

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	US-5-0720(3)	1960	56	79
		BU-072-1(1)	1960	84	118
		BU-072-1(2)	1960	78	115

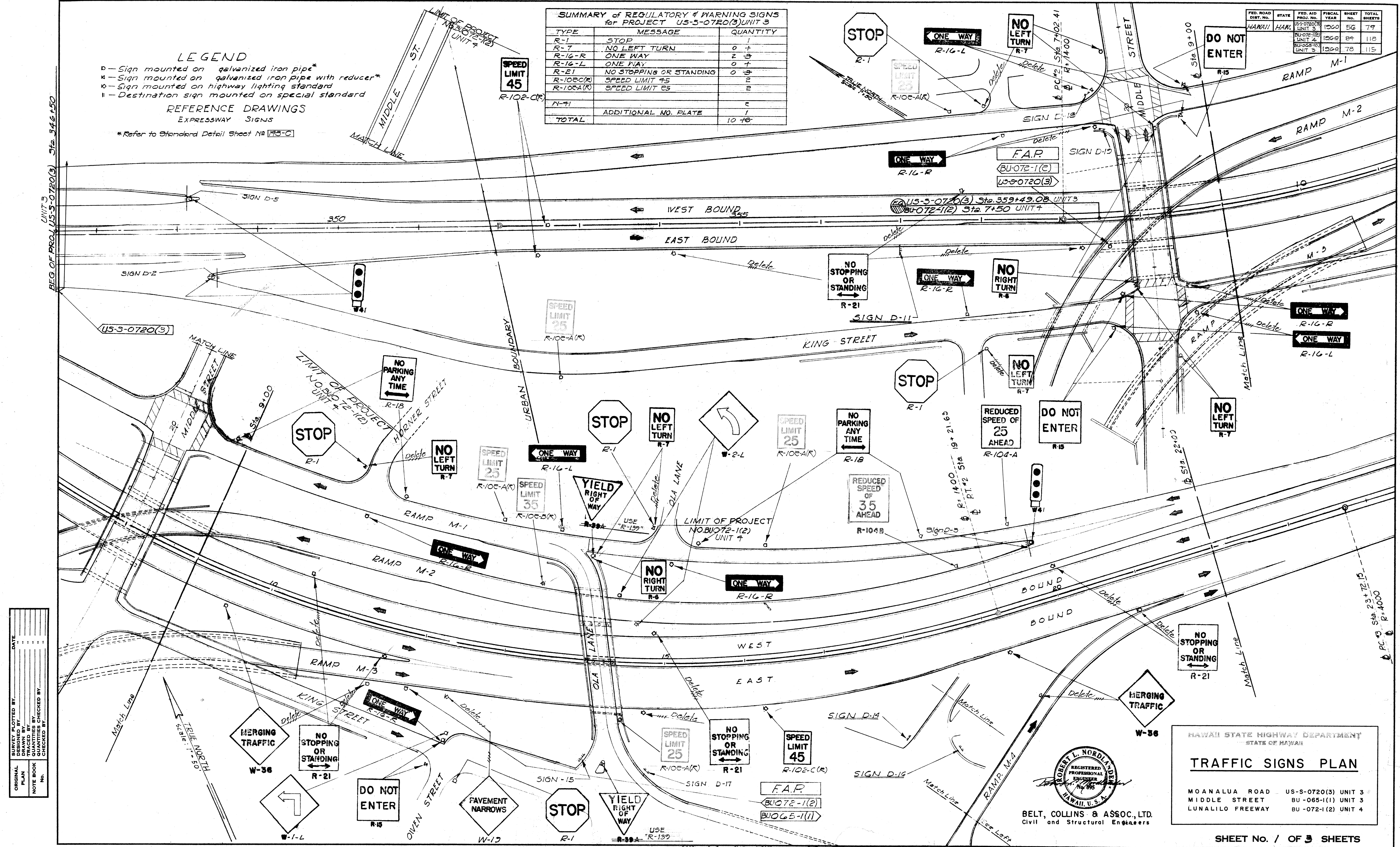
SUMMARY of REGULATORY & WARNING SIGNS for PROJECT US-5-0720(3) UNIT 3		
TYPE	MESSAGE	QUANTITY
R-1	STOP	1
R-7	NO LEFT TURN	0 +
R-16-R	ONE WAY	2 -
R-16-L	ONE WAY	0 +
R-21	NO STOPPING OR STANDING	0 -
R-105C(R)	SPEED LIMIT 45	2
R-105A(R)	SPEED LIMIT 25	2
N-71	ADDITIONAL NO. PLATE	1
TOTAL		10 +

LEGEND

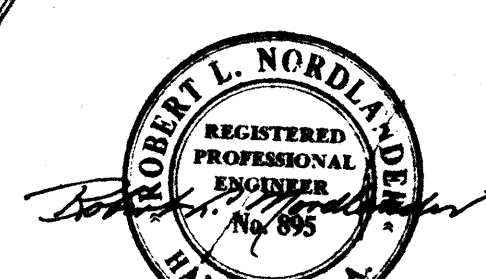
- D - Sign mounted on galvanized iron pipe*
- K - Sign mounted on galvanized iron pipe with reducer*
- o - Sign mounted on highway lighting standard
- F - Destination sign mounted on special standard

REFERENCE DRAWINGS EXPRESSWAY SIGNS

*Refer to Standard Detail Sheet No. 173-C



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



BELT, COLLINS & ASSOC., LTD.
Civil and Structural Engineers

HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII

TRAFFIC SIGNS PLAN

MOANALUA ROAD US-5-0720(3) UNIT 3
MIDDLE STREET BU-065-1(1) UNIT 3
LUNALILO FREEWAY BU-072-1(2) UNIT 4

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	BU-072-1(2)	1960	85	118
		BU-065-1(1)	1960	70	115

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

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

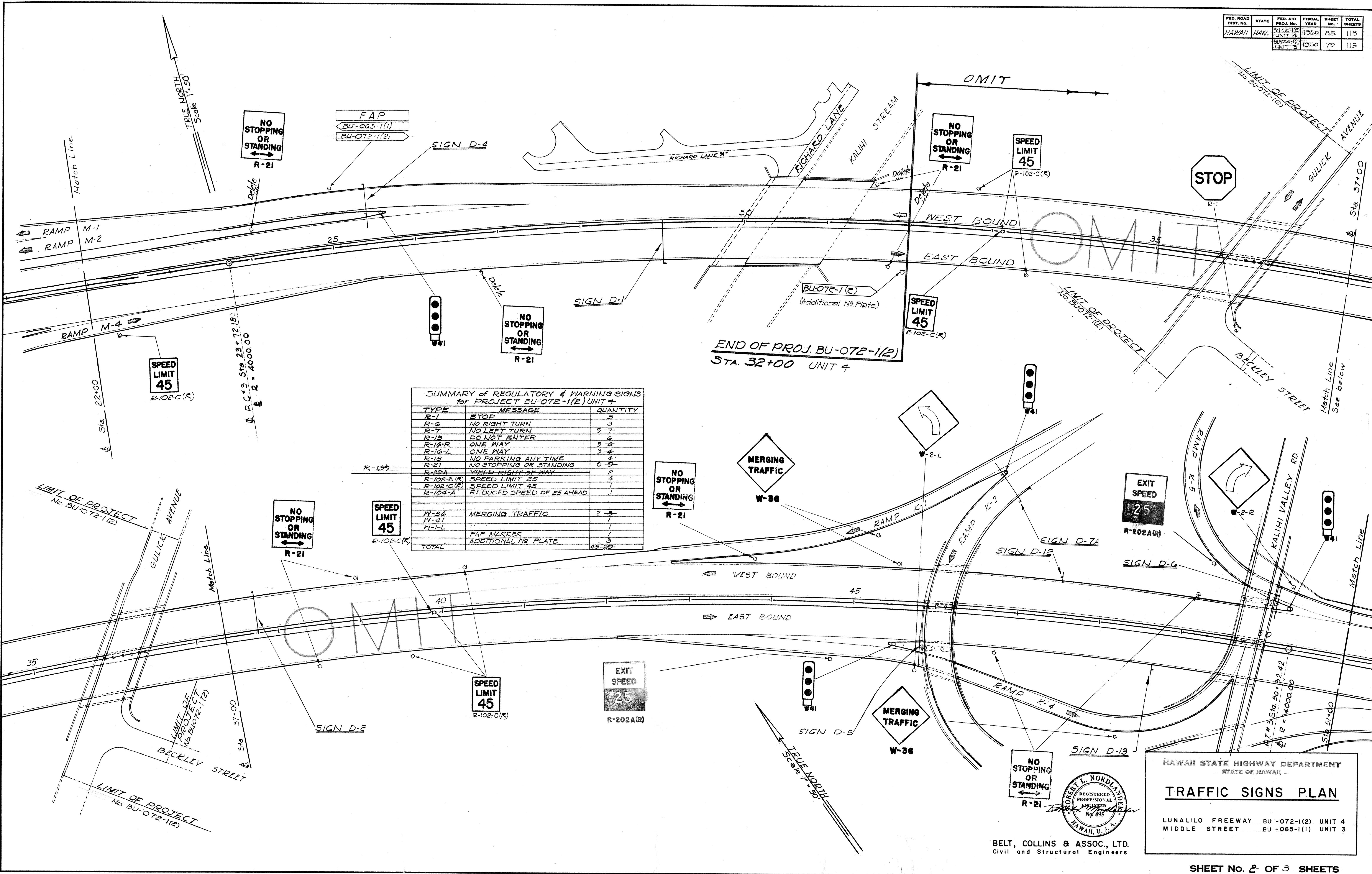
PRINTED ON DESPO 1000 CLEARPRINT

DD-1-8

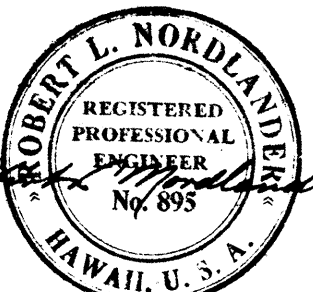
\$174.85

\$161.79

123



BELT, COLLINS & ASSOC., LTD.
Civil and Structural Engineers



HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII

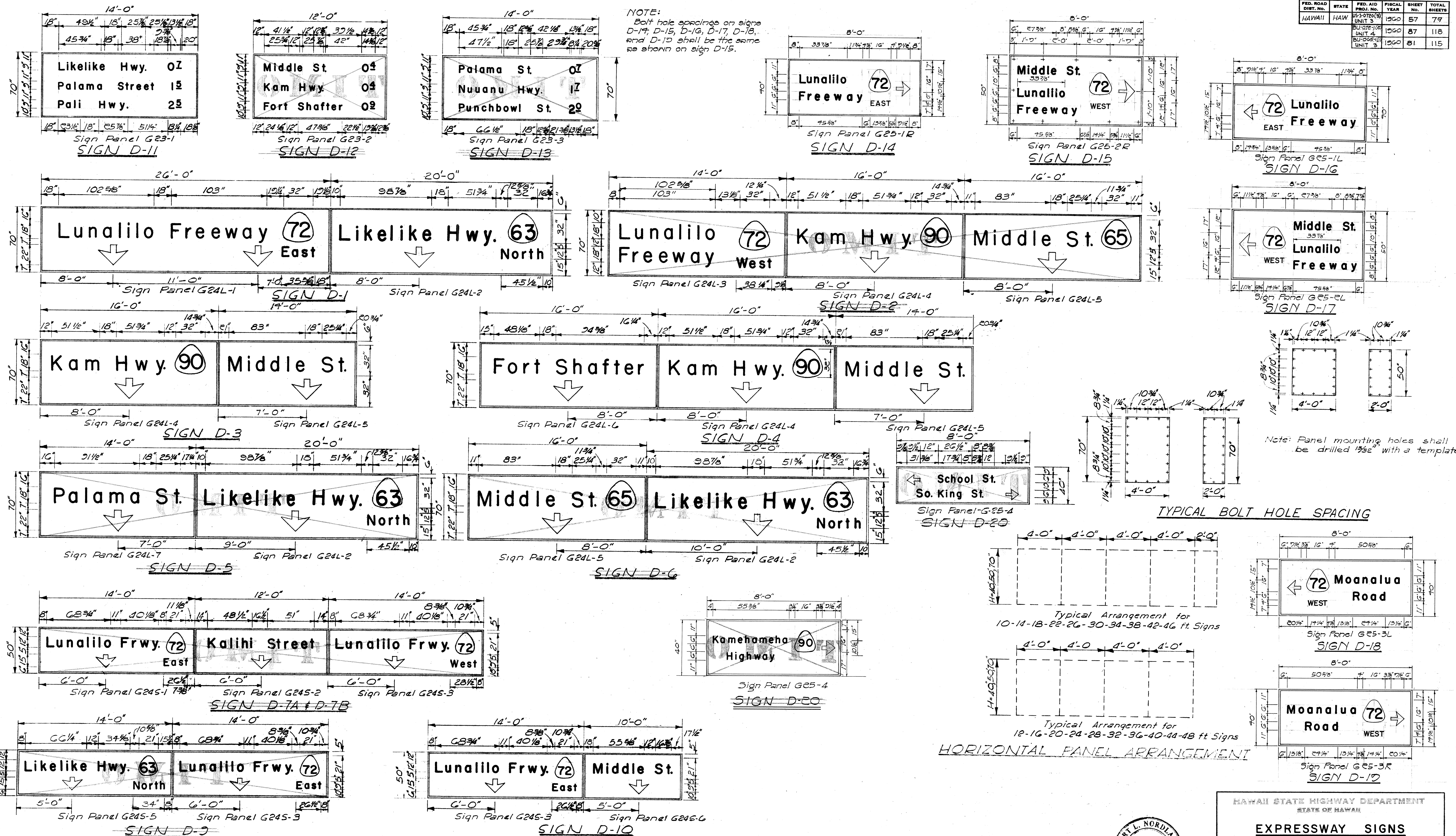
TRAFFIC SIGNS PLAN

LUNALILO FREEWAY BU-072-1(2) UNIT 4
MIDDLE STREET BU-065-1(1) UNIT 3

SHEET No. 2 OF 3 SHEETS

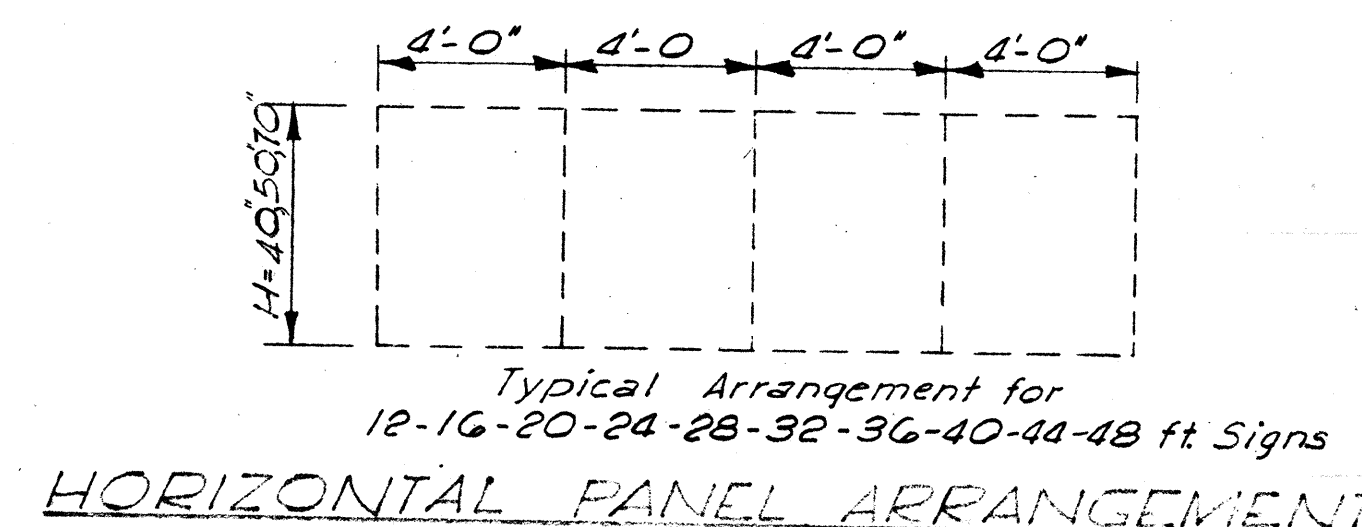
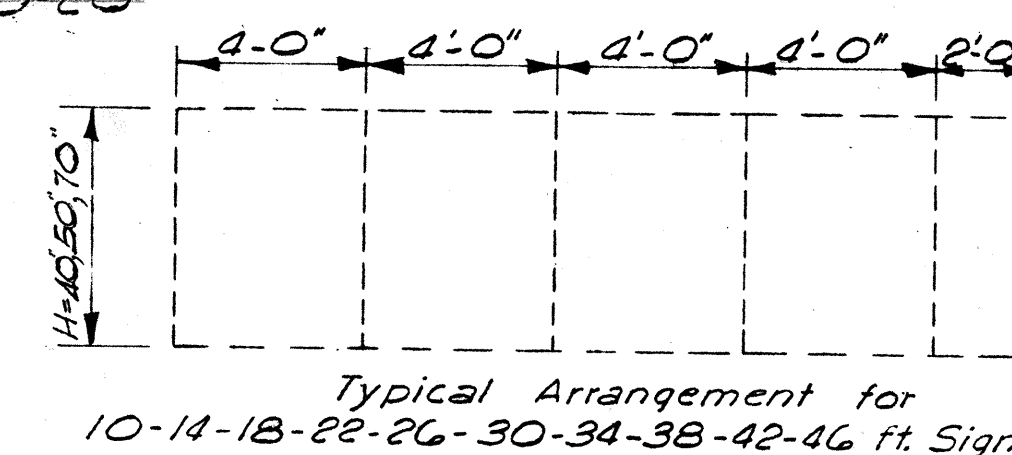
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	105-0720(3)	1960	57	79
		105-0720(2)	1960	87	118
		105-0720(1)	1960	81	115

NOTE:
Bolt hole spacings on signs D-14, D-15, D-16, D-17, D-18, and D-19 shall be the same as shown on sign D-15.

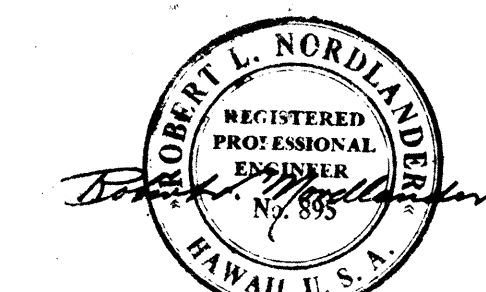


Note: Panel mounting holes shall be drilled 1/32" with a template.

