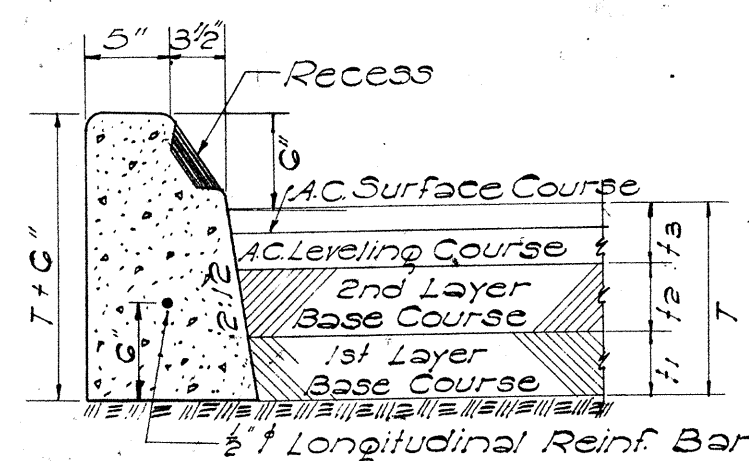


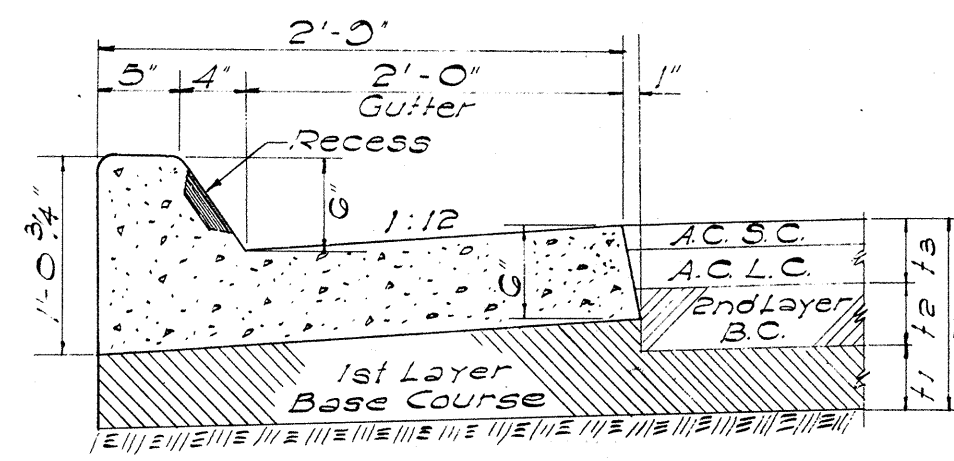
2/17/57
9/22/61

FED. ROAD DIST. NO.	STATE	FED. AID YEAR	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	1-000-109	1945	27	27

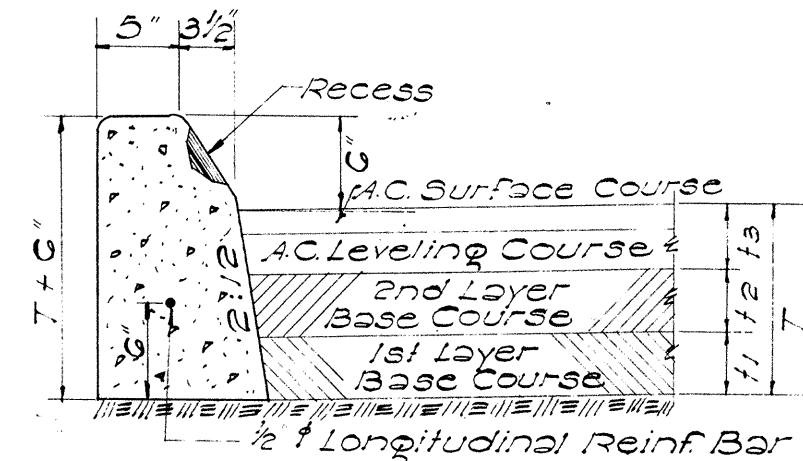
AUG. 1957



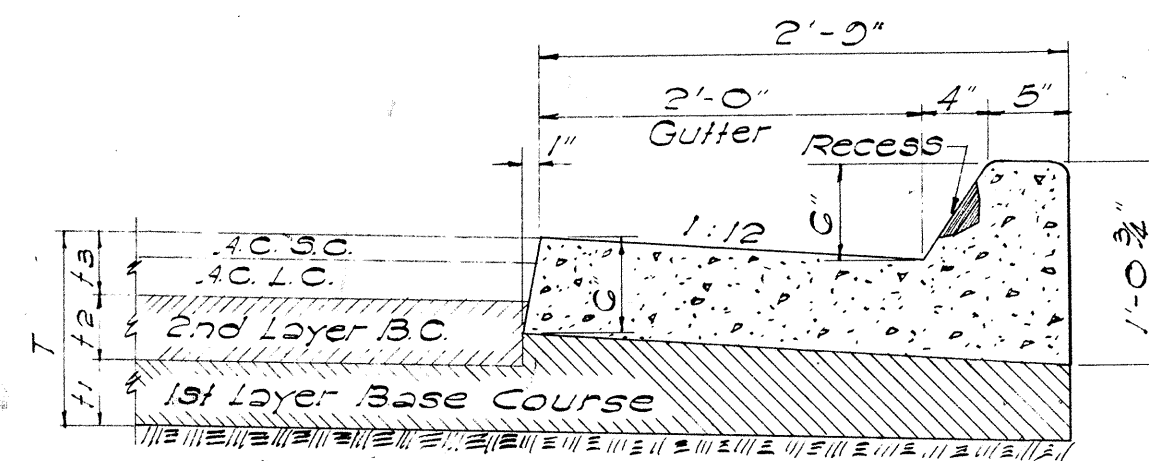
TYPE "A" & "B" CURB
SCALE: 1" = 1'-0"



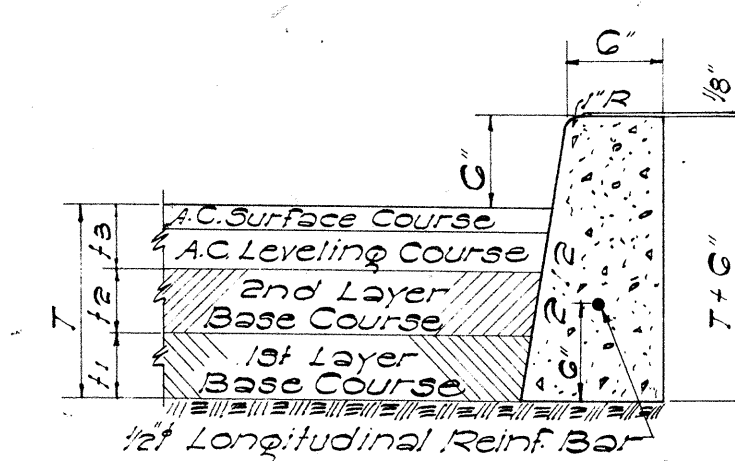
TYPE "AG" & "BG" CURB & GUTTER
SCALE: 1" = 1'-0"



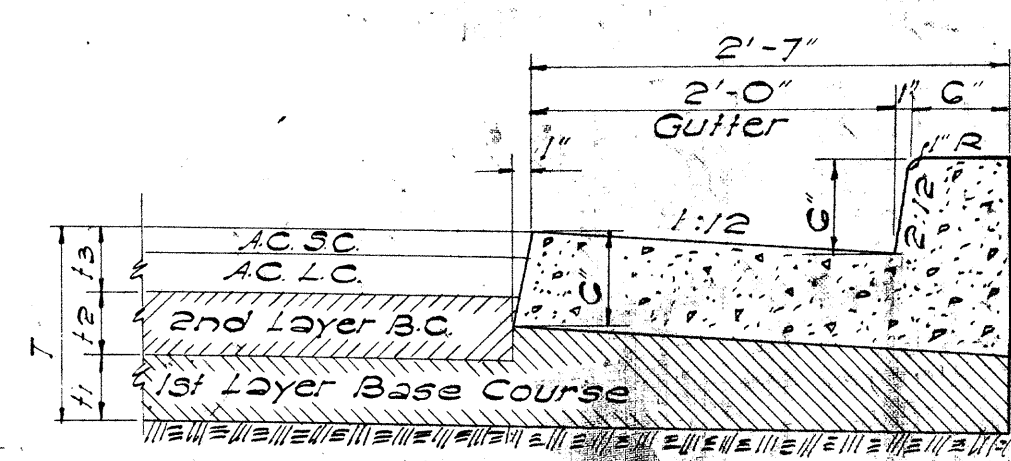
TYPE "C" CURB
SCALE: 1" = 1'-0"



TYPE "CG" CURB & GUTTER
SCALE: 1" = 1'-0"

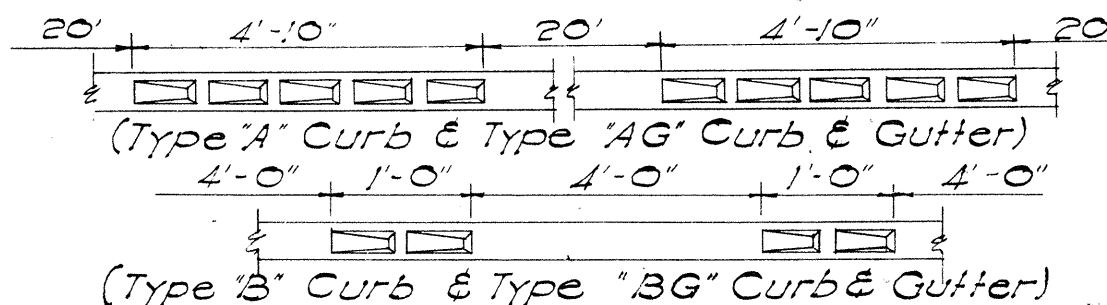


TYPE "D" CURB
SCALE: 1" = 1'-0"

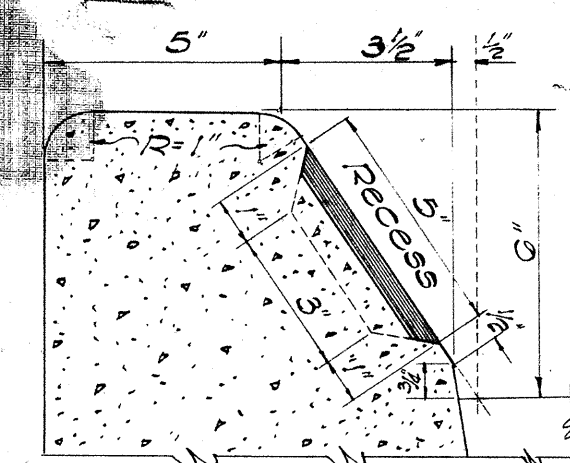


TYPE "DG" CURB & GUTTER
SCALE: 1" = 1'-0"

