

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(88):13	1971	276	457

DESIGN NOTES

DESIGN SPECIFICATIONS AASHO

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

DESIGN LOADS: HS-20-44 or Interstate loading

DESIGN STRESSES:

1. R.C. beams & slabs - See AASHO 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
$f_s =$ ASTM A615, see Special Provisions	

2. Prestressed Girders

$f'_c = 5,500$ psi | $\frac{1}{2}$ " dia. 7 wire strands
 $f'_{ct} = 4,000$ 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.

3. Pile Capacity — 32 tons.

GENERAL NOTES

MATERIALS:

1. 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.

2. Preformed fabric bridge bearing pads are incidental to concrete and will not be paid for separately.

3. See Special Provisions for admixture in concrete.

4. All piles to be prestressed concrete piles Type I- see Standard Det. Sht. Nos. DB-300-1, DB-300-2.

5. The limits of the structure fill or backfill material requiring a sand equivalent value of not less than 20 shall extend up to the bottom of the roadway subgrade lines.

CONSTRUCTION METHODS:

1. See Standard Specifications and Special Provisions.

2. For Concrete finish see Special Provisions. Concrete seats and creep blocks to be poured monolithically with pier. Top surfaces of conc. seats to have hard trowel finish.

3. See details for additional surface finish.

4. In general, top & edge of concrete deck of superstructure shall be constructed to follow the finish roadway vertical & horizontal curves and grades.

REFERENCE:

1. Refer to Standard Detailed Drawings for additional details not covered by detailed plans.

2. Typical Details drawing sheet Nos. TD-1 thru TD-5 inclusive refers to all bridge structures except for modification as may be required by special conditions. For such modifications see corresponding detailed plans.

3. Refer to Highway Drawings & Special Provisions for soil stabilization & details.

GENERAL:

1. Additional structure fill where indicated on detailed drawings shall be incidental to structural excavation, roadway excavation, or imported borrow.

2. Drains and Metal Access Door D-1 at abutment walls shall be incidental to concrete and will not be paid for separately.

All other items noted incidental will not be paid for separately.

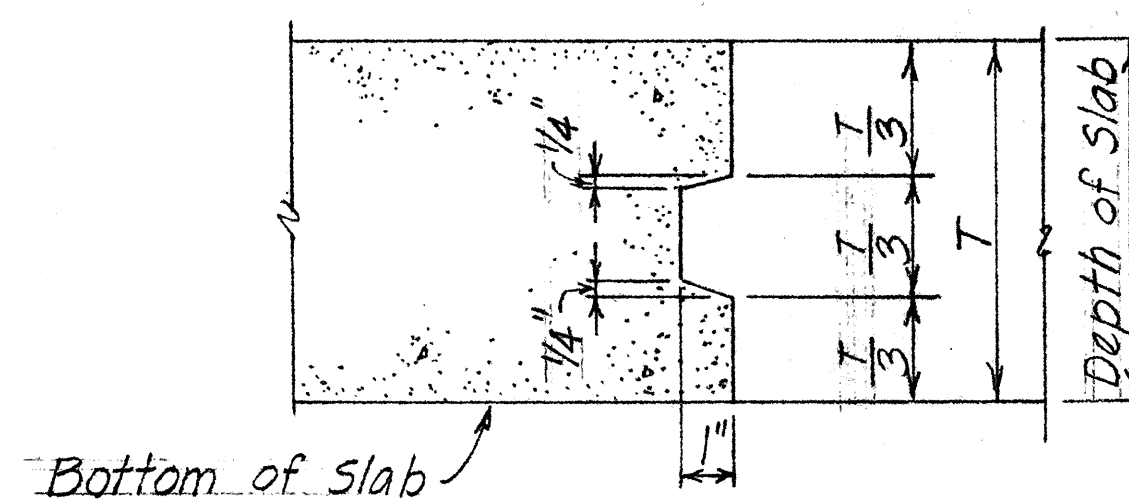
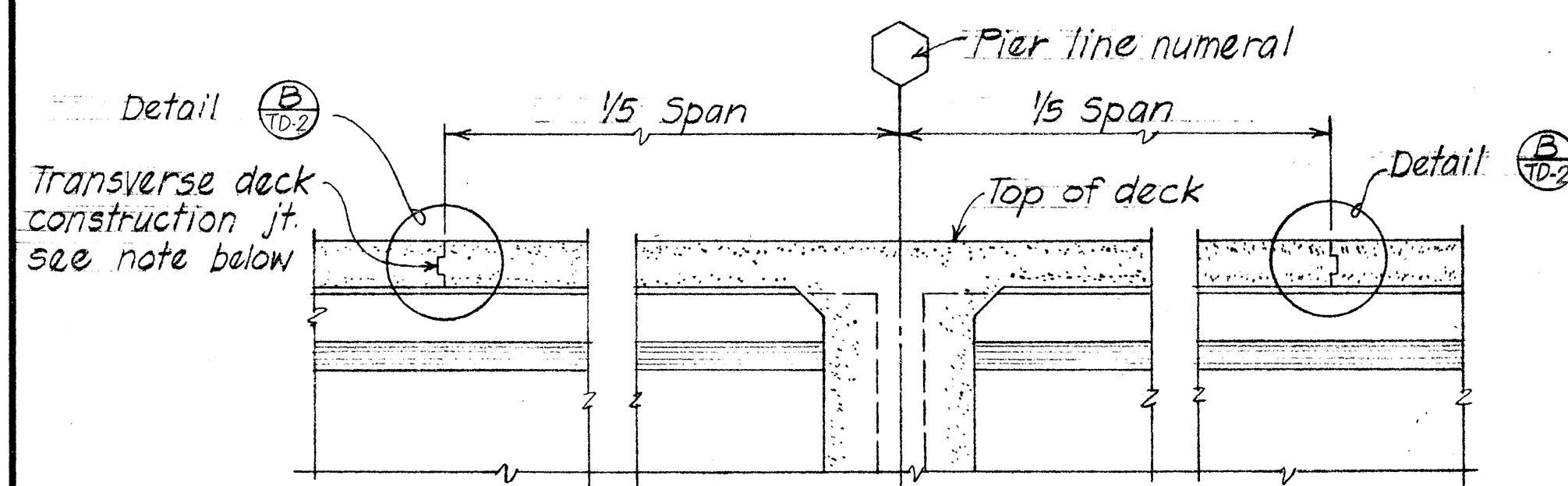
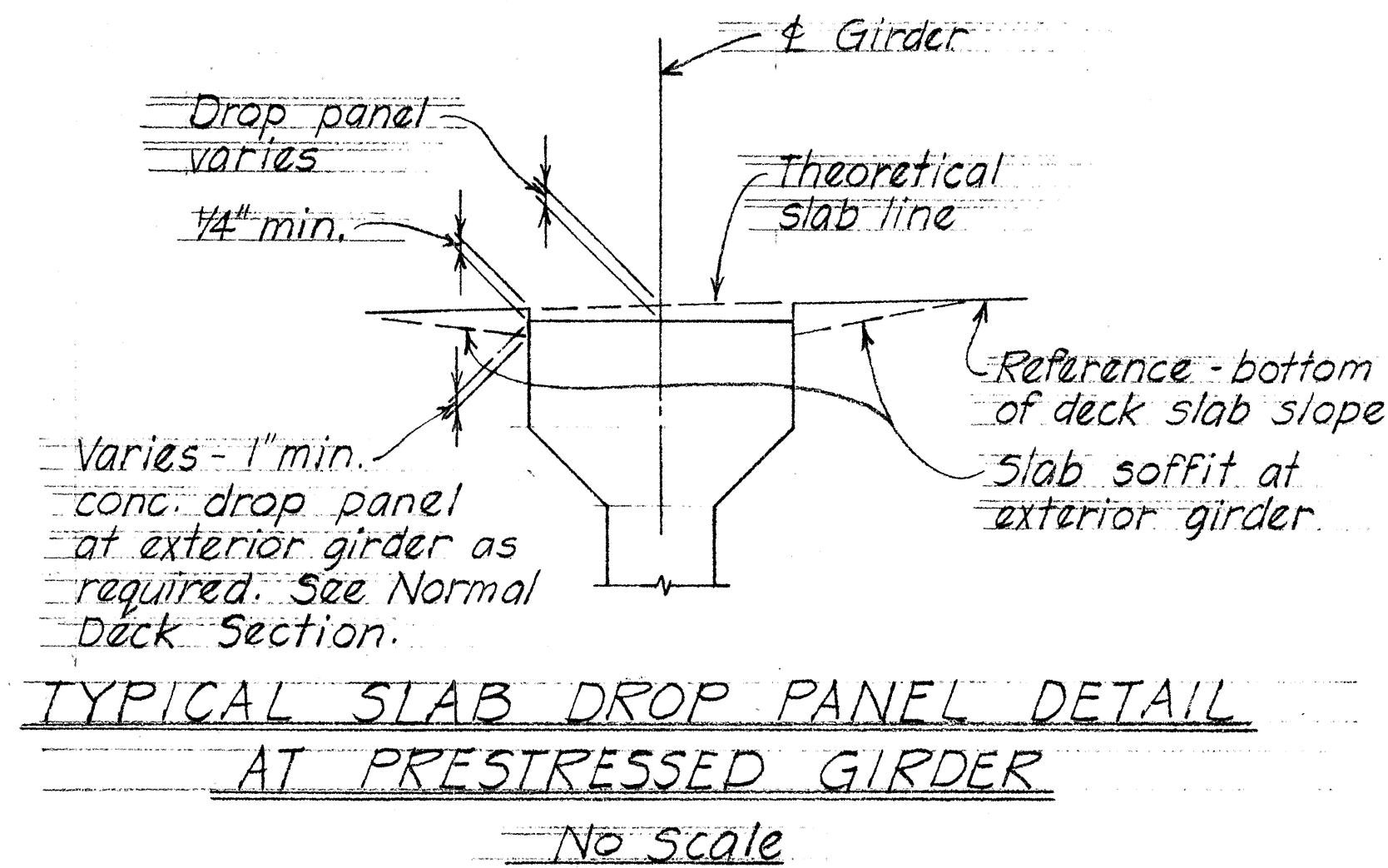
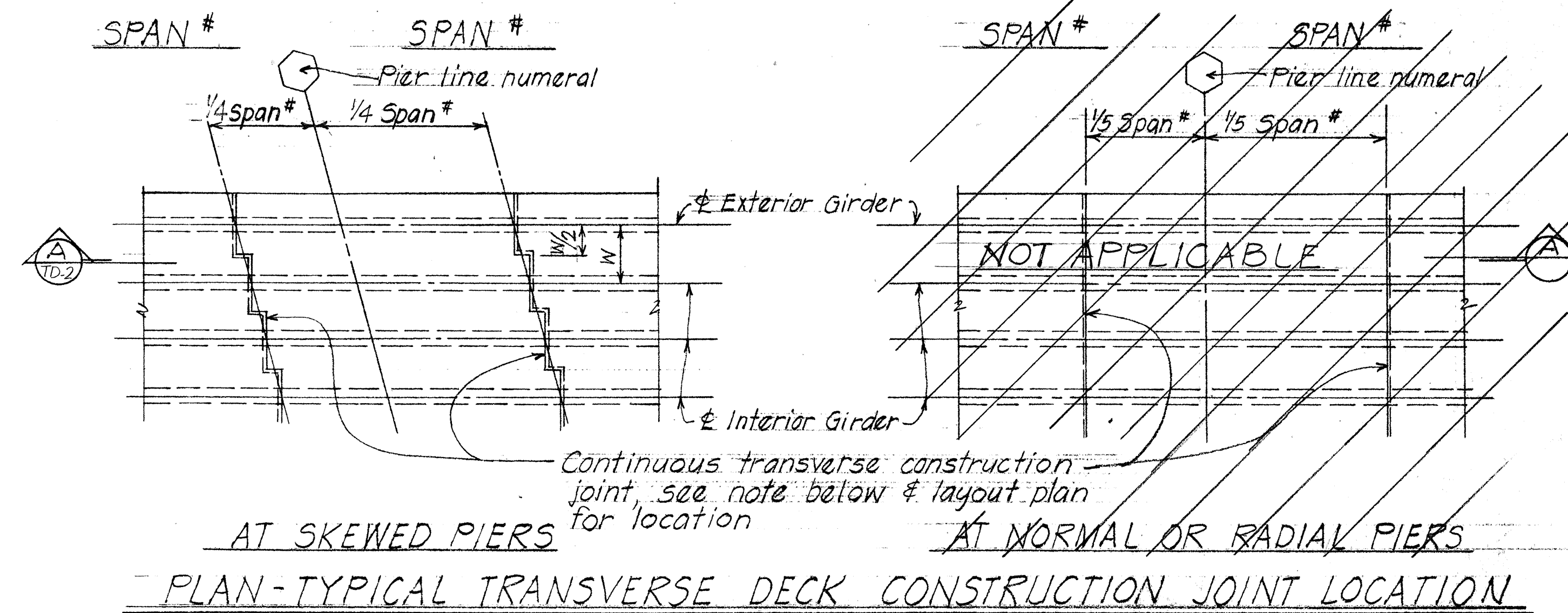
SYMBOLS & ABBREVIATION

	Pier column number
	Column line alphabet
	Location concrete seat line number
	Bottom footing elevation
	Pile cut-off elevation
	Pile tip elevation
	Type I pile
	Section Designation
	Sht. number detail is drawn on
	Boring number and designation
	High Strength reinf. bars ASTM designation A-432 Billet Steel.
	Pile Footing type
	Spread Footing type
	Superelevation
	Girder numbers.
	Inbound
	Outbound
	Baseline
	Point
	Expansion
	Number
	Continuous
	Each Face
	Both Face
	Near Face
	Far Face
	Working Point
	each
	Balance
	Bottom
	Top
	Exterior
	Interior
	on center
	Typical
	Grouted Rubble Paving
	Cement Rubble Masonry
	Welded Wire Fabric
	Straight
	Stirrup
	Not to Scale

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
TYPICAL DETAILS
NOTES AND ABBREVIATIONS
HALAWA INTERCHANGE
STRUCTURE No. 7
"EW" RAMP OVER MOANALUA FREEWAY
Proj. No. I-HI-1(88):13 July 1970
SHEET No. TD-1 OF 5 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(88)-13	1971	277	457



(A) DETAIL OF CONTINUOUS SLAB OVER PIER

(B) TYPICAL SLAB CONSTRUCTION JOINT DETAIL

NOTE:

Transverse deck construction joint shall be used at these locations. The portion of the pour indicated between construction joints over the pier shall not be poured until the pours for the adjacent positive moment areas have been completed.

