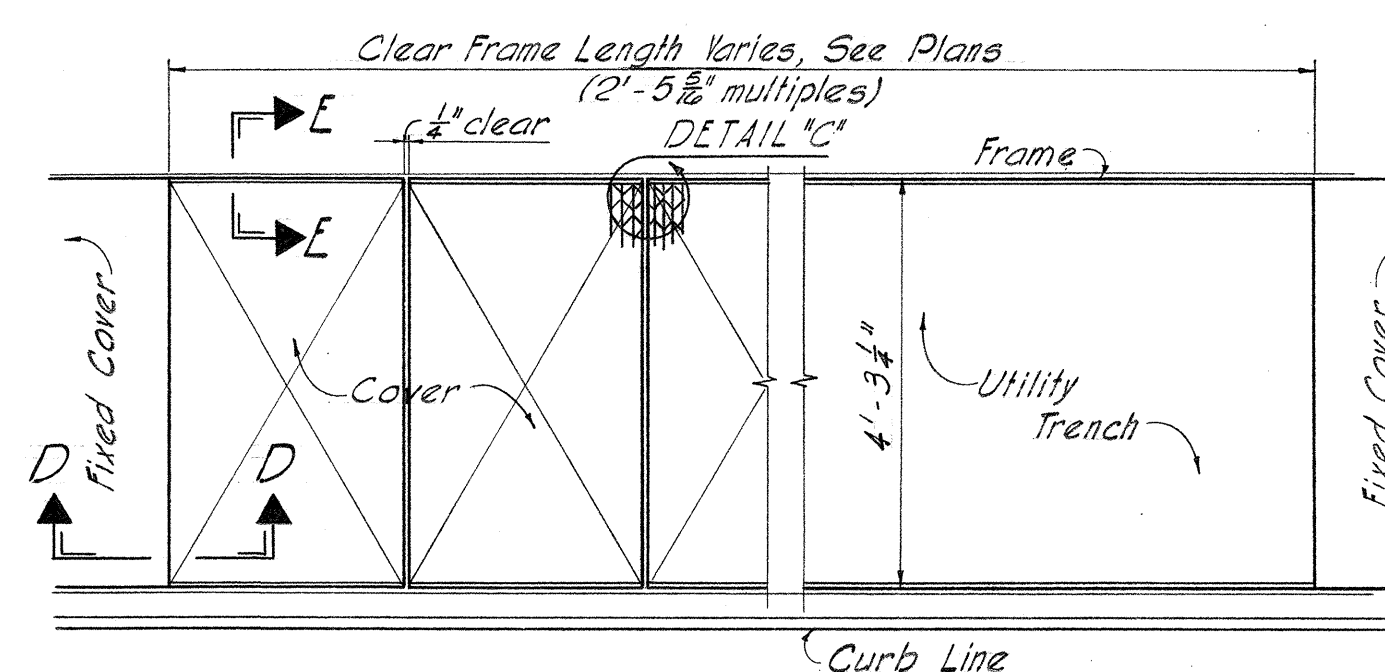
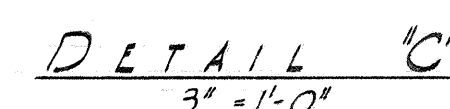




TRENCH PLAN
 $\frac{1}{2}'' = 1'-0''$



SECTION D-D
3' = 1'-0"

SECTION E-E
3" = 1'-0"

DESIGN SPECIFICATION:

7. For Palama Separation Structure the contractor shall construct falsework at Palama Street to allow two lane, two way vehicular traffic with vertical clearance of 13 ft. minimum and horizontal clearance of 12 ft. minimum for each traffic lane. The contractor shall also construct a covered pedestrian walkway on the west side of Palama Street. The above work involved in providing the lanes and walkway shall be incidental to the item of concrete in Bridge (Structure N^o 4C) and will not be paid for separately. Plans for falsework and pedestrian walkway shall be submitted by the contractor and approved by the Engineer. Contractor's attention is directed to the requirements of Section 7 of the Standard Specifications.
8. For pay limits of Excavation & Backfill Detail, see Sht.No. [279] Typical Excavation & Backfill Detail. Also Sht.No. [279] Typical Rigid Frame Detail
9. For electrical Conduits in Bridges see highway lighting plans.

CONCRETE:

1. All concrete shall be Class A-1 unless otherwise noted.
2. Surfaces to receive lead base plates shall be poured monolithically with supporting structure. Bearing seats shall be finished with a steel trowel to a smooth level surface at the elevations shown on the plans.
3. Cover for reinforcing bars shall be as follows unless noted otherwise:
 - 1½" for slabs (including rigid frames), stirrups on sides of box girder webs, and walls not exposed to ground.
 - 2" for formed walls exposed to ground.
 - 2½" to main reinforcing of columns and beams.
 - 3" for footings.
4. Reinforcing bars shall be detailed in accordance with ACI. "Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures" unless otherwise noted.
5. Reinforcing bars shall be lapped 32 bar diameters, except top bars having more than 12" of concrete below which shall be lapped 40 bar diameters, unless shown otherwise.
6. Reinforcing bars shall be securely tied at all intersections and splices and shall be held in place during pouring to maintain their proper location as shown on plans.

CAMBER:

Obtain camber by forming and shoring concrete surfaces above profile grades amount shown in camber diagram.

FORM REMOVAL:

Removal of top slab forms of box girders is optional with contractor. Optional closure slab and diaphragm details shall apply if forms are removed.

PROTECTION OF PROPERTY:

The contractor shall be solely responsible for the protection of adjacent property and structures from damage due to construction and shall repair any damage at his own expense. He shall conduct his work in such a manner and provide such temporary shoring or other measures as may be necessary to insure the safety of adjacent property.

METHOD OF DRIVING PILE:

Piles may be driven, subject to the provisions in the Standard Specifications, with a diesel hammer.

CONSTRUCTION METHODS:

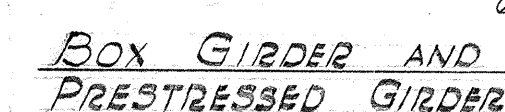
1. Backfill behind abutments of box girder structures shall be completely placed and compacted prior to construction of superstructure.
2. No backfill shall be placed behind abutments of rigid frame structures until concrete in superstructure has reached a strength of 3000 psi. The backfill must then be placed uniformly and simultaneously at each abutment of a rigid frame structure to avoid unequal lateral earth pressure.
3. Sides of footings shall be excavated and poured to neat lines when called for on the plans. For excavation of bottom of footings, see Standard Specifications. Over excavation beyond neat lines for sides of footings and the elevations indicated on the plans for the bottom of footings shall be backfilled with a minimum of Class D concrete at the Contractor's expense and as directed by the Engineer.
4. Forms for all exposed surfaces of separation structures including retaining walls (except round columns) shall be plywood. Forms for round columns shall be made of material that results in a smooth finish and true dimensions as shown in the plans.
5. Finish: See Standard Specifications.
6. All voids under a footing over or adjacent to another Ftg. shall be backfill with Class D-1 Concrete at least to the edges of footing where excavation extends beyond footing outline. Class D-1 fill concrete shall be considered incidental to and covered by the applicable unit price for "Structure Excavation at Bridges".



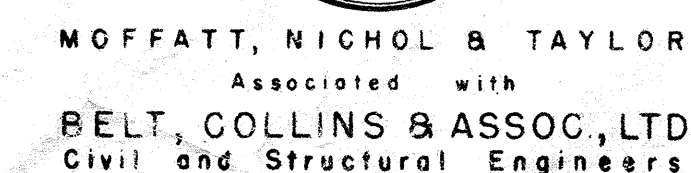
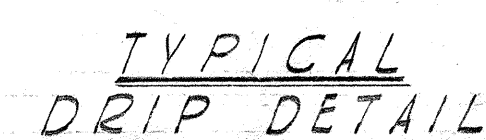
TYP. SHOULDER DETAIL



TYPICAL SIDEWALK AND CURB DETAILS



TYPICAL MEDIAN DETAIL



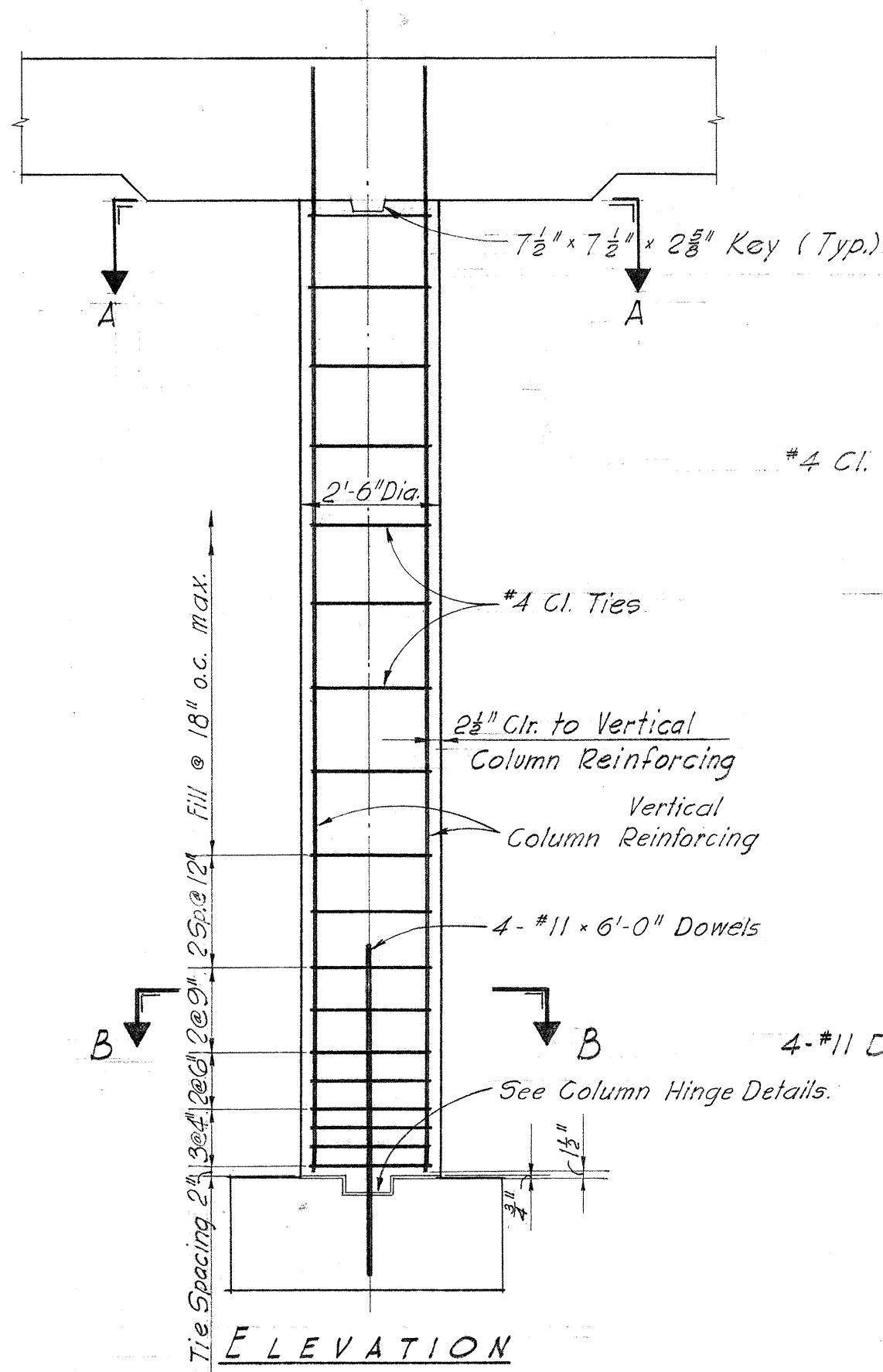
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII

TYPICAL DETAILS AND GENERAL STRUCTURAL NOTES

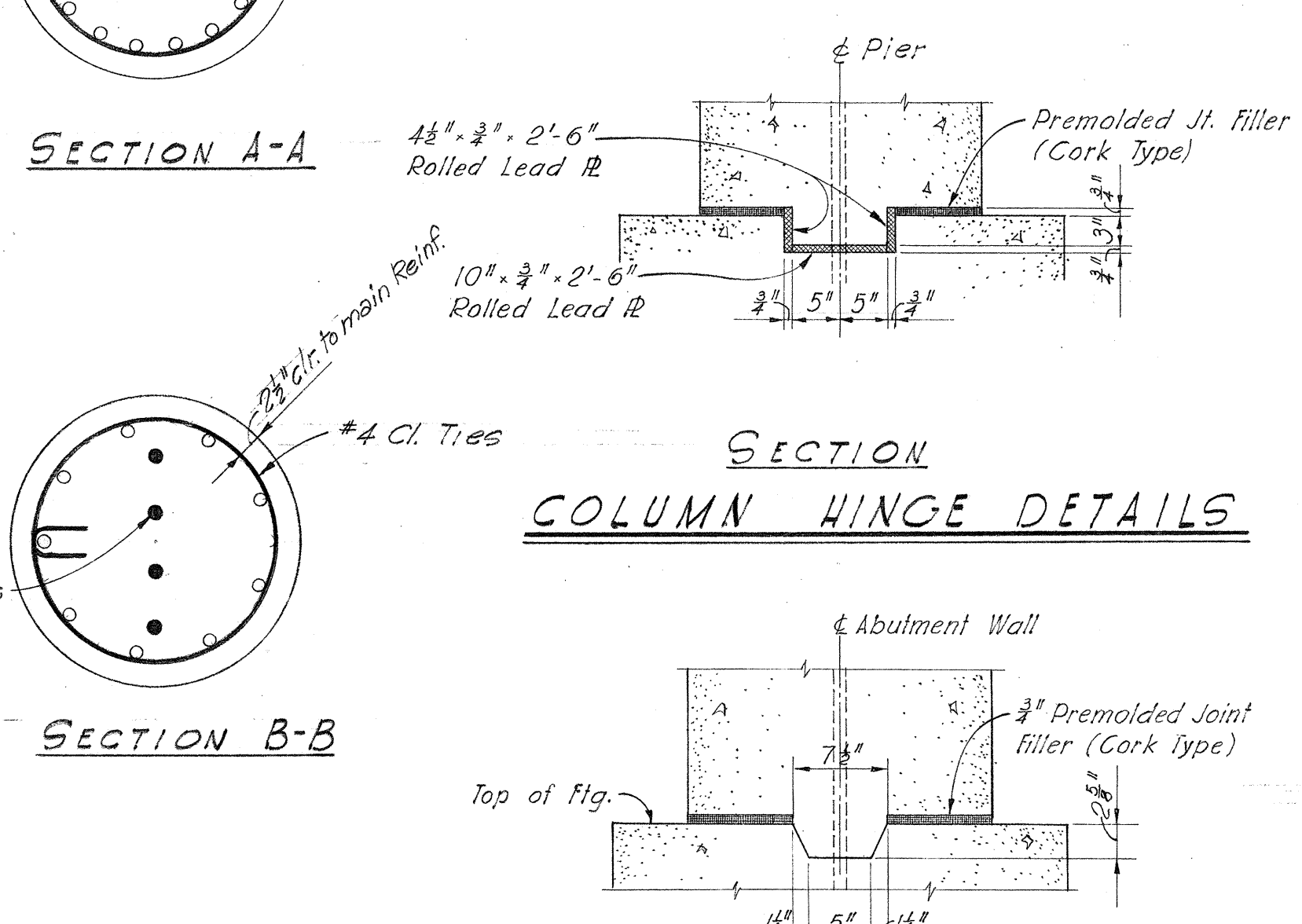
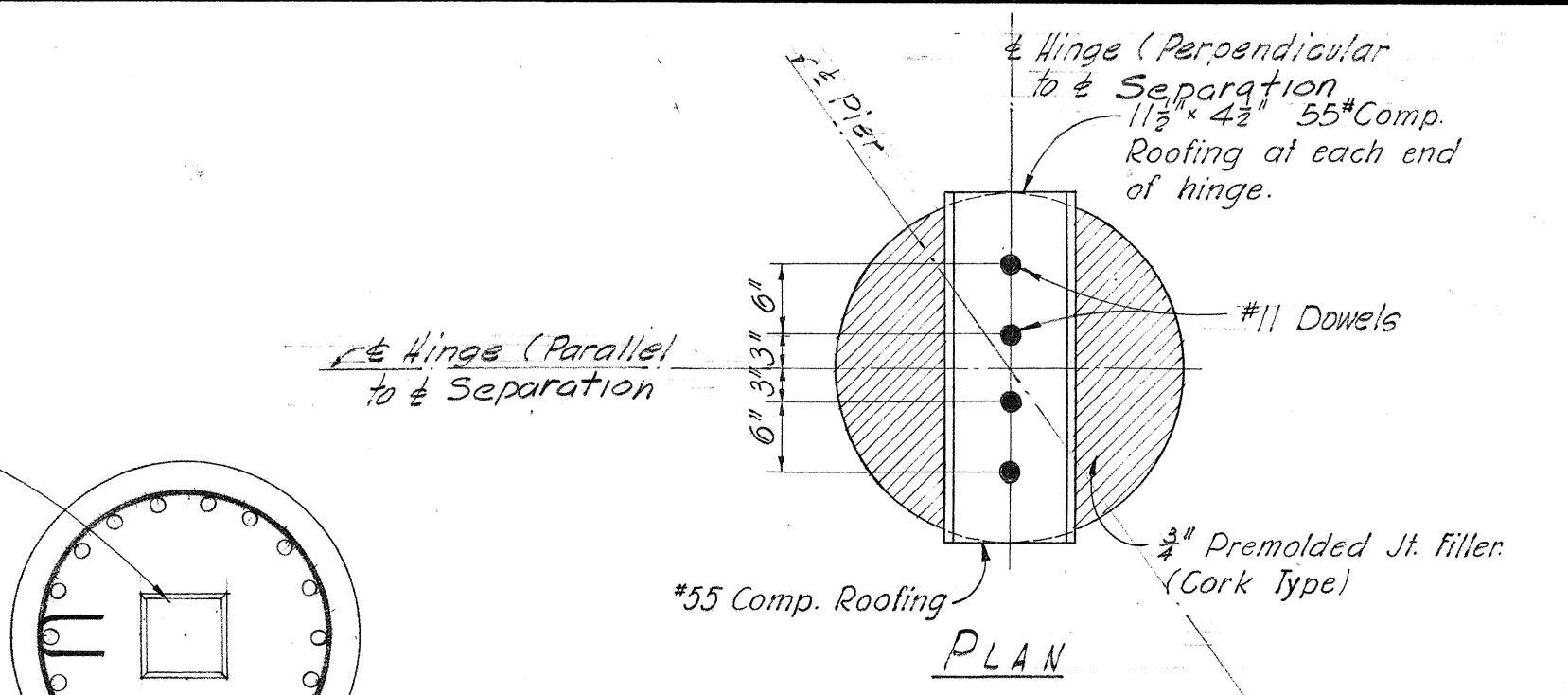
LUNALILO FREEWAY U - 072 - 1 (3)
LILIHA STREET E - 090 - 1 (2)

SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
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		F-090-10	1963	89	93

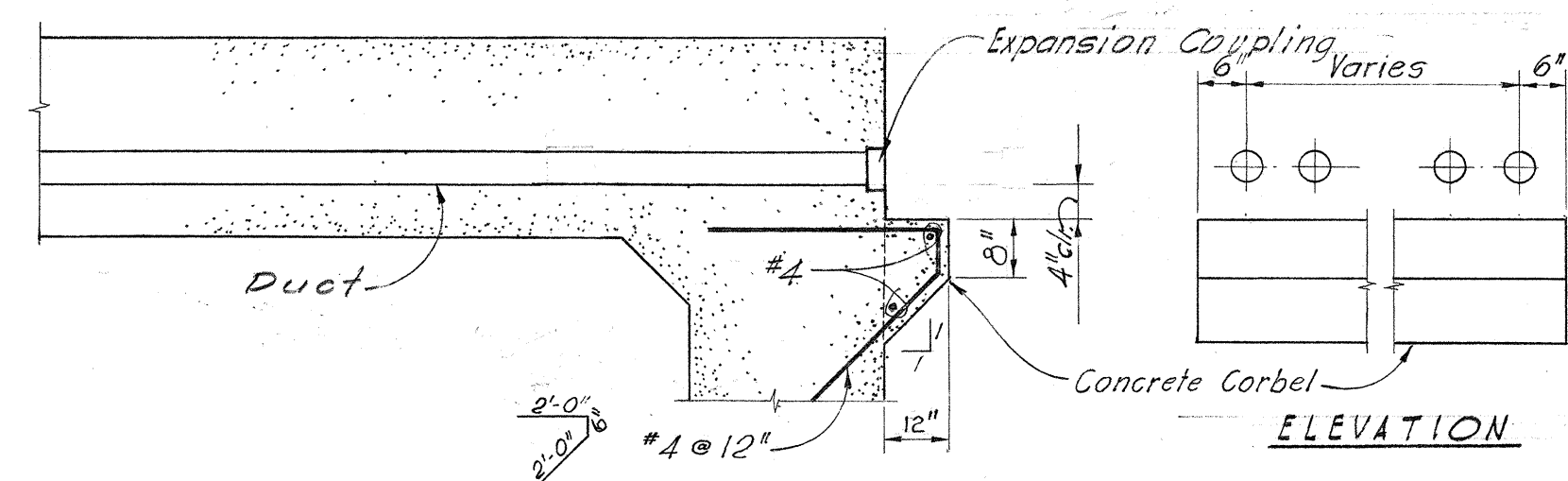


TYPICAL COLUMN DETAILS

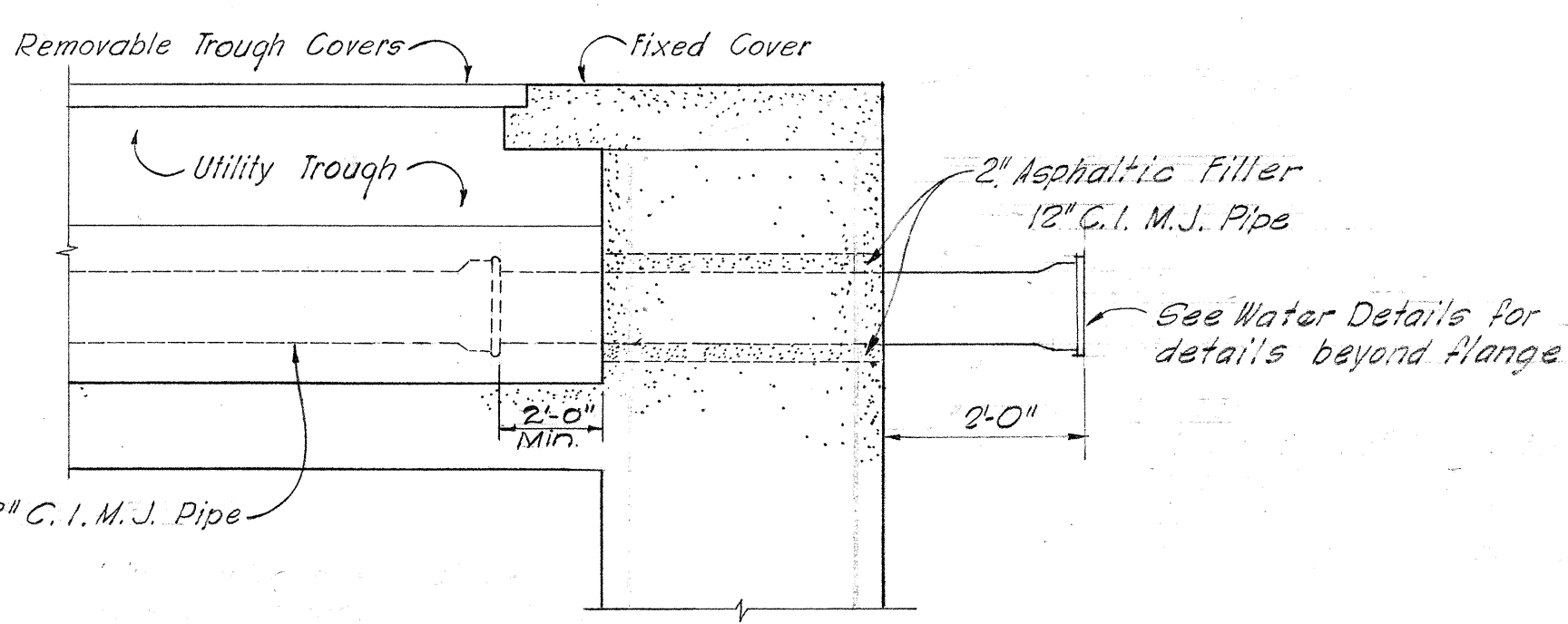


SECTION C-C
COLUMN HINGE DETAILS

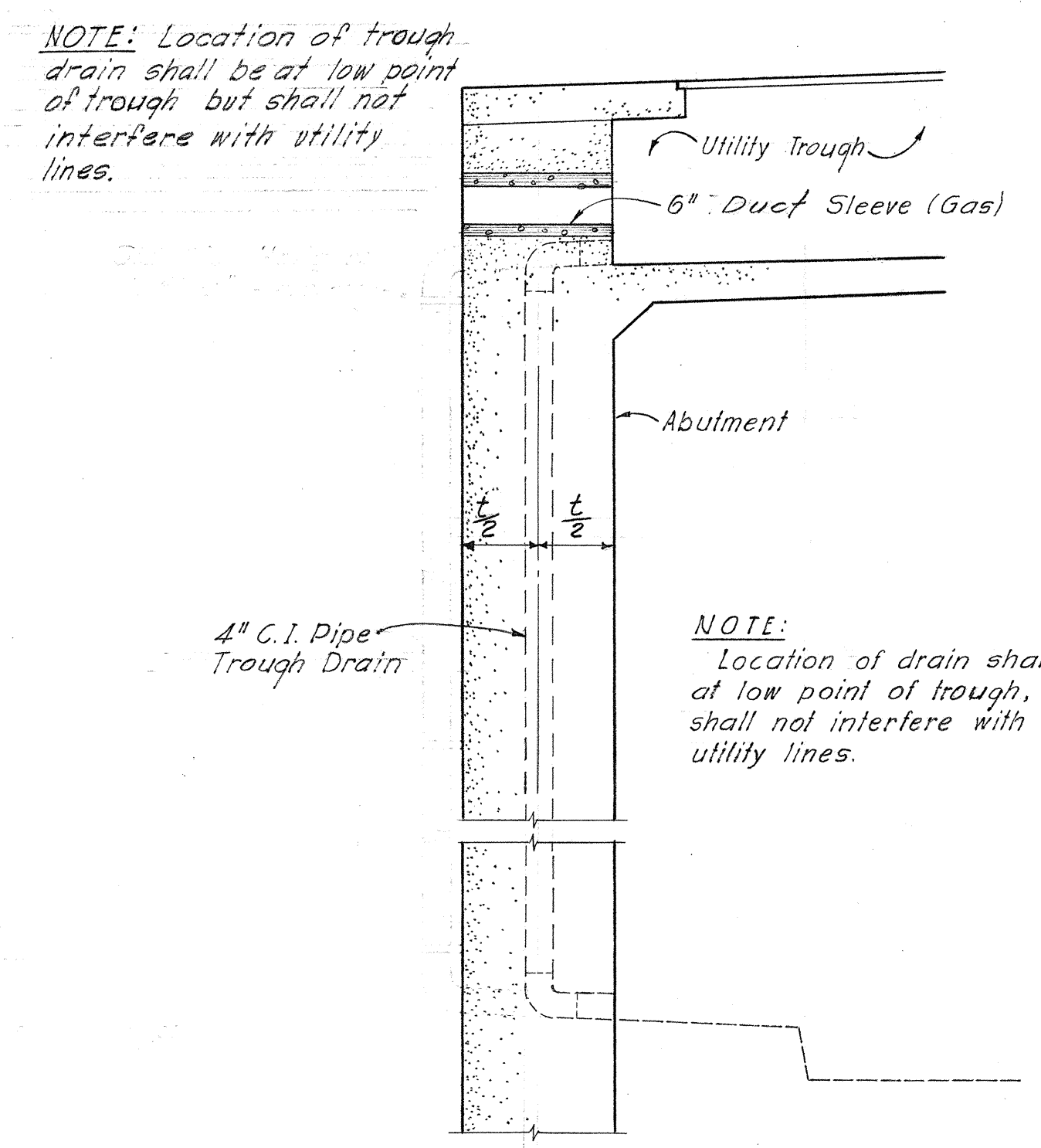
ABUTMENT WALL HINGE DETAIL



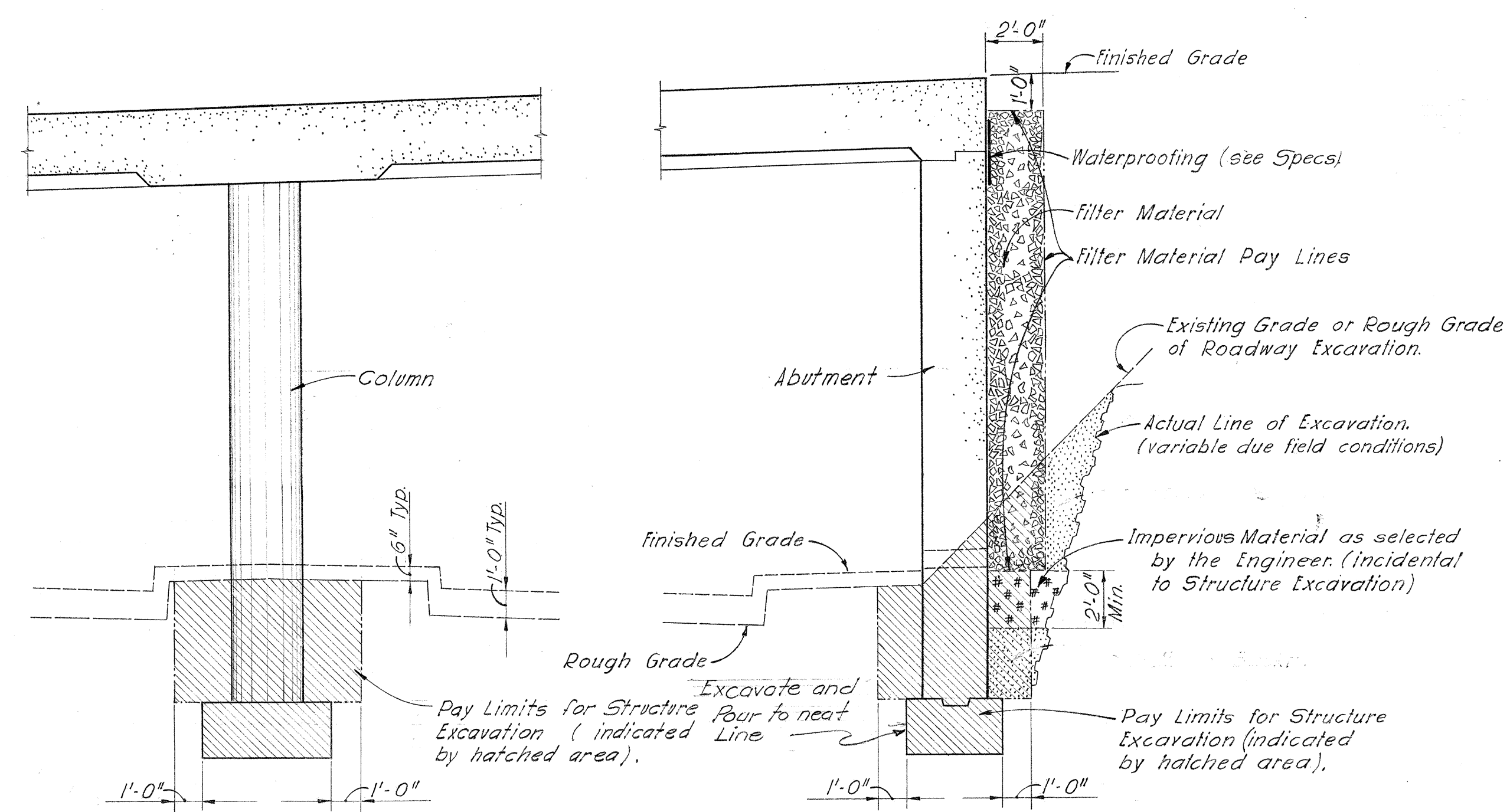
TYPICAL "DUCT" DETAIL



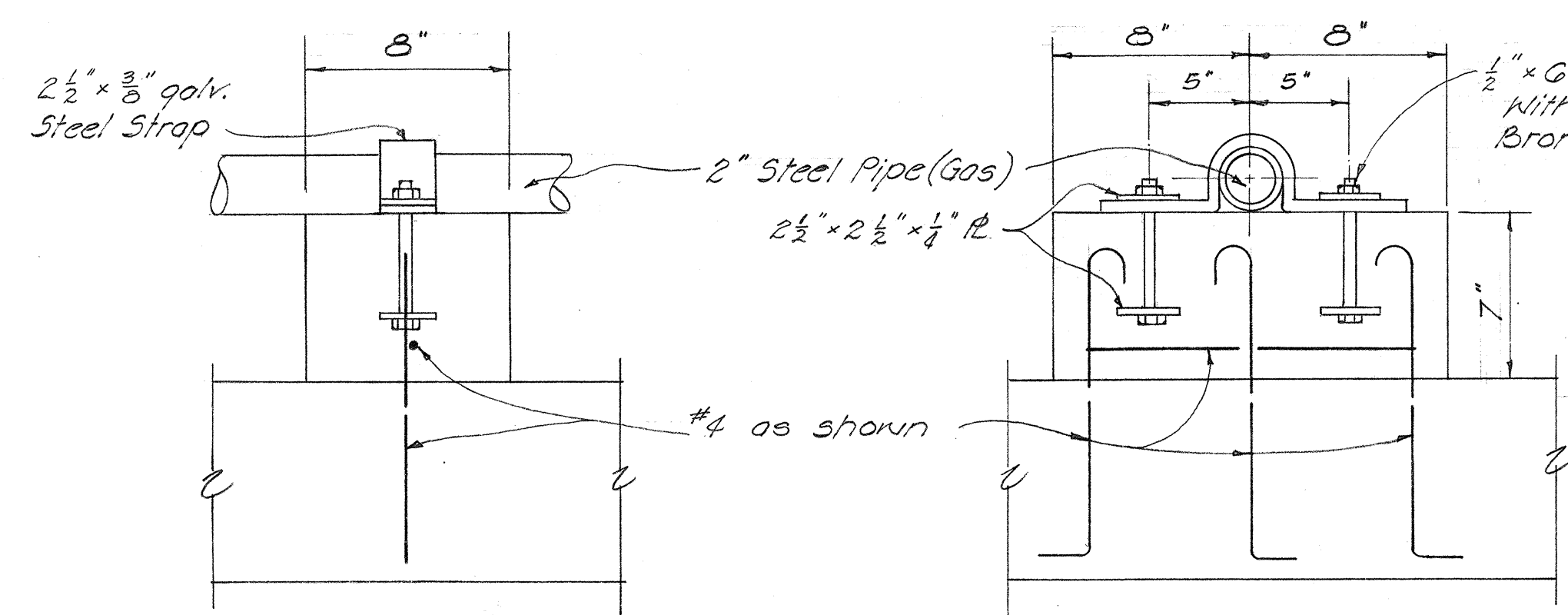
TYPICAL WATER LINE DETAIL



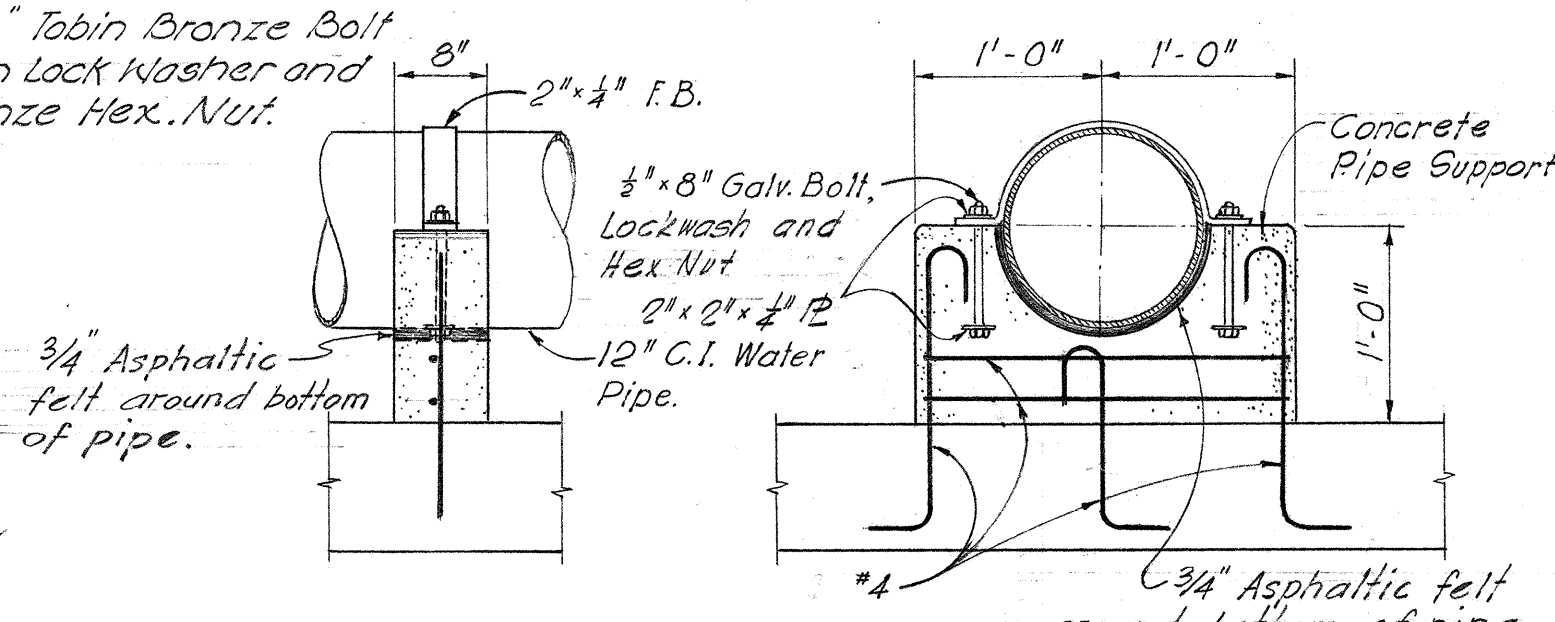
TROUGH DRAIN AND SLEEVE DETAIL



EXCAVATION AND BACKFILL DETAILS



PIPE SUPPORT DETAILS for FUTURE 4" GAS



PIPE SUPPORT DETAIL for WATER

APPROVED: *David A. Kane* 4/1/63
PRINCIPAL ELECTRICAL ENGR., H.E. CO., LTD.
DATE

APPROVED: *Howard D. Hale* 3-22-63
PLANNING ENGR., HON. GAS CO.
DATE

APPROVED: *Paul C. Jones* 3/22/63
OAHU DISTRIBUTING MGR., HON. GAS CO.
DATE

Approved: *H. J. Gendall* Date 4/1/63
Asst. Chief Engineer, BWS.



MOFFATT, NICHOL & TAYLOR
Associated with
BELT, COLLINS & ASSOC., LTD.
Civil and Structural Engineers

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII

TYPICAL RIGID FRAME DETAILS

LUNALILO FREEWAY U-072-1(3)
LILIIHA STREET SF-090-1(2)

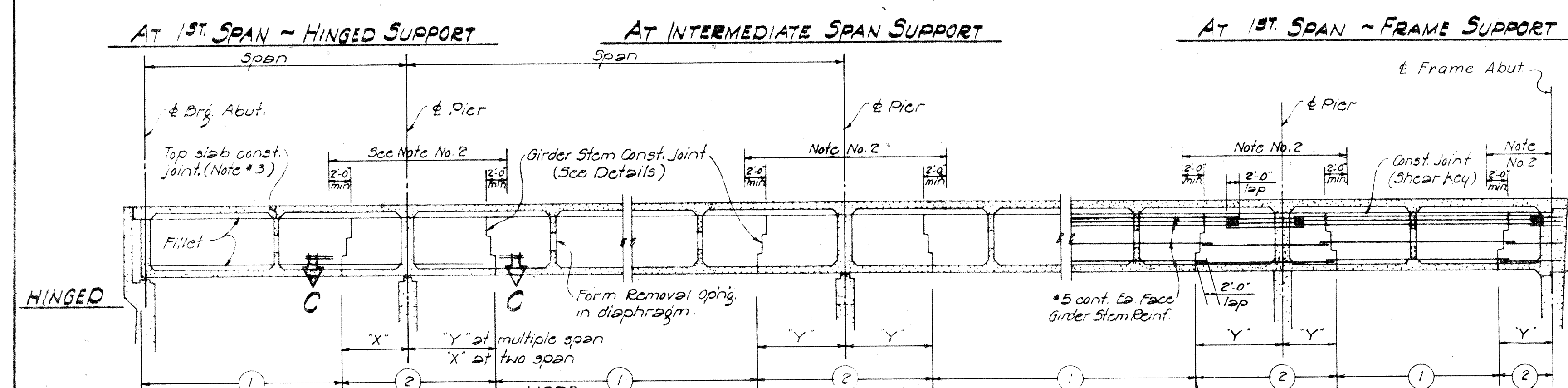
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DATE

