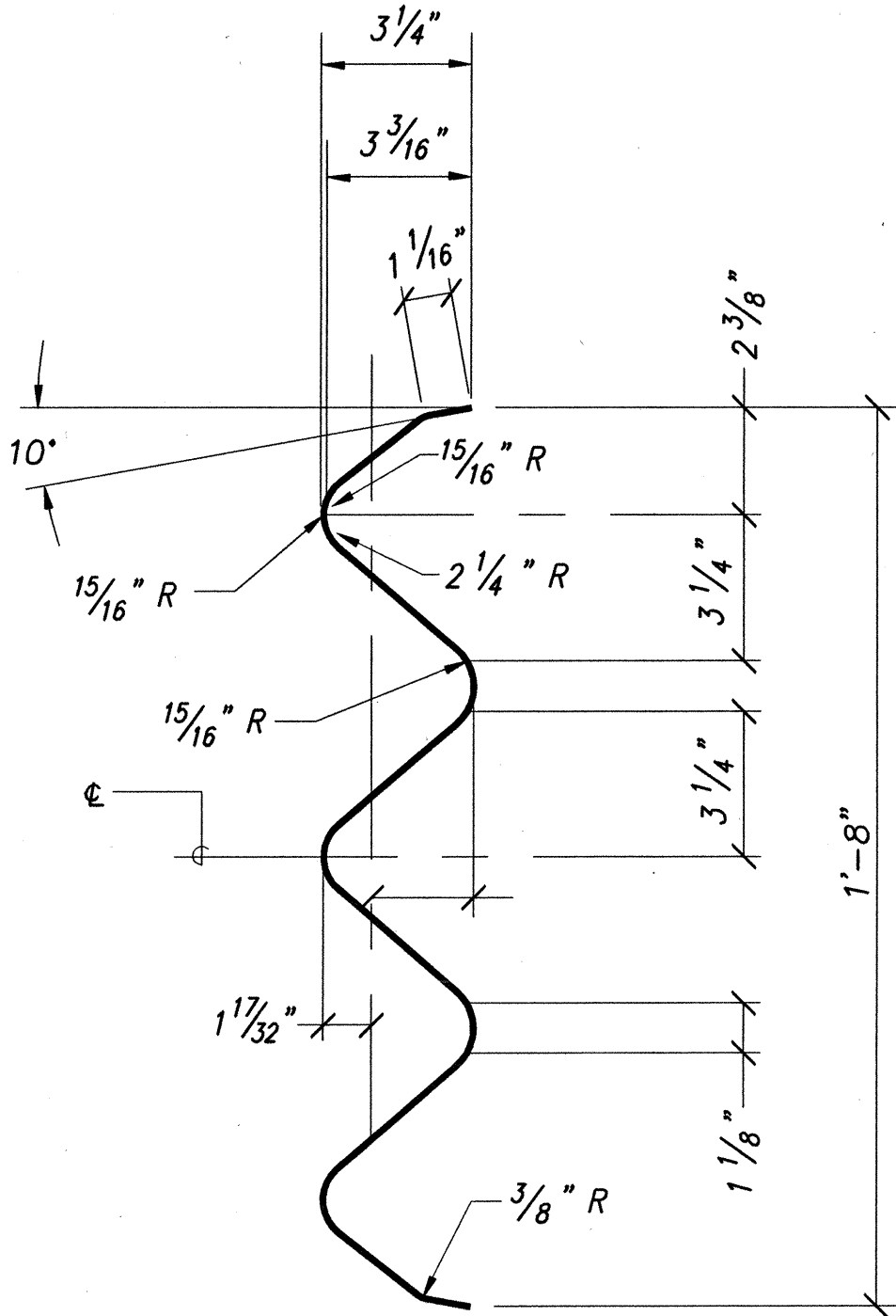
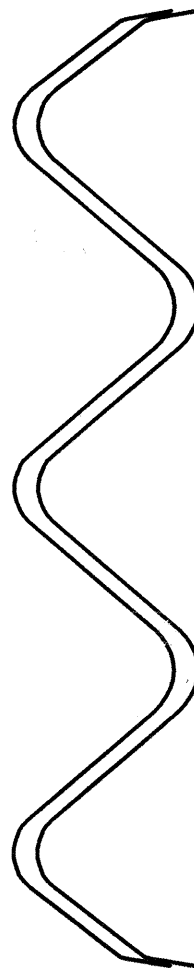


