

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	240A-01-67	1970	41	69

DESIGN NOTES

DESIGN SPECIFICATIONS: AASHTO

Standard Specifications for Highway Bridges (10th Edition) with subsequent interim specifications.

DESIGN LOADS: HS-20-44

DESIGN STRESSES:

- R.C. beams & slabs - See AASHTO Specifications and Special Provisions except as otherwise noted.

Class A	Class E
$f'_c = 3,000$ psi	4,500 psi
$f_c = 1,200$ psi	1,800 psi
$n = 10$	8
$f_s = \text{ASTM A615, see Special Provisions}$	

2. Prestressed Girders

$f'_c = 5,500$ psi | $\frac{1}{2}$ " dia. 7 wire strands
 $f'_{ci} = 4,000$ psi | Tensioning load = 25,200 lbs. per strand
Design load = 20,160 lbs. per strand.
Forms must be removed and the beams inspected before the strands are cut

GENERAL NOTES

MATERIALS:

- All concrete shall be class A except as otherwise noted on plans. Concrete for prestressed concrete girders see Standard Specifications and as noted under Design Stresses
- Preformed fabric bridge bearing pads are incidental to concrete and will not be paid for separately.
- An admixture conforming to the requirements of Subsection 711.03(B) Water-Reducing Admixtures, shall be incorporated into all concrete mixtures.

CONSTRUCTION METHODS:

- See Standard Specifications and Special Provisions
- For Concrete finish see Special Provisions. Concrete seats and creep blocks to be poured monolithically with pier. Top surfaces of conc seats to have a hard trowel finish.
- See details for additional surface finish.
- In general, top & edge of concrete deck of superstructure shall be constructed to follow the finish roadway vertical & horizontal curves and grades.
- Bridge decks may be finished by the manual finishing method.

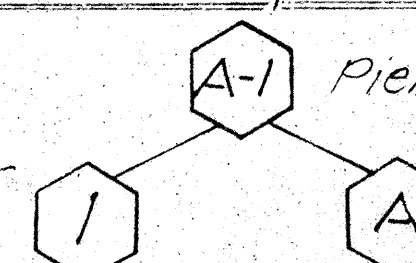
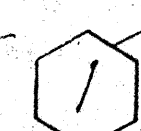
REFERENCE:

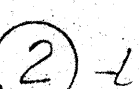
- Refer to Standard Detailed Drawings for additional details not covered by detailed plans.
- Typical Details drawing sheet Nos. T-1 thru T-5 inclusive refers to all bridge structures except for modification as may be required by special conditions. For such modifications see corresponding detailed plans.

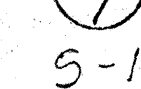
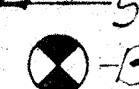
GENERAL:

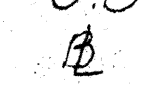
- Additional structural fill where indicated on detailed drawings shall be incidental to structural excavation, roadway excavation, or imported borrow.
- All items noted incidental will not be paid for separately.

SYMBOLS & ABBREVIATION

Location pier line number  Pier column number
 Column line alphabet

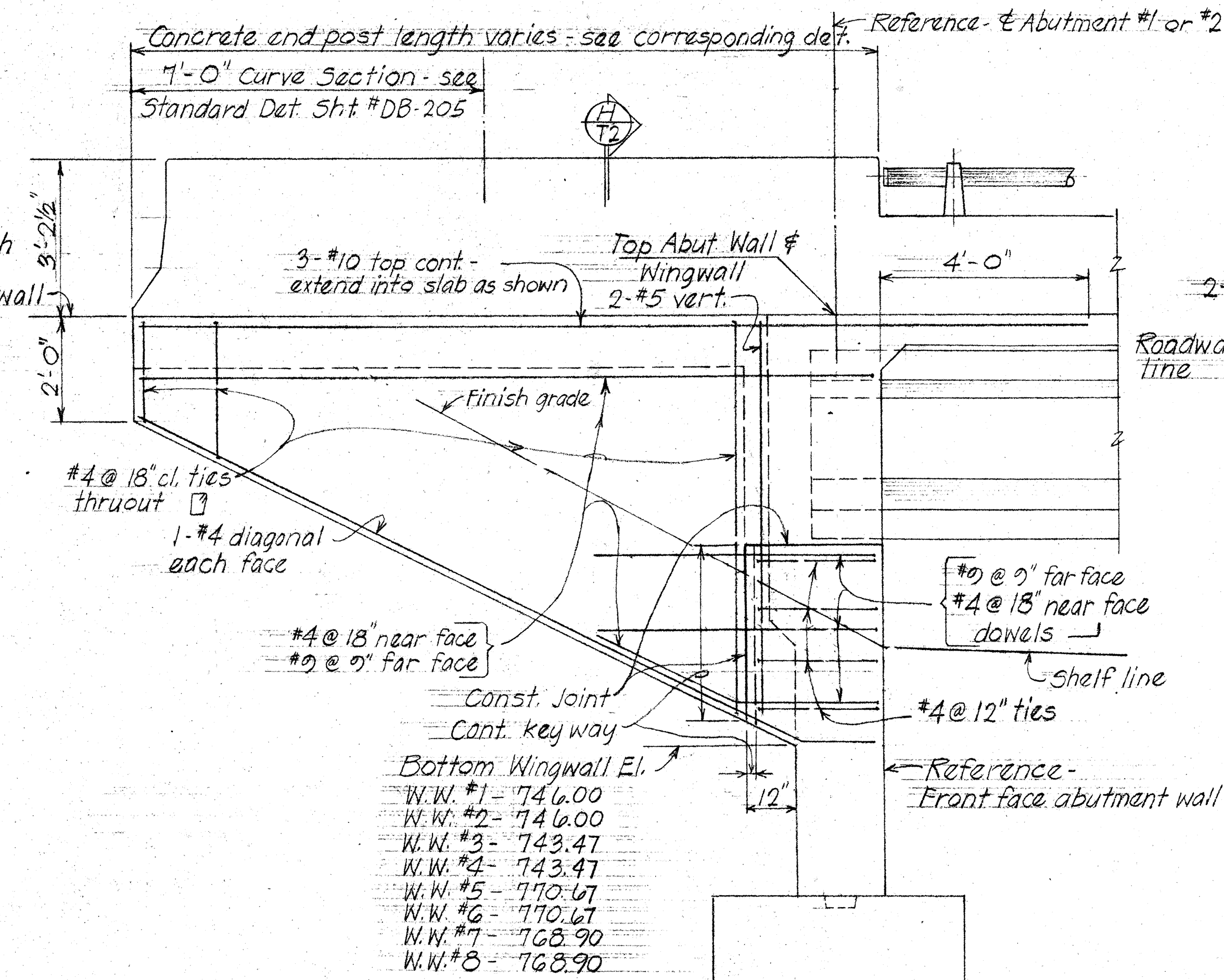
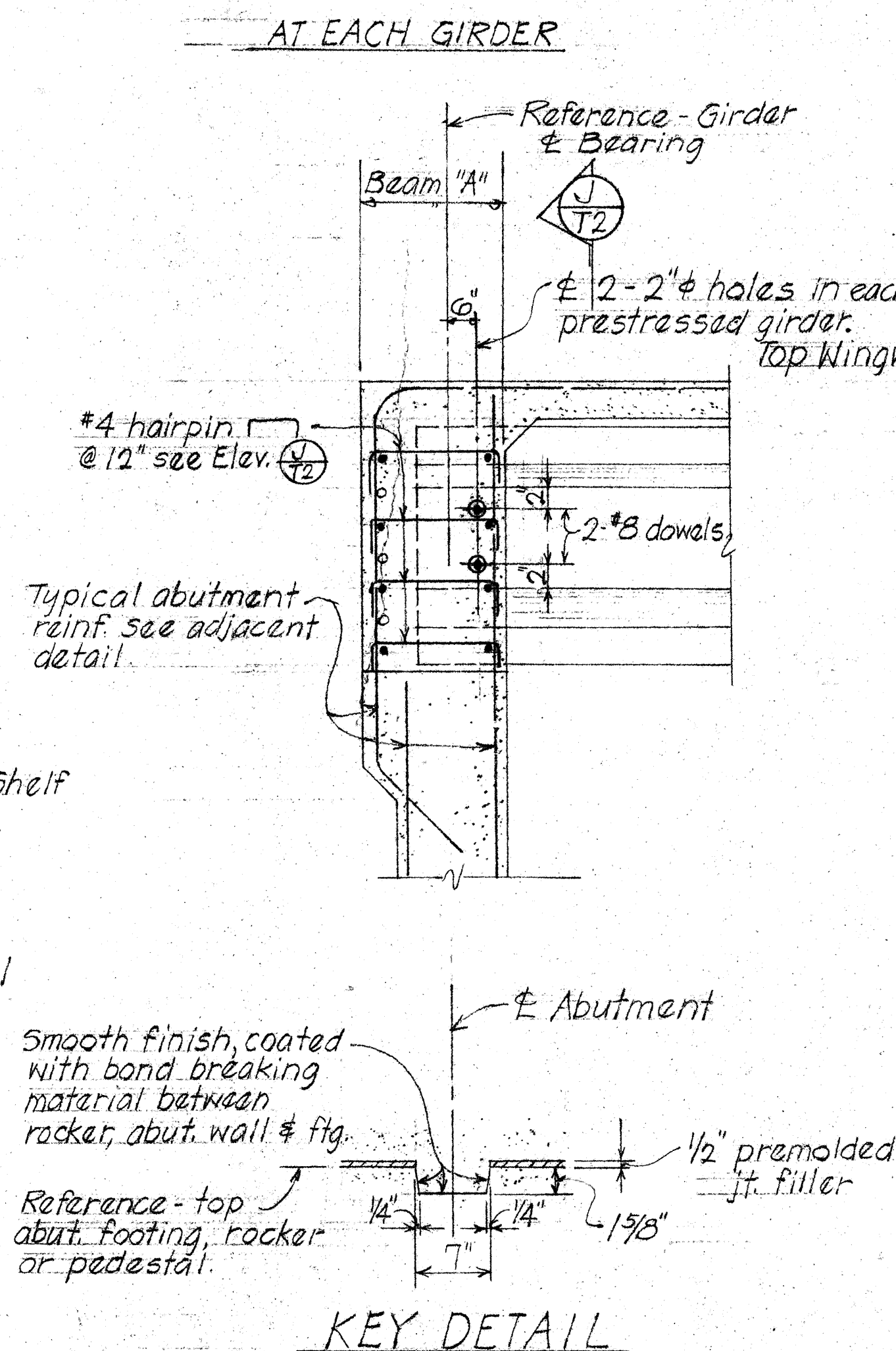
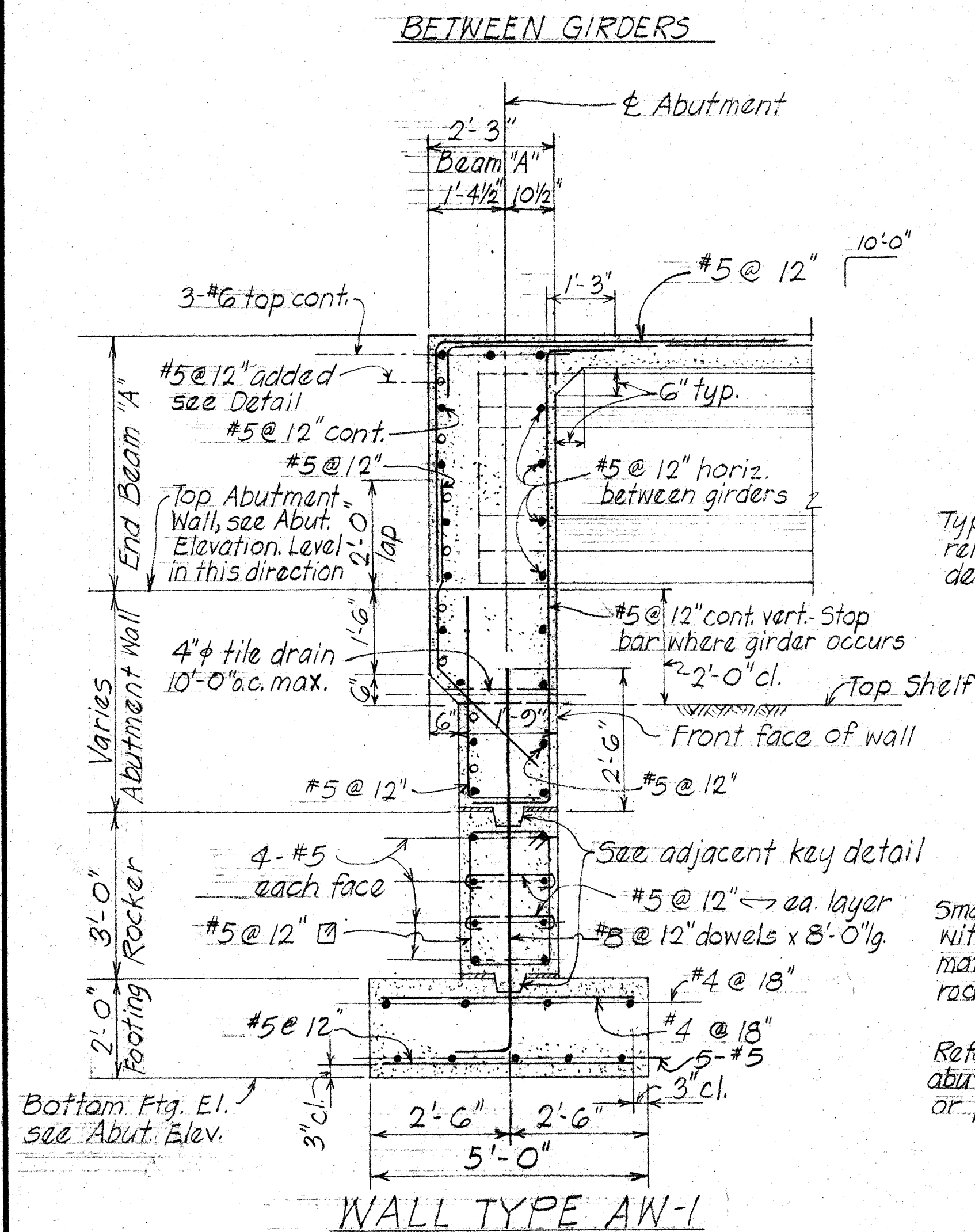
  -Location concrete seat line number
(00.0) -Bottom footing elevation
[00.0] -Pile cut-off elevation
{00.0} -Pile tip elevation

