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### SANITARY SEWER STANDARD DETAIL

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OKLAHOMA CITY UTILITIES DEPARTMENT

### SANITARY SEWER STANDARD DETAIL

**GENERAL CONSTRUCTION NOTES**

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF OKLAHOMA CITY STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC IMPROVEMENTS.
- ALL WORK NOT CLASSIFIED AS A CONTRACT PAY ITEM SHALL BE CONSIDERED AS AN INCIDENTAL AND NOT PAID FOR DIRECTLY.
- ALL EXCAVATION UNDER EXISTING PAVEMENT SHALL BE BACKFILLED WITH CRUSHER RUN ROCK. ALL EXCAVATION UNDER FUTURE PAVEMENT SHALL BE BACKFILLED WITH SAND.
- PIPE LEAKAGE TESTS SHALL BE PERFORMED BY THE CONTRACTOR IN ACCORDANCE WITH THE OKLAHOMA CITY SEWER REQUIREMENTS. LEAKAGE SHALL NOT EXCEED 50 GALLONS PER INCH OF NORMAL PIPE PER MILE PER DAY FOR ANY SECTION OF THE SYSTEM.
- DEFLECTION TESTS SHALL BE PERFORMED ON ALL FLEXIBLE PIPE. THE TEST SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE FOR AT LEAST THIRTY (30) DAYS. NO PIPE SHALL EXCEED A DEFLECTION OF MORE THAN FIVE (5%) PERCENT. IF THE DEFLECTION TEST IS TO BE RUN USING A RIGID BALL AND HANDREL, IT SHALL HAVE A DIAMETER EQUAL TO NINETY-FIVE (95%) PERCENT OF THE INSIDE DIAMETER OF THE PIPE. THE TEST SHALL BE PERFORMED WITHOUT MECHANICAL PULLING DEVICES.
- POLYVINYL CHLORIDE (PVC) PIPES SHALL CONFORM TO ASTM F-794 FOR OPEN PROFILE PIPE AND ASTM F-1883 FOR CLOSED PROFILE PIPE. REGARDLESS OF SIZE, OPEN PROFILE WALL PIPE WILL BE ALLOWED ONLY ON SECTIONS OF PIPE WHERE THERE ARE NO APPARENT SERVICE CONNECTIONS.
- SPECIAL SANITARY SEWER PIPE SHALL BE REQUIRED TO SATISFY MINIMUM HORIZONTAL AND VERTICAL CLEARANCE REQUIREMENTS FROM WATERLINES, WELLS AND PETROLEUM STORAGE TANKS, AS ESTABLISHED BY THE OKLAHOMA STATE DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ).
- SPECIAL PVC PIPE SHALL CONFORM TO ASTM D-2241 AND SDR 32.5 FOR SIZES FOUR (4") INCHES TO THIRTY-SIX (36") INCHES, OR AWWA C-900 AND AWWA C-905, WITH A MINIMUM DR RATING OF DR18 FOR PIPE SIZES FOUR (4") INCHES TO TWELVE (12") INCHES AND A MINIMUM CR RATING OF DR32.5 FOR PIPE SIZES GREATER THAN TWELVE (12") INCHES.
- DUCTILE IRON PIPE (DIP) SHALL CONFORM TO THE REQUIREMENTS OF AWWA C-151.
- EXTERIOR COATING - THE EXTERIOR SURFACES OF DUCTILE IRON PIPE, SPECIFICATIONS AND FITTINGS SHALL BE COATED WITH AN ASPHALTIC COATING IN ACCORDANCE WITH ASTM A746, SECTION 6.1, OF AWWA E-151. THE COATING SHALL HAVE A MINIMUM THICKNESS OF ONE (1) MIL.
- INTERIOR COATING - INTERIOR SURFACES OF PIPE AND FITTINGS SHALL BE LINED WITH FORTY (40) MILS OF VIRGIN POLYETHYLENE COMPLYING WITH ASTM D-1248 OR MADISON POLYETHYLENE LINING, CORPORATE II TX-5 MINUTE NUMBER 17115, MANUFACTURED BY MADISON CHEMICALS, INC., CANADA, OR APPROVED EQUAL. THE LINING MATERIALS SHALL BE COMPOUNDED WITH A MINIMUM OF TWO (2%) PERCENT CARBON BLACK TO RESIST ULTRA VIOLET RAYS.
- THICKNESS - UNLESS OTHERWISE SPECIFIED, DUCTILE IRON PIPE SHALL MEET THE REQUIREMENTS IN THE FOLLOWING TABLE AS SHOWN IN DETAIL S-02.

