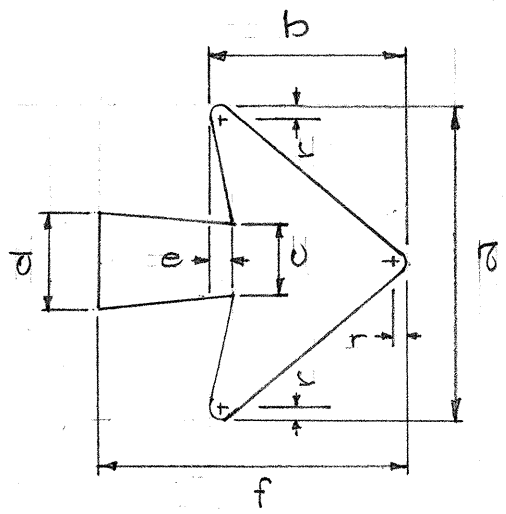
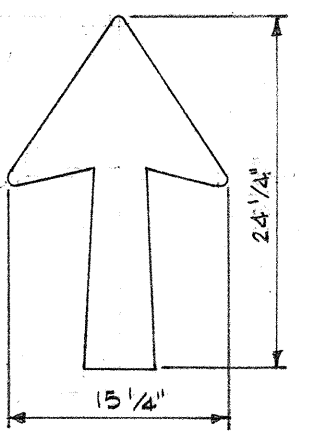
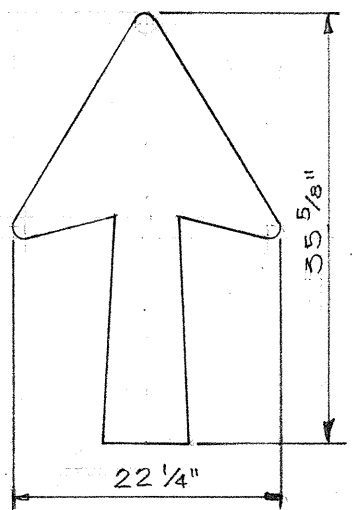
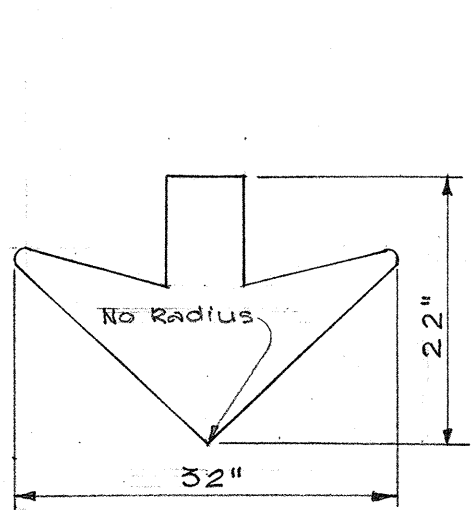
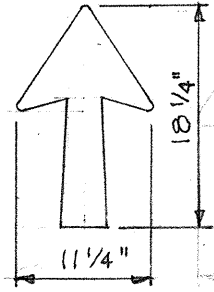
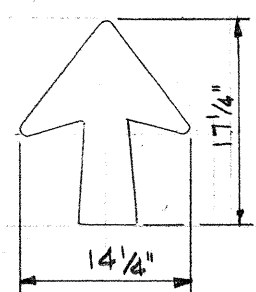


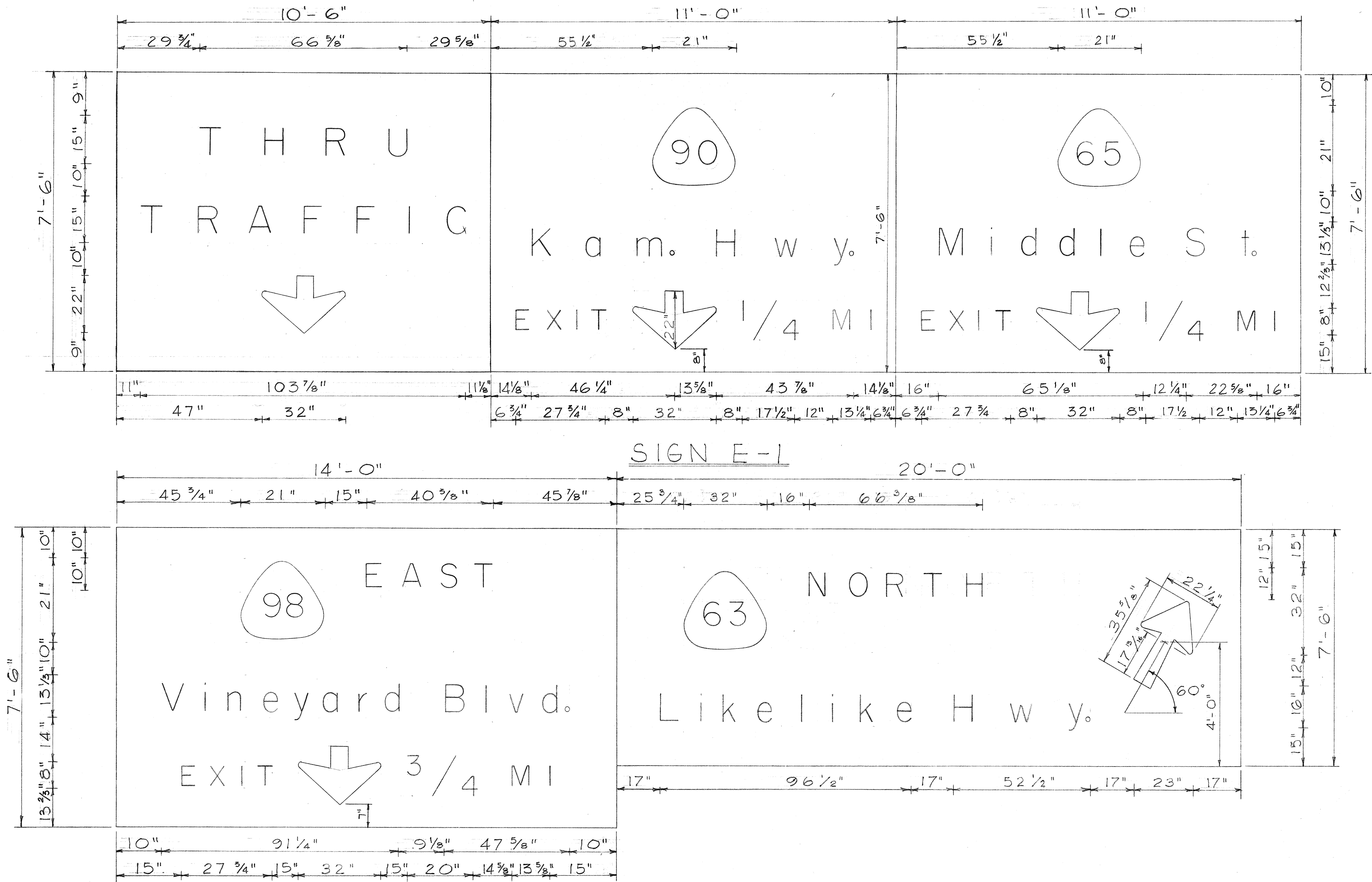
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-075-103	1963	A36	45
		U-063-111	1963	B35	45



Arrow Size	Dimensions in inches						
	a	b	c	d	e	f	r
11 1/4" x 18 1/4"	11 1/4	18 1/4	3 1/8	3 7/8	7/8	18 1/4	5/8
15 1/8" x 24 1/4"	15 1/8	24 1/4	3 3/4	5	1 5/16	24 1/4	13/16
14 1/4" x 17 1/4"	14 1/4	17 1/4	3 3/8	4 1/2	1 1/8	17 1/4	3/4
22 1/4" x 35 5/8"	22 1/4	35 5/8	5 3/8	7 1/8	1 3/4	35 5/8	1
32" x 22"	32	22	6 1/2	6 1/2	3	22	1



TYPICAL ARROW DETAILS



SIGN E-2

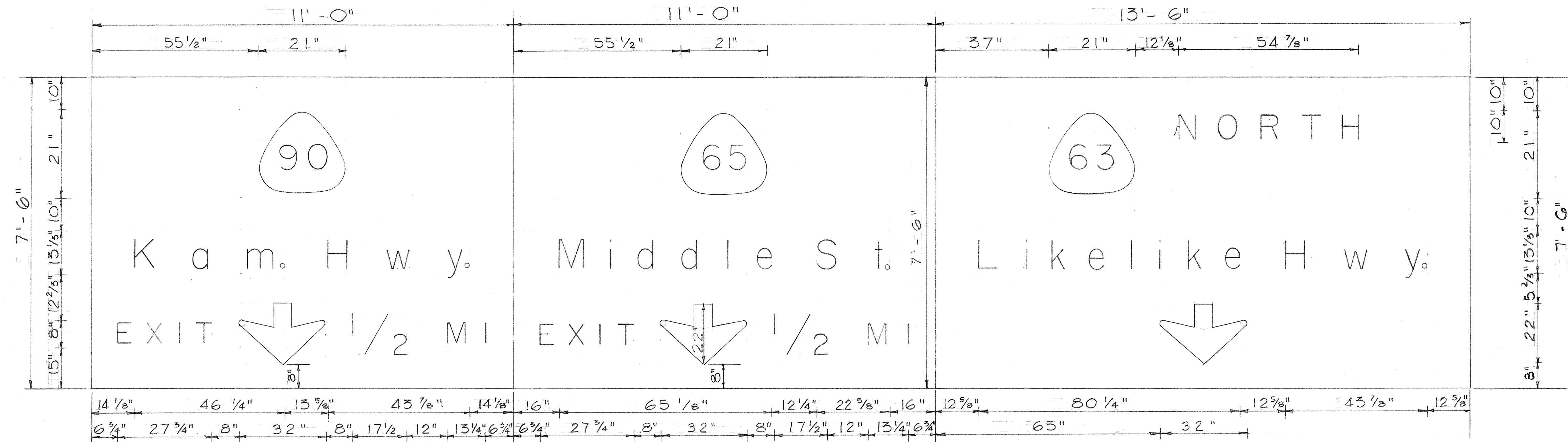
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EXPRESSWAY SIGNS
PANEL LAYOUT,
TYPICAL ARROW DETAILS

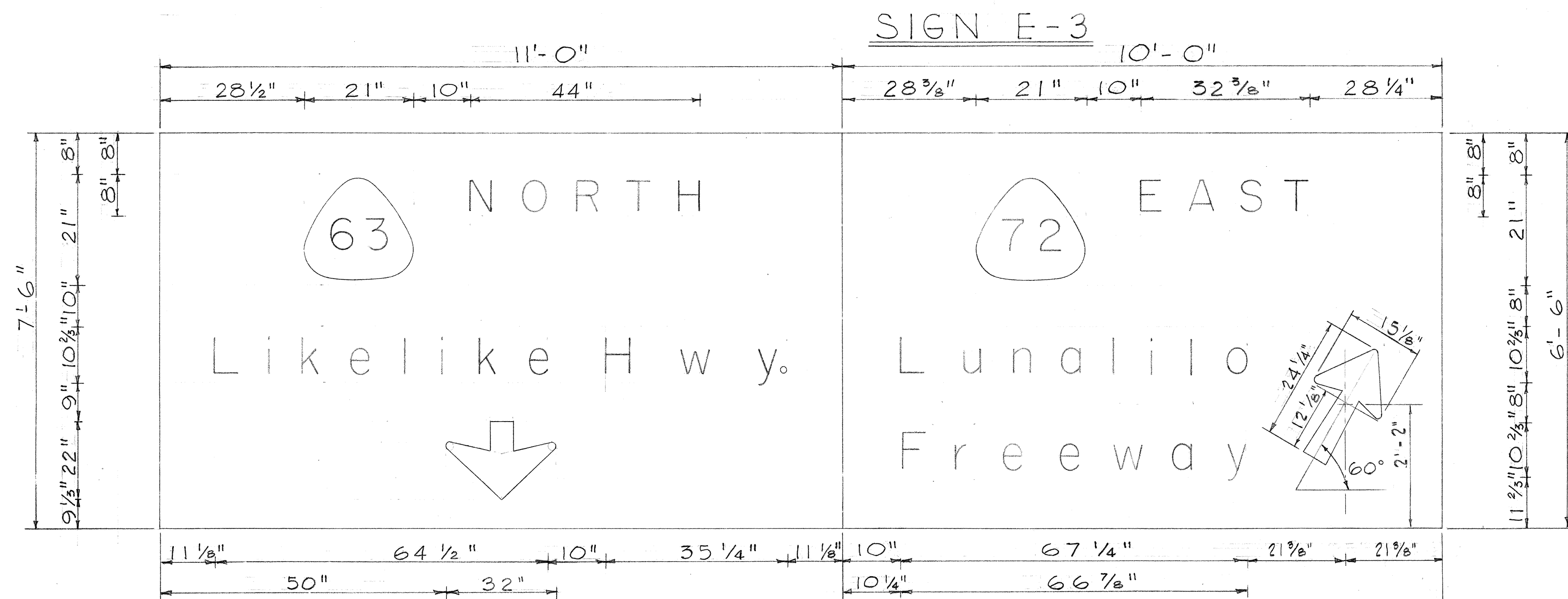
No Scale

SHEET No. 1 OF 3 SHEETS

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



- 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 embossed and shall be fastened on sign panel with blind rivets. See Special Provisions.



SUMMARY OF SIGN AREAS (in Sq. Ft.)

SIGN NO.	MESSAGE	AREA U-072-1(10)	AREA U-063-1(1)
E-1	Thru Traffic	78.75	
E-1C	Kam. Hwy.	82.50	
E-1R	Middle St.	82.50	
E-2	Vineyard Blvd.		105.00
E-2R	Likelike Hwy.		150.00
E-3	Kam. Hwy.	82.50	
E-3C	Middle St.	82.50	
E-3R	Likelike Hwy.	101.25	
E-4	Likelike Hwy.		82.50
E-4R	Lunalilo Freeway		65.00
E-5	Lunalilo Frwy.		120.00
E-5R	Kalihi St.		42.00
E-6	Lunalilo Frwy.		82.50
E-6C	Kalihi St.		60.00
E-6R	Lunalilo Frwy.		82.50
D-1	WEST - Lunalilo Frwy.		* 37.50
D-2	Kalihi St. etc.		* 40.00
	TOTAL AREA	510.00\$	867.00\$

* NOTE: "D" Type Sign Panel (See Special Provisions).

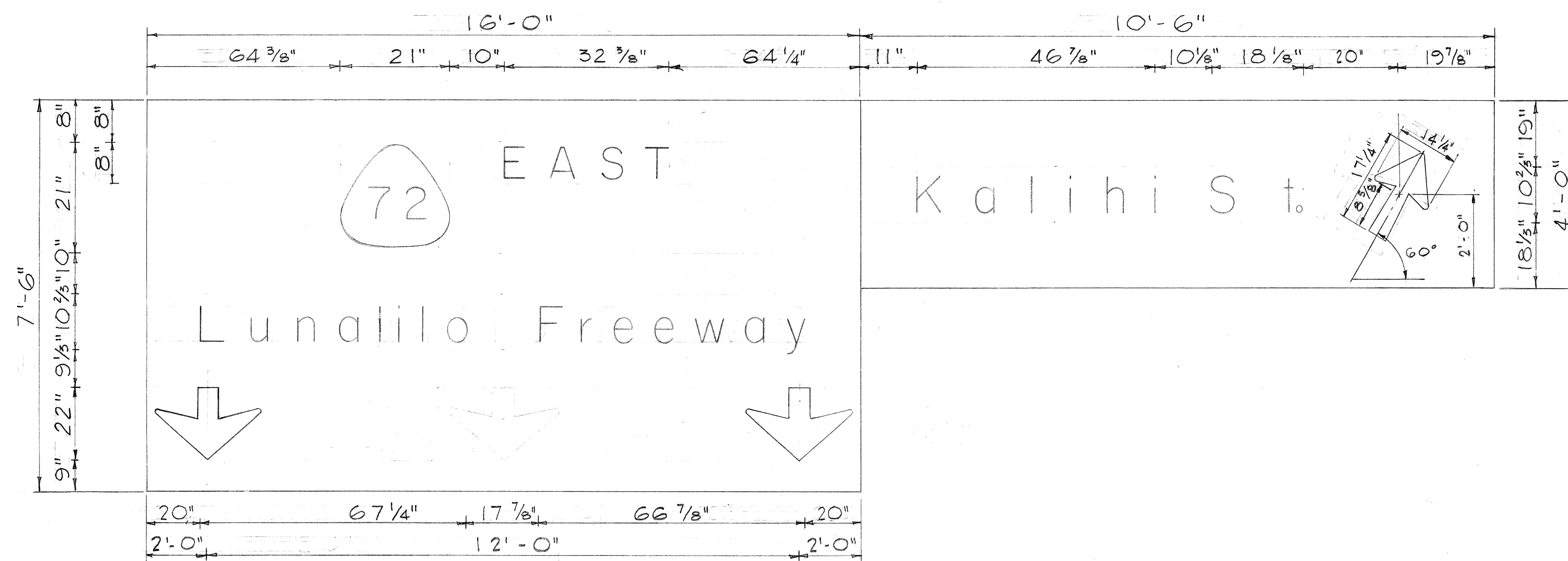
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EXPRESSWAY SIGNS
PANEL LAYOUT

