

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOT SHE
HAWAII	HAW.				

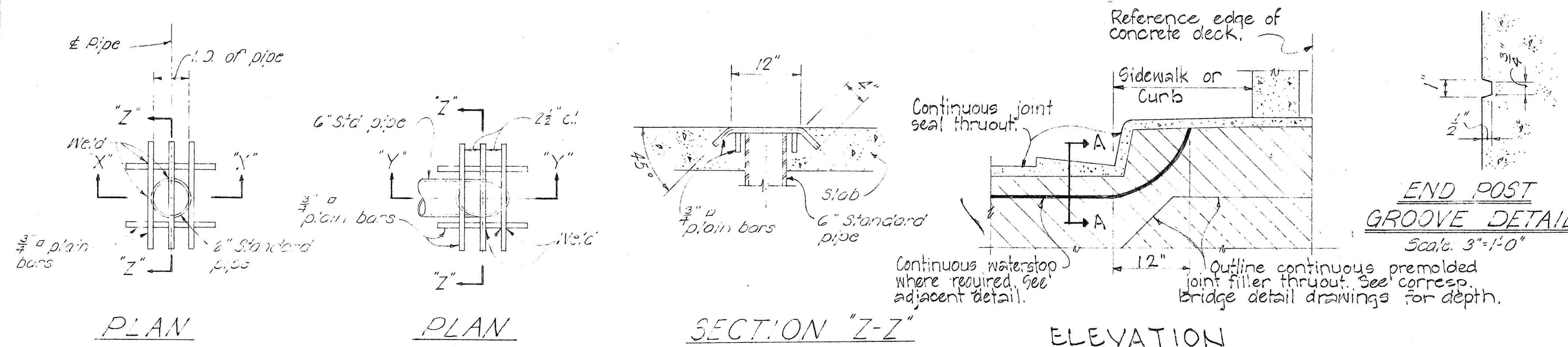
Revision

Jan. '67

Feb. '67

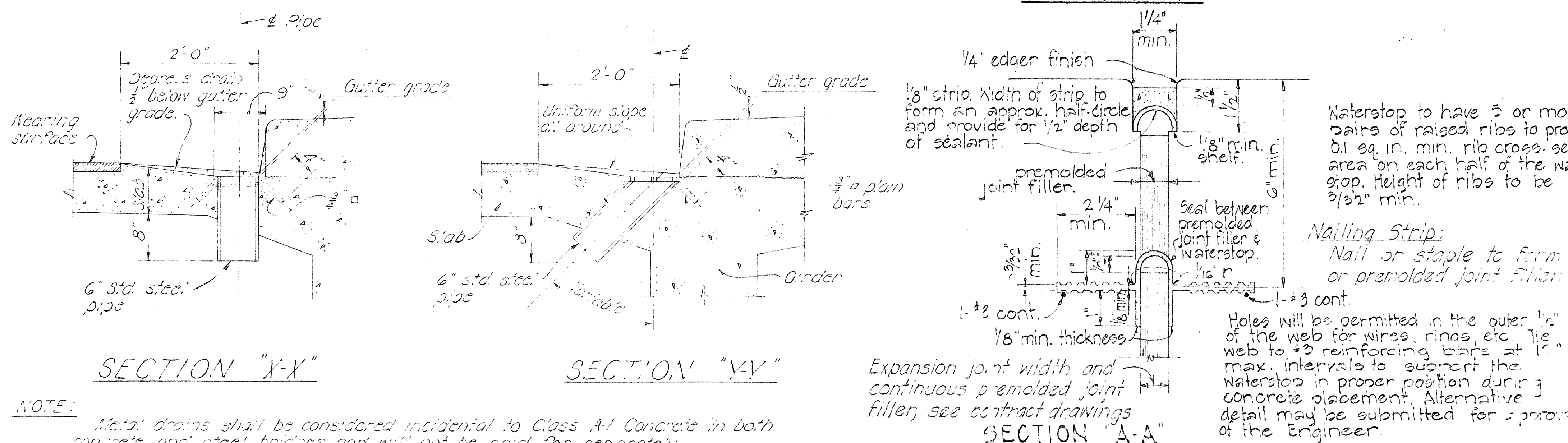
Apr. '67
June '68

same as



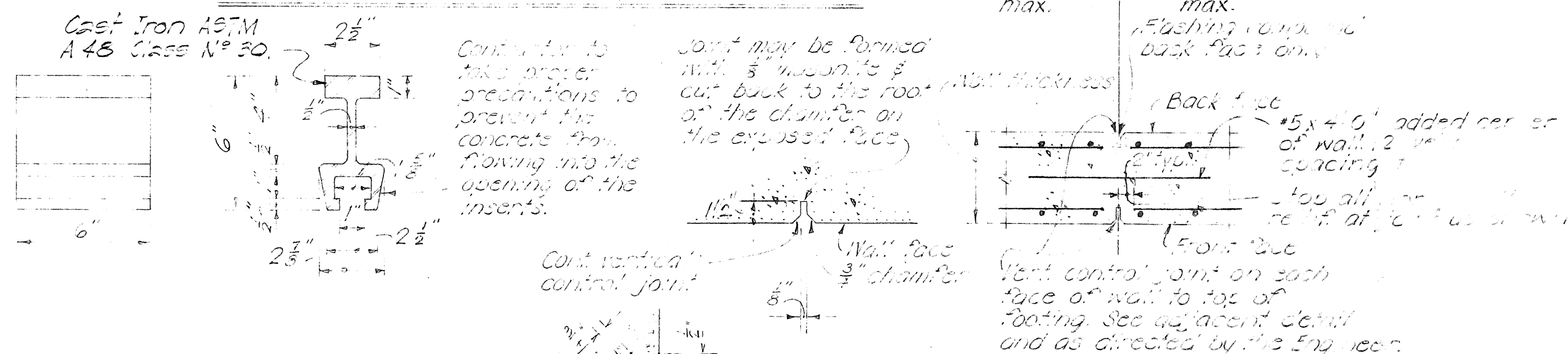
GENERAL NOTES

1. The Contractor shall verify the location of all existing utility lines and notify the respective owners before commencing work of excavation.
2. All concrete shall be Class A-1 unless otherwise noted.
3. Clearance for reinforcing bars shall be as follows, unless otherwise noted:
 - a. - 1" For stirrups of beams & pier caps.
 - b. - 2" For ties of columns
 - c. - 2" For formed walls.
 - d. - 3" For footings.
4. 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.
5. Reinforcing shall be detailed in accordance with A.C.I. Manual of Standard Practice for Detailing Reinforced Concrete Highway Structures unless otherwise noted.
6. Reinforcing bars shall be securely tied at all intersections & top splices & shall be held in place during pouring to maintain their proper locations as shown on plans.
7. Splices of reinforcing - See Special Provisions.

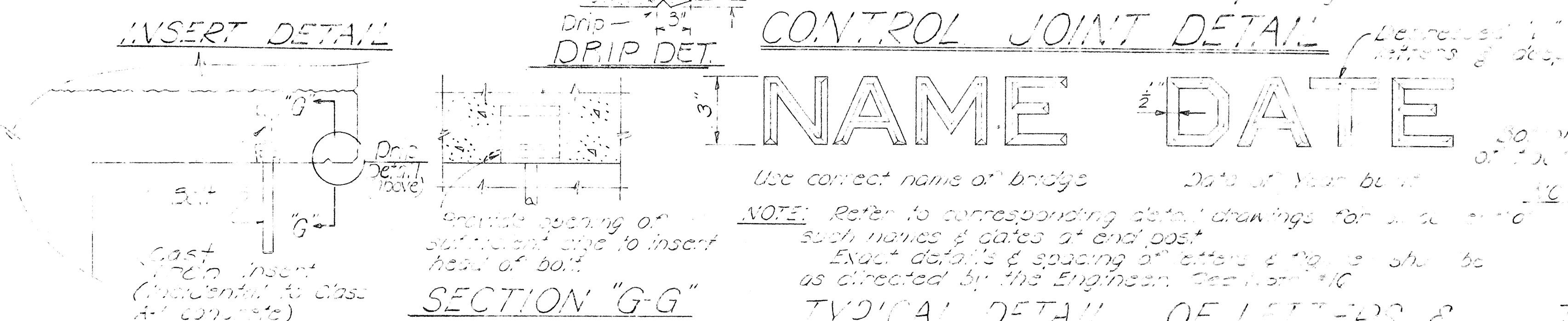


TYPICAL EXPANSION JOINT DETAIL

TYPICAL DRAINAGE DETAILS



CONTROL JOINT DETAILS



DETAIL of PIPE HANGERS & INSERTS

TYPICAL DETAIL OF LETTERS & FIGURES AT CONCRETE END JOINT

TYPE 4 - 40447 V FOR
CONTINENTAL - 10 STEPS-44

8. Minimum spacing between parallel bars shall be $2\frac{1}{2}$ times the diameter of bars, but in no case shall the clear distance between the bars be less than $\frac{1}{2}$ times the maximum size of the coarse aggregate.
9. All dimensions relating to reinforcing are to centers of bars unless otherwise noted.
10. 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 smooth 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.
11. Vertical column bars shall be arranged in such a manner as to pass over cap bars above as directed by the Engineer.
12. Except as otherwise noted on drawings, all exterior corners & re-entrant angles in concrete work shall be chamfered $\frac{3}{4} \times \frac{3}{4}$. See Standard Detail 107 for form.
13. Concrete Finish - See Special Provisions.
14. All welders and welding procedures shall be qualified according to the requirements of the Special Provisions.
15. Embedment Cuts: Top & bottom of bridge bearing pads shall be embedded against displacement with adhesives approved by the Engineer. This shall be incidental to concrete and will not be paid for separately.
16. Gothic letters and figures approximately dimensions shown will be acceptable if approved by the Engineer.
- STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD BRIDGE DETAILS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD BRIDGE DETAILS

Kauai Belt Road Proj. No. S-0560(1) Unit 2

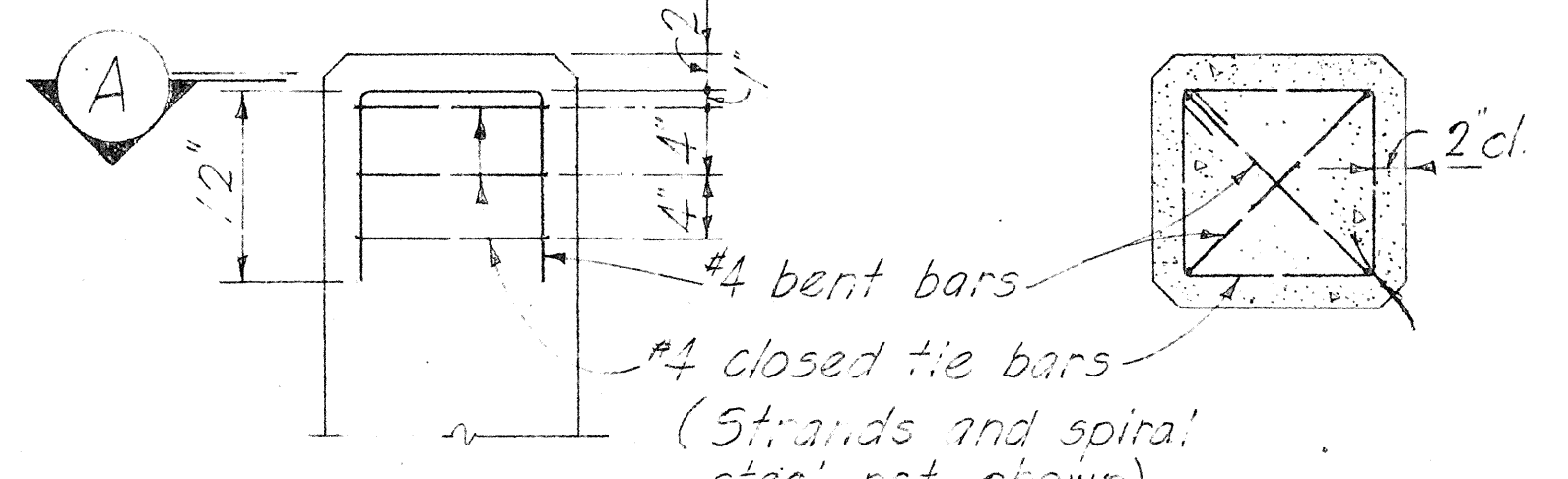
Scale: As Noted Date: Nov. 1964

SHEET No. 51 OF 6 SHEETS

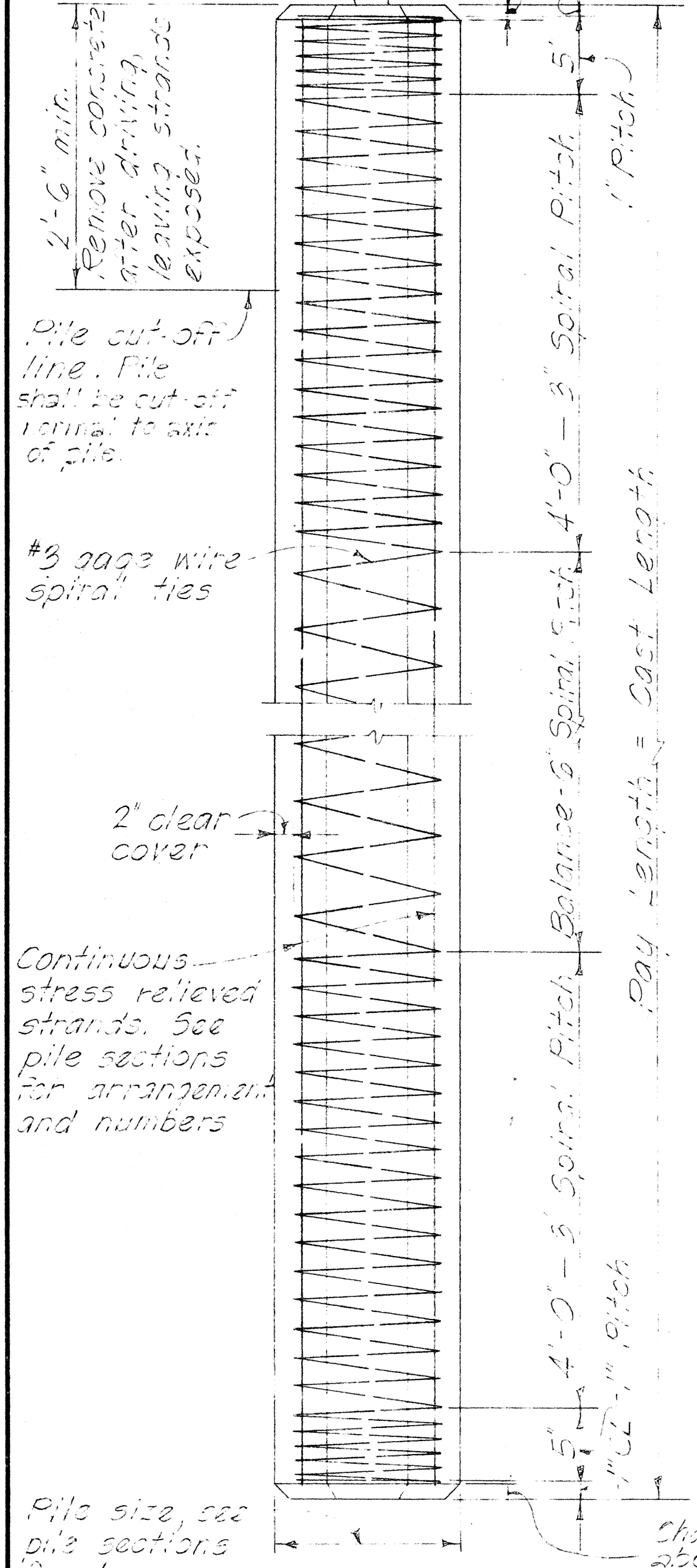
FED. ROAD DIST. NO.	STATE	FED. AID FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.			

