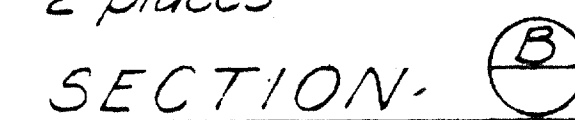
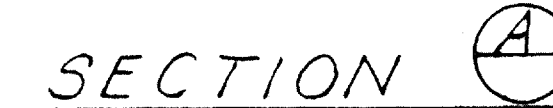




END ELEVATION

TYPICAL RAIL POST DETAILS

Scale: $3'' = 1'-0''$



TYPICAL RAIL POST
ANCHOR BOLT ASSEMBLY

Scale: 3" = 1'-0"



RAIL CAP DETAIL

Scale: $3'' = 1'-0''$



$\frac{1}{2}$ " ϕ TOGGLE BOLT DETAILS

Full Scale

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

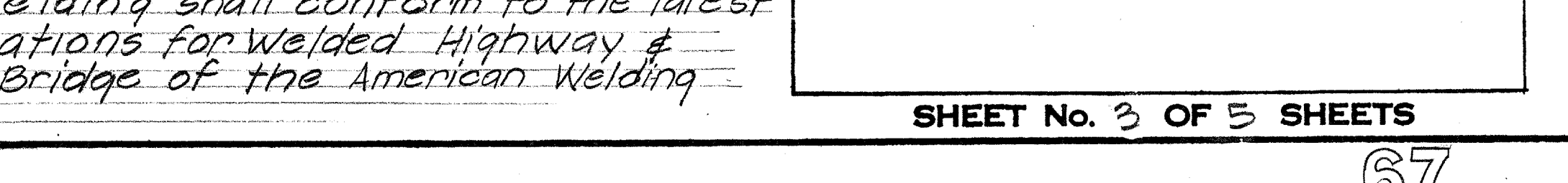
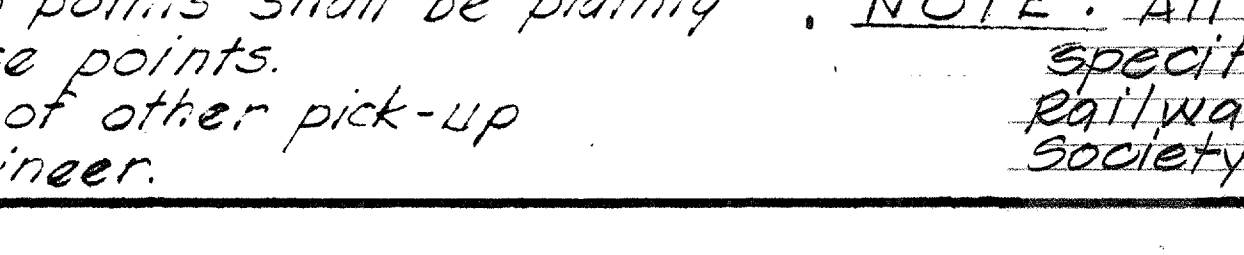
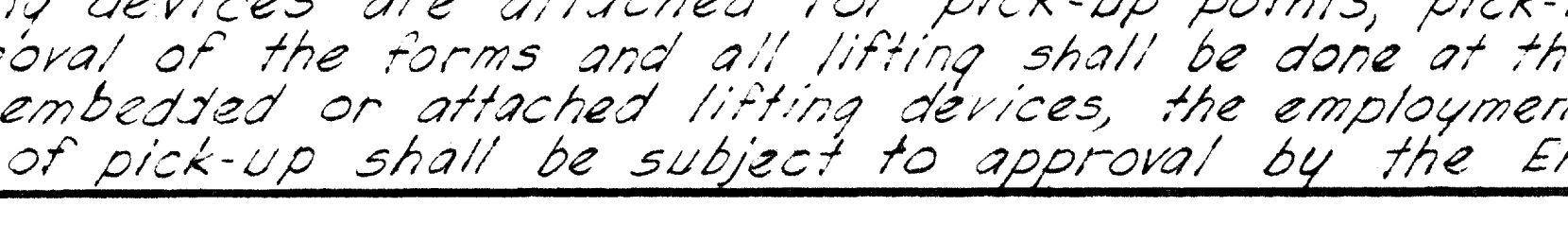
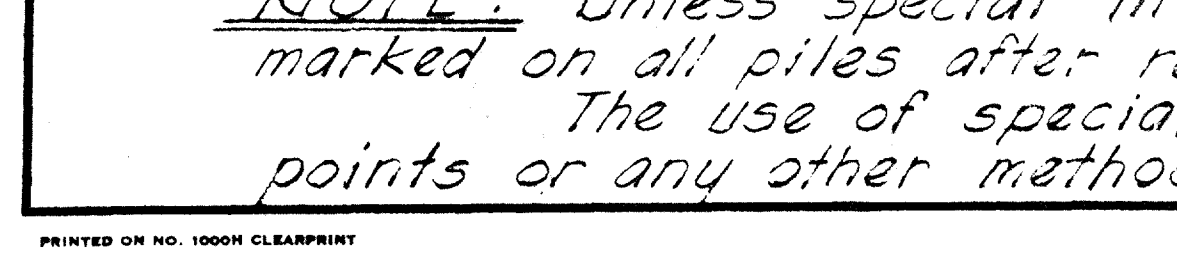
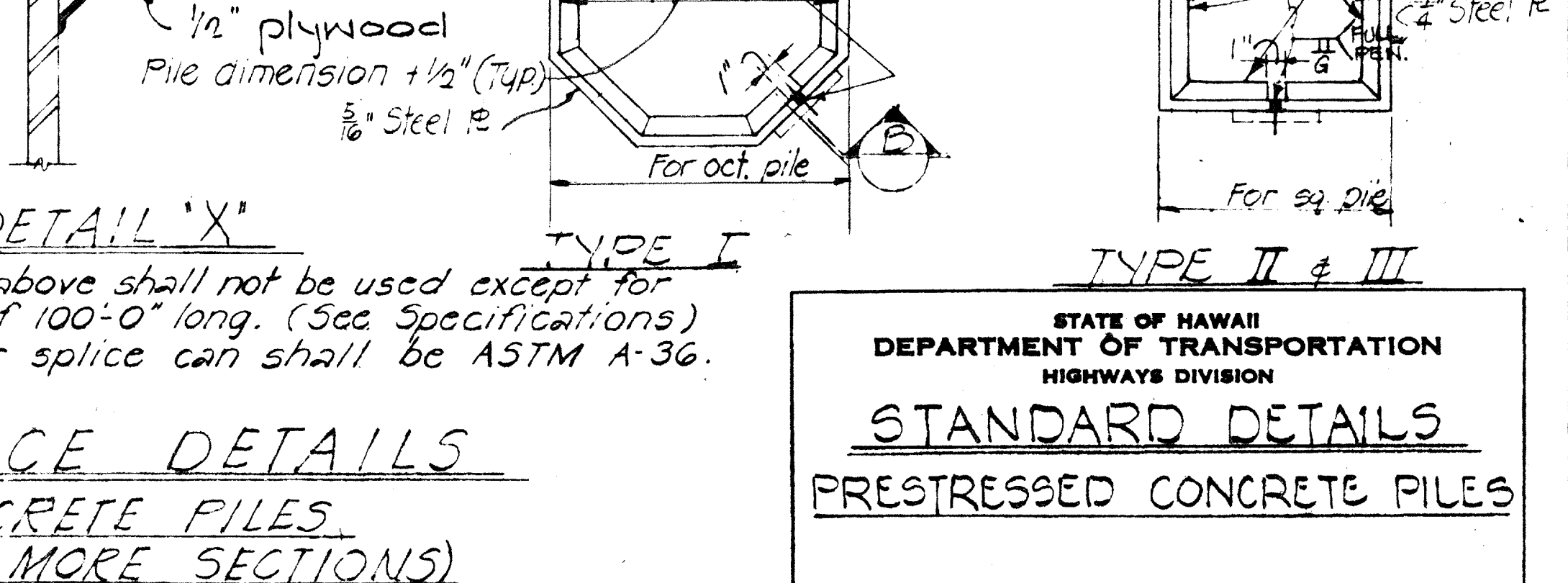
