

Sanitary Sewer Design Computations

Year 2039						Line Road A				Table (A.1.1)			
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer	Upper Mh No	Lower Mh No			Incremental	Total	Q			Infiltration	Total	Q max
								Average	Peak Factor	Maximum			
								Name					
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	A	1	2	50.00	0.768	17.74	17.74	13.62	2.18	29.66	1.36	31.02	37.53
2	A	2	3	50	0.768	19.42	37.15	28.53	1.97	56.15	2.85	59.01	27.99
3	A	3	4	50	0.768	21.04	58.19	44.69	1.87	83.75	4.47	88.22	29.21
4	A	4	5	50	0.768	22.41	80.60	61.90	1.82	112.52	6.19	118.71	30.49
5	A	5	6	50	0.768	33.32	113.92	87.49	1.77	154.62	8.75	163.37	44.66
6	A	6	7	50	0.768	30.00	143.92	110.53	1.74	192.08	11.05	203.13	39.76
7	A	7	8	49	0.768	30.04	173.96	133.60	1.72	229.30	13.36	242.66	39.53
8	A	8	9	50	0.768	30.08	204.04	156.70	1.70	266.35	15.67	282.02	39.36
9	A	9	10	50	0.768	30.13	234.17	179.84	1.69	303.29	17.98	321.27	39.25
10	A	10	11	41	0.768	22.68	256.85	197.26	1.68	331.00	19.73	350.72	29.46
11	A	11	12	50	0.768	26.72	283.57	217.78	1.67	363.56	21.78	385.34	34.61
12	A	12	13	50	0.768	28.06	311.62	239.33	1.66	397.67	23.93	421.60	36.26
13	A	13	14	40	0.768	29.40	341.02	261.91	1.65	433.32	26.19	459.51	37.91
14	A	14	15	50	0.768	30.73	371.75	285.51	1.65	470.50	28.55	499.05	39.54
15	A	15	16	50	0.768	32.08	403.83	310.14	1.64	509.24	31.01	540.26	41.20
16	A	16	17	50	0.768	33.42	437.25	335.81	1.64	549.53	33.58	583.11	42.85
17	A	17	18	49.5	0.768	34.75	472.00	362.50	1.63	591.34	36.25	627.59	44.49
18	A	18	19	50	0.768	41.43	513.43	394.32	1.63	641.12	39.43	680.55	52.95
19	A	19	20	50	0.768	42.40	555.83	426.88	1.62	691.97	42.69	734.66	54.11
20	A	20	21	50	0.768	43.93	599.76	460.62	1.62	744.58	46.06	790.64	55.98
21	A	21	22	49.8	0.768	46.83	646.59	496.58	1.61	800.58	49.66	850.24	59.60
22	A	22	23	50	0.768	49.45	696.04	534.56	1.61	859.64	53.46	913.10	62.86
Design Assamptions and data													
1) Water consumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				
2) peak factor equation: tion =				1.5+2.5/	Q^0.5				8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum man nhole spacing=50m				
4) Minimum pipe diameter=				200	mm				10) Minimum depth of sewer				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				
									er =1.5m				

Sanitary Sewer Design Computations

Year 2039					Line Road A						Table (A.1.2)		
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer	Upper Mh No	Lower Mh No			Incremental	Total	Q			Infiltration	Total	Q max
								Average	Peak Factor	Maximum			
								Name	m	m³/d.donm			
1	2	3	4	5	6	7	8	9	10	11	12	13	14
23	A	23	24	50	0.768	53.29	749.33	575.49	1.60	923.20	57.55	980.75	67.65
24	A	24	25	50	0.768	55.25	804.58	617.92	1.60	989.02	61.79	1050.81	70.06
25	A	25	26	50	0.768	55.87	860.45	660.83	1.60	1055.50	66.08	1121.59	70.77
26	A	26	27	41.6	0.768	45.58	906.03	695.83	1.59	1109.69	69.58	1179.28	57.69
27	A	27	28	30.8	0.768	34.11	940.14	722.03	1.59	1150.22	72.20	1222.42	43.14
28	A	28	29	50	0.768	57.60	997.74	766.26	1.59	1218.60	76.63	1295.23	72.81
29	A	29	30	50	0.768	58.28	1056.02	811.02	1.59	1287.73	81.10	1368.83	73.61
30	A	30	31	50	0.768	58.81	1114.83	856.19	1.59	1357.44	85.62	1443.05	74.22
31	A	31	32	49.5	0.768	59.49	1174.32	901.88	1.58	1427.89	90.19	1518.08	75.03
32	A	32	33	50	0.768	63.91	1238.23	950.96	1.58	1503.54	95.10	1598.63	80.55
33	A	33	34	50	0.768	61.76	1299.99	998.39	1.58	1576.58	99.84	1676.42	77.79
34	A	34	35	43.6	0.768	54.00	1353.99	1039.86	1.58	1640.41	103.99	1744.39	67.97
35	A	35	36	50	0.768	50.39	1404.38	1078.56	1.58	1699.94	107.86	4129.74	2385.35
36	A	36	37	50	0.768	50.84	1455.22	1117.61	1.57	1759.99	111.76	4193.69	63.95
37	A	37	38	50	0.768	50.87	1506.09	1156.67	1.57	1820.04	115.67	4257.64	63.95
Design Assumptions and data													
1) Water comnsumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				
2) peak factor equation: tion =				1.5+2.5/	Q^0.5				8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum man nhole spacing=50				
4) Minimum pipe diameter=				200	mm				10) Minimum depth of sewer				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				
									er =1.5m				

Year 2039					Line Road A					Table (A.1.3)			
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer Name	Upper Mh No	Lower Mh No			Incremental	Total	Q			Infiltration	Total	Q max
								Average	Peak Factor	Maximum			
				m	m³/d.donm	dounm	dounm	m³/day		m³/day	m³/day	m³/day	m³/day
1	2	3	4	5	6	7	8	9	10	11	12	13	14
38	A	38	39	50.00	0.768	49.95	1556.06	1195.05	1.57	1879.01	119.51	4320.45	62.81
39	A	39	40	50	0.768	62.34	1618.40	1242.93	1.57	1952.53	124.29	4398.77	78.32
40	A	40	41	50	0.768	37.68	1656.08	1271.87	1.57	1996.96	127.19	4446.09	47.32
41	A	41	42	50	0.768	37.91	1693.99	1300.98	1.57	2041.65	130.10	4493.69	47.60
42	A	42	43	49.8	0.768	37.66	1731.65	1329.91	1.57	2086.03	132.99	4540.96	47.27
43	A	43	44	30.9	0.768	34.66	1766.31	1356.53	1.57	2126.87	135.65	4584.46	43.50
44	A	44	45	30.6	0.768	33.88	1800.19	1382.55	1.57	2166.77	138.25	4626.97	42.51
45	A	45	46	49.9	0.768	57.76	1857.95	1426.90	1.57	2234.79	142.69	4699.42	72.45
46	A	46	47	49.6	0.768	54.23	1912.18	1468.55	1.57	2298.63	146.86	4767.43	68.01
47	A	47	48	50	0.768	50.33	1962.51	1507.21	1.56	2357.87	150.72	4830.53	63.10
48	A	48	49	50	0.768	46.44	2008.95	1542.87	1.56	2412.51	154.29	4888.74	58.21
49	A	49	50	33.3	0.768	28.84	2037.79	1565.02	1.56	2446.43	156.50	4924.88	36.14
50	A	50	51	34.6	0.768	28.15	2065.94	1586.64	1.56	2479.54	158.66	4960.15	35.27
51	A	51	52	33.7	0.768	24.27	2090.21	1605.28	1.56	2508.09	160.53	4990.56	30.41
52	A	52	53	48	0.768	6.92	2097.13	1610.59	1.56	2516.22	161.06	6640.02	1649.46
53	A	53	54	47.8	0.768	5.68	2102.80	1614.95	1.56	2522.89	161.50	6647.13	7.11
54	A	54	55	49	0.768	3.30	2106.10	1617.49	1.56	2526.77	161.75	6651.26	4.13
Design Assamptions and data													
1) Water comnsumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				
2) peak factor equation:tion =				1.5+2.5/	Q^0.5				8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum manhole s spacing=50				
4) Minimum pipe diameter=				200	mm				10) Minimum depth of sewer				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				
									er =1.5m				

