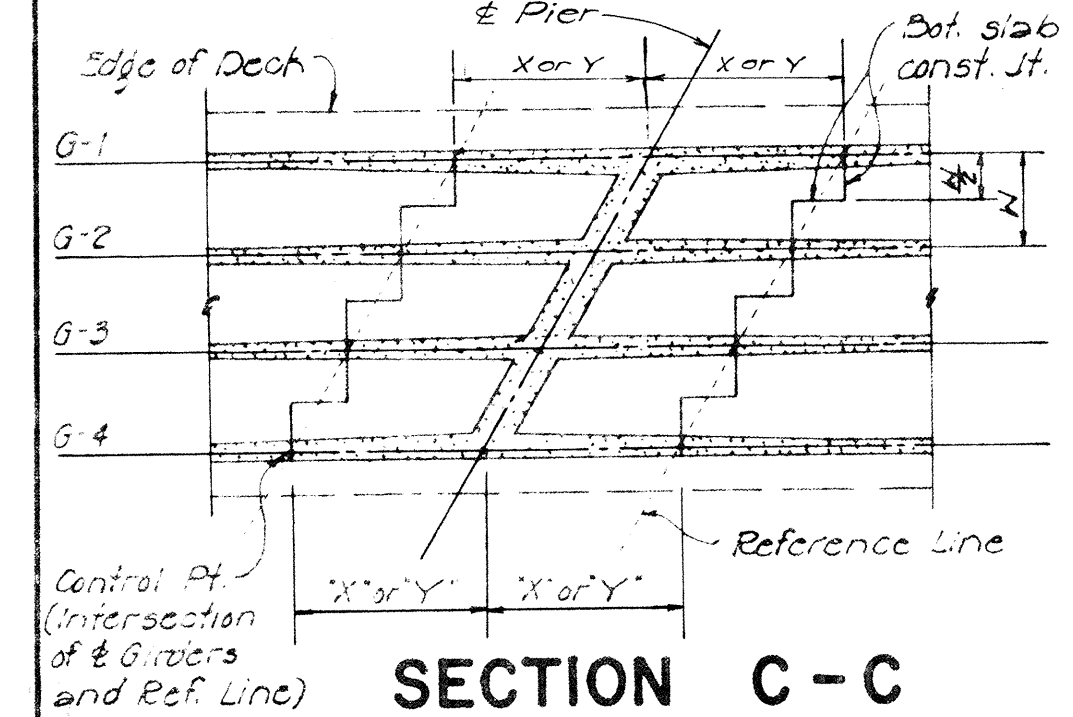
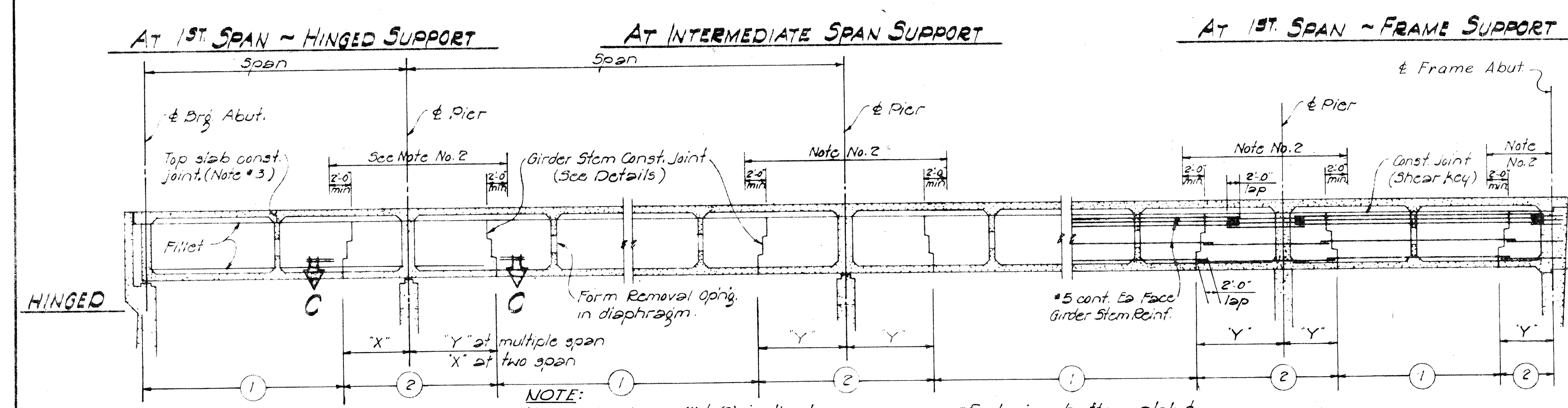


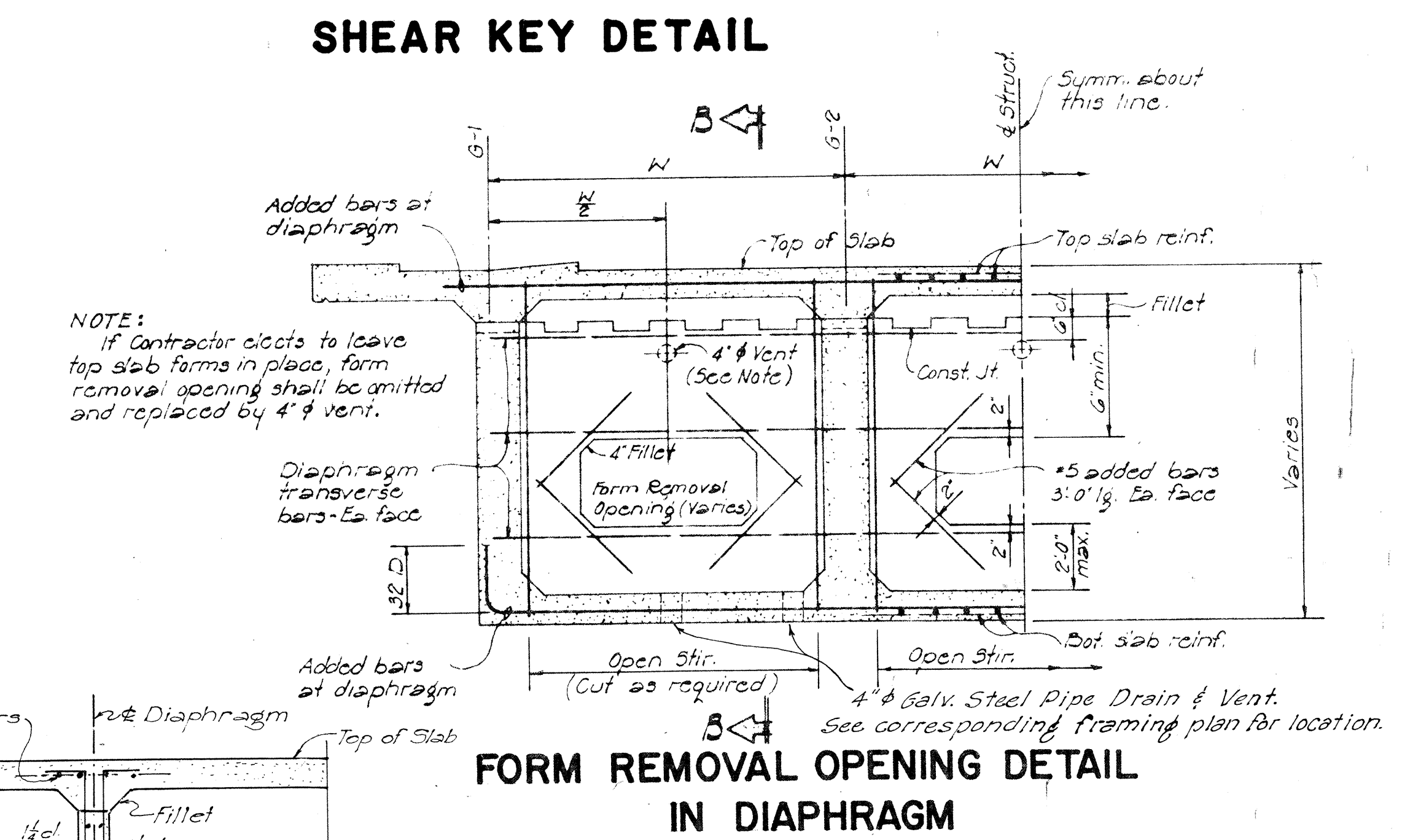
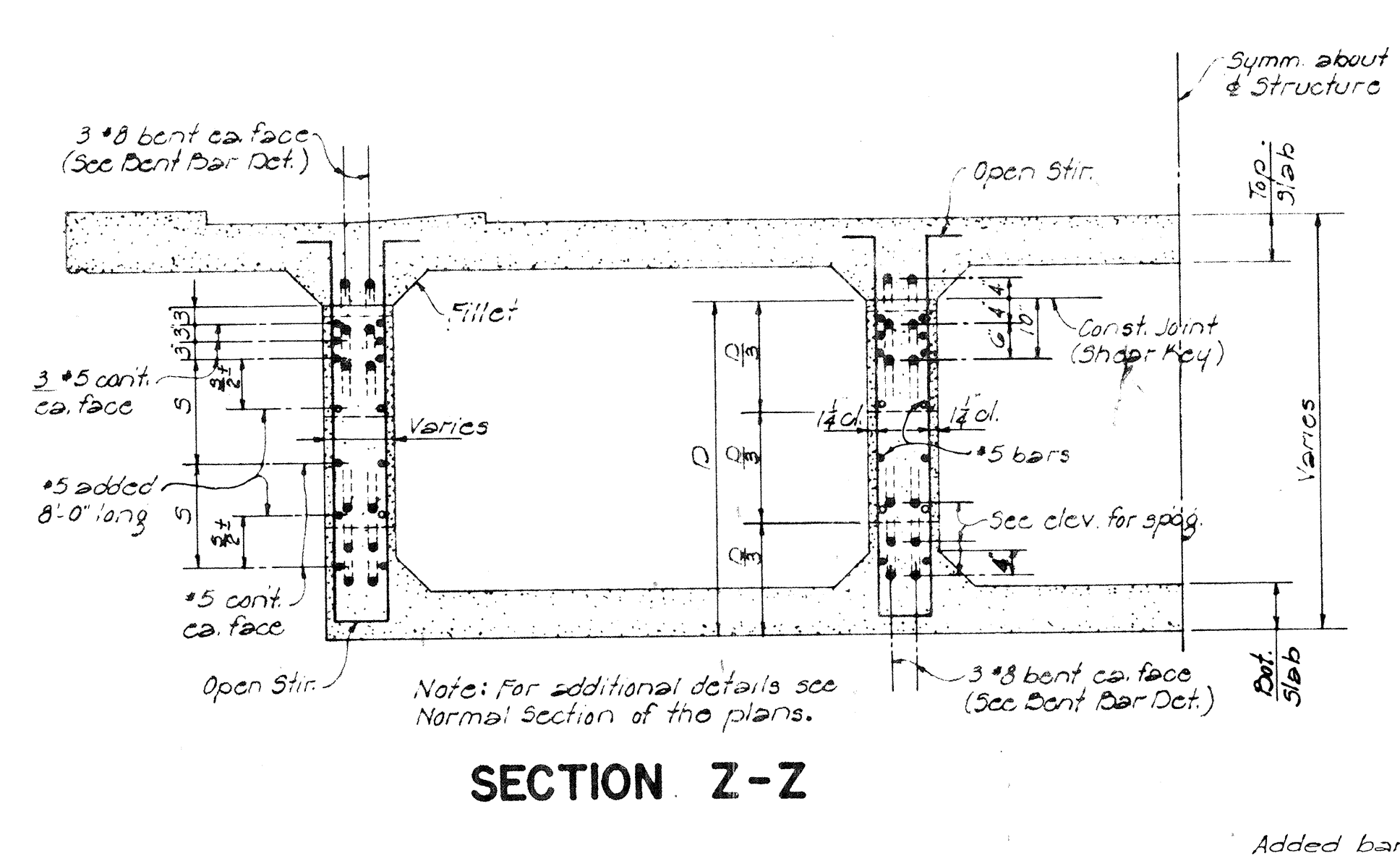
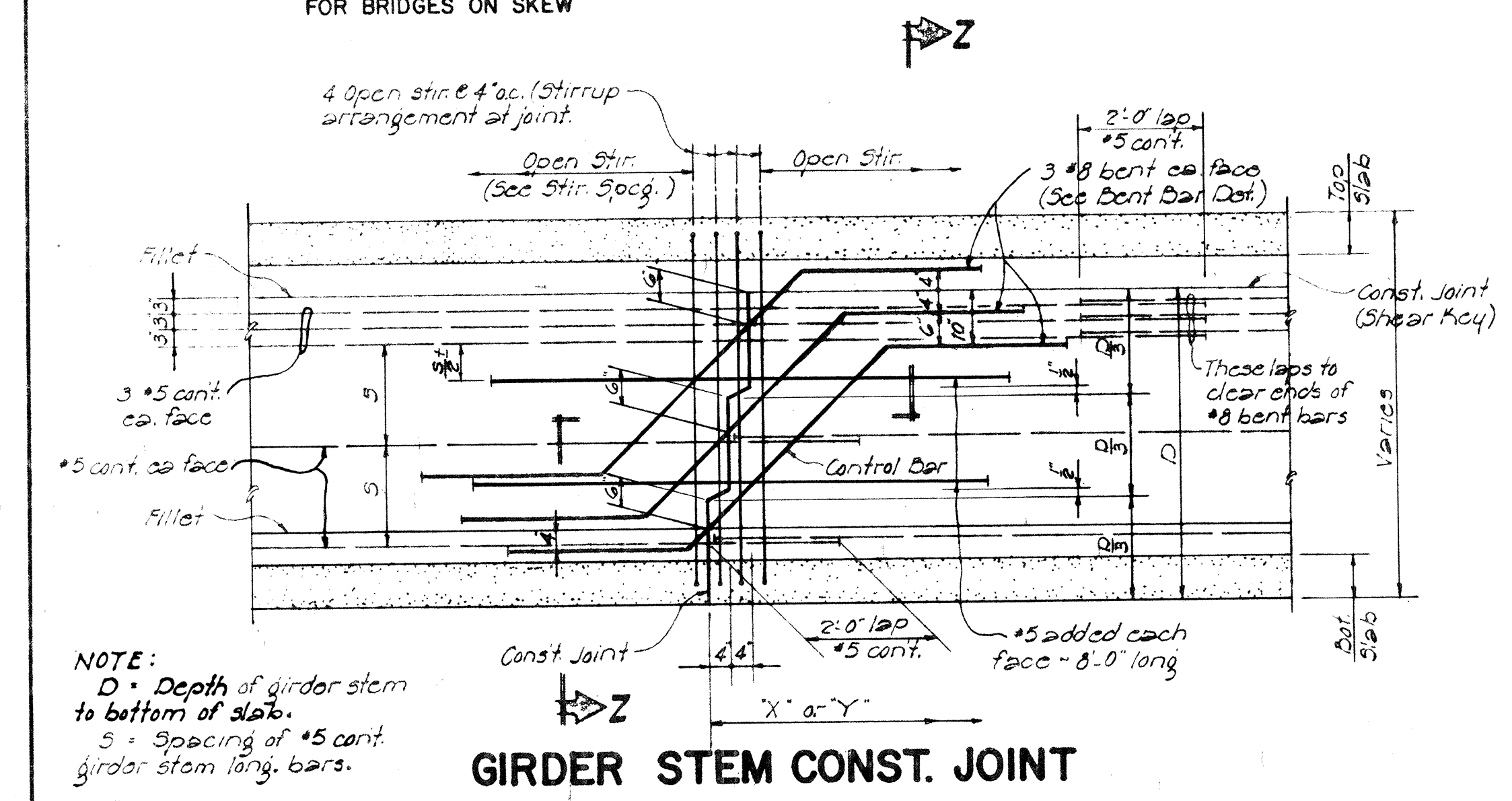
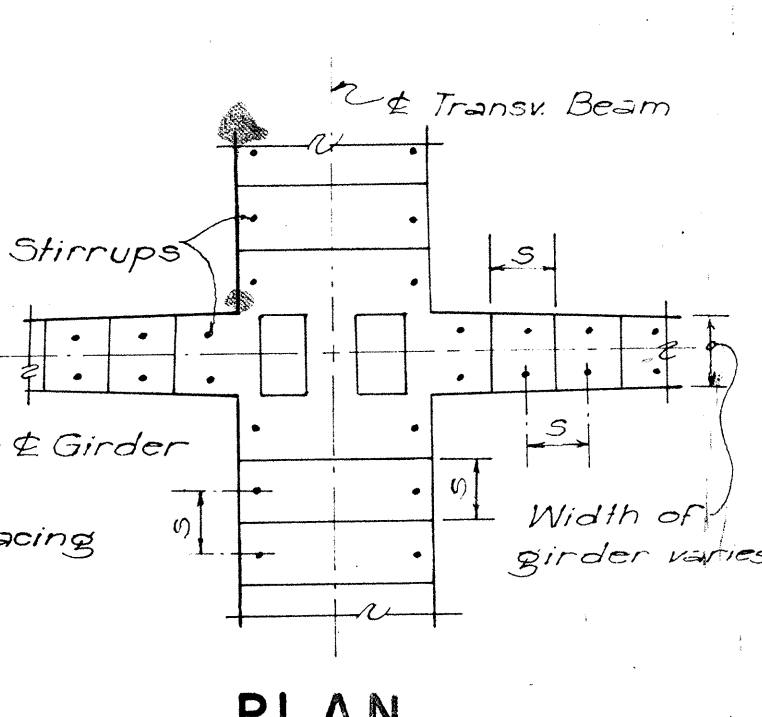
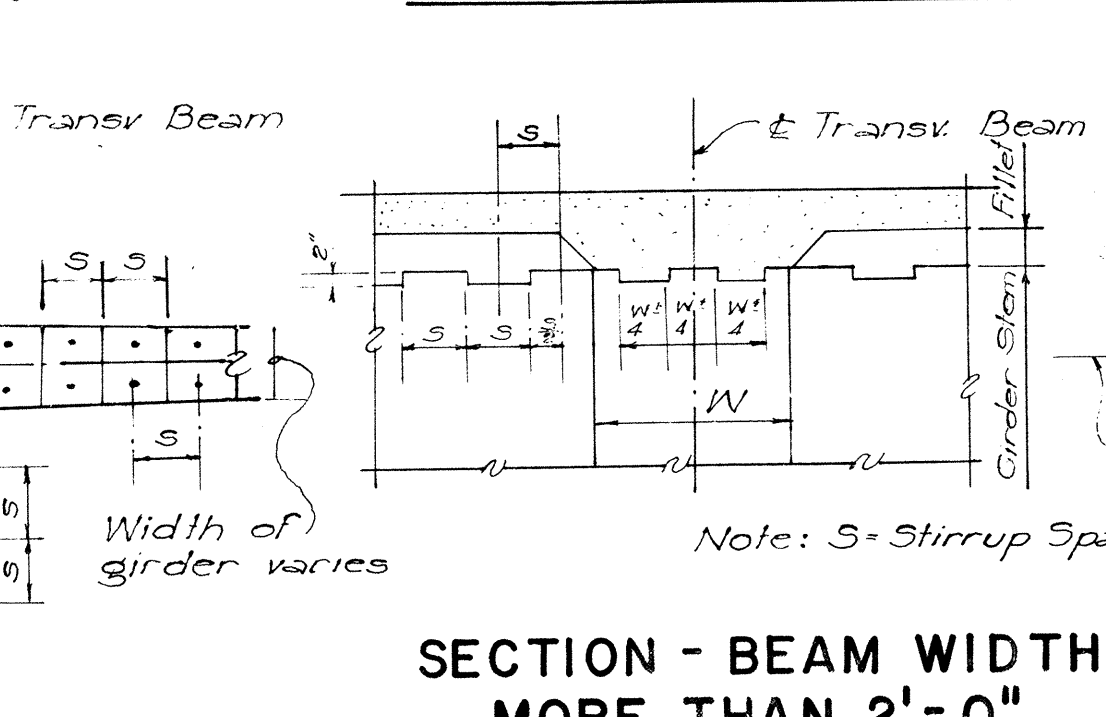
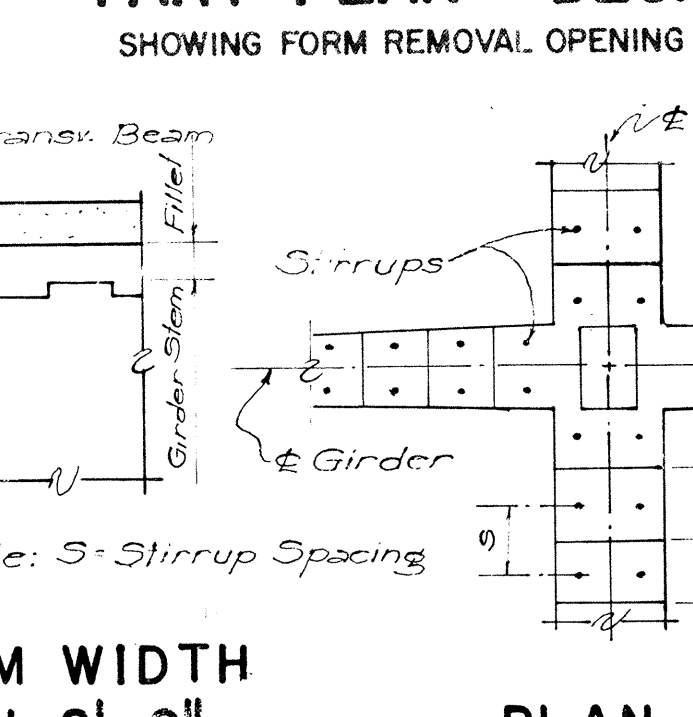
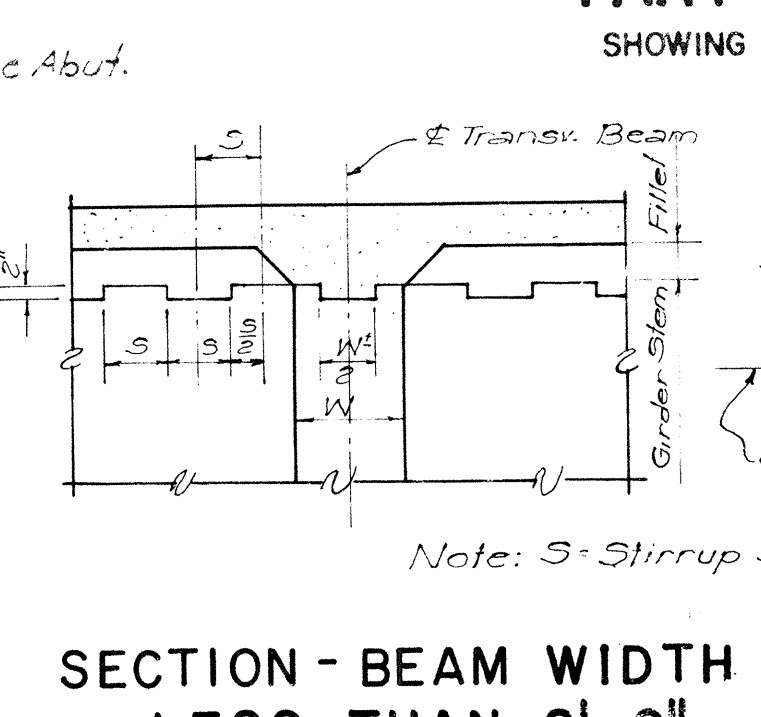
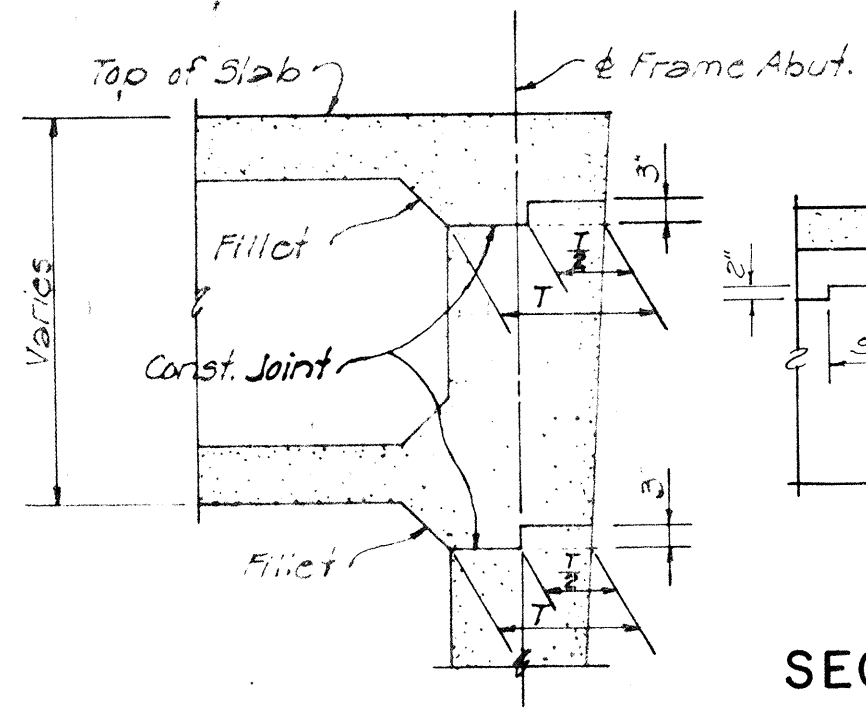
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	U-072-1(3)	1963	243	246
		U-078-1(4)	1963	85	May 59
		F-070-1(2)	1963	30	NOV 62



