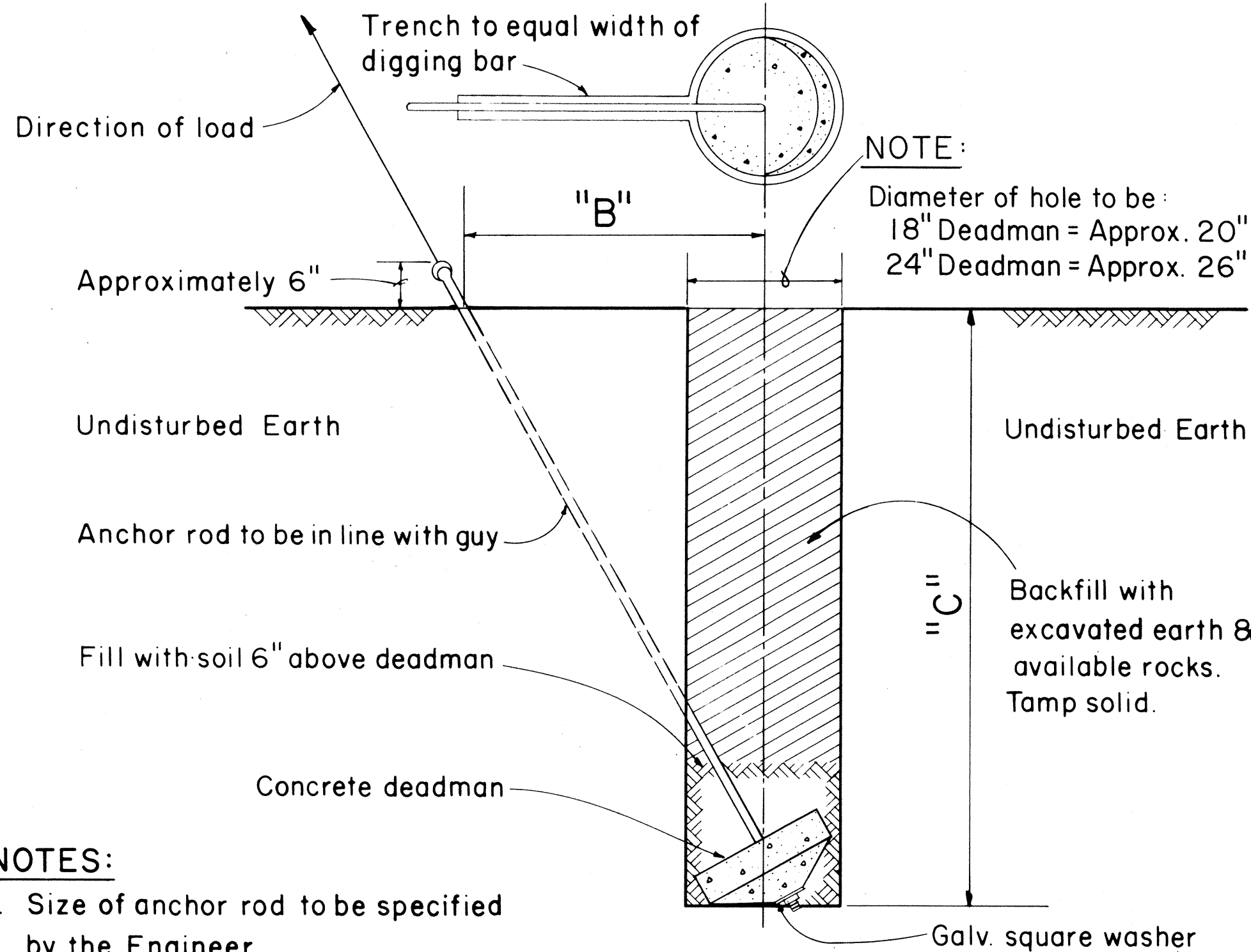


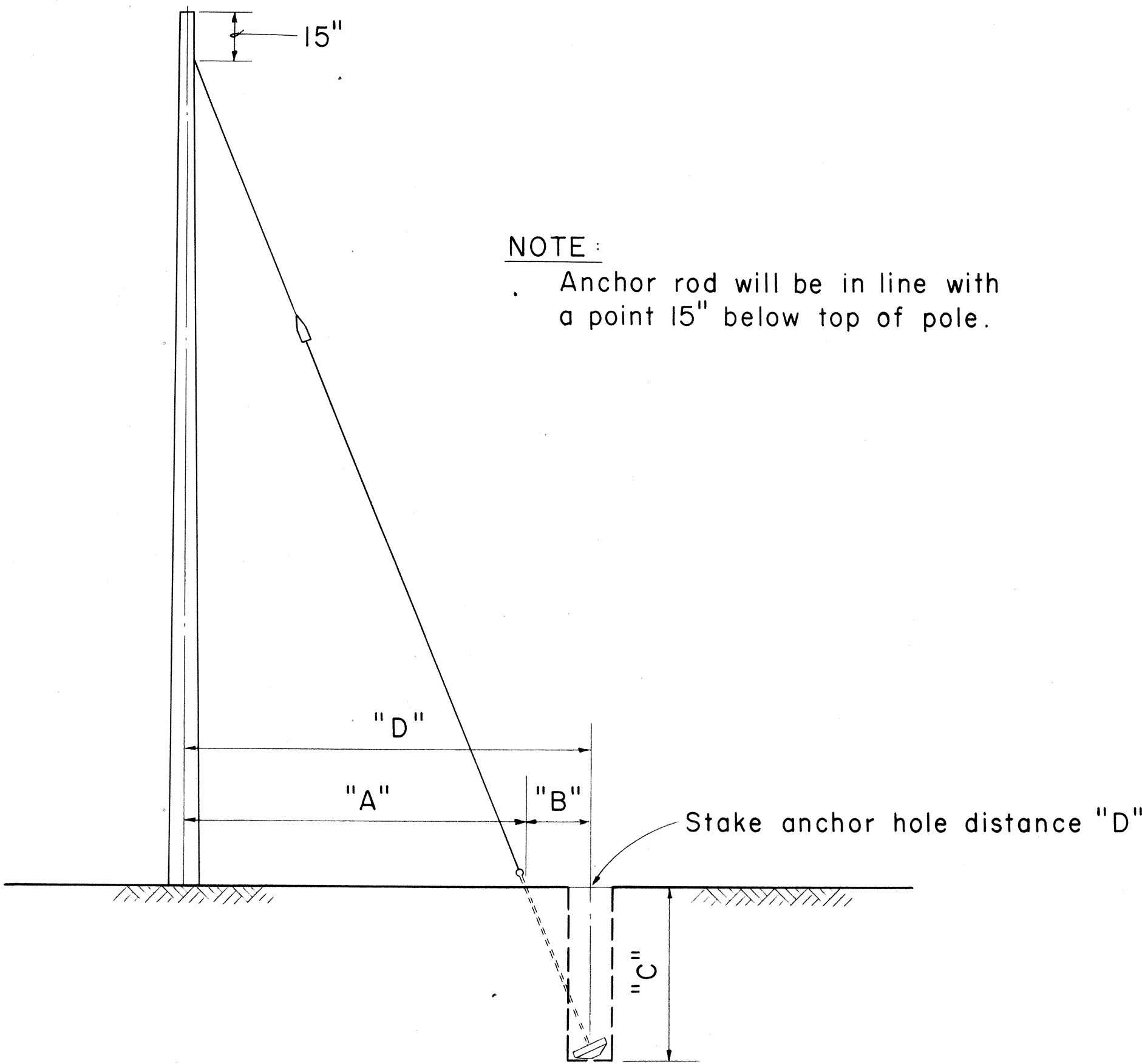
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-1(68)-10	1968	11	21



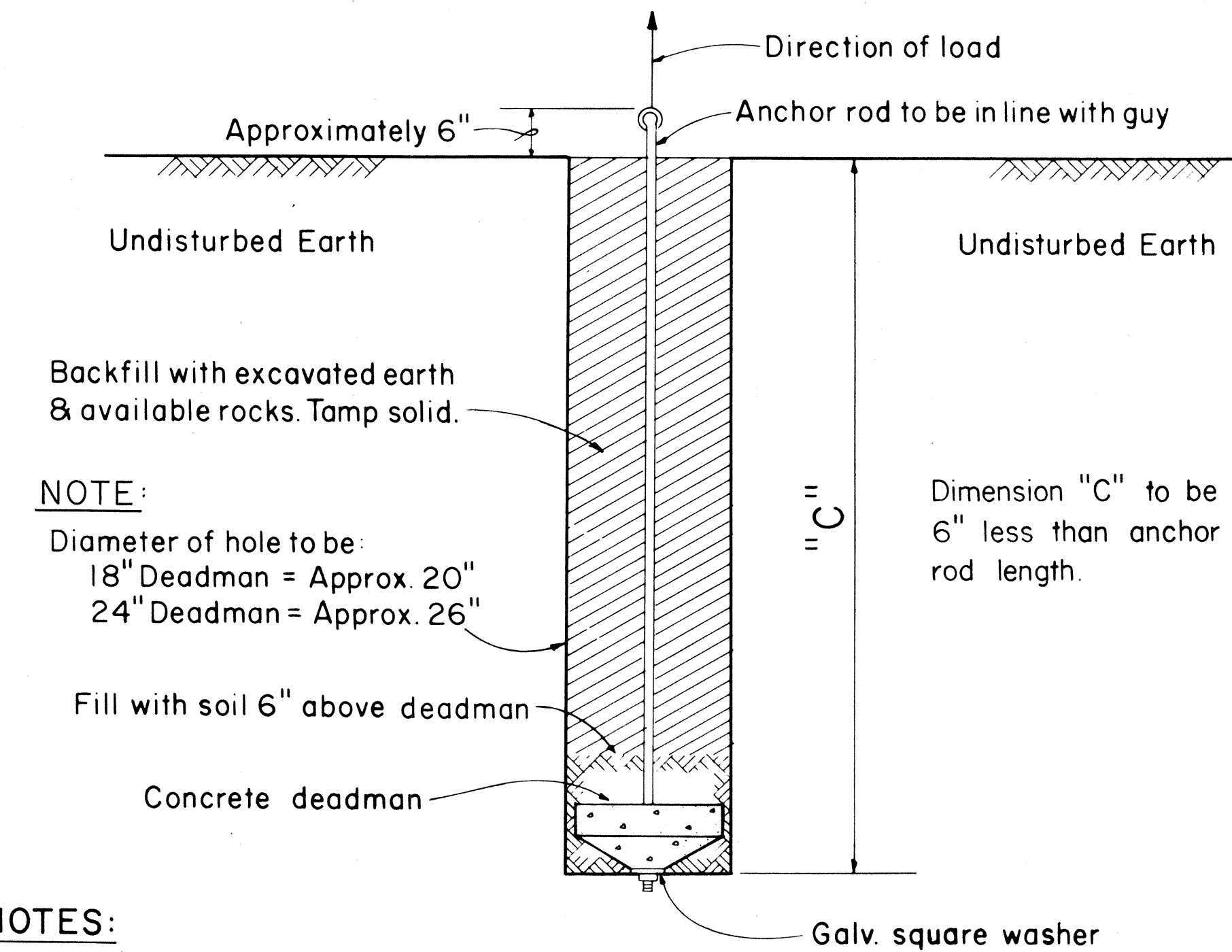
- NOTES:**
1. Size of anchor rod to be specified by the Engineer
 2. Use Anchoring Data.

GUY ANCHOR DEADMAN

Scale: 3/4" = 1' - 0"



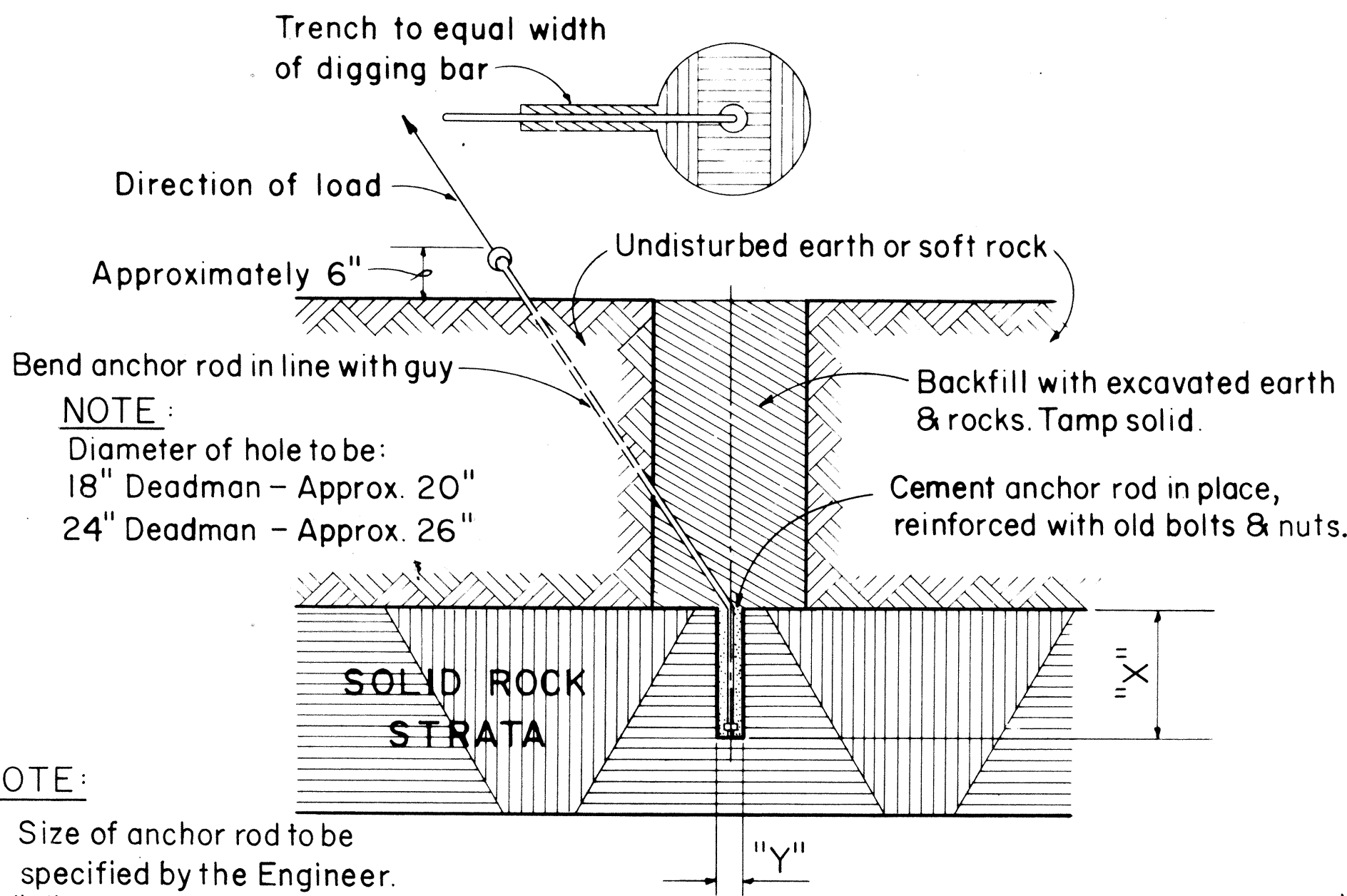
Not to Scale



- NOTES:**
1. Size of anchor rod to be specified by the Engineer.
 2. Use Anchoring Data.

SIDE - WALK ANCHOR

Scale: 3/4" = 1' - 0"



- NOTE:**
1. Size of anchor rod to be specified by the Engineer.
 2. "X" Should not be less than 24". If "X" is less than 24" complete hole & install anchor.
 3. "Y" 5/8" Anchor rod drill 2" hole
3/4" Anchor rod drill 2" hole
1" Anchor rod drill 2 1/2" hole
1 1/4" Anchor rod drill 3" hole
 4. Use Anchoring Data.

ROCK ANCHOR

Not to Scale

FOR 25' & 30' POLES WITH 8'-0" ANCHOR RODS				
"A"	"B"	"C"		"D" = ("A" + "B")
LEAD-ANCHOR ROD TO ϕ OF POLE	ANCHOR ROD TO ϕ OF HOLE	VERTICAL DEPTH 18" D.M.	24" D.M.	TOTAL DISTANCE POLE TO HOLE
5' - 0"	1' - 8"	7' - 1"	7' - 4"	6' - 8"
10' - 0"	3' - 0"	6' - 7"	7' - 0"	13' - 0"
15' - 0"	4' - 0"	6' - 1"	6' - 6"	19' - 0"
20' - 0"	4' - 8"	5' - 6"	5' - 10"	24' - 8"
25' - 0"	5' - 2"	4' - 11"	5' - 4"	30' - 2"
FOR 35' THRU 70' POLES WITH 8'-0" ANCHOR RODS				
5' - 0"	1' - 0"	7' - 3"	7' - 4"	6' - 0"
10' - 0"	1' - 11"	7' - 1"	7' - 3"	11' - 11"
15' - 0"	2' - 8"	6' - 9"	7' - 1"	17' - 8"
20' - 0"	3' - 3"	6' - 6"	6' - 10"	23' - 3"
25' - 0"	3' - 10"	6' - 2"	6' - 7"	28' - 10"
FOR 40' THRU 70' POLES WITH 1 1/4" x 10'-0" ANCHOR RODS				
5' - 0"	1' - 7"		9' - 4"	6' - 7"
10' - 0"	3' - 0"		9' - 0"	13' - 0"
15' - 0"	4' - 2"		8' - 6"	19' - 2"
20' - 0"	5' - 3"		7' - 11"	25' - 3"
25' - 0"	6' - 2"		7' - 3"	31' - 2"

D. M. = Deadman

TABLE 2 ANCHOR ROD - ANCHOR SLUG - SQUARE WASHER COMBINATION						
H.E. CODE NO.	ANCHOR ROD	WORKING TENSION 1/2 ULT (LBS.)	H.E. CODE NO.	CONC. ANC. (IN.)	H.E. CODE NO.	WASHER SIZE QTY.
617	5/8" x 8'-0" Steel	8,000	518	18	2320	4" x 4" x 3/16" 2
615	5/8" x 8'-0" Cu Cov Stl	9,250	518	18	**	3" x 3" x 1/8" 2
618	3/4" x 8'-0" Steel	11,500	518	18	2330	6" x 6" x 3/8" 1
619	1" x 8'-0" Steel	18,000	524	24	2331	6" x 6" x 1/2" 1
616	1" x 8'-0" Cu Cov Stl	22,500	524	24	**	4" x 4" x 3/16" 2
613	1 1/4" x 10'-0" Steel	29,000	524	24	2330	6" x 6" x 3/8" 2

** Use bronze square washers included in anchor rod assembly on copper covered steel (Cu Cov Stl) anchor rods.

ANCHORING DATA

APPROVED:

HAWAIIAN ELECTRIC Co., Inc. DATE

HAWAIIAN TELEPHONE Co. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
H.E. Co. AND H.T. Co.
ANCHOR DETAILS AND
ANCHORING DATA

Scales: As Noted

Date: August, 1968

SHEET No. 1 OF 15 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-(68)10	1968	12	71

CREOSOTED DOUGLAS FIR & YELLOW PINE POLE DATA									
LENGTH IN FEET	CLASS	APPROX. MINIMUM DIMENSIONS (INCHES)				AVERAGE WEIGHT (LBS.)	POLE SETTING DEPTH (FT.)		BREAKING LOAD 2'-0" BELOW TOP OF POLE (LBS.)
		AT TOP		6' FROM BUTT		DOUGLAS FIR	IN SOIL	IN ROCK	
		DIA.	CIR.	DIA.	CIR.				
25	5	6.04	19	8.26	26	525	4.5	3	1900
30	3	7.32	23	10.32	32.5	810	5	3.5	3000
	5	6.04	19	8.90	28	600	5	3.5	1900
35	2	7.96	25	12.23	37.5	1260	5	3.5	3700
	5	6.04	19	9.55	30	770	5	3.5	1900
40	3	7.32	23	11.77	37	1320	5.5	3.5	3000
45	2	7.96	25	13.20	41.5	1845	6	4	3700
	3	7.32	23	12.25	38.5	1575	6	4	3000
50	2	7.96	25	13.70	43	2150	6.5	4	3700
	3	7.32	23	12.70	40	1850	6.5	4	3000
55	1	8.59	27	15.11	47.5	2860	7	4.5	4500
	2	7.96	25	14.15	44.5	2475	7	4.5	3700
	3	7.32	23	13.20	41.5	2145	7	4.5	3000
60	1	8.59	27	15.75	49.5	3360	7	4.5	4500
	2	7.96	25	14.62	46	2820	7	4.5	3700
65	1	8.59	27	16.20	51	3835	7.5	5	4500
	2	7.96	25	15.11	47.5	3250	7.5	5	3700
70	1	8.59	27	16.70	52.5	4340	7.5	5	4500
	2	7.96	25	15.60	49	3640	7.5	5	3700
75	1	8.59	27	17.20	54	4800	8	5.5	4500
	2	7.96	25	16.05	50.5	4050	8	5.5	3700
80	1	8.59	27	17.50	55	5240	8	6	4500
	2	7.96	25	16.40	51.5	4400	8	6	3700
85	1	8.59	27	18.00	56.5	5780	8.5	6.5	4500
	2	7.96	25	16.88	53	4930	8.5	6.5	3700
90	1	8.59	27	18.30	57.5	6300	8.5	6.5	4500
	2	7.96	25	17.20	54	5400	8.5	6.5	3700

NOTE:
The ultimate fiber stress for creosoted Southern Yellow Pine & Douglas Fir is 7,400 Lbs. per square inch.
Weights are for untreated poles. Add 5% as estimate of added weight of creosote treatment.

REFERENCES:
American Standards Association O5.4-1941, O5.6-1945.
Standard Handbook for Electrical Engineers, Eighth Edition
H. E. Co. Specification for Poles.

WOOD POLE DATA

APPROVED:

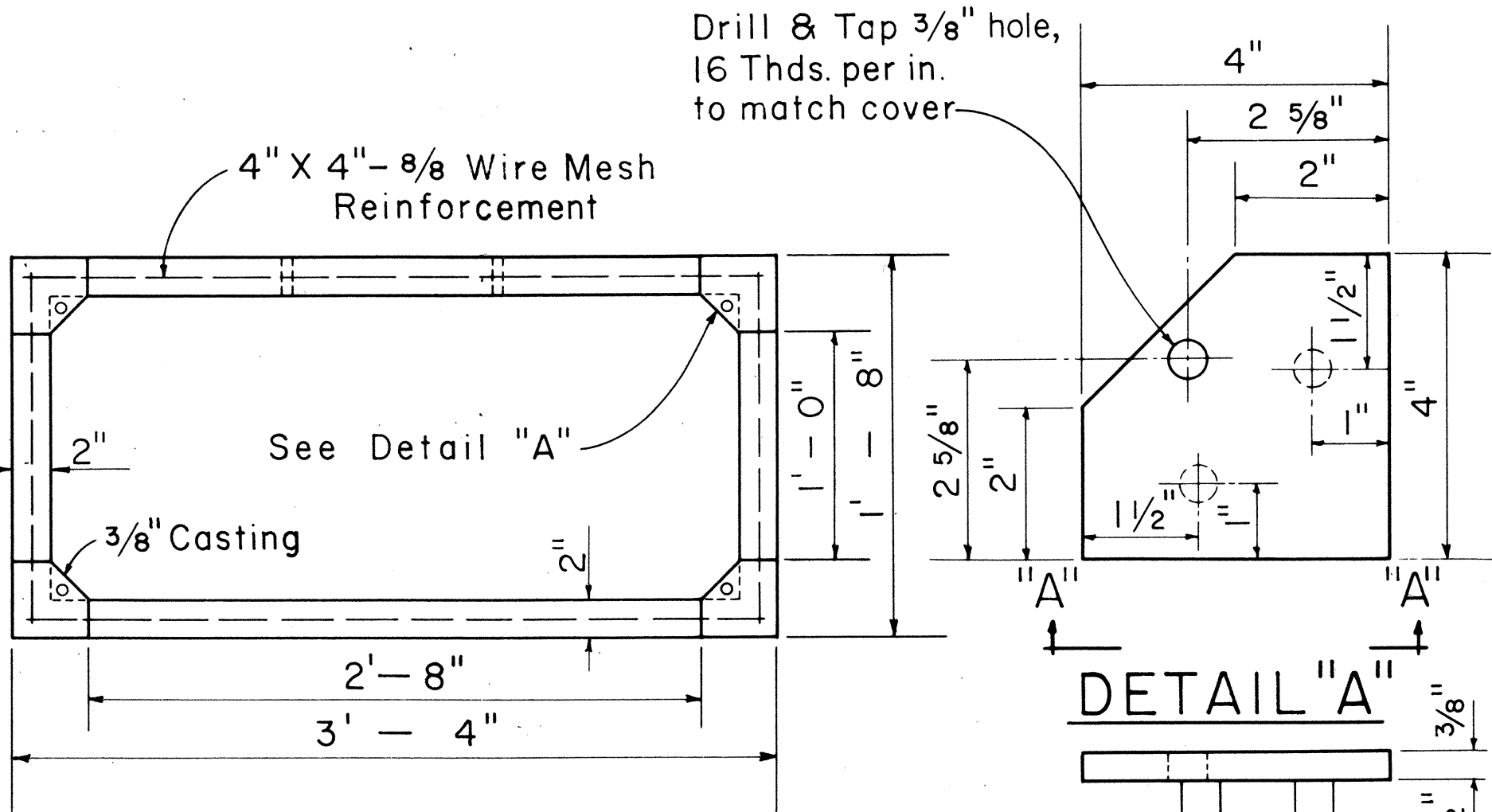
HAWAIIAN ELECTRIC Co., Inc. DATE

HAWAIIAN TELEPHONE Co. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
H.E. Co. AND H.T. Co.
SERVICE BOX DETAILS
AND WOOD POLE DATA

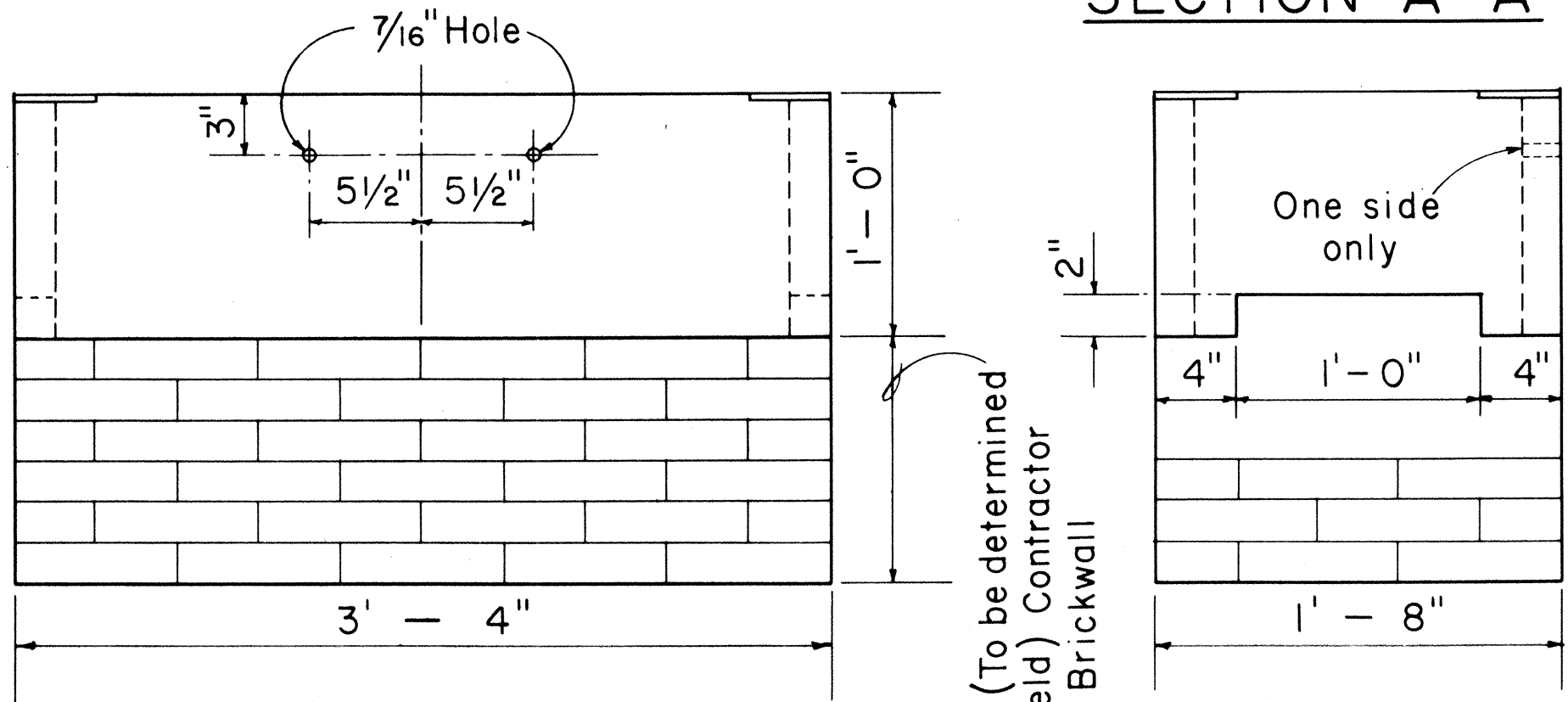
Scales: As Noted Date: August 1, 1968

SHEET NO. 2 OF 15 SHEETS



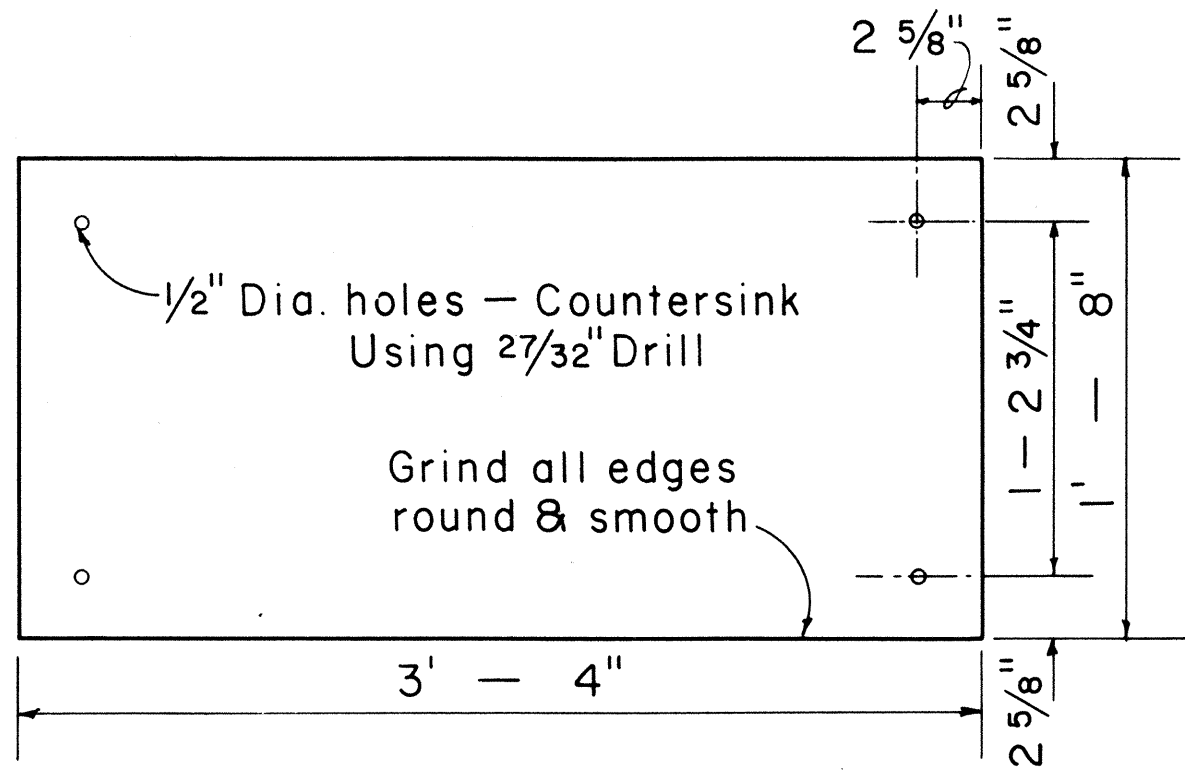
PLAN

SECTION "A-A"