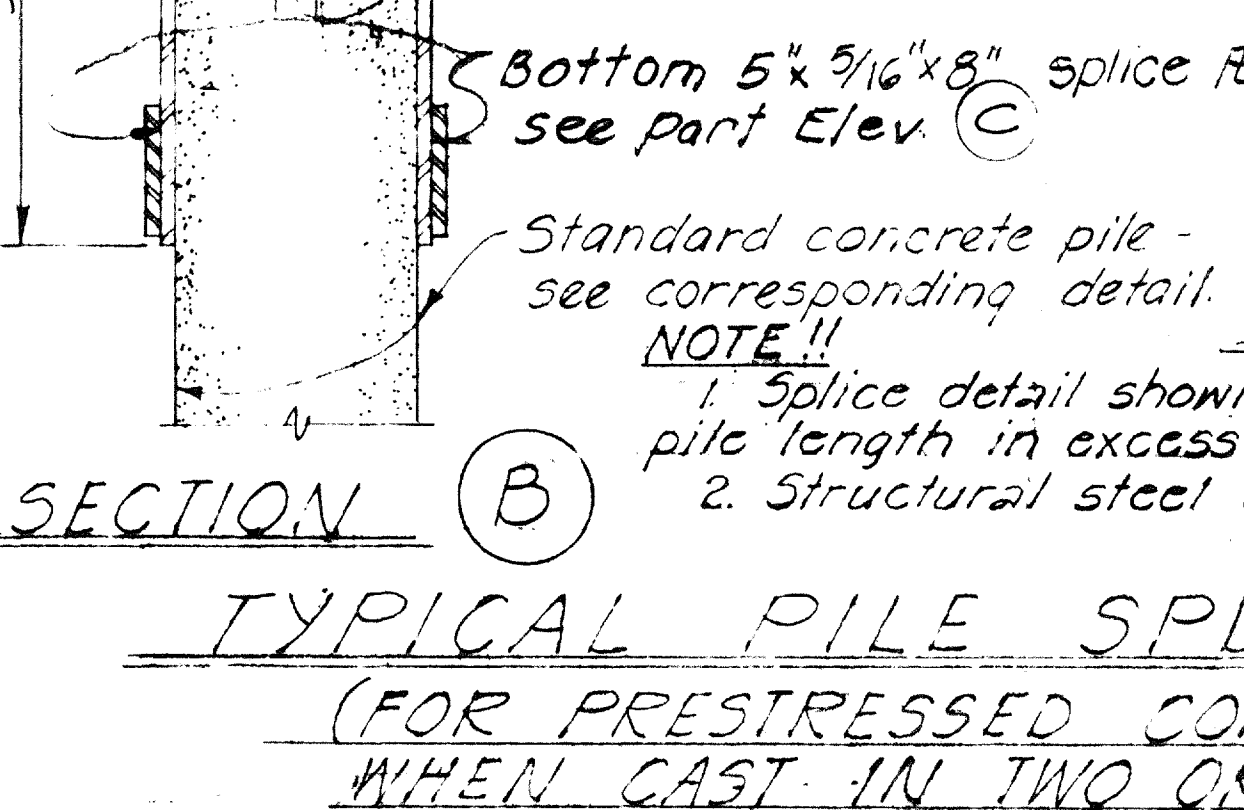
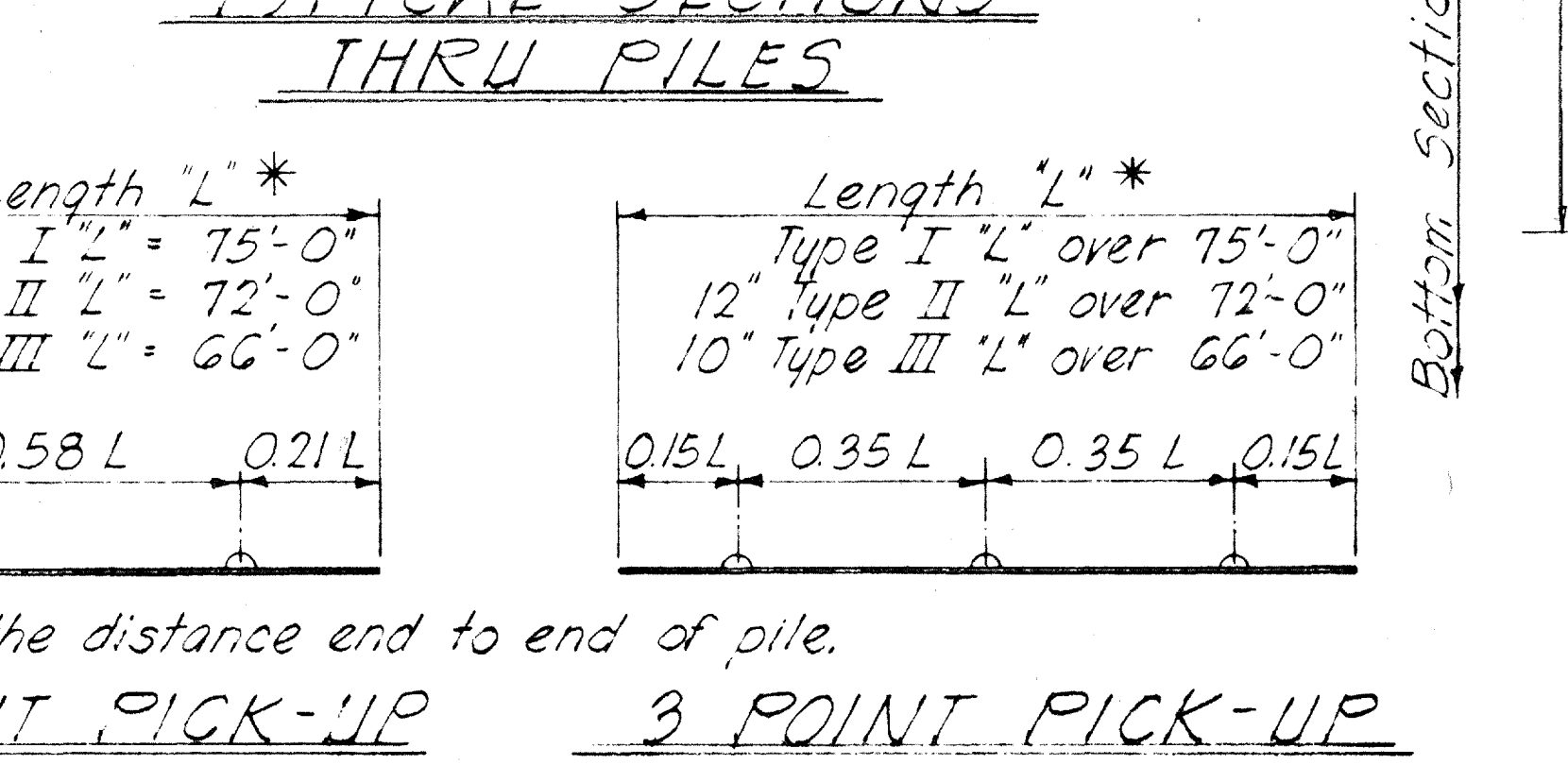
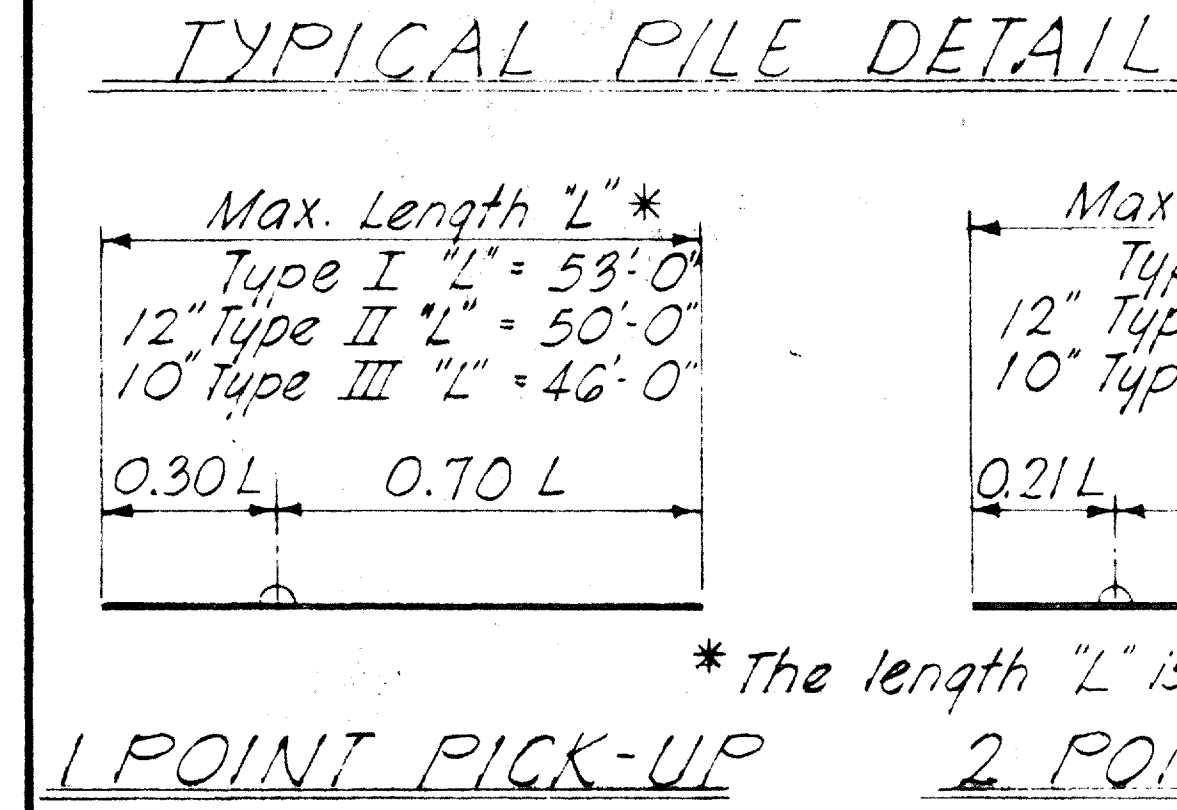
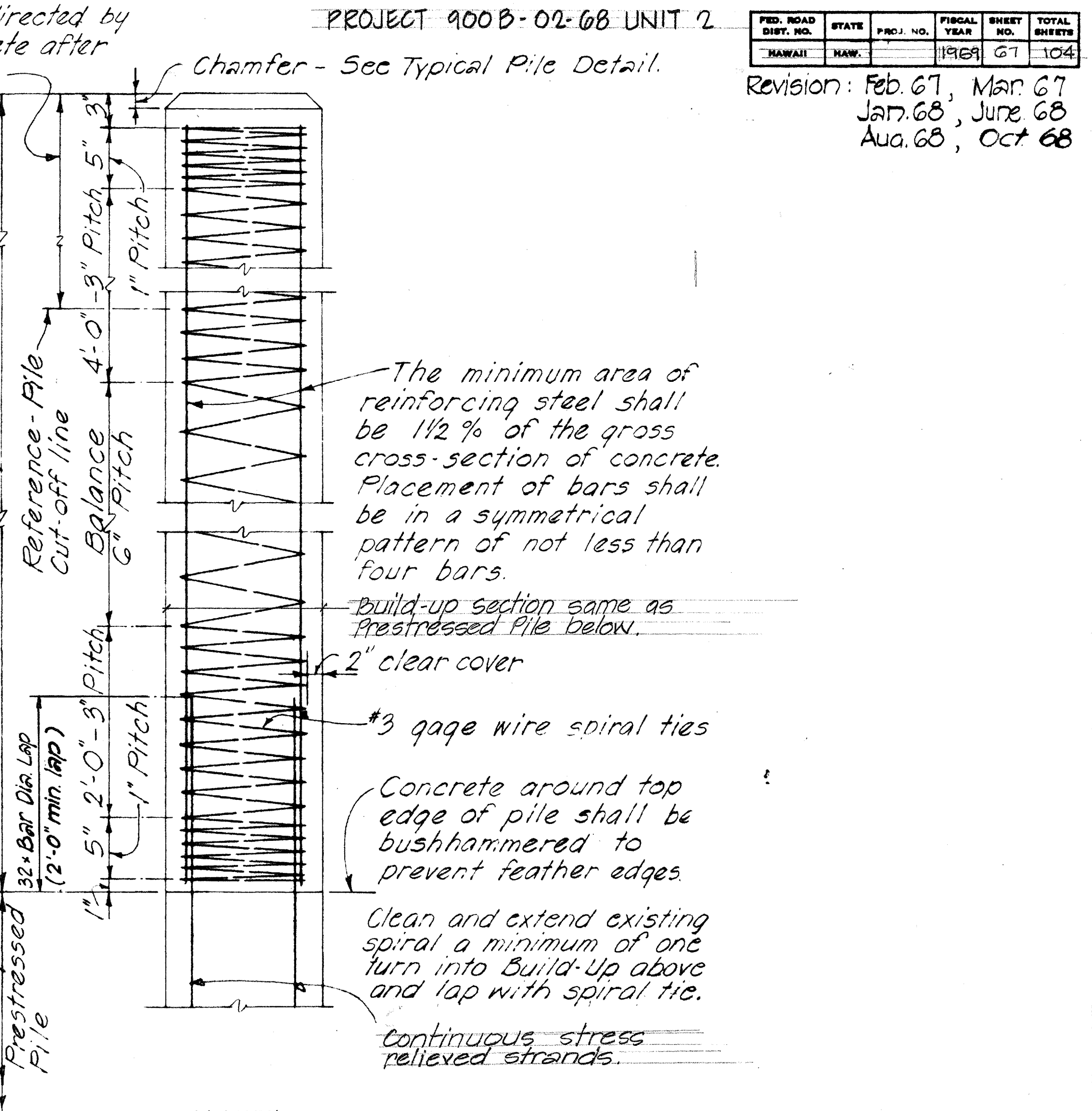
