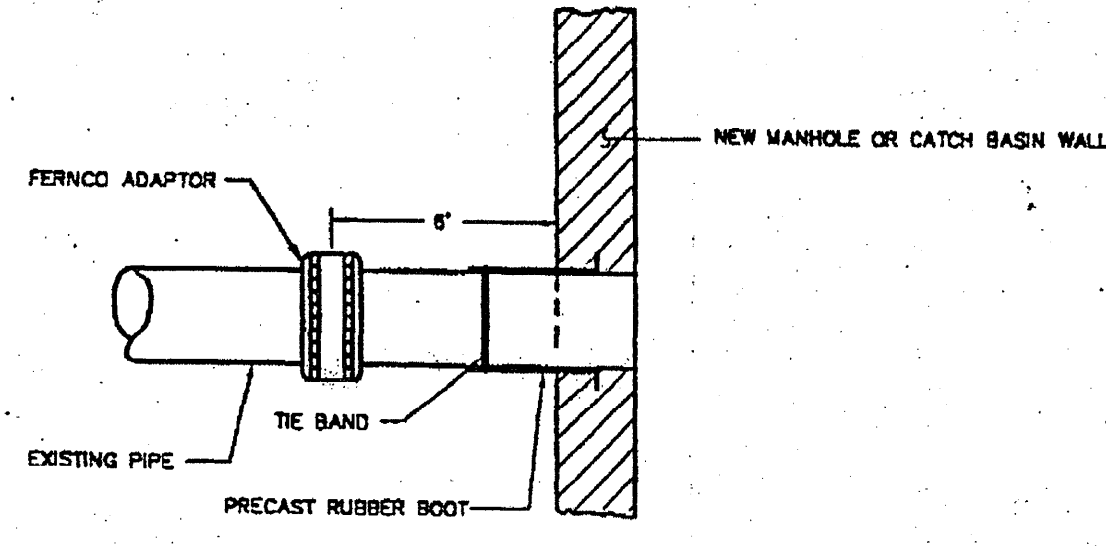
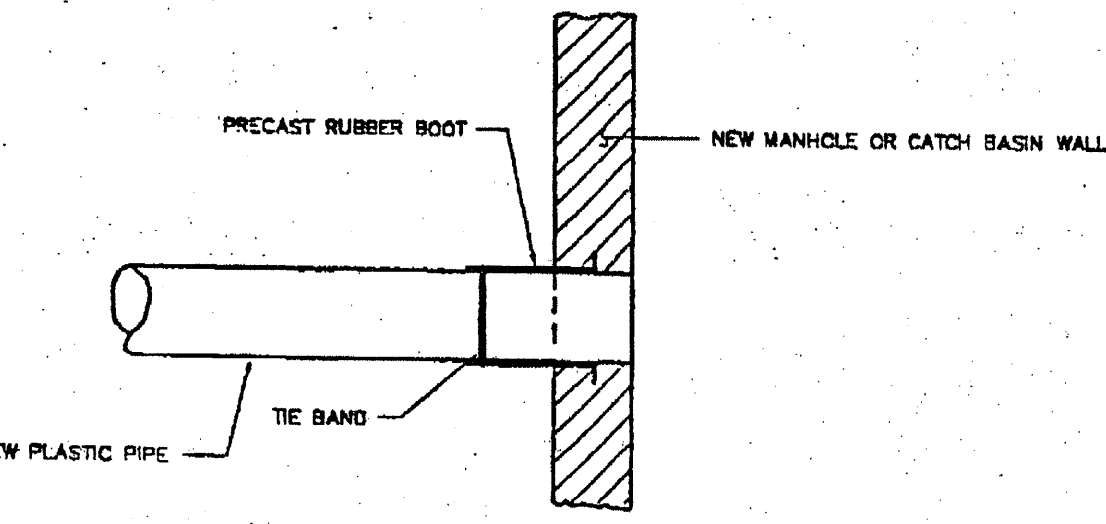


NOTE:
REMOVE WATERPROOFING FROM
STRUCTURE BEFORE APPLYING MORTAR.
WATERPROOF AGAIN AFTER MORTAR
HAS SET.



