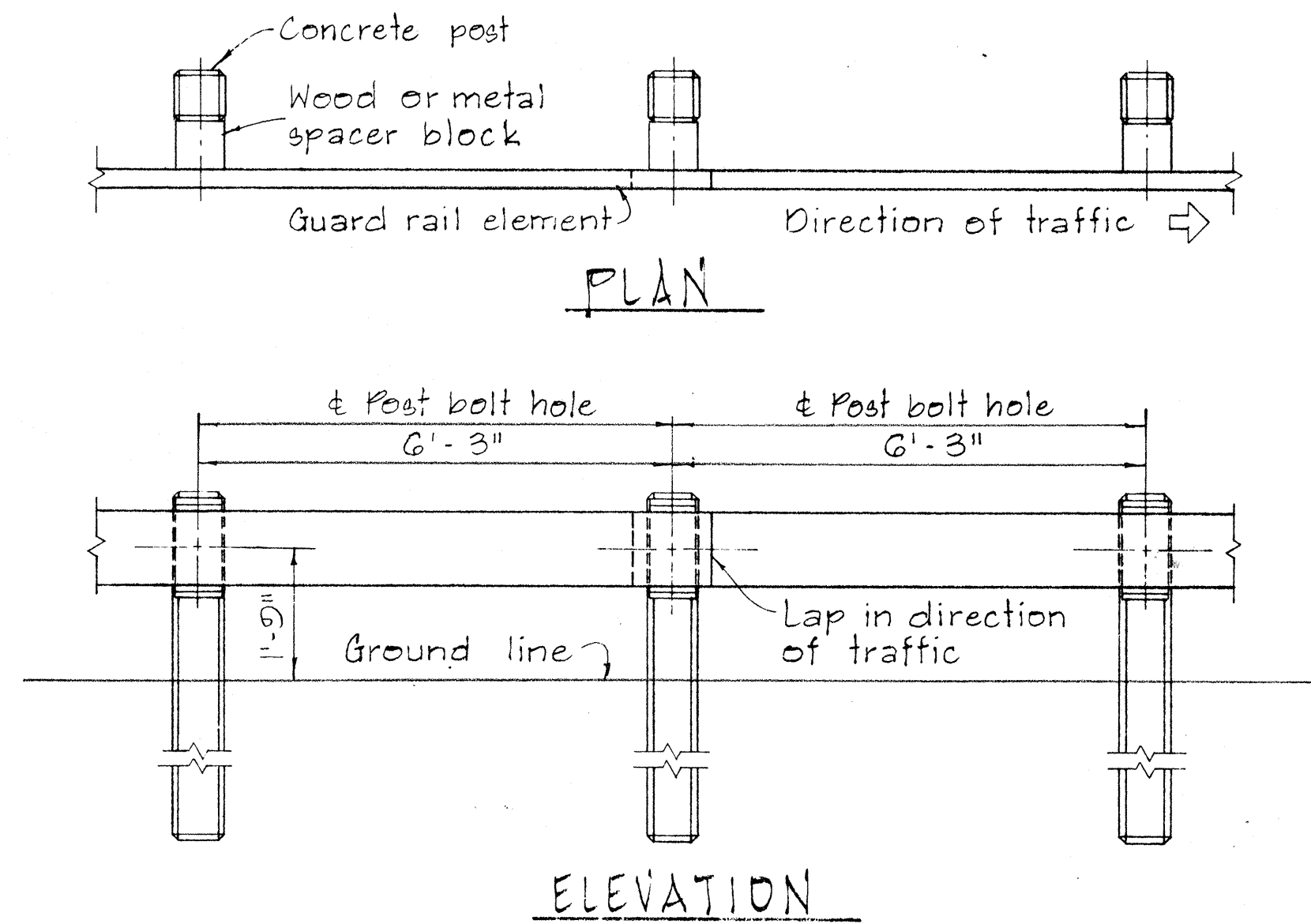
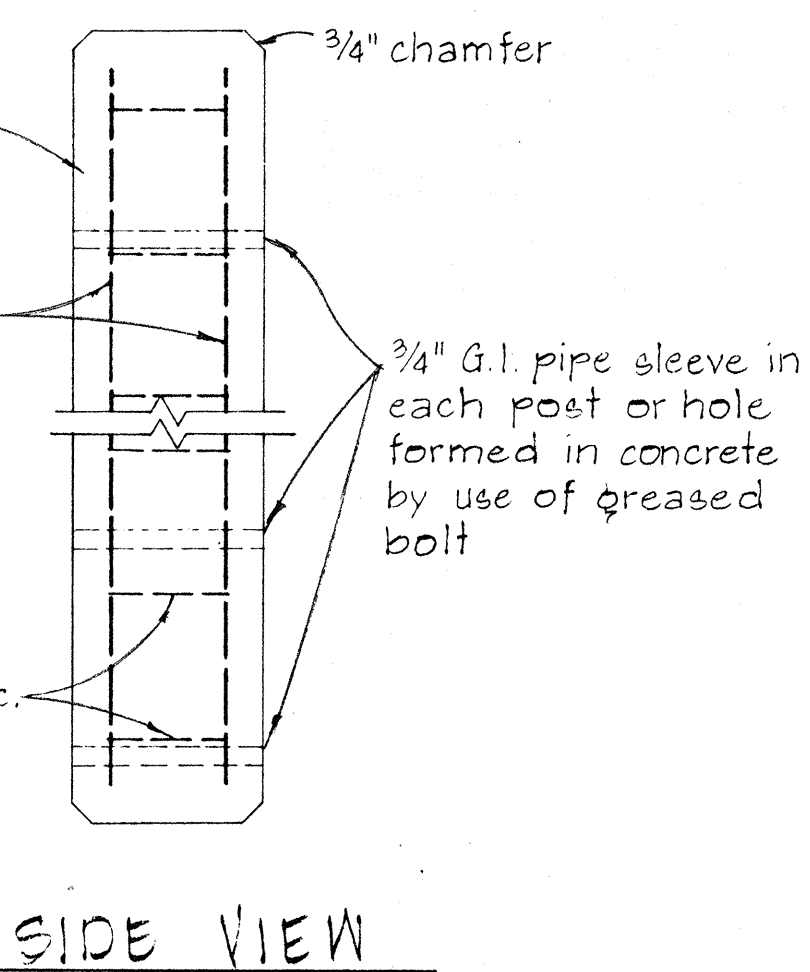
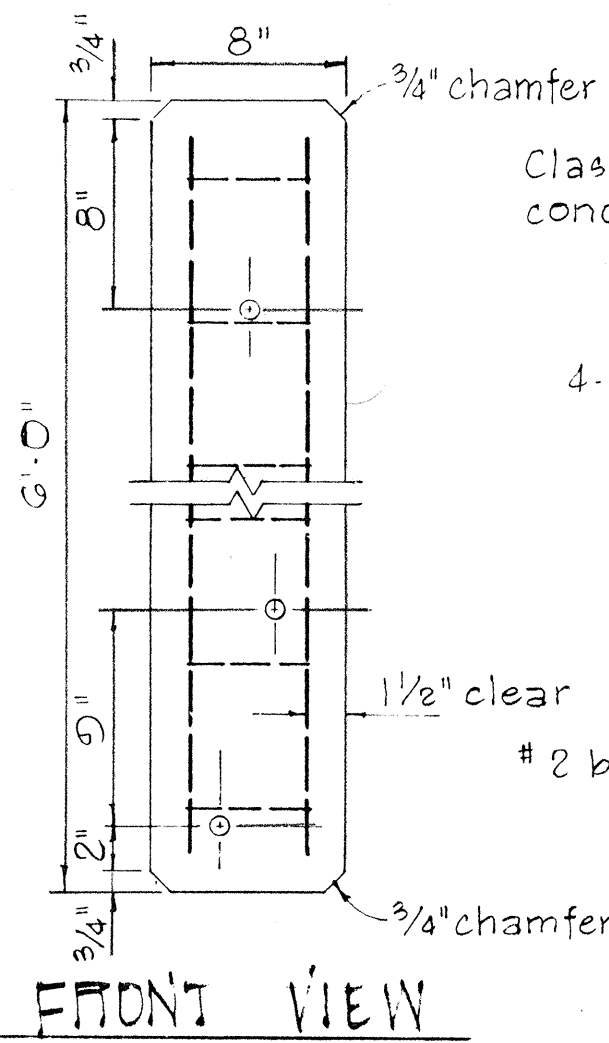


