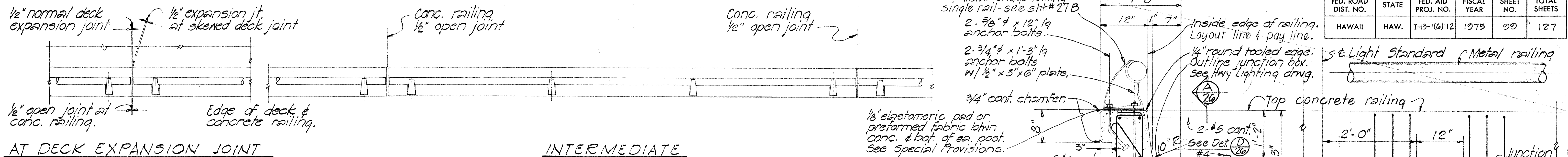
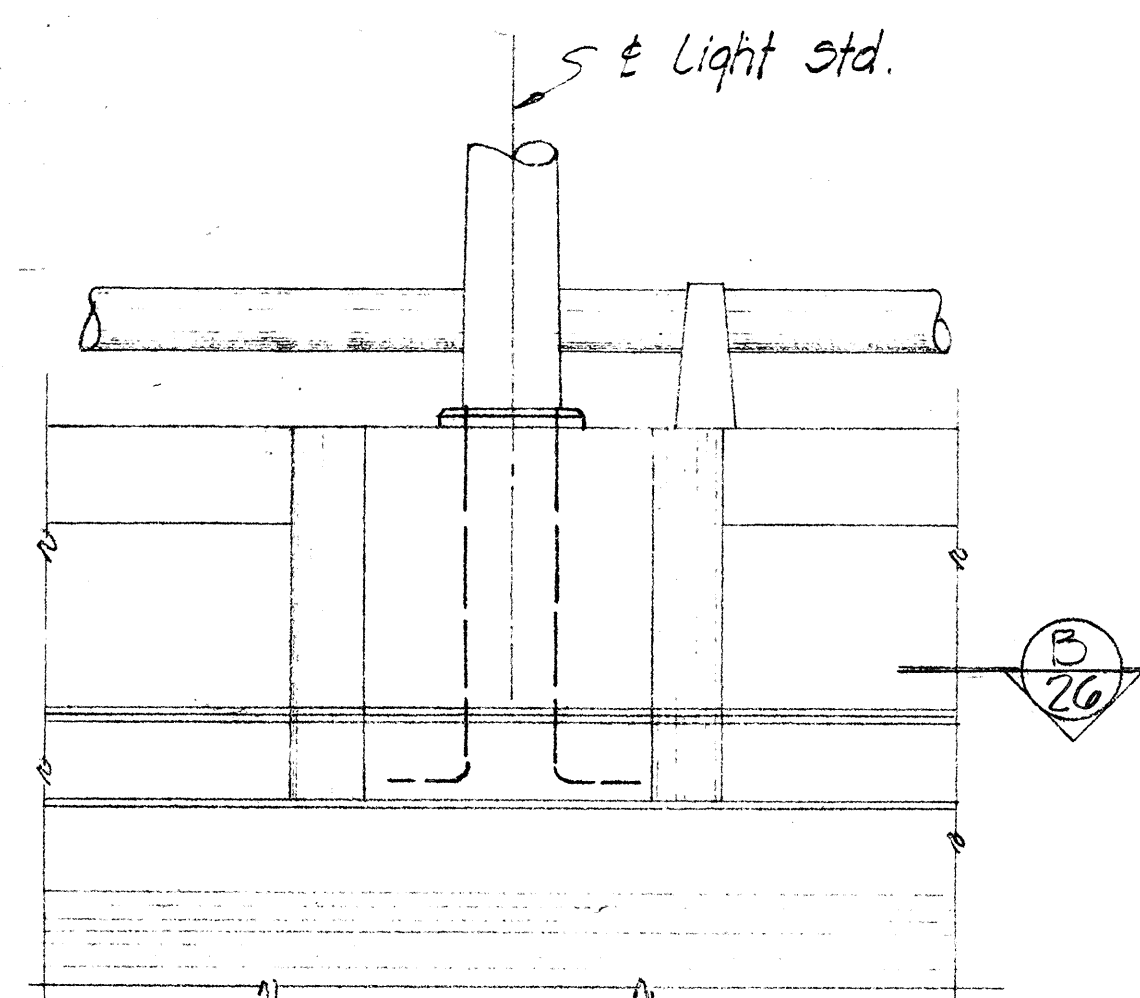
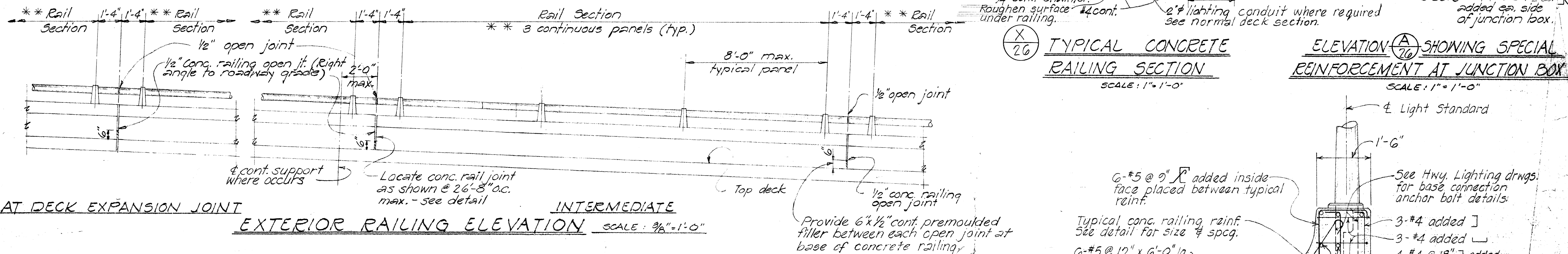


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	EH3-1(6)-12	1975	99	127

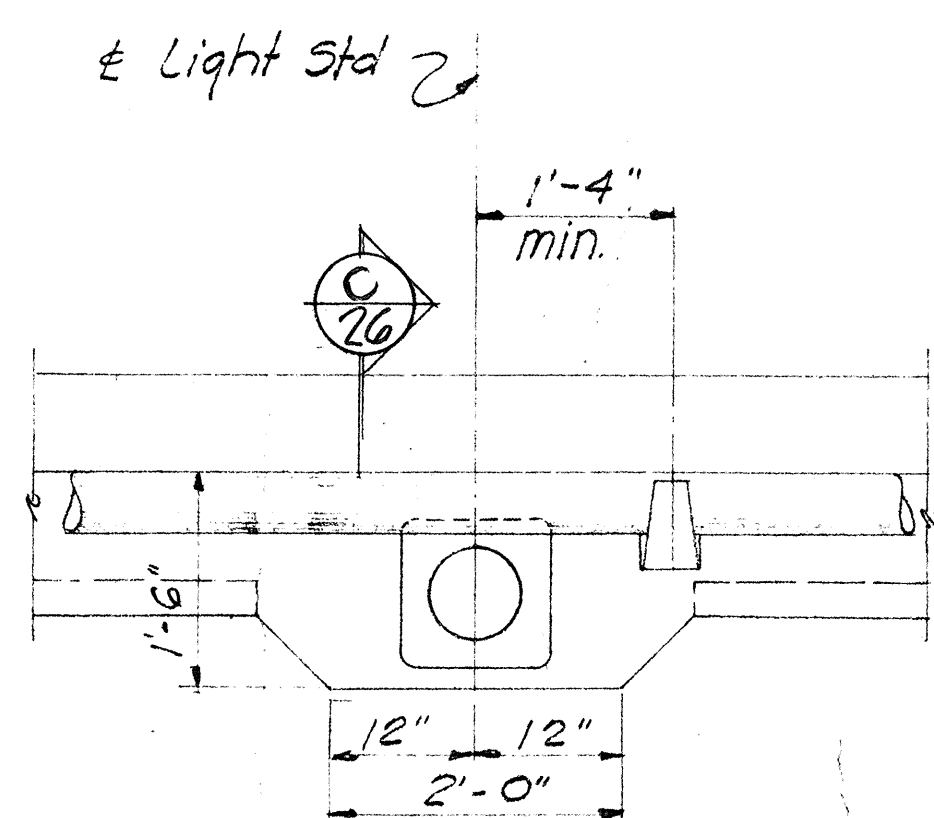


* * Note !!

