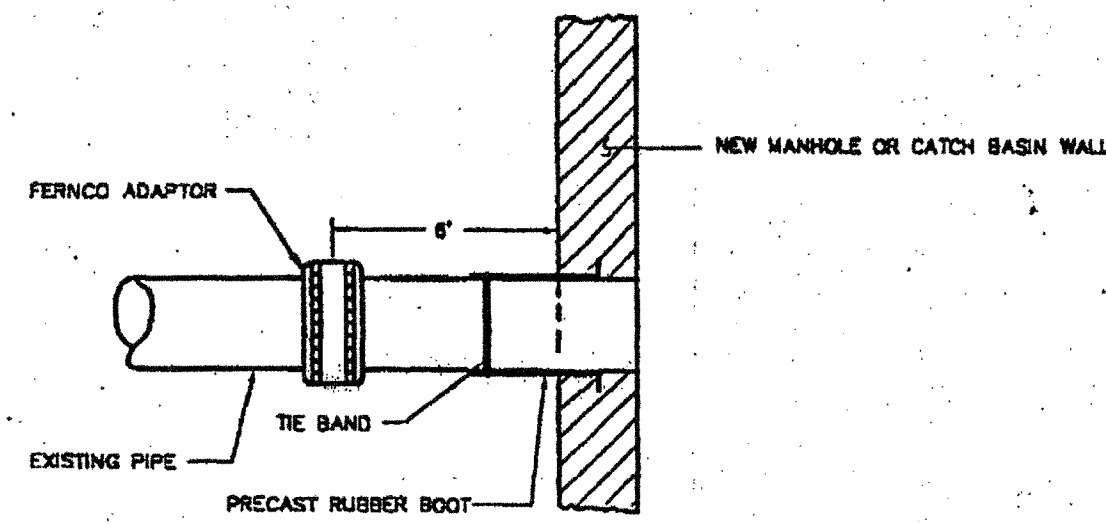
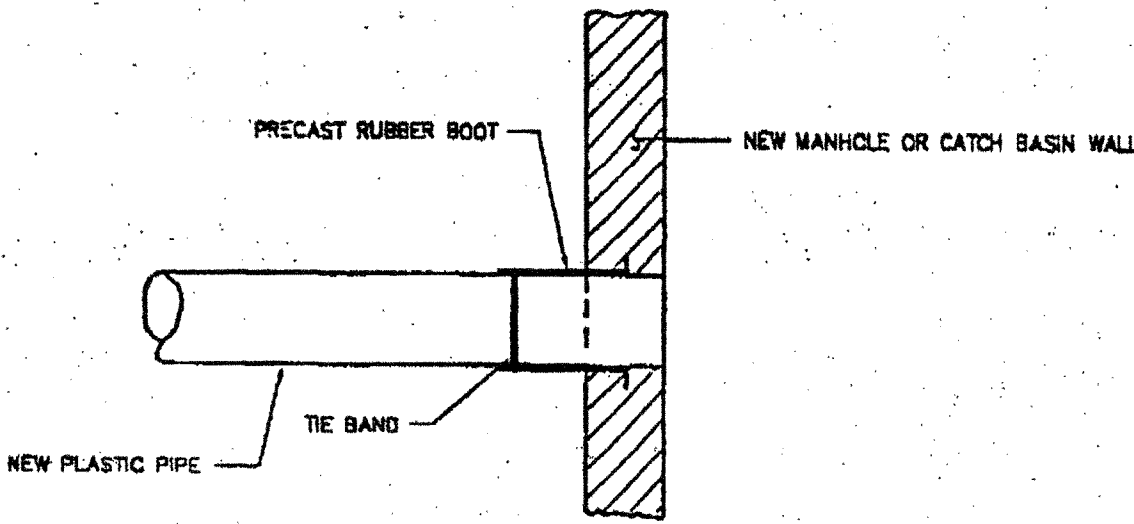


NOTE: REMOVE WATERPROOFING FROM STRUCTURE BEFORE APPLYING MORTAR. WATERPROOF AGAIN AFTER MORTAR HAS SET.