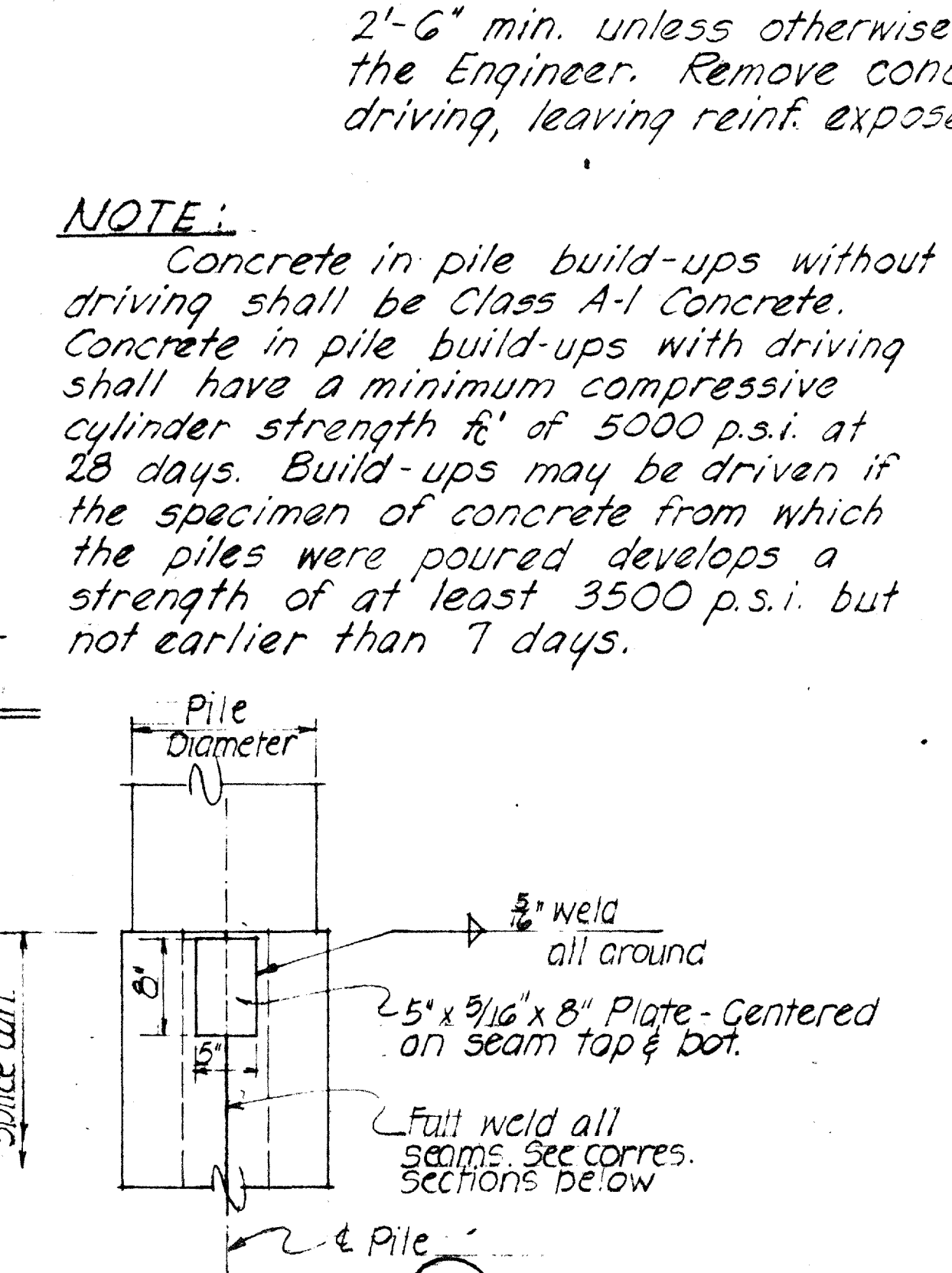
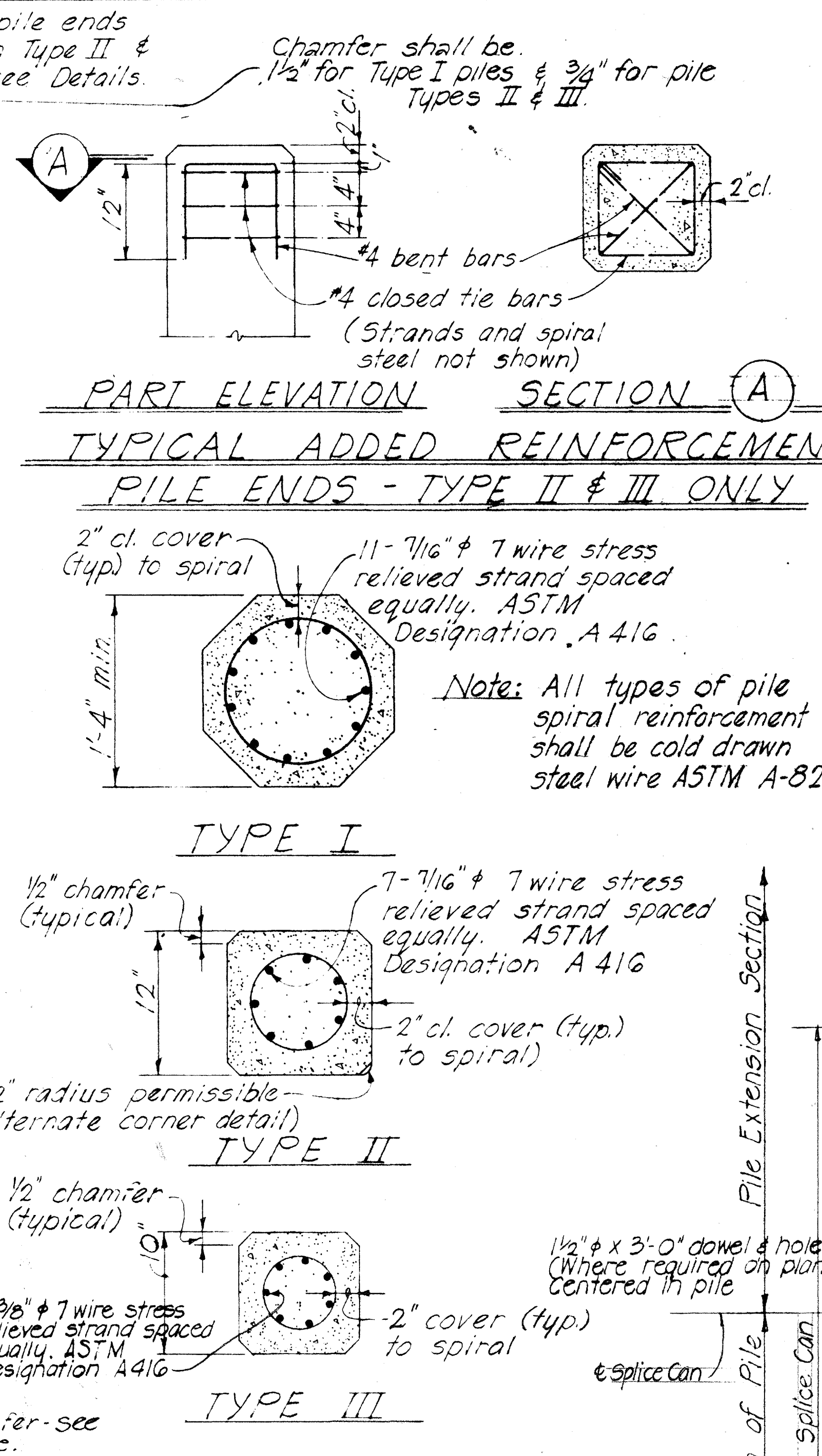
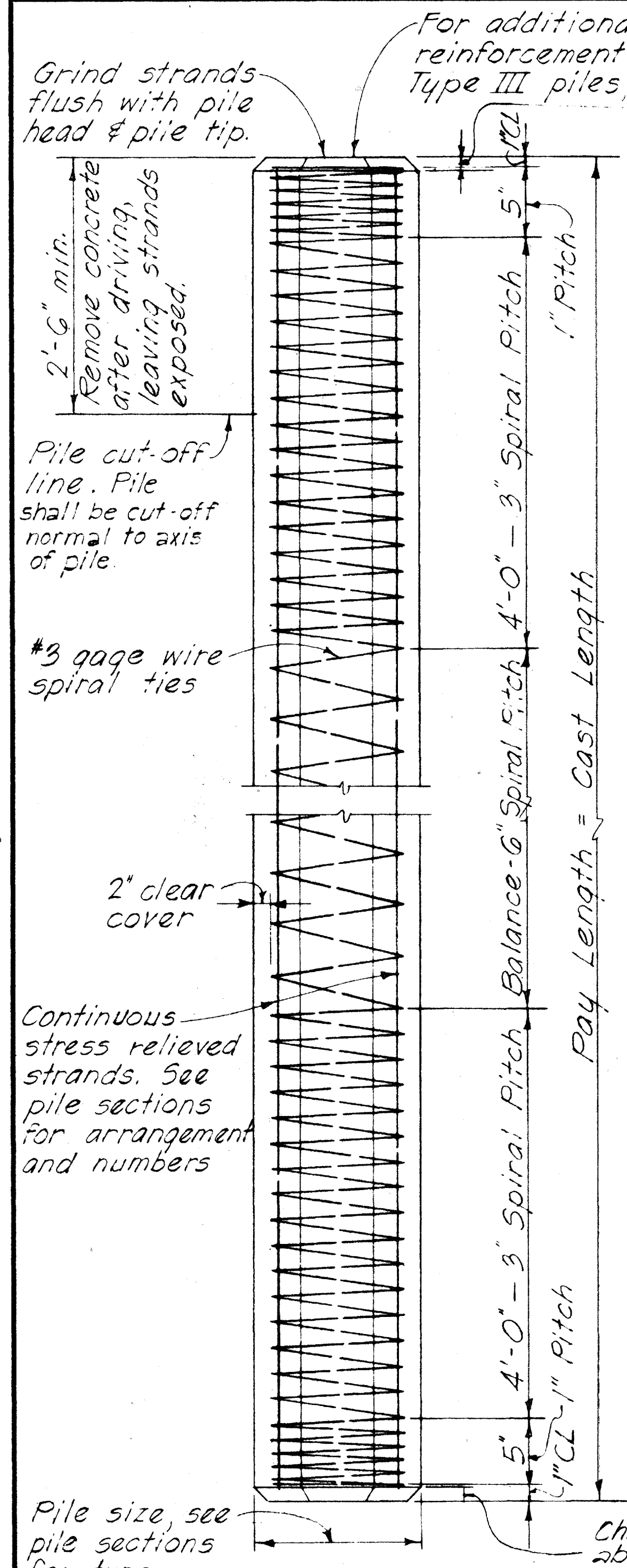
**STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION**