 -Section Designation
 -Sht. number detail is drawn on
5-1  -Boring number and designation

 -Centerline
F-1 -Spread Footing type
S.E. -Superelevation
G1, G-2 -Girder numbers.
I.B. -Inbound
O.B. -Outbound
 -Baseline
Pt. -Point
Exp. -Expansion
No. -Number
Cont. -Continuous
E.F. -Each Face
B.F. -Both Face
N.F. -Near Face
F.F. -Far Face
W.P. -Working Point
ea. -each
Bal. -Balance
Bot, Bott -Bottom
T -Top
Ext -Exterior
Int -Interior
oc -on center
Typ -Typical
G.R.P. -Grouted Rubble Paving
C.R.M. -Cement Rubble Masonry
W.W.F. -Welded Wire Fabric
Str. -Straight
Stirr. -Stirrup

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
TYPICAL DETAILS NOTES AND ABBREVIATIONS	
WAIPUNAHOE STREAM BRIDGE	
WAIKALOA STREAM BRIDGE	
Proj. No. 240A-01-67	April 1970
SHEET No. 7-1 OF 5 SHEETS	

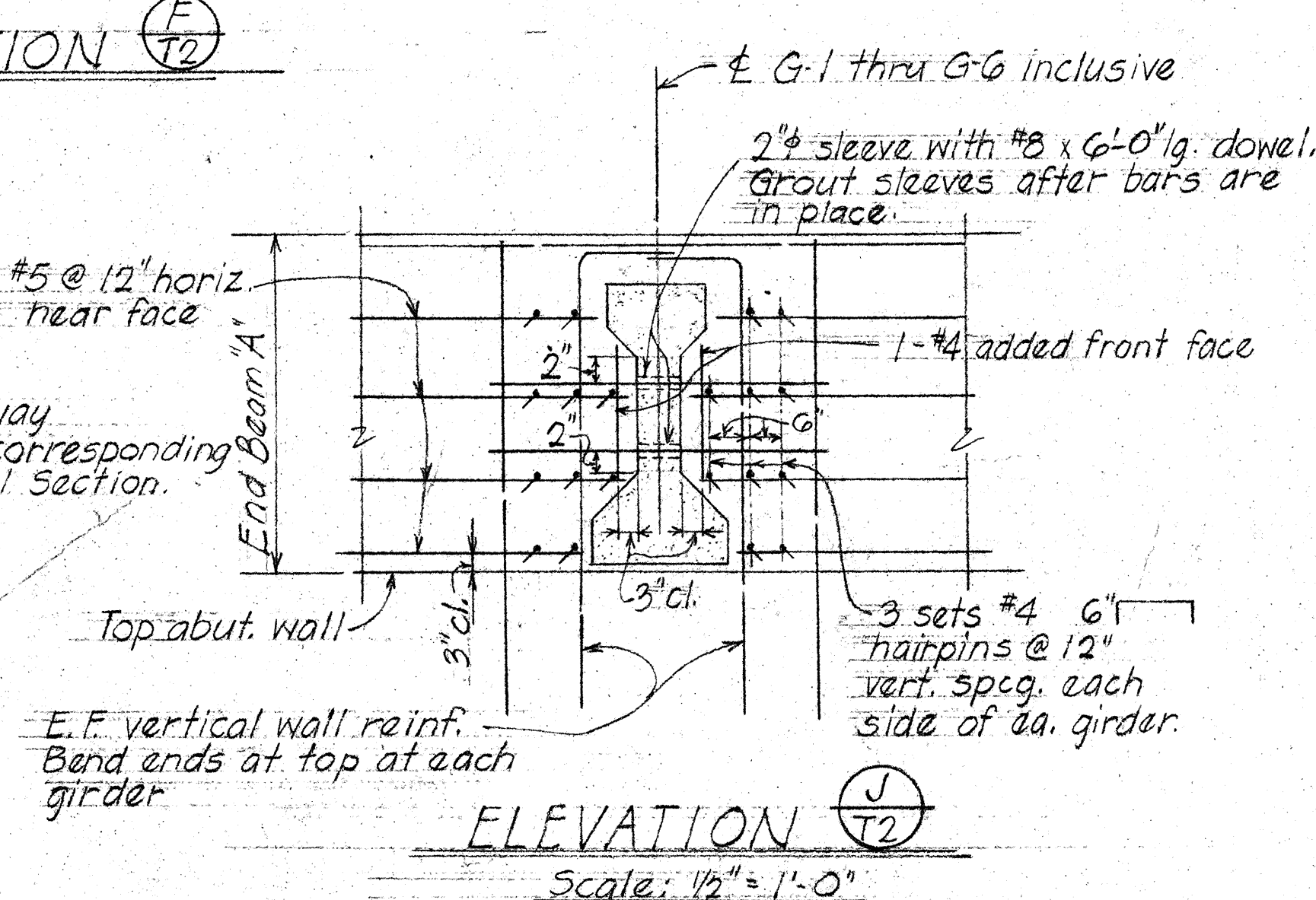
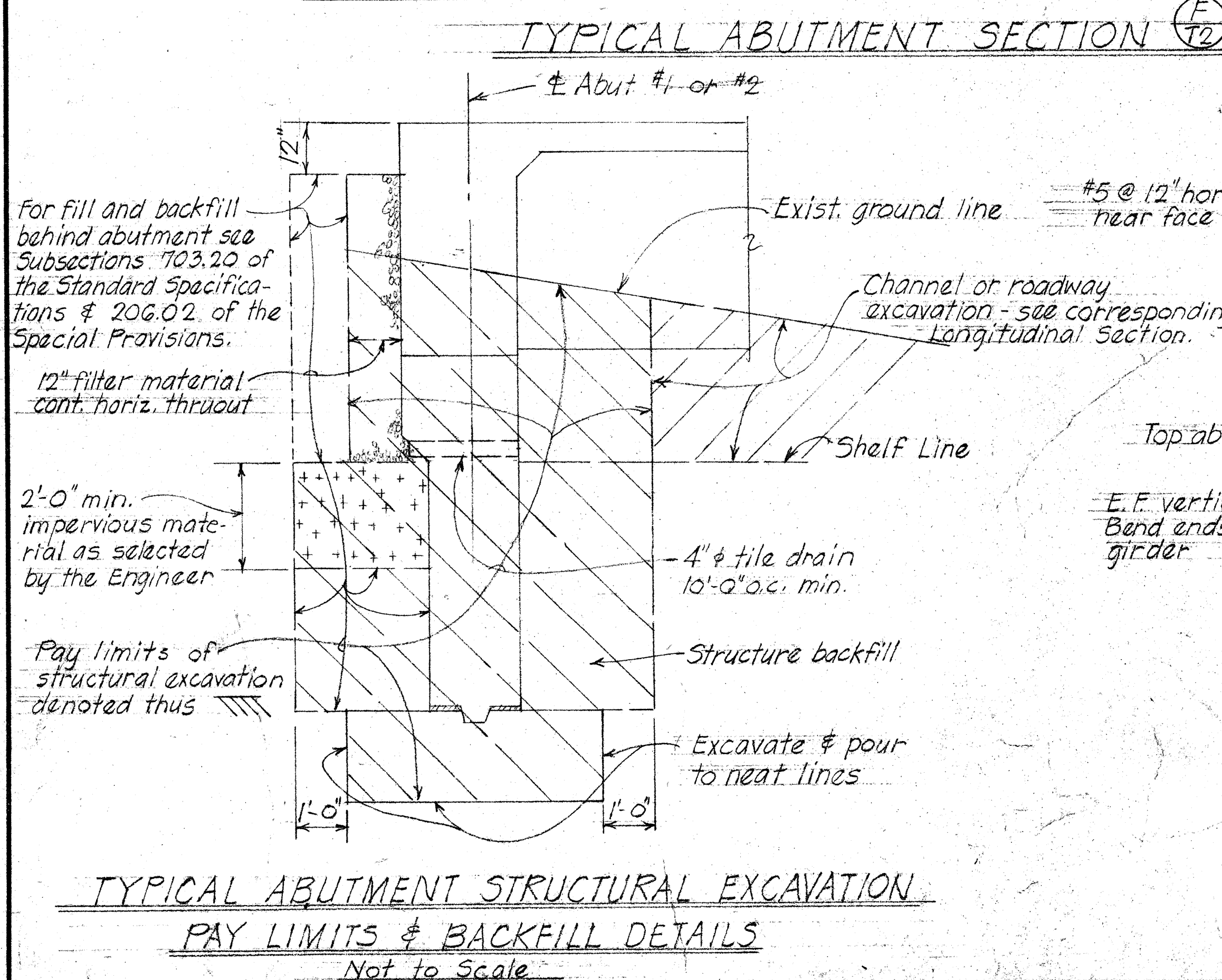
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	240A-01-67	1970	42	67