SIDE VIEW

END VIEW

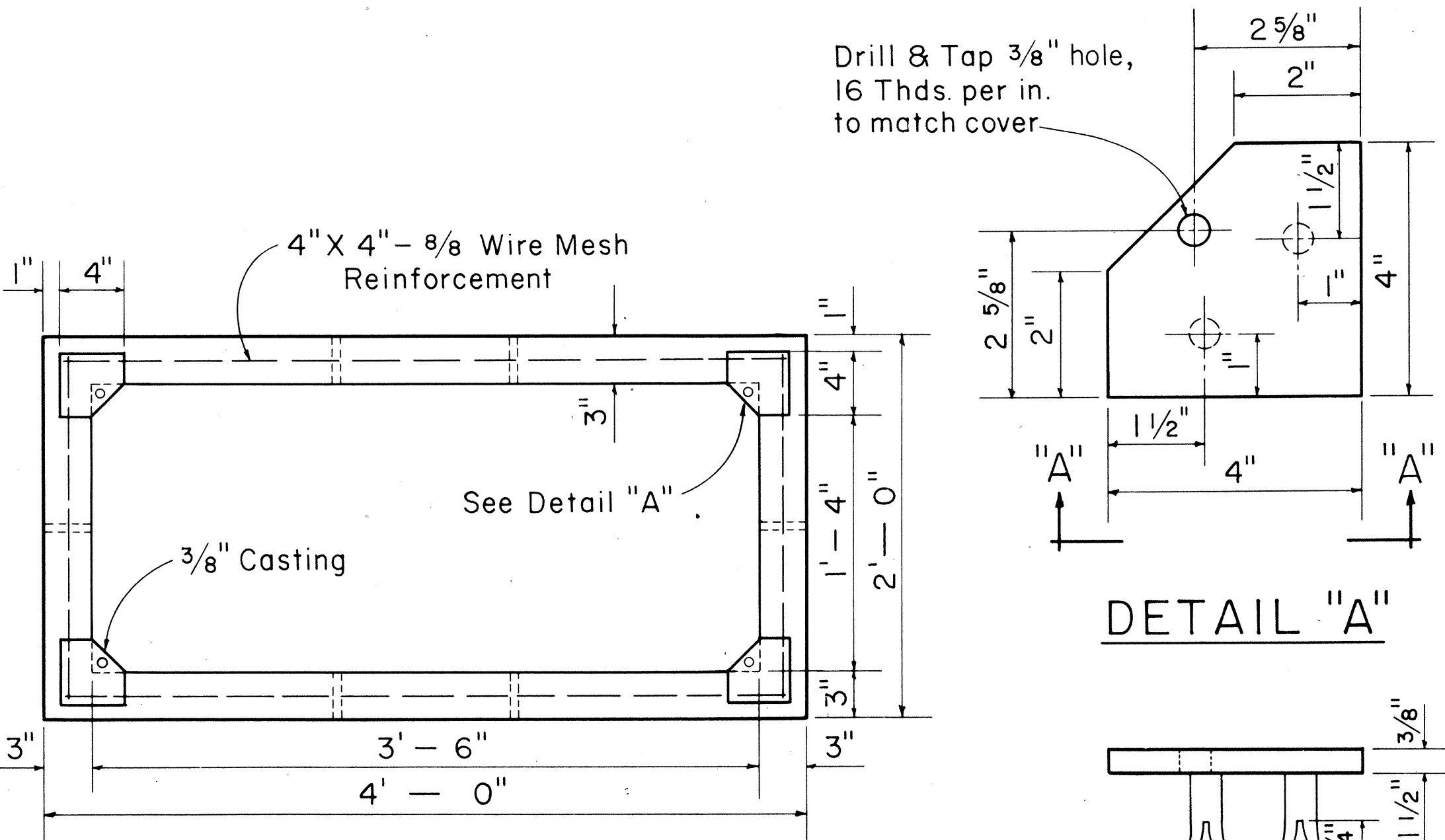


1/4" CHECKER PLATE COVER
(Hot dip galvanize checkered plate after drilling, countersinking, and grinding edge)

1'-4" X 3'-0" CONCRETE
SERVICE BOX

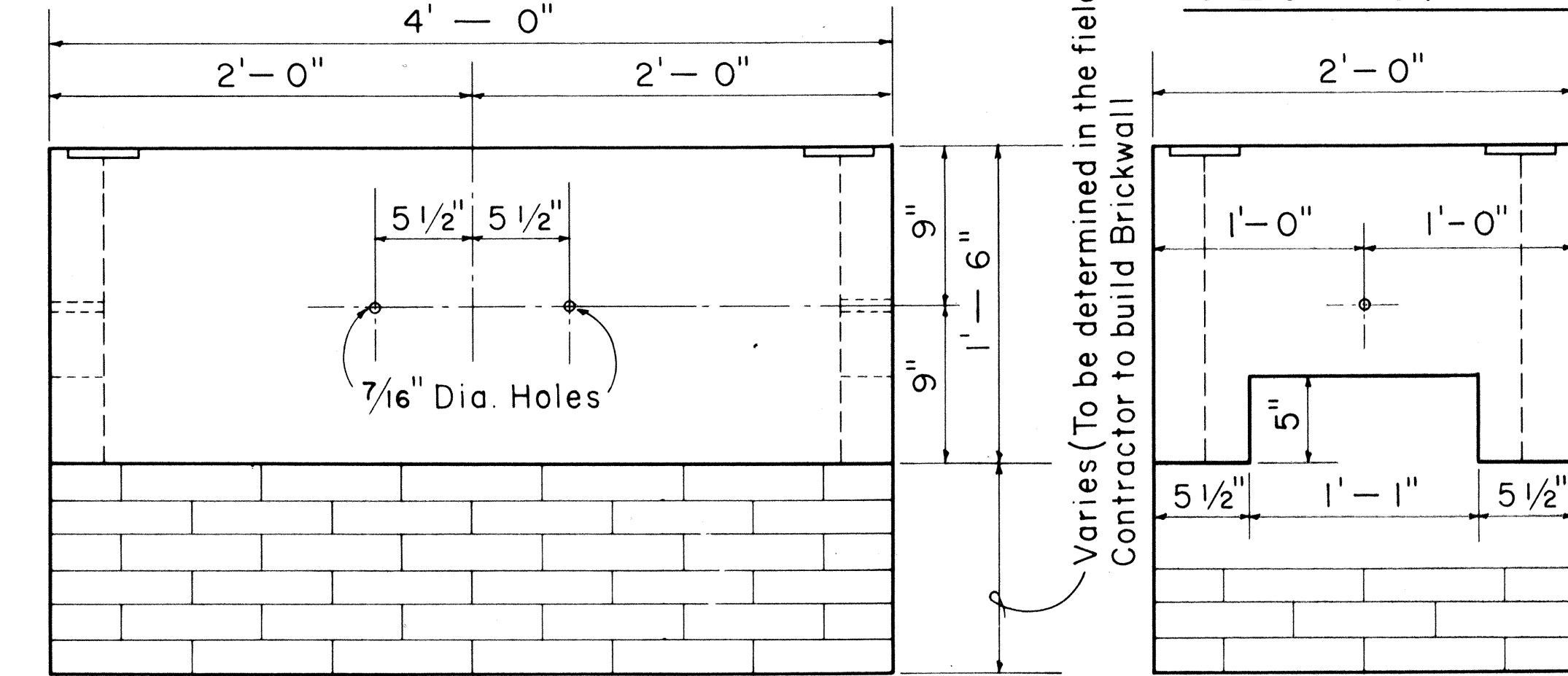
Scale: 1 1/2" = 1'-0"

011250



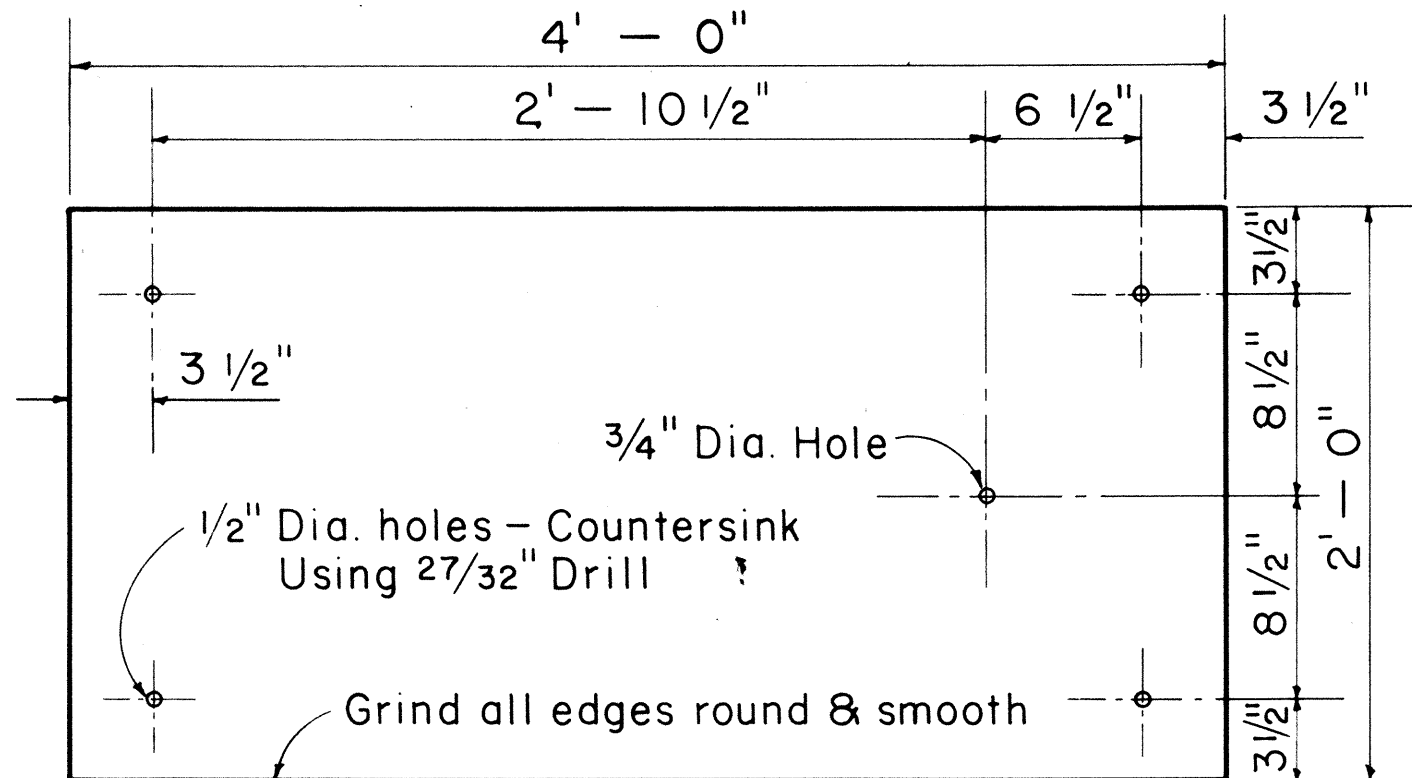
PLAN

SECTION "A-A"



SIDE VIEW

END VIEW



1/4" CHECKER PLATE COVER
(Hot dip galvanize checkered plate after drilling, countersinking, and grinding edge)

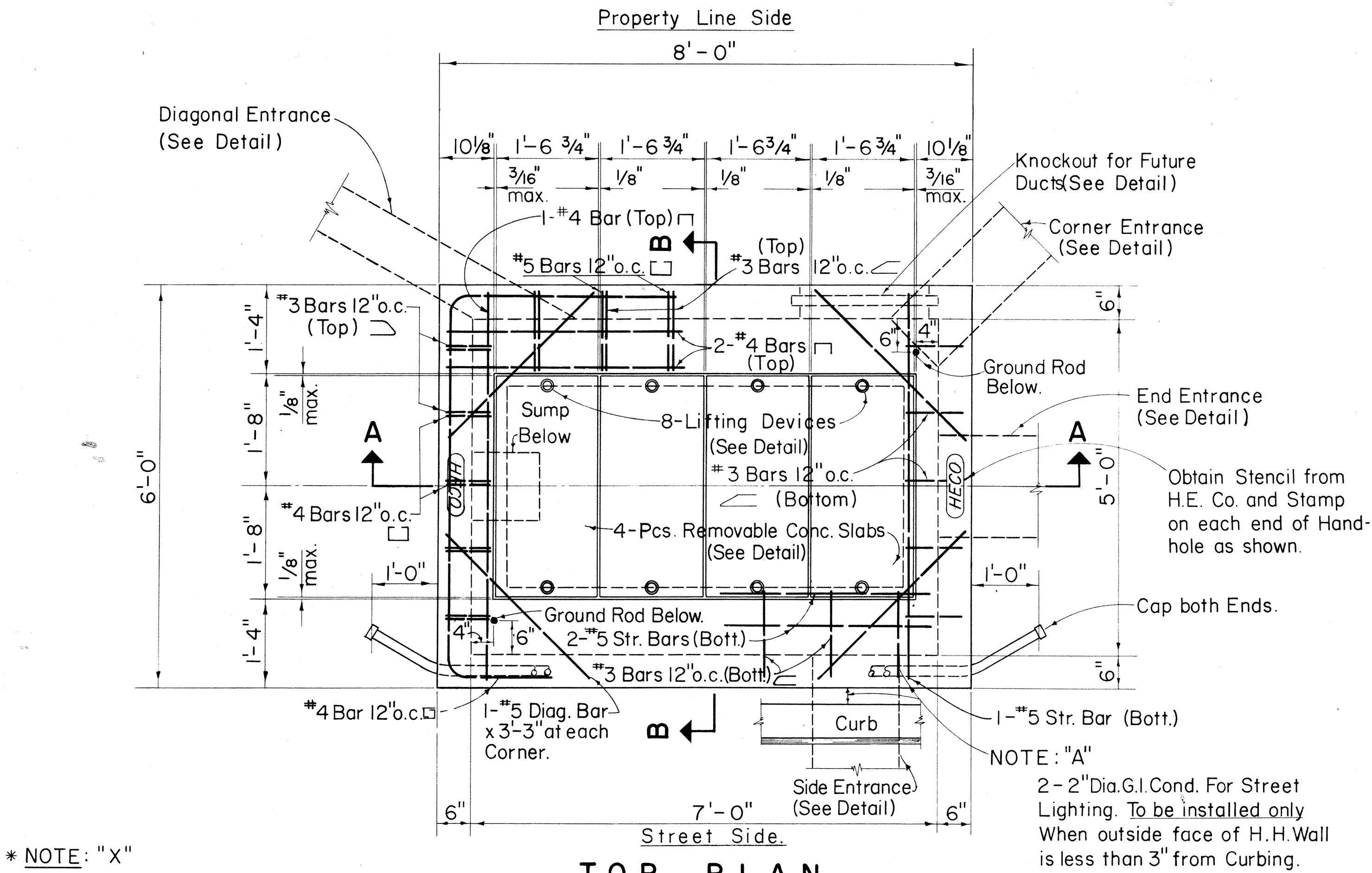
1'-6" X 3'-6" CONCRETE
SERVICE BOX

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

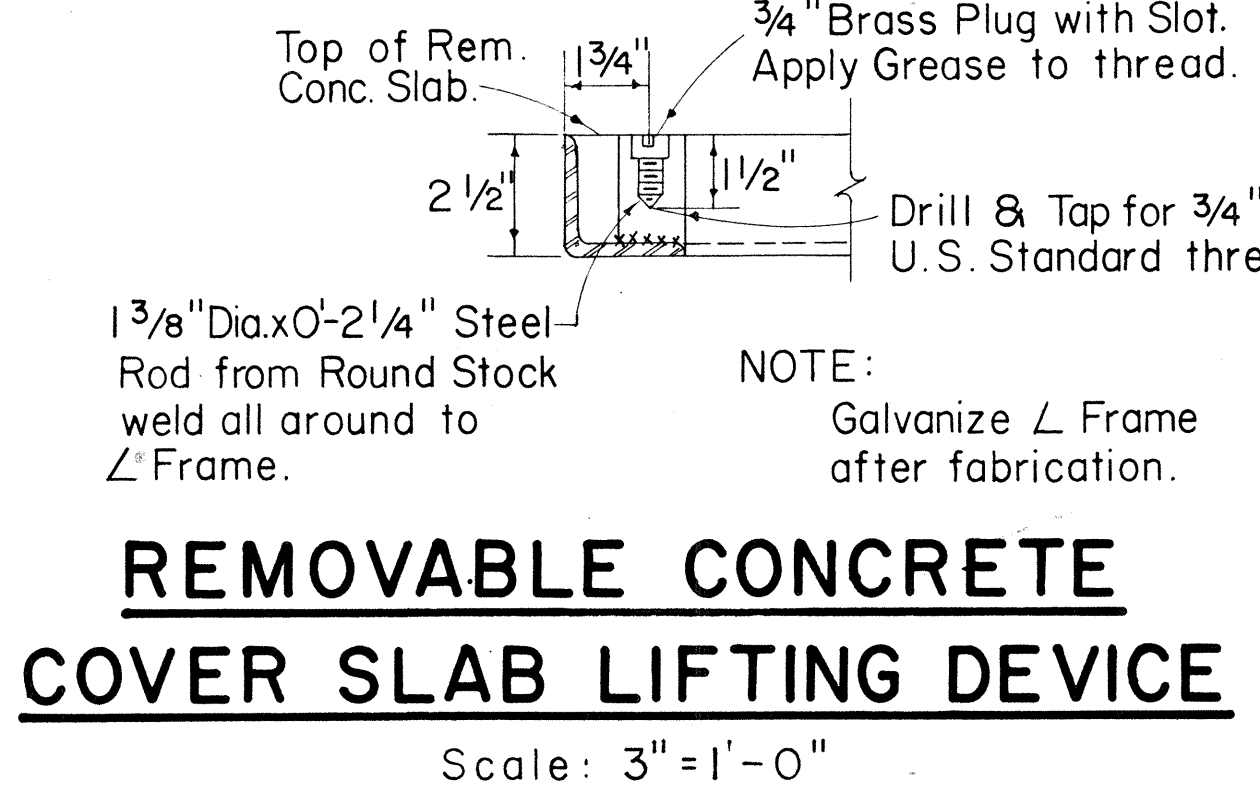
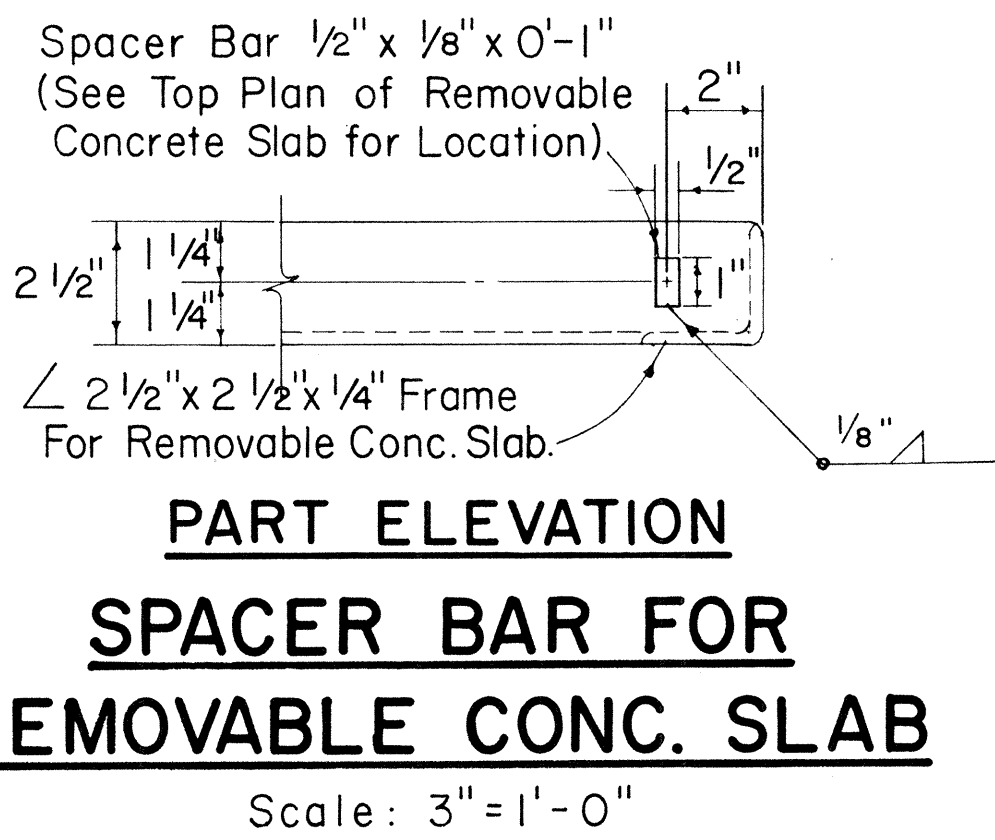
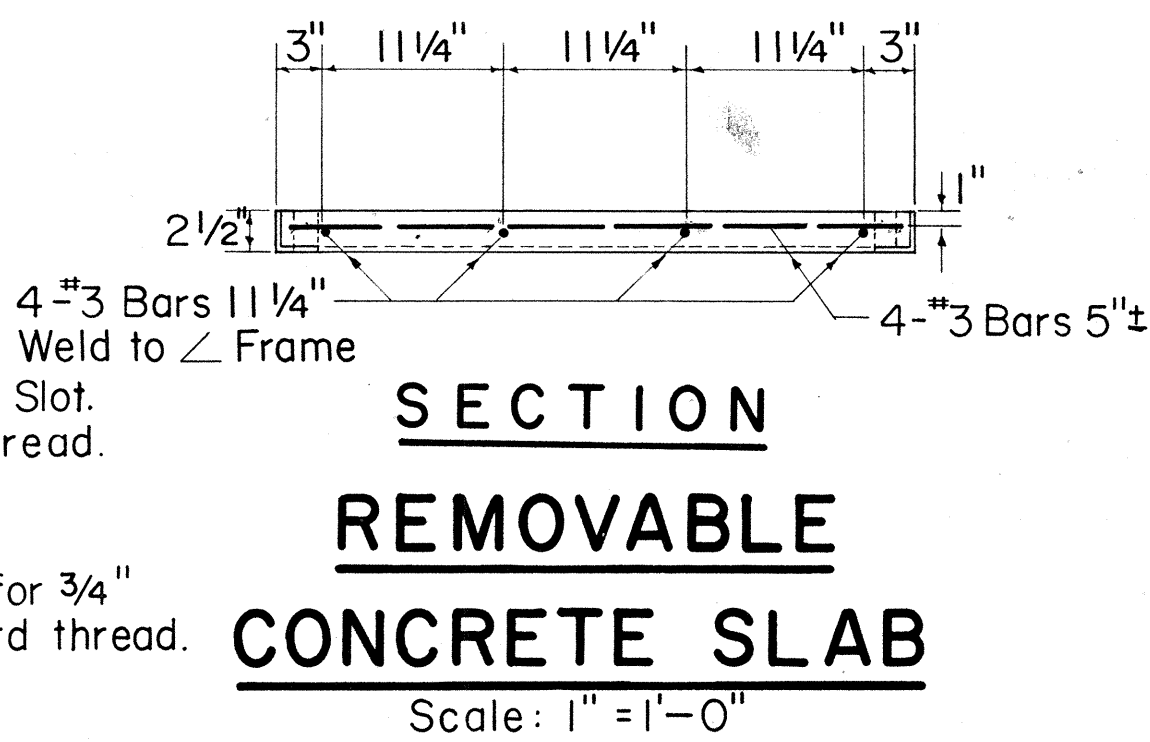
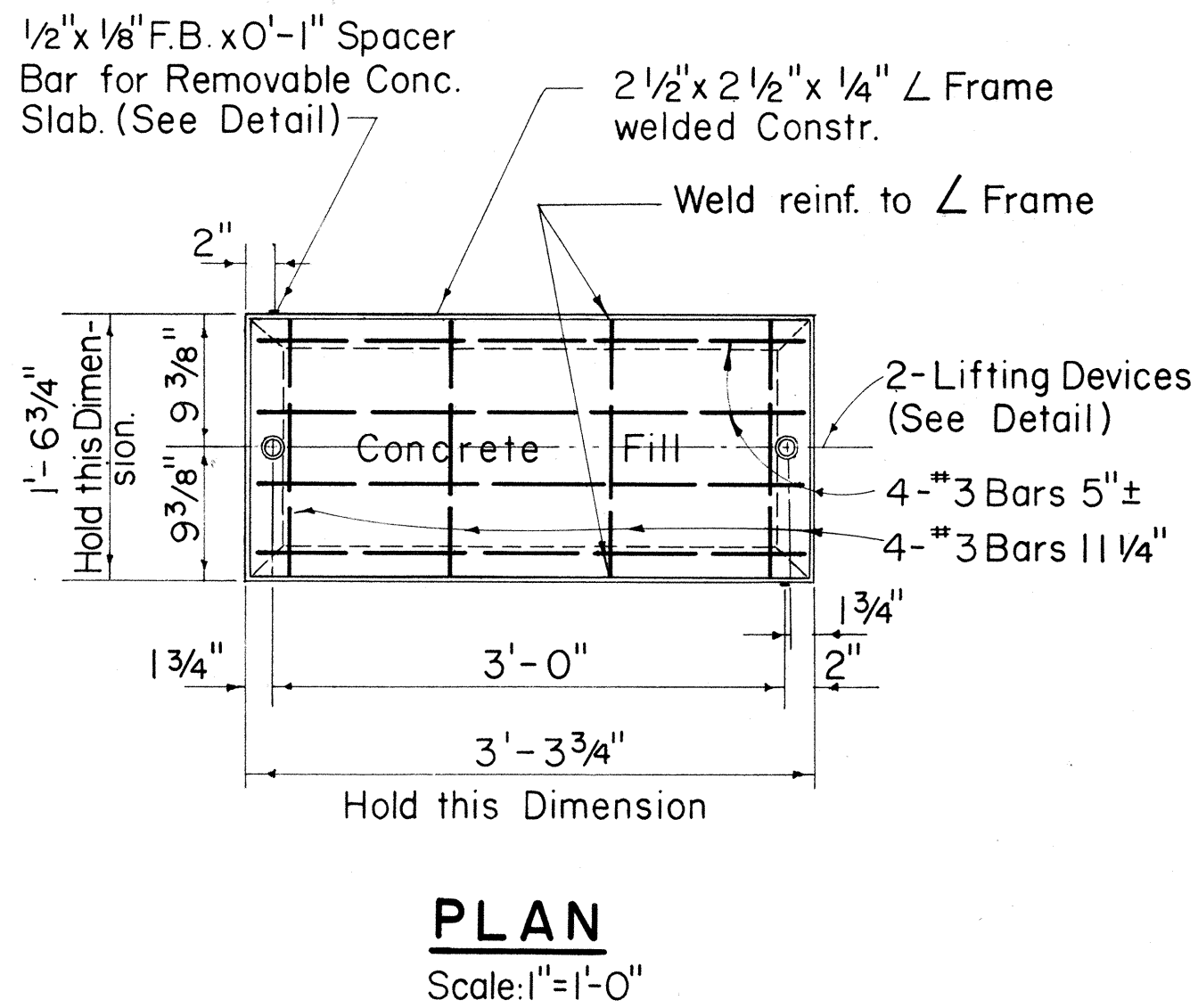
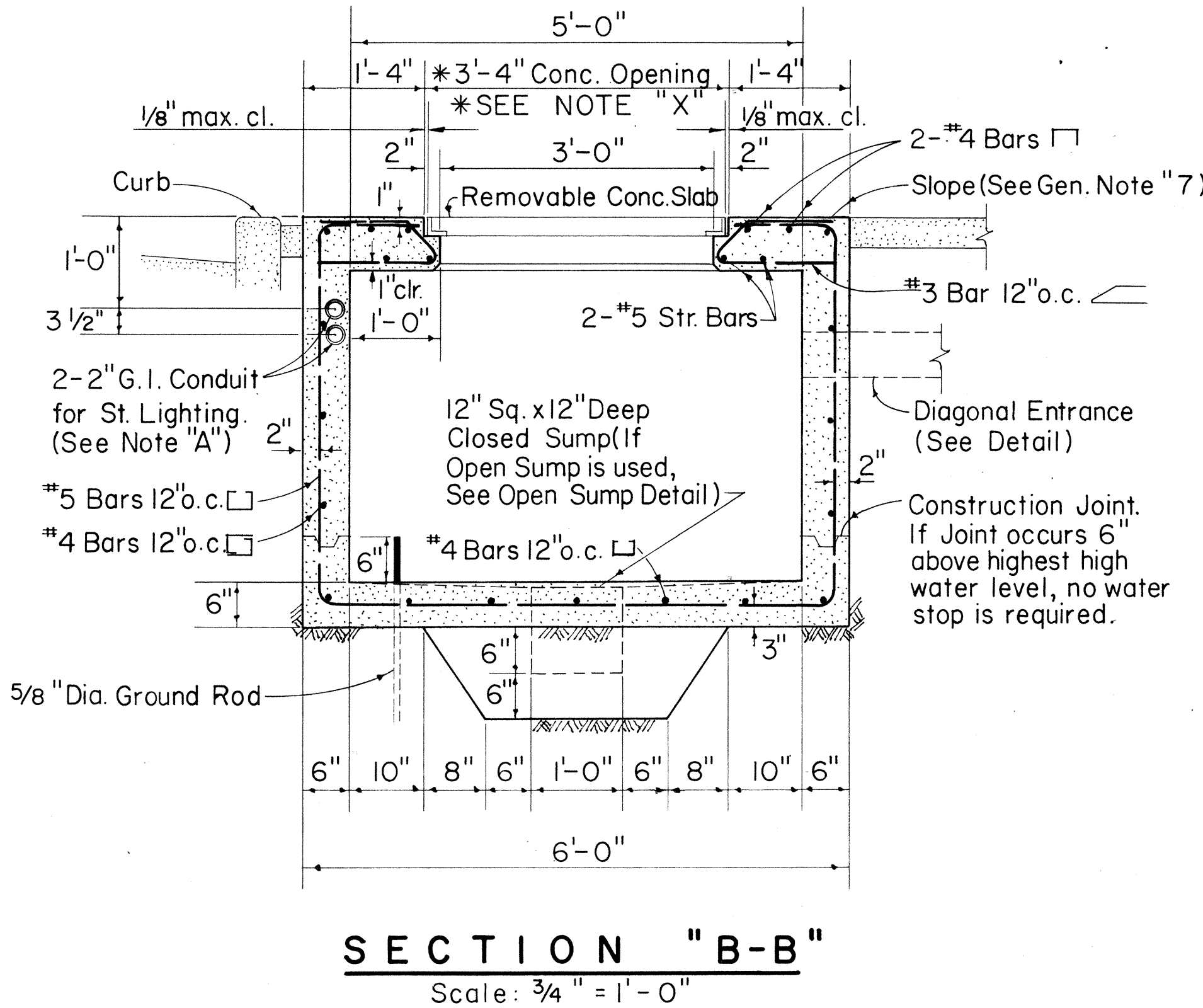
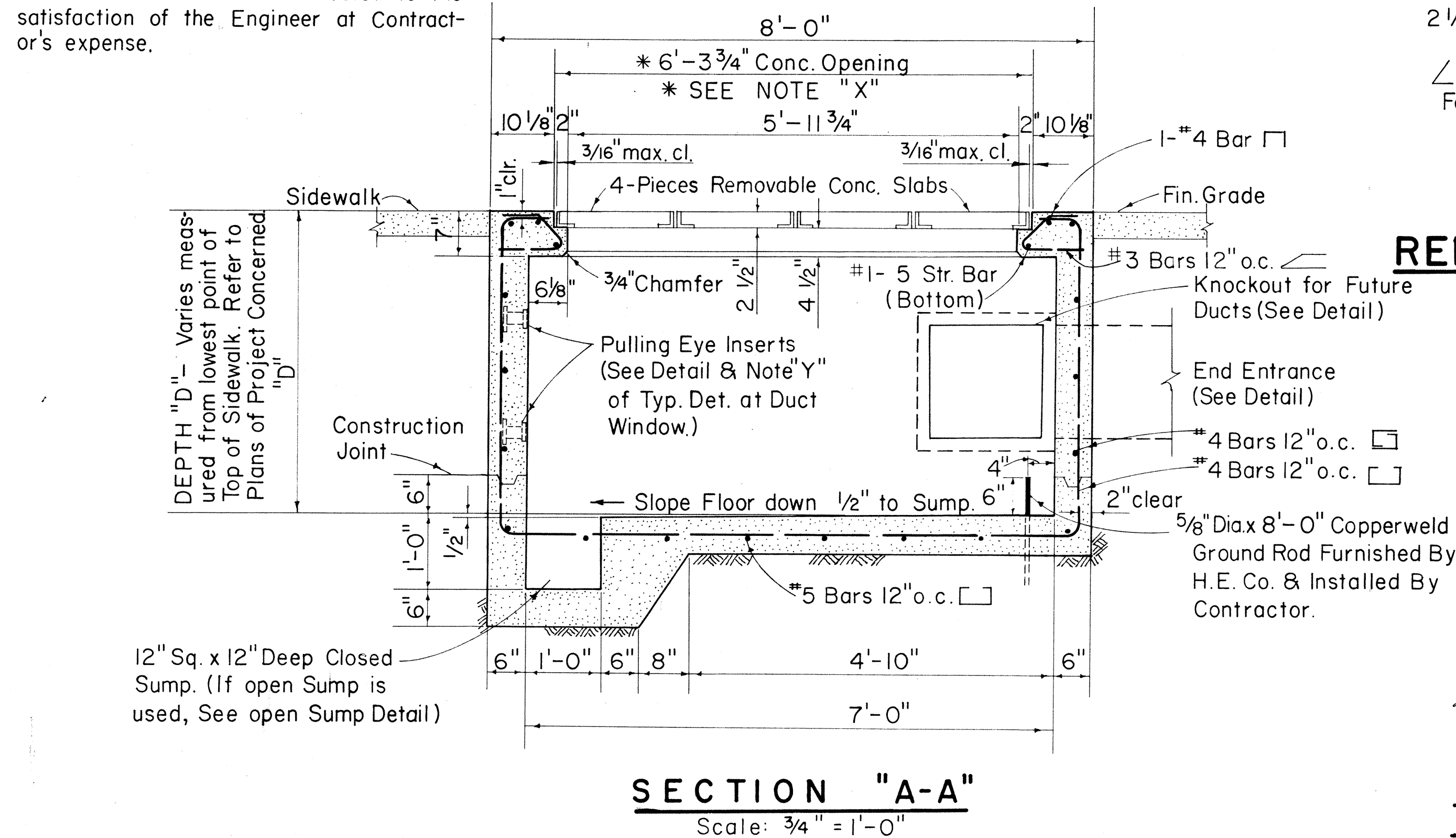
011255

SURVEY PLOTTED BY	DATE
DESIGNED BY	
TRACED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	

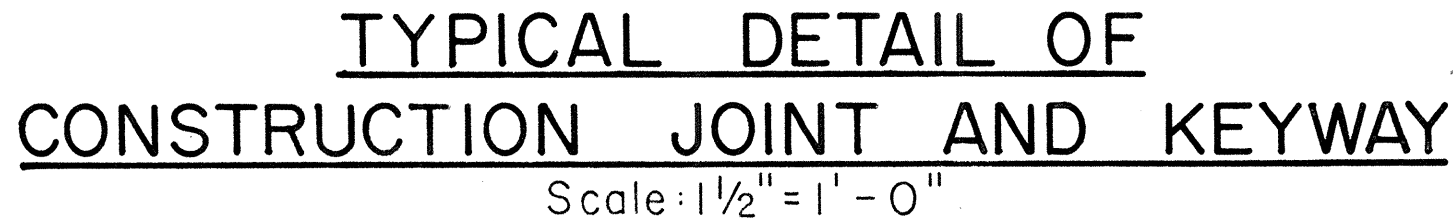
FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	1-H-1(68)10	1968	13	91
		1-H-1(69)10			



* NOTE: "X"
Maximum clearances between removable concrete cover slabs and concrete opening at the supports must be kept. Concrete Contractor shall measure cover slab steel frame after fabrication to obtain proper clearances. Any variation in clearances shall be corrected to the satisfaction of the Engineer at Contractor's expense.