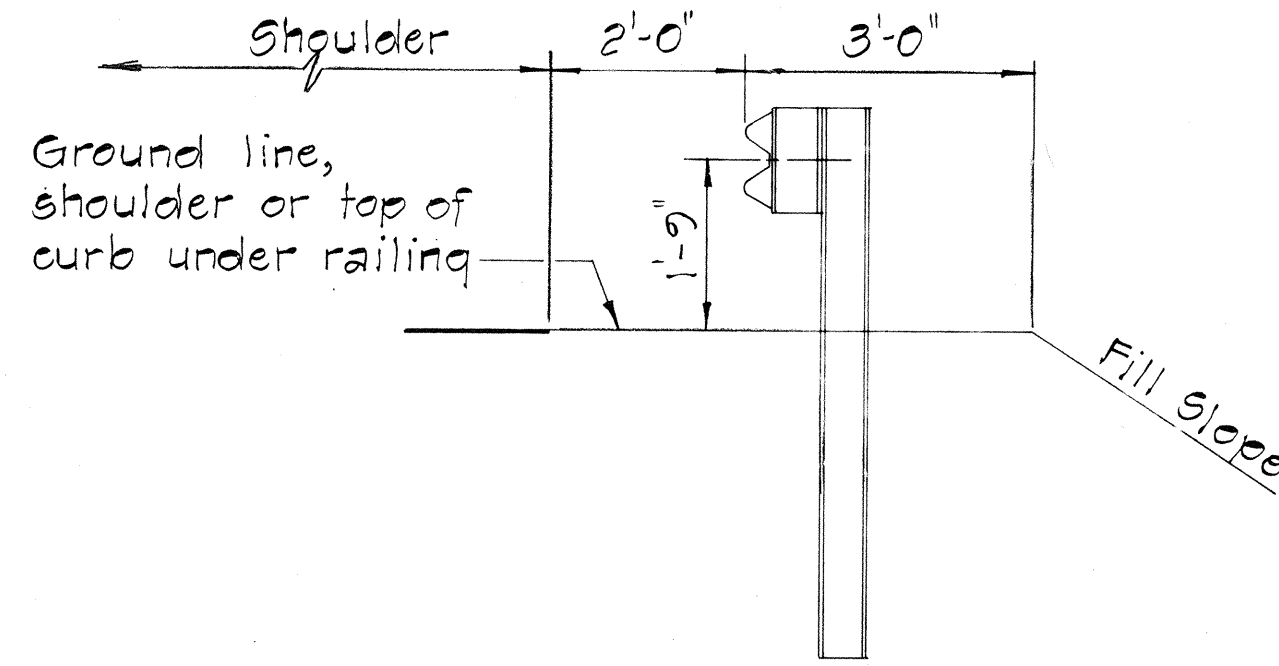
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	63A-01-81	1982	4	18



NOTE:
Concrete post shall be precast



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



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

APPROVAL RECOMMENDED:
Rich. Tanaka
TRAFFIC ENGINEER
12/29/62
DATE

APPROVED:
Richard J. Nelson
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

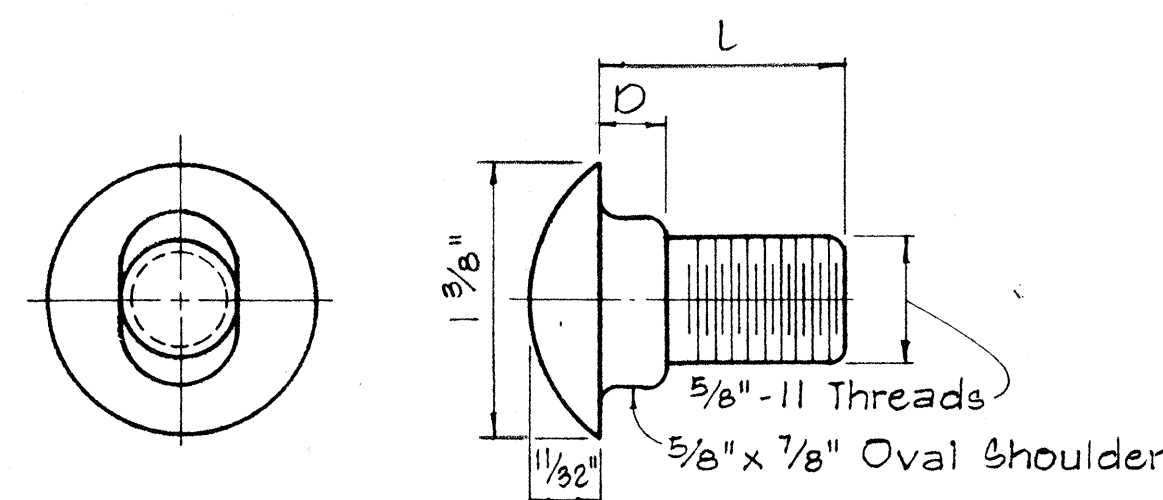
SCALE: AS SHOWN NOV. 1968

SHEET No. 1 OF 3 SHEETS DT 500

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	63A-01-B1	1982	5	18

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"
Rail Bolt for Metal Block	3/32"	18"
	3/32"	2"

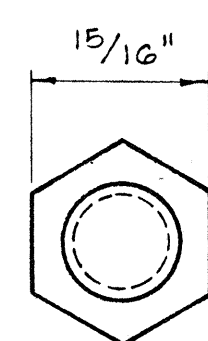
BOLT DIMENSIONS		
TYPE B BOLT		
Post Bolt for Conc. Post w/ Metal Blocks		5 1/2"
Post Bolt for Metal Post w/ Metal Block		1 3/4"



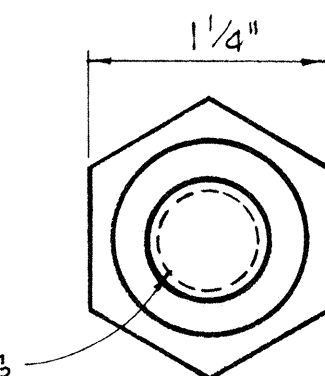
TYPE A BOLT

SPLICE RAIL AND POST BOLTS

Scale: Full Size

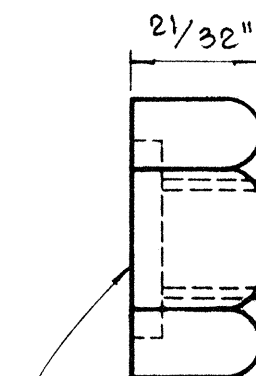


TYPE B BOLT

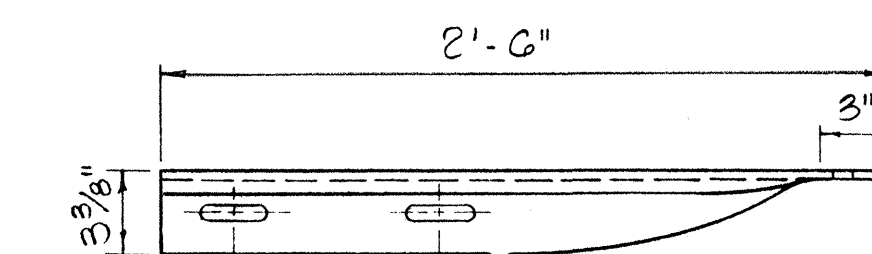


HEXAGON NUT

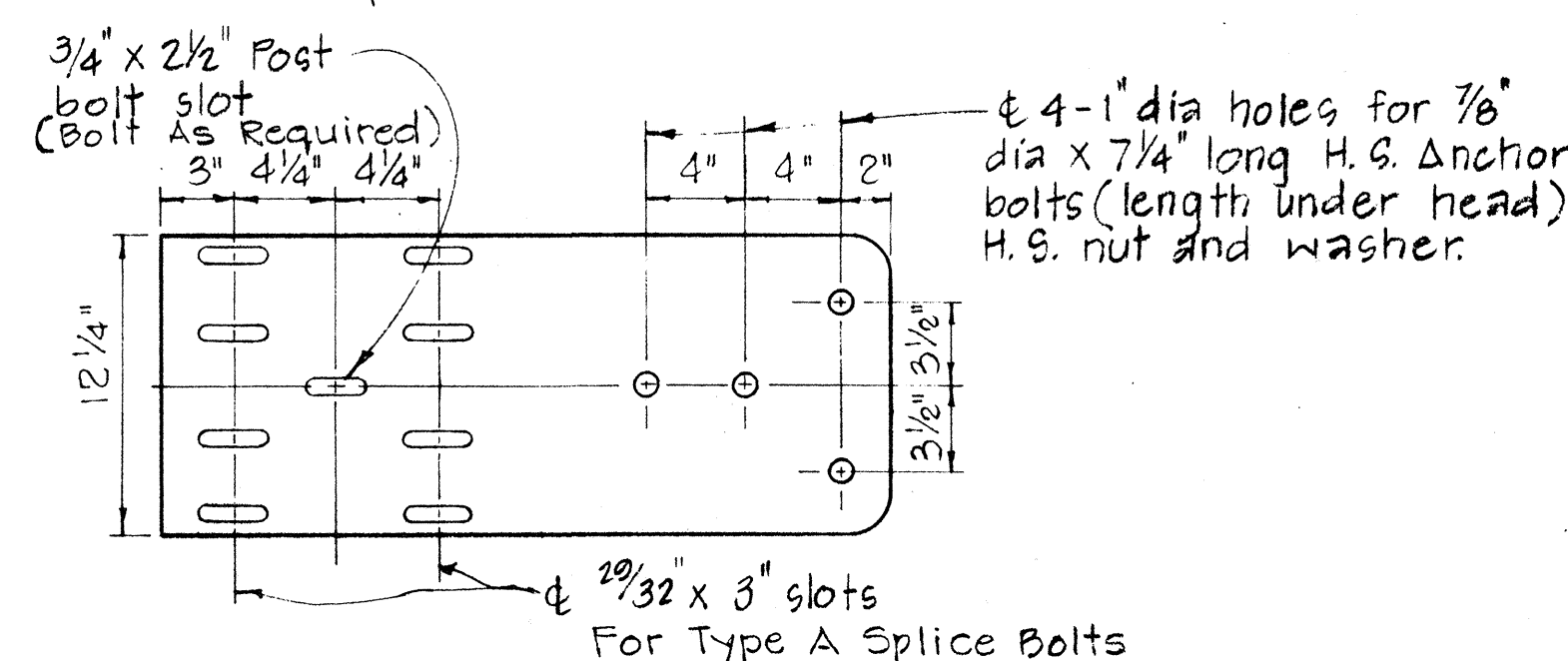
Scale: Full Size



5/32" Deep x 1 5/16" Dia. C' Bore for Type A Bolt only. Plain nut for Type B Bolt.