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(38)	2002	26	73



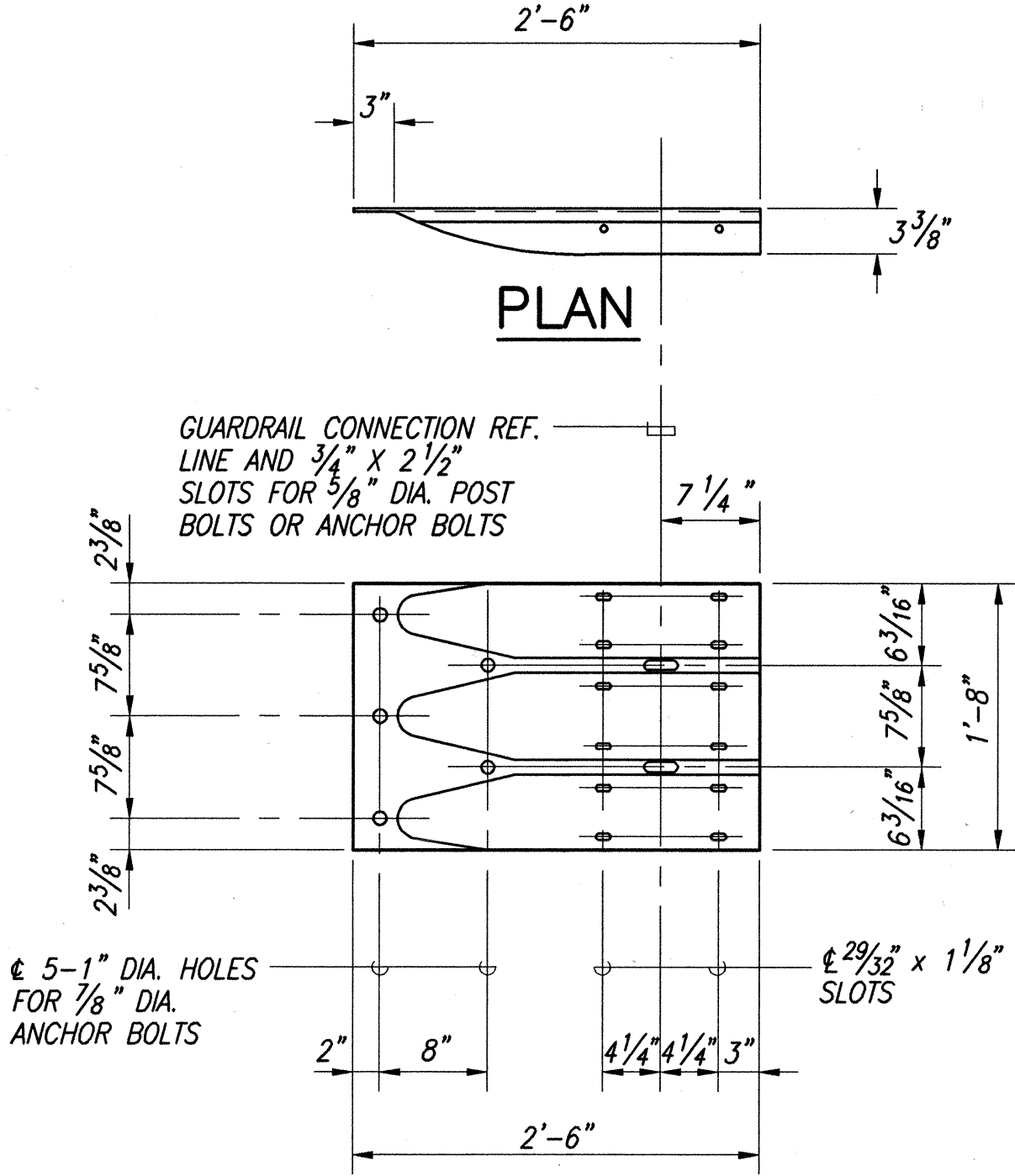
SINGLE



DOUBLE

SECTION THRU RAIL ELEMENT

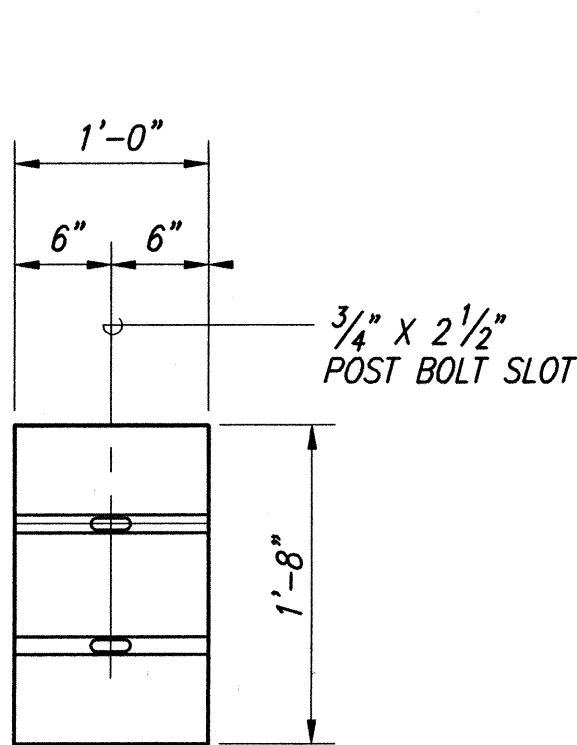
SCALE: 3"=1'-0"



ELEVATION

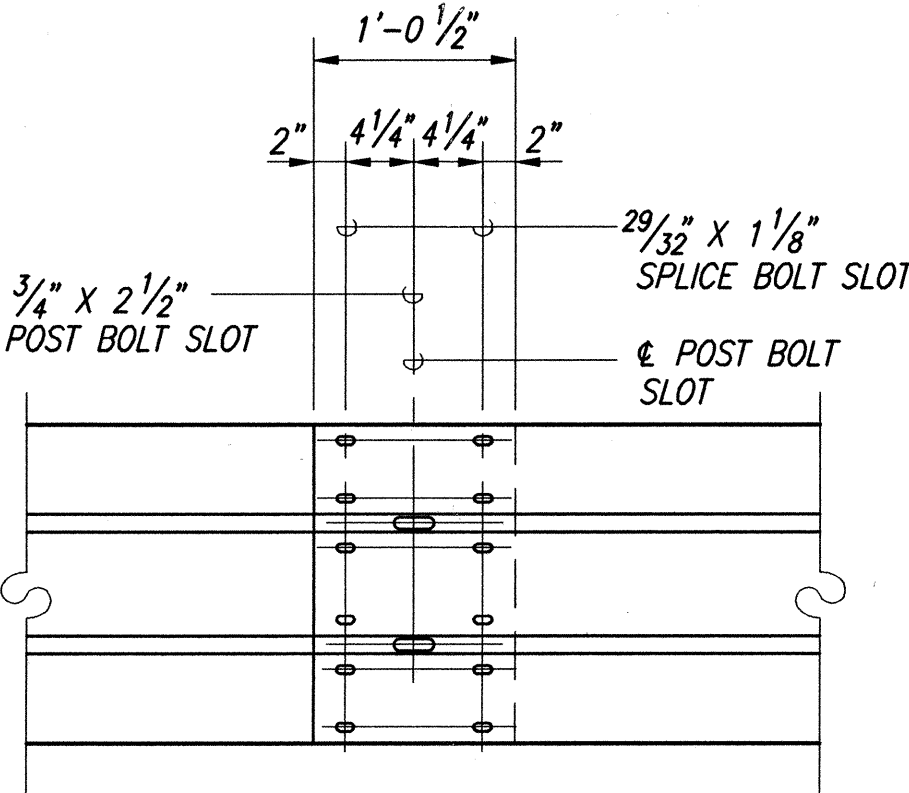
TERMINAL CONNECTOR

SCALE: 1"=1'-0"



