

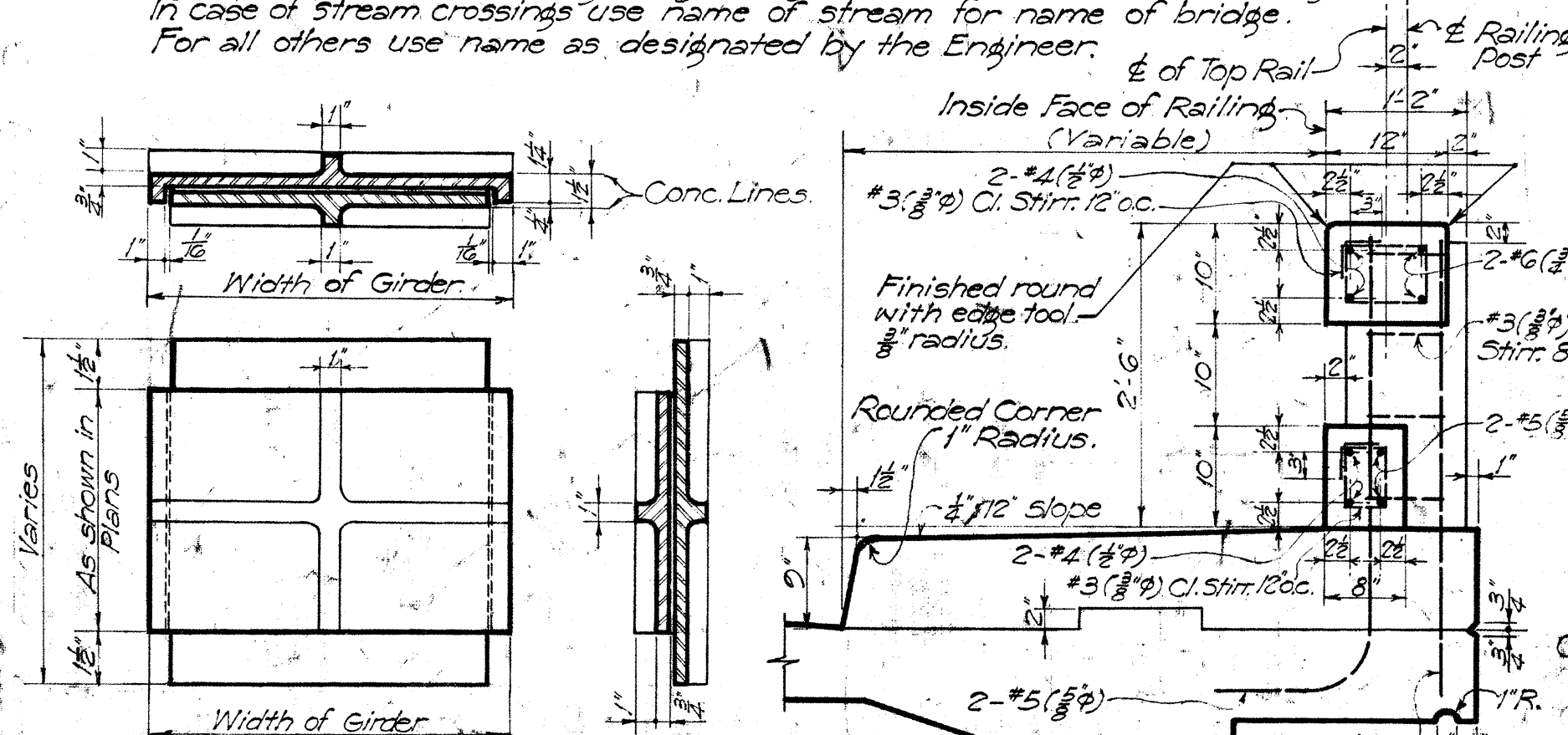
# NAME DATE

Use correct name of bridge.  
LEFT HAND SIDE

Date of year built.  
RIGHT HAND SIDE

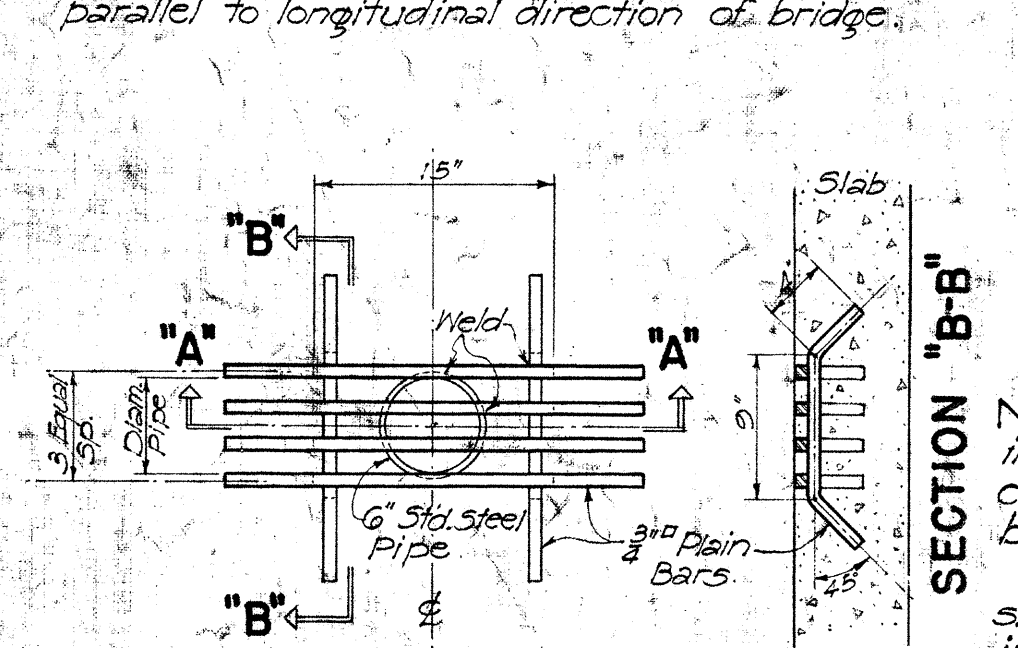
## DETAIL OF LETTERS AND FIGURES AT BOTH APPROACHES

NOTE: Name of bridge to be placed in left end post panels and date in right post panels on entering bridge using modified block letters 3" in height. In case of stream crossings use name of stream for name of bridge. For all others use name as designated by the Engineer.



## EXPANSION PLATES

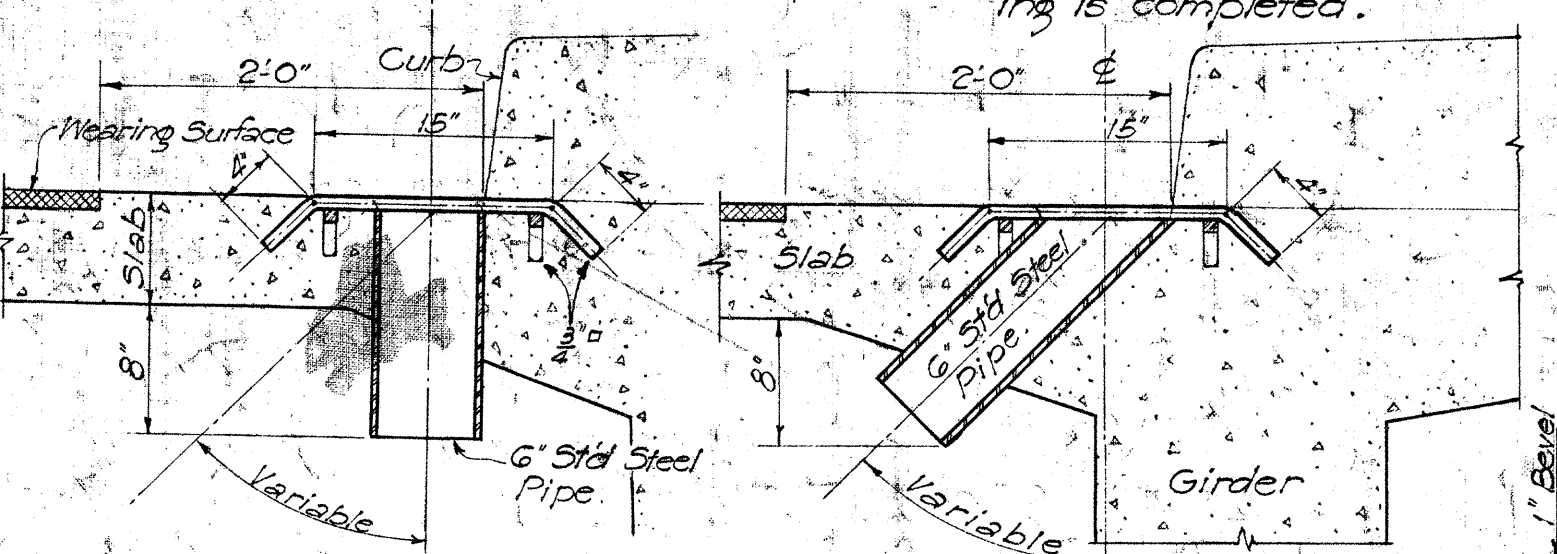
NOTE: Plates to be made of Bronze conforming to A.S.T.M., B22, Class C. Contact areas to have medium planed finish with finishing strokes parallel to longitudinal direction of bridge.



## SECTION "B-B" RAILING DETAIL

NOTE: Sidewalk, curb and railing to be poured after release of falsework. Forms for railing and endpost to be made of plywood. SURFACE FINISH: The surface of the concrete railings shall be given a Class 2 Rubbed Finish as specified under Sub-article 51.3 (1) (2) of Section 51 Concrete of the Standard Specifications.

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 not-dip galvanized after all welding is completed.

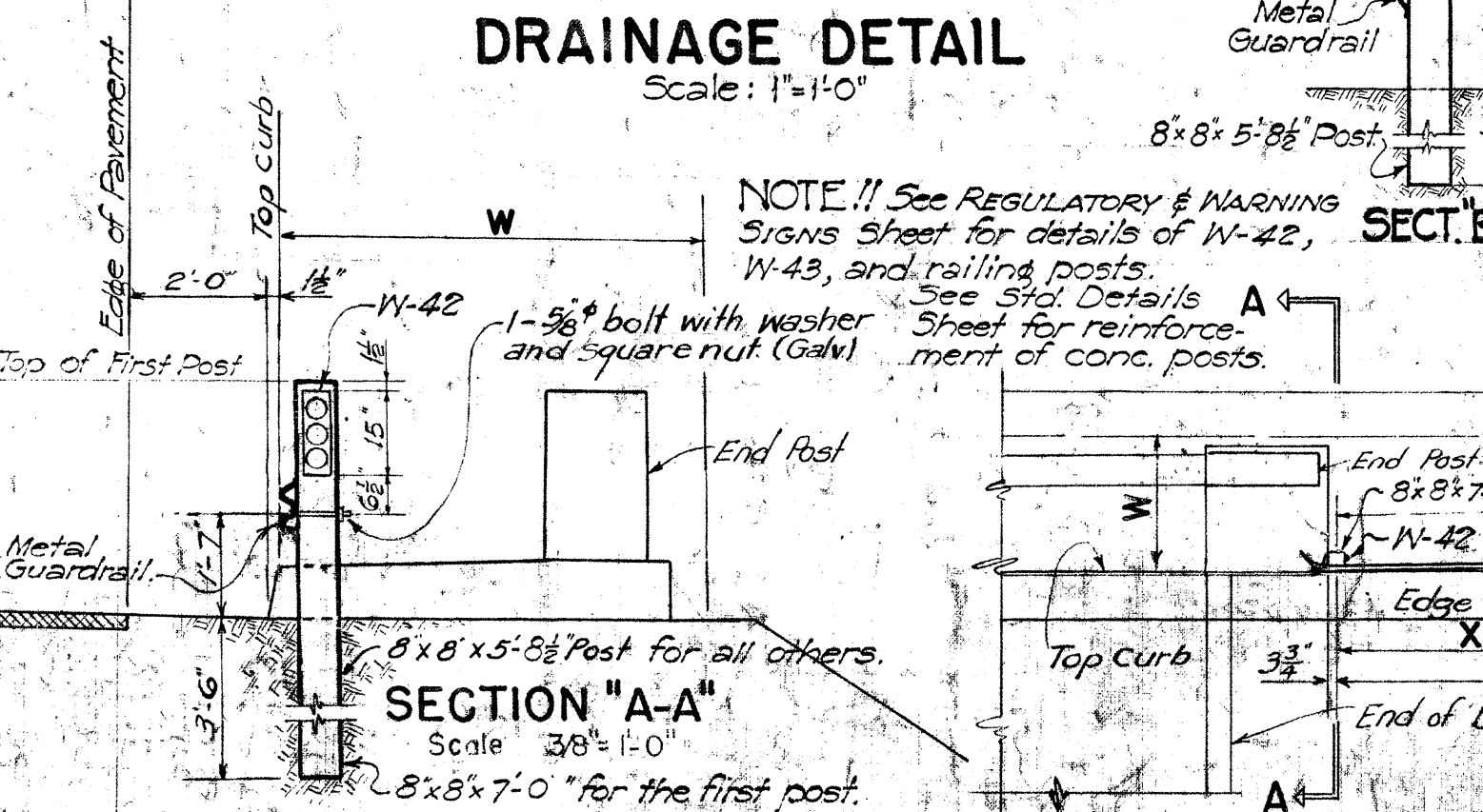


## SECTION "A-A" DRAINAGE DETAIL

Scale: 1"=1'-0"

## SECTION "A-A"

Scale: 1"=1'-0"



## GENERAL NOTES

CONCRETE: Class of concrete to be used in different parts of the structure are as noted on the plans.

REINFORCING STEEL: All reinforcing steel shall be Billet Steel Bars A.S.T.M. A15 intermediate grade, or Rail Steel Bars A.S.T.M. A16. Steel shall be made by the open-hearth process. Deformations shall conform to A.S.T.M. A305.

Splicing of reinforcing other than in main deck slab, girder and frame bars shall be done as shown in above sketch except where shown otherwise. Splices are to be staggered. Splices in main girder and frame bars are permitted only in bars exceeding 60'-0" in length at points to be indicated by the Engineer. These splices to be electrically arc welded according to detail and specifications. No allowance will be made in the quantities for extra weight of steel required for splices not shown on the plans.

Minimum spacing between parallel bars shall be 2 1/2 times the diameter of round or 3 times the side dimension of square 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. Minimum covering, measured from the surface of the concrete to the face of any reinforcing bar, shall be not less than 2 inches except in slabs where the minimum covering shall be 1 inch. In the footings of abutments and retaining walls and in piers the minimum covering shall be 3 inches. In work exposed to the action of sea water the minimum covering shall be 4 inches except in precast concrete piles where a minimum of 3" may be used.

All dimensions relating to reinforcing are to centers of bars unless otherwise noted.

CONSTRUCTION JOINTS: All construction joints to have surface roughened and 1:2 cement grout applied immediately before the second pour. Construction joints to be located at places indicated in the plans.

## WATERPROOFING:

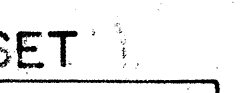
- (1) Top surface either side of joint as required with asphalt 50-100 penetration (A.S.T.M. Design D 5-25) applied at 200°F.
- (2) Apply one layer of 55# Composition Roofing to hot asphalt.
- (3) Top surface of composition roofing and 3" beyond all around with thick coat of asphalt as specified under (1).

The above work is incidental to concrete and will not be paid for separately.

DAMP PROOFING: Apply damp proofing as specified in Section 66 of the Standard Specifications.

## DETAIL OF END POST GROOVE

Scale: 3/4"=1'-0"



## GUARDRAIL OFFSET

| X     | W=3' | W=4' | W=5' | W=6' | W=7' | W=8' |
|-------|------|------|------|------|------|------|
| 12.5  | 0.19 | 0.16 | 0.14 | 0.12 | 0.09 | 0.08 |
| 25.0  | 0.75 | 0.64 | 0.55 | 0.49 | 0.35 | 0.32 |
| 37.5  | 1.69 | 1.44 | 1.25 | 1.10 | 0.78 | 0.72 |
| 50.0  | 3.00 | 2.56 | 2.22 | 1.96 | 1.38 | 1.28 |
| 62.5  |      | 4.00 | 3.47 | 3.06 | 2.16 | 2.00 |
| 75.0  |      |      | 5.00 | 4.41 | 3.11 | 2.88 |
| 87.5  |      |      |      | 6.00 | 4.23 | 3.92 |
| 100.0 |      |      |      |      | 5.53 | 5.12 |
| 112.5 |      |      |      |      | 7.00 | 6.48 |
| 125.0 |      |      |      |      |      | 8.00 |

W = Guardrail flare  
X = Distance from post at bridge to offset points.  
Y = Guardrail flare offset

8x8x5-8 1/2 Post  
See Proposal Schedule for material.

12'-6" Spacing of posts  
Widen for pedestrian walkway when required.

End Post  
8x8x2'-0" First post only.

Edge of pavement  
12'-6" Spacing for stakeout of guardrail flare (Not for location of posts)

End of Bridge

Top curb

3/4"

8x8x5-8 1/2 Post for all others.

8x8x7'-0" for the first post.

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

PLAN - METAL GUARDRAIL FLARE Scale: 1/8"=1'-0"

## LAP DETAIL

(In columns lap bars 20 D.)

Reinforcing Bar

20 D.

35 D. for h=12"

20 D. for h<12"

Eliminate fillet at insert

1'-3"

1'-3"

3/4" Bronze bolts square heads and nuts 6" thread sp. 12'-0" oc. unless shown otherwise in the plans.

3/4" x 6" x 1'-8" Pl.

3" x 3" x 3/4" Pl. Washers.

Scale: 3/4"=1'-0"

SECTION "A-A" Scale: 3/4"=1'-0"

Joint Filler: Joint filler, when called for in plans, shall be incidental to concrete and will not be paid for separately.

BRONZE

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

INSERTS Scale: 3/4"=1'-0"

DETAIL OF PIPE HANGERS AND INSERTS

NOTE: Inserts, bolts, plates, nuts & washers to be Bronze conforming to A.S.T.M. Designation B22 and shall be Class "D" grade.

Cut with saw or grind smooth if cut by torch.

PLAN

REINFORCING BAR SPLICE Scale: Full Size

Scale: 3/8"=1'-0"

"ELEVATION" RAILING AND END POST DETAIL

Scale: 3/8"=1'-0"

1" Premolded Joint Filler (Expansion End only)

Top Rail 10"x12"

Open Joint

Bottom Rail 10"x8"

1" Open Joint for Rails

15'-0" (Max.)

Varies (15'-0" Max.)

4" Cl. Stirr. 12" oc.

2'-4" x 12" oc.

1" Premolded Joint Filler (Expansion End only)

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2'-4" x 12" oc.

4" Tile Drains, when called for in plans, shall be incidental to concrete.

Waterproofing

Filter material when called for in the plan.

Construction Joint.

See "GENERAL NOTES"

BRONZE INSERT (Incidental to Class A-1 Conc.)

1" Radius

Provide opening of sufficient size to insert head of bolt.

3/4" Bronze bolts square heads and nuts 6" thread sp. 12'-0" oc. unless shown otherwise in the plans.

3/4" x 6" x 1'-8" Pl.

3" x 3" x 3/4" Pl. Washers.

Scale: 3/4"=1'-0"

SECTION "A-A" Scale: 3/4"=1'-0"

Joint Filler: Joint filler, when called for in plans, shall be incidental to concrete and will not be paid for separately.

BRONZE

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

INSERTS Scale: 3/4"=1'-0"

DETAIL OF PIPE HANGERS AND INSERTS

NOTE: Inserts, bolts, plates, nuts & washers to be Bronze conforming to A.S.T.M. Designation B22 and shall be Class "D" grade.

Cut with saw or grind smooth if cut by torch.

PLAN

REINFORCING BAR SPLICE Scale: Full Size

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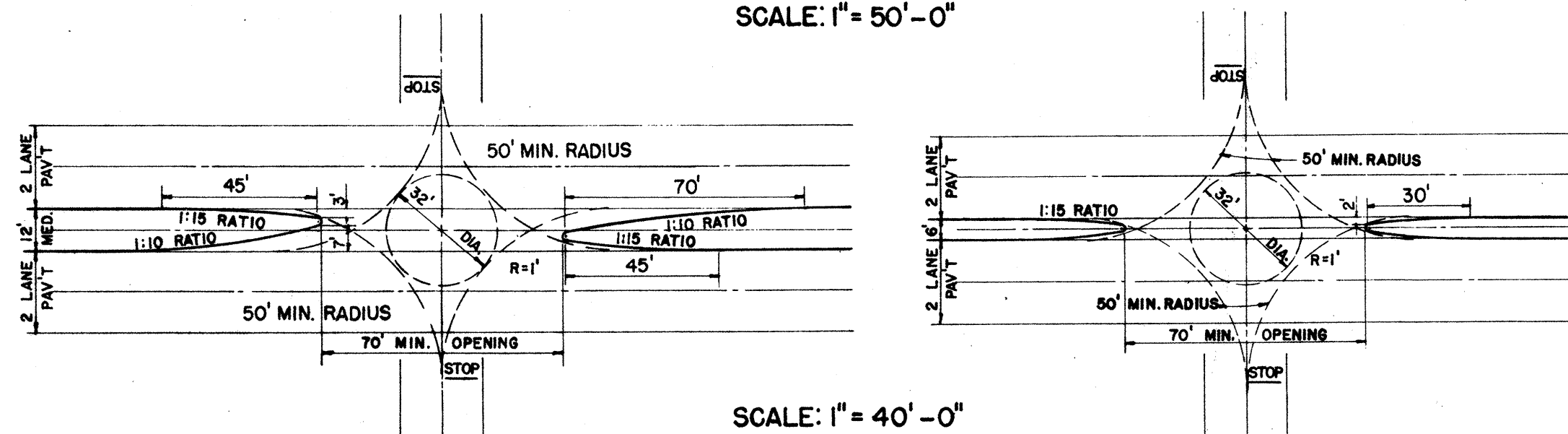
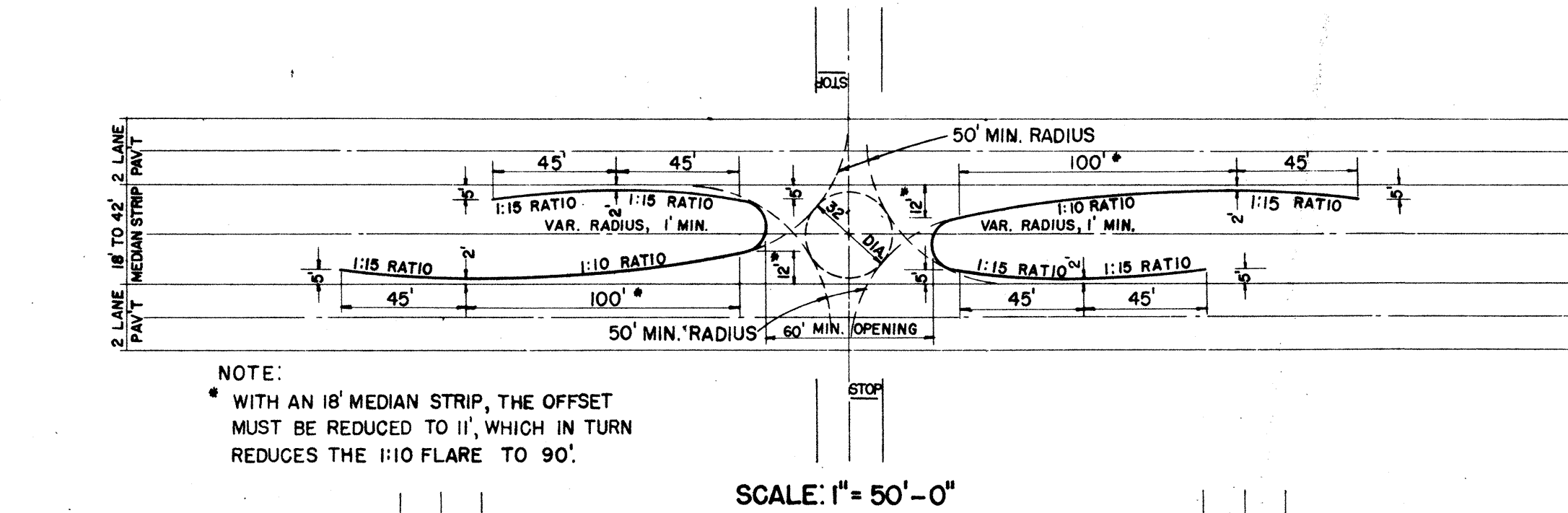
2'-4" x 12" oc.

1" Premolded Joint Filler (Expansion End only)

4" Cl. Stirr. 12" oc.

2'-4" x 12" oc.

## CONSTRUCTION JOINT, WATERPROOFING AND WEEPHOLES.



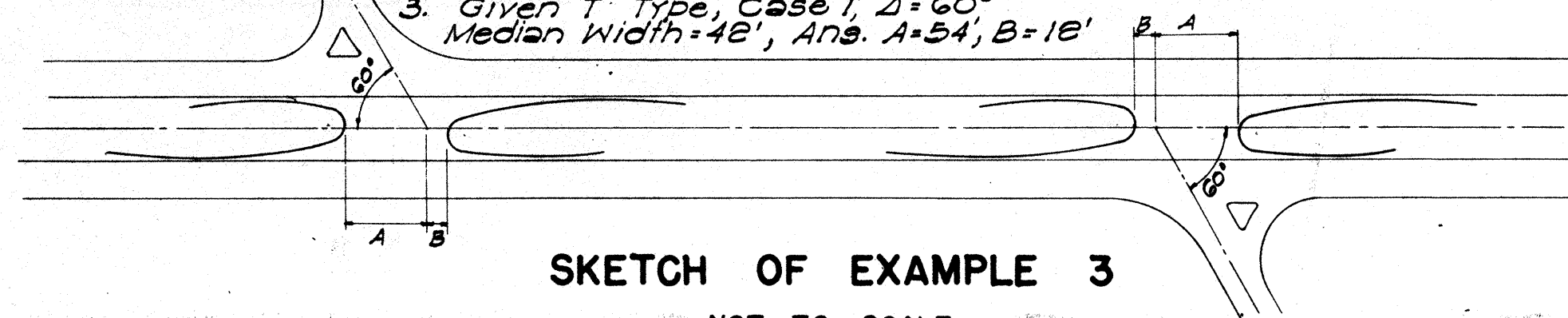
DETAILS OF MEDIAN STRIP OPENINGS

| ANGLE OF INTER. | WIDTH OF MEDIAN STRIP |        |        |        |        |        |        |        |        |        |
|-----------------|-----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                 | 42'                   |        | 36'    |        | 30'    |        | 24'    |        | 18'    |        |
|                 | Case 1                | Case 2 | Case 1 | Case 2 | Case 1 | Case 2 | Case 1 | Case 2 | Case 1 | Case 2 |
| 60°             | 54                    | 12     | 58     | 14     | 62     | 16     | 66     | 18     | 70     | 20     |
| 65°             | 48                    | 14     | 52     | 16     | 56     | 18     | 60     | 20     | 64     | 22     |
| 70°             | 42                    | 16     | 46     | 18     | 50     | 20     | 54     | 22     | 58     | 24     |
| 75°             | 36                    | 18     | 40     | 20     | 44     | 22     | 48     | 24     | 52     | 26     |
| 80°             | 32                    | 20     | 36     | 22     | 40     | 24     | 44     | 26     | 48     | 28     |
| 85°             | 30                    | 22     | 34     | 24     | 38     | 26     | 42     | 28     | 46     | 30     |
| 90°             | 30                    | 24     | 34     | 26     | 38     | 28     | 42     | 30     | 46     | 32     |
| 95°             | 30                    | 26     | 34     | 28     | 38     | 30     | 42     | 32     | 46     | 34     |
| 100°            | 30                    | 28     | 34     | 30     | 38     | 32     | 42     | 34     | 46     | 36     |
| 105°            | 30                    | 30     | 34     | 32     | 38     | 34     | 42     | 36     | 46     | 38     |
| 110°            | 30                    | 32     | 34     | 34     | 38     | 36     | 42     | 38     | 46     | 40     |
| 115°            | 30                    | 34     | 34     | 36     | 38     | 38     | 42     | 40     | 46     | 42     |
| 120°            | 30                    | 36     | 34     | 38     | 38     | 40     | 42     | 42     | 46     | 44     |

| CASE   | RADIUS (Feet)     |                   |                   |                   |                   |                   |
|--------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|        | 12                | 15                | 18                | 21                | 24                | 27                |
| CASE 1 | $R=12\frac{1}{2}$ | $R=15\frac{1}{2}$ | $R=18\frac{1}{2}$ | $R=21\frac{1}{2}$ | $R=24\frac{1}{2}$ | $R=27\frac{1}{2}$ |
| CASE 2 | $R=12\frac{1}{2}$ | $R=15\frac{1}{2}$ | $R=18\frac{1}{2}$ | $R=21\frac{1}{2}$ | $R=24\frac{1}{2}$ | $R=27\frac{1}{2}$ |

NOTES:  
 1) A & B = Distance in feet from Island Nose to Centerline of Intersection.  
 2) In a Crossing Intersection A & B are both equal to the larger distance.  
 3) In a T Intersection A & B must be measured as shown below. The larger distance is always on the same side with the acute angle.  
 4) The minimum radius of 50 ft. should always be scribed on a large scale drawing so that no misinterpretation of the tabulated values is made.