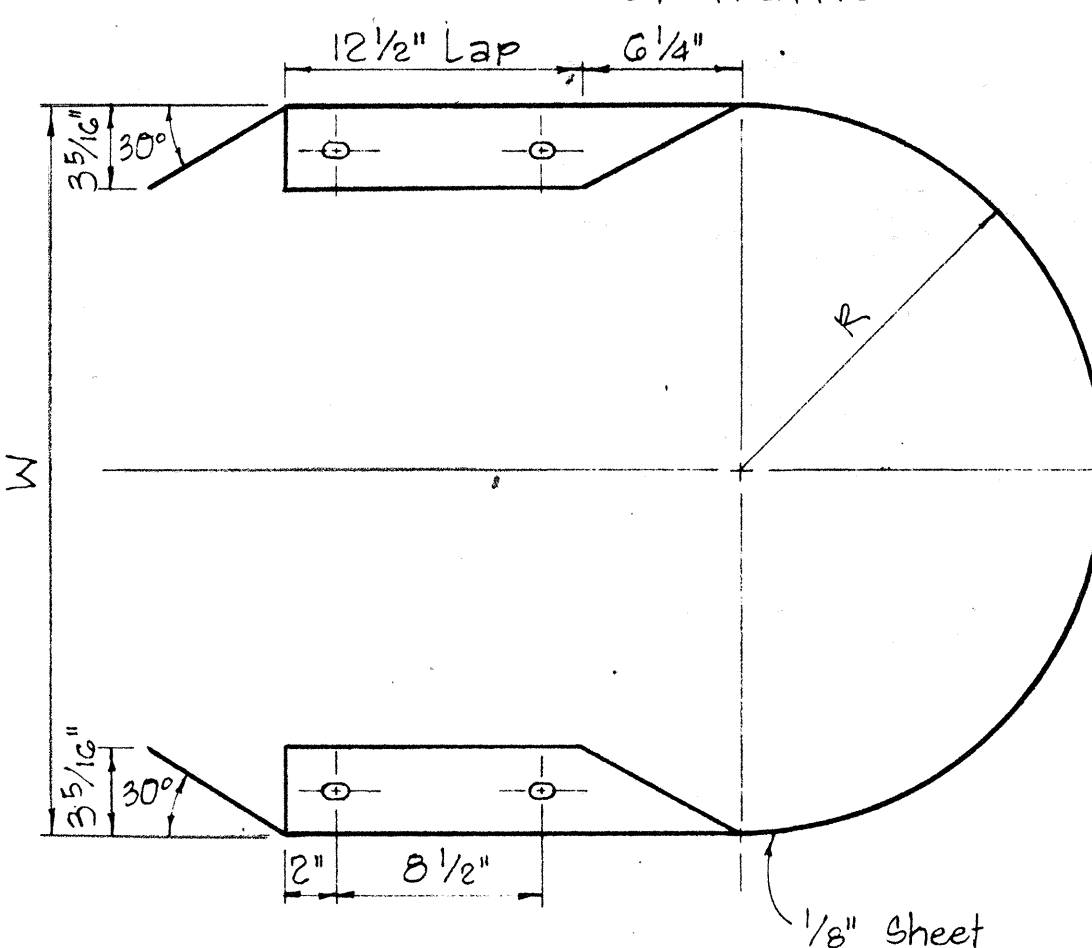
← Lap in direction of traffic



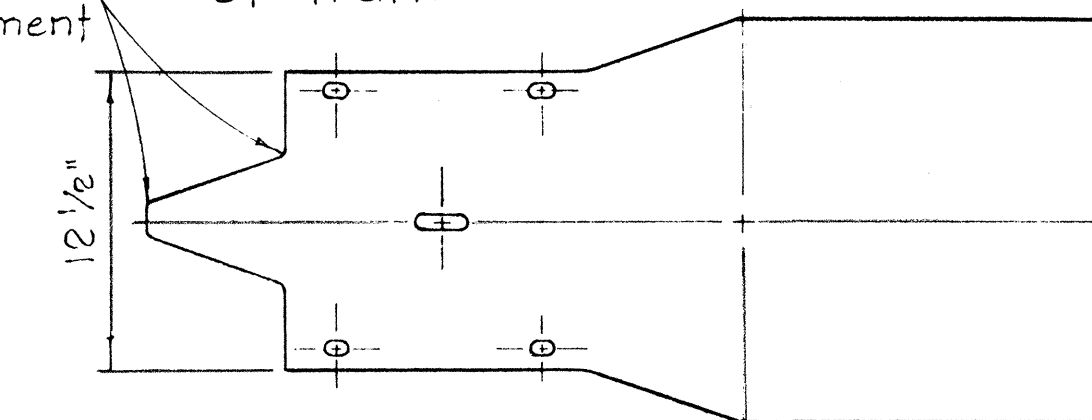
SPECIAL END SHOE

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

← Lap in direction of traffic



Shape to fit rail element
Lap in direction of traffic



MEDIAN END

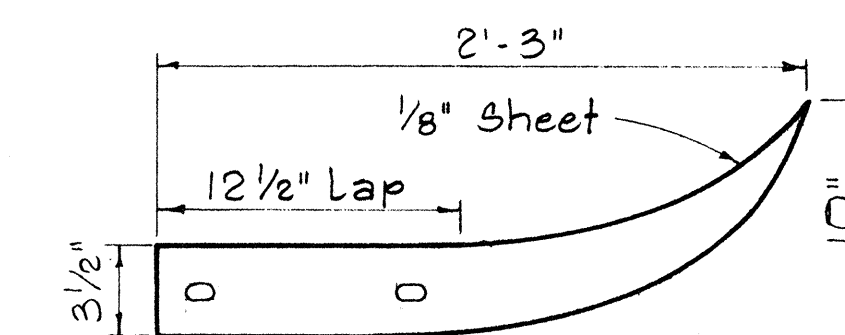
Scale: 1 1/2" = 1'-0"

NOTES:

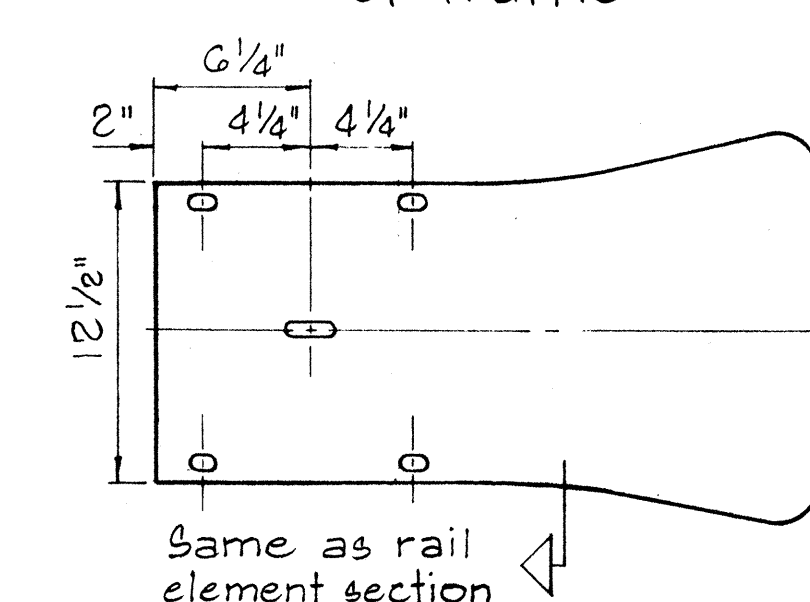
- H.S. Bolts shall conform to the requirements of ASTM A 325.
- Special End Shoe shall be fabricated from 10 Gage steel conforming to the requirements of AASHTO 180.