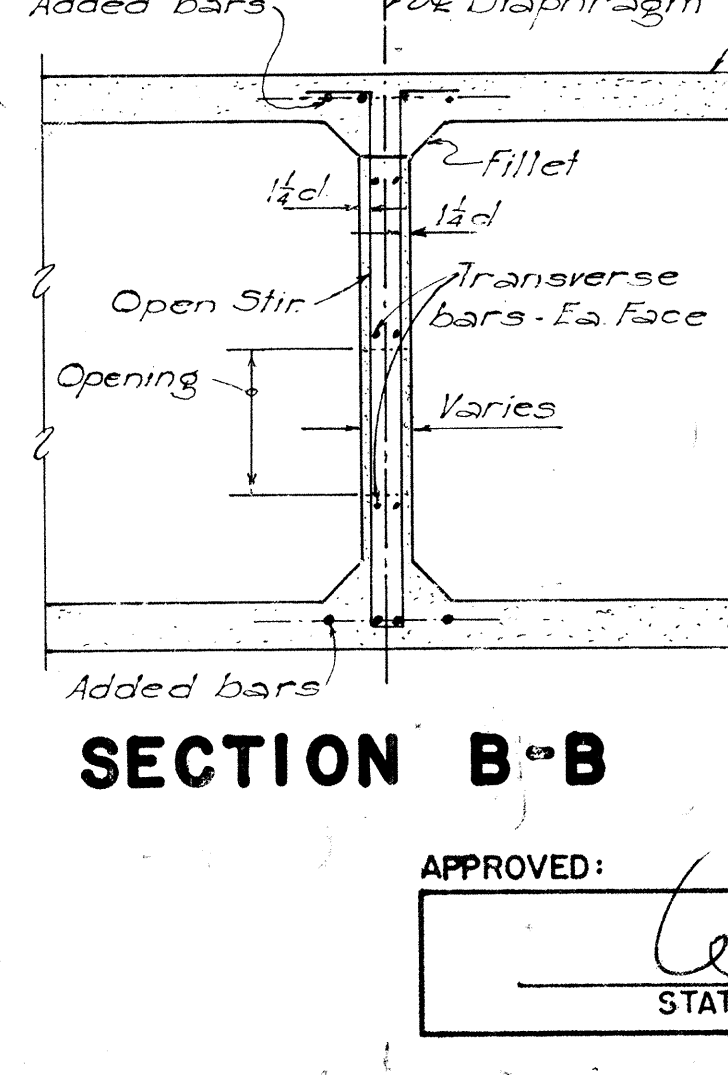
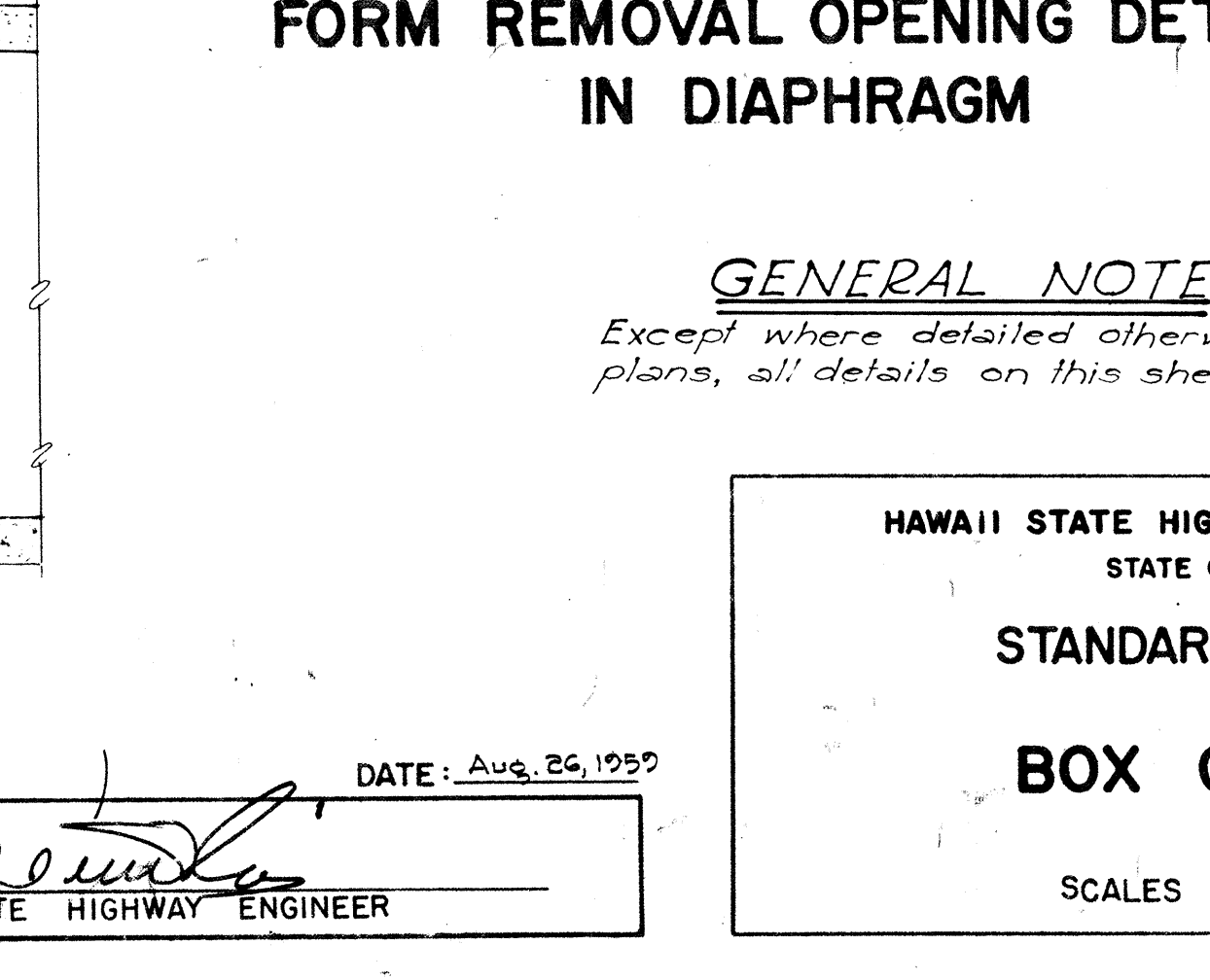
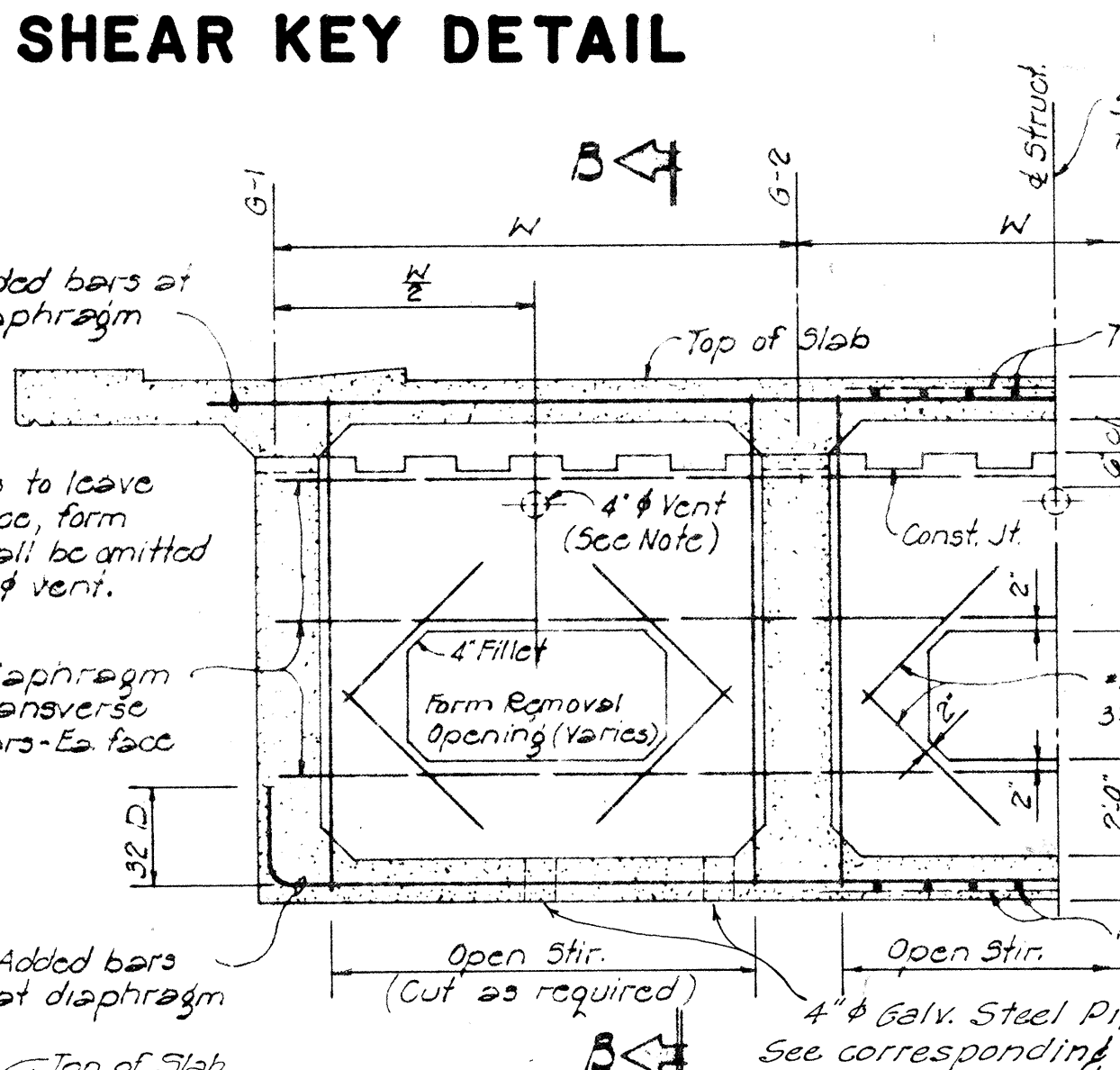
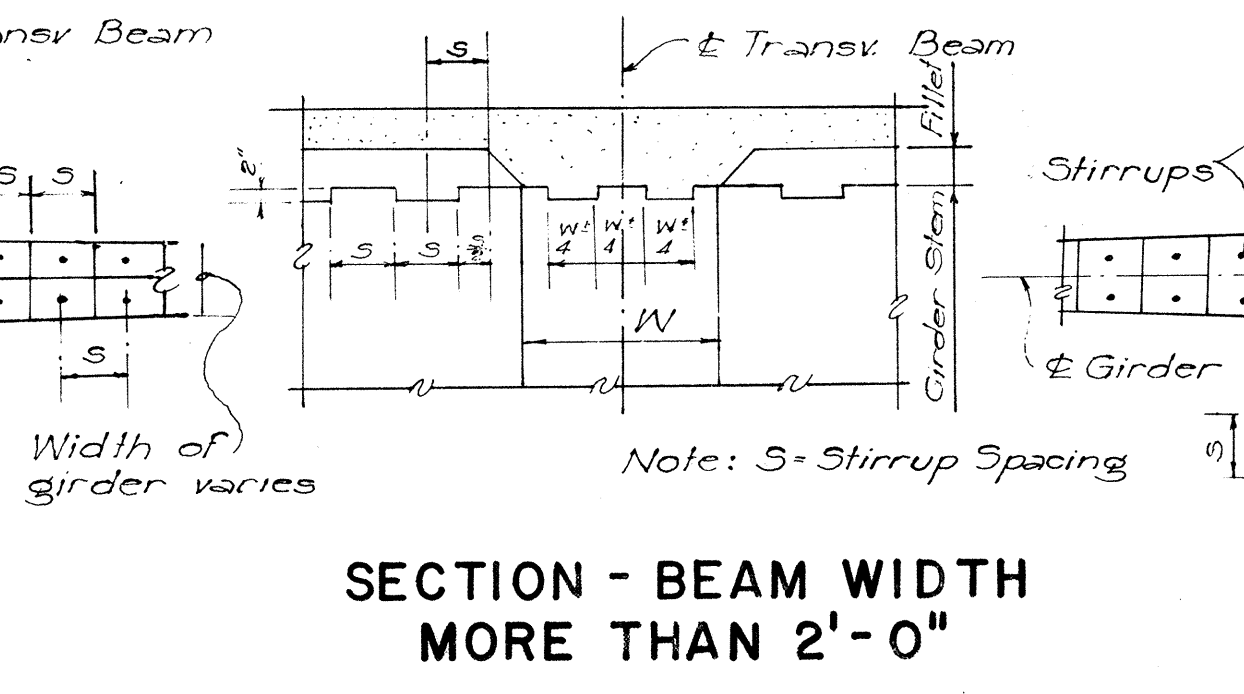