TYPICAL BOLT HOLE SPACING



HORIZONTAL PANEL ARRANGEMENT



BELT, COLLINS & ASSOC., LTD.
Civil and Structural Engineers

HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII
EXPRESSWAY SIGNS
PANEL LAYOUT
MOANALUA ROAD US-5-0720 (3) UNIT 3
LUNALILO FREEWAY BU -072-1 (2) UNIT 4
MIDDLE STREET BU -065-1 (1) UNIT 3

SHEET NO. 1 OF 3 SHEETS

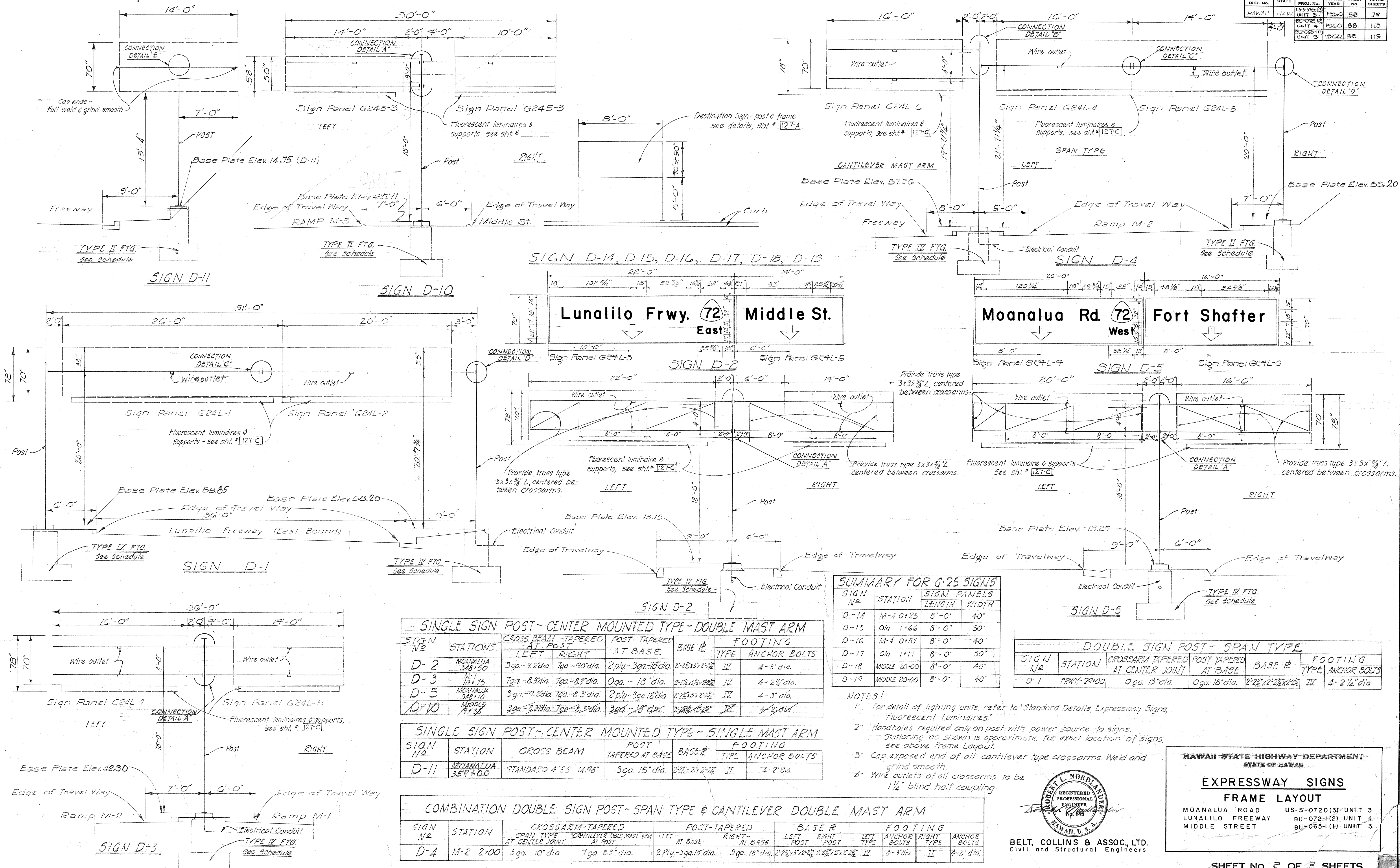
5526.57

8174.87

8161.81

125

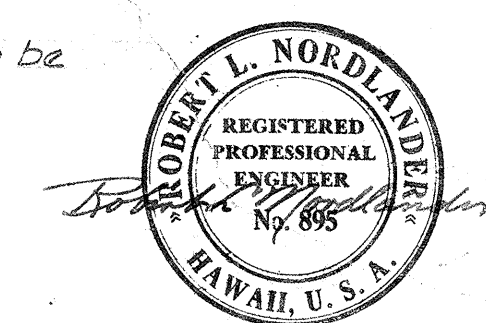
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
105-5-0720(3)	HAWAII	UNIT 3	1960	58	79
BU-072-16		UNIT 4	1960	88	118
BU-065-10		UNIT 2	1960	80	115



SUMMARY FOR G-25 SIGNS

Sign No.	Station	Sign Panels Length	Sign Panels Width
D-14	M-4 0+25	8'-0"	40"
D-15	Ola 1+66	8'-0"	50"
D-16	M-4 0+57	8'-0"	40"
D-17	Ola 1+17	8'-0"	50"
D-18	MIDDLE 20+00	8'-0"	40"
D-19	MIDDLE 20+00	8'-0"	40"

- NOTES:**
- For detail of lighting units, refer to "Standard Details, Expressway Signs, Fluorescent Luminaires."
 - Handholes required only on post with power source to signs. Stationing as shown is approximate, for exact location of signs, see above Frame Layout.
 - Cap exposed end of all cantilever type crossarms weld and grind smooth.
 - Wire outlets of all crossarms to be 1 1/4" blind half coupling.



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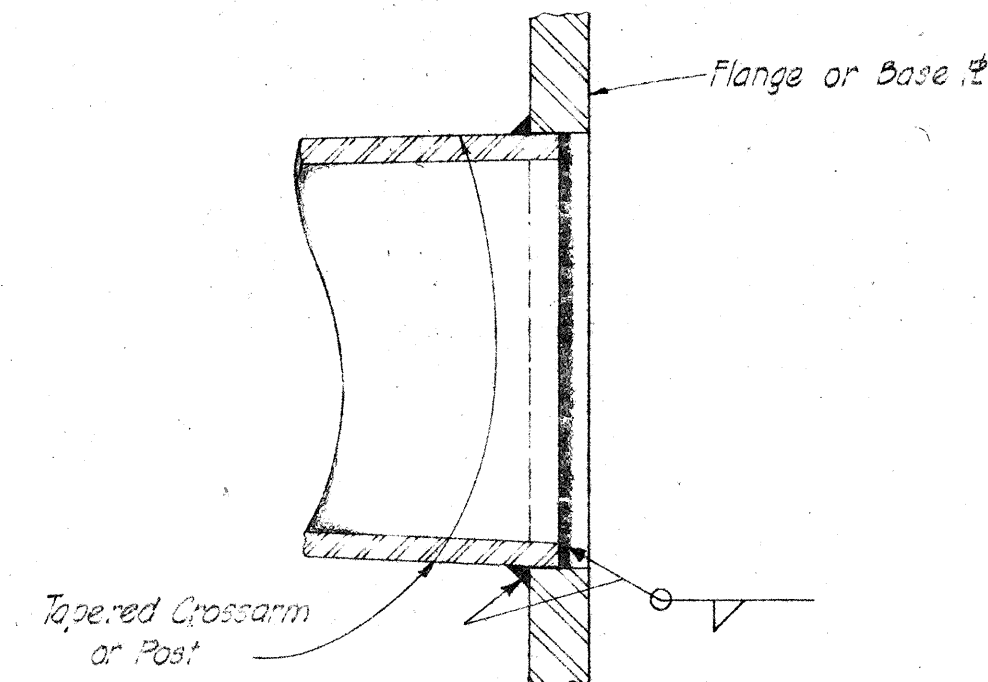
HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII

EXPRESSWAY SIGNS

FRAME LAYOUT

MOANALUA ROAD US-5-0720(3) UNIT 3
LUNALILO FREEWAY BU-072-1(2) UNIT 4
MIDDLE STREET BU-065-1(1) UNIT 3

\$526.55 \$174.88 \$161.82



DETAIL "X"
TYPICAL CROSSARM FLANGE &
OR POST BASE & CONNECTIONS

GENERAL NOTES

DESIGN DATA
1- Wind load = 35 psf.

MATERIALS

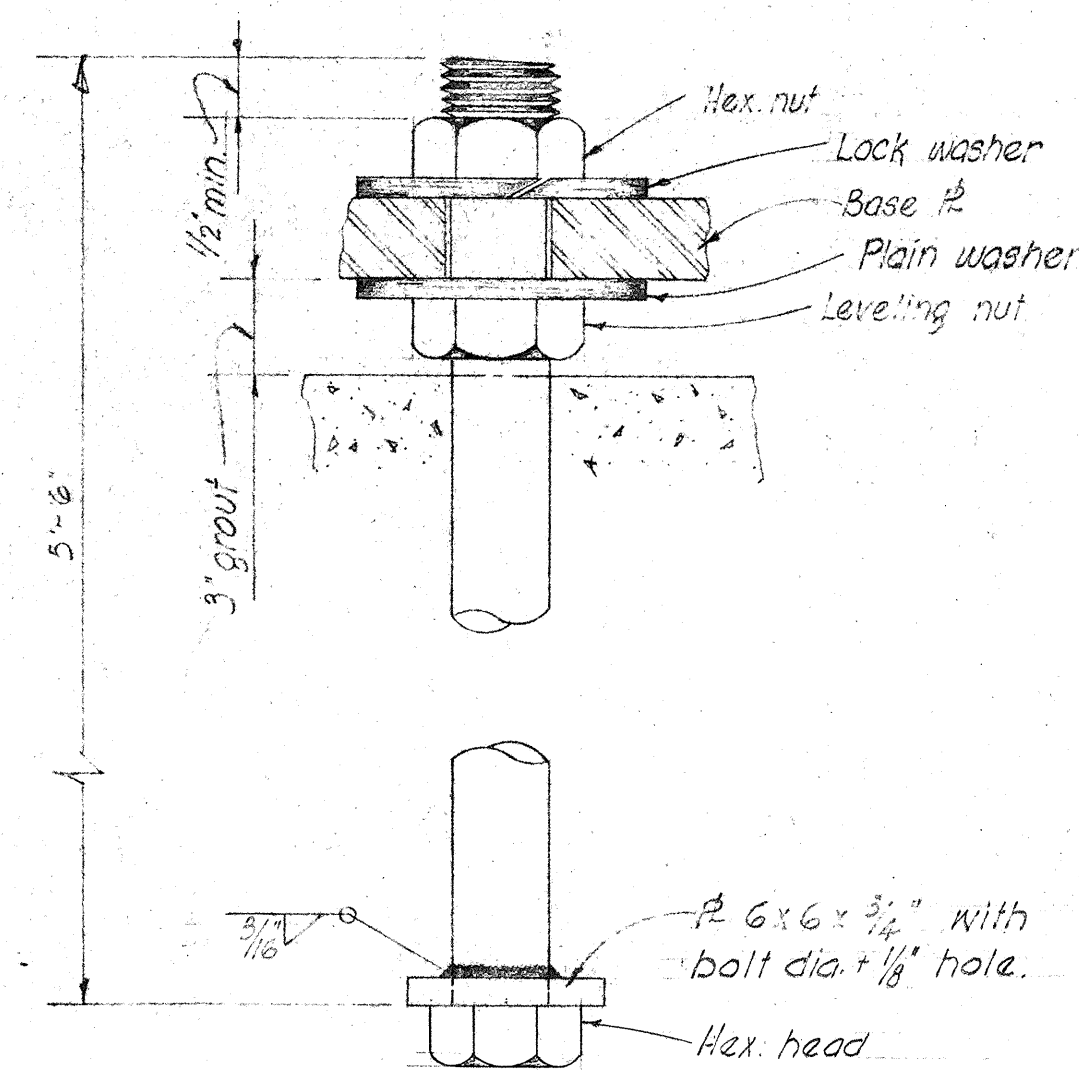
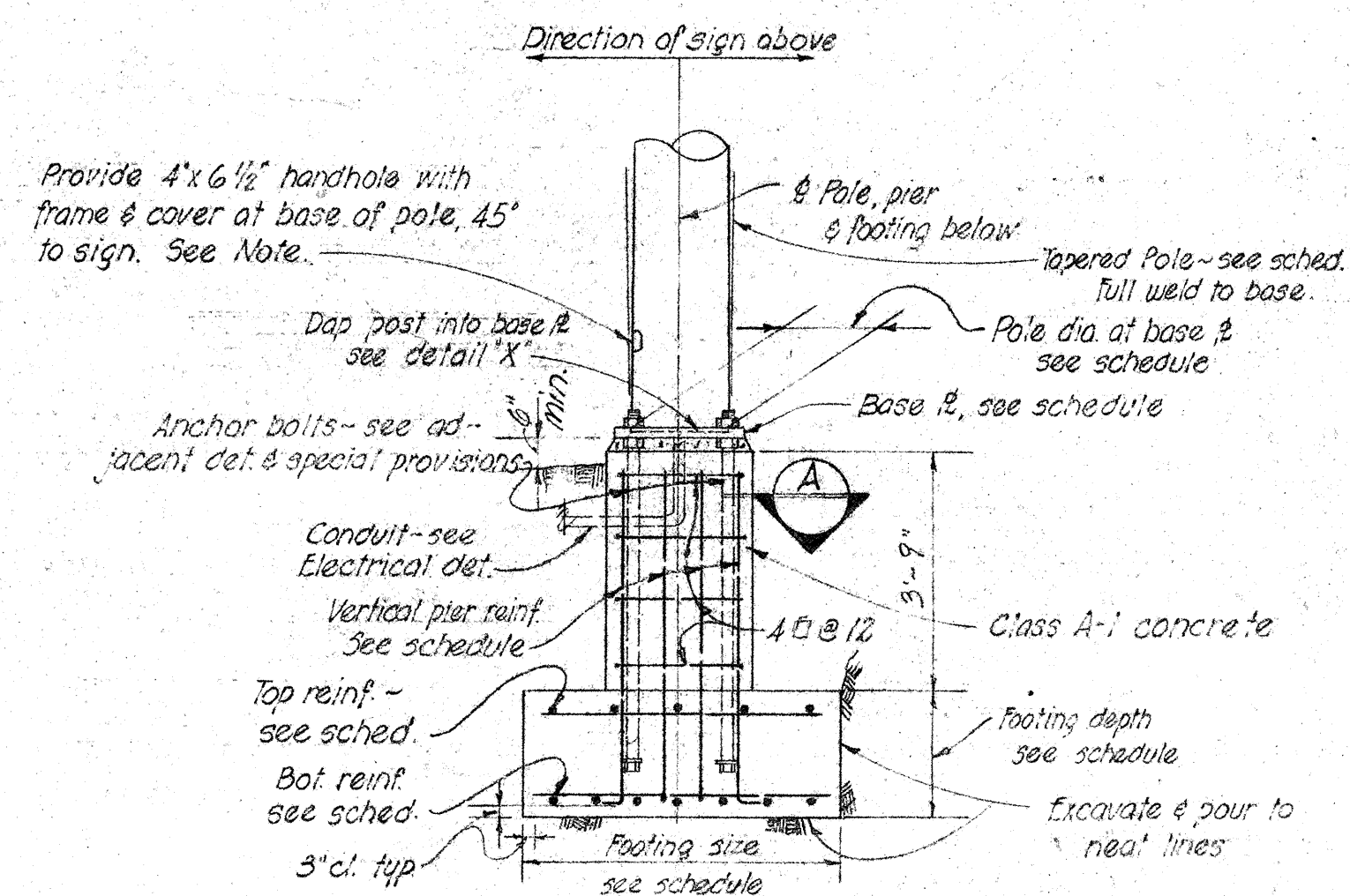
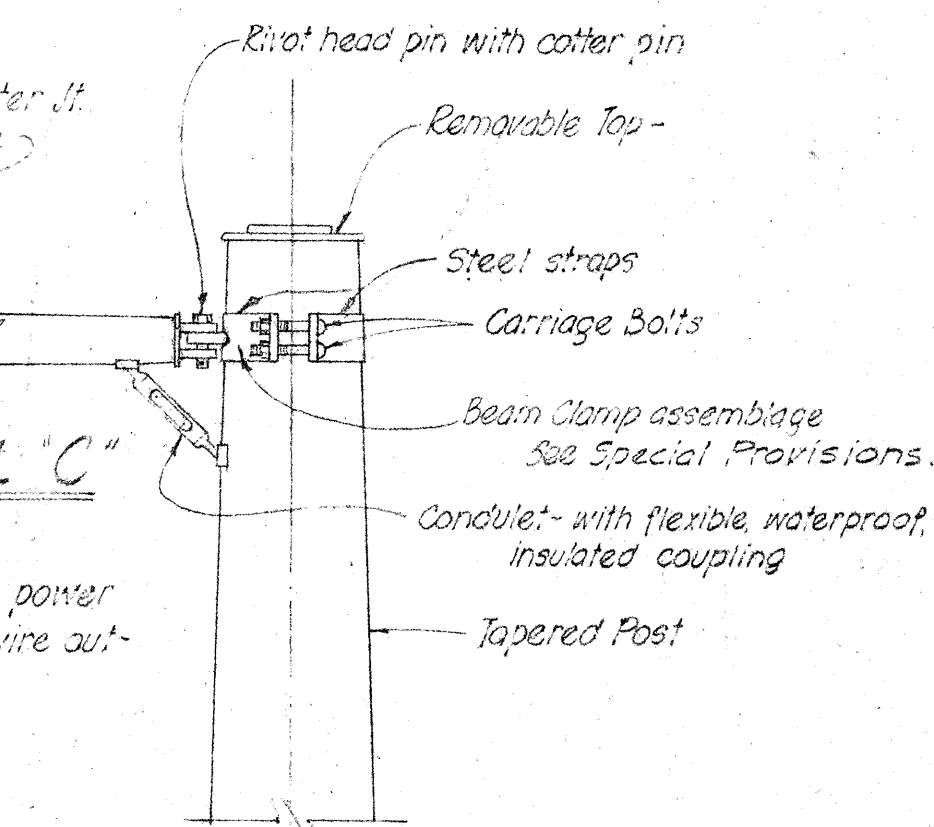
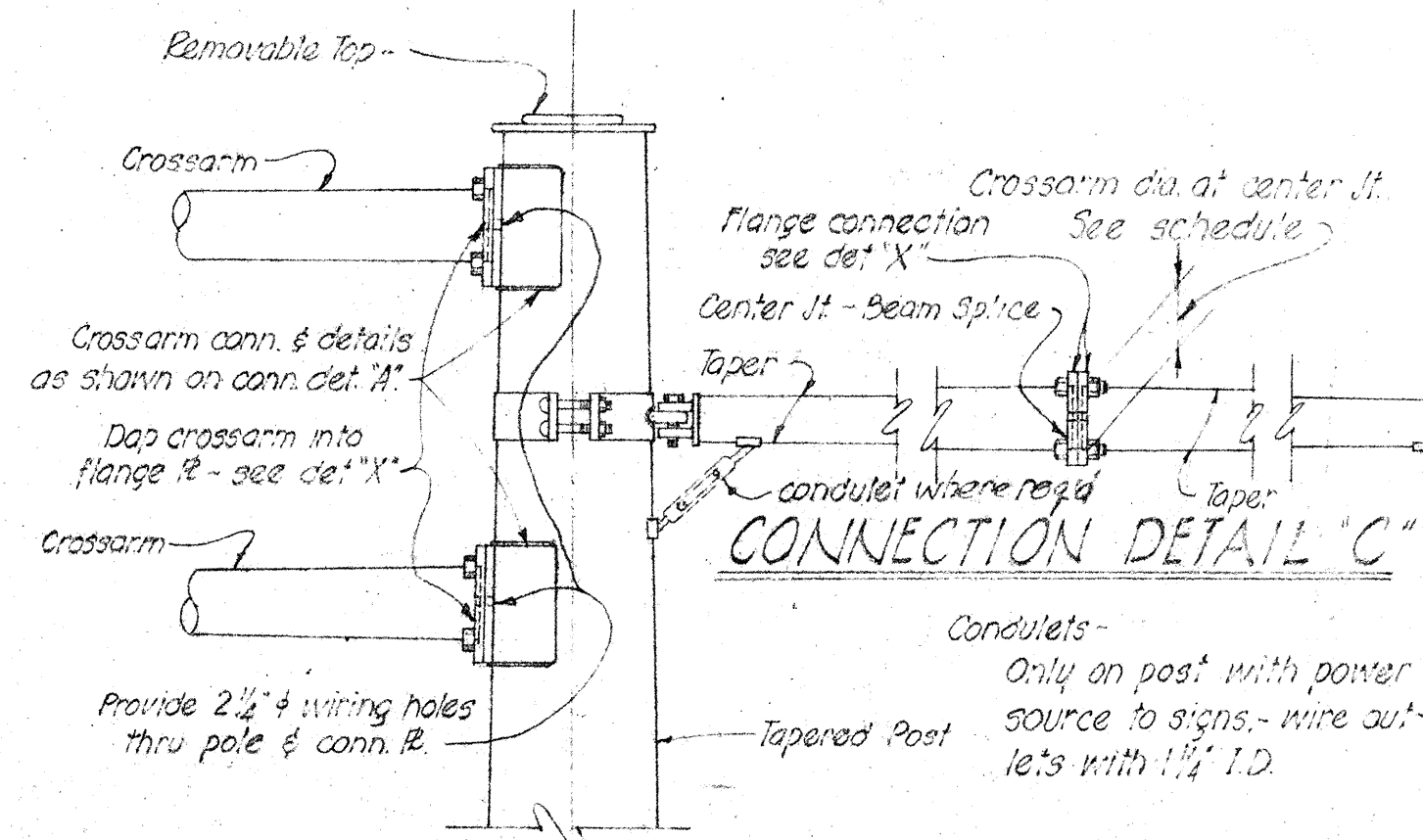
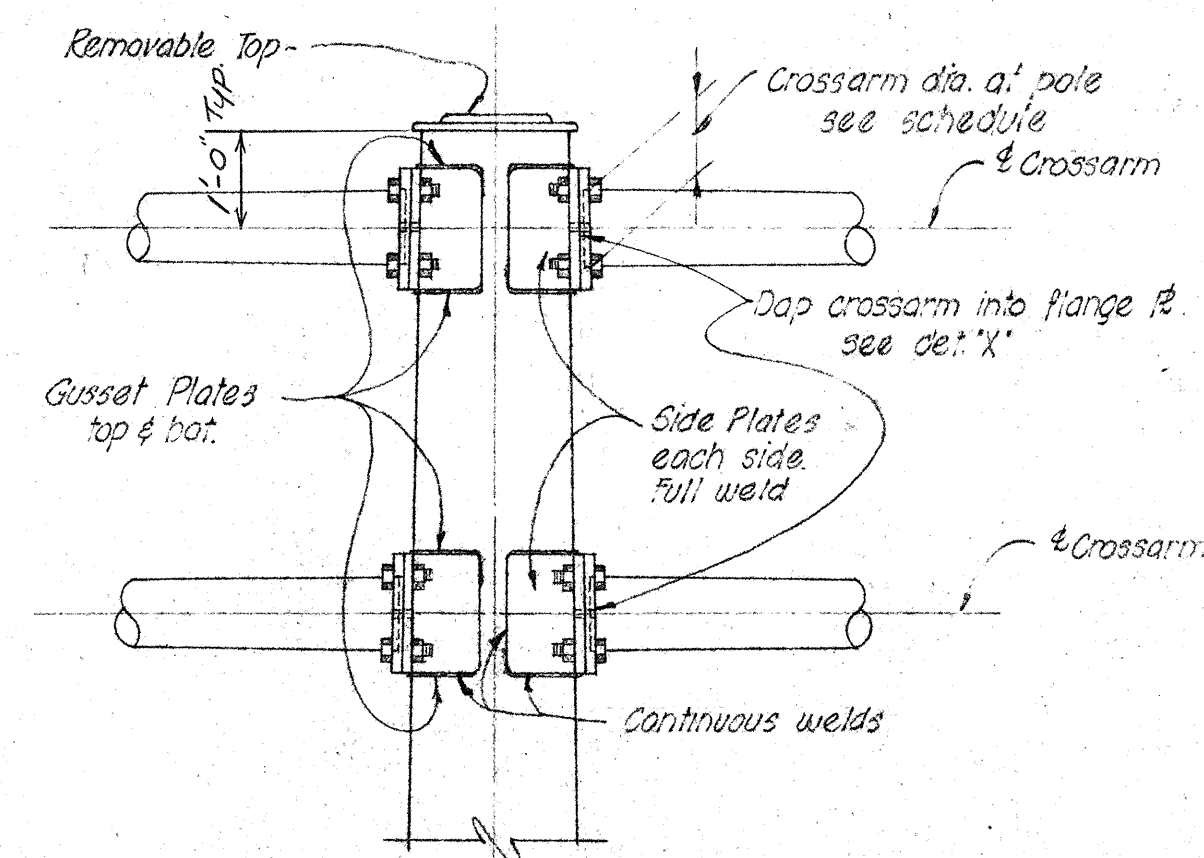
Concrete:
All concrete, Class A-1, except as otherwise noted.

