

~Cheet sheet of restrained length of bend, tee and Valve~

【Condition】

Calculation method JDPA (Japan Ductile Iron Pipe Association)
Buck fill Good sand
Earth covering 3"~8": More than or equal to 30", 12"~18": More than or equal to 36"
Polyethylene sleeve Covered
Coefficient of subgrade reaction 14000 kN/m³ ≒ 89923 lbf/ft³
Safety factor 1.25

Unit: ft

DN (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		
	~250psi	~150psi	~200psi	~250psi	~150psi	~200psi	~250psi	~150psi	~200psi	~250psi	~150psi	~200psi	~250psi
3"	7 ft	7 ft	7 ft	17 ft	19 ft	34 ft	47 ft	4 ft	7 ft	14 ft	25 ft	35 ft	43 ft
4"	7 ft	7 ft	7 ft	26 ft	25 ft	44 ft	61 ft	4 ft	10 ft	18 ft	31 ft	43 ft	54 ft
6"	7 ft	7 ft	7 ft	42 ft	38 ft	63 ft	87 ft	4 ft	12 ft	23 ft	43 ft	60 ft	74 ft
8"	7 ft	7 ft	50 ft	80 ft	58 ft	91 ft	120 ft	4 ft	23 ft	38 ft	55 ft	75 ft	94 ft
12"	7 ft	7 ft	8 ft	94 ft	69 ft	108 ft	143 ft	4 ft	18 ft	36 ft	65 ft	89 ft	111 ft
16"	7 ft	7 ft	75 ft	119 ft	87 ft	136 ft	180 ft	12 ft	25 ft	47 ft	81 ft	112 ft	140 ft

*) Total length (One side length is half of the length)

***) Restrained length of branch, in case of restrained length of main pipeline is 4ft (one side)

In case of restrained length over 120ft, it is recommended to use thrust block