Revision: Feb. 67, Mar. 67
Jan. 68, June 68
Aug. 68, Oct. 68

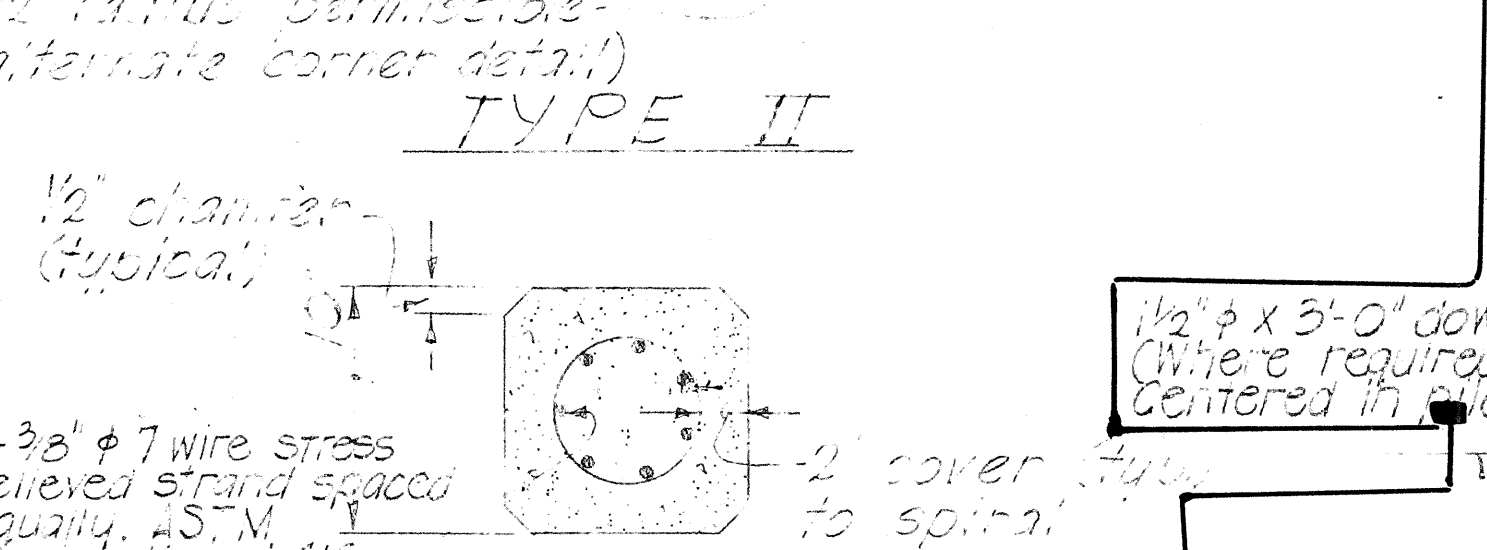
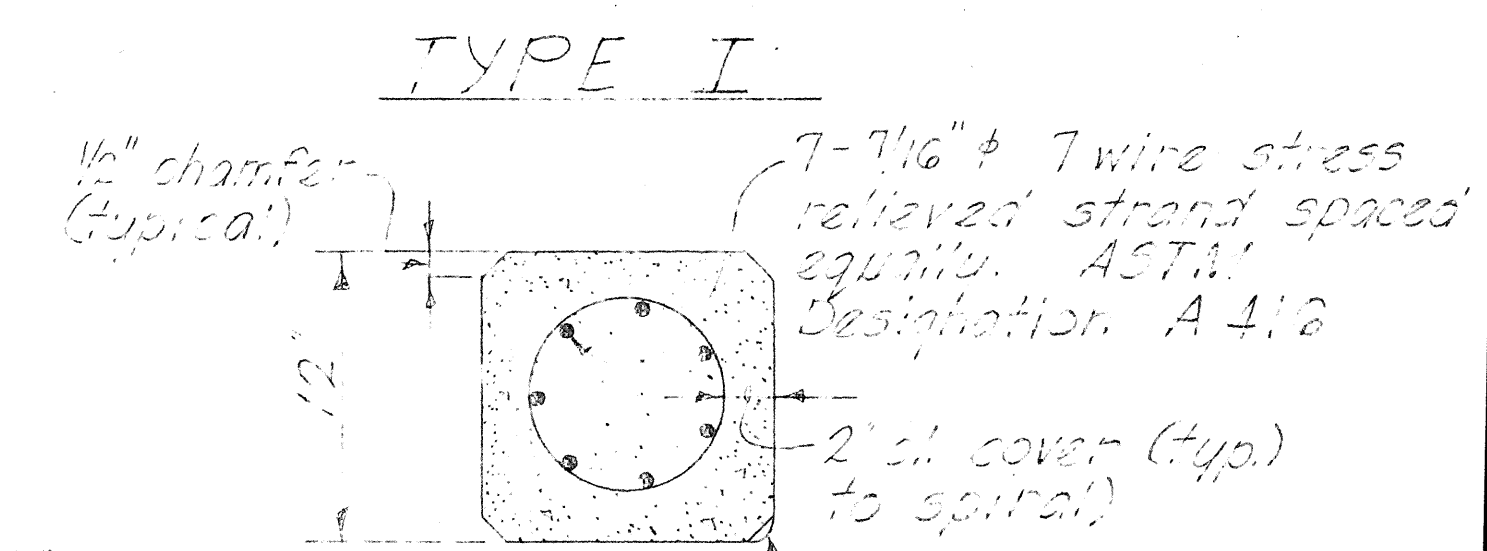
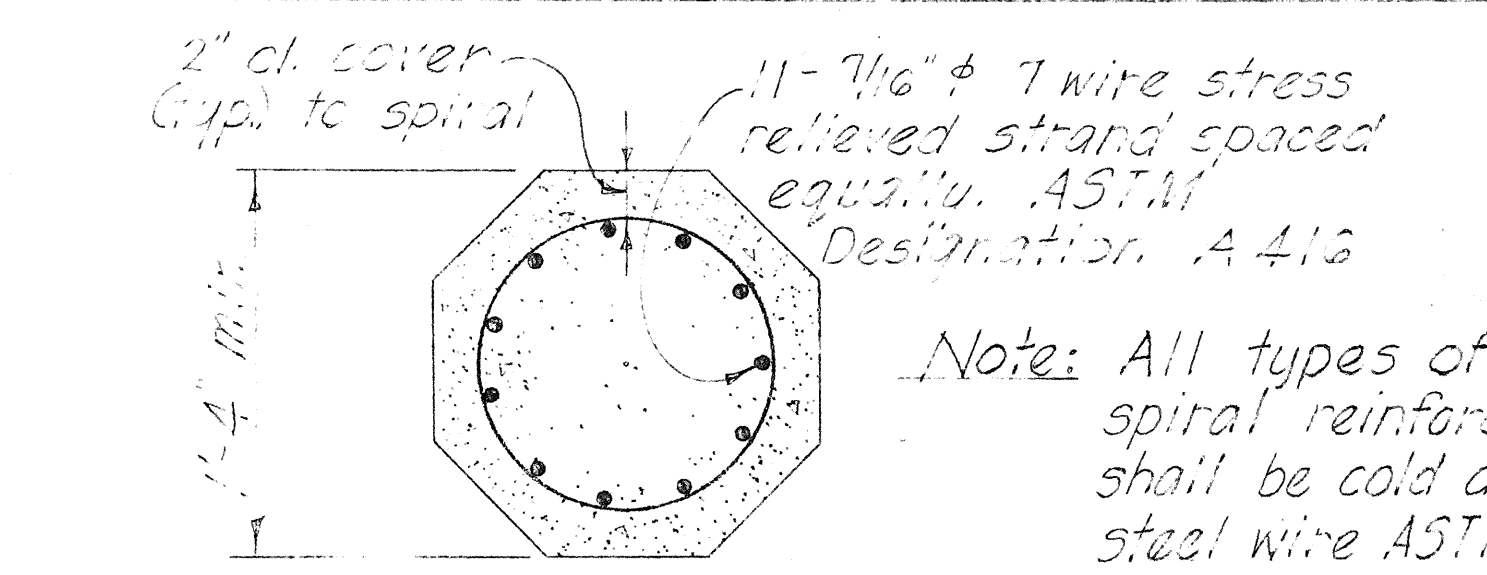
Grind strands flush with pile head & pile tip.
Remove concrete after driving, leaving strands exposed.
2'-6" min. unless otherwise directed by the Engineer. Remove concrete after driving, leaving reinf. exposed.
Chamfer shall be 1/2" for Type I piles & 3/4" for pile Types II & III.



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



TYPICAL PILE DETAIL



TYPE I
TYPE II
TYPE III

TYPICAL SECTIONS THRU PILES

Max. Length "L"*	Max. Length "L"*	Length "L"*
Type I "L" = 56'-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 0.70L	0.31L 0.58L 0.21L	0.15L 0.35L 0.35L 0.15L

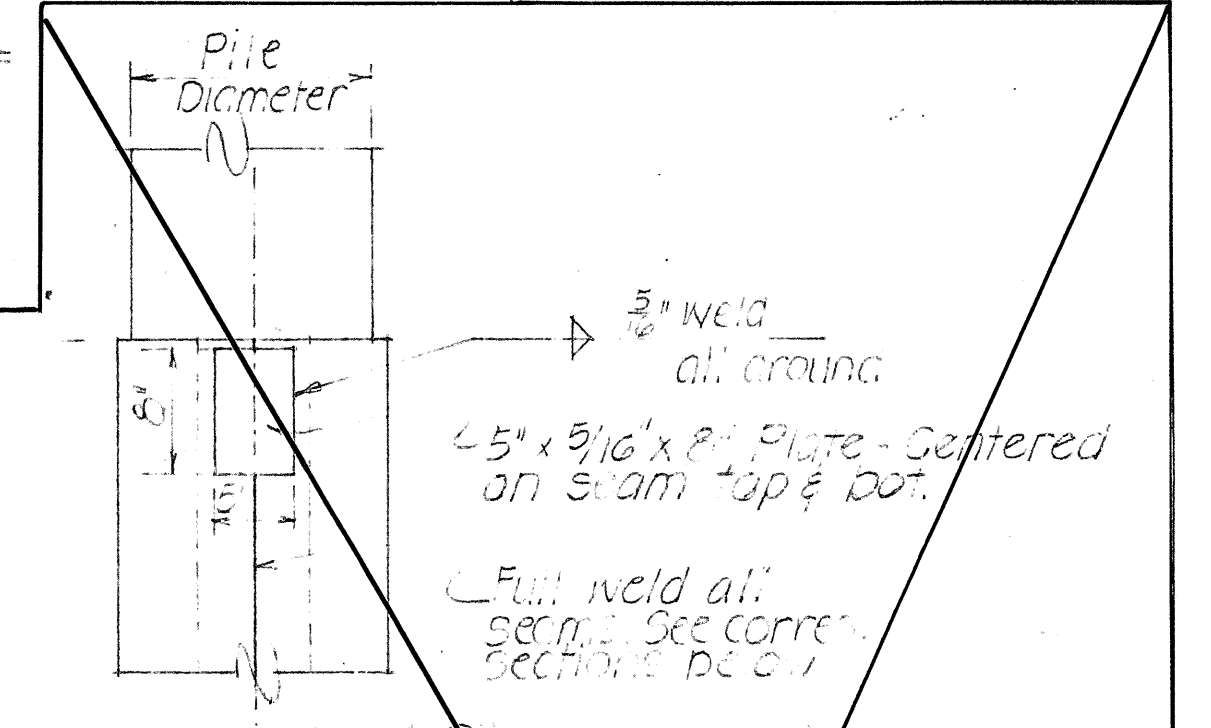
*The length "L" is the distance end to end of pile.

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

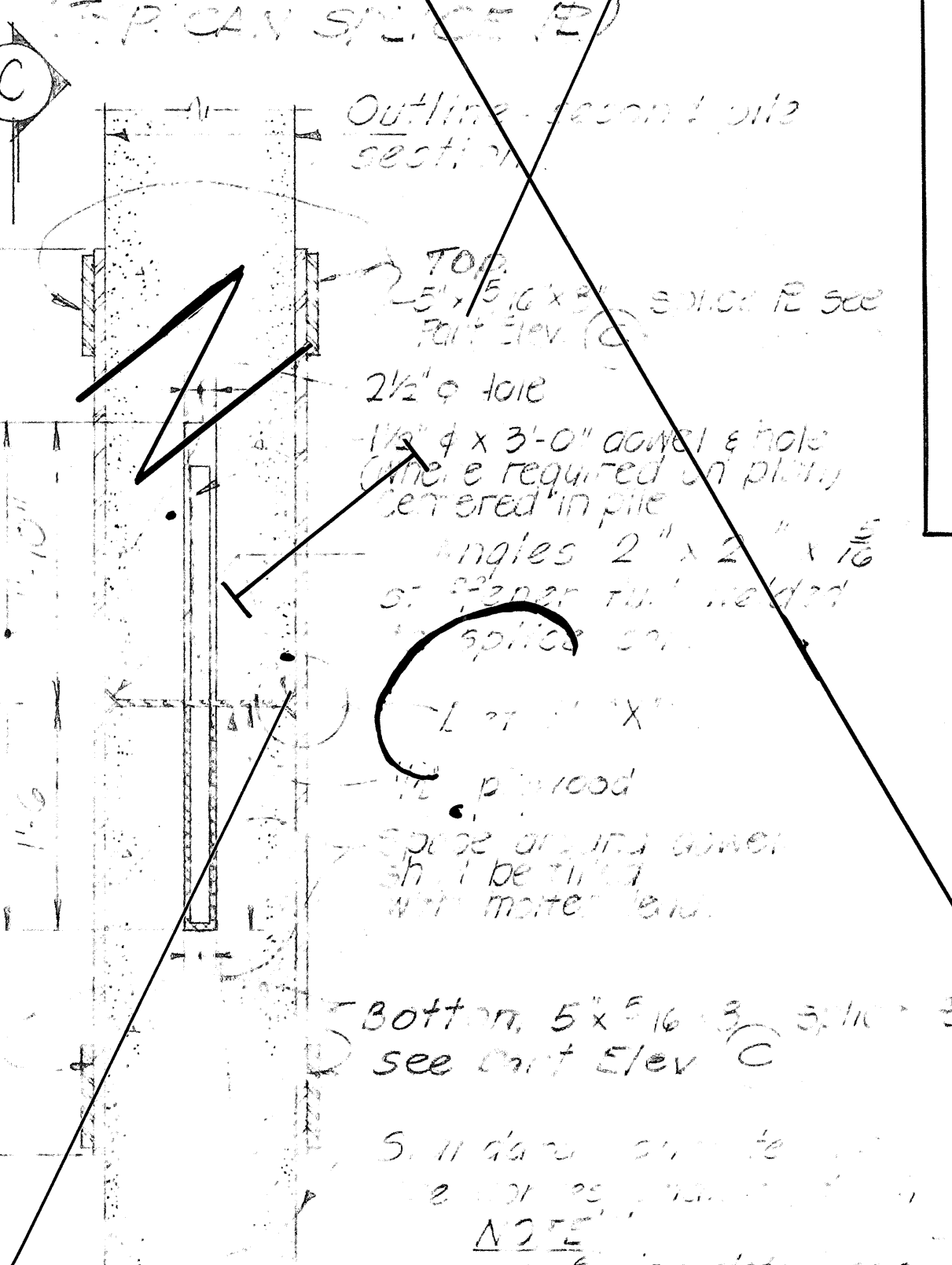
NOTE: Unless special lifting devices are attached for pick-up points, pick-up points shall be marked on all piles after removal of the forms and all lifting shall be done at these points. The use of special embedded or attached lifting devices, the employment of other pick-up points or any other method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

