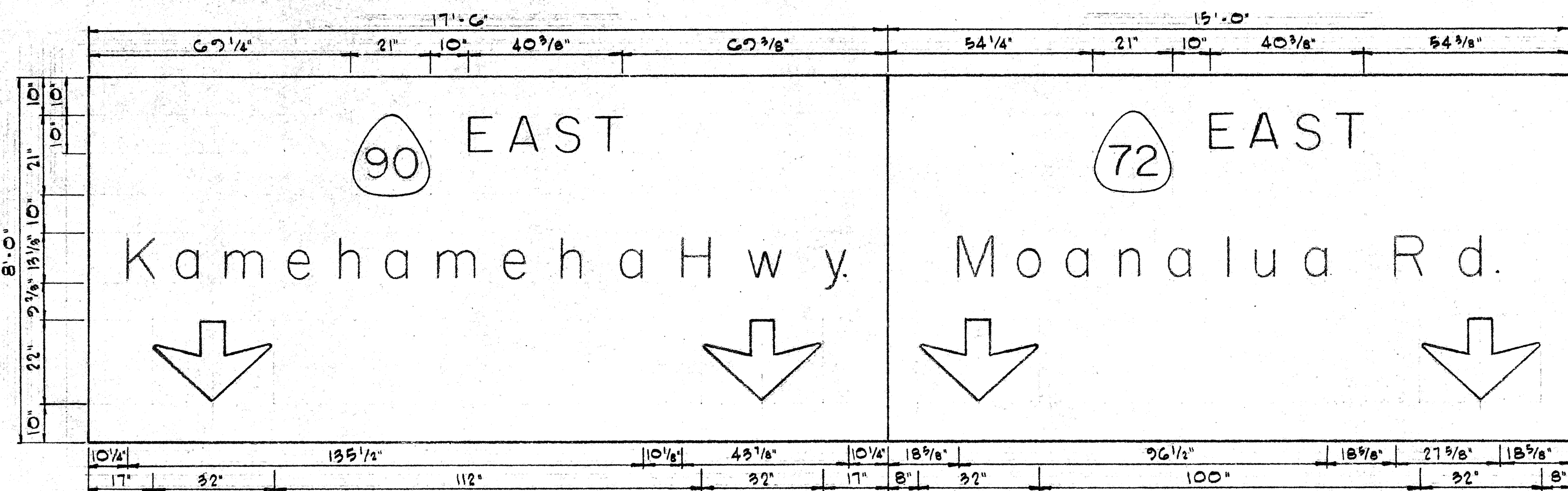
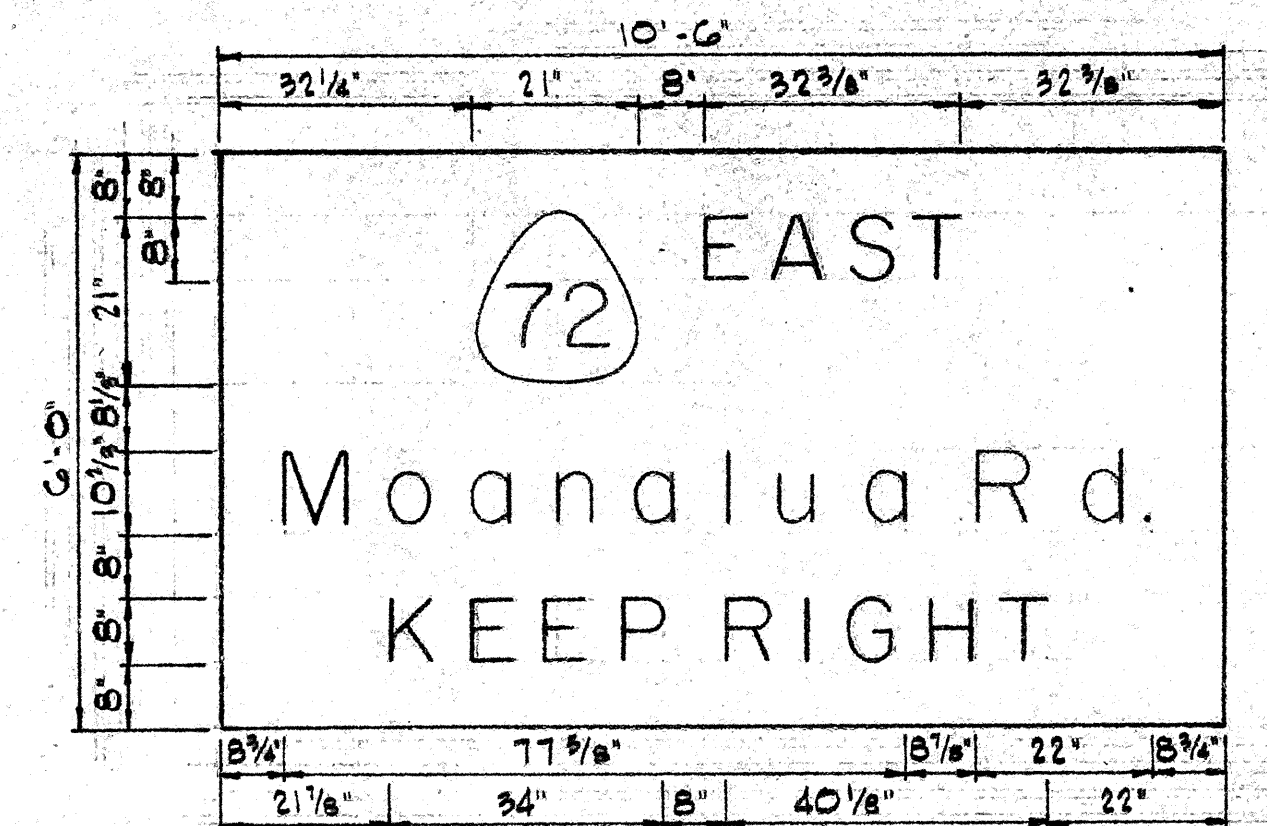
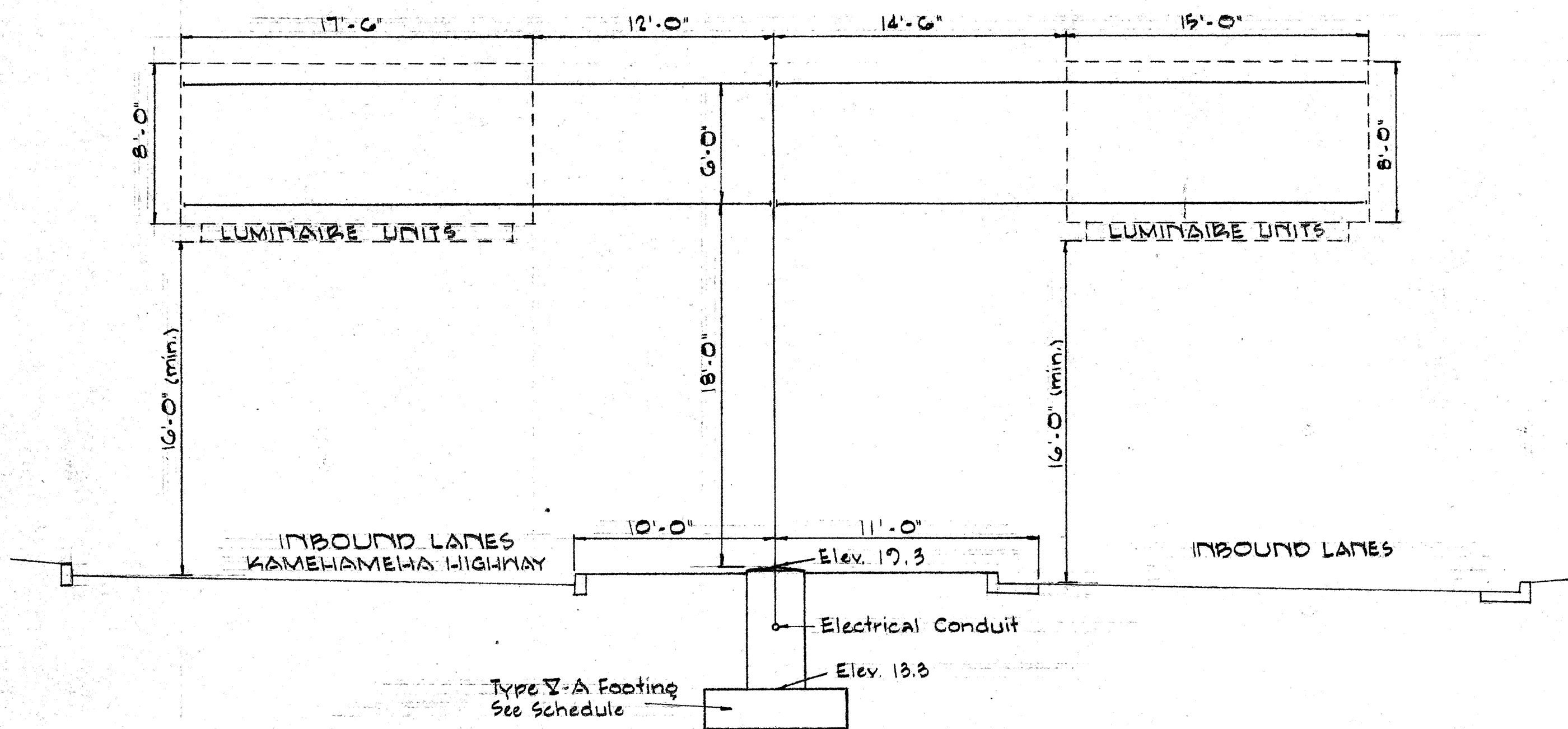




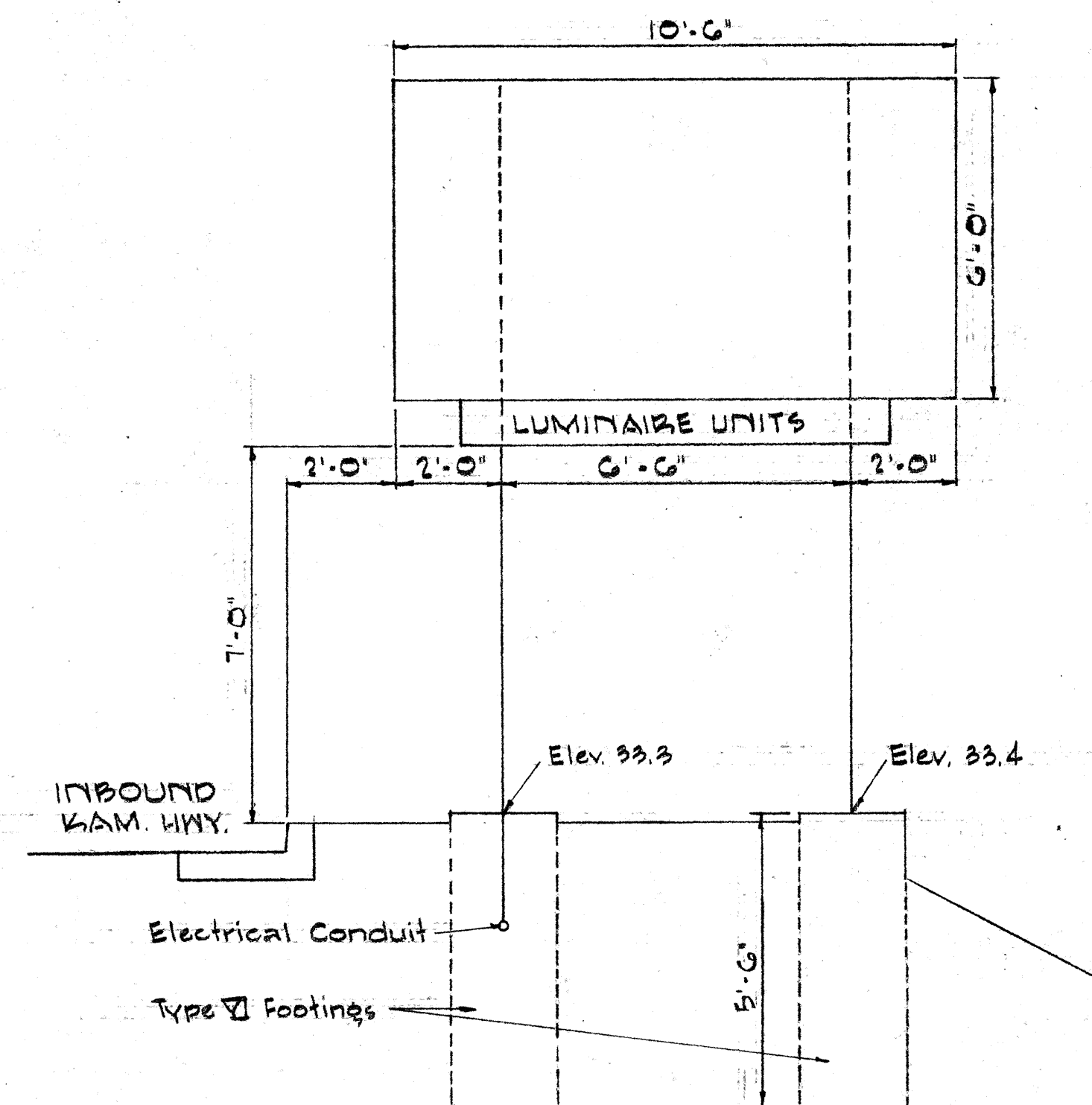
SIGN E-1



SIGN E-5



SIGN E-1
13 Sta. 102+35



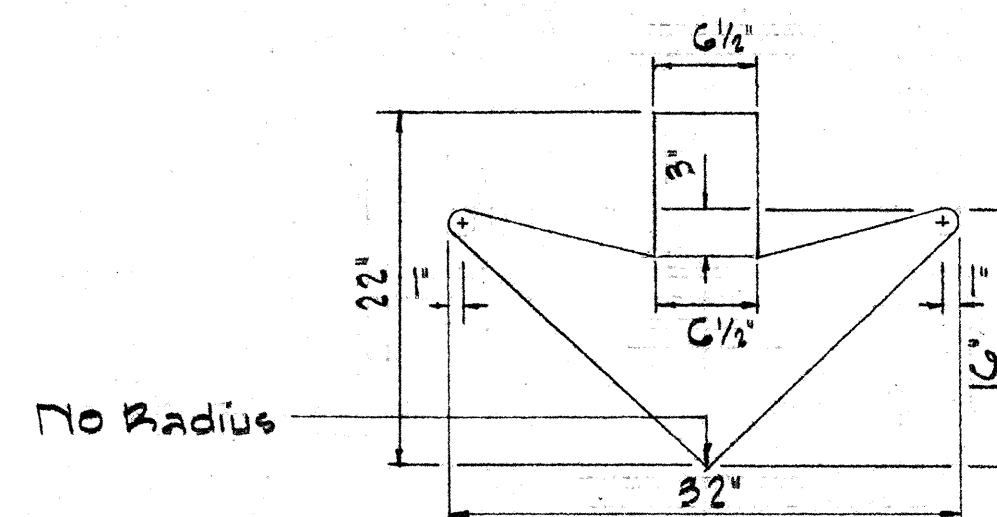
SIGN E-5
13 Sta. 104+00

GENERAL NOTES:

1. Sign message shall be lettered in upper case according to "Standard Alphabets for Highway Signs", Bureau of Public Roads, 1952, and lower case according to "Standard Lower Case Alphabets for Highway Signs", Bureau of Public Roads, 1962. Use Series "E" modified letters unless otherwise noted.
2. Arrows shall conform with details as shown on plans.
3. All borders and State Route Markers shall conform with detail sheet "Destination and Expressway Signs, State Route Marker and Border Details."
4. Letters, numerals, symbols and borders shall be reflectorized cut-outs or demountable copies. Destination signs will use reflectorized cut-outs.
5. All reflectorized cut-outs and demountable copies shall be fastened on sign panel with blind rivets, see Special Provisions.