REINFORCED CONCRETE QUANTITIES	
QUANTITY OF MATERIALS FOR DEPTH "D"=5'-0"	
Total Concrete	= 3.97 Cu. Yds.
Total Reinf. Steel	= 594 Lbs.
Total Misc. Steel	= 168 Lbs.
WEIGHT PER REMOVABLE CONCRETE SLAB	
Concrete	= 150 Lbs.
Reinf. Steel	= 7 Lbs.
Misc. Steel	= 42 Lbs.
TOTAL = 199 Lbs.	
MATERIALS FOR 6" DEPTH OF 6" THICK WALL	
Concrete	= 0.24 Cu. Yds.
Reinf. Steel	= 31 Lbs.



APPROVED:
HAWAIIAN ELECTRIC Co., Inc. DATE

FOR USE IN AREAS NOT SUBJECT TO VEHICULAR TRAFFIC

HECo, Inc. Drawing Number
18843
SHEET No. 1 OF 2 SHEETS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

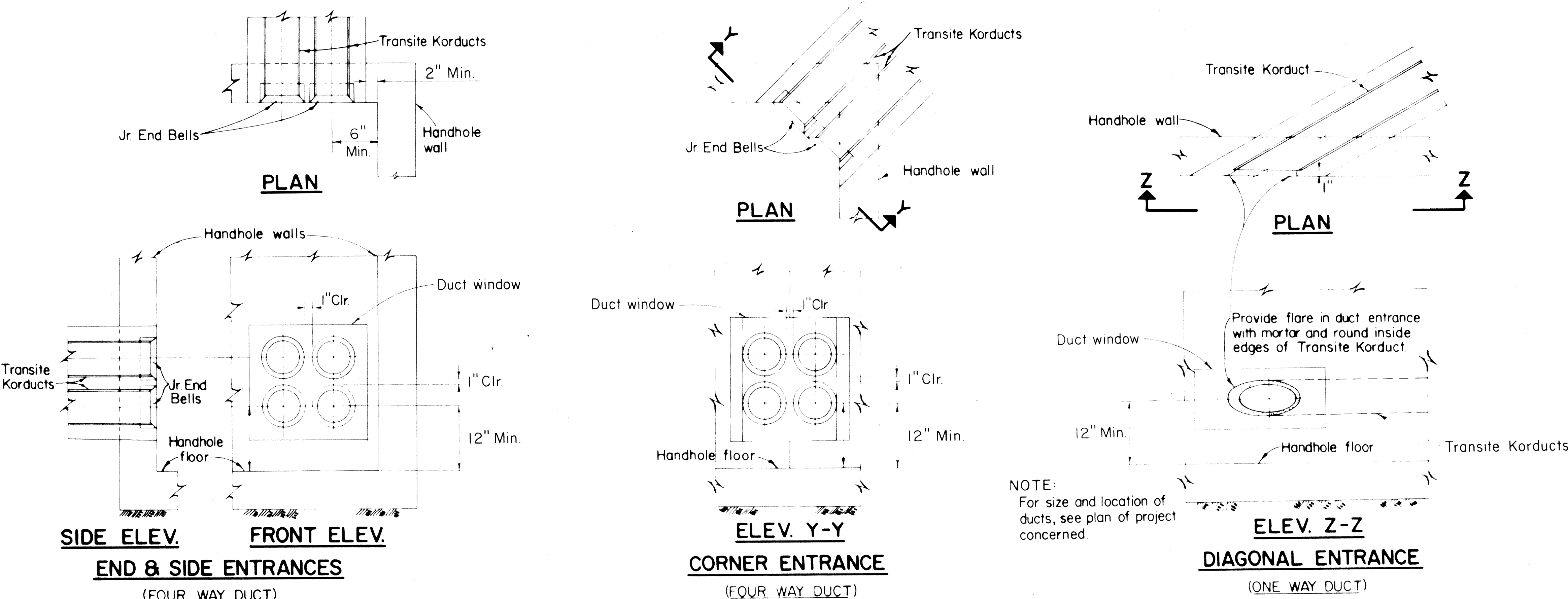
STANDARD DETAILS
HANDHOLE TYPE 57
(5'-0 x 7'-0)
UNDERGROUND STANDARDS

Scales: As Noted Date Nov. 1968
SHEET NO. 3 OF 15 SHEETS

FED AID DIST. NO.	STATE	FED AID PROJECT	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	1-111(100)10 1-111(100)10	1960	14	21

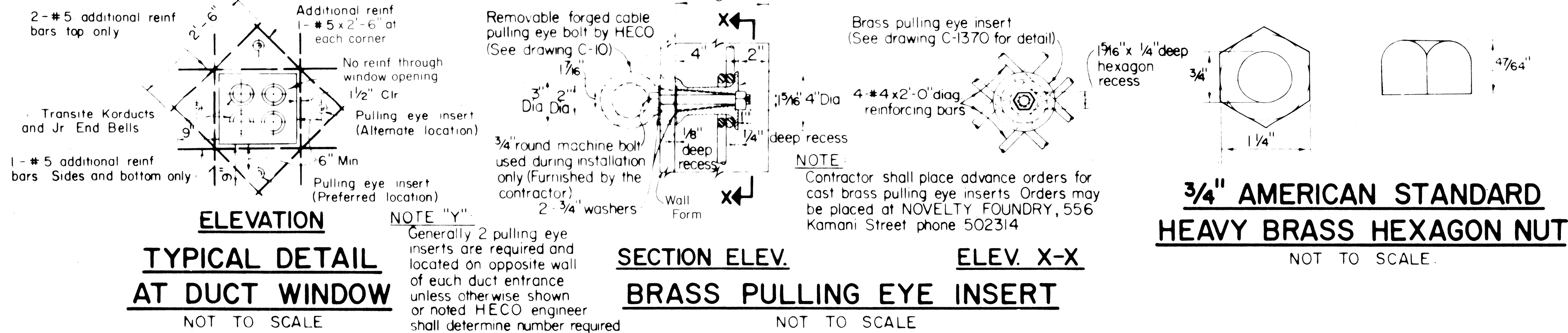
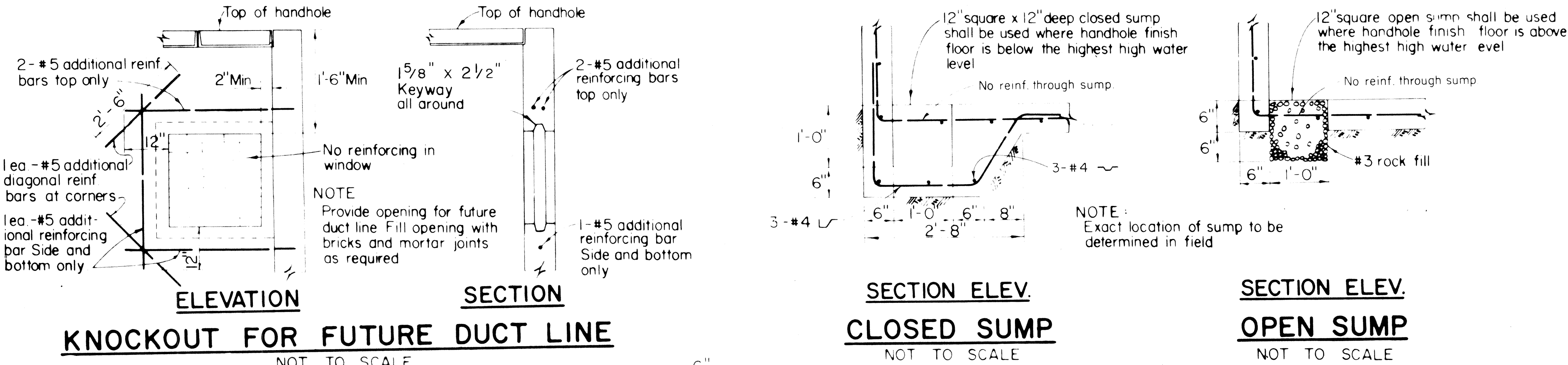
GENERAL NOTES

- Concrete to develop compressive cylinder strength of 3000 PSI in 28 days
- CONCRETE FINISH:
Top of Handhole - Woodfloated (sidewalk finish) according to State Highway or City and County of Honolulu specifications whichever Agency has authority over the work.
Floor - Smooth metal trowelled.
Exposed Wall Surfaces, and Edges - Smooth and free from defects.
CONCRETE POURING:
Notify the Hawaiian Electric Co. Contracting & Inspection Div. 24 hours before pouring any concrete. All concrete pouring shall be done in the presence of an H.E. CO. Engineer or Inspector.
- REINFORCING: round deformed bars, new billet stock intermediate grade ASTM A15. All hooked bars shall have ACI std. hook unless otherwise shown.
- FORMS: form handhole to size and shape as shown. Exterior face of handhole wall shall be formed except:
A) Excavation in solid material such as coral or rock, neat cut, no forms required
B) Excavation in solid material other than coral or rock, lining such as salvaged corrugated iron, canec etc. may be used.
- PULLING EYE INSERTS:
For location and number required, see duct entrance plan of project concerned.
- DRAINAGE: Slope floor down 1/2" to sump.
- Slope of top of manhole See plan of project concerned
- FINISH STEEL WORK:
L iron frames, lifting devices for removable concrete slabs shall be HOT DIP GALVANIZED AFTER FABRICATION.
- EXCAVATION:
Excavate for handhole to accurate alignment, grades and dimensions as shown on drawing. All excavation must be approved by the Engineering Department, the Hawaiian Electric Co, Inc., before any concrete is poured. All excess cut shall be backfilled with concrete or rock.
- BACKFILL:
Remove all debris before backfilling. Backfill in accordance with latest specifications of and subject to approval of State Highway or City and County of Honolulu whichever Agency has authority over the work.
- For duct line construction standards see H E CO Dwg 18585, and specs sheet 18585A
- DUCTS For number, size, and exact location of duct entrances, refer to project drawings.
- ALL MATERIALS SHALL BE NEW.



TYPICAL DUCT LINE ENTRANCE DETAIL

NOT TO SCALE



FOR USE IN AREAS NOT SUBJECT TO VEHICULAR TRAFFIC.

APPROVED:

HAWAIIAN ELECTRIC Co., Inc. DATE

HECo., Inc. Drawing Number

18843 SHEET No. 2 OF 2 SHEETS

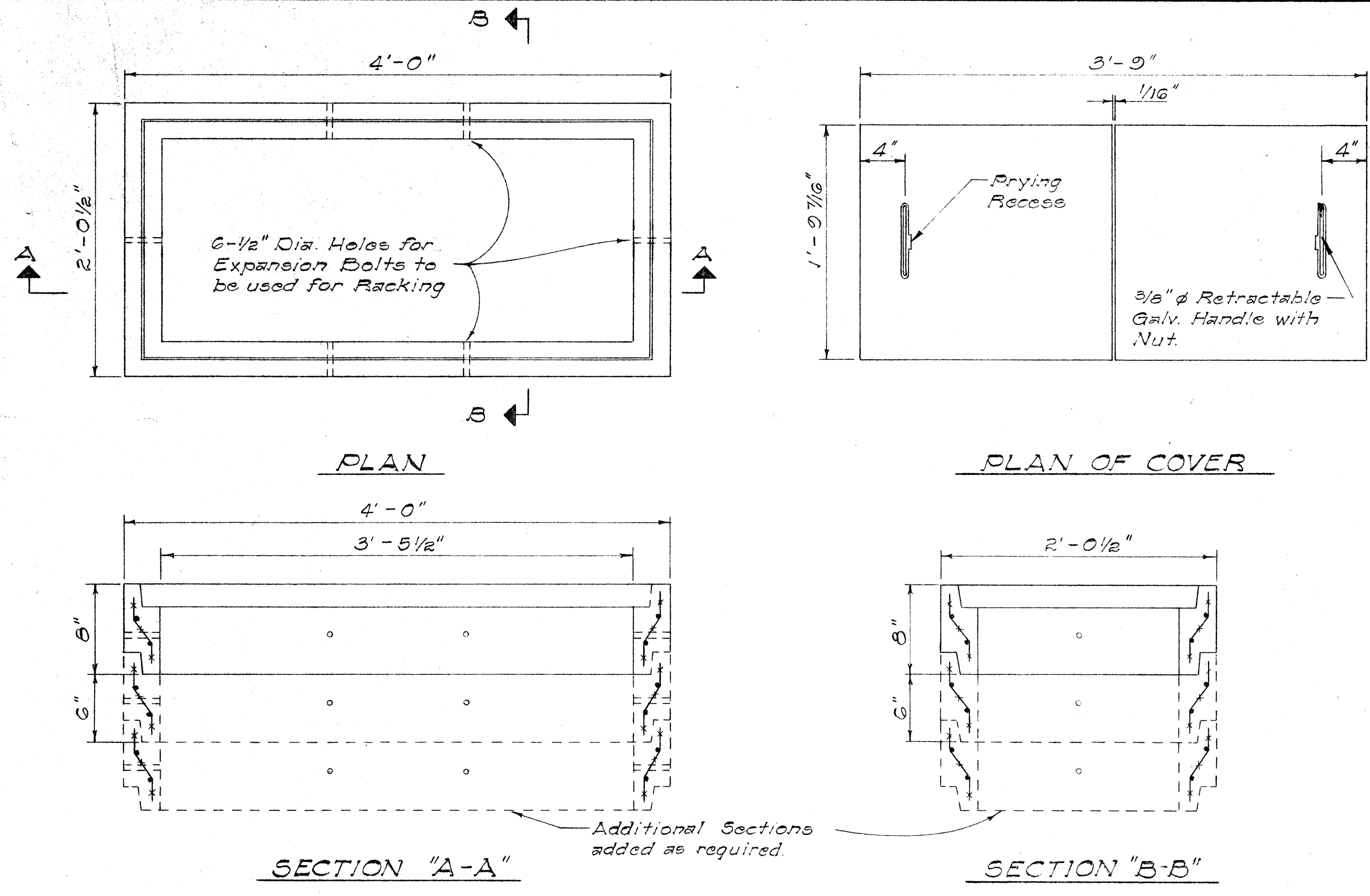
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
HANDHOLE TYPE 57
(5'-0 x 7'-0)
UNDERGROUND STANDARDS

Scales As Noted Date Nov. 1960

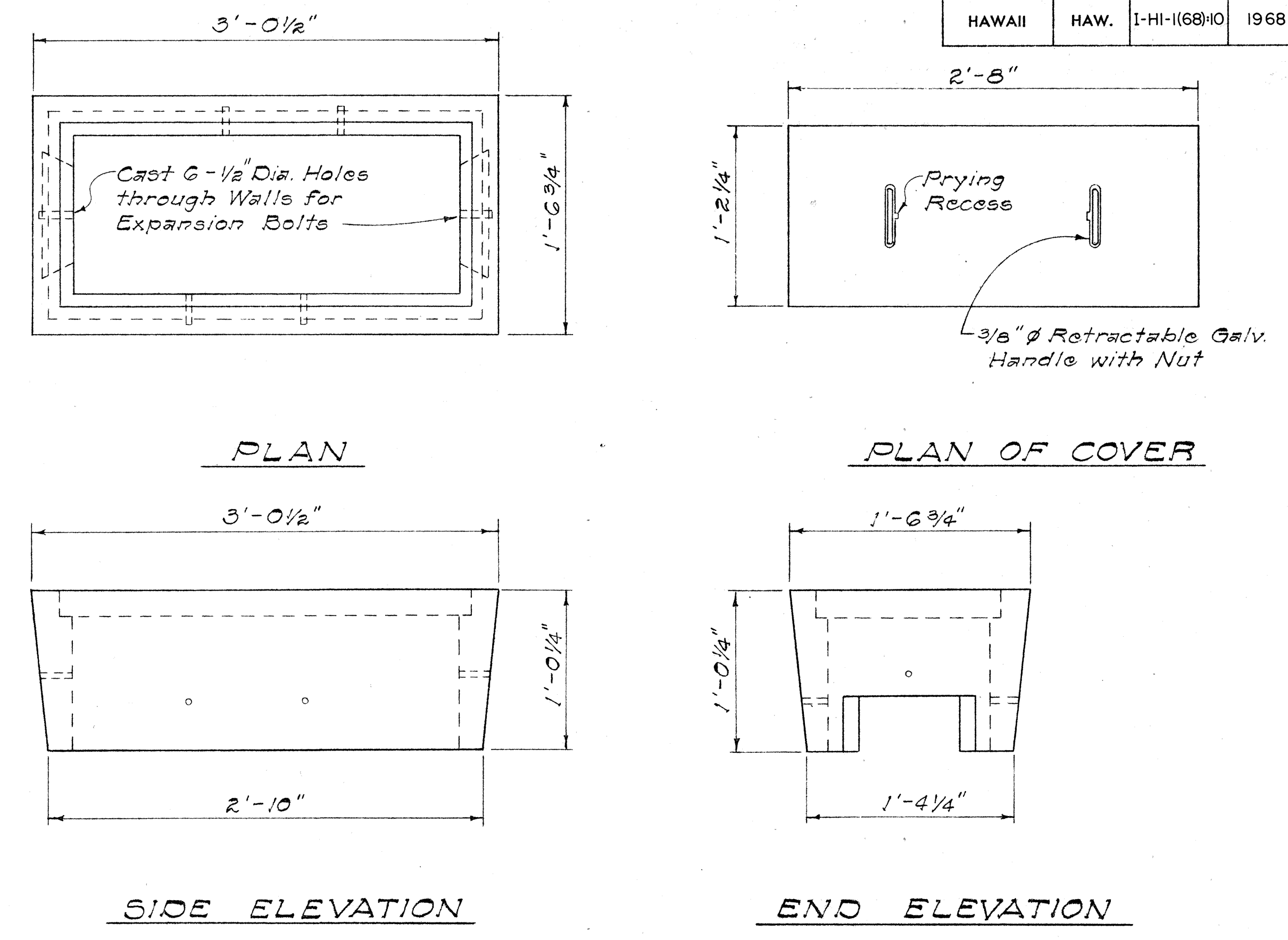
SHEET NO. 4 OF 15 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-HI-116810	1968	15	21



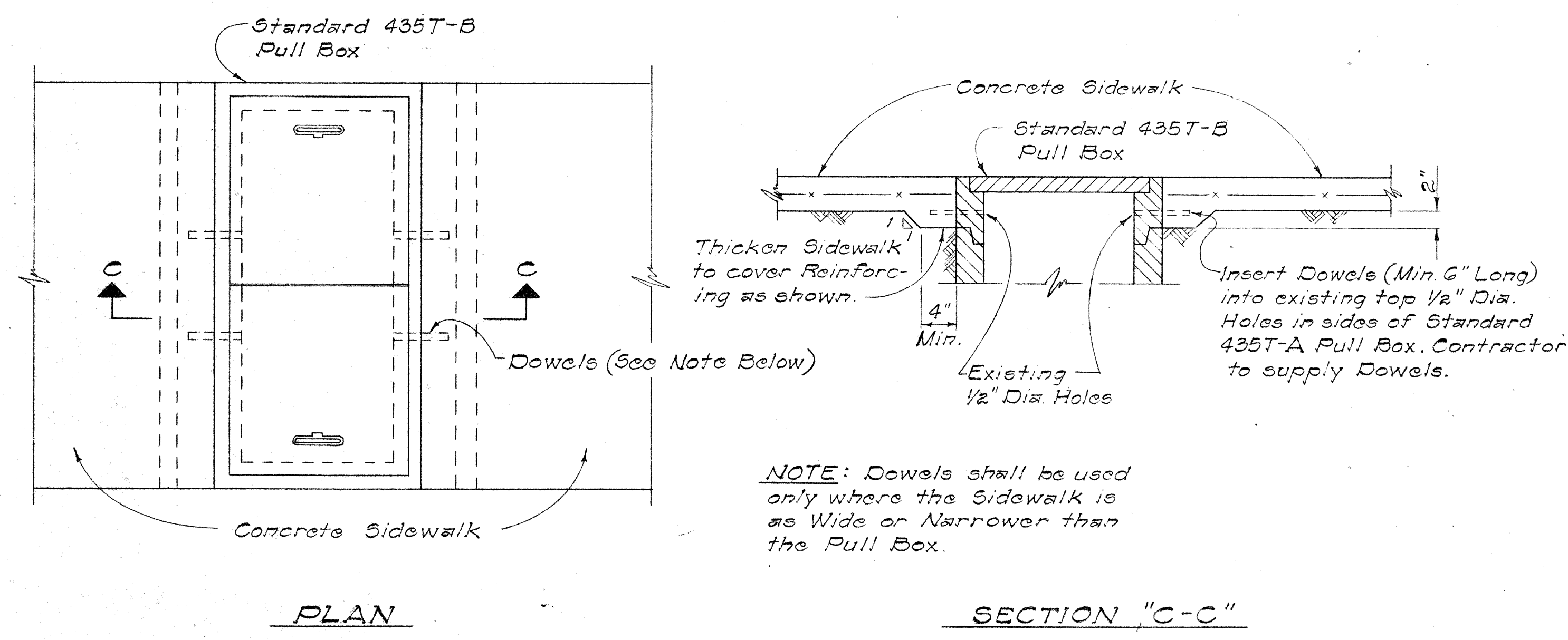
DETAIL OF LARGE PULL BOX No. 435T-B

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



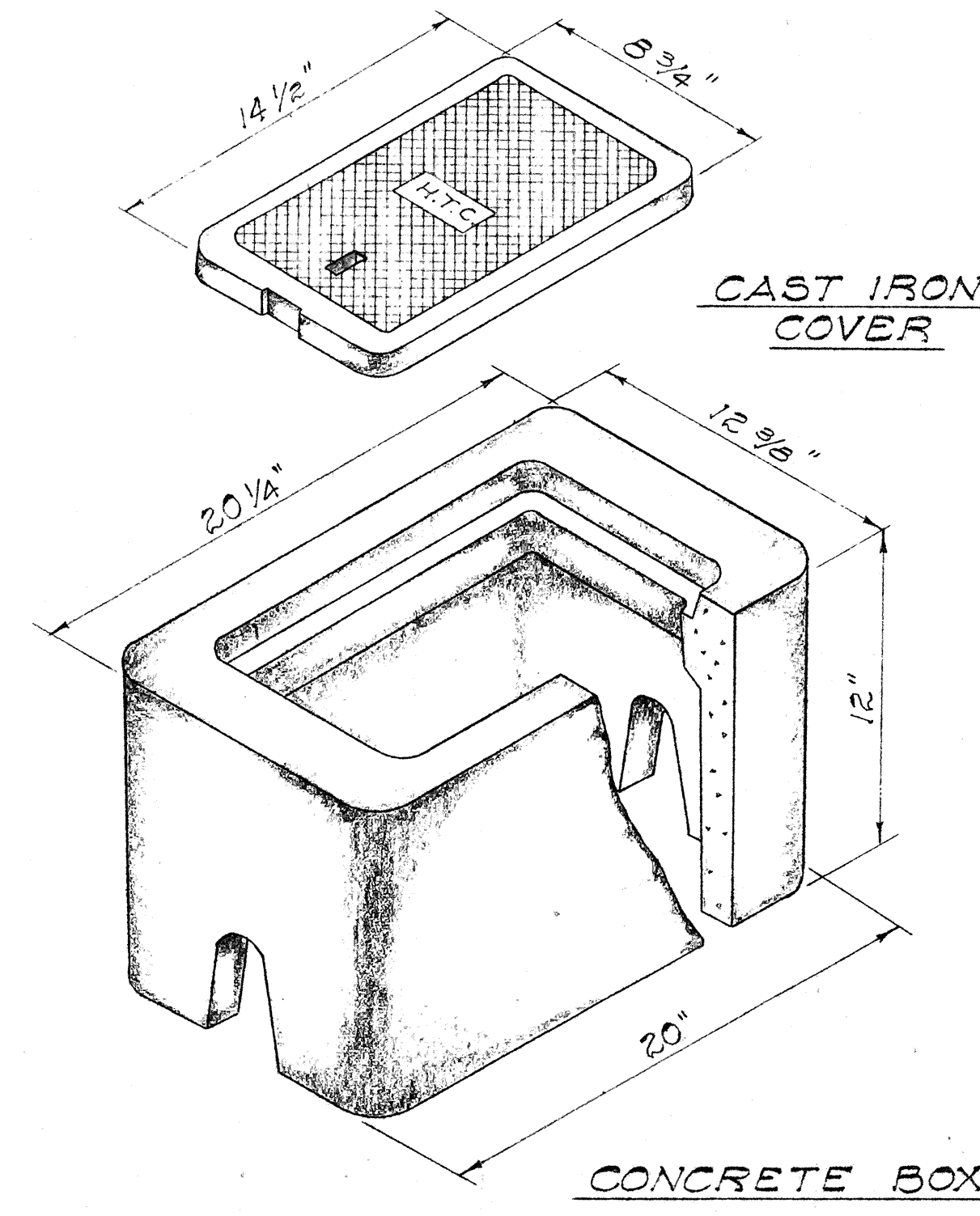
DETAIL OF SMALL PULL BOX No. 434T

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

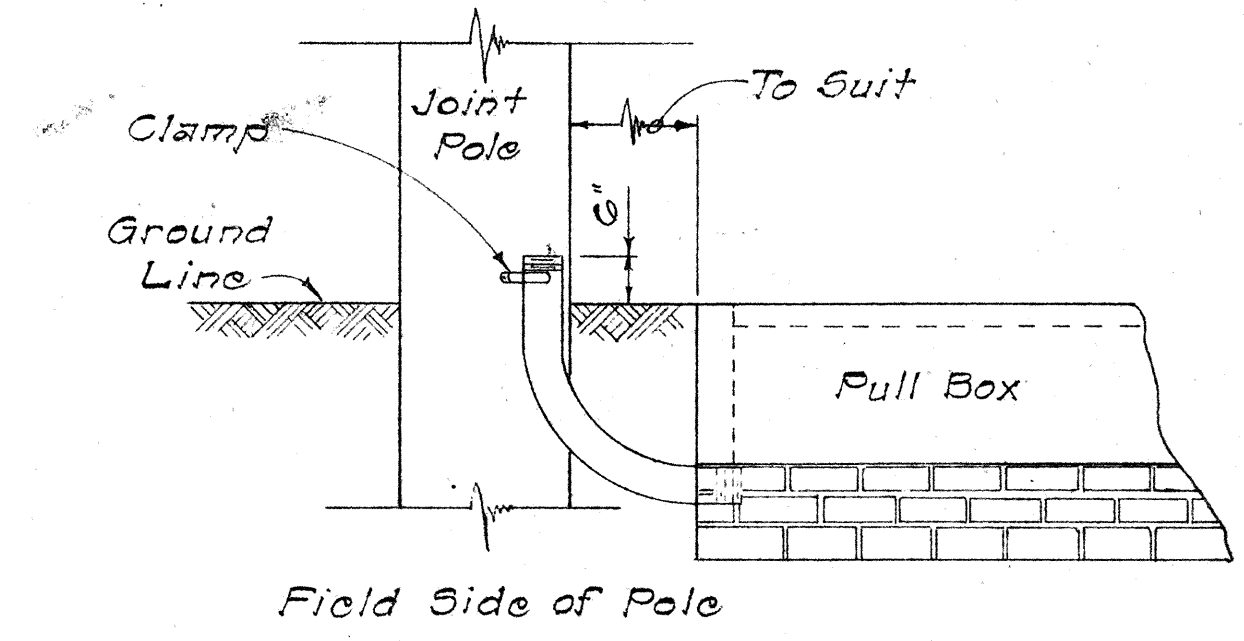


INSTALLATION DETAIL OF PULL BOX No. 435T-B IN SIDEWALK AREAS

Scale: 1" = 1'-0"



TYPE "B" METER BOX TYPE 436T



TYPICAL 90° CONDUIT BEND TO POLE

Not To Scale

APPROVED:
HAWAIIAN TELEPHONE CO. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
TELEPHONE PULL BOXES
Nos. 435T-B, 434T AND 436T

Scale: As Shown Date: August, 1968

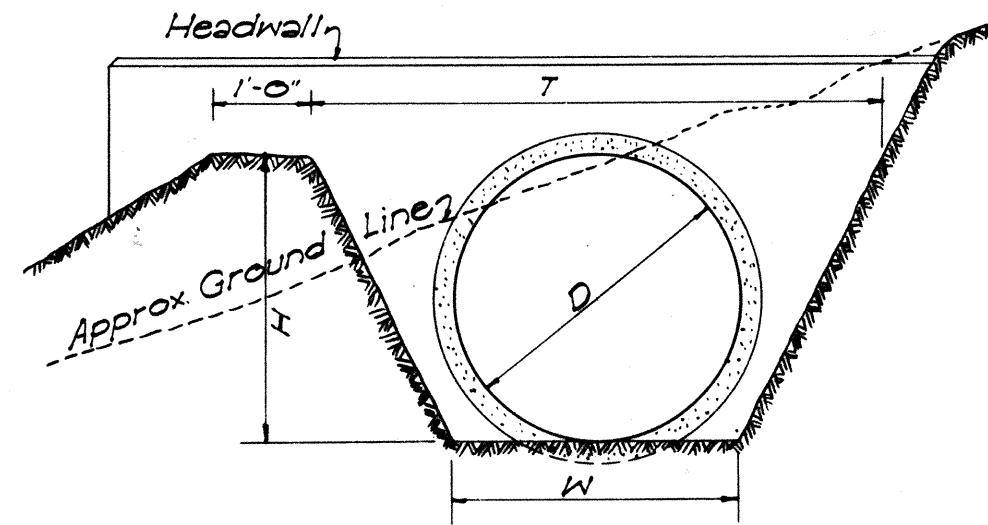
SHEET No. 5 OF 15 SHEETS

ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	
DRAWN BY	
REVIEWED BY	
NOTED BY	
CHECKED BY	
NO.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	I-HI-1168-10	1968	17	71

Revised: June 1965
Revised: August 1967

DATA FOR OUTLET DITCH				
D	W	H	T=W+H	
18"	24"	2'-0"	4'-0"	
24"	30"	2'-0"	4'-6"	
30"	30"	2'-6"	5'-0"	
36"	36"	3'-0"	6'-0"	



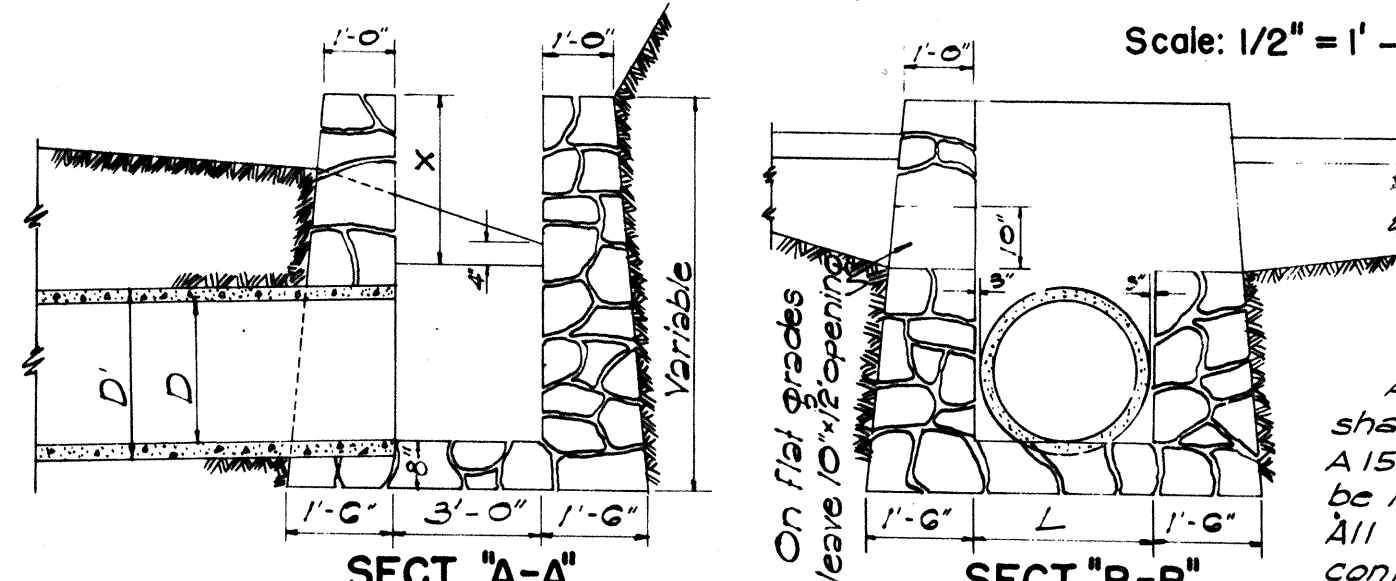
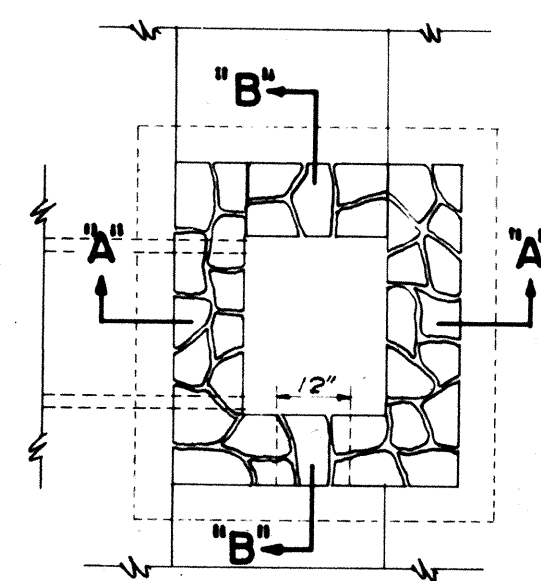
DETAIL OF OUTLET DITCH

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

DATA FOR MASONRY DROP INTAKE				
D	D	L=D+G	Cu Yds.	Where Variables Equal
23"	18"	2'-5"	3.02	4'-6"
30"	24"	3'-0"	3.61	5'-0"
37"	30"	3'-7"	4.21	5'-6"
44"	36"	4'-2"	4.85	6'-0"

NOTE:

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



SECTION "A-A" SECTION "B-B"
CONC. COLLAR FOR CONC. BOX CULVERT

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

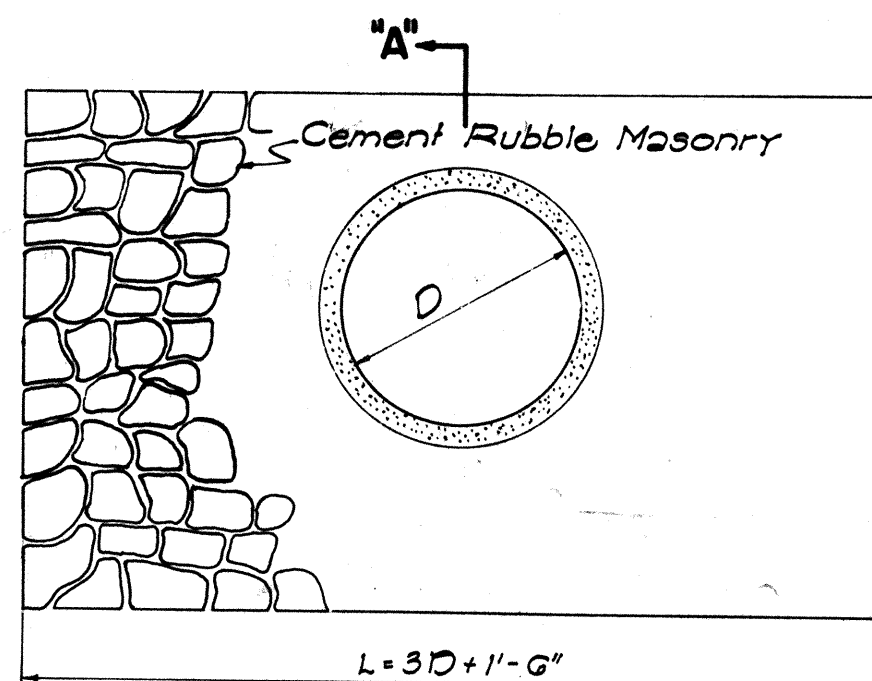
REINFORCING BARS

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 A305.

