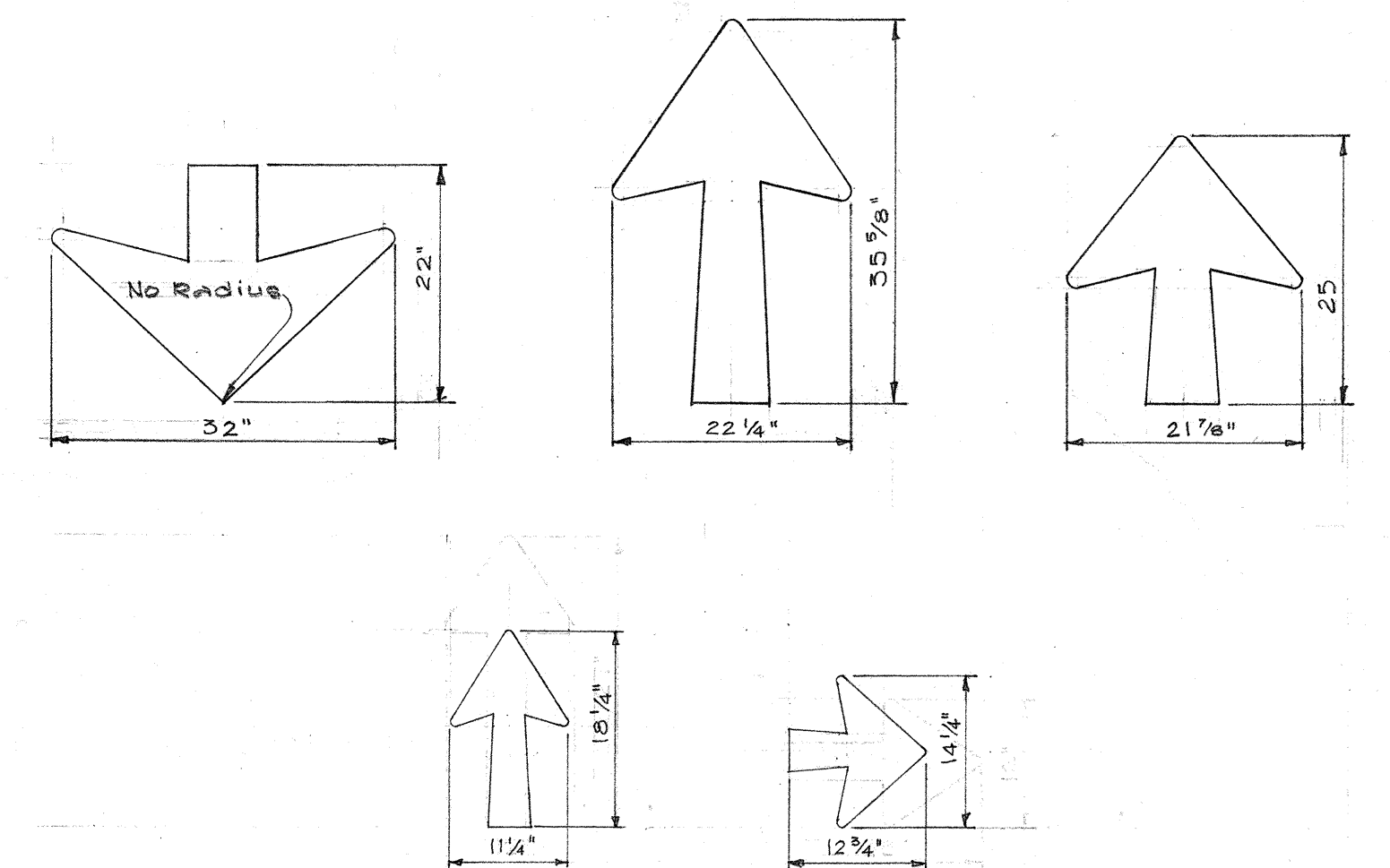
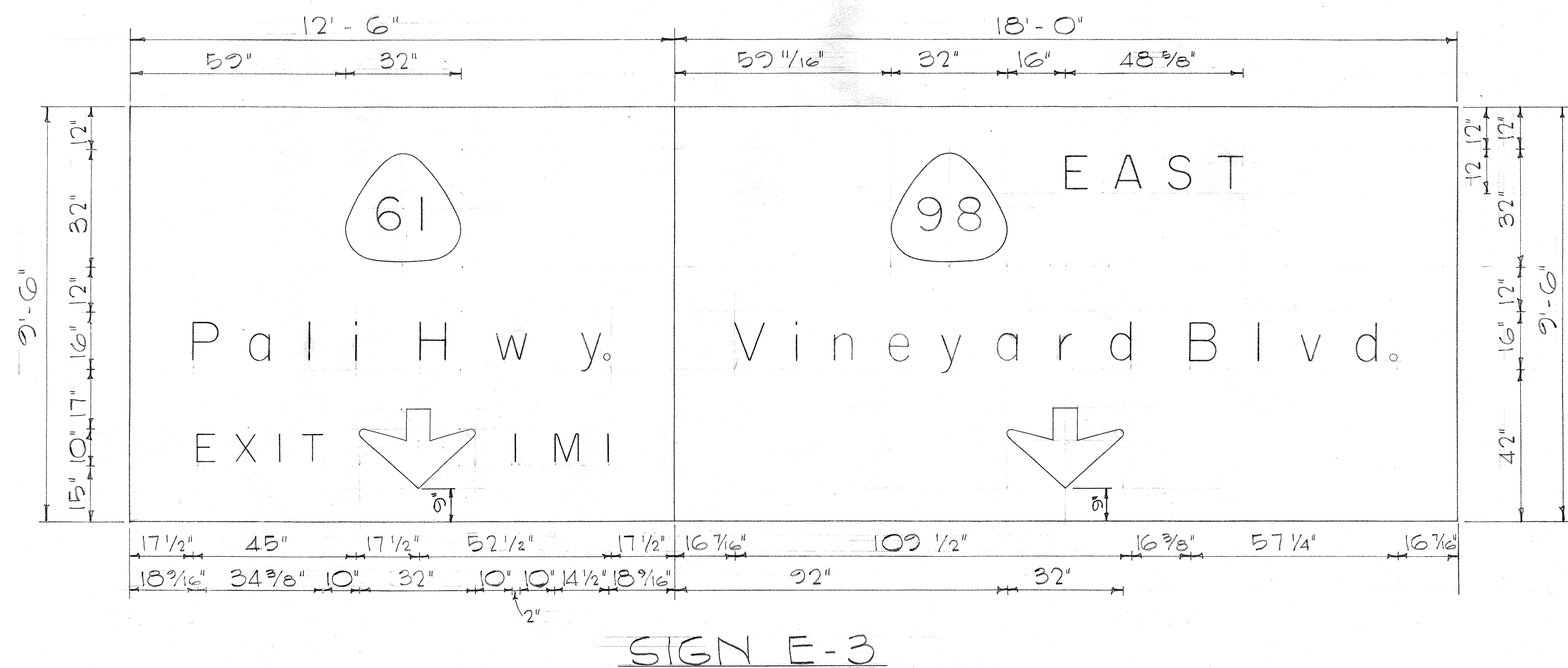
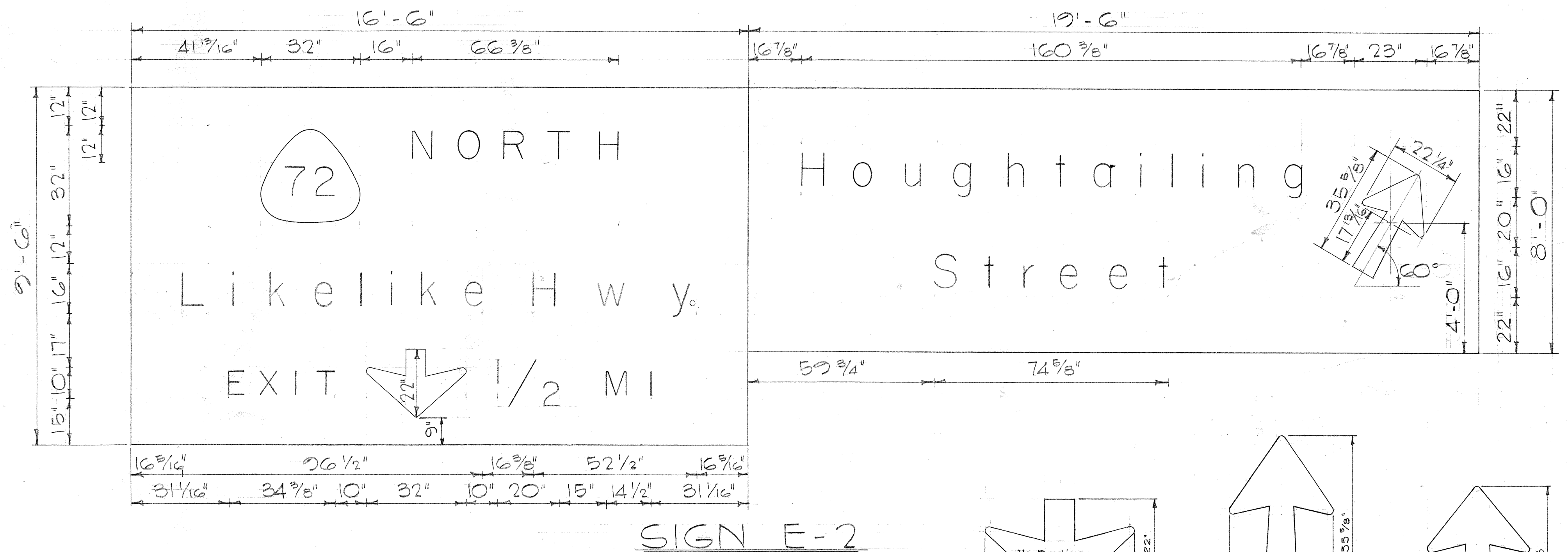
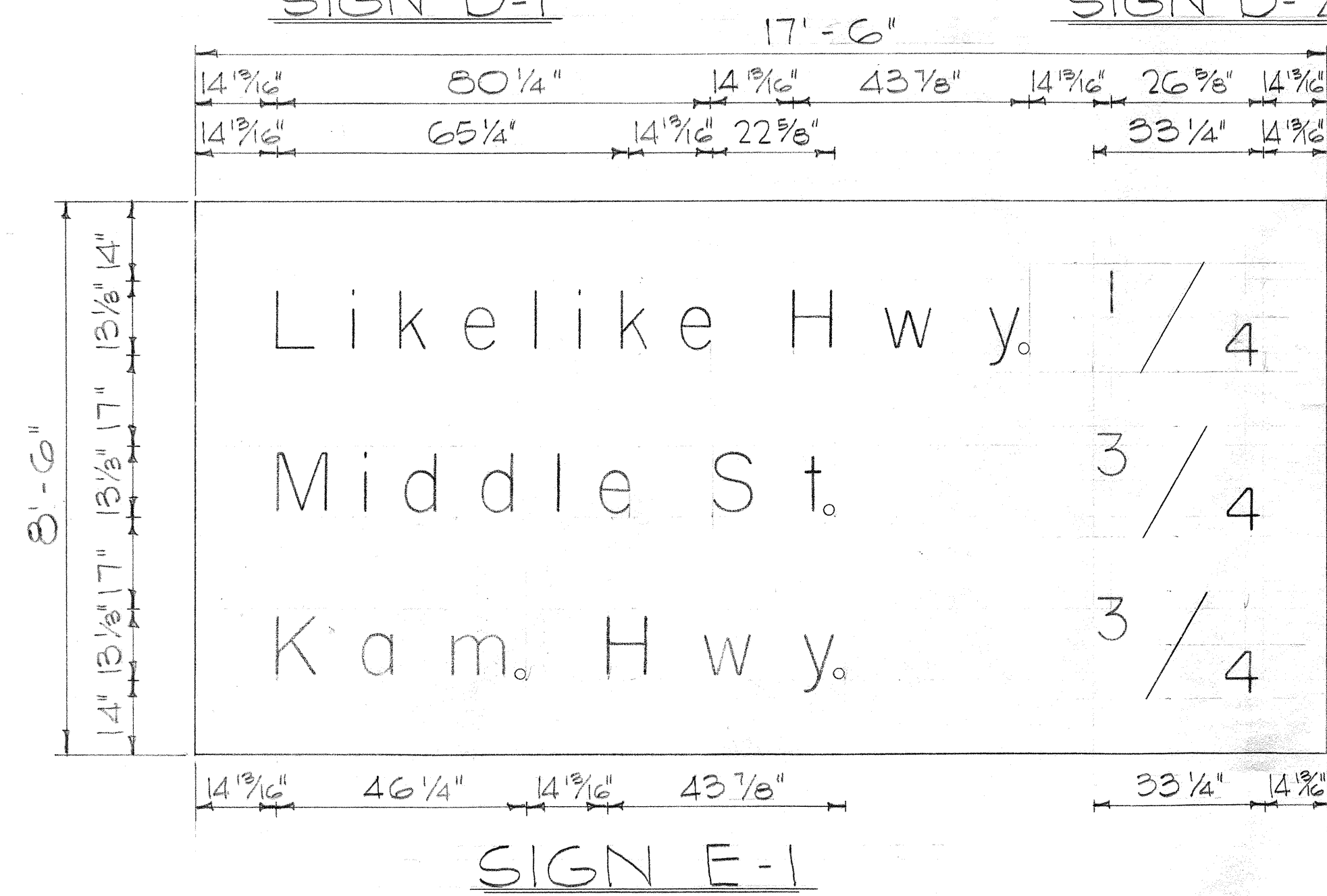
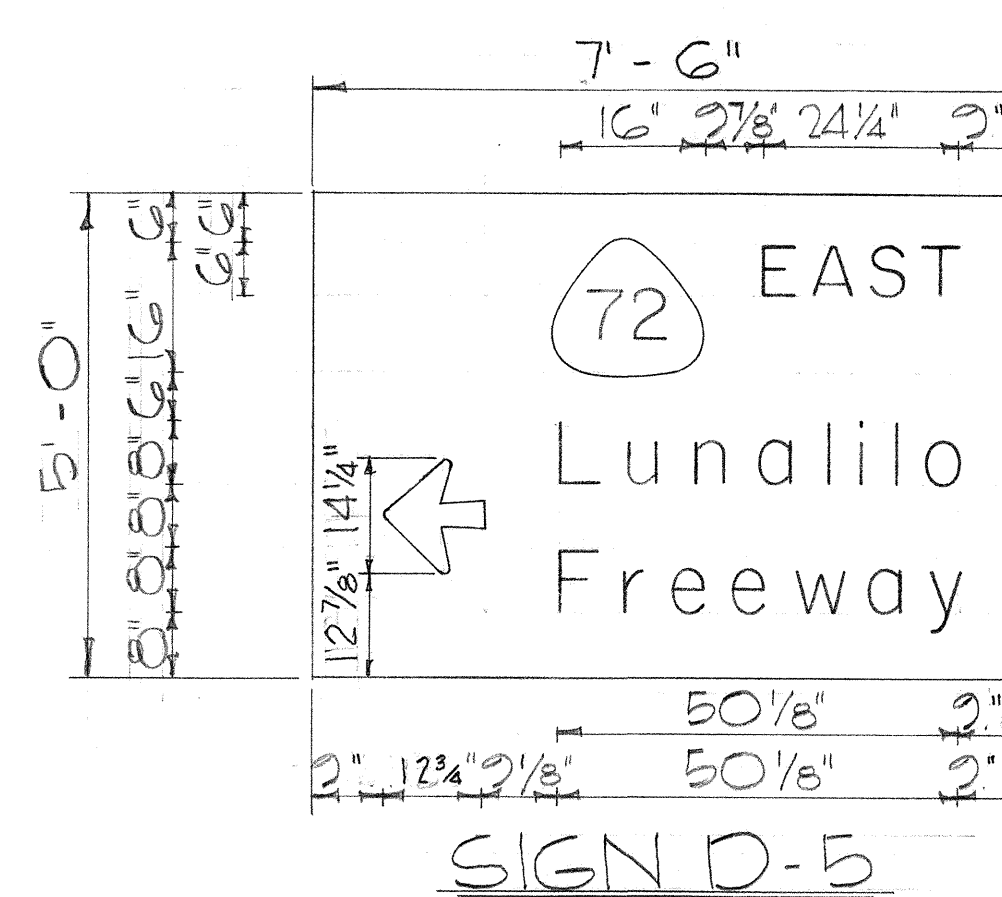
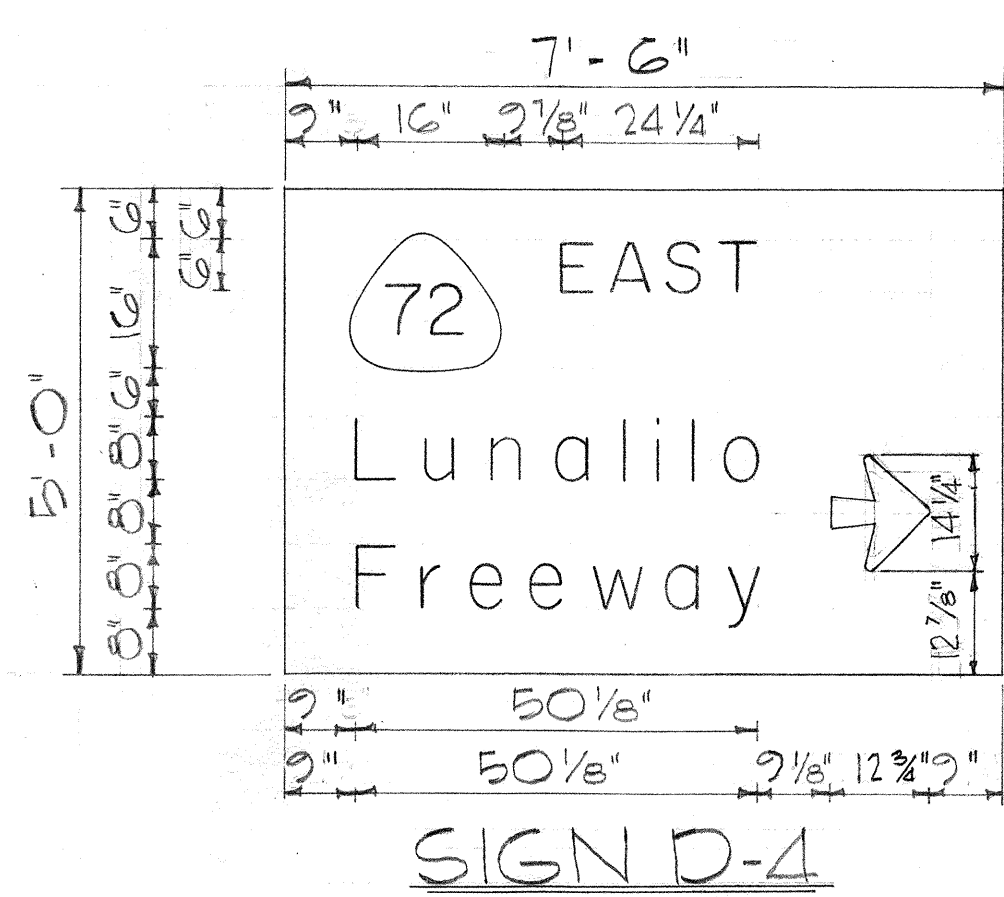
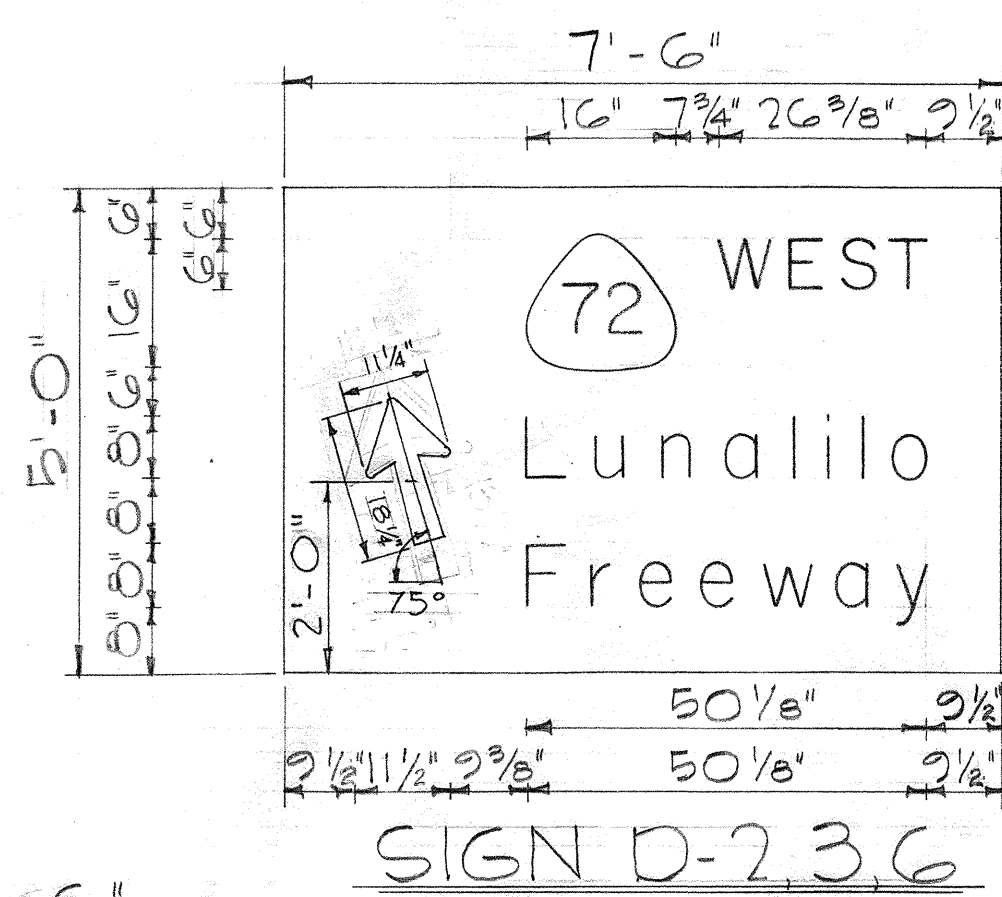
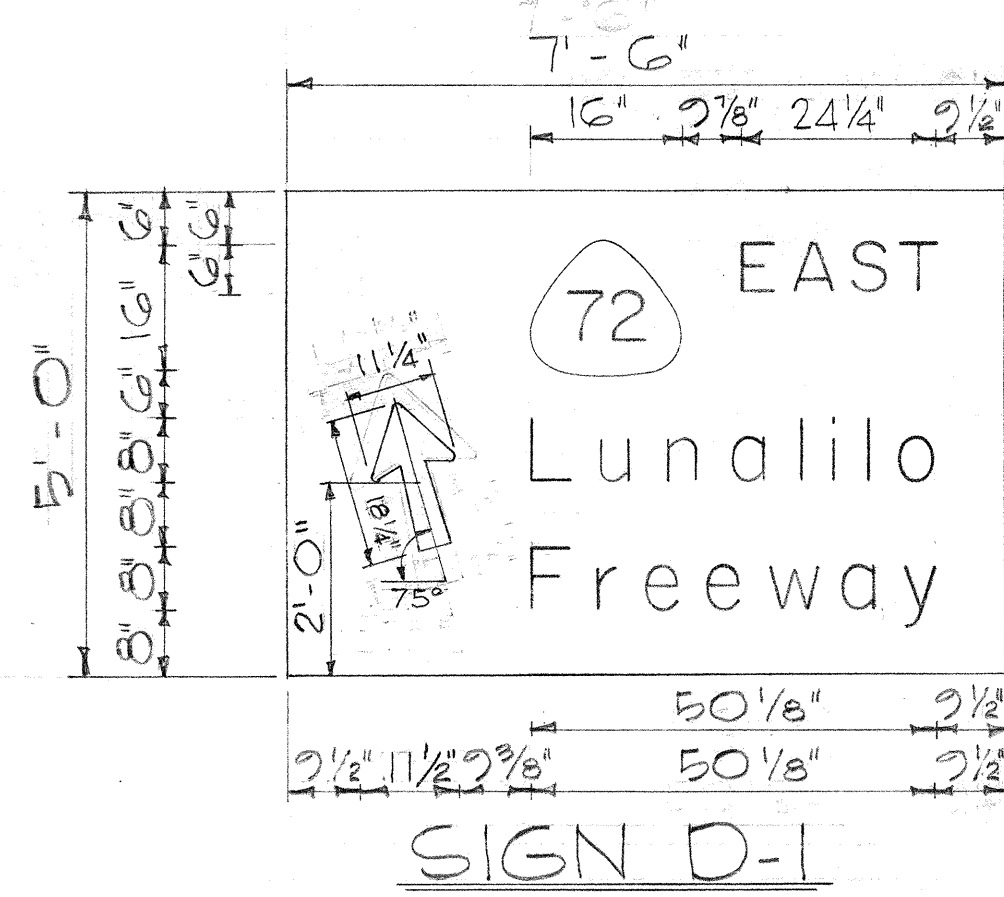




