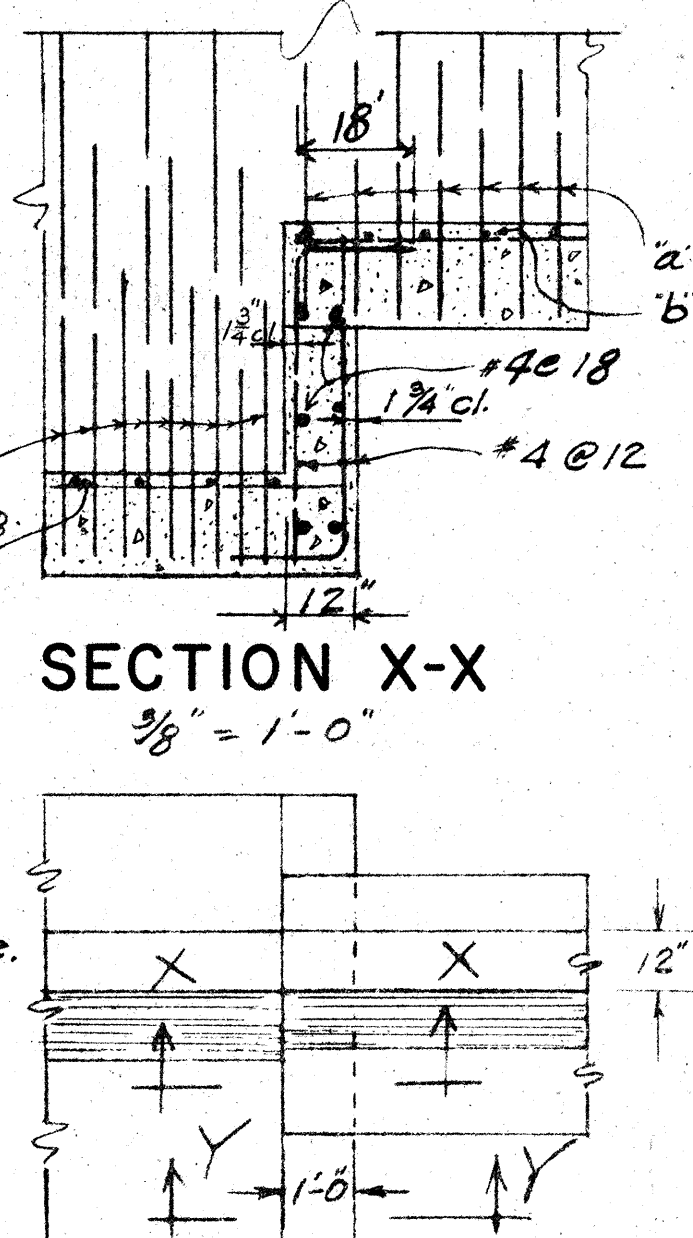
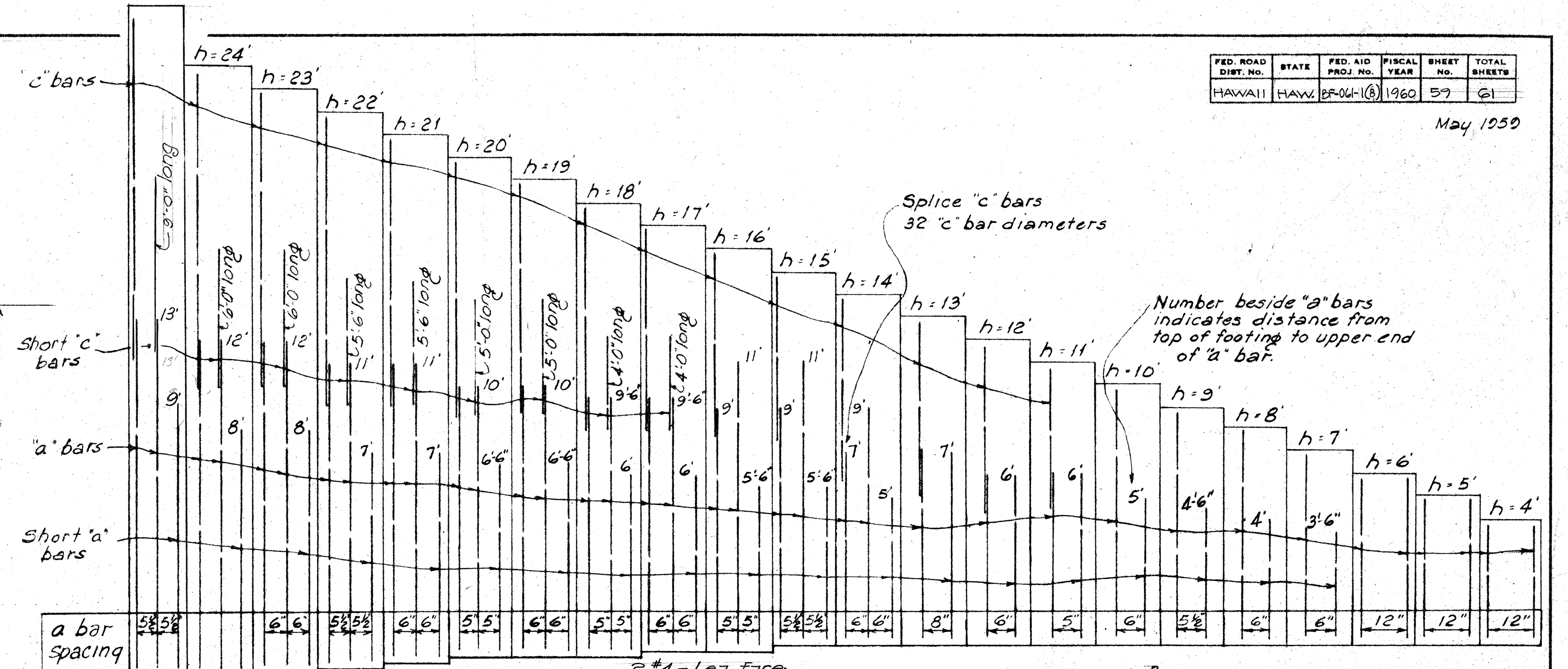
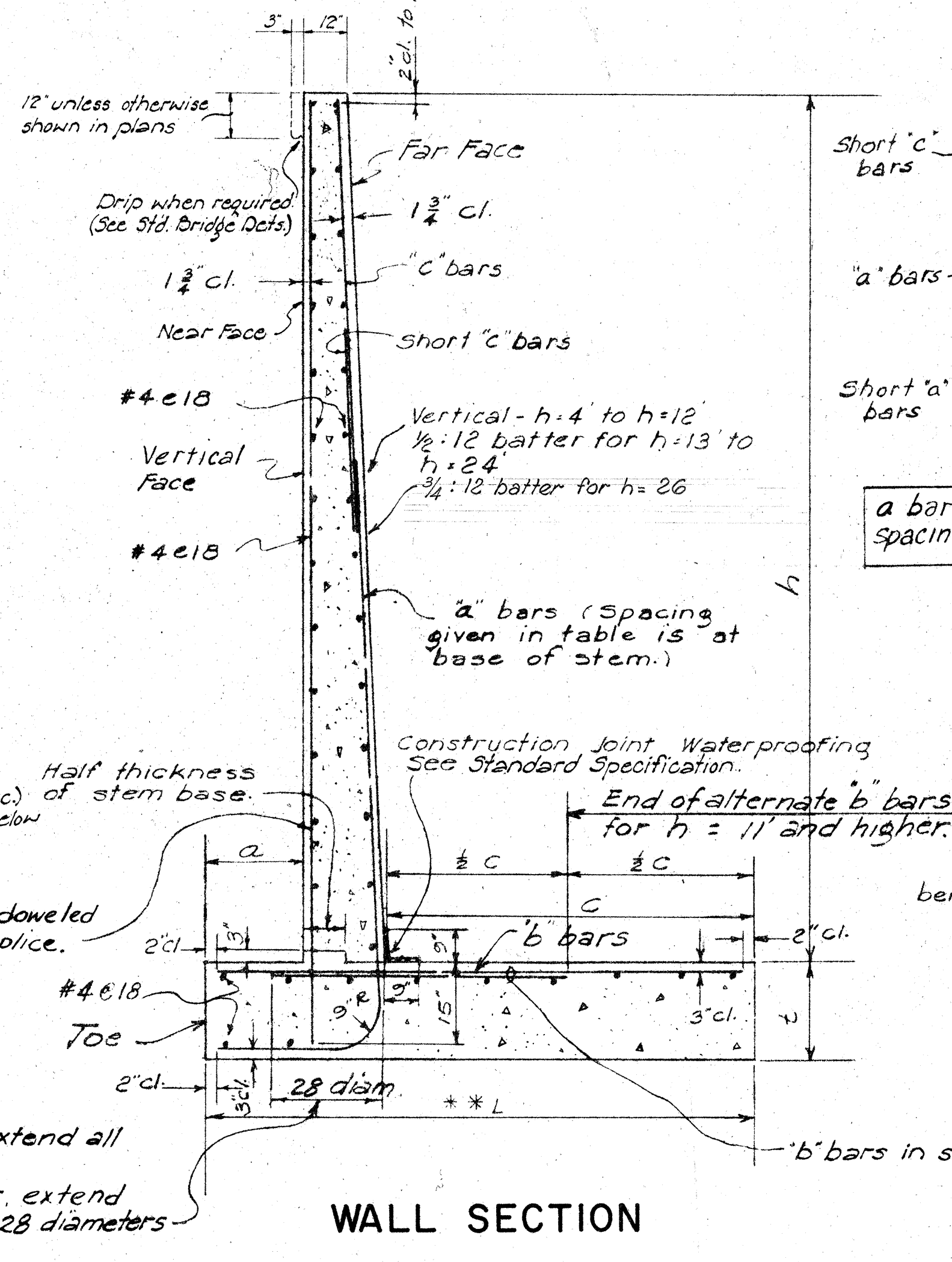
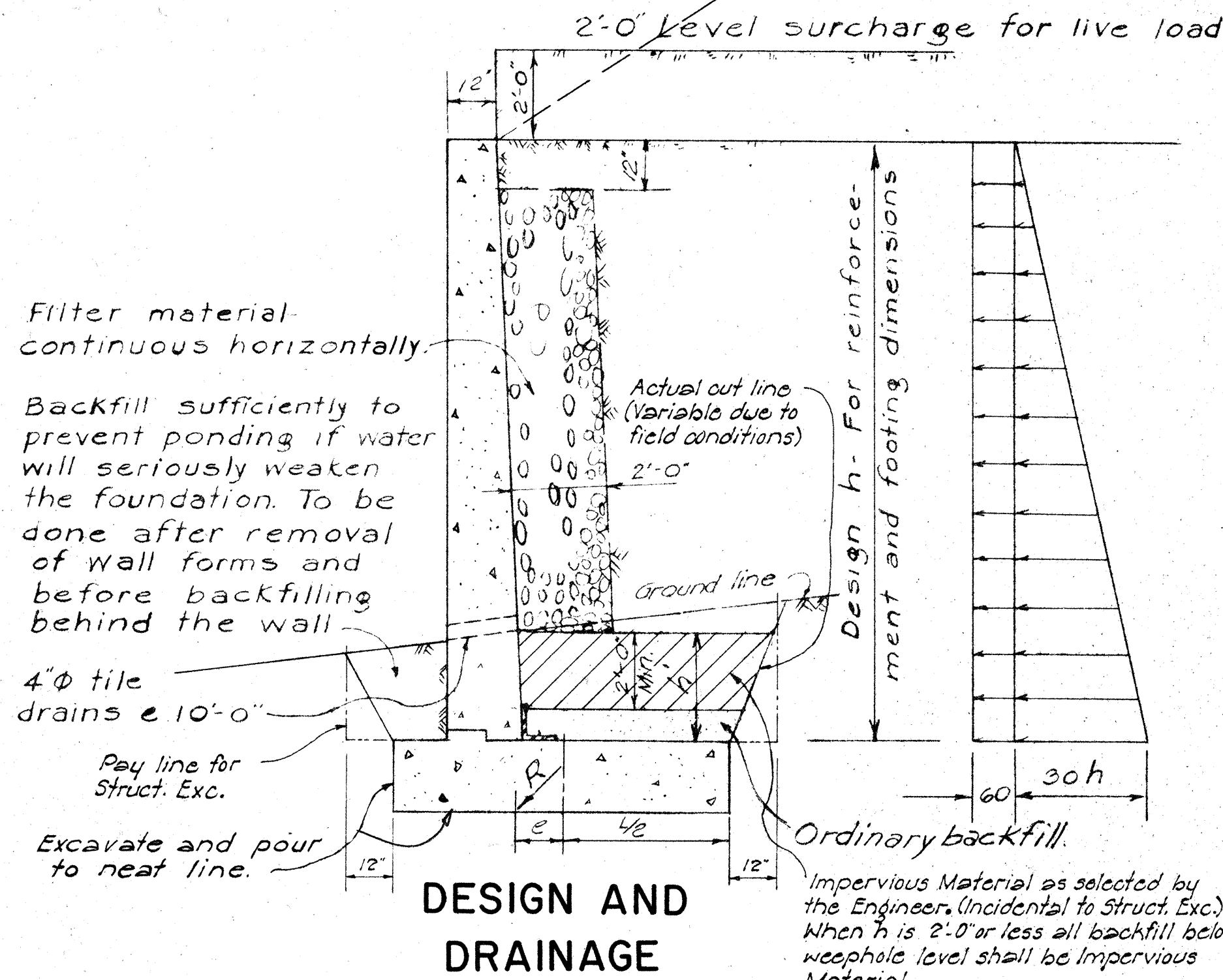
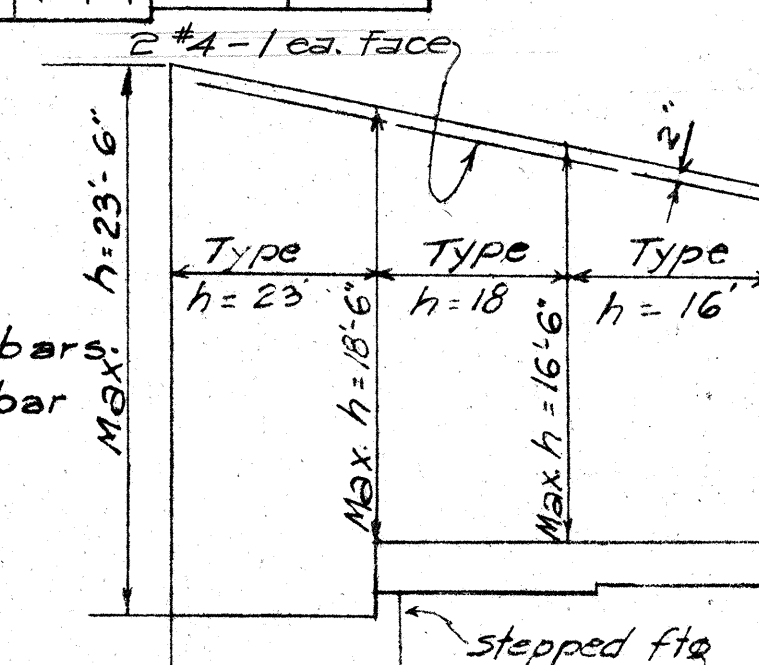