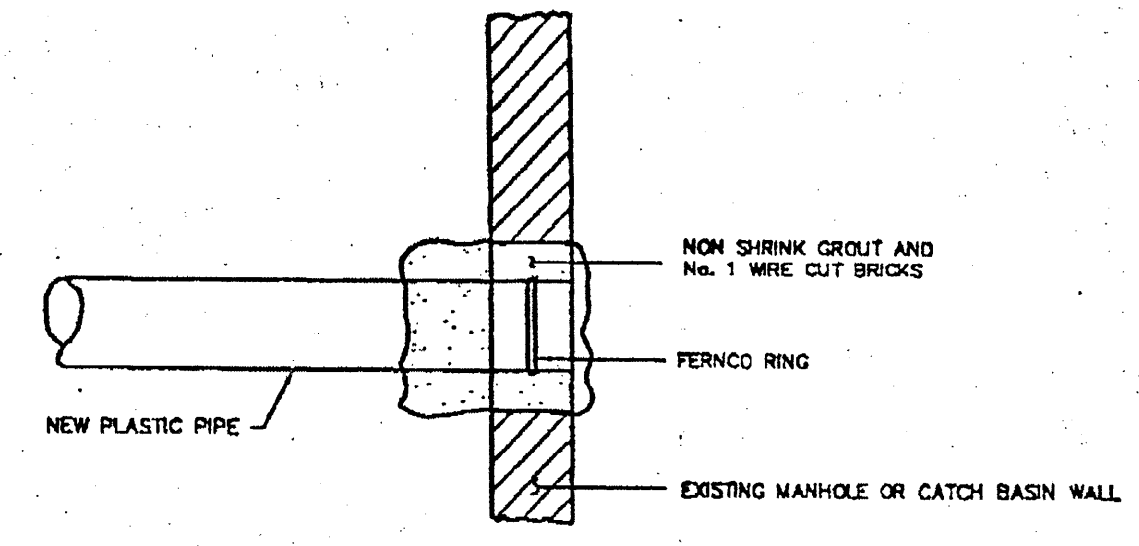
METHOD 1 - EXISTING PIPE INTO NEW STRUCTURE