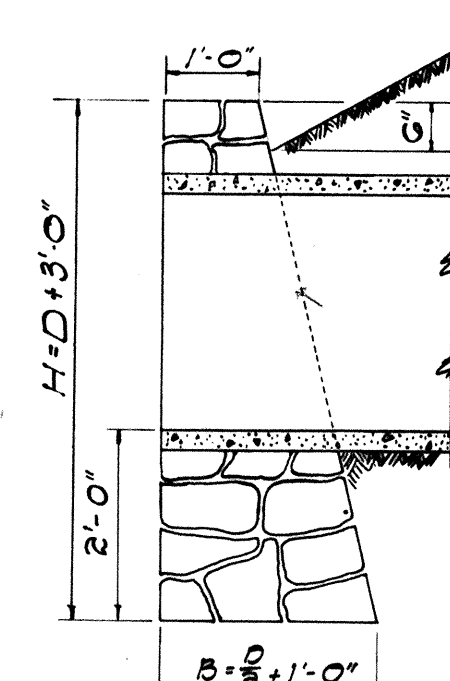
DATA - MASONRY HEADWALL				
D	H	B	L	Cu Yds.
18"	4'-6"	1'-0"	6'-0"	1.24
24"	5'-0"	2'-0"	7'-6"	1.83
30"	5'-6"	2'-3"	9'-0"	2.56
36"	6'-0"	2'-6"	10'-6"	3.45

CRM For RCCP

CRM For CGMP



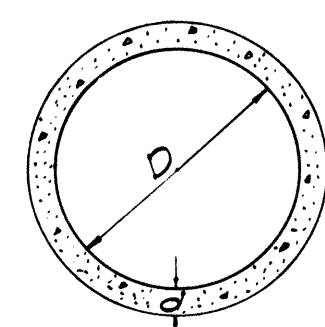
ELEVATION



SECT. "A-A"

DETAIL OF MASONRY HEADWALL

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



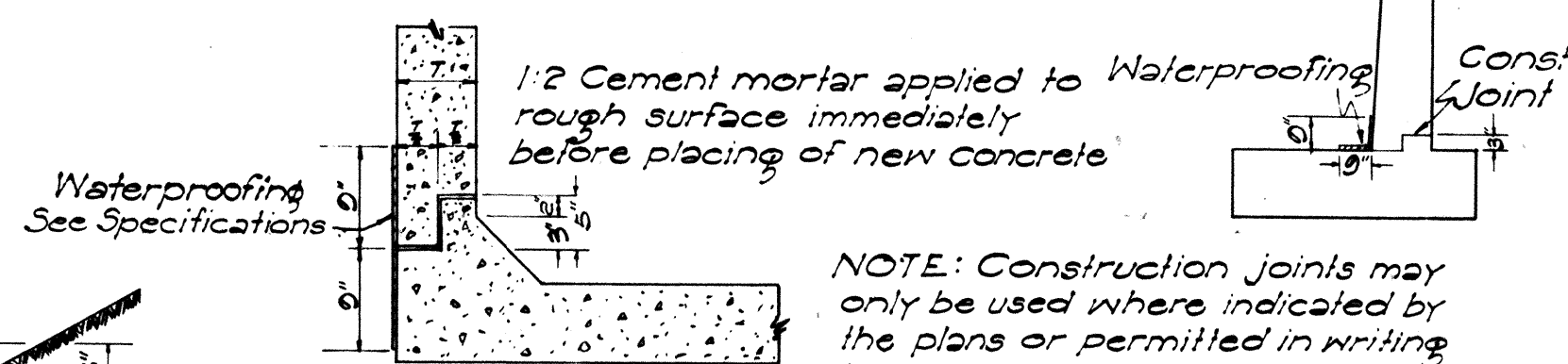
SECTION
CONC. PIPE CULVERT

NOTE:

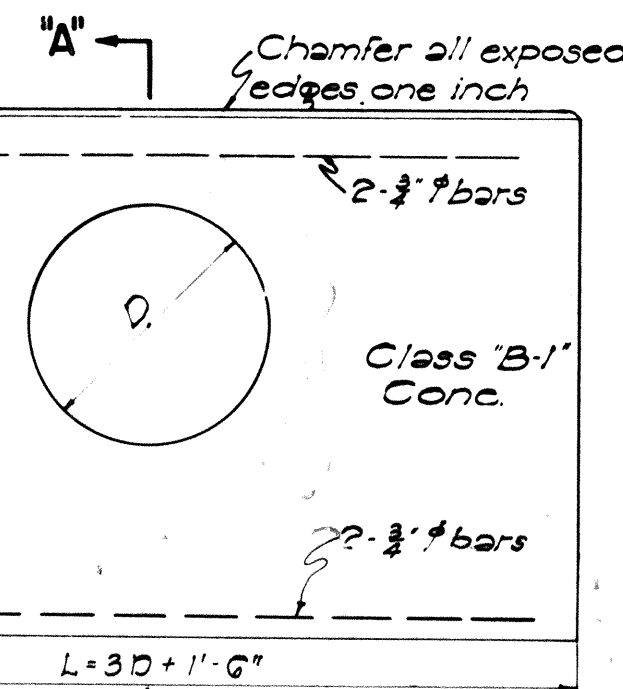
Thickness of reinforcing and concrete used are to conform with the approved design as provided by the Specifications.

DETAIL OF MASONRY DROP INTAKE

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



CONSTR. JOINT DETAILS



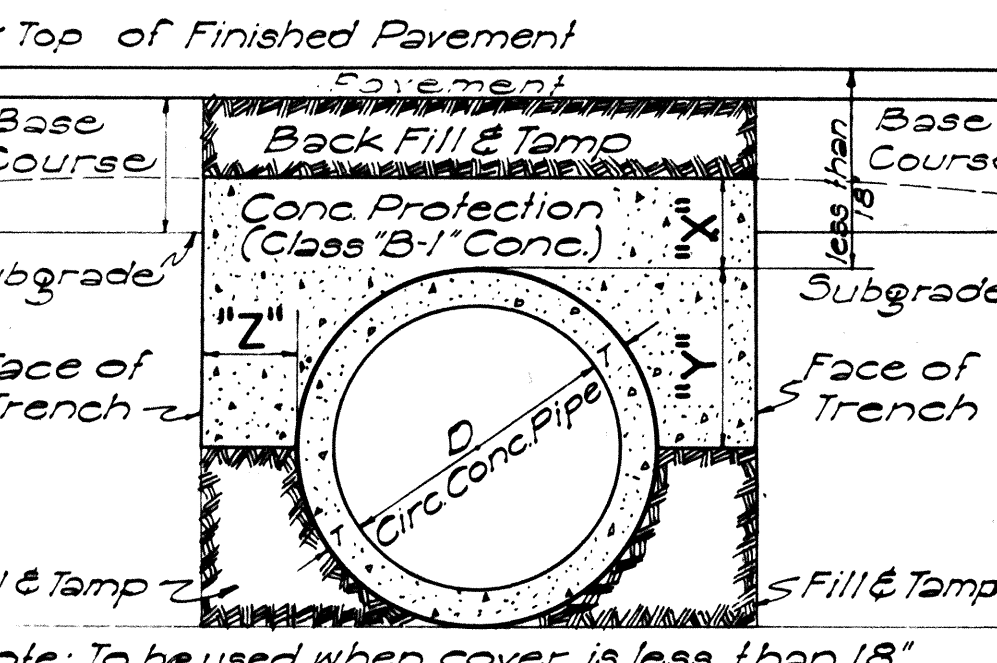
ELEVATION

DATA FOR CONC. HEADWALL				
D	B	L	H	Cu Yds.
18"	1'-0"	6'-0"	4'-6"	1.12
24"	1'-6"	7'-6"	5'-0"	1.52
30"	2'-0"	9'-0"	5'-6"	2.36
36"	2'-6"	10'-6"	6'-0"	3.04
42"	3'-0"	12'-0"	6'-6"	4.19
48"	3'-6"	13'-6"	7'-0"	5.01

DETAIL OF CONCRETE HEADWALL

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

SECTION OF HIGH CEMENT
RUBBLE MASONRY RETAINING
WALL OR SEAWALL



DATA FOR CONCRETE PROTECTION OVER CULVERTS				
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 CONC. PROTECTION

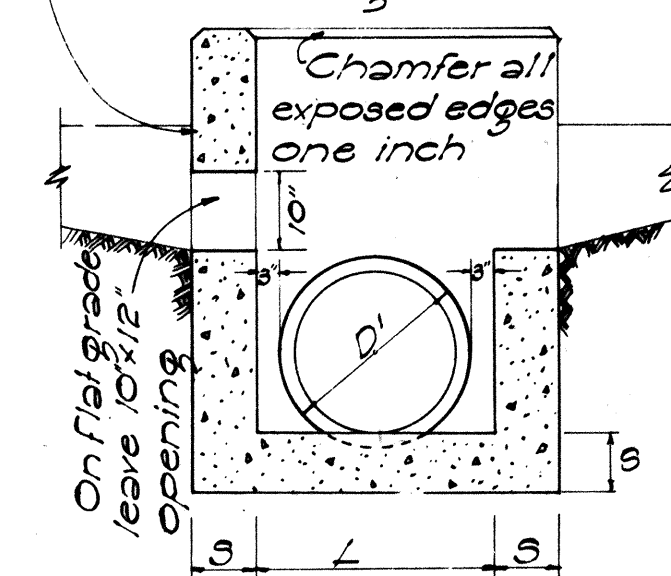
Scale: 1" = 1'-0"

SECTION OF LOW
MASONRY RETAINING
WALL OR SEAWALL

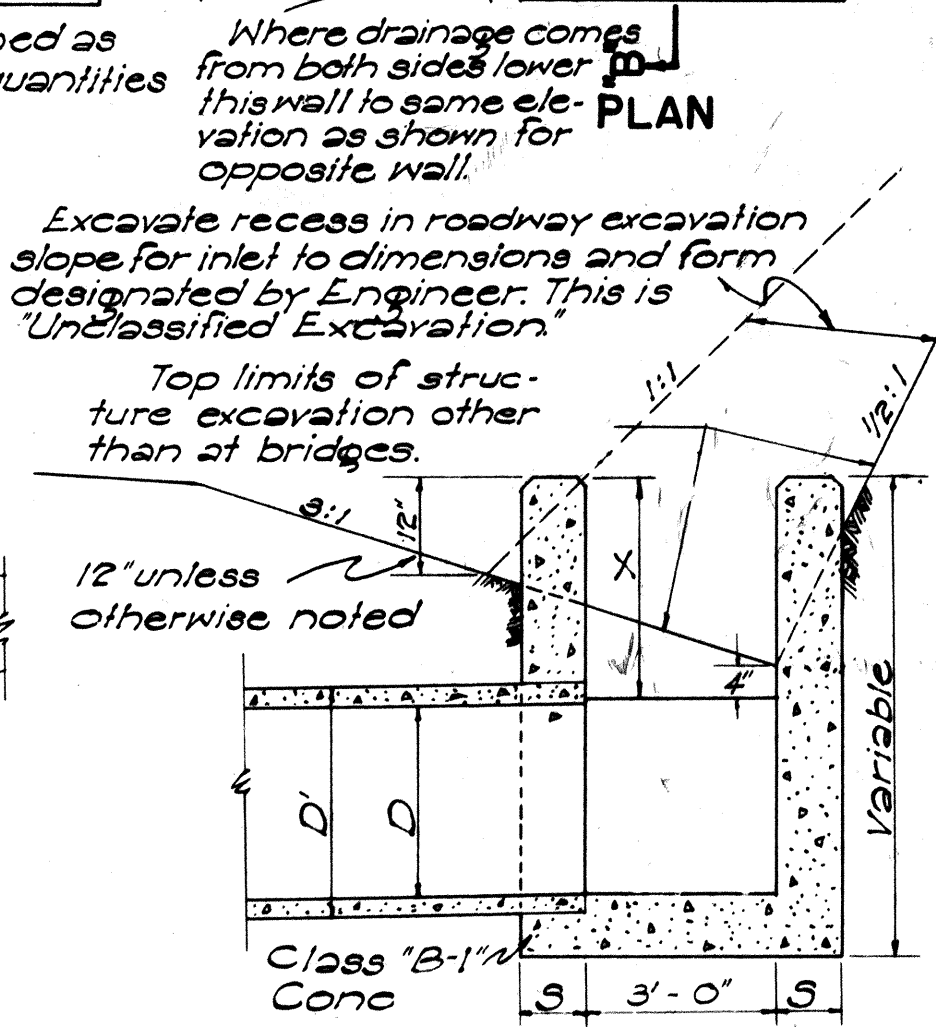
DATA - CONC. DROP INTAKE				
D	D	L=D+G	S	Cu Yds.
23"	18"	2'-5"	8"	1.41
30"	24"	3'-0"	8"	1.72
37"	30"	3'-7"	9"	2.32
44"	36"	4'-2"	9"	2.73
51"	42"	4'-9"	10"	3.54
58"	48"	5'-4"	10"	4.01

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.



SECTION "B-B"



SECTION "A-A"

DETAIL OF CONCRETE DROP INTAKE

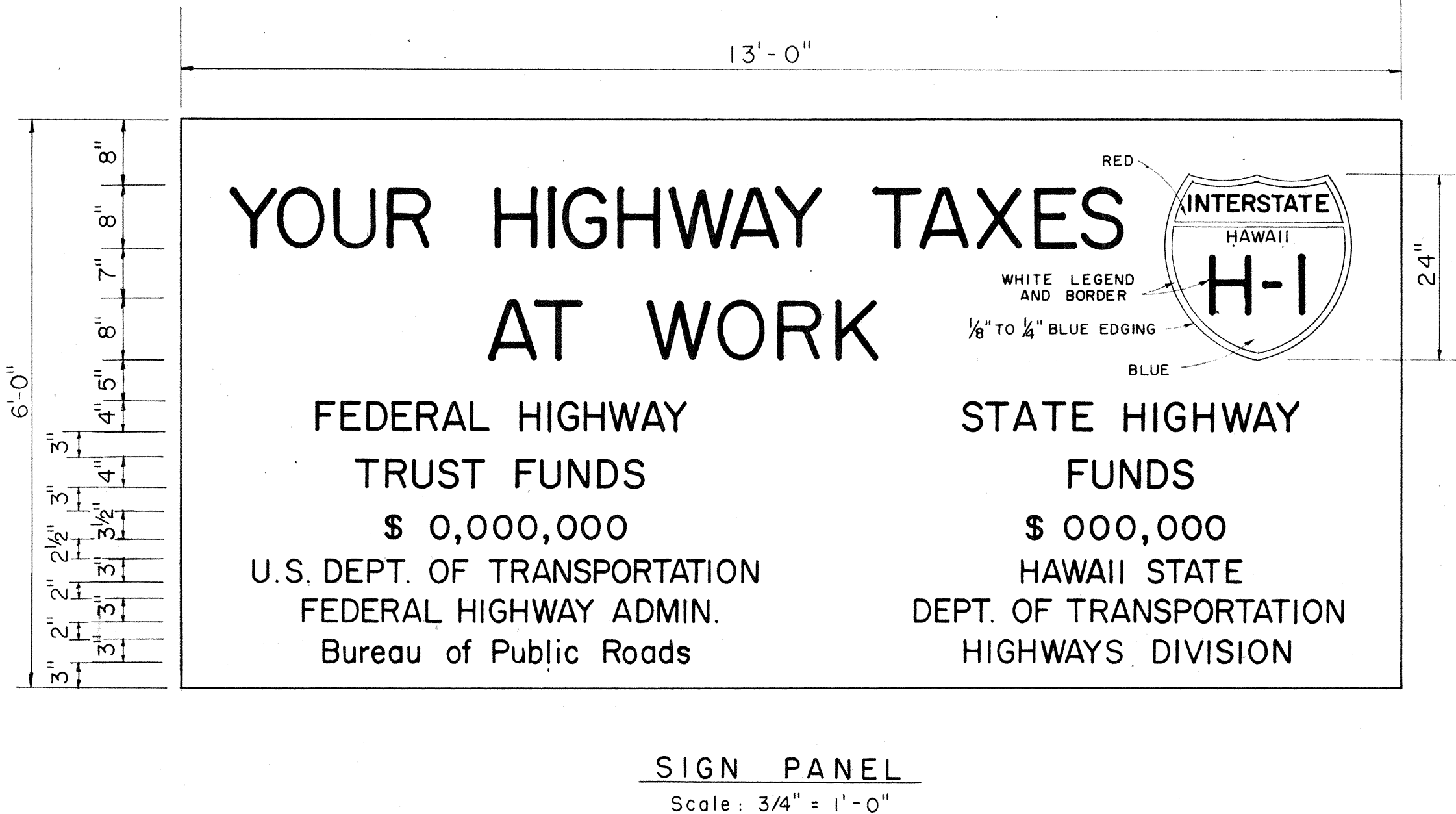
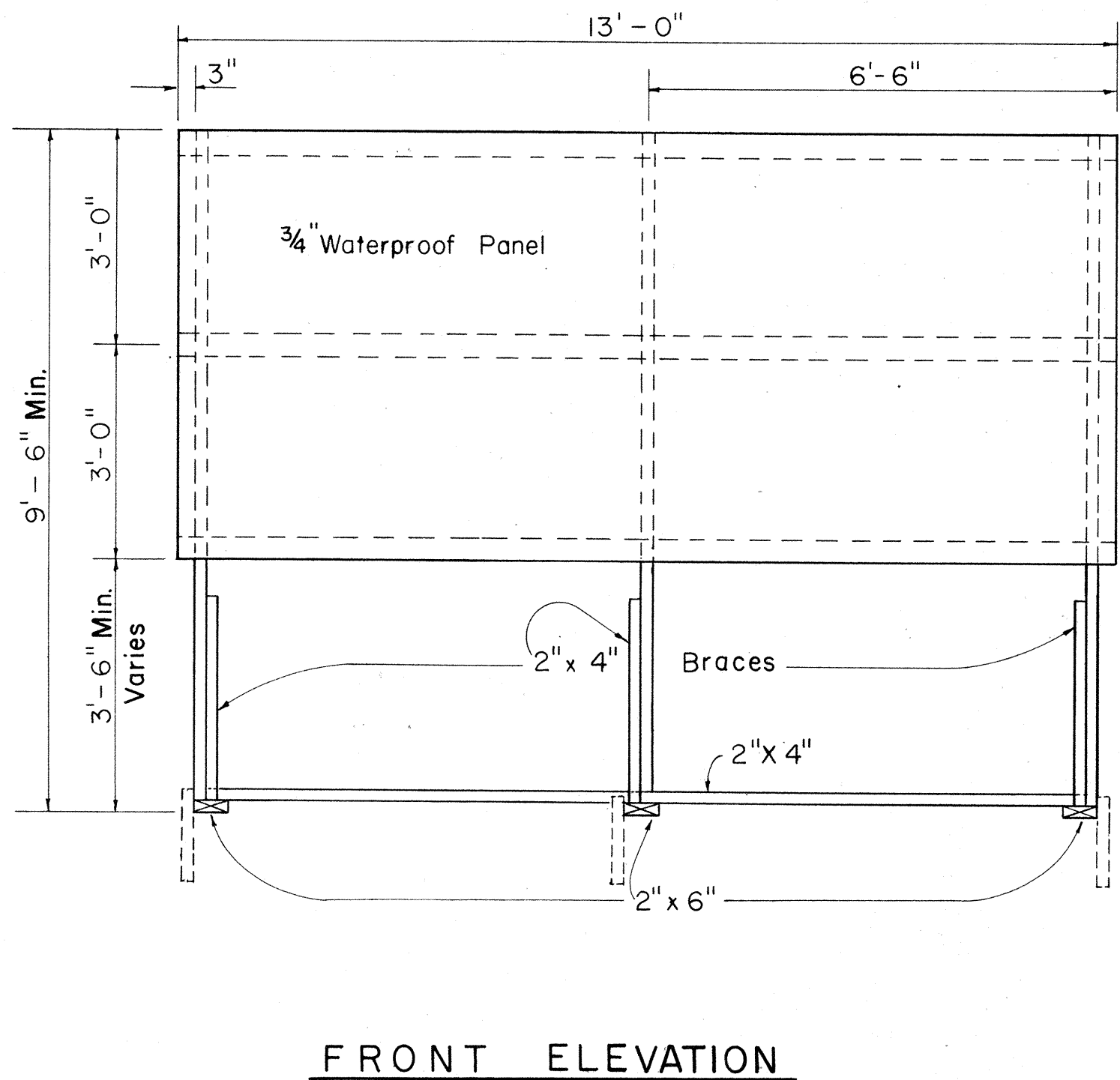
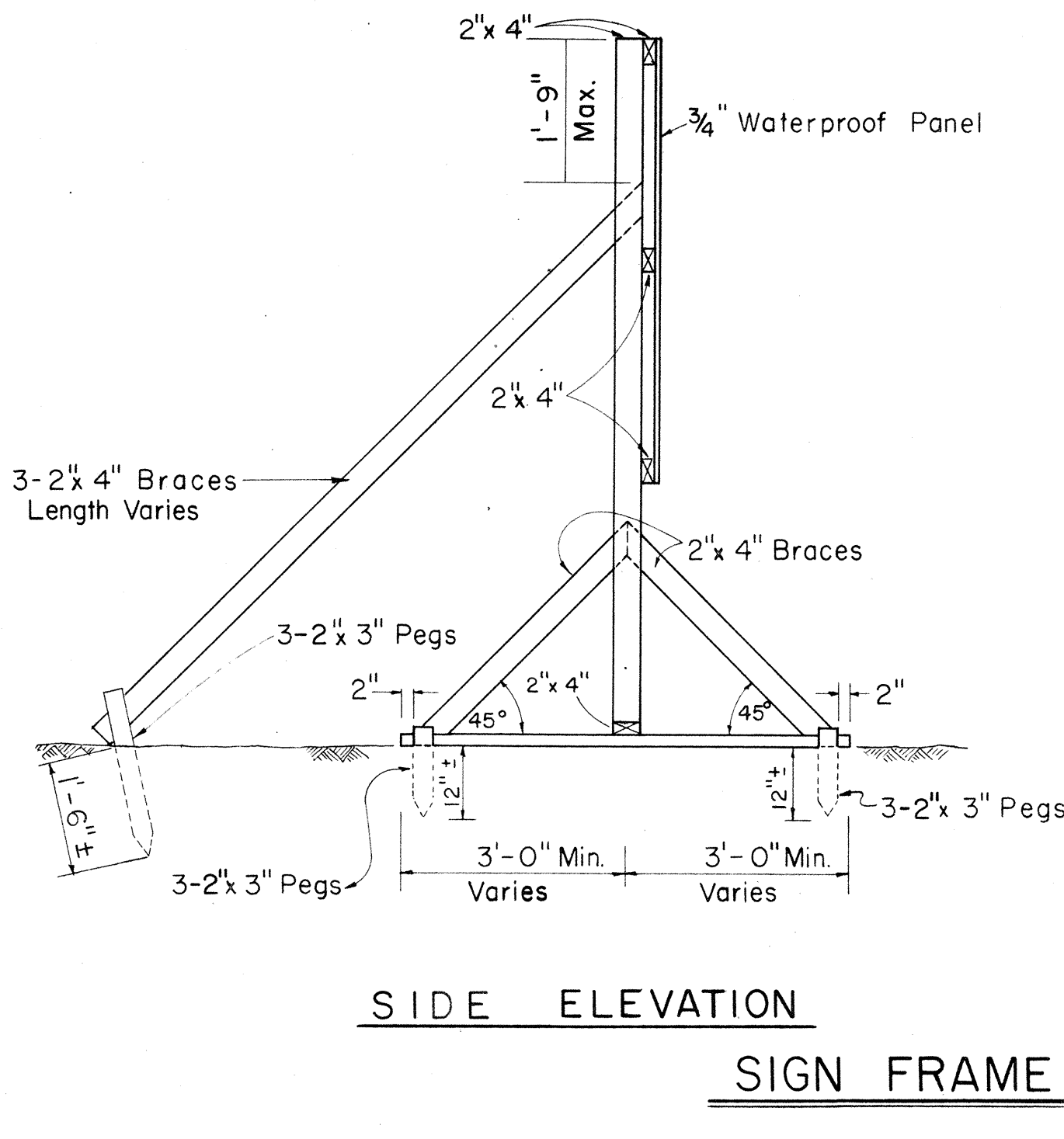
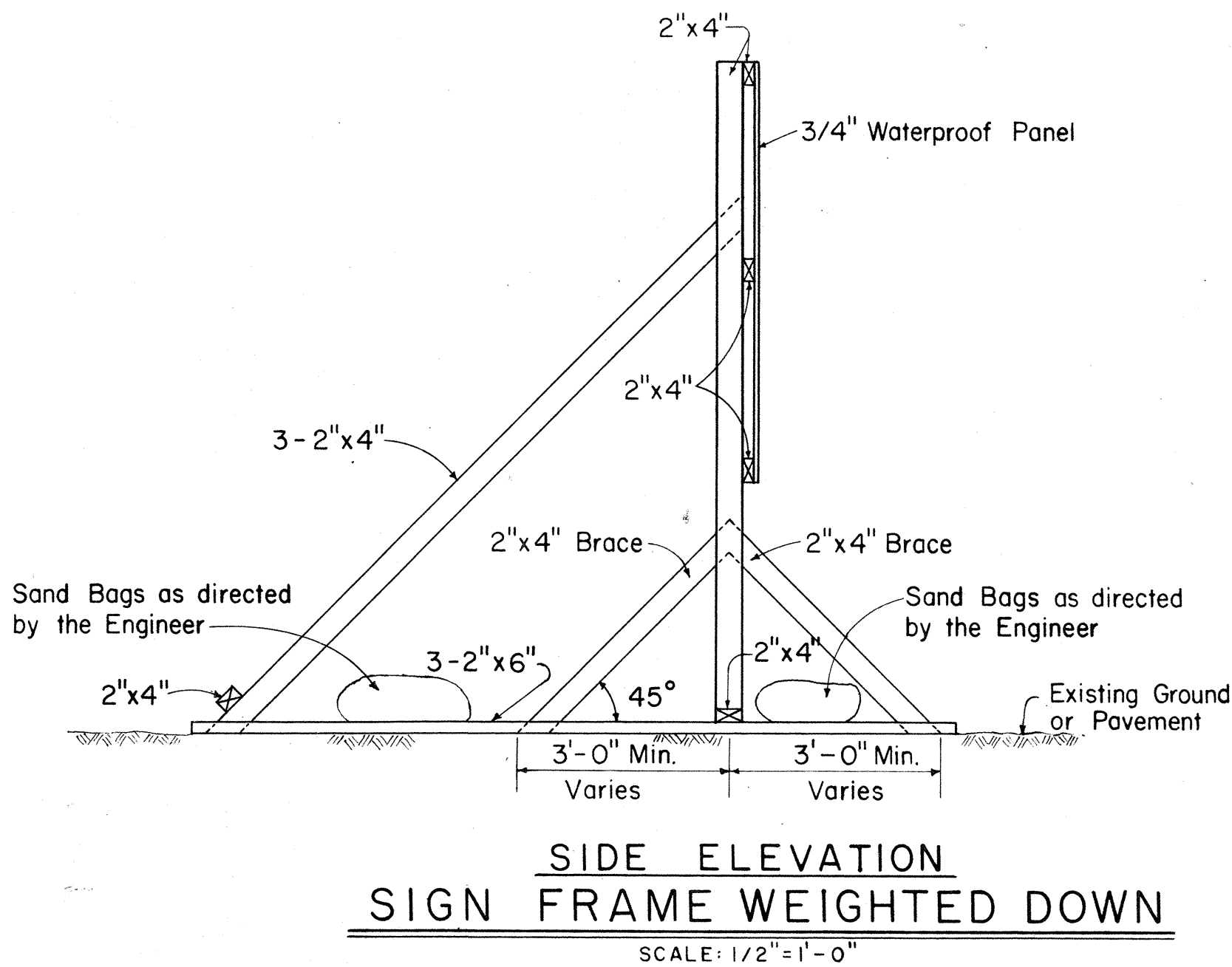
Scale: 1/2" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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

SHEET NO 7 OF 15 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H-1(68)-10	1968	18	91