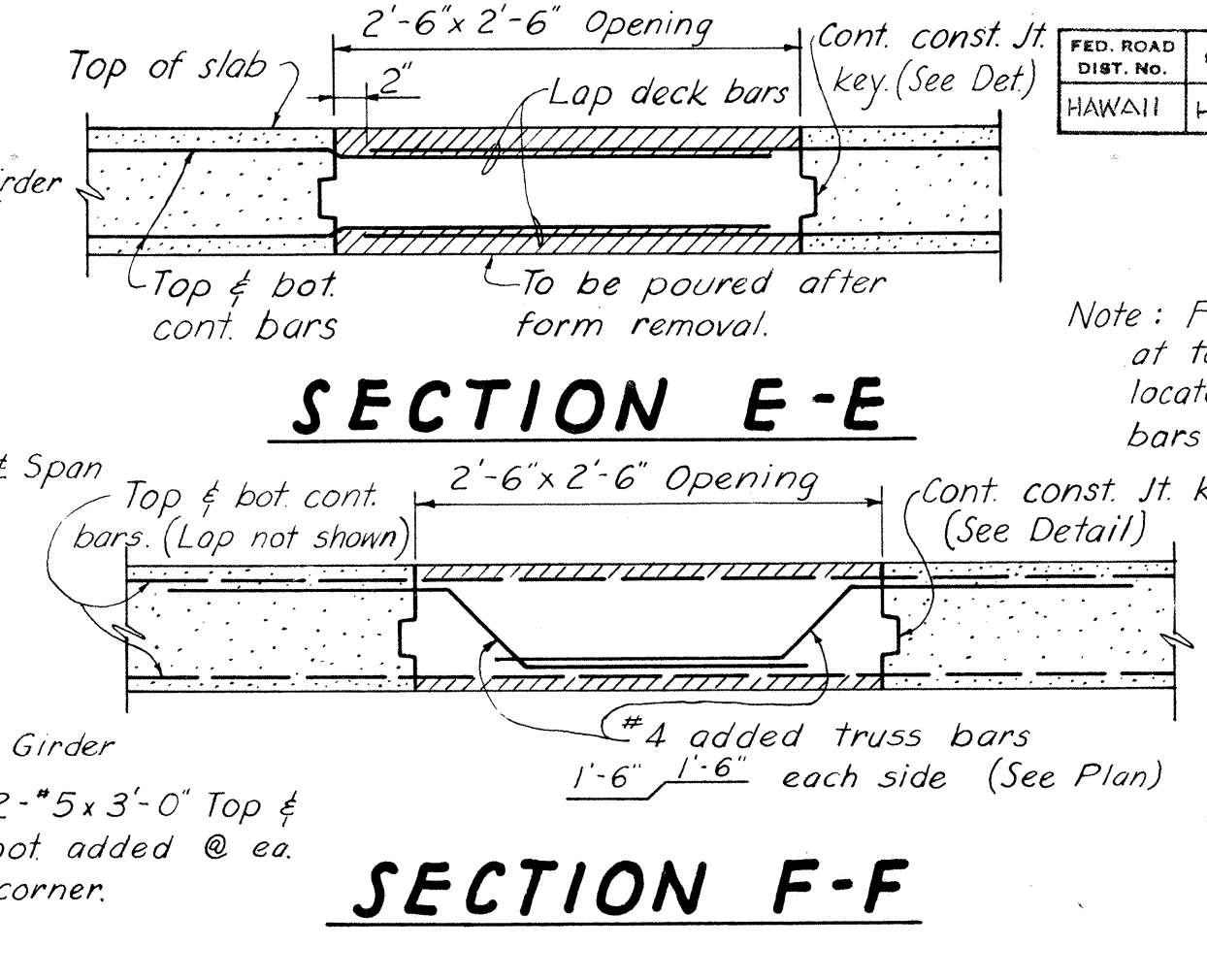
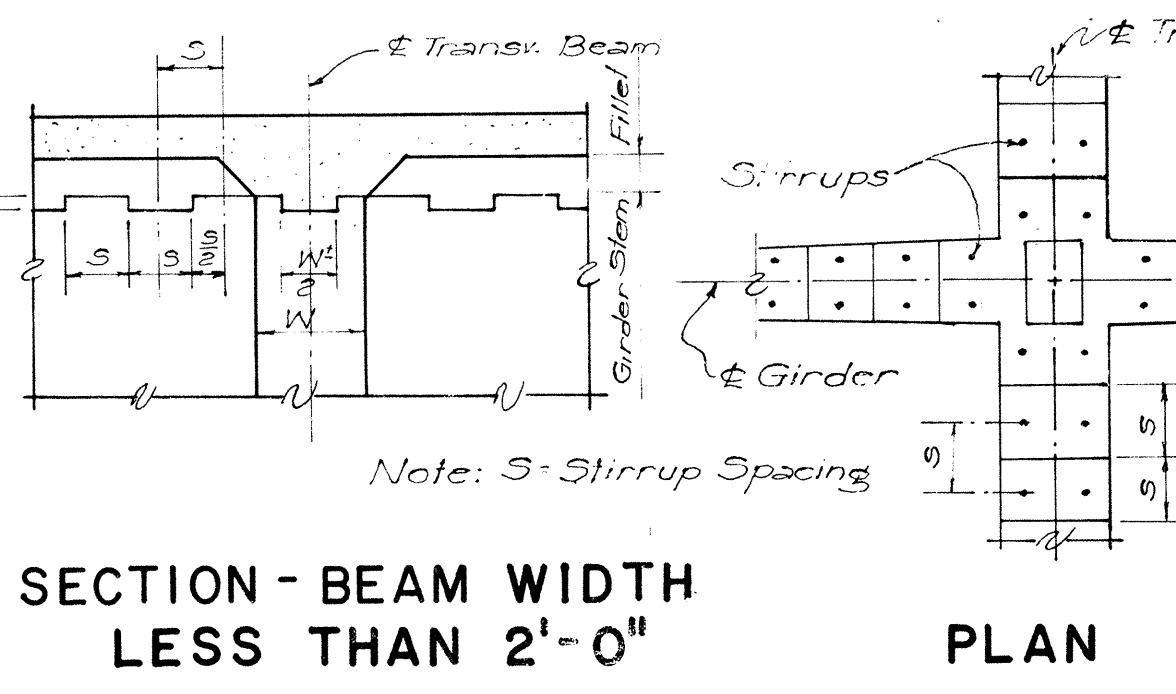
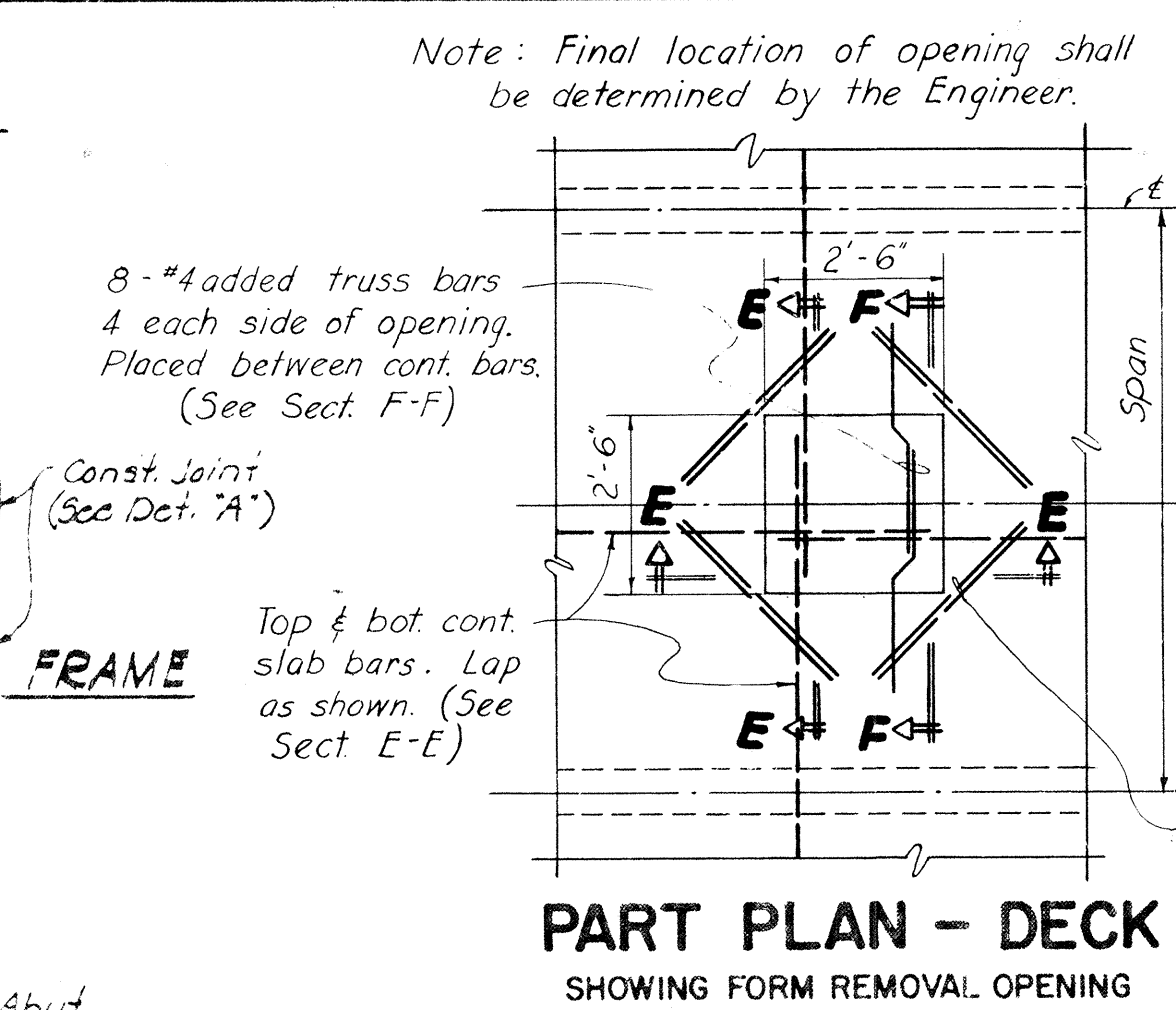
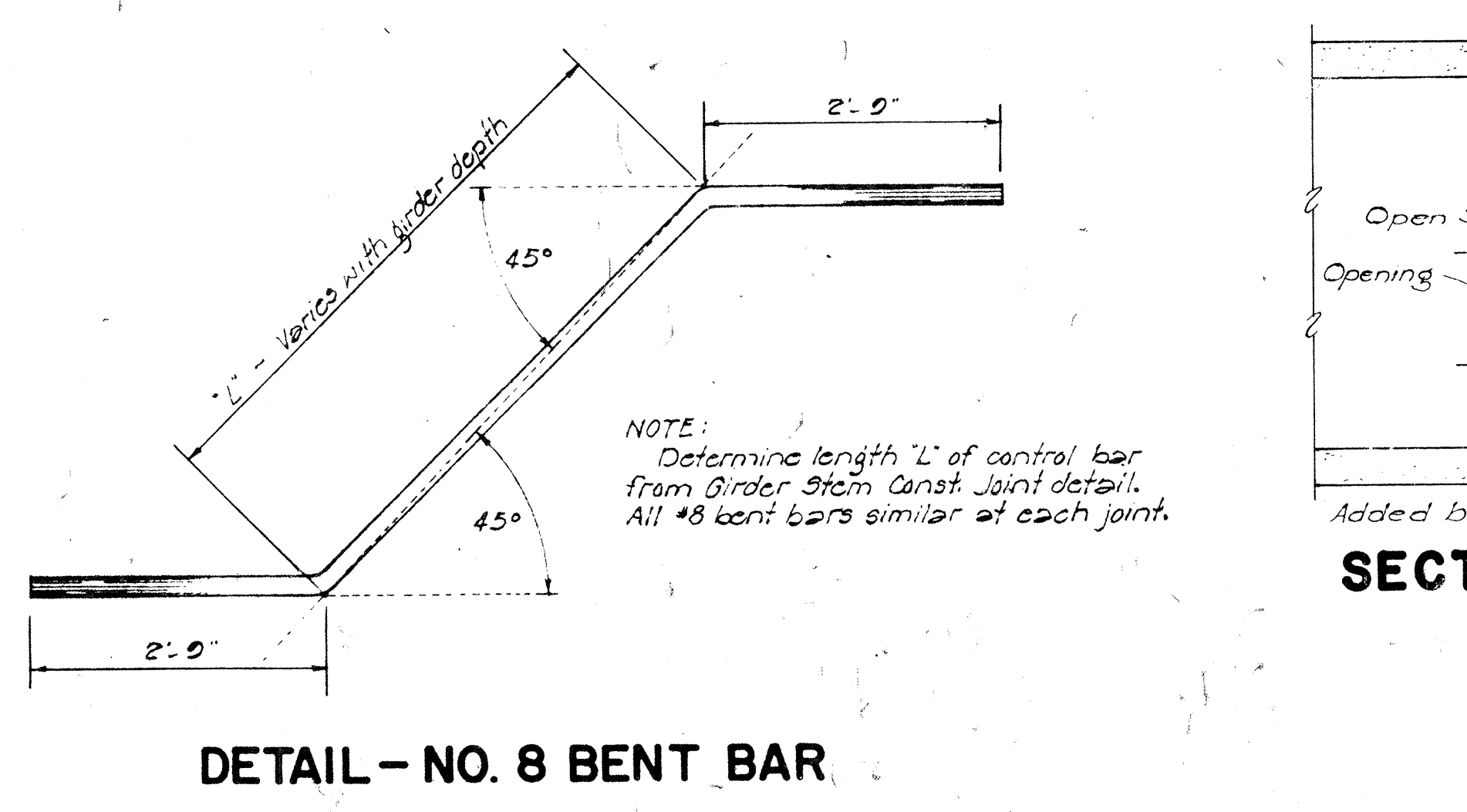
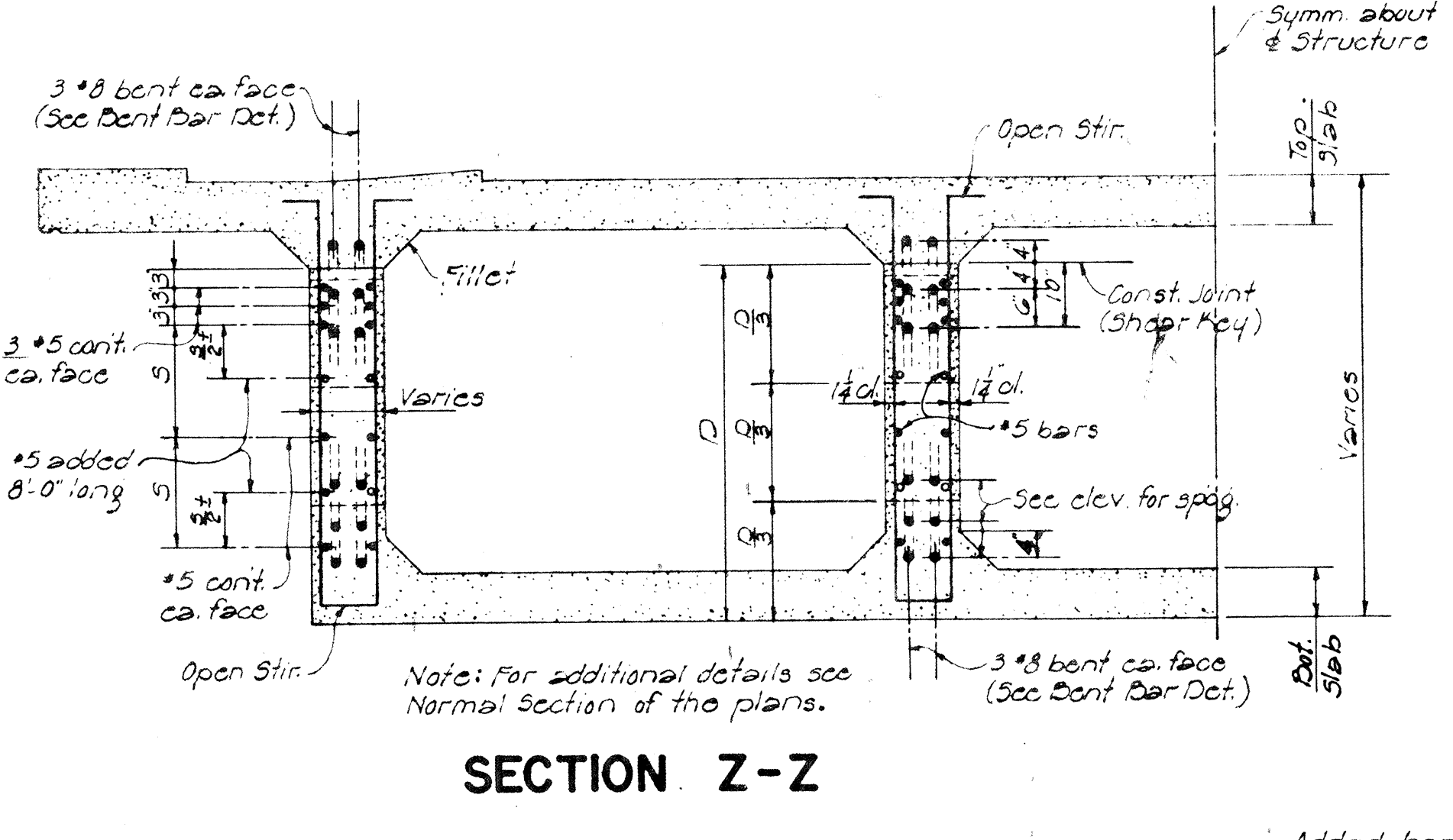
