

Restrained length of bend, tee and Valve

【Conditions】

Calculation method **DIPRA**
Backfill **Type5**
Earth covering **30" or more for pipe size 3" to 8"**
 36" or more for pipe size 12" and 16"
Polyethylene encasement **Covered**
Safety factor **1.5**

Unit: ft

Pipe Size (inch)	Bend Portions ^{*)}									Tee Portion ^{**)}			Valve and Dead end		
	≤22.5°		≤45°			≤90°			Design Pressure			Design Pressure			
	Design Pressure		Design Pressure			Design Pressure			Design Pressure			Design Pressure			
	~150psi	~250psi	~150psi	~200psi	~250psi	~150psi	~200psi	~250psi	~150psi	~200psi	~250psi	~150psi	~200psi	~250psi	
3"	3 ft	4 ft	5 ft	7 ft	8 ft	12 ft	16 ft	20 ft	21 ft	34 ft	48 ft	41 ft	54 ft	67 ft	
4"	3 ft	5 ft	6 ft	8 ft	10 ft	14 ft	19 ft	24 ft	29 ft	45 ft	62 ft	49 ft	65 ft	81 ft	
6"	4 ft	7 ft	9 ft	11 ft	14 ft	20 ft	26 ft	33 ft	49 ft	72 ft	95 ft	69 ft	92 ft	115 ft	
8"	5 ft	9 ft	11 ft	14 ft	18 ft	25 ft	34 ft	42 ft	68 ft	98 ft	127 ft	89 ft	118 ft	148 ft	
12"	6 ft	10 ft	13 ft	17 ft	21 ft	30 ft	40 ft	50 ft	86 ft	122 ft	157 ft	107 ft	142 ft	178 ft	
16"	8 ft	13 ft	16 ft	21 ft	26 ft	38 ft	50 ft	63 ft	115 ft	161 ft	206 ft	137 ft	182 ft	227 ft	

*) The restrained length on this table is ensured on each side of the bend.

***) The restrained length on this table is ensured on the branch. Also, the restrained length of 4 ft is ensured on each side of the tee on the main.

If a continuous restrained length exceeds 120ft, it is recommended to use thrust block to shorten the restrained length.