MEDIAN END DIMENSIONS		
TYPE OF POST AND BLOCK	W	R
Double Metal Guard Rail on Concrete Post with Wood Blocks	29 3/4"	14 3/8"
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
1	Revised Hole Size for Rectangular Rail Washer	H.T.	8/10/81

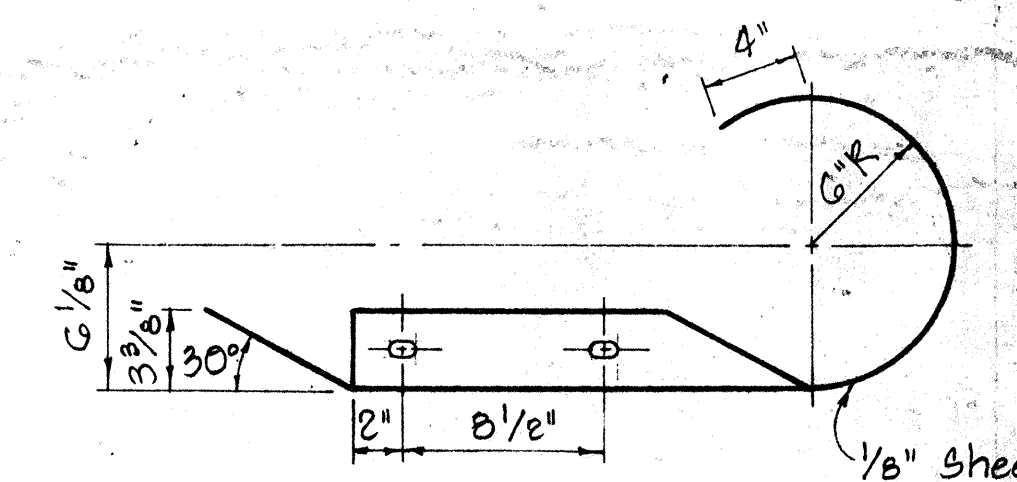


← Lap in direction of traffic

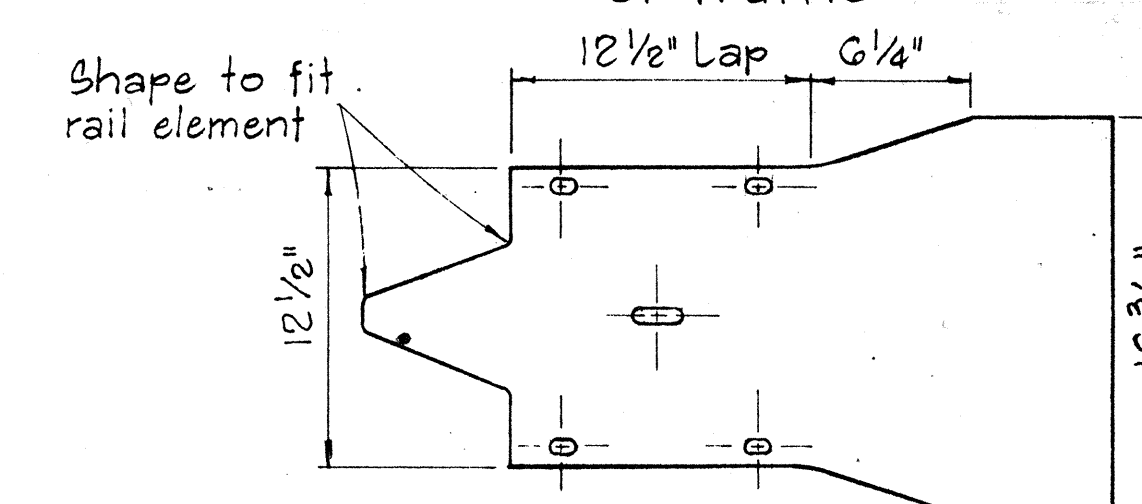


FLARED END

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



← Lap in direction of traffic



CURVED END

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

APPROVAL RECOMMENDED:

TRAFFIC ENGINEER

APPROVED:

ASSISTANT CHIEF, ENGINEERING

12/29/69

DATE

12-30-69

DATE

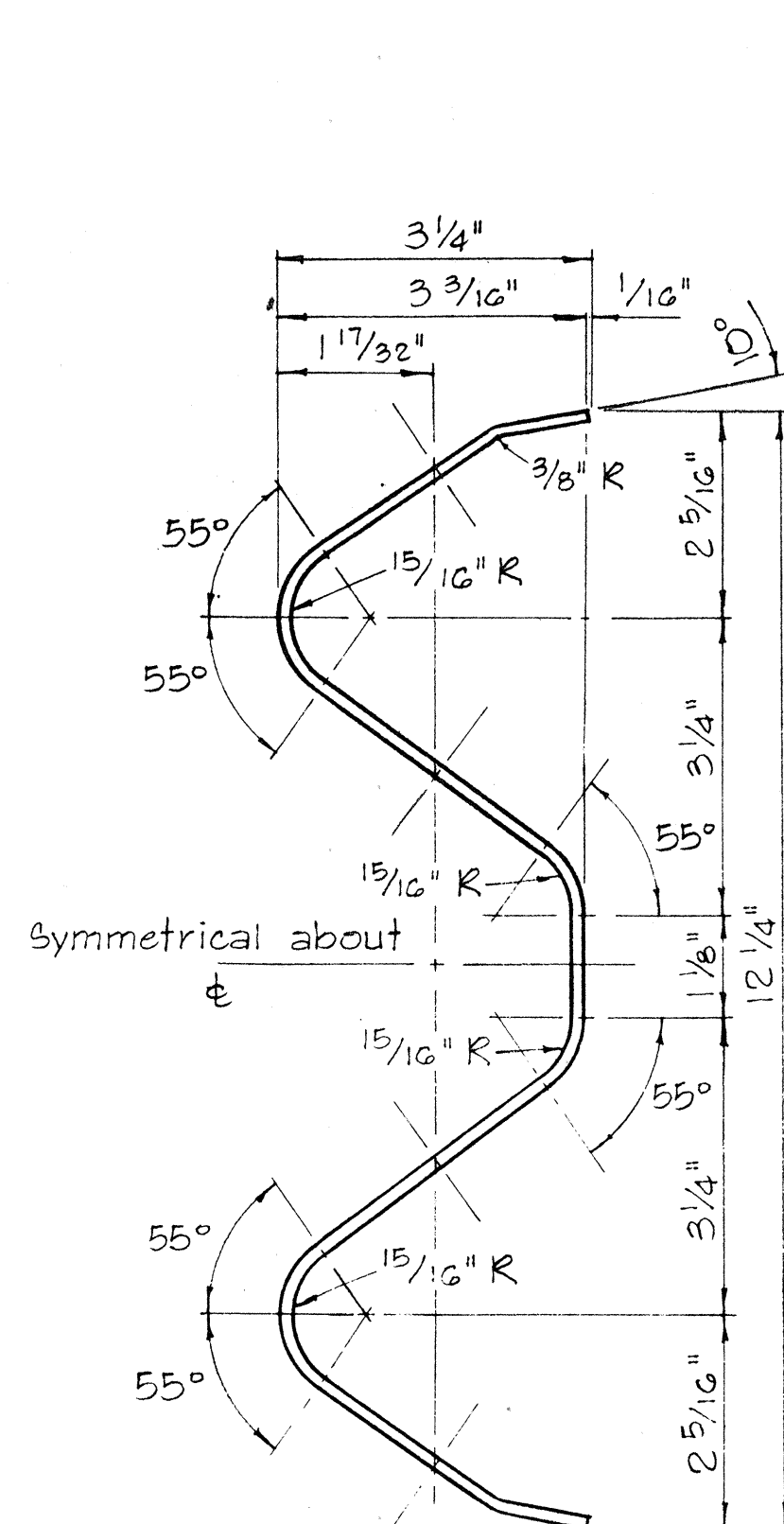
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL GUARD RAIL

Scale: As Noted

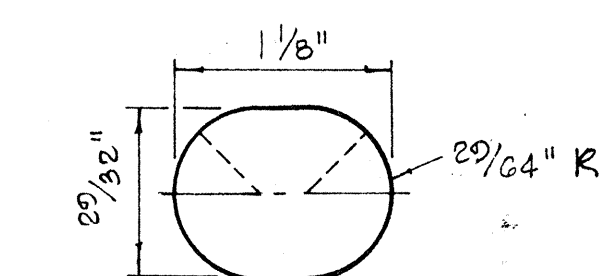
August, 1968

SHEET No. 2 OF 3 SHEETS DT 501



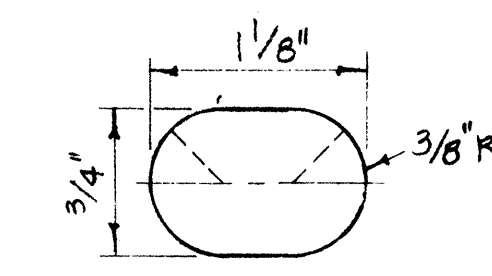
RAIL ELEMENT SECTION

Scale: 6" = 1'-0"