**INTERSTATE SYSTEM
CONSTRUCTION IDENTIFICATION SIGN**

Scale: As Shown

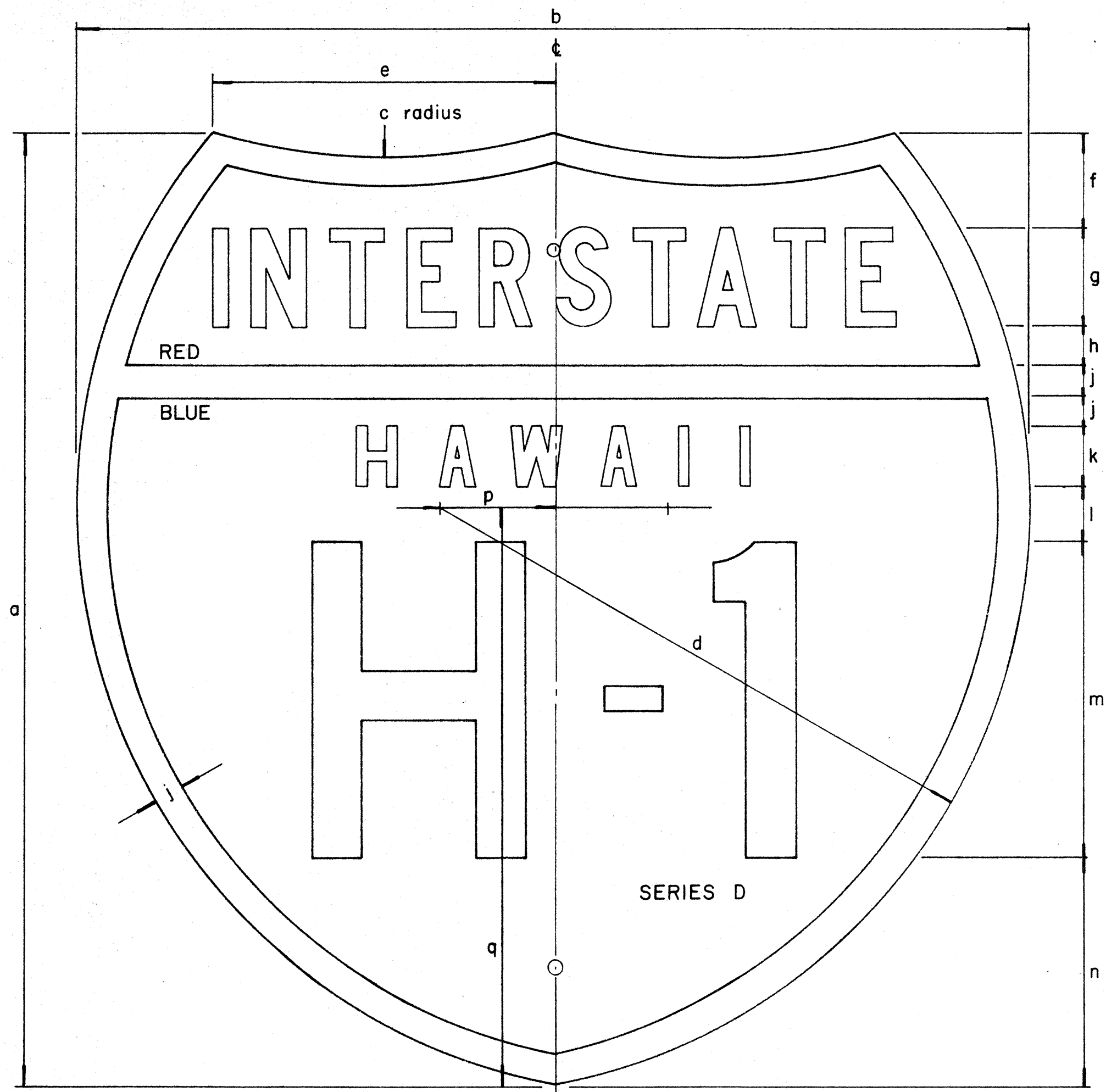
CONSTRUCTION IDENTIFICATION SIGN NOTES

1. The Contractor shall construct, install and maintain the Construction Identification Signs, at the locations shown on the plans and as ordered by the Engineer.
2. All costs incurred in the construction, installation and maintenance of the Construction Identification Signs, will not be paid for separately, but shall be considered as included in the unit price paid for the various items in the proposal.
3. The Construction Identification Signs shall become the property of the Contractor at the completion of the project.
4. The exact figures for the various funds involved will be furnished to the Contractor for the incorporation in the Construction Identification Signs.
5. The legend shall be black on white background except for the Interstate route marker which shall be as shown on the plan.
6. Refer to Sheet No. 19 for details on the exact shape and size of the interstate route marker to be shown on these Construction Identification Signs.
7. All letters shall be of size and design shown and shall conform with "Standard Alphabets for Highway Signs", Bureau of Public Roads, 1952. Use Series "C" letters unless otherwise noted.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
TRACED BY	DRAWN BY	"
NOTE BOOK	CHECKED BY	"
No.		"

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION STANDARD DETAILS INTERSTATE SYSTEM CONSTRUCTION IDENTIFICATION SIGN INTERSTATE ROUTE H-1 F.A.I. PROJ. NO. I-H-1(68)-10

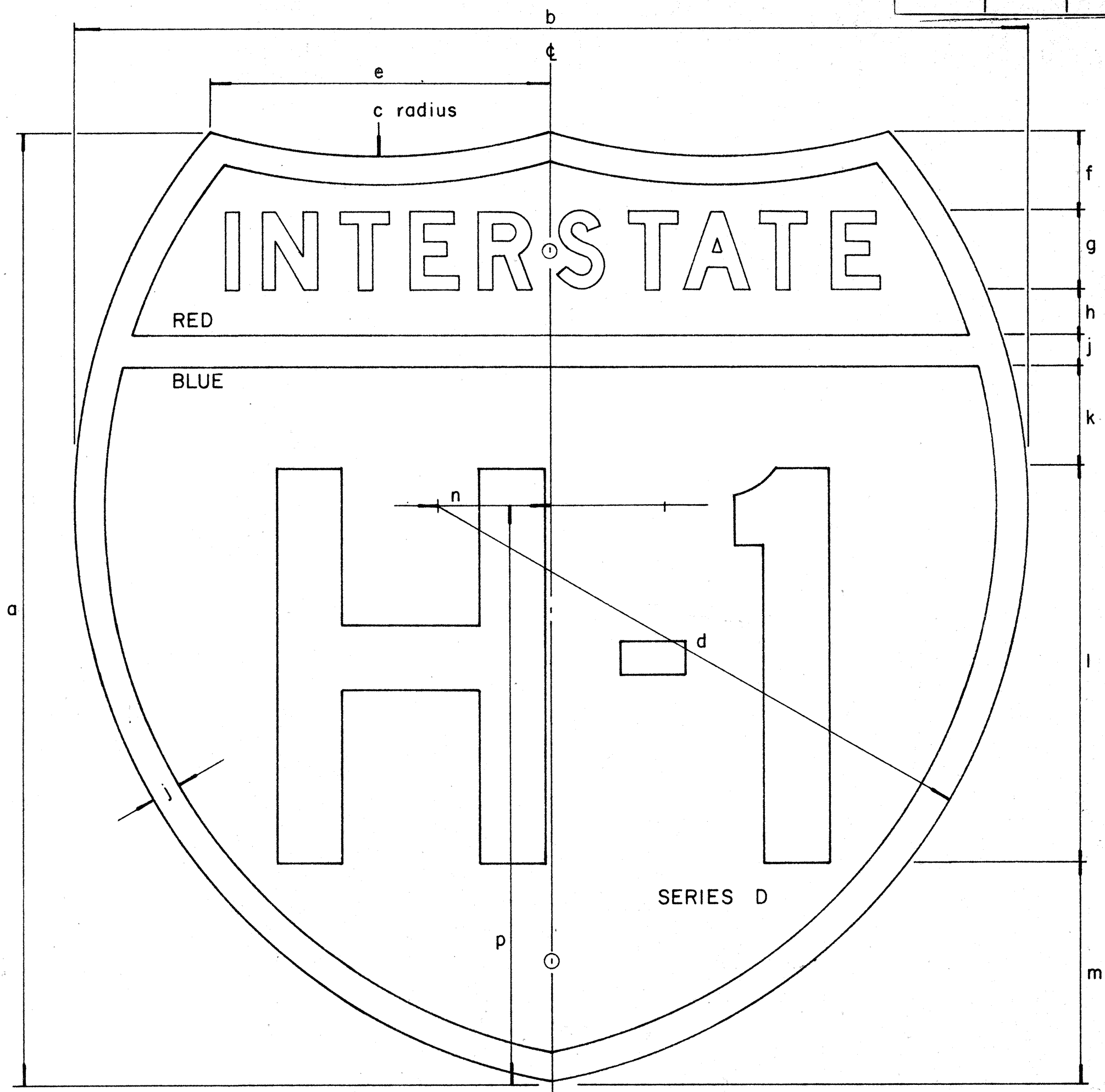
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(68):10	1968	19	71



INTERSTATE ROUTE MARKER
IM - 1 ()

INTERSTATE SHIELDS - INDEPENDENT USE

()	a	b	c	d	e	f	g	h	j	k	l	m	n	p	q
1	18	21	13 1/8	12 9/16	9 3/16	12 5/32	1 7/8 C	3/4	9/16	1 1/8 D	1 1/32	6	4 5/16	2 1/16	12 7/16
2	24	24	15	14 7/8	8 5/8	2 3/8	2 1/2 C	1	3/4	1 1/2 D	1 3/8	8	5 3/4	2 7/8	14 5/8
3	36	36	22 1/2	22 5/16	12 15/16	3 9/16	3 3/4 C	1 1/2	1 1/8	2 1/4 D	2 1/16	12	8 5/8	4 5/16	21 15/16



INTERSTATE ROUTE MARKER
IM - 2 ()

INTERSTATE SHIELDS ON GUIDE SIGNS

()	a	b	c	d	e	f	g	h	j	k	l	m	n	p
2	24	24	15	14 7/8	8 5/8	2	2 D	1 3/16	3/4	2 9/16	10	5 1/2	2 7/8	14 5/8
3	36	36	22 1/2	22 5/16	12 15/16	3 7/16	3 C	1 5/16	1 1/8	3 1/8	15	9	4 5/16	21 15/16
4	48	48	30	29 3/4	17 1/4	4 3/4	5 C	2	1 1/2	4	18	12 3/4	5 3/4	29 1/4

GENERAL NOTES

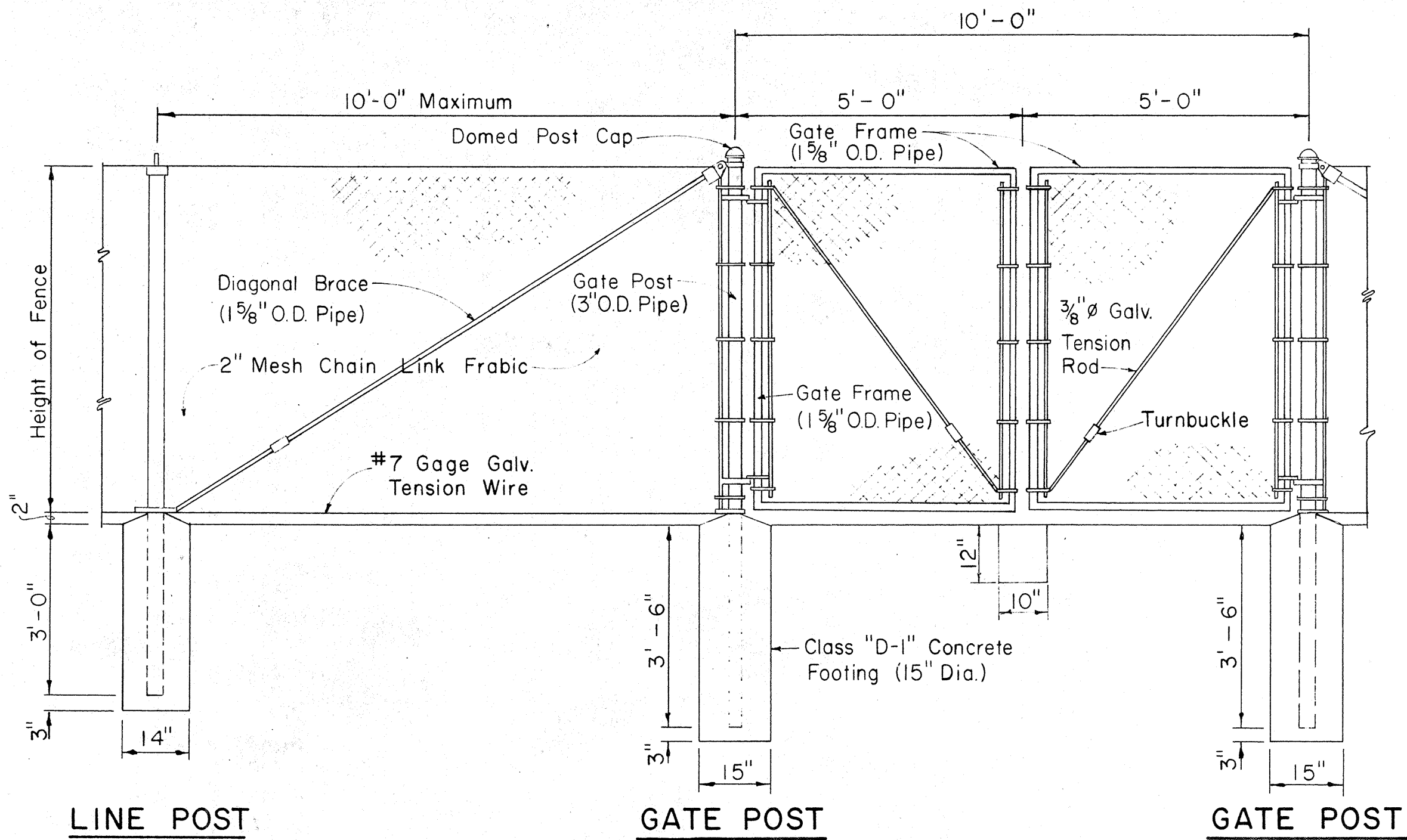
- The shape, dimensions, symbols, wording, lettering, color and reflectorizing of all signs shall be in accordance with the "Manual on Uniform Traffic Control Devices for Streets and Highways," dated June, 1961 and the BPR manual "Standard Highway Signs," dated September, 1961, unless otherwise specified.
- All letters and figures shall conform to the manual "Standard Alphabets for Highway Signs," Dept. of Commerce, Bureau of Public Roads, 1952
- All markers shall be reflectorized unless otherwise specified.
- All markers shall have 3/8" bolt holes drilled at appropriate locations unless otherwise specified.
- The Interstate Route Marker shall be a cut-out shield, in a red, white and blue design as shown on the plans.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
INTERSTATE ROUTE MARKERS
INTERSTATE ROUTE H-1
F.A.I. PROJ. NO. I-HI-1(68):10

ORIGINAL	SURVEY PLOTTED BY	DATE
PLAN	DRAWN BY	"
NOTE BOOK	DESIGNED BY	"
	QUANTITIES BY	"
	CHECKED BY	"
No.		

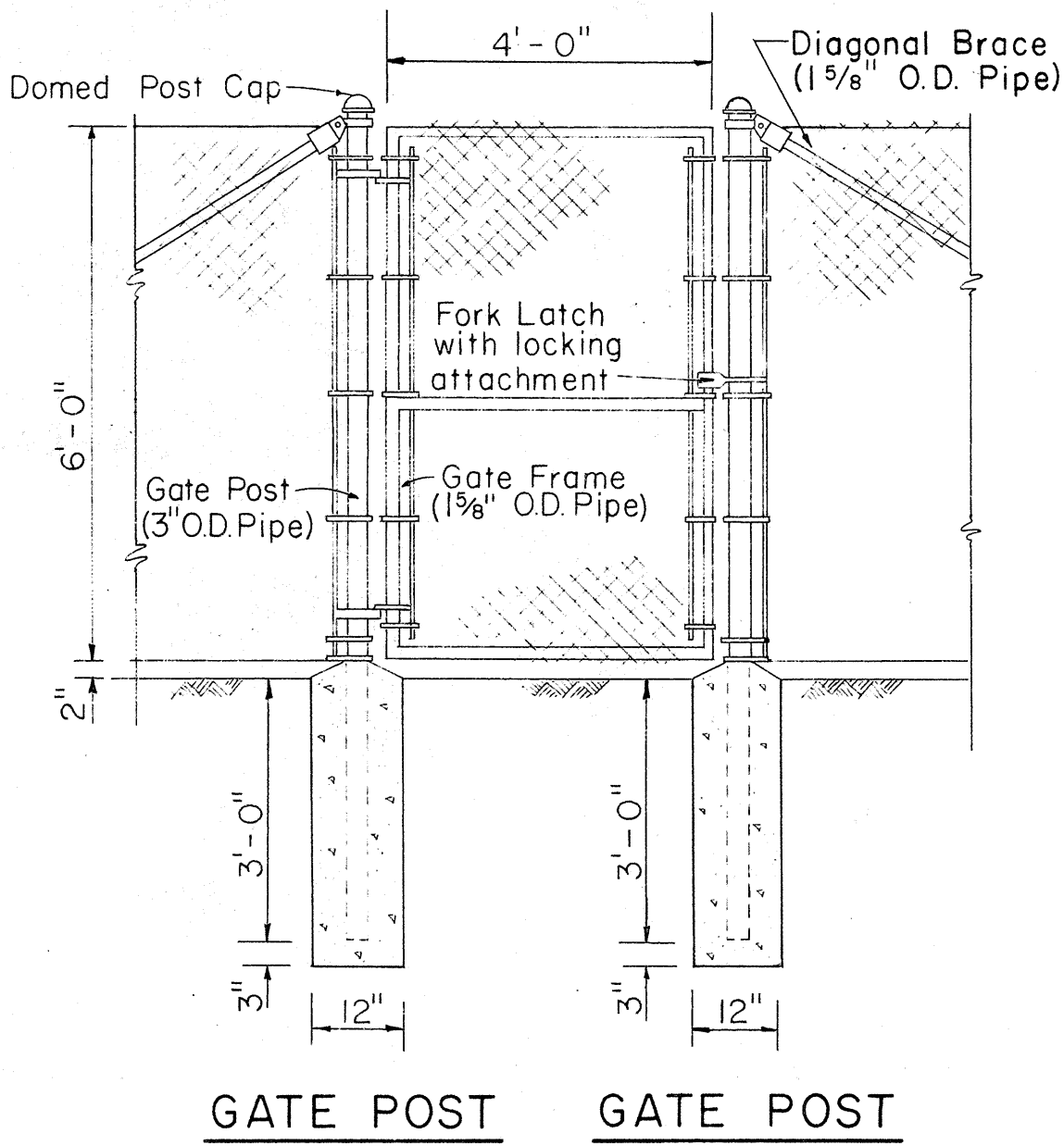
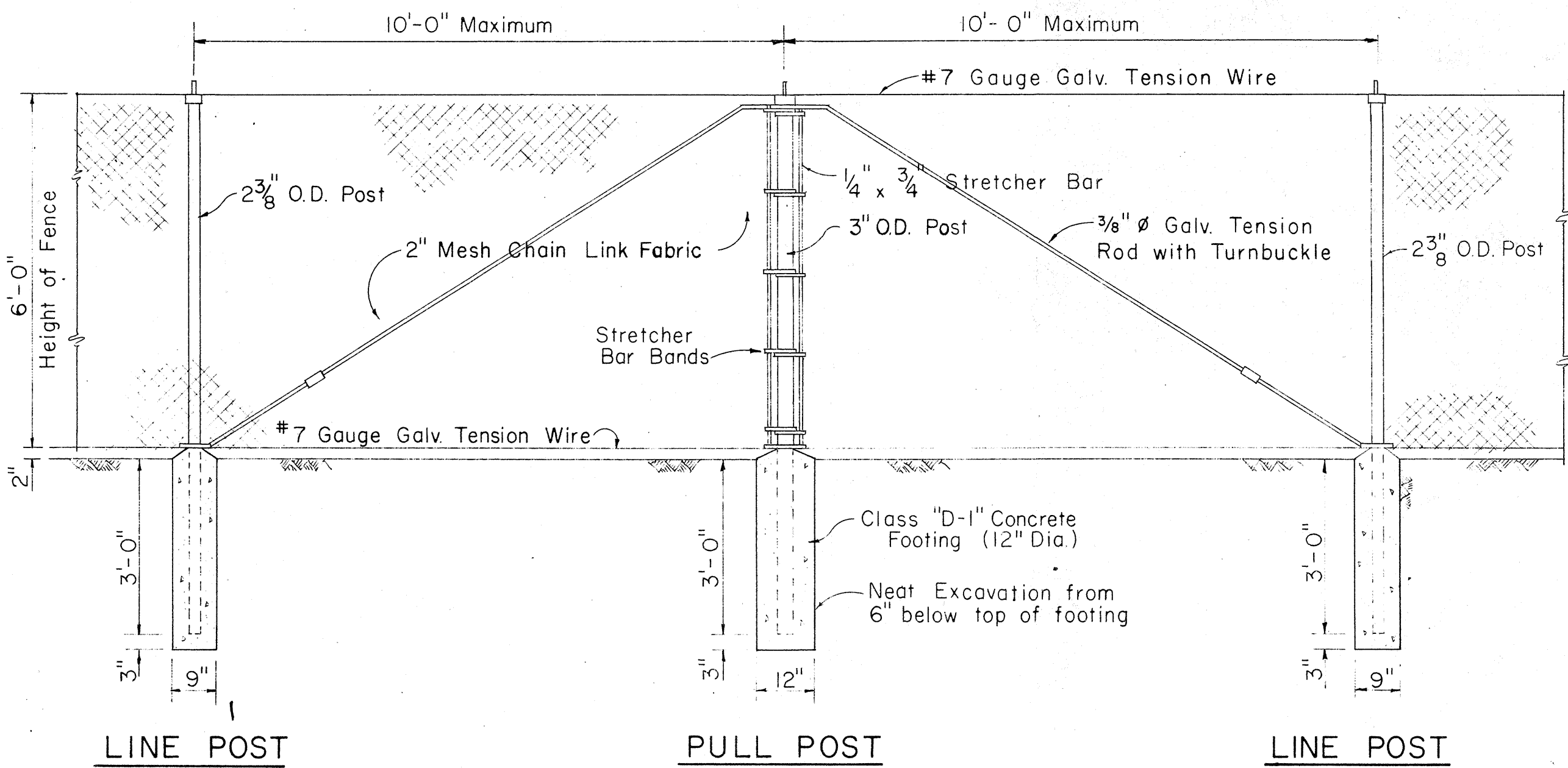
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HA-1(68)10	1968	20	91



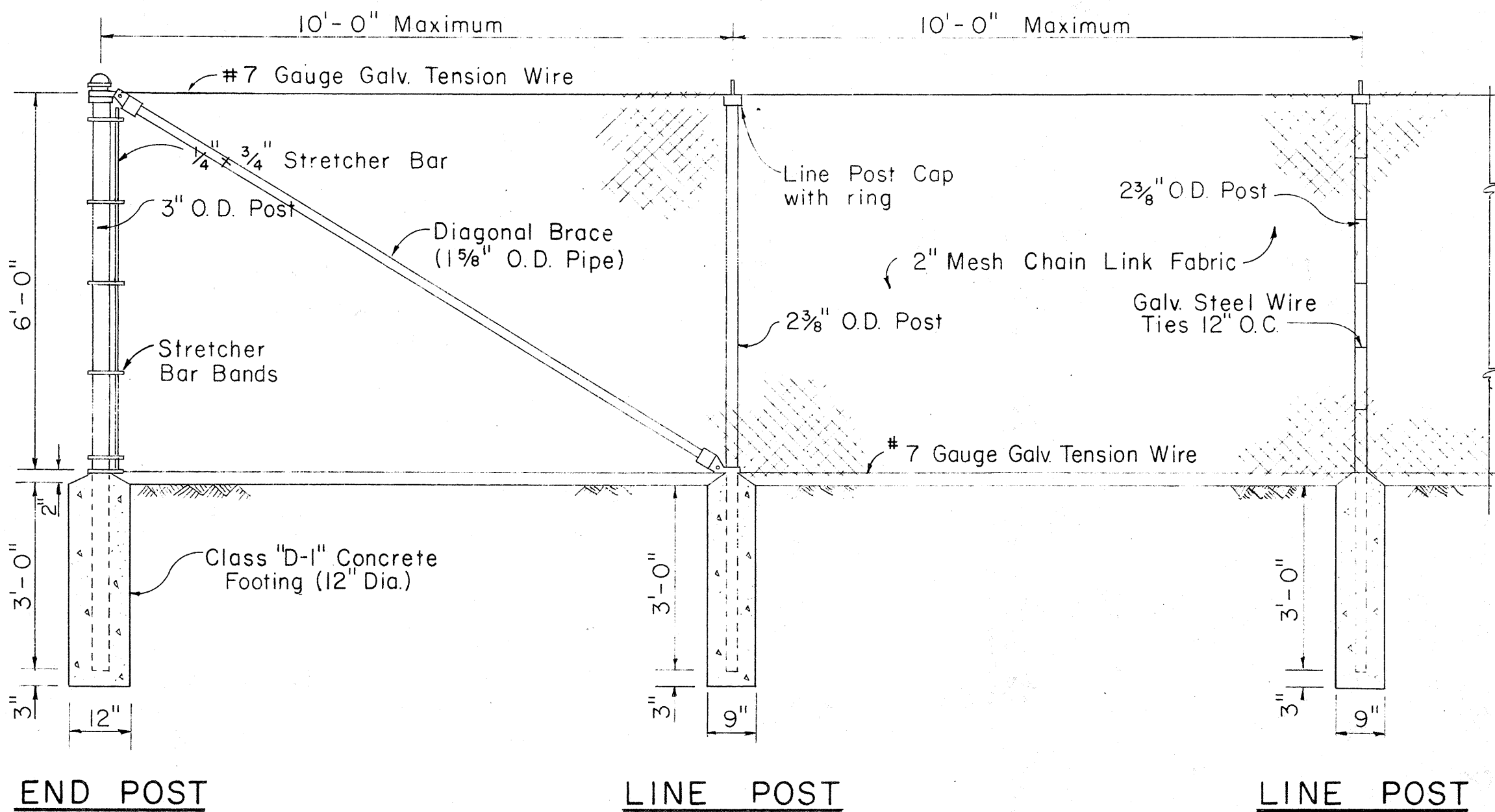
- NOTE: 1. Gate fork latch and lock, flush plate and anchor, and plunger shall be installed with Gates, and shall be considered as incidental to 10 feet Chain Link Fence.
2. Gate frames shall be mitered and welded, at corners.
3. Fence detail not shown shall be in accordance with the Standard Specifications.

DETAIL OF 10 FT. CHAIN LINK GATE

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



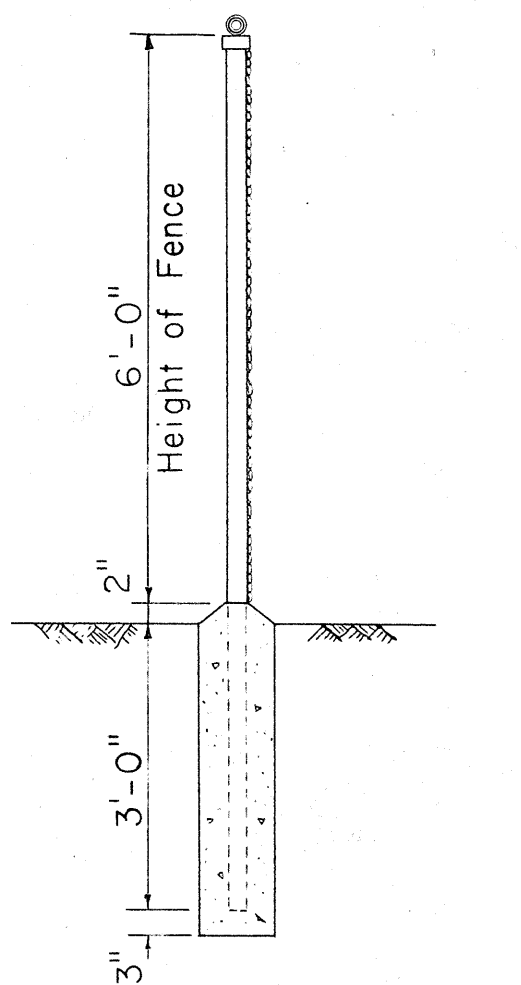
DETAIL OF 4 FT. CH. LK. GATE



NOTE: O.D. refers to outside diameter.

CHAIN LINK FENCE DETAILS

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



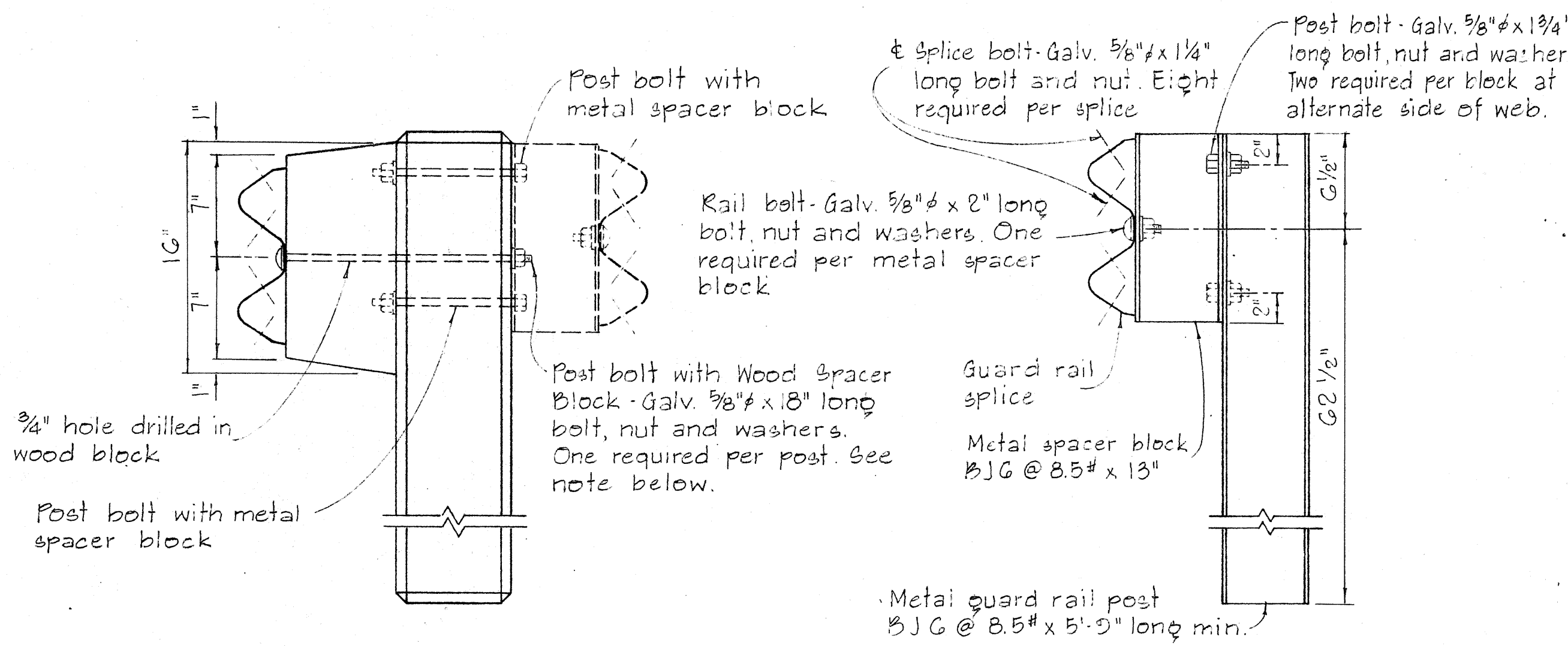
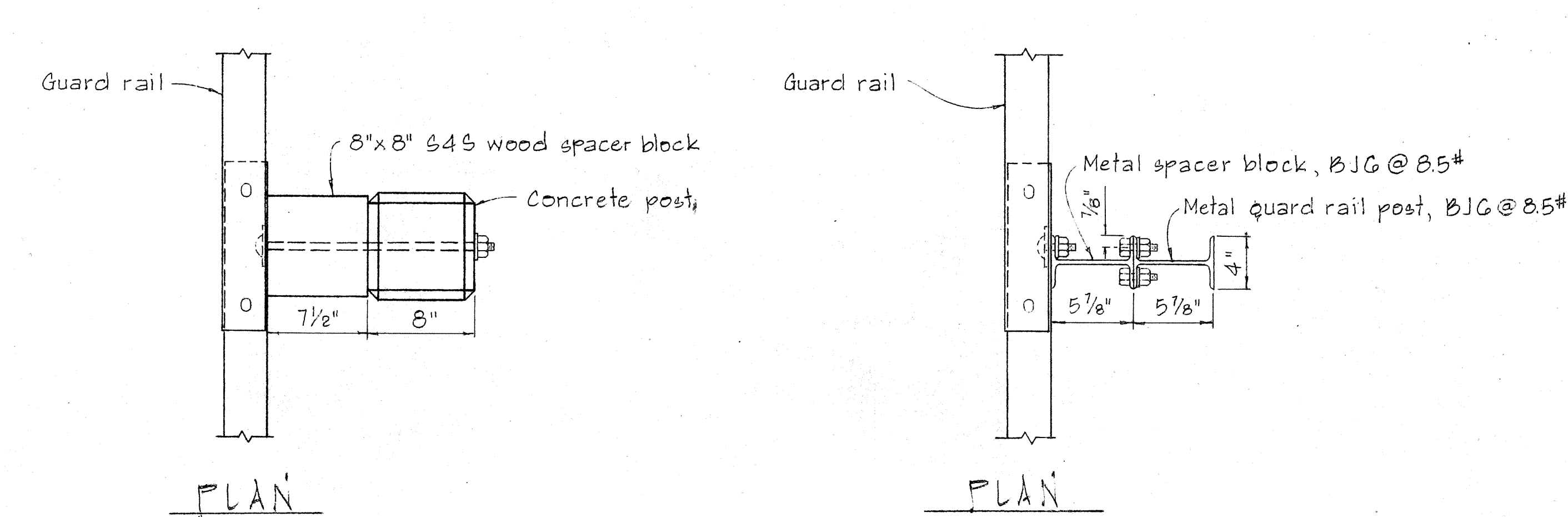
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	" "
No.	DESIGNED BY	" "
	CHECKED BY	" "

