

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-111(169):17	1983	110	280

GENERAL NOTES

MATERIALS:

1. Sign support box truss members & supporting shafts; sheet metal siding & edgings; connection bolts; nut & washers; to be structural steel. All surfaces shall be hot dipped galvanized after fabrication prior to painting. See Specifications & "Ribbed Sheet Metal Notes" on Sheet No. ES-7.
2. Galvanized surfaces of expressway sign frame & supports (Note-1 above) shall be painted, see specifications. Pigment for final coats of exterior weatherproof enamel to be determined by the Engineer.
3. Aluminum members and surfaces in contact with structural steel shall be isolated with neoprene material as directed by the Engineer.
4. Contact surfaces in high strength (H.S.) bolt connections shall not be painted. The galvanizing on these surfaces shall be lightly scored by wire brushing prior to assembly.
5. H.S. Bolts shall be galvanized, furnished and installed in conformance with current ASTM A325 with lubricated nuts.
6. Leveling Grout shall be non-shrink and non-metallic.

CONSTRUCTION METHOD:

1. See Hawaii Standard Specifications for Road & Bridge Construction, 1976 Edition and AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, current edition.

DESIGN:

AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, current edition.

DESIGN DATA:

Wind Loading: Normal to face of sign (75mph wind) (46psf, E-35, E-36, E-37 & E-38)
Transverse to face of sign = 0.2 of normal force.

Walkways: See sheet No. ES-5.

Ice Load: None

Structural Steel: ASTM A-36 $f_y = 36,000$ psi.

High Strength Bolts: ASTM A325 (Friction - Type Connection)

WELDING:

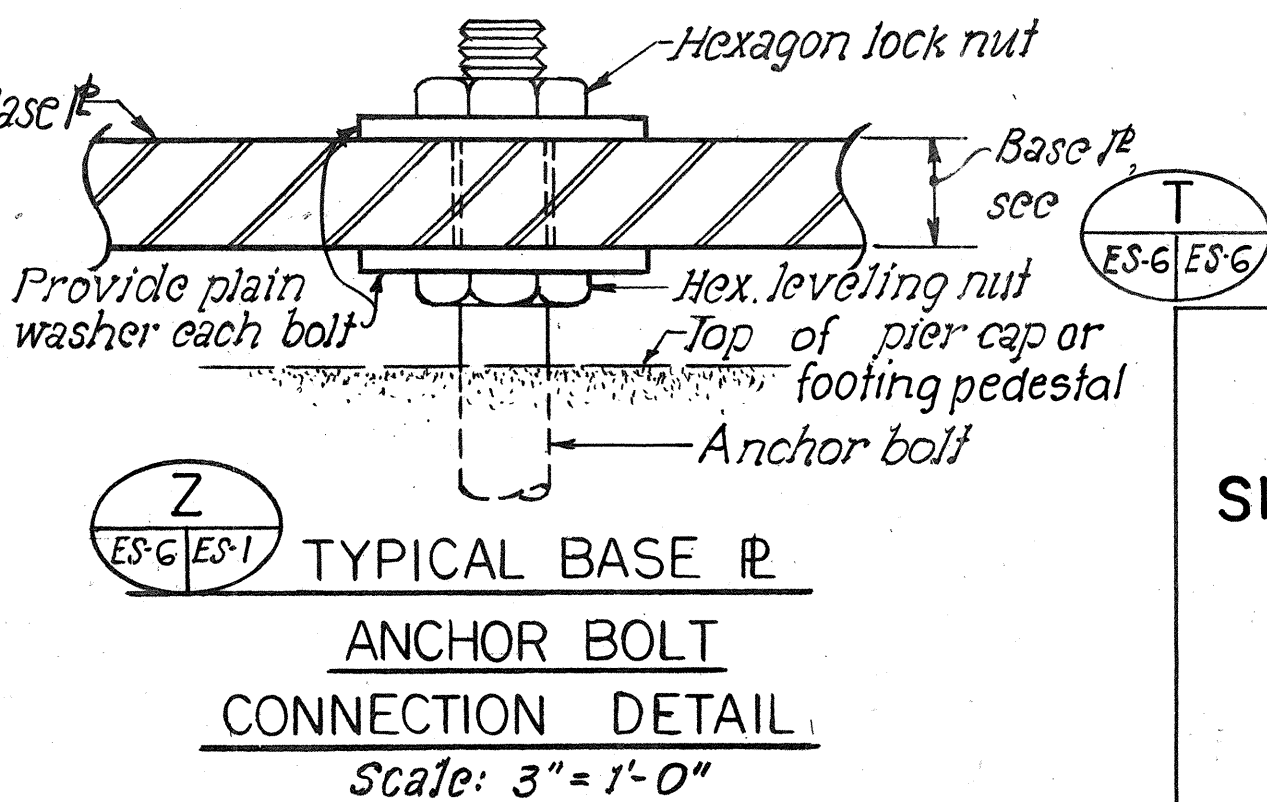
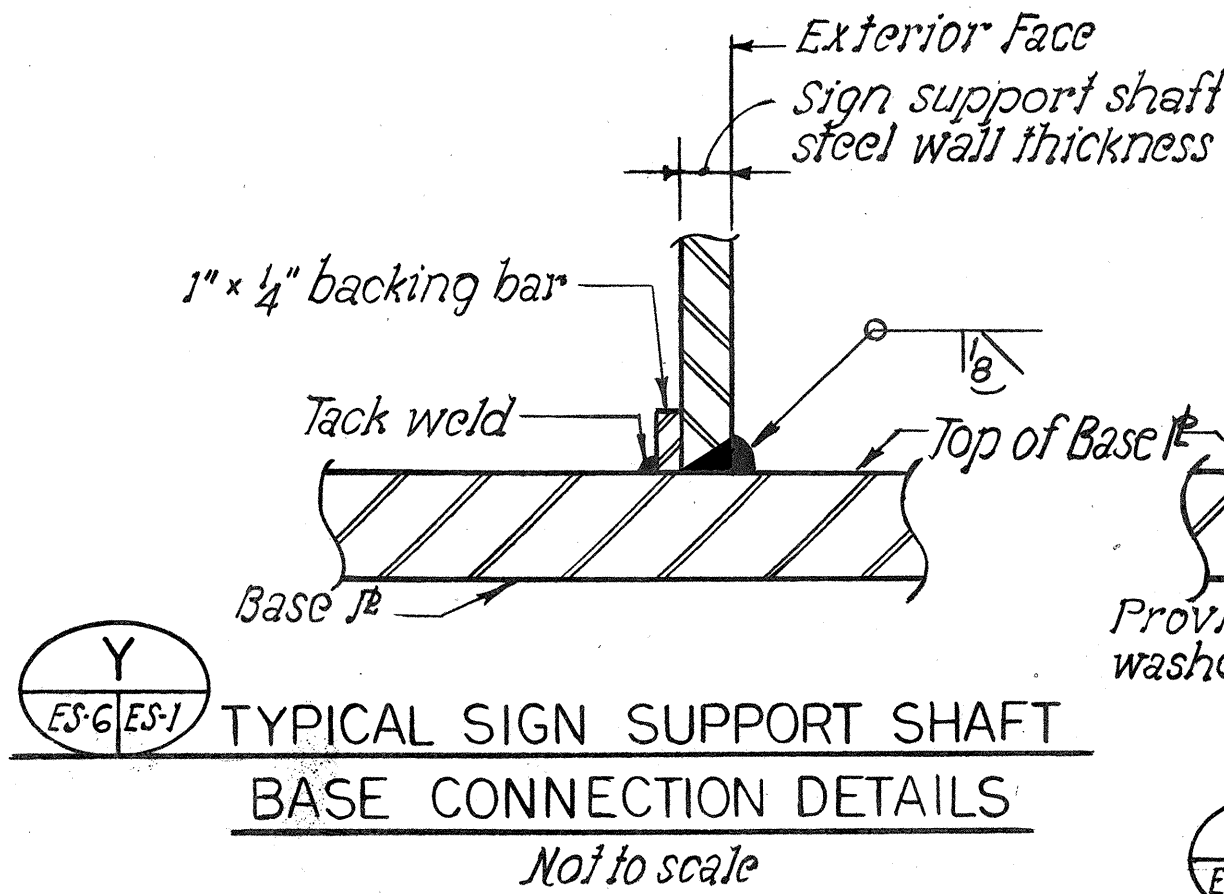
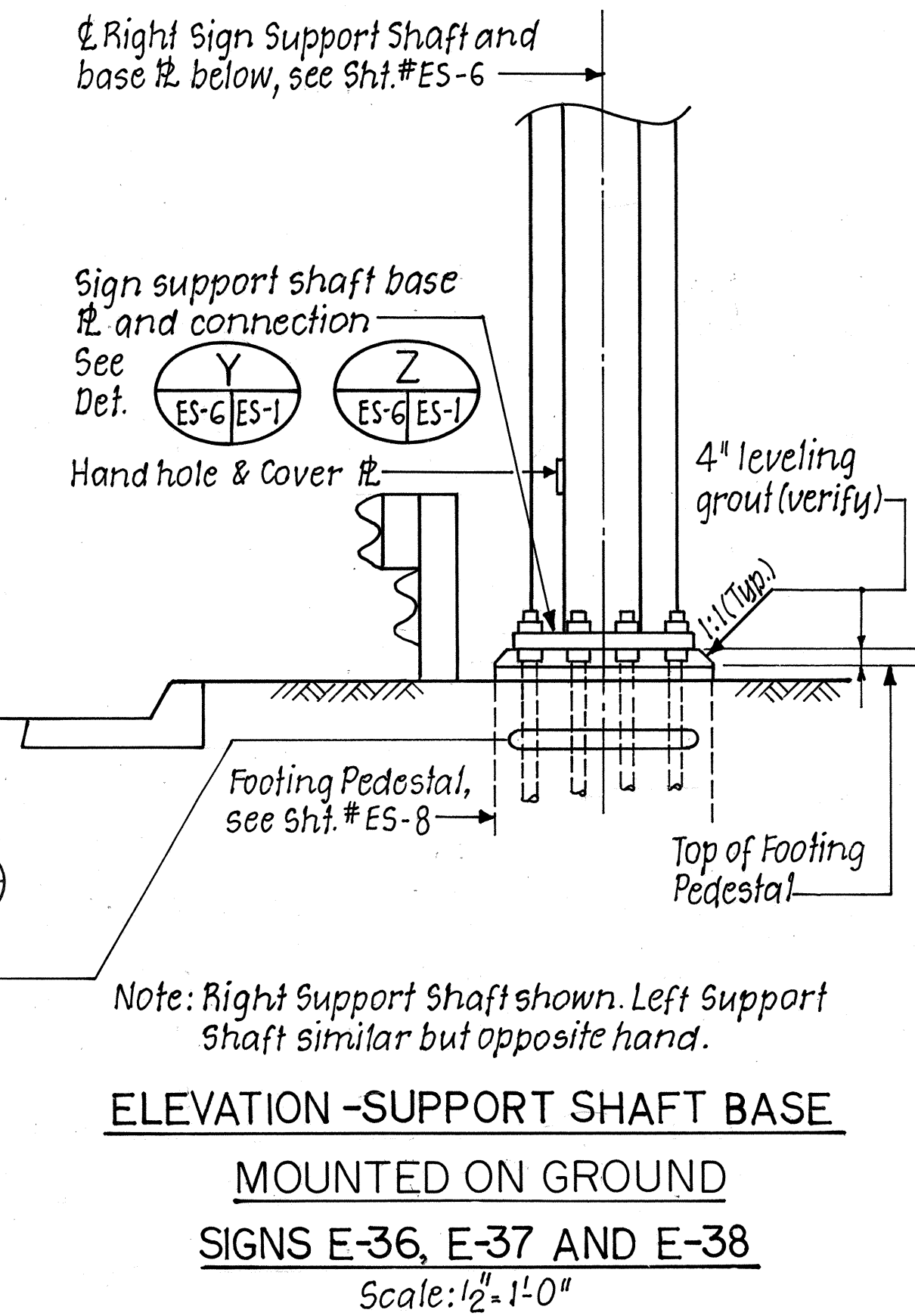
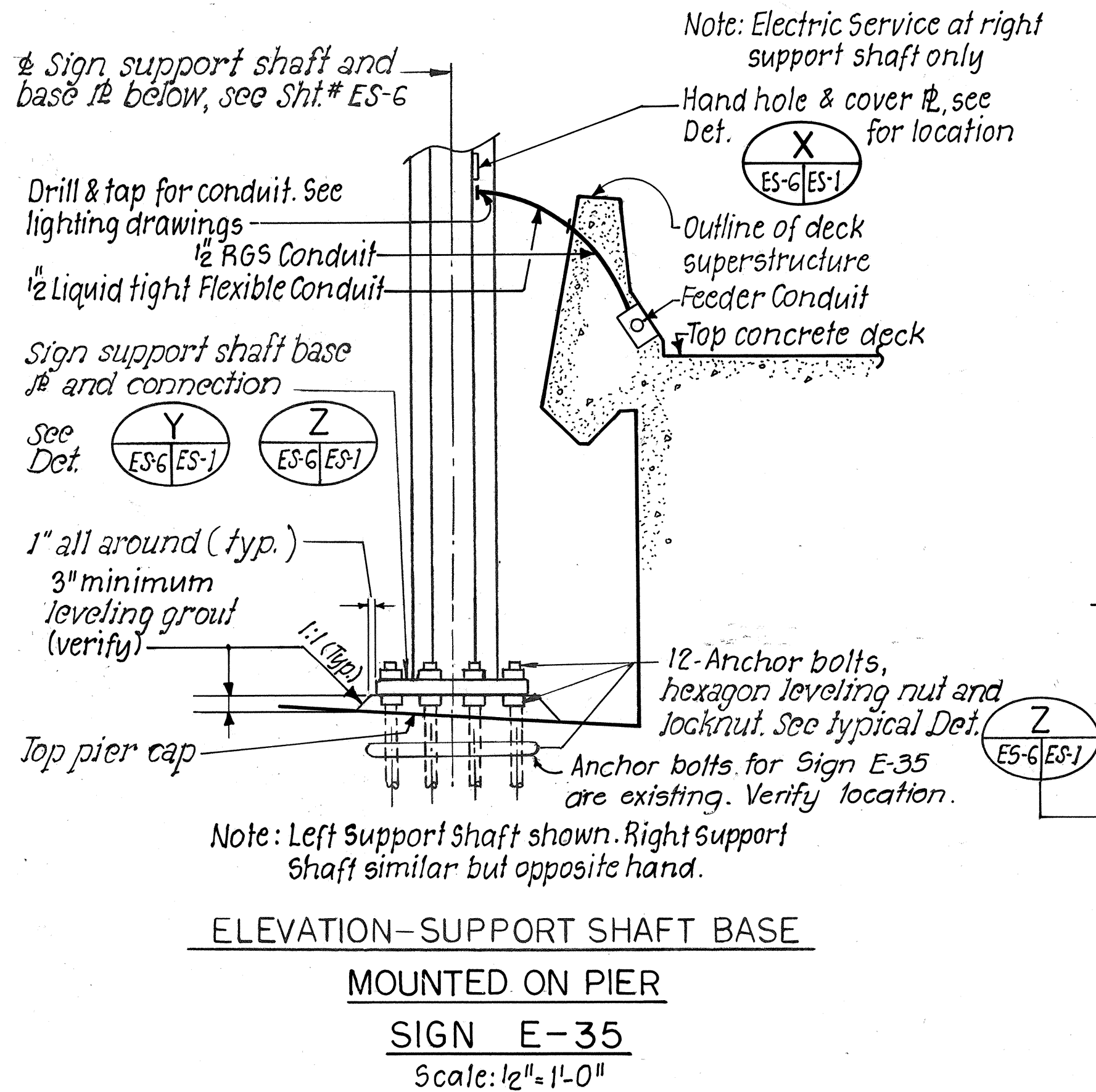
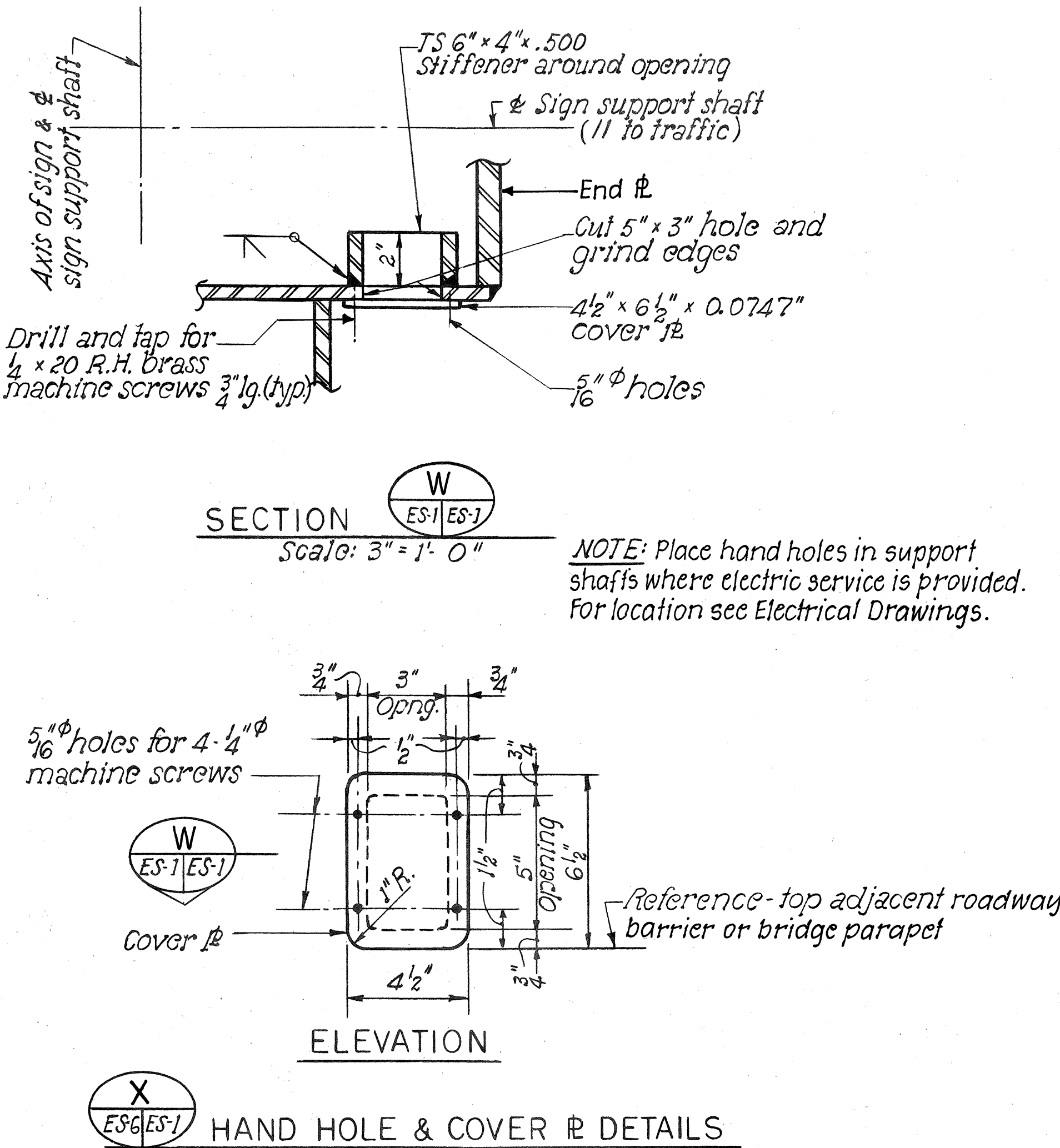
All welding to be continuous welds and as noted on the plans.