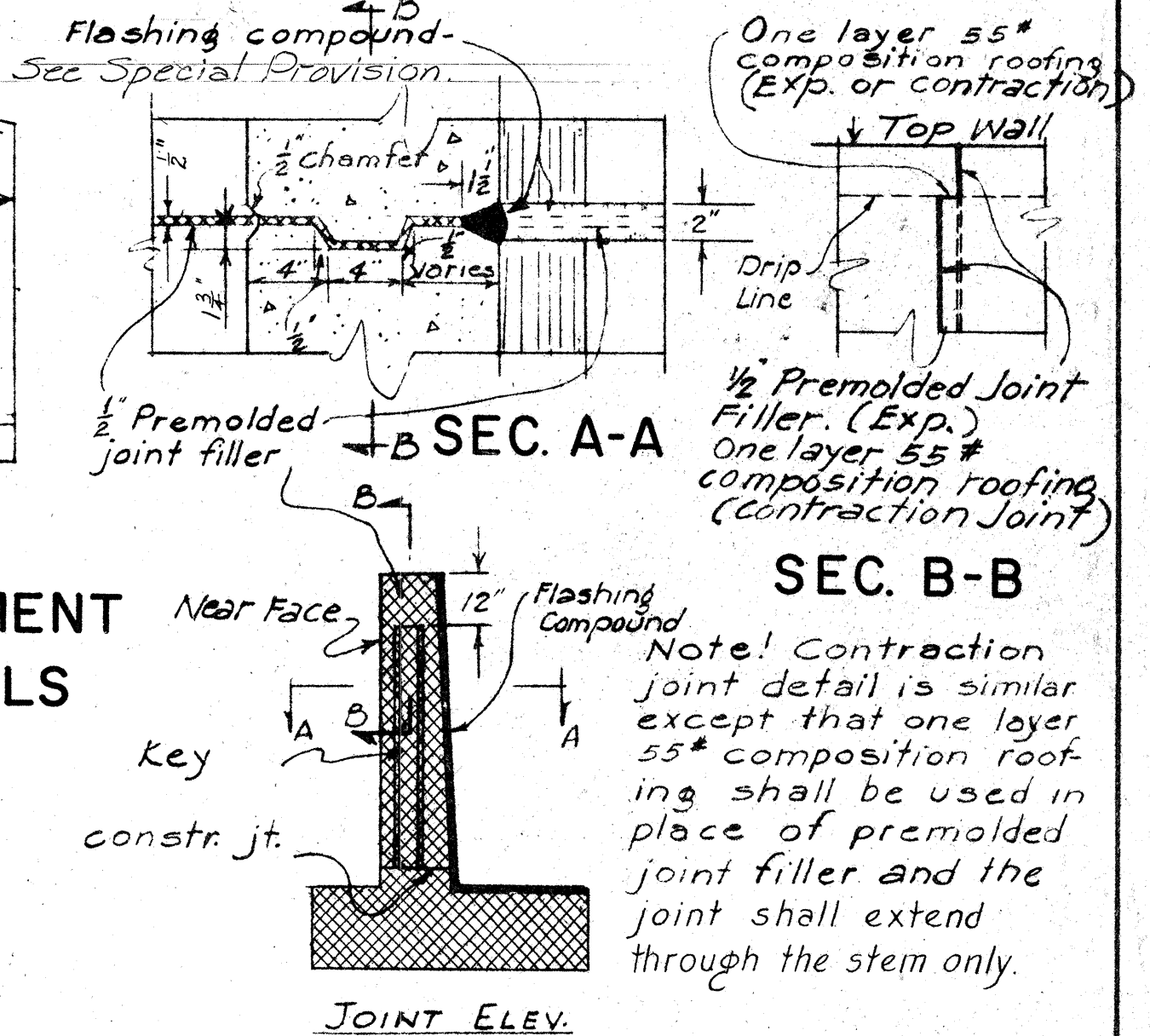
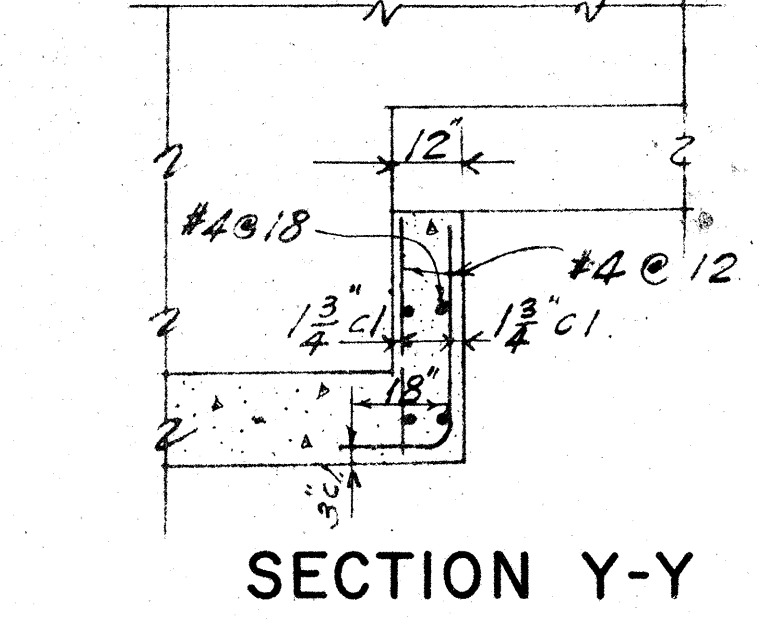
May 1959



