

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(87):13	1970	85	244

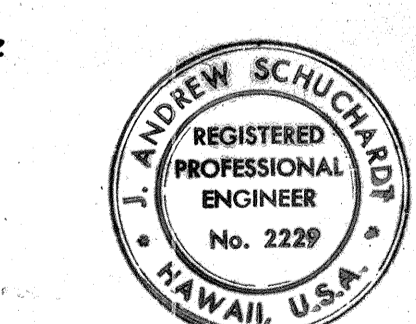
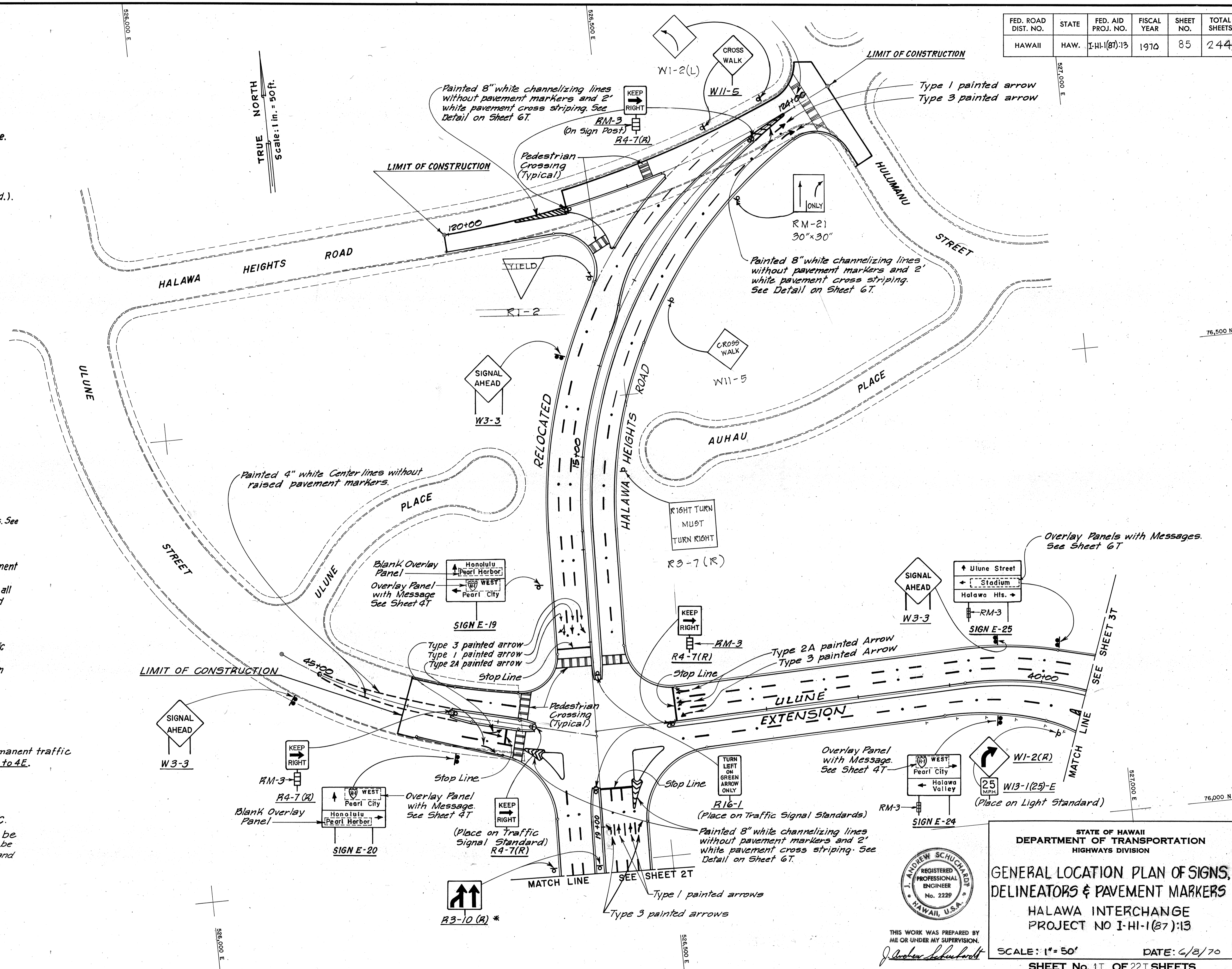
LEGEND

- Ground mounted traffic sign with post (S).
Traffic sign bracket-mounted on pole.
O.H. sign panels mounted on span structure.
- RM-1 Delineator (Single unit clear).
- RM-2 Delineator (Double unit amber).
- RM-3 Delineator (Triple unit amber).
- RM-3H Delineator (Triple unit amber, horiz. mtd.).
- Type A and C Raised Pavement Markers.
- 8" Painted White Stripe with Type C Markers.
- Relocated Painted Traffic Drums
- Class I Barricades

NOTES:

1. All painted pavement markings shown on Sheets 1T through 3T are to be done by State forces. See Standard Details for spacing layout of raised pavement markers.
- For spacing of painted white cross striping see Detail on Sheet No. 6T. Painted elongated pavement arrows are detailed on Sheet No. 6T.
2. Refer to respective Standard Detail sheets for all data pertaining to Regulatory and Warning standard signs.
- For Sign Face details of signs W3-4, W3-5 and R3-11(R) see Sheet No. 6T.
3. Unless noted otherwise, exact location of traffic signs shall be determined in the field by the Engineer.
4. Sign face details of Expressway Signs are shown on Sheets 4T, 5T and 6T.
5. Artificially illuminated traffic signs are shown on Sheet No. 7T.
6. See "Construction sequence and Temporary Signing" plans for location and types of additional temporary and permanent traffic signs.
7. For locations and details of temporary and permanent traffic control signals and allied devices see Sheet Nos. 2E to 4E.
8. Polyethylene Sheeting to be incidental to signs and sign panels covered.
9. Signs labeled with an asterisk (*) are temporary signs to remain upon completion of construction. See Summary on Sheet 1C.
10. Relocated Painted Traffic Drums to be incidental to construction. Such Drums to be obtained from previous construction phases and furnished by the Contractor.

DATE	3/24/70
DESIGNED BY	L. SALVA
DESIGNED BY	M. SAHA
QUANTITIES BY	3/16/70
CHECKED BY	E. S. MCKEAY
ORIGINAL PLAN	
NOTE BOOK	
No.	



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J. Andrew Schuchardt

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**GENERAL LOCATION PLAN OF SIGNS,
DELINEATORS & PAVEMENT MARKERS**

HALAWA INTERCHANGE
PROJECT NO I-HI-1(87):13

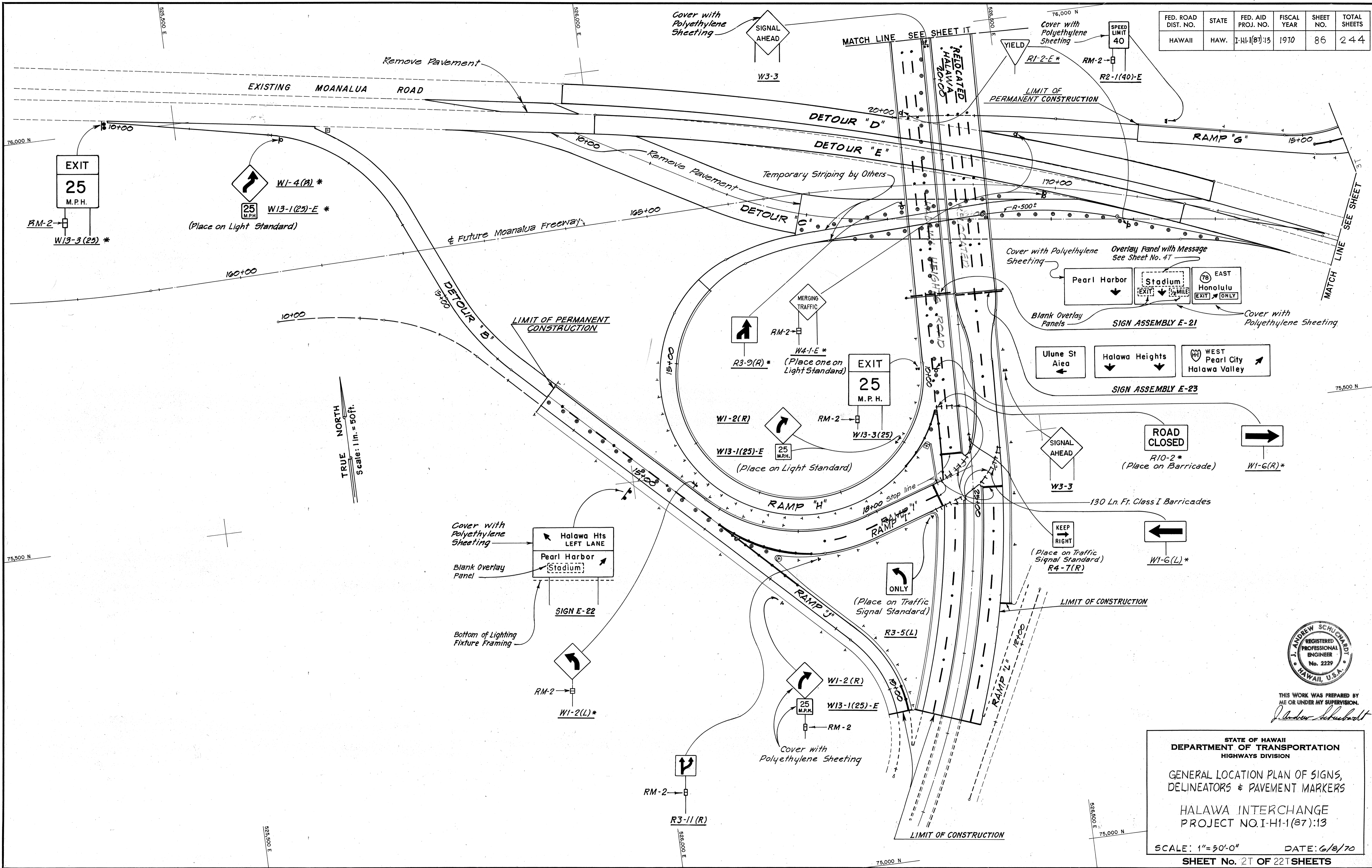
SCALE: 1" = 50' DATE: 6/2/70

SHEET No. 1T OF 22T SHEETS

May 4, 1971

C O S S

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(87):13	1970	86	244



DATE	BY
3/18/70	W. S. SAHA
3/24/70	L. J. FALGAR
2/17/70	W. S. SAHA
4/13/70	E. S. MORGENTHAU



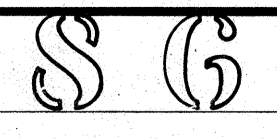
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
J. Andrew Schulchardt

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

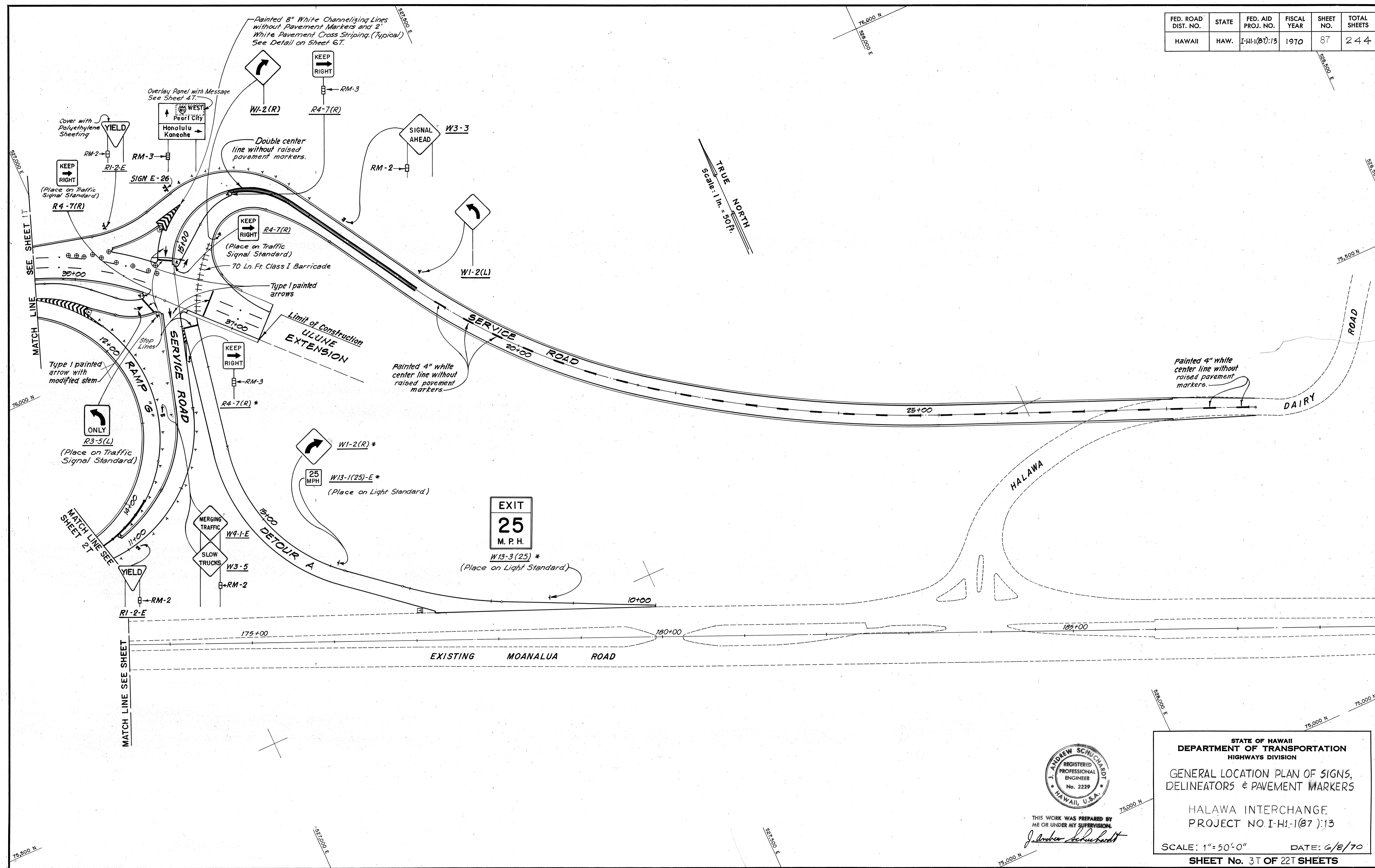
GENERAL LOCATION PLAN OF SIGNS,
 DELINEATORS & PAVEMENT MARKERS

HALAWA INTERCHANGE
 PROJECT NO. I-HI-1(87):13

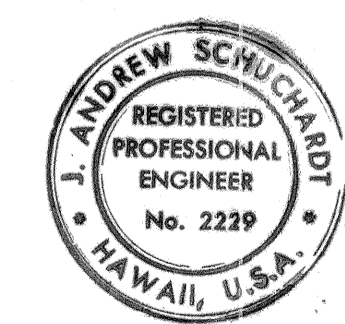
SCALE: 1"=50'-0" DATE: 6/8/70
 SHEET No. 86 OF 224 SHEETS



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(87):13	1970	87	244



SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
QUANTITIES BY	
CHECKED BY	



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J. Andrew Schuchardt

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

GENERAL LOCATION PLAN OF SIGNS,
 DELINEATORS & PAVEMENT MARKERS

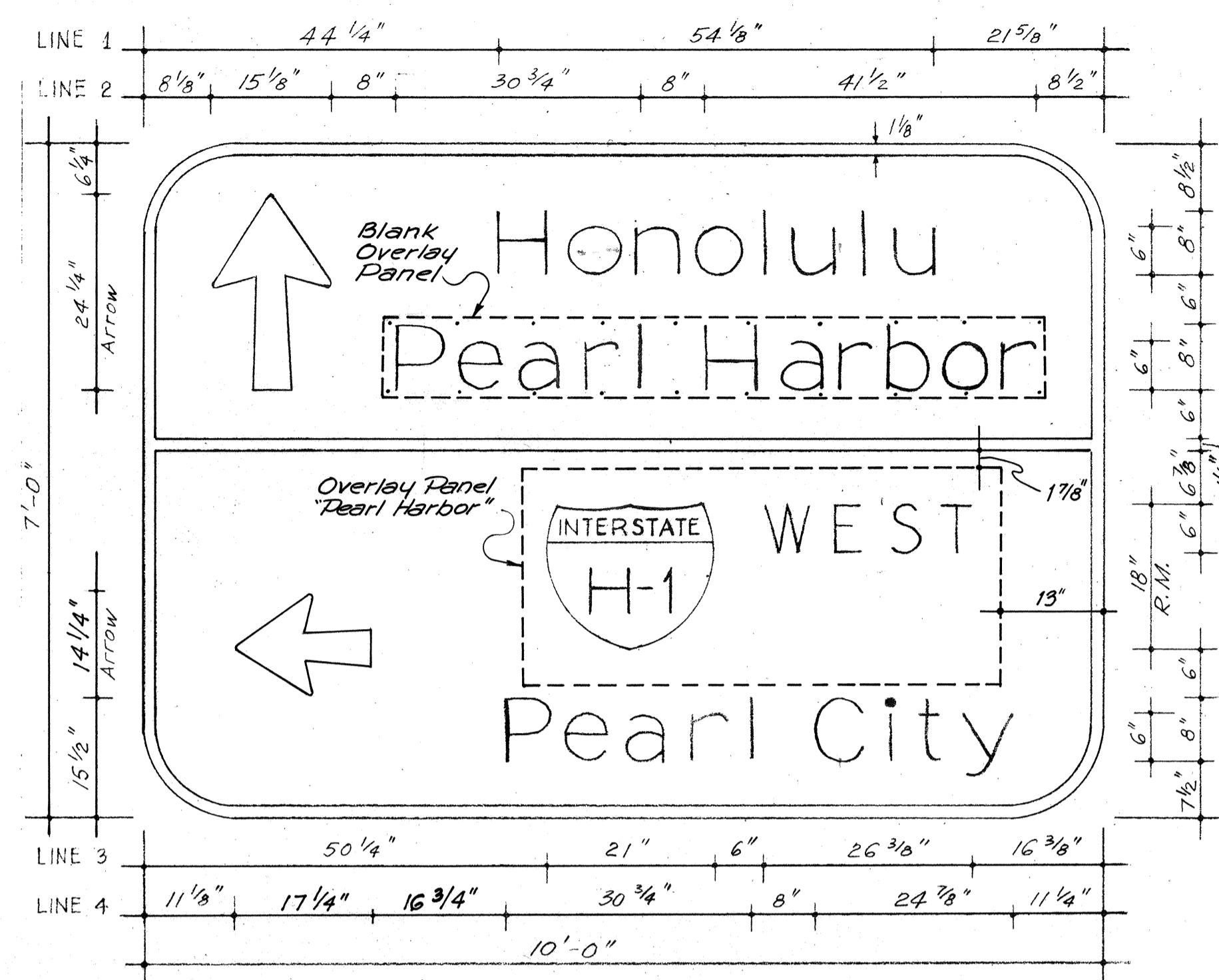
HALAWA INTERCHANGE
 PROJECT NO. I-HI-1(87):13

SCALE: 1"=50'-0" DATE: 6/8/70

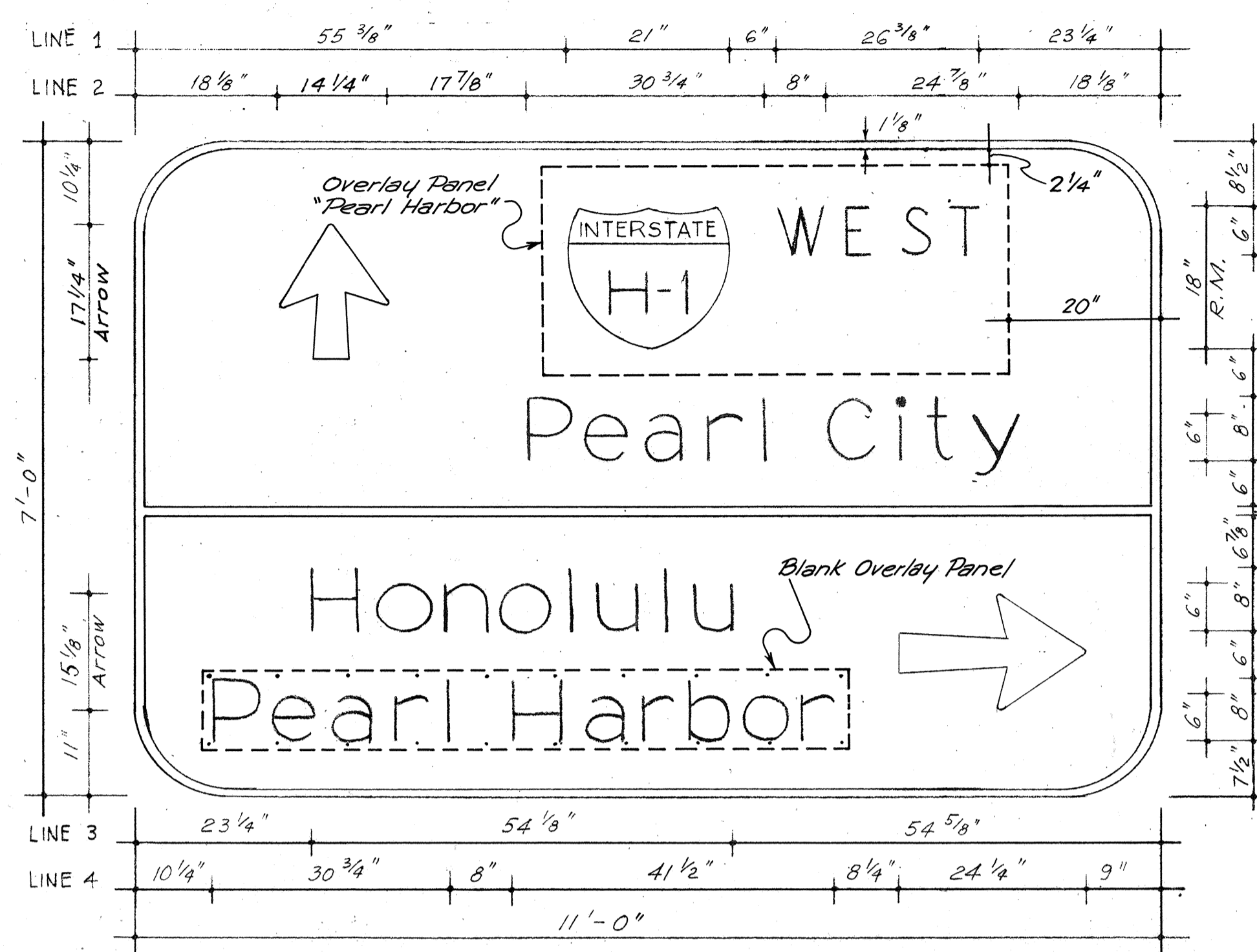
SHEET No. 31 OF 221 SHEETS

87

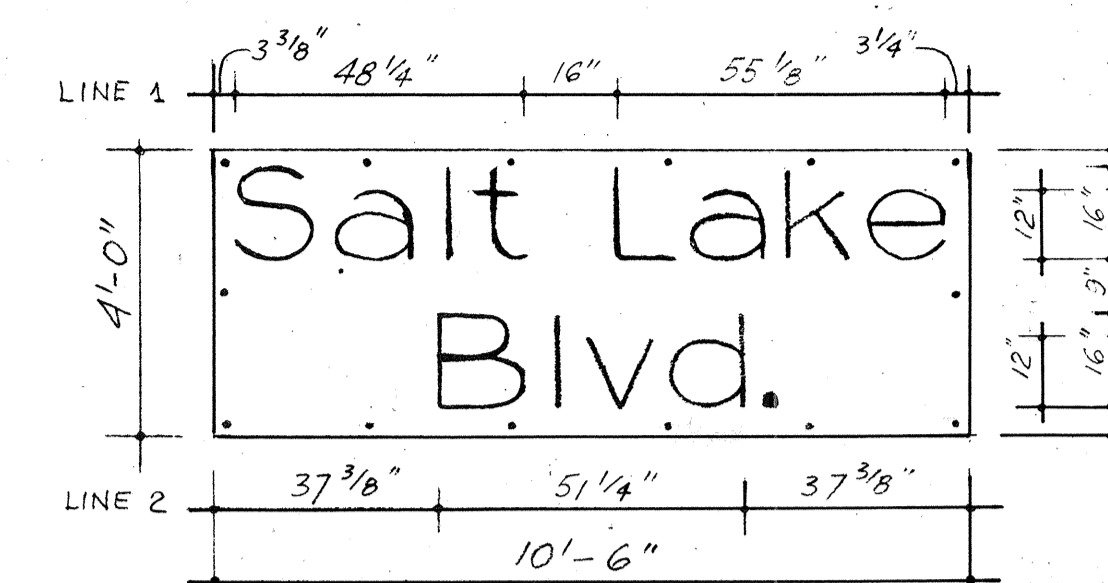
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(87)-13	1970	88	244



SIGN E-19
HALAWA HEIGHTS ROAD SOUTHBOUND & STA. 16+40.60
SCALE: 3/4" = 1'-0"



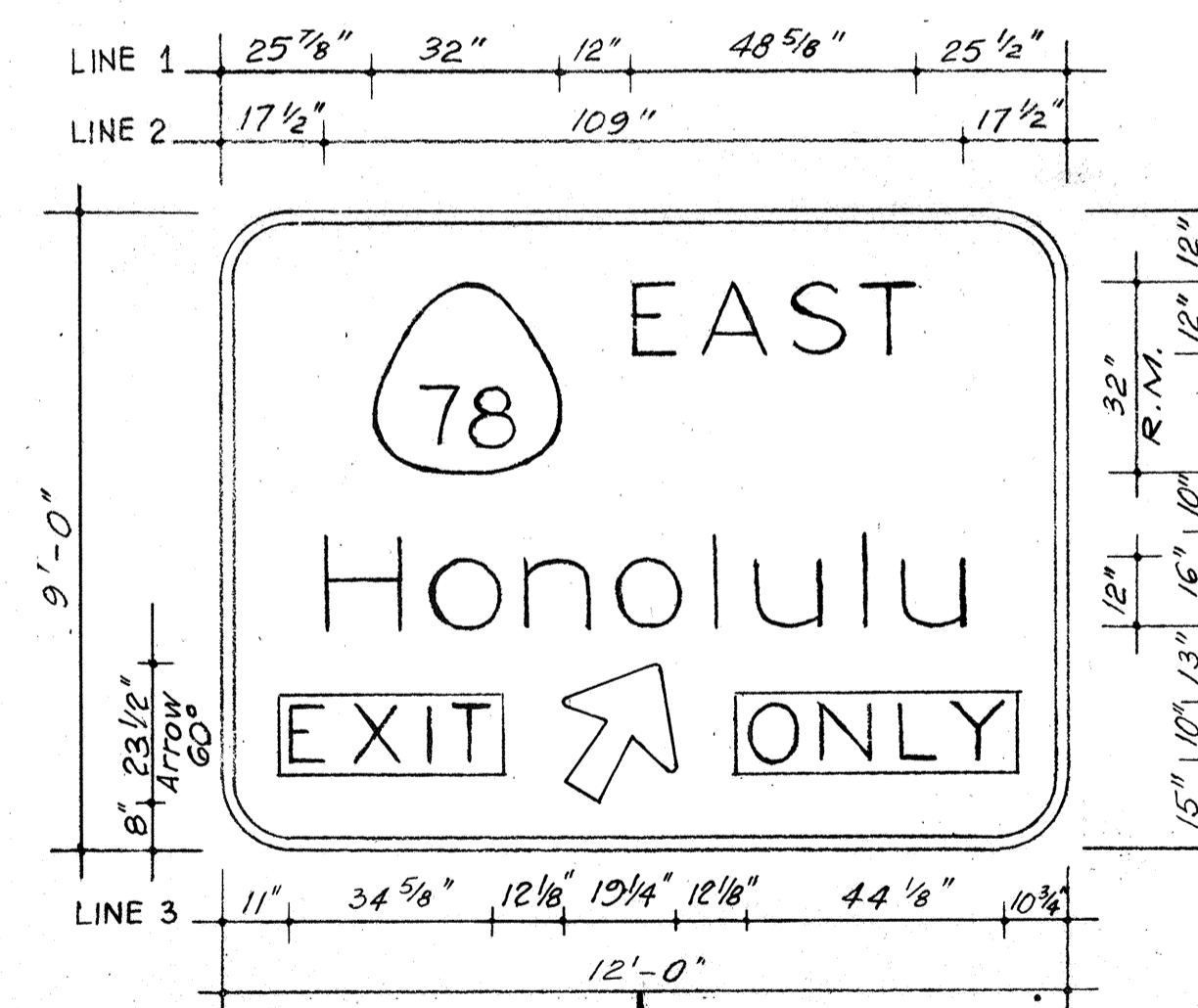
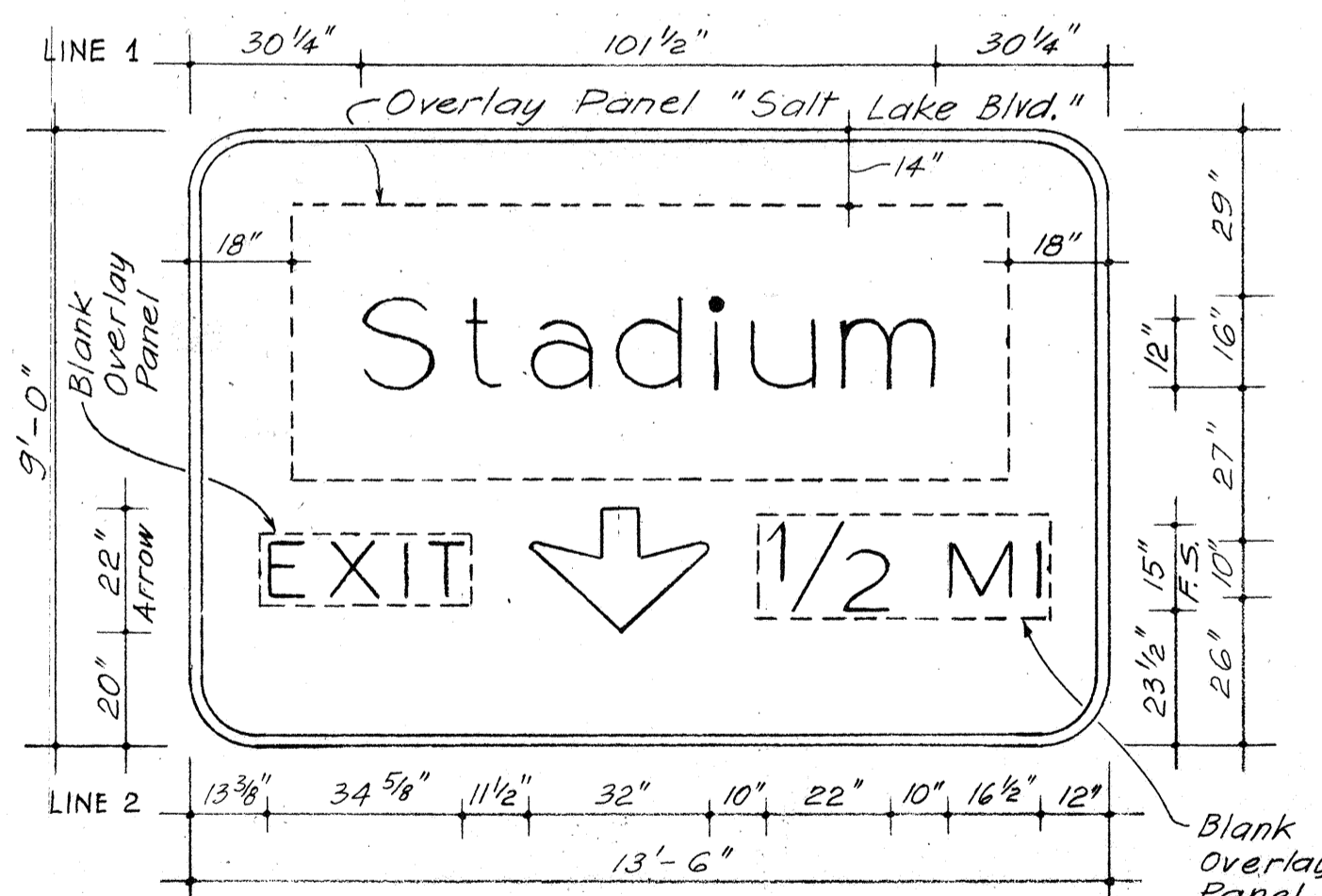
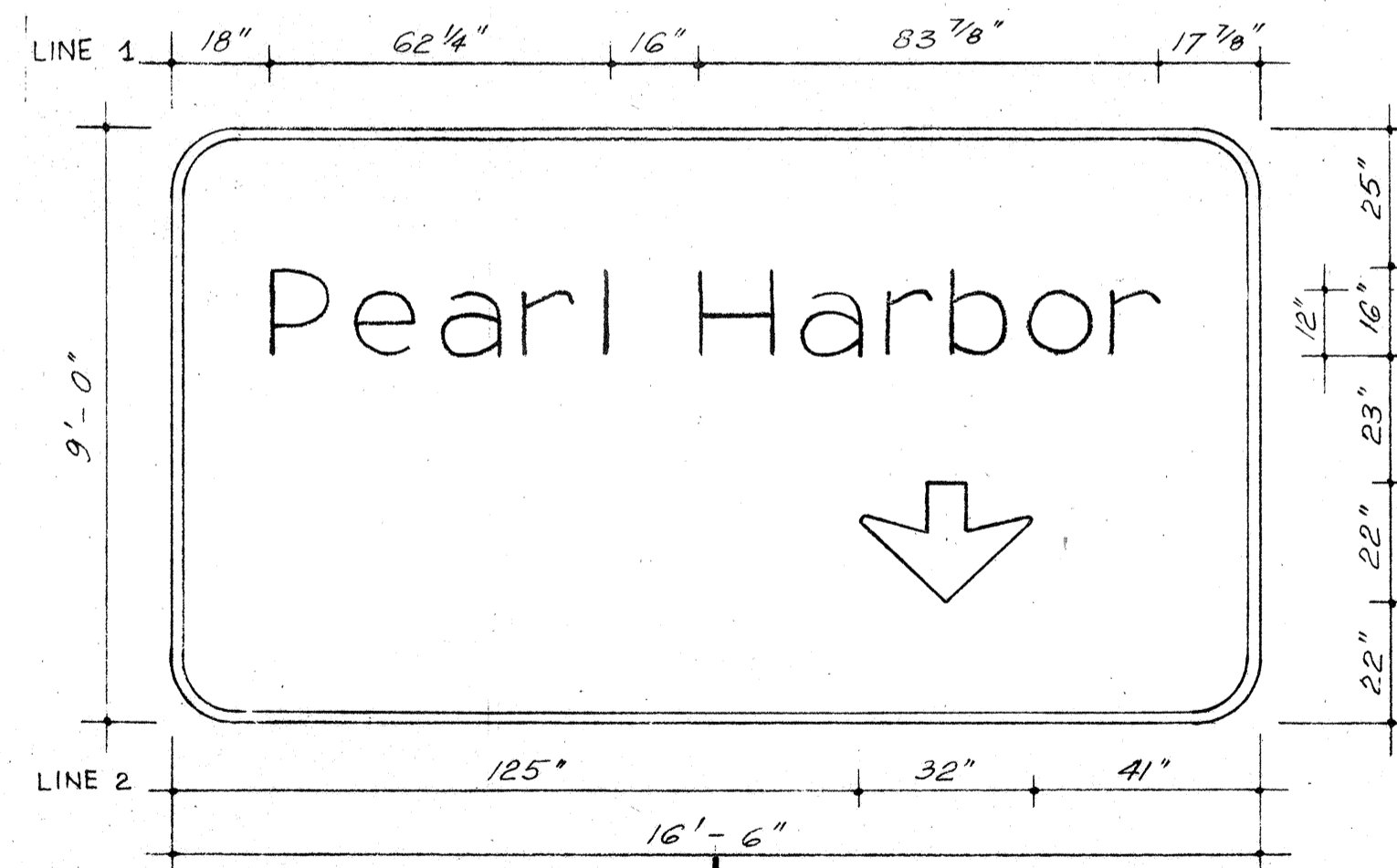
SIGN E-20
ULUNE STREET EASTBOUND & STA. 47+00
SCALE: 3/4" = 1'-0"



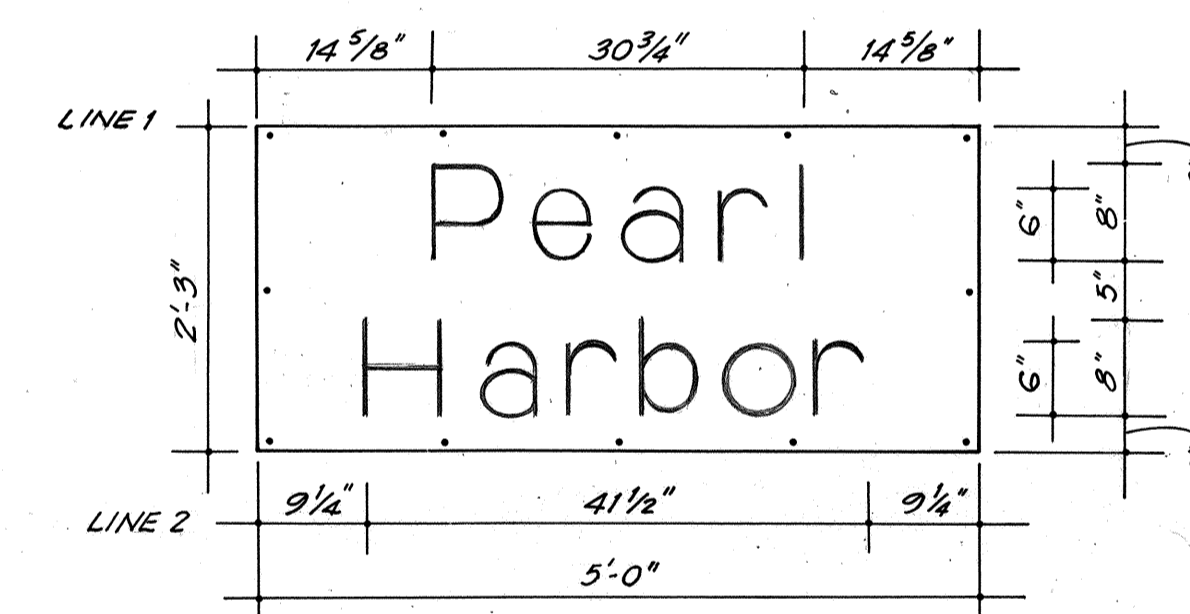
OVERLAY PANEL FOR SIGN E-21(C)
Scale: 3/8" = 1'-0"

SHEET NO.	RM-1 CLEAR		RM-2 AMBER		RM-3 AMBER		RM-3H AMBER	
	W/POST	W/O POST	W/POST	W/O POST	W/POST	W/O POST	W/POST	W/O POST
1T	-	-	6	-	-	6	-	-
2T	-	-	62	8	1	-	2	-
3T	-	-	37	4	1	3	2	-
5C	-	-	-	-	-	3	-	-
TOTAL	-	-	105	12	2	12	4	-

- NOTES
- FOR ADDITIONAL NOTES PERTAINING TO EXPRESSWAY SIGNS, SEE SHEET 5T.
 - SUMMARY TABLES FOR ALL EXPRESSWAY SIGNS ARE LOCATED ON SHEET 6T.
 - OUTLINES OF OVERLAY PANELS MASKING TEMPORARILY CERTAIN PORTIONS OF SIGN PANEL MESSAGE ARE SHOWN IN BROKEN LINES.
 - LAYOUT OF OVERLAY PANELS WITH MESSAGES ARE SHOWN ON SHEETS 4T AND 6T.
 - SUMMARY TABLES FOR ALL BLANK OVERLAY PANELS AND OVERLAY PANELS WITH MESSAGES ARE SHOWN ON SHEET 7T.
 - THE WORDS "EXIT...ONLY" SHALL BE BLACK ON REFLECTORIZED YELLOW BACKGROUND.



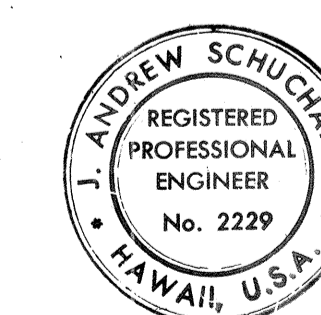
SIGN ASSEMBLY E-21
HALAWA HEIGHTS ROAD NORTHBOUND & STA. 22+62
SCALE: 3/8" = 1'-0"



OVERLAY PANEL FOR SIGNS E-19, E-20, E-24 & E-26
SCALE: 3/4" = 1'-0"

DATE	3.22.70
DRAWN BY	M. SALVA
DESIGNED BY	M. SALVA
QUANTITIES BY	M. SALVA
CHECKED BY	E. S. JOHNSON

SHEET NO.	QUANTITY	
	TYPE A	TYPE C
1T	432	40
2T	432	63
3T	72	10
TOTAL	936	113



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGN FACE DETAILS

HALAWA INTERCHANGE
PROJECT NO. I-HI-1(87)-13

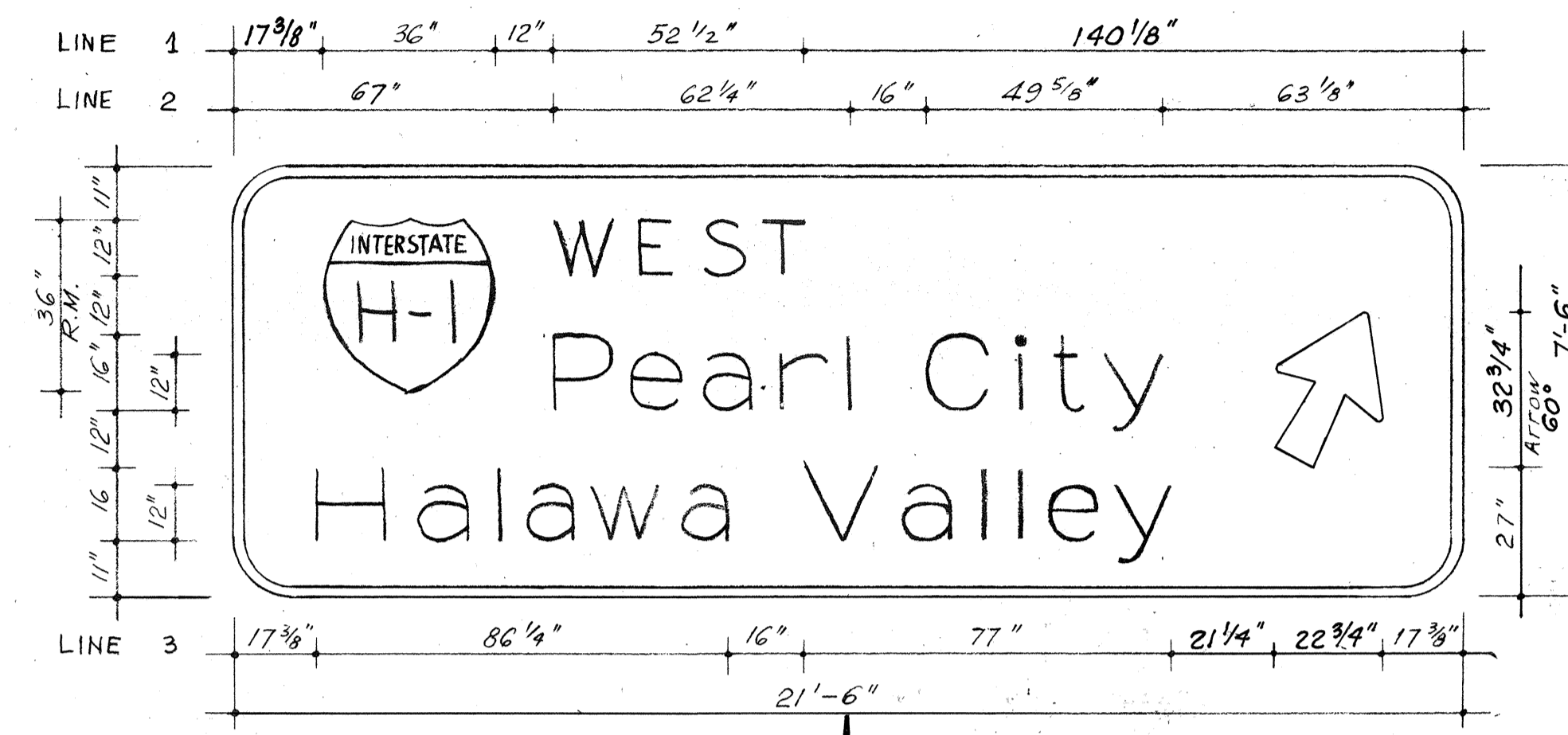
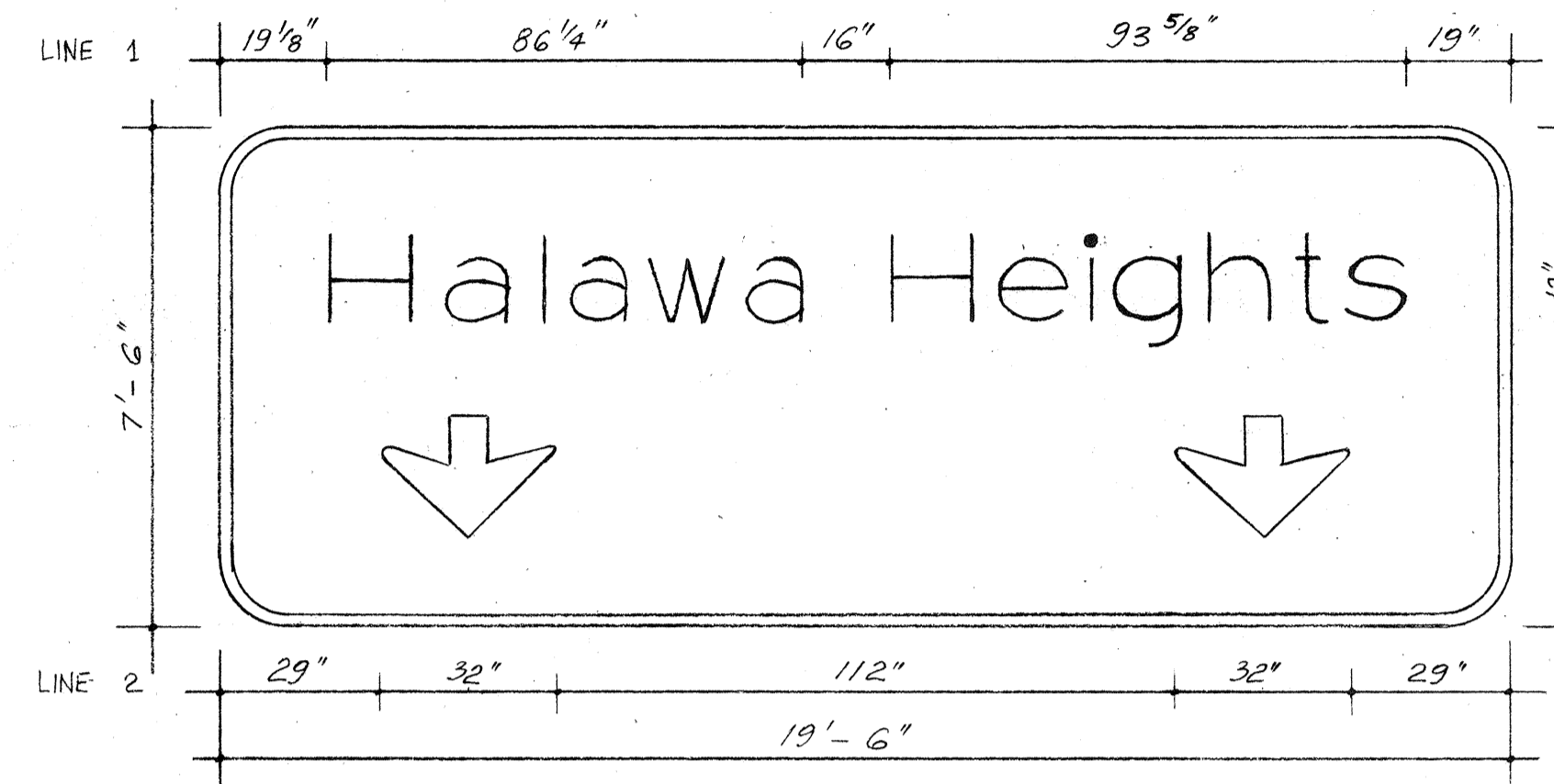
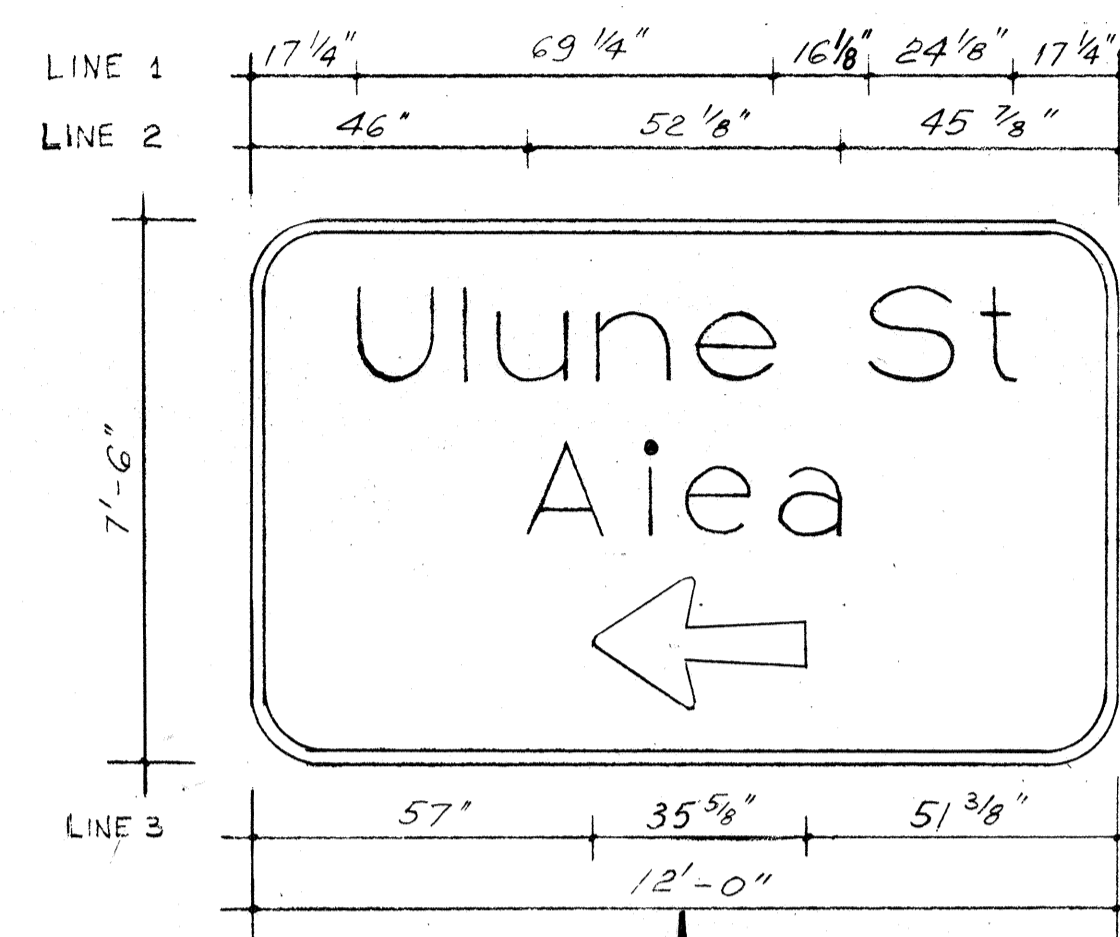
SCALE: AS SHOWN DATE: 6/8/70
SHEET No. 4T OF 22T SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IHI(87)13	1970	89	244

