

REACTION BEARING AREAS FOR
HORIZONTAL WATER PIPE BENDS

BASED ON TEST PRESSURE OF 200 P.S.I. (ALL AREA IN SQUARE FEET)

SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	FAIRLY DRY CLAY 4000 LBS/FT Sq.	SOFT CLAY 2000 LBS/FT Sq.	GRAVEL, COARSE SAND 1600 LBS/FT Sq.	DRY CLAY—ALWAYS DRY—8000 LBS/FT Sq.	SAND, COMPACT, FIRM 8000 LBS/FT Sq.	SAND,—CLEAN, DRY 4000 LBS/FT Sq.	QUICKSAND, VERY POOR SOIL 1000 LBS/FT Sq.	ROCK—POOR 10,000 LBS/FT Sq.
20"									
11 1/4'	12,315	3	7	8	2	2	3	13	2
22 1/2'	24,517	7	13	15	4	4	7	25	3
45°	48,091	12	24	29	6	6	12	48	5
90°	88,844	23	45	53	12	12	23	89	9
PLUG	62,832	16	32	38	8	8	16	63	7
24"									
11 1/4'	17,734	5	9	11	3	3	5	18	2
22 1/2'	35,305	9	18	22	5	5	9	36	4
45°	69,252	18	35	42	9	9	18	70	7
90°	127,936	32	64	77	16	16	32	128	13
PLUG	90,478	23	46	55	12	12	23	91	10
30"									
11 1/4'	27,709	7	14	17	4	4	7	2	3
22 1/2'	55,163	14	28	34	7	7	14	56	6
45°	108,206	28	55	65	14	14	28	109	11
90°	199,900	50	100	120	25	25	50	200	20
PLUG	141,372	36	71	85	18	18	36	142	15
36"									
11 1/4'	39,901	10	20	24	5	5	10	40	4
22 1/2'	79,435	20	40	48	10	10	20	30	8
45°	155,816	39	78	94	20	20	39	156	16
90°	287,855	72	144	172	36	36	72	288	29
PLUG	203,575	51	102	122	26	26	51	204	21

NOTES:

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

USE 6"—90° BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR



DATE
8/16/04

REVISED
8/18/04

SCALE
NOT TO SCALE

DETAIL

W-11

THRUST BLOCKING DESIGN QUANTITY TABLE (SH 2 OF 3)
CITY OF BURLINGTON, NORTH CAROLINA
ENGINEERING DEPARTMENT