Sanitary Sewer Design Computations

Year 2039					Line Road A1					Table (A.2.1)			
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer	Upper Mh No	Lower Mh No			Incremental	Total	Q			Infiltration	Total	Q max
								Average	Peak Factor	Maximum			
Name			m	m³/d.donm	dounm	dounm	m³/day		m³/day	m³/day	m³/day	m³/day	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	A1	1	2	50.00	1.03392	29.85	29.85	30.86	1.95	60.18	3.09	63.26	37.53
2	A1	2	3	50	1.03392	23.56	53.40	55.21	1.84	101.40	5.52	106.92	43.65
3	A1	3	4	50	1.03392	24.48	77.88	80.52	1.78	143.21	8.05	151.27	44.35
4	A1	4	5	50	1.03392	22.47	100.35	103.75	1.75	181.09	10.38	191.47	40.20
5	A1	5	6	41.7	1.03392	19.45	119.80	123.86	1.72	213.61	12.39	226.00	34.53
6	A1	6	7	50	1.03392	13.58	133.37	137.90	1.71	236.20	13.79	249.99	23.99
7	A1	7	8	50	1.03392	16.24	149.61	154.69	1.70	263.12	15.47	278.59	28.60
8	A1	8	9	50	1.03392	11.04	160.66	166.10	1.69	281.38	16.61	297.99	19.40
9	A1	9	10	49.8	1.03392	11.82	172.47	178.32	1.69	300.86	17.83	318.70	20.71
10	A1	10	11	40	1.03392	10.94	183.41	189.63	1.68	318.88	18.96	337.84	19.14
11	A1	11	12	31.4	1.03392	5.98	189.39	195.82	1.68	328.71	19.58	348.29	10.45
12	A1	12	13	50	1.03392	8.65	198.04	204.76	1.67	342.91	20.48	363.39	15.10
13	A1	13	14	49.4	1.03392	5.60	203.64	210.55	1.67	352.10	21.05	373.15	9.76
14	A1	14	15	50	1.03392	6.76	210.40	217.53	1.67	363.17	21.75	384.93	11.77
15	A1	15	16	38.5	1.03392	5.30	215.69	223.01	1.67	371.85	22.30	394.15	9.22
16	A1	16	17	50	1.03392	7.98	223.68	231.26	1.66	384.91	23.13	408.04	13.89
17	A1	17	A36	50	1.03392	6.49	230.16	237.97	1.66	395.52	23.80	419.32	11.28
Design Assamptions and data													
1) Water comnsumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				
2) peak factor equation: tion =				1.5+2.5/	Q^0.5				8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum manhole sj spacing=50				
4) Minimum pipe diameter=				200	mm				10) Minimum depth of sewer				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				
									er =1.5m				

Sanitary Sewer Design Computations

Year 2039					Line Road A2					Table (A.3.1)			
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer	Upper Mh No	Lower Mh No			Incremental	Total	Q			Infiltration	Total	Q max
								Average	Peak Factor	Maximum			
Name			m	m³/d.donm	dounm	dounm	m³/day		m³/day	m³/day	m³/day	m³/day	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	A2	1	2	50.00	1.15	15.71	15.71	18.07	2.09	37.73	1.81	39.53	37.53
2	A2	2	3	50	1.15	18.02	33.73	38.79	1.90	73.76	3.88	77.64	38.10
3	A2	3	4	50	1.15	19.92	53.65	61.70	1.82	112.19	6.17	118.35	40.72
4	A2	4	5	50	1.15	21.80	75.45	86.77	1.77	153.44	8.68	162.12	43.76
5	A2	5	6	50	1.15	23.68	99.13	114.00	1.73	197.69	11.40	209.09	46.98
6	A2	6	7	41.5	1.15	21.12	120.25	138.29	1.71	236.83	13.83	250.66	41.57
7	A2	7	8	34.5	1.15	18.57	138.82	159.64	1.70	271.05	15.96	287.02	36.36
8	A2	8	9	50	1.15	30.09	168.91	194.25	1.68	326.21	19.42	345.64	58.62
9	A2	9	10	50	1.15	32.35	201.26	231.45	1.66	385.21	23.15	408.35	62.71
10	A2	10	11	50	1.15	34.70	235.96	271.36	1.65	448.21	27.14	475.35	67.00
11	A2	11	12	50	1.15	37.22	273.18	314.16	1.64	515.55	31.42	546.96	71.61
12	A2	12	13	50	1.15	39.91	313.09	360.05	1.63	587.52	36.01	623.53	76.56
13	A2	13	14	46	1.15	38.83	351.92	404.71	1.62	657.36	40.47	697.83	74.30
14	A2	14	15	50	1.15	40.81	392.73	451.64	1.62	730.59	45.16	775.75	77.93
15	A2	15	16	50	1.15	42.40	435.13	500.40	1.61	806.53	50.04	856.57	80.81
16	A2	16	17	50	1.15	44.11	479.24	551.13	1.61	885.38	55.11	940.49	83.93
17	A2	17	18	50	1.15	50.84	530.08	609.59	1.60	976.11	60.96	1037.07	96.58
18	A2	18	19	42	1.15	40.81	570.89	656.52	1.60	1048.84	65.65	1114.50	77.42
19	A2	19	20	30.5	1.15	28.74	599.63	689.58	1.60	1100.01	68.96	1168.97	54.47
20	A2	20	21	50	1.15	5.74	605.37	696.17	1.59	1110.22	69.62	1179.84	10.87
21	A2	21	22	50	1.15	7.80	613.17	705.14	1.59	1124.10	70.51	1194.61	14.78
22	A2	22	23	50	1.15	5.13	618.30	711.04	1.59	1133.23	71.10	1204.33	9.72
Design Assamptions and data													
1) Water comnsumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				
2) peak factor equation:tion =				1.5+2.5/Q^0.5					8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum manhole spacing=50				
4) Minimum pipe diameter=				200	mm				10) Minimum depth of sewer				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				
									er =1.5m				