(G) ELEVATION-TYPICAL ABUTMENT WINGWALL

(H) SIMILAR EXCEPT OPPOSITE HAND

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



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAILS
ABUTMENT DETAILS

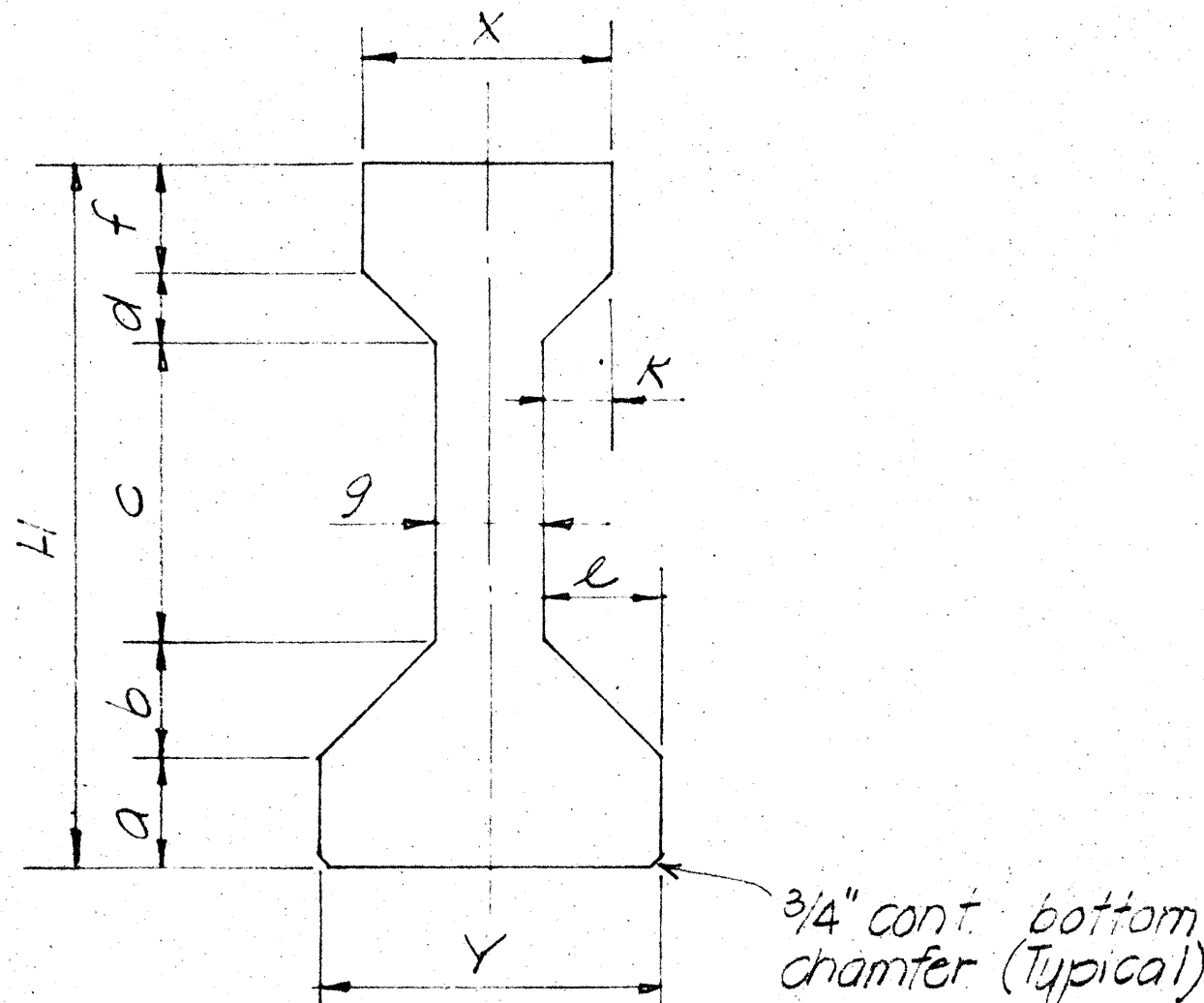
WAIPIUNAHOE STREAM BRIDGE
WAIKALOA STREAM BRIDGE

Project No. 240A-01-67 April 1970

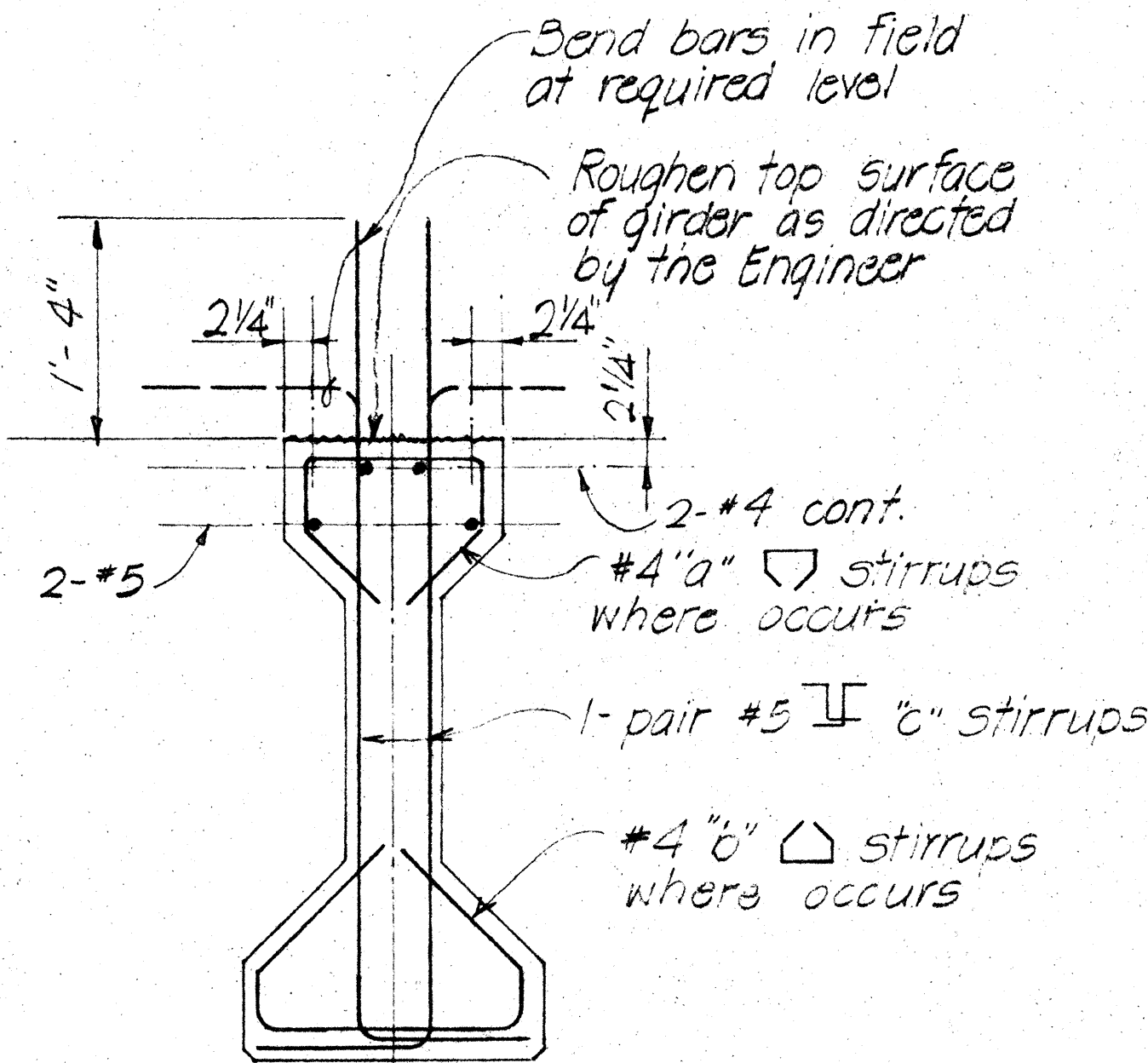
SHEET No. 72 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	240A-01-67	1970	43	62

AASHTO-PCI STANDARD BRIDGE GIRDER DIMENSION															
GIRDER TYPE	H	X	Y	a	b	c	d	e	f	g	J	k	l	m	n
I	2'-4"	1'-0"	1'-4"	5"	5"	11"	3"		4"	6"		3"	5"		
II	3'-0"	1'-0"	1'-6"	6"	6"	1'-3"	3"		6"	6"		3"	6"		
III	3'-9"	1'-4"	1'-10"	7"	7 1/2"	1'-7"	4 1/2"		7"	7"		4 1/2"	7 1/2"		
IV	4'-6"	1'-8"	2'-2"	8"	8"	1'-11"	6"		8"	8"		6"	9"		

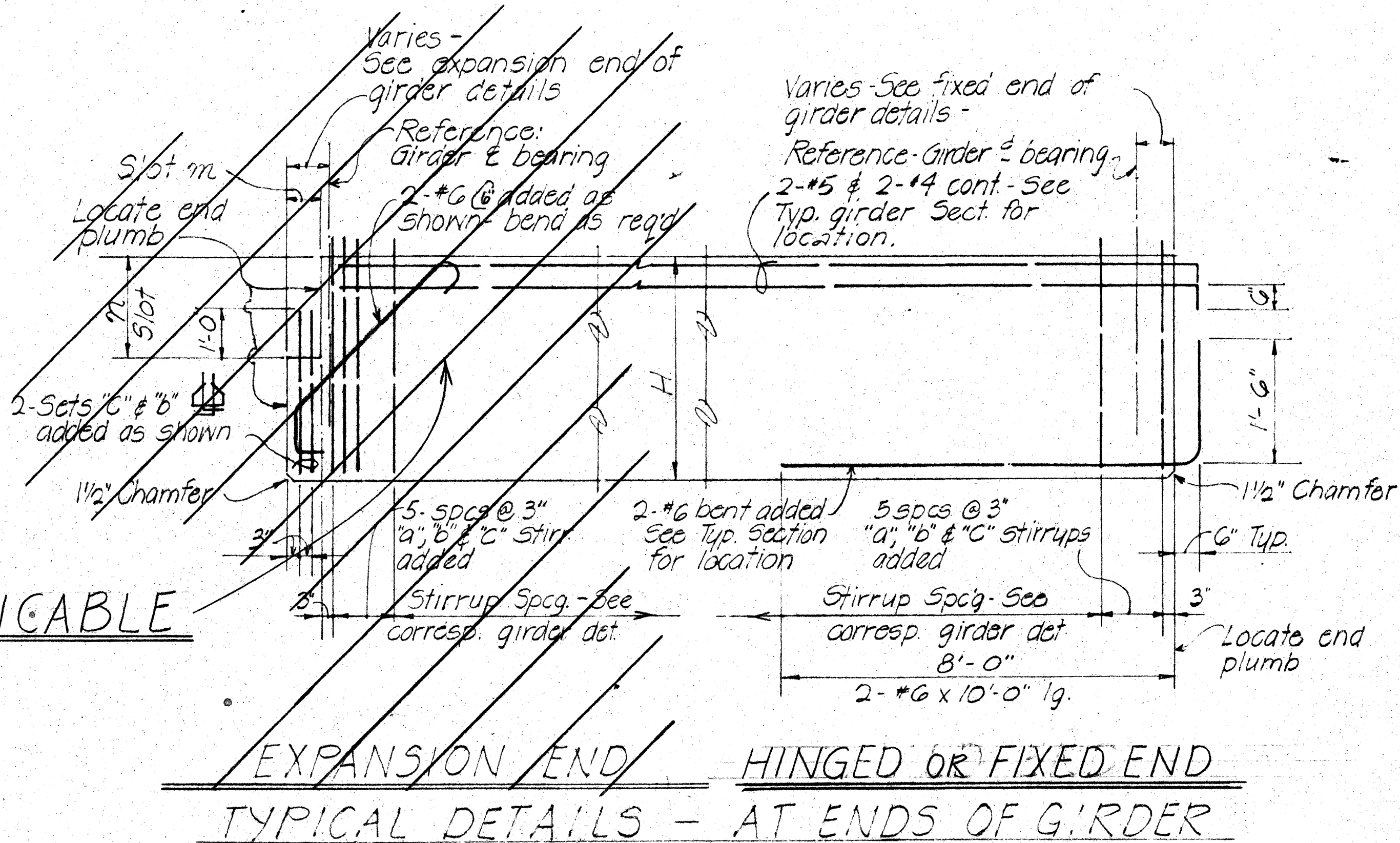


TYPE I THRU TYPE IV



TYPE I THRU TYPE IV
TYPICAL SECTION PRESTRESSED CONC. GIRDERS

BUNDLING OF PRESTRESSING REINFORCEMENT	
ARRANGEMENT AND CLEARANCE FOR POST TENSIONED UNITS	ARRANGEMENT AND CLEARANCE FOR PRETENSIONED STRANDS
- Horizontal clearance between units equals 2" min. - Units may be bundled vertically in groups of 3 maximum. - Vertical clearance between bundled units equal 3" minimum. - Approval of the Engineer is required for deviation.	- Strands may be bundled in groups as shown. - The minimum distance "S" between groups or individual strands is 2" for 1/2" strands. "S" is measured between centers of adjacent strands.
	CASE I CASE II



EXPANSION END / HINGED OR FIXED END
TYPICAL DETAILS - AT ENDS OF GIRDER

GENERAL NOTES

DESIGN LOADS: HS-20-44
 1- Prestressed Girders -
 f_c = 5000 psi / 1/2" diam wire strands
 f_{ti} = 1500 psi / Tensioning Load = 25,200 lbs. per. strands.
 Design Load = 20,160 lbs. per. strands
 Forms must be removed and the beams inspected before the strands are cut.
 For additional holes and inserts in prestressed girders for beam connections, refer to corresponding beam details.