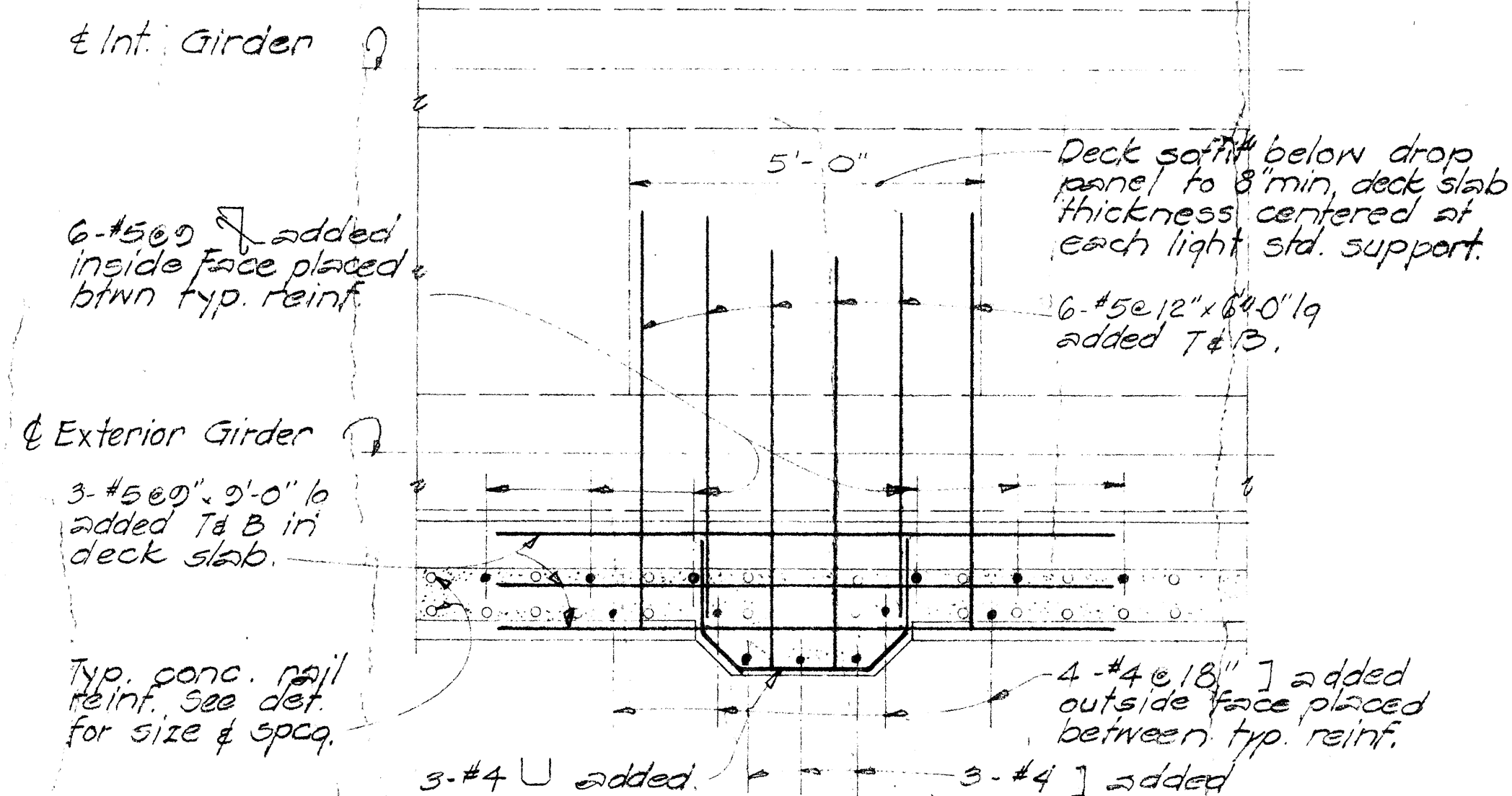
1. The contractor shall layout the railing to provide 3 cont. panels whenever possible. 2 or 4 cont. panels will be permitted to complete the layout when 3 cont. panels cannot be made. Single panels will not be permitted.
2. Rail Posts shall be normal to grade.
3. Provide double posts at each expansion jt., fixed bridge jt., continuous support, and as shown on detailed drawing.



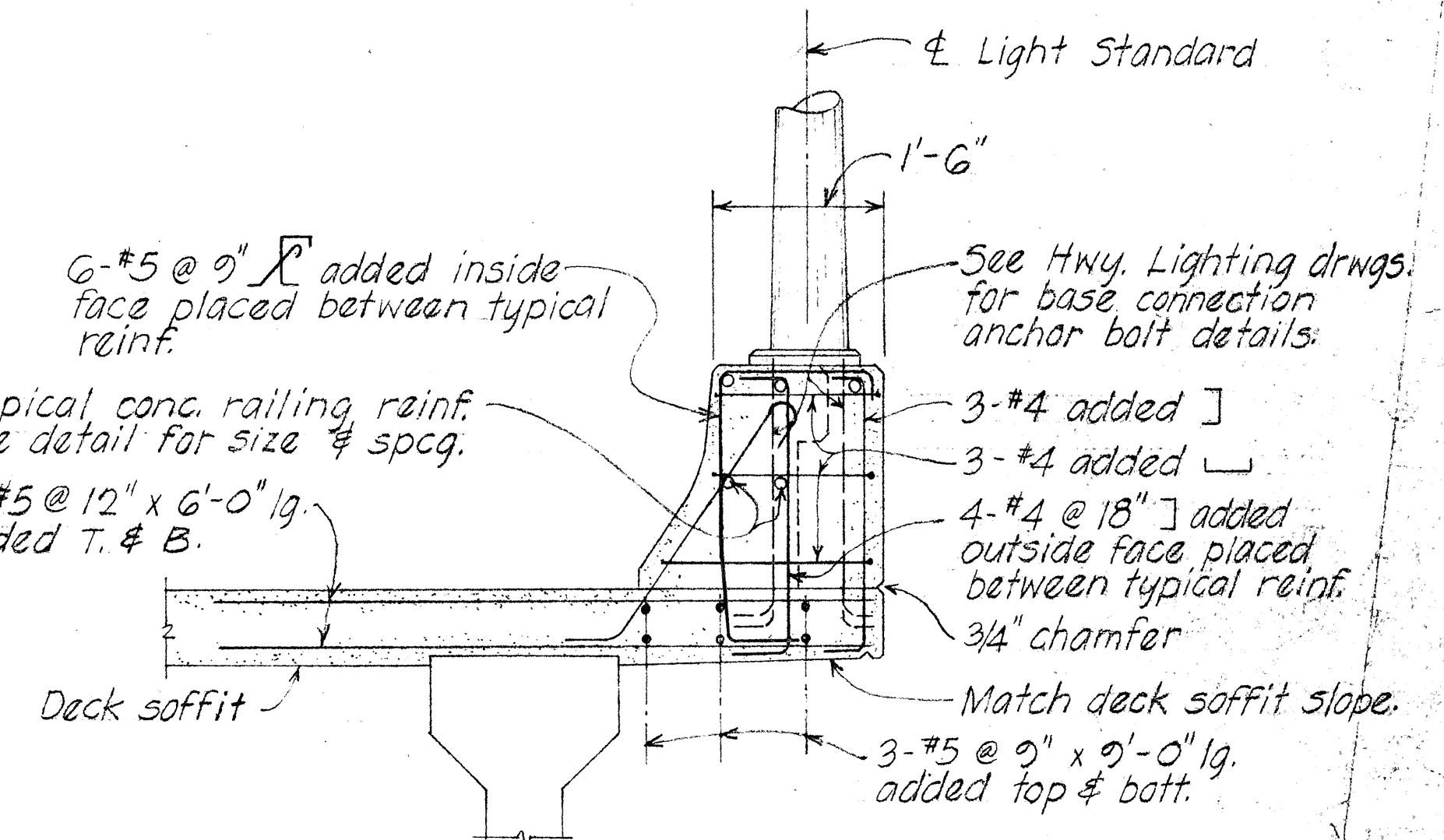
PART ELEVATION
SCALE: $\frac{3}{4}" = 1'-0"$



