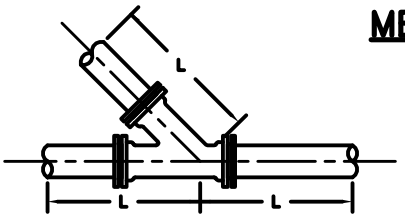
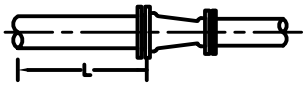
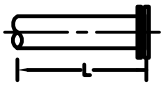
MECHANICAL RESTRAINING DEVICE DETAILS



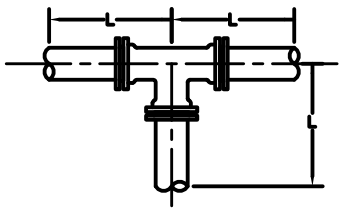
WYE



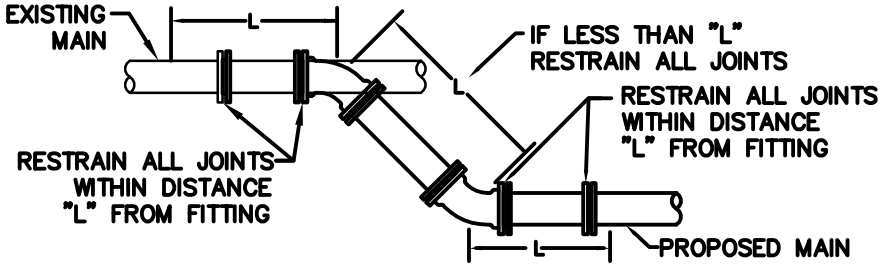
REDUCER



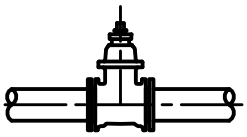
DEAD END



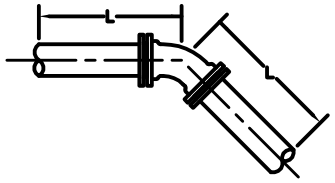
TEE



CONNECTION TO EXISTING MAIN



VALVE



BEND

MINIMUM LENGTH OF PIPE WITH RESTRAINED JOINTS (L) IN FEET

PIPE SIZE	HORIZONTAL BEND				VERTICAL BEND UP			VERTICAL BEND DOWN			DEAD END OR VALVE	UNIFORM SIZE TEE OR WYE	REDUCER LARGER ⌀ TO SMALLER ⌀
	11.25°	22.5°	45°	90°	11.25°	22.5°	45°	11.25°	22.5°	45°			
4"	2	5	10	24	2	5	10	4	7	15	18	13	
6"	3	7	15	35	3	7	15	5	10	21	26	21	13
8"	5	9	19	46	5	9	19	7	14	28	34	29	14
10"	6	11	23	56	6	11	23	8	17	34	42	37	14
12"	7	13	28	67	7	13	28	10	20	41	50	45	14
14"	8	15	32	77	8	15	32	11	23	48	57	52	15
16"	9	17	36	87	9	17	36	13	26	54	65	60	15
18"	10	19	40	97	10	19	40	14	29	61	73	68	15
20"	11	21	45	108	11	21	45	16	32	67	81	76	29
24"	13	25	53	128	13	25	53	19	38	80	97	92	

NOTES:

1. RESTRAINING DEVICES OR RESTRAINED JOINTS SHALL HAVE A WORKING PRESSURE OF 250 PSI WITH A MINIMUM SAFETY FACTOR OF 2.0.
2. RESTRAINED LENGTH SHOWN IS BASED ON 3' OF COVER, SOIL TYPE CL, TRENCH TYPE 2, 2:1 SAFETY FACTOR, AND DUCTILE IRON PIPE AT A TEST PRESSURE OF 150 PSI. IF FIELD CONDITIONS DIFFER FROM THOSE LISTED, CONTACT ENGINEER TO DETERMINE REQUIRED RESTRAINED LENGTH.
3. RESTRAINED LENGTHS SHOWN IN CHART WERE CALCULATED USING METHODOLOGY DEVELOPED BY THE DUCTILE IRON PIPE RESEARCH ASSOCIATION (DIPRA) AND ARE INTENDED AS A GENERAL GUIDE BASED ON CONDITIONS SHOWN IN NOTE 2. FOR FITTINGS AND/OR FIELD CONDITIONS NOT SHOWN, ENGINEER SHALL SUBMIT CALCULATIONS USING DIPRA METHODOLOGY TO THE TOWN FOR APPROVAL.
4. 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 LENGTH INDICATED. IN LIEU OF RESTRAINING JOINTS OF EXISTING PIPE, A BULKHEAD ANCHOR AS SHOWN IN DETAILS CA-1 AND CA-2 MAY BE USED.
5. FIRE HYDRANTS SHALL BE RESTRAINED AT EACH JOINT IN THE ASSEMBLY.
6. ALL JOINTS WITHIN CASING PIPES SHALL BE RESTRAINED.
7. IF A CASING PIPE FALLS WITHIN THE RESTRAINED LENGTH "L", THE REQUIRED RESTRAINED LENGTH SHALL BE INCREASED BY THE LENGTH OF THE CASING.
8. THRUST RESTRAINTS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECCOMMENDATIONS AND SHALL CONFORM TO THE FOLLOWING TABLE OR APPROVED EQUAL. SHOP DRAWINGS FOR ALTERNATE RESTRAINTS SHALL BE SUBMITTED TO THE TOWN FOR APPROVAL PRIOR TO CONSTRUCTION.

PIPE SIZE	JOINT TYPE	SPECIFICATION
4"-12"	MECHANICAL JOINT	ROMAC INDUSTRIES GRIP RING OR MEGALUG SERIES 1100
14"+	MECHANICAL JOINT	ROMAC INDUSTRIES ROMAGRIP OR MEGALUG SERIES 1100
4"-12"	PUSH-ON OR COUPLING	ROMAC INDUSTRIES 611 OR MEGALUG SERIES 1700
14"+	PUSH-ON OR COUPLING	MEGALUG SERIES 1700

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MECHANICAL RESTRAINING DEVICES FOR DUCTILE IRON PIPE

DATE: 11 AUG 2014
SCALE: N.T.S.
DETAIL NO.
CA-4