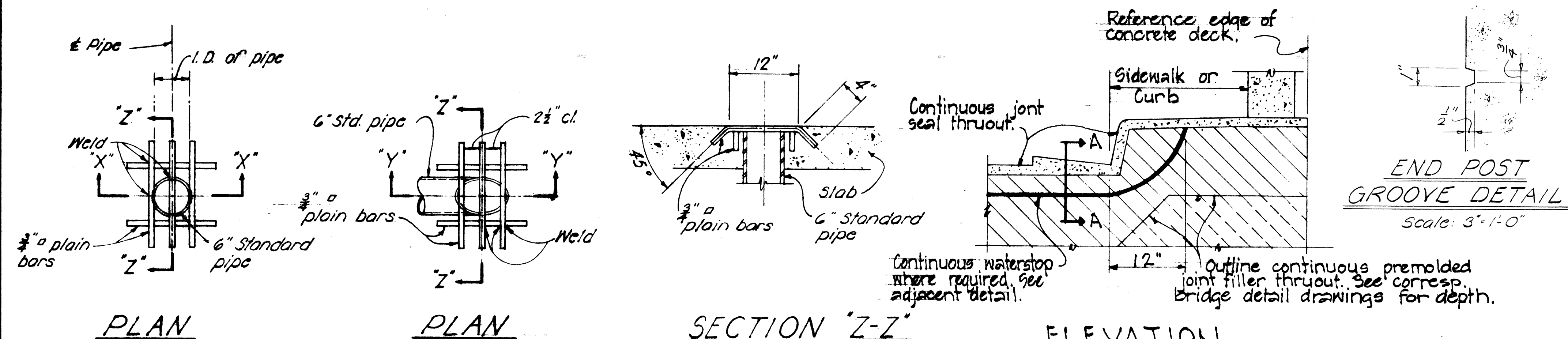
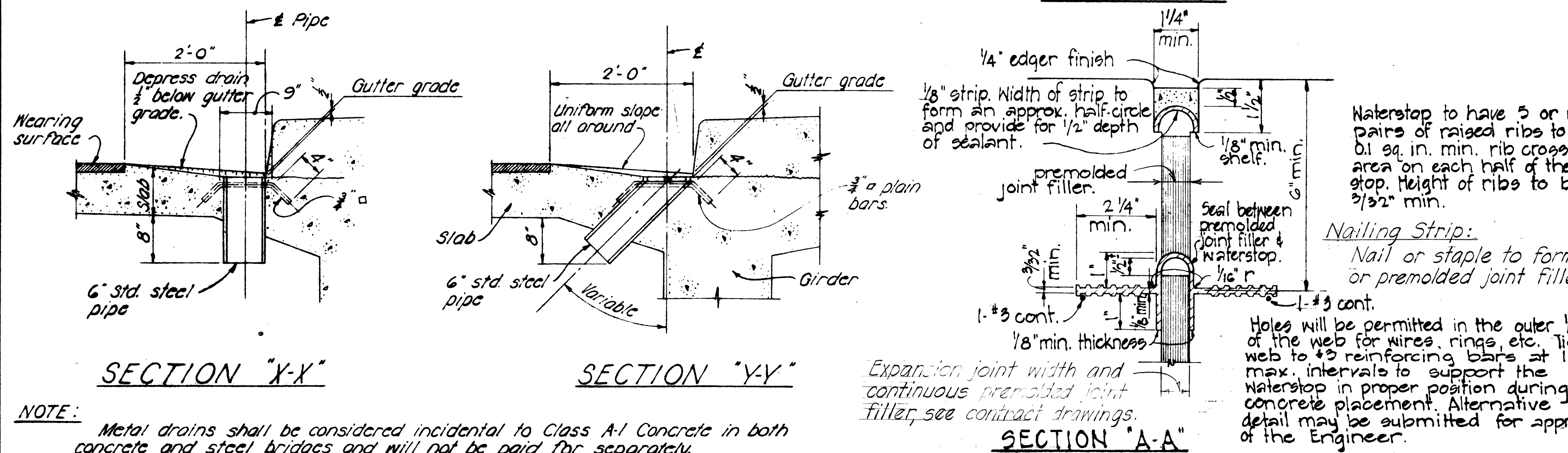


REVISION
 Jan. '67
 Feb. '67
 Apr. '67
 June '68



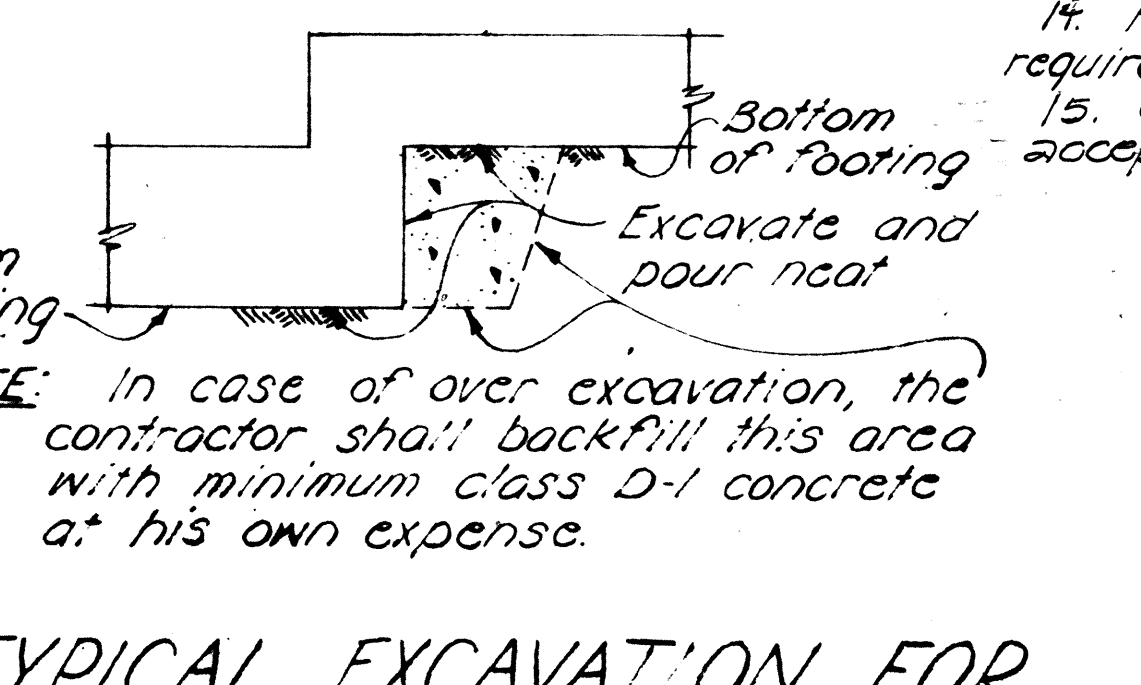
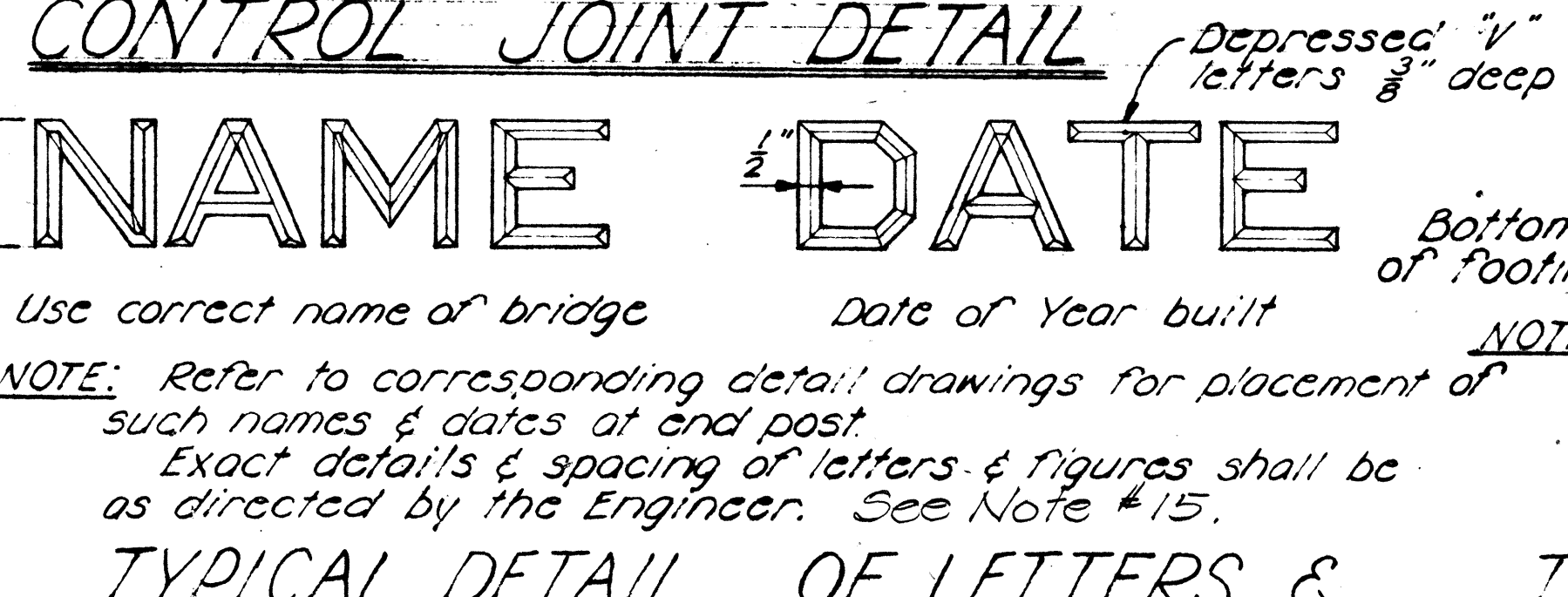
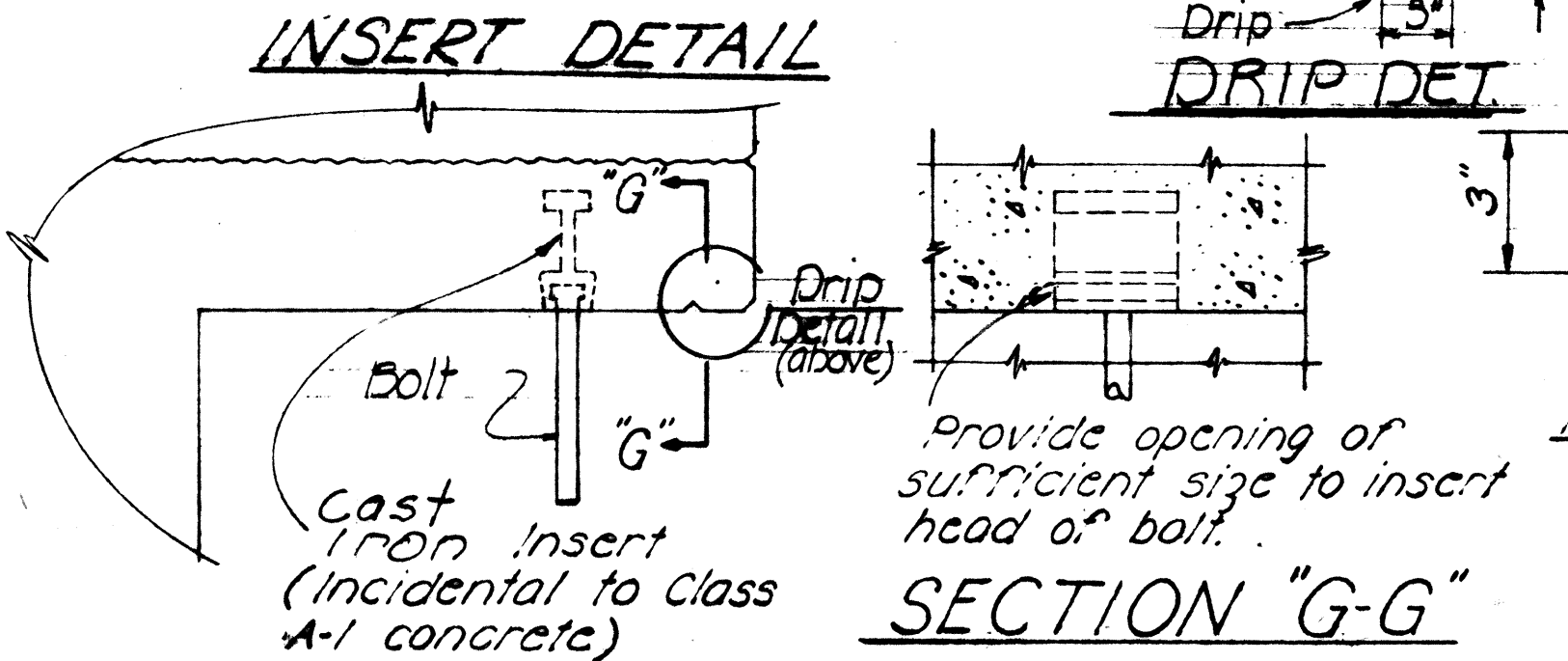
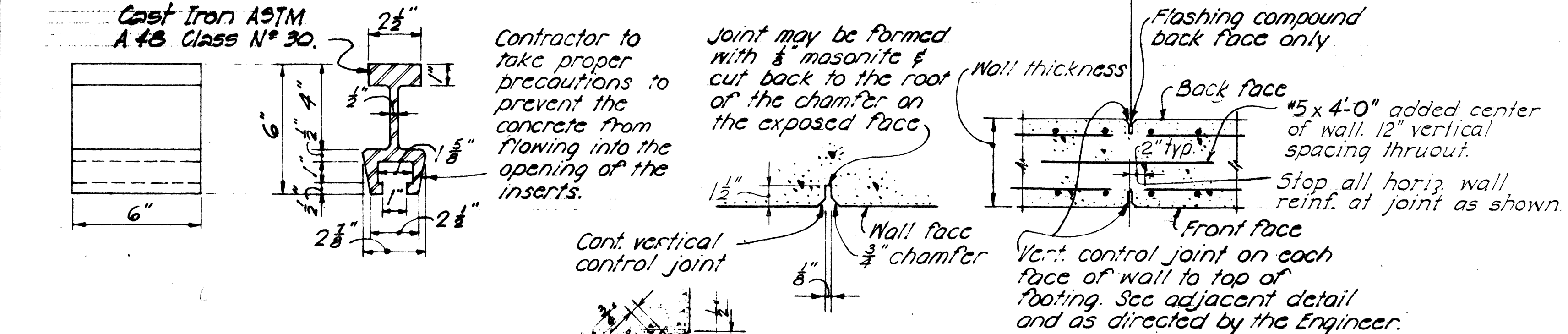
GENERAL NOTES