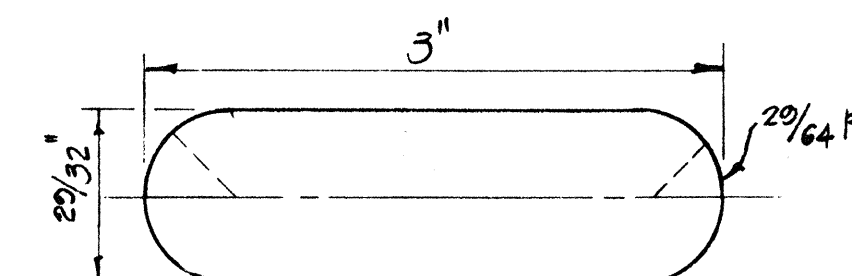


SPLICE BOLT SLOT

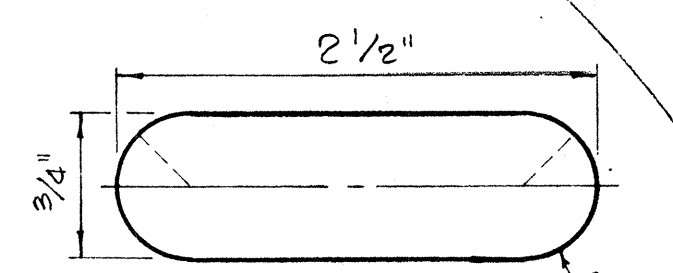
Scale: Full Size



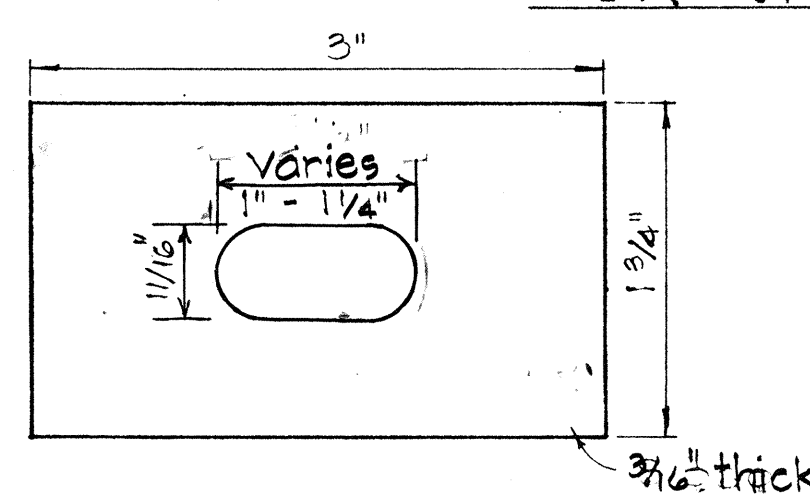
SPLICE BOLT SLOT FOR ALL ENDS



