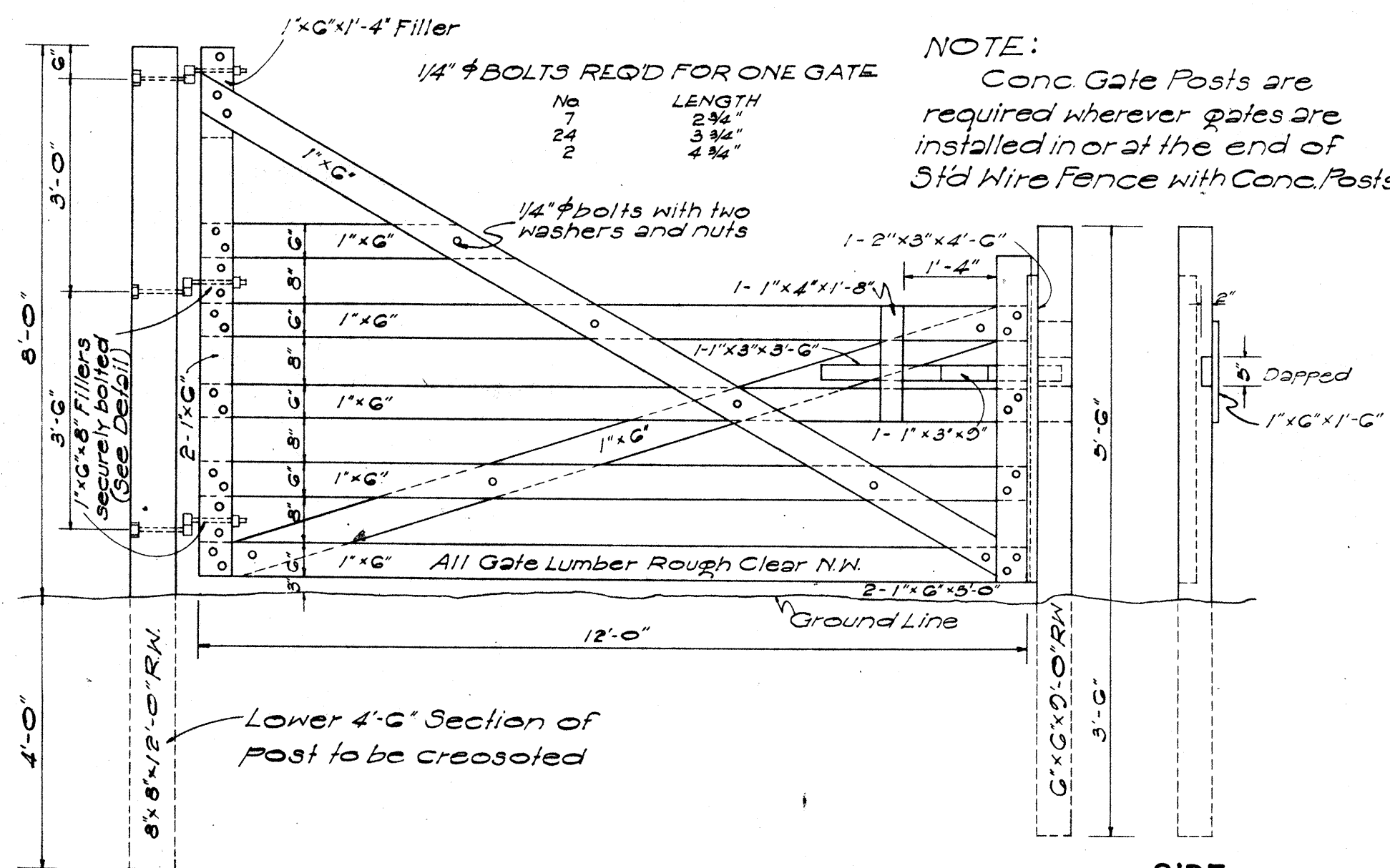
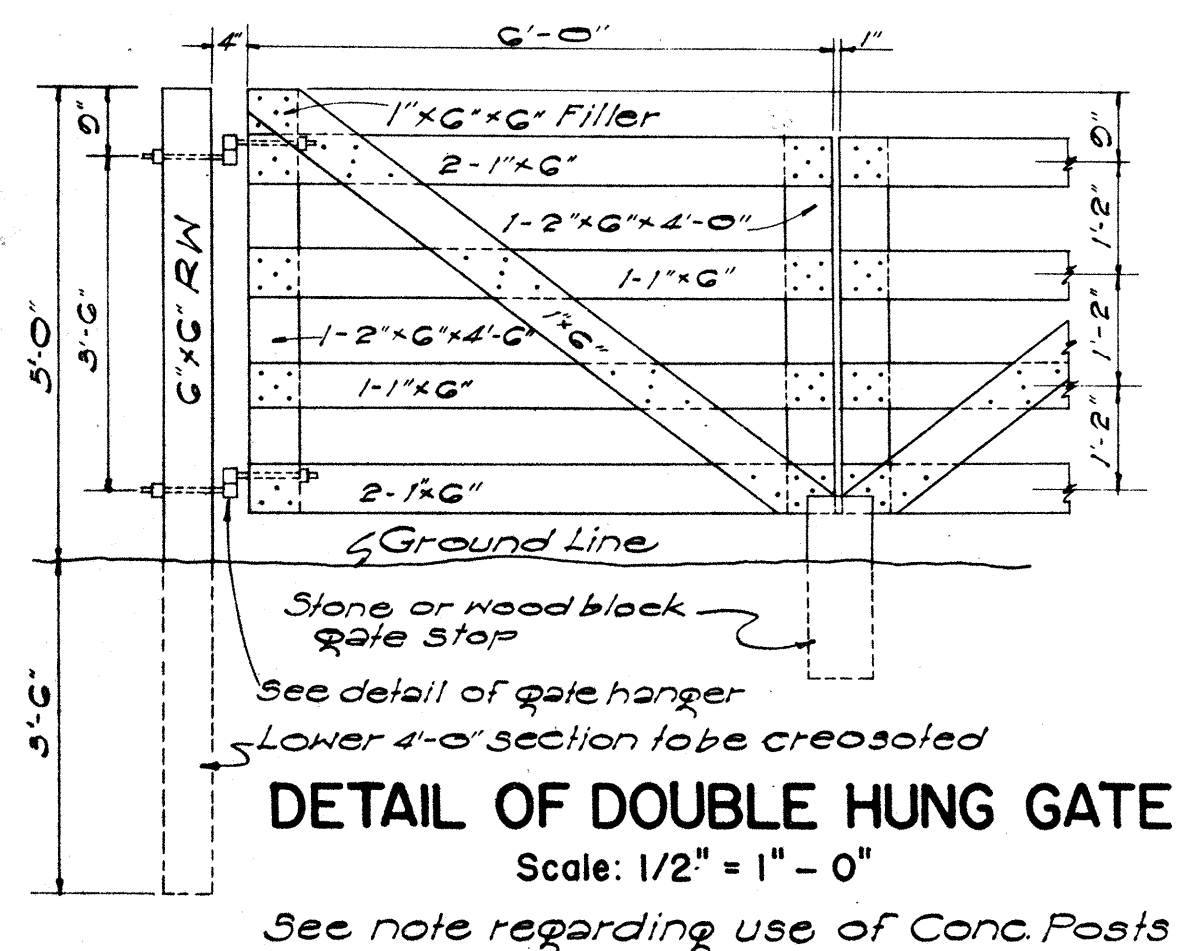




DETAIL OF CATTLE GATE
Scale: 1/2" = 1'-0"

NOTE:
Conc Gate Posts are required wherever gates are installed in or at the end of Std Wire Fence with Conc. Posts

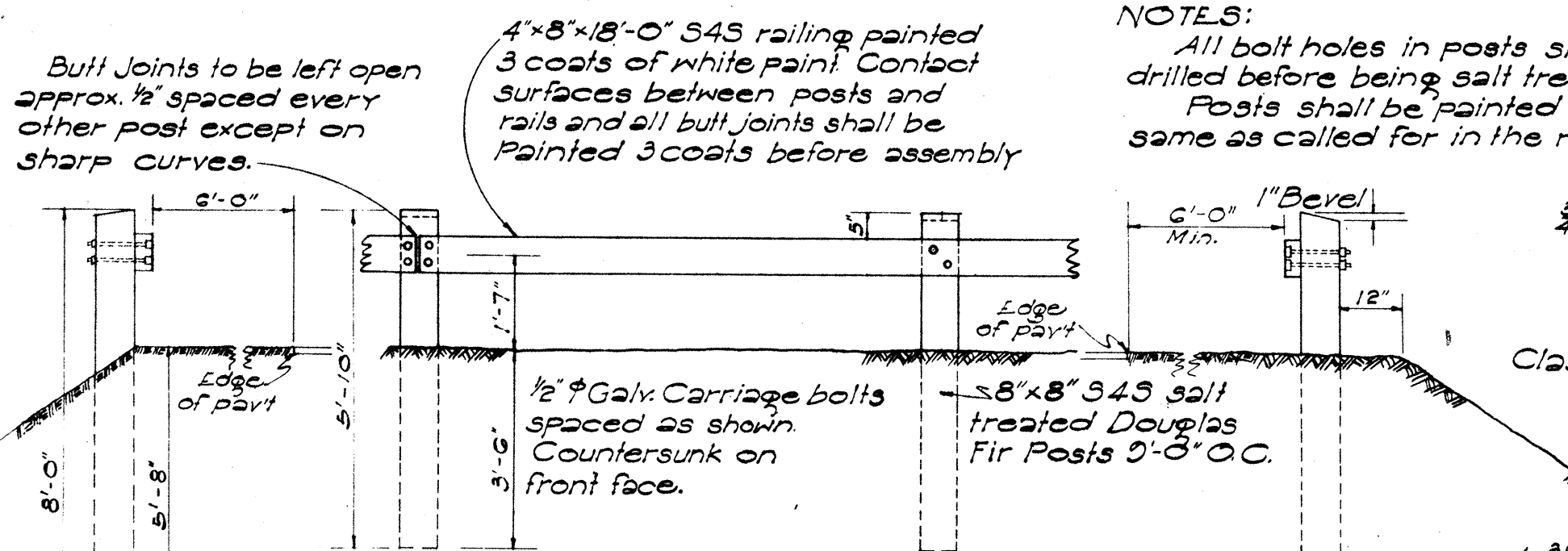
PLAN SECT. SIDE ELEV.



DETAIL OF DOUBLE HUNG GATE
Scale: 1/2" = 1'-0"

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

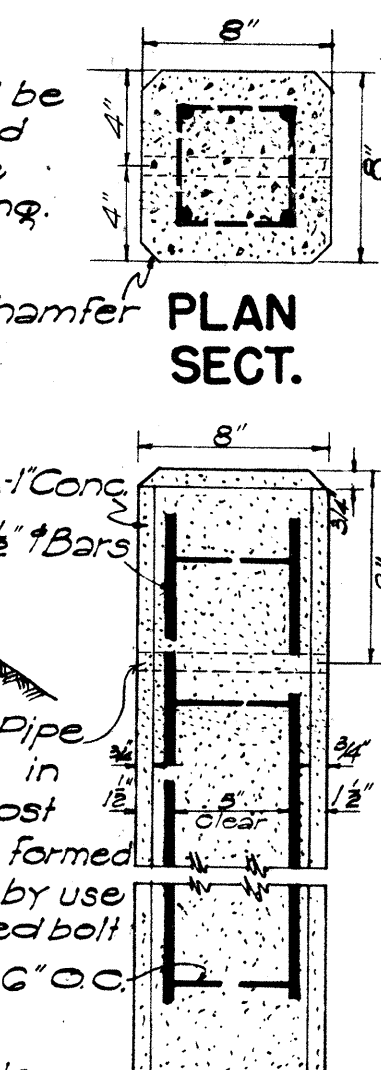
Note: Use 3/4"x11" bolts for Cattle Gate



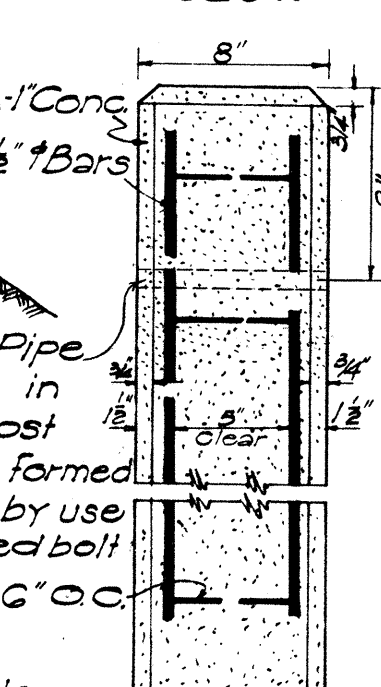
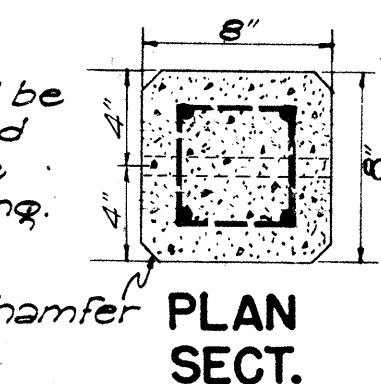
WOOD GUARD RAIL WITH WOOD POSTS
Scale: 3/8" = 1'-0"

NOTE: For Conc. Post see detail at right

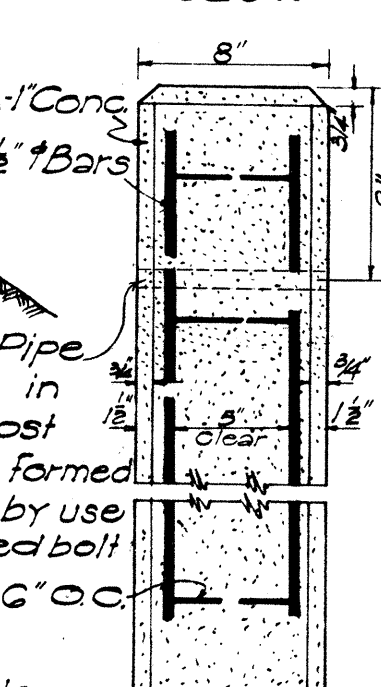
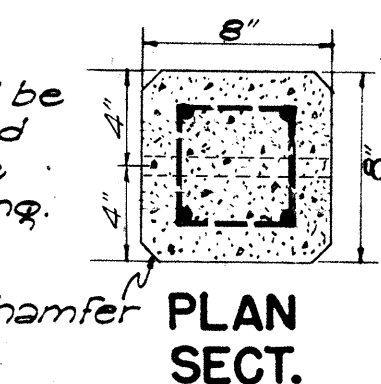
GUIDE POSTS: Wood or Conc. Guide Posts are the same as those used for Wood Guard Rail spaced as shown on plans.



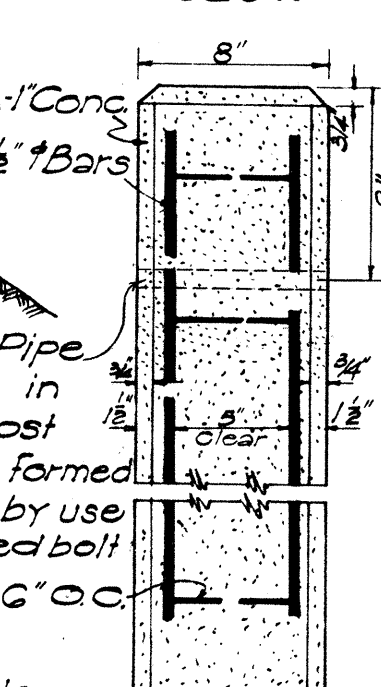
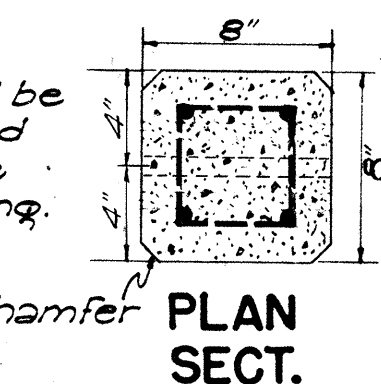
DETAIL OF CONC. POST
Scale: 1-1/2" = 1'-0"



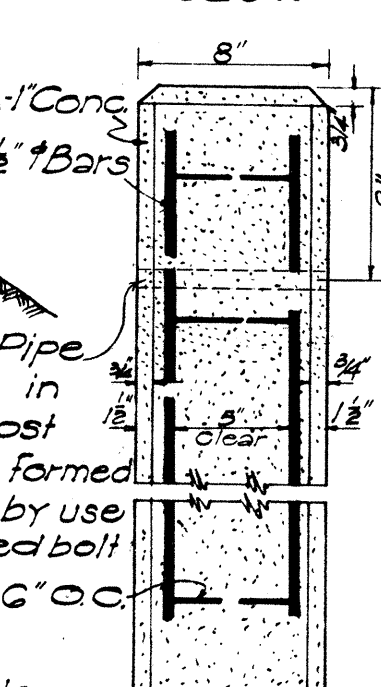
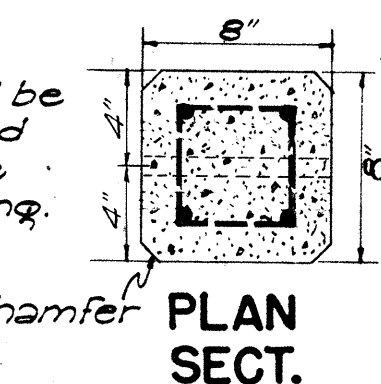
DETAIL OF CONC. POST
Scale: 1-1/2" = 1'-0"



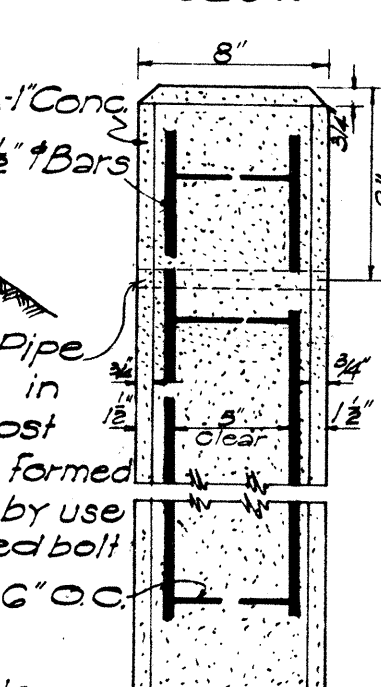
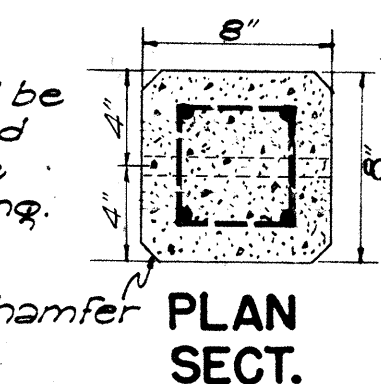
DETAIL OF CONC. POST
Scale: 1-1/2" = 1'-0"



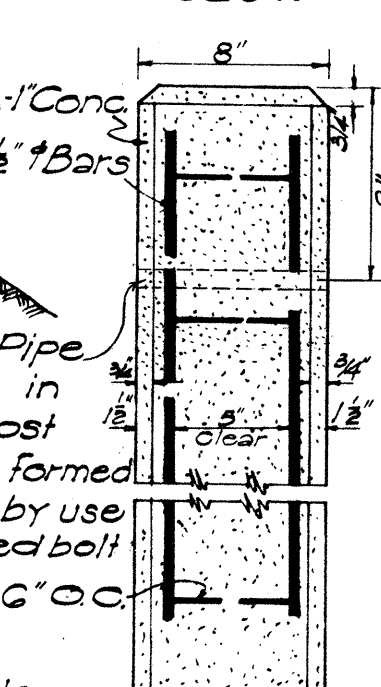
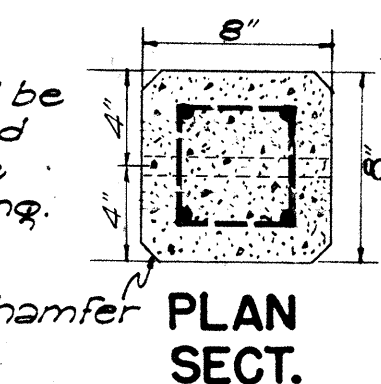
DETAIL OF CONC. POST
Scale: 1-1/2" = 1'-0"



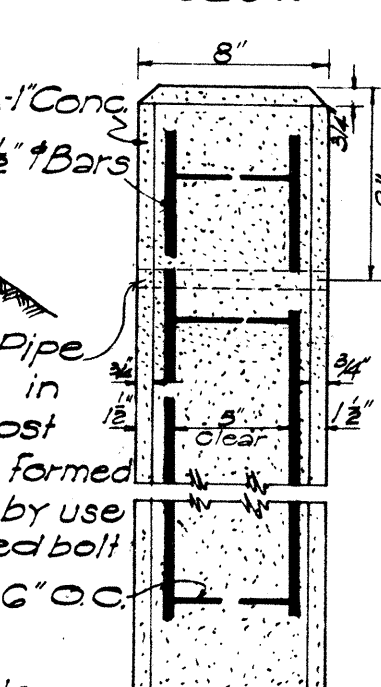
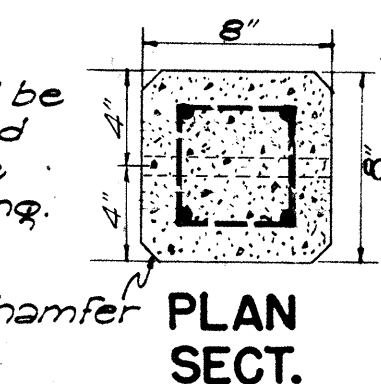
DETAIL OF CONC. POST
Scale: 1-1/2" = 1'-0"



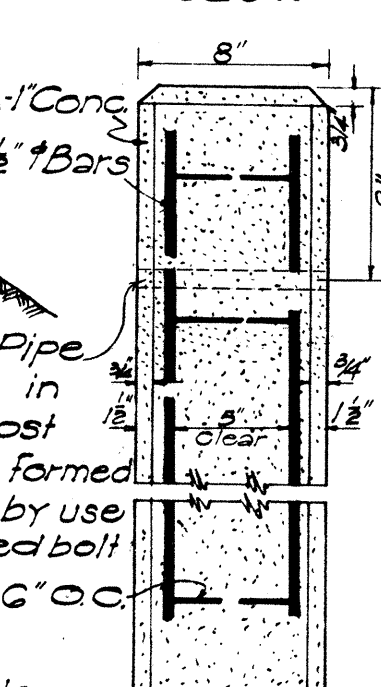
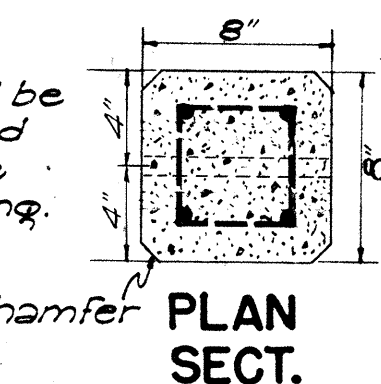
DETAIL OF CONC. POST
Scale: 1-1/2" = 1'-0"



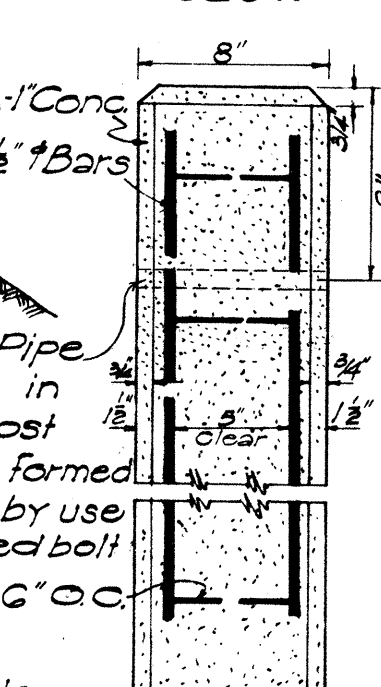
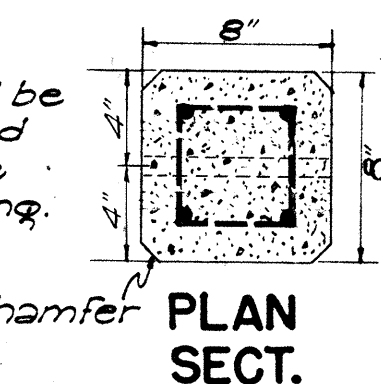
DETAIL OF CONC. POST
Scale: 1-1/2" = 1'-0"



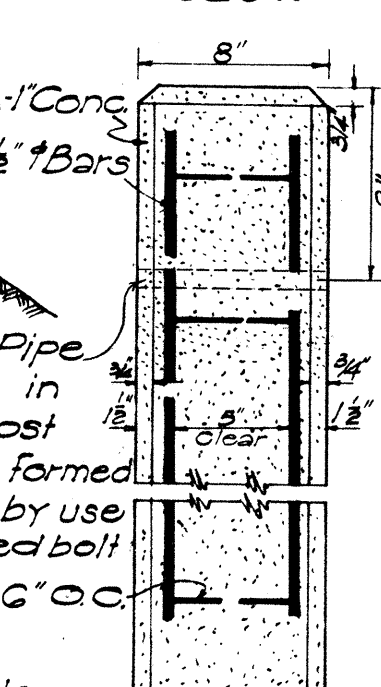
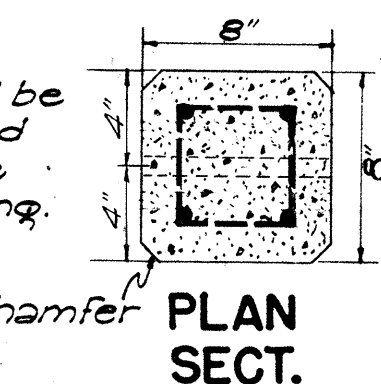
DETAIL OF CONC. POST
Scale: 1-1/2" = 1'-0"



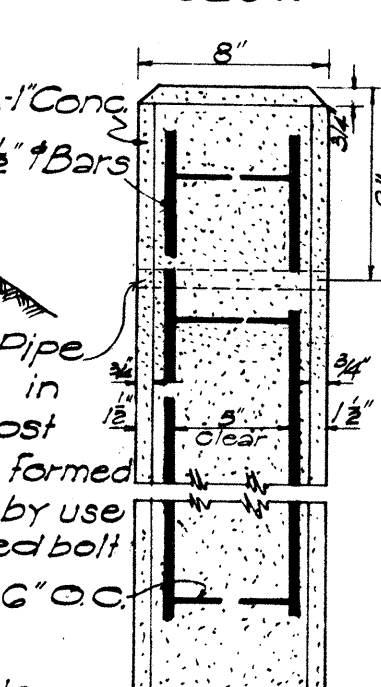
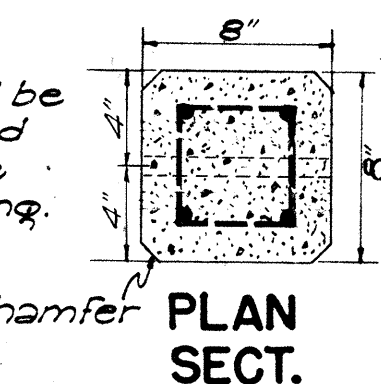
DETAIL OF CONC. POST
Scale: 1-1/2" = 1'-0"



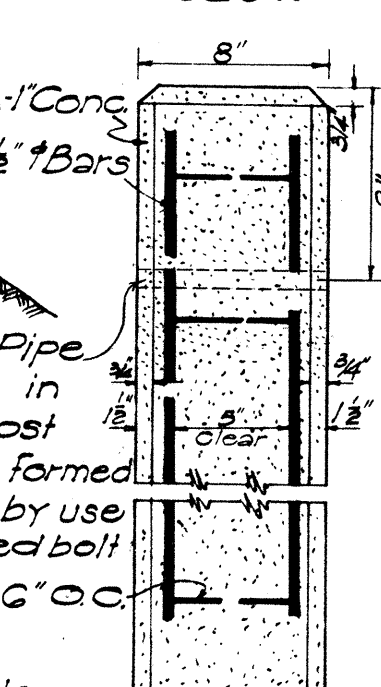
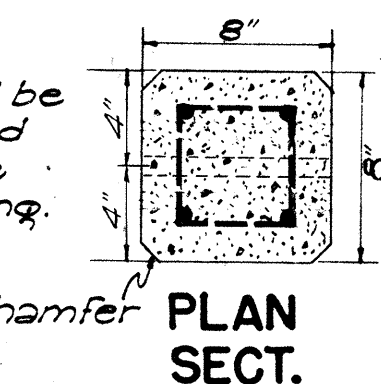
DETAIL OF CONC. POST
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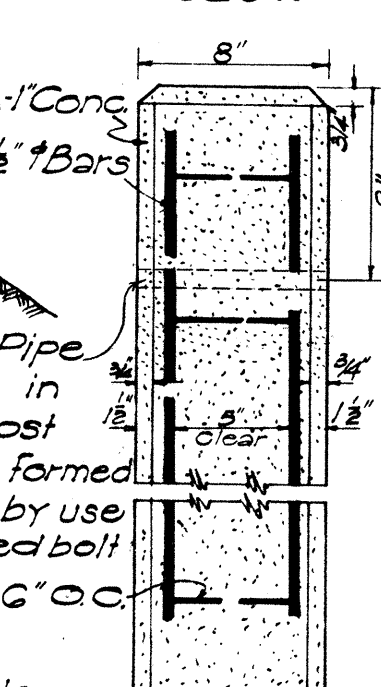
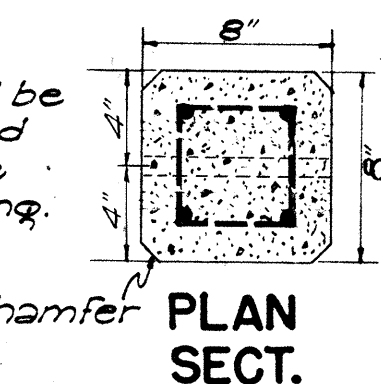
DETAIL OF CONC. POST
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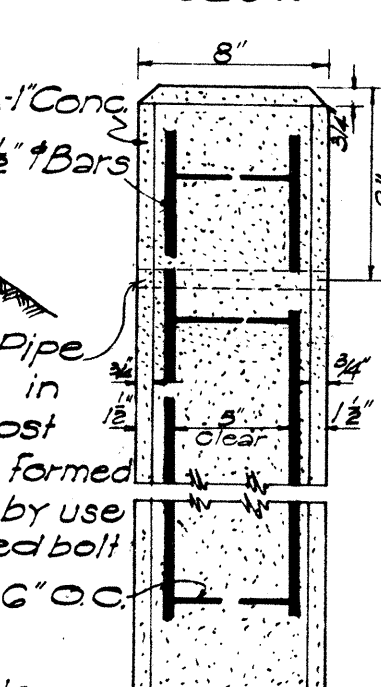
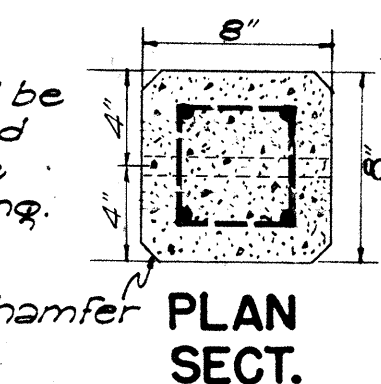
DETAIL OF CONC. POST
Scale: 1-1/2" = 1'-0"



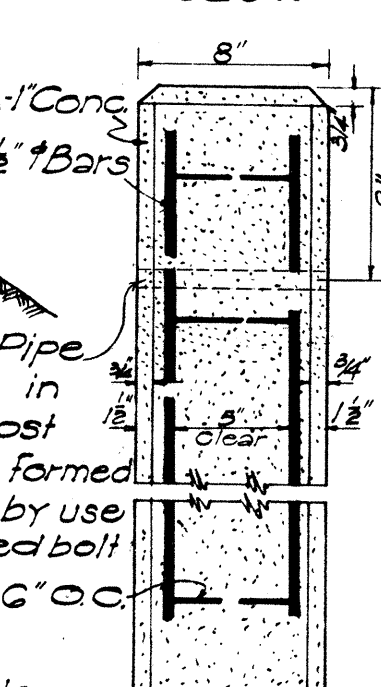
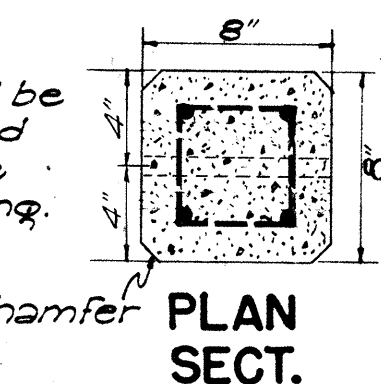
DETAIL OF CONC. POST
Scale: 1-1/2" = 1'-0"



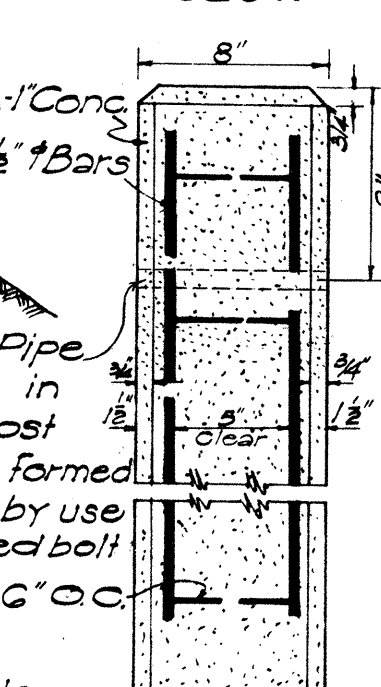
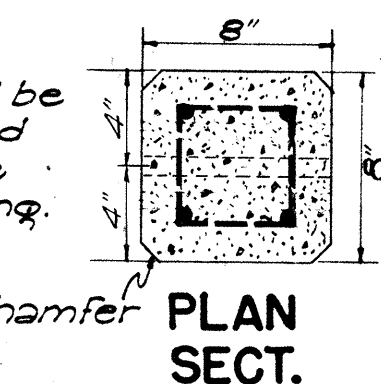
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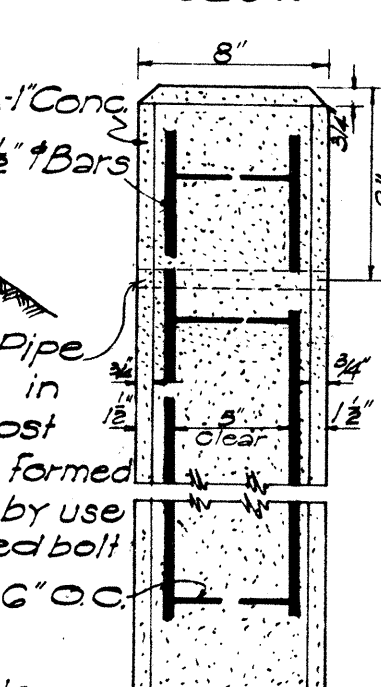
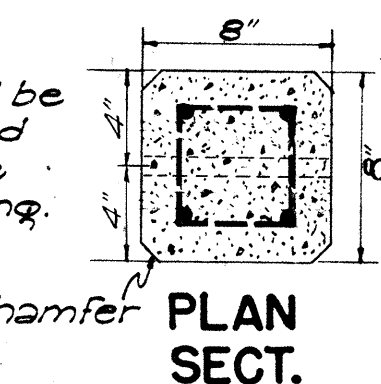
DETAIL OF CONC. POST
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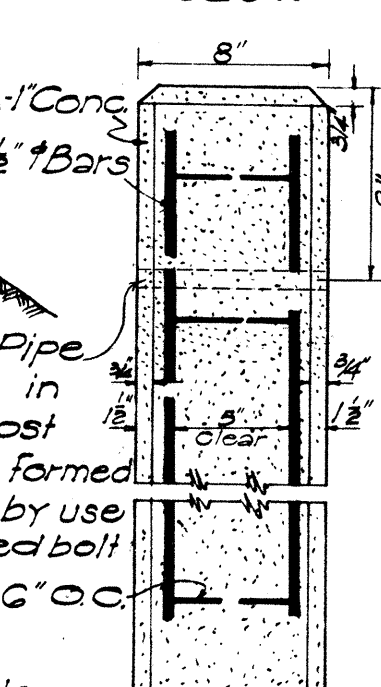
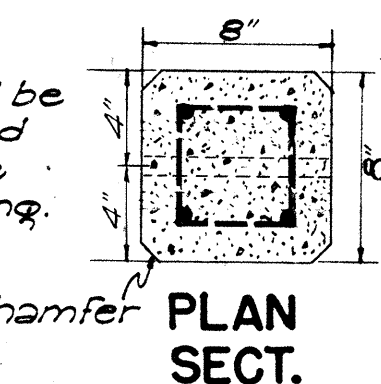
DETAIL OF CONC. POST
Scale: 1-1/2" = 1'-0"



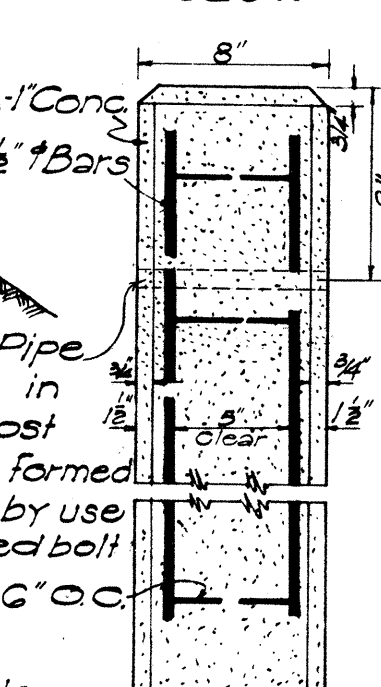
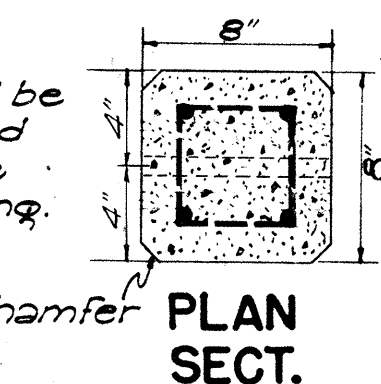
DETAIL OF CONC. POST
Scale: 1-1/2" = 1'-0"



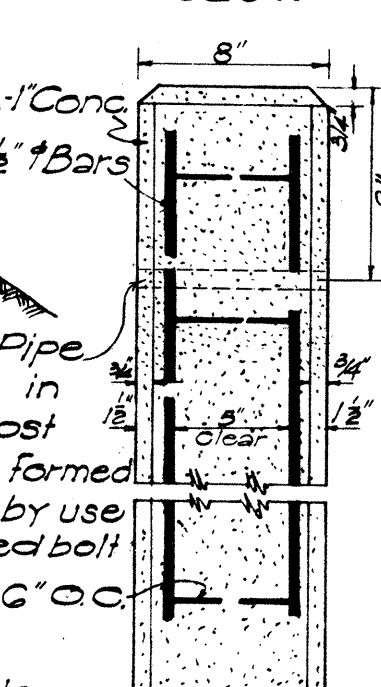
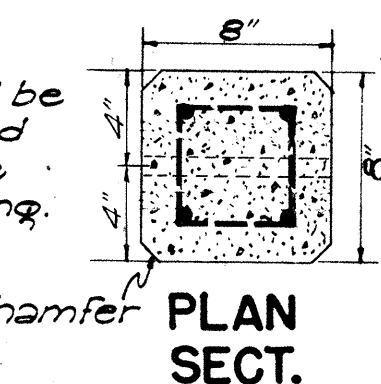
DETAIL OF CONC. POST
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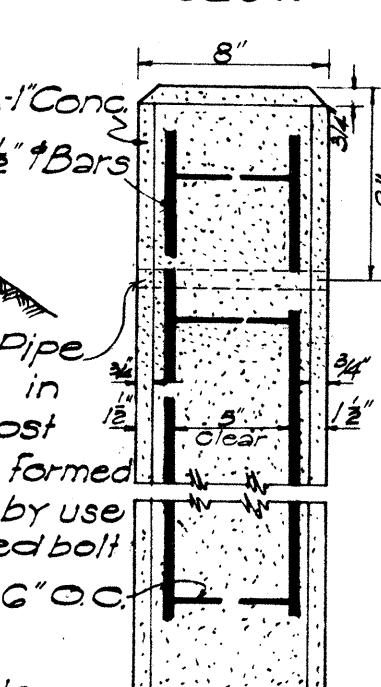
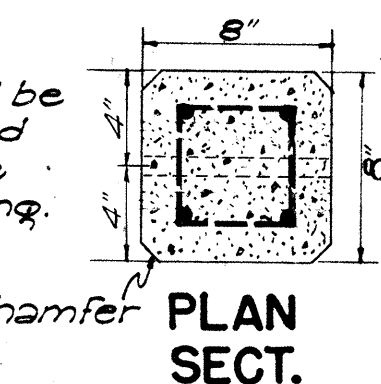
DETAIL OF CONC. POST
Scale: 1-1/2" = 1'-0"



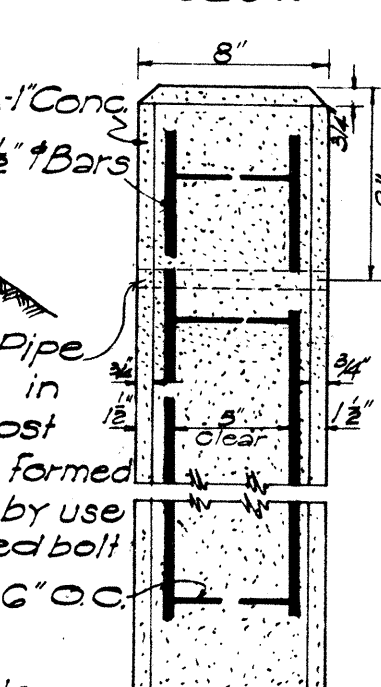
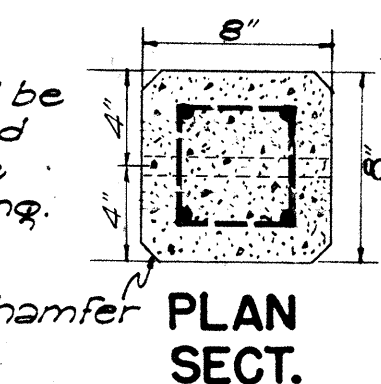
DETAIL OF CONC. POST
Scale: 1-1/2" = 1'-0"



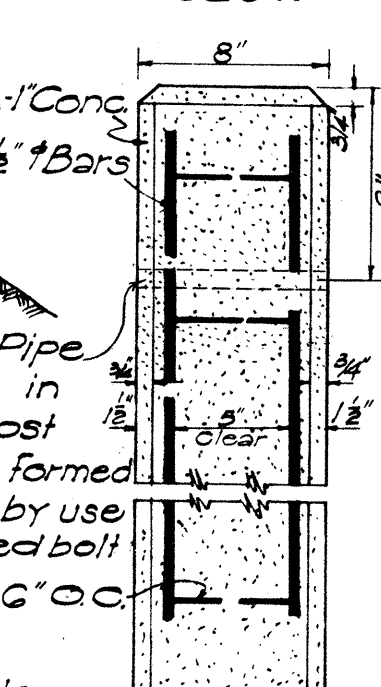
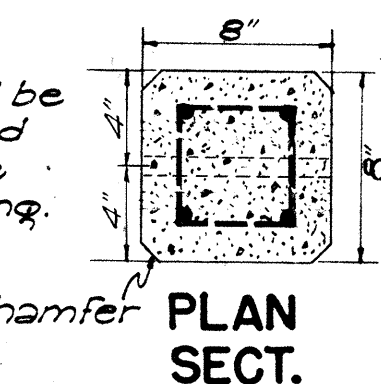
DETAIL OF CONC. POST
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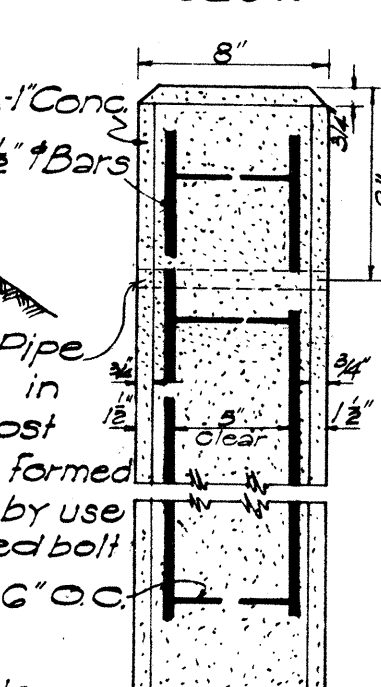
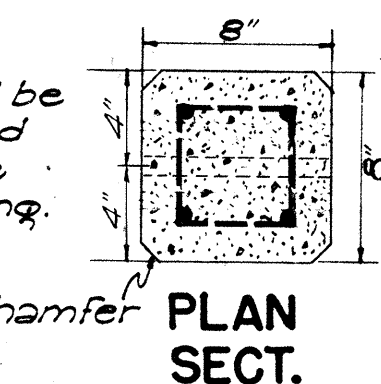
DETAIL OF CONC. POST
Scale: 1-1/2" = 1'-0"



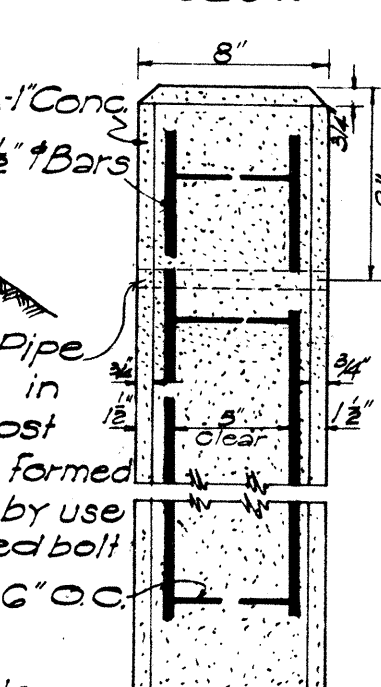
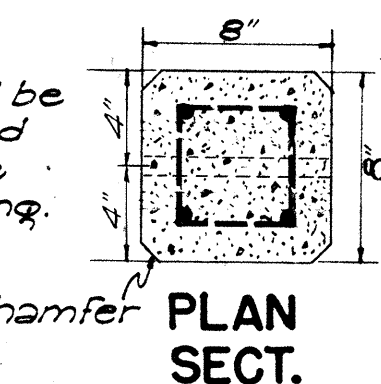
DETAIL OF CONC. POST
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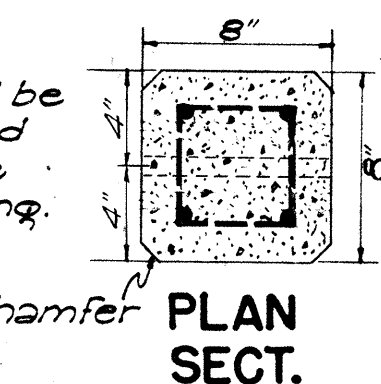
DETAIL OF CONC. POST
Scale: 1-1/2" = 1'-0"



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



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



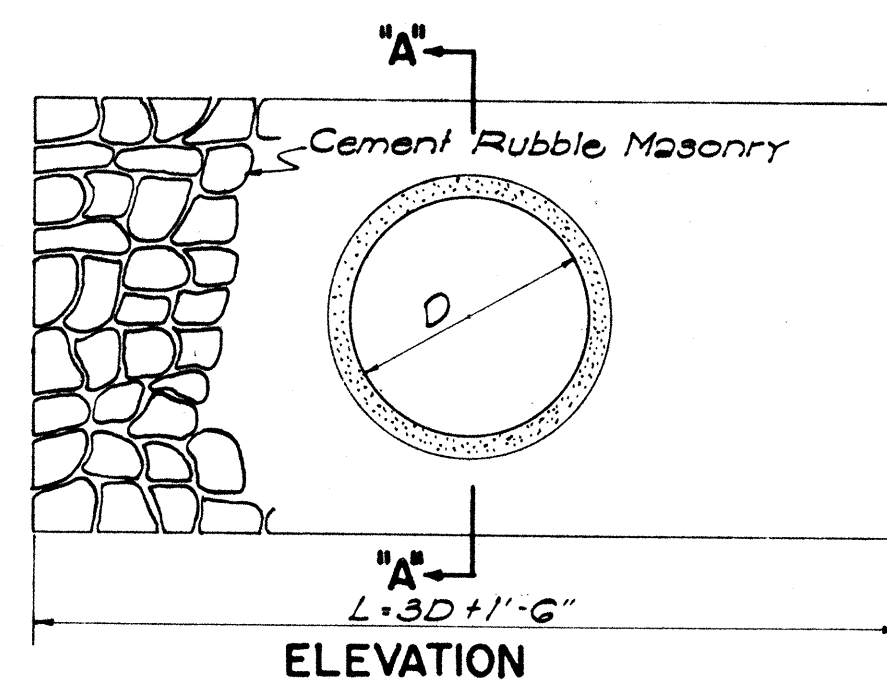
DATA FOR OUTLET DITCH			
D'	W	H	T=W+H
18"	24"	2'-0"	4'-0"
24"	30"	2'-0"	4'-6"
30"	30"	2'-6"	5'-0"
36"	36"	3'-0"	6'-0"

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

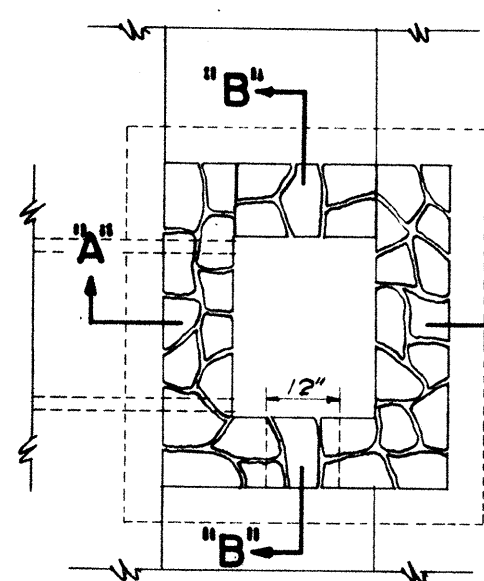
DATA FOR MASONRY DROP INTAKE				Where Variables Equal
D'	D	L+D+G'	Cu. Yds.	
23"	18"	2'-5"	3.02	4'-6"
30"	24"	3'-0"	3.61	5'-0"
37"	30"	3'-7"	4.21	5'-6"
44"	36"	4'-2"	4.85	6'-0"

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

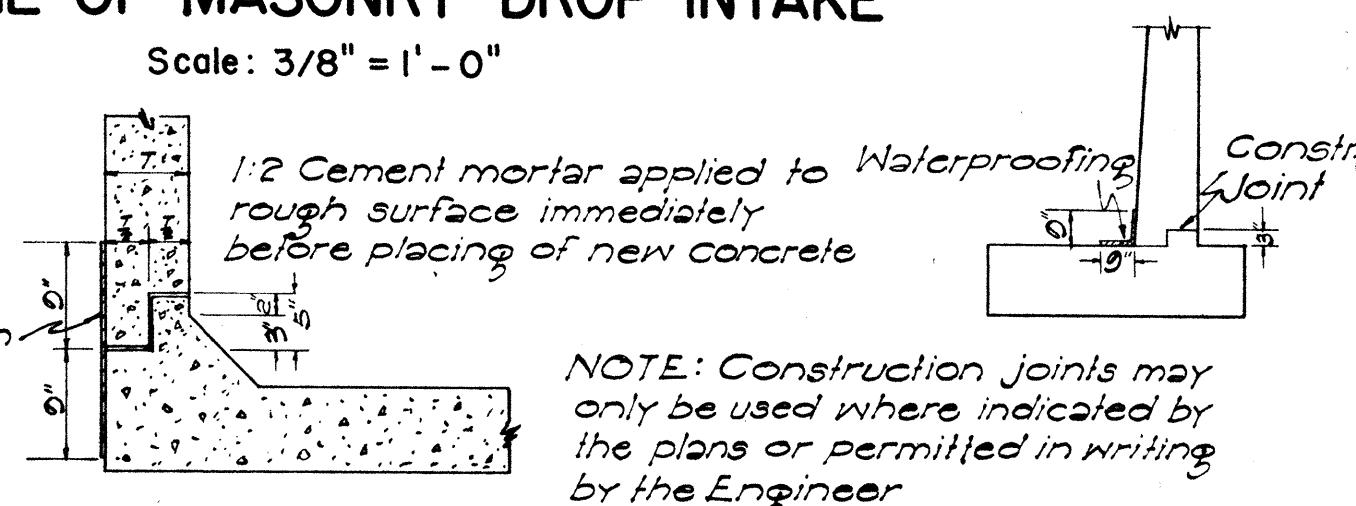
DATA - MASONRY HEADWALL				Cast-in-Place Conc. Culvert	Conc. Pipe Culvert	Corrugated Pipe Culvert
D	H	B	L	Cu. Yds.	Cu. Yds.	Cu. Yds.
18"	3'-6"	1'-0"	6'-0"	0.85	0.95	0.93
24"	4'-0"	2'-0"	7'-6"	1.28	1.45	1.41
30"	4'-6"	2'-6"	9'-0"	1.83	2.06	2.00
36"	5'-0"	2'-6"	10'-6"	2.40	2.84	2.72



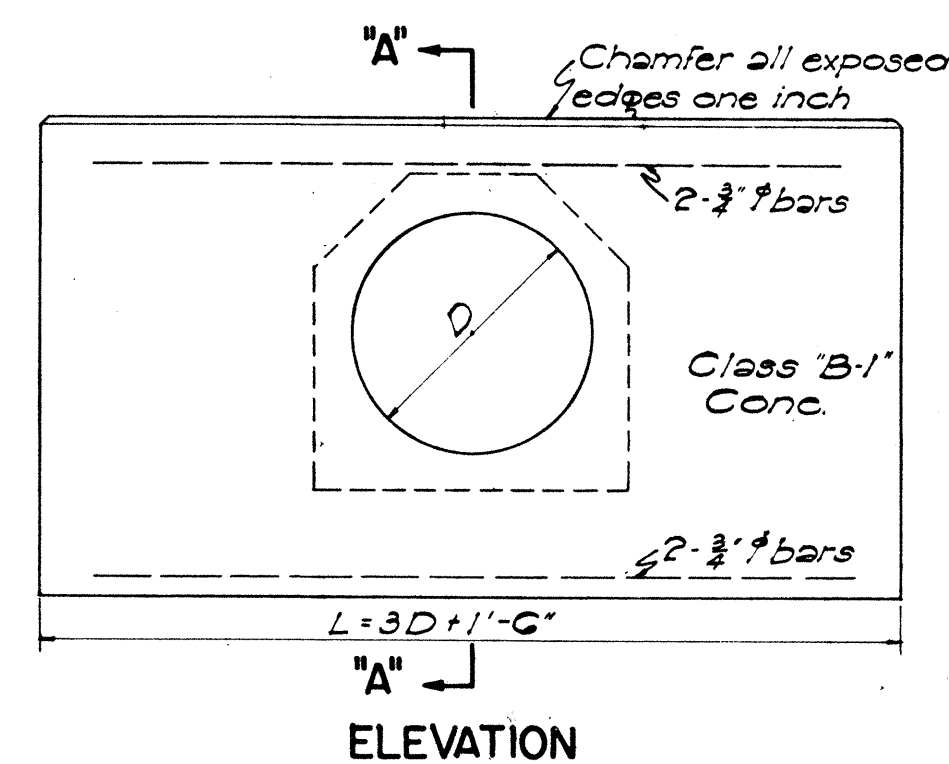
DETAIL OF MASONRY HEADWALL
Scale: 1/2" = 1'-0"



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



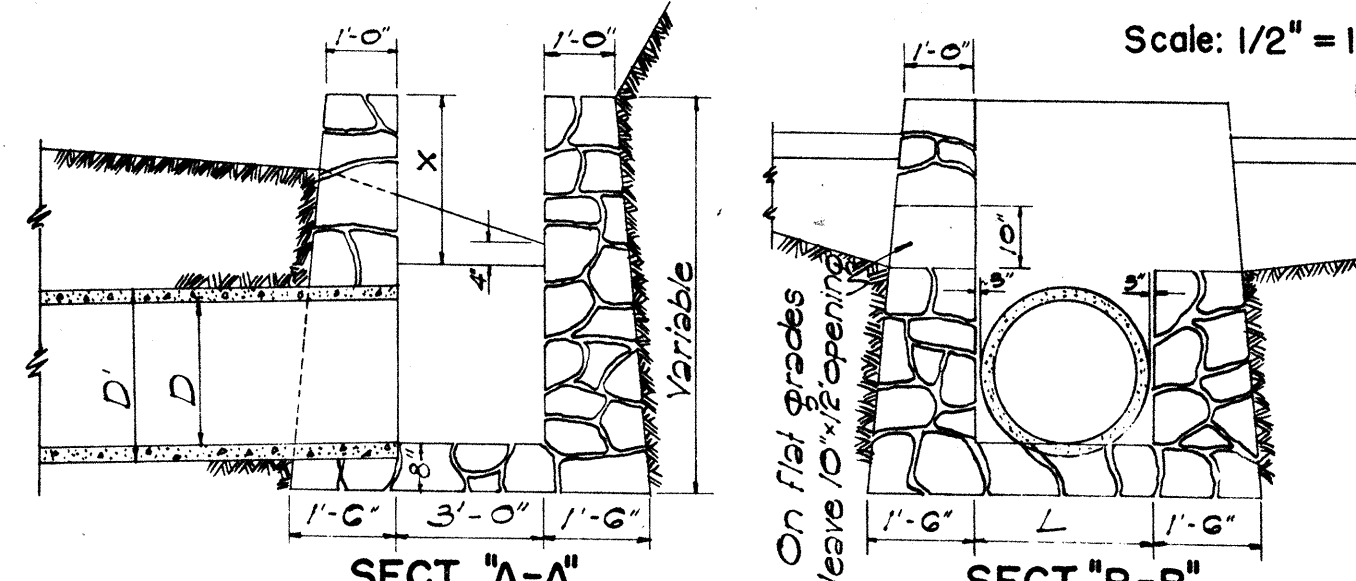
METHOD OF APPLYING CONSTR. JOINT WATERPROOFING
(1) Top surface either side of joint as required with asphalt 50-100 penetration (A.S.T.M. Desig. D 5-25) applied at 200°F.
(2) Apply one layer of 55-1b composition roofing to hot asphalt.
(3) Top surface of composition roofing and 3" beyond all around with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



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

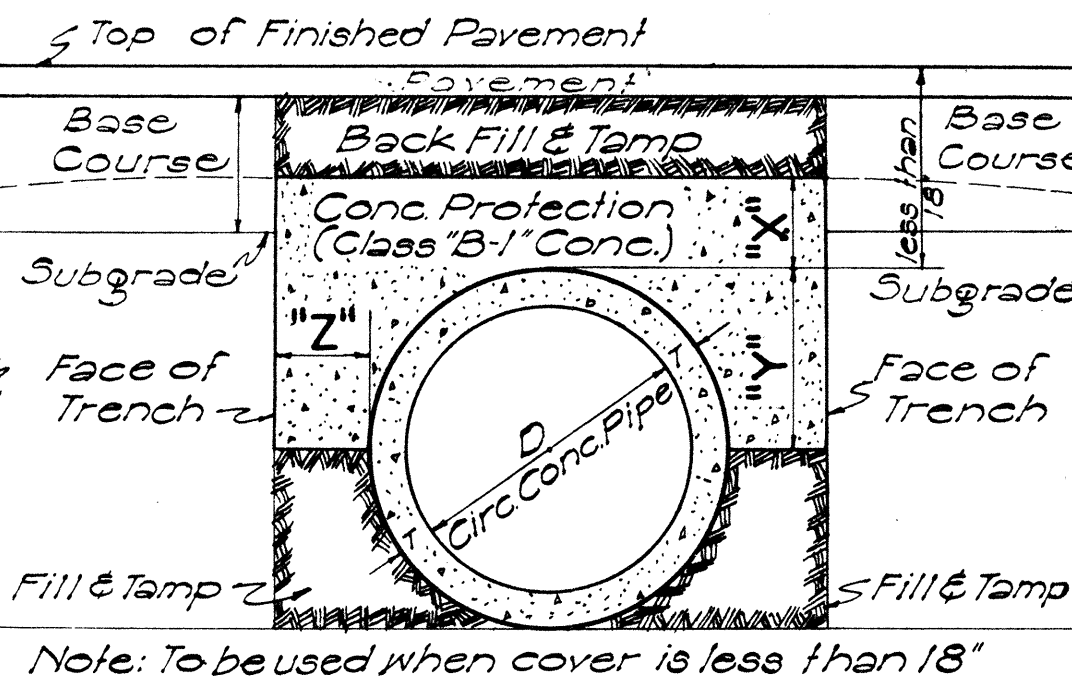
DATA FOR CONC. HEADWALL				Cast-in-Place Conc. Culvert	Conc. Pipe Culvert	Steel For One Headwall
D	B	L	H	Cu. Yds.	Cu. Yds.	No. of Bars Size Length Lbs.
18"	1'-6"	6'-0"	4'-0"	0.92	1.00	4 3/4" 5'-6" 33
24"	1'-6"	7'-6"	4'-6"	1.25	1.38	4 3/4" 7'-0" 42
30"	2'-0"	9'-0"	5'-0"	1.95	2.17	4 3/4" 8'-6" 51
36"	2'-0"	10'-6"	5'-6"	2.45	2.74	4 3/4" 10'-0" 60
42"	2'-6"	12'-0"	6'-0"	3.87	4.26	4 3/4" 11'-6" 69
48"	2'-6"	13'-6"	6'-6"	4.66	5.06	4 3/4" 13'-0" 78

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



NOTE:
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.

SECTION OF HIGH CEMENT RUBBLE MASONRY RETAINING WALL OR SEAWALL

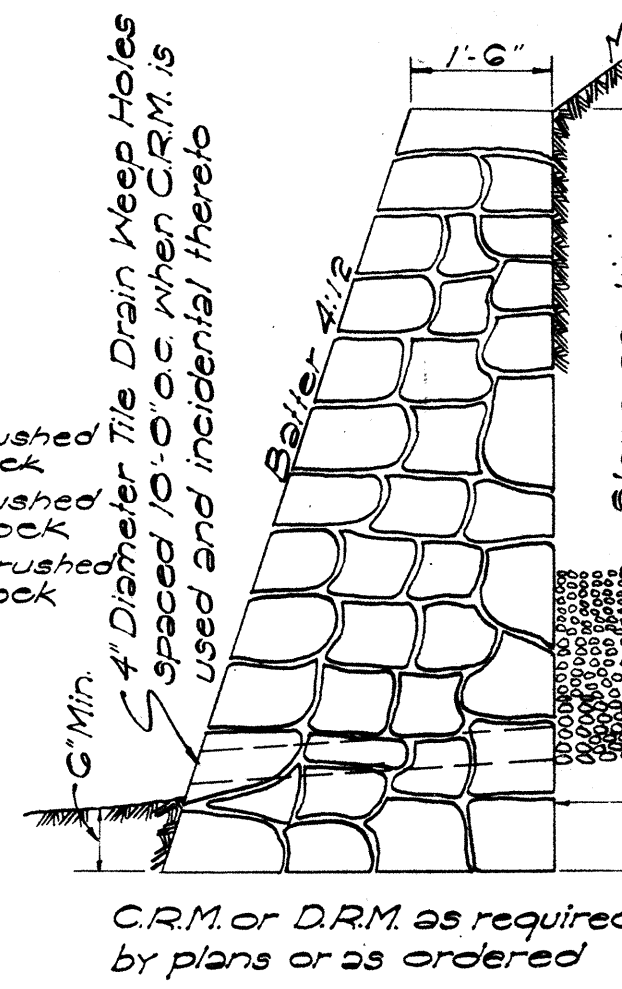


X	Y	Z
6" for 18"D		Z must be from pipe to face of trench
7" " 24"D		
8" " 30"D	D+T	Minimum = X
9" " 36"D		Maximum pay quantity will be Z=12"
10" " 42"D		
11" " 48"D		
12" " 54"D		

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

NOTE: For detail of concrete culvert headwall for Twin 30" Concrete Culvert, See "Catch Basin and Manhole Castings" sheet 64

Note: To Resident Engineer
1) Consider economy of reinf. conc. for high retaining walls which did not originate on plan layout.
2) Elevation of keep holes to be determined by Resident Engineer. Holes to be placed as close to the existing ground line as local conditions permit.

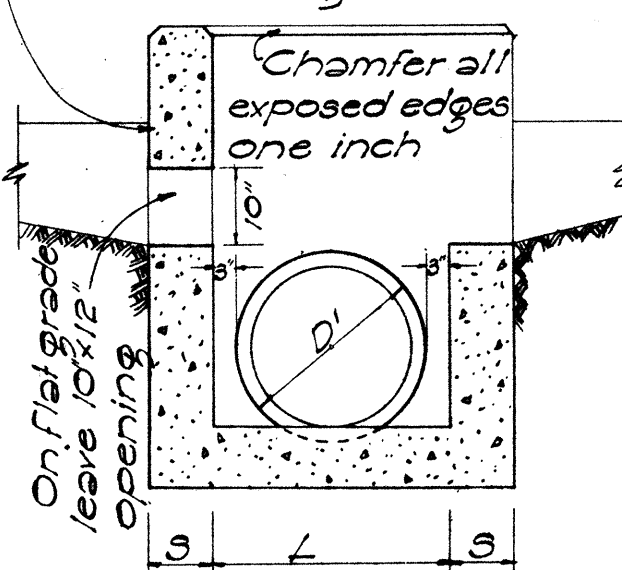


SECTION OF LOW MASONRY RETAINING WALL OR SEAWALL

DATA - CONC. DROP INTAKE				Where Variables Equal
D'	D	L+D+G'	Cu. Yds.	
23"	18"	2'-5"	1.41	4'-6"
30"	24"	3'-0"	1.72	5'-0"
37"	30"	3'-7"	2.32	5'-6"
44"	36"	4'-2"	2.73	6'-0"
51"	42"	4'-9"	3.54	6'-6"
58"	48"	5'-4"	4.01	7'-0"

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

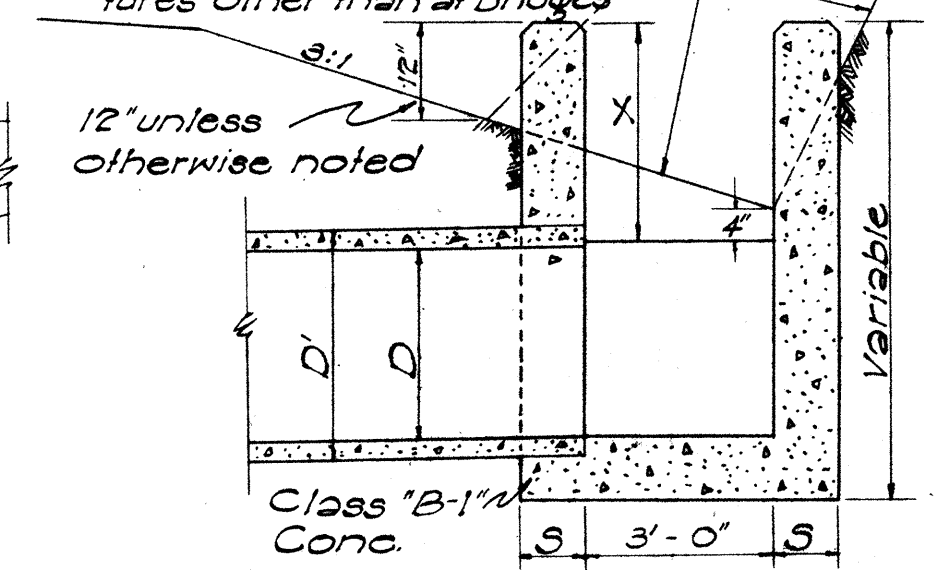
Note: This type of structure shall also be used for the Drop Intakes of Siphons connected with Irrigation Ditches or Flumes with appropriate changes to dimensions. In this case all joints must be made water tight.



SECTION "B-B"

Where drainage comes from both sides lower this wall to same elevation as shown for opposite wall.

Excavate recess in roadway excavation slope for inlet to dimensions and form designated by Engineer. This is "Unclassified Excavation".
Top limits of unclassified excavation for structures other than at bridges.



SECTION "A-A"

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

CONC. PIPE CULVERT

NOTE:
Thickness 'd', reinforcing, and Concrete used, are to conform with the approved design as provided by the Specifications.

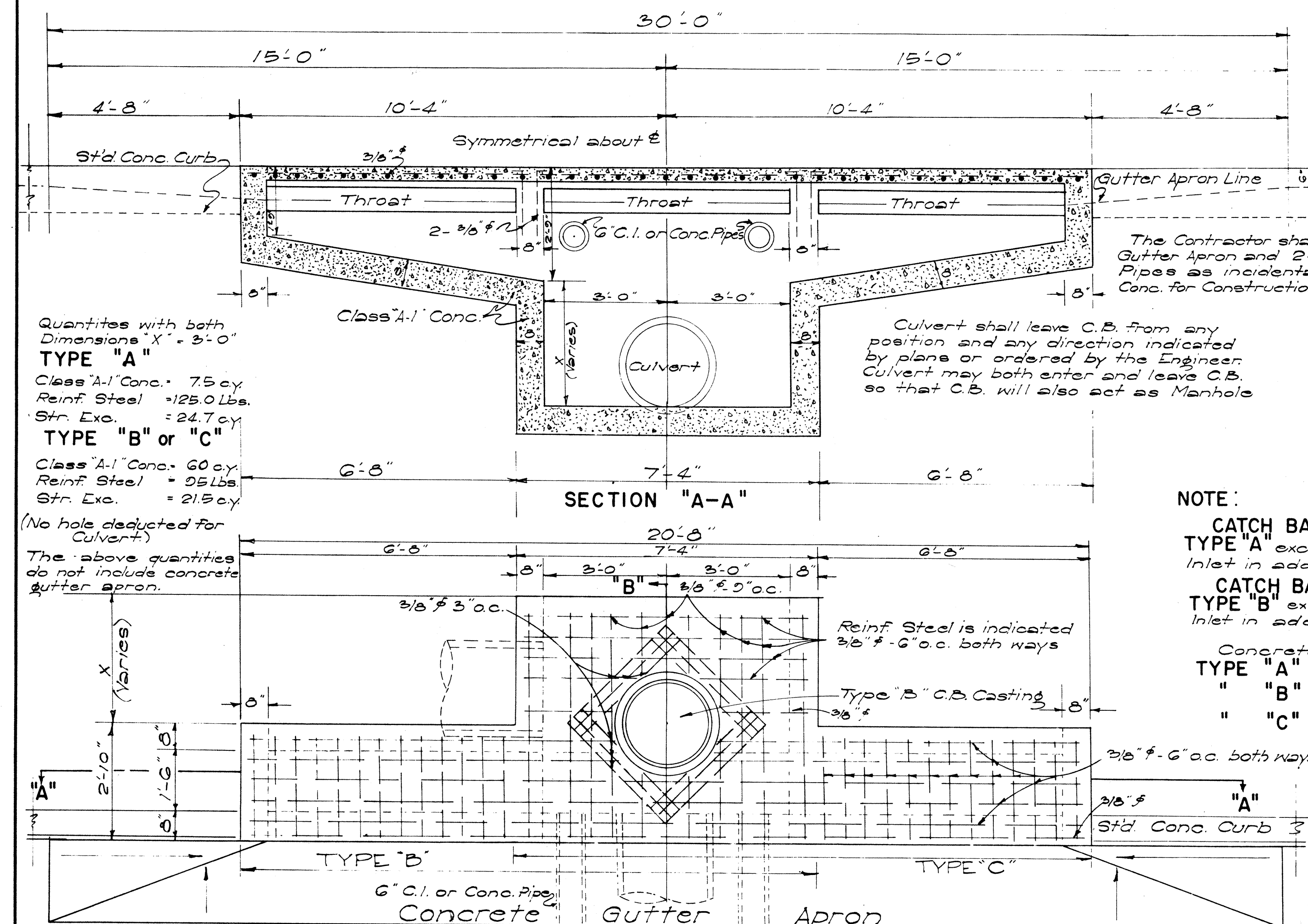
CAST-IN-PLACE CONC. CULVERT

DATA - CAST-IN-PLACE CONC. CULVERT			
D	d	W	Cu'd per ft.
18"	4"	2'-2"	0.11
24"	4 1/2"	2'-9"	0.14
30"	5"	3'-4"	0.19
36"	5 1/2"	3'-11"	0.26

DATE: _____
DESIGNED BY: _____
CHECKED BY: _____
ORIGINAL PLAN: _____
NOTE BOOK: _____
No. _____

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

NOTE:
Provide Manhole Rungs where necessary.



Quantities with both Dimensions "X" = 3'-0"
TYPE "A"
Class "A-1" Conc. = 7.5 cy.
Reinf. Steel = 125.0 lbs.
Str. Exc. = 24.7 cy.
TYPE "B" or "C"
Class "A-1" Conc. = 6.0 cy.
Reinf. Steel = 95 lbs.
Str. Exc. = 21.5 cy.

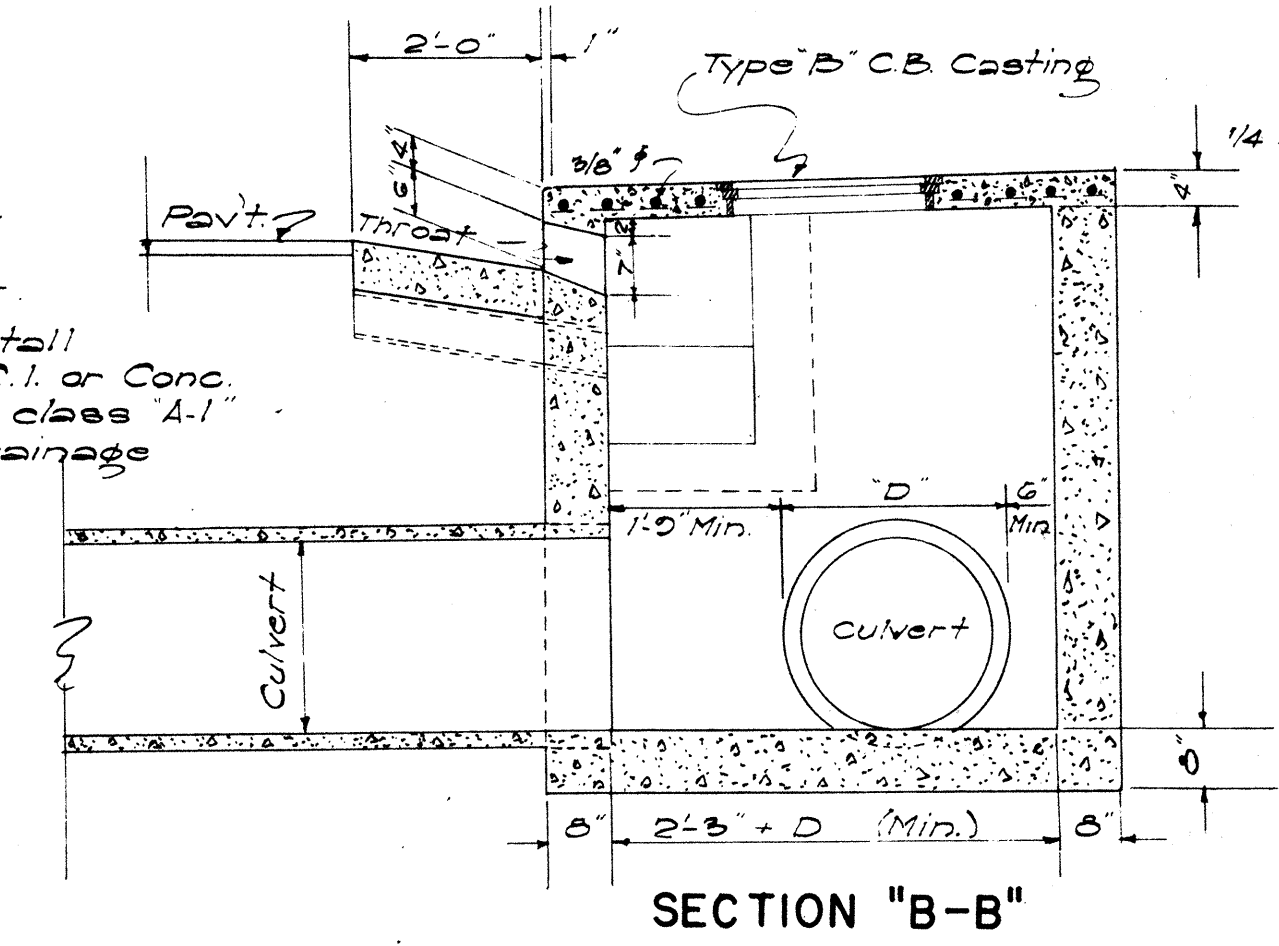
(No hole deducted for Culvert)
The above quantities do not include concrete gutter apron.

The Contractor shall install Gutter Apron and 2" C.I. or Conc. Pipes as incidental to class "A-1" Conc. for Construction Drainage

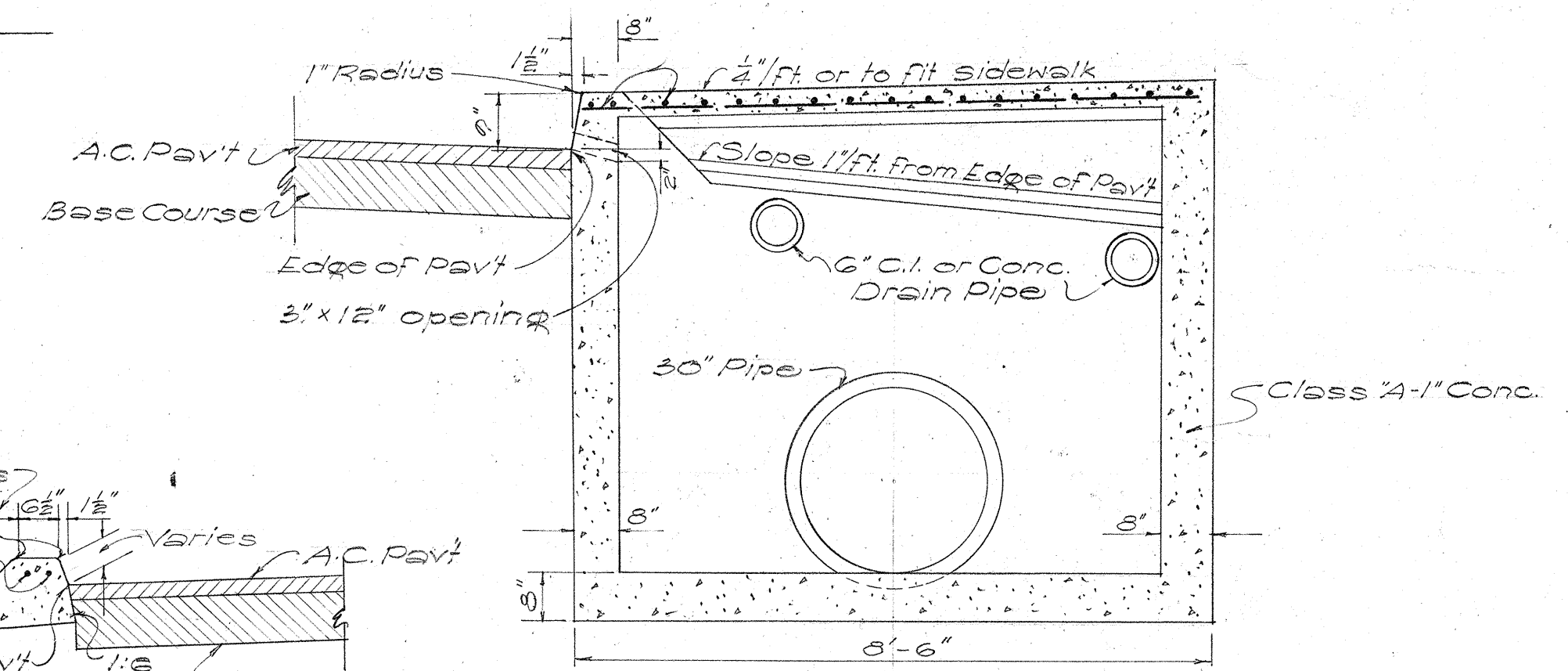
Culvert shall leave C.B. from any position and any direction indicated by plane or ordered by the Engineer. Culvert may both enter and leave C.B. so that C.B. will also act as Manhole

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.

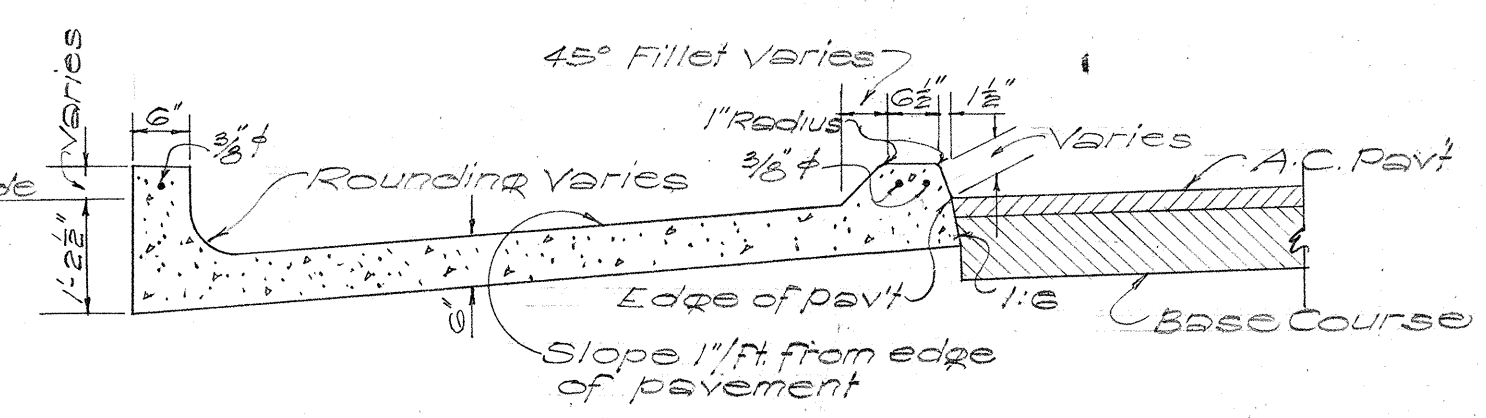
Concrete Gutter Length:
TYPE "A" = 30'-0"
" "B" = 23'-4"
" "C" = 23'-4"



SECTION "B-B"

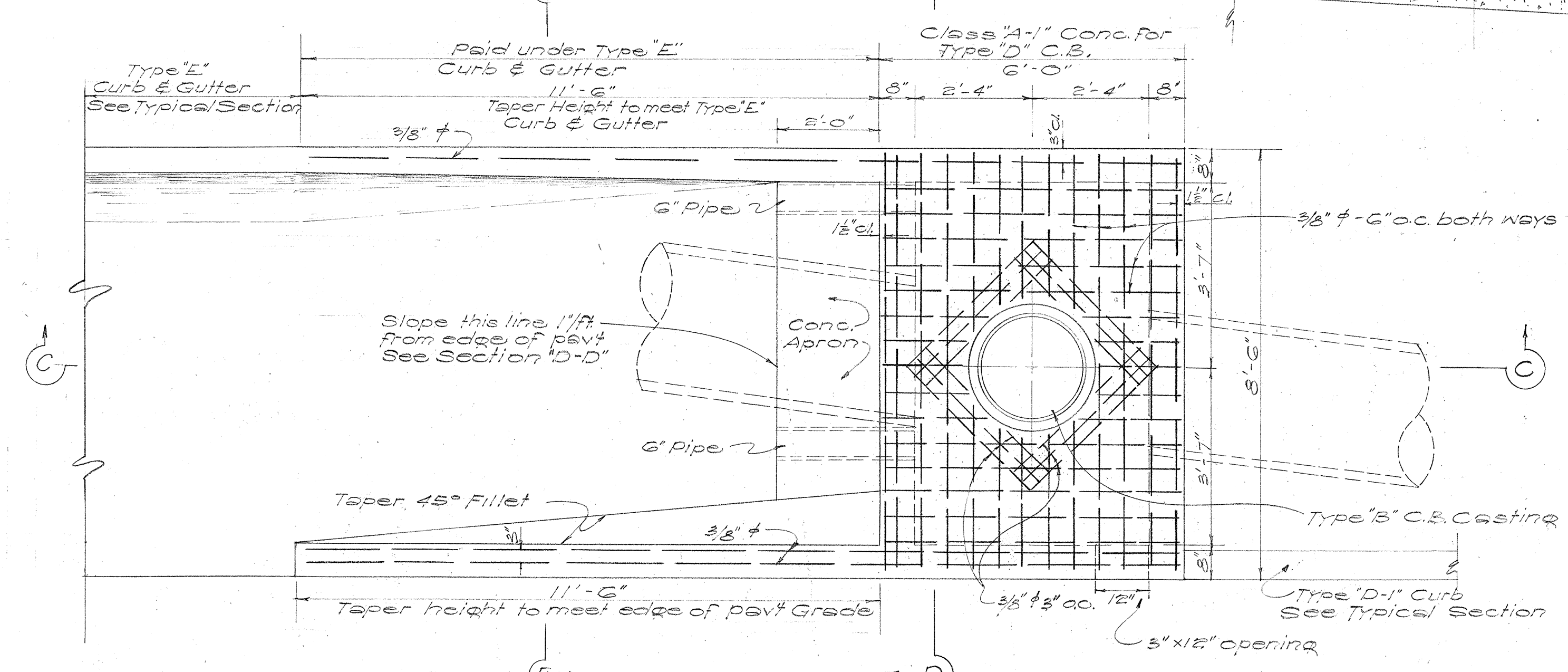


SECTION "D-D"
Scale: 1/2" = 1'-0"

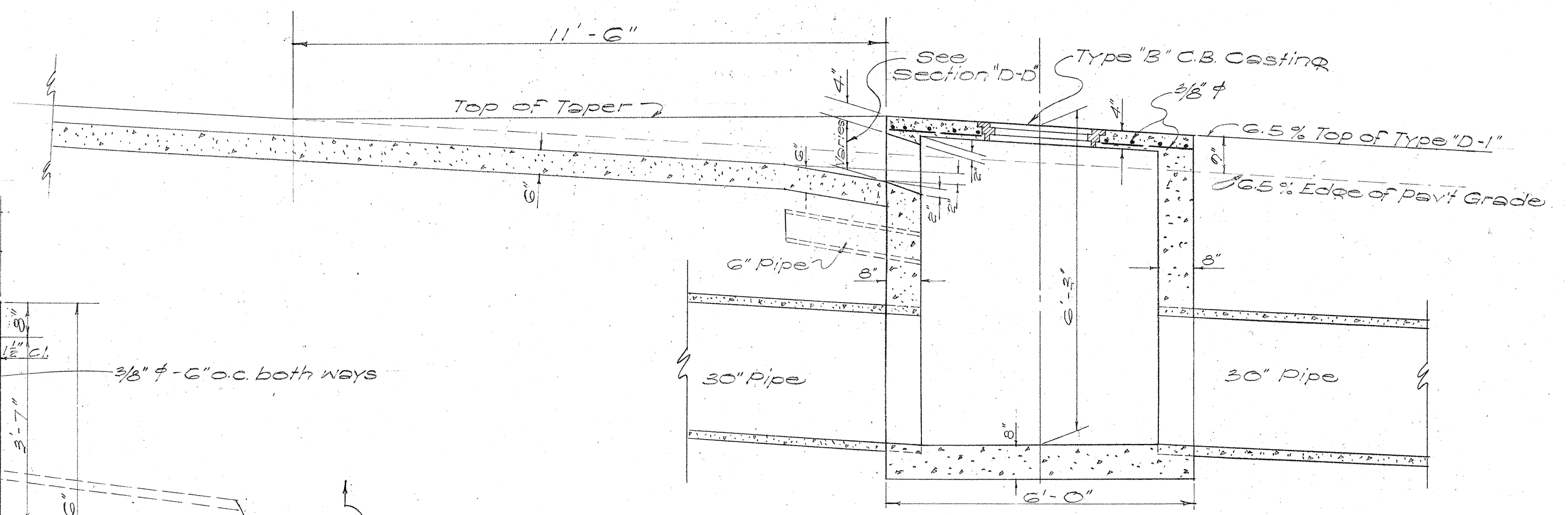


SECTION "E-E"
Scale: 1/2" = 1'-0"

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



PLAN
CATCH BASIN TYPE "D"
Scale: 1/2" = 1'-0"



SECTION "C-C"
Scale: 1/2" = 1'-0"

TYPE "D"
Class "A-1" Conc. = 5.7 cy.
Reinf. Steel = 100 lb.
Struc. Exc. = 17.3 cy.
(No holes deducted for Culvert)
The above quantities do not include concrete apron.

APPROVED: DATE 6-23-53

Ray E. Hutter
TERRITORIAL HIGHWAY ENGINEER

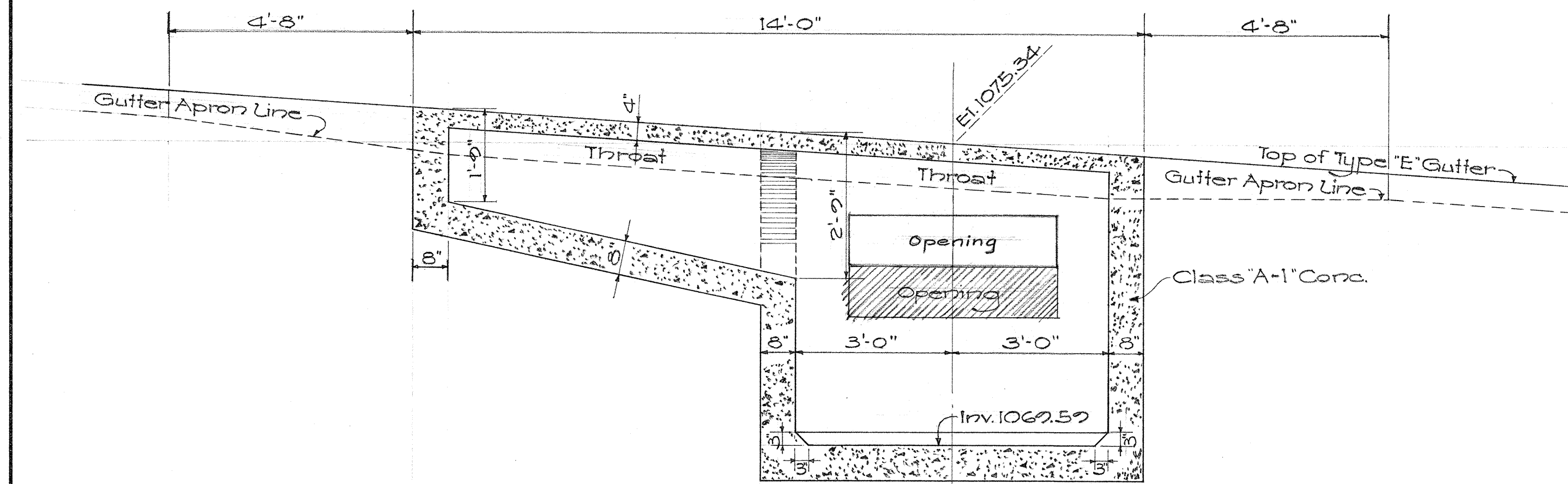
TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII
**STANDARD DETAILS
CATCH BASINS**

SCALES AS NOTED
SHEET NO. OF SHEETS

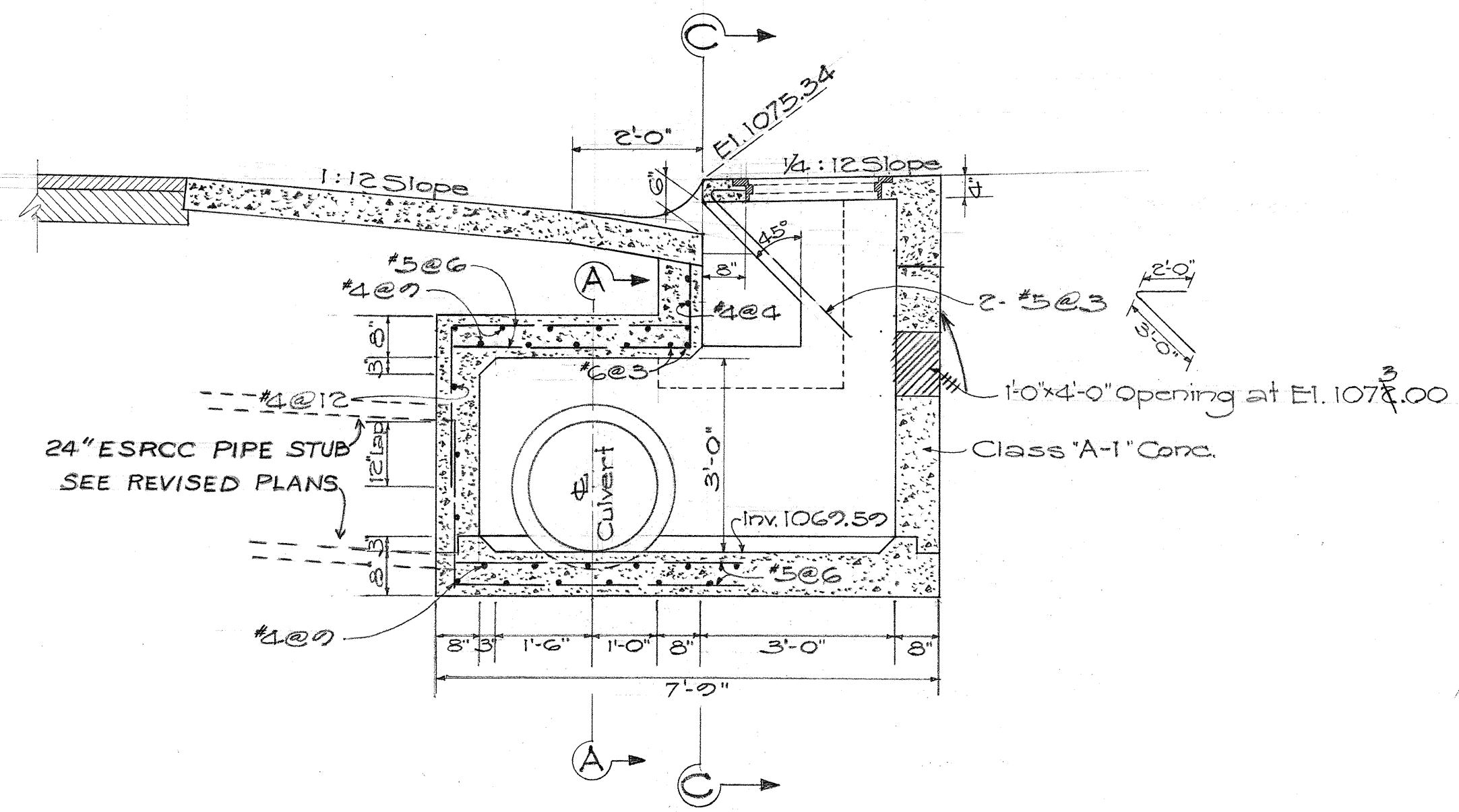
5708.63

ORIGINAL PLAN
DESIGNED BY
DRAWN BY
NOTE BOOK
QUANTITIES BY
CHECKED BY

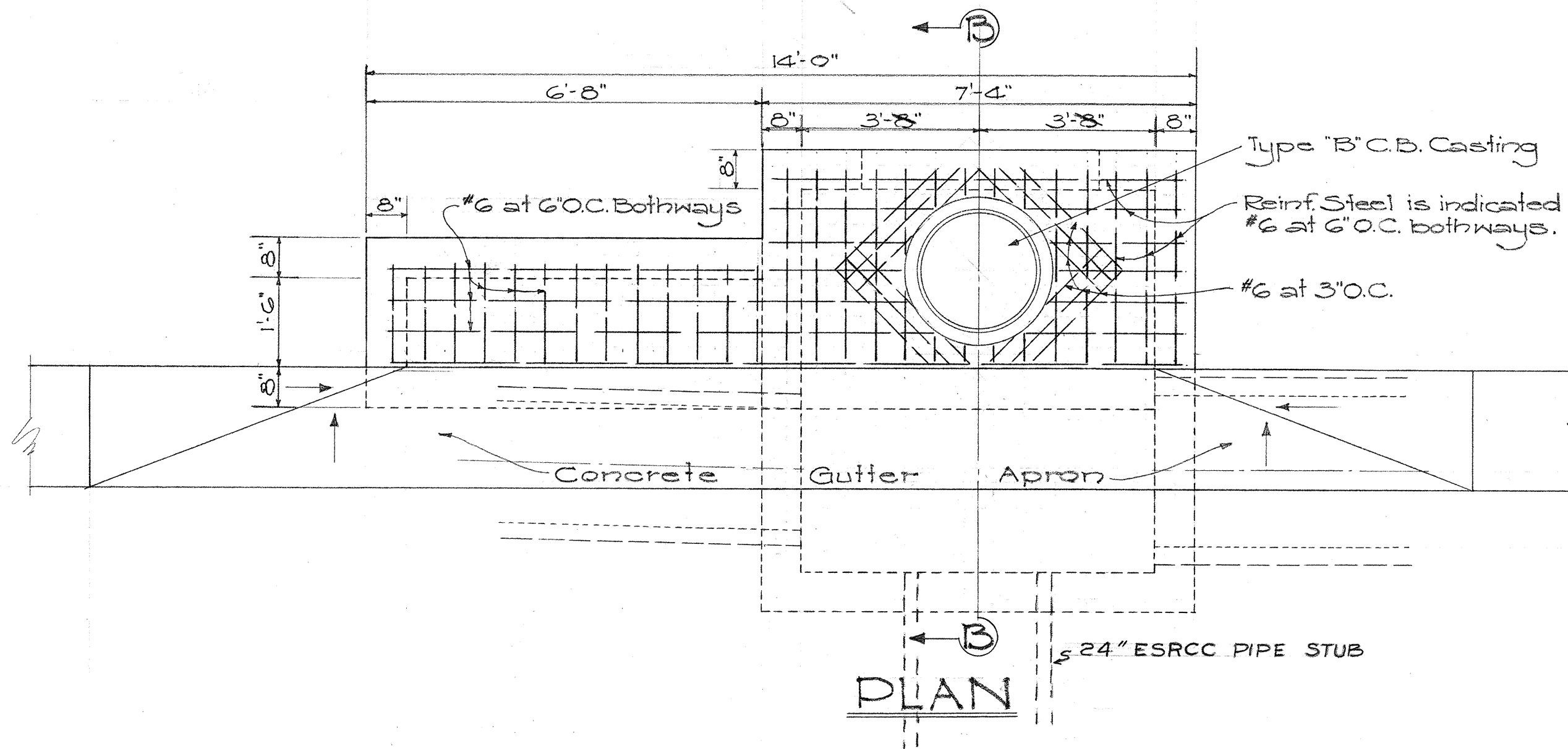
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-216(5)			



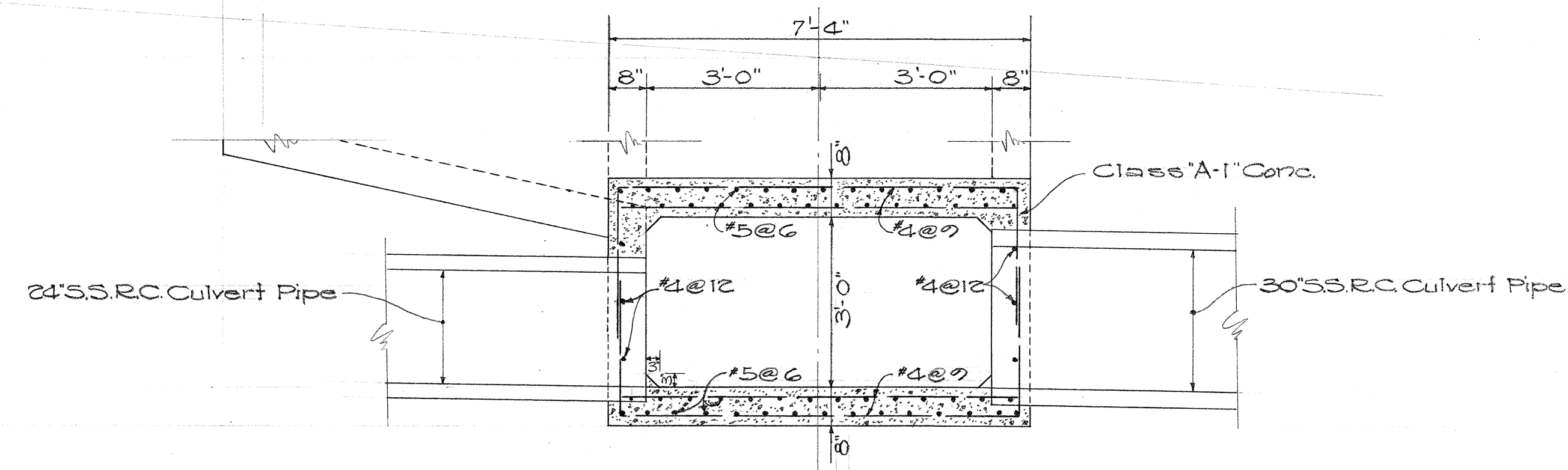
SECTION "C-C"



SECTION "B-B"



PLAN



SECTION "A-A"

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII
SPECIAL CATCH BASIN
AT 93+00
PALI RD. (TUNNEL SECTION)
PROJ. NO 5-216(5)
Scale: 1/2"=1'-0"
Nov. 1956.

SHEET No. OF SHEETS

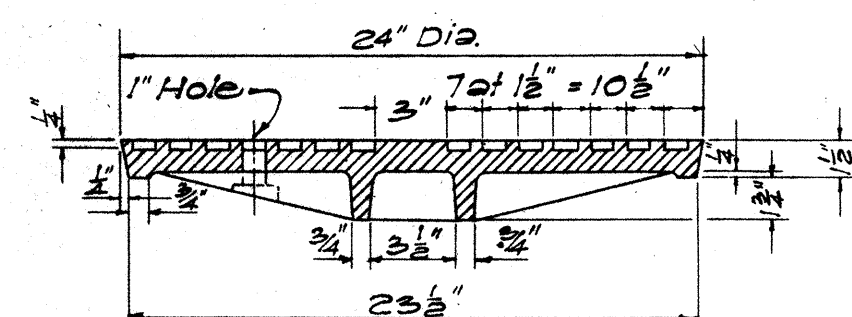
5708 63A

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

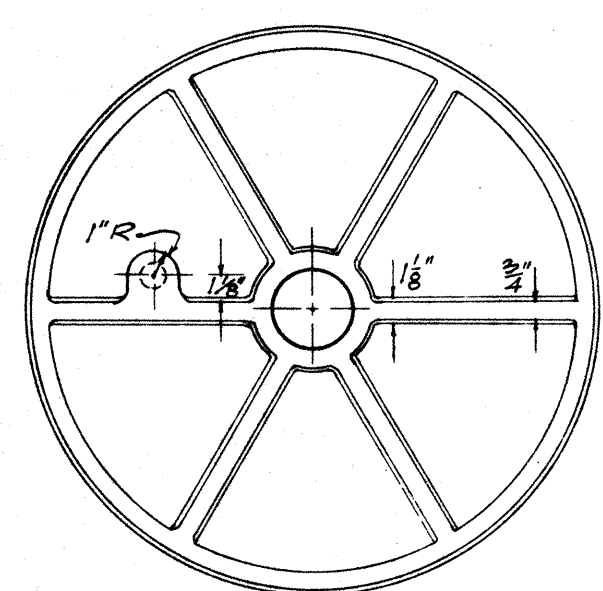
NOTE: Stock Pattern From Novelty Foundry ~ Honolulu



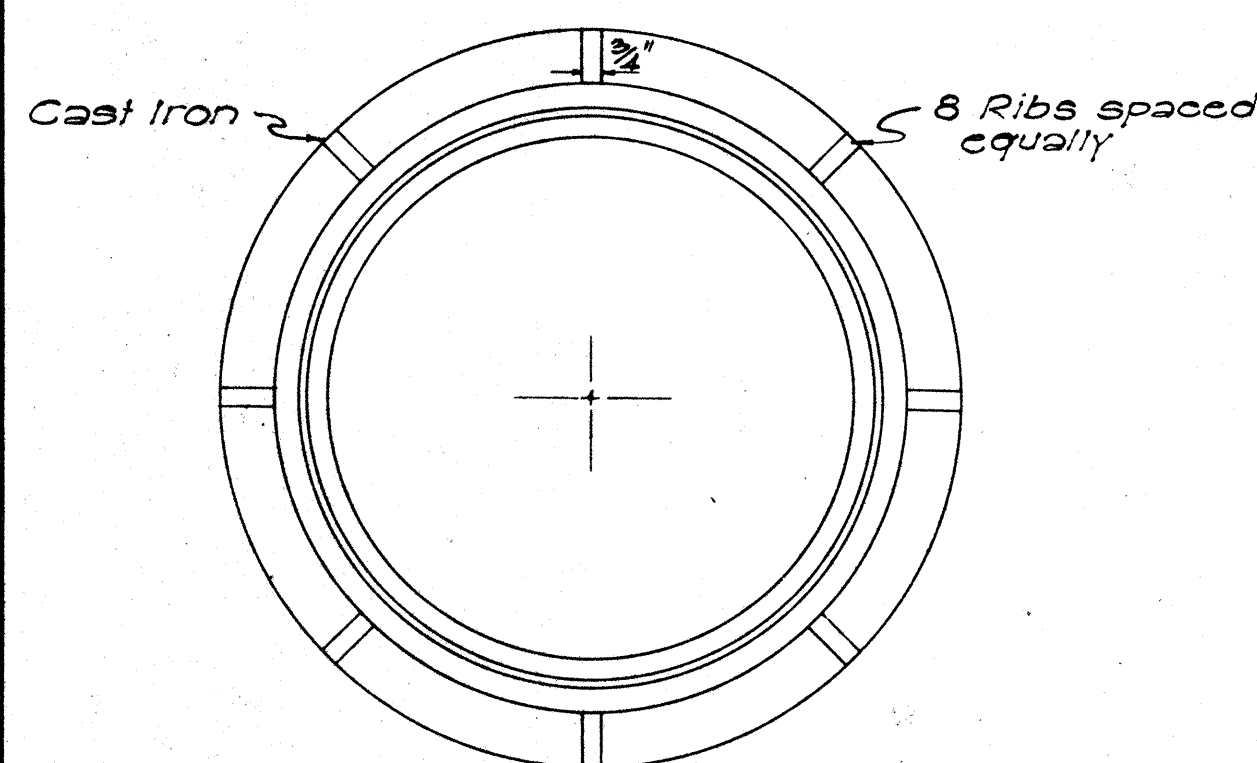
TOP VIEW OF COVER



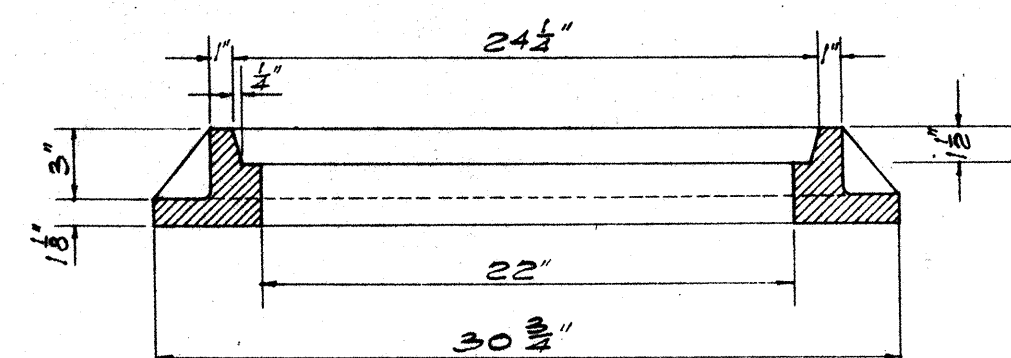
SECTION



BOTTOM VIEW OF COVER



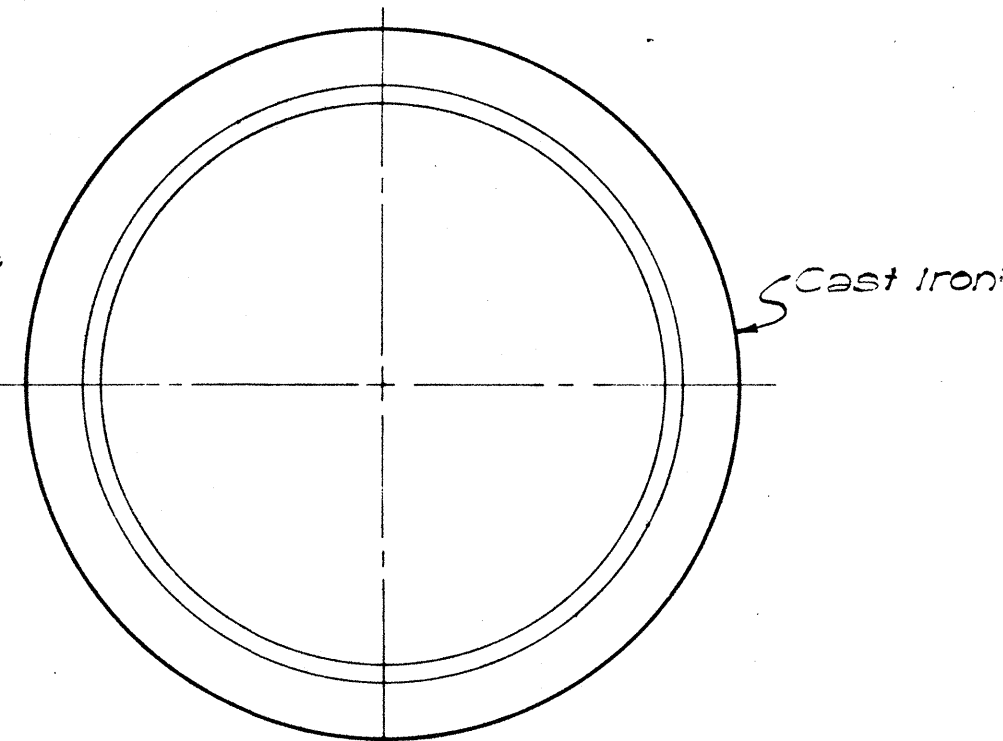
PLAN OF RIM



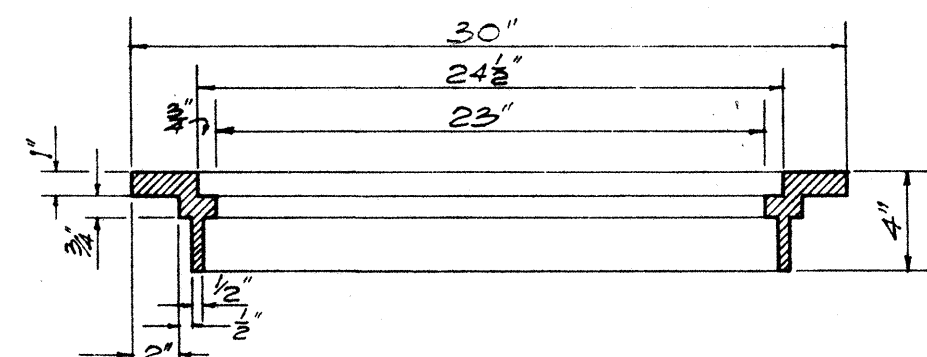
SECTION OF RIM
DETAILS OF TYPE "C"
MANHOLE CASTINGS

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

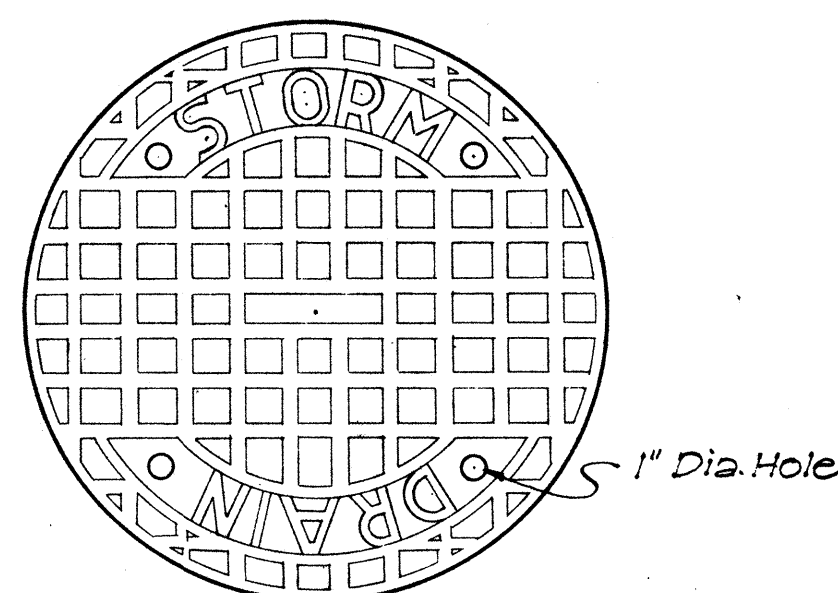
NOTE:
The Cover for Water Manhole shall be the same as for Sanitary Sewer except that the word "WATER" shall be substituted for "SANITARY SEWER". The frames for Sanitary Sewer and Water Covers shall be the same.



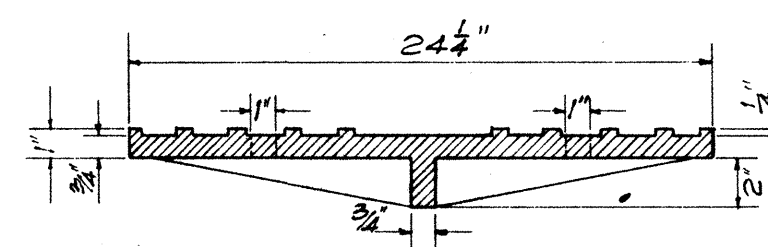
PLAN OF RIM



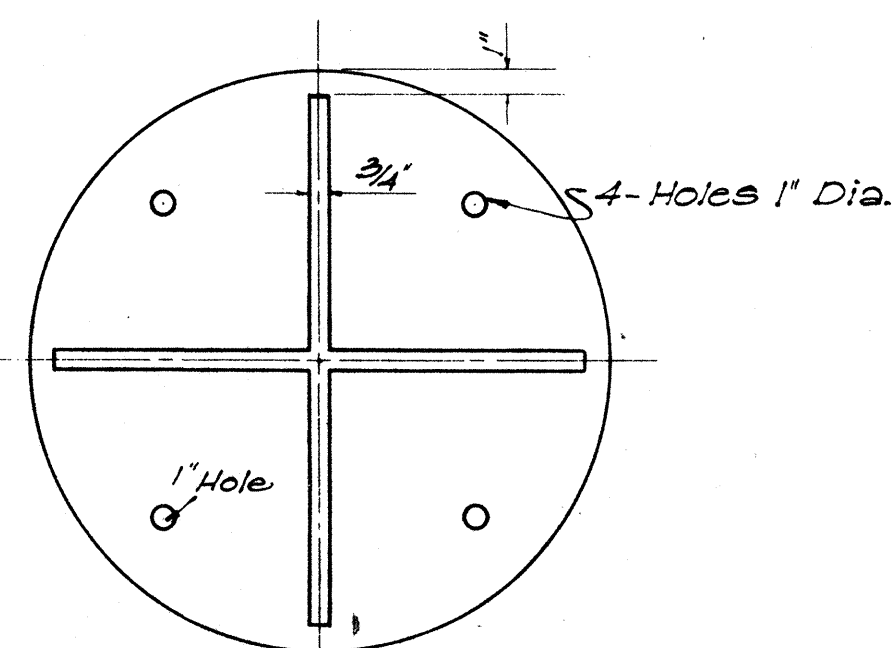
SECTION OF RIM



TOP VIEW OF COVER



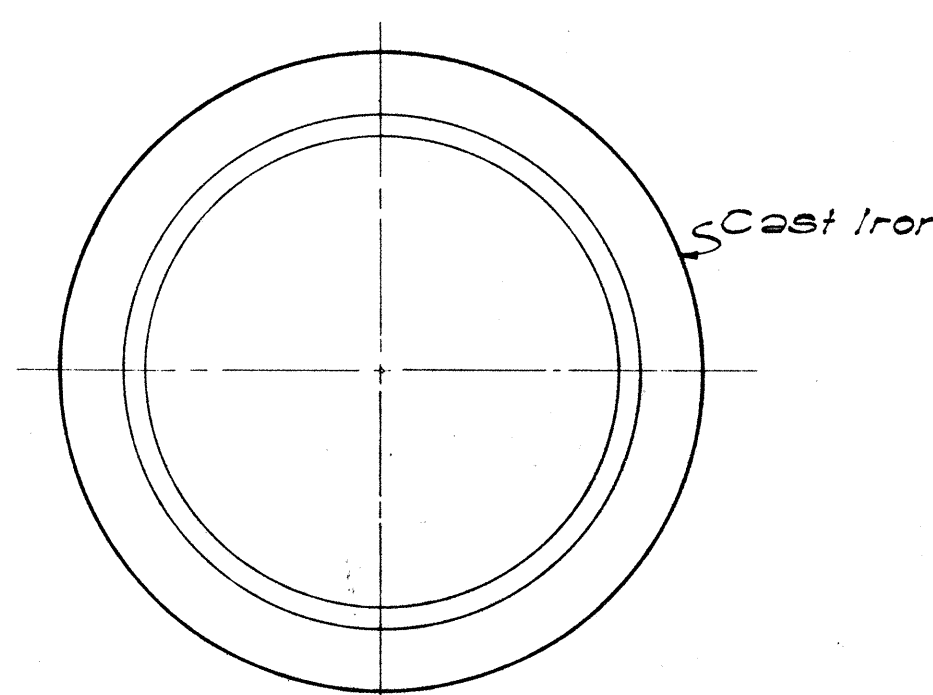
SECTION



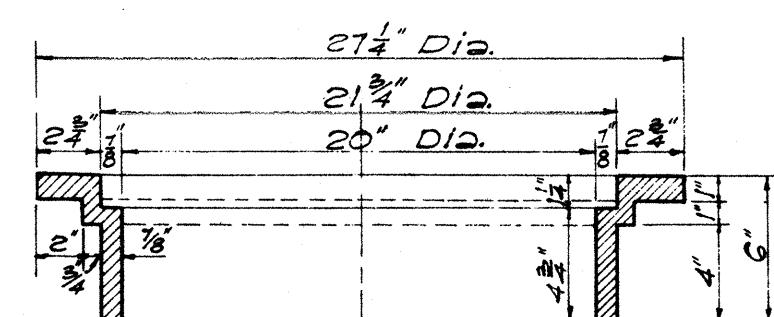
BOTTOM VIEW OF COVER

DETAILS OF TYPE "B"
CATCH BASIN CASTINGS

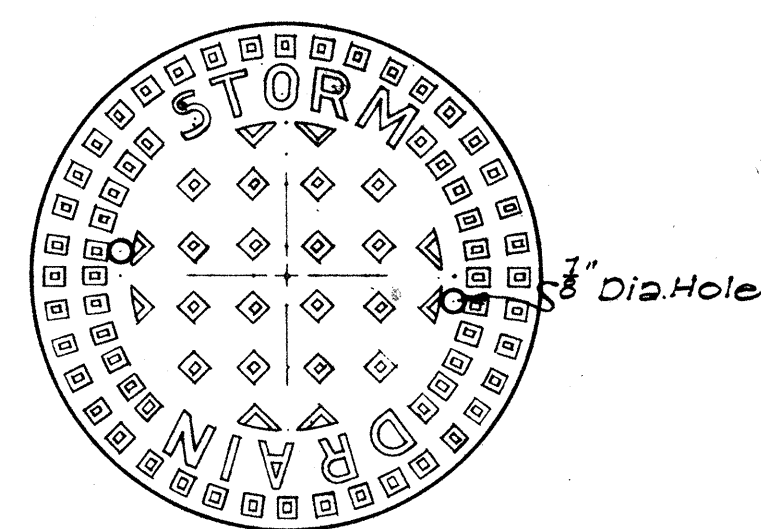
SCALE: 1-1/2" = 1'-0"



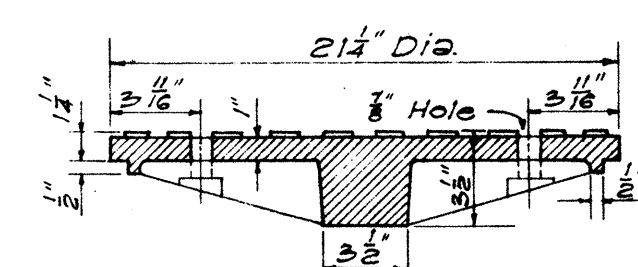
PLAN OF RIM



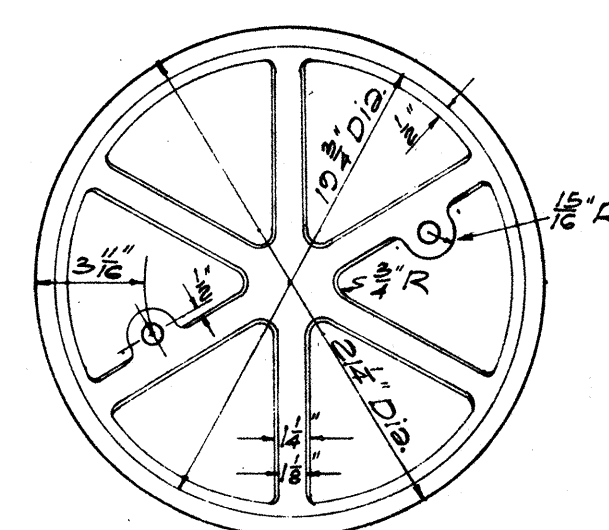
SECTION OF RIM



TOP VIEW OF COVER



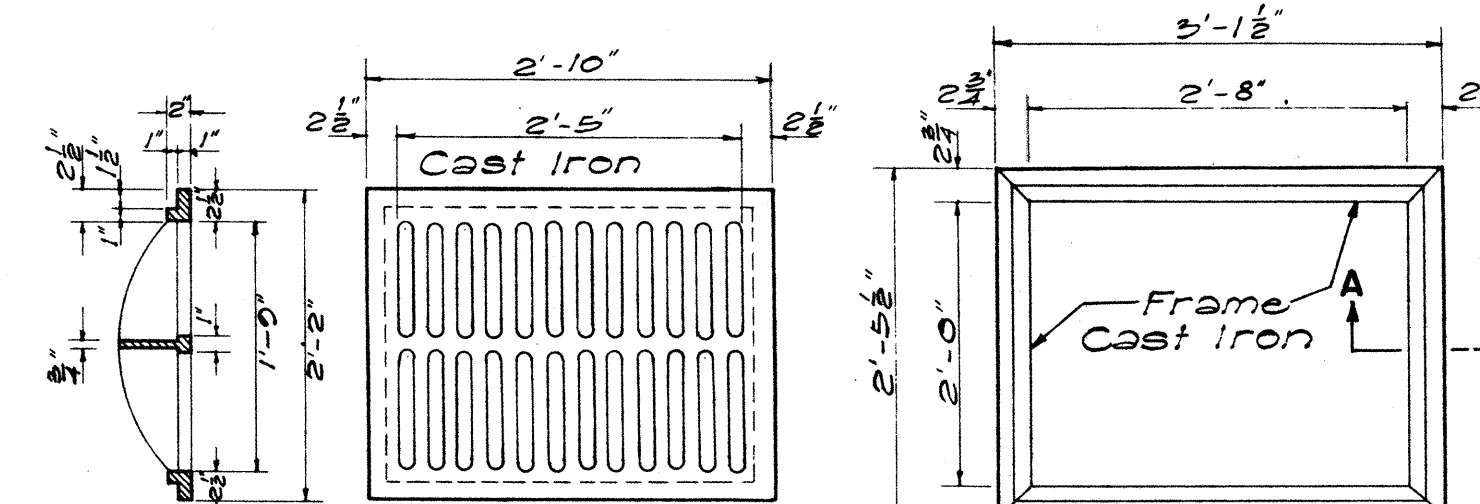
SECTION



BOTTOM VIEW OF COVER

DETAILS OF TYPE "A"
MANHOLE CASTINGS

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

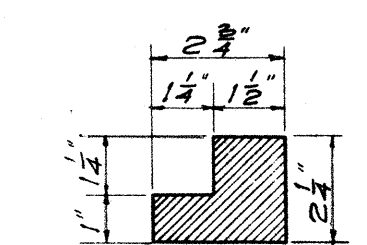


SECTION

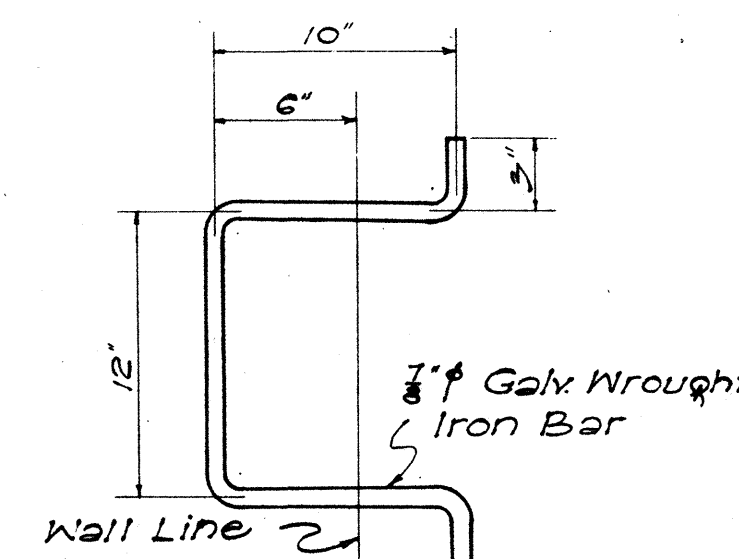
TOP VIEW

TYPE C C.I. FRAME AND GRATING

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

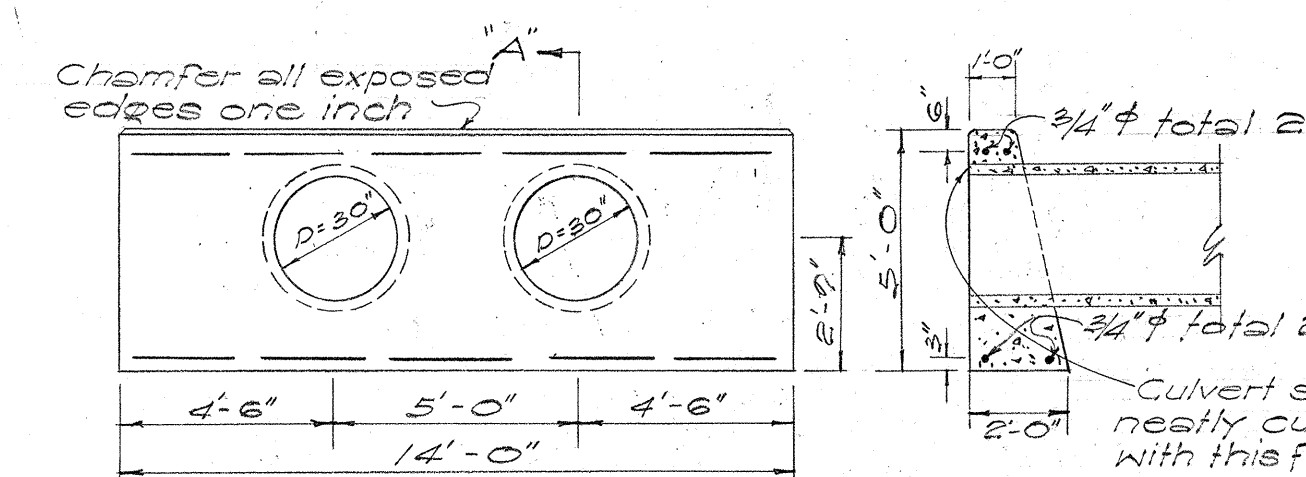


SECTION "A-A"
SCALE 3" = 1'-0"



MANHOLE RUNG

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



ELEVATION

SECTION "A-A"

Class A-1 conc. = 3.87 c.y.
Reinforcing Steel = 81 lb.

DETAIL OF CONCRETE HEADWALL FOR
TWIN 30" CONCRETE CULVERT
Scale: 4" = 1'-0"

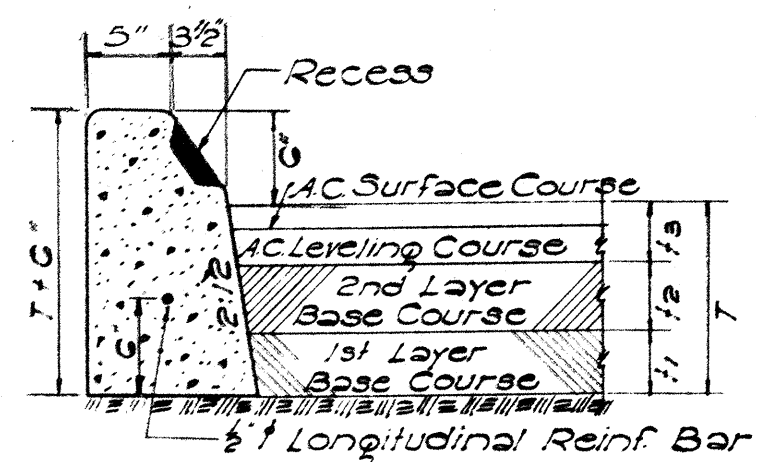
ORIGINAL PLAN
SURVEY PLOTTED BY
DESIGNED BY
DRAWN BY
CHECKED BY
NOTE BOOK
No.

APPROVED: DATE 6-23-53
Territorial Highway Engineer

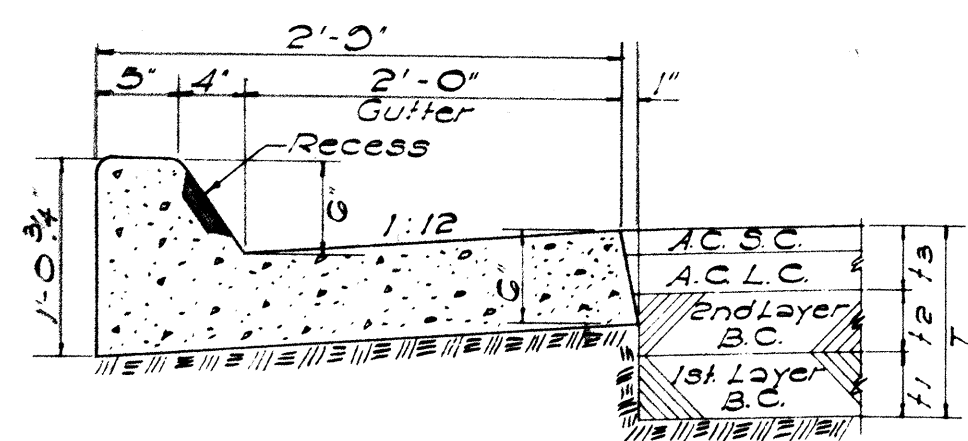
TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII
STANDARD DETAILS
CATCH BASIN AND
MANHOLE CASTINGS
SCALES AS NOTED

SHEET NO. OF SHEETS

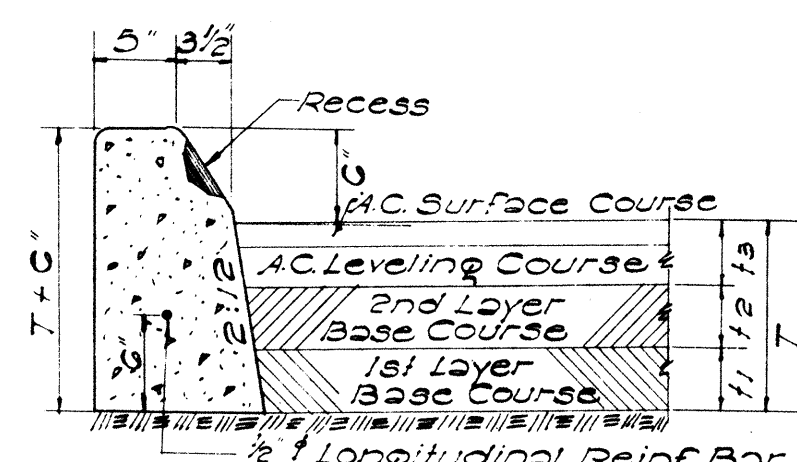
5708.64



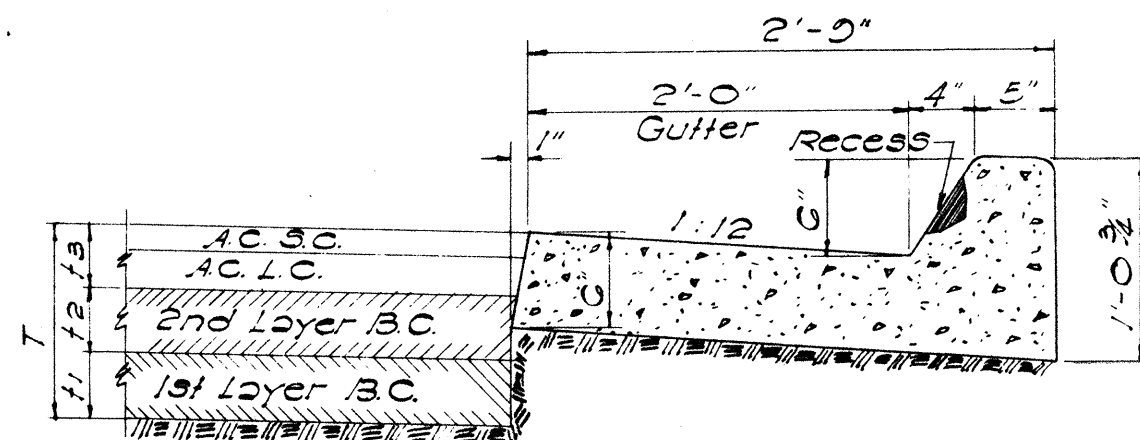
TYPE "A" & "B" CURB
SCALE: 1" = 1'-0"



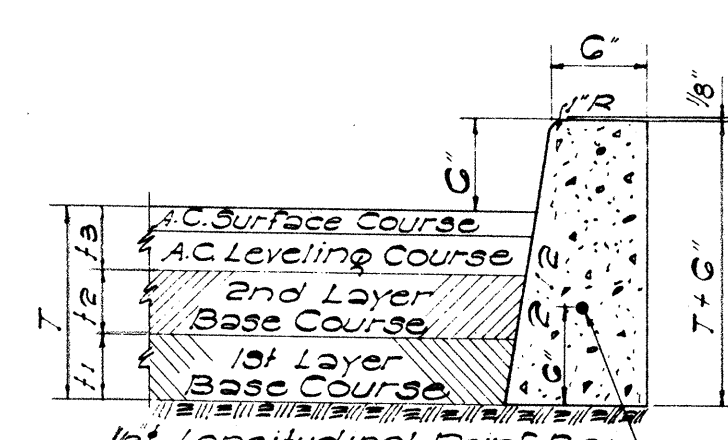
TYPE "AG" & "BG" CURB & GUTTER
SCALE: 1" = 1'-0"



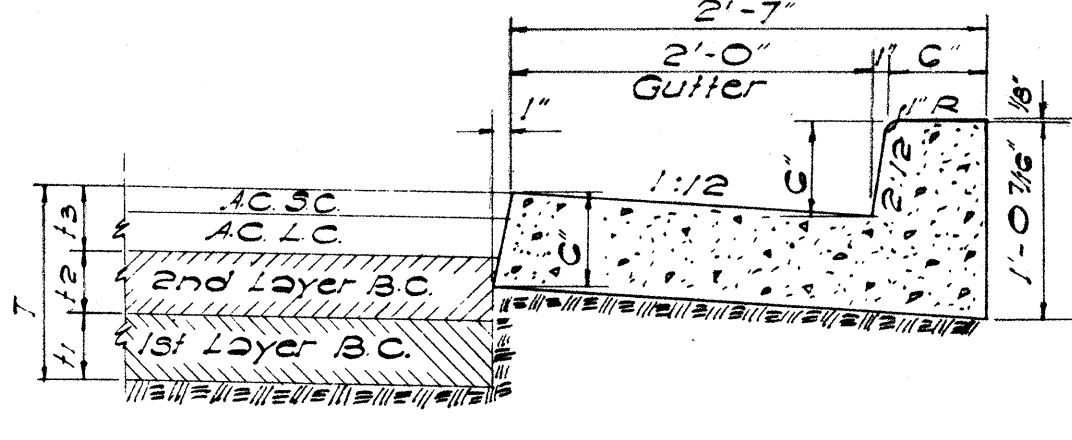
TYPE "C" CURB
SCALE: 1" = 1'-0"



TYPE "CG" CURB & GUTTER
SCALE: 1" = 1'-0"

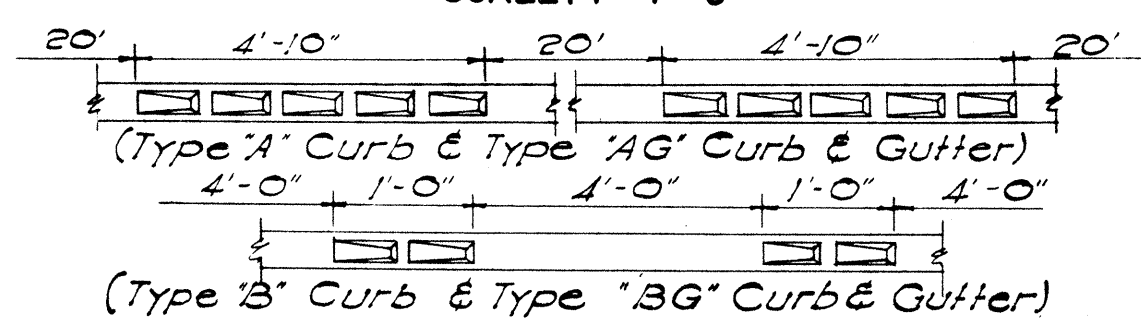


TYPE "D" CURB
SCALE: 1" = 1'-0"

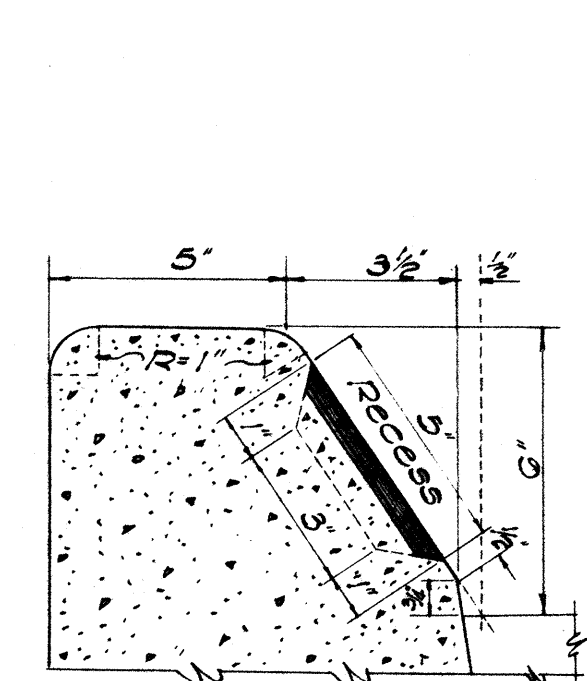


TYPE "DG" CURB & GUTTER
SCALE: 1" = 1'-0"

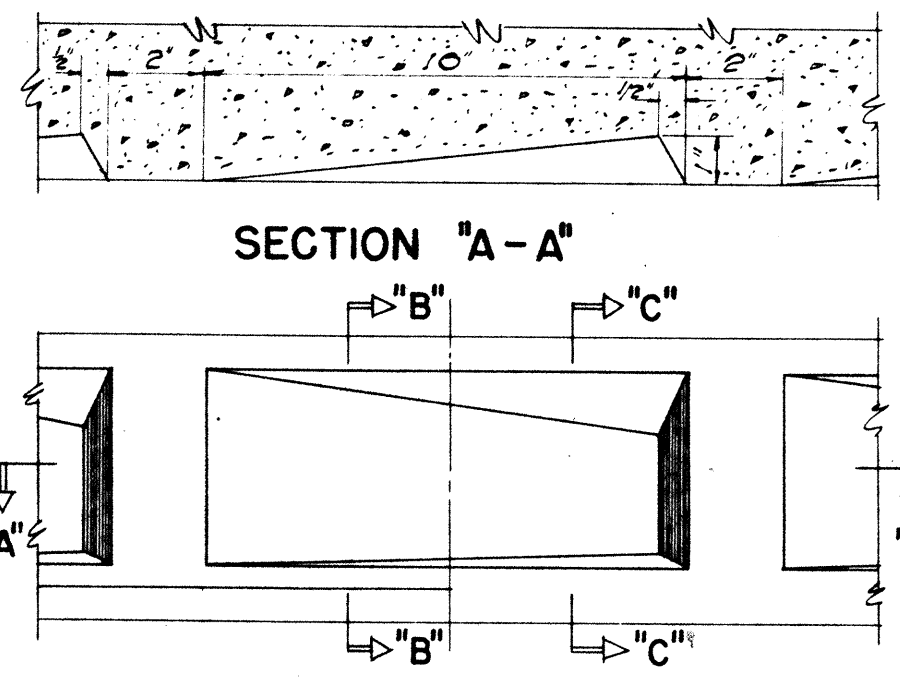
General Note Covering All Types of Curbs:
Occasionally curb rests on first layer of base course. See typical sections.



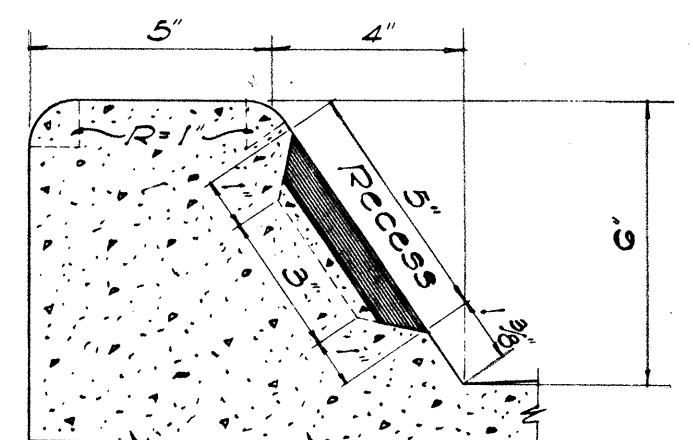
TYPE AND SPACING OF RECESSES



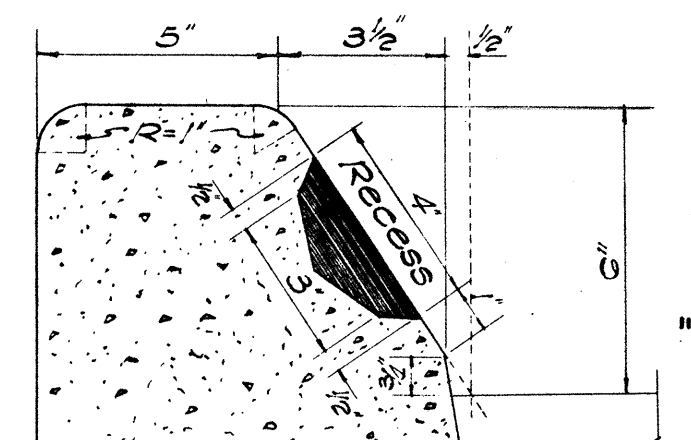
SECTION "B-B"
TYPE "A" & "B" CURB



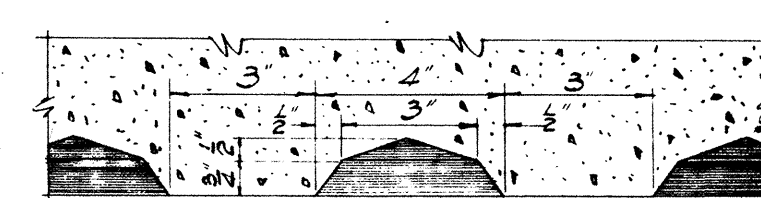
ELEVATION
SCALE: 3" = 1'-0"



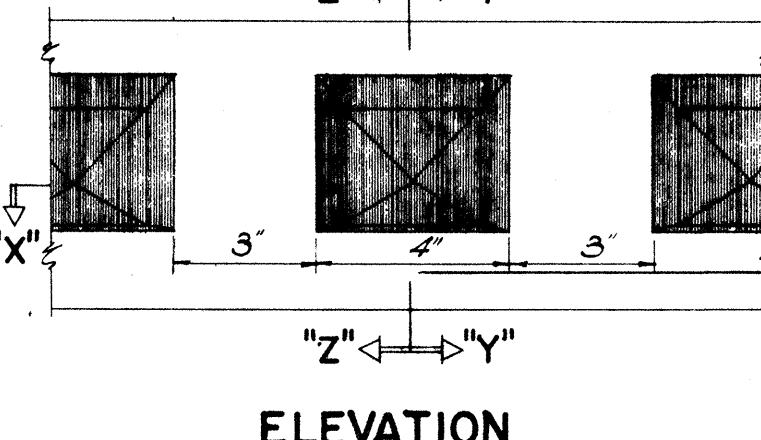
SECTION "C-C"
TYPE "AG" & "BG" CURB



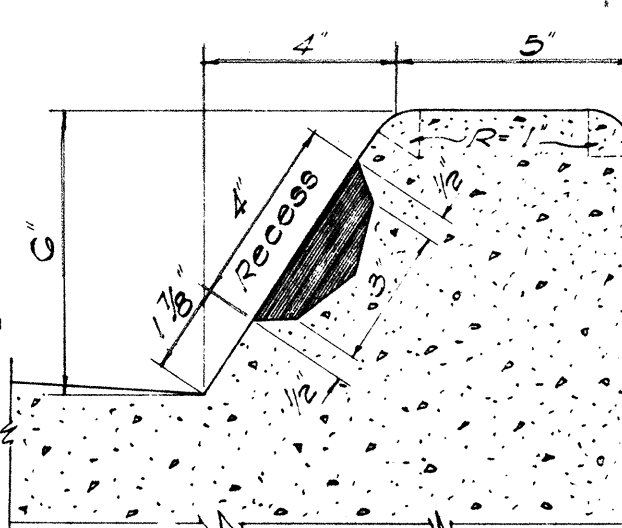
SECTION "Y-Y"
TYPE "C" CURB



SECTION "X-X"
"Z" < "Y"

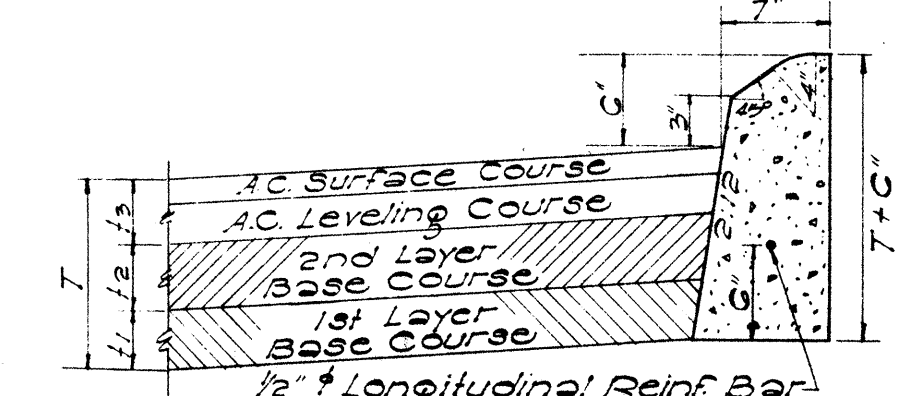


ELEVATION
SCALE: 3" = 1'-0"



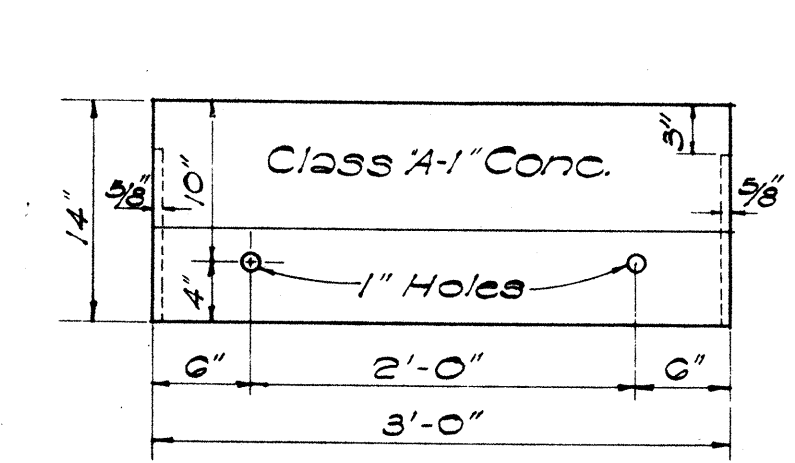
SECTION "Z-Z"
TYPE "CG" CURB

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 Concrete Curbs and Gutters shown herein are to be of Class "A-1" Conc. and Cast-in-Place.

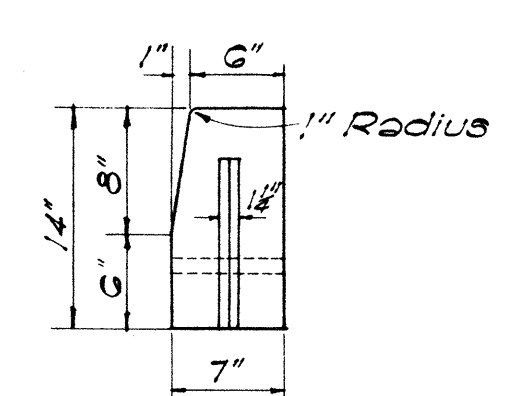


TYPE "F" CURB
SCALE: 1" = 1'-0"

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



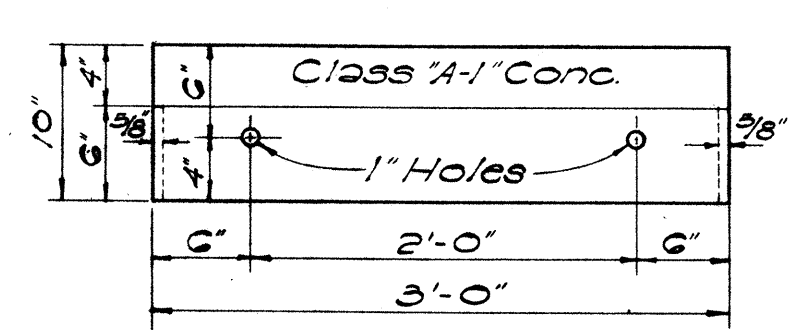
FRONT ELEV.



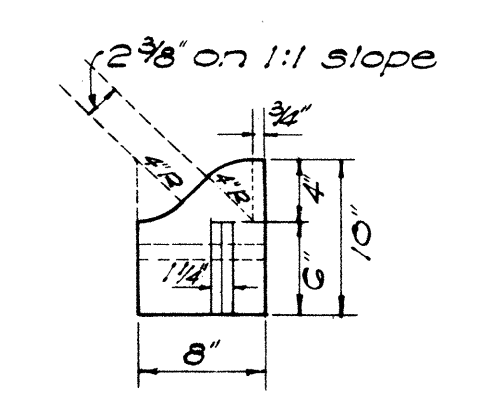
END ELEV.

PRECAST CONC. CURB

SCALE: 1" = 1'-0"



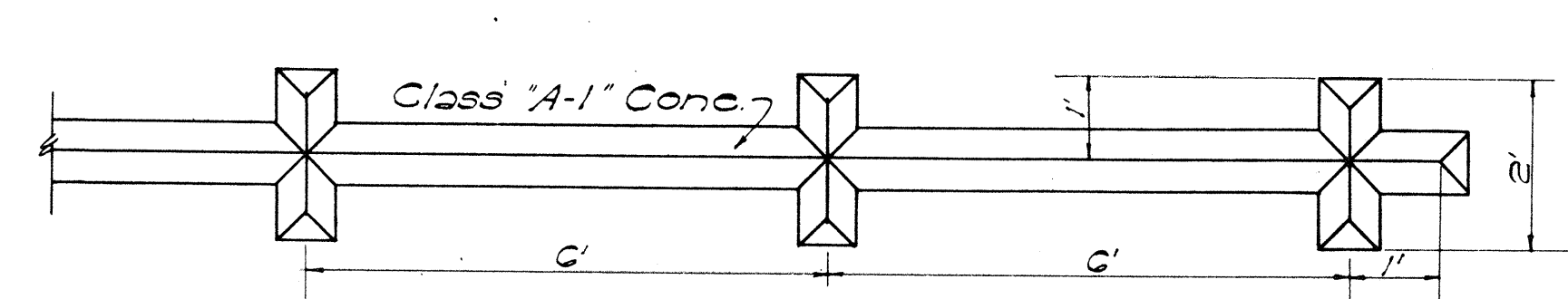
FRONT ELEV.



END ELEV.

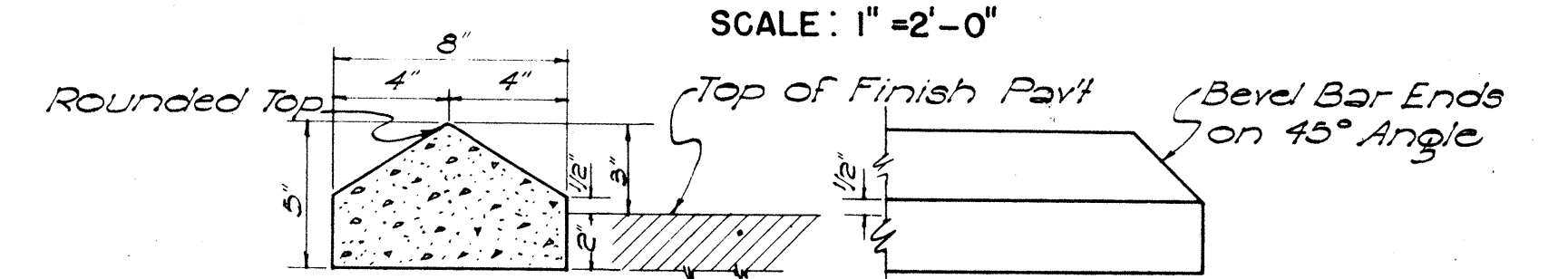
PRECAST CONC. ROLL CURB

SCALE: 1" = 1'-0"



PLAN

SCALE: 1" = 2'-0"

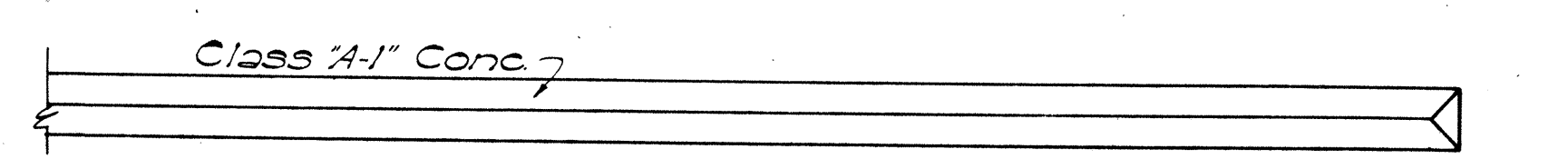


SECTION

ELEVATION

RAISED TRAFFIC BARS

SCALE: 1" = 6"

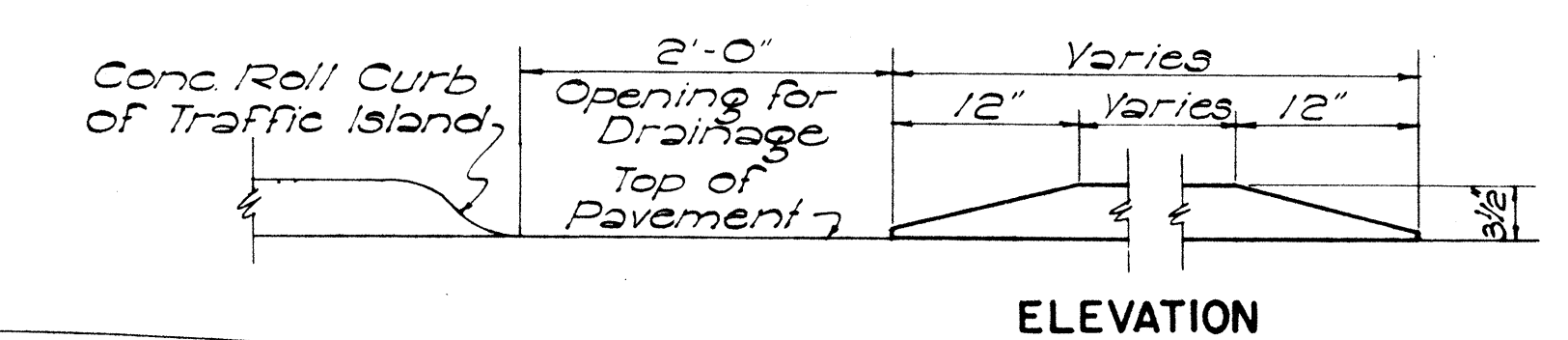


PLAN

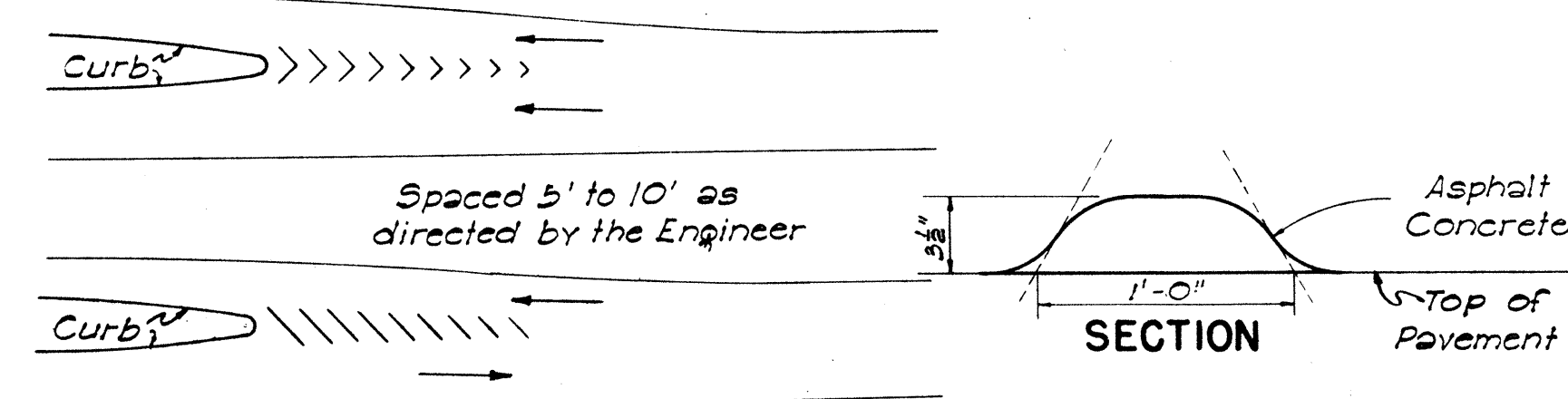
NOTE:
Section and Elevation for Jiggle Bars are same as the Traffic Bars.

RAISED JIGGLE BARS

SCALE: 1" = 2'-0"



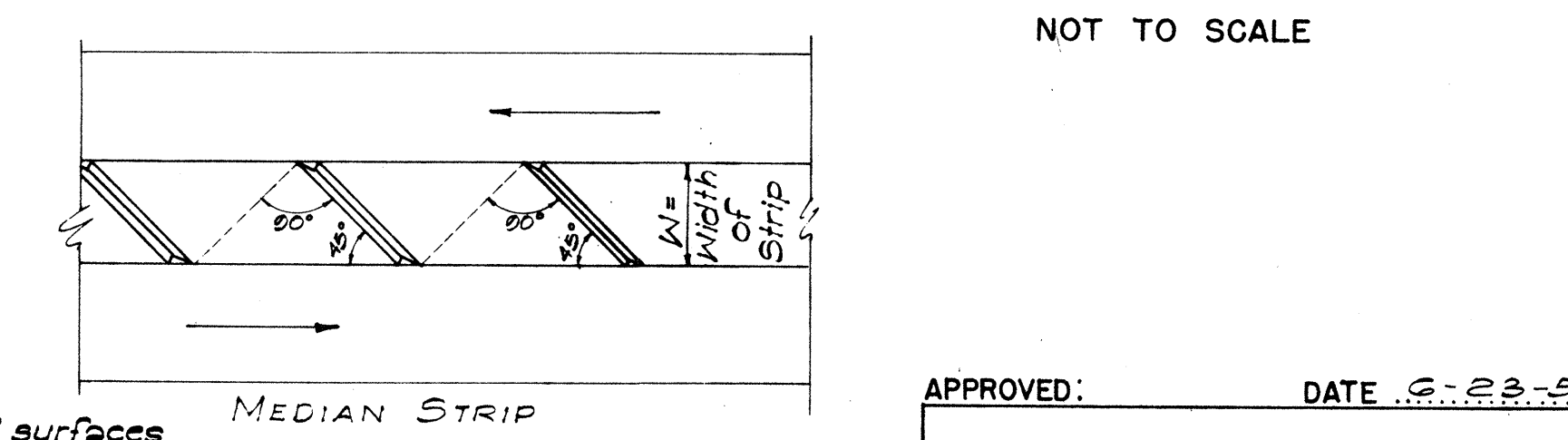
ELEVATION



SECTION

A.C. ROLL CURB

NOT TO SCALE

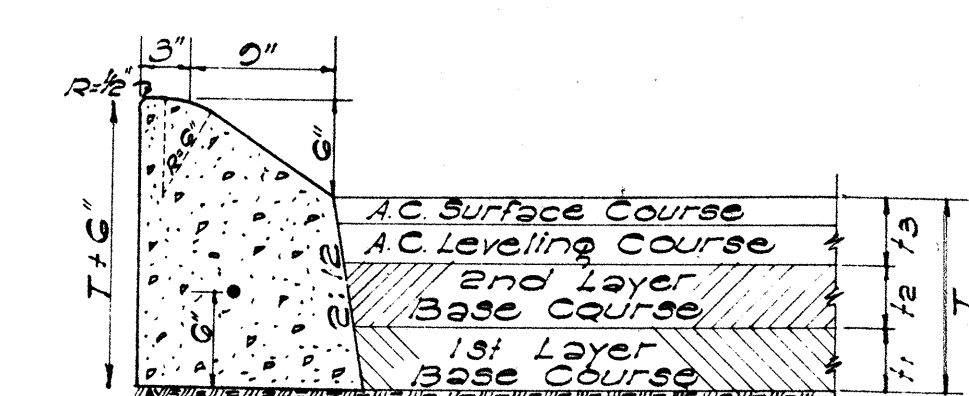


AT CURBED ISLAND

MEDIAN STRIP

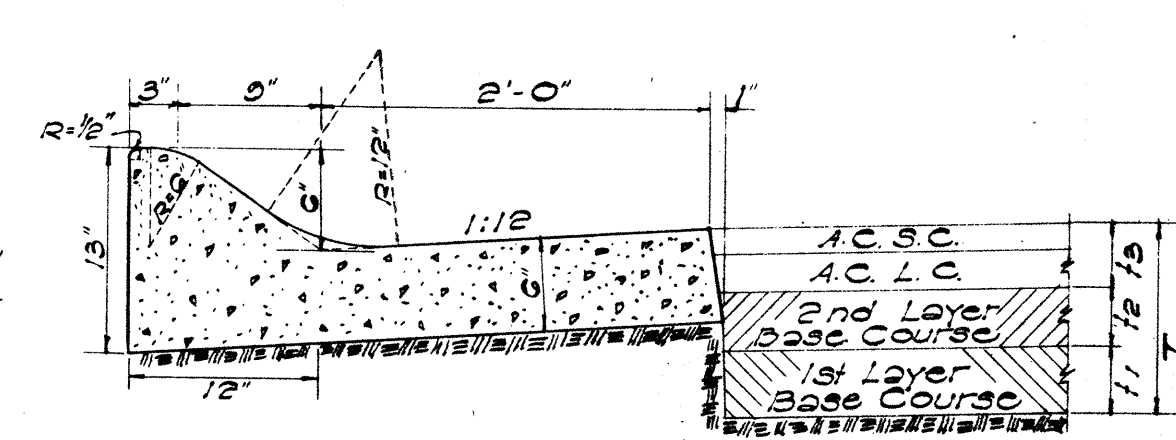
LAYOUT OF JIGGLE BARS

NOT TO SCALE



TYPE "E" CAST-IN-PLACE CONCRETE CURB

SCALE: 1" = 1'-0"



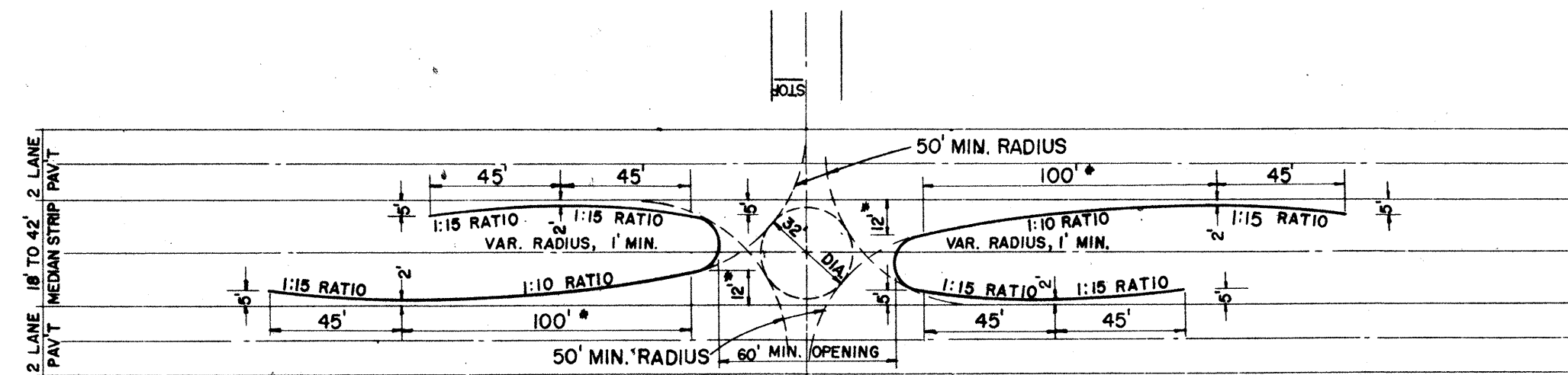
TYPE "EG" CAST-IN-PLACE CONC. CURB & GUTTER

SCALE: 1" = 1'-0"

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

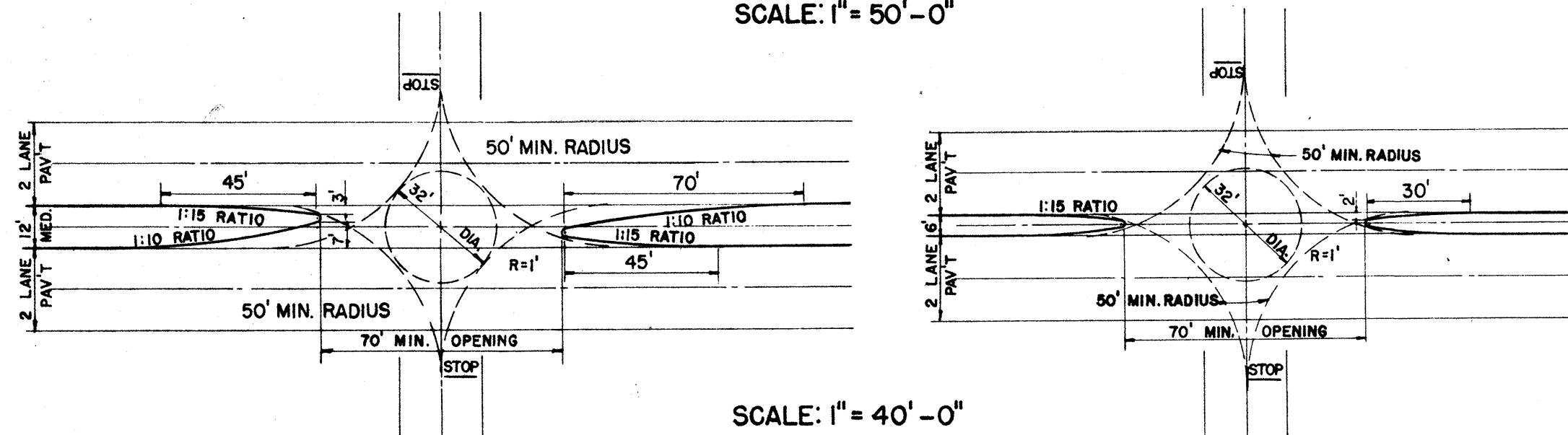
APPROVED: *Paul E. Hunter*
TERRITORIAL HIGHWAY ENGINEER

DATE: 6-23-53



NOTE:
WITH AN 18' MEDIAN STRIP, THE OFFSET MUST BE REDUCED TO 11', WHICH IN TURN REDUCES THE 1:10 FLARE TO 90'.

SCALE: 1" = 50'-0"



SCALE: 1" = 40'-0"

DETAILS OF MEDIAN STRIP OPENINGS

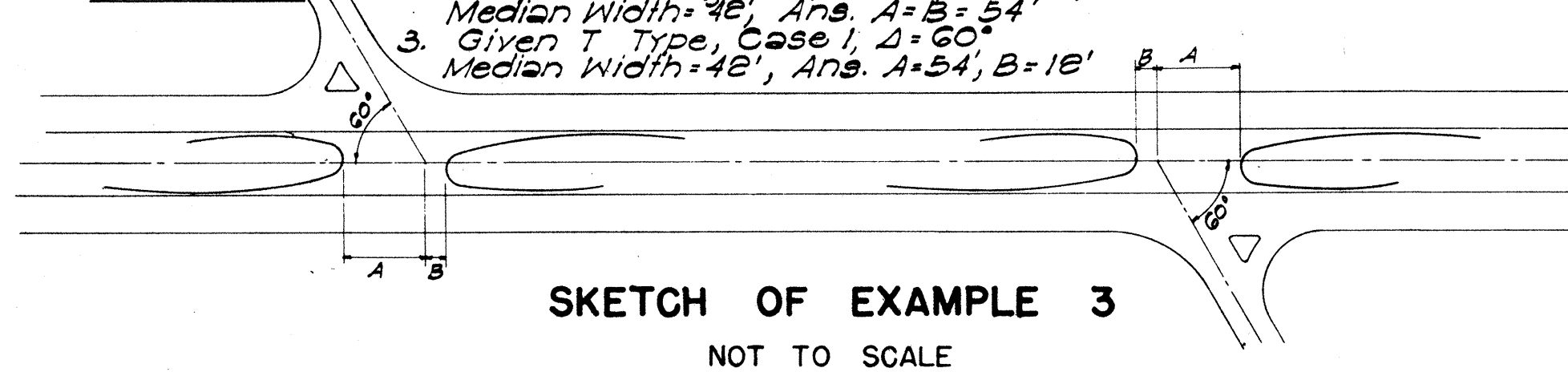
ANGLE OF INTERSECTION	WIDTH OF MEDIAN STRIP											
	42'			36'			30'			24'		
	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2
60°	54	12	58	14	58	14	64	14	64	14	70	16
65°	48	14	52	16	52	16	56	16	56	16	62	18
70°	42	16	46	18	46	18	50	18	50	18	56	20
75°	36	18	40	20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

CASE 1	CASE 2					
	12	15	18	21	24	27
60°	12	15	18	21	24	27
65°	12	15	18	21	24	27
70°	12	15	18	21	24	27
75°	12	15	18	21	24	27
80°	12	15	18	21	24	27
85°	12	15	18	21	24	27
90°	12	15	18	21	24	27
95°	12	15	18	21	24	27
100°	12	15	18	21	24	27
105°	12	15	18	21	24	27
110°	12	15	18	21	24	27
115°	12	15	18	21	24	27
120°	12	15	18	21	24	27

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:

- Given Crossing Type, Case 1, $\Delta = 60^\circ$, Median Width = 42', Ans. A = B = 54'
- Given T Type, Case 1, $\Delta = 60^\circ$, Median Width = 42', Ans. A = 54', B = 18'

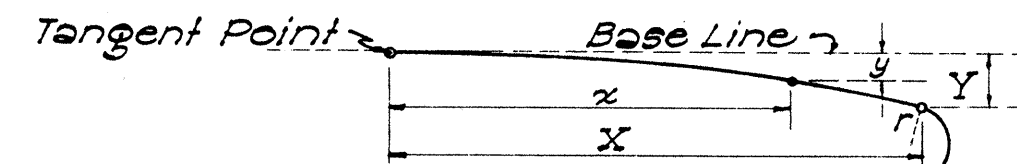


SKETCH OF EXAMPLE 3

NOT TO SCALE

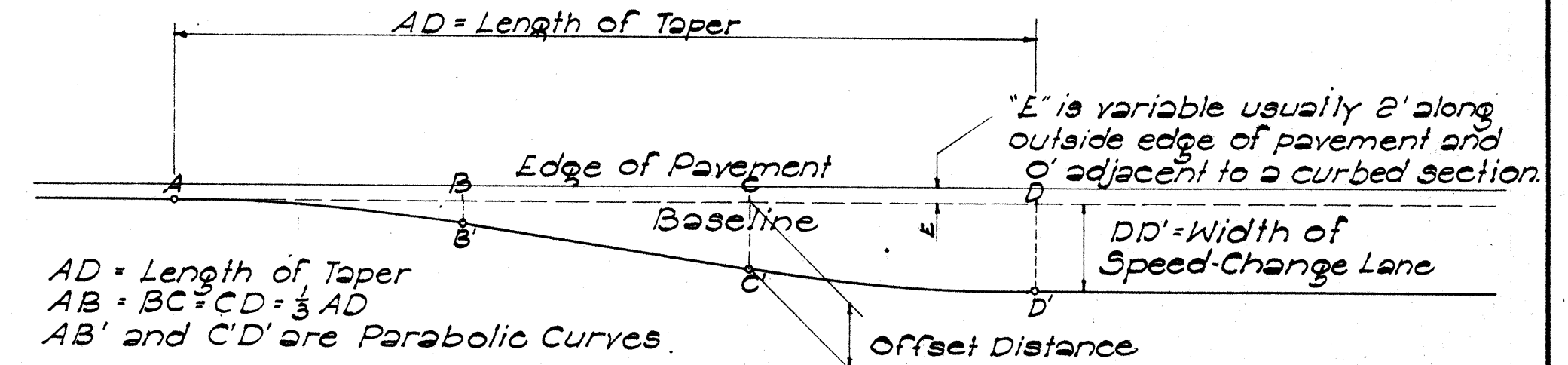
These Curves are based upon the following formula:
 $y = \frac{V^2 X^2}{2R}$

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



RATIO CURVE DATA		Offset in Feet (Y)									
Dist. in Ft. (X)	Ratio	2:30	3:45	5:30	7:30	9:30	10:00	10:00	10:00	10:00	10:00
10	0.22	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60
20	0.88	0.59	0.80	1.00	1.20	1.40	1.60	1.80	2.00	2.20	2.40
30	2.00	1.33	1.80	2.20	2.60	3.00	3.40	3.80	4.20	4.60	5.00
40	3.52	2.33	3.20	3.90	4.60	5.30	6.00	6.70	7.40	8.10	8.80
50	5.00	3.33	4.50	5.40	6.30	7.20	8.10	9.00	9.90	10.80	11.70
60	6.52	4.33	5.80	6.90	8.00	9.10	10.20	11.30	12.40	13.50	14.60
70	8.00	5.33	7.20	8.40	9.60	10.80	12.00	13.20	14.40	15.60	16.80
80	9.52	6.33	8.40	9.70	11.00	12.30	13.60	14.90	16.20	17.50	18.80
90	11.00	7.33	9.60	11.00	12.40	13.80	15.20	16.60	18.00	19.40	20.80
100	12.52	8.33	10.80	12.30	13.80	15.30	16.80	18.30	19.80	21.30	22.80

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

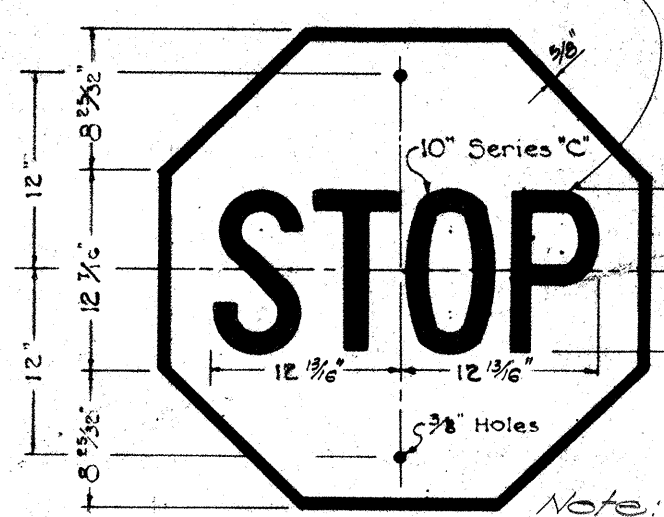


TAPER FOR SPEED-CHANGE LANES

SCALE: 1" = 20'-0"

MINIMUM LENGTHS OF SPEED-CHANGE LANES & TAPER		RAMP DESIGN SPEED (MPH)			
		20	30	40	50
		50	130	250	500
		MIN. CURVE RADIUS (FT)	MIN. CURVE RADIUS (FT)	MIN. CURVE RADIUS (FT)	MIN. CURVE RADIUS (FT)
		30	40	50	60
		21	28	35	42
		120	140	160	180
		150	180	210	240
		205	235	265	295
		315	345	375	405
		410	440	470	500
		510	540	570	600
		610	640	670	700
		710	740	770	800
		810	840	870	900
		910	940	970	1000
		1010	1040	1070	1100
		1110	1140	1170	1200
		1210	1240	1270	1300
		1310	1340	1370	1400
		1410	1440	1470	1500
		1510	1540	1570	1600
		1610	1640	1670	1700
		1710	1740	1770	1800
		1810	1840	1870	1900
		1910	1940	1970	2000
		2010	2040	2070	2100
		2110	2140	2170	2200
		2210	2240	2270	2300
		2310	2340	2370	2400
		2410	2440	2470	2500
		2510	2540	2570	2600
		2610	2640	2670	2700
		2710	2740	2770	2800
		2810	2840	2870	2900
		2910	2940	2970	3000
		3010	3040	3070	3100
		3110	3140	3170	3200
		3210	3240	3270	3300
		3310	3340	3370	3400
		3410	3440	3470	3500
		3510	3540	3570	3600
		3610	3640	3670	3700
		3710	3740	3770	3800
		3810	3840	3870	3900
		3910	3940	3970	4000
		4010	4040	4070	4100
		4110	4140	4170	4200
		4210	4240	4270	4300
		4310	4340	4370	4400
		4410	4440	4470	4500
		4510	4540	4570	4600
		4610	4640	4670	4700
		4710	4740	4770	4800
		4810	4840	4870	4900
		4910	4940	4970	5000
		5010	5040	5070	5100
		5110	5140	5170	5200
		5210	5240	5270	5300
		5310	5340	5370	5400
		5410	5440	5470	5500
		5510	5540	5570	5600
		5610	5640	5670	5700
		5710	5740	5770	5800
		5810	5840	5870	5900
		5910	5940	5970	6000
		6010	6040	6070	6100
		6110	6140	6170	6200
		6210	6240	6270	6300
		6310	6340	6370	6400
		6410	6440	6470	6500
		6510	6540	6570	6600
		6610	6640	6670	6700
		6710	6740	6770	6800
		6810	6840	6870	6900
		6910	6940	6970	7000
		7010	7040	7070	7100
		7110	7140	7170	7200
		7210	7240	7270	7300
		7310	7340	7370	7400
		7410	7440	7470	7500
		7510	7540	7570	7600
		7610	7640	7670	7700
		7710	7740	7770	7800
		7810	7840	7870	7900
		7910	7940	7970	8000
		8010	8040	8070	8100
		8110	8140	8170	8200
		8210	8240	8270	8300
		8310	8340	8370	8400
		8410	8440	8470	8500
		8510	8540	8570	8600
		8610	8640	8670	8700
		8710	8740	8770	8800
		8810	8840	8870	8900
		8910	8940	8970	9000
		9010	9040	9070	9100
		9110	9140	9170	9200
		9210	9240	9270	9300
		9310	9340	9370	9400
		9410	9440	9470	9500
		9510	9540	9570	9600
		9610	9640	9670	9700
		9710	9740	9770	9800
		9810	9840	9870	9900
		9910	9940	9970	10000

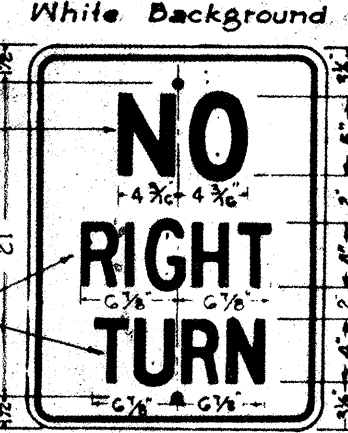
White Letters and Border on Red Background.
Letters to be ReflectORIZED.



R-1

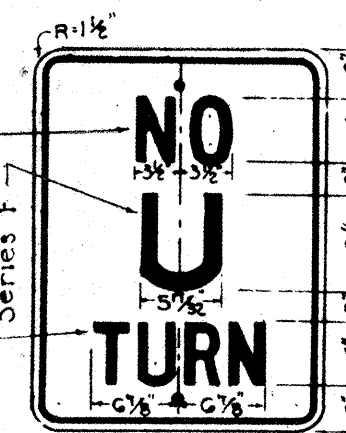
30" x 30"

Black Letters on White Background



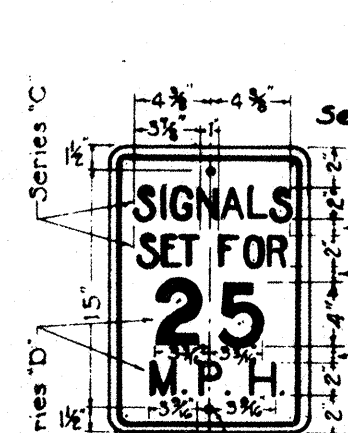
R-6

18" x 24"



R-8

18" x 24"



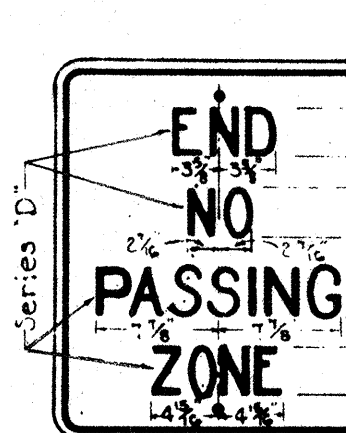
R-10

12" x 18"



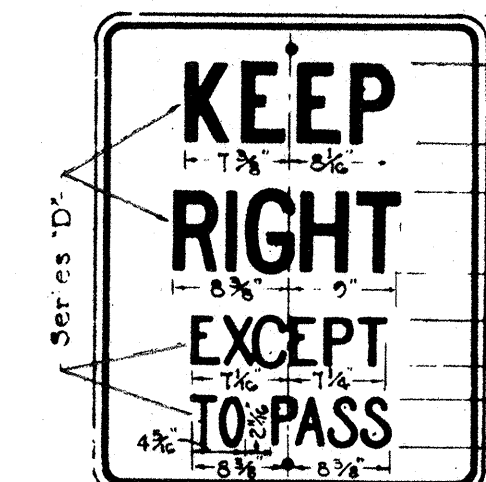
R-11

20" x 24"



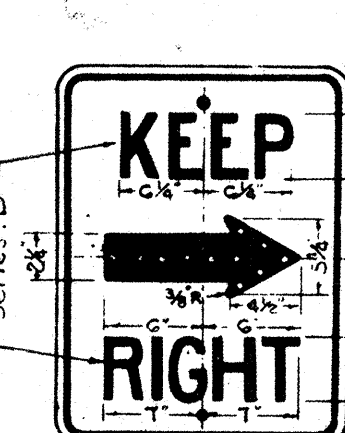
R-12

20" x 24"



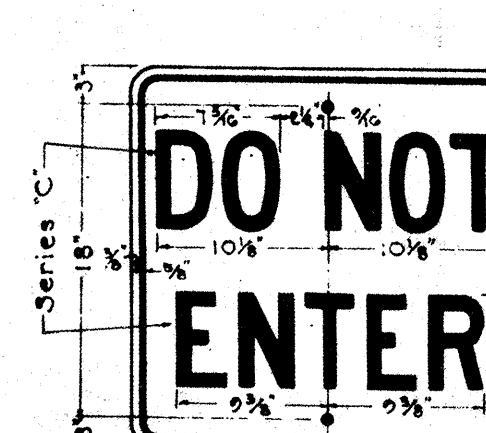
R-13

24" x 30"



R-14

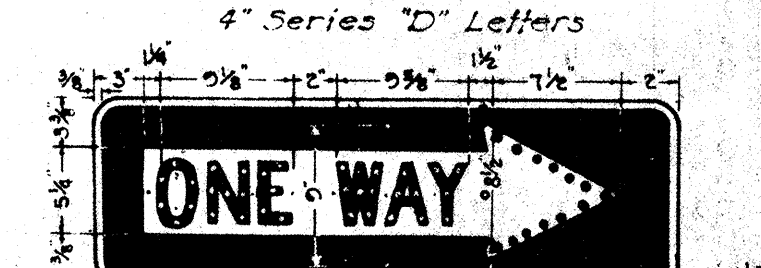
18" x 24"



R-15

24" x 24"

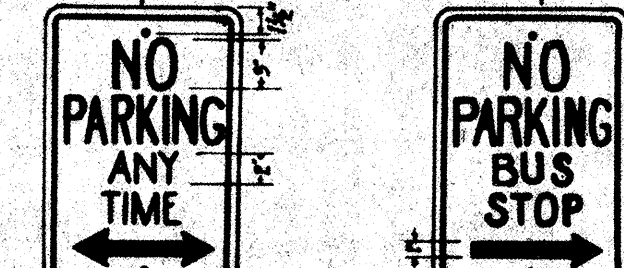
Black letters, White Arrows on Black background, White Border and White Reflectors.



R-16-R
R-16-L

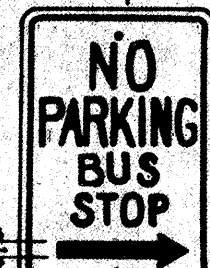
36" x 12"

Red Letters & Border on White Background



R-18

12" x 18"



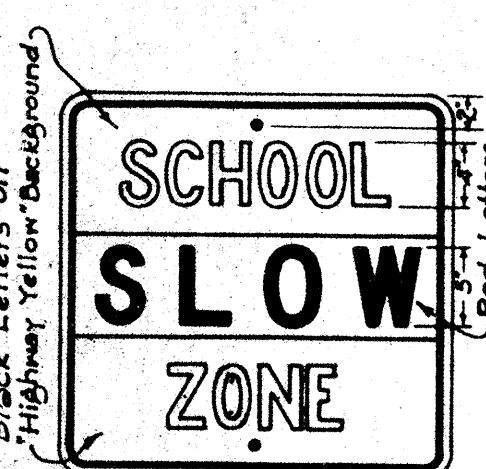
R-26

12" x 18"



R-29

24" x 30"



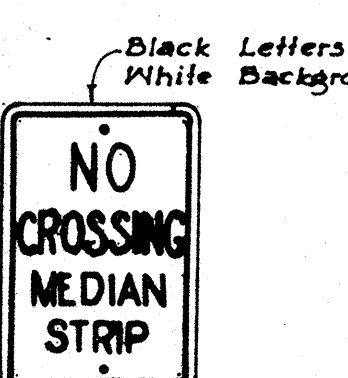
R-41-S

24" x 24"



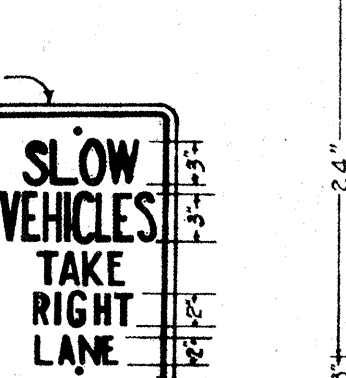
R-42-S

12" x 18"



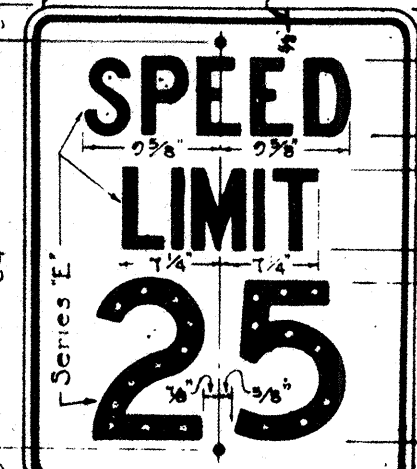
R-43-S

12" x 18"



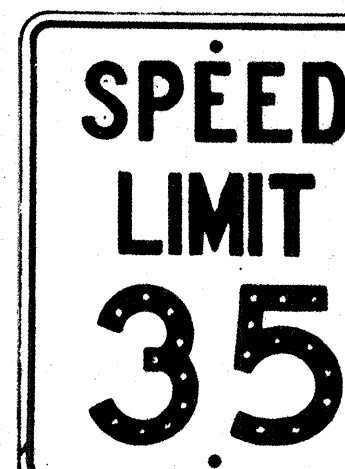
R-44-S

12" x 18"



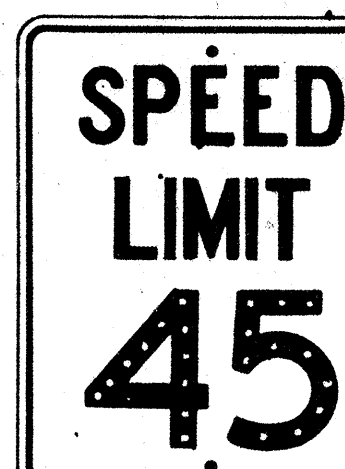
R-102-A

24" x 30"



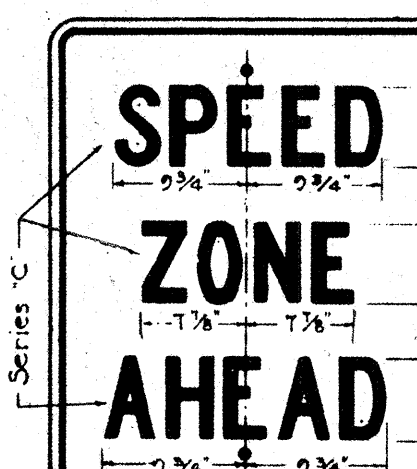
R-102-B

24" x 30"



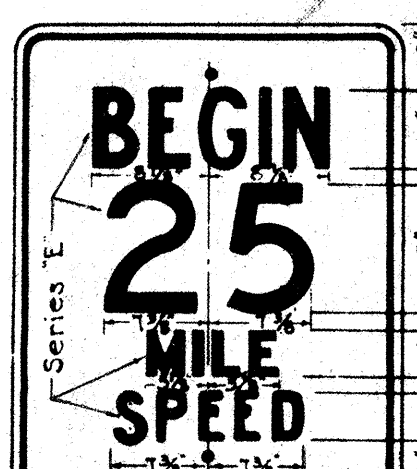
R-102-C

24" x 30"



R-104

24" x 30"



R-105-A

24" x 30"



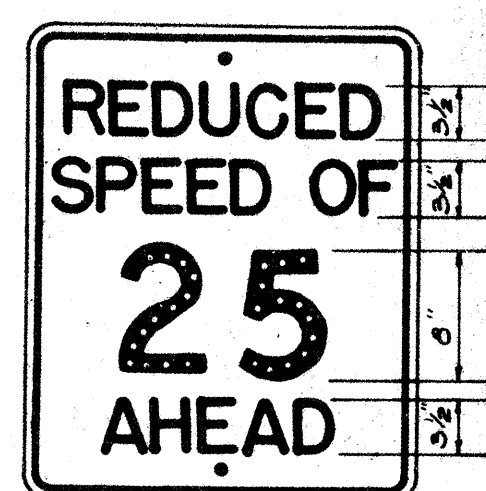
R-105-B

24" x 30"



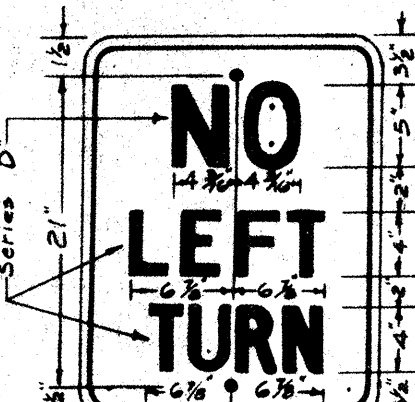
R-105-C

24" x 30"



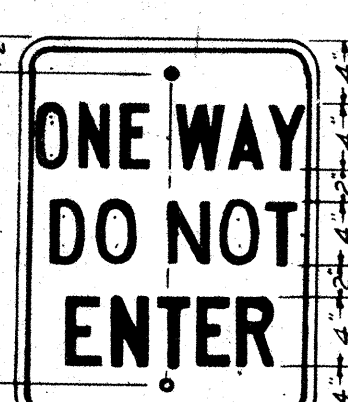
R-104-A

24" x 30"



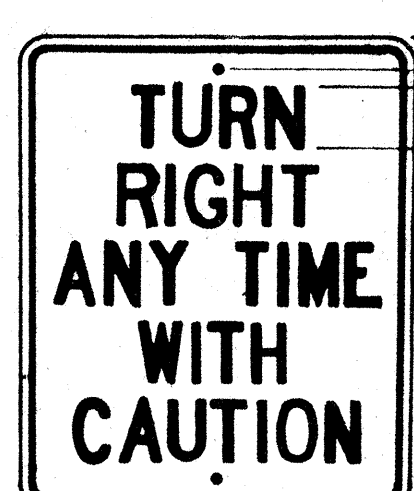
R-7

18" x 24"



R-66

18" x 24"



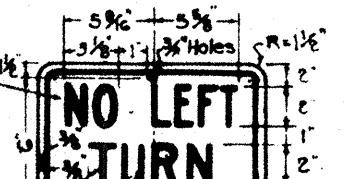
R-106

24" x 30"



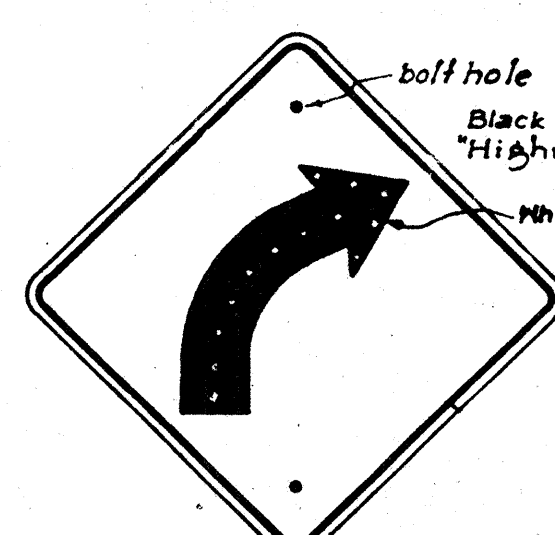
R-107-A

24" x 30"



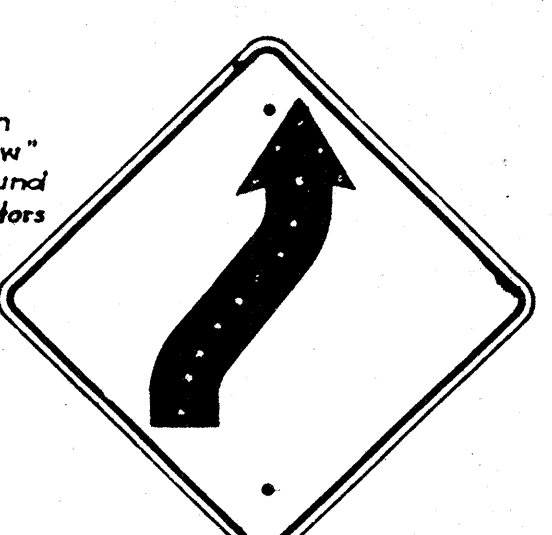
R-107

14" x 9"



W-2-R
*W-2-L

24" x 24"



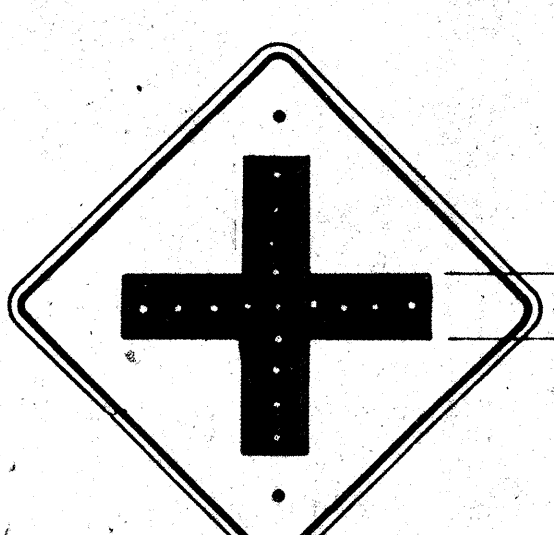
W-4-R
*W-4-L

24" x 24"



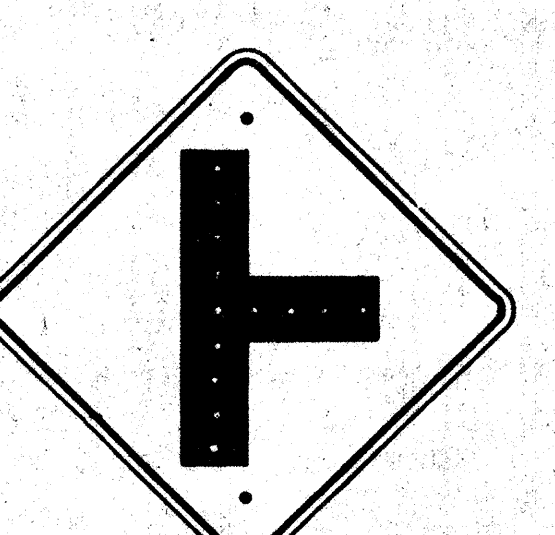
W-5-R
*W-5-L

24" x 24"



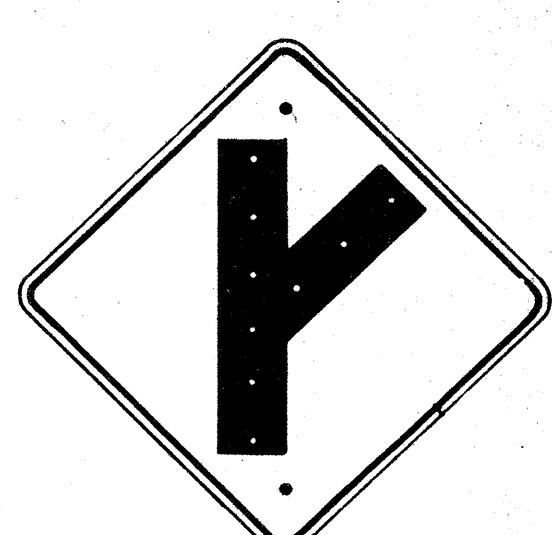
W-6

24" x 24"



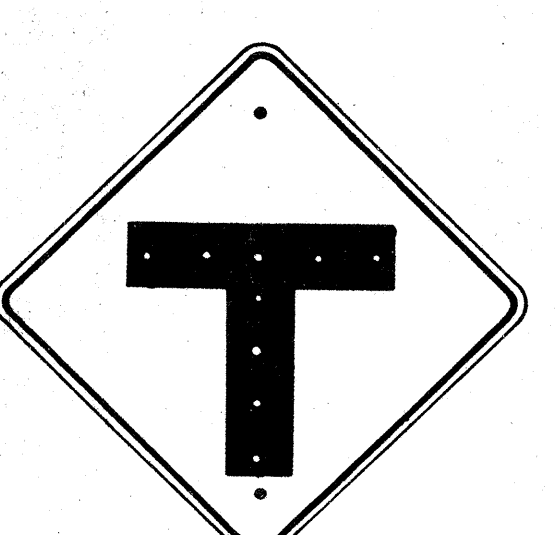
W-7

24" x 24"



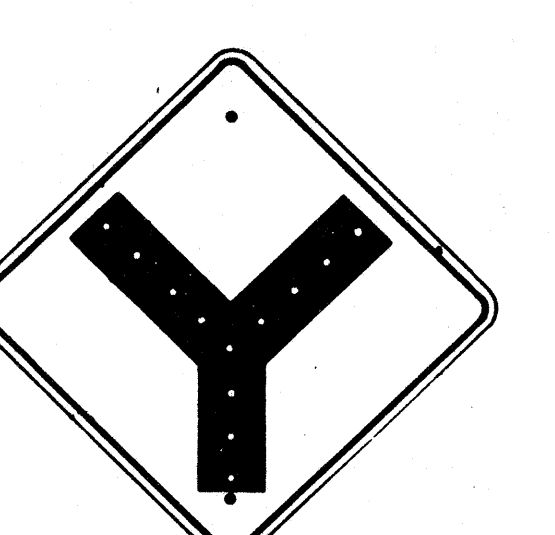
W-8-R
*W-8-L

24" x 24"



W-9

24" x 24"



W-10

24" x 24"



W-13

24" x 24"



W-14

24" x 24"



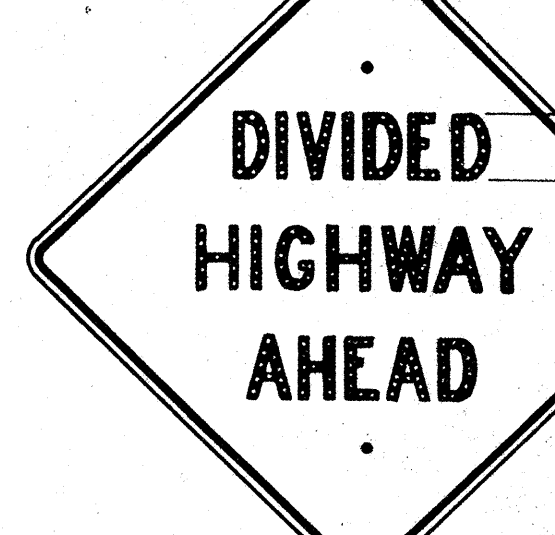
W-14-A

24" x 24"



W-19

30" x 30"



W-20

30" x 30"



W-21

30" x 30"



W-22

24" x 24"



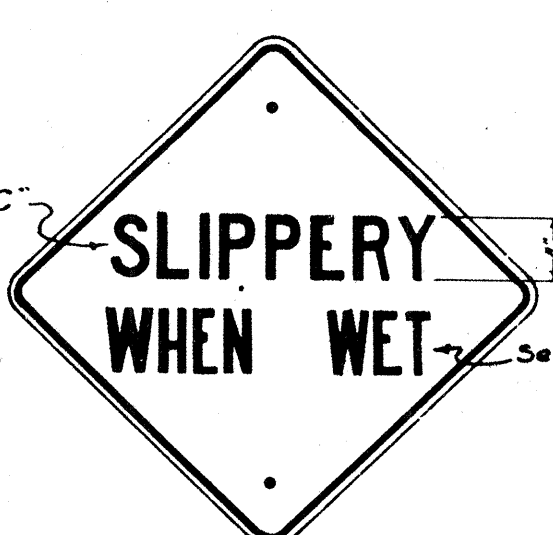
W-24

30" x 30"



W-25

24" x 24"



W-29

24" x 24"



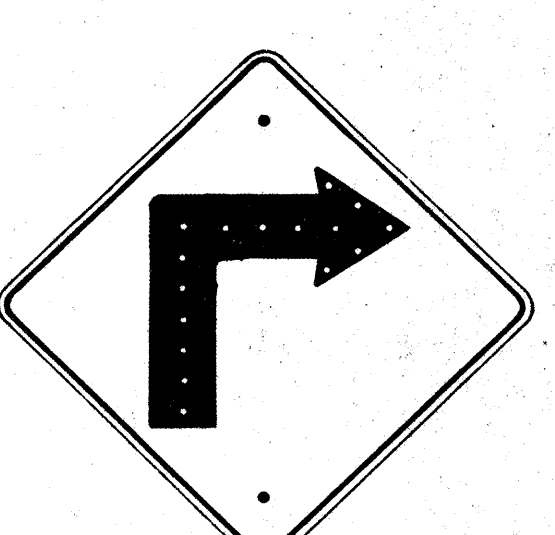
W-59

24" x 24"



W-39

24" x 24"



W-1-R
*W-1-L

24" x 24"

Unless otherwise specified, all signs shall conform with requirements of "Manual on Uniform Traffic Control Devices for Streets and Highways."

All letters and figures shall be of size and design shown and shall conform with "Standard Alphabets for Highway Signs" as set forth by the Public Roads Administration, Federal Works Agency. Series "C" letters and Series "D" numerals shall be used except where noted.

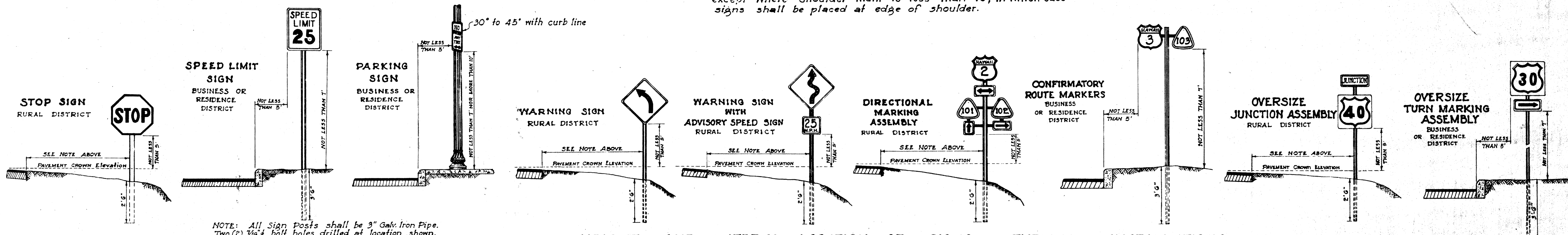
Note: All Regulatory (R) signs shall have black letters on a white background except where noted. All Warning (W) signs shall have black letters or figures on a "Highway Yellow" background. *Signs shall be similar but opposite in direction. See Specifications for Materials and Finish.

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII
REGULATORY & WARNING SIGNS
Scale: 1" = 1'
JUNE 23, 1953
APPROVED: *Ben E. Nutter*
TERRITORIAL HIGHWAY ENGINEER

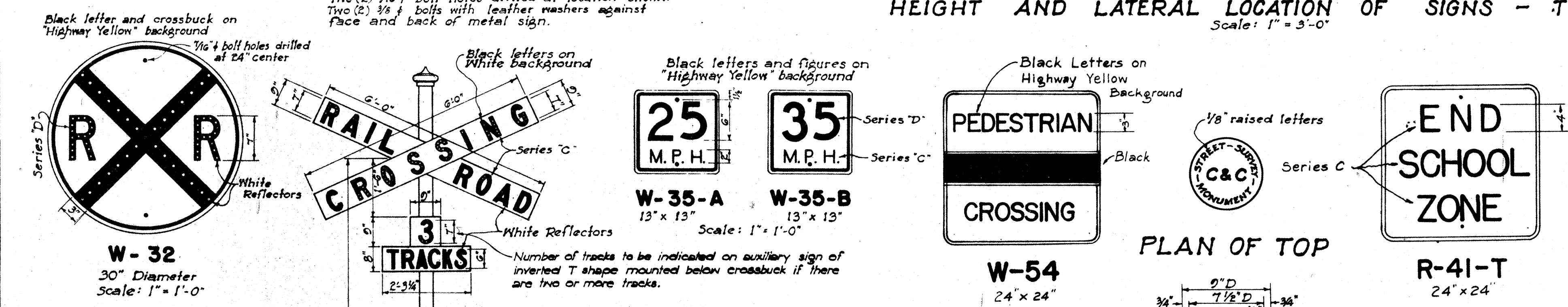
DATE: 6/22/54
Note: Signs shown have been revised 1/17/54

DESIGNED BY: T. Tokunaga
CHECKED BY: N.
ORIGINAL PLAN
DATE: 6/22/54
QUANTITIES: BY THE KID BY

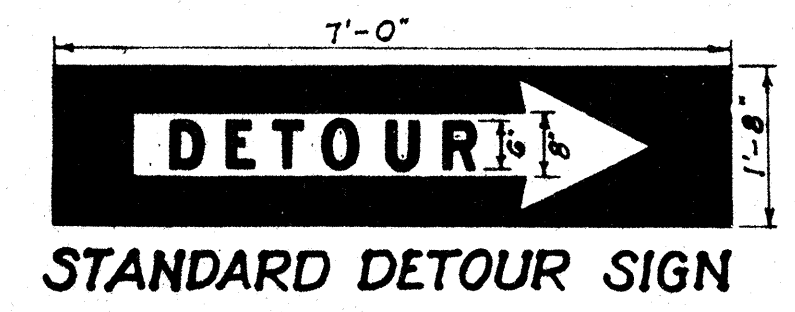
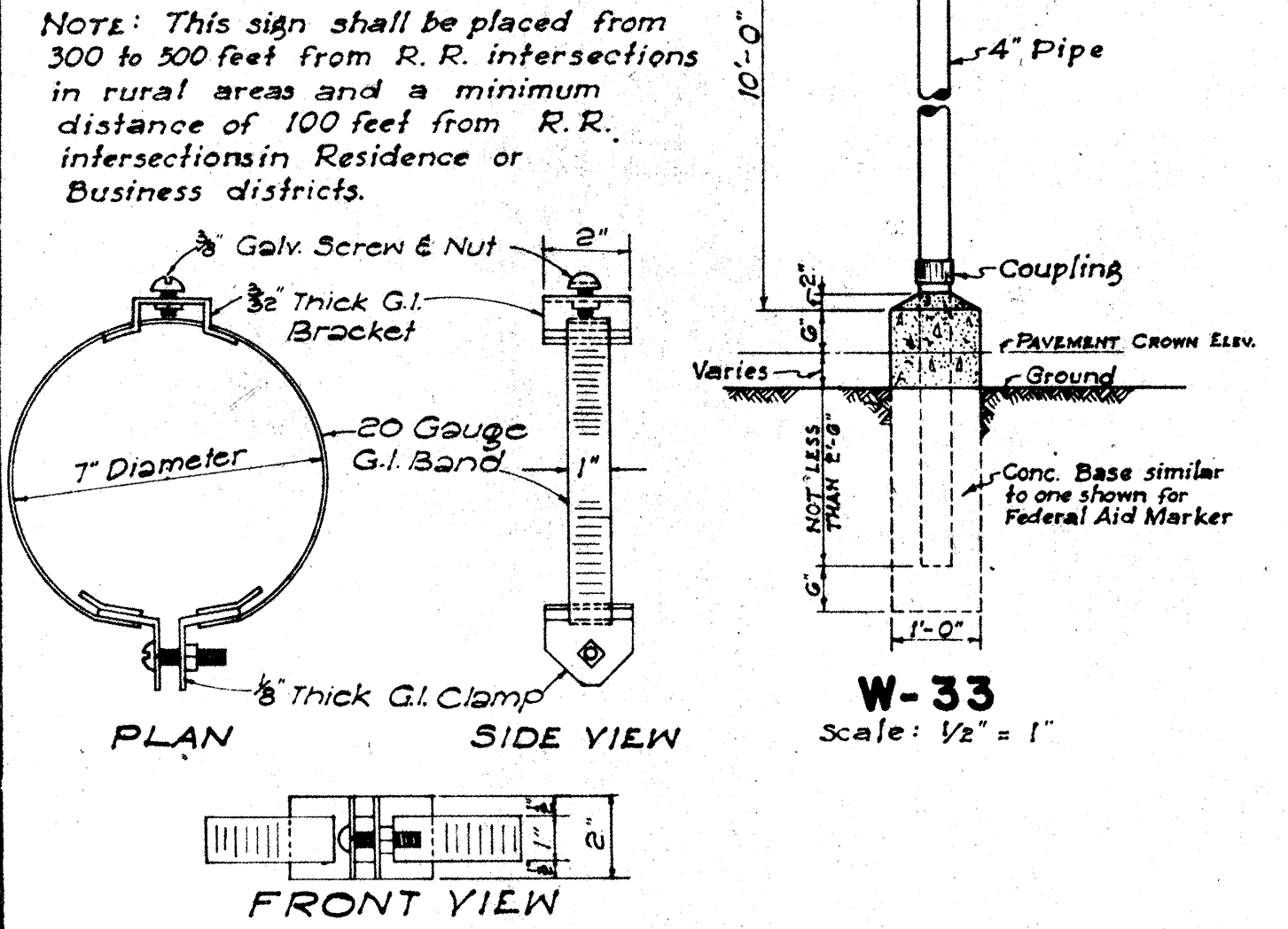
NOTE: All signs shall be placed 10' from edge of pavement except where shoulder width is less than 10'; in which case signs shall be placed at edge of shoulder.



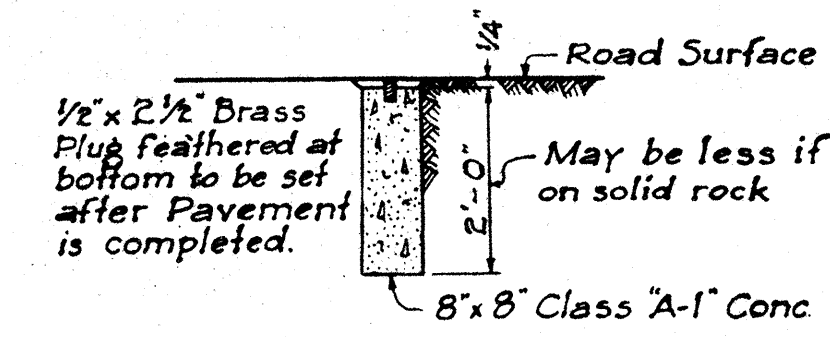
HEIGHT AND LATERAL LOCATION OF SIGNS - TYPICAL INSTALLATIONS
Scale: 1" = 3'-0"



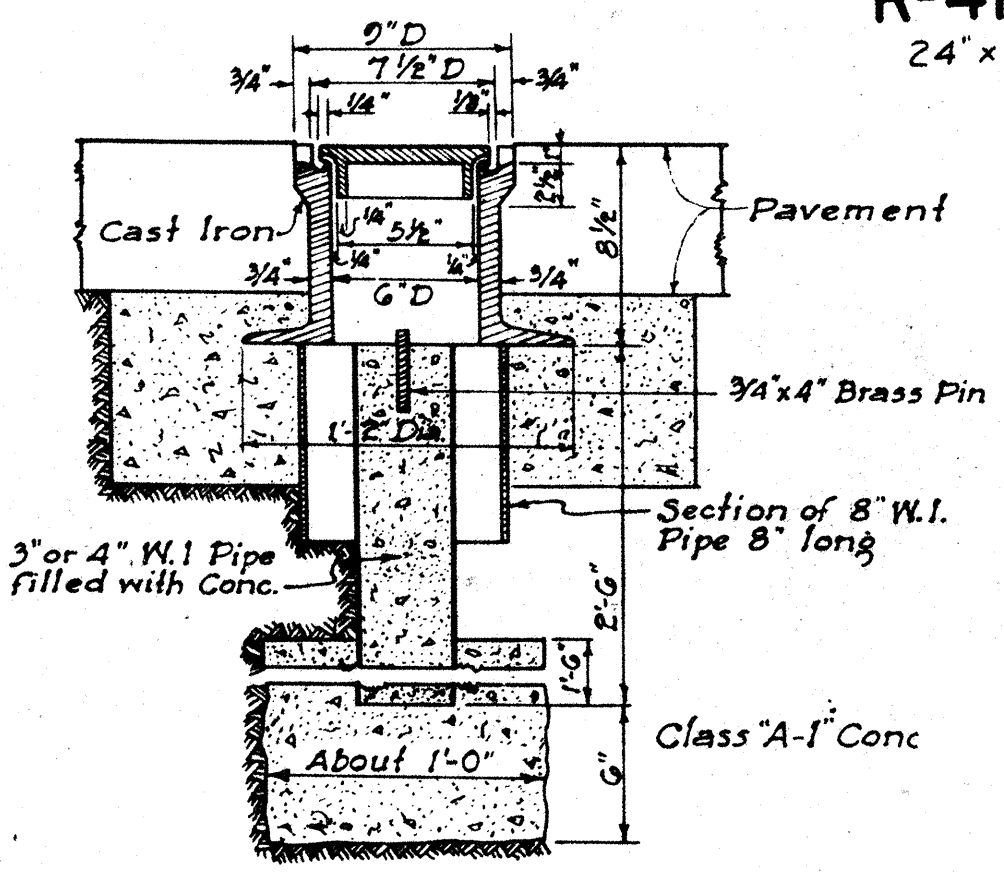
PLAN OF TOP



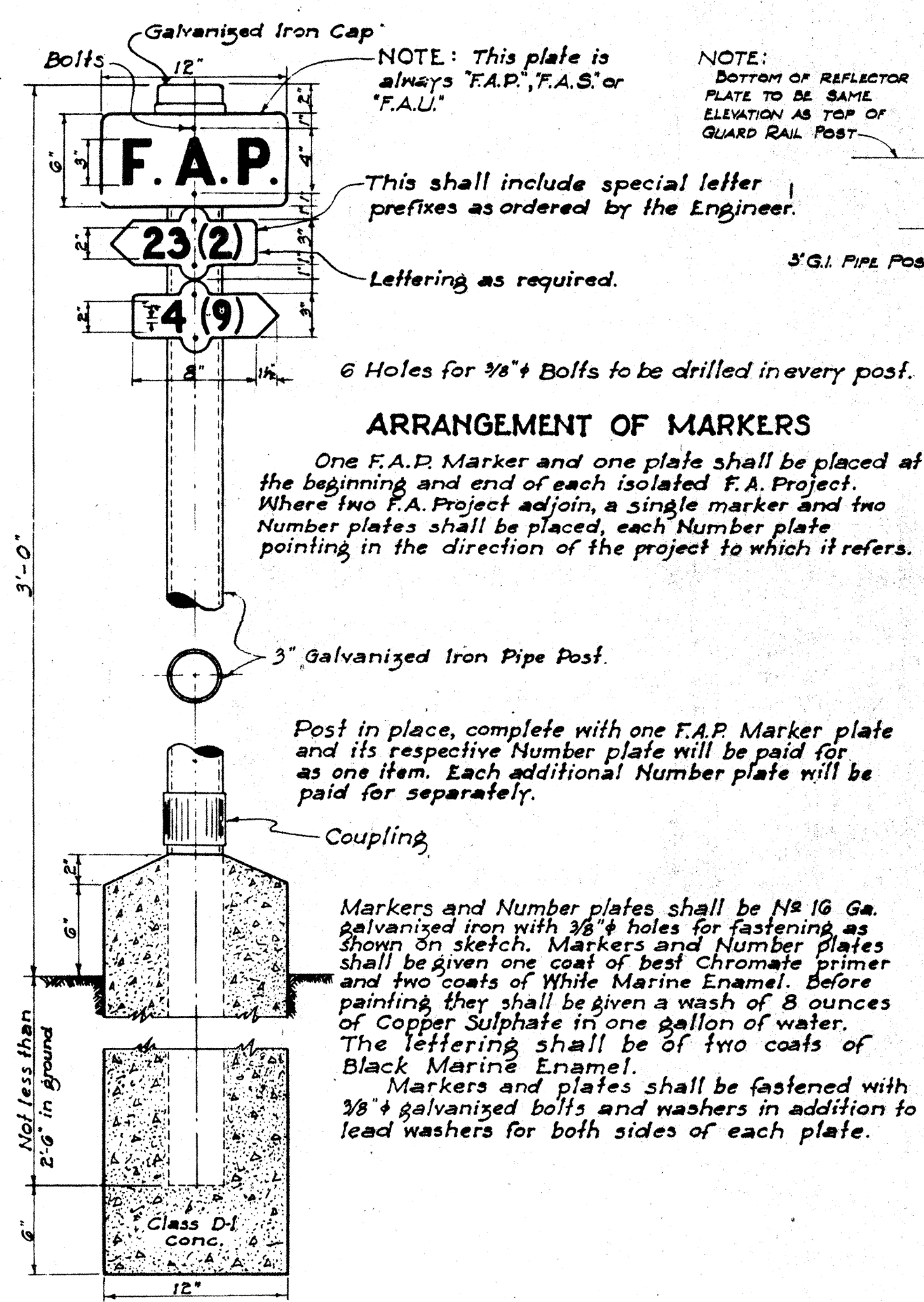
STANDARD DETOUR SIGN



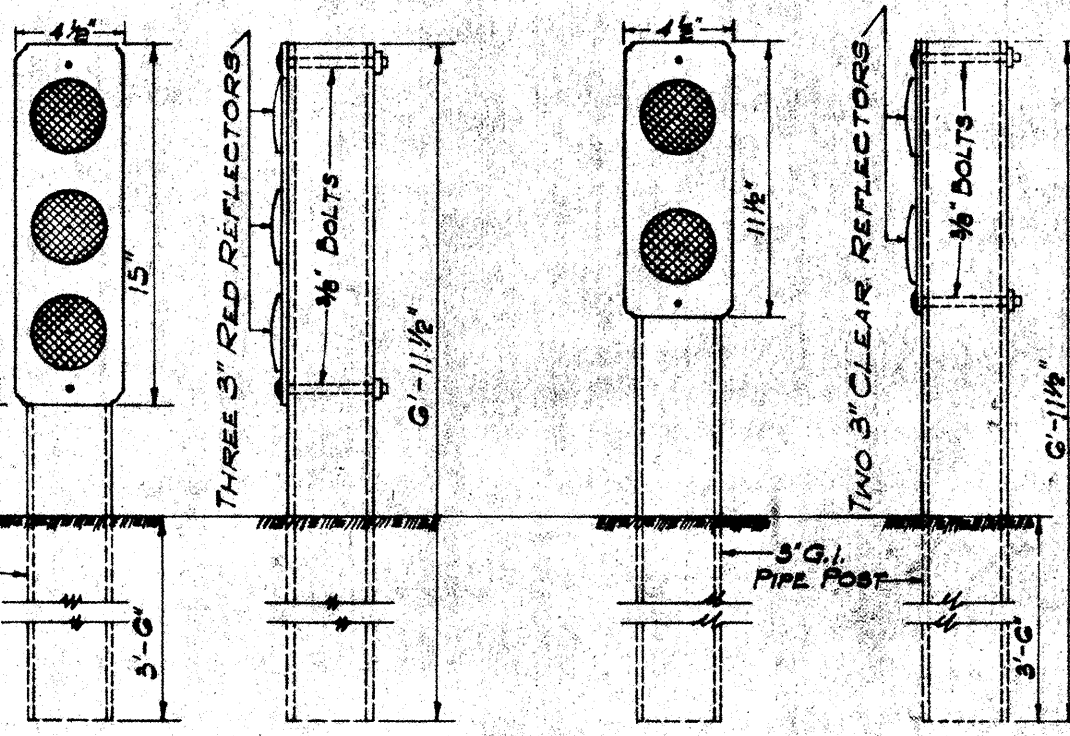
CENTER LINE MONUMENT
Scale: 1/2" = 1'-0"



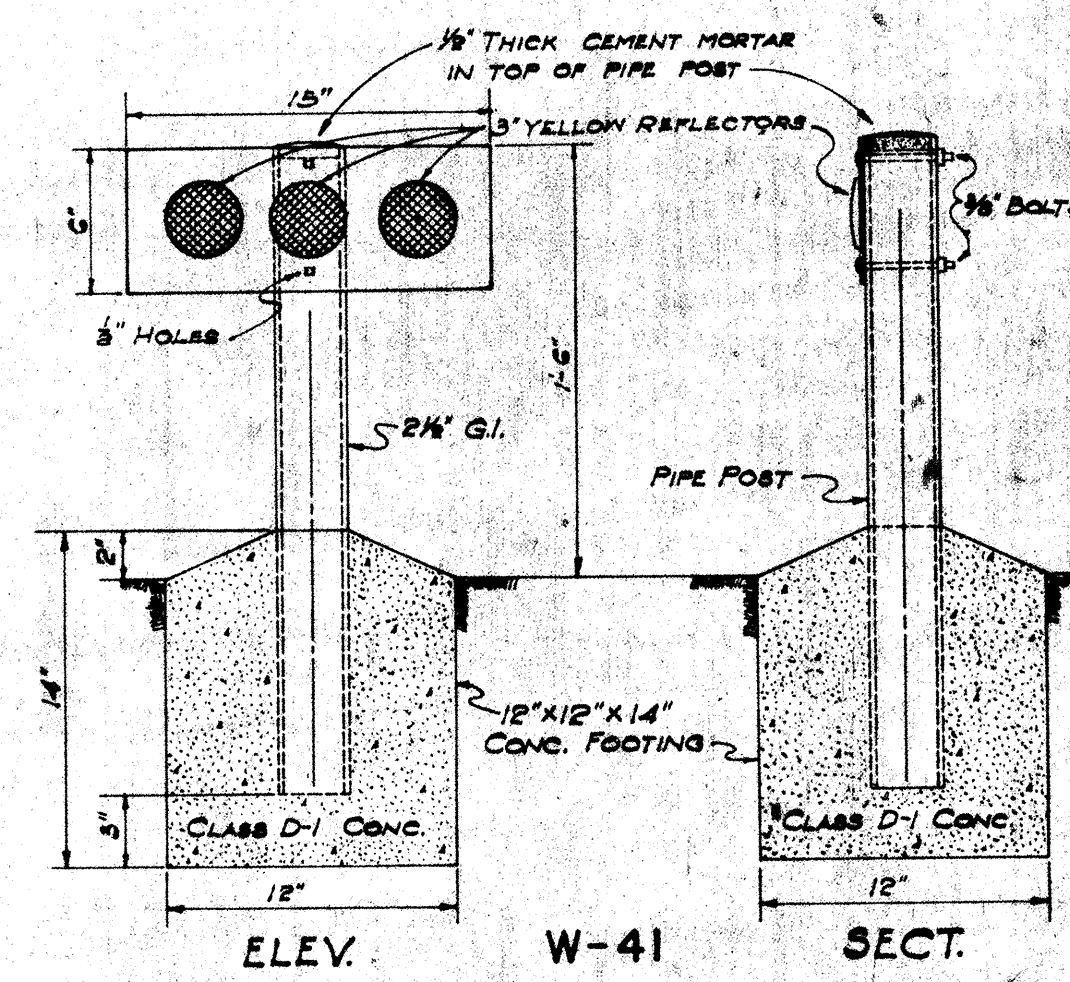
STANDARD C & C STREET SURVEY MONUMENT



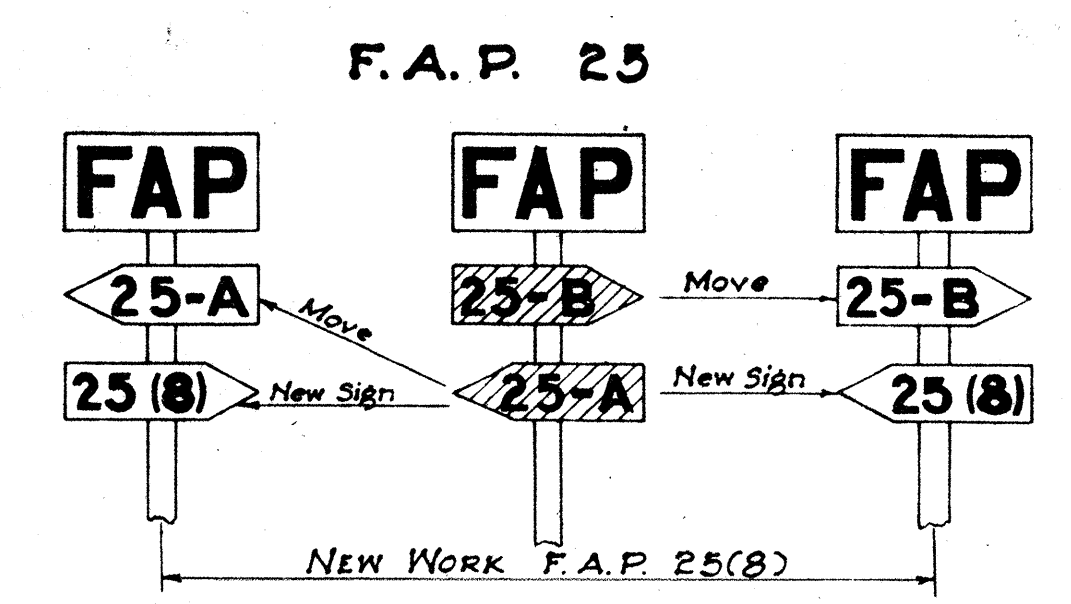
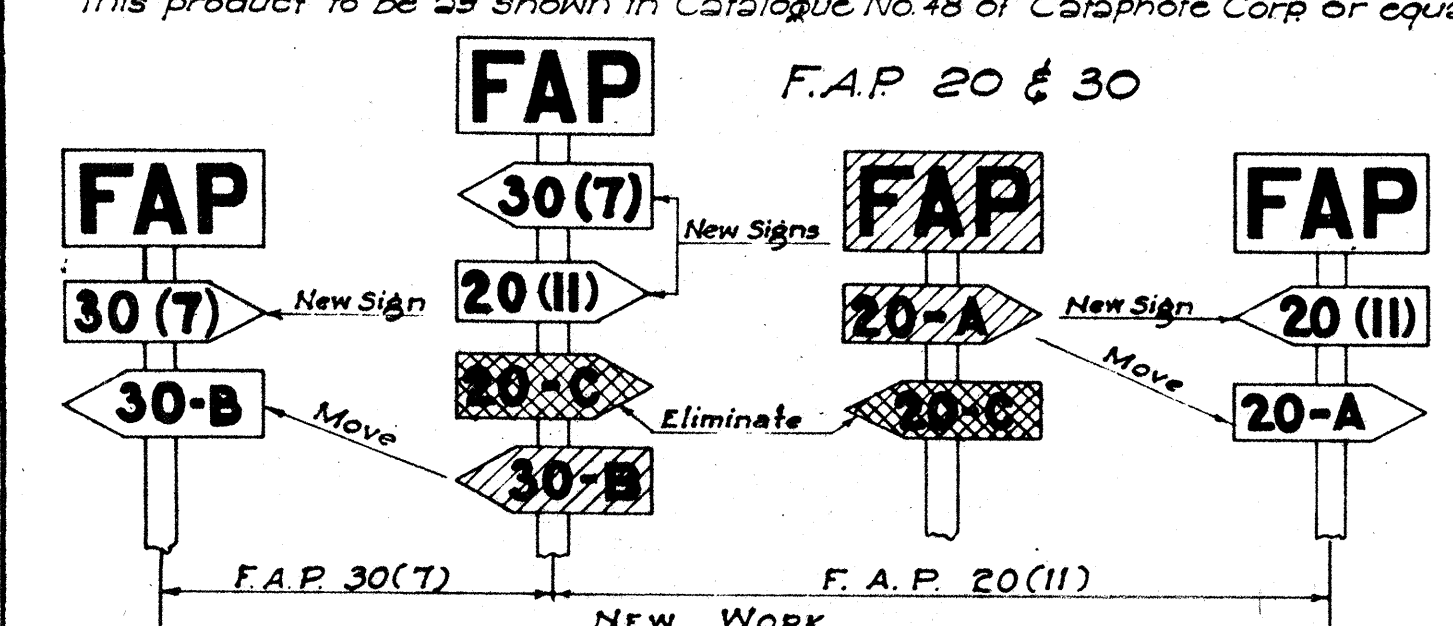
ARRANGEMENT OF MARKERS



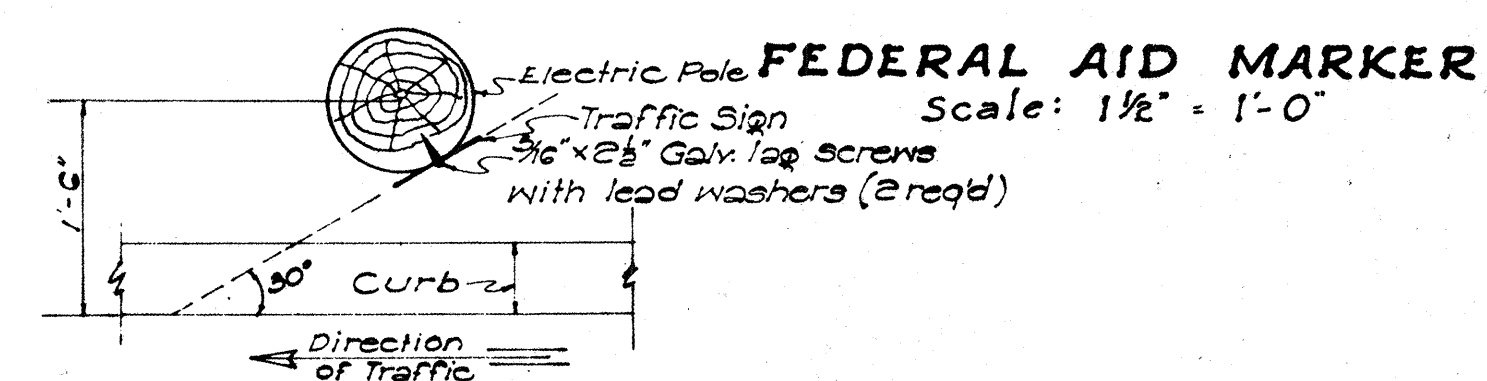
W-42 W-43



DETAIL OF SIGNS
SCALE: 1 1/2" = 1'-0"



METHOD OF MARKING F.A. PROJECTS AT OVERLAPS
(USING NUMBER SUFFIX ON NEW WORK)



DETAIL SHOWING ANGLE OF TRAFFIC SIGNS AND CURB LINE
Scale: 1" = 1'-0"

APPROVED: *Ben E. Nutter*
TERRITORIAL HIGHWAY ENGINEER

TERRITORIAL HIGHWAY DEPARTMENT
TERRITORY OF HAWAII
STANDARD DETAILS
F.A. MARKERS, MONUMENTS
SIGNS & LOCATION OF SIGNS
SCALES AS NOTED