NOTE:

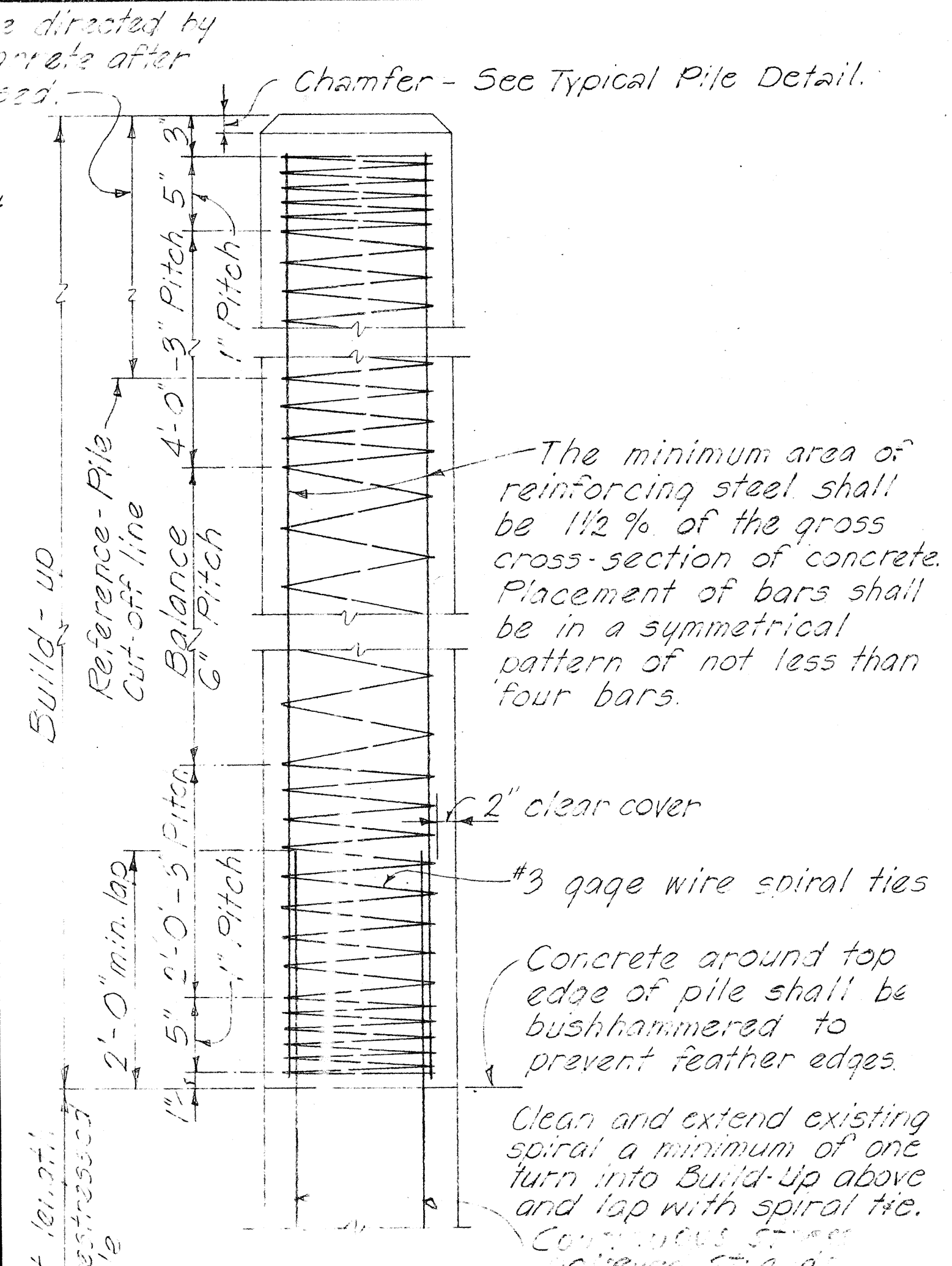
Concrete in pile build-ups without driving shall be Class A-1 Concrete. Concrete in pile build-ups with driving shall have a minimum compressive cylinder strength of 5000 p.s.i. at 28 days. Build-ups may be driven in the specimen of concrete from which the piles were poured develops a strength of at least 3500 p.s.i. but not earlier than 7 days.



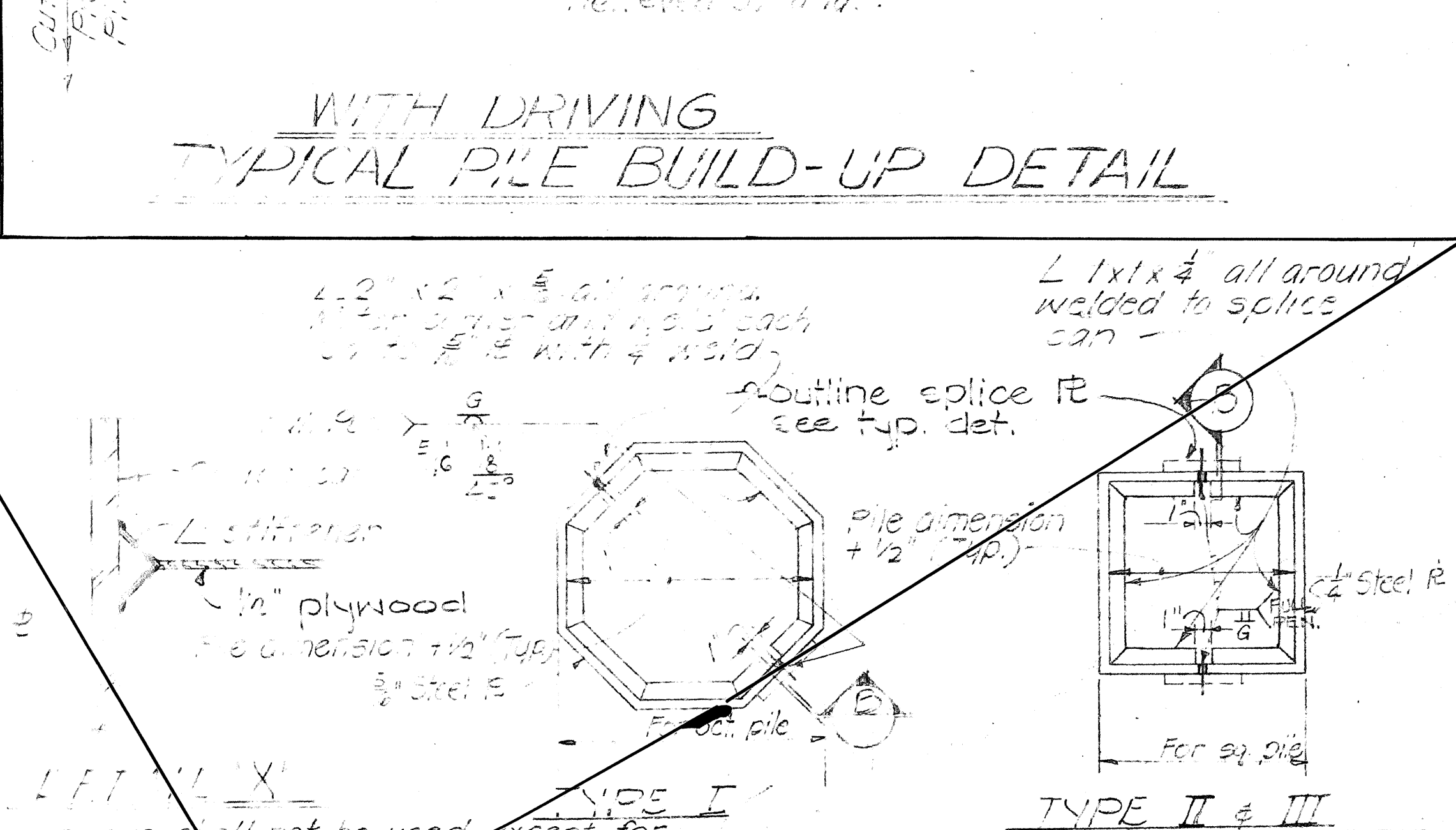
PART ELEV. SECTION C



SECTION B



WITH DRIVING
TYPICAL PILE BUILD-UP DETAIL



TYPICAL PILE STALLS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

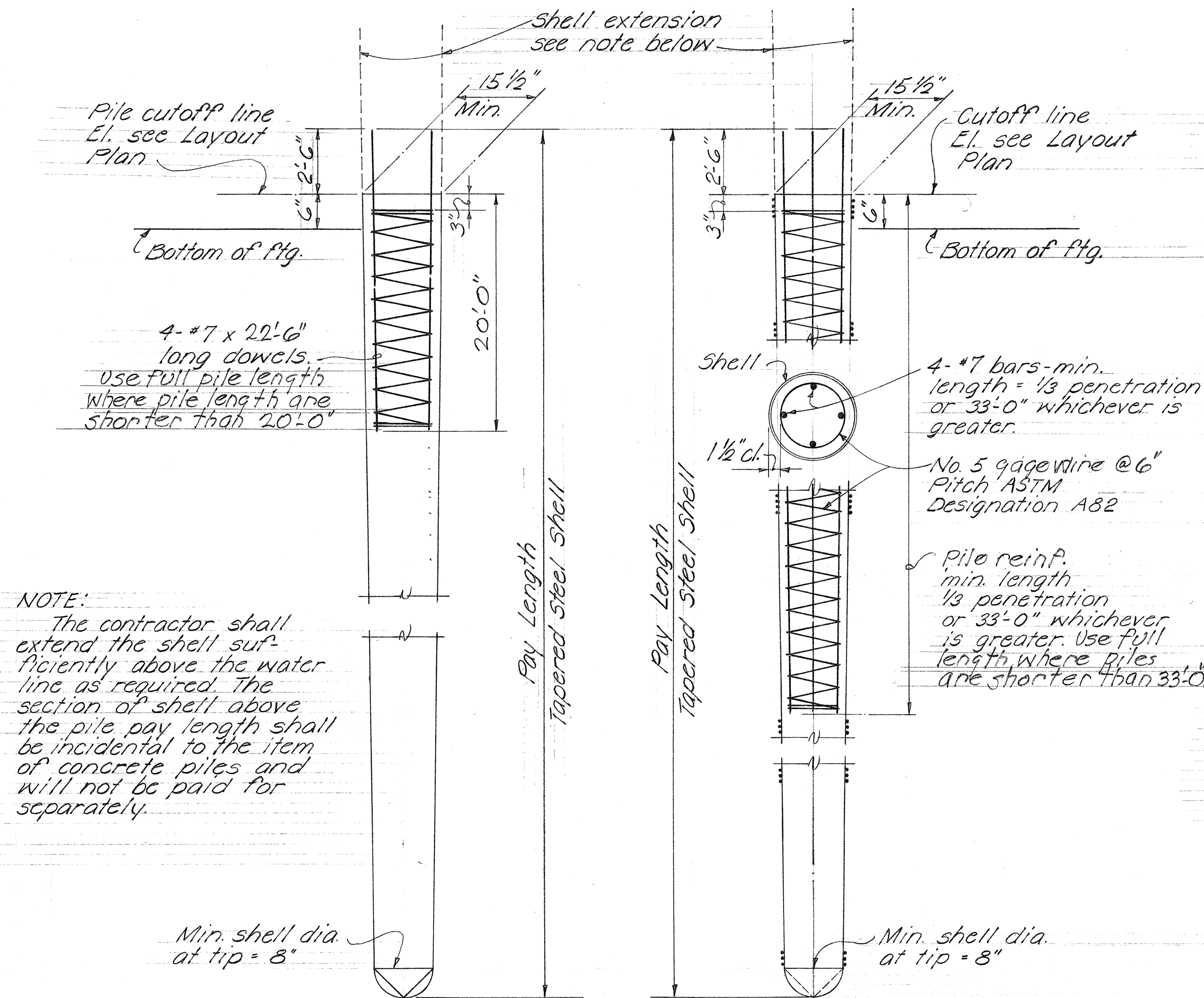
STANDARD DETAILS
PRESTRESSED CONCRETE PILES

Kauai Belt Road Proj. No. S-0560(1) Unit 2

Scale: As Noted Date: Oct. 1966

SHEET No. 62 OF 6 SHEETS

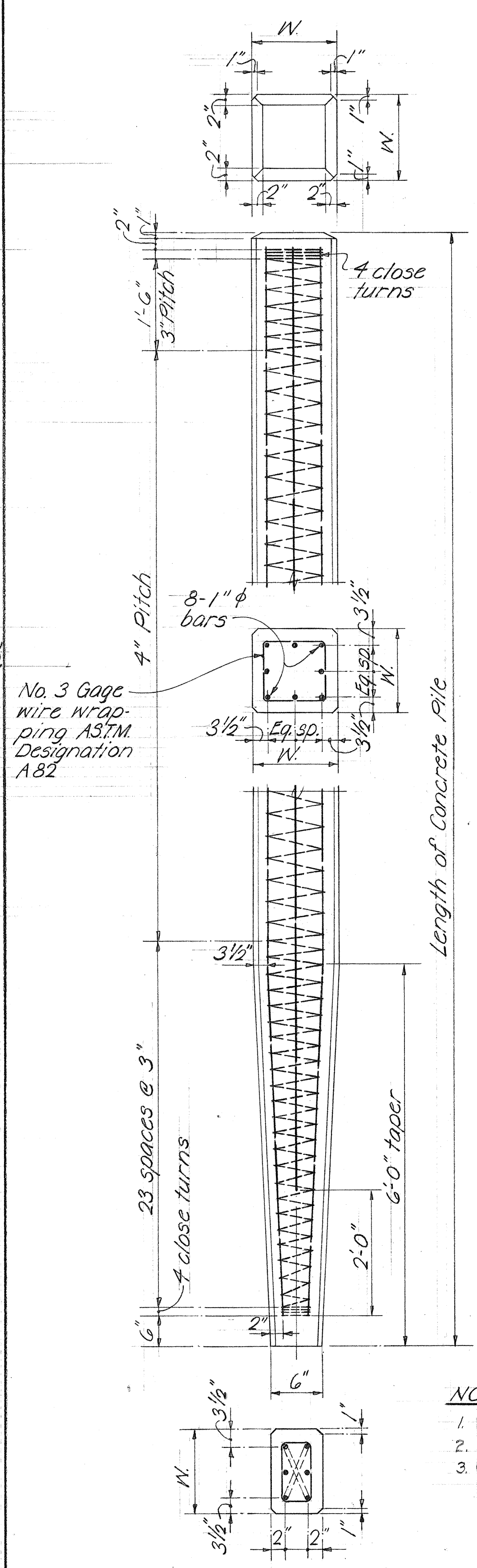
SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
NO.	



NOTE:
The contractor shall extend the shell sufficiently above the water line as required. The section of shell above the pile pay length shall be incidental to the item of concrete piles and will not be paid for separately.