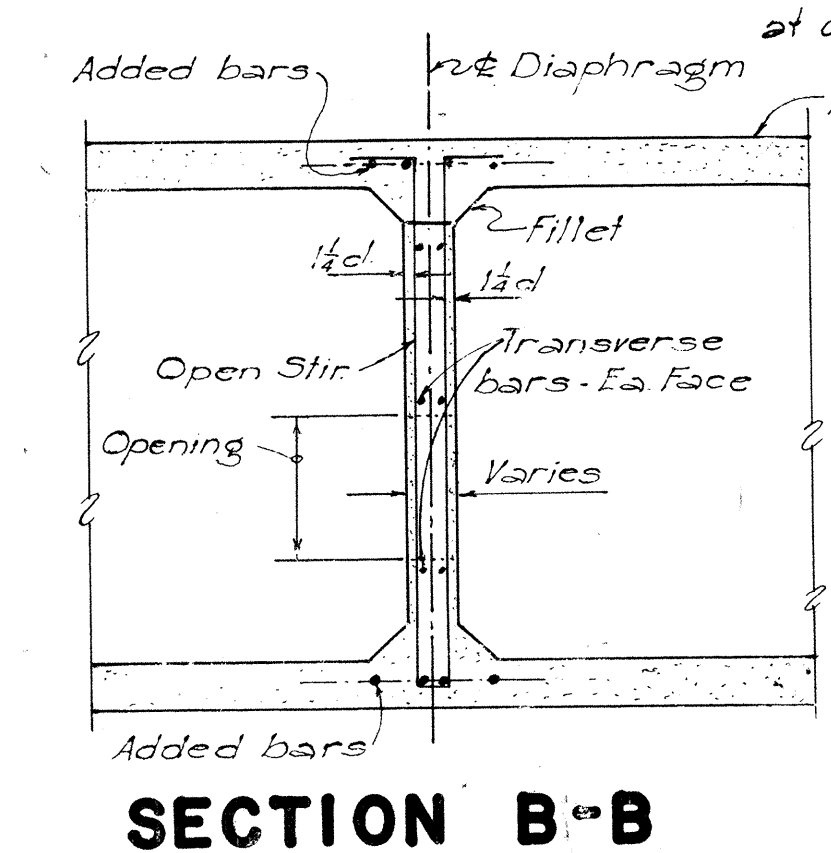
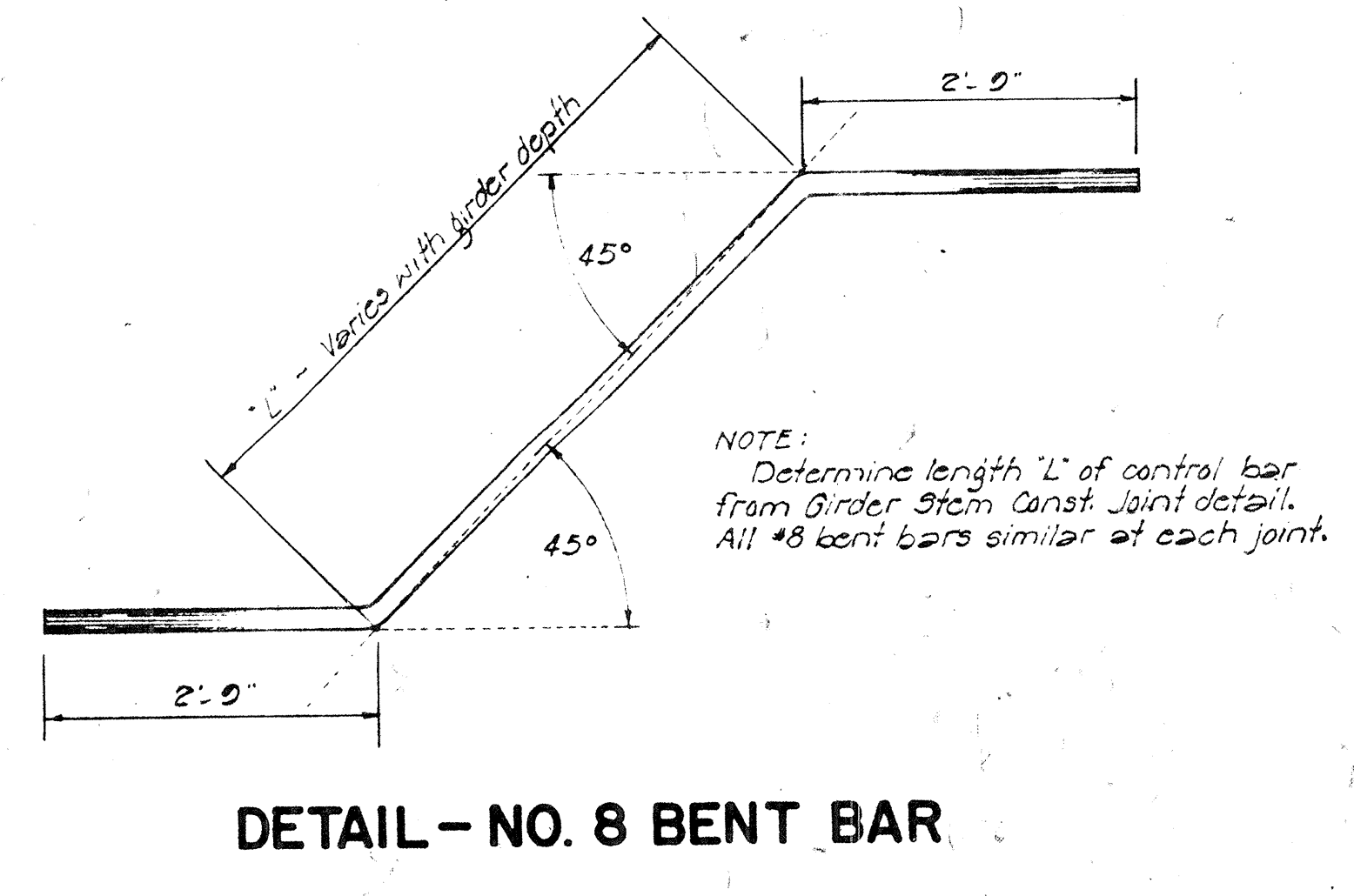
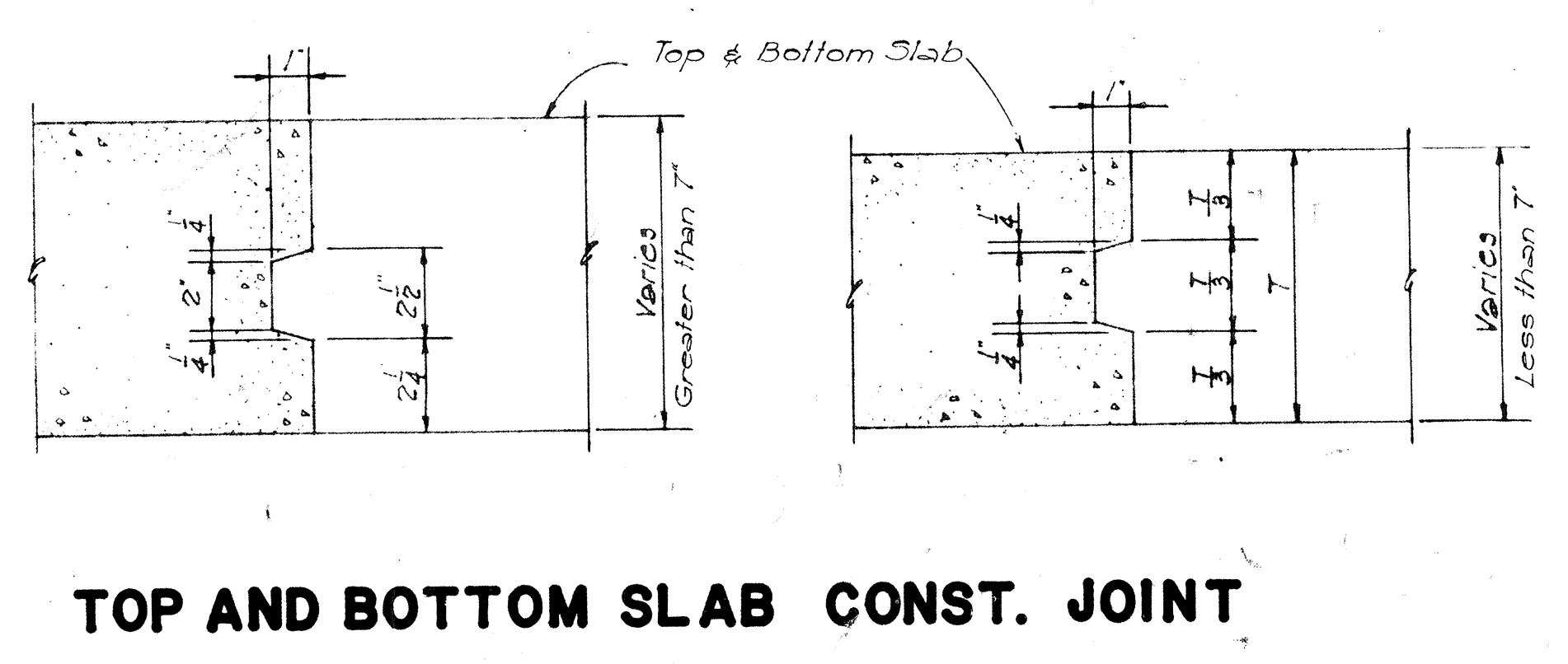
NOTE:

- No.1 - Numbers (1) & (2) indicate sequence of placing bottom slab & girder stem concrete. (2) may be placed simultaneously with (1) when approved by the Engr., and provided that the (1) sections are placed in adjoining spans. For any deviation from the above the contractor shall submit a diagram to the Engineer for approval.
- No.2 - No top slab construction joint or form removal opening shall be located in the region over the piers as noted.
- No.3 - When top slab forms are not removed, const. joint in top slab shall be located over an intermediate diaphragm.
- No.4 - Dimension "X" = $\frac{1}{4}$ span "Y" = $\frac{1}{5}$ span
- No.5 - No lapping of main girder bars shall be permitted at construction joints.

PLACING DIAGRAM FOR SUPERSTRUCTURE CONCRETE



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



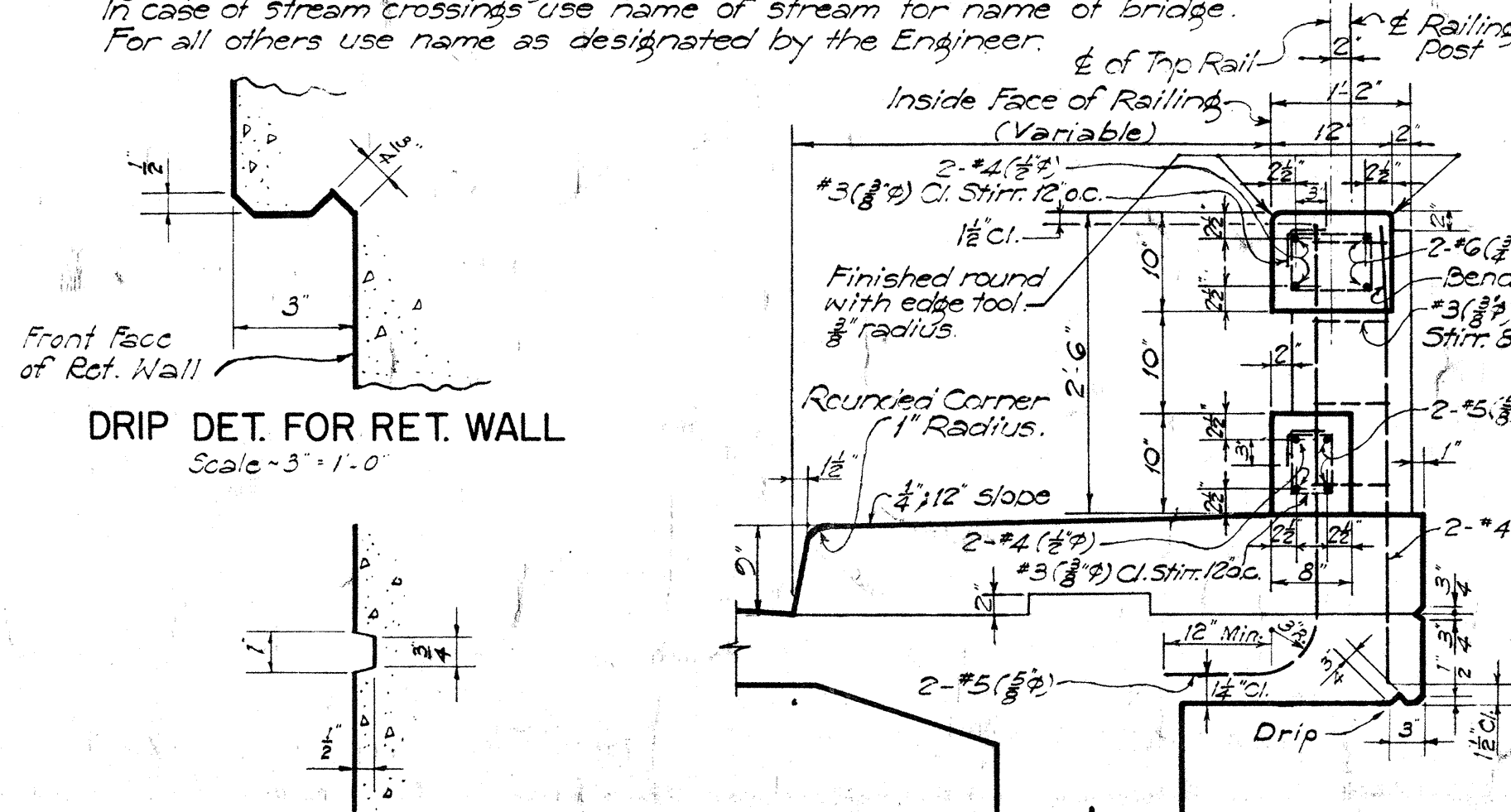
APPROVED: *[Signature]* DATE: Aug. 26, 1959
STATE HIGHWAY ENGINEER

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

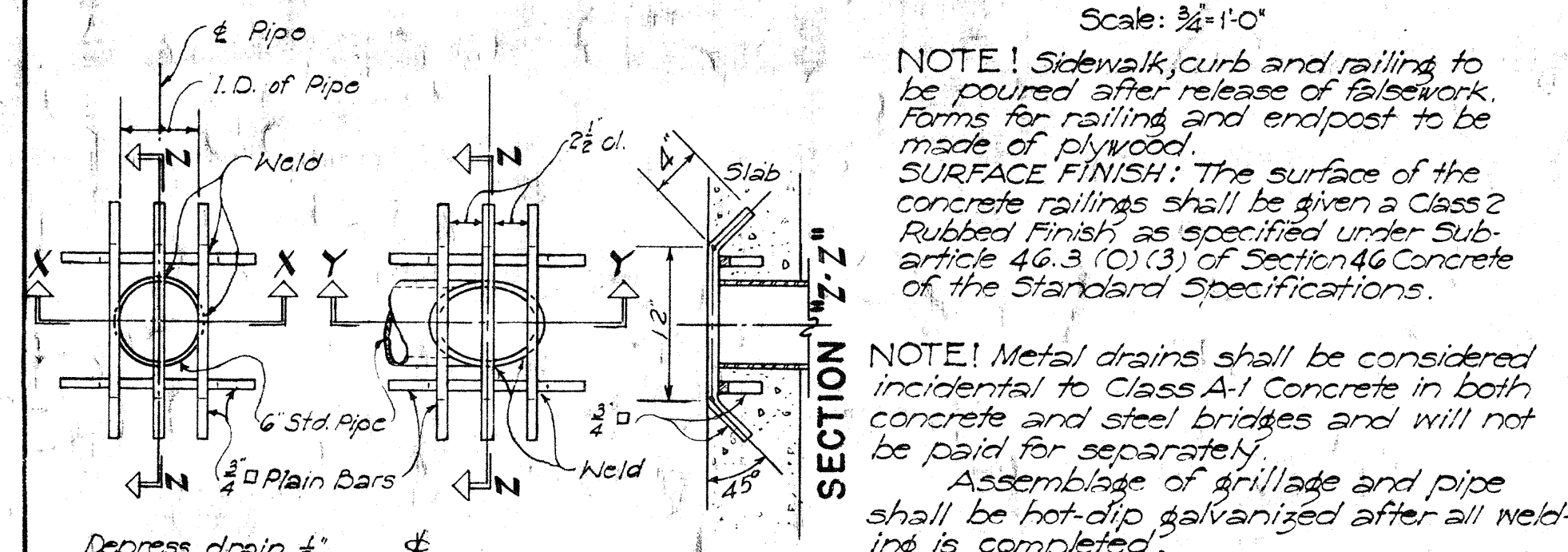
NAME DATE
Use correct name of bridge Date of year built.
LEFT HAND SIDE RIGHT HAND SIDE

DETAIL OF LETTERS AND FIGURES AT BOTH APPROACHES

NOTE: Name of bridge to be placed in left end post panels and date in right post panels on entering bridge using modified block letters 3" in height. In case of stream crossings use name of stream for name of bridge. For all others use name as designated by the Engineer.



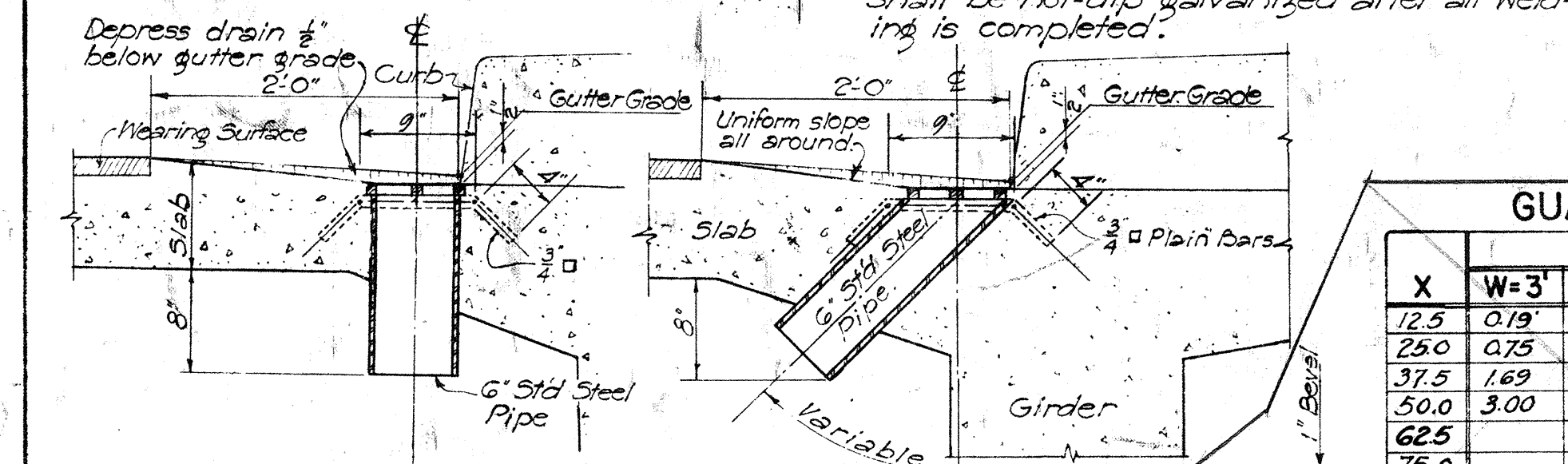
END POST GROOVE DET.
Scale: 3/4" = 1'-0"



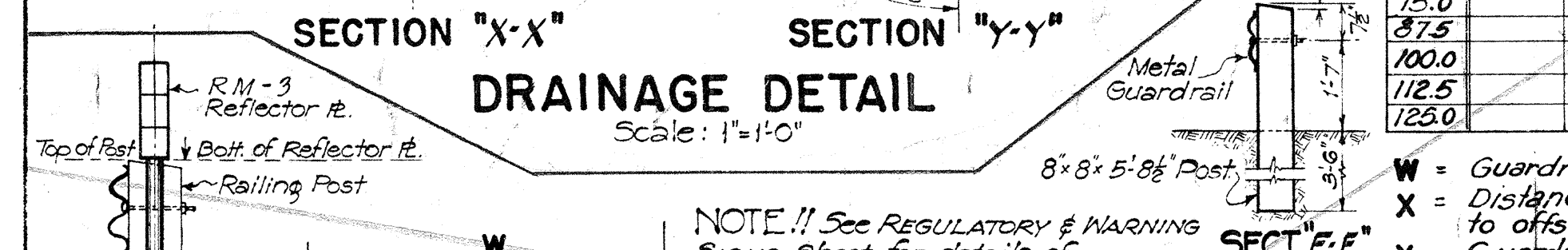
SECTION "B-B"
RAILING DETAIL
Scale: 3/4" = 1'-0"

NOTE! Sidewalk, curb and railing to be poured after release of falsework. Forms for railing and endpost to be made of plywood. SURFACE FINISH: The surface of the concrete railings shall be given a Class 2 Rubbed Finish as specified under Sub-article 46.3 (1) (3) of the Standard Specifications of the Standard Specifications.