SUMMARY OF SIGN AREAS

SIGN NO	MESSAGE	AREA Sq. Ft.
E-1	Kamehameha Hwy.	140.00
E-1B	Moanalua Rd.	120.00
E-5	Moanalua Rd.	63.00
TOTAL AREA		323.00

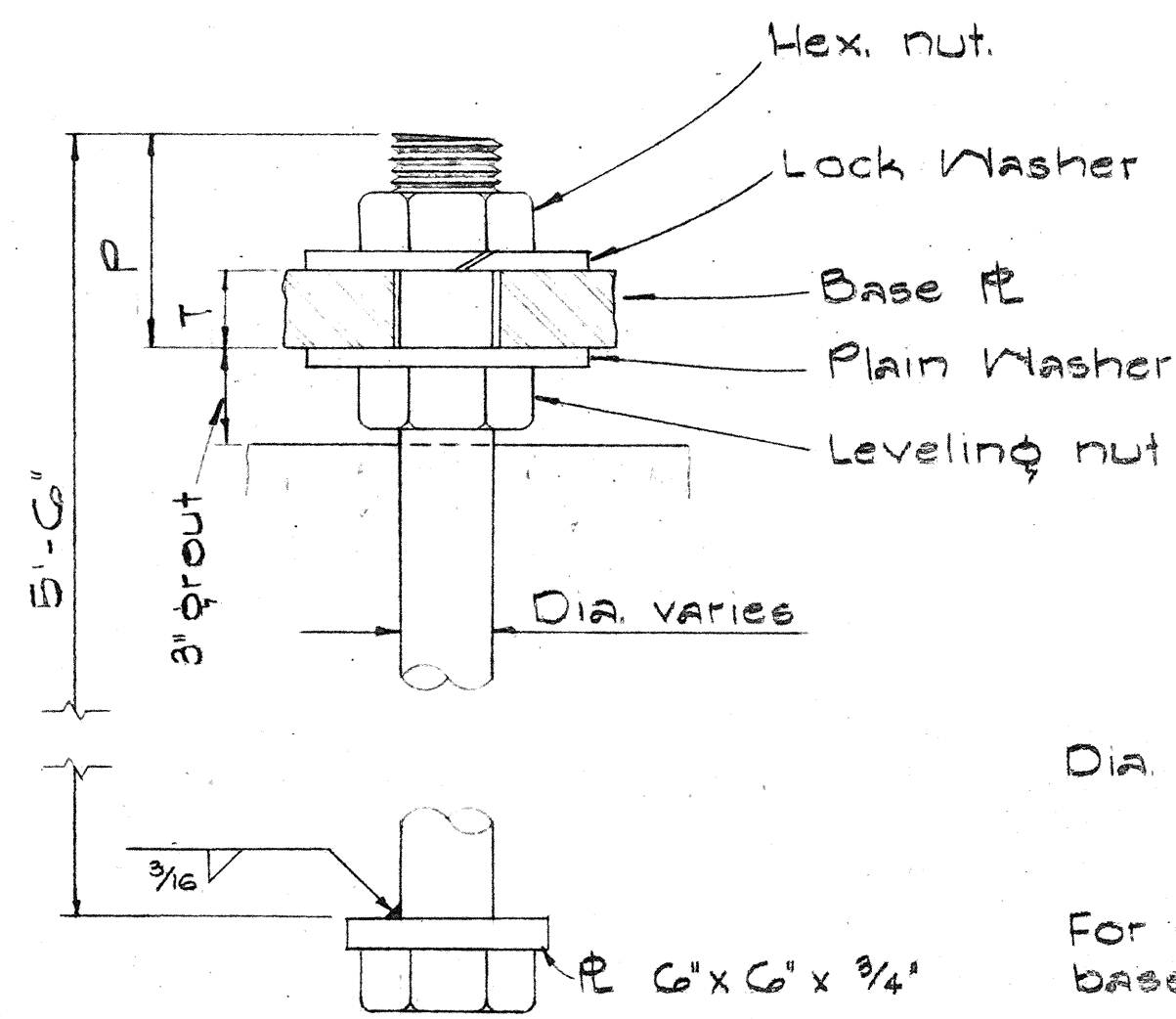


ARROW DETAIL

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EXPRESSWAY SIGNS
FRAME & PANEL LAYOUT

SHEET No. 1 OF 2 SHEETS



TYPICAL ANCHOR BOLT
4 REG'D

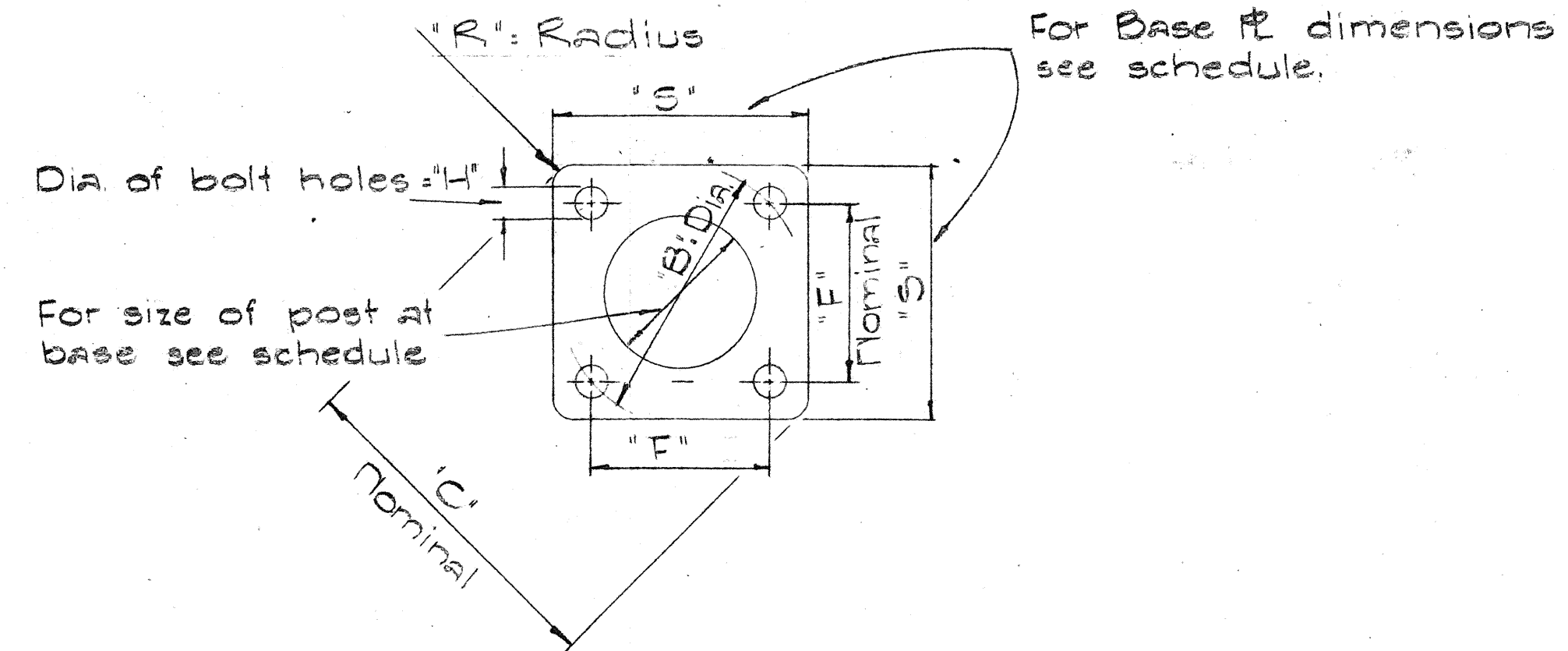


Diagram illustrating a tapered crossarm or post. The structure consists of a vertical tapered member (labeled "Tapered Crossarm or Post") mounted on a horizontal base (labeled "Flange or Base Pl"). A "Continuous Weld" is shown at the junction between the tapered member and the base flange.

SECTION "A"

3' cl.

3' cl.

#4 @ 12

Vertical pier reinf.
See Schedule

PEDESTAL SIZE
See Schedule

SECTION "B"

3' cl.

3' cl.

#4 @ 12

Vertical pier reinf.
See Schedule

PEDESTAL SIZE
See Schedule

PEDESTAL TYPE V-A

NOTE:

1. Total number of conduits into pole foundation as indicated on drawings. Conduit shall slope away from pole foundation. Conduit shall stub out 5'-0" min. for direct burial cable entry.
2. Grounding conductor shall be bonded to light standard.

FOUNDATION SCHEDULE									
Type	Dimension		Depth	Bot.	Reinf.	Top Reinf.		Pedestal	
	A	B		L.W.	S.W.	L.W.	S.W.	Size	Vert. Reinf.
I	9'-0"	4'-6"	2'-0"	6'-6"	10-#4	#4 @ 12 Each Way		2'-6"	10-#7
II	10'-0"	5'-0"	2'-0"	7-#9	11-#4	Do.		2'-6"	10-#9
IV	12'-0"	6'-0"	2'-0"	8-#11	13-#4	Do		2'-9"	10-#10
V	14'-0"	7'-0"	2'-0"	8-#11	19-#4	Do		2'-9"	10-#11
V-A	16'-0"	8'-0"	2'-0"	8-#11	22-#4	Do		2'-9"	12-#11

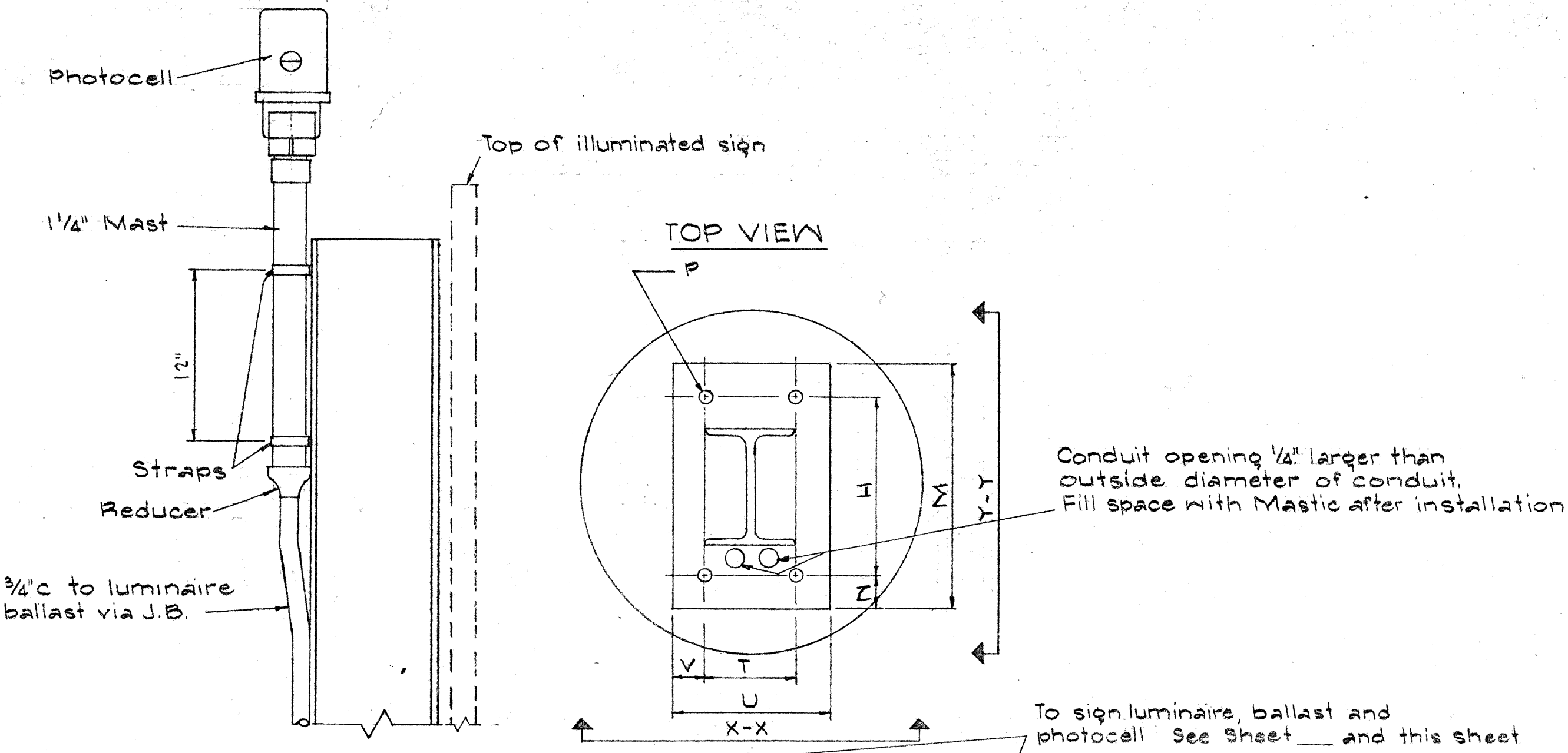
SINGLE SIGN POST-CENTER MOUNTED TYPE-DOUBLE MASTARM (TYPE B)							
Sign No.	Station	Crossarm Tapered at Post		Post Tapered at Base	Base Plate	Footings	
		Left	Right			Type	Anchor Bolts
E-1	1.8 Sta. 109+35	36"x12.5"x8.58"x25"	36"x12.5"x8.58"x25"	0.50 Dia. 18.0"x14.5"x25"	26 1/2" x 26 1/2" x 3"	7-A	4-3" Dia.

GROUND MOUNTED TYPE-EXPRESSWAY SIGNS						
Sign No.	Station	Steel Members		Base Plate	Footing	
		Left	Right		Type	Anchor Bolts
E-5	1.8 Sta. 104+00	8" x 17"		10" x 1' x 17 1/2"	▽	4 - 1 1/8" Dia.

No Scale

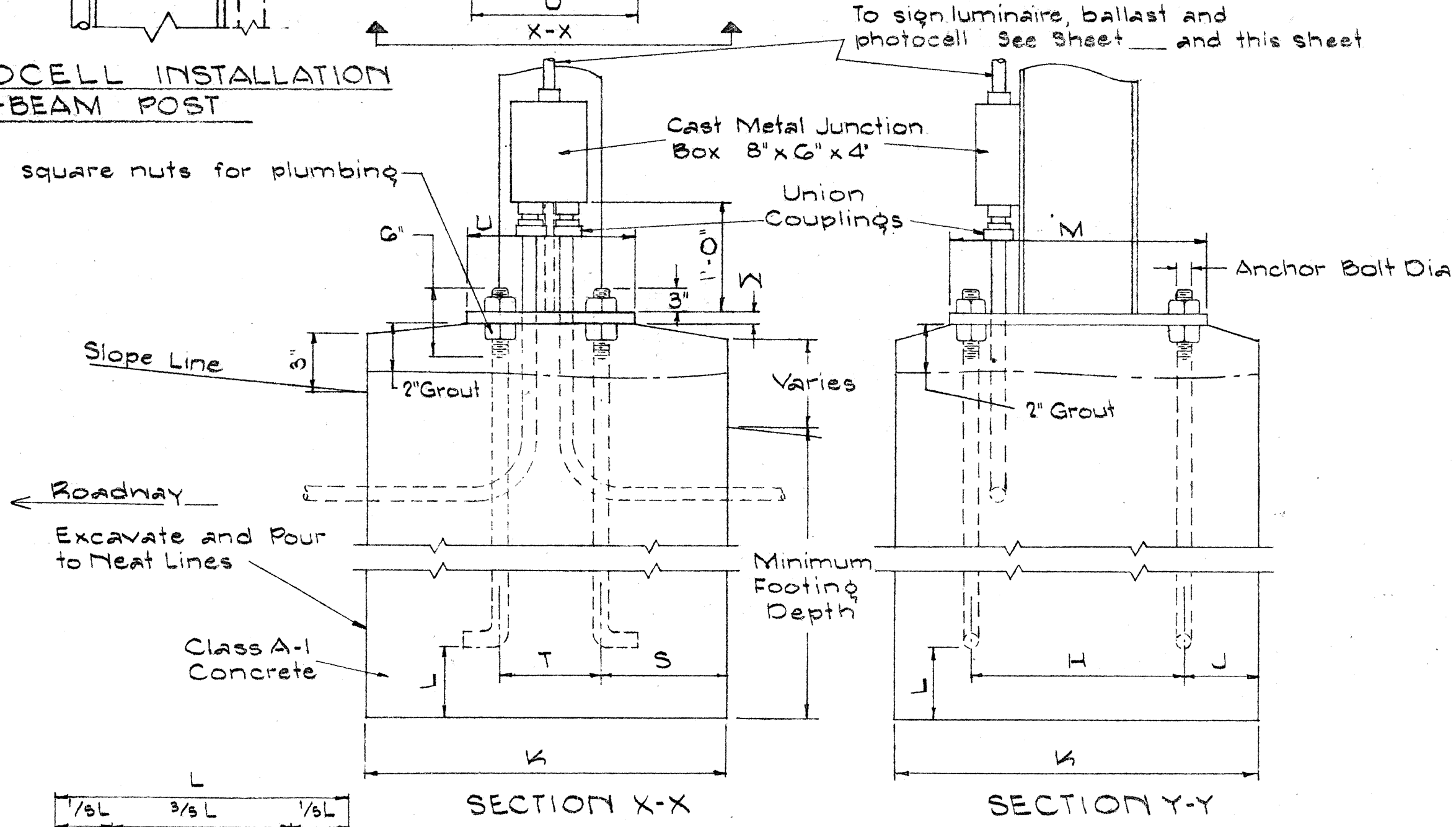
SUPPORT STRUCTURE DATA FOR GROUND MOUNTED SIGNS																				
POST SIZE	MAXIMUM SIGN AREA	POST HGT. TOP OF FOUND. TO CENTER OF SIGN *	DIMENSIONS SEC. Y-Y						DIMENSIONS SEC. X-X						ANCHOR BOLT DIA.	MIN. FOOTING DEPTH (FEET)		TYPE OF WELD TO BASE PLATE		
			H	J	K	L	M	N	O	P	S	T	U	V		W	CUT		FILL **	
G J 8.5	50 sq.ft.	9'	14"	5"	24"	6"	17 1/4"	5 1/8"	1 1/4"	24"	1 1/8"	9"	6"	10"	2"	1"	1 1/8" 4	4 1/2'	4 1/2'	3/8" 
8 KF 17	60 sq.ft.	22'																5'		
8 KF 17	70 sq.ft.	18'																		

NOTE:
 For signs with panel areas of less than 30 sq. ft. but greater than 16 sq. ft. use 3" I 5.7# steel I beam.
 * For moment calculations only. Post to be from top of foundation to top of sign.
 ** For fills with side slopes flatter than 4:1, deduct 2 feet.