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### SANITARY SEWER STANDARD DETAIL

**DIP PIPE THICKNESS REQUIREMENTS**

DEPTH OF COVER (feet)	Standard Thickness Class AWWA C-151 (inches)	Standard Thickness Class AWWA C-151 (mm)
≤ 10'	0.25	6.35
10' to 15'	0.28	7.11
15' to 20'	0.32	8.13
20' to 25'	0.36	9.14
25' to 30'	0.40	10.16
30' to 35'	0.45	11.43
35' to 40'	0.50	12.70
40' to 45'	0.55	13.97
45' to 50'	0.60	15.24
50' to 55'	0.65	16.51
55' to 60'	0.70	17.78
60' to 65'	0.75	19.05
65' to 70'	0.80	20.32
70' to 75'	0.85	21.59
75' to 80'	0.90	22.86
80' to 85'	0.95	24.13
85' to 90'	1.00	25.40
90' to 95'	1.05	26.67
95' to 100'	1.10	27.94
100' to 105'	1.15	29.21
105' to 110'	1.20	30.48
110' to 115'	1.25	31.75
115' to 120'	1.30	33.02
120' to 125'	1.35	34.29
125' to 130'	1.40	35.56
130' to 135'	1.45	36.83
135' to 140'	1.50	38.10
140' to 145'	1.55	39.37
145' to 150'	1.60	40.64
150' to 155'	1.65	41.91
155' to 160'	1.70	43.18
160' to 165'	1.75	44.45
165' to 170'	1.80	45.72
170' to 175'	1.85	46.99
175' to 180'	1.90	48.26
180' to 185'	1.95	49.53
185' to 190'	2.00	50.80
190' to 195'	2.05	52.07
195' to 200'	2.10	53.34
200' to 205'	2.15	54.61
205' to 210'	2.20	55.88
210' to 215'	2.25	57.15
215' to 220'	2.30	58.42
220' to 225'	2.35	59.69
225' to 230'	2.40	60.96
230' to 235'	2.45	62.23
235' to 240'	2.50	63.50
240' to 245'	2.55	64.77
245' to 250'	2.60	66.04
250' to 255'	2.65	67.31
255' to 260'	2.70	68.58
260' to 265'	2.75	69.85
265' to 270'	2.80	71.12
270' to 275'	2.85	72.39
275' to 280'	2.90	73.66
280' to 285'	2.95	74.93
285' to 290'	3.00	76.20
290' to 295'	3.05	77.47
295' to 300'	3.10	78.74
300' to 305'	3.15	80.01
305' to 310'	3.20	81.28
310' to 315'	3.25	82.55
315' to 320'	3.30	83.82
320' to 325'	3.35	85.09
325' to 330'	3.40	86.36
330' to 335'	3.45	87.63
335' to 340'	3.50	88.90
340' to 345'	3.55	90.17
345' to 350'	3.60	91.44
350' to 355'	3.65	92.71
355' to 360'	3.70	93.98
360' to 365'	3.75	95.25
365' to 370'	3.80	96.52
370' to 375'	3.85	97.79
375' to 380'	3.90	99.06
380' to 385'	3.95	100.33
385' to 390'	4.00	101.60
390' to 395'	4.05	102.87
395' to 400'	4.10	104.14
400' to 405'	4.15	105.41
405' to 410'	4.20	106.68
410' to 415'	4.25	107.95
415' to 420'	4.30	109.22
420' to 425'	4.35	110.49
425' to 430'	4.40	111.76
430' to 435'	4.45	113.03
435' to 440'	4.50	114.30
440' to 445'	4.55	115.57
445' to 450'	4.60	116.84
450' to 455'	4.65	118.11
455' to 460'	4.70	119.38
460' to 465'	4.75	120.65
465' to 470'	4.80	121.92
470' to 475'	4.85	123.19
475' to 480'	4.90	124.46
480' to 485'	4.95	125.73
485' to 490'	5.00	127.00
490' to 495'	5.05	128.27
495' to 500'	5.10	129.54
500' to 505'	5.15	130.81
505' to 510'	5.20	132.08
510' to 515'	5.25	133.35
515' to 520'	5.30	134.62
520' to 525'	5.35	135.89
525' to 530'	5.40	137.16
530' to 535'	5.45	138.43
535' to 540'	5.50	139.70
540' to 545'	5.55	140.97
545' to 550'	5.60	142.24
550' to 555'	5.65	143.51
555' to 560'	5.70	144.78
560' to 565'	5.75	146.05
565' to 570'	5.80	147.32
570' to 575'	5.85	148.59
575' to 580'	5.90	149.86
580' to 585'	5.95	151.13
585' to 590'	6.00	152.40
590' to 595'	6.05	153.67
595' to 600'	6.10	154.94
600' to 605'	6.15	156.21
605' to 610'	6.20	157.48
610' to 615'	6.25	158.75
615' to 620'	6.30	160.02
620' to 625'	6.35	161.29
625' to 630'	6.40	162.56
630' to 635'	6.45	163.83
635' to 640'	6.50	165.10
640' to 645'	6.55	166.37
645' to 650'	6.60	167.64
650' to 655'	6.65	168.91
655' to 660'	6.70	170.18
660' to 665'	6.75	171.45
665' to 670'	6.80	172.72
670' to 675'	6.85	173.99
675' to 680'	6.90	175.26
680' to 685'	6.95	176.53
685' to 690'	7.00	177.80
690' to 695'	7.05	179.07
695' to 700'	7.10	180.34
700' to 705'	7.15	181.61
705' to 710'	7.20	182.88
710' to 715'	7.25	184.15
715' to 720'	7.30	185.42
720' to 725'	7.35	186.69
725' to 730'	7.40	187.96
730' to 735'	7.45	189.23
735' to 740'	7.50	190.50
740' to 745'	7.55	191.77
745' to 750'	7.60	193.04
750' to 755'	7.65	194.31
755' to 760'	7.70	195.58
760' to 765'	7.75	196.85
765' to 770'	7.80	198.12
770' to 775'	7.85	199.39
775' to 780'	7.90	200.66
780' to 785'	7.95	201.93
785' to 790'	8.00	203.20
790' to 795'	8.05	204.47
795' to 800'	8.10	205.74
800' to 805'	8.15	207.01
805' to 810'	8.20	208.28
810' to 815'	8.25	209.55
815' to 820'	8.30	210.82
820' to 825'	8.35	212.09
825' to 830'	8.40	213.36
830' to 835'	8.45	214.63
835' to 840'	8.50	215.90
840' to 845'	8.55	217.17
845' to 850'	8.60	218.44
850' to 855'	8.65	219.71
855' to 860'	8.70	220.98
860' to 865'	8.75	222.25
865' to 870'	8.80	223.52
870' to 875'	8.85	224.79
875' to 880'	8.90	226.06
880' to 885'	8.95	227.33
885' to 890'	9.00	228.60
890' to 895'	9.05	229.87
895' to 900'	9.10	231.14
900' to 905'	9.15	232.41
905' to 910'	9.20	233.68
910' to 915'	9.25	234.95
915' to 920'	9.30	236.22
920' to 925'	9.35	237.49
925' to 930'	9.40	238.76
930' to 935'	9.45	240.03
935' to 940'	9.50	241.30
940' to 945'	9.55	242.57
945' to 950'	9.60	243.84
950' to 955'	9.65	245.11
955' to 960'	9.70	246.38
960' to 965'	9.75	247.65
965' to 970'	9.80	248.92
970' to 975'	9.85	250.19
975' to 980'	9.90	251.46
980' to 985'	9.95	252.73
985' to 990'	10.00	254.00
990' to 995'	10.05	255.27
995' to 1000'	10.10	256.54