EXAMPLES:  
 2. Given Crossing Type, Case 1,  $\Delta = 60^\circ$ , Median Width = 36', Ans. A = B = 54'  
 3. Given T Type, Case 1,  $\Delta = 60^\circ$ , Median Width = 48', Ans. A = 54', B = 18'

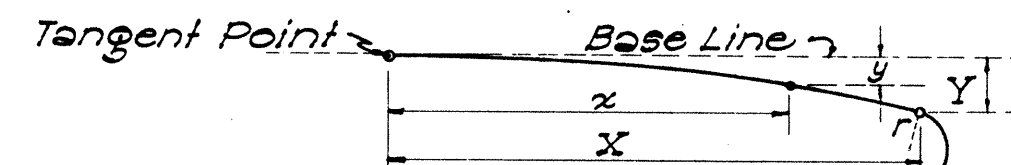


SKETCH OF EXAMPLE 3

NOT TO SCALE

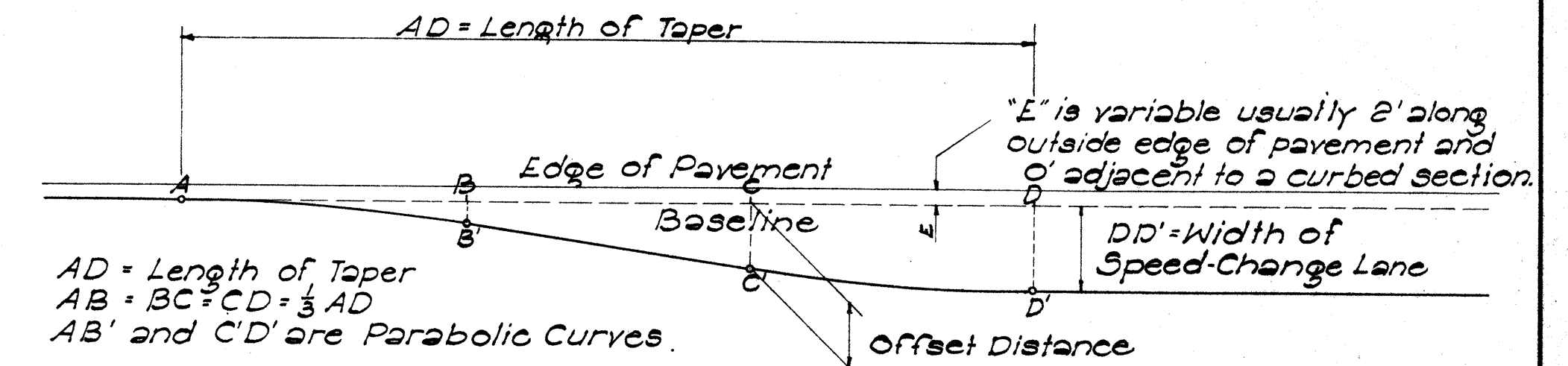
These Curves are based upon the following formula:  
 $y = \frac{Y}{X^2}$

where: y = any offset, x = its tangent dist.  
 X = maximum tangent distance  
 Y = maximum offset



| RATIO CURVE DATA |                    |       |       |       |       |
|------------------|--------------------|-------|-------|-------|-------|
| Dist. (ft.)      | Offset in Feet (Y) |       |       |       |       |
| 10               | 0.25               | 0.15  | 0.20  | 0.14  | 0.11  |
| 20               | 0.80               | 0.50  | 0.80  | 0.57  | 0.44  |
| 30               | 1.80               | 1.35  | 1.80  | 1.20  | 1.00  |
| 40               | 3.20               | 2.40  | 3.20  | 2.20  | 1.78  |
| 50               | 5.00               | 3.75  | 5.00  | 3.50  | 2.80  |
| 60               | 7.20               | 5.40  | 7.20  | 5.14  | 4.00  |
| 70               | 9.80               | 7.42  | 9.80  | 7.11  | 5.40  |
| 80               | 12.80              | 9.80  | 12.80 | 9.40  | 7.20  |
| 90               | 16.20              | 12.60 | 16.20 | 12.10 | 9.40  |
| 100              | 20.00              | 15.80 | 20.00 | 15.00 | 12.00 |

NOTE: Any ratio curve in this tabulation is designated by the maximum offset and its tangent distance



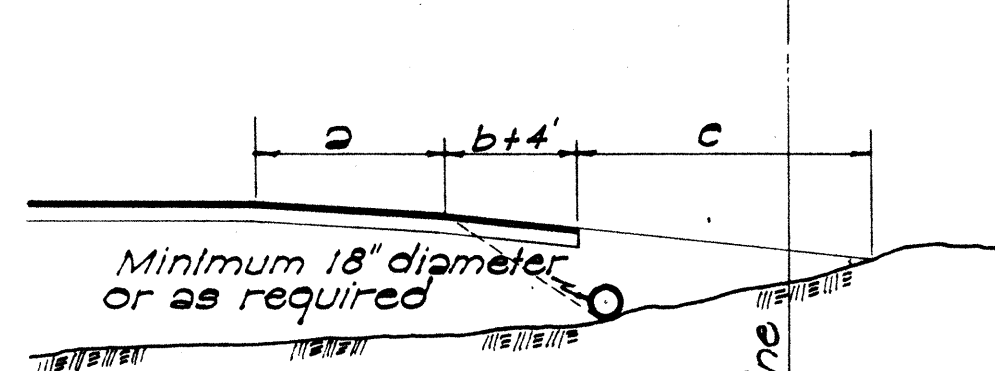
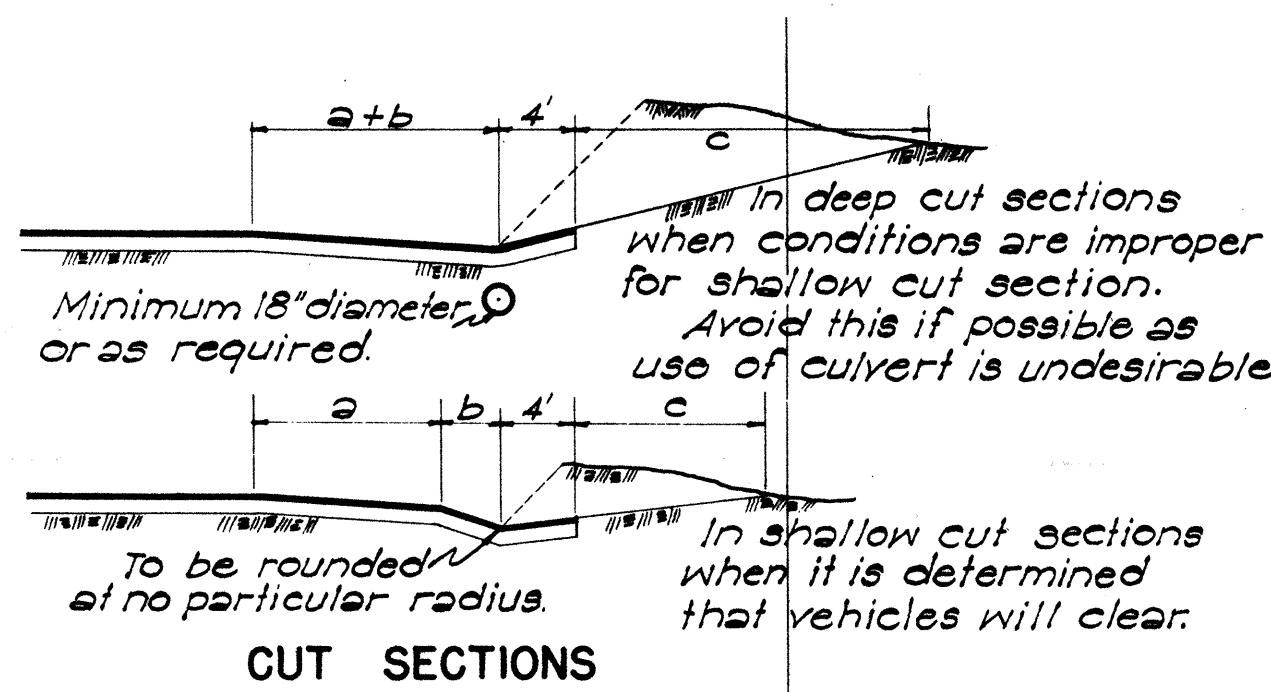
TAPER FOR SPEED-CHANGE LANES

SCALE: 1" = 20'-0"

| MINIMUM LENGTHS OF SPEED-CHANGE LANES & TAPER            |     |     |     |     |     |
|----------------------------------------------------------|-----|-----|-----|-----|-----|
| RAMP DESIGN SPEED (MPH)                                  | 20  | 30  | 40  | 50  |     |
| MIN. CURVE RADIUS (ft.)                                  | 50  | 130 | 250 | 500 |     |
| HIGHWAY DESIGN SPEED (MPH)                               | 30  | 40  | 50  | 60  | 70  |
| Ave. Speed of Travel (mi/hr)                             | 21  | 28  | 35  | 42  | 49  |
| Length of Taper (feet)                                   | 90  | 120 | 150 | 180 | 210 |
| TOTAL LENGTH OF DECELERATION LANE INCLUDING TAPER (Feet) |     |     |     |     |     |
|                                                          | 90  | 120 | 150 | 180 | 210 |
|                                                          | 140 | 170 | 200 | 230 | 260 |
|                                                          | 190 | 220 | 250 | 280 | 310 |
|                                                          | 240 | 270 | 300 | 330 | 360 |
| TOTAL LENGTH OF ACCELERATION LANE INCLUDING TAPER (Feet) |     |     |     |     |     |
|                                                          | 150 | 180 | 210 | 240 | 270 |
|                                                          | 200 | 230 | 260 | 290 | 320 |
|                                                          | 250 | 280 | 310 | 340 | 370 |
|                                                          | 300 | 330 | 360 | 390 | 420 |

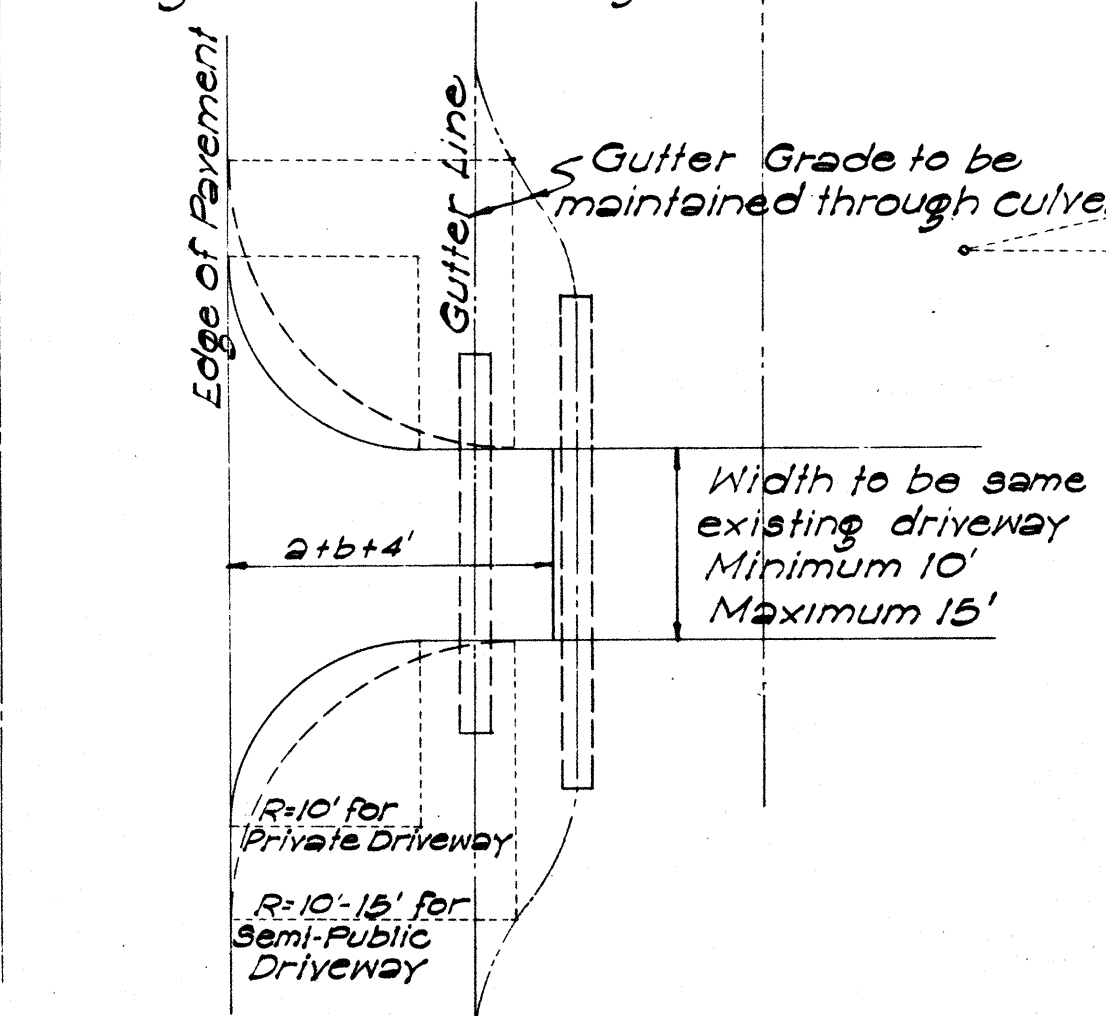
| FOLLOWING TABLE GIVES OFFSETS FROM BASELINE PARALLEL TO EDGE OF PAVEMENT AT INTERVALS MEASURED FROM POINT "A". ADD "E" FOR MEASUREMENT FROM EDGE OF PAV'T |  |  |                             |      |      |      |      |      |      |      |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|-----------------------------|------|------|------|------|------|------|------|------|
| OFFSET FROM BASELINE (ft.)                                                                                                                                |  |  | LENGTH OF TAPER (Feet) = AD |      |      |      |      |      |      |      |      |
|                                                                                                                                                           |  |  | 20                          | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  |
|                                                                                                                                                           |  |  | 120                         | 150  | 180  | 210  | 240  | 270  | 300  | 330  | 360  |
|                                                                                                                                                           |  |  | 370                         | 400  | 430  | 460  | 490  | 520  | 550  | 580  | 610  |
|                                                                                                                                                           |  |  | 620                         | 650  | 680  | 710  | 740  | 770  | 800  | 830  | 860  |
|                                                                                                                                                           |  |  | 870                         | 900  | 930  | 960  | 990  | 1020 | 1050 | 1080 | 1110 |
|                                                                                                                                                           |  |  | 1120                        | 1150 | 1180 | 1210 | 1240 | 1270 | 1300 | 1330 | 1360 |
|                                                                                                                                                           |  |  | 1370                        | 1400 | 1430 | 1460 | 1490 | 1520 | 1550 | 1580 | 1610 |
|                                                                                                                                                           |  |  | 1620                        | 1650 | 1680 | 1710 | 1740 | 1770 | 1800 | 1830 | 1860 |
|                                                                                                                                                           |  |  | 1870                        | 1900 | 1930 | 1960 | 1990 | 2020 | 2050 | 2080 | 2110 |
|                                                                                                                                                           |  |  | 2120                        | 2150 | 2180 | 2210 | 2240 | 2270 | 2300 | 2330 | 2360 |

\* Where edge of pavement is a curve, neither Baseline nor Taper between B' and C' will be a tangent. Use proportional offset from B' to C'.



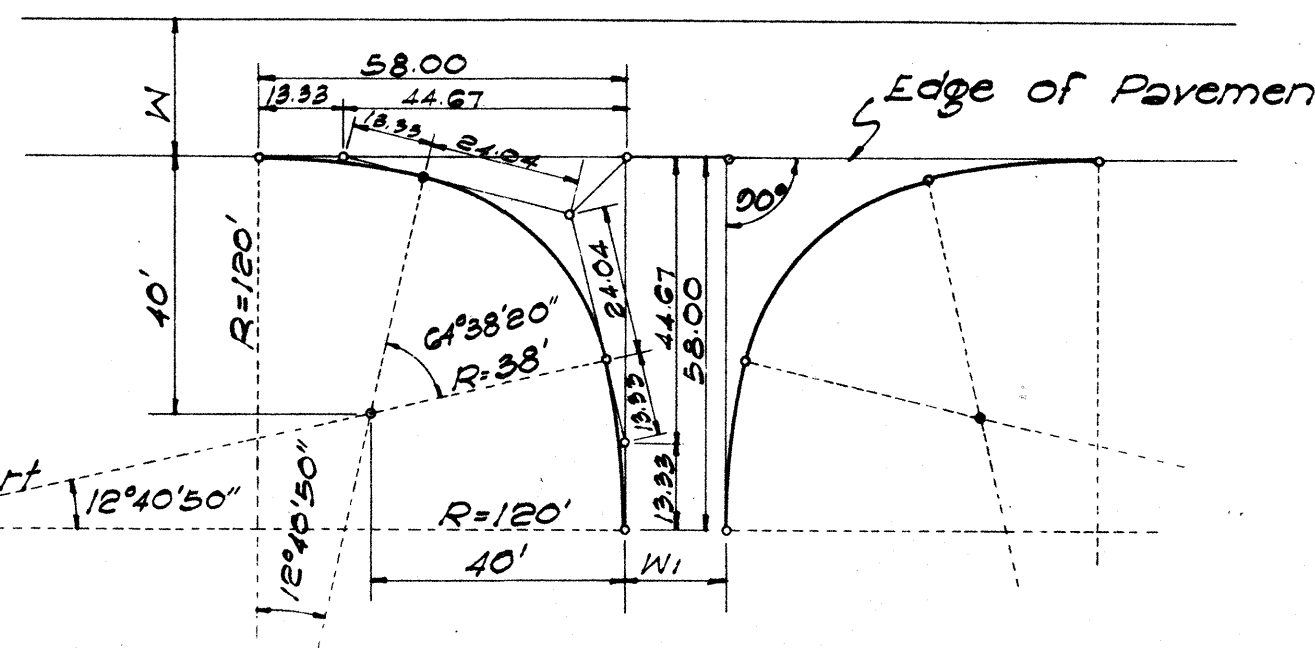
FILL SECTION

a = Shoulder width  
 b = Gutter width  
 c = Distance determined by Engineer for suitable grade.



PRIVATE AND SEMI-PUBLIC DRIVEWAYS

SCALE: 1" = 10'-0"



RIGHT ANGLE APPROACH

SIDE ROAD APPROACHES

THREE CENTERED COMPOUND CURVE

SCALE: 1" = 30'-0"

APPROVED: *Ben C. Hutter*  
 TERRITORIAL HIGHWAY ENGINEER

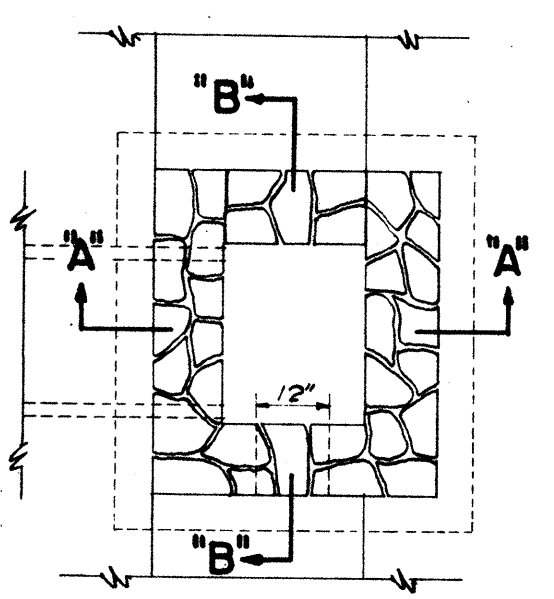
TERRITORIAL HIGHWAY DEPARTMENT  
 TERRITORY OF HAWAII  
 STANDARD DETAILS  
 DRIVEWAYS, SPEED-CHANGE LANES,  
 MEDIAN STRIPS & APPROACHES  
 SCALES AS NOTED

| D   | W   | H     | T+H+H |
|-----|-----|-------|-------|
| 18" | 24" | 2'-0" | 4'-0" |
| 24" | 30" | 2'-0" | 4'-6" |
| 30" | 30" | 2'-6" | 5'-0" |
| 36" | 36" | 3'-0" | 6'-0" |

**DETAIL OF OUTLET DITCH**  
Scale: 1/2" = 1'-0"

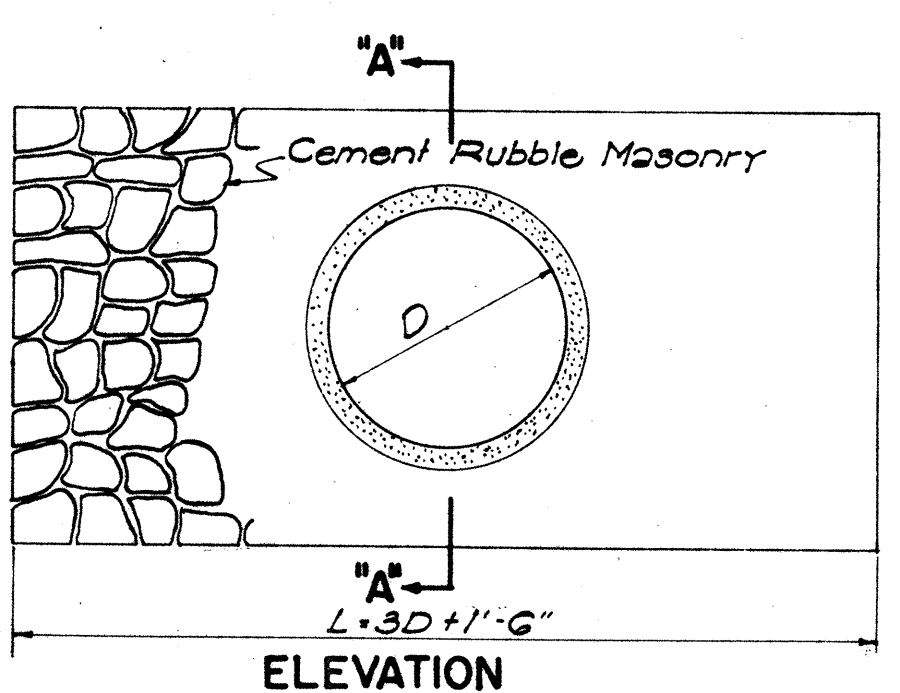
| D   | D   | L+D+G | Where Variables Equal |
|-----|-----|-------|-----------------------|
| 23" | 18" | 2'-5" | 3.02                  |
| 30" | 24" | 3'-0" | 3.61                  |
| 37" | 30" | 3'-7" | 4.21                  |
| 44" | 36" | 4'-2" | 4.85                  |

NOTE: Dimension "X" is assumed as 2'-4" in figuring the above quantities.