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

TYPICAL DETAILS

PRESTRESSED GIRDER

WAIKALOA STREAM BRIDGE

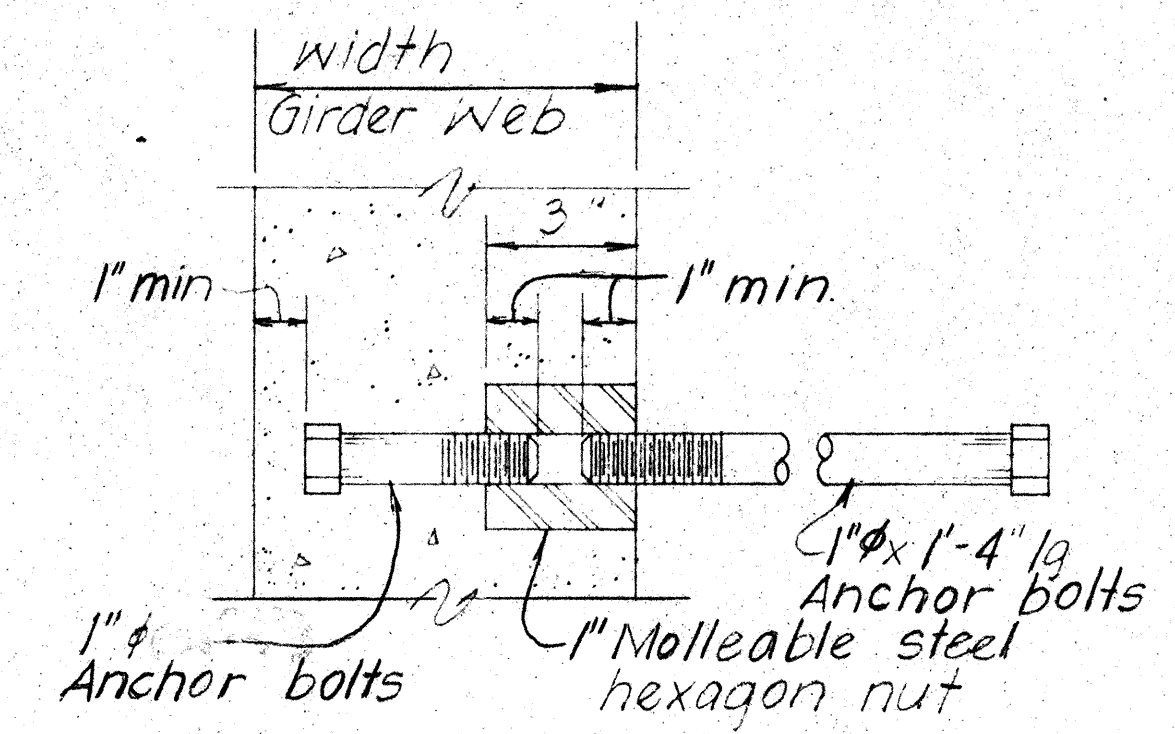
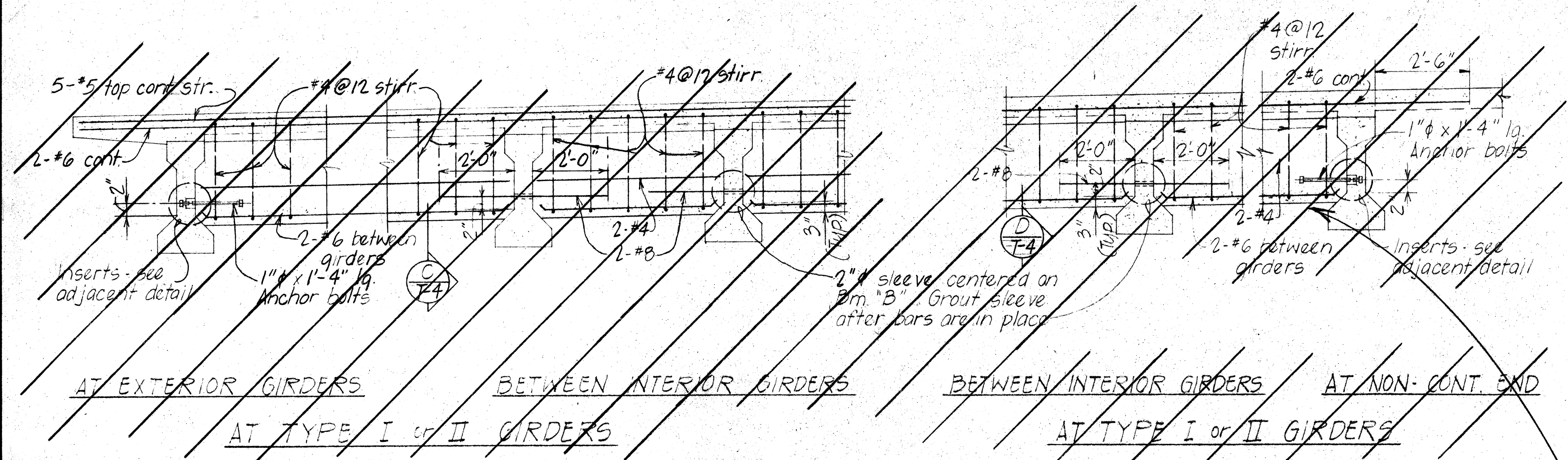
Project No. 240A-01-67

April 1970

SHEET No. 7-30 OF 5 SHEETS

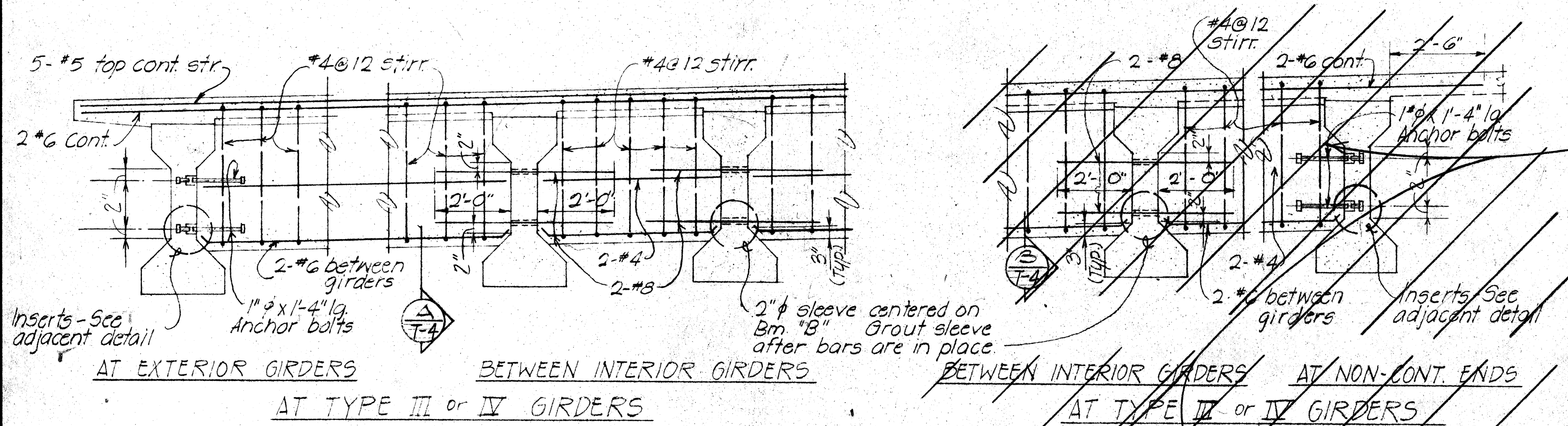
DATE	
SURVEY PLOTTED BY	
PLAN	
DESIGNED BY	
NOTE BOOK	
CHECKED BY	
No.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	240A-01-67	1970	44	67



INSERT DETAIL
Scale: 3" = 1'-0"

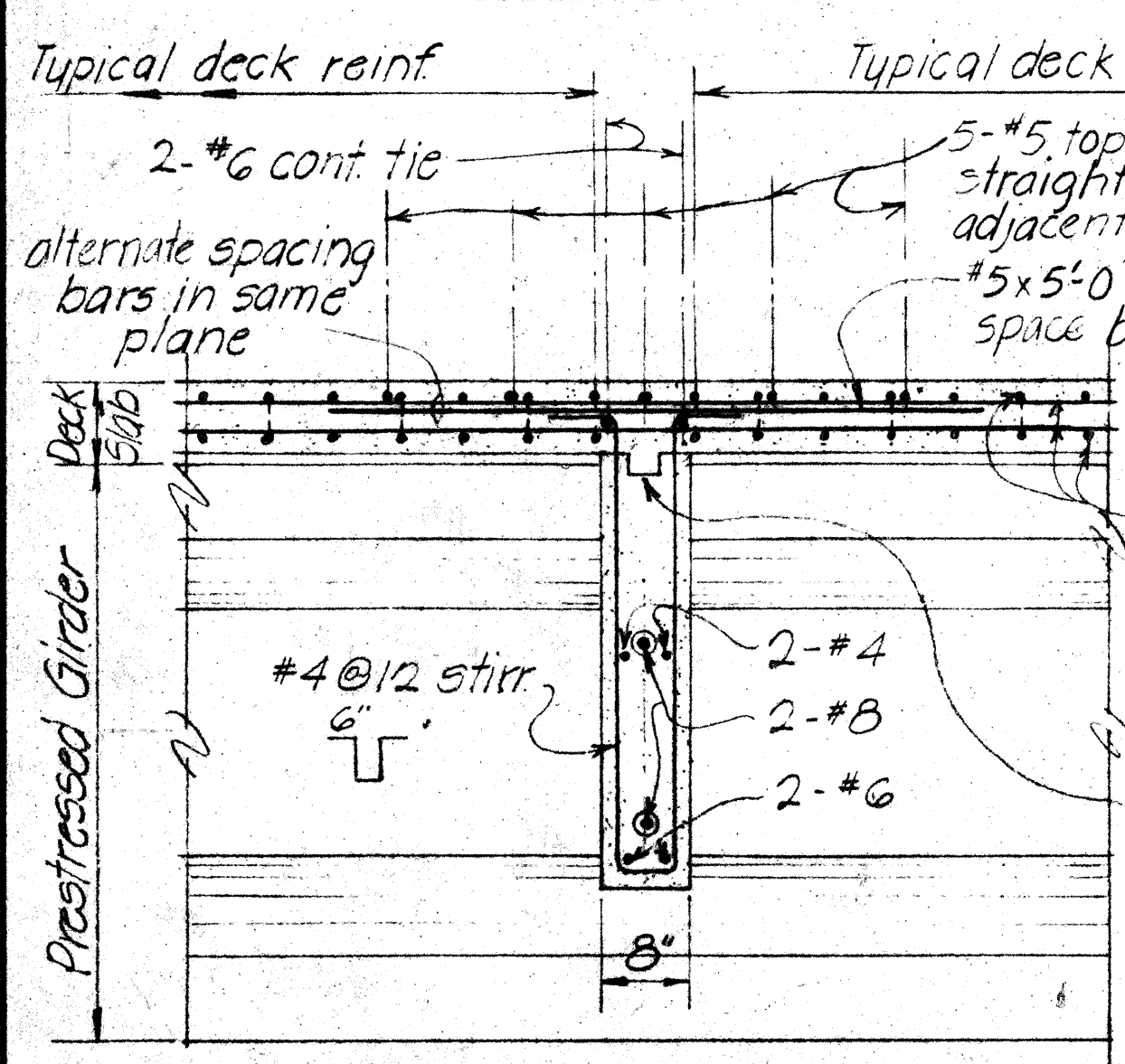
Note: Anchor bolts & inserts incidental to concrete and will not be paid for separately.