- Elastomeric Pads: Top & bottom of bridge bearing pads shall be secured against displacement with adhesives approved by the Engineer. Pads shall be incidental to concrete and will not be paid for separately.
- The Contractor shall verify the location of all existing utility lines and notify the respective owners before commencing work of excavation.
 - All concrete shall be Class A-1 unless otherwise noted.
 - Clearance for reinforcing bars shall be as follows, unless otherwise noted:
 - 1 1/2" For stirrups of beams & pier caps.
 - 2" For ties of columns.
 - 2" For formed walls.
 - 3" For footings.
 - Concrete seats receiving steel plates, lead plates or neoprene pads shall be poured monolithically with supporting structures & top surfaces of the concrete seats shall be finished with a steel trowel to a smooth level at the elevation shown on the plans.
 - Reinforcing shall be detailed in accordance with A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures unless otherwise noted.
 - Reinforcing bars shall be securely tied at all intersections & lap splices & shall be held in place during pouring to maintain their proper locations as shown on plans.
 - Splices of reinforcing - See Special Provisions.
- Waterstop to have 5 or more pairs of raised ribs to provide 0.1 sq. in. min. rib cross section area on each half of the waterstop. Height of ribs to be 3/32" min.
- Nailing Strip:**
 Nail or staple to form or premolded joint filler.
- Holes will be permitted in the outer 1/4" of the web for wires, rings, etc. Tie web to #3 reinforcing bars at 12" max. intervals to support the waterstop in proper position during concrete placement. Alternative detail may be submitted for approval of the Engineer.



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

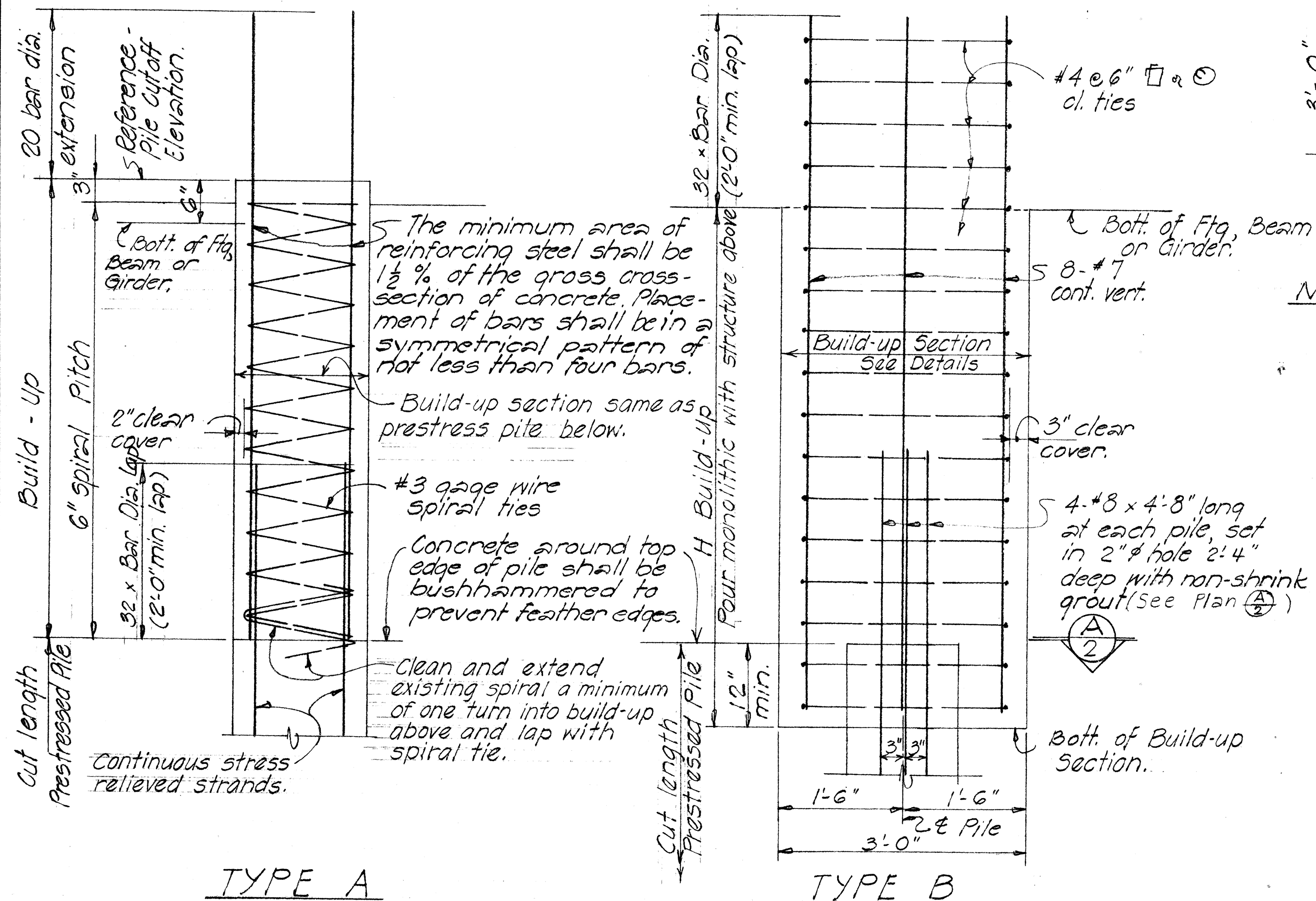
TYPICAL DRAINAGE DETAILS



- 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.
- Forms for all exposed surfaces of separation structures and surfaces of retaining walls visible from a traveled way or from a populated area shall be plywood except that metal forms may be permitted provided a surface finish satisfactory to the Engineer can be obtained and the use of such forms is approved in writing by the Engineer. Forms for round columns shall be made of materials that will give a smooth finish and true dimensions as given in the plans. Forms for prestressed concrete members shall be either metal or plywood.
- Vertical column bars shall be arranged in such a manner as to miss pier cap bars above as directed by the Engineer.
- Except as otherwise noted on drawings, all exterior corners & re-entrant angles in concrete work shall be chamfered 3/4" x 3/4". See Standard Specifications.
- Concrete Finish - See Special Provisions.
- All welders and welding procedures shall be qualified according to the requirements of the Special Provisions.
- Gothic letters and figures approximating dimensions shown will be acceptable if approved by the Engineer.

DATE
 SURVEY PLOTTED BY
 DESIGNED BY
 NOTE BOOK
 CHECKED BY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(68)10	1968	74	91



SQUARE BUILD-UP

CIRCULAR BUILD-UP

SECTION $\left(\frac{A}{2}\right)$

Notes:

1. Portion of pile embedded into footing shall be of sound concrete. Damaged portions shall be removed and pile cut-off elev. lowered as required by the Engineer.
2. When height of depressed portion of footing (H_d) exceeds 4', the depressed section shall be poured separately from the main body of the footing.
3. Depressed portion of footing may be omitted for pile heads embedded at least 4" into footing provided at least 90% of the piles in each footing have the minimum embedment into footing as shown in contract plans.

