

THE GOVERNMENT OF THE REPUBLIC OF INDONESIA

THE STUDY ON URBAN DRAINAGE
AND
WASTEWATER DISPOSAL PROJECT
IN
THE CITY OF JAKARTA
DATA BOOK

MARCH 1991

JAPAN INTERNATIONAL COOPERATION AGENCY

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国際協力事業団

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*I. COMPUTATION OF SEWER DESIGN
FOR PLUIT HOUSING ESTATE*

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line					
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Sewage	Infil.	Total	Diameter(mm)	Slope(%o)	V (m/s)	Cap.(m ³ /s)
1	(2-1)	75		0.7		29.1		29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
(2-1)	(3-1)	110	185	0.0	0.7	29.1		29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
2	(3-1)	90		0.9		37.4		37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
(3-1)	(4-1)	50	325	0.0	1.6	66.4		66.4	6.10	0.0047	0.0001	0.0048	150	3	0.614	0.011
3	(4-1)	150		1.4		58.1		58.1	6.23	0.0042	0.0001	0.0043	150	3	0.614	0.011
(4-1)	(5-1)	200	675	0.0	3.0	124.5		124.5	5.54	0.0080	0.0001	0.0081	200	3	0.743	0.023
4	(5-1)	80		0.9		37.4		37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
(5-1)	5	40	795	0.0	3.9	161.9		161.9	5.32	0.0100	0.0002	0.0102	200	3	0.743	0.023
5	11	200	995	2.2	6.1	253.2		253.2	4.97	0.0146	0.0003	0.0149	250	2.8	0.833	0.041
6	(7-1)	140		0.8		33.2		33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
(7-1)	(8-1)	50	190	0.0	0.8	33.2		33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
7	(8-1)	100		1.1		45.7		45.7	6.47	0.0034	0.0001	0.0035	150	3	0.614	0.011
(8-1)	(9-1)	85	375	0.0	1.9	78.9		78.9	5.94	0.0054	0.0001	0.0055	200	3	0.743	0.023
8	(9-1)	105		1.4		58.1		58.1	6.23	0.0042	0.0001	0.0043	150	3	0.614	0.011
(9-1)	(10-1)	100	580	0.0	3.3	137.0		137.0	5.46	0.0087	0.0002	0.0089	200	3	0.743	0.023
9	(10-1)	100		1.1		45.7		45.7	6.47	0.0034	0.0001	0.0035	150	3	0.614	0.011
(10-1)	(11-1)	80	760	0.0	4.4	182.6		182.6	5.22	0.0110	0.0002	0.0112	200	3	0.743	0.023
10	(11-1)	85		0.7		29.1		29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line					
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Sewage	Infil.	Total	Diameter(mm)	Slope(%o)	V (m/s)	Cap.(m ³ /s)
(11-1)	11	230	1,075	0.0	5.1	211.7		211.7	5.11	0.0125	0.0002	0.0127	250	2.8	0.833	0.041
11	24	170	2,240	0.7	11.9	493.9		493.9	4.48	0.0256	0.0006	0.0262	300	2.8	0.941	0.067
12	13	110		0.8		33.2		33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
13	15	200	310	1.3	2.1	87.2		87.2	5.85	0.0059	0.0001	0.0060	200	3	0.743	0.023
14	15	90		0.6		24.9		24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
15	17	70	470	0.4	3.1	128.7		128.7	5.51	0.0082	0.0001	0.0083	200	3	0.743	0.023
16	17	100		0.8		33.2		33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
17	23	40	610	0.3	4.2	174.3		174.3	5.26	0.0106	0.0002	0.0108	200	3	0.743	0.023
18	19	100		0.8		33.2		33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
19	20	150	250	1.0	1.8	74.7		74.7	5.99	0.0052	0.0001	0.0053	150	3	0.614	0.011
20	22	70	320	0.5	2.3	95.5		95.5	5.77	0.0064	0.0001	0.0065	200	3	0.743	0.023
21	22	100		0.8		33.2		33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
22	23	35	455	0.3	3.4	141.1		141.1	5.43	0.0089	0.0002	0.0091	200	3	0.743	0.023
23	24	120	1,185	0.0	7.6	315.4		315.4	4.80	0.0175	0.0004	0.0179	250	2.8	0.833	0.041
24	36	340	3,765	1.8	21.3	884.0		884.0	4.10	0.0419	0.0010	0.0429	350	4	0.959	0.092
25	26	105		0.6		24.9		24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
26	27	140	245	1.1	1.7	70.6		70.6	6.05	0.0049	0.0001	0.0050	150	3	0.614	0.011
27	29	60	305	0.6	2.3	95.5		95.5	5.77	0.0064	0.0001	0.0065	200	3	0.743	0.023

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Sewage	Infiltr.	Total	Diameter(mm)	Slope(‰)	V (m/s)
28	29	100		0.9		37.4	37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
29	35	40	445	0.3	3.5	145.3	145.3	5.41	0.0091	0.0002	0.0093	200	3	0.743	0.023
30	31	100		0.7		29.1	29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
31	32	150	250	1.2	1.9	78.9	78.9	5.94	0.0054	0.0001	0.0055	200	3	0.743	0.023
32	34	70	320	0.6	2.5	103.8	103.8	5.70	0.0068	0.0001	0.0069	200	3	0.743	0.023
33	34	100		0.9		37.4	37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
34	35	40	460	0.3	3.7	153.6	153.6	5.36	0.0095	0.0002	0.0097	200	3	0.743	0.023
35	36	120	1,025	0.0	7.2	298.8	298.8	4.84	0.0167	0.0003	0.0170	250	2.8	0.833	0.041
36	42	220	5,010	0.9	29.4	1,220.1	1,220.1	3.90	0.0551	0.0014	0.0565	350	4	0.959	0.092
37	39	90		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
38	39	70		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
39	41	100	260	0.5	1.5	62.3	62.3	6.16	0.0044	0.0001	0.0045	150	3	0.614	0.011
40	41	105		0.8		33.2	33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
41	42	110	475	0.4	2.7	112.0	112.0	5.63	0.0073	0.0001	0.0074	200	3	0.743	0.023
42	109	280	5,765	0.9	33.0	1,369.5	1,369.5	3.83	0.0607	0.0016	0.0623	400	3.5	0.980	0.123
43	45	120		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
44	45	55		0.3		12.5	12.5	7.90	0.0011	0.0000	0.0011	150	3	0.614	0.011