Arrow Size	Dimensions in inches						
	a	b	c	d	e	f	r
11 1/4" x 18 1/4"	11 1/4	8 3/4	3 1/8	3 3/8	7/8	18 1/4	5/8
14 1/4" x 12 3/4"	14 1/4	8 1/4	3 1/8	3 3/8	7/8	12 3/4	5/8
21 1/8" x 25"	21 1/8	14 1/4	5	6 3/4	1 3/4	25	1
22 1/4" x 35 3/8"	22 1/4	17	5 3/8	7 1/8	1 3/4	35 3/8	1
32" x 22"	32	16	6 1/2	6 1/2	3	22	1

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DESTINATION AND EXPRESSWAY
SIGNS

PANEL LAYOUT
TYPICAL ARROW DETAILS

LUNALILO FREEWAY PROJ. NO. U-072-1(3)

No Scale

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 to details as shown on plans.
3. All borders and State Route Markers shall conform to detail sheet "Destination and Expressway Signs, State Route Marker and Border Details."
4. Letters, numerals, symbols and borders shall be embossed reflectorized cutouts fastened to the sign panel with blind rivets.
5. Destination signs (D-1 through D-6) shall be reflectorized with reflective sheeting.

SUMMARY OF SIGN AREAS

SIGN NO.	MESSAGE	AREA Sq. Ft.
E-1	Likelike Hwy. 1/4 etc.	148.75
E-2	Likelike Hwy.	156.75
E-2R	Houghtailing St.	156.00
E-3	Pali Hwy.	118.75
E-3R	Vineyard Blvd.	171.00
E-4	Houghtailing St. 1/4 etc.	170.00
E-5	Houghtailing St.	120.00
E-5R	Palama St.	102.00
E-6	Pali Hwy. 1/4 etc.	157.25
E-7	Palama St. 1/2 etc.	170.00
E-8	Vineyard Blvd. 1/2 etc.	165.75
D-1	EAST - Lunalilo Frwy.	37.50
D-2,3,6	WEST - Lunalilo Frwy.	112.50
D-4	EAST - Lunalilo Frwy.	37.50
D-5	EAST - Lunalilo Frwy.	37.50
	TOTAL AREA	1,861.25 sq.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EXPRESSWAY SIGNS

PANEL LAYOUT

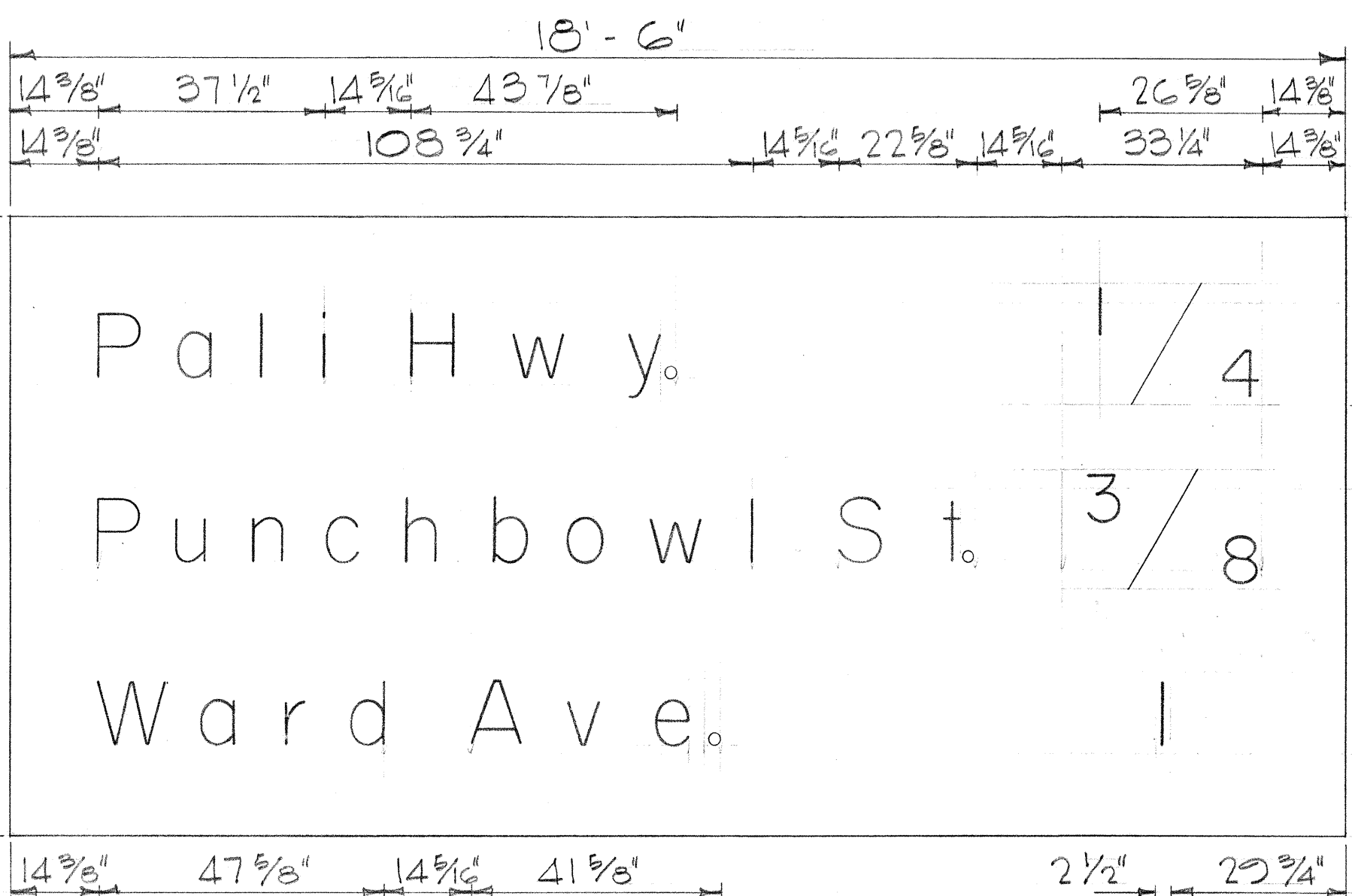
LUNALILO FREEWAY PROJ. NO. U-072-1(3)