Reinforcing steel:
See General Specs.

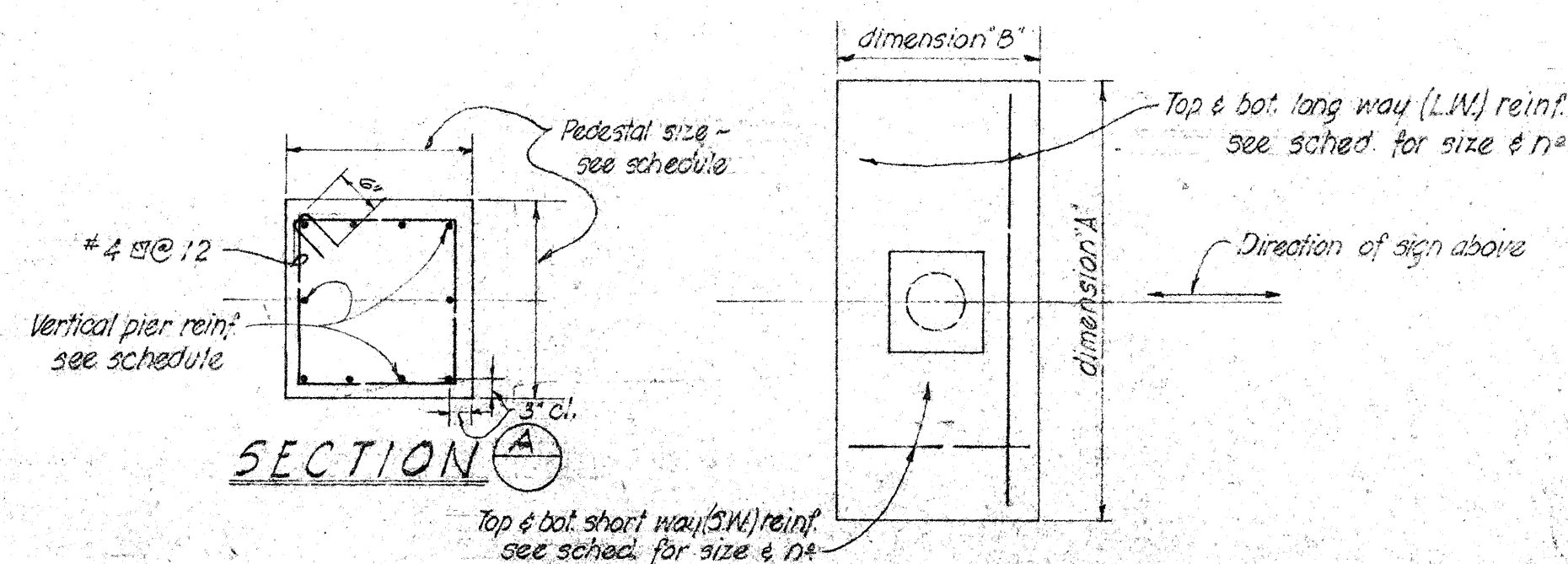
Structural steel
Structural steel shall be structural carbon steel, A.S.T.M. designation A-7.

FASTENINGS & ANCHOR BOLTS
See Special Provision.

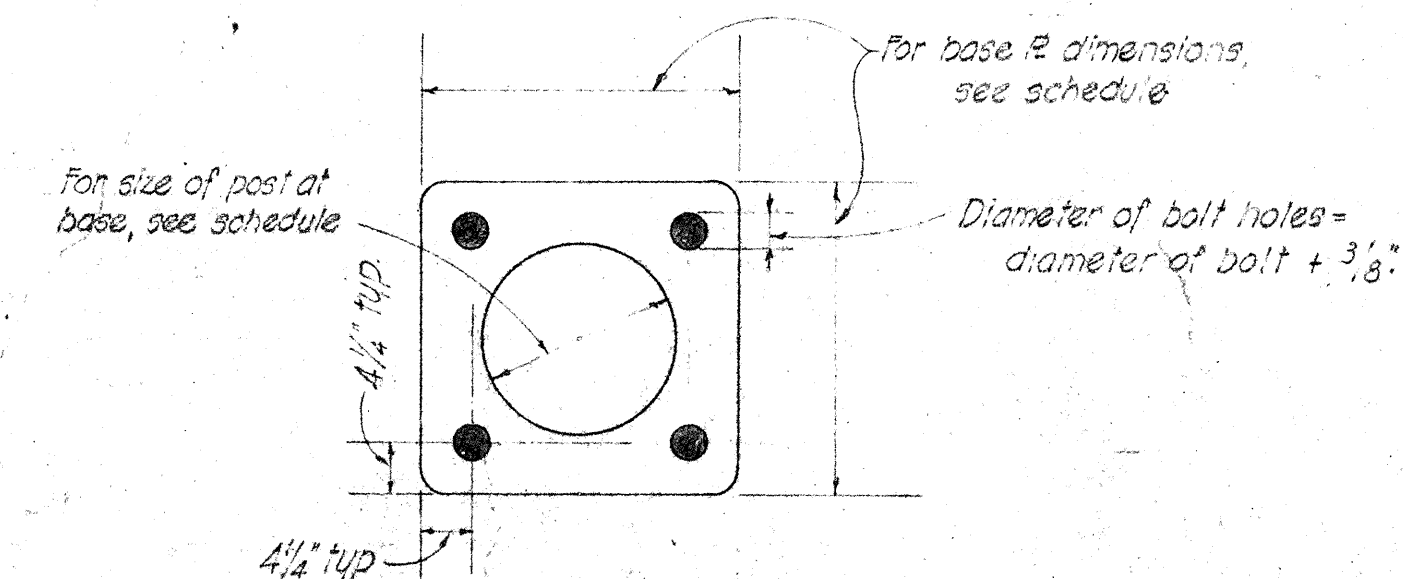
CONSTRUCTION METHODS.
Welding: See Special Provision.
Painting & galvanizing: See Special Provision.



- ## NOTES:
- 1- The size of all footings is based on an allowable bearing pressure of 4000 p.s.f. on the soil.
 - 2- After the excavations for each footing is completed, the Contractor shall notify the engineer.
 - 3- The engineer shall conduct such tests as are deemed advisable to determine the actual allowable bearing pressure of the soil encountered.
 - 4- In the event that the actual allowable bearing pressure is less than 4000 p.s.f., the engineer shall increase the size of the footing and so order in writing.
 - 5- Grout to be placed after sign is in place.
 - 6- Footing for Expressway Signs will not be paid for separately but shall be incidental to the item of Expressway Signs.
 - 7- Handholes required only on posts with power source to sign. It shall be located away from traffic lanes.
 - 8- Base flanges and anchor bolts to be furnished by the manufacturer.



FOUNDATION SCHEDULE									
TYPE	DIMENSION		DEPTH	BOT REINF		TOP REINF		PEDESTAL	
	A	B		L.W.	S.W.	L.W.	S.W.	SIZE	VERT REIN.
II	9'-0"	4'-6"	2'-0"	6-#6	10-#4	2#10	do. wavy	2'-6" X 2'-6"	10 - #7
IV	12'-0"	6'-0"	2'-0"	7-#9	13-#4	do.		2'-9" X 2'-9"	10 - #10



TYPICAL BASE & PLAN

HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII

EXPRESSWAY SIGNS ~
SCHEDULES & DETAILS

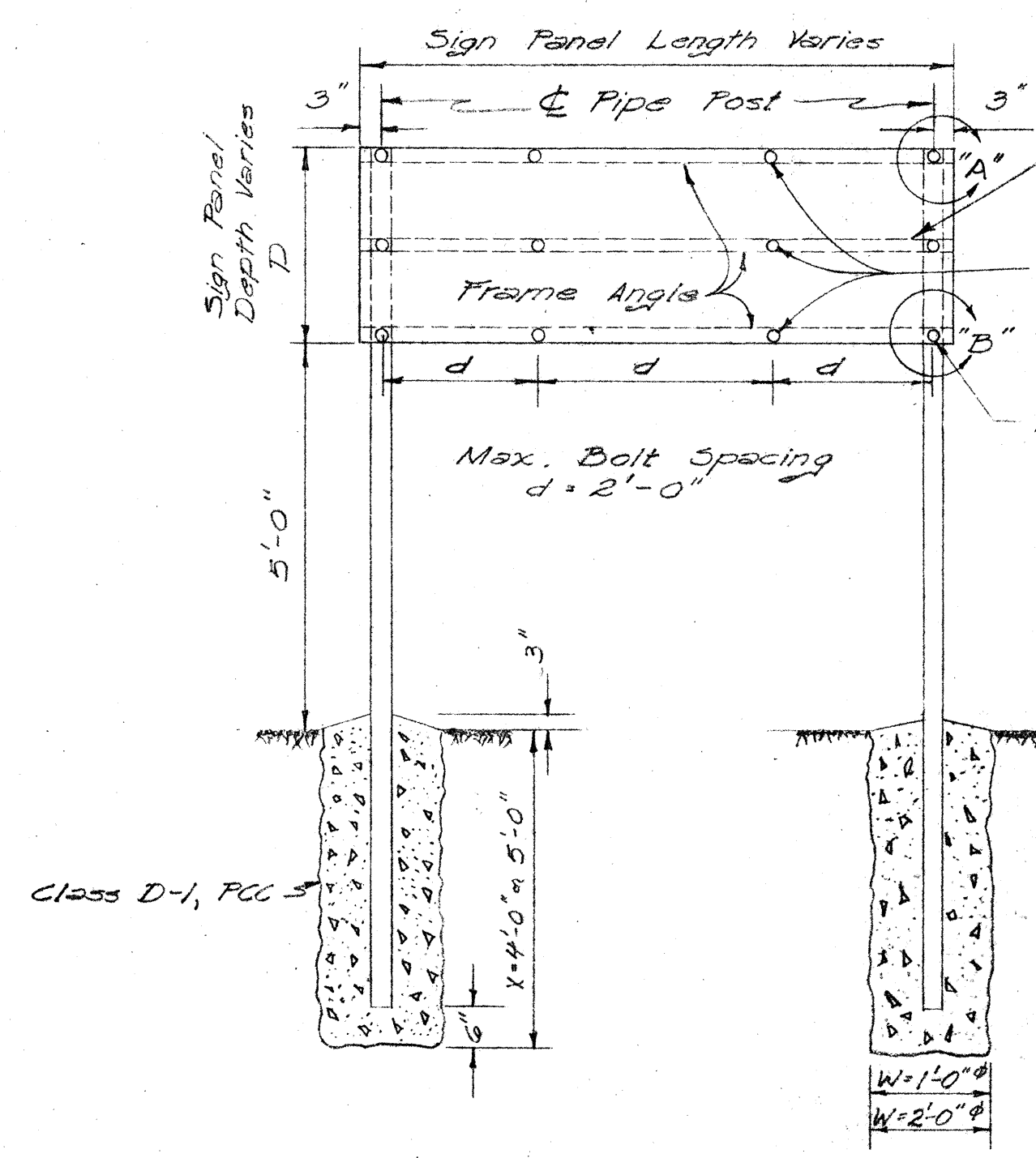
MOANALUA ROAD	US-5-0720(3) UNIT 3
LUALILU FERRY	BU-072-1(2) UNIT 4
MIDDLE STREET	BU-065-1(1) UNIT 3

SHEET No. OF SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	19-5-501200	1960	59A	79
		BU-016-100	1960	59A	118
		BU-065-10	1960	59A	115

Varies { When D is 2' to 4' use interior angles at $\frac{1}{2}$.
When D is 4' to 6' use interior angles at $\frac{2}{3}$.
Connection is similar to Detail "B".
All frame angles shall be $2\frac{1}{2}'' \times 2\frac{1}{2}'' \times \frac{3}{4}''$.

Note: This Standard Detail Sheet applies to G-25 series Expressway signs with G Series "E" u.c. and 4" l.c. letters.