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS

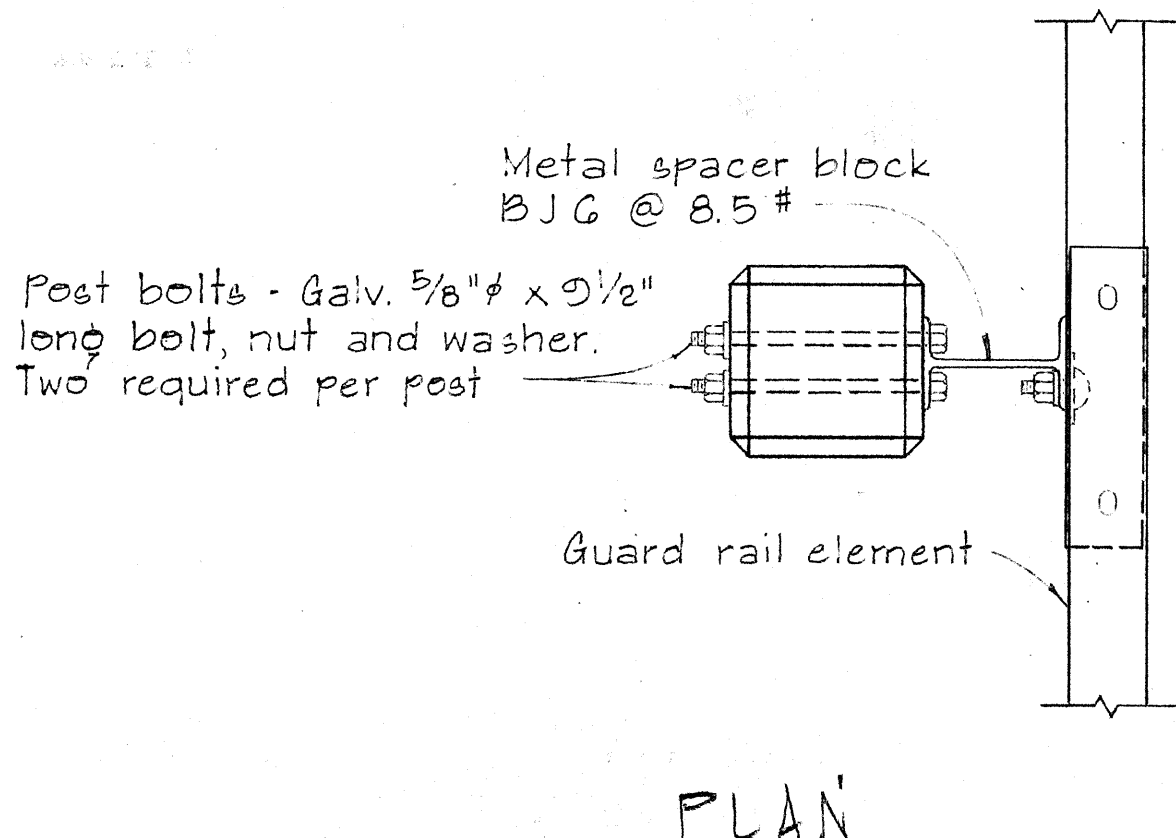
Scales: As Noted
Date: Nov. 1968
SHEET No. 10 OF 15 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-11(68)-10 I-H-11(59)-10	1968	21	91

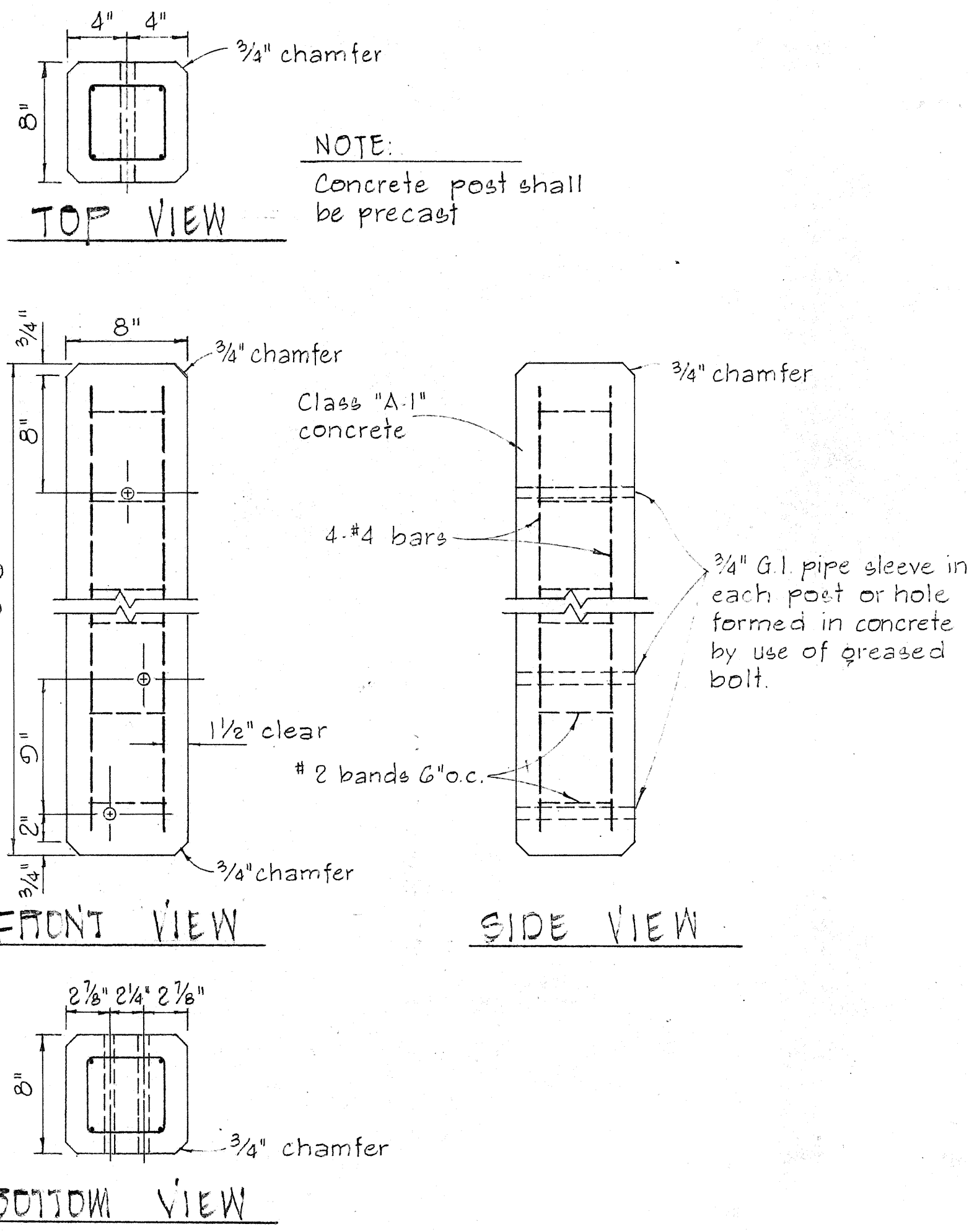
12/11/68



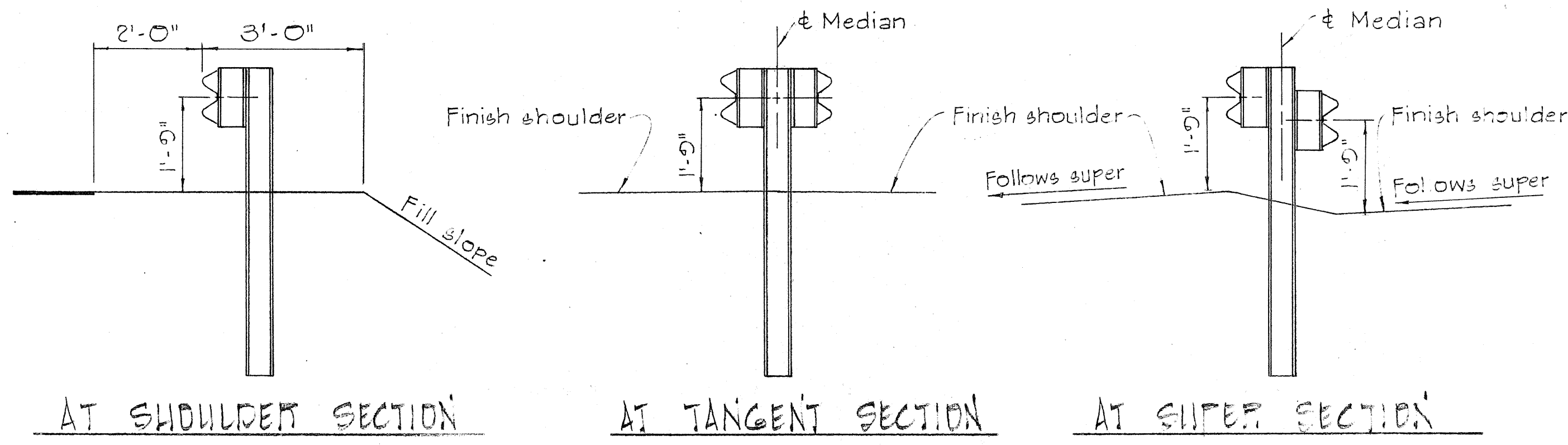
SINGLE METAL GUARD RAIL ON METAL POST
WITH METAL SPACER BLOCK
SCALE: 1 1/2" = 1'-0"



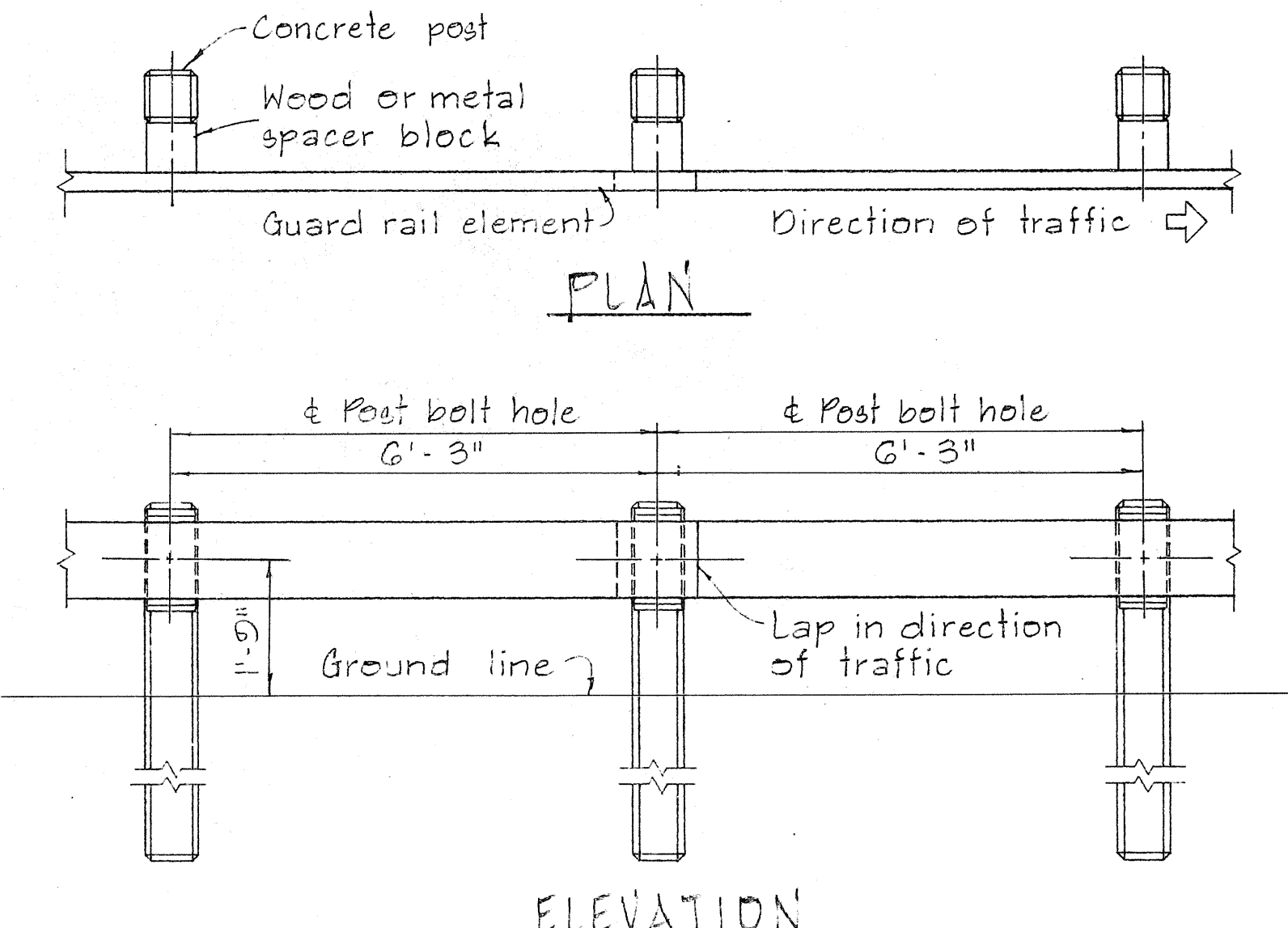
SINGLE METAL GUARD RAIL ON PRECAST
CONCRETE POST WITH WOOD OR METAL SPACER BLOCK
SCALE: 1 1/2" = 1'-0"



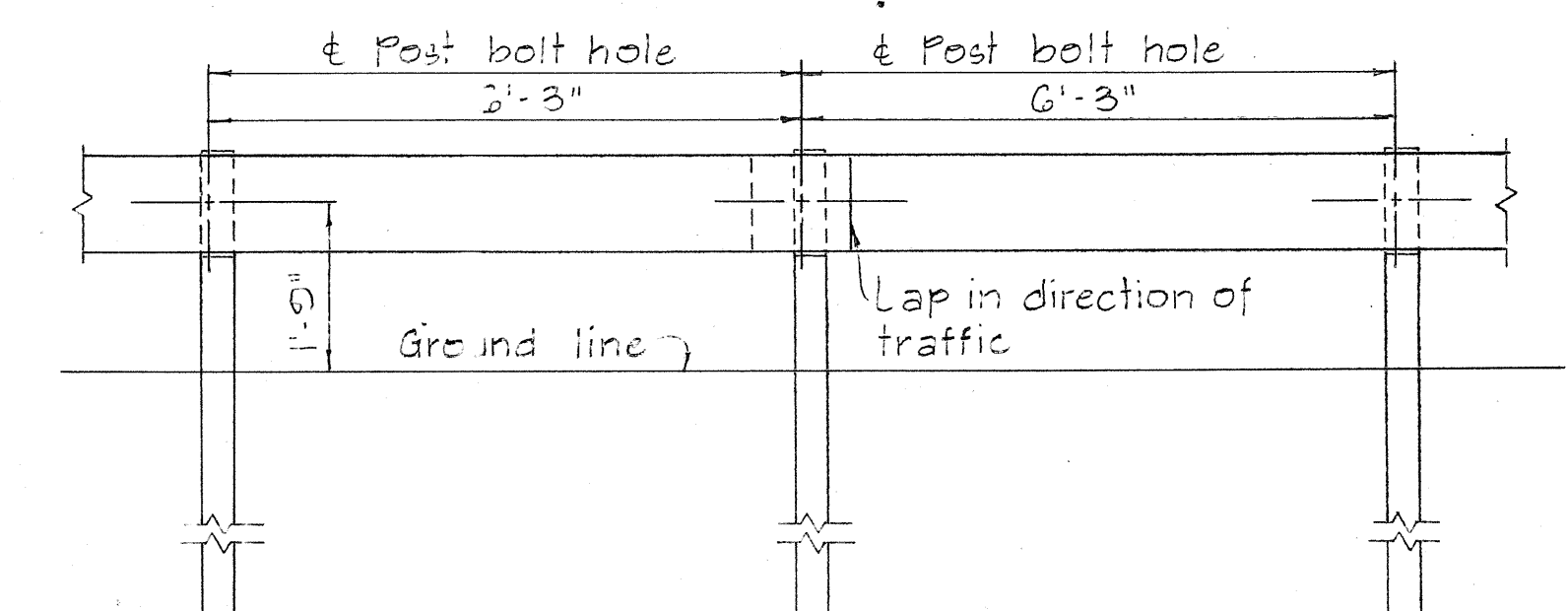
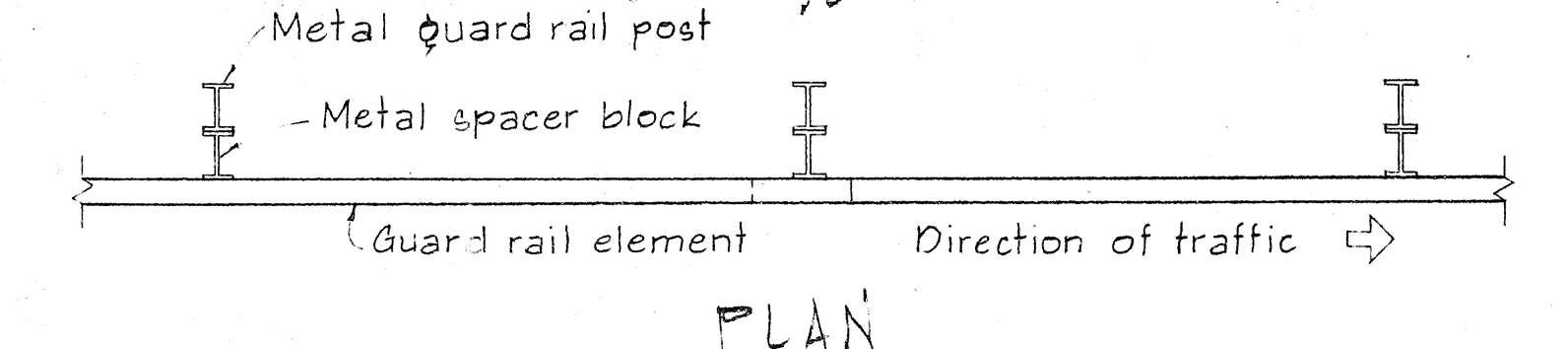
DETAIL OF CONCRETE POST
SCALE: 1 1/2" = 1'-0"



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

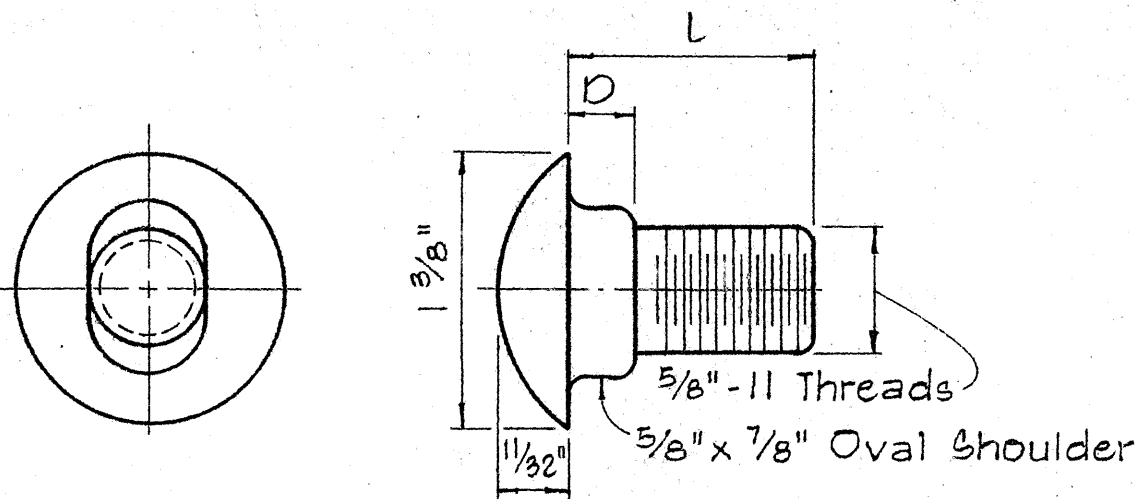
NOV 1968

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

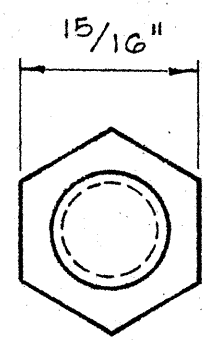
BOLT DIMENSIONS		
TYPE B BOLT		
Post Bolt for Conc. Post w/ Metal Blocks	5/16"	5 1/2"
Post Bolt for Metal Post w/ Metal Block	1 3/4"	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HI-1(68)10 HI-1(37)10	1968	22	71

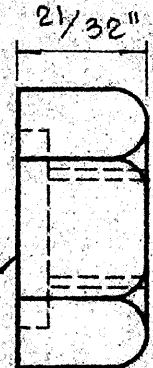
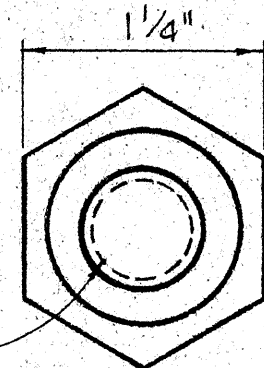
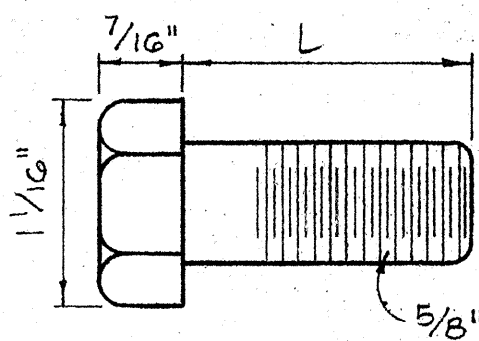
Revised: Dec. 11, 1968



TYPE A BOLT



TYPE B BOLT



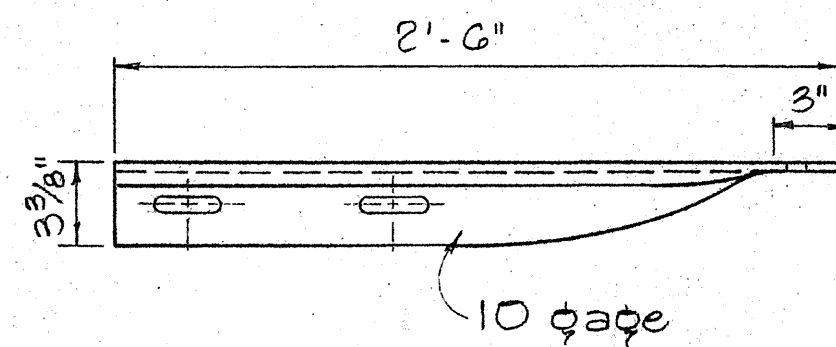
5/32" Deep x 1 5/16" Dia. C' Bore for Type A Bolt only.
Plain nut for Type B Bolt.

HEXAGON NUT

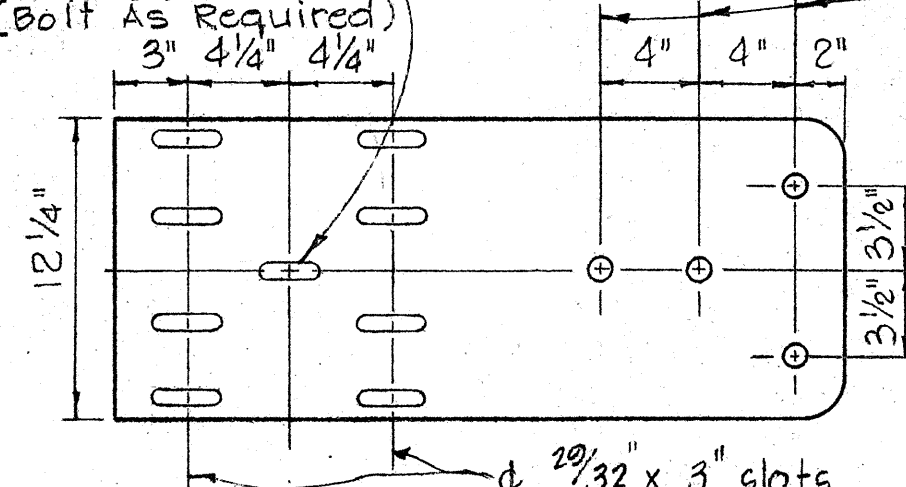
Scale: Full Size

SPUCE RAIL AND POST BOLTS

Scale: Full Size

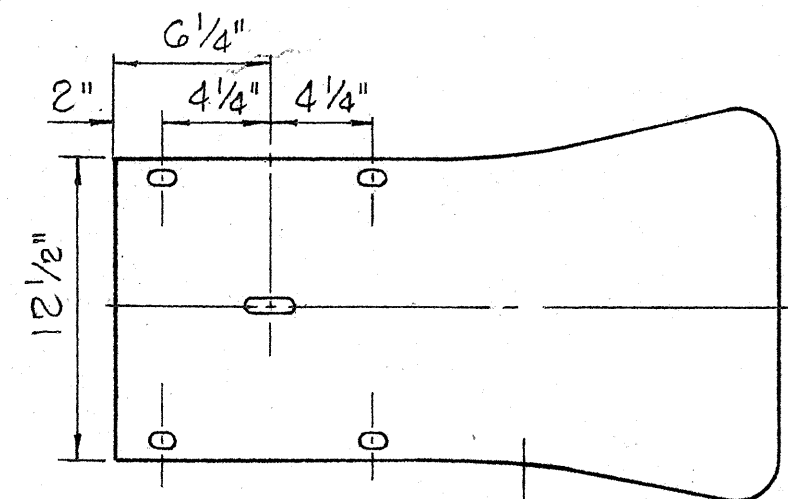
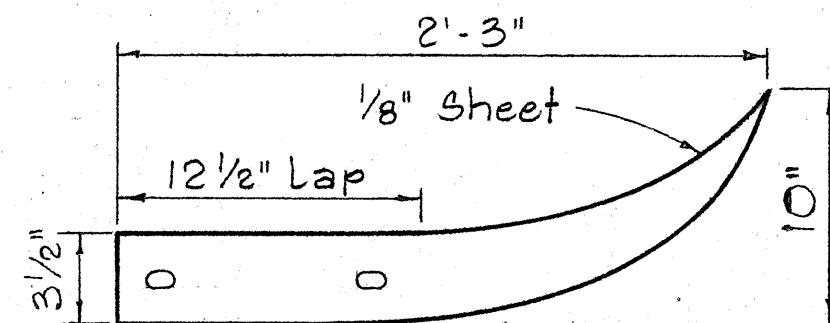


3/4" x 2 1/2" Post
bolt slot
(bolt As Required)
3" 4 1/4" 4 1/4"



SPECIAL END SHOE

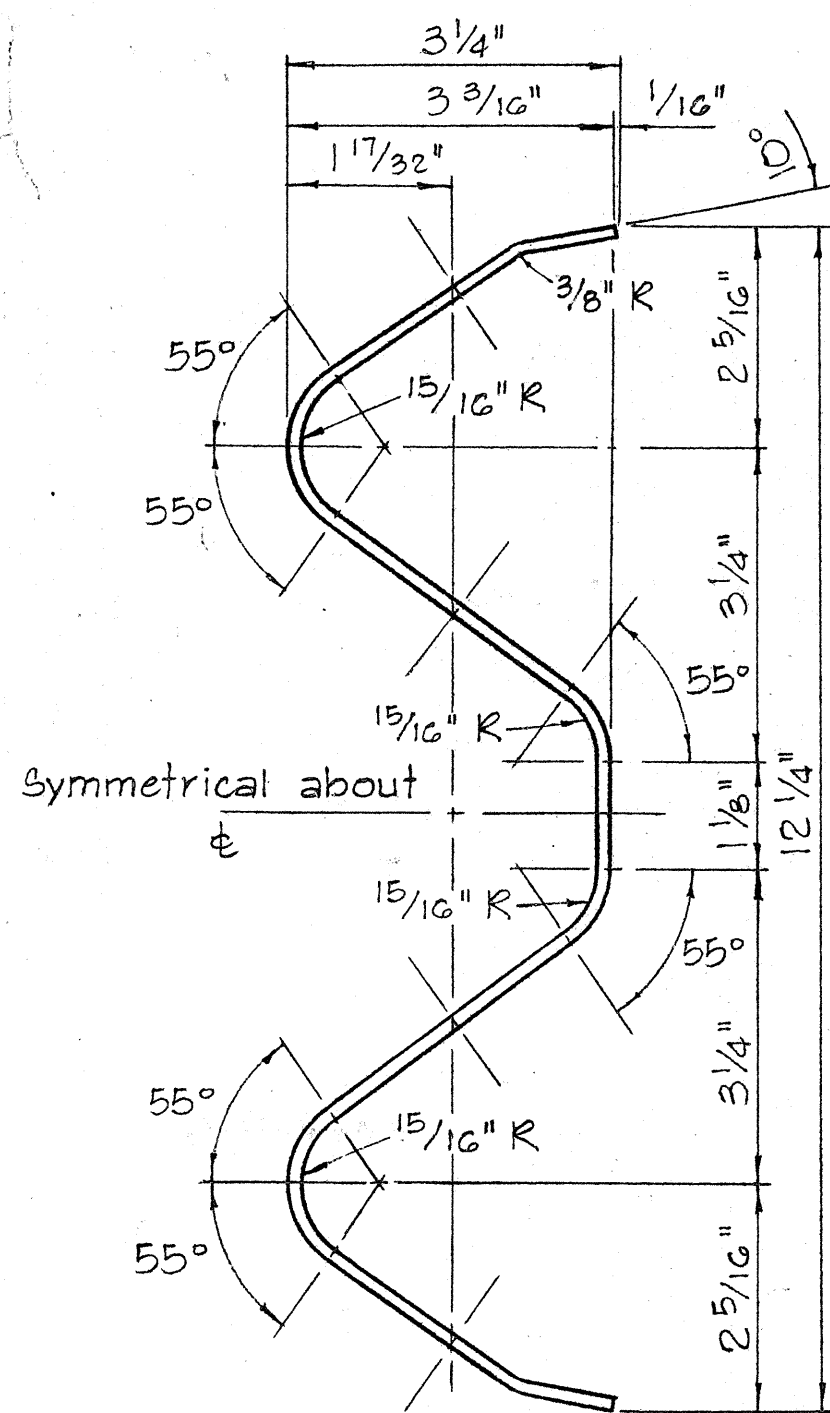
Scale: 1 1/2" = 1'-0"



Same as rail element section

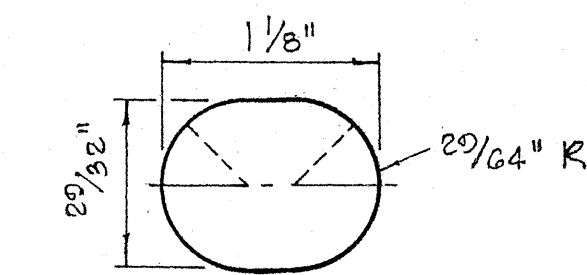
FLARED END

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



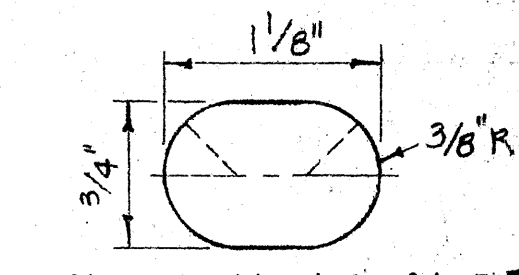
RAIL ELEMENT SECTION

Scale: 6" = 1'-0"