No Scale

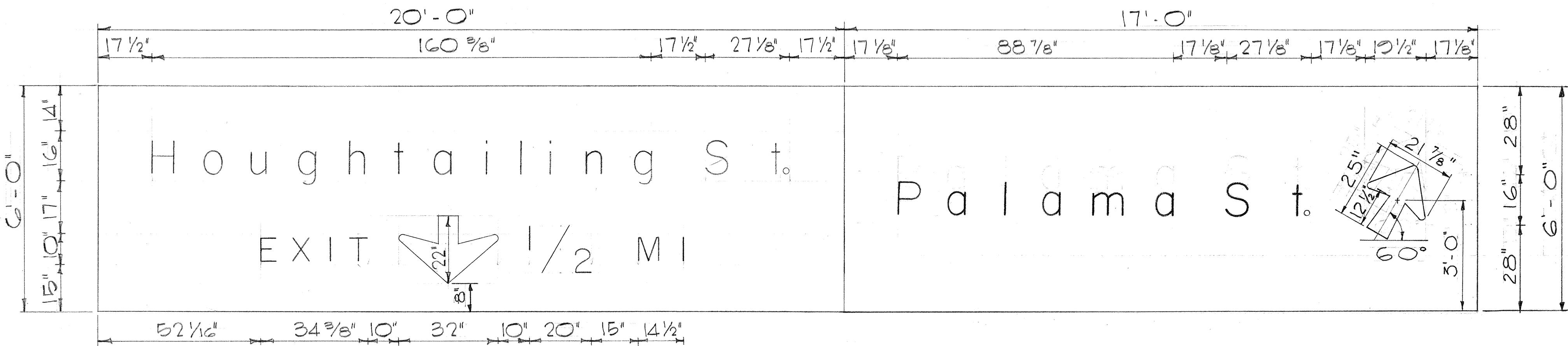
SHEET No. 2 OF 10 SHEETS



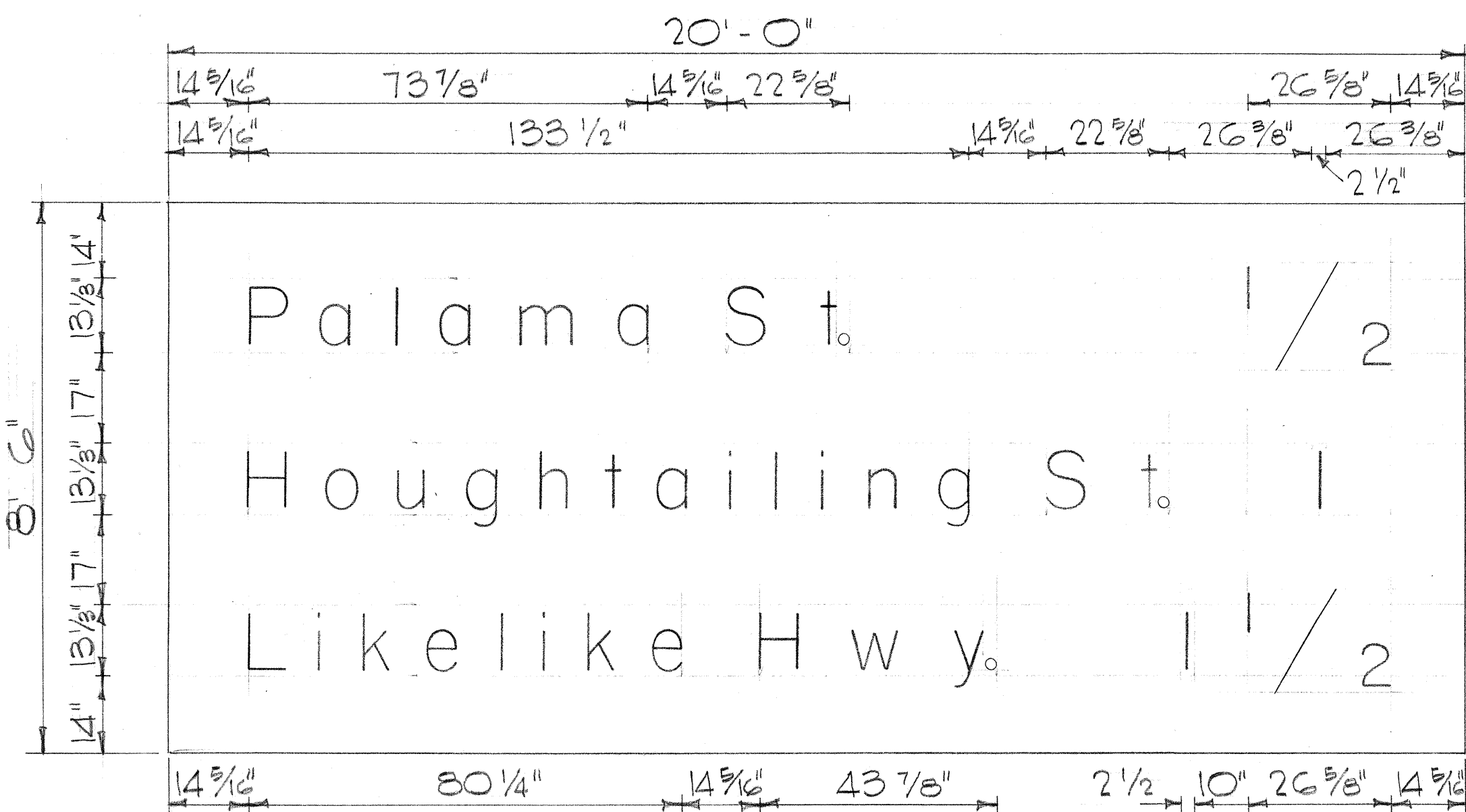
SIGN E-4



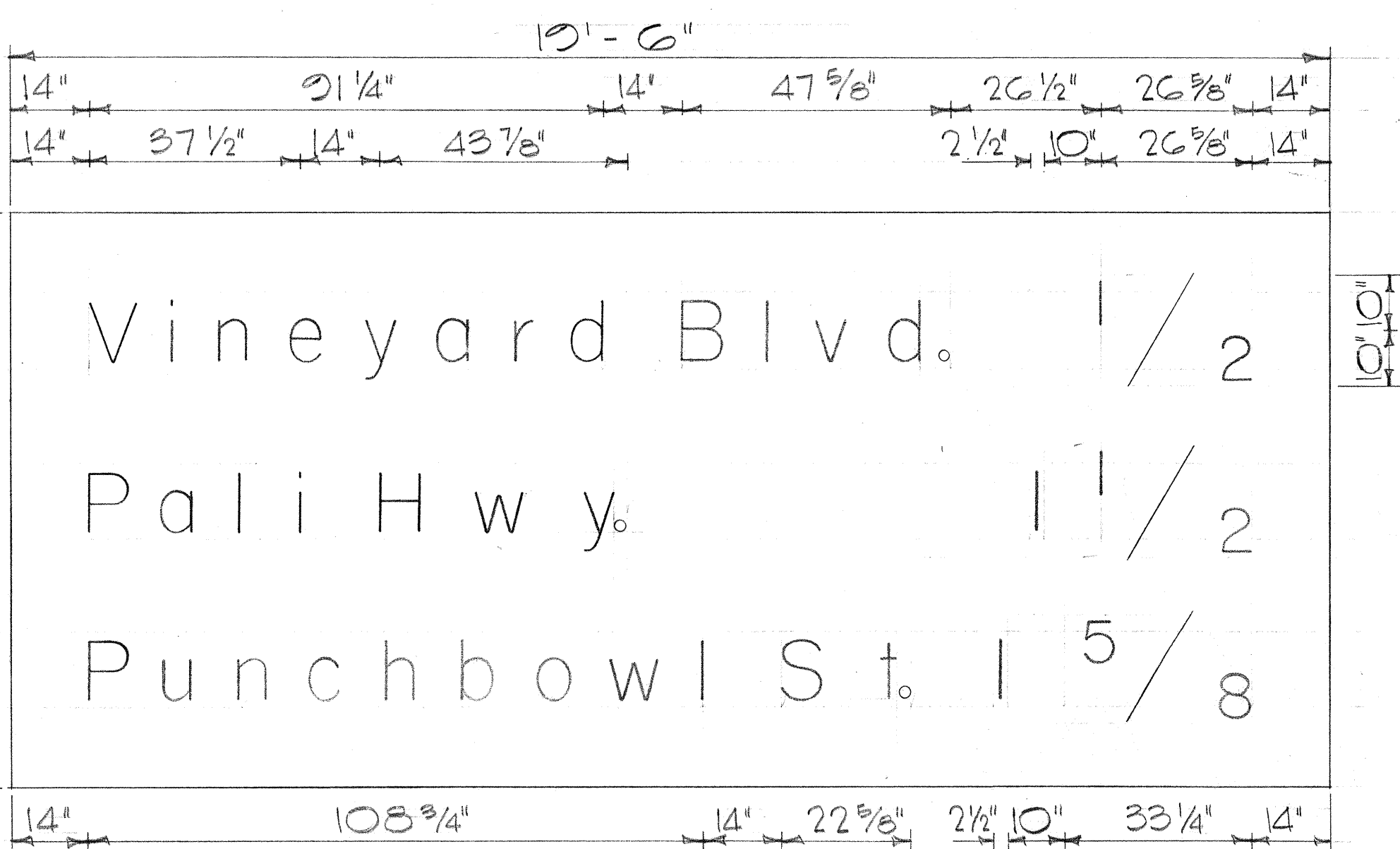
SIGN E-6



SIGN E-5

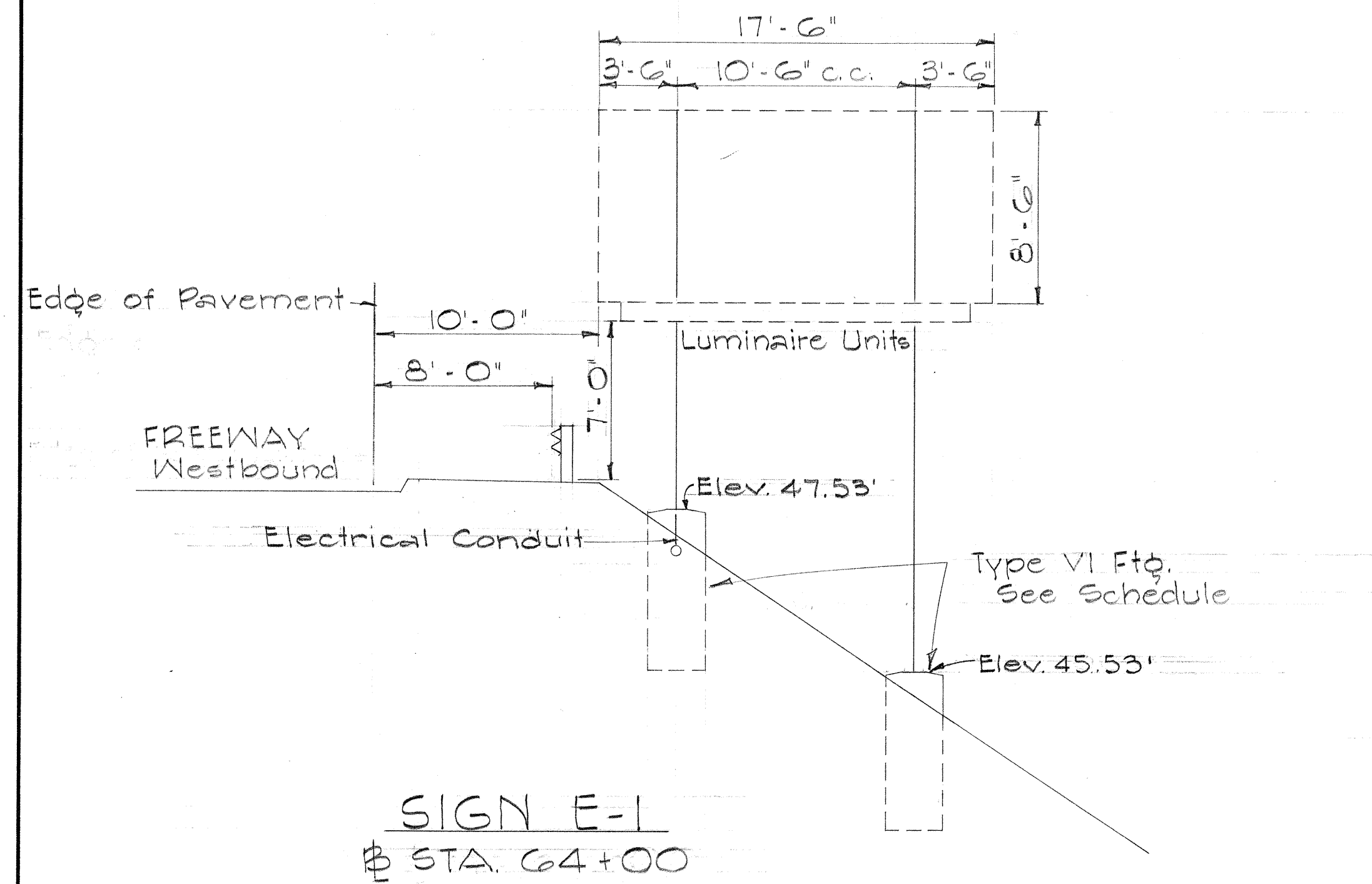


SIGN E-7

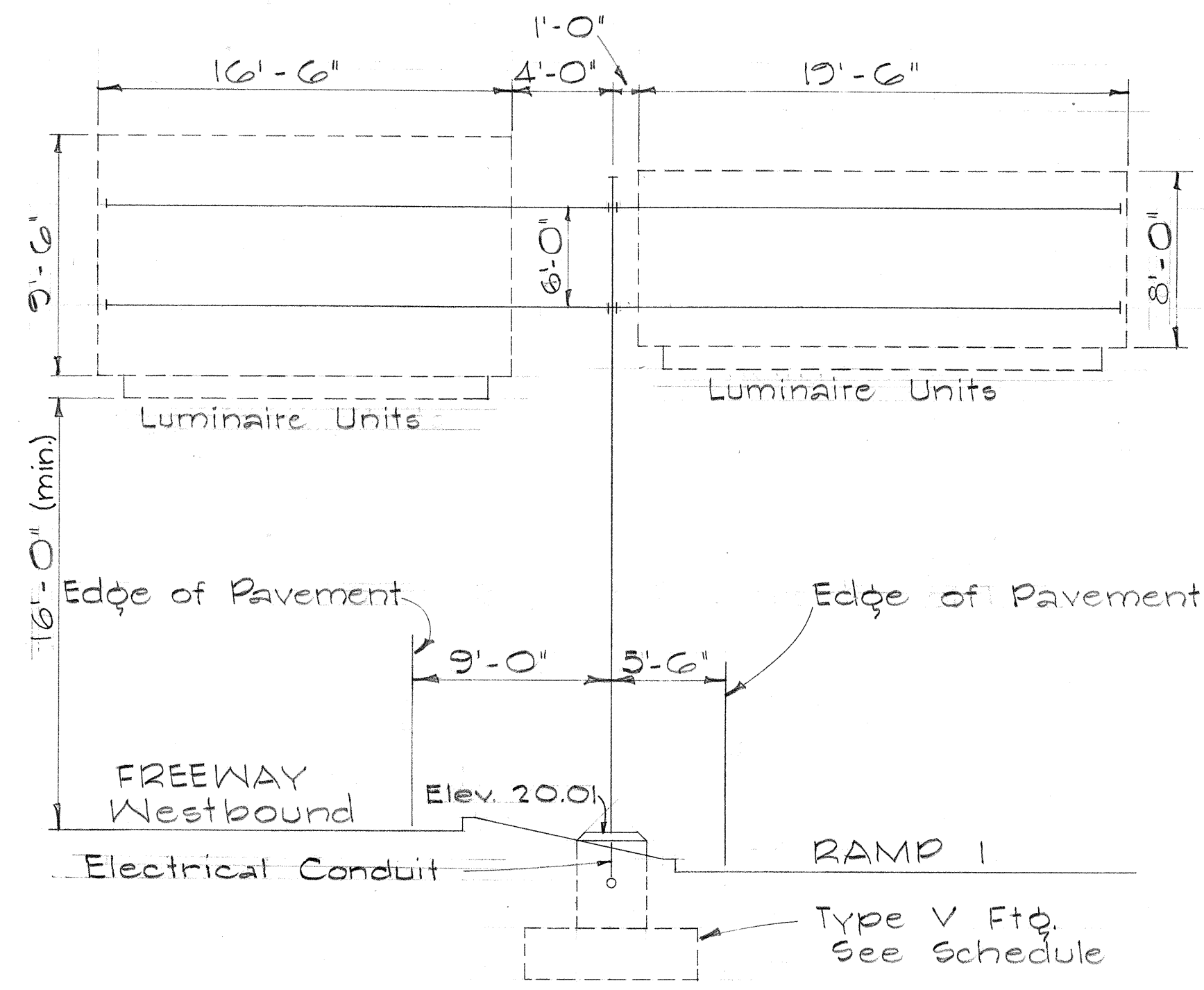


SIGN E-8

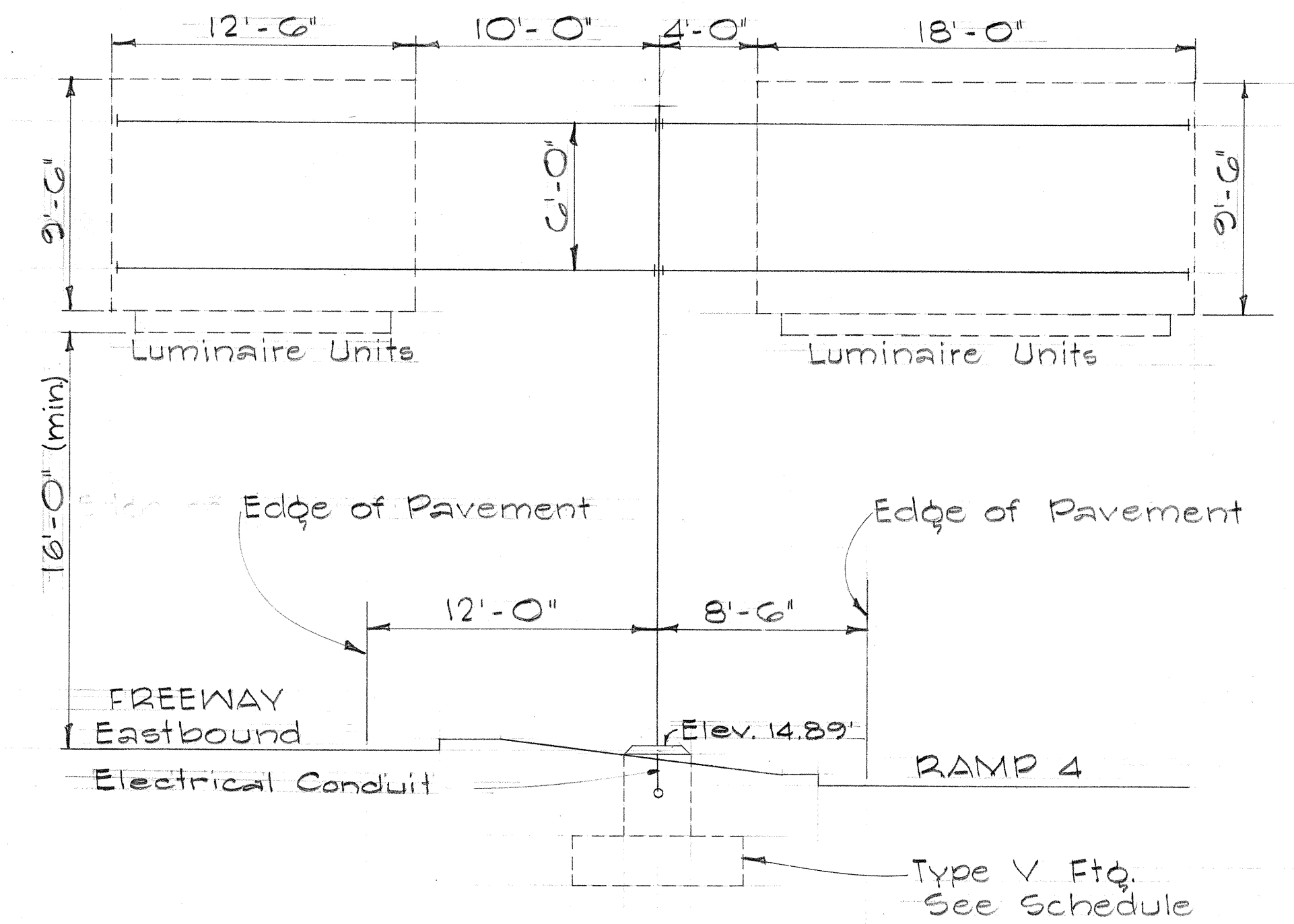
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-072-1(3)	1963	146	246



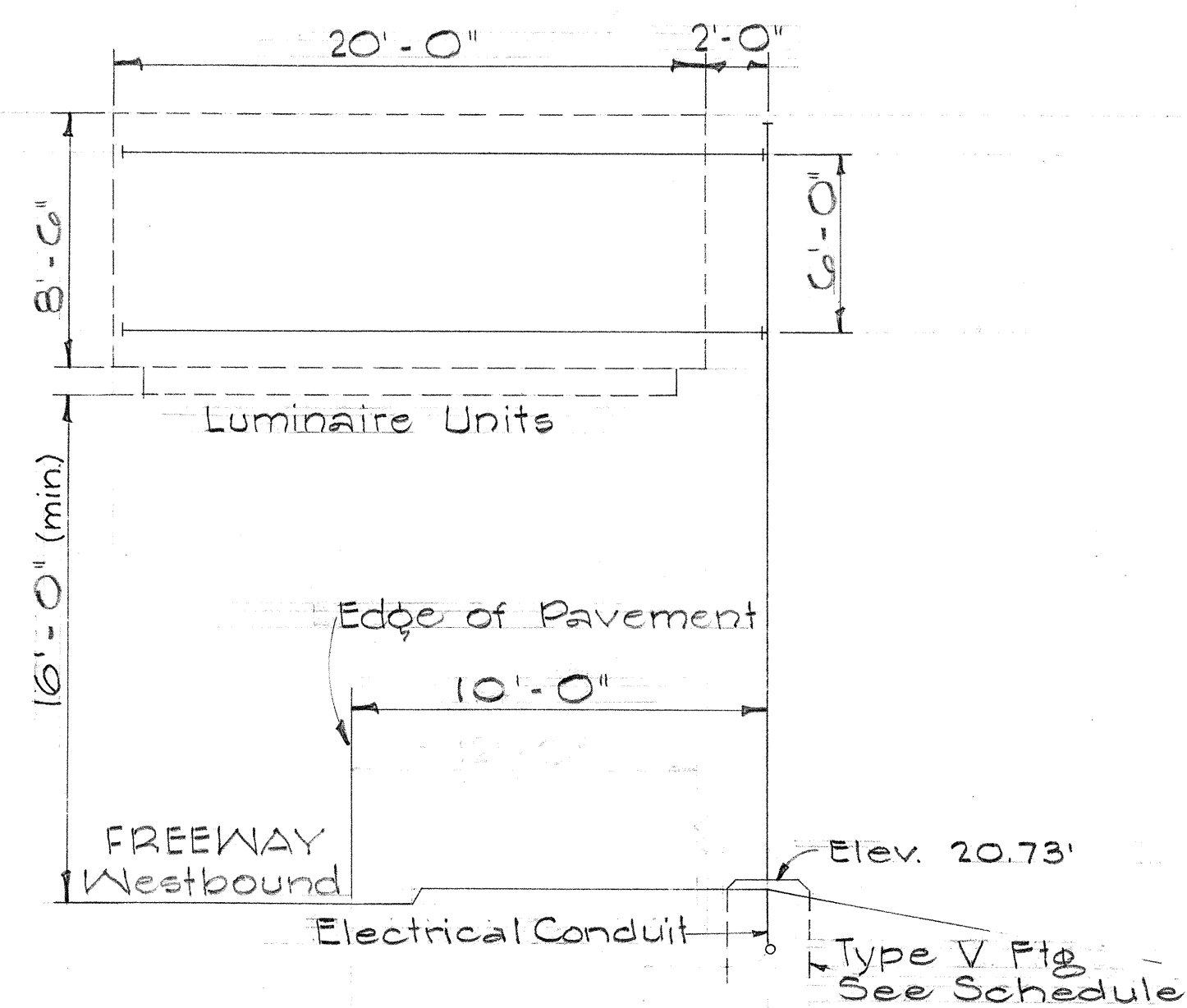
SIGN E-1
STA. 64+00



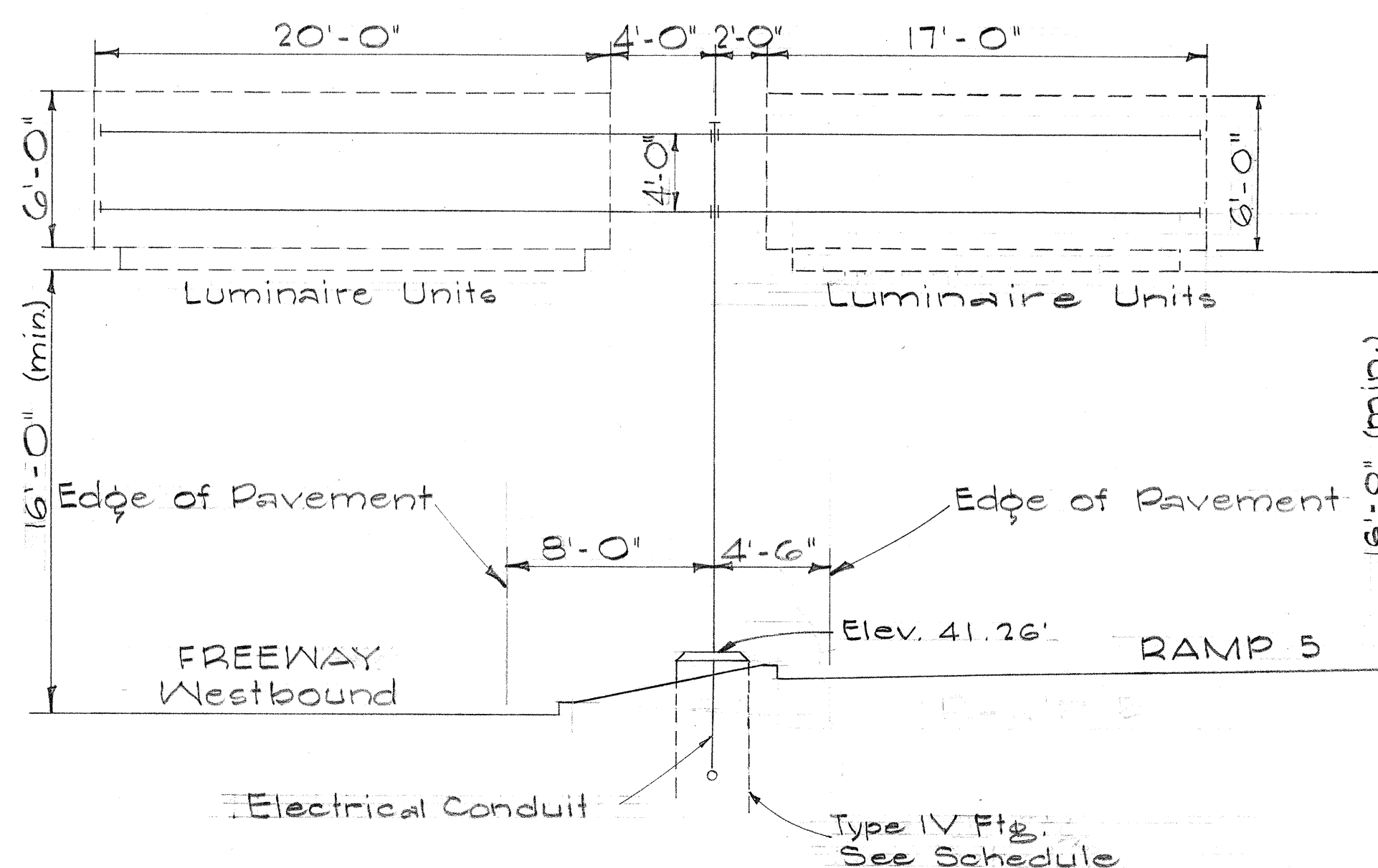
SIGN E-2
STA. 71+35



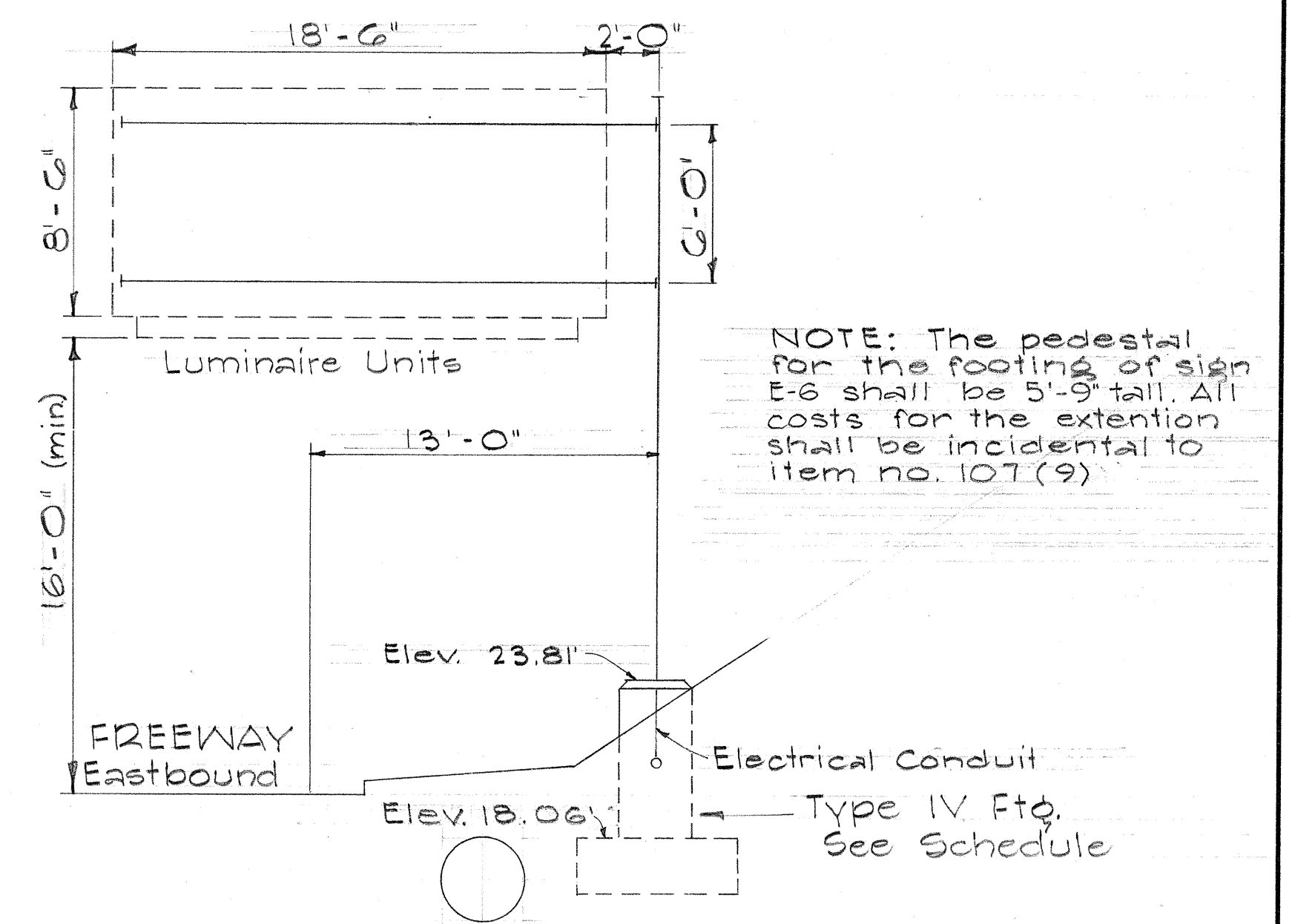
SIGN E-3
STA. 83+40



SIGN E-4
STA. 85+45



SIGN E-5
STA. 103+30



SIGN E-6
STA. 124+00

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
EXPRESSWAY SIGNS	
FRAME LAYOUT	
LUNALILO FREEWAY	PROJ. NO. U-072-1(3)
No. Scale	

SHEET No. 3 OF 10 SHEETS

U07210300.146

DATE	BY
DESIGNED BY	
DRAWN BY	
CHECKED BY	
NOTED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

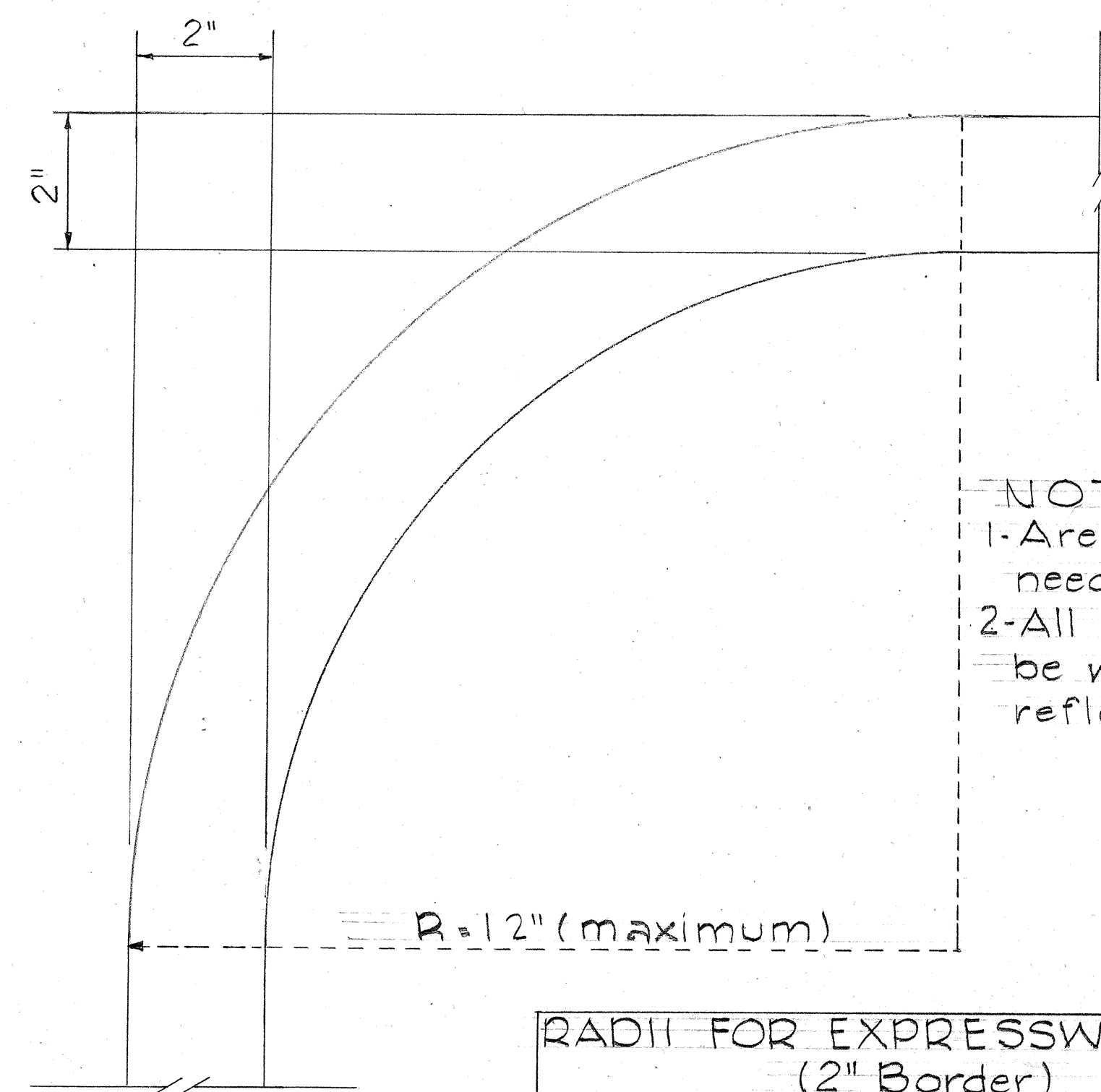
Technical drawing of a bridge deck cross-section. The drawing includes the following dimensions and labels:

- Top Dimensions:**
 - 20'-0" (Total width)
 - 3'-0" (Right side offset)
- Left Side Dimensions:**
 - 8'-6" (Height of the upper section)
 - 16'-0" (min) (Total height)
- Right Side Dimensions:**
 - 9'-0" (Height of the right side section)
- Internal Dimensions:**
 - 13'-0" (Width of the lower section)
- Labels:**
 - Luminaire Units (indicated by dashed lines)
 - FREEWAY Westbound
 - Electrical Conduit
 - Elev. 22.88' (elevation of the conduit)

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GENERAL NOTES

1. All State Route Markers on Destination & Expressway Signs shall have white numerals on black background (sign panel) with the border of the shield around the numerals.
2. All numerals shall be Series "D" from the "Standard Alphabets for Highway Signs," Bureau of Public Roads, 1957.
3. All numerals and borders shall be Cut-outs.
4. 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 white and reflectorized.