GENERAL:

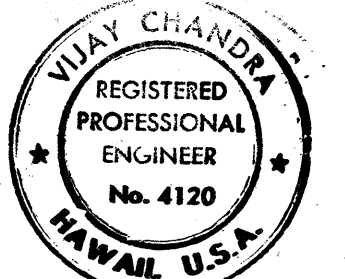
1. Before preparation of shop drawings for the sign support frame structures, the Contractor shall verify in the field, the exact location of each of the anchor bolts and the shelf elevation at the top of the pier caps and footing pedestals.
2. Payment for overhead sign supports E-35, E-36, E-37 & E-38 shall be made as described in the special provisions.
3. All sign structures are viewed in the direction of traffic.

REFERENCE:

1. Refer to civil drawings for General Notes, Symbols & Abbreviations not covered by these drawings.
2. Refer to civil drawings for sign panel location plans of signs E-35, E-36, E-37 and E-38.
3. For Anchor Bolt Details, see Sheet No. ES-8.



NOTE: For elevation at bottom of base plates, see Table on Sheet No. ES-2.



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Vijay Chandra
Signature

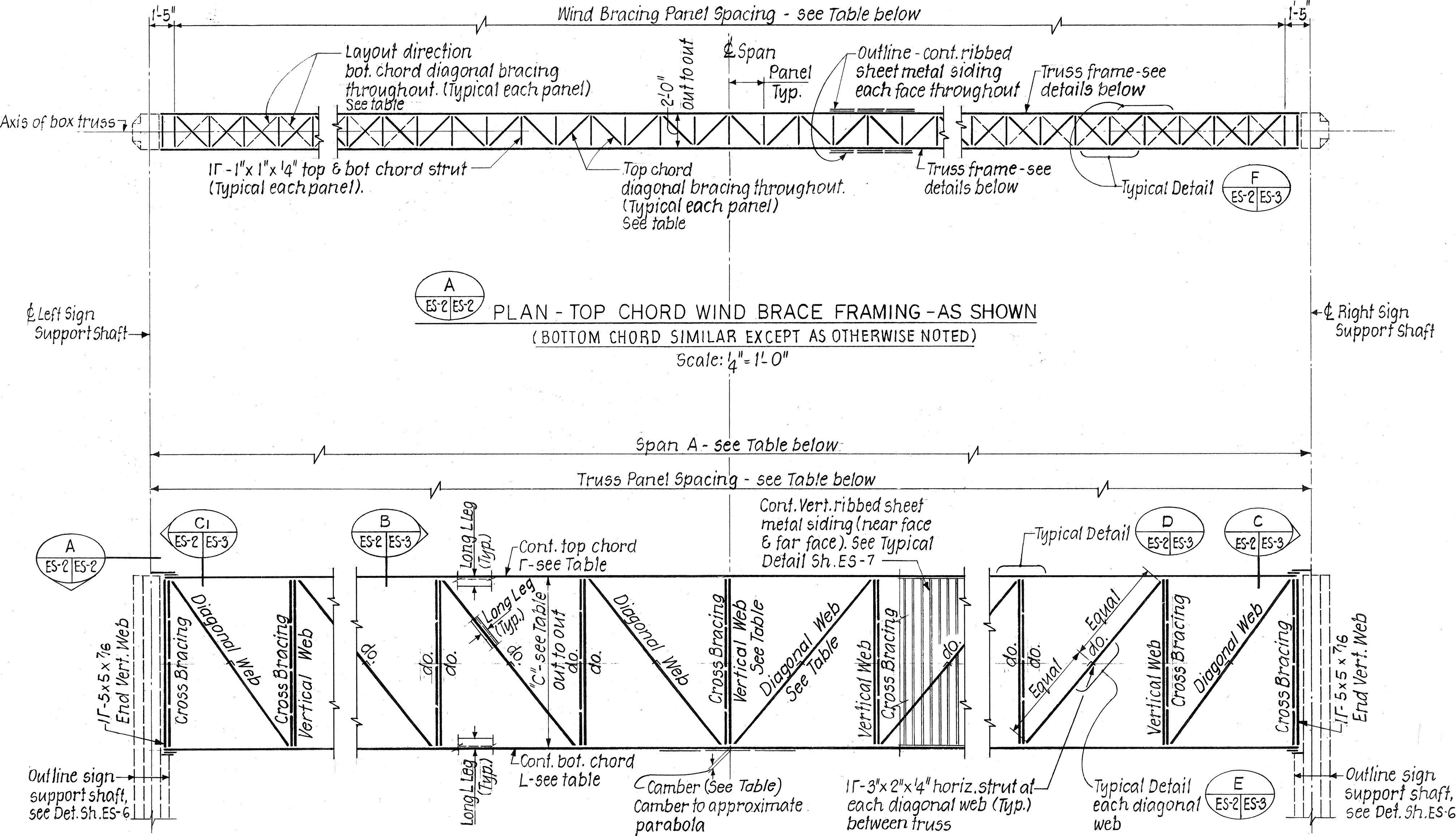
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNS E-35, E-36, E-37 & E-38
SUPPORT SHAFT BASE & DETAILS
GENERAL NOTES

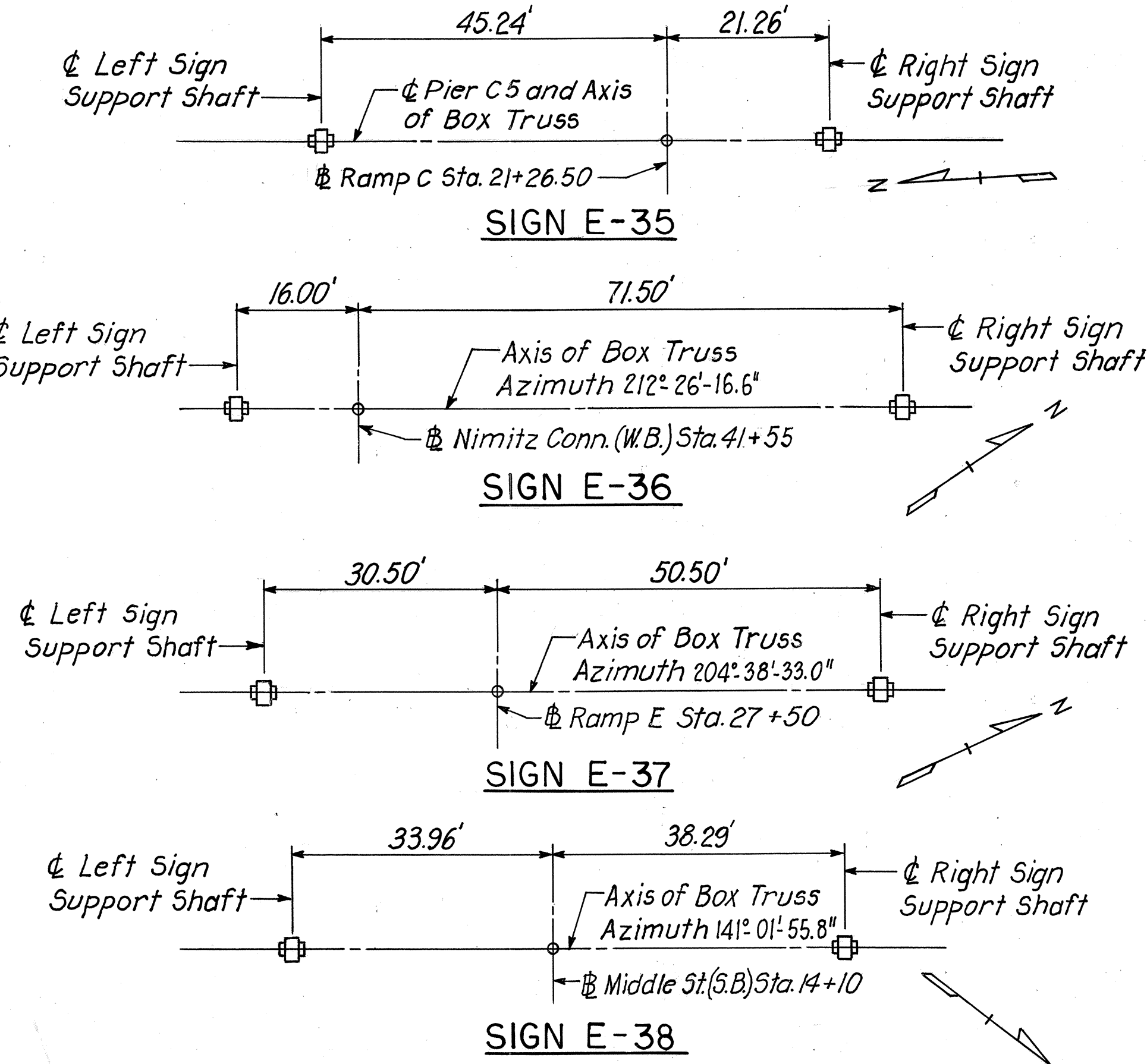
KEEHI INTERCHANGE
F.A.I. PROJ. NO. I-IR-HI-1(169):17
SCALE: AS NOTED DATE: 2/15/82

SHEET NO. ES-1 OF 8 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-1(169)-17	1983	111	280



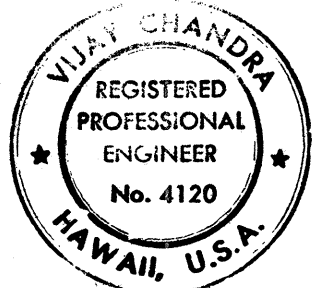
ELEVATION - TYPICAL TRUSS FRAMING DETAIL - BOX BEAM CLOSED TRUSS
Scale: 1/4" = 1'-0"



SIGN STRUCTURE LOCATION DIAGRAMS
Not to Scale

- NOTES:
- For General & Design Notes, refer to Sh. No. ES-1.
 - Luminaire support framing; sign supports & mounting beams not shown. Refer to corresponding details Sh. No. ES-3, ES-4, ES-5 & ES-7. For additional details, refer to corresponding highway lighting & sign drawings.