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Sewage	Infiltr.	Total	Diameter(mm)	Slope(‰)	V (m/s)
45	49	55	230	0.0	0.9	37.4	37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
46	48	60		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
47	48	90		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
48	49	70	220	0.5	1.3	54.0	54.0	6.30	0.0039	0.0001	0.0040	150	3	0.614	0.011
49	51	60	510	0.0	2.2	91.3	91.3	5.81	0.0061	0.0001	0.0062	200	3	0.743	0.023
50	51	100		0.5		20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
51	53	110	720	0.3	3.0	124.5	124.5	5.54	0.0080	0.0001	0.0081	200	3	0.743	0.023
52	53	100		0.7		29.1	29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
53	57	60	880	0	3.7	153.6	153.6	5.36	0.0095	0.0002	0.0097	200	3	0.743	0.023
55	54	80		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
56	54	50		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
54	57	85	215	0.5	1.3	54.0	54.0	6.30	0.0039	0.0001	0.0040	150	3	0.614	0.011
57	59	60	1,155	0	5.0	207.5	207.5	5.12	0.0123	0.0002	0.0125	250	2.8	0.833	0.041
58	59	105		0.8		33.2	33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
59	61	120	1,380	0.3	6.1	253.2	253.2	4.97	0.0146	0.0003	0.0149	250	2.8	0.833	0.041
60	61	95		0.9		37.4	37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)	Total Infiltr.	Total Diameter(mm)	Slope(‰)	V (m/s)	Cap.(m ³ /s)	
		Increment	Total	Increment	Total	Sewage	Inlet								Total
61	65	55	1,530	0	7.0	290.5	290.5	4.86	0.0163	0.0003	0.0166	250	2.8	0.833	0.041
63	62	60		0.3		12.5	12.5	7.90	0.0011	0.0000	0.0011	150	3	0.614	0.011
64	62	75		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
62	65	70	205	0.3	1.0	41.5	41.5	6.56	0.0032	0.0000	0.0032	150	3	0.614	0.011
65	84	150	1,885	0.9	8.9	369.4	369.4	4.69	0.0200	0.0004	0.0204	250	2.8	0.833	0.041
66	67	50		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
67	69	165	215	0.5	0.9	37.4	37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
68	69	85		0.3		12.5	12.5	7.90	0.0011	0.0000	0.0011	150	3	0.614	0.011
69	71	60	360	0.2	1.4	58.1	58.1	6.23	0.0042	0.0001	0.0043	150	3	0.614	0.011
70	71	110		0.7		29.1	29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
71	74	55	525	0.2	2.3	95.5	95.5	5.77	0.0064	0.0001	0.0065	200	3	0.743	0.023
72	74	35		0.3		12.5	12.5	7.90	0.0011	0.0000	0.0011	150	3	0.614	0.011
74	75	60	620	0.2	2.8	116.2	116.2	5.60	0.0075	0.0001	0.0076	200	3	0.743	0.023
73	75	120		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
75	77	60	800	0.2	3.6	149.4	149.4	5.39	0.0093	0.0002	0.0095	200	3	0.743	0.023
76	77	75		0.3		12.5	12.5	7.90	0.0011	0.0000	0.0011	150	3	0.614	0.011
77	79	60	935	0.2	4.1	170.2	170.2	5.28	0.0104	0.0002	0.0106	200	3	0.743	0.023

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)	Total Infiltr.	Total Diameter(mm)	Slope(‰)	V (m/s)	Cap.(m ³ /s)	
		Increment	Total	Increment	Total	Sewage	Inlet								Total
78	79	100		0.5		20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
79	81	105	1,140	0.5	5.1	211.7	211.7	5.11	0.0125	0.0002	0.0127	250	2.8	0.833	0.041
80	81	45		0.3		12.5	12.5	7.90	0.0011	0.0000	0.0011	150	3	0.614	0.011
81	83	120	1,305	0.7	6.1	253.2	253.2	4.97	0.0146	0.0003	0.0149	250	2.8	0.833	0.041
82	83	110		0.8		33.2	33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
83	84	120	1,535	0.5	7.4	307.1	307.1	4.82	0.0171	0.0004	0.0175	250	2.8	0.833	0.041
84	86	155	3,575	0.5	16.8	697.2	697.2	4.25	0.0343	0.0008	0.0351	350	4	0.959	0.092
85	86	50		0.3		12.5	12.5	7.90	0.0011	0.0000	0.0011	150	3	0.614	0.011
86	88	195	3,820	1.4	18.5	767.8	767.8	4.19	0.0372	0.0009	0.0381	350	4	0.959	0.092
87	88	50		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
88	90	55	3,925	0.3	19.4	805.1	805.1	4.16	0.0388	0.0009	0.0397	350	4	0.959	0.092
89	90	90		0.7		29.1	29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
90	108	160	4,175	1.1	21.2	879.8	879.8	4.10	0.0417	0.0010	0.0427	350	4	0.959	0.092
91	93	110		0.7		29.1	29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
92	93	45		0.3		12.5	12.5	7.90	0.0011	0.0000	0.0011	150	3	0.614	0.011
93	95	115	270	0.5	1.5	62.3	62.3	6.16	0.0044	0.0001	0.0045	150	3	0.614	0.011

Computation of Sewer Design

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line					
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Sewage	Infiltr.	Total	Diameter(mm)	Slope(‰)	V (m/s)	Cap.(m ³ /s)
94	95	85		0.6		24.9		24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
95	97	60	415	0.4	2.5	103.8		103.8	5.70	0.0068	0.0001	0.0069	200	3	0.743	0.023
96	97	90		0.6		24.9		24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
97	100	80	585	0.4	3.5	145.3		145.3	5.41	0.0091	0.0002	0.0093	200	3	0.743	0.023
98	99	70		0.8		33.2		33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
99	100	80	150	0.3	1.1	45.7		45.7	6.47	0.0034	0.0001	0.0035	150	3	0.614	0.011
100	102	55	790	0.3	4.9	203.3		203.3	5.14	0.0121	0.0002	0.0123	250	2.8	0.833	0.041
101	102	185		1.3		54.0		54.0	6.30	0.0039	0.0001	0.0040	150	3	0.614	0.011
102	104	60	1,035	0	6.2	257.3		257.3	4.95	0.0147	0.0003	0.0150	250	2.8	0.833	0.041
103	104	85		0.6		24.9		24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
104	106	60	1,180	0	6.8	282.2		282.2	4.88	0.0159	0.0003	0.0162	250	2.8	0.833	0.041
105	106	80		0.6		24.9		24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
106	108	55	1,315	0	7.4	307.1		307.1	4.82	0.0171	0.0004	0.0175	250	2.8	0.833	0.041
108	109	25	5,515	0	28.6	1,186.9		1,186.9	3.92	0.0539	0.0014	0.0553	350	4	0.959	0.092
109	110	130	11,410	1.4	63.0	2,614.5		2,614.5	3.47	0.1050	0.0030	0.1080	500	2.8	1.018	0.200
110	111	155	11,565	0	63.0	2,614.5		2,614.5	3.47	0.1050	0.0030	0.1080	500	2.8	1.018	0.200
(110-1)	(110-3)	180		2.5		103.8		103.8	5.70	0.0068	0.0001	0.0069	200	3	0.743	0.023