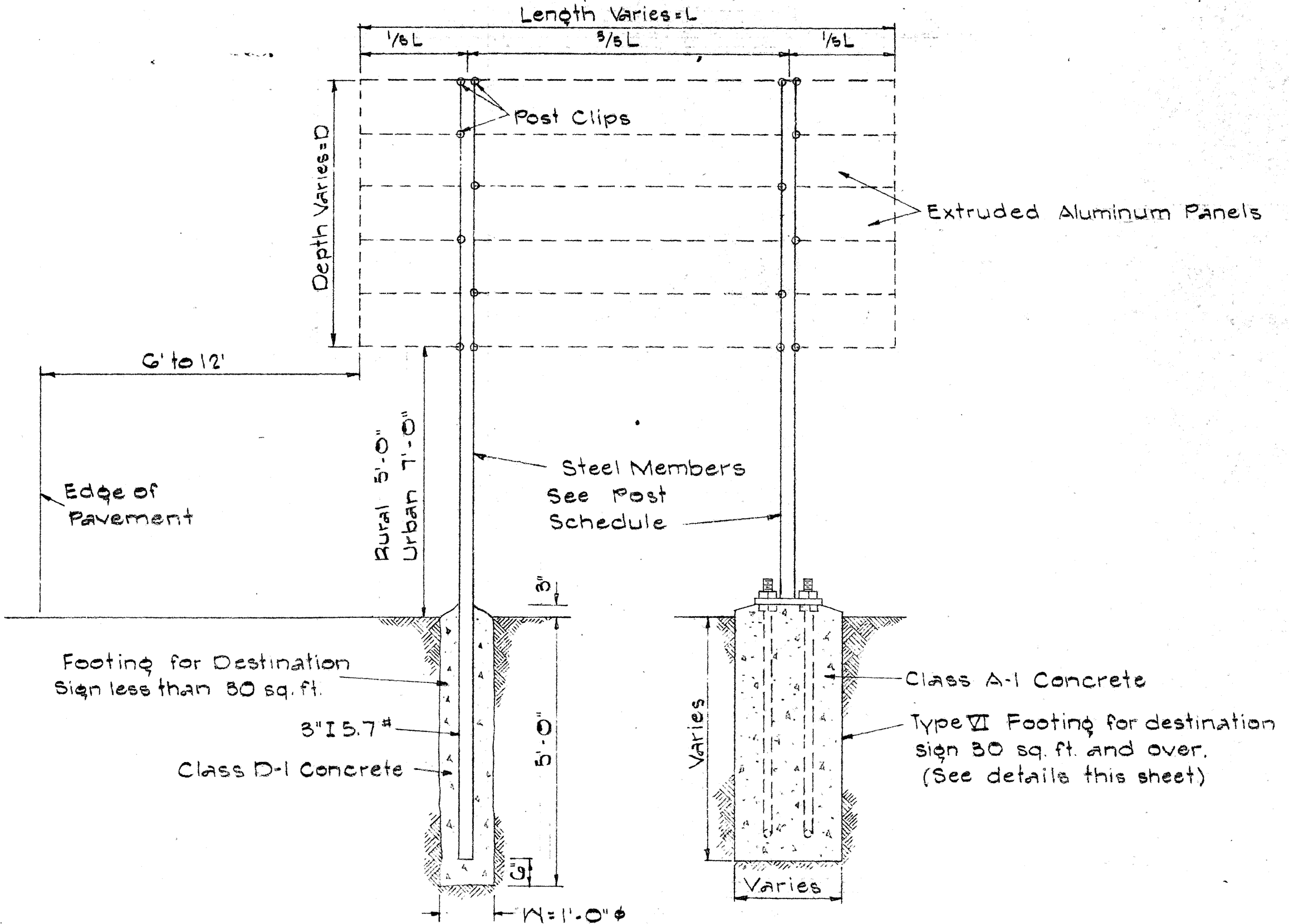
PHOTOCELL INSTALLATION ON I-BEAM POST

Heavy square nuts for plumbing

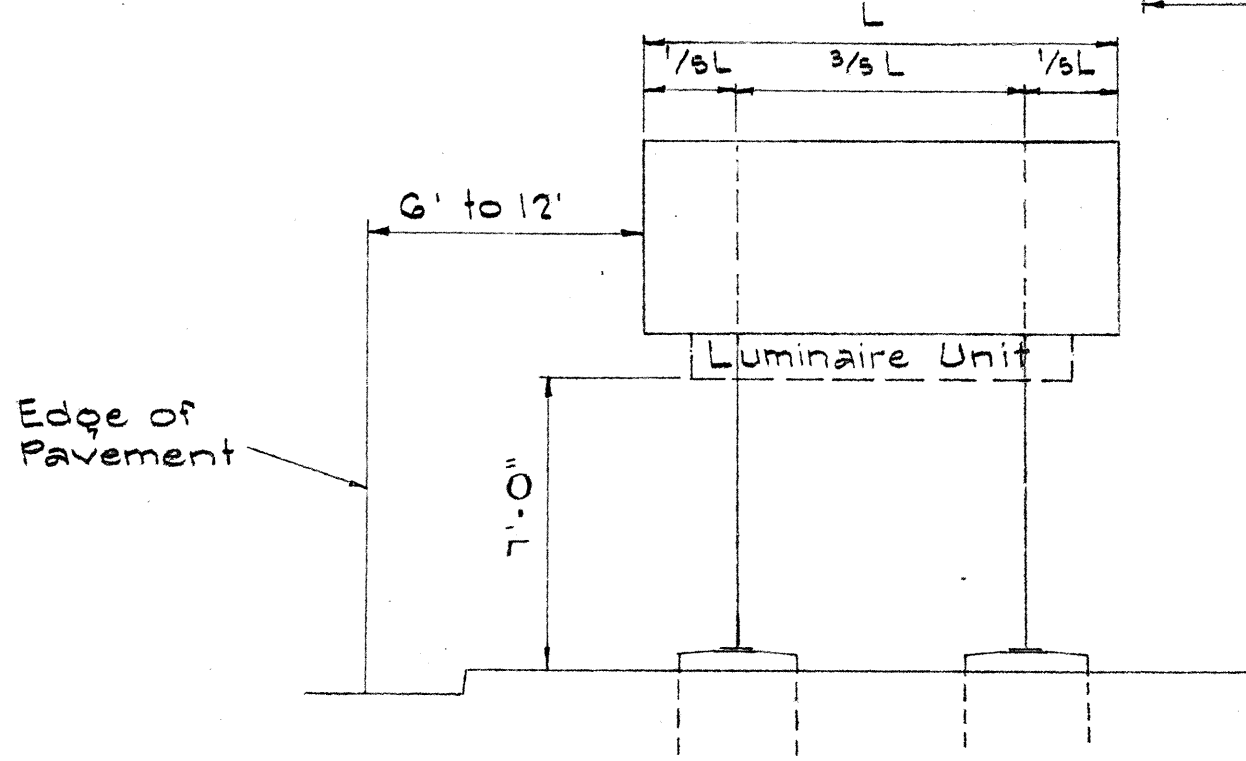


FOUNDATION DETAILS FOR GROUND MOUNTED EXPRESSWAY SIGN EXTRUDED ALUMINUM TYPE VI FOOTING

NOTE:
 Conduit and ballast details are shown only for ground mounted illuminated Expressway signs.



TYPICAL DESTINATION SIGN PANEL & POST

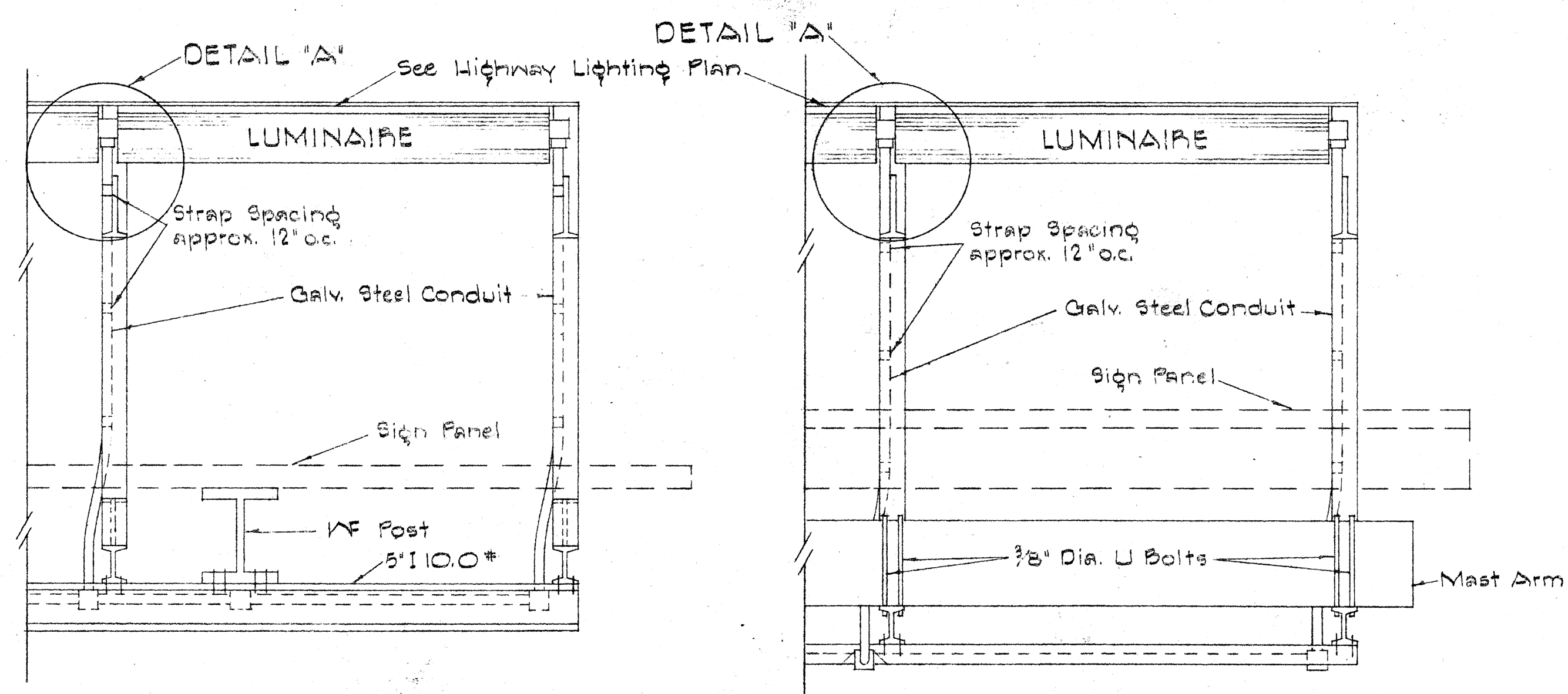


TYPICAL GROUND MOUNTED EXPRESSWAY SIGN TYPE A

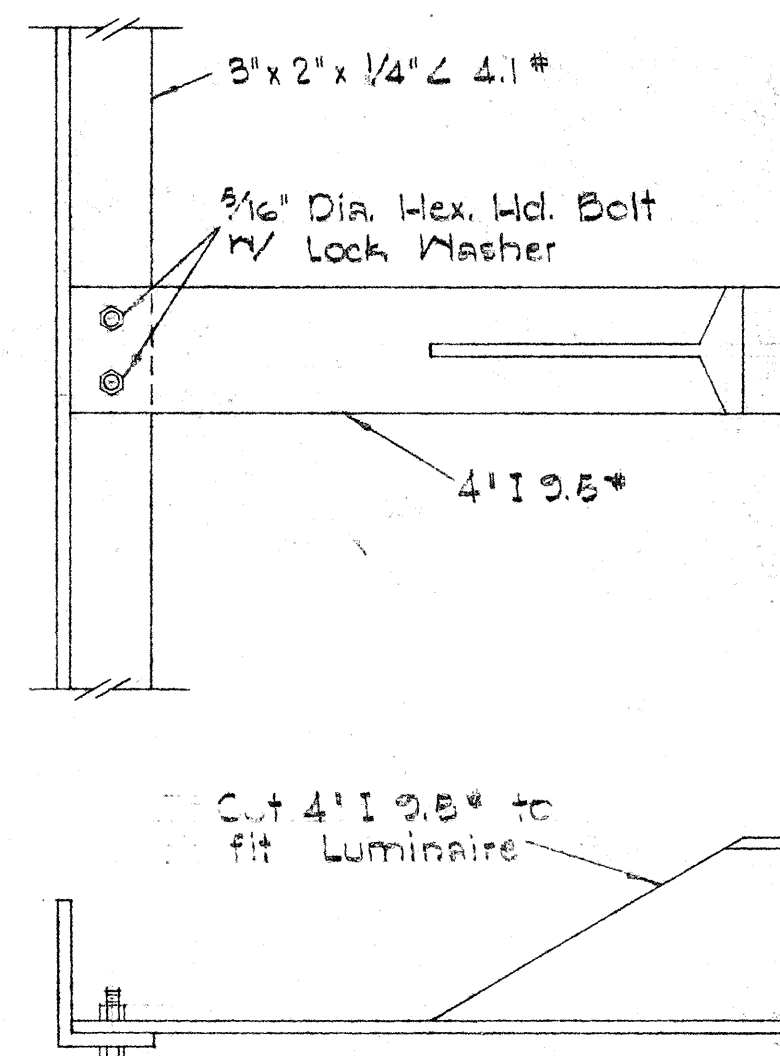
DATE: _____
 SURVEYED BY: _____
 DRAWN BY: _____
 CHECKED BY: _____
 NOTE BOOK: _____
 No. _____

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
DESTINATION & EXPRESSWAY SIGNS
 DETAILS & SCHEDULES
 TYPE A SIGN SUPPORT
 TYPE VI FOOTING

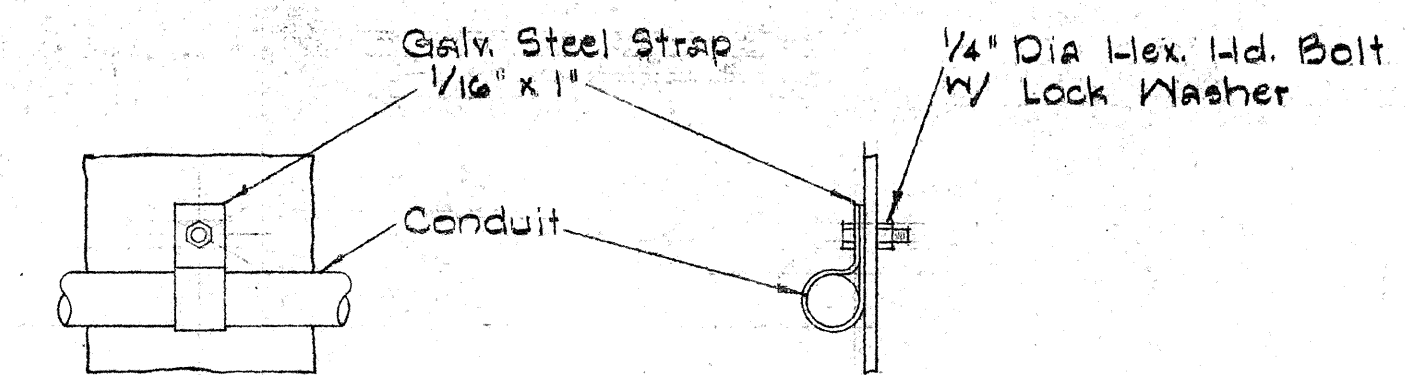
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	R-000-100	1964	45	58



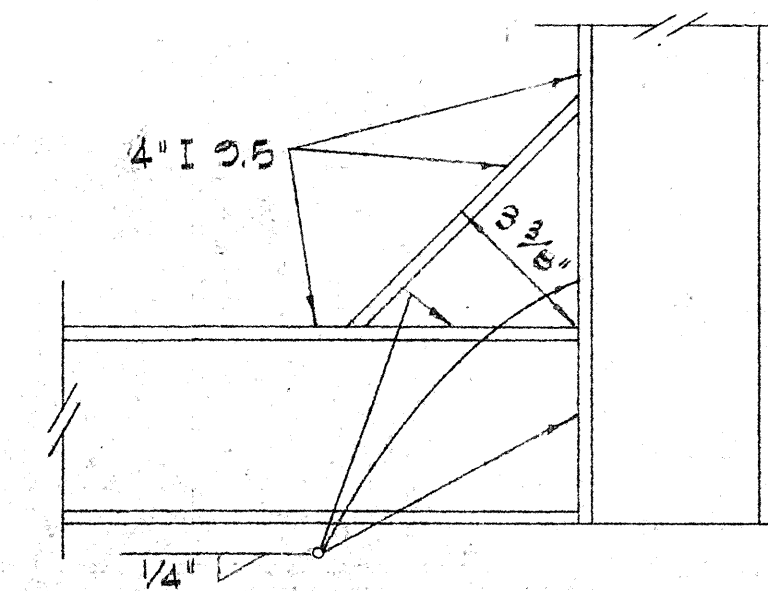
GROUND MOUNTED OVERHEAD
TOP VIEW
LUMINAIRE MOUNTING
Scale: 1" = 1'-0"



DETAIL 'A'
Scale: 3" = 1'-0"



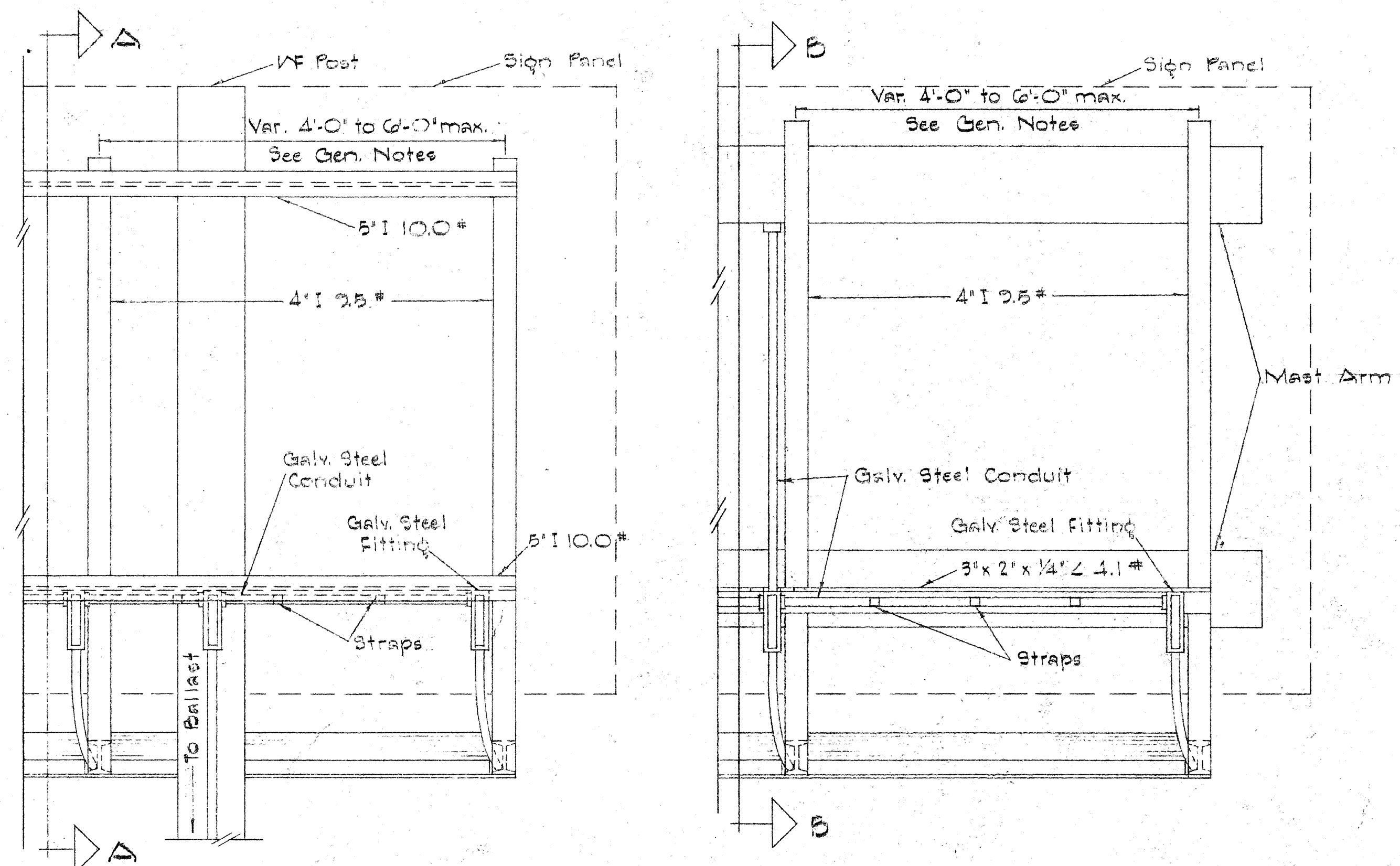
CONDUIT STRAP DETAIL
Scale: 3" = 1'-0"