RADI FOR EXPRESSWAY SIGNS (2" Border)	
Least Dimension of Sign	R
3'-0" to 4'-6"	3"
4'-0" to 5'-6"	6"
5'-0" to 7'-6"	9"
7'-0" and greater	12"

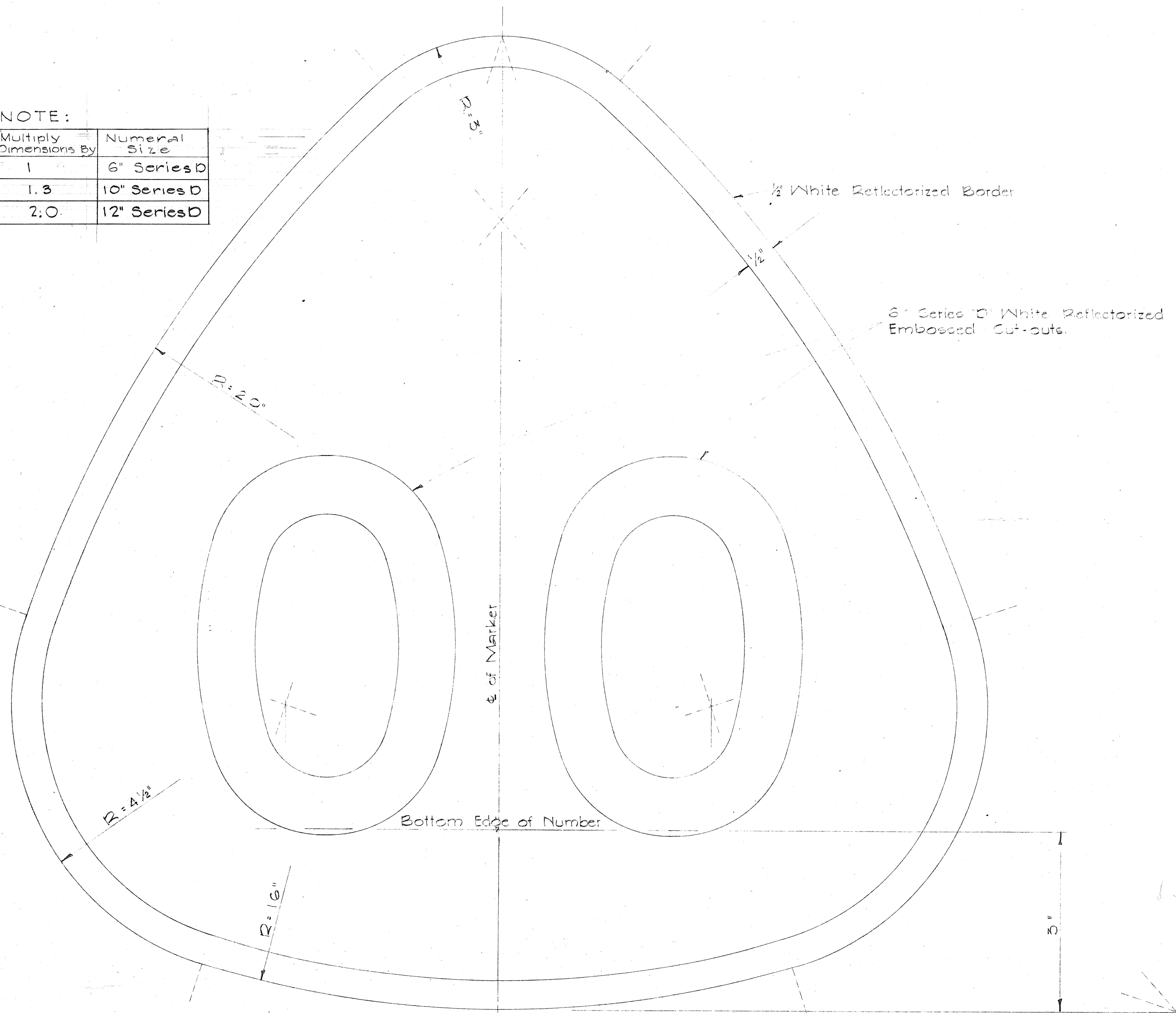
SCALE: 6"=1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DESTINATION AND EXPRESSWAY
SIGNS
DETAILS OF
STATE ROUTE MARKER AND
EXPRESSWAY SIGN BORDERS
LUNALILO FREEWAY PROJ. NO. U-072-1(3)
Scale: As Noted

SHEET No. 5 OF 10 SHEETS

NOTE:

Shield Size	Multiply Dimensions By	Numerical Size
16"	1	6" Series D
21"	1.3	10" Series D
32"	2.0	12" Series D

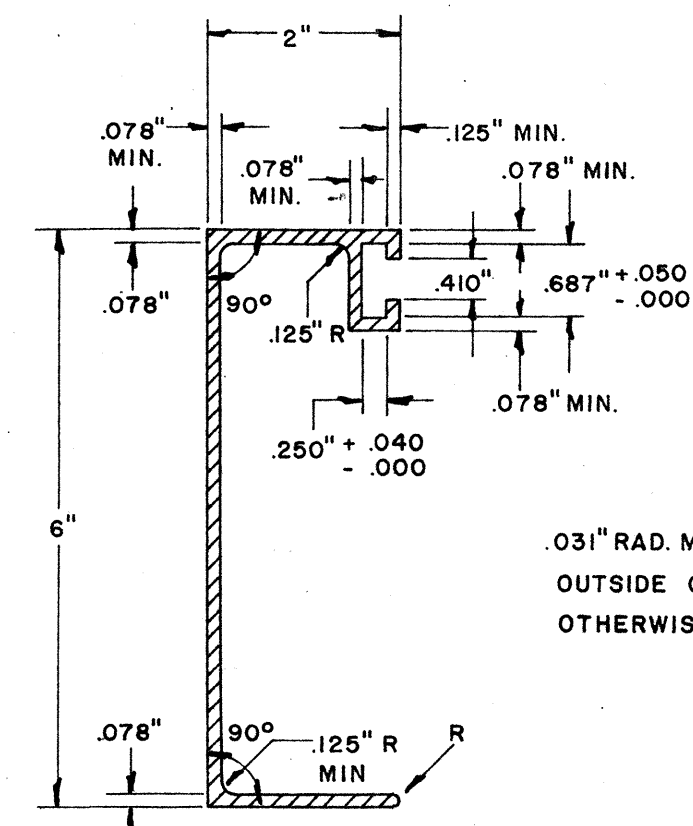
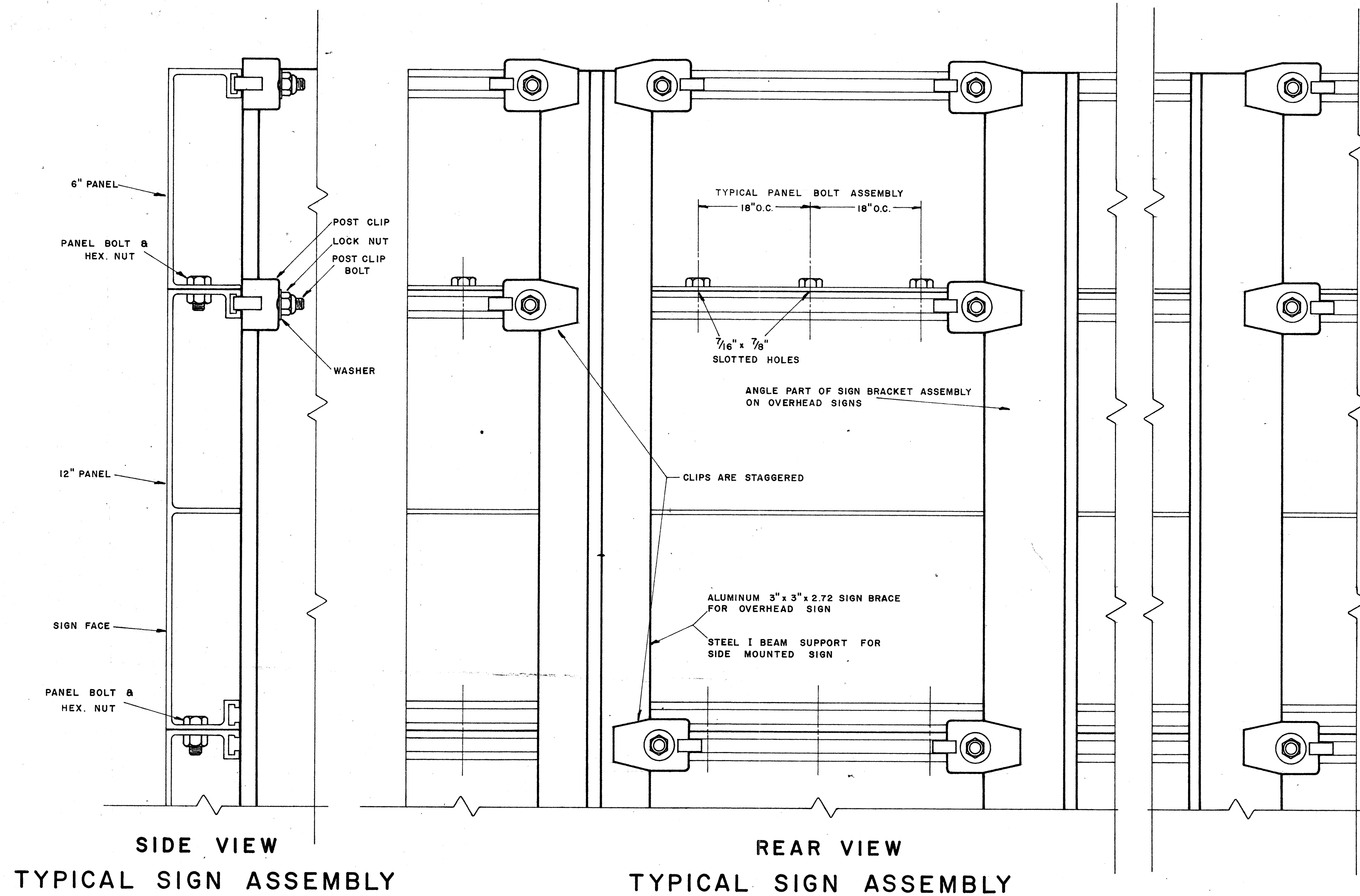


STATE ROUTE MARKER
FOR
DESTINATION AND EXPRESSWAY SIGNS

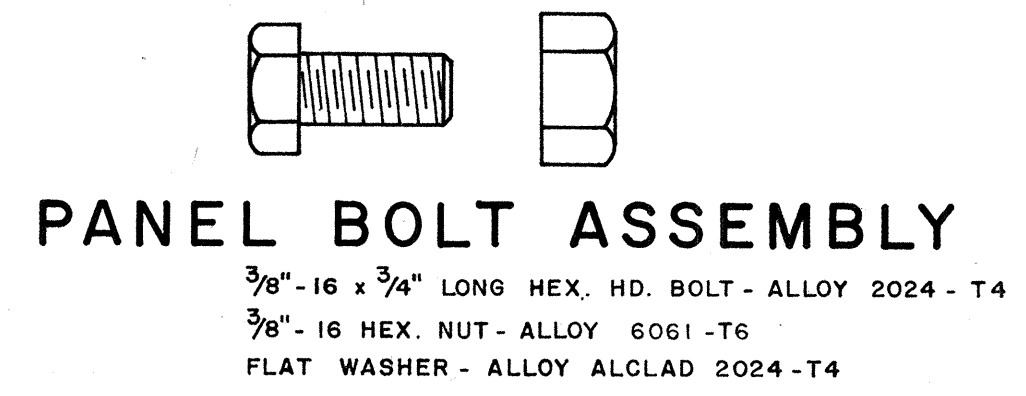
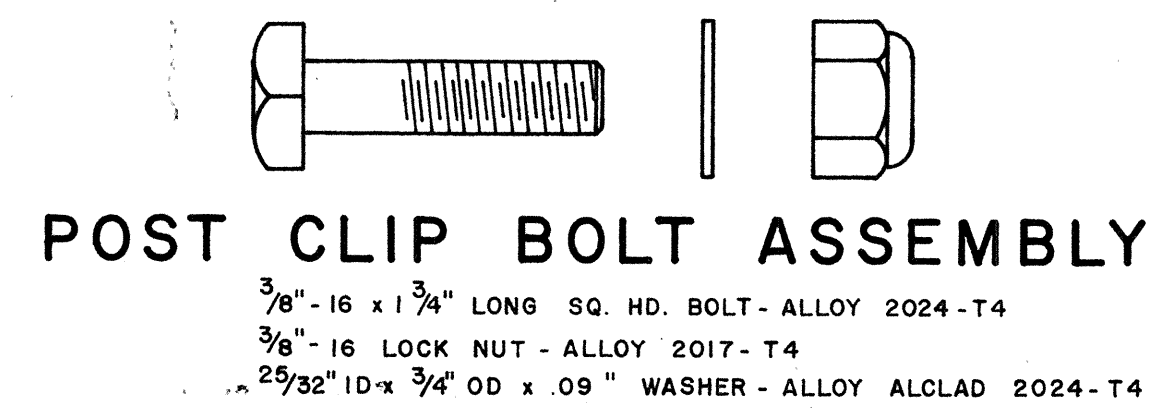
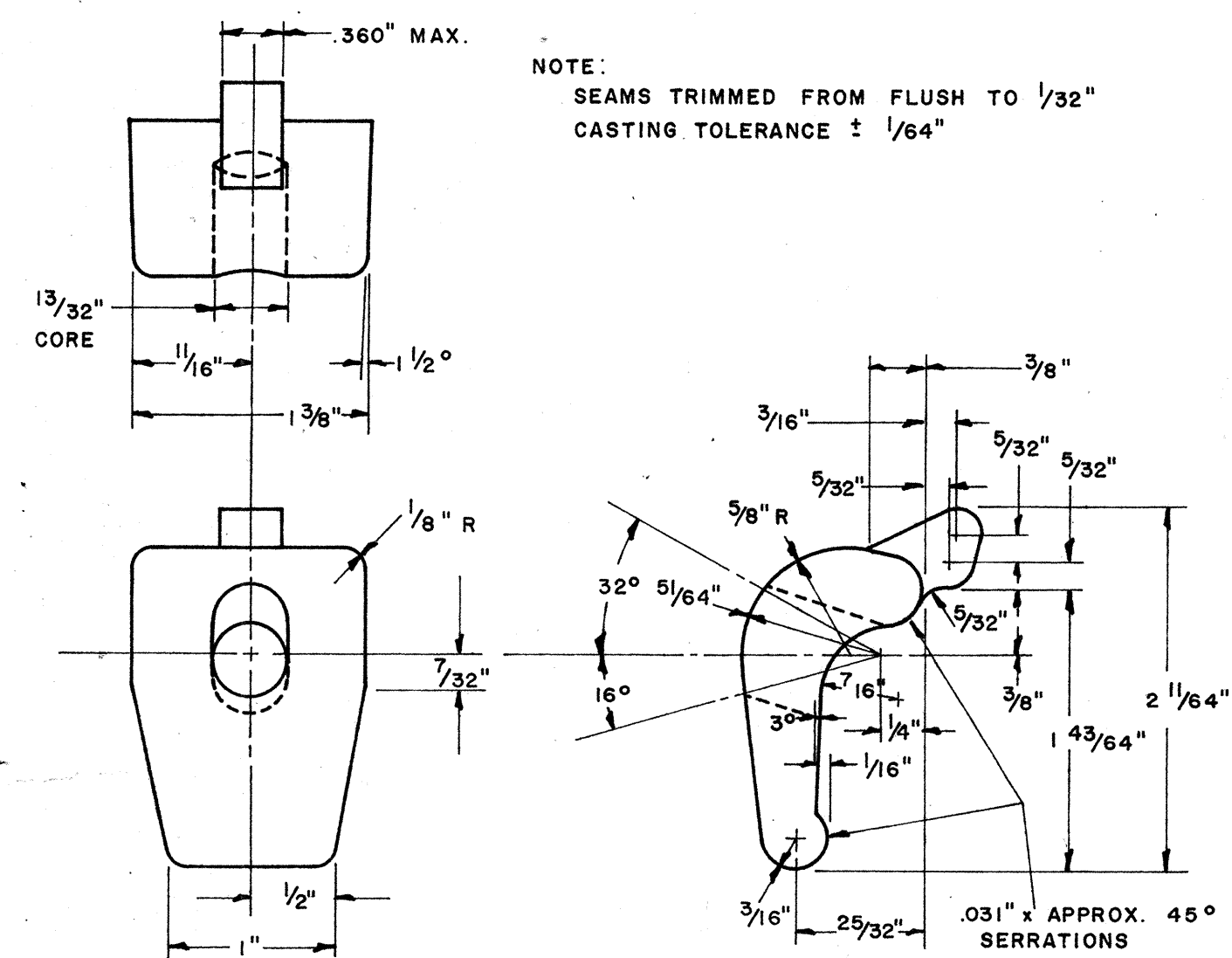
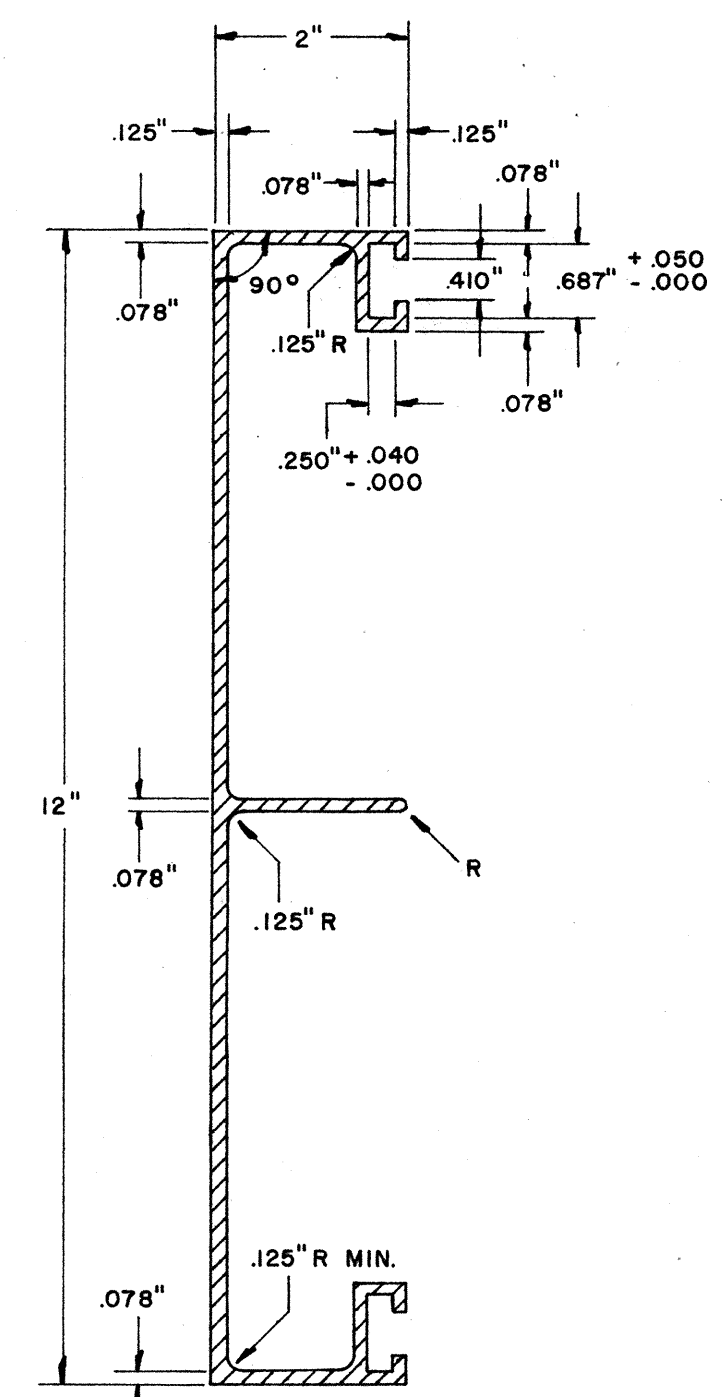
SCALE: Full Size

ORIGINAL PLAN
DATE
DESIGNED BY
NOTED BY
CHECKED BY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW	U-0721(3)	1963	147	240
		U-0781(4)	1963	65	88



**SOLID EXTRUDED SIGN
PANEL DETAILS**



NOTE: Extruded Aluminum Panels shall be used for Destination ~~and~~ signonly.