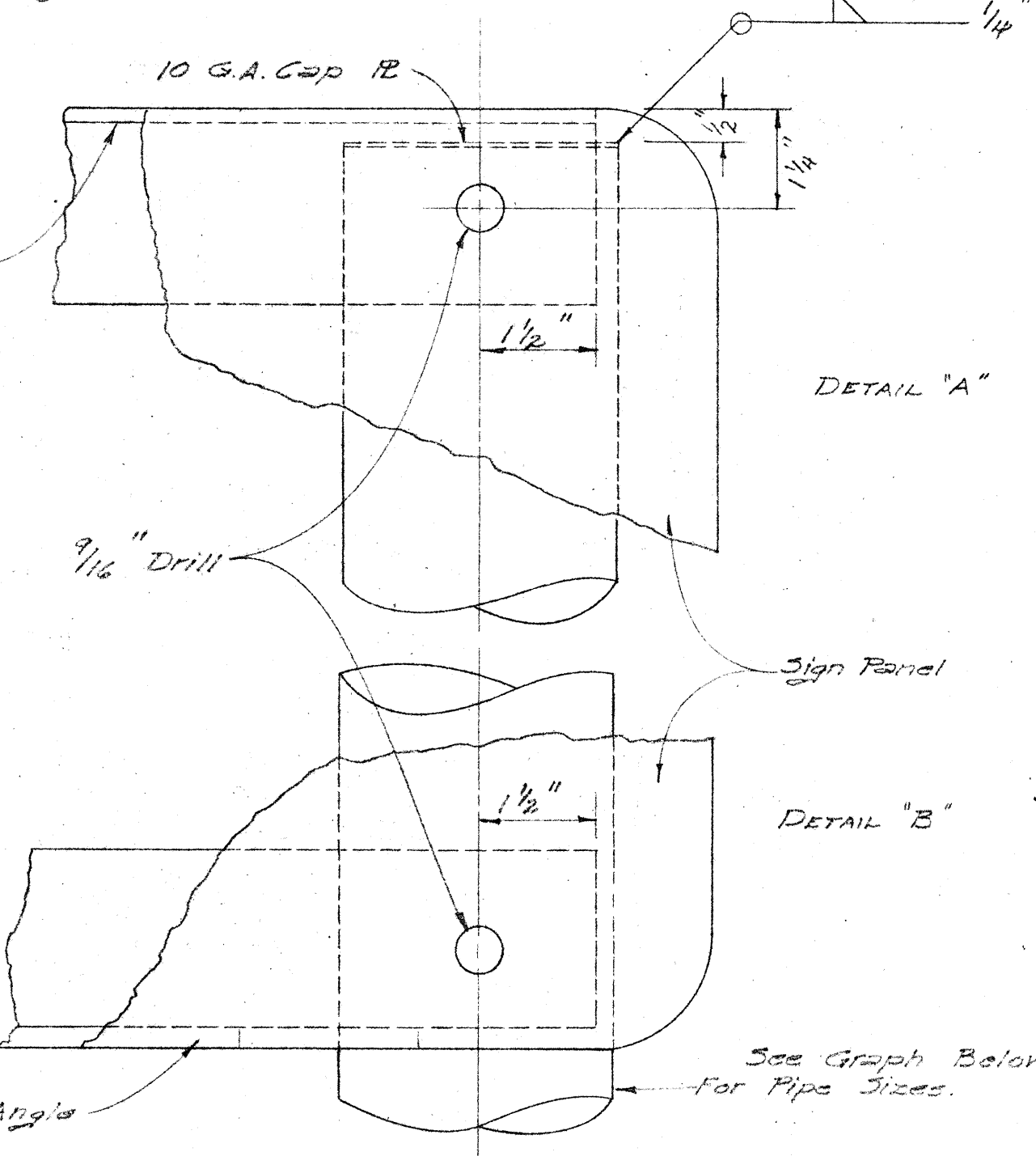


Note:
With 3" Std. Pipe 7.58"
W = 1'-0" ϕ , x = 4'-0"
With 4" Std. Pipe 10.97"
W = 2'-0" ϕ , x = 4'-0"
With 5" Std. Pipe 14.62"
W = 2'-0" ϕ , x = 5'-0"

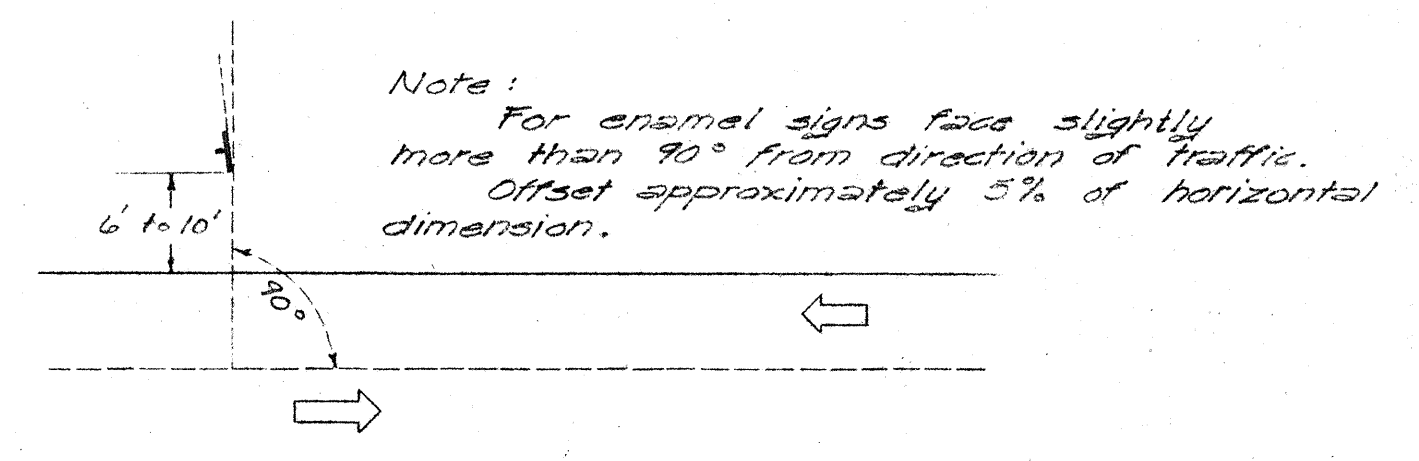
$\frac{1}{2}$ " Galv. Bolt, Round Head
Slotted With Hexagon Nut
and Lockwasher.

$\frac{3}{32}$ " ϕ Holes (Interior only)
 $\frac{9}{16}$ " ϕ Holes (Exterior only)

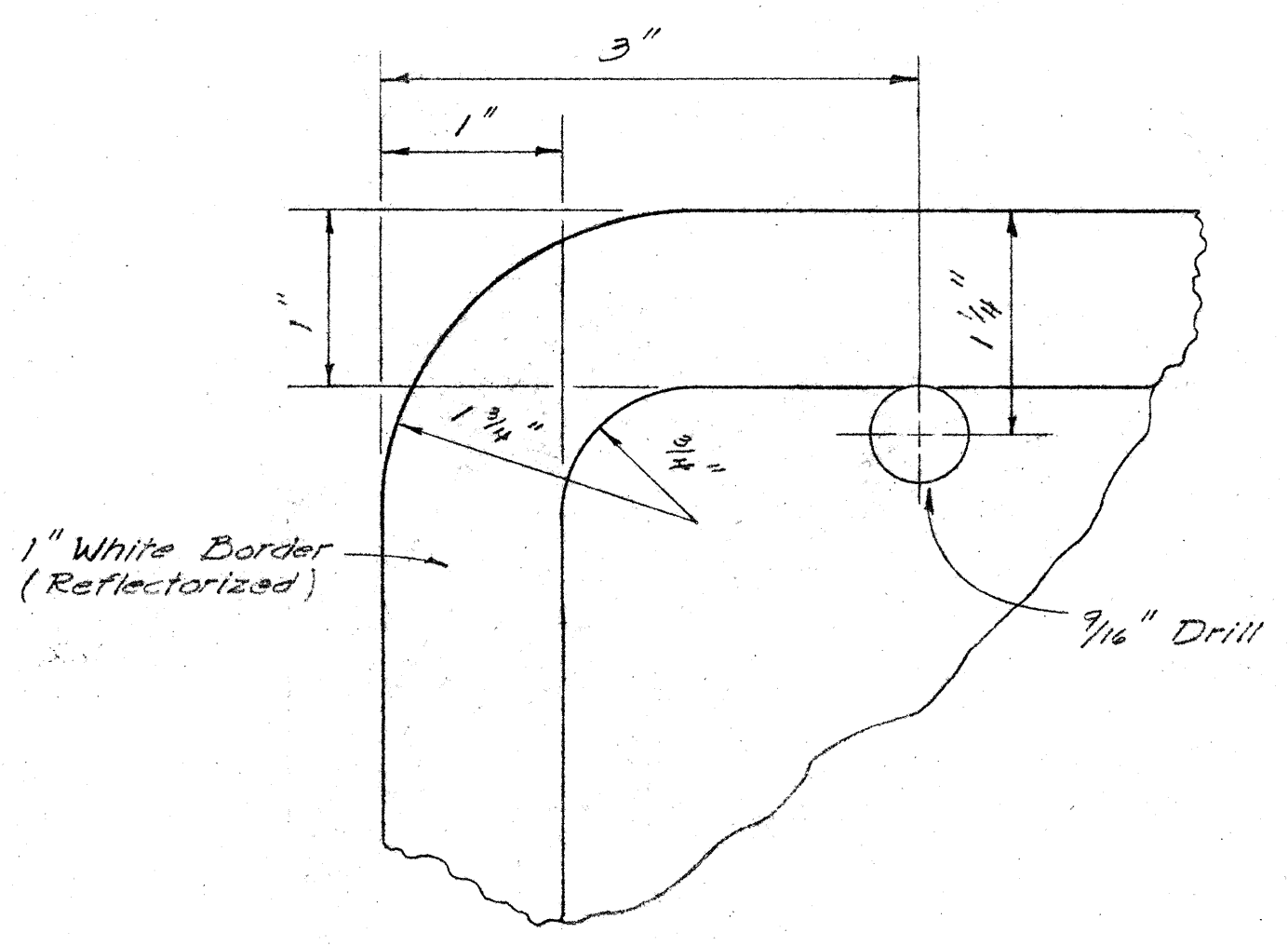
DETAIL "A" & "B"



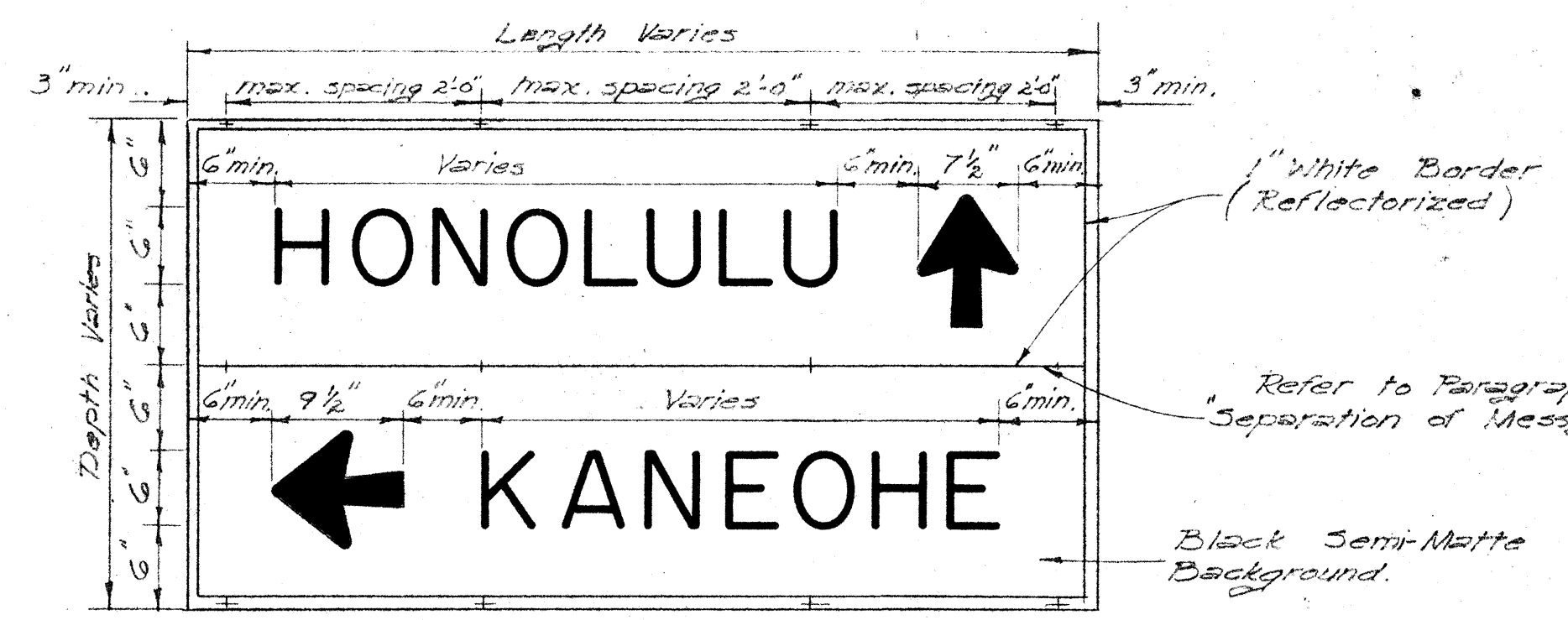
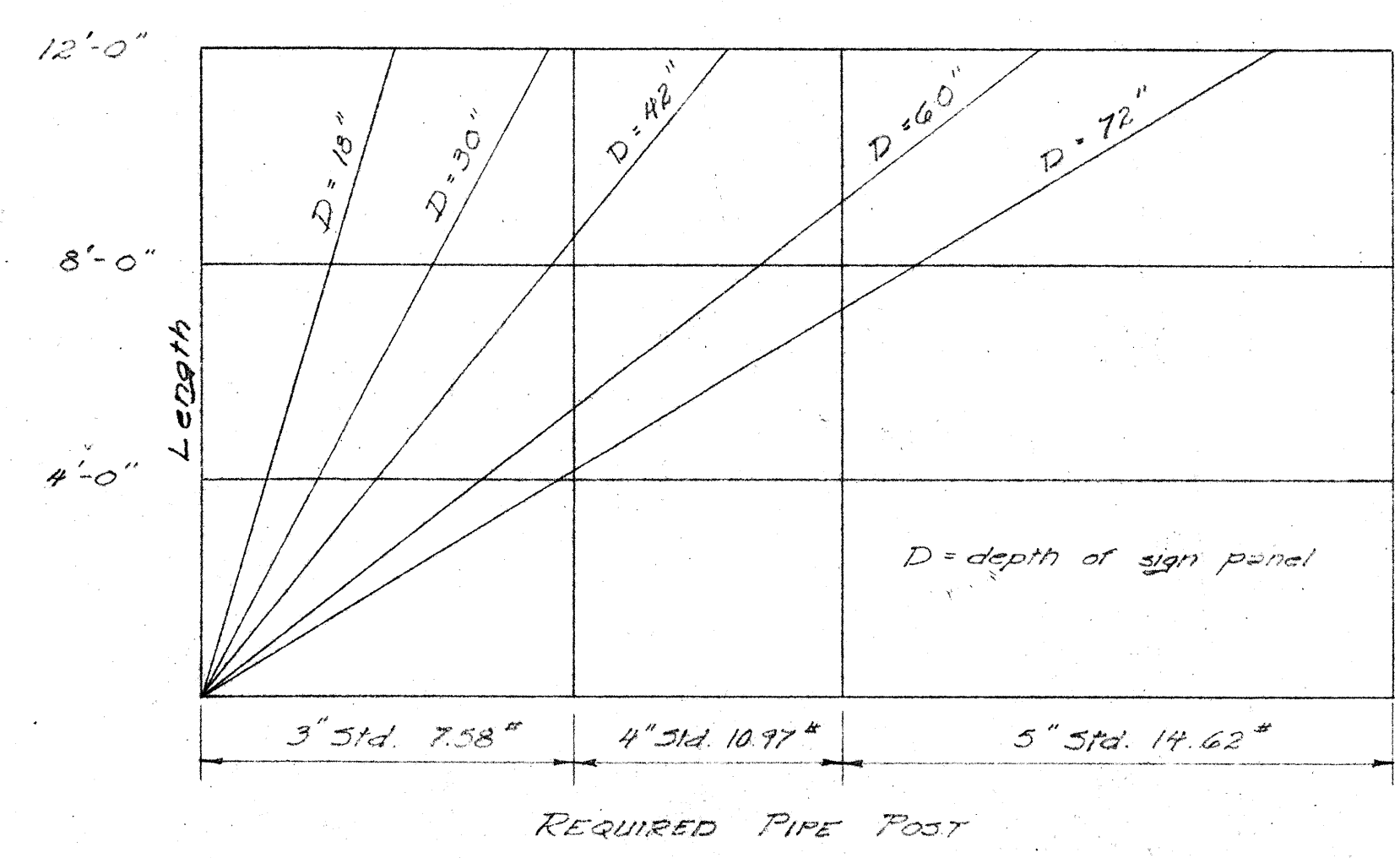
DESTINATION SIGNS
ELEVATION



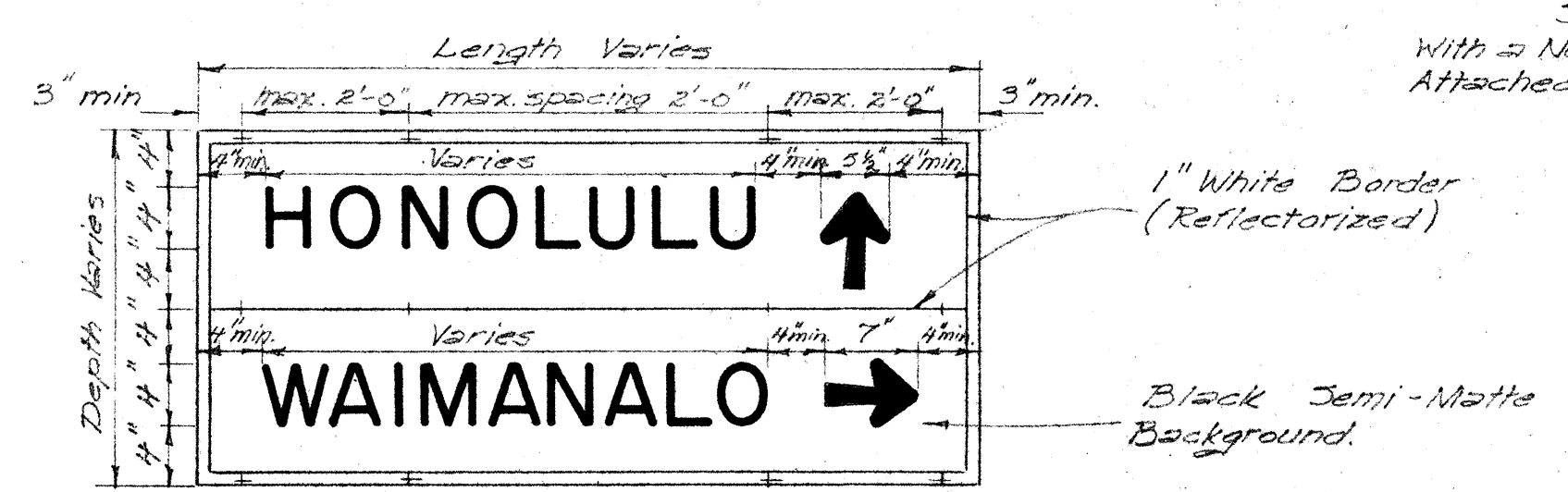
Sign Position With Relation
To Direction Of Traffic



