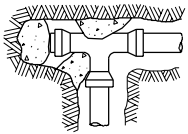
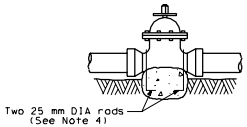
UNBALANCED CROSS
(Use column A)

PLUGGED CROSS
(Use column B)

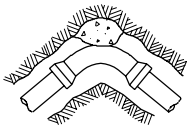
PLUGGED CROSS
(Use column A)



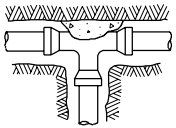
PLUGGED TEE
(Use column B)



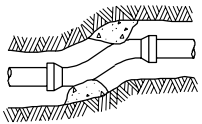
VALVE
(Use column A)



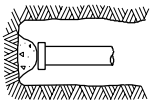
BEND



TEE



OFFSET
(Use columns B - E)



DEAD END

NOTES:

1. Contractor to provide blocking adequate to withstand full test pressure.
2. Divide thrust by safe bearing load to determine required area (in square meters) of concrete to distribute load.
3. Areas to be adjusted for other pressure conditions.
4. Provide two 25 mm minimum diameter rods on valves up through 250 mm diameter. Valves larger than 250 mm require special tie rod design.

Size	Test Pressure kPa	Thrust at Fittings in kilonewtons				
		A	B	C	D	E
		Tee and Dead Ends	90° Bend	45° Bend	22.5° Bend	11.25° Bend
100 mm	1725	13.5	19.2	10.3	5.4	2.7
150 mm	1725	30.5	43.3	23.2	12.1	6.1
200 mm	1725	54.2	77.0	41.2	21.5	10.8
250 mm	1725	84.7	120.3	64.4	33.6	16.9
300 mm	1725	121.9	173.2	92.7	48.4	24.3
350 mm	1725	166.0	235.8	126.2	65.9	33.1
400 mm	1725	216.8	308.0	164.8	86.1	43.3

Soil Type	Safe Bearing Load kPa
Muck, peat, etc.	0
Soft clay	50
Sand	95
Sand and gravel	145
Sand and gravel cemented with clay	190
Hard shale	480

CONCRETE THRUST BLOCK