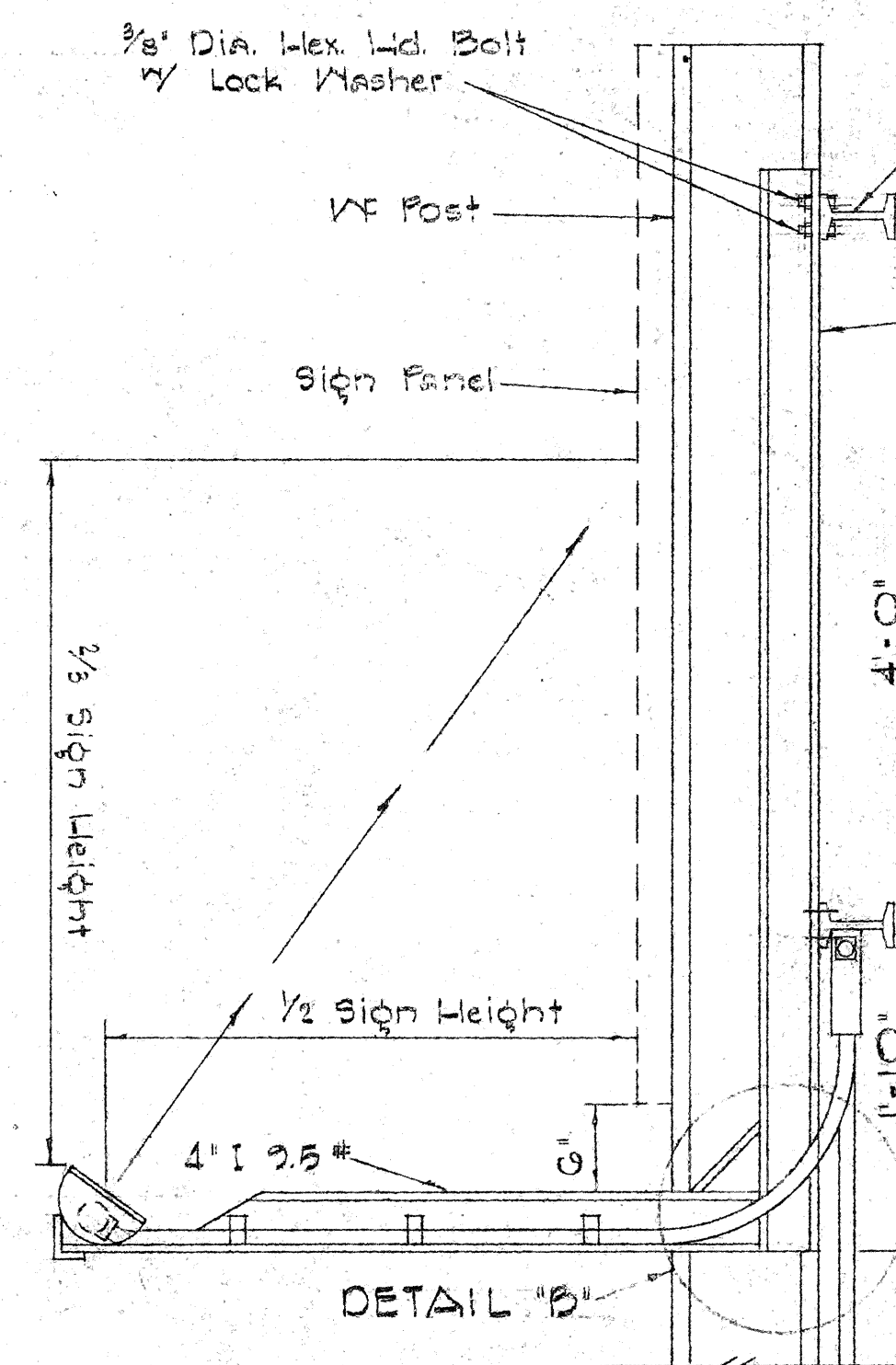
DETAIL 'B'
Scale: 3" = 1'-0"

GENERAL NOTES

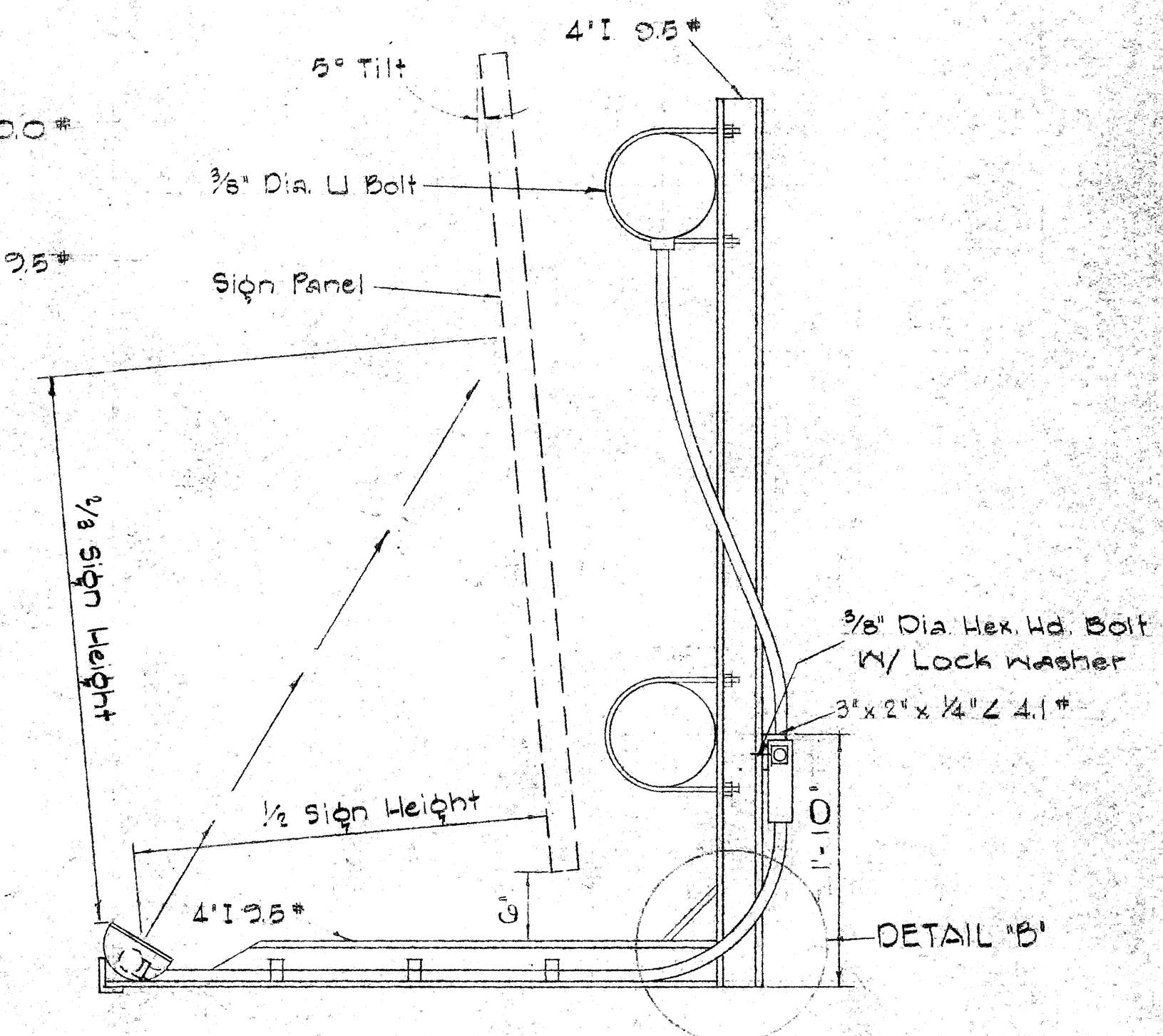
1. Conduit sizes: 3/4" diameter for one or two Luminaire Units; 1" diameter for three or more Luminaire Units.
2. Fluorescent Fixtures shall be installed as recommended by the manufacturer.
3. Luminaire brackets shall be spaced 4'-0" to 6'-0" maximum. 8' long luminaires shall have an additional bracket at midpoint.
4. All parts of the bracket shall be hot-dip galvanized, prime coated with a suitable primer and painted with three coats of dark green enamel.



GROUND MOUNTED OVERHEAD
REAR VIEW
LUMINAIRE MOUNTING
Scale: 1" = 1'-0"



SECTION 'A-A'
Scale: 1" = 1'-0"



SECTION 'B-B'
Scale: 1" = 1'-0"

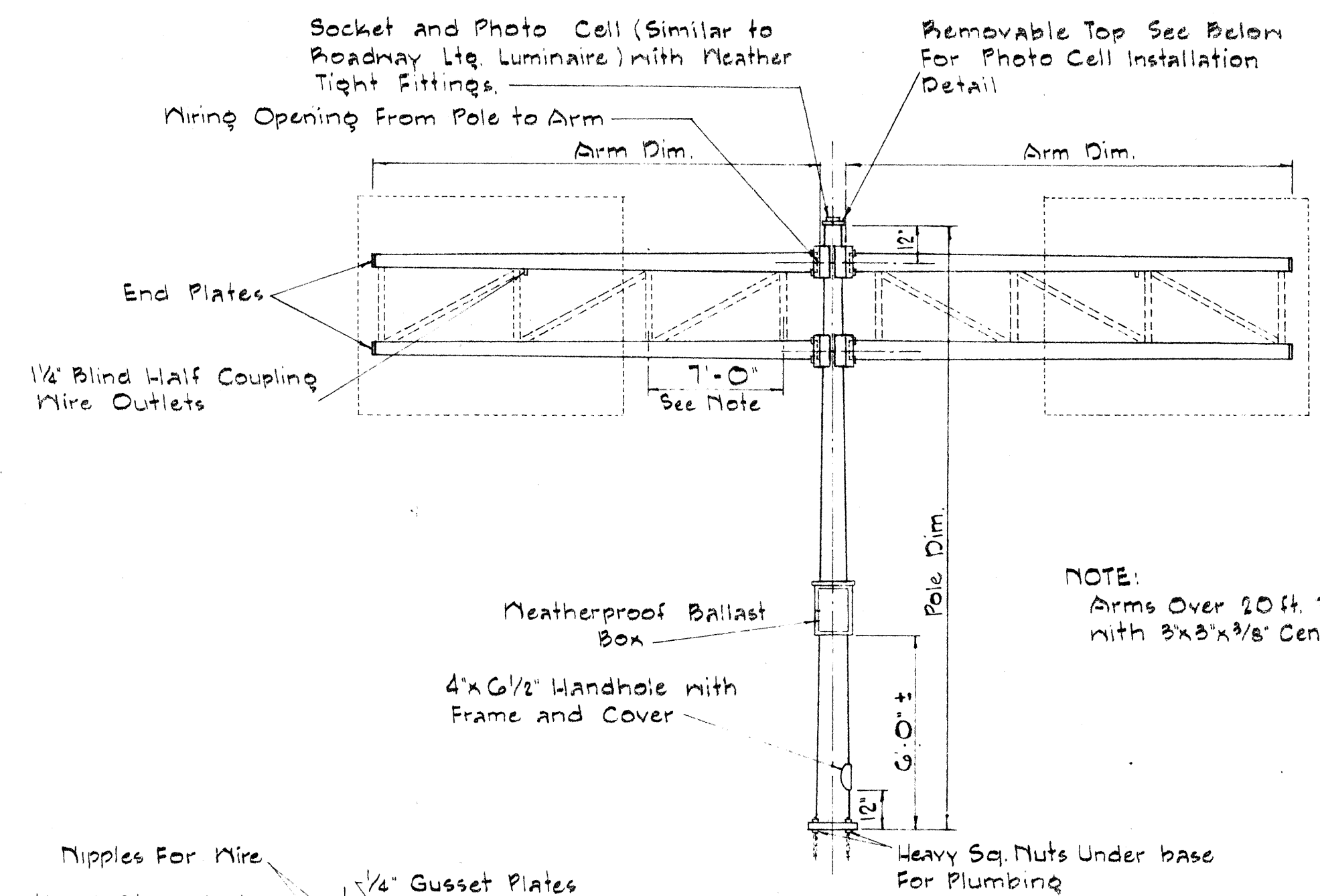
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EXPRESSWAY SIGNS
LUMINAIRE MOUNTINGS

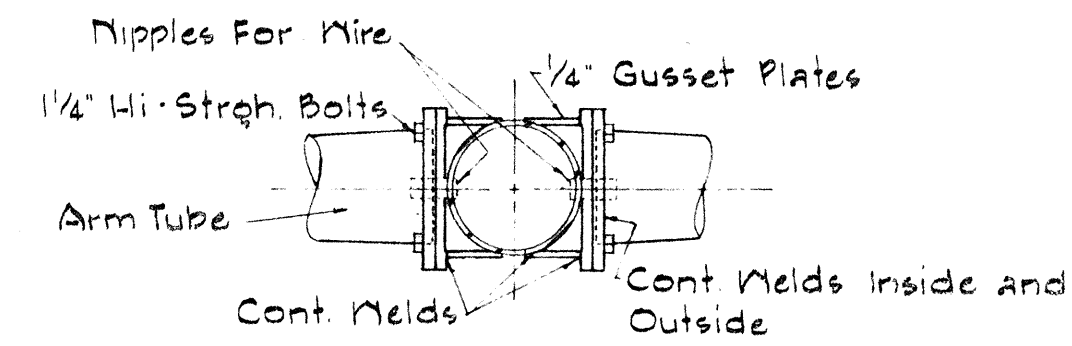
Scale: As Shown

SHEET No. 4 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-000-1(9)	1964	46	58