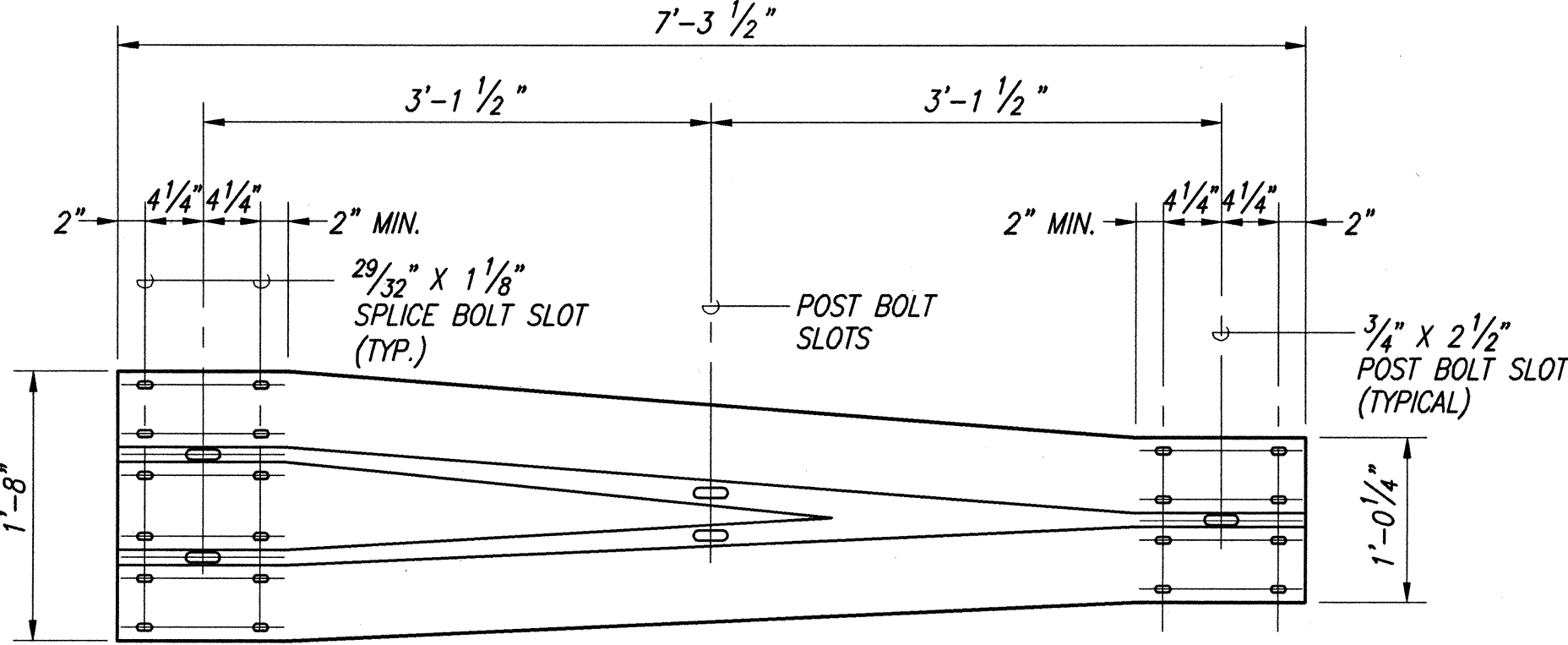
BACKUP PLATE

SCALE: 1"=1'-0"



RAIL SPLICE

SCALE: 1"=1'-0"



TRANSITION SECTION

SCALE: 1"=1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPE "A" ENDPST UPGRADE DETAILS

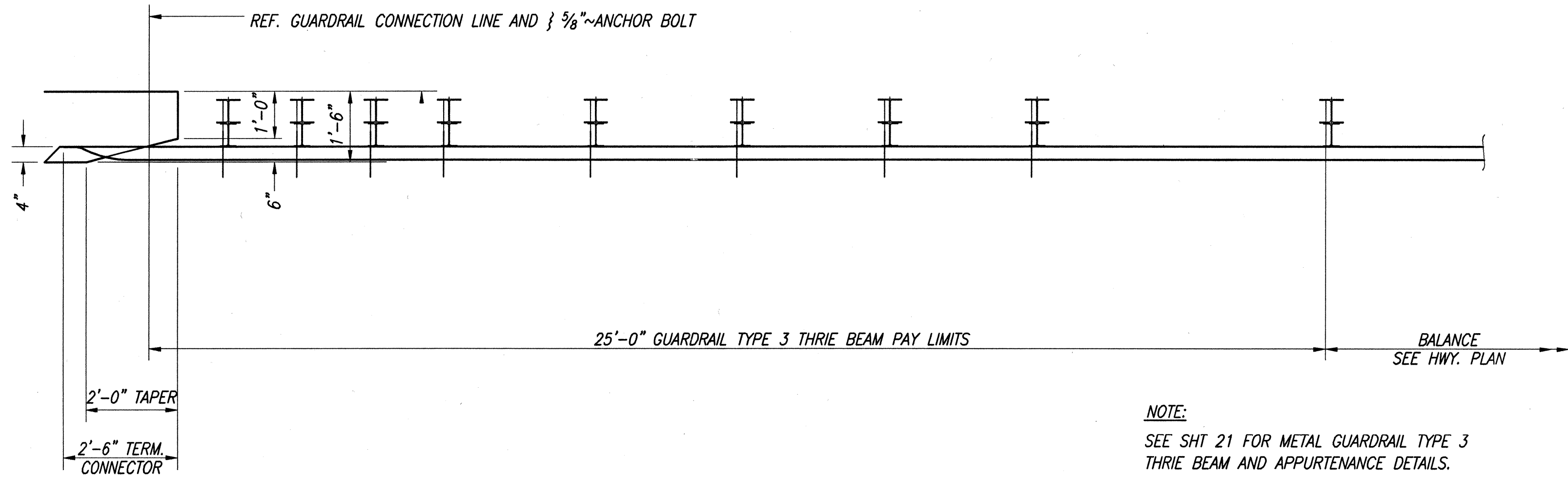
HAWAII BELT ROAD
KUPAPAU LUA BRIDGE WIDENING
HAMAKUA DISTRICT
Federal-Aid Project No. BR-019-2(38)