Sanitary Sewer Design Computations

Year 2039					Line Road A2						Table (A.3.2)		
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer Name	Upper Mh No	Lower Mh No			Incremental	Total	Q			Infiltration	Total	Q max
								Average	Peak Factor	Maximum			
								m³/day		m³/day			
				m	m³/d.donm	dounm	dounm	m³/day		m³/day	m³/day	m³/day	m³/day
1	2	3	4	5	6	7	8	9	10	11	12	13	14
23	A2	23	24	50	1.15	6.73	625.03	718.78	1.59	1145.20	71.88	1217.08	12.75
24	A2	24	25	50	1.15	7.36	632.39	727.25	1.59	1158.29	72.72	1231.02	13.94
25	A2	25	26	48.5	1.15	6.35	638.74	734.55	1.59	1169.58	73.46	1243.04	12.02
26	A2	26	27	50	1.15	22.61	661.35	760.55	1.59	1209.77	76.06	1285.83	42.79
27	A2	27	28	50	1.15	22.73	684.08	786.69	1.59	1250.16	78.67	1328.83	43.00
28	A2	28	29	50	1.15	24.41	708.49	814.76	1.59	1293.51	81.48	1374.98	46.15
29	A2	29	30	50	1.15	38.33	746.82	858.84	1.59	1361.53	85.88	1447.42	72.43
30	A2	30	31	50	1.15	38.70	785.52	903.35	1.58	1430.16	90.33	1520.50	73.08
31	A2	31	32	50	1.15	38.78	824.30	947.95	1.58	1498.89	94.79	1593.69	73.19
32	A2	32	33	50	1.15	38.39	862.69	992.10	1.58	1566.89	99.21	1666.10	72.41
33	A2	33	34	50	1.15	35.64	898.33	1033.08	1.58	1629.98	103.31	1733.28	67.19
34	A2	34	35	50	1.15	23.18	921.51	1059.74	1.58	1670.99	105.97	1776.97	43.68
35	A2	35	36	33	1.15	22.18	943.69	1085.25	1.58	1710.23	108.52	1818.75	41.78
36	A2	36	37	49	1.15	10.35	954.04	1097.15	1.58	1728.53	109.71	2257.57	438.81
37	A2	37	38	50	1.15	8.36	962.40	1106.76	1.58	1743.31	110.68	2273.31	15.74
Design Assumptions and data													
1) Water comnsumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				
2) peak factor equation =				1.5+2.5/	Q^0.5				8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum manhole spacing=50				
4) Minimum pipe diameter=				200	mm				10) Minimum depth of sewer				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				
									er =1.5m				

Sanitary Sewer Design Computations

Year 2039					Line Road A2						Table (A.3.3)		
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer Name	Upper Mh No	Lower Mh No			Incremental	Total	Q			Infiltration	Total	Q max
								Average	Peak Factor	Maximum			
											dounm	dounm	m³/day
1	2	3	4	5	6	7	8	9	10	11	12	13	14
38	A2	38	39	40.00	1.15	7.65	970.05	1115.56	1.57	1756.84	111.56	2287.71	14.40
39	A2	39	40	48	1.15	8.68	978.73	1125.54	1.57	1772.18	112.55	2304.06	16.34
40	A2	40	A35	43	1.15	9.50	988.23	1136.46	1.57	1788.98	113.65	2321.94	17.89
Design Assamptions and data													
1) Water comnsumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				
2) peak factor equation: tion = 1.5+2.5/					Q^0.5				8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum man nhole spacing=50				
4) Minimum pipe diameter=				200	mm				10) Minimum depth of sewer				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				
									er =1.5m				

Sanitary Sewer Design Computations

Year 2039					Line Road B					Table (A.4.1)			
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer	Upper Mh No	Lower Mh No			Incremental	Total	Q			Infiltration	Total	Q max
								Average	Peak Factor	Maximum			
Name			m	m³/d.donm	dounm	dounm	m³/day		m³/day	m³/day	m³/day	m³/day	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	B	1	2	50.00	1.24	10.19	10.19	12.63	2.20	27.83	1.26	29.10	37.53
2	B	2	3	45	1.24	10.27	20.45	25.36	2.00	50.63	2.54	53.17	24.07
3	B	3	4	48.5	1.24	12.69	33.15	41.10	1.89	77.68	4.11	81.79	28.62
4	B	4	5	50	1.24	14.99	48.14	59.69	1.82	108.85	5.97	114.82	33.03
5	B	5	6	46	1.24	13.83	61.97	76.84	1.79	137.17	7.68	144.85	30.03
6	B	6	7	47.9	1.24	14.01	75.97	94.20	1.76	165.57	9.42	174.99	30.14
7	B	7	8	46	1.24	12.94	88.91	110.24	1.74	191.61	11.02	202.64	27.65
8	B	8	9	50	1.24	12.71	101.61	126.00	1.72	217.06	12.60	229.66	27.02
9	B	9	10	38.4	1.24	10.13	111.75	138.57	1.71	237.28	13.86	251.13	21.47
10	B	10	11	41	1.24	12.74	124.49	154.37	1.70	262.61	15.44	278.05	26.91
11	B	11	12	31.8	1.24	10.41	134.90	167.27	1.69	283.24	16.73	299.96	21.92
12	B	12	13	38.7	1.24	15.14	150.04	186.05	1.68	313.17	18.60	331.77	31.81
13	B	13	14	31.6	1.24	12.90	162.93	202.04	1.68	338.59	20.20	358.79	27.02
14	B	14	15	41	1.24	17.71	180.64	224.00	1.67	373.41	22.40	395.81	37.02
15	B	15	16	50	1.24	18.02	198.66	246.34	1.66	408.75	24.63	433.38	37.57
16	B	16	17	50	1.24	19.58	218.24	270.62	1.65	447.06	27.06	474.12	40.73
17	B	17	18	36.5	1.24	14.16	232.40	288.18	1.65	474.71	28.82	503.53	29.41
18	B	18	19	50	1.24	24.76	257.16	318.88	1.64	522.96	31.89	554.85	51.33
19	B	19	20	44	1.24	21.71	278.87	345.80	1.63	565.19	34.58	599.77	44.92
20	B	20	21	27	1.24	13.41	292.28	362.42	1.63	591.23	36.24	627.47	27.70
21	B	21	22	27.6	1.24	13.54	305.82	379.21	1.63	617.50	37.92	655.42	27.95
22	B	22	23	29	1.24	10.66	316.48	392.43	1.63	638.17	39.24	677.42	21.99
Design Assamptions and data													
1) Water comnsumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				
2) peak factor equation: tion =				1.5+2.5/	Q^0.5				8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum manhole sj spacing=50				
4) Minimum pipe diameter=				200	mm				10) Minimum depth of sewer				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				
									er =1.5m				