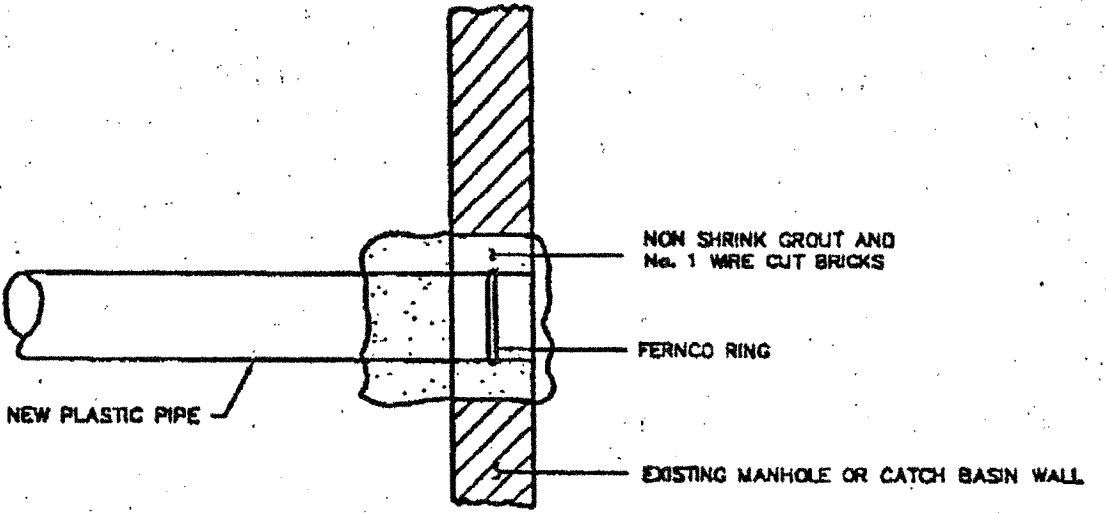
METHOD 1 - EXISTING PIPE INTO NEW STRUCTURE



