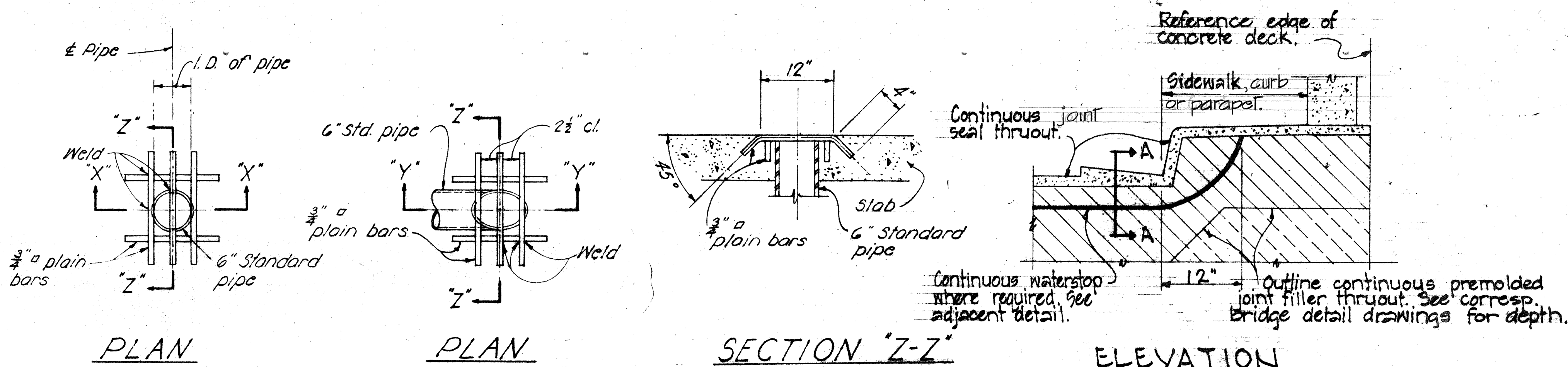


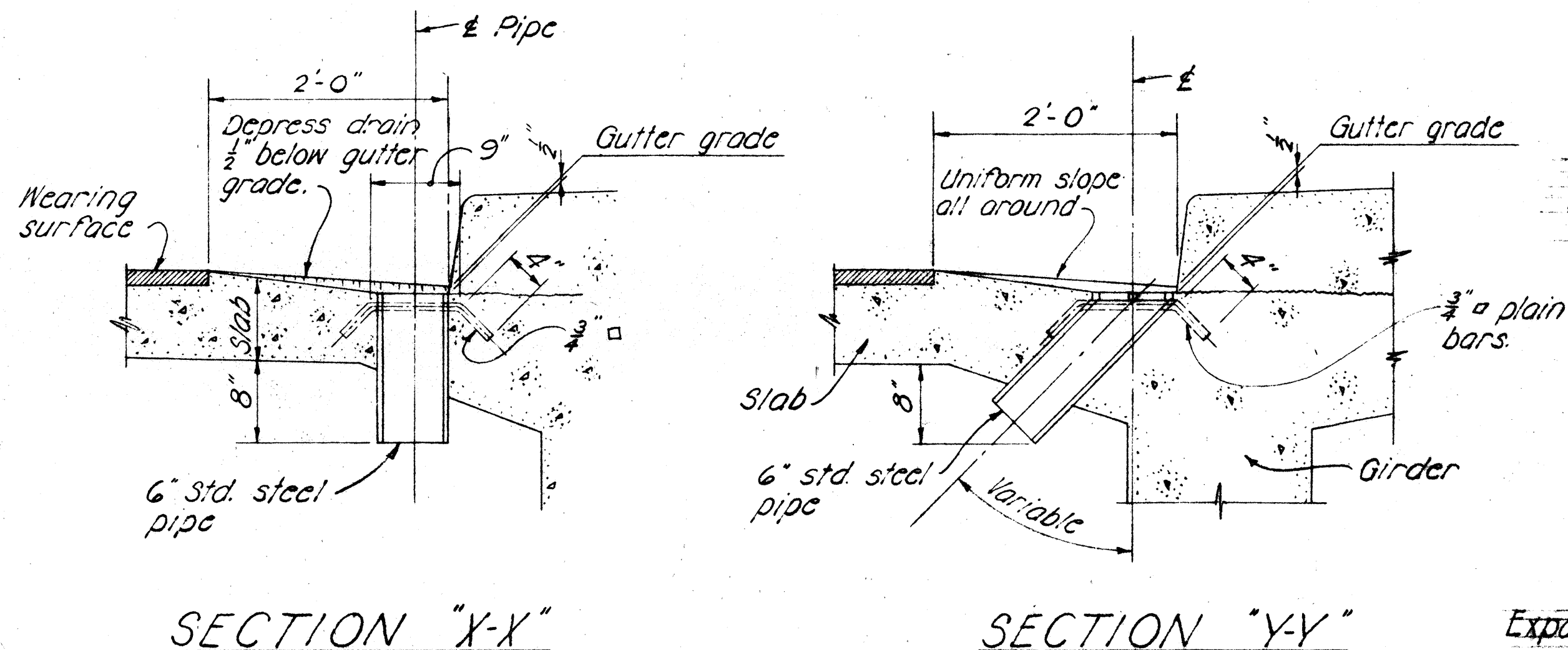
Revision

Jan. '67  
Feb. '67  
Aug. '68

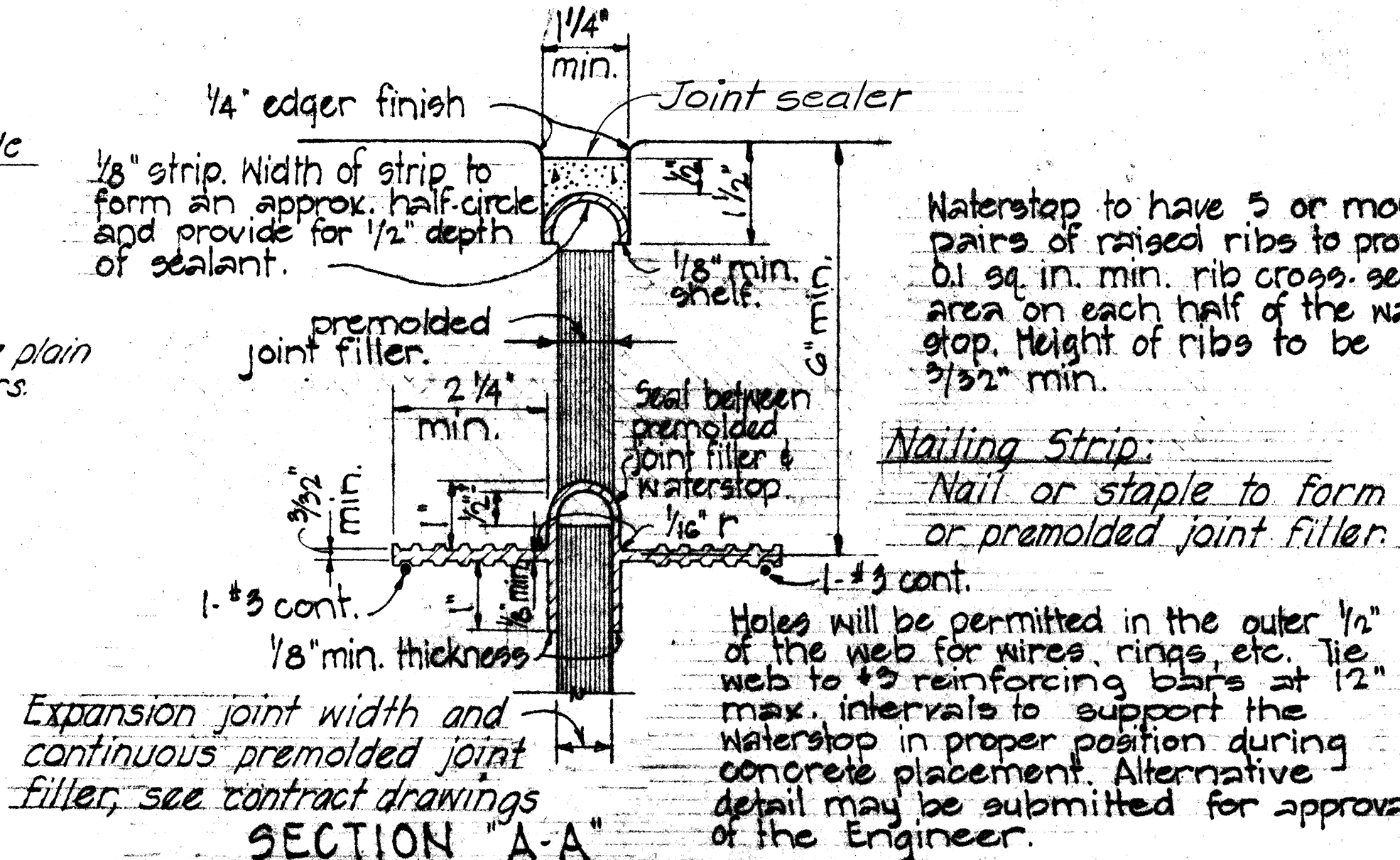


## GENERAL NOTES

- The Contractor shall verify the location of all existing utility lines and notify the respective owners before commencing work of excavation or driving piles.
- 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.
- Unless indicated otherwise, minimum spacing between parallel bars and parallel bundles of bars shall be 2 1/2 times the diameter of bars, but in no case shall the clear distance between the bars or bundles be less than 1 1/2 times the maximum size of the coarse aggregate. Bars shall be bundled where shown.
- Placement of bundled bars shall conform with A.C.I. 318-63.