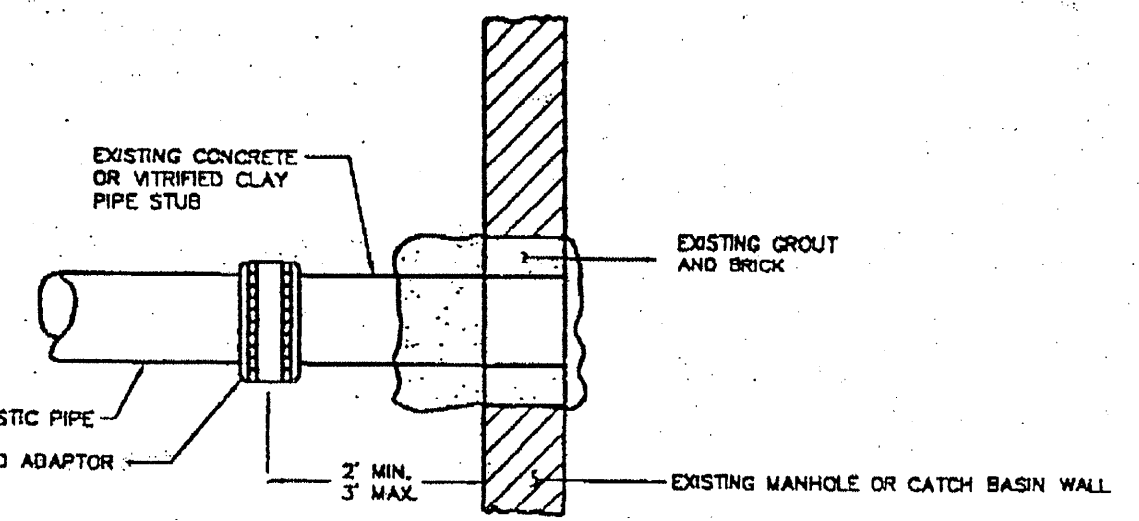
METHOD 2 - NEW CONSTRUCTION

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

1. LOCATIONS AND ELEVATIONS OF STUBS SHOWN ON THE PLANS ARE TO BE CONSIDERED AS APPROXIMATE AND MAY BE ADJUSTED AS DIRECTED TO SUIT FIELD CONDITIONS.
2. HOUSE CONNECTIONS AND CATCH BASIN CONNECTIONS TO THE MAIN LINE OF THE SEWER SHALL CONSIST OF AN APPROXIMATE "Y" BRANCH CONNECTION AS SHOWN ON THE PLANS, OR AS DIRECTED. ACTUAL "Y" LOCATIONS FOR HOUSE CONNECTIONS AND CATCH BASIN CONNECTIONS SHALL BE DETERMINED DURING CONSTRUCTION. THE CONTRACTOR SHALL KEEP A COMPLETE RECORD OF "Y" LOCATIONS WHICH SHALL BE GIVEN TO THE CITY OF PORTLAND UPON COMPLETION OF THE CONTRACT.