Sanitary Sewer Design Computations

Year 2039					Line Road B					Table (A.4.2)			
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer	Upper Mh No	Lower Mh No			Incremental	Total	Q			Infiltration	Total	Q max
								Average	Peak Factor	Maximum			
								m³/d/day		m³/day			
Name			m	m³/d.donm	dounm	dounm	m³/day		m³/day	m³/day	m³/day	m³/day	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
23	B	23	24	28	1.24	11.88	328.36	407.17	1.62	661.20	40.72	701.91	24.50
24	B	24	25	48	1.24	22.20	350.56	434.69	1.62	704.16	43.47	747.63	45.72
25	B	25	26	38	1.24	19.11	369.67	458.39	1.62	741.11	45.84	786.95	39.32
26	B	26	27	48	1.24	24.73	394.40	489.06	1.61	788.87	48.91	837.78	50.83
27	B	27	28	34.2	1.24	19.07	413.47	512.70	1.61	825.66	51.27	876.93	39.16
28	B	28	29	34.3	1.24	19.25	432.72	536.57	1.61	862.77	53.66	916.43	39.49
29	B	29	30	50	1.24	28.33	461.05	571.70	1.60	917.33	57.17	974.50	58.07
30	B	30	31	50	1.24	28.99	490.04	607.65	1.60	973.10	60.76	1033.87	59.37
31	B	31	32	43.6	1.24	25.68	515.72	639.49	1.60	1022.46	63.95	1086.41	52.54
32	B	32	33	32.8	1.24	19.63	535.35	663.83	1.60	1060.16	66.38	1126.55	40.14
33	B	33	34	32.6	1.24	19.31	554.66	687.78	1.60	1097.23	68.78	1166.01	39.46
34	B	34	35	31	1.24	18.22	572.88	710.37	1.59	1132.19	71.04	1203.23	37.22
35	B	35	36	31.2	1.24	17.38	590.26	731.92	1.59	1165.52	73.19	1238.71	35.49
36	B	36	37	31.3	1.24	17.19	607.45	753.24	1.59	1198.47	75.32	1273.79	35.08
37	B	37	38	40.2	1.24	17.42	624.87	774.84	1.59	1231.85	77.48	1309.33	35.54
Design Assumptions and data													
1) Water comnsumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				er =1.5m
2) peak factor equation: tion =				1.5+2.5/	Q^0.5				8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum manhole sj spacing=50				
4) Minimum pipe diameter=				200	mm				10) Minimum depth of sewer				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				

Sanitary Sewer Design Computations

Year 2039					Line Road B						Table (A.4.3)		
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer Name	Upper	Lower			Incremental	Total	Q			Infiltration	Total	Q max
		Mh No	Mh No					Average	Peak Factor	Maximum		Maximum	
						m	m³/d.donm	dounm	dounm	m³/day		m³/day	m³/day
1	2	3	4	5	6	7	8	9	10	11	12	13	14
38	C	38	39	40.00	1.24	16.63	641.50	795.46	1.59	1263.70	79.55	1343.25	33.92
39	C	39	40	40	1.24	16.66	658.16	816.12	1.59	1295.60	81.61	1377.21	33.96
40	C	40	41	49	1.24	20.64	678.80	841.71	1.59	1335.10	84.17	1419.27	42.06
41	C	41	42	34.7	1.24	15.68	694.48	861.16	1.59	1365.10	86.12	1451.21	31.94
42	C	42	43	33	1.24	13.79	708.27	878.25	1.58	1391.47	87.83	1479.30	28.08
43	C	43	44	50	1.24	16.91	725.18	899.22	1.58	1423.80	89.92	1513.72	34.43
44	C	44	45	50	1.24	15.40	740.58	918.32	1.58	1453.24	91.83	1545.07	31.35
45	C	45	46	50	1.24	14.48	755.06	936.28	1.58	1480.91	93.63	1574.54	29.47
46	C	46	47	50	1.24	13.61	768.67	953.15	1.58	1506.90	95.31	1602.22	27.68
47	C	47	48	47.5	1.24	11.43	780.10	967.32	1.58	1528.73	96.73	1625.46	23.25
48	C	48	A52	39.6	1.24	7.54	787.64	976.67	1.58	1543.13	97.67	1640.80	15.33
Design Assamptions and data													
1) Water comnsumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				
2) peak factor equation:tion =				1.5+2.5/	Q^0.5				8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum manhole s spacing=50				
4) Minimum pipe diameter=				200	mm				10) Minimum depth of sewer				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				
												er =1.5m	

Sanitary Sewer Design Computations

Year 2039						Line C					Table (A.5.1)		
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer Name	Upper Mh No	Lower Mh No			Incremental	Total	Q			Infiltration	Total	Q max
								Average	Peak Factor	Maximum			
								m³/day		m³/day			
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	C1	1	2	50.0	1.92	36.84	36.84	70.74	1.80	127.13	7.07	134.20	34.79
2	C1	2	3	50.0	1.92	12.71	49.55	95.13	1.76	167.09	9.51	176.60	42.40
3	C1	3	4	32.5	1.92	10.22	59.77	114.75	1.73	198.91	11.48	210.38	33.78
4	C1	4	5	37.3	1.92	12.81	72.58	139.35	1.71	238.54	13.94	252.48	42.09
5	C1	5	6	35.3	1.92	13.32	85.90	164.93	1.69	279.50	16.49	295.99	43.52
6	C1	6	7	36.6	1.92	9.66	95.56	183.47	1.68	309.07	18.35	327.42	31.43
7	C1	7	8	31.3	1.92	9.14	104.70	201.03	1.68	336.98	20.10	357.09	29.66
8	C1	8	9	31.7	1.92	10.04	114.75	220.31	1.67	367.57	22.03	389.60	32.52
9	C1	9	10	40.8	1.92	20.86	135.61	260.37	1.65	430.90	26.04	456.93	67.33
10	C1	10	11	50.0	1.92	41.06	176.67	339.20	1.64	554.85	33.92	588.77	131.84
11	C1	11	12	36.9	1.92	38.70	215.37	413.50	1.62	671.09	41.35	712.44	123.67
12	C1	12	13	50.0	1.92	53.10	268.47	515.46	1.61	829.94	51.55	881.49	169.05
13	C1	13	14	50.0	1.92	53.97	322.44	619.08	1.60	990.82	61.91	1052.73	171.24
14	C1	14	15	50.0	1.92	58.28	380.72	730.97	1.59	1164.05	73.10	1237.15	184.42
15	C1	15	16	50.0	1.92	68.84	449.56	863.15	1.59	1368.17	86.31	1454.49	217.34
16	C1	16	17	50.0	1.92	66.88	516.43	991.55	1.58	1566.05	99.15	1665.20	210.71
17	C1	17	18	44.8	1.92	70.10	586.53	1126.15	1.57	1773.11	112.61	1885.73	220.53
18	C1	18	19	46.6	1.92	73.53	660.07	1267.33	1.57	1989.99	126.73	2116.72	230.99
19	C1	19	20	50.0	1.92	76.34	736.40	1413.89	1.57	2214.84	141.39	2356.23	239.51
20	C1	20	21	50.0	1.92	73.77	810.17	1555.53	1.56	2431.90	155.55	2587.45	231.22
21	C1	21	22	50.0	1.92	75.20	885.37	1699.91	1.56	2652.94	169.99	2822.93	235.48
22	C1	22	23	50.0	1.92	71.46	956.83	1837.10	1.56	2862.81	183.71	3046.52	223.59