IDENTIFICATION NO.	SPAN A	LEFT POST	RIGHT POST	TRUSS DEPTH C	TRUSS PANELS SPACING	TRUSS			WIND BRACING PANEL SPACING	DIAG. BRACING TOP & BOTTOM CHORDS	ELEVATION BOTTOM OF BASE PLATES		TRUSS CAMBER
		B SHEET ES-6	B SHEET ES-6			TOP & BOTTOM CHORD SIZE	VERT. WEB SIZE	DIAG. WEB SIZE			LEFT POST	RIGHT POST	
E-35	66'-6"	30'-2 1/2"	33'-10"	6'-5 1/2"	10 Equal Panels @ 6'-7 1/2" (-) = 66'-6"	L 5 x 3 1/2 x 7/16	L 3 x 3 x 1/4	L 3 1/2 x 3 x 1/4	32 Equal Panels @ 1'-11 7/8" (+) = 63'-8"	L 1 1/2 x 1 1/2 x 1/4	26.76	23.14	1"
E-36	87'-6"	27'-7 3/4"	28'-8 7/8"	9'-11 1/2"	10 Equal Panels @ 8'-9" = 87'-6"	L 8 x 4 x 7/8	L 3 1/2 x 3 1/2 x 5/16	L 4 x 3 1/2 x 5/16	40 Equal Panels @ 2'-1 7/8" (+) = 84'-8"	L 1 3/4 x 1 3/4 x 1/4	7.63	6.53	1 3/4"
E-37	81'-0"	27'-0 1/2"	28'-1 3/4"	9'-11 1/2"	10 Equal Panels @ 8'-1 3/8" (+) = 81'-0"	L 7 x 4 x 3/4	L 3 1/2 x 3 1/2 x 5/16	L 4 x 3 1/2 x 5/16	40 Equal Panels @ 1'-11 3/8" (+) = 78'-2"	L 1 3/4 x 1 3/4 x 1/4	9.23	8.13	1 3/4"
E-38	72'-3"	27'-0 1/2"	27'-10 1/8"	9'-11 1/2"	8 Equal Panels @ 9'-0 3/8" = 72'-3"	L 7 x 4 x 5/8	L 3 1/2 x 3 1/2 x 5/16	L 4 x 3 1/2 x 5/16	36 Equal Panels @ 1'-11 1/8" (+) = 69'-5"	L 1 3/4 x 1 3/4 x 1/4	10.73	9.93	1 3/4"



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Signature: *Vijay Chandra*
Date: 3/15/82

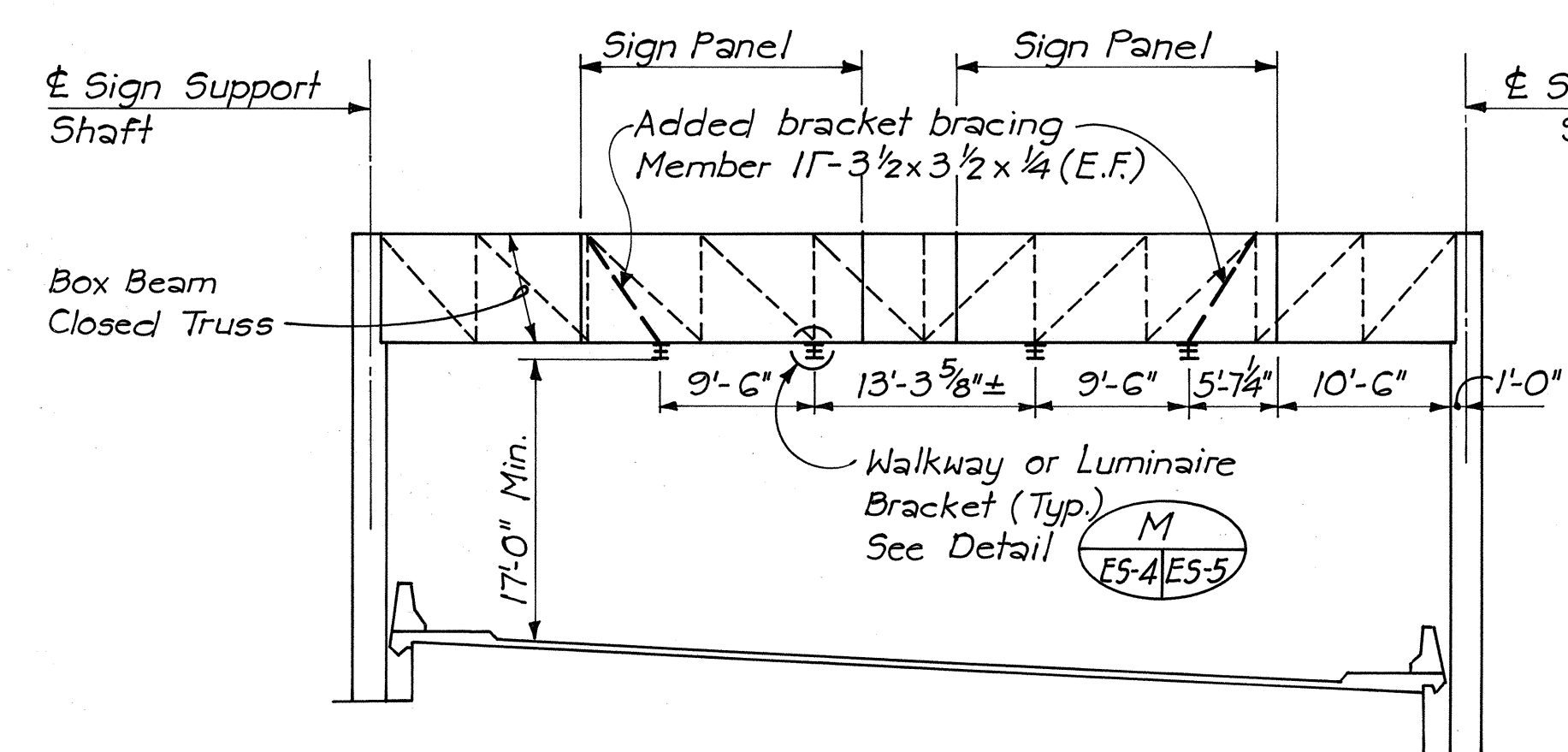
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNS E-35, E-36, E-37 & E-38
BOX BEAM CLOSED TRUSS FRAMING DETAILS

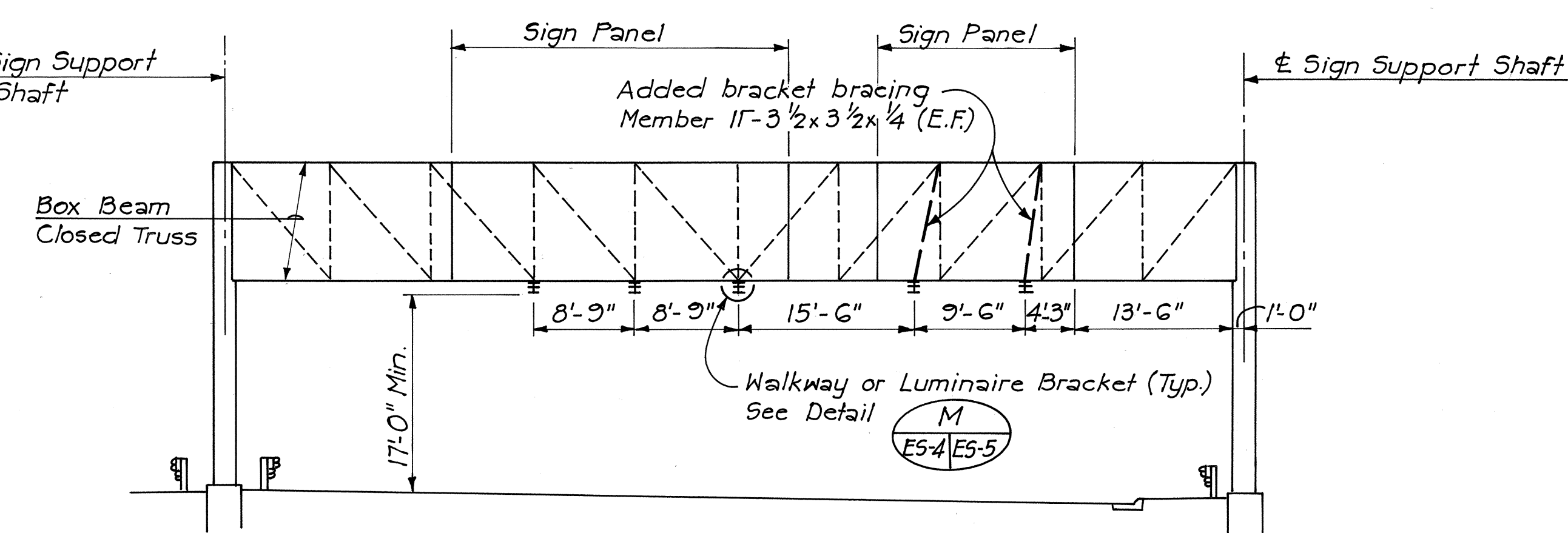
KEEHI INTERCHANGE
F.A.I. PROJ. NO. I-IR-HI-1(169)-17
SCALE: AS NOTED
DATE: 3/15/82
SHEET NO. ES-2 OF 8 SHEETS

DATE: 2-77	DESIGNED BY: C. T. SAI	CHECKED BY: J. B. TIMONEY
ORIGINAL PLAN	TRACED BY: C. T. SAI	NO.
NOTE BOOK	CHECKED BY: J. B. TIMONEY	NO.

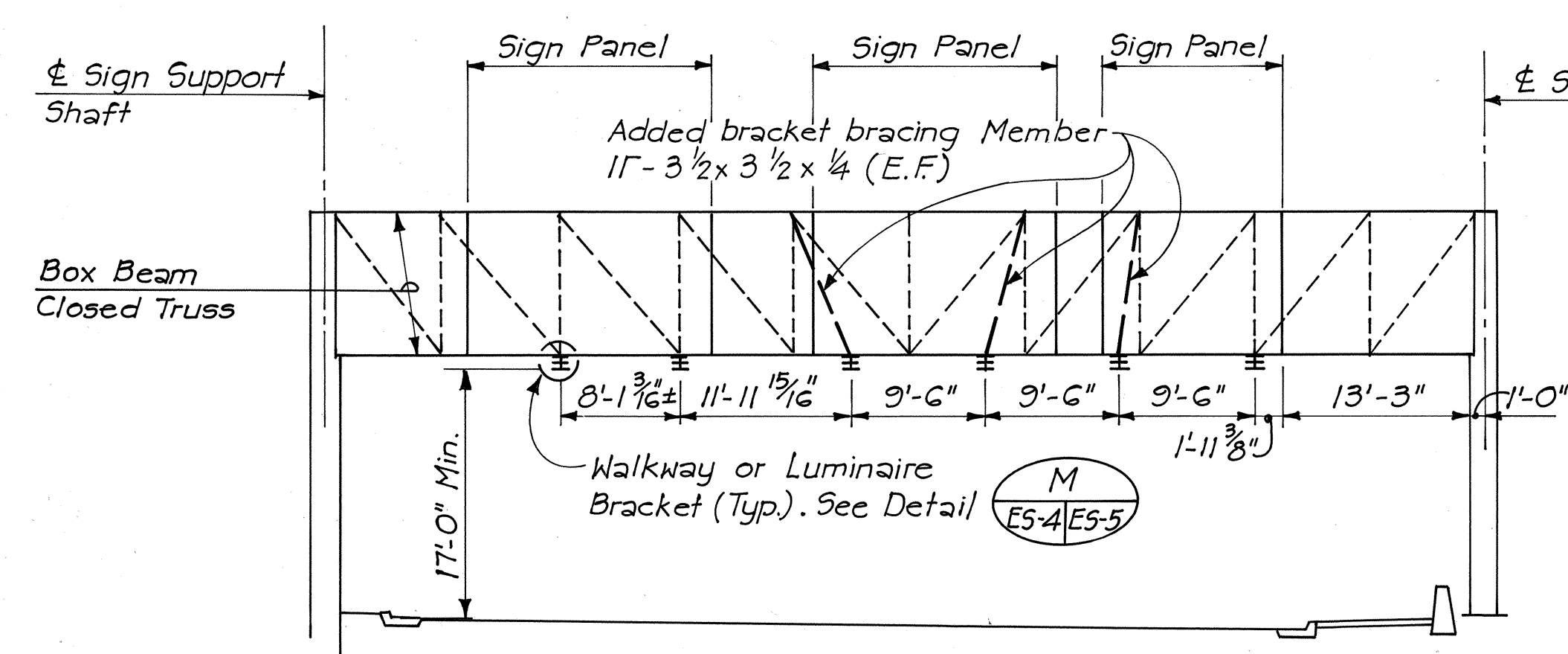
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-1(169)17	1983	113	280