PART PLAN
SCALE: $\frac{3}{4}" = 1'-0"$

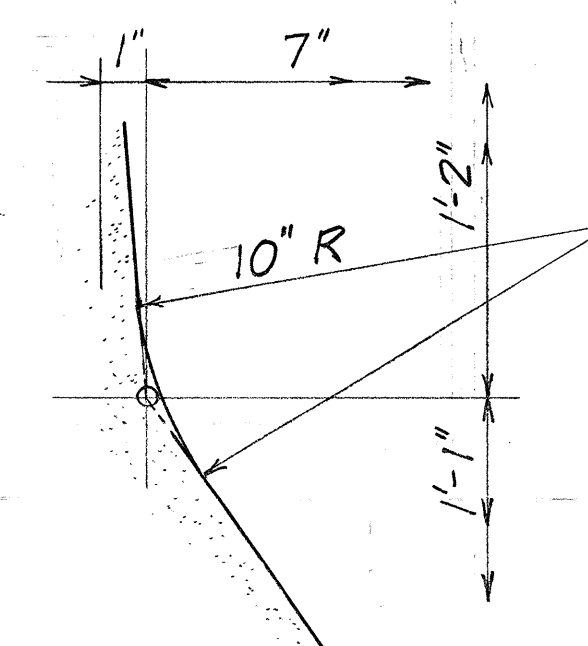


SECTION B
SCALE: $\frac{1}{2}" = 1'-0"$ 26



SECTION C
26

Scale: $\frac{3}{4}" = 1' - 0"$



DETAIL 
Scale: 3" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

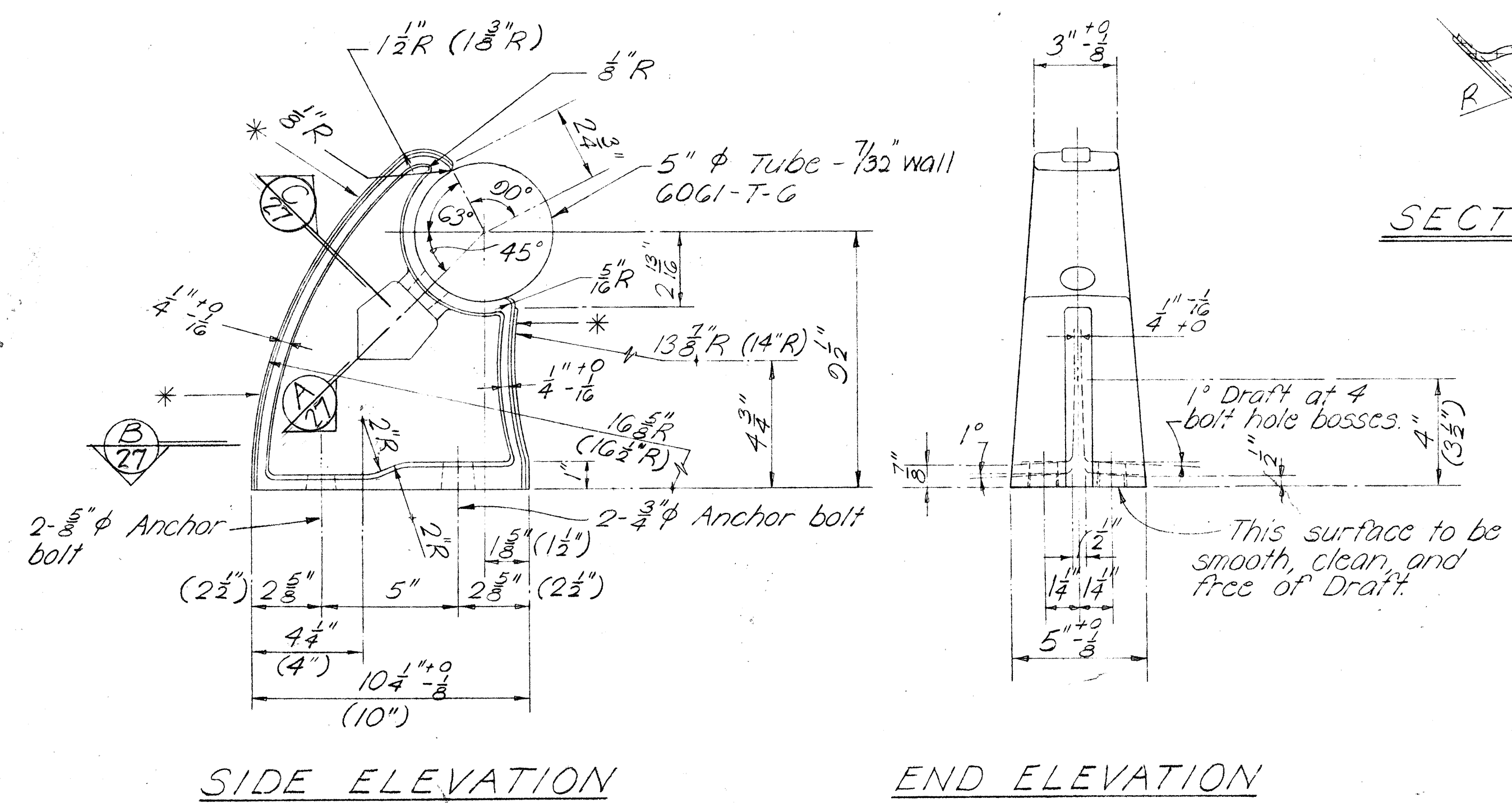
TYPICAL DETAILS

ALUMINUM BRIDGE RAILING
ONE RAIL COMBINATION TYPE
ON PARAPET

Dec. 1974

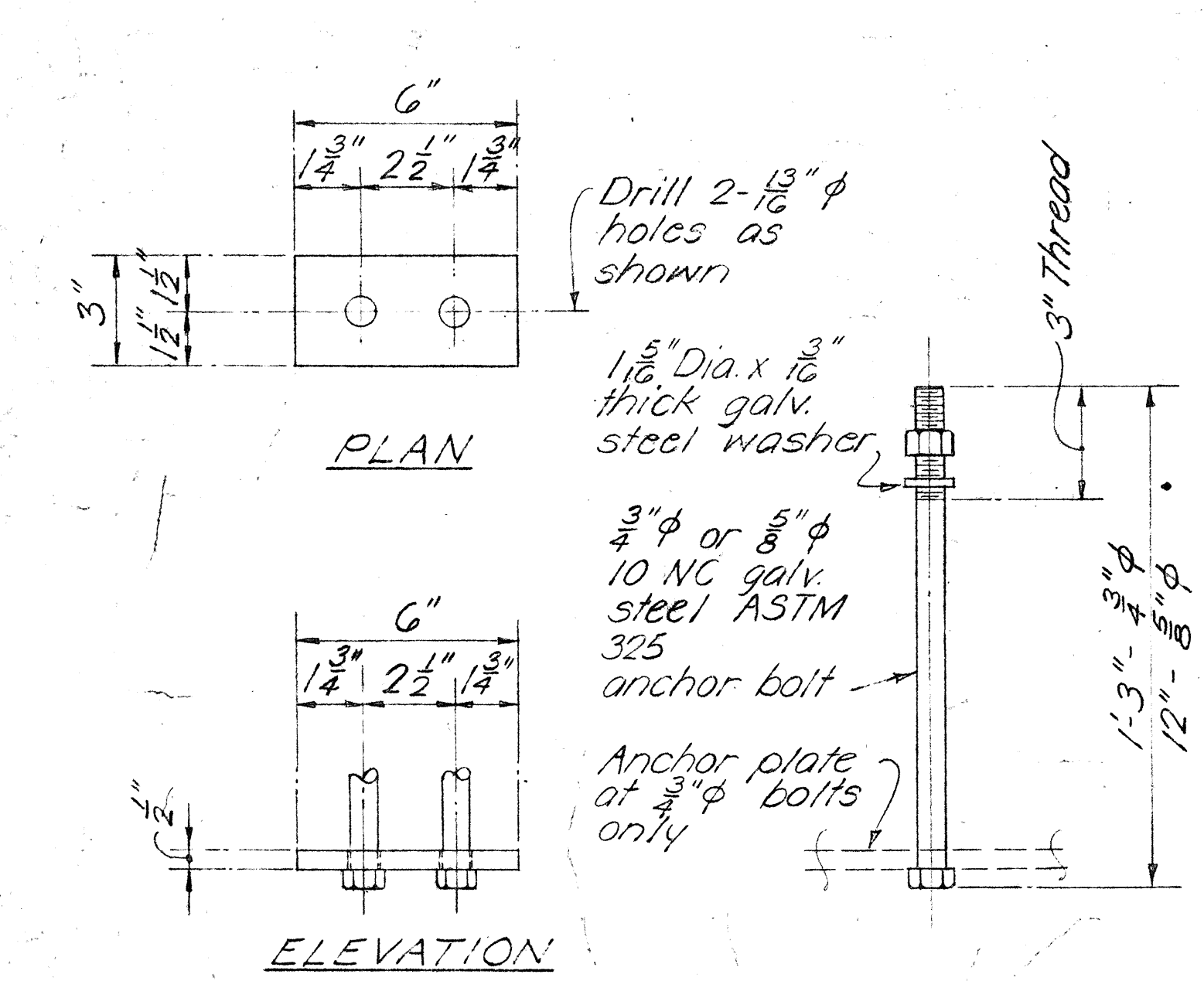
SHEET No. 26 OF 30 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	112-16-12	1975	100	127

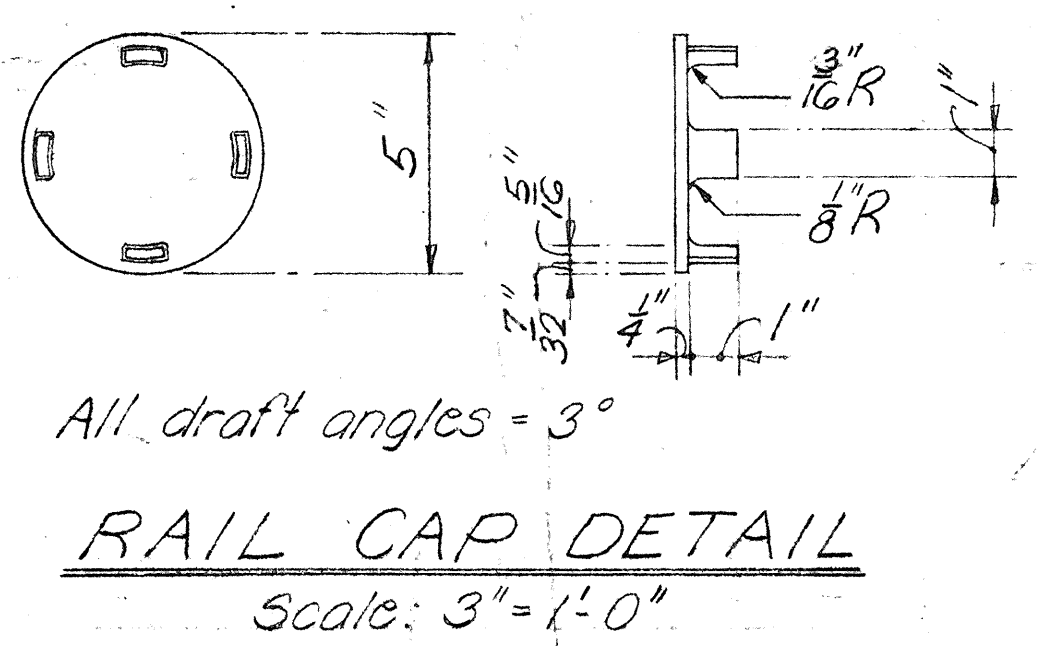
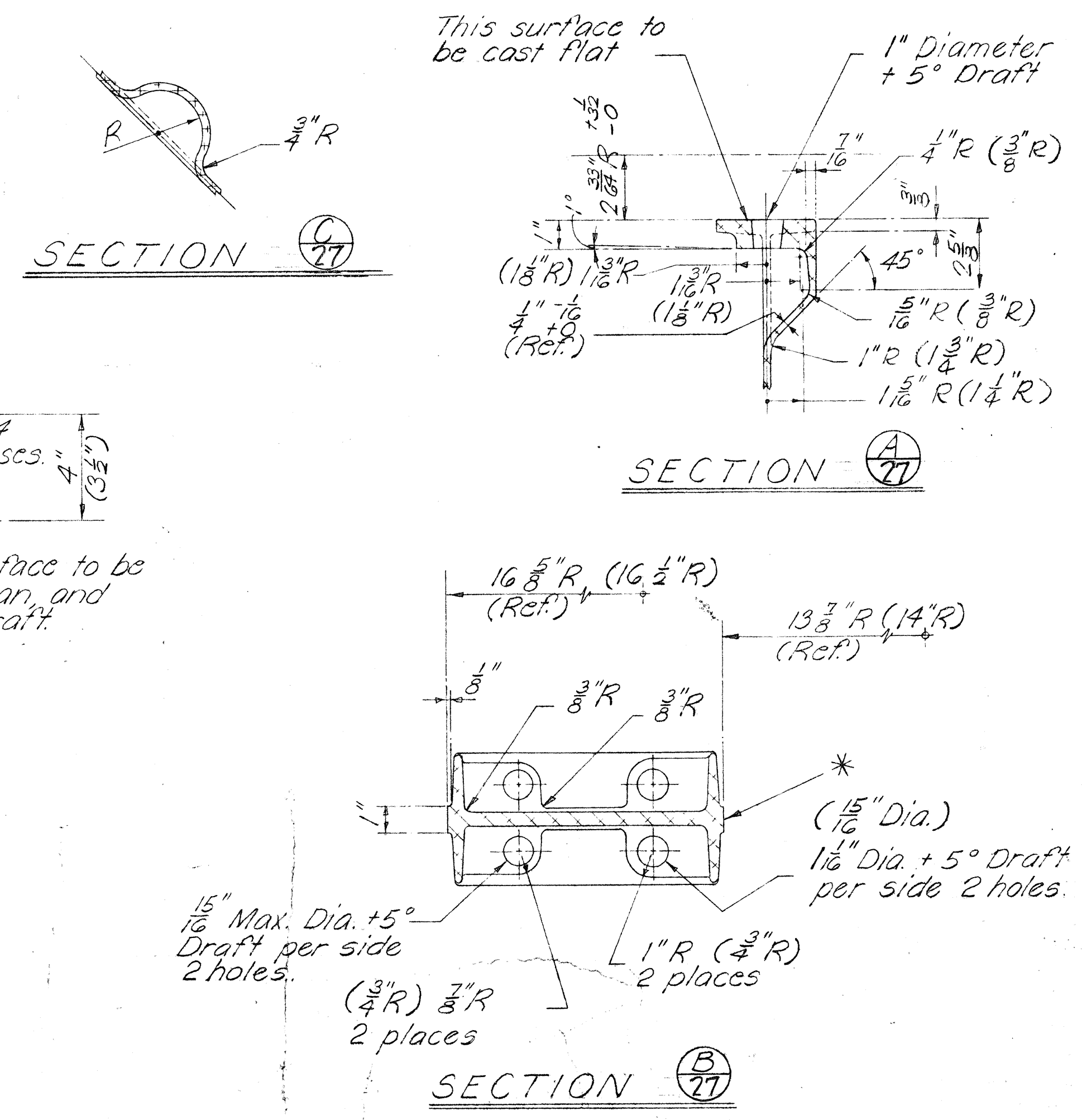