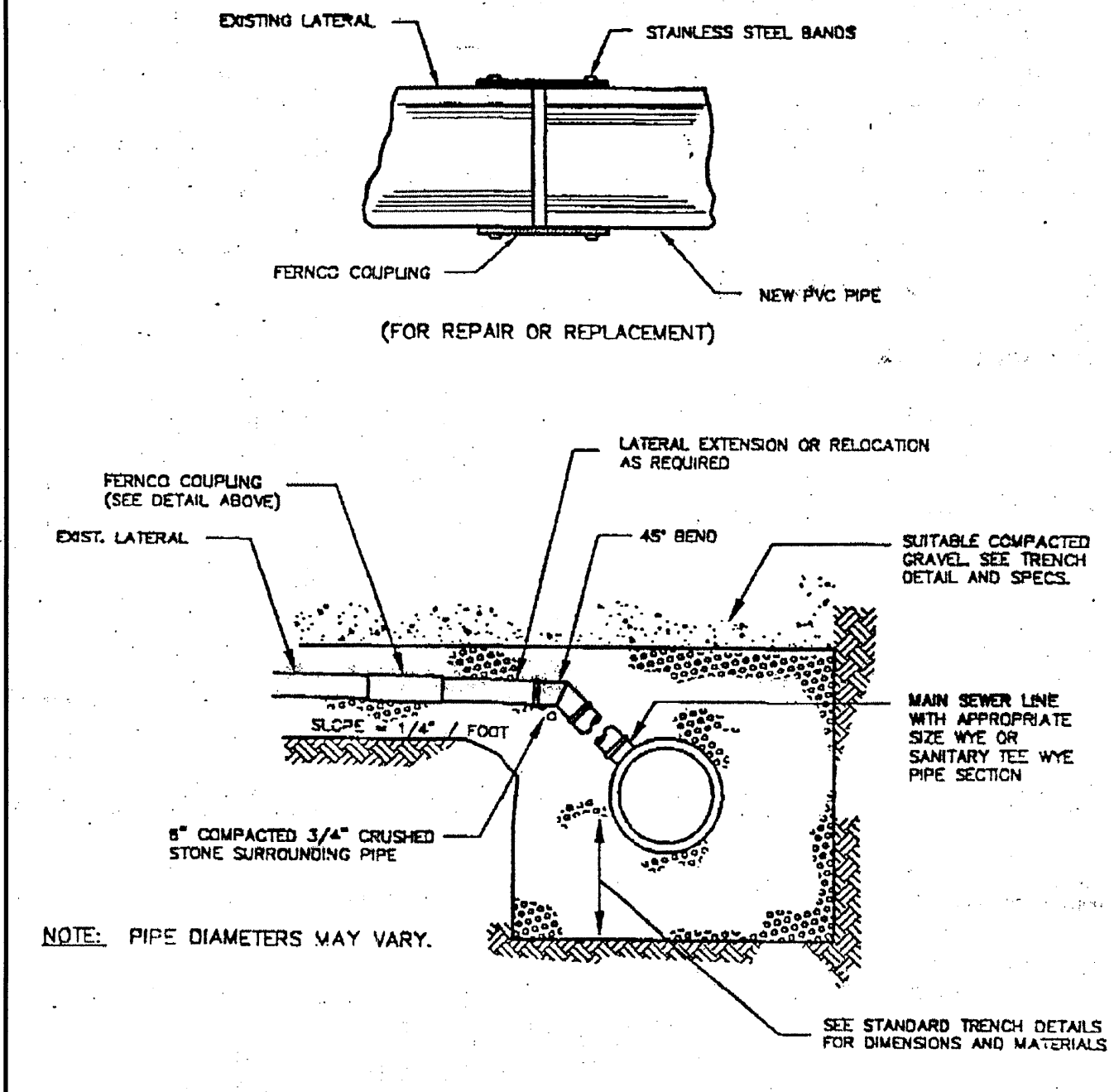


FIGURE II - 18
TYPICAL EXISTING LATERAL CONNECTION DETAIL

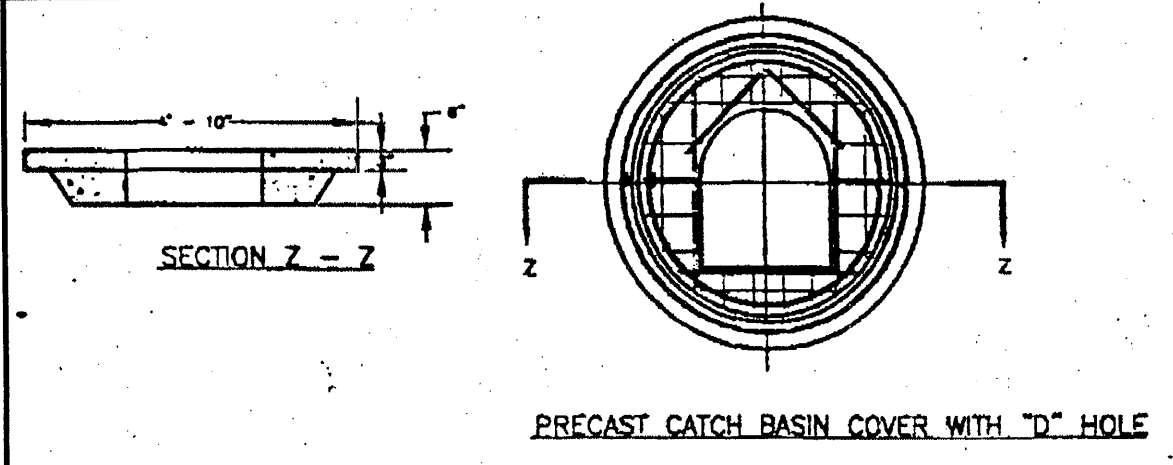


FIGURE II - 7
CATCH BASIN FRAME AND GRATE

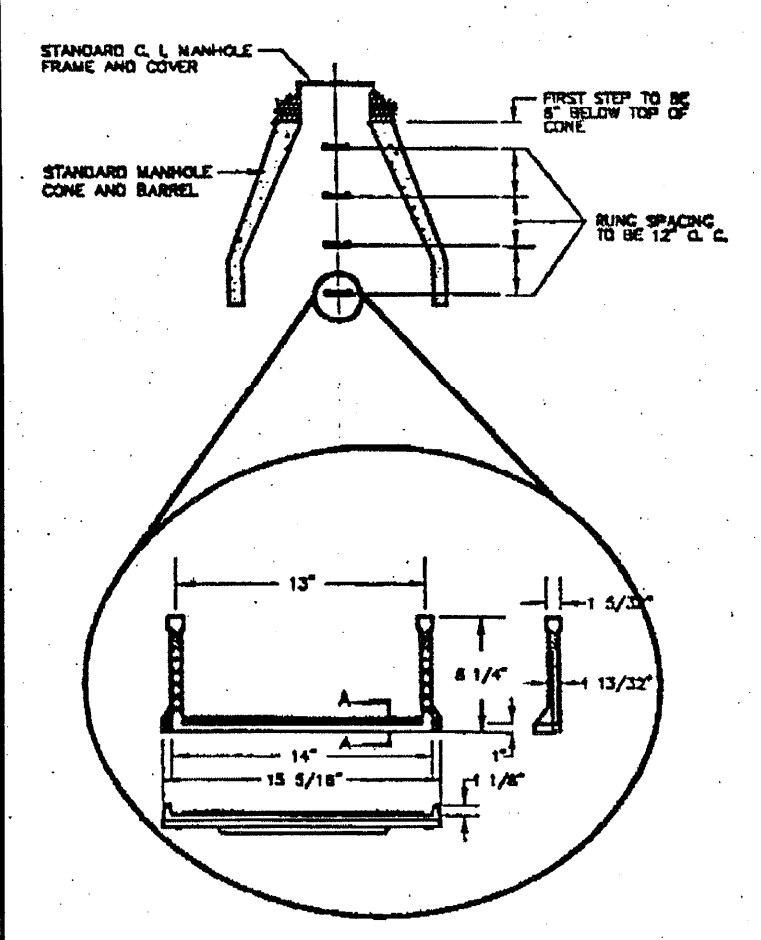


FIGURE II - 4
PLASTIC MANHOLE STEPS

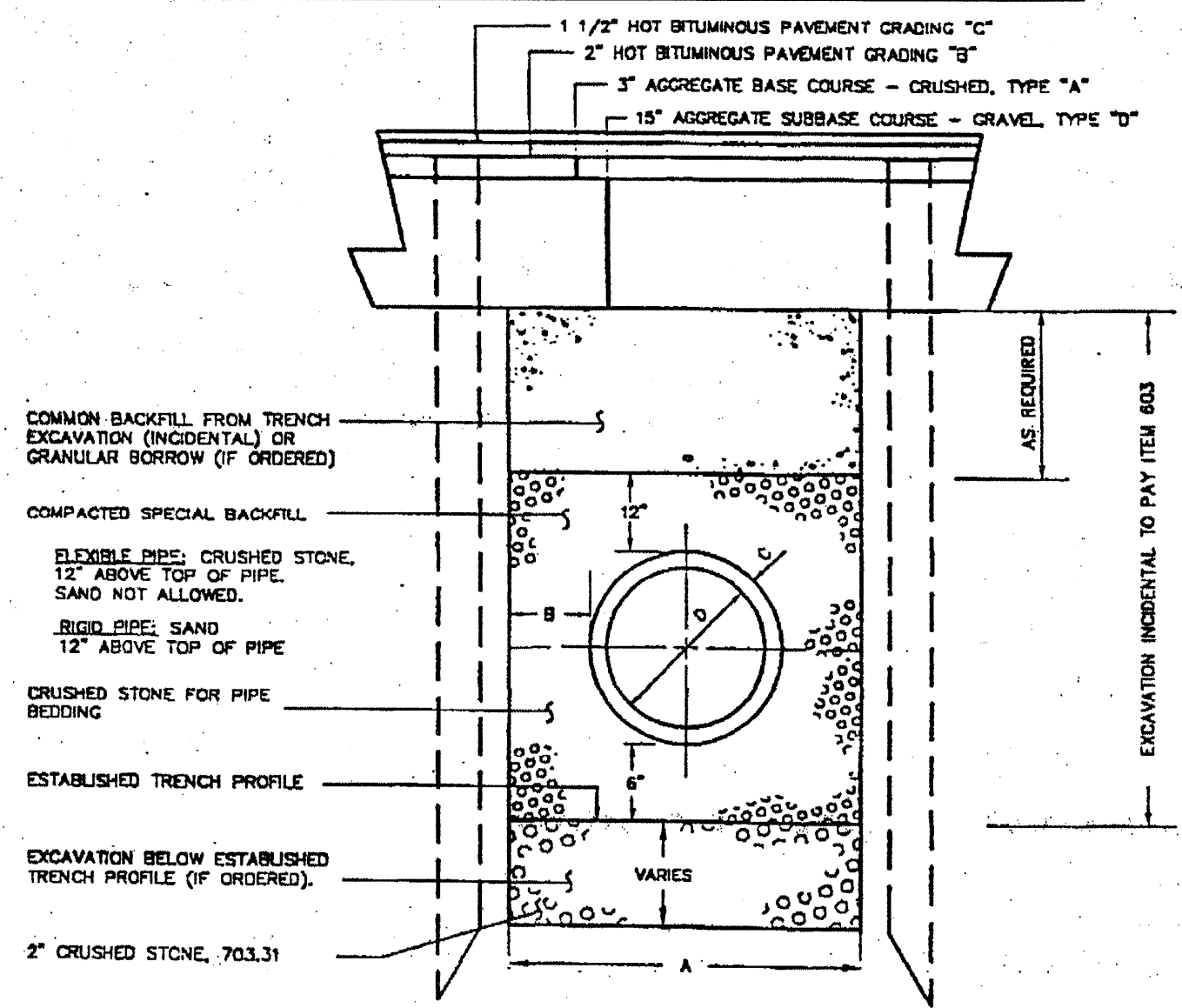


FIGURE II - 12
TYPICAL PIPE INSTALLATION DETAIL

TABLE OF DIMENSIONS OF PIPE REINFORCED CONCRETE

INVERT D. A. (FEET)	OUTER D. B. (FEET)	THICKNESS C. (INCHES)	WEIGHT PER LINEAL FOOT D. (LBS.)	SPACING OF REINFORCING E. (INCHES)
18"	24"	4"	12.1	18"
24"	30"	4"	16.1	18"
30"	36"	4"	20.1	18"
36"	42"	4"	24.1	18"
42"	48"	4"	28.1	18"
48"	54"	4"	32.1	18"
54"	60"	4"	36.1	18"
60"	66"	4"	40.1	18"
66"	72"	4"	44.1	18"
72"	78"	4"	48.1	18"
78"	84"	4"	52.1	18"
84"	90"	4"	56.1	18"
90"	96"	4"	60.1	18"
96"	102"	4"	64.1	18"
102"	108"	4"	68.1	18"
108"	114"	4"	72.1	18"
114"	120"	4"	76.1	18"
120"	126"	4"	80.1	18"
126"	132"	4"	84.1	18"
132"	138"	4"	88.1	18"
138"	144"	4"	92.1	18"
144"	150"	4"	96.1	18"
150"	156"	4"	100.1	18"
156"	162"	4"	104.1	18"
162"	168"	4"	108.1	18"
168"	174"	4"	112.1	18"
174"	180"	4"	116.1	18"
180"	186"	4"	120.1	18"
186"	192"	4"	124.1	18"
192"	198"	4"	128.1	18"
198"	204"	4"	132.1	18"
204"	210"	4"	136.1	18"
210"	216"	4"	140.1	18"
216"	222"	4"	144.1	18"