TYPE A

TYPE B

WITHOUT DRIVING - TYPICAL PILE BUILD-UP DETAILS

NOTE: Selection of pile build-up type without driving to be determined by the Engineer.

ORIGINAL PLAN	SURVEY PLOTTED BY _____ DATE _____
NOTE BOOK	DRAWN BY _____
	TRACED BY _____
	DESIGNED BY _____
	QUANTITIES BY _____
No. _____	CHECKED BY _____

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

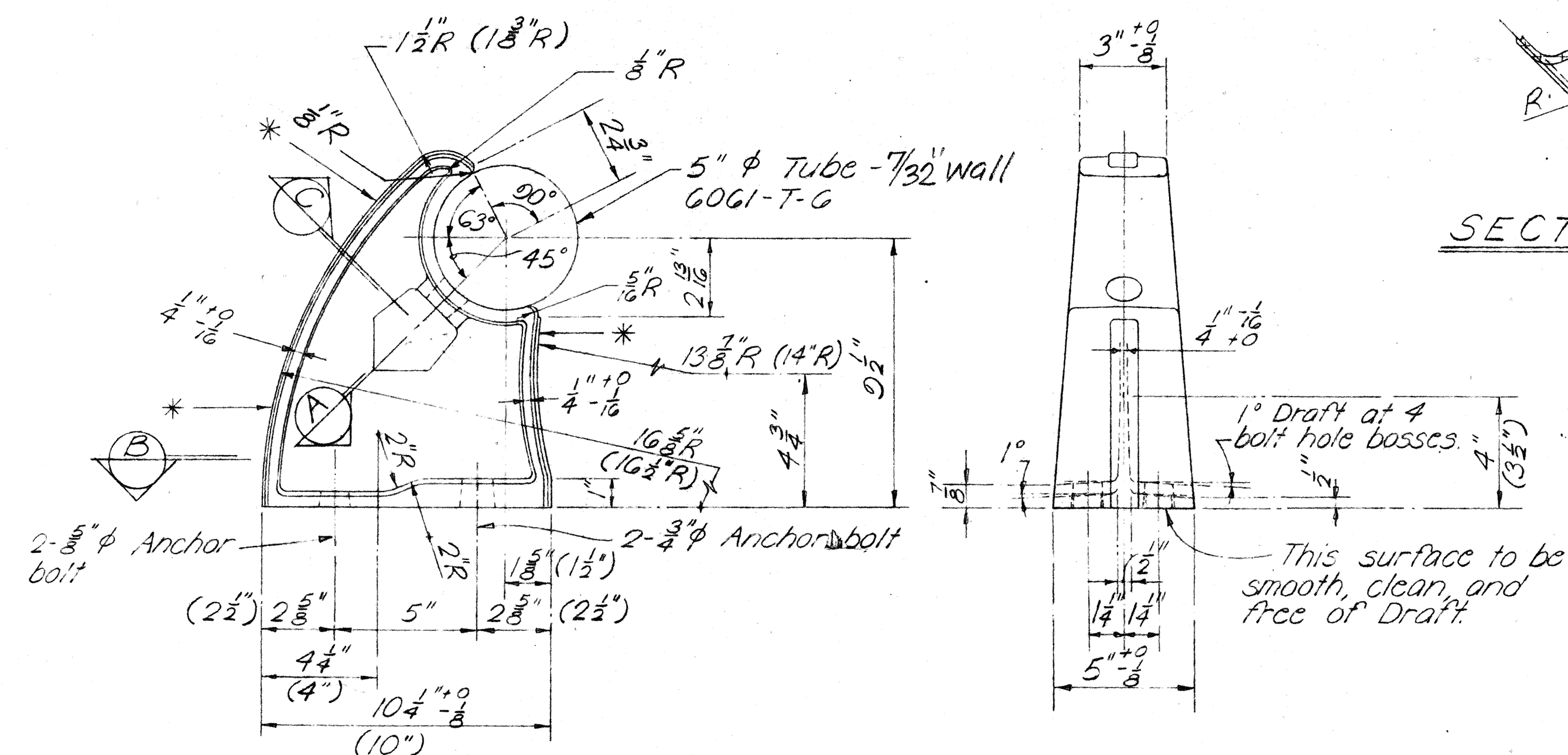
PRESTRESSED CONCRETE PILES

SHEET No. 53 OF 6 SHEETS

Oct. 1968

74

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(68)	1968	75	91



SIDE ELEVATION

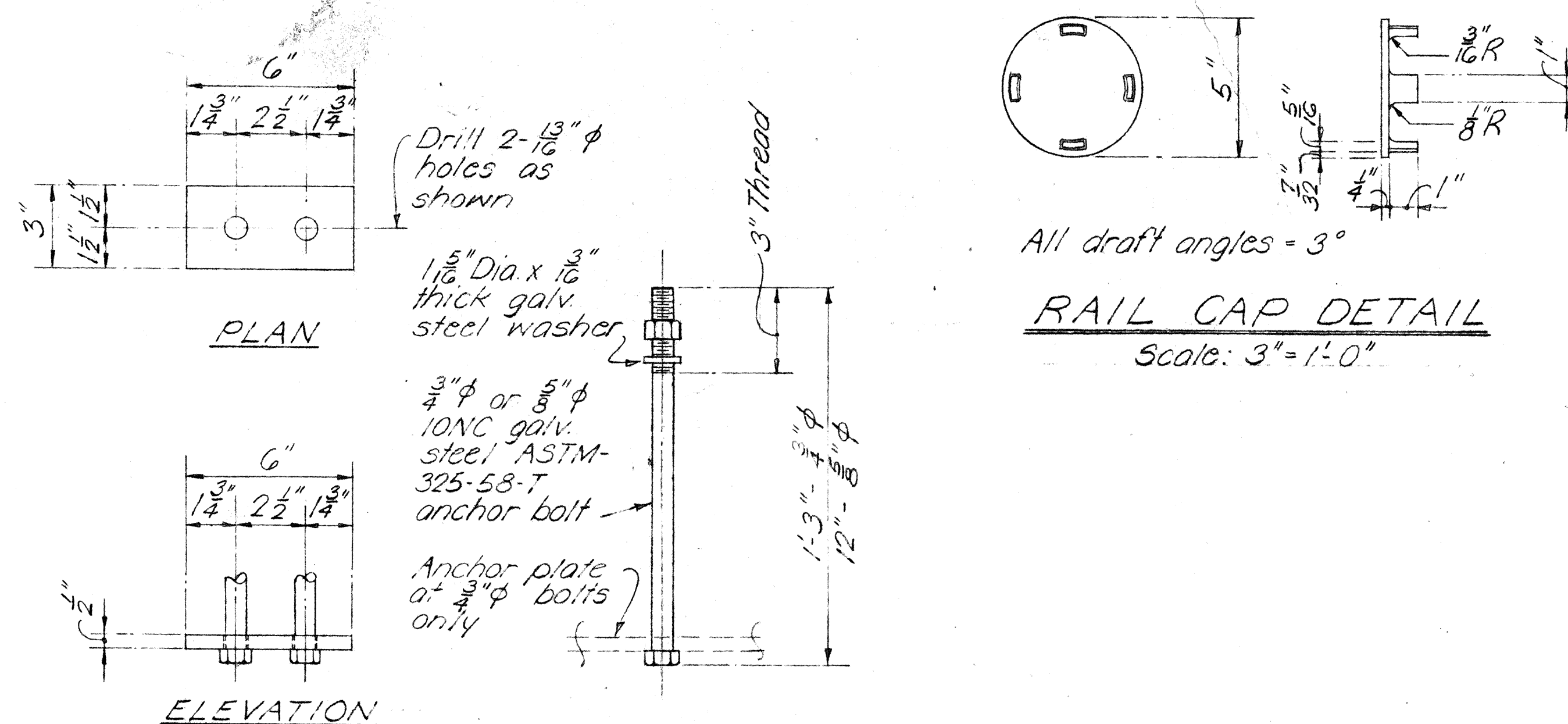
END ELEVATION

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.
For cast post specifications, see Special Provisions.
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 ± 3/32\".
Dimensions may be as shown or as shown in parenthesis ().

TYPICAL RAIL POST DETAILS

Scale: 3\" = 1'-0\"



PLAN

ELEVATION

All draft angles = 3°

RAIL CAP DETAIL

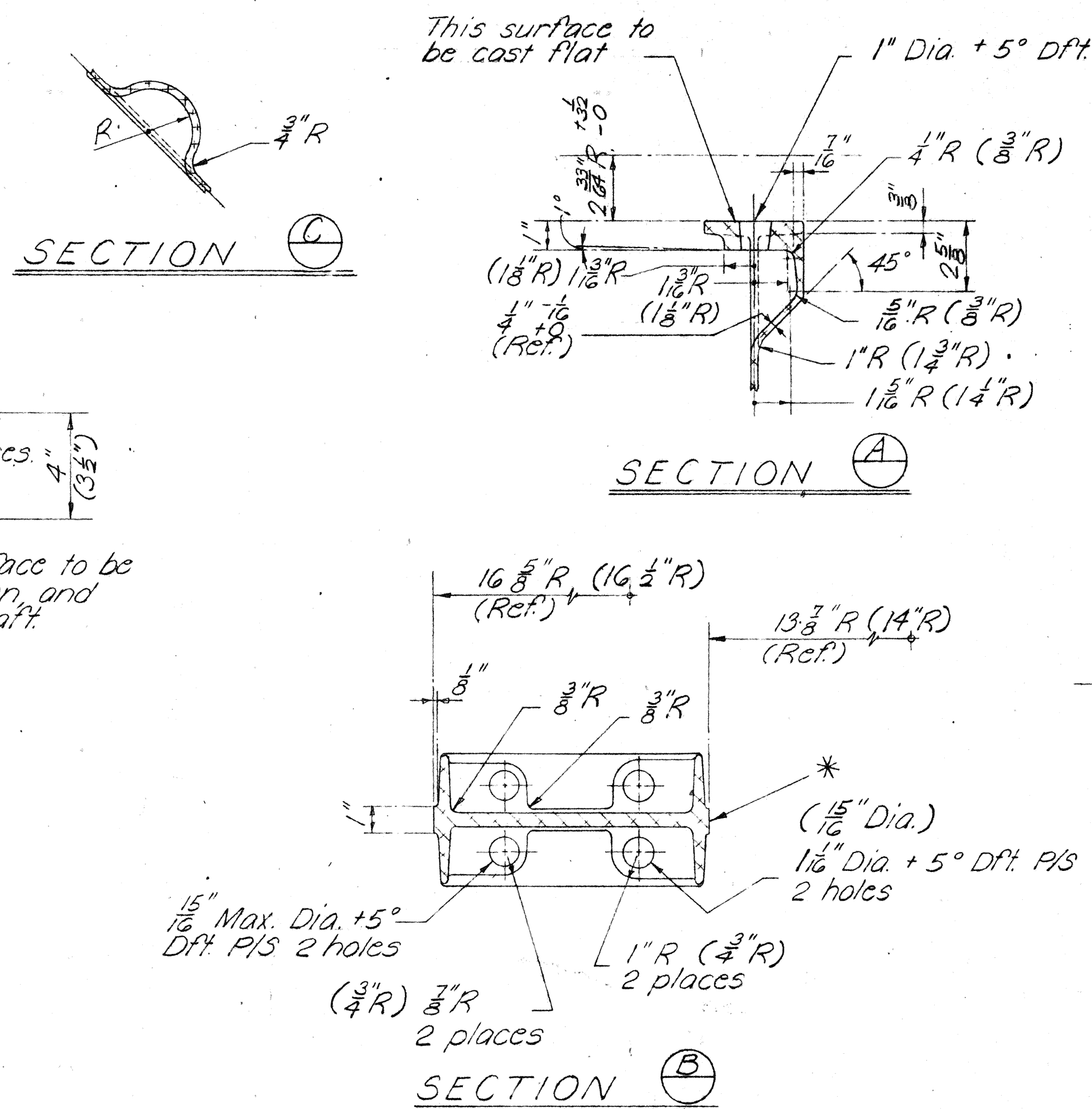
Scale: 3\" = 1'-0\"