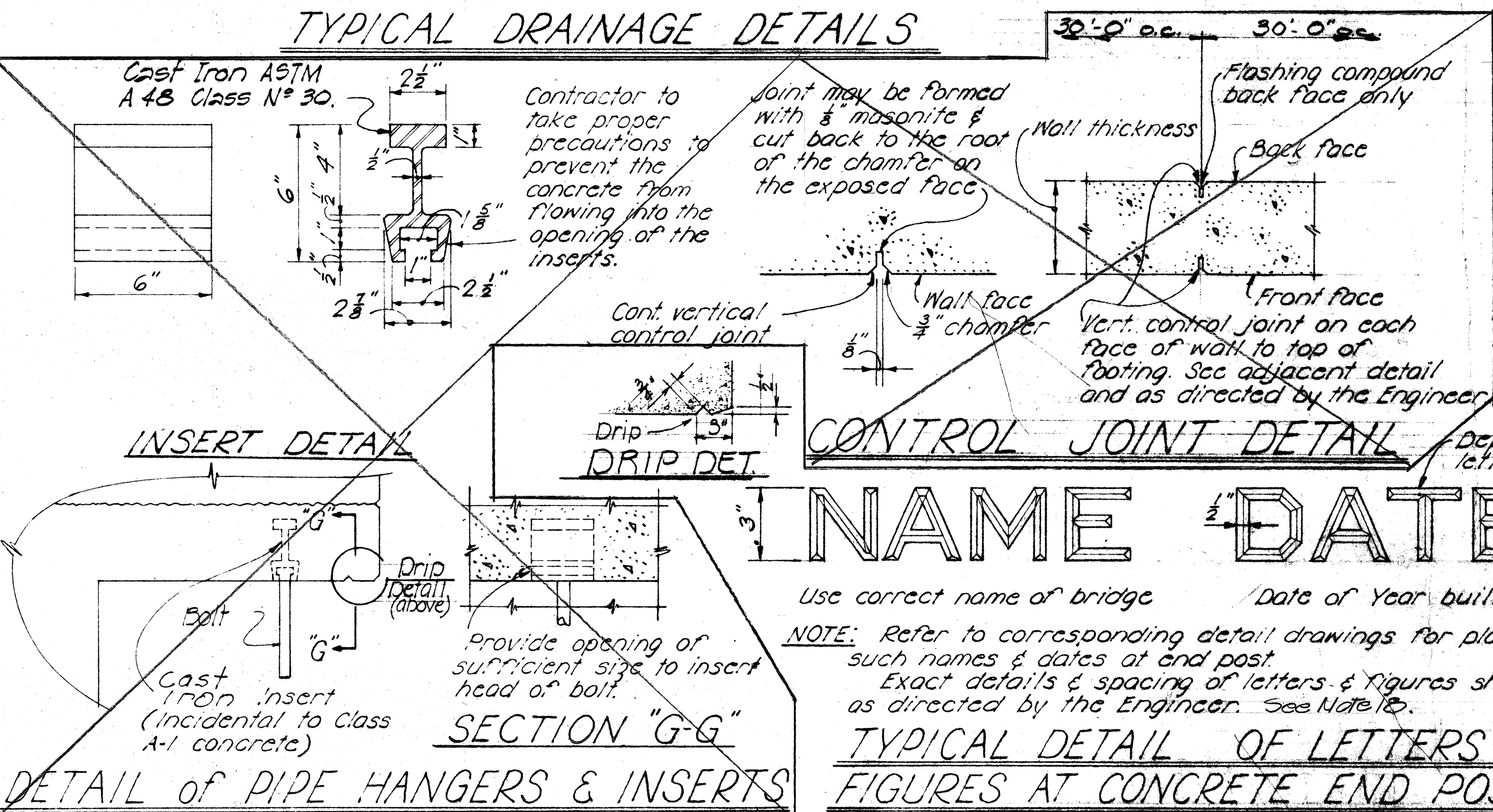


**NOTE:**  
Metal drains shall be considered incidental to Class A-1 Concrete in both concrete and steel bridges and will not be paid for separately.  
Assemblage of grillage and pipe shall be hot-dip galvanized after all welding is completed.



