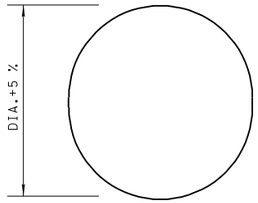
REV. 11-1-95: CHANGED TO METRIC.

ALTERNATE METHODS OF STRUTTING FOR CORRUGATED METAL PIPE, CORRUGATED ALUMINUM PIPE & STRUCTURAL PLATE PIPE

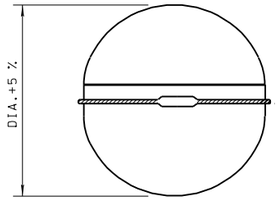
NOTE: DO NOT STRUT PIPE-ARCHES



FACTORY FORMED VERTICALLY ELONGATED SHAPE FOR CORRUGATED METAL AND STRUCTURAL PLATE PIPE ONLY

NOTE:

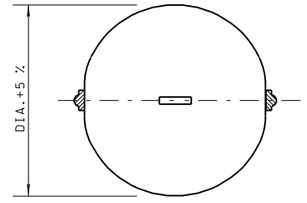
FACTORY FORMED 5 % VERTICALLY ELONGATED PIPE CAN BE INSTALLED WITHOUT STRUTTING, UP THROUGH 2700 mm DIAMETER TO 9.1 m OF COVER AND OVER 2700 mm DIAMETER TO 6.1 m OF COVER.



WIRE STRUTS FOR CORRUGATED METAL PIPE ONLY

NOTE:

WIRES SHALL BE PLACED AT 600 mm INTERVALS ON THE HORIZONTAL DIAMETERS OF PIPE TO BE WIRE-STRUTTED. AT LEAST FOUR 3.8 mm DIA. WIRES SHALL BE USED AT EACH POINT. THE WIRES SHALL BE TWISTED TO HOLD THE PIPE TO THE REQUIRED DEFORMED SHAPE AND SHALL BE OF SUFFICIENT LENGTH SO THAT WHEN UNTWISTED THEY WILL PERMIT THE PIPE TO ASSUME ITS NORMAL SHAPE WITHOUT BREAKING THE WIRES.

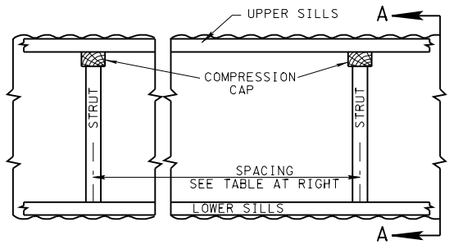


ROD & TURNBUCKLE STRUTS FOR CORRUGATED METAL PIPE ONLY

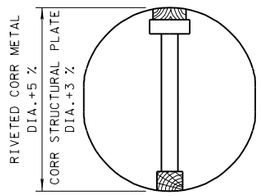
NOTE:

RODS SHALL BE PLACED AT 600 mm INTERVALS ON THE HORIZONTAL DIAMETERS OF PIPE TO BE ROD-STRUTTED. THE DIAMETER OF EACH ROD SHALL NOT BE LESS THAN 13 mm. EACH ROD, OR ROD ASSEMBLY IF TURNBUCKLES ARE USED, SHALL BE THREADED ON EACH END AND SHALL BE OF SUFFICIENT LENGTH TO ACCOMMODATE A NUT AND WASHER AND A 75x100x460 WOOD BLOCK OR A 51x51x460 (MIN.) ANGLE ON EACH END, IN ADDITON TO SPANNING THE DIAMETER OF THE PIPE. THE WOOD BLOCKS OR ANGLES SHALL BE PLACED ON THE OUTSIDE OF THE PIPE AND BETWEEN THE PIPE AND WASHERS.