ANCHOR BOLT DETAIL ANCHOR BOLT

TYPICAL RAIL POST

ANCHOR BOLT ASSEMBLY

Scale: 3\" = 1'-0\"



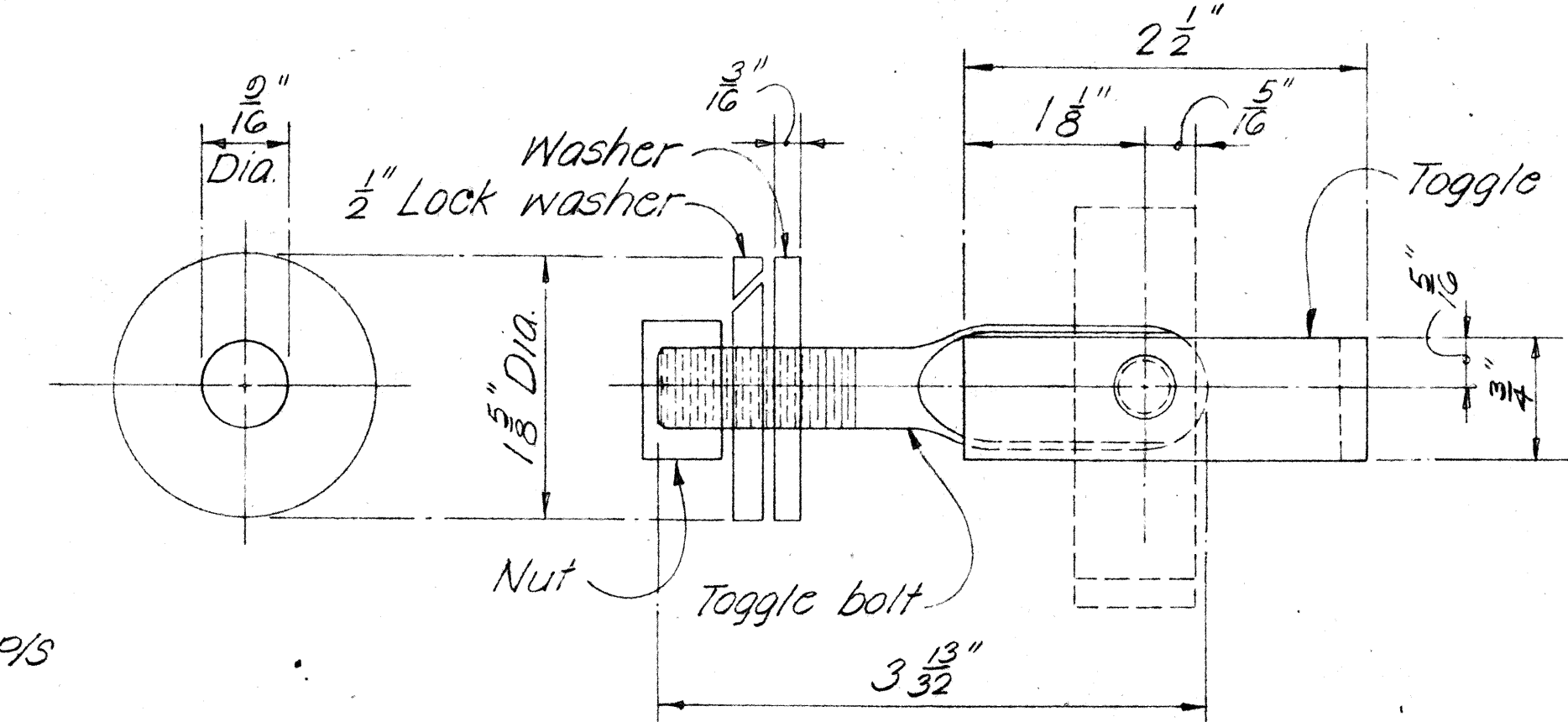
SECTION A

SECTION B

SECTION C

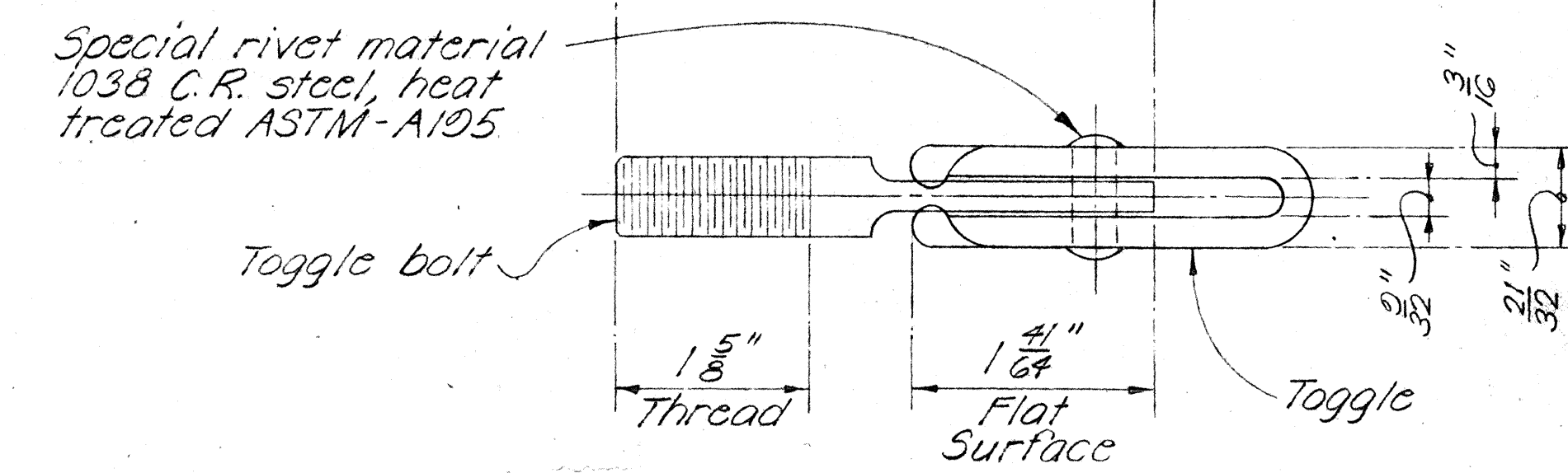
NOTE:

Toggle Bolt Material - 1/2\" - 13 N.C. 1335 C.R. - Steel heat treated R.C. 32-38 ASTM-A354
Toggle Material - 1015 H.R. steel pickled and oiled. Round edges ASTM-A303.
Washer Material - SAE 1020 H.R. steel plates ASTM-A-7. Break sharp edges.
Nut - 1/2\" - 13 American hex. nut - Heavy Material 1035 C.R. - Steel heat treated ASTM A325 Grade 2H.
Cadmium plating on steel - Type N.S. 0005\" thick ASTM-A165. (all parts).
For cast post specifications, see Special Provisions.



WASHER

SIDE ELEVATION ASSEMBLY



TOP PLAN

1/2\" TOGGLE BOLT DETAILS

Full Scale

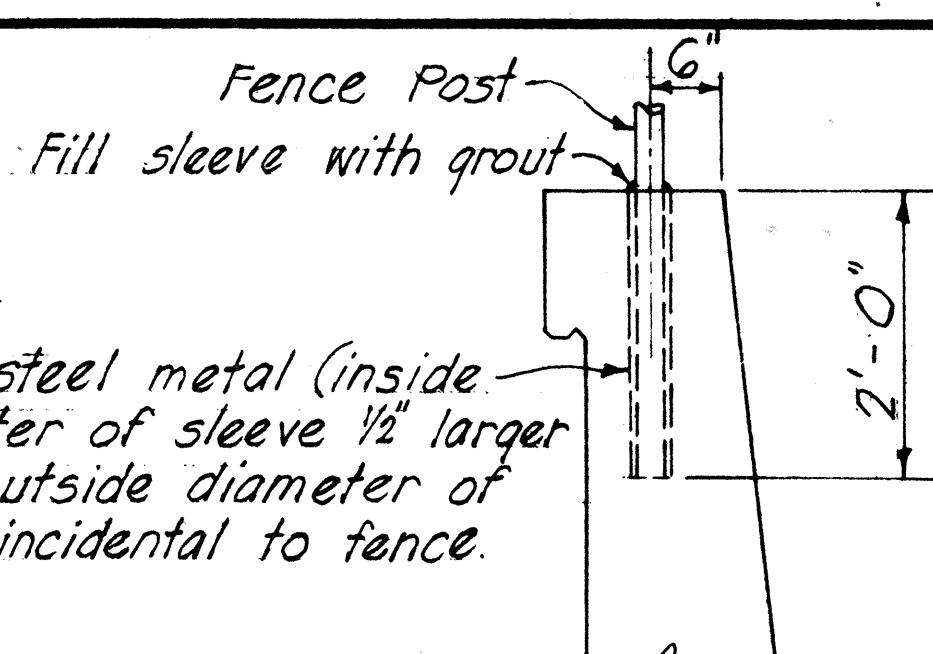
GENERAL NOTES

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

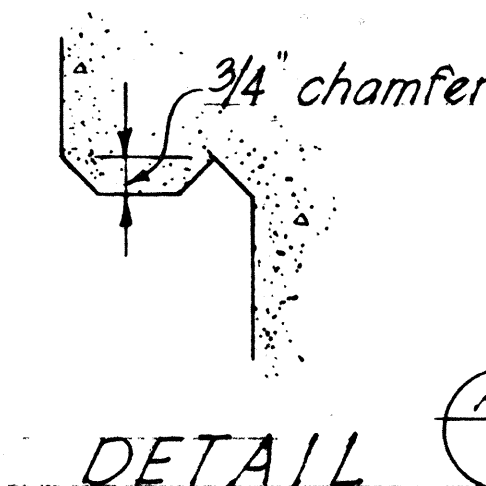
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL BRIDGE RAILINGS
SINGLE RAIL
FAI Proj NO. I-HI-1(68):10
Scale as noted July 1968
SHEET No. 54 OF 6 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN BY	1968
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	