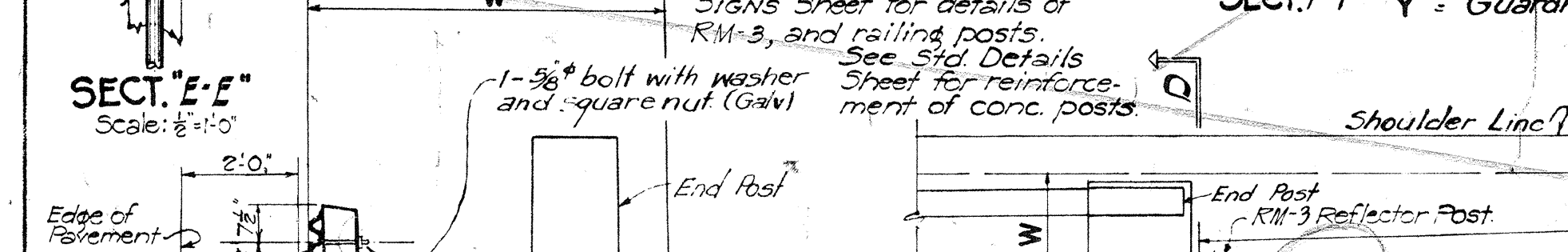
NOTE! Metal drains shall be considered incidental to Class A-1 Concrete and will not be paid for separately. Assembly of grillage and pipe shall be hot-dip galvanized after all welding is completed.



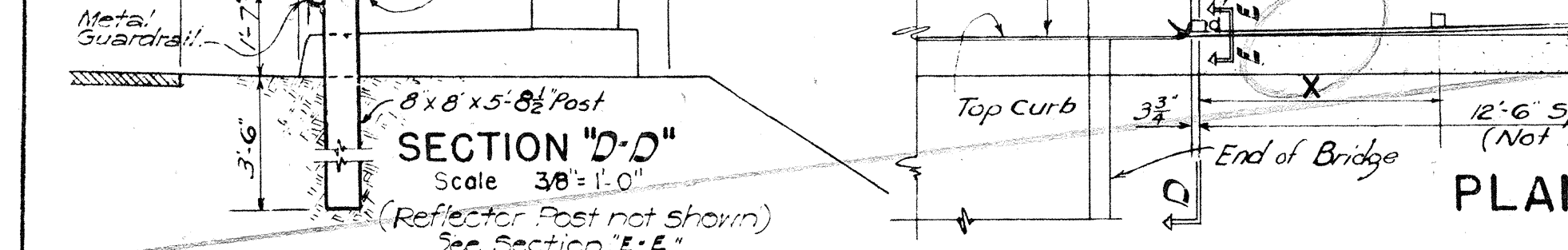
SECTION "X-X"
DRAINAGE DETAIL
Scale: 1" = 1'-0"



SECTION "Y-Y"



SECTION "E-E"



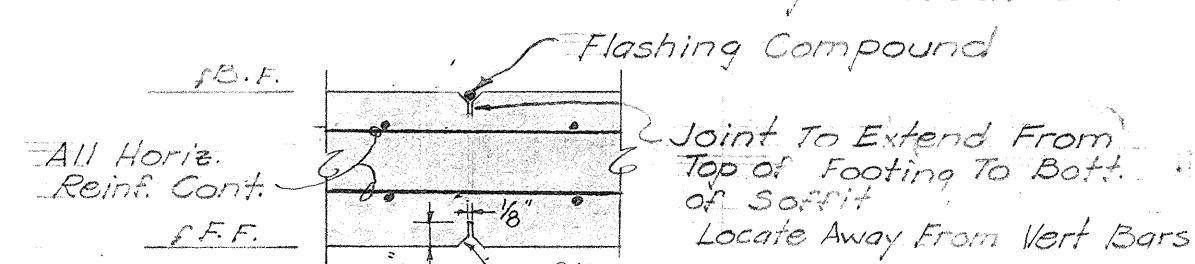
SECTION "D-D"

GENERAL NOTES

CONCRETE: Class of concrete to be used in different parts of the structure are as noted on plans. REINFORCING STEEL: All reinforcing steel shall be Billet Steel Bars A.S.T.M. A15 intermediate grade. Steel shall be made by the open-hearth or Electric Furnace Process. Mill certificate shall be required.

Deformations shall conform to A.S.T.M. A305. Splicing of reinforcing other than in main deck slab, girder and frame bars shall be done as shown in above sketch except where shown otherwise. Splices are to be staggered. Splices in main girder and frame bars are permitted only in bars exceeding 60'-0" in length at points to be indicated by the Engineer. These splices to be electrically welded according to detail and specifications. No allowance will be made in the quantities for extra weight of steel required for splices not shown on the plans. Minimum spacing between parallel bars shall be 2 1/2 times the diameter of bars, but in no case shall the clear distance between the bars be less than 1 1/2 times the maximum size of the coarse aggregate. All dimensions relating to reinforcing are to centers of bars unless otherwise noted.

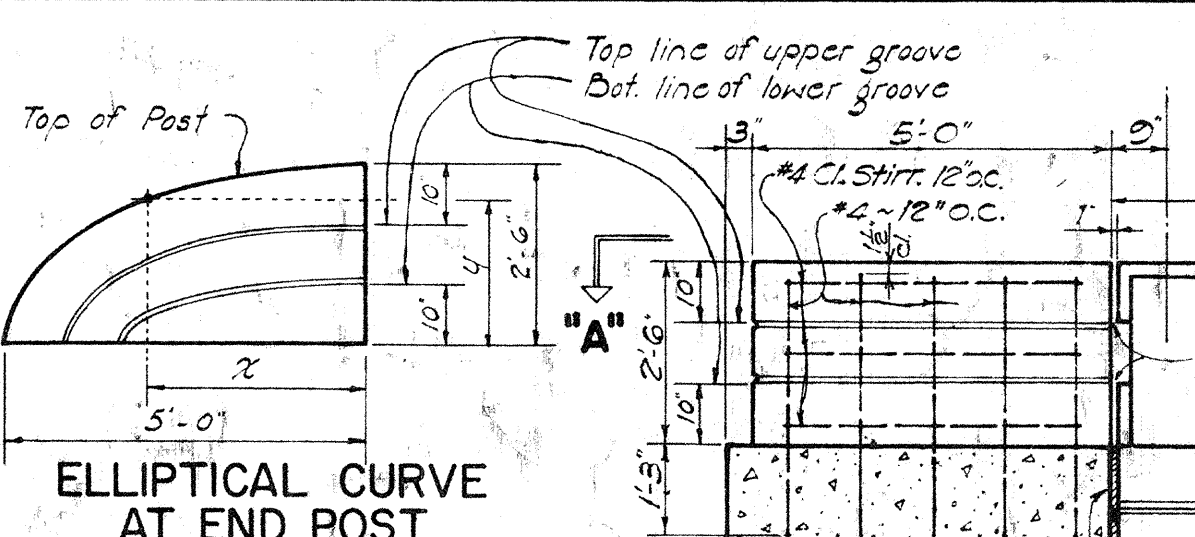
CONSTRUCTION JOINTS: All construction joints to have surface roughened and 1:2 cement grout applied immediately before the second pour. Construction joints to be located at places indicated in the plans. See Sec. 46.3 F(3) of the Standard Specifications.



JOINT FILLER DET.
Scale: 3/4" = 1'-0"

ELLIPSE COORDINATES

Top of Post	X	0	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	4'-10"	5'-0"
	Y	2'-6"	2'-5 1/2"	2'-4 1/2"	2'-3 1/2"	2'-2"	2'-0"	1'-9 1/2"	1'-6"	1'-3 1/2"	1'-1 1/2"	0
Top Line of Upper Groove	X	0	6"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-10"	5'-0"
	Y	1'-8"	1'-7 1/2"	1'-6 1/2"	1'-5 1/2"	1'-4"	1'-2 1/2"	1'-0 1/2"	10 1/2"	8 1/2"	5 1/2"	4"
Bot. Line of Lower Groove	X	0	6"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-10"	5'-0"
	Y	10"	9 1/2"	9 1/2"	8 1/2"	8"	6 1/2"	5 1/2"	4 1/2"	3 1/2"	2 1/2"	0

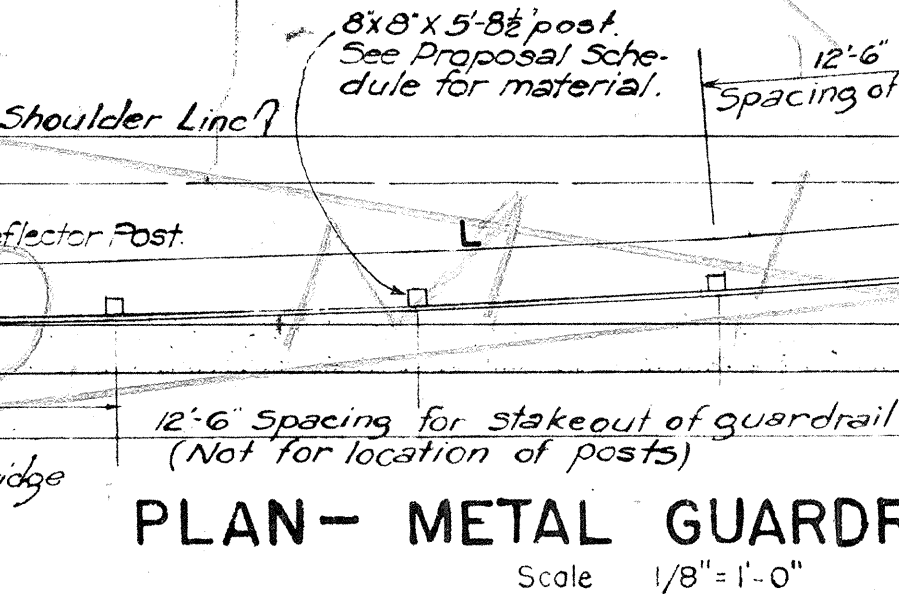


ELLIPTICAL CURVE
AT END POST

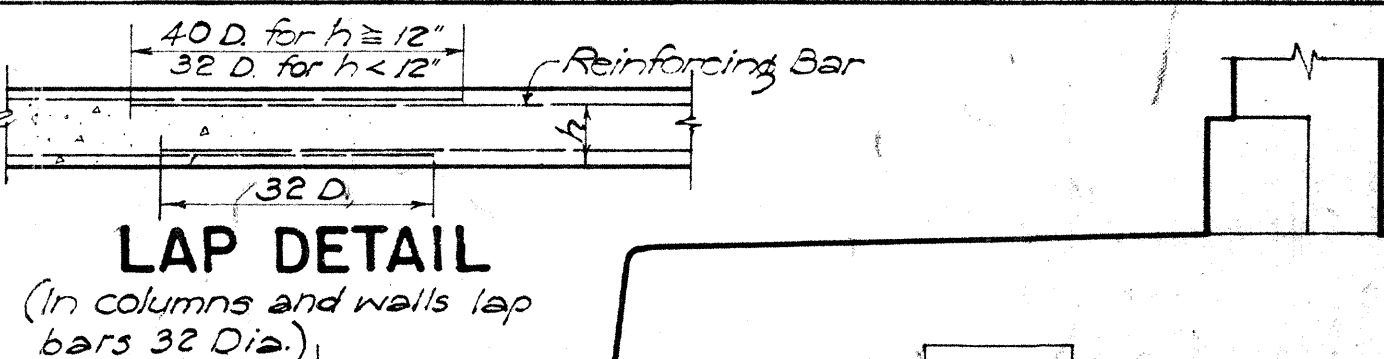
GUARDRAIL OFFSET

X	W=3'	W=4'	W=5'	W=6'	W=7'	W=8'
12.5	0.19	0.16	0.14	0.12	0.09	0.08
25.0	0.75	0.64	0.55	0.49	0.35	0.32
37.5	1.69	1.44	1.25	1.10	0.78	0.72
50.0	3.00	2.56	2.22	1.96	1.38	1.28
62.5		4.00	3.47	3.06	2.16	2.08
75.0			5.00	4.41	3.11	2.98
87.5				6.00	4.23	3.92
100.0					5.53	5.12
112.5					7.00	6.48
125.0						8.00

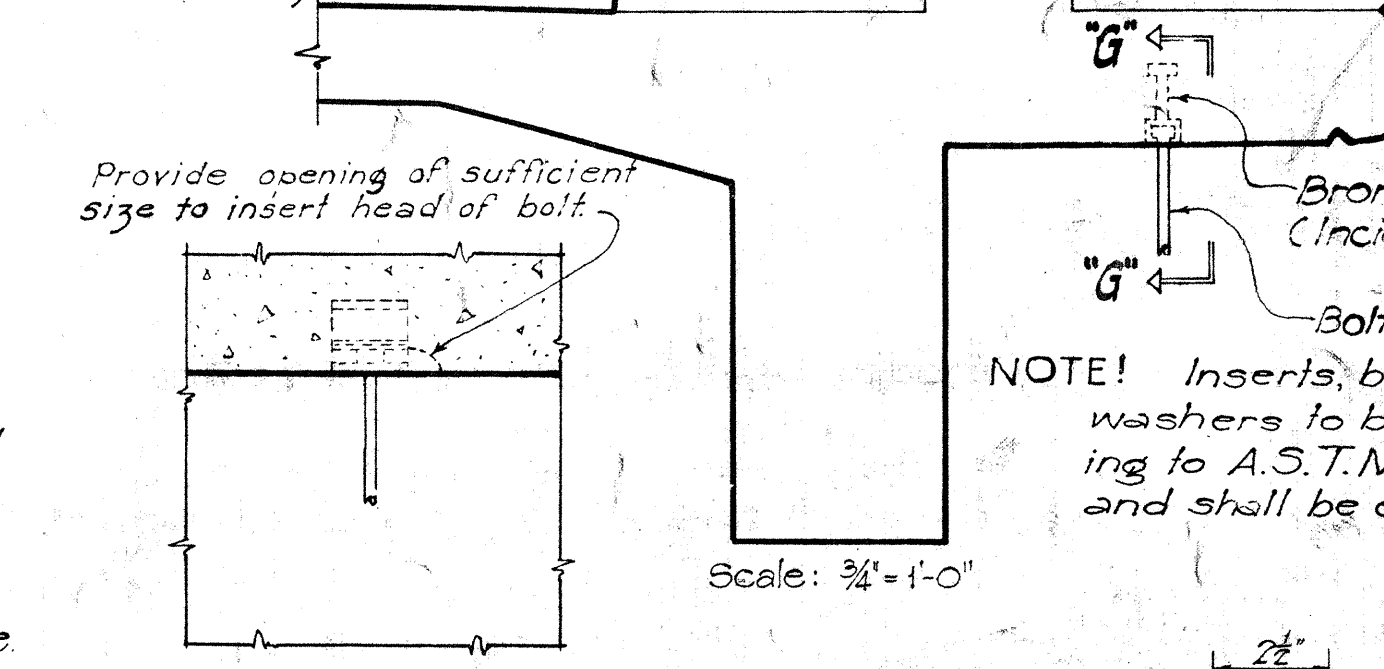
W = Guardrail flare
X = Distance from post at bridge to offset points.
Y = Guardrail flare offset



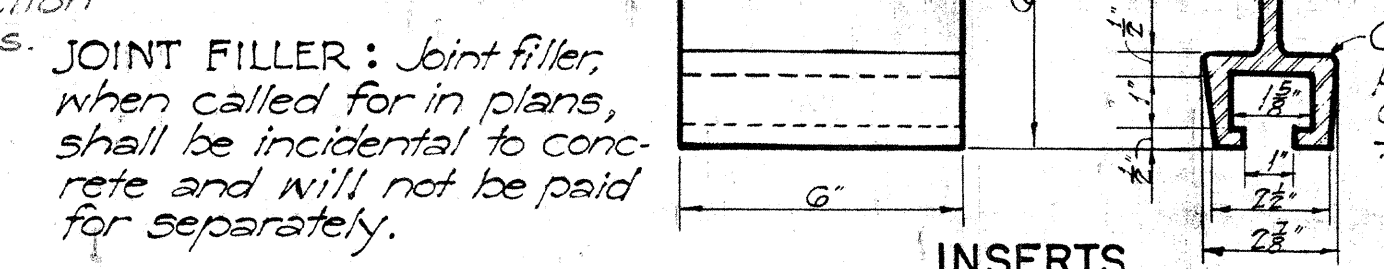
PLAN - METAL GUARDRAIL FLARE
Scale: 1/8" = 1'-0"