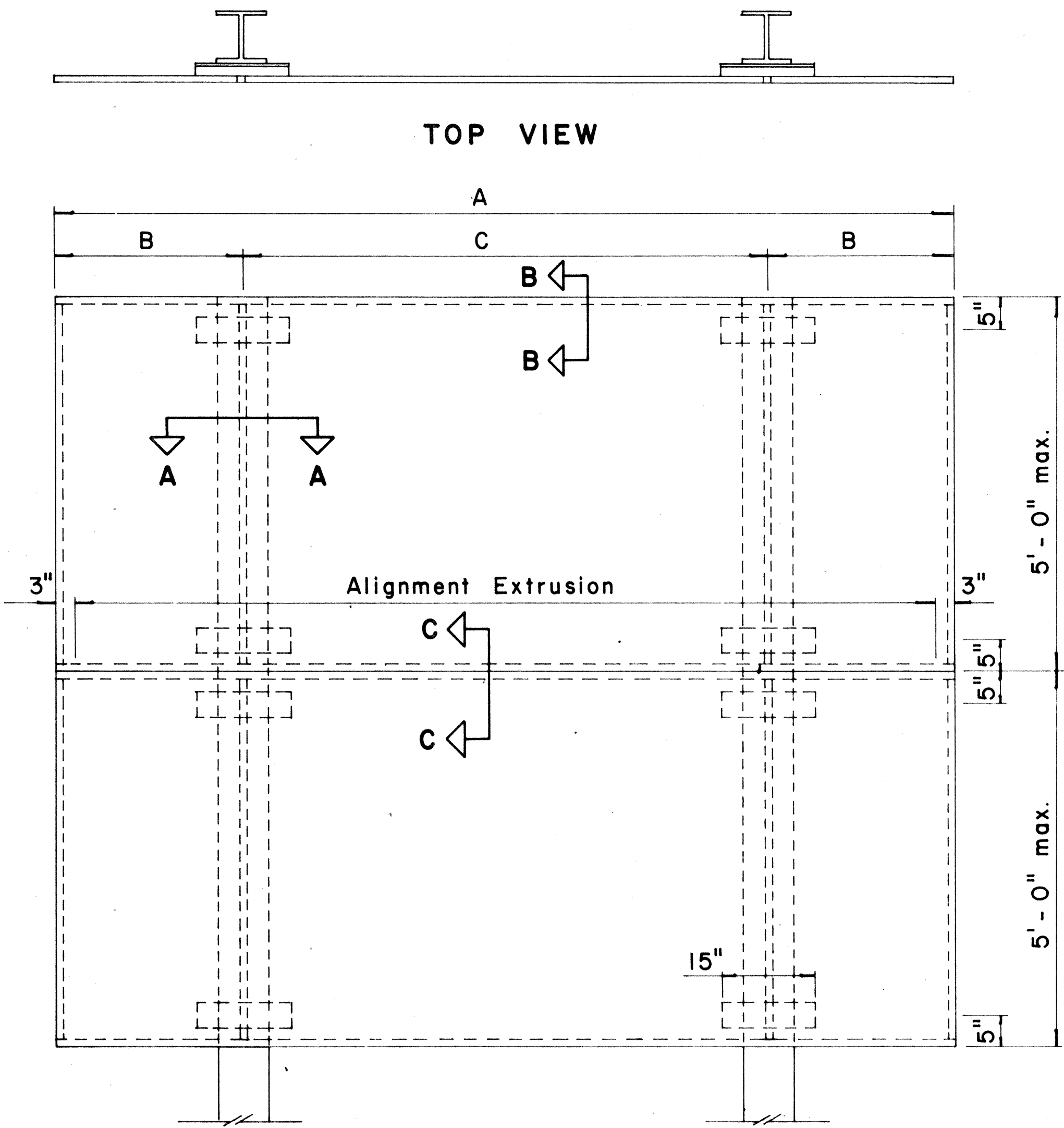
See Previous Sheet for Changes

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**DETAILS OF
SOLID ALUMINUM
EXTRUDED SIGN PANEL
AND
ACCESSORY DETAILS**
NO SCALE

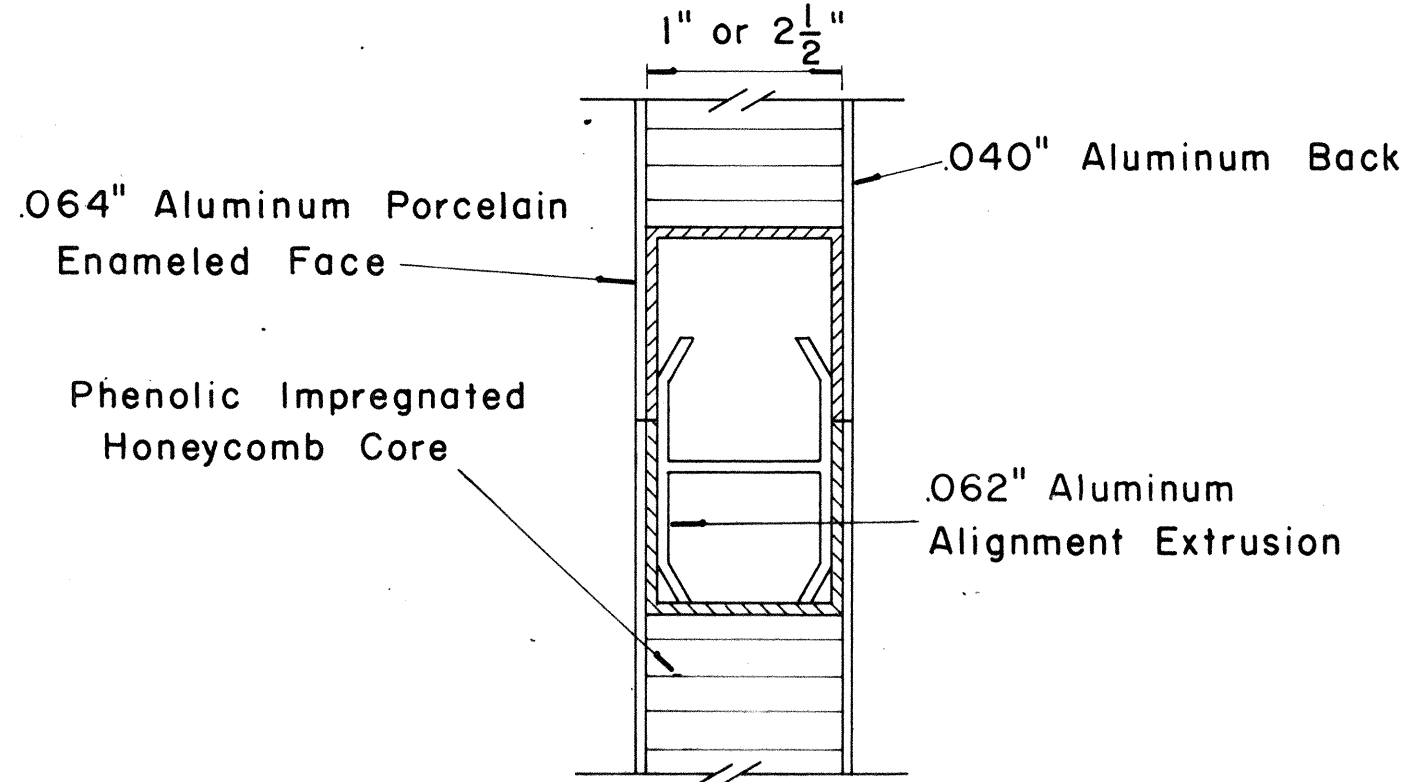
DATE	DESIGNED BY	CHECKED BY
ORIGINAL	PLAN	NOTE BOOK
QUANTITIES BY	TRACED BY	CHECKED BY
No.		

(GROUND MOUNTED SIGNS)
SUPPORT SPACING TABLE

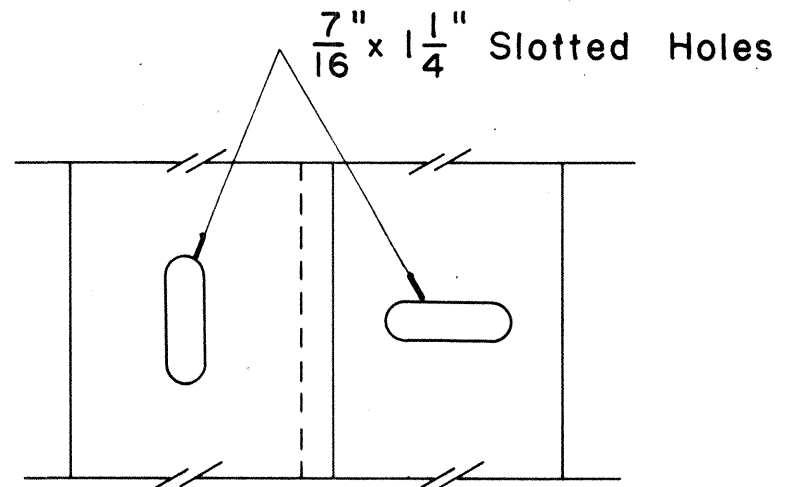
PANEL THICK.	LENGTH OF SIGN A	NO. OF SUPPORTS	OVERHANG B	SUPPORT SPACING C
1"	6'-0"	2	12"	48"
1"	6'-6"	2	15"	48"
1"	7'-0"	2	15"	54"
1"	7'-6"	2	18"	54"
1"	8'-0"	2	18"	60"
1"	8'-6"	2	20"	62"
1"	9'-0"	2	22"	64"
1"	9'-6"	2	23"	68"
1"	10'-0"	2	24"	72"
1"	10'-6"	2	24"	78"
1"	11'-0"	2	24"	84"
1"	11'-6"	2	27"	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"



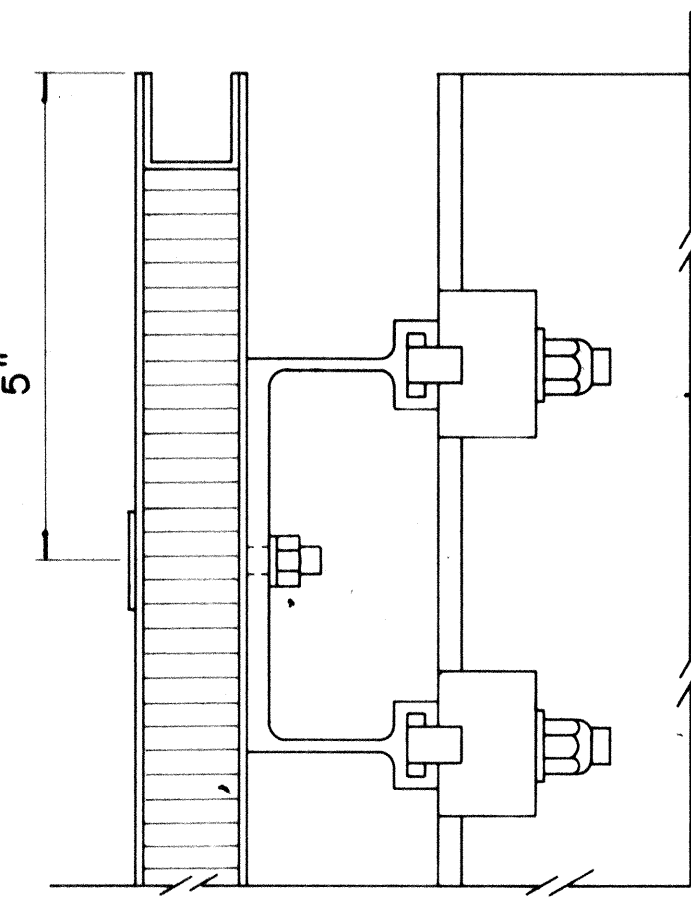
TYPICAL SIGN ASSEMBLY
Scale: $\frac{3}{4}$ " = 1' - 0"



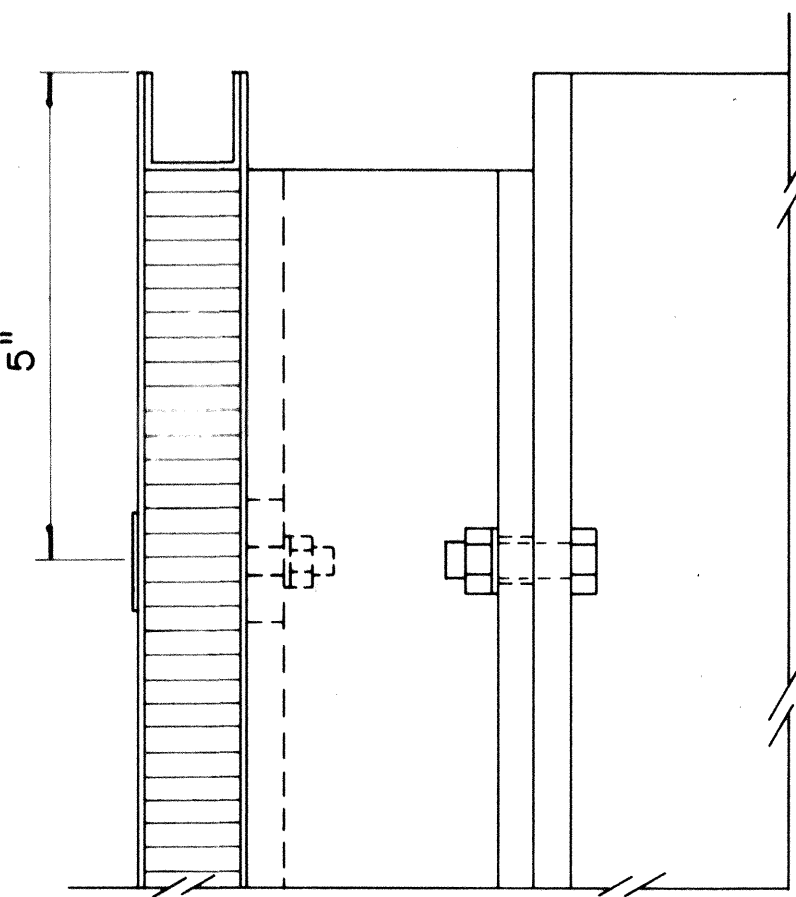
CLOSURE DETAIL
SECTION "C - C"
FULL SCALE



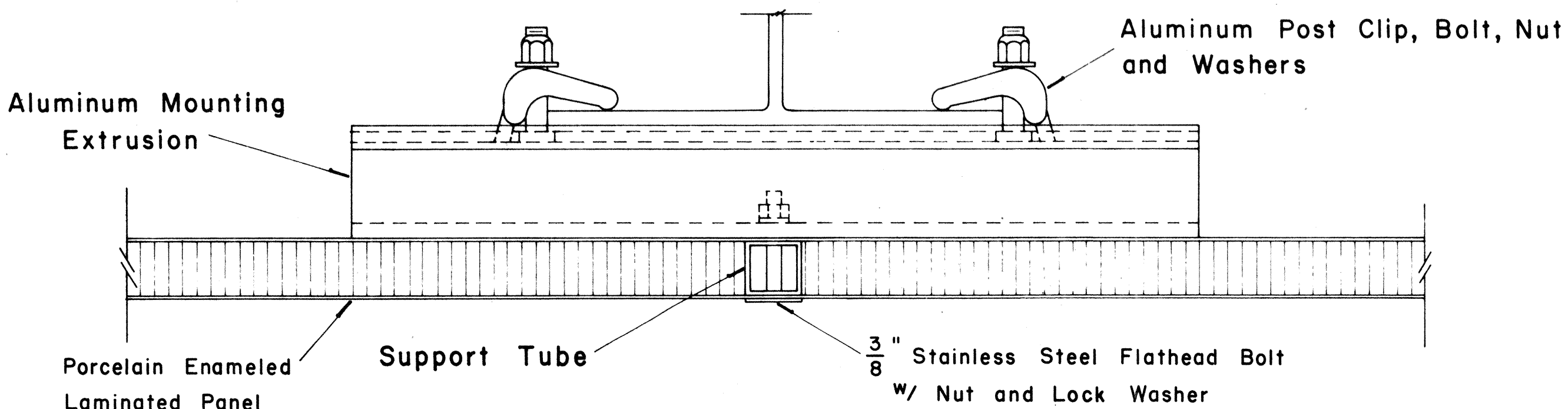
ZEE SLOT DETAIL
Scale: $\frac{1}{2}$ " = 1"



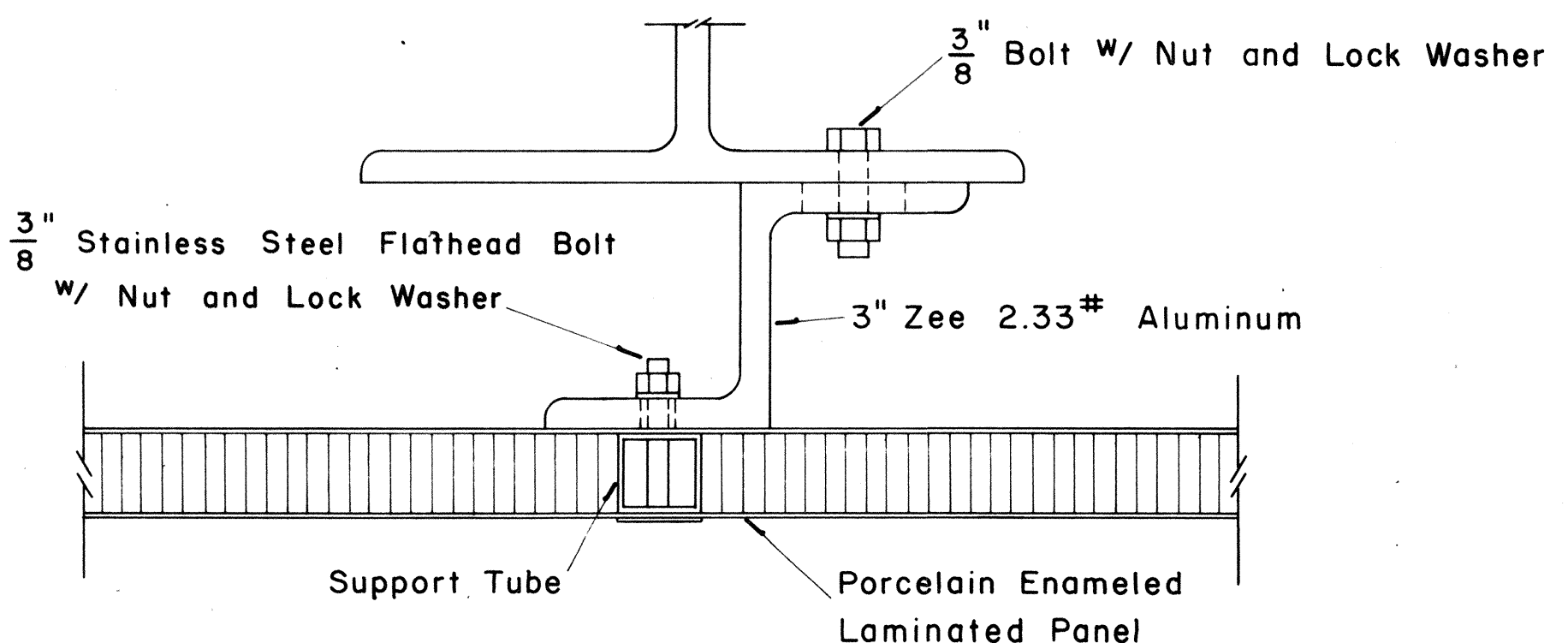
SECTION "B - B"
Scale: $\frac{1}{2}$ " = 1"



SECTION "B - B"
(Alternate)
Scale: $\frac{1}{2}$ " = 1"



SECTION "A - A"
Scale: $\frac{1}{2}$ " = 1"



SECTION "A - A"
(Alternate)
Scale: $\frac{1}{2}$ " = 1"

NOTE:
Laminated Sign Panels
shall be used for Expressway
signs only.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