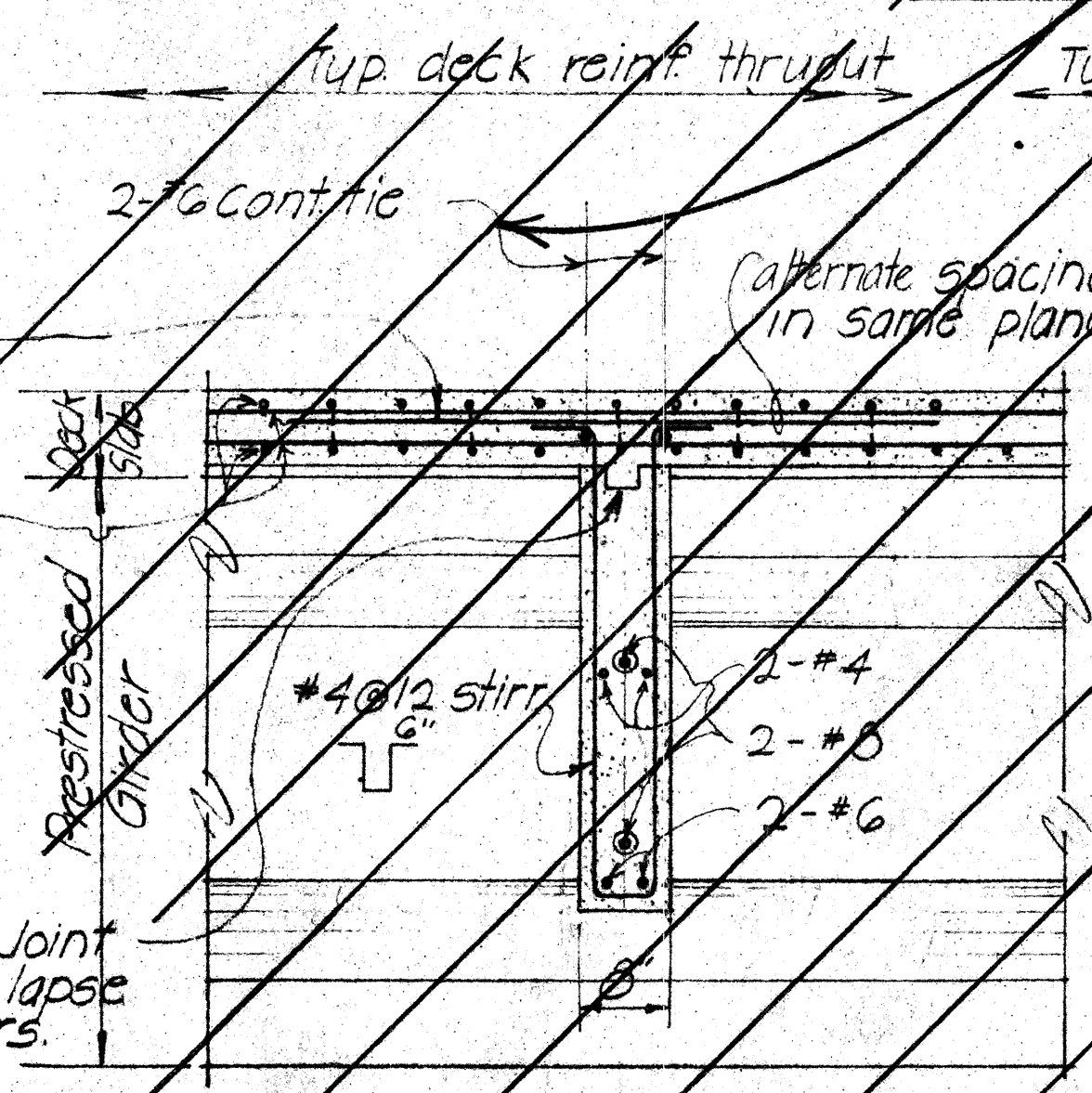
NOT APPLICABLE

TYPICAL BEAM "B" DETAIL Scale: 1/2" = 1'-0"

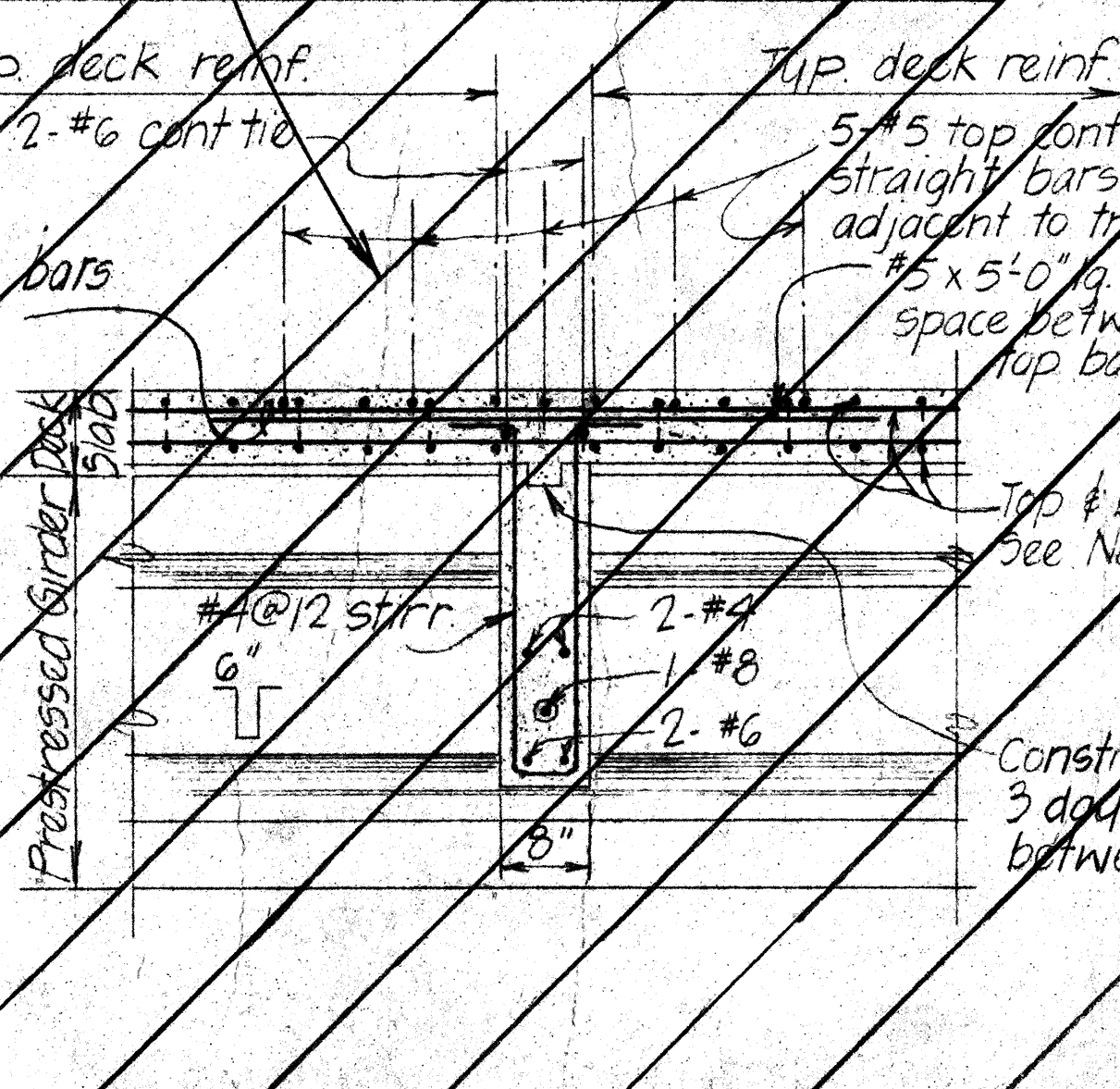
TYPICAL BEAM "Ba" DETAIL Scale: 1/2" = 1'-0"



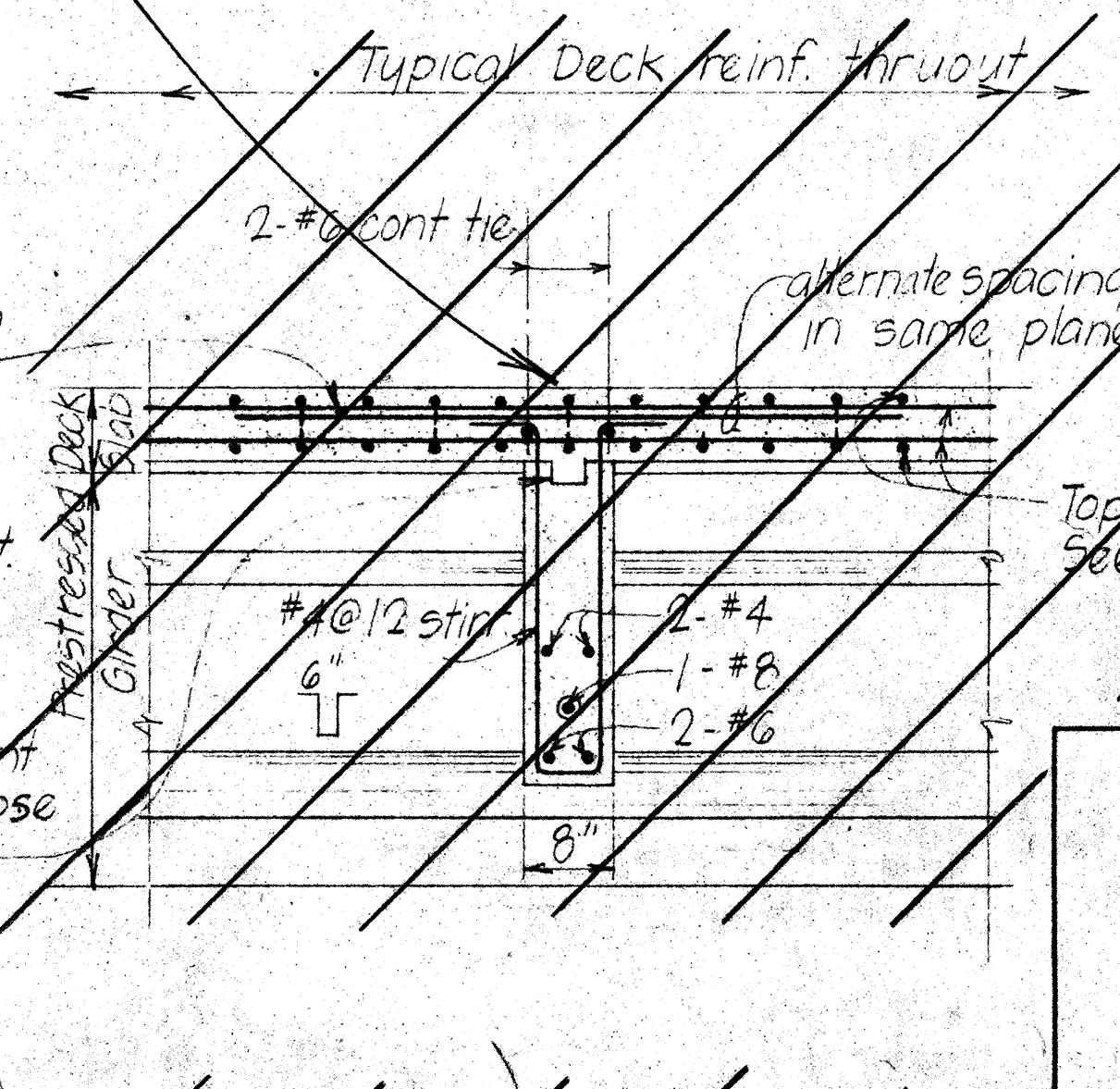
TYPICAL SECTION
Scale: 3/4" = 1'-0"



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



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



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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAILS
BEAM "B", "Ba"

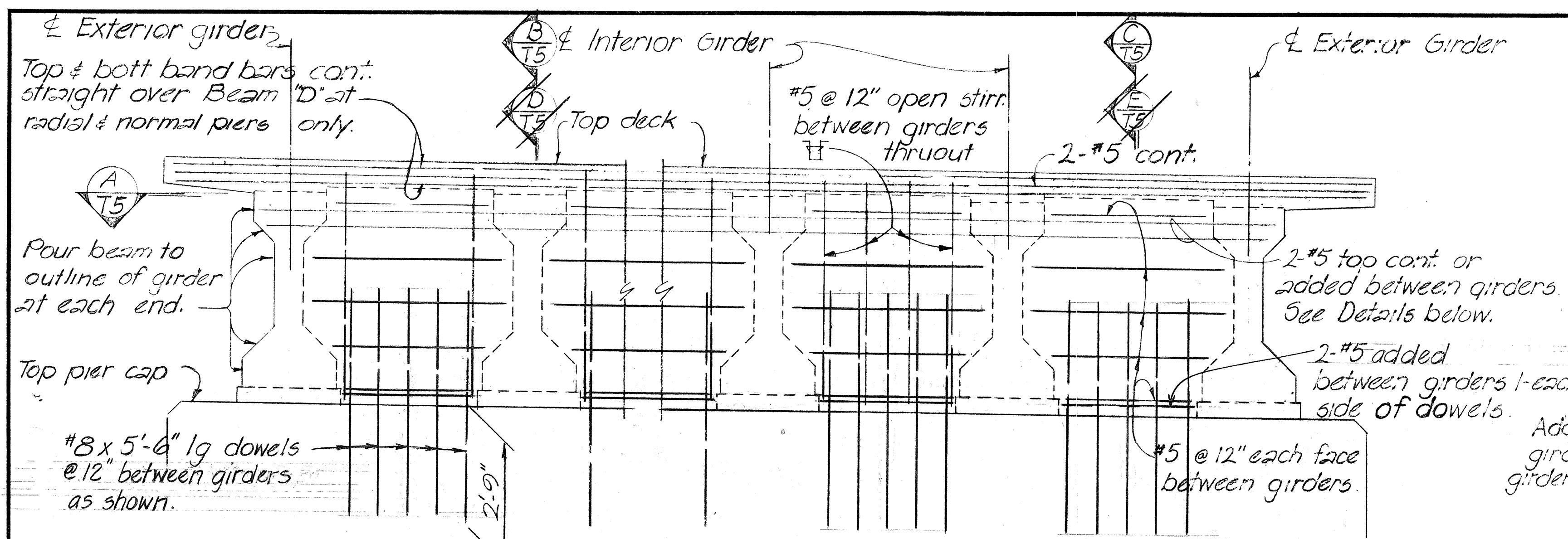
WAIKALOA STREAM BRIDGE
WAIKALOA STREAM BRIDGE