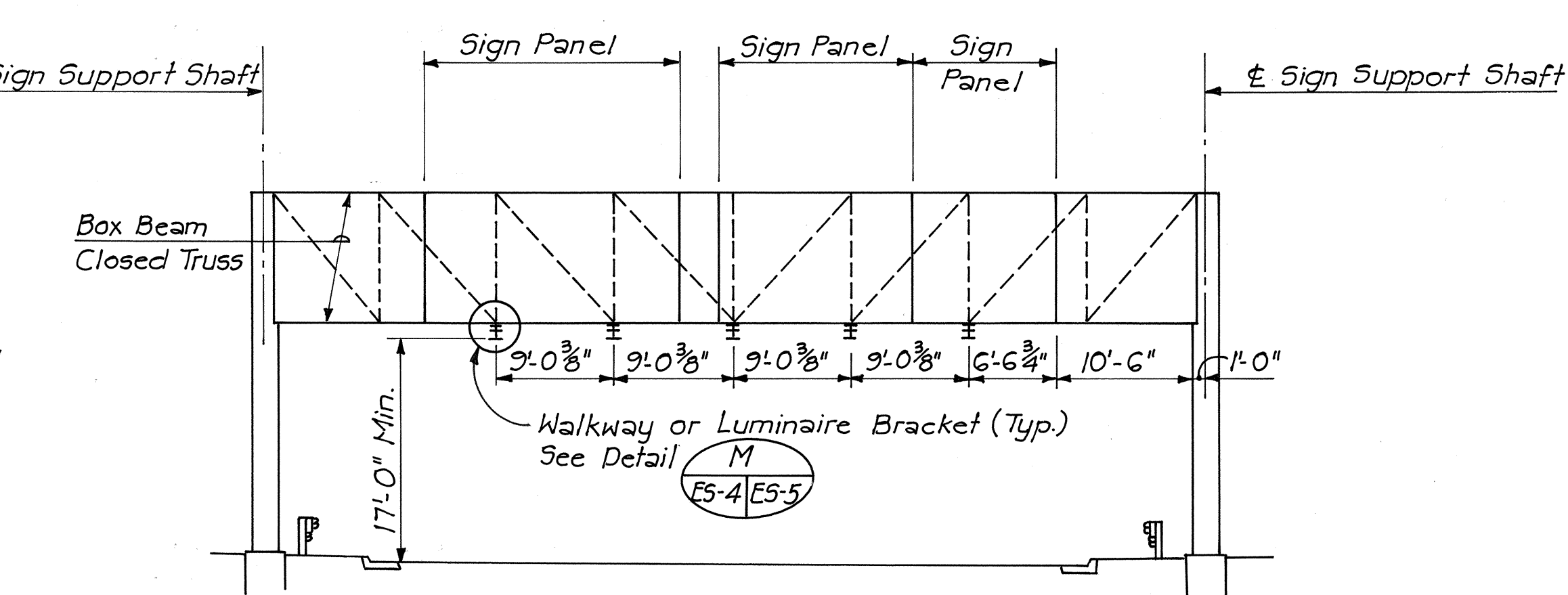
SIGN E-35 ELEVATION
Scale: 1" = 10'-0"



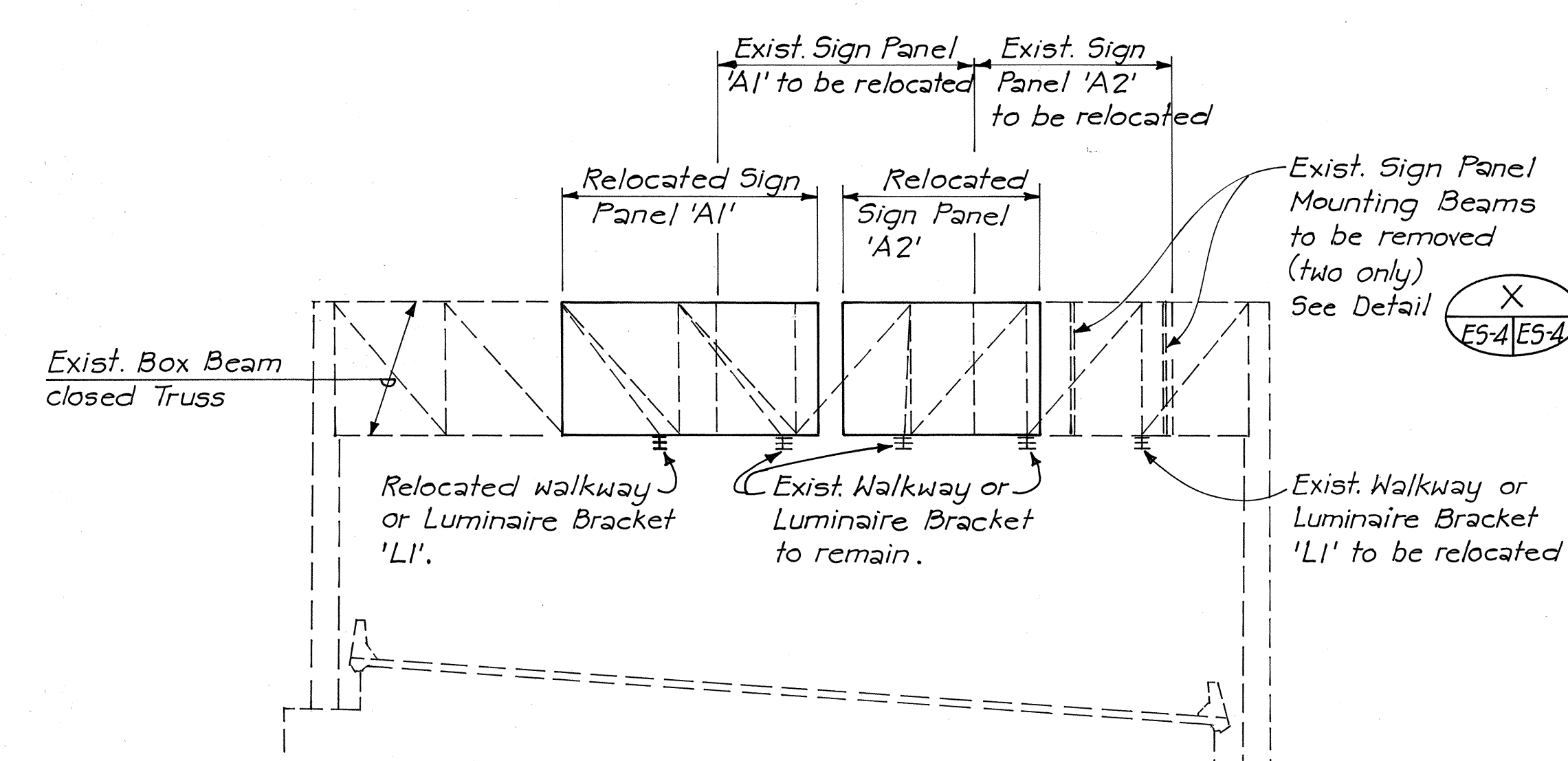
SIGN E-36 ELEVATION
Scale: 1" = 10'-0"



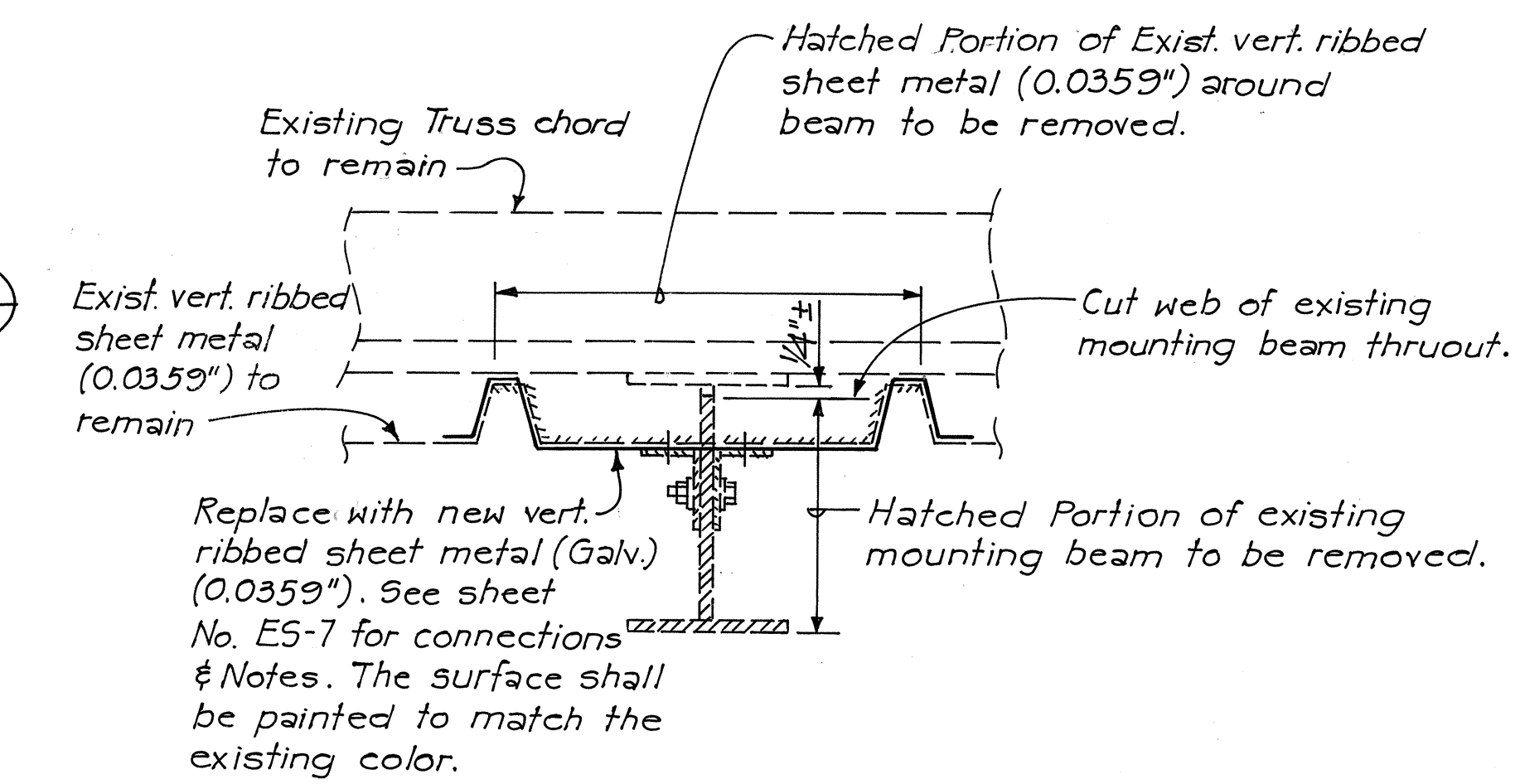
SIGN E-37 ELEVATION
Scale: 1" = 10'-0"



SIGN E-38 ELEVATION
Scale: 1" = 10'-0"



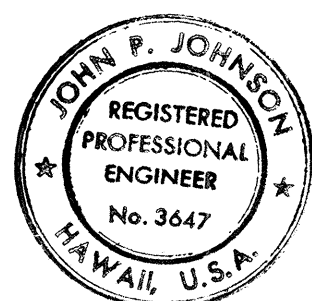
SIGN E-14 ELEVATION
Scale: 1" = 10'-0"
(See Notes 2 and 3 for installation)



DETAIL
Scale: 3" = 1'-0"
(Removal of Existing Mounting Beam)

NOTES

- For Box Beam Closed Truss details, See Sheet Nos. E5-2 & E5-3.
- The Contractor shall carefully remove the existing Walkway/Luminaire Bracket "L1", existing sign panels 'A1' and 'A2' and relocate them to the positions shown on Sign E-14. The bracket shall be installed to the bolt holes provided in the existing bottom chord of truss according to installation details shown on Sheet No. E5-5. The sign panels shall be installed to the mounting beams provided in the existing truss according to mounting details shown on sheet E5-7. Any damage to the existing sign structure, luminaire, brackets or sign panels during construction shall be repaired by the Contractor at his own cost as directed by the Engineer.
- Any damage of galvanization in steel during removing of mounting beams shall be repaired according to the Specifications. Any damage of paint around the surface of removed vertical ribbed sheet metal shall be repainted to match the existing color.