STANDARD DETAILS
METAL BRIDGE RAILINGS
SINGLE RAIL

scale as noted

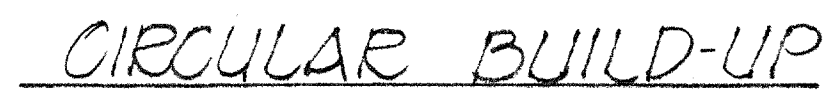
Date:

SHEET No. 1 OF 5 SHEETS



PROJECT 900 B-02-68 UNIT 2

PROJECT 900 B-02-68 UNIT 2



Notes:

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.



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

STATE OF HAWAII
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HIGHWAYS DIVISION

STANDARD DETAILS

PRESTRESSED CONCRETE PILES

Oct. 1963

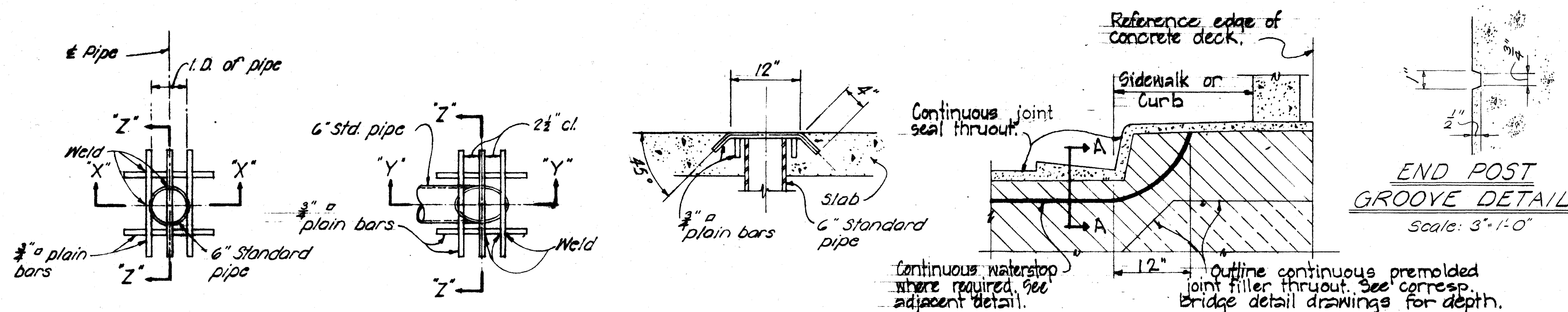
SHEET No. 4 OF 5 SHEETS

SHEET No. 4 OF 5 SHEETS

68

REVISION

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



END POST
GROOVE DETAIL
Scale: 3"=1'-0"