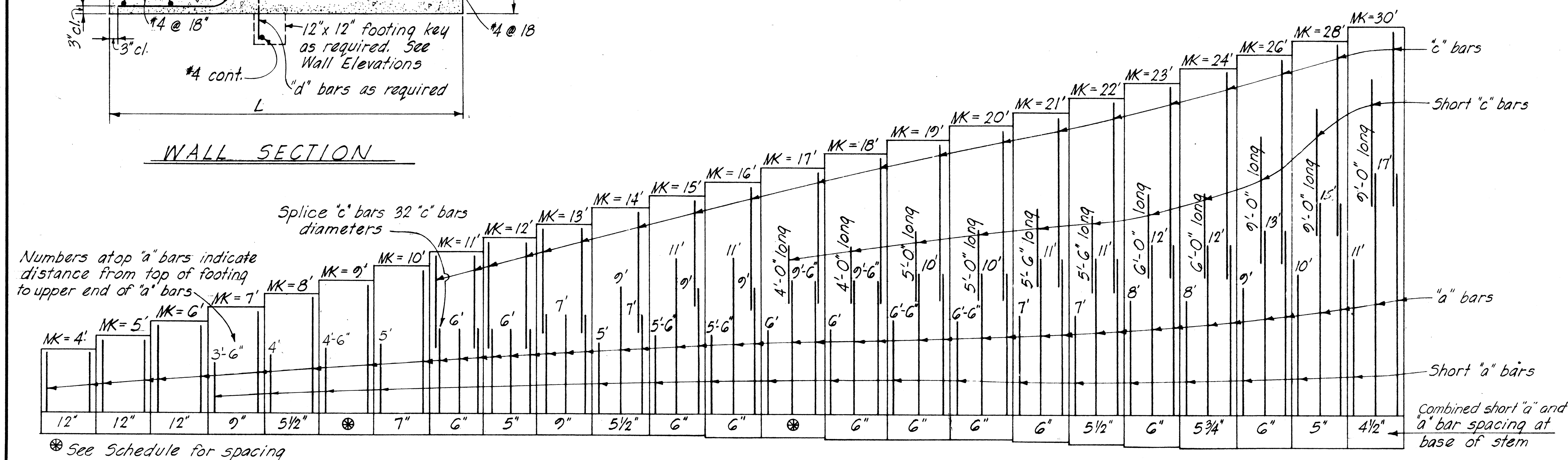
CHAIN LINK FENCE
POST DETAIL



DETAIL

SCHEDULE OF DIMENSIONS AND REINFORCING STEEL																								
Maximum "W"	4E	5E	6E	7E	8E	9E	10E	11E	12E	13E	14E	15E	16E	17E	18E	19E	20E	21E	22E	23E	24E	26E	28E	30E
a	6"	6"	6"	12"	12"	12"	12"	12"	12"	12"	15"	18"	21"	24"	24"	24"	27"	30"	33"	36"	39"	54"	60"	72"
t	14"	14"	14"	14"	14"	14"	14"	18"	18"	18"	18"	18"	21"	21"	24"	24"	24"	27"	30"	31"	33"	36"	39"	42"
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'	16.0'	18.0'	20.0'	21.0'
"a" bars	#3@12"	#3@12"	#4@12"	#4@9"	#4@5 1/2"	#5@7"	#6@7"	#6@6"	#6@5"	#7@9"	#6@5 1/2"	#7@6"	#8@6"	#8@5 3/4"	#7@6"	#7@6"	#10@6"	#10@6"	#10@5 1/2"	#10@6"	#10@5 3/4"	#11@6"	#11@5"	#11@4 1/2"
"b" bars	#3@12"	#3@12"	#3@12"	#3@9"	#4@11"	#4@7"	#5@7"	#5@6"	#5@5"	#7@9"	#6@5 1/2"	#7@6"	#8@6"	#7@5 3/4"	#8@6"	#7@6"	#10@6"	#10@6"	#10@5 1/2"	#10@6"	#10@5 3/4"	#11@6"	#11@5"	#11@4 1/2"
"c" bars								#4	#4	#4	#4	#4	#5	#5	#5	#6	#6	#6	#7	#7	#7	#7	#7	#7
"d" bars	#3@12"	#3@12"	#3@12"	#3@12"	#4@18"	#4@15"	#4@15"	#4@12"	#4@11"	#4@9"	#5@12"	#5@12"	#5@10"	#5@9"	#5@9"	#5@8"	#6@10"	#6@9"	#7@12"	#7@11"	#7@10"	#7@	#7@	#7@6"

Maximum "MK"	4R	5R	6R	7R	8R	9R	10R	11R	12R	13R	14R	15R	16R	17R	18R	19R	20R	21R	22R	23R	24R	26R	28R	30R
a	6"	6"	6"	12"	12"	12"	12"	12"	12"	12"	15"	18"	21"	21"	21"	21"	24"	24"	27"	30"	33"	39"	39"	51"
t	14"	14"	14"	14"	14"	14"	14"	18"	18"	18"	18"	18"	18"	18"	18"	21"	21"	21"	21"	24"	24"	27"	30"	36"
L	2.5'	3.0'	3.5'	4.0'	4.5'	5.0'	5.5'	6.0'	6.5'	6.75'	7.25'	7.75'	8.25'	8.75'	9.25'	9.75'	10.25'	10.5'	11.0'	11.5'	12.0'	13.0'	14.0'	15.0'
"a" bars	*3 @ 12"	*3 @ 12"	*4 @ 12"	*4 @ 9"	*4 @ 5 1/2"	*5 @ 6"	*6 @ 7"	*6 @ 6"	*6 @ 5"	*7 @ 9"	*6 @ 5 1/2"	*7 @ 6"	*8 @ 6"	*8 @ 6"	*9 @ 6"	*9 @ 6"	*10 @ 6"	*10 @ 6"	*10 @ 5 1/2"	*10 @ 6"	*10 @ 5 3/4"	*11 @ 6"	*11 @ 5"	*11 @ 4 1/2"
"b" bars	*3 @ 12"	*3 @ 12"	*3 @ 12"	*3 @ 9"	*4 @ 11"	*4 @ 6"	*5 @ 7"	*5 @ 6"	*5 @ 5"	*7 @ 9"	*6 @ 5 1/2"	*7 @ 6"	*7 @ 6"	*8 @ 6"	*9 @ 6"	*9 @ 6"	*10 @ 6"	*10 @ 6"	*10 @ 5 1/2"	*10 @ 6"	*10 @ 5 3/4"	*10 @ 6"	*10 @ 5"	*9 @ 4 1/2"
"c" bars								*4	*4	*4	*4	*4	*5	*5	*5	*6	*6	*6	*7	*7	*7	*7	*7	*7
"d" bars	*3 @ 12"	*3 @ 12"	*3 @ 12"	*3 @ 12"	*4 @ 18"	*4 @ 15"	*4 @ 15"	*4 @ 12"	*4 @ 11"	*4 @ 9"	*5 @ 12"	*5 @ 12"	*5 @ 10"	*5 @ 9"	*5 @ 9"	*5 @ 8"	*6 @ 10"	*6 @ 9"	*7 @ 12"	*7 @ 11"	*7 @ 10"	*7 @ 10"	*7 @ 10"	*7 @ 10"