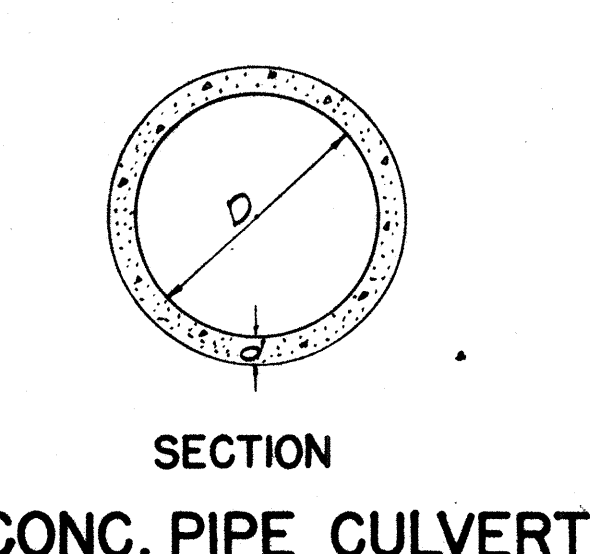


**DETAIL OF MASONRY DROP INTAKE**  
Scale: 3/8" = 1'-0"

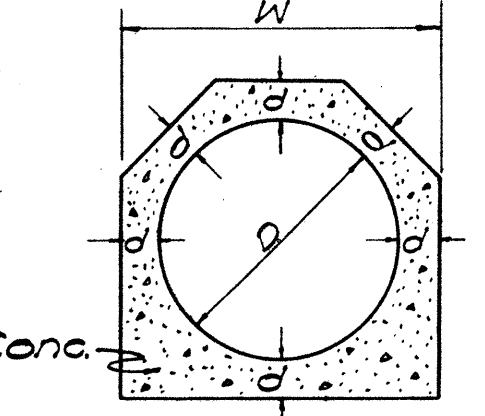
| D   | H     | B     | L      | Cost-in-Place Conc. Culvert Cu. Yds. | Cost-in-Place Conc. Pipe Culvert Cu. Yds. | Corrugated Pipe Culvert Cu. Yds. |
|-----|-------|-------|--------|--------------------------------------|-------------------------------------------|----------------------------------|
| 18" | 3'-6" | 1'-0" | 6'-0"  | 0.83                                 | 0.05                                      | 0.03                             |
| 24" | 4'-0" | 2'-0" | 7'-6"  | 1.28                                 | 1.45                                      | 1.41                             |
| 30" | 4'-6" | 2'-6" | 9'-0"  | 1.83                                 | 2.06                                      | 2.00                             |
| 36" | 5'-0" | 3'-0" | 10'-6" | 2.40                                 | 2.84                                      | 2.72                             |



**DETAIL OF MASONRY HEADWALL**  
Scale: 1/2" = 1'-0"



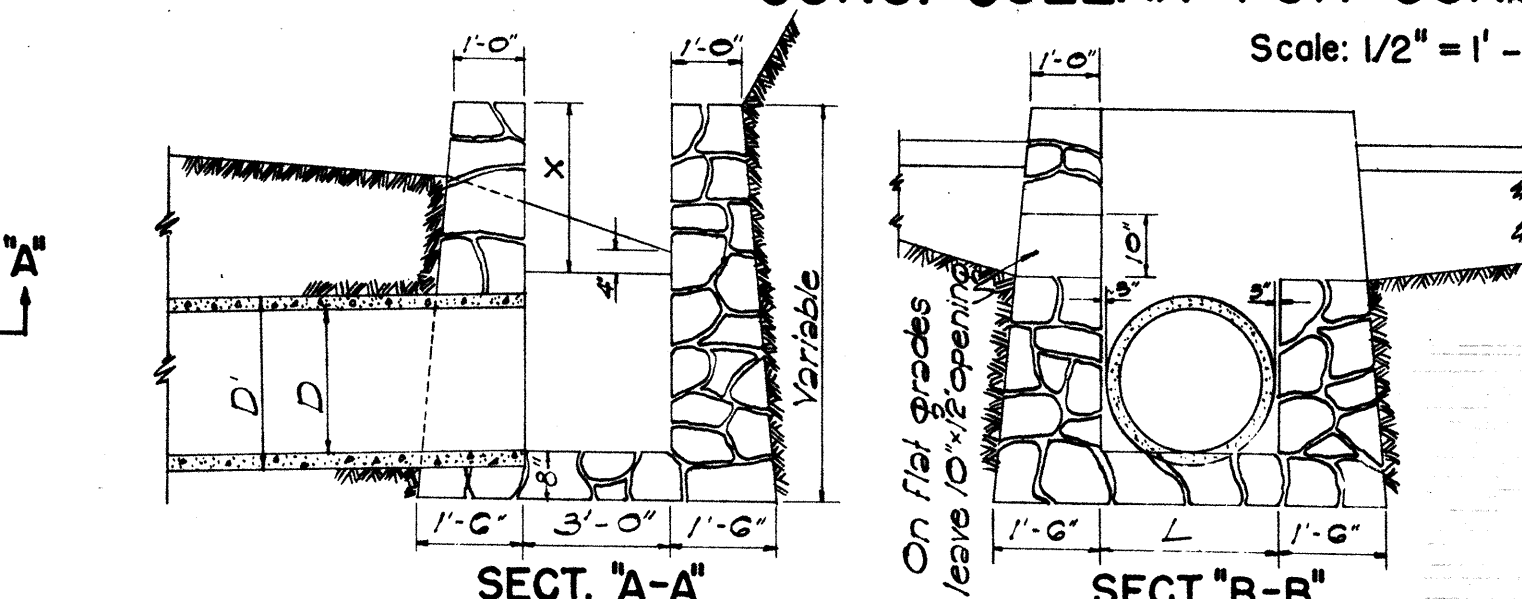
**SECTION CONC. PIPE CULVERT**



**CAST-IN-PLACE CONC. CULVERT**

NOTE: Thickness of reinforcing and concrete used are to conform with the approved design as provided by the Specifications.

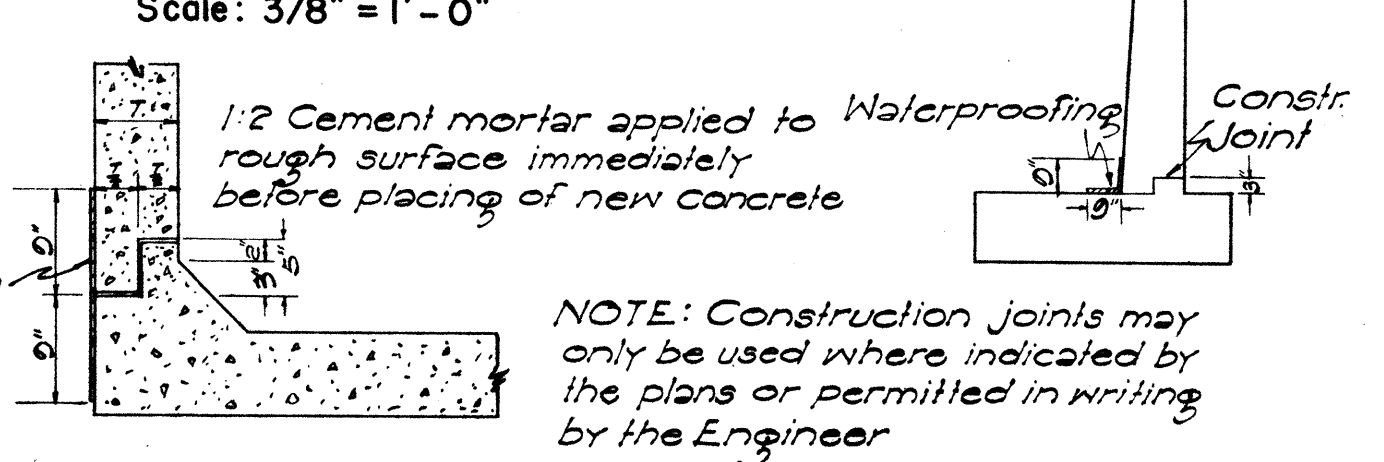
| D   | d      | W      | Cu. Yds. per Ft. |
|-----|--------|--------|------------------|
| 18" | 4"     | 2'-2"  | 0.11             |
| 24" | 4 1/2" | 2'-0"  | 0.14             |
| 30" | 5"     | 3'-4"  | 0.19             |
| 36" | 5 1/2" | 3'-11" | 0.26             |



**SECTION "A-A" SECTION "B-B" CONC. COLLAR FOR CONC. BOX CULVERT**  
Scale: 1/2" = 1'-0"

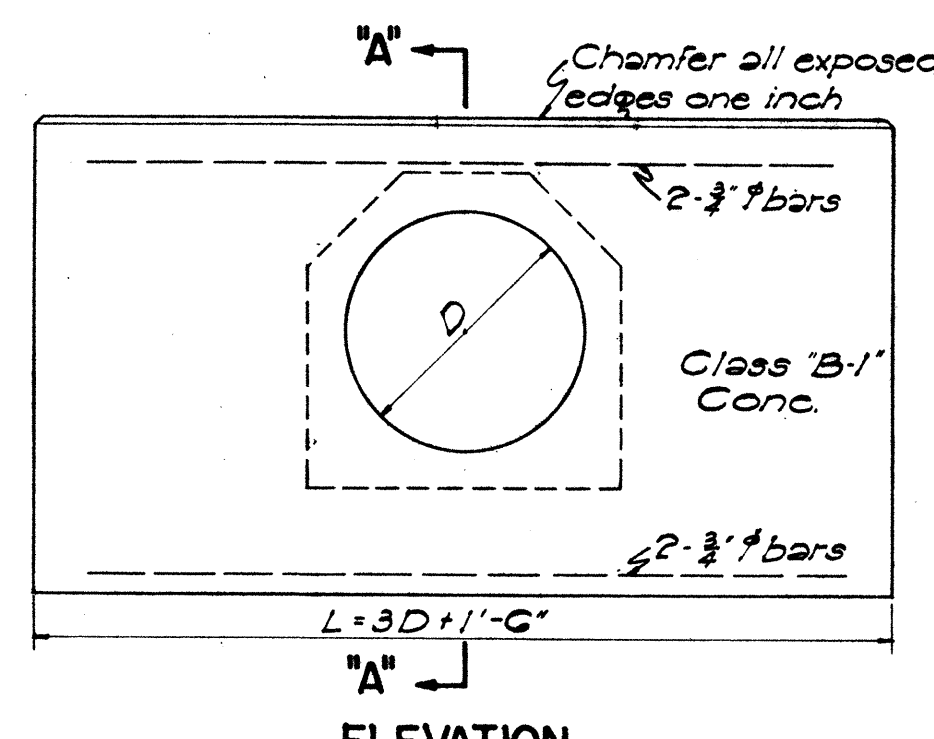
**Reinforcing Steel Note**  
All reinforcing steel shall be Billet Steel Bars A.S.T.M. A15 intermediate grade, or rail steel Bars A.S.T.M. A 16. Steel shall be made by the open hearth process. Deformations shall conform to A.S.T.M. A 305.

**DETAIL OF MASONRY DROP INTAKE**  
Scale: 3/8" = 1'-0"



**CONSTR. JOINT DETAILS**

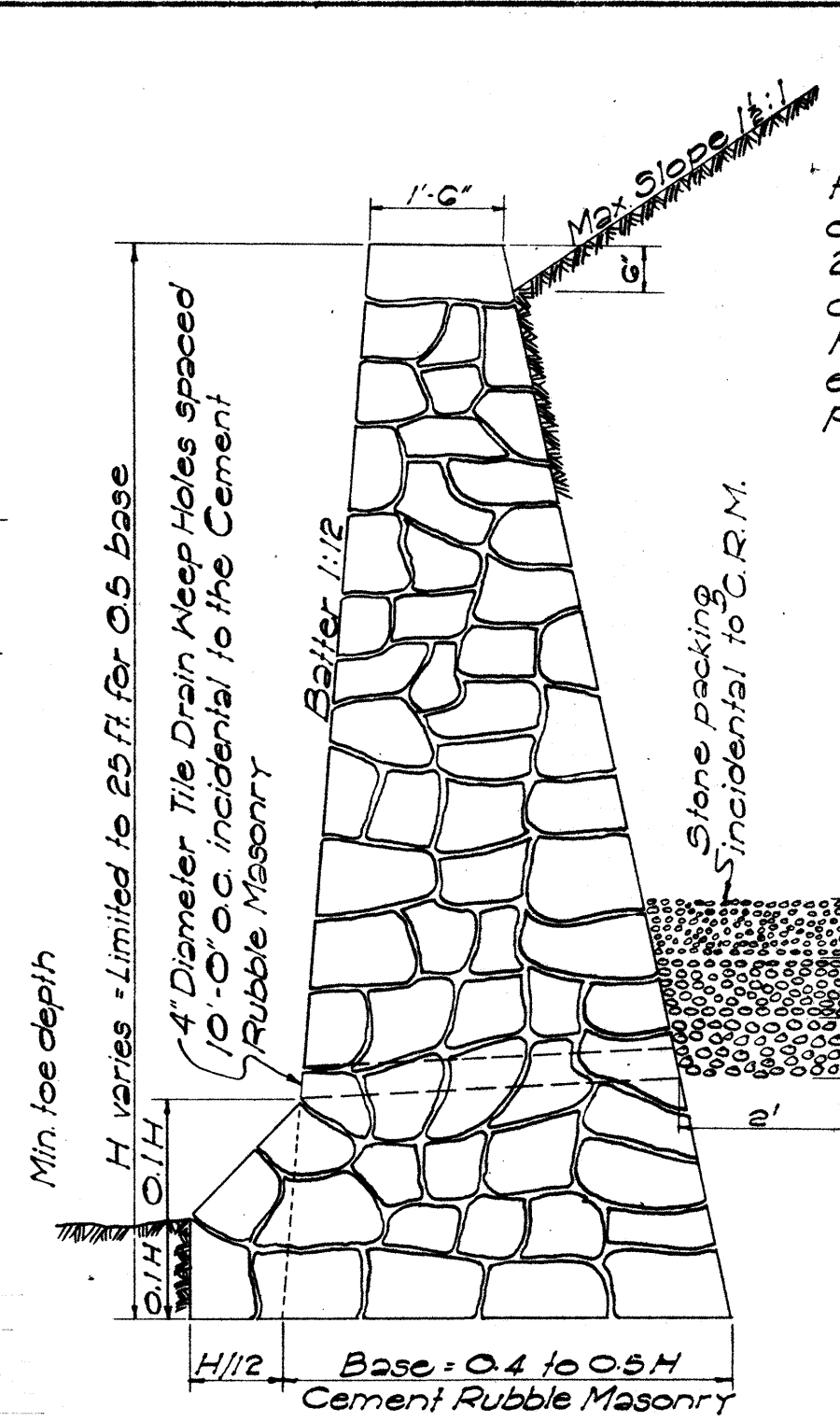
**METHOD OF APPLYING CONSTR. JOINT WATERPROOFING**  
(1) Map surface either side of joint as required with asphalt 50-100 penetration (A.S.T.M. Desig. D 5-25) applied at 200°F.  
(2) Apply one layer of 55-lb composition roofing to hot asphalt.  
(3) Map surface of composition roofing and 3" beyond all around with thick coat of asphalt as specified under (1).  
The above work is incidental to concrete and will not be paid for separately.



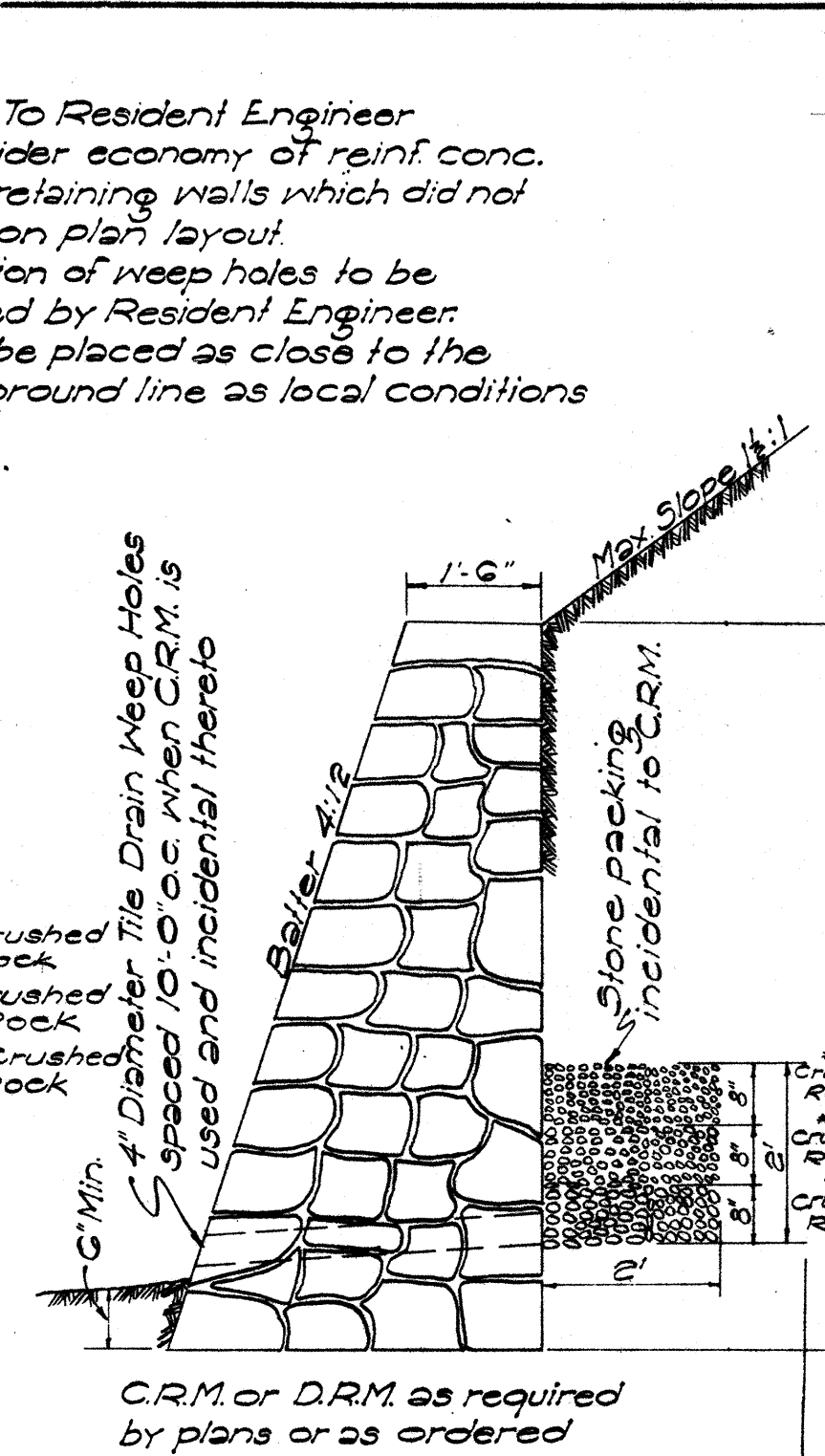
**ELEVATION SECTION "A-A" DETAIL OF CONCRETE HEADWALL**  
Scale: 1/2" = 1'-0"

| D   | B     | L      | H     | Cost-in-Place Conc. Culvert Cu. Yds. | Cost-in-Place Conc. Pipe Culvert Cu. Yds. | Steel For One Headwall No. of Bars Size Length Lbs. |
|-----|-------|--------|-------|--------------------------------------|-------------------------------------------|-----------------------------------------------------|
| 18" | 1'-6" | 6'-0"  | 4'-0" | 0.02                                 | 1.00                                      | 4 3/4" 5'-6" 33                                     |
| 24" | 1'-6" | 7'-0"  | 4'-0" | 1.25                                 | 1.98                                      | 4 3/4" 7'-0" 42                                     |
| 30" | 2'-0" | 9'-0"  | 5'-0" | 1.95                                 | 2.17                                      | 4 3/4" 8'-6" 51                                     |
| 36" | 2'-0" | 10'-6" | 5'-0" | 2.45                                 | 2.74                                      | 4 3/4" 10'-0" 60                                    |
| 42" | 2'-6" | 12'-0" | 6'-0" |                                      | 3.67                                      | 4 3/4" 11'-6" 69                                    |
| 48" | 2'-6" | 13'-6" | 6'-0" |                                      | 4.66                                      | 4 3/4" 13'-0" 78                                    |

**DETAIL OF CONCRETE HEADWALL**  
Scale: 1/2" = 1'-0"



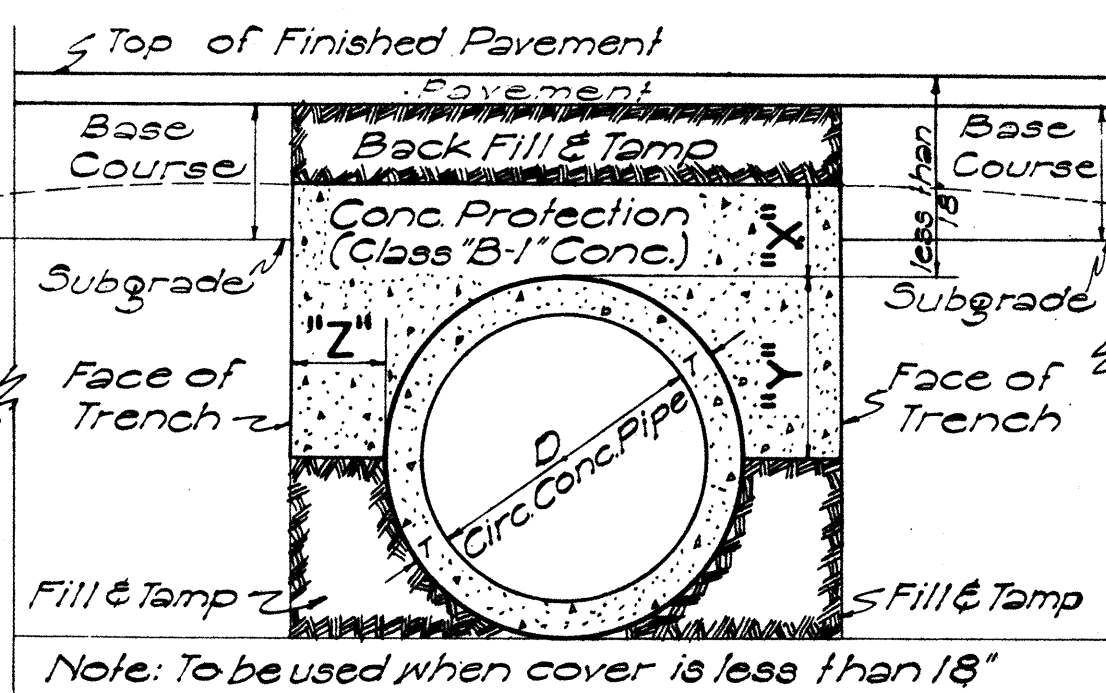
**SECTION OF HIGH CEMENT RUBBLE MASONRY RETAINING WALL OR SEAWALL**



**SECTION OF LOW MASONRY RETAINING WALL OR SEAWALL**

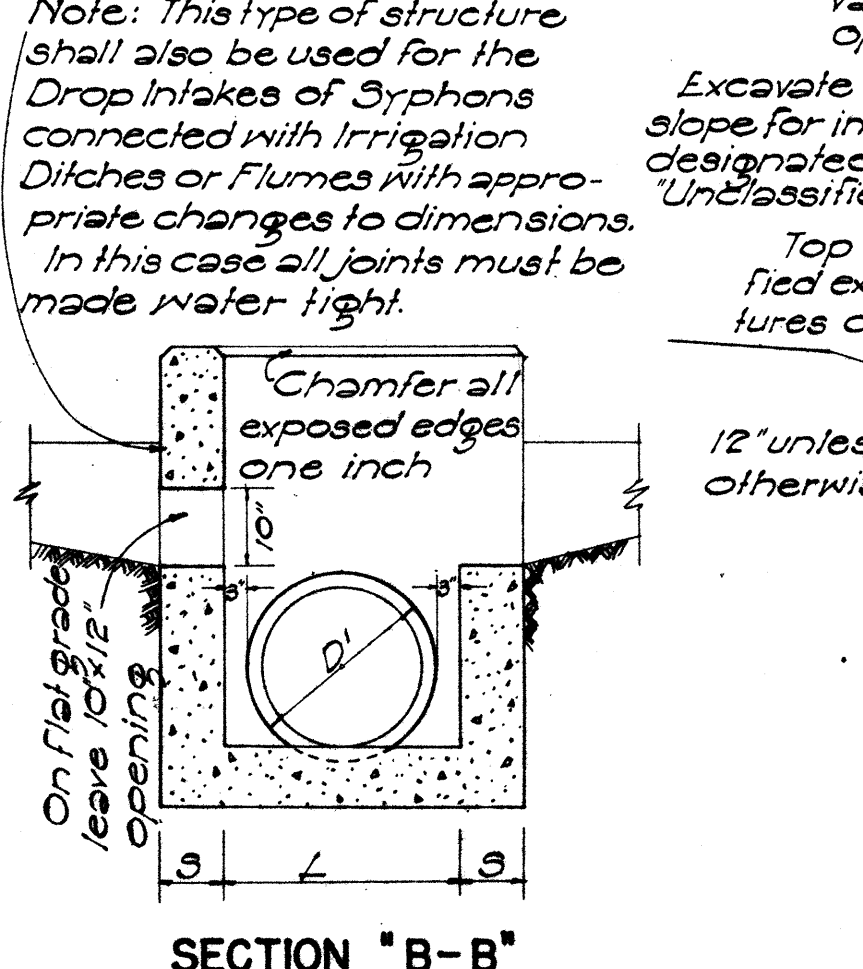
| D   | D   | L+D+G | Where Variables Equal |
|-----|-----|-------|-----------------------|
| 23" | 18" | 2'-5" | 1.41                  |
| 30" | 24" | 3'-0" | 1.72                  |
| 37" | 30" | 3'-7" | 2.32                  |
| 44" | 36" | 4'-2" | 2.73                  |
| 51" | 42" | 4'-9" | 3.54                  |
| 58" | 48" | 5'-4" | 4.01                  |

NOTE: Dimension "X" is assumed as 2'-4" in figuring the above quantities.