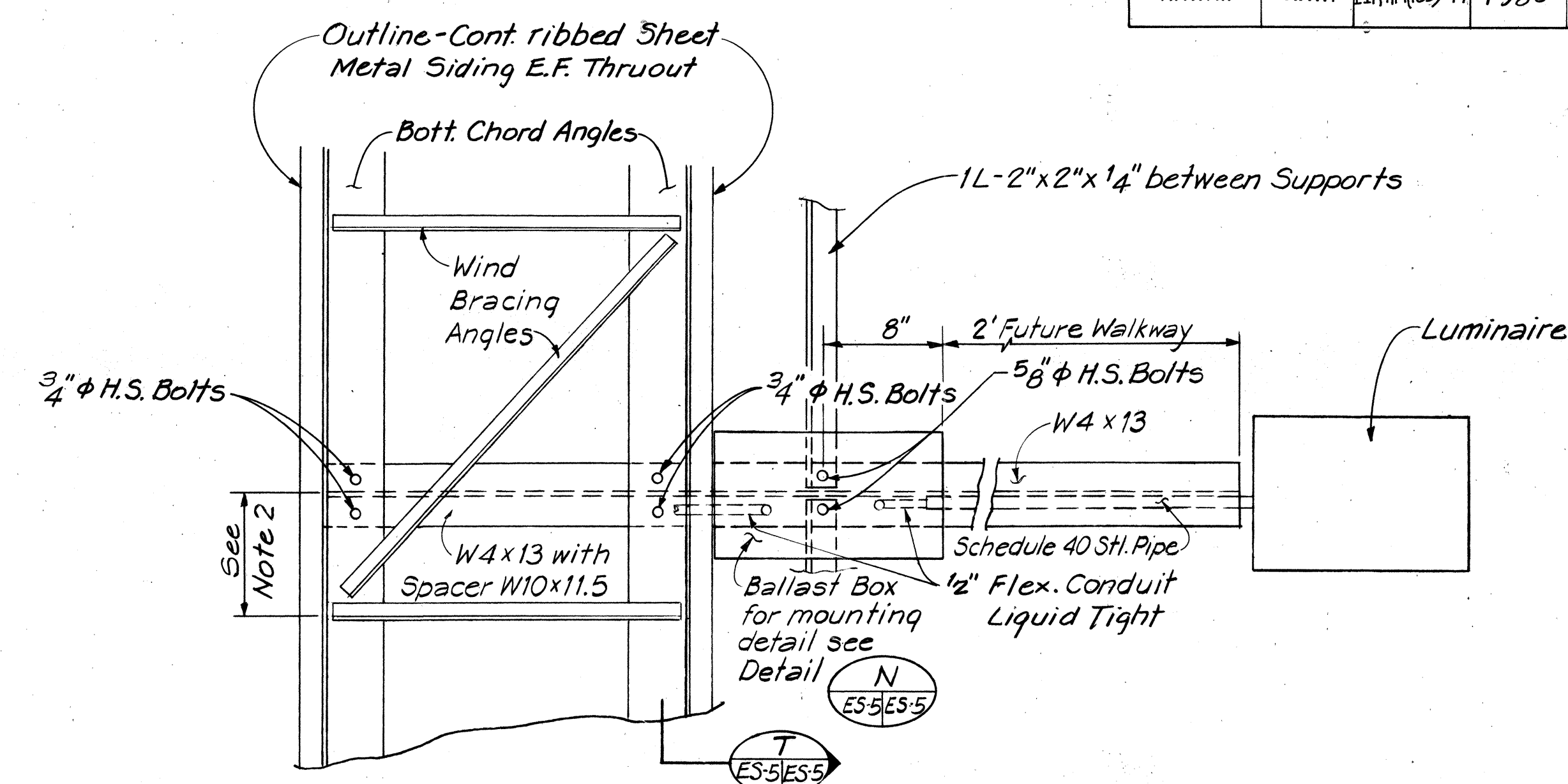


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John P. Johnson

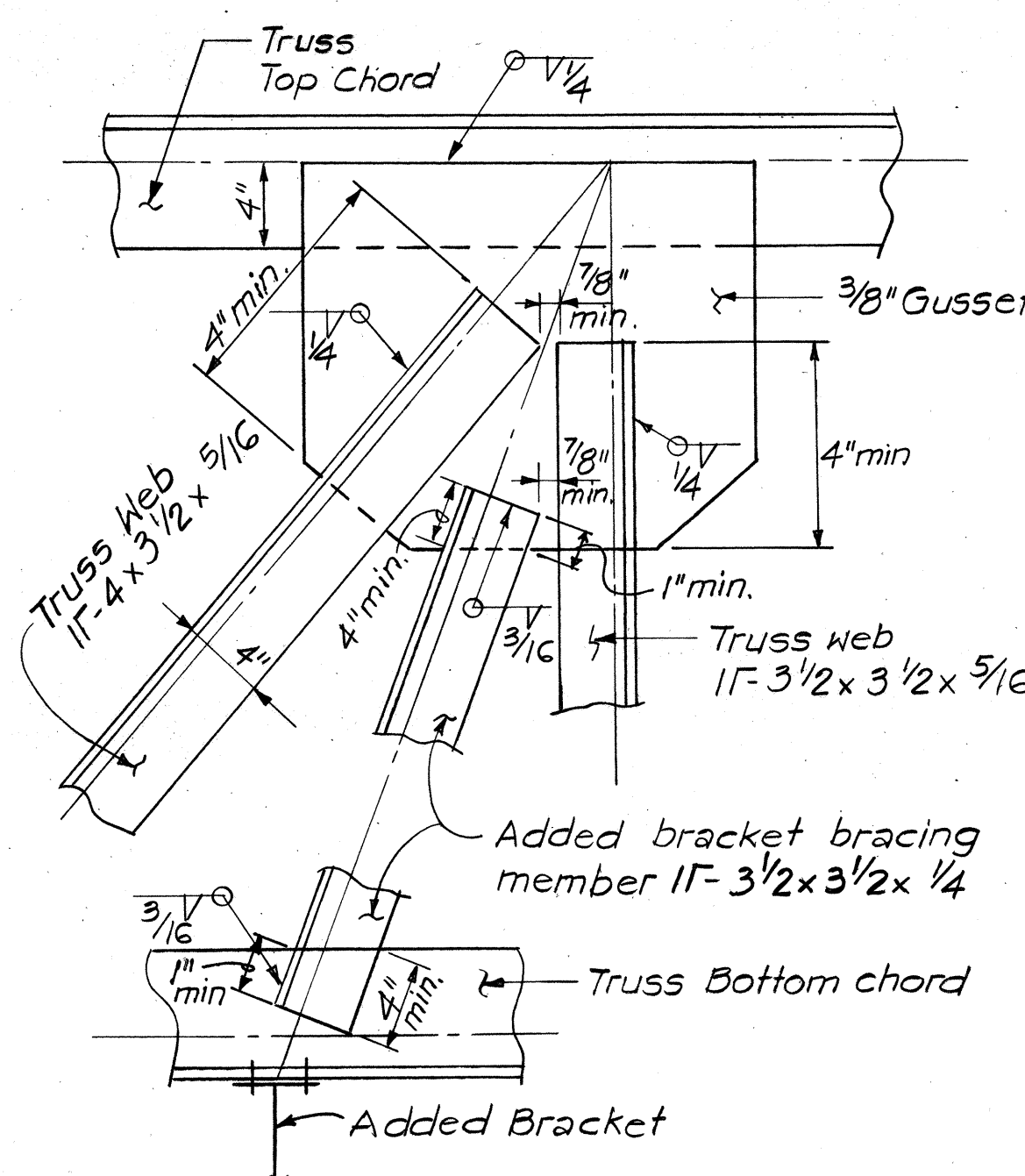
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

SIGNS E-14, E-35, E-36, E-37 & E-38
BOX BEAM CLOSED TRUSS
FRAMING DETAILS
KEEHI INTERCHANGE
F.A.I. PROJ. NO. I-IR-HI-1(169)17
SCALE: AS NOTED
DATE: 3/15/82
SHEET NO. ES-4 OF 8 SHEETS

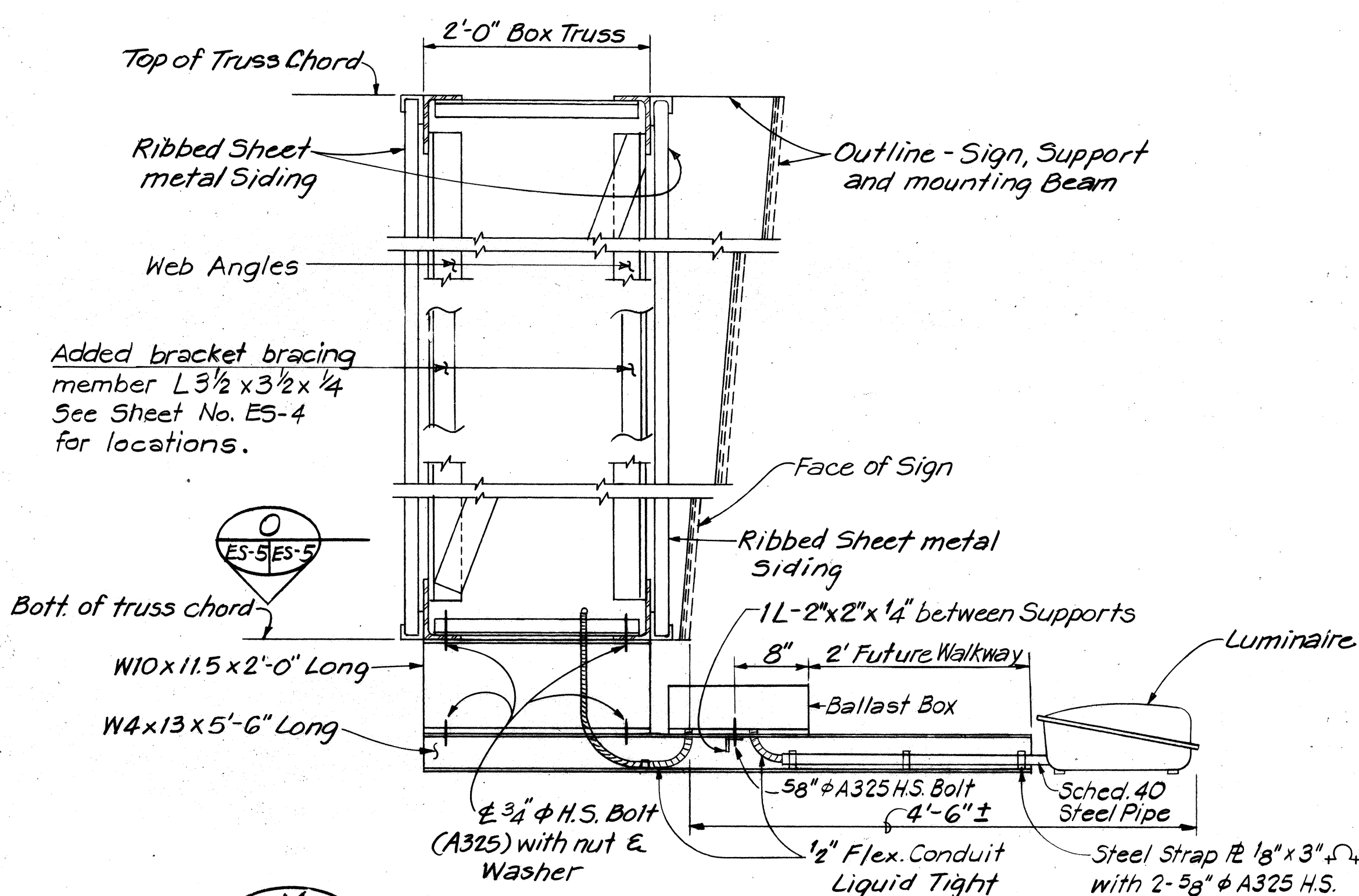
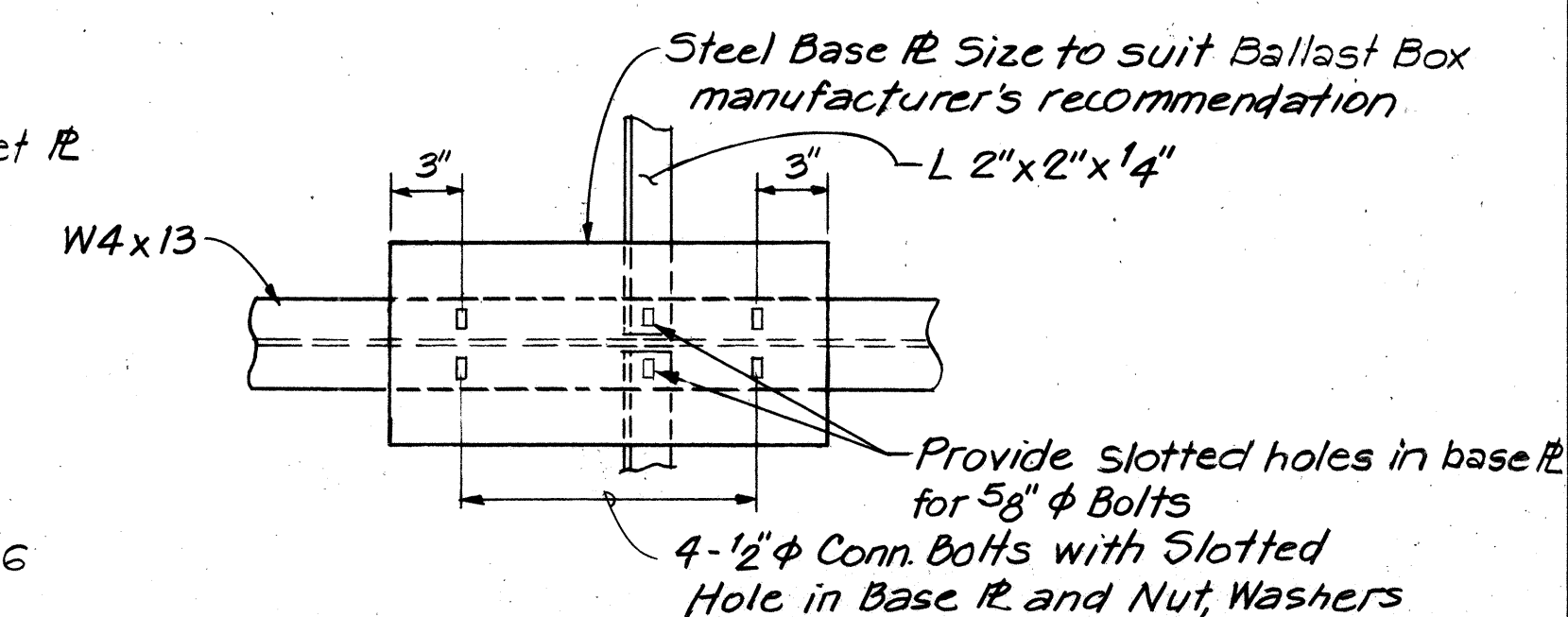
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HAWAII	HAW.	HRH-163-17	1983	114	280



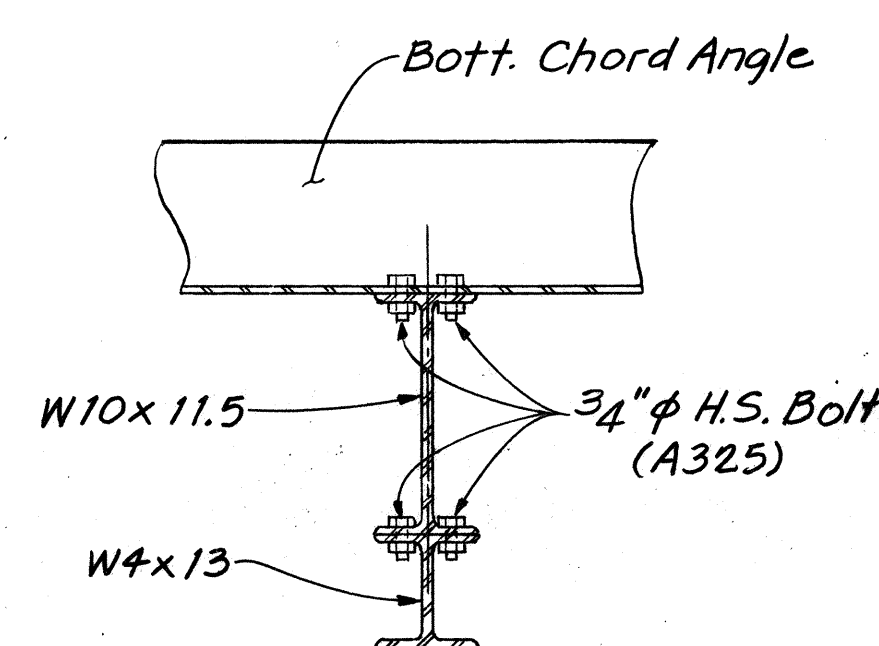
SECTION
Scale: 1 1/2" = 1'-0"



DETAIL
N. T. S.