Computation of Sewer Design

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line					
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Sewage	Infiltr.	Total	Diameter(mm)	Slope(‰)	V (m/s)	Cap.(m ³ /s)
(110-2)	(110-3)	130		2.3		95.5		95.5	5.77	0.0064	0.0001	0.0065	200	3	0.743	0.023
(110-3)	111	60	370	0	4.8	199.2		199.2	5.15	0.0119	0.0002	0.0121	250	2.8	0.833	0.041
111	113	120	12,055	3.8	71.6	2,971.4		2,971.4	3.40	0.1169	0.0034	0.1203	500	2.8	1.018	0.200
112	113	325		1.9		78.9		78.9	5.94	0.0054	0.0001	0.0055	200	3	0.743	0.023
113	115	85	12,465	0.2	73.7	3,058.6		3,058.6	3.38	0.1197	0.0035	0.1232	500	2.8	1.018	0.200
114	115	330		2		83.0		83.0	5.90	0.0057	0.0001	0.0058	200	3	0.743	0.023
115	(122-1)	70	12,865	0.3	76.0	3,154.0		3,154.0	3.37	0.1230	0.0037	0.1267	500	2.8	1.018	0.200
116	117	230		1.2		49.8		49.8	6.38	0.0037	0.0001	0.0038	150	3	0.614	0.011
117	119	80	310	0.3	1.5	62.3		62.3	6.16	0.0044	0.0001	0.0045	150	3	0.614	0.011
118	119	240		1.6		66.4		66.4	6.10	0.0047	0.0001	0.0048	150	3	0.614	0.011
119	121	60	610	0.2	3.3	137.0		137.0	5.46	0.0087	0.0002	0.0089	200	3	0.743	0.023
120	121	230		1.1		45.7		45.7	6.47	0.0034	0.0001	0.0035	150	3	0.614	0.011
121	(122-1)	50	890	0.2	4.6	190.9		190.9	5.19	0.0115	0.0002	0.0117	200	3	0.743	0.023
122	(122-1)	325		1.6		66.4		66.4	6.10	0.0047	0.0001	0.0048	150	3	0.614	0.011
(122-1)	155	15	14,095	0	82.2	3,411.3		3,411.3	3.33	0.1315	0.0039	0.1354	600	2.6	1.107	0.313
123	124	125		0.4		16.6		16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
124	135	305	430	1	1.4	58.1		58.1	6.23	0.0042	0.0001	0.0043	150	3	0.614	0.011

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Infiltr.	Diameter(mm)	Slope(‰)	V (m/s)	Cap.(m ³ /s)	
125	126	130		0.4		16.6		7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
126	128	50	180	0.3	0.7	29.1		6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
127	128	135		0.4		16.6		7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
128	130	45	360	0.2	1.3	54.0		6.30	0.0039	0.0001	0.0040	150	3	0.614	0.011
129	130	25		0.1		4.2		9.36	0.0004	0.0000	0.0004	150	3	0.614	0.011
130	132	160	545	1.1	2.5	103.8		5.70	0.0068	0.0001	0.0069	200	3	0.743	0.023
131	132	110		0.5		20.8		7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
132	134	60	715	0.2	3.2	132.8		5.49	0.0084	0.0002	0.0086	200	3	0.743	0.023
133	134	110		0.6		24.9		7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
134	135	70	895	0.2	4.0	166.0		5.30	0.0102	0.0002	0.0104	200	3	0.743	0.023
135	147	280	1,605	2.3	7.7	319.6		4.79	0.0177	0.0004	0.0181	250	2.8	0.833	0.041
137	138	110		0.6		24.9		7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
136	138	35		0.2		8.3		8.41	0.0008	0.0000	0.0008	150	3	0.614	0.011
138	144	155	300	1.2	2.0	83.0		5.90	0.0057	0.0001	0.0058	200	3	0.743	0.023
139	141	120		1		41.5		6.56	0.0032	0.0000	0.0032	150	3	0.614	0.011
140	141	10		0.1		4.2		9.36	0.0004	0.0000	0.0004	150	3	0.614	0.011

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Infiltr.	Diameter(mm)	Slope(‰)	V (m/s)	Cap.(m ³ /s)	
141	143	50	180	0.2	1.3	54.0		6.30	0.0039	0.0001	0.0040	150	3	0.614	0.011
142	143	120		1		41.5		6.56	0.0032	0.0000	0.0032	150	3	0.614	0.011
143	144	50	350	0.2	2.5	103.8		5.70	0.0068	0.0001	0.0069	200	3	0.743	0.023
144	146	60	710	0.2	4.7	195.1		5.17	0.0117	0.0002	0.0119	250	2.8	0.833	0.041
145	146	110		1.5		62.3		6.16	0.0044	0.0001	0.0045	150	3	0.614	0.011
146	147	60	880	0.3	6.5	269.8		4.92	0.0154	0.0003	0.0157	250	2.8	0.833	0.041
147	152	110	2,595	0.3	14.5	601.8		4.35	0.0303	0.0007	0.0310	300	2.8	0.941	0.067
148	149	90		0.3		12.5		7.90	0.0011	0.0000	0.0011	150	3	0.614	0.011
149	151	50	140	0.2	0.5	20.8		7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
150	151	90		0.5		20.8		7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
151	152	160	390	2.1	3.1	128.7		5.51	0.0082	0.0001	0.0083	200	3	0.743	0.023
152	155	55	3,040	0.1	17.7	734.6		4.22	0.0359	0.0009	0.0368	350	4	0.959	0.092
153	154	100		0.6		24.9		7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
154	155	65	165	0.2	0.8	33.2		6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
155	165	215	17,515	1.9	102.6	4,257.9		3.22	0.1587	0.0049	0.1636	600	2.6	1.107	0.313
156	158	125		0.5		20.8		7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
157	158	15		0.1		4.2		9.36	0.0004	0.0000	0.0004	150	3	0.614	0.011