## TYPICAL EXPANSION JOINT DETAIL

## TYPICAL DRAINAGE DETAILS

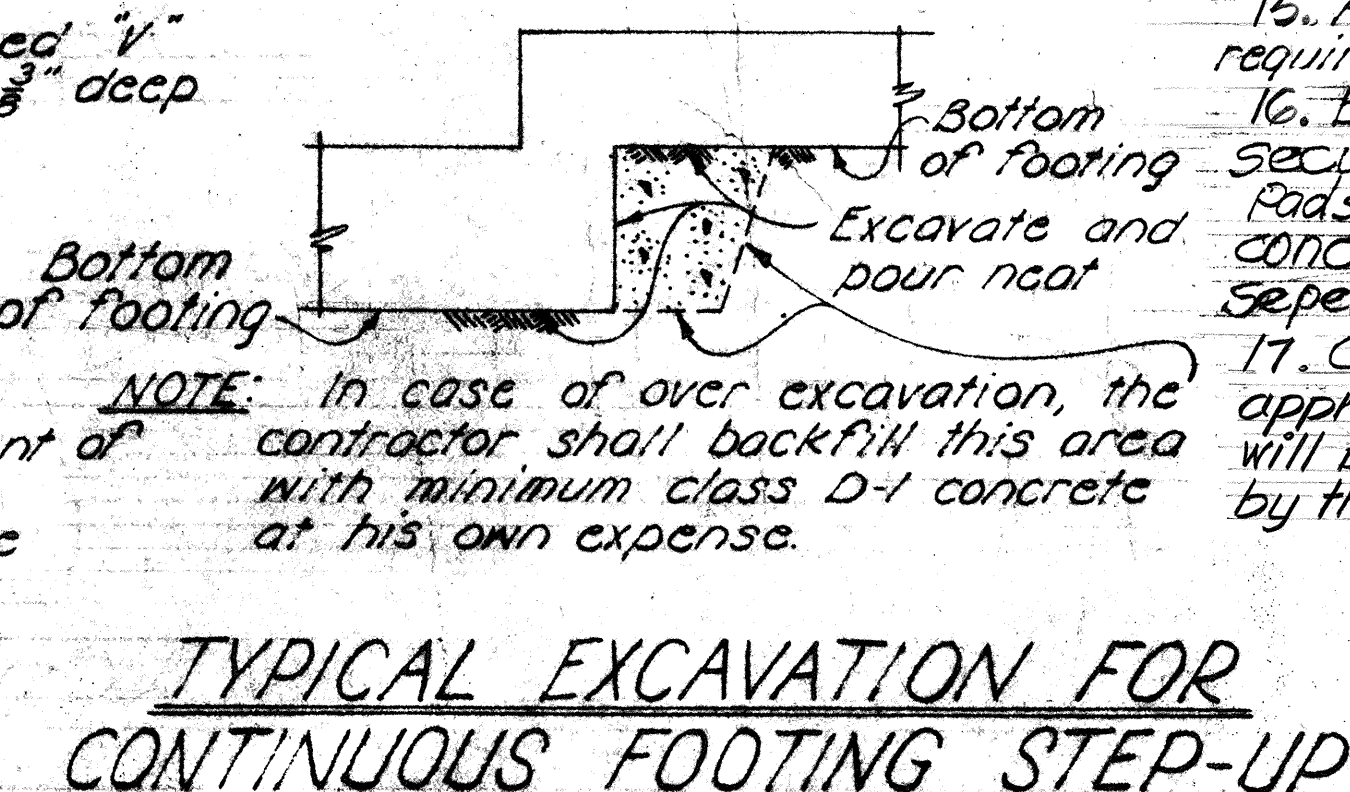


## DETAIL OF PIPE HANGERS & INSERTS

**NAME** **DATE**

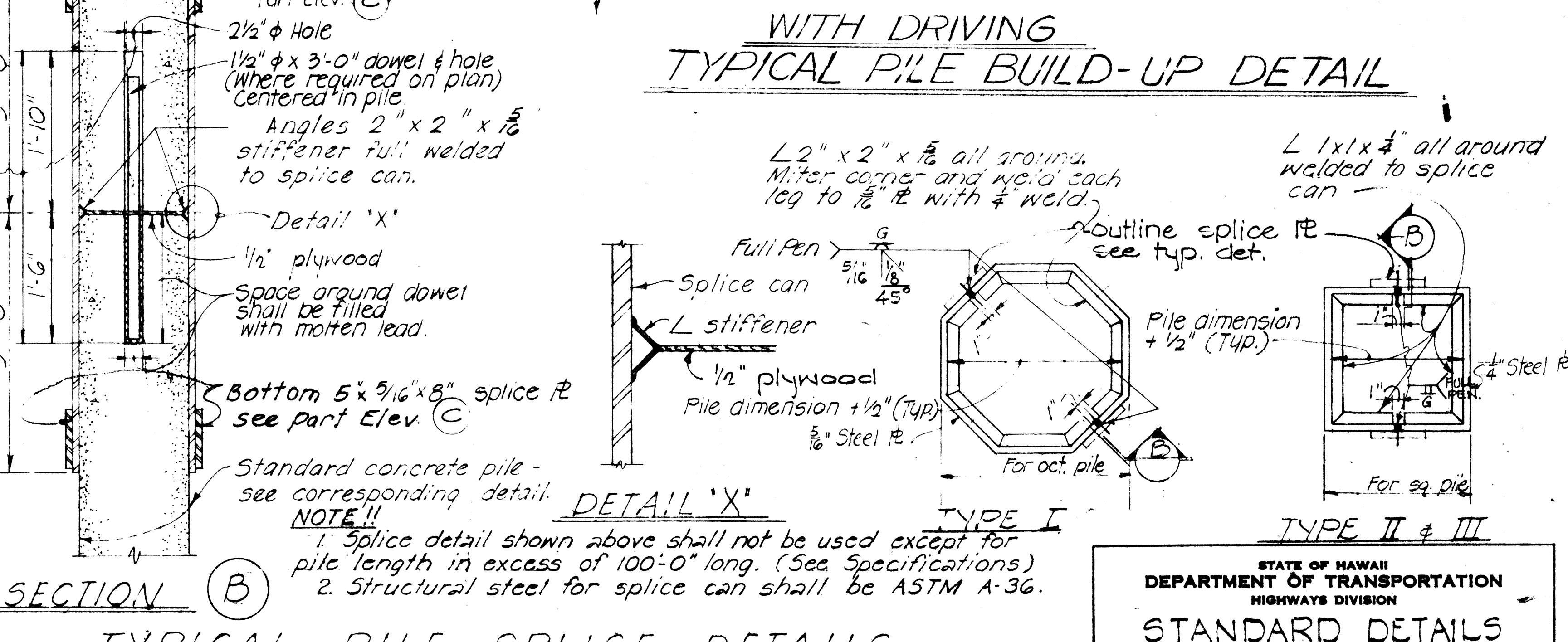
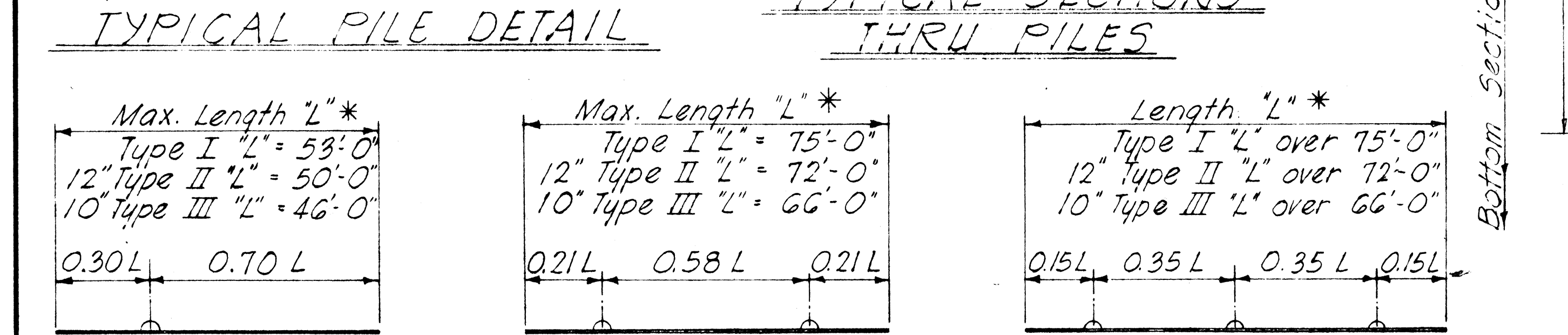
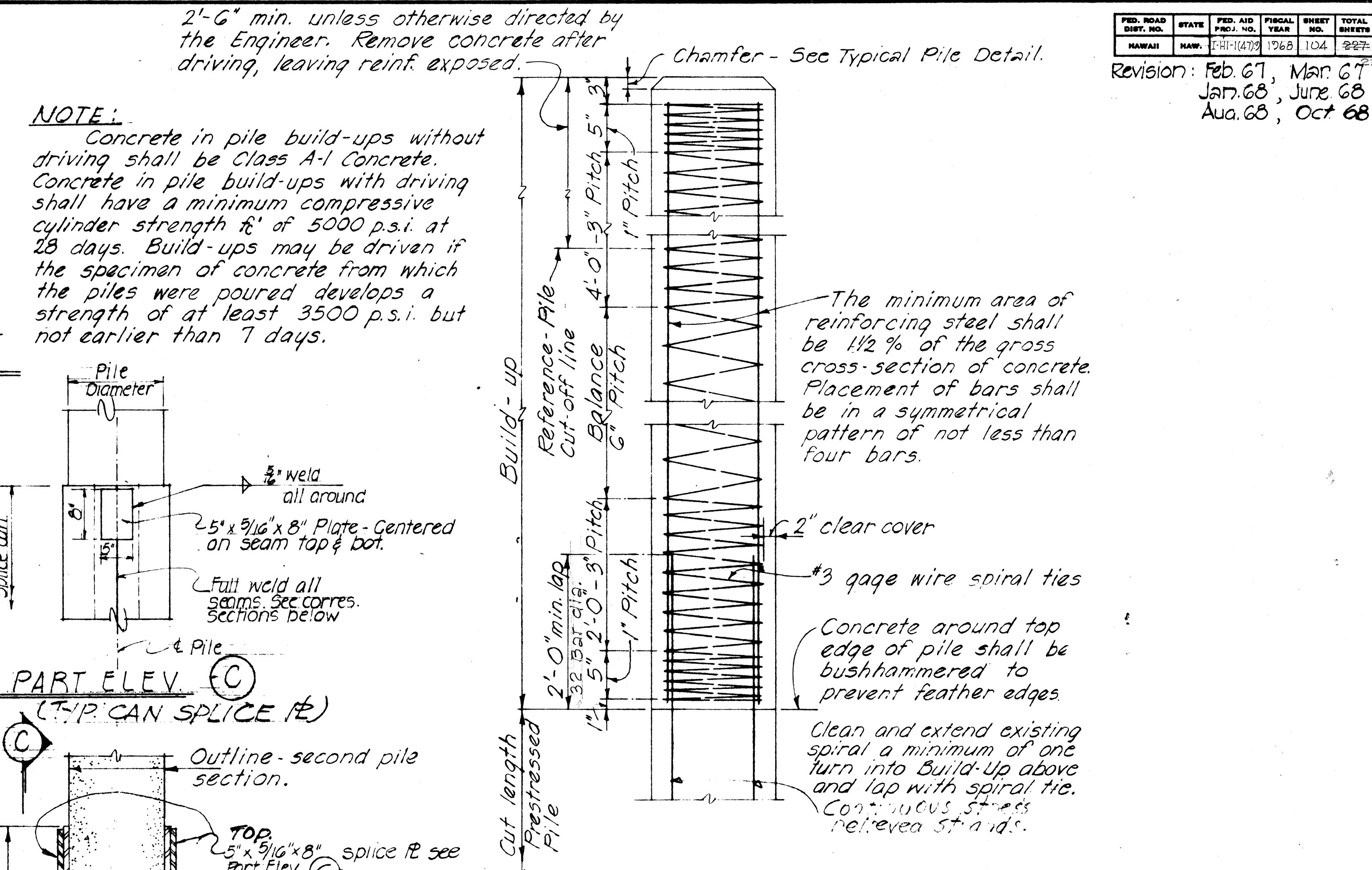
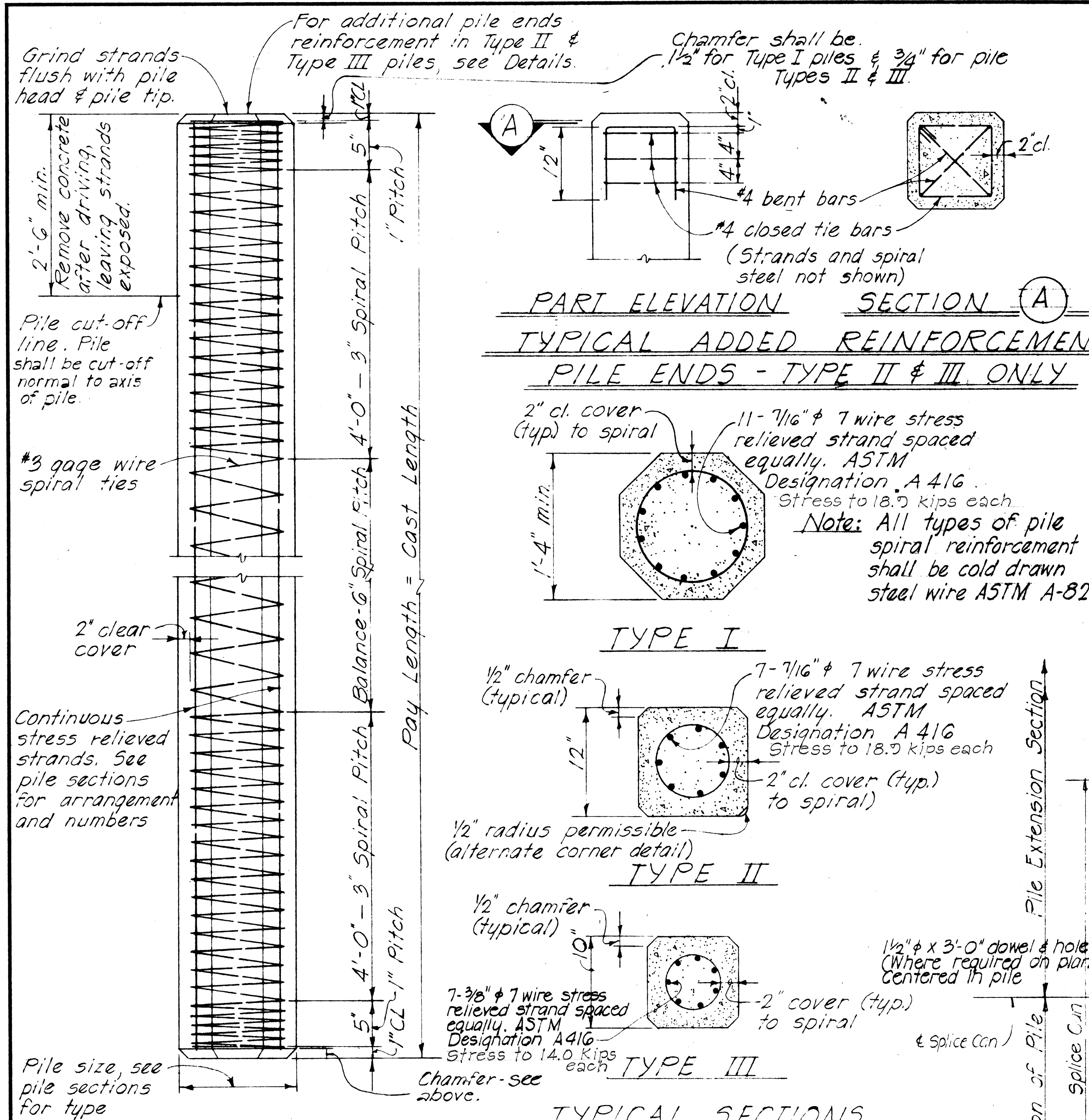
Use correct name of bridge Date of Year built  
**NOTE:** Refer to corresponding detail drawings for placement of such names & dates at end post.  
Exact details & spacing of letters & figures shall be as directed by the Engineer. See Note 10.

## TYPICAL DETAIL OF LETTERS & FIGURES AT CONCRETE END POST



- 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.
- 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.
- Gothic letters and figures approximating dimensions shown will be acceptable if approved by the Engineer.