Transverse deck construction joints may be eliminated if permitted by the Engineer in writing. If the construction joints are eliminated, water reducing and retarding admixture conforming to AASHTO Designation: M174, Type D, shall be added to the deck concrete over the pier within the indicated lines. The type of the admixture shall be such that the amount of dosage used will produce the retardation required. The type and dosage of the admixture, and the method of pour shall be approved by the Engineer.

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
NO.	

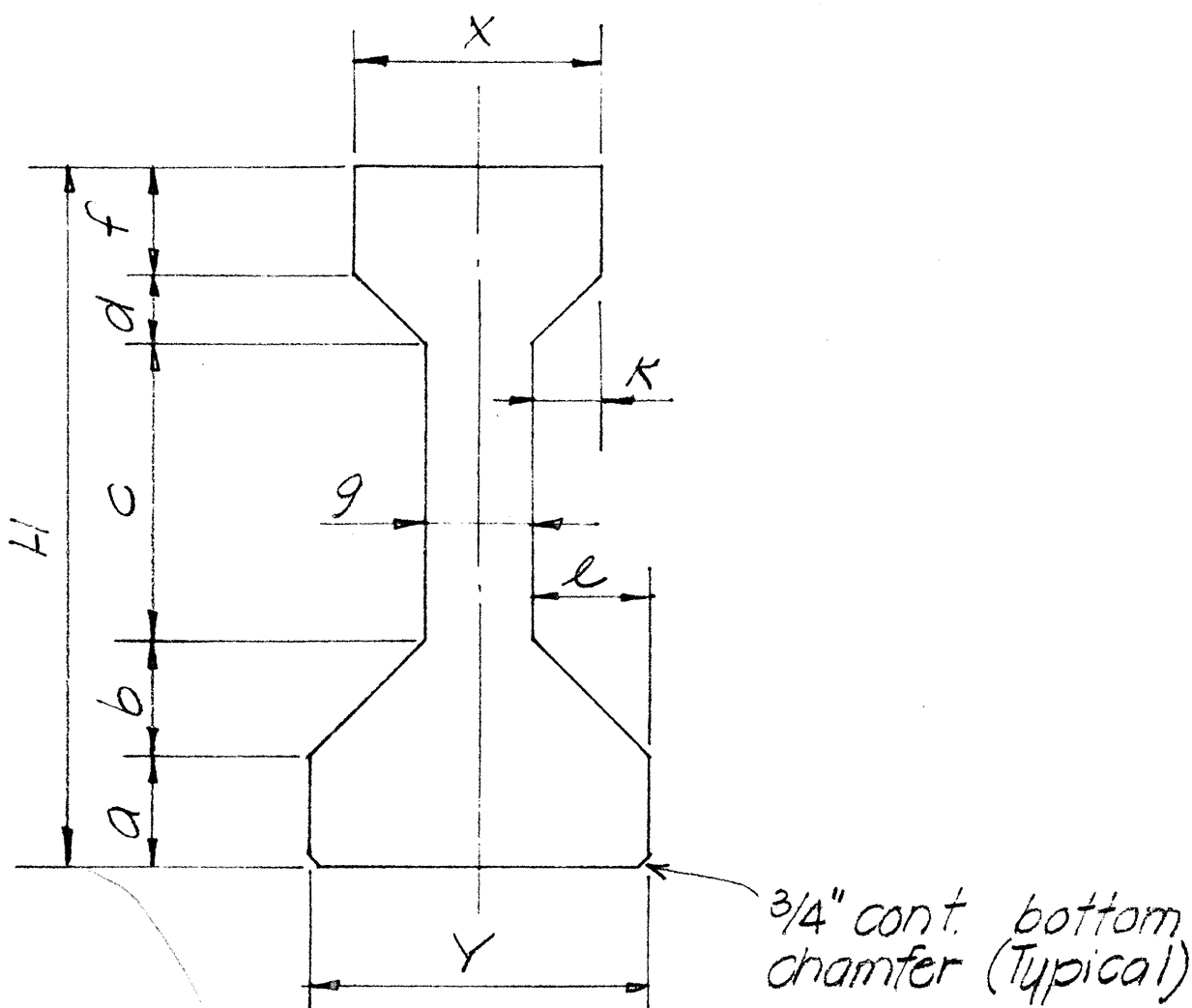
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
TYPICAL DETAILS
PRESTRESSED GIRDER SUPERSTRUCTURE
HALAWA INTERCHANGE
STRUCTURE No. 7
"EW" RAMP OVER MOANALUA FREEWAY
Proj. No. I-HI-1(88)-13 July 1970
SHEET No. TD-2 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(88)13	1971	277	457

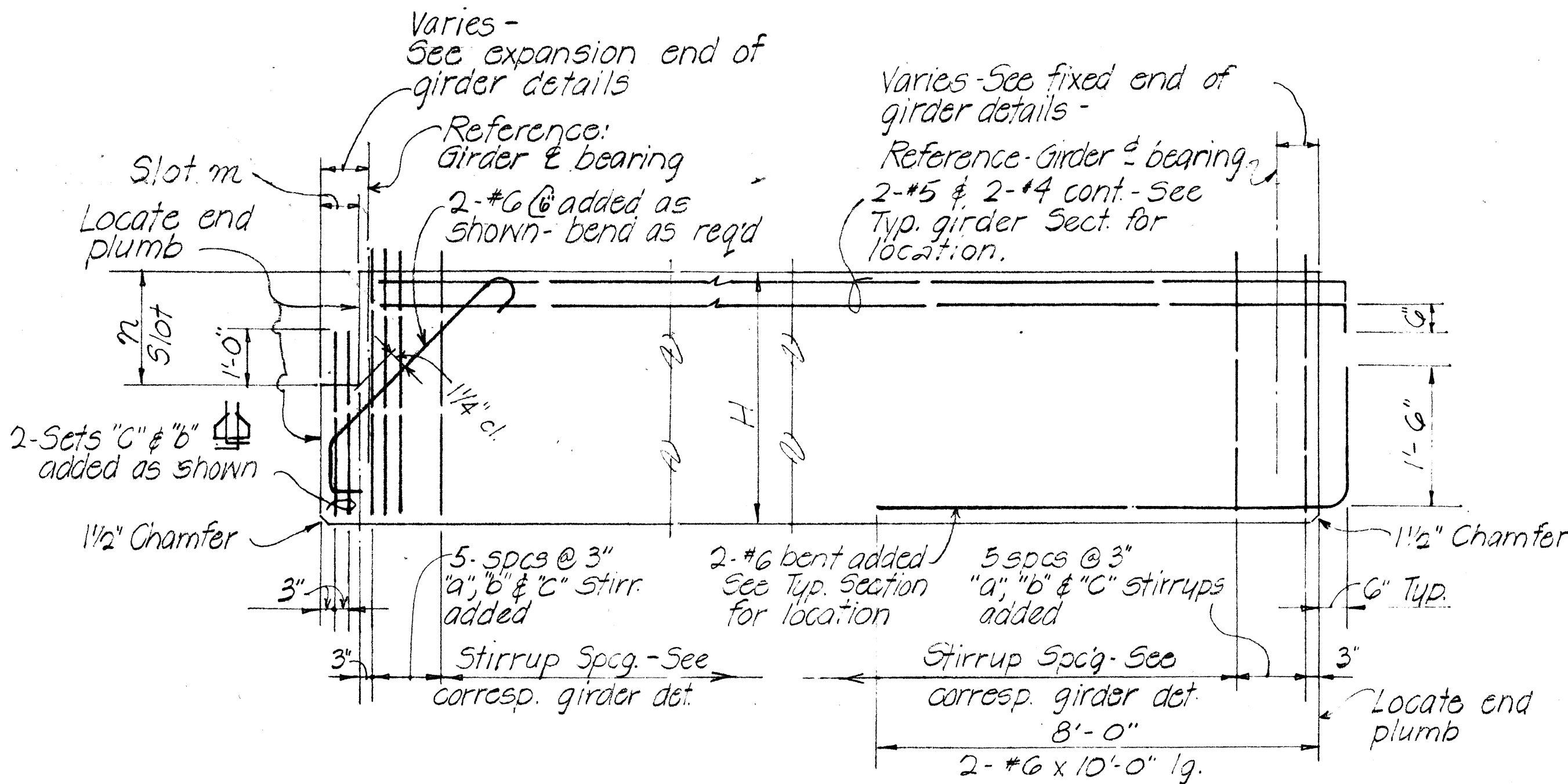
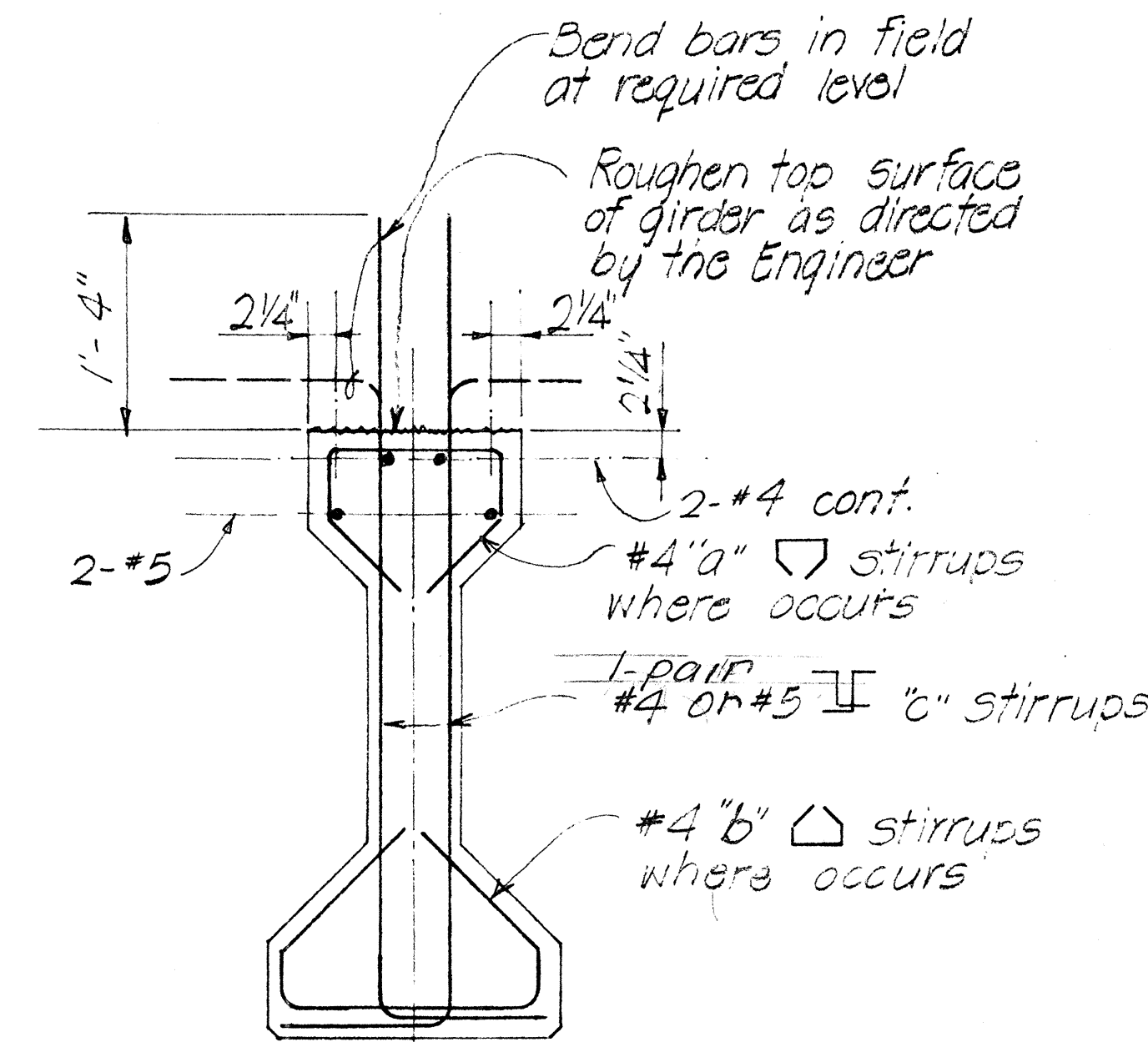
DIST. NO.

HAWAII

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"	7½"	1'-7"	4½"	—	7"	7"	—	4½"	7½"		
IV	4'-6"	1'-8"	2'-2"	8"	9"	1'-11"	6"	—	8"	8"	—	6"	9"		



TYPE I THRU TYPE IV



EXPANSION END FIXED END
TYPICAL DETAILS - AT ENDS OF GIRDER

TYPE I THRU TYPE IV

TYPICAL SECTION PRESTRESSED CONC. GIRDERS

GENERAL NOTES

DESIGN LOADS: HS-20-44 or Interstate Loading

1- Prestressed Girders -
 f'_c = psi
 f_{ci} = psi
 Design Load = 20,160 lbs per strand
 Tensioning Load = 25,200 lbs per strand.
 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.