PLAN FOOTING STEP



TYPICAL ARRANGEMENT FOR SLOPING WALLS



JOINT DETAIL (Spacing of Joints) Contraction Joint - 30'-0" Max Expansion Joint - 20'-0" Max

GENERAL NOTE

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

APPROVED: DATE Aug. 29, 1959
STATE HIGHWAY ENGINEER

HAWAII STATE HIGHWAY DEPARTMENT
STATE OF HAWAII
RETAINING WALL STANDARDS
PALI HWY. PROJ. No. BF-061-1(8)
OUTBOUND LANES
SCALES AS NOTED MAY 1956

SHEET NO. 1 OF 3 SHEETS

TABLE OF DIMENSIONS AND REINFORCING STEEL																				
h	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'	21'	22'	23'
a	6"	6"	6"	12"	12"	12"	12"	12"	12"	12"	15"	18"	21"	24"	24"	24"	27"	30"	33"	36"
* L	2.5'	3.0'	3.5'	4.0'	4.5'	5.0'	5.5'	6.0'	6.5'	7.0'	7.75'	8.25'	9.0'	9.75'	10.5'	11.5'	12.5'	13.5'	14.5'	15.25'
c	18"	18"	18"	18"	18"	18"	18"	18"	18"	18"	18"	18"	21"	21"	24"	24"	27"	30"	31"	33"
a bars	#3 @ 12	#3 @ 12	#4 @ 12	#3 @ 6	#4 @ 6	#4 @ 5 1/2	#5 @ 6	#5 @ 5	#6 @ 6	#6 @ 8	#6 @ 6	#6 @ 5 1/2	#6 @ 5	#7 @ 6	#7 @ 5	#8 @ 6	#8 @ 5	#9 @ 6	#9 @ 5 1/2	#10 @ 5 1/2
b bars	#3 @ 12	#3 @ 12	#3 @ 12	#3 @ 12	#3 @ 12	#4 @ 11	#5 @ 12	#5 @ 10	#5 @ 8	#6 @ 8	#6 @ 6	#6 @ 5 1/2	#6 @ 5	#7 @ 6	#7 @ 5	#8 @ 6	#8 @ 5	#9 @ 6	#9 @ 5 1/2	#10 @ 5 1/2
c bars								#4	#4	#4	#4	#4	#4	#4	#4	#5	#5	#6	#6	#7
F.S. Sliding *	1.30	1.29	1.28	1.16	1.17	1.18	1.17	1.17	1.20	1.23	1.25	1.21	1.25	1.26	1.33	1.39	1.42	1.48	1.53	1.54
F.S. Overturning	1.38	1.45	1.50	1.54	1.61	1.64	1.63	1.71	1.76	1.81	1.96	1.97	2.05	2.19	2.47	2.49	2.70	2.85	3.02	3.11
Concr. C.Y./ft	0.29	0.35	0.42	0.48	0.55	0.61	0.68	0.74	0.81	1.00	1.10	1.19	1.37	1.49	1.69	1.83	1.97	2.26	2.53	2.72
Steel lbs./ft	11.1	13.8	18.3	20.5	27.8	33.4	44.7	51.0	67.7	59.6	76.2	87.8	103.7	125.8	145.4	178.3	222.7	249.2	273.4	339.0
Eccentricity e	0.88'	1.01'	1.14	1.21	1.20	1.42	1.63	1.63	1.74	1.83	1.83	1.89	1.93	1.89	1.98	1.94	1.86	2.00	1.75	1.82
Toe Pressure	2800	2600	3200	2800	2900	3200	3700	3600	3800	4100	3800	3900	3900	3800	4000	3900	4100	4100	4100	3850

* F.S. Against Sliding based on friction Factor of 0.40

SPECIAL CASES:
Retaining walls shown are also applicable for the following conditions of loading:
① For h = 4' to 7'
1.58:1 or less sloping surcharge unlimited
1.5:1 sloping surcharge limited to $\frac{H}{4} = 2.3$
② For h of 8' and 9'
1.62:1 or less sloping surcharge unlimited
1.5:1 sloping surcharge limited to $\frac{H}{4} = 1.8$
③ For h of 10' and 11'
1.9:1 or less sloping surcharge unlimited
1.5:1 sloping surcharge limited to $\frac{H}{4} = 1.4$
④ For h = 13', 14', and 15'
2.2:1 or less sloping surcharge unlimited
1.5:1 sloping surcharge limited to $\frac{H}{4} = 1.2$
⑤ For h = 18' to 21'
2.7:1 or less sloping surcharge unlimited
⑥ For h = 22' to 24'
3:1 sloping surcharge unlimited
* Special cases are not applicable if traffic can come within a distance from the top of the stem equal to one-half its height.

8148.59

FOR CONTRACT PLANS

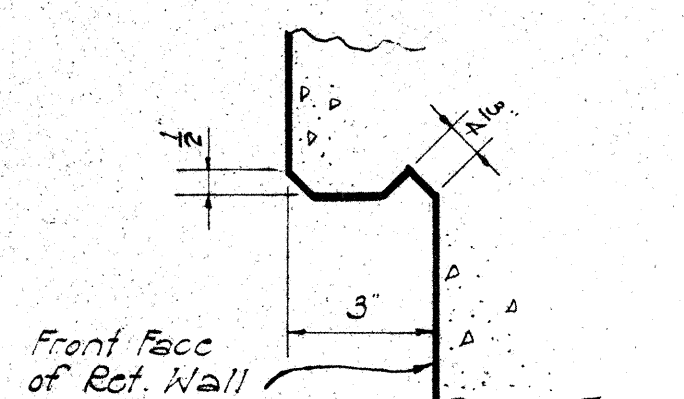
NAME DATE

Use correct name of bridge
LEFT HAND SIDE

Date of year built
RIGHT HAND SIDE

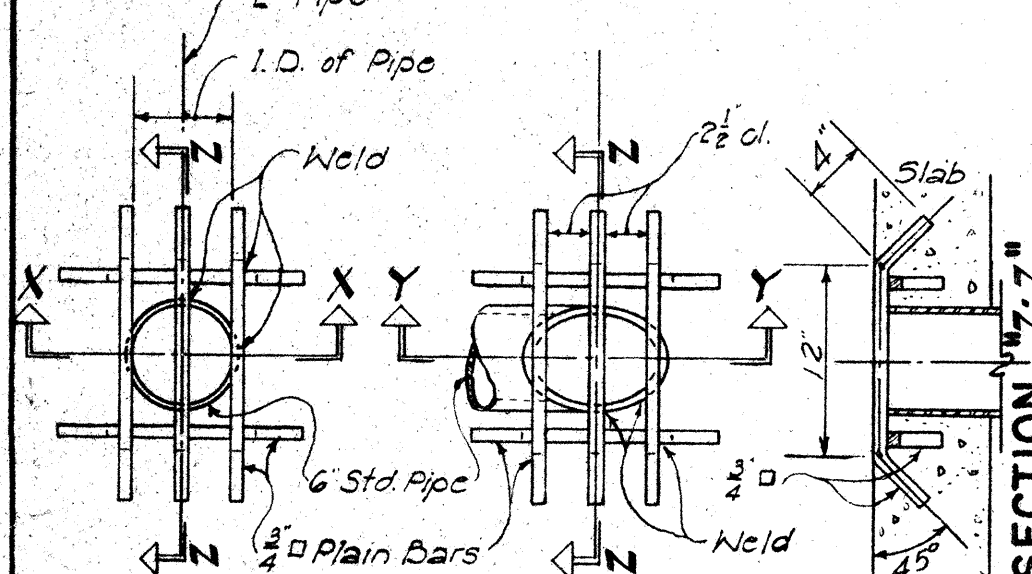
DETAIL OF LETTERS AND FIGURES AT BOTH APPROACHES

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.