GENERAL NOTES

Elastometric 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:

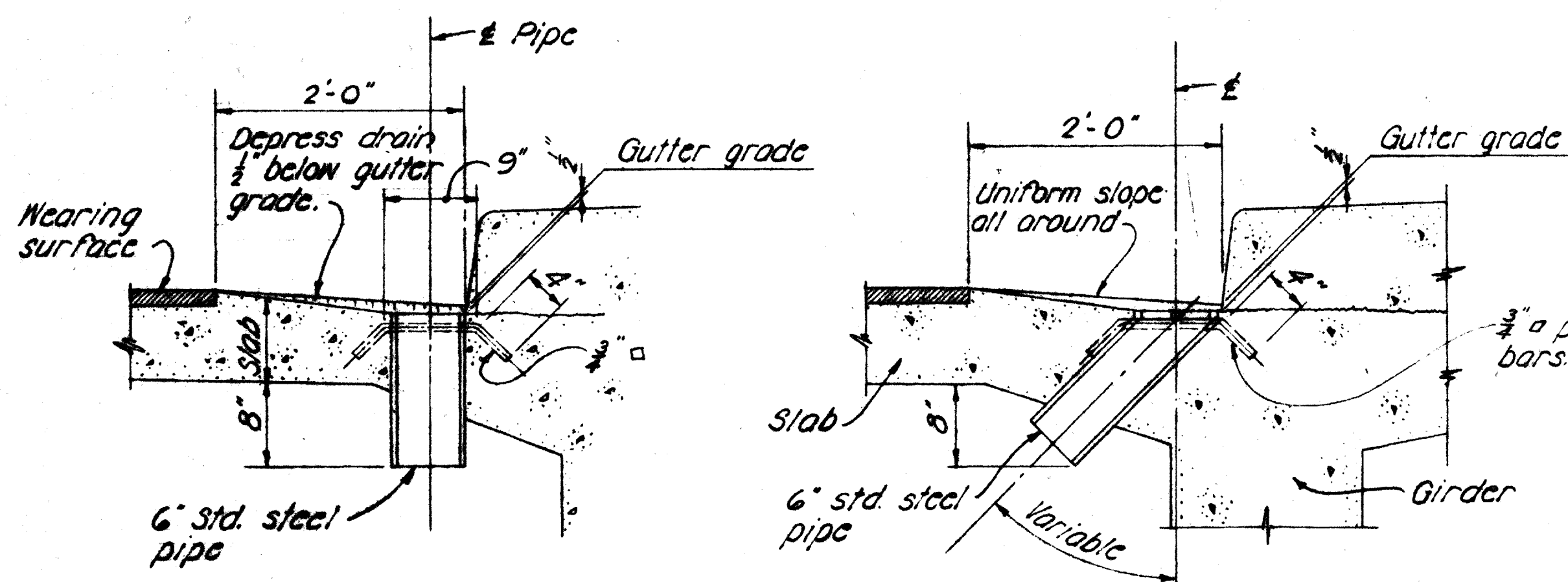
Nail or staple to form or premolded joint filler.

Holes will be permitted in the outer 1/2" 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.

TYPICAL EXPANSION JOINT DETAIL

Expansion joint width and continuous premolded joint filler, see contract drawings.

SECTION 'A-A'

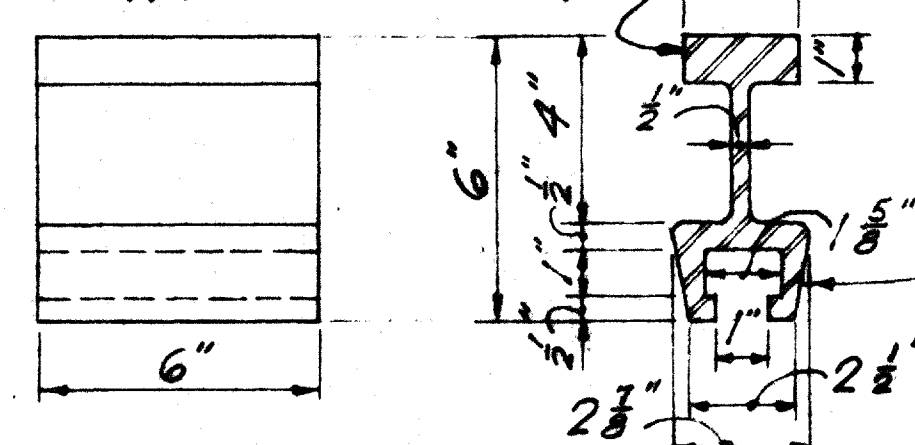


NOTE:

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

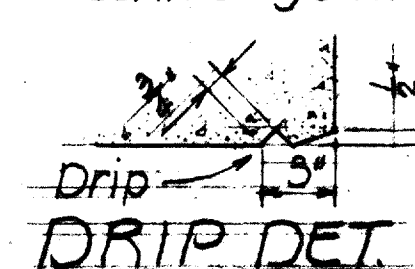
Cast Iron ASTM
A 48 Class N° 30.