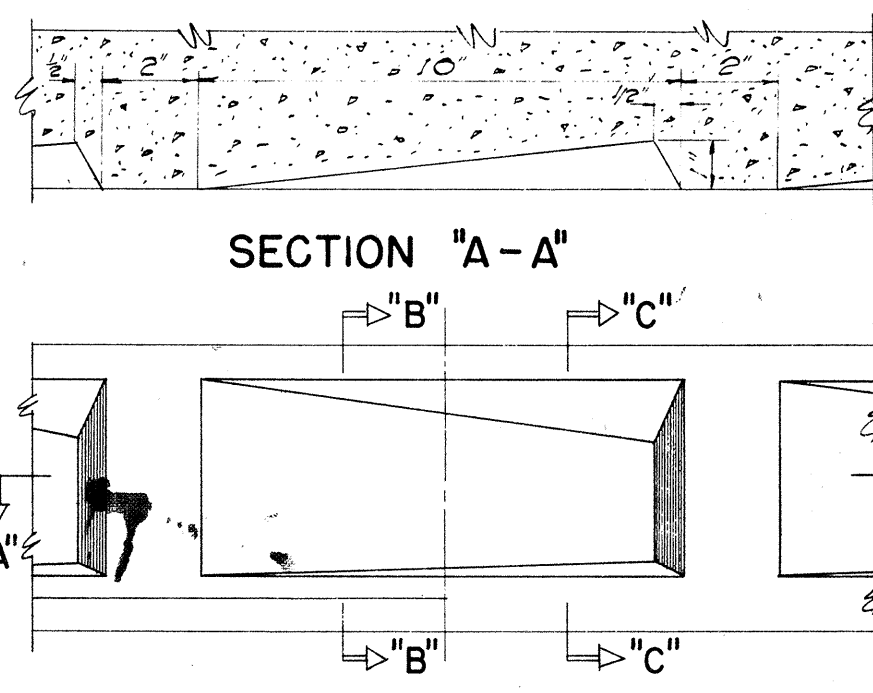
General Note Covering All Types of Curbs:
Occasionally curb rests on first layer of base course. See typical sections.



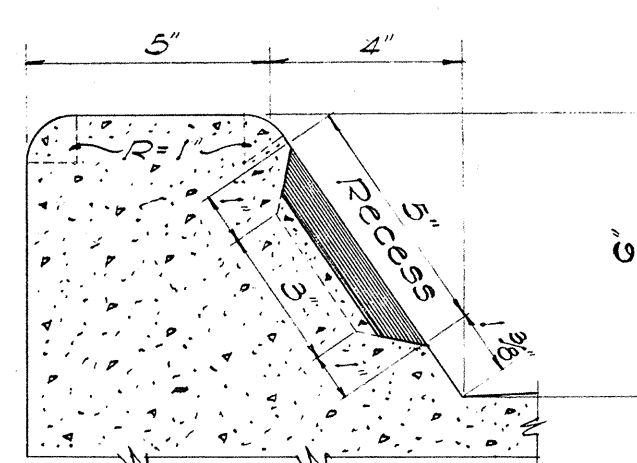
TYPE AND SPACING OF RECESSES



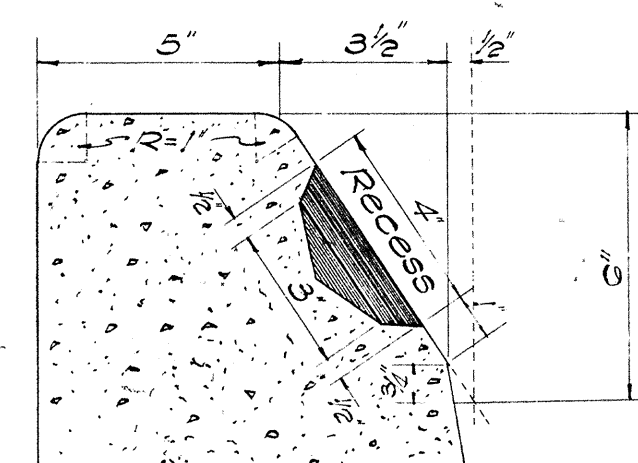
SECTION "B-B"
TYPE "A" & "B" CURB



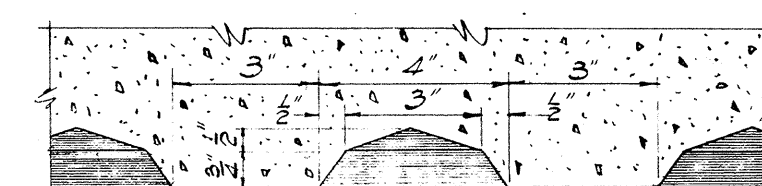
ELEVATION
SCALE: 3" = 1'-0"



SECTION "C-C"
TYPE "AG" & "BG" CURB

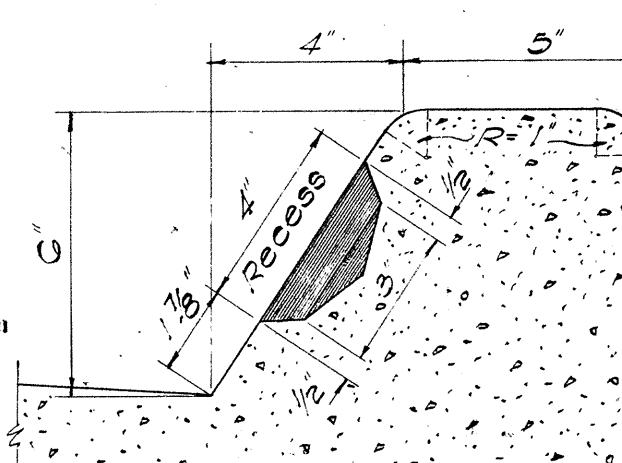


SECTION "Y-Y"
TYPE "C" CURB



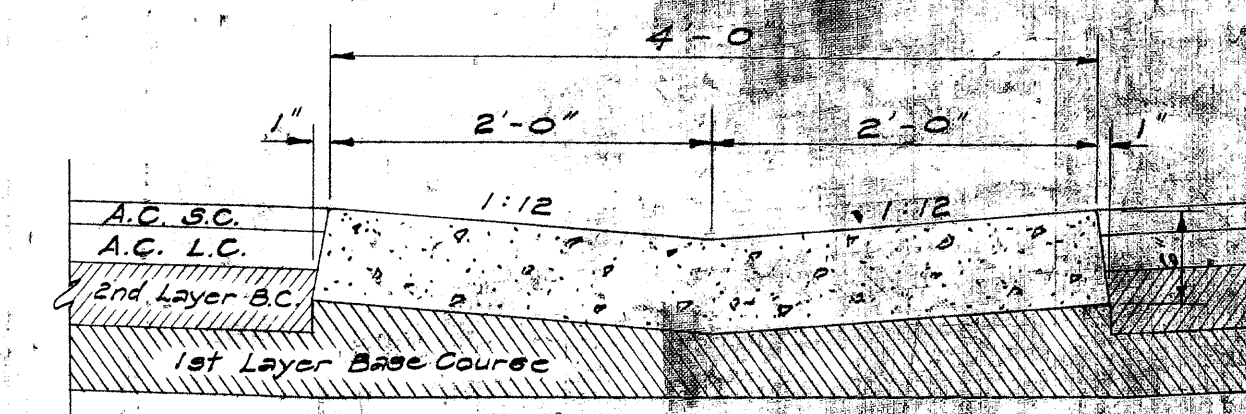
SECTION "X-X"

ELEVATION
SCALE: 3" = 1'-0"



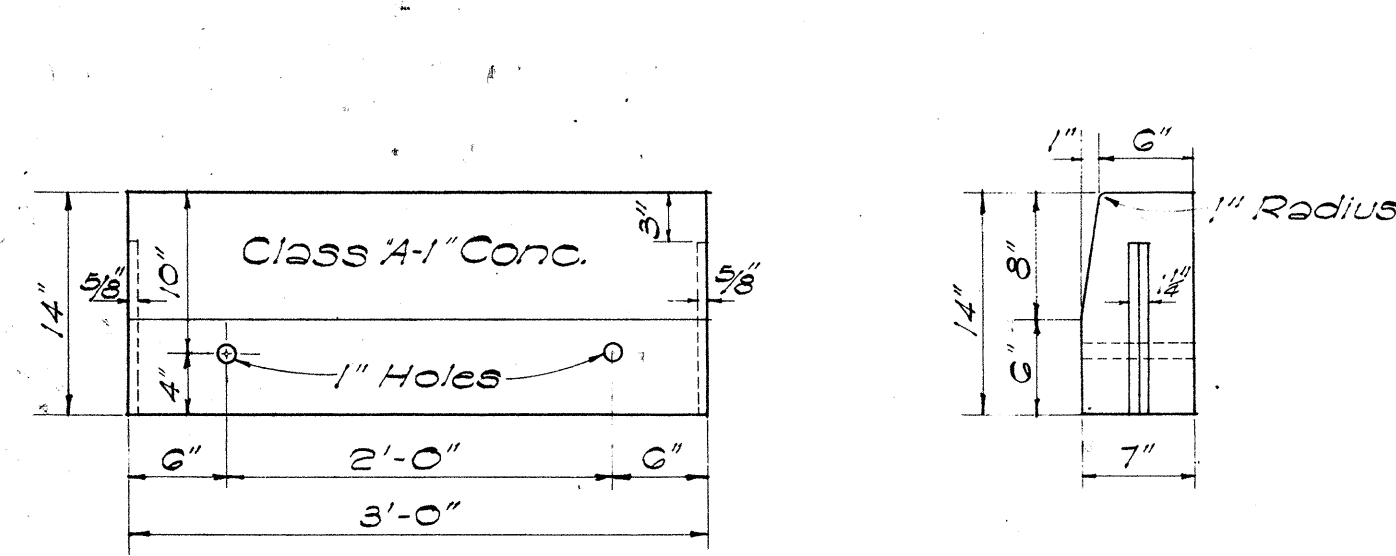
SECTION "Z-Z"
TYPE "CG" CURB

- NOTES:
- Types "AG", "BG", "CG", "DG" and "EG" Concrete Curbs and Gutters are to be poured monolithically.
 - Types "A", "B" and "C" Curbs and Types "AG", "BG" and "CG" Curbs and Gutters occur at Median Strips and Traffic Islands.
 - Shaded area in Curbs are to be painted with an approved white lacquer. (One Coat)
 - All Conc. Curbs and Gutters shown herein are to be of Class "A-1" Conc. and Cast in Place.