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
WAIKAWA INTERCHANGE  
UNIT II  
STANDARD BRIDGE DETAILS  
GENERAL NOTES AND  
MISCELLANEOUS DETAILS  
F.A.I. PROJ. NO. 1-11(47)-9  
Scale: As shown Date: Aug. 1968  
SHEET No. 1 OF 7 SHEETS



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

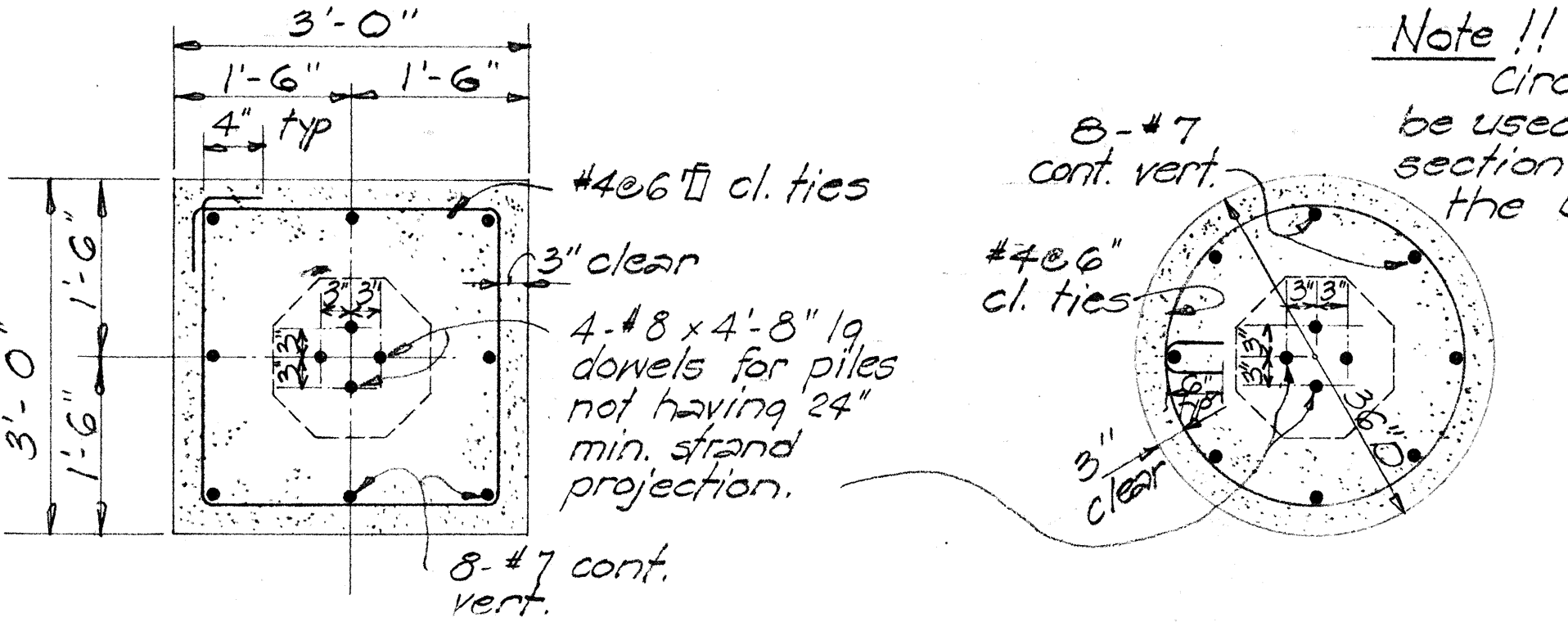
NOTE: Unless special lifting devices are attached for pick-up points, pick-up points shall be plainly marked on all piles after removal of the forms and all lifting shall be done at these points. The use of special embedded or attached lifting devices, the employment of other pick-up points or any other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

NOTE: All welding shall conform to the latest Specifications for Welded Highway & Railway Bridge of the American Welding Society.

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**STANDARD DETAILS**  
PRESTRESSED CONCRETE PILES  
WATAWA INTERCHANGE  
F.A.I. PROJ. NO. I-HI-1(47)-D  
Scale as Noted Date: Aug. 1968  
SHEET No. 1 OF 2 SHEETS

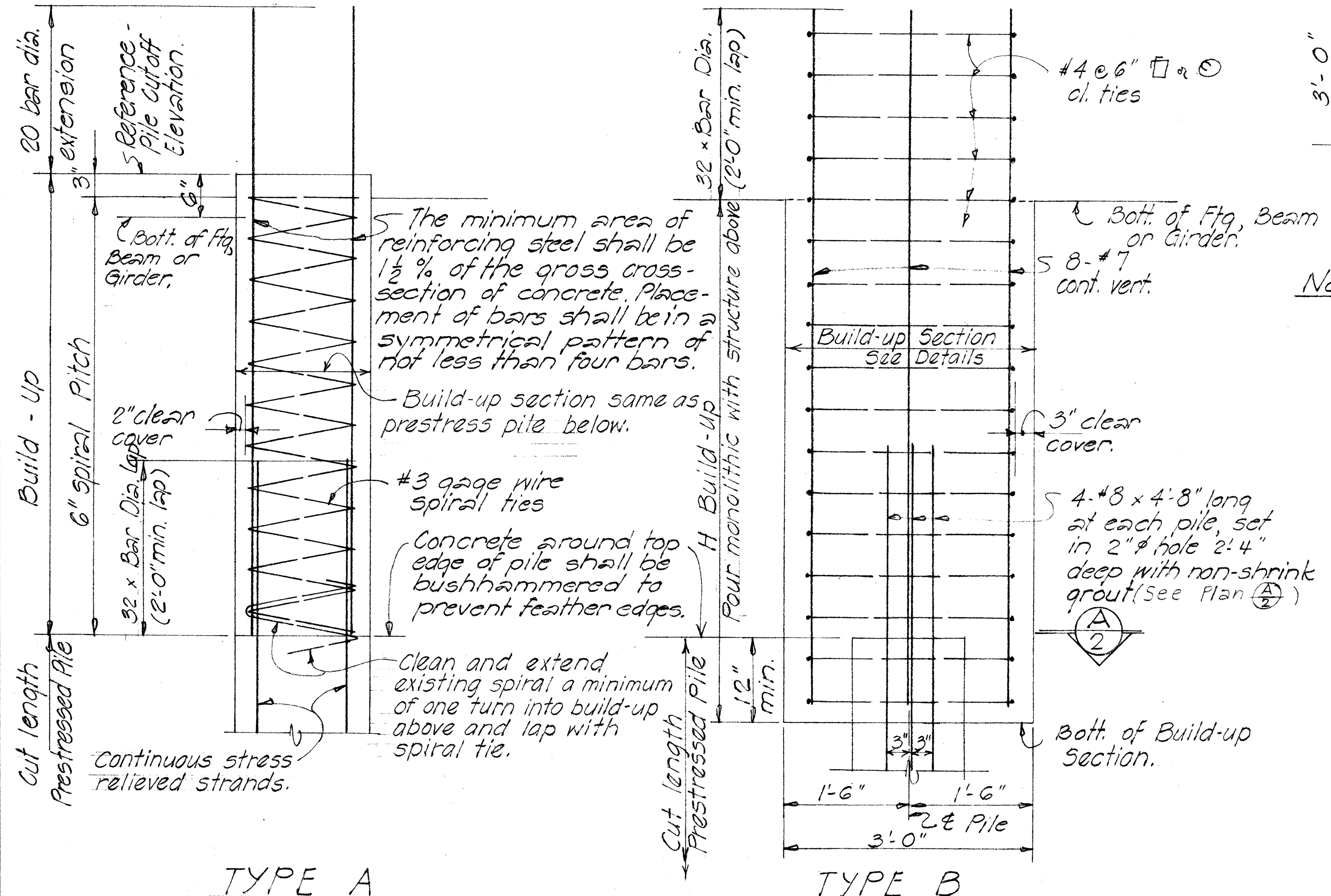
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | I-HI-1(47):7       | 1968        | 104A      | 227<br>238   |

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



SQUARE BUILD-UP SECTION (A) 2  
CIRCULAR BUILD-UP

- 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) 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.

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

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**STANDARD DETAILS**

**PRESTRESSED CONCRETE PILES**

WAIAWA INTERCHANGE  
F.A.I. PROJ. NO. I-HI-1(47):7

Scale as Noted Oct. 1968

SHEET No. 2 OF 2 SHEETS

11 00 41 11

107A

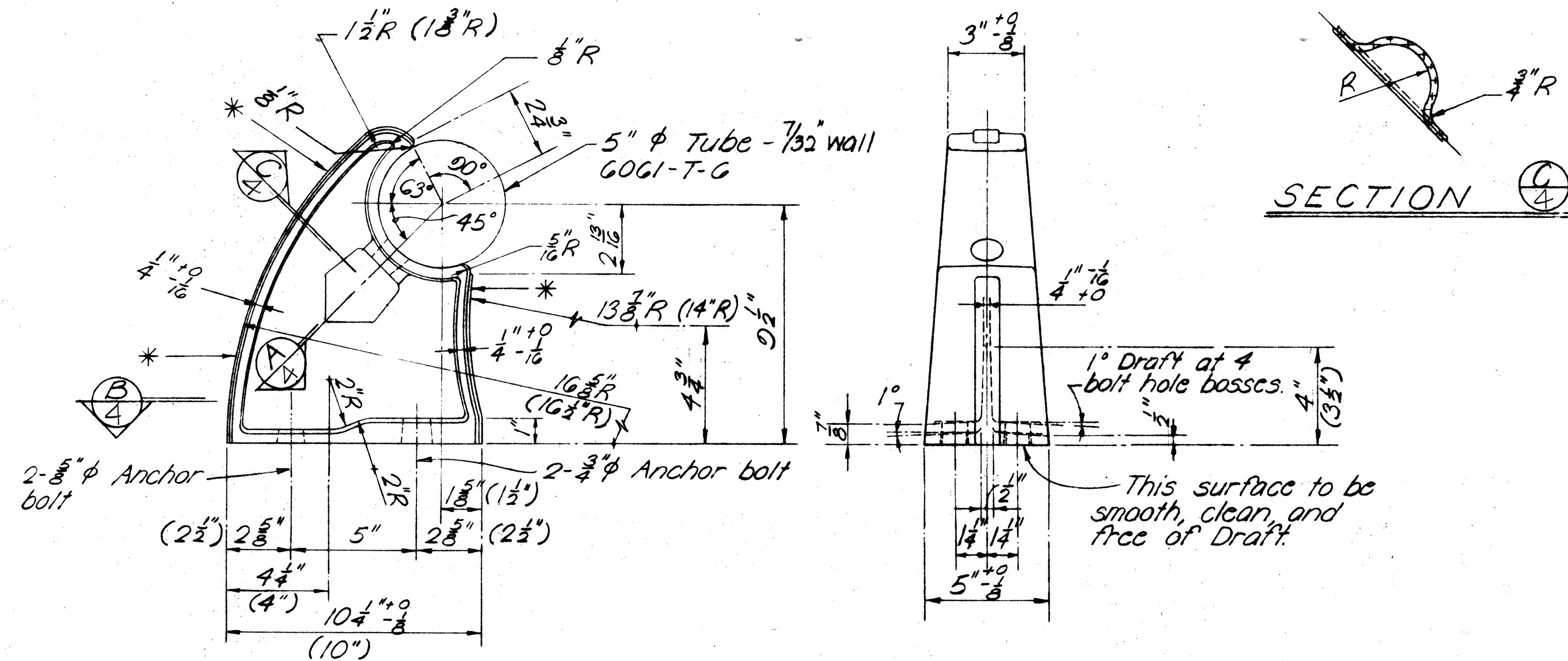


| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | 141-1(47)9         | 1968        | 106       | 227          |

This surface to be cast flat

#### NOTE:

Toggle Bolt Material -  $\frac{1}{2}$ "-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 -  $\frac{1}{2}$ "-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.