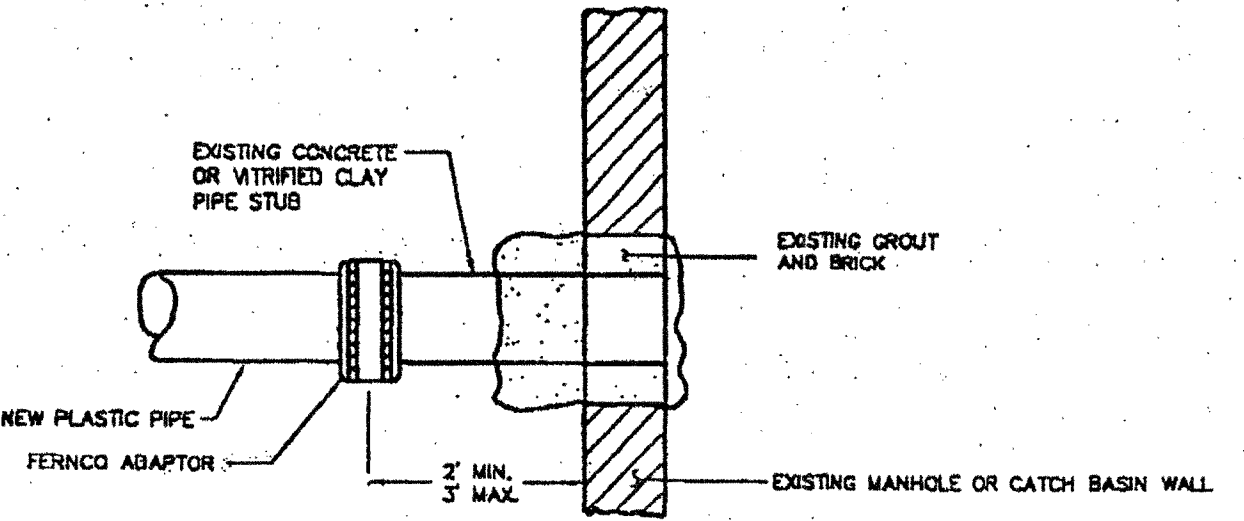
METHOD 2 - NEW CONSTRUCTION

FIGURE II - 16  
PIPE CONNECTION DETAILS

NOTE: EXISTING MANHOLE OR CATCH BASIN SHALL BE CORE DRILLED FOR PIPE INSTALLATION

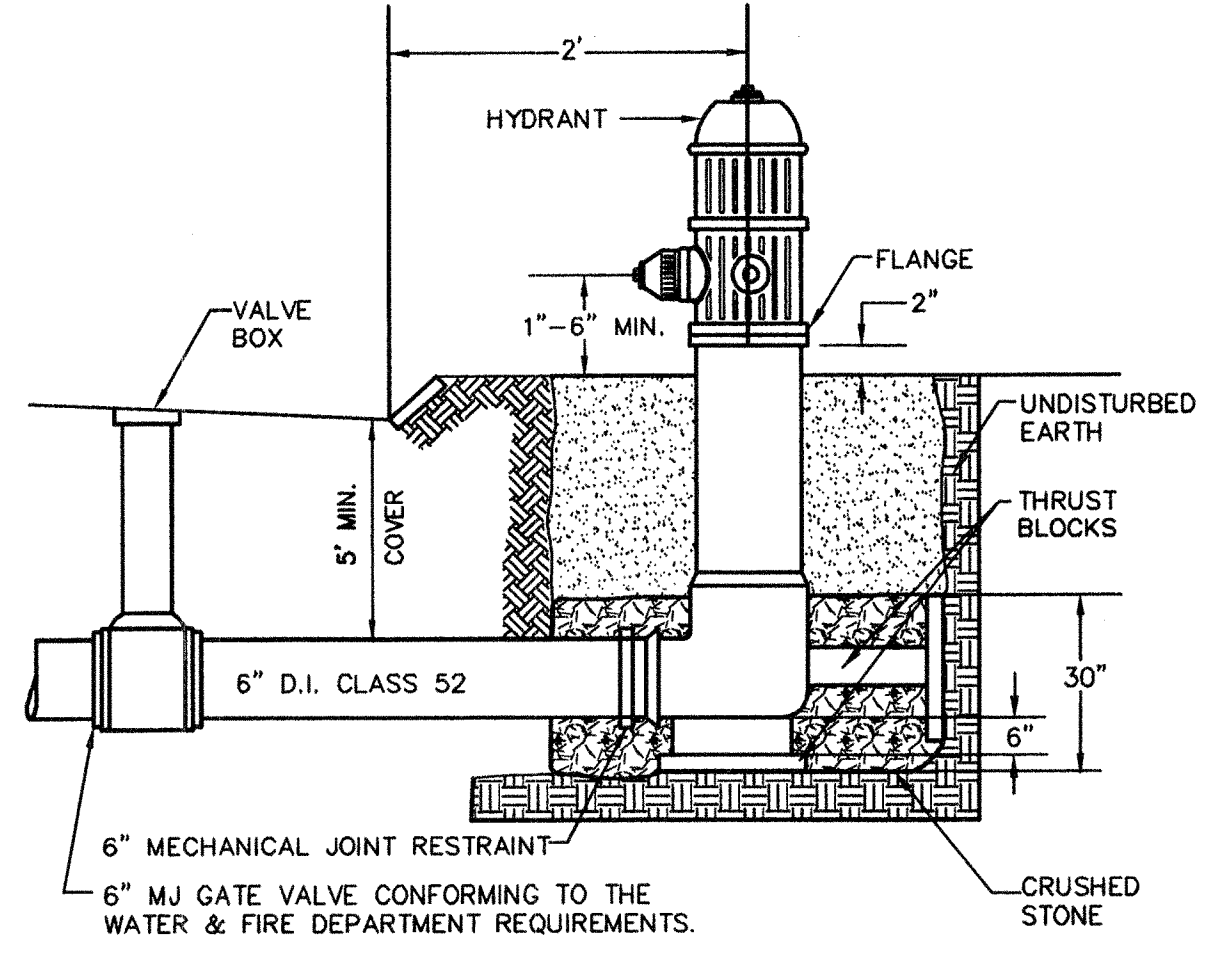


METHOD 3 - NEW PIPE INTO EXISTING STRUCTURE



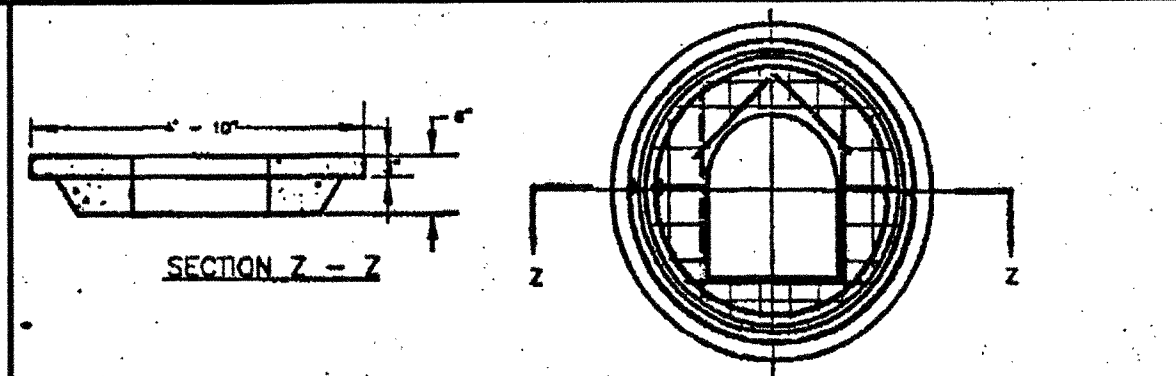
METHOD 4 - NEW PIPE TO EXISTING STUB

FIGURE II - 16 (Continued)  
PIPE CONNECTION DETAILS

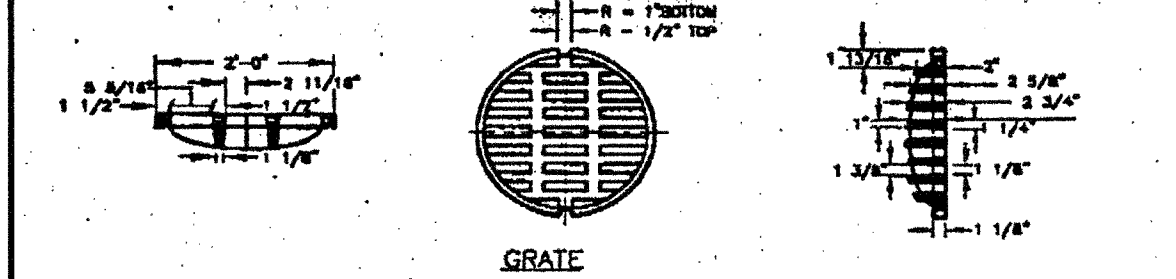


- NOTES:
1. HYDRANT INSTALLATION & OPERATION TO CONFORM TO REGULATIONS OF THE PORTLAND WATER DISTRICT & PORTLAND FIRE DEPARTMENT.
  2. HYDRANT SHALL BE DARLING B6285 HYDRANTS AND CLOW EDDY HYDRANTS THAT MEET PORTLAND WATER DISTRICT OPEN RIGHT AND OTHER SPECIFICATIONS.
  3. THE HYDRANT SHALL HAVE A DEPTH OF EITHER 6" BURY OR 6-1/2" BURY. IF THE INSTALLATION IS GOING TO BE GREATER THAN 6-1/2" THE HYDRANT SHALL BE EXTENDED USING A TOP EXTENSION KIT FROM THE MANUFACTURE (USUALLY AVAILABLE IN 6" INCREMENTS UP TO AT LEAST 2').

