

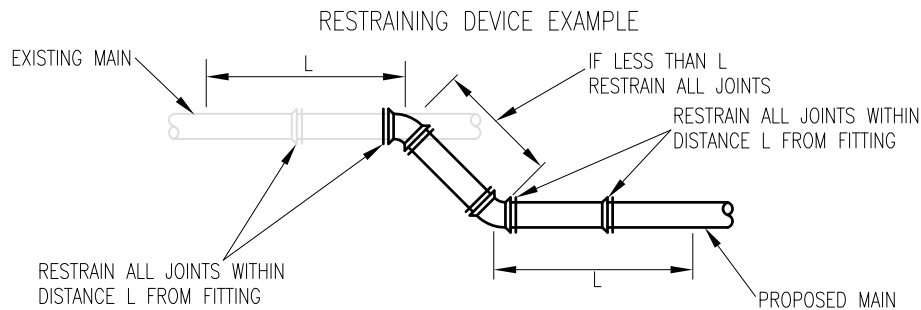
MINIMUM LENGTH OF PIPE WITH RESTRAINED JOINTS (L) IN FEET FOR DUCTILE IRON PIPE (SEE NOTE 4 FOR PVC)

TEST PRESSURE 200 PSI

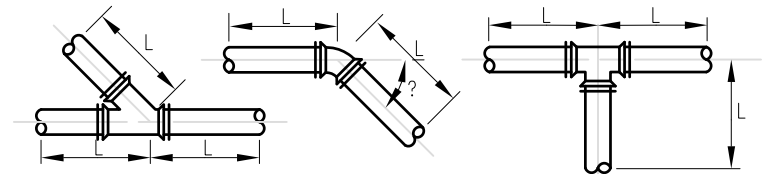
PIPE SIZE	HORIZONTAL				VERTICAL				DEAD END	TEE OR WYE
	11¼"	22½"	45"	90"	11¼"	22½"	45"	90"		
4"	10	10	10	18	10	10	17	NOT ALLOWED	29'	10'
6"	10	10	10	25	10	12	25	"	41'	10'
8"	10	10	14	33	10	16	32	"	54'	14'
10"	10	10	16	40	10	19	39	"	65'	16'
12"	10	10	19	47	11	22	46	"	77'	19'
14"	10	11	22	54	13	25	53	"	89'	22'
16"	10	12	25	61	14	29	60	"	101'	25'
18"	10	13	28	67	16	32	67	"	112"	28'
20"	10	15	31	74	17	35	73	"	124'	31'
24"	10	17	36	86	20	41	86	"	146'	36'

TEST PRESSURE 250 PSI

PIPE SIZE	HORIZONTAL				VERTICAL				DEAD END	TEE OR WYE
	11¼"	22½"	45"	90"	11¼"	22½"	45"	90"		
4"	10	10	10	22	10	10	22	NOT ALLOWED	36'	10'
6"	10	10	13	31	10	15	31	"	51'	13'
8"	10	10	17	41	10	19	40	"	68'	17'
10"	10	10	21	50	12	23	49	"	81'	21'
12"	10	12	24	59	14	28	58	"	97'	24'
14"	10	13	28	67	16	32	66	"	111'	28'
16"	10	15	31	76	18	36	75	"	126'	31'
18"	10	17	35	84	20	40	83	"	140'	35'
20"	10	18	38	92	22	44	91	"	155'	38'
24"	11	21	45	108	26	52	108	"	183'	45'



MECHANICAL RESTRAINING DEVICE DETAILS AND NOTES



8. IF A CASING PIPE FALLS WITHIN THE RESTRAINED LENGTH "L", THIS REQUIRED RESTRAINED LENGTH "L" SHALL BE INCREASED BY THE LENGTH OF THE CASING.

NOTES:

1. RESTRAINING DEVICES OR RESTRAINED JOINTS SHALL HAVE A WORKING PRESSURE OF 250 PSI WITH A MINIMUM SAFETY FACTOR OF 2.
2. RESTRAINED LENGTH SHOWN IS BASED ON 3' OF COVER, SOILTYPE CL, TRENCH TYPE 4, 2:1 SAFETY FACTOR, AND DUCTILE IRON PIPE.
3. VALVES SHALL BE RESTRAINED BASED ON RESTRAINED LENGTH FOR DEAD ENDS.
4. FOR PVC PIPE, INCREASE LENGTH "L" BY 25% FOR HORIZONTAL BENDS, AND INCREASE LENGTH "L" BY 100% FOR VERTICAL BENDS AND DEADENDS.
5. EXISTING PIPE ADJACENT TO PROPOSED BENDS, WYES, VALVES, TEES, AND PLUGS SHALL BE UNCOVERED AND THE JOINTS RESTRAINED FOR THE LENGTHS INDICATED. IF THE EXISTING PIPE IS UNABLE TO ACCEPT THE MECHANICAL JOINT RESTRAINING MECHANISM, THE EXISTING PIPE SHALL BE REPLACED WITH DUCTILE IRON WATER MAIN IN ACCORDANCE WITH THE SPECIFICATIONS AND RESTRAINED FOR THE LENGTH INDICATED.
6. FIRE HYDRANTS SHALL BE RESTRAINED AT EACH JOINT IN THE ASSEMBLY.
7. ALL JOINTS WITHIN CASING PIPES SHALL BE RESTRAINED.

AUGUSTA COUNTY SERVICE AUTHORITY
VERONA, VIRGINIA

SCALE: NTS

DRAWN BY: ACSA

DATE: AUG. 2004

REVISED: NOV. 2020

TYPICAL RESTRAINING DEVICE

DRAWING NUMBER: W-11

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