Project No. 240A-01-67 April 1970

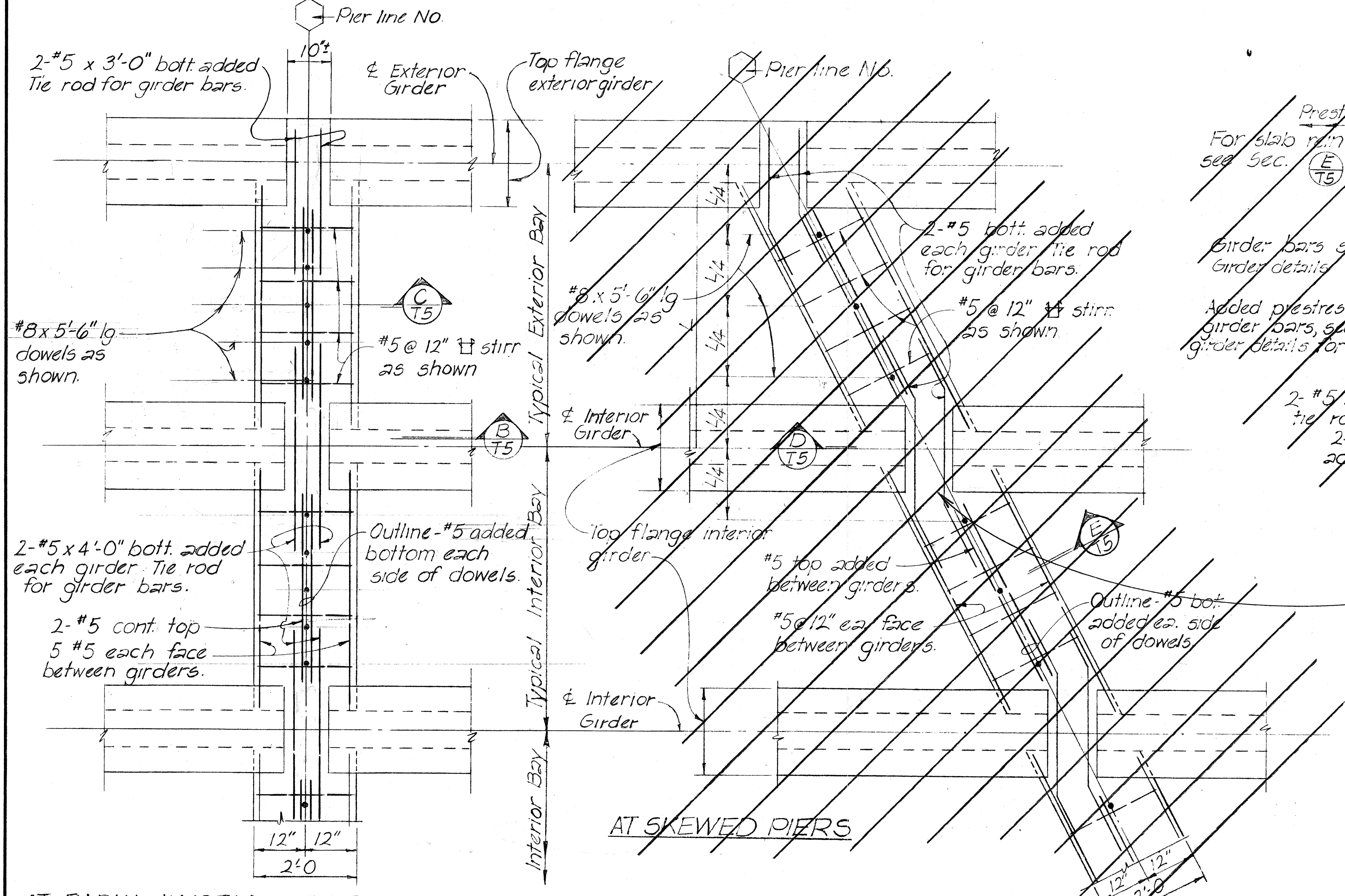
SHEET No. 4 OF 5 SHEETS

DATE
SURVEY PLOTTED BY
DRAWN BY
CHECKED BY
NOTES
NO.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	240A-01-67	1970	45	69

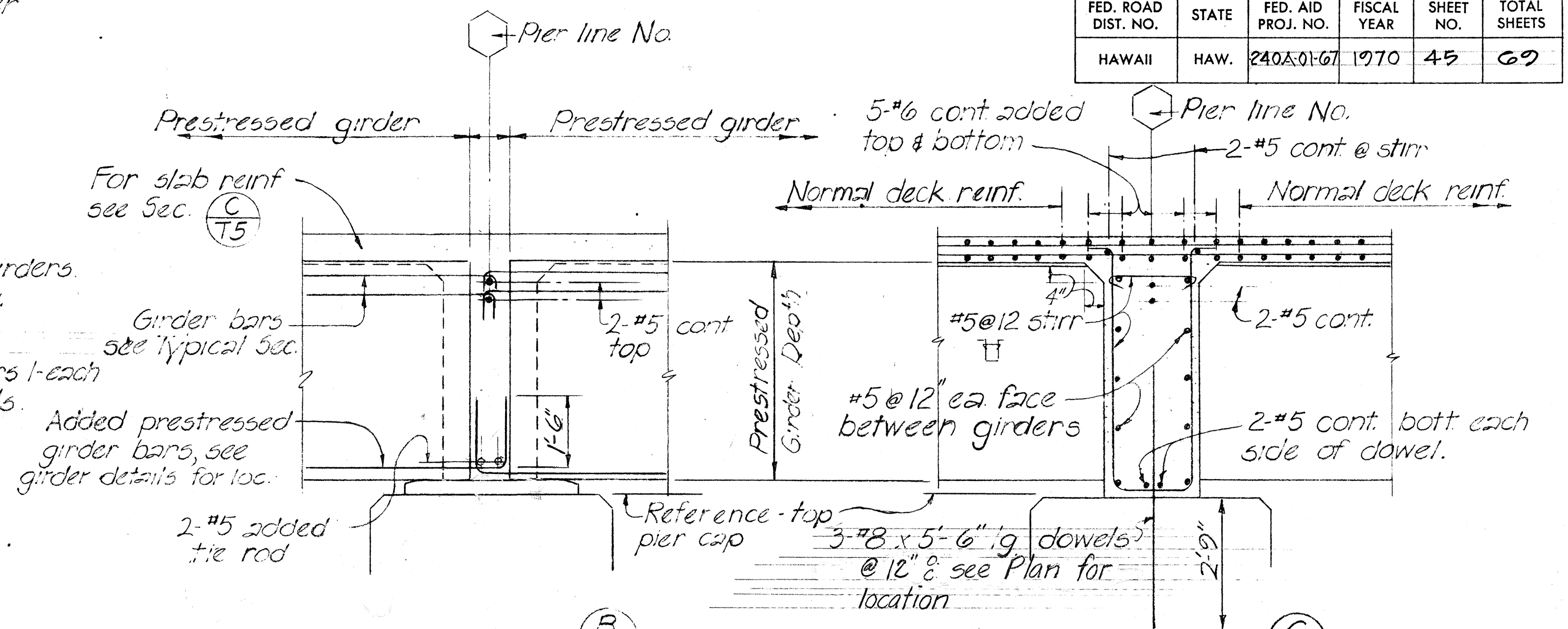


ELEVATION - TYPICAL TRANSVERSE BEAM "D"



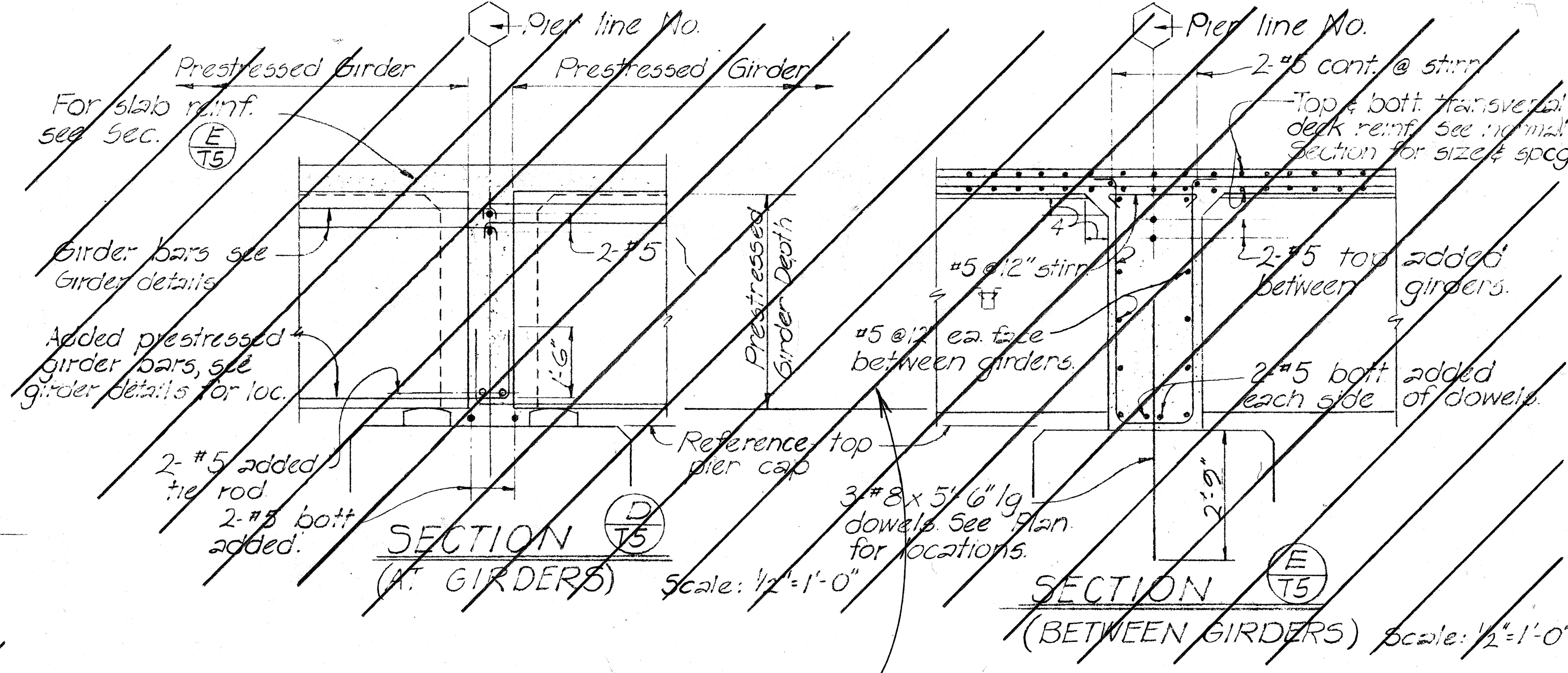
AT RADIAL & NORMAL PIERS

TYPICAL SECTION



SECTION (AT GIRDERS)

SECTION (BETWEEN GIRDERS)



NOT APPLICABLE

AT SKEWED PIERS

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
 TYPICAL DETAILS
 BEAM "D"
 WAIKALOA STREAM BRIDGE
 Project No. 240A-01-67 April 1970
 SHEET No. 7-5 OF 5 SHEETS

5. Light Standard, Metal railing

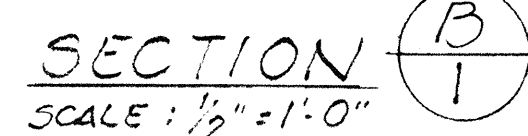
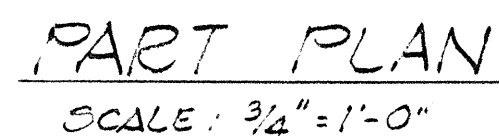
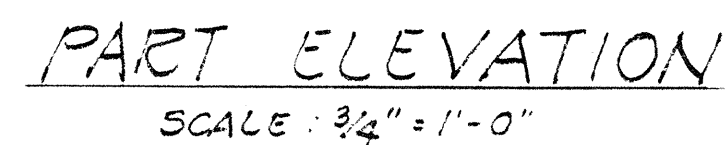


The contractor shall layout the railing to provide 3 cont. panels whenever possible. 2 or 4 cont. panels will be permitted to complete the layout when 3 cont. panels cannot be made. Single panels will not be permitted.