NOTE:
 * Casting to be supplied with a standard scratch brush finish on entire gating rib surface and as indicated by an asterisk (*). Finish shall be approved by the Engineer.
 Casting to be neatly trimmed and any protruding flash to be broken off. Unless otherwise specified, draft angles to be 3°, 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"

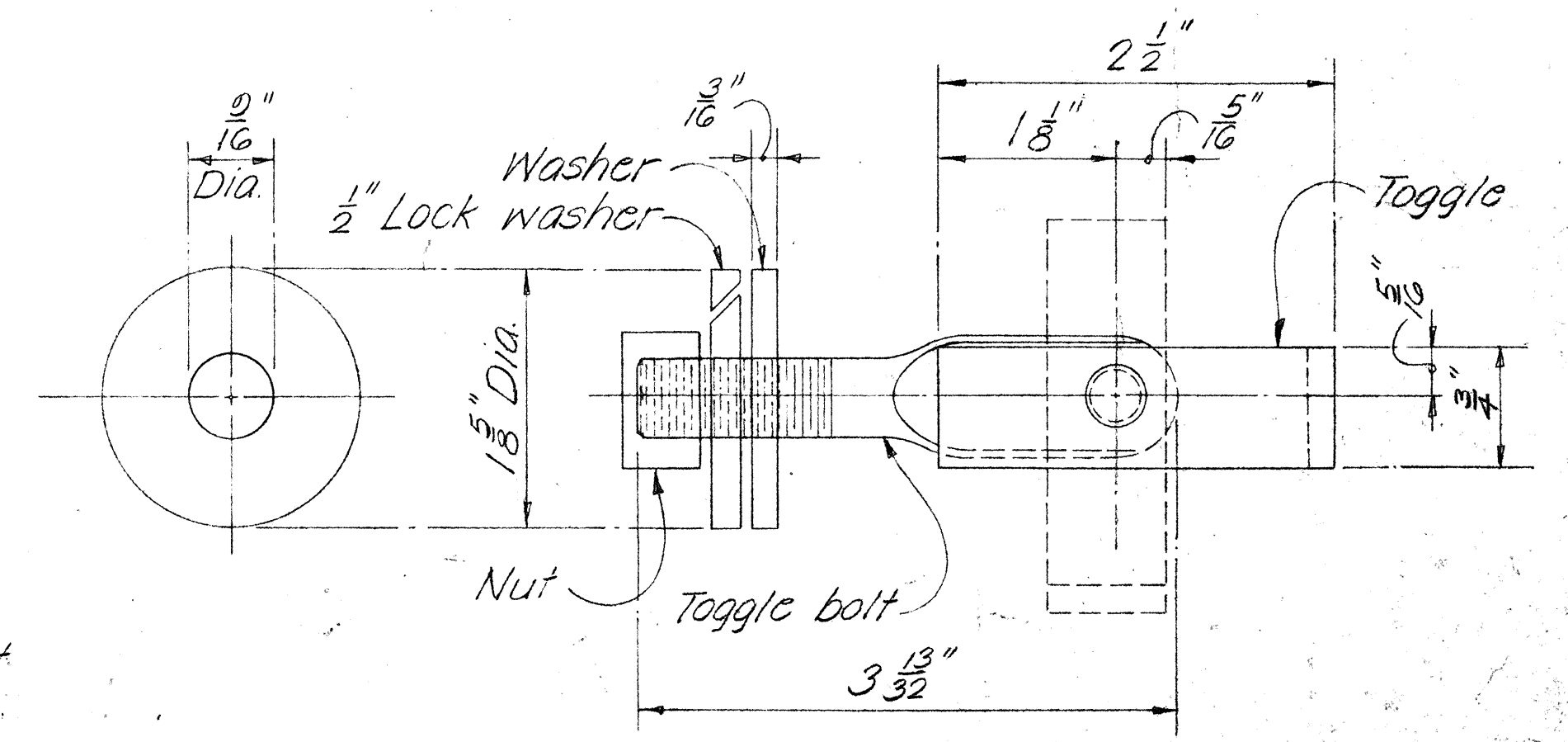


ANCHOR BOLT DETAIL
ANCHOR BOLT
TYPICAL RAIL POST
STEEL ANCHOR BOLT ASSEMBLY
 Scale: 3" = 1'-0"