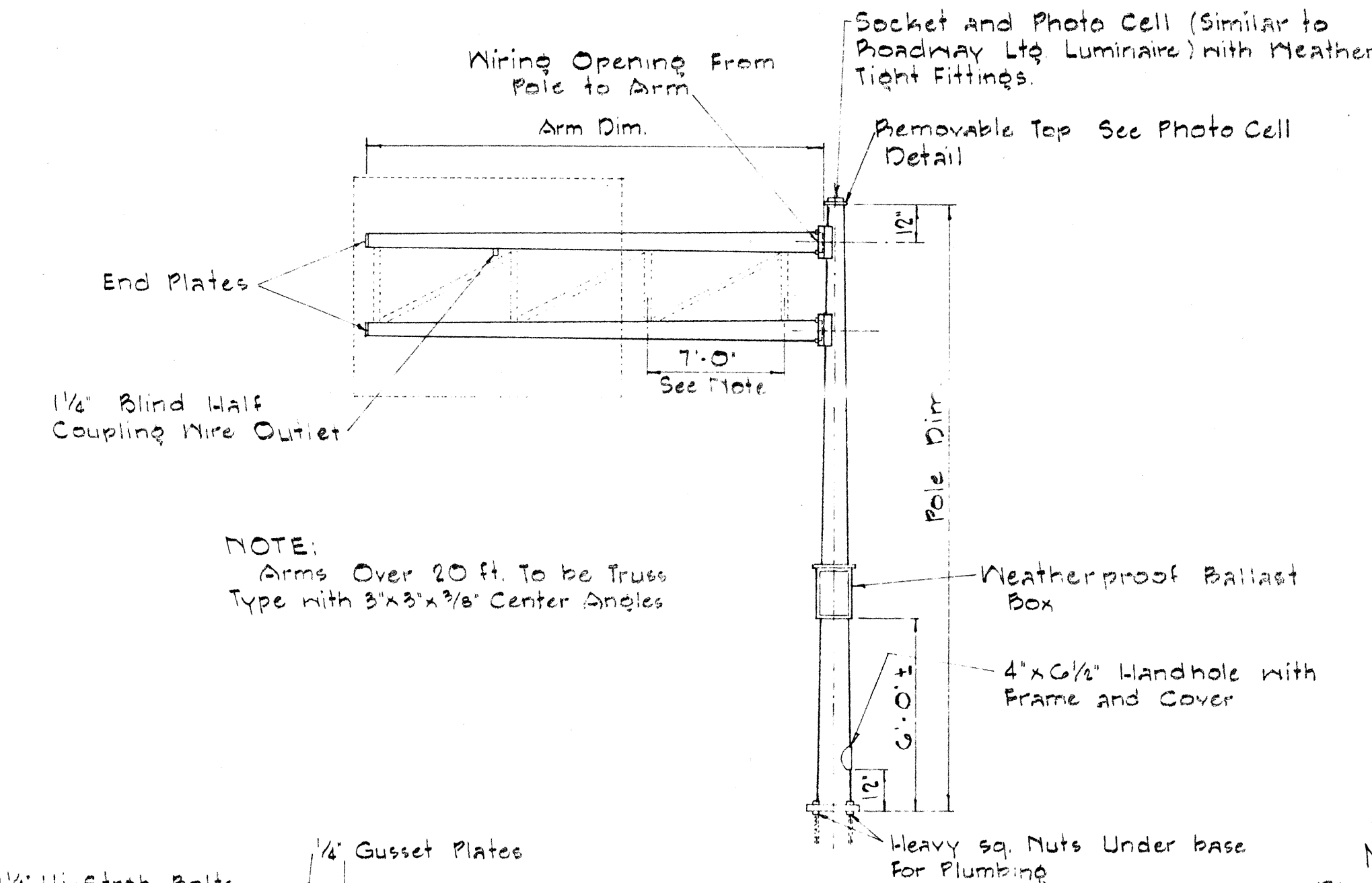


NOTE:
Arms Over 20 ft. To Be Truss Type with 3"x3"x3/8" Center Angles

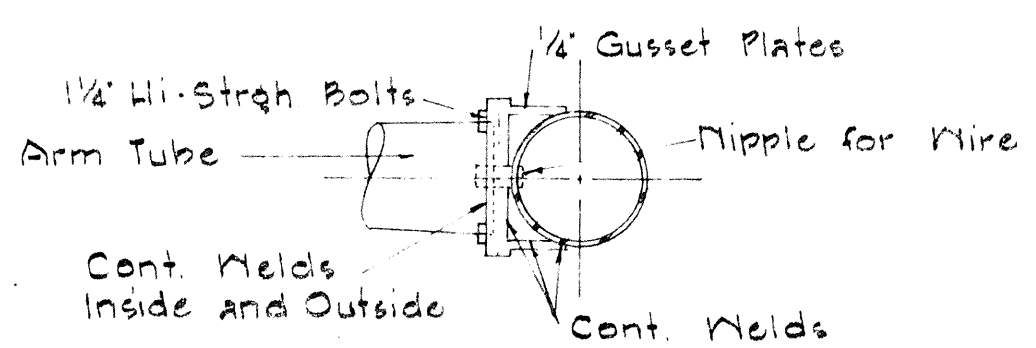


ARM ATTACHMENT

SINGLE SIGN POST
CENTER MOUNTED TYPE
DOUBLE MAST ARM
TYPE B

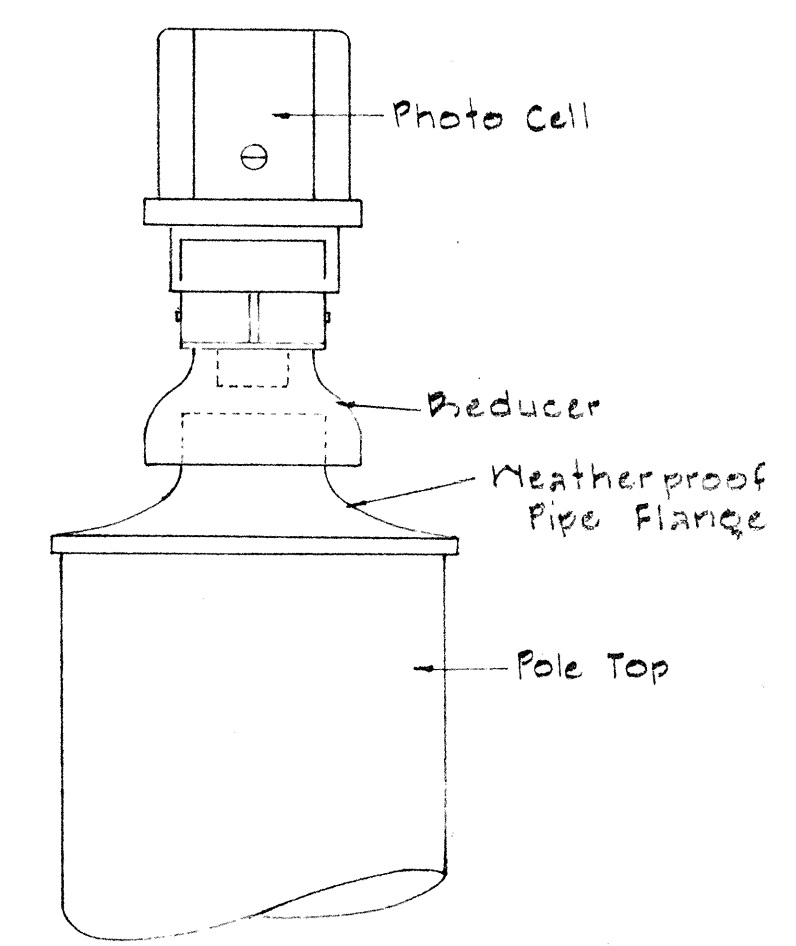


NOTE:
Arms Over 20 ft. To Be Truss Type with 3"x3"x3/8" Center Angles

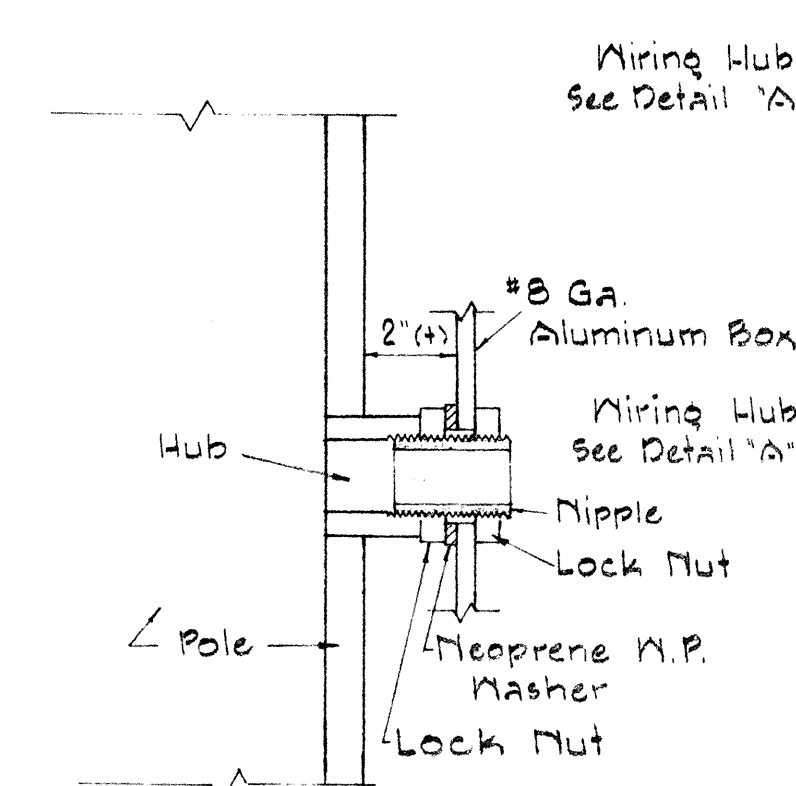


ARM ATTACHMENT

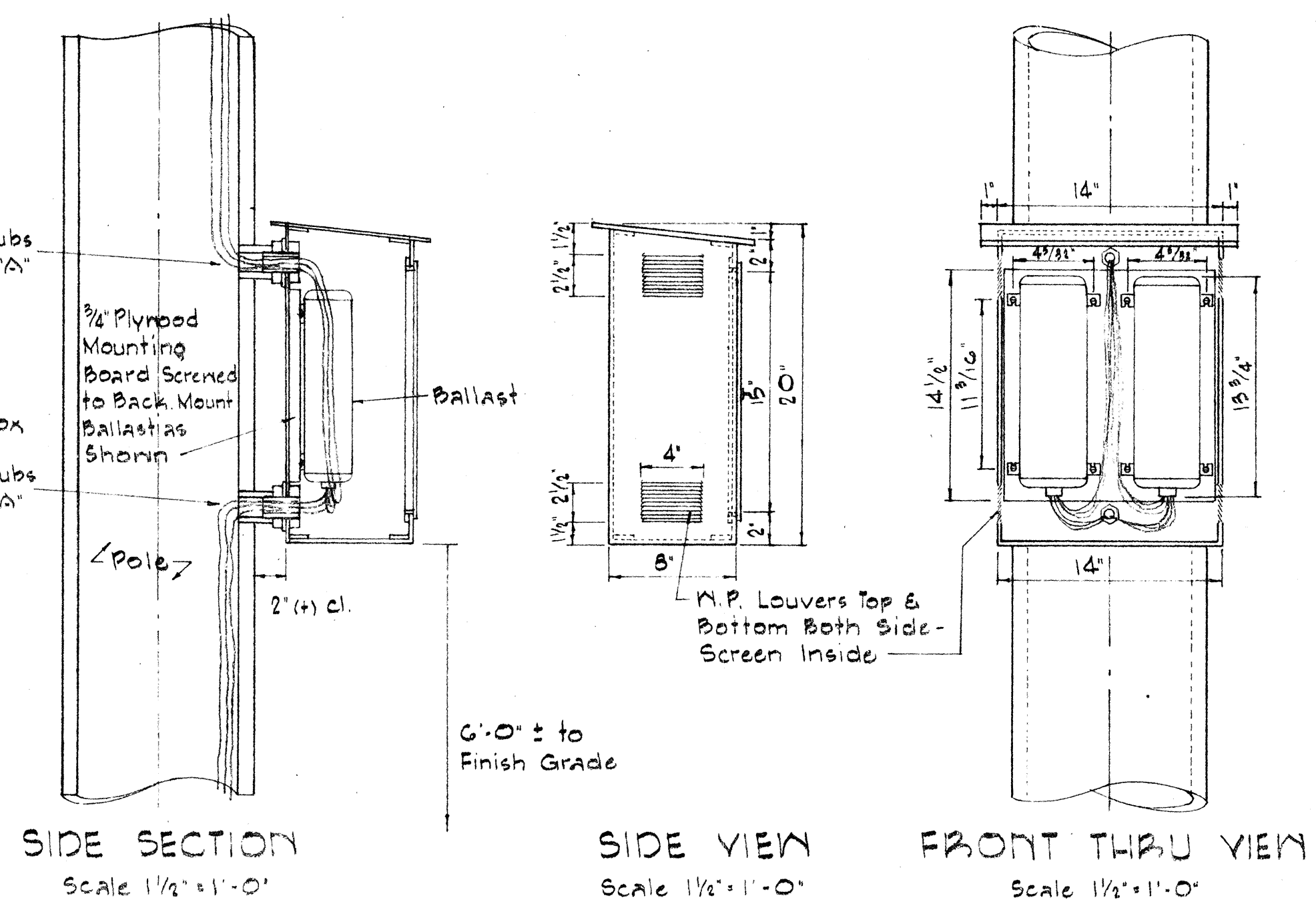
SINGLE SIGN POST
CANTILEVER TYPE
DOUBLE MAST ARM
TYPE C



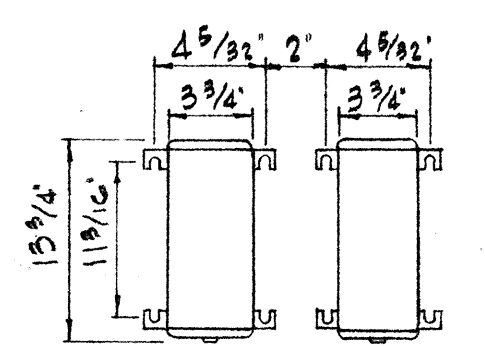
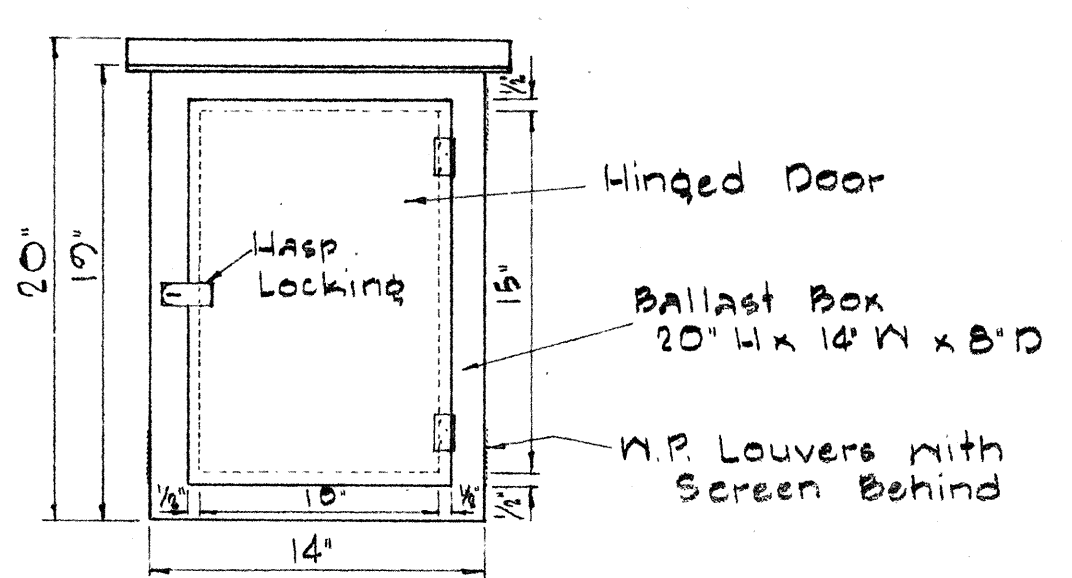
METAL POLE TOP
PHOTOCELL INSTALLATION
Not to Scale



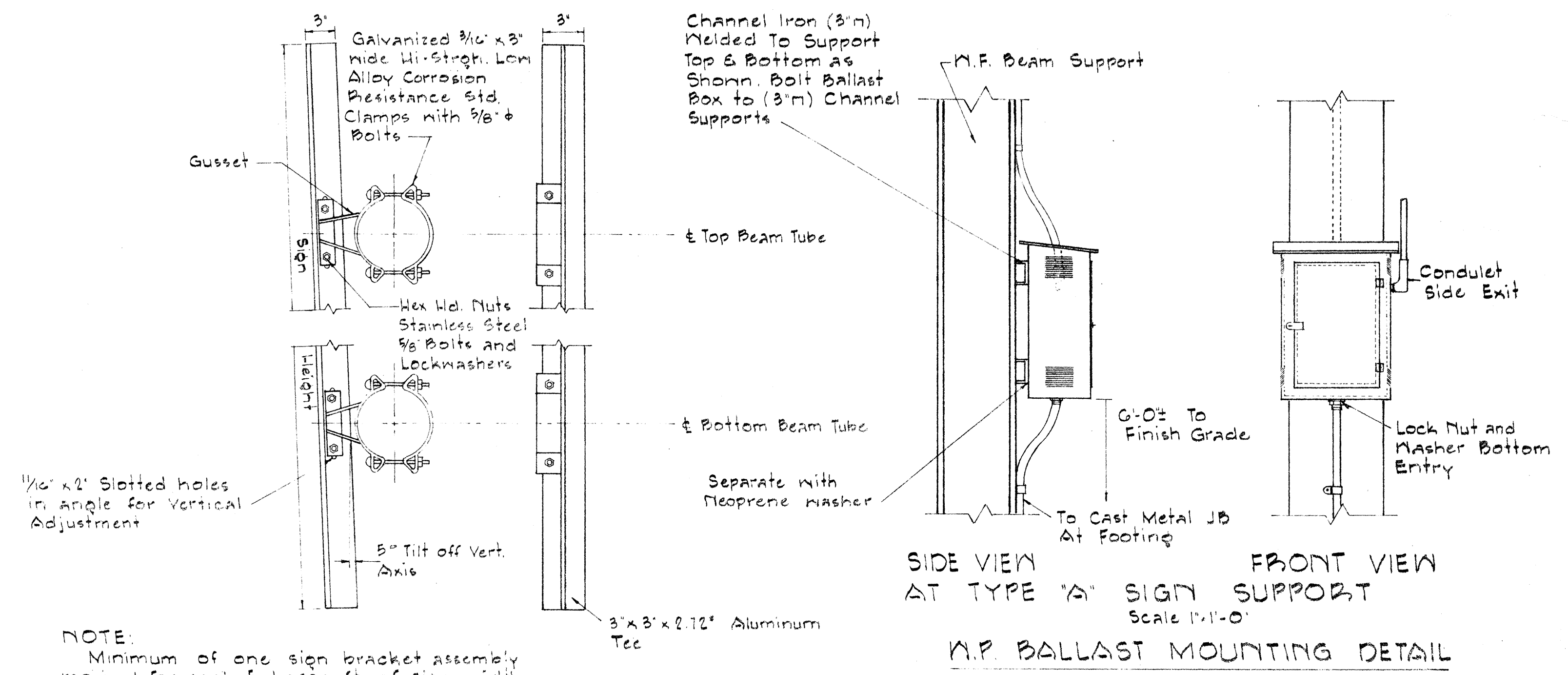
WIRING HUB
DETAIL 'A'
Not to Scale



WEATHER PROOF BALLASTS MOUNTING DETAIL



2-BALLAST DIM.