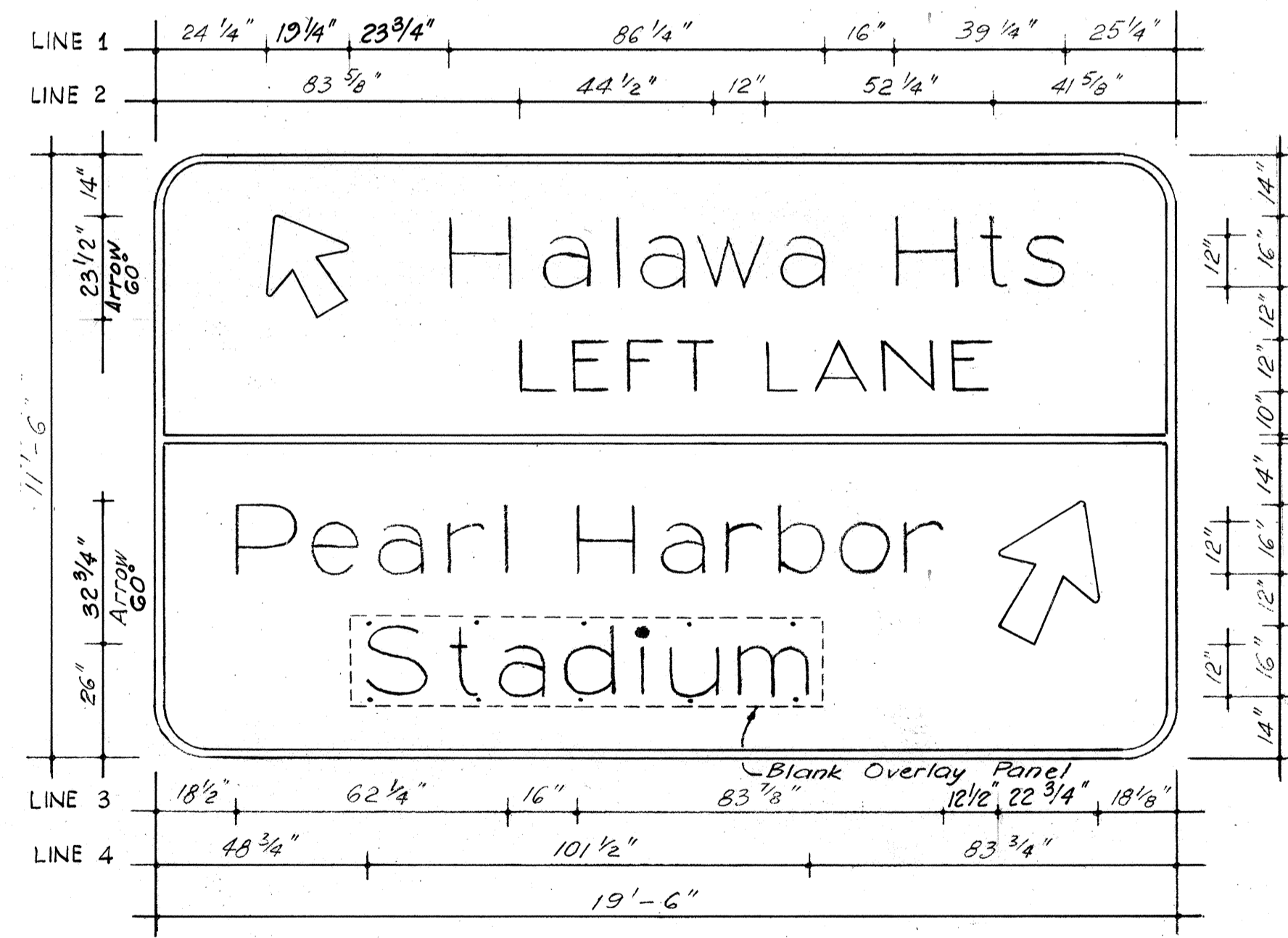
NOTES PERTAINING TO EXPRESSWAY (E) SIGNS AND DESTINATION (D) SIGNS

- DESIGN OF THE COMPANION UPPER AND LOWER CASE CHARACTERS, MODIFIED SERIES "E" CAPITAL LETTERS AND DIGITS, AND INTER-CHARACTER SPACING FOR LINE MESSAGES SHALL MEET THE REQUIREMENTS ESTABLISHED BY THE BUREAU OF PUBLIC ROADS, U.S. DEPARTMENT OF COMMERCE, IN ITS REFERENCE GUIDE, "STANDARD ALPHABETS FOR HIGHWAY SIGNS", 1966 EDITION.
- UNLESS OTHERWISE NOTED, SIGN BORDERS AND CORNER RADIUS FOR ALL SIGN FACES DETAILED HEREIN SHALL BE 2 INCHES WIDE, AND 12 INCHES, RESPECTIVELY.
- STATE AND INTERSTATE ROUTE MARKERS INCORPORATED ON SIGN PANELS SHALL CONFORM TO THE DIMENSIONS AS SHOWN. MARKER SHAPE, COLOR, LETTER AND NUMERAL SERIES, ETC., ARE TO COMPLY WITH THOSE OF THE OFFICIAL MARKER DESIGNS ON THE STANDARD DETAIL SHEETS.
- ALL ARROWS SHALL BE AS PRESCRIBED FOR SIGNS ON THE NATIONAL SYSTEM OF INTERSTATE AND DEFENSE HIGHWAYS.
- INDIVIDUAL LETTERS, NUMERALS, SYMBOLS, AND BORDERS SHALL BE DEMOUNTABLE AND CONSIST OF:
 - (A) EMBOSSED ALUMINUM CUT-OUTS WITH APPLIED SILVER-WHITE REFLECTIVE SHEETING MATERIAL; OR
 - (B) WHITE PORCELAIN ENAMELED ALUMINUM FRAMES IN WHICH ARE INSTALLED PLASTIC REFLEX REFLECTORS.
- ALL ARTIFICIALLY ILLUMINATED EXPRESSWAY SIGNS SHALL HAVE REFLECTORIZED MESSAGE AND BORDER ON A GREEN PORCELAIN ENAMELED BACKGROUND. DESTINATION SIGNS SHALL BE COMPLETELY REFLECTORIZED WITH SILVER-WHITE REFLECTIVE SHEETING FOR MESSAGE CUT-OUTS AND BORDER STRIPS, AND GREEN REFLECTIVE SHEETING FOR SIGN BACKGROUND.
- FASTENERS: DEMOUNTABLE CHARACTERS SHALL BE FASTENED TO SIGN PANELS WITH BLIND RIVETS. OVERLAY PANELS SHALL BE FASTENED TO PARENT SIGN PANELS WITH SELF-TAPPING SCREWS AS SHOWN.
- DEMOUNTABLE CHARACTERS, EXCEPT AS OTHERWISE SPECIFIED, SHALL BE OF ONE TYPE ON ANY SIGN PANEL OR GROUP OF SIGN PANELS MOUNTED ON A COMMON SUPPORT, AND SHALL INCLUDE LETTERS, NUMERALS, ARROWS AND BORDERS.
- WHERE MORE THAN ONE SIGN PANEL IS MOUNTED ON THE SAME OVERHEAD SIGN PANEL SUPPORT, THE LEFT TO RIGHT POSITION OF SIGN FACES OF PANELS ON THE SUPPORT (AS VIEWED BY APPROACHING TRAFFIC) IS REPEATED IN THE SAME ORDER ON THESE SIGN FACE DETAIL SHEETS.

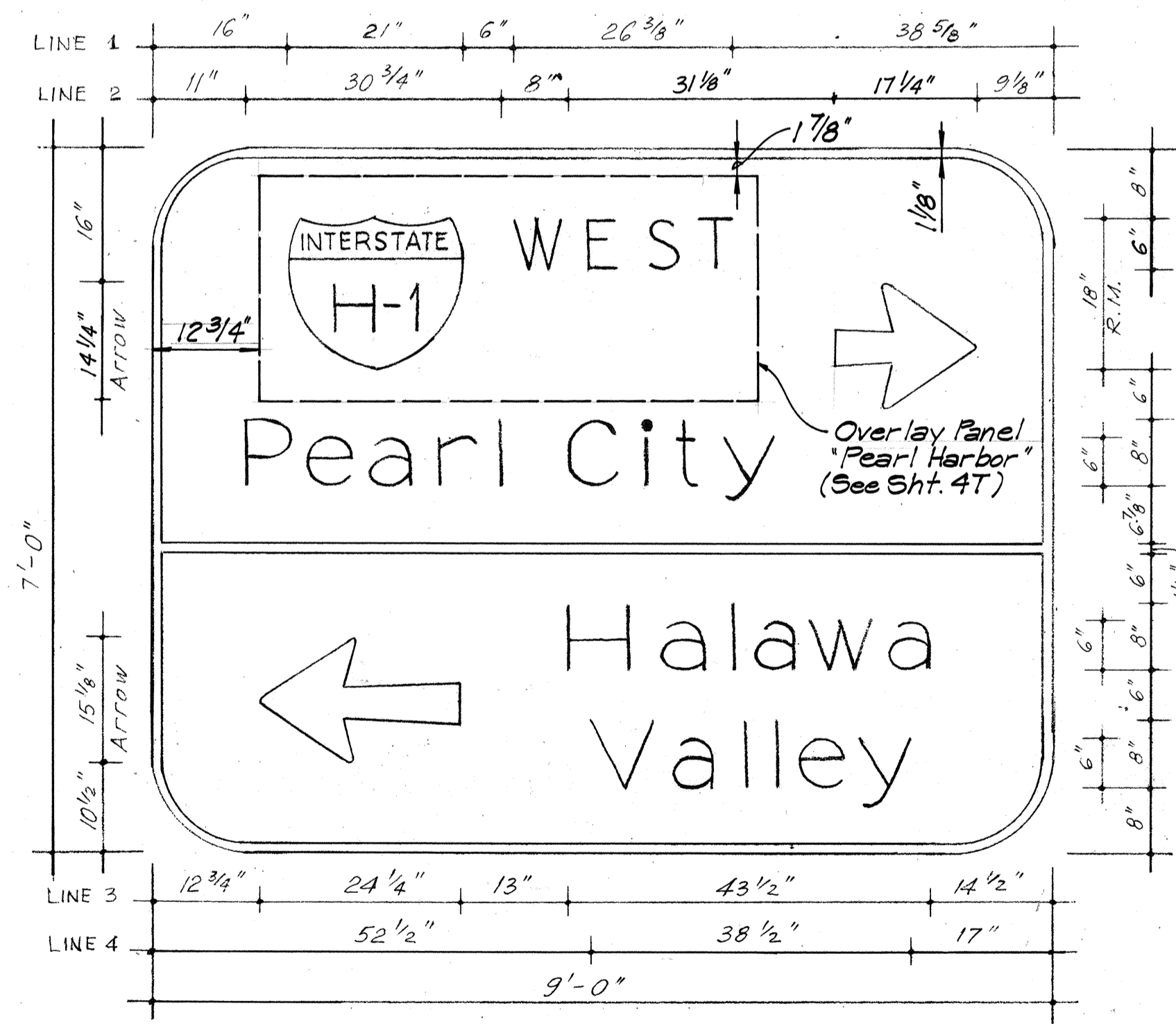
*NON-ILLUMINATED EXPRESSWAY SIGN PANELS SHALL BE FABRICATED IN ACCORDANCE WITH SPECIFICATIONS FOR DESTINATION SIGNS.



SIGN ASSEMBLY E-23
HALAWA HEIGHTS ROAD SOUTHBOUND @ STA. 22+62
SCALE: 3/8" = 1'-0"



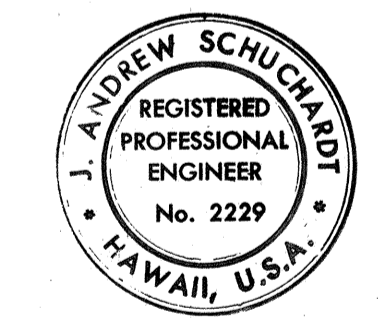
SIGN E-22
RAMP "J" @ STA. 15+00
SCALE: 3/8" = 1'-0"



SIGN E-24
RAMP "G" @ STA. 10+20
SCALE: 3/4" = 1'-0"

SUMMARY OF PERMANENT REGULATORY SIGNS			
TYPE	MESSAGE	QUANTITY	
		W/POST	W/O POST
R3-21	ONLY	1	-
R1-2-E	YIELD	3	-
R2-1(40)-E	SPEED LIMIT 40	1	-
R3-5(L)	(CURVED ARROW) ONLY	-	2
R3-7(R)	RIGHT LANE MUST TURN RIGHT	1	-
R3-11(R)	(DIVERGING ARROWS)	1	-
R4-7(R)	KEEP RIGHT	5	4
R16-1	TURN LEFT ON GREEN ARROW ONLY	-	2
TOTAL		12	8

SUMMARY OF PERMANENT WARNING SIGNS			
TYPE	MESSAGE	QUANTITY	
		W/POST	W/O POST
W1-2 (L)	(CURVED ARROW)	2	-
W1-2 (R)	(CURVED ARROW)	2	2
W3-3	SIGNAL AHEAD	6	-
W3-5	SLOW TRUCKS	-	1
W4-1-E	MERGING TRAFFIC	1	-
W11-5	CROSS WALK	3	-
W13-1(25)-E	25 M.P.H.	-	3
W13-3(25)	EXIT 25 M.P.H.	1	-
TOTAL		15	6



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J. Andrew Schuchardt

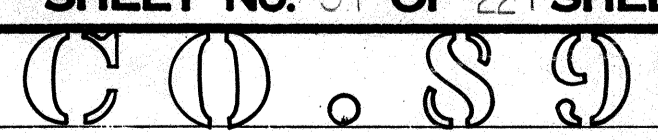
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGN FACE DETAILS

HALAWA INTERCHANGE
PROJECT I-H1-1(87)13

Scale: As Shown Date: 6/8/70

May 4, 1971

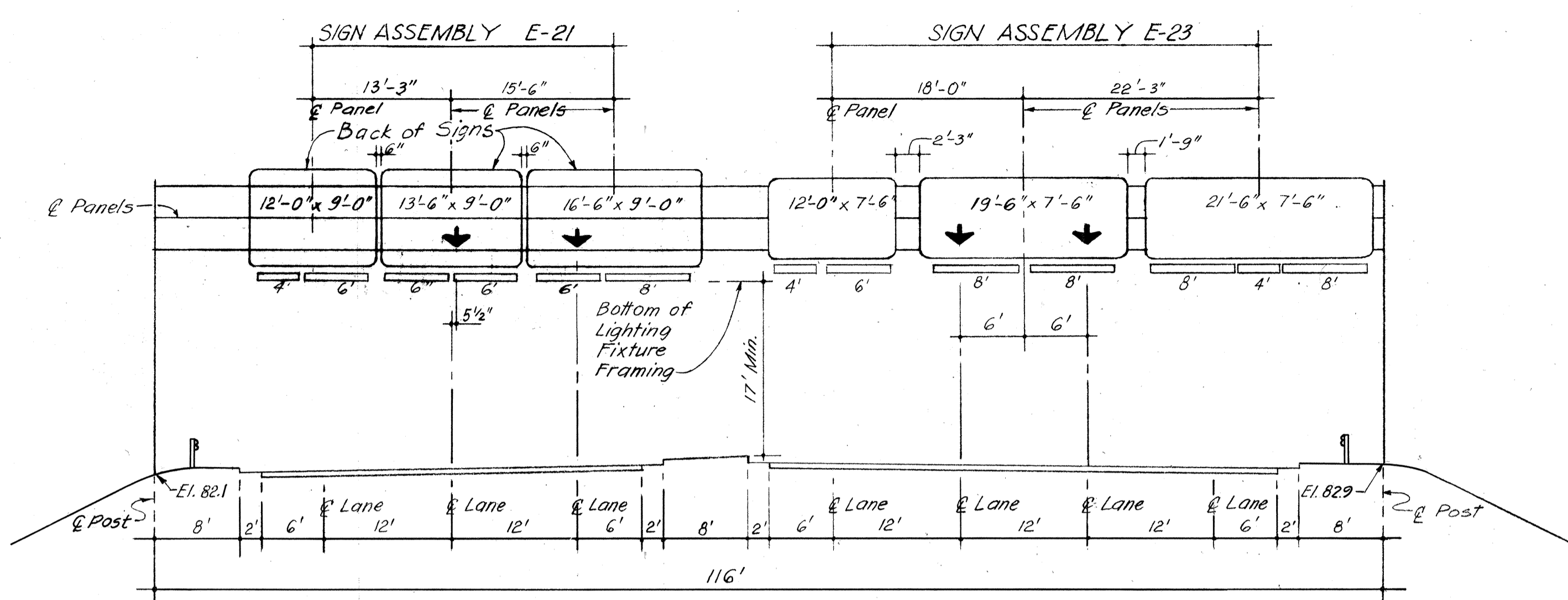


DATE: 3-30-70
DRAWN BY: M. SALVA
CHECKED BY: M. SALVA
QUANTITIES BY: M. SALVA
CHECKED BY: E. S. MCKEAY

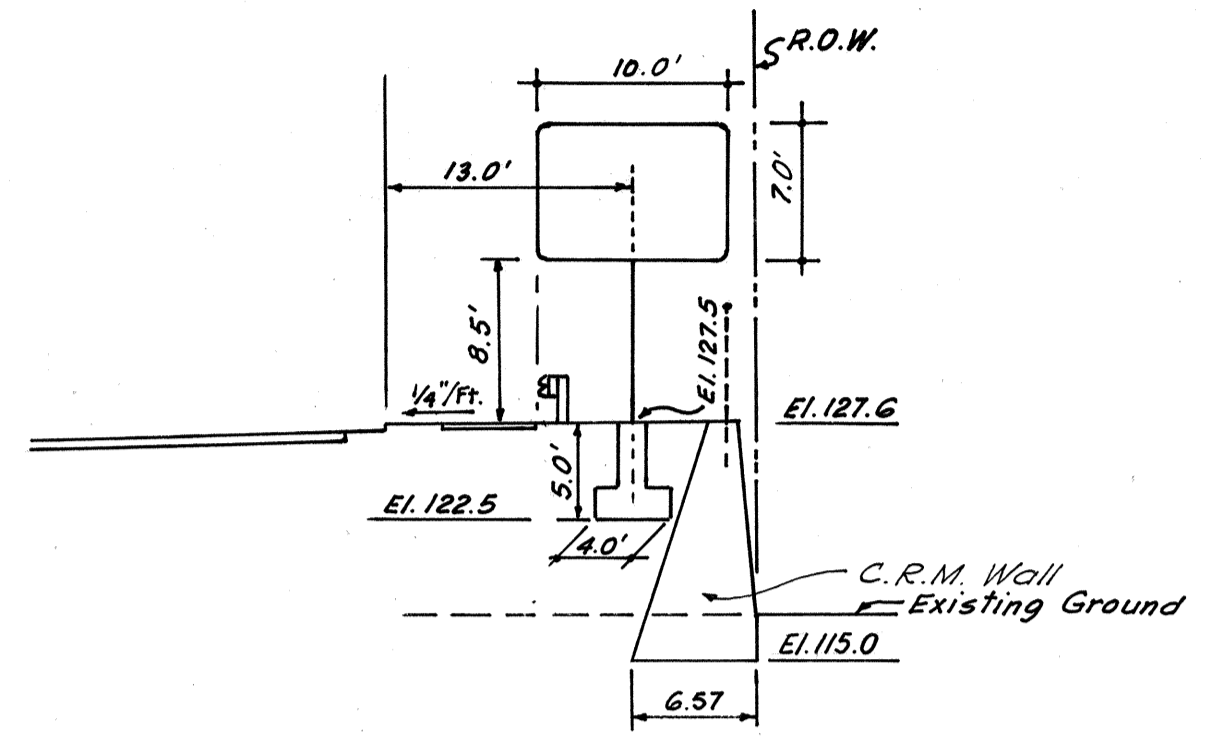
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I.H.I.(87)13	1970	91	244

NOTES

- FOR SIGN FACE DETAILS OF PANELS MOUNTED ON OVERHEAD SIGN STRUCTURES, SEE SHEETS 4T AND 5T.
- FOR SIGN FACE DETAILS OF PANELS MOUNTED ON STRUCTURAL STEEL POSTS, SEE SHEETS 4T, 5T AND 6T.
- FOR DETAILS OF (A) OUTRIGGER BRACKETS SUPPORTING SIGN PANEL LIGHTING FIXTURES, (B) OVERHEAD SIGN STRUCTURES, (C) STRUCTURE FOOTINGS, (D) SIGN PANEL BRACKETS, SEE SHEETS 8T TO 15T INCL.
- SEE ELECTRICAL DRAWINGS FOR SIGN PANEL LIGHTING FIXTURE TYPES, INSTALLATION DETAILS, ETC.
- FOR PROTECTIVE TREATMENT OF EXPOSED OVERHEAD SIGN STRUCTURE SUPPORTS, SEE SPECIAL GUARD RAIL INSTALLATIONS ON GENERAL LOCATION PLANS, SPECIFICATIONS AND STANDARD DETAILS.



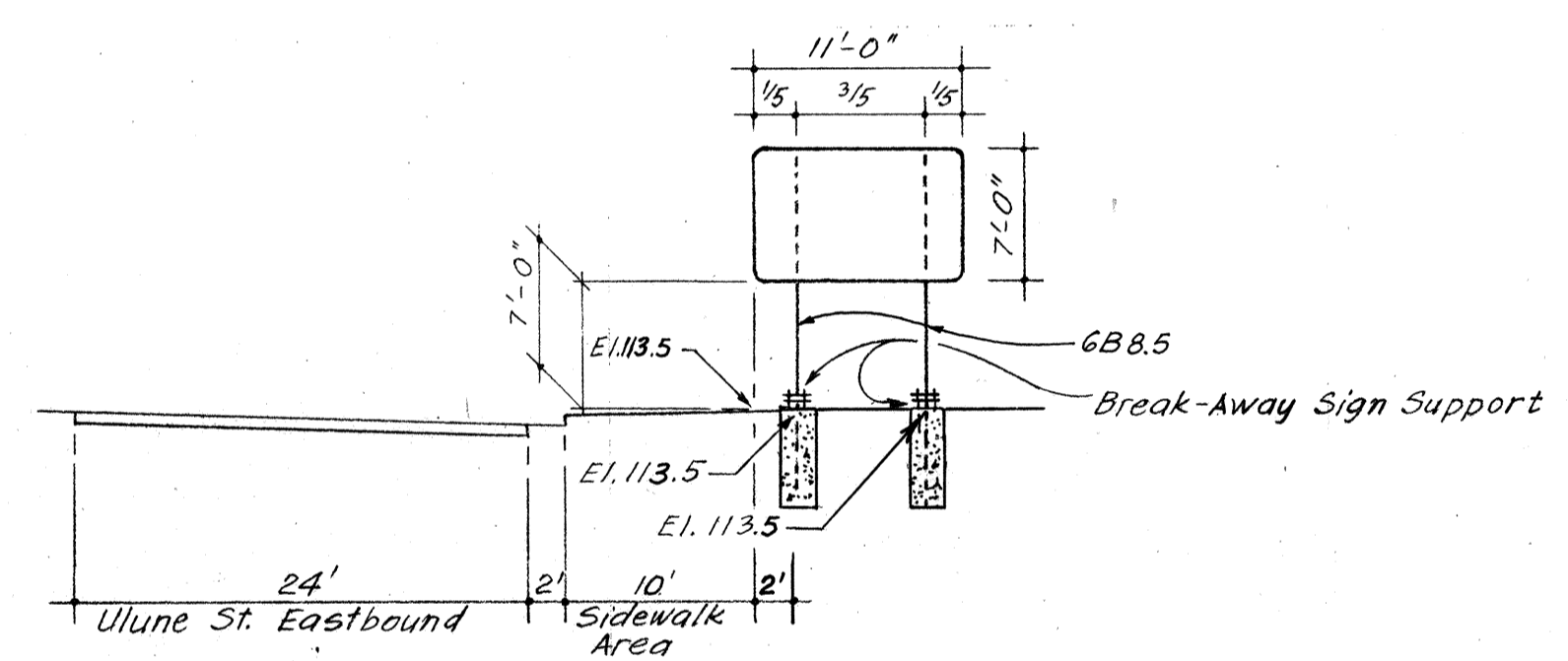
ELEVATION SIGN ASSEMBLIES E-21 AND E-23
HALAWA HEIGHTS ROAD STA. 22+62
(LOOKING NORTH)
Scale: 1" = 10'-0"



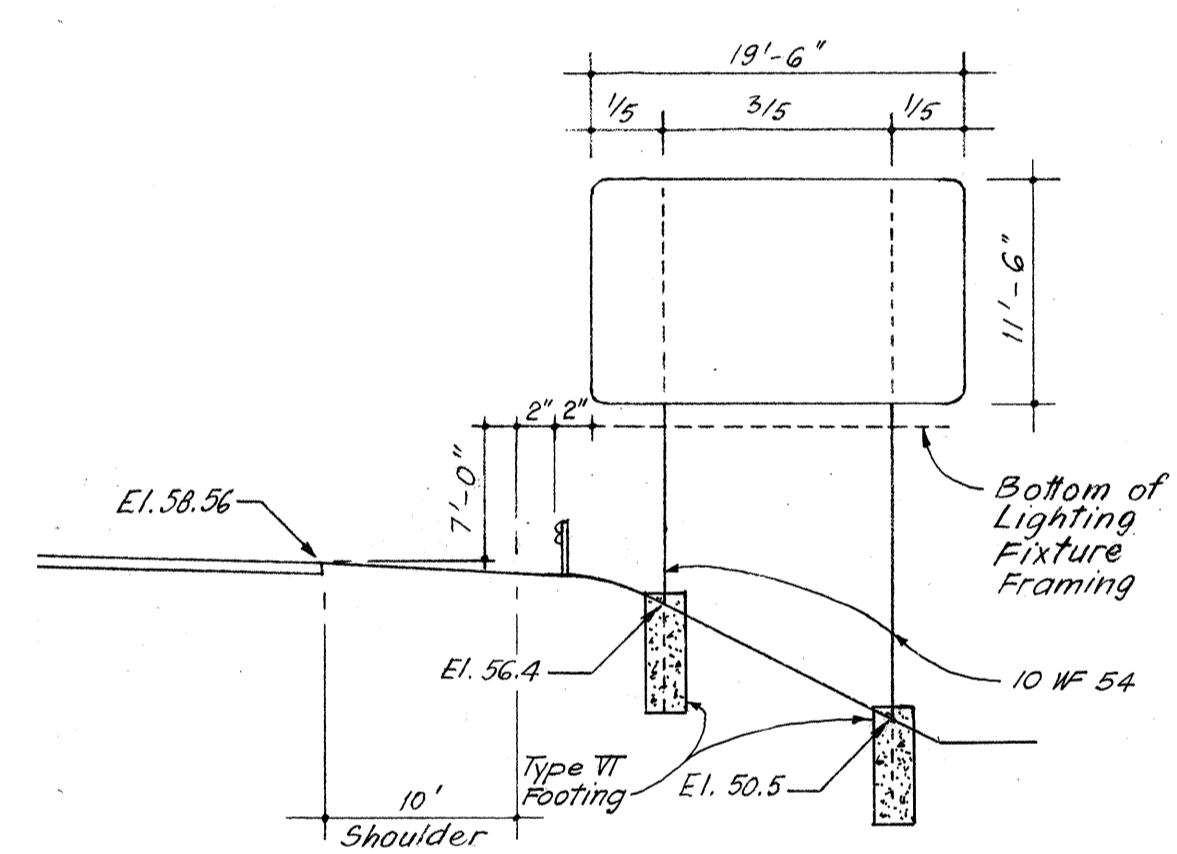
SIGN E-19
HALAWA HEIGHTS ROAD
SOUTHBOUND STA. 16+40.60
Scale: 1" = 10'-0"

SUMMARY OF BLANK OVERLAY PANELS

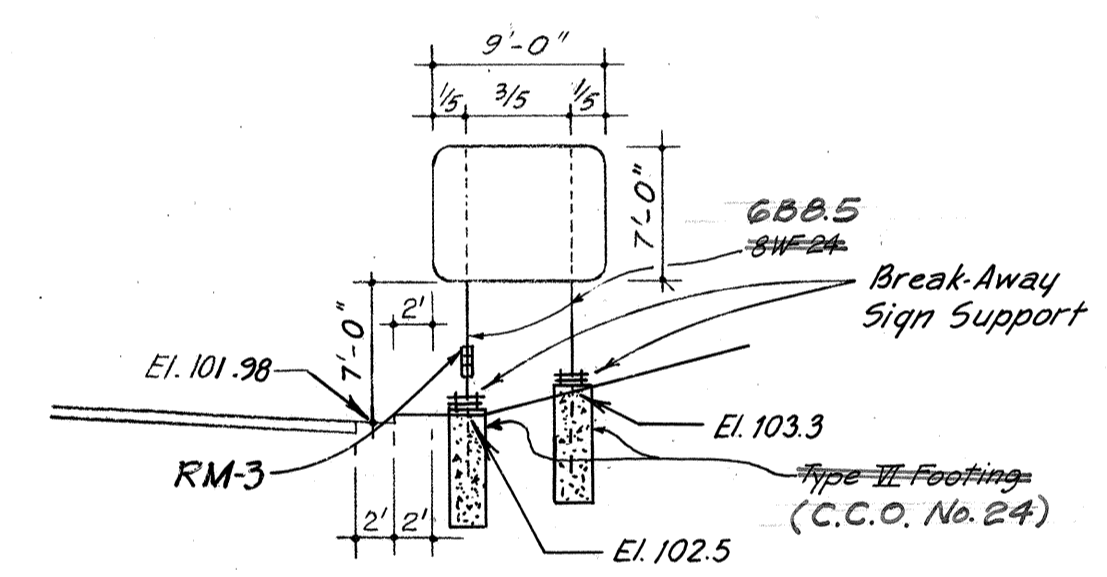
SIGN NO.	MESSAGE COVERED	AREA (SQ. FT.)
E-19	PEARL HARBOR	6.40
E-20	PEARL HARBOR	6.40
E-21	EXIT	3.80
E-21	1/2 MI	6.45
E-22	STADIUM	14.25
TOTAL		36.30



SIGN E-20
ULUNE STREET
EASTBOUND STA. 46+62
Scale: 1" = 10'-0"



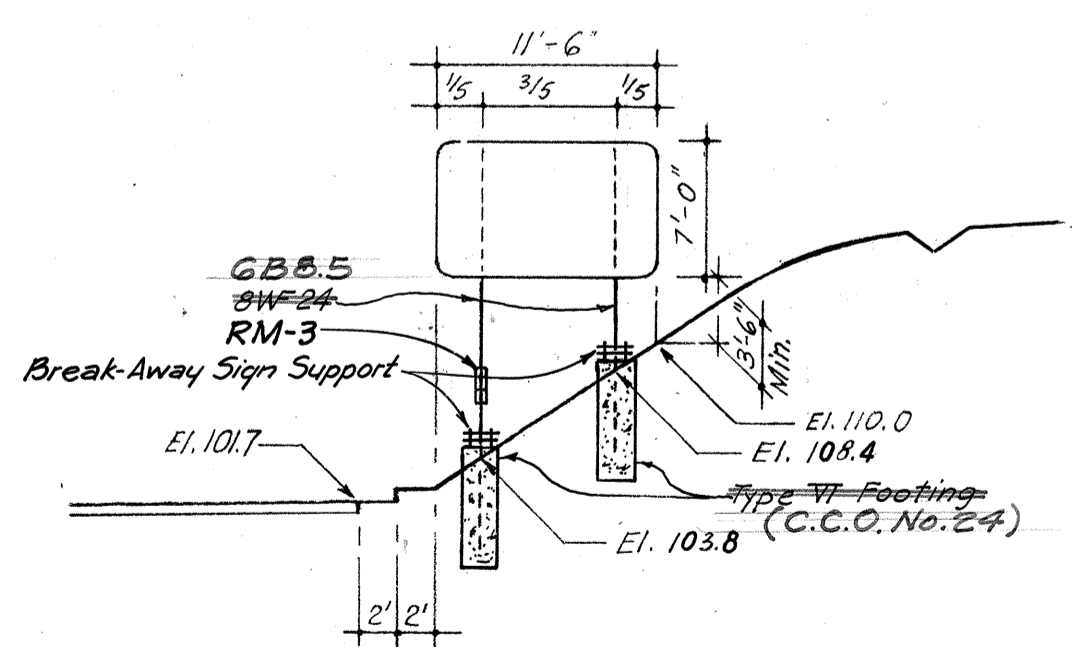
SIGN E-22
RAMP "J" STA. 15+00
(Looking East)
Scale: 1" = 10'-0"



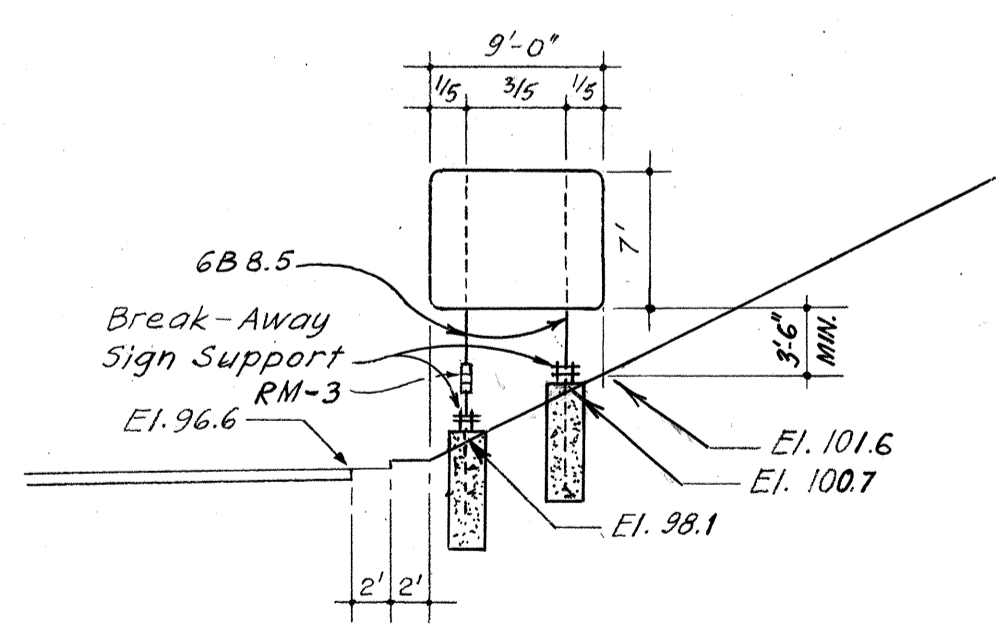
SIGN E-24
RAMP "G" STA. 10+20
(Looking East)
Scale: 1" = 10'-0"

SUMMARY OF OVERLAY PANELS W/ MESSAGES

SIGN NO.	MESSAGE	AREA (SQ. FT.)
E-19	PEARL HARBOR	11.25
E-20	PEARL HARBOR	11.25
E-21	SALT LAKE BLVD.	42.00
E-24	PEARL HARBOR	11.25
E-25	HONOLULU	8.50
E-25	SALT LAKE BLVD.	8.50
E-26	PEARL HARBOR	11.25
TOTAL		104.00

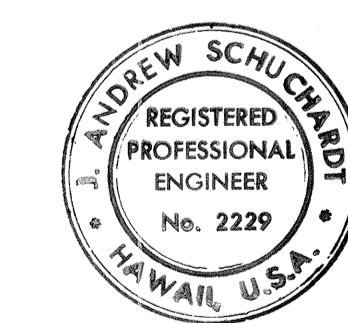


SIGN E-25
ULUNE EXTENSION WESTBOUND
STA. 39+85
Scale: 1" = 10'-0"



SIGN E-26
SERVICE ROAD WESTBOUND
STA. 15+40
Scale: 1" = 10'-0"

DATE	4/13/70
DESIGNED BY	M. SAVA
CHECKED BY	E. S. MOGGERY
QUANTITIES BY	M. SAVA
NOTE BOOK	
NO.	



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Andrew Schuchardt

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

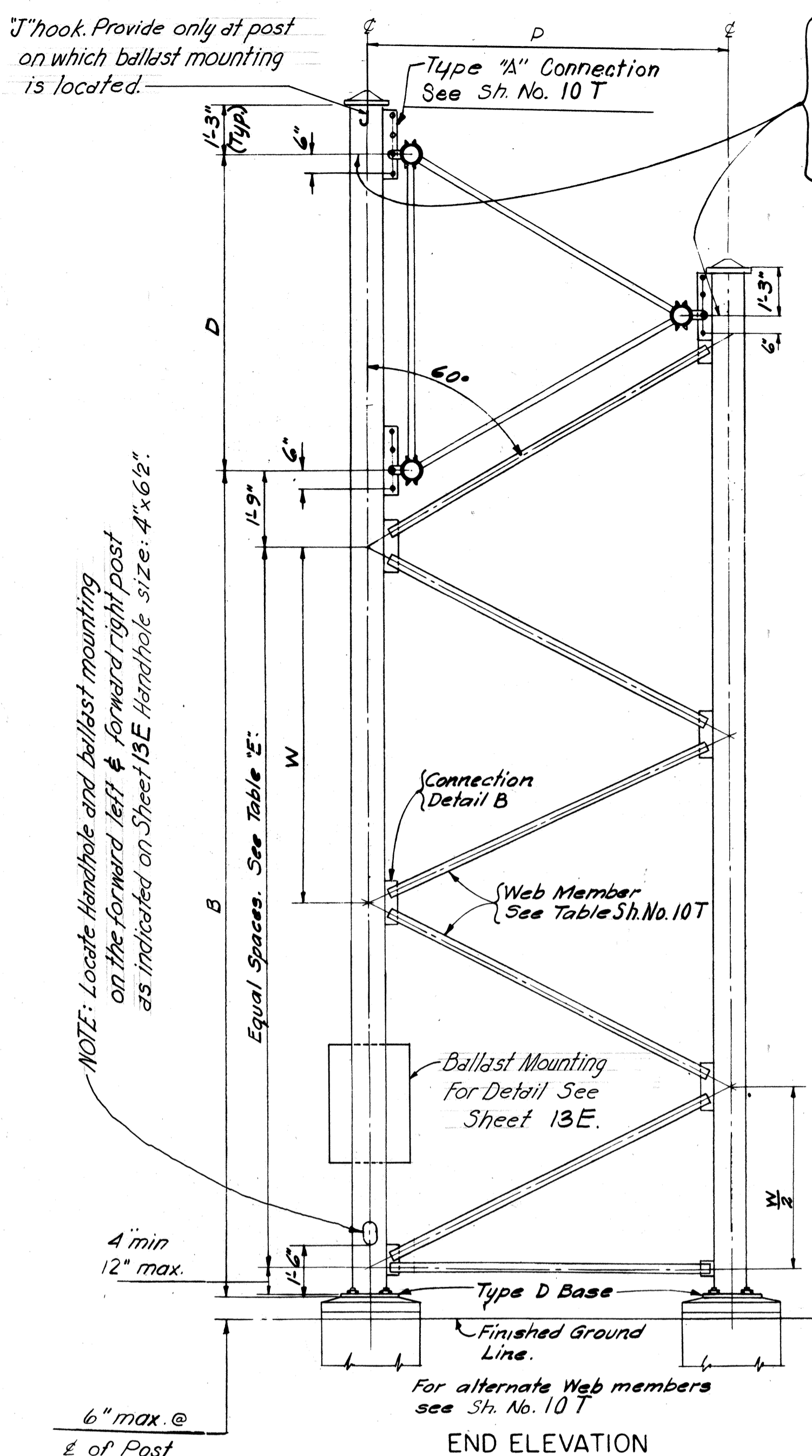
MISCELLANEOUS SIGN DETAILS

HALAWA INTERCHANGE
PROJECT NO. I-H-1(87)13

Scale: As Shown Date: 6/8/70

SHEET No. 7T OF 22T SHEETS

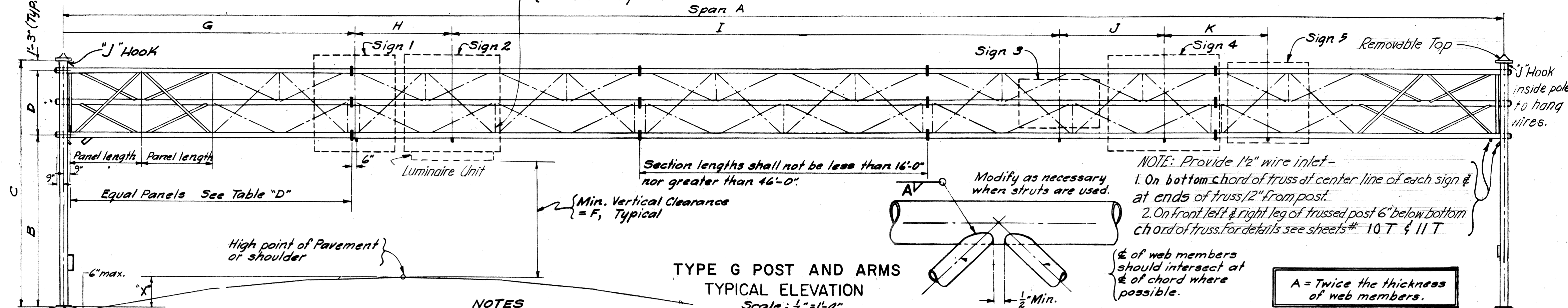
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(87)13	1970	92	244



Design mounting location of truss chord. Dimensions "B" and "C" are based on chord being mounted opposite this hole. In the case of changes in "X" dimensions or sign heights after the trussed posts are fabricated, the truss should be mounted so that the minimum vertical clearance "F" is not exceeded by more than 6".

Left and Right refer to sides of structure as viewed looking North.

Use struts on 6'-0" and 8'-0" deep trusses only. Make struts same size as diagonal web members. Locate struts as shown in this view. Struts are not necessary within 25' of posts.



NOTES

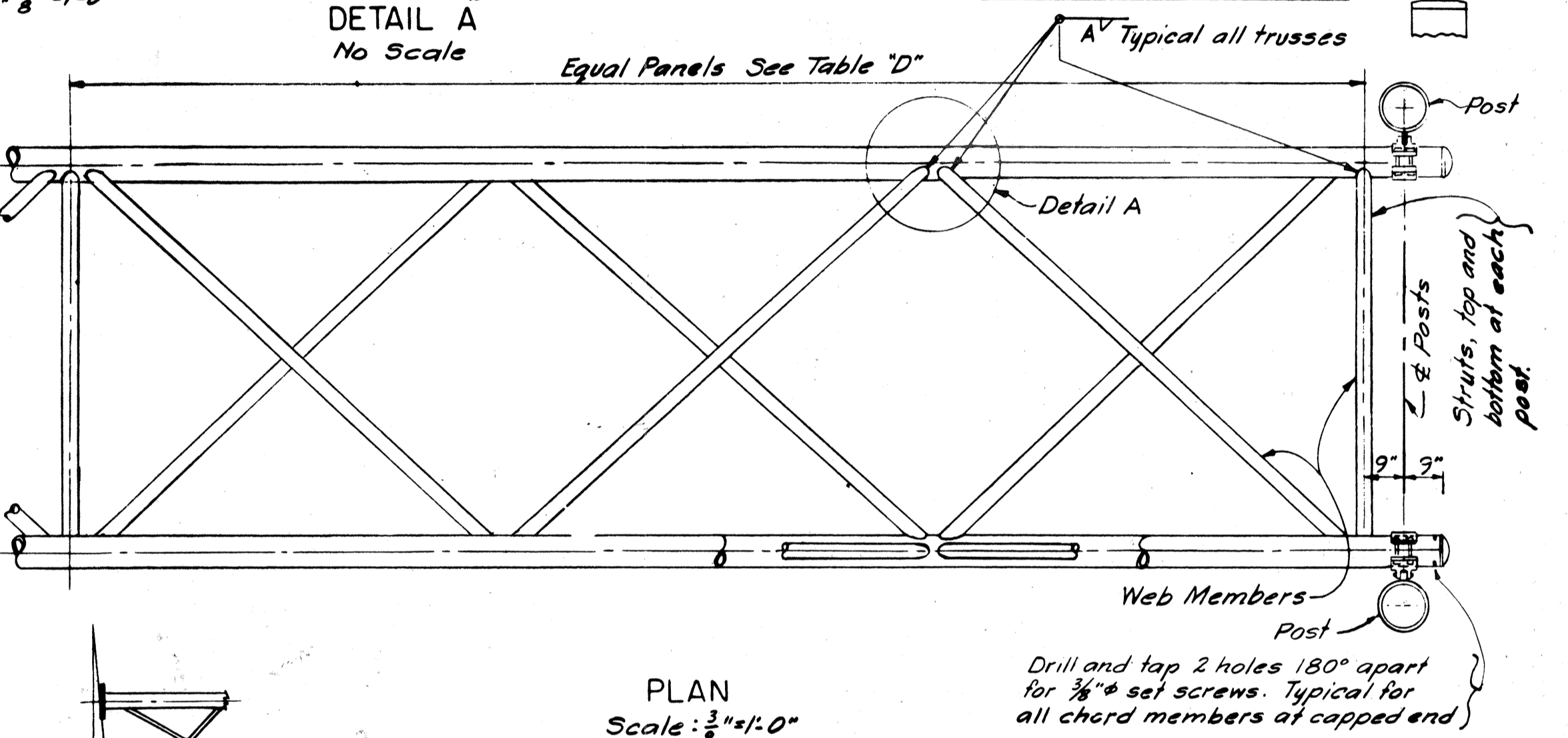
For dimensions of Type "D" bases and anchor bolts see Sh. No. 10T

For Connection Detail "B" and for the alternate details of web members of trussed posts see Sh. No. 10T

For flanged connections and post cap details see Sh. No. 11T

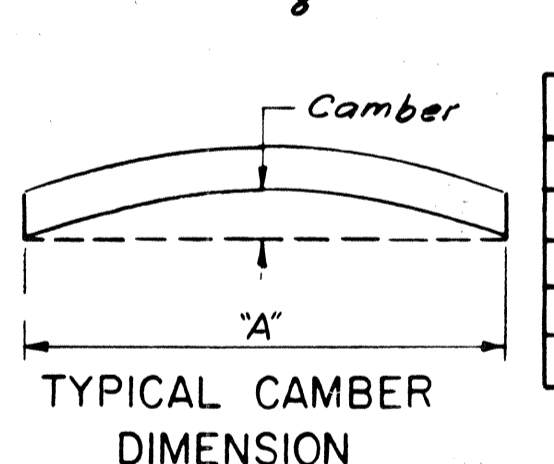
Tri-truss span and brackets are fabricated of Aluminum. Galvanized Steel in contact with Aluminum must be separated by "Fabco" or "Fabreka" Pads. Single and double poles, base plates and post to truss connections are fabricated of galvanized steel.

