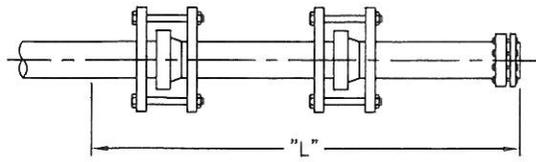


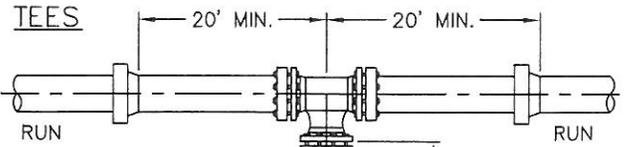
DEAD ENDS & EACH SIDE OF VALVES



PIPE SIZE

6"	8"	12"
146	190	267

RESTRAINED LENGTHS "L" IN FEET



PIPE SIZE (BRANCH)

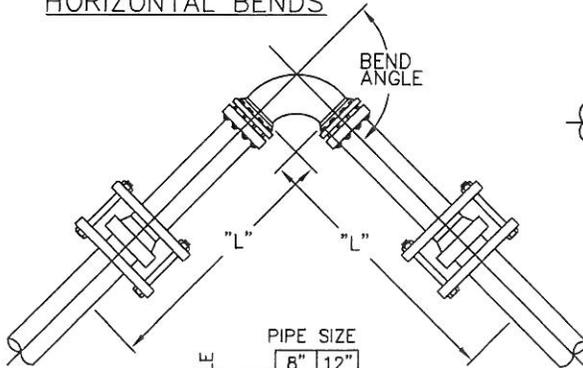
	8"	12"
6"	14	*
8"	90	35
12"	X	165

RESTRAINED LENGTHS "L" IN FEET

* ONLY THE BRANCH OUTLET ON THE TEE NEEDS TO BE RESTRAINED.

BRANCH

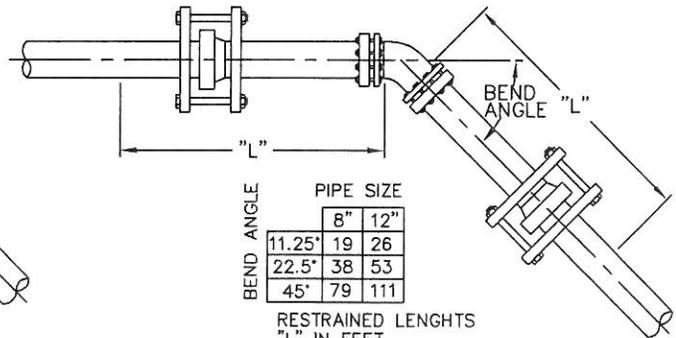
HORIZONTAL BENDS



	PIPE SIZE	
	8"	12"
BEND ANGLE	6	8
11.25°	12	17
22.5°	26	35
45°	62	85
90°		

RESTRAINED LENGTHS "L" IN FEET.

VERTICAL BENDS



	PIPE SIZE	
	8"	12"
BEND ANGLE	19	26
11.25°	38	53
22.5°	79	111
45°		

RESTRAINED LENGTHS "L" IN FEET.

NOTES

1. ALL JOINTS WITHIN LENGTH 'L' MUST BE RESTRAINED.
2. FOR TEE RESTRAINT INSTALL A FULL LENGTH OF PIPE ON EACH SIDE OF BRANCH.
3. ASSUMES FORTY-TWO (42) INCHES MINIMUM DEPTH OF COVER.
4. ASSUMES A SAFETY FACTOR OF 1.5.
5. SOIL TYPE ML PER UNITED SOIL CLASSIFICATION ASTM D 2487.
6. PIPE BEDDING PER CITY STANDARDS.
7. TEST PRESSURE 225 PSI.
8. IF ACTUAL CONDITIONS DIFFER FROM THOSE LISTED ABOVE OR THE REQUIRED RESTRAINED LENGTH CANNOT BE MET, THE RESTRAINED LENGTH SHALL BE DETERMINED BY THE DESIGN ENGINEER AND APPROVED BY THE CITY.



APPROVED BY:				
<i>Louis Abi-Younes</i> 11-22-10				
LOUIS ABI-YOUNES, CITY ENGINEER		RCE	DATE	44485
RECOMMENDED:				
<i>Scott Burton</i> 10/25/10				
SCOTT BURTON, UTILITIES ENG/OPERATIONS DIRECTOR		RCE	DATE	57875
REV	DESCRIPTION	BY	APP'D	DATE

CITY OF ONTARIO	
STANDARD RESTRAINT TEES, DEAD ENDS, & BENDS FOR PVC	STANDARD DRAWING NUMBER 4010