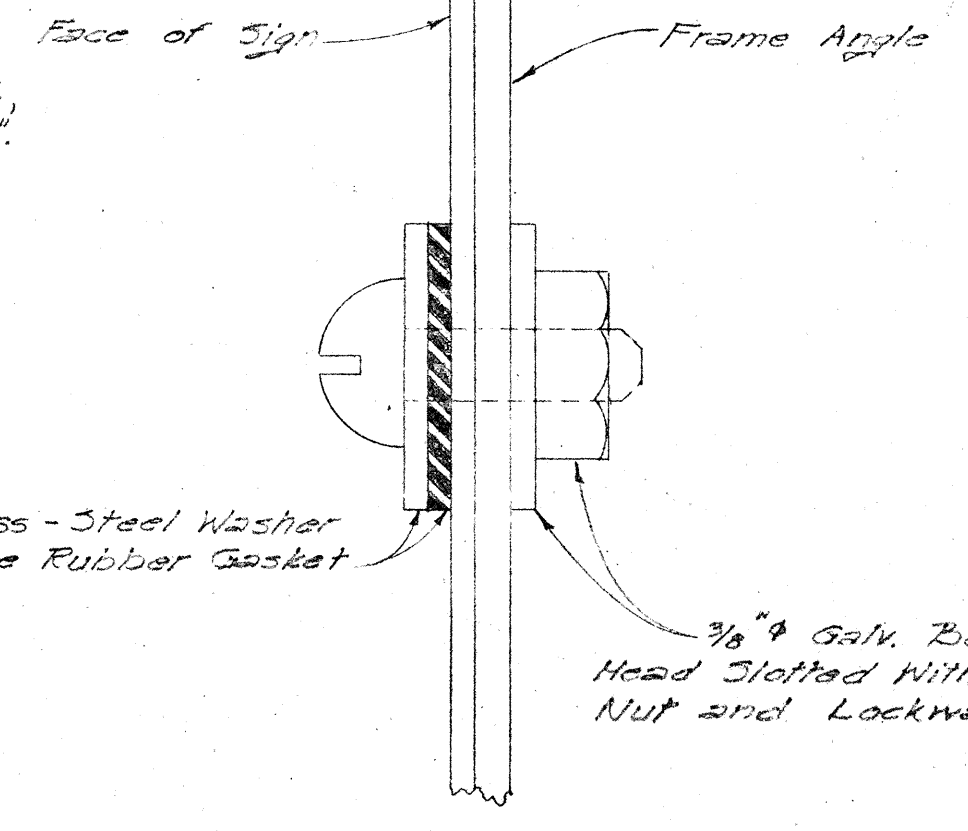
TYPICAL CORNER AND
BORDER DETAIL (1")



TYPICAL 6" SERIES "D"
DESTINATION SIGN



TYPICAL 4" SERIES "D"
DESTINATION SIGN



ATTACHMENT OF SIGN
PANEL TO FRAME

GENERAL NOTES

- 1- Sign message shall be lettered according to "Standard Alphabets" for Highway Signs, Public Roads Administration, Federal Works Agency, 1952 and from Table III, "Width of Capital Letters and Digits, Series 'D', Table II, "Spacing of Letters and Digits." Use Series "D" Letters unless otherwise noted.
- 2- Arrows shall conform with "Standard Arrows for Directional Signs."
- 3- Thickness of sign plate shall be No. 16 U.S. standard gauge.
- 4- Signs shall be bolted to Post and Frame with $\frac{1}{2}$ " round head slotted Gal. Bolts and Hex. Nuts and with stainless-steel washer with a neoprene rubber gasket attached on face of signs. For location of bolt holes, see plans.
- 5- Sign finish shall be porcelain enamel as specified in the latest Department specifications.
- 6- Signs shall have white letters on a black semi-matte background; non-embossed, and letters reflectORIZED with reflective sheeting.
- 7- All sign frame members shall be hot dip galvanized.
- 8- Class "D-1" concrete for footing will not be paid for separately but shall be considered incidental to the item of destination signs.
- 9- Pipe post shall be galvanized pipe conforming to A.S.T.M. Designation A53-58, Grade B.
- 10- All welding shall conform to the latest specifications for Welded Highway and Railway Bridges of the American Welding Society.
- 11- Reflective sheeting material shall be applied by heat and vacuum applicator over the white porcelain enamel letters, arrows and borders.
- 12- All interior bolts of sign plates shall be $\frac{3}{8}$ " ϕ slotted head galvanized and hexagon nut, with a stainless steel washer with a neoprene gasket attached on face of sign plate. See Detail.
- 13- All G-25 signs shall be fabricated on one sheet of metal plate.

SIGN PANEL SPACING REQUIREMENTS

- 1- The spacing between words in the same line shall be equal to $1\frac{1}{2}$ " times the height of the letter.
 - 2- The spacing between lines of copy shall be not more than the height of the letters in line one, plus the height of the letters in line two, divided by two.
 - 3- Margins: Copy shall be applied in the background in such a way that the distance between any point in the copy and the nearest edge of the sign shall be not less than the average height of letters used.
 - 4- Borders: The signs shall have a border width of one (1") inch.
 - 5- Arrows: Arrows shall point in directions as shown on the plans.
- The spacing between copy and the nearest part of arrow shall be equivalent to the average height of letters used.
- 6- Separation of messages: In a multi-direction or multi-message sign, the distinction between the two destinations or two messages shall be defined sharply by separating the two with a horizontal white line as shown on the "Typical Sign Layout." When the horizontal line is used, the spacing to the copy both above and below the line shall be not less than either height.

Note: This Standard Detail Sheet applies to G-25 series Expressway signs with G Series "E" u.c. and 4" l.c. letters.

TYPICAL TABLE

Sign No. -	STATION -	Sign Panel
Frame L -	PIPE POST -	BOLT HOLE SPACING

APPROVED: DATE: 4-21-60
DIRECTOR OF TRANSPORTATION

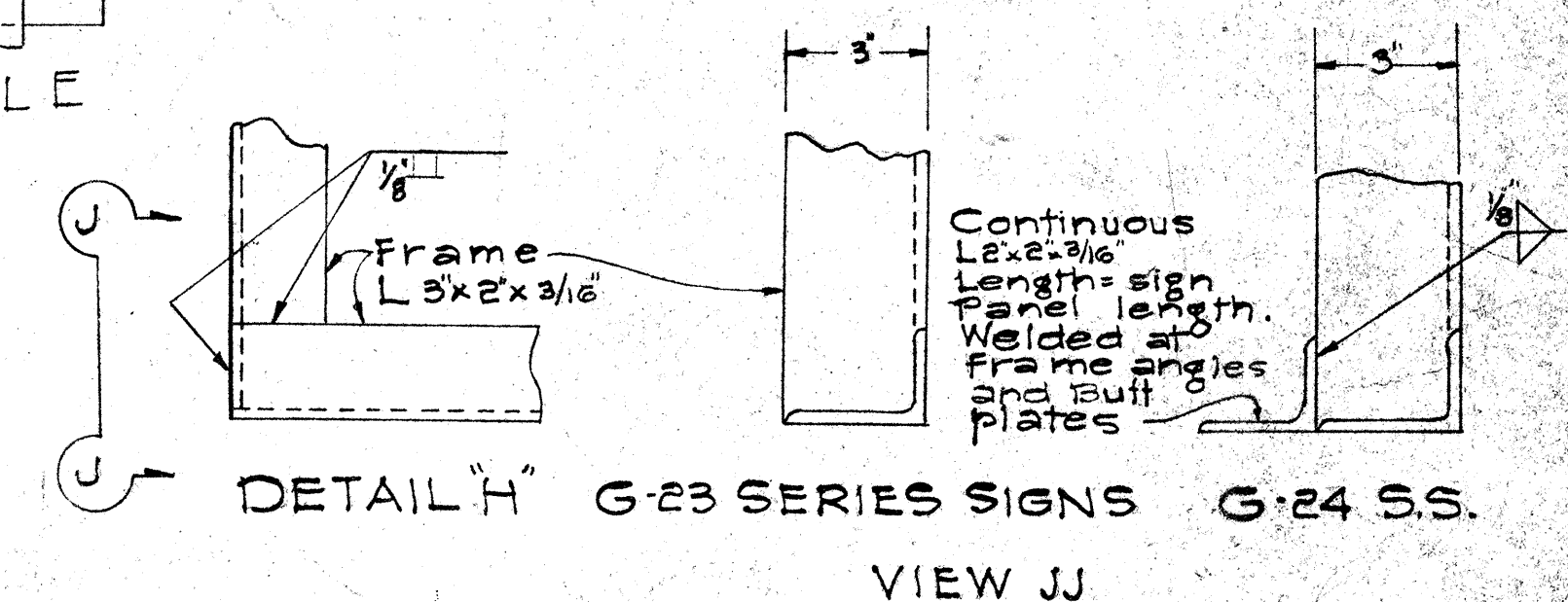
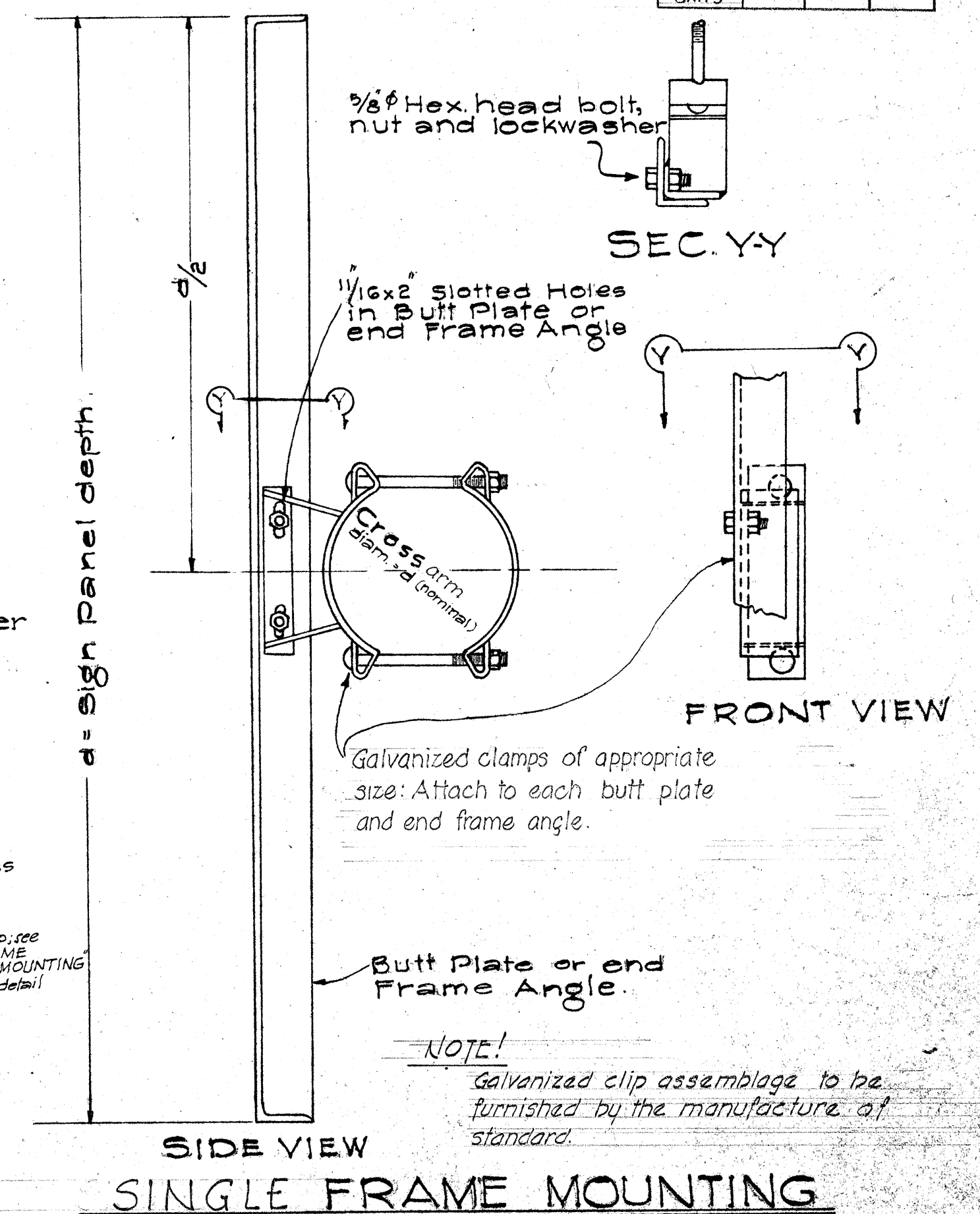
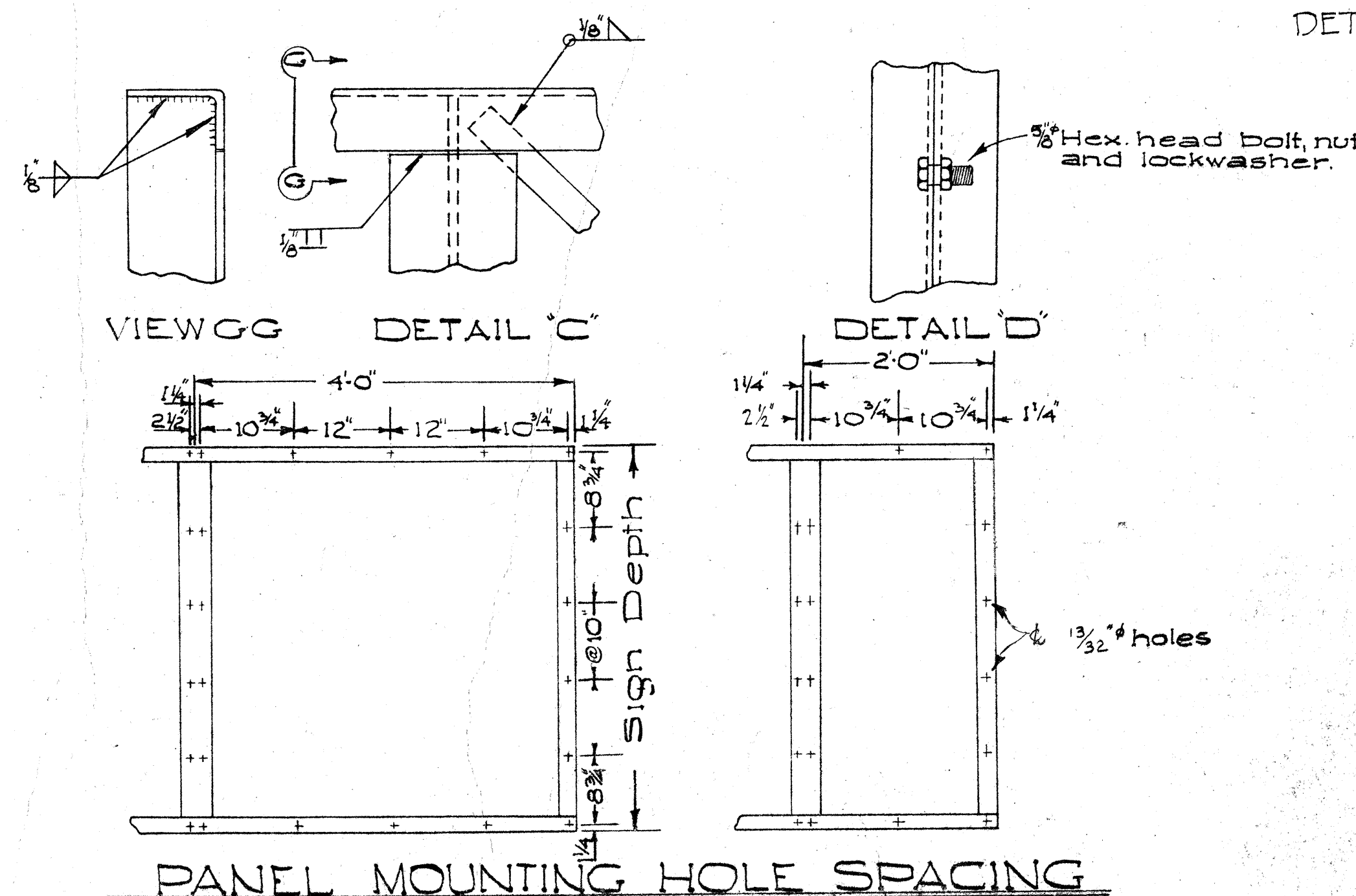
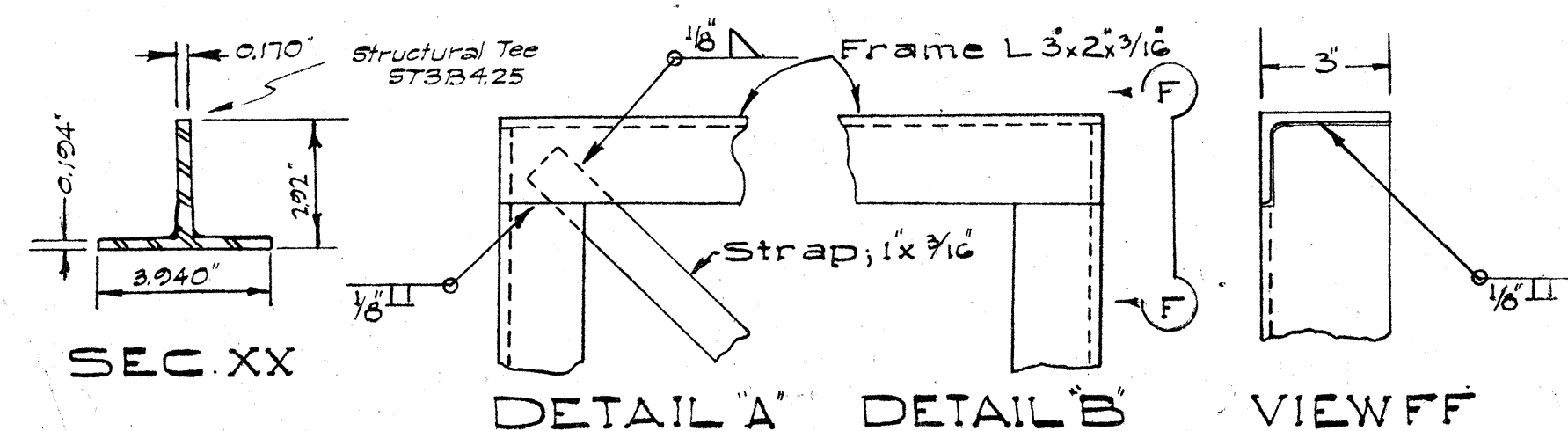
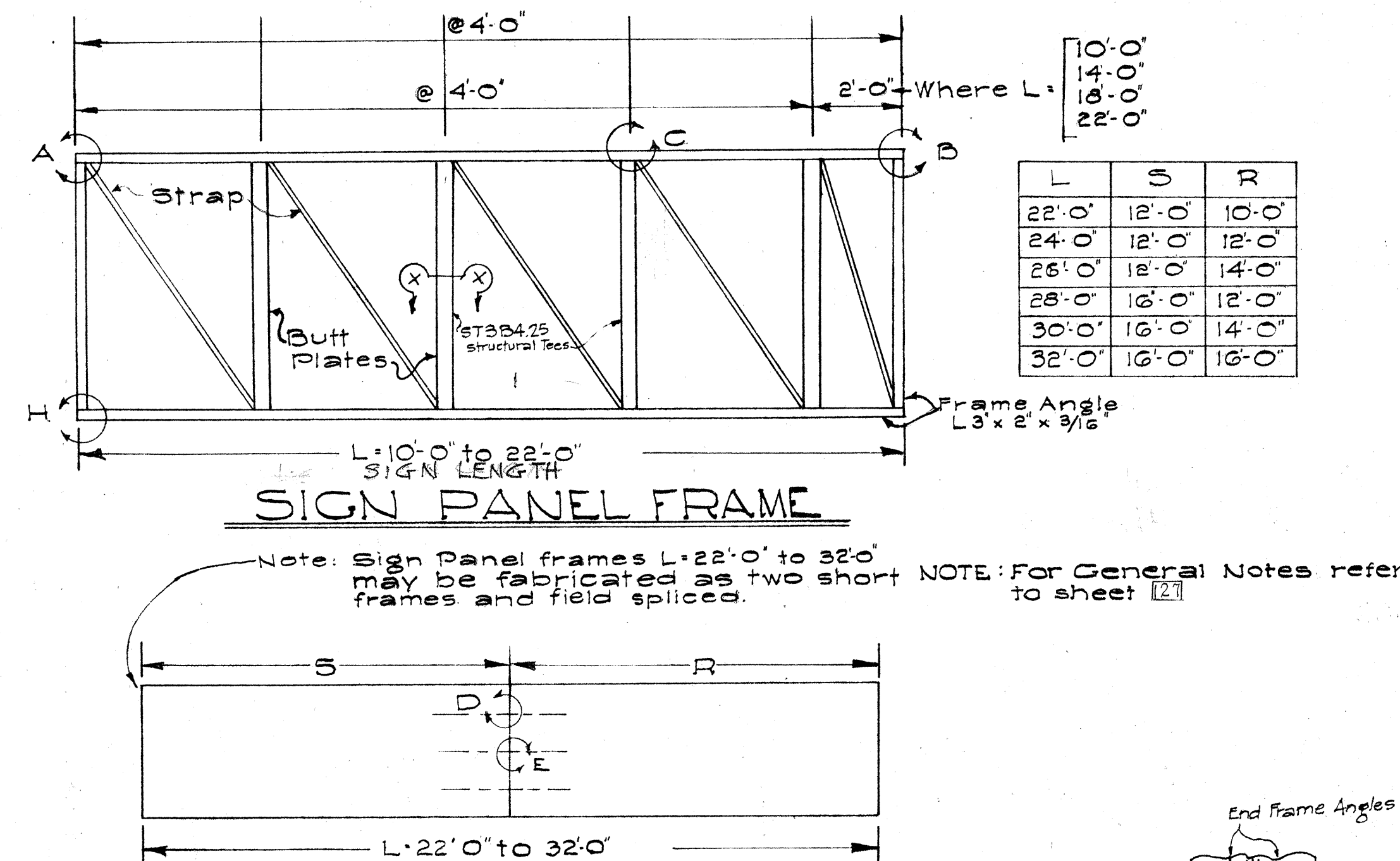
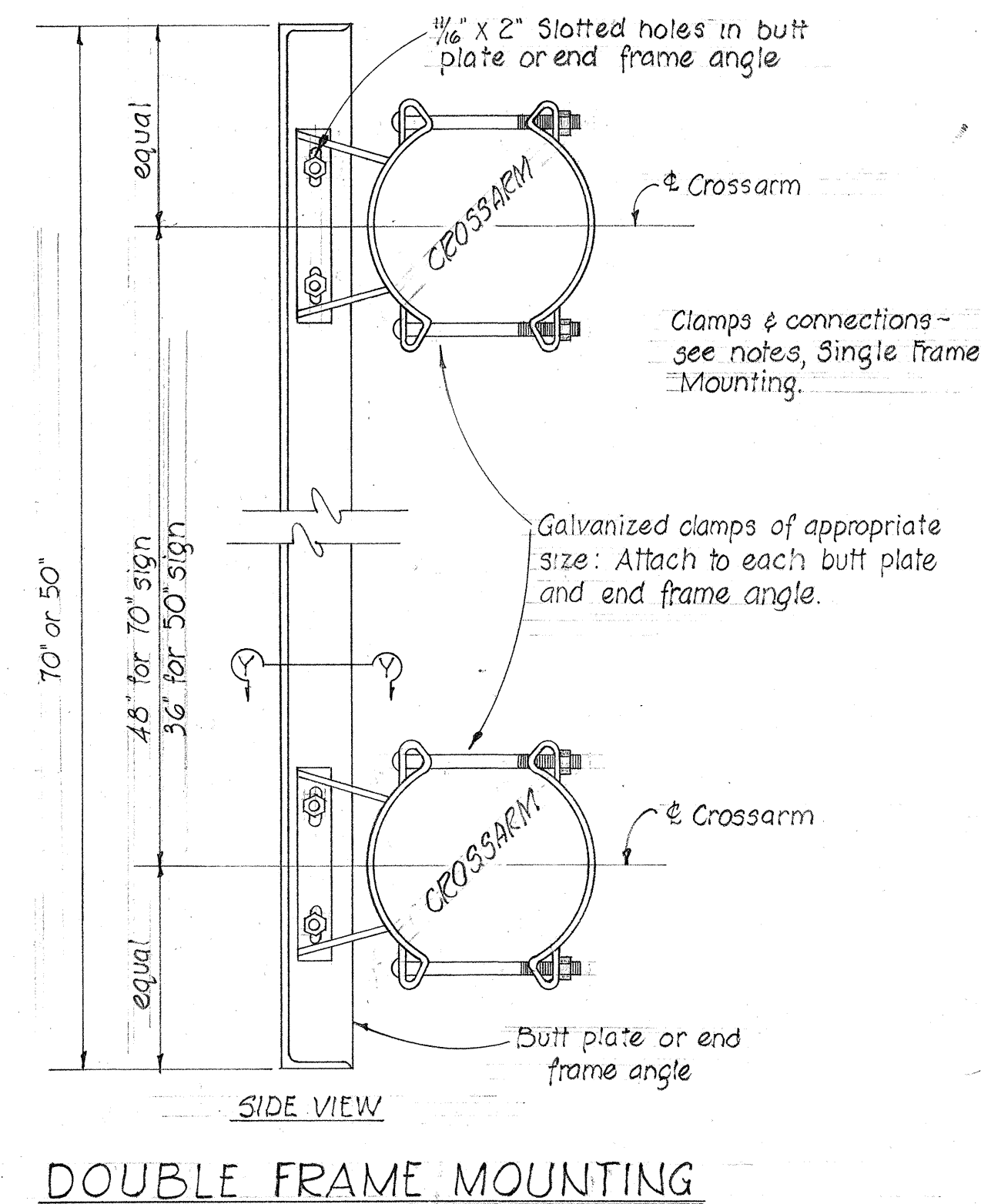
Design DATA
1- Wind load: 35 PSF.
2- Allowable stresses
a: Concrete: $f_c = 870$ psi
b: Pipe: $f_s = 24,500$ psi
c: Angle: $f_s = 26,000$ psi