NOTE:
Minimum of one sign bracket assembly required for each 5 linear ft. of sign width for signs over 7 ft. high. Minimum of one sign bracket assembly for each 7 linear ft. of sign width for signs up to 7 ft. high

SIGN BRACKET ASSEMBLY

SIDE VIEW
AT TYPE 'A' SIGN SUPPORT
Scale 1/2\"/>

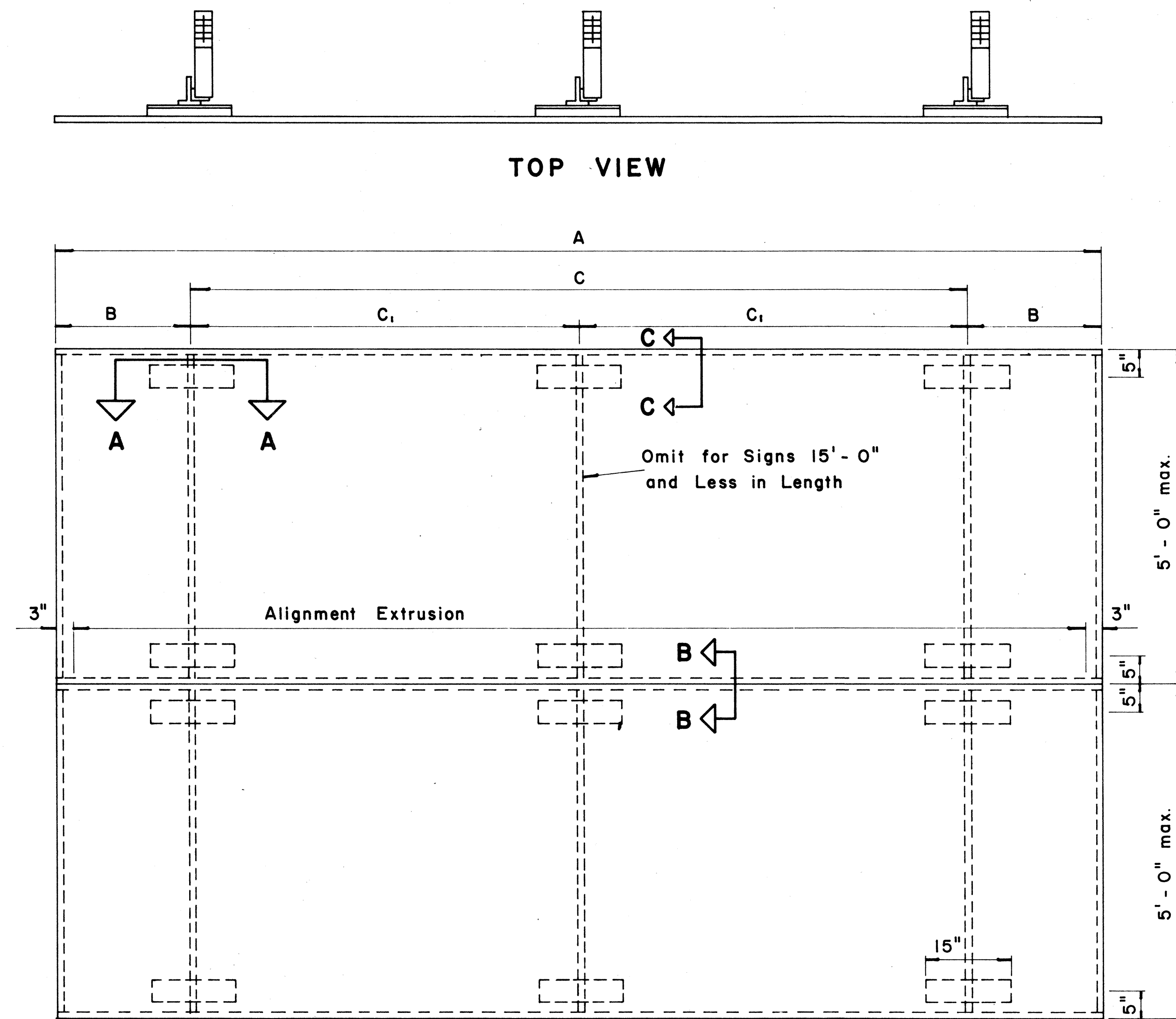
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPE B & C
OVERHEAD SIGN SUPPORT
BALLAST MOUNTING
DETAIL

DESIGNED BY	DATE
CHECKED BY	
NOTED BY	
ORIGINAL PLAN	

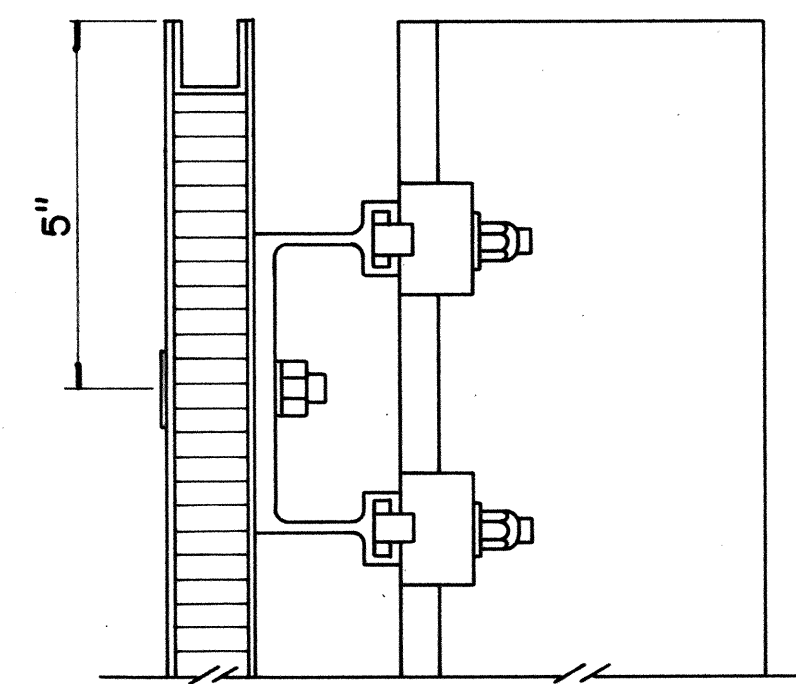
(OVERHEAD SIGNS)
SUPPORT SPACING TABLE

PANEL THICK.	LENGTH OF SIGN A	NO. OF SUPPORTS	OVERHANG B	SUPPORT SPACING C or C ₁
1"	6'-0"	2	12"	48"
1"	6'-6"	2	15"	48"
1"	7'-0"	2	15"	54"
1"	7'-6"	2	18"	54"
1"	8'-0"	2	18"	60"
1"	8'-6"	2	20"	62"
1"	9'-0"	2	22"	64"
1"	9'-6"	2	23"	68"
1"	10'-0"	2	24"	72"
1"	10'-6"	2	24"	78"
1"	11'-0"	2	24"	84"
1"	11'-6"	2	27"	84"
1"	12'-0"	2	30"	84"
1"	12'-6"	2	30"	90"
1"	13'-0"	2	30"	96"
1"	13'-6"	2	30"	102"
1"	14'-0"	2	30"	108"
1"	14'-6"	2	36"	102"
1"	15'-0"	2	36"	108"
1"	15'-6"	3	24"	69"
1"	16'-0"	3	24"	72"
1"	16'-6"	3	24"	75"
1"	17'-0"	3	24"	78"
1"	17'-6"	3	24"	81"
1"	18'-0"	3	24"	84"
1"	18'-6"	3	27"	84"
1"	19'-0"	3	27"	87"
1"	19'-6"	3	27"	90"
1"	20'-0"	3	30"	90"
1"	20'-6"	3	30"	93"
1"	21'-0"	3	30"	96"
1"	21'-6"	3	33"	96"
1"	22'-0"	3	36"	96"
1"	22'-6"	3	36"	99"
1"	23'-0"	3	36"	102"
1"	23'-6"	3	36"	105"
1"	24'-0"	3	36"	108"



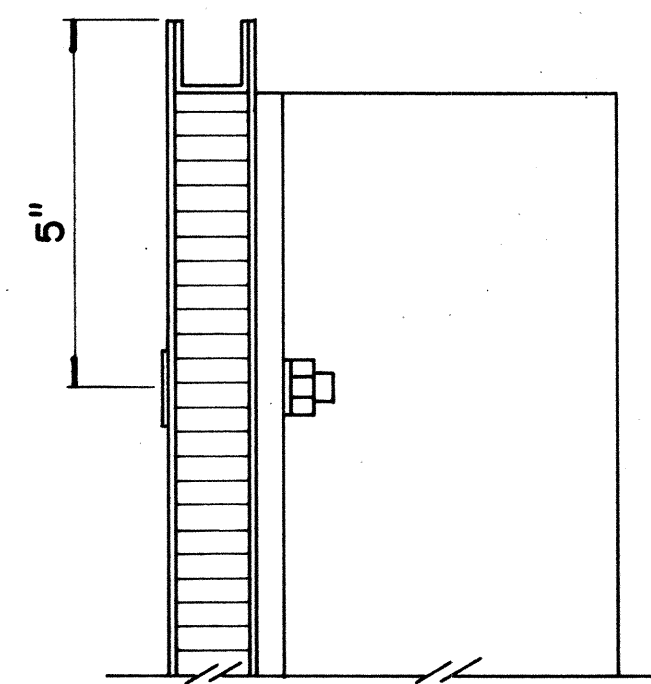
TYPICAL SIGN ASSEMBLY

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



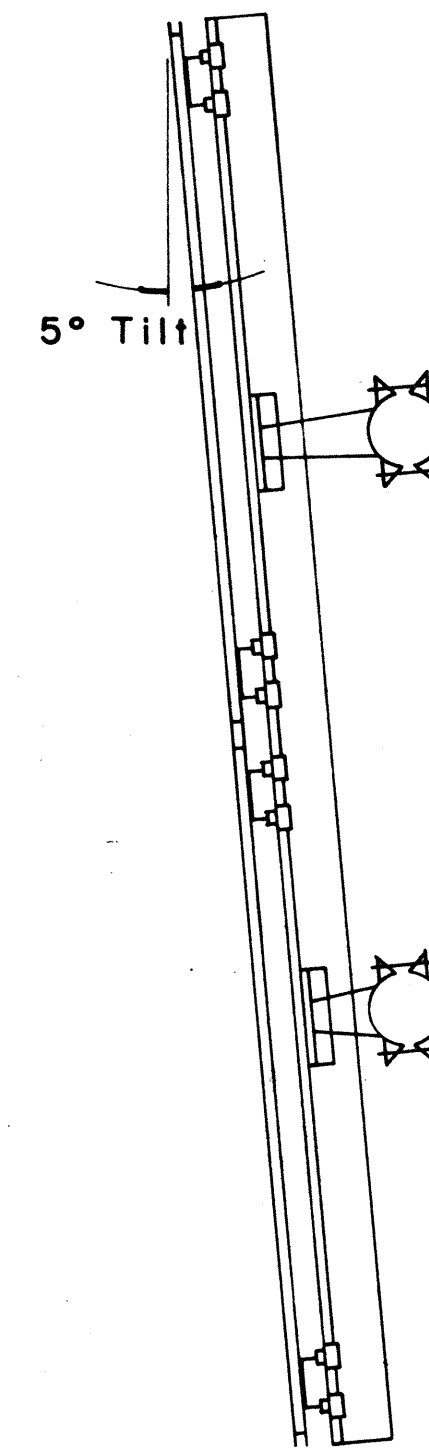
SECTION "C-C"

Scale: $\frac{3}{8}$ " = 1"

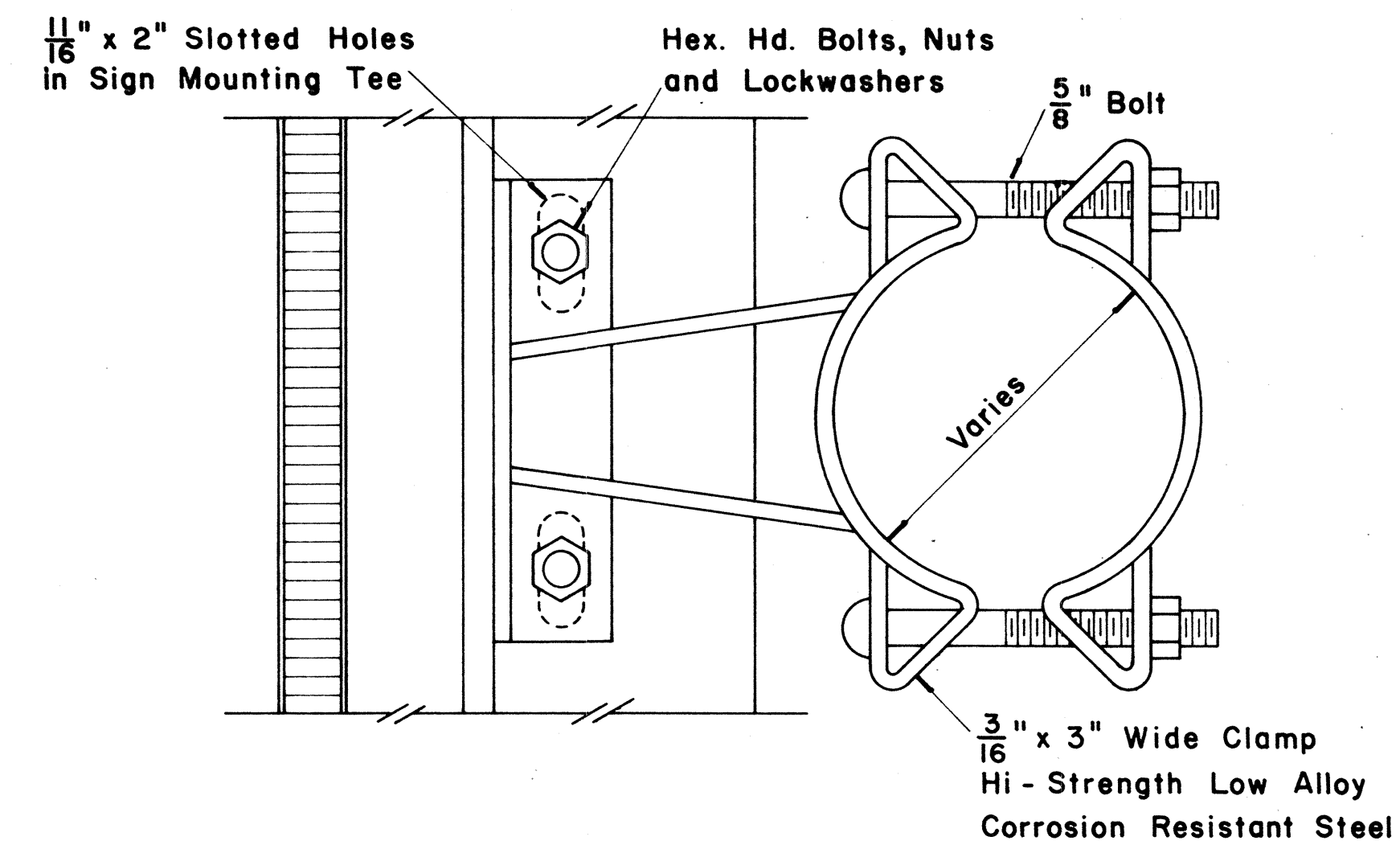


SECTION "C-C" (Alternate)

Scale: $\frac{3}{8}$ " = 1"

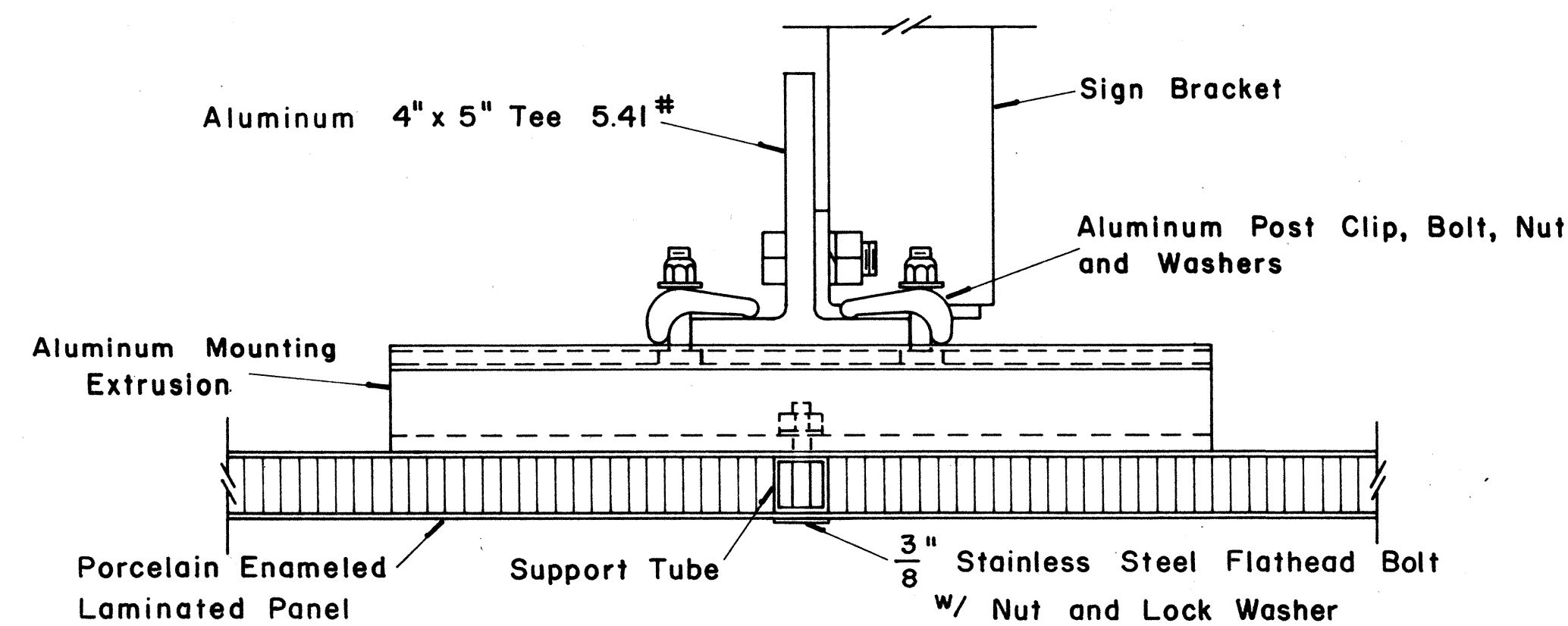


SIDE VIEW



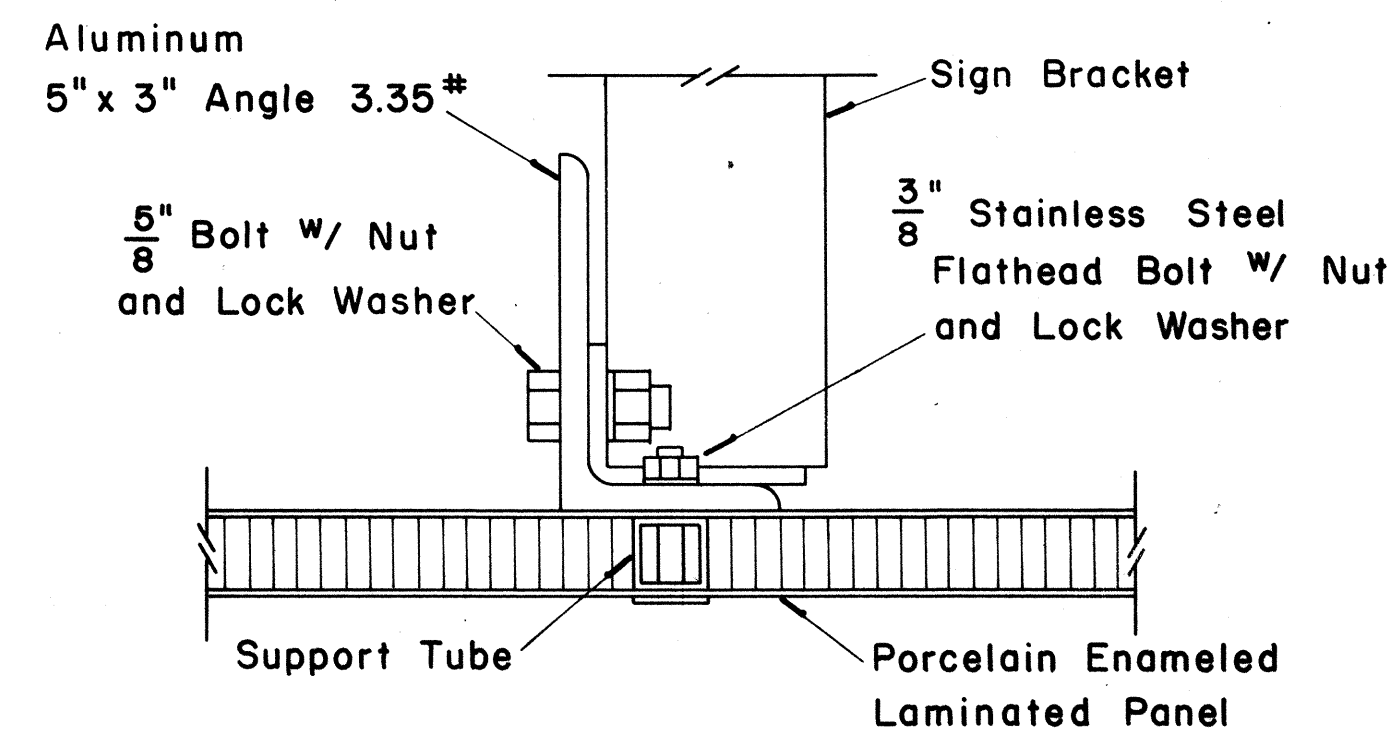
SIGN BRACKET ASSEMBLY

Scale: $\frac{3}{8}$ " = 1"



