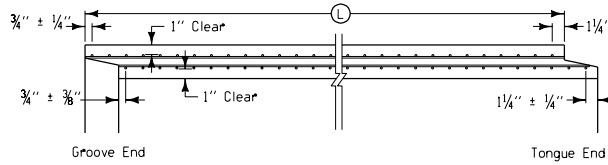


SINGLE LINE REINFORCED



DOUBLE LINE REINFORCED

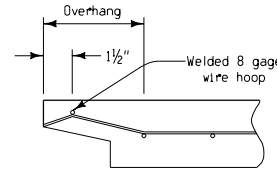
GENERAL DIMENSIONS

D	Area of Opening	CLASS 20000 AND 30000										CLASS 15000										D		
		Appr. Wt./Ft.	Dimensions in Inches										Appr. Wt./Ft.	Dimensions in Inches										
			T	A	B	G1	G2	C*	E	F	T	A		B	G1	G2	C*	E	F					
12	0.78	92	2	3/8	3/8	1	3/8	3/8	1/2	2	3/8	---	---	---	---	---	---	---	---	---	---	---	---	12
15	1.23	127	2 1/4	3/4	1	7/8	7/8	1 1/2	2	1/2	---	---	---	---	---	---	---	---	---	---	---	---	---	15
18	1.77	168	2 1/2	7/8	1 1/8	1	1	1 1/2	2 1/2	1 1/2	---	---	---	---	---	---	---	---	---	---	---	---	---	18
21	2.41	210	2 3/4	1	1 1/8	1 1/4	1 1/8	1 1/2	2 1/2	1 1/2	---	---	---	---	---	---	---	---	---	---	---	---	---	21
24	3.15	265	3	1 1/8	1 1/4	1 1/2	1 1/4	1 3/4	3	3/4	---	---	---	---	---	---	---	---	---	---	---	---	---	24
27	3.98	327	3 1/4	1 1/4	1 1/2	1 1/2	1 1/4	1 3/4	3 1/4	3/4	---	---	---	---	---	---	---	---	---	---	---	---	---	27
30	4.91	384	3 1/2	1 1/2	1 1/2	1 3/8	1 3/8	1 3/4	3 1/2	3/4	---	---	---	---	---	---	---	---	---	---	---	---	---	30
36	7.07	524	4	1 3/8	1 1/2	1 1/2	1 1/2	1 3/4	4	3/4	---	---	---	---	---	---	---	---	---	---	---	---	---	36
42	9.62	685	4 1/2	1 3/8	1 1/2	1 1/2	1 1/2	1 3/4	4	3/4	---	---	---	---	---	---	---	---	---	---	---	---	---	42
48	12.57	867	5	1 3/8	1 1/2	1 1/2	1 1/2	1 3/4	4	3/4	---	---	---	---	---	---	---	---	---	---	---	---	---	48
54	15.90	1071	5 1/2	1 3/8	1 1/2	1 1/2	1 1/2	1 3/4	4 1/2	3/4	---	---	---	---	---	---	---	---	---	---	---	---	---	54
60	19.64	1296	6	2	3/4	3	2 1/4	1 1/2	5	3/4	---	---	---	---	---	---	---	---	---	---	---	---	---	60
66	23.76	1542	6 1/2	2 1/4	3/2	3 1/4	2 1/2	1 1/2	5	3/4	---	---	---	---	---	---	---	---	---	---	---	---	---	66
72	28.27	1810	7	2 1/2	3 3/4	3 1/2	2 3/4	1 1/2	5	3/4	---	---	---	---	---	---	---	---	---	---	---	---	---	72
84	38.48	2409	8	2 3/4	4 3/8	4	3 1/4	1 1/2	5	3/4	---	---	---	---	---	---	---	---	---	---	---	---	---	84

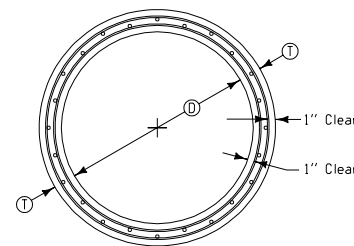
\* C is clearance between edges of adjacent tongue and groove (G2-A).