222"	228"	4"	148.1	18"
228"	234"	4"	152.1	18"
234"	240"	4"	156.1	18"
240"	246"	4"	160.1	18"
246"	252"	4"	164.1	18"
252"	258"	4"	168.1	18"
258"	264"	4"	172.1	18"
264"	270"	4"	176.1	18"
270"	276"	4"	180.1	18"
276"	282"	4"	184.1	18"
282"	288"	4"	188.1	18"
288"	294"	4"	192.1	18"
294"	300"	4"	196.1	18"
300"	306"	4"	200.1	18"
306"	312"	4"	204.1	18"
312"	318"	4"	208.1	18"
318"	324"	4"	212.1	18"
324"	330"	4"	216.1	18"
330"	336"	4"	220.1	18"
336"	342"	4"	224.1	18"
342"	348"	4"	228.1	18"
348"	354"	4"	232.1	18"
354"	360"	4"	236.1	18"
360"	366"	4"	240.1	18"
366"	372"	4"	244.1	18"
372"	378"	4"	248.1	18"
378"	384"	4"	252.1	18"
384"	390"	4"	256.1	18"
390"	396"	4"	260.1	18"
396"	402"	4"	264.1	18"
402"	408"	4"	268.1	18"
408"	414"	4"	272.1	18"
414"	420"	4"	276.1	18"
420"	426"	4"	280.1	18"
426"	432"	4"	284.1	18"
432"	438"	4"	288.1	18"
438"	444"	4"	292.1	18"
444"	450"	4"	296.1	18"
450"	456"	4"	300.1	18"
456"	462"	4"	304.1	18"
462"	468"	4"	308.1	18"
468"	474"	4"	312.1	18"
474"	480"	4"	316.1	18"
480"	486"	4"	320.1	18"
486"	492"	4"	324.1	18"
492"	498"	4"	328.1	18"
498"	504"	4"	332.1	18"
504"	510"	4"	336.1	18"
510"	516"	4"	340.1	18"
516"	522"	4"	344.1	18"
522"	528"	4"	348.1	18"
528"	534"	4"	352.1	18"
534"	540"	4"	356.1	18"
540"	546"	4"	360.1	18"
546"	552"	4"	364.1	18"