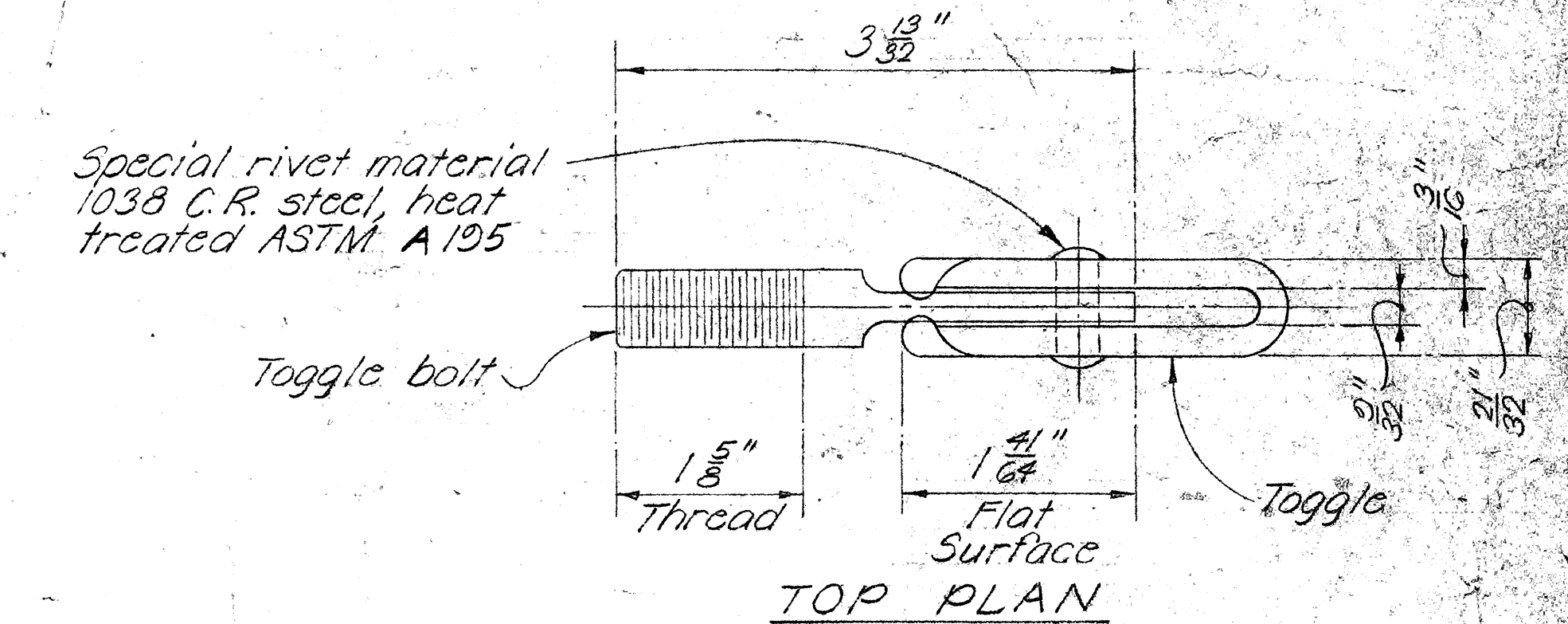


All draft angles = 3°

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



WASHER
SIDE ELEVATION ASSEMBLY

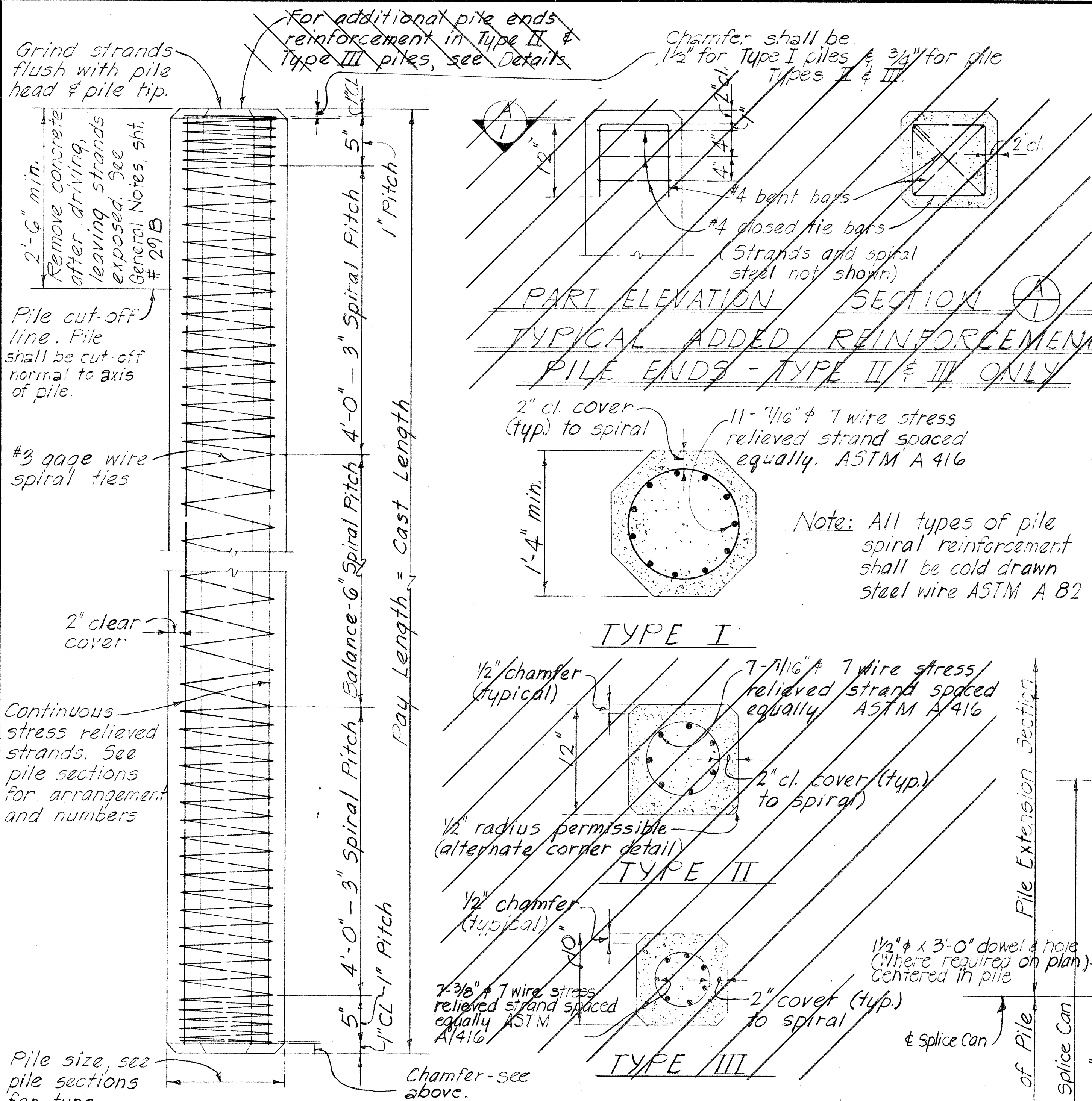


1/2" Φ STEEL TOGGLE BOLT DETAILS
 Full Scale.

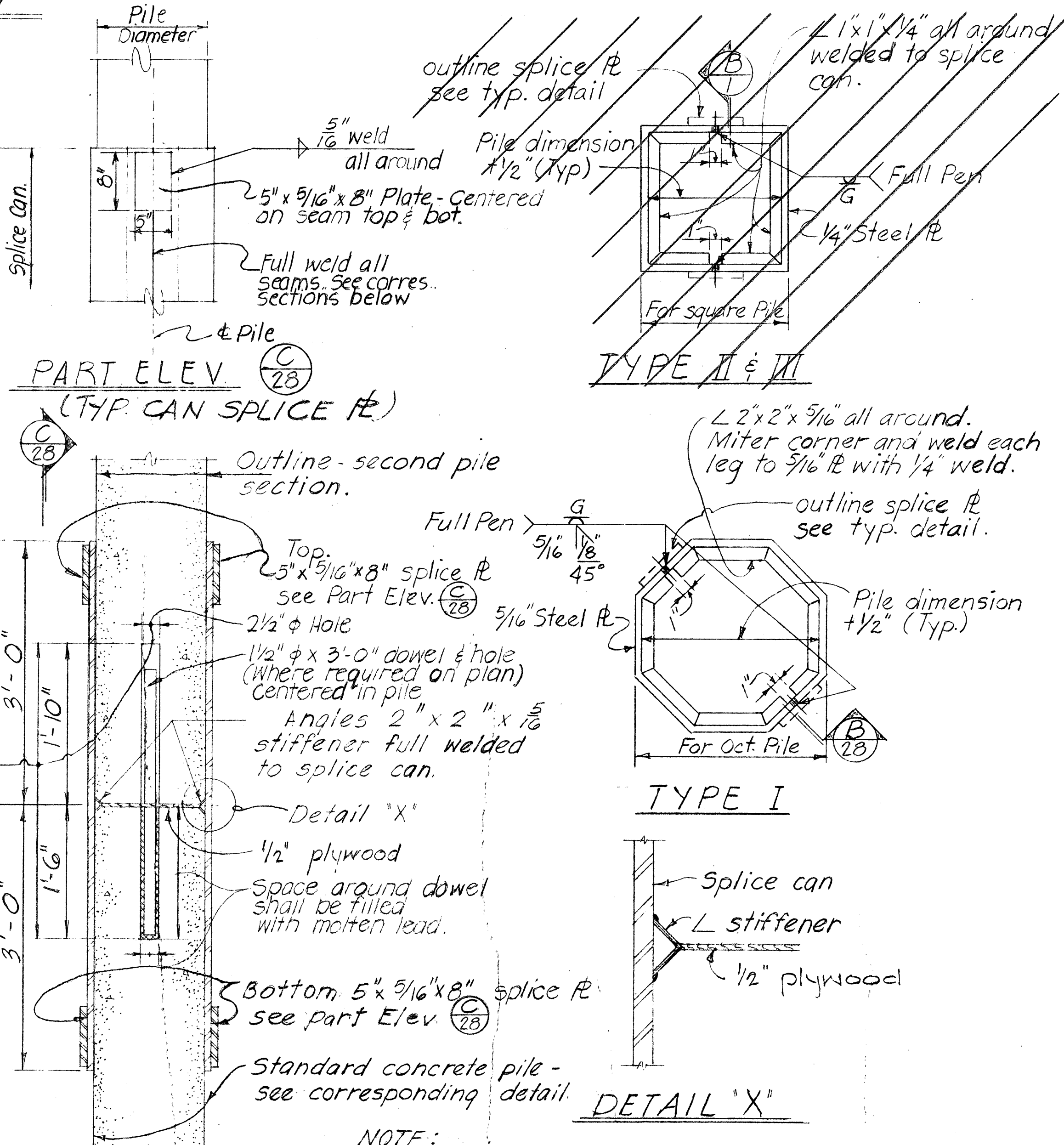
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

TYPICAL DETAILS
ALUMINUM BRIDGE RAILING
ONE RAIL COMBINATION TYPE
ON PARAPET

Scale: as noted Date: Dec. 1974
 SHEET No. 27 OF 30 SHEETS



NOTE:
Concrete in pile build-ups without driving shall be Class A Concrete. Concrete in pile build-ups with driving shall have a minimum compressive cylinder strength f'_c of 5000 p.s.i. at 28 days. Build-ups may be driven if the specimen of concrete from which the piles were poured develops a strength of at least 3500 p.s.i. but not earlier than 7 days.



TYPICAL PILE DETAIL		TYPICAL SECTIONS THRU PILES	
Max. Length "L" *	Max. Length "L" *	Length "L" *	
Type I "L" = 59'-0"	Type I "L" = 75'-0"	Type I "L" over 75'-0"	
12" Type II "L" = 50'-0"	12" Type II "L" = 72'-0"	12" Type II "L" over 72'-0"	
10" Type III "L" = 46'-0"	10" Type III "L" = 66'-0"	10" Type III "L" over 66'-0"	
0.30L	0.21L	0.15L	
0.70L	0.58L	0.35L	
	0.21L	0.35L	
		0.15L	

*The length "L" is the distance end to end of pile.

1 POINT PICK-UP **2 POINT PICK-UP** **3 POINT PICK-UP**

NOTE: Unless special lifting devices are attached for pick-up points, pick-up points shall be plainly marked on all piles after removal of the forms and all lifting shall be done at these points. The use of special embedded or attached lifting devices, the employment of other pick-up points or any other method of pick-up shall be subject to approval by the Engineer.

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAILS
PRESTRESSED CONCRETE PILES
KAPAA QUARRY SEPARATION
STRUCTURE NO. 1 & NO. 2

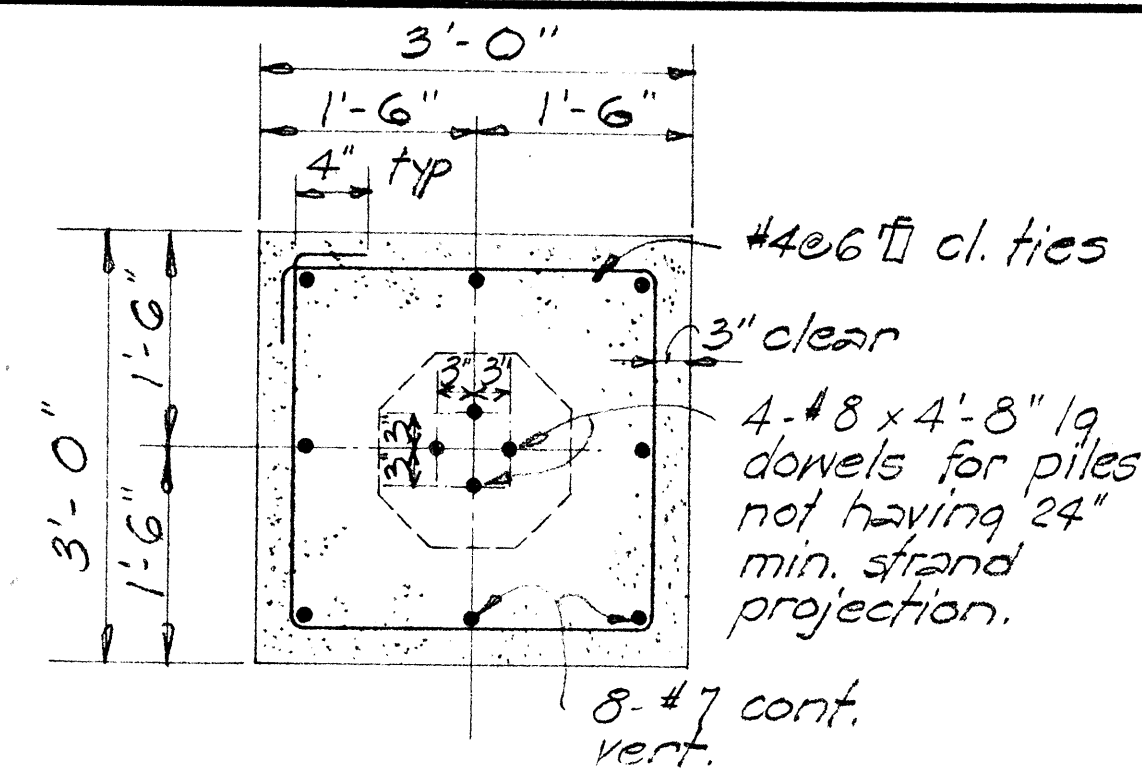
Date: MARCH 1972

SHEET No. 23 OF 30 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-43-1(6)12	1975	102	127