**SECT. OF CULVERT WITH CONC. PROTECTION**  
Scale: 1" = 1'-0"

| X           | Y     | Z                                     |
|-------------|-------|---------------------------------------|
| 6" for 18"D |       | Z must be from pipe to face of trench |
| 7" " 24"D   |       |                                       |
| 8" " 30"D   |       |                                       |
| 9" " 36"D   | D + T | Minimum = X                           |
| 10" " 42"D  |       | Maximum pay quantity will be Z = 12"  |
| 11" " 48"D  |       |                                       |
| 12" " 54"D  |       |                                       |



**DETAIL OF CONCRETE DROP INTAKE**  
Scale: 1/2" = 1'-0"

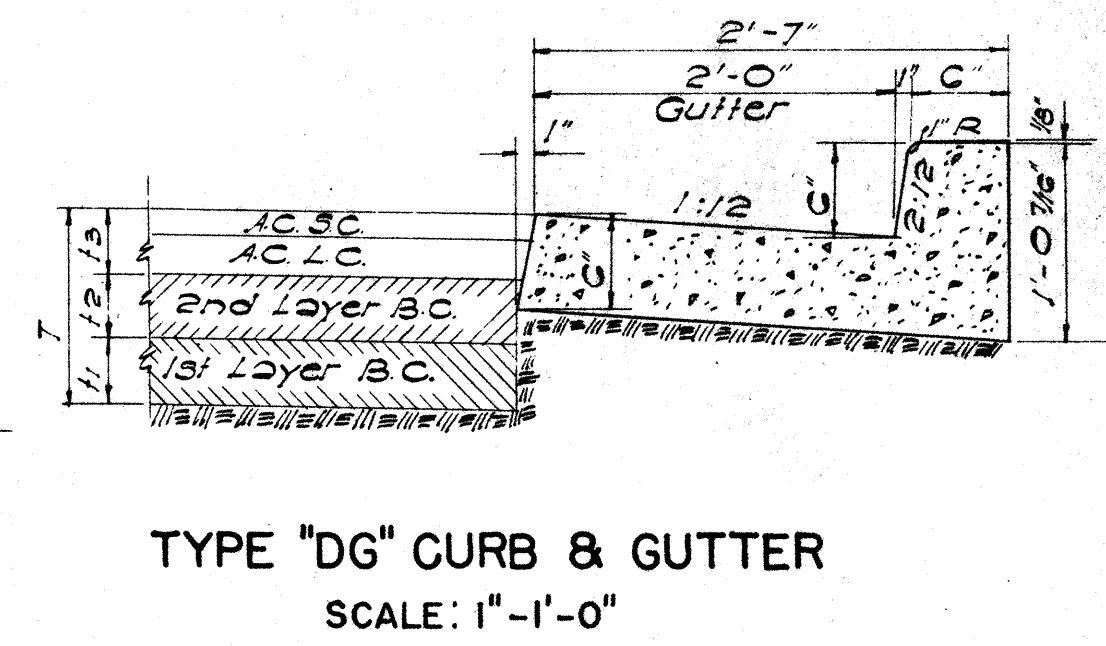
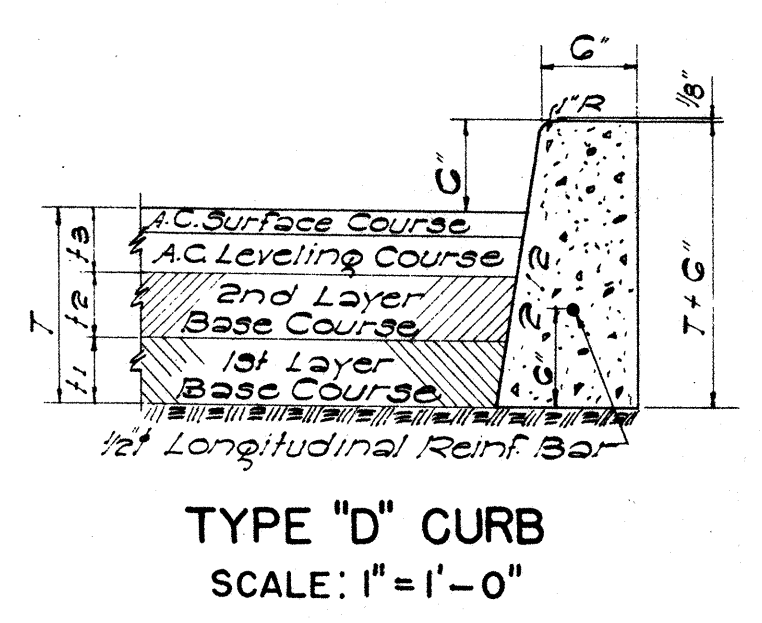
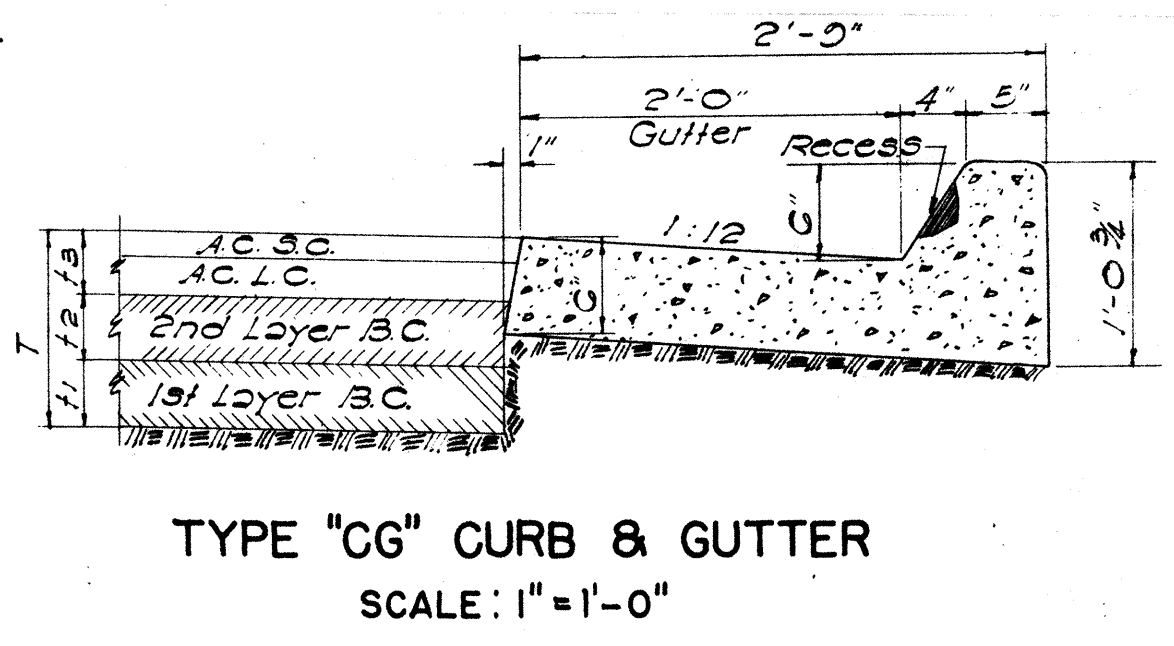
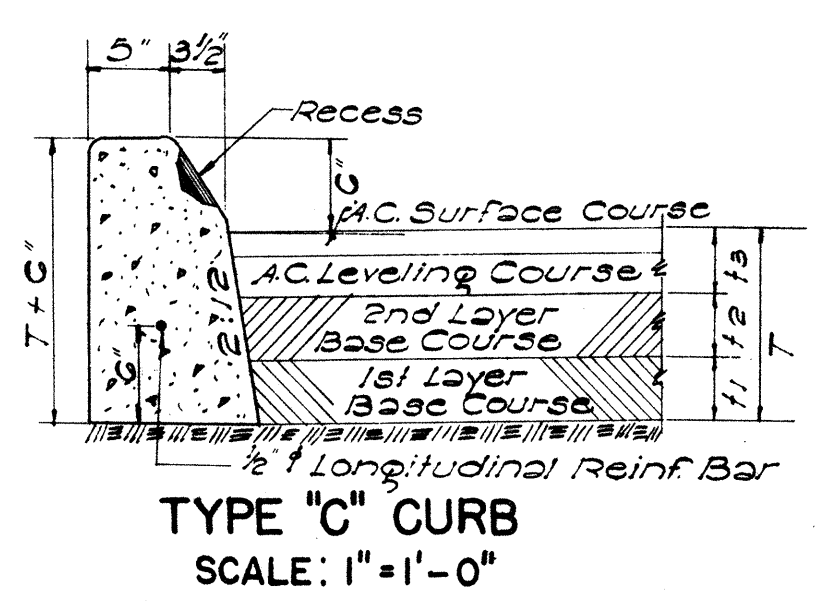
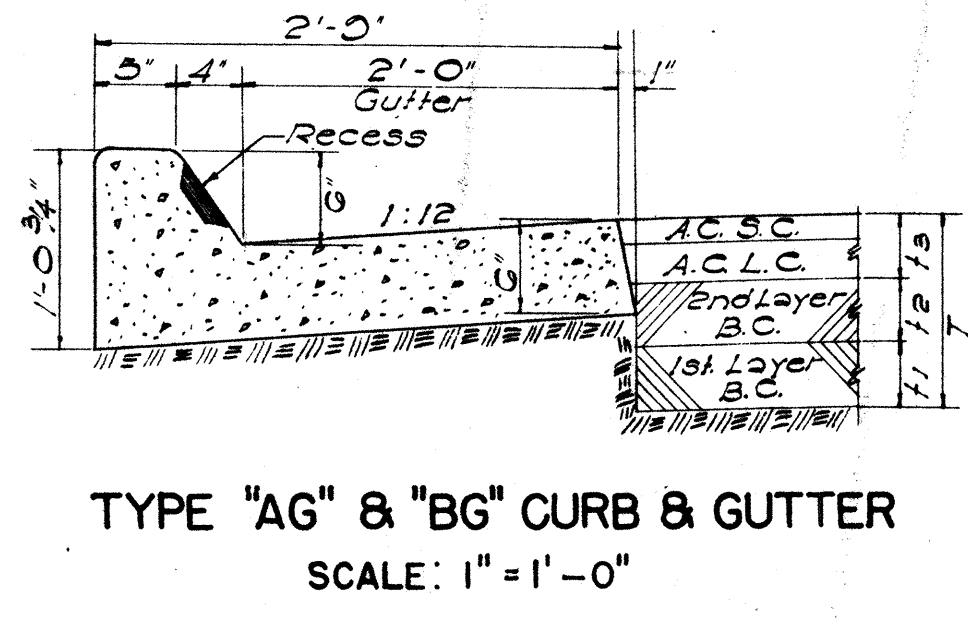
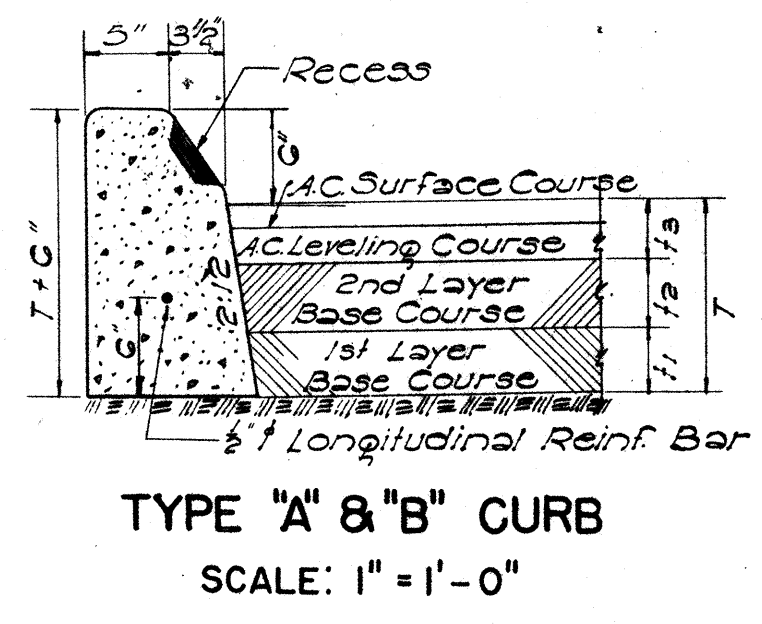
TERRITORIAL HIGHWAY DEPARTMENT  
TERRITORY OF HAWAII  
STANDARD DETAILS  
DROP INTAKES, RETAINING WALLS,  
HEADWALLS, CONSTRUCTION JOINTS  
SCALES AS NOTED

APPROVED: *Paul E. Mueller*  
TERRITORIAL HIGHWAY ENGINEER

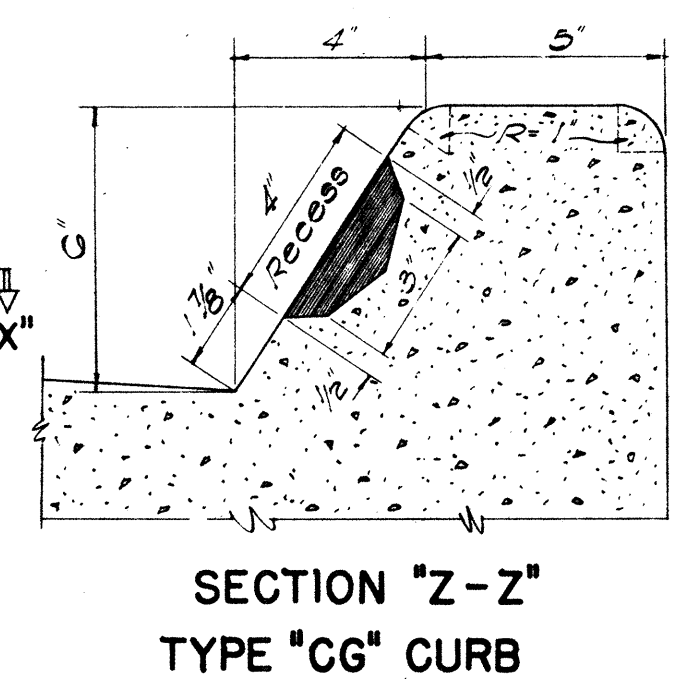
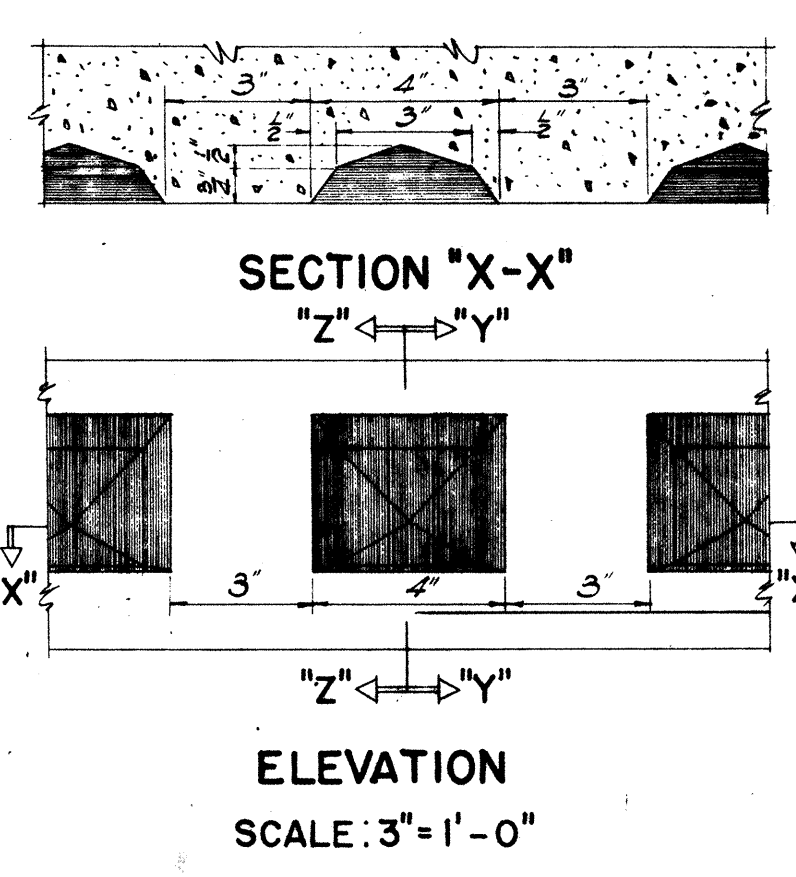
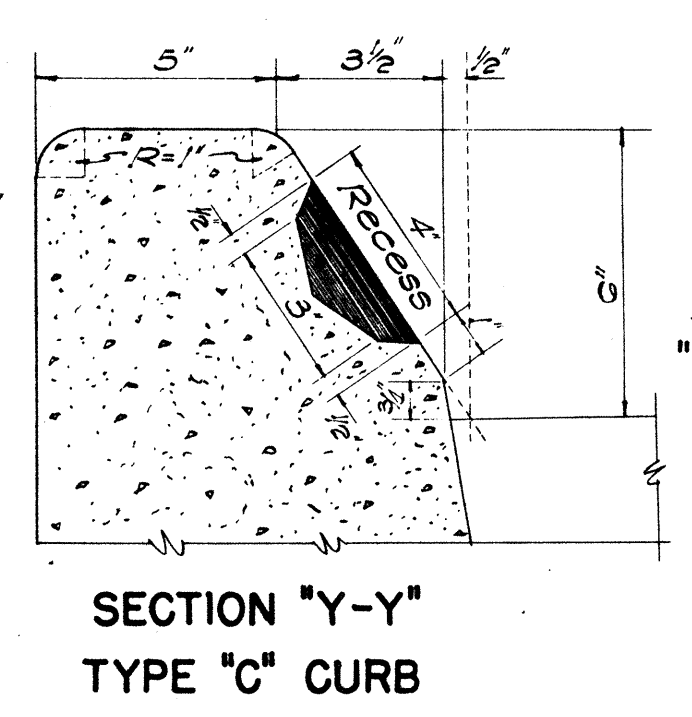
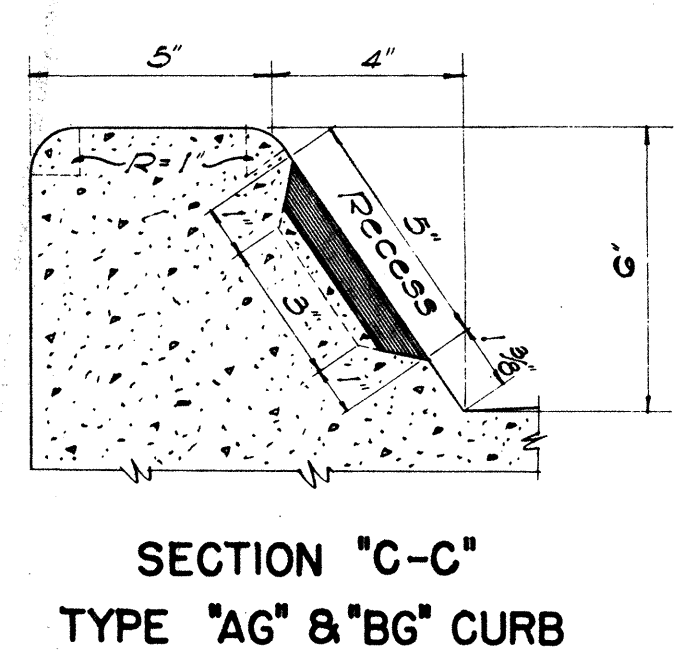
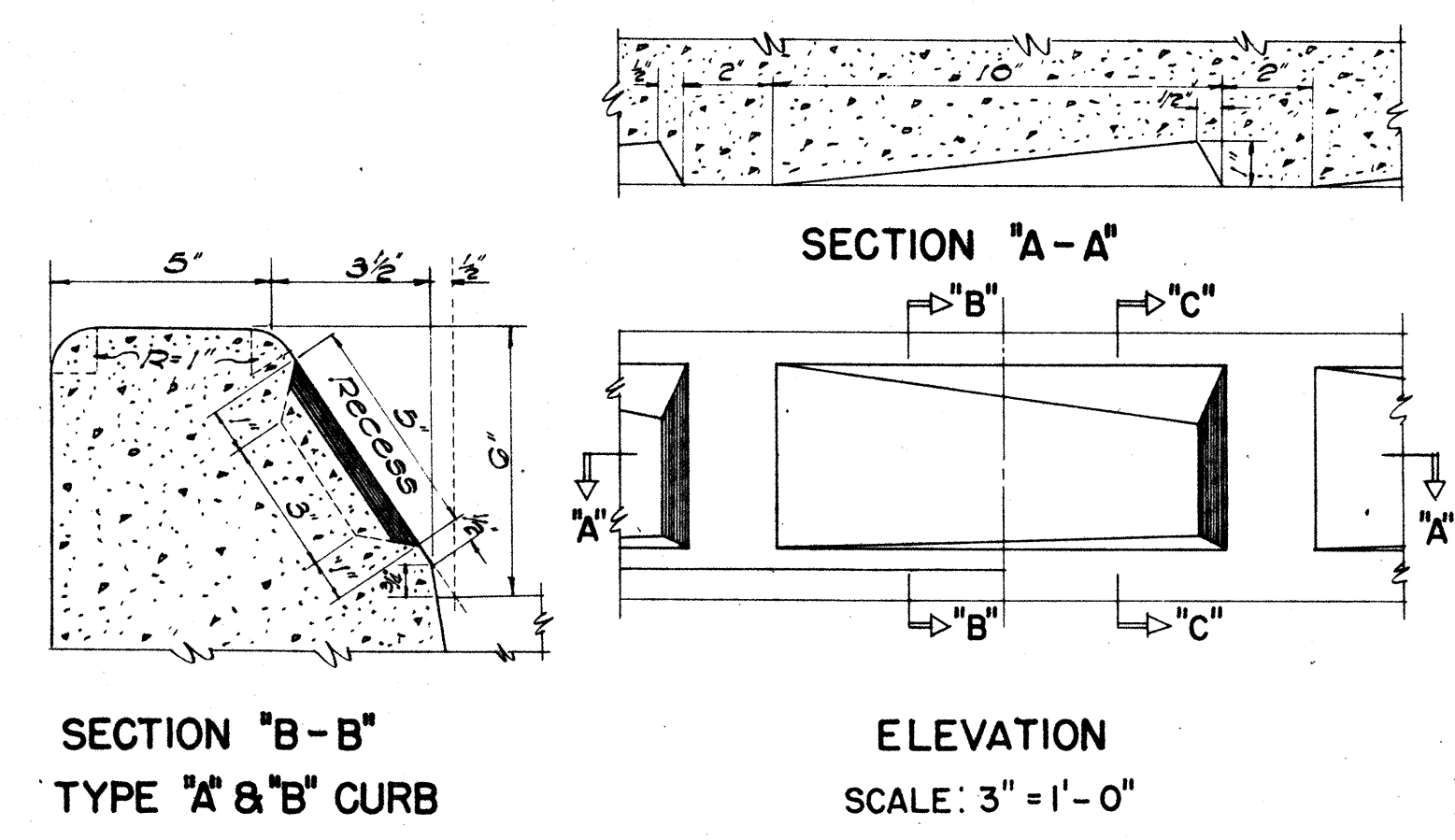
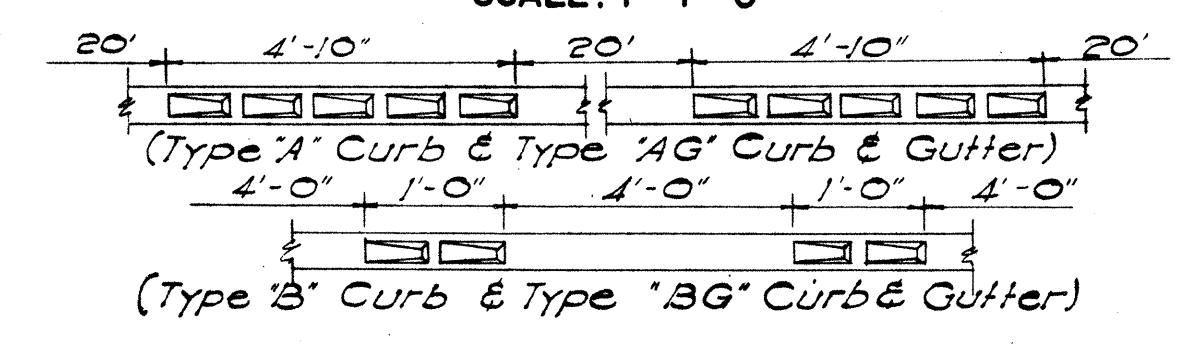
There may be more than one over-all curb height used in this project depending upon thickness of Base Course and A.C. or P.C. Conc. Pavement, but this shall make no difference in item under which payment is made. 1/2" & Longitudinal Reinforcing Bars in Conc. Curbs and/or Gutters shall be lapped 12" at splices.

NOTE: For Detail of Precast Concrete Curb, see Sht. No. 5627.82

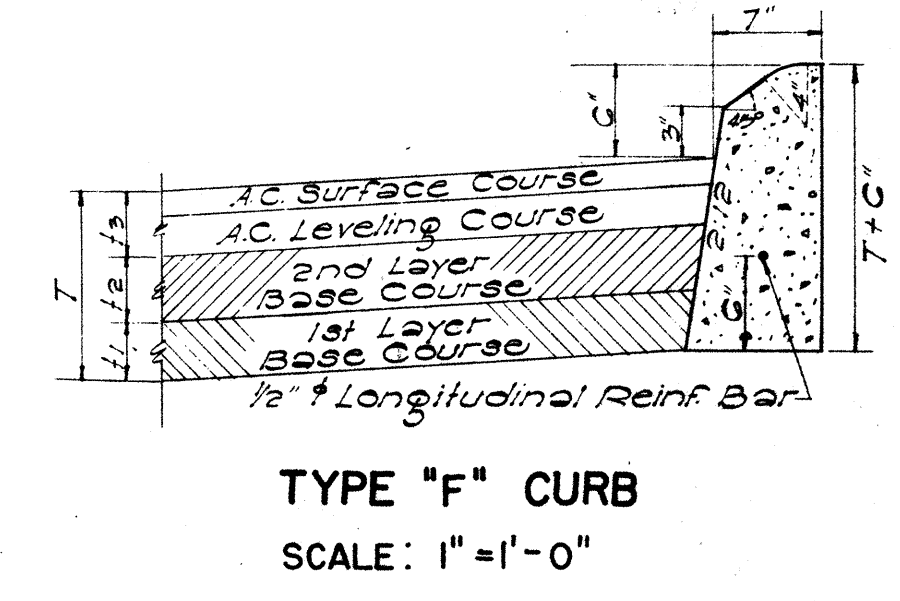
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | U 59 (G)           | 1954        | 88        | 104          |