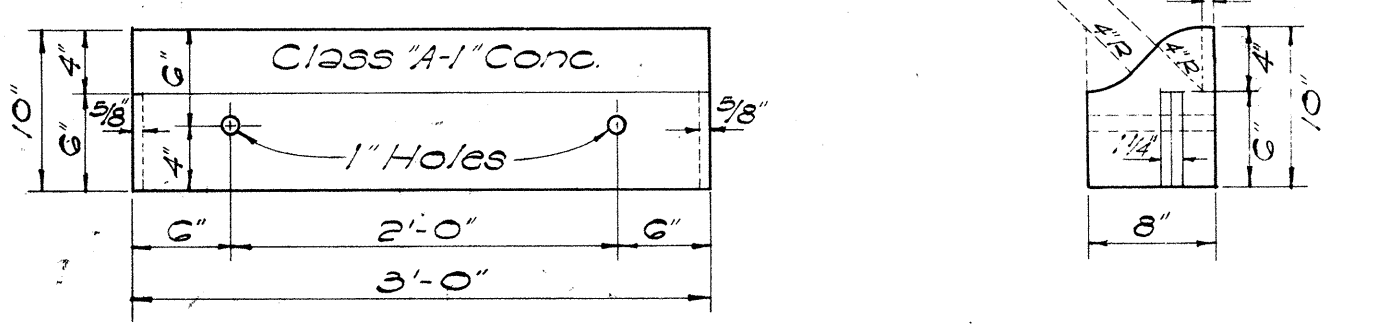


TYPE "G" GUTTER
SCALE: 1" = 1'-0"

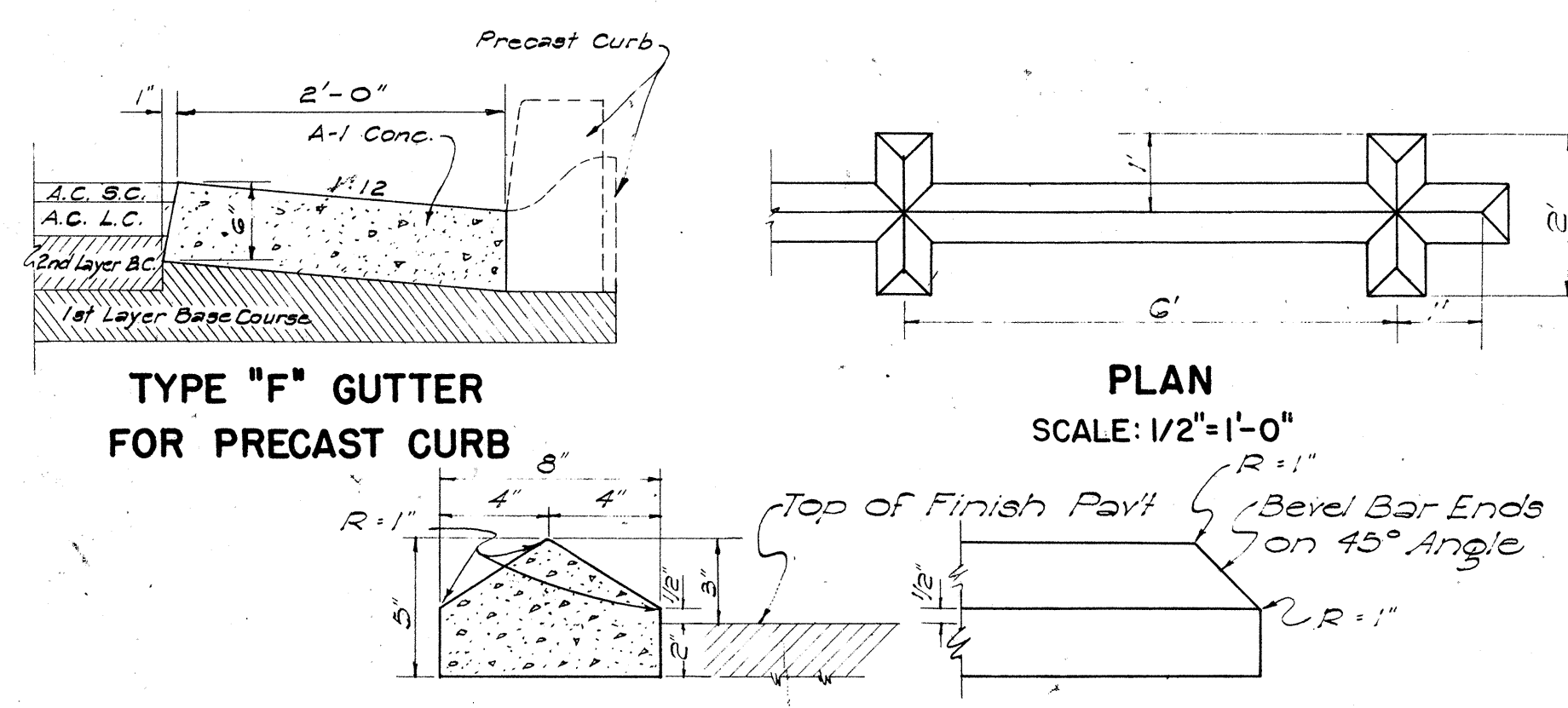
DETAILS OF CAST-IN-PLACE CONC. CURBS AND GUTTERS



FRONT ELEV.
END ELEV.
PRECAST CONC. CURB
SCALE: 1" = 1'-0"



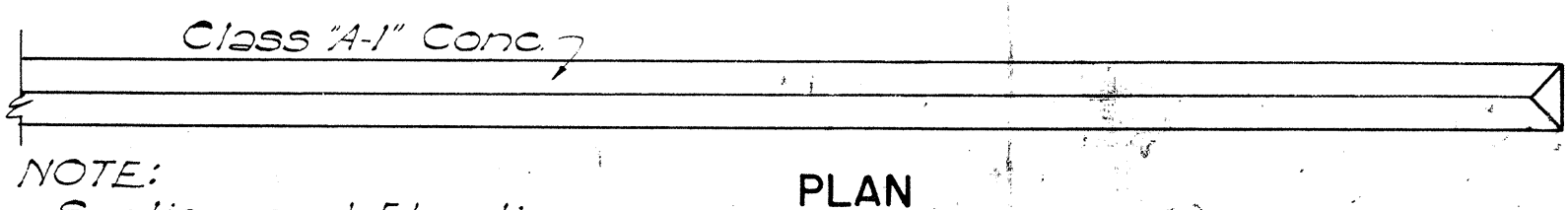
FRONT ELEV.
END ELEV.
PRECAST CONC. ROLL CURB
SCALE: 1" = 1'-0"



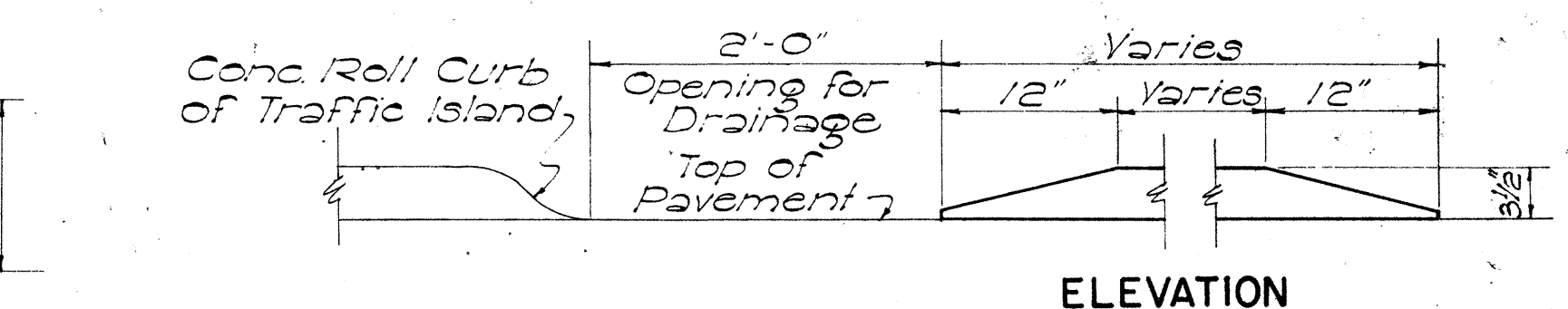
TYPE "F" GUTTER
FOR PRECAST CURB
SCALE: 1/2" = 1'-0"

SECTION
ELEVATION
RAISED TRAFFIC BARS
SCALE: 2" = 1'-0"

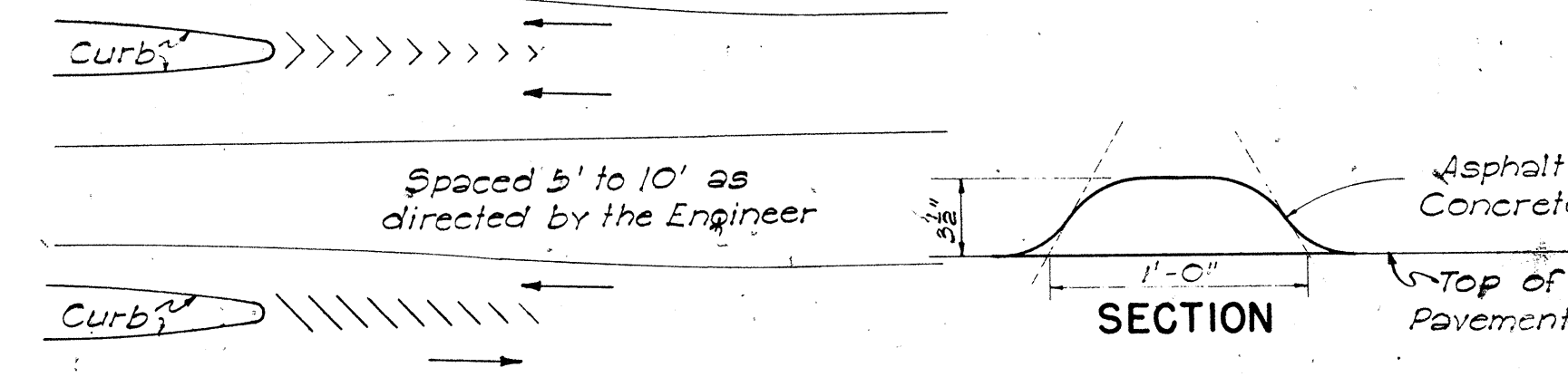
NOTE:
Section and Elevation for Jiggle Bars are same as the Traffic Bars.



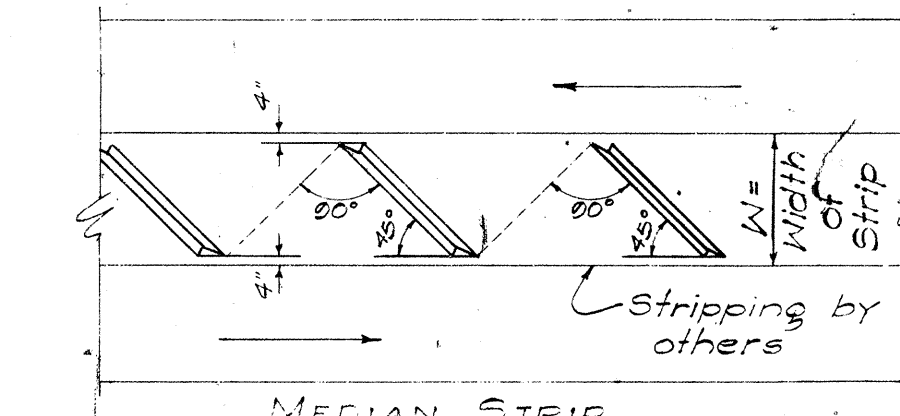
RAISED JIGGLE BARS
SCALE: 1/2" = 1'-0"