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### SANITARY SEWER STANDARD DETAIL

**REINFORCED CONCRETE PIPE MINIMUM DESIGN**

PIPE NOMINAL SIZE (INCHES)	D <sub>0.01</sub> (0.01 INCHES)	D <sub>0.01</sub> (0.01 INCHES)
24	3200	
27	3050	
30	3050	
33	3475	
36	3475	
42	3450	
48	3300	
54	3125	
24	3300	
27	3125	
30	3150	
33	3575	
36	3575	
42	3550	
48	3400	
54	3225	
60	3100	

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### SANITARY SEWER STANDARD DETAIL

**VITRIFIED CLAY PIPE (VCP) MINIMUM PIPE DESIGN ASTM C-700**

PIPE NOMINAL SIZE (INCHES)	MINIMUM THREE-EDGE BEARING STRENGTH (LB/FT)	MAXIMUM DEPTH OF COVER (FT)
4	2000	25
6	2000	25
8	2200	20
10	2400	18
12	2600	16
15	2900	15
18	3300	14
21	3850	14
24	4400	14
27	4700	13
30	5000	13
33	5500	13
36	6000	13
39	6500	13
42	7000	12

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### SANITARY SEWER STANDARD DETAIL

**MANHOLE TESTING**

Manhole Depth (feet)	Maximum Allowable Water Loss
≤ 8	One (1") inch over Five (5) minutes
≥ 8	One - Eighth (1/8") inch per vertical foot of depth over five (5) minutes

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