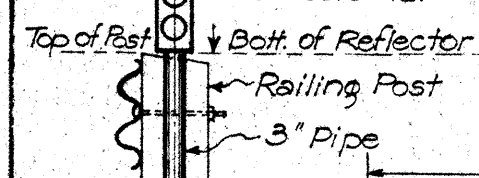
DRIP DET. FOR RET. WALL
Scale: 3/4" = 1'-0"

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



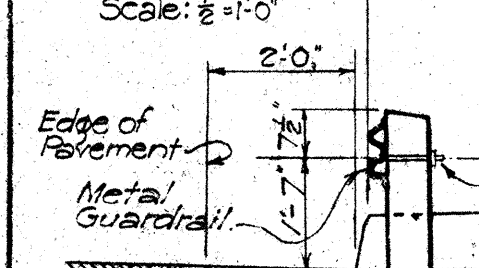
SECTION "X-X"

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



SECT. "E-E"

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



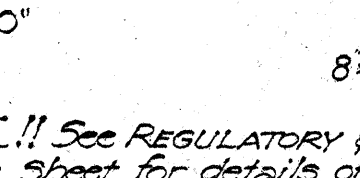
SECTION "D-D"

Scale: 3/8" = 1'-0"

(Reflector Post not shown)
See Section "E-E"

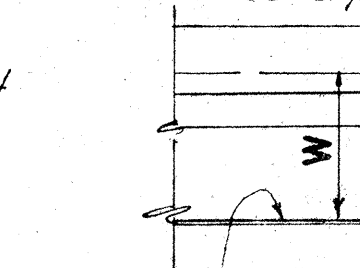
SECTION "Y-Y"

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



SECT. "F-F"

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



SECTION "D-D"

Scale: 3/8" = 1'-0"

(Reflector Post not shown)
See Section "E-E"

GENERAL NOTES

CONCRETE: Class of concrete to be used in different parts of the structure are as noted on the plans.

REINFORCING STEEL: All reinforcing steel shall be Billet Steel Bars A.S.T.M. A 15 intermediate grade.

Deformations shall conform to A.S.T.M. A 305. 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 may be electrically arc 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. Minimum covering, measured from the surface of the concrete to the face of any reinforcing bar, shall be not less than 1 1/2 inch. In the footings of abutments and retaining walls and in piers the minimum covering shall be 3 inches. In work exposed to the action of sea water the minimum covering shall be 4 inches except in precast concrete piles where a minimum of 3" may be used.

All dimensions relating to reinforcing are to centers of bars unless otherwise noted.

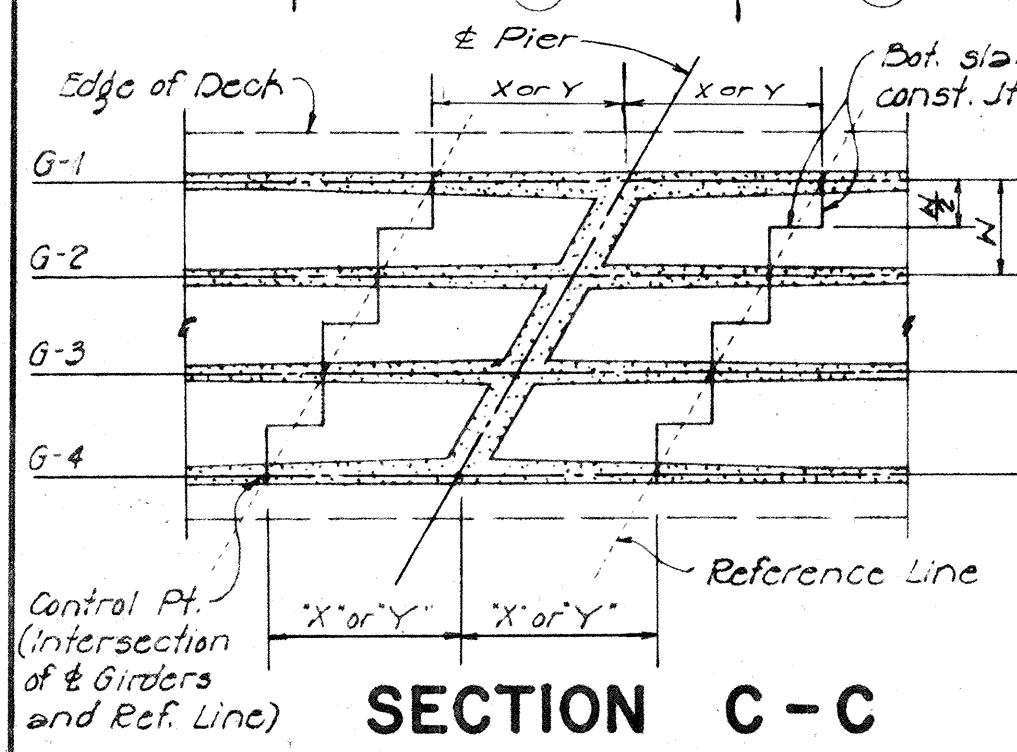
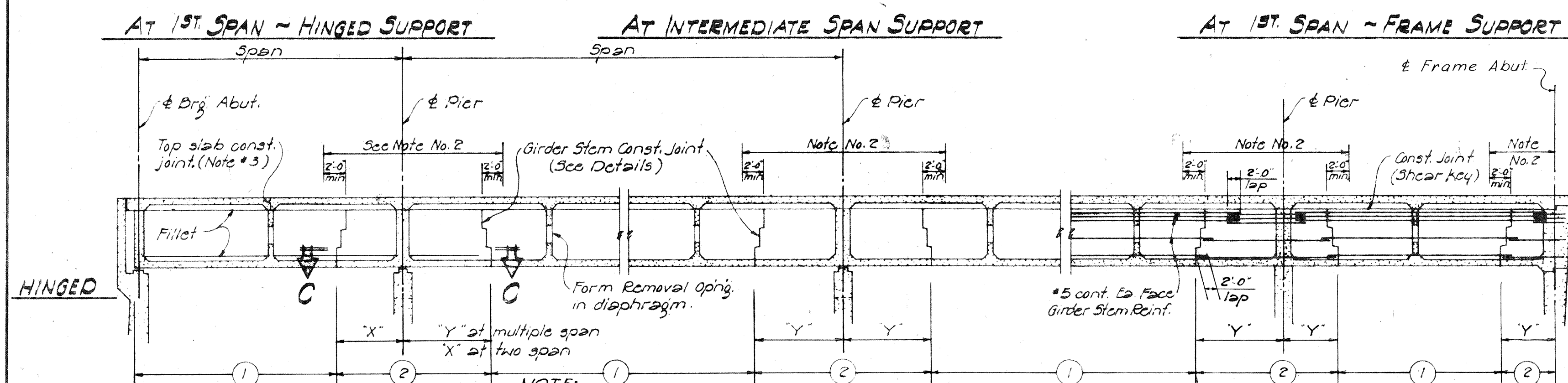
CONSTRUCTION JOINTS: All construction joints to have surface roughened and 1:2 cement grout applied immediately before the second pour. Construction joints to be located at places indicated in the plans. See Sec. 46.3F(3) of the "Standard Specifications."