WITH ROD AND TURNBUCKLE STRUTS, A SCHEDULE SHALL BE SET TO BACK OFF THE TURNBUCKLES AS THE FILL IS PLACED, ALL TURNBUCKLES IN EACH LINE OF PIPE SHALL BE RELEASED UNIFORMLY, A TURN OR TWO AT A TIME. ALLOW SOME TENSION TO REMAIN IN THE RODS UNTIL THE FILL HAS BEEN COMPLETED.



LONGITUDINAL SECTION



END VIEW A-A

SPECIAL NOTES

CORR. METAL STRUCTURAL PLATE PIPE

FACTORY FORMED 5 % VERTICALLY ELONGATED STRUCTURAL PLATE PIPE HELD IN ELONGATED SHAPE BY TIMBER STRUTS WEDGED IN PLACE UNTIL FILL IS COMPLETED, MAY BE USED IN LIEU OF OTHER METHODS SHOWN ON THIS DRAWING, FOR PIPES HAVING A DIAMETER OF 1500 mm OR LARGER. SPACING AND SIZE OF TIMBER STRUTS SHALL BE IN ACCORDANCE WITH TIMBER STRUT TABLE ON THIS DRAWING.

CORRUGATED ALUMINUM PIPE

FACTORY FORMED 5 % VERTICALLY ELONGATED PIPE, HELD IN ELONGATED SHAPE BY TIMBER STRUTS WEDGED IN PLACE UNTIL FILL IS COMPLETED, WILL BE REQURIED FOR ALL PIPE HAVING A DIAMETER OF 1200 mm OR LARGER, SPACING AND SIZE OF TIMBER STRUTS SHALL BE IN ACCORDANCE WITH TIMBER STRUT TABLE ON THIS SHEET.

GENERAL NOTES

(A) THE NOMINAL HORIZONTAL DIAMETER OF C.M. OR CORR. ALUM. PIPE SHALL BE REDUCED APPROXIMATELY 5 PERCENT BY STRUTTING. A TOLERANCE OF 20 PERCENT IN THE 5 PERCENT DIAMETER REDUCTION WILL BE PERMITTED. IF THE METHOD OF STRUTTING AS USED HAS CAUSED ANY DAMAGE TO THE PIPE, THE CONTRACTOR SHALL, AT HIS EXPENSE, REPLACE SUCH PIPE OR REPAIR IT TO THE THE SATISFACTION OF THE ENGINEER. PAVED INVERT PIPE SHALL NOT BE STRUTTED WITH TIMBERS.

(B) FACTORY FORMED 5 % VERTICALLY ELONGATED C.M. OR CORR. ALUMINUM PIPE, HELD IN ELONGATED SHAPE BY HIGH TENSILE STRENGTH WIRES UNTIL FILL IS COMPLETED, MAY BE USED IN LIEU OF OTHER METHODS SHOWN ON THIS DRAWING FOR STRUTTED RIVETED PIPE.

(C) STRUTS SHALL BE LEFT IN PLACE UNTIL THE FILL IS COMPACTED AFTER WHICH THE STRUTS SHALL BE REMOVED AS DIRECTED.

(D) HOLES FOR ROD OR WIRE STRUTS SHALL NOT BE LARGER THAN NECESSARY.

TIMBER STRUTS FOR CORRUGATED METAL & STRUCTURAL PLATE PIPE AND CORRUGATED ALUMINUM PIPE

(TIMBER STRUTS WILL NOT BE USED WHEN PIPE HAS A PAVED INVERT)

