

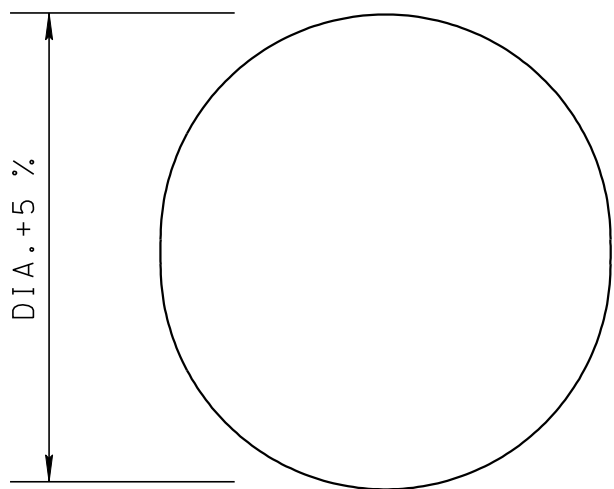
REV. 7-1-72: CHANGED DEPARTMENT NAME.

REV. 1-1-76: CHANGED DWG. NO. FROM CM-1-7(68) TO D-PS-1.

REV. 3-15-76: DELETED REFERENCE TO OLD DWG. NO., SUBSTITUTED NEW DWG. NO.

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

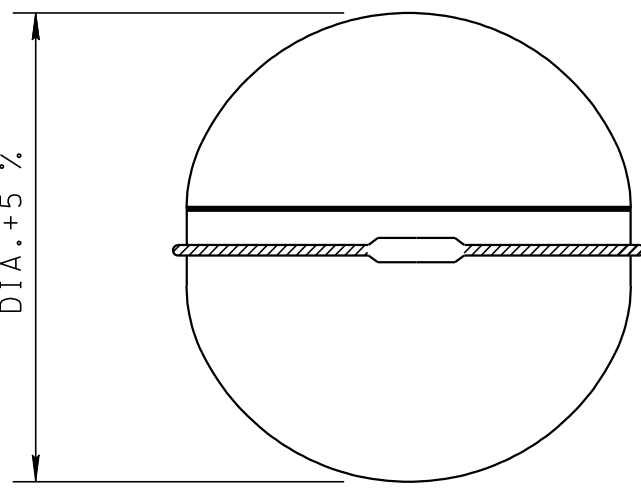
NOTE: DO NOT STRUT PIPE-ARCHES



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

NOTE:

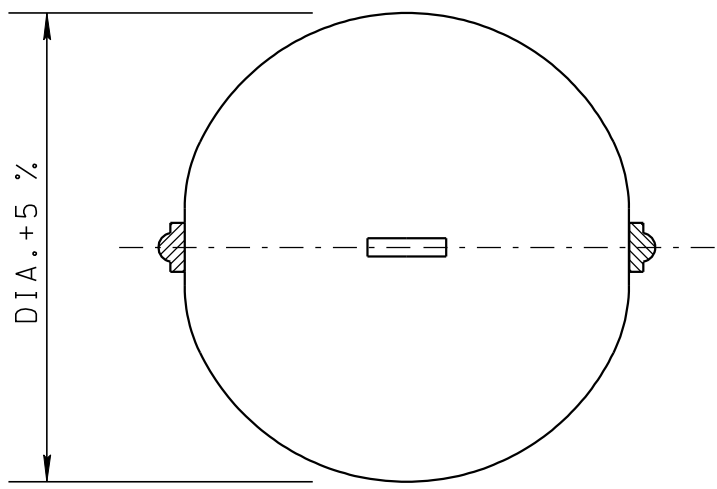
FACTORY FORMED 5 % VERTICALLY ELONGATED PIPE CAN BE INSTALLED WITHOUT STRUTTING, UP THROUGH 108 INCH DIAMETER TO 30 FEET OF COVER AND OVER 108 INCH DIAMETER TO 20 FEET OF COVER.



WIRE STRUTS FOR CORRUGATED METAL PIPE ONLY

NOTE:

WIRES SHALL BE PLACED AT 2' INTERVALS ON THE HORIZONTAL DIAMETERS OF PIPE TO BE WIRE-STRUTTED. AT LEAST FOUR NO. 9 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.