EQUIVALENT SIZES FOR TRUSSED POSTS			
ASTM A53 TYPE B	ASTM A595	ASTM A252 GRADE 3	API 5Lx 52
6" Schedule 40s	3 Gauge 6"	6" Schedule 40s	6" Schedule 40s
8" Schedule 20	3 Gauge 8"	8" Schedule 20	8" Schedule 20
8" Schedule 30	3 Gauge 8"	8" Schedule 20	8" Schedule 20
8" Schedule 40s	3 Gauge 8"	8" Schedule 20	8" Schedule 20
8" Schedule 60	0 Gauge 8"	8" Schedule 40s	8" Schedule 30
8" Schedule 80x	7+7 Gauge 8"	8" Schedule 60	8" Schedule 60
10" Schedule 20	3 Gauge 10"	10" Schedule 20	10" Schedule 20
10" Schedule 30	3 Gauge 10"	10" Schedule 20	10" Schedule 20
10" Schedule 40s	3 Gauge 11"	10" Schedule 30	10" Schedule 20
10" Schedule 60x	0 Gauge 11"	10" Schedule 60x	10" Schedule 40s
10" Schedule 80	7+3 Gauge 10"	10" Schedule 60x	10" Schedule 60x
12" Schedule 20	3 Gauge 12"	12" Schedule 20	12" Schedule 20
12" Schedule 30	3 Gauge 12"	12" Schedule 30	12" Schedule 20
12" Schedule s	0 Gauge 12"	12" Schedule 30	12" Schedule 20
12" Schedule 40	0 Gauge 12"	12" Schedule 30	12" Schedule 30
12" Schedule x	7+7 Gauge 12"	12" Schedule 40	12" Schedule s
12" Schedule 60	7+3 Gauge 12"	12" Schedule x	12" Schedule s
12" Schedule 80	3+3 Gauge 12"	12" Schedule 60	12" Schedule x



METHOD OF OBTAINING CAMBER

Washers having the same O.D. as flanges and with holes punched for bolts may be used to obtain camber.



CAMBER DETAILS			
SPAN A	CAMBER	SPAN A	CAMBER
Up to 50'	2"	125' to 150'	8"
50' to 75'	3"	150' to 170'	9"
75' to 100'	4"	170' to 190'	10"
100' to 125'	6"	190' to 210'	12"

SIGN NO.	SPAN A	TYPE	PIPE SIZE 2	LEFT POST				RIGHT POST				XR 3	F	D	TRUSS CHORD SIZE	WEB SIZE #1	SIGN 1 G	SIGN 2 H	SIGN 3 I	SIGN 4 J	SIGN 5 K	SIGN 6 L
				B	C	XL 3	P	B	C	B	C											
E21&23	116 0 0	T	10" SCH 20	20 3 4	27 6 4	0 6 0	7 2	T	10" SCH 20	19 10 5	27 1 5	0 1 2	17 0 0	6 0 0	5" X 3/8"	3" X 3/16"	14 9 0	13 3 0	15 6 0	20 6 0	18 0 0	22 3 0

DATE: 1/22/70
 SURVEY PLOTTED BY: [Signature]
 DRAWN BY: [Signature]
 DESIGNED BY: [Signature]
 QUANTITIES BY: [Signature]
 CHECKED BY: [Signature]

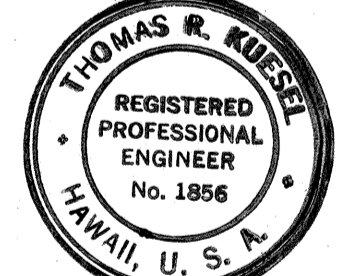
- ① T = Trussed Post.
- ② The pipe sizes listed in this column are for ASTM A53 steel. See the table "Equivalent Post Sizes" on this sheet when using another Type of Steel. Tapered poles may be used for the structures shown on this sheet. Modify connections to fit taper. Large end of tapered sections must

- ③ XL refers to X dimension in "Typical Elev." for Left Post. XR refers to X dimension in "Typical Elev." for Right Post. This dimension to verified by contractor in field.
- ④ The number and arrangement of panels in each section must be such that the web members in

- ⑤ each face of the truss form a continuous trussing in the structure from post to post.
- ⑥ For details of footings see Sh. No. 11T
- ⑦ For Sign Panel and Bracket details see Sh. No. 12T
- ⑧ For Luminaire Mounting details see Sh. No. 14E.

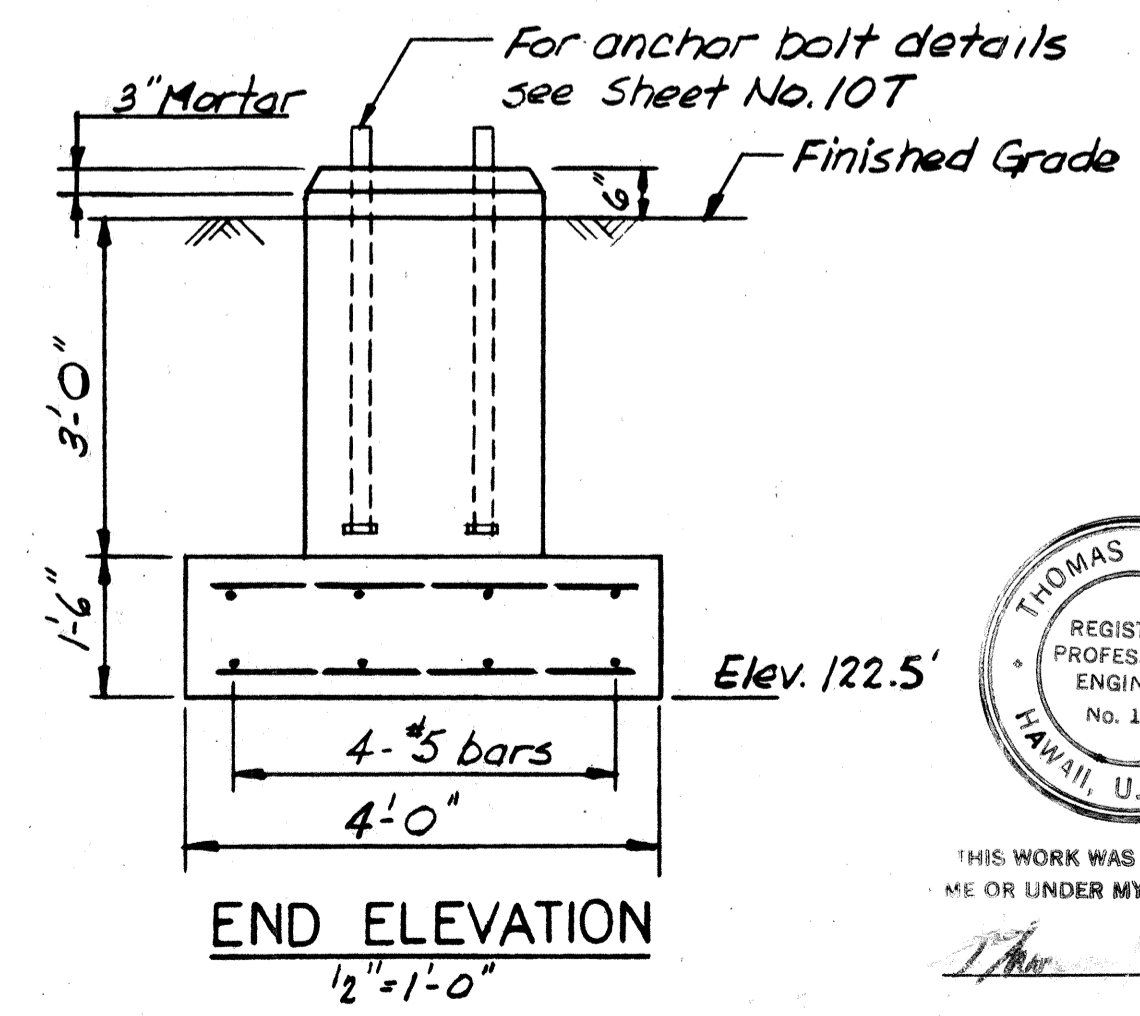
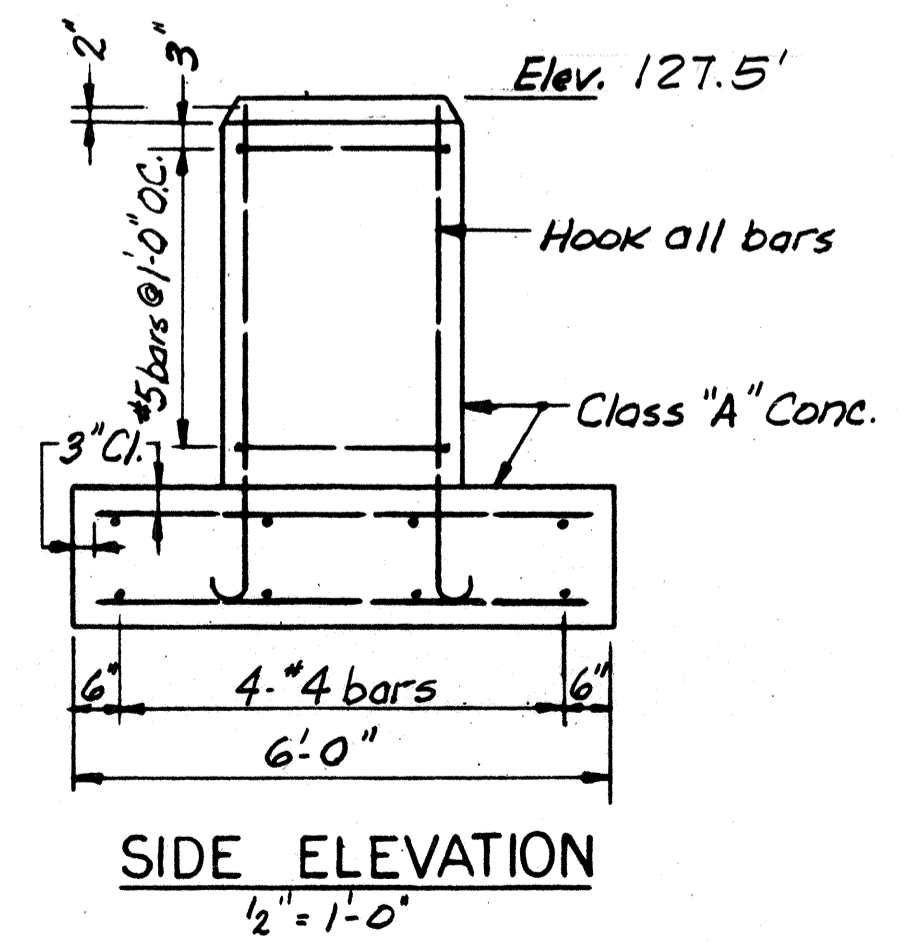
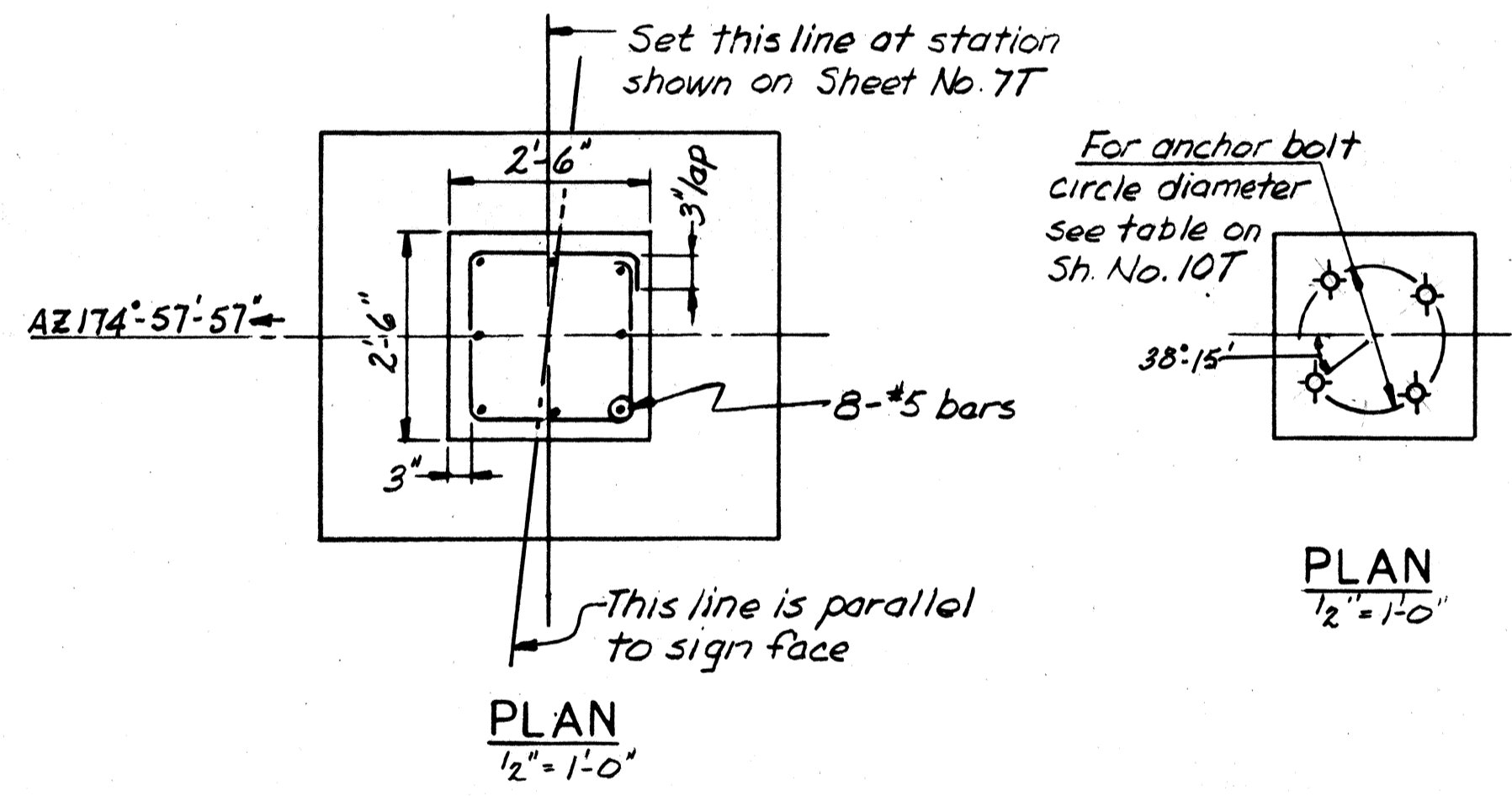
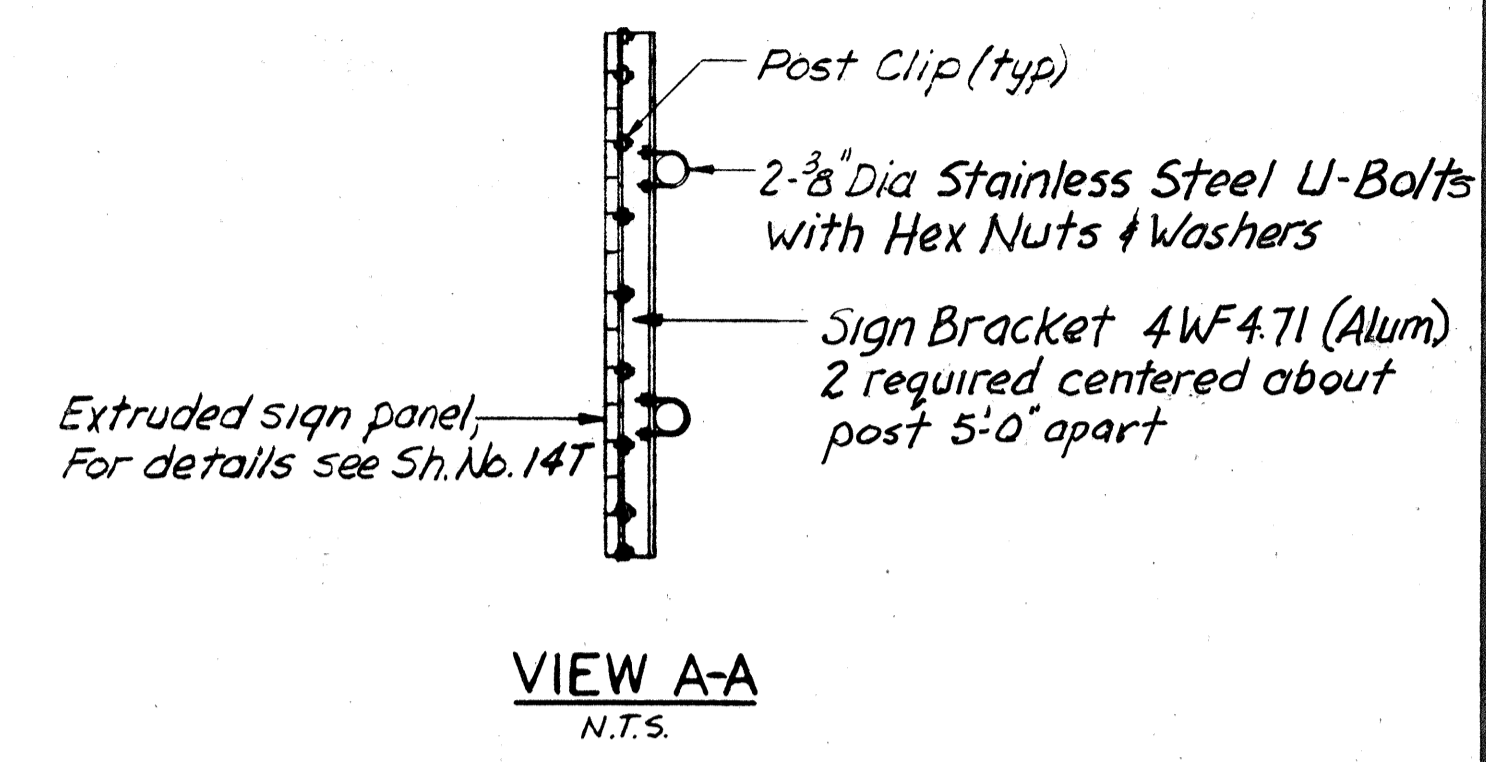
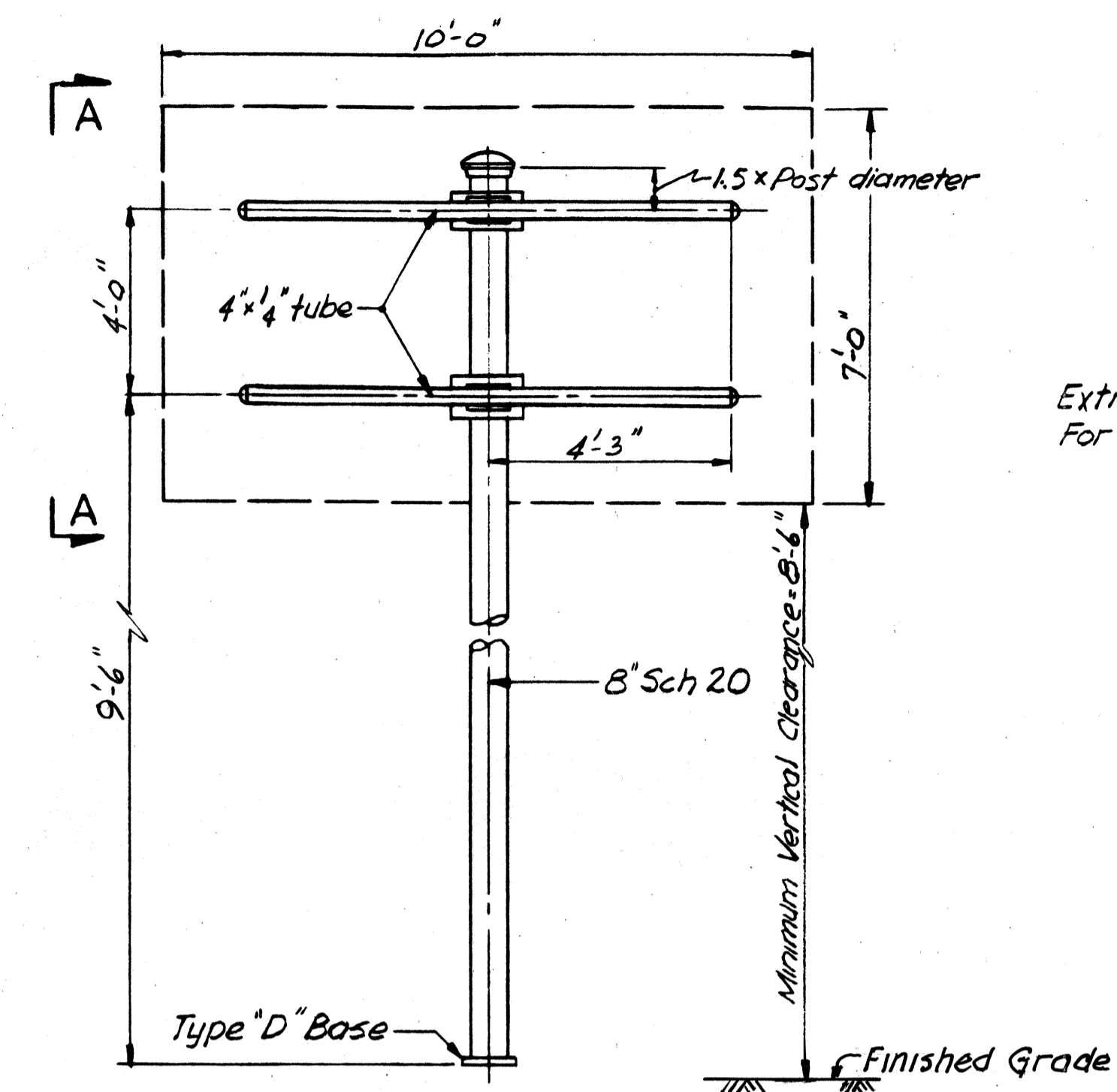
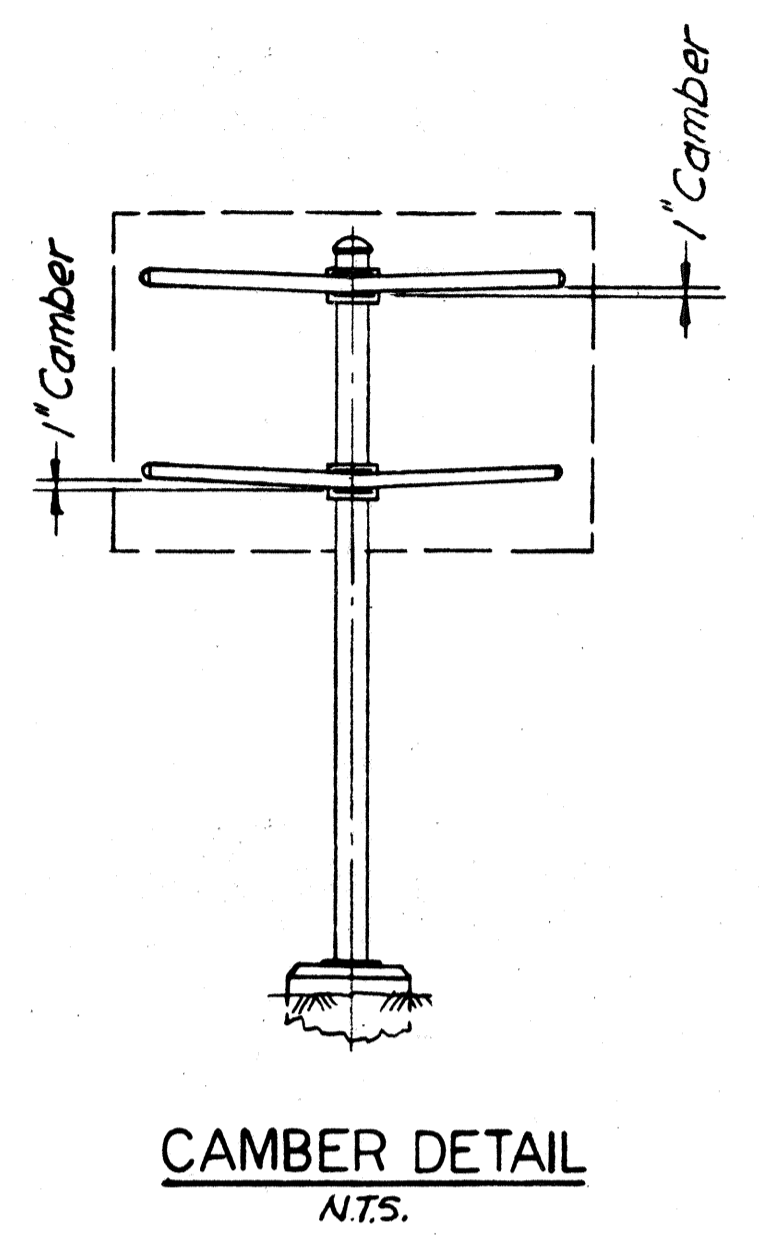
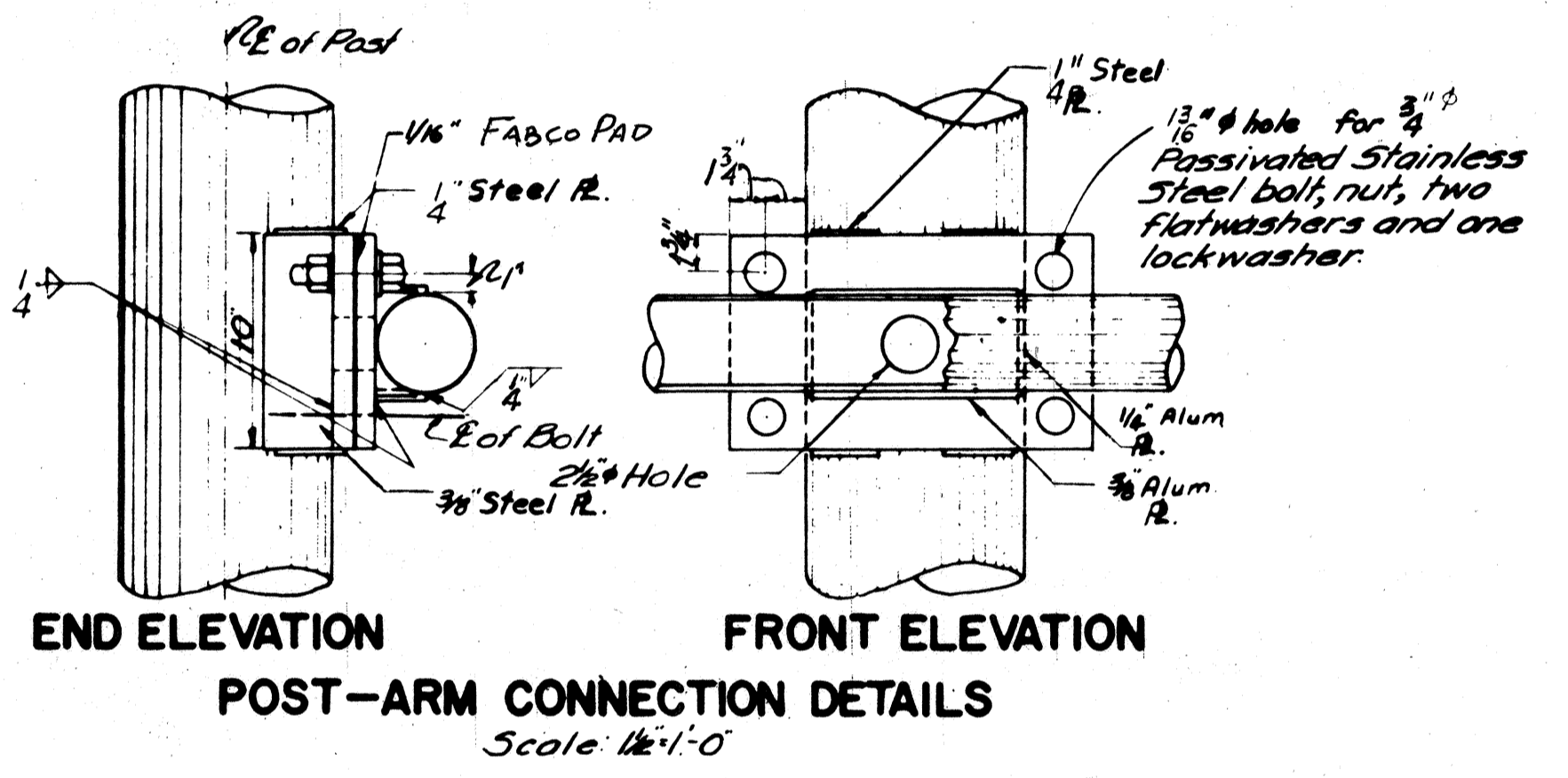
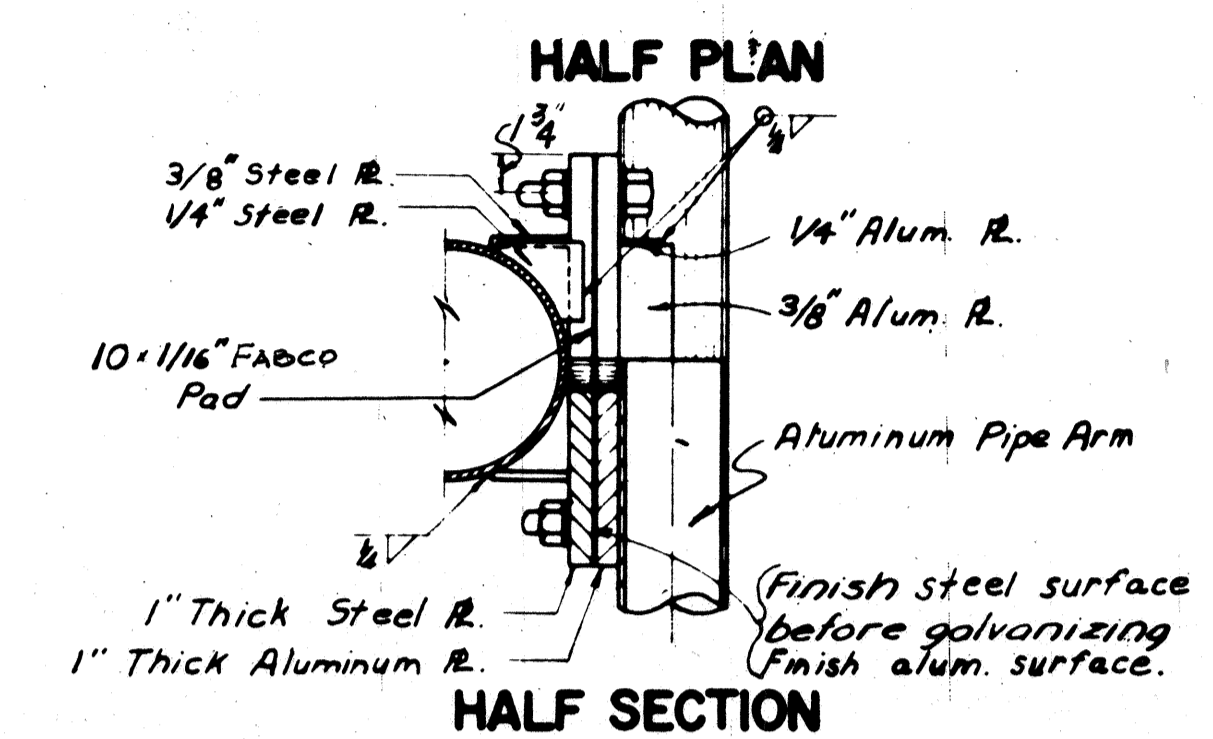
TABLE "D"		
D'	Panel Lengths	
	Min.	Max.
4'-0"	3'-6"	4'-4"
6'-0"	5'-3"	6'-9"
8'-0"	7'-2"	8'-10"

TABLE "E"		
P	"W" Min.	"W" Max.
5'-2"	4'-8"	5'-8"
7'-2"	6'-8"	7'-8"
9'-2 3/4"	8'-8"	9'-8"



STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
OVERHEAD SIGN SUPPORT
 3 CHORD TRUSS
 HALAWA INTERCHANGE
 PROJECT NO. I-HI-1(87)13
 Scale: As Shown Date: 6/2/70
SHEET No. 8T OF 22T SHEETS

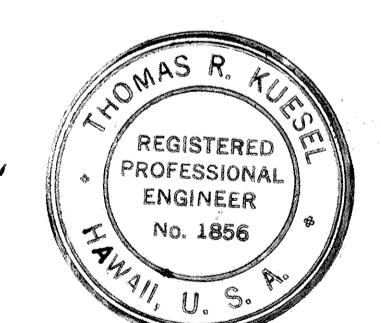
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(87)13	1970	93	244



- NOTES**
1. Posts to be galvanized after welding.
 2. The post size shown is for ASTM A53 steel. See the table "Equivalent Post Sizes" when using another type of steel. Tapered posts may be used. Modify connections to fit taper. Large end of taper sections must have the same O.D. as the pipe specified in the table.
 3. For details of bases, see Sh. No. 10T
 4. For details of cap, see Sh. No. 11T
 5. For Excavation Pay Limits, see Sh. No. 11T
 6. Footing for Double Cantilever Sign Support to be paid for under the Item "Type VII Footing For Destination And Ground Mounted Expressway Signs".
 7. Double Cantilever Sign Support, including post-arms and post-arm connections to be paid for under the Item "Galvanized Steel Post For Expressway Signs".

EQUIVALENT POST SIZES			
ASTM A53 TYPE B	ASTM A595	ASTM A252 GRADE 3	API 5Lx52
8" Schedule 20	3 Gauge 8"	8" Schedule 20	8" Schedule 20
8" Schedule 30			
8" Schedule 40s			

DATE: _____
 SURVEY PLOTTED BY: _____
 DRAWN BY: _____
 CHECKED BY: _____
 ORIGINAL PLAN: _____
 NOTE BOOK: _____
 QUANTITIES BY: _____
 No. _____



STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

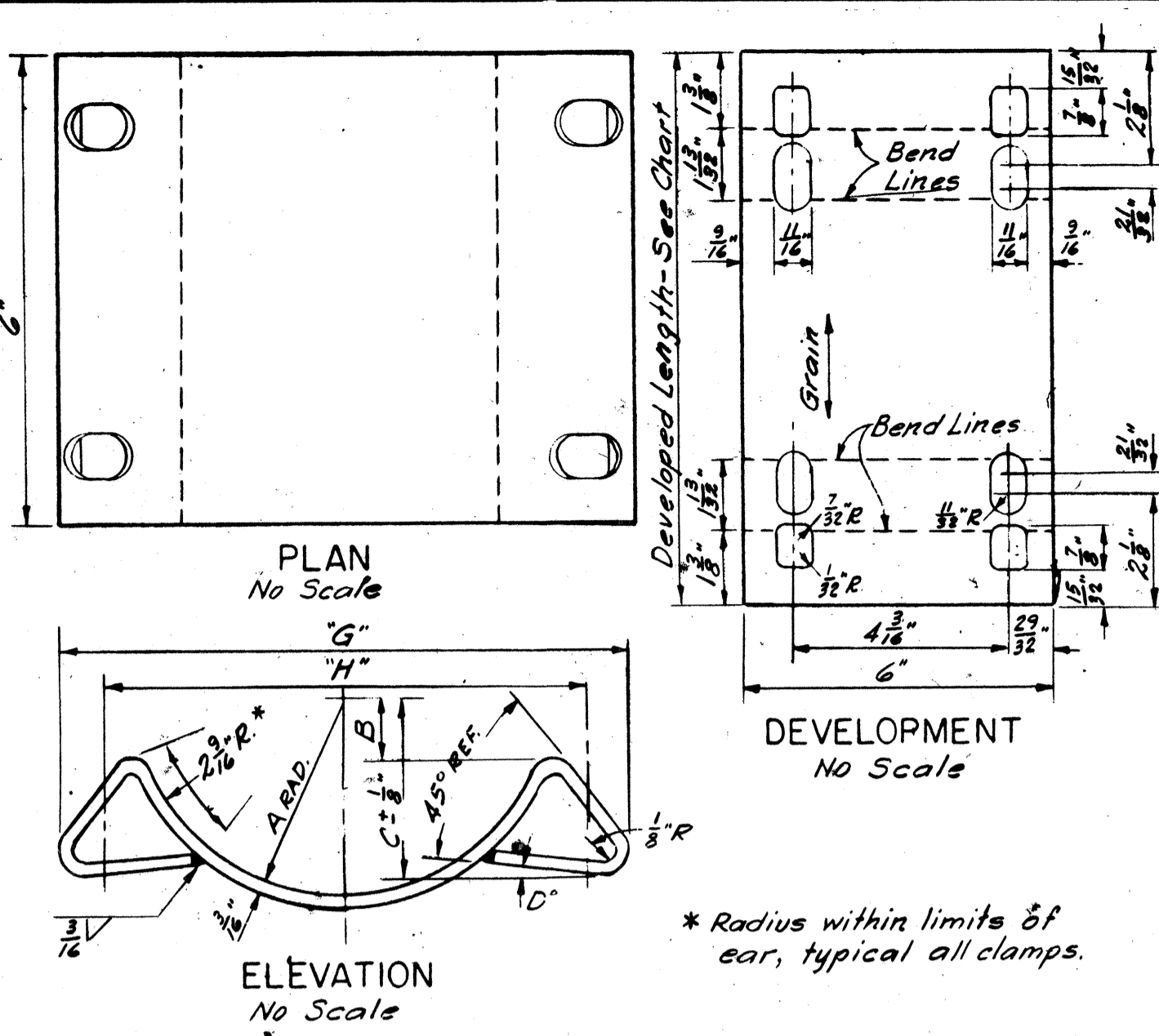
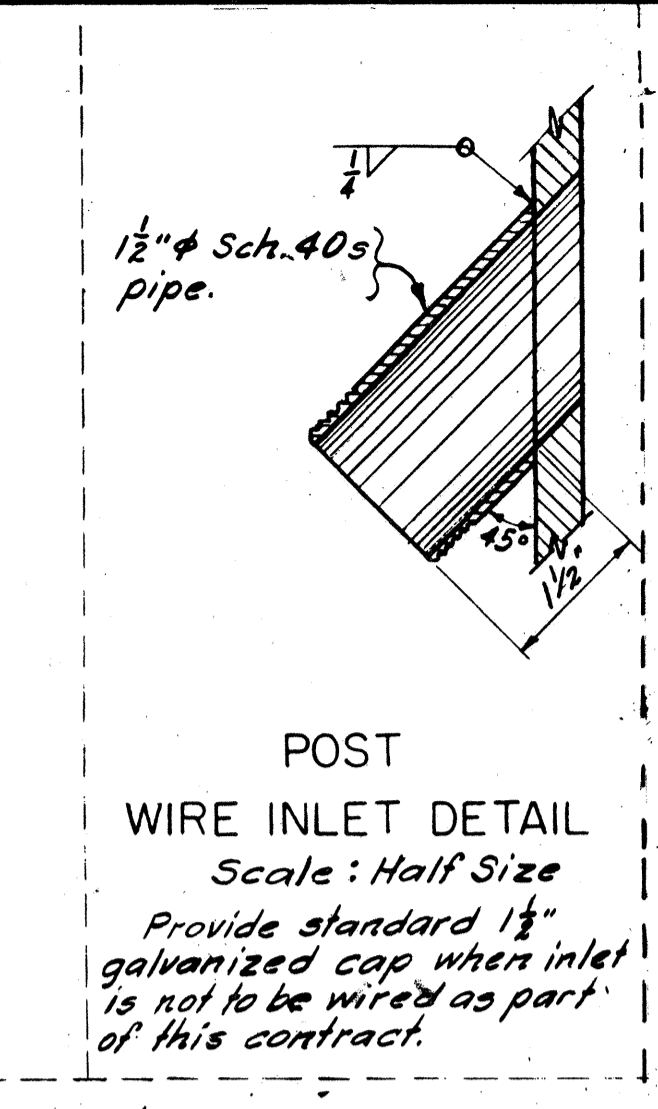
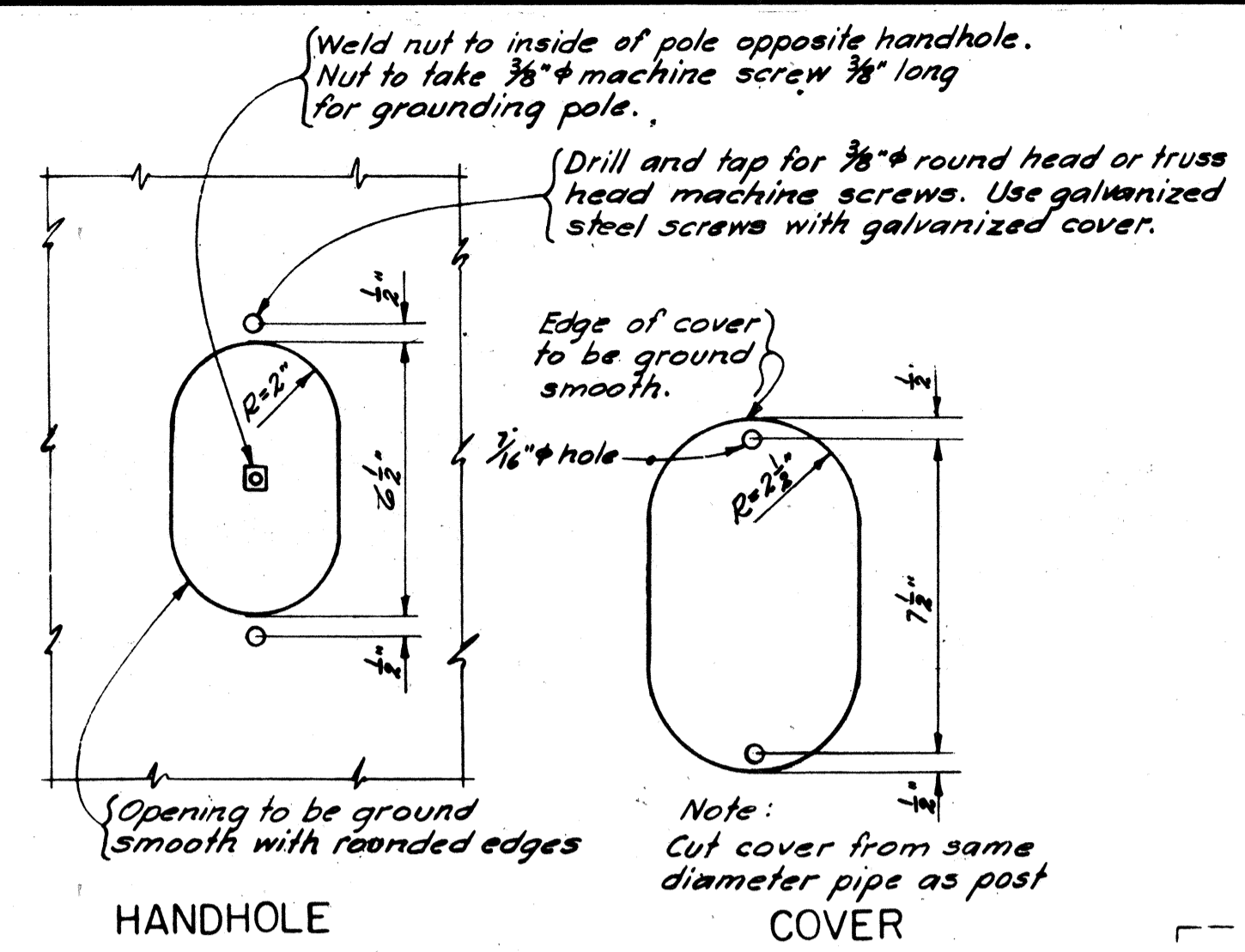
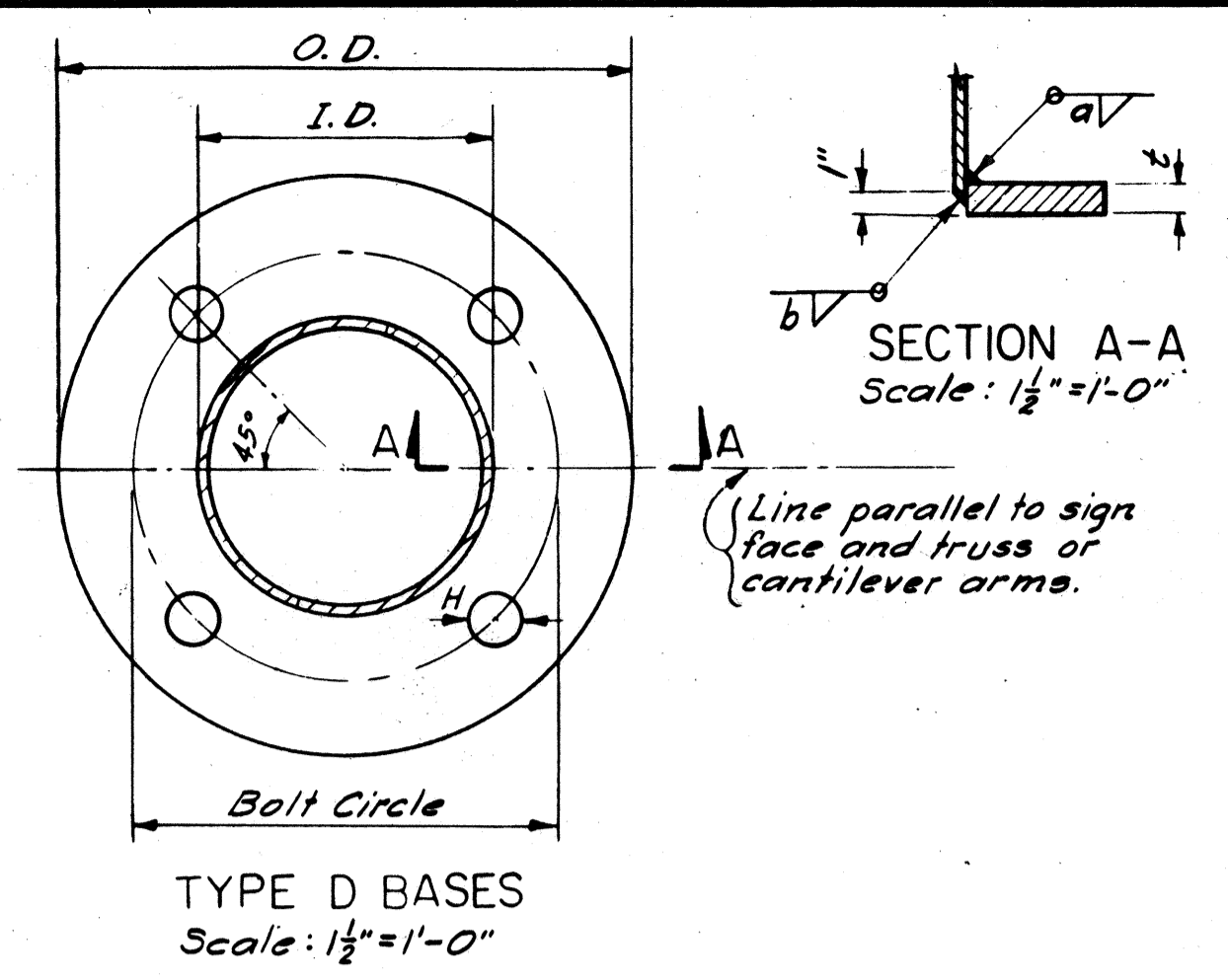
DOUBLE CANTILEVER
 SIGN SUPPORT