ELLIPSE COORDINATES

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

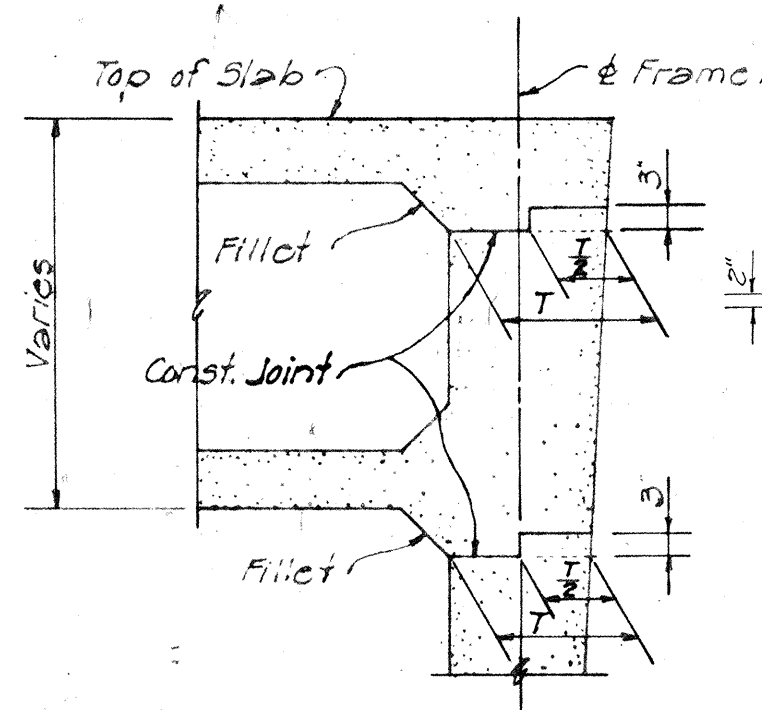
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BF-061(8)	1960	61	61

May 59
C. J. G. O.
MAY 62

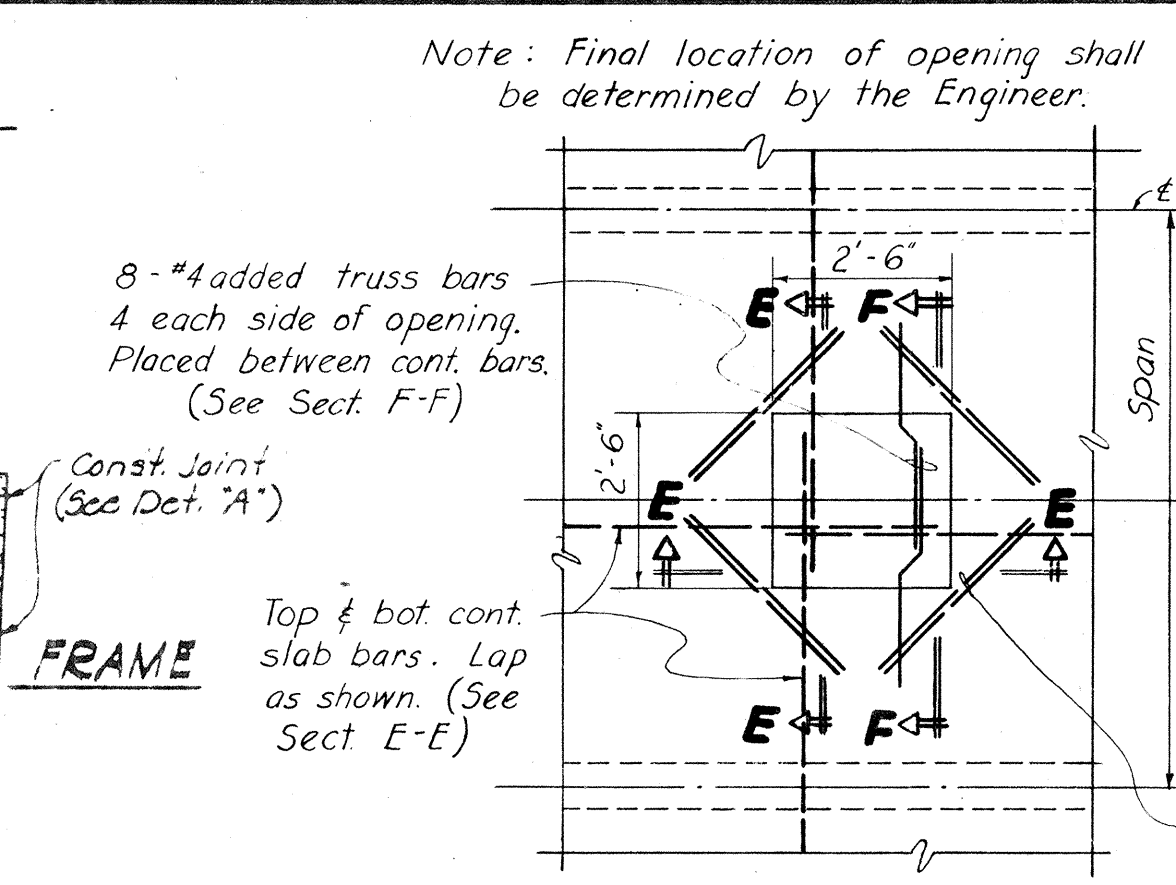


NOTE:
 No. 1 - Numbers (1) & (2) indicate sequence of placing bottom slab & girder stem concrete. (2) may be placed simultaneously with (1) when approved by the Engr. and provided that the (1) sections are placed in adjoining spans. For any deviation from the above the contractor shall submit a diagram 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" = 1/4 span "Y" = 1/5 span
 No. 5 - No lapping of main girder bars shall be permitted at construction joints.

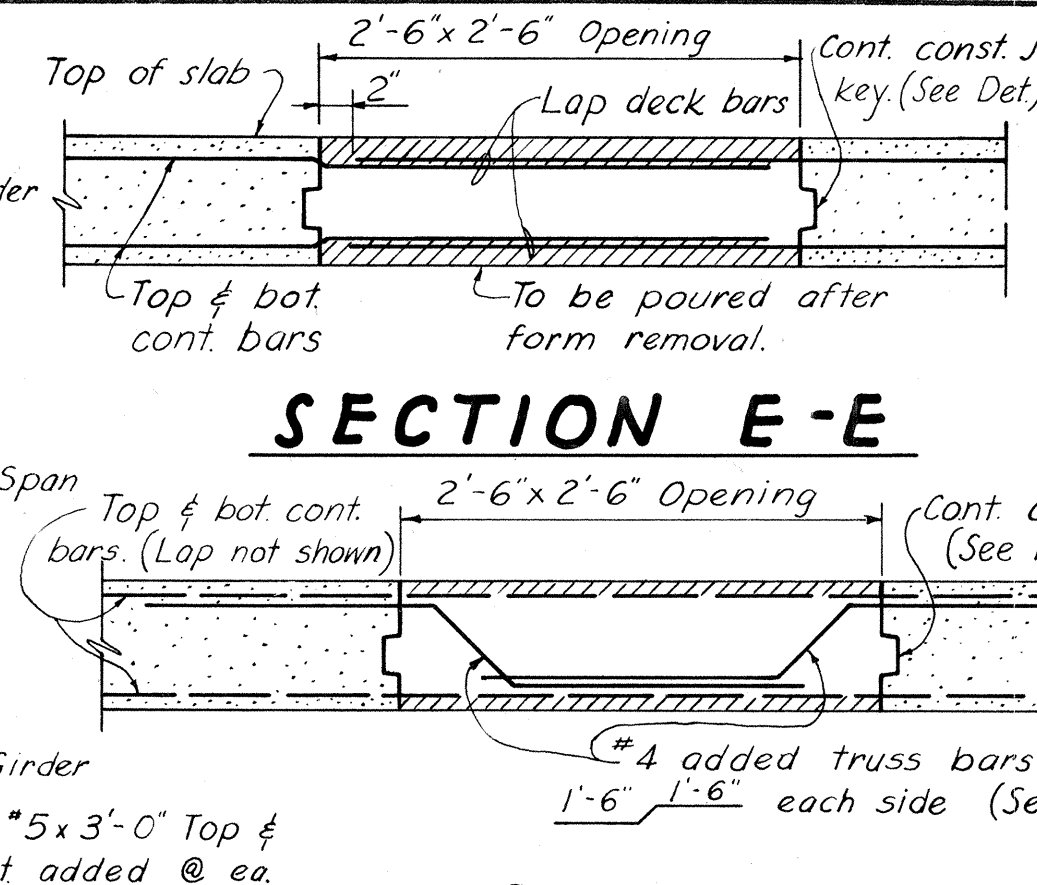
PLACING DIAGRAM FOR SUPERSTRUCTURE CONCRETE