2'-6" min. unless otherwise directed by the Engineer.
Remove concrete after driving, leaving reinf. exposed

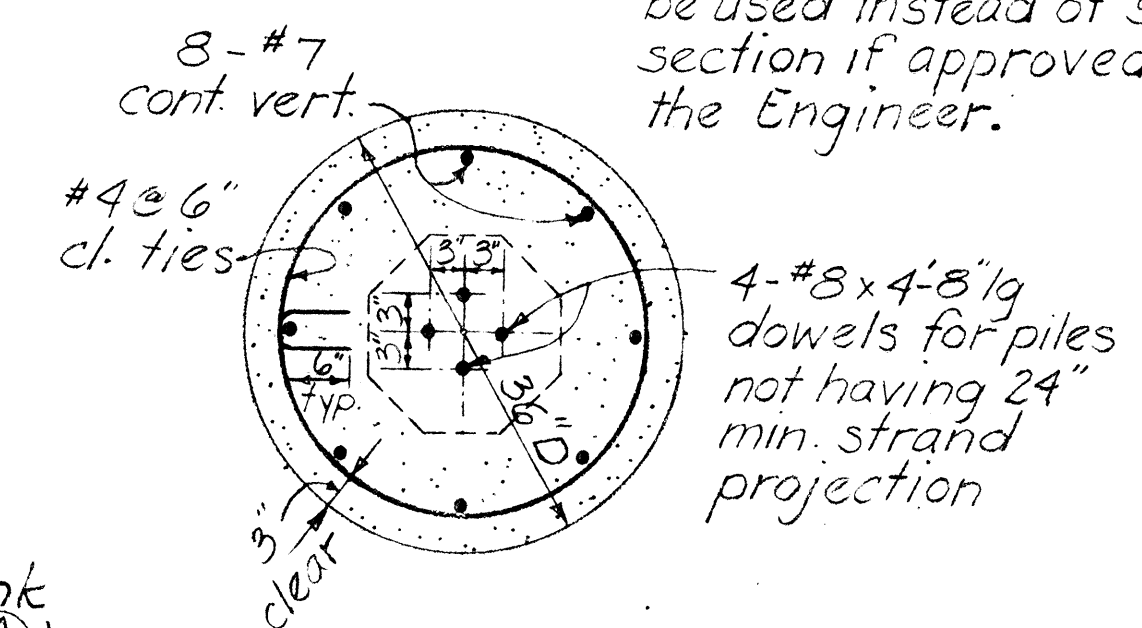
Chamfer - See Typical Pile Detail.



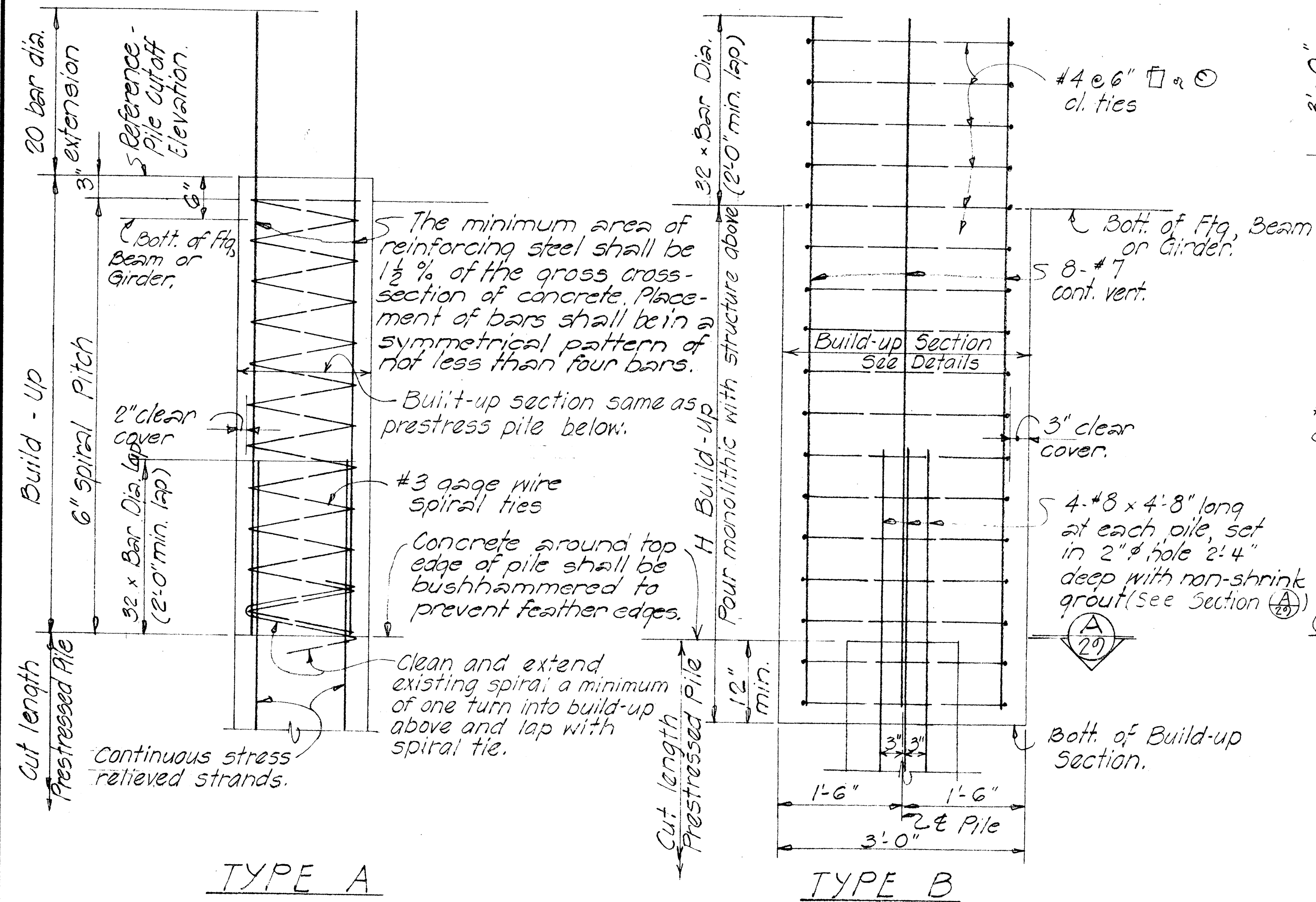
SQUARE BUILD-UP

Note:

Circular section may be used instead of square section if approved by the Engineer.



CIRCULAR BUILD-UP SECTION (A) 29



TYPE A

Notes:

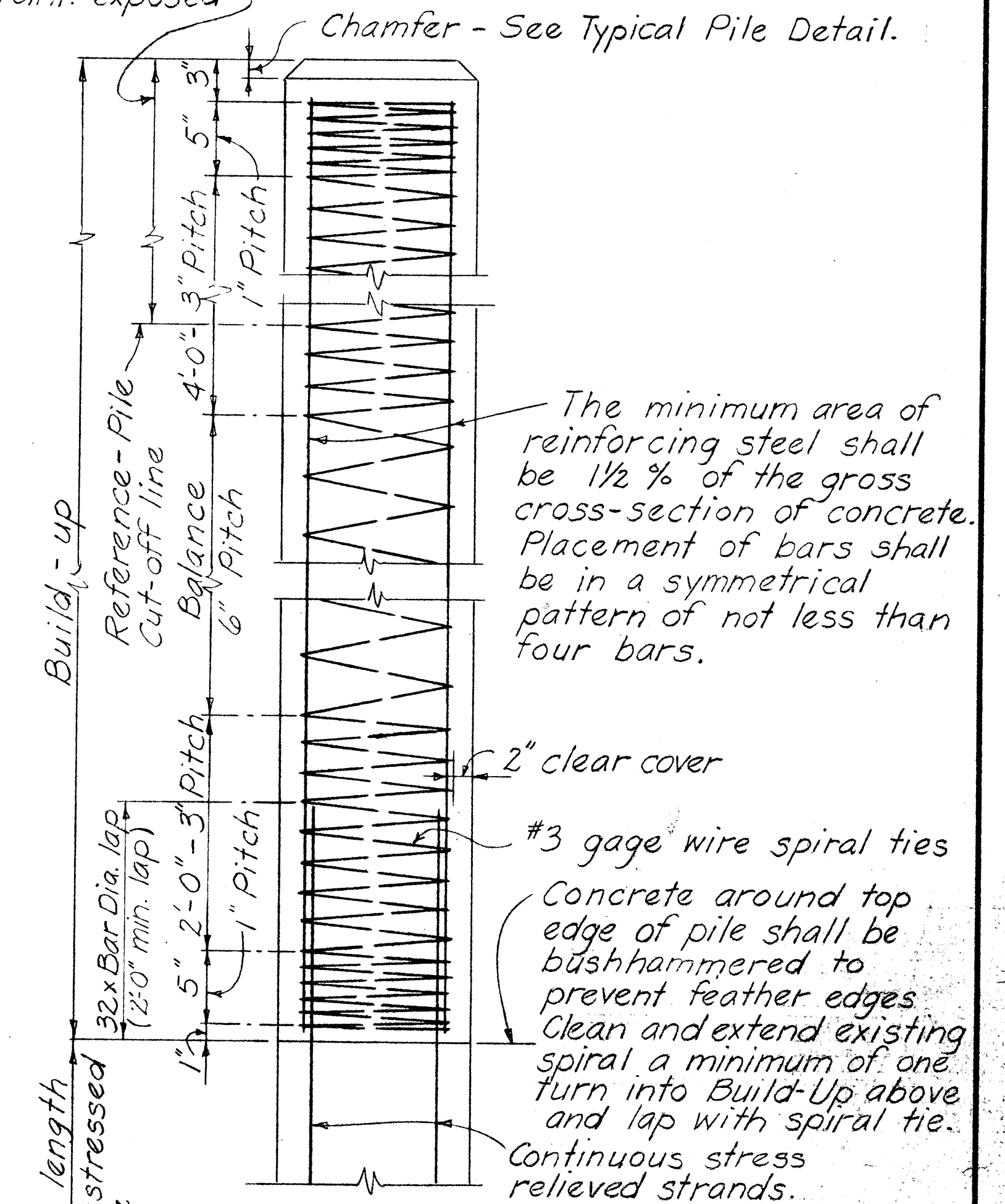
Selection of pile build-up type without driving to be determined by the Engineer.
When height of depressed portion of footing (H) exceeds 4', the depressed section shall be poured separately from the main body of the footing.