HALAWA INTERCHANGE
 PROJECT NO. I-H-1(87)13

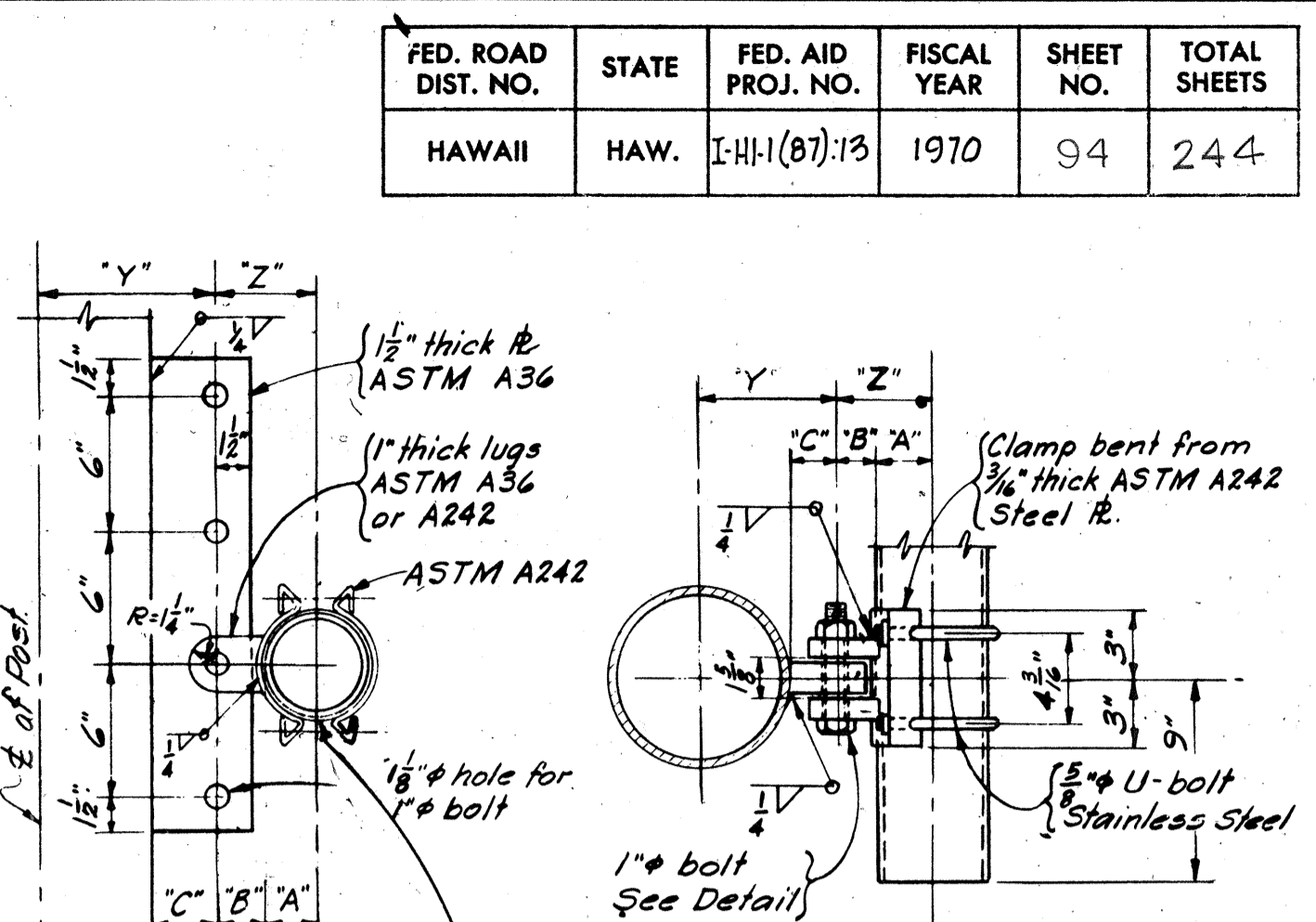
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SHEET No. 93 OF 222 SHEETS

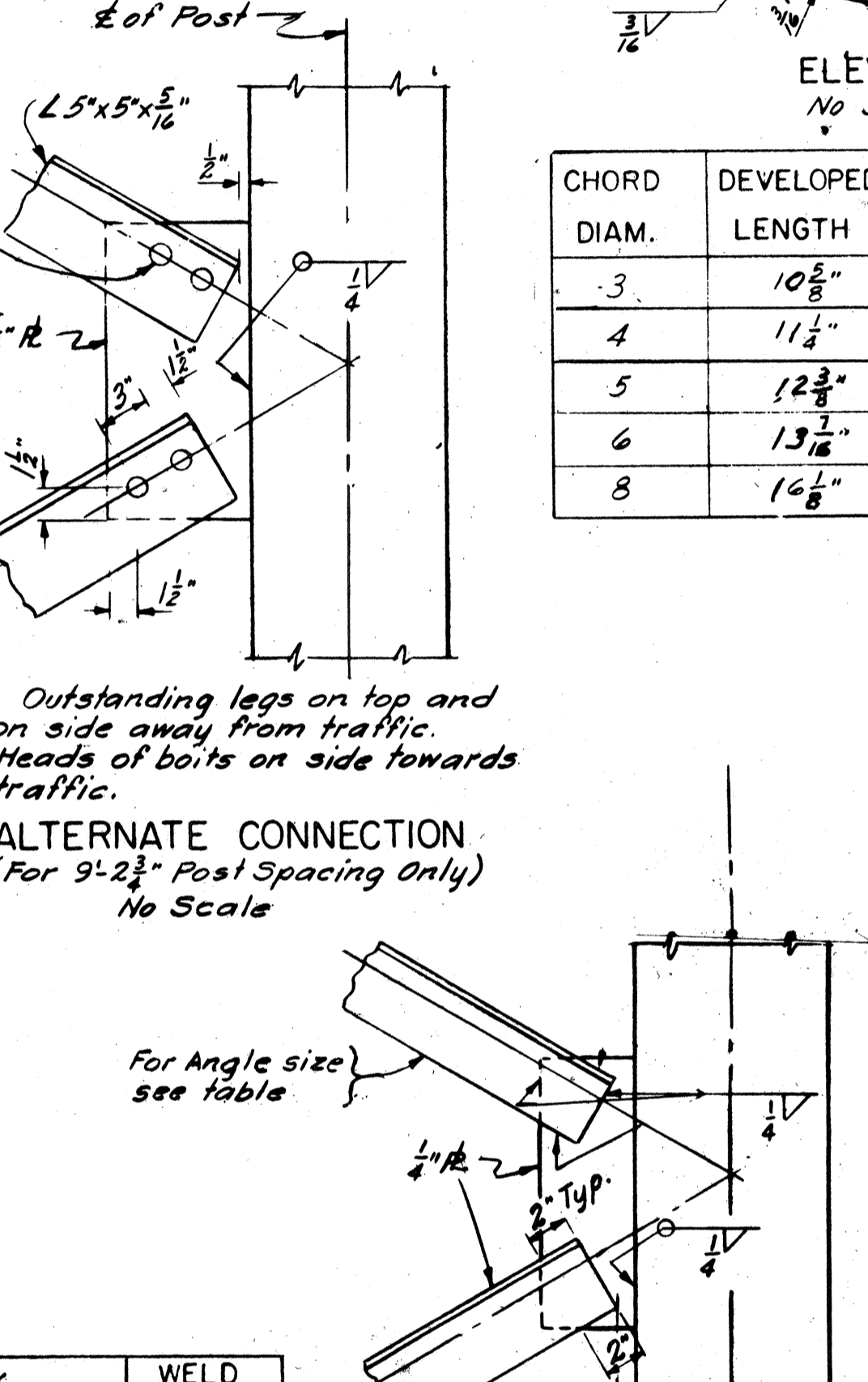
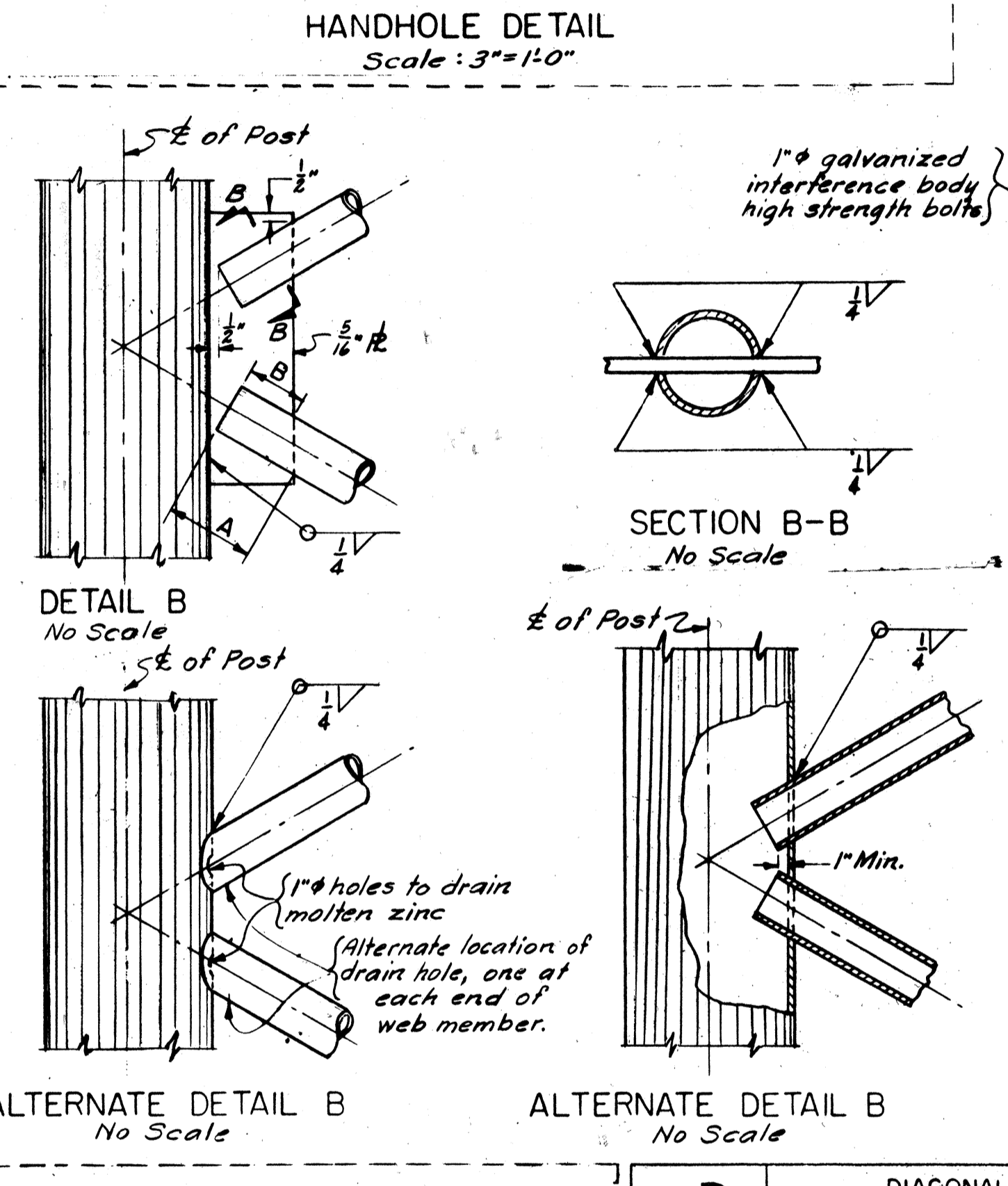
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(87)-13	1970	94	244



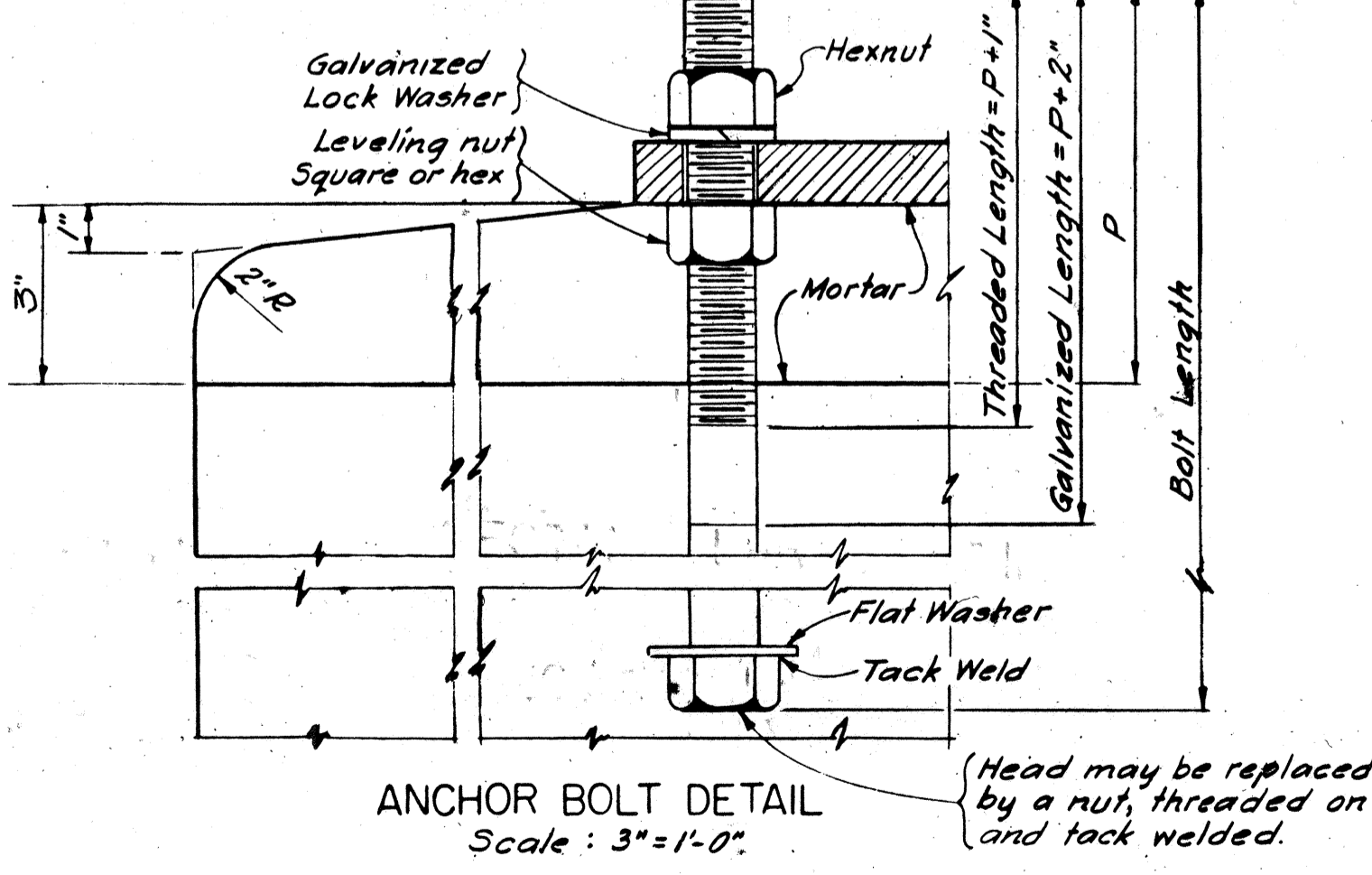
CHORD DIAM.	DEVELOPED LENGTH	DIMENSIONS						BOLT LENGTH
		A	B	C	D	G	H	
3	10 5/8"	1 1/2"	1"	1 1/2"	7"	5 1/2"	4 3/8"	4"
4	11 1/2"	2 1/4"	2 3/4"	2 1/2"	1 1/2"	6 3/4"	5 3/8"	5"
5	12 3/4"	2 3/4"	3 1/4"	2 3/4"	7"	7 1/2"	5 3/4"	5"
6	13 7/8"	3"	3 1/2"	2 1/2"	5"	8 1/2"	6 3/8"	6"
8	16 1/8"	4 1/2"	4 3/4"	2 3/4"	3 1/2"	10 3/8"	8 1/2"	7"



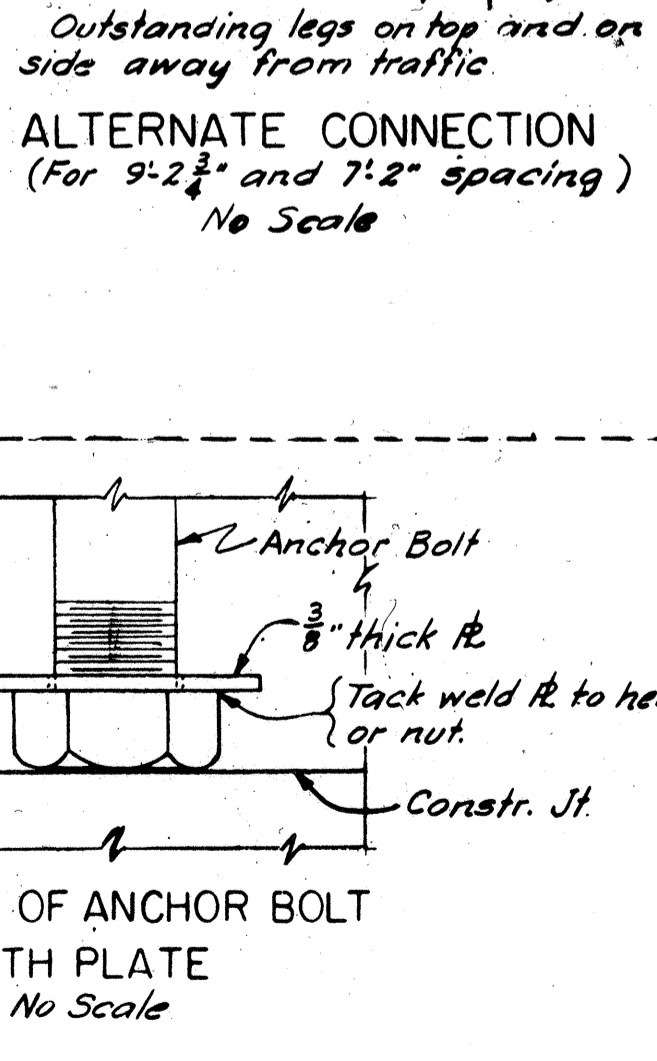
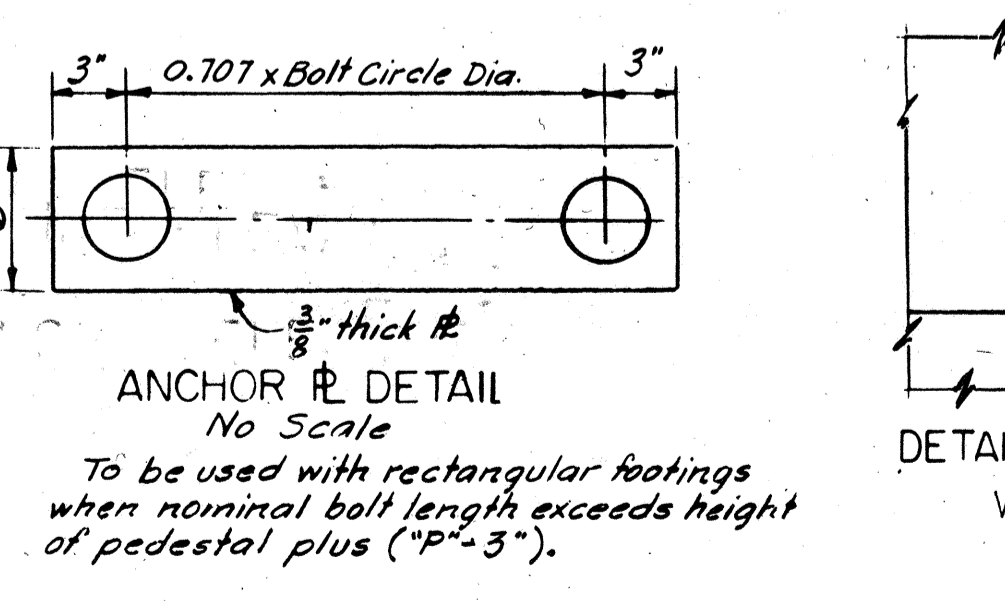
TYPE D BASES									
POST	BASE R. O. D.	BASE I. D.	MIN. t	BOLT CIRCLE	BOLT DIA.	HOLE DIA.	WELD a	b	
6 Sch. 40s	14.0"	6 3/8"	1 1/8"	11 1/2"	1 3/8"	1 3/8"	1/2"	1/4"	
6 Sch 80x	14.0"	6 3/8"	1 3/8"	11 1/2"	1 1/2"	1 1/2"	3/8"	3/8"	
8 Sch 20	17.0"	8 3/8"	1 1/4"	13"	1 3/4"	2"	3/8"	1/4"	
8 Sch 30	17.0"	8 3/8"	1 1/4"	13"	1 3/4"	2"	1/2"	1/4"	
8 Sch 40s	17.0"	8 3/8"	1 3/8"	13"	1 3/4"	2"	1/2"	3/8"	
8 Sch 60	18.0"	8 3/8"	1 1/2"	14"	2"	2 1/4"	3/8"	3/8"	
8 Sch 80x	18.0"	8 3/8"	1 1/2"	14"	2"	2 1/4"	3/4"	1/4"	
10 Sch 20	20.0"	10 3/4"	1 3/8"	16"	1 3/4"	2"	1/2"	1/4"	
10 Sch 30	20.0"	10 3/4"	1 3/8"	16"	2"	2 1/4"	1/2"	1/4"	
10 Sch 40s	20.0"	10 3/4"	1 1/2"	16"	2"	2 1/4"	5/8"	5/16"	
10 Sch 60x	21.0"	10 3/4"	1 3/4"	17"	2 1/4"	2 1/4"	3/4"	1/2"	
10 Sch 80	21.0"	10 3/4"	1 3/4"	17"	2 1/4"	2 3/4"	3/8"	3/8"	
12 Sch 20	24.0"	12 3/4"	1 1/2"	19"	2"	2 1/4"	3/8"	1/4"	
12 Sch 30	24.0"	12 3/4"	1 1/4"	19"	2 1/4"	2 1/2"	1/2"	3/16"	
12 Sch s	24.0"	12 3/4"	1 3/8"	19"	2 1/4"	2 1/2"	3/8"	3/8"	
12 Sch 40	25.0"	12 3/4"	1 1/2"	20"	2 1/4"	2 1/2"	5/8"	3/8"	
12 Sch x	25.0"	12 3/4"	2 1/8"	20"	2 1/2"	2 3/4"	3/4"	1/8"	
12 Sch 60	25.0"	12 3/4"	2 1/4"	20"	2 3/4"	3"	1/2"	1/4"	
12 Sch 80	25.0"	12 3/4"	2 1/2"	20"	2 3/4"	3"	1"	3/8"	
14 Sch 10	25.0"	14"	1 3/4"	20"	2"	2 1/4"	3/8"	1/4"	
14 Sch 20	25.0"	14"	1 3/4"	20"	2 1/4"	2 1/2"	1/2"	3/16"	
14 Sch 30s	27.0"	14"	1 3/8"	22"	2 1/4"	2 1/2"	3/8"	3/8"	
14 Sch 40	27.0"	14"	2 1/4"	22"	2 1/2"	2 3/4"	3/4"	3/8"	
16 Sch 10	27.0"	16"	1 3/4"	22"	2 1/4"	2 1/2"	3/8"	1/4"	
16 Sch 30s	29.0"	16"	2 1/8"	23 1/2"	2 1/2"	2 3/4"	3/8"	3/8"	
16 Sch 40x	29.0"	16"	2 3/8"	23 1/2"	3"	3 1/4"	1/2"	3/8"	
18 Sch 10	30.0"	18"	1 3/4"	24 1/2"	2 1/4"	2 1/2"	1/2"	1/4"	
18 Sch 20	30.0"	18"	2 1/8"	24 1/2"	2 3/4"	3"	1/2"	3/8"	
18 Sch x	32.0"	18"	2 3/8"	24"	3"	3 1/4"	3/4"	1/4"	
20 Sch 30x	33.0"	20"	2 1/8"	28"	3 1/4"	3 1/4"	3/4"	1/2"	



ANCHOR BOLTS		
BOLT DIA.	BOLT LENGTH	P
1 3/8"	4'-1"	7"
1 1/2"	4'-5"	8"
1 3/4"	5'-0"	8"
2"	5'-9"	9"
2 1/4"	6'-5"	9"
2 1/2"	7'-1"	9"
2 3/4"	7'-9"	10"
3"	8'-5"	10"
3 1/4"	9'-1"	11"



P	DIAGONALS *		WELD LENGTH A+B
	PIPE SIZE	ANGLE SIZE (Do not use)	
5'-2"	2 1/2" Sch. 40s	(Do not use)	6"
7'-2"	2 1/2" Sch. 40x	4" x 4" x 1/4"	6"
9'-2 1/2"	3" Sch. 40s	5" x 5" x 1/2"	7"



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BASES & CONNECTION DETAILS

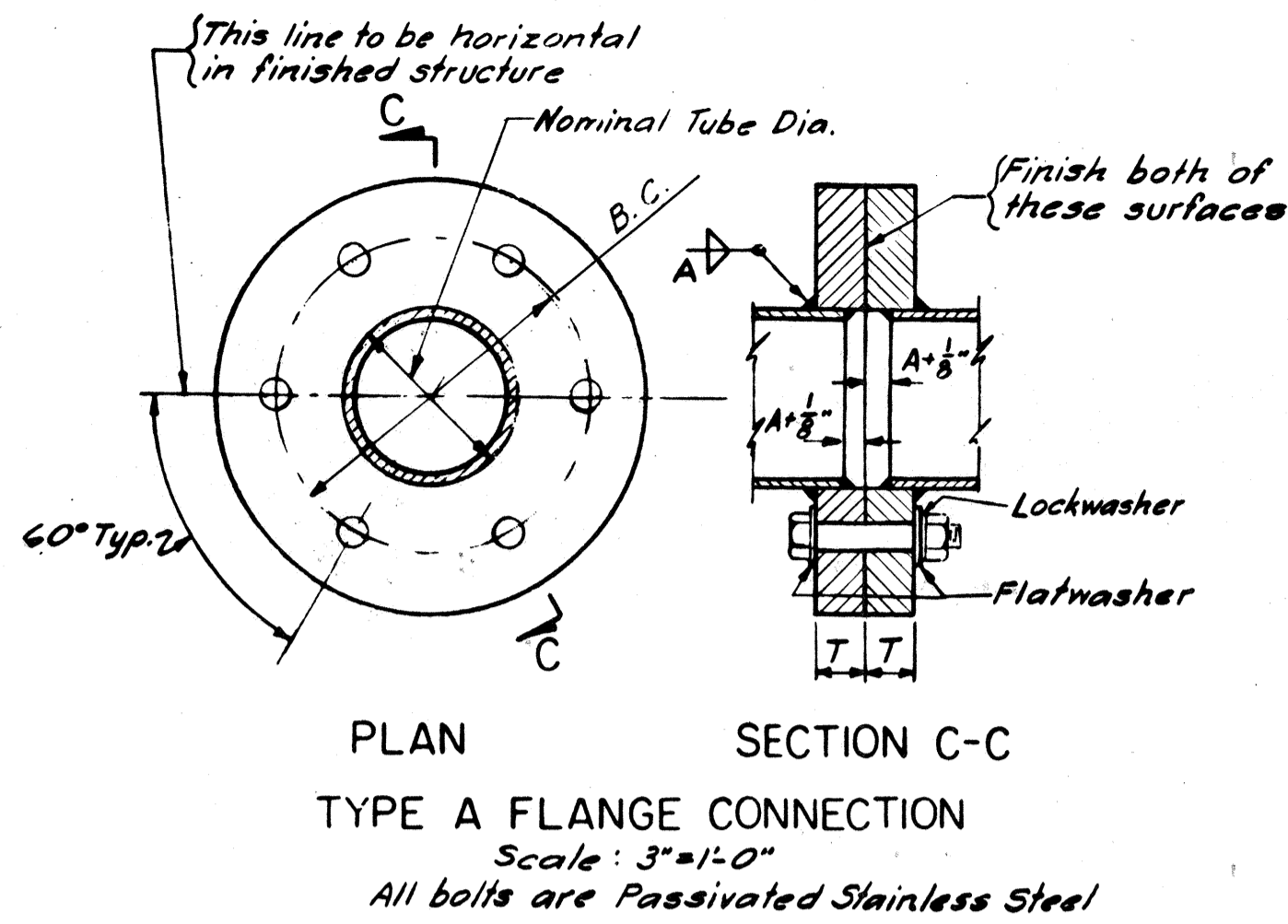
HALAWA INTERCHANGE
PROJECT NO. I-H-1(87)-13

Scale: As Shown Date: 6/2/70

SHEET No. 107 OF 221 SHEETS

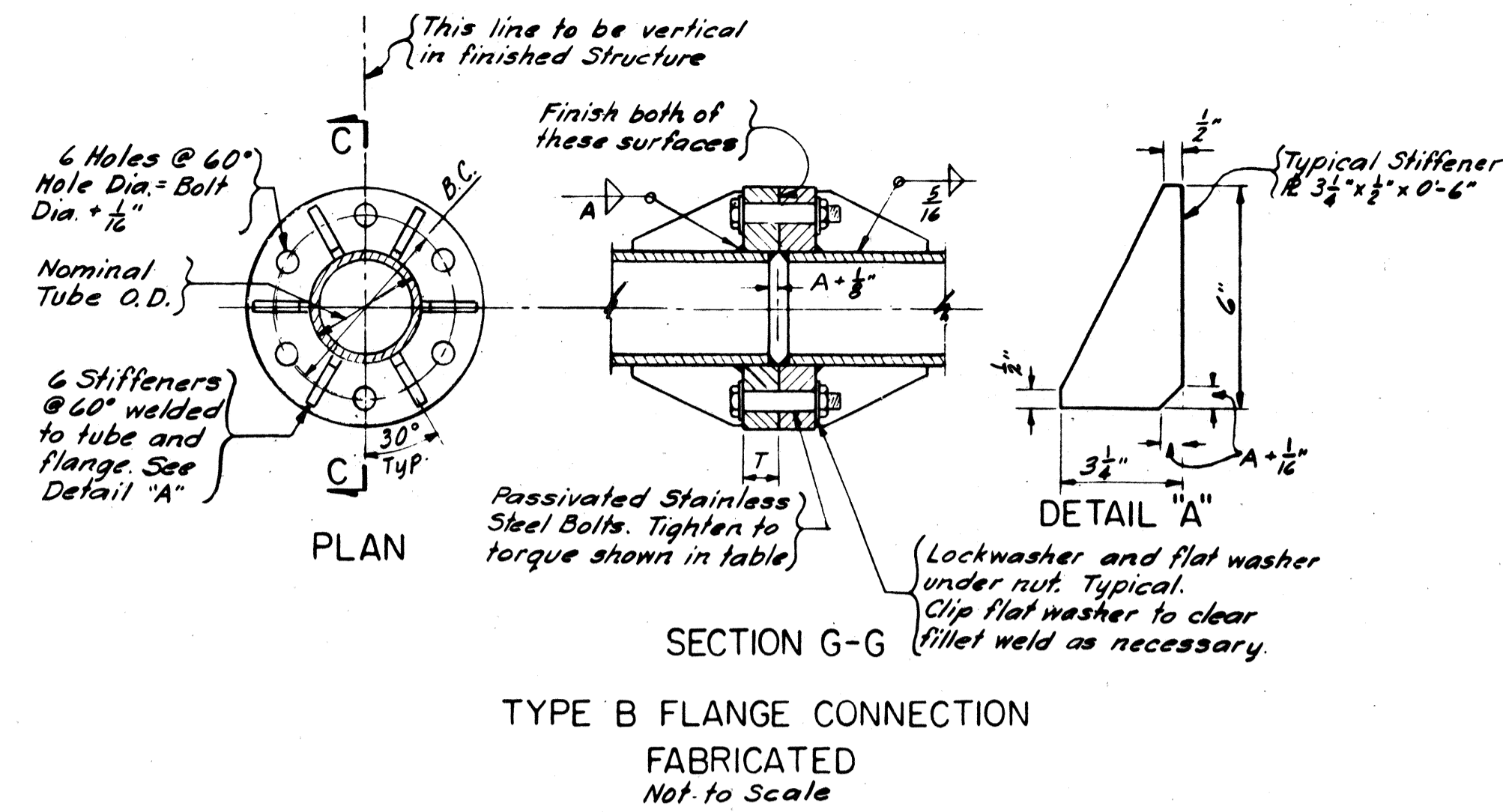
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 TRACKED BY: _____
 DESIGNED BY: _____
 QUANTITIES BY: _____
 CHECKED BY: _____
 ORIGINAL PLAN NOTE BOOK _____

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1(87)-13	1970	95	244

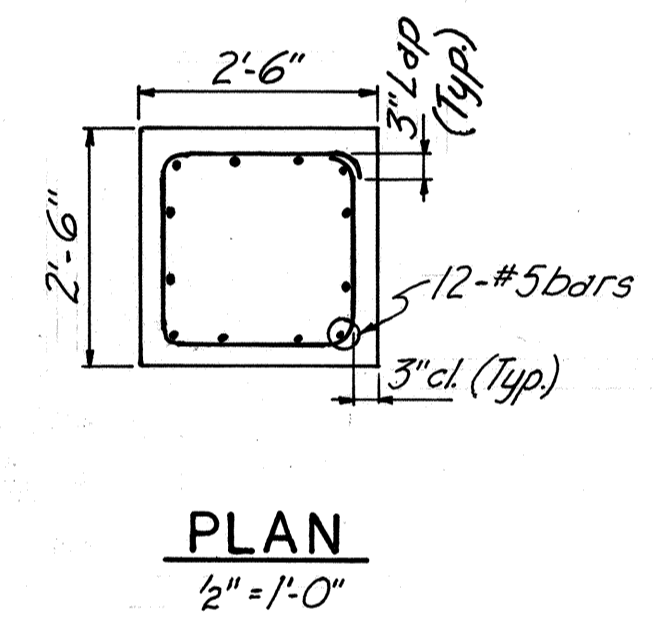


TYPE A FLANGE CONNECTION *						
CHORD SIZE	FLANGE			BOLT DIA.	BOLT CIRCLE	BOLT TORQUE FT. LBS.
	"A"	O.D.	"T"*			
3" x 3/16"	3/16"	7"	7/8"	1/2"	5"	100
3" x 1/4"	1/4"	7"	7/8"	1/2"	5"	100
3" x 5/16"	5/16"	7"	7/8"	1/2"	5"	100
4" x 1/4"	1/4"	8 1/2"	7/8"	5/8"	6 1/2"	150
4" x 5/16"	5/16"	8 1/2"	7/8"	5/8"	6 1/2"	150
4" x 3/8"	3/8"	8 1/2"	7/8"	5/8"	6 1/2"	150
5" x 5/16"	5/16"	9 1/2"	1"	5/8"	7 1/2"	150
5" x 3/8"	3/8"	9 1/2"	1"	5/8"	7 1/2"	150
6" x 1/4"	1/4"	11 1/2"	1 1/4"	3/4"	9"	200
6" x 5/16"	5/16"	11 1/2"	1 1/4"	3/4"	9"	200
6" x 3/8"	3/8"	11 1/2"	1 1/4"	3/4"	9"	200
8" x 1/4"	1/4"	13 1/2"	1 1/4"	3/4"	11"	200
8" x 5/16"	5/16"	13 1/2"	1 1/4"	3/4"	11"	200
8" x 3/8"	3/8"	13 1/2"	1 1/4"	3/4"	11"	200

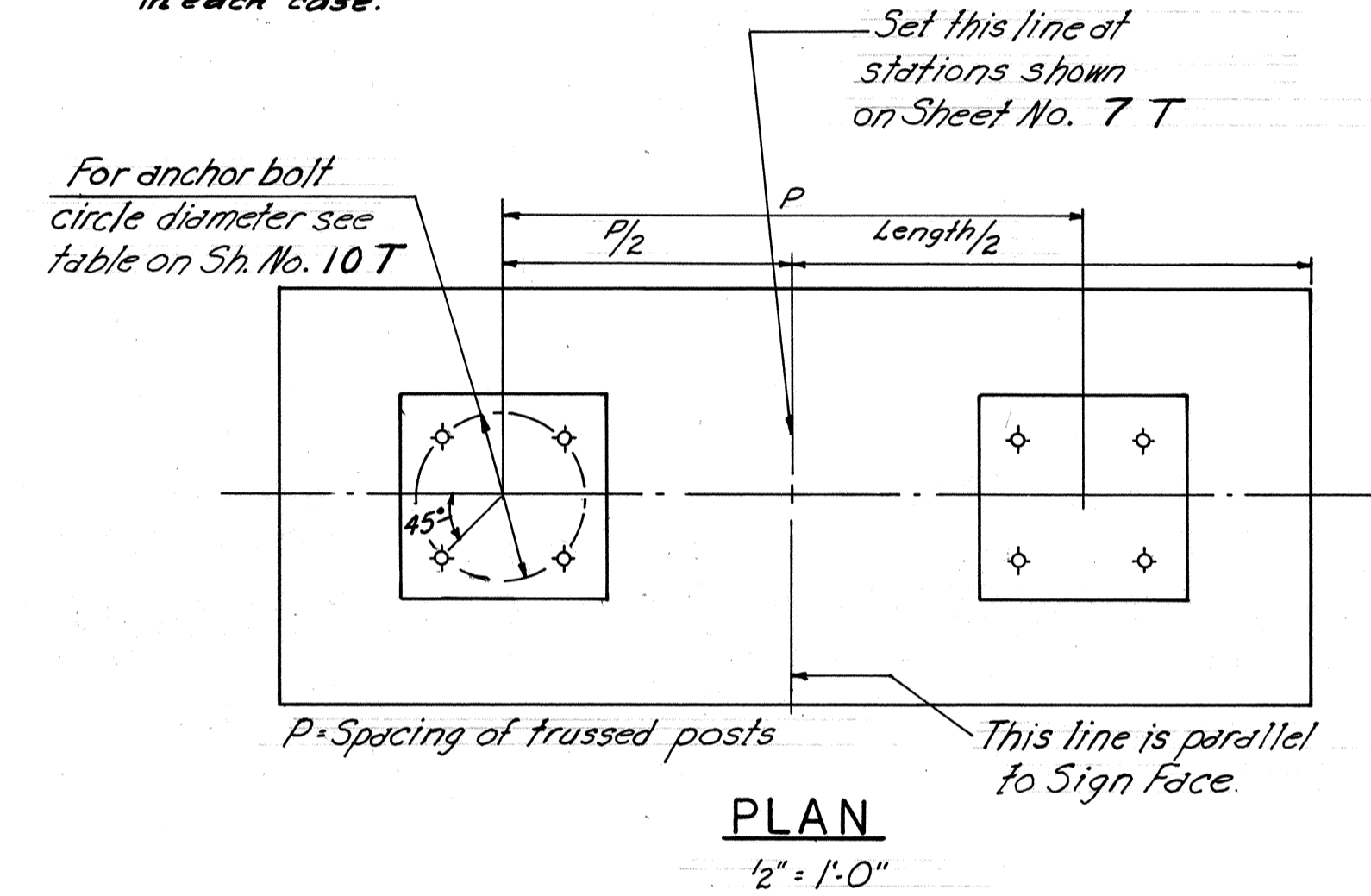
* Cast flanges may be used. All dimensions will be the same except that the thickness "T" shall be 1/4" greater in each case.



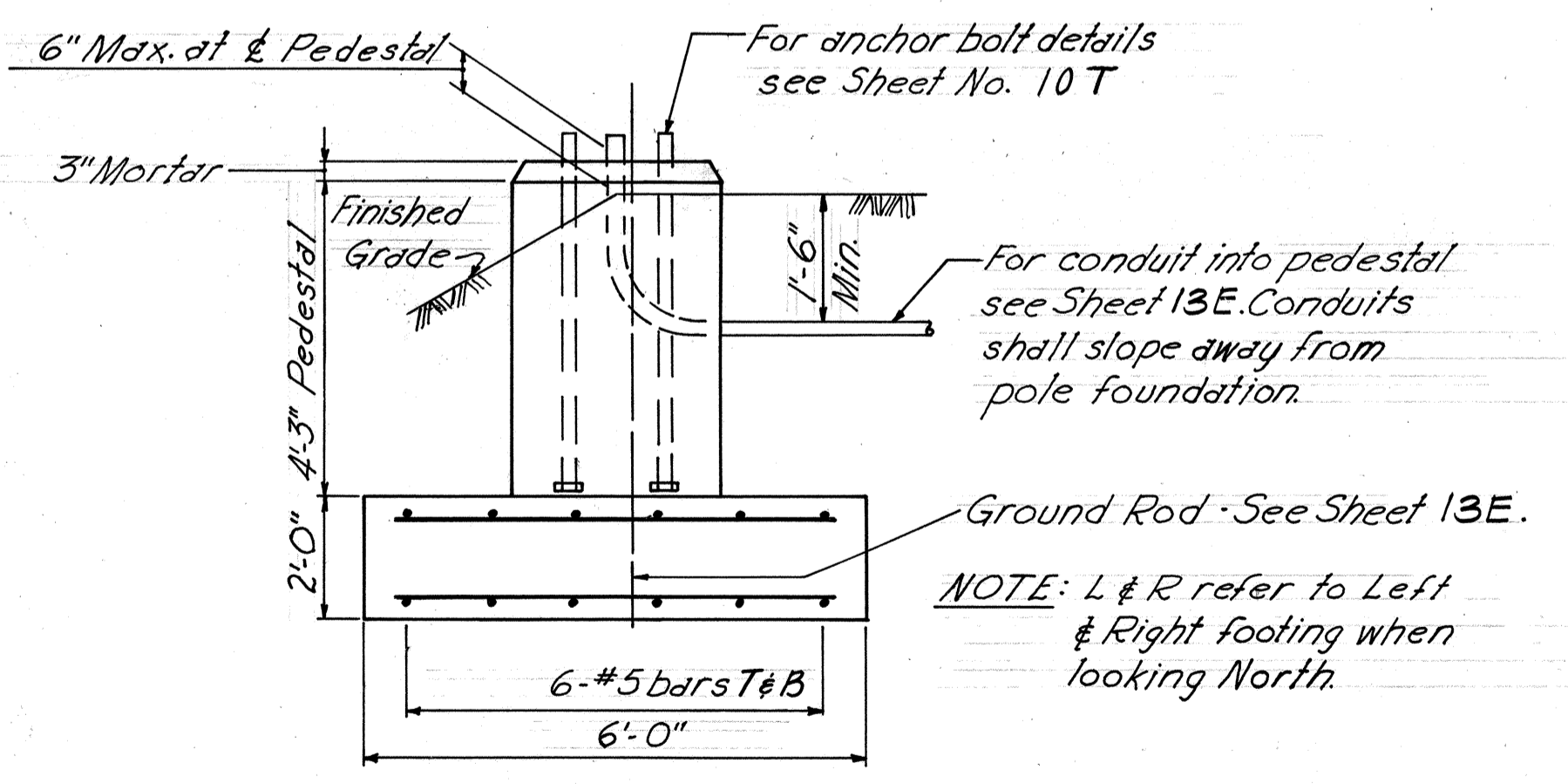
TYPE B FLANGE CONNECTION							
FABRICATED FLANGE	CHORD SIZE	FLANGE			BOLT DIA.	BOLT CIRCLE	BOLT TORQUE FT. LBS.
		A	O.D.	T			
	5" x 1/2"	3/8"	10 1/2"	1"	3/4"	8"	75
	6" x 1/2"	3/8"	11 1/2"	1 1/4"	3/4"	9"	75
	8" x 1/2"	3/8"	13 1/2"	1 1/4"	7/8"	11"	75
	8" x 3/8"	1/2"	13 1/2"	1 1/4"	1"	11"	100
	8" x 3/4"	5/8"	13 1/2"	1 1/4"	1"	11"	150
CAST FLANGE	5" x 1/2"	1/2"	13"	1 1/2"	3/4"	10"	100
	6" x 1/2"	1/2"	14"	1 1/2"	3/4"	11"	100
	8" x 1/2"	1/2"	16"	1 1/2"	7/8"	13"	100
	8" x 3/8"	5/8"	16"	1 1/2"	1"	13"	150
	8" x 3/4"	3/4"	16"	1 1/2"	1"	13"	200



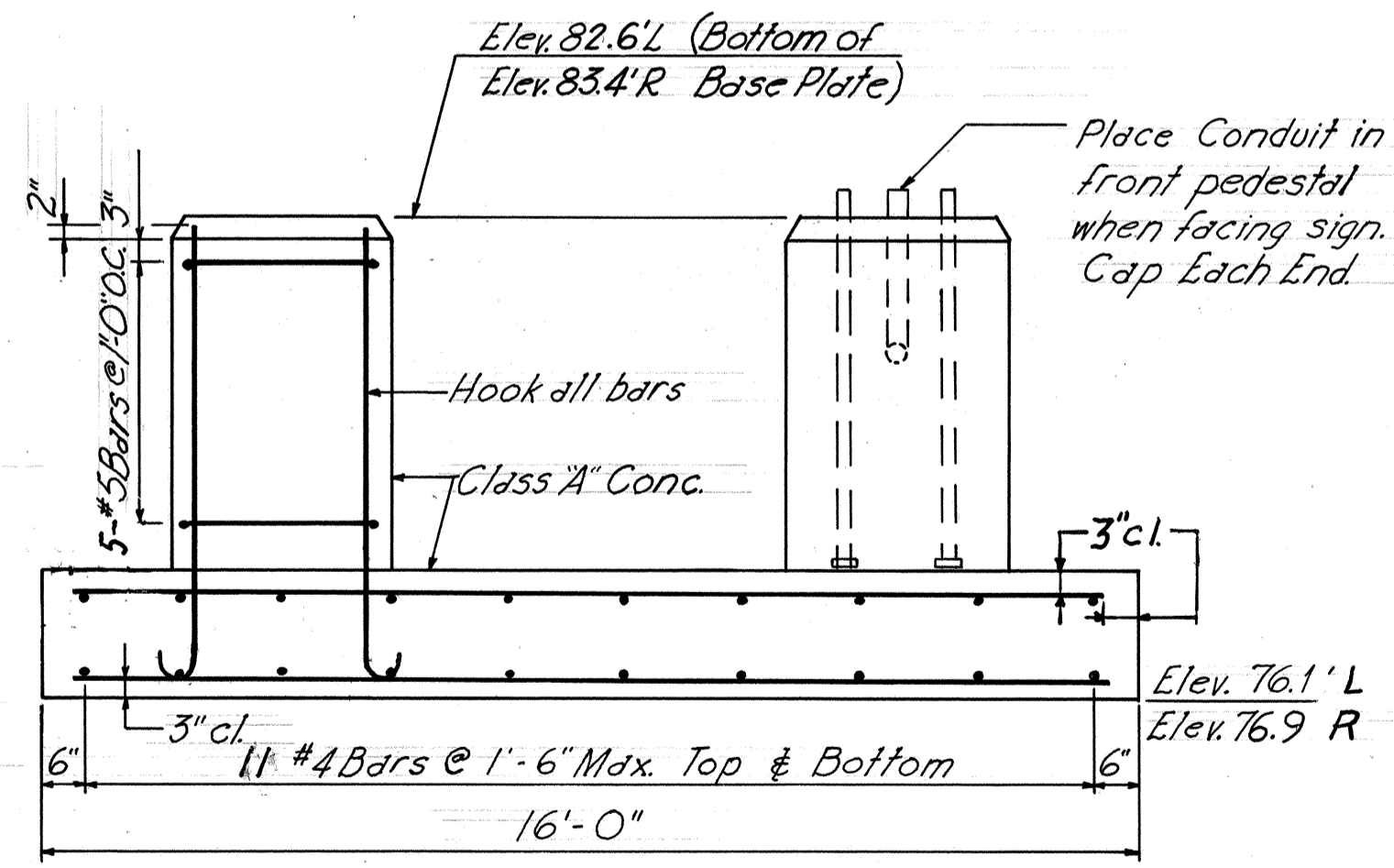
PLAN
1/2" = 1'-0"