LAP DETAIL



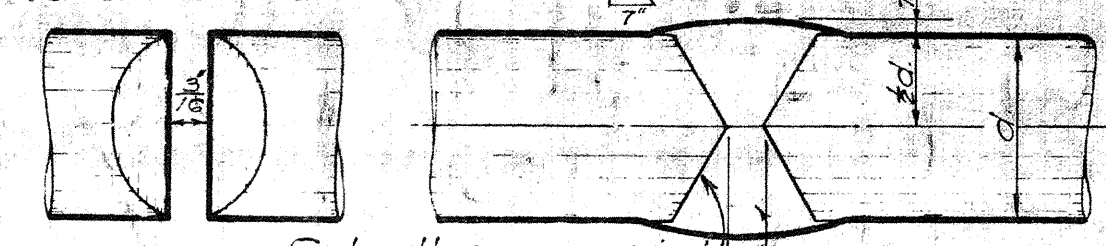
SECTION "G-G"



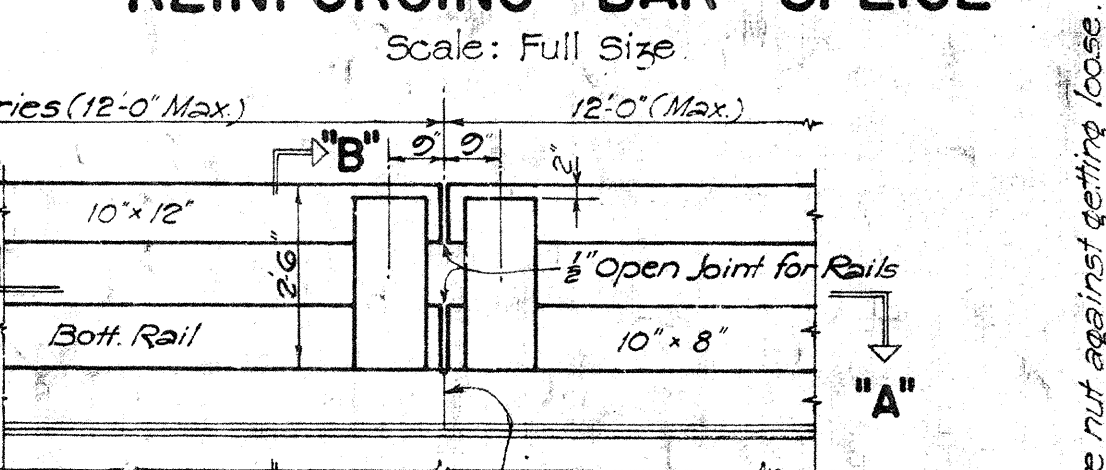
JOINT FILLER: Joint filler when called for in plans, shall be incidental to concrete and will not be paid for separately.

DETAIL OF PIPE HANGERS AND INSERTS

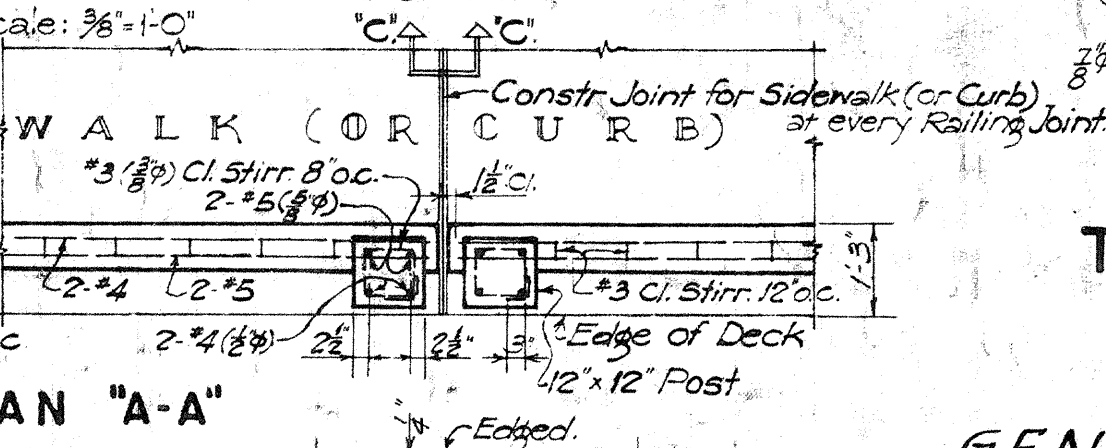
NOTE! Carbon content of reinforcing bars for welding shall not be over 0.40%. Low hydrogen electrodes E7015 or E7018 shall be used with preheat and interpass temperature not less than 200°F.



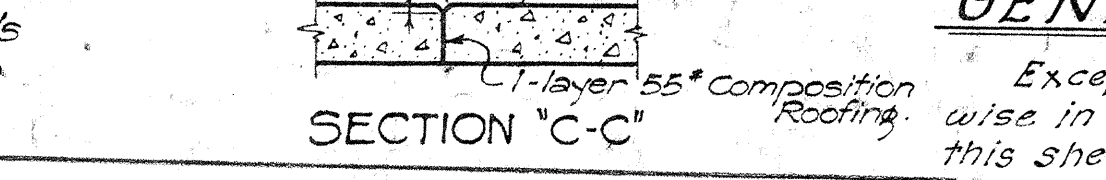
REINFORCING BAR SPLICE



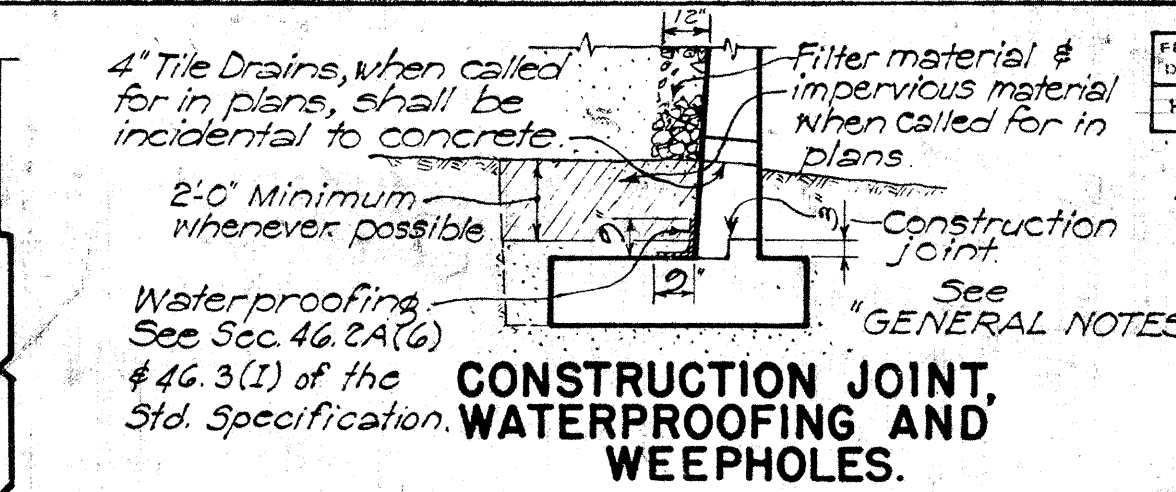
"ELEVATION"
RAILING AND END POST DETAIL



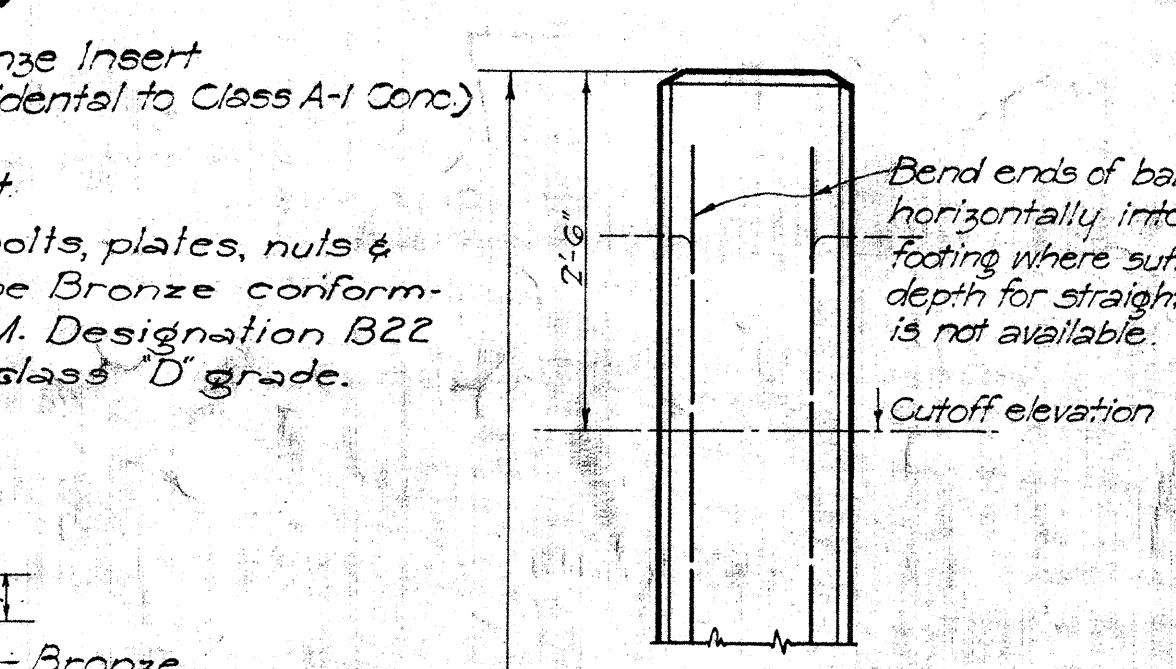
PLAN "A-A"



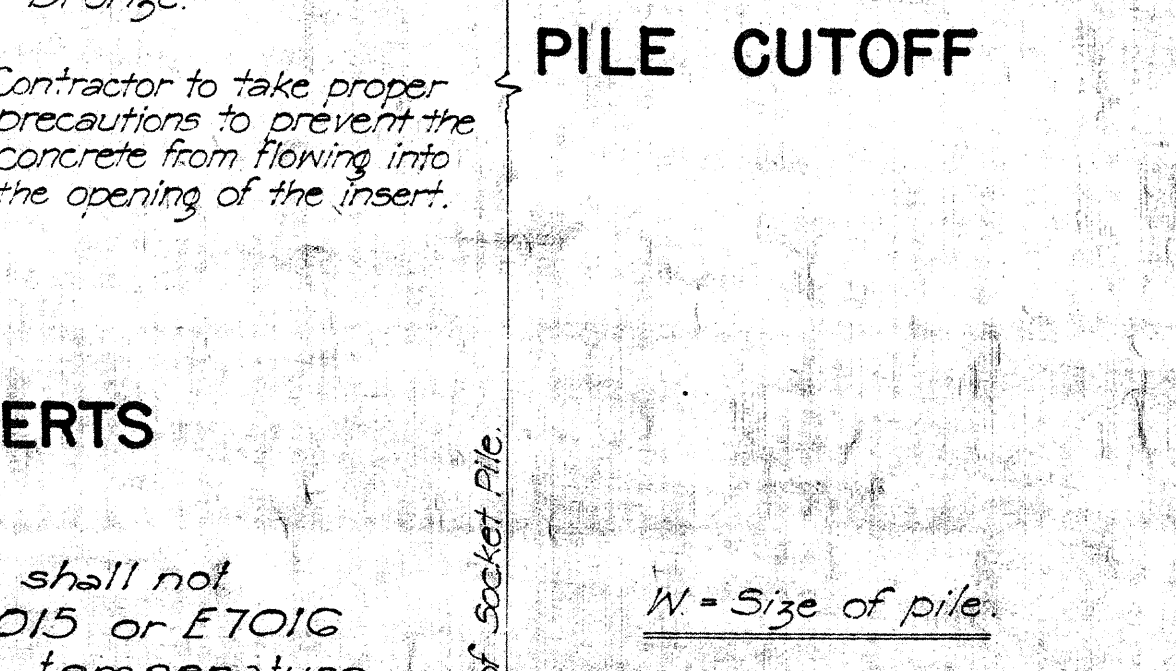
SECTION "C-C"



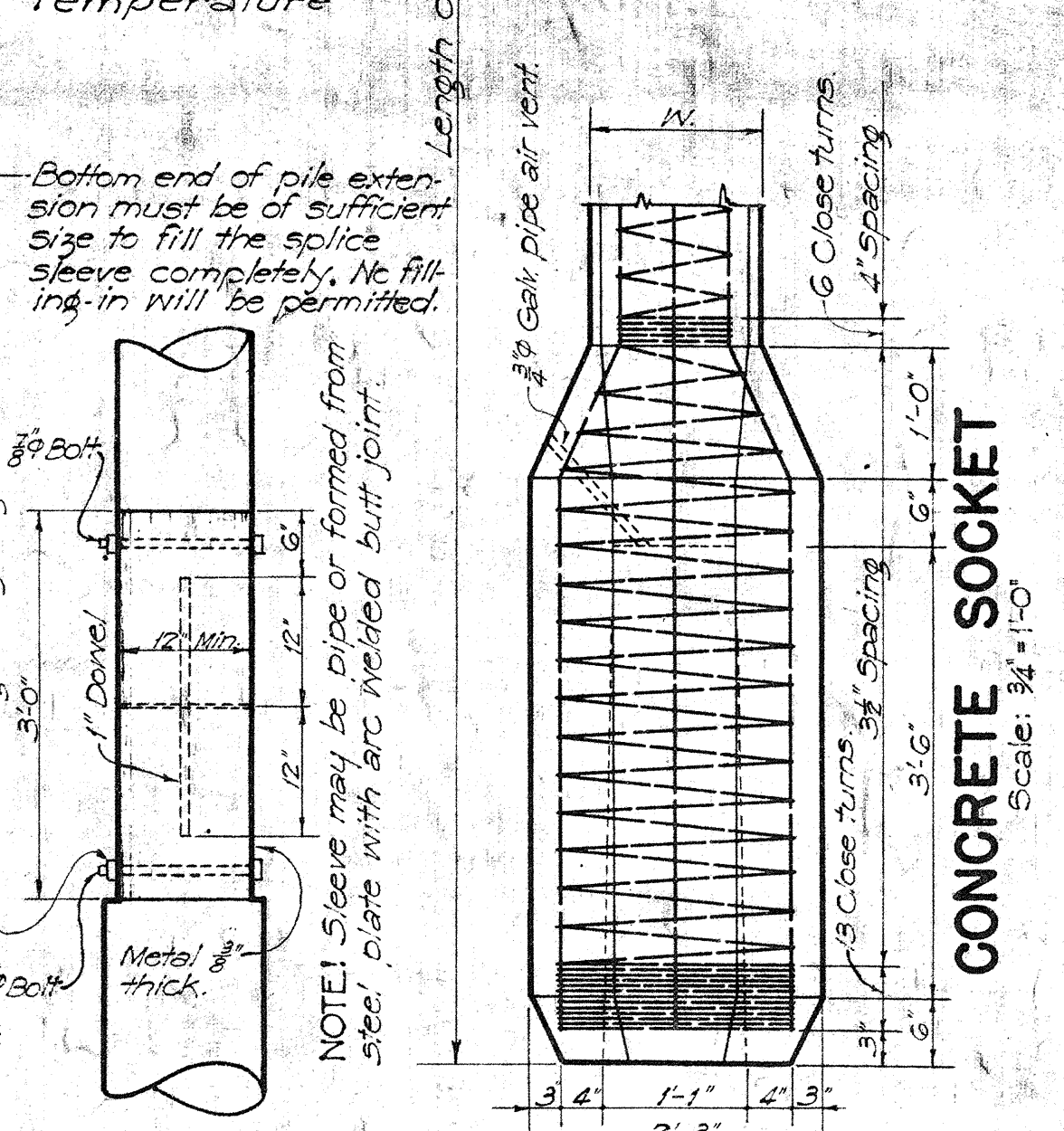
CONSTRUCTION JOINT,
WATERPROOFING AND
WEEPHOLES.