Scale: As Noted
SHEET No. C-24 OF 41 SHEETS

Date: Oct 2001

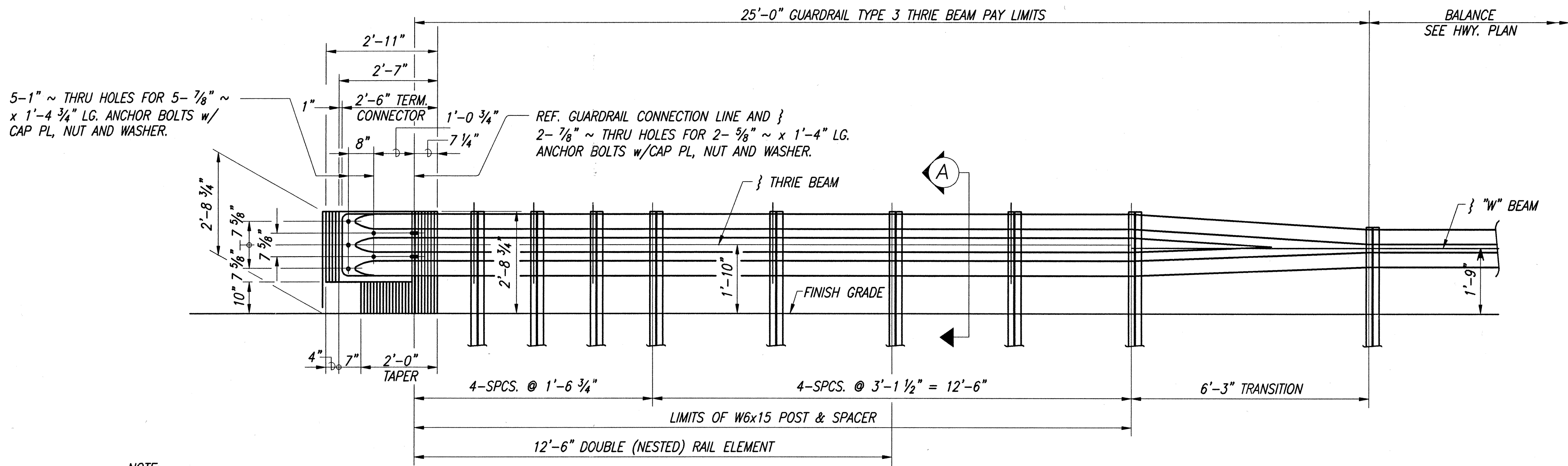
DATE	
DESIGNED BY	
CHECKED BY	
QUANTITIES BY	
NOTED BY	
ORIGINAL PLAN	
NO.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(38)	2002	27	73



NOTE:
SEE SHT 21 FOR METAL GUARDRAIL TYPE 3
THRIE BEAM AND APPURTENANCE DETAILS.

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



NOTE:
SEE SHT S-26 FOR DETAILS

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

TYPE "A" ENDPOST UPGRADE PLAN AND ELEVATION

ORIGINAL PLAN	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
NO.	

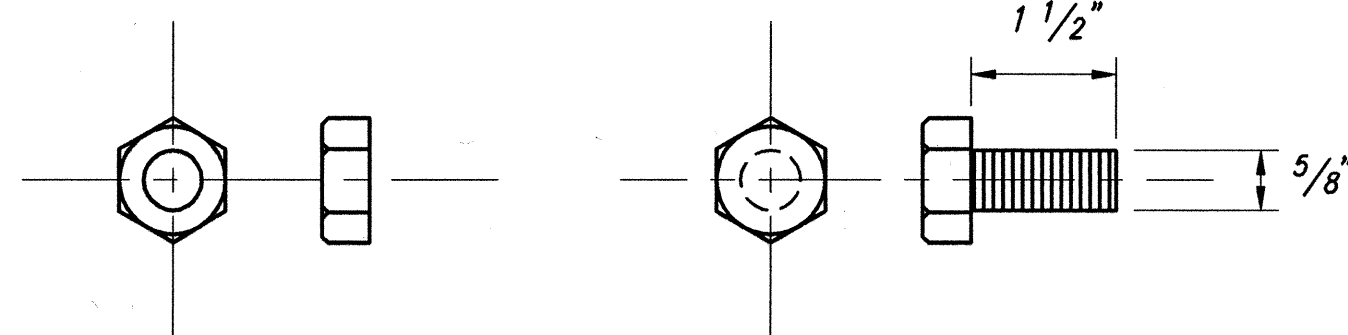
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
TYPE "A" ENDPOST UPGRADE DETAILS

HAWAII BELT ROAD
KUPAPAU LUA BRIDGE WIDENING
HAMAKUA DISTRICT
Federal-Aid Project No. BR-019-2(38)

Scale: As Noted
SHEET No. C-25 OF 41 SHEETS

Date: Oct 2001

FED.ROAD DIST.NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(38)	2002	28	73