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Sewage	Infiltr.	Total	Diameter(mm)	Slope(%)	V (m/s)
158	160	50	190	0.2	0.8	33.2	33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
159	160	125		0.5		20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
160	164	50	365	0.2	1.5	62.3	62.3	6.16	0.0044	0.0001	0.0045	150	3	0.614	0.011
161	163	100		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
162	163	50		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
163	164	150	300	0.8	1.8	74.7	74.7	5.99	0.0052	0.0001	0.0053	150	3	0.614	0.011
164	165	65	730	0.3	3.6	149.4	149.4	5.39	0.0093	0.0002	0.0095	200	3	0.743	0.023
165	202	75	18,320	0.2	106.4	4,415.6	4,415.6	3.20	0.1635	0.0051	0.1686	600	2.6	1.107	0.313
166	168	80		0.2		8.3	8.3	8.41	0.0008	0.0000	0.0008	150	3	0.614	0.011
167	168	70		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
168	177	180	330	0.6	1.2	49.8	49.8	6.38	0.0037	0.0001	0.0038	150	3	0.614	0.011
169	171	20		0.1		4.2	4.2	9.36	0.0004	0.0000	0.0004	150	3	0.614	0.011
170	171	105		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
171	(172-1)	40	165	0.1	0.6	24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
172	(172-1)	120		0.7		29.1	29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
(172-1)	174	15	300	0	1.3	54.0	54.0	6.30	0.0039	0.0001	0.0040	150	3	0.614	0.011

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Sewage	Infiltr.	Total	Diameter(mm)	Slope(%)	V (m/s)
173	174	110		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
174	176	75	485	0.3	2.2	91.3	91.3	5.81	0.0061	0.0001	0.0062	200	3	0.743	0.023
175	176	80		0.5		20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
176	177	50	615	0.2	2.9	120.4	120.4	5.57	0.0078	0.0001	0.0079	200	3	0.743	0.023
177	179	190	1,135	0.6	4.7	195.1	195.1	5.17	0.0117	0.0002	0.0119	250	2.8	0.833	0.041
178	179	130		0.7		29.1	29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
179	181	150	1,415	0.7	6.1	253.2	253.2	4.97	0.0146	0.0003	0.0149	250	2.8	0.833	0.041
180	181	60		0.5		20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
181	183	60	1,535	0.4	7.0	290.5	290.5	4.86	0.0163	0.0003	0.0166	250	2.8	0.833	0.041
182	183	70		0.5		20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
183	201	130	1,735	0.4	7.9	327.9	327.9	4.77	0.0181	0.0004	0.0185	250	2.8	0.833	0.041
184	186	60		0.3		12.5	12.5	7.90	0.0011	0.0000	0.0011	150	3	0.614	0.011
185	186	50		0.2		8.3	8.3	8.41	0.0008	0.0000	0.0008	150	3	0.614	0.011
186	187	80	190	0.4	0.9	37.4	37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
187	190	60	250	0.3	1.2	49.8	49.8	6.38	0.0037	0.0001	0.0038	150	3	0.614	0.011
188	190	60		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
189	190	90		0.5		20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Sewage	Infiltr.	Total	Diameter(mm)	Slope(%o)	V (m/s)
190	192	60	460	0.2	2.3	95.5	95.5	5.77	0.0064	0.0001	0.0065	200	3	0.743	0.023
191	192	130		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
192	195	100	690	0.3	3.2	132.8	132.8	5.49	0.0084	0.0002	0.0086	200	3	0.743	0.023
193	194	120		0.5		20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
194	195	150	270	0.5	1.0	41.5	41.5	6.56	0.0032	0.0000	0.0032	150	3	0.614	0.011
195	197	50	1,010	0.1	4.3	178.5	178.5	5.24	0.0108	0.0002	0.0110	200	3	0.743	0.023
196	197	80		0.3		12.5	12.5	7.90	0.0011	0.0000	0.0011	150	3	0.614	0.011
197	200	70	1,160	0	4.6	190.9	190.9	5.19	0.0115	0.0002	0.0117	200	3	0.743	0.023
198	199	100		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
199	200	70	170	0.3	0.9	37.4	37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
200	201	200	1,530	0.7	6.2	257.3	257.3	4.95	0.0147	0.0003	0.0150	250	2.8	0.833	0.041
201	202	110	3,375	0	14.1	585.2	585.2	4.37	0.0296	0.0007	0.0303	300	2.8	0.941	0.067
202	240	310	22,005	1.5	122.0	5,063.0	5,063.0	3.13	0.1834	0.0059	0.1893	600	2.6	1.107	0.313
203	206	110		0.5		20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
204	206	20		0.1		4.2	4.2	9.36	0.0004	0.0000	0.0004	150	3	0.614	0.011
206	207	50	180	0.2	0.8	33.2	33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
205	207	90		0.5		20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Sewage	Infiltr.	Total	Diameter(mm)	Slope(%o)	V (m/s)
207	209	50	320	0.1	1.4	58.1	58.1	6.23	0.0042	0.0001	0.0043	150	3	0.614	0.011
208	209	100		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
209	240	80	500	0.4	2.4	99.6	99.6	5.73	0.0066	0.0001	0.0067	200	3	0.743	0.023
240	241	80	22,585	0	124.4	5,162.6	5,162.6	3.12	0.1864	0.0060	0.1924	600	2.6	1.107	0.313
210	211	110		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
211	216	130	240	0.3	0.9	37.4	37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
212	213	130		0.5		20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
213	215	50	180	1	1.5	62.3	62.3	6.16	0.0044	0.0001	0.0045	150	3	0.614	0.011
214	215	130		0.5		20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
215	216	120	430	0.8	2.8	116.2	116.2	5.60	0.0075	0.0001	0.0076	200	3	0.743	0.023
216	222	230	900	0.8	4.5	186.8	186.8	5.21	0.0113	0.0002	0.0115	200	3	0.743	0.023
217	219	110		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
218	219	130		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
219	221	60	300	0.2	1.4	58.1	58.1	6.23	0.0042	0.0001	0.0043	150	3	0.614	0.011
220	221	120		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
221	222	70	490	0.2	2.2	91.3	91.3	5.81	0.0061	0.0001	0.0062	200	3	0.743	0.023
222	234	280	1,670	1	7.7	319.6	319.6	4.79	0.0177	0.0004	0.0181	250	2.8	0.833	0.041