SIDE ELEVATION

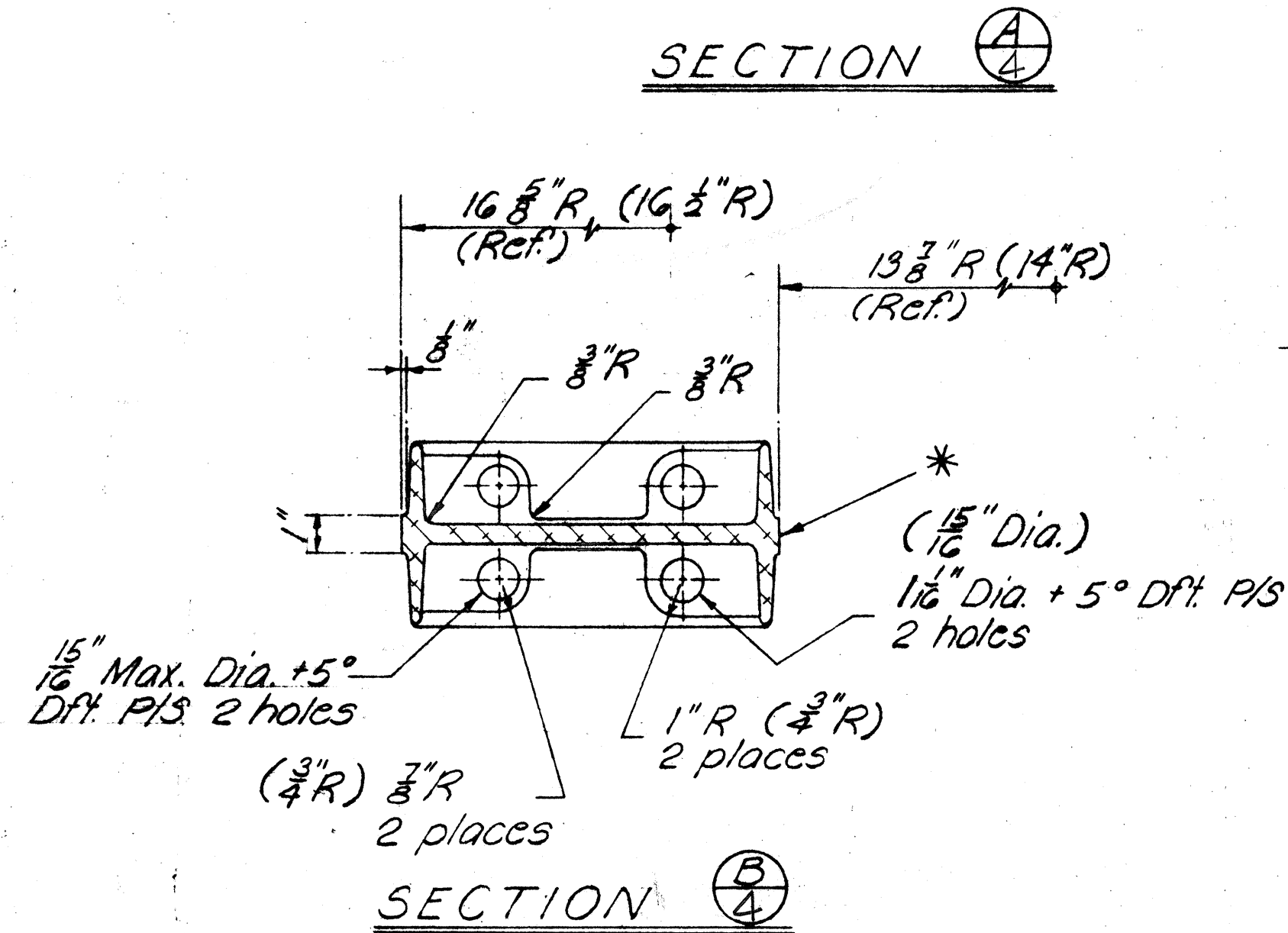
END ELEVATION

#### NOTE:

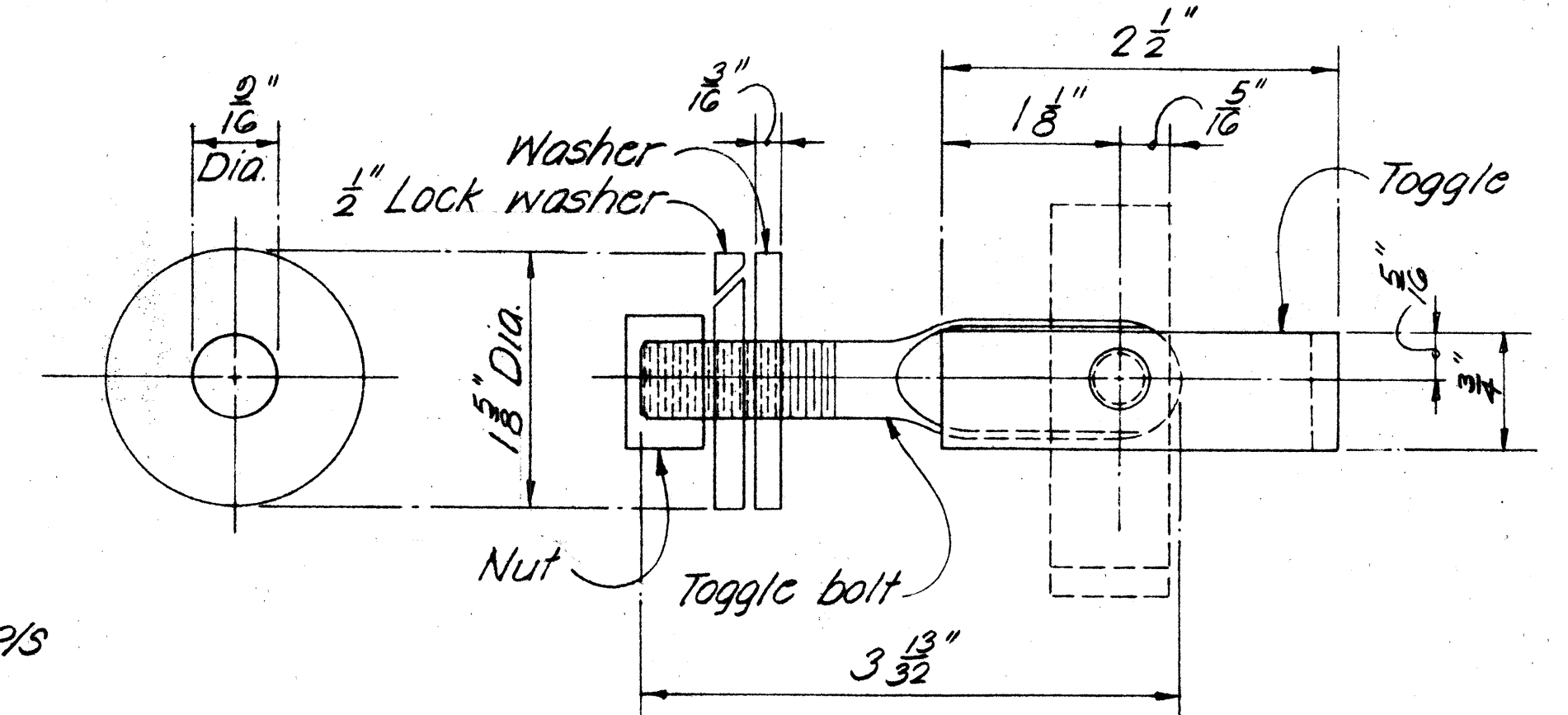
\* Casting to be supplied with a standard scratch brush finish on entire gating rib surface and as indicated by an asterisk (\*). Finish shall be approved by the Engineer.  
Casting to be neatly trimmed and any protruding flash to be broken off.  
For cast post specifications, see Special Provisions.  
Unless otherwise specified, draft angles to be 3°, corner radii to be  $\frac{3}{32}$ " R, fillet radii to be  $\frac{3}{8}$ " R, casting tol. to be  $\pm .010$ , wall thickness to be  $\pm .010$ .  
Dimensions may be as shown or as shown in parenthesis ( ).