Design Assamptions and data

1) Water comnsumption is 0.12
2) peak factor equation:tion = 1.5+2.5/
3) Infiltration is equal 10
4) Minimum pipe diameter= 200
5) Minimum velocity Vmin = 0.6
6) Maximum velocity Vmax = 3

m3/c.d which 80% return to sewer
Q^0.5
% of the Qavg
mm
m/sec
m/sec

7) Minimum slope Smin =5%
8) Maximum slope Smax =15%
9) Maximum manhole spacing = 50 m
10) Minimum depth of sewerer =1.5m
11) Design depth of flow h/d<0.5
12) Maining coefficient n=0.01

Sanitary Sewer Design Computations

Year 2039						Line C				Table (A.5.2)			
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer Name	Upper Mh No	Lower Mh No			Incremental	Total	Q			Infiltration	Total	Q max
								Average	Peak Factor	Maximum			
								m³/day		m³/day			
1	2	3	4	5	6	7	8	9	10	11	12	13	14
23	C1	23	24	39.5	1.92	63.87	1020.69	1959.73	1.56	3050.27	195.97	3246.25	199.73
24	C1	24	25	38.8	1.92	58.04	1078.74	2071.18	1.55	3220.54	207.12	3427.66	181.42
25	C1	25	26	38.0	1.92	61.71	1140.45	2189.67	1.55	3401.49	218.97	3620.45	192.79
26	C1	26	27	50.0	1.92	70.25	1210.71	2324.55	1.55	3607.36	232.46	3839.82	219.37
27	C1	27	28	50.0	1.92	68.35	1279.06	2455.79	1.55	3807.57	245.58	4053.15	213.33
28	C1	28	29	50.0	1.92	73.74	1352.80	2597.37	1.55	4023.47	259.74	4283.20	230.06
29	C1	29	30	50.0	1.92	67.69	1420.49	2727.34	1.55	4221.57	272.73	4494.30	211.10
30	C1	30	31	50.0	1.92	66.09	1486.58	2854.24	1.55	4414.93	285.42	4700.35	206.05
31	C1	31	32	50.0	1.92	71.78	1558.36	2992.06	1.55	4624.84	299.21	4924.04	223.69
32	C1	32	33	50.0	1.92	75.47	1633.83	3136.96	1.54	4845.46	313.70	5159.15	235.11
33	C1	33	34	50.0	1.92	48.83	1682.67	3230.72	1.54	4988.18	323.07	5311.25	152.10
34	C1	34	35	50.0	1.92	188.42	1871.09	3592.50	1.54	5538.59	359.25	5897.84	586.58
Design Assumptions and data													
1) Water consumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				
2) peak factor equation =				1.5+2.5/	Q^0.5				8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum manhole spacing = 50 m				
4) Minimum pipe diameter=				200	mm				10) Minimum depth of sewer =1.5m				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				

Sanitary Sewer Design Computations

Year 2039					Line C					Table (A.5.3)			
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer	Upper Mh No	Lower Mh No			Incremental	Total	Q			Infiltration	Total	Q max
								Average	Peak Factor	Maximum			
Name			m	m³/d.donm	dounm	dounm	m³/day		m³/day	m³/day	m³/day	m³/day	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
35	C	35	36	50.0	1.92	23.70	1894.80	3638.01	1.54	5607.80	363.80	7132.18	1234.35
36	C	35	37	43.9	1.92	17.43	1912.23	3671.48	1.54	5658.69	367.15	7186.42	54.24
37	C	35	38	50.0	1.92	31.35	1943.57	3731.66	1.54	5750.21	373.17	7283.96	97.54
38	C	35	39	50.0	1.92	37.90	1981.47	3804.42	1.54	5860.83	380.44	7401.86	117.90
39	C	35	40	50.0	1.92	40.27	2021.74	3881.73	1.54	5978.36	388.17	7527.11	125.26
40	C	35	41	50.0	1.92	40.71	2062.45	3959.90	1.54	6097.18	395.99	7653.75	126.63
41	C	35	42	50.0	1.92	40.71	2103.16	4038.07	1.54	6215.96	403.81	7780.35	126.60
42	C	35	43	50.0	1.92	41.05	2144.21	4116.87	1.54	6335.72	411.69	7907.99	127.64
43	C	35	44	50.0	1.92	41.42	2185.63	4196.40	1.54	6456.55	419.64	8036.77	128.79
44	C	35	45	50.0	1.92	42.15	2227.77	4277.33	1.54	6579.49	427.73	8167.80	131.03
Design Assumptions and data													
1) Water comnsumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				
2) peak factor equation =				1.5+2.5/	Q^0.5				8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum manhole spacing = 50 m				
4) Minimum pipe diameter=				200	mm				10) Minimum depth of sewer =1.5m				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				

Sanitary Sewer Design Computations

Year 2039					Line C				Table (A.5.4)					
Line No	Location			Length	unit sewage	Tributary area		Flow Rates						
	Street Sewer Name	Upper Mh No	Lower Mh No			Incremental	Total	Q	Peak Factor	Maximum	Infiltration	Total	Q max	
							Average							
				m		m ³ /d.donm	dounm	dounm						m ³ /day
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
45	C	45	46	50.0	1.92	42.97	2270.75	4359.84	1.54	6704.83	435.98	8309.39	141.59	
46	C	46	47	50.0	1.92	44.11	2314.86	4444.53	1.54	6833.47	444.45	8446.50	137.11	
47	C	47	48	50.0	1.92	45.95	2360.81	4532.75	1.54	6967.45	453.28	8589.30	142.80	
48	C	48	49	50.0	1.92	46.76	2407.57	4622.54	1.54	7103.79	462.25	8734.62	145.32	
49	C	49	50	50.0	1.92	46.55	2454.13	4711.93	1.54	7239.50	471.19	8879.27	144.65	
50	C	50	51	50.0	1.92	46.23	2500.36	4800.70	1.54	7374.26	480.07	9022.91	143.64	
51	C	51	52	50.0	1.92	45.01	2545.37	4887.12	1.54	7505.45	488.71	9162.74	139.83	
52	C	52	53	50.0	1.92	44.65	2590.03	4972.86	1.54	7635.58	497.29	9301.45	138.71	
53	C	53	54	50.0	1.92	43.81	2633.84	5056.98	1.54	7763.25	505.70	9437.53	136.08	
54	C	54	55	38.9	1.92	33.52	2667.36	5121.33	1.53	7860.91	512.13	9541.62	104.10	
55	C	55	56	38.3	1.92	32.12	2699.48	5183.00	1.53	7954.48	518.30	9641.36	99.74	
56	C	56	57	50.0	1.92	34.66	2734.14	5249.55	1.53	8055.45	524.95	9748.99	107.62	
57	C	57	58	50.0	1.92	33.85	2767.98	5314.53	1.53	8154.05	531.45	9854.08	105.09	
58	C	58	59	50.0	1.92	33.27	2801.26	5378.42	1.53	8250.97	537.84	9957.39	103.31	
59	C	59	60	50.0	1.92	32.70	2833.96	5441.20	1.53	8346.22	544.12	10058.92	101.53	
Design Assumptions and data														
1) Water consumption is 0.12 m3/c.d which 80% return to sewer 2) peak factor equation = 1.5+2.5/Q^0.5 3) Infiltration is equal 10 % of the Qavg 4) Minimum pipe diameter= 200 mm 5) Minimum velocity Vmin = 0.6 m/sec 6) Maximum velocity Vmax = 3 m/sec 7) Minimum slope Smin =5% 8) Maximum slope Smax =15% 9) Maximum manhole spacing = 50 m 10) Minimum depth of sewer =1.5m 11) Design depth of flow h/d<0.5 12) Maining coefficient n=0.01														