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line					
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Sewage	Infiltr.	Total	Diameter(mm)	Slope(%)	V (m/s)	Cap.(m ³ /s)
223	225	40		0.2		8.3		8.3	8.41	0.0008	0.0000	0.0008	150	3	0.614	0.011
224	225	120		0.5		20.8		20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
225	231	150	310	1	1.7	70.6		70.6	6.05	0.0049	0.0001	0.0050	150	3	0.614	0.011
226	228	120		0.5		20.8		20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
227	228	20		0.1		4.2		4.2	9.36	0.0004	0.0000	0.0004	150	3	0.614	0.011
228	230	50	190	0.3	0.9	37.4		37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
229	230	120		0.5		20.8		20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
230	231	50	360	0.1	1.5	62.3		62.3	6.16	0.0044	0.0001	0.0045	150	3	0.614	0.011
231	233	70	740	0.2	3.4	141.1		141.1	5.43	0.0089	0.0002	0.0091	200	3	0.743	0.023
232	233	110		0.4		16.6		16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
233	234	75	925	0.1	3.9	161.9		161.9	5.32	0.0100	0.0002	0.0102	200	3	0.743	0.023
234	239	160	2,755	2.6	14.2	589.3		589.3	4.36	0.0297	0.0007	0.0304	300	2.8	0.941	0.067
235	236	130		0.6		24.9		24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
236	238	60	190	0.3	0.9	37.4		37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
237	238	120		0.5		20.8		20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
238	239	70	380	0.1	1.5	62.3		62.3	6.16	0.0044	0.0001	0.0045	150	3	0.614	0.011

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line					
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Sewage	Infiltr.	Total	Diameter(mm)	Slope(%)	V (m/s)	Cap.(m ³ /s)
239	241	250	3,385	0.9	16.6	688.9		688.9	4.26	0.0340	0.0008	0.0348	350	4	0.959	0.092
241	289	230	26,200	0	141.0	5,851.5		5,851.5	3.06	0.2072	0.0068	0.2140	600	2.6	1.107	0.313
242	243	190		0.8		33.2		33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
243	244	200	390	0.8	1.6	66.4		66.4	6.10	0.0047	0.0001	0.0048	150	3	0.614	0.011
244	276	180	570	0.7	2.3	95.5		95.5	5.77	0.0064	0.0001	0.0065	200	3	0.743	0.023
245	246	220		0.8		33.2		33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
246	254	80	300	0.5	1.3	54.0		54.0	6.30	0.0039	0.0001	0.0040	150	3	0.614	0.011
247	249	20		0.2		8.3		8.3	8.41	0.0008	0.0000	0.0008	150	3	0.614	0.011
248	249	130		0.7		29.1		29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
249	251	50	200	0.2	1.1	45.6		45.6	6.47	0.0034	0.0001	0.0035	150	3	0.614	0.011
250	251	120		0.7		29.1		29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
251	253	50	370	0.2	2.0	83.0		83.0	5.90	0.0057	0.0001	0.0058	200	3	0.743	0.023
252	253	110		0.7		29.1		29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
253	254	70	550	0.2	2.9	120.4		120.4	5.57	0.0078	0.0001	0.0079	200	3	0.743	0.023
254	255	130	980	0.7	4.9	203.4		203.4	5.14	0.0121	0.0002	0.0123	250	2.8	0.833	0.041
255	262	135	1,115	0.7	5.6	232.4		232.4	5.03	0.0135	0.0003	0.0138	250	2.8	0.833	0.041
256	257	120		0.6		24.9		24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
257	259	60	180	0.2	0.8	33.2		33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
258	259	120		0.6		24.9		24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Total	Diameter(mm)	Slope(%o)	V (m/s)	Cap.(m ³ /s)	
259	261	50	350	0.2	1.6	66.4	66.4	6.10	0.0047	0.0001	0.0048	150	3	0.614	0.011
260	261	120		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
261	262	70	540	0.2	2.4	99.6	99.6	5.73	0.0066	0.0001	0.0067	200	3	0.743	0.023
262	264	70	1,725	0.3	8.3	344.5	344.5	4.74	0.0189	0.0004	0.0193	250	2.8	0.833	0.041
263	264	180		1.6		66.4	66.4	6.10	0.0047	0.0001	0.0048	150	3	0.614	0.011
264	266	70	1,975	0.3	10.2	423.3	423.3	4.59	0.0225	0.0005	0.0230	300	2.8	0.941	0.067
265	266	190		1.1		45.7	45.7	6.47	0.0034	0.0001	0.0035	150	3	0.614	0.011
266	275	110	2,275	0.7	12.0	498.0	498.0	4.48	0.0258	0.0006	0.0264	300	2.8	0.941	0.067
267	268	80		0.3		12.5	12.5	7.90	0.0011	0.0000	0.0011	150	3	0.614	0.011
268	270	60	140	0.4	0.7	29.1	29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
269	270	80		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
270	272	50	270	0.2	1.3	54.0	54.0	6.30	0.0039	0.0001	0.0040	150	3	0.614	0.011
271	272	80		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
272	274	50	400	0.2	1.9	78.9	78.9	5.94	0.0054	0.0001	0.0055	200	3	0.743	0.023
273	274	80		0.3		12.5	12.5	7.90	0.0011	0.0000	0.0011	150	3	0.614	0.011
274	275	50	530	0.2	2.4	99.6	99.6	5.73	0.0066	0.0001	0.0067	200	3	0.743	0.023

