

June 12, 2023

The Corporation of the City of Windsor
P.O. Box 1607
Windsor, Ontario
N9A 6S1

**RE: DEVELOPMENT AT FORMER
ST. JOHNS SCHOOL SITE
BRIDGE AVENUE AND GROVE AVENUE – SANITARY STUDY
Our Project No.: 18-141**

Further to our meeting over the past few years with Mr. Winters, P.Eng. of the City of Windsor and the associated agreement on the sanitary matters, our office offers again our analysis of the the sewer infrastructure specific to the proposed development. The following report will summarize our findings and recommendations.

Overview

The current site, located on Grove Avenue and running parallel to Bridge Avenue, is the former location of St. John’s Catholic Elementary School. This site was purchased by our client from the Windsor-Essex Catholic District School Board (WECDSB). The purpose of this purchase was to rezone the site from institutional to a residential designation, a process which has already occurred.

The current site is 1.27 hectares in size and is supported on Bridge Ave. by a 375 mm VP combined sewer, and on Grove Ave. by a 375 mm VP combined sewer, both of which are connected to a larger main combined sewer running along Campbell Ave. The combined sewer on Grove Ave. flows east to a 900 mm sewer located on Campbell Ave. which flows into a 1600 mm VP pipe. The combined sewer on Bridge flows north to a 600 mm VP pipe on Ronney Street which outlets to the same 1600 mm pipe on Campbell Avenue.

Summary of Study

For the sanitary sewer, our office assessed the Partington Avenue line for changes in flow as a result of the zoning change. For this purpose, our office followed the standard design methodologies recommended by the Ministry of the Environment (MOE) with factors defined in the City of Windsor’s own development manual. Further to this, our office reviewed the calculations for the Partington Ave. reconstruction, the calculations for which are from the 2009 design by our office.

Sanitary Sewer

As noted in the previous section, our assessment was based on flows with areas being assigned to the Partington Ave. sewer accounting for the entire site flowing south done Bridge Ave. and west down Grove Ave. to Partington Ave. Based on the proposed developed condition, refer to C1 in Appendix A, 1.27 hectares would be attributed to Partington Ave.

The sewer calculations were reviewed for the presence of increased flow. Consideration was given to the original flow from the site as an institutional development compared to the proposed. It should be noted that the original institutional use, per the City development manual would have a flow rate of 0.55 L/S/Ha while the residential equivalent would be 1.18 L/S/Ha. In terms of gross outflows this would be an overall development change from 0.70 L/s to 1.50 L/s.

The results of a more detailed updating of the sanitary sewer calculations, employing the Haddad Morgan and Associates Ltd. 2009 calculations can be found in Appendix B. From these calculations it was found that in the presence of the proposed development the sanitary network on Partington Ave. is adequate. Given the above calculated results, no further investigation was conducted as sufficient evidence exists to show the current infrastructure will support the proposed development.

Conclusion

As noted in the above section of this site report, the existing infrastructure surrounding the site is able to support the proposed development. The sanitary sewers have been confirmed as being designed to support the change in use.

Closing

We trust that the above meets your needs at this time. Should you require any further assistance in this regard please do not hesitate to contact our office.

Yours truly,

Haddad Morgan and Associates Ltd.



June 12, 2023

William Tape, Ph.D., P.E., P.Eng., C.A.H.P.
Senior Engineer

**SANITARY SEWER ANALYSIS
ADDITION OF GROVE AVENUE DEVELOPMENT TO
PARTINGTON AVENUE REHABILITATION FROM COLLEGE AVENUE TO TECUMSEH ROAD WEST**

DESIGNED BY
CHECKED BY

April, 2019

SEWAGE FLOW PER CAPITA:	0.0035 L/s	ULTIMATE FLOW FACTOR:	CITY OF WINDSOR STANDARD	MINIMUM PIPE SIZE:	250 mm DIAMETER
POPULATION DENSITY:	RESIDENTIAL - 50 PEOPLE PER HECTARE COMMERCIAL - 74 PEOPLE PER HECTARE INDUSTRIAL - 62 PEOPLE PER HECTARE INSTITUTIONAL - 22 PEOPLE PER HECTARE	INFILTRATION:	0.156 L/Ha/s	COEFFICIENT OF ROUGHNESS:	VP - 0.013 BP - 0.015
		MINIMUM VELOCITY:			0.61 m/s