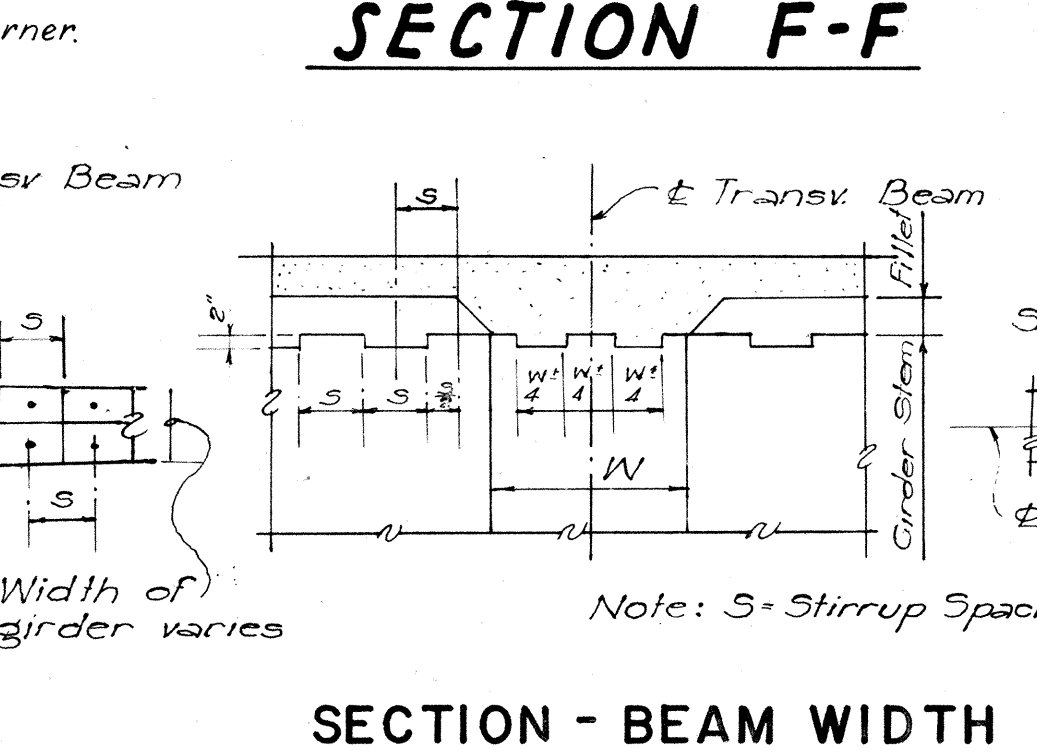
DETAIL - A



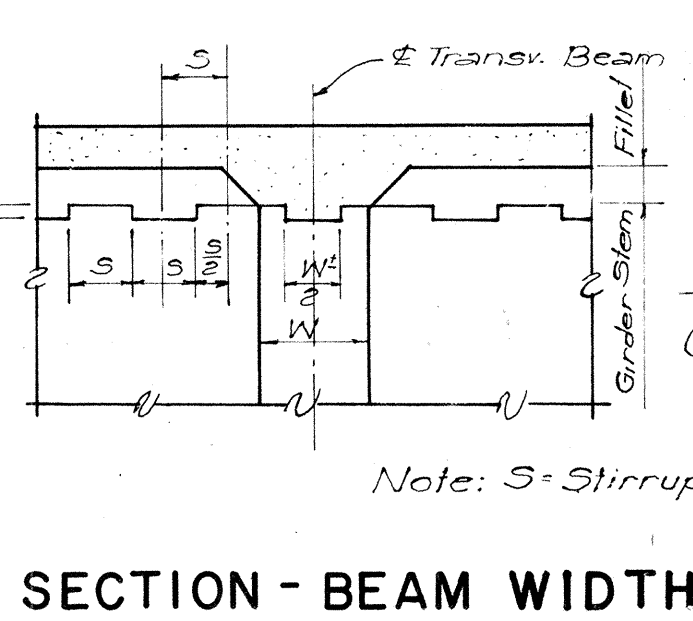
PART PLAN - DECK SHOWING FORM REMOVAL OPENING



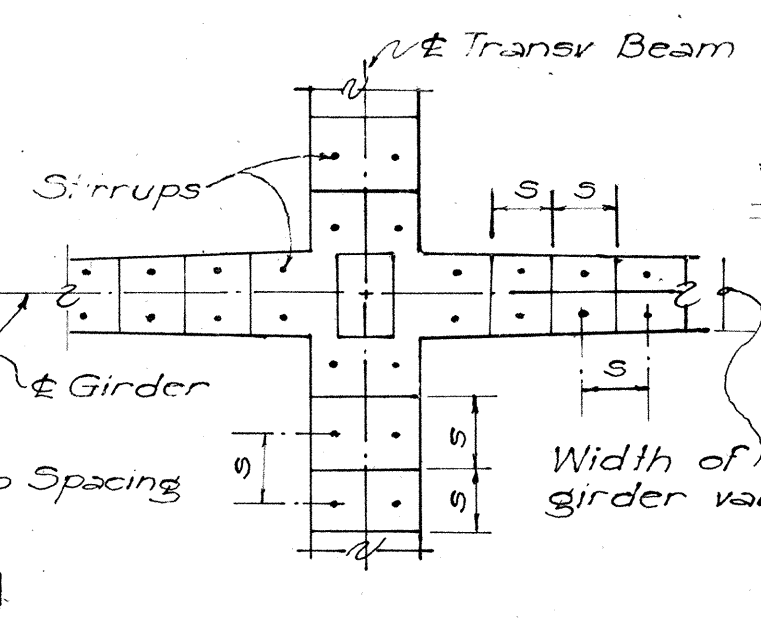
SECTION E-E



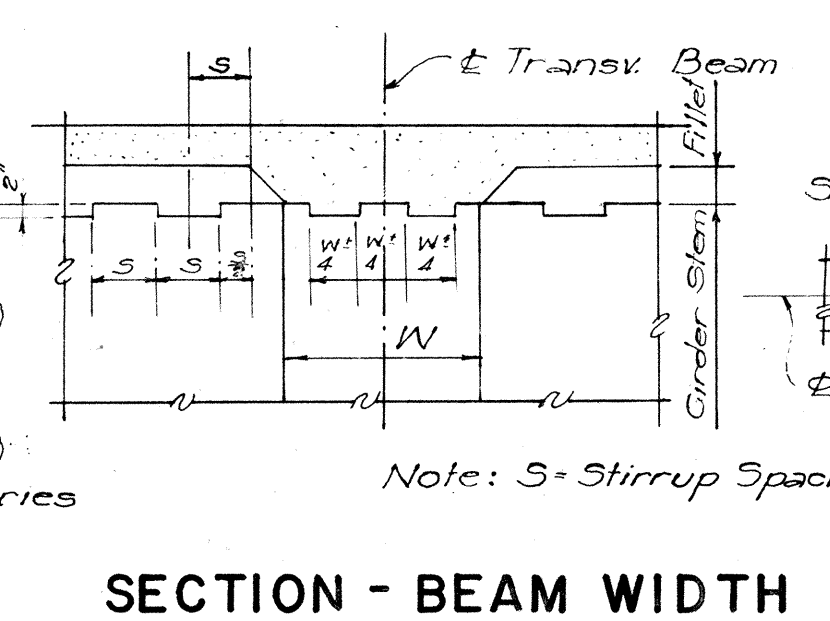
SECTION F-F



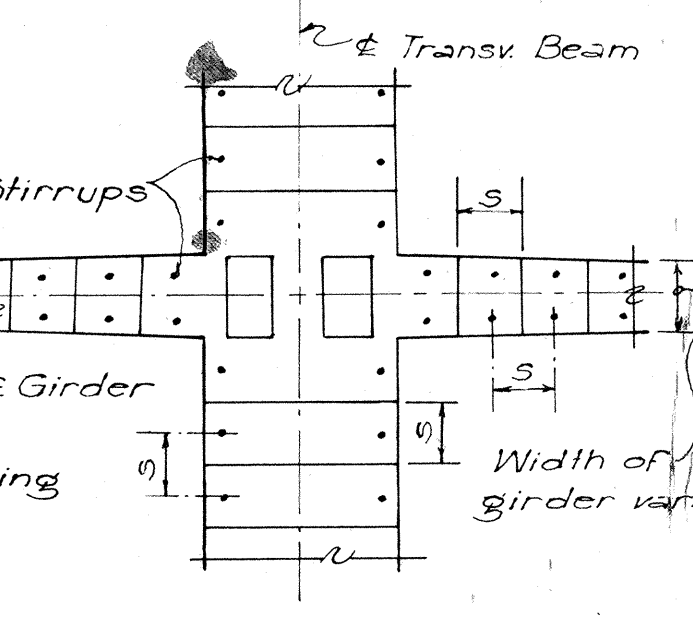
SECTION - BEAM WIDTH LESS THAN 2'-0"