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Total	Diameter(mm)	Slope(%o)	V (m/s)	Cap.(m ³ /s)	
275	276	70	2,875	0.2	14.6	605.9	605.9	4.34	0.0304	0.0007	0.0311	300	2.8	0.941	0.067
276	284	65	3,510	0.1	17.0	705.5	705.5	4.24	0.0346	0.0008	0.0354	350	4	0.959	0.092
277	279	110		0.7		29.1	29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
278	279	90		0.5		20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
279	281	50	250	0.2	1.4	58.1	58.1	6.23	0.0042	0.0001	0.0043	150	3	0.614	0.011
280	281	90		0.5		20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
281	283	50	390	0.2	2.1	87.2	87.2	5.85	0.0059	0.0001	0.0060	200	3	0.743	0.023
282	283	90		0.5		20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
283	284	60	540	0.2	2.8	116.2	116.2	5.60	0.0075	0.0001	0.0076	200	3	0.743	0.023
284	288	140	4,190	0.4	20.2	838.3	838.3	4.13	0.0401	0.0010	0.0411	350	4	0.959	0.092
285	286	45		0.2		8.3	8.3	8.41	0.0008	0.0000	0.0008	150	3	0.614	0.011
286	287	110	155	0.5	0.7	29.1	29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
287	288	210	365	1.4	2.1	87.2	87.2	5.85	0.0059	0.0001	0.0060	200	3	0.743	0.023
288	289	280	4,835	1.2	23.5	975.3	975.3	4.04	0.0456	0.0011	0.0467	350	4	0.959	0.092
289	299	100	31,135	0.2	164.7	6,835.1	6,835.1	2.99	0.2365	0.0079	0.2444	700	2.4	1.179	0.454
290	291	130		0.8		33.2	33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
291	293	60	190	0.4	1.2	49.8	49.8	6.38	0.0037	0.0001	0.0038	150	3	0.614	0.011
292	293	130		0.7		29.1	29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Inlet	Total	Diameter(mm)	Slope(%o) V (m/s) Cap.(m ³ /s)		
293	295	60	380	0.3	2.2	91.3	91.3	5.81	0.0061	0.0001	0.0082	200	3	0.743	0.023
294	295	130		1.2		49.8	49.8	6.38	0.0037	0.0001	0.0038	150	3	0.614	0.011
295	299	80	590	0.4	3.8	157.7	157.7	5.34	0.0097	0.0002	0.0099	200	3	0.743	0.023
296	297	40		0.8		33.2	33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
297	298	110	150	1.7	2.5	103.8	103.8	5.70	0.0068	0.0001	0.0069	200	3	0.743	0.023
298	299	90	240	1.2	3.7	153.6	153.6	5.36	0.0095	0.0002	0.0097	200	3	0.743	0.023
299	305	150	32,115	1	173.2	7,187.8	7,187.8	2.97	0.2471	0.0083	0.2554	700	2.4	1.179	0.454
300	301	130		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
301	302	110	240	1.2	1.8	74.7	74.7	5.99	0.0052	0.0001	0.0053	150	3	0.614	0.011
302	304	80	320	1.2	3.0	124.5	124.5	5.54	0.0080	0.0001	0.0081	200	3	0.743	0.023
303	304	130		0.5		20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
304	305	100	550	0.9	4.4	182.6	182.6	5.22	0.0110	0.0002	0.0112	200	3	0.743	0.023
305	319	170	32,835	1.2	178.8	7,420.2	7,420.2	2.95	0.2534	0.0086	0.2620	700	2.4	1.179	0.454
306	307	130		1		41.5	41.5	6.56	0.0032	0.0000	0.0032	150	3	0.614	0.011
307	309	70	200	0.3	1.3	54.0	54.0	6.30	0.0039	0.0001	0.0040	150	3	0.614	0.011
308	309	130		0.9		37.4	37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
309	311	50	380	0.3	2.5	103.8	103.8	5.70	0.0068	0.0001	0.0069	200	3	0.743	0.023
310	311	130		0.9		37.4	37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Inlet	Total	Diameter(mm)	Slope(%o) V (m/s) Cap.(m ³ /s)		
311	313	60	570	0.3	3.7	153.6	153.6	5.36	0.0095	0.0002	0.0097	200	3	0.743	0.023
312	313	130		1		41.5	41.5	6.56	0.0032	0.0000	0.0032	150	3	0.614	0.011
313	319	75	775	0.3	5.0	207.5	207.5	5.12	0.0123	0.0002	0.0125	250	2.8	0.833	0.041
314	315	160		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
315	316	110	270	1	1.4	58.1	58.1	6.23	0.0042	0.0001	0.0043	150	3	0.614	0.011
316	318	70	340	0.9	2.3	95.5	95.5	5.77	0.0064	0.0001	0.0065	200	3	0.743	0.023
317	318	150		0.7		29.1	29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
318	319	90	580	0.6	3.6	149.4	149.4	5.39	0.0093	0.0002	0.0095	200	3	0.743	0.023
319	421	70	34,260	0.4	187.8	7,793.7	7,793.7	2.93	0.2643	0.0090	0.2733	700	2.4	1.179	0.454
320	322	210		0.8		33.2	33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
321	322	250		1.2		49.8	49.8	6.38	0.0037	0.0001	0.0038	150	3	0.614	0.011
322	343	80	540	0.2	2.2	91.3	91.3	5.81	0.0061	0.0001	0.0062	200	3	0.743	0.023
323	325	20		0.2		8.3	8.3	8.41	0.0008	0.0000	0.0008	150	3	0.614	0.011
324	325	90		0.5		20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
325	327	50	160	0.3	1.0	41.5	41.5	6.56	0.0032	0.0000	0.0032	150	3	0.614	0.011
326	327	110		1		41.5	41.5	6.56	0.0032	0.0000	0.0032	150	3	0.614	0.011
327	329	60	330	0.3	2.3	95.5	95.5	5.77	0.0064	0.0001	0.0065	200	3	0.743	0.023

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak		Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet	Total	Factor	Sewage	Infiltr.	Total	Diameter(mm)	Slope(‰)	V (m/s)	Cap.(m ³ /s)
328	329	130		0.8		33.2		33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
329	343	80	540	0.4	3.5	145.3		145.3	5.41	0.0091	0.0002	0.0093	200	3	0.743	0.023
330	332	40		0.2		8.3		8.3	8.41	0.0008	0.0000	0.0008	150	3	0.614	0.011
331	332	40		0.4		16.6		16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
332	334	50	130	0.2	0.8	33.2		33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
333	334	50		0.3		12.5		12.5	7.90	0.0011	0.0000	0.0011	150	3	0.614	0.011
334	336	50	230	0.2	1.3	54.0		54.0	6.30	0.0039	0.0001	0.0040	150	3	0.614	0.011
335	336	40		0.3		12.5		12.5	7.90	0.0011	0.0000	0.0011	150	3	0.614	0.011
336	338	50	320	0.2	1.8	74.7		74.7	5.99	0.0052	0.0001	0.0053	150	3	0.614	0.011
337	338	130		0.5		20.8		20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
338	340	50	500	0.2	2.5	103.8		103.8	5.70	0.0068	0.0001	0.0069	200	3	0.743	0.023
339	340	130		0.6		24.9		24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
340	342	50	680	0.2	3.3	137.0		137.0	5.46	0.0087	0.0002	0.0089	200	3	0.743	0.023
341	342	130		0.6		24.9		24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
342	343	60	870	0.3	4.2	174.3		174.3	5.26	0.0106	0.0002	0.0108	200	3	0.743	0.023
343	365	280	2,230	2	11.9	493.9		493.9	4.48	0.0256	0.0006	0.0262	300	2.8	0.941	0.067