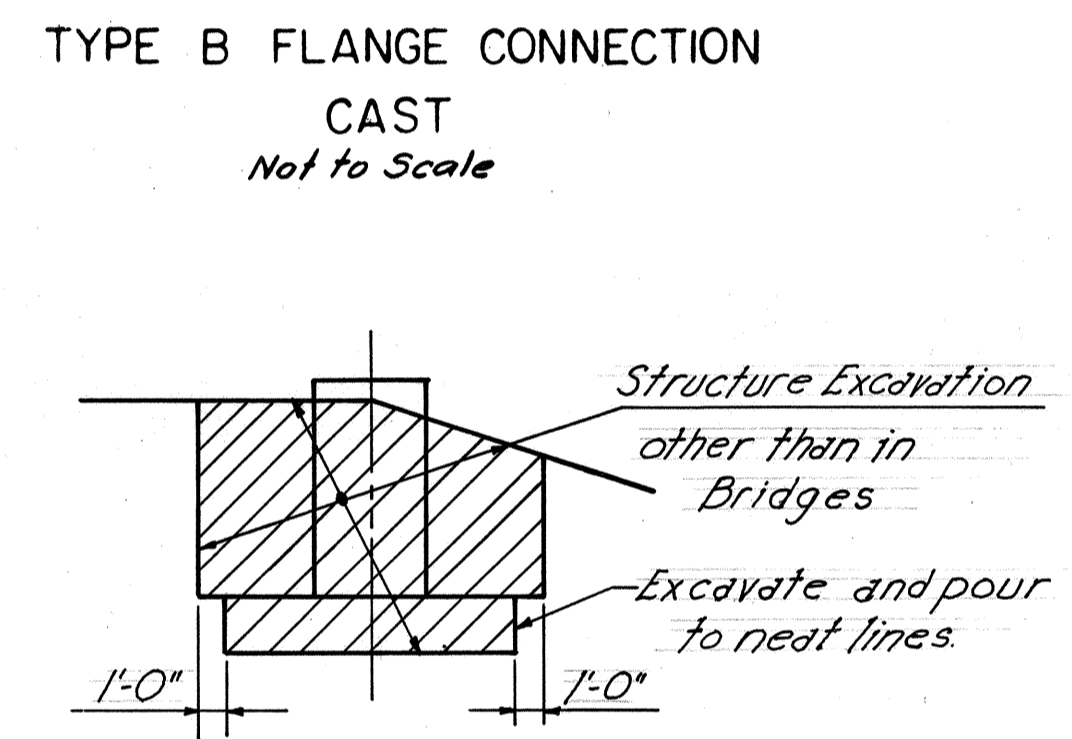
PLAN
1/2" = 1'-0"



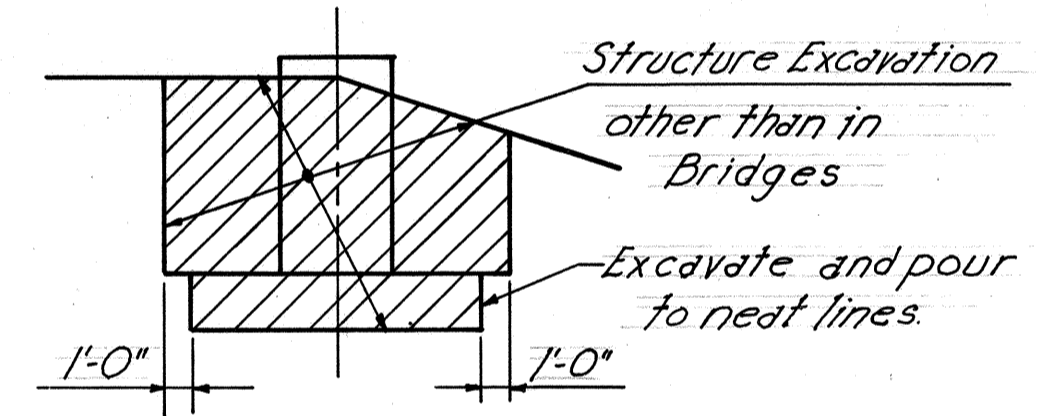
END ELEVATION
1/2" = 1'-0"



SIDE ELEVATION
1/2" = 1'-0"

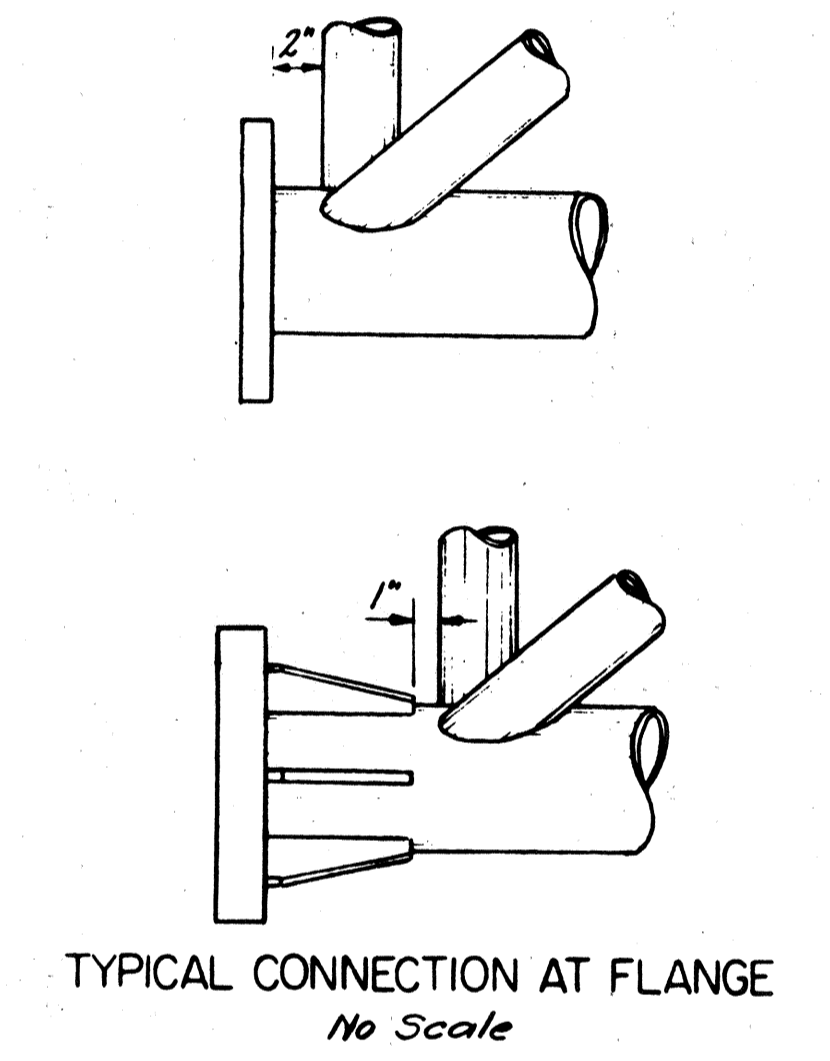


TYPE B FLANGE CONNECTION
CAST
Not to Scale

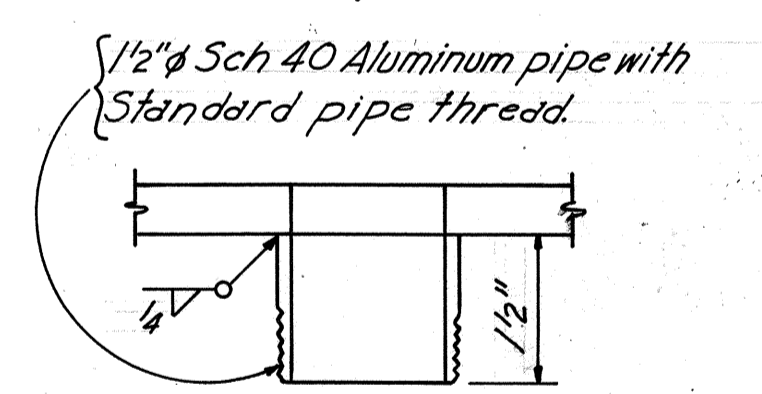


EXCAVATION PAYMENT LIMITS

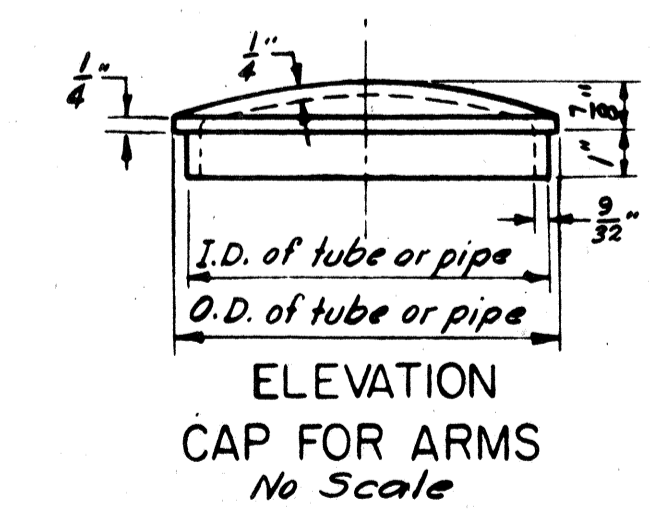
NOTE: Upper limit for payment of Structure Excavation shall be the lower of Existing Ground, Finished Ground, or Subgrade of Roadway.



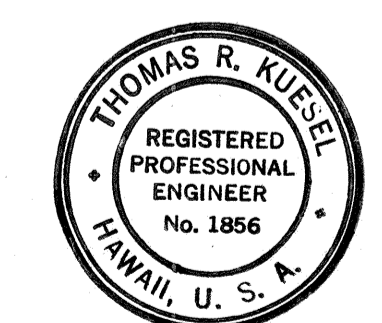
TYPICAL CONNECTION AT FLANGE
No Scale



WIRE INLET DETAIL FOR TRUSS OR CHORD
Scale Half Size



ELEVATION CAP FOR ARMS
No Scale



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Thomas R. Kuesel

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

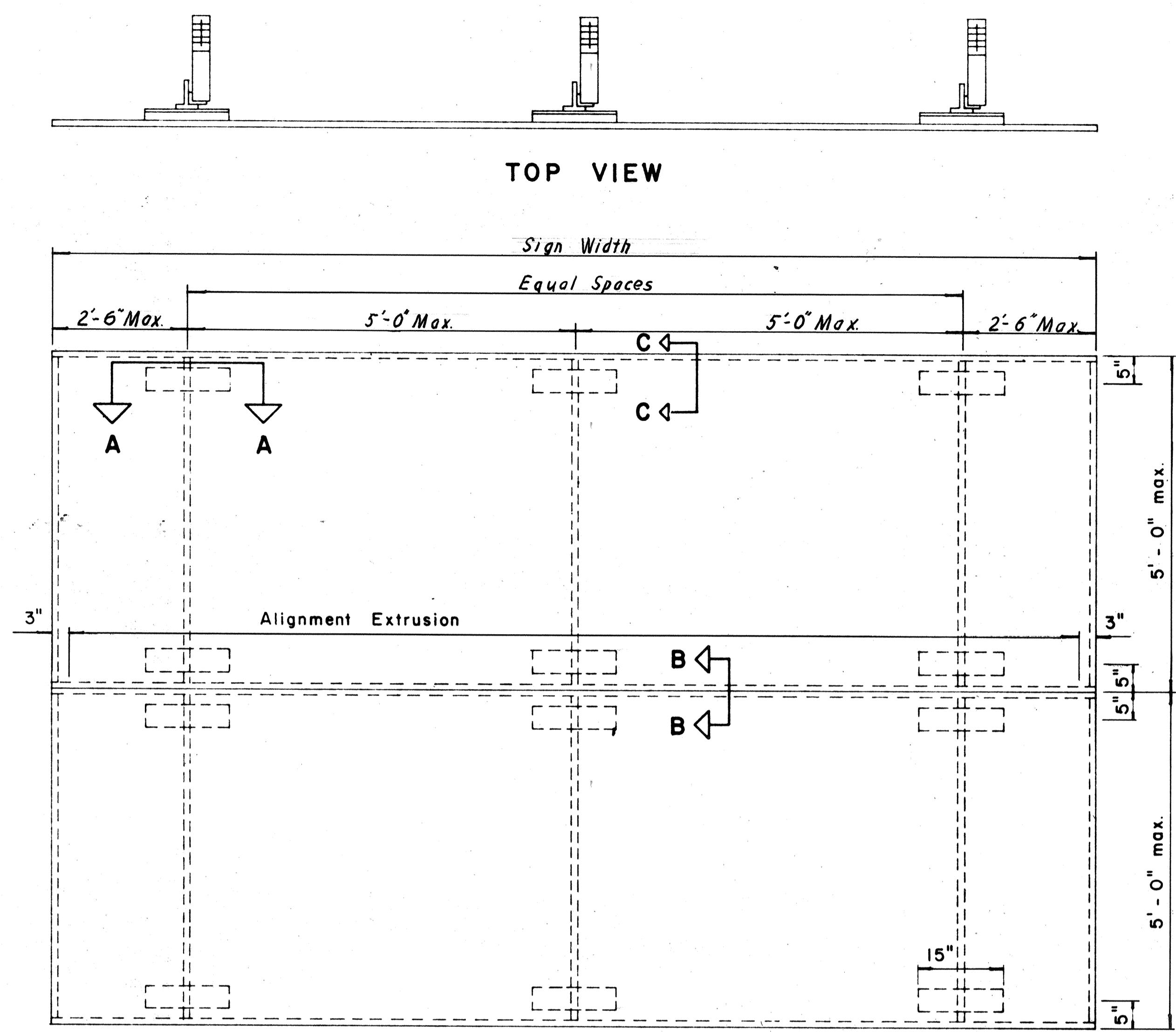
FLANGE CONNECTIONS & OVERHEAD SIGN FOUNDATIONS

HALAWA INTERCHANGE
PROJECT NO. I-H1(87)-13

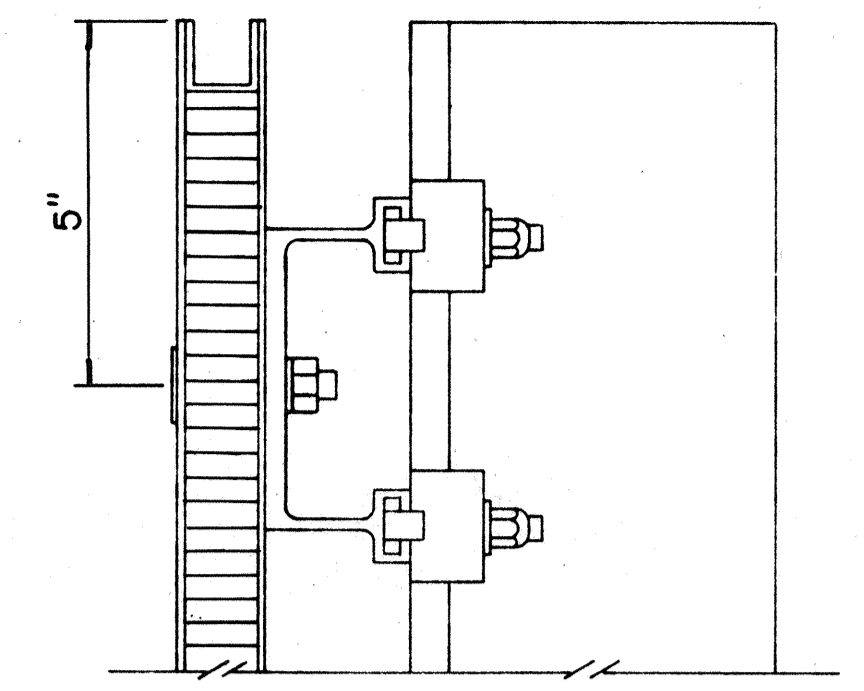
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SHEET No. 11 OF 22 SHEETS

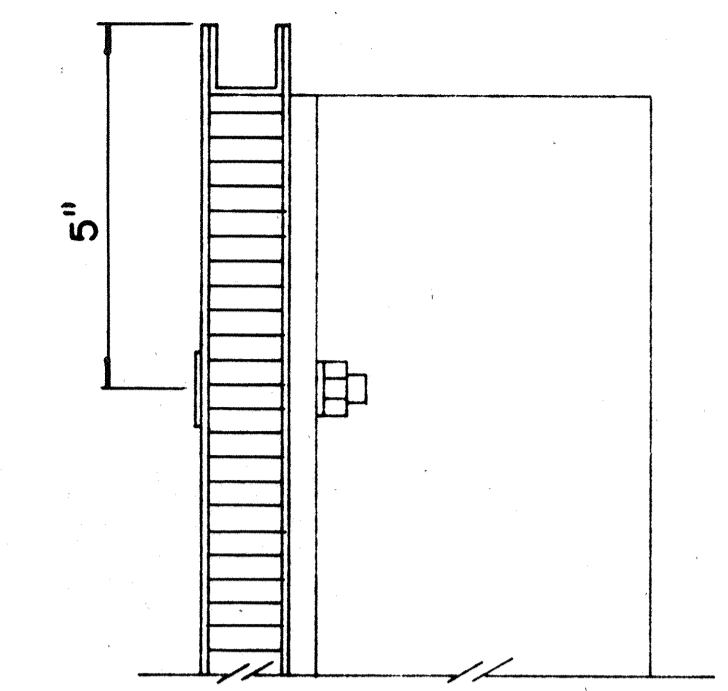
DATE: 1/27/70
DRAWN BY: J. J. JENSEN
CHECKED BY: J. J. JENSEN
NO. 11



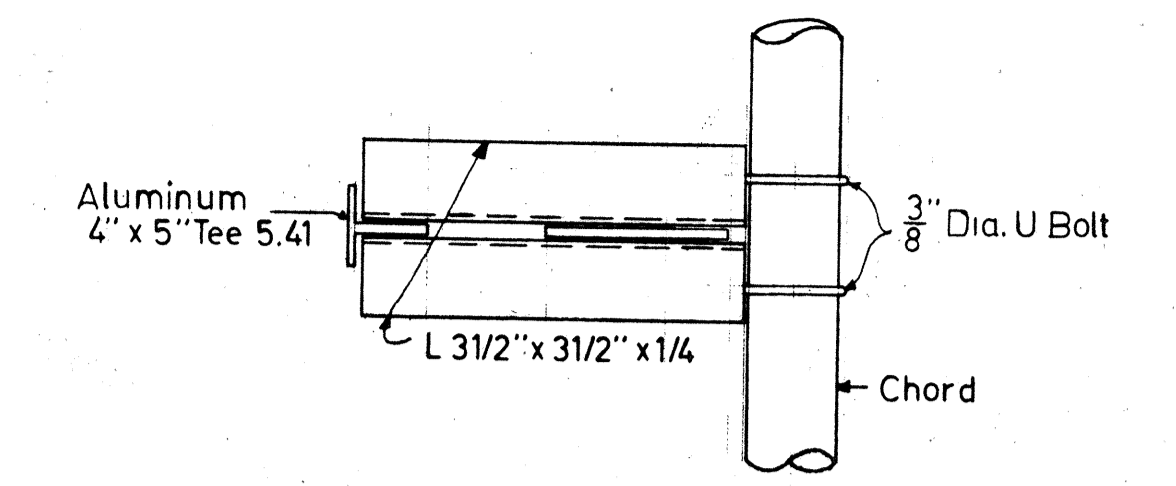
ELEVATION
TYPICAL SIGN ASSEMBLY
 Scale: $\frac{3}{4}$ " = 1'-0"



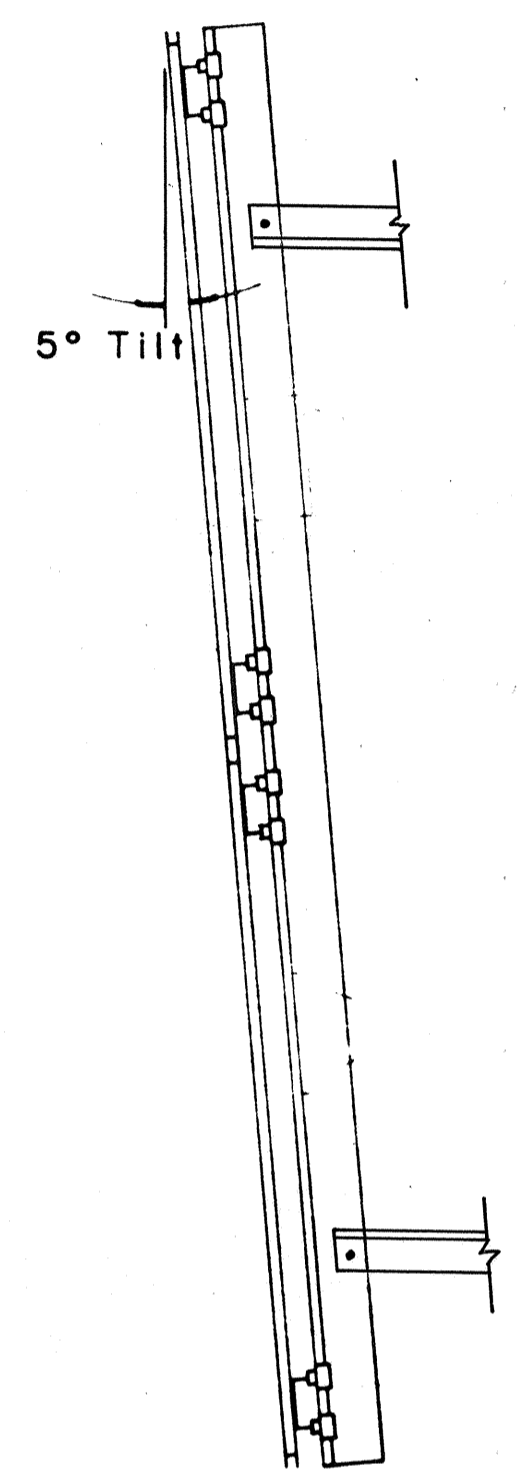
SECTION "C-C"
 Scale: $\frac{3}{8}$ " = 1"



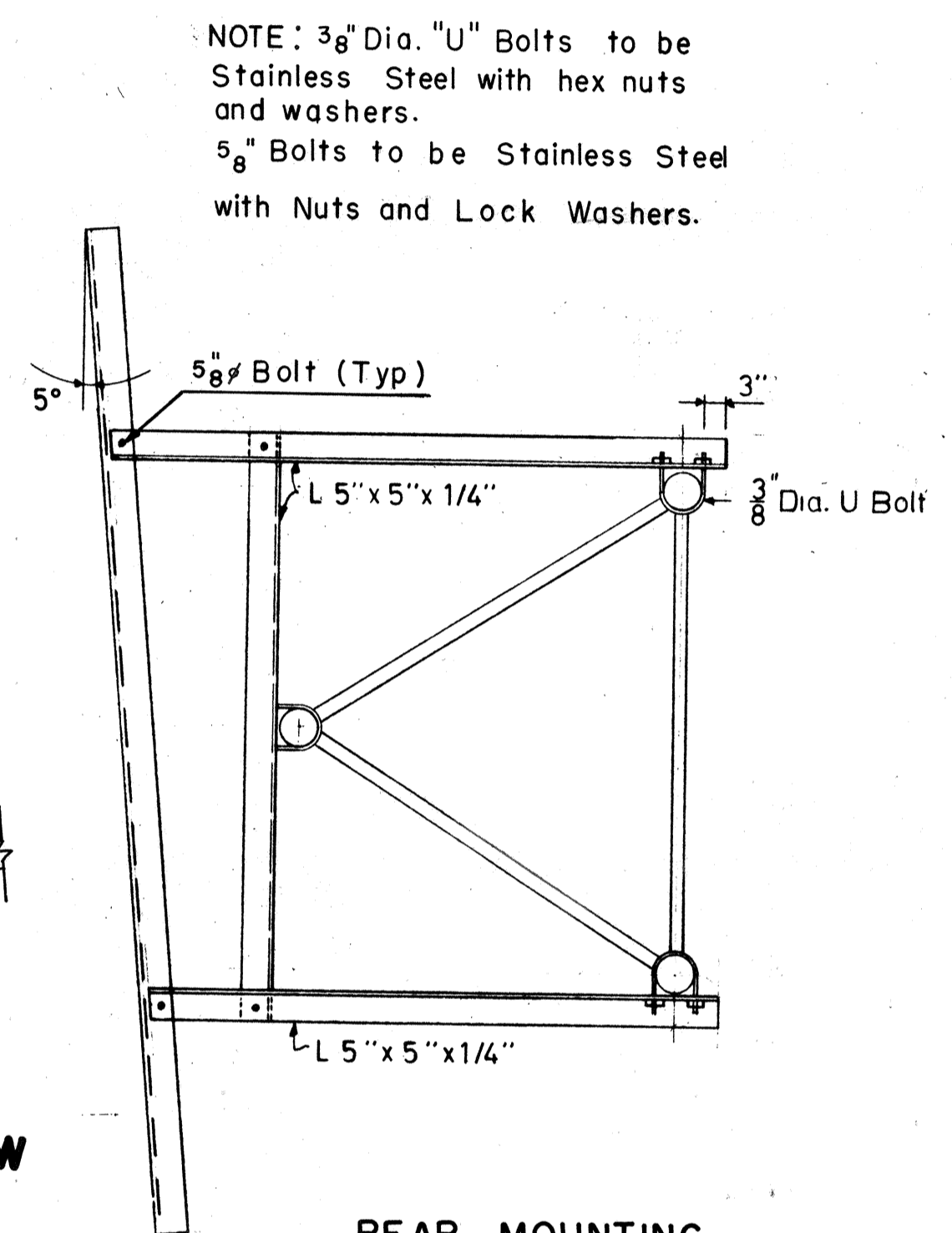
SECTION "C-C" (Alternate)
 Scale: $\frac{3}{8}$ " = 1"



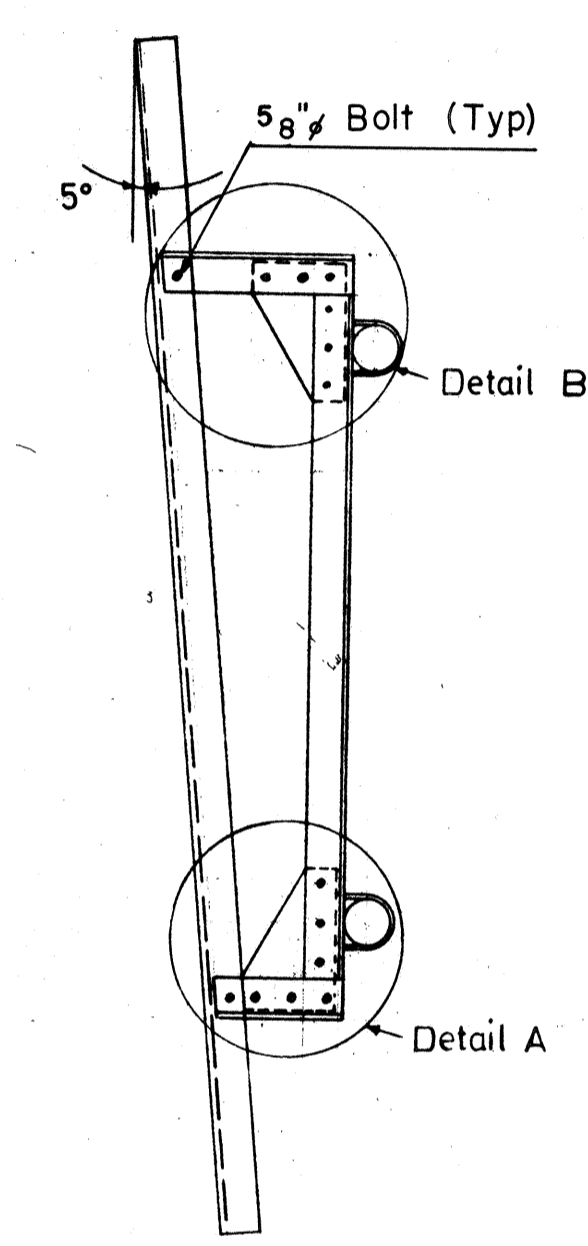
SECTION D-D
 Scale: 1" = 1'-0"



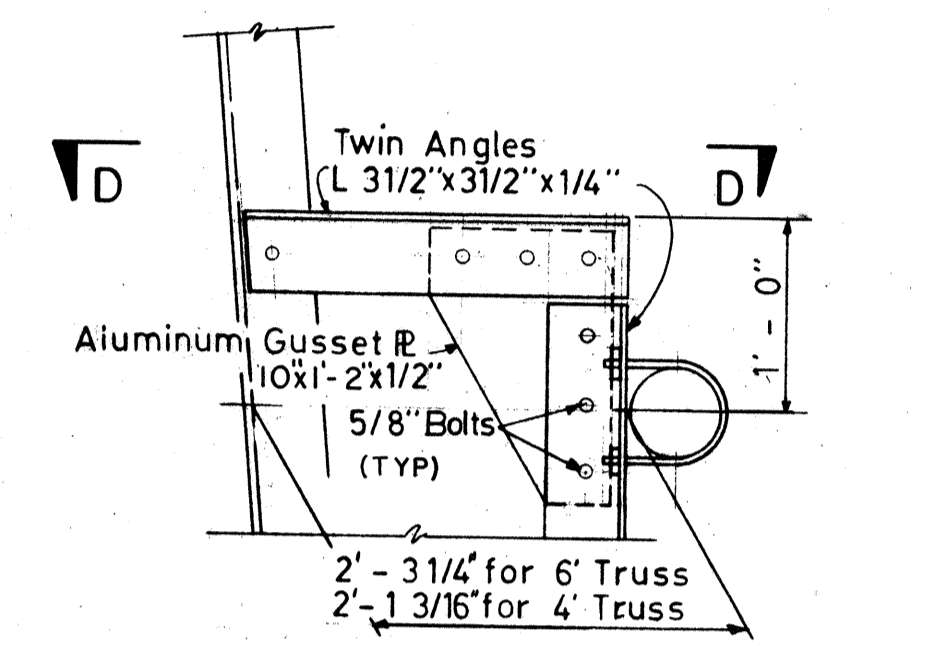
SIDE VIEW



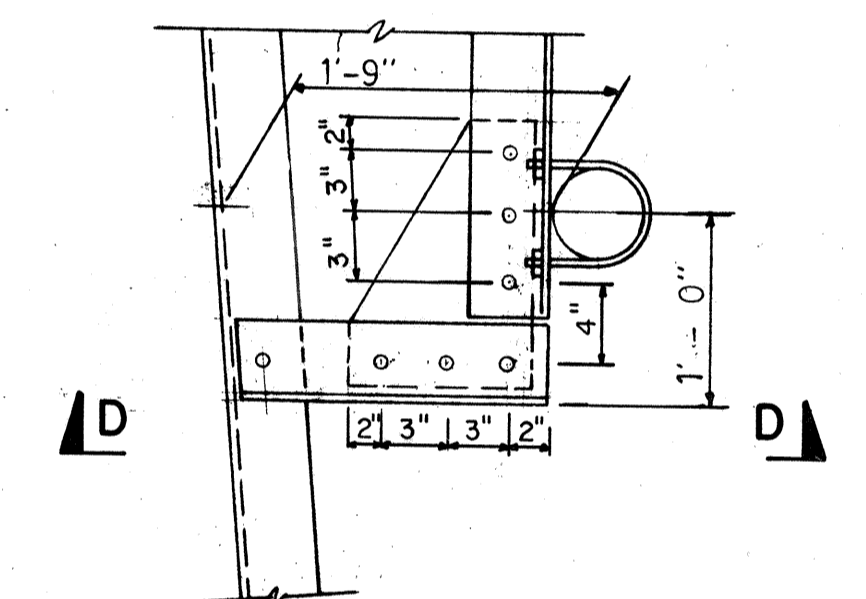
REAR MOUNTING
 Scale: $\frac{1}{2}$ " = 1'-0"



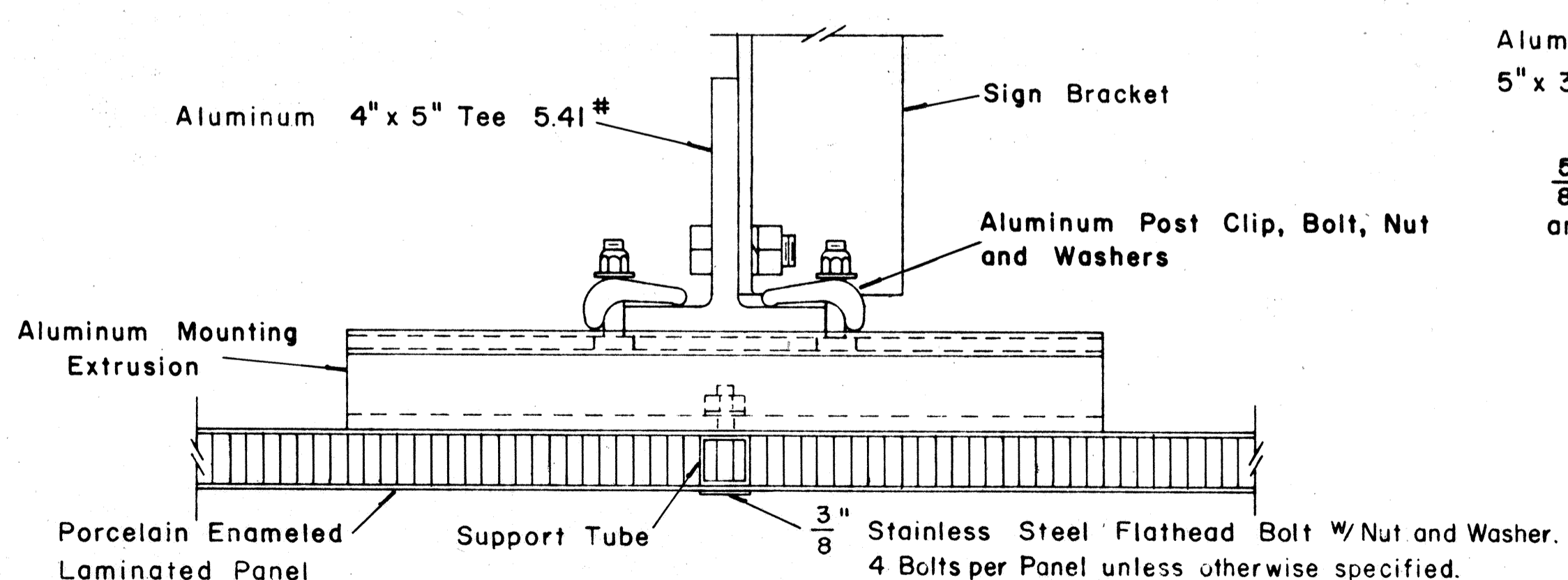
FRONT MOUNTING
 Scale: $\frac{1}{2}$ " = 1'-0"



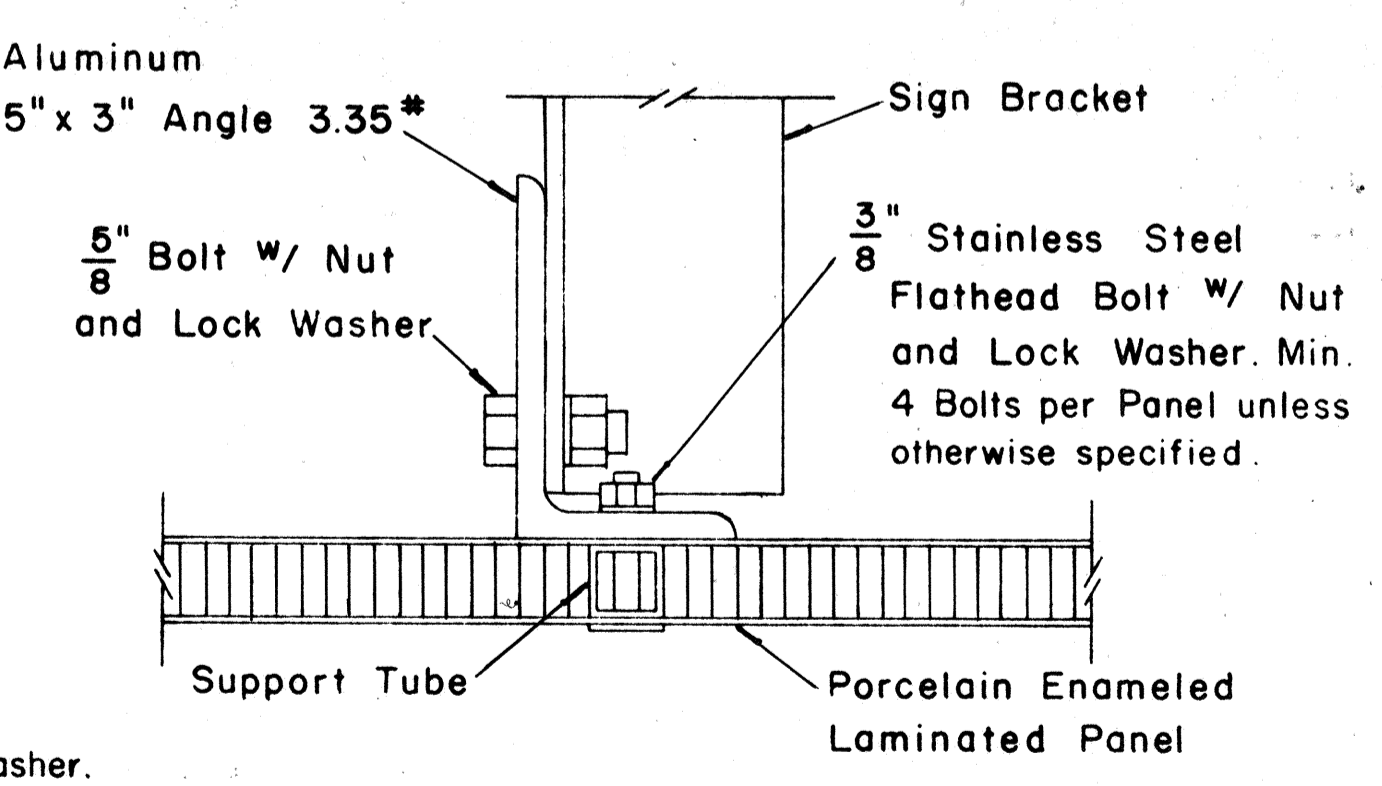
DETAIL B
 Not to Scale



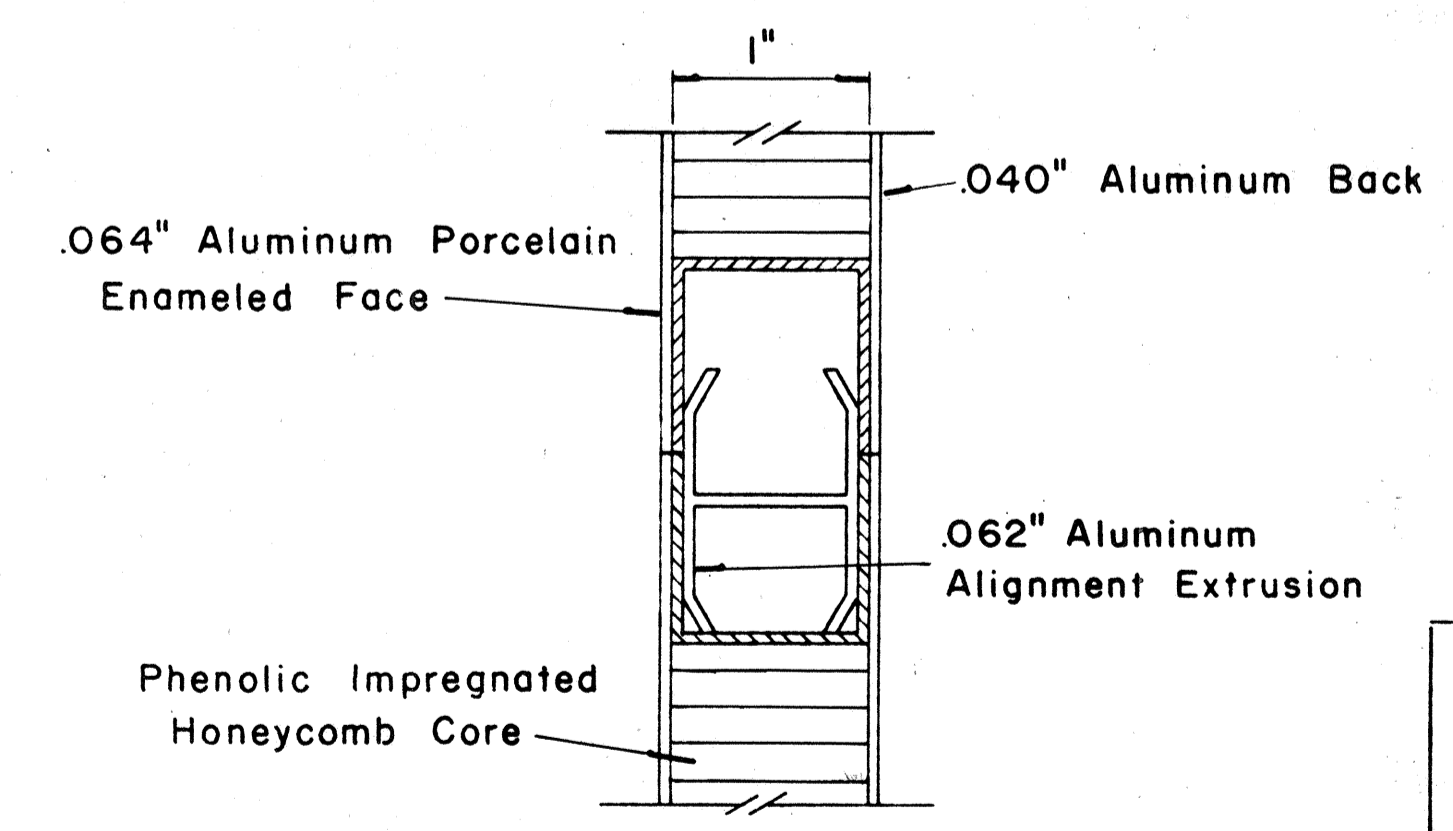
DETAIL A
 Not to Scale



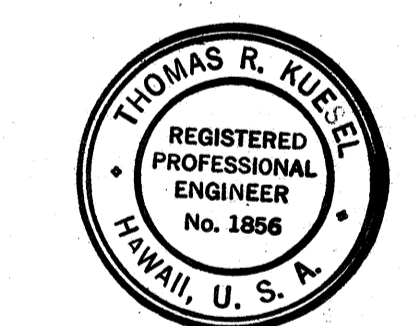
SECTION "A-A"
 Scale: $\frac{3}{8}$ " = 1"



SECTION "A-A" (Alternate)
 Scale: $\frac{3}{8}$ " = 1"



CLOSURE DETAIL SECTION "B-B"
 FULL SCALE



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Thomas R. Kuehl

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

DETAILS
 LAMINATED ALUMINUM SIGN PANELS (OVERHEAD)

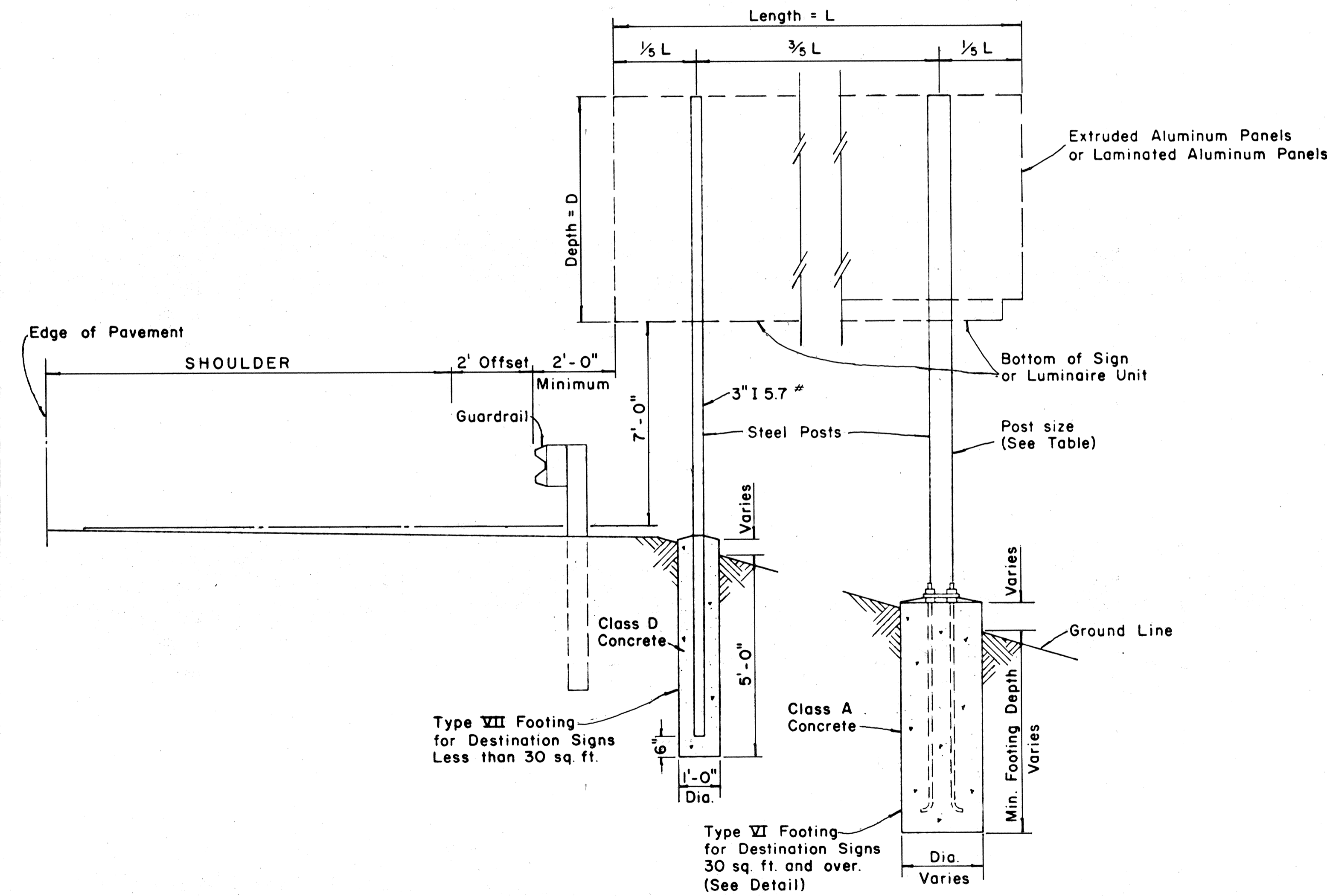
Scale: As Shown Date: 6/8/70

DATE: 1/14/70
 SURVEY PLOTTED BY: [Signature]
 DRAWN BY: [Signature]
 CHECKED BY: [Signature]

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HH(87)15	1970	97	244

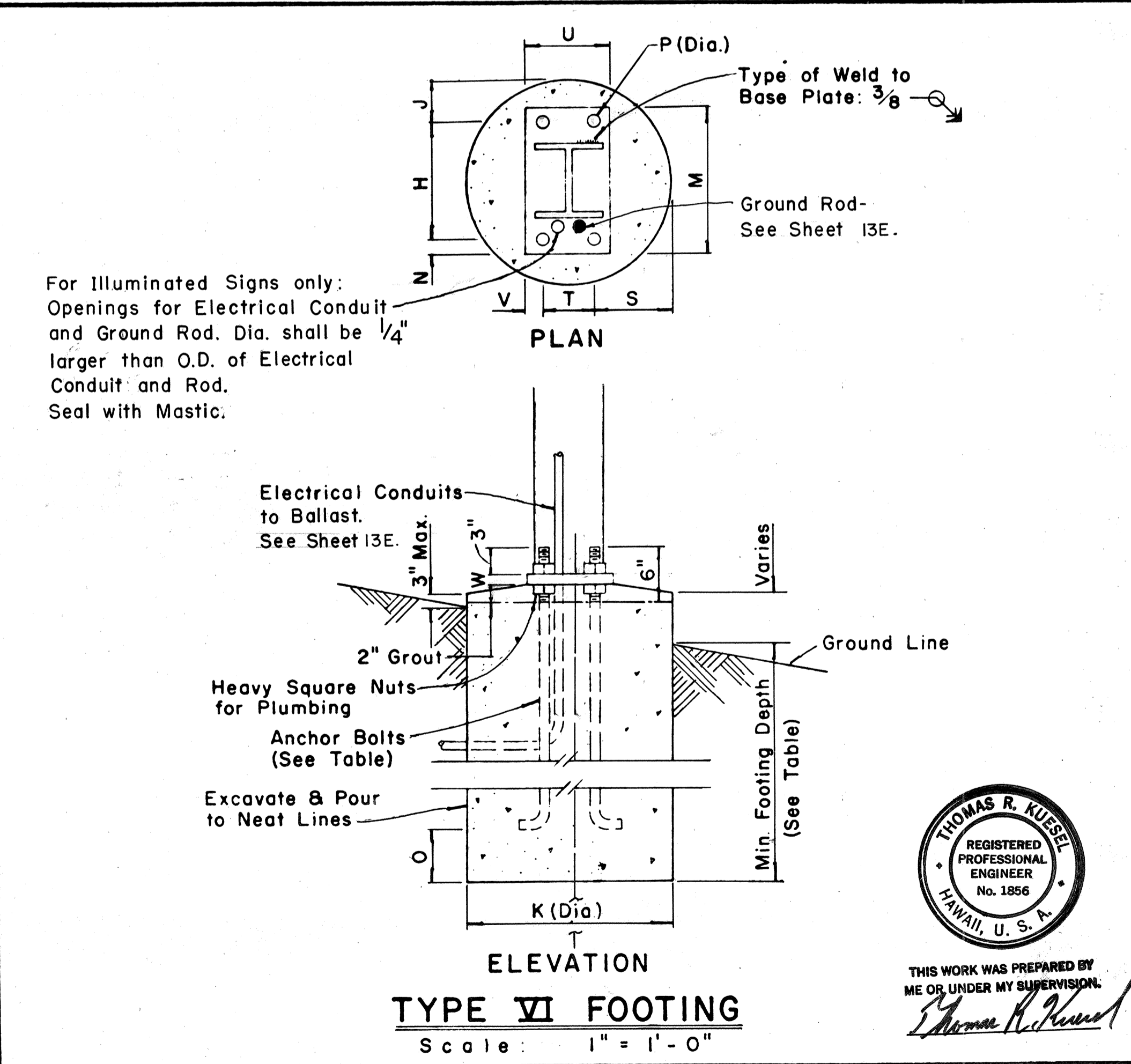
* For moment calculations only. Post shall be from top of foundation to top of sign.
 ** For fills with side slopes flatter than 4:1, Minimum Footing Depth shall be 4 1/2 feet.