552"	558"	4"	368.1	18"
558"	564"	4"	372.1	18"
564"	570"	4"	376.1	18"
570"	576"	4"	380.1	18"
576"	582"	4"	384.1	18"
582"	588"	4"	388.1	18"
588"	594"	4"	392.1	18"
594"	600"	4"	396.1	18"
600"	606"	4"	400.1	18"
606"	612"	4"	404.1	18"
612"	618"	4"	408.1	18"
618"	624"	4"	412.1	18"
624"	630"	4"	416.1	18"
630"	636"	4"	420.1	18"
636"	642"	4"	424.1	18"
642"	648"	4"	428.1	18"
648"	654"	4"	432.1	18"
654"	660"	4"	436.1	18"
660"	666"	4"	440.1	18"
666"	672"	4"	444.1	18"
672"	678"	4"	448.1	18"
678"	684"	4"	452.1	18"
684"	690"	4"	456.1	18"
690"	696"	4"	460.1	18"
696"	702"	4"	464.1	18"
702"	708"	4"	468.1	18"
708"	714"	4"	472.1	18"
714"	720"	4"	476.1	18"
720"	726"	4"	480.1	18"
726"	732"	4"	484.1	18"
732"	738"	4"	488.1	18"
738"	744"	4"	492.1	18"
744"	750"	4"	496.1	18"
750"	756"	4"	500.1	18"
756"	762"	4"	504.1	18"
762"	768"	4"	508.1	18"
768"	774"	4"	512.1	18"
774"	780"	4"	516.1	18"
780"	786"	4"	520.1	18"
786"	792"	4"	524.1	18"
792"	798"	4"	528.1	18"
798"	804"	4"	532.1	18"
804"	810"	4"	536.1	18"
810"	816"	4"	540.1	18"
816"	822"	4"	544.1	18"
822"	828"	4"	548.1	18"
828"	834"	4"	552.1	18"
834"	840"	4"	556.1	18"
840"	846"	4"	560.1	18"
846"	852"	4"	564.1	18"
852"	858"	4"	568.1	18"
858"	864"	4"	572.1	18"
864"	870"	4"	576.1	18"
870"	876"	4"	580.1	18"
876"	882"	4"	584.1	18"
882"	888"	4"	588.1	18"