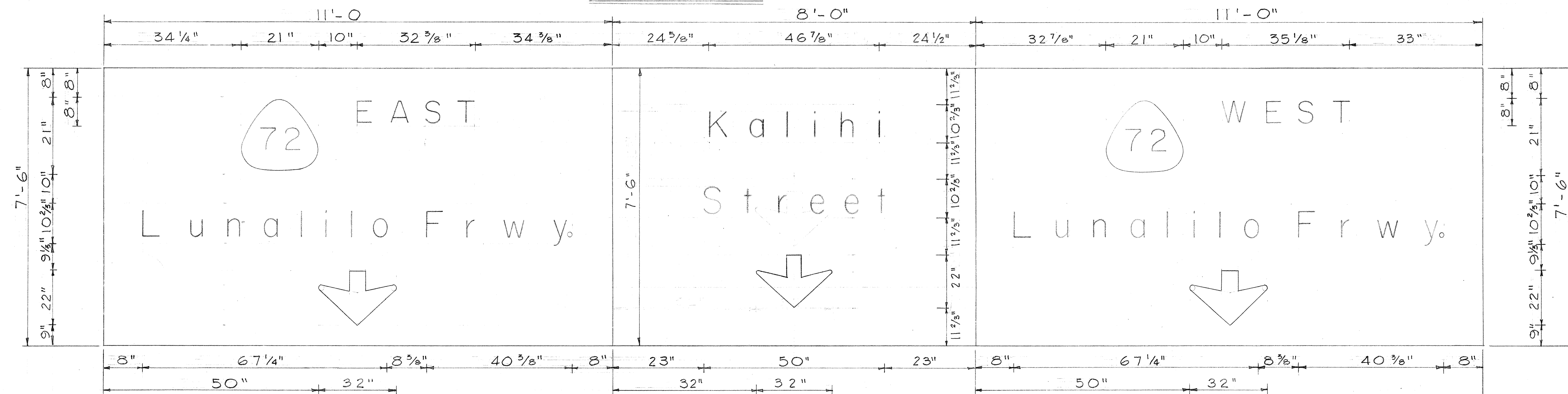
No Scale

SHEET No. 2 OF 3 SHEETS

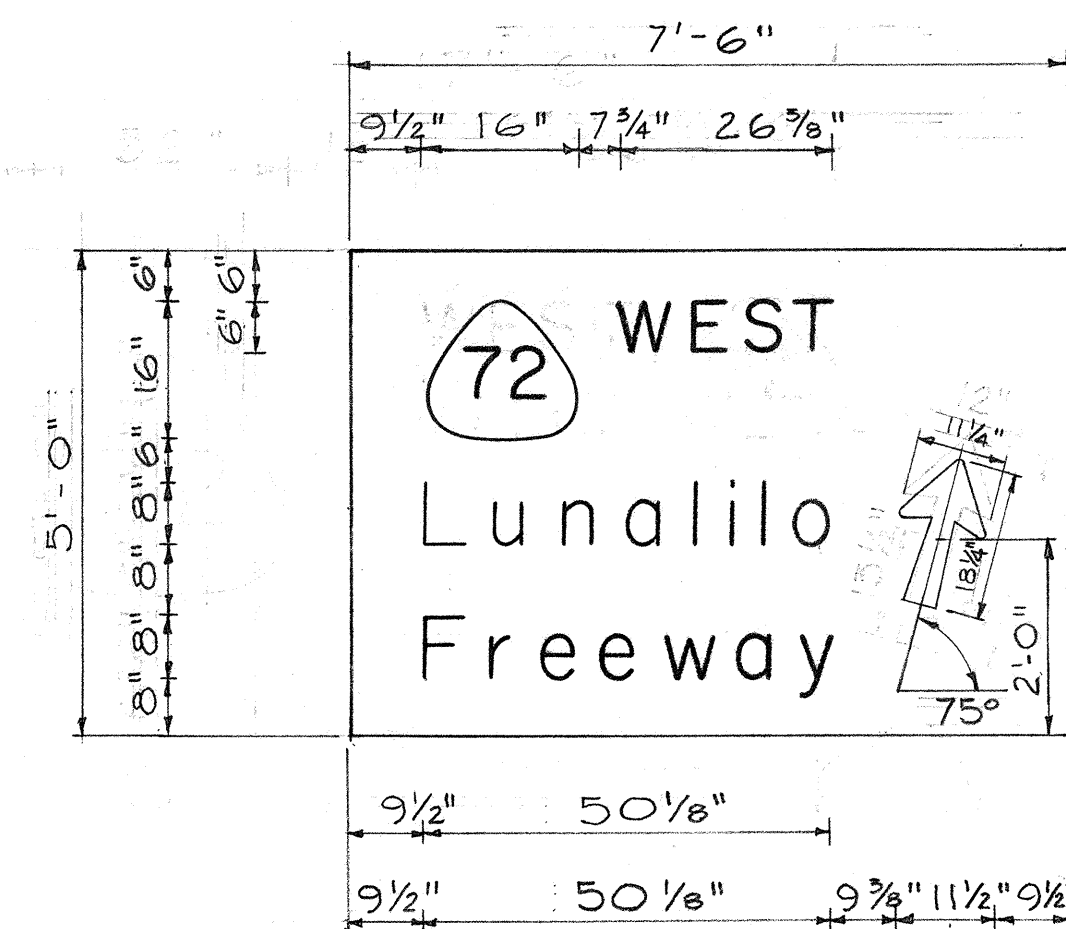
A 37 B 36



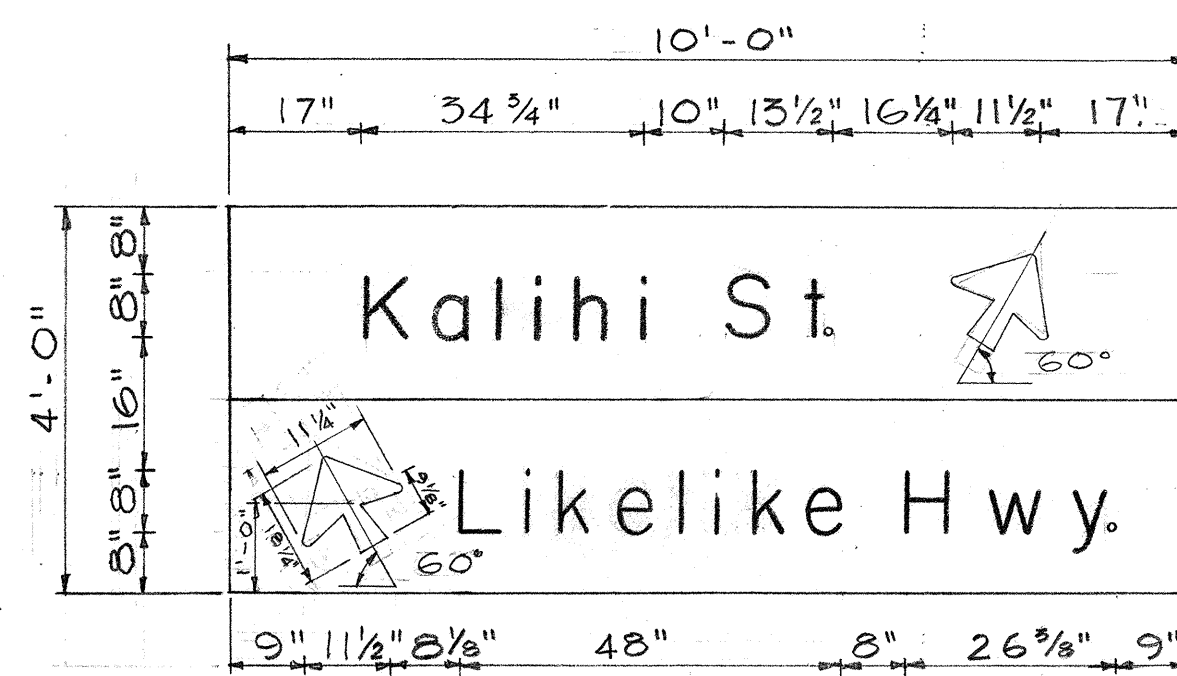
SIGN E-5



SIGN E-6



SIGN D-1



SIGN D-2

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

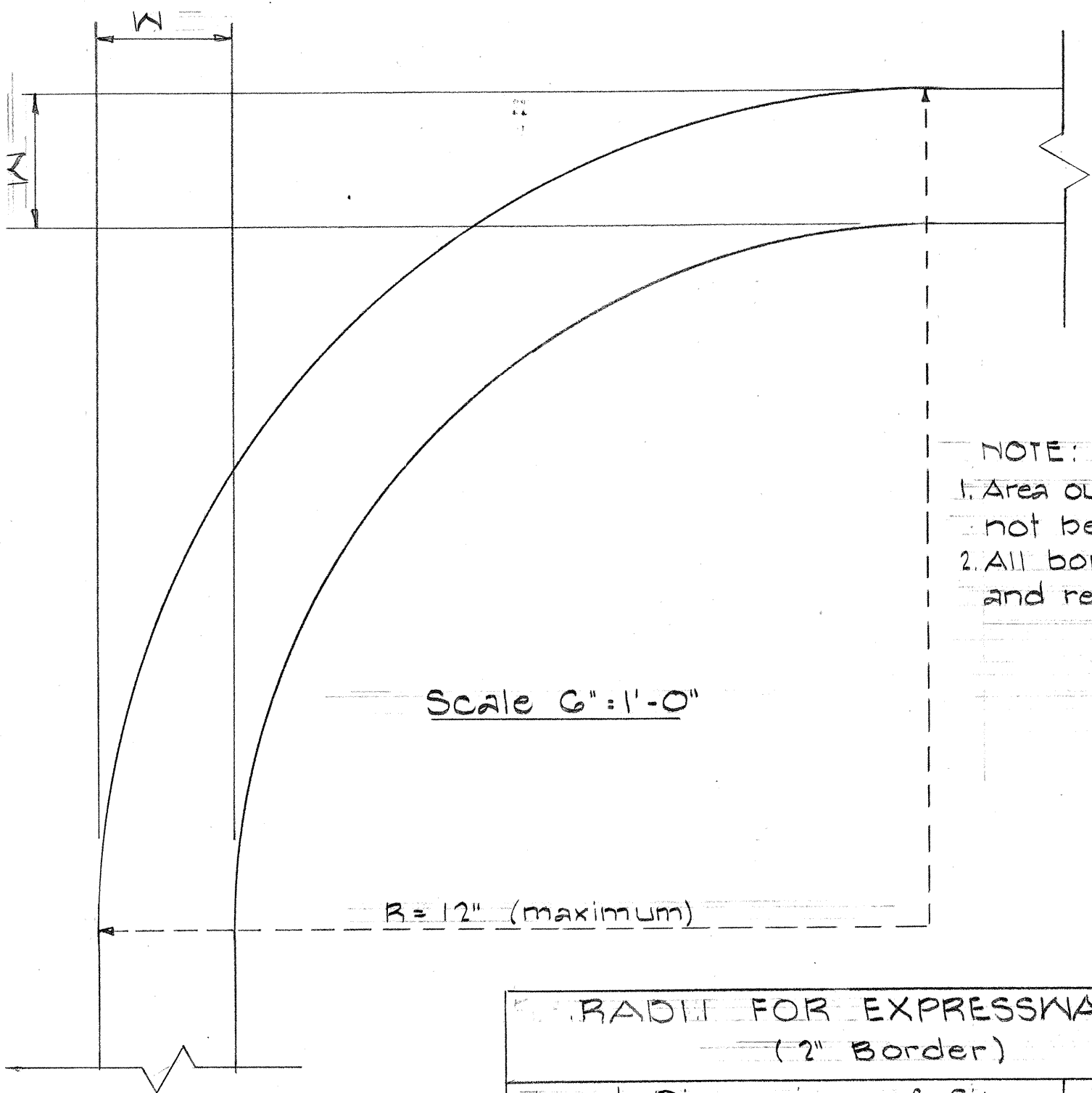
DESTINATION & EXPRESSWAY
SIGNS - PANEL LAYOUT

No Scale

SHEET No. 3 OF 3 SHEETS

GENERAL NOTES

1. All State Route Markers on 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.
5. All signs shall have borders.



- NOTE:
1. Area outside corner need not be trimmed.
 2. All borders shall be white and reflectorized

Scale 6"=1'-0"

R=12" (maximum)

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

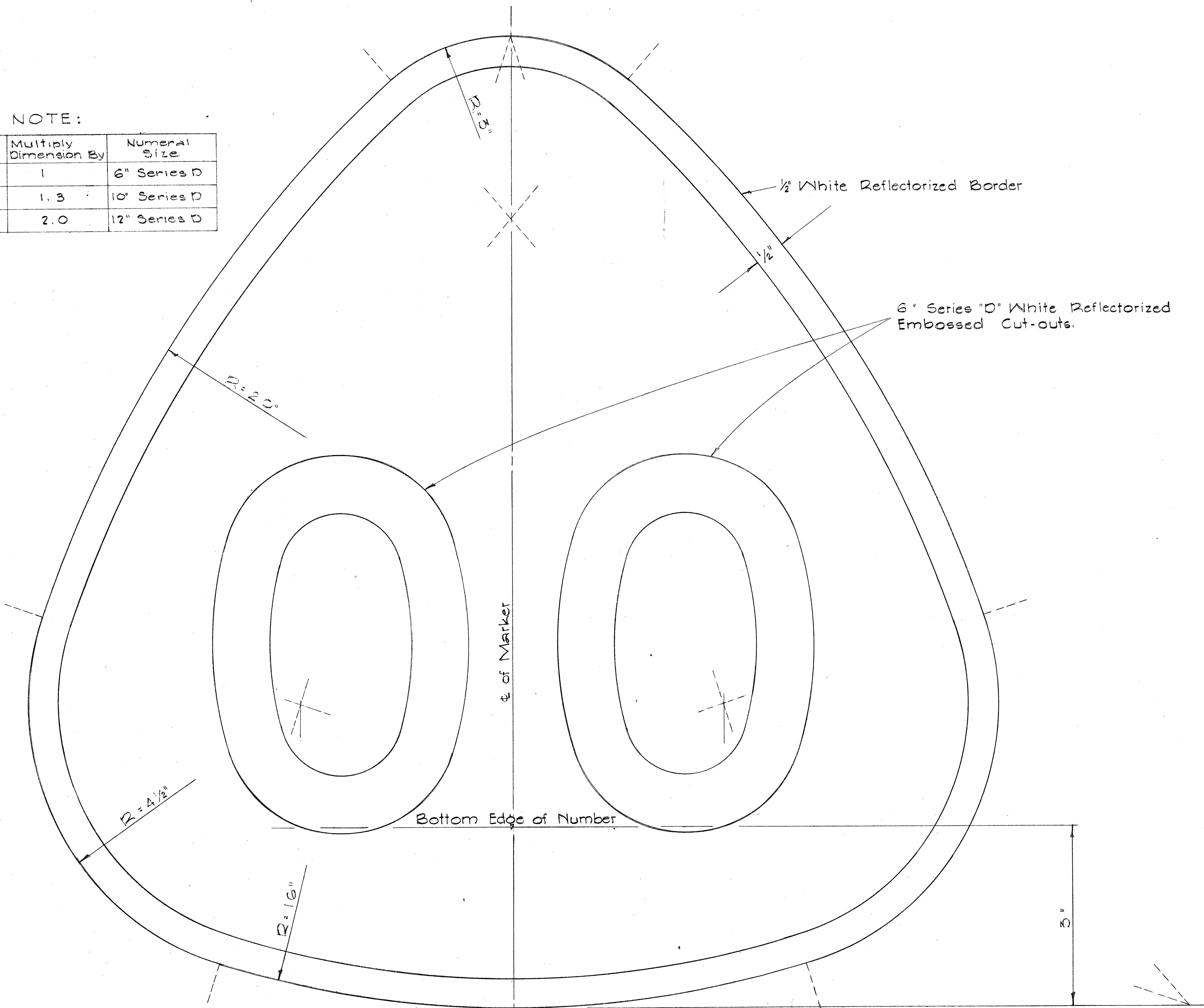
SHEET No. OF SHEETS

A 38 B 38

45

NOTE:

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

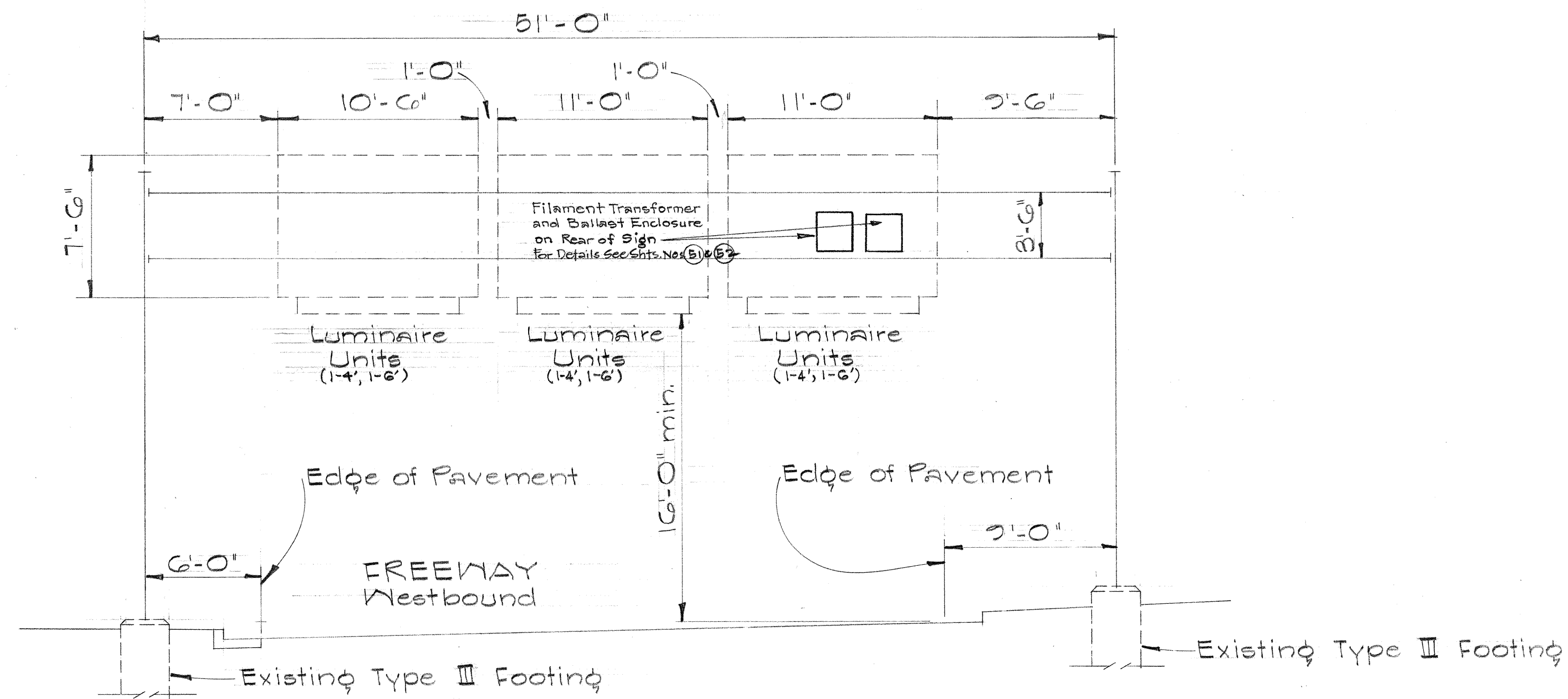


STATE ROUTE MARKER
FOR
DESTINATION AND EXPRESSWAY SIGNS

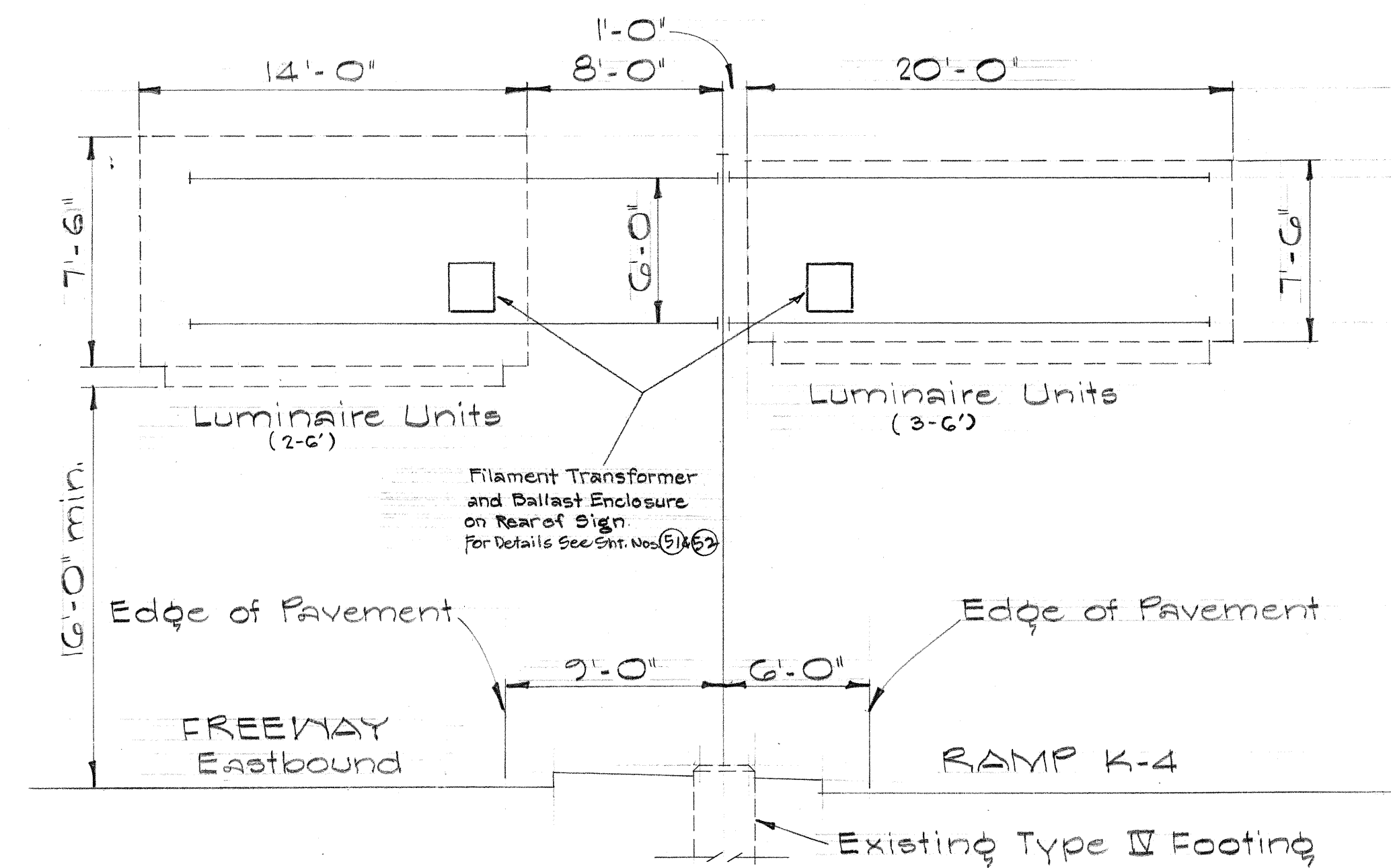
SCALE: Full Size

SURVEY PLOTTED BY	DATE
DRAWN BY	
CHECKED BY	
NOTE BOOK	
No.	

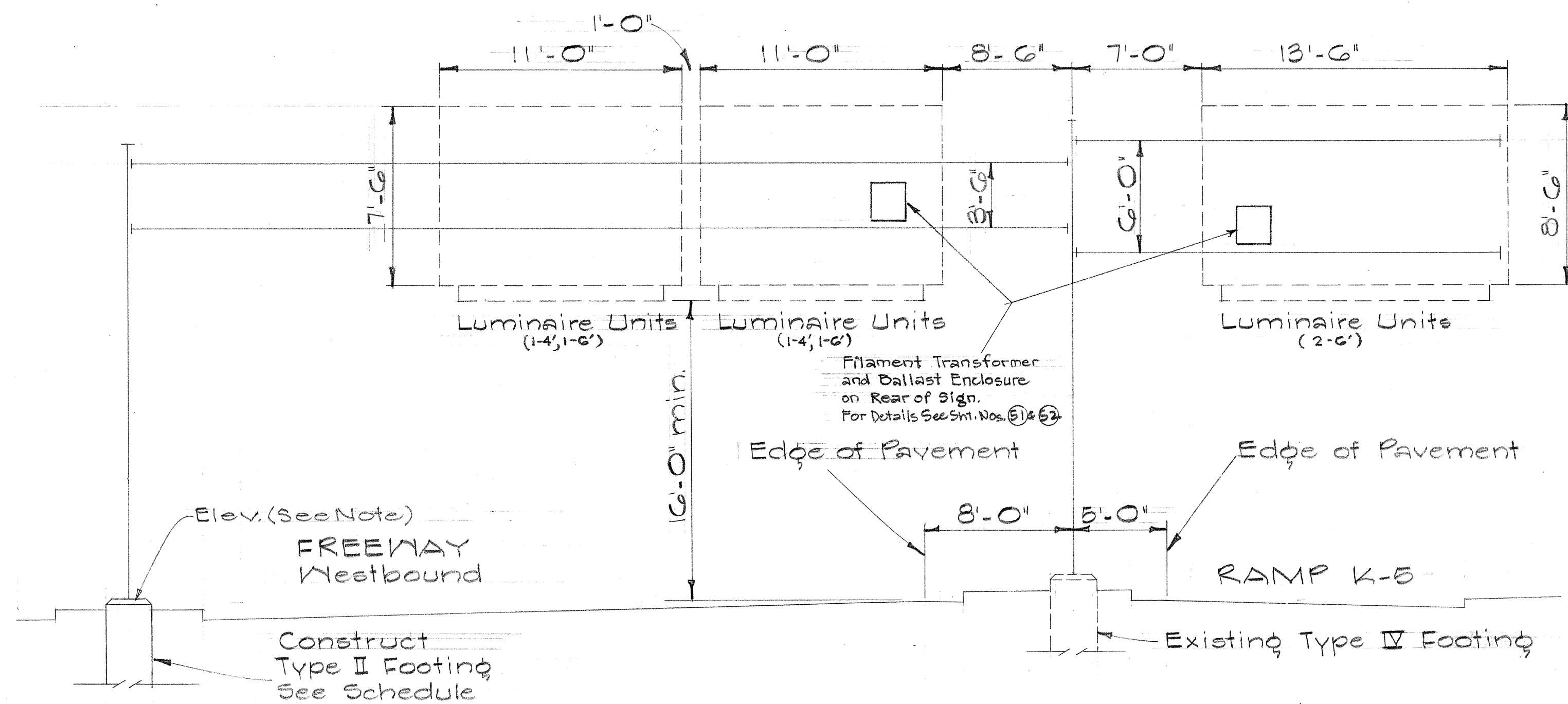
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	11072-1(6)	1963	A 39	45
		1063-1(1)	1963	B 39	45



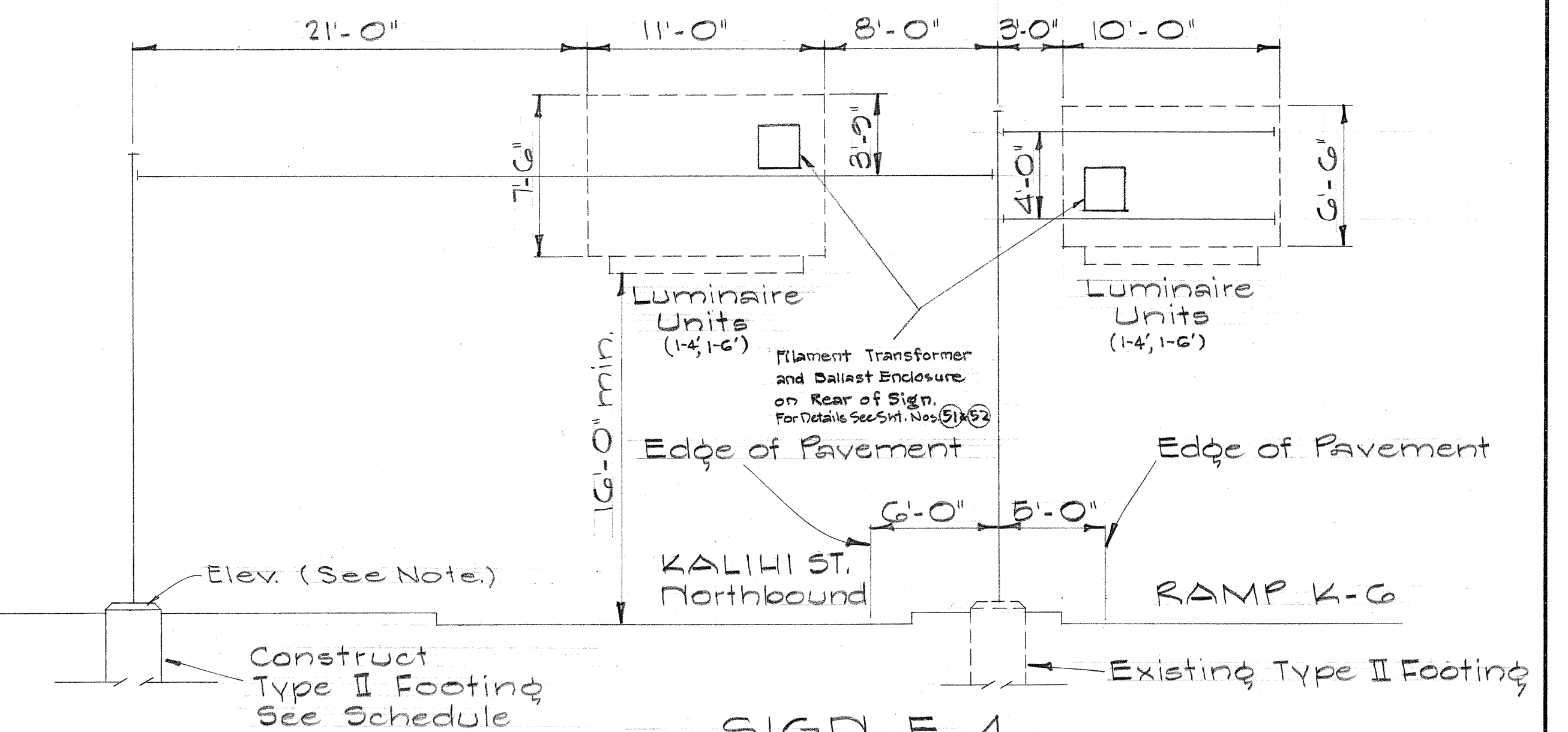
SIGN E-1
STA 37+75



SIGN E-2
STA 45+80



SIGN E-3
STA 50+10



SIGN E-4
KALIHIKI ST. STA 4+50

NOTE:

1. The elevations of the new footings shall be determined in the field by the Engineer.
2. The right vertical supports of signs E-4 and E-5 shall be longer than the left supports to accommodate the cantilever mast arms.