POST SIZE	MAXIMUM SIGN AREA	POST HEIGHT TOP OF FOUNDATION TO CENTER OF SIGN *	DIMENSIONS											ANCHOR BOLT DIA.	MINIMUM FOOTING DEPTH		
			H	J	K	M	N	O	P	S	T	U	V		W	CUT	FILL**
8 J 10	50 sq. ft.	14'	14"	5"	24"	17 1/4"	1 3/8"	6"	1 1/4"	9"	6"	10"	2"	1"	1 1/8" ø	4 1/2'	4 1/2'
8 WF 24	90 sq. ft.	21'															5'
8 WF 35	190 sq. ft.	15'	16 1/2"	6 3/4"	30"	20"	1 3/4"	6"	1 3/8"	11 1/4"	6 1/2"	10"	1 3/4"	1"	1 1/4" ø	6'	7'
10 WF 45	190 sq. ft.	25'															
10 WF 45	200 sq. ft.	25'															
12 WF 50	230 sq. ft.	25'														7'	
12 WF 50	250 sq. ft.	23'															
10 WF 54	—	—															



TYPICAL DESTINATION & GROUND MOUNTED EXPRESSWAY SIGN

Not to Scale



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
 Thomas R. Kiesel

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

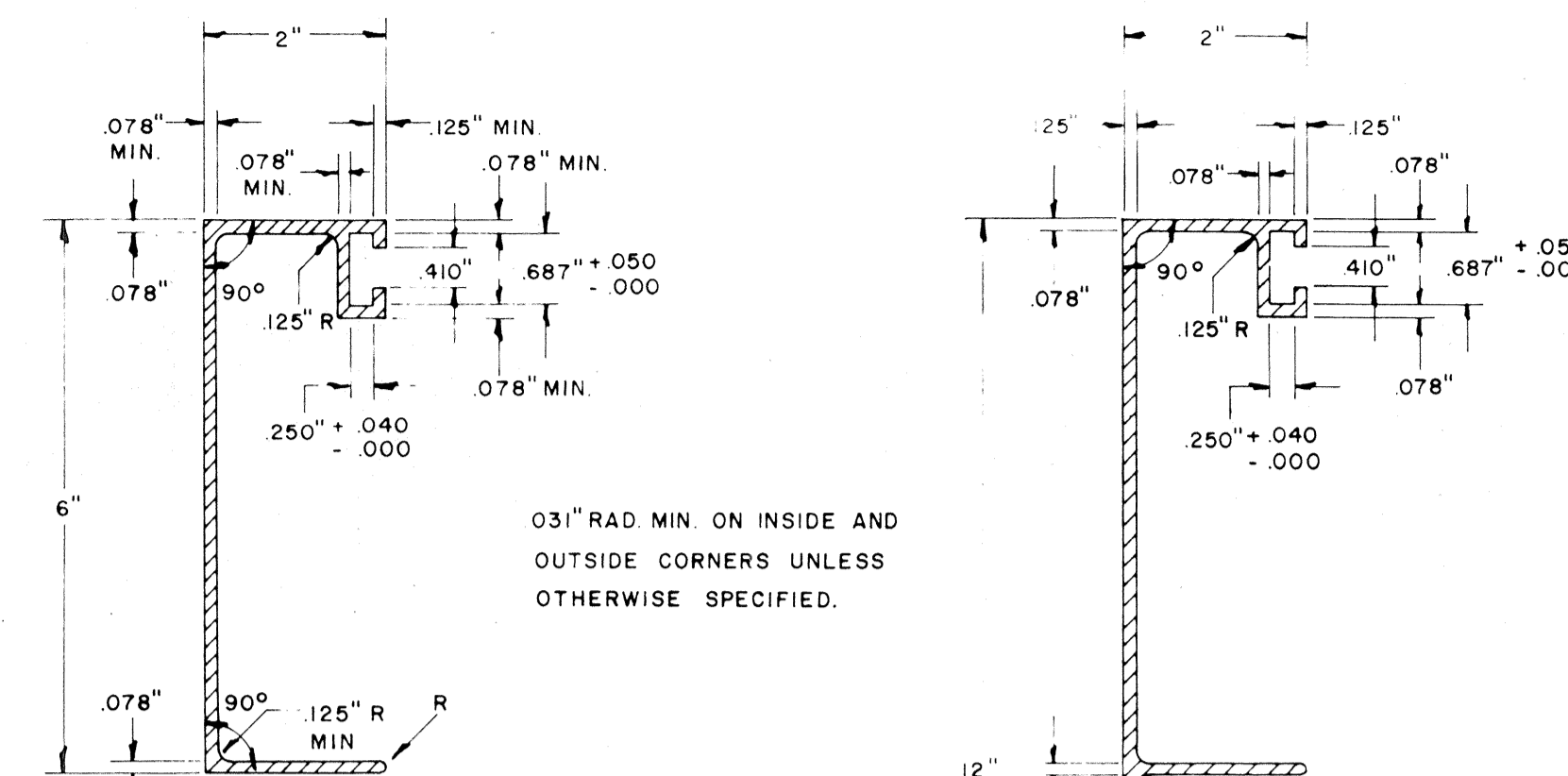
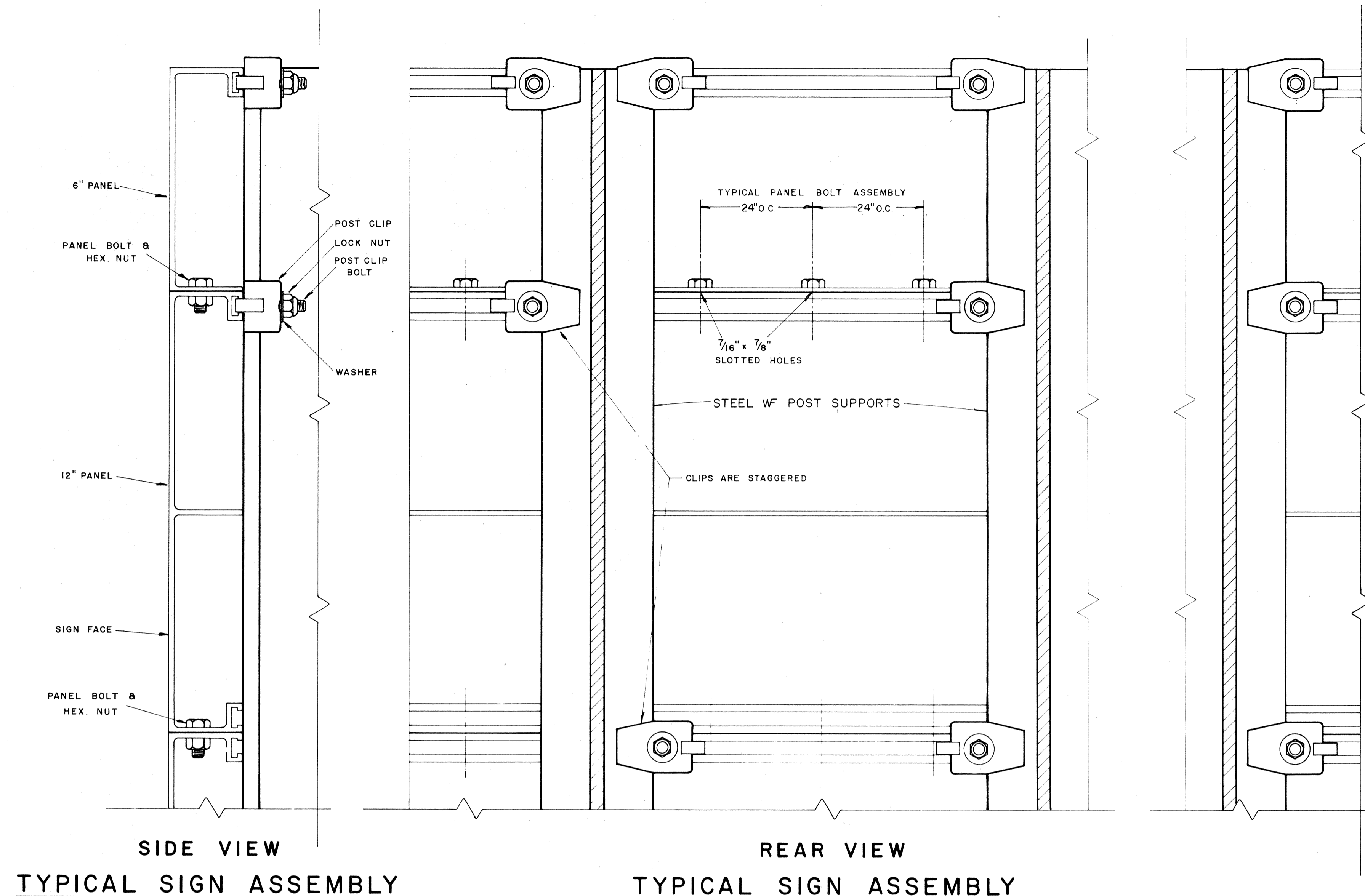
DETAILS

DESTINATION & GROUND MOUNTED EXPRESSWAY SIGNS

Scale: As Shown Date: 6/8/70

SHEET No. 137 OF 221 SHEETS

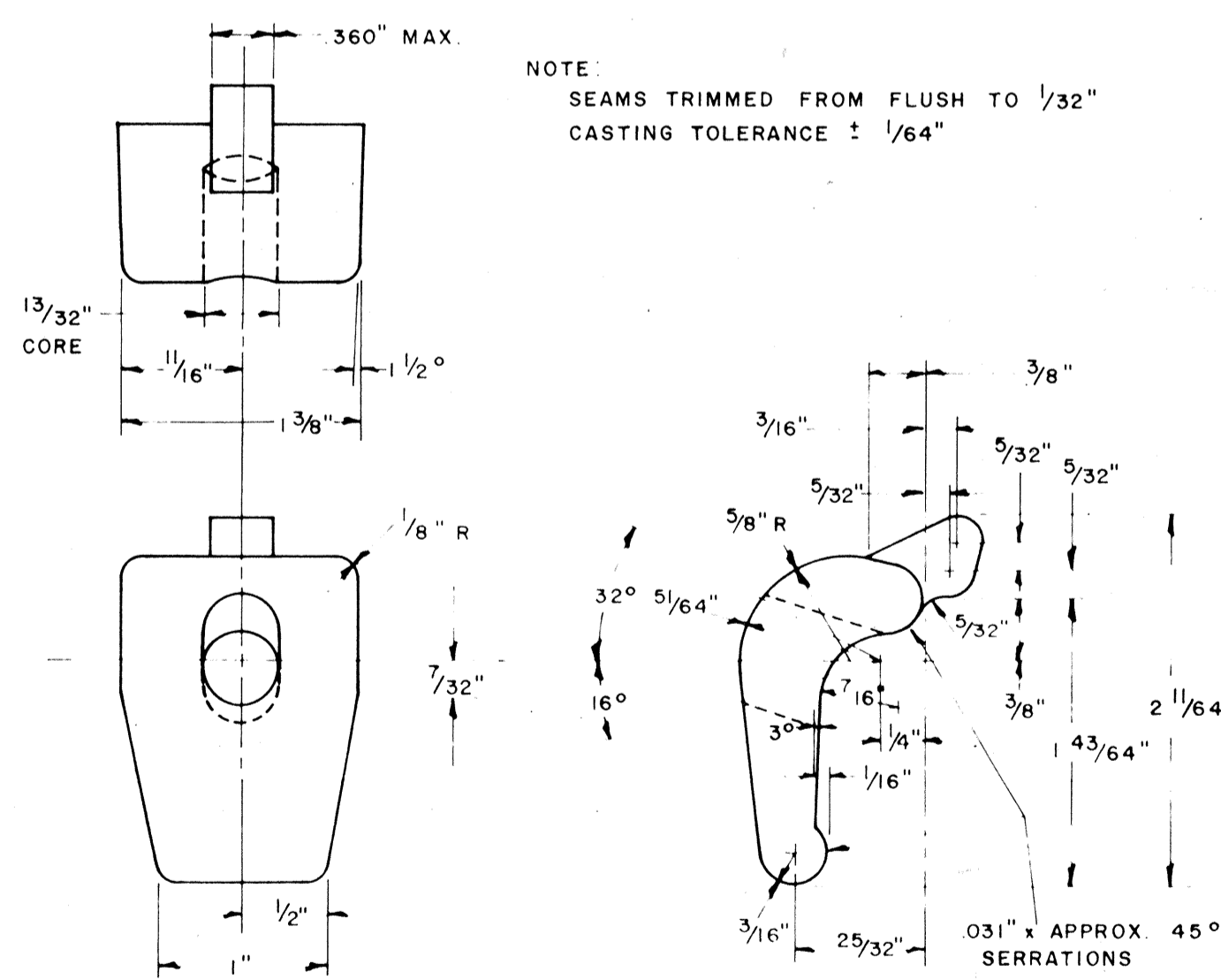
DATE: 1/17/70
 SURVEY PLOTTED BY: [Name]
 ORIGINAL PLAN: [Name]
 DESIGNED BY: [Name]
 CHECKED BY: [Name]
 NOTES BOOK: [Name]
 No.:



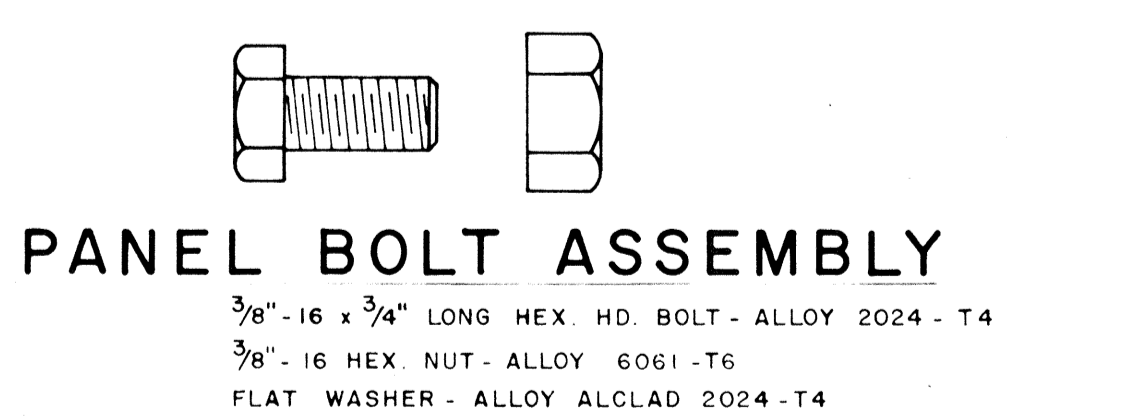
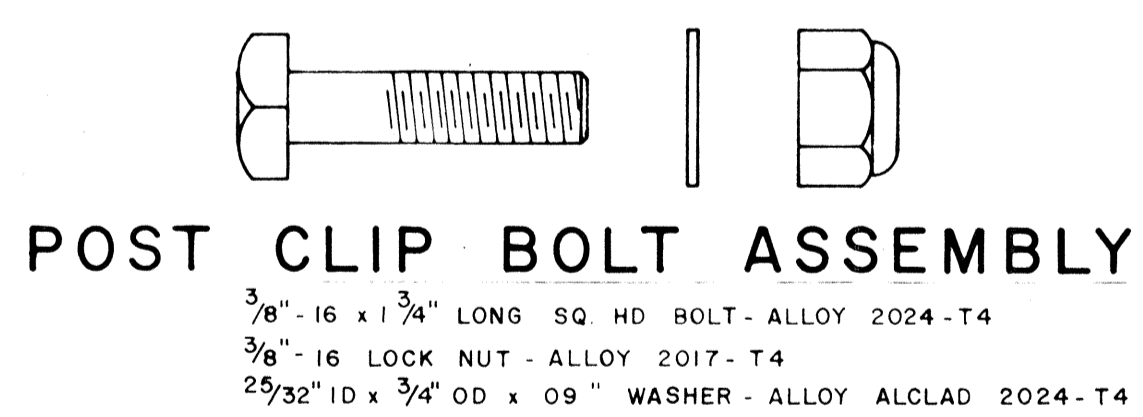
6" SIGN PANEL
 WT./LINEAL FT. - 1.103 LBS. MIN.
 ALLOY - 6061 - F(1)
 MOMENT OF INERTIA - 0.487 MIN.
 MINIMUM SECTION MODULUS 0.341

12" SIGN PANEL
 WT./LINEAL FT. - 2.690 LBS. MIN.
 ALLOY - 6061 - F(1)
 MOMENT OF INERTIA 0.936 MIN.
 MINIMUM SECTION MODULUS 0.605

SOLID EXTRUDED SIGN PANEL DETAILS



NOTE:
 SEAMS TRIMMED FROM FLUSH TO 1/32"
 CASTING TOLERANCE ± 1/64"



NOTE:
 Extruded Aluminum Panels to be used for
 Destination Signs with Reflective Sheeting Background

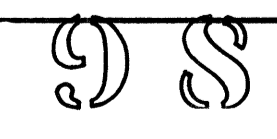
APPROVAL RECOMMENDED:
Eishi Tanaka 12/29/69
 TRAFFIC ENGINEER DATE

APPROVED:
[Signature] 12-30-69
 ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

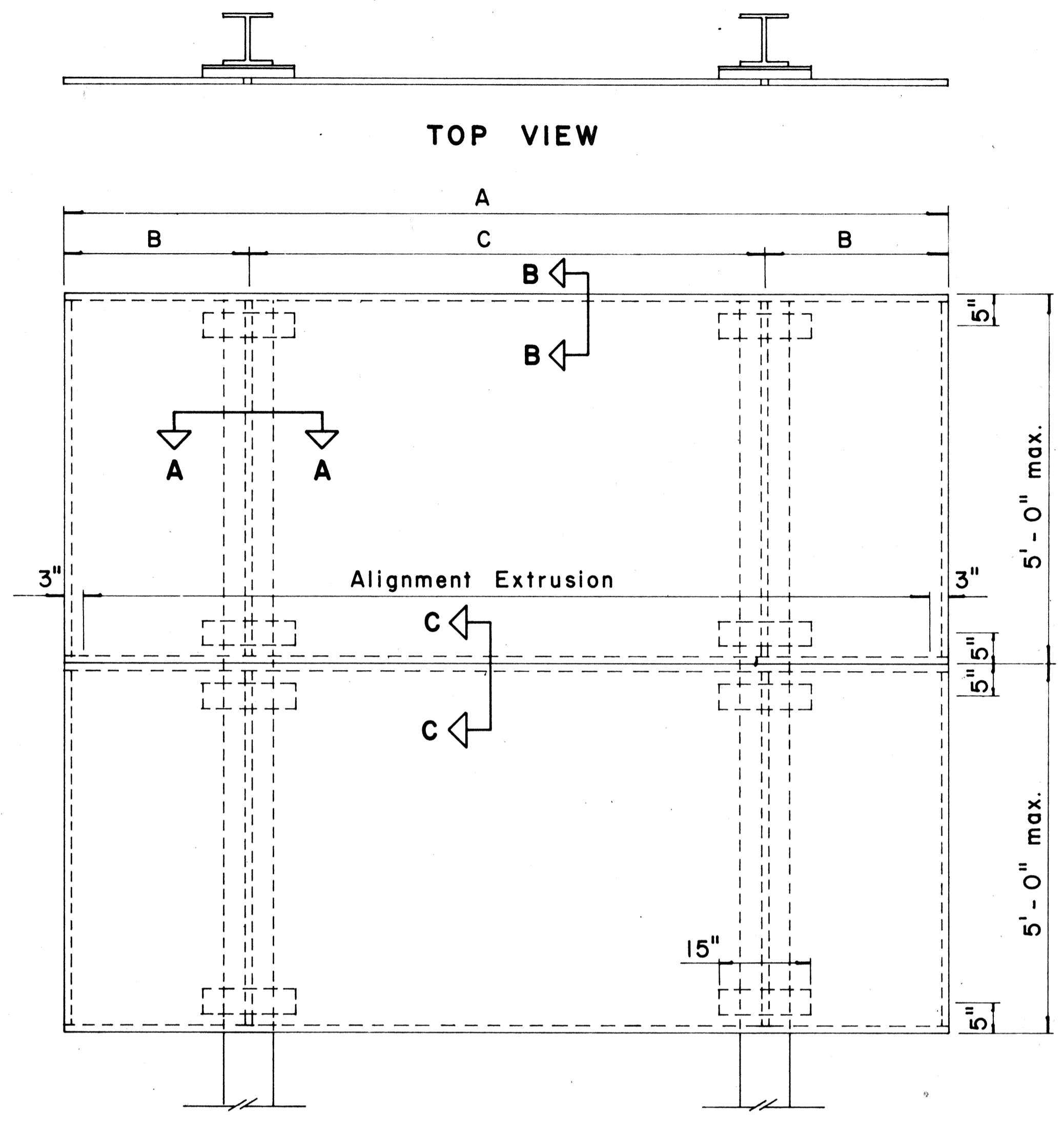
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
STANDARD DETAILS
 SOLID ALUMINUM
 EXTRUDED SIGN PANEL
 AND
 ACCESSORY DETAILS
 SCALE: DATE: 6-8-70

DATE: _____
 SURVEY PLOTTED BY: _____
 DESIGNED BY: _____
 TRACED BY: _____
 QUANTITIES BY: _____
 CHECKED BY: _____
 ORIGINAL PLAN NO. _____
 NOTE BOOK NO. _____

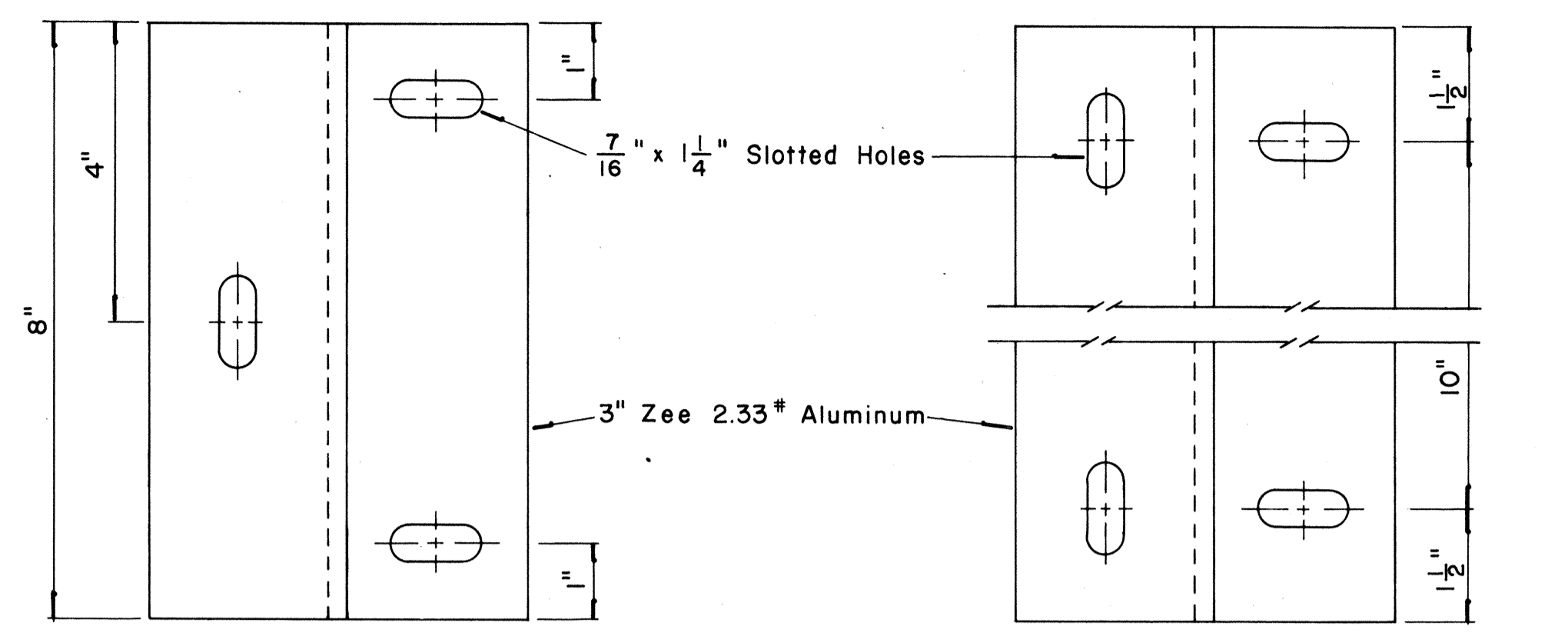


(GROUND MOUNTED SIGNS)
SUPPORT SPACING TABLE

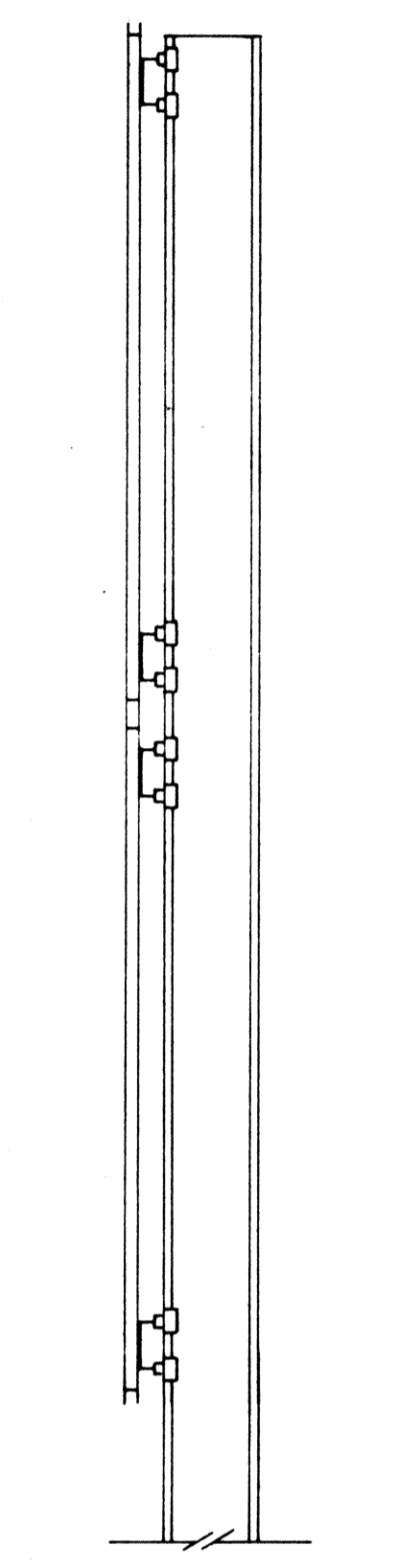
PANEL THICK.	LENGTH OF SIGN	NO. OF SUPPORTS	OVERHANG		SUPPORT SPACING
			B	C	
1"	6'-0"	2	12"		48"
1"	6'-6"	2	15"		48"
1"	7'-0"	2	15"		54"
1"	7'-6"	2	18"		54"
1"	8'-0"	2	18"		60"
1"	8'-6"	2	20"		62"
1"	9'-0"	2	22"		64"
1"	9'-6"	2	23"		68"
1"	10'-0"	2	24"		72"
1"	10'-6"	2	24"		78"
1"	11'-0"	2	24"		84"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



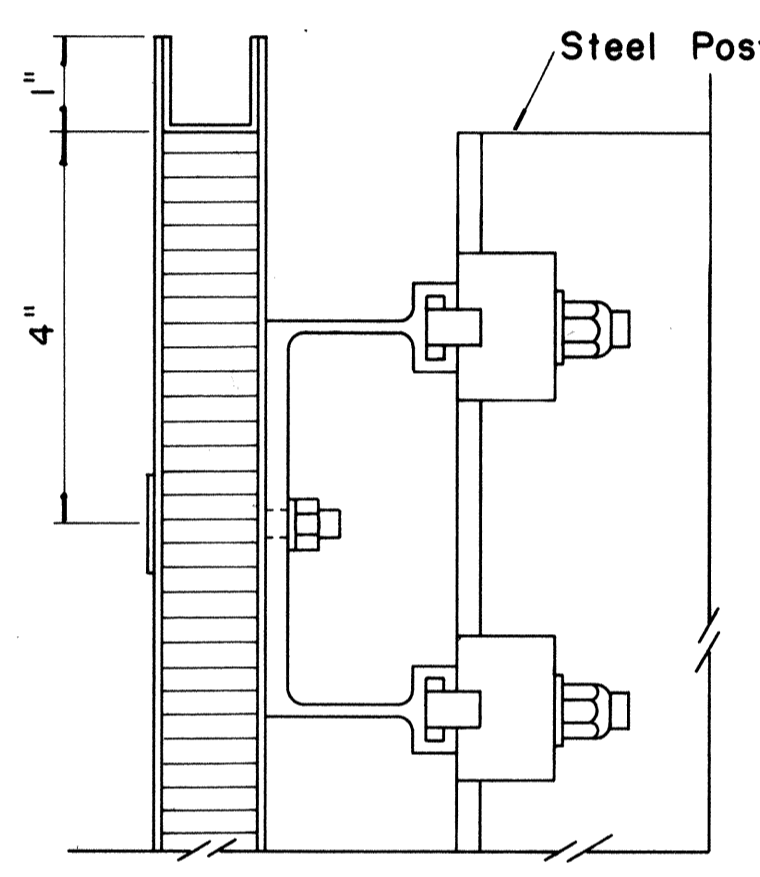
TYPICAL SIGN ASSEMBLY
Scale: $\frac{3}{4}$ " = 1'-0"



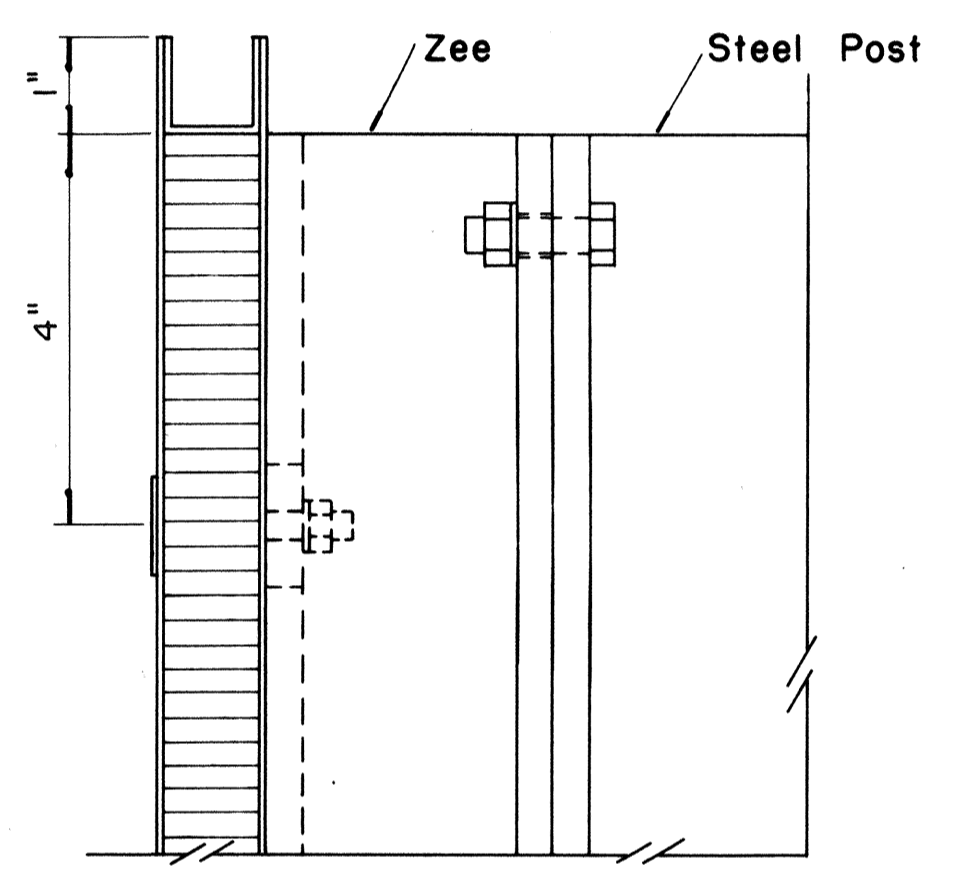
ZEE MOUNTING DETAILS
Scale: $\frac{1}{2}$ " = 1"



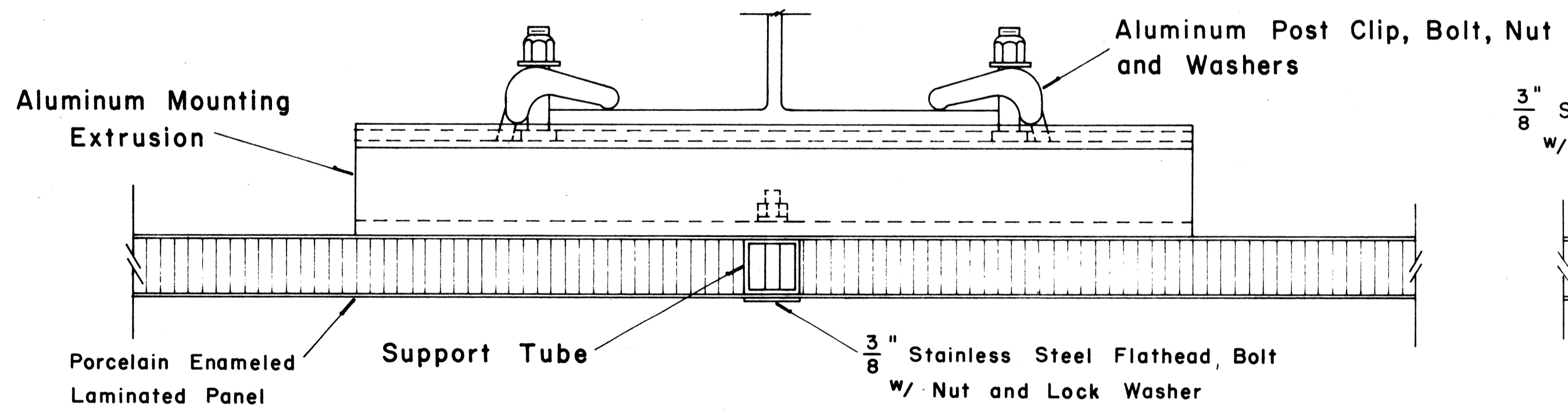
SIDE VIEW



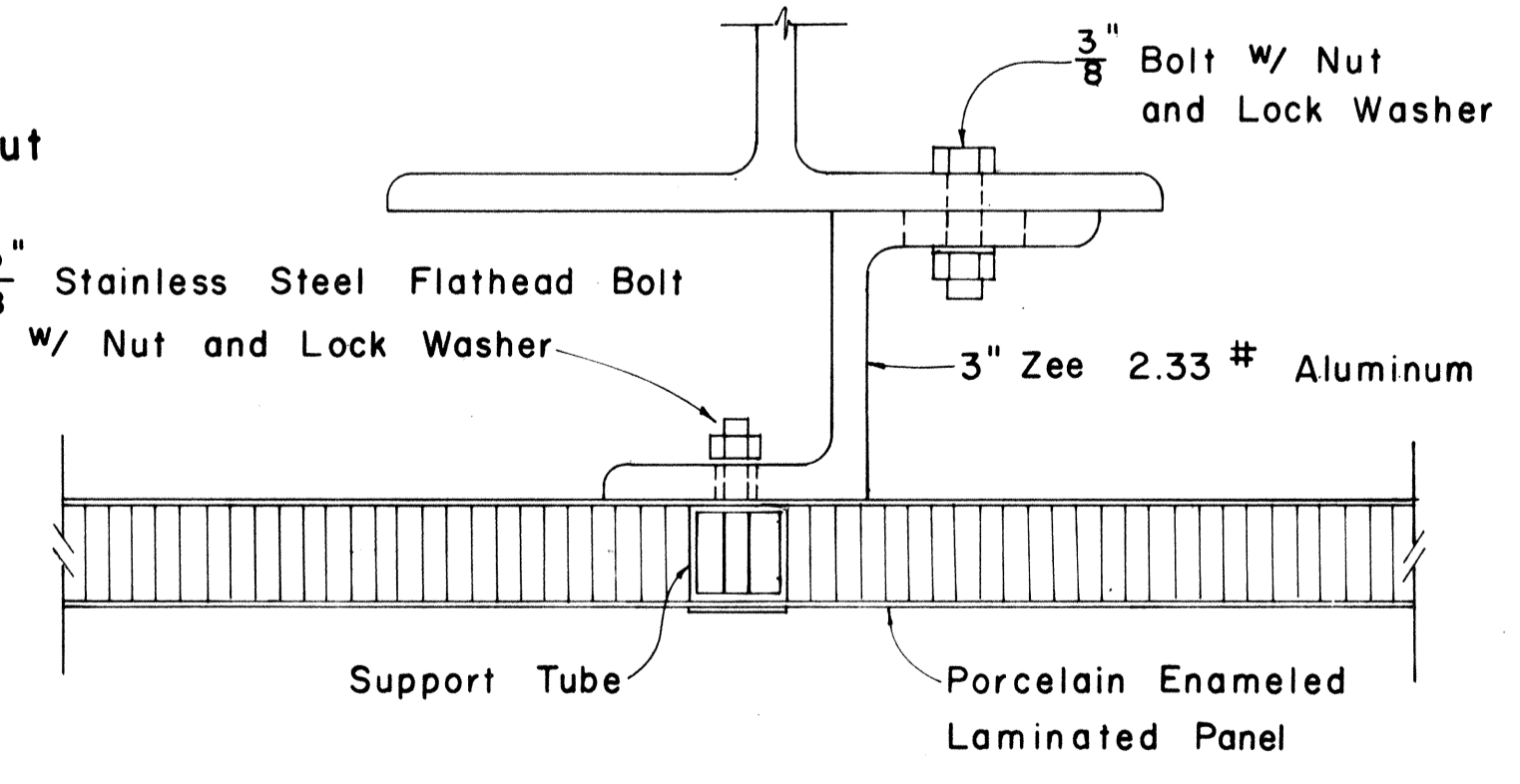
SECTION "B-B"
Scale: $\frac{1}{2}$ " = 1"



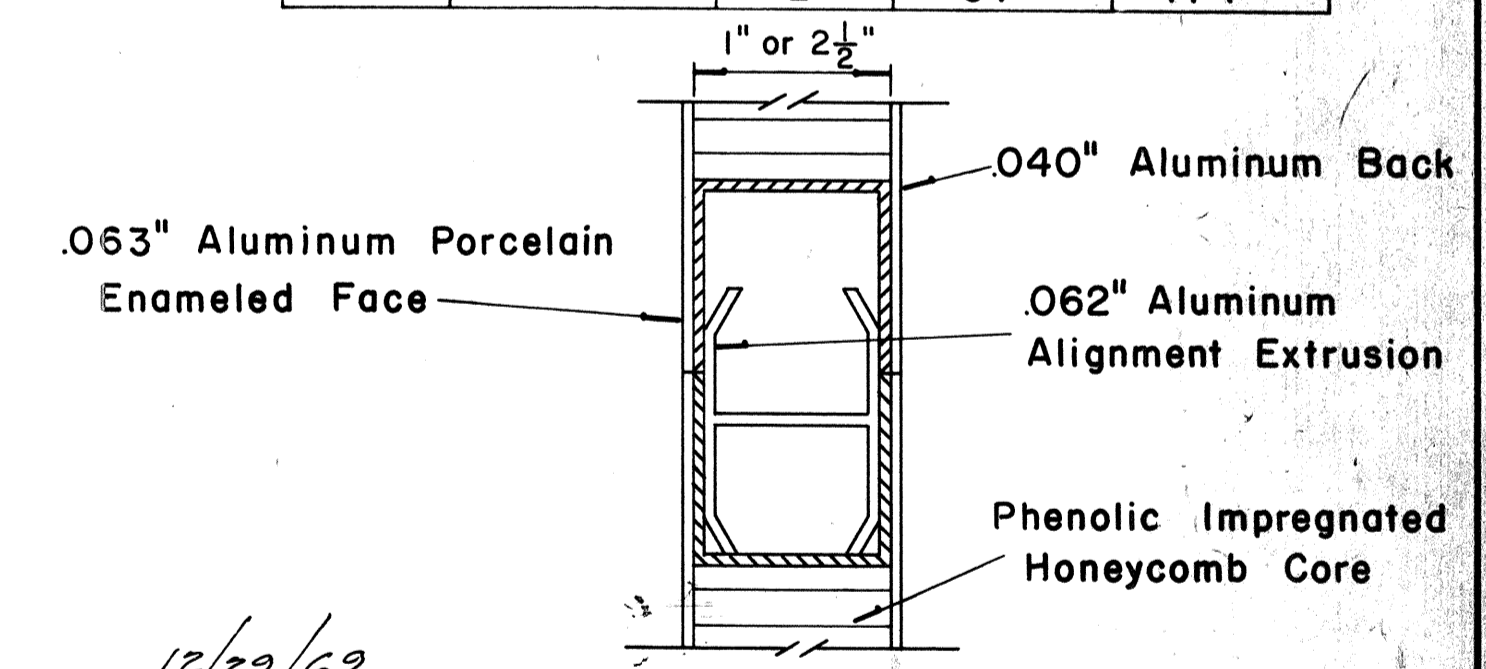
SECTION "B-B" (Alternate)
Scale: $\frac{1}{2}$ " = 1"



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



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



CLOSURE DETAIL SECTION "C-C"
FULL SCALE

APPROVAL RECOMMENDED:
Eishi Tanaka 12/29/69
TRAFFIC ENGINEER DATE

APPROVED:
John S. S. S. 12-29-69
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

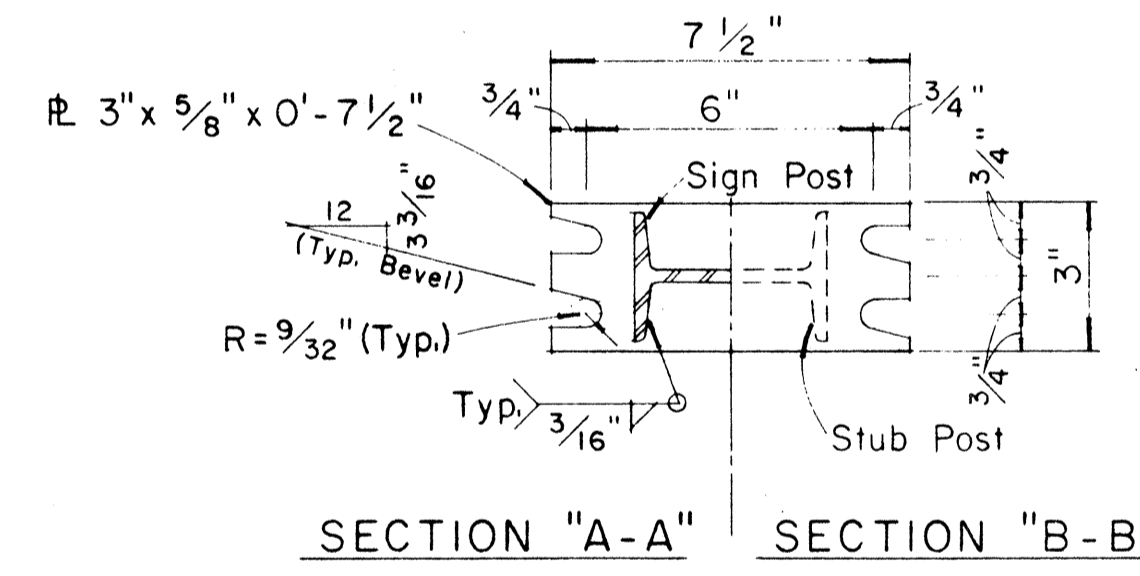
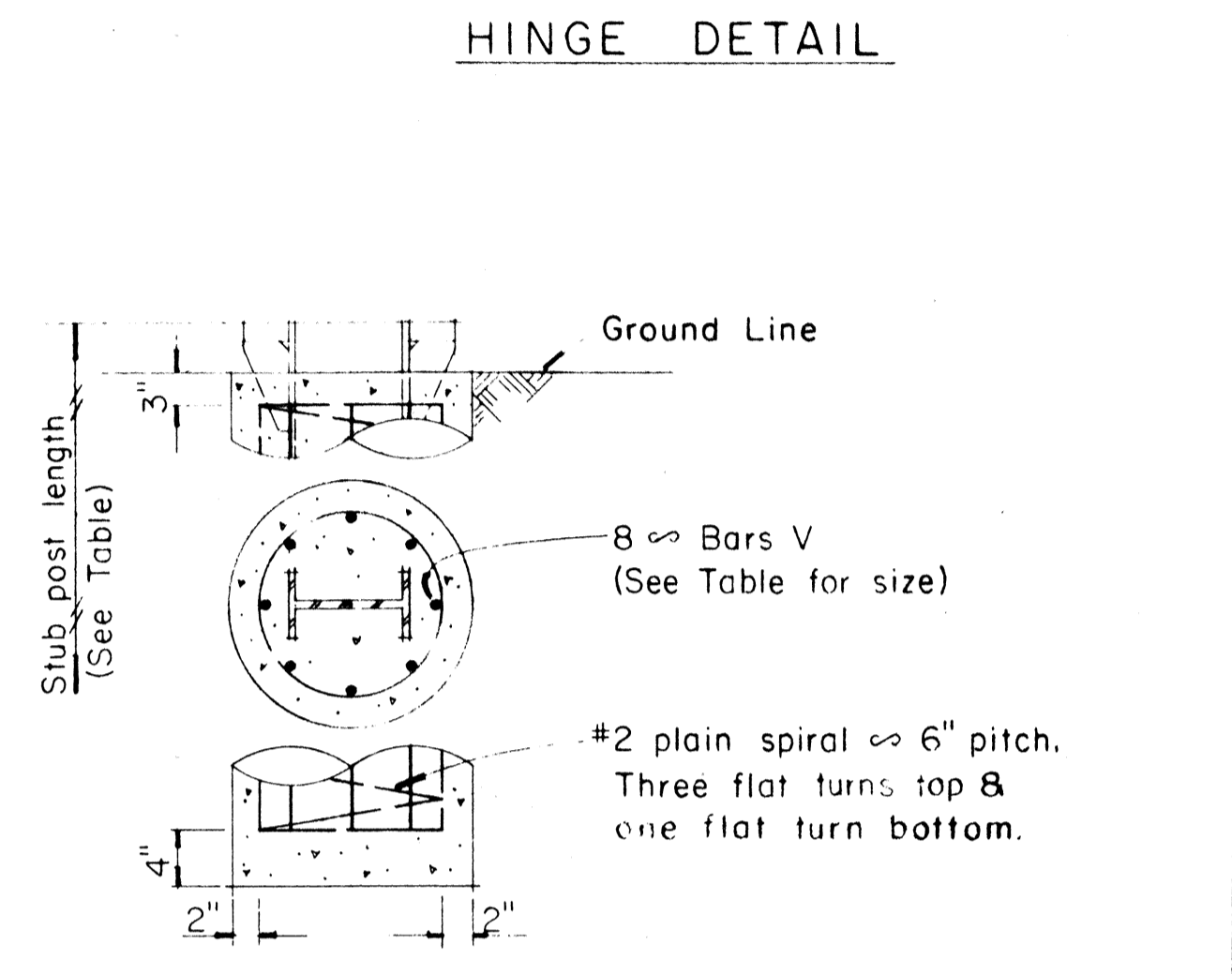
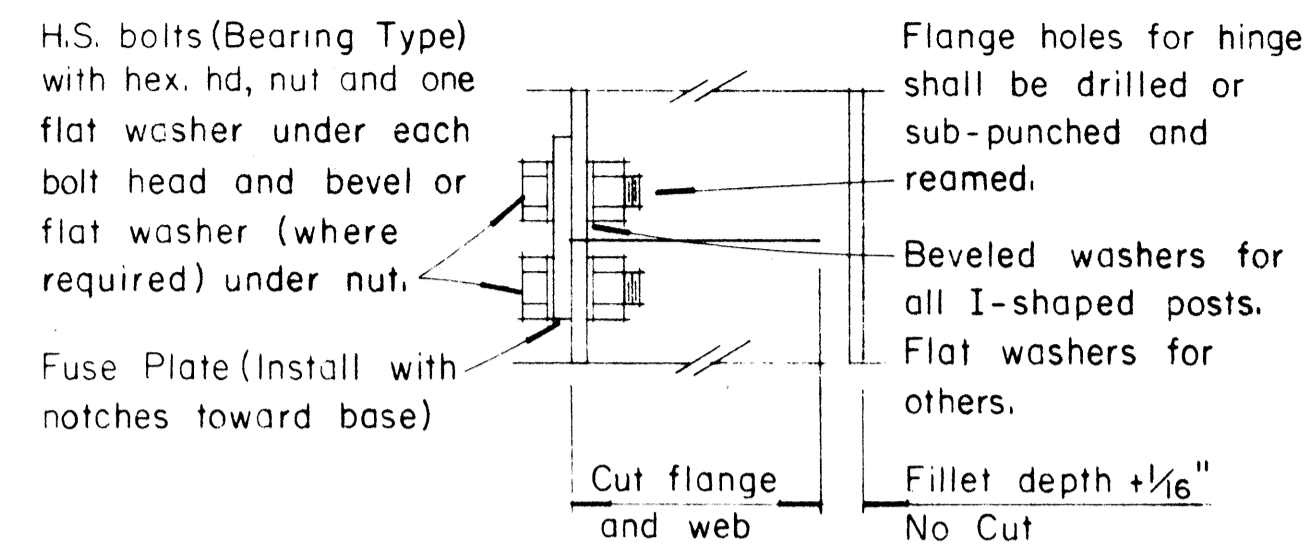
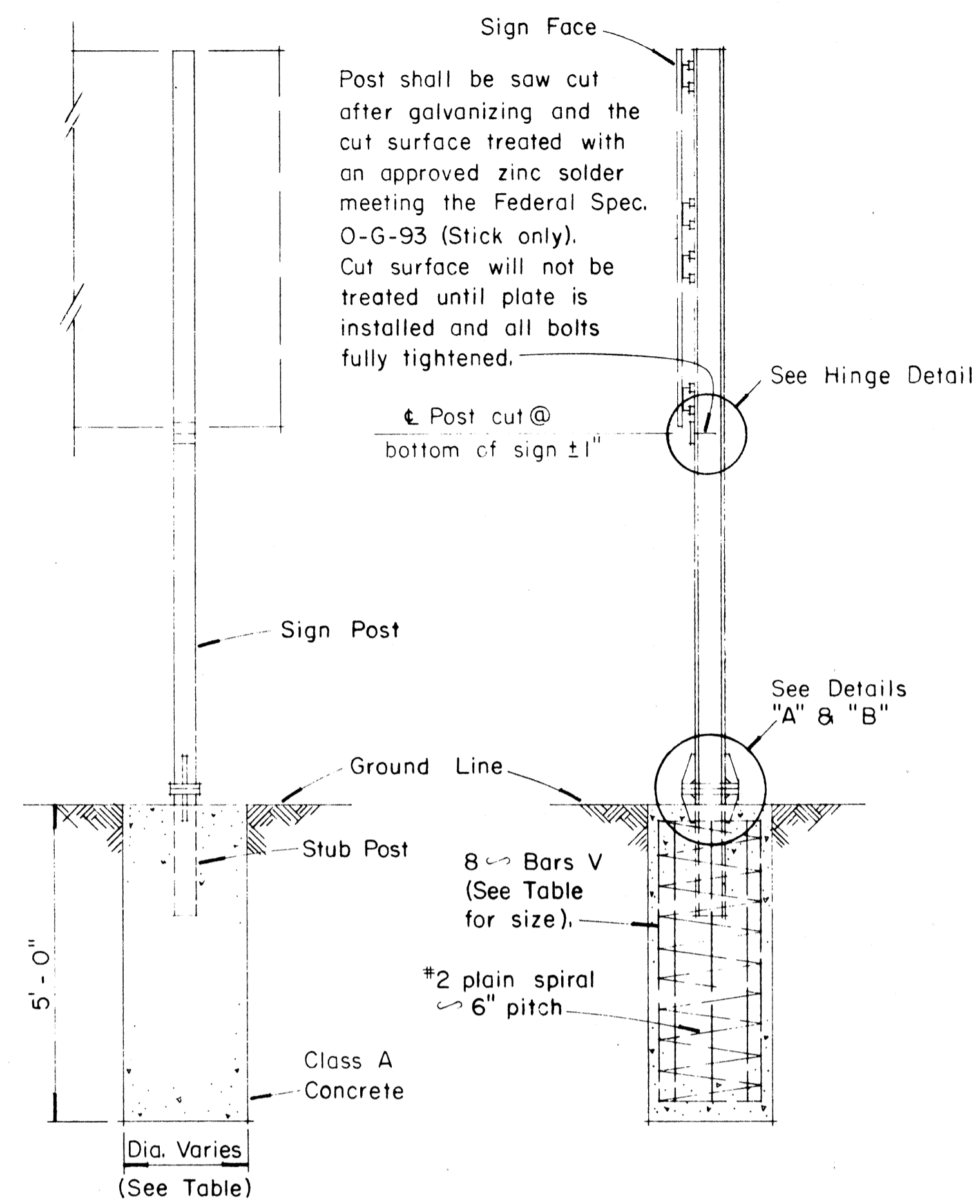
STANDARD DETAILS
LAMINATED ALUMINUM
SIGN PANELS
(GROUND MOUNTED)