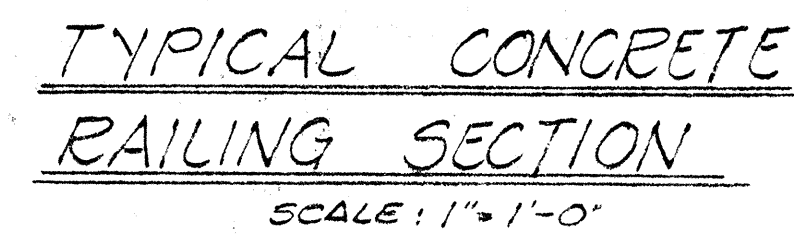
2. Rail Posts shall be normal to grade.
3. Provide double posts at each expansion jt., fixed bridge jt., continuous support, and as shown on detailed drawing.



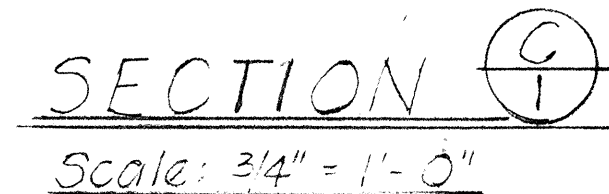
INTERMEDIATE



SCALE AS NOTED



SCALE: 1" = 1'-0"



Paul T. Yamashita
BRIDGE DESIGN ENGINEER

Paul T. Yamashita
For ASSISTANT CHIEF, ENGINEERING

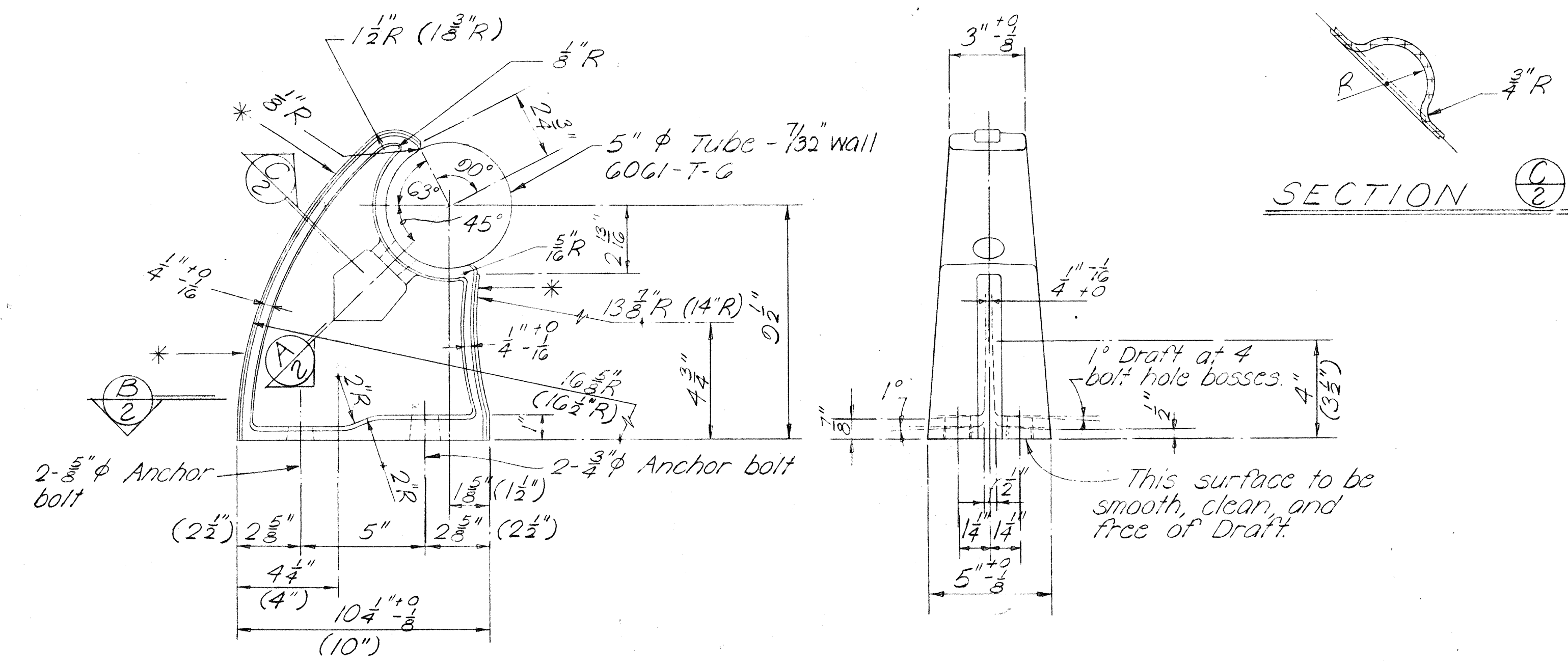
1-28-70
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL BRIDGE RAILING
ONE RAIL COMBINATION TYPE
ON PARAPET

Date October 1969

SHEET No. 1 OF 2 SHEETS DB-200-1



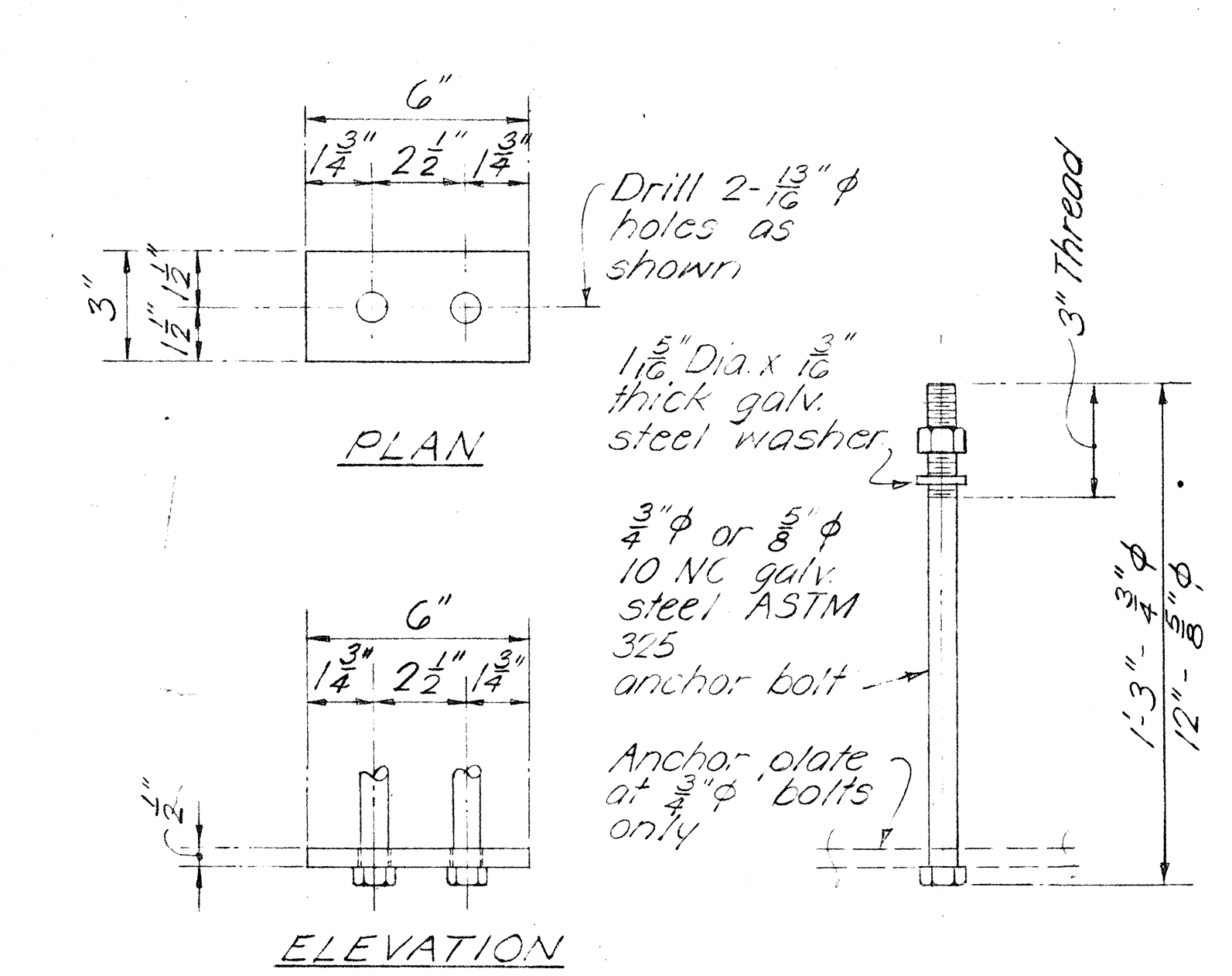
SIDE ELEVATION

END ELEVATION

NOTE:
 * Casting to be supplied with a standard scratch brush finish on entire gating rib surface and as indicated by an asterisk (*). Finish shall be approved by the Engineer.
 Casting to be neatly trimmed and any protruding flash to be broken off. Unless otherwise specified, draft angles to be 3°, corner radii to be 3/32" R, fillet radii to be 3/8" R, casting tol. to be ± 1/16", wall thickness to be ± 1/32". Dimensions may be as shown or as shown in parenthesis ().

TYPICAL RAIL POST DETAILS

Scale: 3" = 1'-0"



PLAN

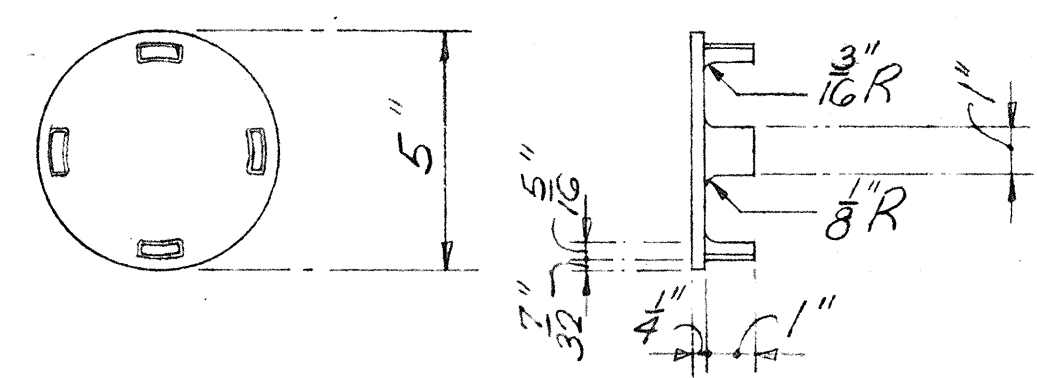
ELEVATION

ANCHOR BOLT DETAIL

TYPICAL RAIL POST

STEEL ANCHOR BOLT ASSEMBLY

Scale: 3" = 1'-0"