### TYPICAL RAIL POST DETAILS

Scale: 3" = 1'-0"

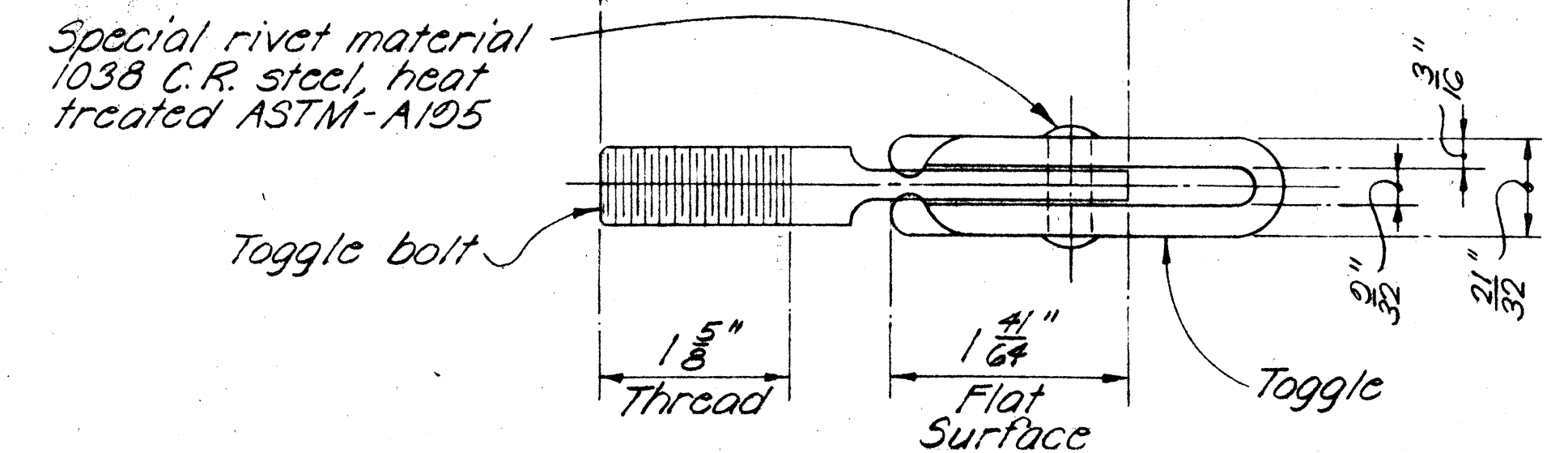


SECTION



WASHER

SIDE ELEVATION ASSEMBLY



TOP PLAN

### $\frac{1}{2}$ " $\phi$ 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

WAIKAWA INTERCHANGE  
UNIT II

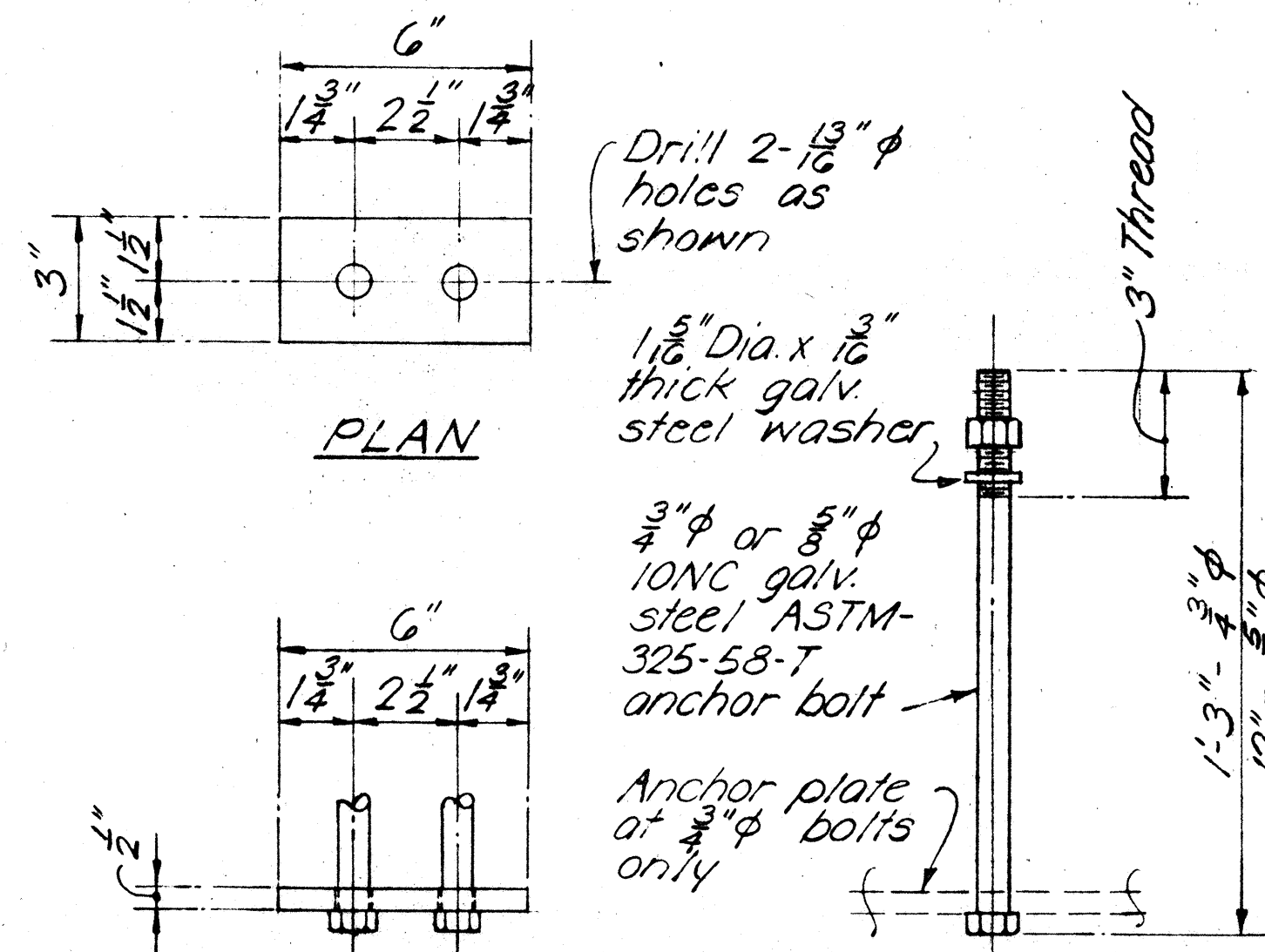
STANDARD BRIDGE DETAILS

METAL BRIDGE RAILING  
SINGLE RAIL TYPE

F.A.I. Proj. No. I-41-1(47):9

Scale as noted Date: Aug. 1968

SHEET No. 4 OF 7 SHEETS



PLAN

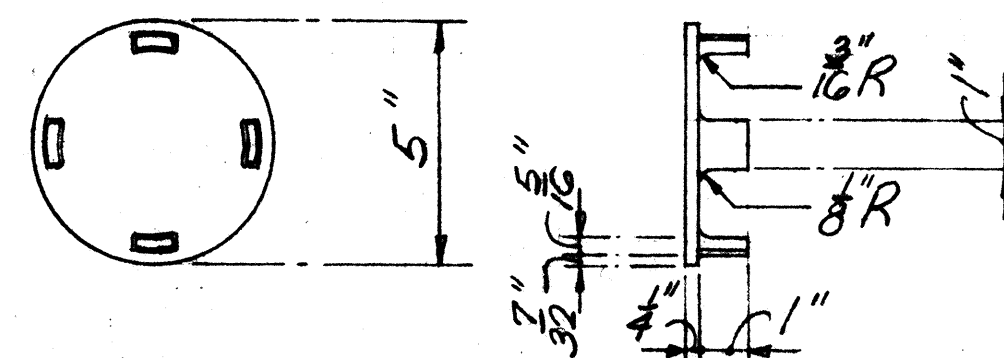
ELEVATION

ANCHOR BOLT DETAIL ANCHOR BOLT

### TYPICAL RAIL POST

### ANCHOR BOLT ASSEMBLY

Scale: 3" = 1'-0"