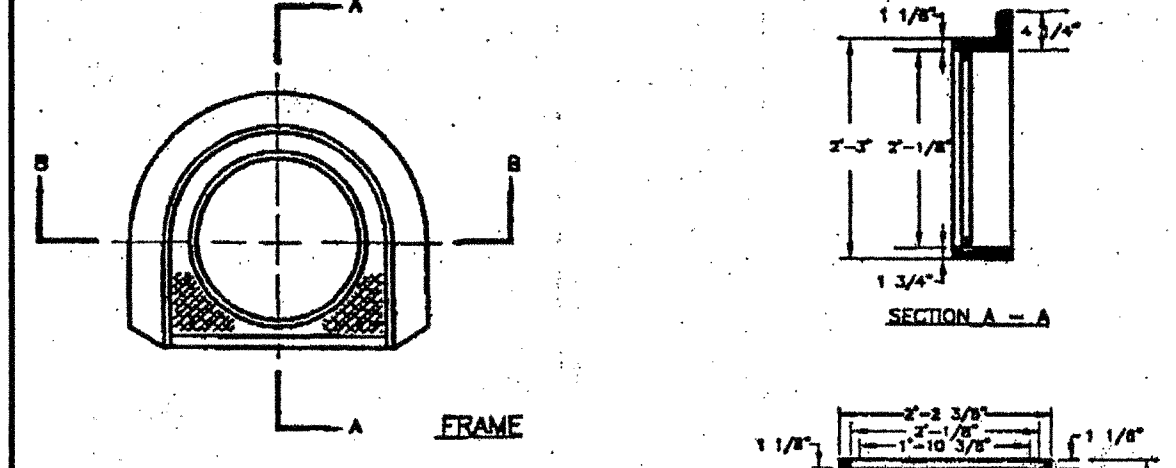
FIRE HYDRANT DETAIL  
NOT TO SCALE



PRECAST CATCH BASIN COVER WITH "D" HOLE



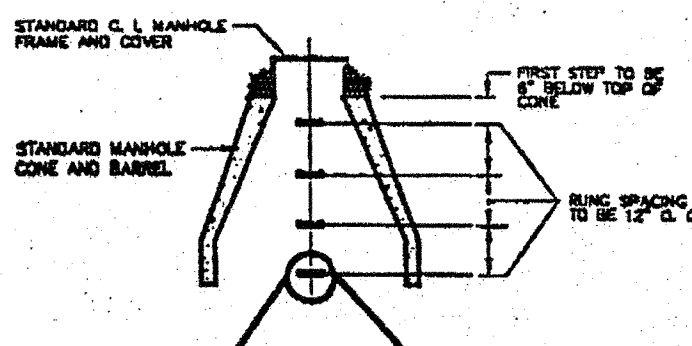
GRATE



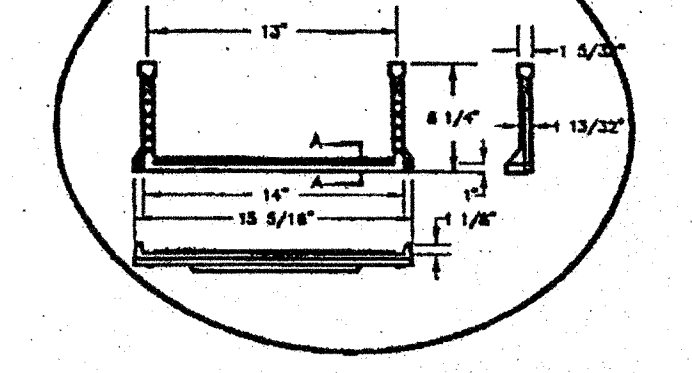
FRAME

NOT TO SCALE

FIGURE II - 7  
CATCH BASIN FRAME AND GRATE



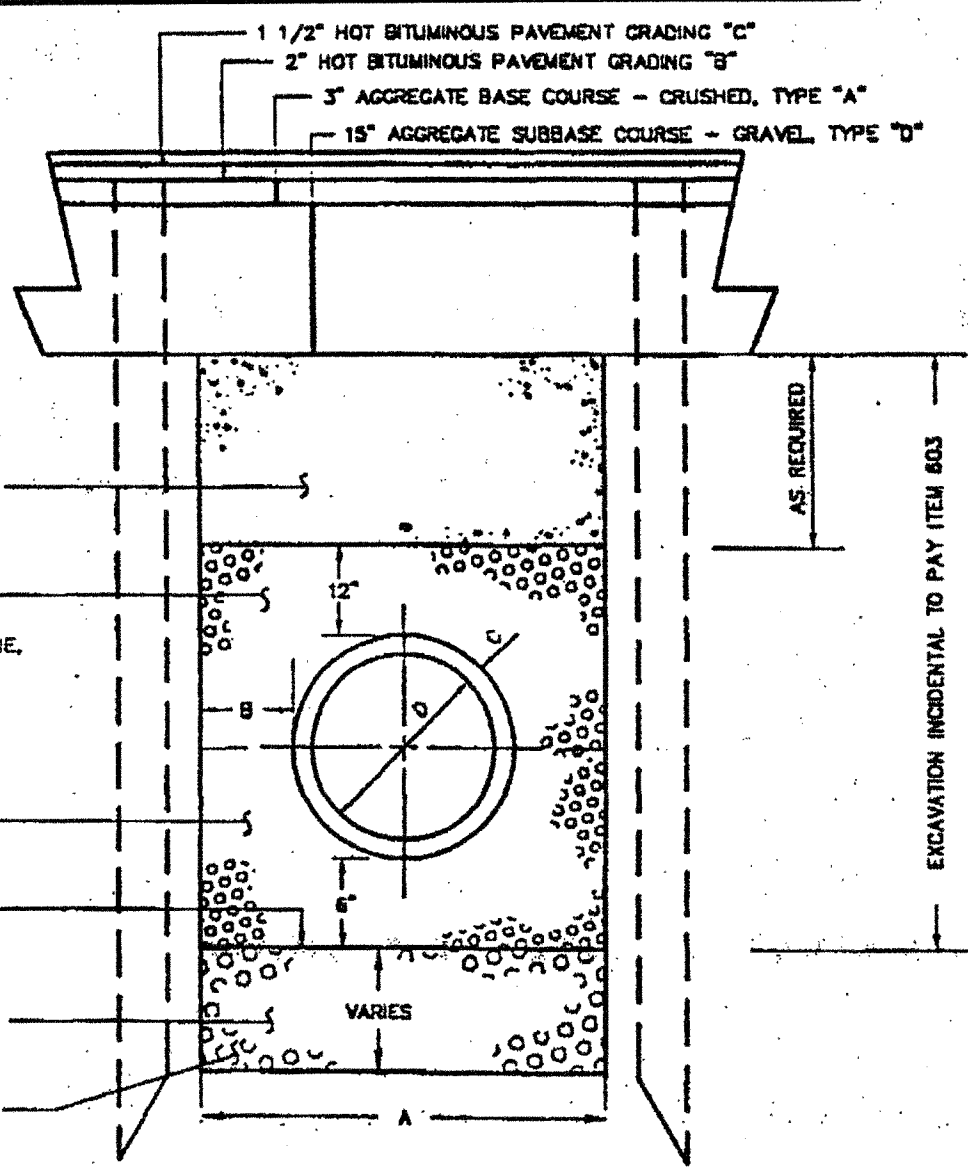
PLASTIC MANHOLE STEPS



MANHOLE WALL

NOT TO SCALE

FIGURE II - 4  
PLASTIC MANHOLE STEPS



NOT TO SCALE

FIGURE II - 12  
TYPICAL PIPE INSTALLATION DETAIL

TABLE OF DIMENSIONS OF PIPE REINFORCED CONCRETE

INCH	FEET	MIN. BASE 2100	MIN. WALL 2100	MIN. THICKNESS 2100	MIN. WALL 2100	MIN. THICKNESS 2100
12	0	1.0	1.0	1.0	1.0	1.0
18	0	1.5	1.5	1.5	1.5	1.5
24	0	2.0	2.0	2.0	2.0	2.0
30	0	2.5	2.5	2.5	2.5	2.5
36	0	3.0	3.0	3.0	3.0	3.0
42	0	3.5	3.5	3.5	3.5	3.5
48	0	4.0	4.0	4.0	4.0	4.0
54	0	4.5	4.5	4.5	4.5	4.5
60	0	5.0	5.0	5.0	5.0	5.0
66	0	5.5	5.5	5.5	5.5	5.5
72	0	6.0	6.0	6.0	6.0	6.0
78	0	6.5	6.5	6.5	6.5	6.5
84	0	7.0	7.0	7.0	7.0	7.0
90	0	7.5	7.5	7.5	7.5	7.5
96	0	8.0	8.0	8.0	8.0	8.0
102	0	8.5	8.5	8.5	8.5	8.5
108	0	9.0	9.0	9.0	9.0	9.0
114	0	9.5	9.5	9.5	9.5	9.5
120	0	10.0	10.0	10.0	10.0	10.0
126	0	10.5	10.5	10.5	10.5	10.5
132	0	11.0	11.0	11.0	11.0	11.0
138	0	11.5	11.5	11.5	11.5	11.5