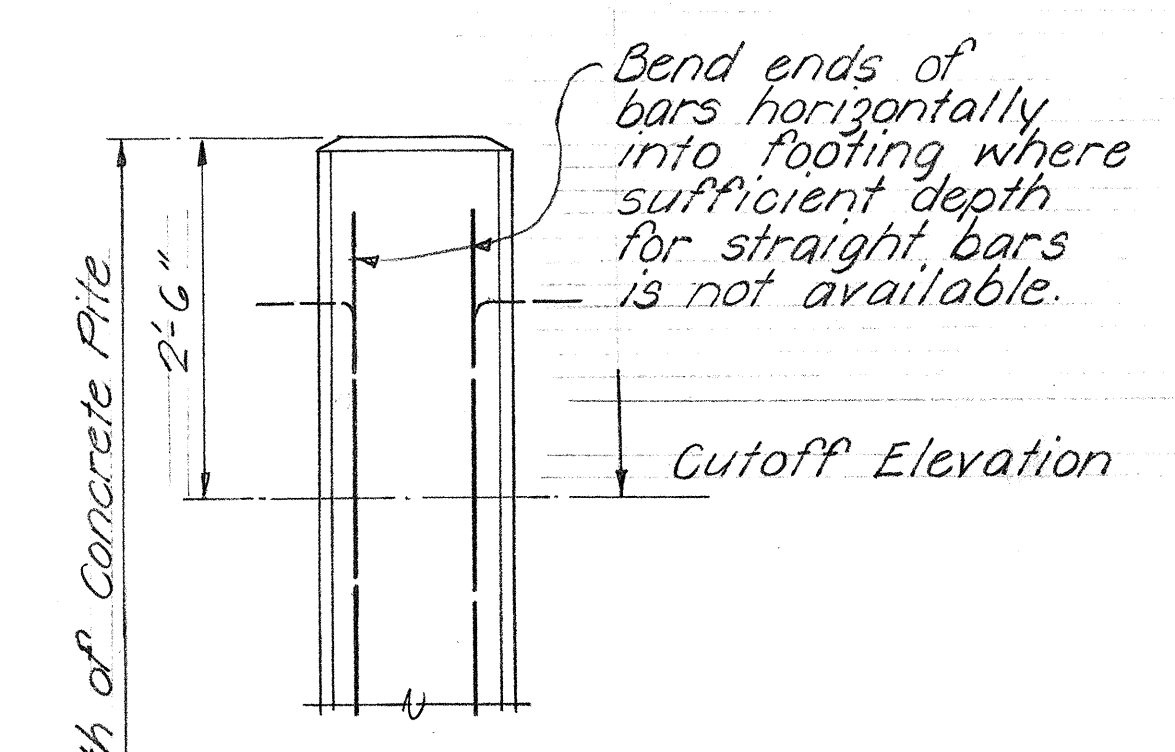
WHERE SHELL THICKNESS THICKER THAN 9 GAGE
WHERE SHELL THICKNESS THINNER THAN 9 GAGE

TYPICAL CAST-IN-PLACE CONCRETE PILE

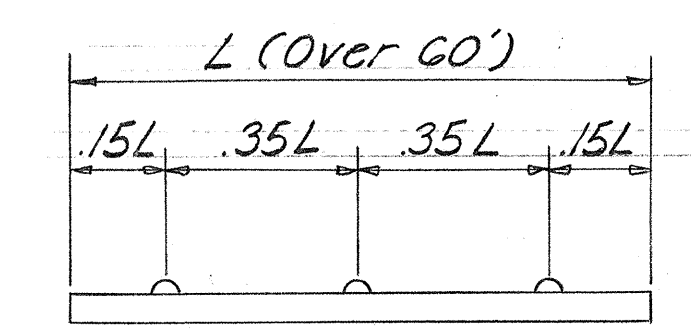


NOTES:
1. W=18" for "L" greater than 70.0'
2. W=16" for "L" less than 70.0'
3. Concrete shall be Class E-1.

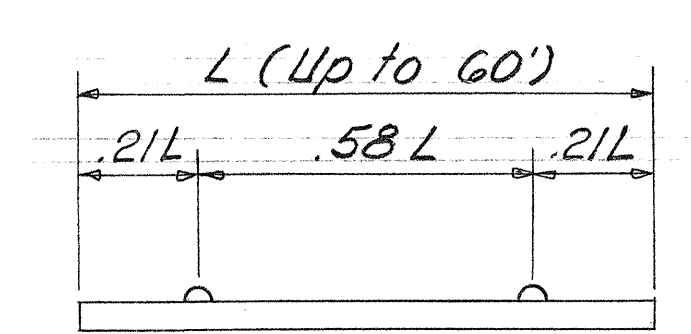
TYPICAL PRECAST CONCRETE PILE Scale: 3/4"=1'-0"



PILE CUTOFF



THREE POINT PICKUP



TWO POINT PICKUP

ORIGINAL PLAN	DATE
DESIGNED BY	
NOTED BY	
CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CAST-IN-PLACE CONCRETE PILE
PRECAST CONCRETE PILE

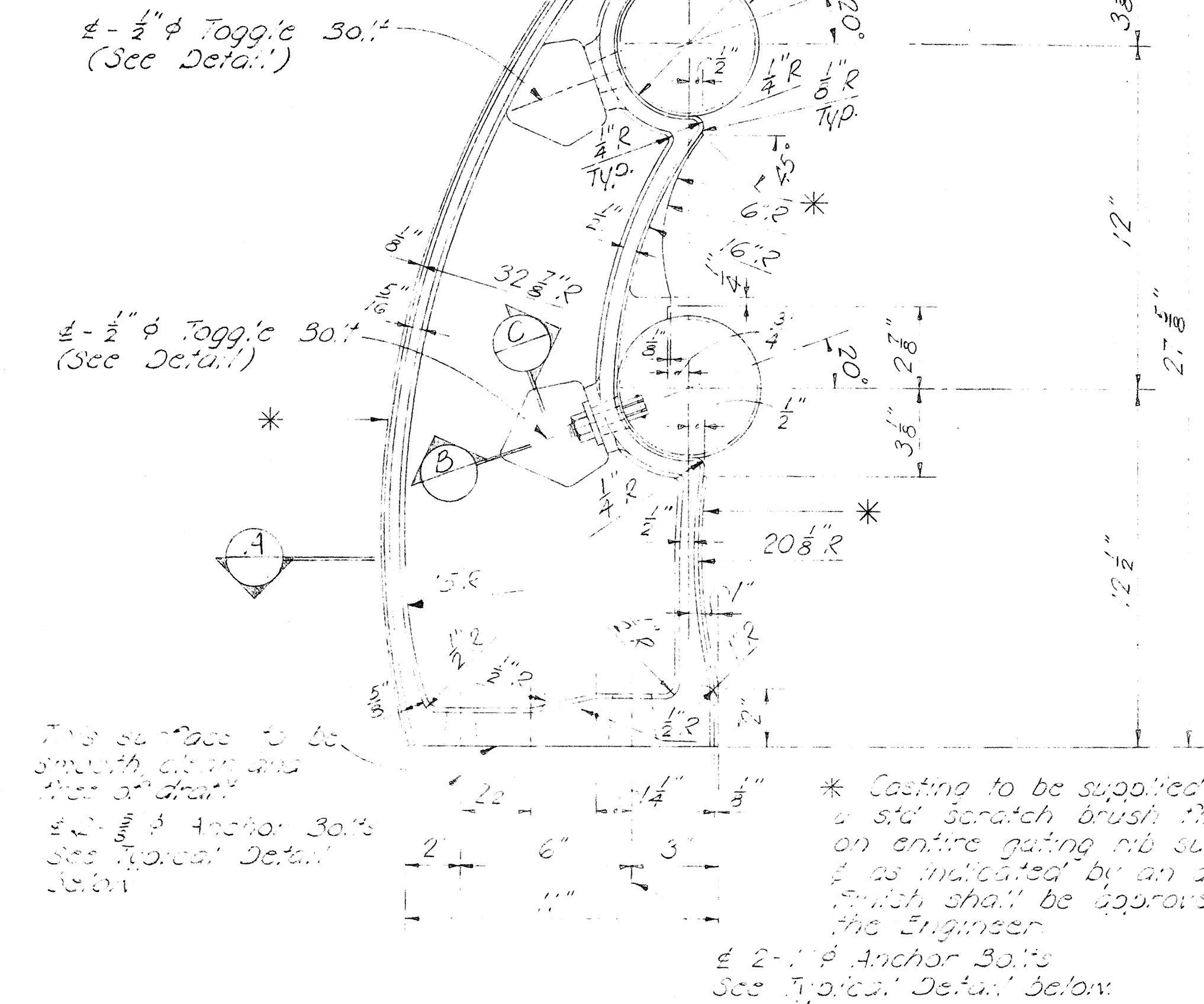
Kauai Belt Road Proj. No. 5-0560(1) Unit 2

February 1967
SHEET No. 34-A OF 6 SHEETS

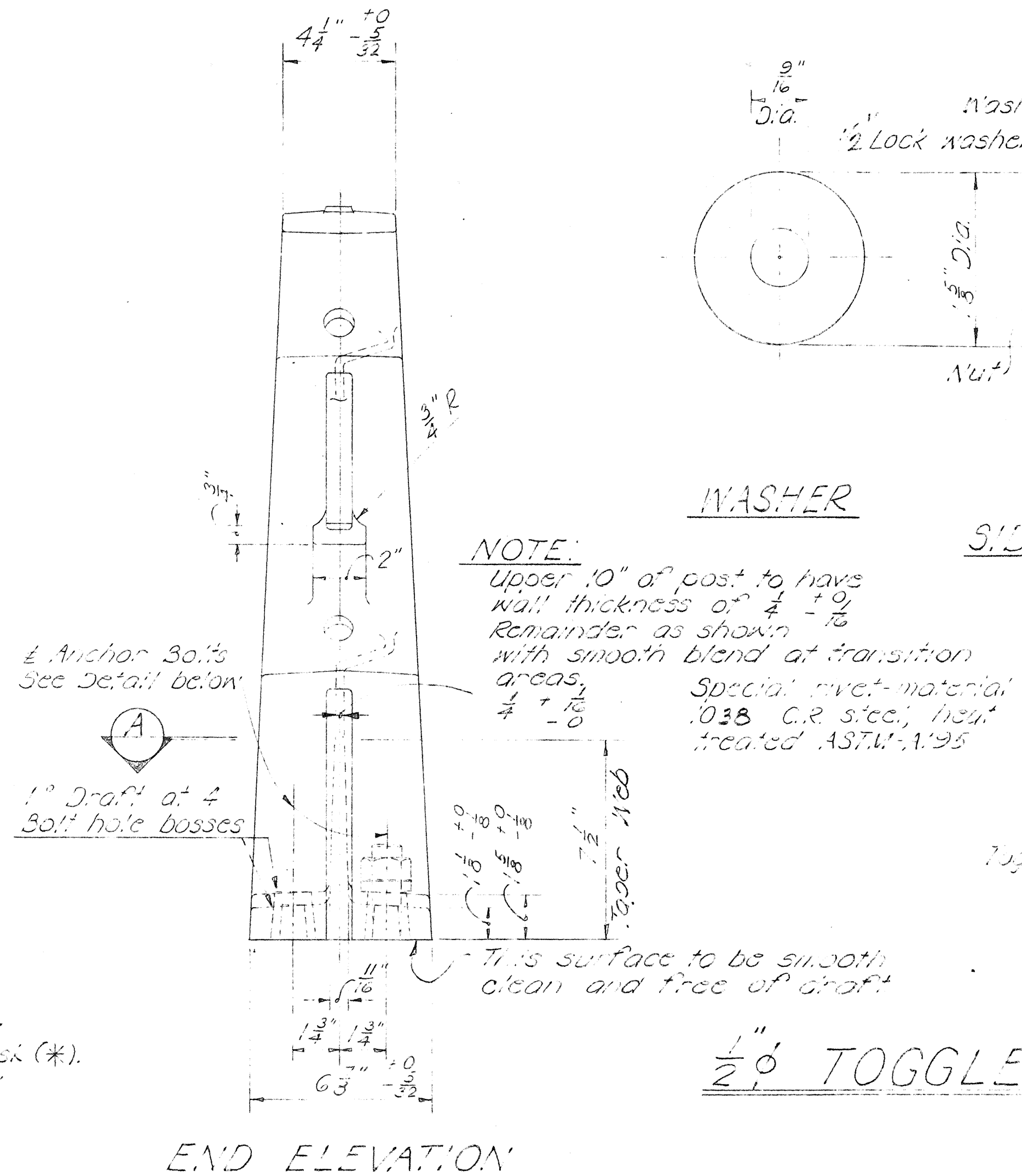
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.				

NOTE:

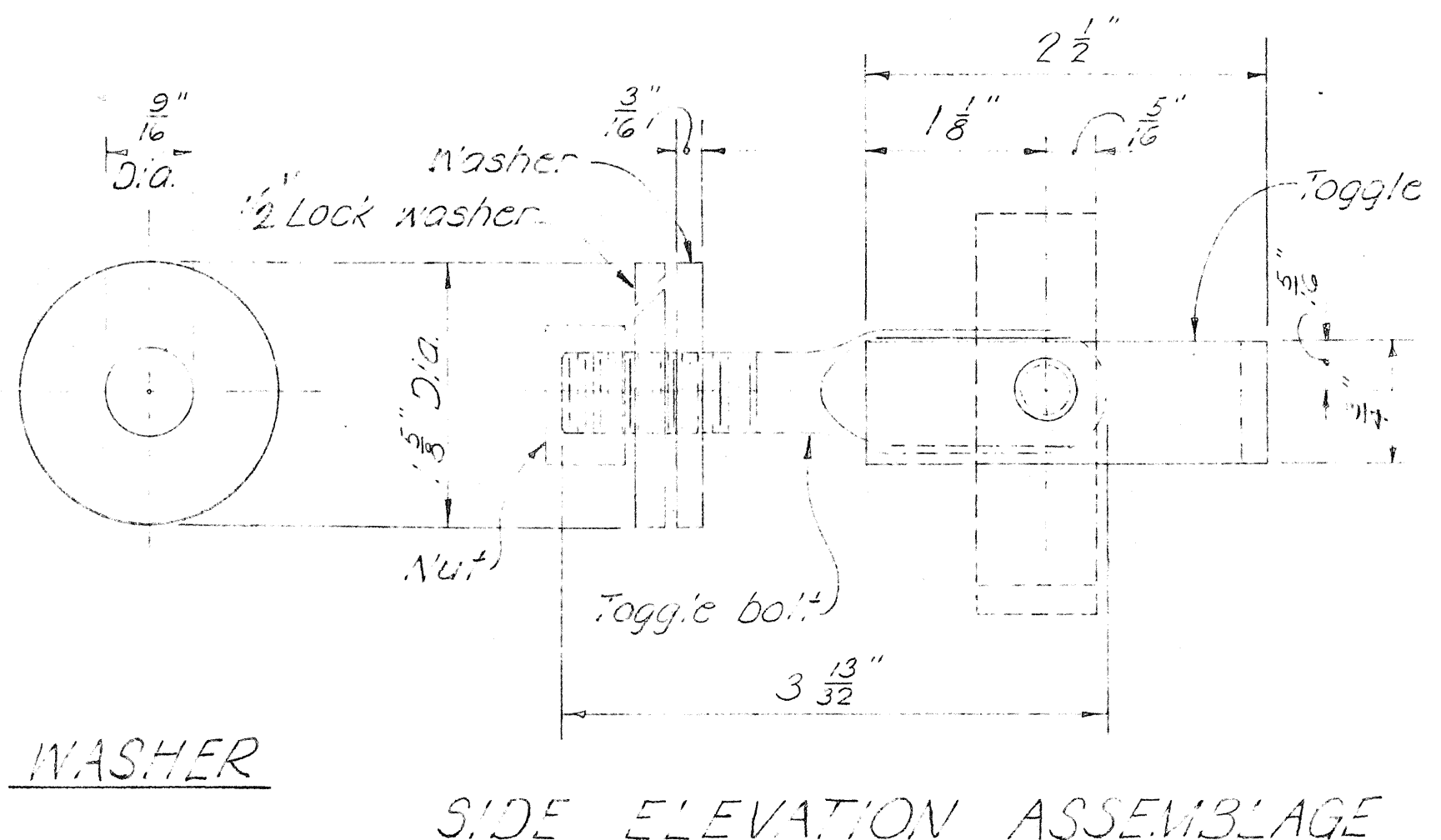
Unless otherwise specified:
 D₁ Angles - 3°
 Corner Radii - 1/8" R
 Fillet Radii - 1/8" R
 Castg. Tol. - ± 1/32"
 Nail Thickness - ± 1/32"