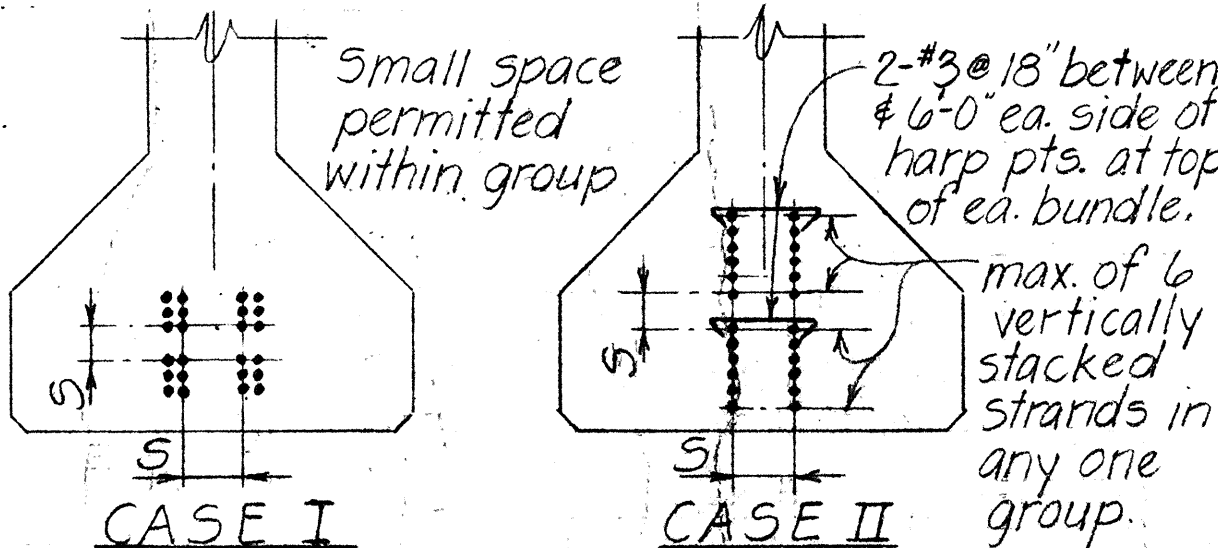
BUNDLING OF PRESTRESSING REINFORCEMENT

ARRANGEMENT AND CLEARANCE FOR POST TENSIONED UNITS

- 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.

ARRANGEMENT AND CLEARANCE FOR PRETENSIONED STRANDS

- Strands may be bundled in groups as shown.
- The minimum distance "S" between groups or individual strands is 2" for ½" strands.
- "S" is measured between centers of adjacent strands.



STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

TYPICAL DETAILS

PRESTRESSED GIRDER

HALAWA INTERCHANGE

STRUCTURE NO 7

"EW" RAMP OVER MOANALUA FREEWAY

Proj. No. I-HI-1(88)13 July 1970

SHEET No. 7D-4 OF 5 SHEETS

DATE	_____
DESIGNED BY	_____
CHECKED BY	_____
NO.	_____

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, leadplates 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.

TYPICAL CONCRETE GROOVE DETAIL

D RIP DETAIL

SECTION "Z-Z"

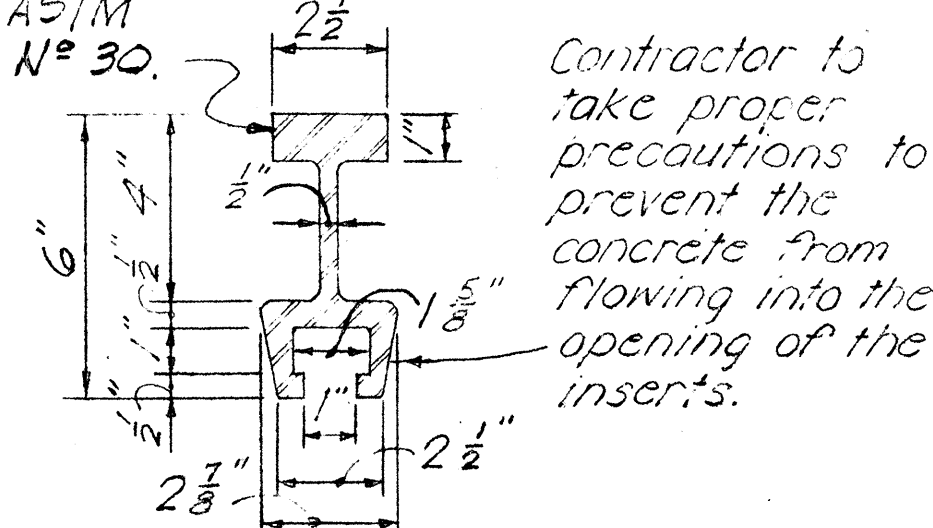
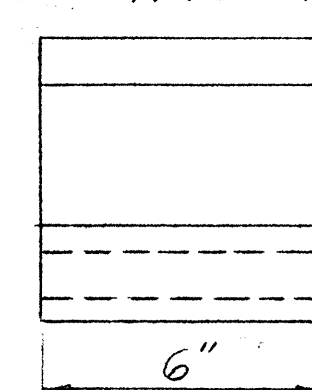
SECTION "Y-Y"

SECTION "X-X"

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.

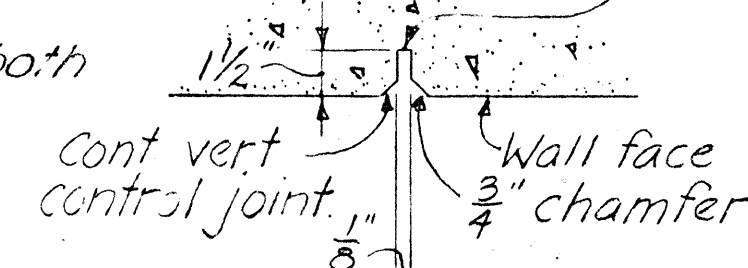
TYPICAL DRAINAGE DETAILS

Cast Iron ASTM A 48 Class N=30.



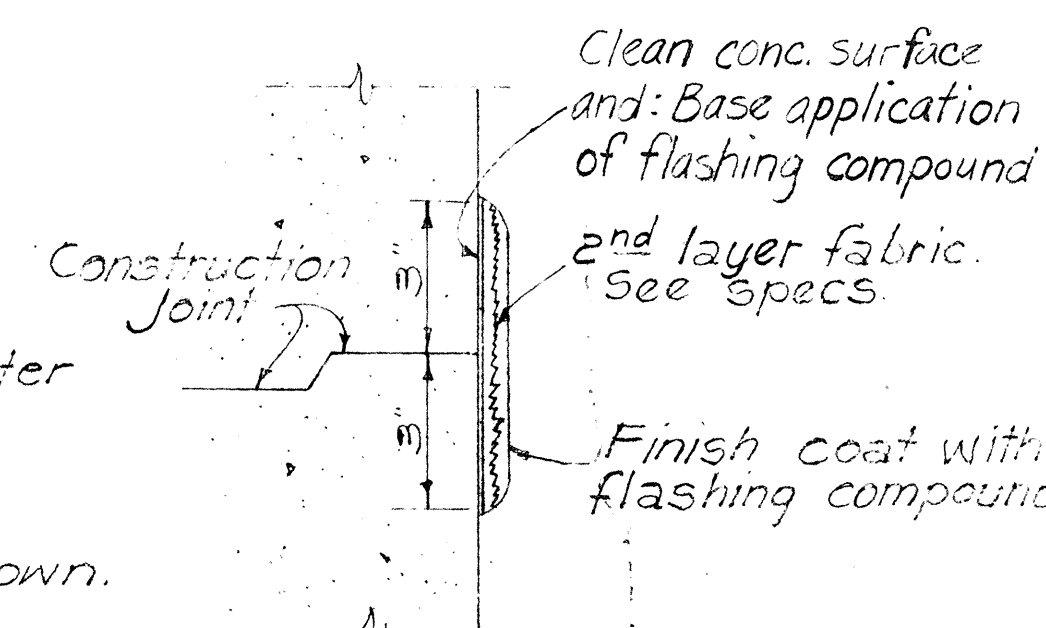
Contractor to take proper precautions to prevent the concrete from flowing into the opening of the inserts.

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

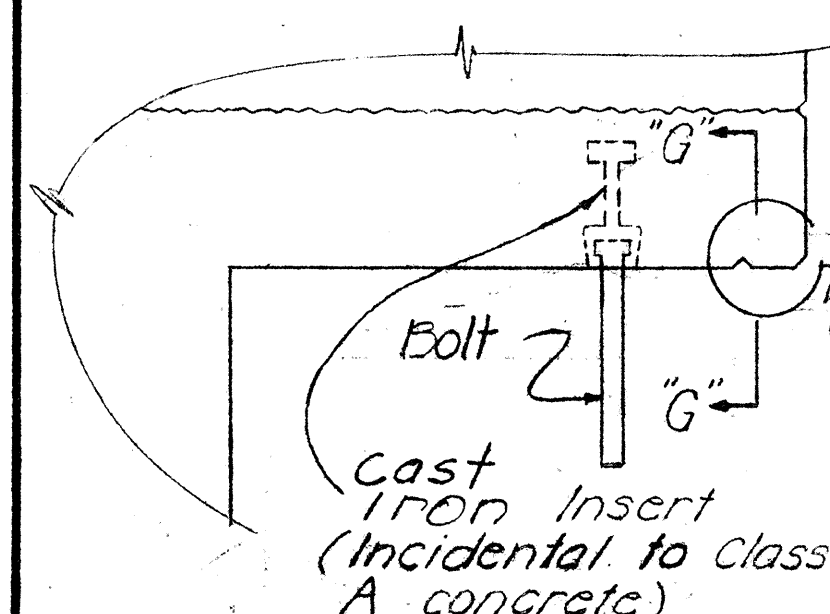


CONTROL JOINT DETAILS

TYP. FLASHING COMPOUND WATERPROOFING DETAIL



INSERT DETAIL



SECTION "G-G"

DETAIL of PIPE HANGERS & INSERTS

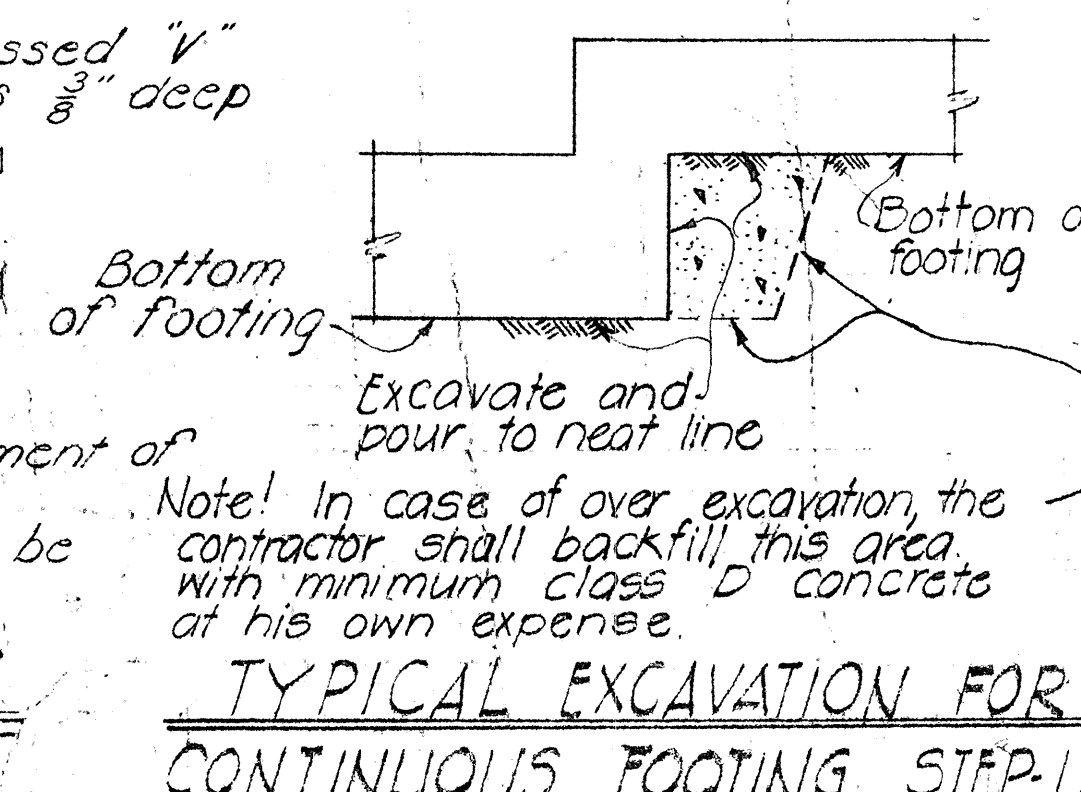
NAME DATE

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

APPROVAL RECOMMENDED:
Paul T. Yamashita
BRIDGE DESIGN ENGINEER 1-23-70
DATE

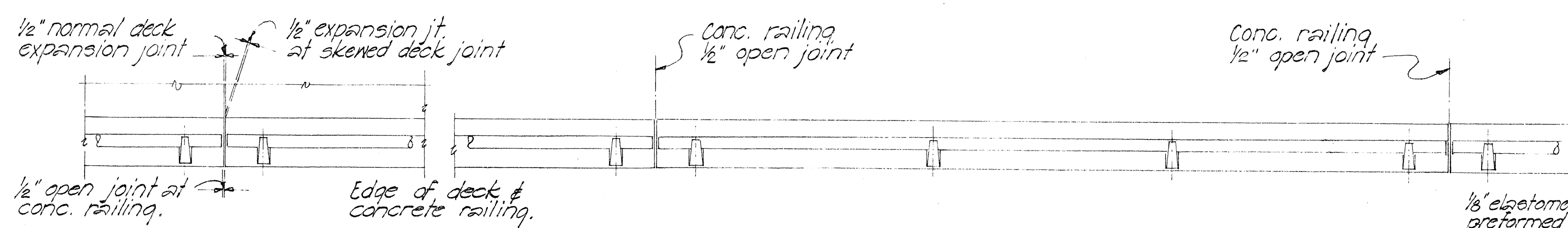
APPROVED
Paul T. Yamashita
FOR ASSISTANT CHIEF, ENGINEERING 1-28-70
DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
NOTES AND MISCELLANEOUS
DETAILS