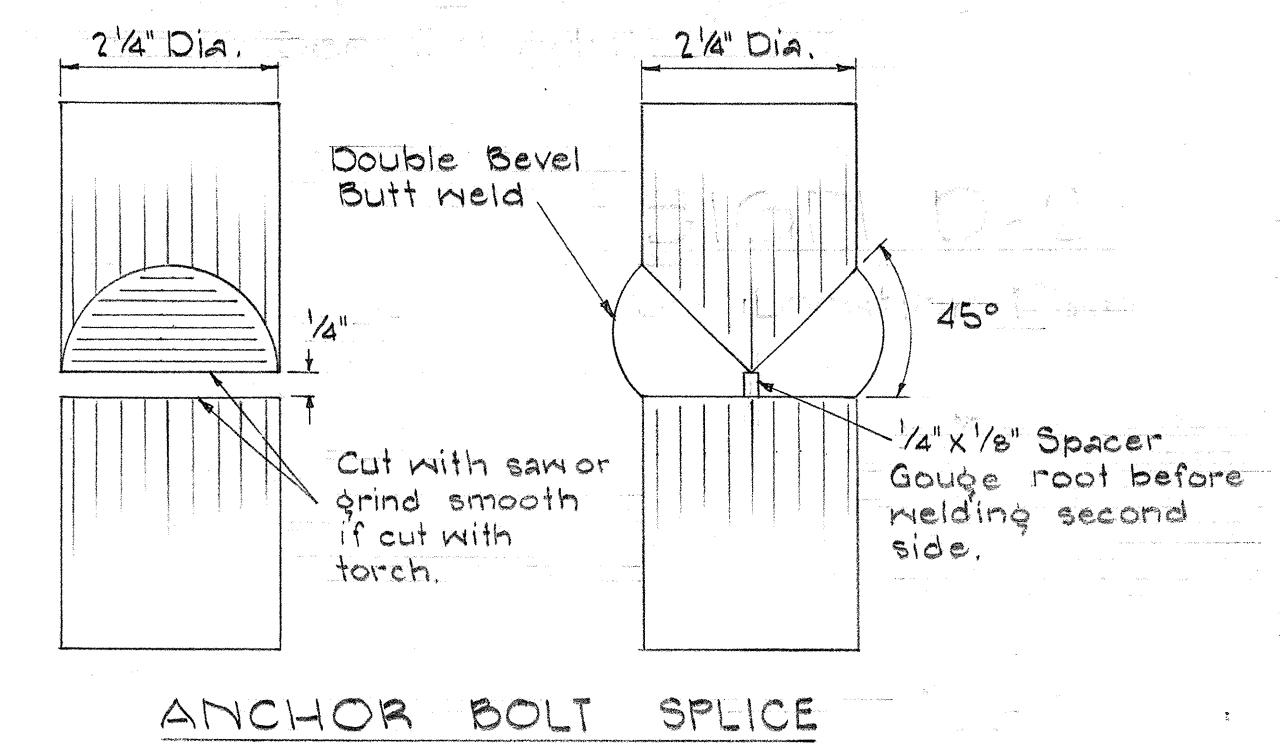
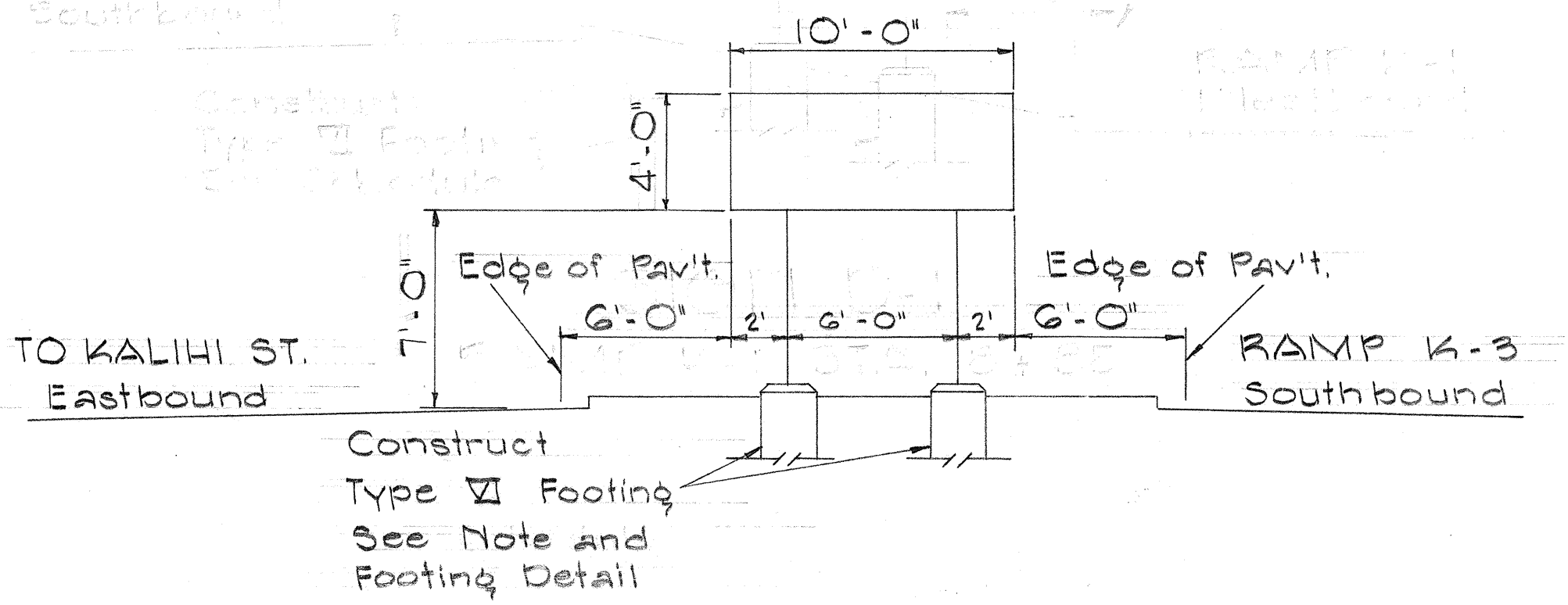
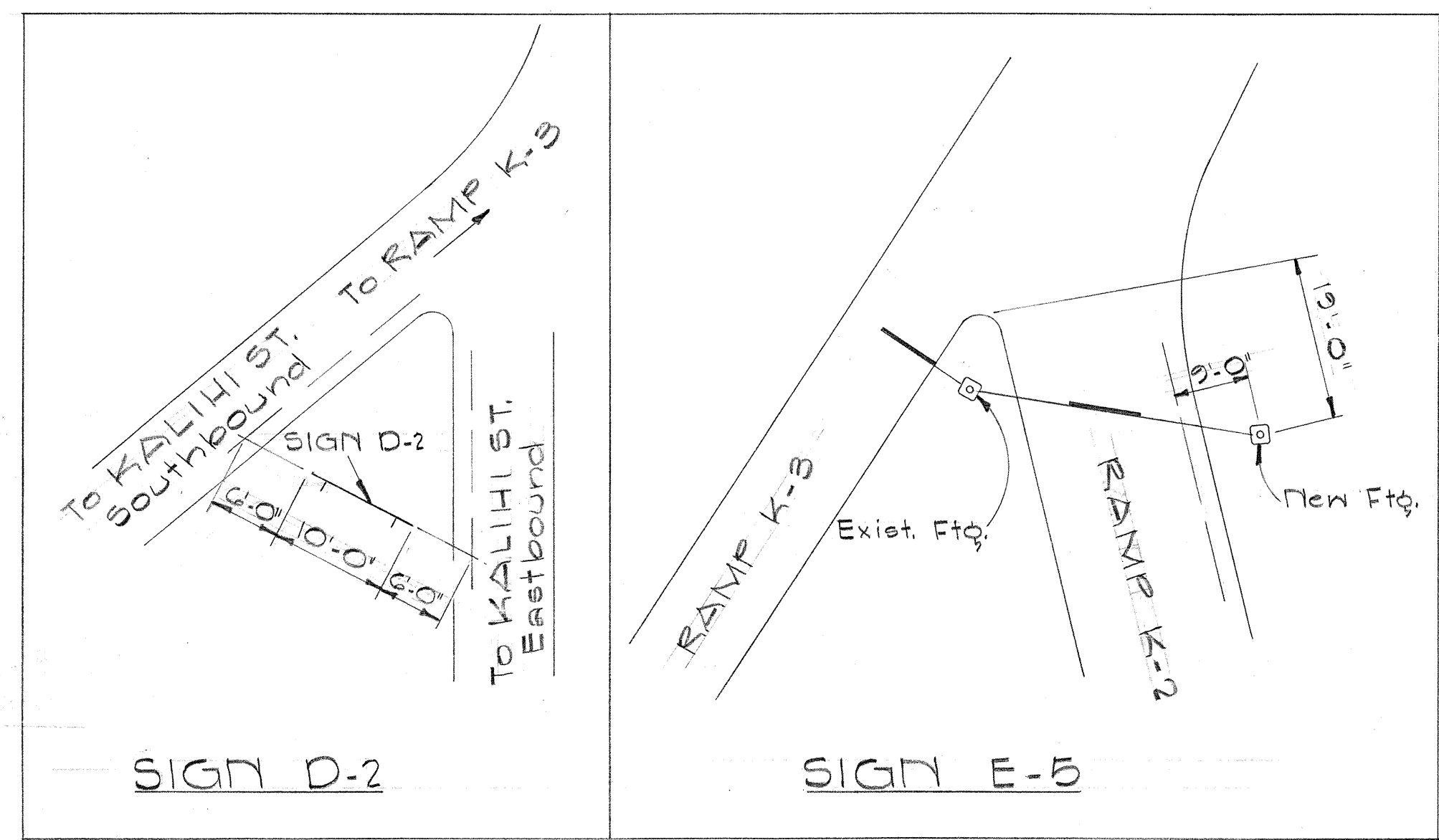
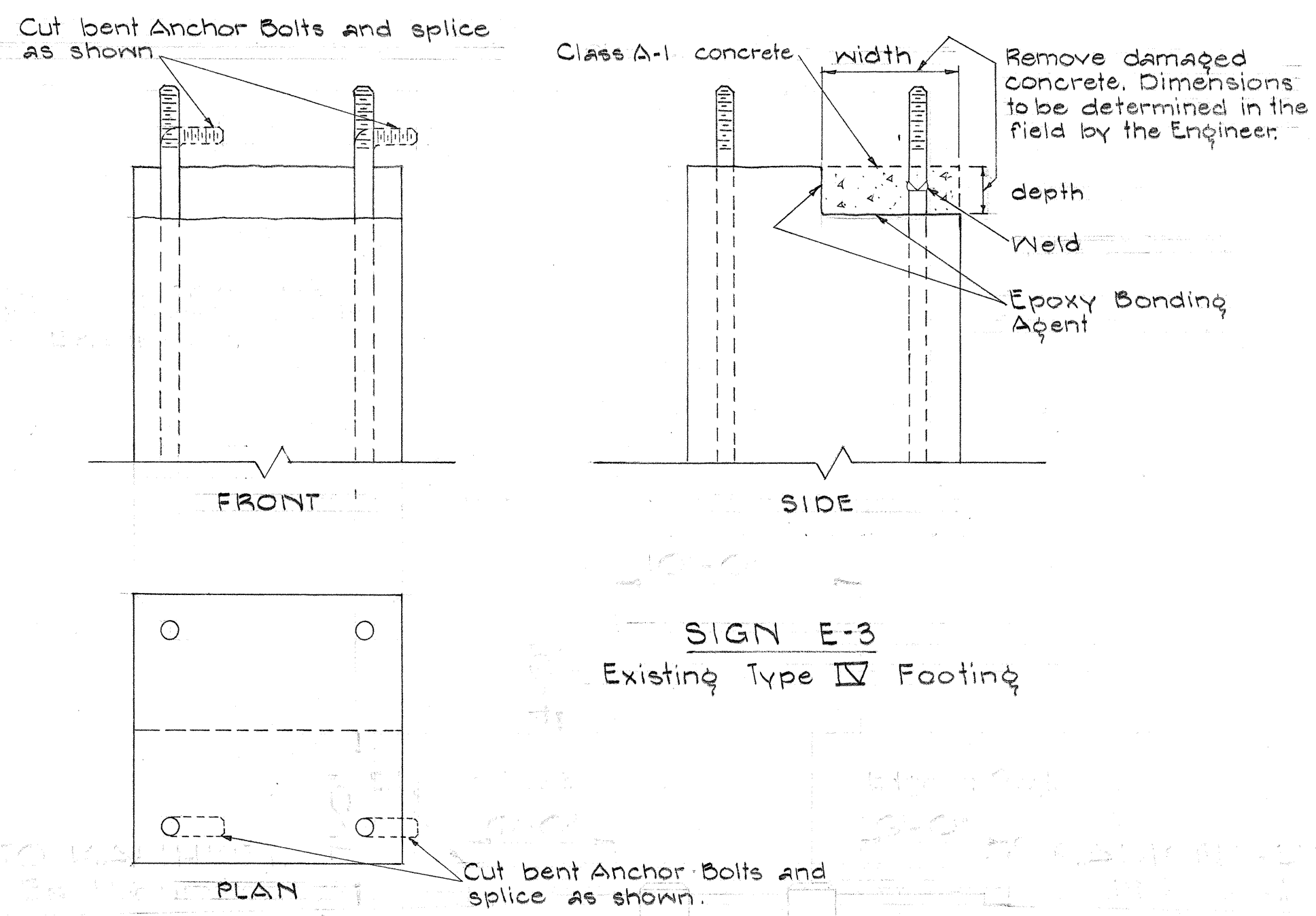
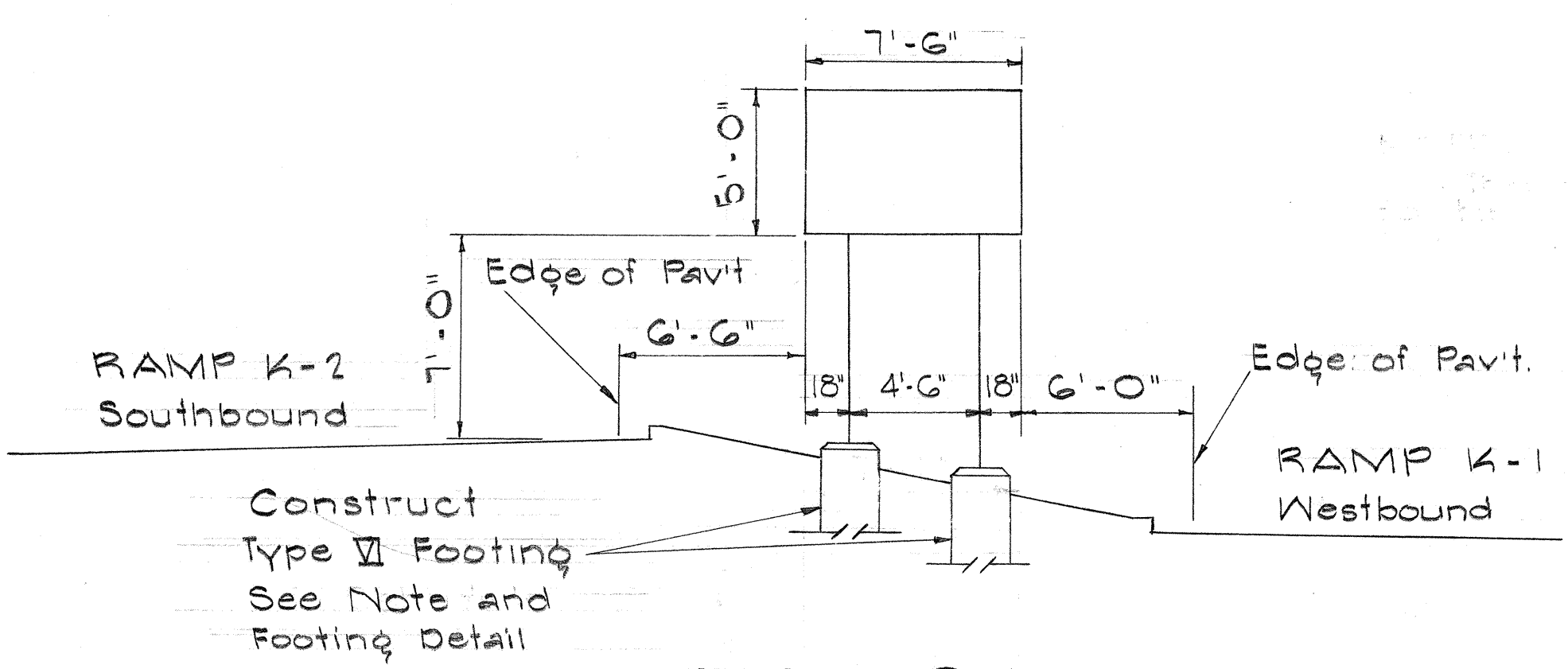
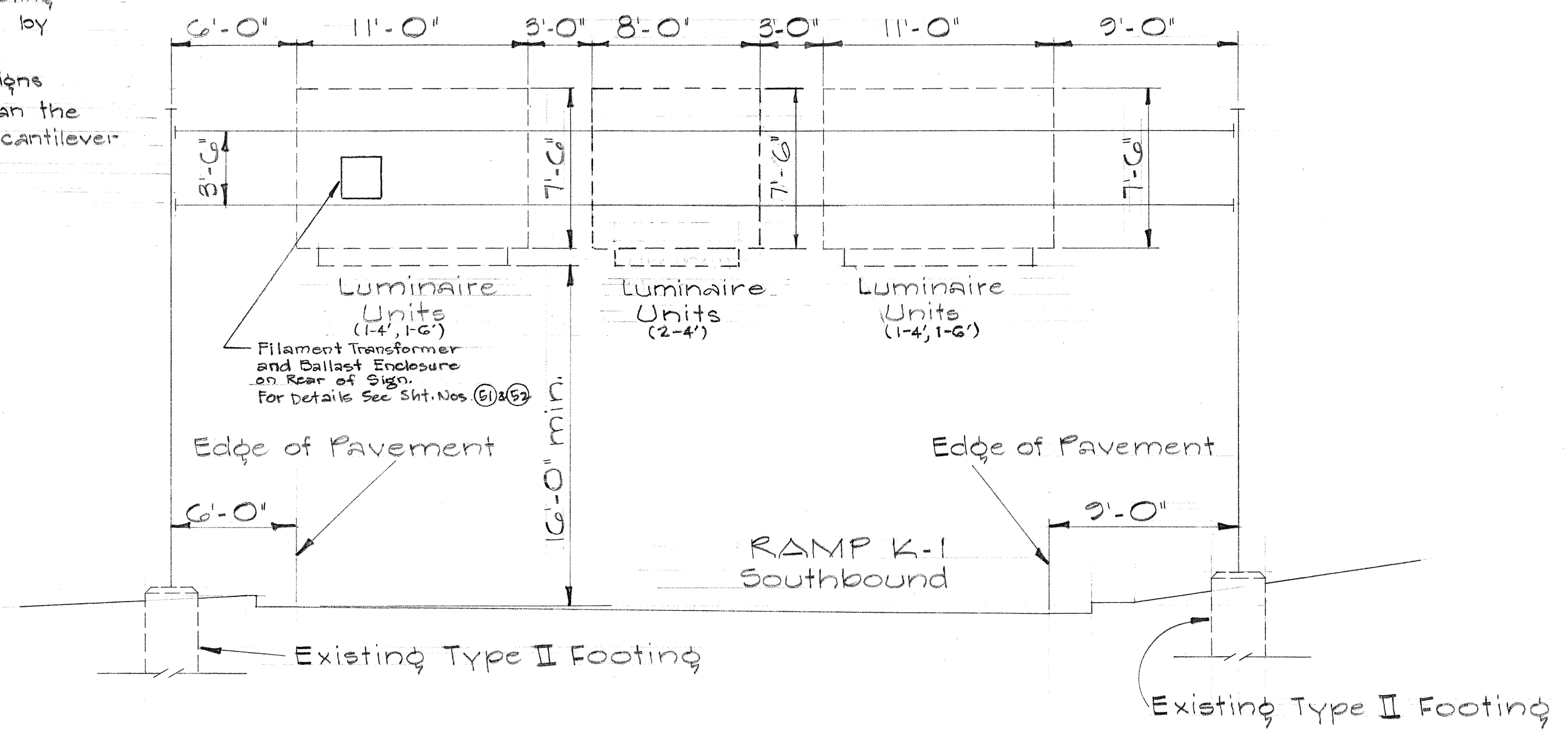
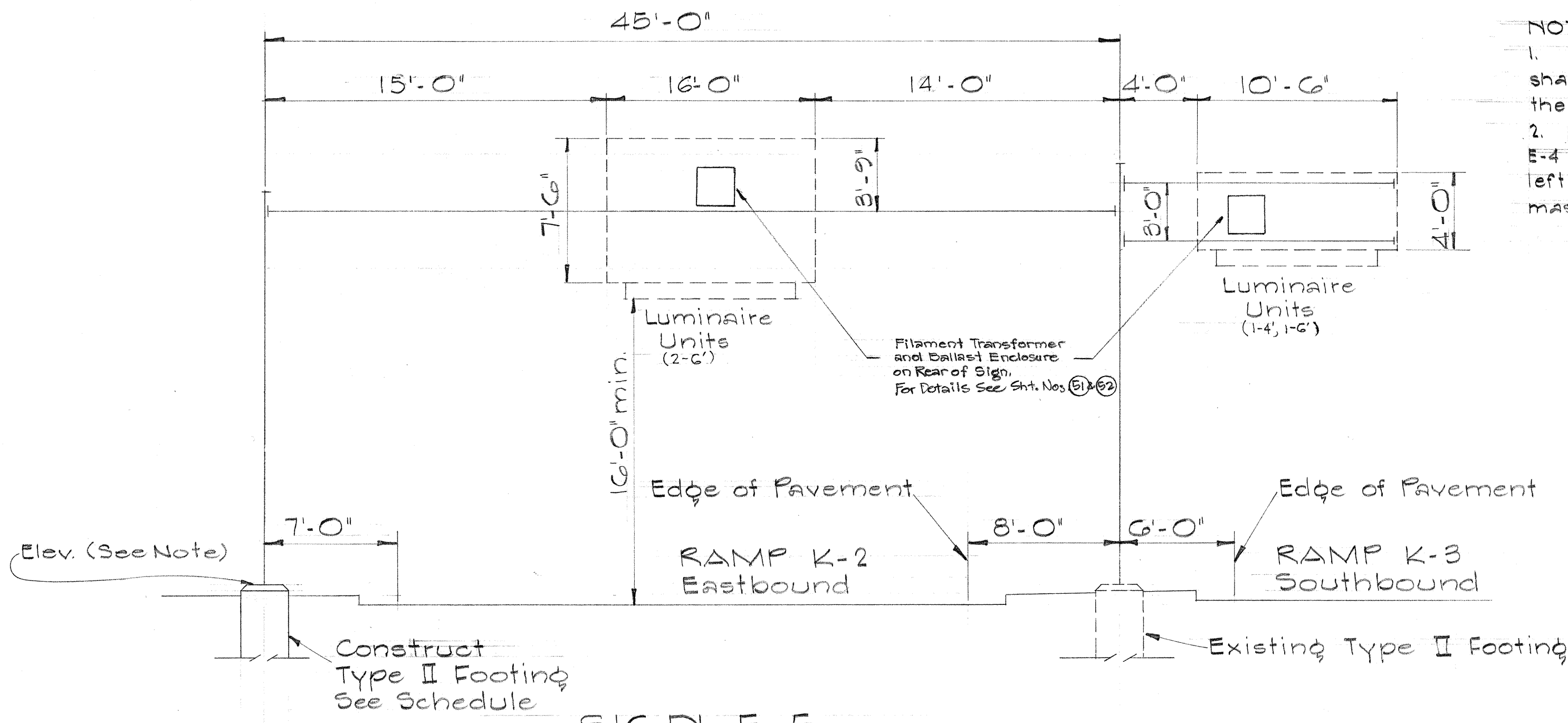
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EXPRESSWAY SIGNS
FRAME LAYOUT

SHEET No. OF SHEETS

A 39 B 39

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U072(10)	1963	440	45
		U063(11)	1963	840	45