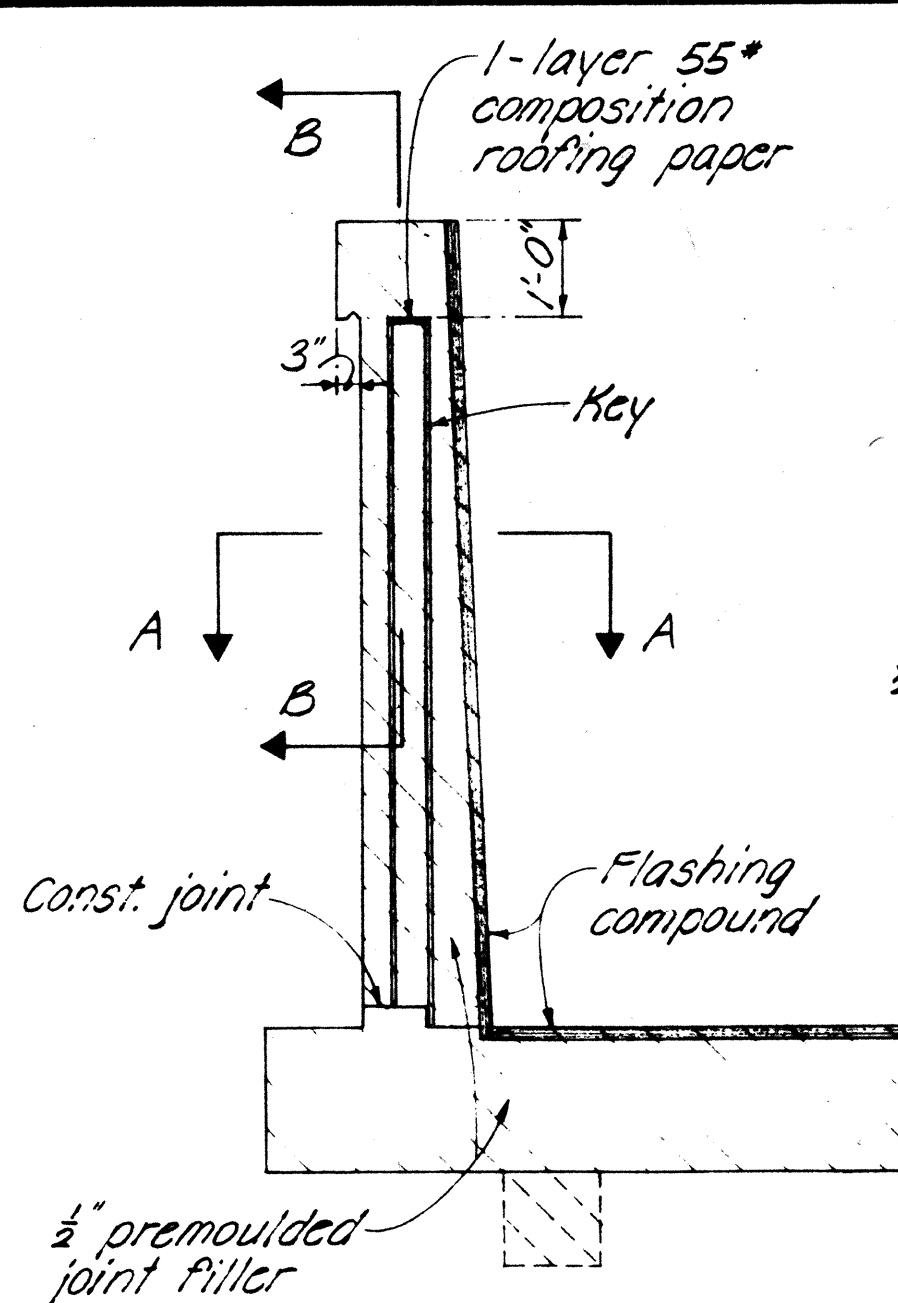
VERTICAL REINFORCING STEEL ARRANGEMENT

STANDARD DETAILS
RETAINING WALL TYPE T-1

SHEET No. 55 OF 6 SHEETS

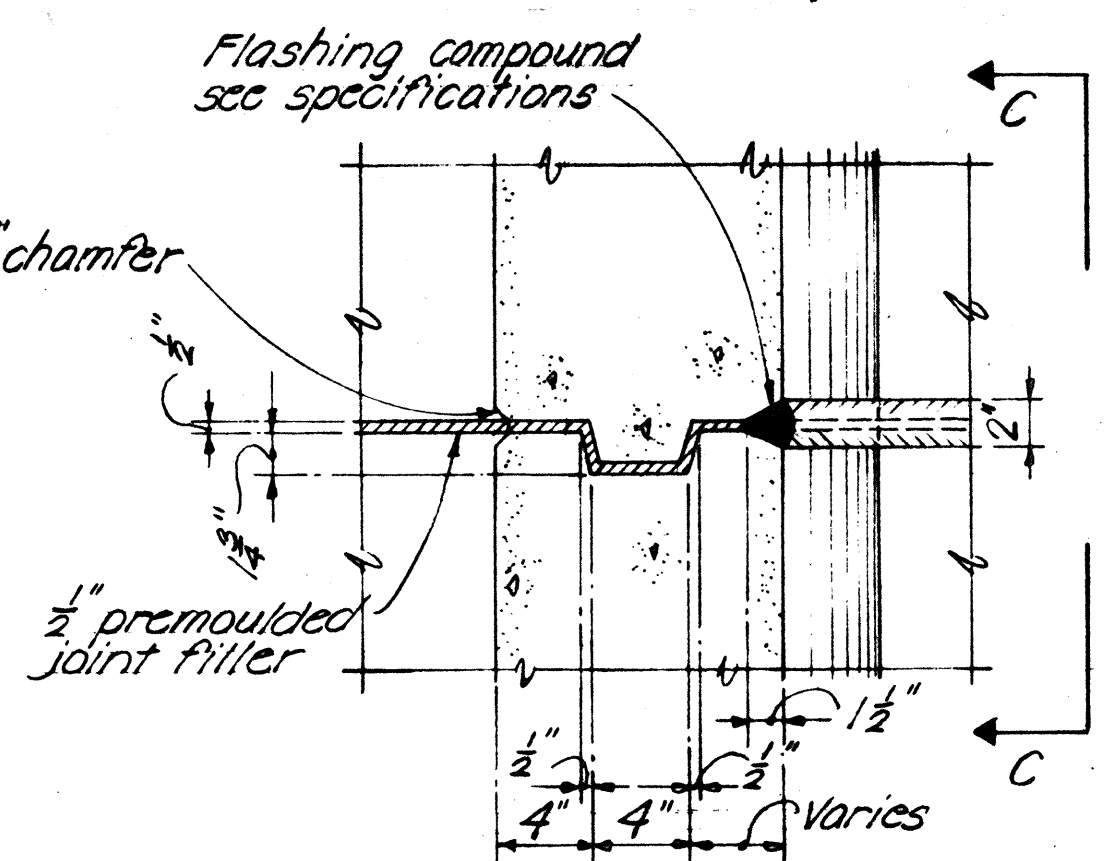
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CHH(66)10	1966	77	91

June, 1968

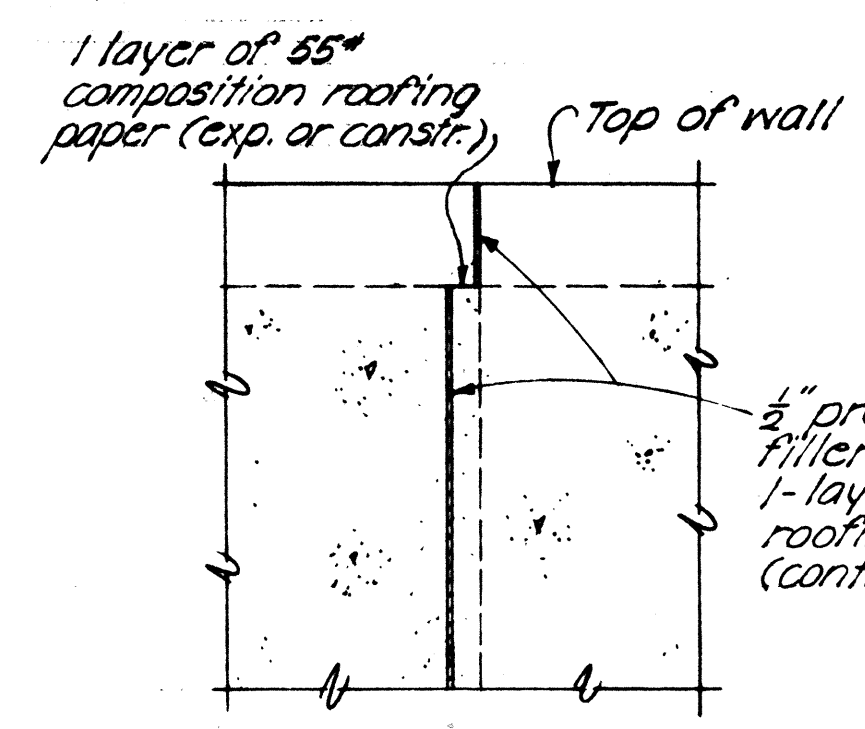


JOINT ELEVATION

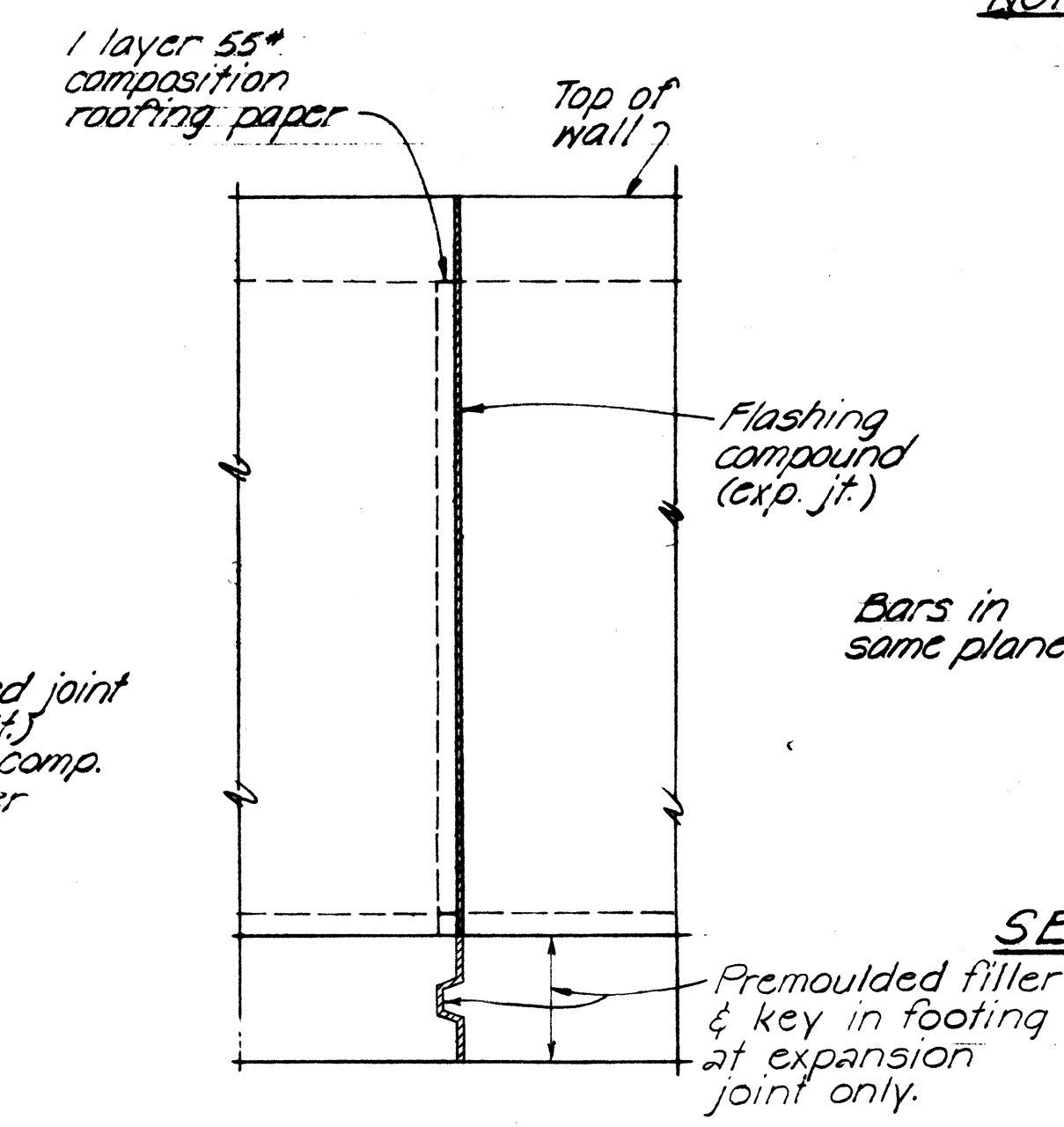
NOTE
 Spacing of joints
 Expansion = 90'-0" max.
 Contraction = 30'-0" max. except where conc. railing or curb occurs 26'-8" max. (match with railing joint above.)
 For alternate contraction joint and control joint details - See Standard Bridge Details.