Date: October 1999
SHEET No. 1 OF 1 SHEETS DB-100

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-100-13	1971	282	457



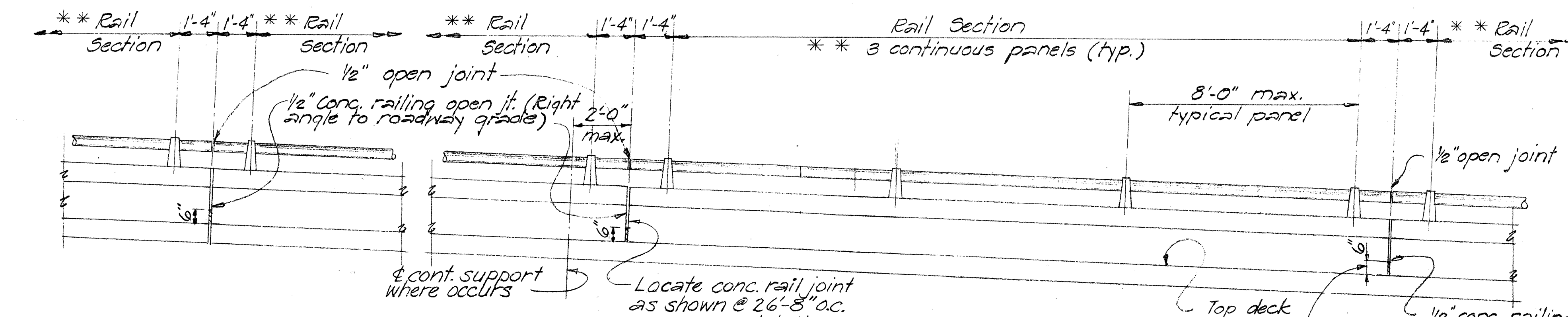
AT DECK EXPANSION JOINT

INTERMEDIATE

RAILING PLAN SCALE 3/8" = 1'-0"

**** 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.

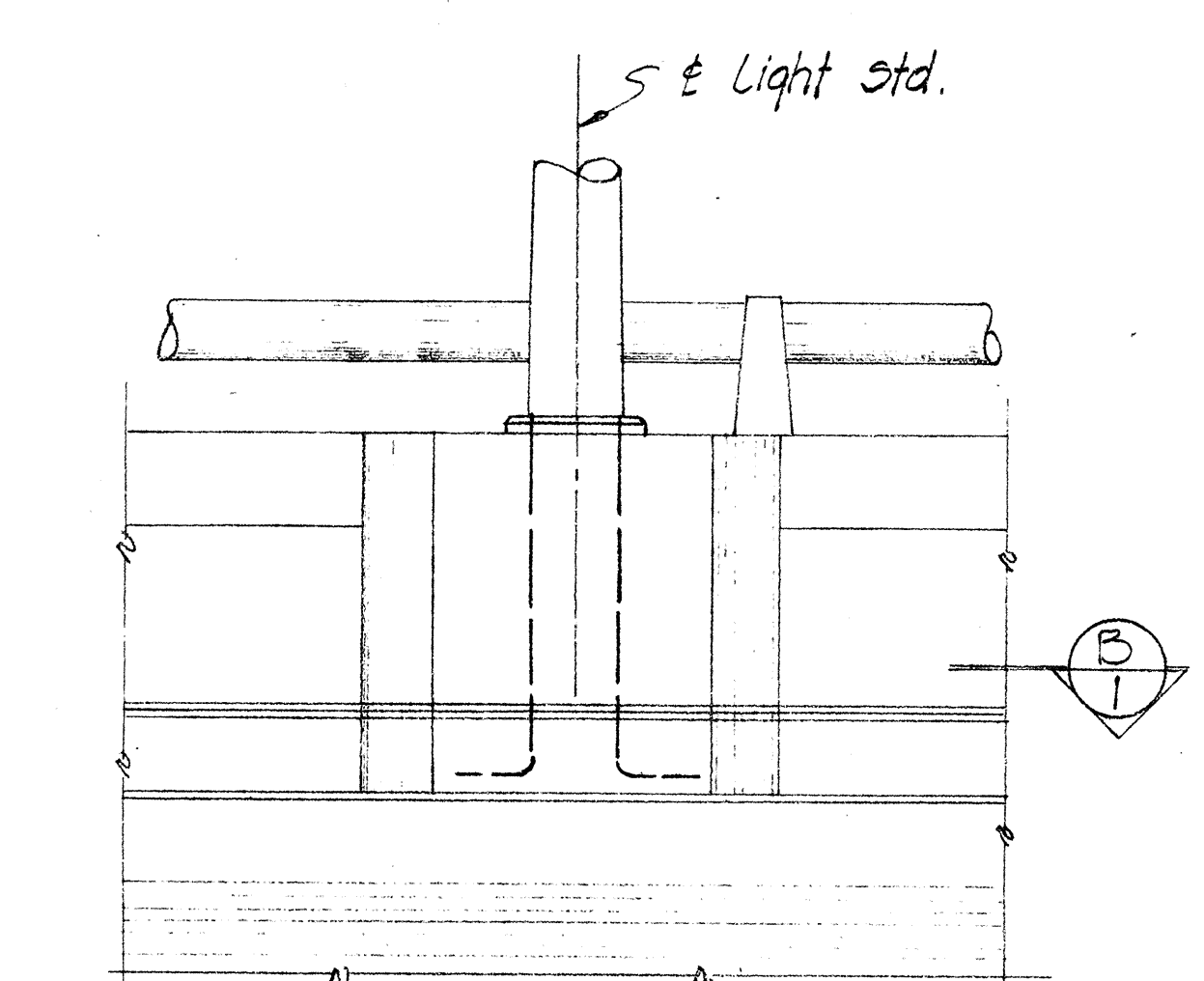
2. Rail Posts shall be normal to grade.
 3. Provide double posts at each expansion jt., fixed bridge jt., continuous support, and as shown on detailed drawing.



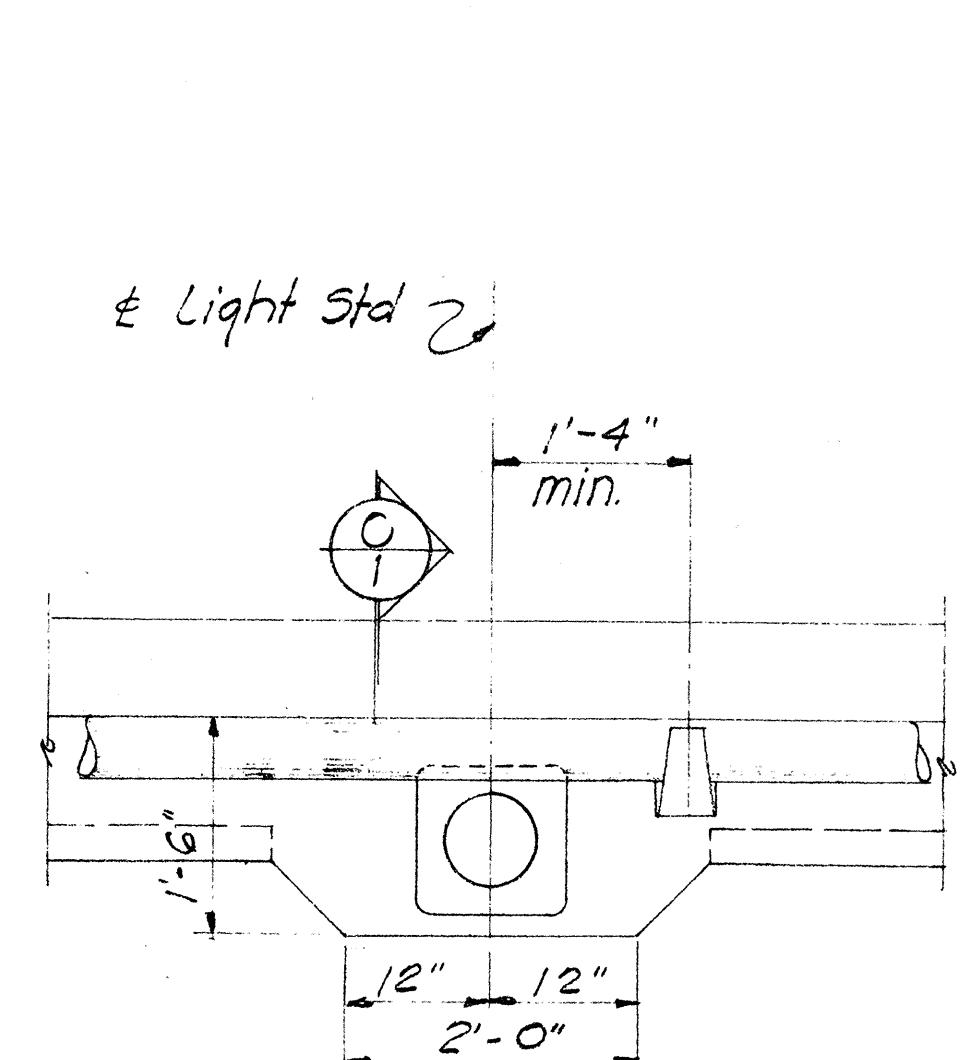
AT DECK EXPANSION JOINT

INTERMEDIATE

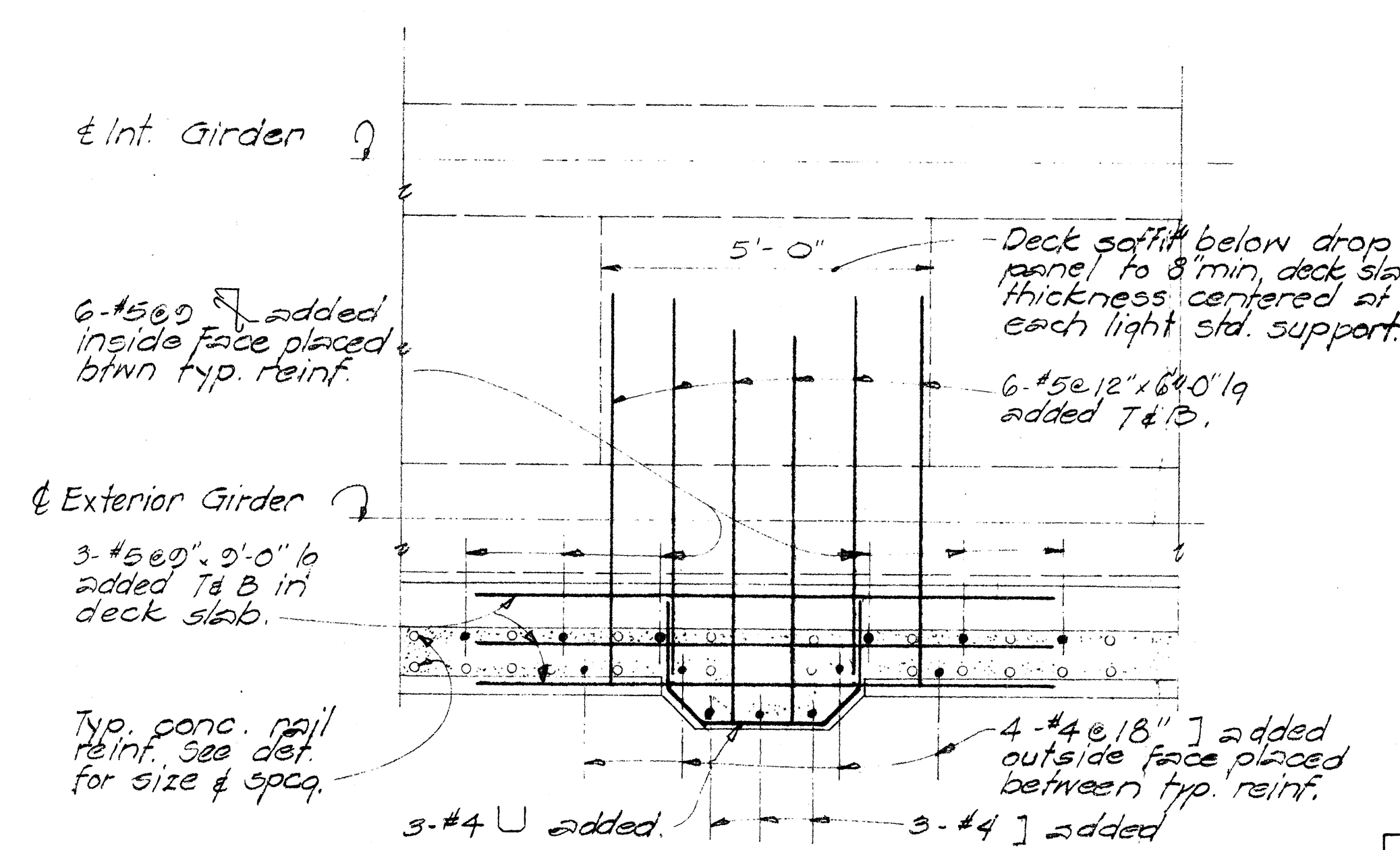
EXTERIOR RAILING ELEVATION SCALE: 3/8" = 1'-0"



PART ELEVATION
 SCALE: 3/4" = 1'-0"