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STANDARD DETAILS
DESTINATION SIGNS
POST AND FRAMES
TYPICAL SIGN PANELS
NOT TO SCALE

SHEET No. OF SHEETS

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

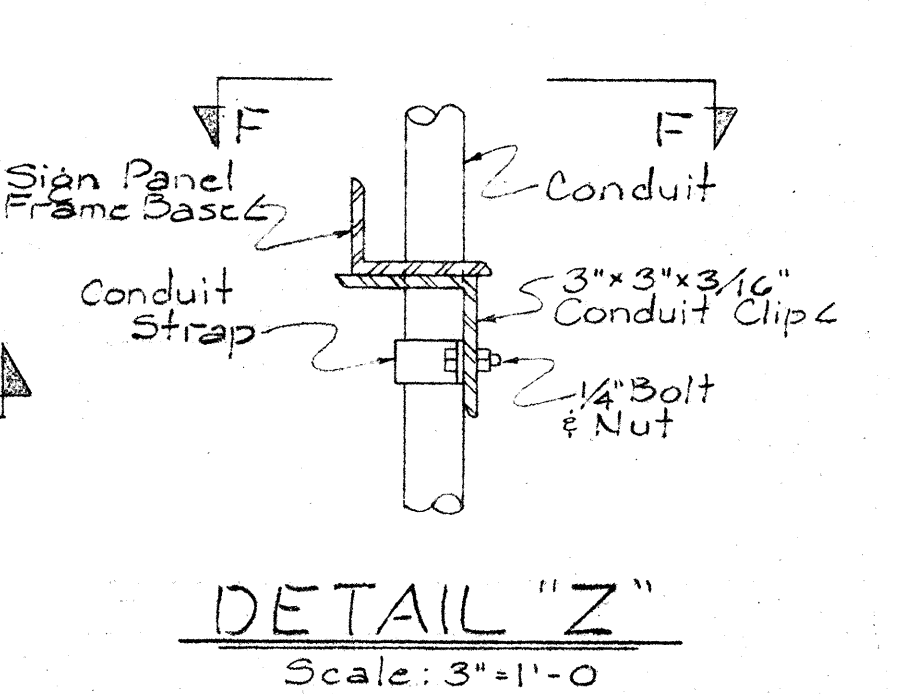
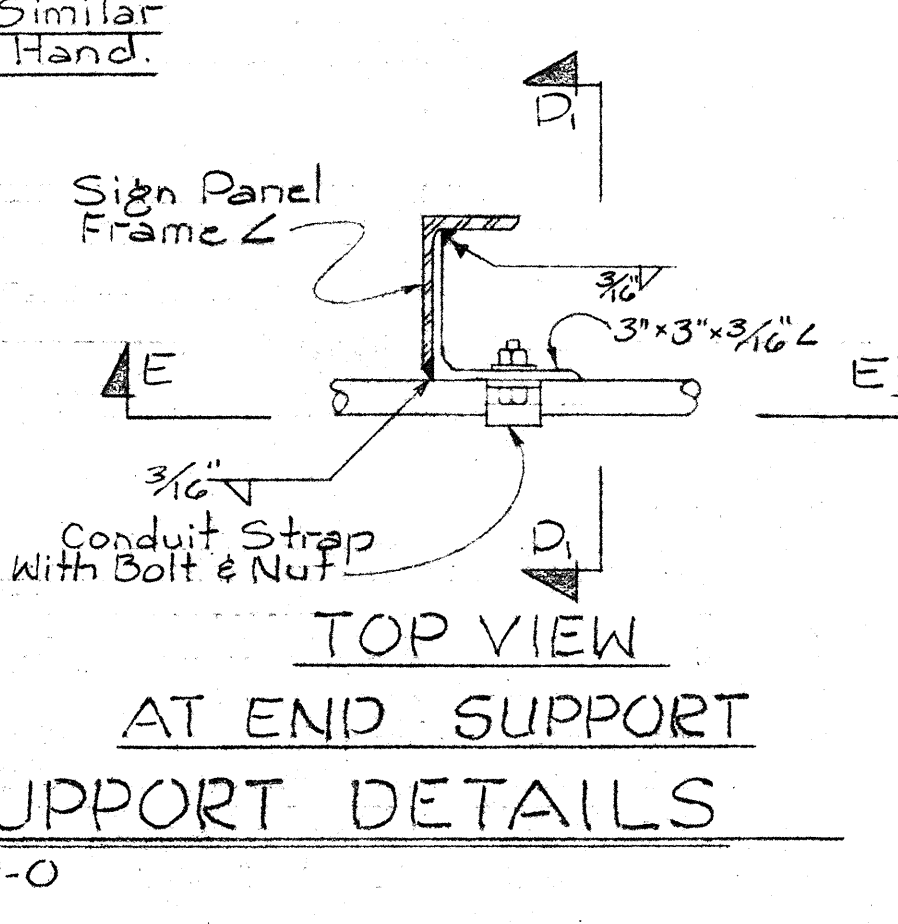
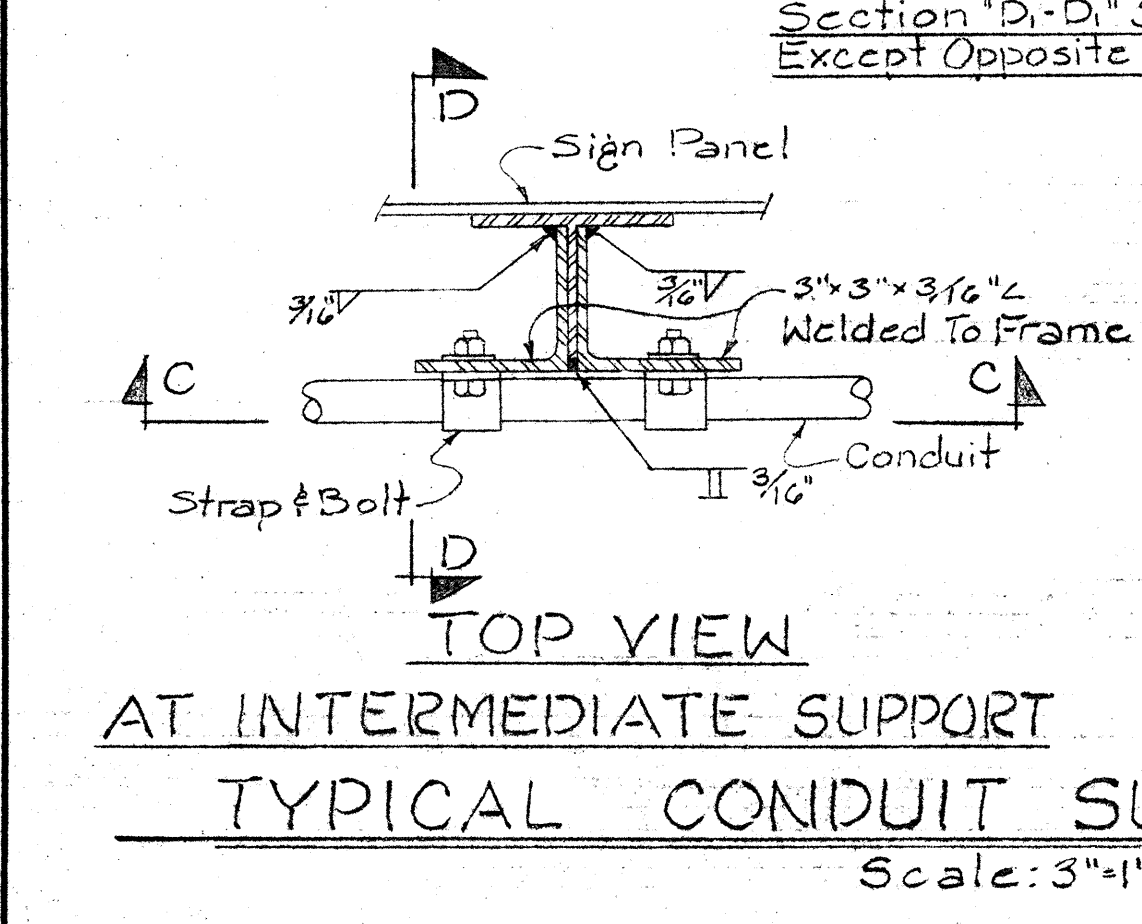
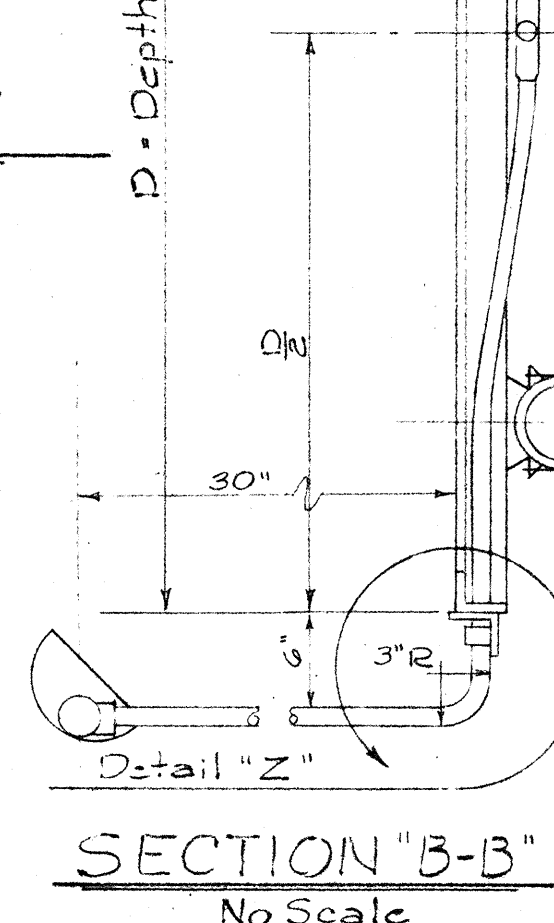
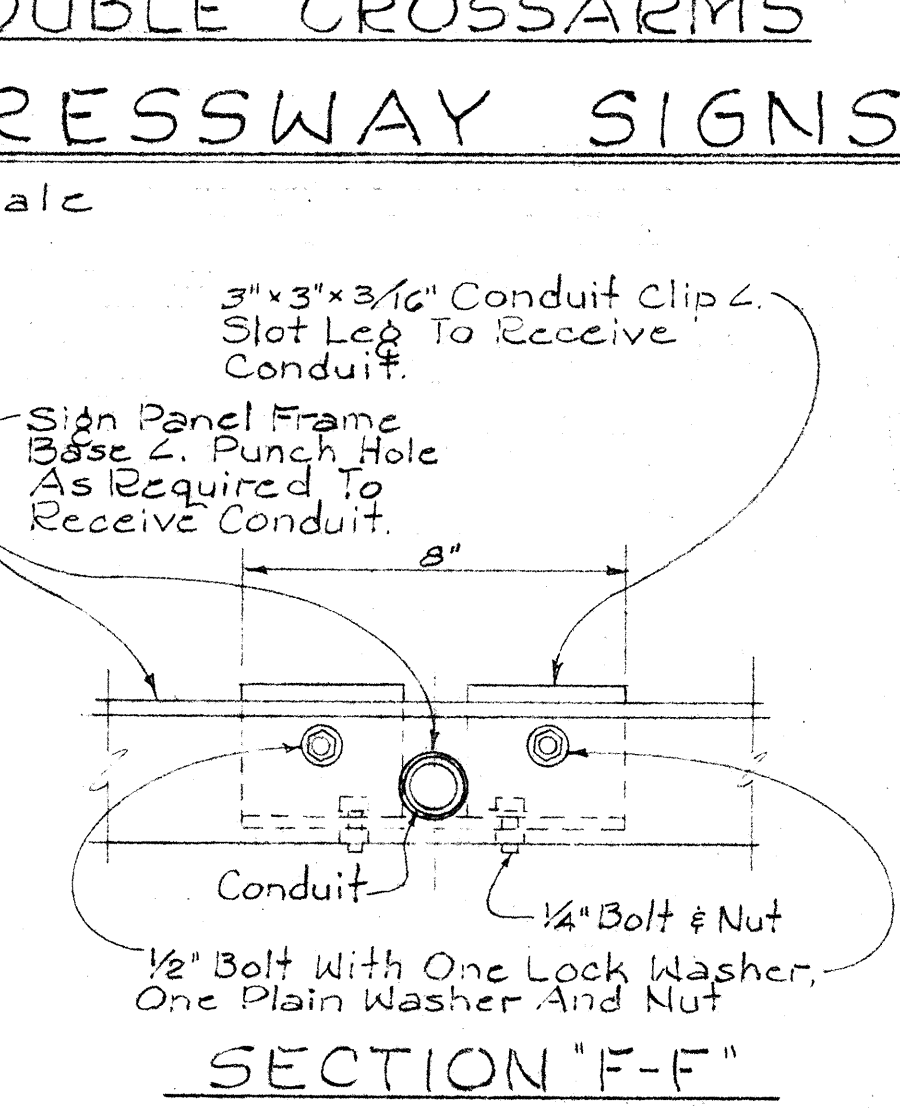
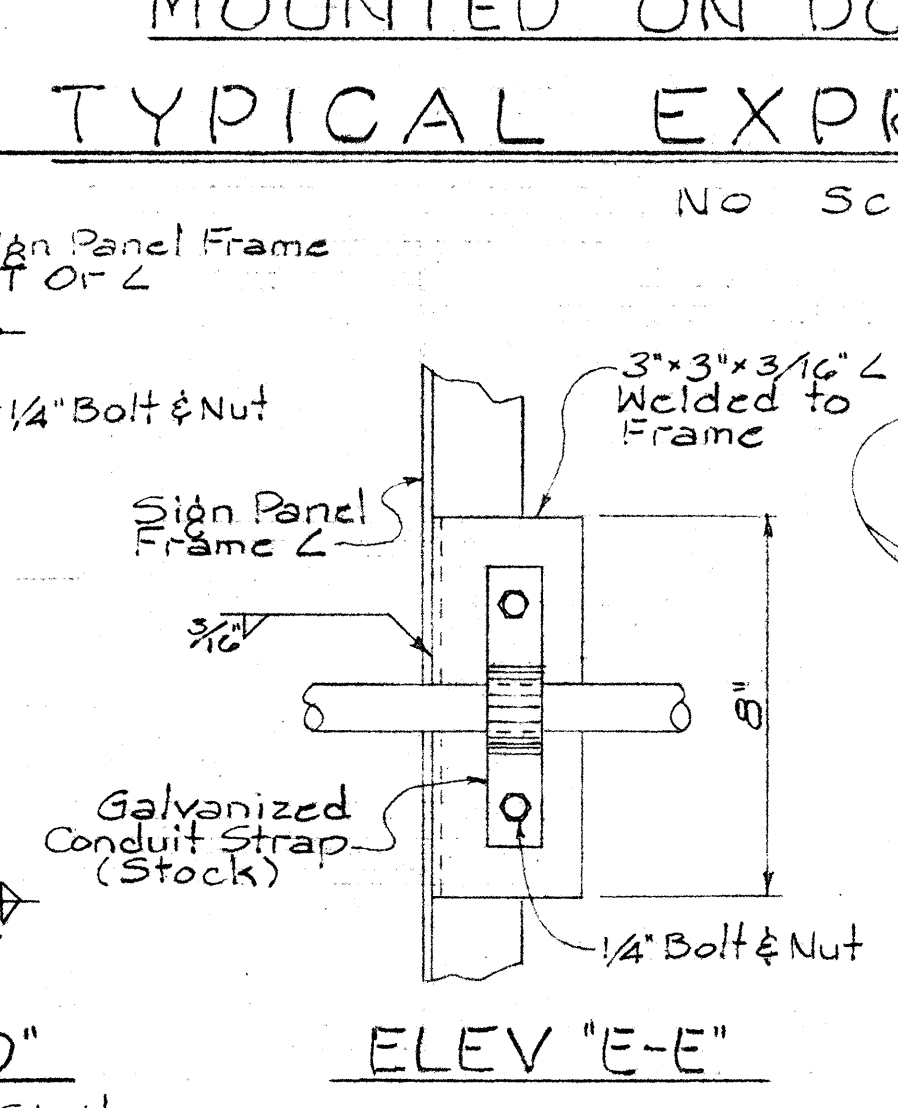
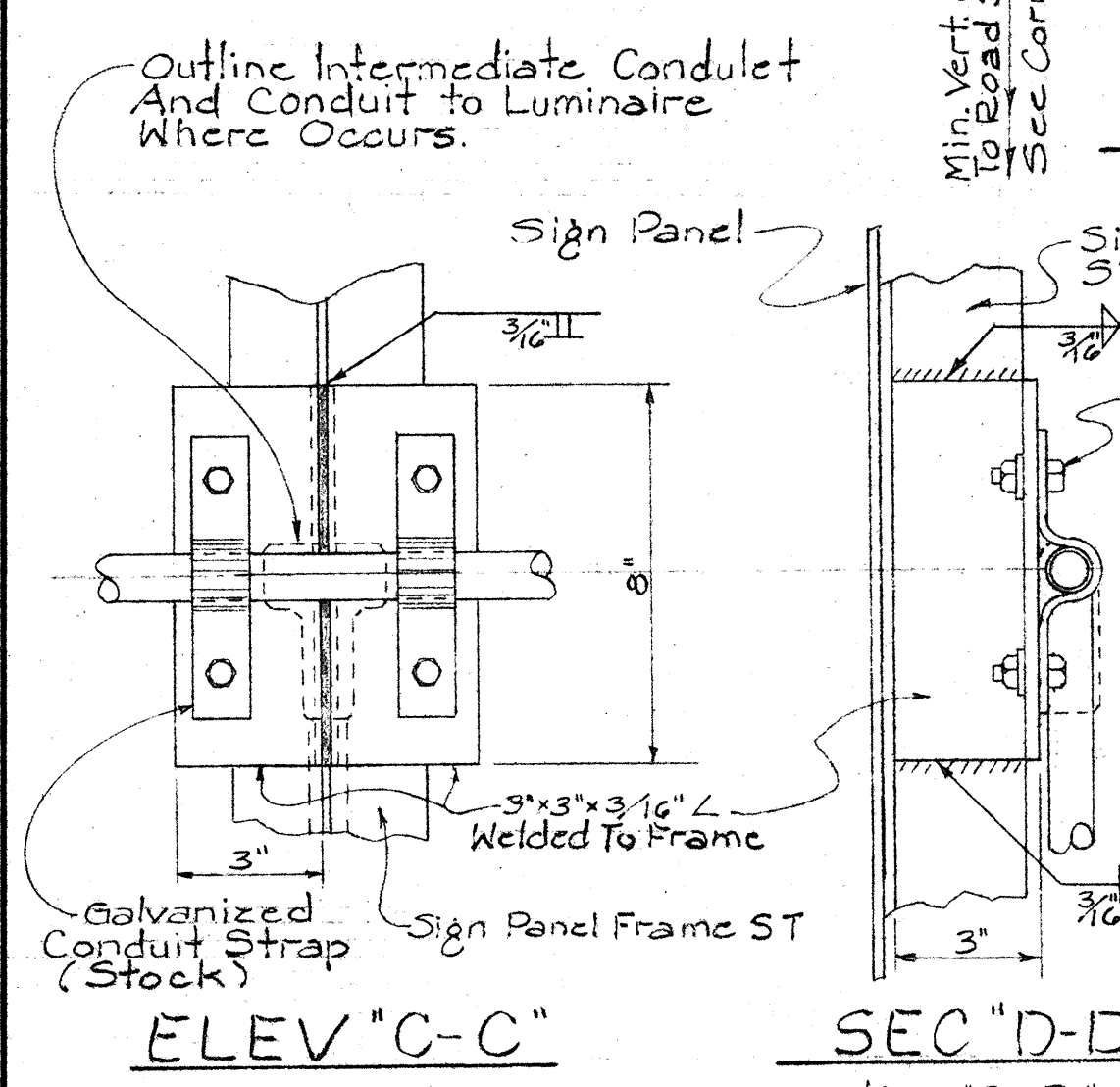