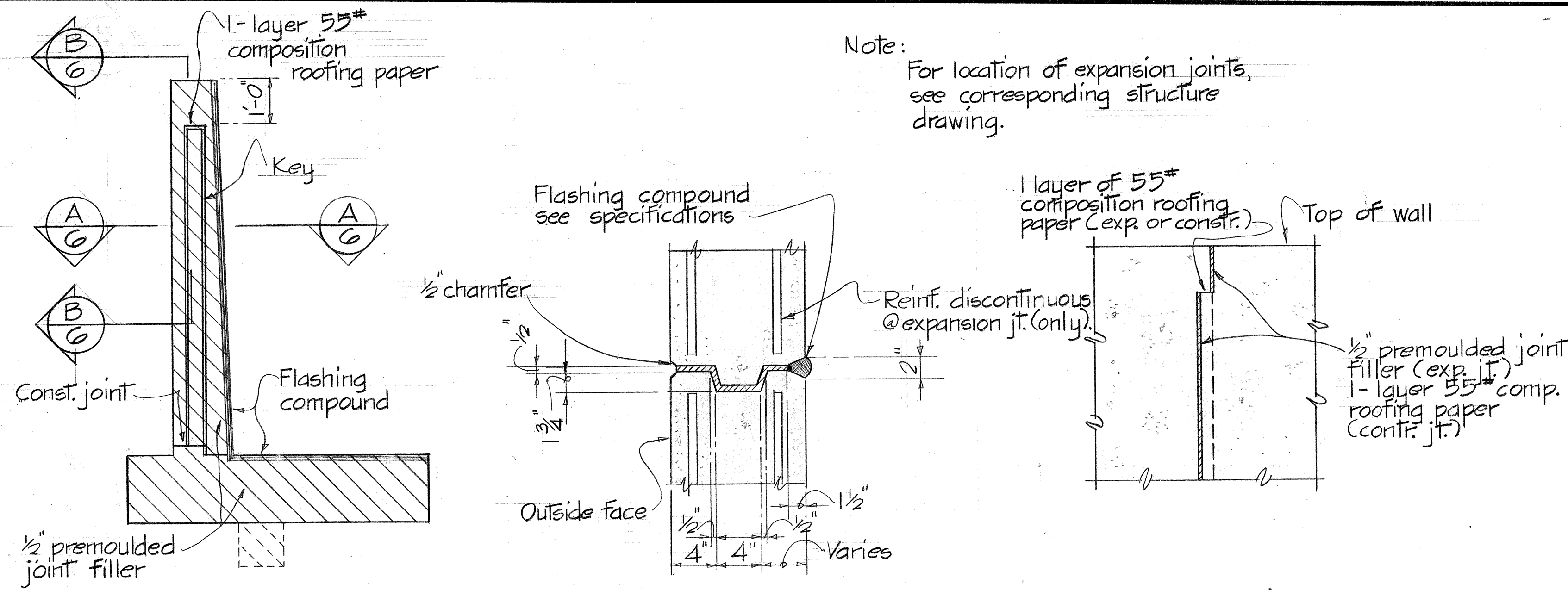
All draft angles = 3°

### RAIL CAP DETAIL

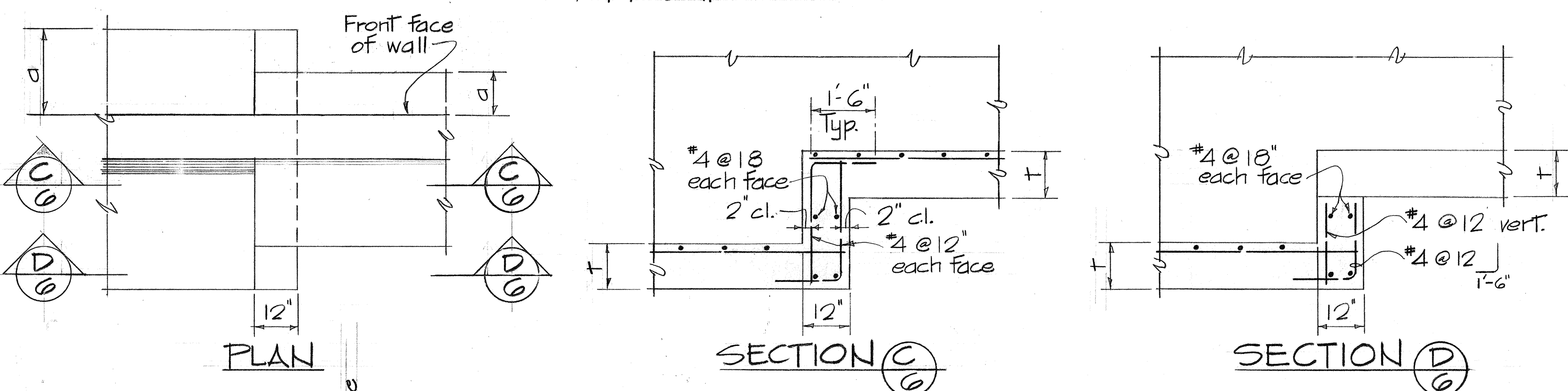
Scale: 3" = 1'-0"

|               |       |
|---------------|-------|
| DATE          | _____ |
| DESIGNED BY   | _____ |
| DRAWN BY      | _____ |
| CHECKED BY    | _____ |
| ORIGINAL PLAN | _____ |
| NOTE BOOK     | _____ |

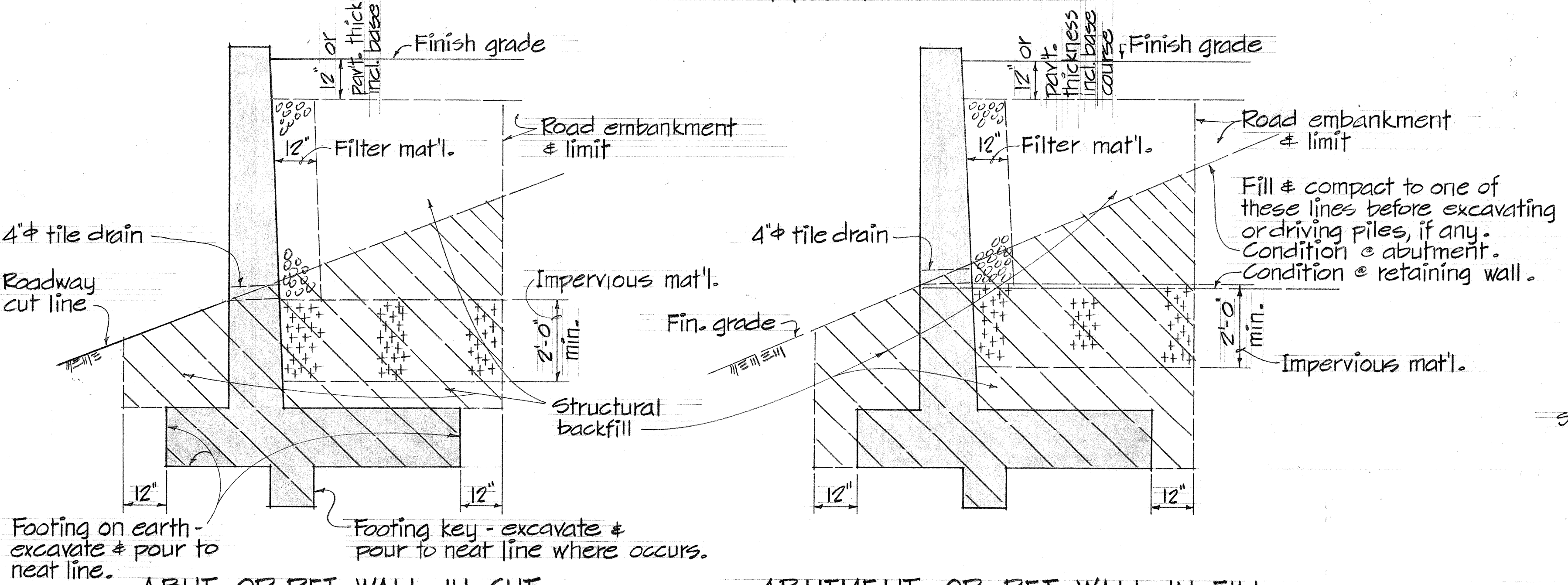




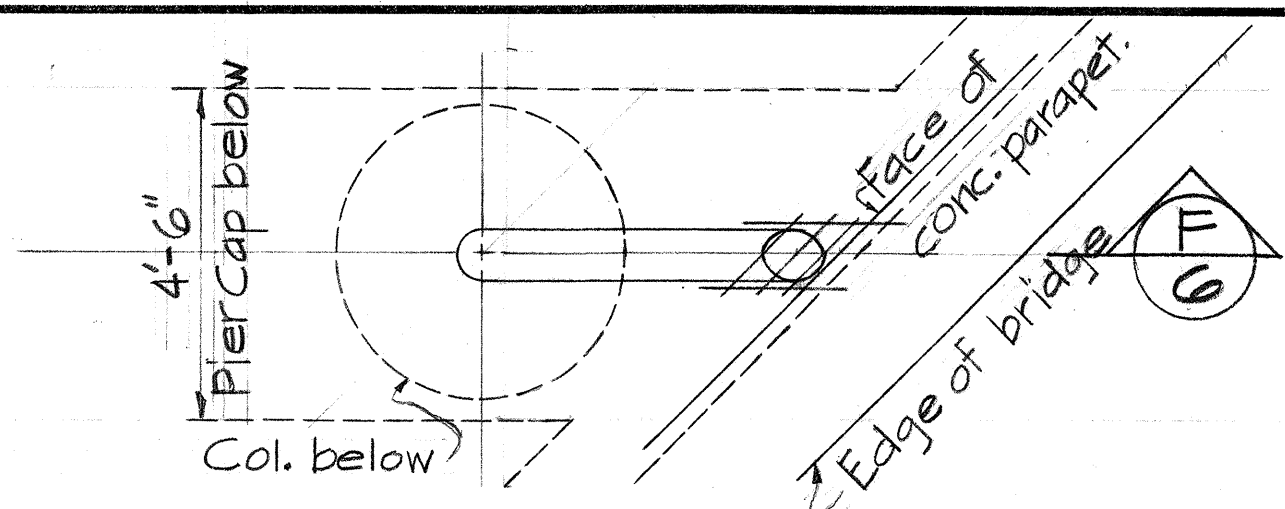
**TYPICAL WALL EXPANSION JOINT DETAILS**  
Not to scale



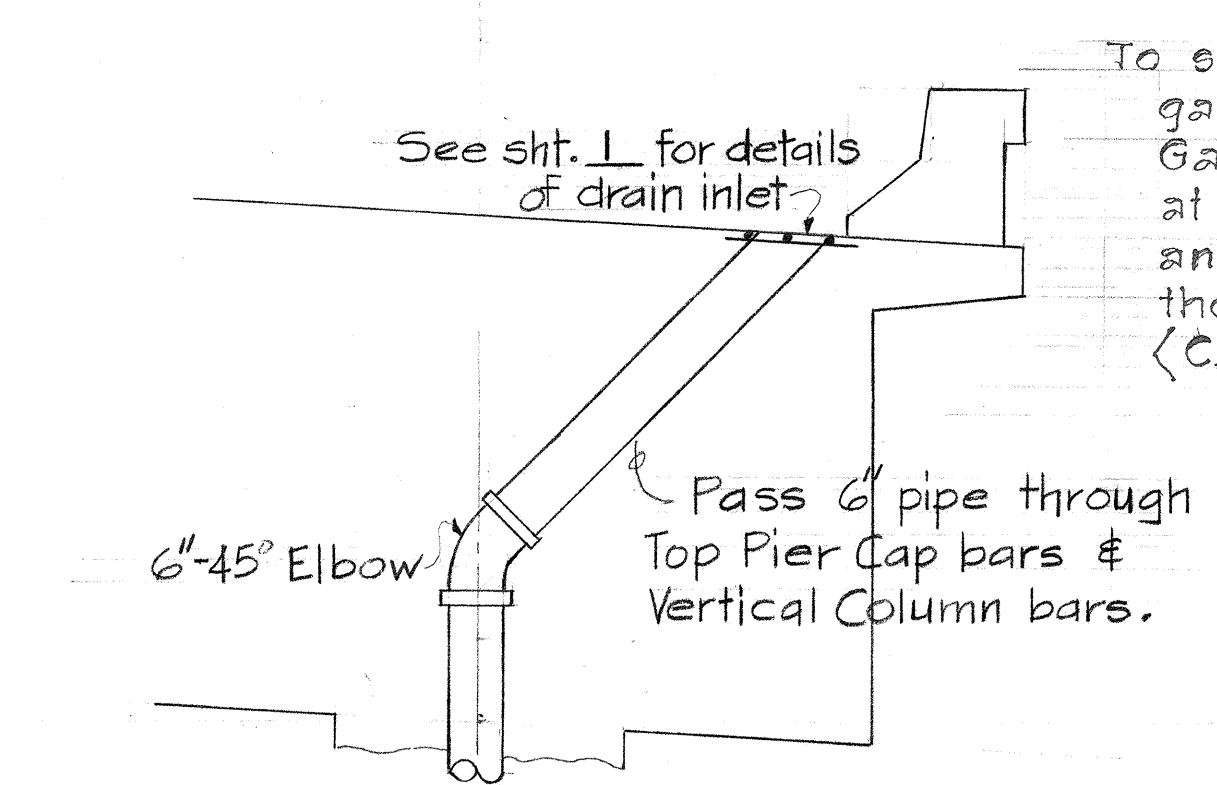
**FOOTING STEP-UP DETAILS**  
Not to scale