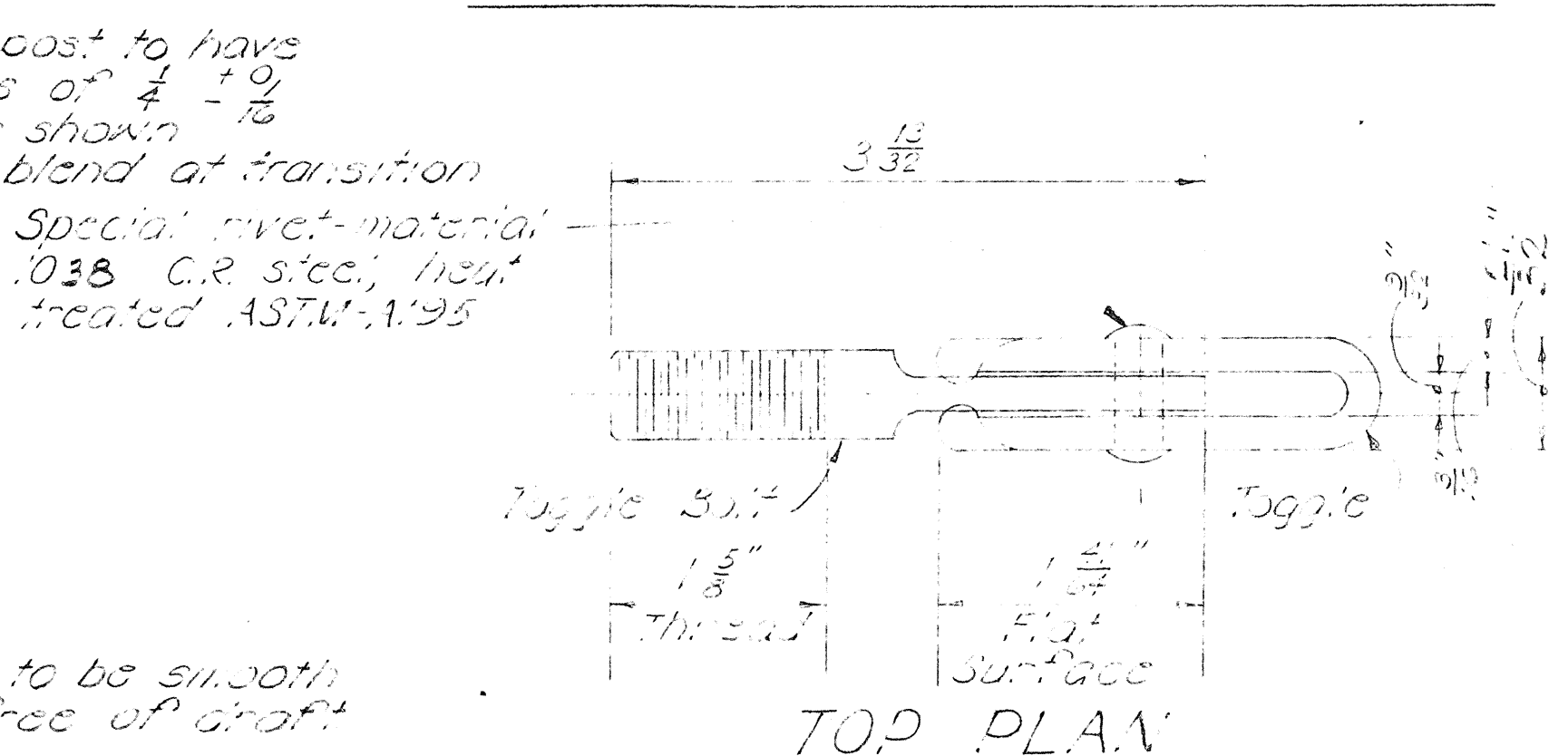
SIDE ELEVATION



END ELEVATION



SIDE ELEVATION ASSEMBLY

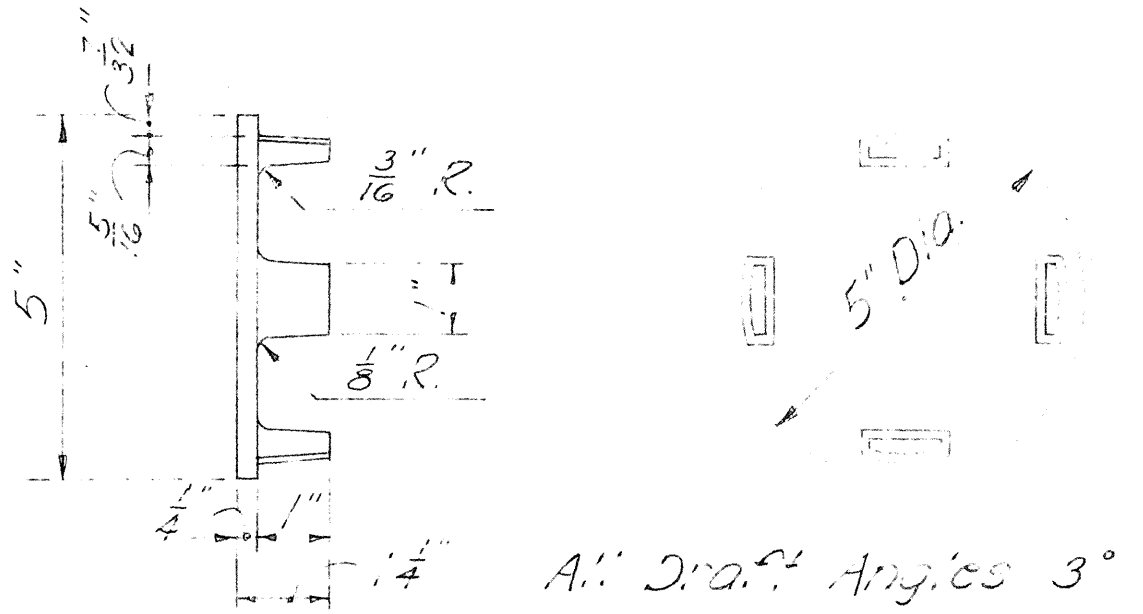


TOP PLAN

1/2" TOGGLE BOLT DETAILS

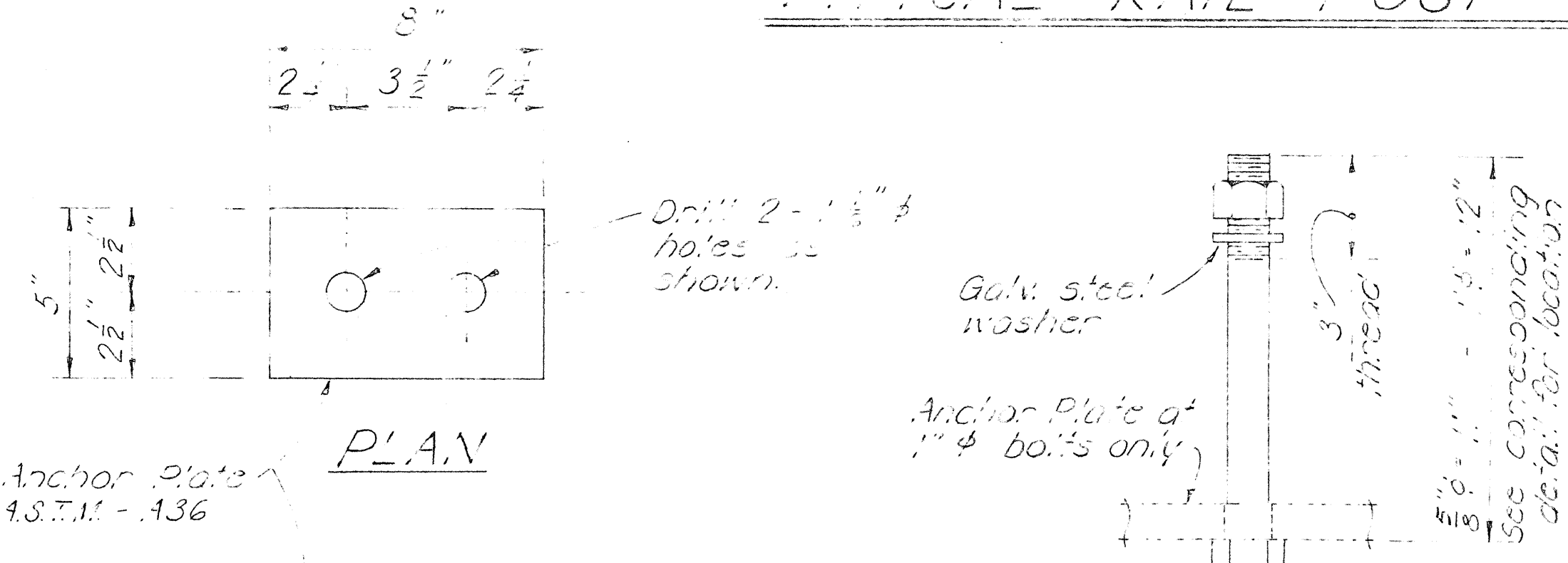
NOTE:

Toggle Bolt Material - 1/2" - 13 M.C. 1335
 C.R. - Steel heat treated
 R.C. 32-33 ASTM-A354
 Toggle Material - 10.5 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 Anchor hex nut - Heavy
 Mat'l. 1035 C.R. Steel - heat
 treated. ASTM-A325 Grade 2H
 Cadmium plating on steel - Type
 M-3. 0.005" thick. ASTM-A165
 (17 points).
 For cast post specifications, see
 Special Provisions.

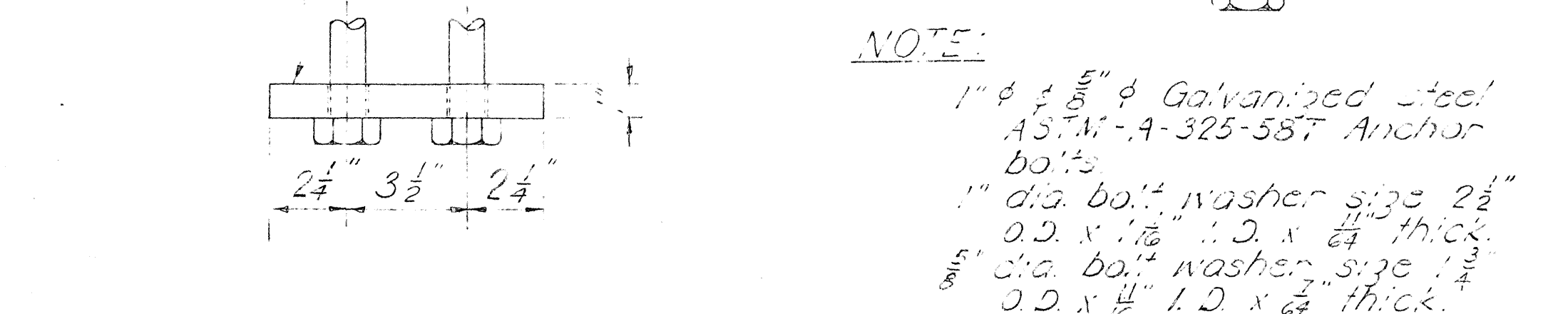


RAIL CAP DETAIL

TYPICAL RAIL POST DETAILS Scale: 3"=1'-0"



PLAN



ELEVATION

ANCHOR PLATE

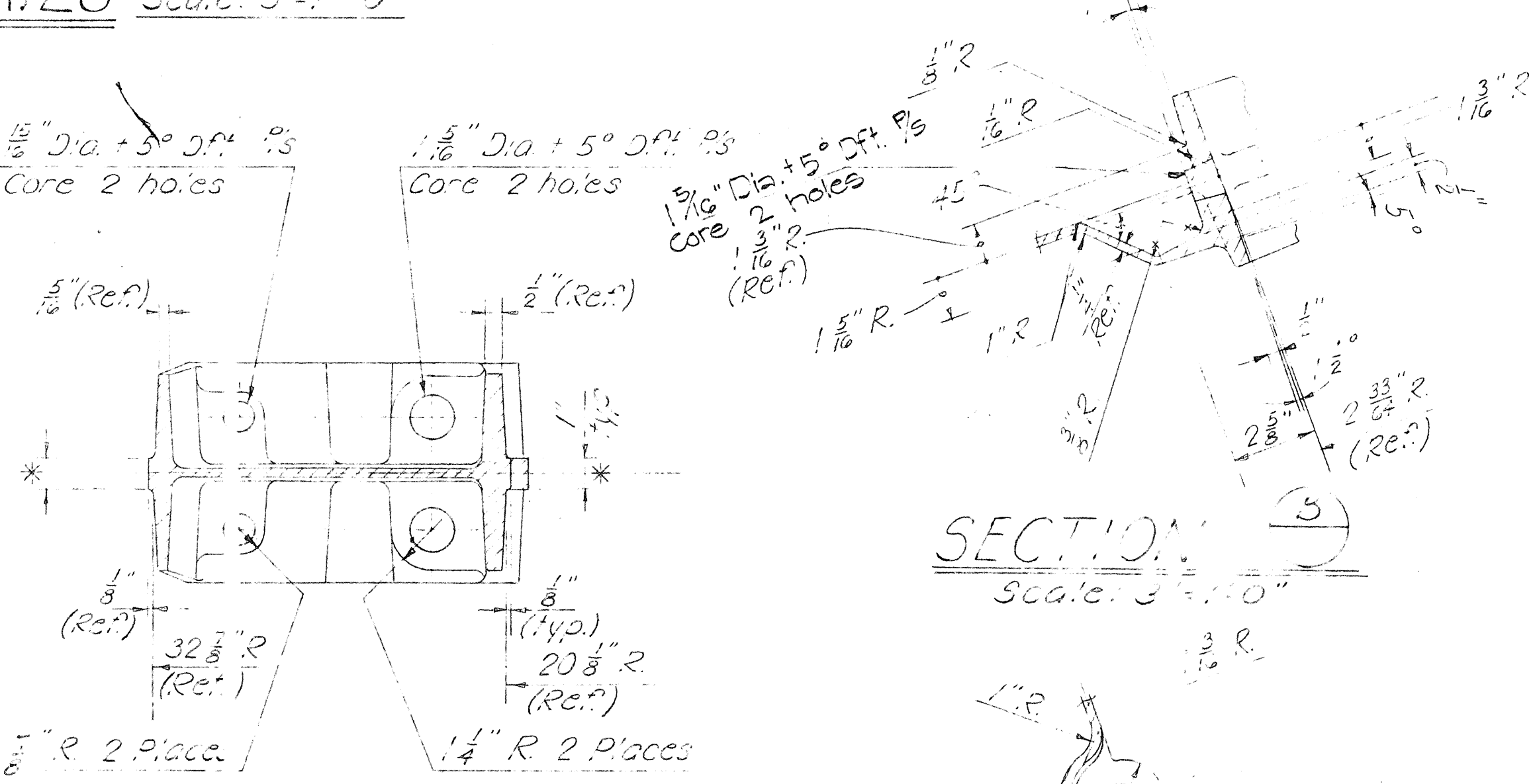
DETAIL Scale: 3"=1'-0"

NOTE:
 1" x 1/2" x 1/2" Galvanized steel
 ASTM-A-4-325-58T Anchor
 bolts
 1" dia. bolt washer size 2 1/2"
 O.D. x 1/16" I.D. x 1/4" thick
 3/8" dia. bolt washer size 1 1/4"
 O.D. x 1/16" I.D. x 1/4" thick.

