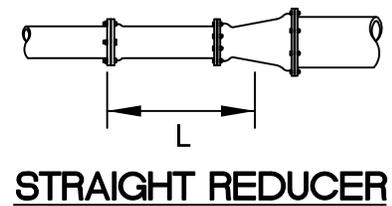
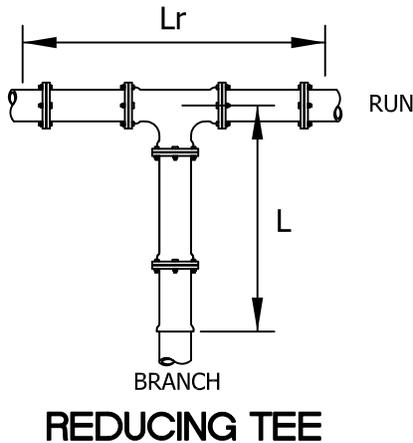


DUCTILE IRON											DUCTILE IRON											
STRAIGHT REDUCERS											REDUCING TEES											
Pipe Diameter (in)	Minimum Pipe Length to be Restrained, L (ft)										Pipe Diameter (in)	Minimum Pipe Length to be Restrained, Lb (ft)										
	4	6	8	10	12	14	16	18	20	24		4	6	8	10	12	14	16	18	20	24	
SMALL SIDE	3	18	54	81							BRANCH	3	1	1	1							
	4		42	72	100	124						4		1	1	1	1	1				
	6			41	75	103	130	153				6			1	1	1	1	1	1	1	
	8				43	77	108	133	159			8				1	1	1	1	1	1	
	10					41	77	107	136	161		10					12	1	1	1	1	
	12						43	78	110	137		188	12						32	14	1	1
	14							41	78	108		165	14							55	38	21
	16								42	77		139	16								73	59
	18									40		109	18									94
	20											77	20									
PVC											PVC											
STRAIGHT REDUCERS											REDUCING TEES											
Pipe Diameter (in)	Minimum Pipe Length to be Restrained, L (ft)										Pipe Diameter (in)	Minimum Pipe Length to be Restrained, Lb (ft)										
	4	6	8	10	12	14	16	18	20	24		4	6	8	10	12	14	16	18	20	24	
SMALL SIDE	3	24	71	107							BRANCH	3	1	1	1							
	4		55	95	132	164						4		1	1	1	1	1				
	6			54	99	136	172	203				6			1	1	1	1	1	1	1	
	8				57	101	142	177	210			8				1	1	1	1	1	1	
	10					54	102	142	180	213		10					16	1	1	1	1	
	12						57	103	146	182		249	12						43	19	1	1
	14							54	103	144		217	14							73	50	28
	16								56	102		184	16								97	78
	18									53		143	18									124
	20											101	20									

**NOTES:**

- CALCULATIONS ARE BASED ON THE FOLLOWING ASSUMPTIONS:  
TEST PRESSURE = 150 PSI, SORL GROUP = SM, TRENCH TYPE = 3, DEPTH = 2.5', SAFETY FACTOR = 2
- WITH REDUCING TEES, THE DISTANCE OF THE RUN LENGTH IS ASSUMED TO BE 40'. FOR OTHER RUN LENGTHS (L<sub>r</sub>), INDIVIDUAL CALCULATIONS MUST BE MADE.
- AS A MINIMUM, PIPE RESTRAINTS ARE TO BE PLACED ON THE FIRST JOINT FROM THE FITTING.
- FOR ALL NEW CONSTRUCTION, WHEN A PIPE MUST BE INSTALLED IN A CASING THE REQUIRED JOINT RESTRAINTS MUST ALSO BE INSTALLED INSIDE THE CASING. THE CASING IS TO BE SIZED ACCORDINGLY.
- FOR AN EXISTING MAIN LOCATED UNDER A PAVED SURFACE, THE CONTRACTOR WILL NOT BE REQUIRED TO PLACE RESTRAINTS ON THE EXISTING PIPE.
- FOR AN EXISTING MAIN NOT LOCATED UNDER A PAVED SURFACE, THE CONTRACTOR WILL BE REQUIRED TO PLACE RESTRAINTS ON THE EXISTING PIPE.



PROPOSED

SCALE: N.T.S.  
DATE: 12/18/14

# PIPE JOINT RESTRAINT REDUCERS & REDUCING TEES

DETAIL

# D-63