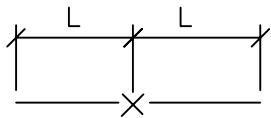
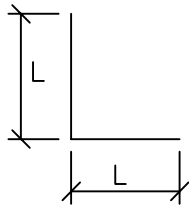


# ROD NUMBER, DIAMETER AND LENGTH OF JOINT RESTRAINT

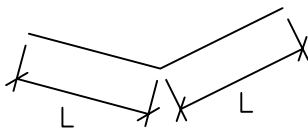
PIPE SIZE	4''			6''			8''			12''			16''			20''			24''		
	D	L	N	D	L	N	D	L	N	D	L	N	D	L	N	D	L	N	D	L	N
90° BEND TEE, PLUG OR VALVE	3/4''	72'	2	3/4''	102'	2	3/4''	134'	2	3/4''	190'	4	1''	245'	6	1 3/4''	298'	10	3/4''	350'	12
45° BEND	3/4''	14'	2	3/4''	20'	2	3/4''	27'	2	3/4''	38'	4	1''	49'	6	3/4''	60'	10	3/4''	71'	12
22 1/2° BEND	3/4''	4'	2	3/4''	6'	2	3/4''	8'	2	3/4''	11'	4	3/4''	14'	6	3/4''	17'	10	3/4''	21'	12
11 1/4° BEND	3/4''	2'	2'	3/4''	3'	2'	3/4''	4'	2	3/4''	5'	4	3/4''	7'	6	3/4''	9'	10	3/4''	10'	12



TEE OR VALVE



90° BEND



BENDS

**NOTES:**

1. LENGTH OF TIED PIPE MEASURED EACH WAY FROM VALVES AND BENDS.
2. D=DIAMETER, L=LENGTH, N=NUMBER.
3. MINIMUM 4'-6" GROUND COVER REQUIRED.
4. BASED ON 250 PSI INTERNAL PRESSURE FOR "L".
5. NUTS SHALL BE ASTM STANDARD DESIGNATION A-307 GRADE A OR B HEXAGON HEAVY SERIES.
6. CLAMP DETAILS DRAWING NO. 5.07.
7. ALL TIE RODS, WASHERS, NUTS, CLAMPS AND LUGS SHALL BE COATED WITH COAL-TAR ENAMEL.
8. ALL MATERIAL SHALL BE "COR-TEN" STEEL OR EQUAL.

DRAWN BY: JSH  
CHECKED BY: RJH

APPROVED BY:  
DIRECTOR OF PUBLIC WORKS

CITY OF BOULDER, COLORADO

TIE ROD  
SPECIFICATIONS

ISSUED: JULY 2, 1998  
REVISED: OCT. 17, 2000

DRAWING NO.

5.03