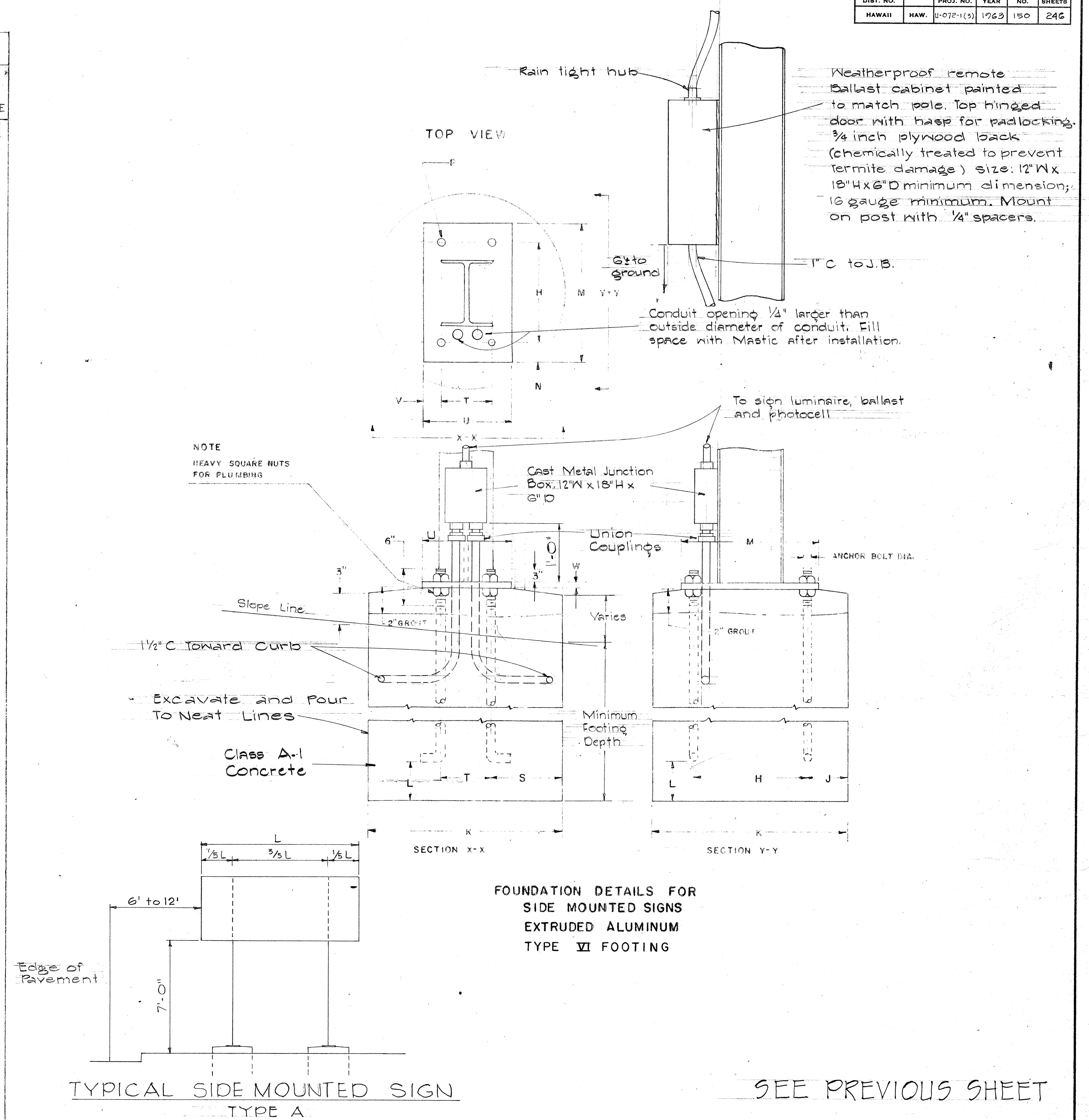
STANDARD DETAILS
LAMINATED ALUMINUM
SIGN PANELS
(GROUND MOUNTED)
Scale: As Shown

SHEET No. 14 OF 248 SHEETS

[illegible]

NOTE
IF CHART INDICATES MORE THAN ONE POST SIZE FOR EACH SIGN,
THE HEAVIER POST SHALL BE USED

* FOR MOMENT CALCULATIONS ONLY. POST TO BE FROM
TOP OF FOUNDATION TO TOP OF SIGN.
** FOR FILLS WITH SIDE SLOPE FLATTER THAN 4:1 DEDUCT 2 FEET



NOTE:

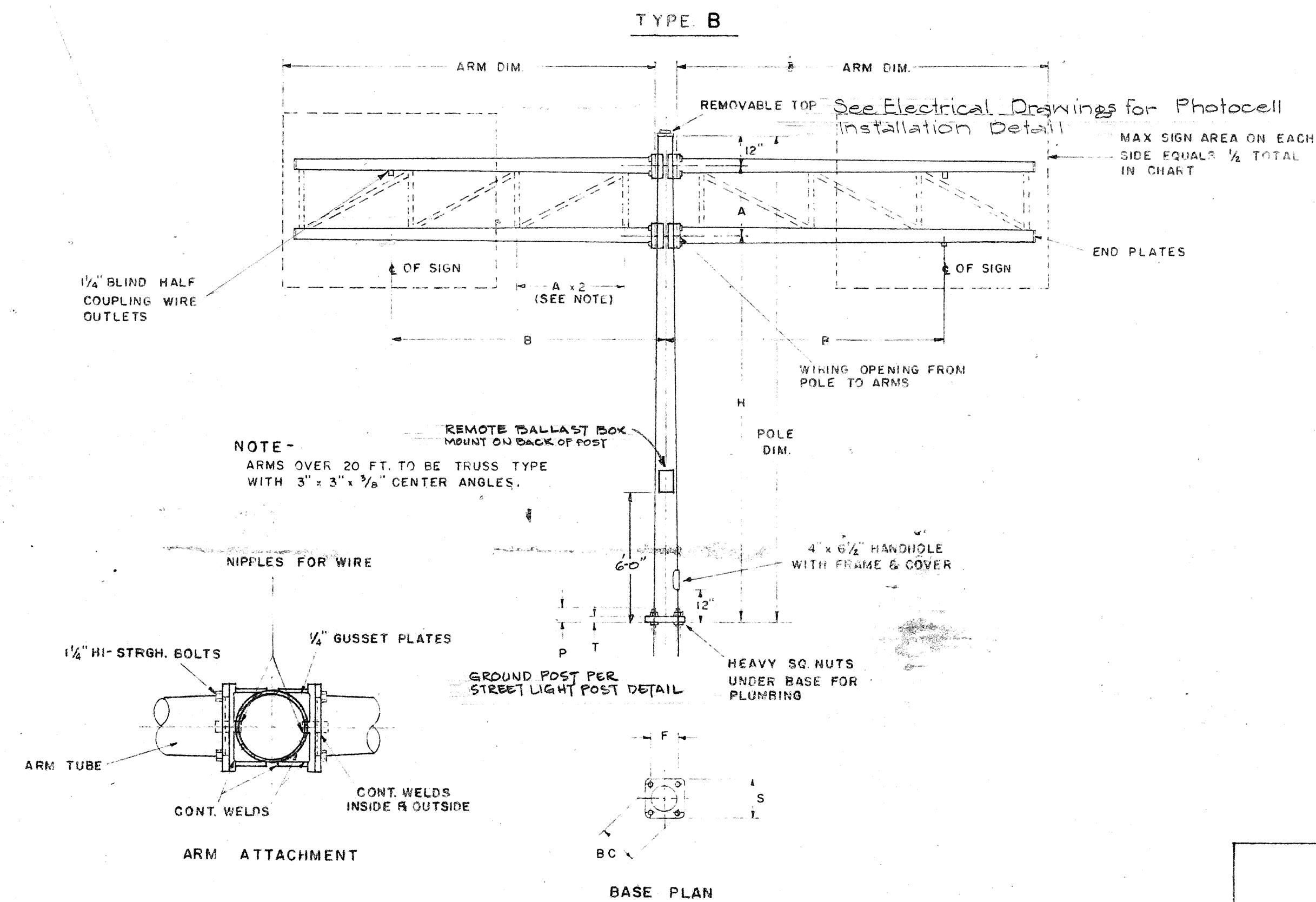
- 1-FOR SIGNS WITH PANEL AREAS OF LESS THAN 30 SQ. FT. BUT GREATER THAN 10 SQ. FT. USE 3" I 5.7" STEEL I-BEAM AS POSTS.
- 2-CONCRETE FOOTING FOR DESTINATION SIGN WILL BE PAID FOR UNDER ITEM POST AND FOUNDATIONS.
- 3-CONDUIT AND BALLAST DETAILS ARE SHOWN ONLY FOR GROUND MOUNTED ILLUMINATED EXPRESSWAY SIGNS.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DESTINATION AND EXPRESSWAY
SIGNS

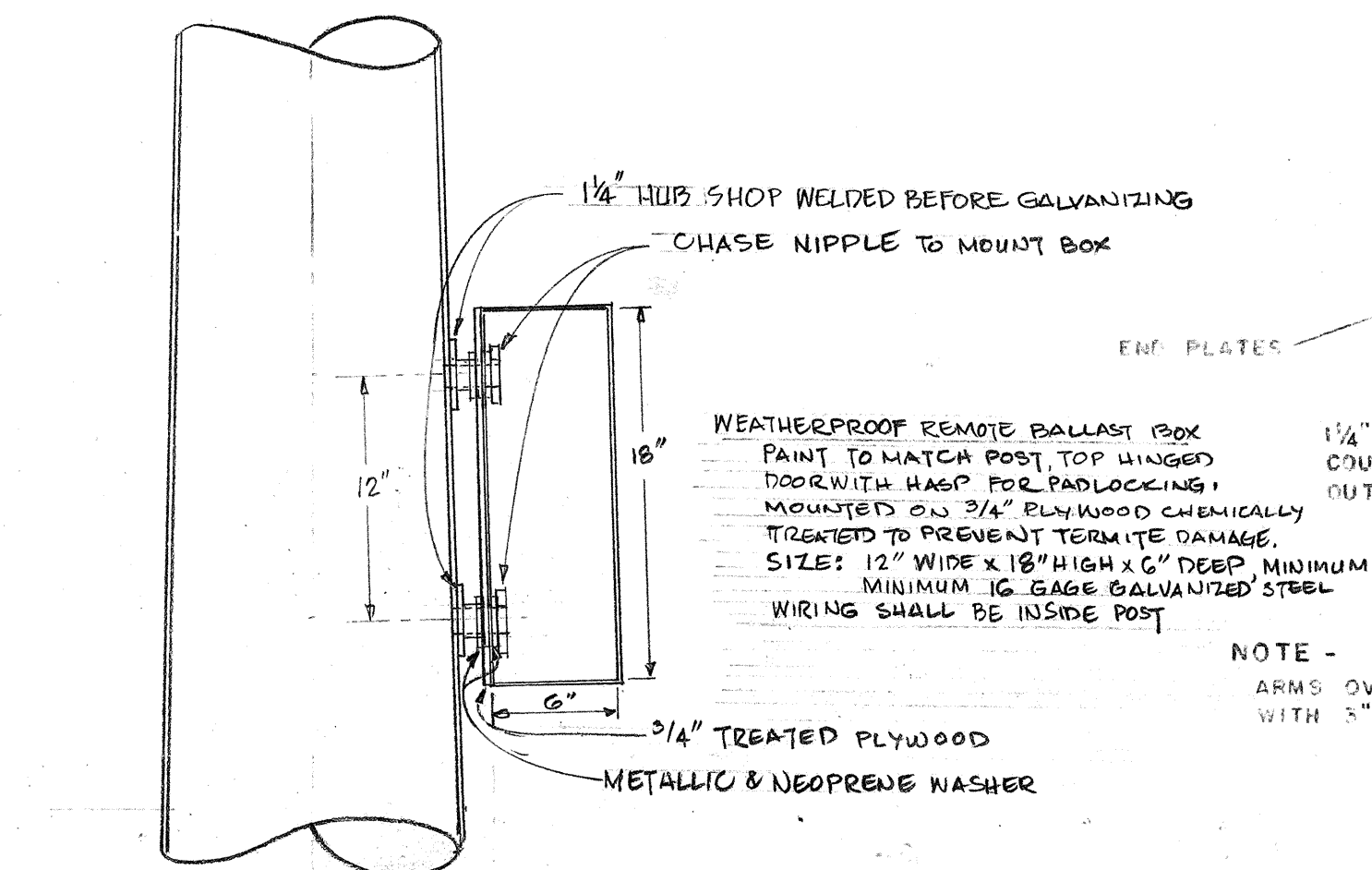
DETAILS AND SCHEDULES
TYPE A SIGN SUPPORT
TYPE VI FOOTING

LUALABU FREEWAY PROJ. NO. U-072-1 (3)
No Scale

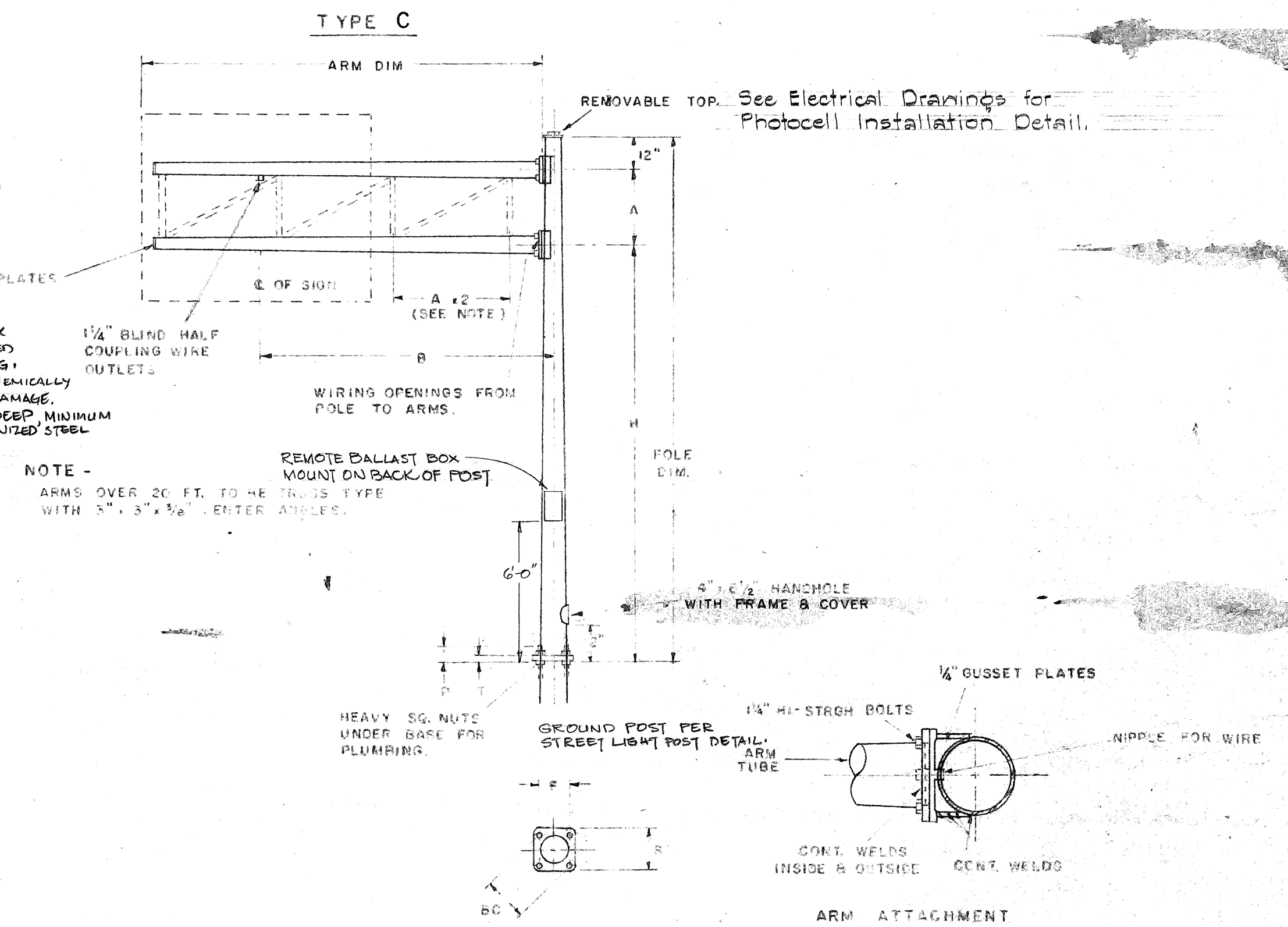


POLE DIM	S	F	BC	P	T	ANCHOR BOLTS
0 GA 18"	26 1/2"	18"	25 1/2"	3 3/4"	2 1/2"	2 1/4" DIA
2 PLY 3 GA 18"	25 1/2"	18"	25 1/2"	5 1/4"	3"	3" DIA.
3 PLY 5 GA 18"	26 1/2"	18"	25 1/2"	6"	3"	3" DIA

INDEX NO	POLE DIM.	H	A	B	ARM DIM.	AREA
1	0.6A.18" x 15.6" x 1	16"				
2	x 14.7" x 23"	16"	4'	5'	7 GA. 4.3" x 6.6" x 12"	
3	x 15.6" x 21"	16"				
4	x 14.7" x 23"	16"	4'	12'	7 GA. 8.3" x 6.6" x 15"	240 MAX SQ. FT.
5	x 15.6" x 21"	16"				TOTAL
6	x 14.7" x 23"	16"	4'	16'	3 GA. 9.2" x 6.4" x 20"	
7	x 15.6" x 21"	16"				
8	x 14.7" x 23"	16"	4'	20'	3 GA. 9.2" x 5.8" x 24"	
9	7 GA.3.6A.18" x 14.7" x 23"	16"				
10	x 14.7" x 23"	16"	6'	10'	7 GA. 9" x 6.4" x 15"	
11	x 14.7" x 23"	16"				
12	x 14.5" x 25"	18"	6'	14'	7 GA. 11" x 7.9" x 22"	360 MAX. SQ. FT.
13	x 14.7" x 23"	16"				TOTAL
14	x 14.5" x 25"	18"	6'	18'	7 GA. 12.5" x 8.6" x 26"	
15	0.6A.6A.18" x 14.7" x 23"	16"				
16	x 14.7" x 23"	16"	6'	14'	7 GA. 12.5" x 9.1" x 24"	
17	x 14.7" x 23"	16"				
18	x 14.5" x 25"	18"	6'	16'	3 GA. 12.5" x 8.6" x 28"	480 MAX. SQ. FT.
19	x 14.7" x 23"	16"				TOTAL
20	x 14.5" x 25"	18"	6'	24'	0.6A.13" x 8.2" x 34"	

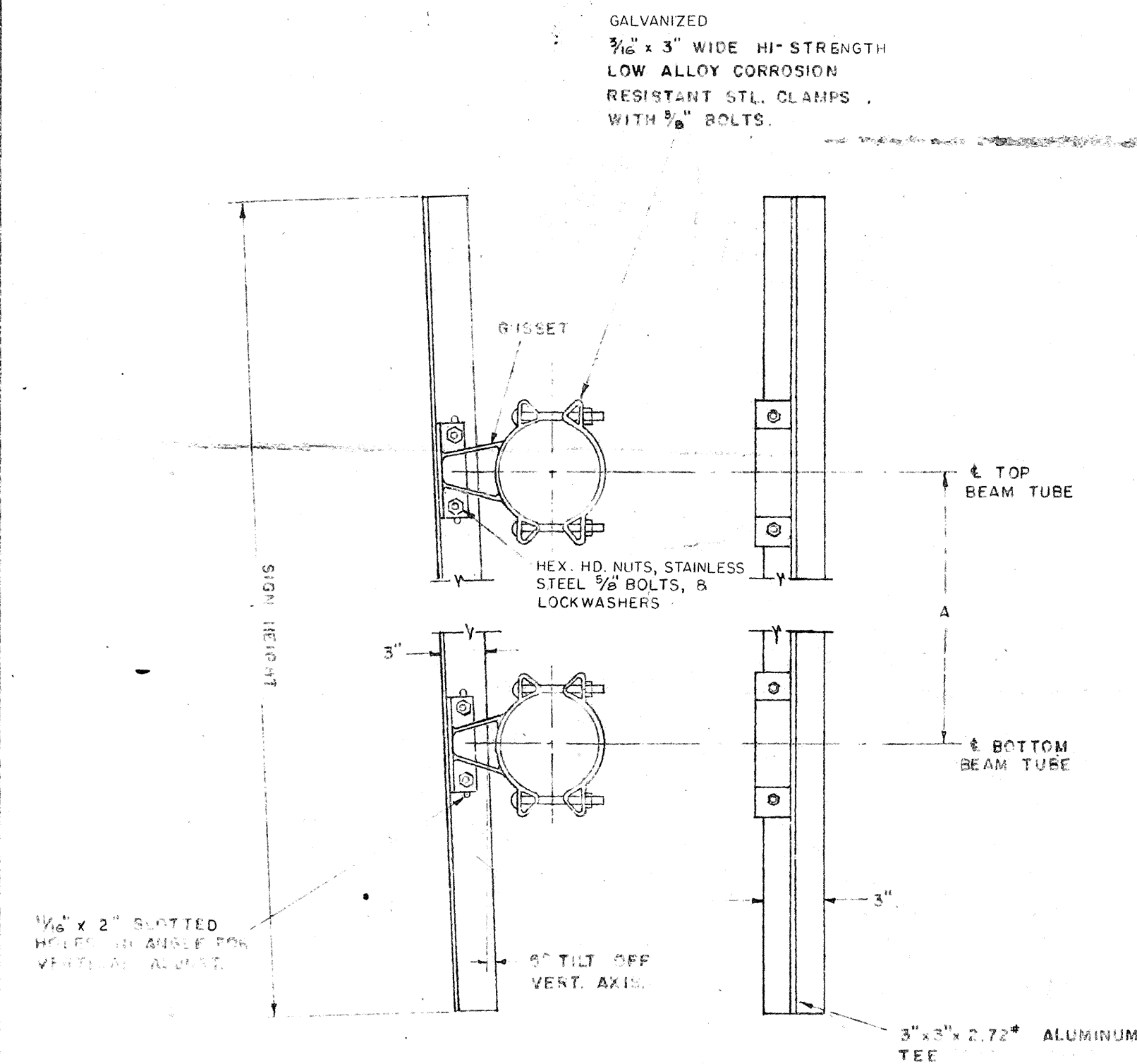


DETAIL OF REMOTE BALLAST BOX
NOT TO SCALE



POLE DIM.	S	F	BC	P	T	ANCHOR BOLTS
3 GA 15"	23"	15 1/2"	22"	4"	2"	2" DIA.
3 GA 16"	25 1/2"	15 1/2"	23 1/2"	4"	2"	2" DIA.
0 GA 18"	26 1/2"	15 1/2"	25 1/2"	4 3/4"	2 1/2"	2 1/2" DIA.