PILE CUTOFF



CONCRETE SOCKET



TIMBER PILE
SPLICE

Scale: 3/4" = 1'-0"

GENERAL NOTE

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

REVISIONS

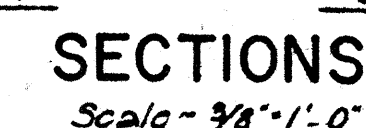
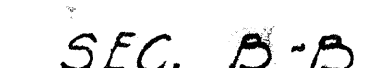
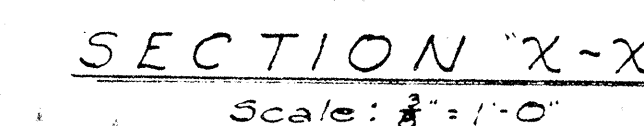
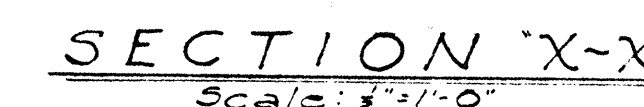
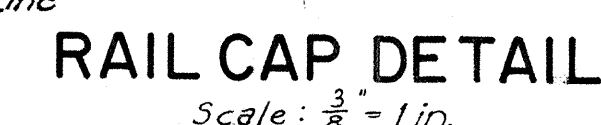
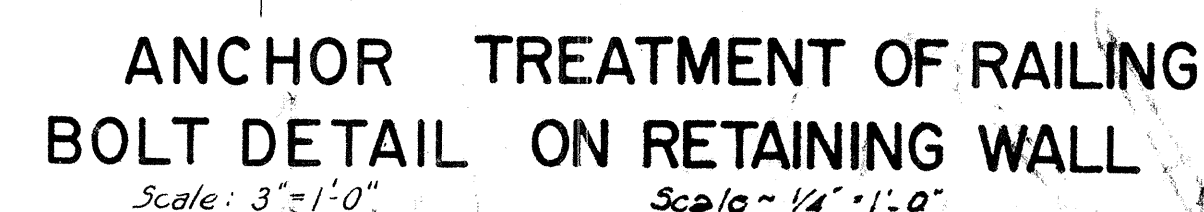
NO.	DATE	DESCRIPTION
1	1959	Initial
2	1960	Revised
3	1961	Revised
4	1962	Revised
5	1963	Revised
6	1964	Revised
7	1965	Revised
8	1966	Revised
9	1967	Revised
10	1968	Revised
11	1969	Revised
12	1970	Revised
13	1971	Revised
14	1972	Revised
15	1973	Revised
16	1974	Revised
17	1975	Revised
18	1976	Revised
19	1977	Revised
20	1978	Revised
21	1979	Revised
22	1980	Revised
23	1981	Revised
24	1982	Revised
25	1983	Revised
26	1984	Revised
27	1985	Revised
28	1986	Revised
29	1987	Revised
30	1988	Revised
31	1989	Revised
32	1990	Revised
33	1991	Revised
34	1992	Revised
35	1993	Revised
36	1994	Revised
37	1995	Revised
38	1996	Revised
39	1997	Revised
40	1998	Revised
41	1999	Revised
42	2000	Revised
43	2001	Revised
44	2002	Revised
45	2003	Revised
46	2004	Revised
47	2005	Revised
48	2006	Revised
49	2007	Revised
50	2008	Revised
51	2009	Revised
52	2010	Revised
53	2011	Revised
54	2012	Revised
55	2013	Revised
56	2014	Revised
57	2015	Revised
58	2016	Revised
59	2017	Revised
60	2018	Revised
61	2019	Revised
62	2020	Revised

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII

STANDARD BRIDGE DETAILS

Scale: as noted
APPROVED BY: STATE HIGHWAY ENGINEER
DATE: Aug. 26, 1959

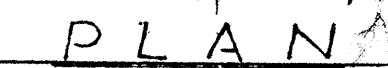
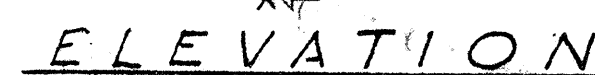
SHEET NO. OF SHEETS



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

ITEM	DESCRIPTION	ALLOY	UNIT WT.
Top Rail	Al Alloy Drawn Or Extruded Tube 4" o.d. x 1/8" thick wall.	6061 - T6	1.70 #/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 Cast no See Rail Post Detail	Post 16-35G-T6 Set 50 2024-T4	16.0 #/Bd.
Rail Cap	See Rail Cap Detail	Cap 35G-T6	Top - .415 #/ft. Bot. - .340 #/ft.
Bolts	See Anchor Bolt & Rail Post Detail Use 3001 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.



HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII

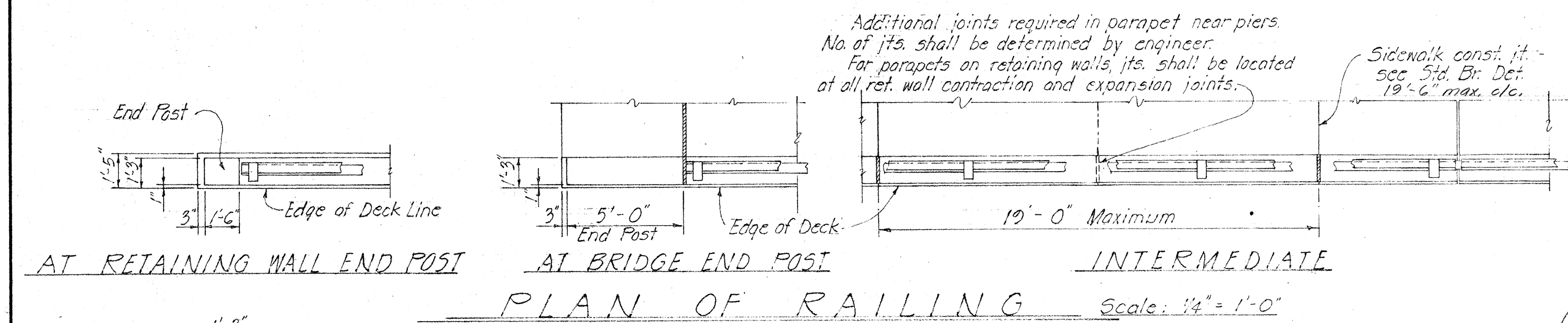
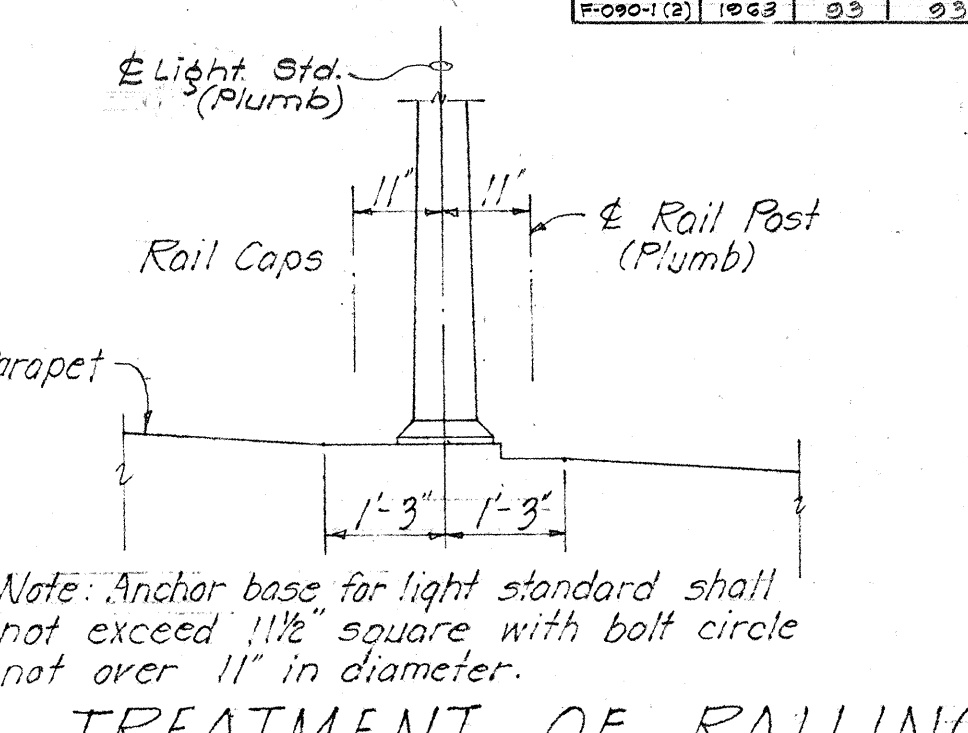
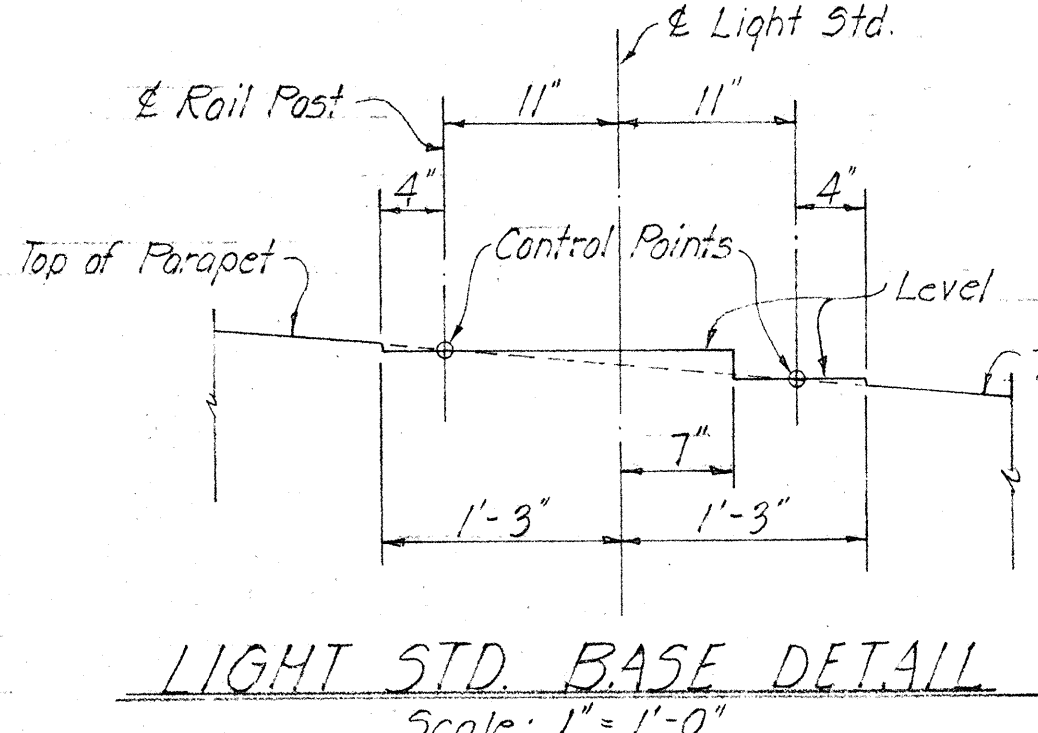
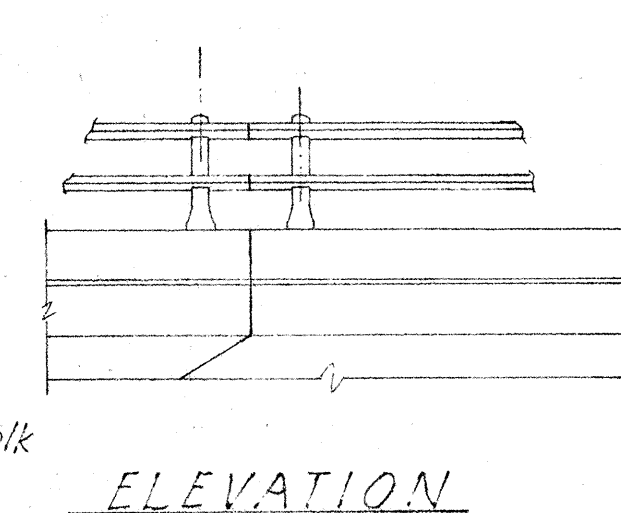
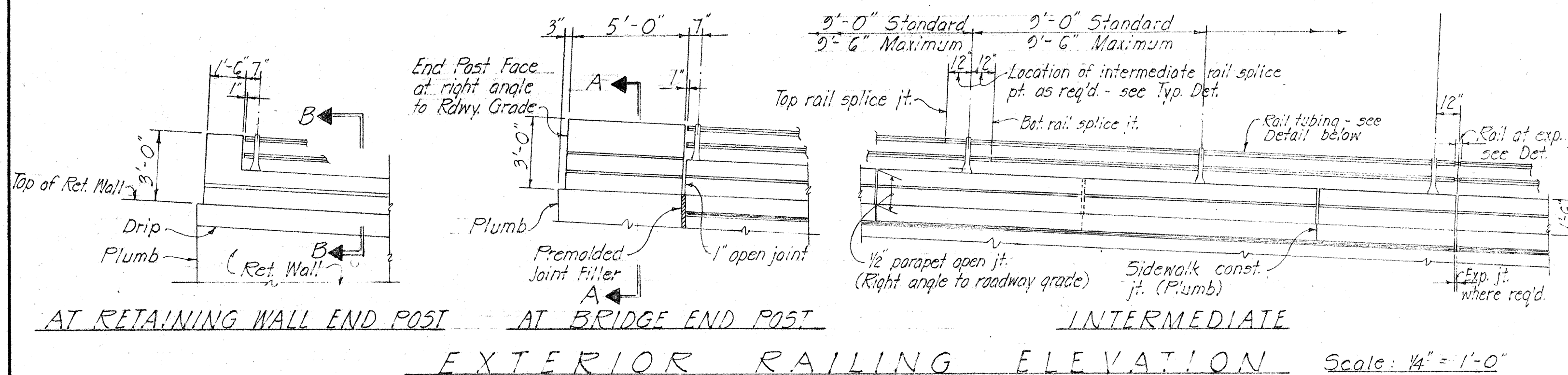
STANDARD DETAILS