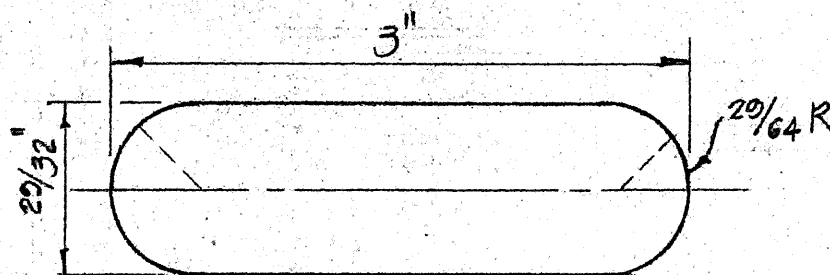


SPUCE BOLT SLOT

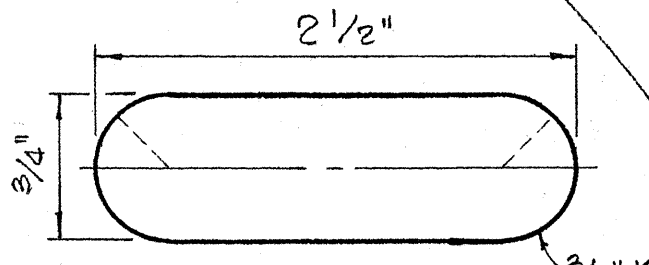
Scale: Full Size



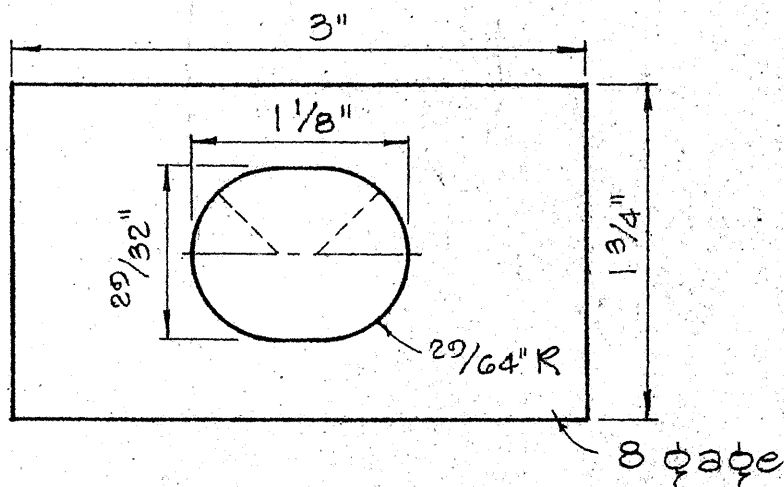
SPUCE BOLT SLOT FOR ALL ENDS



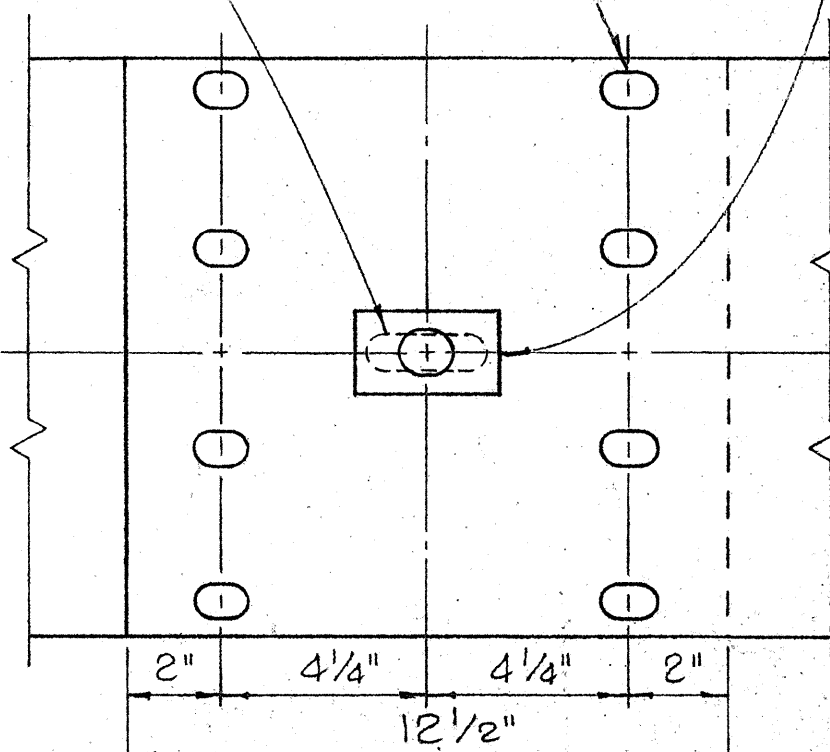
SPUCE BOLT SLOT FOR SPECIAL END SHOE



POST BOLT SLOT



RAIL WASHER

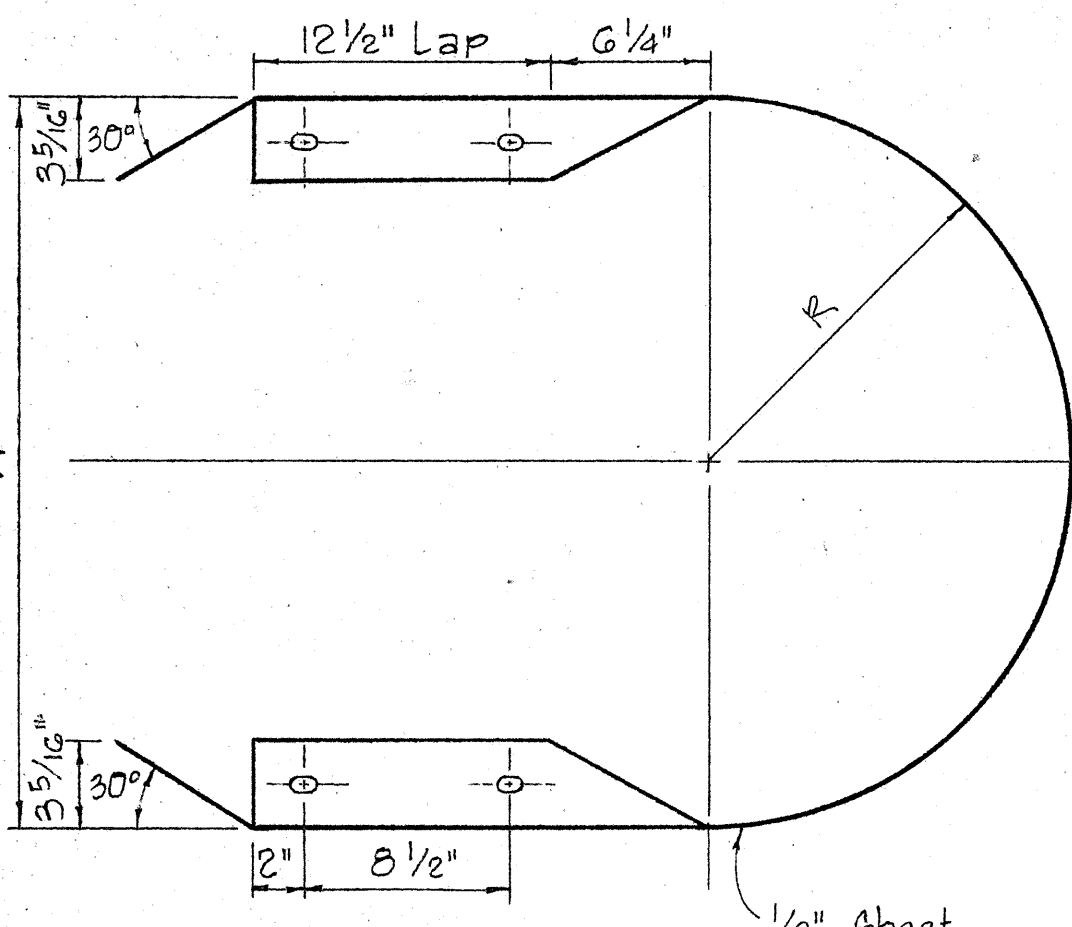


RAIL SPICE

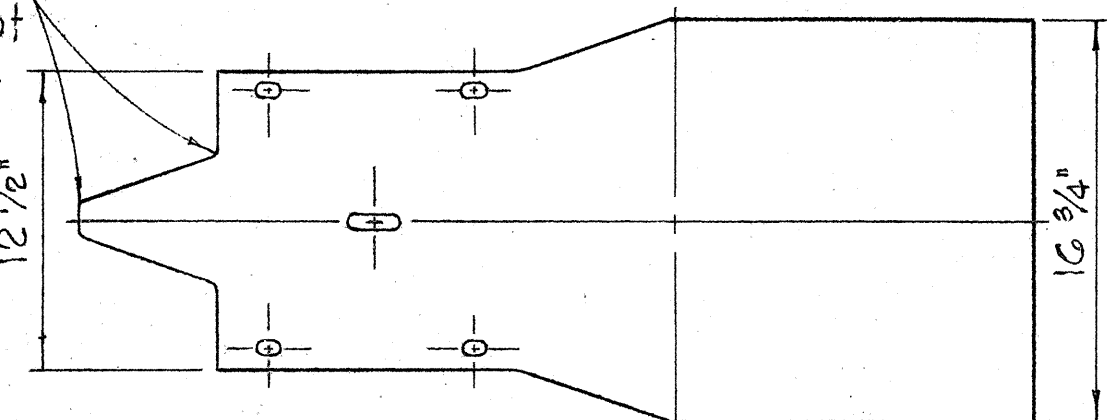
Scale: 3" = 1'-0"

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 AA6HO 150.



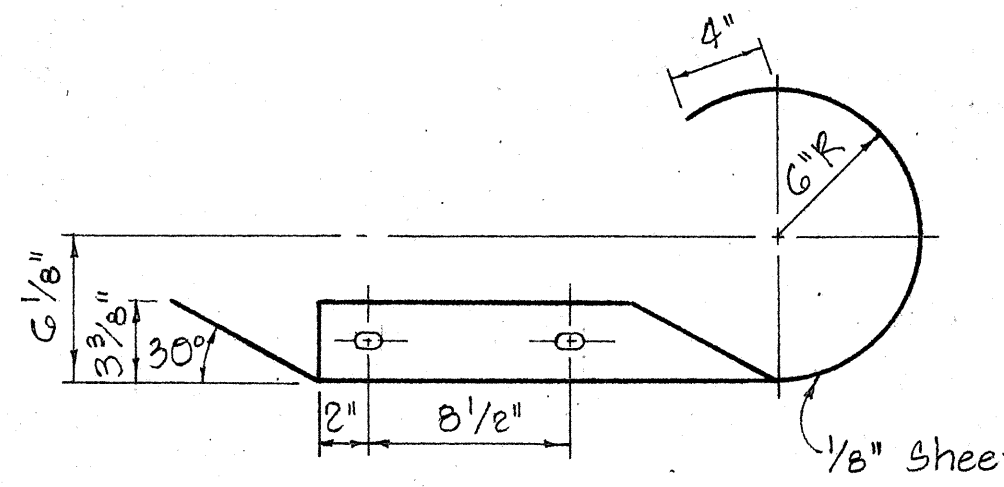
Shape to fit rail element



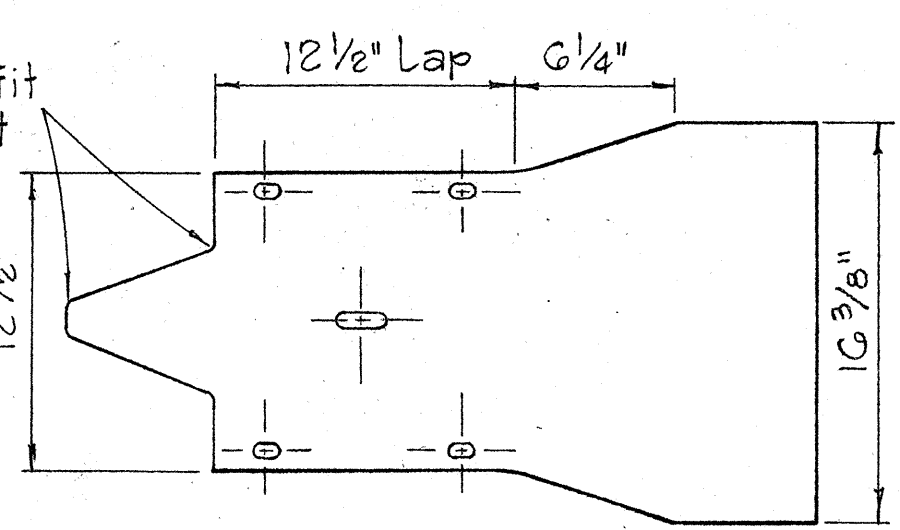
MEDIAN END

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)	26 1/2"	13 1/4"
Double Metal Guard Rail on Metal Post with Metal Blocks (BJG)	24 3/8"	12 3/16"



Shape to fit rail element



CURVED END

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL GUARD RAIL

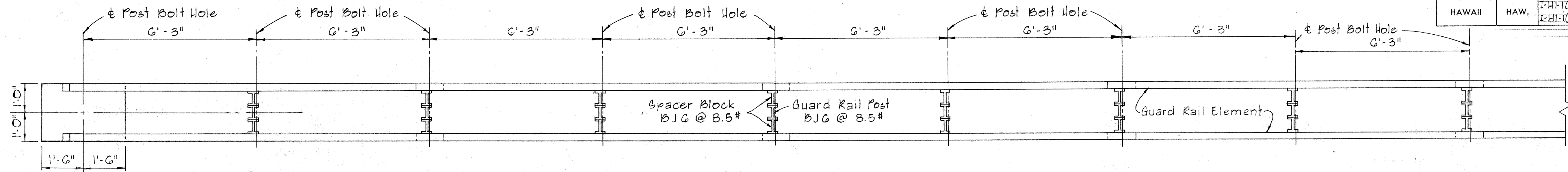
Scale: As Noted

August, 1968

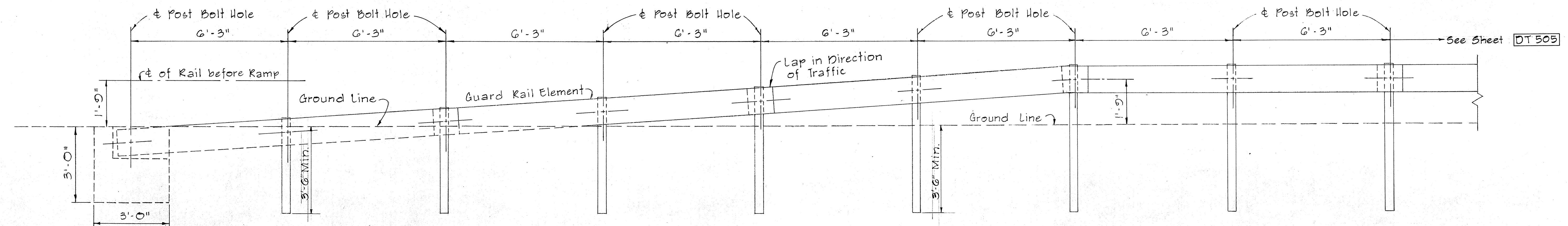
SHEET No. OF SHEETS DT 501

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(00)10 I-HI-1(30)10	1968	23	71

12/11/68



PLAN

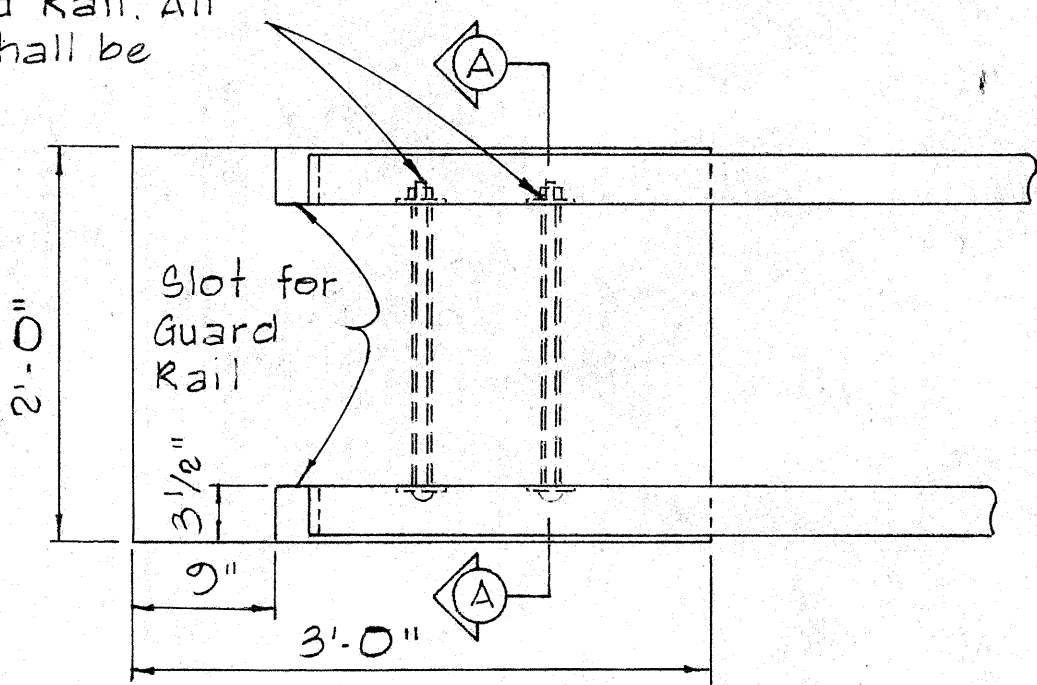


ELEVATION

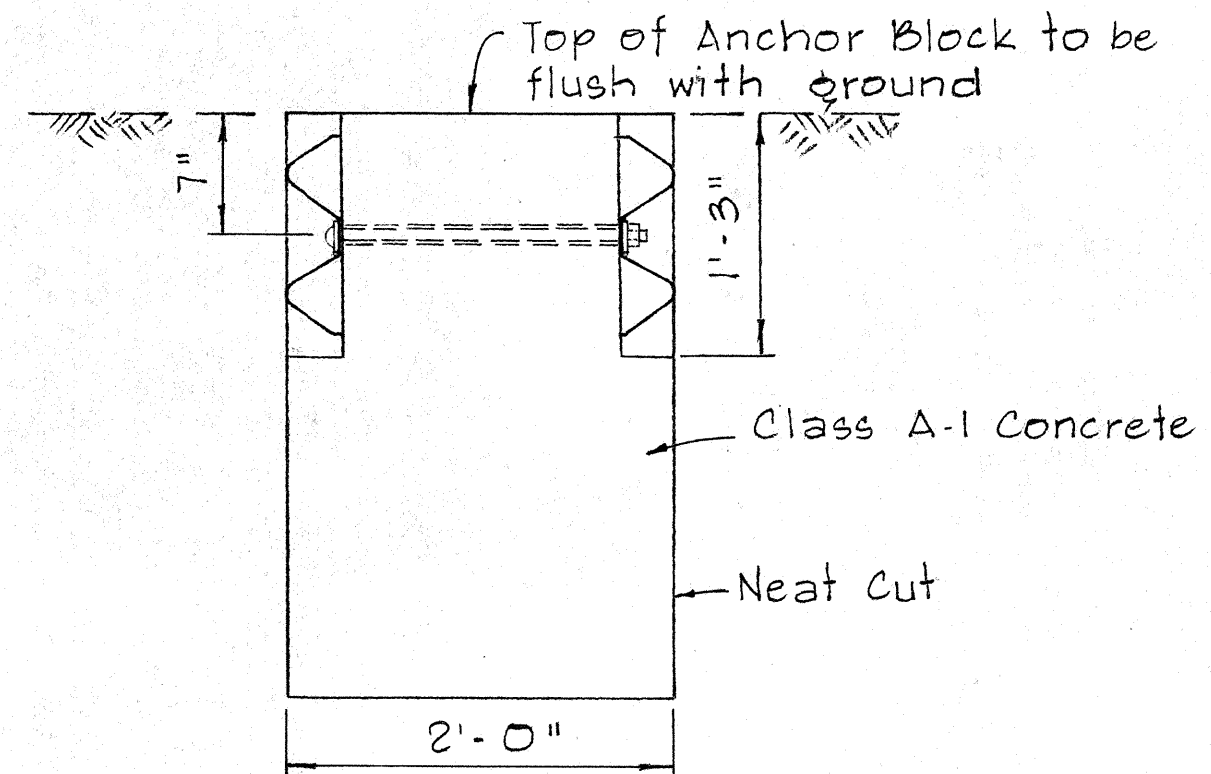
STRAIGHT APPROACH - RAMP END ANCHORAGE (MEDIAN)

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

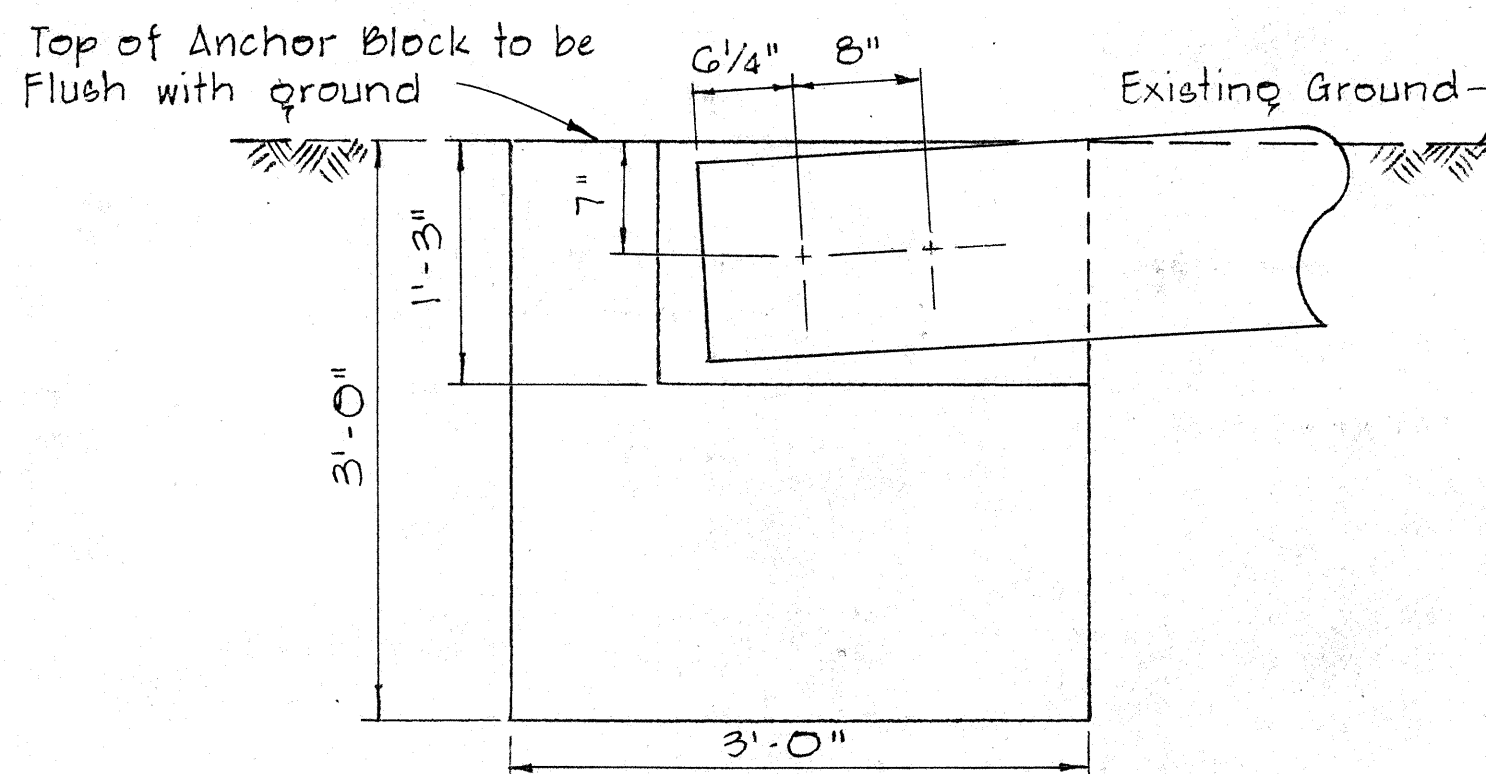
5/8" Bolts with 3/4" G.I. Pipe Sleeve in each hole incidental to Metal Guard Rail. All Metal Pieces shall be Galvanized.



PLAN



SECTION A-A



ELEVATION

CONCRETE ANCHOR BLOCK FOR RAMP END

Scale: 1" = 1'-0"

NOTE: Concrete, Excavation, and Miscellaneous Appurtenances necessary to anchor the Guard Rail Ends, shall be incidental to the Metal Guard Rail.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAIL
GUARD RAIL
RAMP END ANCHORAGE

Scale: as Noted August, 1968

SHEET No. 13 OF 15 SHEETS DT 502

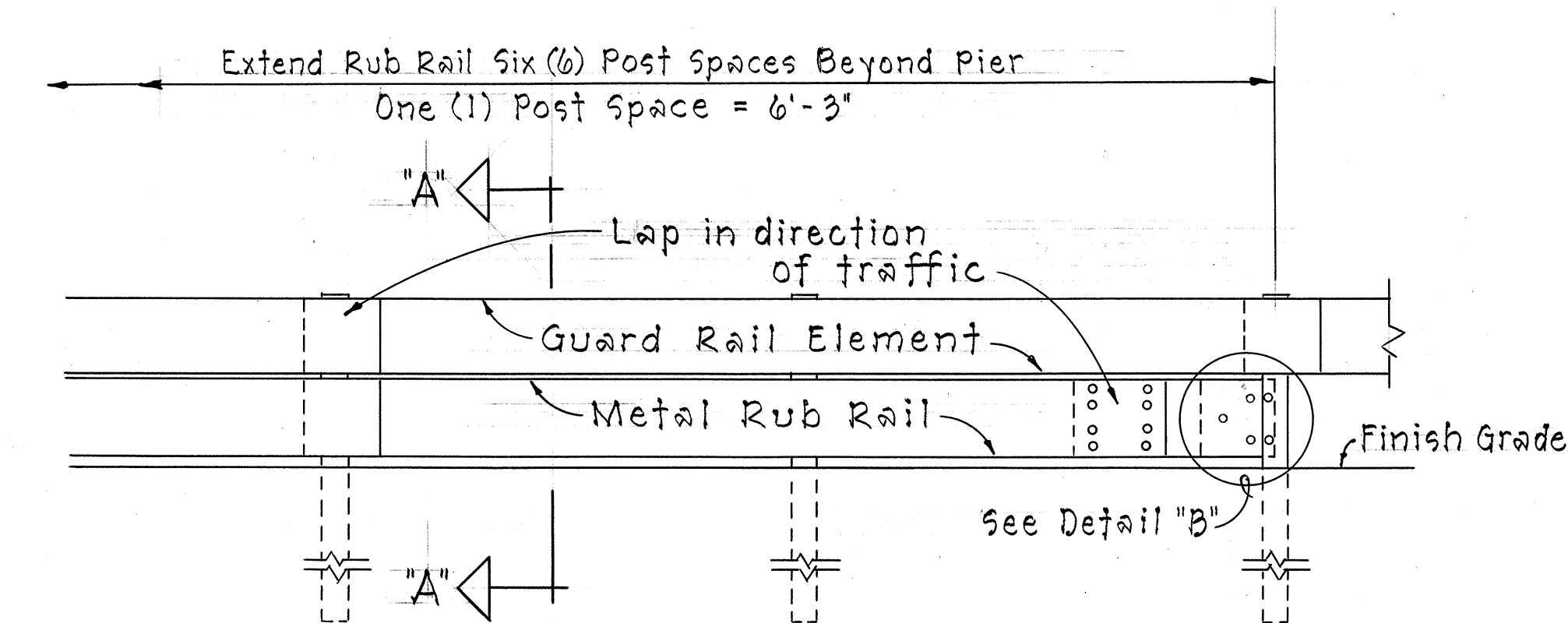
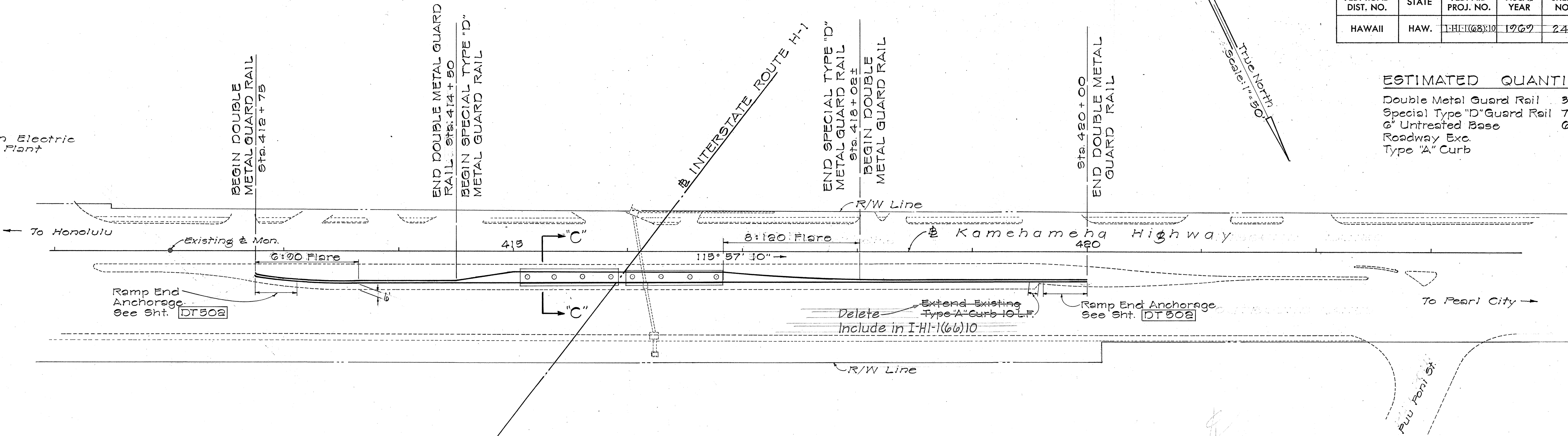
DATE	DESIGNED BY	CHECKED BY
PLAN	DESIGNED BY	CHECKED BY
NOTE BOOK	DESIGNED BY	CHECKED BY
No.	DESIGNED BY	CHECKED BY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(68):10	1969	24	91

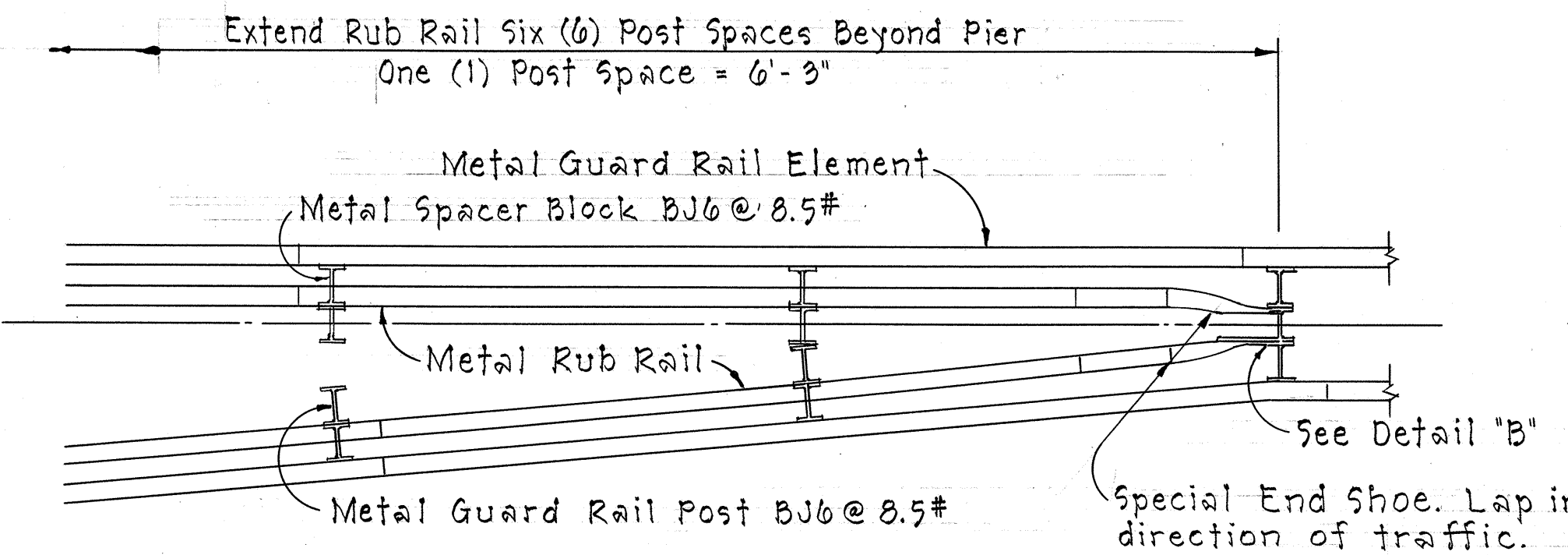
ESTIMATED QUANTITIES

Double Metal Guard Rail	375	L.F.
Special Type "D" Guard Rail	700	L.F.
6" Untreated Base	600	S.Y.
Roadway Exc.	75	C.Y.
Type "A" Curb	10	L.F.