Sanitary Sewer Design Computations

Sanitary Sewer Design Computations

Year 2039					Line C					Table (A.5.5)			
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer Name	Upper	Lower			Incremental	Total	Q			Infiltration	Total	Q max
		Mh No	Mh No					Average	Peak Factor	Maximum		Maximum	
								m³/day		m³/day	m³/day	m³/day	m³/day
						m	m³/d.donm	dounm	dounm				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
60	C	60	61	50	1.92	31.61	2865.57	5501.89	1.53	8438.27	550.19	10149.04	90.12
61	C	61	62	50	1.92	166.41	3031.98	5821.39	1.53	8922.84	582.14	10665.55	516.51
Design Assumptions and data													
1) Water comnsumption is 0.12 m3/c.d which 80% return to sewer 7) Minimum slope Smin =5% 2) peak factor equation tion = 1.5+2.5/Q^0.5 8) Maximum slope Smax =15% 3) Infiltration is equal 10 % of the Qavg 9) Maximum manhole spacing = 50 m 4) Minimum pipe diameter= 200 mm 10) Minimum depth of sewer =1.5m 5) Minimum velocity Vmin = 0.6 m/sec 11) Design depth of flow h/d<0.5 6) Maximum velocity Vmax = 3 m/sec 12) Maining coefficient n=0.01													

Sanitary Sewer Design Computations

Year 2039						Line C1				Table (A.6.1)			
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer	Upper Mh No	Lower Mh No			Incremental	Total	Q			Infiltration	Total	Q max
								Average	Peak Factor	Maximum			
Name			m	m ³ /d.donm	dounm	dounm	m ³ /day		m ³ /day	m ³ /day	m ³ /day	m ³ /day	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	C1	1	2	50.0	1.92	8.74	8.74	16.78	2.11	35.41	1.68	37.09	25.74
2	C1	2	3	46.1	1.92	6.64	15.38	29.53	1.96	57.89	2.95	60.84	23.75
3	C1	3	4	50.0	1.92	8.86	24.24	46.54	1.87	86.86	4.65	91.52	30.68
4	C1	4	5	50.0	1.92	9.58	33.82	64.93	1.81	117.54	6.49	124.03	32.51
5	C1	5	6	50.0	1.92	9.22	43.03	82.62	1.78	146.66	8.26	154.92	30.89
6	C1	6	7	50.1	1.92	10.68	53.72	103.13	1.75	180.09	10.31	190.40	35.48
7	C1	7	8	37.3	1.92	7.49	61.21	117.52	1.73	203.38	11.75	215.13	24.73
8	C1	8	9	43.2	1.92	8.37	69.58	133.59	1.72	229.29	13.36	242.65	27.51
9	C1	9	10	50.0	1.92	11.06	80.65	154.84	1.70	263.37	15.48	278.85	36.20
10	C1	10	11	50.0	1.92	9.88	90.52	173.80	1.69	293.66	17.38	311.04	32.19
11	C1	11	12	45.9	1.92	9.37	99.89	191.79	1.68	322.31	19.18	341.49	30.45
12	C1	12	13	39.2	1.92	8.98	108.87	209.03	1.67	349.69	20.90	370.59	29.10
13	C1	13	14	50.0	1.92	11.27	120.14	230.68	1.66	383.98	23.07	407.05	36.46
14	C1	14	15	50.0	1.92	13.24	133.38	256.09	1.66	424.15	25.61	449.76	42.70
15	C1	15	16	40.6	1.92	15.06	148.44	285.01	1.65	469.73	28.50	498.23	48.47
16	C1	16	17	49.0	1.92	20.10	168.54	323.60	1.64	530.37	32.36	562.73	64.50
17	C1	17	18	39.8	1.92	13.75	182.29	350.00	1.63	571.78	35.00	606.78	44.05
18	C1	18	19	40.2	1.92	11.55	193.85	372.18	1.63	606.51	37.22	643.72	36.95
19	C1	19	20	50.0	1.92	11.43	205.28	394.13	1.63	640.83	39.41	680.24	36.52
20	C1	20	21	50.0	1.92	9.71	214.99	412.78	1.62	669.96	41.28	711.24	31.00
21	C1	21	22	50.0	1.92	7.47	222.46	427.13	1.62	692.36	42.71	735.07	23.83
22	C1	22	23	47.5	1.92	5.04	227.50	436.80	1.62	707.45	43.68	751.13	16.06
Design Assamptions and data													
1) Water comnsumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				
2) peak factor equation tion =				1.5+2.5/	Q^0.5				8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum manhole spacing = 50 m				
4) Minimum pipe diameter=				200	mm				10) Minimum depth o of sewer = 1.5m				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				