144	0	12.0	12.0	12.0	12.0	12.0
150	0	12.5	12.5	12.5	12.5	12.5
156	0	13.0	13.0	13.0	13.0	13.0
162	0	13.5	13.5	13.5	13.5	13.5
168	0	14.0	14.0	14.0	14.0	14.0
174	0	14.5	14.5	14.5	14.5	14.5
180	0	15.0	15.0	15.0	15.0	15.0
186	0	15.5	15.5	15.5	15.5	15.5
192	0	16.0	16.0	16.0	16.0	16.0
198	0	16.5	16.5	16.5	16.5	16.5
204	0	17.0	17.0	17.0	17.0	17.0
210	0	17.5	17.5	17.5	17.5	17.5
216	0	18.0	18.0	18.0	18.0	18.0
222	0	18.5	18.5	18.5	18.5	18.5
228	0	19.0	19.0	19.0	19.0	19.0
234	0	19.5	19.5	19.5	19.5	19.5
240	0	20.0	20.0	20.0	20.0	20.0
246	0	20.5	20.5	20.5	20.5	20.5
252	0	21.0	21.0	21.0	21.0	21.0
258	0	21.5	21.5	21.5	21.5	21.5
264	0	22.0	22.0	22.0	22.0	22.0
270	0	22.5	22.5	22.5	22.5	22.5
276	0	23.0	23.0	23.0	23.0	23.0
282	0	23.5	23.5	23.5	23.5	23.5
288	0	24.0	24.0	24.0	24.0	24.0
294	0	24.5	24.5	24.5	24.5	24.5
300	0	25.0	25.0	25.0	25.0	25.0
306	0	25.5	25.5	25.5	25.5	25.5
312	0	26.0	26.0	26.0	26.0	26.0
318	0	26.5	26.5	26.5	26.5	26.5
324	0	27.0	27.0	27.0	27.0	27.0
330	0	27.5	27.5	27.5	27.5	27.5
336	0	28.0	28.0	28.0	28.0	28.0
342	0	28.5	28.5	28.5	28.5	28.5
348	0	29.0	29.0	29.0	29.0	29.0
354	0	29.5	29.5	29.5	29.5	29.5
360	0	30.0	30.0	30.0	30.0	30.0
366	0	30.5	30.5	30.5	30.5	30.5