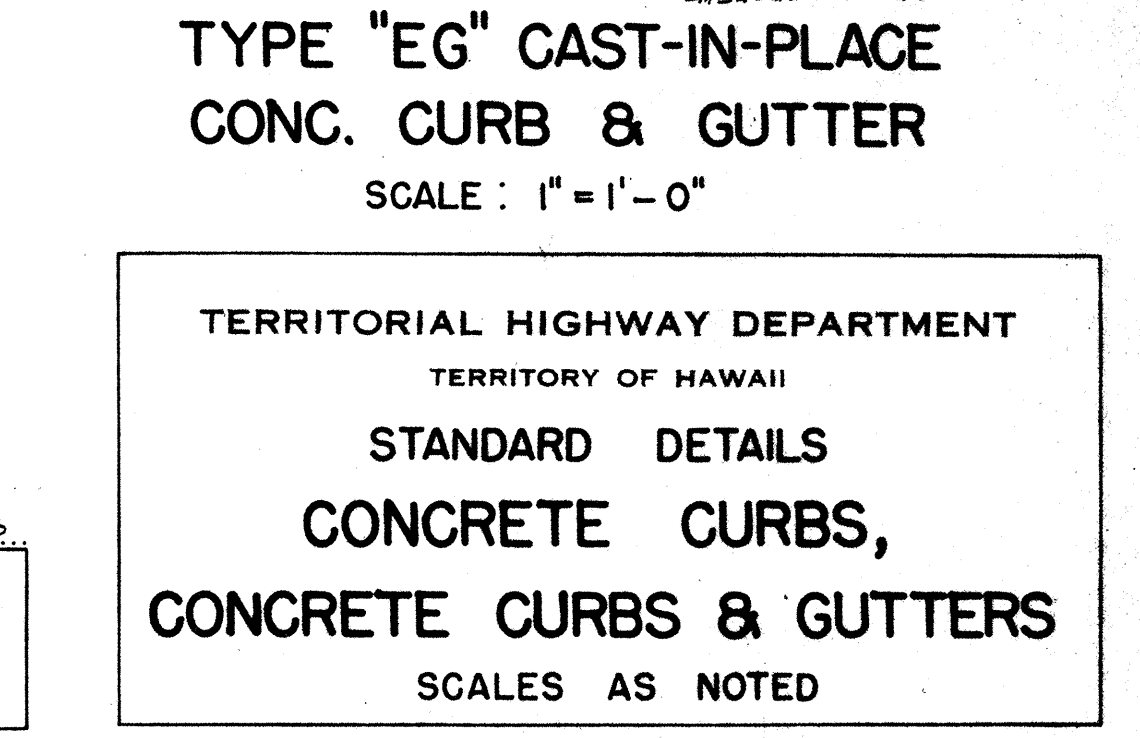
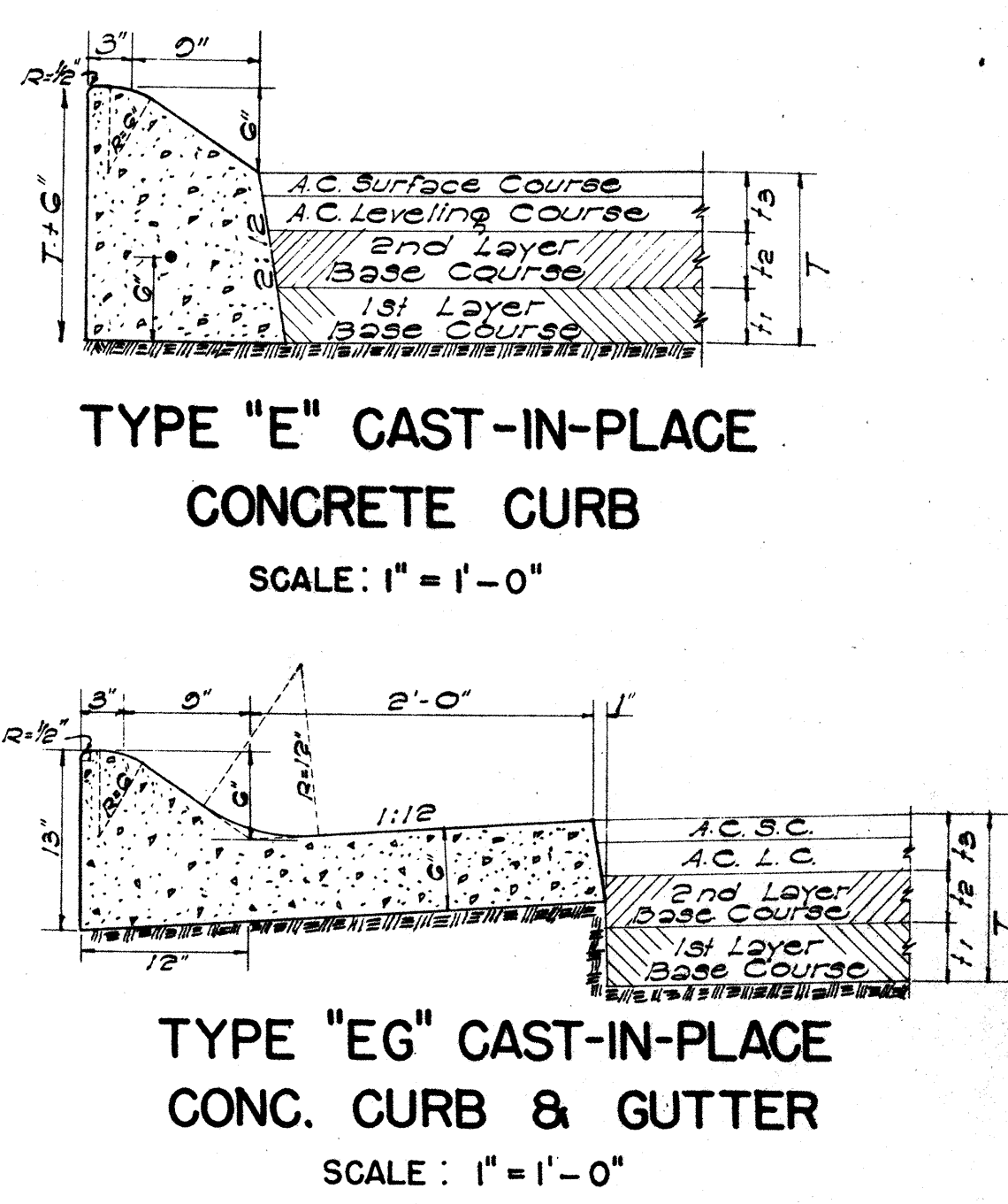
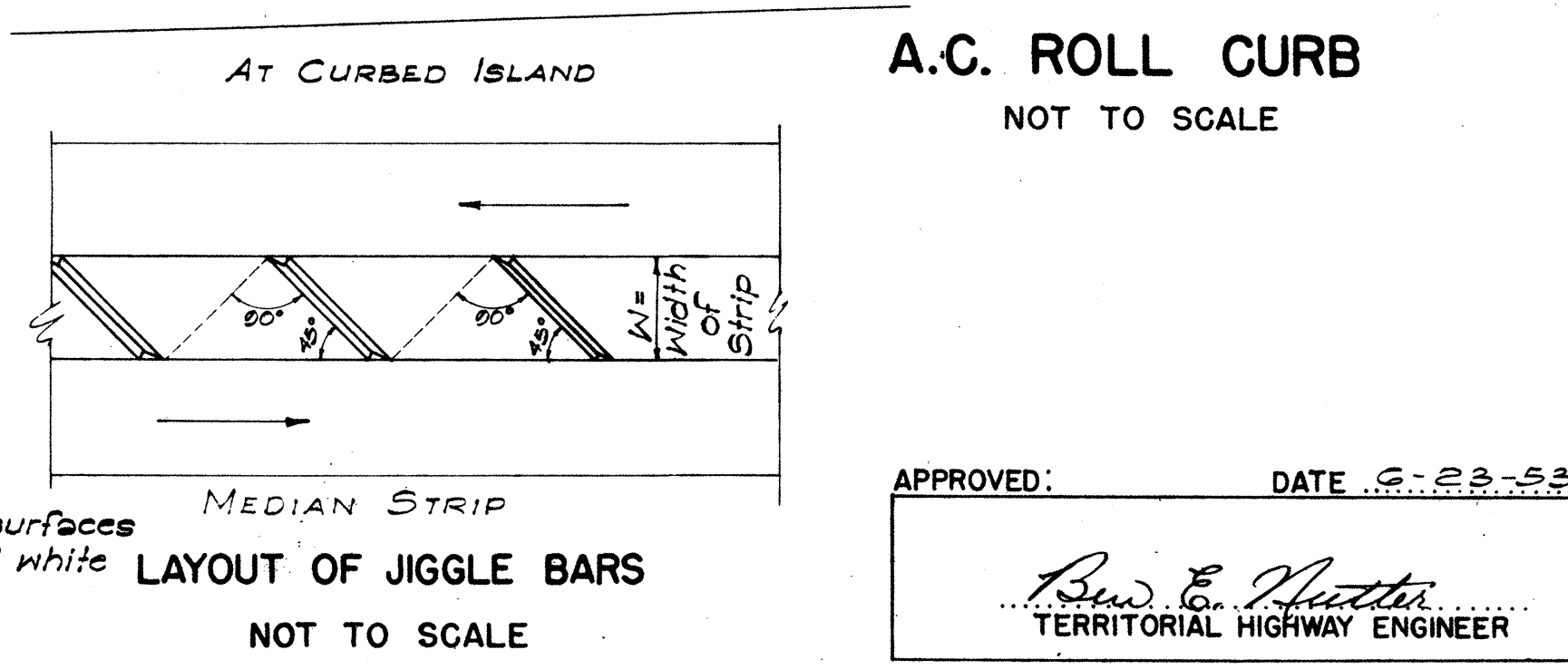
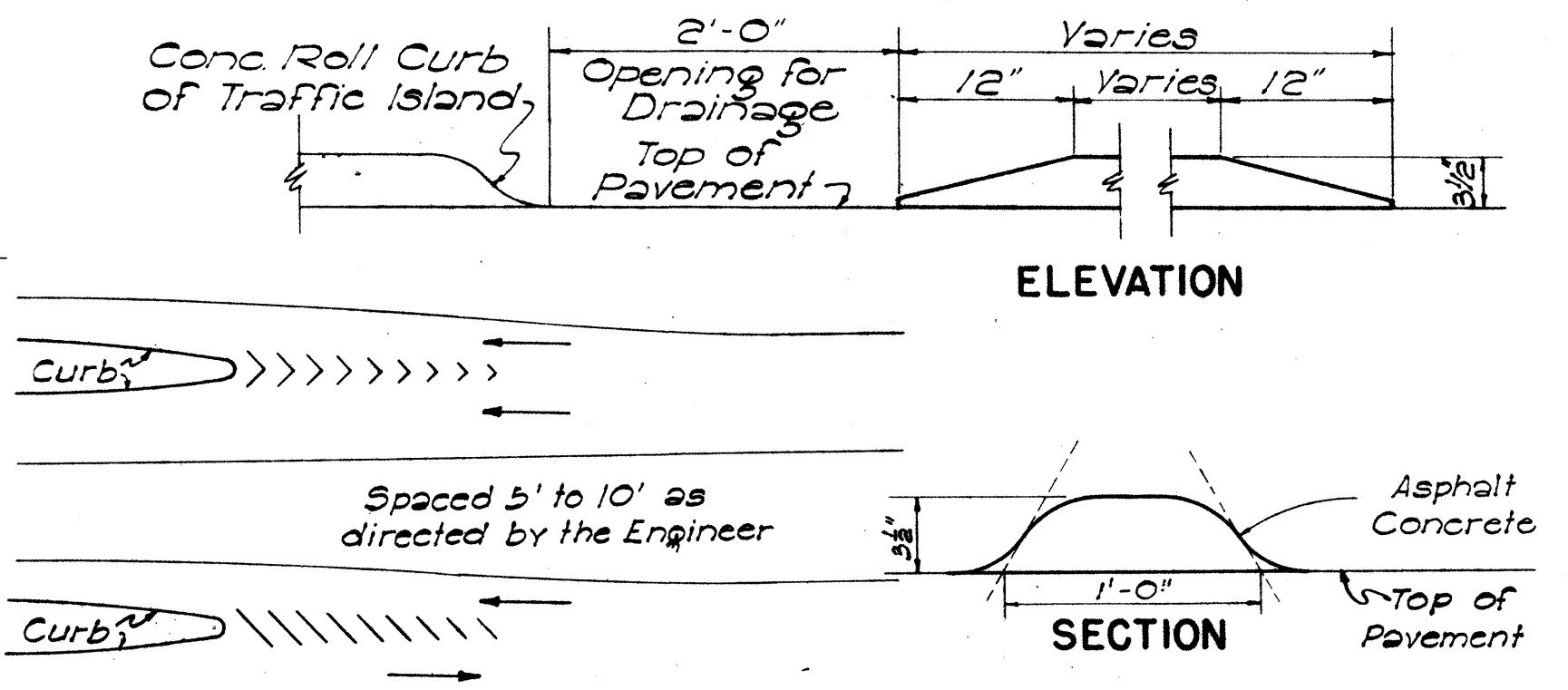
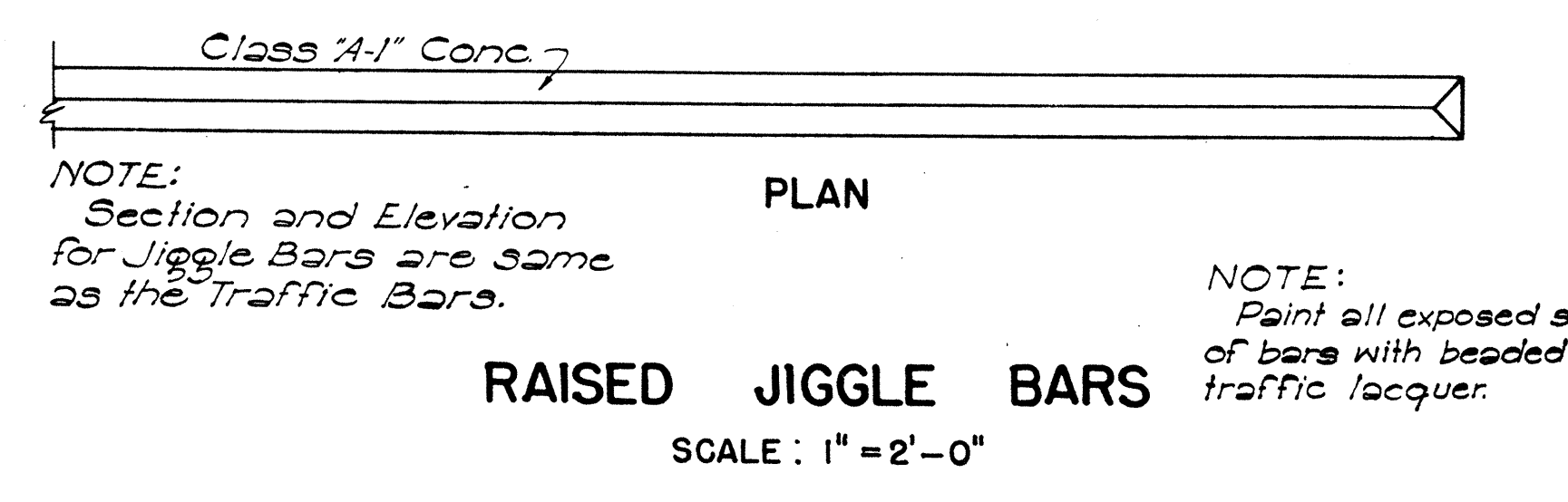
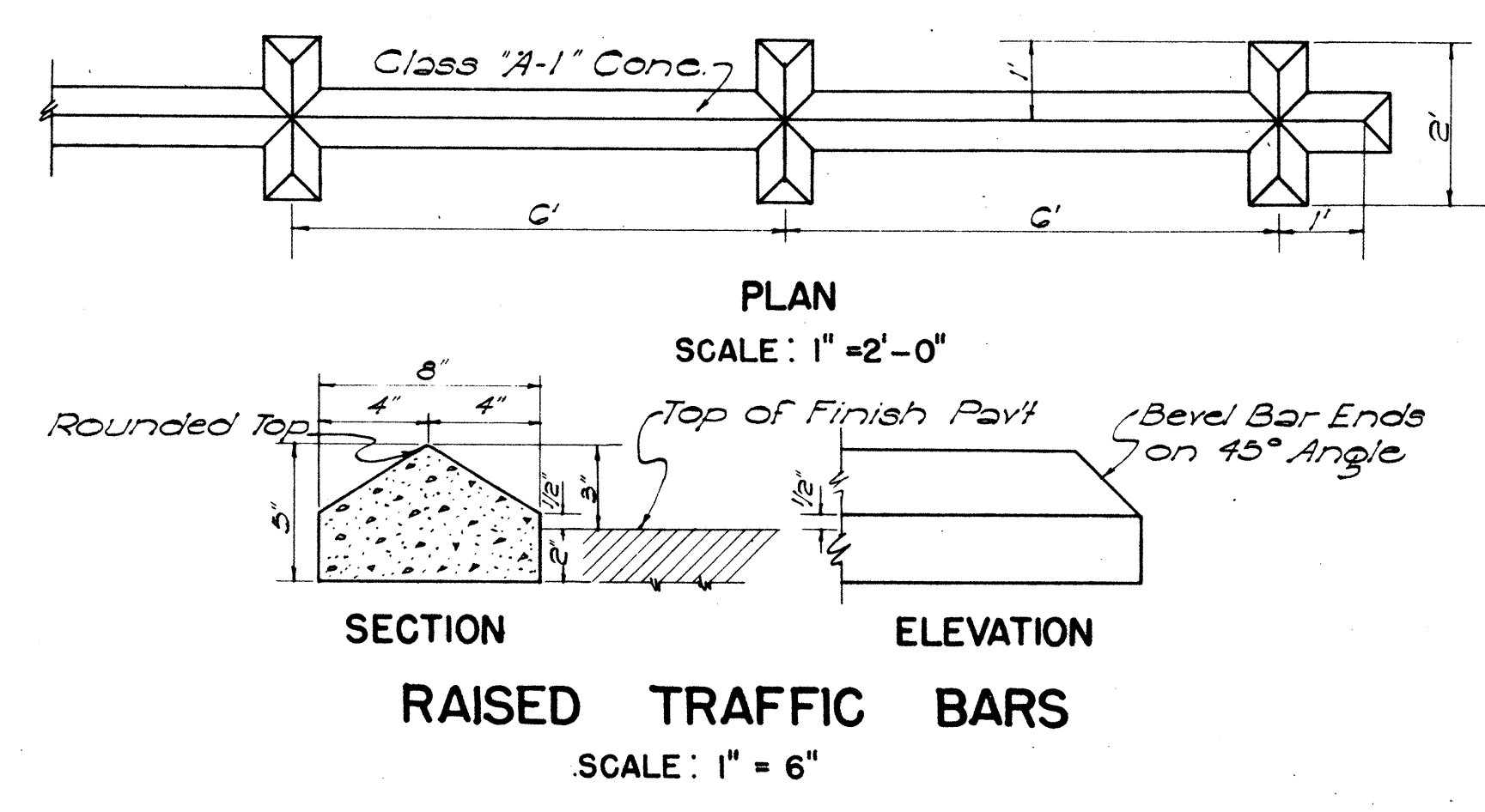
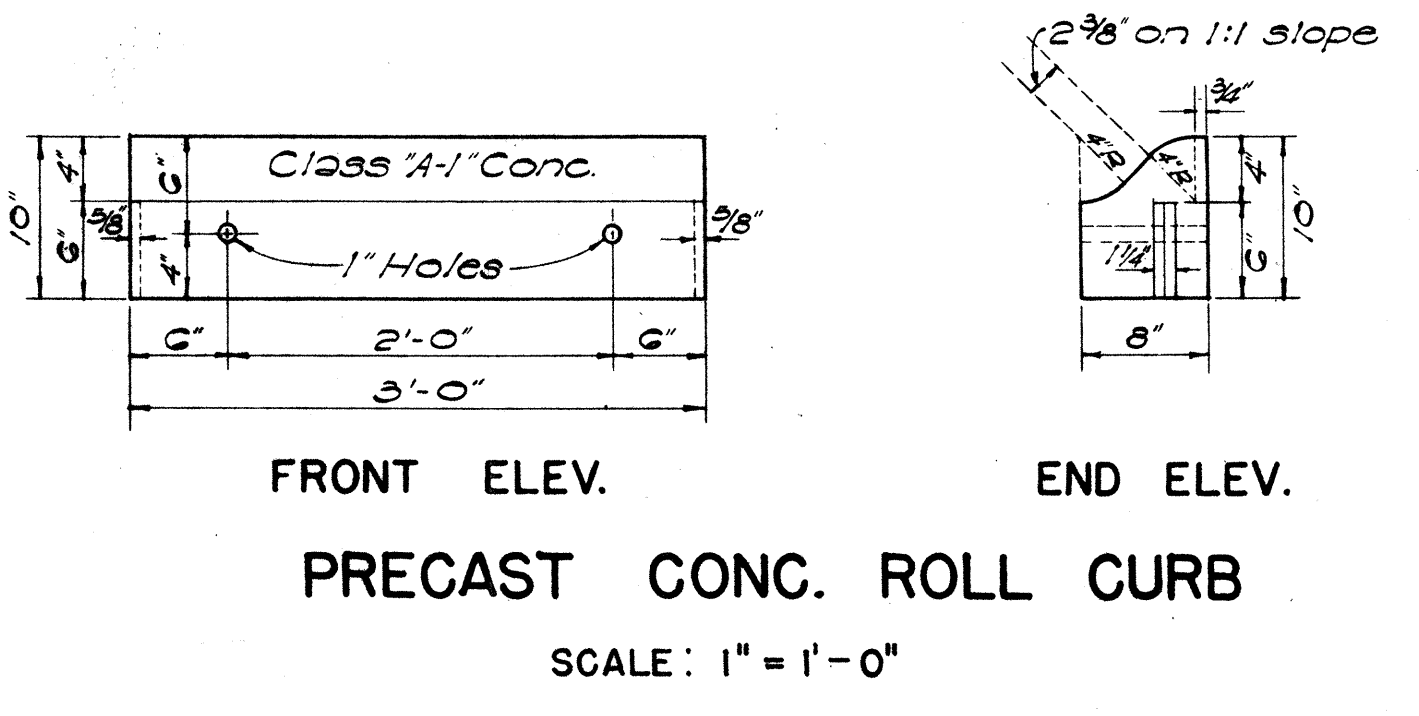
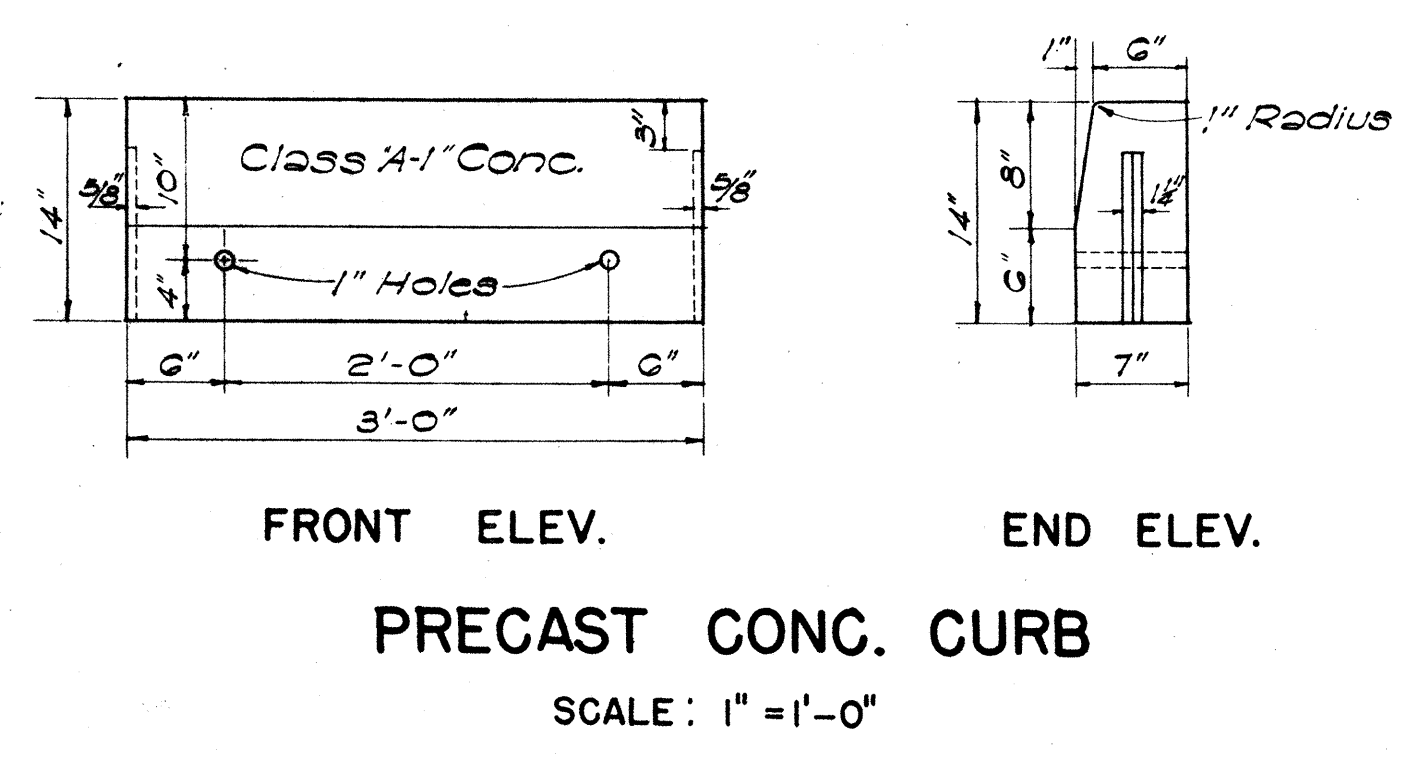
General Note Covering All Types of Curbs:  
Occasionally curb rests on first layer of base course. See typical sections.



NOTES:  
1) Types 'AG', 'BG', 'CG', 'DG' and 'EG' Concrete Curbs and Gutters are to be poured monolithically.  
2) Types 'A', 'B', and 'C' Curbs and Types 'AG', 'BG' and 'CG' Curbs and Gutters occur at Median Strips and Traffic Islands.  
3) Shaded area in Curbs are to be painted with an approved white lacquer. (One Coat)  
4) All Conc. Curbs and Gutters shown herein are to be of Class 'A-1' Conc. and Cast-in-Place.



# DETAILS OF CAST-IN-PLACE CONC. CURBS AND GUTTERS



TERRITORIAL HIGHWAY DEPARTMENT  
TERRITORY OF HAWAII  
STANDARD DETAILS  
CONCRETE CURBS,  
CONCRETE CURBS & GUTTERS  
SCALES AS NOTED

SHEET No 3 OF 6 SHEETS

5627.88

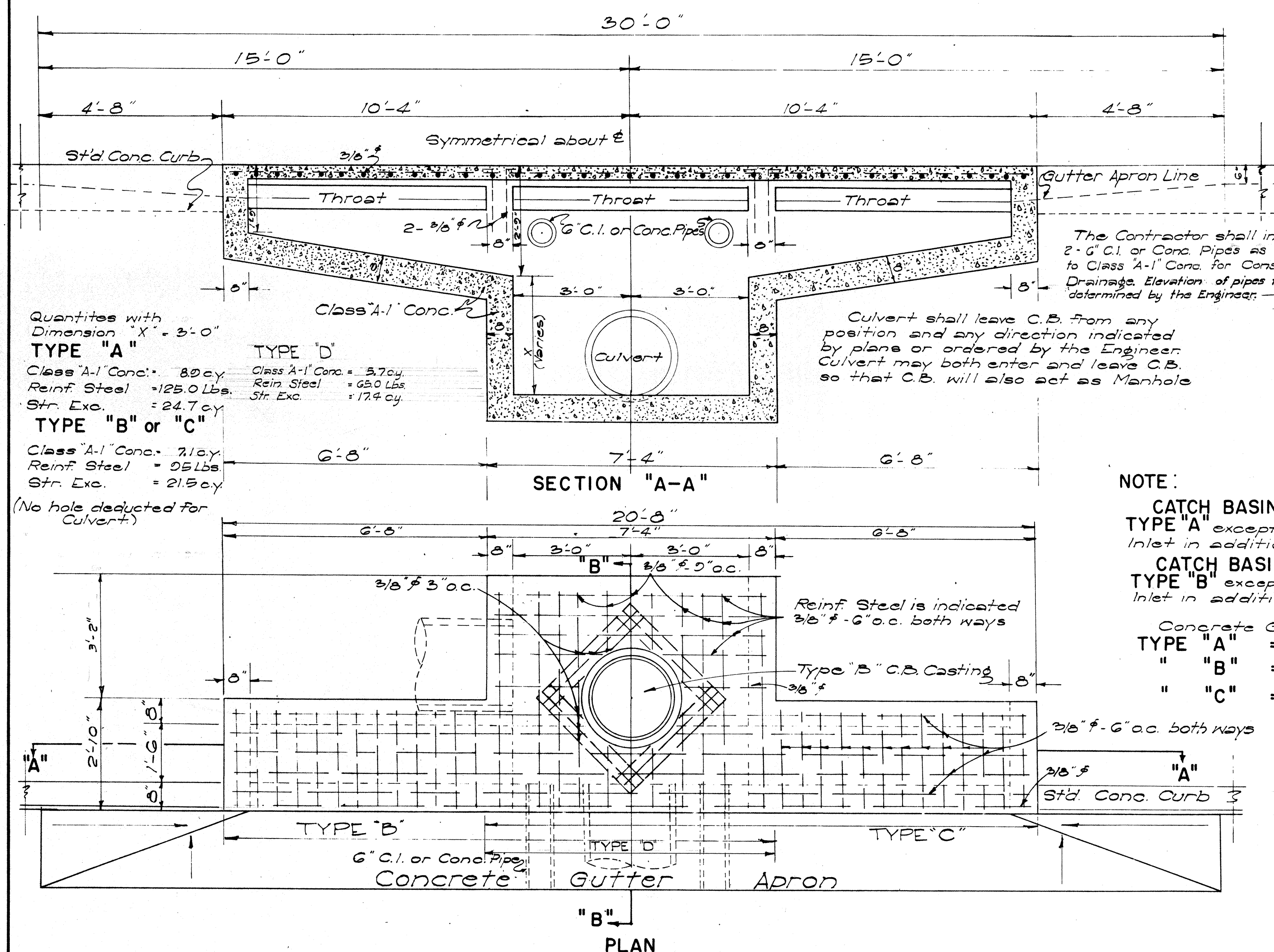
DATE: \_\_\_\_\_  
DESIGNED BY: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
ORIGINAL PLAN: \_\_\_\_\_  
NOTE BOOK: \_\_\_\_\_  
QUANTITIES CHECKED BY: \_\_\_\_\_  
NO. \_\_\_\_\_

NOTE:  
Section and Elevation for Jiggle Bars are same as the Traffic Bars.