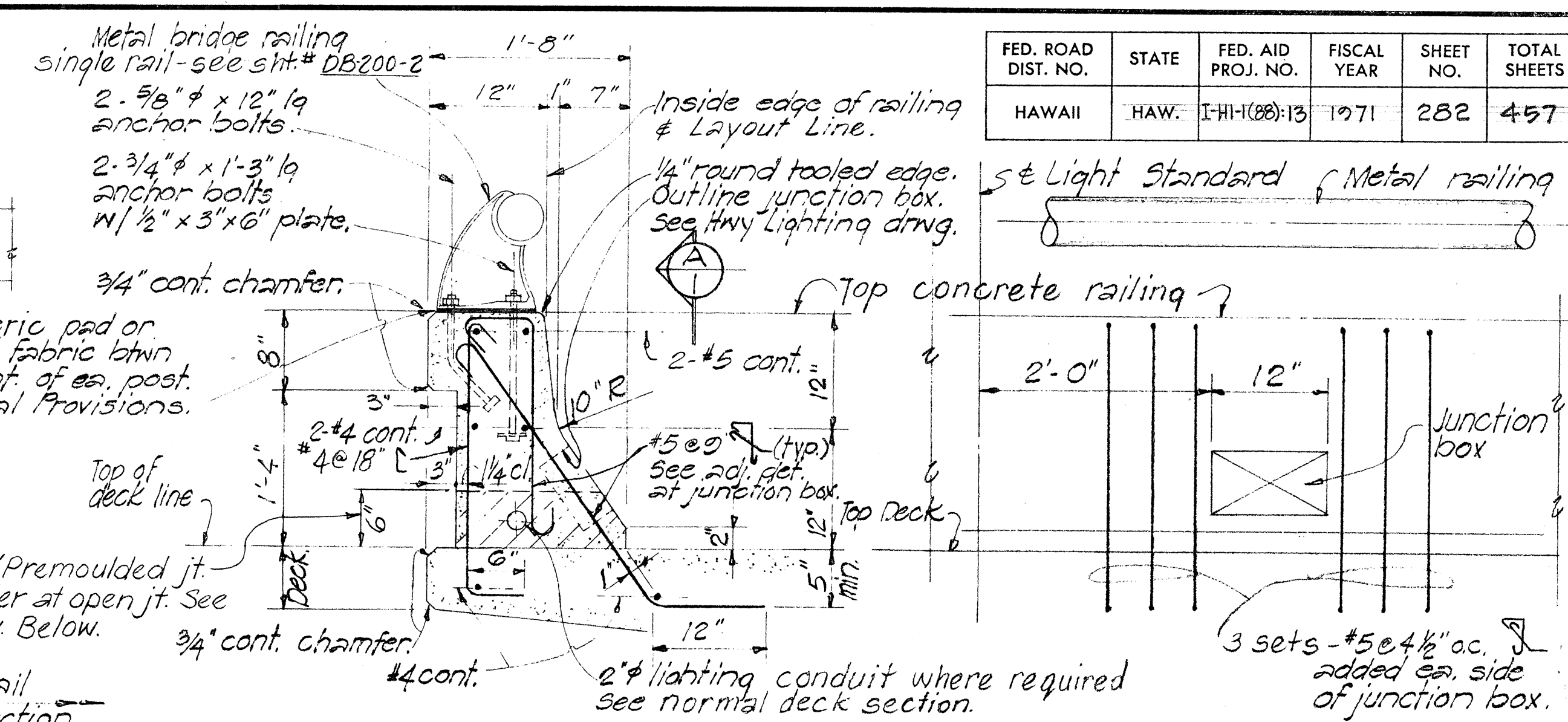


PART PLAN
 SCALE: 3/4" = 1'-0"



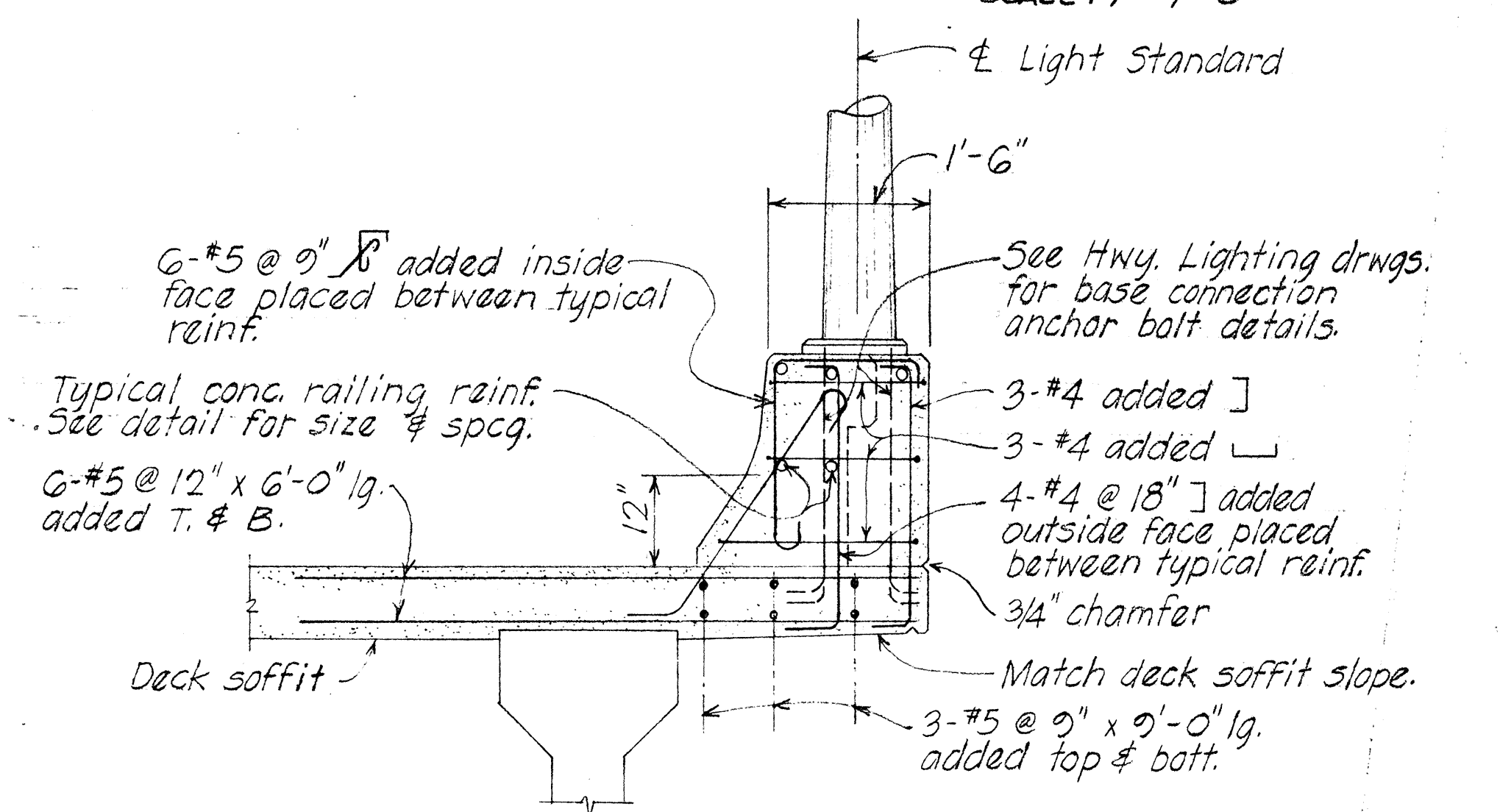
SECTION (B)
 SCALE: 1/2" = 1'-0"

DETAILS OF RAILING AT LIGHT STANDARD
 SCALE AS NOTED



TYPICAL CONCRETE RAILING SECTION
 SCALE: 1" = 1'-0"

ELEVATION (A) SHOWING SPECIAL REINFORCEMENT AT JUNCTION BOX
 SCALE: 1" = 1'-0"



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

APPROVAL RECOMMENDED:
Paul T. Yamashita 1-23-70
 BRIDGE DESIGN ENGINEER DATE

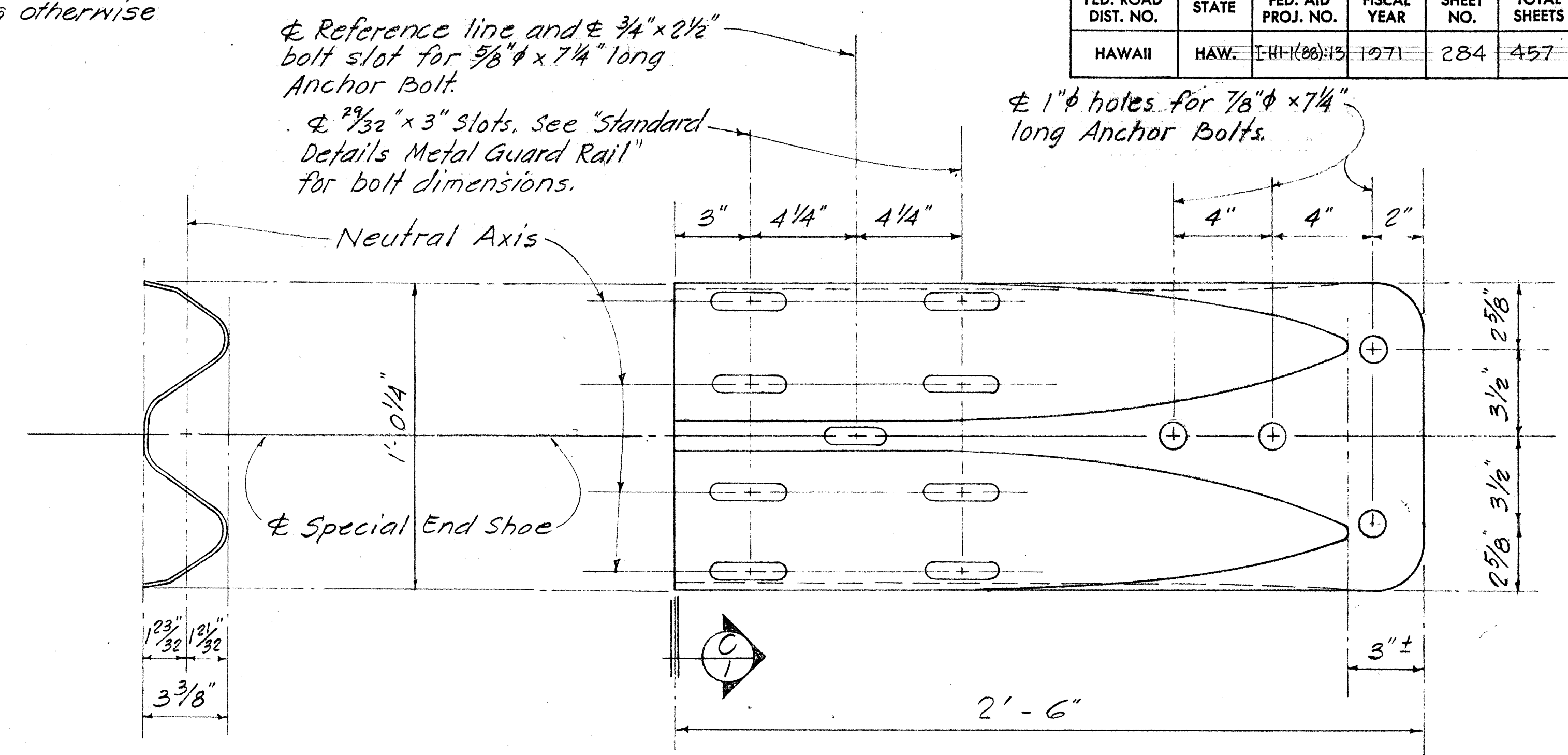
APPROVED:
Paul T. Yamashita 1-28-70
 ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

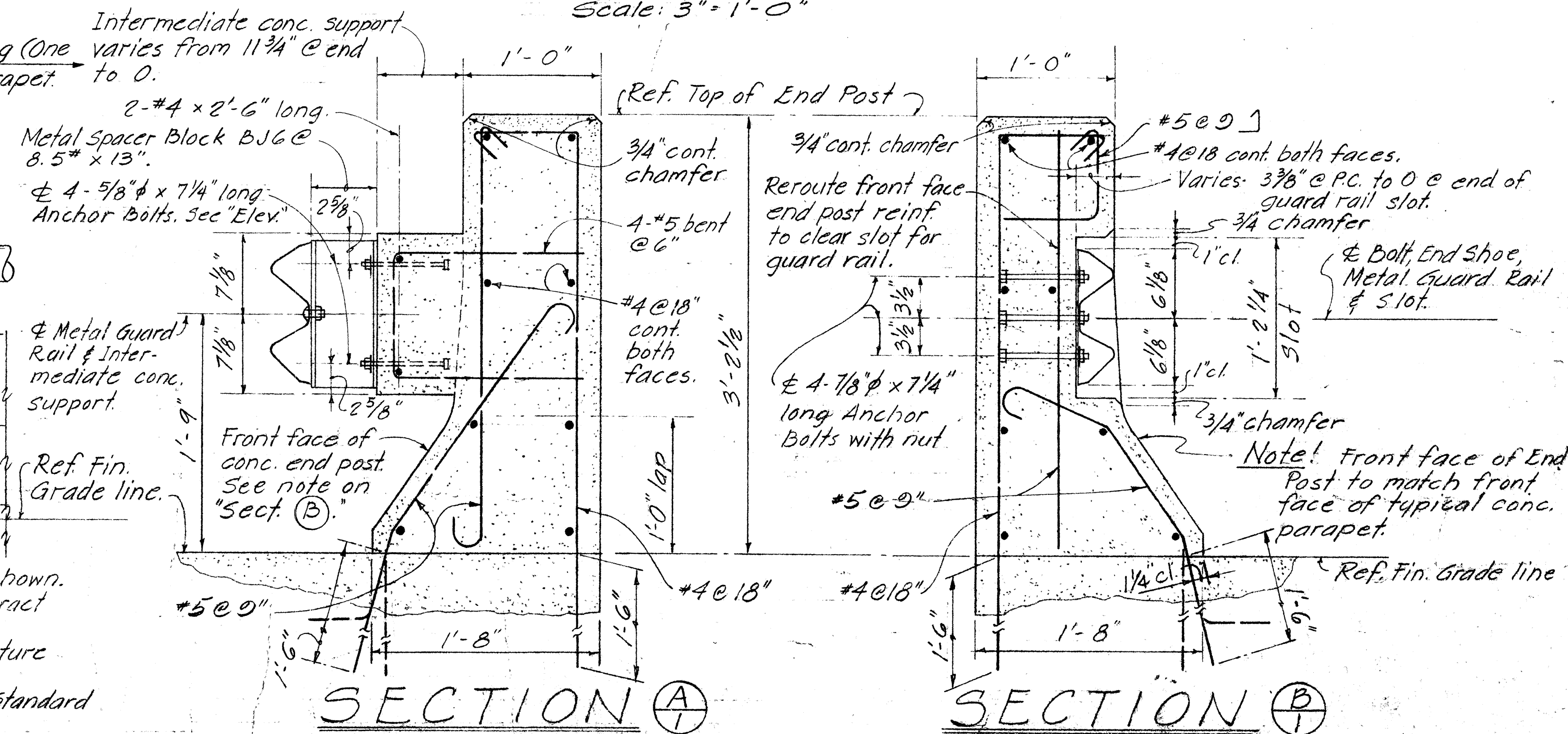
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
STANDARD DETAILS
METAL BRIDGE RAILING
ONE RAIL COMBINATION TYPE
ON PARAPET
 Date: October 1969