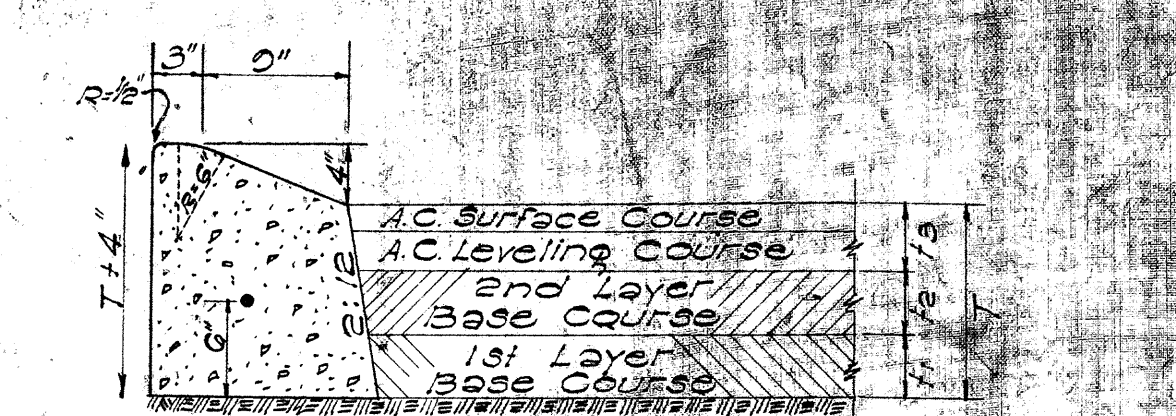
ELEVATION



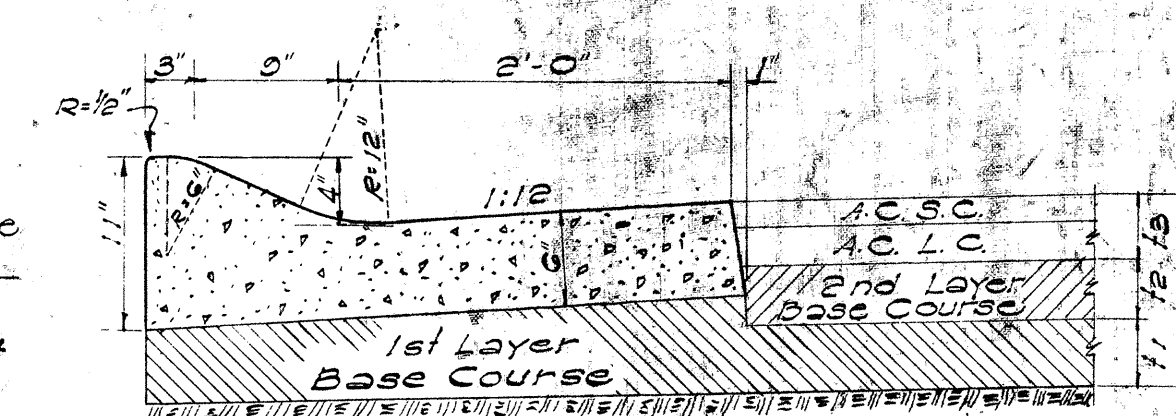
A.C. TRAFFIC ROLL
NOT TO SCALE



LAYOUT OF JIGGLE BARS
NOT TO SCALE



TYPE "E" CAST-IN-PLACE
CONCRETE CURB
SCALE: 1" = 1'-0"



TYPE "EG" CAST-IN-PLACE
CONC. CURB & GUTTER
SCALE: 1" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CONCRETE CURBS,
CONCRETE CURBS & GUTTERS
SCALES AS NOTED

SHEET NO. 1 OF 3 SHEETS

APPROVED: [Signature]
DATE: Aug. 25, 1957
STATE HIGHWAY ENGINEER

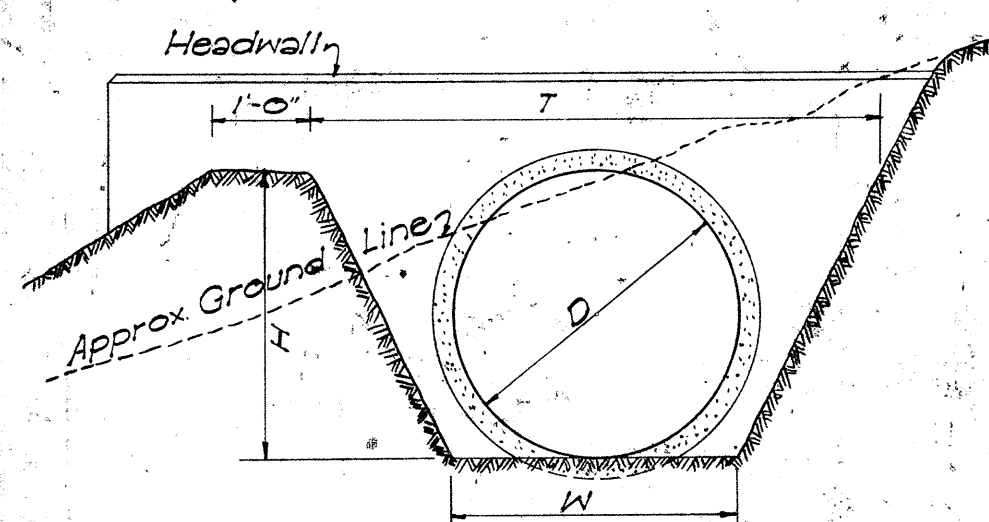
"E" and "EG" Curbs have been revised 7-20-57
"G" and "F" Gutters have been added 9-22-61

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

D	W	H	T=H+H
18"	24"	2'-0"	4'-0"
24"	30"	2'-0"	4'-0"
30"	36"	2'-0"	4'-0"
36"	42"	2'-0"	4'-0"

DETAIL OF OUTLET DITCH

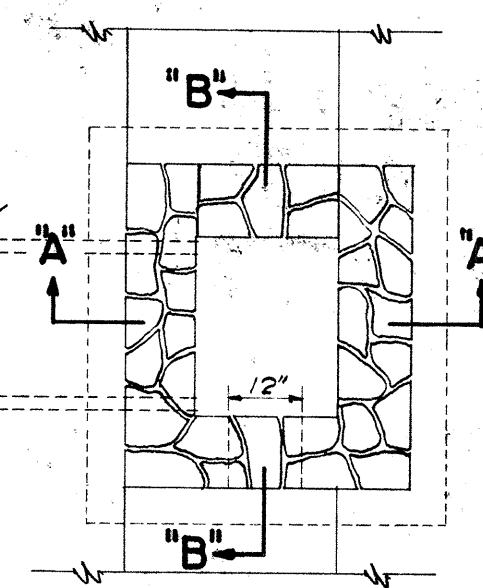
Scale: 1/2" = 1'-0"



D	D	L=D+G	Cu. Yds.	Where Variables Equal
24"	18"	2'-5"	3.02	4'-0"
30"	24"	3'-0"	3.61	5'-0"
36"	30"	3'-7"	4.21	5'-0"
42"	36"	4'-2"	4.85	6'-0"

NOTE:

Dimension "X" is assumed as 2'-4" in figuring the above quantities.



DETAIL OF MASONRY DROP INTAKE

Scale: 3/8" = 1'-0"

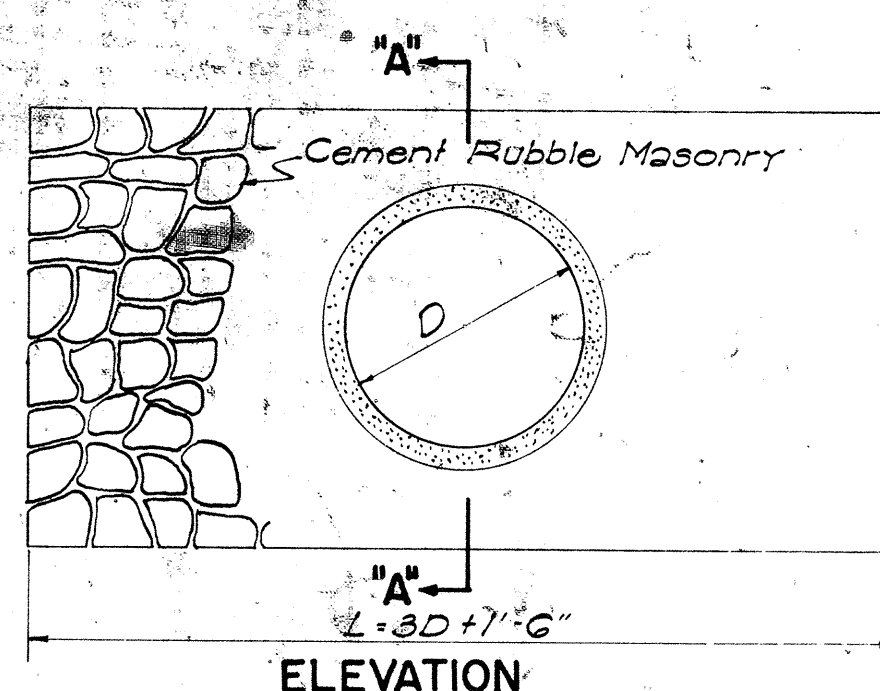


1:2 Cement mortar applied to waterproofing rough surface immediately before placing of new concrete.

NOTE: Construction joints may only be used where indicated by the plans or permitted in writing by the Engineer.

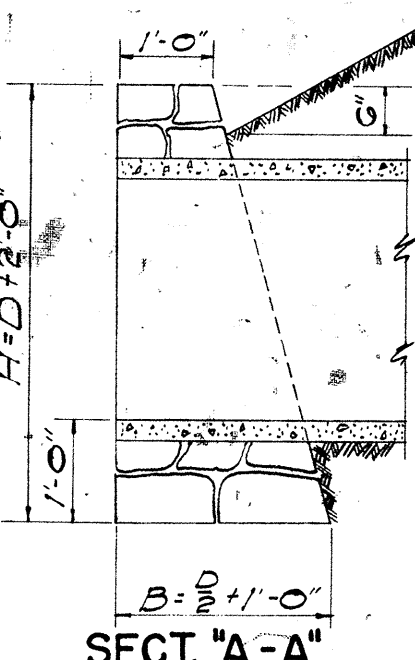
CONSTR. JOINT DETAILS

Note: When subgrade is below top of jacket, it shall be fully compacted to this line and then re-excavated (struct. exc.) to proper subgrade. This surface shall be rolled again.