REINFORCEMENT - WELDED STEEL WIRE FABRIC

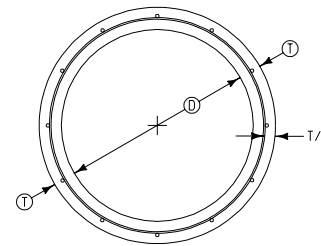
D	MINIMUM CIRCUMFERENTIAL SQ. INCH PER FOOT OF PIPE						MINIMUM CAGE WIDTH (W) + (L) INCHES SHOWN BELOW			SUGGESTED OVERHANG				
	15000		20000		30000		15000	20000	30000	GROOVE END		TONGUE END		
	SINGLE	DOUBLE	SINGLE	DOUBLE	SINGLE	DOUBLE				20000 30000	15000	20000 30000	15000	20000 30000
							STD. WALL	THIN WALL	STD. WALL					
12	.062	---	.062	---	.062	---	5	5	5	---	---	---	---	---
15	.062	---	.062	---	.087	---	5	5	5	3 1/2	3 1/2	1 3/8	1 3/8	1 1/4
18	.062	---	.098	---	.116	---	5	5	5	3 3/4	3 1/2	1 1/2	1 1/2	1 3/8
21	.074	---	.116	---	.148	---	5	5	5	3 3/4	3 3/4	1 1/2	1 1/2	1 1/2
24	.087	---	.148	---	.187	---	6	6	6	3 3/4	4 1/4	1 3/4	1 3/4	1 1/2
27	.098	---	.159	---	.216	---	---	6	6	5 3/4	4 7/8	2	1 7/8	1 1/2
30	.116	---	.187	---	.174	---	6	6	3	5 1/2	5 1/2	2	2	1 3/4
36	.148	---	---	.174	---	.187	6	3	3	3 3/4	5 1/2	1 3/8	2 1/4	2
42	---	.174	---	.187	---	.239	3	3	2	3 3/4	3 3/4	1 1/2	1 3/8	1 3/8
48	---	.187	---	.239	---	.280	3	2	2	3 3/4	3 3/4	1 1/2	1 1/2	1 1/2
54	---	.239	---	.280	---	.325	2	2	2	3 3/4	3 3/4	1 1/2	1 1/2	1 1/2
60	---	.280	---	.325	---	.377	2	2	2	3 3/4	3 3/4	1 1/2	1 1/2	1 1/2
66	---	.325	---	.377	---	.443	---	2	2	3 3/4	3 3/4	1 1/2	1 1/2	1 1/2
72	---	.325	---	.443	---	.443	2	2	2	3 3/4	3 3/4	1 1/2	1 1/2	1 1/2
84	---	.377	---	.516	---	.516	2	2	2	3 3/4	3 3/4	1 1/2	1 1/2	1 1/2



REINFORCED GROOVE



DOUBLE LINE REINFORCED



SINGLE LINE REINFORCED

CROSS SECTIONS

GENERAL NOTES:

The wall thickness and reinforcement shown are minimum requirements. If the wall thickness is increased only dimensions indicated by T, B and G1 shall be changed. 1500D pipe, in 12", 15" 18" and 21" diameters, when made with wall thickness for 2000D pipe need not be reinforced if strength requirement can be met. All other 1500D pipe shall have the minimum reinforcement specified.

No circumferential reinforcement shall be required in tongues or grooves of 12", 15", 18" and 21" pipe of all classes or 24" pipe of 1500D class. All other pipe with single line reinforcement shall have the groove end reinforced by one welded hoop of not less than 8 gage wire. This hoop shall be secured to the cage by welding or by twisting the transverse wires around the hoop.

Pipe having two lines of reinforcement shall have circumferential wires extending into tongues and grooves as shown.

The difference between X1 and X2 shall not be more than 1/2".

The spacing of transverse wires shall not exceed 8" and the size shall be that specified by the U.S. Dept. of Commerce Simplified Practice Recommendation No. 234-48 effective Aug. 1, 1948. The spacing of circumferential rings shall not exceed 4".

The suggested overhangs specified are approximate and may need to be changed due to the tightness of bends, wire diameter, cage width, and the exact location of cage within the tolerances permitted. The bend shown in REINFORCED GROOVE view requires approximately 1/8" extra overhang for all sizes except the 30" pipe which will require about 1/4". When the groove end hoop is welded to the transverse wires, approximately 1-1/8" less overhang will be required. Tongue end overhang is required only when it is used for placement of reinforcement.

All material and construction to conform to the current Standard Specifications and welded wire fabric shall conform to A.S.T.M. A-185.

Pipe culvert sections shall be connected by use of approved connectors when so specified. Connector holes shall be provided in conformance with requirements shown on Standard Road Plan RF-14.

SPECIAL NOTE:

Installation requirements for concrete culvert pipe shall be in conformance with appropriate other Standard Road Plans, detail project plans and current Standard and Supplemental Specifications. Refer to "Tabulation of Drainage Structures" for requirements of individual installations.

<b>STANDARD ROAD PLAN</b>	
<b>RF-1</b>	
REVISION: Correct error in dimension in top view of single line	REVISION NO. 5
<i>Mitchell J. Dillman</i> 12-05-00	REVISION DATE 04-03-01
APPROVED BY DESIGN METHODS ENGINEER	
<b>CONCRETE CULVERT PIPE</b>	