PRINTED ON NO. 1000H CLEARPRINT

1" ϕ holes for $\frac{7}{8}$ " ϕ x $7\frac{1}{4}$ "



Scale: 3" = 1'-0"

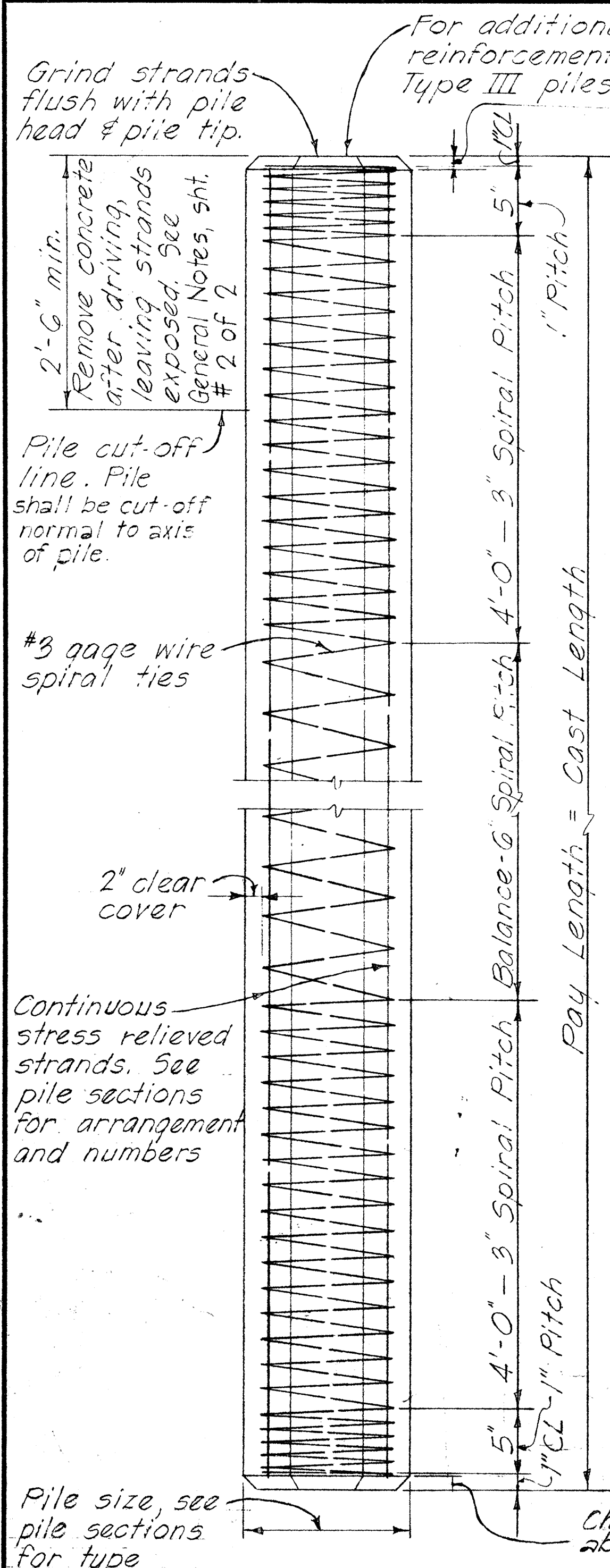


SECTION (B)
Scale: $1\frac{1}{2}" = 11'-0"$

NO.	REVISION	APPROVED BY	DATE

1-28-70
DATE

SHEET No. / OF / SHEETS DB-205



TYPICAL PILE DETAIL

Max. Length "L" *
Type I "L" = 53'-0"
12" Type II "L" = 50'-0"
10" Type III "L" = 46'-0"
0.30L 0.70L

Max. Length "L" *
Type I "L" = 75'-0"
12" Type II "L" = 72'-0"
10" Type III "L" = 66'-0"
0.21L 0.58L 0.21L

Length "L" *
Type I "L" over 75'-0"
12" Type II "L" over 72'-0"
10" Type III "L" over 66'-0"
0.15L 0.35L 0.35L 0.15L

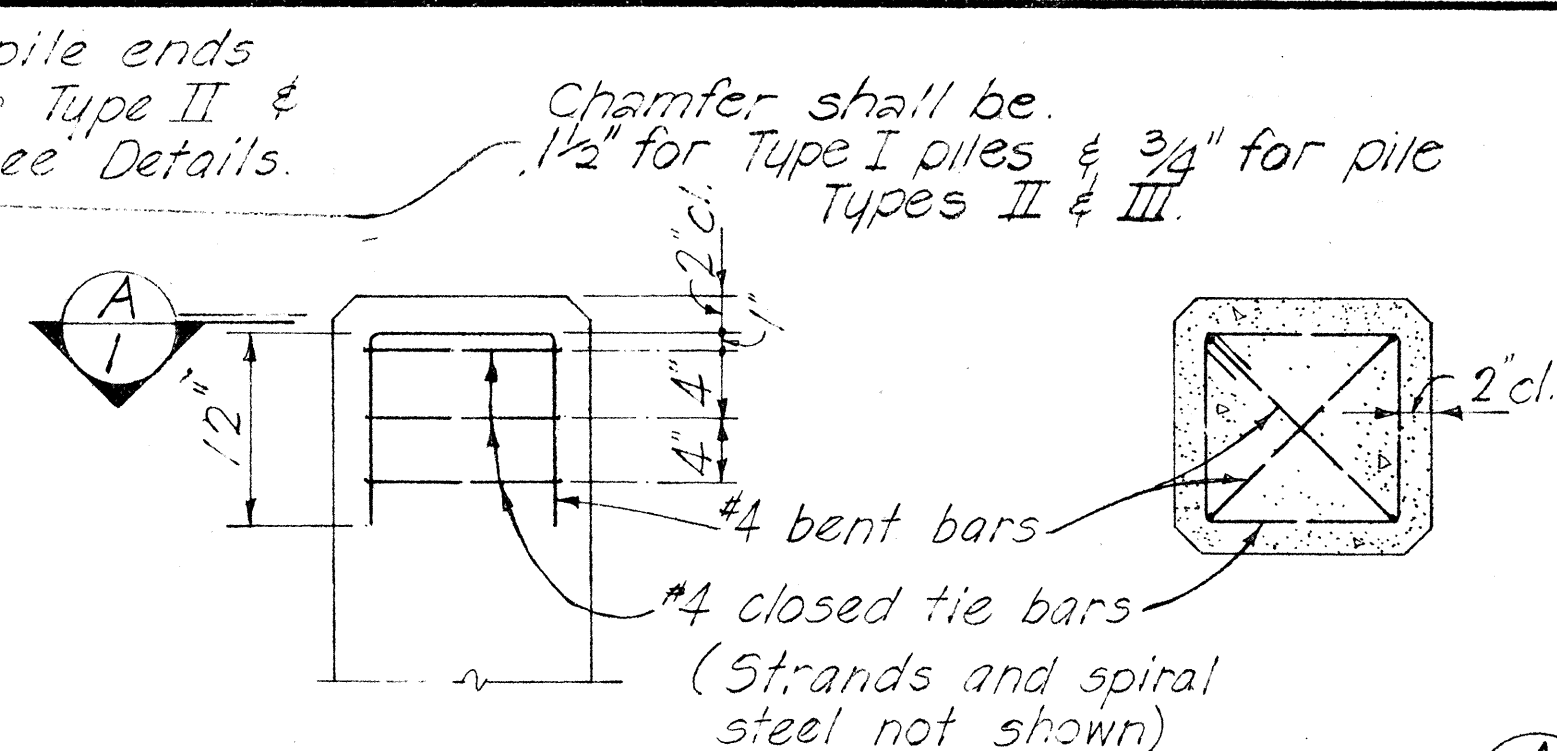
* The length "L" is the distance end to end of pile.

1 POINT PICK-UP

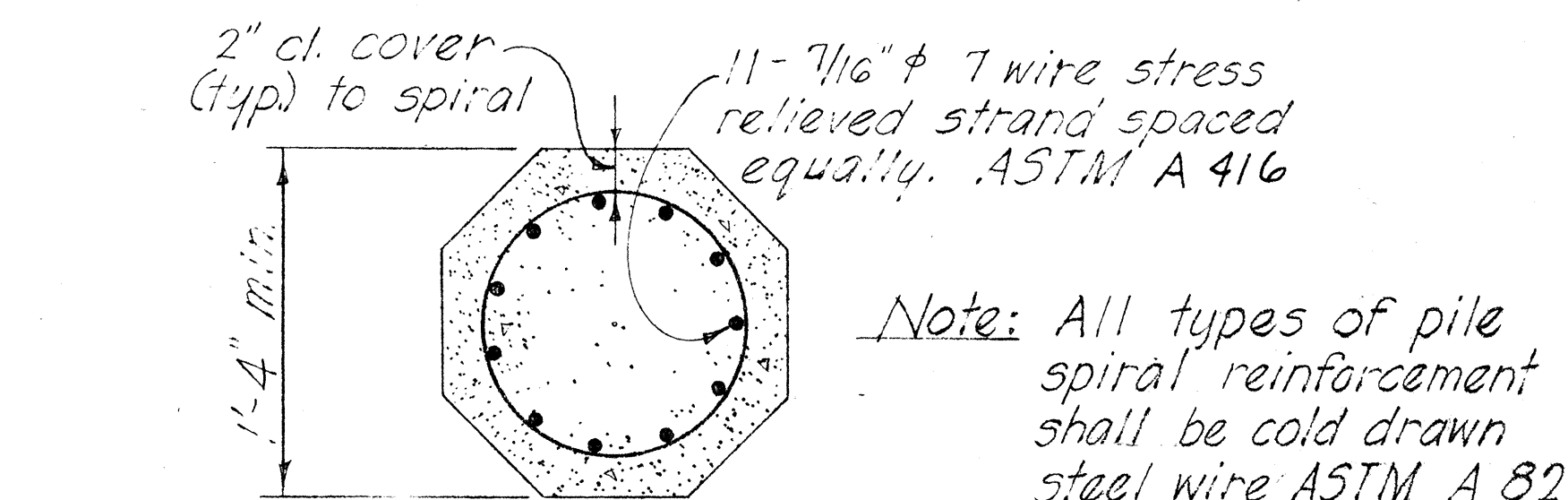
2 POINT PICK-UP

3 POINT PICK-UP

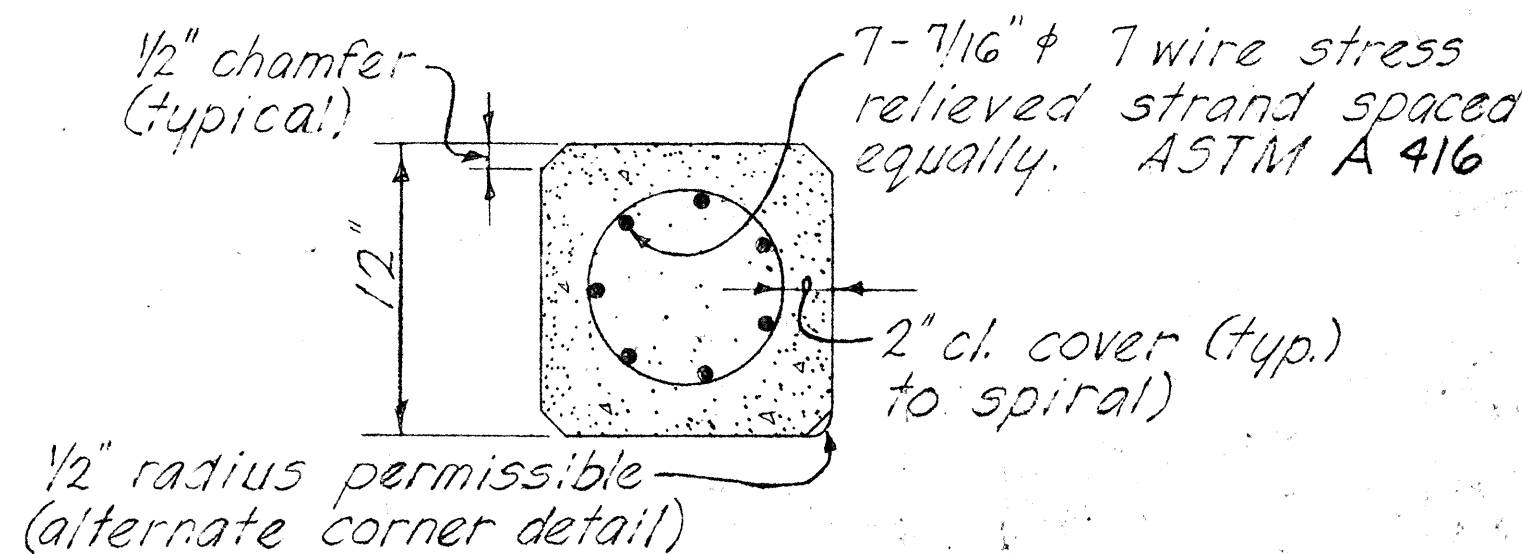
NOTE: Unless special lifting devices are attached for pick-up points, pick-up points shall be plainly marked on all piles after removal of the forms and all lifting shall be done at these points. The use of special embedded or attached lifting devices, the employment of other pick-up points or any other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