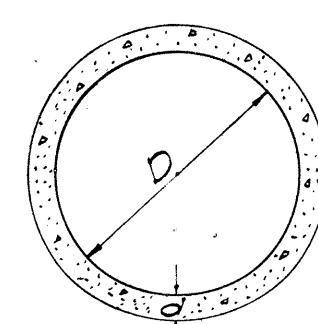


DETAIL OF MASONRY HEADWALL

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

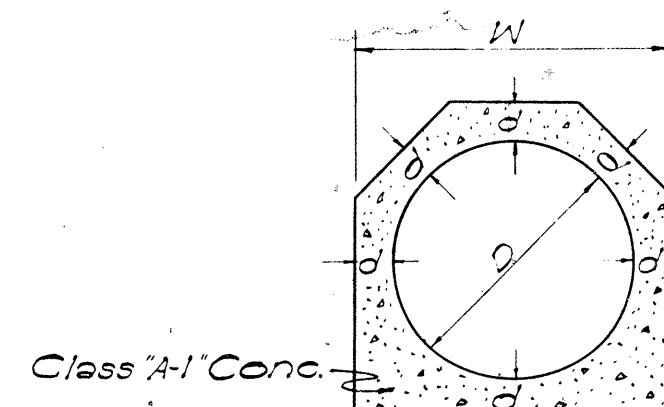


SECT. "A-A"



SECTION CONG. PIPE CULVERT

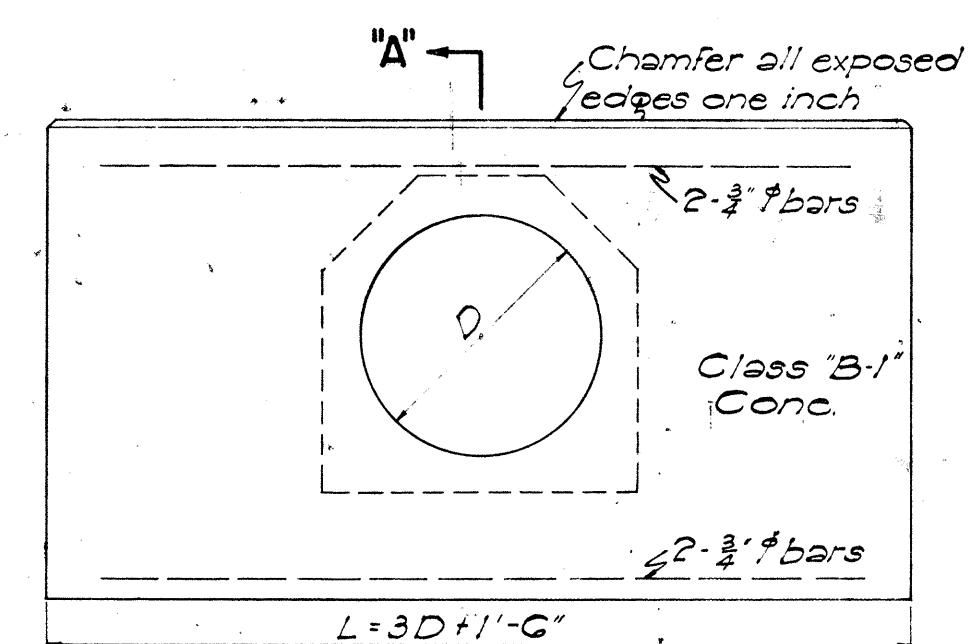
NOTE: Thickness 'd', reinforcing, and concrete used, are to conform with the approved design as provided by the Specifications.



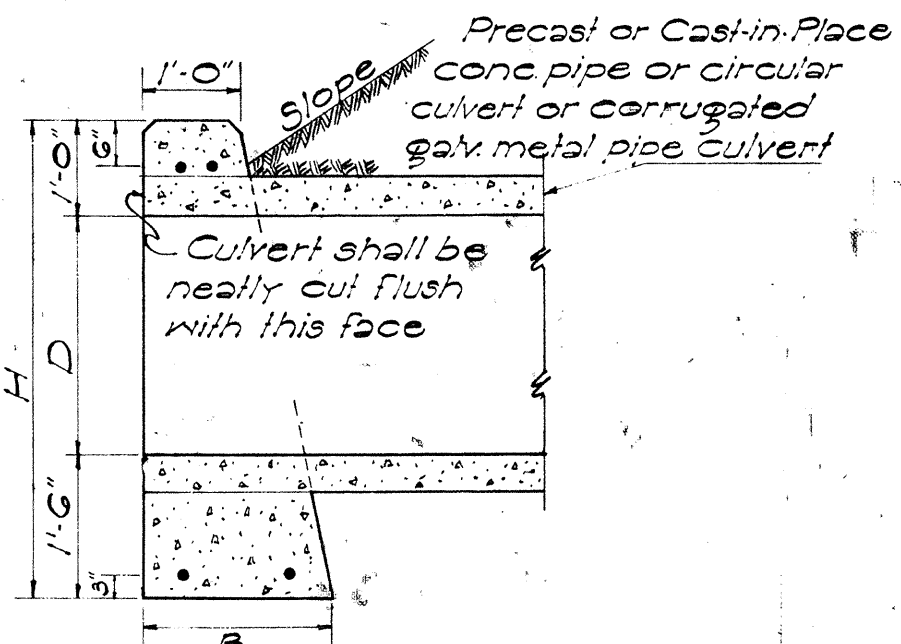
SECT. "A-A"

D	D	W	Cu. Yds. per Ft.
18"	4"	2'-2"	0.11
24"	4"	2'-0"	0.14
30"	5"	3'-4"	0.19
36"	5"	3'-11"	0.26

CAST-IN-PLACE CONG. CULVERT



ELEVATION

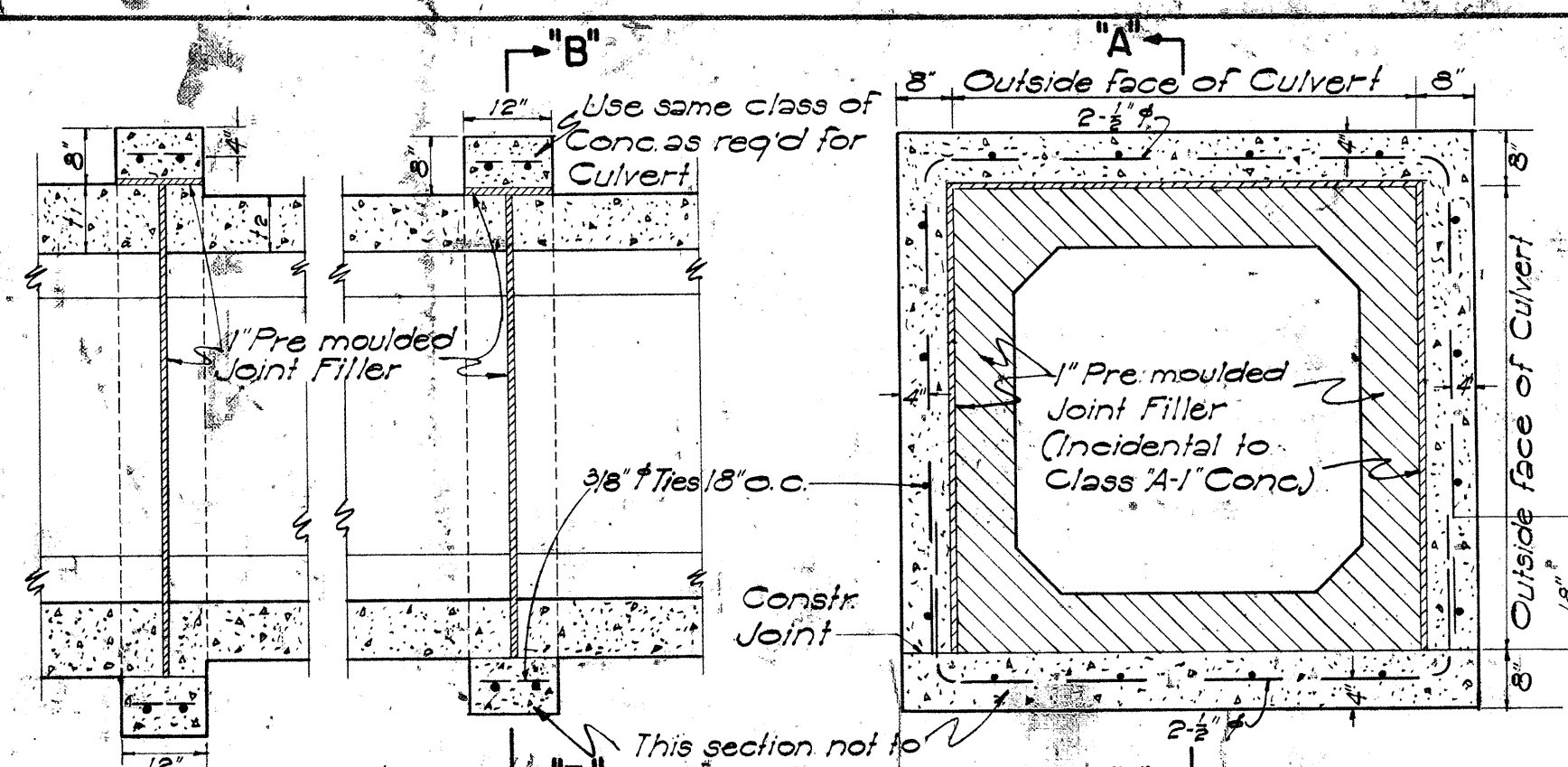


SECT. "A-A"

D	B	L	H	Cast-in-Place Conc. Culvert Cu. Yds.	Cast-in-Place Conc. Culvert Cu. Yds.	Steel For One Headwall No. of Bars Size Length Lbs.
18"	1'-6"	9'-0"	4'-0"	0.02	1.00	4 3/4" 5'-6" 33
24"	1'-6"	7'-6"	4'-0"	1.23	1.33	4 3/4" 7'-0" 42
30"	2'-0"	9'-0"	5'-0"	1.05	2.17	4 3/4" 8'-6" 51
36"	2'-0"	10'-6"	5'-0"	2.45	2.74	4 3/4" 10'-0" 60
42"	2'-6"	12'-0"	6'-0"		3.87	4 3/4" 11'-6" 69
48"	2'-6"	13'-6"	6'-0"		4.66	4 3/4" 13'-0" 78

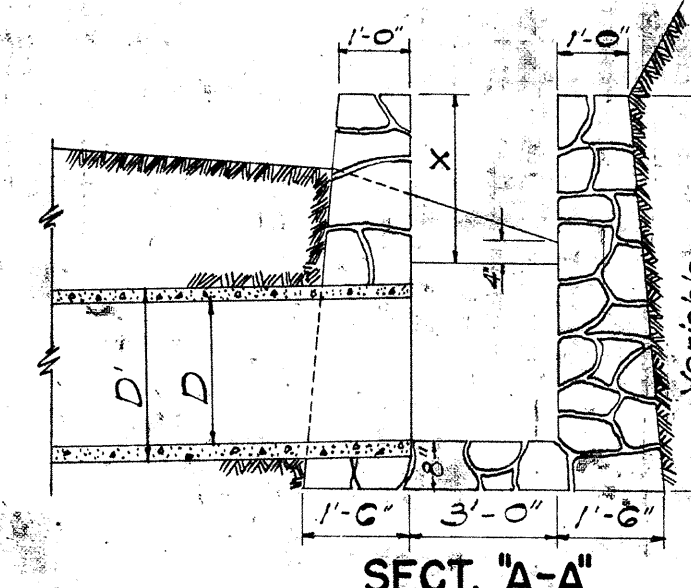
DETAIL OF CONCRETE HEADWALL

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

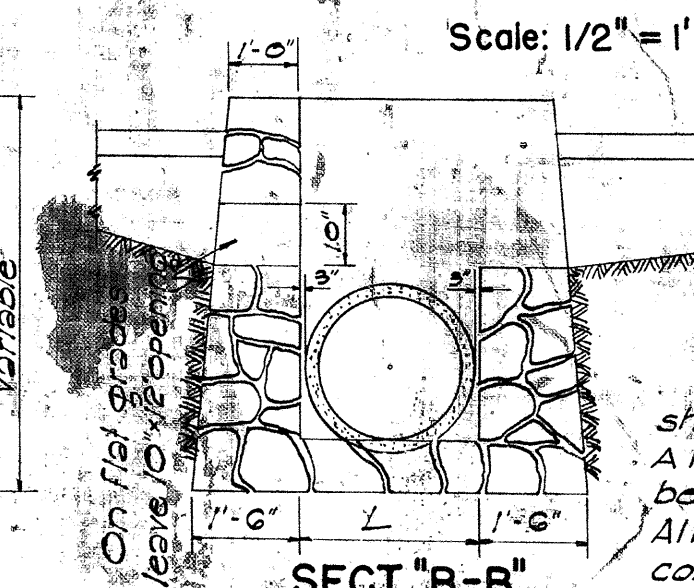


SECTION "A-A" CONG. COLLAR FOR CONG. BOX CULVERT

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



SECT. "A-A"