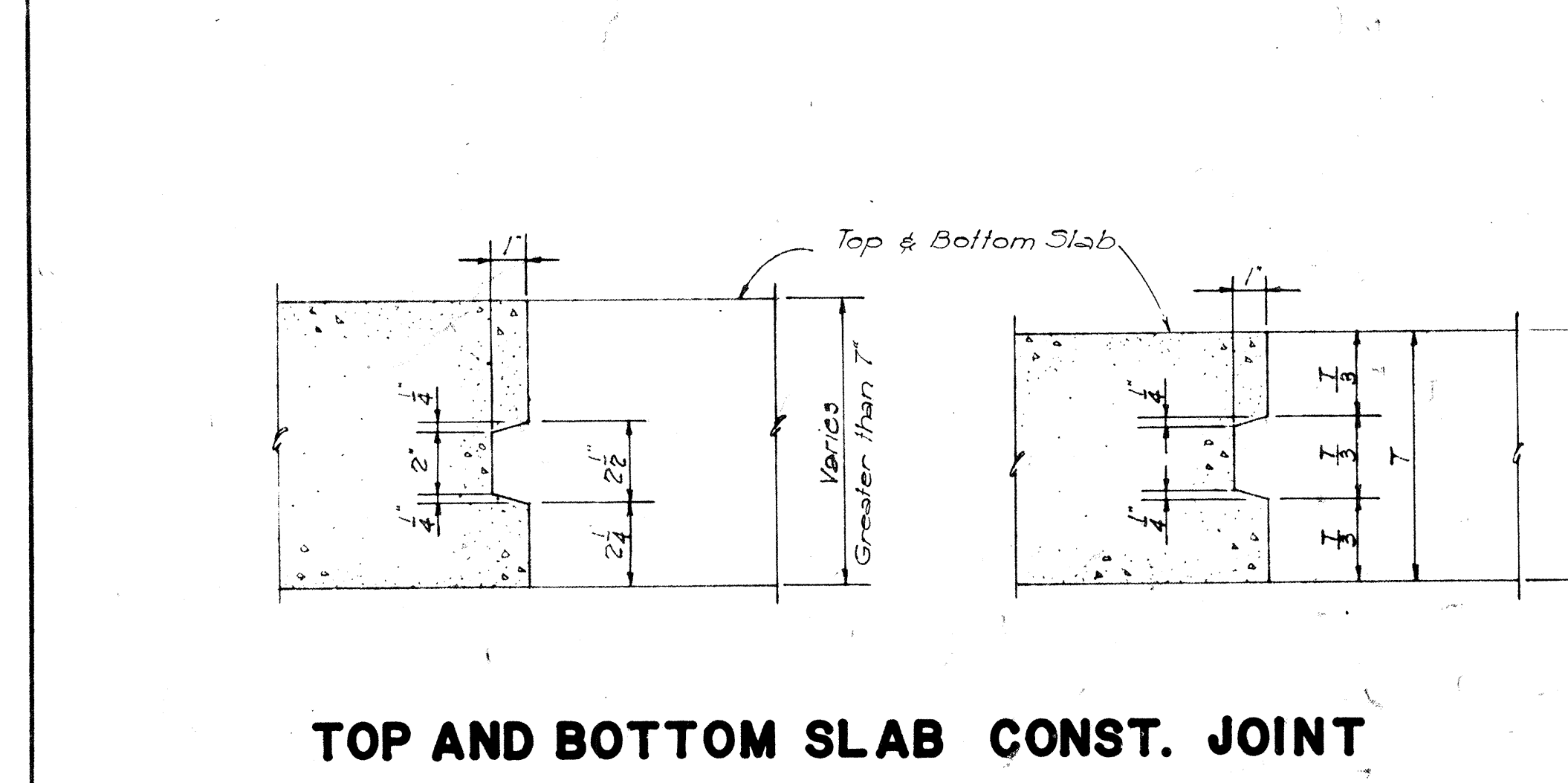
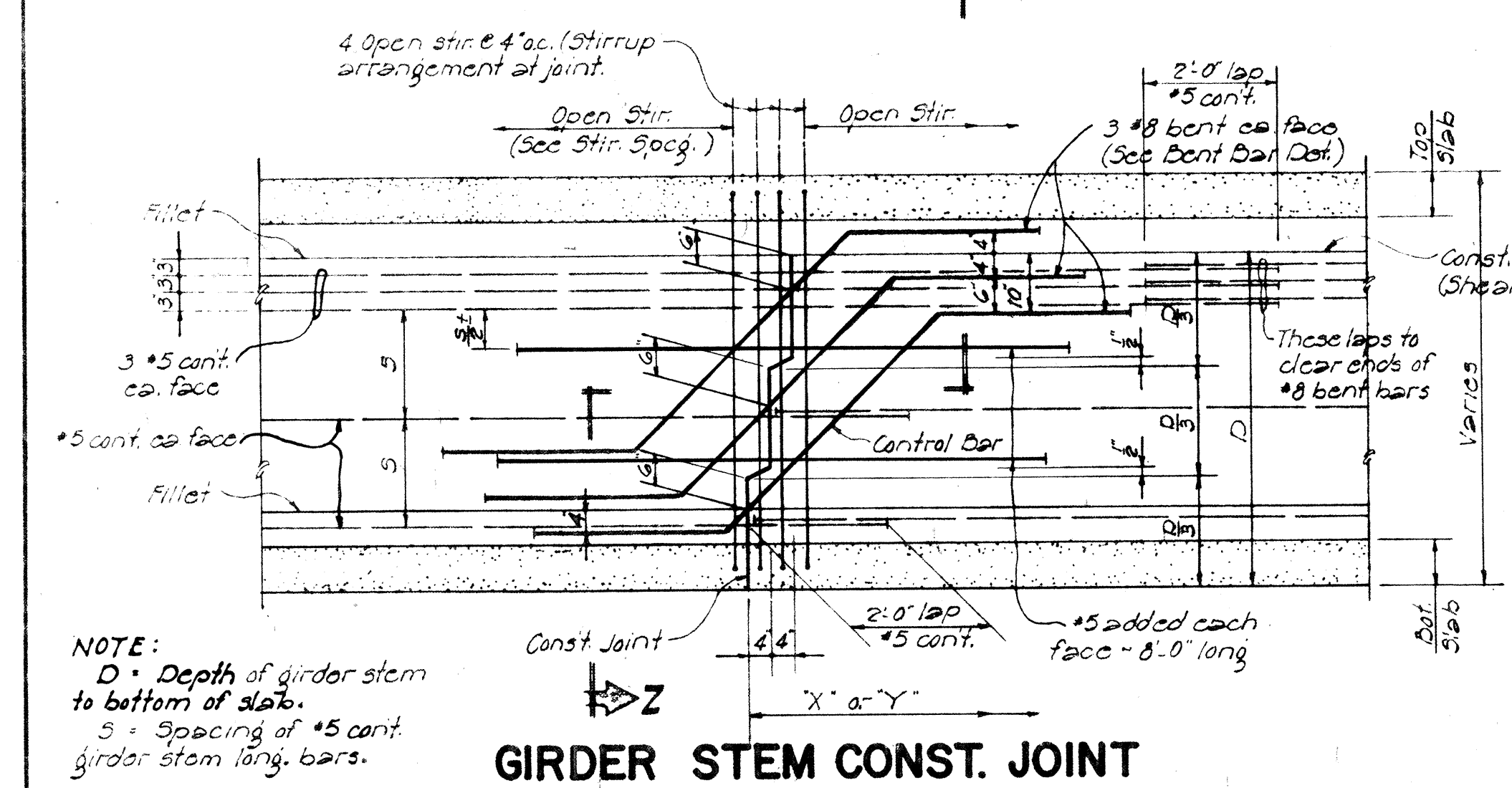
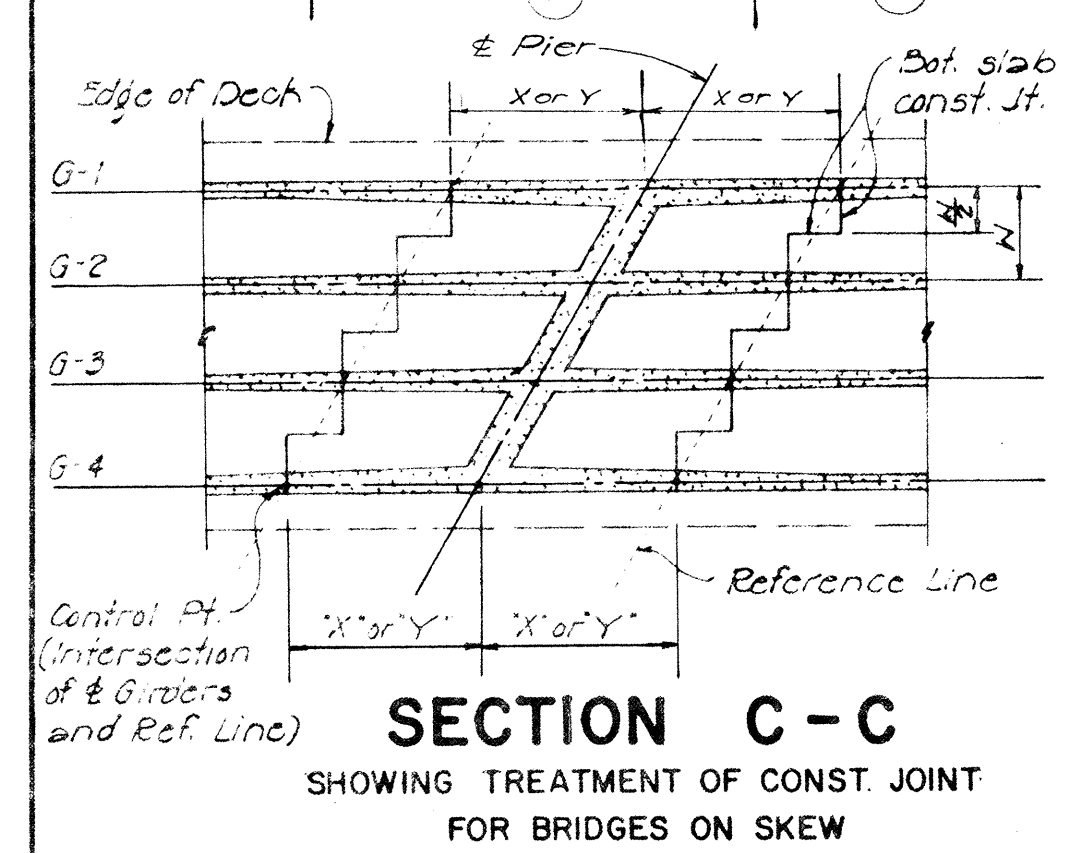
QUANTITIES BY
CHECKED BY
DATE