SECTION A-A

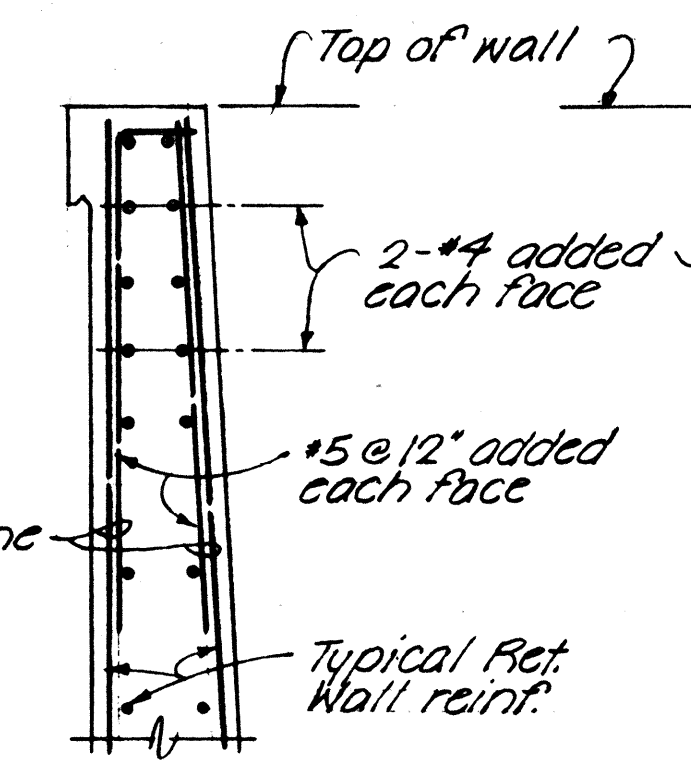


SECTION B-B

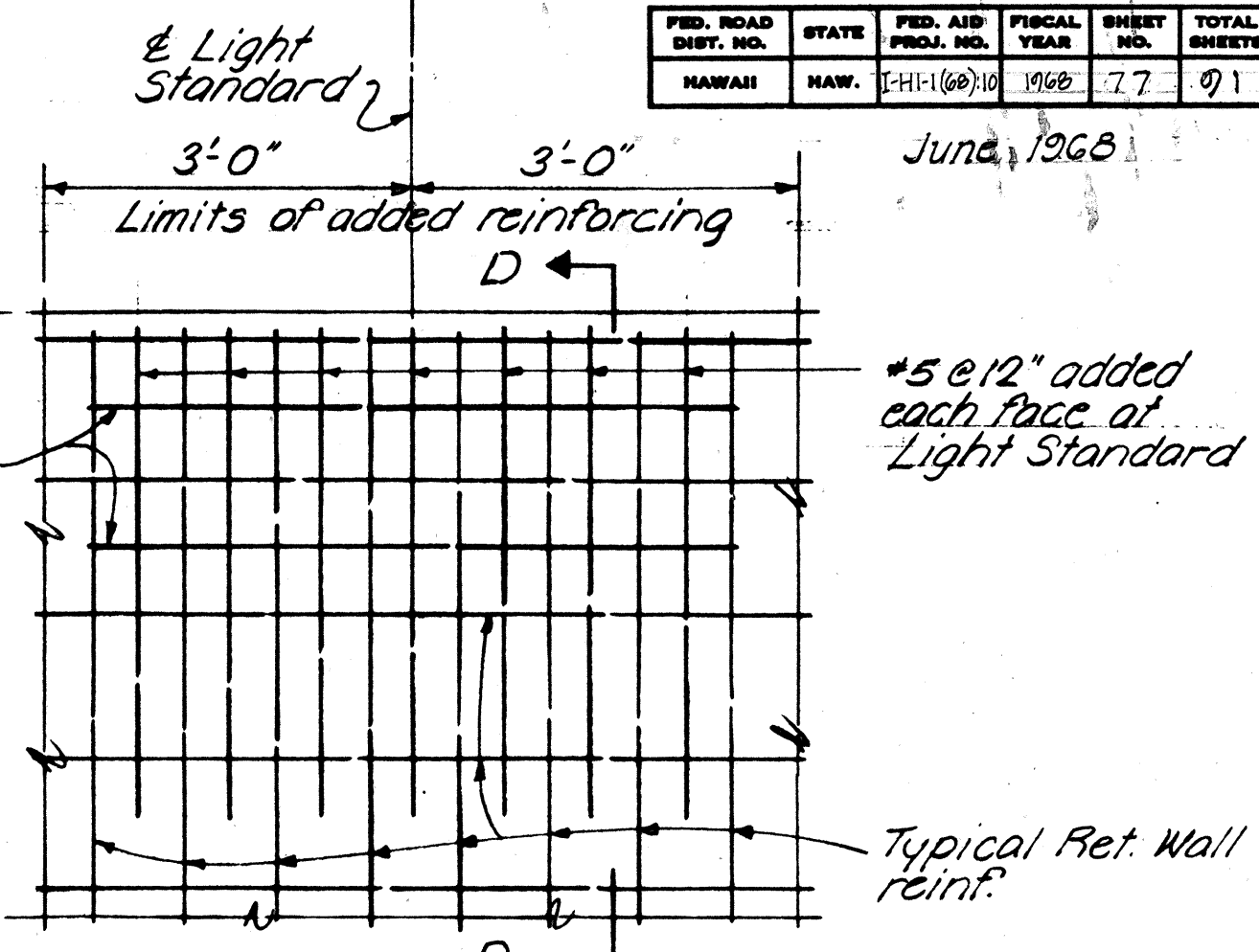


SECTION C-C

NOTE:
 Limits of added reinf.
 Height 0'-18' L = 1/2 L
 Height 19'-30' L = 6'-0"