ALUMINUM RAILING

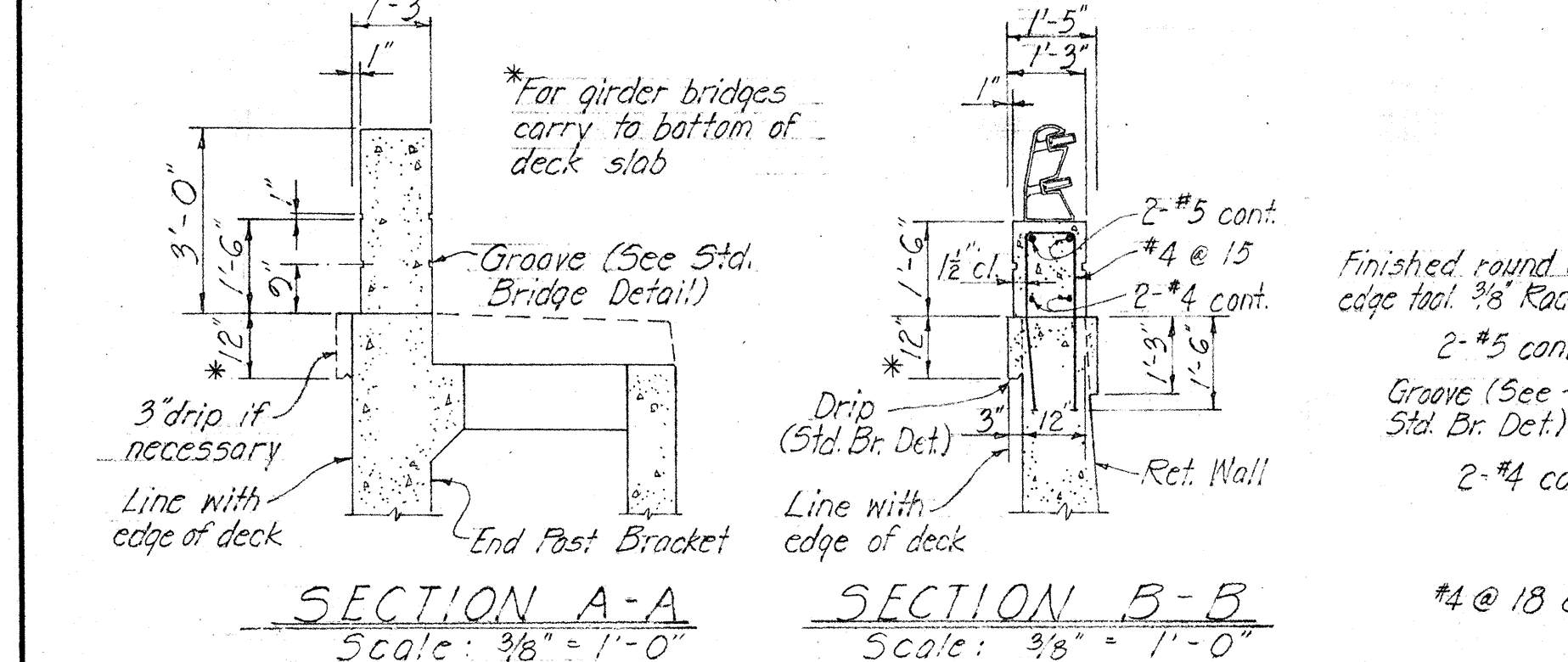
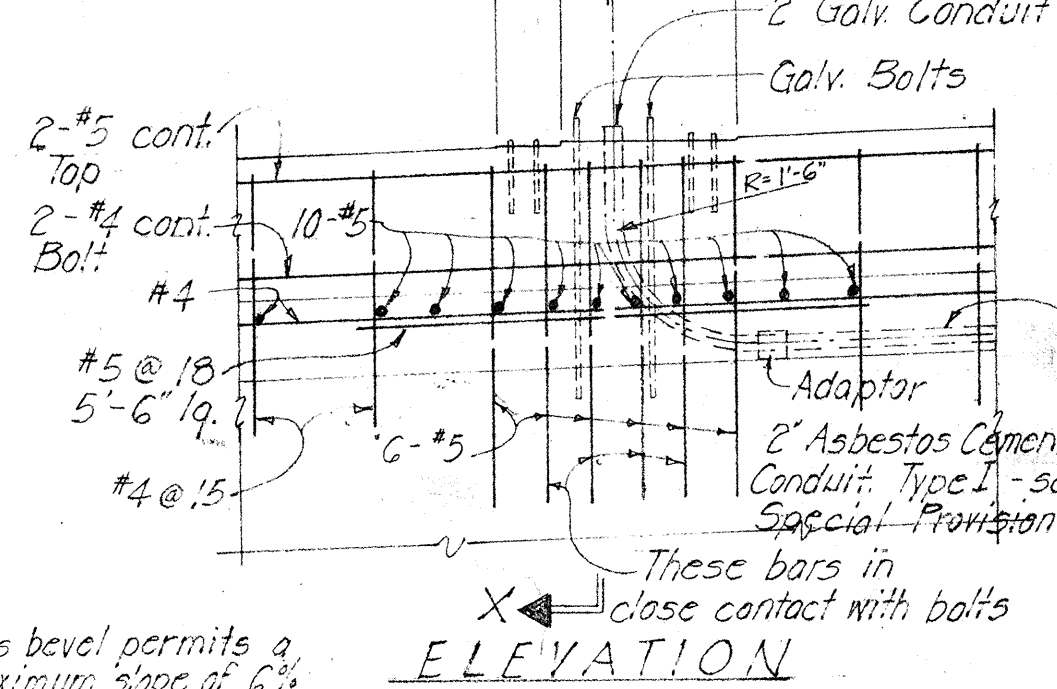
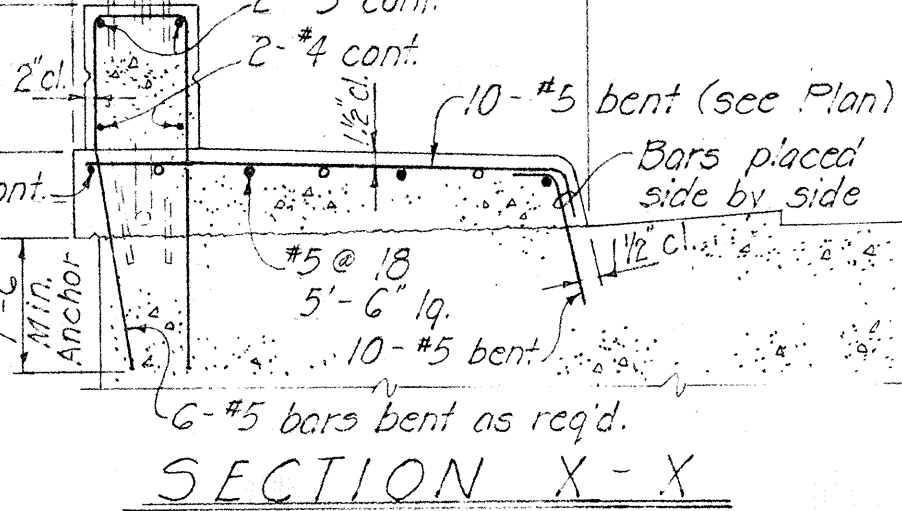
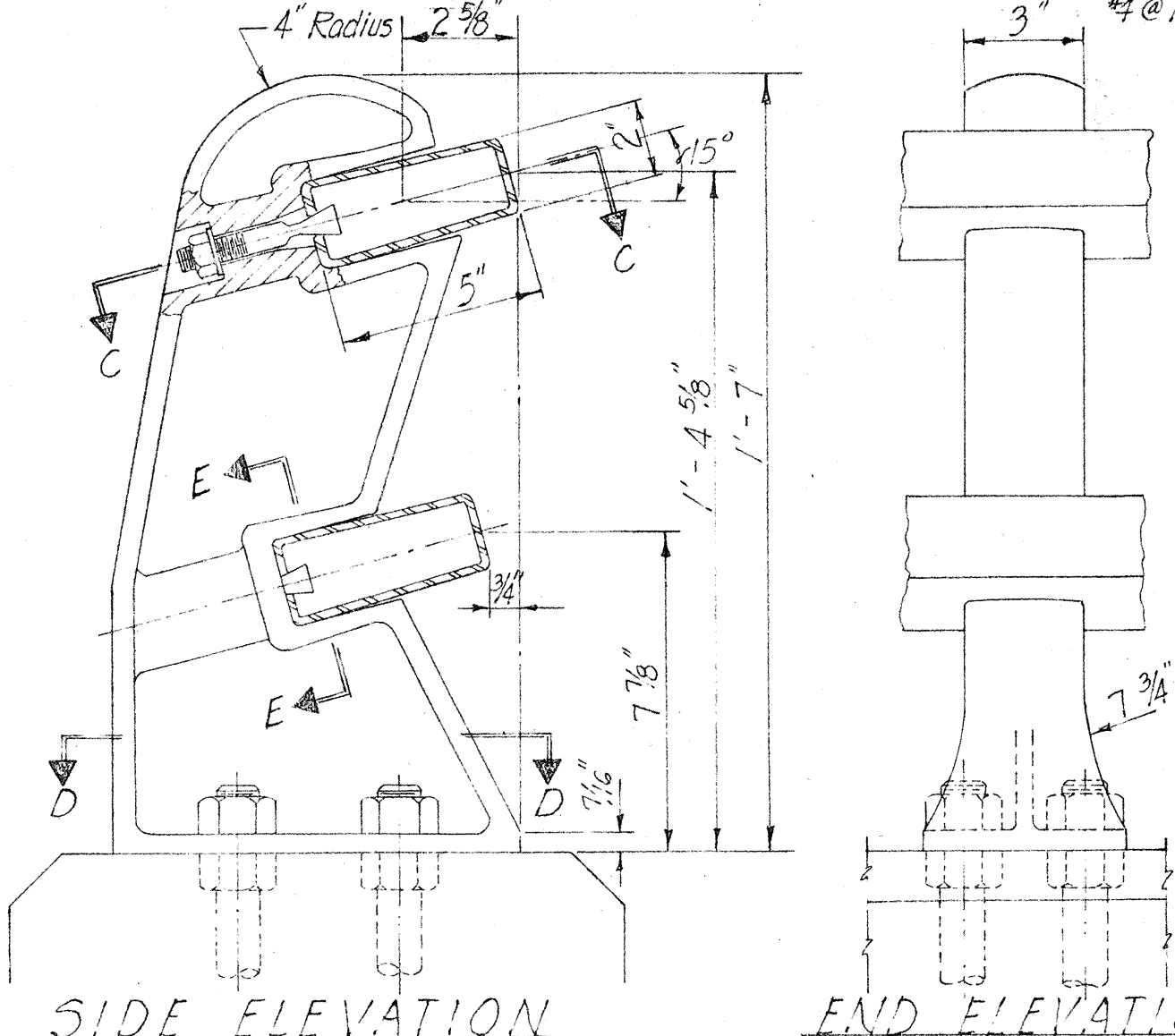
SCALE AS NOTED

SHEET No. 1 OF 1 SHEETS

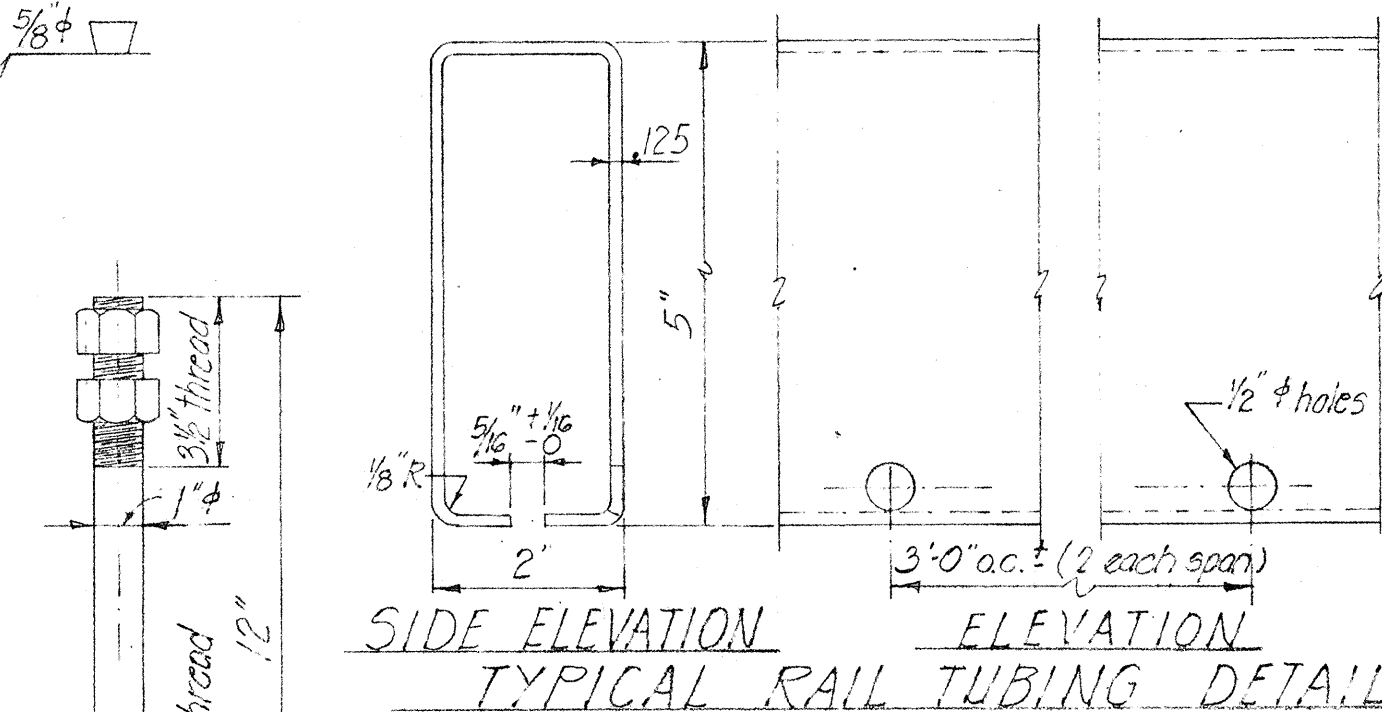
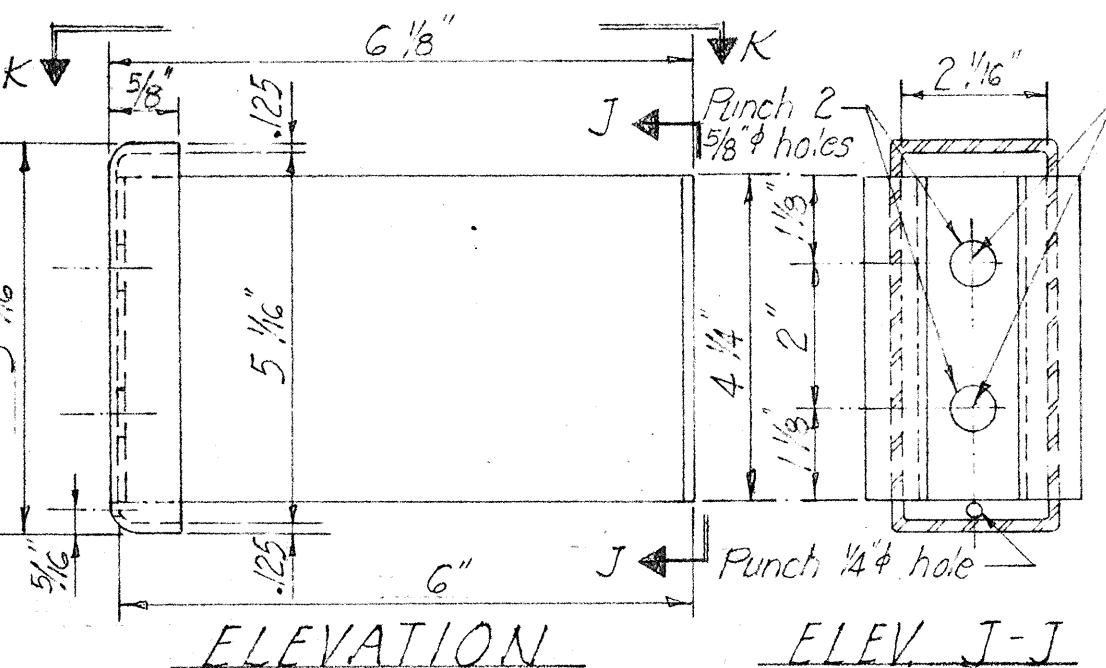
282