TYPICAL ANCHOR

BOLT DETAIL

Scale: 3"=1'-0"



SECTION A

Scale: 3"=1'-0"

SECTION B

Scale: 3"=1'-0"

SECTION C

Scale: 3"=1'-0"

GENERAL NOTE:

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

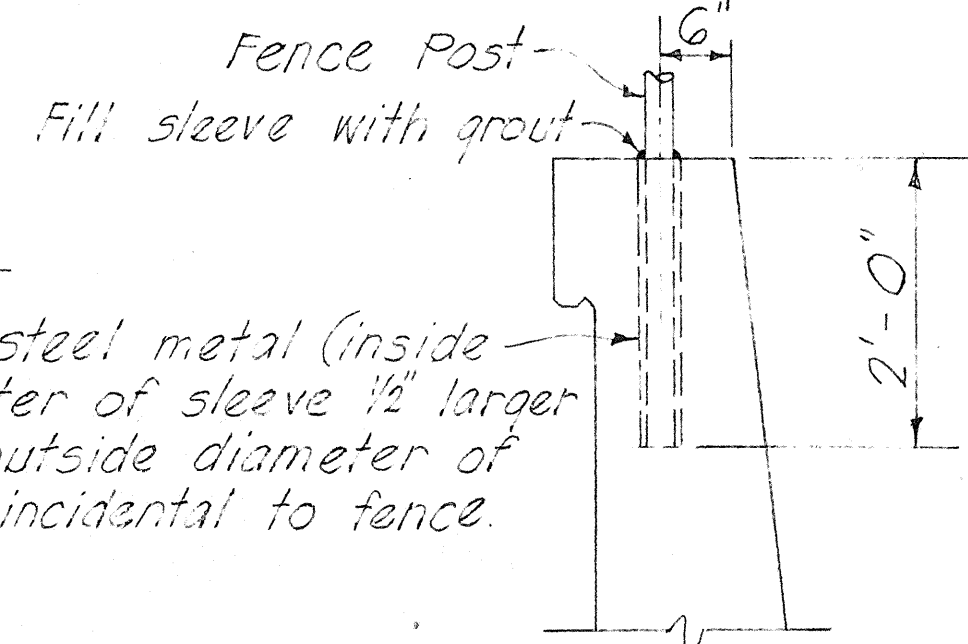
STANDARD DETAILS
 METAL BRIDGE RAILINGS
 TRAFFIC TYPE

Kauai Belt Road Proj. No. S-0560(1) Unit 2

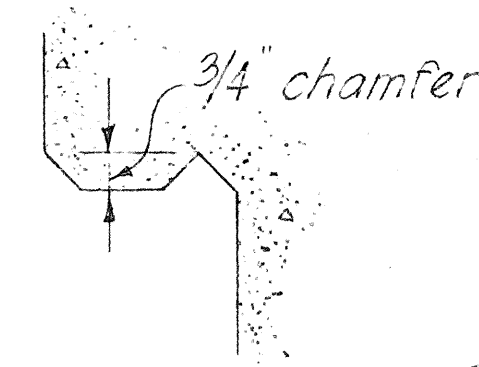
Scale: As Noted Date: Oct. 1966

SHEET No. 53 OF 6 SHEETS

33



CHAIN LINK FENCE
POST DETAIL

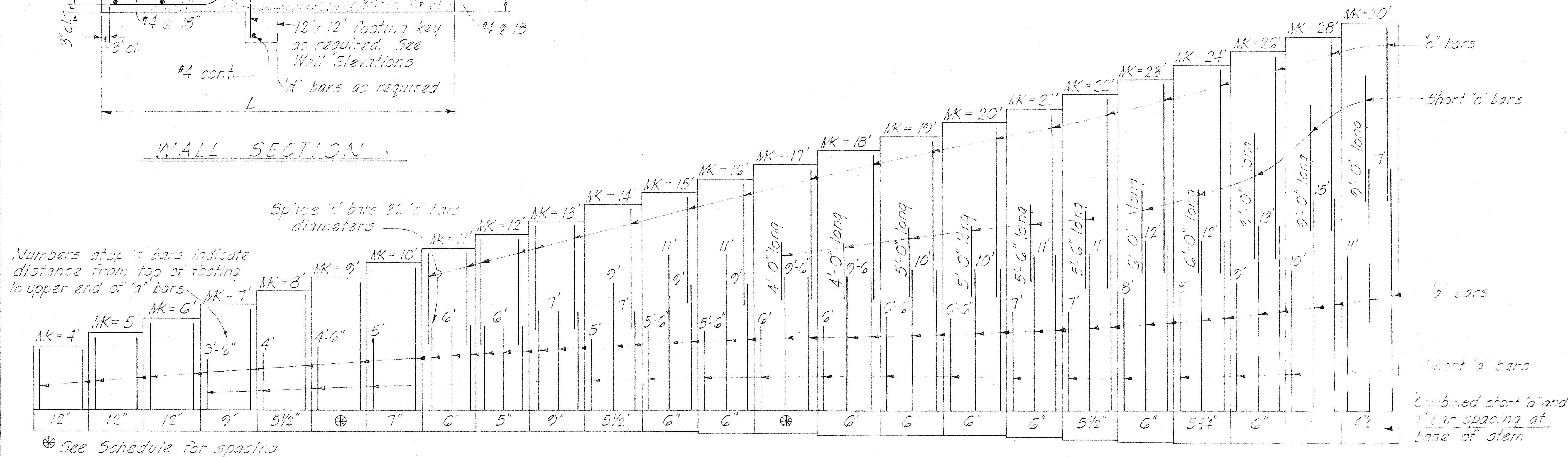


DETAIL

SCHEDULE OF DIMENSIONS AND REINFORCING STEEL																								
Maximum "K"	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@5½"	#5@7"	#6@7"	#6@6"	#6@5"	#7@9"	#6@5½"	#7@6"	#3@6"	#8@5½"	#7@6"	#7@6"	#10@6"	#10@6"	#10@5½"	#10@6"	#10@5¾"	#11@6"	#11@5"	#11@4½"
"b" bars	#3@12"	#3@12"	#3@12"	#3@9"	#4@11"	#4@7"	#5@7"	#5@6"	#5@5"	#7@9"	#6@5½"	#7@6"	#3@6"	#8@5¾"	#3@6"	#7@6"	#10@6"	#10@6"	#10@5½"	#10@6"	#10@5¾"	#11@6"	#11@5"	#11@4½"
"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"	#5@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 "K"	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"	13"	21"	21"	21"	21"	24"	24"	27"	30"	33"	39"	39"	51"
t	14"	14"	14"	14"	14"	14"	14"	13"	13"	13"	13"	13"	18"	13"	13"	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"	#3@6"	#3@6"	#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@6"	#5@7"	#5@6"	#5@5"	#7@9"	#6@5 1/2"	#7@6"	#7@6"	#3@6"	#7@6"	#7@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@11"	#5@10"	#5@9"	#5@9"	#5@8"	#6@10"	#6@9"	#7@12"	#7@11"	#7@10"	#7@	#7@	#7@6"

WALL SECTION.



VERTICAL REINFORCING STEEL ARRANGEMENT

STANDARD DETAILS
RETAINING WALL TYPE T-1

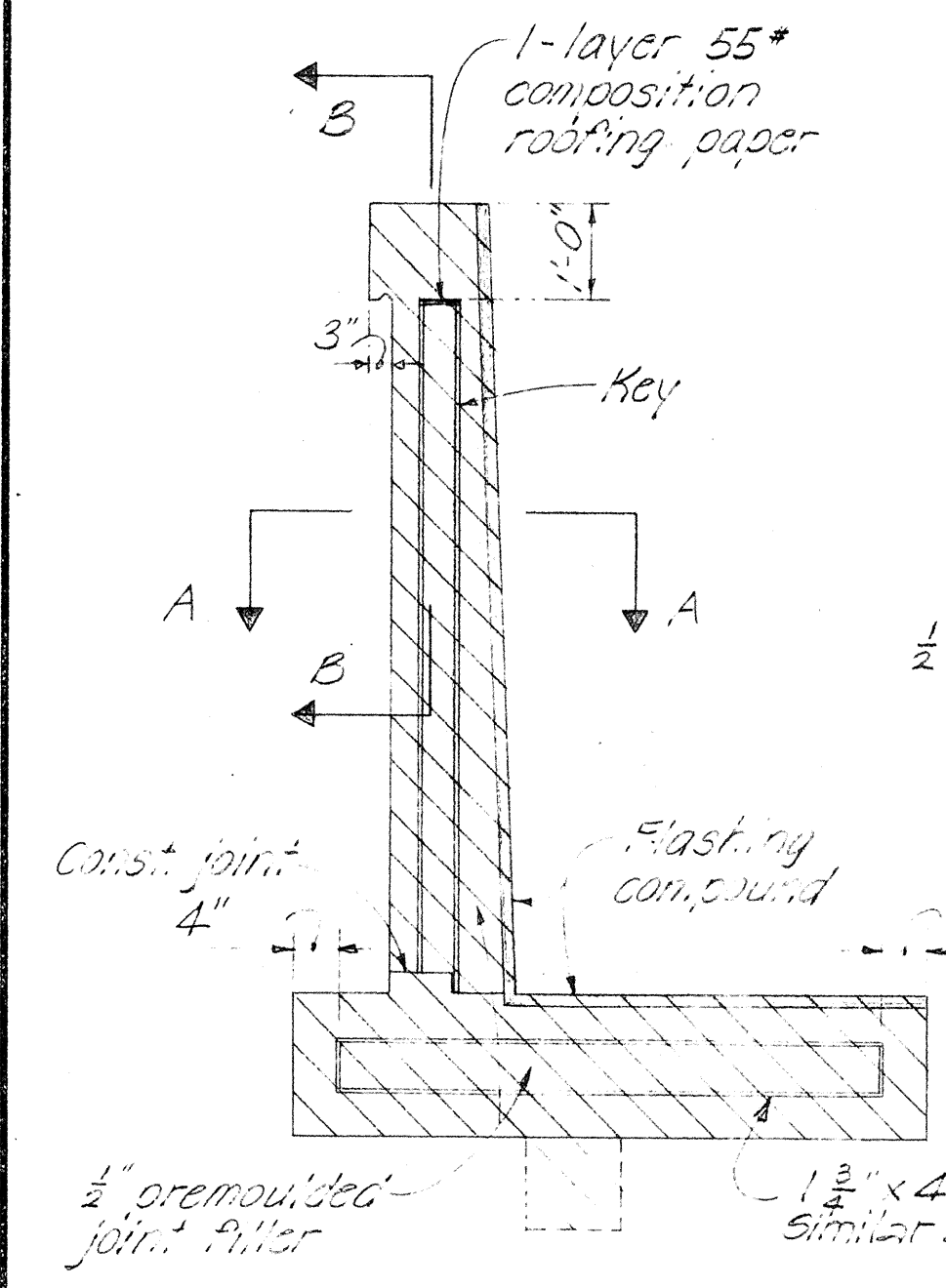
Kauai Belt Road Proj. No. 9-0560(1) Unit 2

SCALE AS NOTED DATE: Oct. 1966

SHEET No. 55 OF 6 SHEETS

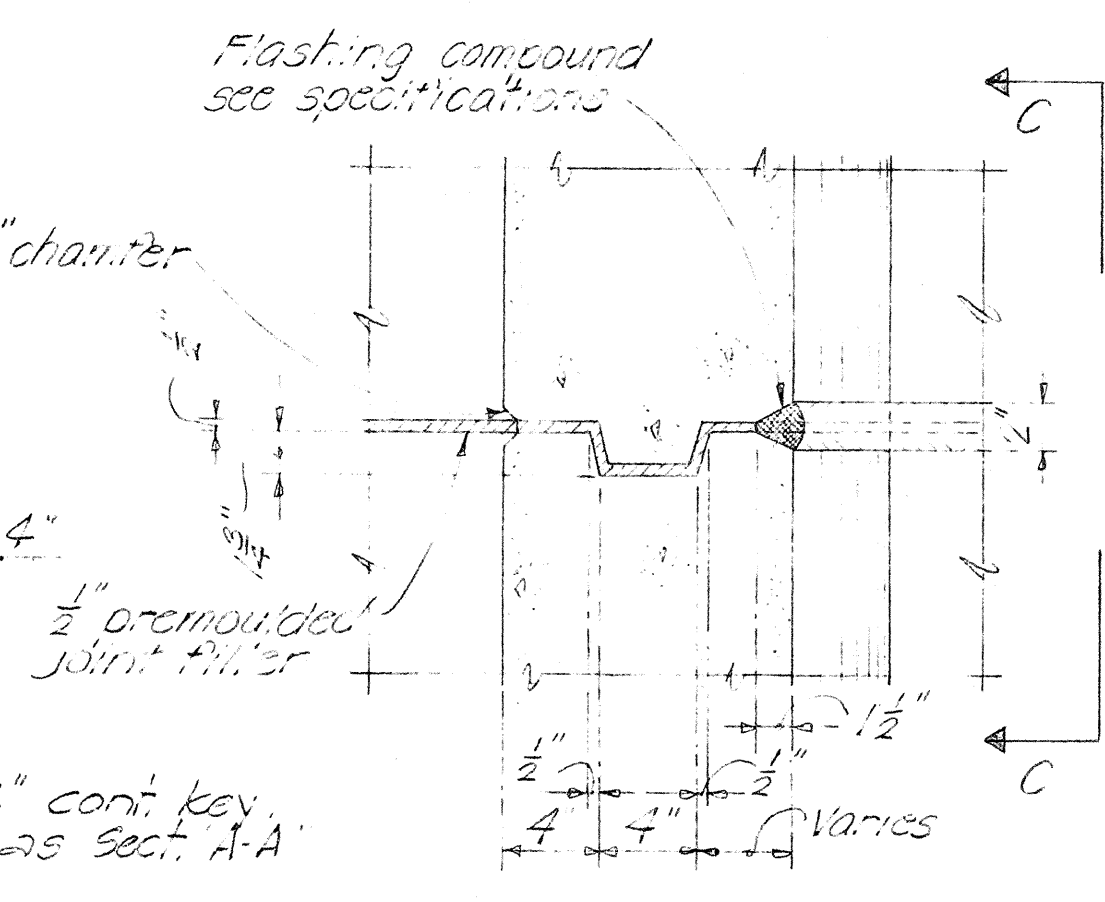
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.				