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak		Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet	Total	Factor	Sewage	Infiltr.	Total	Diameter(mm)	Slope(‰)	V (m/s)	Cap.(m ³ /s)
344	345	120		0.8		33.2		33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
345	347	60	180	0.4	1.2	49.8		49.8	6.38	0.0037	0.0001	0.0038	150	3	0.614	0.011
346	347	120		0.7		29.1		29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
347	349	60	360	0.3	2.2	91.3		91.3	5.81	0.0061	0.0001	0.0062	200	3	0.743	0.023
348	349	120		0.7		29.1		29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
349	365	70	550	0.3	3.2	132.8		132.8	5.49	0.0084	0.0002	0.0086	200	3	0.743	0.023
350	351	20		0.1		4.2		4.2	9.36	0.0004	0.0000	0.0004	150	3	0.614	0.011
351	353	60	80	0.3	0.4	16.6		16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
352	353	30		0.2		8.3		8.3	8.41	0.0008	0.0000	0.0008	150	3	0.614	0.011
353	356	70	180	0.3	0.9	37.4		37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
355	356	40		0.2		8.3		8.3	8.41	0.0008	0.0000	0.0008	150	3	0.614	0.011
356	358	50	270	0.2	1.3	54.0		54.0	6.30	0.0039	0.0001	0.0040	150	3	0.614	0.011
357	358	130		0.6		24.9		24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
358	360	50	450	0.2	2.1	87.2		87.2	5.85	0.0059	0.0001	0.0060	200	3	0.743	0.023
359	360	130		0.6		24.9		24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
360	362	50	630	0.2	2.9	120.4		120.4	5.57	0.0078	0.0001	0.0079	200	3	0.743	0.023
361	362	130		0.6		24.9		24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Infiltr.	Total	Diameter(mm)	(Slope‰) V (m/s)	Cap.(m ³ /s)	
362	364	50	810	0.2	3.7	153.6	153.6	5.36	0.0095	0.0002	0.0097	200	3	0.743	0.023
363	364	130		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
364	365	60	1,000	0.2	4.5	186.8	186.8	5.21	0.0113	0.0002	0.0115	200	3	0.743	0.023
365	372	70	3,850	0.2	19.8	821.7	821.7	4.14	0.0394	0.0010	0.0404	350	4	0.939	0.092
366	372	200		1		41.5	41.5	6.56	0.0032	0.0000	0.0032	150	3	0.614	0.011
367	368	280		1.5		62.3	62.3	6.16	0.0044	0.0001	0.0045	150	3	0.614	0.011
368	371	70	350	0.2	1.7	70.6	70.6	6.05	0.0049	0.0001	0.0050	150	3	0.614	0.011
369	370	120		1		41.5	41.5	6.56	0.0032	0.0000	0.0032	150	3	0.614	0.011
370	371	120	240	1	2.0	83.0	83.0	5.90	0.0057	0.0001	0.0058	200	3	0.743	0.023
371	372	65	655	0.2	3.9	161.9	161.9	5.32	0.0100	0.0002	0.0102	200	3	0.743	0.023
372	402	250	4,955	5	29.7	1,232.5	1,232.5	3.89	0.0555	0.0014	0.0569	350	4	0.939	0.092
373	375	100		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
374	375	80		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
375	377	45	225	0.2	1.2	49.8	49.8	6.38	0.0037	0.0001	0.0038	150	3	0.614	0.011
376	377	90		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
377	402	65	380	0.3	1.9	78.9	78.9	5.94	0.0054	0.0001	0.0055	200	3	0.743	0.023
378	379	80		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
379	381	50	130	0.3	0.7	29.1	29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Infiltr.	Total	Diameter(mm)	(Slope‰) V (m/s)	Cap.(m ³ /s)	
380	381	80		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
381	383	50	260	0.2	1.3	54.0	54.0	6.30	0.0039	0.0001	0.0040	150	3	0.614	0.011
382	383	80		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
383	385	50	390	0.2	1.9	78.9	78.9	5.94	0.0054	0.0001	0.0055	200	3	0.743	0.023
384	385	80		0.4		16.6	16.6	7.56	0.0015	0.0000	0.0015	150	3	0.614	0.011
385	397	50	520	0.2	2.5	103.8	103.8	5.70	0.0068	0.0001	0.0069	200	3	0.743	0.023
386	397	110		0.6		24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
397	401	65	695	0.2	3.3	137.0	137.0	5.46	0.0087	0.0002	0.0089	200	3	0.743	0.023
387	388	160		0.9		37.4	37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
388	390	25	185	0.1	1.0	41.5	41.5	6.56	0.0032	0.0000	0.0032	150	3	0.614	0.011
389	390	40		0.1		4.2	4.2	9.36	0.0004	0.0000	0.0004	150	3	0.614	0.011
390	392	40	265	0.1	1.2	49.8	49.8	6.38	0.0037	0.0001	0.0038	150	3	0.614	0.011
391	392	40		0.2		8.3	8.3	8.41	0.0008	0.0000	0.0008	150	3	0.614	0.011
392	394	50	355	0.2	1.6	66.4	66.4	6.10	0.0047	0.0001	0.0048	150	3	0.614	0.011
393	394	50		0.2		8.3	8.3	8.41	0.0008	0.0000	0.0008	150	3	0.614	0.011
394	396	45	450	0.2	2.0	83.0	83.0	5.90	0.0057	0.0001	0.0058	200	3	0.743	0.023

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Infiltr.	Total	Diameter(mm)	Slope(‰)	V (m/s)	Cap.(m ³ /s)
395	396	40		0.2		8.3	8.3	8.41	0.0008	0.0000	0.0008	150	3	0.614	0.011
396	401	45	535	0.1	2.3	95.5	95.5	5.77	0.0064	0.0001	0.0065	200	3	0.743	0.023
398	400	170		0.8		33.2	33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
399	400	20		0.1		4.2	4.2	9.36	0.0004	0.0000	0.0004	150	3	0.614	0.011
400	401	70	260	0.3	1.2	49.8	49.8	6.38	0.0037	0.0001	0.0038	150	3	0.614	0.011
401	402	60	1,550	0.2	7.0	290.5	290.5	4.86	0.0163	0.0003	0.0166	250	2.8	0.833	0.041
402	416	130	7,015	1.6	40.2	1,668.3	1,668.3	3.72	0.0718	0.0019	0.0737	400	3.5	0.980	0.123
403	405	30		0.1		4.2	4.2	9.36	0.0004	0.0000	0.0004	150	3	0.614	0.011
404	405	35		0.2		8.3	8.3	8.41	0.0008	0.0000	0.0008	150	3	0.614	0.011
405	407	60	125	0.2	0.5	20.8	20.8	7.30	0.0018	0.0000	0.0018	150	3	0.614	0.011
406	407	40		0.2		8.3	8.3	8.41	0.0008	0.0000	0.0008	150	3	0.614	0.011
407	409	60	225	0.2	0.9	37.4	37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
408	409	90		1		41.5	41.5	6.56	0.0032	0.0000	0.0032	150	3	0.614	0.011
409	416	165	480	0.7	2.6	107.9	107.9	5.66	0.0071	0.0001	0.0072	200	3	0.743	0.023
410	411	200		1.3		54.0	54.0	6.30	0.0039	0.0001	0.0040	150	3	0.614	0.011
411	412	200	400	1	2.3	95.5	95.5	5.77	0.0064	0.0001	0.0065	200	3	0.743	0.023
412	413	230	630	1.2	3.5	145.3	145.3	5.41	0.0091	0.0002	0.0093	200	3	0.743	0.023
413	414	170	800	0.8	4.3	178.5	178.5	5.24	0.0108	0.0002	0.0110	200	3	0.743	0.023