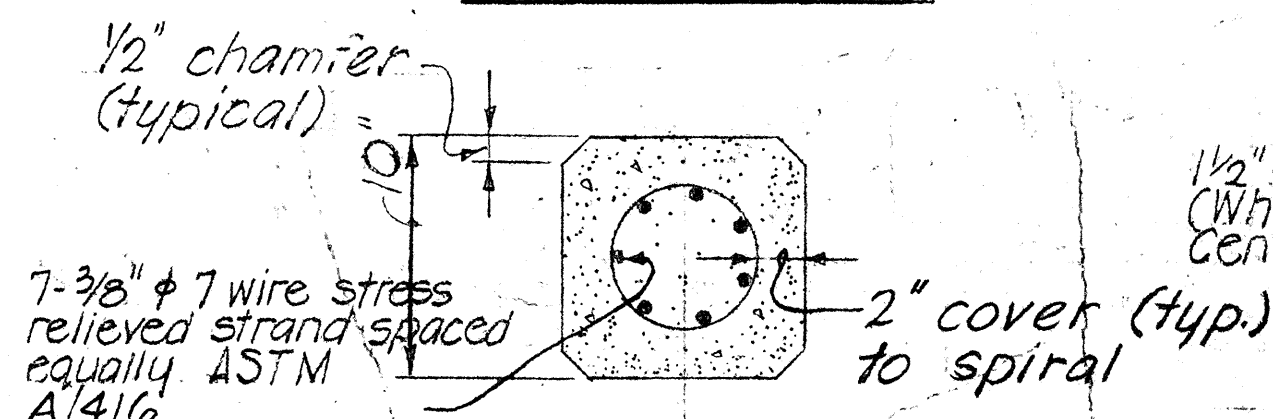
PART ELEVATION SECTION A-TYPICAL ADDED REINFORCEMENT PILE ENDS - TYPE II & III ONLY



TYPE I



TYPE II

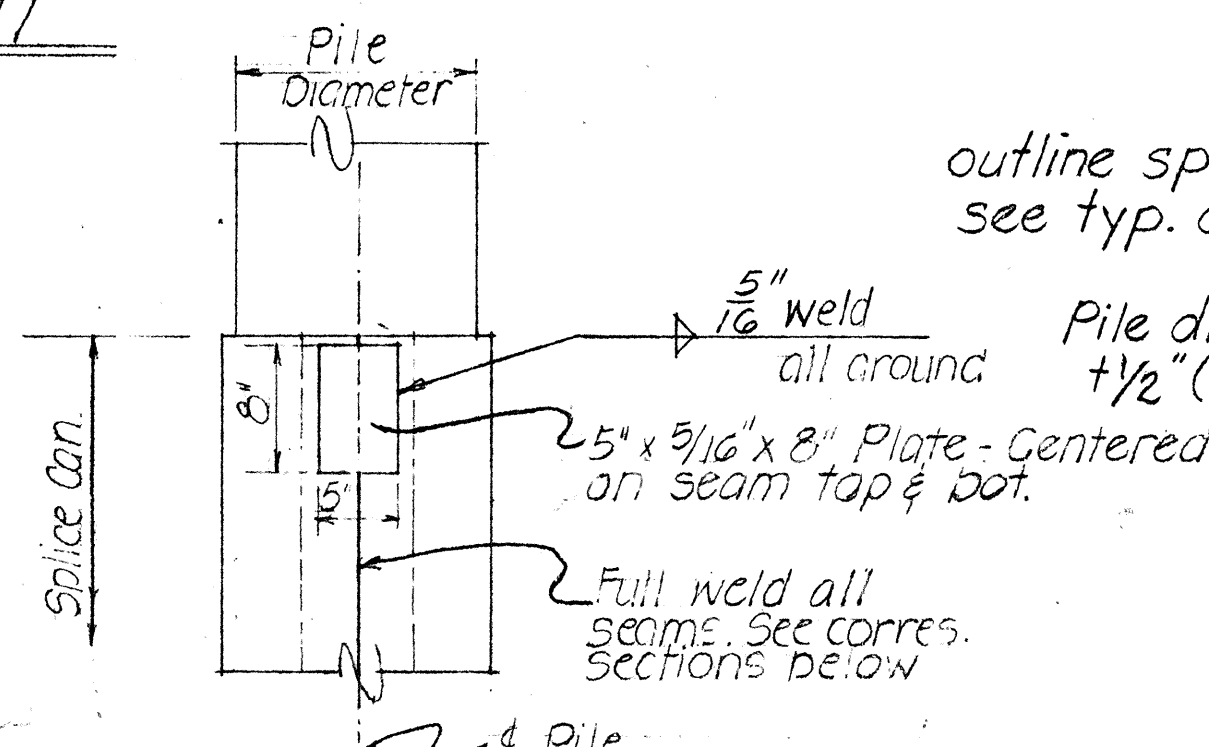


TYPE III

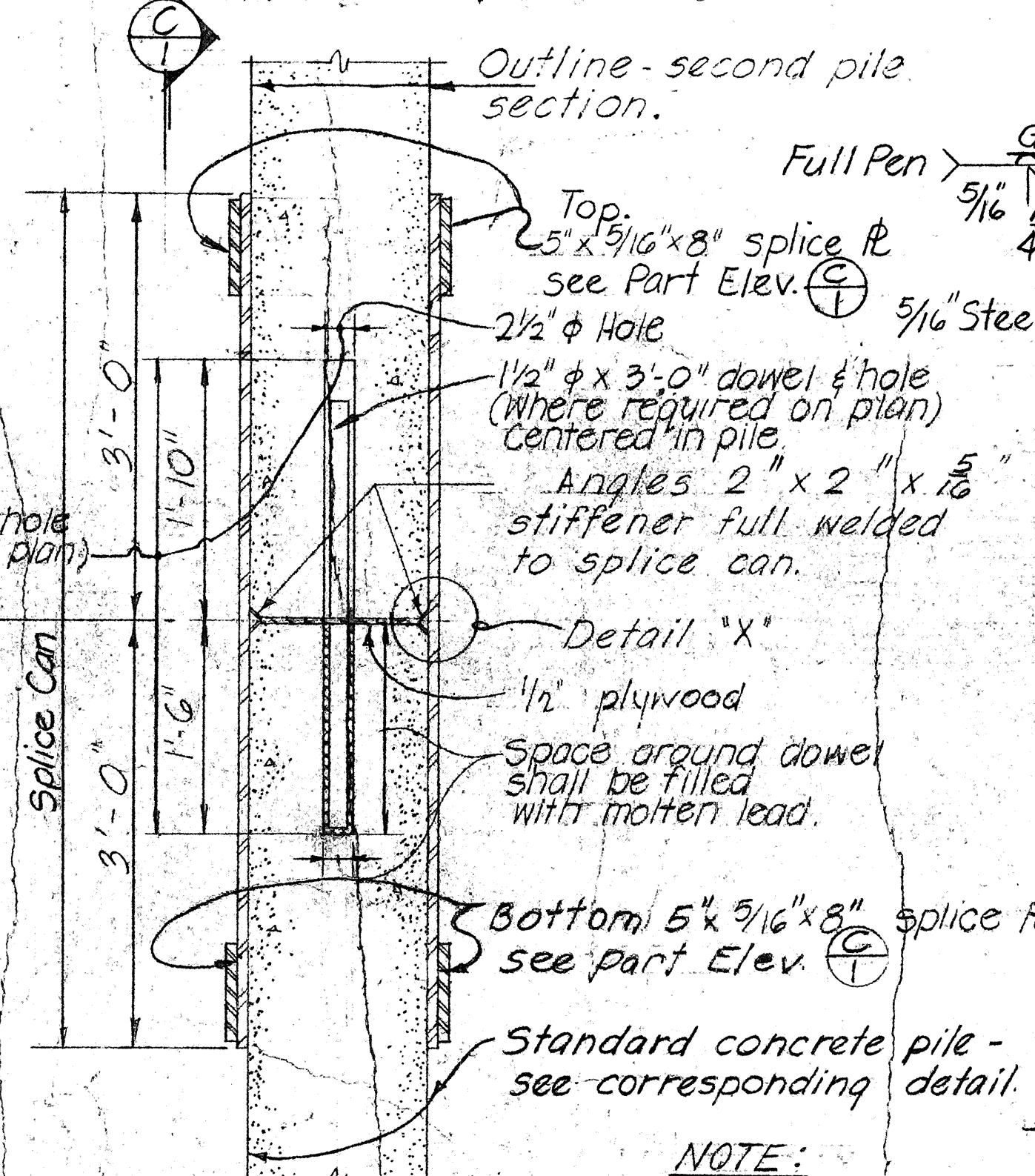
TYPICAL SECTIONS THRU PILES

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.



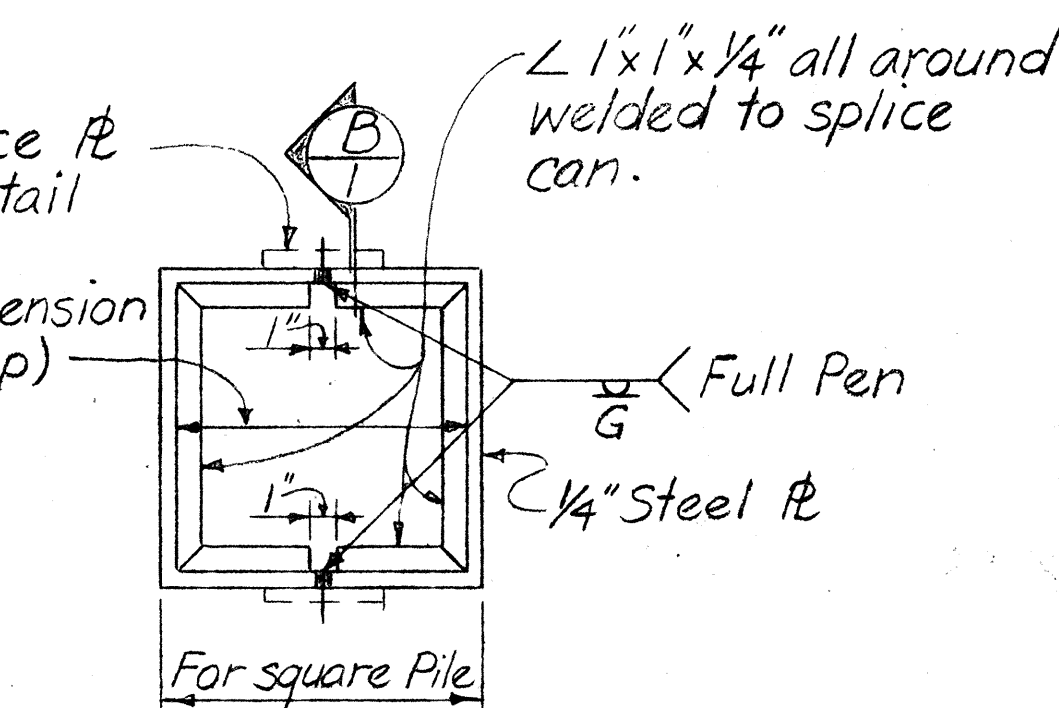
PART ELEV. C-TYP CAN SPICE RE



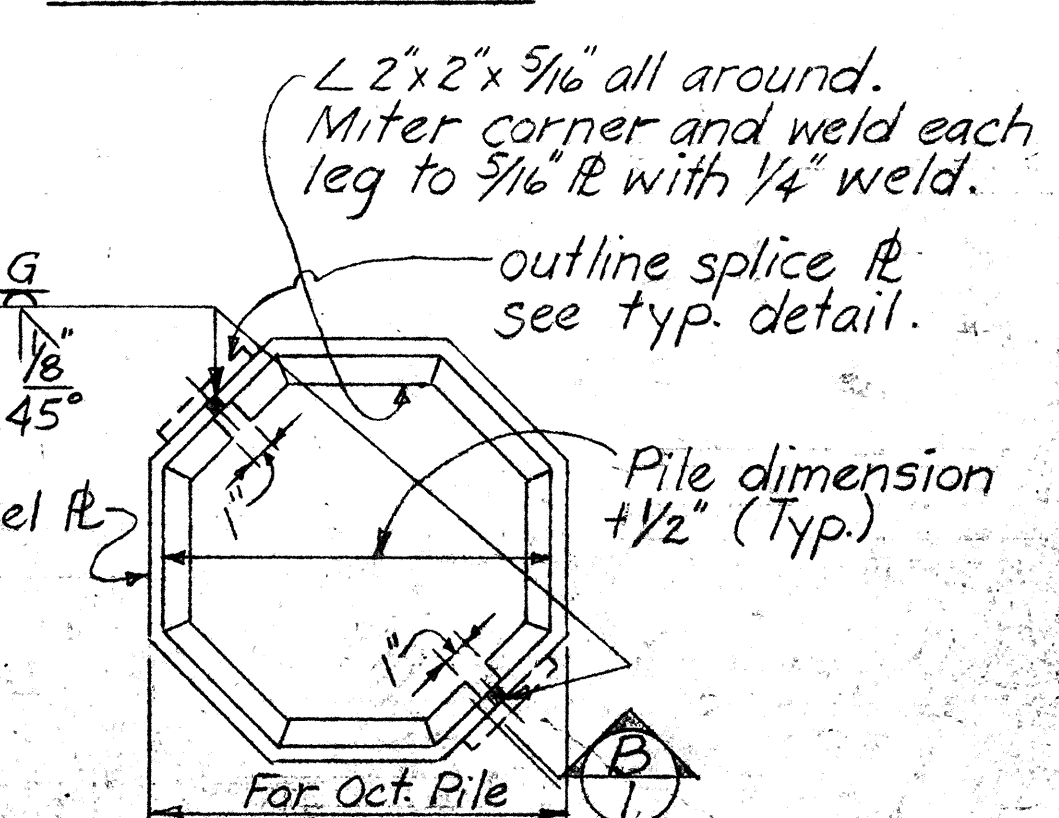
SECTION B-TYPICAL PILE SPLICE DETAILS

(FOR PRESTRESSED CONCRETE PILES WHEN CAST IN TWO OR MORE SECTIONS)

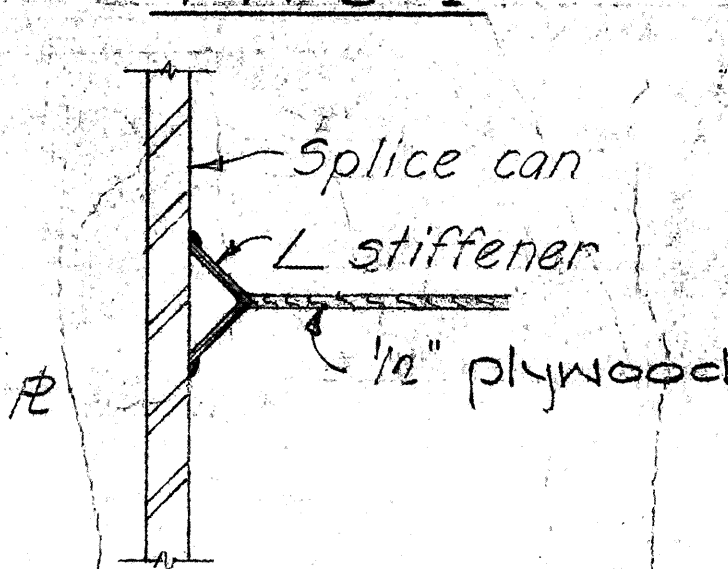
NOTE: All welding shall conform to the Specifications for "Welded Highway and Railway Bridges" of the American Welding Society.