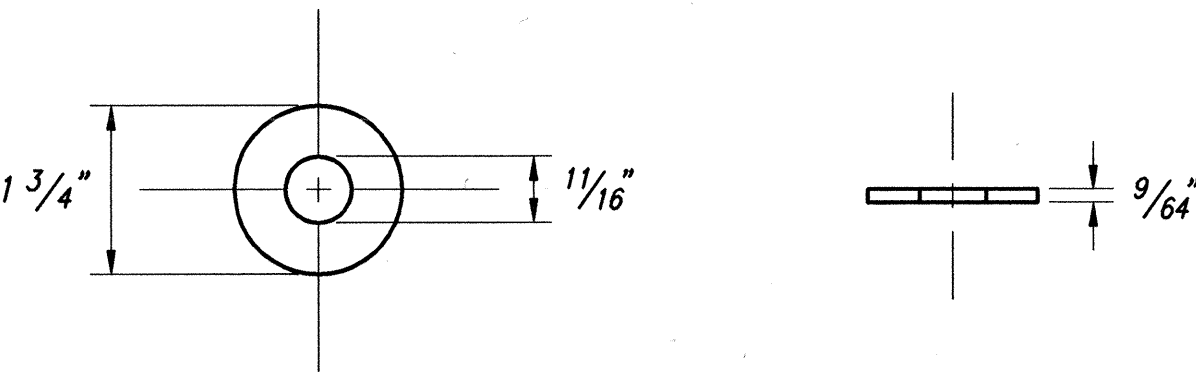


5/8"-11 HEX NUT

5/8"-11 HEX BOLT

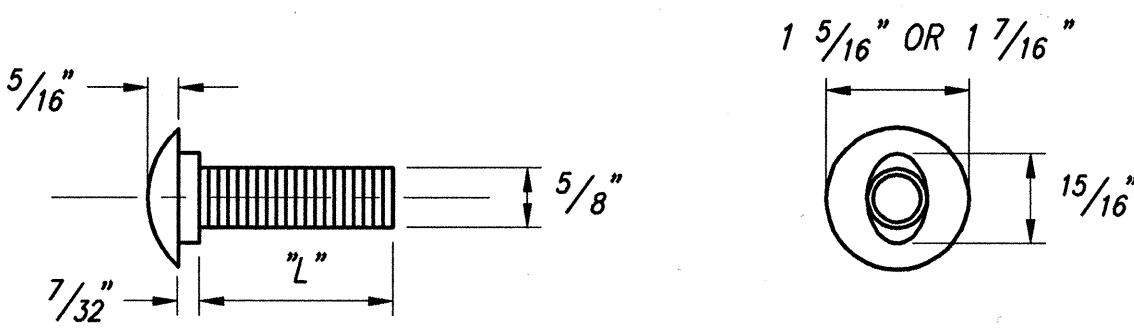
5/8" DIA. HEX BOLT AND NUT

SCALE: 6"=1'-0"

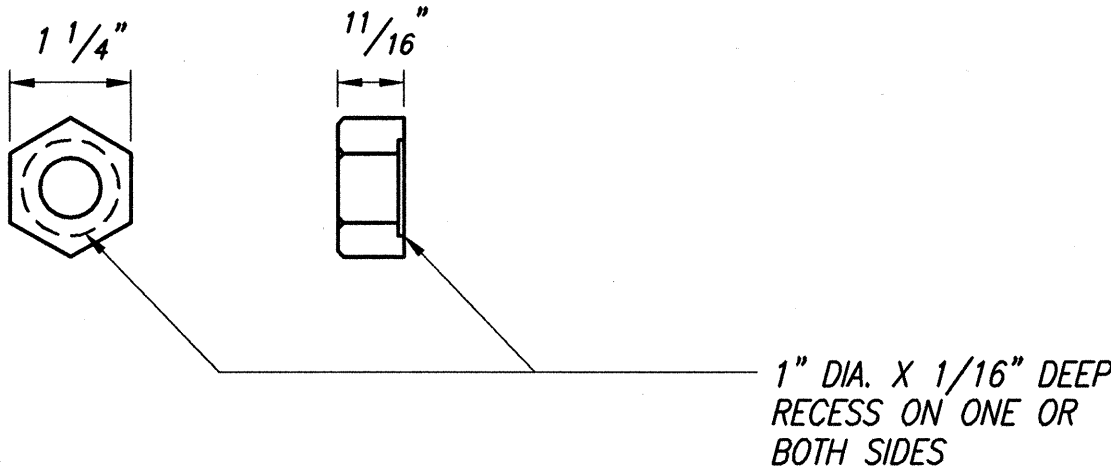


STEEL WASHER FOR 5/8" DIA. BOLT

SCALE: 6"=1'-0"

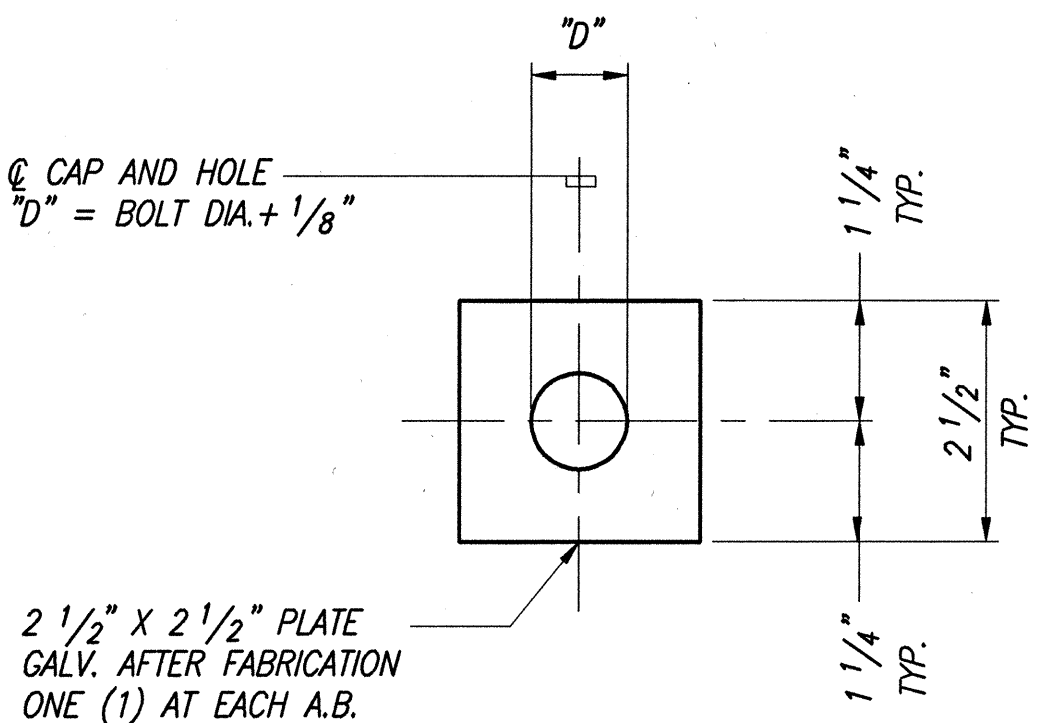


Length	Requirement
7/32"	THREAD LENGTH
1 1/4"	FULL THREAD
2"	1 1/2" MIN. THREAD LENGTH