888"	894"	4"	592.1	18"
894"	900"	4"	596.1	18"
900"	906"	4"	600.1	18"
906"	912"	4"	604.1	18"
912"	918"	4"	608.1	18"
918"	924"	4"	612.1	18"
924"	930"	4"	616.1	18"
930"	936"	4"	620.1	18"
936"	942"	4"	624.1	18"
942"	948"	4"	628.1	18"
948"	954"	4"	632.1	18"
954"	960"	4"	636.1	18"
960"	966"	4"	640.1	18"
966"	972"	4"	644.1	18"
972"	978"	4"	648.1	18"
978"	984"	4"	652.1	18"
984"	990"	4"	656.1	18"
990"	996"	4"	660.1	18"
996"	1002"	4"	664.1	18"
1002"	1008"	4"	668.1	18"
1008"	1014"	4"	672.1	18"
1014"	1020"	4"	676.1	18"
1020"	1026"	4"	680.1	18"
1026"	1032"	4"	684.1	18"
1032"	1038"	4"	688.1	18"
1038"	1044"	4"	692.1	18"
1044"	1050"	4"	696.1	18"
1050"	1056"	4"	700.1	18"
1056"	1062"	4"	704.1	18"
1062"	1068"	4"	708.1	18"
1068"	1074"	4"	712.1	18"
1074"	1080"	4"	716.1	18"
1080"	1086"	4"	720.1	18"
1086"	1092"	4"	724.1	18"
1092"	1098"	4"	728.1	18"
1098"	1104"	4"	732.1	18"
1104"	1110"	4"	736.1	18"
1110"	1116"	4"	740.1	18"
1116"	1122"	4"	744.1	18"
1122"	1128"	4"	748.1	18"
1128"	1134"	4"	752.1	18"
1134"	1140"	4"	756.1	18"
1140"	1146"	4"	760.1	18"
1146"	1152"	4"	764.1	18"
1152"	1158"	4"	768.1	18"
1158"	1164"	4"	772.1	18"
1164"	1170"	4"	776.1	18"
1170"	1176"	4"	780.1	18"
1176"	1182"	4"	784.1	18"
1182"	1188"	4"	788.1	18"
1188"	1194"	4"	792.1	18"
1194"	1200"	4"	796.1	18"