Sanitary Sewer Design Computations

Year 2039				Line C 1				Table (A.6.2)					
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer Name	Upper Mh No	Lower Mh No			Incremental	Total	Q			Infiltration	Total	Q max
								Average	Peak Factor	Maximum	m³/day	m³/day	m³/day
								m³/day		m³/day			
1	2	3	4	5	6	7	8	9	10	11	12	13	14
23	C1	23	24	50.0	1.92	3.29	230.79	443.12	1.62	717.30	44.31	761.61	10.48
24	C1	24	25	47.9	1.92	2.61	233.40	448.13	1.62	725.12	44.81	769.94	8.32
25	C1	25	26	50.0	1.92	3.11	236.52	454.11	1.62	734.44	45.41	779.85	9.92
26	C1	26	27	37.5	1.92	3.03	239.55	459.93	1.62	743.51	45.99	789.50	9.65
27	C1	27	28	37.5	1.92	3.44	242.99	466.53	1.62	753.80	46.65	800.45	10.95
28	C1	28	29	35.7	1.92	3.94	246.93	474.11	1.61	765.59	47.41	813.00	12.55
29	C1	29	30	50.0	1.92	5.93	252.86	485.49	1.61	783.32	48.55	831.87	18.86
30	C1	30	31	39.6	1.92	4.55	257.41	494.22	1.61	796.91	49.42	846.33	14.46
31	C1	31	32	49.0	1.92	5.08	262.48	503.97	1.61	812.08	50.40	862.48	16.15
32	C1	32	33	50.0	1.92	4.33	266.82	512.29	1.61	825.02	51.23	876.25	13.77
33	C1	33	34	39.1	1.92	2.56	269.38	517.21	1.61	832.67	51.72	884.39	8.14
34	C1	34	35	50.0	1.92	2.85	272.23	522.67	1.61	841.17	52.27	893.43	9.04
35	C1	35	36	30.5	1.92	1.71	273.94	525.96	1.61	846.27	52.60	898.86	5.43
36	C1	36	37	50.0	1.92	1.72	275.66	529.26	1.61	851.41	52.93	904.34	5.47
37	C1	37	38	50.0	1.92	2.79	278.45	534.62	1.61	859.73	53.46	913.20	8.86
Design Assumptions and data													
1) Water comnsumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				
2) peak factor equation =				1.5+2.5/	Q^0.5				8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum manhole spacing = 50 m				
4) Minimum pipe diameter=				200	mm				10) Minimum depth o of sewer = 1.5m				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				

Sanitary Sewer Design Computations

Year 2039					Line C 1				Table (A.6.3)				
Line No	Location			Le	unit sewage	Tributary area	Flow Rates						
	Street Sewer	Upper Mh No	Lower Mh No			Incremental	Total	Q	Peak Factor	Maximum	Infiltration	Total	Q max
						Average							
				Name	m	m ³ /d.donm	dounm	dounm					
1	2	3	4	5	6	7	8	9	10	11	12	13	14
38	C1	38	39	50.0	1.92	2.50	280.95	539.42	1.61	867.20	53.94	921.14	7.95
39	C1	39	40	42.0	1.92	1.89	282.84	543.05	1.61	872.84	54.31	927.14	6.00
40	C1	40	41	50.0	1.92	2.28	285.11	547.42	1.61	879.62	54.74	934.37	7.22
41	C1	41	42	50.0	1.92	2.84	287.95	552.87	1.61	888.09	55.29	943.37	9.01
42	C1	42	43	50.0	1.92	3.24	291.19	559.09	1.61	897.75	55.91	953.65	10.28
43	C1	43	44	34.5	1.92	2.66	293.85	564.19	1.61	905.67	56.42	962.09	8.43
44	C1	44	45	40.7	1.92	3.66	297.51	571.22	1.60	916.58	57.12	973.70	11.61
45	C1	45	46	50.0	1.92	5.02	302.53	580.86	1.60	931.54	58.09	989.63	15.93
46	C1	46	47	50.0	1.92	5.69	308.22	591.79	1.60	948.50	59.18	1007.68	18.05
47	C1	47	48	50.0	1.92	6.09	314.31	603.48	1.60	966.64	60.35	1026.98	19.30
48	C1	48	49	50.0	1.92	6.27	320.59	615.52	1.60	985.31	61.55	1046.86	19.88
49	C1	49	50	50.0	1.92	5.70	326.29	626.47	1.60	1002.27	62.65	1064.92	18.06
50	C1	50	51	47.8	1.92	5.57	331.85	637.16	1.60	1018.84	63.72	1082.56	17.64
51	C1	51	52	43.6	1.92	5.82	337.67	648.33	1.60	1036.16	64.83	1100.99	18.43
52	C1	52	53	50.0	1.92	5.10	342.77	658.12	1.60	1051.31	65.81	1117.12	16.13
Design Assumptions and data													
1) Water comnsumption is 0.12 m3/c.d which 80% return to sewer 7) Minimum slope Smin =5% 2) peak factor equation tion = 1.5+2.5/Q^0.5 8) Maximum slope Smax =15% 3) Infiltration is equal 10 % of the Qavg 9) Maximum manhole spacing = 50 m 4) Minimum pipe diameter= 200 mm 10) Minimum depth o of sewer = 1.5m 5) Minimum velocity Vmin = 0.6 m/sec 11) Design depth of flow h/d<0.5 6) Maximum velocity Vmax = 3 m/sec 12) Maining coefficient n=0.01													

Sanitary Sewer Design Computations

Year 2039				Line C 1				Table (A.6.4)					
Line No	Location		Lower Mh No	Slope	unit sewage	Tributary area	Total	Flow Rates					
	Street Sewer	Upper Mh No				Incremental		Average	Peak Factor	Maximum	Infiltration	Total	Q max
			Name	m		m³/d.donm	dounm						
	1	2	3	4		5	6	7	8	9	10	11	12
53	C1	53	54	50.0	1.92	4.03	346.80	665.86	1.60	1063.29	66.59	1129.88	12.76
54	C1	54	55	37.9	1.92	2.30	349.10	670.26	1.60	1070.12	67.03	1137.15	7.27
55	C1	55	56	50.0	1.92	2.27	351.37	674.63	1.60	1076.88	67.46	1144.34	7.19
56	C1	56	57	50.0	1.92	2.88	354.25	680.16	1.60	1085.43	68.02	1153.45	9.11
57	C1	57	58	48.1	1.92	2.25	356.50	684.48	1.60	1092.13	68.45	1160.58	7.13
Design Assumptions and data													
1) Water comnsumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				
2) peak factor equation =				1.5+2.5/	Q^0.5				8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum manhole spacing = 50 m				
4) Minimum pipe diameter=				200	mm				10) Minimum depth o of sewer = 1.5m				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				