CATCH- MENT NO.	LOCATION		PEOPLE PER HECTARE	AREA SERVED (hectares)	INCREMENTAL POPULATION SERVED	CUMULATIVE POPULATION SERVED	CUMULATIVE AREA SERVED (hectares)	ULTIMATE FLOW FACTOR	ULTIMATE FLOW EXPECTED (litres/sec.)	COEFFICIENT OF ROUGHNESS	PIPE DIAMETER OR SIZE (mm)	GRADIENT (m/100 m)	PIPE CAPACITY (litres/sec.)	FULL FLOW VELOCITY (m/s)	LENGTH OF SEWER (m)	UP- STREAM INVERT (m)	DOWN- STREAM INVERT (m)	COVER (m)	DESIGN GROUND ELEVATION (Upstream) (m)	
	SEWER LOCATION	AREA BOUNDED BY																		
		FROM M.H.	TO M.H.																	
13	Partington	5S3541	5S3540	50	0.64	32	32	0.64	6.00	0.78	0.013	250	0.40	38	0.77	106.0	178.220	177.796	2.030	180.500
14	Partington	5S3540	5S3539	50	0.54	27	59	1.18	6.00	1.43	0.013	250	0.30	33	0.66	106.0	177.796	177.478	1.954	180.000
15	Partington	5S3539	5S3538	50	0.53	27	86	1.72	6.00	2.07	0.013	250	0.25	30	0.61	106.0	177.478	177.213	2.554	180.600
16	Partington	5S3538	5C209	50	0.46	23	109	2.17	6.00	2.62	0.013	300	0.20	43	0.61	106.5	177.213	177.000	3.287	180.500
2	ALLEY	5S3537	5S3535	74	0.12	8	8	0.12	6.00	0.19	0.013	250	0.40	38	0.77	38.0	180.725	180.573	3.315	184.040
3	Partington	5S3535	5S3534	50	0.06	4	13	0.19	6.00	0.29	0.013	250	0.40	38	0.77	11.0	180.573	180.529	3.227	183.800
4	Partington	5S3534	5S3533	50	1.04	71	93	1.23	6.00	2.15	0.013	250	0.40	38	0.77	116.0	180.529	180.065	3.759	184.288
5	Partington	5S3533	5S3532	50	1.01	69	162	2.24	6.00	3.75	0.013	250	0.40	38	0.77	116.0	180.065	179.601	3.143	183.208
6	Partington	5S3532	5S3531	50	1.14	77	239	3.38	6.00	5.55	0.013	250	0.30	33	0.66	116.0	179.601	179.253	3.899	183.500
7	Partington	5S3531	5S3530	50	1.08	73	313	4.46	6.00	7.26	0.013	250	0.38	37	0.75	116.0	179.253	178.812	2.897	182.150
8	Partington	5S3530	5S3529	50	0.97	48	361	5.42	6.00	8.43	0.013	250	0.40	38	0.77	103.5	178.812	178.398	2.188	181.250
	Partington	5S3529	5S3528	50	0.00	0	361	5.42	6.00	8.43	0.013	300	0.30	53	0.75	7.0	178.398	178.377	1.902	180.600
Addition from Grove Ave. development																				
B1	Bridge	SAMH1	SAMH2	50	0.71	35	35	0.71	6.00	0.85	0.013	250	0.39	37	0.76	86.4	179.340	179.003	1.827	181.417
B2	Bridge	SAMH2	SAMH3	50	0.57	28	64	1.27	6.00	1.54	0.013	250	0.39	37	0.76	76.9	179.003	178.704	1.732	180.985
	Grove	SAMH3	5S3528	50	0.00	0	64	1.27	6.00	1.54	0.013	250	0.39	37	0.76	83.7	178.704	178.377	1.646	180.600
9	Partington	5S3528	5S3527	50	0.62	31	456	7.32	6.00	10.71	0.013	300	0.30	53	0.75	120.0	178.377	178.017	1.923	180.600
10	Partington	5S3527	5S3526	50	0.54	27	483	7.86	6.00	11.37	0.013	300	0.30	53	0.75	106.0	178.017	177.699	1.983	180.000
11	Partington	5S3526	5S3525	50	0.49	25	508	8.35	6.00	11.96	0.013	300	0.26	49	0.70	106.0	177.699	177.424	2.801	180.500
12	Partington	5S3525	5S3524	50	0.54	27	534	8.89	6.00	12.61	0.013	300	0.25	48	0.68	107.0	177.424	177.156	2.676	180.400
	Partington	5S3524	5S13	50	0.00	0	534	8.89	6.00	12.61	0.013	300	0.20	43	0.61	3.0	177.156	177.150	2.244	179.700
1	ALLEY	5S3536	5S3535	74	0.13	10	10	0.13	6.00	0.22	0.013	250	0.40	38	0.77	35.0	180.669	180.529	3.369	184.288