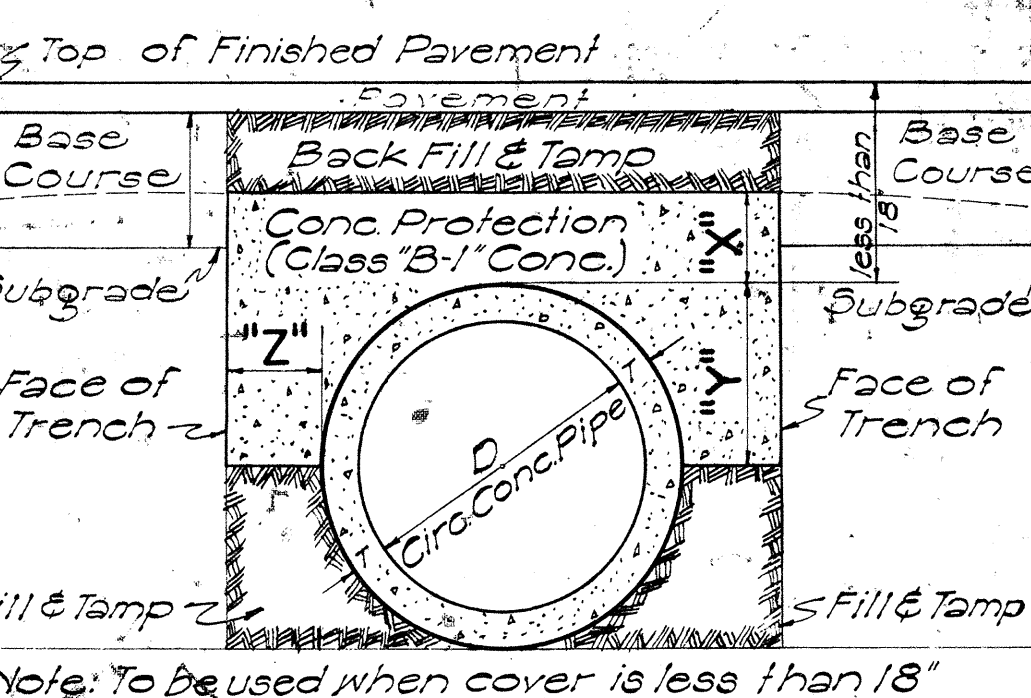


SECT. "B-B"

REINFORCING BARS

All reinforcing bars for concrete shall be Billet Steel Bars, ASTM A15, intermediate grade. Steel shall be made by the open-hearth process. All bars shall be deformed type conforming to ASTM A-305.

SECTION OF HIGH CEMENT RUBBLE MASONRY RETAINING WALL OR SEAWALL

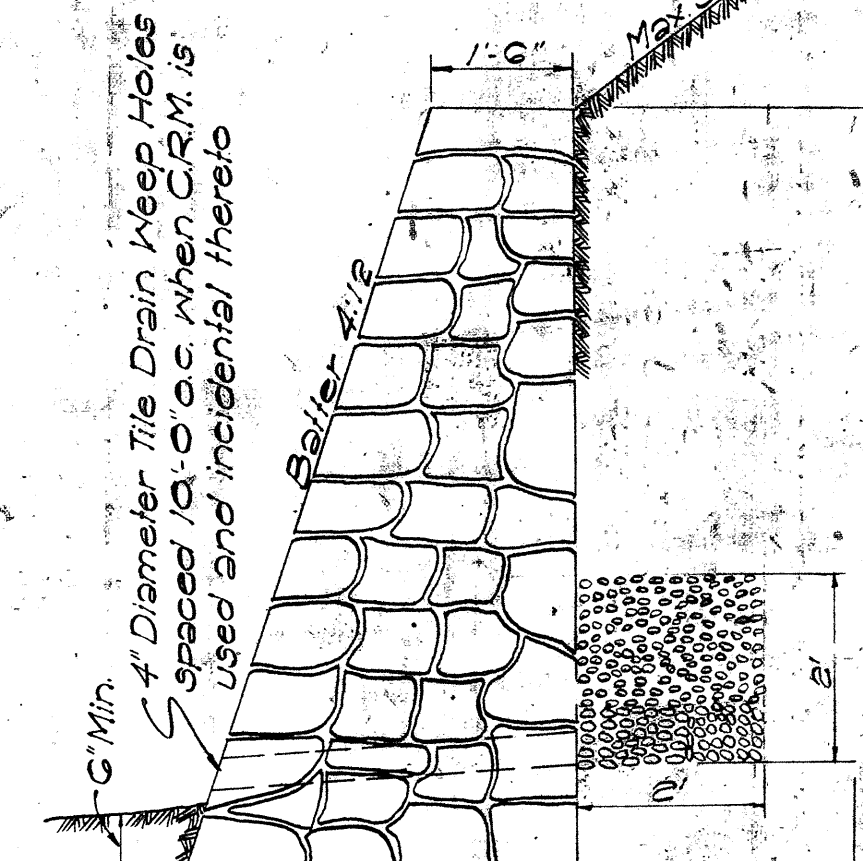


X	Y	Z
6" for 18" D		Z must be from pipe to face of trench
7" " 24" D		
8" " 30" D		
9" " 36" D		
10" " 42" D		
11" " 48" D		
12" " 54" D		

SECT. OF CULVERT WITH CONG. PROTECTION

Scale: 1" = 1'-0"

Note: To Resident Engineer
1) Consider economy of reinf. conc. for high retaining walls which did not originate on plan layout.
2) Elevation of weep holes to be determined by Resident Engineer. Holes to be placed as close to the existing ground line as local conditions permit.



SECTION OF LOW MASONRY RETAINING WALL OR SEAWALL

C.R.M. or D.R.M. as required by plans or as ordered

Note: Dimension "X" is assumed as 2'-4" in figuring the above quantities

Note: This type of structure shall also be used for the Drop Intakes of Siphons connected with Irrigation Ditches or Flumes with appropriate changes to dimensions. In this case all joints must be made water tight.

Excavate recess in roadway excavation slope for inlet to dimensions and form designated by Engineer. This is 'Unclassified' Excavation.

Top limits of structure excavation other than at bridges.

12' unless otherwise noted

Class "B-1" Conc.

SECT. "B-B"

SECT. "A-A"

DETAIL OF CONCRETE DROP INTAKE

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

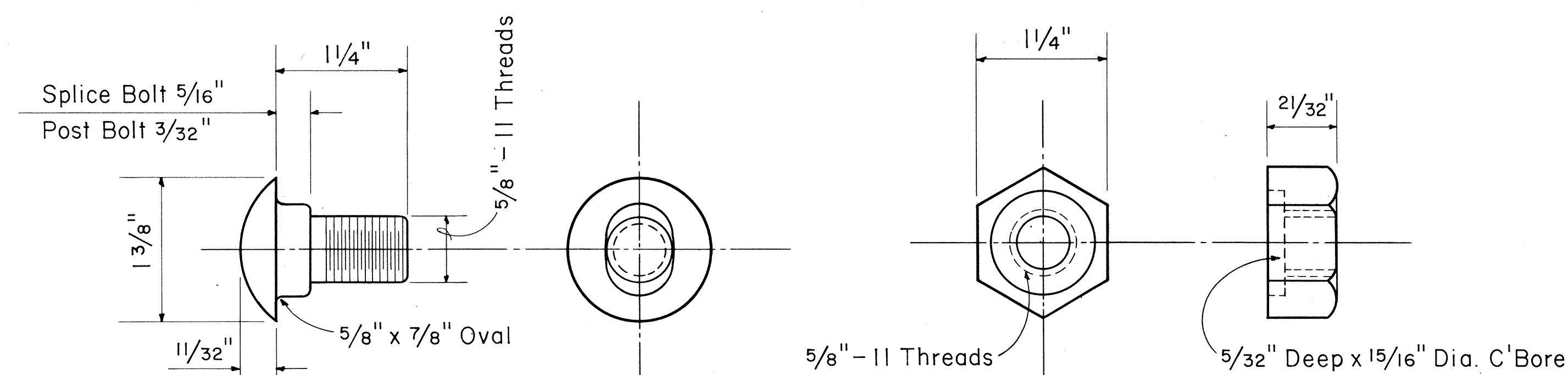
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII

STANDARD DETAILS
DROP INTAKES, RETAINING WALLS,
HEADWALLS, CONSTRUCTION JOINTS
SCALES AS NOTED

SHEET NO. 2 OF 3 SHEETS

APPROVED: DATE: Aug. 25, 1959
STATE HIGHWAY ENGINEER

FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL
HAWAII	HAWAII	U-090-1(9)	1965	29	87



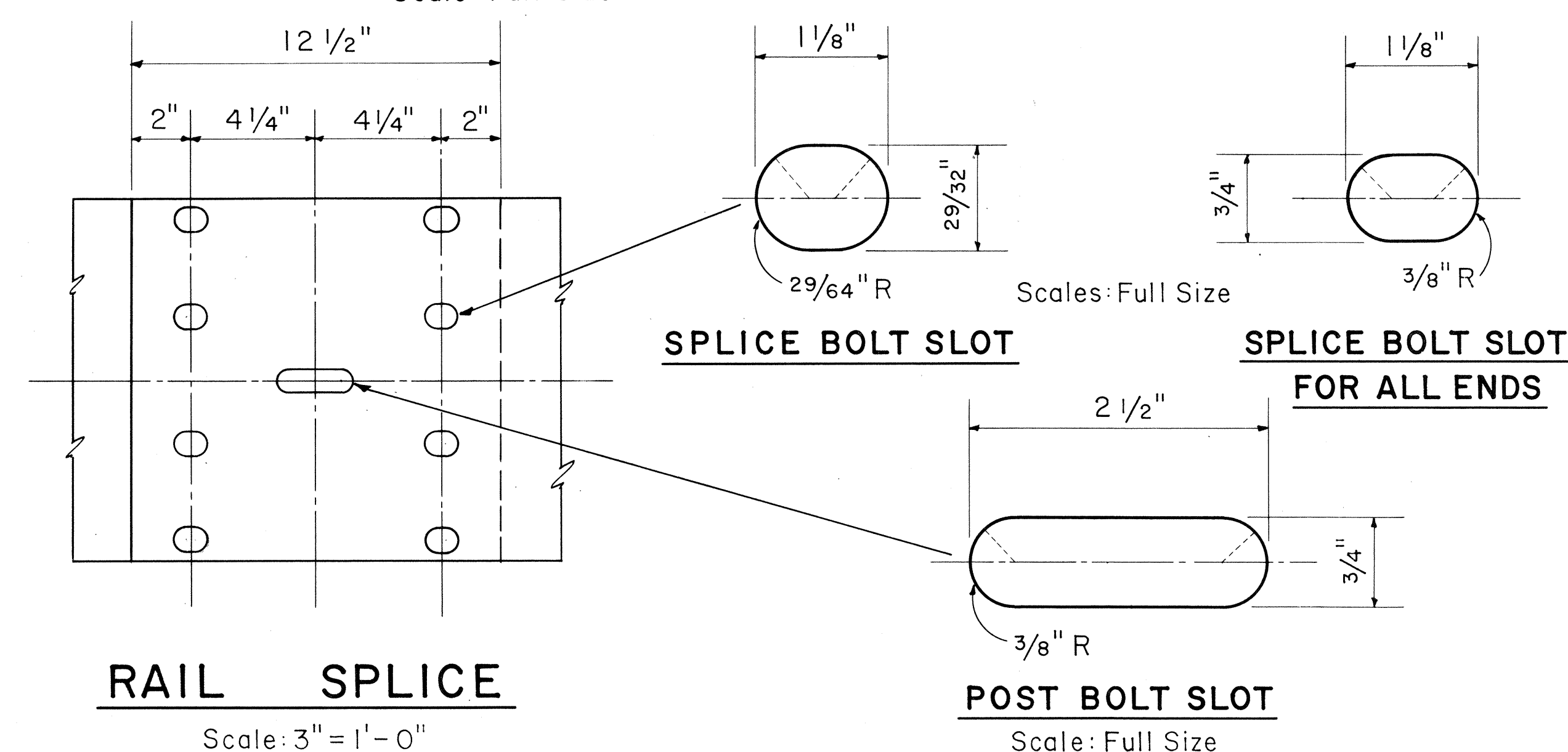
SPLICE BOLT

POST BOLT (Same except for length)