Scale: As Shown Date: 6-8-70

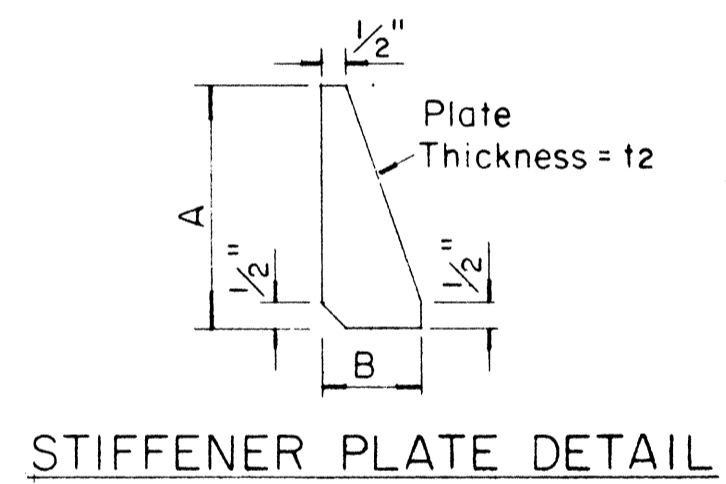
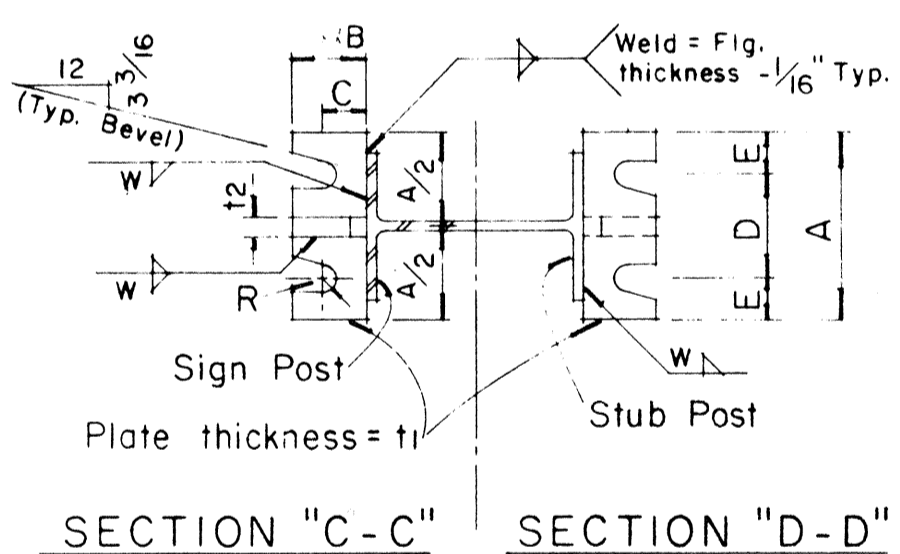
DESIGNED BY
CHECKED BY
DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HH(67)113	1970	100	244

BASE CONNECTION DATA TABLE											FUSE PLATE DATA TABLE								FOUNDATION DATA						
Post Size	Bolt Size & Torque	A	B	C	D	E	t1	t2	W	R	F	G	H	J	K	L	N	d1	t3	Bolt Dia.	Wt. of each Fuse P.	Stub Length	Stub Projection	Footing Diameter	Bars V Size
6 B 8.5											3 3/8"	2"	1 1/8"	4"	2 1/4"	7/8"	1/2"	9/16"	1/4"	1/2"	1.09#	2'-0"	3"	2'-0"	#5
6 B 12	5/8" ϕ x 2 3/4" Torque = 450#	5"	2"	1 1/4"	2 3/4"	1 1/8"	3/4"	1/2"	1/4"	1 1/32"	3 3/4"	2"	1 1/8"	4"	2 1/4"	7/8"	5/8"	1 1/16"	3/8"	5/8"	1.60#	2'-0"	3"	2'-0"	#5
6 B 15.5											4 1/2"	2 1/2"	1 1/4"	6"	3 1/2"	1 1/4"	3/4"	1 3/16"	1/2"	3/4"	3.75#	2'-6"	3"	2'-0"	#6
8 WF 17											4 1/2"	2 1/2"	1 1/4"	5 1/4"	2 3/4"	1 1/4"	3/4"	1 3/16"	1/2"	3/4"	3.27#	2'-6"	3"	2'-0"	#7
8 WF 20											4 7/8"	2 1/2"	1 1/2"	5 1/4"	2 3/4"	1 1/4"	7/8"	1 5/16"	9/16"	7/8"	3.93#	3'-0"	2 1/2"	2'-0"	#8
10 WF 21											5 3/8"	3"	1 1/2"	5 3/4"	2 3/4"	1 1/2"	7/8"	1 5/16"	9/16"	7/8"	4.75#	3'-0"	2 1/2"	2'-0"	#9
10 WF 25	3/4" ϕ x 3 1/2" Torque = 750#	6"	2 1/4"	1 3/8"	3 1/2"	1 1/4"	1"	3/4"	5/16"	1 3/32"	5 3/8"	3"	1 1/2"	5 3/4"	2 3/4"	1 1/2"	7/8"	1 5/16"	9/16"	7/8"	4.79#	3'-0"	2 1/2"	2'-0"	#10
12 WF 27											5 3/8"	3"	1 1/2"	6 1/2"	3 1/2"	1 1/2"	7/8"	1 5/16"	9/16"	7/8"	5.42#	3'-0"	2 1/2"	2'-0"	#11
3 I 5.7	1/2" ϕ x 2 1/2" Torque = 200#	SEE DETAIL "A"									3 1/8"	1 1/2"	1 1/8"	2 5/8"	1 1/2"	9/16"	1/2"	9/16"	1/4"	1/2"	0.64#	1'-6"	3 1/2"	1'-6"	#5
4 I 7.7		SEE DETAIL "A"									3 1/8"	1 1/2"	1 1/8"	2 5/8"	1 1/2"	9/16"	1/2"	9/16"	1/4"	1/2"	0.64#	1'-6"	3 1/2"	1'-6"	#5



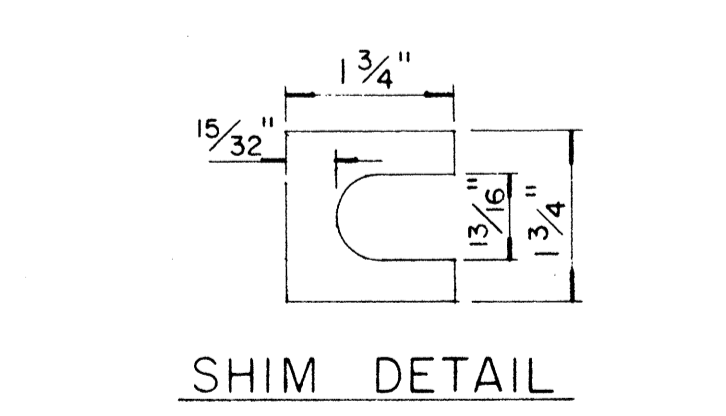
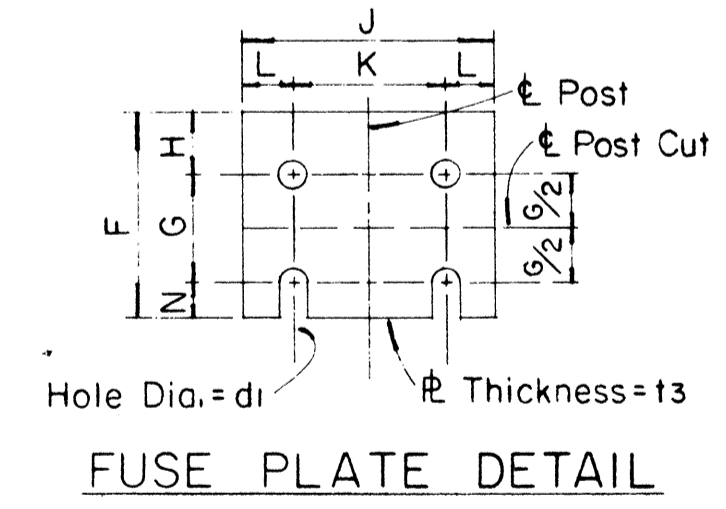
NOTE:
Sections shown are for installations on right shoulder and in gore. Reverse plate slot bevels for installations on left shoulder.



GENERAL NOTES

- Design conforms with AASHTO Specifications for the design and Construction of Structural Supports for Highway Signs.
- Materials and Fabrication shall conform to the requirements of the Standard Specifications and Special Provisions.
- All holes shall be drilled. All plate cuts shall preferably be saw cuts, however; flame cutting will be permitted provided all edges are ground. Metal projecting beyond the plane of the plate face will not be tolerated.
- Tighten the high strength bolts in the base connection only to the torque shown, do not overtighten. All bolts other than high strength bolts shall conform to ASTM A 307, Class A.
- All structural steel, bolts, nuts and washers shall be galvanized as per the Standard Specifications and Special Provisions. Structural steel to be galvanized after fabrication except as noted.
- Structural steel shall conform with with the requirements of ASTM A 441
- Galvanizing of all posts shall be projection above concrete plus 6" minimum.
- All friction fuse bolts shall be tightened in the shop following a method approved by the Engineer. Tightening shall be to such a degree as to obtain the following minimum residual tension in each bolt:

Bolt Size	Min. Tension	Bolt Size	Min. Tension
1/2" ϕ	12050 Lbs.	3/4" ϕ	28400 Lbs.
5/8" ϕ	19200 Lbs.	7/8" ϕ	36050 Lbs.



Furnish 2 x .012" ± thick and 2 x .032" ± thick shims per post. Shims shall be fabricated from brass shim stock or strip conforming to A.S.T.M. - B 36.

APPROVAL RECOMMENDED:
Eishi Tanaka 12/29/69
TRAFFIC ENGINEER DATE

APPROVED:
John J. ... 12-30-69
ASSISTANT CHIEF, ENGINEERING DATE

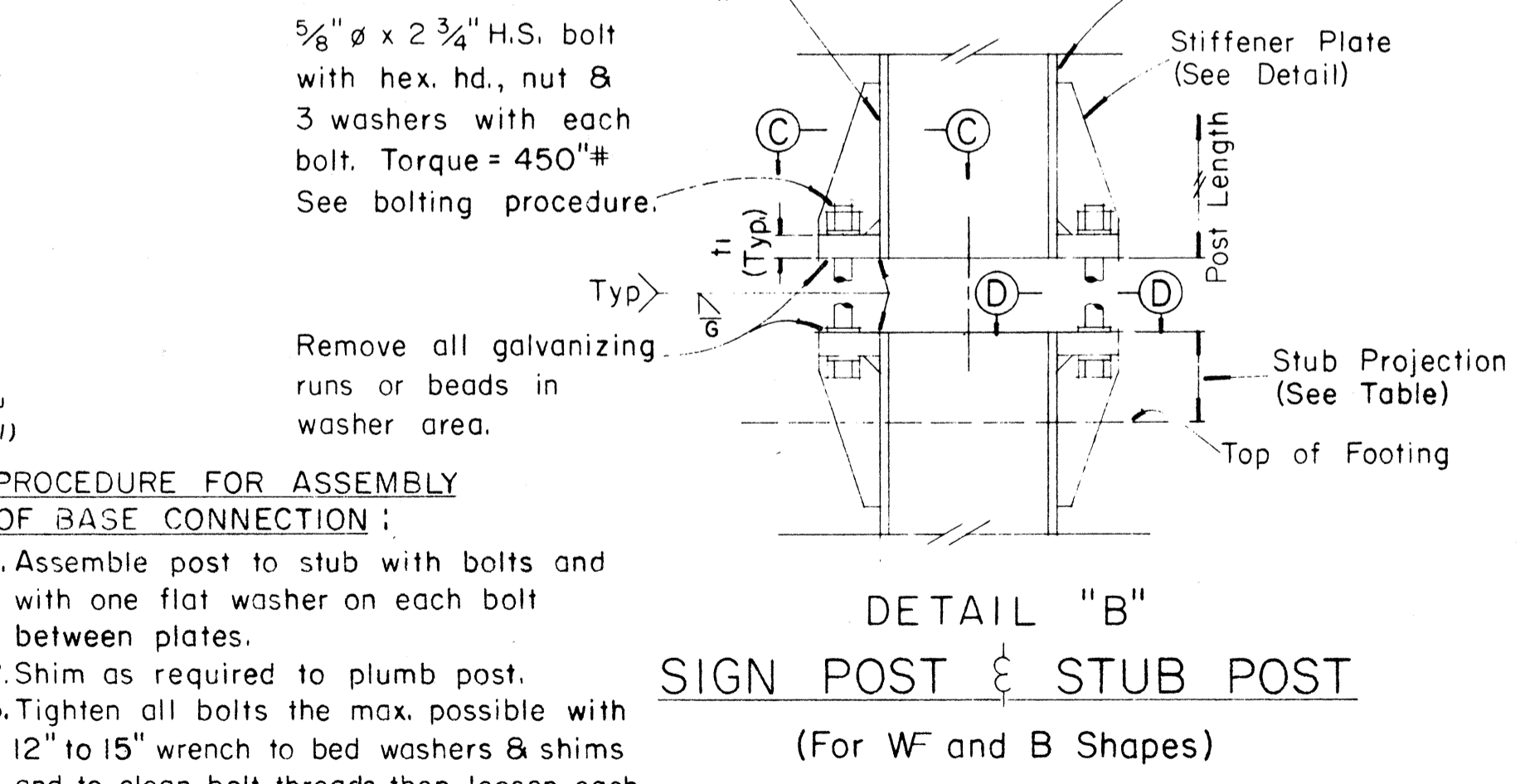
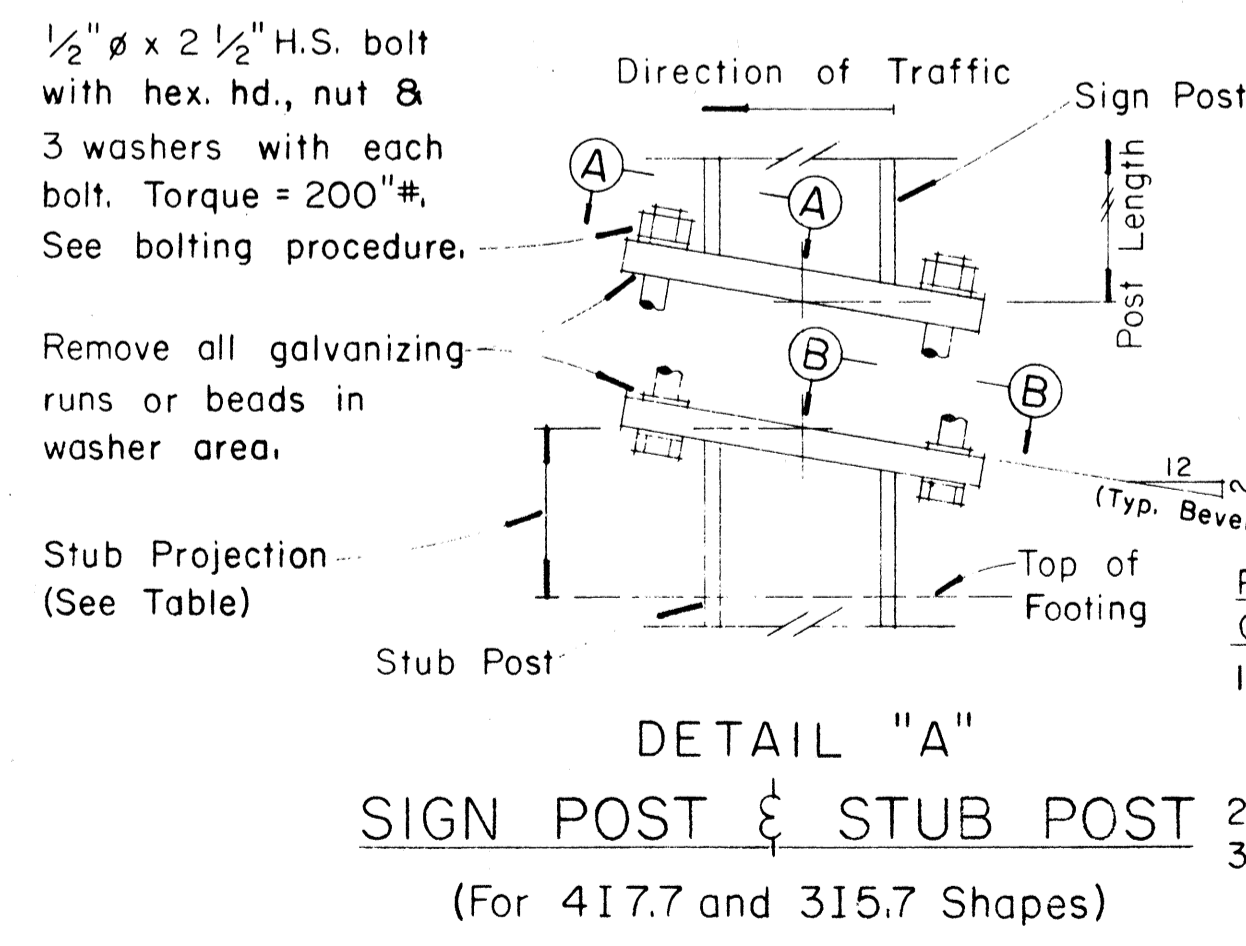
NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
BREAK-AWAY SIGN SUPPORTS
FOR
GROUND MOUNTED GUIDE SIGNS

Not to Scale

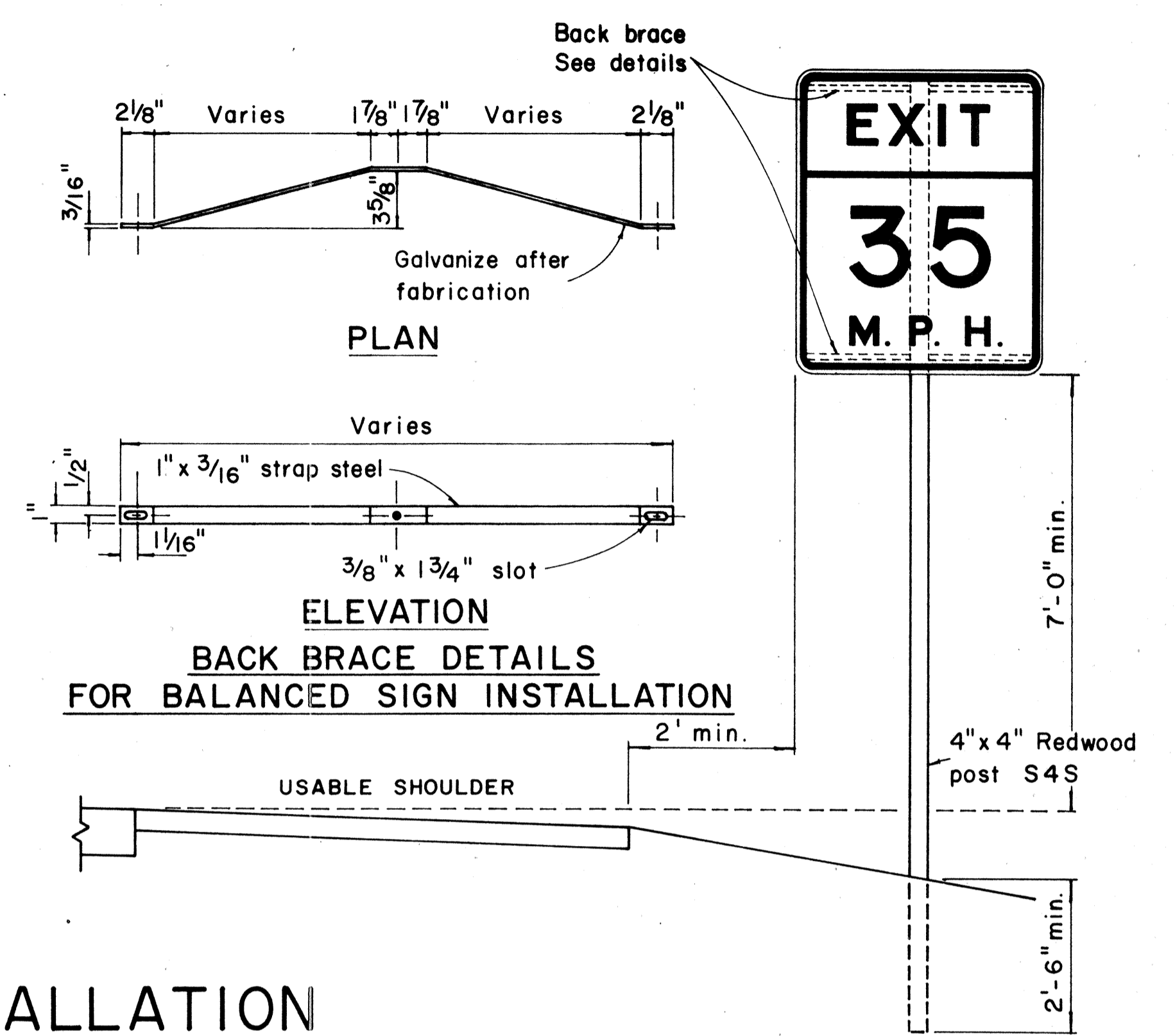
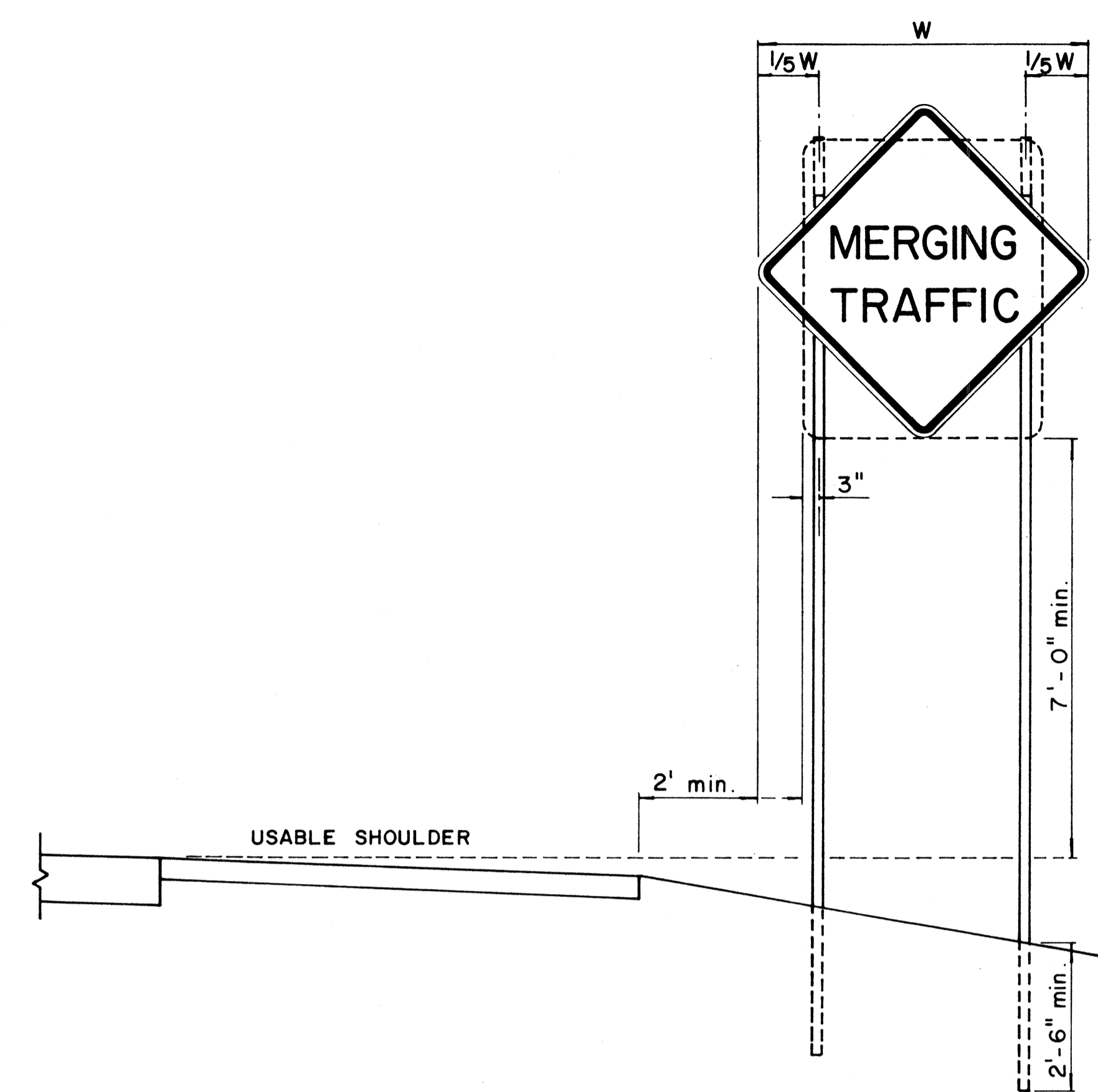
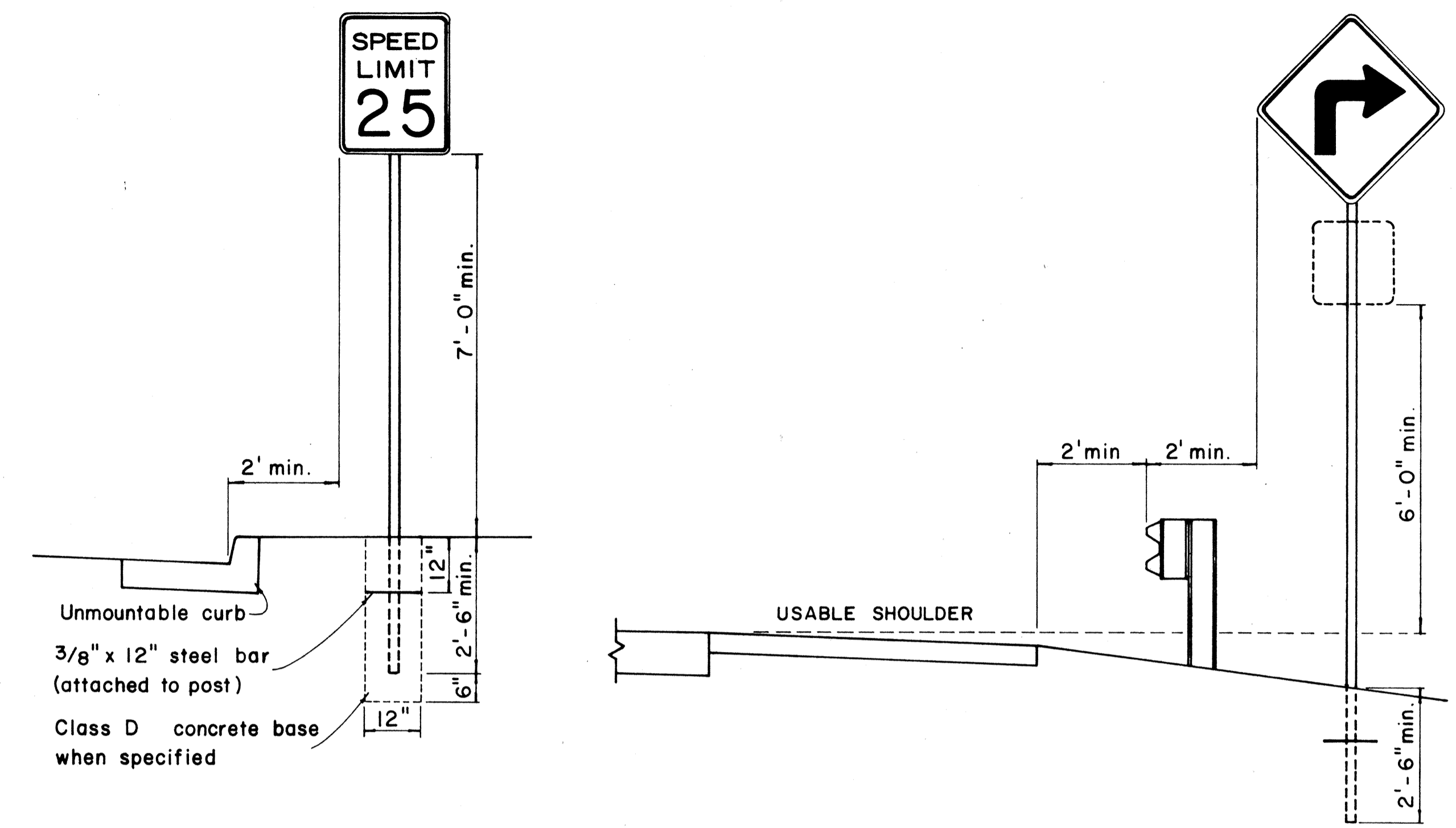
SURVEY PLOTTED BY: _____ DATE: _____
 DRAWN BY: _____
 DESIGNED BY: _____
 CHECKED BY: _____
 NO. _____



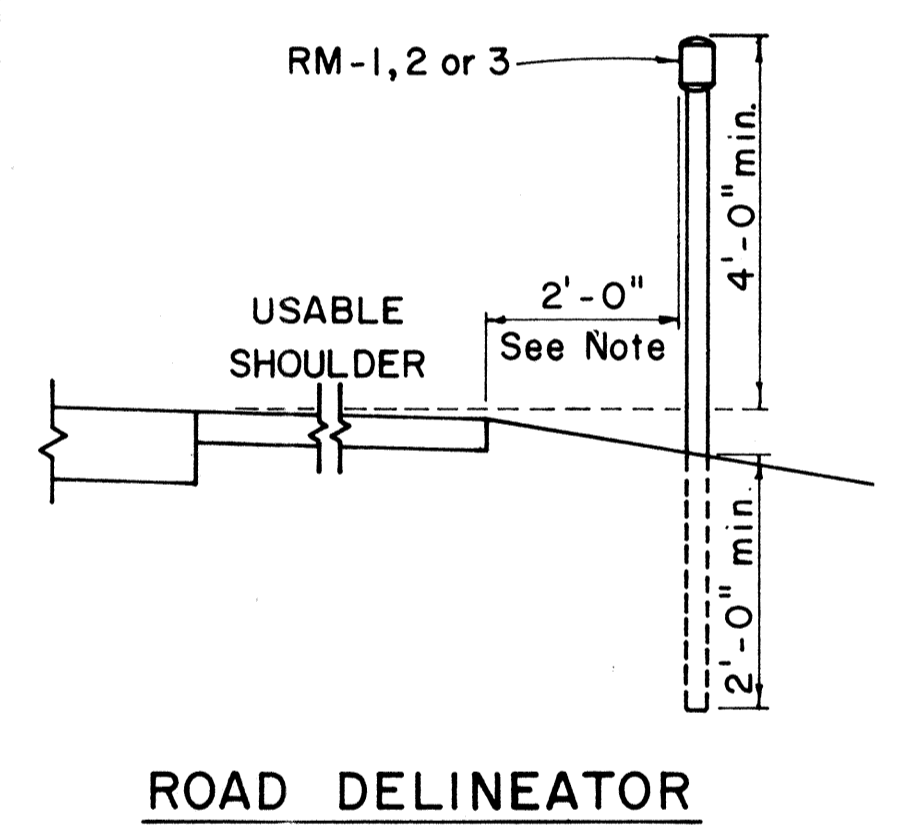
PROCEDURE FOR ASSEMBLY OF BASE CONNECTION:

- Assemble post to stub with bolts and with one flat washer on each bolt between plates.
- Shim as required to plumb post.
- Tighten all bolts the max. possible with 12" to 15" wrench to bed washers & shims and to clean bolt threads then loosen each bolt in turn & retighten bolts in systematic order to prescribed torque. (See Table)
- Burr threads at junction with nut using a center punch to prevent nut loosening.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(87)13	1970	101	244



HEIGHT AND LATERAL LOCATION OF SIGNS - TYPICAL INSTALLATION

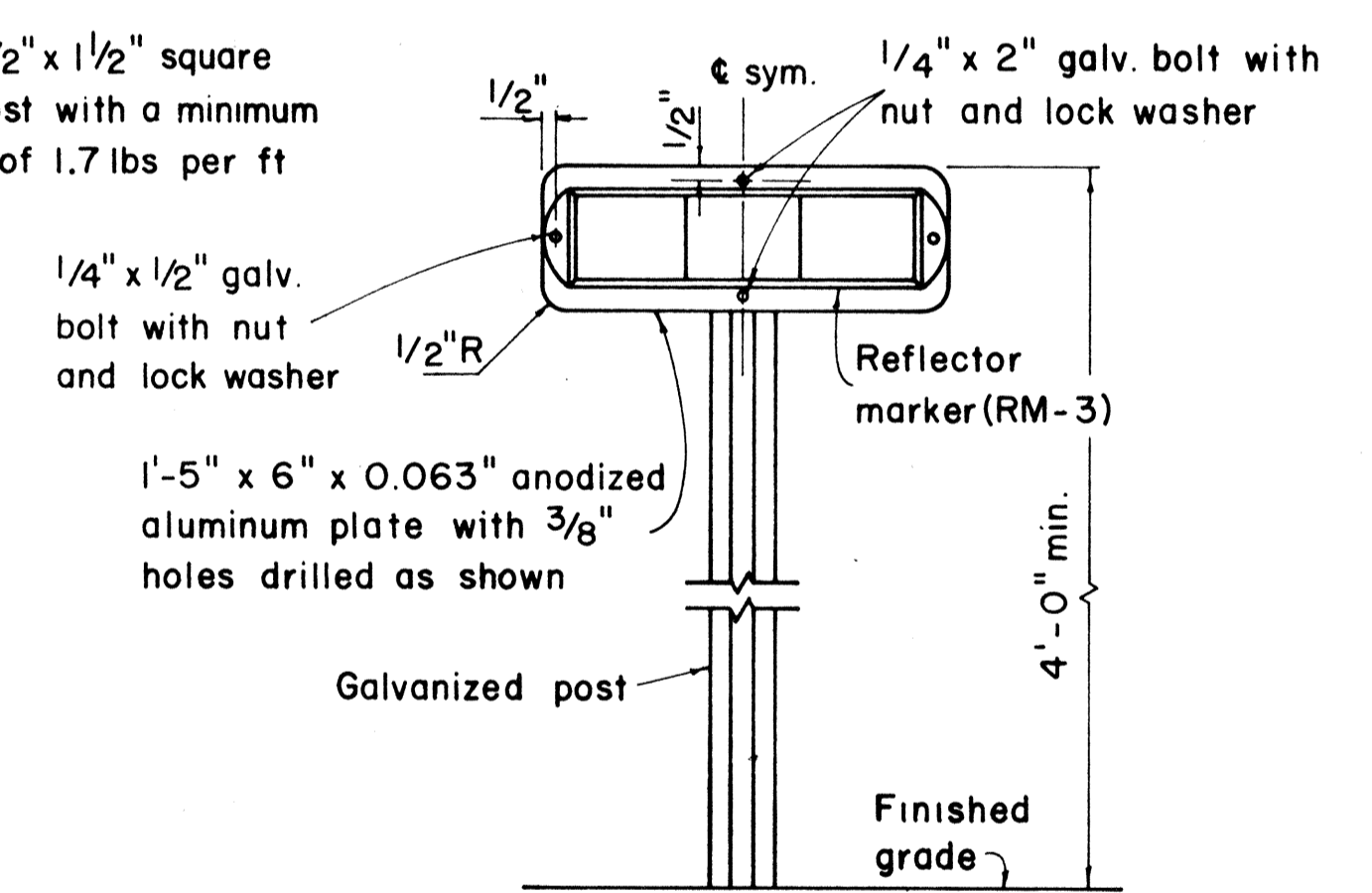


Galv. flanged channel $1/8'' \times 3/16''$ rolled section post with a minimum weight of 2 lbs. per ft.. Upper 2 ft. shall have a single row of $3/8''$ holes centered in the web at 1" o.c.

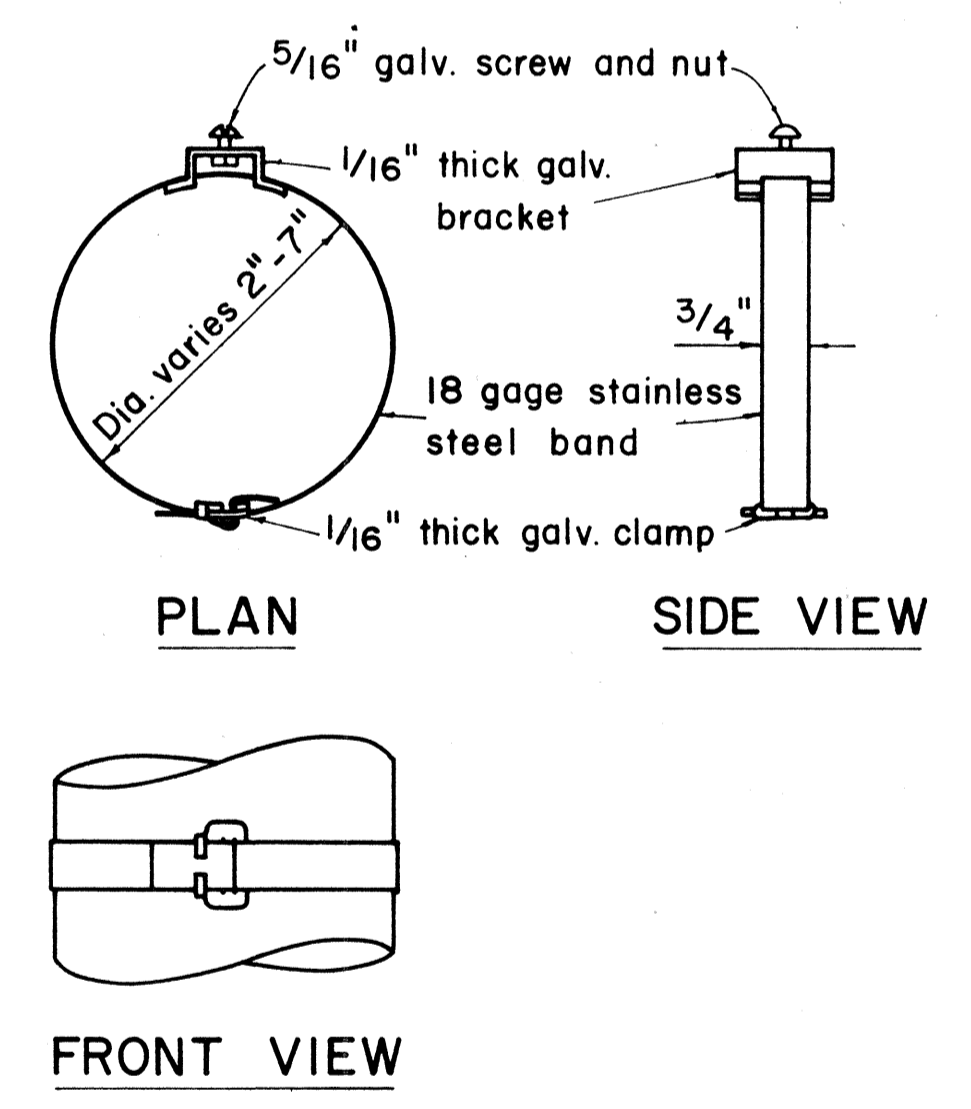
$1/4'' \times 2''$ galv. bolt with nut and lock washer

Galv $1/2'' \times 1/2''$ square tube post with a minimum weight of 1.7 lbs per ft

TYPICAL SECTION OF ROAD DELINEATOR



TYPICAL DETAIL
HORIZONTAL REFLECTOR MARKER
RM-3H



TYPICAL BAND BRACKET FOR
MOUNTING TRAFFIC SIGNS

- GENERAL NOTES:**
- Sign posts shall be 2" galv. standard pipe or 2" x 2" galv. sq. tube post.
 - Signs 48" and wider or larger than 10 sq. ft. in area shall be mounted on two 2" galv. standard pipe or two 2" x 2" galv. sq. tube post or 4" x 4" redwood post S4S.
 - Signs shall be attached to post with $5/16''$ galv. bolts with nuts and $7/8'' \times 0.06$ stainless steel washers with neoprene rubber gasket.
 - Sign posts shall extend $3 1/2''$ above sign where required for City and County street name signs.
 - Reflector markers RM-1, 2, 3 shall be glass sphere reflector markers with 4" x 5" reflector units (as shown) or plastic prismatic reflector markers with 3" diameter reflector units.
 - Clearance markers (RM-3, RM-4) shall be installed with the edge of the marker in line with the inner edge of the obstruction.
 - (R) or (L) indicates right or left and shall be as shown on the plans.