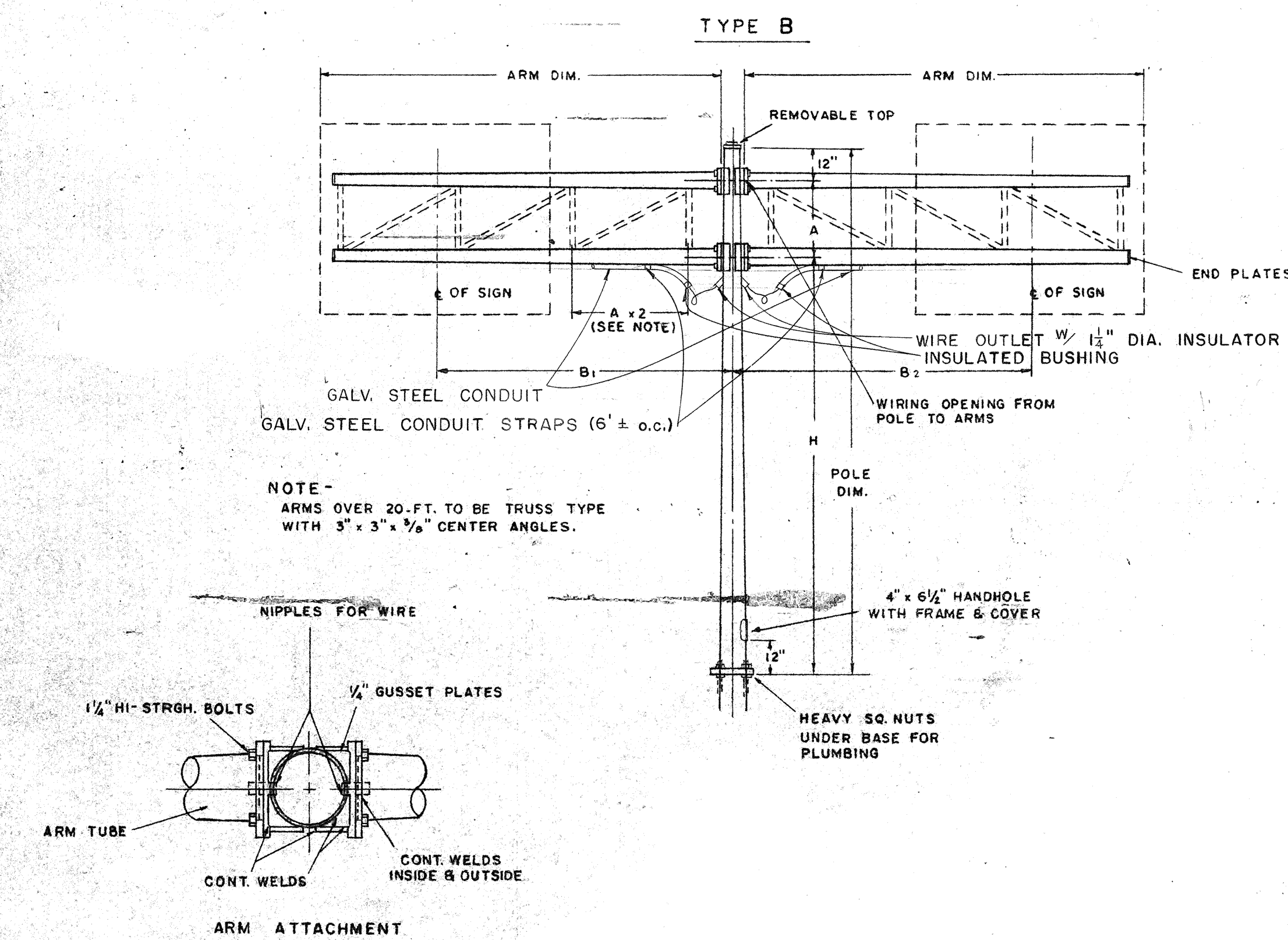


- NOTE:
- Cost of repair of Anchor Bolts shall be incidental to item NE 107 (9).
 - The depth and width of concrete to be removed shall be determined in the field by the Engineer.
 - Exposed reinforcing bars shall not be removed or damaged.
 - The spliced anchor bolts shall be Structural Steel conforming to ASTM Designation: A-7.
 - The type of Electrode and amount of Carbon content for welding shall be determined by the Engineer. See Special Provisions.
 - Epoxy Bonding Agent shall be applied between existing concrete and the new concrete.
 - The new spliced anchor shall be threaded and hot-dipped galvanized before welding.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

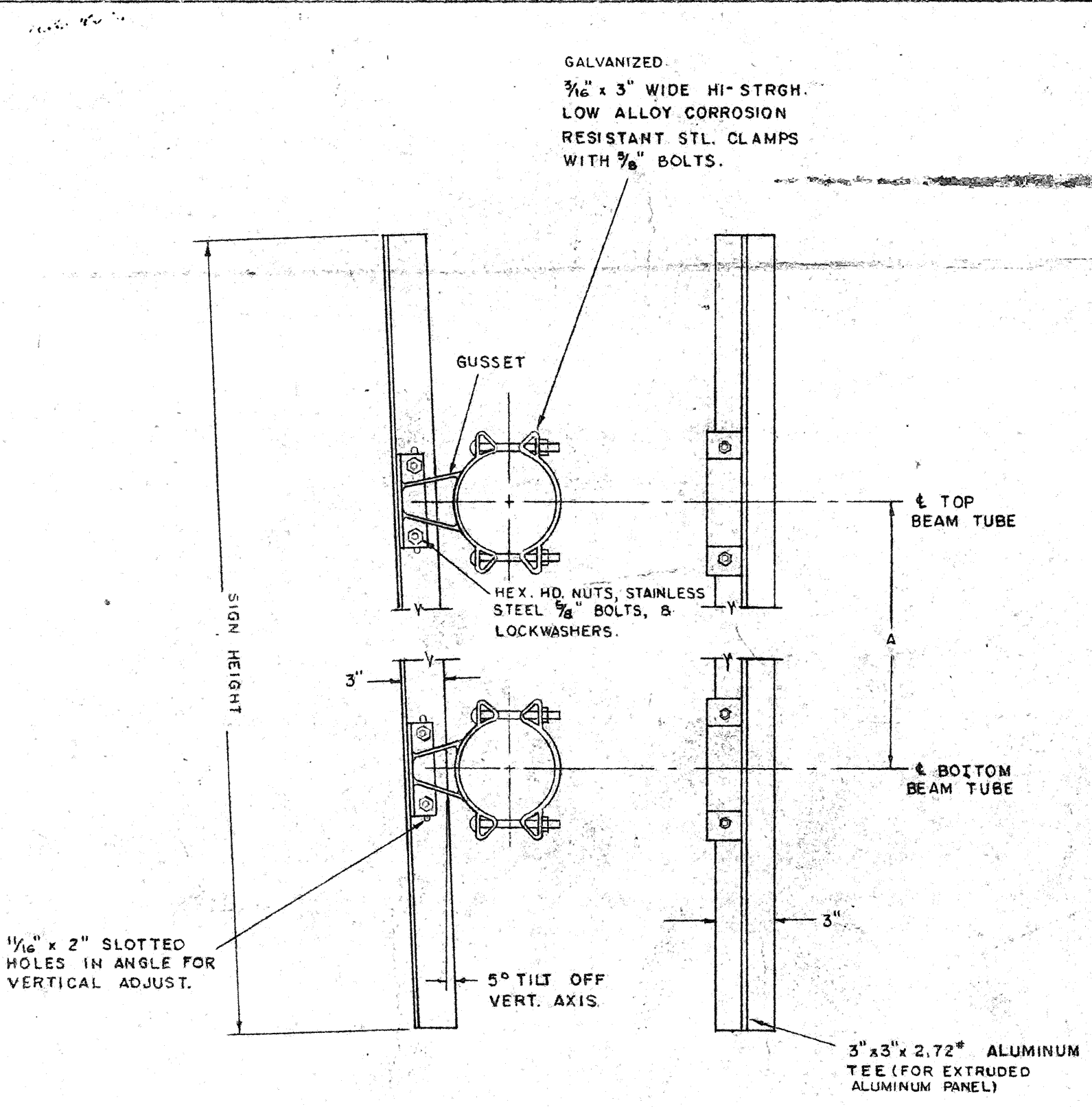
FRAME LAYOUT
EXPRESSWAY AND
DESTINATION SIGNS
ANCHOR BOLT SPLICE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-072-1(10)	1963	A 41	45
		U-063-1(1)	1963	B 41	45



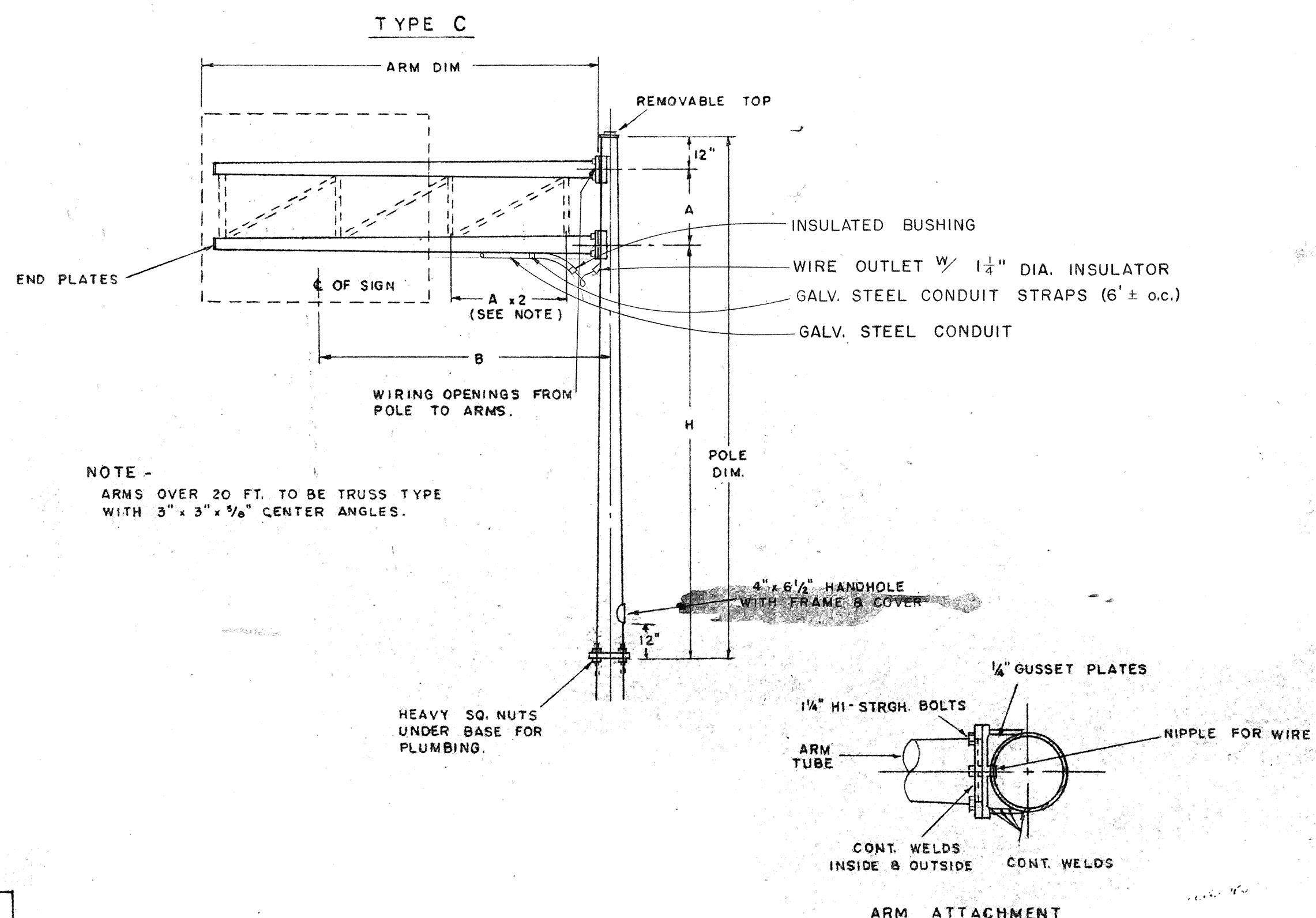
Sign No	Pole Dim	H	A	B ₁	B ₂	Arm Dim.	
						Left	Right
E-2	3 #3 gal. 18" Dia. x 25'	18'	6'	15'	11'	3 gal. 9.2' Dia.	

NOTE: See Post and Arms Schedule on Sheet 50



SIGN BRACKET ASSEMBLY

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 No	Left Pole Dim.	Right Pole Dim.	H	A	B	Arm Dim.	
E-3	3 gal. 15.0' Dia.	3 #3 gal. 15.0' Dia.	18'	6'	15.0'	3 gal. 9.2' Dia.	
E-4	3 gal. 15.0' Dia.	0 gal. 15.0' Dia.	18'	4'	8'	6" Std. Pipe 12.97" L.F.	
E-5	3 gal. 12.0' Dia.	3 gal. 15.0' Dia.	18'	3'	9-3' 15" Std. Pipe 14.62" L.F.		

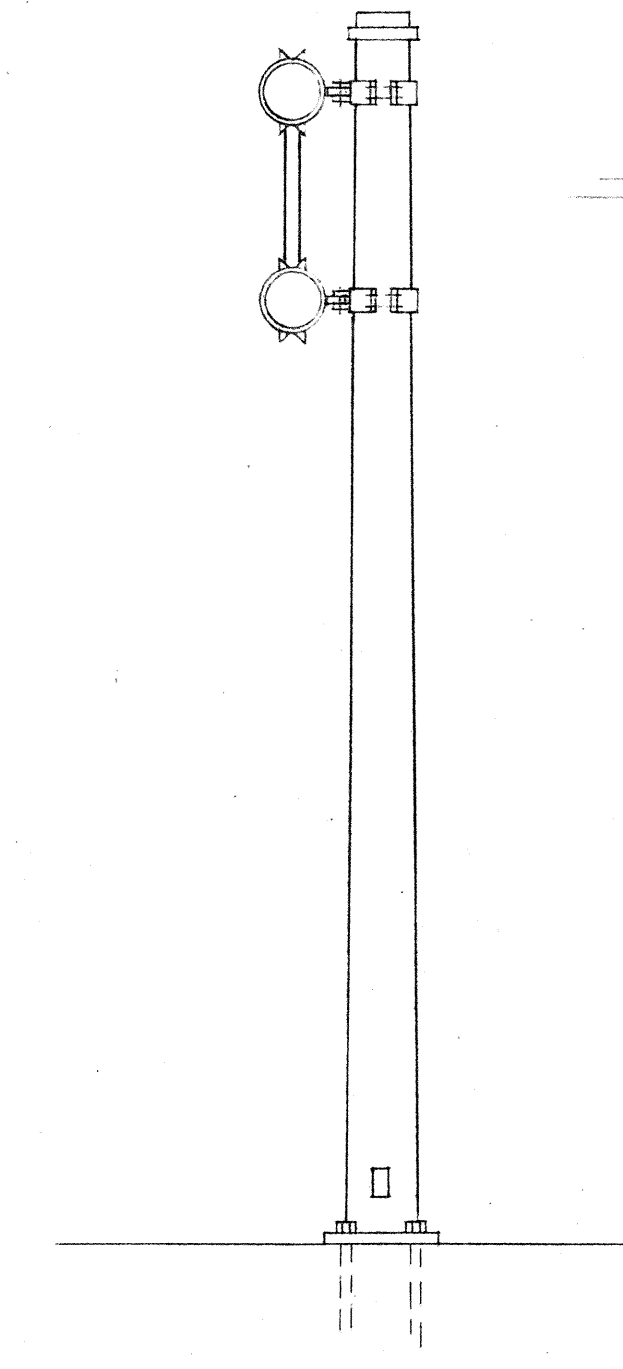
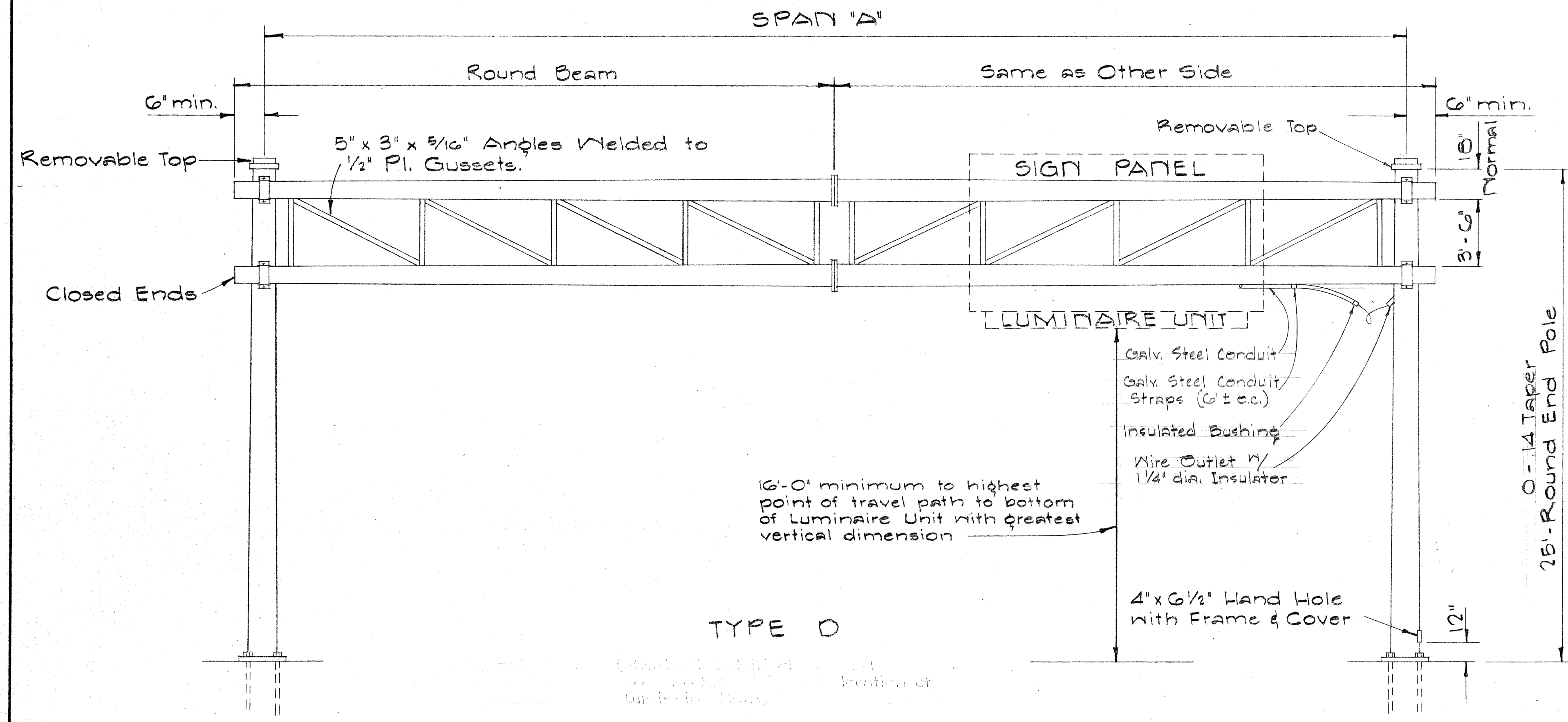
NOTE: See Post and Arms Schedule on Sheet 50

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

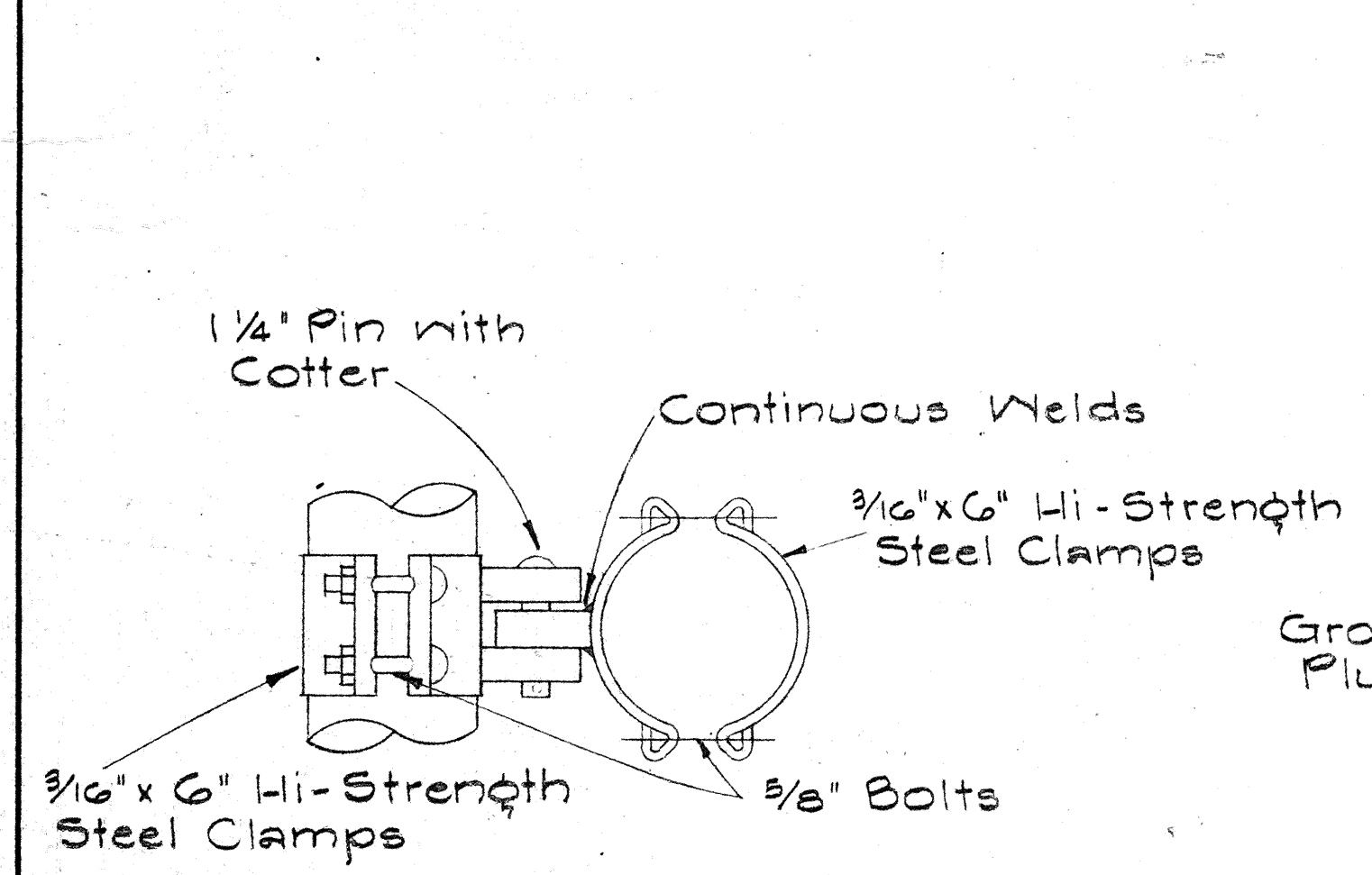
TYPE B & C
OVERHEAD SIGN SUPPORTS
STEEL

SHEET No. OF SHEETS

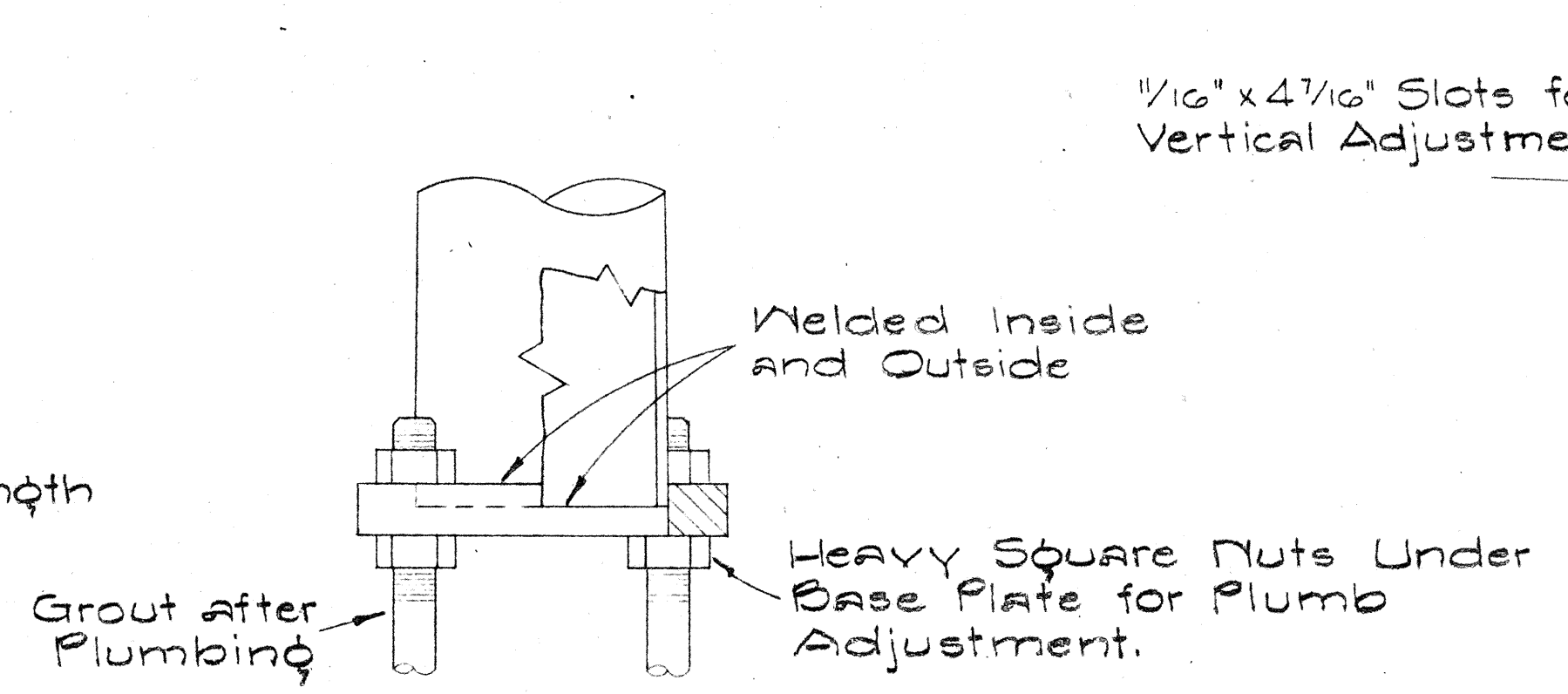
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-072-1(0)	1963	A42	45
		U-063-1(1)	1963	B42	45