Scale: Full Size

HEXAGON NUT

Scale: Full Size



RAIL SPLICE

Scale: $3'' = 1' - 0''$

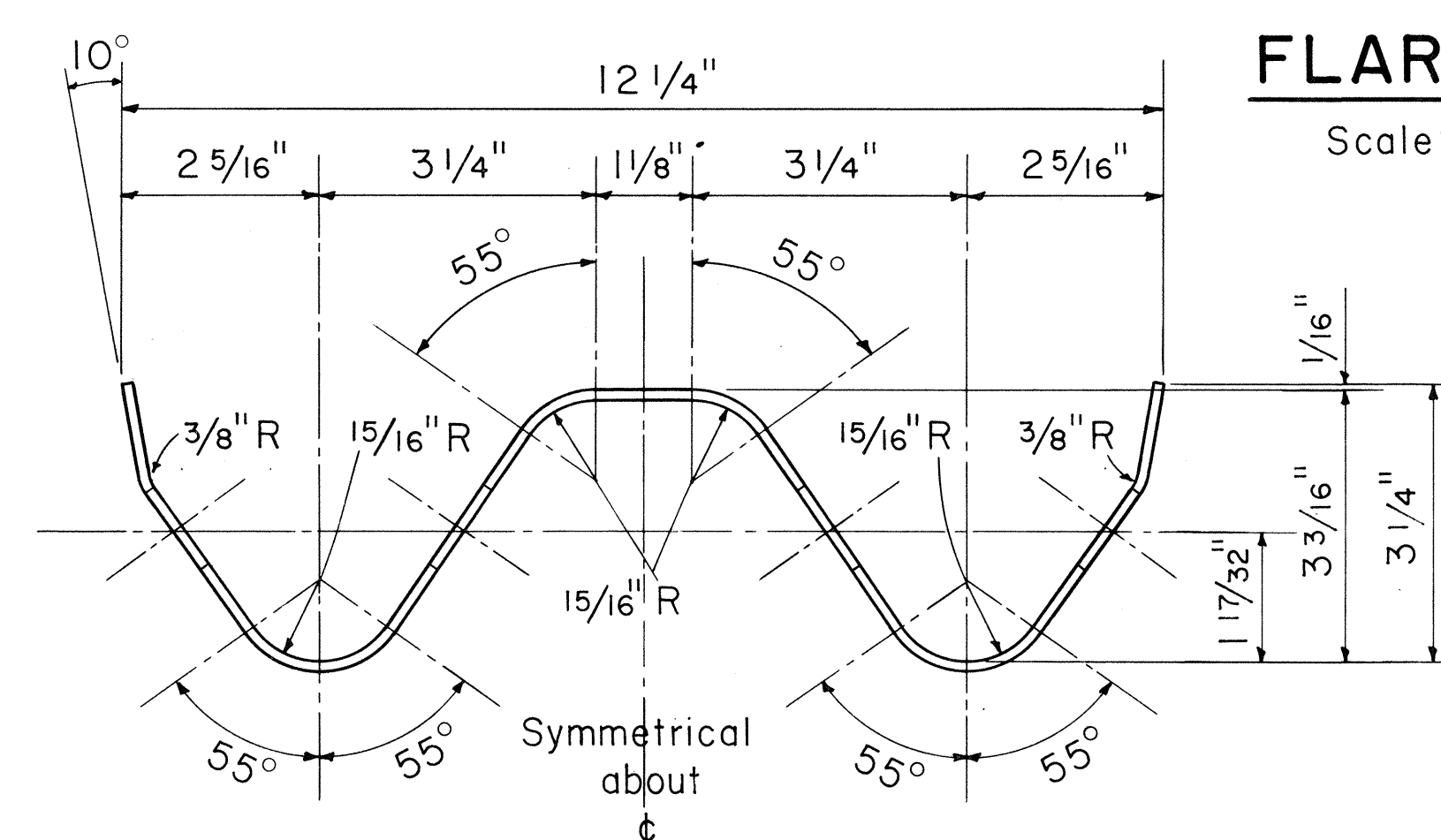
SPLICE BOLT SLOT

Scales: Full Size

SPLICE BOLT SLOT
FOR ALL ENDS

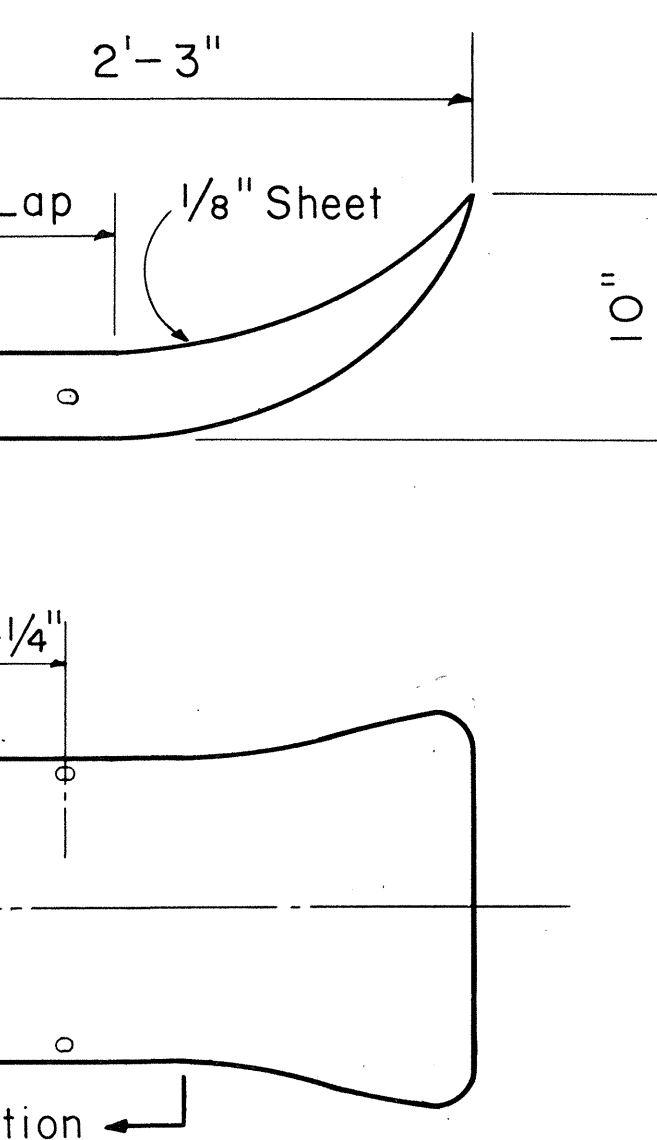
POST BOLT SLOT

Scale: Full Size



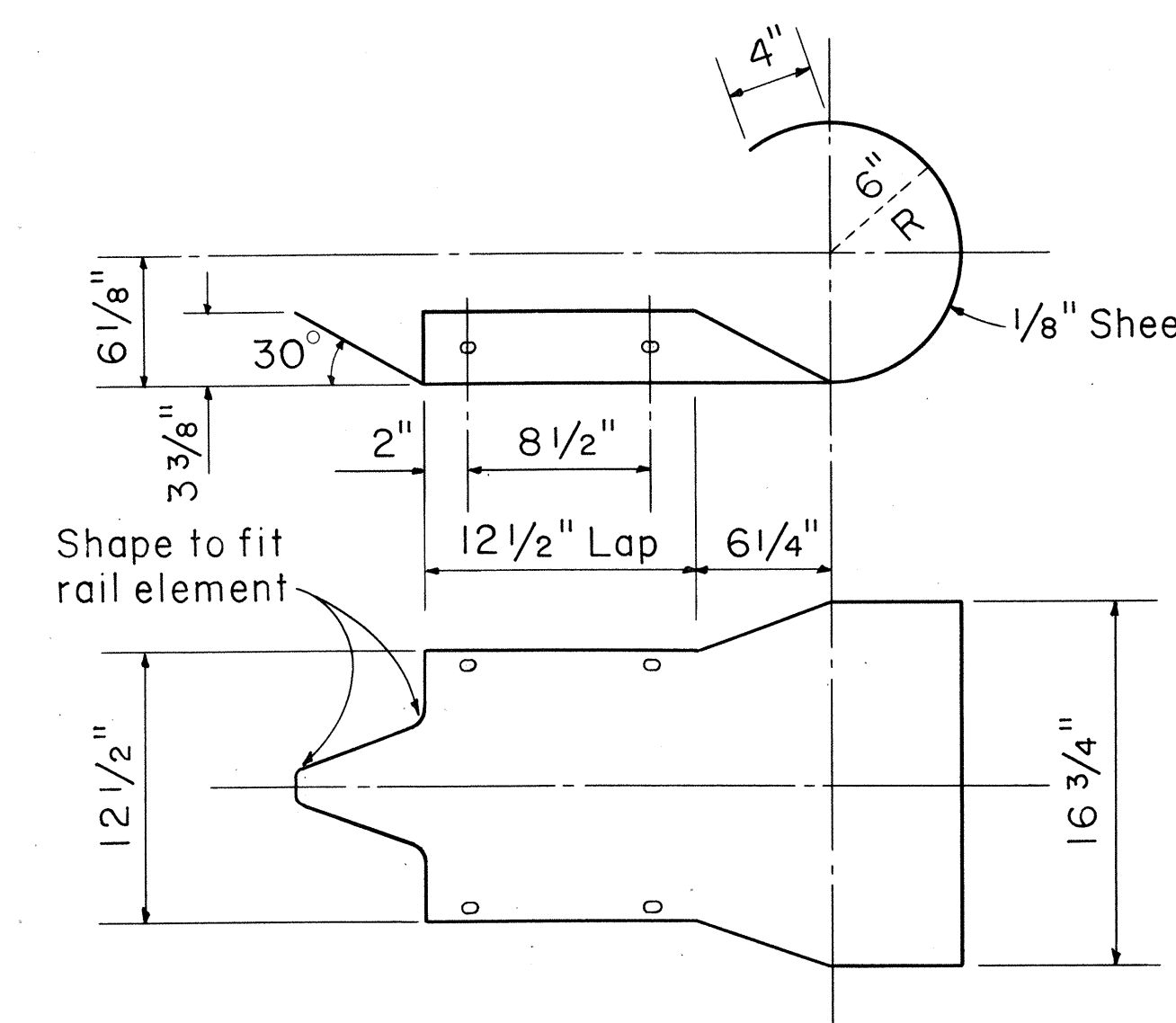
RAIL ELEMENT SECTION

Scale: Half Full Size



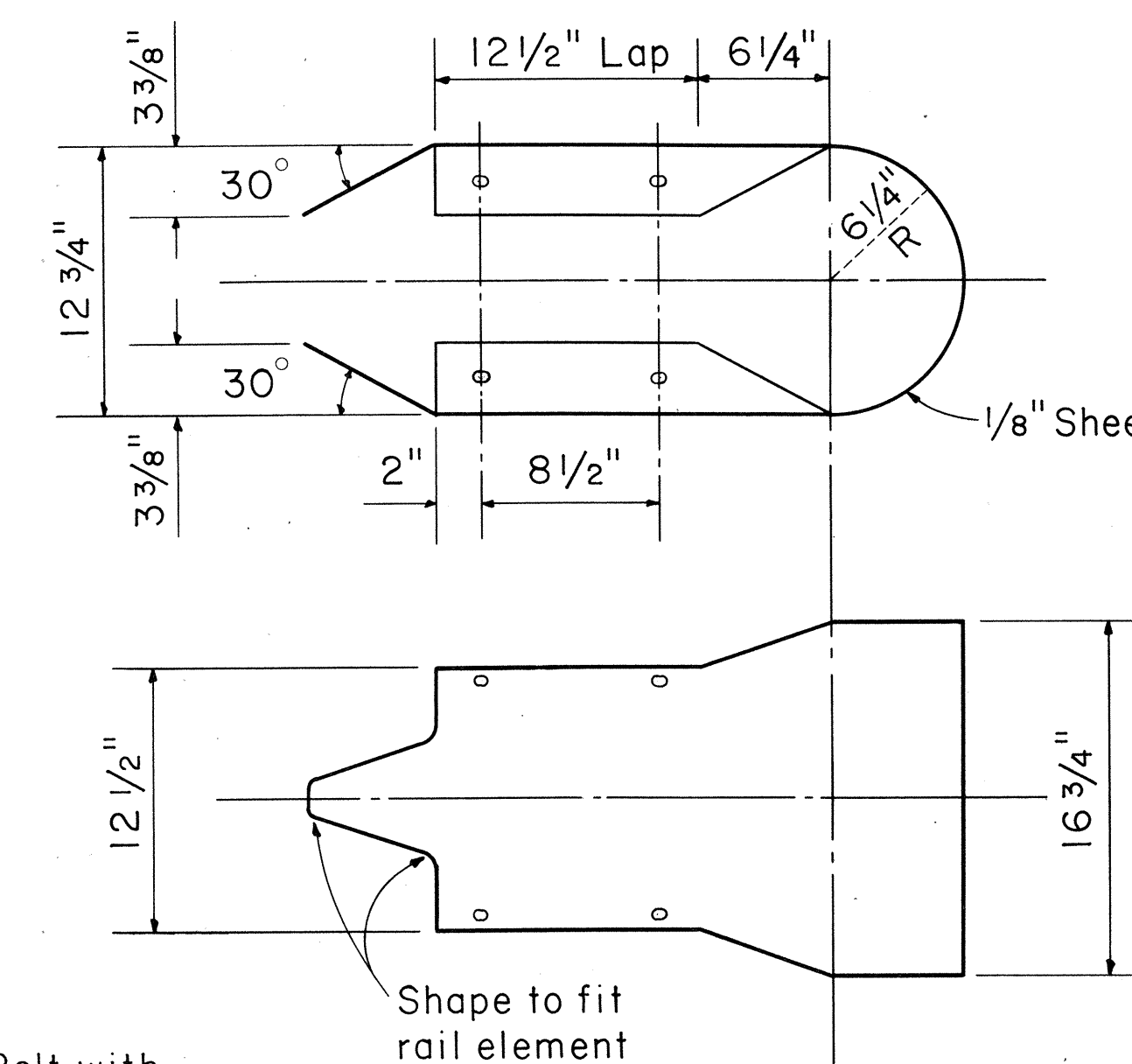
FLARED END

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



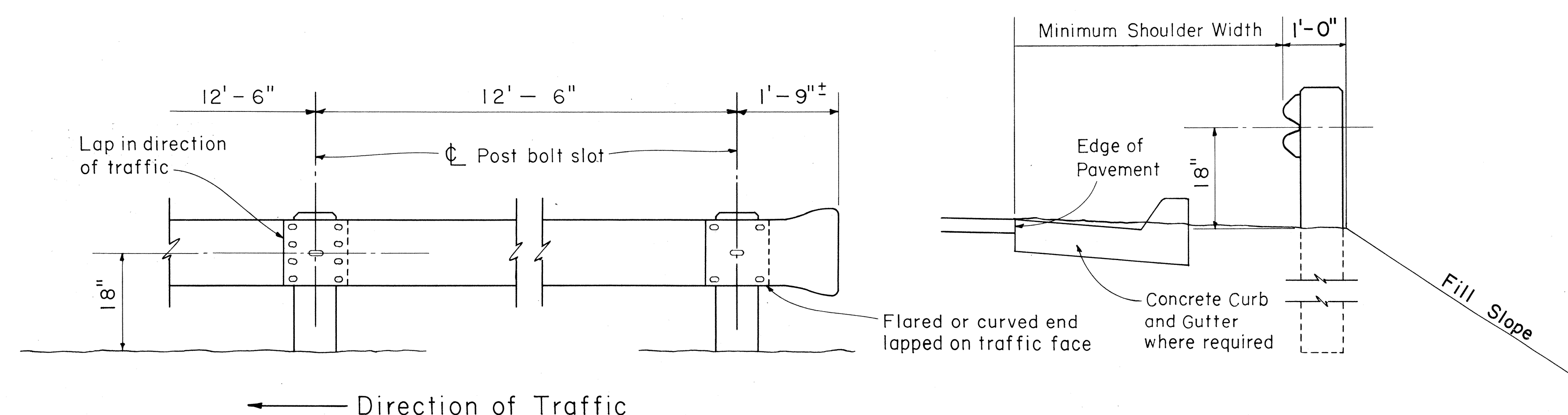
CURVED END

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