NOTE BOOK
No.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	U-072-1(15)	1963	243	246
		U-072-1(14)	1963	85	May '59
		F-070-1(12)	1963	20	May '62
					NOV. '62



PLACING DIAGRAM
FOR SUPERSTRUCTURE CONCRETE

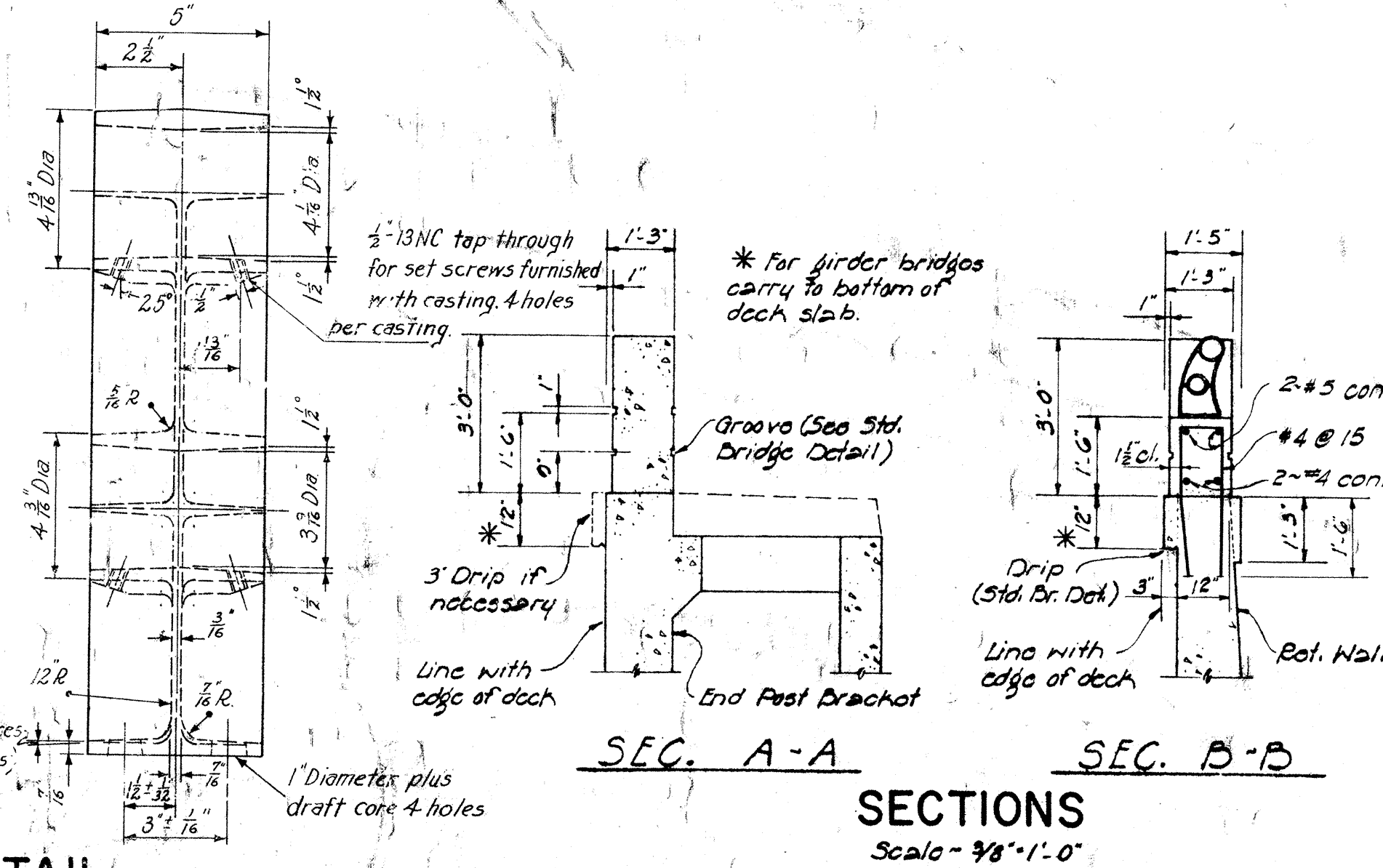
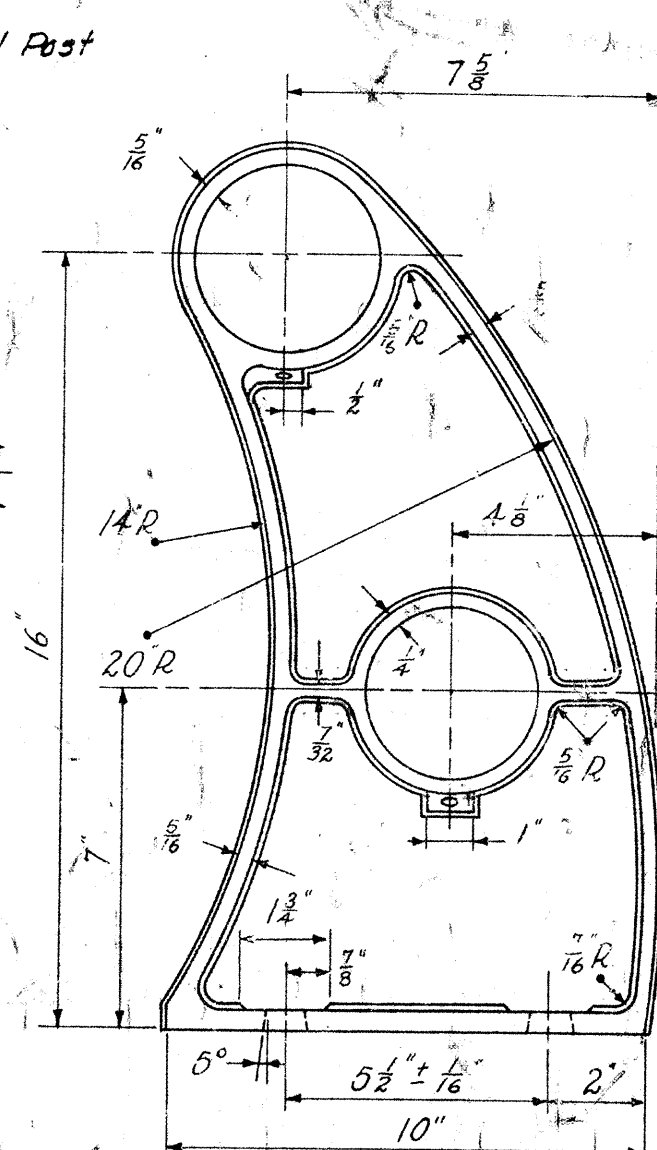
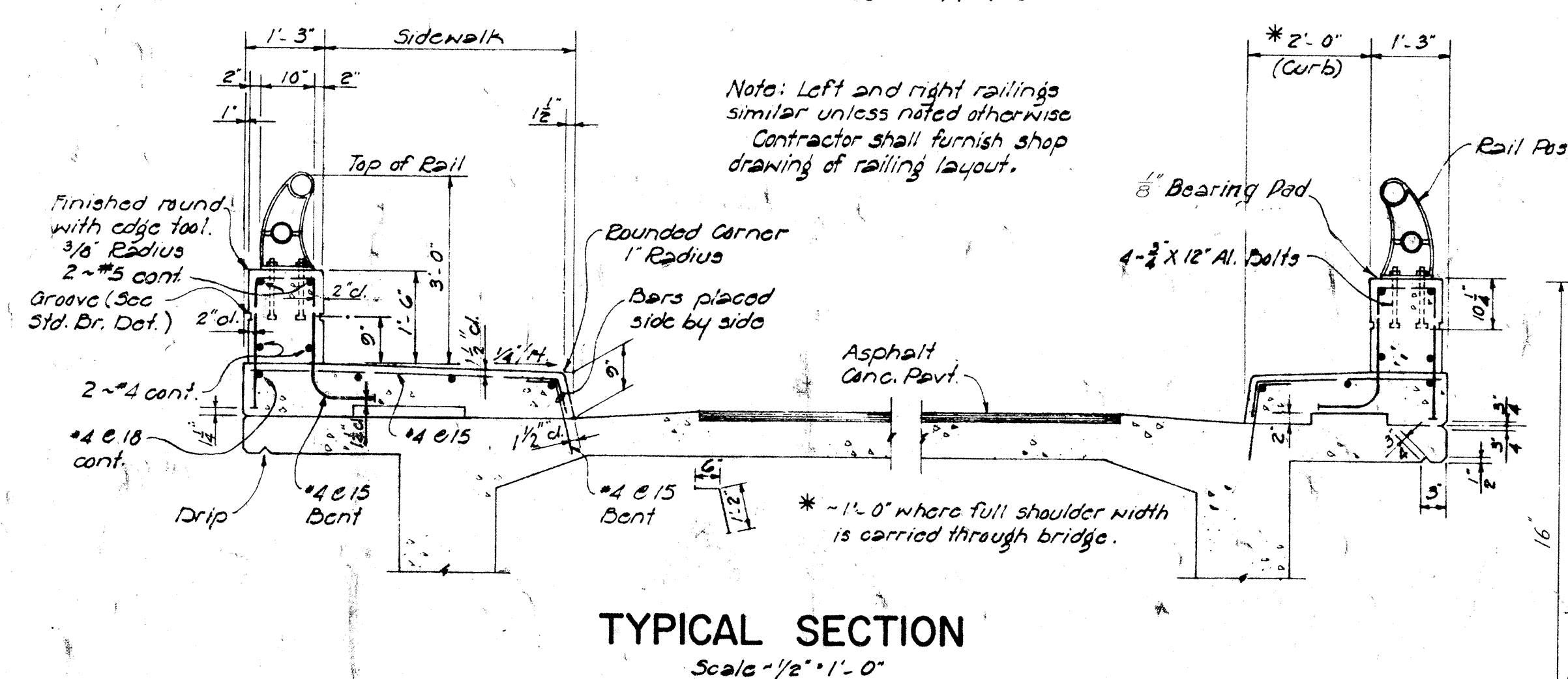
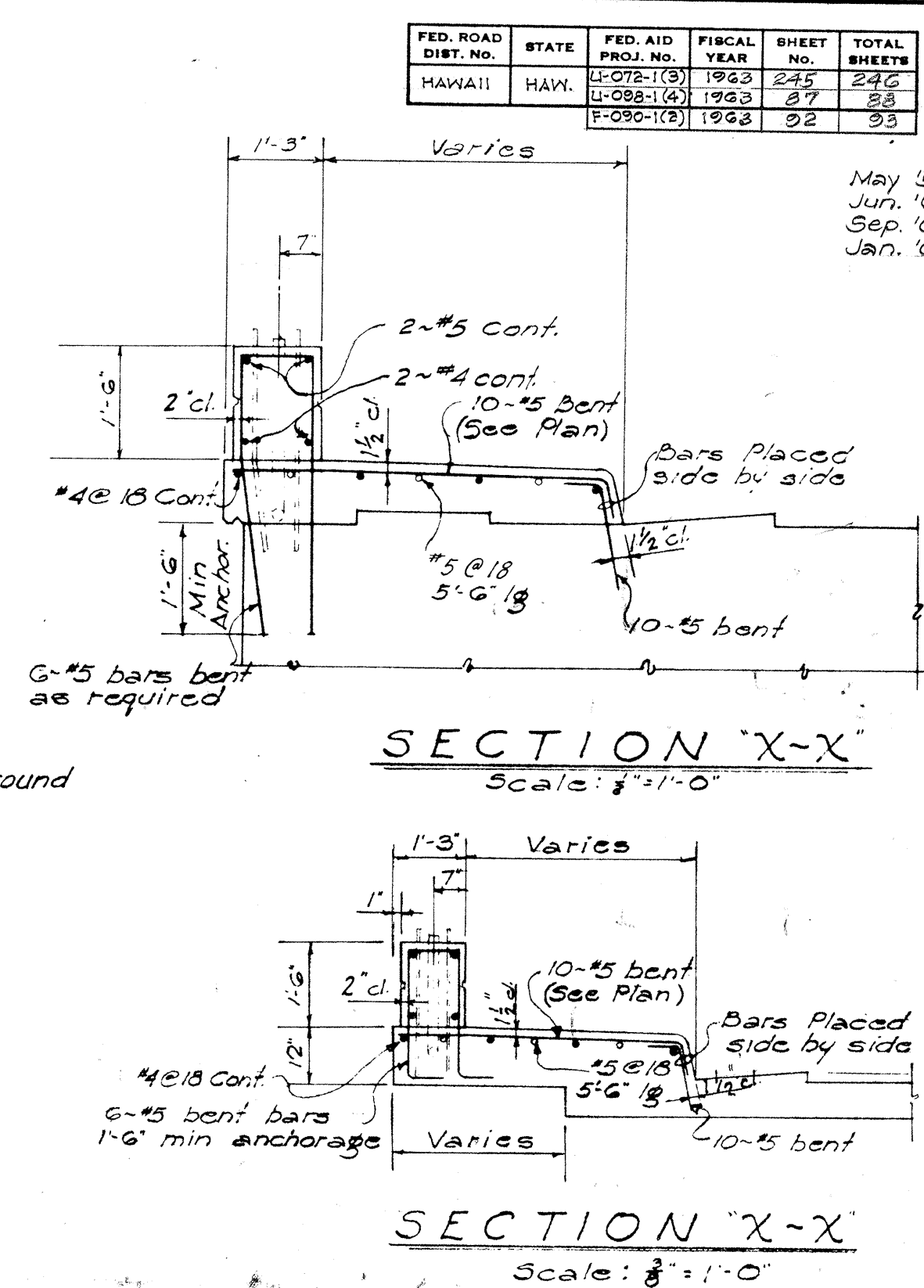
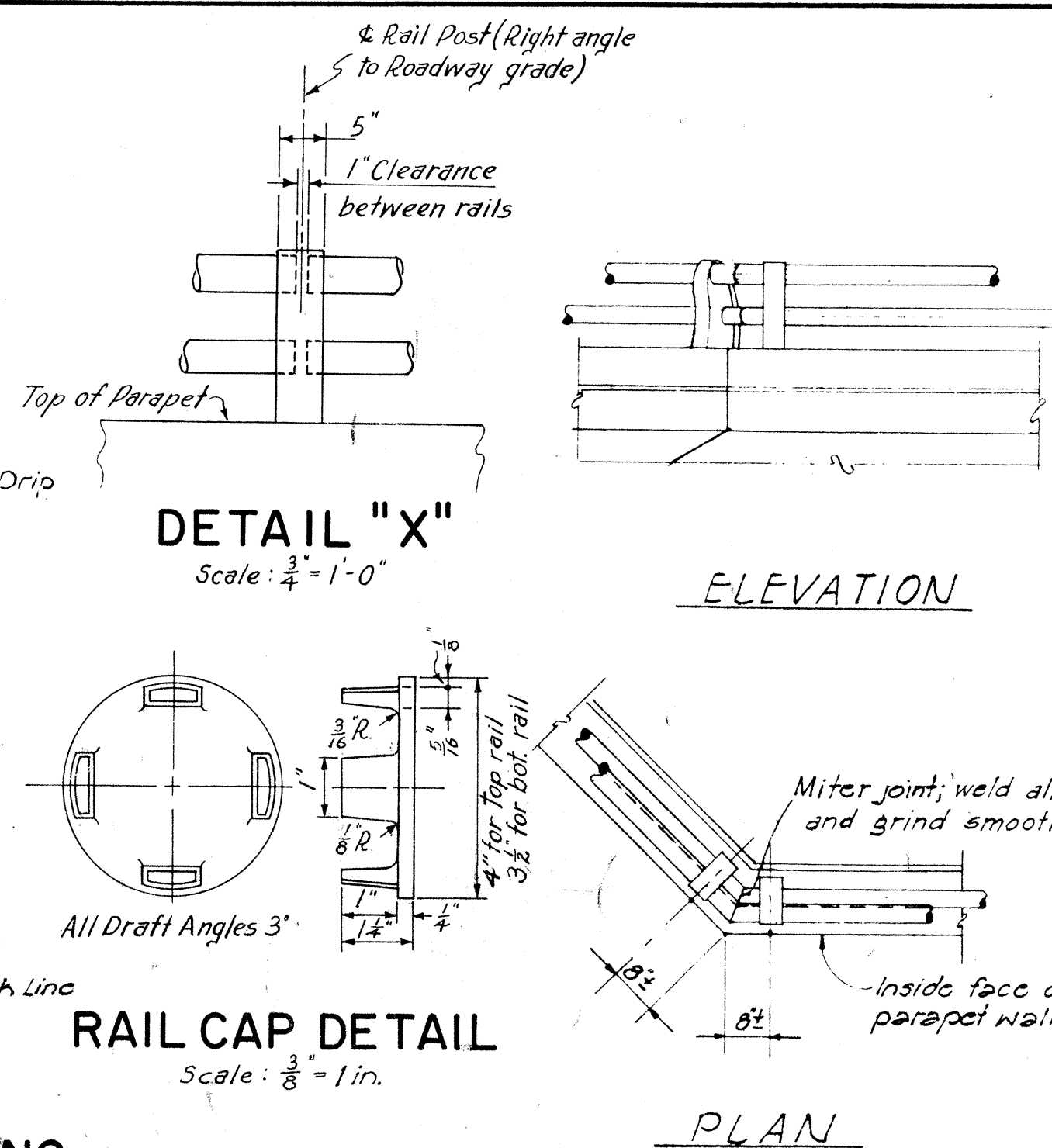
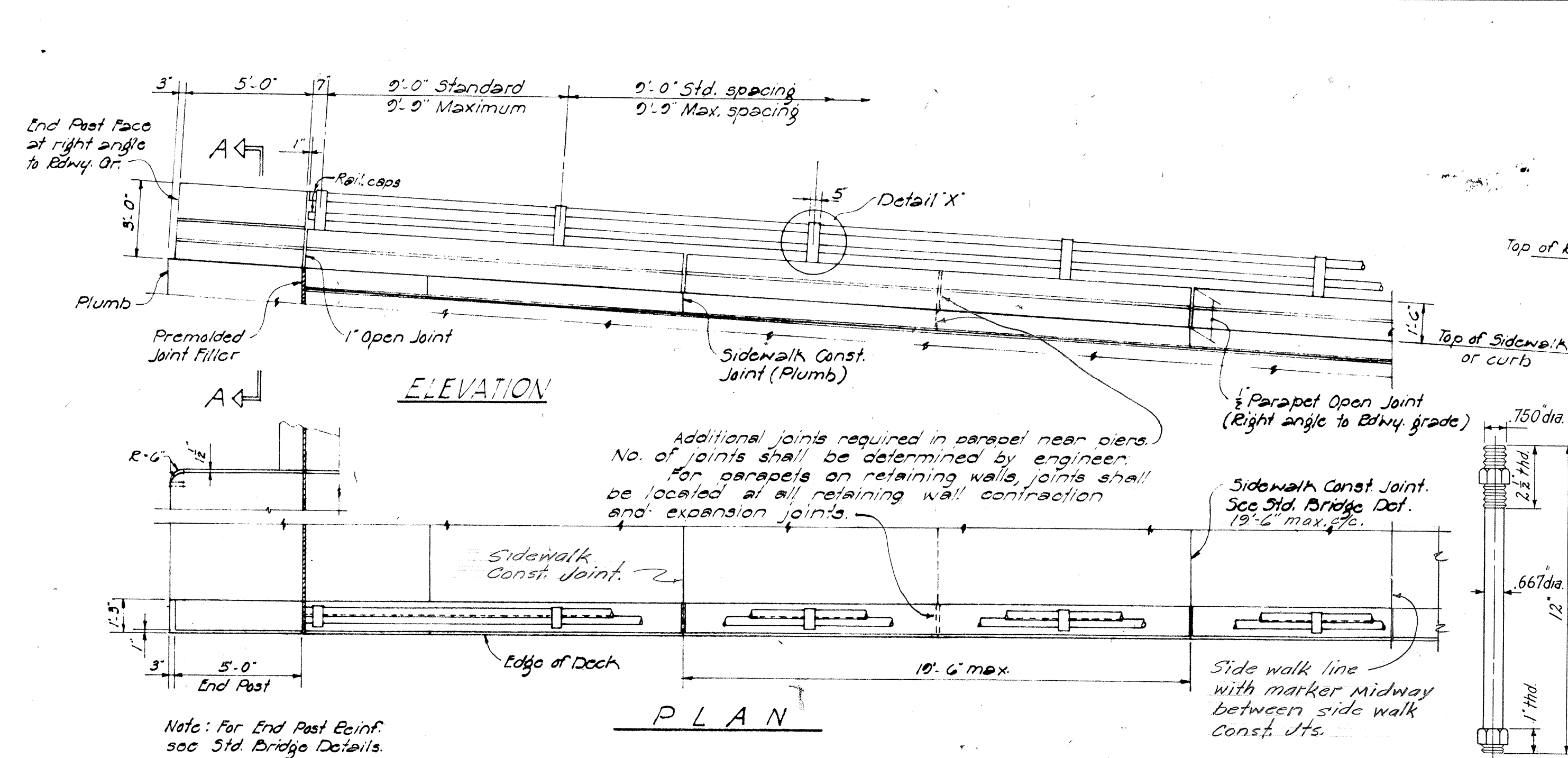


APPROVED: DATE: Aug. 26, 1959
STATE HIGHWAY ENGINEER

GENERAL NOTE
Except where detailed otherwise in the plans, all details on this sheet govern.

HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII
STANDARD DETAILS
BOX GIRDER
SCALES AS NOTED

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

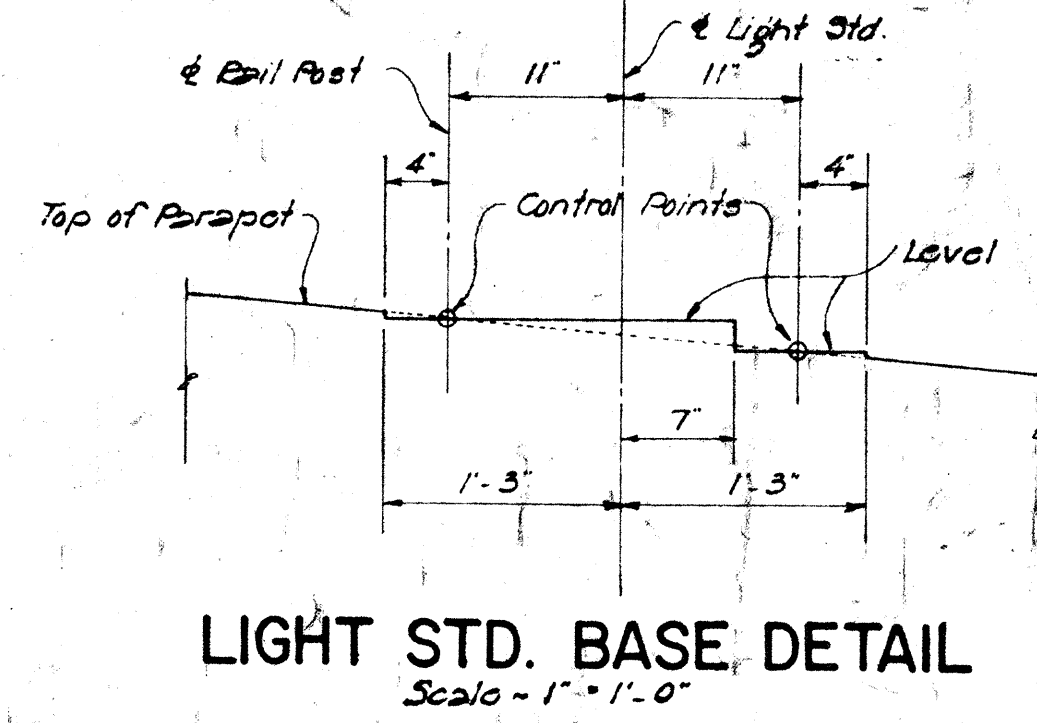
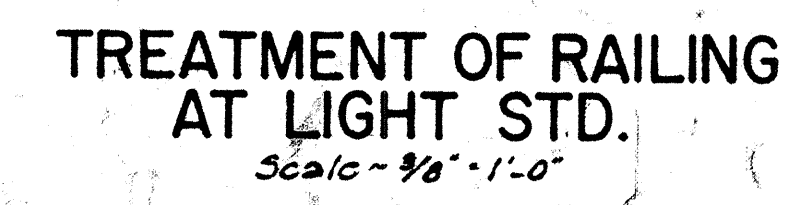
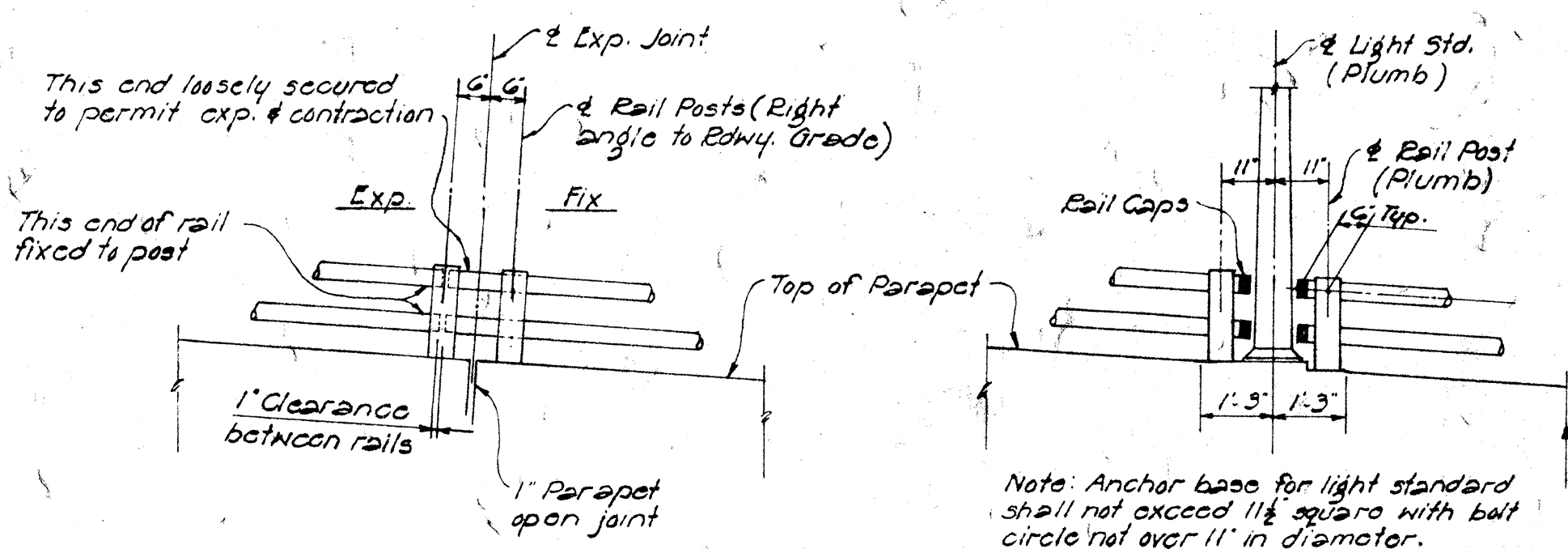
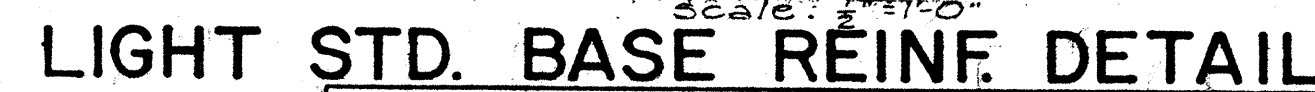
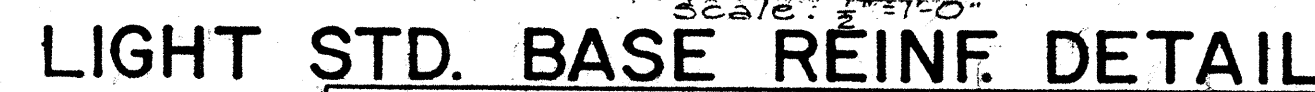
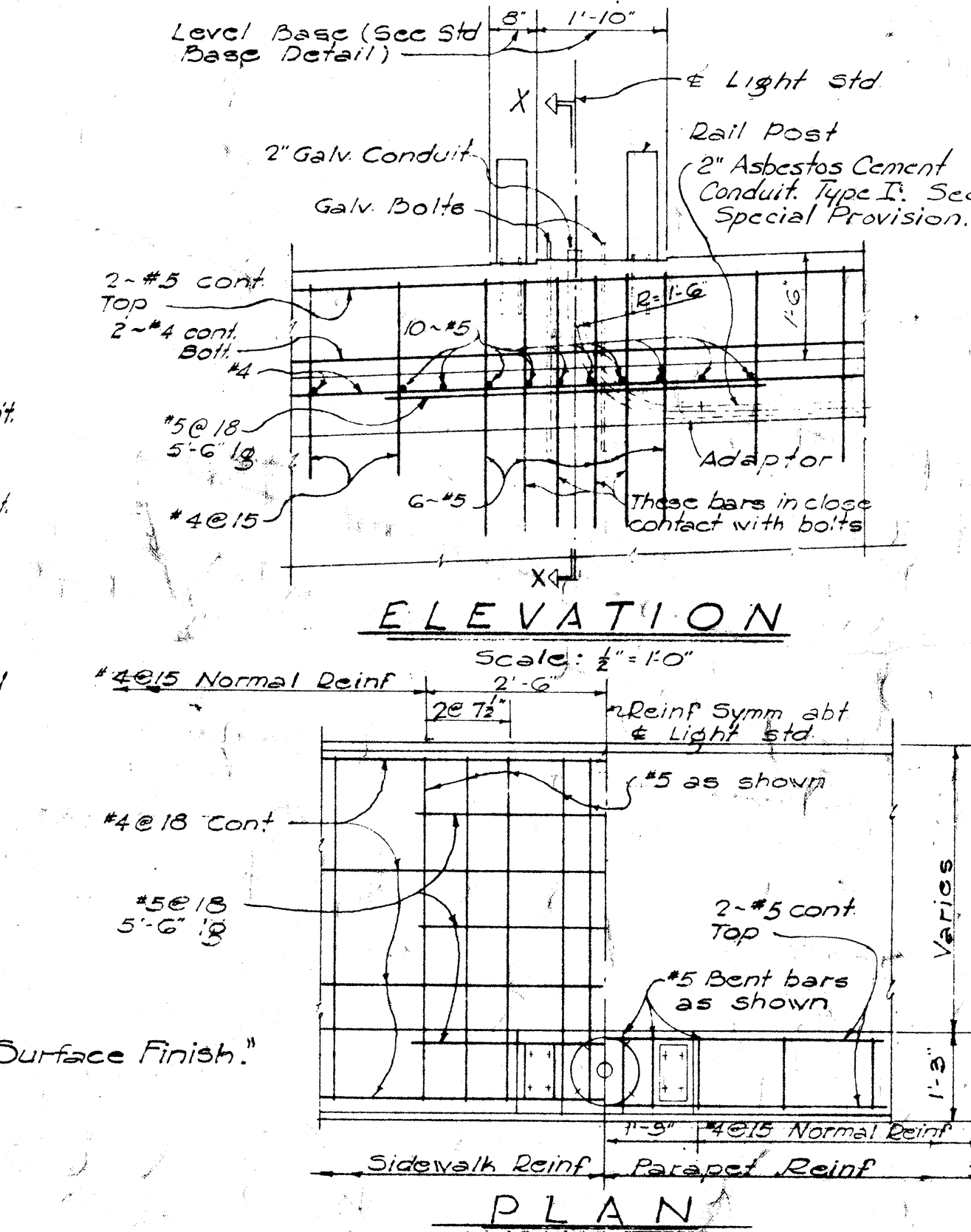


GENERAL NOTE
Except where detailed otherwise in the plans,
all details on this sheet govern.

Aluminum railing, concrete parapet & end post to receive "Class 2 Surface Finish."

SPECIFICATION FOR ALUMINUM RAILING			
ITEM	DESCRIPTION	ALLOY	UNIT WT.
Top Rail	Al Alloy Drawn Or Extruded Tube 4" o.d. x 1/8" thick wall.	6061 - T6	1.79 #/ft.
Bot. Rail	Al Alloy Drawn Or Extruded Tube 3 1/2" o.d. x 1/8" thick wall.	6061 - T6	1.56 #/ft.
* Rail Post	Permanent Mold Casting See Rail Post Detail	Post 1A-356-T6 Bot. 5c. 2024-T4	16.0 #/Bd.
Rail Cap	See Rail Cap Detail	Cap 356-T6	Top .415 #/Bd. Bot. .340 #/Bd.
Bolts	See Anchor Bolt & Rail Pin Detail Hex 3031 Nut and Plain Washer	Bolt 2024-T4 Nut 6061-T6 Washer 2024-T4	

* Rail Post Finish: Front, top and rear faces of post shall receive a standard scratch brush finish, to be approved by the Engineer.