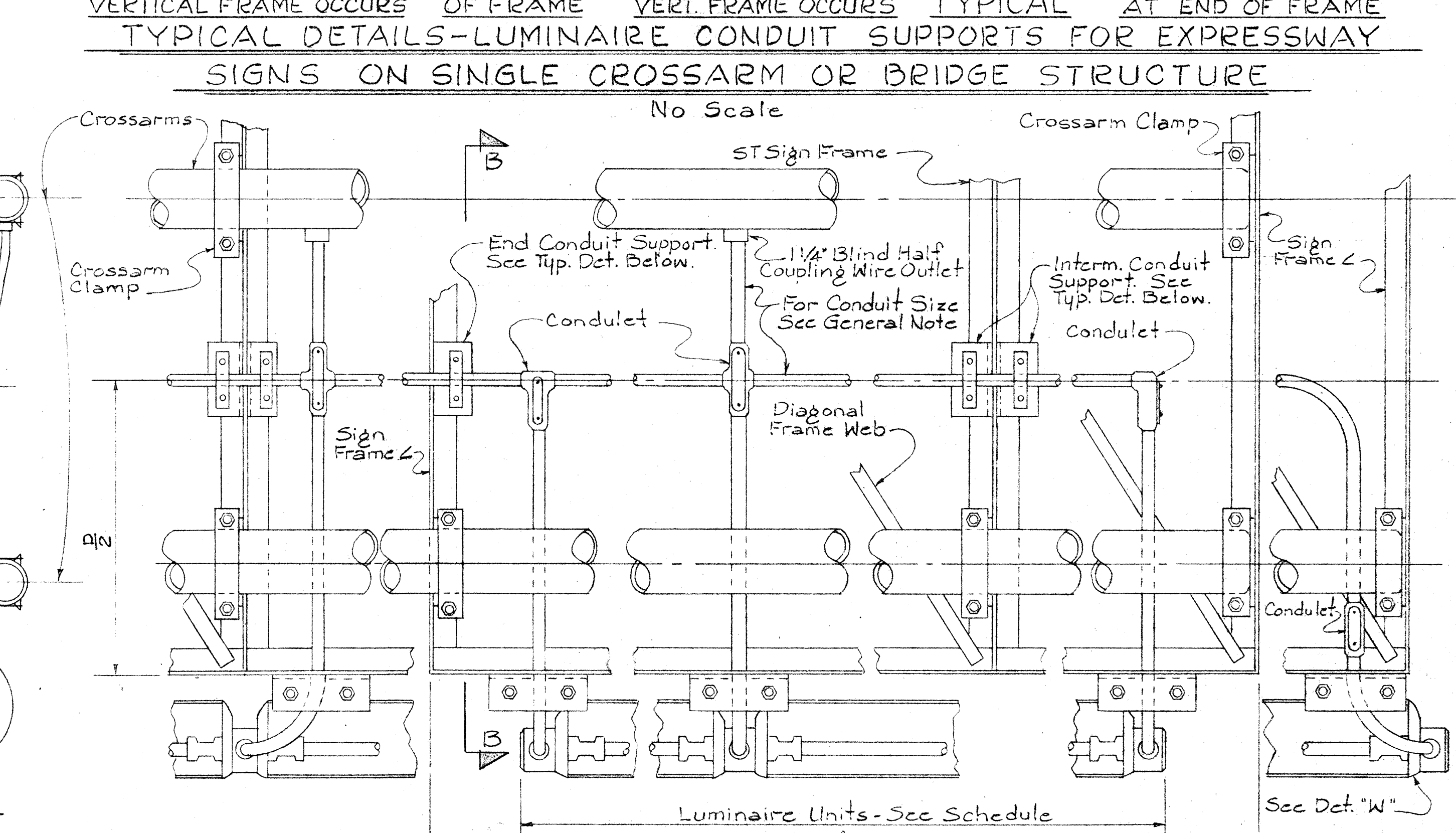
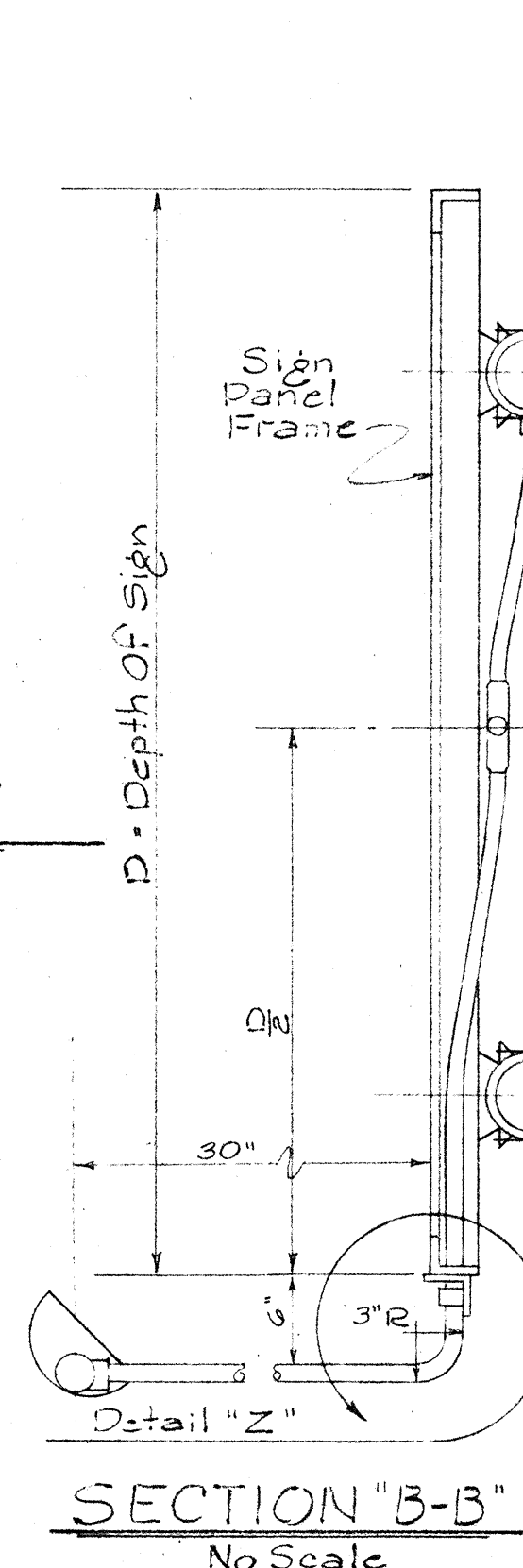
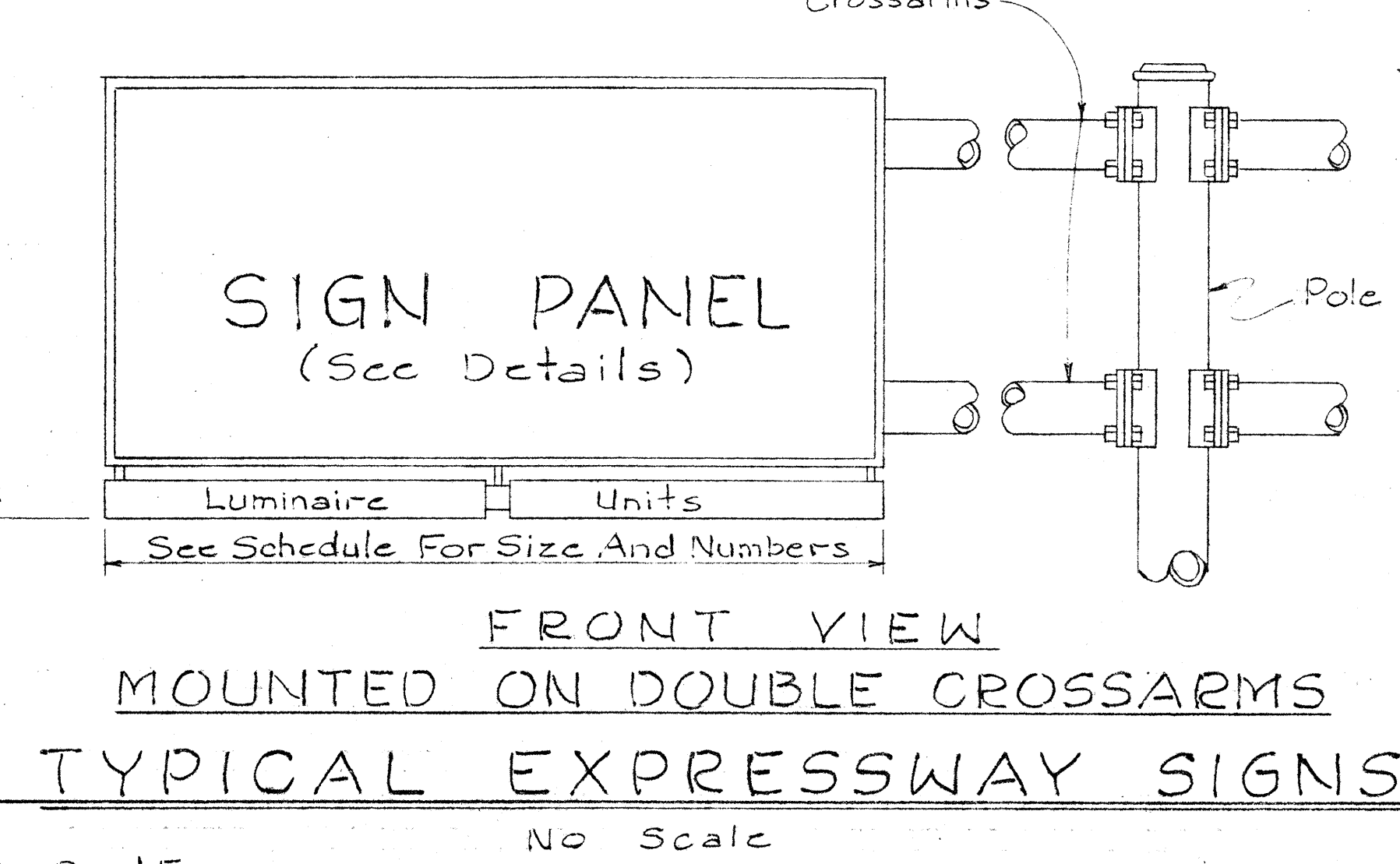
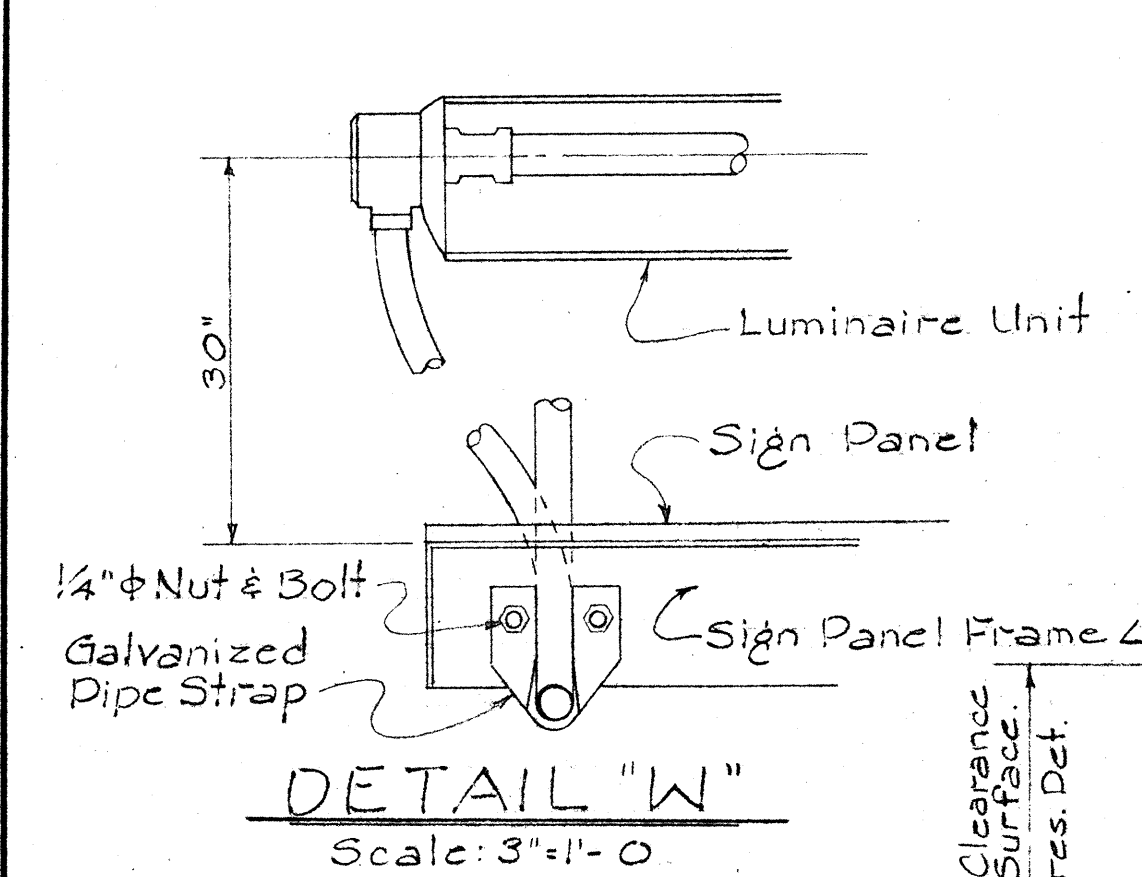
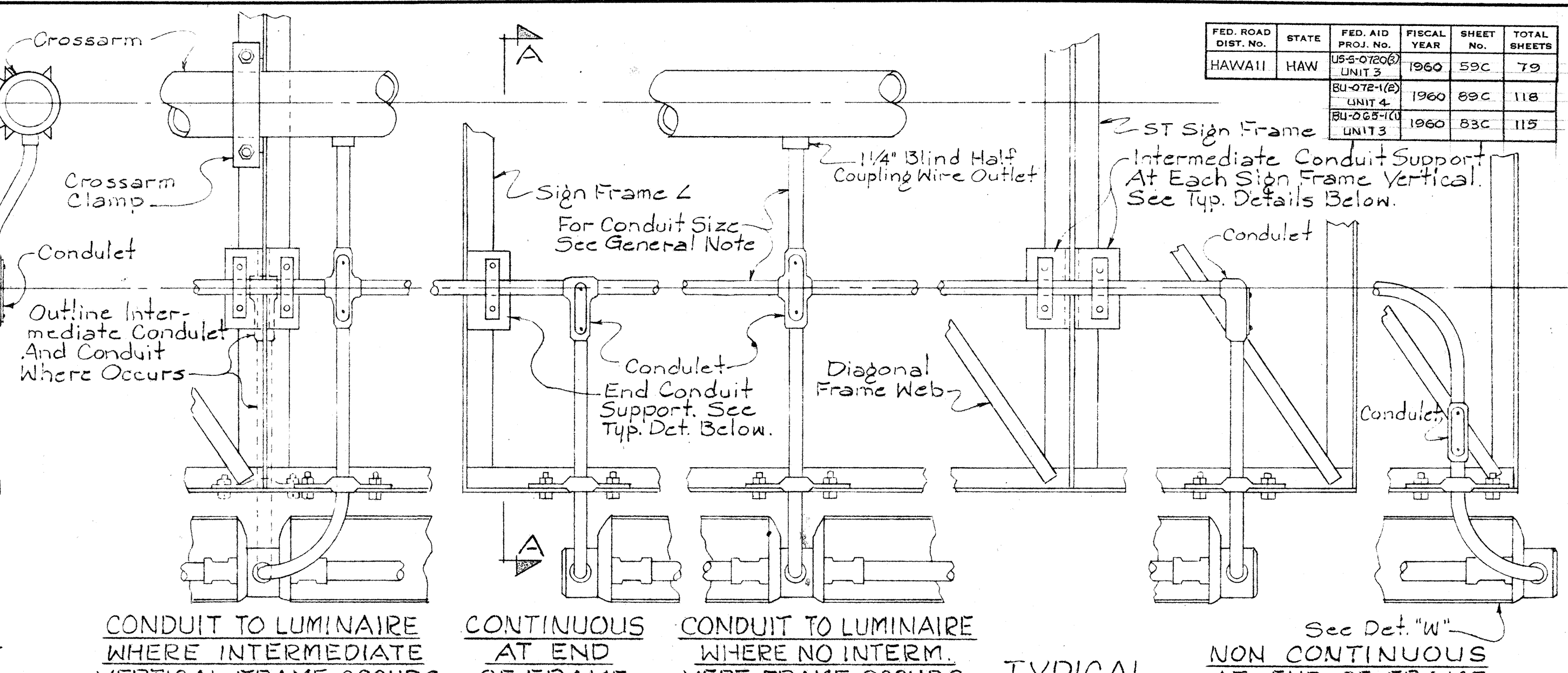
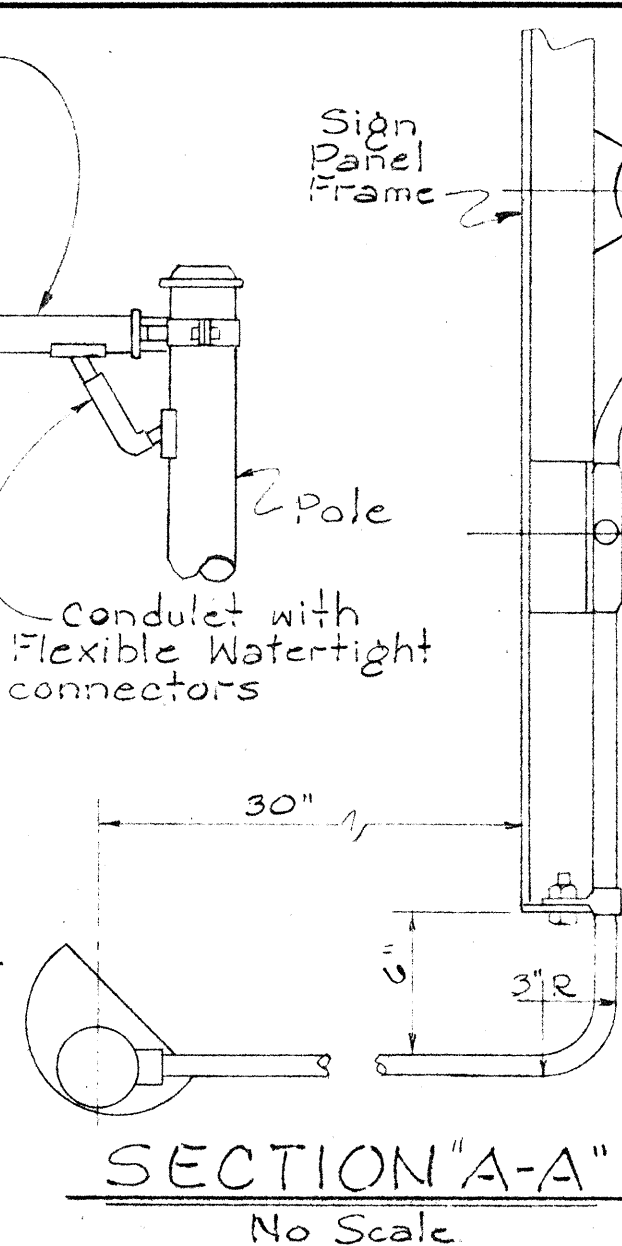
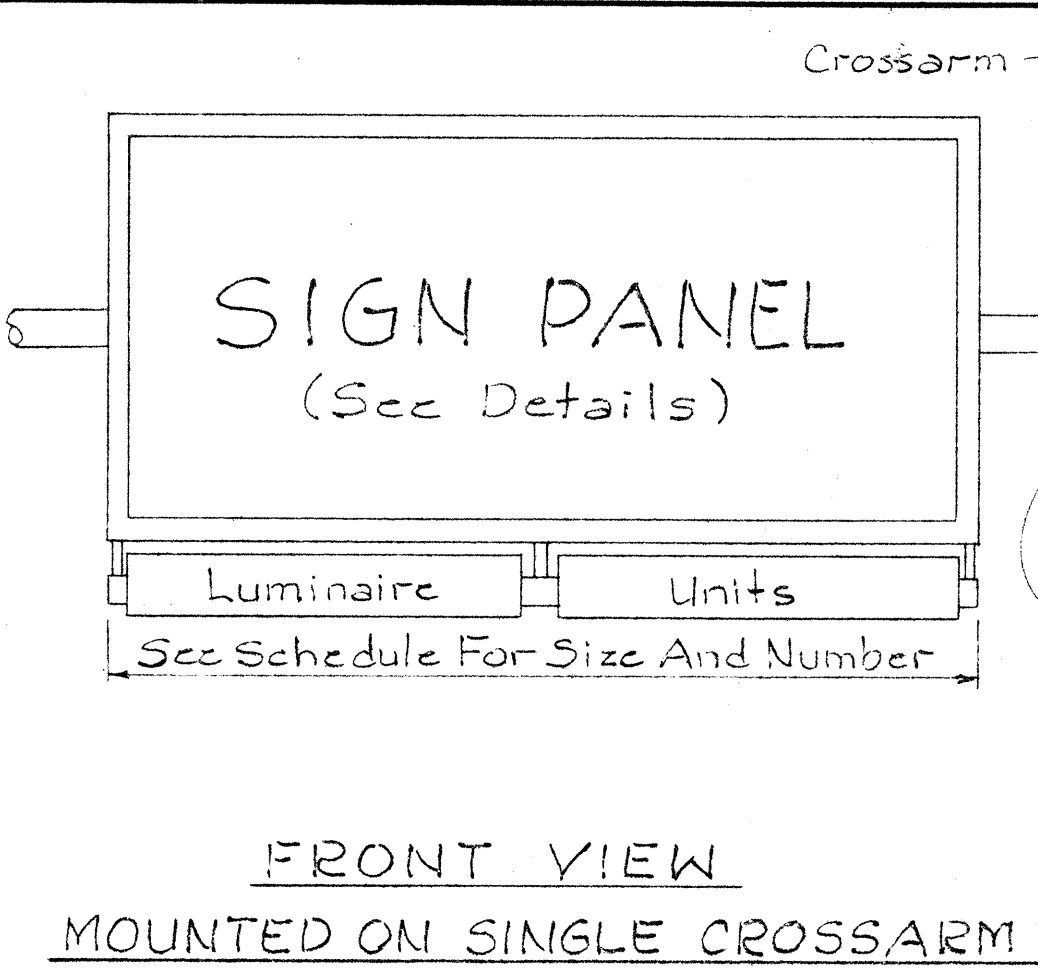
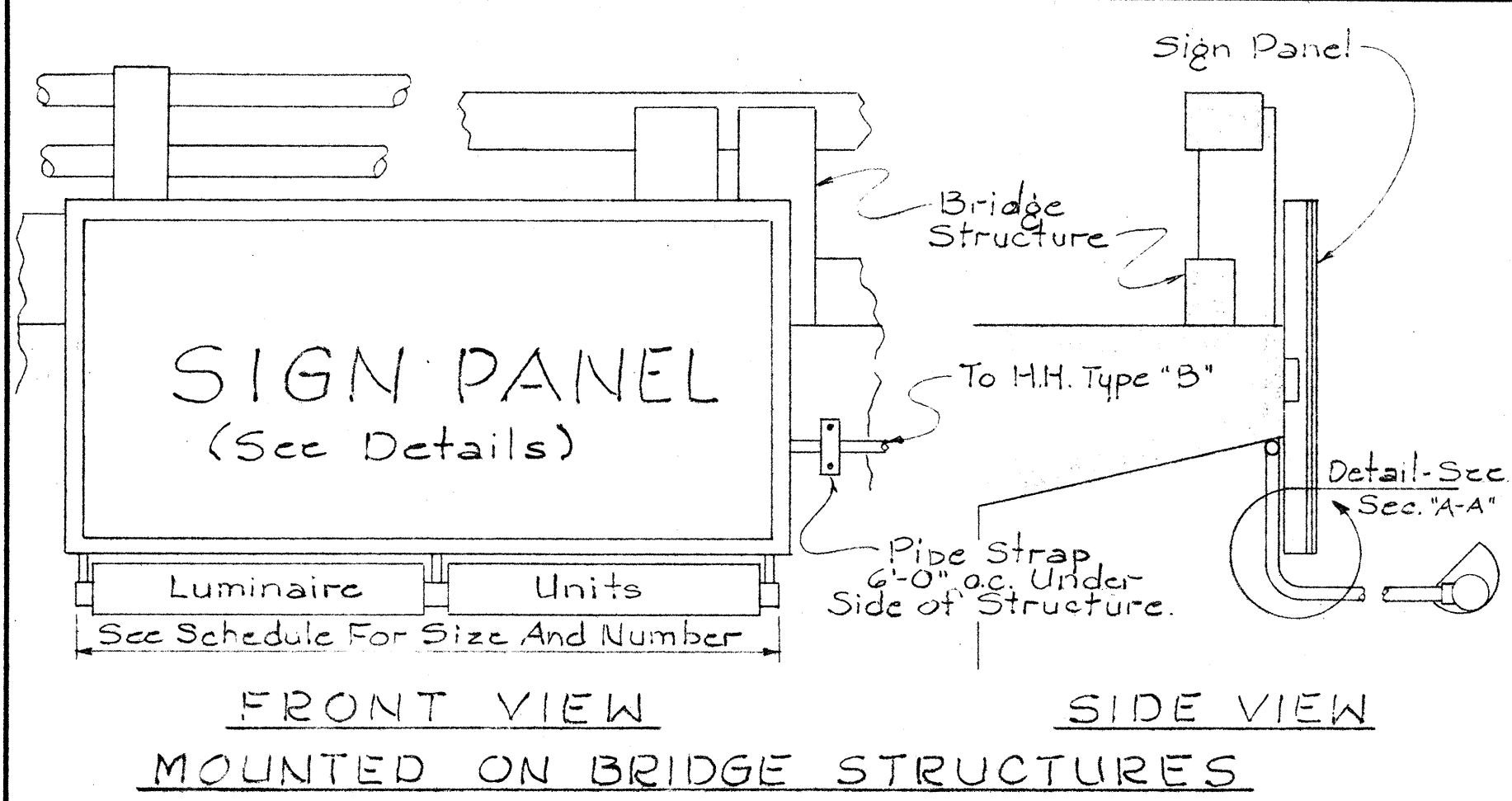
FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS	FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	015-0-00000	1960	598	79	HAWAII	HAW.	015-0-00000	1960	598	116
		UNIT 3						UNIT 3			