MEDIAN END

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



METAL GUARD RAIL

Scale: $\frac{3}{4}" = 1' - 0"$

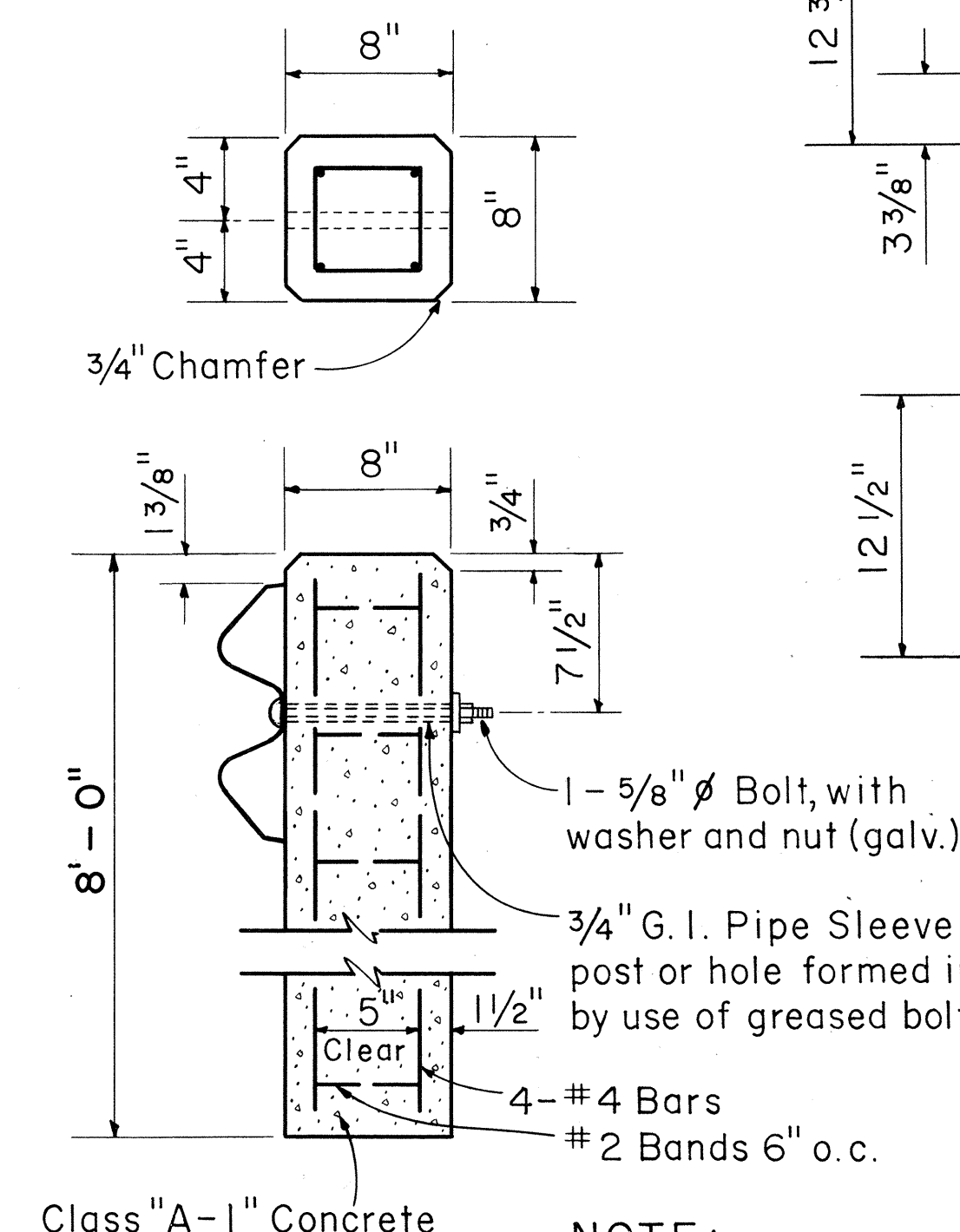
ELEVATION

Scale: $\frac{3}{4}" = 1' - 0"$

APPROVED:

DIRECTOR OF TRANSPORTATION

DATE _____



DETAIL OF CONCRETE POST

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

NOTE: All concrete posts shall be precast.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
METAL GUARD RAIL
KAMEHAMEHA HIGHWAY WIDENING
PROJ. NO. U-090-1(9)
Scale: As Noted. Date July, 1965

Date July, 1965

SHEET NO. 3 OF 3 SHEETS