INDEX NO	POLE DIM	H	A	B	ARM DIM	AREA
1	3 GA 15" x 10.6" x 21'	16'				
2	x 14.78" x 23'	16'	4'	8'	7 GA 9.3" x 6.62" x 12'	
3	x 12.06" x 21'	16'				
4	x 11.78" x 23'	16'	4'	12'	7 GA 6.3" x 8.06" x 16'	120 MAX. SQ. FT.
5	x 12.06" x 21'	16'				
6	x 11.78" x 23'	16'	4'	16'	3 GA 9.2" x 6.4" x 20'	
7	x 12.06" x 21'	16'				
8	x 11.78" x 23'	16'	4'	20'	3 GA 9.2" x 5.84" x 24'	
9	3 GA 18" x 14.78" x 23'	16'				
10	x 14.5" x 25'	16'	6'	10'	7 GA 9" x 6.48" x 16'	
11	x 14.78" x 23'	16'				
12	x 14.5" x 25'	16'	6'	14'	7 GA 11" x 7.92" x 22'	180 MAX. SQ. FT.
13	x 14.78" x 23'	16'				
14	x 14.5" x 25'	16'	6'	18'	7 GA 12.5" x 6.66" x 26'	
15	0 GA 18" x 14.78" x 23'	16'				
16	x 14.5" x 25'	16'	6'	14'	7 GA 12.5" x 9.14" x 24'	
17	x 14.78" x 23'	16'				
18	x 14.5" x 25'	16'	6'	16'	3 GA 12.5" x 9.56" x 28'	240 MAX. SQ. FT.
19	x 14.78" x 23'	16'				
20	x 14.5" x 25'	16'	6'	24'	0 GA 13" x 8.24" x 34'	



SIGN BRACKET ASSEMBLY

NOTE -
MINIMUM OF ONE SIGN BRACKET ASSEMBLY
REQUIRED FOR EACH 4 LINEAR FT OF
SIGN WIDTH FOR SIGNS OVER 10 FT HIGH
MINIMUM OF ONE SIGN BRACKET ASSEMBLY
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

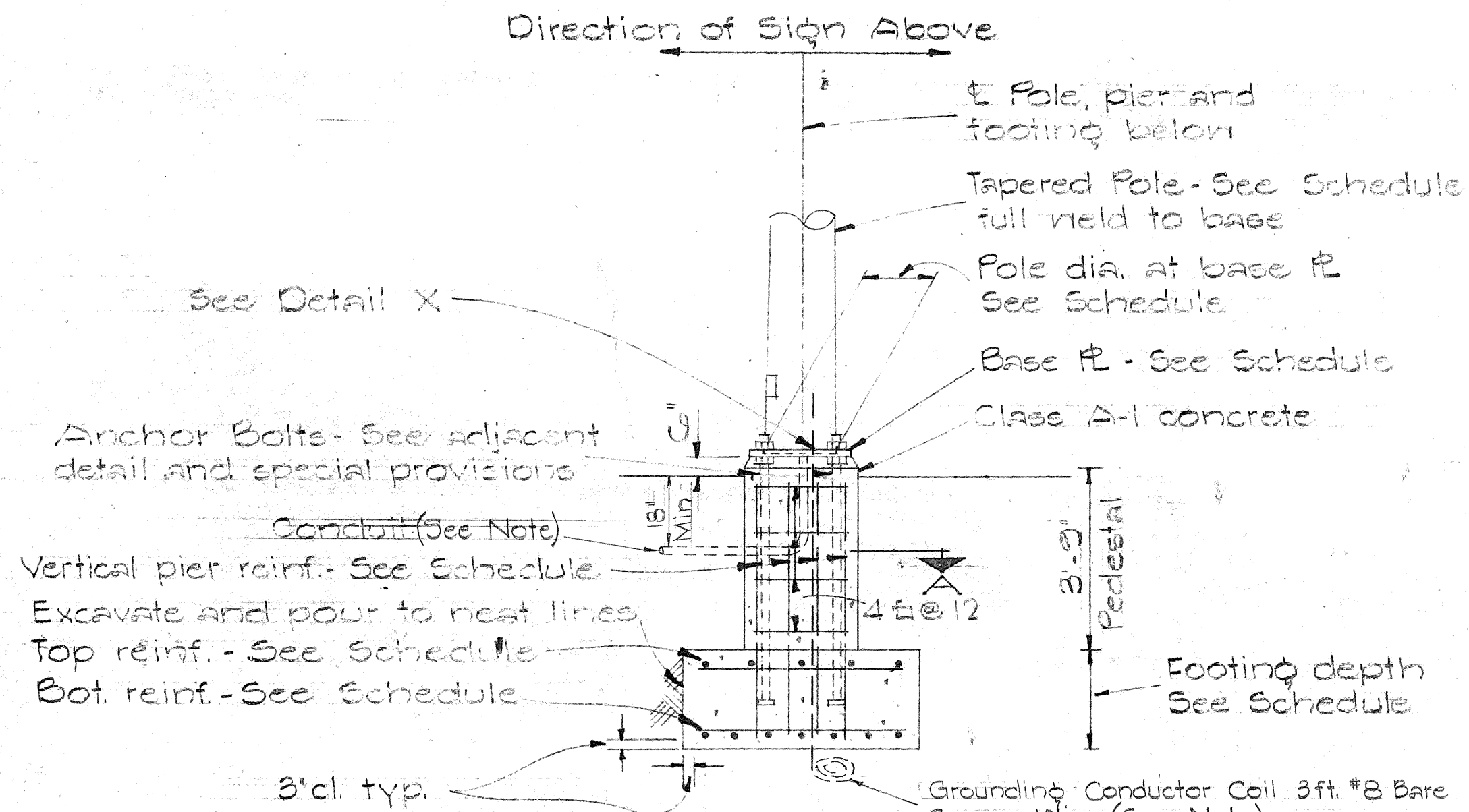
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EXPRESSWAY SIGNS

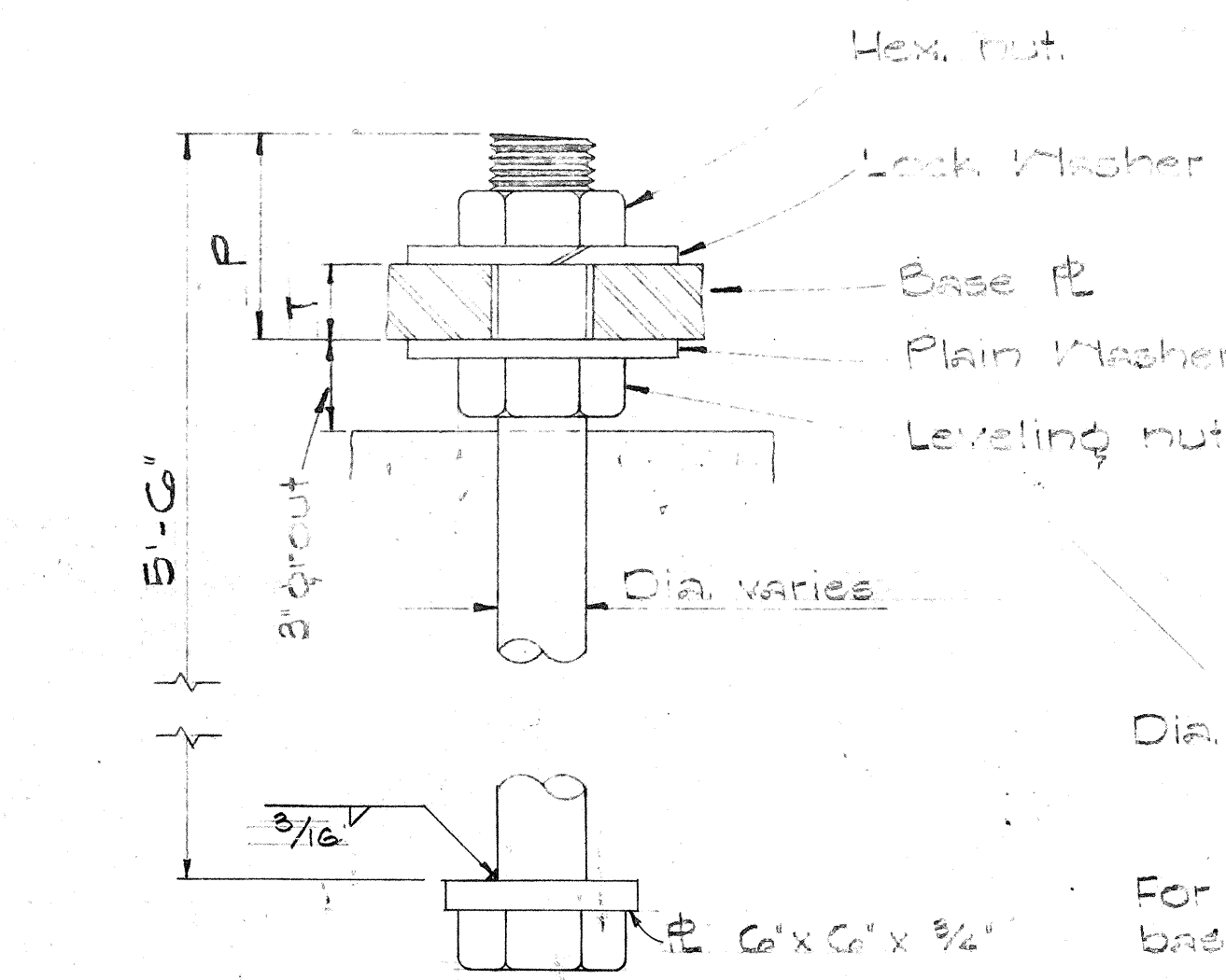
DETAILS AND SCHEDULES
TYPE B & C SIGN SUPPORTS

LUNALILO FREEWAY PROJ. NO. U-072-1(3)

No Scale

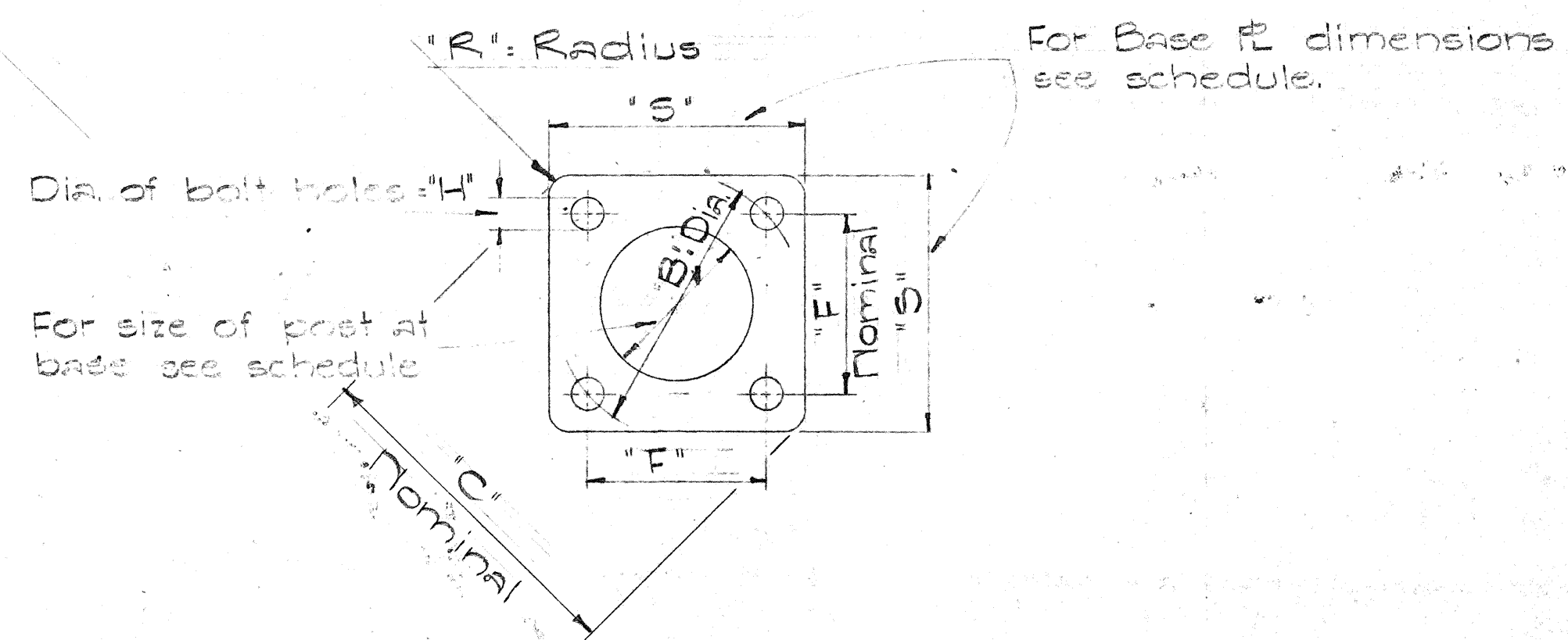


TYPICAL POLE FOUNDATION DETAIL

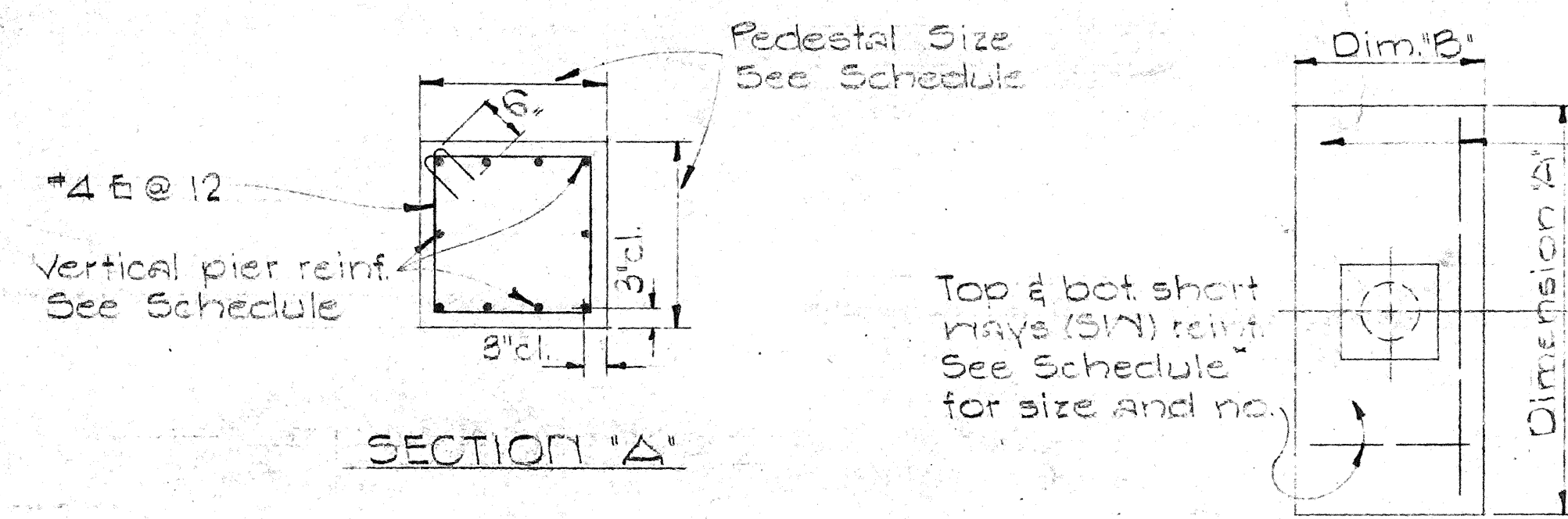


TYPICAL ANCHOR BOLT 4 REG'D

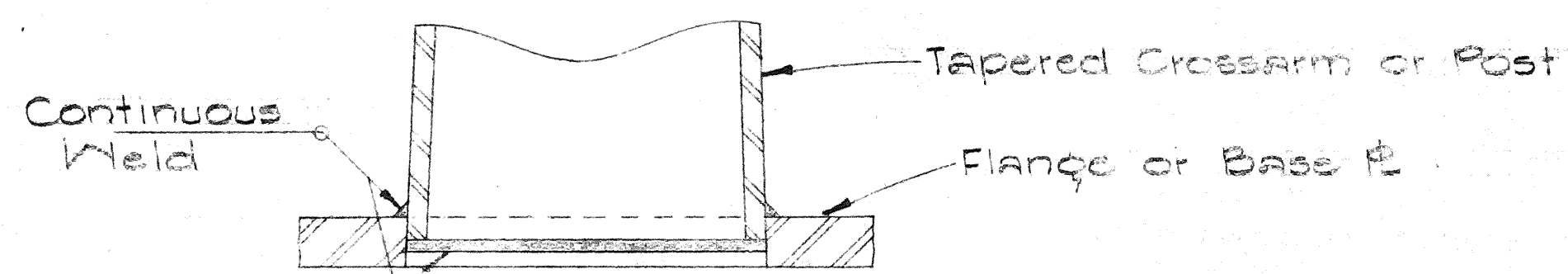
BASE PLATE SCHEDULE										
Post Dia.	Gage No.	B	C	F	H	P	R	S	T	Bolt Dia.
15	3-3	22	28 3/8	15 1/2	2 1/8	5	4 5/8	23	2 1/2	2 1/2
15	0-0	23 1/2	30 1/2	16 5/8	3 3/8	6	5	24 1/2	3	3
18	0	25 1/2	33	18	2 5/8	4 3/4	5 1/2	26 1/2	2 1/2	2 1/4
18	0-0	25 1/2	33	18	3 3/8	6	5 1/2	26 1/2	3	3



TYPICAL BASE PLATE



TYPICAL FOOTING PLAN



DETAIL 'X'

- NOTE:
- 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.
 - 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	7'-0"	3'-0"	2'-0"	3-#4	8-#4	4 @ 12 Each Way	Do.	1'-11"	10-#5
II	9'-0"	4'-6"	2'-0"	6-#6	10-#4	Do.	Do.	2'-6"	10-#7
III	10'-0"	5'-0"	2'-0"	5-#8	11-#4	Do.	Do.	2'-6"	10-#8
IV	12'-0"	6'-0"	2'-0"	7-#9	13-#4	Do.	Do.	2'-9"	10-#10
V	14'-0"	7'-0"	2'-0"	8-#11	15-#4	Do.	Do.	2'-9"	10-#11

SINGLE SIGN POST-CANTILEVER TYPE-DOUBLE MASTARM						
Sign No.	Stations	Crossarm Tapered at Post	Post Tapered at Base	Base Plate	Footing	
E-4	± 85+45	0 ¢a-2.0" Dia.	3 ¢ 3 ¢a-15" Dia.	23" x 2 1/2" x 23"	V	4-2 1/2" Dia.
E-6	± 124+00	0 ¢a-2.0" Dia.	0 ¢a-18" Dia.	26 1/2" x 2 1/2" x 26 1/2"	IV	4-2 1/4" Dia.
E-7	± 125+00	0 ¢a-10.0" Dia.	0 ¢ 0 ¢a-15" Dia.	24 1/2" x 3" x 24 1/2"	IV	4-3" Dia.

GROUND MOUNTED TYPE EXPRESSWAY SIGNS						
Sign No.	Stations	I-Section Posts		Base Plate	Footing	
		Left	Right		Type	Anchor Bolts
E-1	± 64+00	8'x 35	10'x 45	10'x 1' x 20"	VI	4-1 1/4" Dia.
E-8	± 61+00	8'x 35	10'x 45	10'x 1' x 20"	VI	4-1 1/4" Dia.

