

ATTACHMENT K - LENGTH OF RESTRAINT JOINT

TYPE	LENGTH OF RESTRAINED JOINT EACH DIRECTION (FT) PIPE SIZE (IN)			REMARKS
	6"	8"	12"	
HORIZONTAL BEND 90 DEG	43.1	55.5	78.3	
HORIZONTAL BEND 45 DEG	17.8	23	32.4	
HORIZONTAL BEND 22.5 DEG	8.6	11	15.6	
HORIZONTAL BEND 11.25 DEG	4.2	5.5	7.7	
VERTICAL BEND 45 DEG (UPPER BEND & LOWER BEND)	46.1 & 17.8	59.8 & 23	85 & 32.4	85' UPPER BEND AND 32.4' LOWER BEND ON EACH SIDE
VERTICAL BEND 22.5 DEG (UPPER BEND & LOWER BEND)	22.2 & 8.6	28.7 & 11	40.8 & 15.6	40.8' UPPER BEND AND 15.6' LOWER BEND ON EACH SIDE
VERTICAL BEND 11.25 DEG (UPPER BEND & LOWER BEND)	11 & 4.2	14.2 & 5.5	20.2 & 7.7	20.2' UPPER BEND AND 7.7' LOWER BEND ON EACH SIDE
REDUCER 12" X 8"			108.8	Length of the restraint on the larger side of reducer
REDUCER 12" X 6"			150	Required restrained length for larger pipe.
DEAD END	111.4	144.3	205.2	
TEE 8" X 8"		112.3		
TEE 8" X 6"	79.6			
TEE 12" X 8"		112.3		
TEE 12" X 6"	79.6			
TEE 6" X 6"	79.6			
TEE 12" X 12"			172.8	
<u>CALCULATED RESTRAINT LENGTH</u>				
1. ALL JOINTS WITHIN THE CALCULATED LENGTH MUST BE RESTRAINED.				
2. IF YOUR DISTANCE BETWEEN FITTINGS IS LESS THAN OR EQUAL TO THE CALCULATED RESTRAINT LENGTH, RESTRAIN ALL JOINTS BETWEEN THOSE FITTINGS.				3. USE POLYETHYLENE ENCASEMENT (POLYWRAP) FOR DUCTILE IRON PIPE.