June 1968

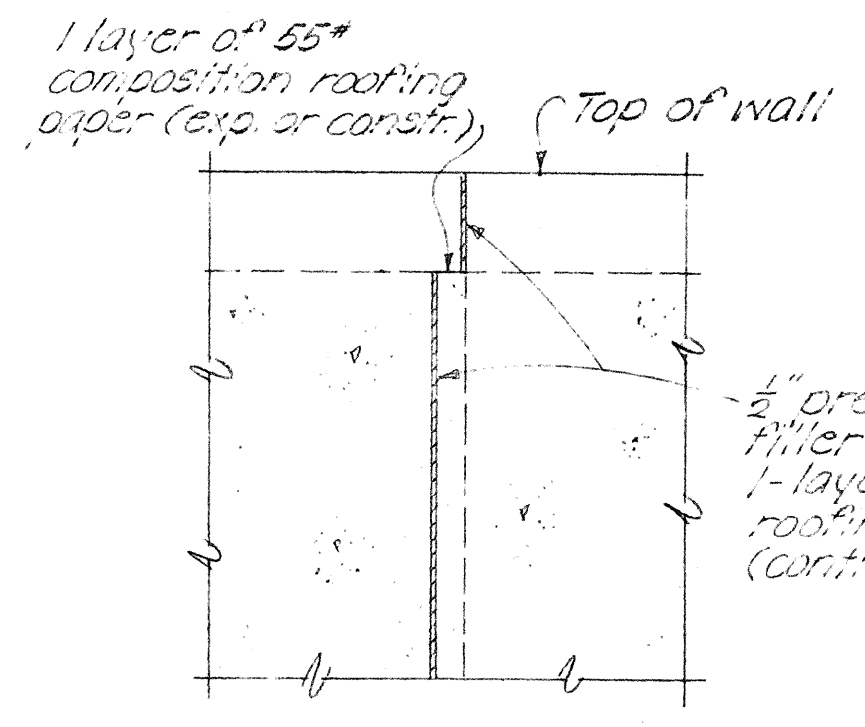


JOINT ELEVATION

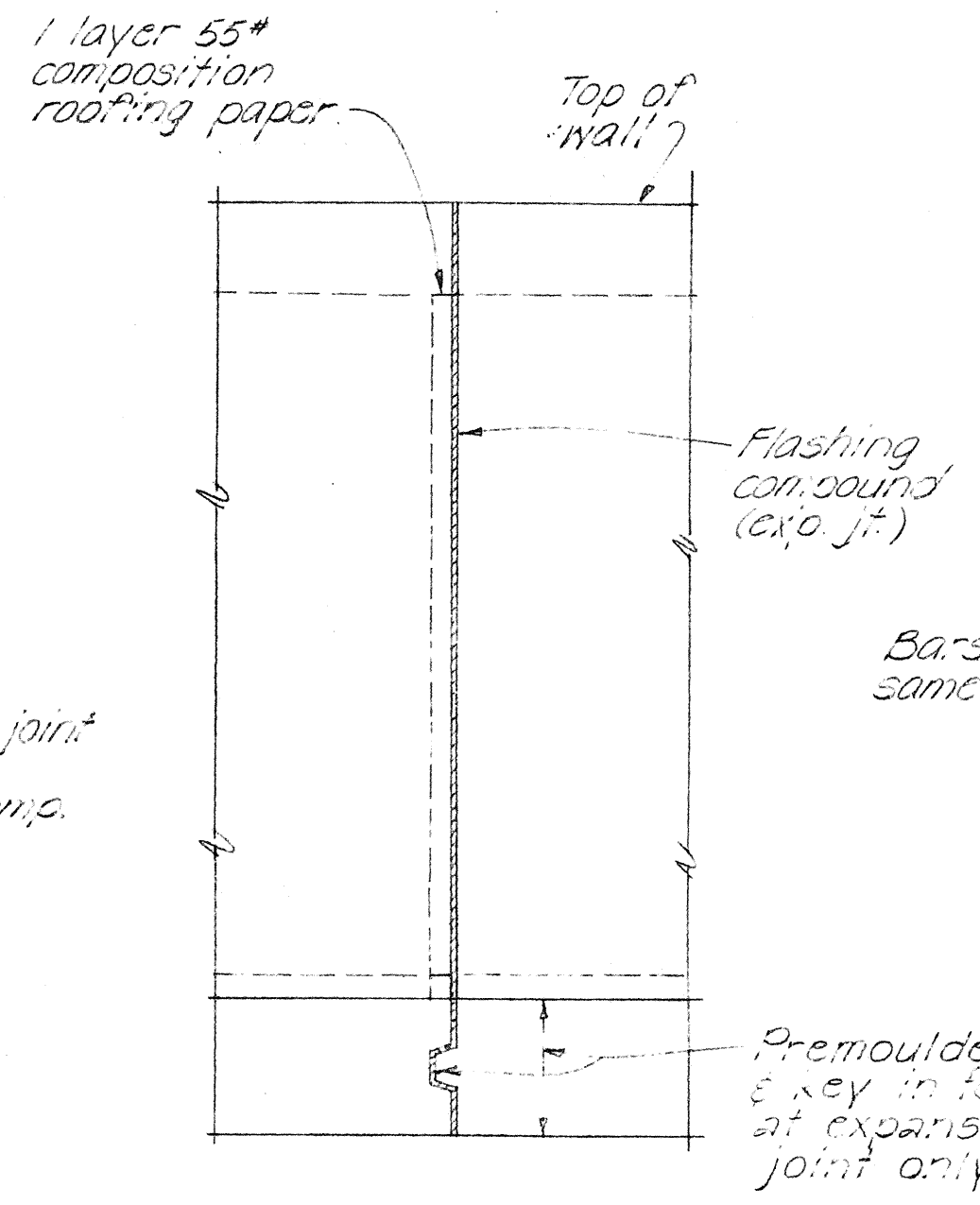
NOTE:
Spacing of joints
Expansion = 90'-0" max.
Contraction = 30'-0" max. except where conc. railing or curb occurs 26'-5" max. (match with railing joint above)
For alternate contraction joint and control joint details - See Standard Bridge Details.



SECTION A-A

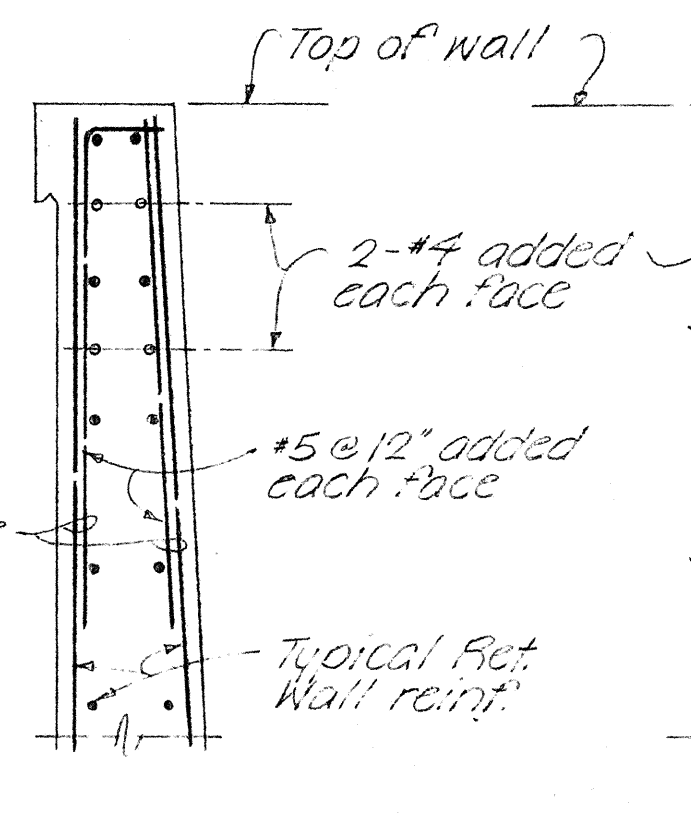


SECTION B-B

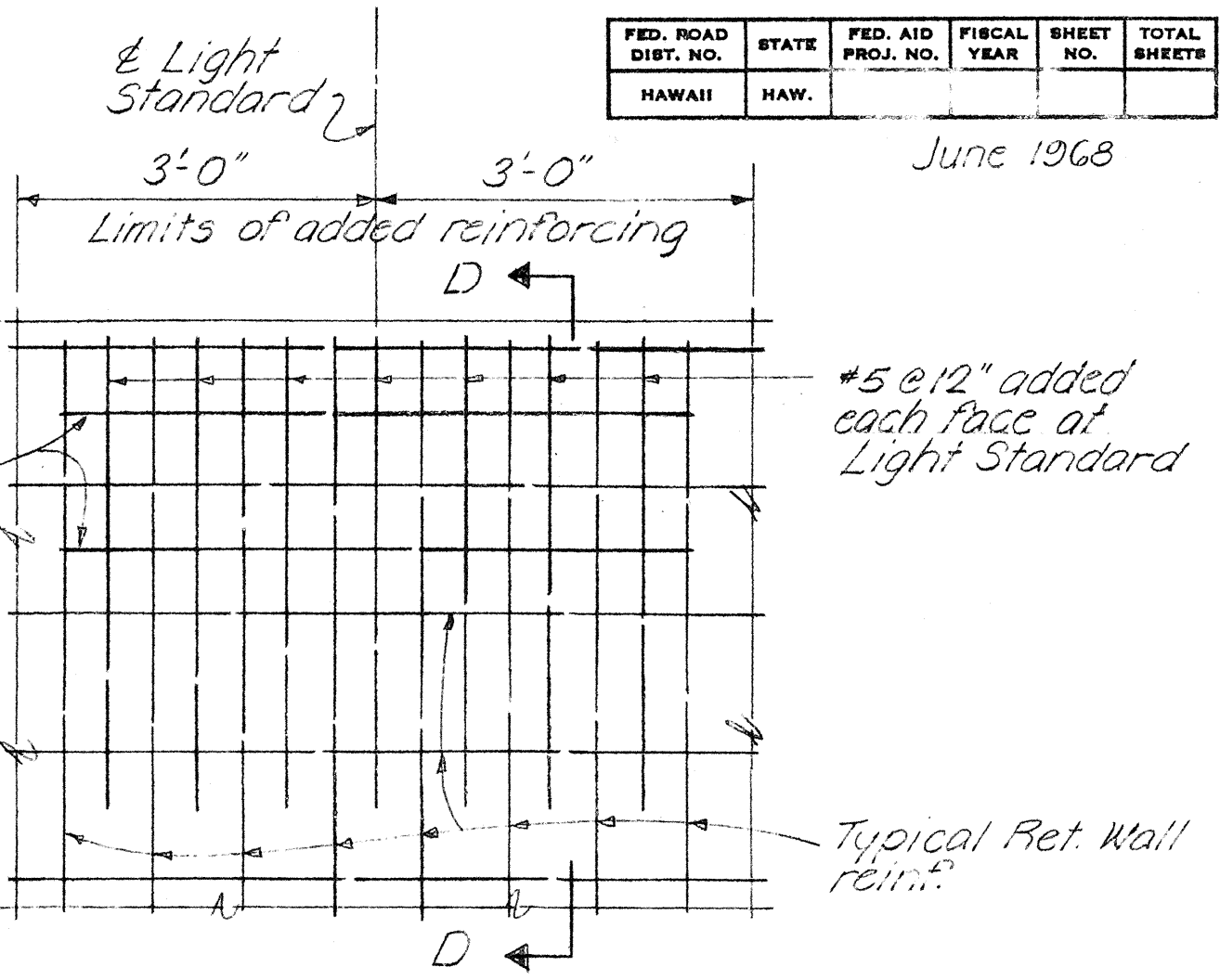


SECTION C-C

NOTE:
Limits of added reinf.
Height 0'-18' L = $\frac{h}{2}$
Height 19'-30' L = 6'-0"