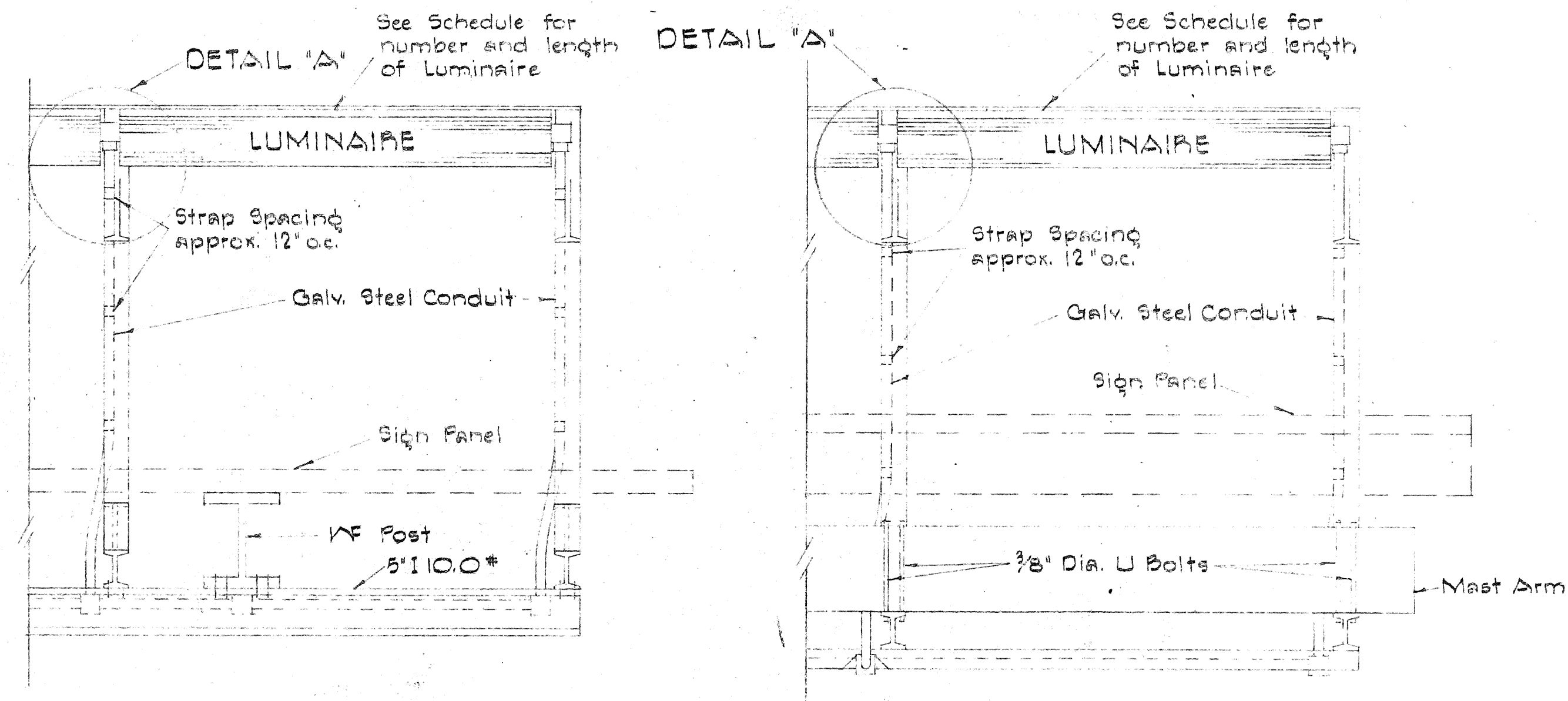
SINGLE SIGN POST-CENTER MOUNTED TYPE - DOUBLE MASTARM							
Sign No.	Stations	Crossarm Tapered at Post		Post Tapered at Base	Base Plate	Footing	
		Left	Right			Type	Anchor Bolts
E-2	± 71+50	0 ¢a-2.0" Dia.	0 ¢a-2.0" Dia.	0 ¢ 0 ¢a-18" Dia.	26 1/2" x 3" x 26 1/2"	V	4 - 3" Dia.
E-3	± 83+40	0 ¢a-2.0" Dia.	0 ¢a-10.0" Dia.	0 ¢ 0 ¢a-18" Dia.	26 1/2" x 3" x 26 1/2"	V	4 - 3" Dia.
E-5	± 103+30	0 ¢a-2.0" Dia.	7 ¢a-2.0" Dia.	0 ¢ 0 ¢a-15" Dia.	24 1/2" x 3" x 24 1/2"	IV	4 - 3" Dia.

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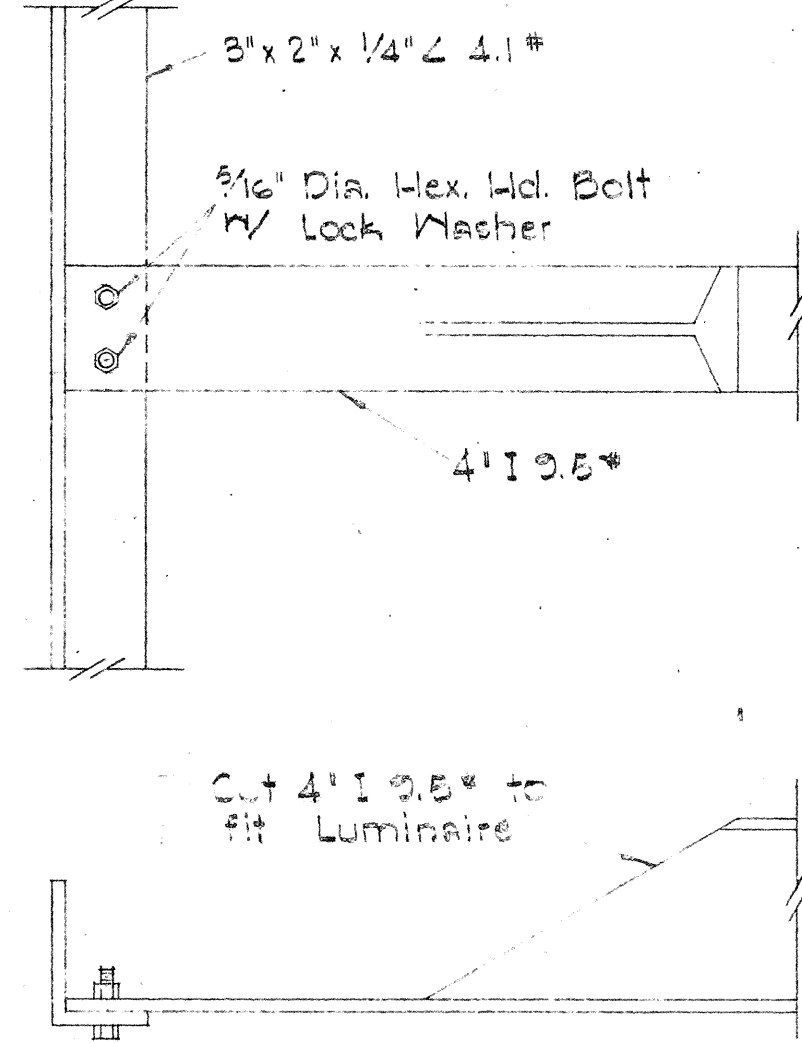
EXPRESSWAY SIGNS
DETAILS AND SCHEDULES
FOOTING, BASE PLATE & POST

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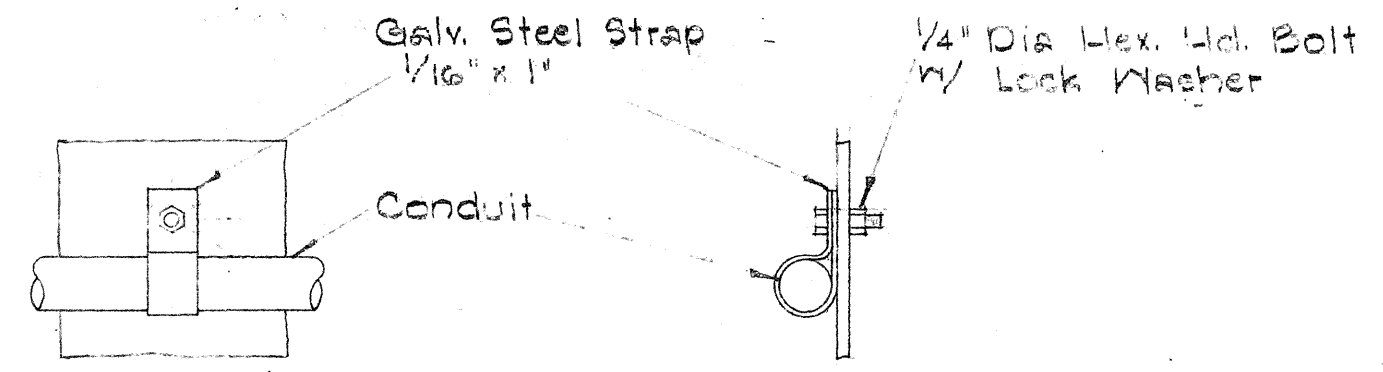
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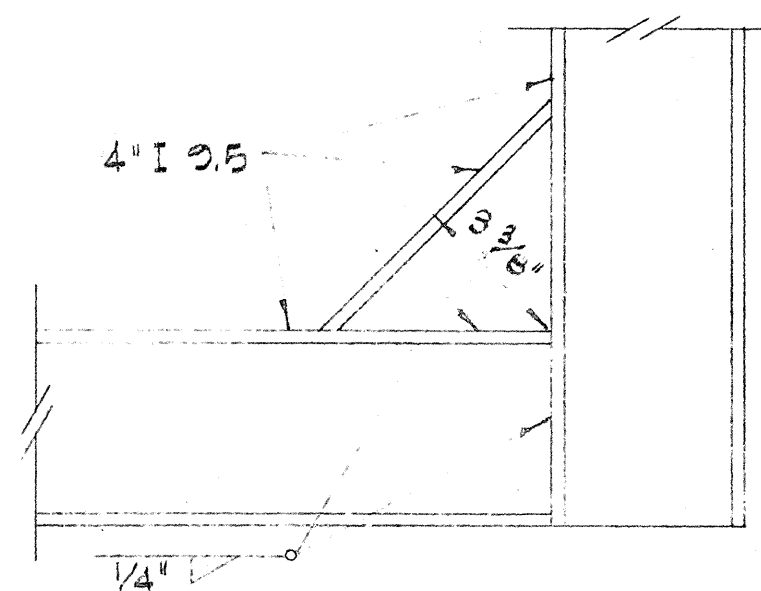
GROUND MOUNTED OVERHEAD
TOP VIEW
LUMINAIRE MOUNTING
Scale: 1" = 1'-0"



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



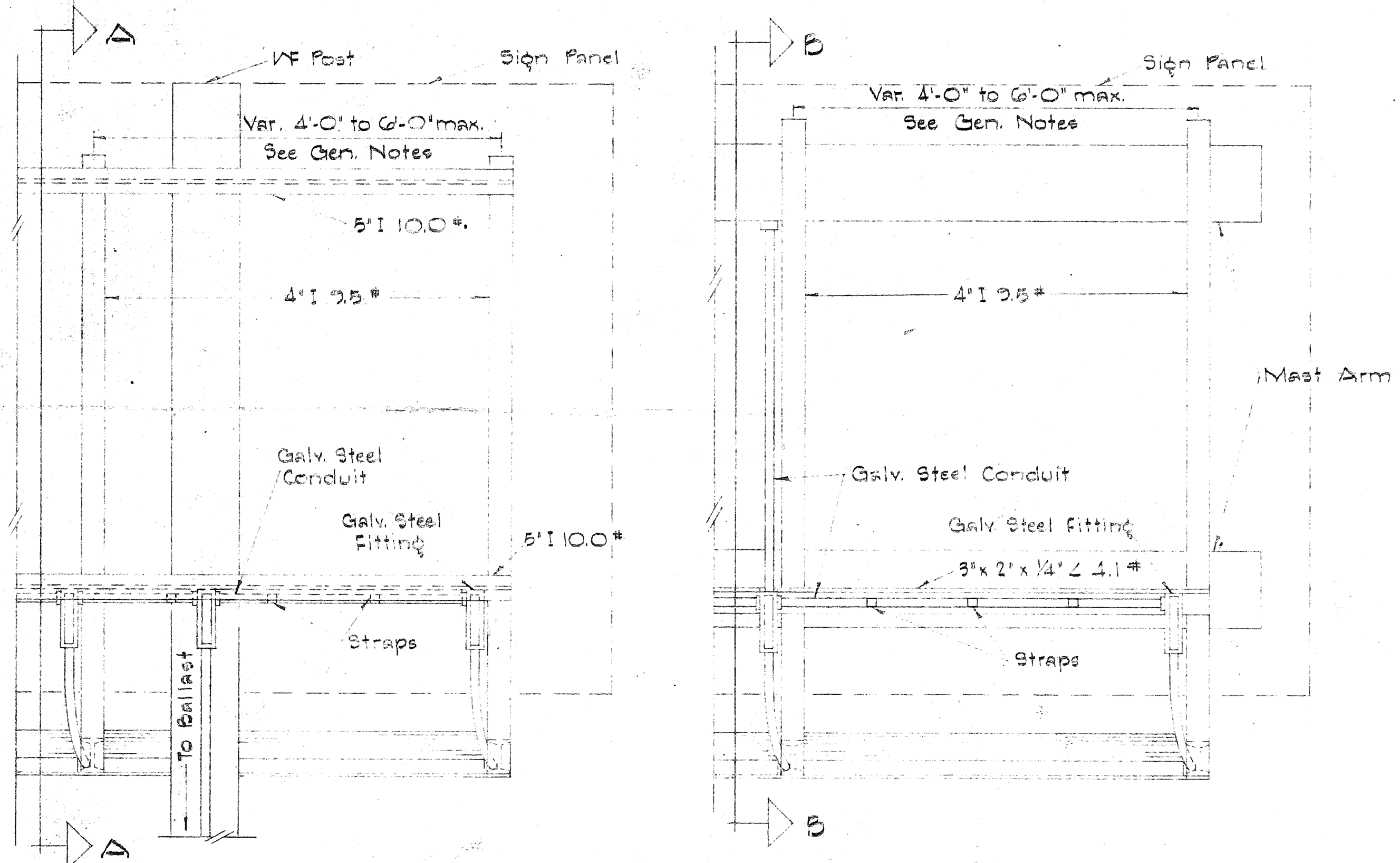
CONDUIT STRAP DETAIL
Scale: 3" = 1'-0"



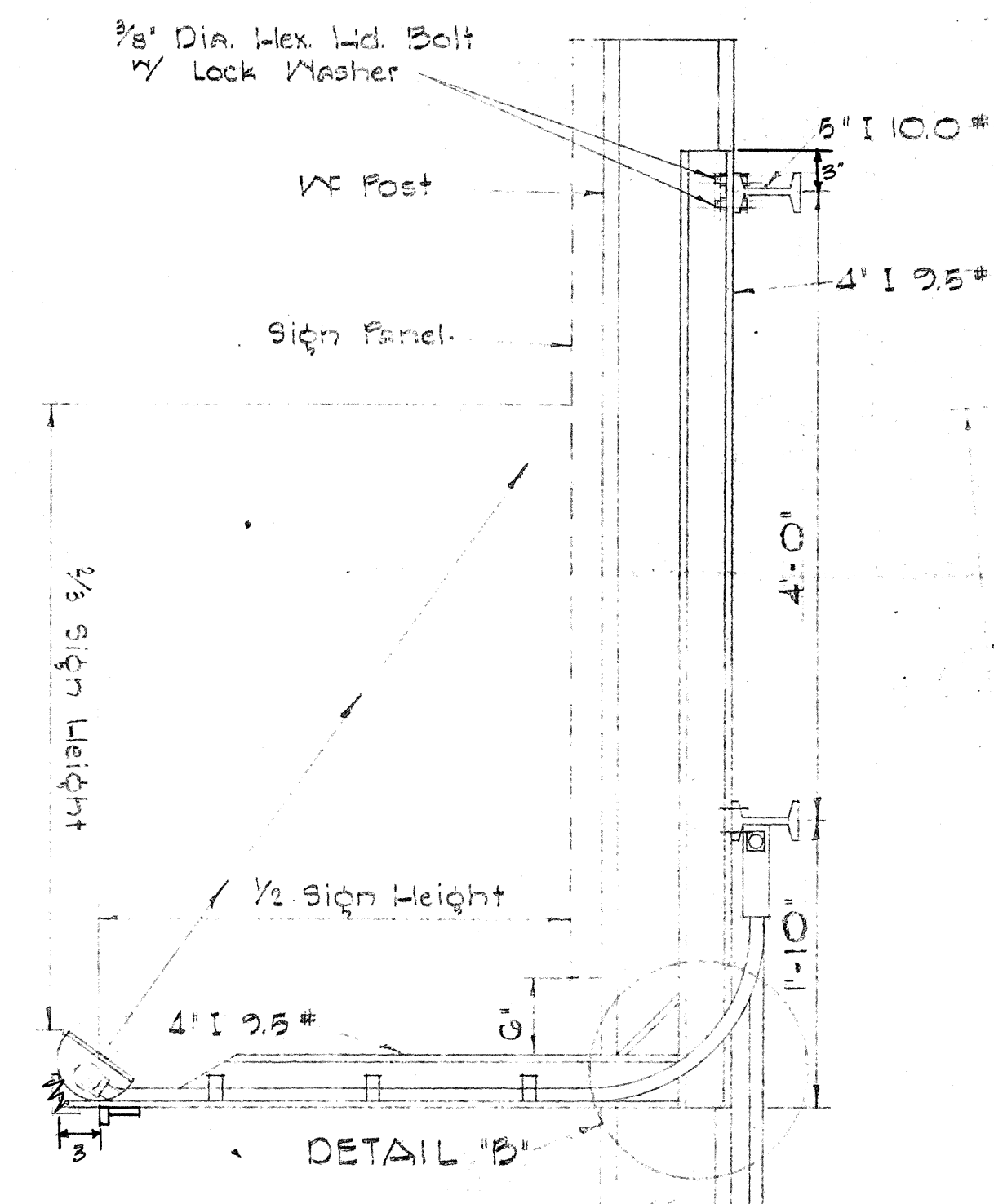
DETAIL 'B'
Scale: 3" = 1'-0"

GENERAL NOTES

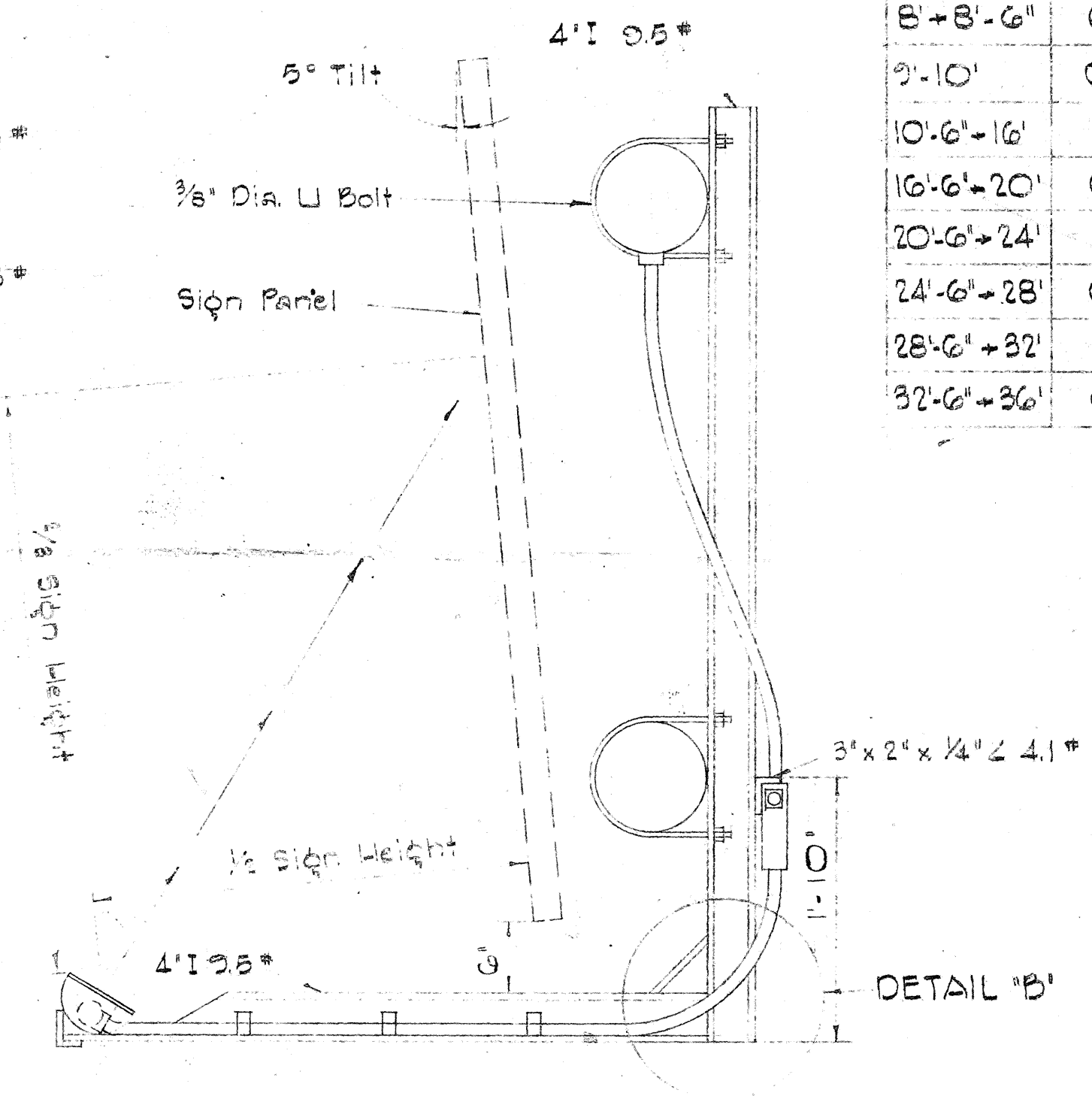
- Conduit sizes: 3/4" diameter for one or two Luminaire Units, 1" diameter for three or more Luminaire Units.
- Flourescent Fixtures shall be installed as recommended by the manufacturer.
- Luminaire brackets shall be spaced 4'-0" to 6'-0" maximum, 8' long luminaires shall have an additional bracket at midpoint.
- 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"

LUMINAIRE SCHEDULE			
Sign Length	Luminaire Units		
	4'-0"	6'-0"	8'-0"
8'-0"-12'-0"	0	1	0
12'-0"-16'-0"	0	0	1
16'-0"-20'-0"	1	0	1
20'-0"-24'-0"	0	0	2
24'-0"-28'-0"	0	0	3
28'-0"-32'-0"	1	0	3
32'-0"-36'-0"	0	0	4

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EXPRESSWAY SIGNS
LUMINAIRE MOUNTINGS

LUNALILO FREEWAY PROJ. NO. U-072-1(3)
Scale: As Shown

SHEET No. 10 OF 10 SHEETS