372	0	31.0	31.0	31.0	31.0	31.0
378	0	31.5	31.5	31.5	31.5	31.5
384	0	32.0	32.0	32.0	32.0	32.0
390	0	32.5	32.5	32.5	32.5	32.5
396	0	33.0	33.0	33.0	33.0	33.0
402	0	33.5	33.5	33.5	33.5	33.5
408	0	34.0	34.0	34.0	34.0	34.0
414	0	34.5	34.5	34.5	34.5	34.5
420	0	35.0	35.0	35.0	35.0	35.0
426	0	35.5	35.5	35.5	35.5	35.5
432	0	36.0	36.0	36.0	36.0	36.0
438	0	36.5	36.5	36.5	36.5	36.5
444	0	37.0	37.0	37.0	37.0	37.0
450	0	37.5	37.5	37.5	37.5	37.5
456	0	38.0	38.0	38.0	38.0	38.0
462	0	38.5	38.5	38.5	38.5	38.5
468	0	39.0	39.0	39.0	39.0	39.0
474	0	39.5	39.5	39.5	39.5	39.5
480	0	40.0	40.0	40.0	40.0	40.0
486	0	40.5	40.5	40.5	40.5	40.5
492	0	41.0	41.0	41.0	41.0	41.0
498	0	41.5	41.5	41.5	41.5	41.5
504	0	42.0	42.0	42.0	42.0	42.0
510	0	42.5	42.5	42.5	42.5	42.5
516	0	43.0	43.0	43.0	43.0	43.0
522	0	43.5	43.5	43.5	43.5	43.5
528	0	44.0	44.0	44.0	44.0	44.0
534	0	44.5	44.5	44.5	44.5	44.5
540	0	45.0	45.0	45.0	45.0	45.0
546	0	45.5	45.5	45.5	45.5	45.5
552	0	46.0	46.0	46.0	46.0	46.0
558	0	46.5	46.5	46.5	46.5	46.5
564	0	47.0	47.0	47.0	47.0	47.0
570	0	47.5	47.5	47.5	47.5	47.5
576	0	48.0	48.0	48.0	48.0	48.0
582	0	48.5	48.5	48.5	48.5	48.5
588	0	49.0	49.0	49.0	49.0	49.0
594	0	49.5	49.5	49.5	49.5	49.5
600	0	50.0	50.0	50.0	50.0	50.0