Sanitary Sewer Design Computations

Year 2039					Line Road D					Table (A.7.1)			
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer Name	Upper Mh No	Lower Mh No			Incremental	Total	Q			Infiltration	Total	Q max
								Average	Peak Factor	Maximum		Maximum	
						dounm	dounm	m³/day		m³/day	m³/day	m³/day	m³/day
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	D	1	2	50.00	2.11	21.49	21.49	45.34	1.87	84.85	4.53	89.38	37.53
2	D	2	3	27	2.11	14.00	35.49	74.88	1.79	133.96	7.49	141.45	52.06
3	D	3	4	41.3	2.11	21.71	57.20	120.70	1.73	208.51	12.07	220.58	79.13
4	D	4	5	21.9	2.11	19.30	76.50	161.42	1.70	273.89	16.14	290.04	69.45
5	D	5	6	50.1	2.11	26.28	102.78	216.87	1.67	362.12	21.69	383.81	93.77
6	D	6	7	39.5	2.11	25.45	128.23	270.57	1.65	446.98	27.06	474.04	90.23
7	D	7	8	50.1	2.11	33.55	161.78	341.36	1.64	558.23	34.14	592.37	118.33
8	D	8	9	50.2	2.11	27.98	189.76	400.40	1.62	650.63	40.04	690.67	98.30
9	D	9	10	50	2.11	39.62	229.38	483.99	1.61	780.98	48.40	829.38	138.71
10	D	10	11	50.1	2.11	67.49	296.87	626.39	1.60	1002.16	62.64	1064.80	235.42
11	D	11	12	50.1	2.11	75.71	372.58	786.14	1.59	1249.31	78.61	1327.92	263.12
12	D	12	13	31.6	2.11	46.03	418.61	883.26	1.58	1399.20	88.33	1487.52	159.60
13	D	13	14	37.9	2.11	35.00	453.61	957.11	1.58	1513.02	95.71	1608.73	121.20
14	D	14	15	50	2.11	49.38	502.99	1061.31	1.58	1673.40	106.13	1779.54	170.81
15	D	15	16	50	2.11	58.21	561.20	1184.13	1.57	1862.22	118.41	1980.64	201.10
16	D	16	17	50	2.11	37.49	598.69	1263.23	1.57	1983.71	126.32	2110.03	129.39
17	D	17	18	50	2.11	34.08	632.77	1335.14	1.57	2094.07	133.51	2227.58	117.55
18	D	18	19	50.1	2.11	30.06	662.83	1398.57	1.57	2191.35	139.86	2331.21	103.63
19	D	19	20	50	2.11	14.02	676.85	1428.16	1.57	2236.72	142.82	2379.53	48.33
20	D	20	21	50	2.11	6.31	683.16	1441.47	1.57	2257.13	144.15	2401.28	21.74
21	D	21	22	50	2.11	4.31	687.47	1450.57	1.57	2271.07	145.06	2416.12	14.85
22	D	22	23	50	2.11	5.30	692.77	1461.75	1.57	2288.21	146.18	2434.38	18.26
Design Assamptions and data													
1) Water comnsumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				
2) peak factor equation:tion =				1.5+2.5/	Q^0.5				8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum manhole s spacing=50				
4) Minimum pipe diameter=				200	mm				10) Minimum depth of sewer				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				
										er =1.5m			

Year 2039					Line Road D					Table (A.7.2)			
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer Name	Upper Mh No	Lower Mh No			Incremental	Total	Q			Infiltration	Total	Q max
								Average	Peak Factor	Maximum			
								m³/day		m³/day			
1	2	3	4	5	6	7	8	9	10	11	12	13	14
23	D	23	24	50	2.11	10.23	703.00	1483.33	1.56	2321.28	148.33	2469.61	35.23
24	D	24	25	50	2.11	17.92	720.92	1521.14	1.56	2379.21	152.11	2531.33	61.71
25	D	25	26	50.1	2.11	12.64	733.56	1547.81	1.56	2420.07	154.78	2574.85	43.52
26	D	26	27	49.5	2.11	21.40	754.96	1592.96	1.56	2489.23	159.30	2648.52	73.67
27	D	27	28	50.5	2.11	21.56	776.52	1638.46	1.56	2558.88	163.85	2722.72	74.20
28	D	28	29	50	2.11	21.89	798.41	1684.64	1.56	2629.58	168.46	2798.04	75.32
29	D	29	30	50	2.11	26.23	824.64	1739.99	1.56	2714.27	174.00	2888.26	90.22
30	D	30	31	50.1	2.11	26.34	850.98	1795.57	1.56	2799.28	179.56	2978.84	90.58
31	D	31	32	50	2.11	24.48	875.46	1847.22	1.56	2878.28	184.72	3063.00	84.16
32	D	32	33	50	2.11	28.49	903.95	1907.33	1.56	2970.18	190.73	3160.91	97.92
33	D	33	34	50.1	2.11	30.30	934.25	1971.27	1.56	3067.90	197.13	3265.03	104.11
34	D	34	35	50	2.11	31.84	966.09	2038.45	1.56	3170.55	203.85	3374.40	109.37
35	D	35	36	50.1	2.11	33.32	999.41	2108.76	1.55	3277.94	210.88	3488.81	114.42
36	D	36	37	50	2.11	28.28	1027.69	2168.43	1.55	3369.06	216.84	3585.90	97.09
37	D	37	38	50.1	2.11	29.27	1056.96	2230.19	1.55	3463.34	223.02	3686.36	100.46
Design Assumptions and data													
1) Water consumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				
2) peak factor equation:tion =				1.5+2.5/	Q^0.5				8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum manhole s spacing=50				
4) Minimum pipe diameter=				200	mm				10) Minimum depth of sewer				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				
									er =1.5m				

Sanitary Sewer Design Computations

Year 2039					Line Road D					Table (A.7.3)			
Line No	Location			Length	unit sewage	Tributary area		Flow Rates					
	Street Sewer Name	Upper Mh No	Lower Mh No			Incremental	Total	Q			Infiltration	Total	Q max
								Average	Peak Factor	Maximum			
								m³/d.day		m³/day			
1	2	3	4	5	6	7	8	9	10	11	12	13	14
38	D	38	39	50	2.11	36.28	1093.24	2306.74	1.55	3580.18	230.67	3810.85	124.49
39	D	39	40	50	2.11	20.18	1113.42	2349.31	1.55	3645.14	234.93	3880.07	69.22
40	D	40	41	50	2.11	37.21	1150.63	2427.83	1.55	3764.92	242.78	4007.70	127.63
41	D	41	42	50	2.11	28.31	1178.94	2487.56	1.55	3856.02	248.76	4104.78	97.08
42	D	42	43	50	2.11	28.39	1207.33	2547.46	1.55	3947.37	254.75	4202.12	97.34
43	D	43	44	50	2.11	25.45	1232.78	2601.16	1.55	4029.24	260.12	4289.36	87.24
44	D	44	45	50	2.11	34.96	1267.74	2674.93	1.55	4141.69	267.49	4409.18	119.82
45	D	45	46	50	2.11	27.04	1294.77	2731.97	1.55	4228.63	273.20	4501.82	92.64
46	D	46	47	50	2.11	32.21	1326.98	2799.93	1.55	4332.18	279.99	4612.18	110.35
47	D	47	48	50	2.11	37.98	1364.96	2880.07	1.55	4454.27	288.01	4742.28	130.10
48	D	48	49	50	2.11	26.87	1391.83	2936.77	1.55	4540.63	293.68	4834.30	92.03
49	D	49	50	50	2.11	28.53	1420.37	2996.97	1.55	4632.32	299.70	4932.01	97.71
50	D	50	51	50	2.11	23.85	1444.22	3047.29	1.55	4708.95	304.73	5013.68	81.66
Design Assamptions and data													
1) Water comnsumption is				0.12	m3/c.d which 80% return to sewer				7) Minimum slope Smin =5%				
2) peak factor equation:tion =				1.5+2.5/	Q^0.5				8) Maximum slope Smax =15%				
3) Infiltration is equal				10	% of the Qavg				9) Maximum manhole s spacing=50				
4) Minimum pipe diameter=				200	mm				10) Minimum depth of sewer				
5) Minimum velocity Vmin =				0.6	m/sec				11) Design depth of flow h/d<0.5				
6) Maximum velocity Vmax =				3	m/sec				12) Maining coefficient n=0.01				
									er =1.5m				