PROJECT TITLE:	L&M Gardens Block 140
PROJECT No.:	07:146
CLIENT:	Sorbara/L&M G.P. Inc.
ISSUED FOR:	1st Submission

SANITARY SEWER DESIGN SHEET
TOWN OF WHITCHURCH-STOUFFVILLE
REGION OF YORK

ENGINEER'S SEAL

PREPARED BY:

SABOURIN KIMBLE & ASSOCIATES LTD. CONSULTING ENGINEERS

NOTES, STANDARDS AND DESIGN INPUT PARAMETERS

Densities (persons/unit):

Single Family, Semi-Detached Residential	3.2
Townhouse, Multi-Family Residential	2.9
High Density Residential	2.2
Other	3.0
Unplanned Developable Land (persons/hectare)	125

Harmon Peaking Factor:

Maximum: 3.8
Minimum: 1.5
Formula: $K_H = 1 + \frac{14}{(4 + P)^{1/2}}$
where; K_H = Harmon Peaking Factor
P = Population in Thousands

Design Flows:

Residential Flow	350	L/person/day
Infiltration Flow	19.9	m^3/ha/day
Commercial Flow	28	m^3/ha/day
Floor Space Index	0.5	of gross lot area
Institutional Flow	28	m^3/ha/day
Industrial Flow	28	m^3/ha/day

Note: PVC pipe is manufactured in metric dimensions, therefore, the pipe diameter stated is used to calculate capacity and velocity. However, since concrete pipe is manufactured in imperial dimensions, standard imperial equivalent sizes for the diameter stated have been used to calculate capacity and velocity.

Infiltration Flow Applied to: Residential Area Only

				RESIDENTIAL										COMMERCIAL				INSTITUTIONAL			INDUSTRIAL			EXTERNAL FLOWS		TOTAL AREA		INFILTRATION			PIPE DESIGN								
PROPERTY	**STREET**	**Upstream Manhole**	**Downstream Manhole**	**Section Area (ha)**	**Cummulative Area (ha)**	**Single Family, Semi-Detached Units**	**Townhouse Units**	**High Density Units**	**Other (specified above) Units**	**Unplanned Land (ha)**	**Section Population**	**Cummulative Population (thousands)**	**Harmon Peaking Factor**	**Residential Flow (L/s)**	**Section Area (ha)**	**Gross Floor Area (ha)**	**Cummulative Gross Floor Area (ha)**	**Commercial Flow (L/s)**	**Section Area (ha)**	**Cummulative Area (ha)**	**Institutional Flow (L/s)**	**Section Area (ha)**	**Cummulative Area (ha)**	**Industrial Flow (L/s)**	**Total External Flow (L/s)**	**Cummulative External Flow (L/s)**	**Total Section Area (ha)**	**Total Cummulative Area (ha)**	**Applicable Area (ha) (select above)**	**Infiltration Flow (L/s)**	**Total Design Flow (L/s)**	**Type**	**Pipe (mm)**	**Grade (%)**	**Capacity (l/s)**	**Length (m)**	**Velocity (m/s)**	**Down-stream Velocity (m/s)**	**Change in Velocity (m/s)**	**Capacity (%)**
		1A	2A	0.14	0.14		6				18	0.018	3.80	**0.28**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.14	0.14	0.14	**0.03**	**0.31**	PVC	200	2.10	47.53	37.0	1.51	1.09	0.42	1%
		2A	3A	0.48	0.62		32				93	0.111	3.80	**1.71**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.48	0.62	0.62	**0.14**	**1.85**	PVC	200	1.10	34.40	97.3	1.09	0.74	0.36	5%
		3A	4A	0.05	0.67						0	0.111	3.80	**1.71**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.05	0.67	0.67	**0.15**	**1.86**	PVC	200	0.50	23.19	39.7	0.74	0.74	0.00	8%
		1A(s)	5A	0.40	0.40		28				82	0.082	3.80	**1.26**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.40	0.40	0.40	**0.09**	**1.35**	PVC	200	1.20	35.93	98.7	1.14	0.74	0.41	4%
		5A	4A	0.03	0.43		2				6	0.088	3.80	**1.35**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.03	0.43	0.43	**0.10**	**1.45**	PVC	200	0.50	23.19	9.3	0.74	0.74	0.00	6%
		4A	Ex 944B		1.10						0	0.199	3.80	**3.06**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.00	1.10	1.10	**0.25**	**3.32**	PVC	200	0.50	23.19	6.6	0.74	N/A		14%
		6A	7A	0.10	0.10		5				15	0.015	3.80	**0.23**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.10	0.10	0.10	**0.02**	**0.25**	PVC	200	2.80	54.88	27.0	1.75	0.74	1.01	0%
		7A	8A	0.02	0.12		1				3	0.018	3.80	**0.28**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.02	0.12	0.12	**0.03**	**0.30**	PVC	200	0.50	23.19	10.7	0.74	0.93	0.20	1%
		8A	9A	0.37	0.49		29				85	0.103	3.80	**1.59**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.37	0.49	0.49	**0.11**	**1.70**	PVC	200	0.80	29.34	100.4	0.93	0.74	0.20	6%
		11A	12A	0.12	0.12		3				9	0.009	3.80	**0.14**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.12	0.12	0.12	**0.03**	**0.17**	PVC	200	1.00	32.80	20.0	1.04	0.74	0.31	1%
		7A(w)	12A	0.12	0.12		6				18	0.018	3.80	**0.28**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.12	0.12	0.12	**0.03**	**0.30**	PVC	200	1.80	44.00	41.0	1.40	0.74	0.66	1%
		12A	13A	0.09	0.33		6				18	0.045	3.80	**0.69**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.09	0.33	0.33	**0.08**	**0.77**	PVC	200	0.50	23.19	21.6	0.74	0.74	0.00	3%
		13A	14A	0.42	0.75		23				67	0.112	3.80	**1.72**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.42	0.75	0.75	**0.17**	**1.90**	PVC	200	0.50	23.19	78.0	0.74	0.74	0.00	8%
		14A	15A	0.07	0.82		2				6	0.118	3.80	**1.82**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.07	0.82	0.82	**0.19**	**2.01**	PVC	200	0.50	23.19	10.9	0.74	0.74	0.00	9%
		15A	9A	0.05	0.87						0	0.118	3.80	**1.82**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.05	0.87	0.87	**0.20**	**2.02**	PVC	200	0.50	23.19	32.5	0.74	0.74	0.00	9%
		9A	10A		1.36						0	0.221	3.80	**3.40**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.00	1.36	1.36	**0.31**	**3.72**	PVC	200	0.50	23.19	5.6	0.74	N/A		16%