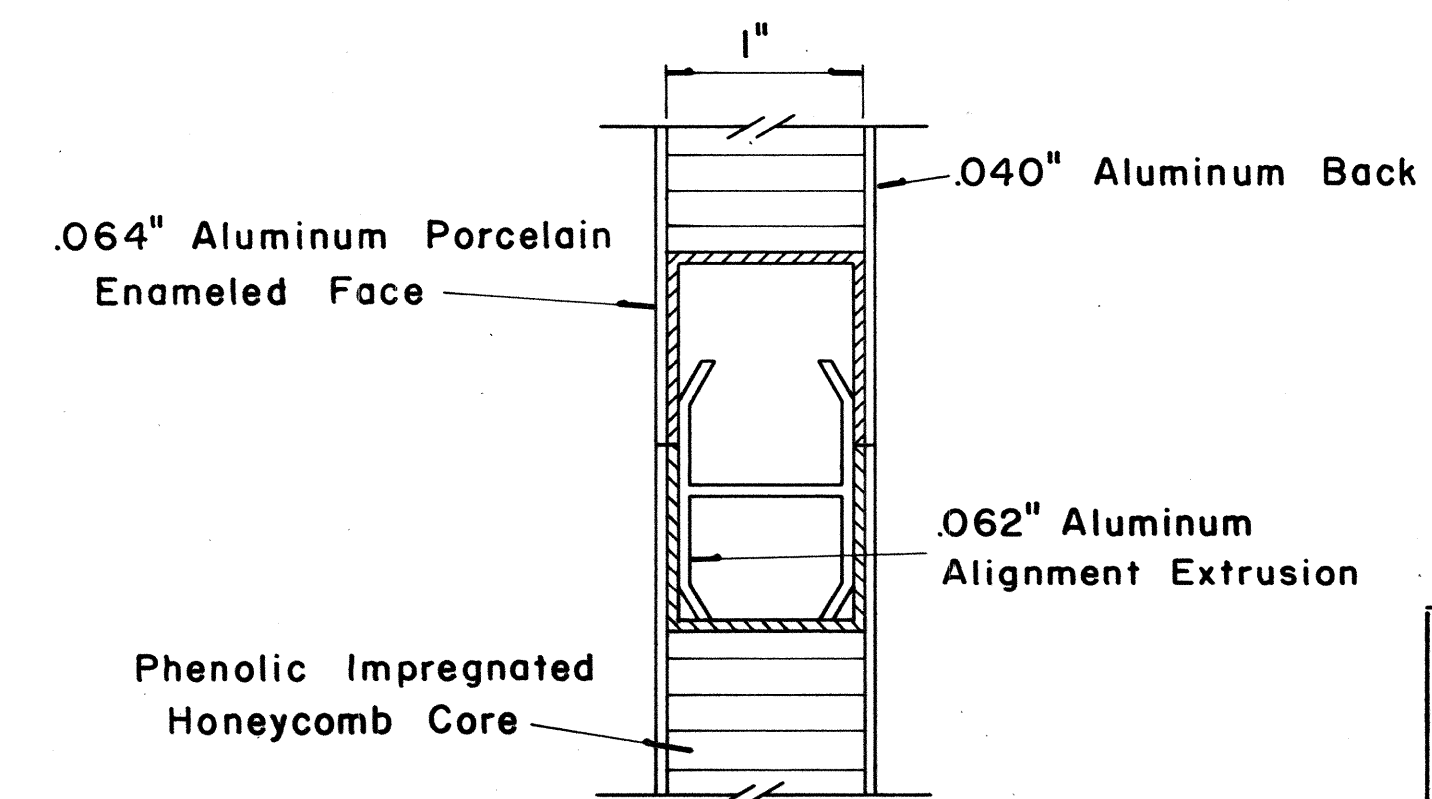
SECTION "A-A"

Scale: $\frac{3}{8}$ " = 1"



SECTION "A-A" (Alternate)

Scale: $\frac{3}{8}$ " = 1"



CLOSURE DETAIL
SECTION "B-B"

FULL SCALE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
LAMINATED ALUMINUM
SIGN PANELS
(OVERHEAD)

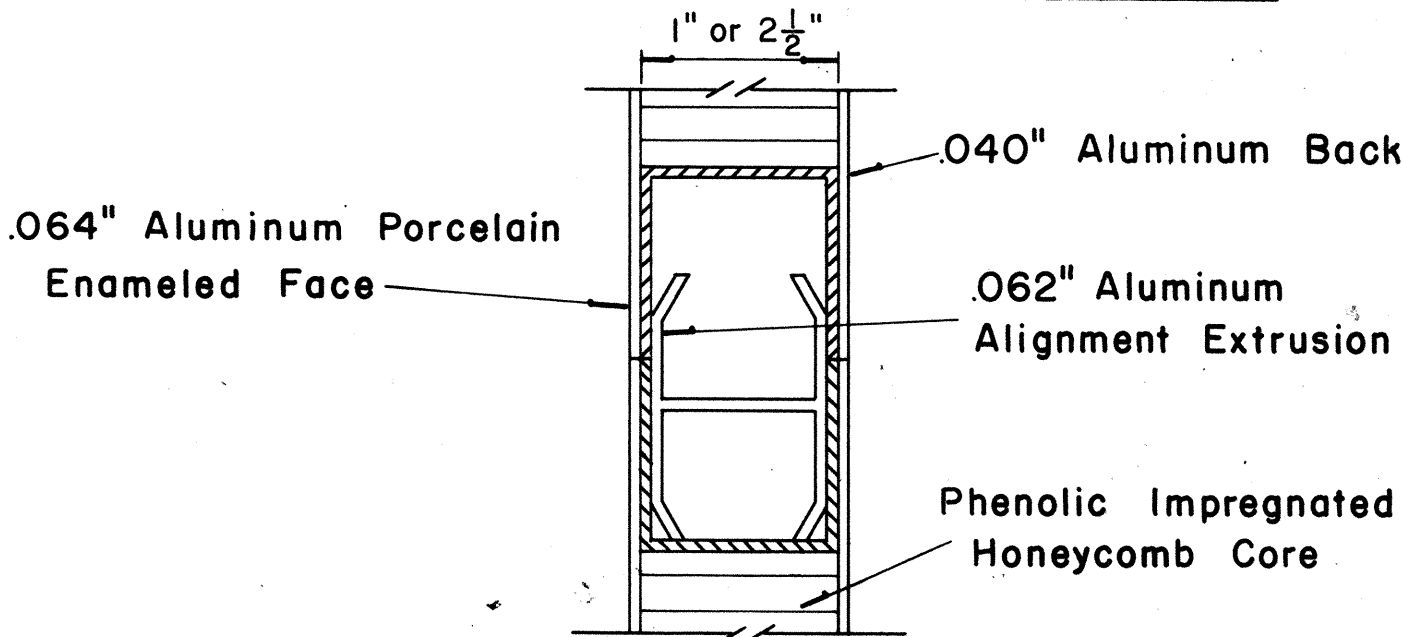
Scale: As Shown

SHEET No. 6 OF 2 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-090-100	1964	48	50

(GROUND MOUNTED SIGNS)
SUPPORT SPACING TABLE

PANEL THICK.	LENGTH OF SIGN	NO. OF SUPPORTS	OVERHANG	SUPPORT SPACING
	A		B	C
1"	6'-0"	2	12"	48"
1"	6'-6"	2	15"	48"
1"	7'-0"	2	15"	54"
1"	7'-6"	2	18"	54"
1"	8'-0"	2	18"	60"
1"	8'-6"	2	20"	62"
1"	9'-0"	2	22"	64"
1"	9'-6"	2	23"	68"
1"	10'-0"	2	24"	72"
1"	10'-6"	2	24"	78"
1"	11'-0"	2	24"	84"
1"	11'-6"	2	27"	84"
1"	12'-0"	2	30"	84"
1"	12'-6"	2	30"	90"
1"	13'-0"	2	30"	96"
1"	13'-6"	2	30"	102"
1"	14'-0"	2	30"	108"
1"	14'-6"	2	36"	102"
1"	15'-0"	2	36"	108"
2.5"	15'-6"	2	36"	114"
2.5"	16'-0"	2	39"	114"
2.5"	16'-6"	2	39"	120"
2.5"	17'-0"	2	39"	126"
2.5"	17'-6"	2	42"	126"
2.5"	18'-0"	2	42"	132"
2.5"	18'-6"	2	45"	132"
2.5"	19'-0"	2	45"	138"
2.5"	19'-6"	2	45"	144"
2.5"	20'-0"	2	48"	144"
2.5"	20'-6"	2	48"	150"
2.5"	21'-0"	2	51"	150"
2.5"	21'-6"	2	51"	156"
2.5"	22'-0"	2	51"	162"
2.5"	22'-6"	2	54"	162"
2.5"	23'-0"	2	54"	168"
2.5"	23'-6"	2	54"	174"
2.5"	24'-0"	2	57"	174"



CLOSURE DETAIL
SECTION "C-C"

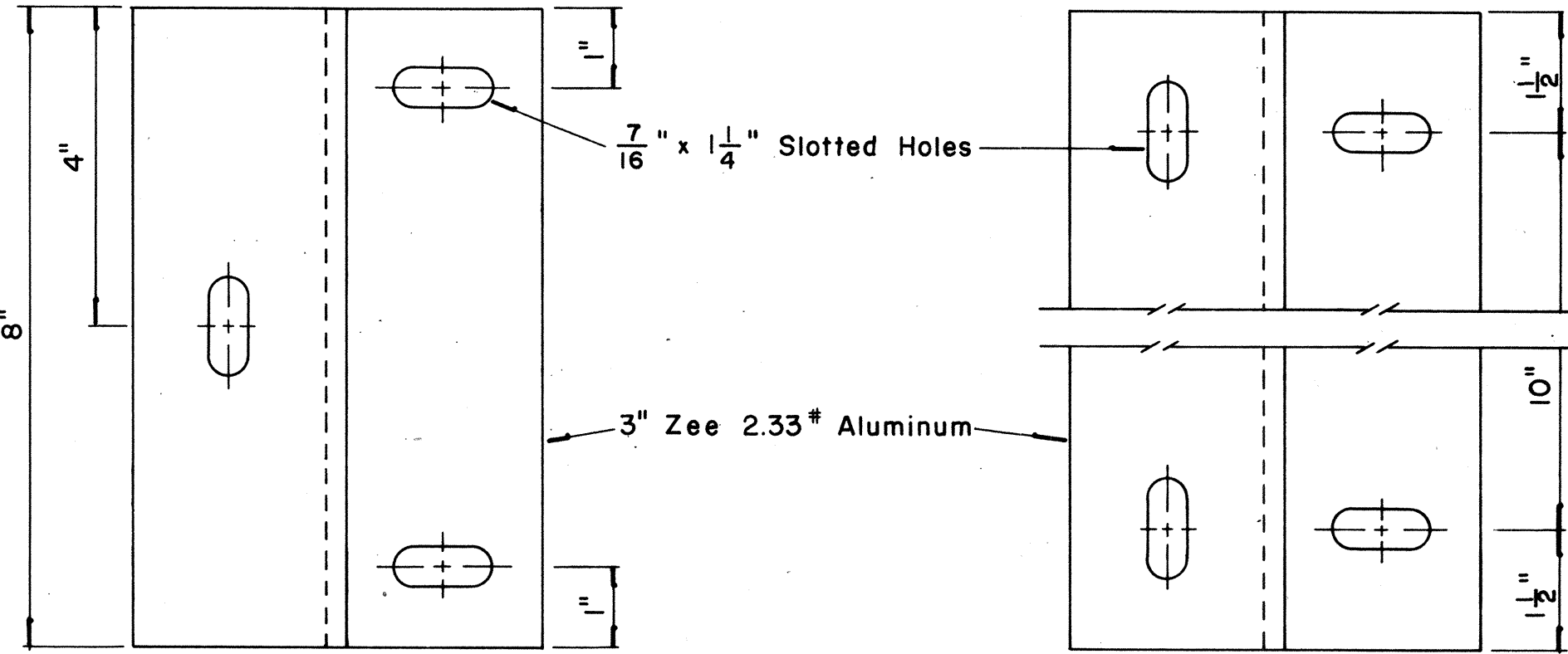
FULL SCALE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
LAMINATED ALUMINUM
SIGN PANELS
(GROUND MOUNTED)