TYPE II & III



TYPE I



DETAIL "X"

NO.	REVISION	APPROVED BY	DATE

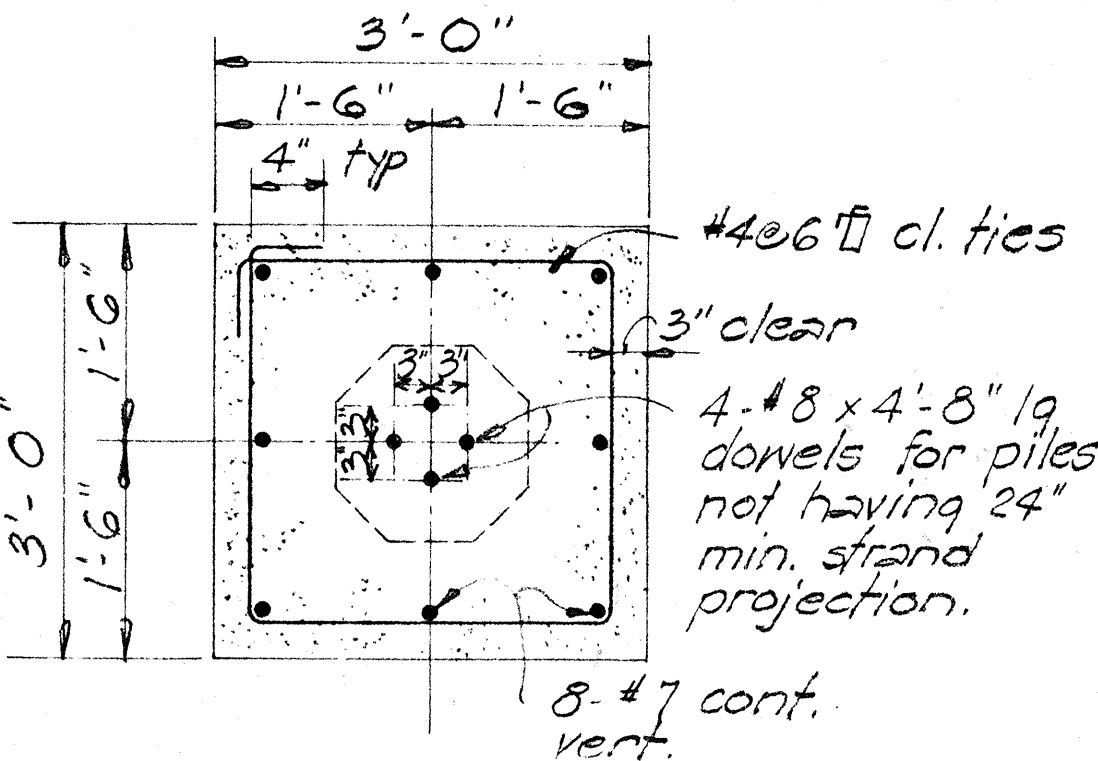
APPROVAL RECOMMENDED: *Paul T. James* 1-23-70
BRIDGE DESIGN ENGINEER DATE

APPROVED: *Paul T. James* 1-23-70
ASSISTANT CHIEF, ENGINEERING DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
PRESTRESSED CONCRETE PILES
Date
SHEET No. 1 OF 2 SHEETS DB-300-1

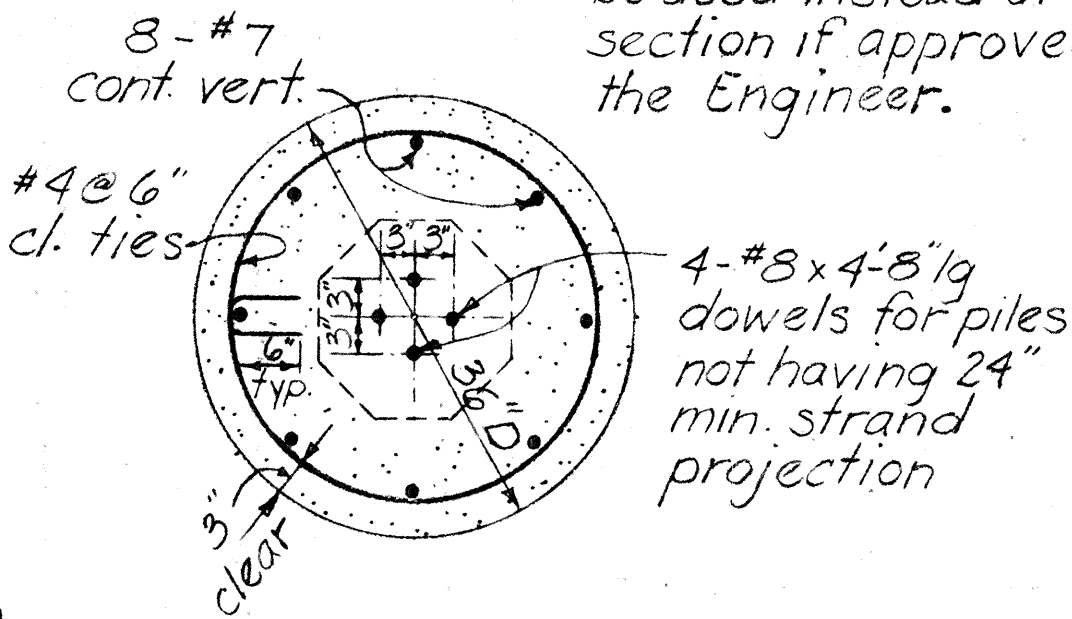
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H-1(88)-13	1971	286	457

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

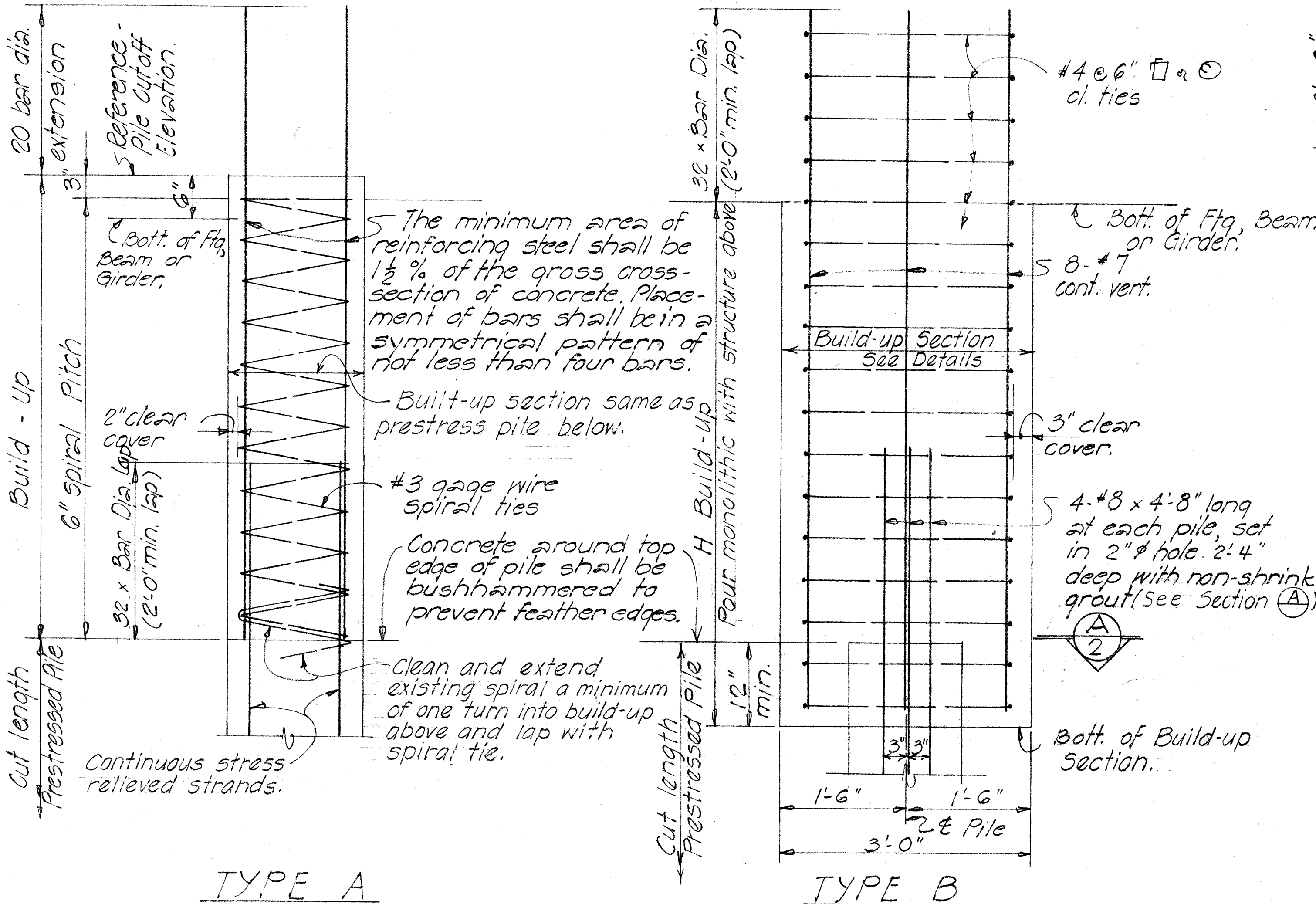


SQUARE BUILD-UP

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



CIRCULAR BUILD-UP SECTION (A/2)



TYPE A

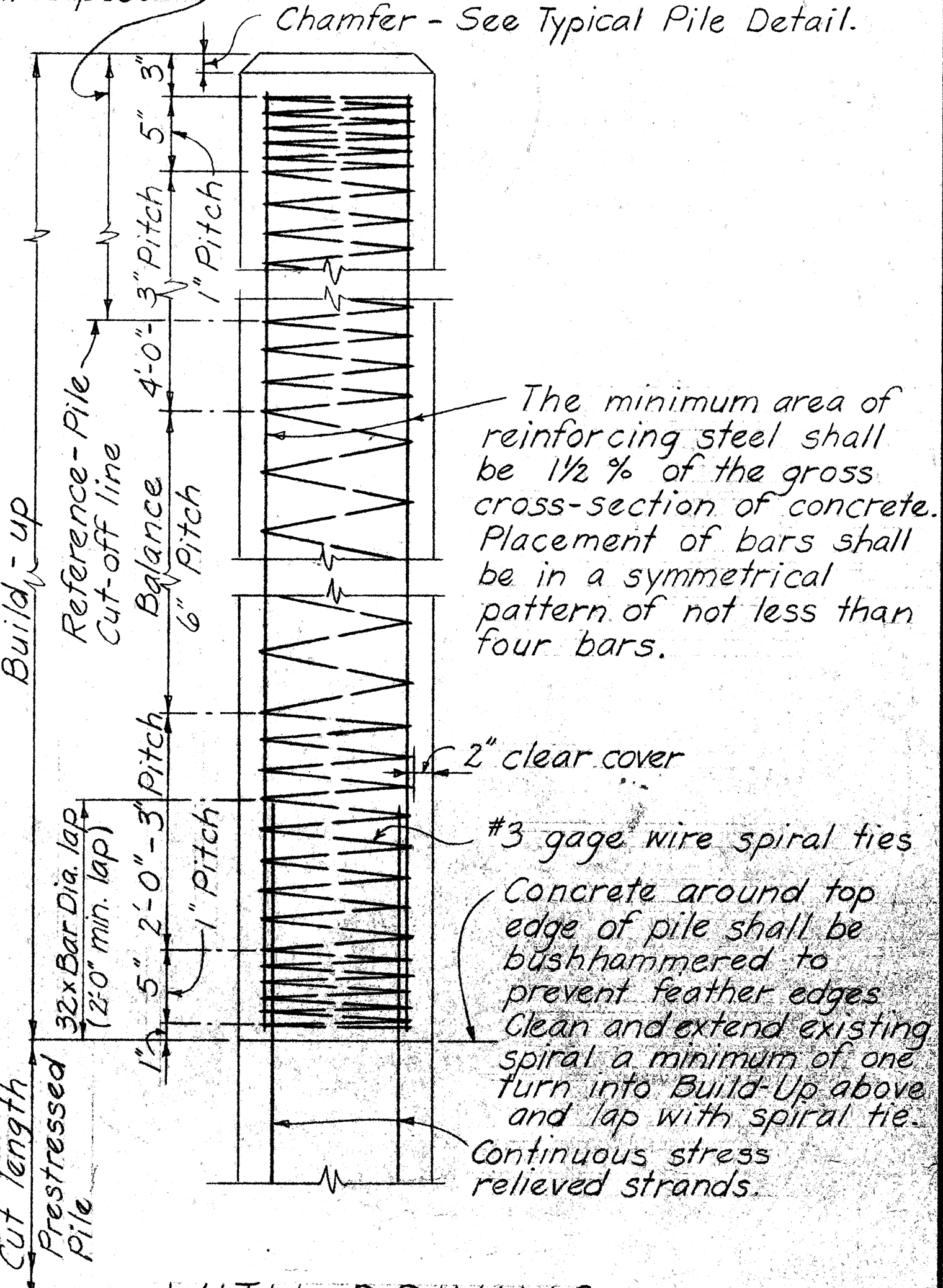
TYPE B

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

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
PRESTRESSED CONCRETE PILES

Date: Oct. 1968

ORIGINAL PLAN	DATE
DESIGNED BY	
NOTED BY	
CHECKED BY	