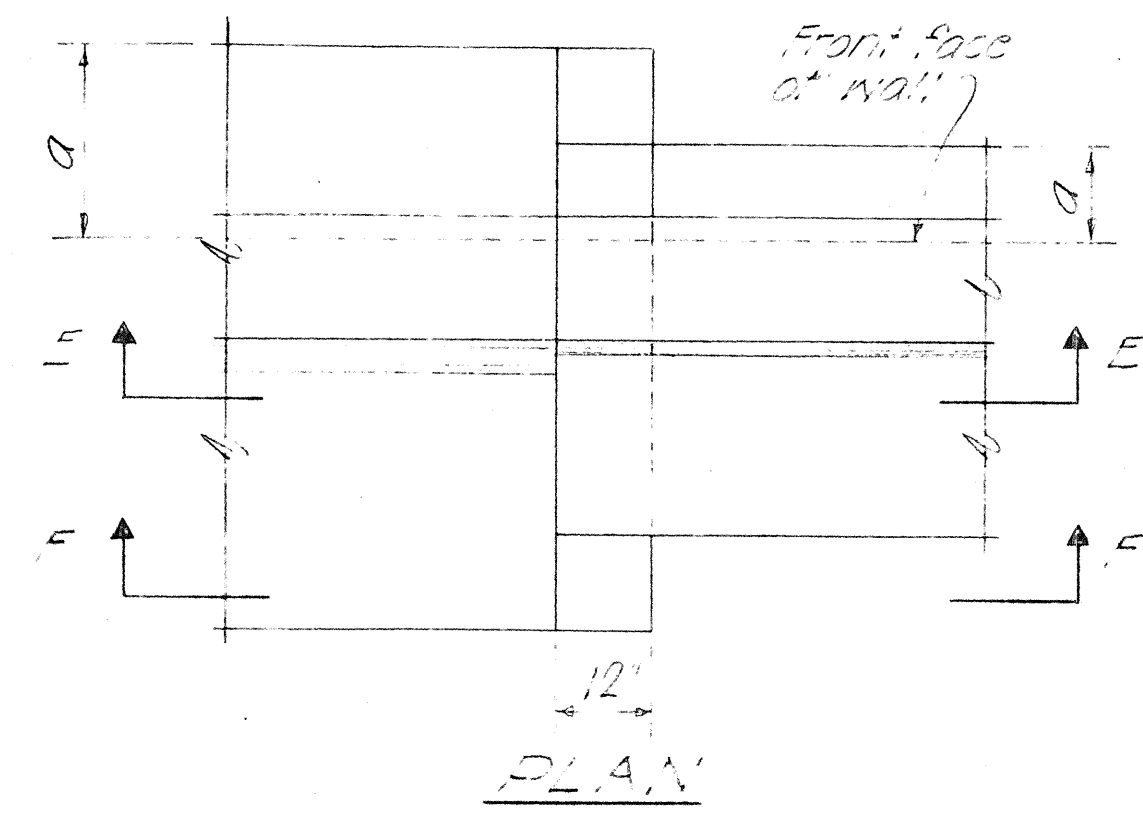


SECTION D-D

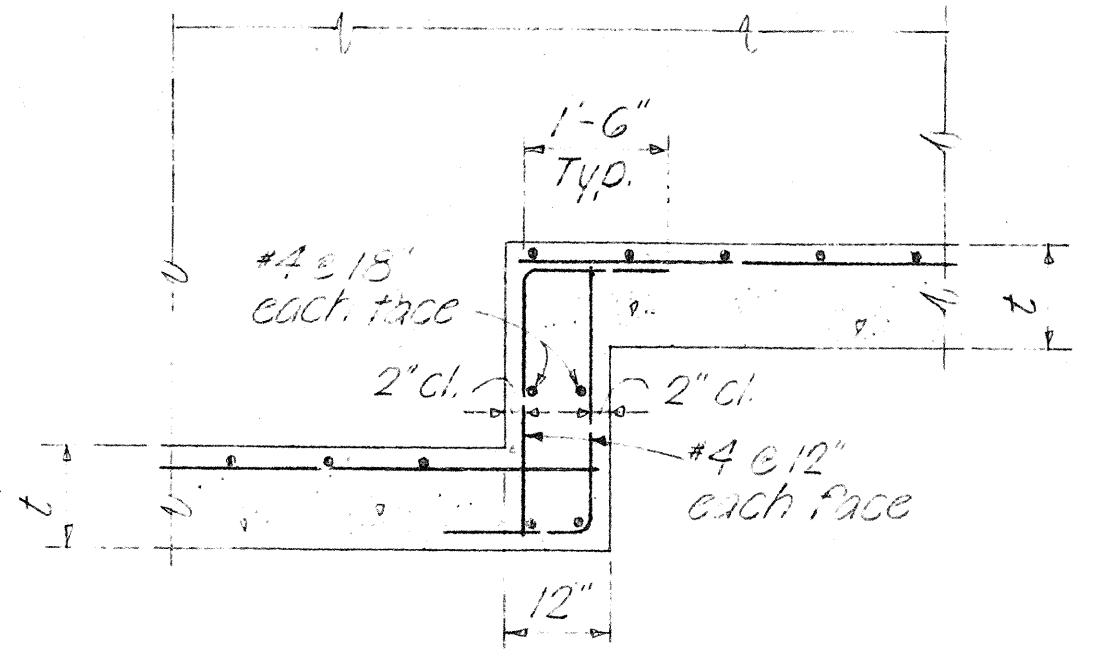


ELEVATION

TYPICAL ADDED REINFORCEMENT
AT LIGHT STANDARD BASE No Scale

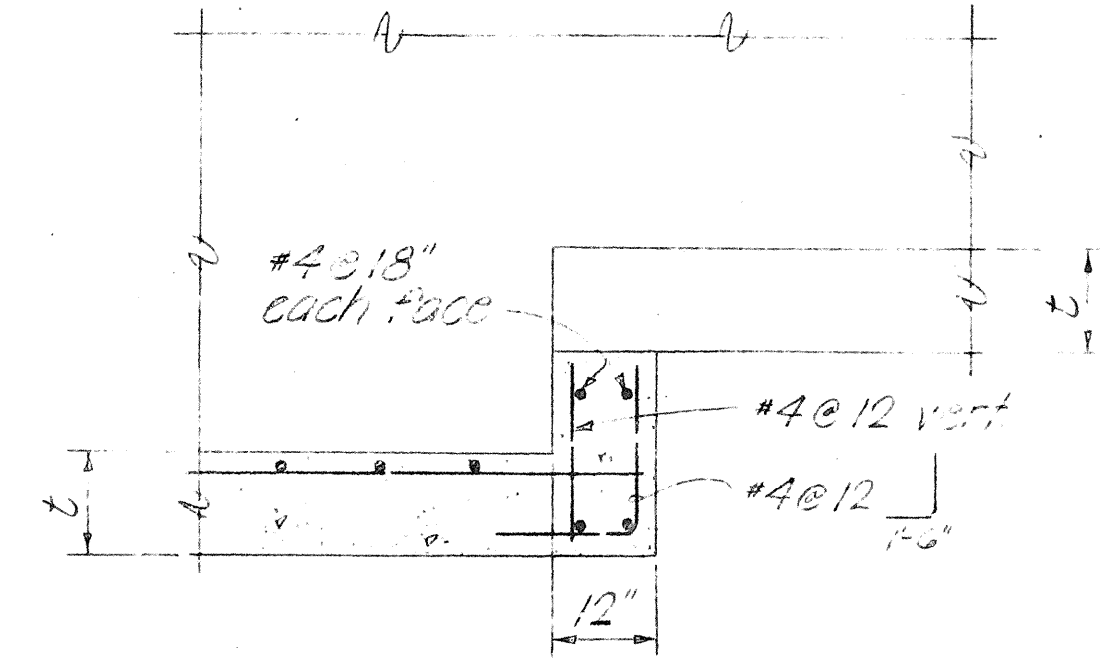


PLAN



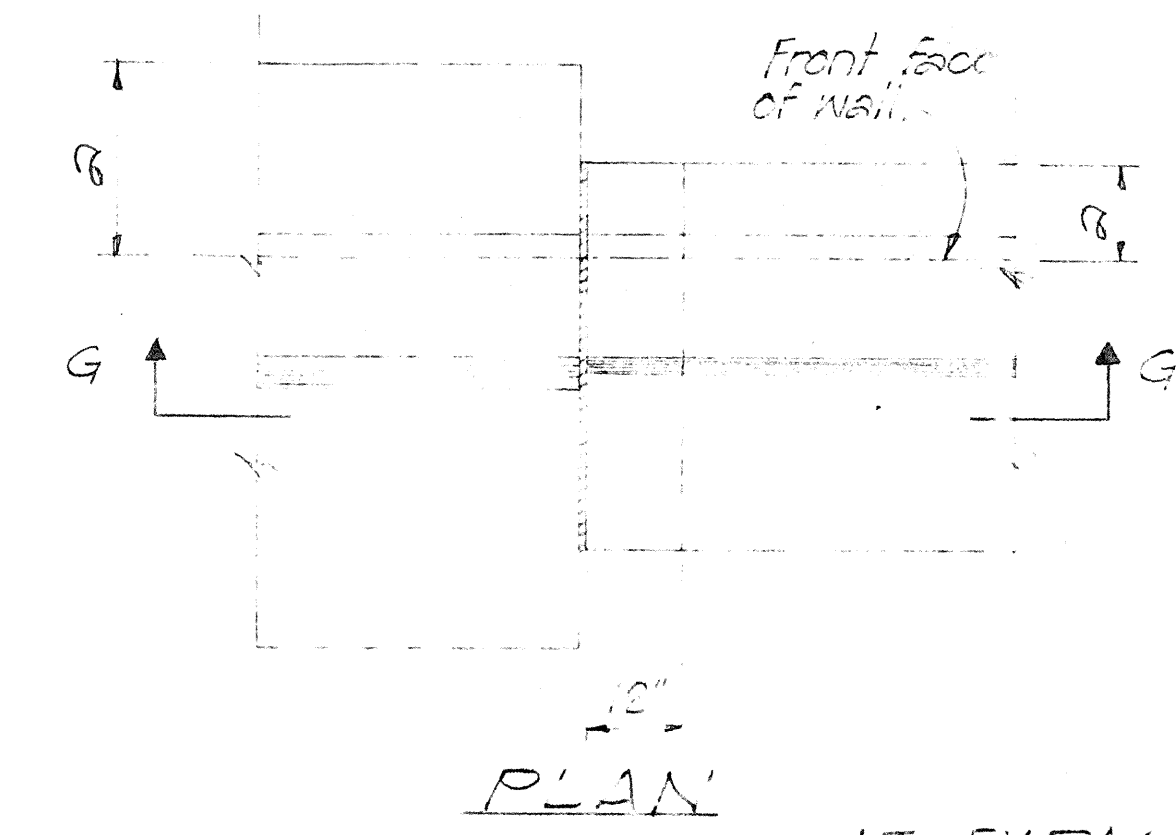
SECTION E-E

AT CONTINUOUS FOOTING

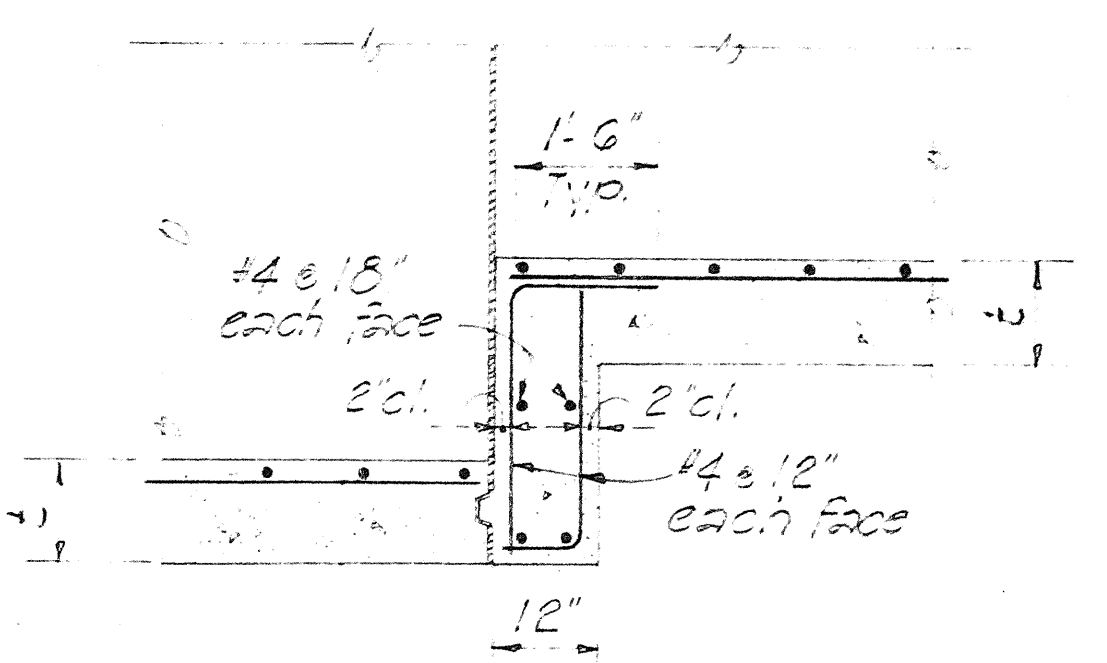


SECTION F-F

TYPICAL FOOTING STEP-UP DETAILS No Scale

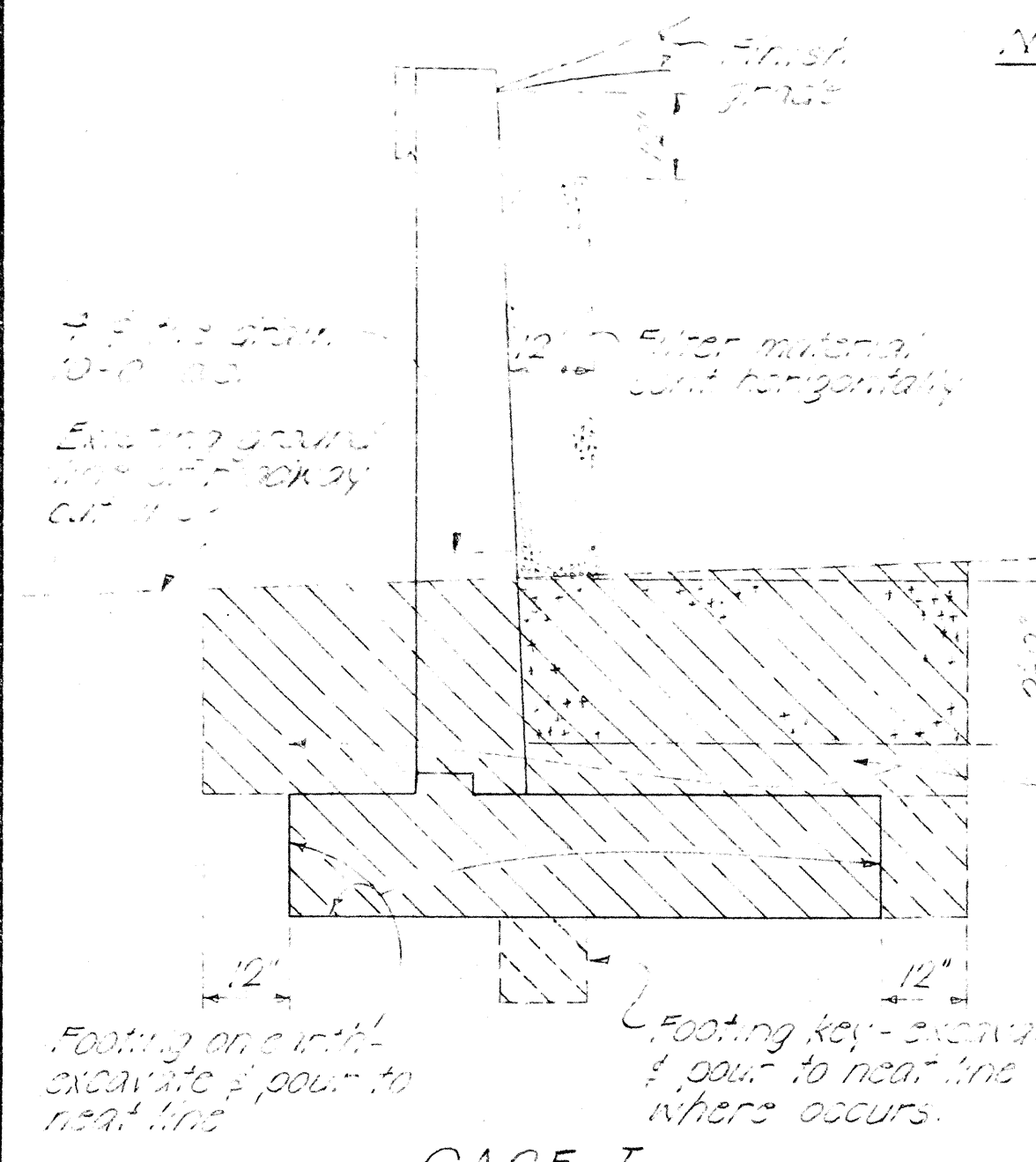


PLAN

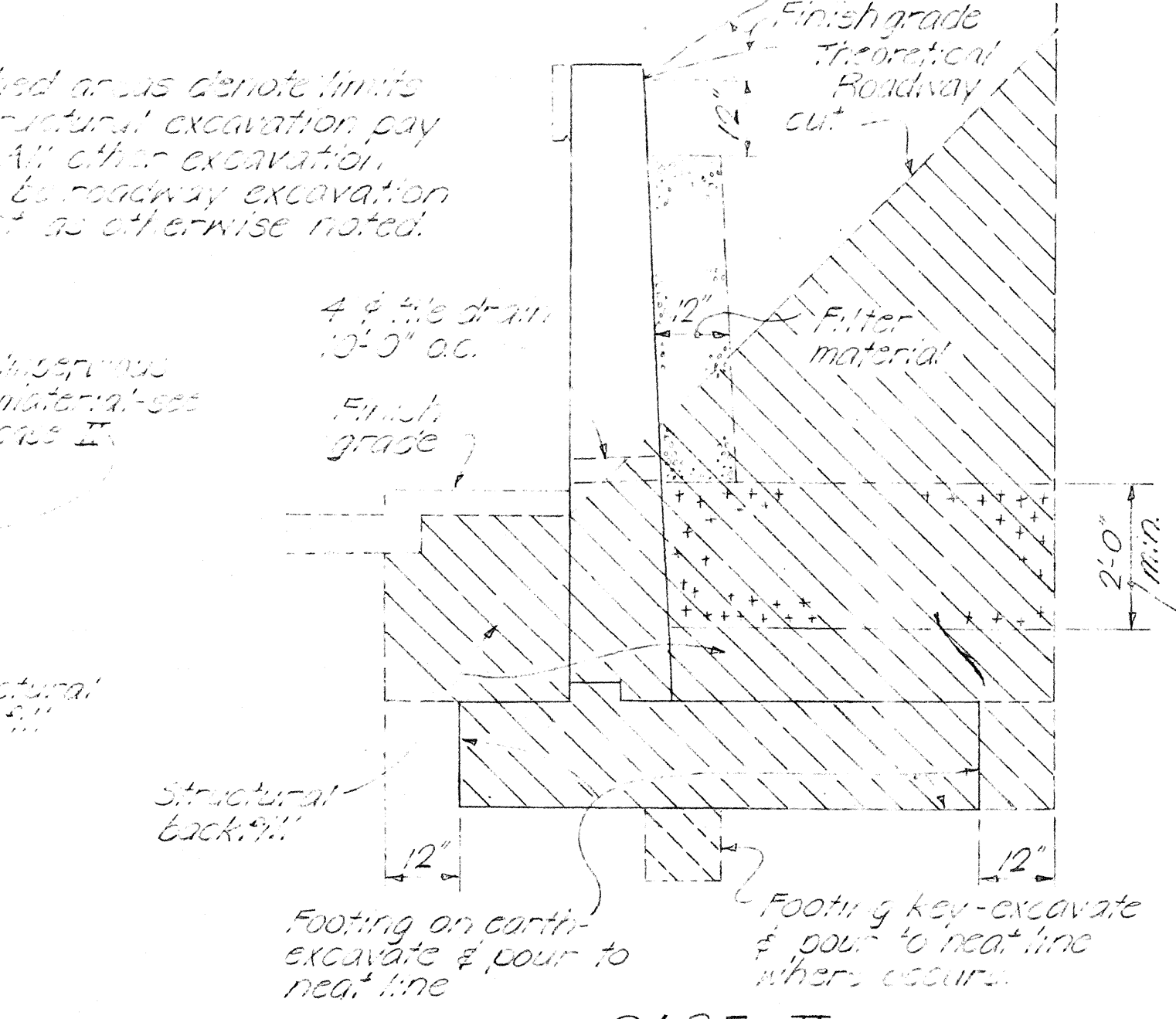


SECTION G-G

AT EXPANSION JOINT



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

Kauai Belt Road Proj. No. S-0560(1) Unit 2

SCALE AS NOTED DATE Oct. 1966
SHEET No. 96 OF 6 SHEETS