DETAIL TYPICAL SIGN LUMINAIRE AND WALKWAY SUPPORT DETAILS
Scale: 1"=1'-0"



SECTION
Scale: 3" = 1'-0"

NOTES:

1. *For General Notes see Sheet No. ES-1.*
2. *Locations of Sign Luminaires and Walkway Brackets may be adjusted to avoid any interference with bottom wind bracing subject to the Approval of the Engineer.*
3. *Load of walkway and railing on each bracket shall not exceed 375 Lbs.*
4. *Live load on each bracket = 500 Lbs.*
5. *For locations of sign luminaires and walkway brackets, See Sheet No. ES-4.*
6. *All structural steel, steel pipe, steel strap, connection bolts, washers and nuts in walkway/luminaire supports shall be hot dip galvanized after fabrication.*



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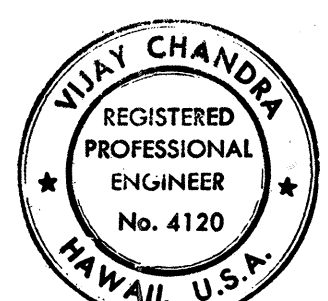
John P. Johnson

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNS E-35, E-36, E-37 & E-38

BOX BEAM CLOSED TRUSS
TRUSS DETAILS

KEEHI INTERCHANGE
F.A.I. PROJ. NO. I-IR-HI-1(169):17
SCALE: AS NOTED DATE: 3/15/82
SHEET NOES-5 OF 8 SHEETS



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

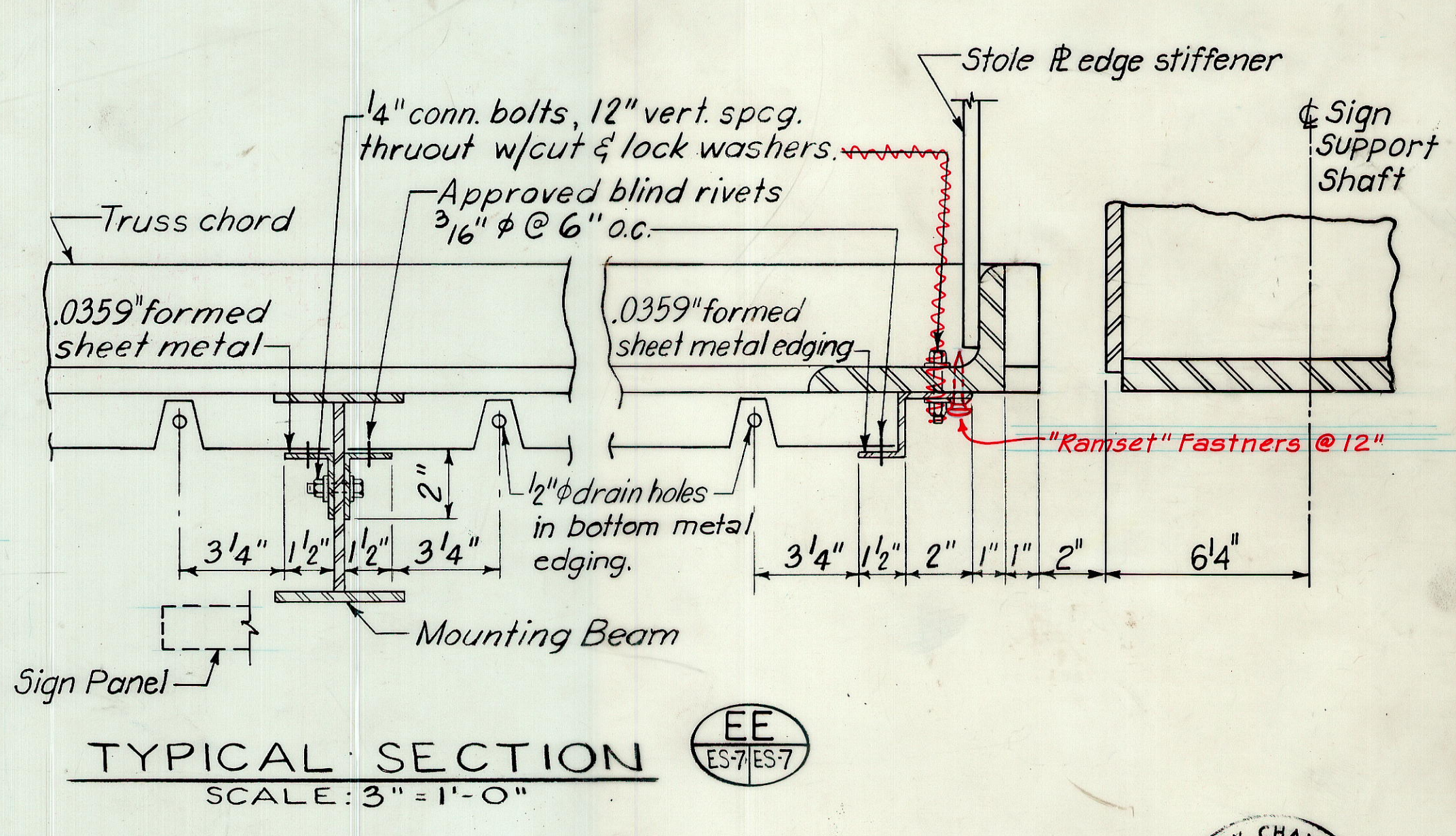
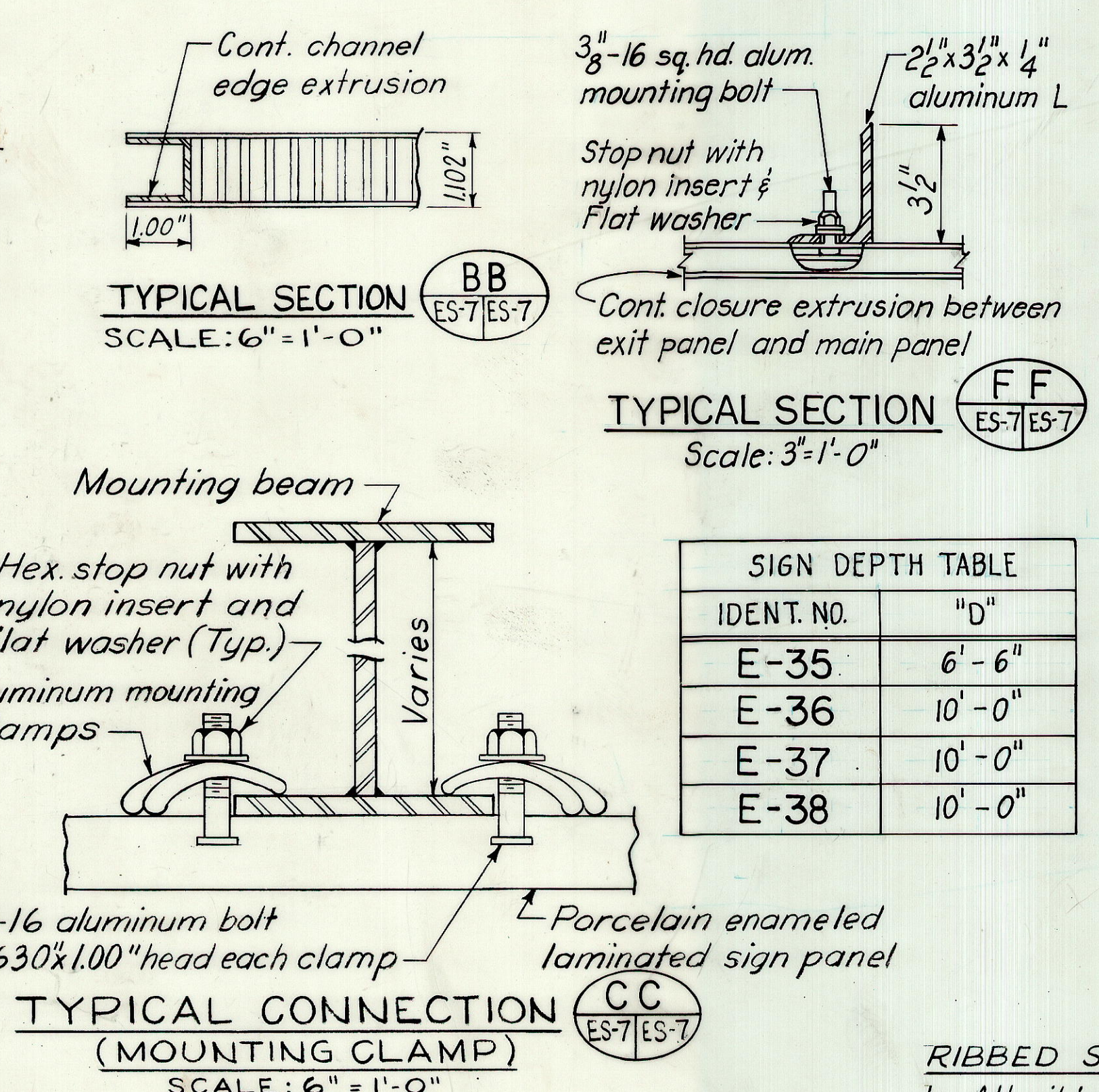
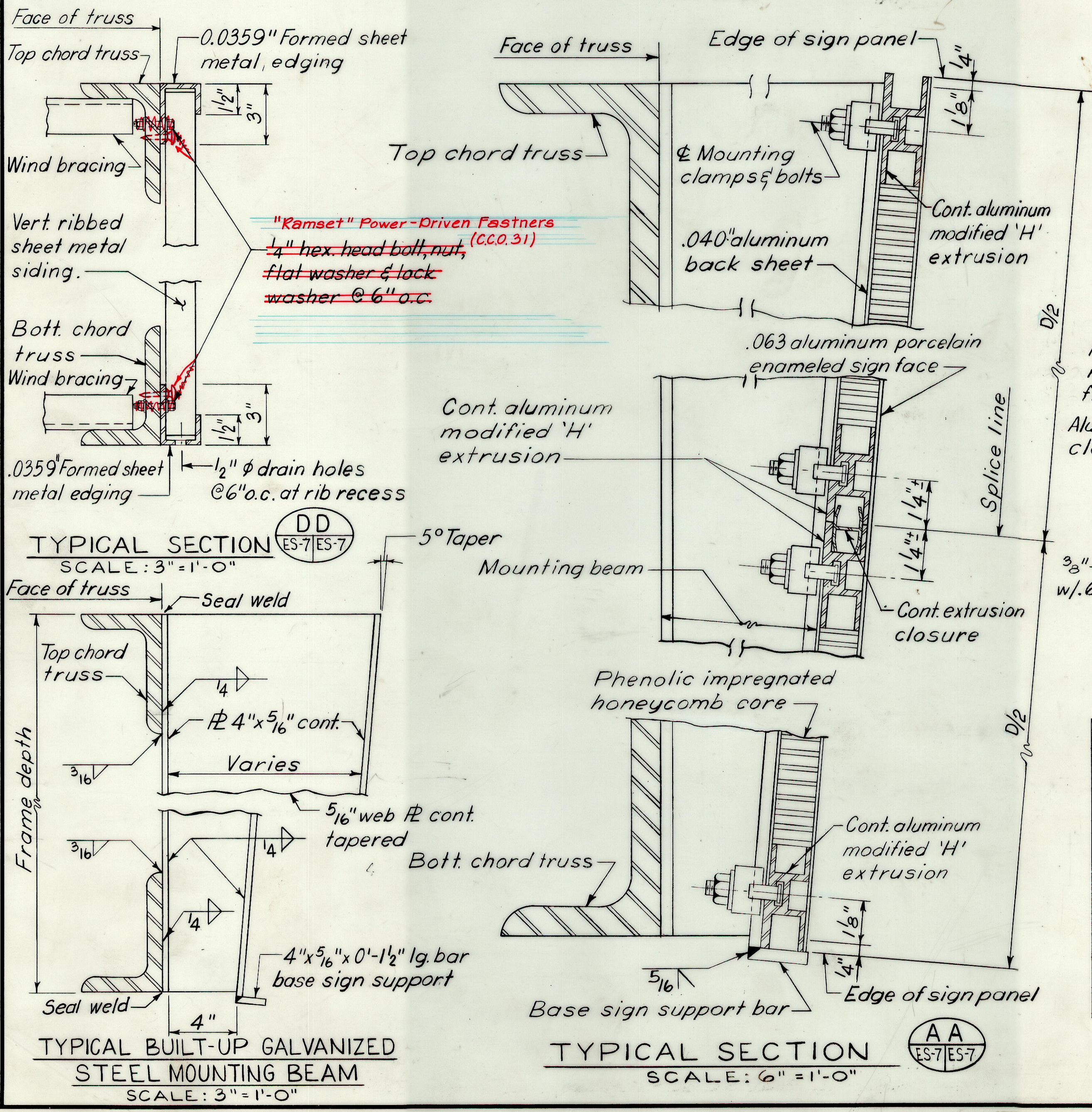
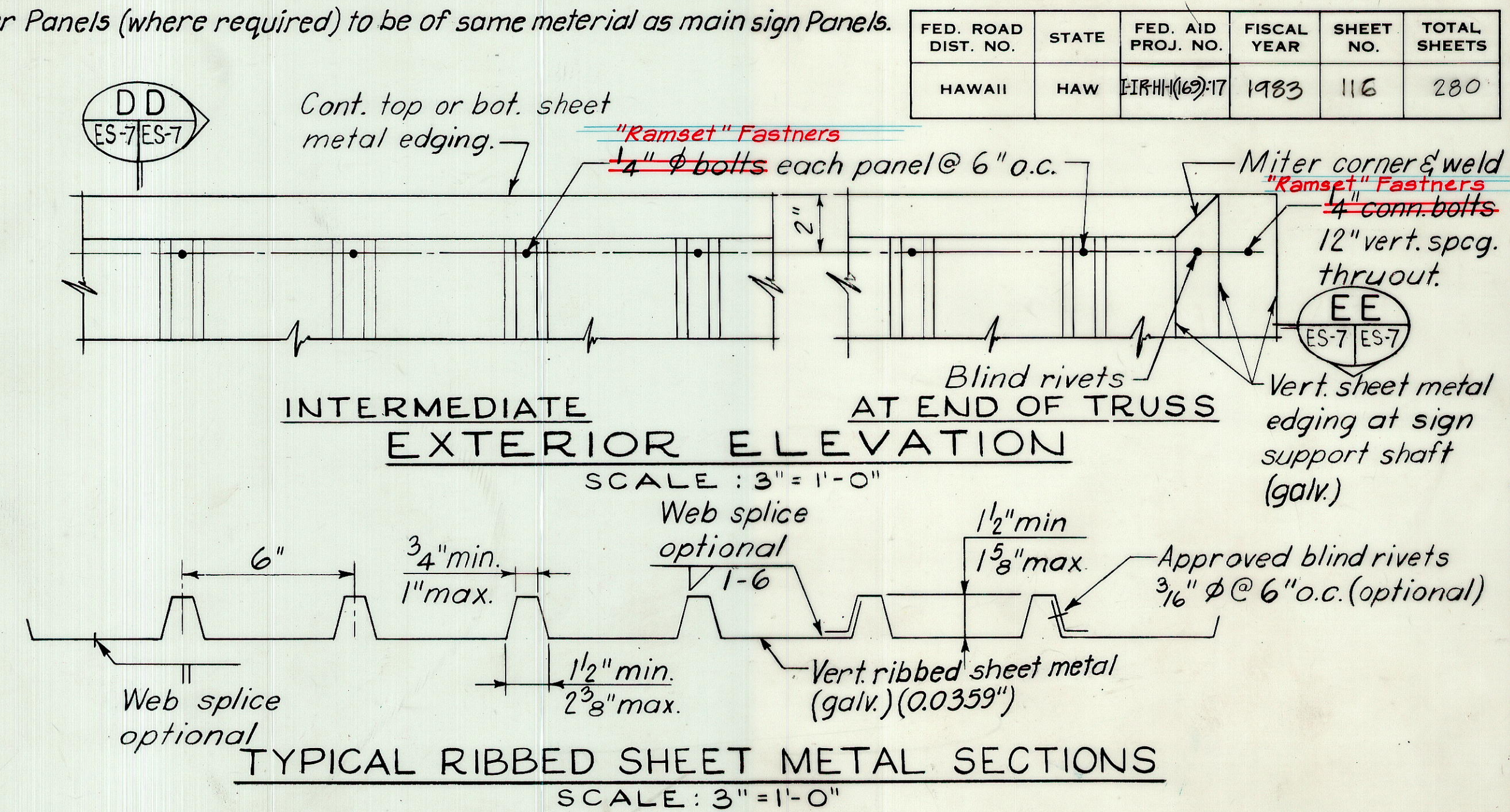
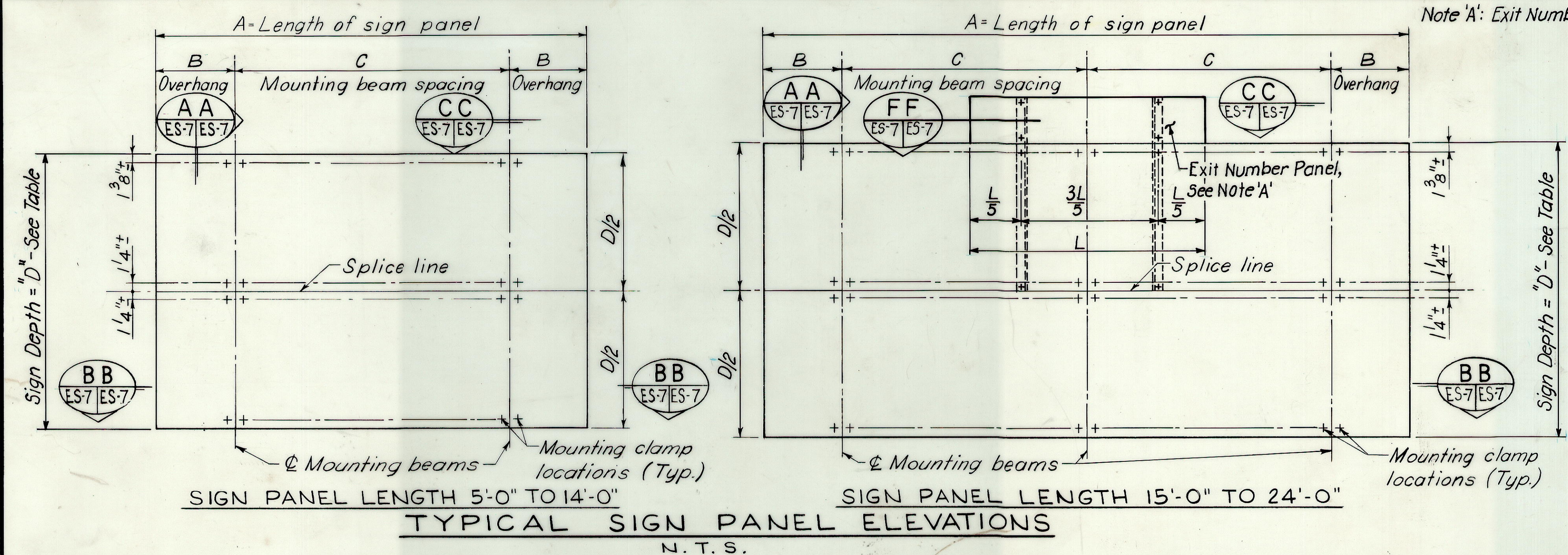
SIGNS E-35, E-36, E-37 & E-38

