

THRUST LOADS

RESULTANT THRUST AT FITTINGS AT 200 PSI WATER PRESSURE

PIPE DIAMETER	90° BEND	45° BEND	22 - 1/2" BEND	11 - 1/2" BEND	DEAD END OR TEE
3"	3,484	1,886	962	482	2,464
4"	5,118	2,770	1,412	710	3,620
6"	10,576	5,724	2,918	1,466	7,478
8"	18,194	9,846	5,020	2,522	12,866
10"	27,370	14,812	7,552	3,794	19,354
12"	38,706	20,948	10,680	5,366	27,370
14"	52,002	28,144	14,348	7,208	36,770
16"	67,256	36,398	18,556	9,322	47,558
18"	84,470	45,716	23,306	11,710	59,730
20"	103,644	56,092	28,596	14,366	73,328
24"	147,868	80,026	40,796	20,498	104,558
30"	227,476	123,108	62,760	31,532	160,850
36"	325,862	176,354	89,904	45,170	230,418
42"	439,900	238,072	121,368	60,978	311,056
48"	573,274	310,254	158,166	79,466	405,366
54"	735,998	398,320	203,062	102,022	520,428
60"	843,212	456,344	232,642	116,884	596,242
64"	958,008	518,470	264,314	132,796	677,414

NOTES:

1. BLOCKING SHALL BE COMMERCIAL CONCRETE IN PLACE AGAINST UNDISTURBED EARTH. FITTING SHALL BE ISOLATED FROM CONCRETE THRUST BLOCK WITH PLASTIC OR SIMILAR MATERIAL.
2. TO DETERMINE THE BEARING AREA OF THE THRUST BLOCK IN SQUARE FEET (S.F.):

EXAMPLE: 12" - 90° BEND IN SAND AND GRAVEL
32,000 LBS DIVIDED BY SOIL BEARING LOAD EQUALS 10.7 S.F. OF AREA.
(SOIL BEARING LOAD TO BE DETERMINED PER SOILS REPORT OR PROJECT ENGINEER OR GEOTECHNICAL ENGINEER).
3. AREAS MUST BE ADJUSTED FOR OTHER PIPE SIZE, FITTING PRESSURES AND SOIL CONDITIONS.
4. ALL THRUST BLOCKS TO BE CLASS 4000 CONCRETE.



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STANDARD PLAN:
W - 220

DATE: **FEB. 2008**

CITY ENGINEER APPROVAL:

Longview: **C.B.**

Kelso: **S.Z.**