TABLE OF DIMENSIONS OF PIPE

INCH	FEET	MIN. BASE 2100	MIN. WALL 2100	MIN. THICKNESS 2100	MIN. WALL 2100	MIN. THICKNESS 2100
12	0	1.0	1.0	1.0	1.0	1.0
18	0	1.5	1.5	1.5	1.5	1.5
24	0	2.0	2.0	2.0	2.0	2.0
30	0	2.5	2.5	2.5	2.5	2.5
36	0	3.0	3.0	3.0	3.0	3.0
42	0	3.5	3.5	3.5	3.5	3.5
48	0	4.0	4.0	4.0	4.0	4.0
54	0	4.5	4.5	4.5	4.5	4.5
60	0	5.0	5.0	5.0	5.0	5.0
66	0	5.5	5.5	5.5	5.5	5.5
72	0	6.0	6.0	6.0	6.0	6.0
78	0	6.5	6.5	6.5	6.5	6.5
84	0	7.0	7.0	7.0	7.0	7.0
90	0	7.5	7.5	7.5	7.5	7.5
96	0	8.0	8.0	8.0	8.0	8.0
102	0	8.5	8.5	8.5	8.5	8.5
108	0	9.0	9.0	9.0	9.0	9.0
114	0	9.5	9.5	9.5	9.5	9.5
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132	0	11.0	11.0	11.0	11.0	11.0
138	0	11.5	11.5	11.5	11.5	11.5
144	0	12.0	12.0	12.0	12.0	12.0
150	0	12.5	12.5	12.5	12.5	12.5
156	0	13.0	13.0	13.0	13.0	13.0
162	0	13.5	13.5	13.5	13.5	13.5
168	0	14.0	14.0	14.0	14.0	14.0
174	0	14.5	14.5	14.5	14.5	14.5
180	0	15.0	15.0	15.0	15.0	15.0
186	0	15.5	15.5	15.5	15.5	15.5
192	0	16.0	16.0	16.0	16.0	16.0
198	0	16.5	16.5	16.5	16.5	16.5
204	0	17.0	17.0	17.0	17.0	17.0
210	0	17.5	17.5	17.5	17.5	17.5
216	0	18.0	18.0	18.0	18.0	18.0
222	0	18.5	18.5	18.5	18.5	18.5
228	0	19.0	19.0	19.0	19.0	19.0
234	0	19.5	19.5	19.5	19.5	19.5
240	0	20.0	20.0	20.0	20.0	20.0
246	0	20.5	20.5	20.5	20.5	20.5
252	0	21.0	21.0	21.0	21.0	21.0
258	0	21.5	21.5	21.5	21.5	21.5
264	0	22.0	22.0	22.0	22.0	22.0
270	0	22.5	22.5	22.5	22.5	22.5
276	0	23.0	23.0	23.0	23.0	23.0
282	0	23.5	23.5	23.5	23.5	23.5
288	0	24.0	24.0	24.0	24.0	24.0
294	0	24.5	24.5	24.5	24.5	24.5
300	0	25.0	25.0	25.0	25.0	25.0
306	0	25.5	25.5	25.5	25.5	25.5
312	0	26.0	26.0	26.0	26.0	26.0
318	0	26.5	26.5	26.5	26.5	26.5
324	0	27.0	27.0	27.0	27.0	27.0
330	0	27.5	27.5	27.5	27.5	27.5
336	0	28.0	28.0	28.0	28.0	28.0
342	0	28.5	28.5	28.5	28.5	28.5
348	0	29.0	29.0	29.0	29.0	29.0
354	0	29.5	29.5	29.5	29.5	29.5
360	0	30.0	30.0	30.0	30.0	30.0
366	0	30.5	30.5	30.5	30.5	30.5
372	0	31.0	31.0	31.0	31.0	31.0
378	0	31.5	31.5	31.5	31.5	31.5
384	0	32.0	32.0	32.0	32.0	32.0