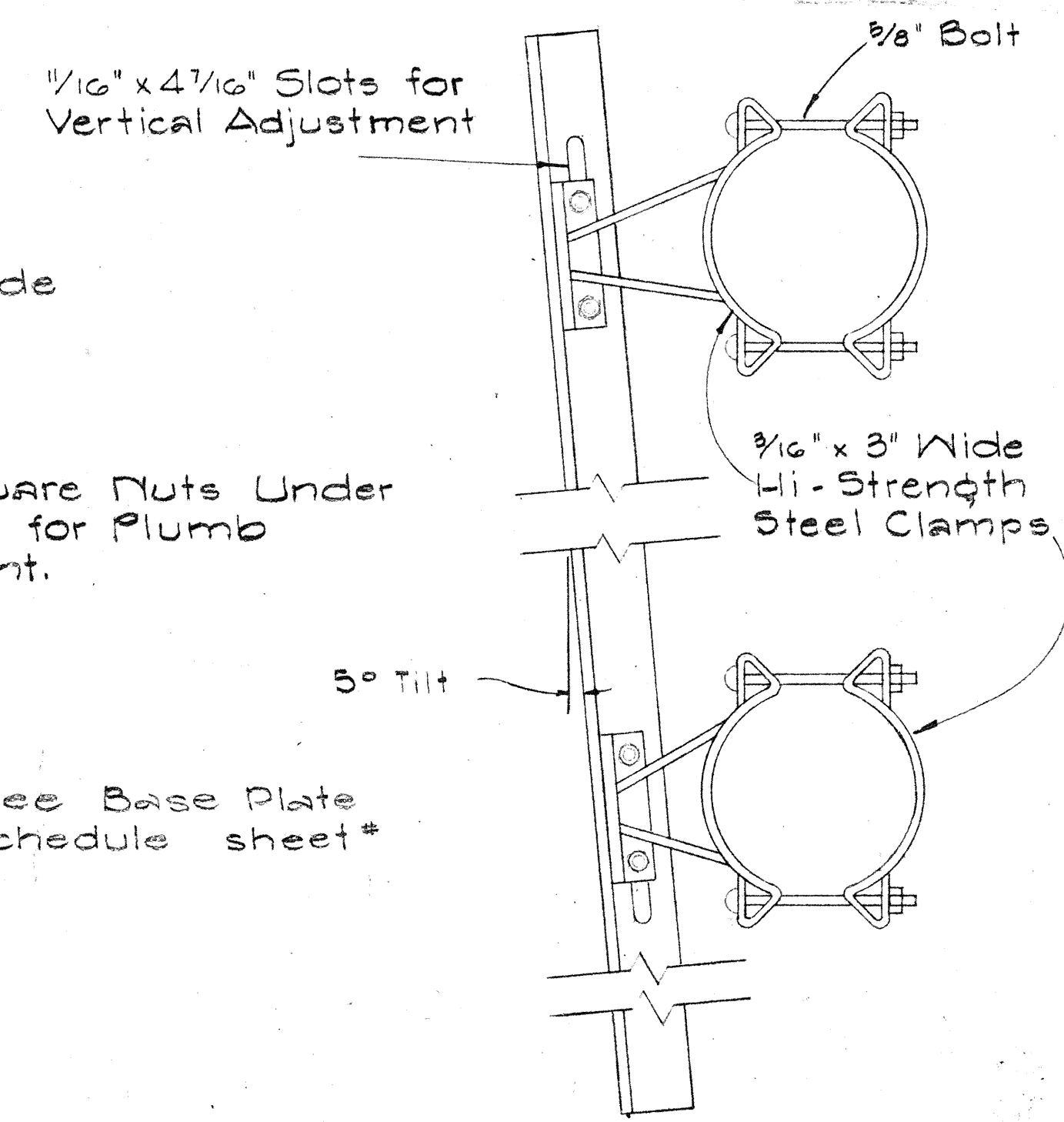
NOTE: See Post and Arms Schedule on Sheet # 50



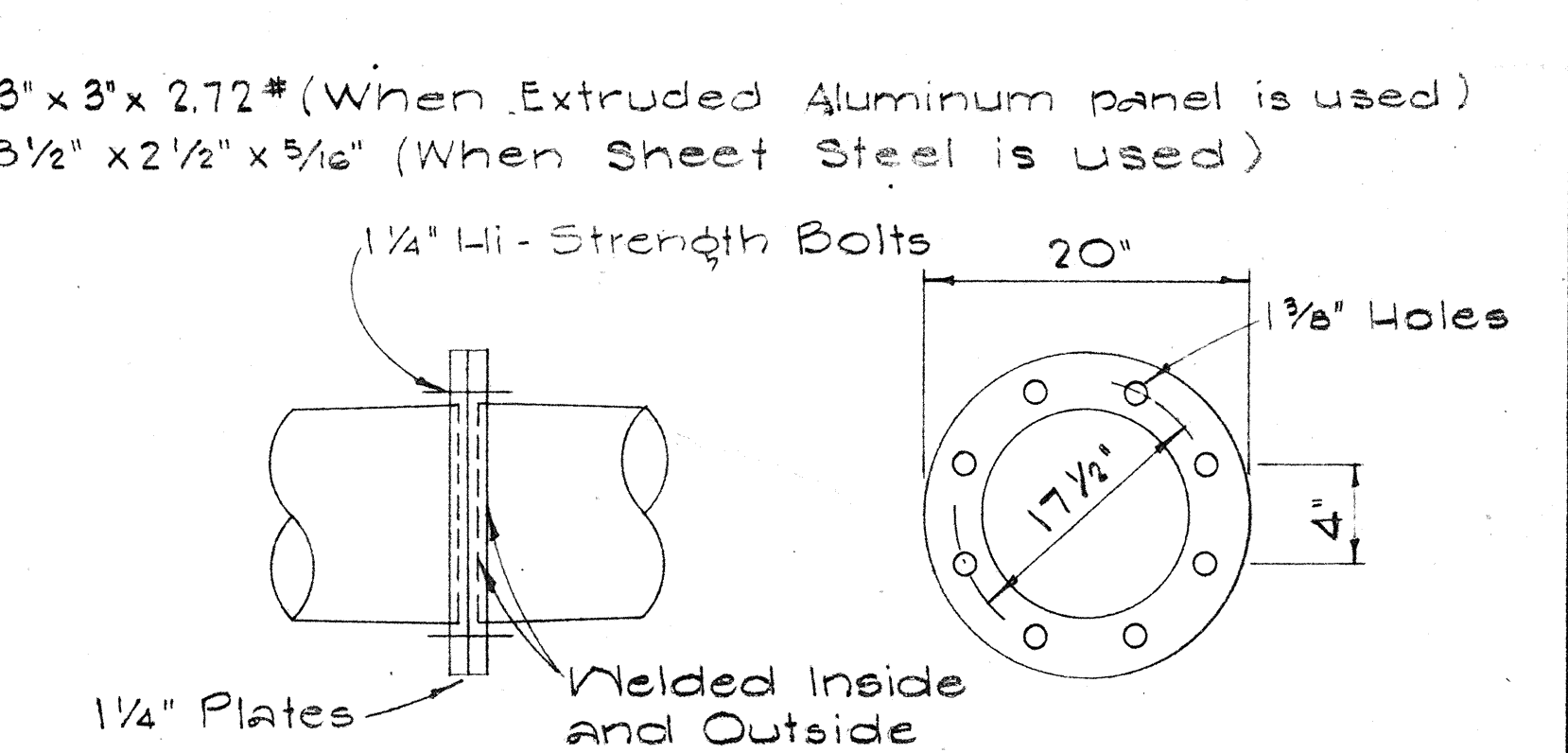
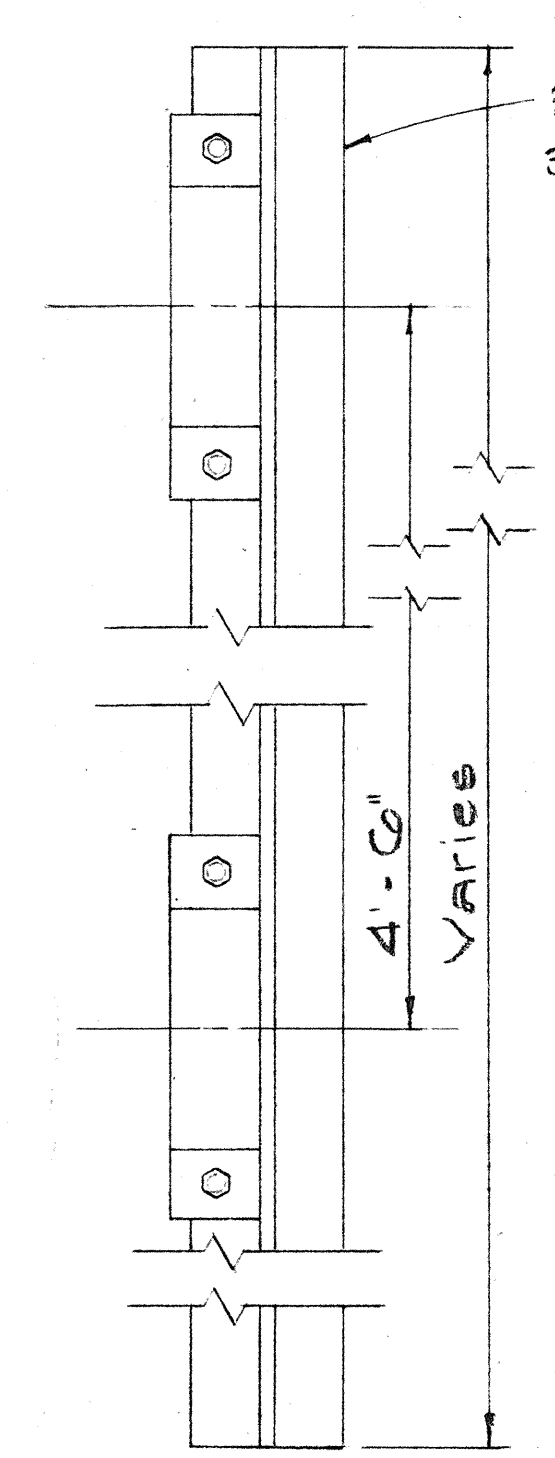
BEAM CLAMP DETAIL



POLE BASE DETAIL



SIGN BRACKET ASSEMBLY



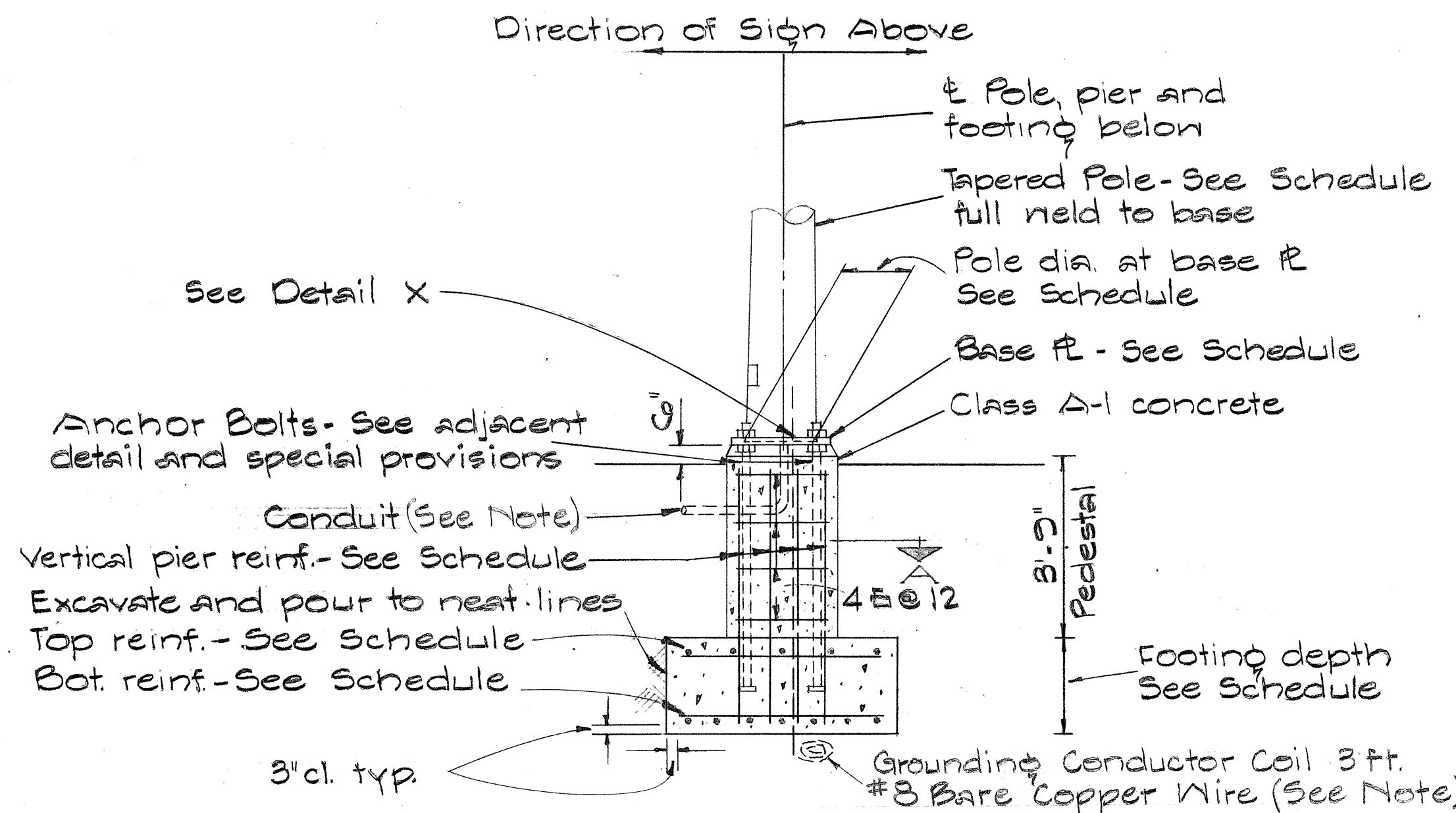
CENTER JOINT DETAIL

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

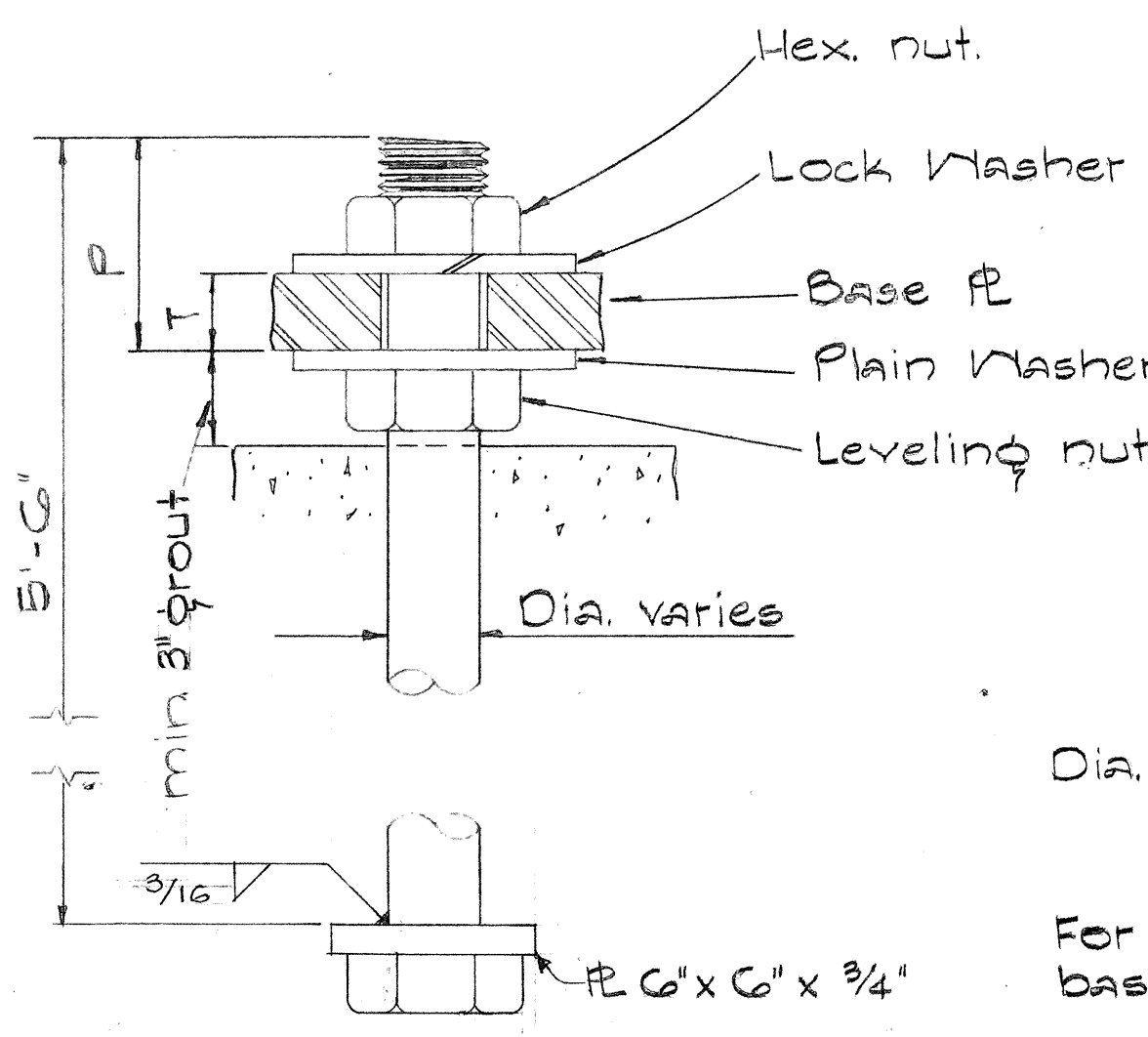
TYPE D
OVERHEAD SIGN SUPPORT
TWO-TUBE TRUSS TYPE
STEEL

SHEET No. OF SHEETS

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

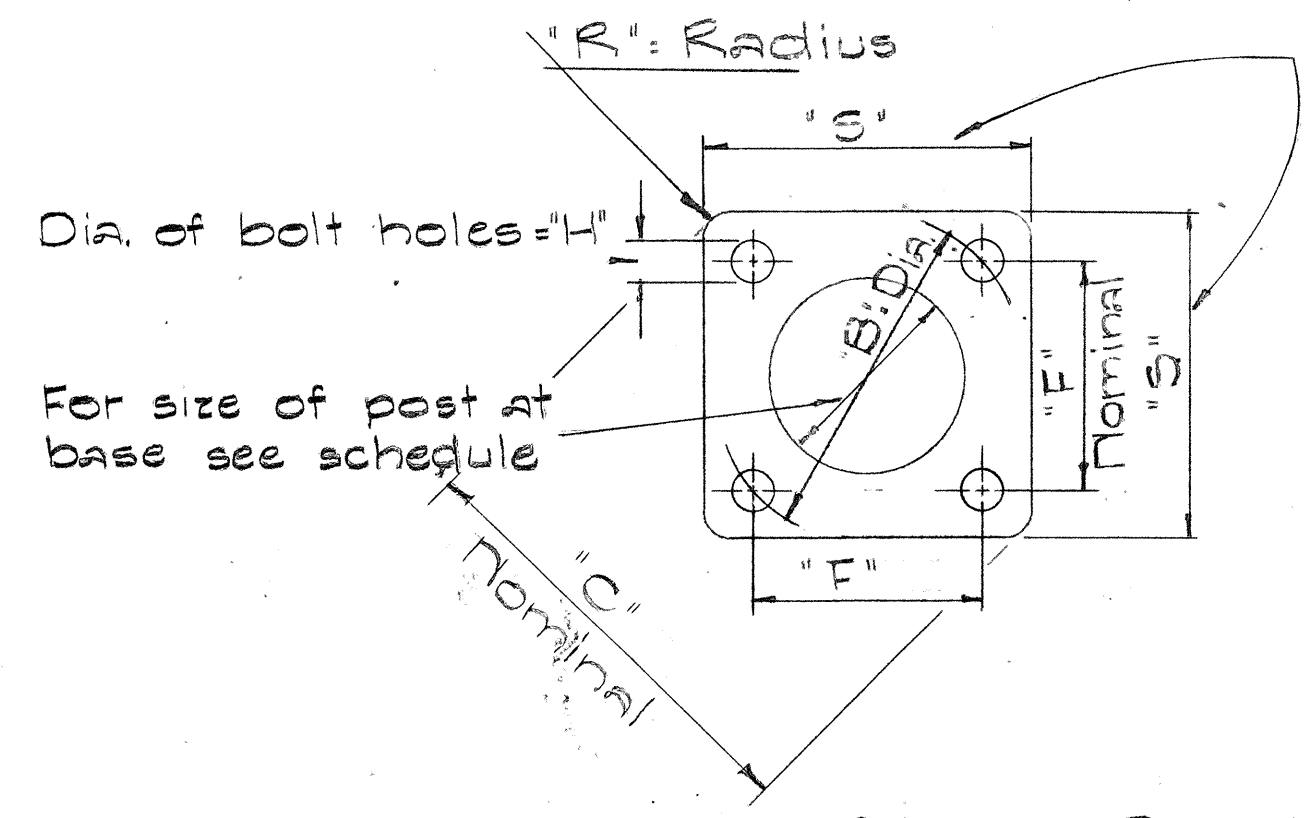


TYPICAL POLE FOUNDATION DETAIL



TYPICAL ANCHOR BOLT 4 REQ'D

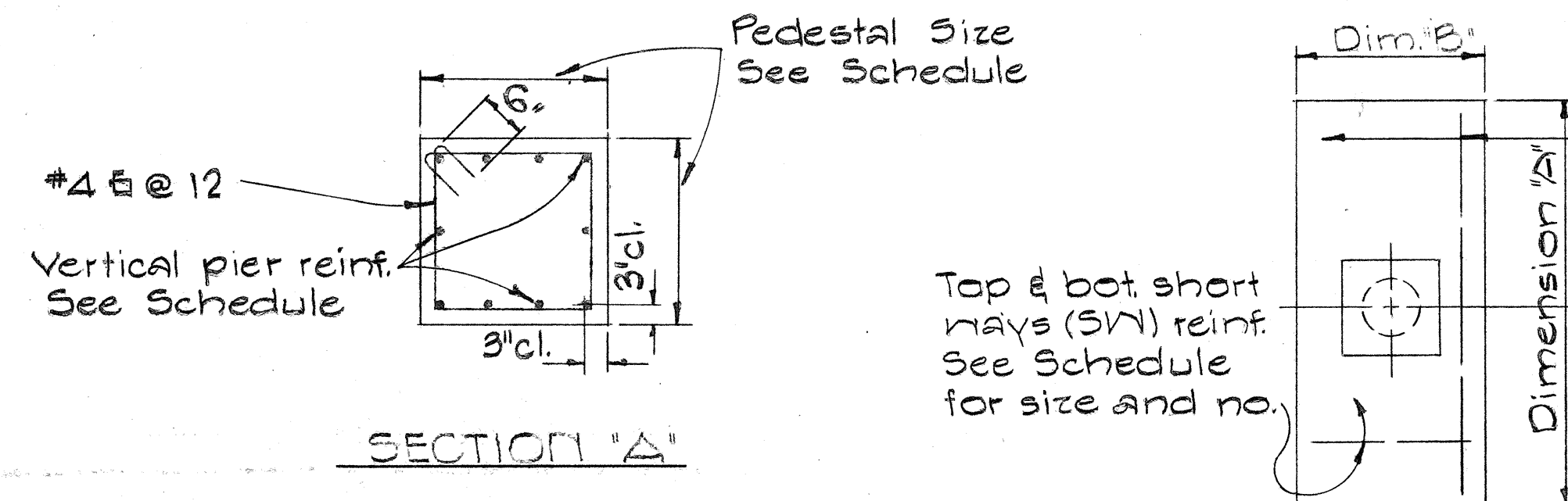
BASE PLATE SCHEDULE											
Sign No.	Gage No.	Post Size	B	C	F	H	P	R	S	T	Bolt Dia.
E-1	3	18"	23 3/4"	37 1/4"	21"	2 3/8"	4"	5 1/2"	23 1/2"	2"	2"
E-2	3-3	18"	34 1/2"	42"	24 1/2"	3 3/8"	6"	5 1/2"	33"	3"	3"
E-3	0-0	15"	33 3/4"	40 3/4"	24"	2 5/8"	6"	5"	32 1/2"	3"	2 1/4"
E-4	0	15"	30 1/2"	37 1/4"	21 1/2"	2 3/8"	4"	4 5/8"	30"	2"	2"
E-5	3	15"	30 1/2"	37 1/4"	21 1/2"	2 3/8"	4"	4 5/8"	30"	2"	2"
E-6	0	15"	30"	36 3/4"	21 1/4"	2 3/8"	4"	4 5/8"	29 3/4"	2"	2"