Contractor to take proper precautions to prevent the concrete from flowing into the opening of the inserts.

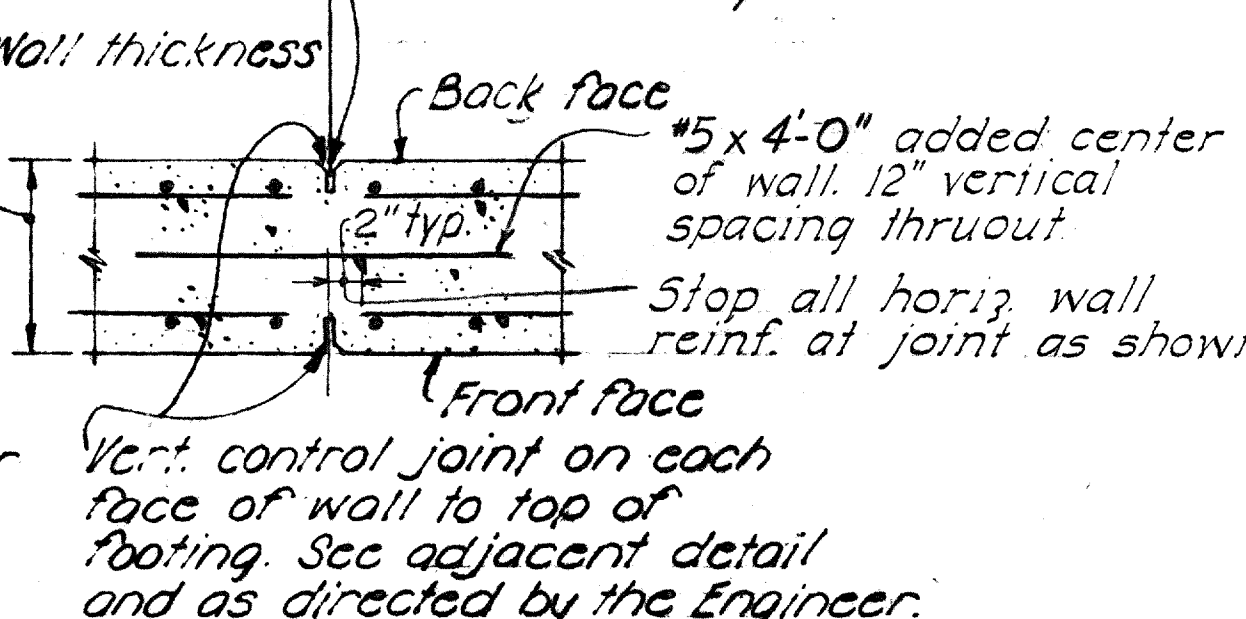
Joint may be formed with 1/2 inch masonite & cut back to the roof of the chamfer on the exposed face.

Cont. vertical control joint



Wall face 3/4 inch chamfer

30'-0" max. Flashing compound back face only



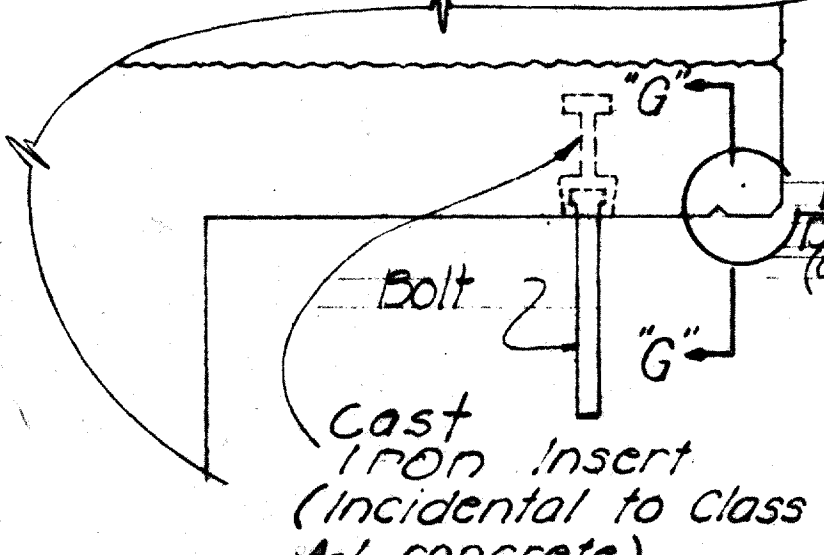
Front Face

Stop all horiz. wall reinf. at joint as shown

Vert. control joint on each face of wall to top of footing. See adjacent detail and as directed by the Engineer.

Depressed "V" letters 3/8 inch deep

INSERT DETAIL



Provide opening of sufficient size to insert head of bolt.

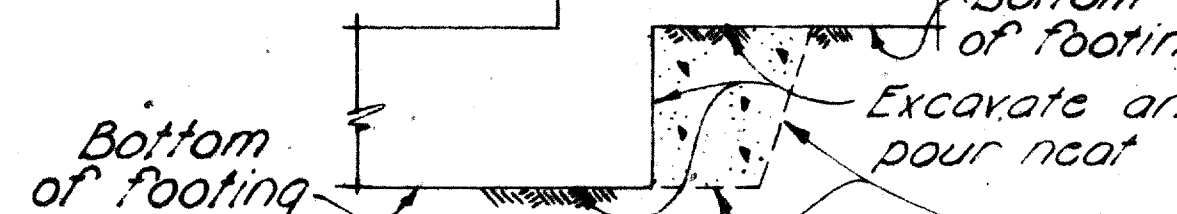
SECTION 'G-G'

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 #15.

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-1 concrete at his own expense.

TYPICAL EXCAVATION FOR CONTINUOUS FOOTING STEP-UP

- 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 inch x 3/4 inch. 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.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD BRIDGE DETAILS

Scale as Noted

Date:

SHEET No. 5 OF 5 SHEETS