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.

WITHOUT DRIVING
TYPICAL PILE BUILD-UP DETAILS

GENERAL NOTES

1. Work of cutting off prestressed conc. piles or concrete build-ups shall be performed in such a manner as to avoid spalling or damaging the pile below cut-off. In case of such damage, the pile shall be replaced or repaired by the Contractor at his expense as directed by the Engineer.
2. Portion of pile embedded into footing shall be of sound concrete. Damaged portions shall be removed and pile cut-off elevation lowered as required by the Engineer.



WITH DRIVING
TYPICAL PILE BUILD-UP DETAIL

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
TYPICAL DETAILS PRESTRESSED CONCRETE PILES KAPAA QUARRY SEPARATION STRUCTURE NO. 1 & NO. 2
Date: MARCH 1972

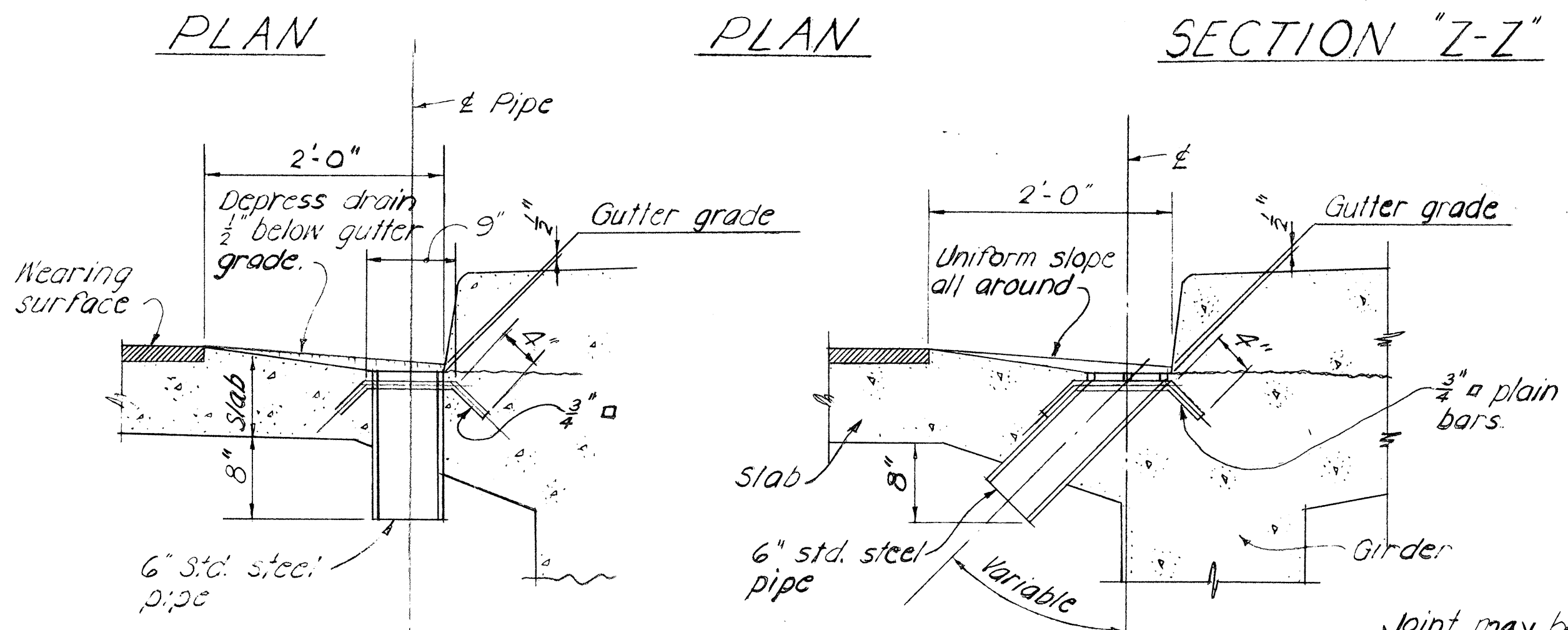
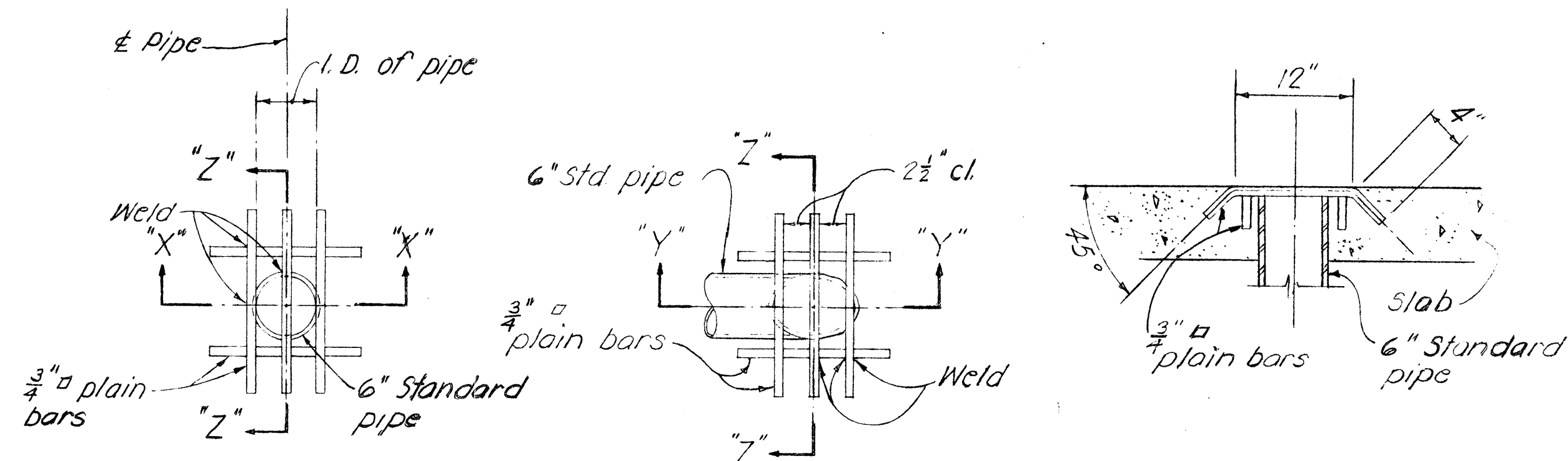
SHEET No. 29 OF 30 SHEETS

GENERAL NOTES

- All concrete shall be Class A unless otherwise noted.
- Reinforcing shall be detailed in accordance with A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures unless otherwise noted.
- Clearance for reinforcing bars shall be as follows, unless otherwise noted:
 - 1/2" for stirrups of beams & pier caps.
 - 2" for ties of columns.
 - 2" for formed walls.
 - 3" for footings.
- 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.
- 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.
- 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".
- Concrete seats receiving steel plates, lead plates or neoprene pads shall be poured monolithically with supporting structures & top of concrete seats shall be finished with a steel trowel to a smooth level surface at the elevation shown on the plans.
- Elastomeric Pads: 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.
- 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.
- Gothic letters and figures approximating dimensions shown will be acceptable if approved by the Engineer.
- The contractor shall verify the location of all existing utility lines and notify the respective owners before commencing work of excavation or driving of piles.
- Standard Detail Drawings refer to all structures in general, except for modifications as may be required for special conditions. For such modifications refer to the corresponding detailed drawings.
- Structure backfill behind Abutment & Wingwalls for Structure #2 shall be placed after Superstructure, prestressed Concrete Girders & Deck are complete in place.