**STRUCTURAL EXCAVATION & DRAINAGE DETAILS**



**PLAN OF DRAIN INLET**  
Scale: 3/8" = 1'-0"



**NOTES:**

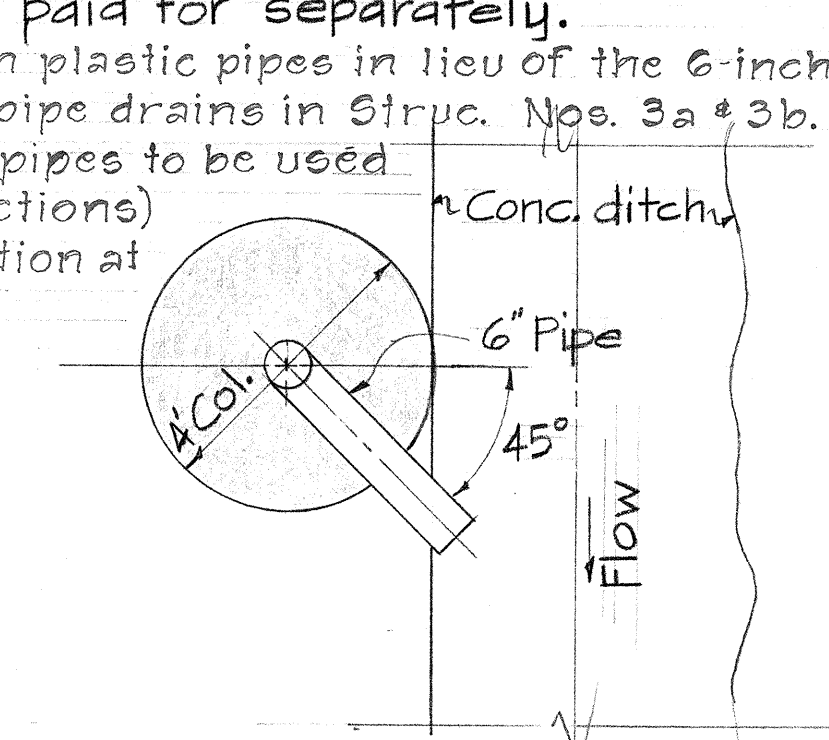
All pipes to be standard galvanized steel ASTM A120.

All pipe fittings to be cast iron, screwed type drainage fittings.

Federal Specifications WW-P-491a(1).

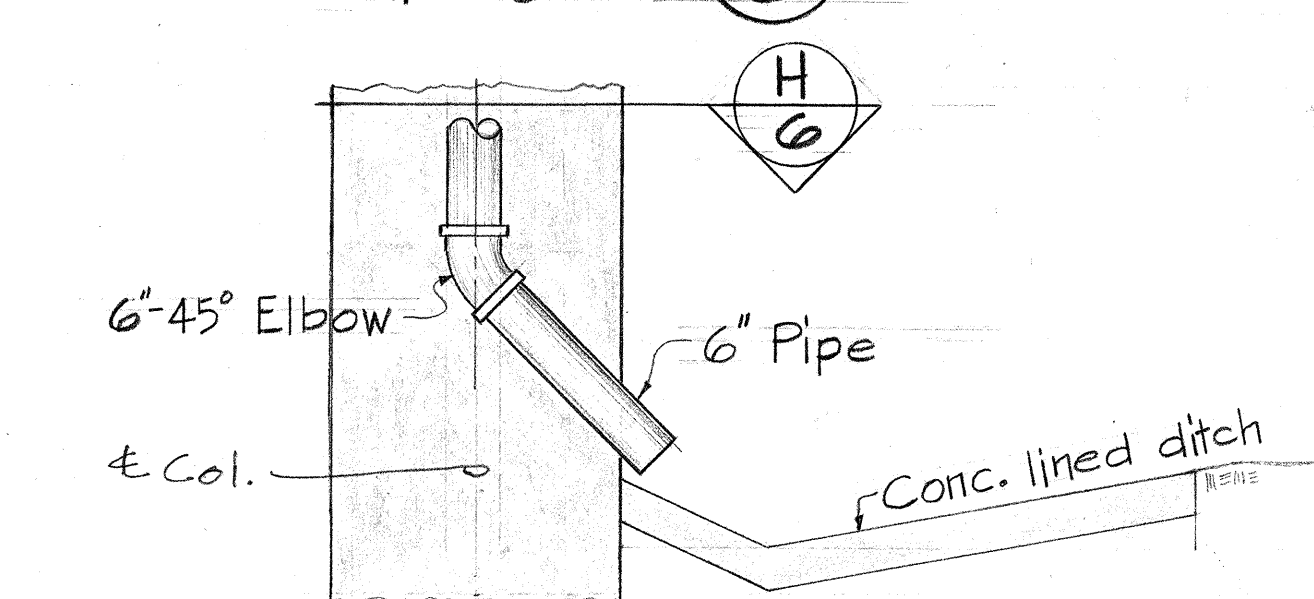
All drain pipes, drain frames, gratings & splash blocks to be incidental to Class A-1 concrete and will not be paid for separately.

To substitute 6-inch plastic pipes in lieu of the 6-inch galvanized steel pipe drains in Struc. Nos. 3a & 3b. Galvanized steel pipes to be used at grating (connections) and exposed portion at the outlets. (C.C.O. #15)



**SECTION F**  
Scale: 3/8" = 1'-0"

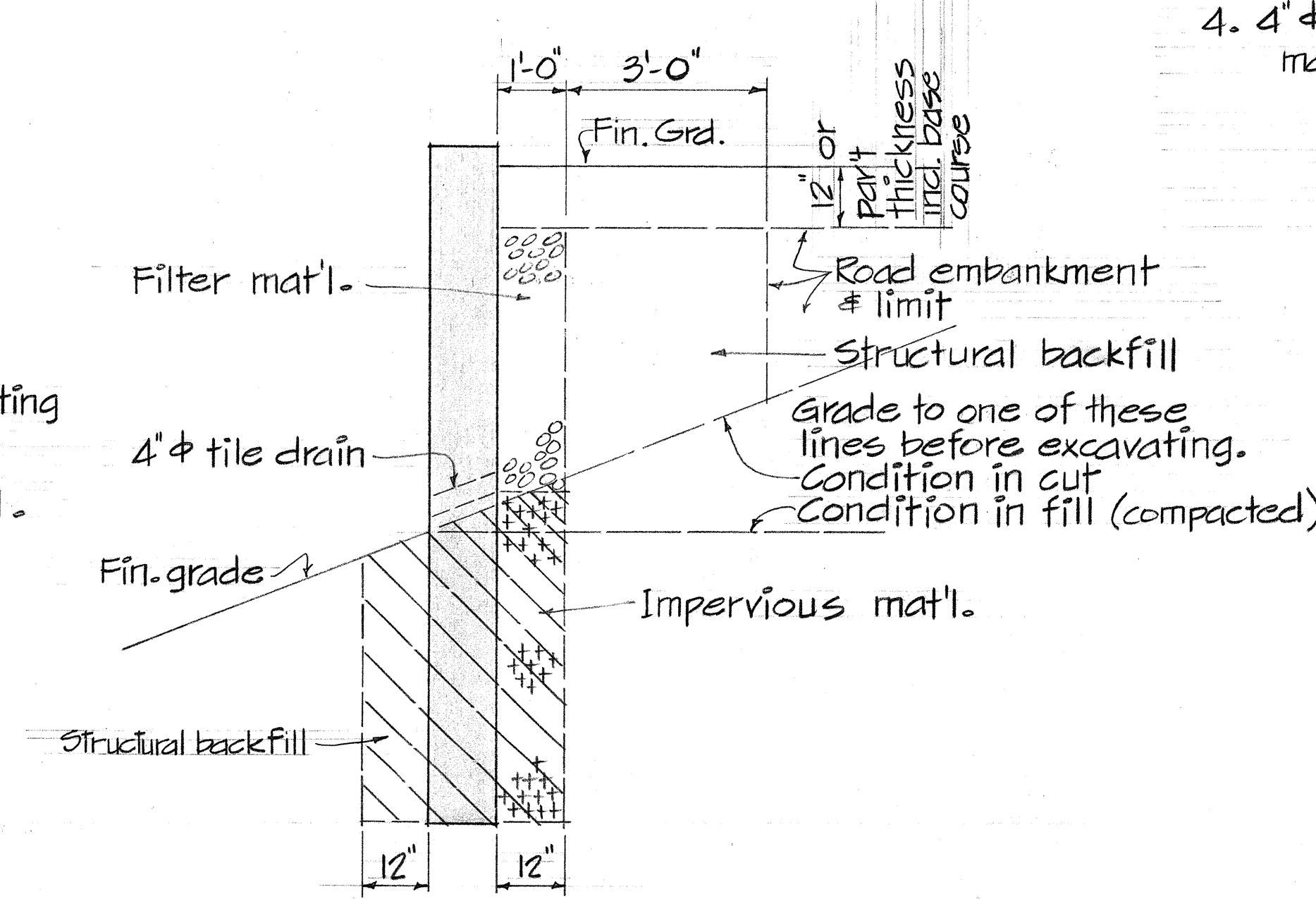
**SECTION H**  
Scale: 3/8" = 1'-0"



**DRAIN OUTLET DET. G**  
Scale: 3/8" = 1'-0"

**STRUCTURAL EXCAVATION NOTES**

1. Hatched areas, shown [hatched], denote limits of structural excavation payment. All other excavation shall be roadway excavation.
2. Impervious material used for backfill, shown [hatched], shall be selected by the Engineer & shall be incidental to structural excavation.
3. Filter material, shown [hatched], shall be continuous horizontally.
4. 4" tile drain shall be spaced @ 10'-0" max. when not otherwise indicated.



**WING WALL IN CUT OR FILL**  
Not to scale

