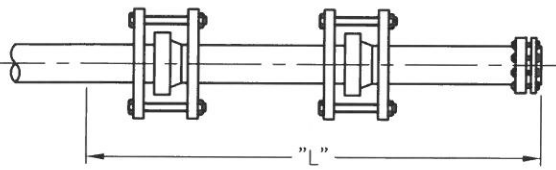


DEAD ENDS & EACH SIDE OF VALVES



PVC PIPE SIZE

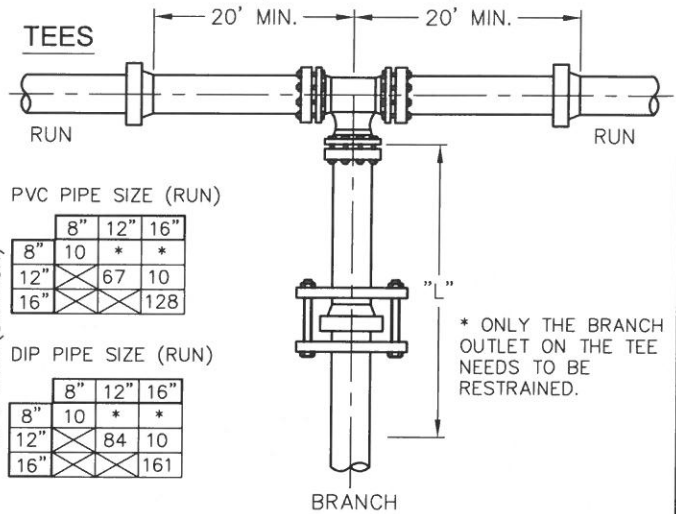
8"	12"	16"
167	236	304

DIP PIPE SIZE

8"	12"	16"
203	286	367

(ALSO SEE NOTE 2)

TEES



PVC PIPE SIZE (RUN)

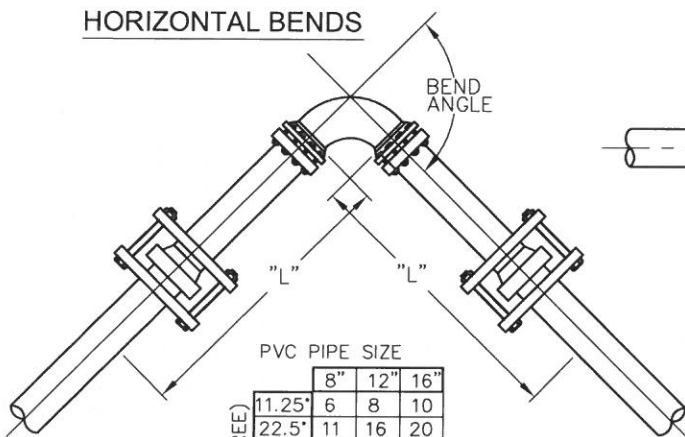
	8"	12"	16"
8"	10	*	*
12"	X	67	10
16"	X	X	128

DIP PIPE SIZE (RUN)

	8"	12"	16"
8"	10	*	*
12"	X	84	10
16"	X	X	161

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

HORIZONTAL BENDS



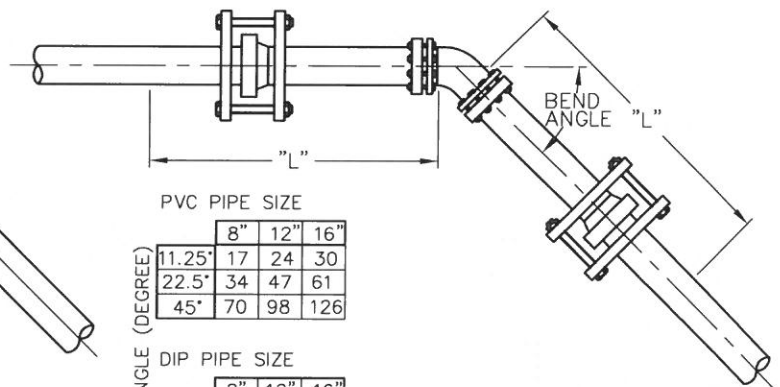
PVC PIPE SIZE

	8"	12"	16"
11.25°	6	8	10
22.5°	11	16	20
45°	23	32	41
90°	55	77	98

DIP PIPE SIZE

	8"	12"	16"
11.25°	6	8	11
22.5°	12	17	21
45°	25	34	43
90°	58	81	103

VERTICAL BENDS



PVC PIPE SIZE

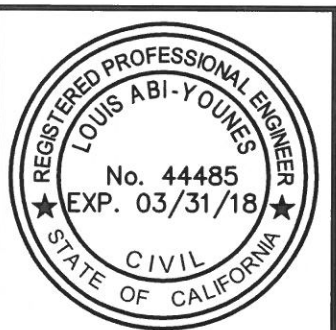
	8"	12"	16"
11.25°	17	24	30
22.5°	34	47	61
45°	70	98	126

DIP PIPE SIZE

	8"	12"	16"
11.25°	20	29	37
22.5°	41	57	73
45°	84	119	152

GENERAL NOTES

1. ALL JOINTS WITHIN LENGTH 'L' MUST BE RESTRAINED. LENGTHS SHOWN IN TABLES ABOVE ARE MEASURED IN FEET.
2. FOR TEE RESTRAINT INSTALL A FULL LENGTH OF PIPE ON EACH SIDE OF RUN.
3. ASSUMES FORTY-TWO (42) INCHES MINIMUM DEPTH OF COVER.
4. ASSUMES A SAFETY FACTOR OF 2.0.
5. SOIL TYPE ML PER UNITED SOIL CLASSIFICATION ASTM D 2487.
6. PIPE BEDDING PER CITY STANDARD NUMBER 1306.
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.
9. DUCTILE IRON PIPE (DIP) AS DESCRIBED IS POLY-WRAPPED
10. IF MORE THAN ONE CRITERIA APPLIES, USE THE STRICTER CRITERIA



APPROVED BY:			
<i>LA</i>		44485	12/12/16
LOUIS ABI-YOUNES, CITY ENGINEER		RCE	DATE
RECOMMENDED:			
<i>Dennis Meja</i>		62268	10/28/16
DENNIS MEJA, UTILITIES ENGINEERING DIRECTOR		RCE	DATE
REV	DESCRIPTION	BY	APP'D DATE

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