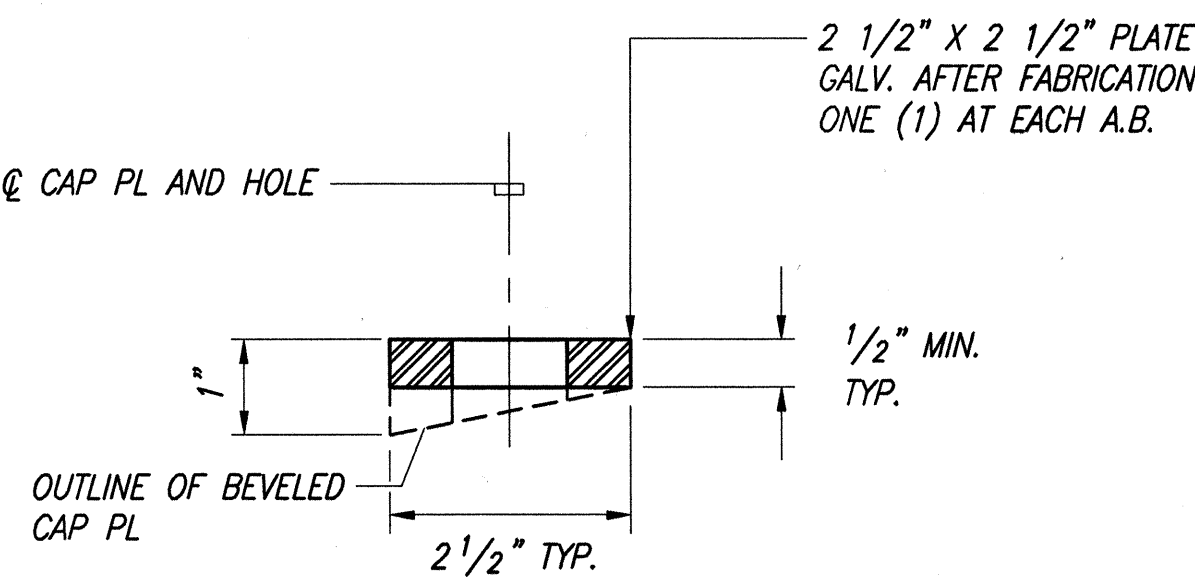


5/8" DIA. BUTTON HEAD
BOLT AND RECESS NUT

SCALE: 6"=1'-0"



FRONT VIEW



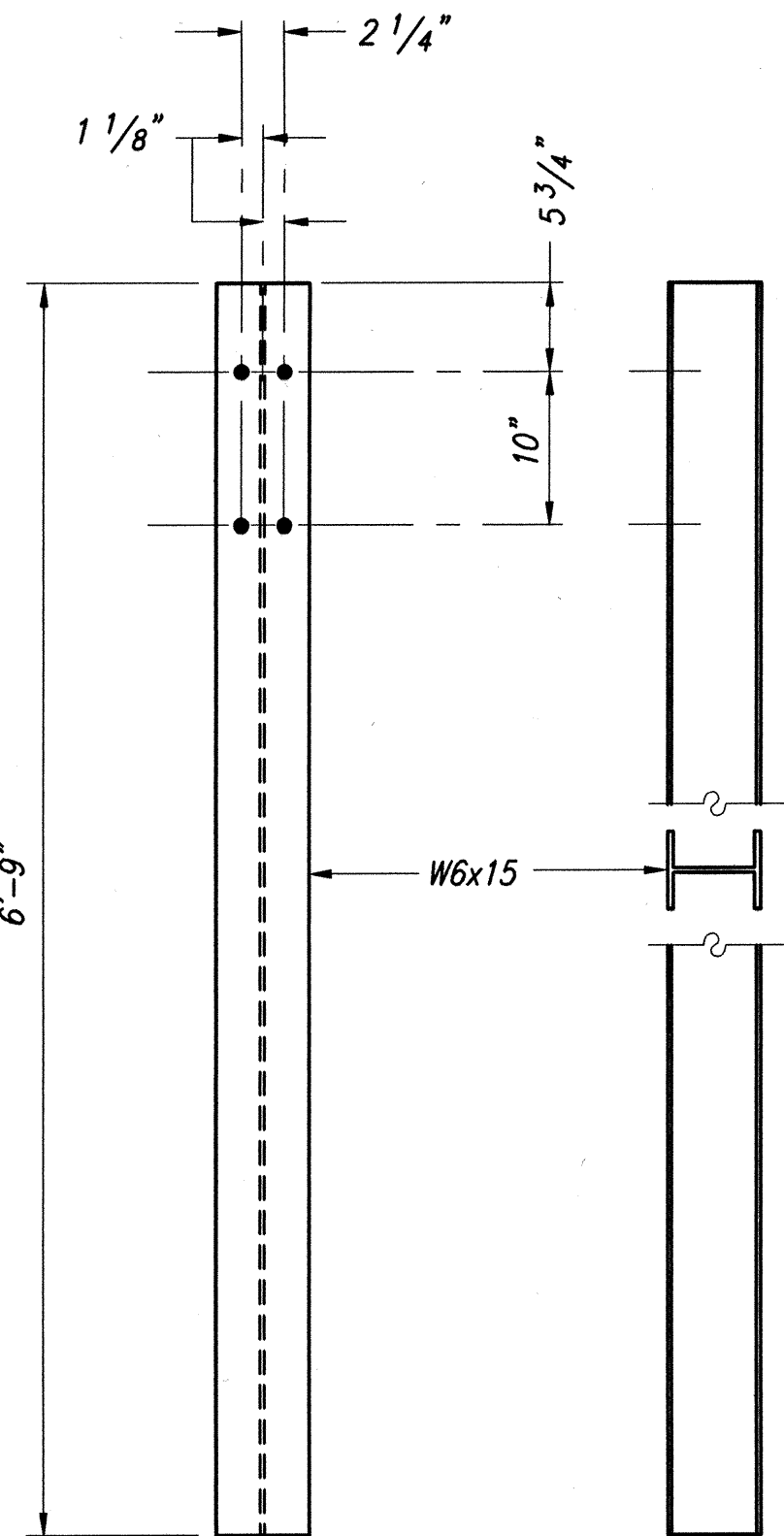
SECTION

CAP (BEARING) PLATE DETAIL

SCALE: 6"=1'-0"