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)		Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewage	Inlet		Total	Infiltr.	Total	Diameter(mm)	Slope(‰)	V (m/s)	Cap.(m ³ /s)
414	415	135	935	0.9	5.2	215.8	215.8	5.09	0.0127	0.0002	0.0129	250	2.8	0.833	0.041
415	416	150	1,085	0.8	6.0	249.0	249.0	4.98	0.0144	0.0003	0.0147	250	2.8	0.833	0.041
416	417	50	8,630	0.2	49.0	2,033.5	2,033.5	3.60	0.0847	0.0024	0.0871	450	3	0.982	0.156
417	421	220	8,850	1.4	50.4	2,091.6	2,091.6	3.59	0.0869	0.0024	0.0893	450	3	0.982	0.156
418	419	60		0.2		8.3	8.3	8.41	0.0008	0.0000	0.0008	150	3	0.614	0.011
419	420	185	245	1.1	1.3	54.0	54.0	6.30	0.0039	0.0001	0.0040	150	3	0.614	0.011
420	421	100	345	0.5	1.8	74.7	74.7	5.99	0.0052	0.0001	0.0053	150	3	0.614	0.011
421	433	70	43,525	0.3	240.3	9,972.5	9,972.5	2.82	0.3255	0.0115	0.3370	700	2.4	1.179	0.454
422	423	50		0.2		8.3	8.3	8.41	0.0008	0.0000	0.0008	150	3	0.614	0.011
423	424	190	240	1.1	1.3	54.0	54.0	6.30	0.0039	0.0001	0.0040	150	3	0.614	0.011
424	433	100	340	0.5	1.8	74.7	74.7	5.99	0.0052	0.0001	0.0053	150	3	0.614	0.011
425	426	45		0.3		12.5	12.5	7.90	0.0011	0.0000	0.0011	150	3	0.614	0.011
426	427	60	105	1	1.3	54.0	54.0	6.30	0.0039	0.0001	0.0040	150	3	0.614	0.011
427	428	150	255	1.1	2.4	99.6	99.6	5.73	0.0066	0.0001	0.0067	200	3	0.743	0.023
428	430	50	305	0.2	2.6	107.9	107.9	5.66	0.0071	0.0001	0.0072	200	3	0.743	0.023
429	430	130		0.8		33.2	33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
430	432	50	485	0.2	3.6	149.4	149.4	5.39	0.0093	0.0002	0.0095	200	3	0.743	0.023
431	432	140		0.9		37.4	37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
432	433	60	685	0.2	4.7	195.1	195.1	5.17	0.0117	0.0002	0.0119	250	2.8	0.833	0.041
433	437	70	44,620	0.4	247.2	10,258.8	10,258.8	2.81	0.3336	0.0119	0.3455	700	2.4	1.179	0.454
434	435	50		0.1		4.2	4.2	9.36	0.0004	0.0000	0.0004	150	3	0.614	0.011

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)			Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewerage	Inlet	Total		Sewage	Infiltr.	Total	Diameter(mm)	Slope(%o)	V (m/s)	Cap.(m ³ /s)
435	436	190	240	1.3	1.4	58.1	58.1	58.1	6.23	0.0042	0.0001	0.0043	150	3	0.614	0.011
436	437	95	335	0.4	1.8	74.7	74.7	74.7	5.99	0.0052	0.0001	0.0053	150	3	0.614	0.011
437	443	100	45,055	0.5	249.5	10,354.3	10,354.3	10,354.3	2.80	0.3356	0.0120	0.3476	700	2.4	1.179	0.454
438	439	180		0.9		37.4	37.4	37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
439	440	190	370	0.7	1.6	66.4	66.4	66.4	6.10	0.0047	0.0001	0.0048	150	3	0.614	0.011
440	441	260	630	1.1	2.7	112.1	112.1	112.1	5.63	0.0073	0.0001	0.0074	200	3	0.743	0.023
441	442	195	825	1.3	4.0	166.0	166.0	166.0	5.30	0.0102	0.0002	0.0104	200	3	0.743	0.023
442	443	275	1,100	0.8	4.8	199.2	199.2	199.2	5.15	0.0119	0.0002	0.0121	250	2.8	0.833	0.041
443	449	160	46,315	0.6	254.9	10,578.4	10,578.4	10,578.4	2.80	0.3428	0.0122	0.3550	800	2.2	1.234	0.620
444	446	130		0.9		37.4	37.4	37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
445	446	120		0.9		37.4	37.4	37.4	6.67	0.0029	0.0000	0.0029	150	3	0.614	0.011
446	448	40	290	0.2	2.0	83.0	83.0	83.0	5.90	0.0057	0.0001	0.0058	200	3	0.743	0.023
447	448	125		0.8		33.2	33.2	33.2	6.79	0.0026	0.0000	0.0026	150	3	0.614	0.011
448	449	35	450	0	2.8	116.2	116.2	116.2	5.60	0.0075	0.0001	0.0076	200	3	0.743	0.023
449	450	140	46,905	0.6	258.3	10,719.5	10,719.5	10,719.5	2.79	0.3461	0.0124	0.3585	800	2.2	1.234	0.620
450	457	130	47,035	0.6	258.9	10,744.4	10,744.4	10,744.4	2.79	0.3470	0.0124	0.3594	800	2.2	1.234	0.620
451	453	130		0.7		29.1	29.1	29.1	6.93	0.0023	0.0000	0.0023	150	3	0.614	0.011
452	453	140		0.6		24.9	24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
453	456	90	360	0	1.3	54.0	54.0	54.0	6.30	0.0039	0.0001	0.0040	150	3	0.614	0.011

Computation of Sewer Design

Specific Wastewater Discharge = 41.5 m³/ha/d

Line No.	Line No. of Lower Sewer	Sewer Length(m)		Sewerage Area(ha)		Average Flow(m ³ /d)			Peak Factor	Max. Flow(m ³ /s)		Sewer Line				
		Increment	Total	Increment	Total	Sewerage	Inlet	Total		Sewage	Infiltr.	Total	Diameter(mm)	Slope(%o)	V (m/s)	Cap.(m ³ /s)
454	456	130		0.6		24.9	24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
455	456	140		0.6		24.9	24.9	24.9	7.10	0.0020	0.0000	0.0020	150	3	0.614	0.011
456	457	40	670	0	2.5	103.8	103.8	103.8	5.70	0.0068	0.0001	0.0069	200	3	0.743	0.023
457	IN	150	47,855	0.6	262.0	10,873.0	10,873.0	10,873.0	2.78	0.3498	0.0126	0.3624	800	2.2	1.234	0.620