- NOTES
1. Frames shall be all-welded construction.
 2. Tolerance on 1/8\"/>

HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII
TYPICAL DETAILS
EXPRESSWAY SIGNS
POST AND FRAMES
G-23 AND G-24 L AND S SERIES
SCALE AS NOTED

SHEET No. OF SHEETS

[illegible]

EXPRESSWAY SIGN		
LUMINAIRE SCHEDULE		
SIGN LENGTH	NUMBER AND SIZE OF LUMINAIRE	
10'	2 - 4'-0"	
12'	2 - 6'-0"	
14'	2 - 6'-0"	
16'	2 - 6'-0"	
18'	4 - 4'-0"	
20'	2 - 4'-0"	2 - 6'-0"
22'	2 - 4'-0"	2 - 6'-0"
24'	4 - 6'-0"	
26'	4 - 6'-0"	
28'	2 - 6'-0"	4 - 4'-0"
30'	2 - 6'-0"	4 - 4'-0"
32'	2 - 6'-0"	4 - 4'-0"

- ## GENERAL NOTES
1. Fluorescent Floodlight Fixtures Shall Be Installed As Recommended By The Manufacturers.
 2. Size Of Conduits:
1 And 2 Luminaire Units - 3/4" Conduit.
3 Or More Luminaire Units - 1" Conduit.

HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII

STANDARD DETAILS
EXPRESSWAY SIGNS
FLUORESCENT LUMINAIRE
AND CONDUIT SUPPORTS