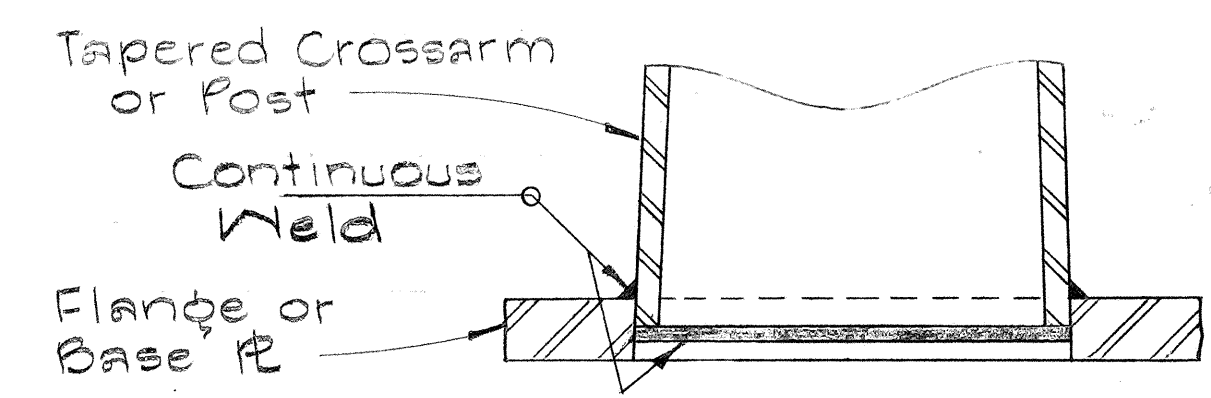
For Base R dimensions see schedule.

NOTE:
All measurements of the Base Plates shall be confirmed by the Contractor before purchasing.

NOTE:
1. Total number of conduits into pole foundation as indicated on drawings. Conduit shall slope away from pole foundation. Conduit shall be stubbed into existing R.B. Provide insulated bushings on both ends.
2. Grounding conductor shall be banded to light standard.



TYPICAL FOOTING PLAN



DETAIL "X"

GROUND MOUNTED TYPE-EXTRUDED ALUMINUM PANEL						
SIGN No.	STATIONS	I-SECTION POSTS		BASE PLATE	FOOTING	
		LEFT	RIGHT		Type	Anchor Bolts
O-1	RAMP K-1 3+90	8" J 10#		10" x 1" x 17 1/4"	II	4-1 1/8" Dia.
O-2	RAMP K-3 3+50	8" J 10#		10" x 1" x 17 1/4"	VI	4-1 1/8" Dia.

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	3-#4	#4 @ 12 Each Way	Do.	1'-11"	10-#5
II	7'-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	13-#4	Do.	Do.	2'-9"	10-#11

COMBINATION DOUBLE SIGN POST - SPAN TYPE & CANTILEVER TYPE - DOUBLE MASTARM											
SIGN No.	STATION	CROSSARM TAPERED		POST TAPERED		BASE PLATE		FOOTING		ANCHOR BOLTS	
		Span Type at Midspan	Cantilever Type at Post	LEFT at Base	RIGHT at Base	Left Post	Right Post	Left Base	Right Base	Left	Right
E-4	KALIHI ST. 4+80	3 ga - 2.5" Dia.	6" Std. Pipe 18.75" Lf	3 ga 1.50" Dia.	0 ga 1.50" Dia.	23" x 2" x 23"	30" x 2" x 30"	II	Exist.	4-2" Dia.	Exist.
E-5	RAMP K-3 1+95	7 ga - 14.0" Dia.	5" Std. Pipe 14.62" Lf	3 ga 1.20" Dia.	3 ga 1.50" Dia.	17" x 2" x 17"	30" x 2" x 30"	II	Exist.	4-1 3/4" Dia.	Exist.

COMBINATION TWO-TUBE TRUSS - SPAN TYPE & CANTILEVER TYPE - DOUBLE MASTARM											
SIGN No.	STATION	CROSSARM TAPERED		POST TAPERED		BASE PLATE		FOOTING		ANCHOR BOLTS	
		Span Type at Midspan	Cantilever Type at Post	LEFT at Base	RIGHT at Base	Left Post	Right Post	Left Base	Right Base	Left	Right
E-3	450+10	3 ga x 14.25" x 26"	3 ga - 9.2" Dia.	3 ga - 1.50" Dia.	3 ga 3 ga - 1.50" Dia.	23" x 2" x 23"	32 1/2" x 3" x 32 1/2"	II	Exist.	4-2" Dia.	Exist.

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	445+80	3 ga - 2.2" Dia.	3 ga - 2.2" Dia.	3 ga 3 ga - 1.80" Dia.	33" x 3" x 33"	Exist.	Exist.

TWO-TUBE TRUSS - SPAN TYPE						
SIGN No.	STATIONS	CROSS BEAMS TAPERED AT MIDSPAN	POST TAPERED AT BASE	BASE PLATE	FOOTING	
					TYPE	ANCHOR BOLTS
E-1	437+75	3 ga x 14.25" x 26"	2 ply. - 1/4" x 17"	23 1/2" x 2" x 23 1/2"	Exist.	Exist.
E-6	RAMP K-1 2+90	3 ga x 14.25" x 26"	0 ga - 1.50" Dia.	23 3/4" x 2" x 23 3/4"	Exist.	Exist.

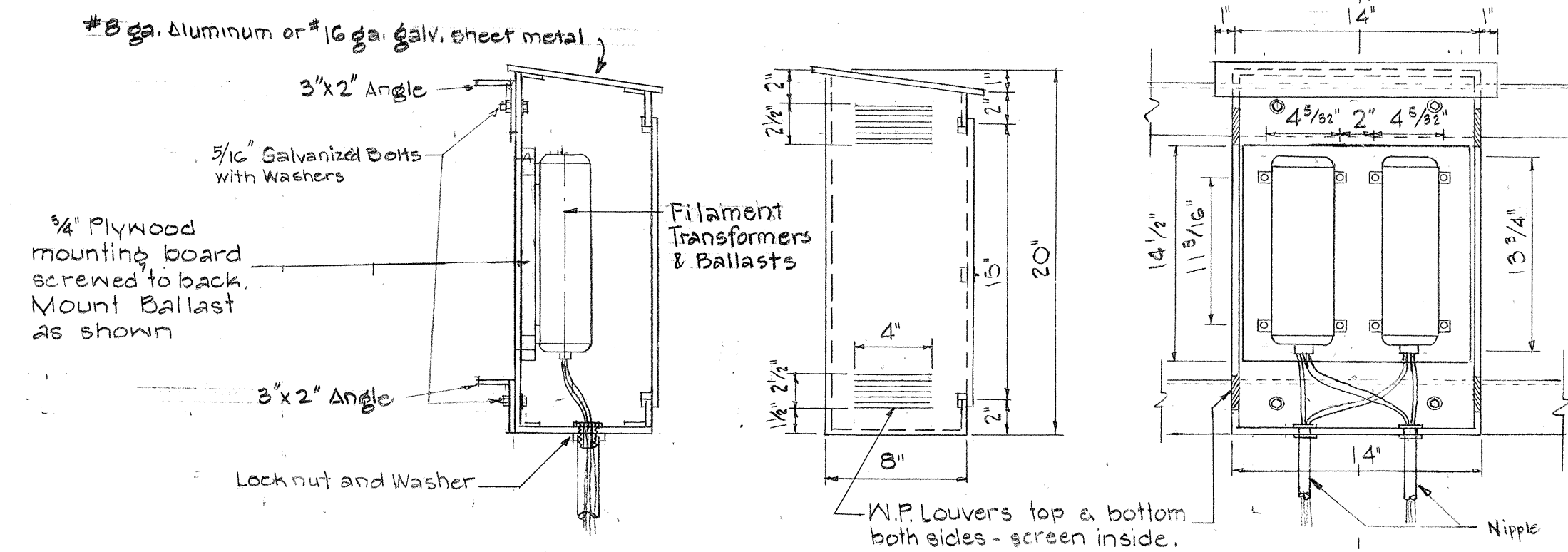
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EXPRESSWAY SIGNS
FOOTING, BASE PLATE & POST
SCHEDULES & DETAILS

FILAMENT TRANSFORMER AND BALLAST ENCLOSURE

GENERAL NOTES

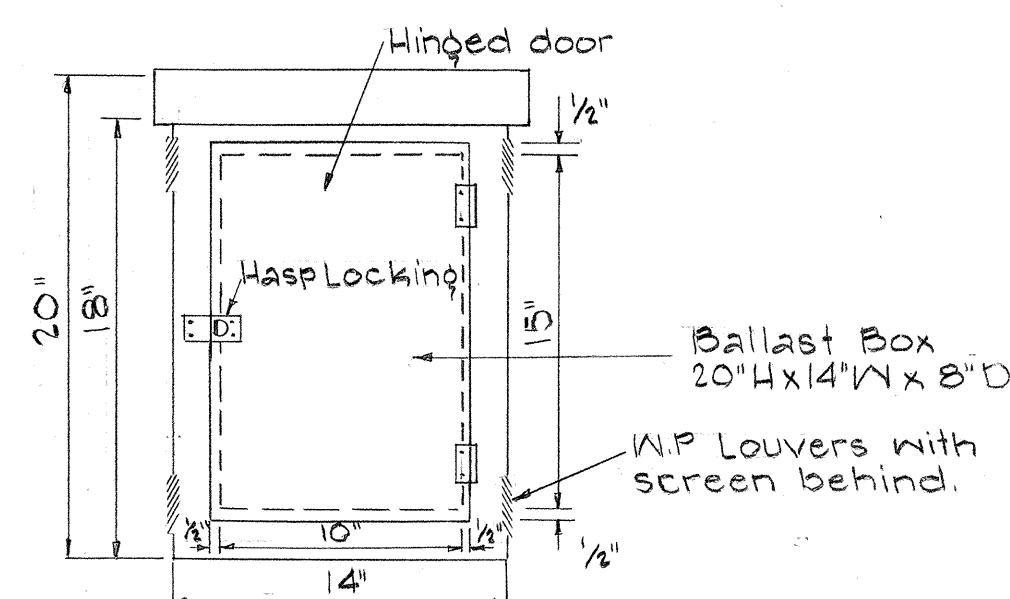
1. Enclosure shall accommodate at least two sets of filament transformers and ballasts. Dimensions shown are approximate only and may be varied to suit individual equipment requirements.
2. Aluminum enclosures shall be separated from the mounting angles by neoprene washers.



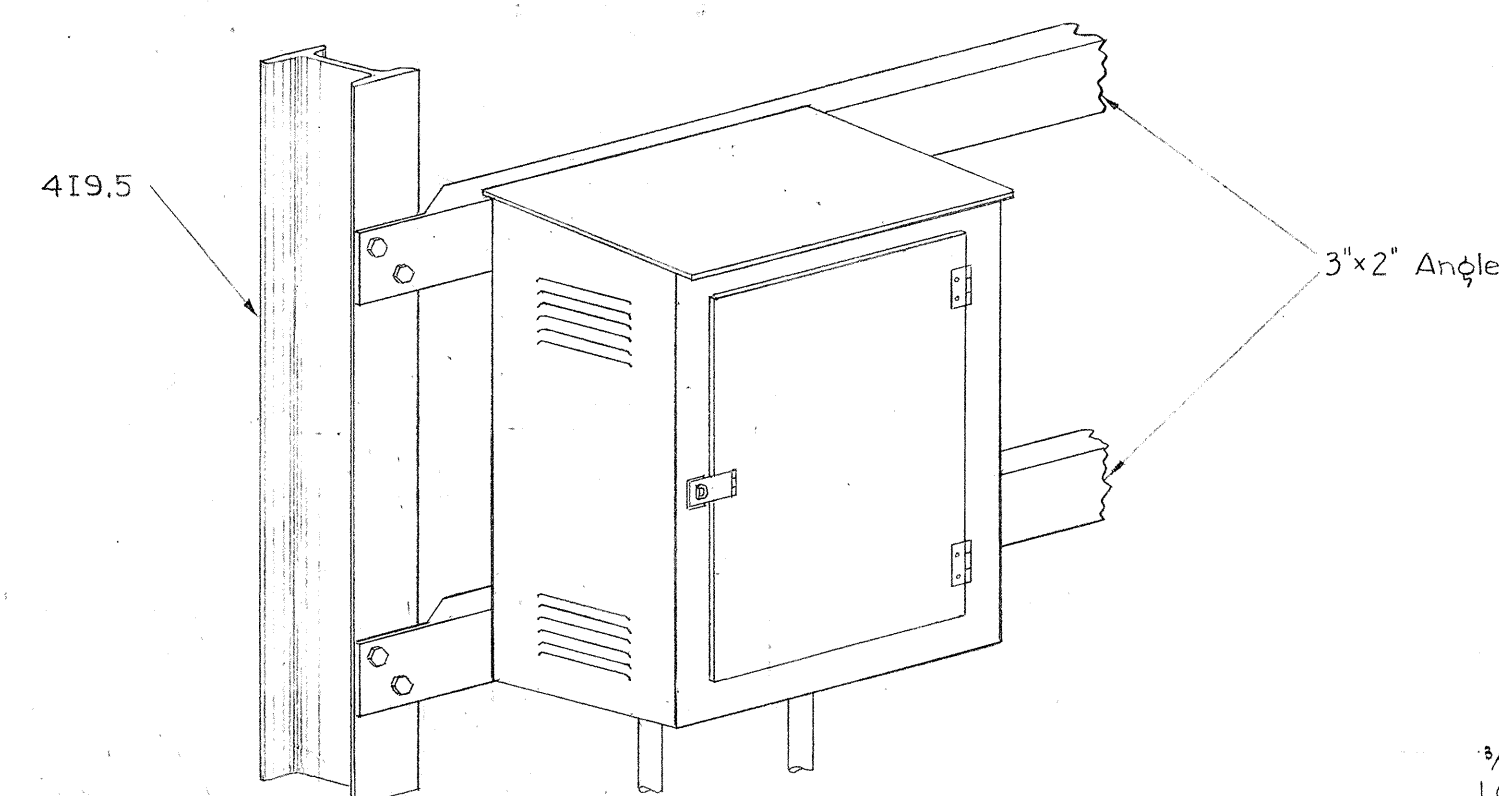
SIDE - SECTION
SCALE: 1/4" = 1'-0"

SIDE VIEW
SCALE: 1/4" = 1'-0"

FRONT - THRU VIEW
SCALE: 1/4" = 1'-0"

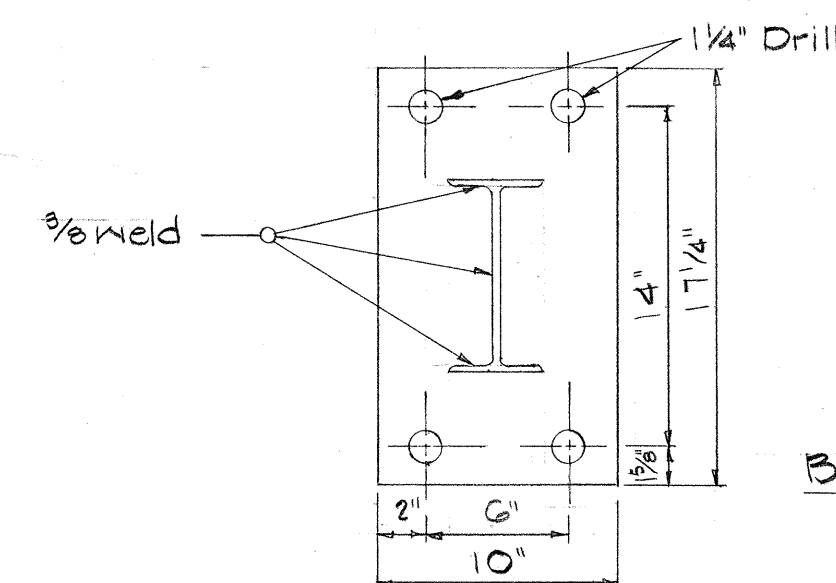


FRONT VIEW
SCALE: 1/2" = 1'-0"



TYPICAL ENCLOSURE MOUNTING

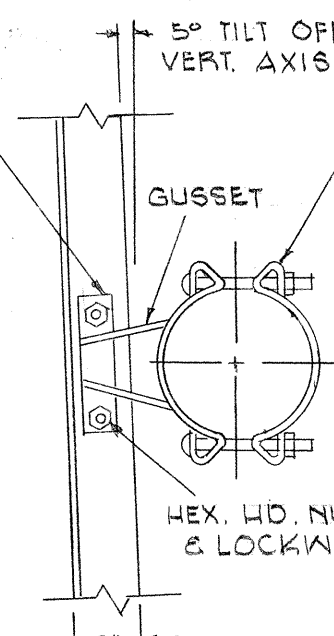
3/8" x 3" WIDE HI-STRENGTH LOW ALLOY CORROSION RESISTANT STL. CLAMPS WITH 3/8" BOLTS.



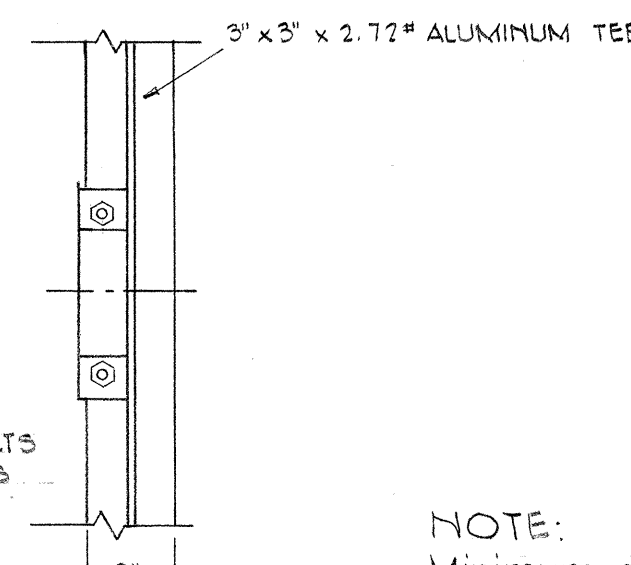
BASE PLATE DETAIL

NOTE:
Concrete footing for Destination Sign will be paid for under item Post and Foundations, 107 (6).

1/16" x 2" SLOTTED HOLES IN ANGLE FOR VERTICAL ADJUST.