APPROVED _____ DATE Aug 26, 1959

STATE HIGHWAY ENGINEER

HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII

STANDARD DETAILS

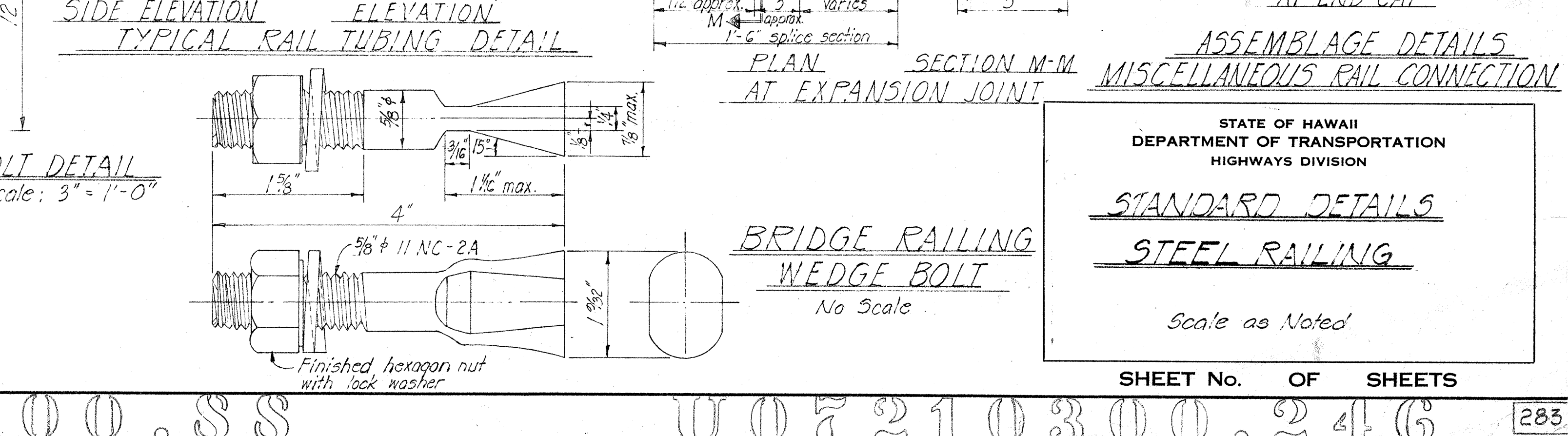
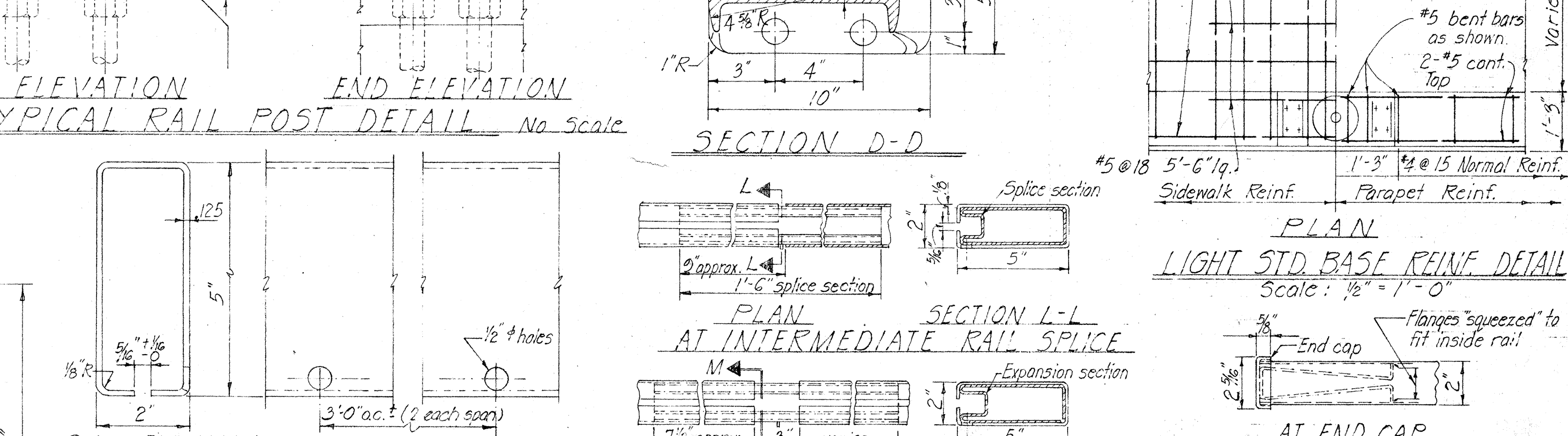
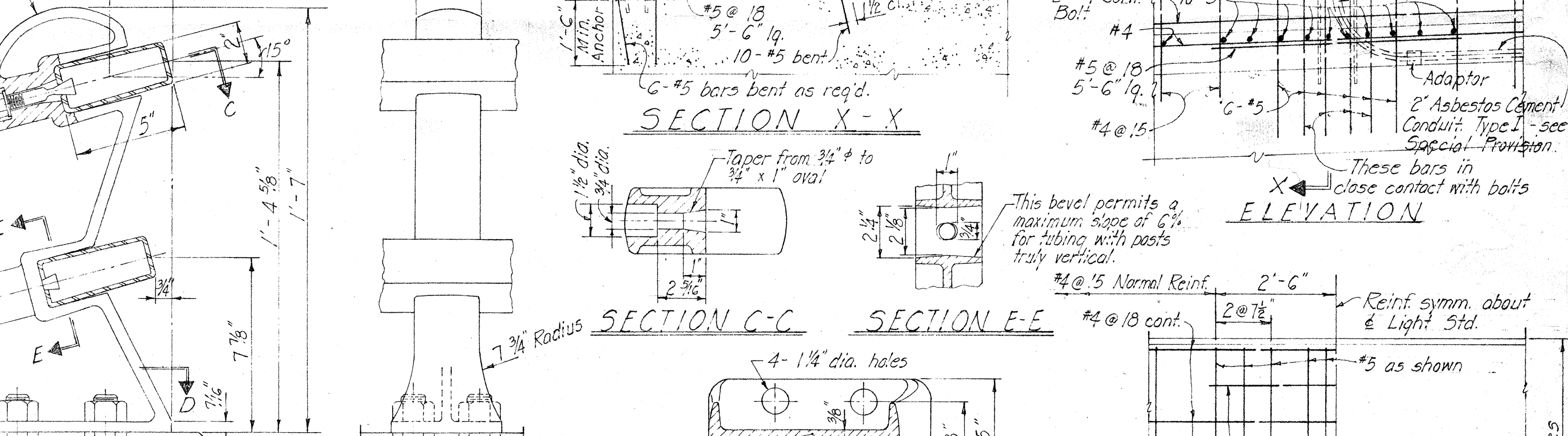
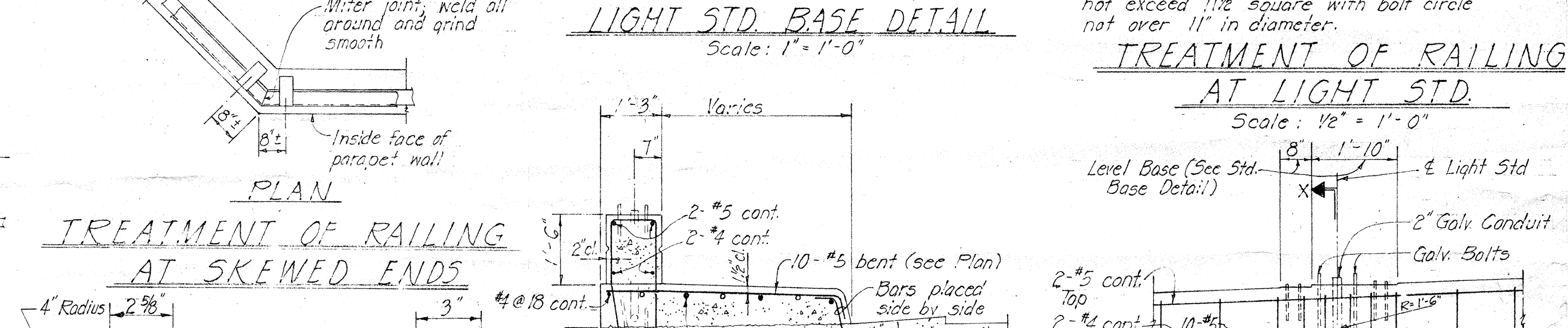
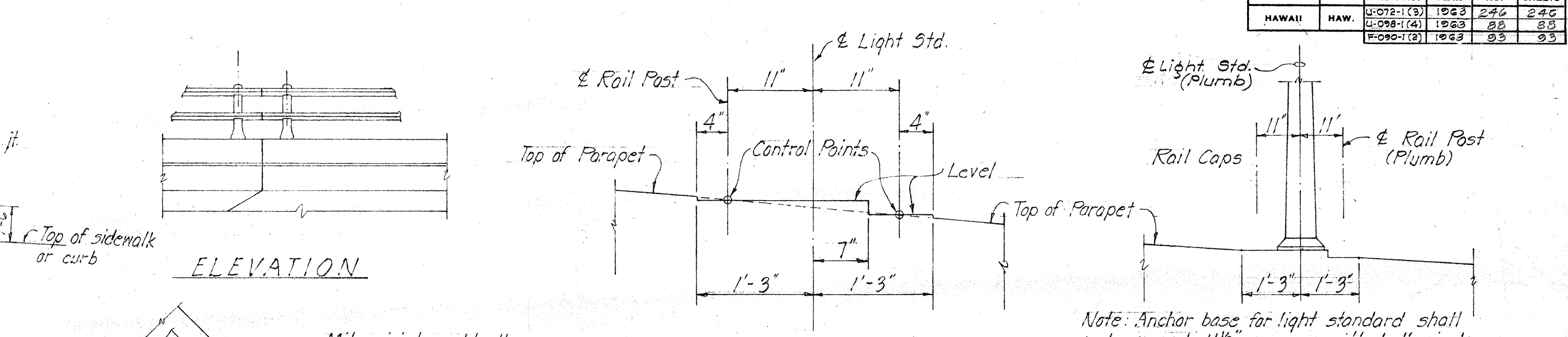
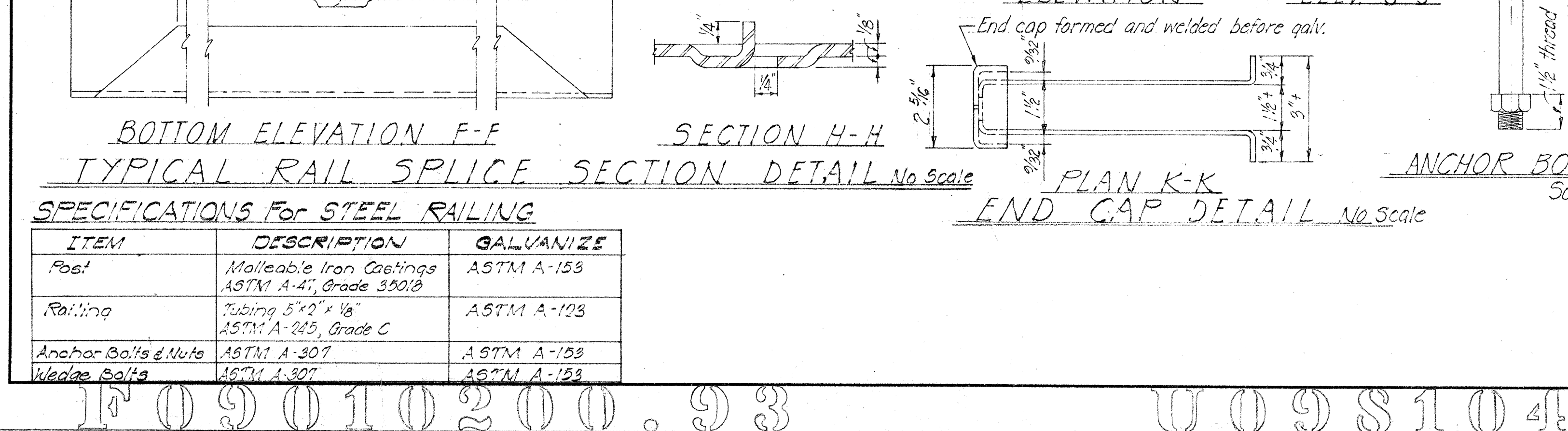
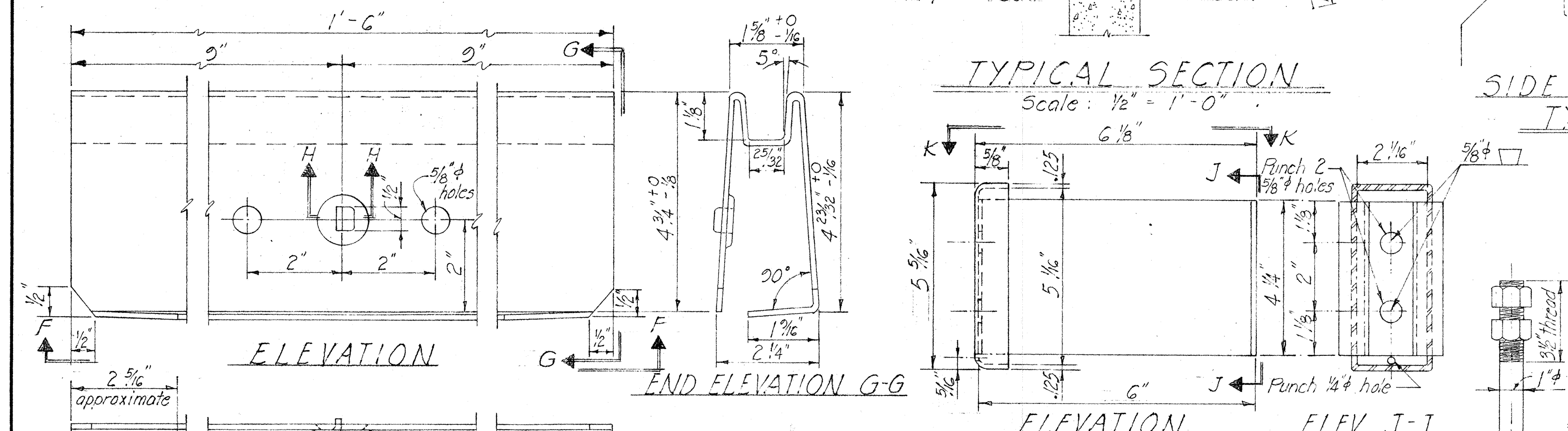
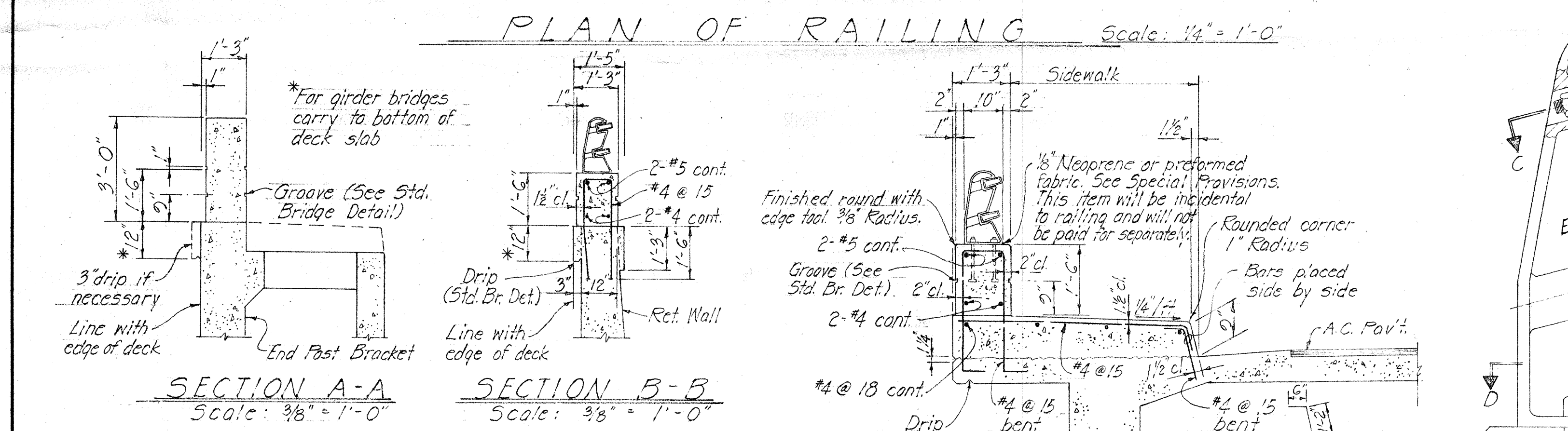
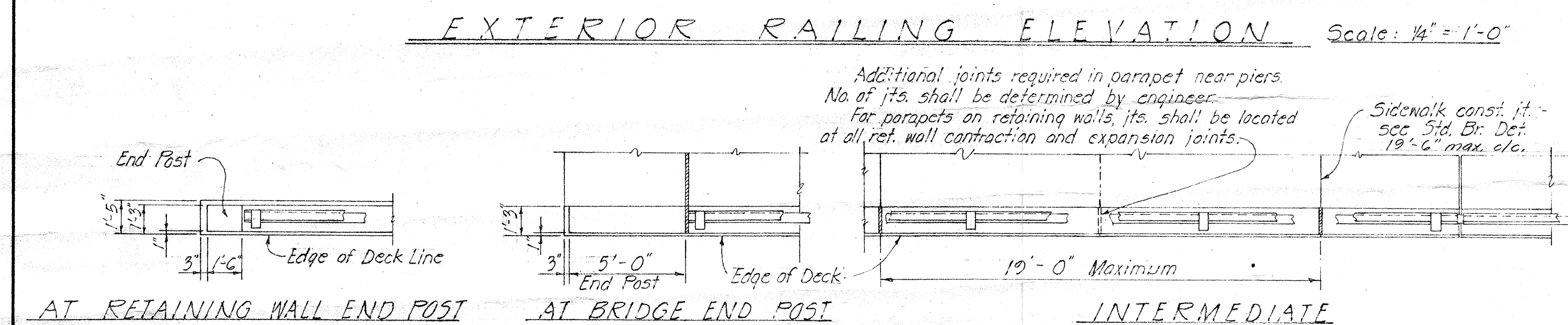
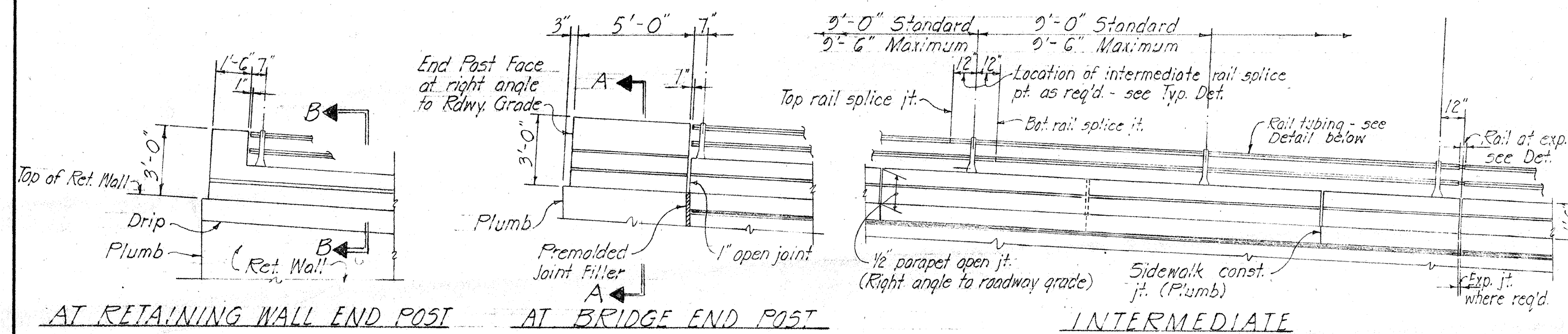
ALUMINUM RAILING

SCALE AS NOTED

SHEET No. 1 OF 1 SHEETS

282.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-072-1(3)	1963	246	246
		U-072-1(4)	1963	88	88
		U-072-1(5)	1963	83	83



STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
STANDARD DETAILS STEEL RAILING
Scale as Noted
SHEET No. OF SHEETS