NOTE:  
Paint all exposed surfaces of bars with beaded white traffic lacquer.

APPROVED: \_\_\_\_\_ DATE: 6-23-53  
TERRITORIAL HIGHWAY ENGINEER

| FED. ROAD<br>DIST. NO. | STATE | FED. AID<br>PROJ. NO. | FISCAL<br>YEAR | SHEET<br>NO. | TOTAL<br>SHEET |
|------------------------|-------|-----------------------|----------------|--------------|----------------|
| HAWAII                 | HAW.  | U 59 (6)              | 1954           | 87           | 104            |



NOTE :

CATCH BASIN TYPE "B" similar to TYPE "A" except it has only Left Side Inlet in addition to the Main Box.

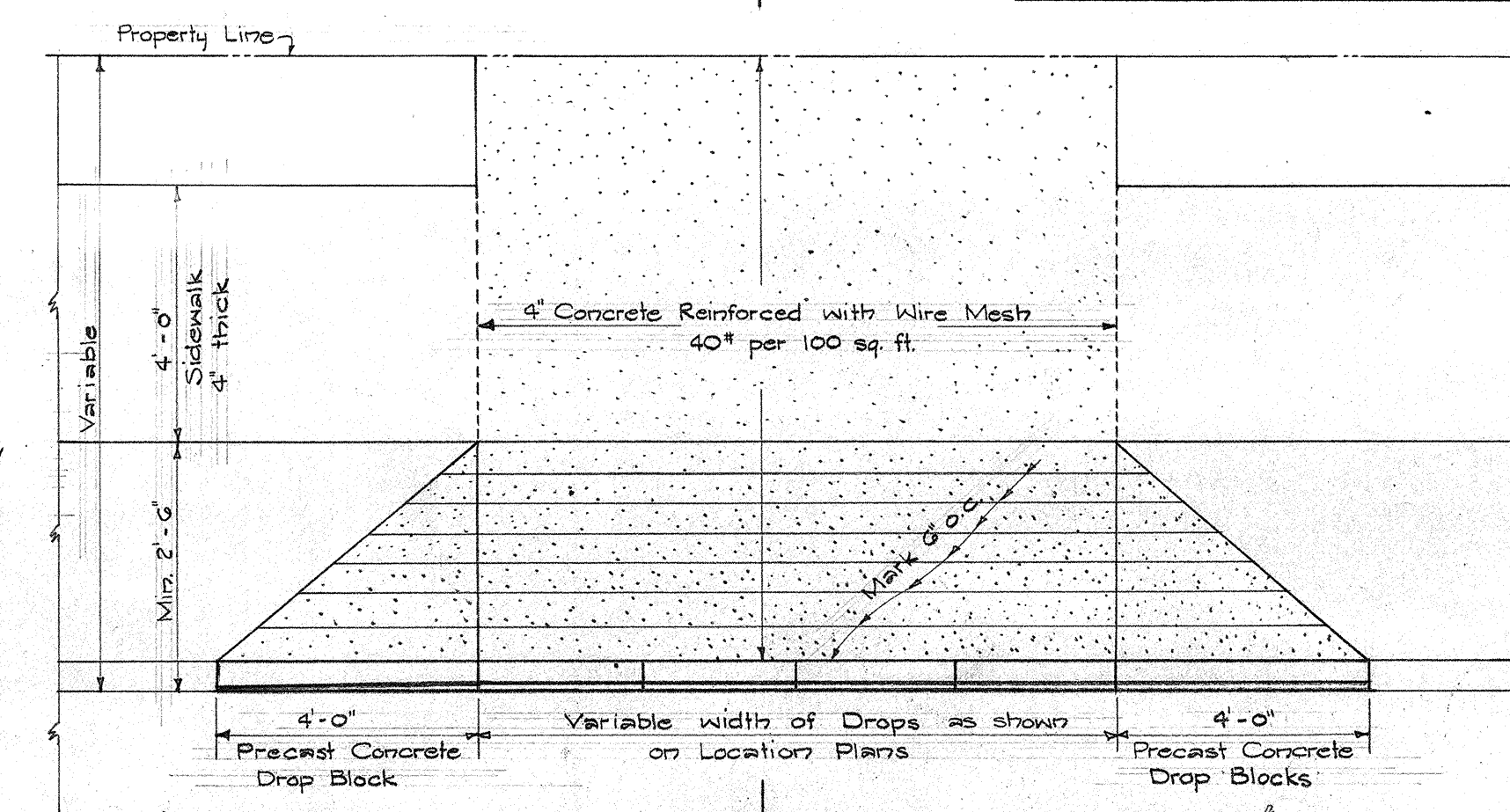
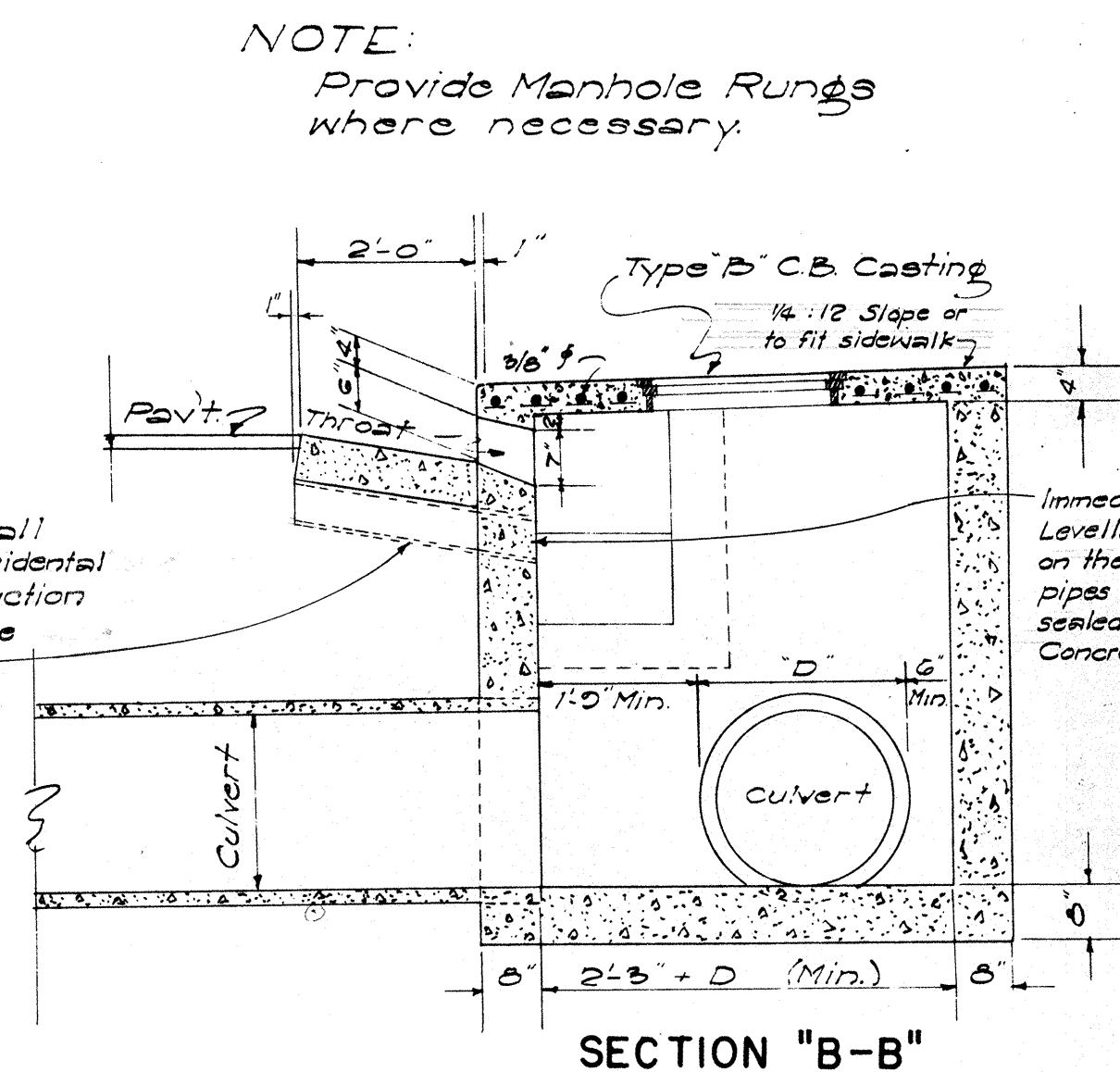
CATCH BASIN TYPE "C" similar to TYPE "B" except it has only Right Side Inlet in addition to the Main Box.

Concrete Gutter Length:

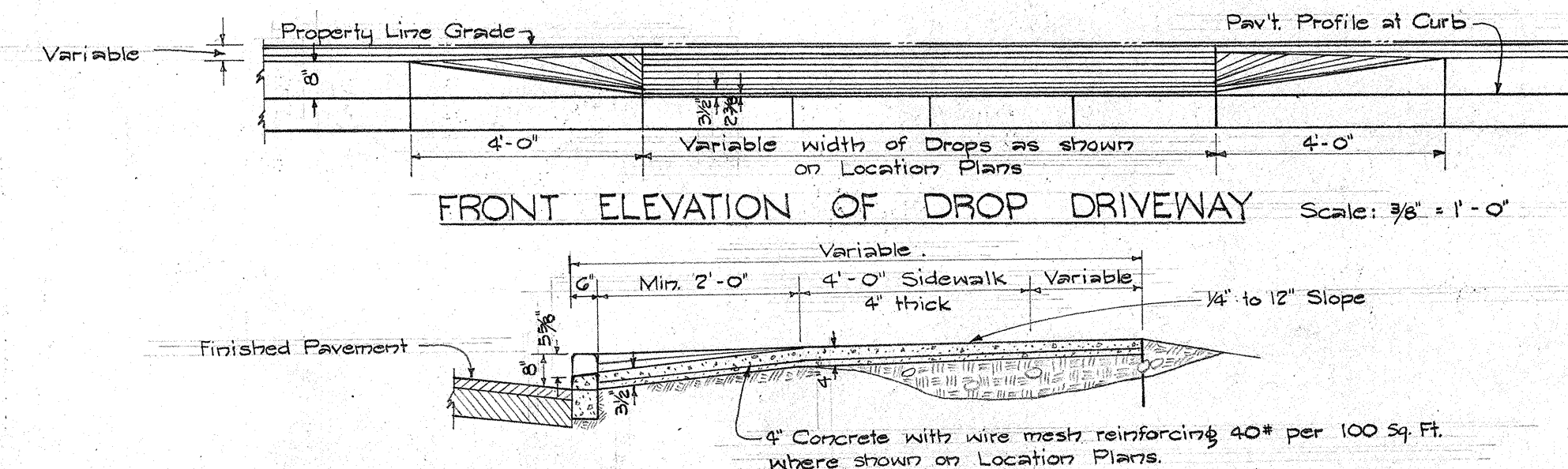
|          |   |        |
|----------|---|--------|
| TYPE "A" | = | 30'-0" |
| " " "B"  | = | 25'-4" |
| " " "C"  | = | 25'-4" |

NOTE:

In all Standard Concrete Catch Basins, the location of Type 'B' C.B. Casting shall be determined by the Resident Engineer.

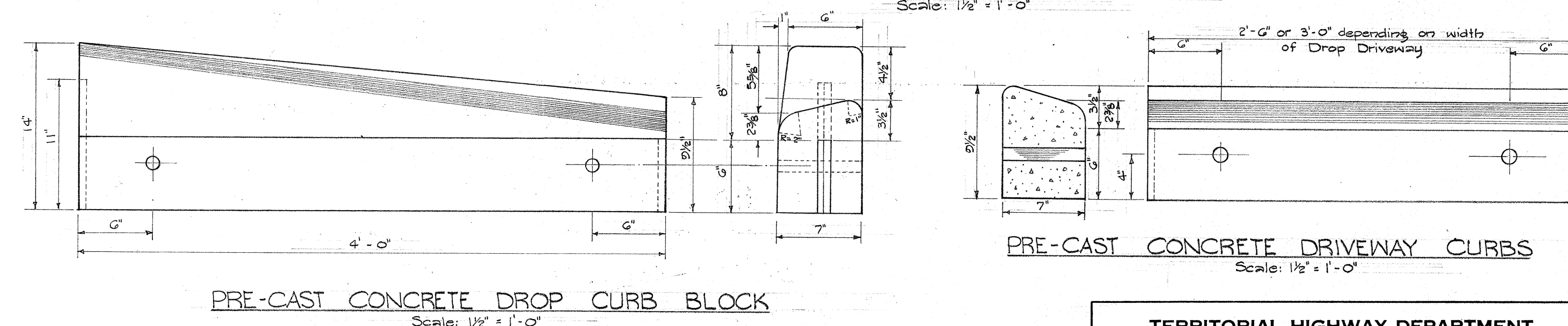
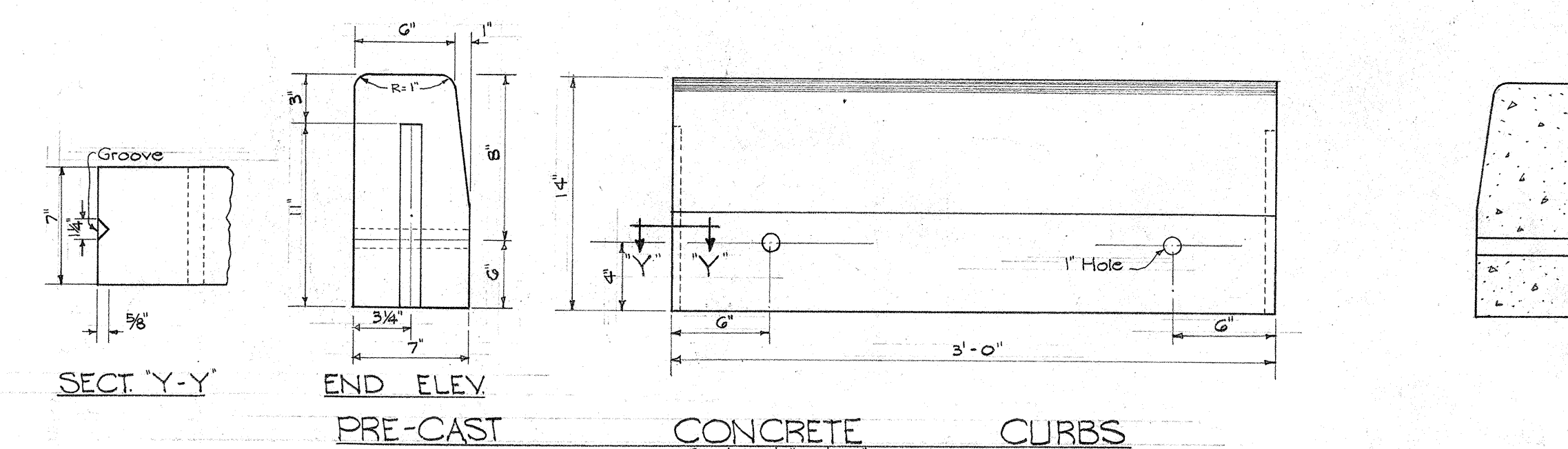
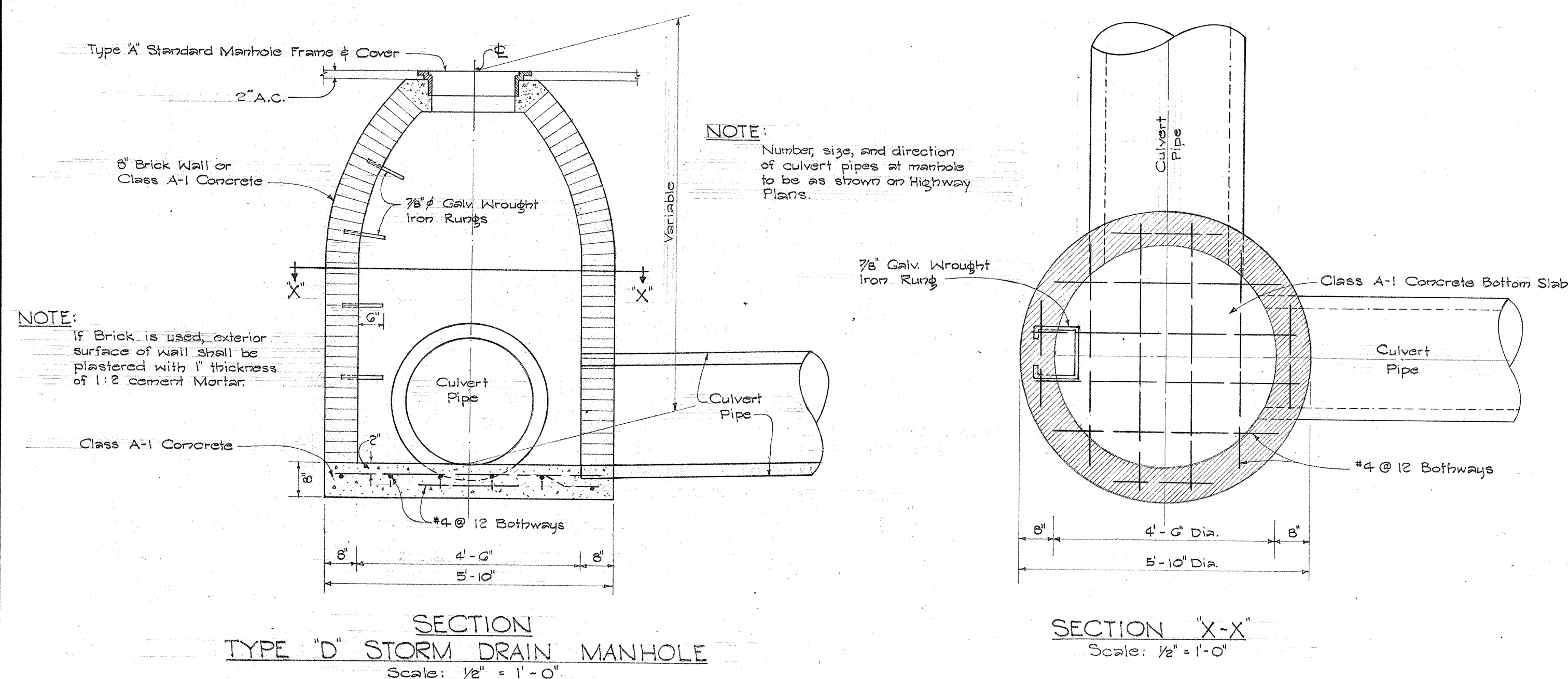


PLAN OF DROP DRIVEWAY



SECTION: "M-M"  
OF DROP DRIVEWAY  
Scale:  $\frac{3}{8}" = 1' - 0"$

DETAIL OF CONCRETE CATCH BASIN TYPE "A"  
SCALE: 1/2" = 1'-0"



**TERRITORIAL HIGHWAY DEPARTMENT**  
**TERRITORY OF HAWAII**  
**STANDARD DETAILS**  
**CATCH BASINS**

SCALES AS NOTED

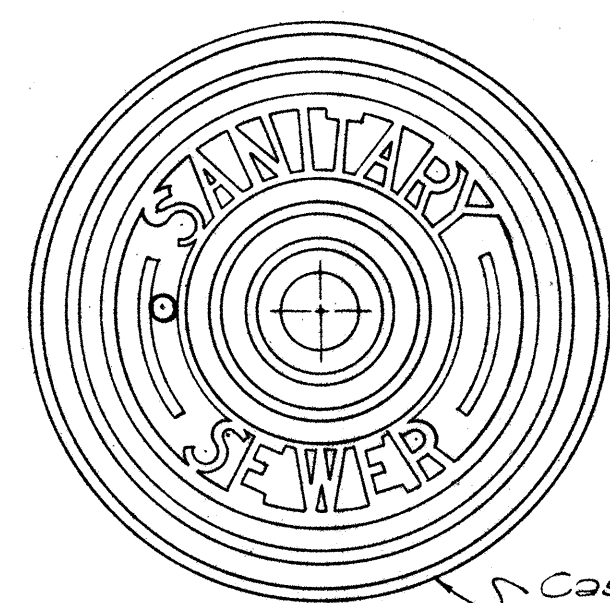
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SHEET No 4 OF 6 SHEETS

APPROVED: DATE 6-23-53

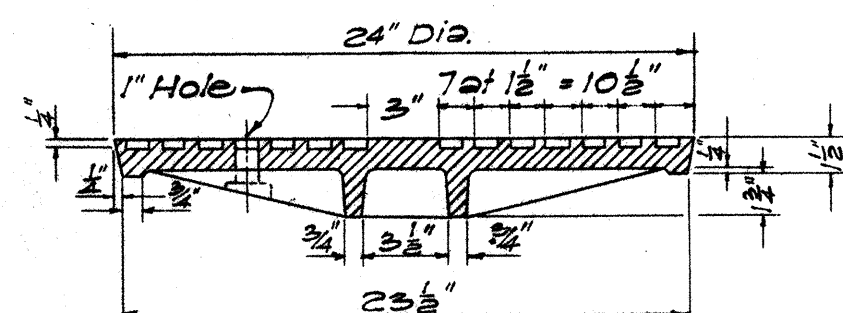
Bur E. Nutter  
TERRITORIAL HIGHWAY ENGINEER

NOTE: Stock Pattern From Novelty Foundry ~ Honolulu

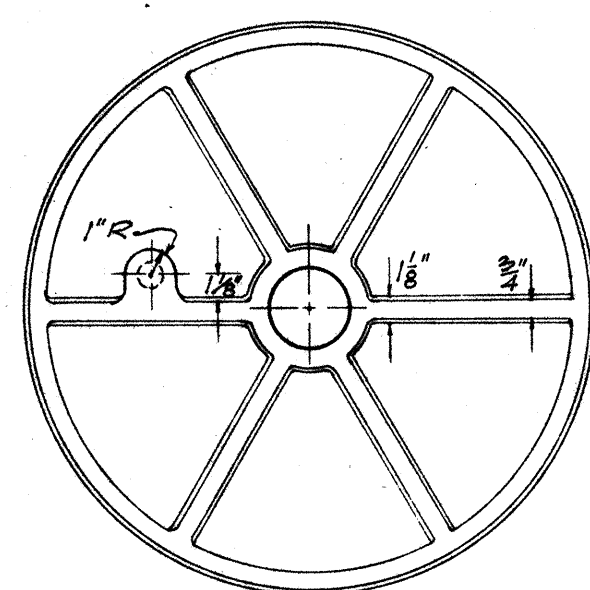


NOTE: The Cover for Water Manhole shall be the same as for Sanitary Sewer except that the word "WATER" shall be substituted for "SANITARY SEWER". The frames for Sanitary Sewer and Water Covers shall be the same.

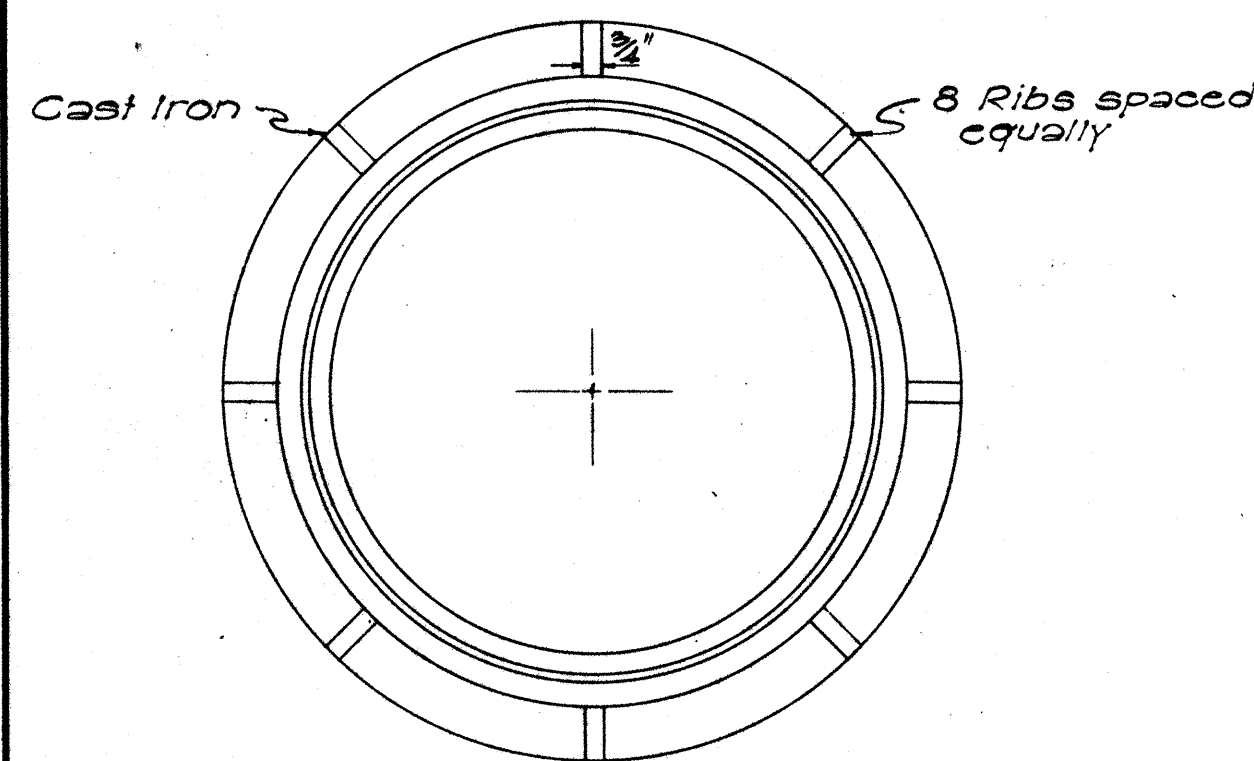
TOP VIEW OF COVER



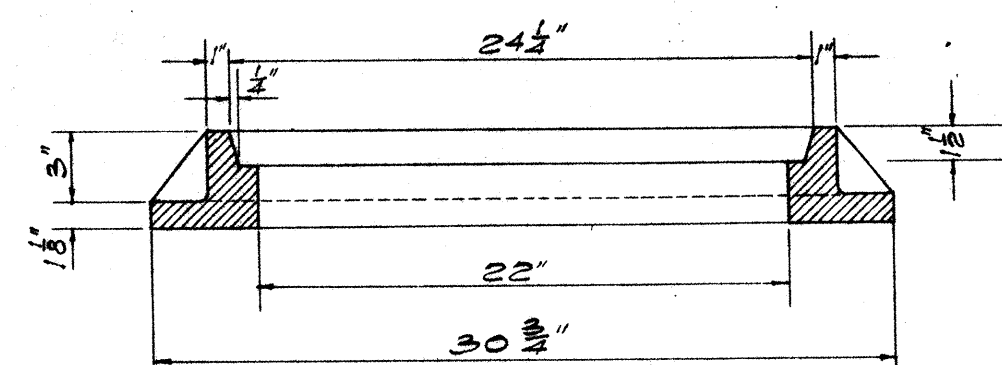
SECTION



BOTTOM VIEW OF COVER

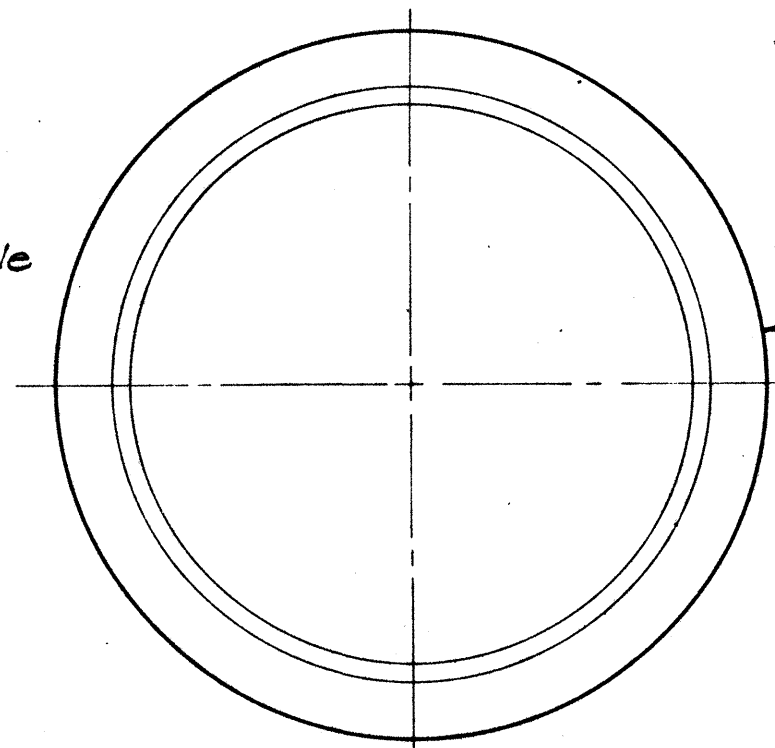


PLAN OF RIM

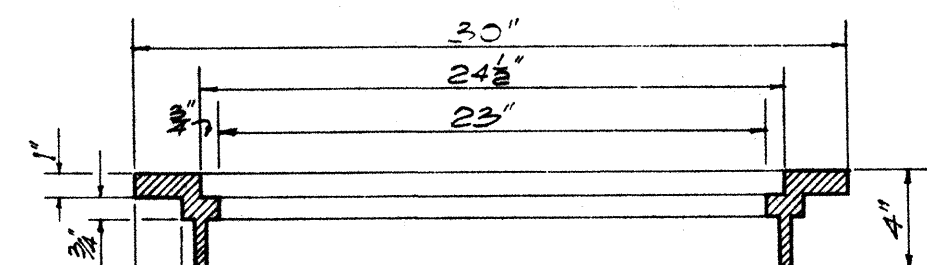


SECTION OF RIM  
DETAILS OF TYPE "C"  
MANHOLE CASTINGS

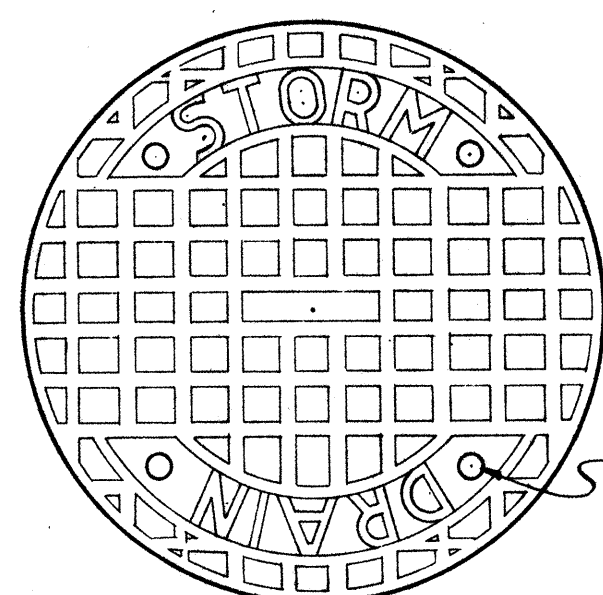
SCALE: 1-1/2" = 1'-0"



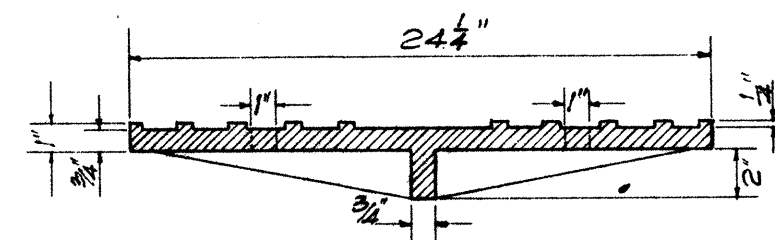
PLAN OF RIM



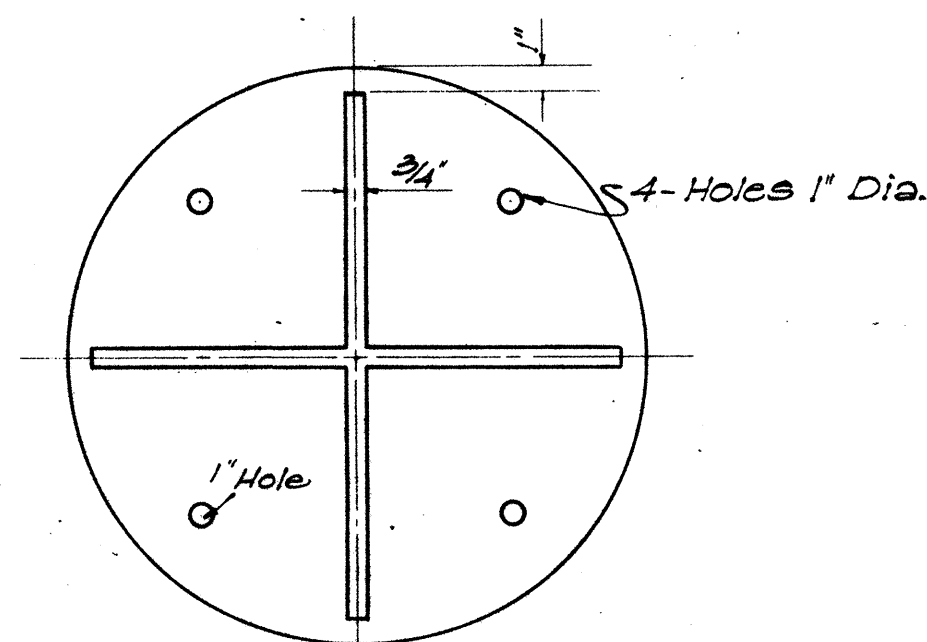
SECTION OF RIM



TOP VIEW OF COVER



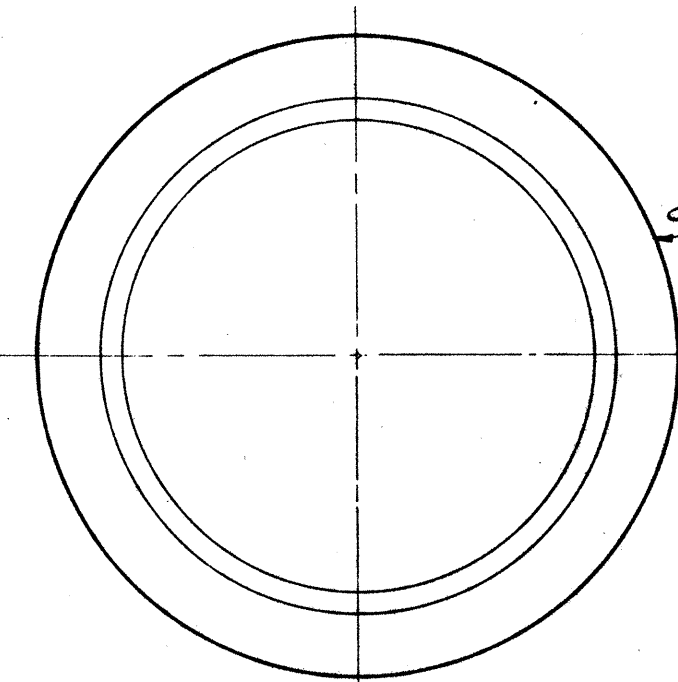
SECTION



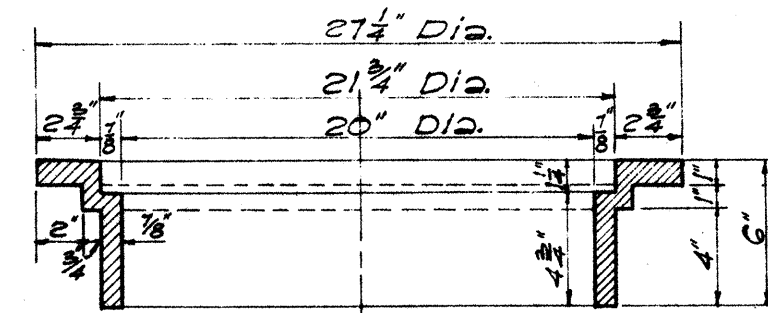
BOTTOM VIEW OF COVER

DETAILS OF TYPE "B"  
CATCH BASIN CASTINGS

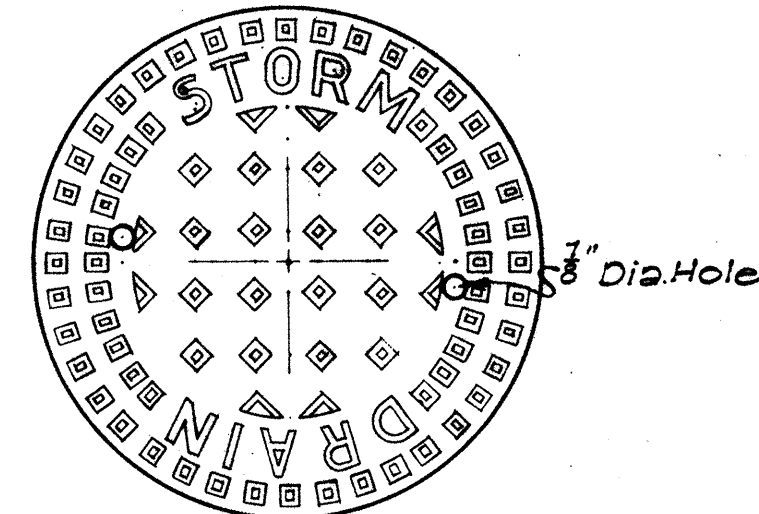
SCALE: 1-1/2" = 1'-0"



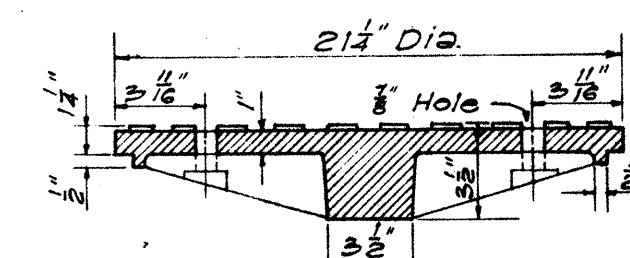
PLAN OF RIM



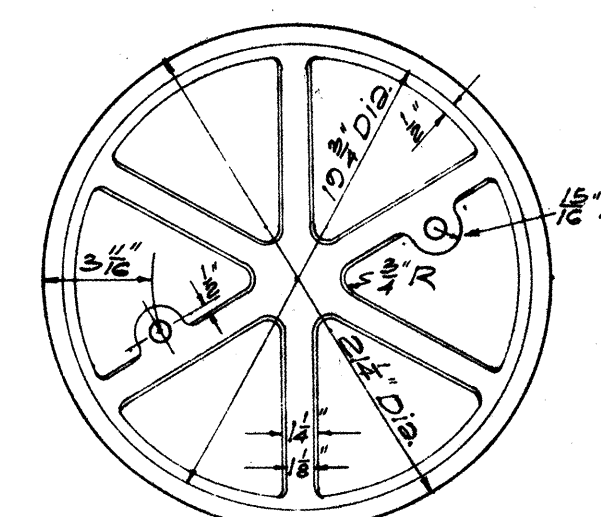
SECTION OF RIM



TOP VIEW OF COVER



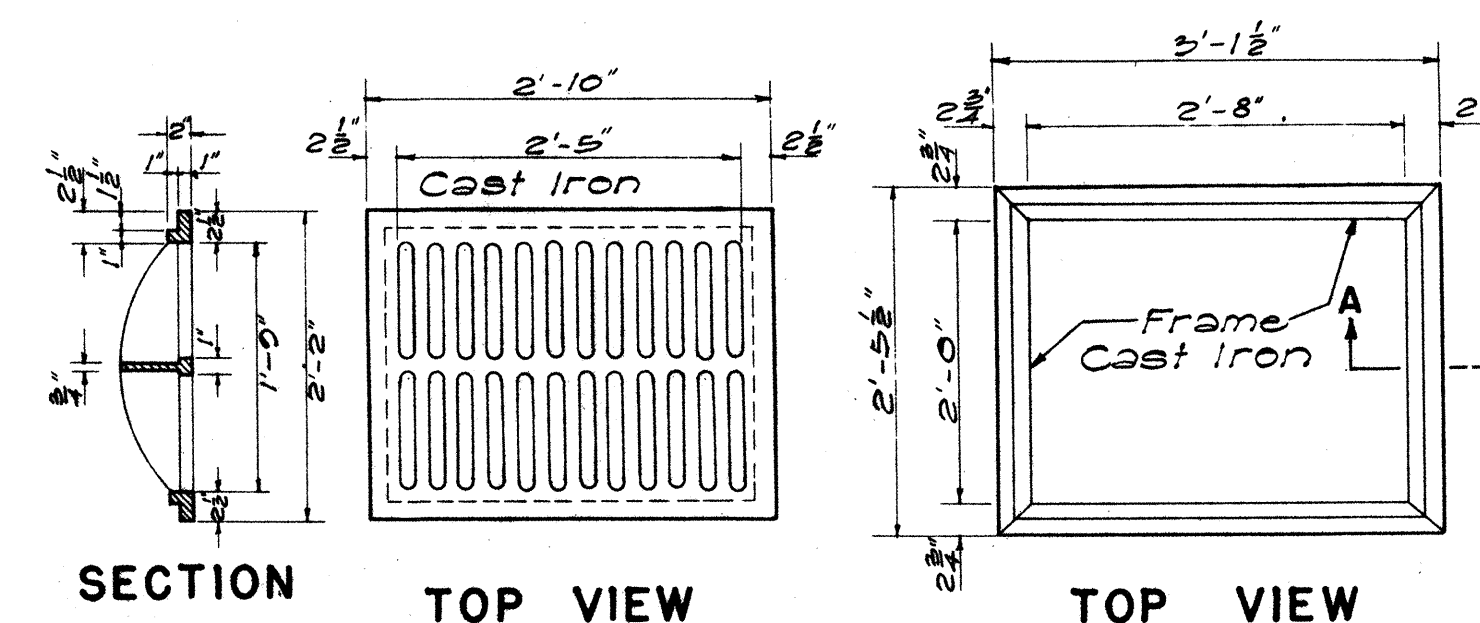
SECTION



BOTTOM VIEW OF COVER

DETAILS OF TYPE "A"  
MANHOLE CASTINGS

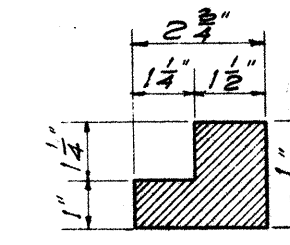
SCALE: 1-1/2" = 1'-0"



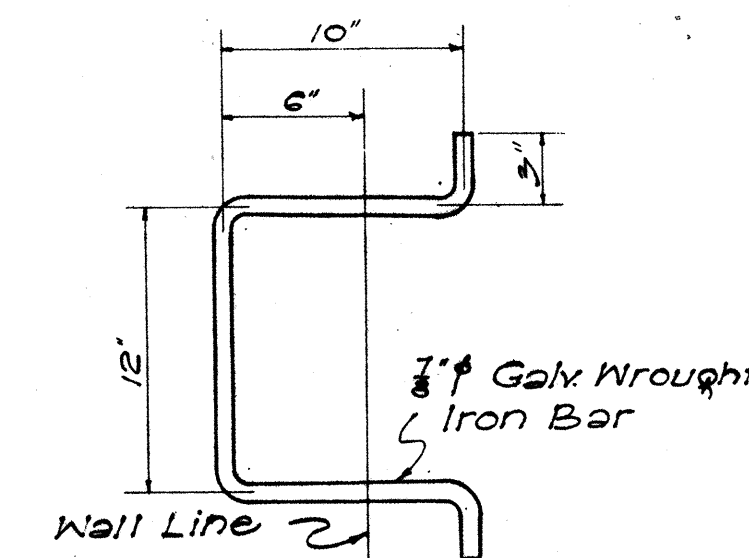
SECTION TOP VIEW

TYPE C C.I. FRAME AND GRATING

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



SECTION "A-A"  
SCALE 3" = 1'-0"



MANHOLE RUNG

SCALE: 1-1/2" = 1'-0"

SURVEY PLOTTED BY: DATE: \_\_\_\_\_  
DESIGNED BY: \_\_\_\_\_  
TRACED BY: A. Calisto  
NOTE BOOK: \_\_\_\_\_  
QUANTITIES BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_