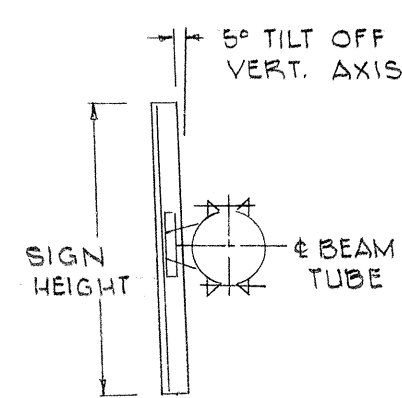


BRACKET & CLAMP DETAIL



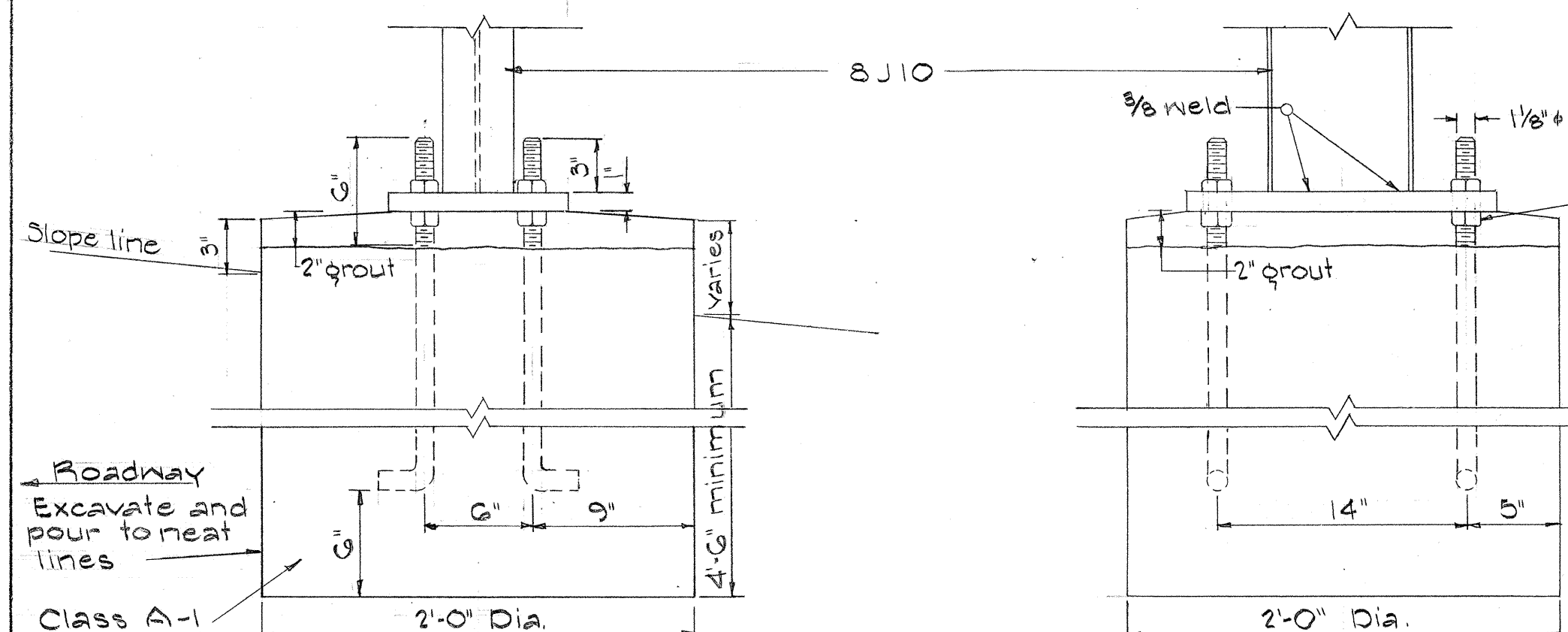
DOUBLE MAST ARM BRACKET

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

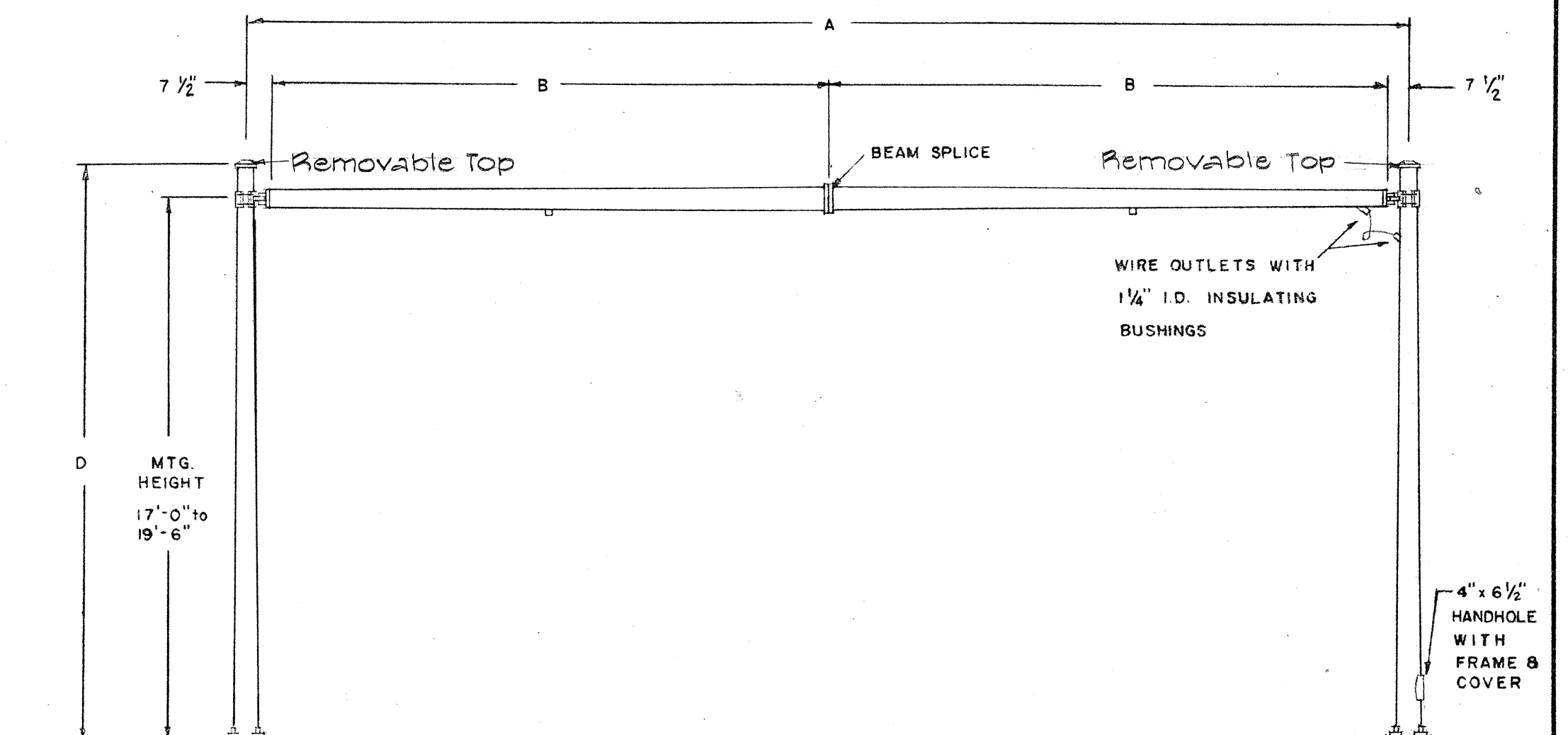


MONOTUBE SPAN & SINGLE MAST ARM BRACKET

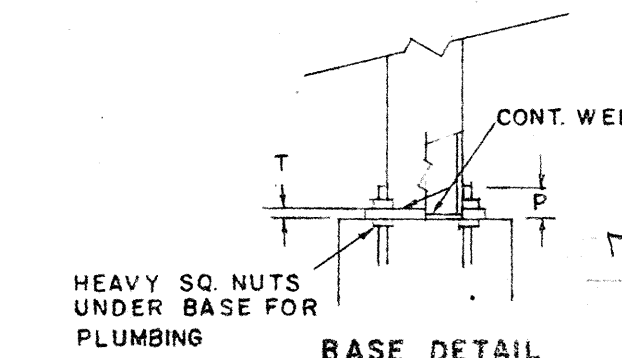
SIGN HEIGHT	MAX. UN. FT. SIGN WIDTH PER BRACKET
4' & UNDER	16'
5'	9'
6'	6'
7'	4'
8'	3'



FOUNDATION DETAILS FOR SIDE MOUNTED SIGNS
EXTRUDED ALUMINUM
TYPE VI FOOTING



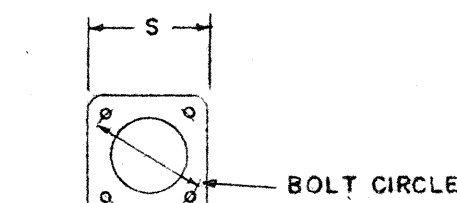
NOTE -
CROSSBEAMS ARE CAMBERED



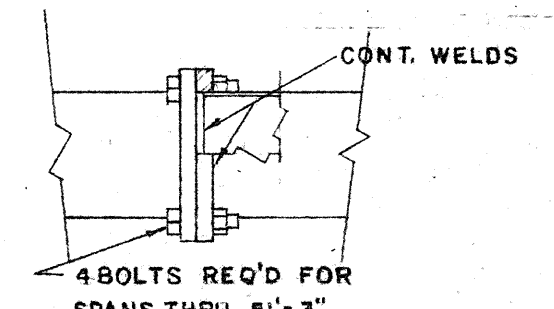
BASE DETAIL

NOTE - See Base Plate Schedule Sht. No. 50

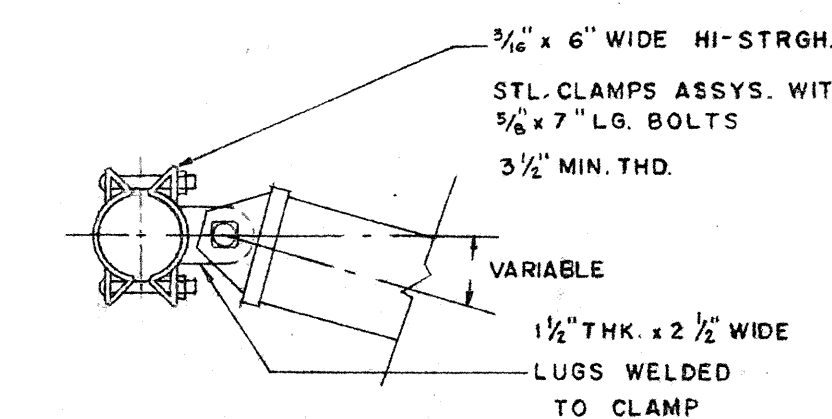
BEAM SPLICE FLANGE DETAIL



ANCHOR BOLT PLAN



BEAM SPLICE DETAIL



BEAM CLAMP DETAIL

SPANS UNDER 61'-6"

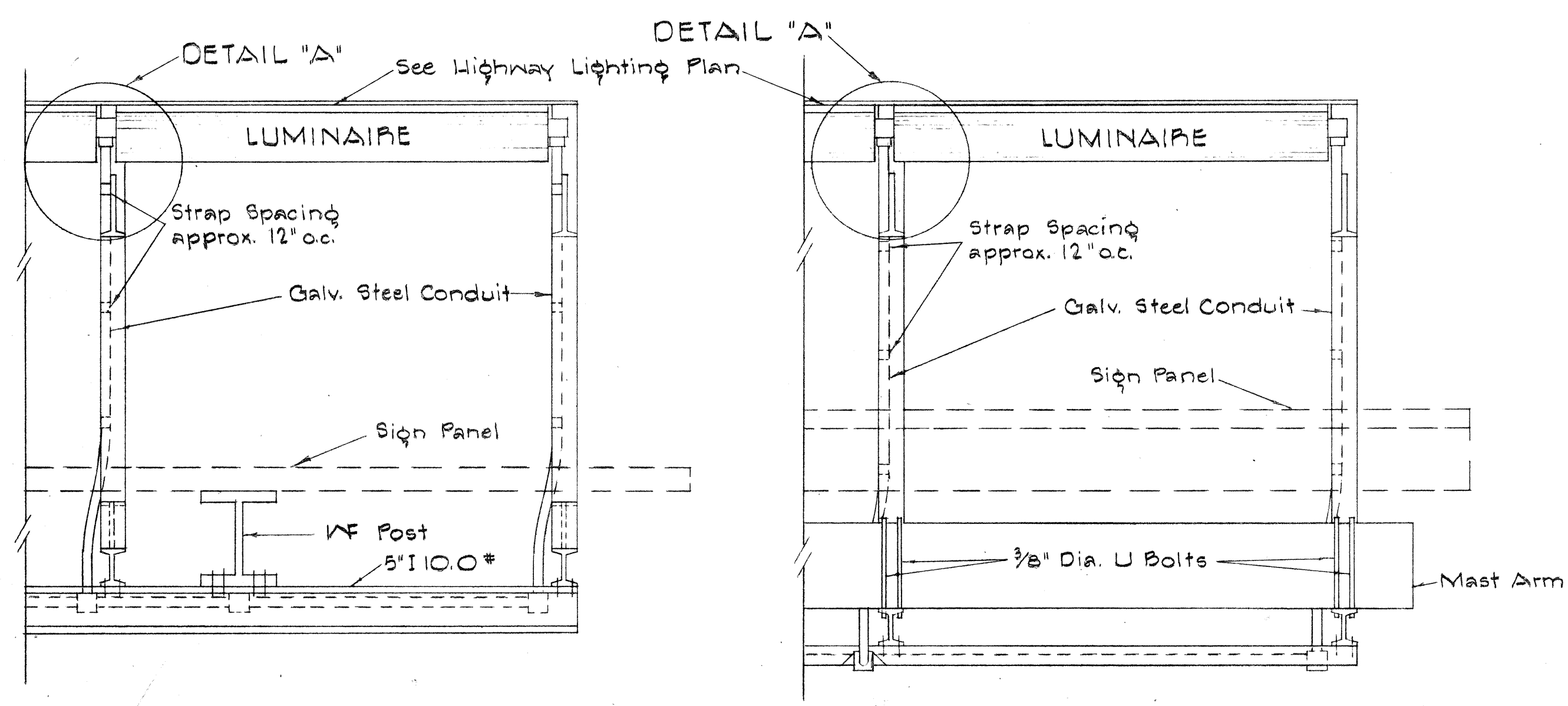
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STEEL
TYPE - W
OVERHEAD SIGN SUPPORTS
BALLAST MOUNTING DETAIL

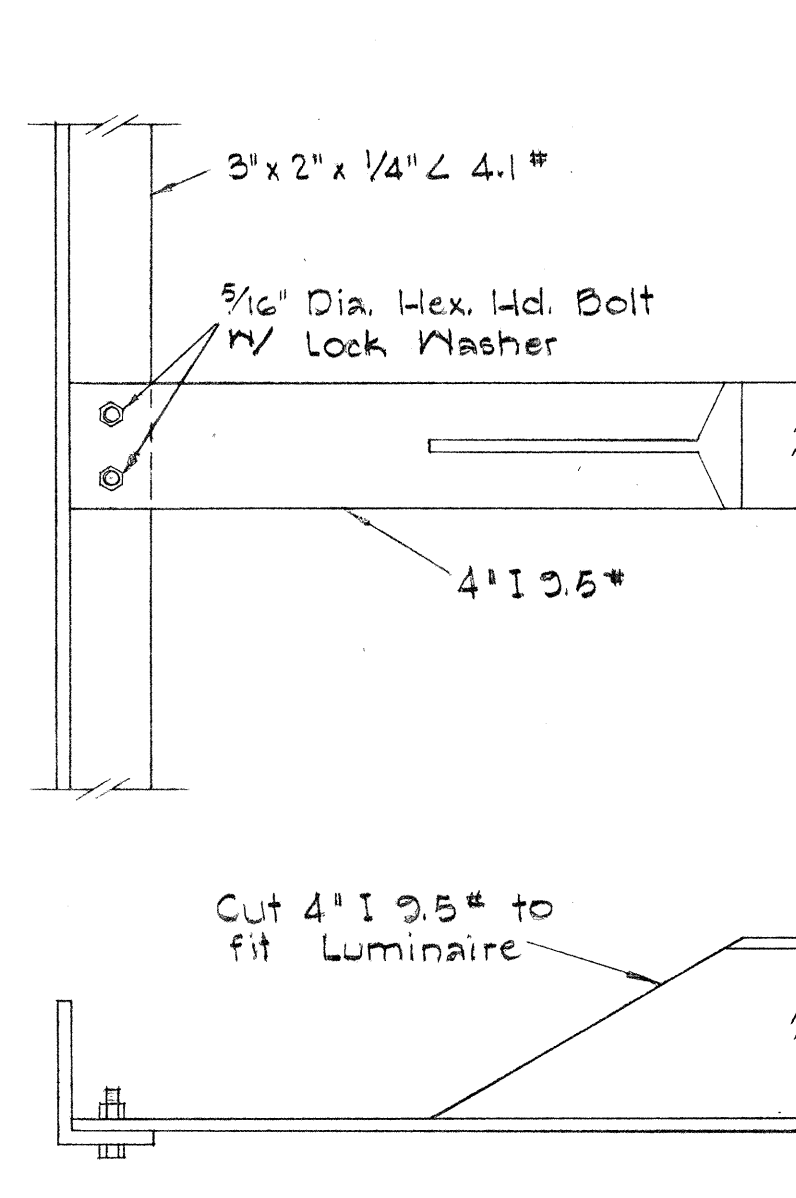
SHEET No. OF SHEETS

A 44 B 44

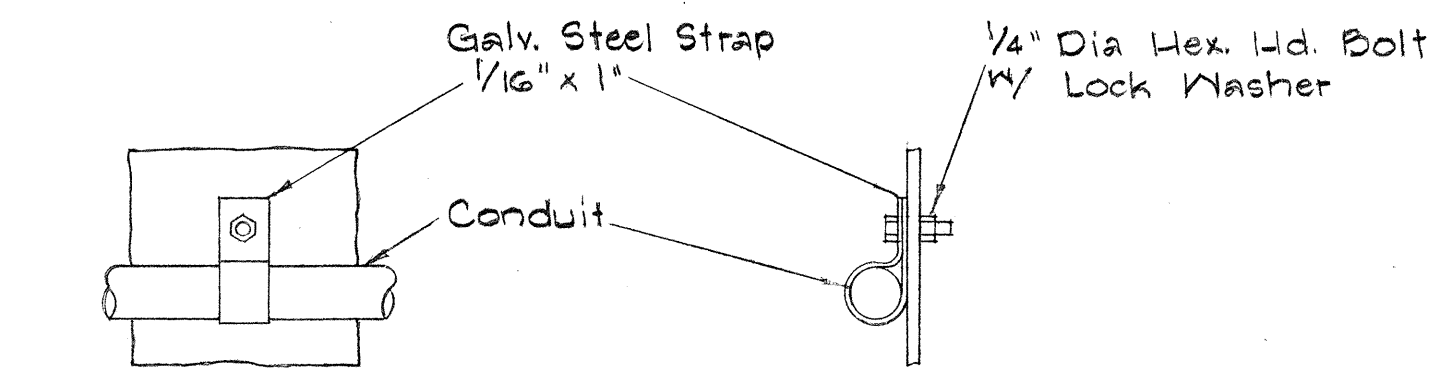
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	007E-100	1963	A45	45
		006B-100	1963	B45	45



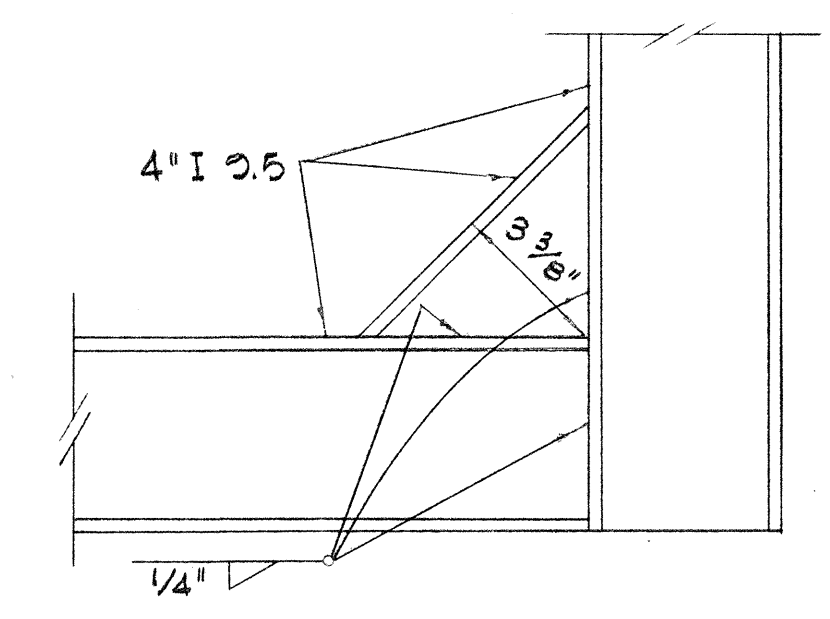
GROUND MOUNTED TOP VIEW
OVERHEAD TOP VIEW
LUMINAIRE MOUNTING
Scale: 1" = 1'-0"



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

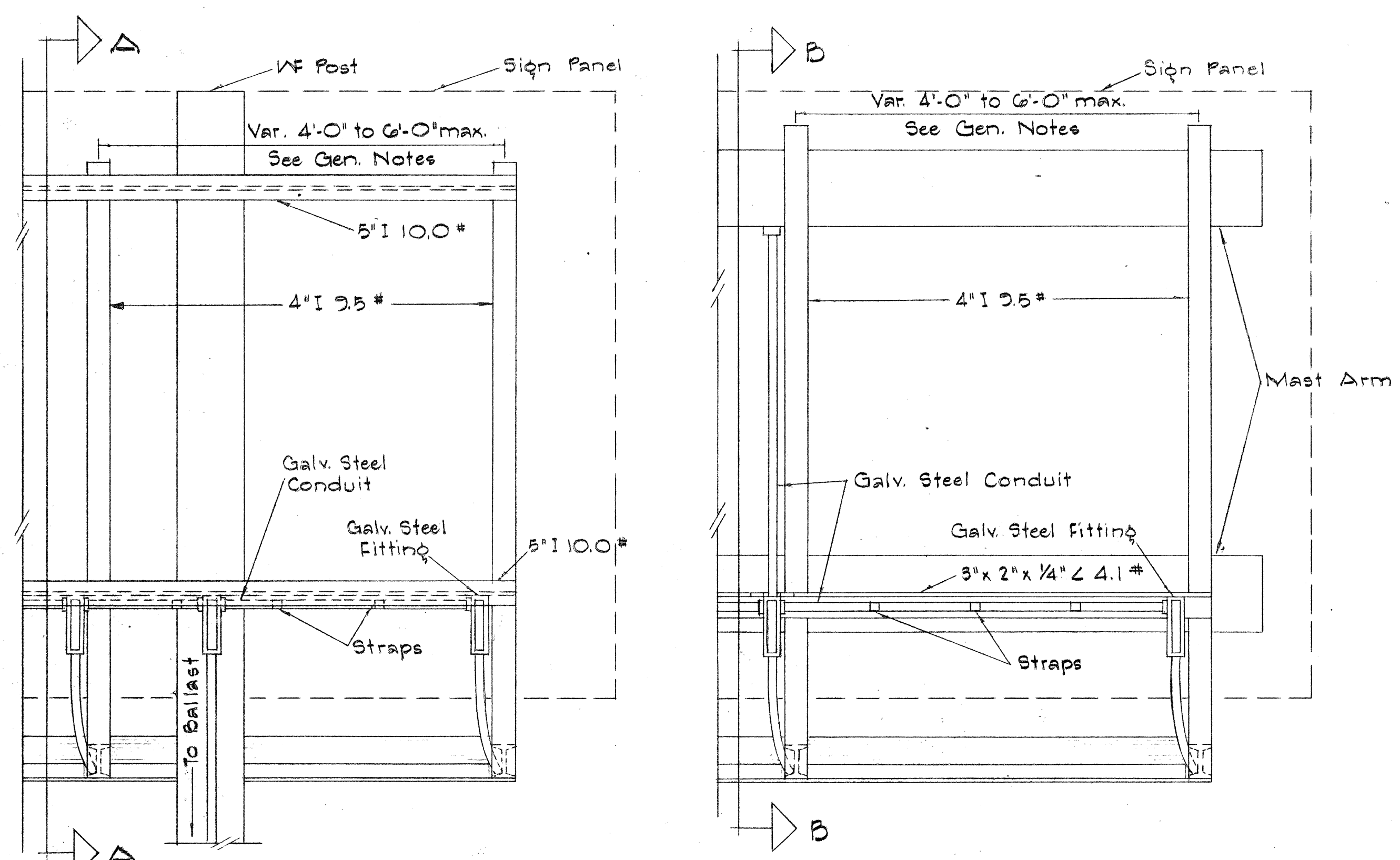


CONDUIT STRAP DETAIL
Scale: 3" = 1'-0"

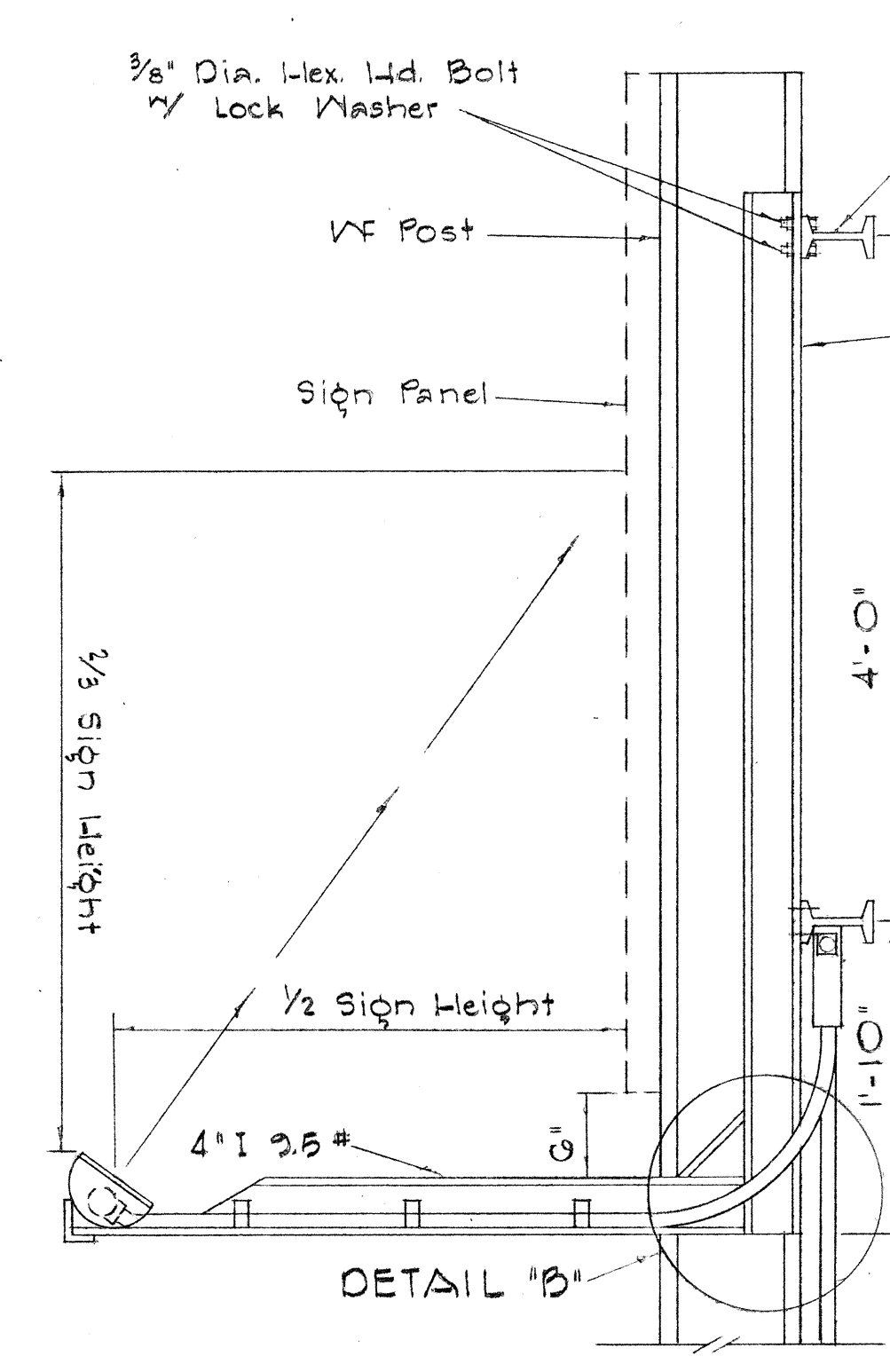


DETAIL "B"
Scale: 3" = 1'-0"