NOTES:

1. THE WORK NECESSARY TO CONNECT GUARDRAIL TO CONCRETE END POST SHALL INCLUDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AND WILL NOT BE PAID FOR SEPARATELY.
2. LAP TERMINAL CONNECTOR AND RAIL ELEMENT IN DIRECTION OF TRAFFIC TO PREVENT SNAGGING.
3. ALL ANCHOR BOLTS SHALL BE HIGH STRENGTH BOLTS CONFORMING TO THE REQUIREMENTS OF ASTM 325 AND STANDARD SPECIFICATION, SECTION 713.04.
4. ANCHOR BOLT LENGTH SHALL BE SUCH THAT A SNUG FIT OF THE ELEMENTS AND FULL THREAD ENGAGEMENT PLUS 1/4" (MAX) IS ATTAINED.
5. "TERMINAL CONNECTOR", "TRANSITION SECTION" AND THRIE BEAM SHALL BE FABRICATED FROM 10 GAUGE STEEL CONFORMING TO THE REQUIREMENTS OF AASHTO M 180 TYPE II, CLASS B.
6. "TERMINAL CONNECTOR" AND STANDARD SPACER, INCLUDING ALL ANCHOR BOLTS, CAP PL, NUTS AND WASHERS, SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
7. CAP PL SHALL BE FABRICATED FROM ASTM A 36.
8. FIRST 25'-0" OF GUARDRAIL ADJOINING "TERMINAL CONNECTOR" SHALL BE GALVANIZED STEEL AND SUPPORTS SPACED AS SHOWN ON THE DETAIL DRAWINGS. THIS SECTION OF RAIL SHALL BE PLACED TANGENT TO END POST OR PARALLEL TO ROADWAY, UNLESS CONDITIONS AT SITE RENDERS IT IMPOSSIBLE TO DO SO. FLARE POINT TO BE DETERMINED IN FIELD.
9. NEW GUARDRAIL TYPE 3 THRIE BEAM ADJOINING "TERMINAL CONNECTOR" SHALL BE GALVANIZED STEEL AND SUPPORTS SPACED AS SHOWN ON THE DETAIL DRAWINGS. THIS SECTION OF RAIL SHALL BE PLACED ON TANGENT TO END POST OR PARALLEL TO ROADWAY UNLESS CONDITIONS AT SITE RENDERS IT IMPOSSIBLE TO DO SO. FLARE POINT TO BE DETERMINED IN FIELD.
10. DOUBLE (NEST 1ST PANEL) THRIE BEAM ELEMENTS AT ALL END POST CONNECTIONS EXCEPT ON HIGHWAYS WITH ONE-WAY TRAFFIC PATTERN, USE SINGLE THRIE-BEAM ELEMENTS AT END POST ON TRAILING END ONLY.
11. WHERE DOUBLE (NESTED) BEAM OCCUR, 12" "BACK-UP PLATE" NOT REQUIRED.
12. HEADS OF THROUGH ANCHOR BOLTS SHALL BE PLACED ON THE TRAFFIC SIDE OF THE RAIL.
13. ALL STEEL SHAPES, RAILS AND PLATES SHALL CONFORM TO ASTM A 36 SPECIFICATIONS.