**BOX BEAM CLOSED TRUSS
TYPICAL SUPPORT SHAFT &
TRUSS CONNECTION DETAILS**

KEEHI INTERCHANGE
F.A.I. PROJ. NO. I-IR-HI-1(169):17

SCALE: AS NOTED DATE: 3/15/82

SHEET NO. 56 OF 8 SHEETS



IDENT. NO.	"D"
E-35	6'-6"
E-36	10'-0"
E-37	10'-0"
E-38	10'-0"

- RIBBED SHEET METAL NOTES**
- All ribbed sheet metal and formed edging shall be galvanized steel conforming to ASTM Designation: A446, Grade A; G165 Coating Designation in conformance with ASTM Designation: A525.
 - Connection bolts, nuts and washers to be galvanized steel ASTM A307.
- SIGN PANEL MOUNTING NOTES**
- Laminated panel sign depths more than 60" require additional mounting clamps located 14"± ea. side of panel splice line. Exact location is dependent on sign panel manufacturer.
 - Torque aluminum sign panel mounting bolt to 100 in.-lbs.
 - Solid aluminum extruded sign panels may be furnished in lieu of laminated aluminum sign panels. For details of solid aluminum extruded panels see Standard Detail sheet No. DT 207.

* Signs longer than 24' are fabricated and mounted as adjoining single panels.

SIGN PANEL LENGTH *	NUMBER MOUNTING BEAMS	SIGN PANEL OVERHANG	MOUNTING BEAM SPACING
A	B	C	
5'-0"	2	6"	4'-0"
11'-0"	2	1'-6"	8'-0"
12'-6"	2	2'-0"	8'-6"
15'-0"	3	6"	7'-0"
17'-0"	3	1'-0"	7'-6"
19'-6"	3	1'-0"	8'-9"
24'-0"	3	2'-0"	10'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNS E-35, E-36, E-37 & E-38

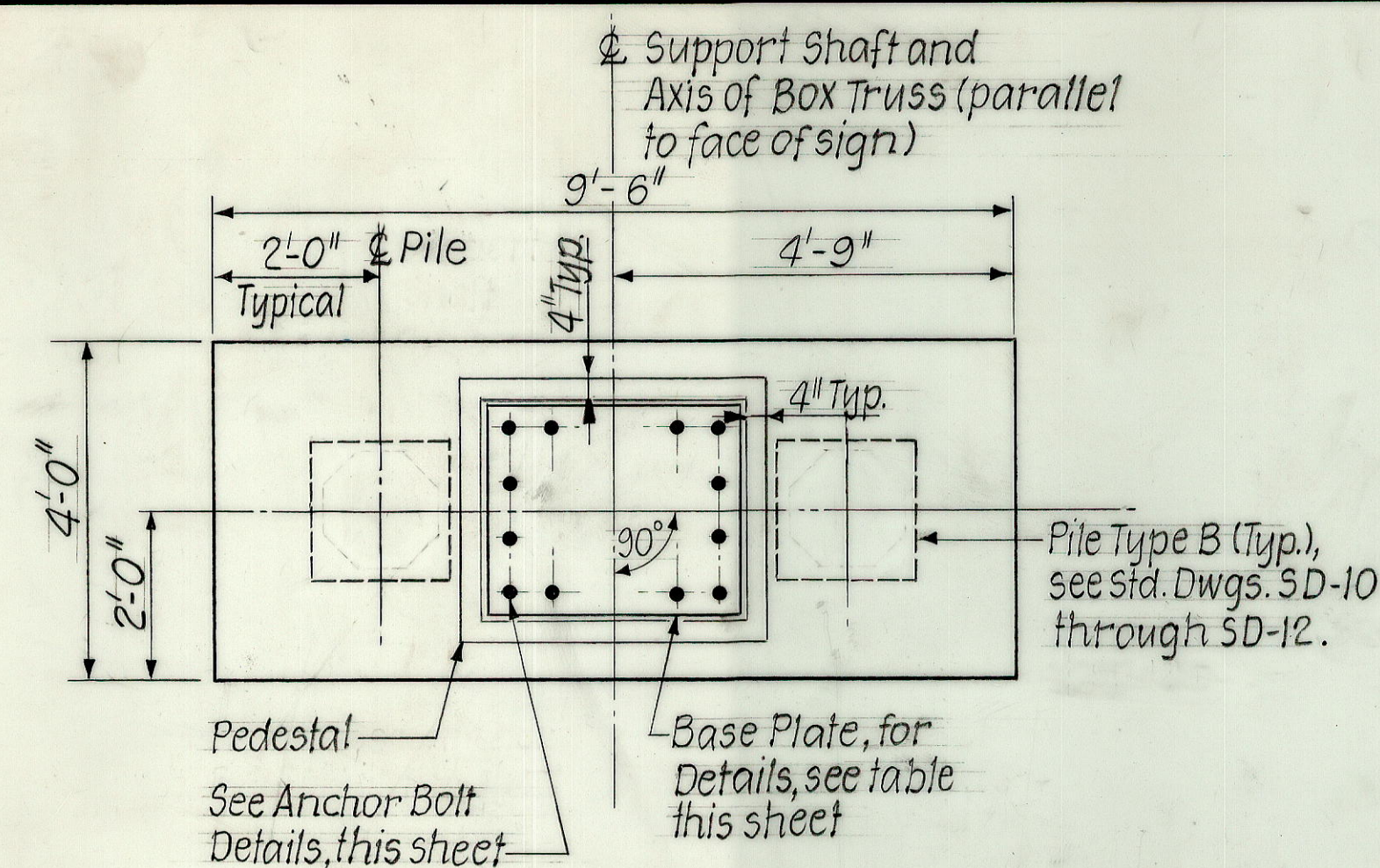
TYPICAL SIGN PANEL MOUNTING & RIBBED SHEET METAL SIDING DETAILS

KEEHI INTERCHANGE
F.A.I. PROJ. NO. I-IR-116(169):17
SCALE: AS NOTED DATE: 3/15/82

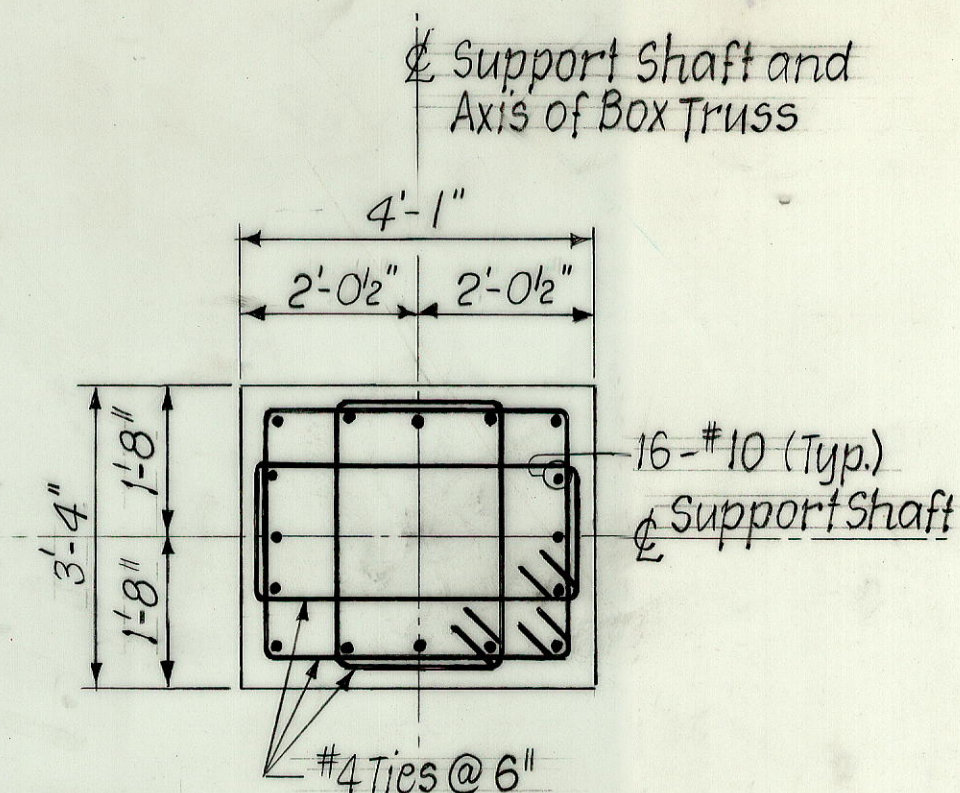
SHEET NO. ES-7 OF 8 SHEETS

ORIGINAL PLAN
NO. 3-77
DATE 3-77
DRAWN BY A. GARCIA
CHECKED BY S. T. JARVIS
NOTED BY S. T. JARVIS

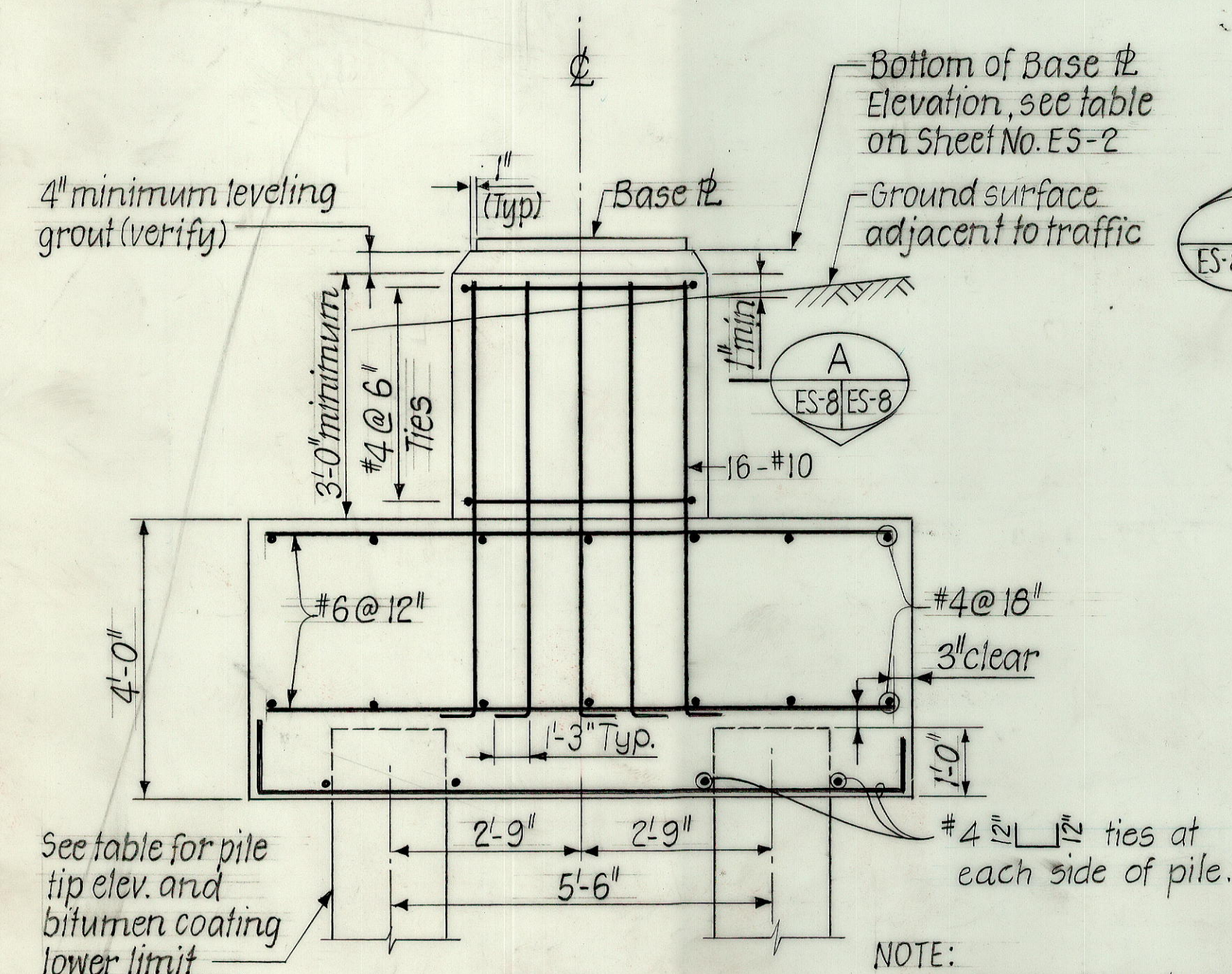
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-1(169):17	1983	117	280