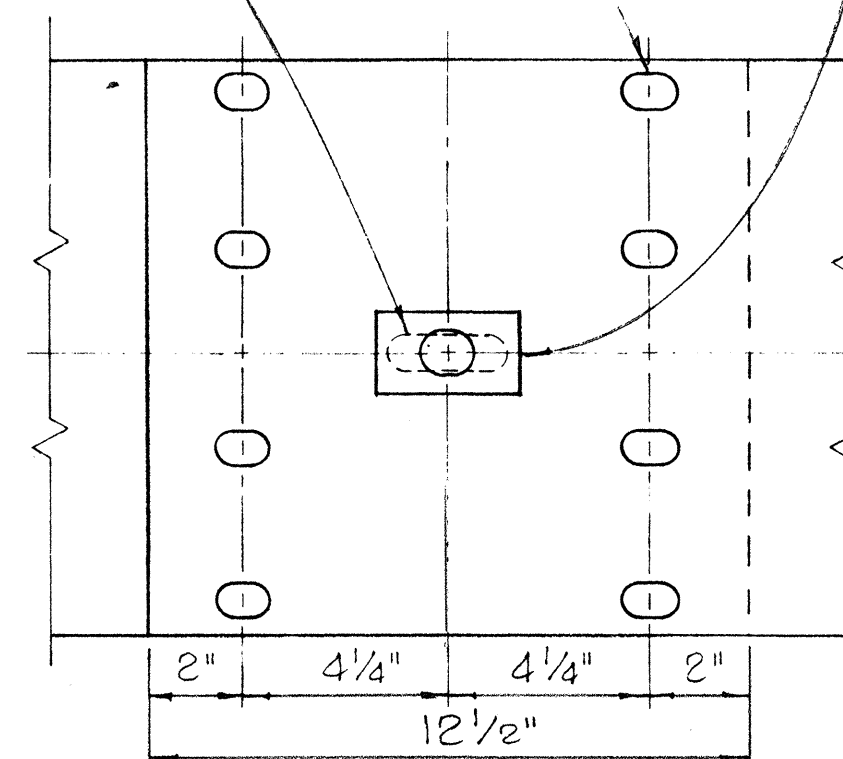
SPLICE BOLT SLOT FOR SPECIAL END SHOE



POST BOLT SLOT



RAIL WASHER

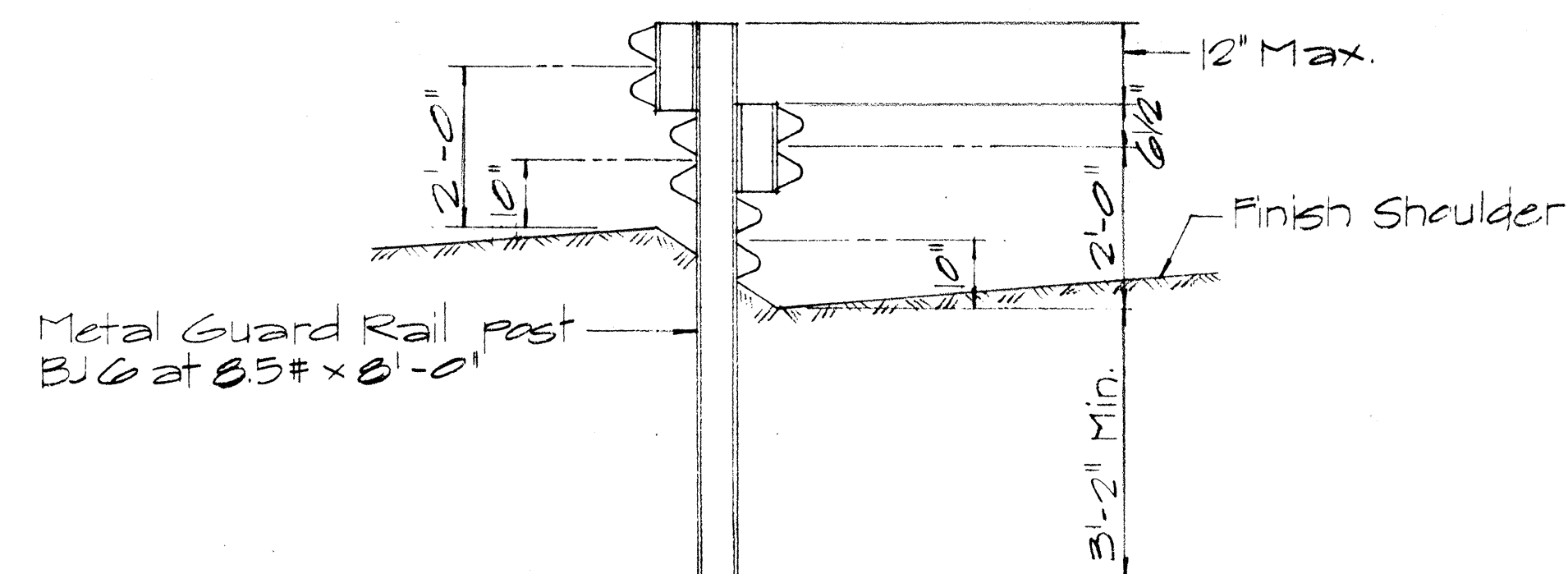
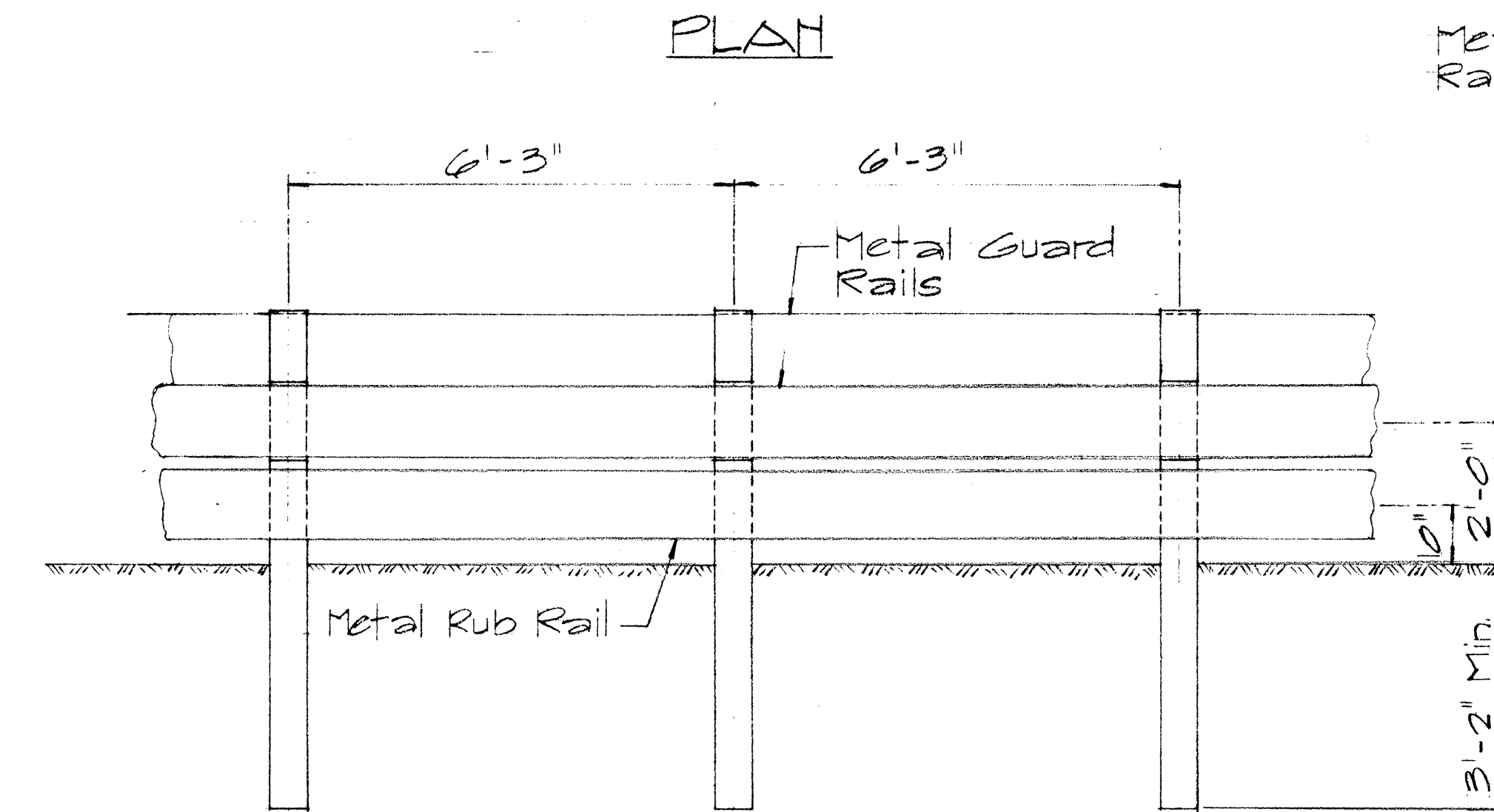