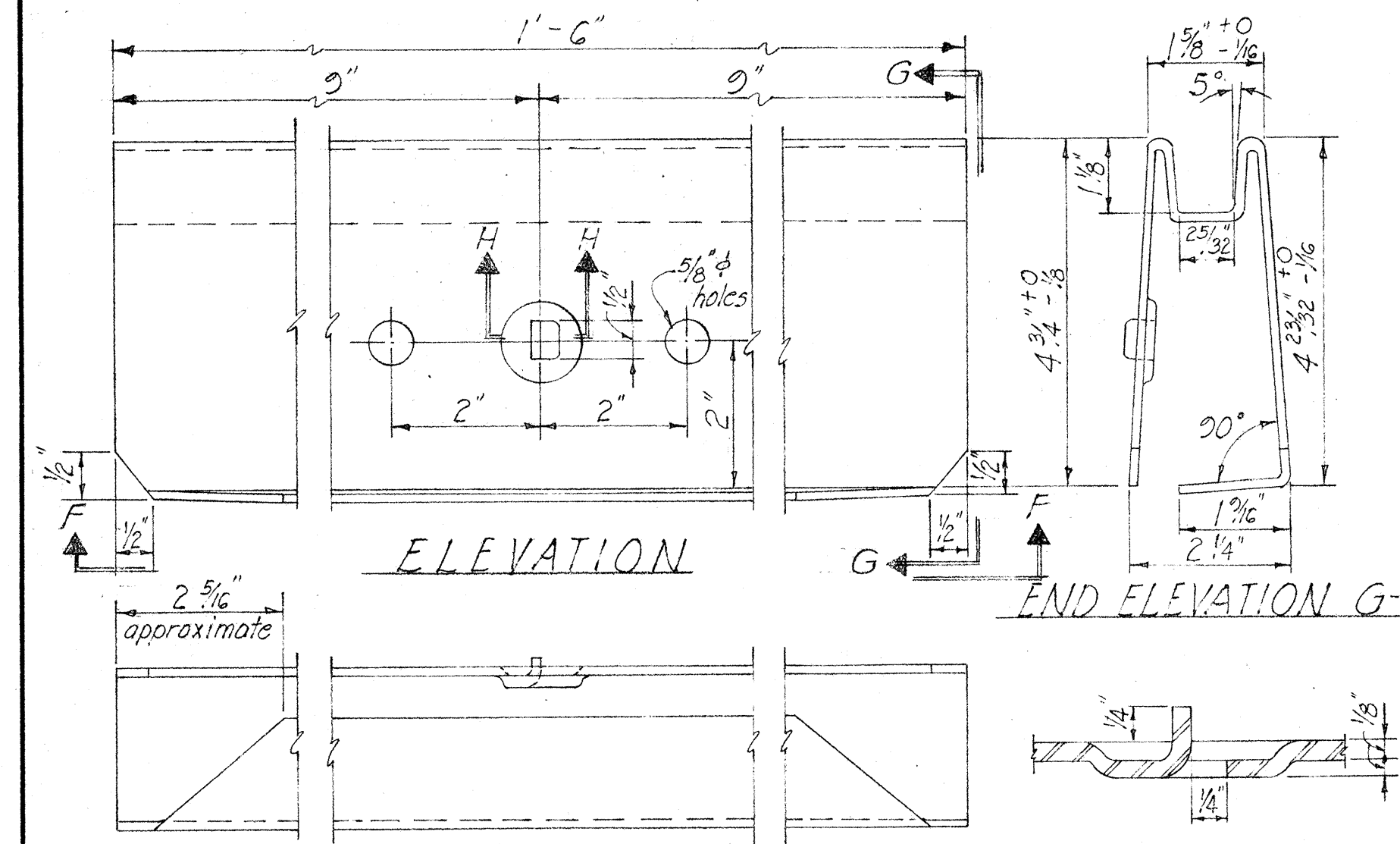
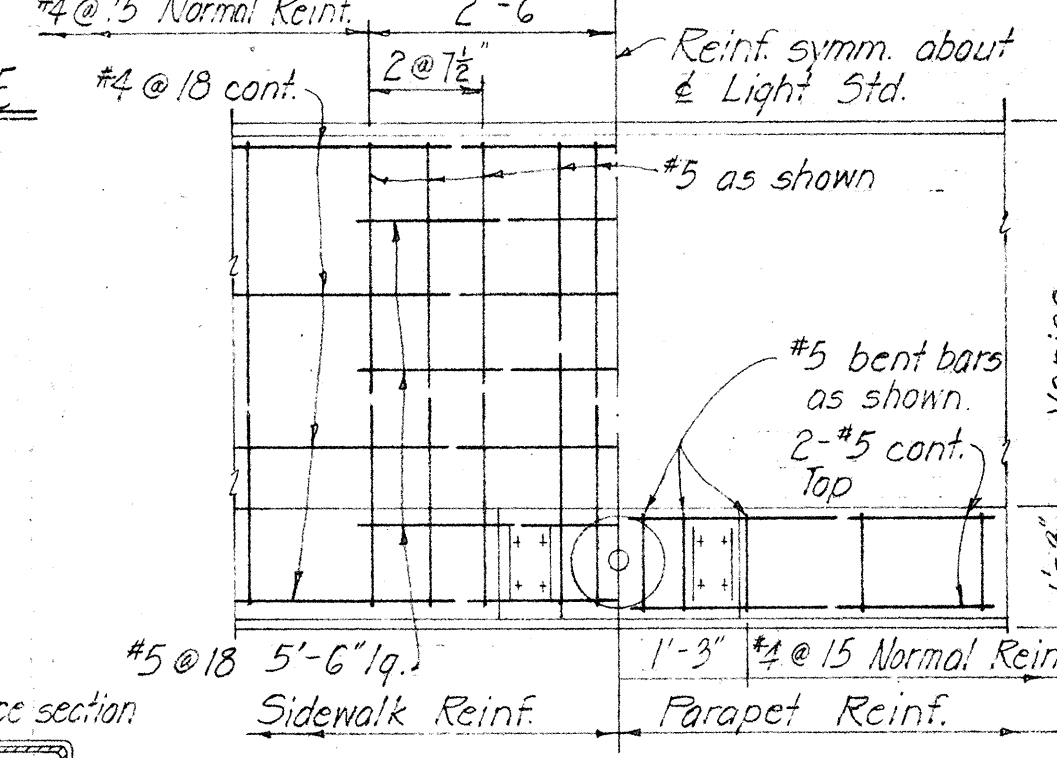
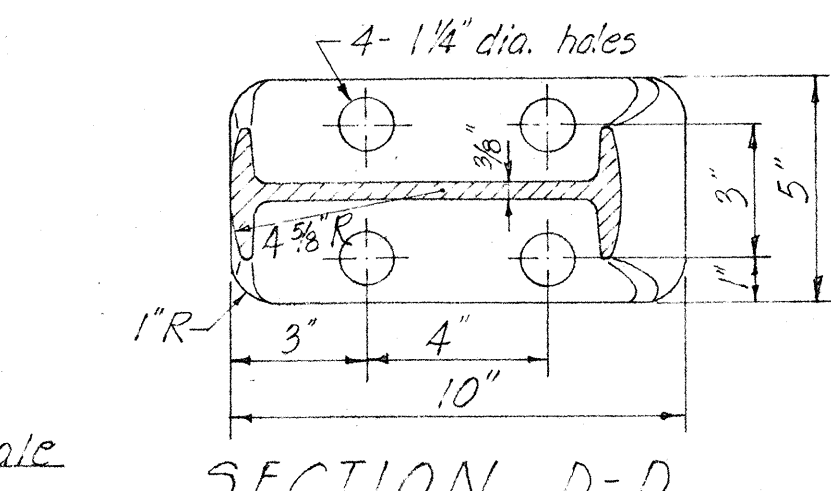
TREATMENT OF RAILING AT SKEWED ENDS



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

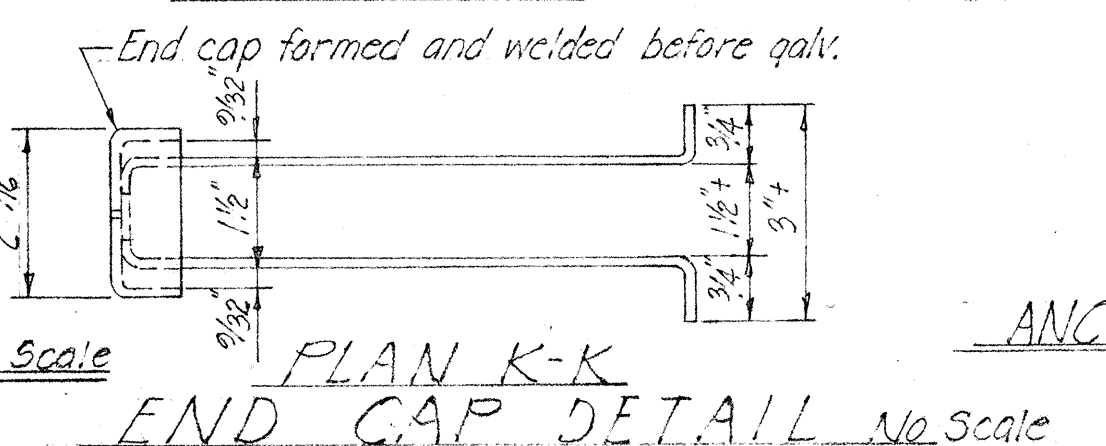


SECTION C-C, SECTION E-E, SECTION D-D

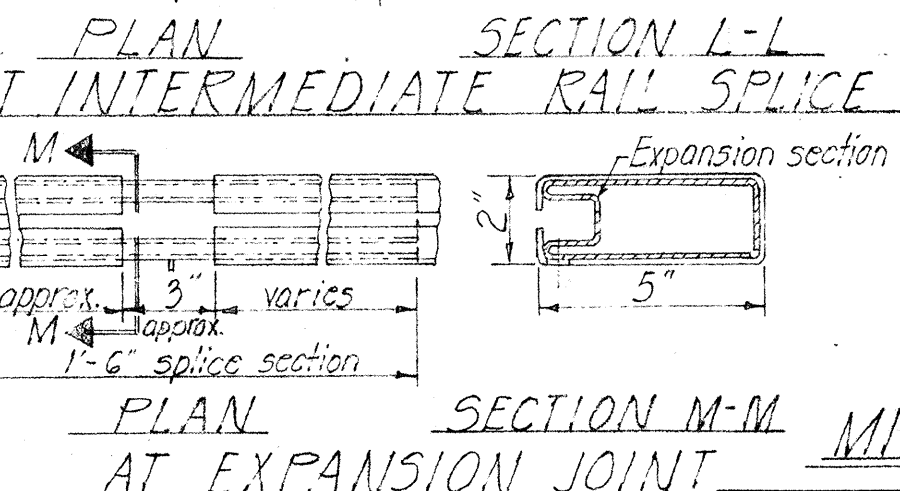
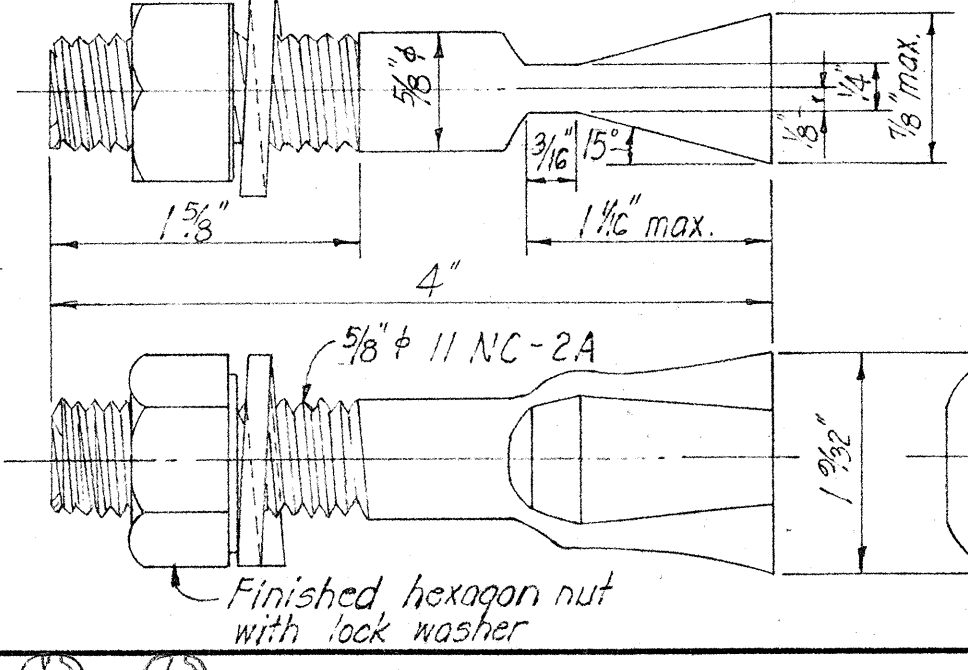
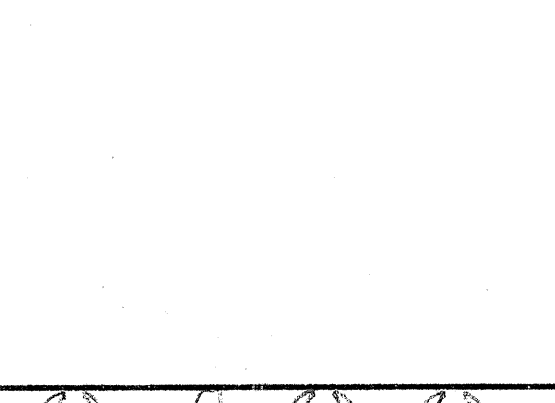


BOTTOM ELEVATION F-F, TYPICAL RAIL SPLICE SECTION DETAIL No Scale

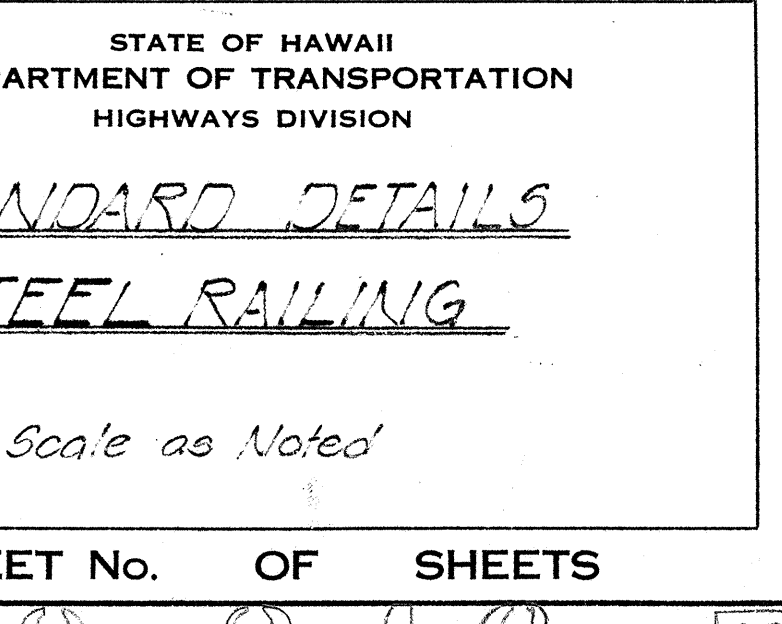
ITEM	DESCRIPTION	GALVANIZE
Post	Malleable Iron Castings ASTM A-41, Grade 35018	ASTM A-153
Railing	Tubing 5"x2"x1/8" ASTM A-245, Grade C	ASTM A-123
Anchor Bolts & Nuts	ASTM A-307	ASTM A-153
Wedge Bolts	ASTM A-307	ASTM A-153



ANCHOR BOLT DETAIL Scale: 3" = 1'-0"



ASSEMBLY DETAILS, MISCELLANEOUS RAIL CONNECTION



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
STEEL RAILING

Scale as Noted

SHEET No. OF SHEETS

246

DATE: _____
 SURVEYED BY: _____
 DRAWN BY: _____
 CHECKED BY: _____
 ORIGINAL FILED IN: _____
 NOTE BOOK NO. _____