



THRUST RESTRAINT CALCULATIONS (POLYWRAPPED DIP)

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Scale: N.T.S.

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PVC NON-ENCROACHING THRUST RESTRAINT CALCULATIONS								
PIPE DIA.	HORIZONTAL BENDS AND VERTICAL UP BENDS				VERTICAL DOWN BENDS		DEAD ENDS	PIPE DIA.
	11.25°	22.5°	45°	90°	22.5°	45°		
4"	2	3	7	17	8	16	39	4"
6"	2	5	10	25	11	23	55	6"
8"	3	6	13	33	14	30	73	8"
10"	4	8	16	40	18	37	89	10"
12"	5	9	20	47	21	44	106	12"
16"	6	12	23	62	28	58	140	16"
20"	7	15	31	76	35	72	174	20"
24"	9	18	37	90	41	86	207	24"
30"	11	22	46	110	51	107	257	30"
36"	13	26	54	131	61	127	308	36"

TEE BRANCH RESTRAINT (ASSUMED RESTRAINT OF "RUN" PIPE IS 20' EACH SIDE OF TEE)											
TEE BRANCH DIAMETER											
TEE RUN DIA.	4"	6"	8"	10"	12"	16"	20"	24"	30"	36"	TEE RUN DIA.
4"	0										4"
6"	0	0									6"
8"	0	0	0								8"
10"	0	0	0	7							10"
12"	0	0	0	0	16						12"
16"	0	0	0	0	4	32					16"
20"	0	0	0	0	0	23	48				20"
24"	0	0	0	0	0	14	41	65			24"
30"	0	0	0	0	0	0	30	55	89		30"
36"	0	0	0	0	0	0	18	46	81	113	36"

NOTES:

1. ASSUMPTIONS

- 1.1. POLYWRAPPED DUCTILE IRON PIPE
- 1.2. DESIGN/TEST PRESSURE= 150PSI
- 1.3. SAFETY FACTOR ±1.5 (RECOMMENDED BY DIPRA)
- 1.4. TYPE 3 LAYING CONDITION (REP. RECOMMENDED BY DIPRA)
- 1.5. TYPE 3 LAYING CONDITION (REP. OF ACTUAL FIELD CON.)
- 1.6. 5' COVER
- 1.7. SOIL/BACKFILL CONDITIONS = CLAY 2 (DIPRA/CHART)

- 2. CALCULATED RESTRAINT LENGTHS ARE FOR EACH SIDE OF THE FITTING. ALL FITTINGS SHALL BE RESTRAINED THE CALCULATED LENGTH AT A MINIMUM.