

Minimum Restraint Length (ft) on both sides of the Fitting

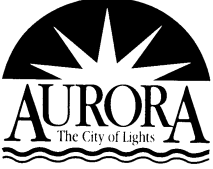
Fitting Type/Nominal Size	6"	8"	12"	16"
1 1/4 ° Bend	2	3	4	6
2 1/2 ° Bend	5	6	9	11
45 ° Bend	10	13	18	23
90 ° Bend	23	30	43	56
Dead End	31	40	57	74
Top Side of a Vertical Offset ¹	19	25	35	46
Tee Run x Branch ² 6" BY	24			
Tee Run x Branch ² 8" BY	22	34		
Tee Run x Branch ² 12" BY	18	31	51	
Tee Run x Branch ² 16" BY	14	28	48	67
Reducer ³ 8" BY	17			
Reducer ³ 12" BY	42	30		
Reducer ³ 16" BY	62	54	31	

¹ All joints within the lowered section of the watermain shall be restrained or shall be solid pipe. The above distances reflect the required restraint distance on the normally elevated watermain either side of the 45° Fitting of the vertical offset (or lowering).

² Minimum of 8 ft of solid pipe is required on both sides of the fitting on the run side. Distance indicates the length of restraint on the branch side or the side perpendicular to the tee run watermain.

³ Indicates the distance from the larger end of the reducer.

- Notes: 1) All nuts and bolts shall be stainless steel.
 2) The Entire restraint system from the fitting to the minimum restraint distance must be Inspected by The City of Aurora or it's representative prior to backfilling.

 Engineering Department	Revisions		Watermain Restraint Length Table		
	Date:	By:	Scale:	Checked	EXHIBIT III-C-9
			None	PJH	
			Date:	Drawn:	
		2/04	DF		