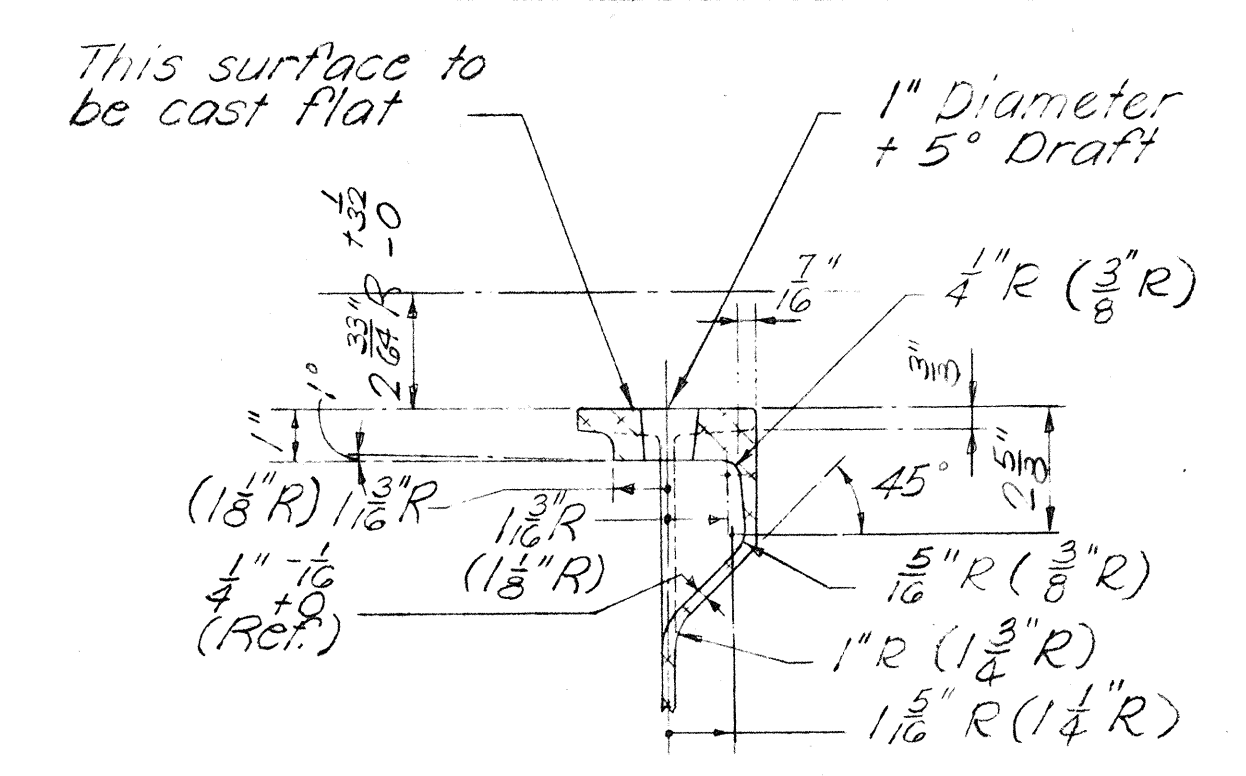
All draft angles = 3°

RAIL CAP DETAIL

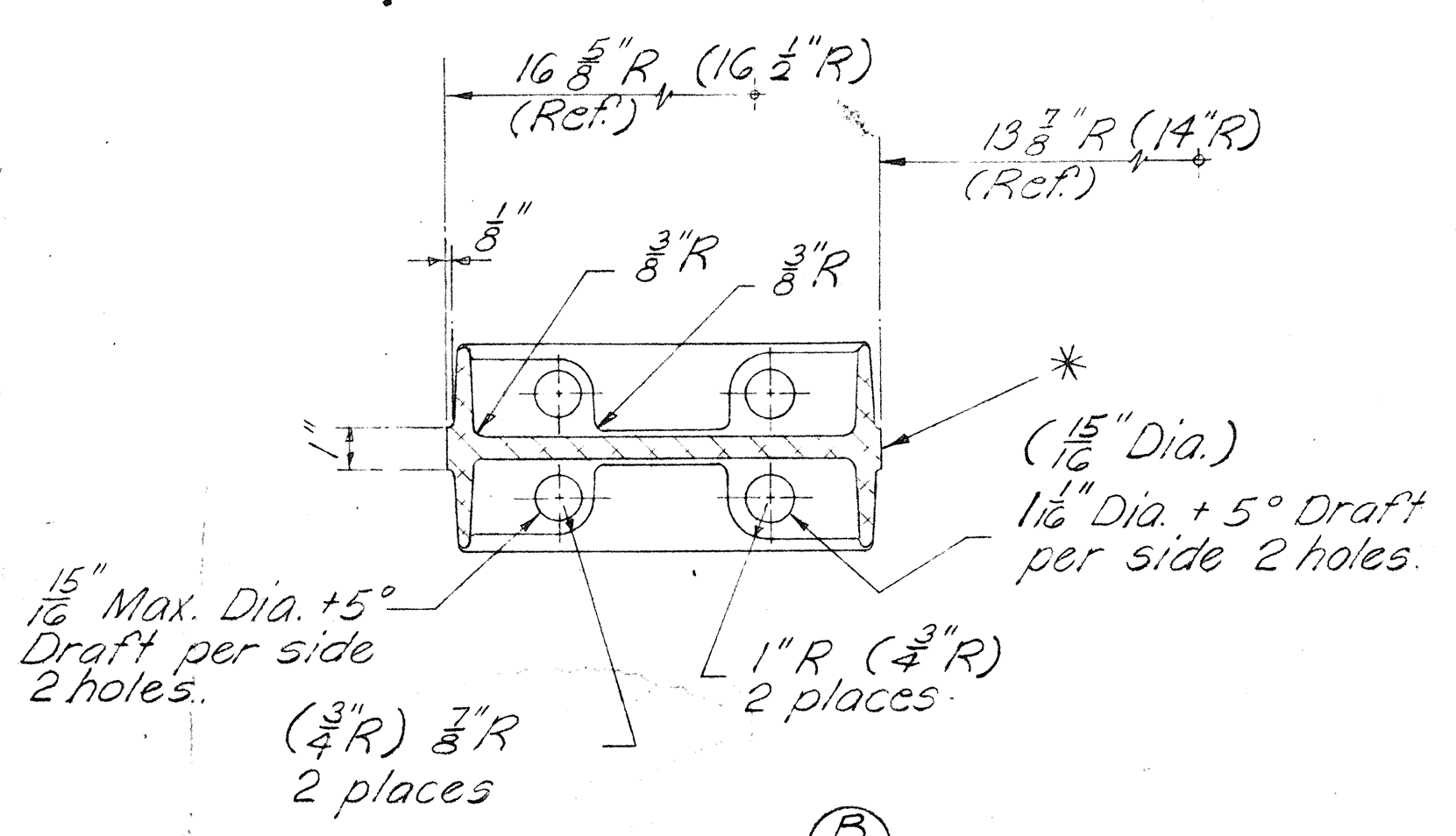
Scale: 3" = 1'-0"

GENERAL NOTES:

Metal bridge railing shown is for Aluminum bridge railing. See Specifications for alternate railing in steel.

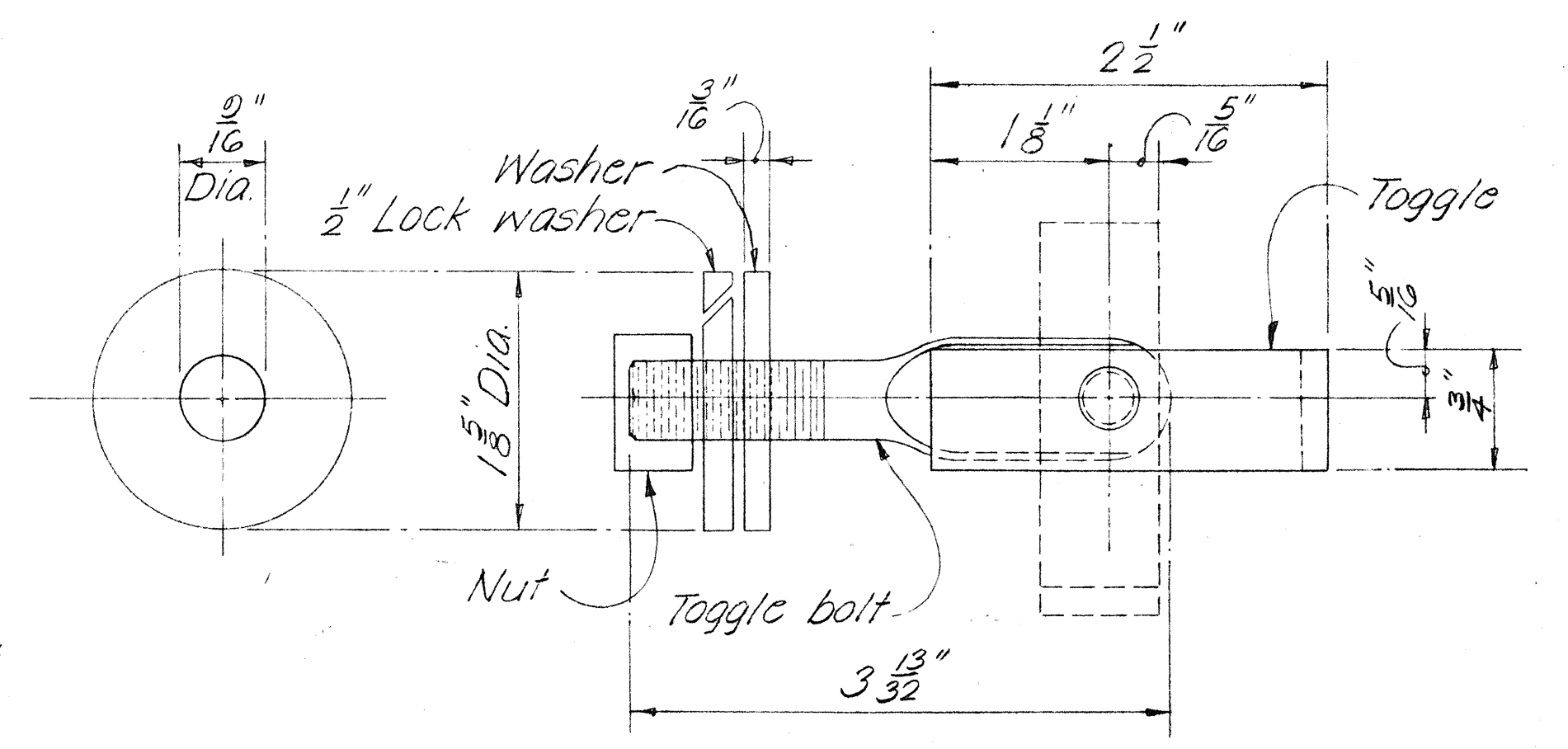


SECTION A-A



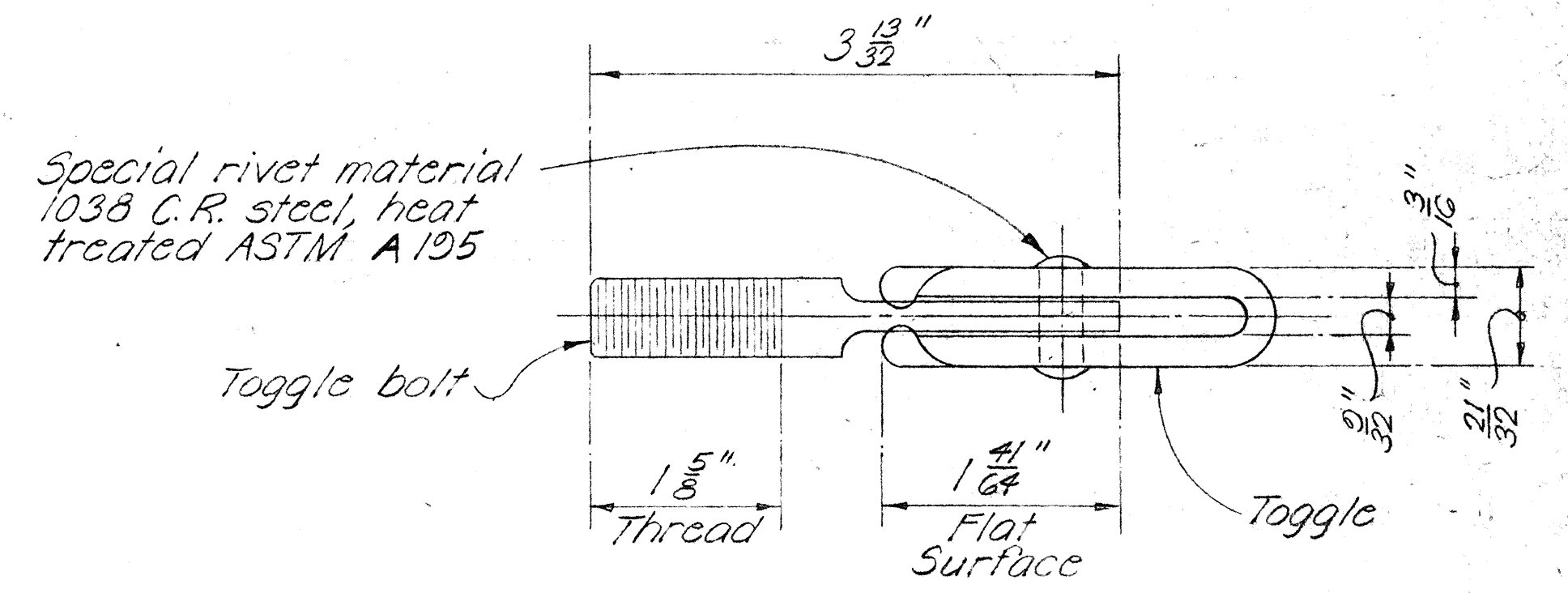
SECTION B-B

NOTE:
TOGGLE BOLT
 Cadmium plating on steel - Type NS 0.0005" thick ASTM-A165 (all parts).



WASHER

SIDE ELEVATION ASSEMBLY



TOP PLAN

1/2" STEEL TOGGLE BOLT DETAILS

Full Scale

APPROVAL RECOMMENDED:

Paul T. Yamashita
 BRIDGE DESIGN ENGINEER

1-23-70
 DATE

APPROVED

Paul T. Yamashita
 For ASSISTANT CHIEF, ENGINEERING

1-28-70
 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
STANDARD DETAILS
METAL BRIDGE RAILINGS
ONE RAIL COMBINATION TYPE
ON PARAPET

Scale as noted Date:

