

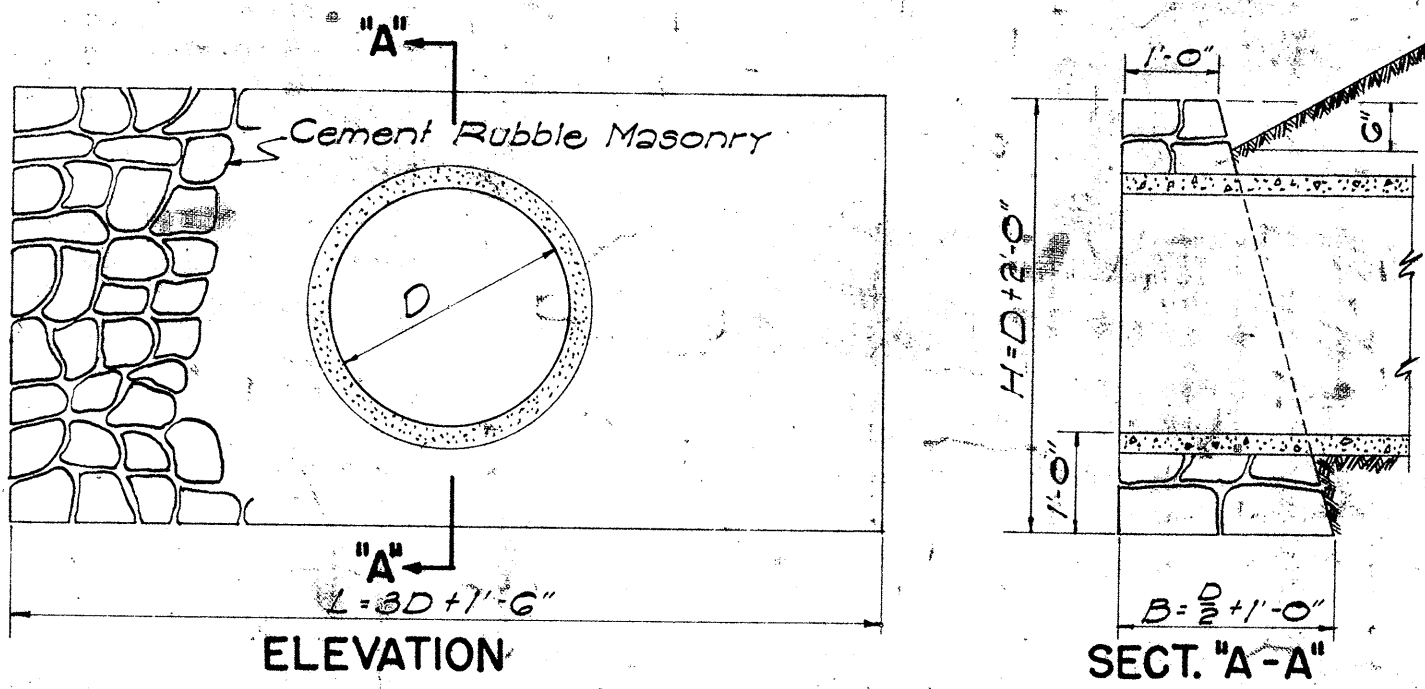
DATA FOR OUTLET DITCH			
D	W	H	T+W+H
18"	24"	2'-0"	4'-0"
24"	30"	2'-0"	4'-6"
30"	30"	2'-6"	5'-0"
36"	36"	3'-0"	6'-0"

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	0.05	0.03
24"	4'-0"	2'-0"	7'-6"	1.28	1.45	1.41
30"	4'-6"	2'-3"	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"

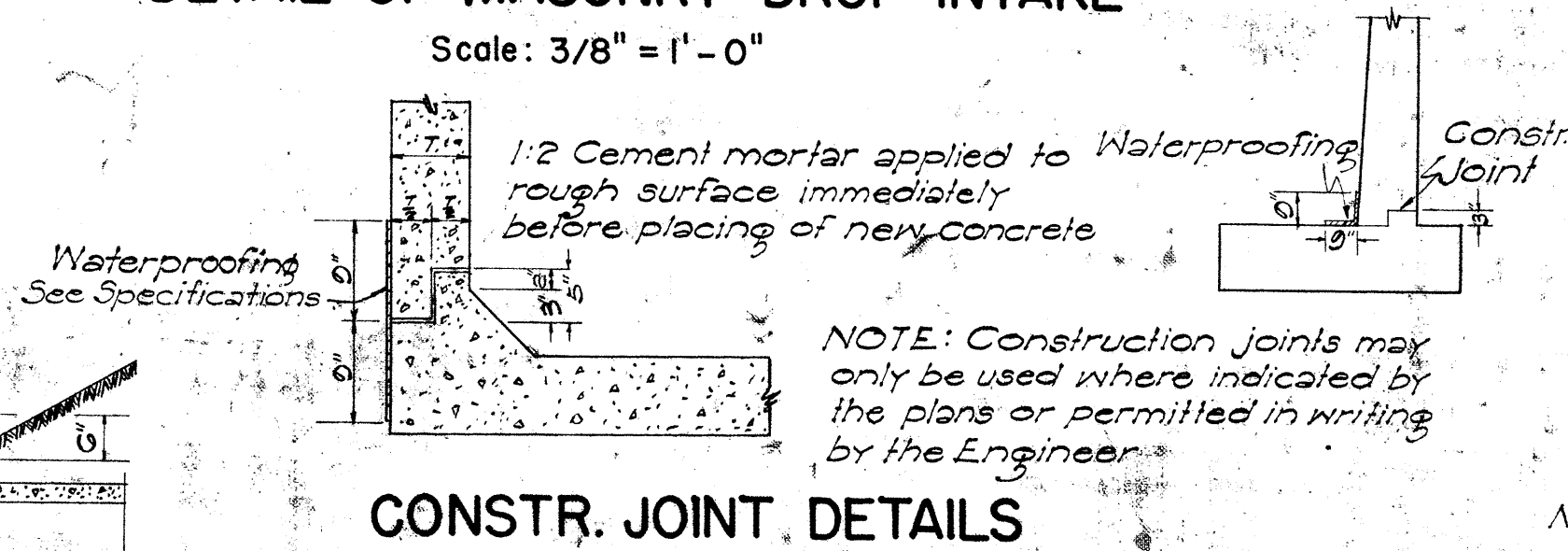
CONC. PIPE CULVERT

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

DATA - CAST-IN-PLACE CONC. CULV'T			
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

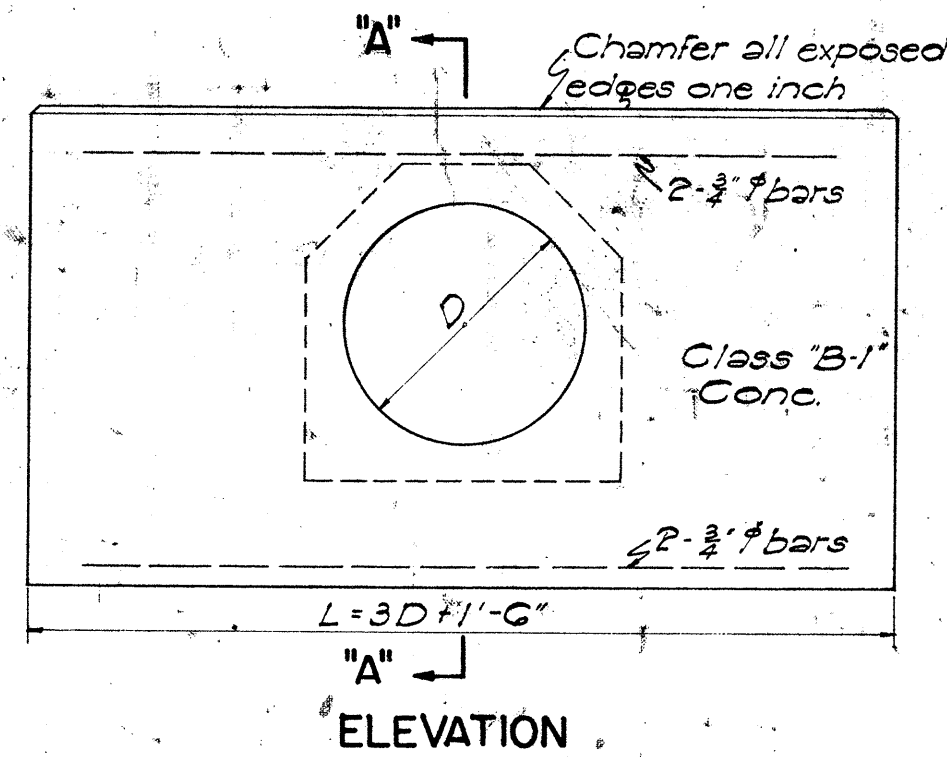
CAST-IN-PLACE CONC. CULVERT

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



CONSTR. JOINT DETAILS

NOTE: Construction joints may only be used where indicated by the plans or permitted in writing by the Engineer.



ELEVATION

SECTION "A-A"

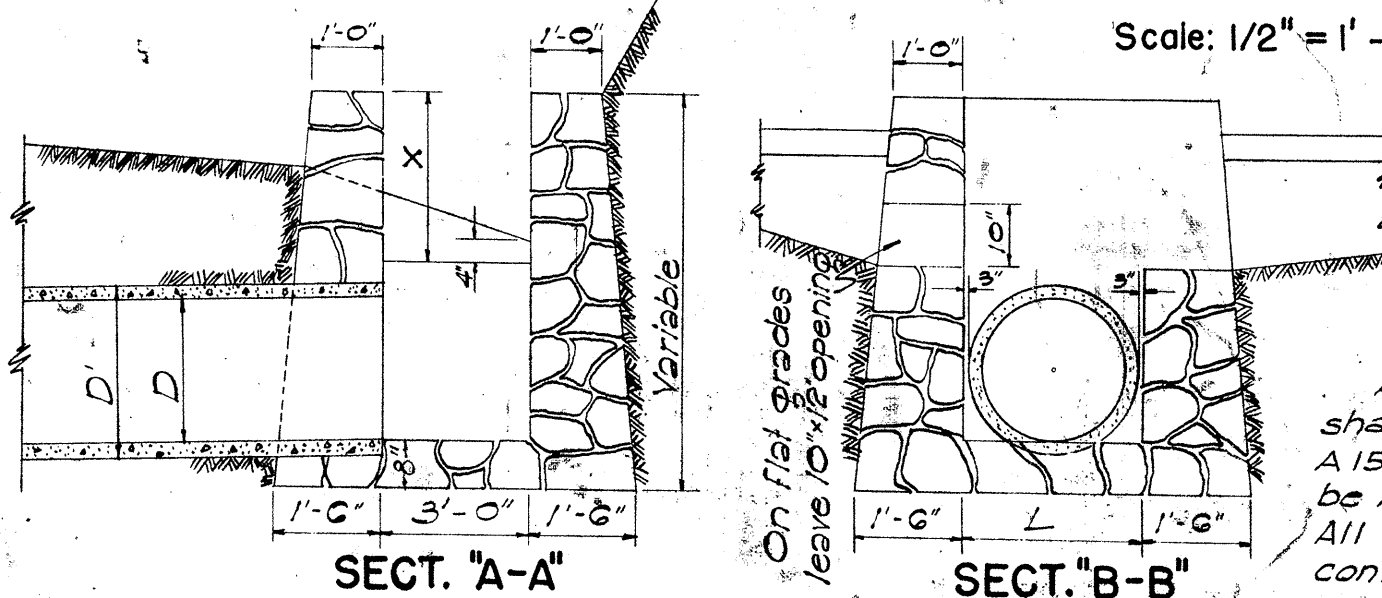
DATA FOR CONC. HEADWALL				Cast-in-Place Conc. Culvert	Conc. Pipe Culvert	Steel For One Headwall
D	B	L	H	Cu. Yds.	Cu. Yds.	No. of Bars Size Length Lbs.
18"	1'-6"	6'-0"	4'-0"	0.02	1.00	4 #4 5'-6" 33
24"	1'-6"	7'-6"	4'-6"	1.25	1.38	4 #4 7'-0" 42
30"	2'-0"	9'-0"	5'-0"	1.05	2.17	4 #4 8'-6" 51
36"	2'-0"	10'-6"	5'-6"	2.45	2.74	4 #4 10'-0" 60
42"	2'-6"	12'-0"	6'-0"		3.87	4 #4 11'-6" 69
48"	2'-6"	13'-6"	6'-6"		4.66	4 #4 13'-0" 73

DETAIL OF CONCRETE HEADWALL

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

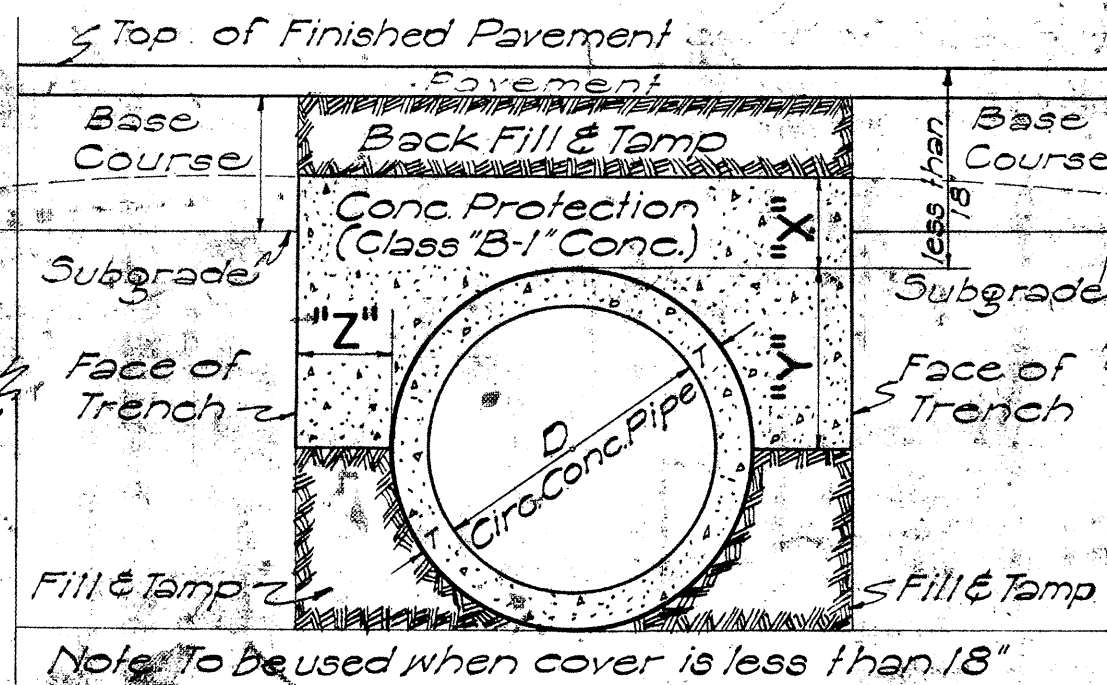
SECTION "A-A" SECTION "B-B"
CONC. COLLAR FOR CONC. BOX CULVERT

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



REINFORCING BARS
All reinforcing bars for concrete shall be Billet Steel bars, ASTM A15, intermediate grade. Steel shall be made by the open-hearth process. All bars shall be deformed type conforming to ASTM A-305.

SECTION OF HIGH CEMENT RUBBLE MASONRY RETAINING WALL OR SEAWALL



DATA FOR CONCRETE PROTECTION OVER CULVERTS		
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		
10" " 42" D		
11" " 48" D		
12" " 54" D		

SECT. OF CULVERT WITH CONC. PROTECTION

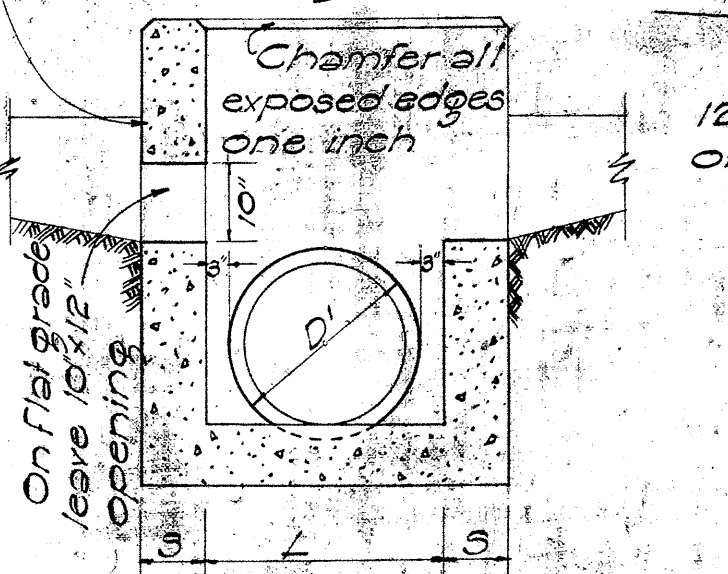
Scale: 1" = 1'-0"

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"	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.

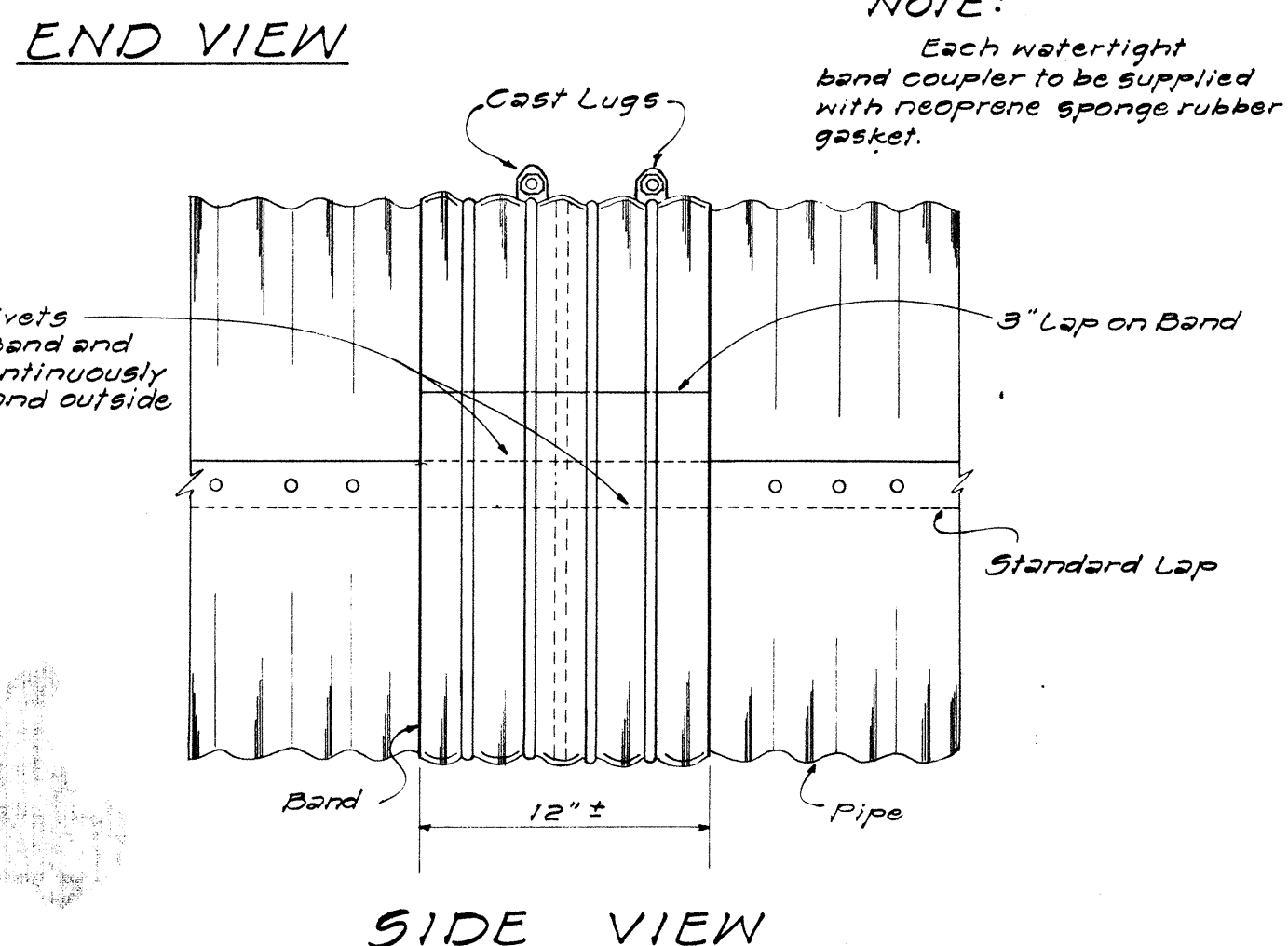
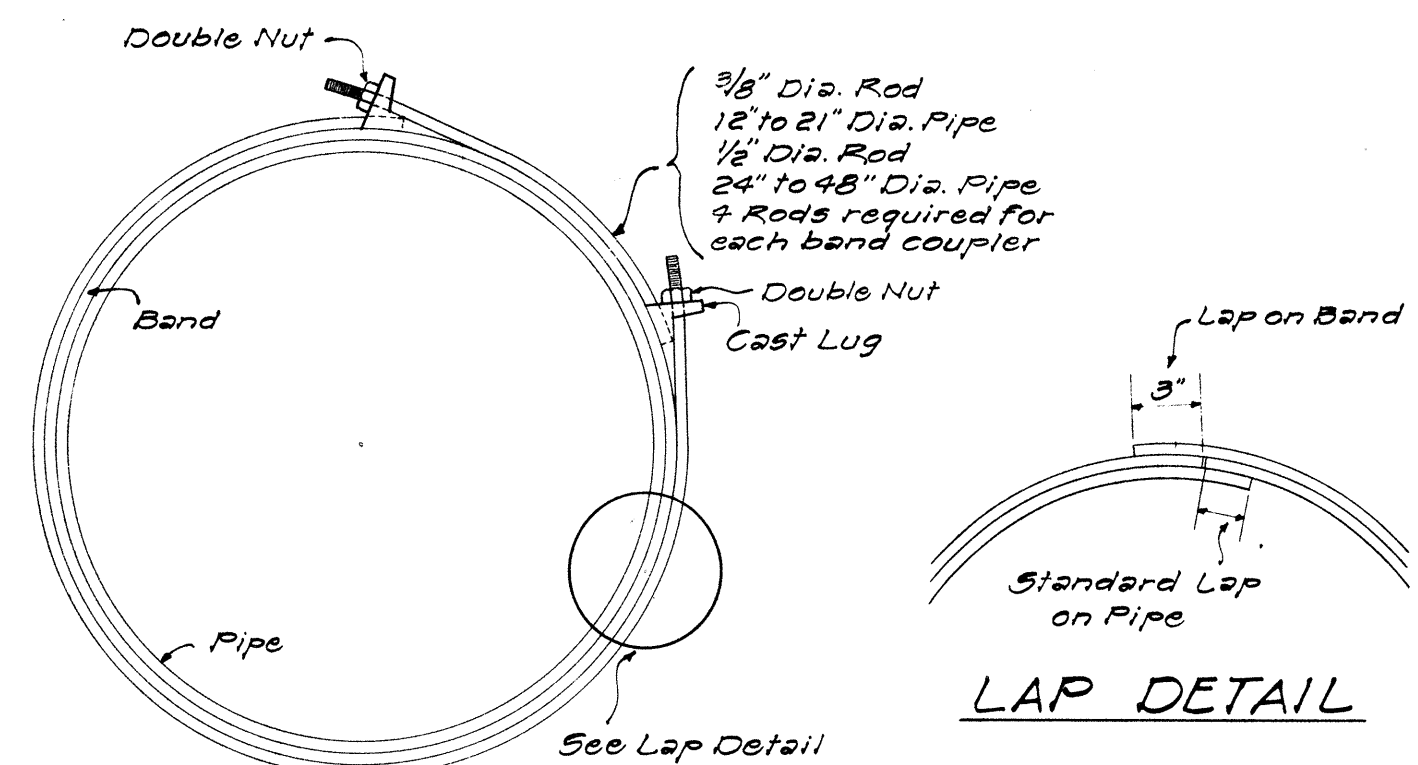
NOTE: This type of structure shall also be used for the Drop Intakes of Siphons connected with Irrigation Ditches or Flumes with appropriate changes to dimensions. In this case all joints must be made water tight.



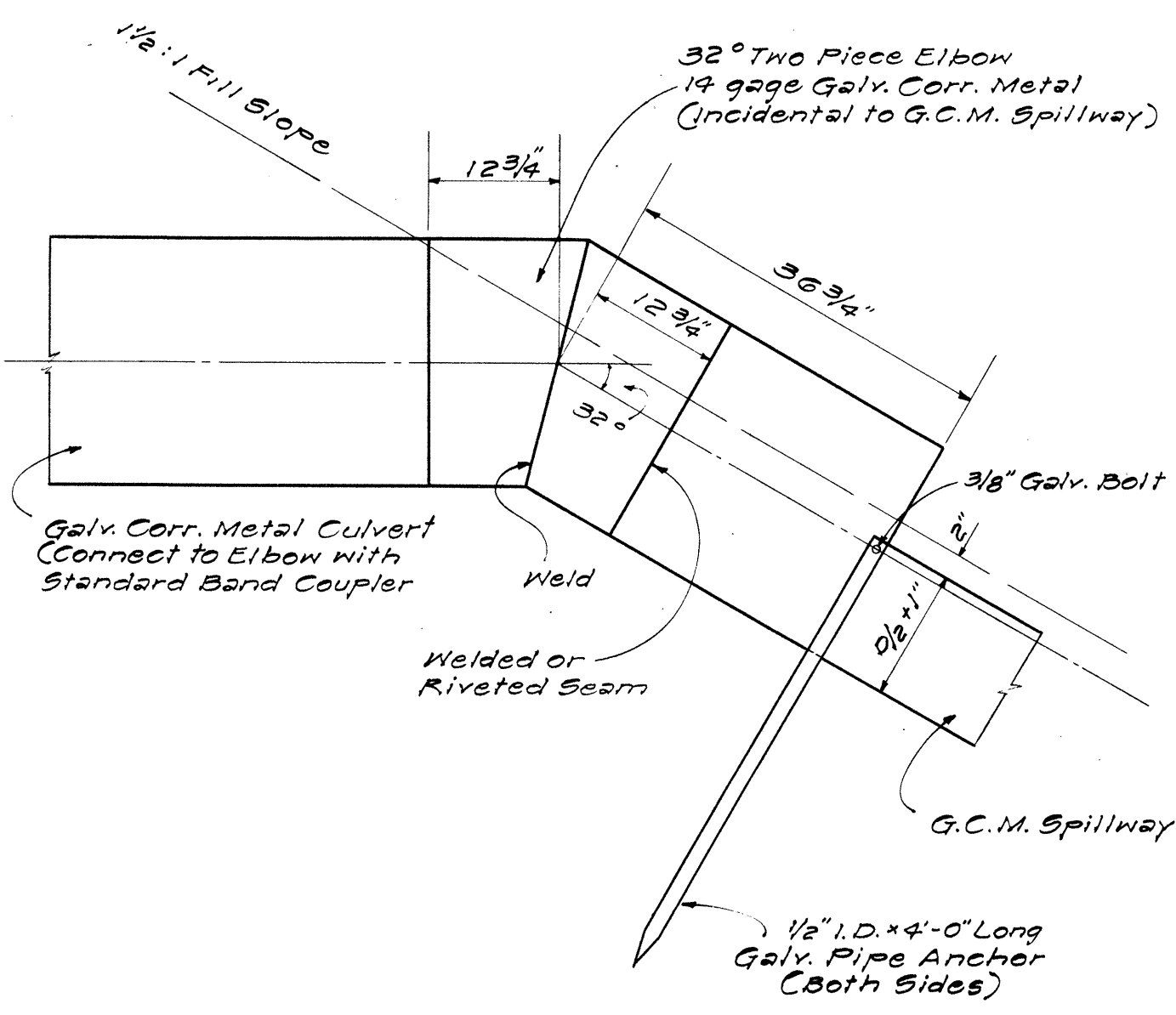
SECTION "B-B"

DETAIL OF CONCRETE DROP INTAKE

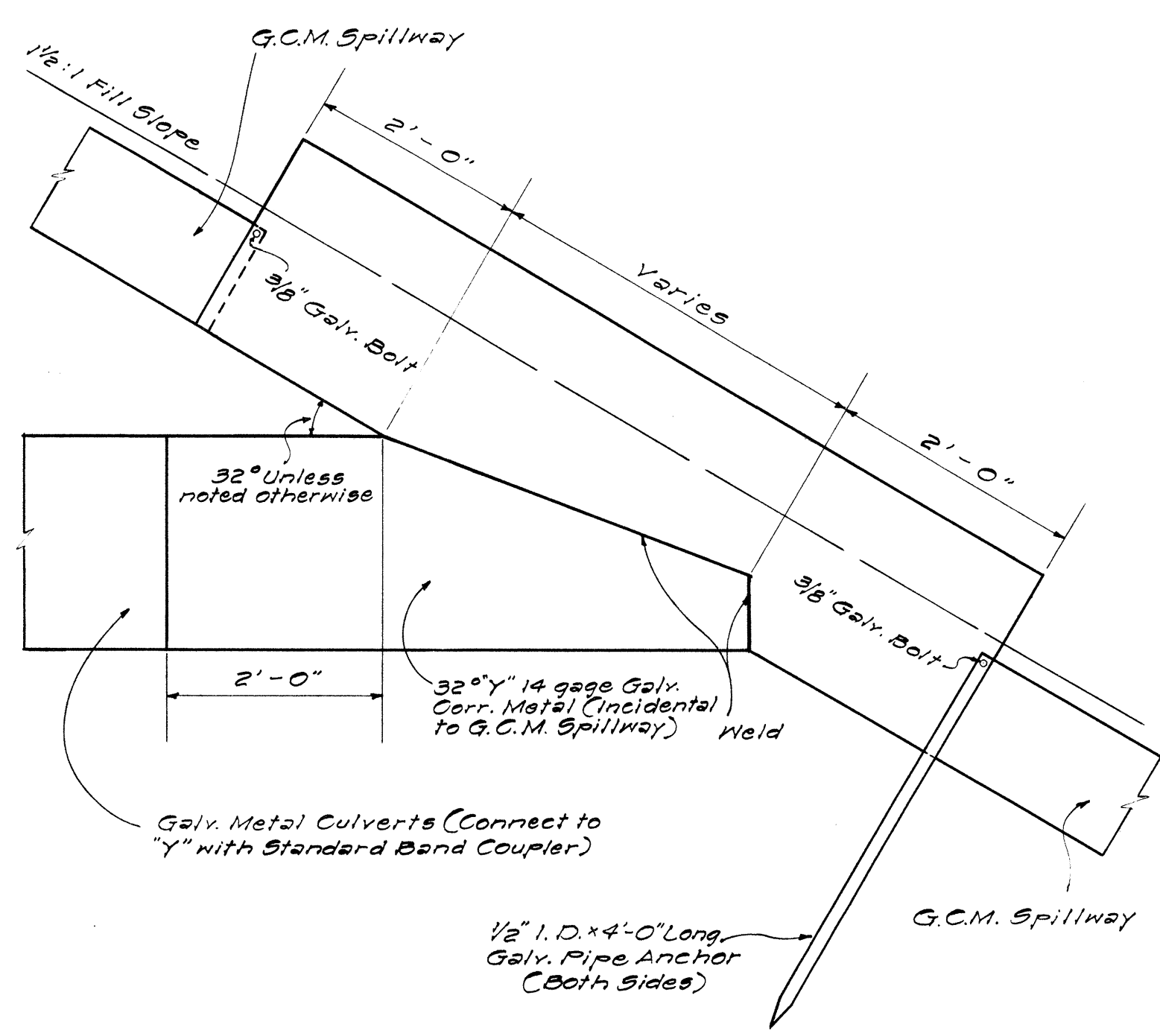
Scale: 1/2" = 1'-0"



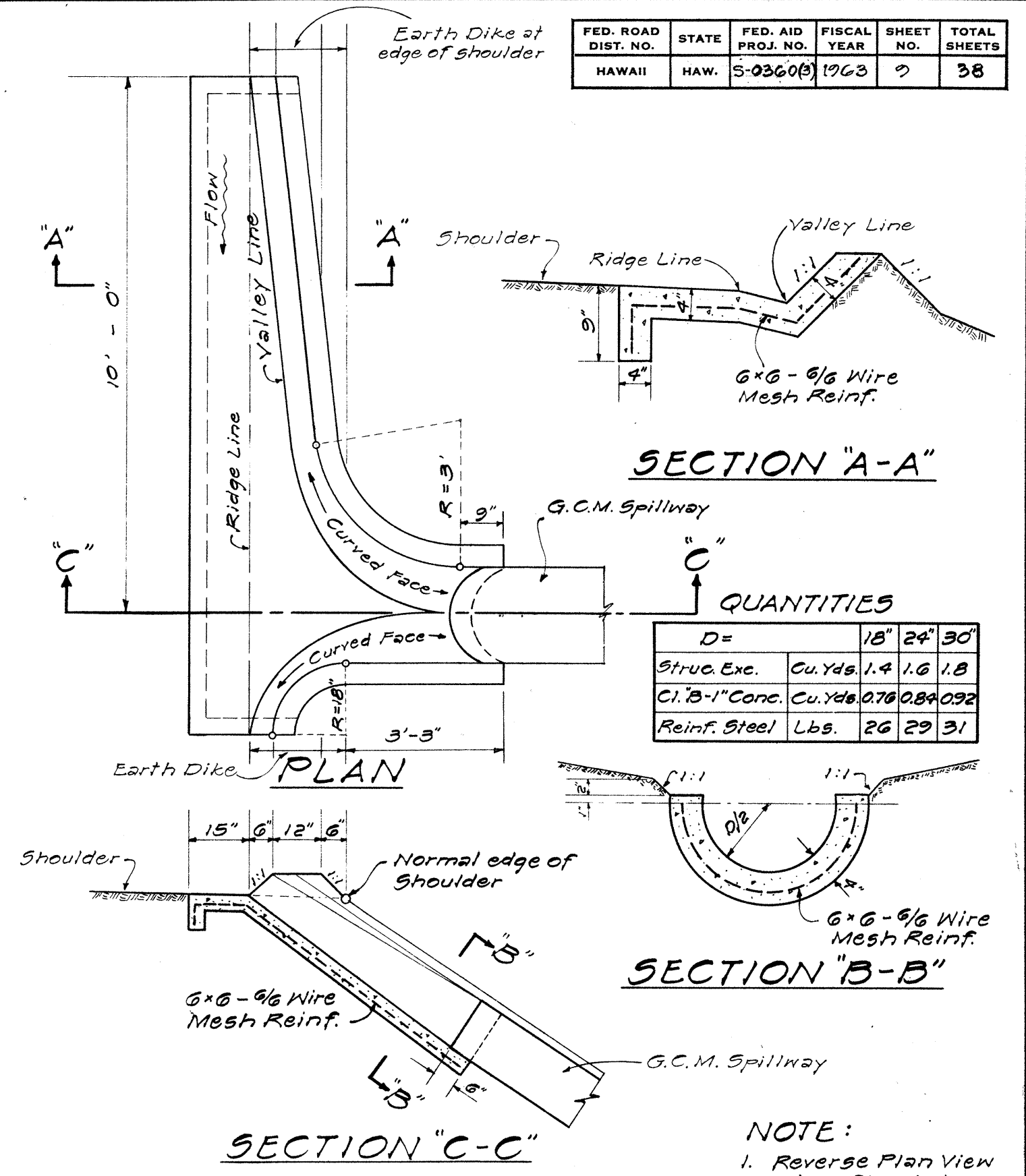
DETAIL OF WATERTIGHT BAND COUPLER
NOT TO SCALE



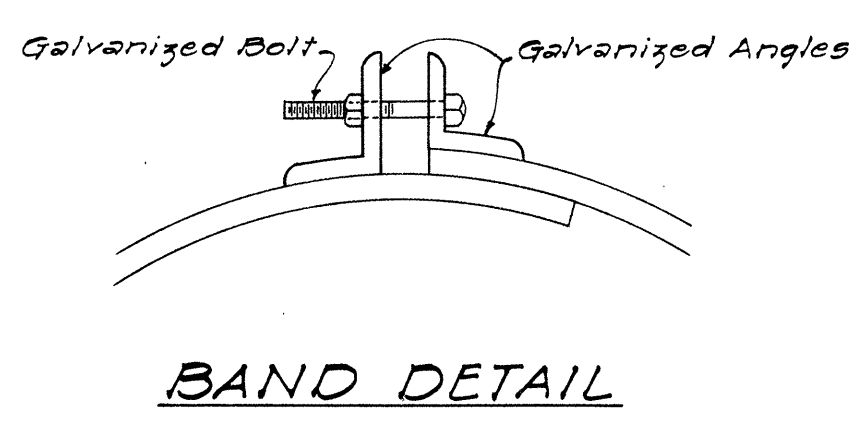
DETAIL OF CULVERT TO SPILLWAY CONNECTION
NOT TO SCALE



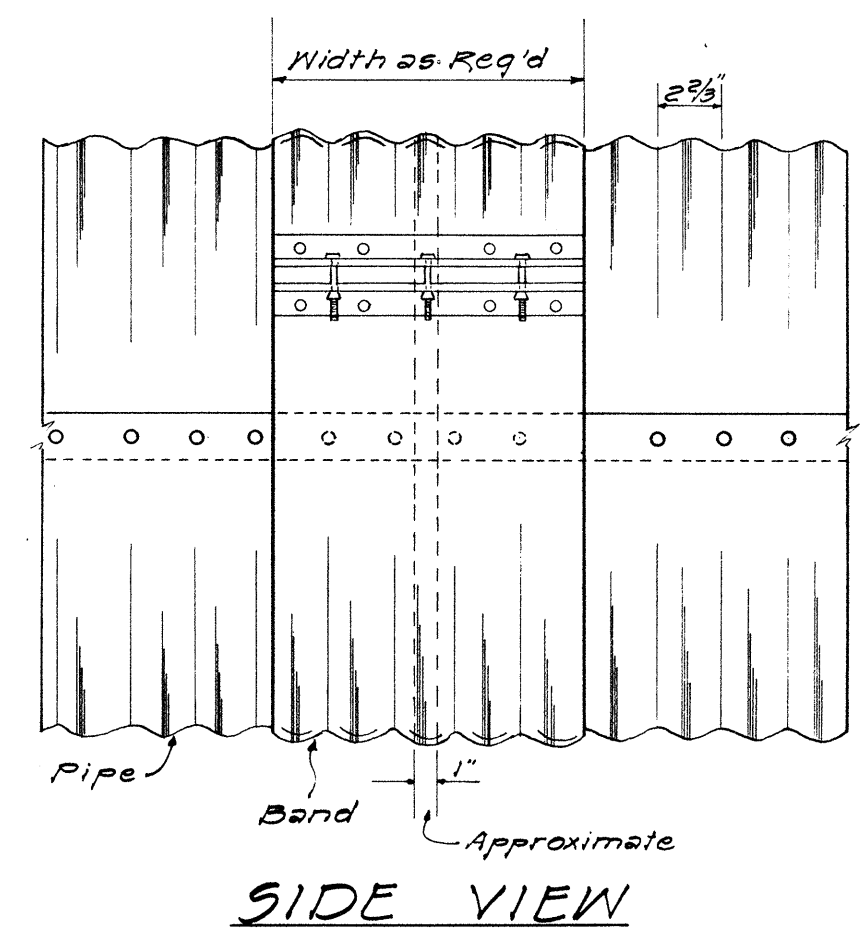
DETAIL OF CULVERT TO SPILLWAY "Y" CONNECTION
NOT TO SCALE



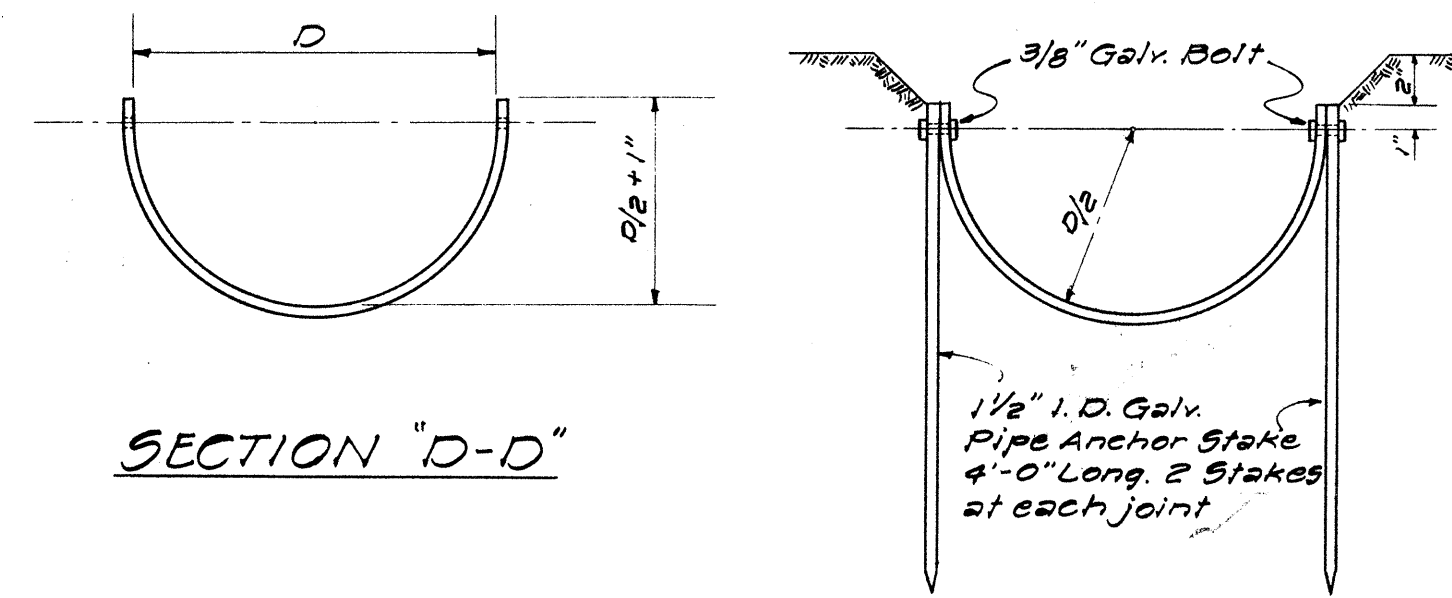
DETAIL OF SPILLWAY INLET
NOT TO SCALE



BAND DETAIL

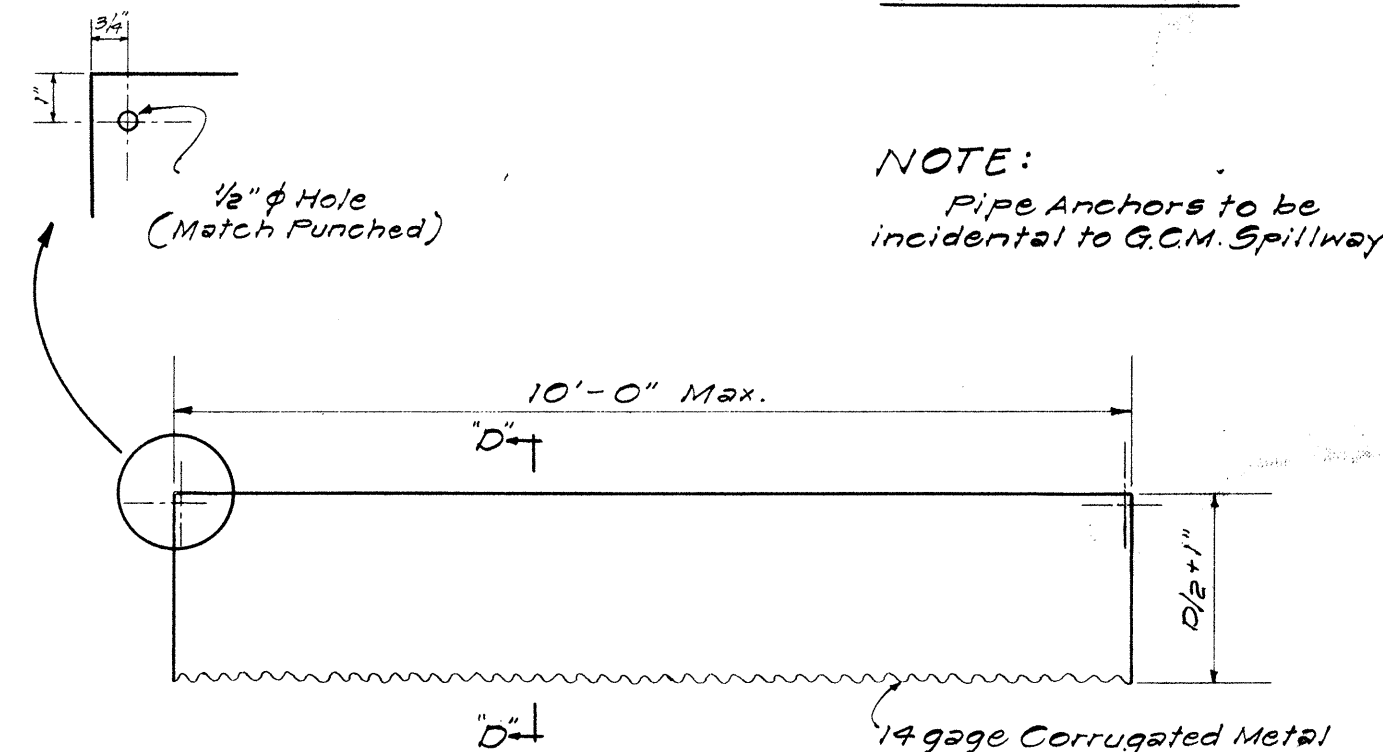


DETAIL OF STANDARD BAND COUPLER
NOT TO SCALE



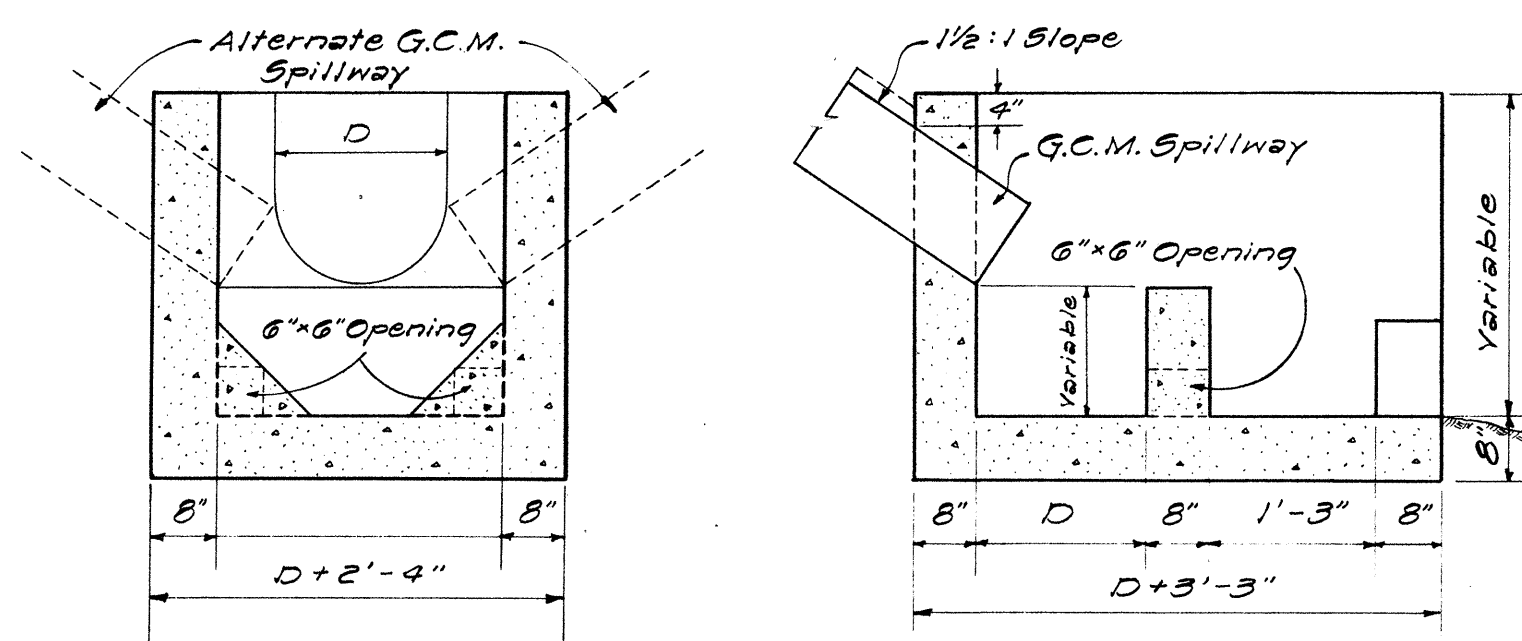
SECTION "D-D"

END VIEW



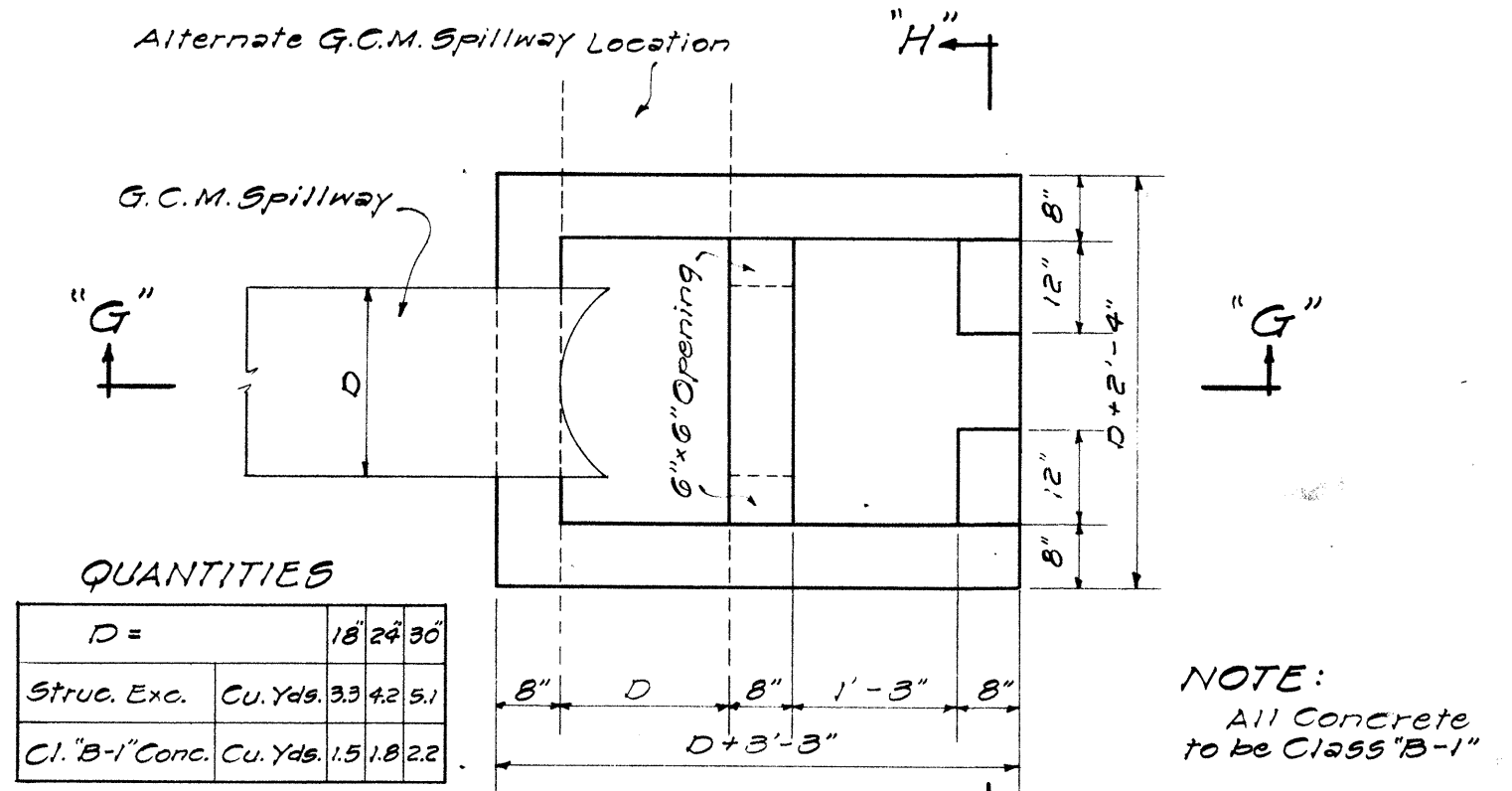
SIDE VIEW

G. C. M. SPILLWAY
NOT TO SCALE



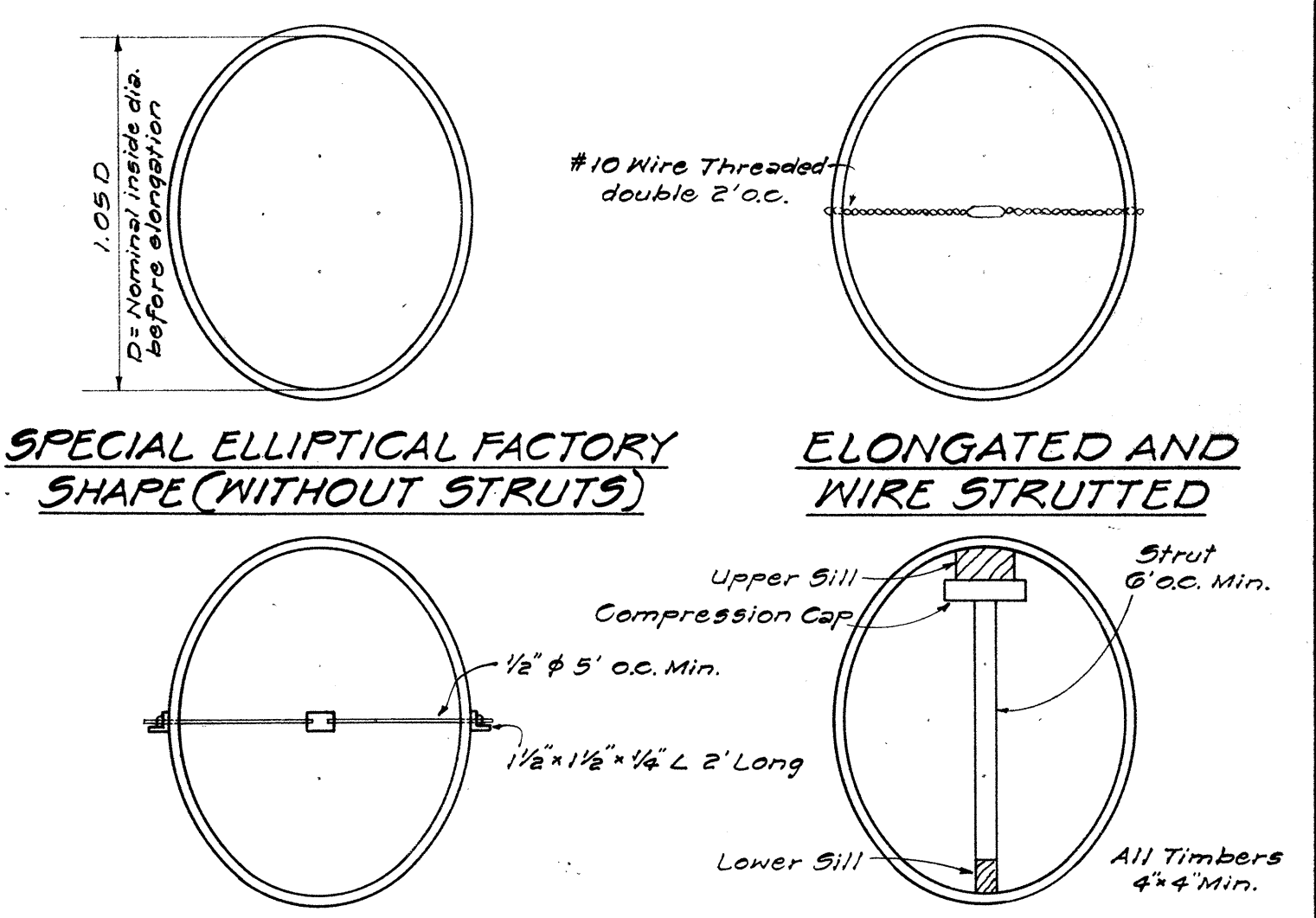
SECTION "H-H"

SECTION "G-G"



PLAN "H"

DETAILS OF CONC DROP BOX AT OUTLET OF G.C.M. SPILLWAY
NOT TO SCALE



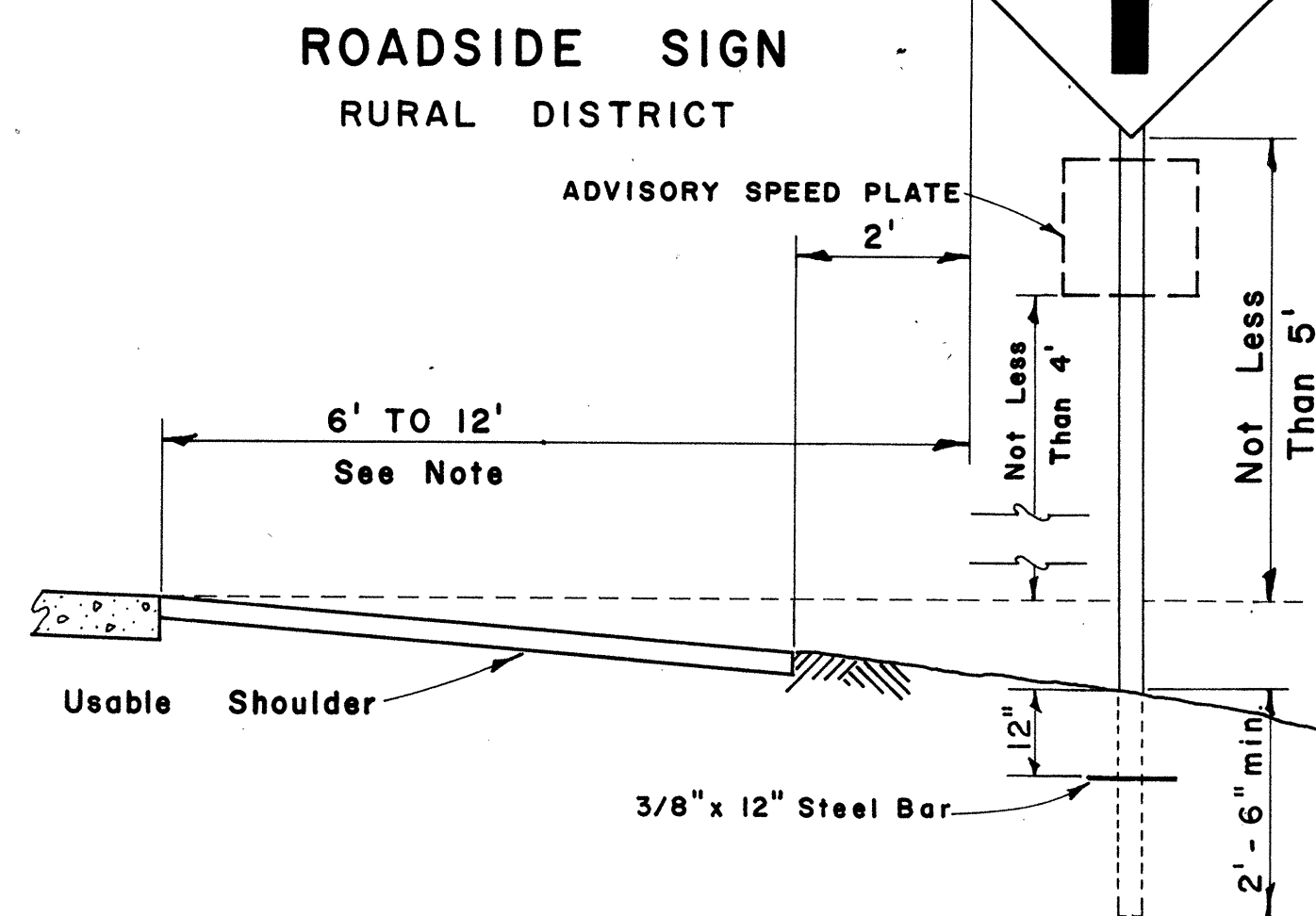
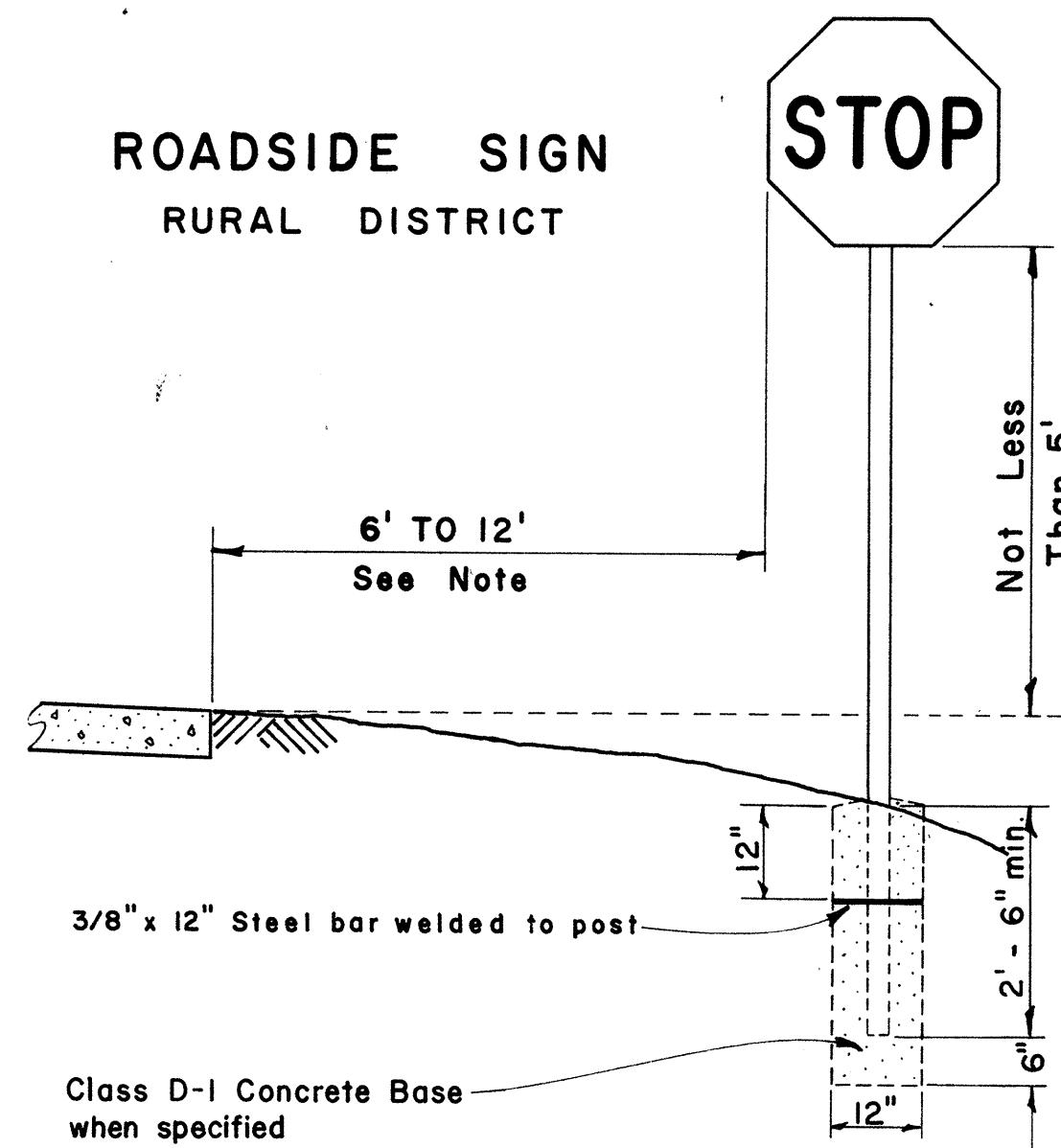
ELONGATED WITH ROD AND TURNBUCKLE
ELONGATED WITH TIMBER STRUT
METHOD OF ELONGATING AND STRUTTING CORRUGATED PIPE
NOT TO SCALE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
GALVANIZED CORRUGATED METAL CULVERTS, SPILLWAYS, AND SPECIAL DETAILS
SCALES AS NOTED
SHEET NO. 2 OF 10 SHEETS

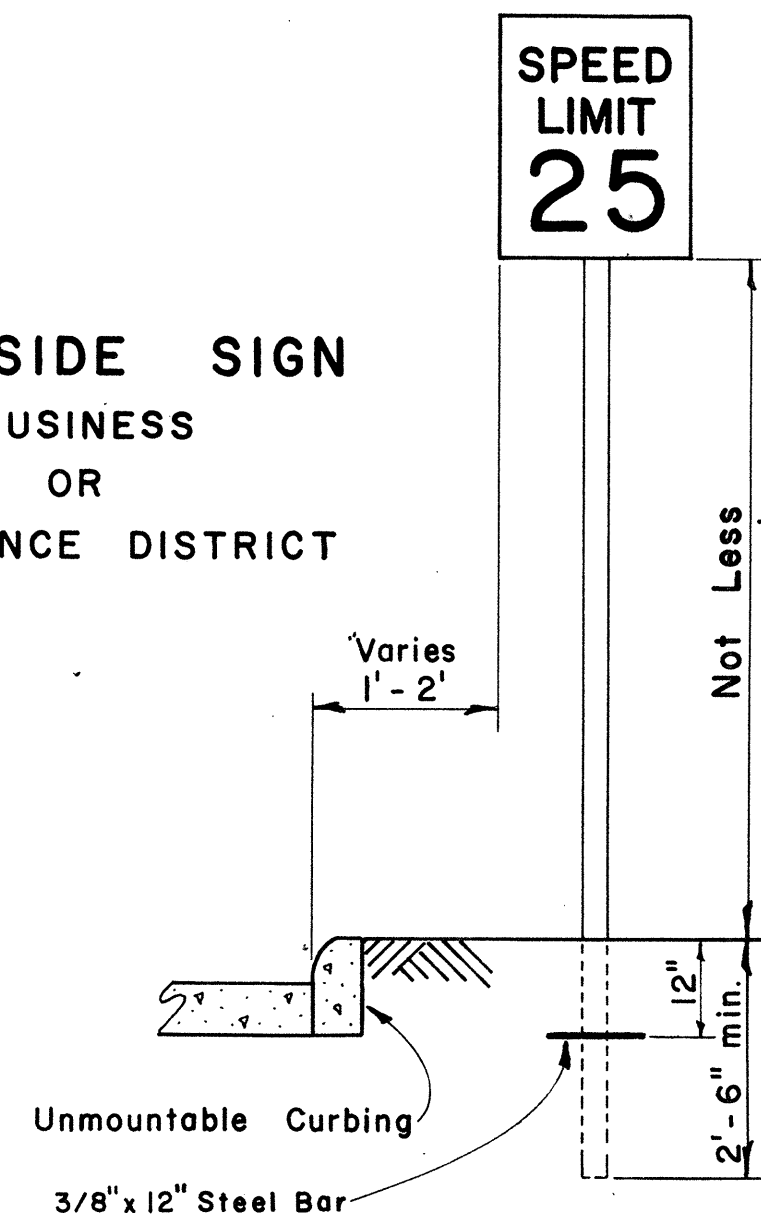
SURVEY PLOTTED BY: R. Y. DATE: 5-22-66
DRAWN BY: R. Y. DATE: 5-22-66
CHECKED BY: O. M. DATE: 5-24-66
NOTE BOOK: 5-24-66

NOTE:

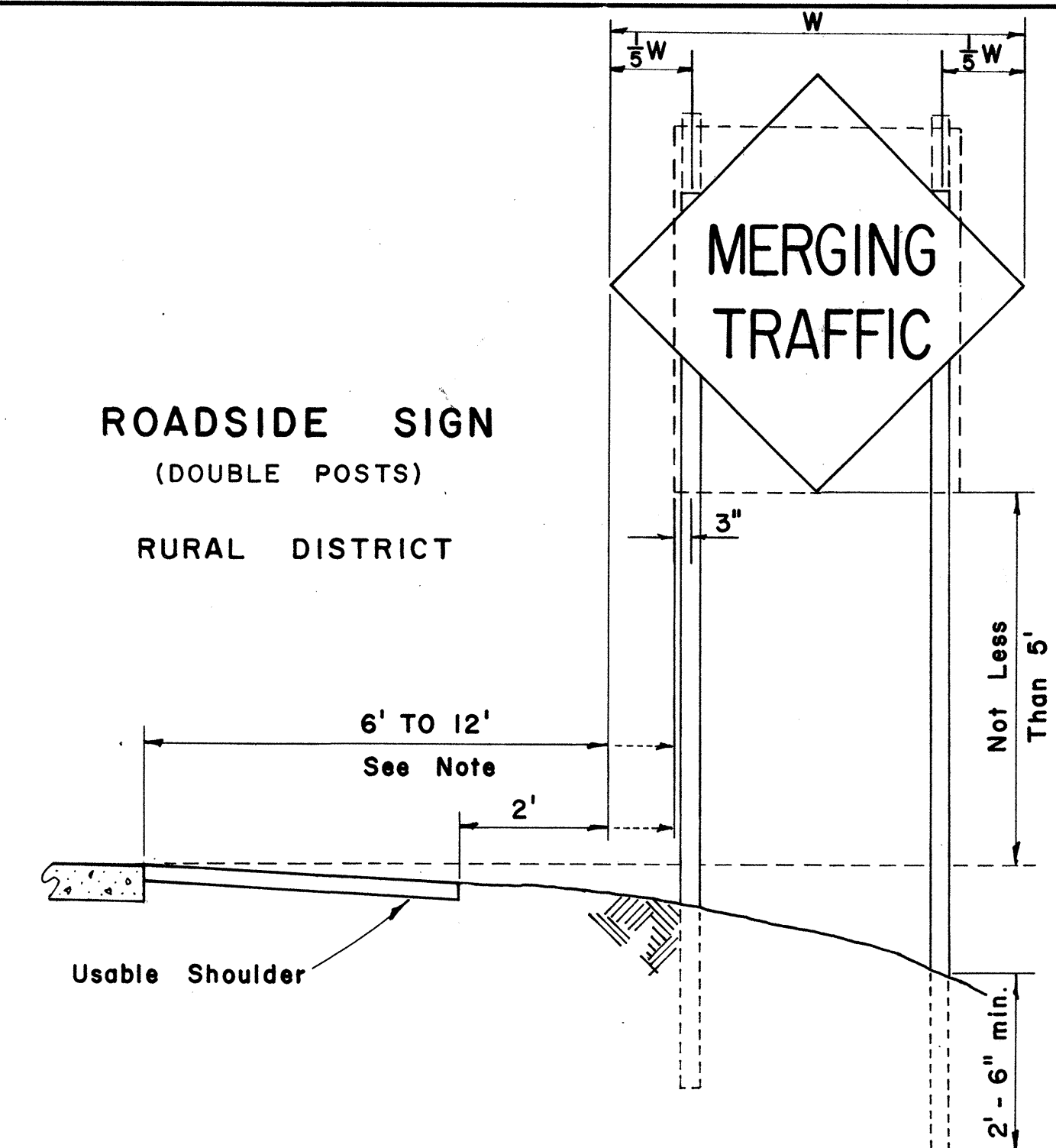
1. All signs and road delineators shall be placed 2' outside the usable roadway shoulder or 1' outside unmountable curbing present and within the limits shown below.
2. Except as noted below, sign posts shall be 3" galv. std. pipe for signs larger than 24" in any dimension and 2" galv. std. pipe for signs not over 24" in any dimension, with two $\frac{3}{8}$ " ϕ bolt holes or adjustable band brackets.
3. Sign shall be attached to post with $\frac{5}{16}$ " galvanized carriage bolts with nuts and $\frac{7}{8}$ " x $\frac{7}{16}$ " x .120 stainless - steel washers with neoprene rubber gasket.
4. Clearance Markers (RM-4, RM-3) shall be installed with the inside edge of the marker in line with the inner edge of the obstruction.
5. Signs 48" and wider or larger than 10 sq. ft. in area shall be mounted on two 3" galv. std. pipe with appropriate $\frac{3}{8}$ " bolt holes.



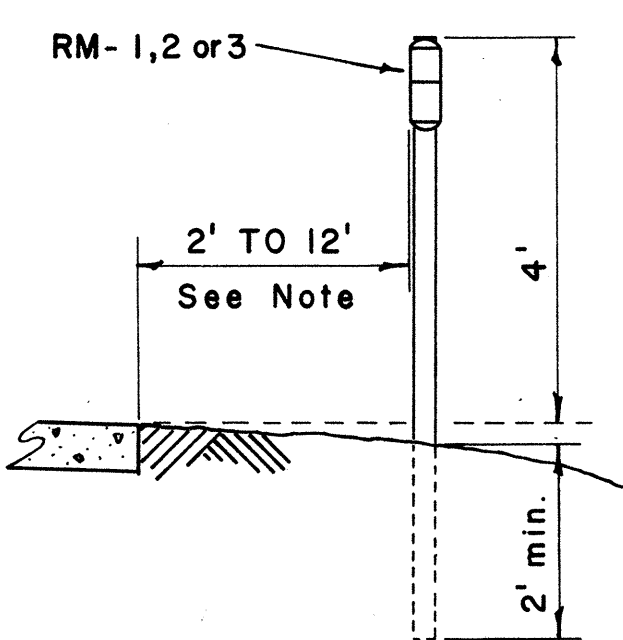
ROADSIDE SIGN
BUSINESS
OR
RESIDENCE DISTRICT



ROADSIDE SIGN
(DOUBLE POSTS)
RURAL DISTRICT

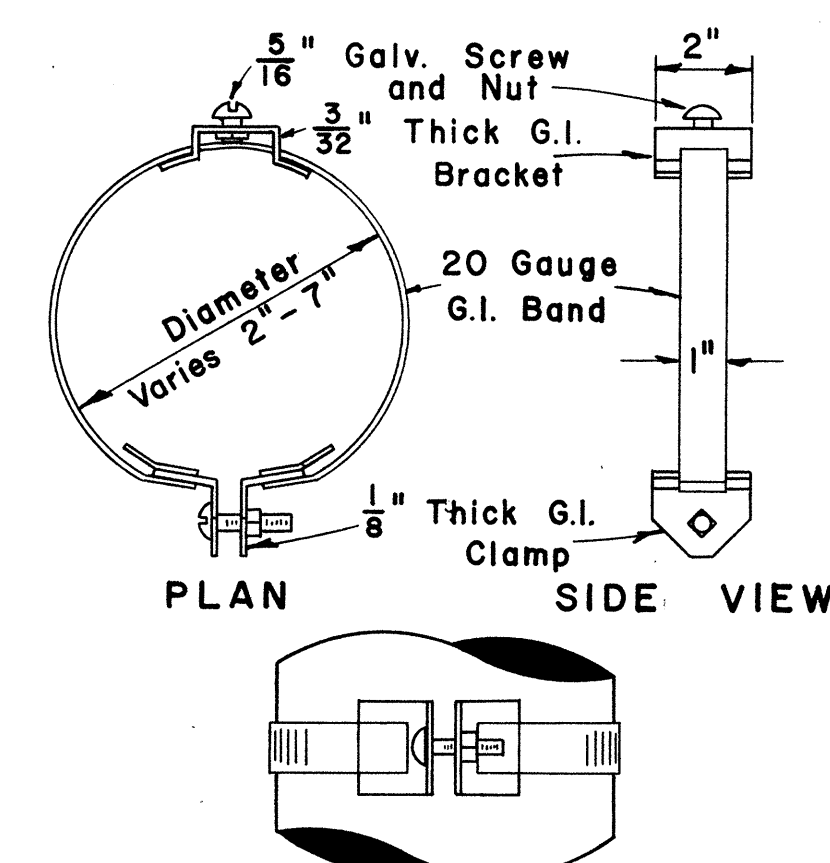
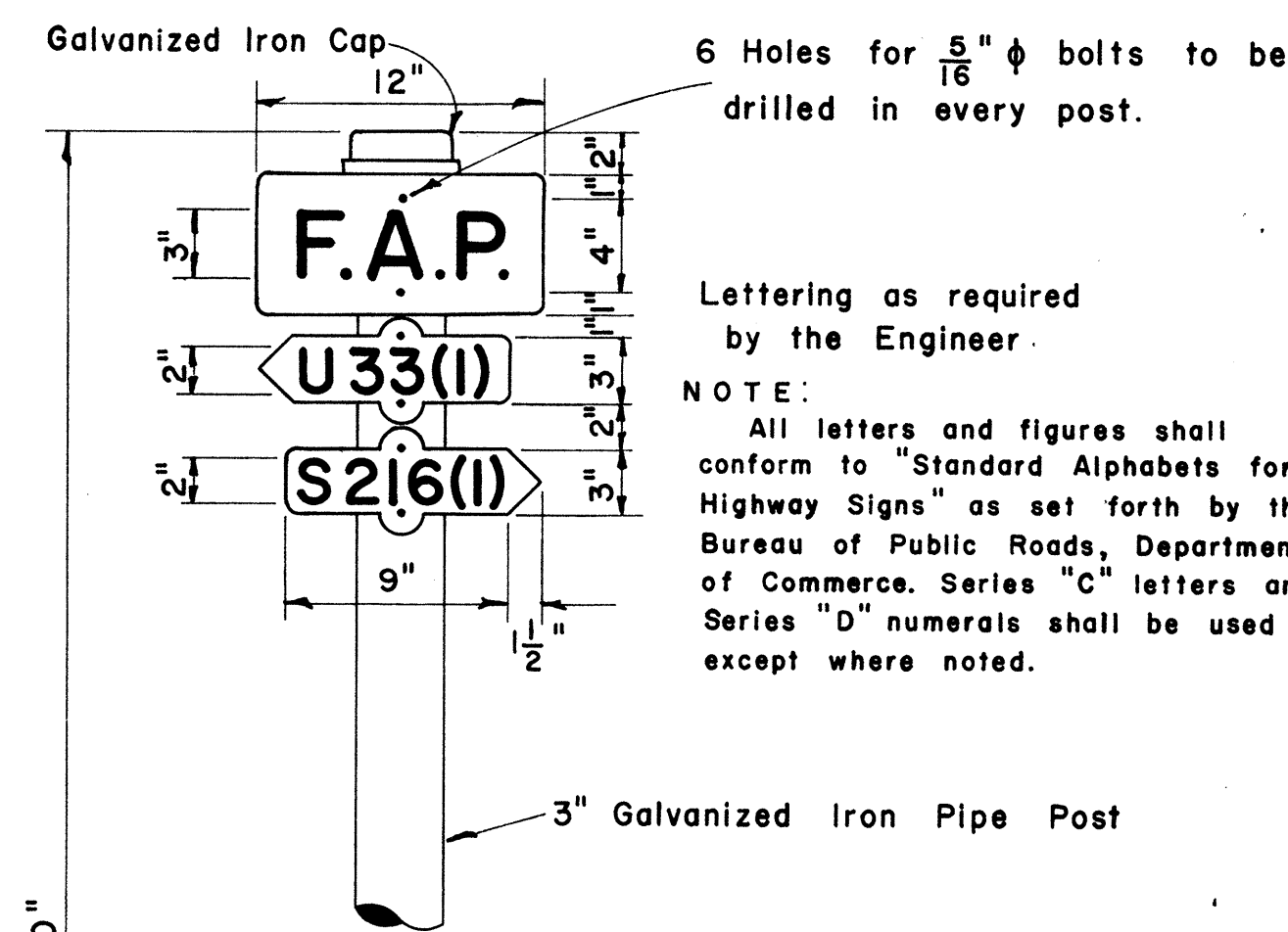


ROAD DELINEATOR

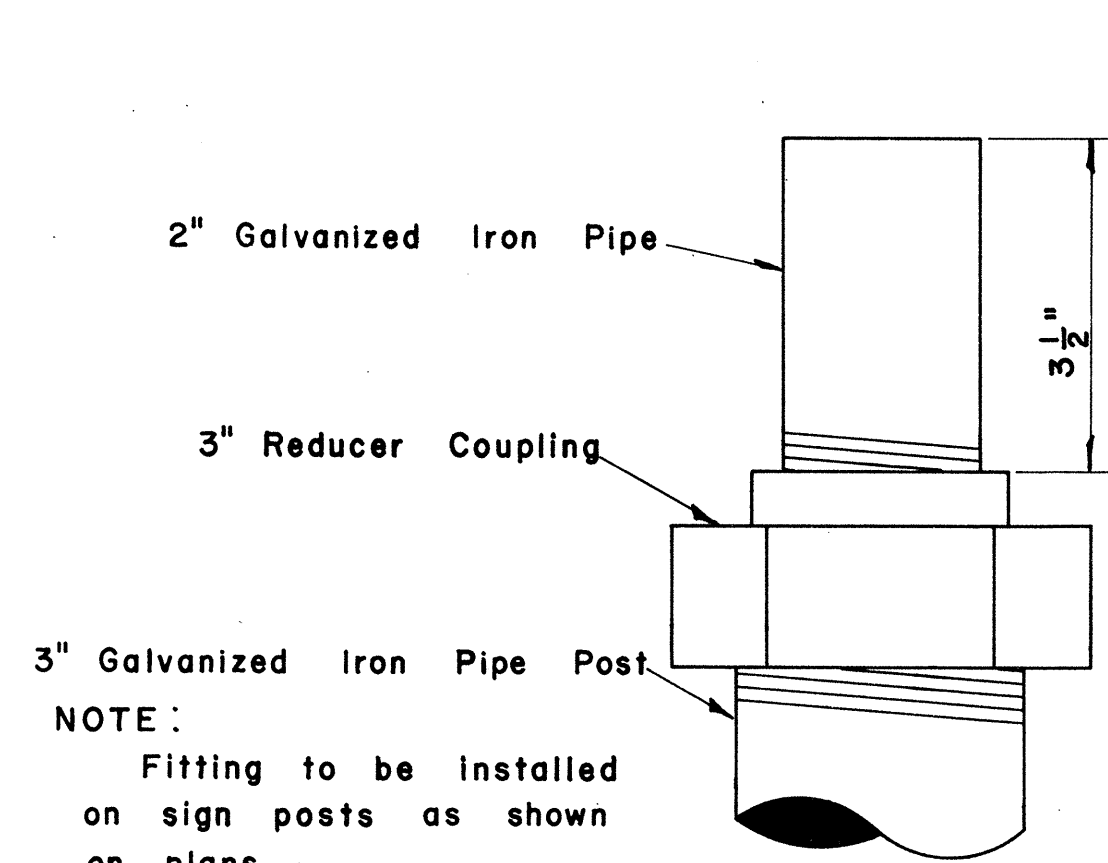


HEIGHT AND LATERAL LOCATION OF SIGNS - TYPICAL INSTALLATIONS

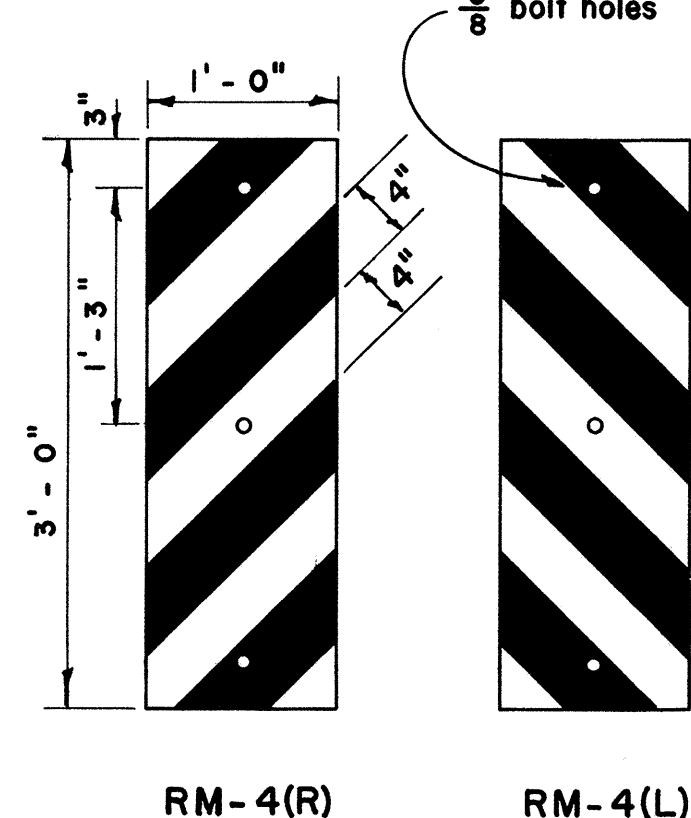
Scale: $\frac{1}{2}$ " = 1' - 0"



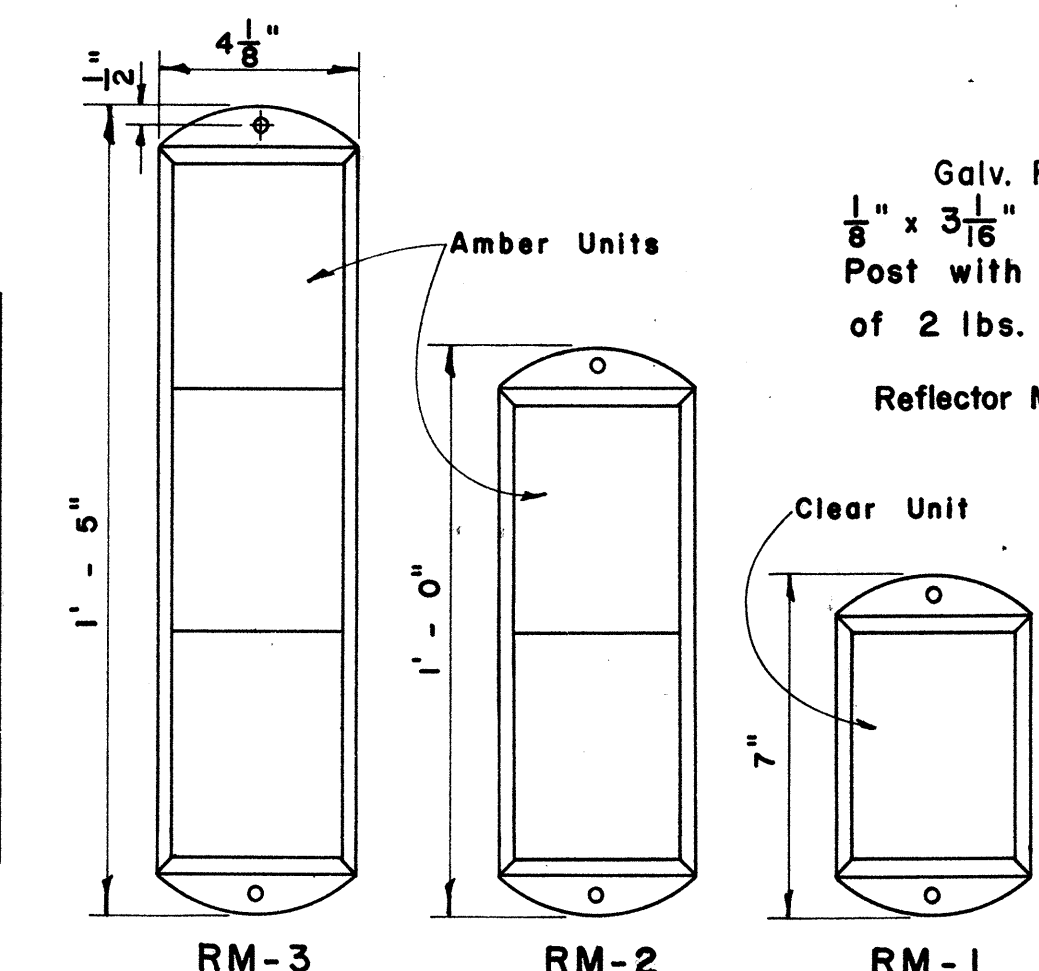
FRONT VIEW
ADJUSTABLE BAND BRACKET
FOR MOUNTING TRAFFIC SIGNS
Scale: 3" = 1' - 0"



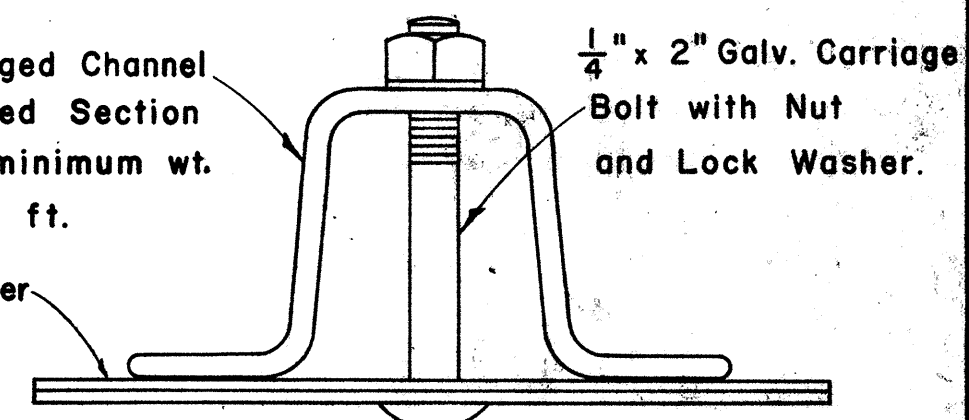
DETAIL OF SIGN POST FITTING
FOR CITY & COUNTY
STREET NAME SIGNS
Scale: $\frac{1}{2}$ " = 1"



Scale: 1" = 1' - 0"

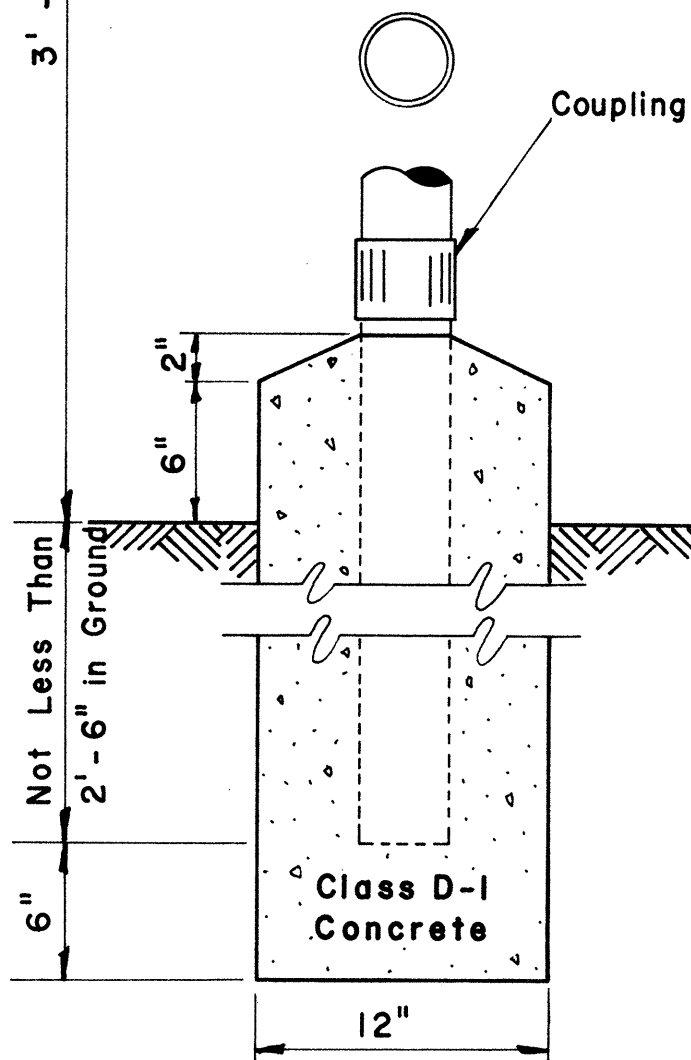


REFLECTOR MARKERS
Scale: As Shown

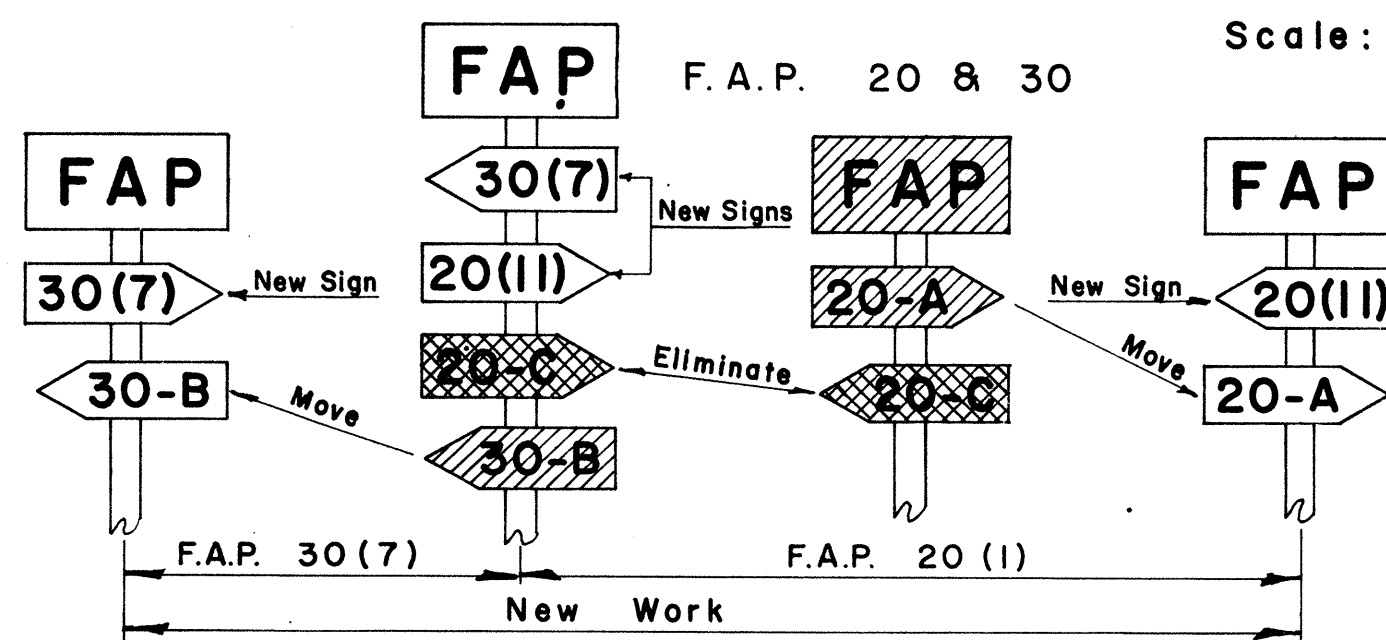


TYPICAL SECTION
OF ROAD DELINEATOR
Full Size

NOTE:
Reflector Units for RM-1,2,3 shall be 4" x 5" in size and shall consist of reflective sheeting encapsulated in acrylic plastic.

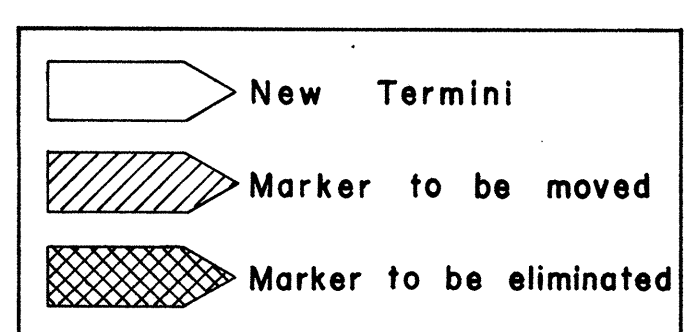
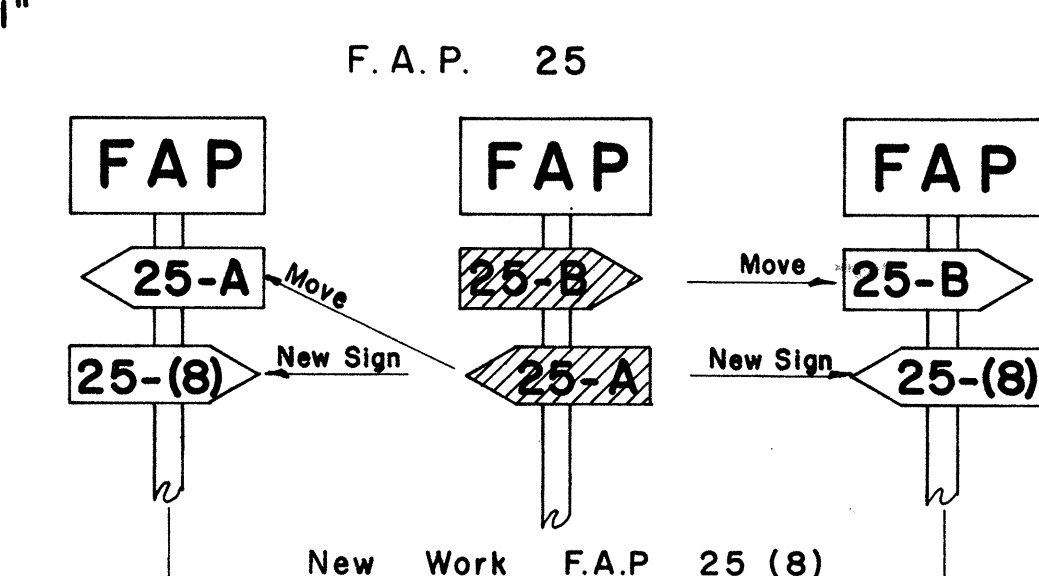


FEDERAL AID MARKER
Scale: $\frac{1}{2}$ " = 1' - 0"



NOTE:
Federal Aid Markers should be placed at the termini of suffix designated sections. Intermediate letter designated markers of adjacent sections located within the limits of new improvements should be moved to the termini of the new work. The same procedure should be followed on each successive improvement until all markers for letter designated sections are eventually eliminated.

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

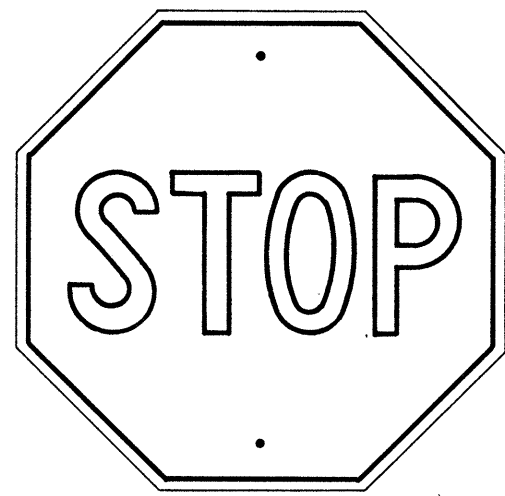


APPROVED: *[Signature]*
DIRECTOR OF TRANSPORTATION

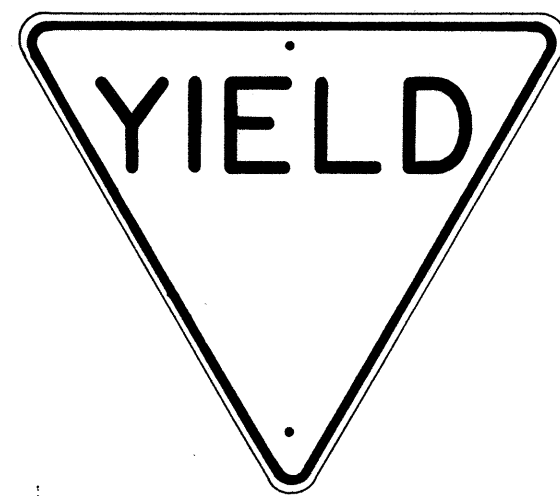
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
F.A. MARKER
AND
MISCELLANEOUS SIGN
DETAILS
Scale: As Shown

SHEET No. 3 OF 10 SHEETS

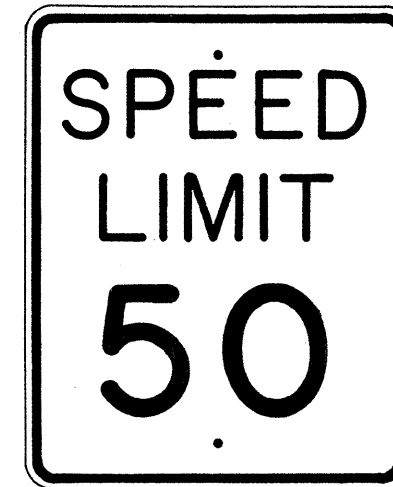
FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	5-0360(3)	1963	11	38



R1-1 30"x30"



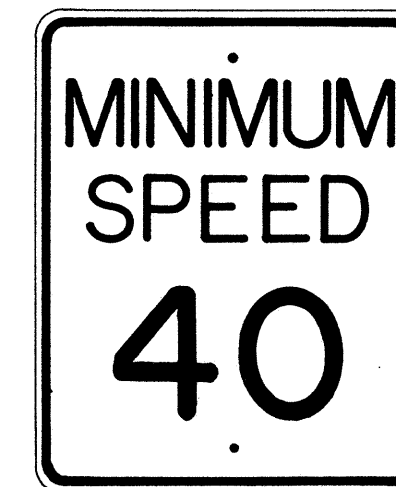
R1-2 36"x36"x36"
R1-2-E 48"x48"x48"
R1-2-I 60"x60"x60"



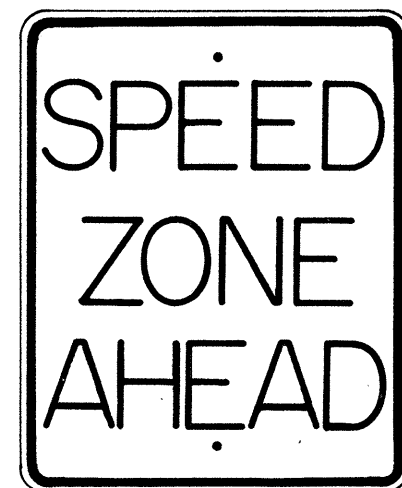
R2-1(50) 24"x30"
R2-1(50)-E 36"x48"
R2-1(50)-I 48"x60"



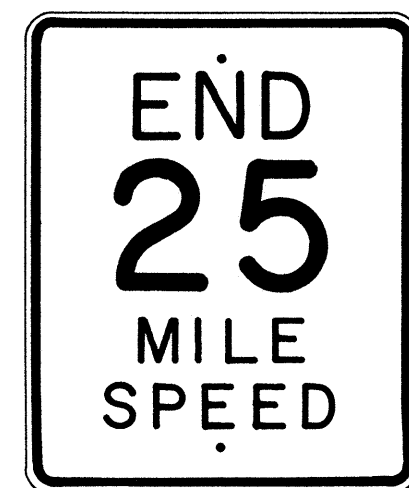
R2-2(40) 24"x24"
R2-2(40)-E 36"x36"
R2-2(40)-I 48"x48"



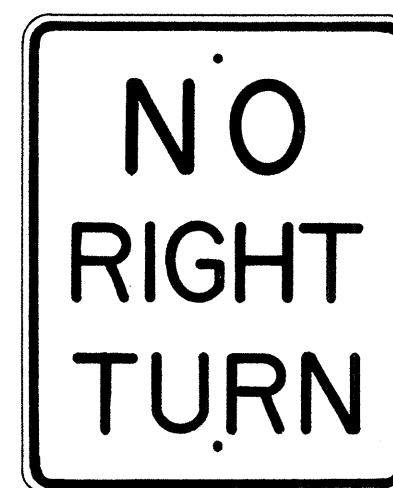
R2-4(40) 24"x30"
R2-4(40)-E 36"x48"
R2-4(40)-I 48"x60"



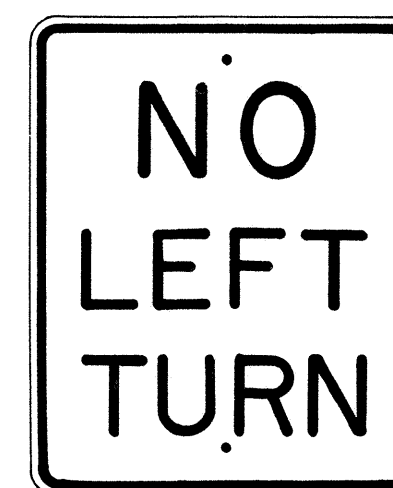
R2-5 24"x30"
R2-5-E 36"x48"
R2-5-I 48"x60"



R2-6(25) 24"x30"
R2-6(25)-E 36"x48"



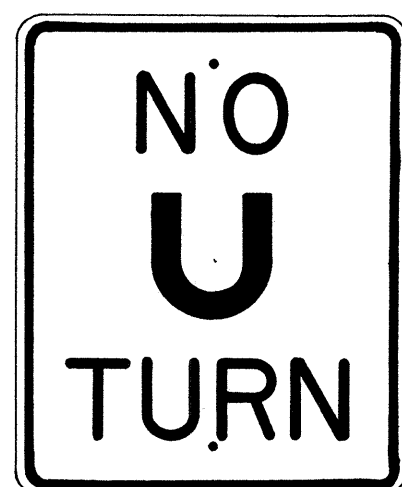
R3-1 24"x30"
R3-1-E 36"x48"



R3-2 24"x30"
R3-2-E 36"x48"



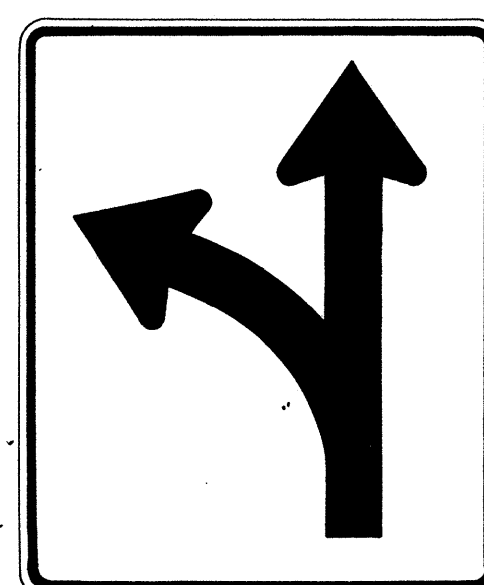
R3-3 24"x24"



R3-4 24"x30"
R3-4-E 36"x48"
R3-4-I 48"x60"



R3-5(L) 30"x36"



R3-6(L) 30"x36"

NOTE:

1. The shape, color, dimensions, symbols, wording, lettering and reflectorization of all signs shall be in accordance with the "Manual on Uniform Traffic Control Devices for Streets and Highways," dated June 1961 and the BPR manual "Standard Highway Signs," dated September 1961 unless otherwise specified.
2. All regulatory signs shall be reflectorized unless otherwise specified.
3. All regulatory signs shall have 3/8" bolt holes drilled at appropriate locations unless otherwise noted.
4. The suffix "E" denotes Expressway signs and "I" denotes Interstate signs.
5. For R2 signs, number in () indicates speed and shall be as shown on the plans.
6. (R) or (L) indicates right or left and shall be as shown on the plans.

APPROVED:

DATE: 1/22/62

[Signature]
DIRECTOR OF TRANSPORTATION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
REGULATORY SIGNS

Scale: 1" = 1'-0"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	50560(3)	1965	12	38



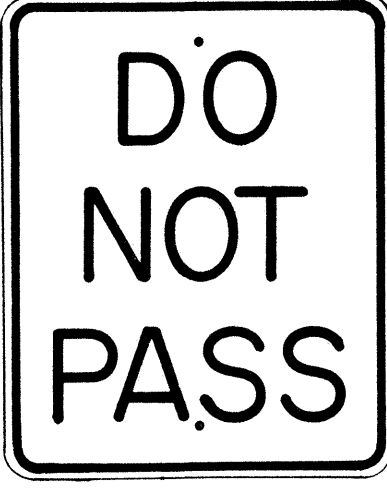
R 3 - 7 (L) 30"x30"



R 3 - 7 (R) 30"x30"



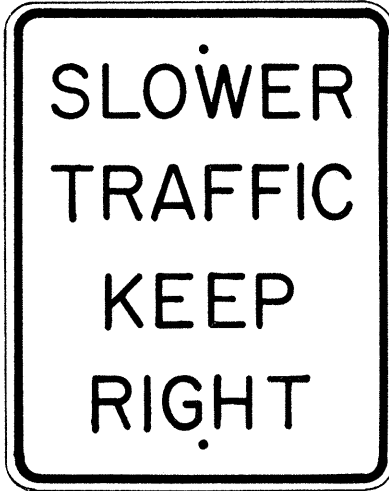
R 3 - 8 (L) 30"x30"



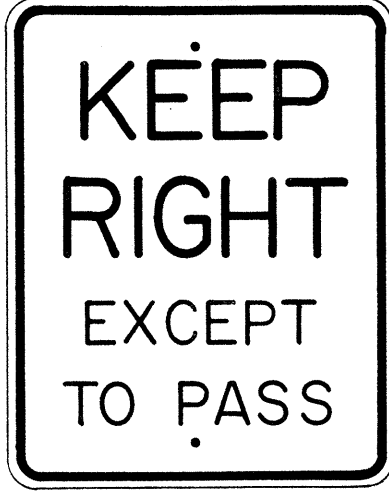
R 4 - 1 24"x30"



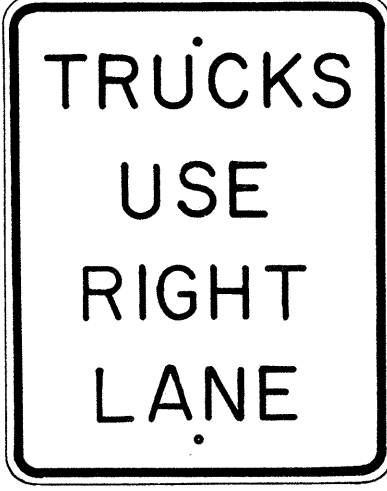
R 4 - 2 24"x30"



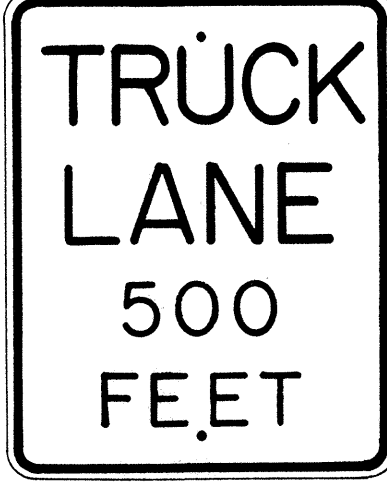
R 4 - 3 24"x 30"
R 4 - 3 - E 36"x 48"
R 4 - 3 - I 48"x 60"



R 4 - 4 24"x 30"
R 4 - 4 - E 36"x 48"
R 4 - 4 - I 48"x 60"



R 4 - 5 24"x 30"
R 4 - 5 - E 36"x 48"



R 4 - 6 24"x 30"
R 4 - 6 - E 36"x 48"



R 4 - 7 (R) 24"x 30"
R 4 - 7 (R) - E 36"x 48"



R 4 - 7 (L) 24"x30"
R 4 - 7 (L) - E 36"x 48"



R 5 - 1 24"x24"



R 6 - 1 (R) 36"x 12"



R 6 - 2 (R) 18"x24"

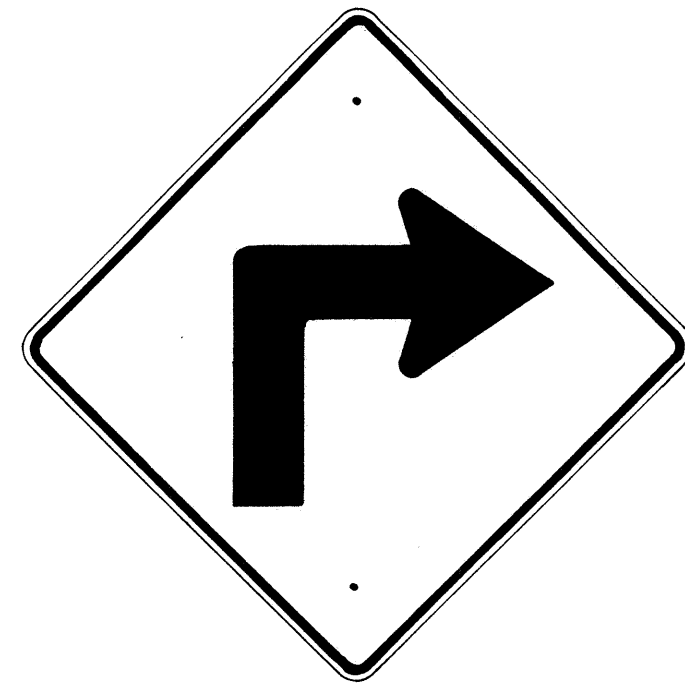
- NOTE:
1. The shape, color, dimensions, symbols, wording, lettering and reflectorization of all signs shall be in accordance with the "Manual on Uniform Traffic Control Devices for Streets and Highways," dated June 1961 and the BPR manual "Standard Highway Signs," dated September 1961 unless otherwise specified.
 2. All regulatory signs shall be reflectorized unless otherwise specified.
 3. All regulatory signs shall have 3/8" bolt holes drilled at appropriate locations unless otherwise noted.
 4. The suffix "E" denotes Expressway signs and "I" denotes Interstate signs.
 5. (R) or (L) indicates right or left and shall be as shown on the plans.

APPROVED: _____ DATE: 1/22/62
DIRECTOR OF TRANSPORTATION

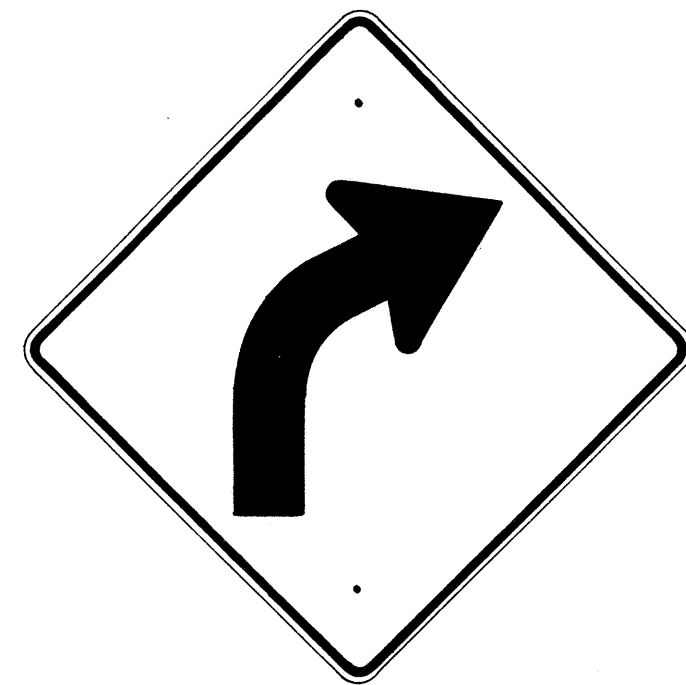
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
REGULATORY SIGNS

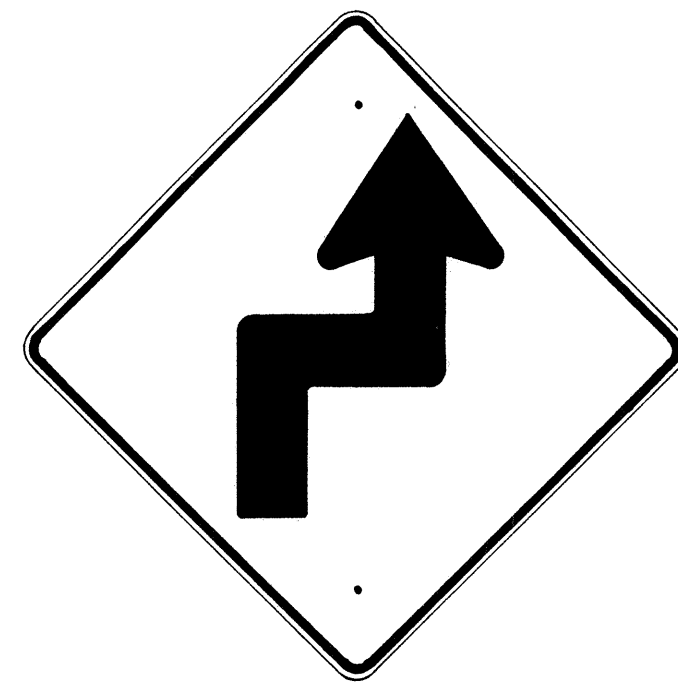
Scale: 1" = 1'-0"



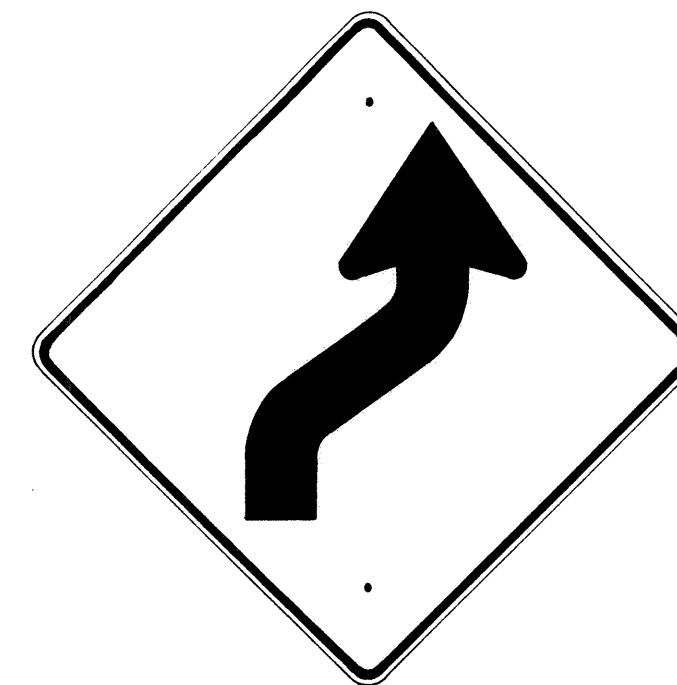
W1-1(R) 30" x 30"



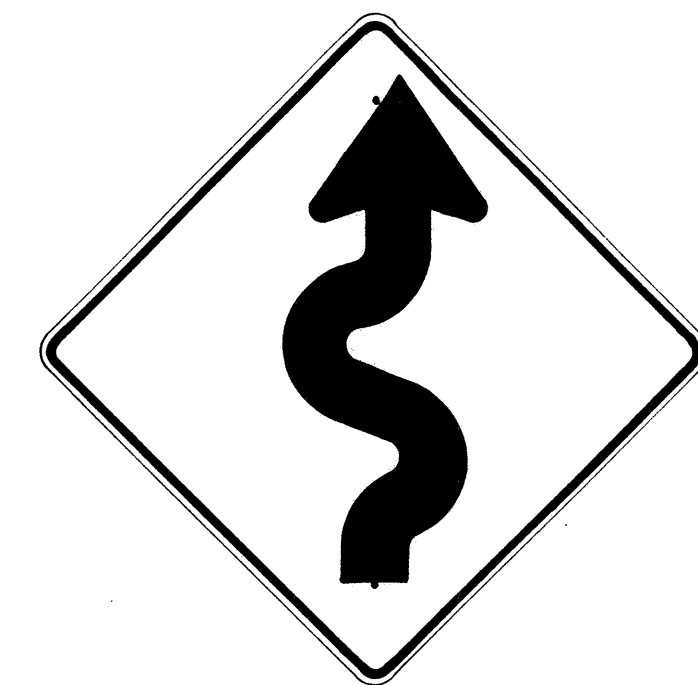
W1-2(R) 30" x 30"



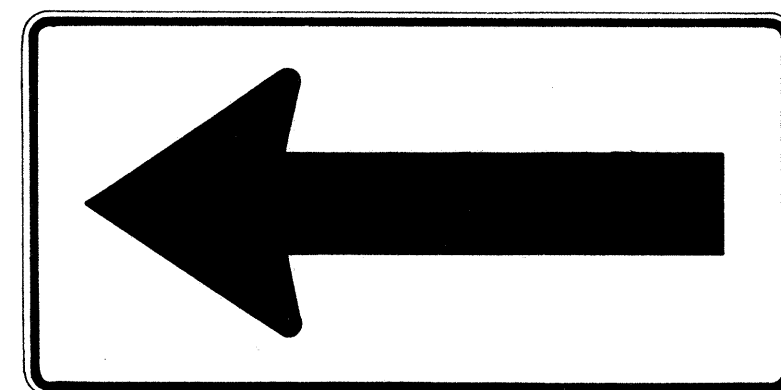
W1-3(R) 30" x 30"



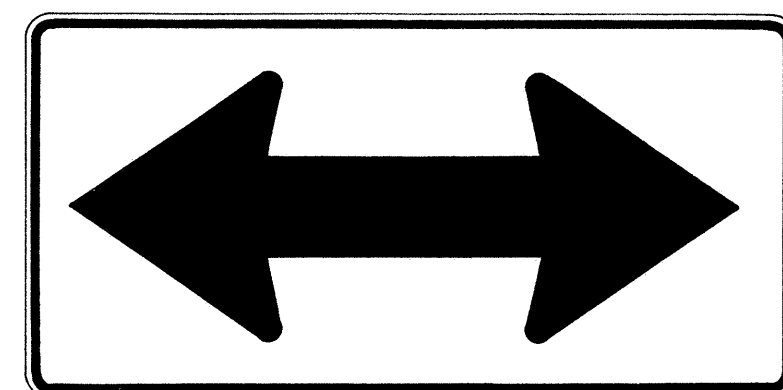
W1-4(R) 30" x 30"



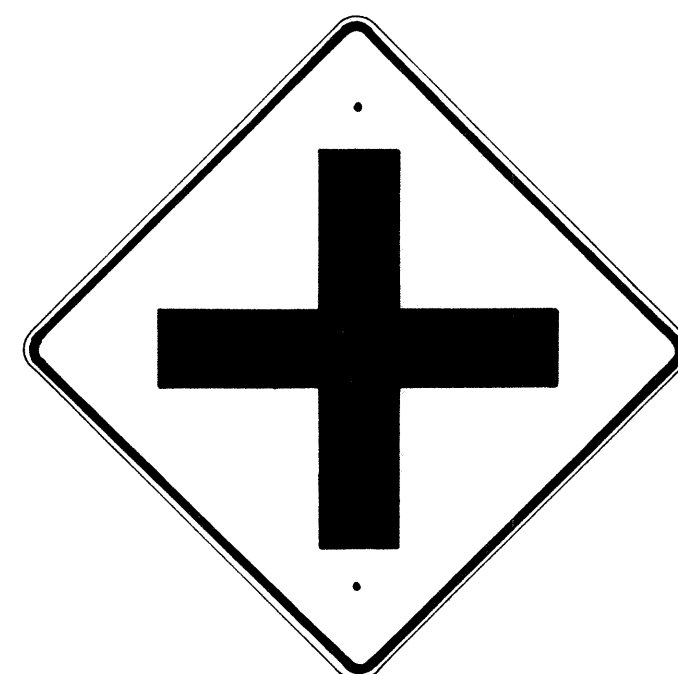
W1-5(R) 30" x 30"



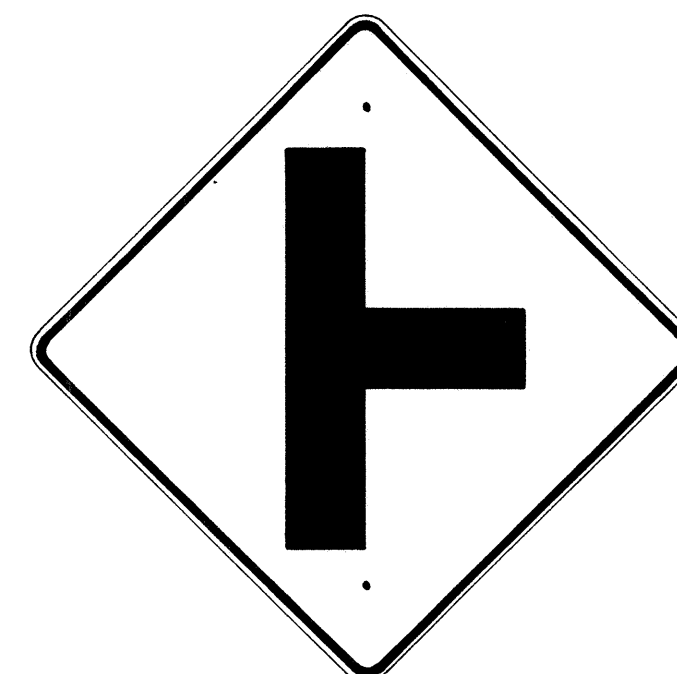
W1-6 48" x 24"



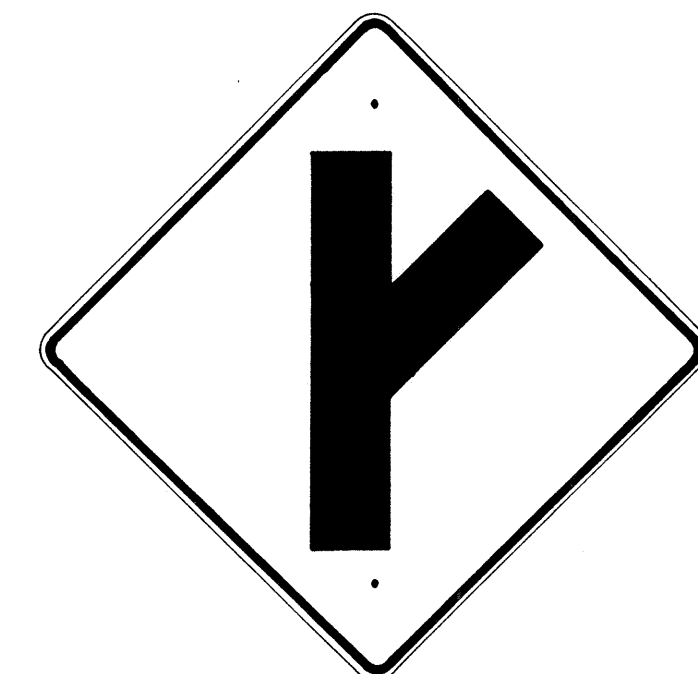
W1-7 48" x 24"



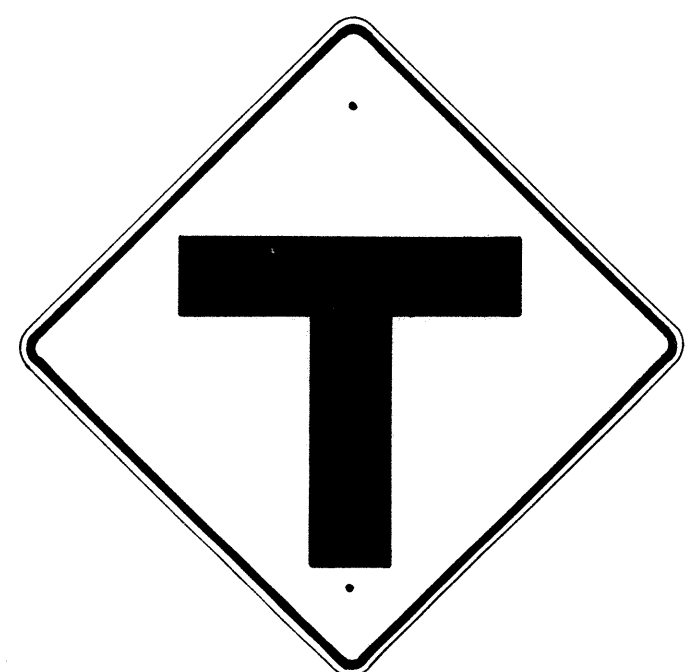
W2-1 30" x 30"



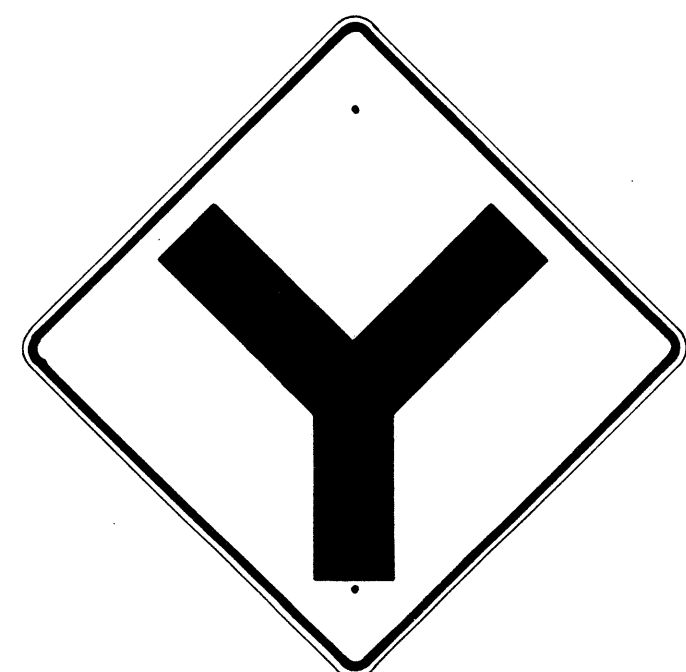
W2-2 30" x 30"



W2-3(R) 30" x 30"



W2-4 30" x 30"



W2-5 30" x 30"



W3-1 30" x 30"



W3-2 30" x 30"

NOTE:

1. The shape, color, dimensions, symbols, wording, lettering and reflectorization of all signs shall be in accordance with the "Manual on Uniform Traffic Control Devices for Streets and Highways," dated June 1961 and the BPR manual Standard Highway Signs," dated September 1961 unless otherwise specified.
2. All warning signs shall be reflectorized unless otherwise specified.
3. All warning signs shall have 3/8" bolt holes drilled at appropriate locations unless otherwise noted.
4. (R) or (L) indicates right or left and shall be as shown on the plans.

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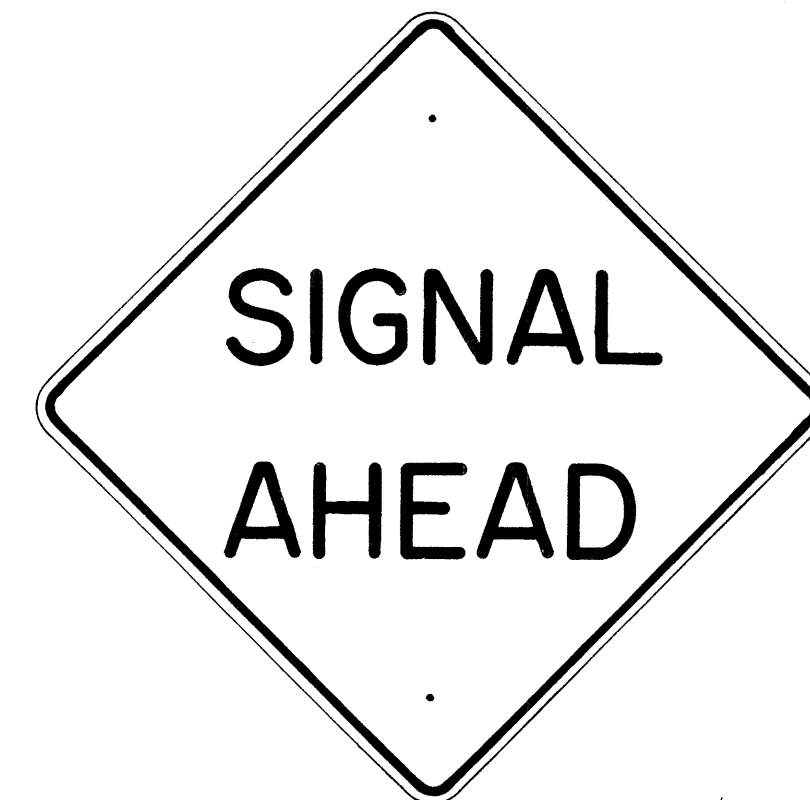
[Signature]
DIRECTOR OF TRANSPORTATION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
WARNING SIGNS

Scale: 1" = 1'-0"

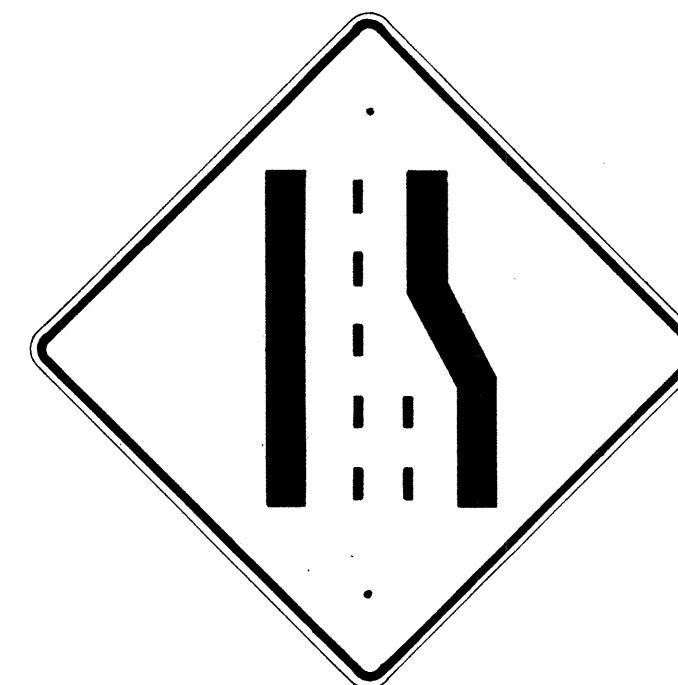
SHEET No. 6 OF 10 SHEETS



W3-3 36" x 36"



W4-1 30" x 30"
W4-1-E 36" x 36"
W4-1-I 48" x 48"



W4-2 30" x 30"
W4-2-E 36" x 36"



W5-1 30" x 30"
W5-1-E 36" x 36"



W5-2 30" x 30"



W5-3 30" x 30"



W6-1 36" x 36"



W6-2 36" x 36"



W7-1 30" x 30"



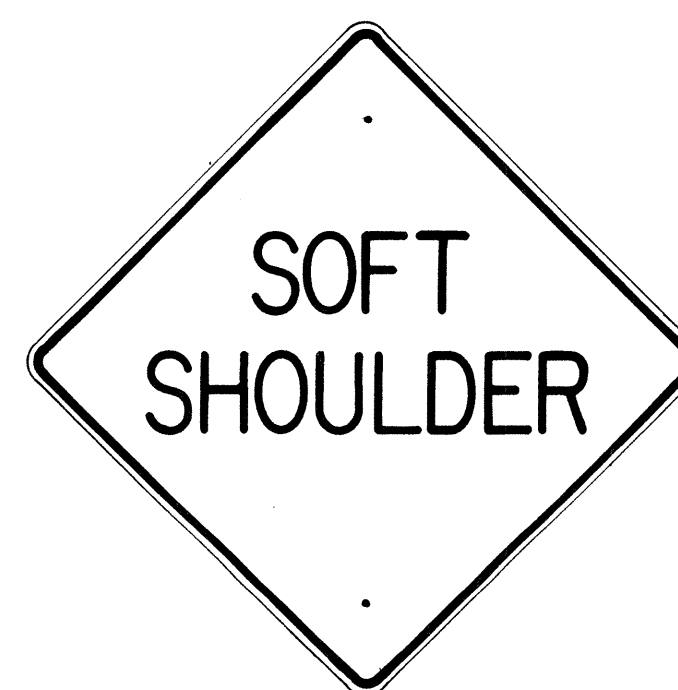
W8-1 30" x 30"



W8-2 30" x 30"



W8-3 30" x 30"



W8-4 30" x 30"



W8-5 30" x 30"

NOTE:

1. The shape, color, dimensions, symbols, wording, lettering and reflectorization of all signs shall be in accordance with the "Manual on Uniform Traffic Control Devices for Streets and Highways," dated June 1961 and the BPR manual "Standard Highway Signs," dated September 1961 unless otherwise specified.
2. All warning signs shall be reflectorized unless otherwise specified.
3. All warning signs shall have 3/8" bolt holes drilled at appropriate location unless otherwise noted.
4. The suffix "E" denotes Expressway signs and "I" denotes Interstate signs.

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DATE 1/22/62

[Signature]
DIRECTOR OF TRANSPORTATION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

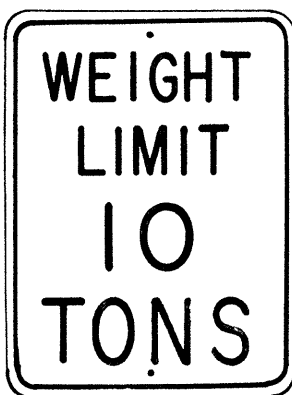
STANDARD DETAILS
WARNING SIGNS

Scale: 1" = 1'-0"

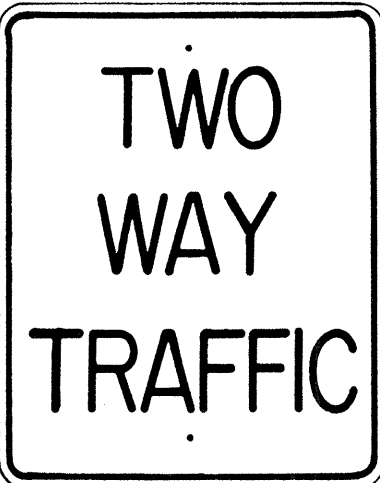
FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	S-0860(3)	1962	10	38



R 10 - 2 48" x 30"



R 10 - 4(10) 18" x 24"



R 6 - 3 24" x 30"



W20 - 1a 48" x 48"



W20 - 2d 48" x 48"



W20 - 3b 48" x 48"

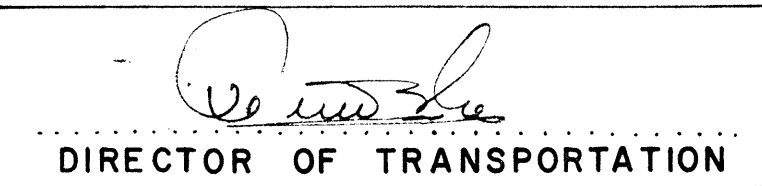


W20 - 4d 48" x 48"

- NOTE:
1. The shape, color, dimensions, symbols, wording, lettering and reflectorization of all signs shall be in accordance with the "Manual on Uniform Traffic Control Devices for Streets and Highways," dated June 1961 and the BPR manual "Standard Highway Signs," dated September 1961 unless otherwise specified.
 2. All signs shall be reflectorized unless otherwise specified.
 3. All signs shall have 3/8" bolt holes drilled at appropriate locations unless otherwise noted.
 4. For R10-4 sign, number in () indicates weight and shall be as shown on the plans.
 5. For W20 series signs, suffixes a, b, c and d are as follows a 1500 FT, b 1000 FT, c 500 FT and d AHEAD.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CONSTRUCTION SIGNS

Scale: 1" = 1'- 0"

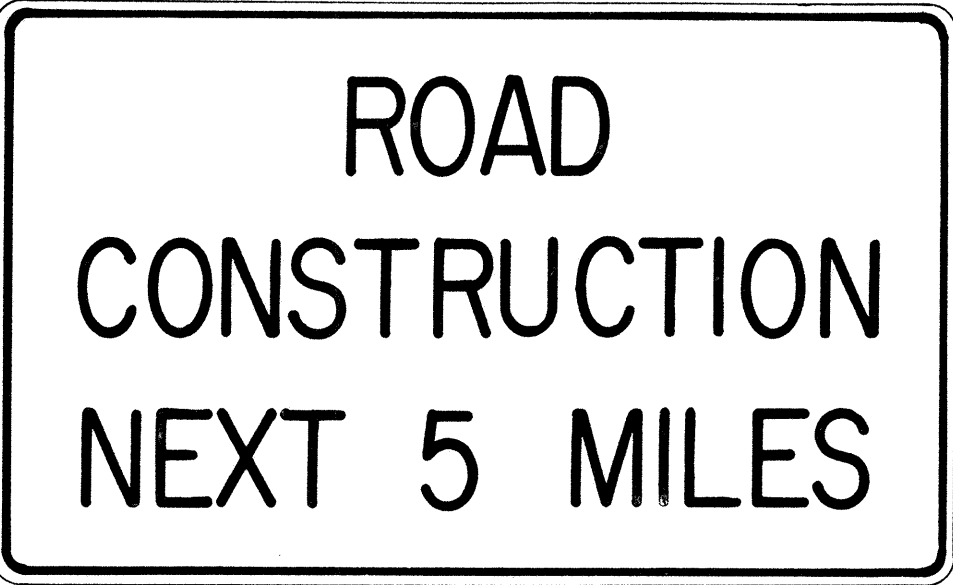
FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	5-036-09	1963	17	28



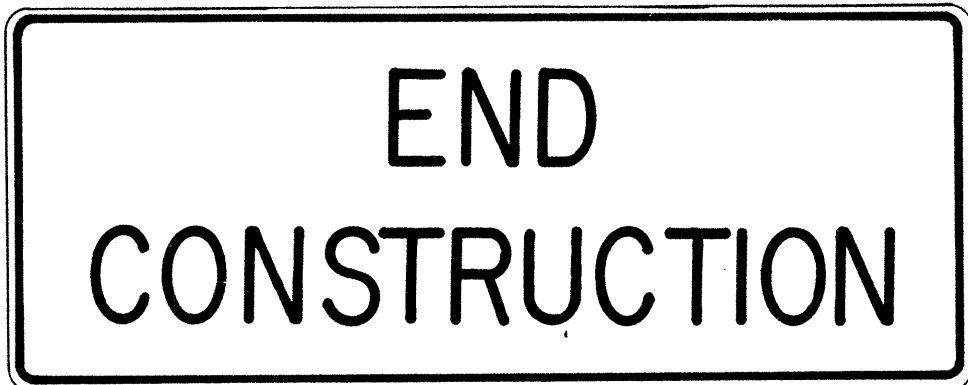
W21-5 30"x 30"



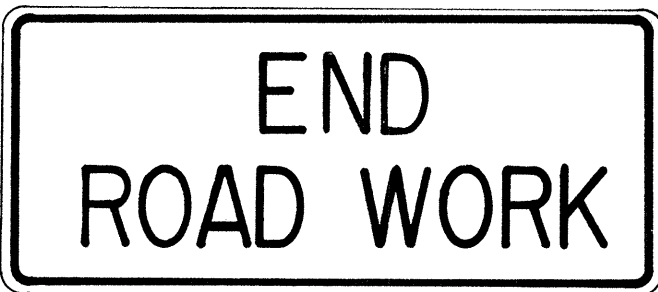
W21-6 30"x 30"



G20-1(5) 60" x 36"



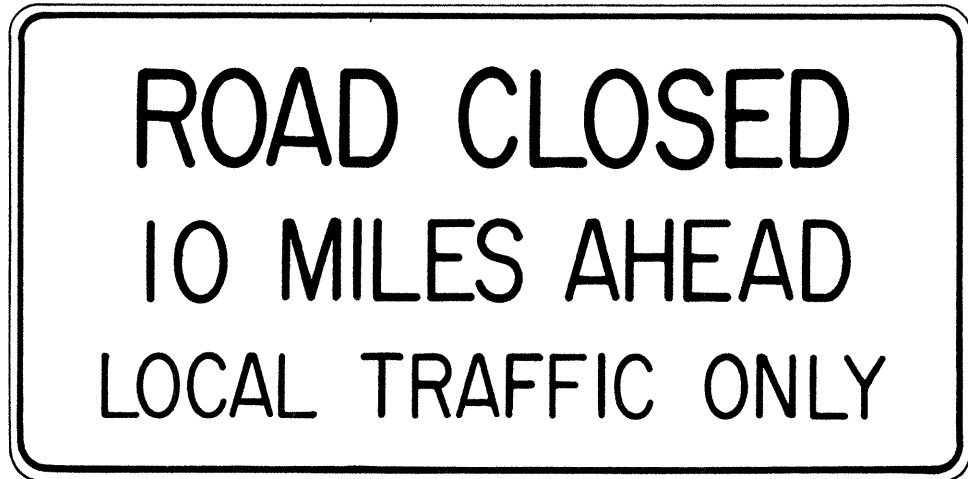
G20-2 60" x 24"



G20-3 42" x 18"

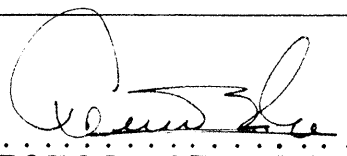


M5-7(L) 48" x 18"



R10-3(10) 60" x 30"

- NOTE:
1. The shape, color, dimensions, symbols, wording, lettering and reflectorization of all signs shall be in accordance with the "Manual on Uniform Traffic Control Devices for Streets and Highways", dated June 1961 and the BPR manual "Standard Highway Signs", dated September 1961 unless otherwise specified.
 2. All signs shall be reflectorized unless otherwise specified.
 3. All signs shall have 3/8" bolt holes drilled at appropriate locations unless otherwise noted.
 4. Number in () indicates miles and shall be as shown on the plans.
 5. (R) or (L) indicates right or left and shall be as shown on the plans.

APPROVED: _____ DATE 1/22/62

DIRECTOR OF TRANSPORTATION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CONSTRUCTION SIGNS

Scale: 1" = 1' - 0"