APPROVED: DATE: 6-22-55

*Ben E. Hunter*  
TERRITORIAL HIGHWAY ENGINEER

TERRITORIAL HIGHWAY DEPARTMENT

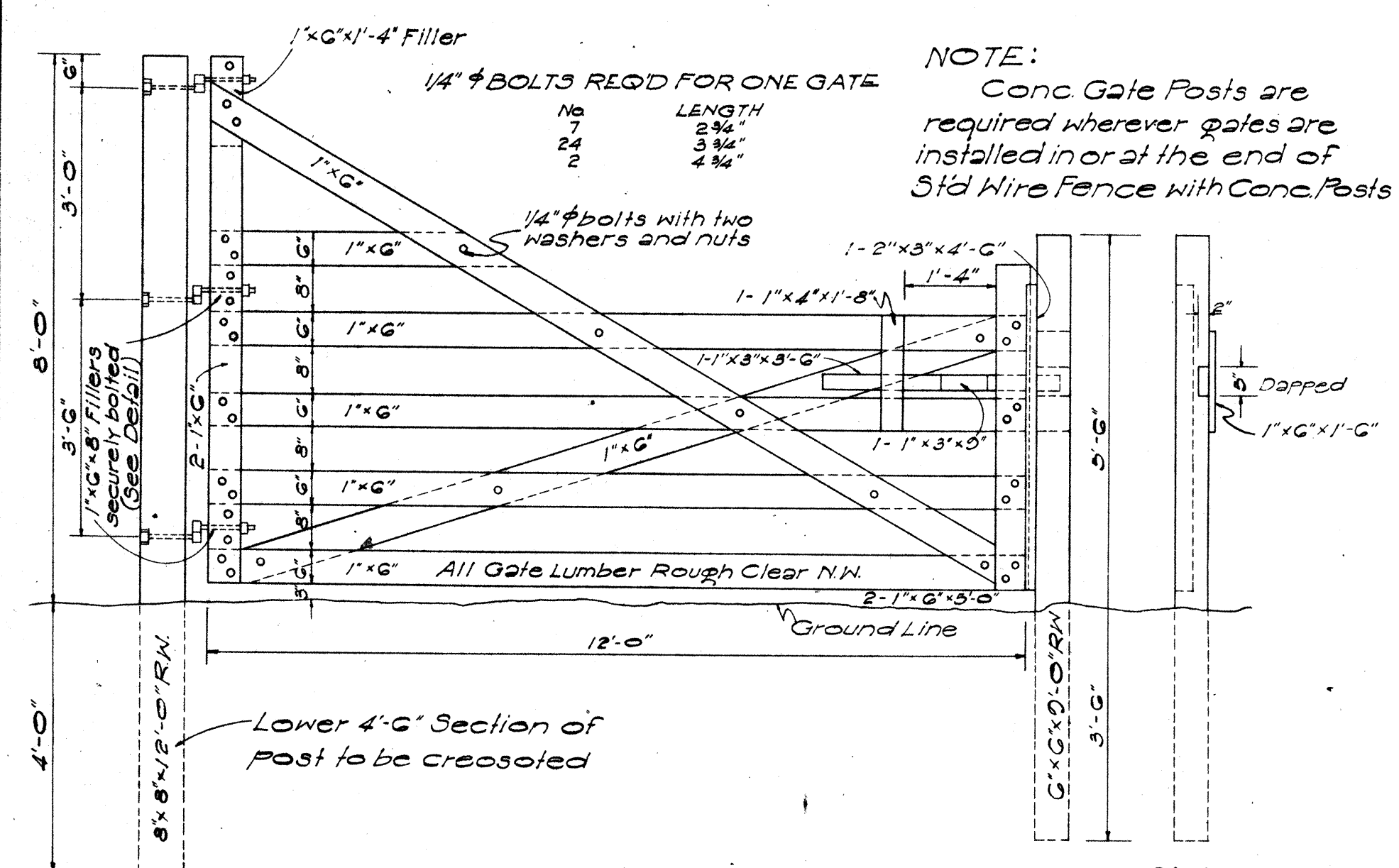
TERRITORY OF HAWAII

STANDARD DETAILS  
CATCH BASIN AND  
MANHOLE CASTINGS

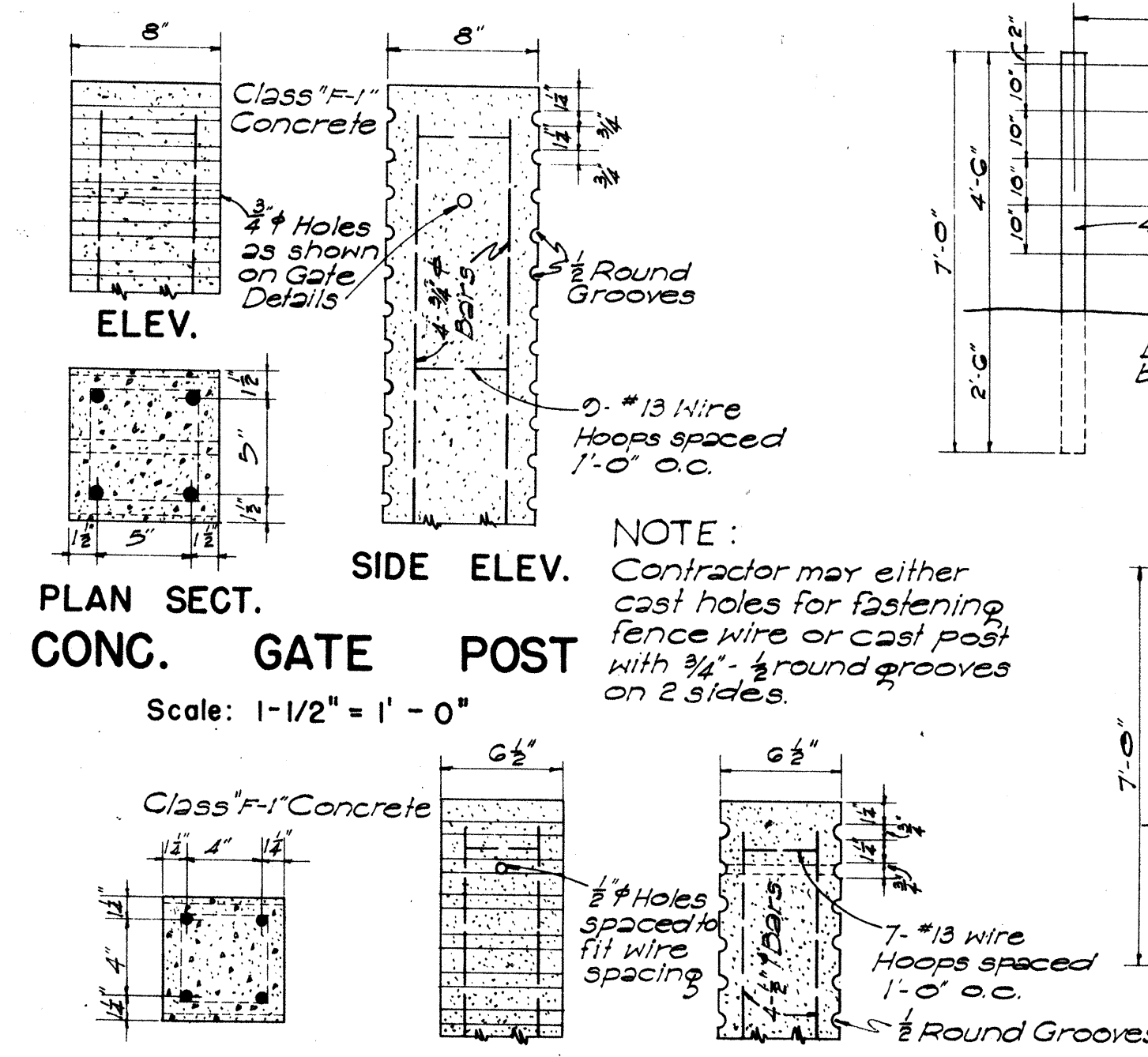
SCALES AS NOTED

SHEET NO 5 OF 6 SHEETS

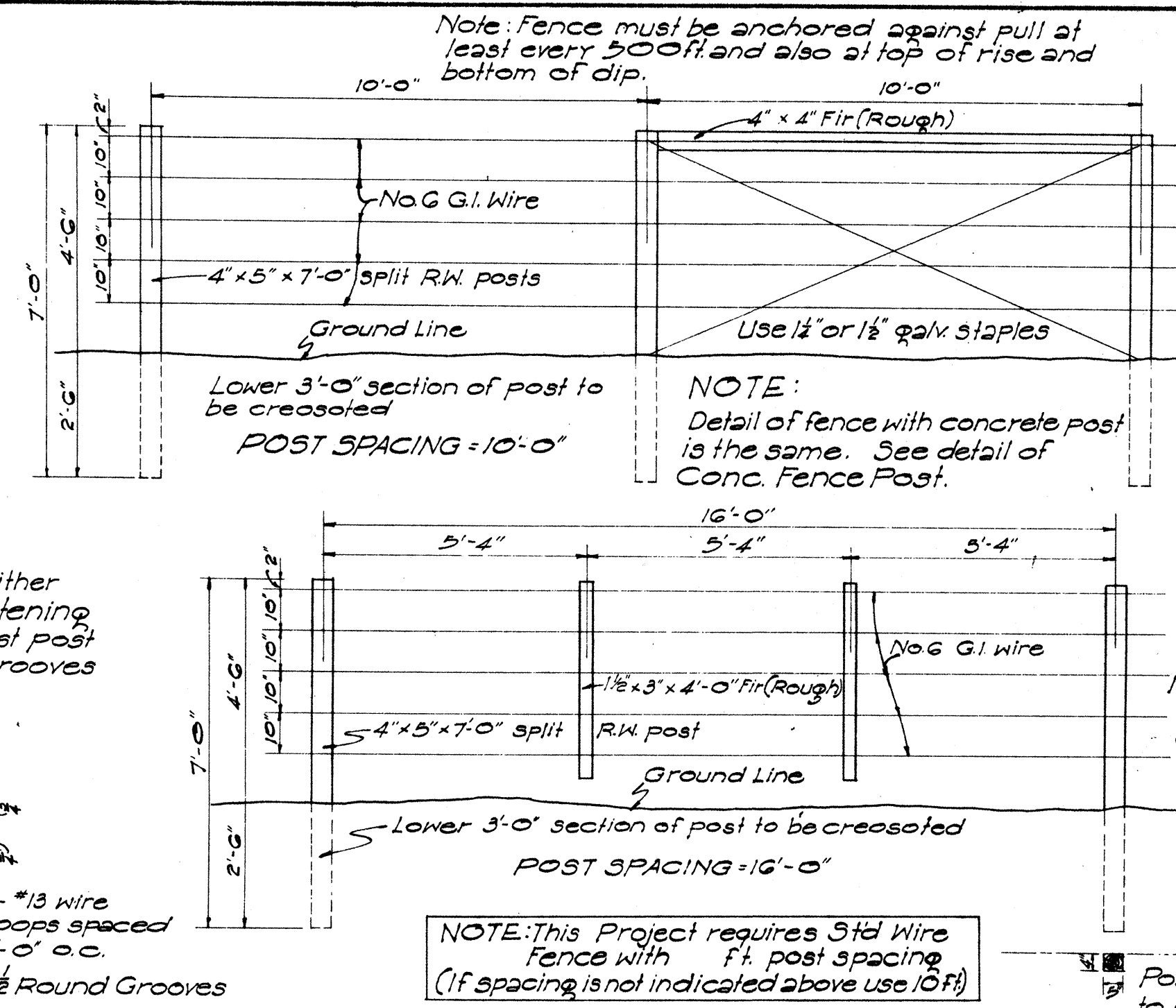
5627.90



**DETAIL OF CATTLE GATE**  
Scale: 1/2" = 1'-0"

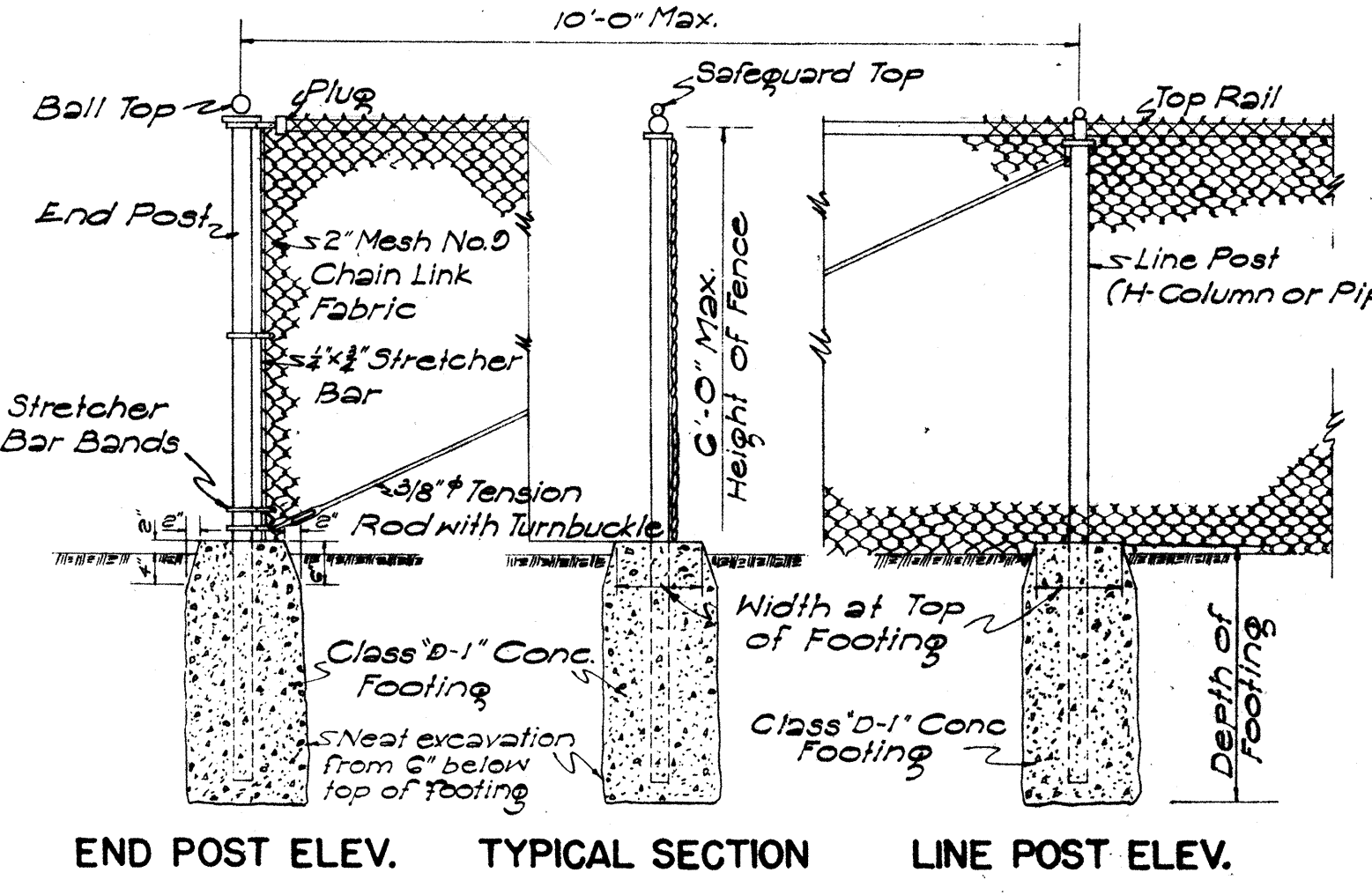


**CONC. GATE POST**  
Scale: 1-1/2" = 1'-0"

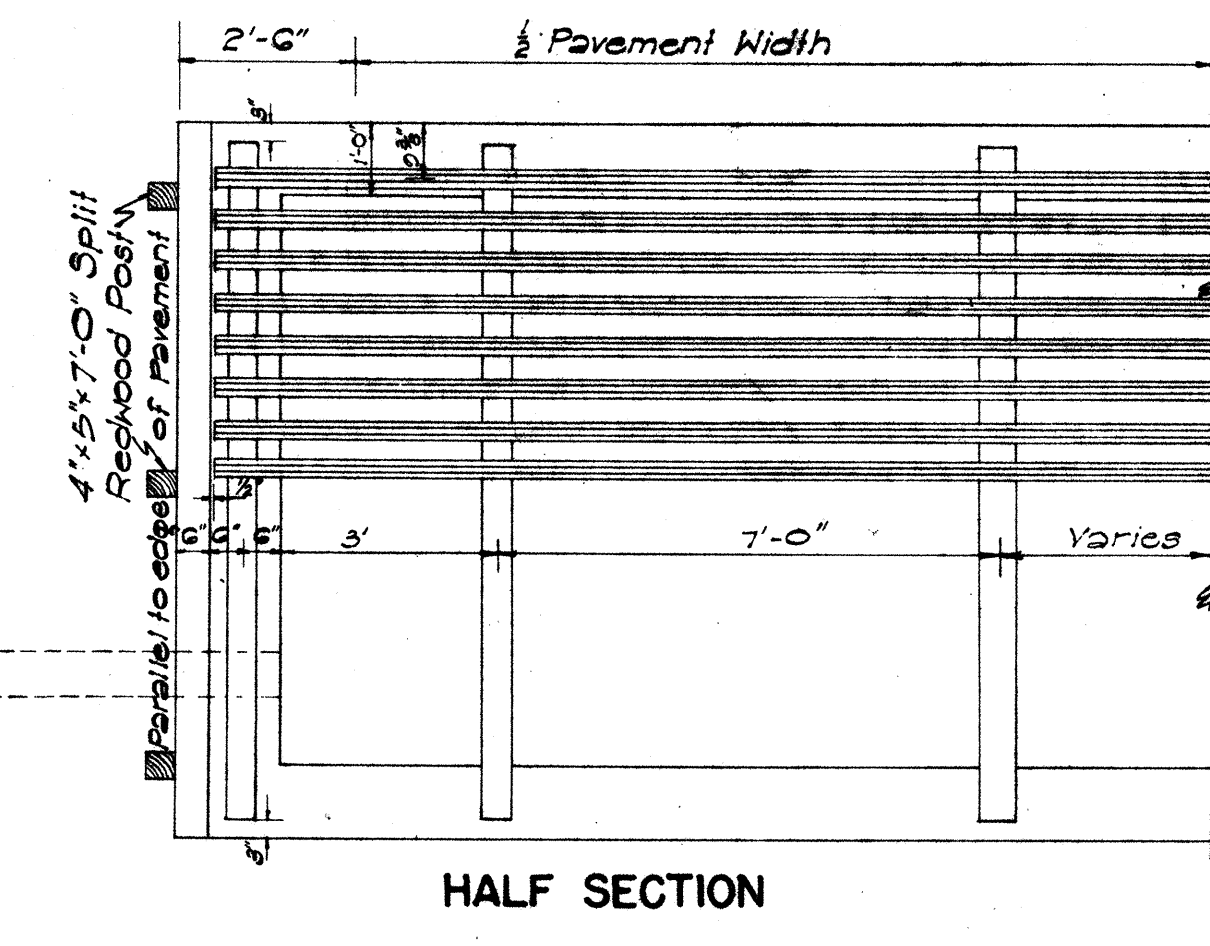
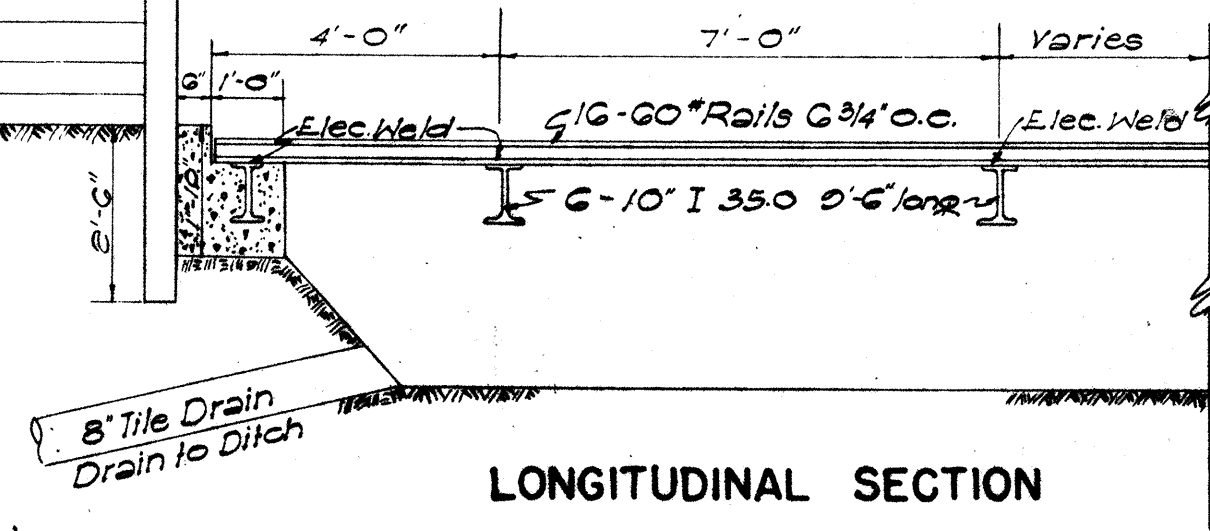


**DETAILS OF STANDARD WIRE FENCE WITH WOOD POSTS**  
Scale: 3/8" = 1'-0"

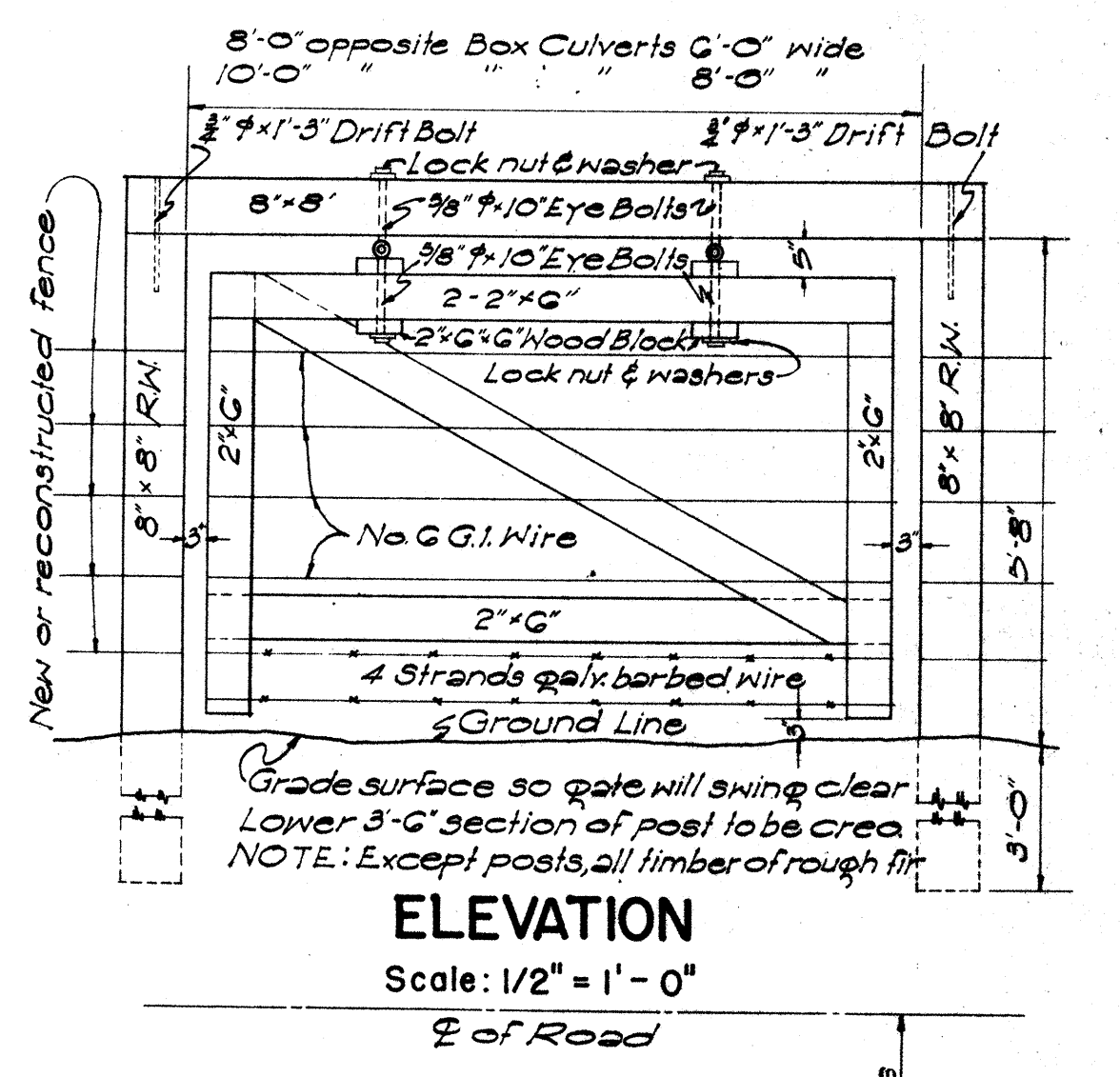
| SCHEDULE FOR CHAIN LINK FENCE |                 |          |          |                  |                |                 |
|-------------------------------|-----------------|----------|----------|------------------|----------------|-----------------|
| Height of Fence               | Line Post       | End Post | Top Rail | Depth of Footing | Top of Footing | Length of Posts |
| 3'                            | 1.875' ft. 1.00 | 2.00     | 1.00     | 30" 24"          | 8" 24"         | 5'-0" 5'-0"     |
| 4'                            | 1.875' ft. 1.00 | 2.00     | 1.00     | 30" 24"          | 10" 24"        | 6'-0" 6'-0"     |
| 5'                            | 1.875' ft. 1.00 | 2.00     | 1.00     | 30" 24"          | 12" 24"        | 7'-0" 7'-0"     |
| 6'                            | 2.25' ft. 2.00  | 3.00     | 1.00     | 42" 42"          | 12" 30"        | 8'-0" 8'-0"     |



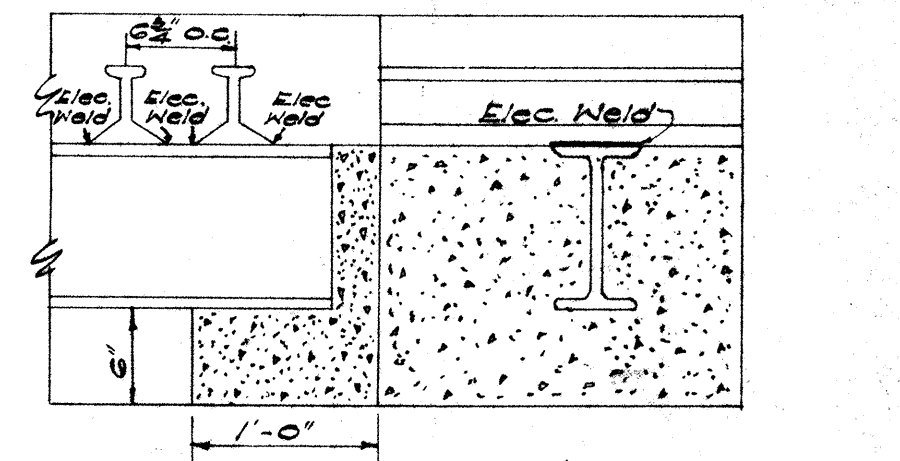
**DETAIL OF CHAIN LINK FENCE**  
Scale: 1/2" = 1'-0"



**DETAIL OF CATTLE GUARD**  
Scale: 3/8" = 1'-0"

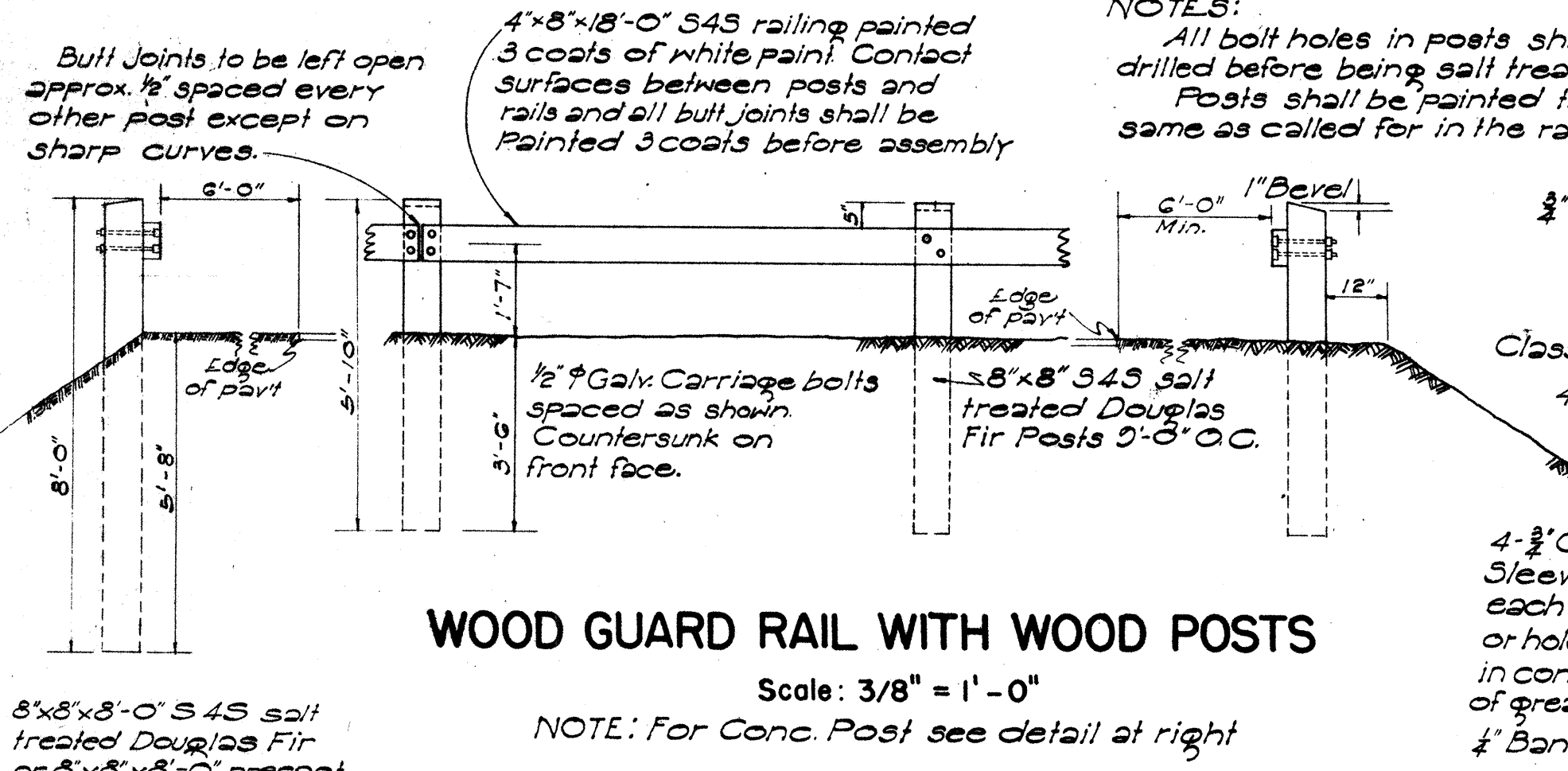


**DETAILS OF HURDLE**  
Scale: 1/2" = 1'-0"

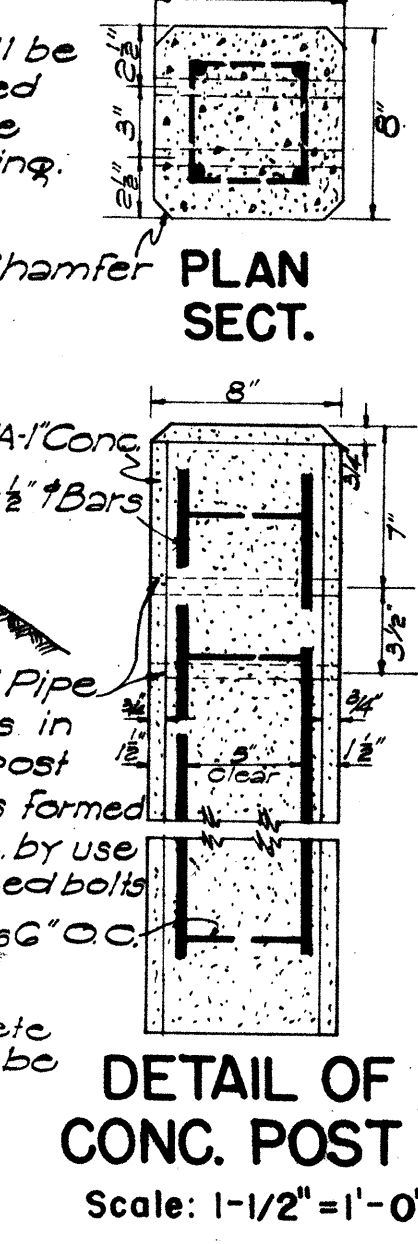


TERRITORIAL HIGHWAY DEPARTMENT  
TERRITORY OF HAWAII  
**STANDARD DETAILS**  
**FENCES, GATES, GUARD RAILS,**  
**GUIDE POSTS, CATTLE GUARD**  
SCALES AS NOTED

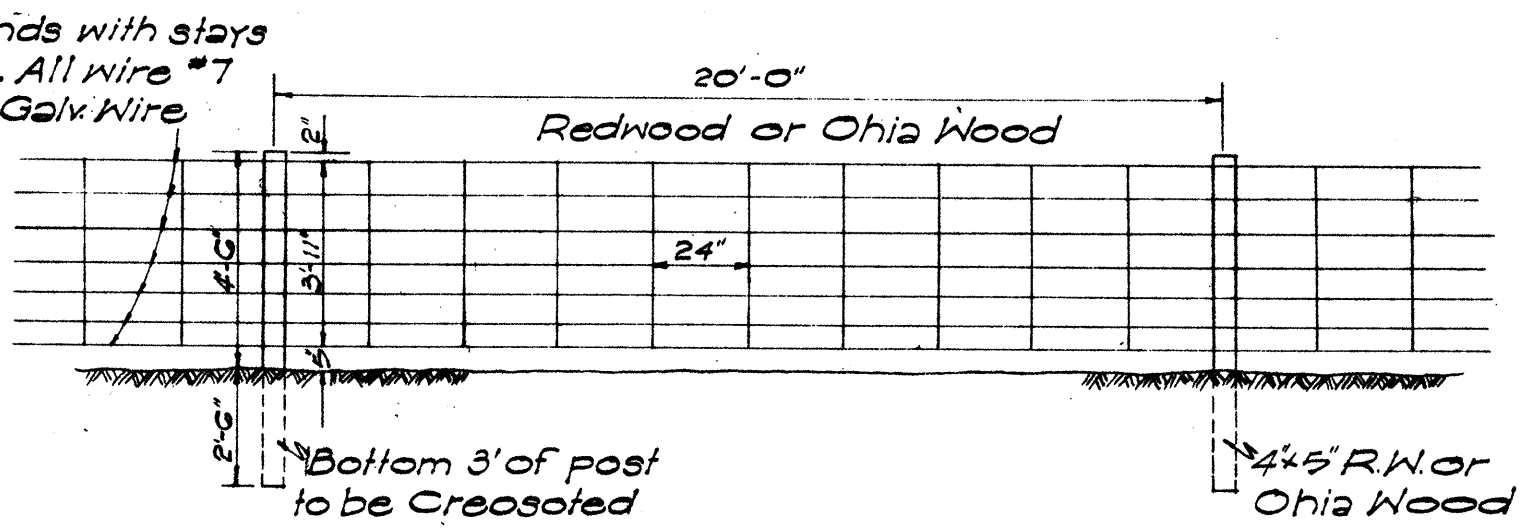
DATE: 10-1-54  
DRAWN BY: L. Colisio  
CHECKED BY: L. Colisio  
NOTE: 1. All concrete posts shall be precast.  
2. All concrete posts shall be spaced as shown on plans.  
3. All concrete posts shall be spaced as shown on plans.



**WOOD GUARD RAIL WITH WOOD POSTS**  
Scale: 3/8" = 1'-0"



**DETAIL OF CONC. POST**  
Scale: 1-1/2" = 1'-0"



**DETAIL OF WOVEN WIRE FENCE**  
Scale: 1/4" = 1'-0"

APPROVED: *Paul W. Neather*  
TERRITORIAL HIGHWAY ENGINEER

DATE: 10-1-54