Hawaiian Electric Power Plant



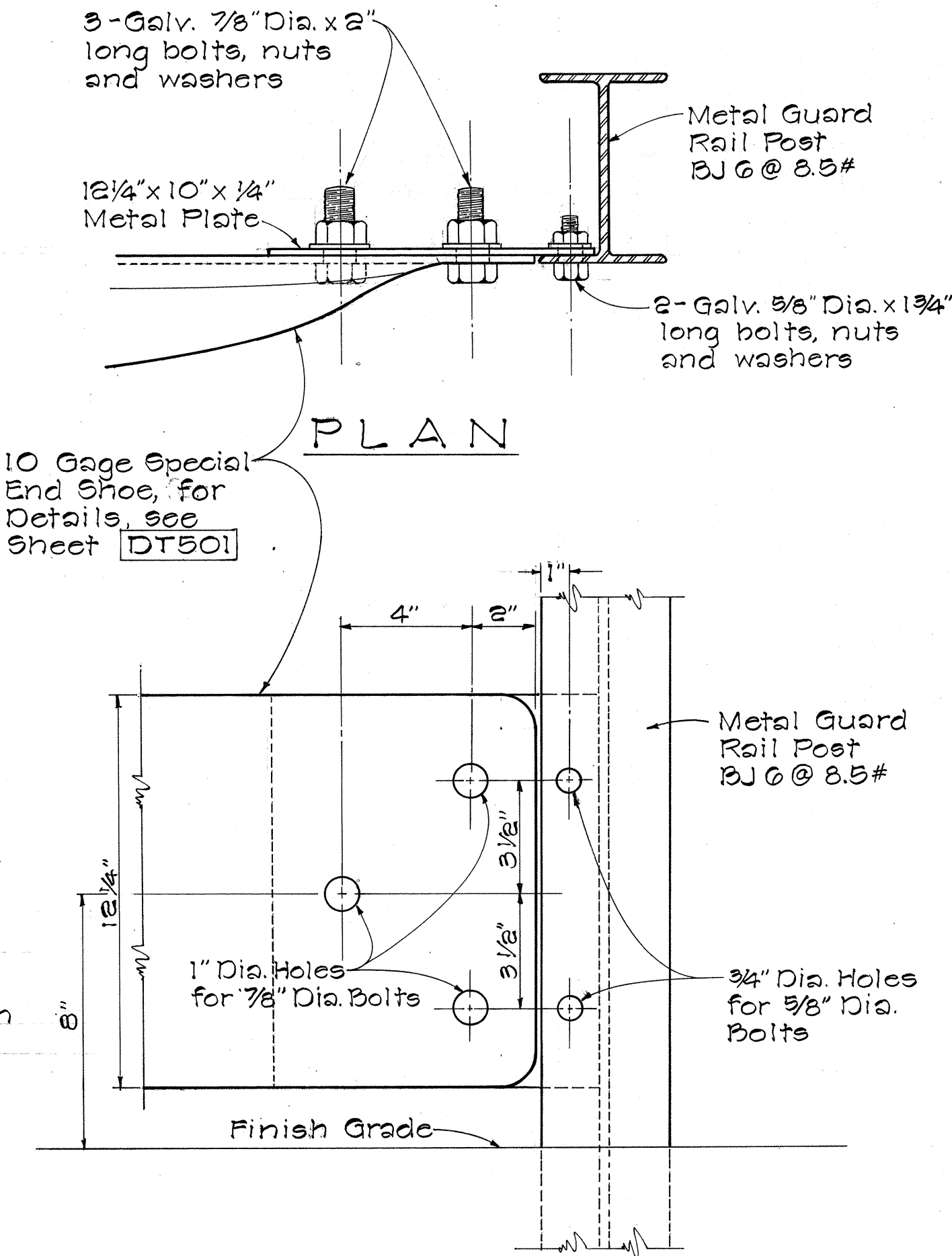
ELEVATION



PLAN

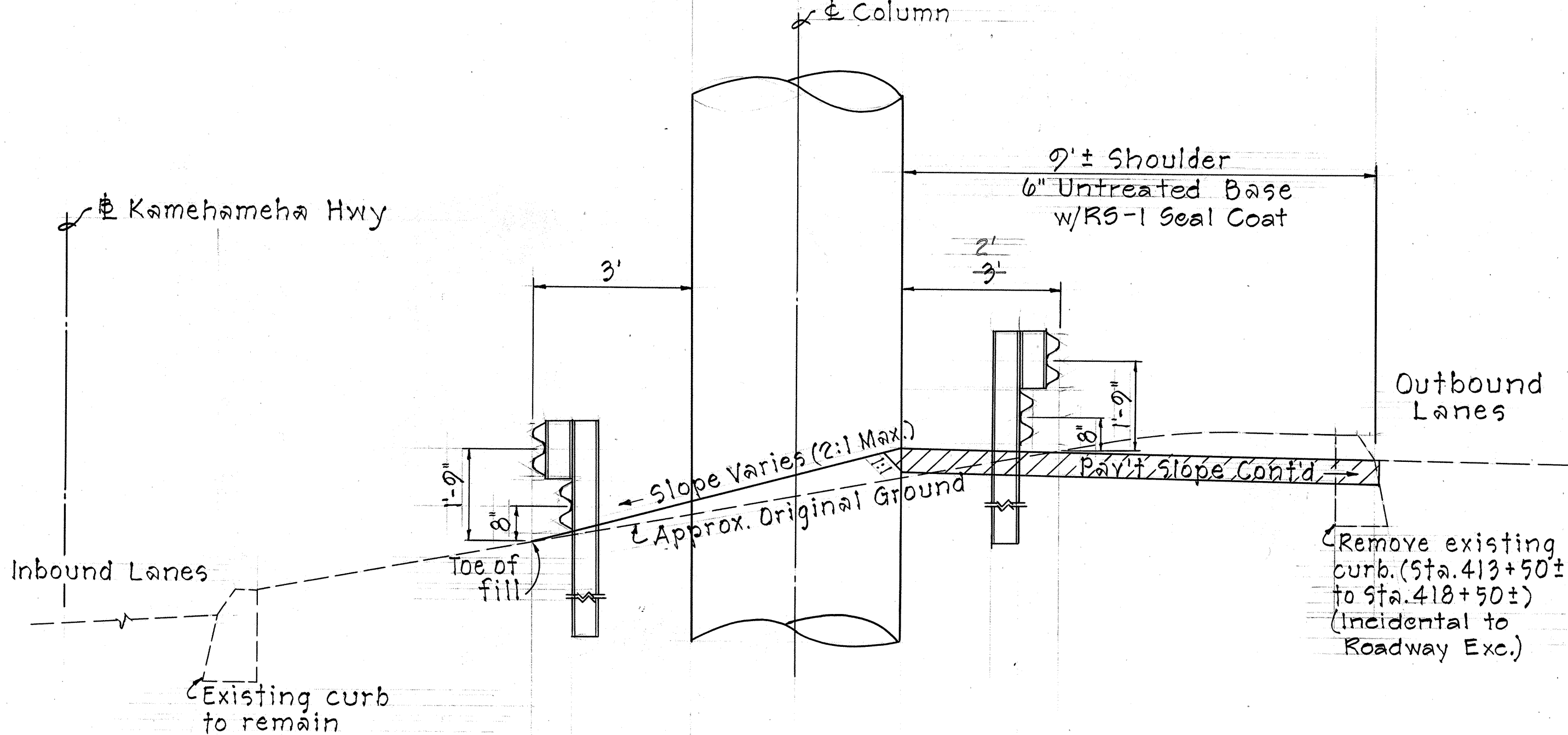
DETAIL OF SPECIAL TYPE "D" METAL GUARD RAIL

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



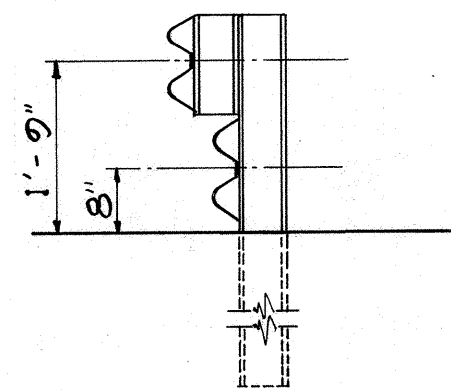
ELEVATION DETAIL "B"

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



TYPICAL SECTION "C-C"

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



SECTION "A-A"

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

NOTE: This sheet supersedes sheet No. 24 of these Plans.

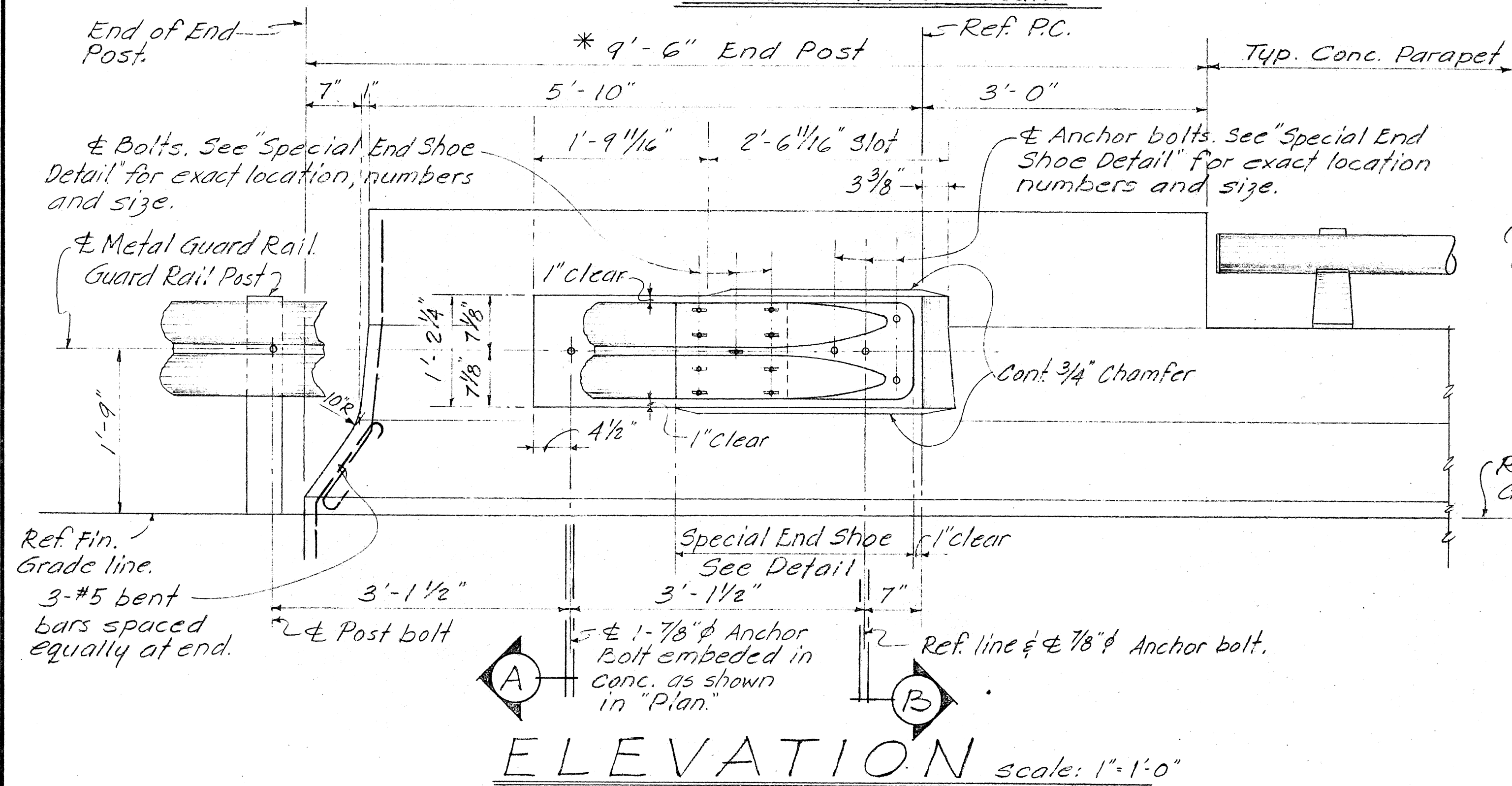
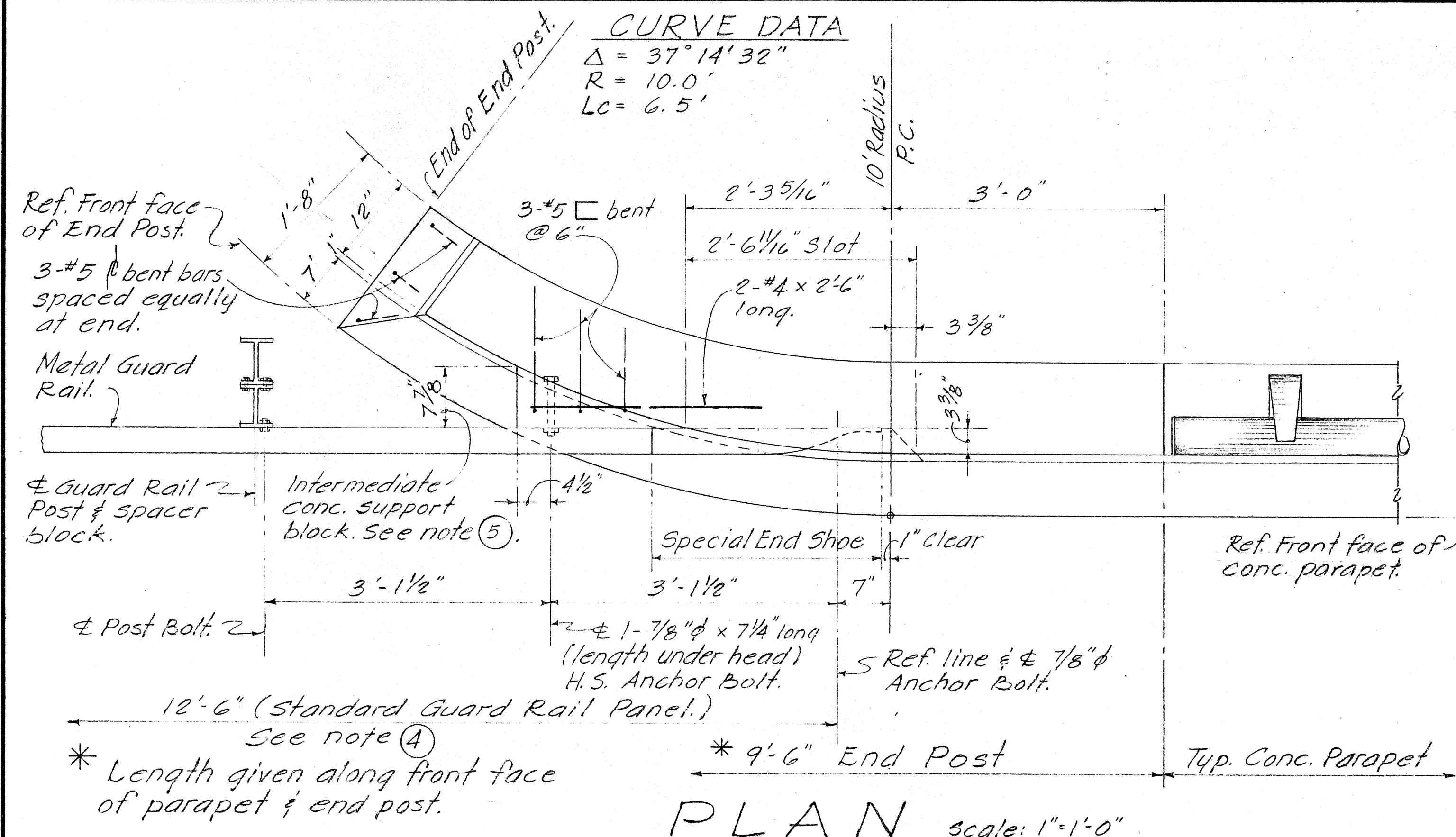
Note: The shoulder construction shown in above typical section applies from Kamehameha Hwy Sta. 413+50 to Sta. 417+50, Outbound Lanes.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
METAL GUARD RAIL
AT KAMEHAMEHA HIGHWAY
PROJ. NO. I-HI-1(68):10

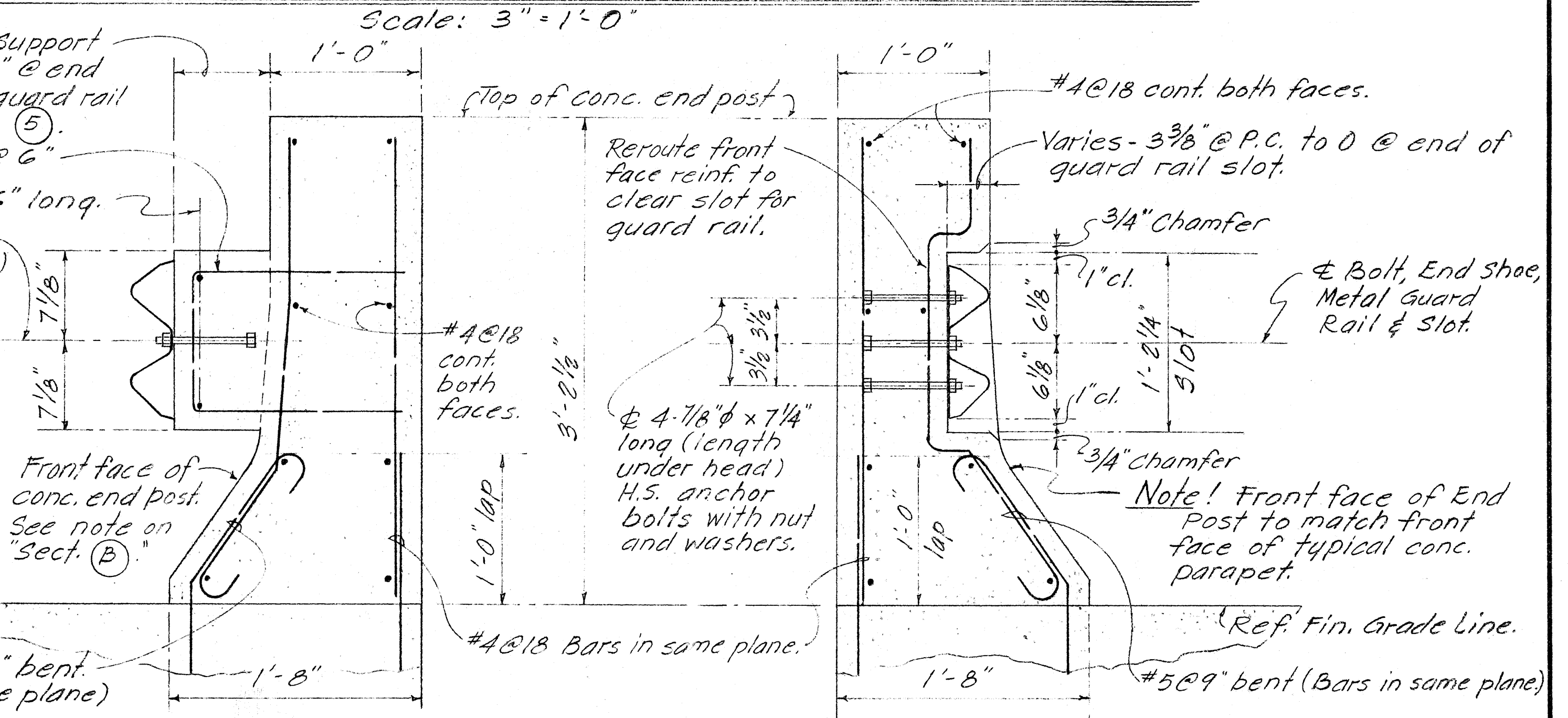
Scale: As Noted Jan. 1969

SHEET NO. OF SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(68)10	1968	CO24A	91



SECTION (C) SPECIAL END SHOE DETAILS



SECTION (A)

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

SECTION (B)

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

NOTES

- H.S. Bolts shall conform to the requirements of ASTM A-325.
- All shoe assembly, including anchor bolts, nuts and washers, shall be galvanized.
- Special End Shoe shall be fabricated from 10 gage steel conforming to the requirements of AASHTO 180.
- First Guard Rail Panel adjoining "Special End Shoe" shall be of galvanized steel. See Special Provisions for requirements.
- Intermediate support of concrete block shall be installed at approach ends only.
- Details shown on this sheet are drawn for End Posts used with the Single Rail Type Metal Bridge Railing and Concrete Parapet.

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
STANDARD END POST CONNECTION TO METAL GUARD RAIL DETAILS
 (SINGLE RAIL TYPE)
 SCALE AS SHOWN DATE: DEC. 1968

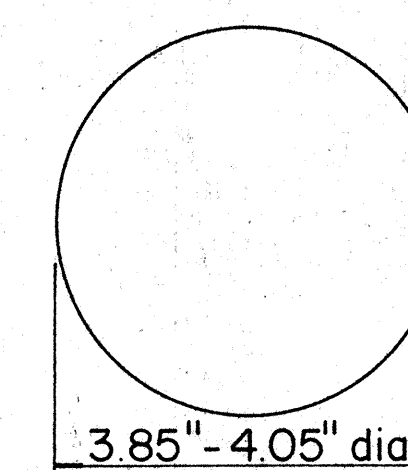
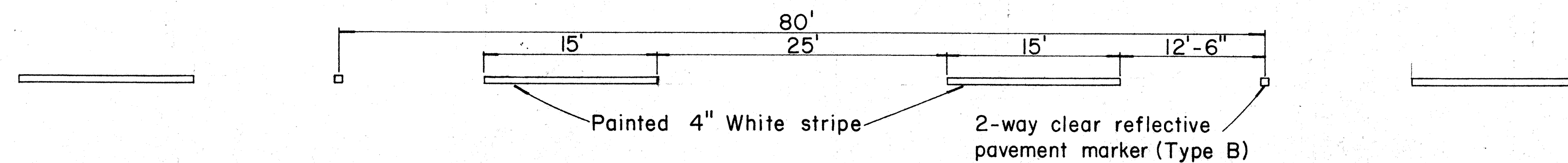
SHEET No. OF SHEETS

CO24A

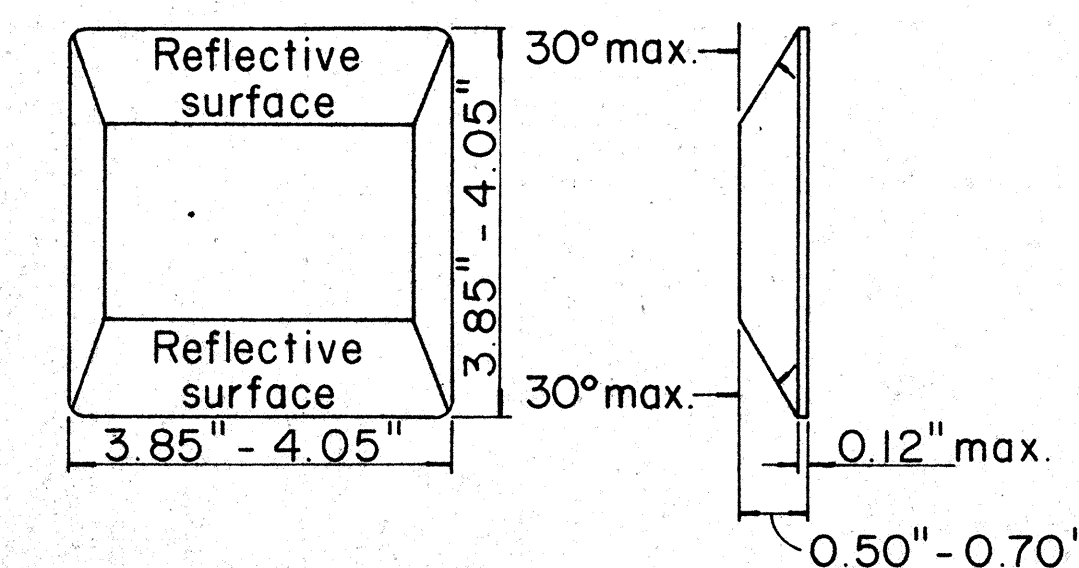
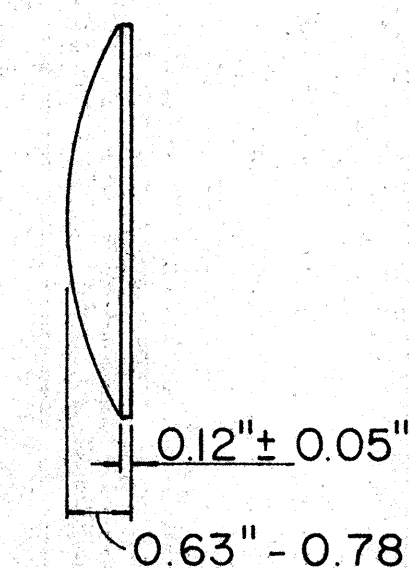
DATE	
DESIGNED BY	
CHECKED BY	
NOTED BY	
ORIGINAL	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-11-1(68)10	1968	25	71

① CENTER LINES ON TWO - LANE RURAL ROADS AND CITY STREETS



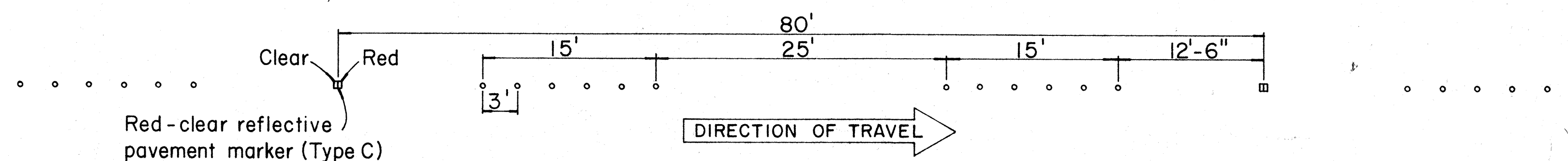
TYPE A
Non-reflective white marker



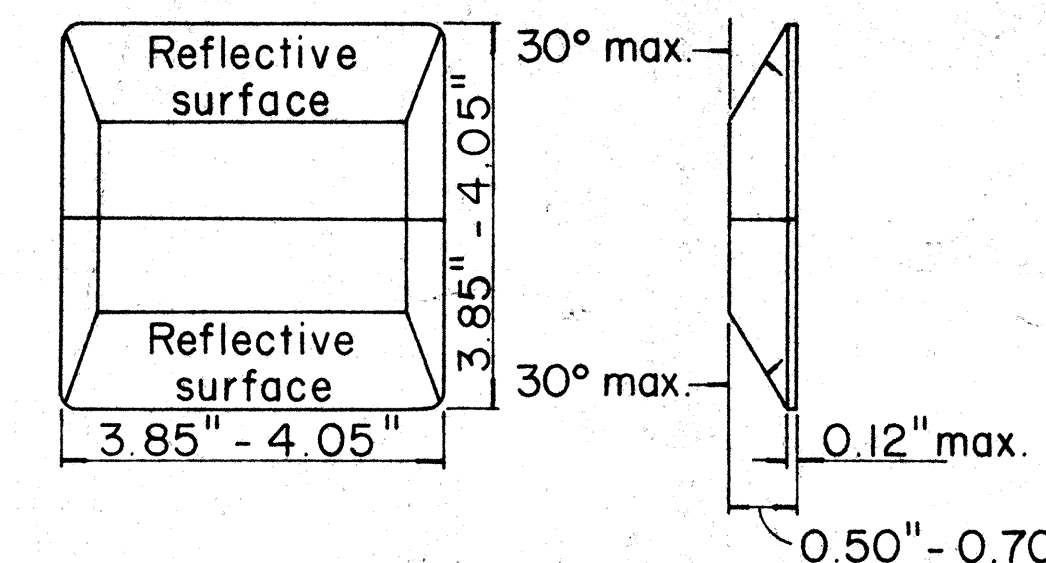
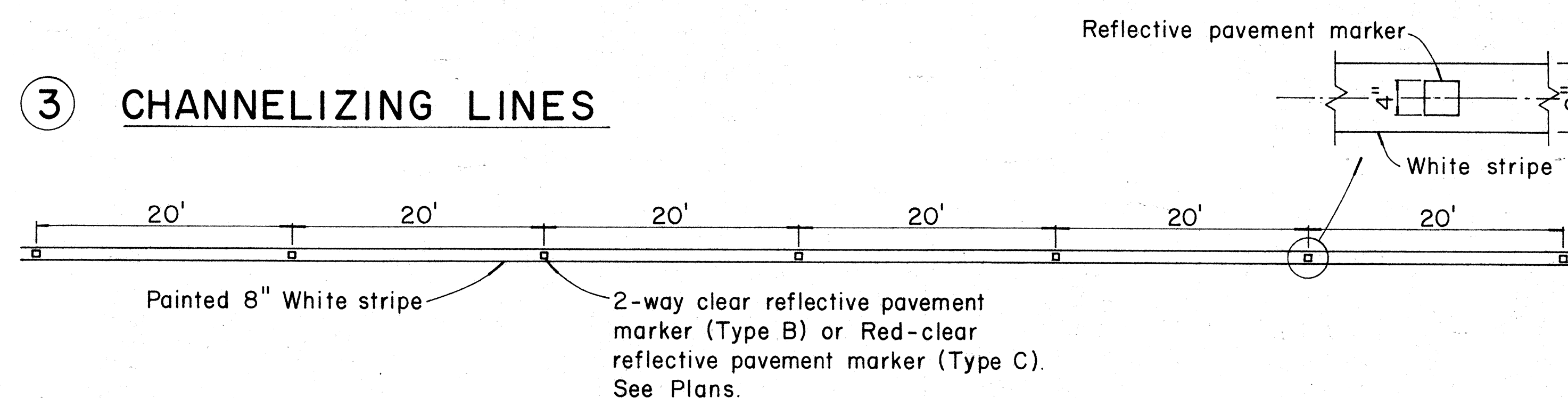
TYPE B
2-way clear reflective surface

TYPE D
2-way yellow reflective surface

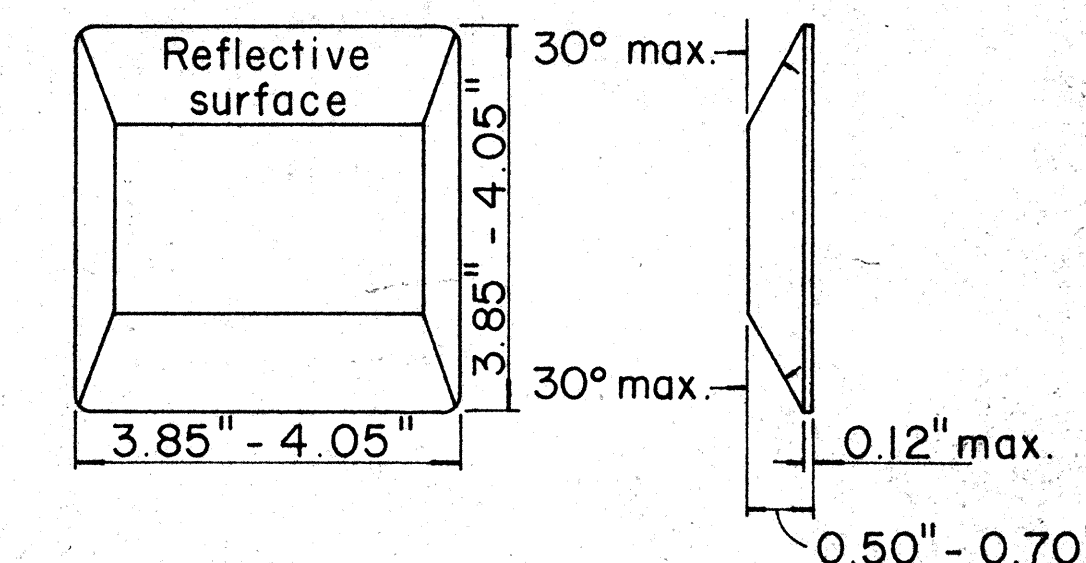
② LANE LINES



③ CHANNELIZING LINES

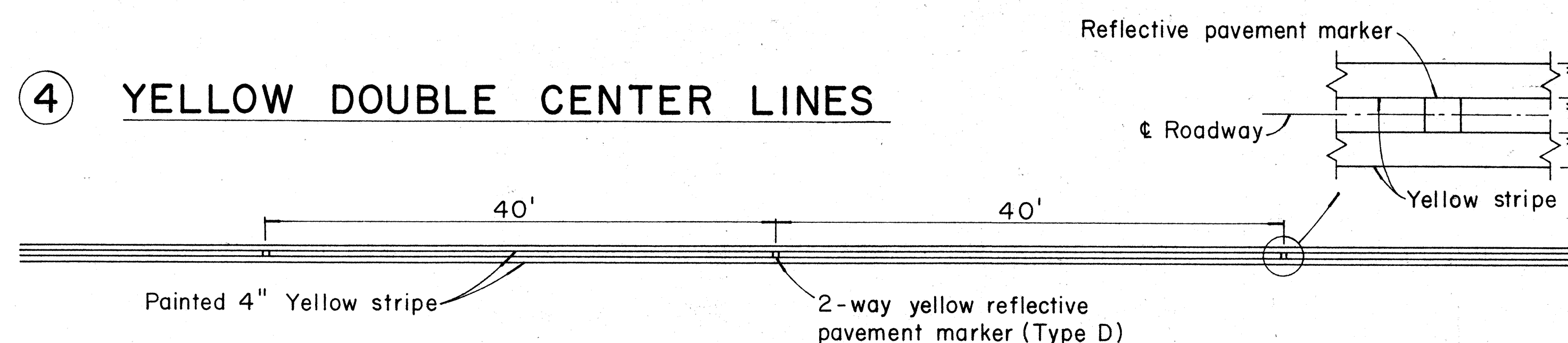


TYPE C
Red-clear reflective surface



TYPE H
One-way yellow reflective surface

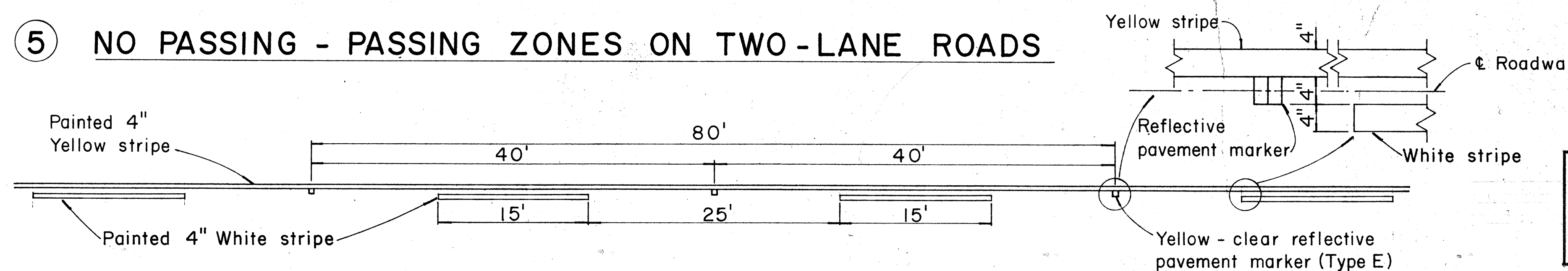
④ YELLOW DOUBLE CENTER LINES



TYPE E
Yellow-clear reflective surface

TYPE G
One-way clear reflective surface

⑤ NO PASSING - PASSING ZONES ON TWO-LANE ROADS



NOTE:
Painted stripes to be done by State forces

APPROXIMATE QUANTITIES FOR 6 LANE LINES	5400 TYPE A
# STA. 3+25 TO 62+67 ±	450 TYPE C

REVISED: Aug. 26, 1968

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
RAISED PAVEMENT MARKERS

Not to Scale Sept., 1967

SHEET No. 15 OF 15 SHEETS

25