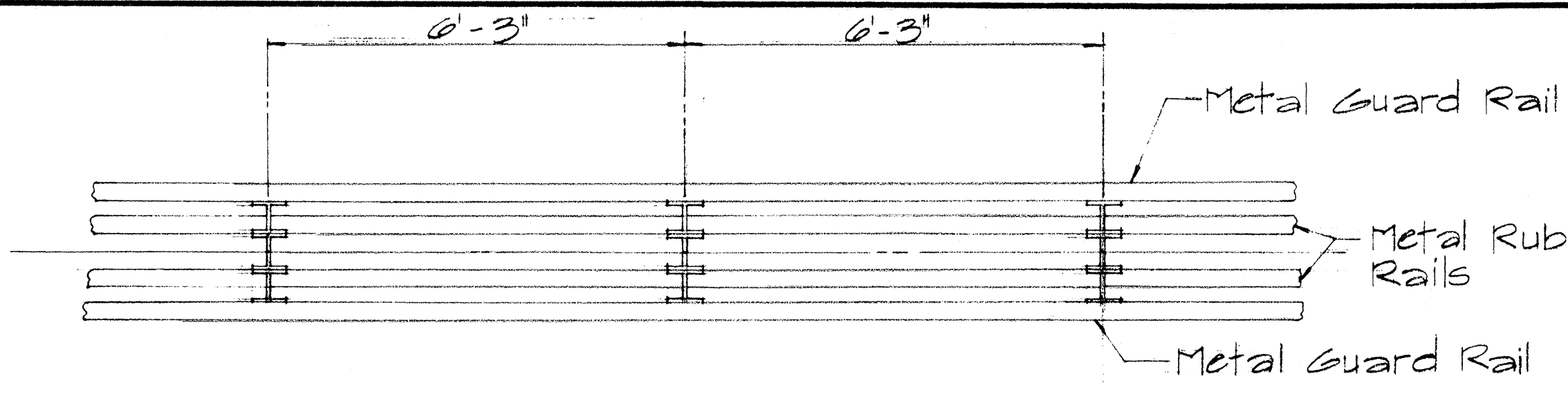
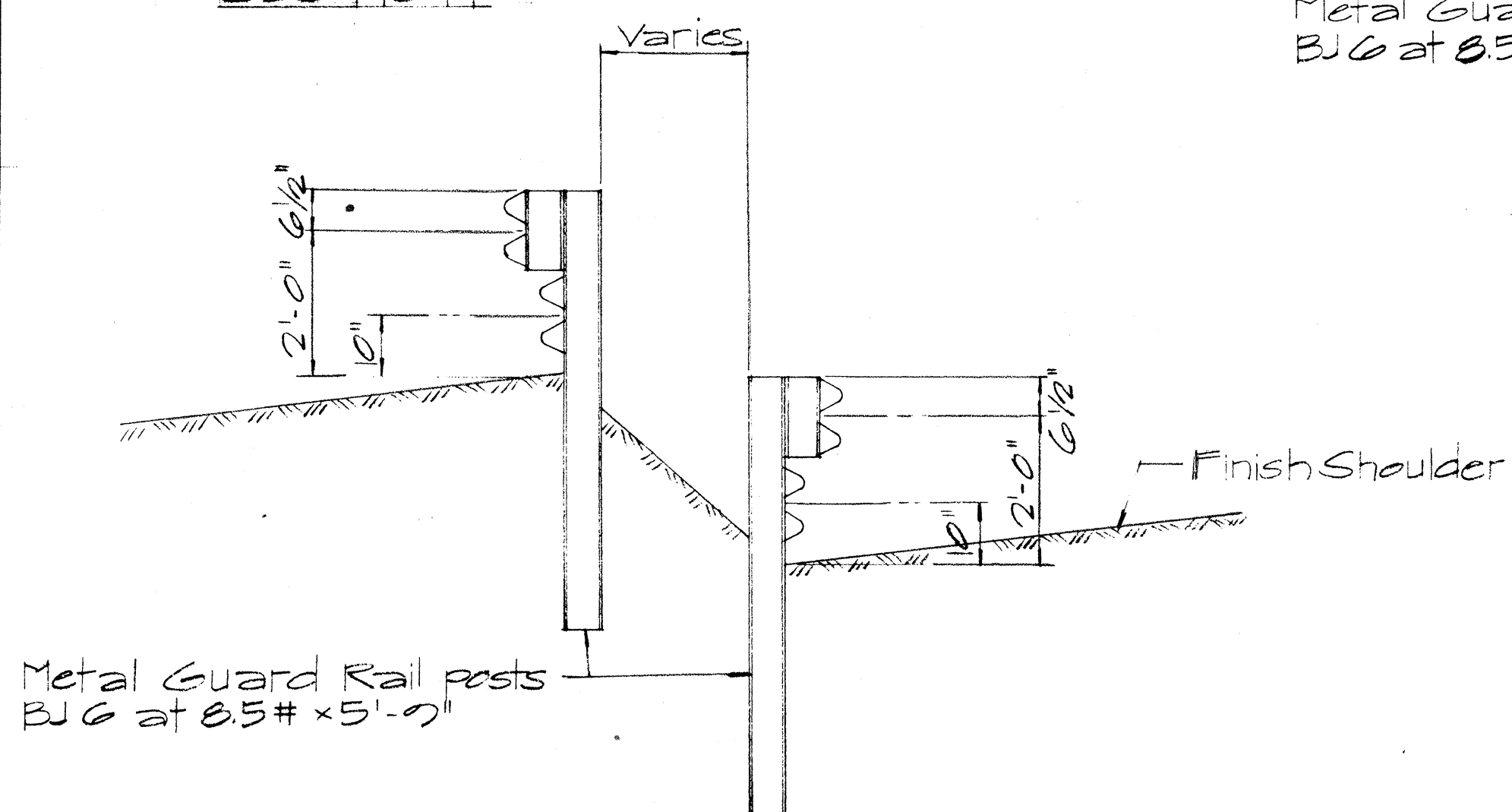
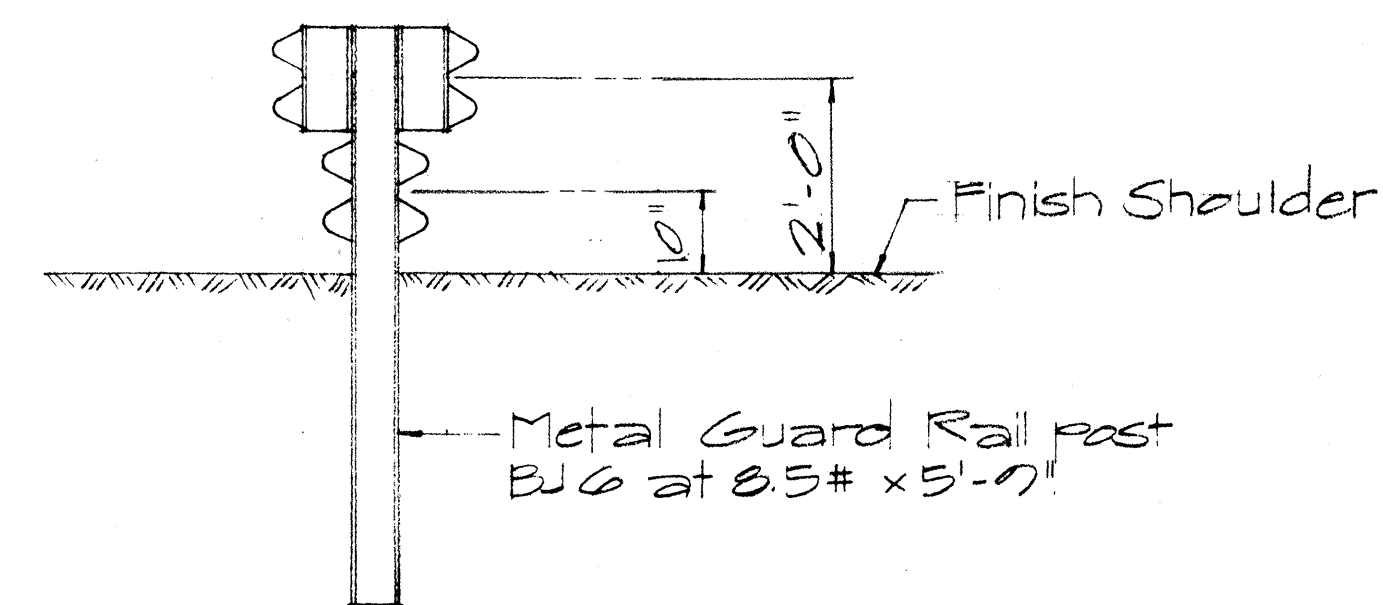
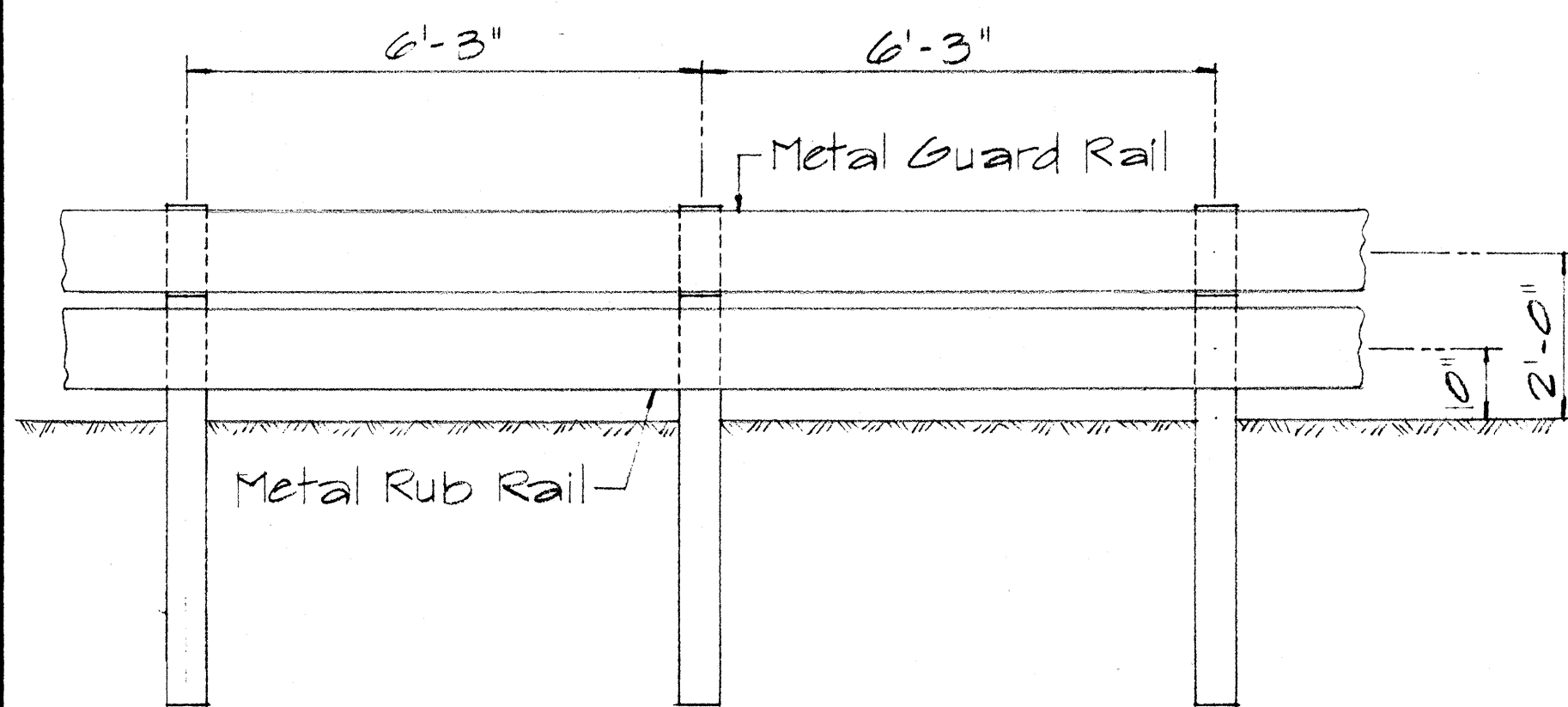
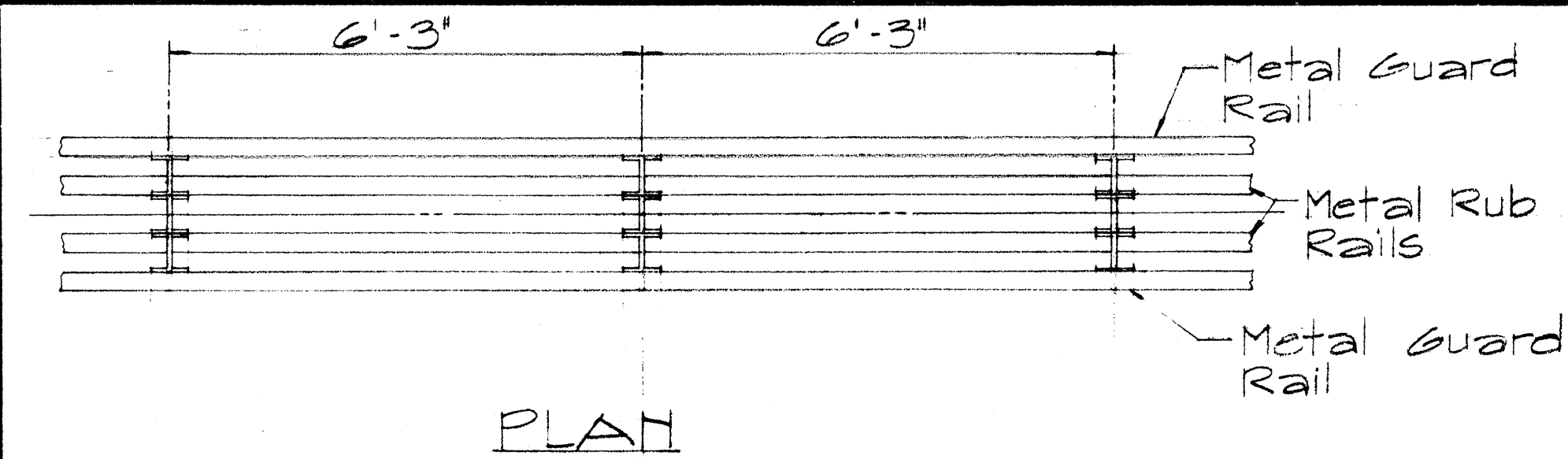