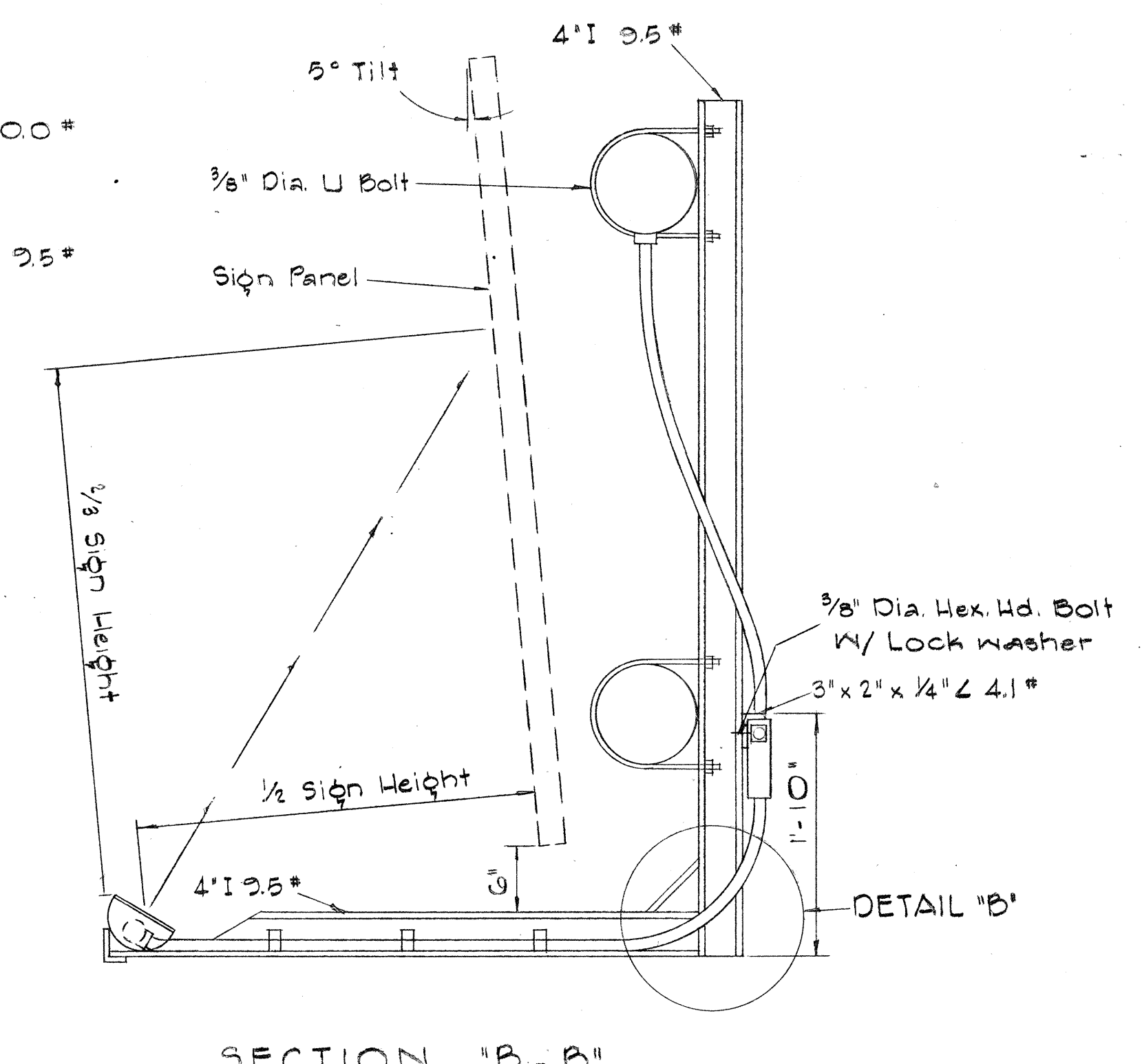
- GENERAL NOTES**
1. Conduit sizes: 3/4" diameter for one or two Luminaire Units, 1" diameter for three or more Luminaire Units.
 2. Fluorescent Fixtures shall be installed as recommended by the manufacturer.
 3. Luminaire brackets shall be spaced 4'-0" to 6'-0" maximum. 8' long luminaires shall have 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 REAR VIEW
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

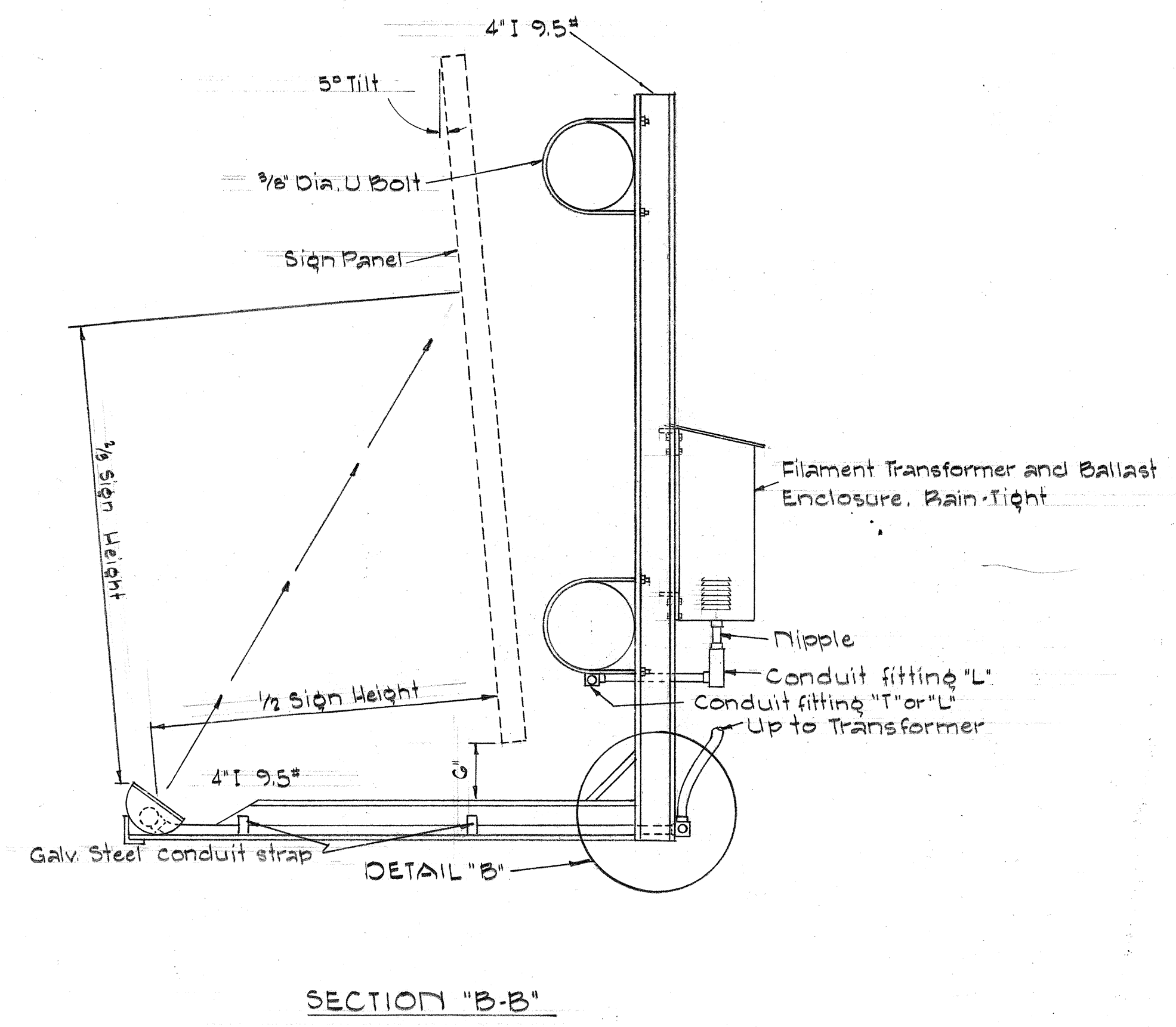
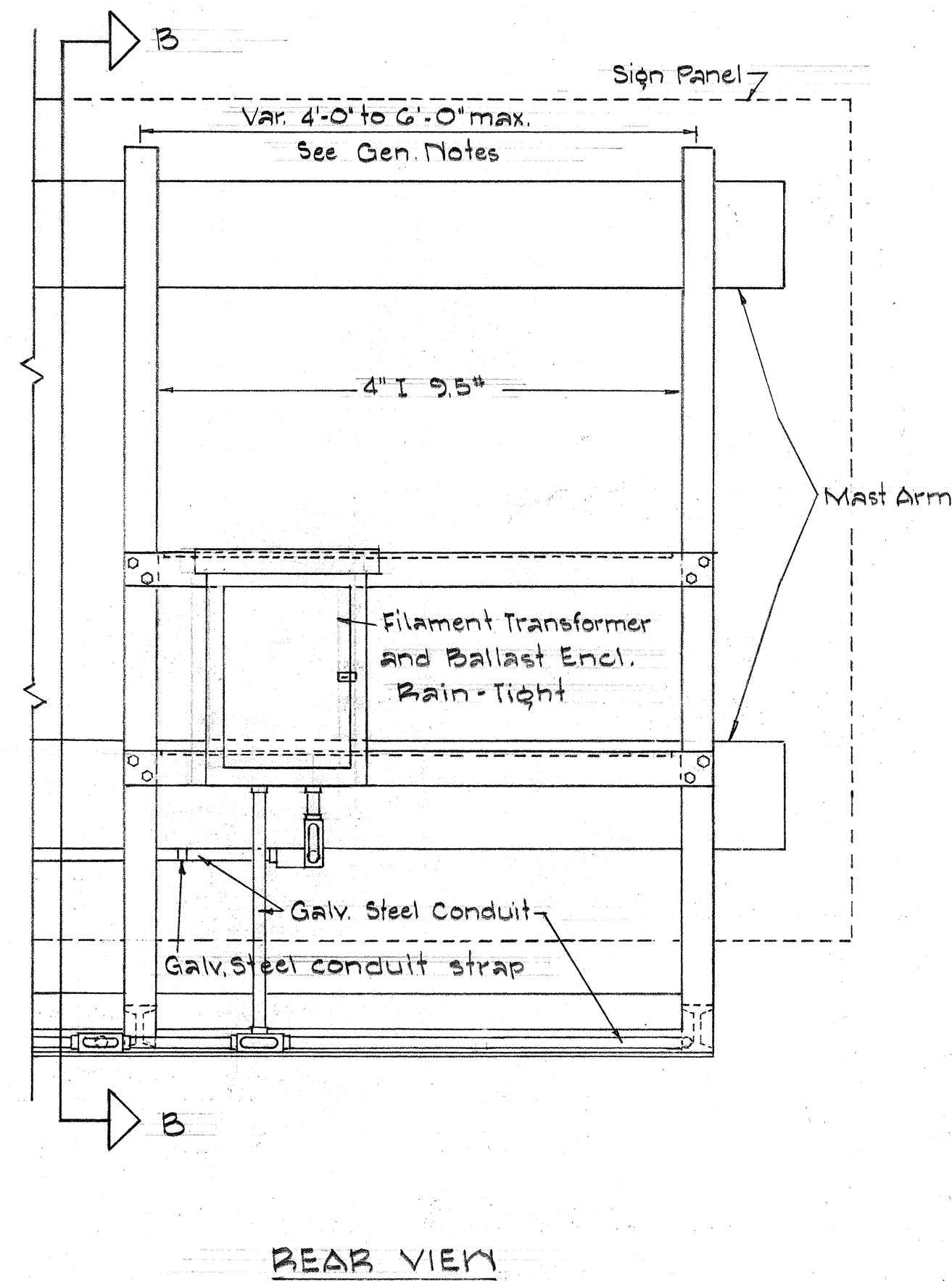
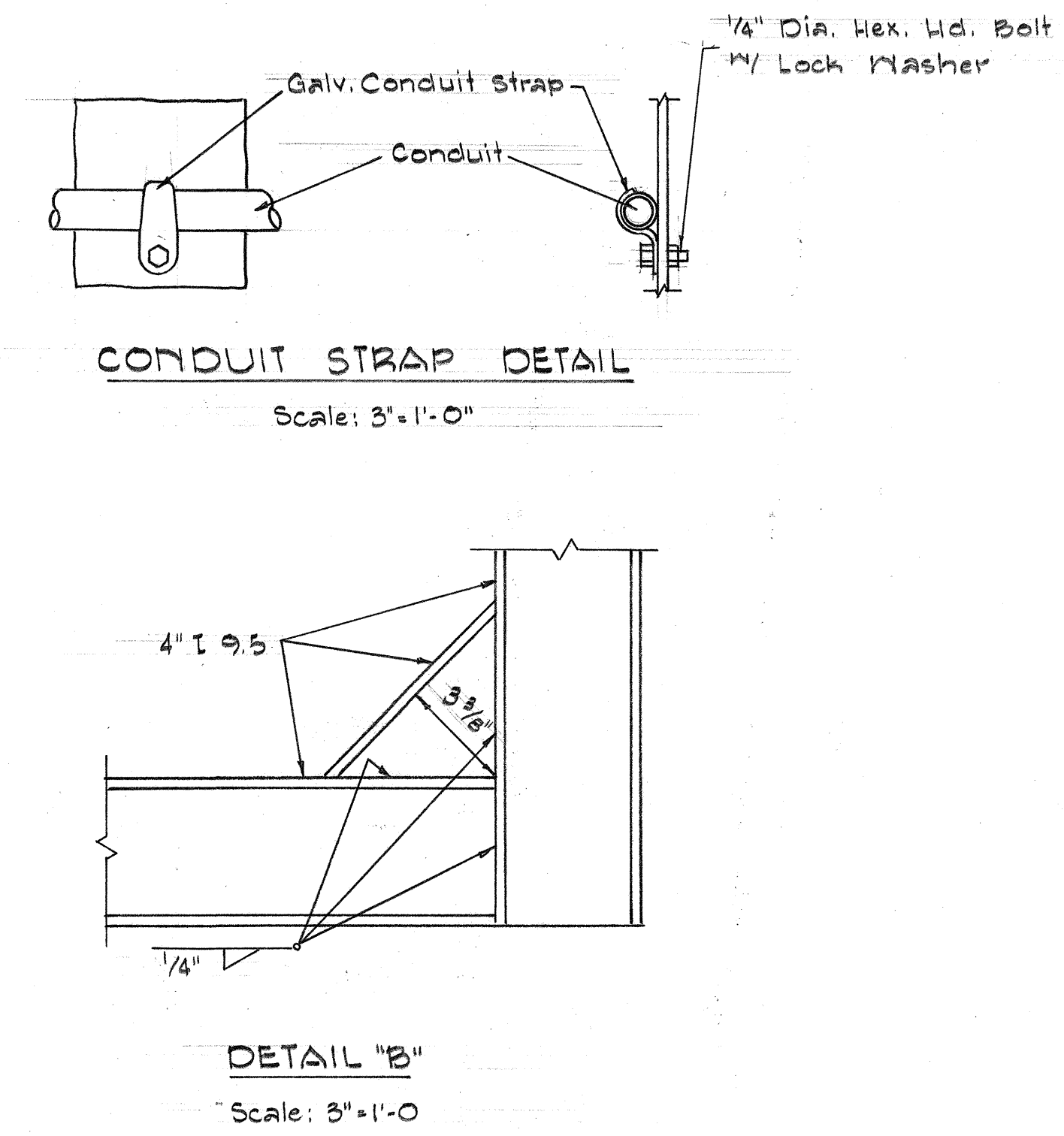
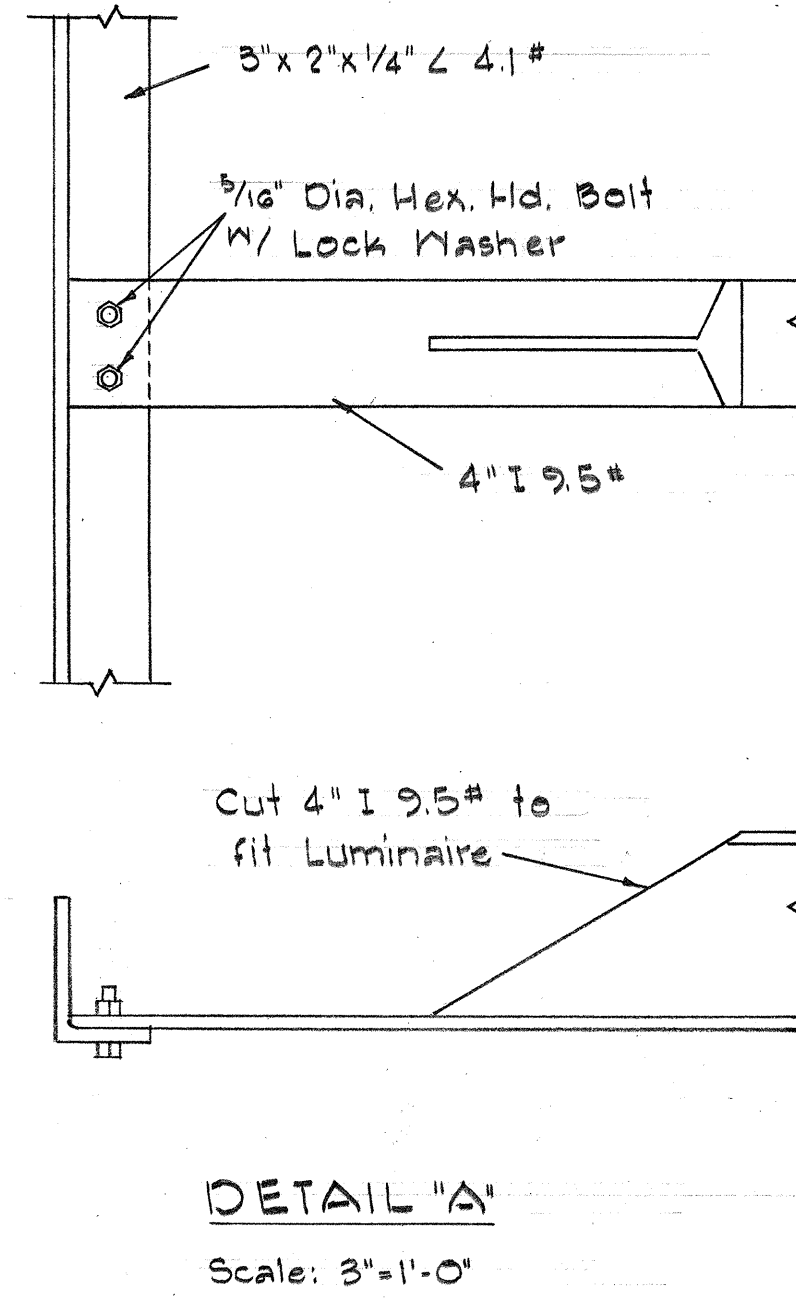
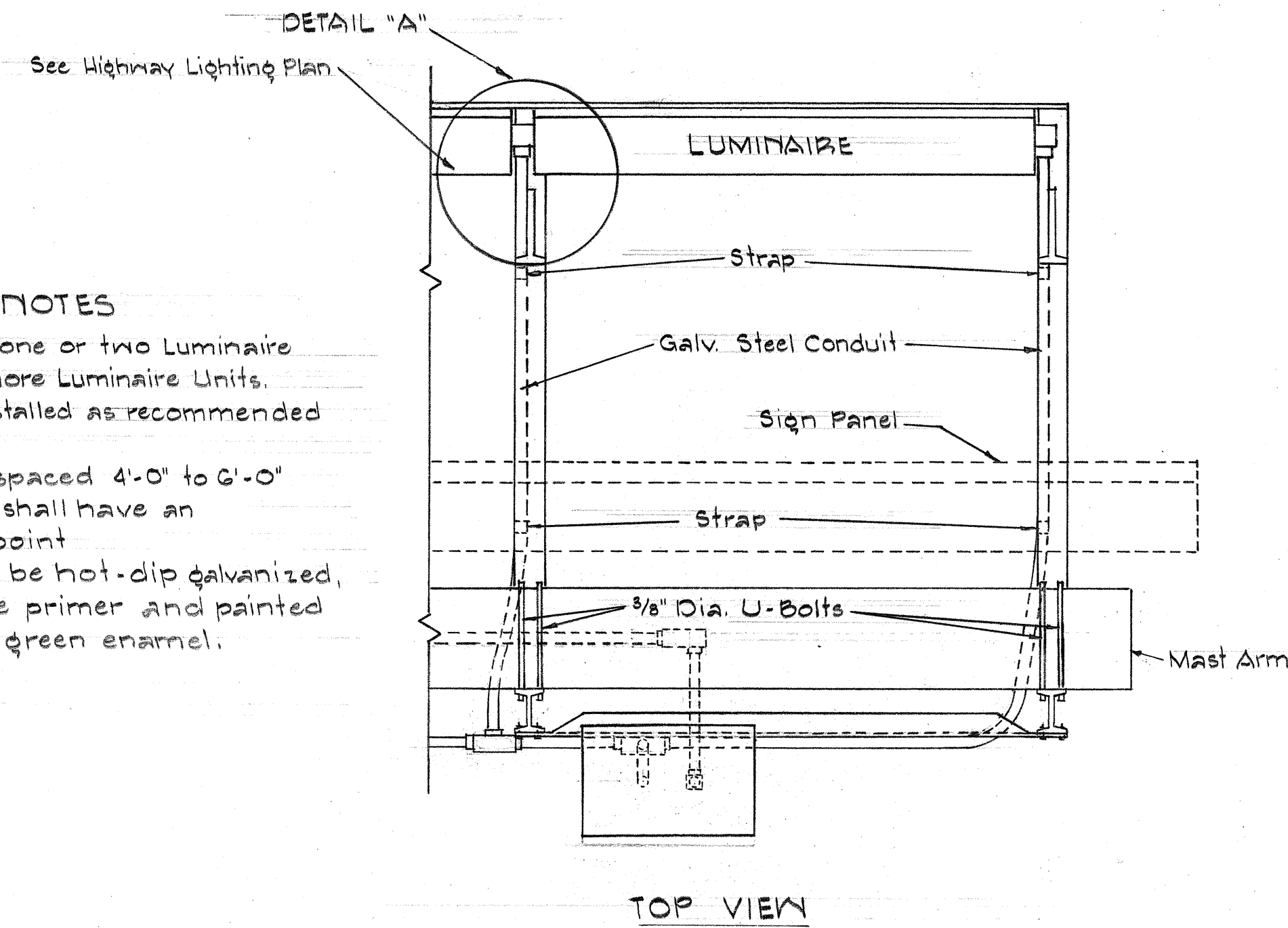
EXPRESSWAY SIGNS
LUMINAIRE MOUNTINGS

Scale: As Shown

SHEET No. OF SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-072-110	1963	A45	45
		U-063-111	1963	B45	45

- GENERAL NOTES**
- Conduit sizes: 3/4" diameter for one or two Luminaire Units, 1" diameter for three or more Luminaire Units.
 - Fluorescent 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.



LUMINAIRE MOUNTING

Scale 1"=1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EXPRESSWAY SIGNS
LUMINAIRE MOUNTINGS

Scale as Shown

SHEET No. OF SHEETS

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