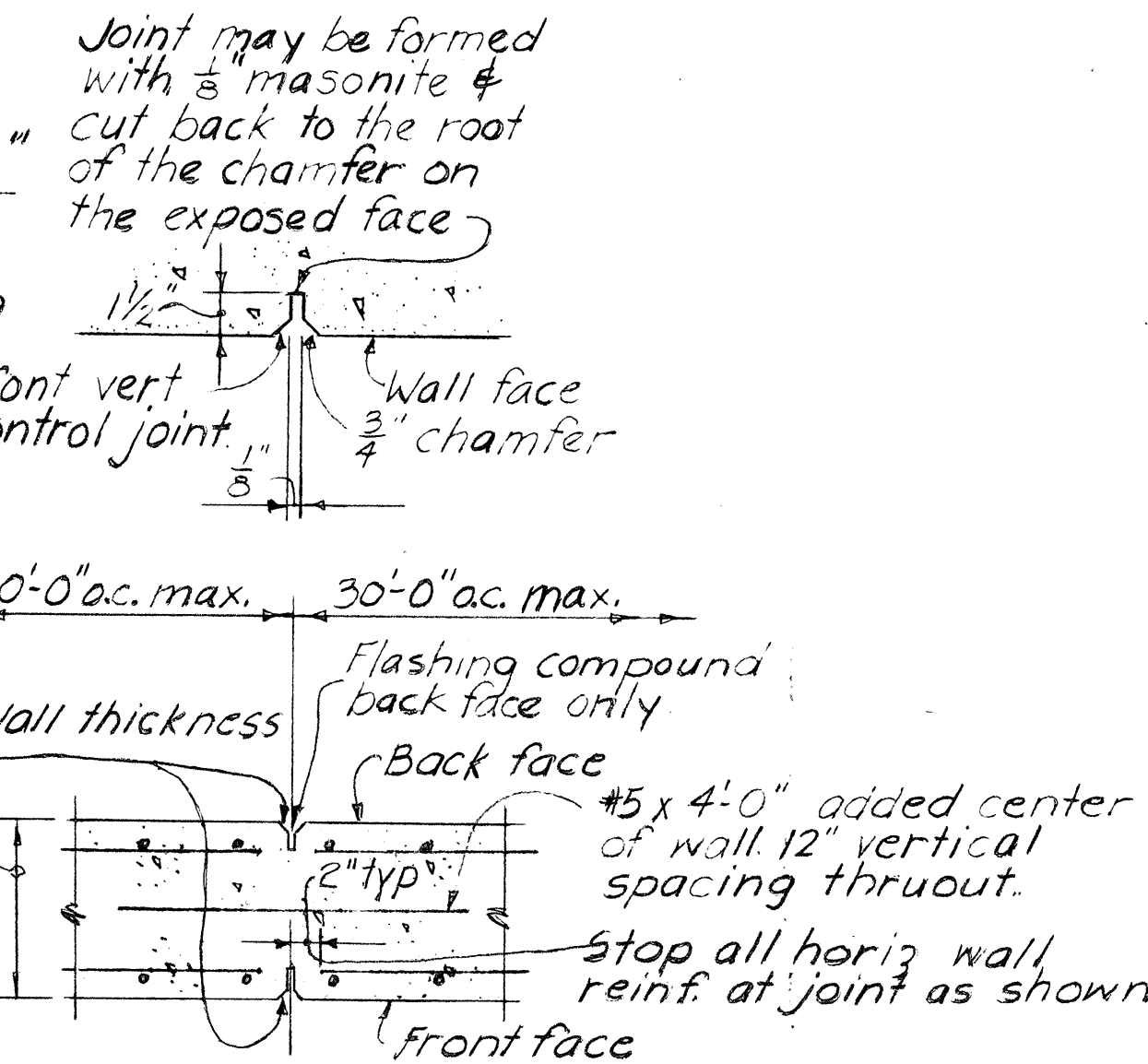
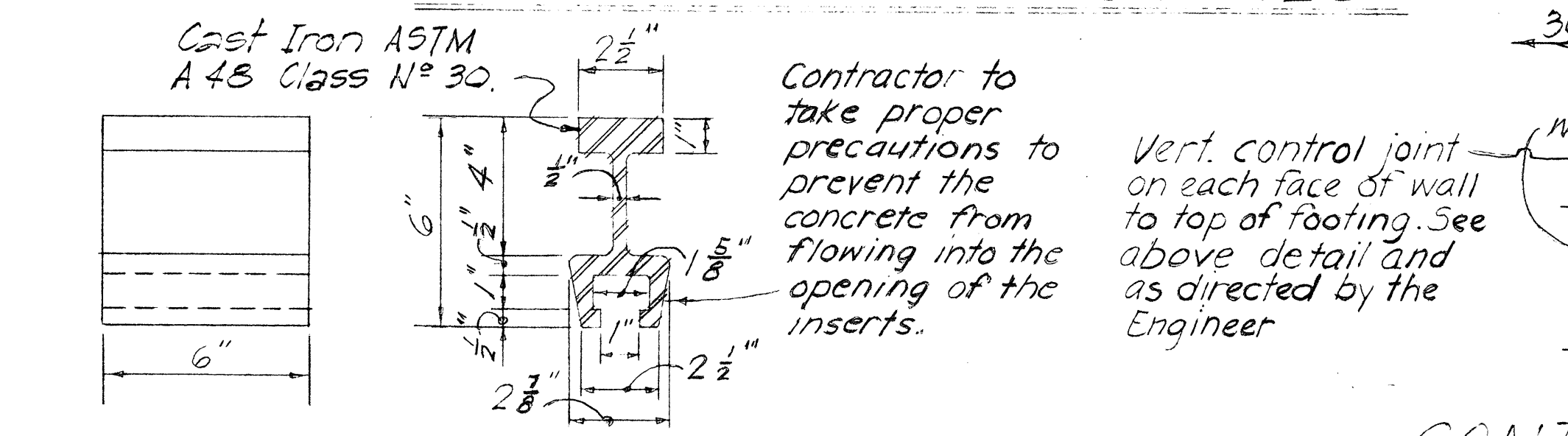
TYPICAL CONCRETE GROOVE DETAIL

DRIP DETAIL



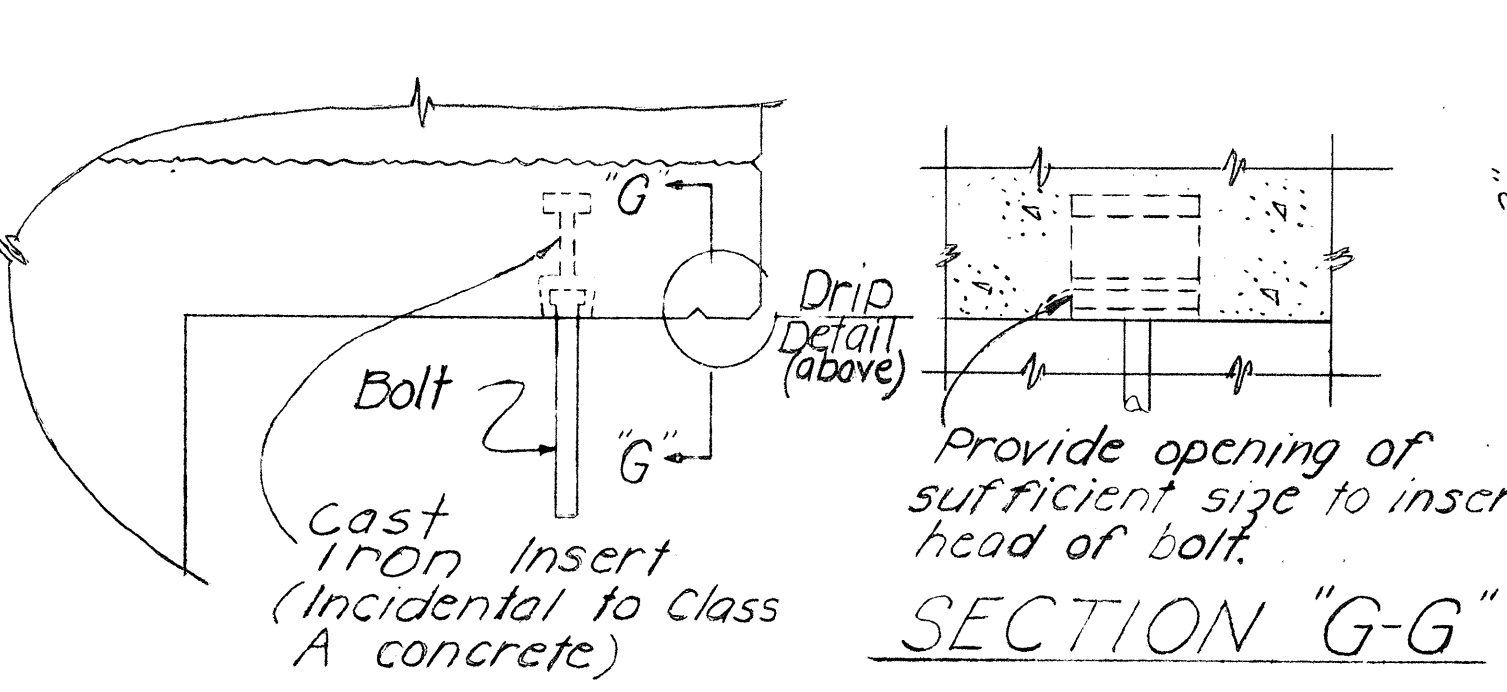
NOTE: Metal drains shall be considered incidental to Class A Concrete in both concrete and steel bridges and will not be paid for separately. Assembly of grillage and pipe shall be hot-dip galvanized after all welding is completed.

TYPICAL DRAINAGE DETAILS



CONTROL JOINT DETAILS

INSERT DETAIL

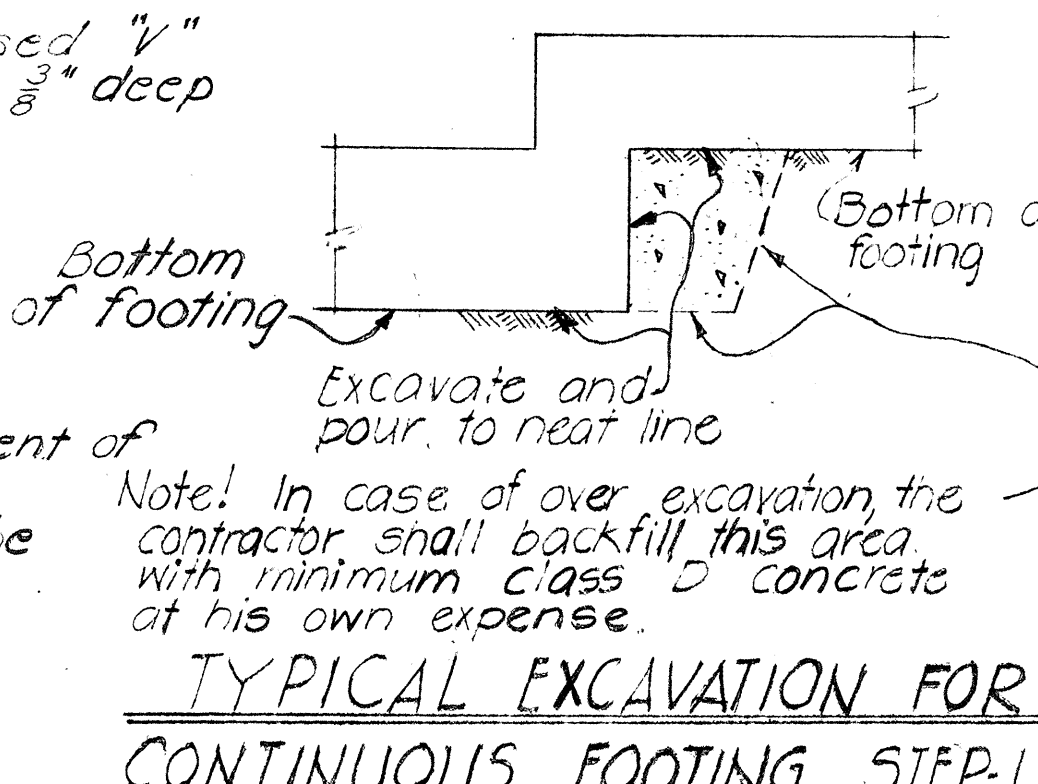


DETAIL OF PIPE HANGERS & INSERTS

NAME DATE

Use correct name of bridge Date of Year built
NOTE: Refer to corresponding detail drawings for placement of such names & dates at end post. Exact details & spacing of letters & figures shall be as directed by the Engineer. See Note #12.

TYPICAL DETAIL OF LETTERS & FIGURES AT CONCRETE END POST



NOTE: In case of over excavation the contractor shall backfill this area with minimum Class D concrete at his own expense.

TYPICAL EXCAVATION FOR CONTINUOUS FOOTING STEP-UP

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
TYPICAL DETAILS
 NOTES AND MISCELLANEOUS
 DETAILS
 KADAA QUARRY SEPARATION
 STRUCTURE NO. 1 & NO. 2
 Date: MARCH 1972
 SHEET No. 30B OF 30 SHEETS