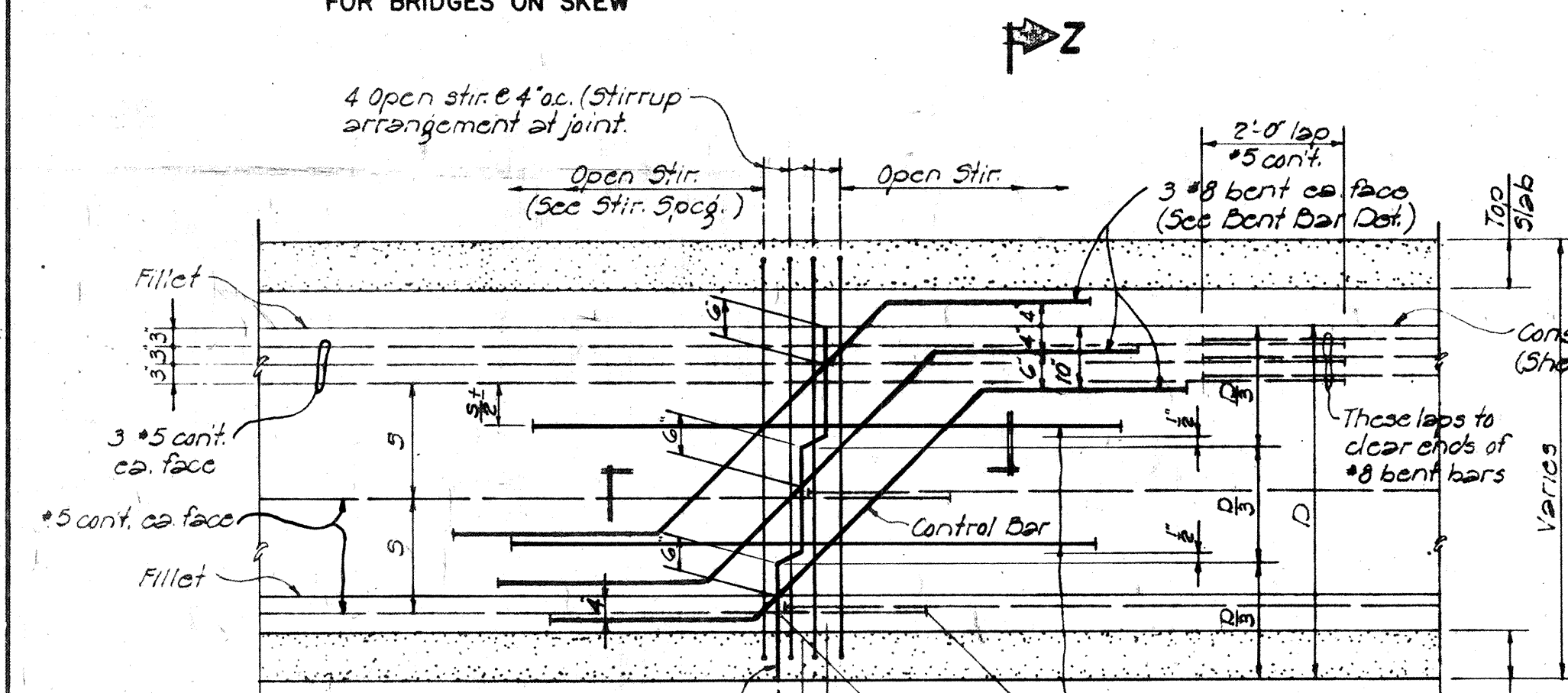
PLAN



SECTION - BEAM WIDTH MORE THAN 2'-0"

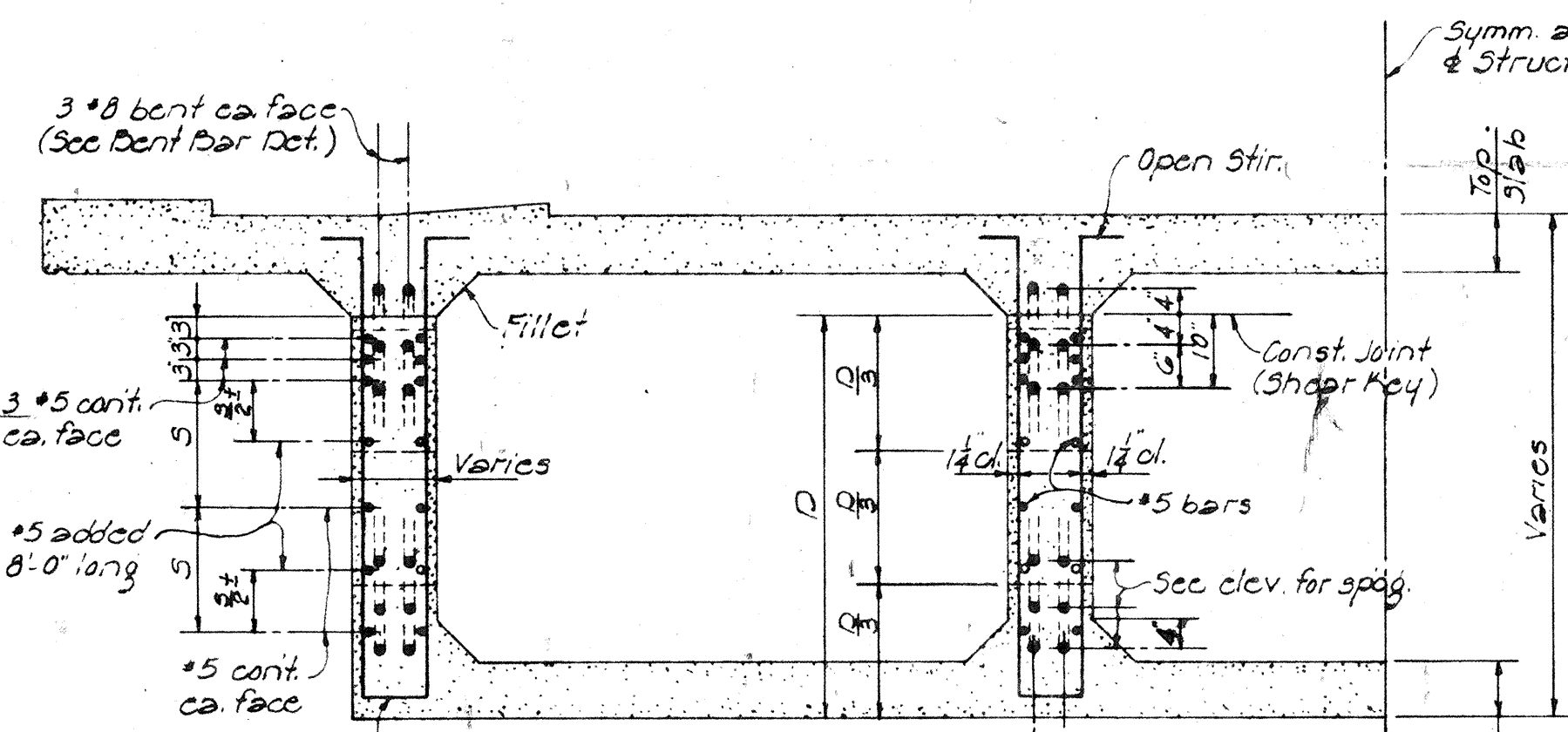


PLAN

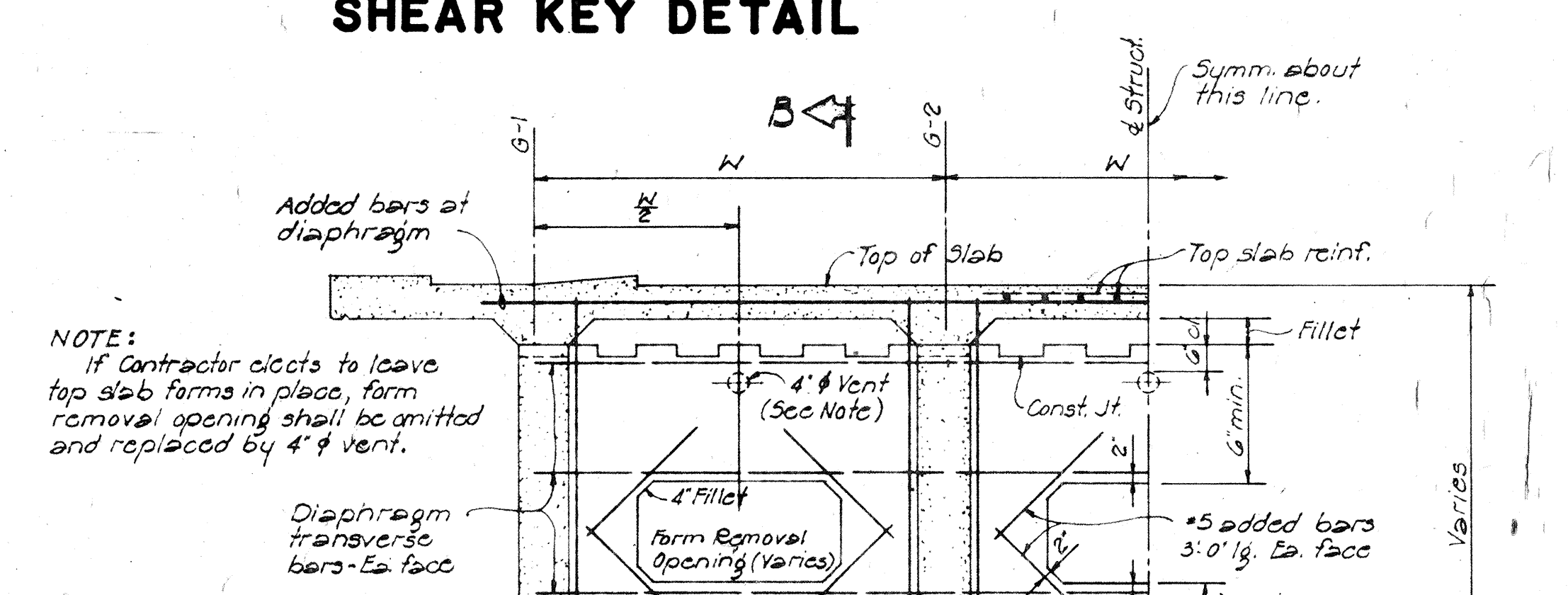


NOTE:
 D = Depth of girder stem to bottom of slab.
 S = Spacing of #5 const. girder stem long. bars.