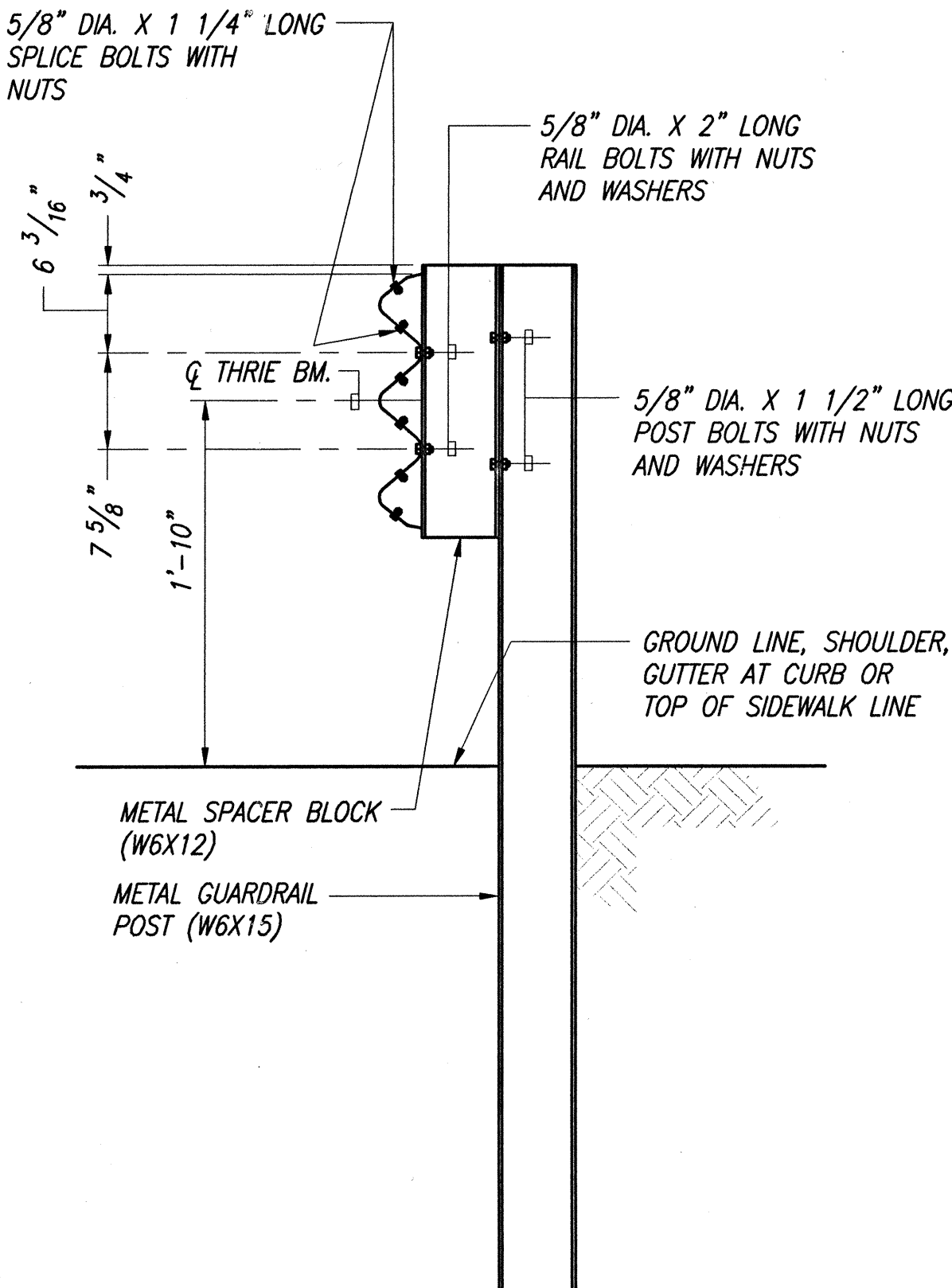


FRONT

SIDE

POST DETAILS

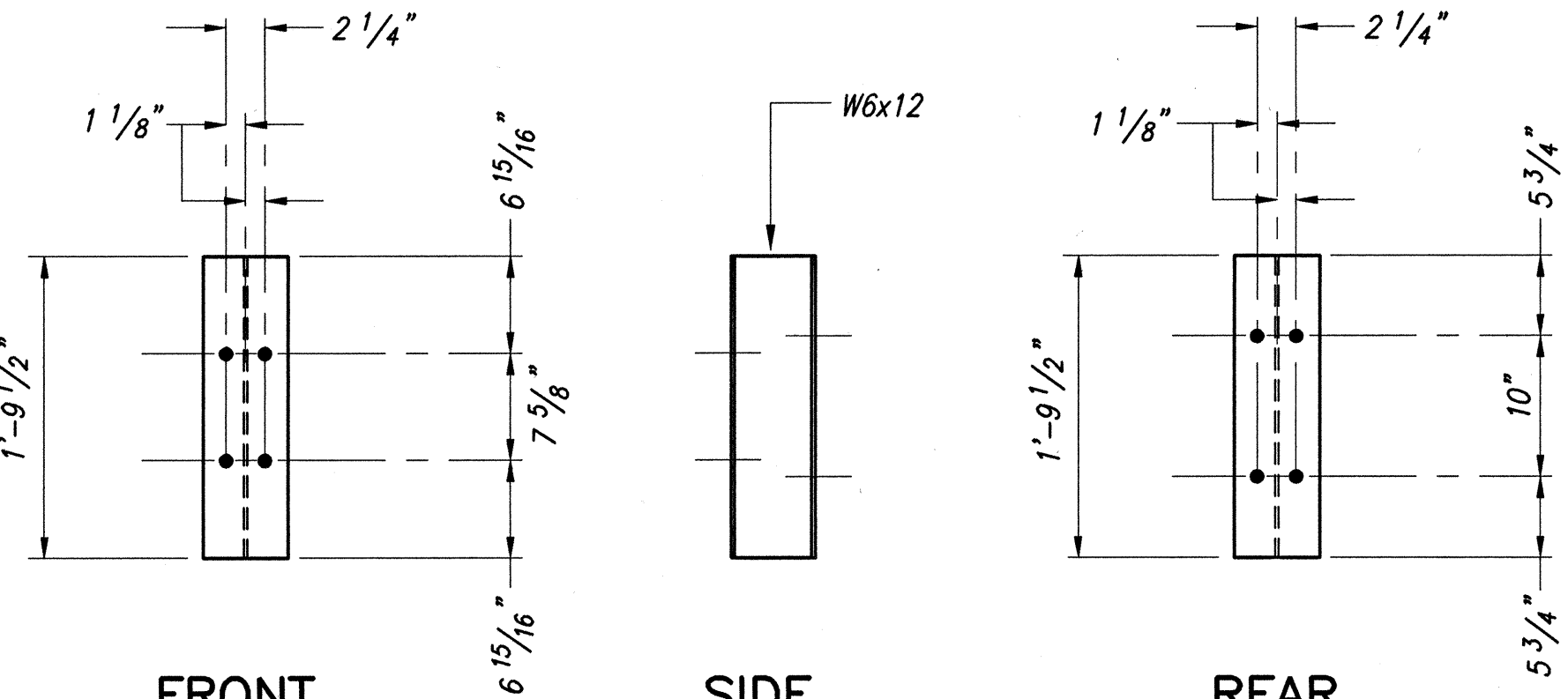
SCALE: 1"=1'-0"



METAL GUARDRAIL ON METAL
POST WITH METAL SPACER BLOCK

TYPICAL SECTION

SCALE: 1"=1'-0"



FRONT

SIDE

REAR

SPACER BLOCK DETAILS

SCALE: 1"=1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
TYPE "A" ENDPST UPGRADE DETAILS

HAWAII BELT ROAD
KUPAPAU LUA BRIDGE WIDENING
HAKAUA DISTRICT
Federal-Aid Project No. BR-019-2(38)

Scale: As Noted Date: Oct 2001
SHEET No. C-26 OF 41 SHEETS