RAIL SPLICE

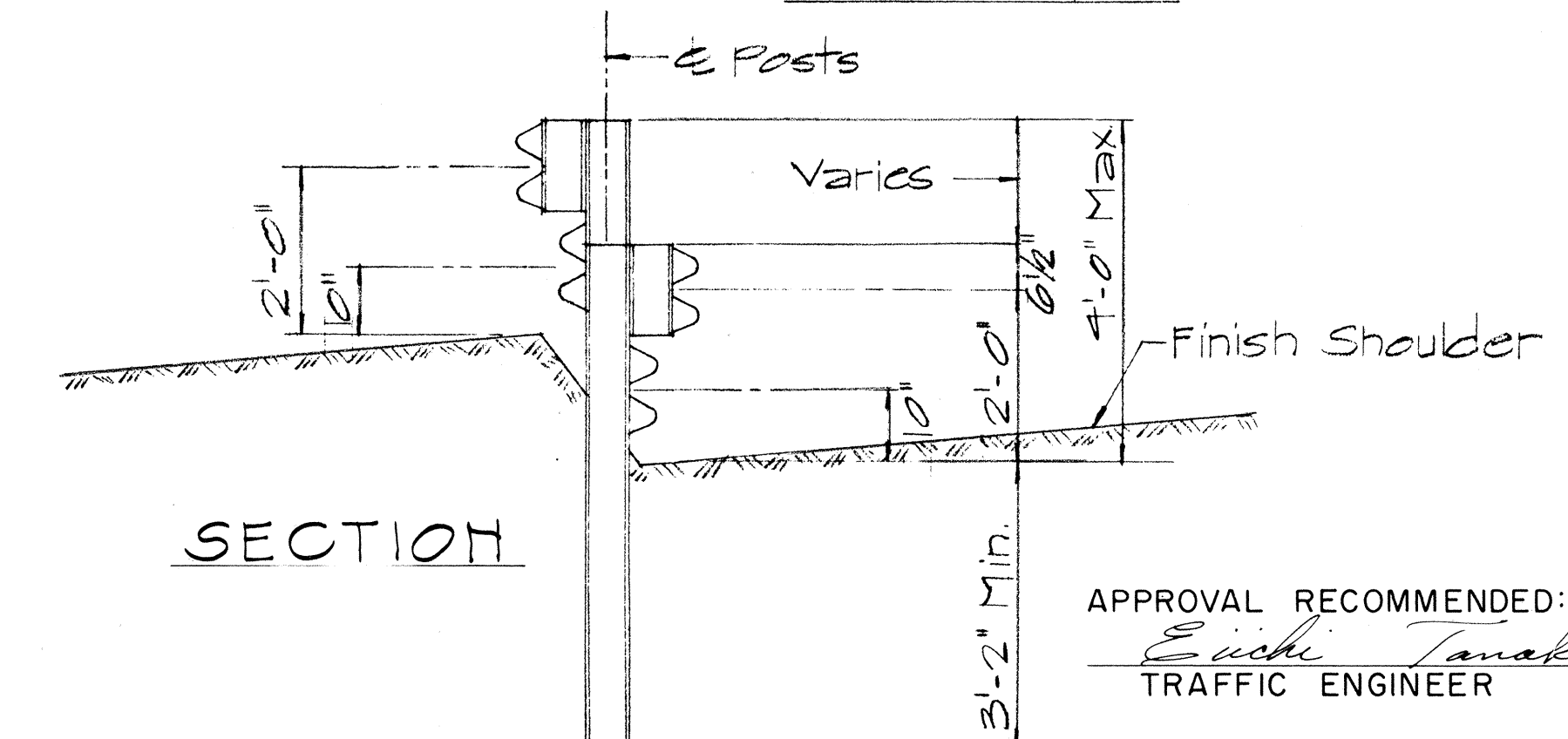
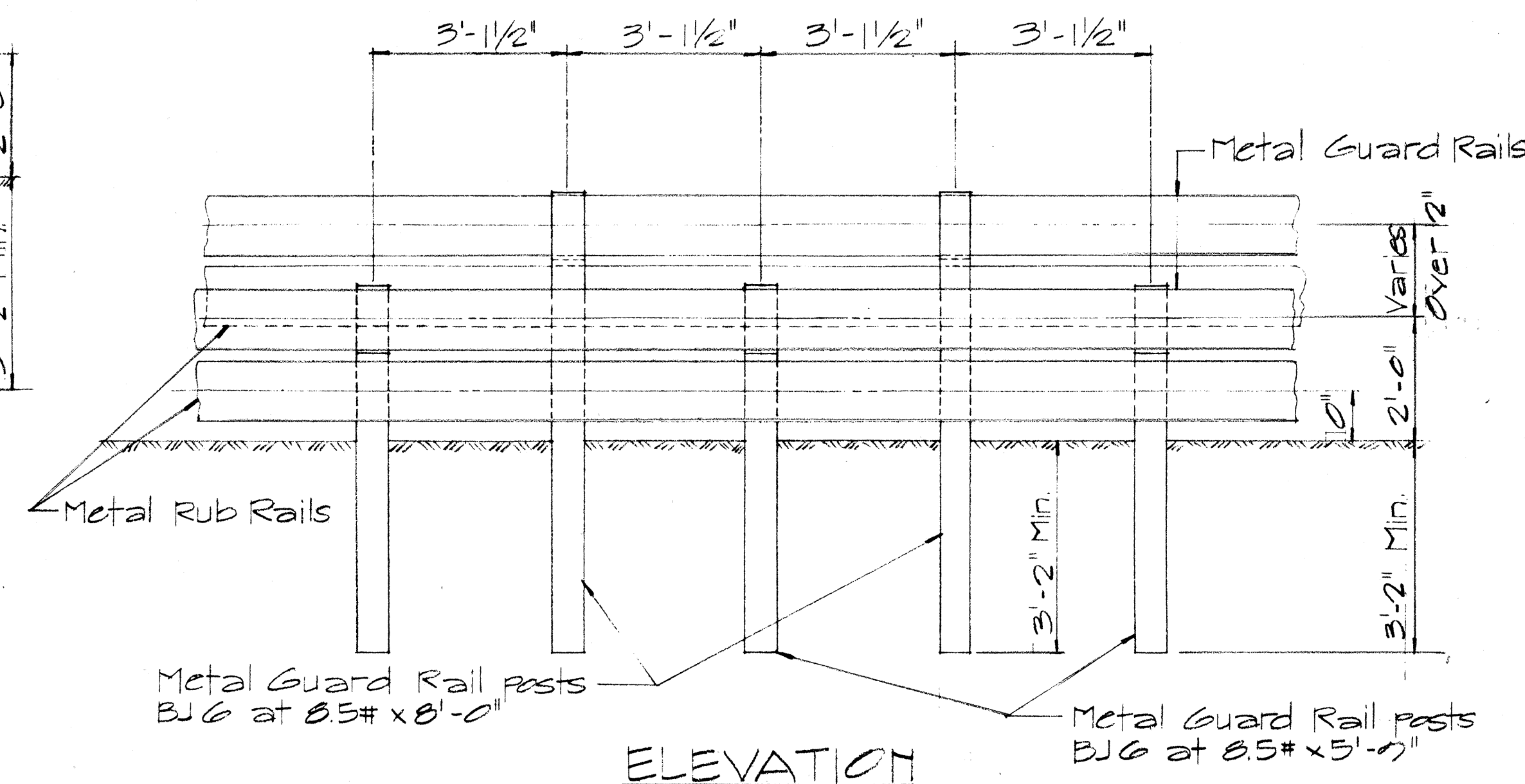
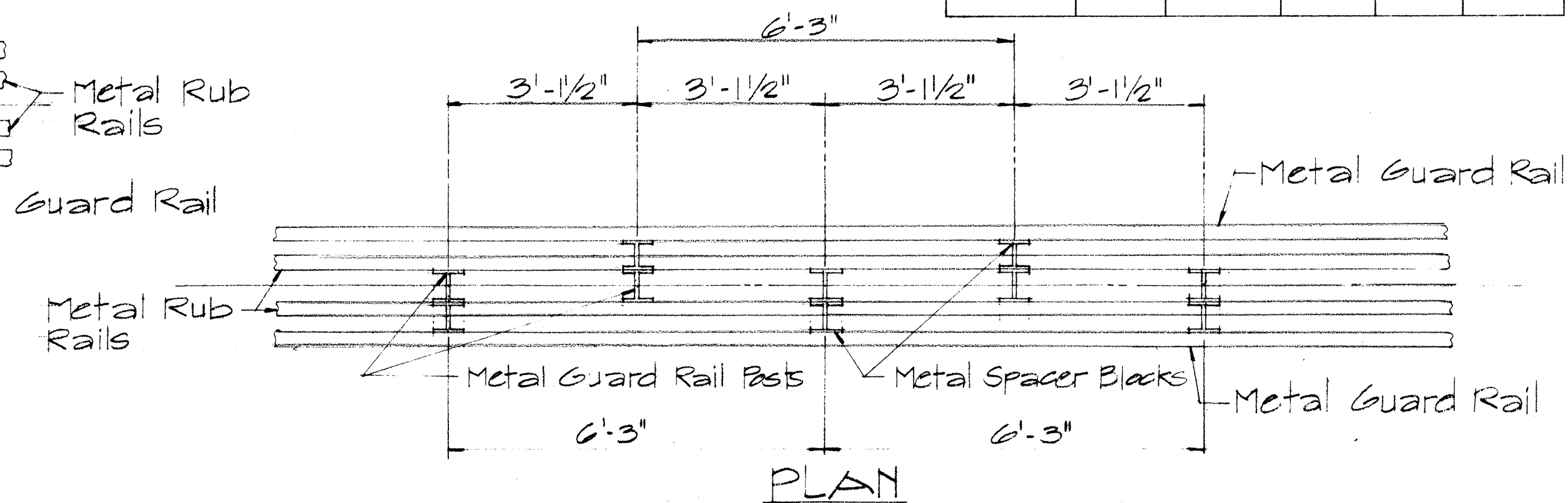
Scale: 3" = 1'-0"

DATE	
DESIGNED BY	
CHECKED BY	
NOTED BY	
ORIGINAL PLAN	
NO.	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	63A-01-81	1982	6	18



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



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

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

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

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

**STANDARD DETAIL
METAL GUARD RAIL
WITH RUB RAIL**

Scale: 1/2" = 1'-0" Feb. 14, 1969

SHEET No. 3 OF 3 SHEETS DT 514

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	