SPACING IN METERS OF TIMBER STRUTS FOR CORR. METAL AND CORR. STRUCTURAL PLATE PIPE

PIPE DIA (mm)	STRUT SIZE (mm)	HEIGHT OF COVER IN METERS										
		1.5	3.0	4.6	6.1	9.1	12.2	15.2	18.3	21.3	24.4	30.5
1200	100x100	1.83	1.83	1.83	1.83	1.52	1.07					
	100x150					1.83	1.52	1.22	1.07	0.91		
	150x150							1.83	1.52	1.37	1.22	1.07
	150x205										1.83	1.52
1500	100x100	1.83	1.83	1.83	1.83	1.22	0.91					
	100x150					1.83	1.37	1.07	0.91			
	150x150							1.68	1.37	1.22	1.07	0.91
	150x205									1.68	1.37	1.22
1800	100x100	1.83	1.83	1.83	1.52	0.91						
	100x150				1.83	1.52	1.07	0.91				
	150x150						1.83	1.37	1.22	1.07	0.91	0.91
	150x205								1.52	1.37	1.22	1.07
2100	100x100	1.83	1.83	1.52	1.22							
	100x150				1.68	1.22	0.91	1.22				
	150x150					1.83	1.52	1.52	1.07	0.91		
	150x205								1.37	1.22	1.07	0.91
	200x205										1.37	1.07
2400	100x100	1.83	1.68	1.22	0.91							
	100x150			1.83	1.37	0.91						
	150x150					1.68	1.37	1.07	0.91			
	150x205						1.68	1.37	1.22	1.07	0.91	
	200x205									1.37	1.22	0.91
2700	100x100	1.83	1.22	0.91								
	100x150		1.83	1.37	0.91							
	150x150				1.83	1.52	1.07	0.91				
	150x205					1.83	1.52	1.22	1.07	0.91		
	200x205								1.37	1.22	1.07	
3000	100x150	1.83	1.22	0.91								
	150x150		1.83	1.83	1.83	1.22	0.91					
	150x205				1.83	1.68	1.22	1.07	0.91			
	200x205							1.52	1.22	1.07	0.91	
3300	100x150	1.83	0.91									
	150x150		1.83	1.83	1.52	1.07						
	150x205			1.83	1.83	1.37	1.07	0.91				
	200x205						1.68	1.37	1.22	1.07	0.91	
3600	100x150	1.37										
	150x150		1.83	1.83	1.37	0.91						
	150x205		1.83	1.83	1.68	1.22	0.91					
	200x205						1.52	1.22	1.07	0.91		
3900	150x150	1.83	1.83	1.52	1.07							
	150x205		1.83	1.83	1.37	0.91						
	200X205					1.83	1.37	1.07	0.91			
4200	150x150	1.83	1.52	1.07								
	150x205	1.83	1.83	1.52	1.07							
	200X205				1.83	1.52	1.22	0.91				
4500	150x150	1.83	1.22	0.91								
	150x205	1.83	1.68	1.22	0.91							
	200X205				1.83	1.37	1.07					

NOTE:

TRANSVERSE CAPS AND SILLS SHOULD BE OF SAME SIZE TIMBER AS STRUTS AND PLACED WITH LEAST DIMENSION VERTICAL. LENGTH OF STRUTS SHOULD BE DIAMETER OF PIPE TIMES 1.03 MINUS (3) THREE TIMES THE LEAST DIMENSION OF STRUT. STRUT SPACING COMPUTED FOR FULL DIMENSION (NOT NOMINAL). SOUND STRUCTURAL TIMBER BASED ON AASHTO TIMBER COLUMN FORMULA $P/A = C[1-1/3(L/RD)^4]$ USING C = 27 MPa E = 110000 MPa SF = 1 FOR TEMPORARY CONSTRUCTION. FOR PIPE DIAMETERS NOT SHOWN ABOVE, INTERPOLATE OR USE NEXT LARGER DIMENSION.

TIMBER STRUTS SHALL BE LEFT IN PLACE UNTIL FILL IS CONSOLIDATED OR SHALL BE REMOVED AT THE DIRECTION OF THE ENGINEER.

NOTE: SEE DWG. DM-PG-3 & DM-PG-4 FOR PIPE DETAILS

TENNESSEE METRIC D.O.T.

ALL UNITS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

STRUTTING DETAILS FOR CORR. METAL & STRUCTURAL PLATE ROUND PIPE

11-1-95

DM-PS-1