PLAN
Scale: $1/2" = 1'-0"$

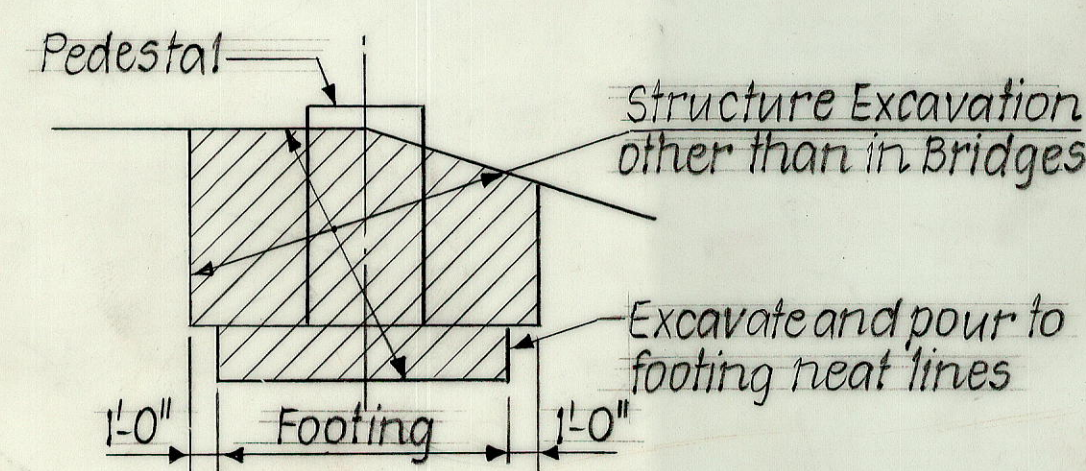


SECTION A
Scale: $1/2" = 1'-0"$



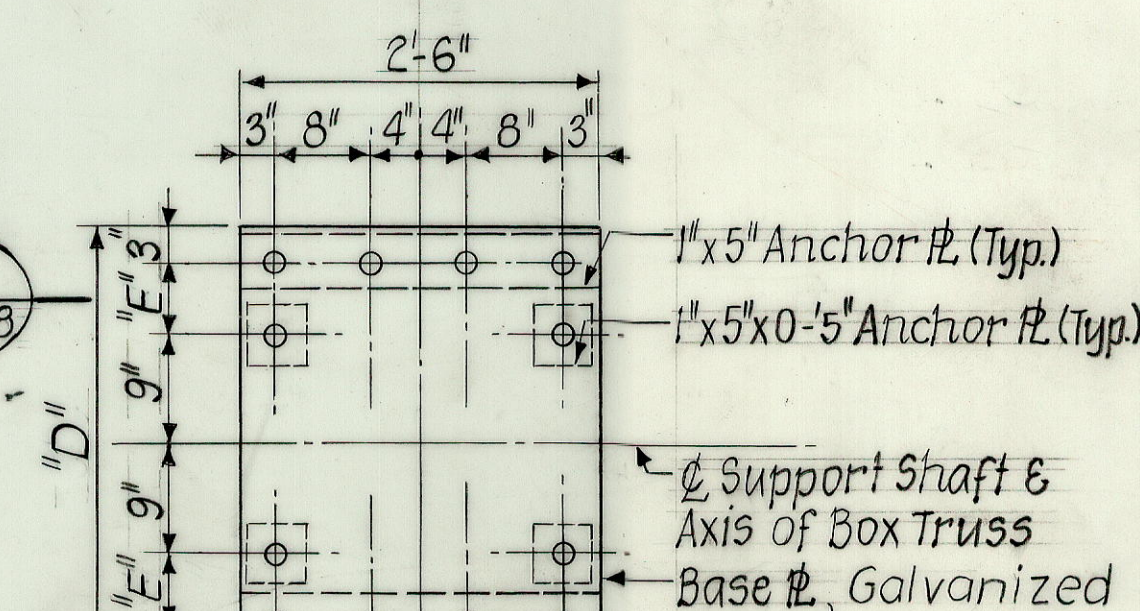
ELEVATION
Scale: $1/2" = 1'-0"$

IDENTIFICATION NO.	PILE TIP ELEVATION	LOWER LIMIT OF BITUMEN COATING
E-36	-160.0	Elev. -90.0
E-37	-160.0	Elev. -100.0
E-38	-160.0	Elev. -90.0

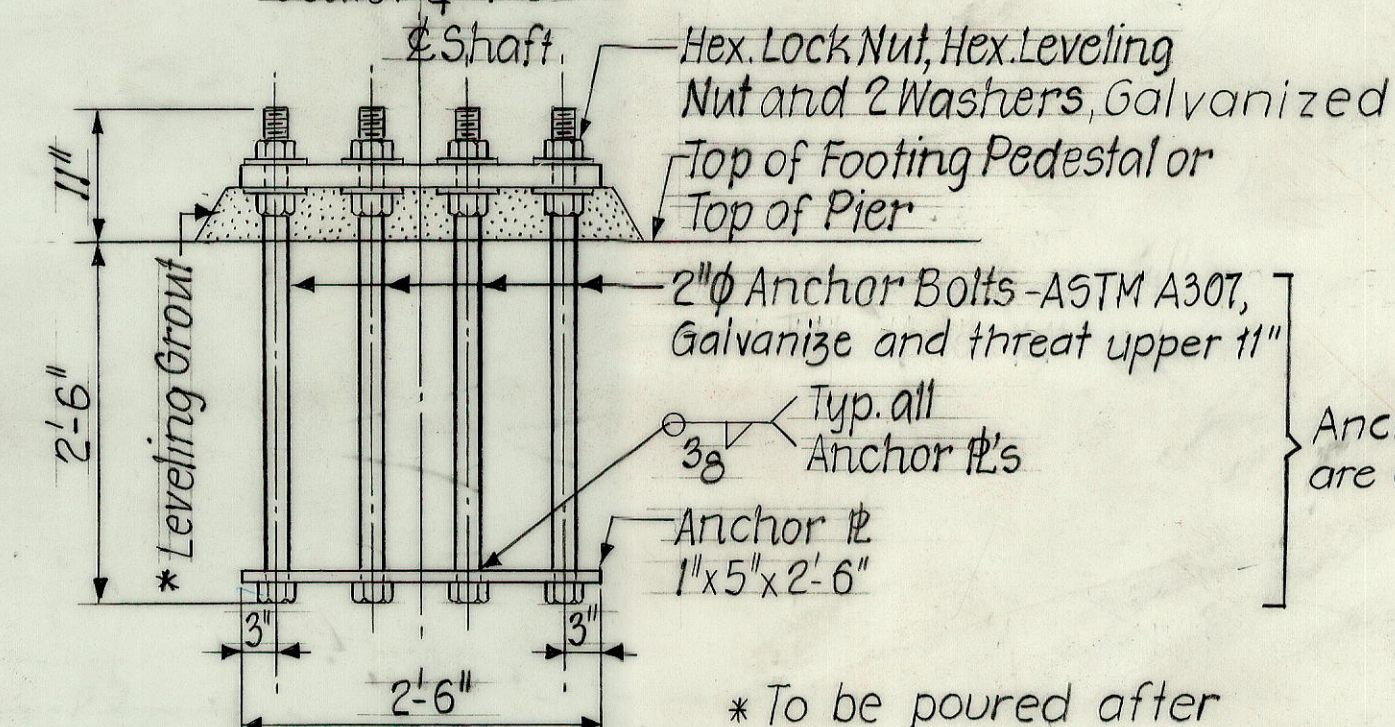


EXCAVATION PAYMENT LIMITS

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



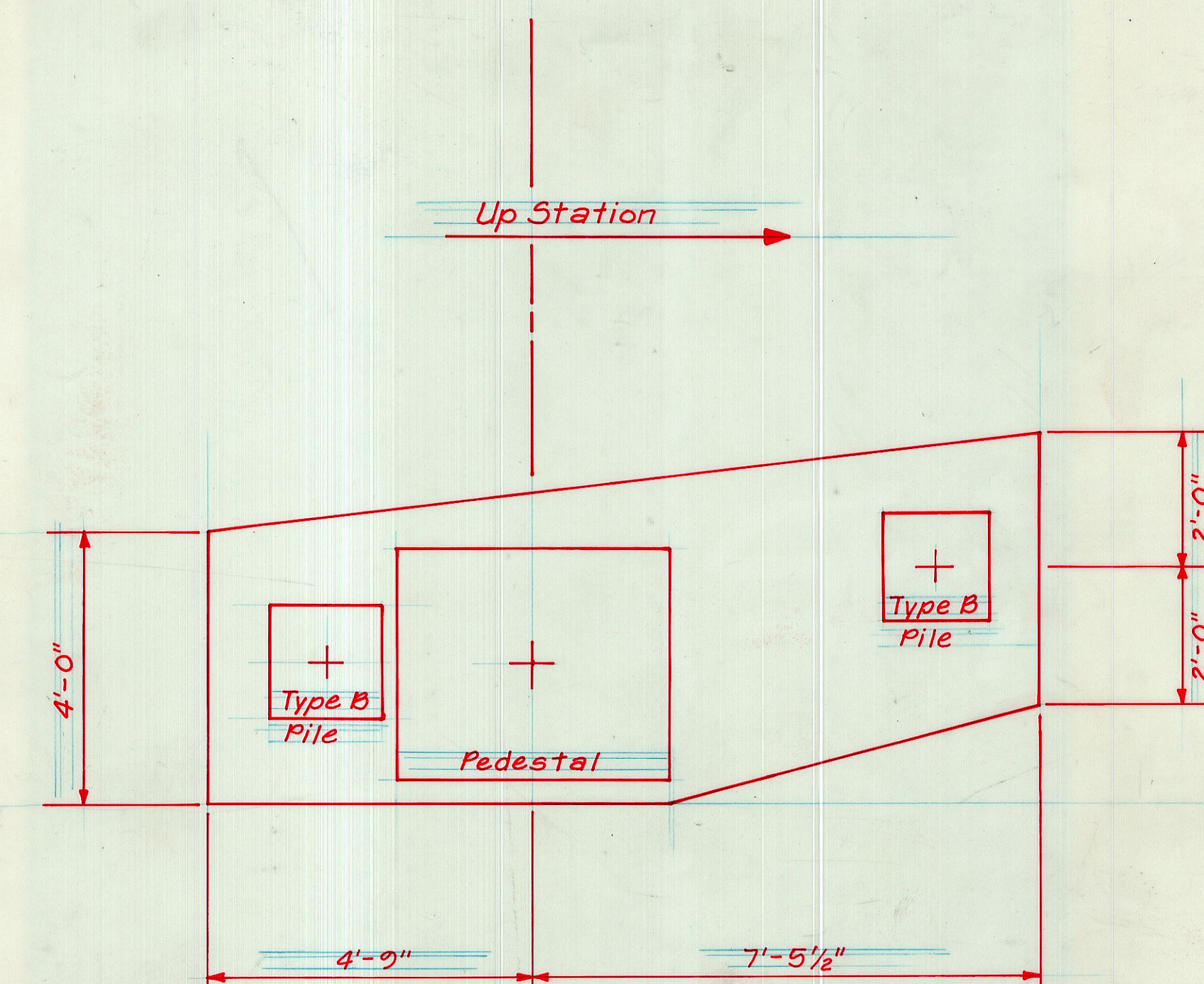
ANCHOR BOLT PLAN
Scale: $3/4" = 1'-0"$



SECTION B
Scale: $3/4" = 1'-0"$

ANCHOR BOLT DETAILS

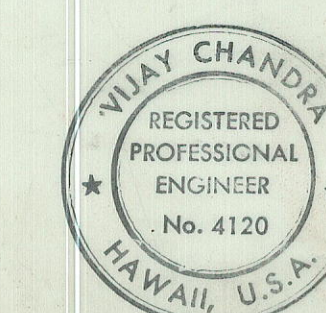
IDENTIFICATION NO.	BASE PLATE			ANCHOR BOLT SIZE	BOLT HOLE SIZE
	"D"	THICKNESS	"E"		
E-35	3'-0"	2"	6"	2"	2 1/4"
E-36, E-37, E-38	3'-3"	2 1/2"	7 1/2"	2"	2 1/4"



PLAN OF REVISED SIGN E-37
Left Footing
Ramp E Sta. 27+50 Rt.
(C.C.O. No. 18)

NOTES:

- All Concrete shall have a minimum compressive strength of 3,000 PSI at 28 days.
- Reinforcing Steel shall conform to A.S.T.M. A-615 Grade 40.
- For General and Design Notes, refer to Sh. No. ES-1.
- For Location and details of lighting conduits in the Pedestals see Electrical Drawings.



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ME OR UNDER MY SUPERVISION.
Vijay chandra
Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNS E-35, E-36, E-37 & E-38

OVERHEAD SIGN
FOUNDATIONS

KEEHI INTERCHANGE
F.A.I. PROJ. NO. I-IR-HI-1(169):17

SCALE: AS NOTED DATE: 3/15/82

SHEET NO. ES-8 OF 8 SHEETS

"AS-BUILT"