GIRDER STEM CONST. JOINT

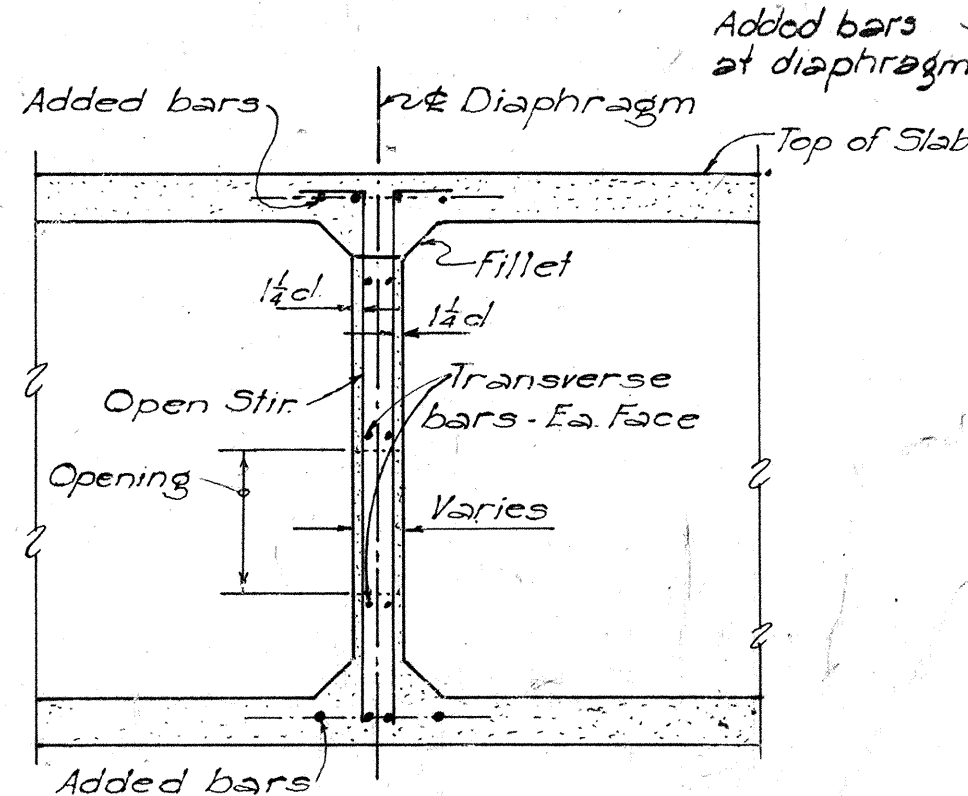


SECTION Z-Z



SHEAR KEY DETAIL

NOTE:
 If Contractor elects to leave top slab forms in place, form removal opening shall be omitted and replaced by 4" & vent (See Note).

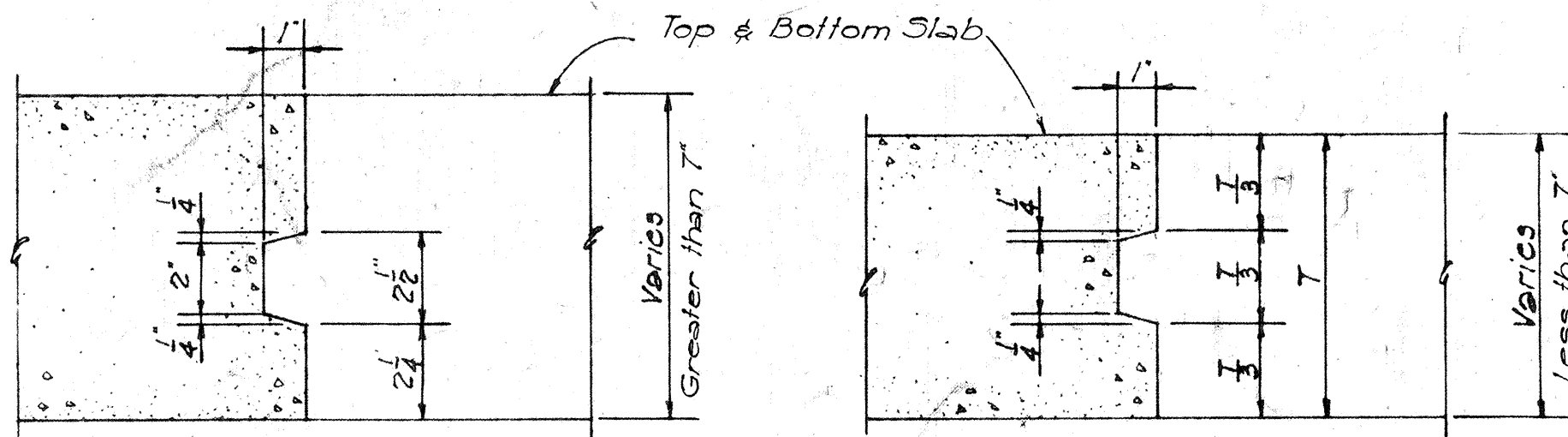


SECTION B-B

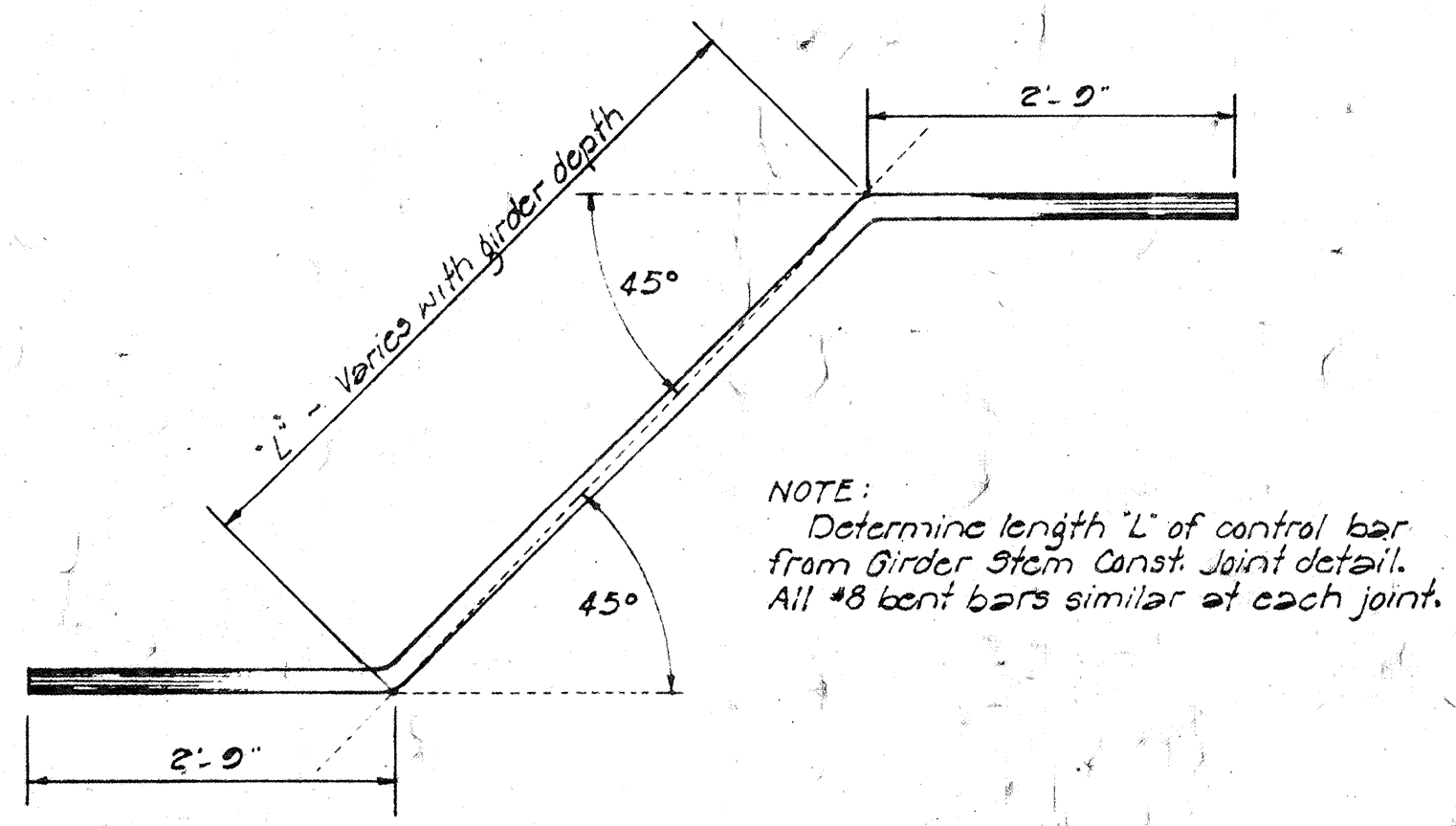


FORM REMOVAL OPENING DETAIL IN DIAPHRAGM

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



TOP AND BOTTOM SLAB CONST. JOINT



DETAIL - NO. 8 BENT BAR

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

HAWAII STATE HIGHWAY DEPARTMENT
 STATE OF HAWAII
STANDARD DETAILS
BOX GIRDER
 PALI HWY. PROJ. NO. BF-061-1(8)
 OUTBOUND LANES
 SCALES AS NOTED