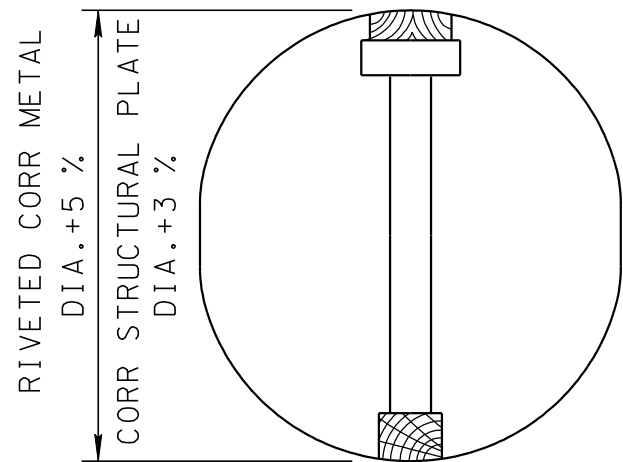


ROD & TURNBUCKLE STRUTS FOR CORRUGATED METAL PIPE ONLY

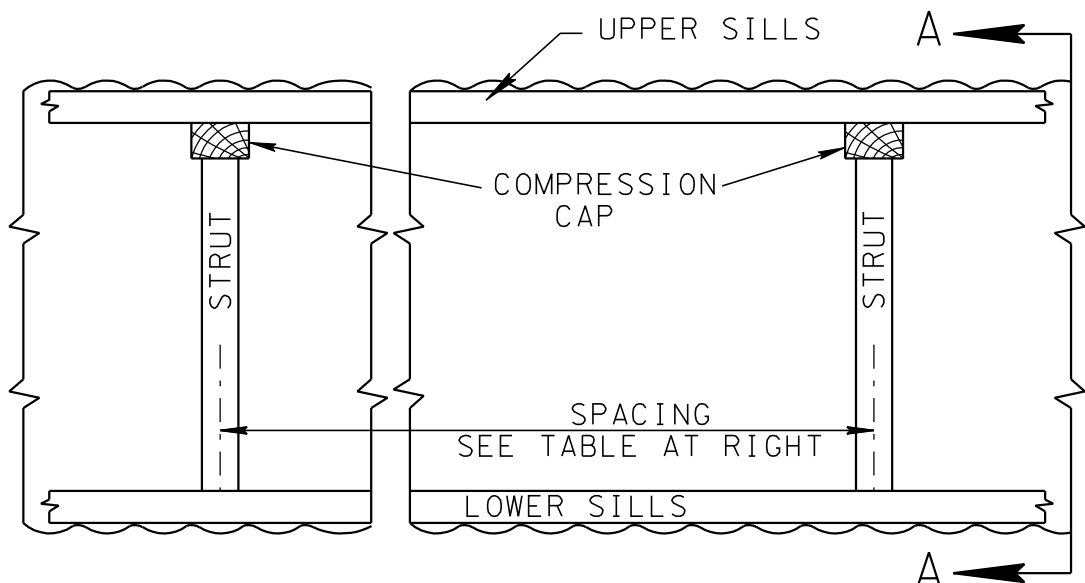
NOTE:

RODS SHALL BE PLACED AT 2 FOOT INTERVALS ON THE HORIZONTAL DIAMETERS OF PIPE TO BE ROD-STRUTTED. THE DIAMETER OF EACH ROD SHALL NOT BE LESS THAN 1/2". 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 3"x4"x18" WOOD BLOCK OR A 2"x2"x18" (MIN.) ANGLE ON EACH END, IN ADDITION 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.



END VIEW A-A



LONGITUDINAL SECTION

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 60" 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 REQUIRED FOR ALL PIPE HAVING A DIAMETER OF 48" OR LARGER. SPACING AND SIZE OF TIMBER STRUTS SHALL BE IN ACCORDANCE WITH TIMBER STRUT TABLE ON THIS SHEET.

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 (IN)	STRUT SIZE (IN)	HEIGHT OF COVER IN FEET										
		5	10	15	20	30	40	50	60	70	80	100
48	4x4	6.0	6.0	6.0	6.0	5.0	3.5					
	4x6					6.0	5.0	4.0	3.5	3.0		
	6x6							6.0	5.0	4.5	4.0	3.5
	6x8										6.0	5.0
60	4x4	6.0	6.0	6.0	6.0	4.0	3.0					
	4x6					6.0	4.5	3.5	3.0			
	6x6							5.5	4.5	4.0	3.5	3.0
	6x8									5.5	4.5	4.0
72	4x4	6.0	6.0	6.0	5.0	3.0						
	4x6				6.0	5.0	3.5	3.0				
	6x6						6.0	4.5	4.0	3.5	3.0	3.0
	6x8								5.0	4.5	4.0	3.5
84	4x4	6.0	6.0	5.0	4.0							
	4x6				5.5	4.0	3.0	4.0				
	6x6					6.0	5.0	5.0	3.5	3.0		
	6x8								4.5	4.0	3.5	3.0
96	4x4	6.0	5.5	4.0	3.0							
	4x6			6.0	4.5	3.0						
	6x6					5.5	4.5	3.5	3.0			
	6x8						5.5	4.5	4.0	3.5	3.0	
108	4x4	6.0	4.0	3.0								
	4x6		6.0	4.5	3.0							
	6x6				6.0	5.0	3.5	3.0				
	6x8					6.0	5.0	4.0	3.5	3.0		
120	4x4	6.0	4.0	3.0								
	4x6		6.0	6.0	6.0	4.0	3.0					
	6x6				6.0	5.5	4.0	3.5	3.0			
	6x8							5.0	4.0	3.5	3.0	
132	4x4	6.0	3.0									
	4x6		6.0	6.0	5.0	3.5						
	6x6			6.0	6.0	4.5	3.5	3.0				
	6x8						5.5	4.5	4.0	3.5	3.0	
144	4x4	4.5										
	4x6		6.0	6.0	4.5	3.0						
	6x6		6.0	6.0	5.5	4.0	3.0					
	6x8						5.0	4.0	3.5	3.0		
156	4x4	6.0	6.0	5.0	3.5							
	4x6		6.0	6.0	4.5	3.0						
	6x6					6.0	4.5	3.5	3.0			
	6x8											
168	4x4	6.0	5.0	3.5								
	4x6	6.0	6.0	5.0	3.5							
	6x6				6.0	5.0	4.0	3.0				
	6x8											
180	4x4	6.0	4.0	3.0								
	4x6	6.0	5.5	4.0	3.0							
	6x6				6.0	4.5	3.5					
	6x8											

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 $C = 3900$ $E = 16 \times 10^6$ 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.

☒ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

STRUTTING DETAILS FOR CORR. METAL & STRUCTURAL PLATE ROUND PIPE

D-PS-1

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