APPROVAL RECOMMENDED:
Erichi Tanaka 12/29/68
TRAFFIC ENGINEER DATE

APPROVED:
[Signature] 12-30-68
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

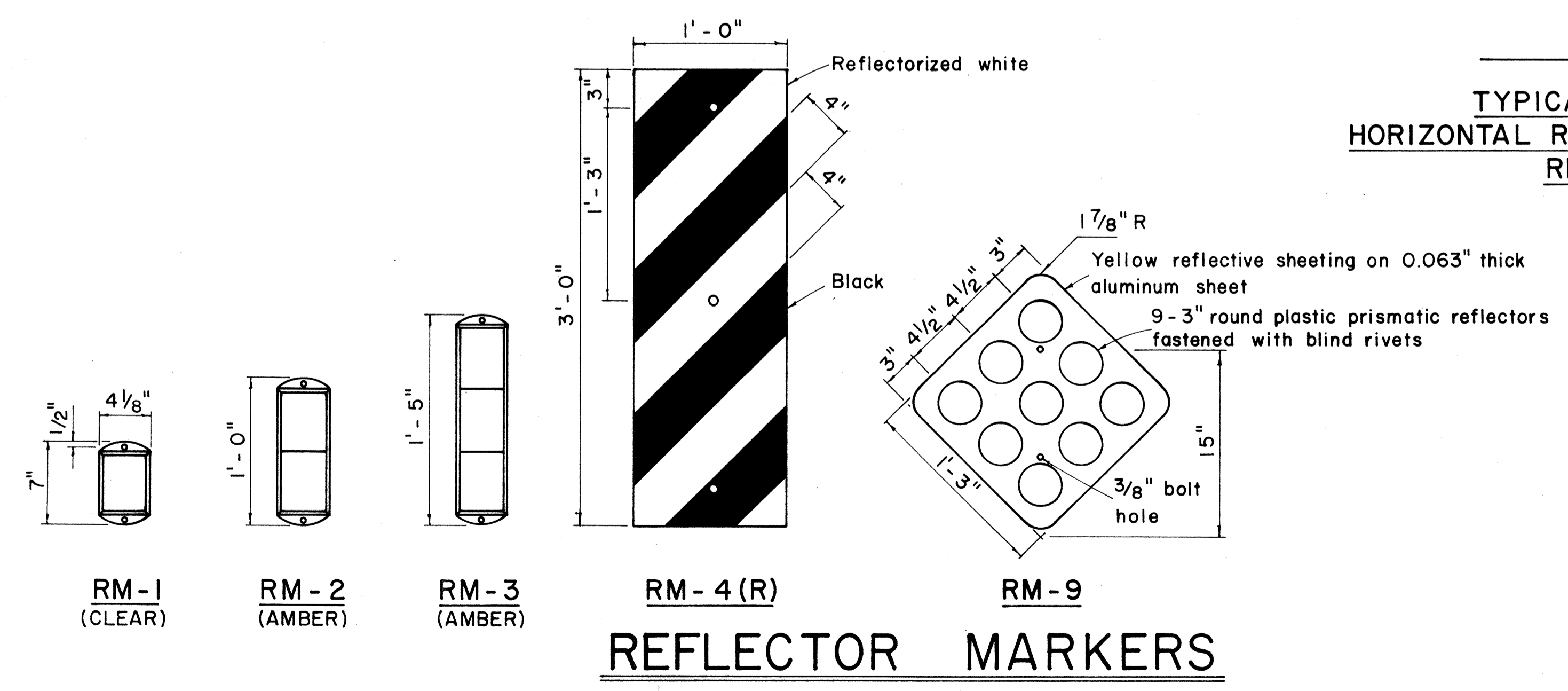
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
MISCELLANEOUS SIGN DETAILS

Not to scale March, 1968

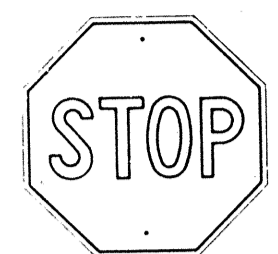
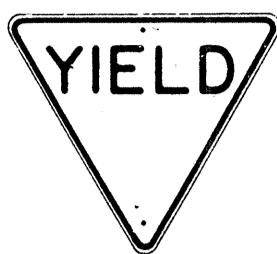
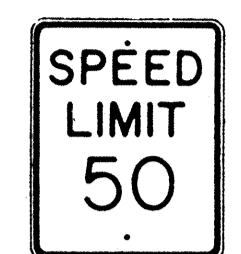
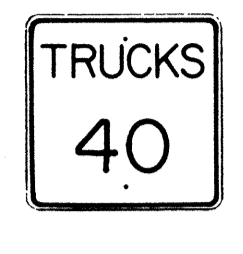
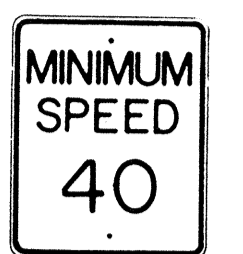
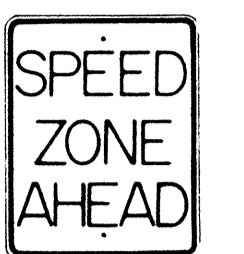
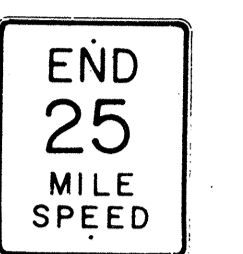
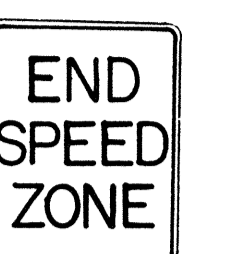

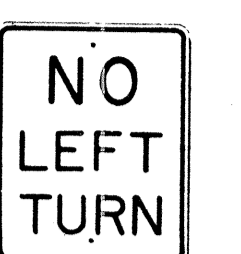
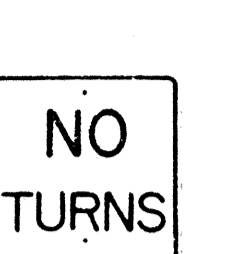
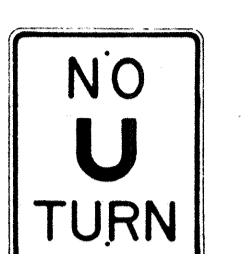
SHEET No. 17 OF 22 SHEETS DT 100


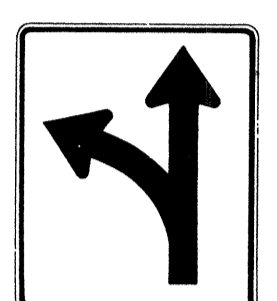






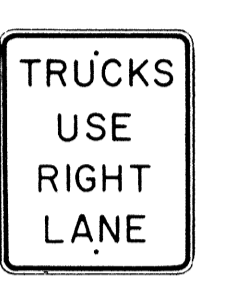



ORIGINAL PLAN
 SURVEY PLOTTED BY
 DRAWN BY
 DESIGNED BY
 CHECKED BY
 No.

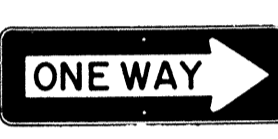

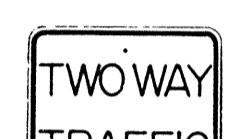
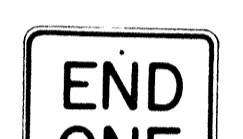
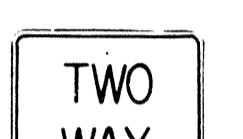



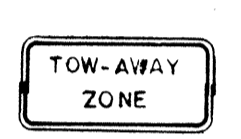






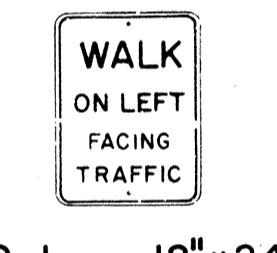
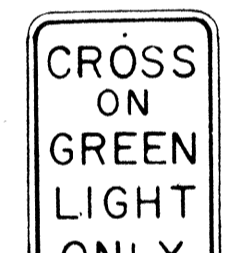

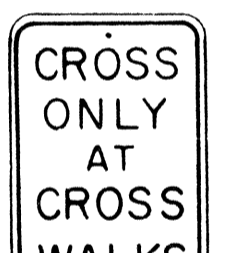

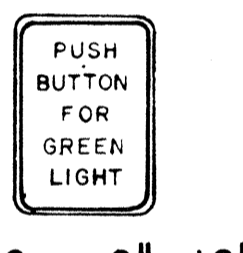
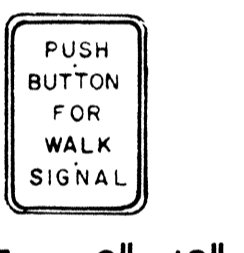
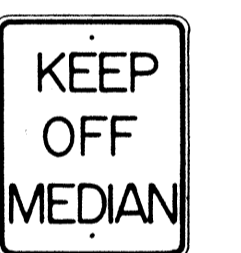

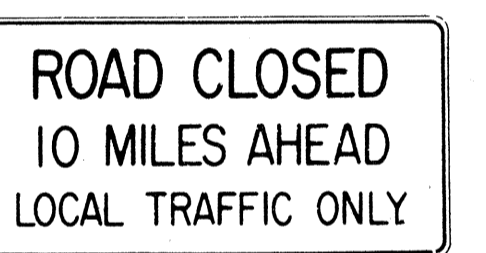
REFLECTOR MARKERS


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	[H-1(87)13	1970	102	244

 R1-1 30"x 30"	 R1-2 36"x36"x36" R1-2-E 48"x48"x48" R1-2-I 60"x60"x60"	 R2-1(50) 24"x30" R2-1(50)-E 36"x48" R2-1(50)-I 48"x60"	 R2-2(40) 24"x24" R2-2(40)-E 36"x36" R2-2(40)-I 48"x48"	 R2-4(40) 24"x30" R2-4(40)-E 36"x48" R2-4(40)-I 48"x60"	 R2-5 24"x30" R2-5-E 36"x48" R2-5-I 48"x60"	 R2-6(25) 24"x30" R2-6(25)-E 36"x48" R2-6(25)-I 48"x60"	 R2-7 24"x30" R2-7-E 36"x48" R2-7-I 48"x60"	 R3-1 24"x30" R3-1-E 36"x48"	 R3-2 24"x30" R3-2-E 36"x48"	 R3-3 24"x24"	 R3-4 24"x30" R3-4-E 36"x48" R3-4-I 48"x60"
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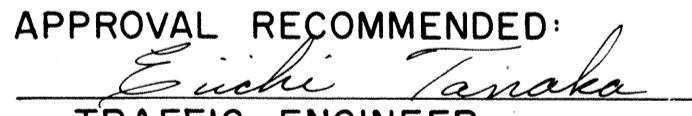
 R3-5(L) 30"x 36"	 R3-6(L) 30"x 36"	 R3-7(R) 30"x 30"	 R3-8(L) 30"x 30"	 R4-1 24"x 30"	 R4-2 24"x 30"	 R4-3 24"x 30" R4-3-E 36"x 48" R4-3-I 48"x 60"	 R4-4 24"x 30" R4-4-E 36"x 48" R4-4-I 48"x 60"	 R4-5 24"x 30" R4-5-E 36"x 48"	 R4-6 24"x 30" R4-6-E 36"x 48"	 R4-7(R) 24"x 30" R4-7(R)-E 36"x 48"	 R5-1 24"x 24"
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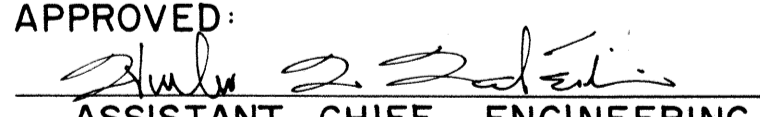
 R6-1(R) 36"x 12"	 R6-2(R) 18"x 24"	 R6-3 24"x 30"	 R6-4 24"x 30"	 R6-5 24"x 30"	 R7-1 12"x 18"	 R7-4 12"x 18" R7-4-E 24"x 30"	 R7-107(R) 12"x 18"	 R7-201 12"x 6"	 R8-1 24"x 30" R8-1-E 36"x 48" R8-1-I 48"x 60"	 R8-2 24"x 30" R8-2-E 36"x 48"	 R8-3 24"x 30" R8-3-E 36"x 48"
---	---	--	---	--	--	---	---	---	--	---	---

 R8-4 24"x 30" R8-4-E 36"x 48" R8-4-I 48"x 36"	 R9-1 18"x 24"	 R9-2 12"x 18"	 R9-3 12"x 18"	 R9-4 12"x 18"	 R9-5 12"x 18"	 R9-6 9"x 12"	 R9-7 9"x 12"	 RIO-1 24"x 30" RIO-1-E 36"x 48" RIO-1-I 48"x 60"	 RIO-2 48"x 30"	 RIO-3(10) 60"x 30"
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RIO-4(10) 18"x 24"

- NOTE:
- The shape, color, dimensions, symbols, wording, lettering and reflectorization 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 regulatory signs shall be reflectorized unless otherwise specified.
 - All regulatory signs shall have 3/8" bolt holes drilled at appropriate locations unless otherwise noted.
 - The suffix "E" denotes Expressway signs and "I" denotes Interstate signs.
 - For R2 signs, number in () indicates speed and shall be as shown on the plans.
 - (R) or (L) indicates right or left and shall be as shown on the plans.
 - For RIO-4 sign, number in () indicates weight and shall be as shown on the plan.

APPROVAL RECOMMENDED:

 TRAFFIC ENGINEER 12/29/69 DATE

APPROVED:

 ASSISTANT CHIEF, ENGINEERING 12-30-69 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

STANDARD DETAILS
REGULATORY SIGNS

NOT TO SCALE

SHEET No. 18T OF 22T SHEETS DT 101

ORIGINAL PLAN
 SURVEY PLOTTED BY
 DRAWN BY
 DESIGNED BY
 NOTE BOOK
 QUANTITIES BY
 CHECKED BY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-(67)13	1970	103	244

WI-1(R) 30" x 30"	WI-2(R) 30" x 30"	WI-3(R) 30" x 30"	WI-4(R) 30" x 30"	WI-5(R) 30" x 30"	WI-6 48" x 24"	WI-7 48" x 24"	W2-1 30" x 30"	W2-2 30" x 30"	W2-3(R) 30" x 30"
W2-4 30" x 30"	W2-5 30" x 30"	W3-1 30" x 30"	W3-2 30" x 30"	W3-3 36" x 36"	W4-1 30" x 30" W4-1-E 36" x 36" W4-1-I 48" x 48"	W4-2 30" x 30" W4-2-E 36" x 36"	W5-1 30" x 30" W5-1-E 36" x 36"	W5-2 30" x 30"	W5-3 30" x 30"
W6-1 36" x 36"	W6-2 36" x 36"	W7-1 30" x 30"	W8-1 30" x 30"	W8-2 30" x 30"	W8-3 30" x 30"	W8-4 30" x 30"	W8-5 30" x 30"	W9-1 30" x 30"	W9-2 30" x 30"
W10-1 36" DIAMETER	W11-1 30" x 30"	W11-5 30" x 30"	W12-2 36" x 36"	W13-1(35) 18" x 18" W13-1(35)-E 24" x 24"	W13-2(25) 12" x 18"	W13-3(25) 48" x 60"			

NOTE:

- The shape, color, dimensions, symbols, wording, lettering and reflectorization 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 warning signs shall be reflectorized unless otherwise specified.
- All warning signs shall have 3/8" bolt holes drilled at appropriate locations unless otherwise noted.
- (R) or (L) indicates right or left and shall be as shown on the plan.
- The suffix "E" denotes Expressway signs and "I" denotes Interstate signs.
- For W13 sign, number in () indicates speed and shall be as shown on the plans.

APPROVAL RECOMMENDED:
Etsuki Tanaka 12/29/69
 TRAFFIC ENGINEER DATE

APPROVED:
John J. ... 12-30-69
 ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

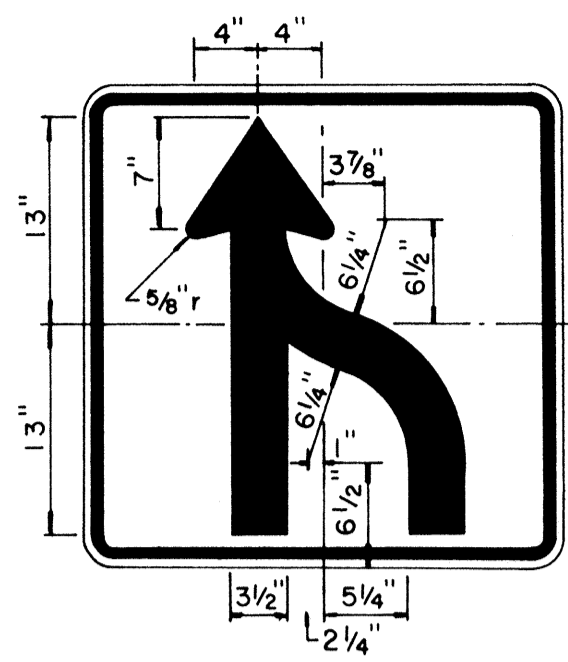
STANDARD DETAILS
WARNING SIGNS

NOT TO SCALE

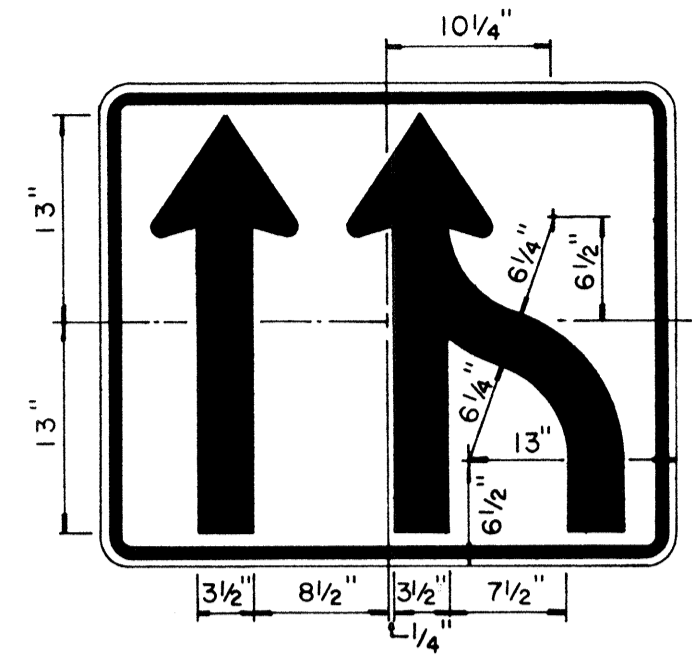
SHEET No. 19T OF 22T SHEETS DT 102

SURVEY PLOTTED BY _____ DATE _____
 ORIGINAL PLAN _____
 NOTE BOOK _____
 DESIGNED BY _____
 QUANTITIES BY _____
 CHECKED BY _____

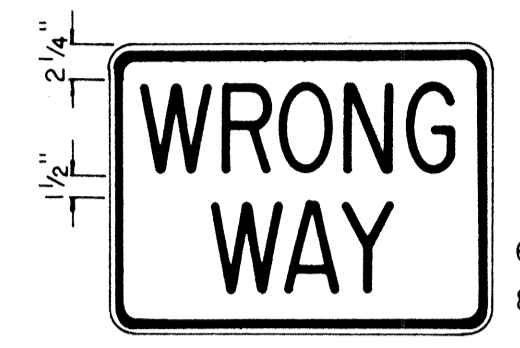
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-(87):13	1970	104	244



R3-9 30" x 30"

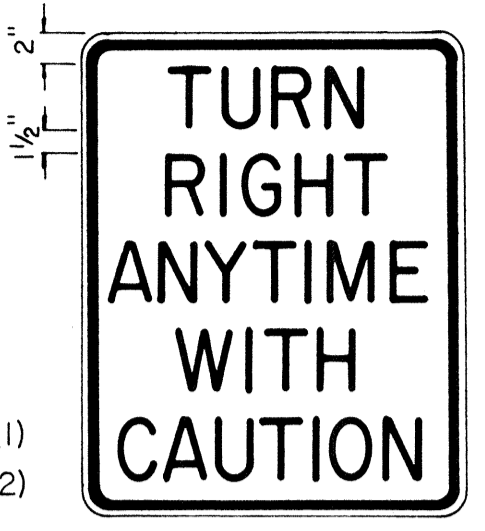


R3-10 36" x 30"

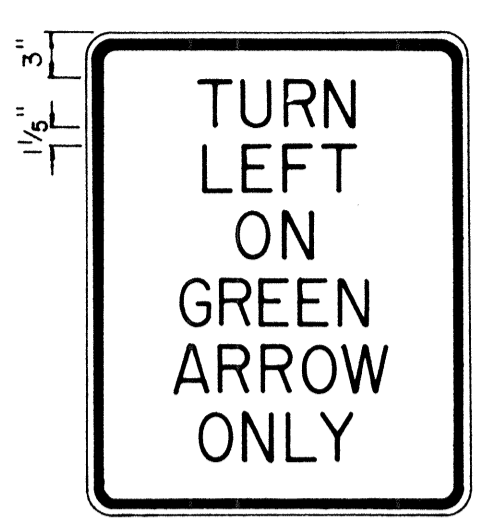


R5-5(1) 24" x 18"
R5-5(2) 36" x 24"

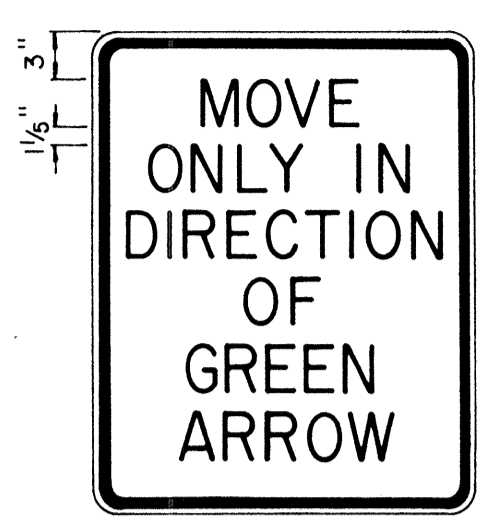
NOTE:
White legend and border
on Red background



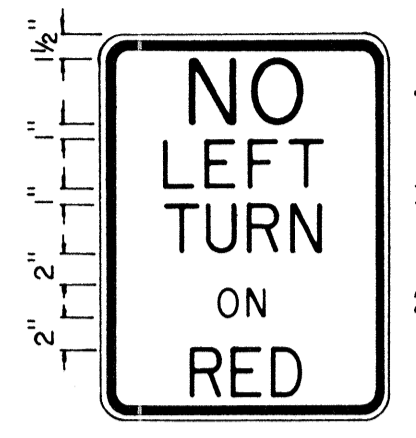
R15-1 24" x 30"



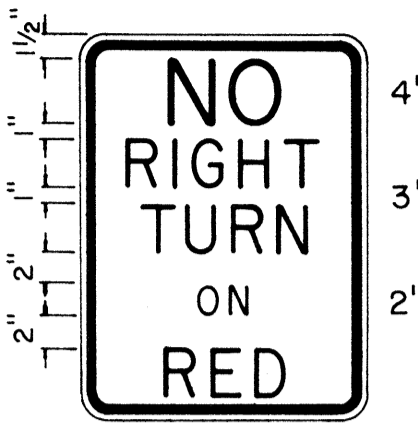
R16-1 24" x 30"



R16-2 24" x 30"



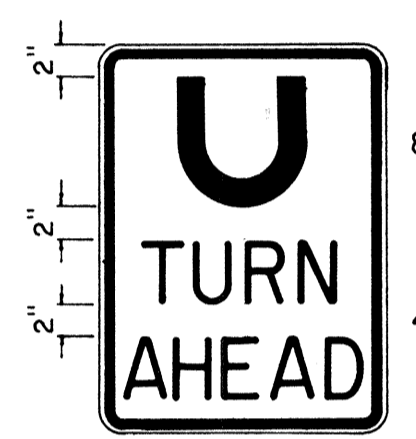
R17-1 18" x 24"



R17-2 18" x 24"



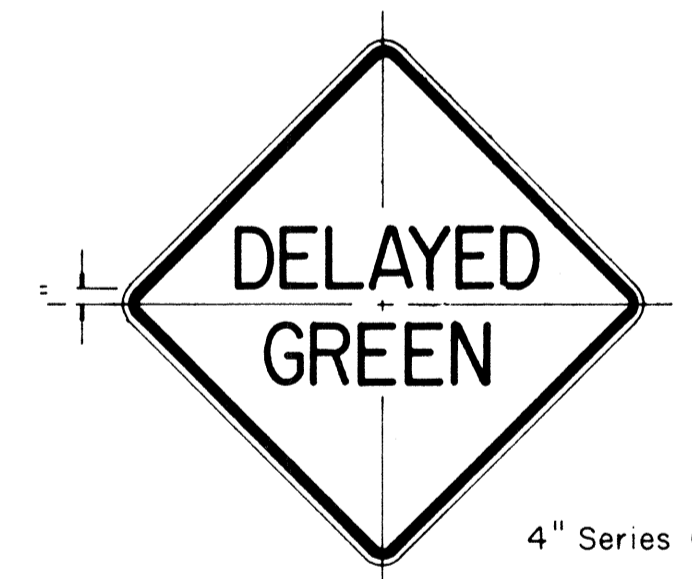
R18-1 36" x 30"



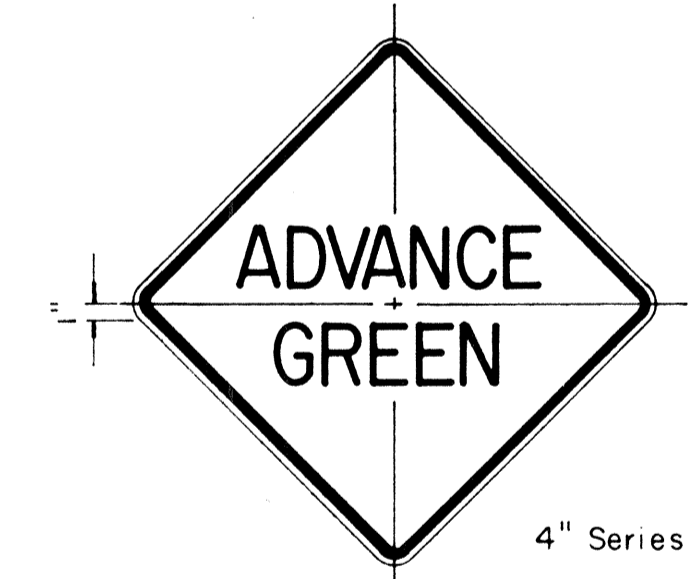
R19-1 18" x 24"



W13-4 24" x 24"



W15-1 24" x 24"



W15-2 24" x 24"

NOTE

- The shape, color, plate details, lettering and reflectorization of Regulatory signs (Prefix R) and Warning signs (Prefix W) 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 regulatory and warning signs shall be reflectorized unless otherwise specified.
- All regulatory and warning signs shall have 3/8" bolt holes drilled at appropriate locations unless otherwise specified.

APPROVAL RECOMMENDED:
Euchi Tanaka 12/29/69
TRAFFIC ENGINEER DATE

APPROVED:
Arthur S. Seibel 12-29-69
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

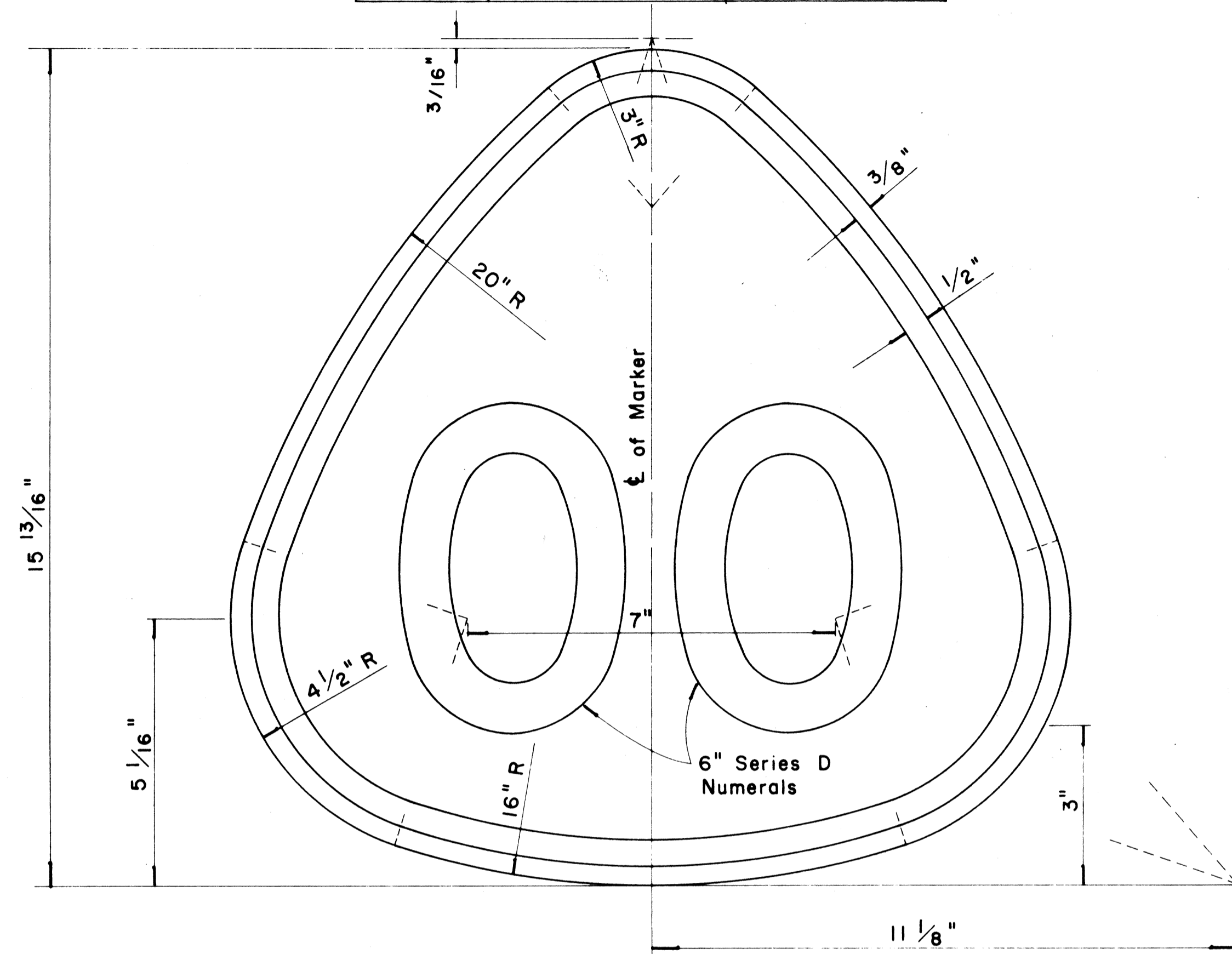
STANDARD DETAILS
MISCELLANEOUS
REGULATORY & WARNING SIGNS

Scale: 1" = 1'-0"

SHEET No. 207 OF 227 SHEETS DT 103

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

Shield Size	Multiply Dimensions by	Numeral Size
16"	1	6" Series D
21"	1.3	8" Series D
32"	2.0	12" Series D
42"	2.63	15" Series D
48"	3	18" Series D



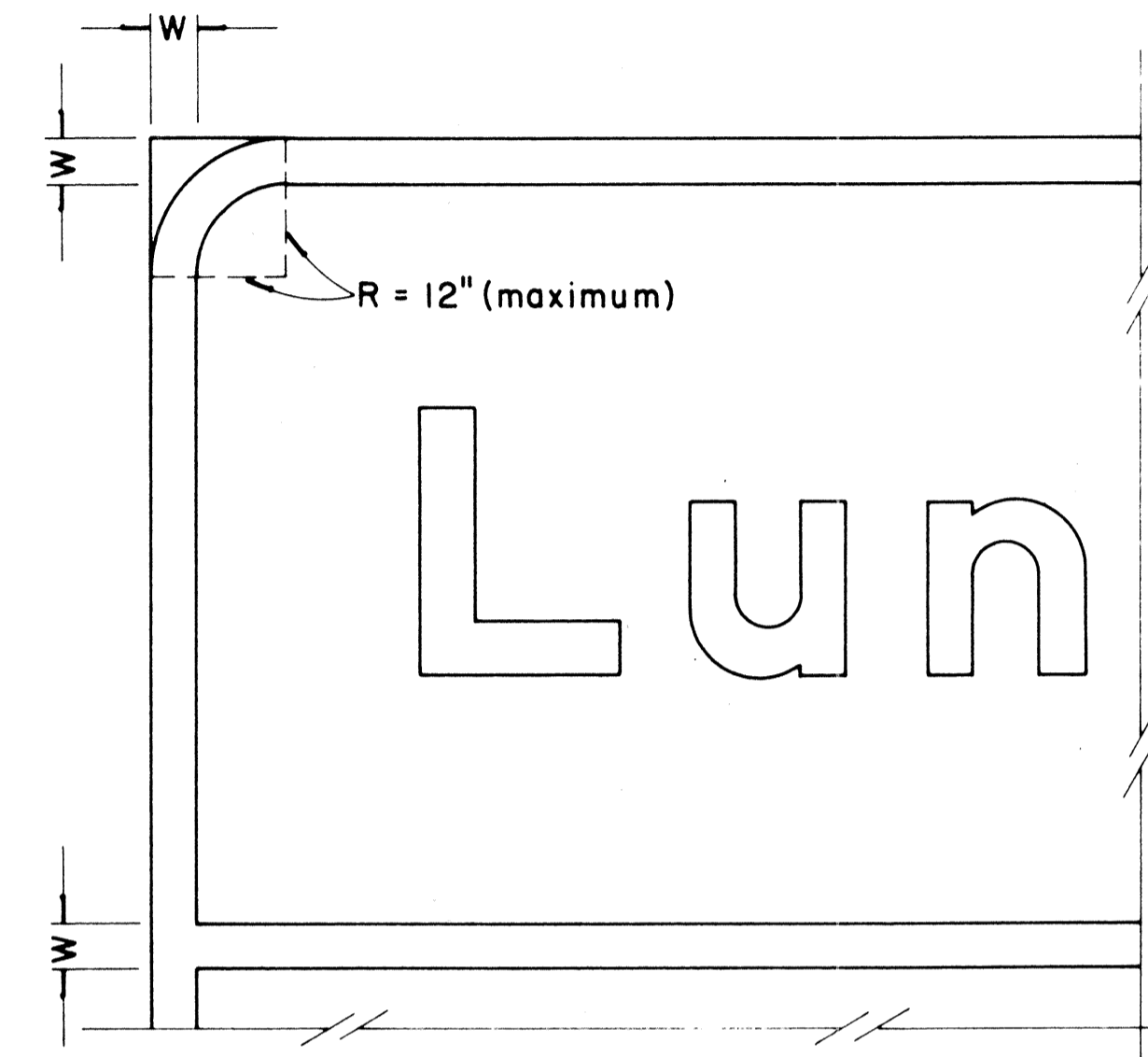
**STATE ROUTE MARKER
FOR
DESTINATION & EXPRESSWAY SIGNS**

Scale: Half Size

NOTE:

1. State Route Markers on Destination and 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, 1966.
3. All Cut-outs shall be fastened on sign panel with Aluminum blind rivets. See Standard Specification.

RADI FOR SIGNS		
Least Dimension of Sign	W	R
2' - 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"



**BORDER DETAIL
FOR
DESTINATION & EXPRESSWAY SIGNS**

No Scale

NOTE:

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

APPROVAL RECOMMENDED:

Eishi Tanaka 12/29/69
TRAFFIC ENGINEER DATE

APPROVED:

Alan S. S. S. 12/30/69
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DESTINATION & EXPRESSWAY SIGNS

**STATE ROUTE MARKER
AND
BORDER DETAIL**

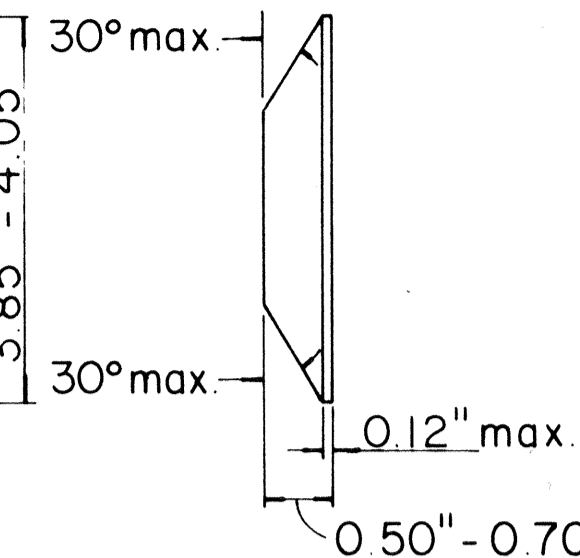
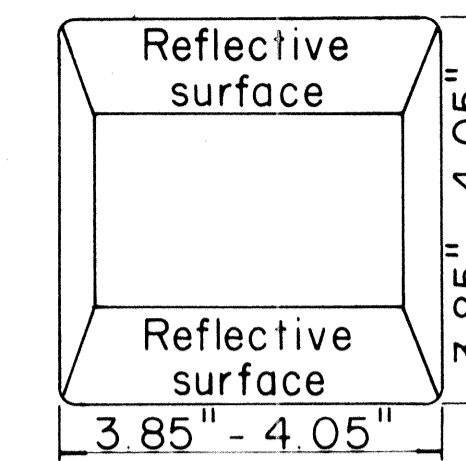
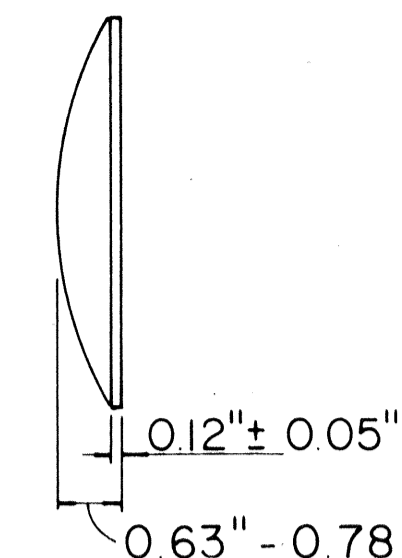
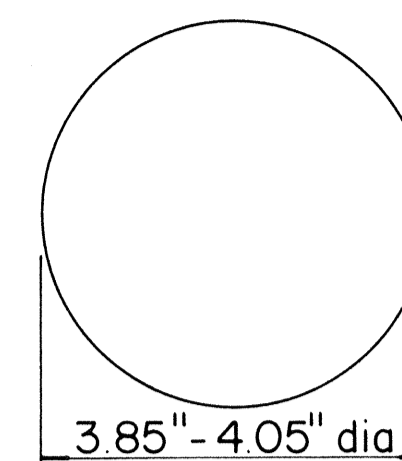
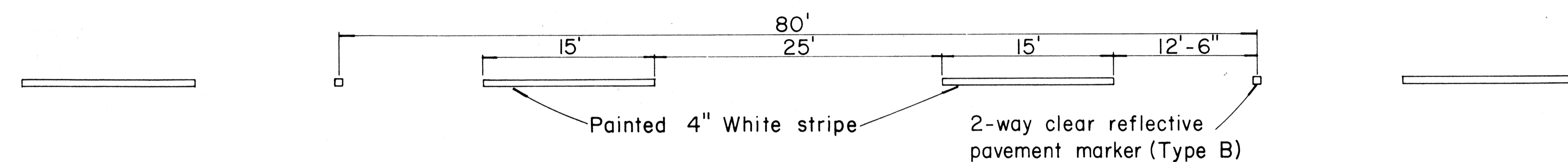
Scale: As Shown

SHEET No. 211 OF 221 SHEETS DT 209

DATE: _____
SURVEY PLOTTED BY: _____
DRAWN BY: _____
CHECKED BY: _____
NOTED BY: _____
ORIGINAL PLAN: _____
NOTE BOOK: _____

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(2)-13	1970	106	244

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



TYPE A

Non-reflective white marker

TYPE B

2-way clear reflective surface

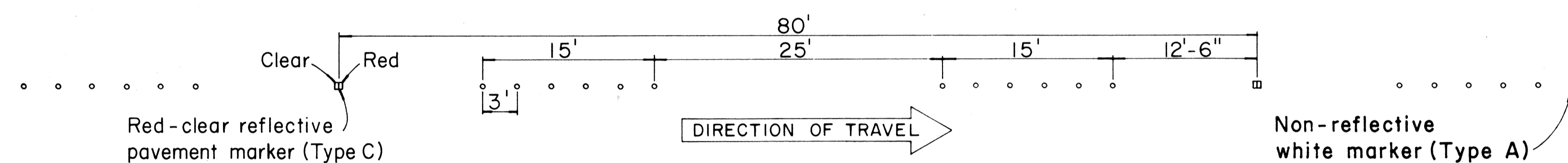
TYPE J

Non-reflective yellow marker

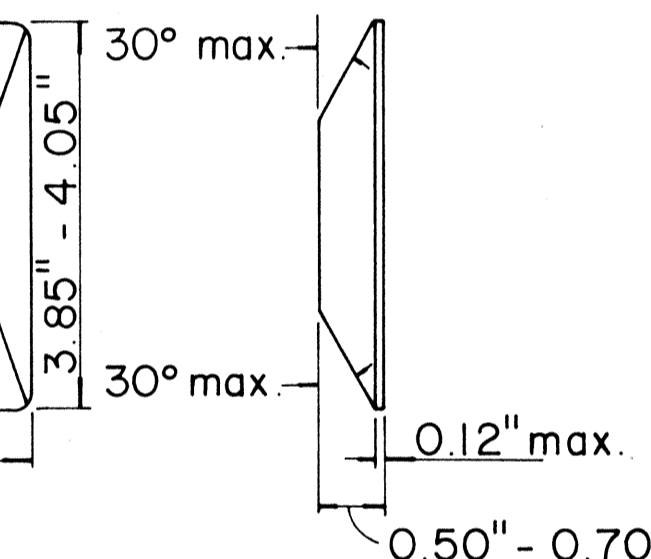
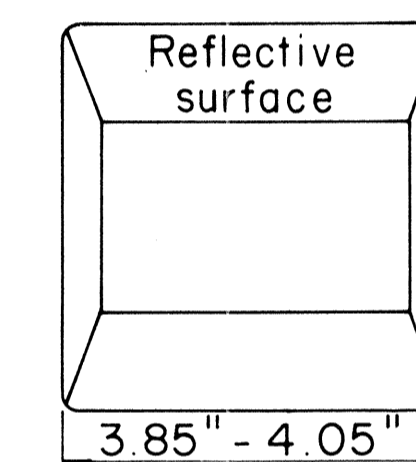
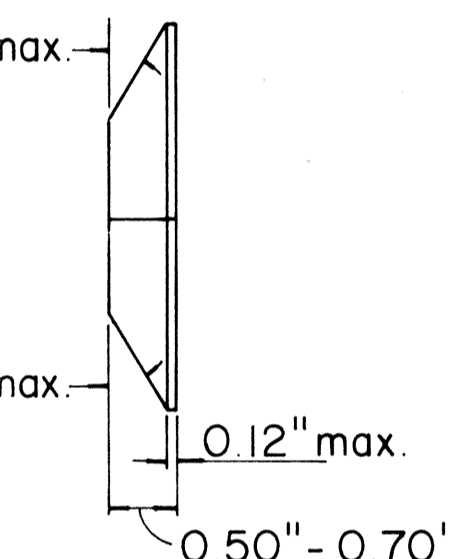
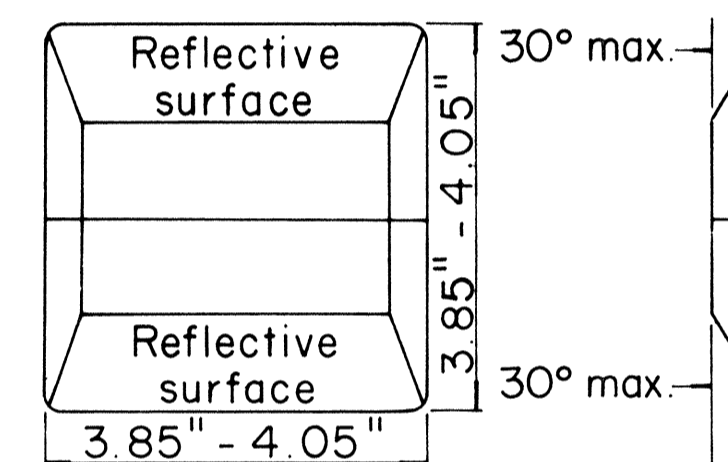
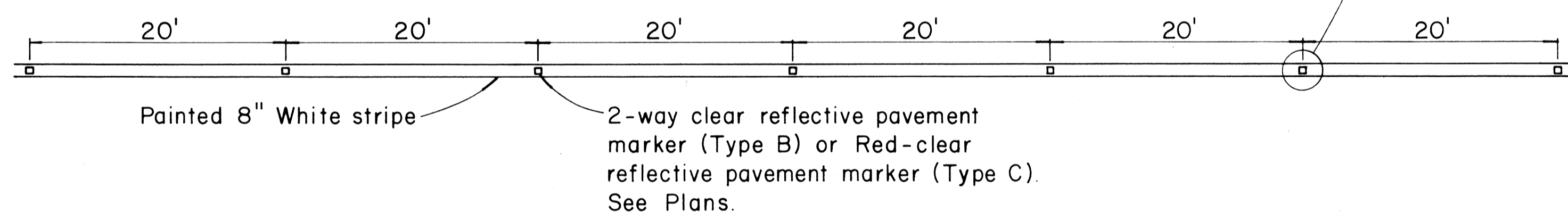
TYPE D

2-way yellow reflective surface

2 LANE LINES



3 CHANNELIZING LINES



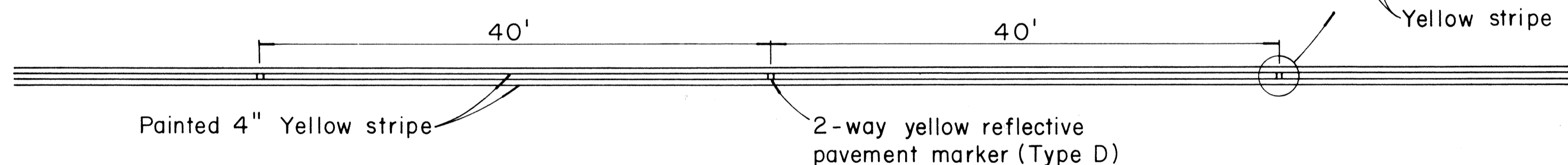
TYPE C

Red - clear reflective surface

TYPE H

One - way yellow reflective surface

4 YELLOW DOUBLE CENTER LINES



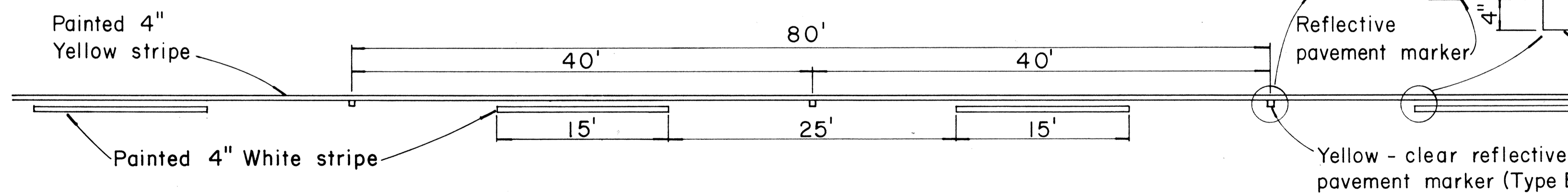
TYPE E

Yellow - clear reflective surface

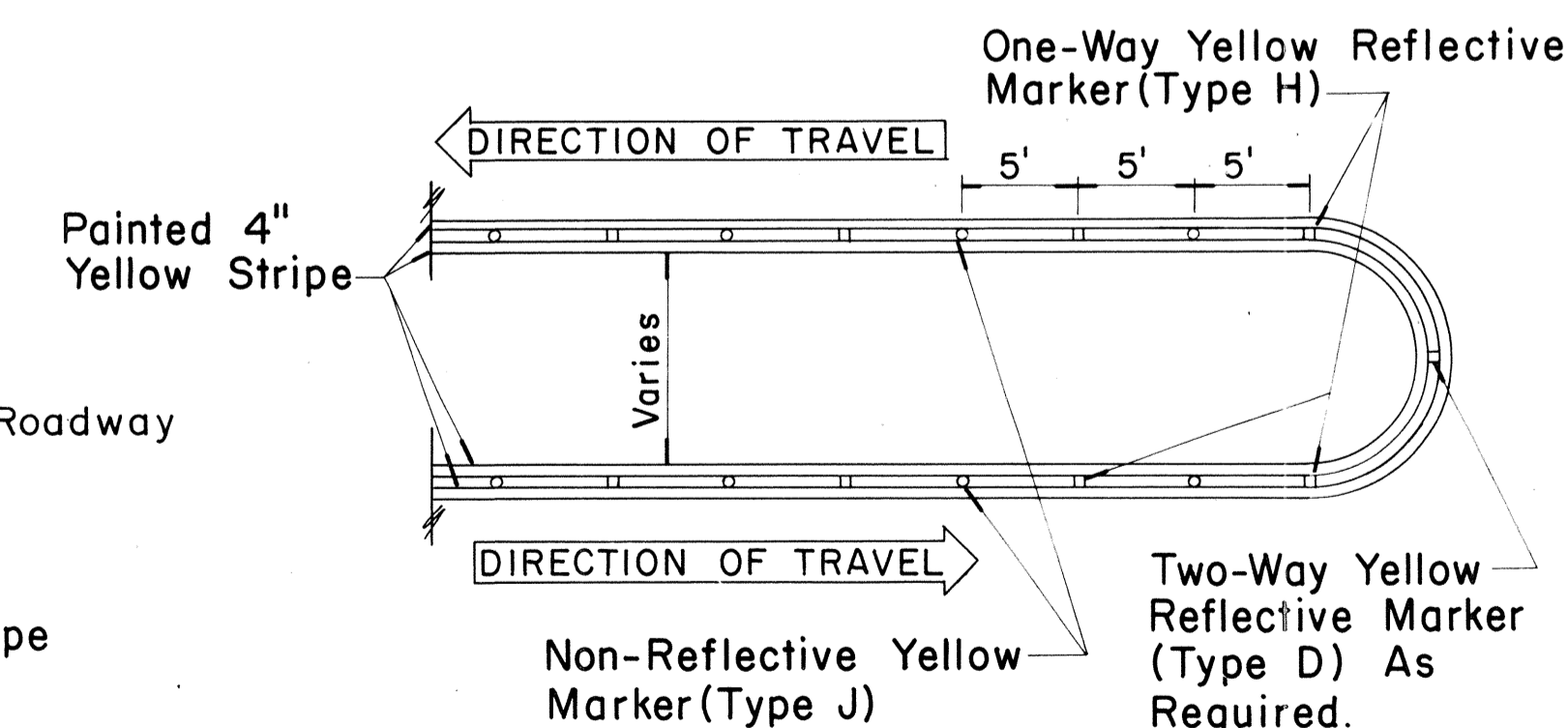
TYPE G

One - way clear reflective surface

5 NO PASSING - PASSING ZONES ON TWO - LANE ROADS



6 MEDIAN NOSE DELINEATION



NOTE

Painted stripes to be done by State forces.

APPROVAL RECOMMENDED:

Etsuki Tanaka 12/29/63
TRAFFIC ENGINEER DATE

APPROVED:

Andy [Signature] 12-30-63
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS RAISED PAVEMENT MARKERS

Not to Scale

Sept., 1967

SHEET No. 22 T OF 22 T SHEETS DT 300

106

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