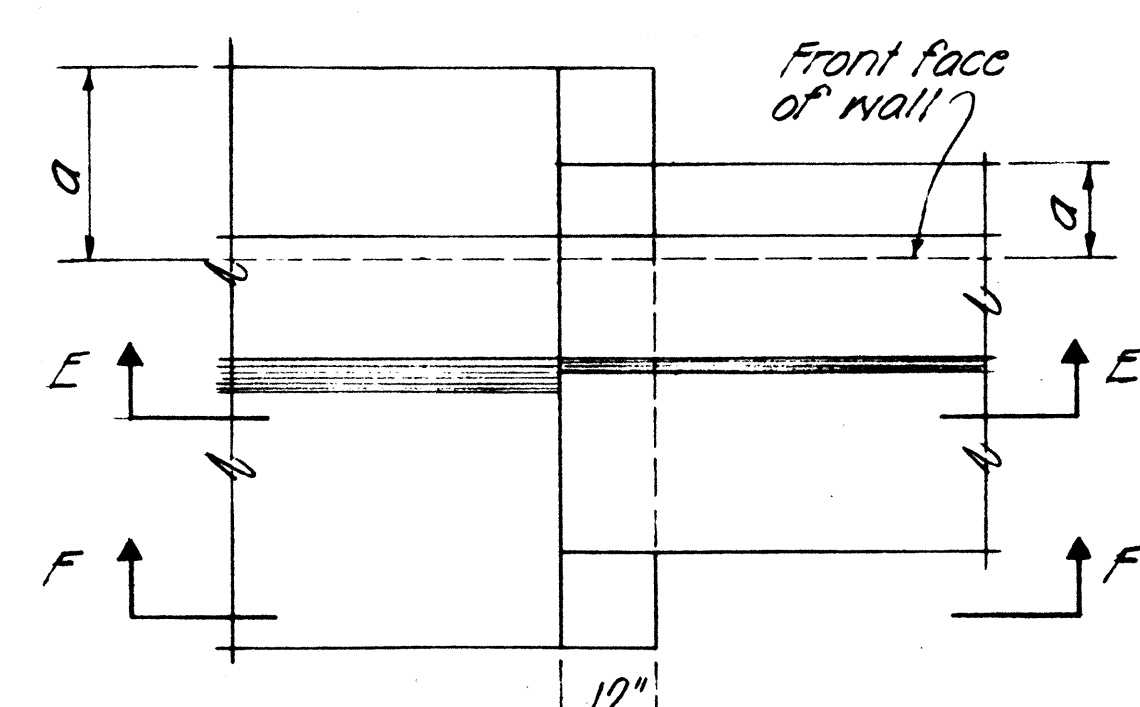


SECTION D-D

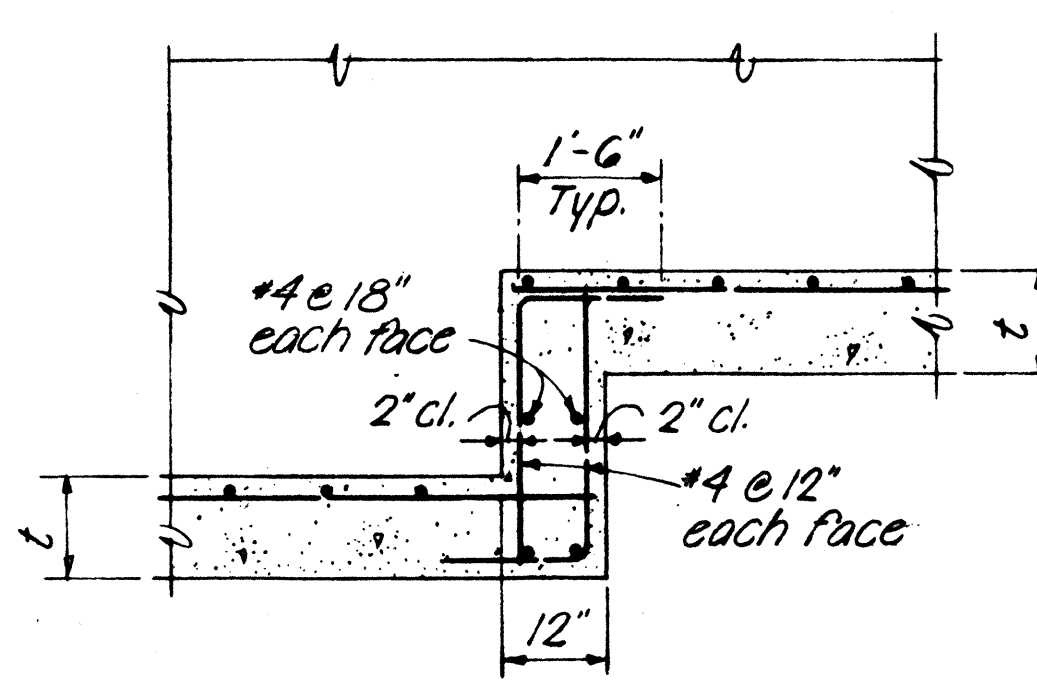


ELEVATION

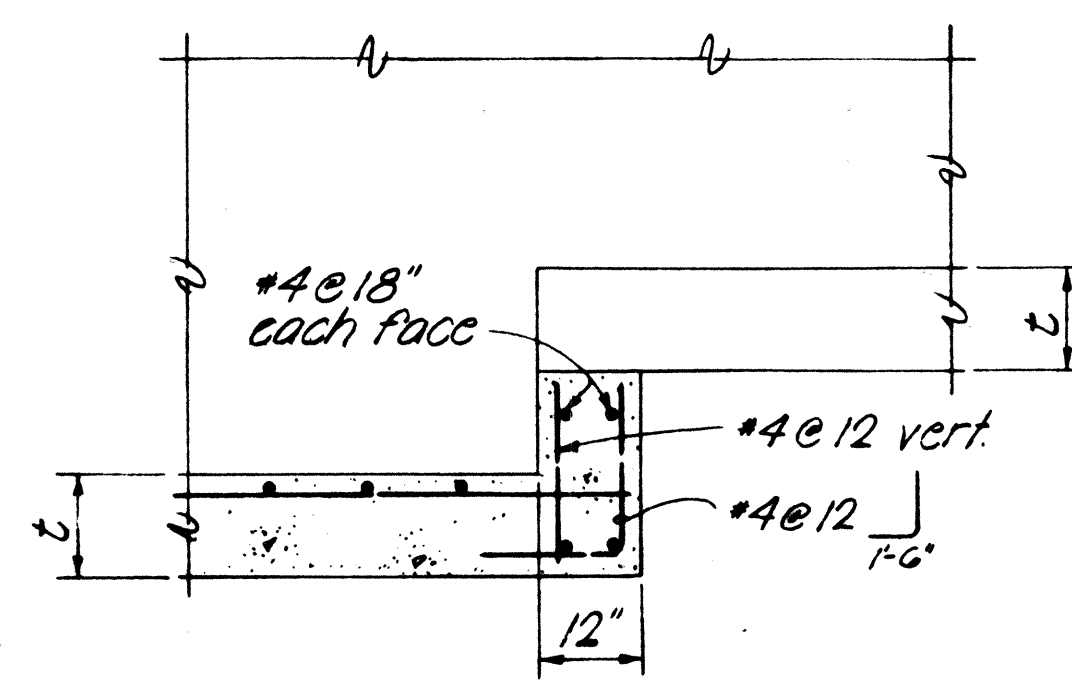
TYPICAL ADDED REINFORCEMENT
 AT LIGHT STANDARD BASE No Scale



PLAN



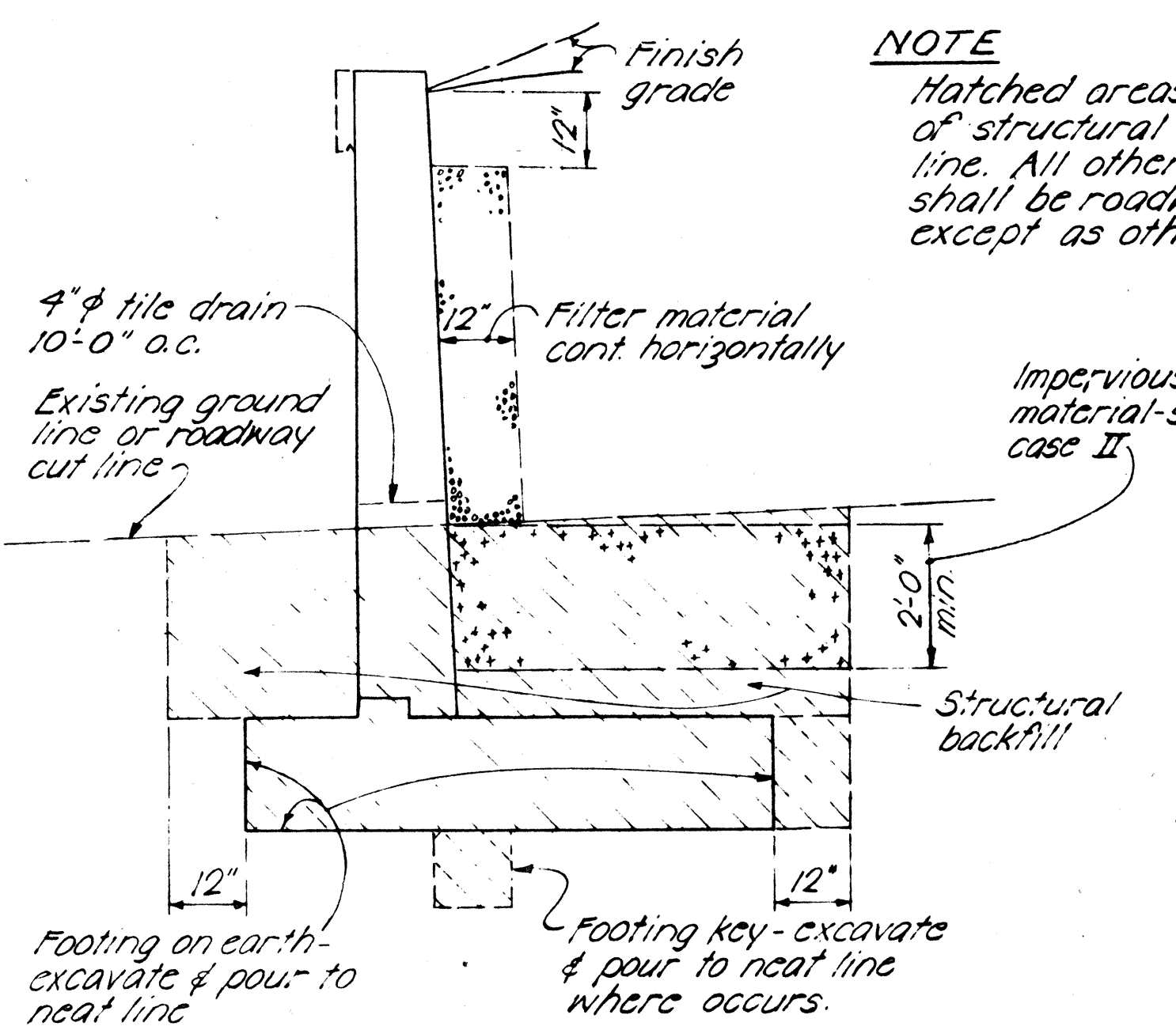
SECTION E-E



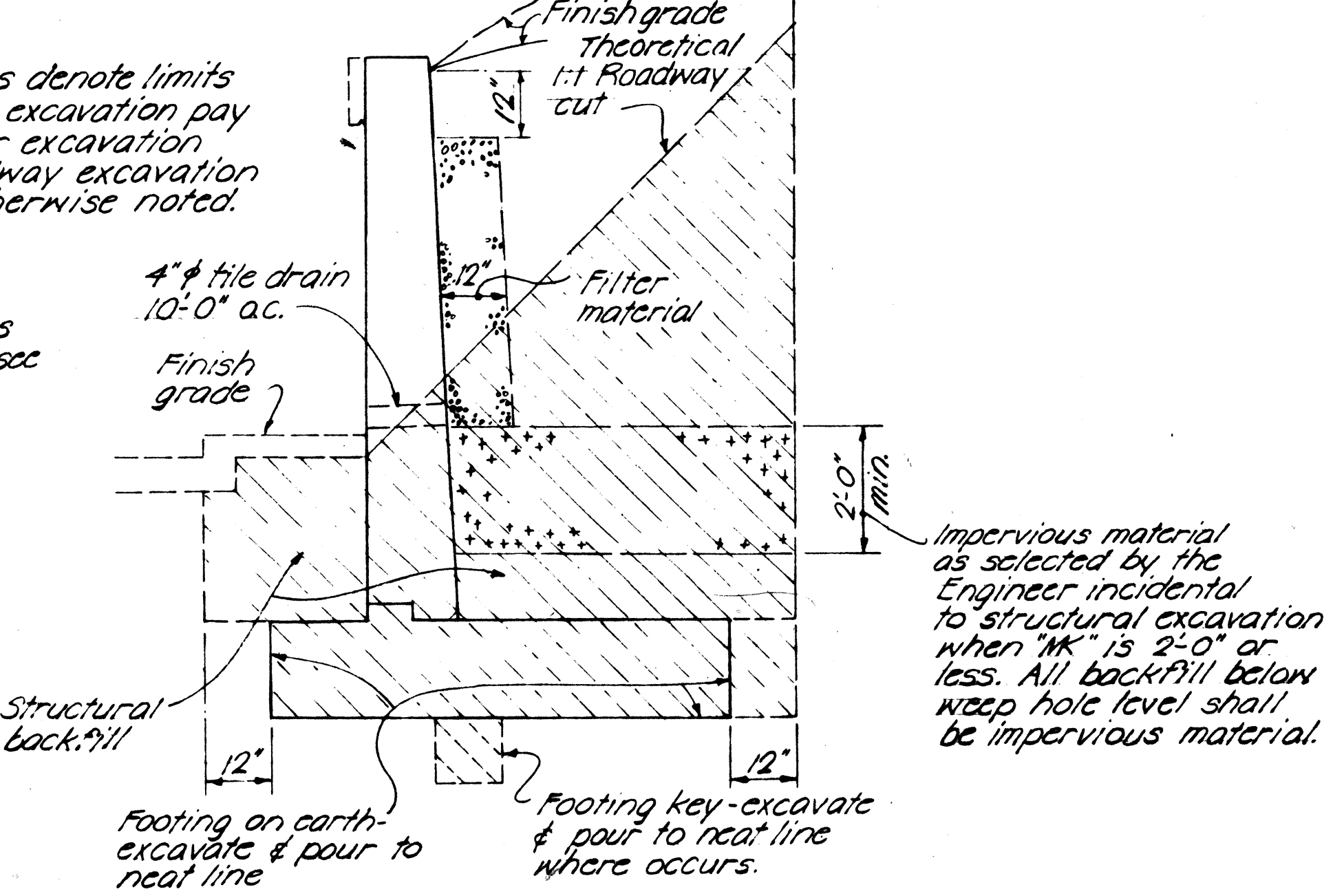
SECTION F-F

FOOTING STEP-UP DETAILS No Scale

NOTE
 Hatched areas denote limits of structural excavation pay line. All other excavation shall be roadway excavation except as otherwise noted.



CASE I



CASE II

STRUCTURAL EXCAVATION & DRAINAGE DETAILS No Scale

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

STANDARD DETAILS
 RETAINING WALL TYPE T-1

SCALE AS NOTED
 SHEET No. 56 OF 6 SHEETS

DESIGNED BY	DATE
CHECKED BY	
NOTED BY	
ORIGINAL	