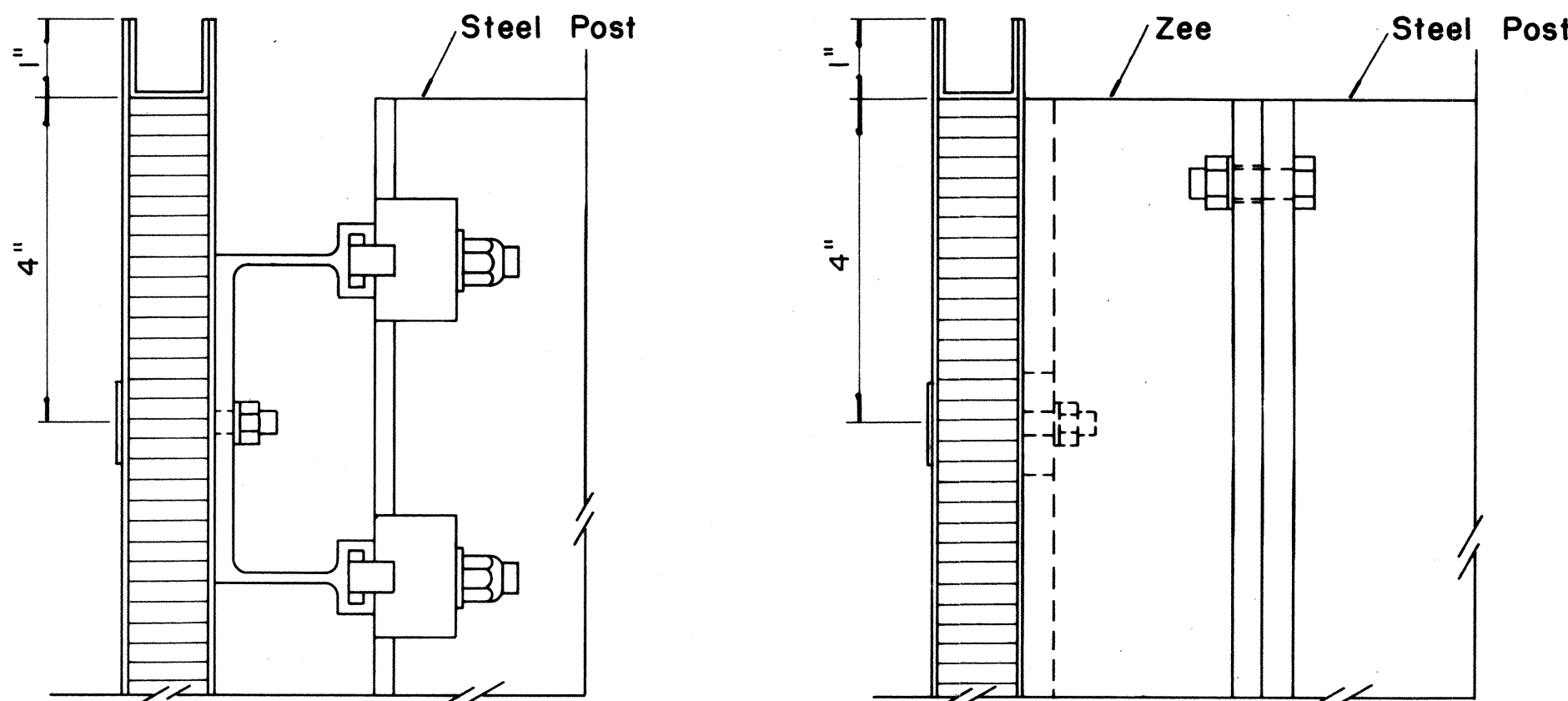
Scale: As Shown

SHEET No. 7 OF 7 SHEETS



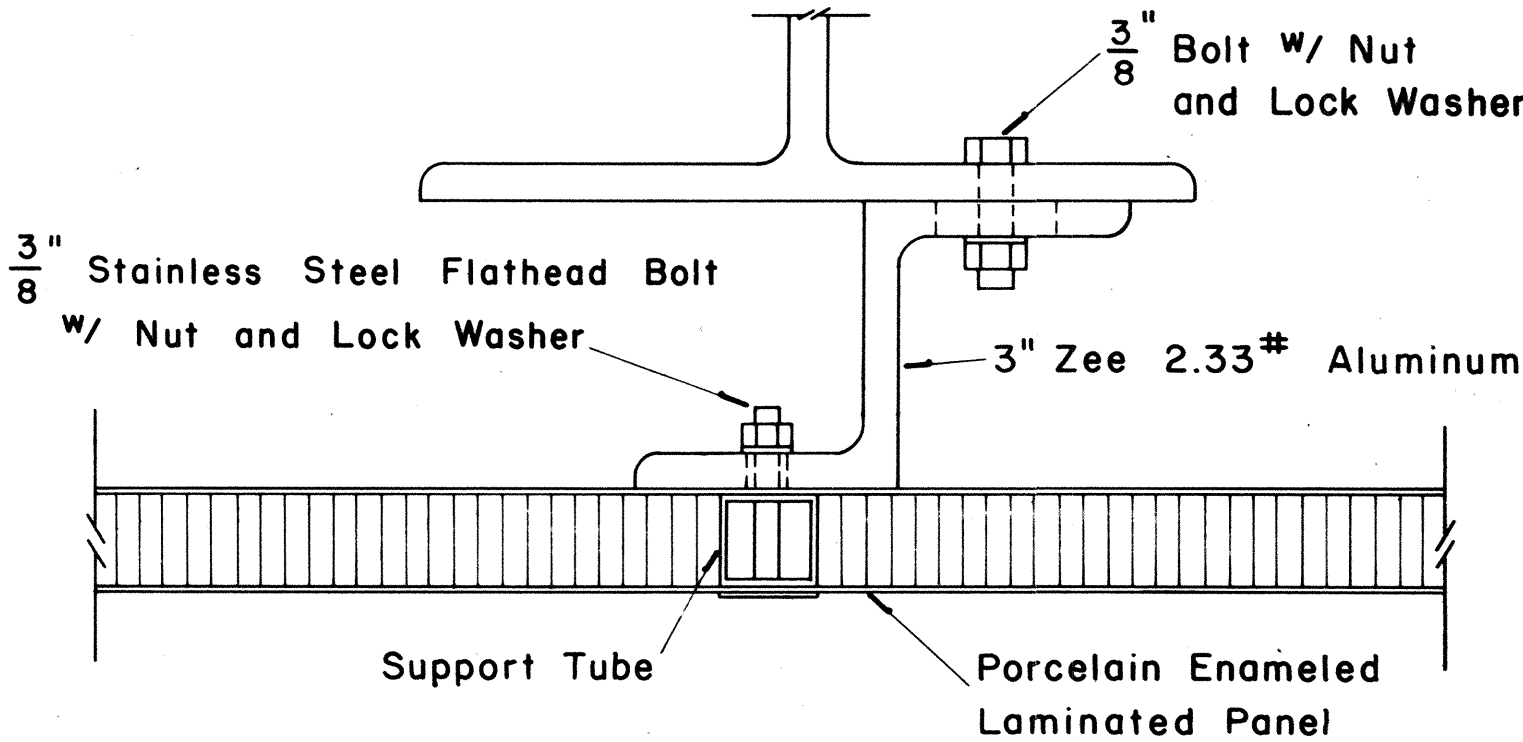
END MOUNTING
INTERMEDIATE MOUNTING
ZEE MOUNTING DETAILS

Scale: $\frac{1}{2}$ " = 1"



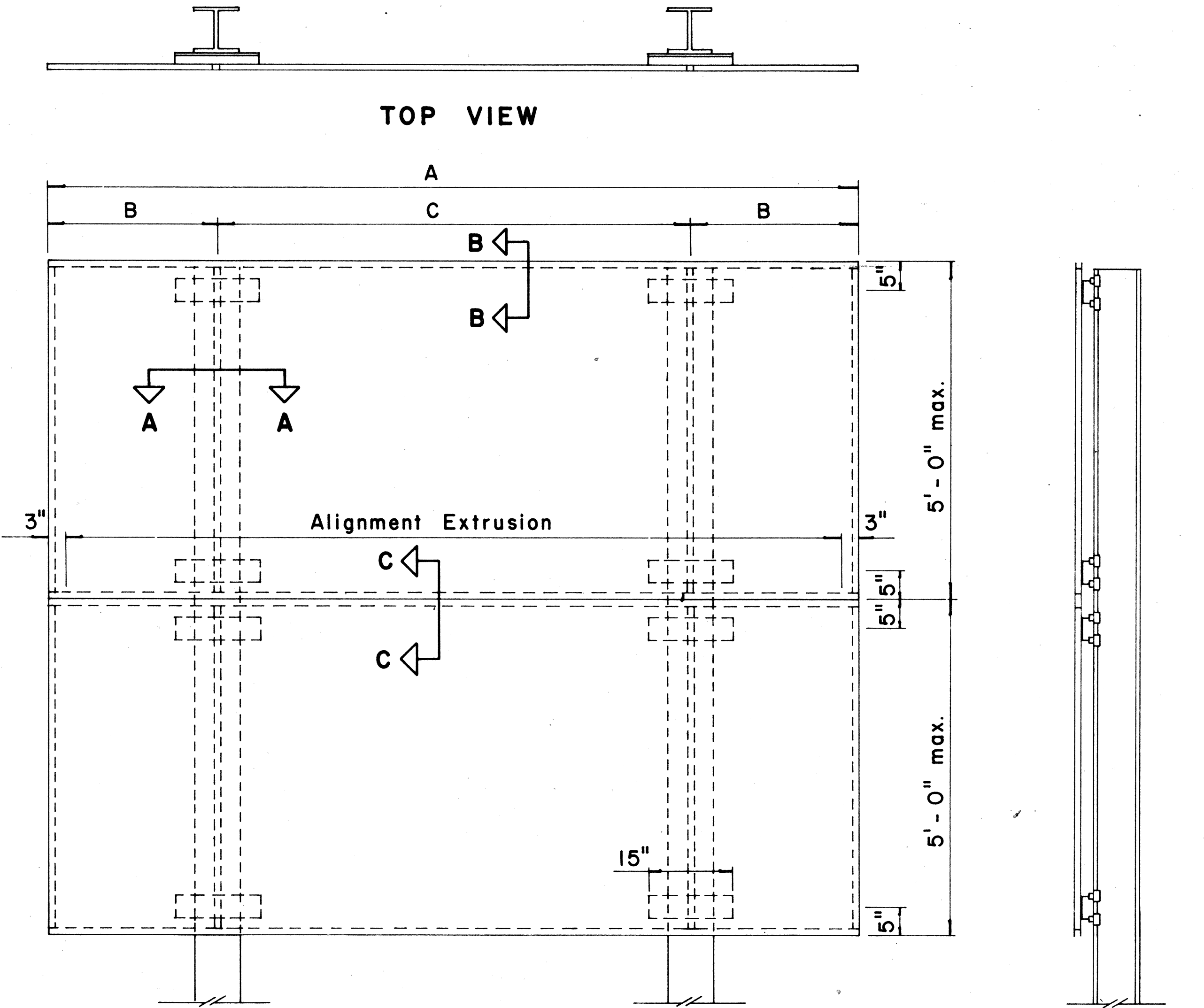
SECTION "B-B"
SECTION "B-B" (Alternate)

Scale: $\frac{1}{2}$ " = 1"



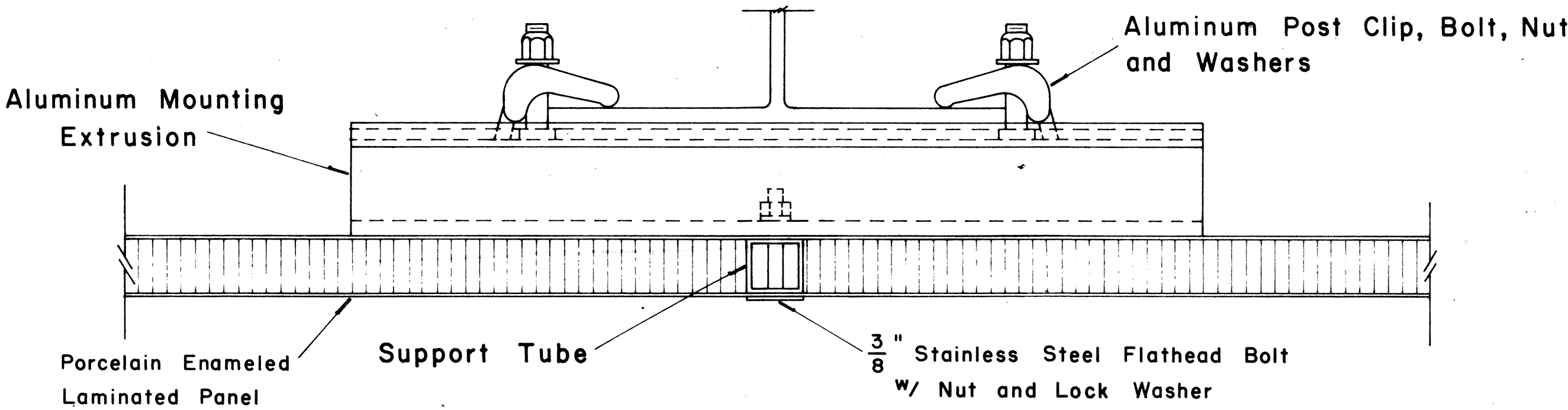
SECTION "A-A"
(Alternate)

Scale: $\frac{1}{2}$ " = 1"



TYPICAL SIGN ASSEMBLY

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



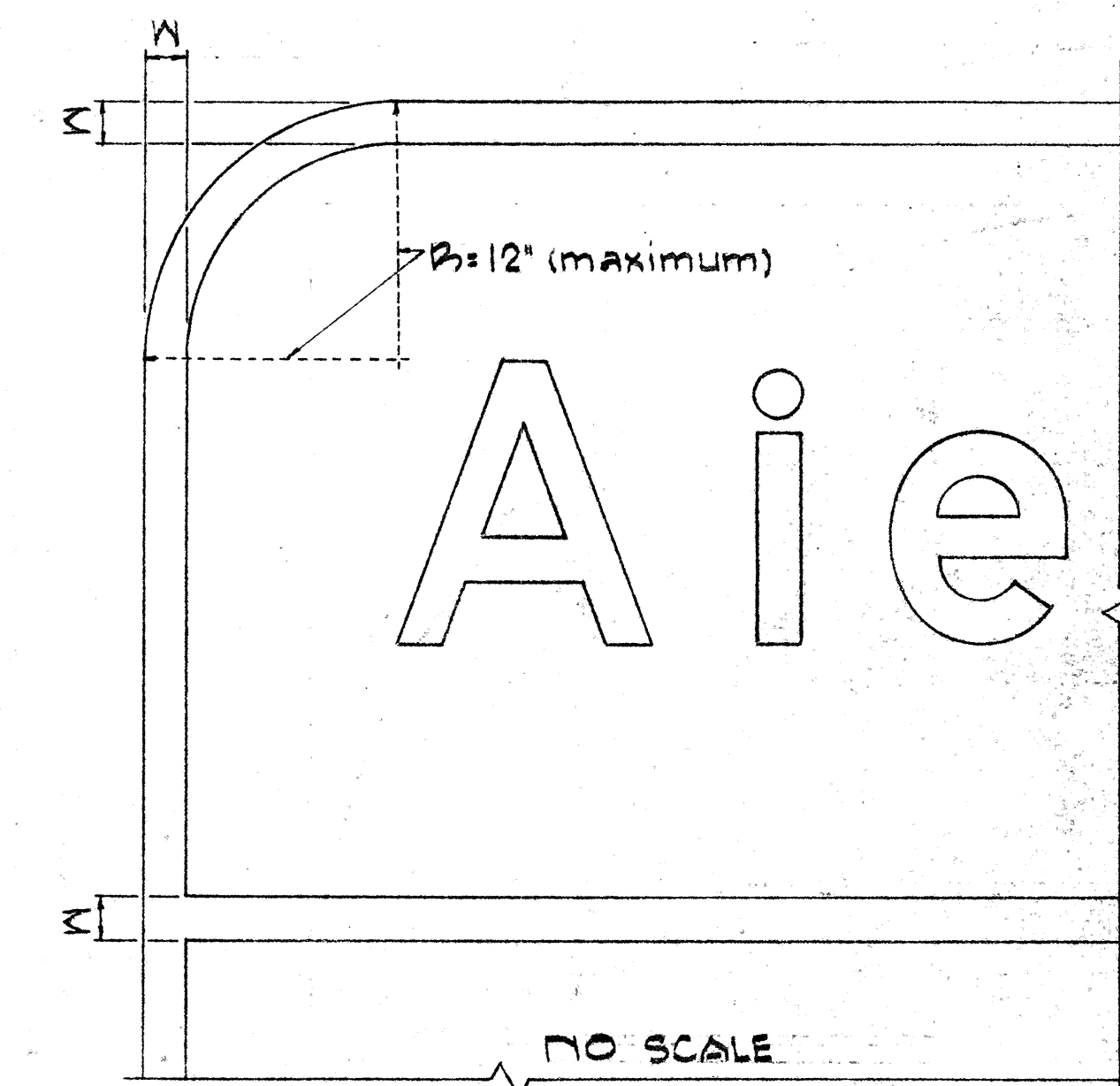
SECTION "A-A"

Scale: $\frac{1}{2}$ " = 1"

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
APPROVED BY	
NO.	

GENERAL NOTES

1. State Route Markers on Destination & Expressway signs shall have black numerals and borders on a white reflectorized background mounted on a flat Aluminum cut-out.
2. All numerals shall be Series 'D' from the "Standard Alphabets for Highway Signs," Bureau of Public Roads, 1957.
3. All Cut-outs shall be fastened on sign panel with Aluminum blind rivets. See Special Provisions.



- NOTE:
1. Area outside corner need not be trimmed.
 2. All borders shall be embossed cut-outs, white and reflectorized.
 3. All signs shall have borders.

RADI FOR EXPRESSWAY SIGNS (2" Border)

Least Dimension of Sign	W	R
3'-0" to 4'-6"	2"	3"
4'-9" to 5'-6"	2"	6"
5'-9" to 7'-6"	2"	9"
7'-9" and greater	2"	12"

RADI FOR DESTINATION SIGNS (1" Border)

Least Dimension of Sign	W	R
Any Size	1"	3"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

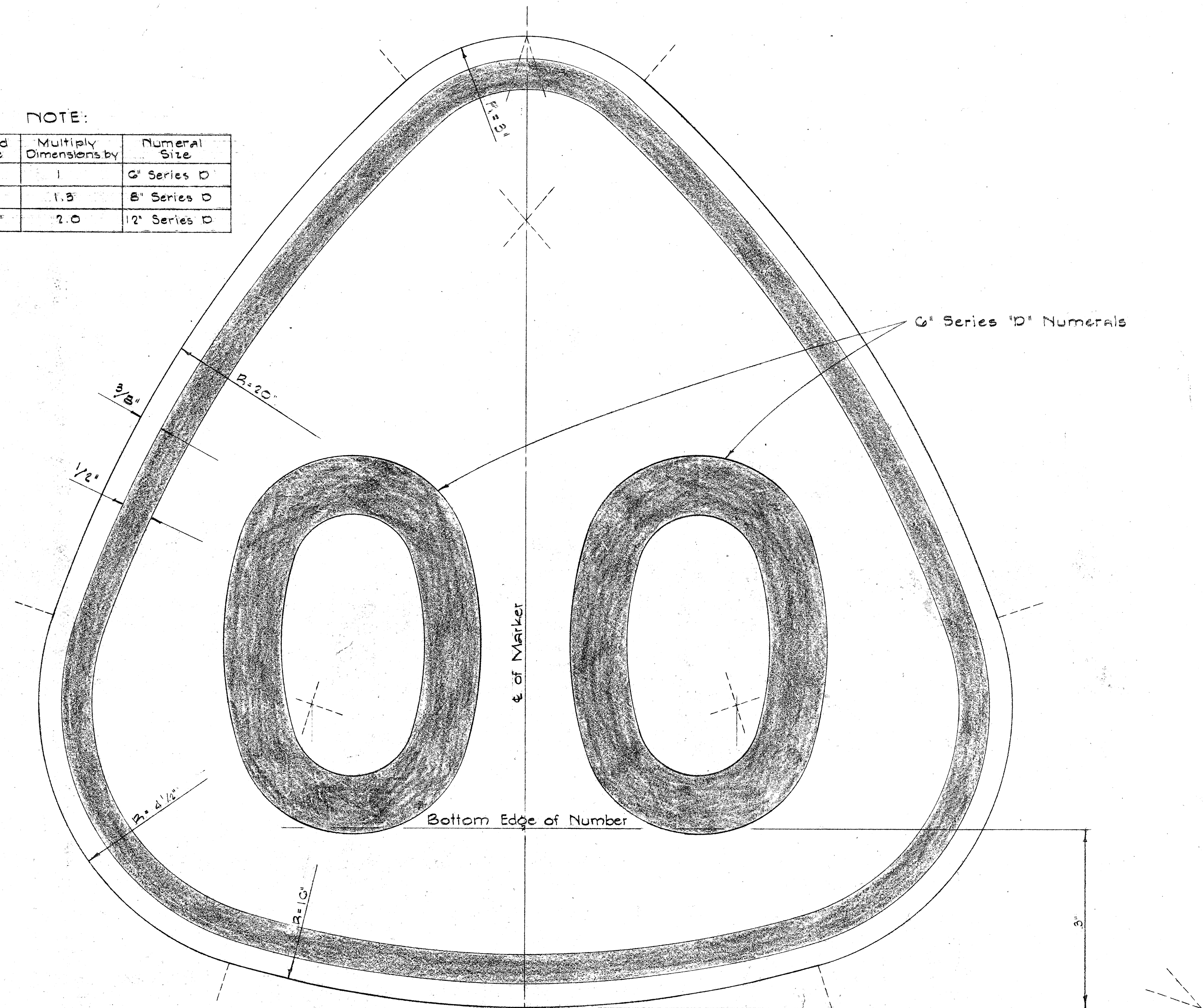
DESTINATION AND EXPRESSWAY SIGN
STATE ROUTE MARKER
AND BORDER DETAILS

Scale: As Noted Proj. No. F-090-1(10)

SHEET No. 2 OF 2 SHEETS

NOTE:

Shield Size	Multiply Dimensions by	Numerical Size
16"	1	6" Series D
24"	1.5	8" Series D
32"	2.0	12" Series D



STATE ROUTE MARKER
FOR
DESTINATION & EXPRESSWAY SIGNS
Scale: Full Size

ORIGINAL	DATE
PLAN	
DESIGNED BY	
NOTED BY	
CHECKED BY	
NO.	