TABLE OF DIMENSIONS OF PIPE

INVERT D. A. (FEET)	OUTER D. B. (FEET)	THICKNESS C. (INCHES)	WEIGHT PER LINEAL FOOT D. (LBS.)	SPACING OF REINFORCING E. (INCHES)
18"	24"	4"	12.1	18"
24"	30"	4"	16.1	18"
30"	36"	4"	20.1	18"
36"	42"	4"	24.1	18"
42"	48"	4"	28.1	18"
48"	54"	4"	32.1	18"
54"	60"	4"	36.1	18"
60"	66"	4"	40.1	18"
66"	72"	4"	44.1	18"
72"	78"	4"	48.1	18"
78"	84"	4"	52.1	18"
84"	90"	4"	56.1	18"
90"	96"	4"	60.1	18"
96"	102"	4"	64.1	18"
102"	108"	4"	68.1	18"
108"	114"	4"	72.1	18"
114"	120"	4"	76.1	18"
120"	126"	4"	80.1	18"
126"	132"	4"	84.1	18"
132"	138"	4"	88.1	18"
138"	144"	4"	92.1	18"
144"	150"	4"	96.1	18"
150"	156"	4"	100.1	18"
156"	162"	4"	104.1	18"
162"	168"	4"	108.1	18"
168"	174"	4"	112.1	18"
174"	180"	4"	116.1	18"
180"	186"	4"	120.1	18"
186"	192"	4"	124.1	18"
192"	198"	4"	128.1	18"
198"	204"	4"	132.1	18"
204"	210"	4"	136.1	18"
210"	216"	4"	140.1	18"
216"	222"	4"	144.1	18"
222"	228"	4"	148.1	18"
228"	234"	4"	152.1	18"
234"	240"	4"	156.1	18"
240"	246"	4"	160.1	18"
246"	252"	4"	164.1	18"
252"	258"	4"	168.1	18"
25				