Addendum No. 1

Project Name: 1120 Cooke Blvd

MTE File No.: 48247-100

To: Adam Huycke, Halton Region

Date: December 5, 2023

cc: Adi Development Group

From: George Berenyi, MTE Consultants

RE: Addendum No. 1 to Functional Servicing and Stormwater Management Report dated February 17, 2023 for 1120 Cooke Blvd Three New Multi-Storey Buildings Phase 2

MTE Consultants Inc. were retained by ADI Developments (Masonry) Inc. to complete the site grading, servicing, and stormwater management design for the proposed mixed-used development located at 1120 Cooke Boulevard in the City of Burlington (see Key Plan in Dwg SA1). The overall site comprises 0.97ha. This shall memo shall serve as an addendum to the FSR & SWM Report dated February 17, 2023 for the captioned project. This addendum focuses on the external sanitary sewer upgrades along Cooke Blvd and Plains Road East.

Work Completed To Date

Section 3.4 and Appendix B of the FSR & SWM Report included a downstream sanitary sewer capacity analysis. The analysis was completed using a traditional sanitary sewer design sheet. In addition, a dynamic sanitary sewer system model using Infoworks ICM was built and integrated with the Region's provided InfoSewer mode. Appendix B of the FSR & SWM report included the Sanitary System Hydrologic and Hydraulic Modelling Technical Memorandum. Recommendations included pipe size upgrades to 6 reaches of sewer associated with the downstream sanitary sewer system on Cooke Blvd. and Plains Road East. The sanitary upgrades were intended to accommodate the captioned project as well development within the sewershed.

In addition, a technical memo was prepared and issued on July 21, 2023 and included an updated spreadsheet analysis of the downstream sanitary sewer system based on the latest development applications and proposed land uses within the sewershed. During preparation of the memo, additional information with respect to the existing sewer connectivity on Clearview Avenue also became known to MTE and was incorporated into the analysis. Recommendations includes pipe size upgrades to 8 reaches of sewer associated with the downstream sanitary sewer system on Cooke Blvd and Plains Road East. Again, the sanitary upgrades were intended to accommodate the captioned project as well as development within the sewershed.

Background Information and Supporting Studies

It should be noted that Halton Region is in the process of completing a Water, Wastewater and Transportation Integrated Master Plan. The Plan will build on existing Regional water, wastewater and transportation systems and develop strategies to enable local municipalities to meet growth targets. With respect to wastewater, the Plan will address the collection and treatment of sewage from urban areas before returning treated water safely to the environment. We note the study is being conducted in accordance with Phases 1 and 2 of the Municipal Class Environmental process. Specific recommendations for infrastructure improvements are currently being developed and coordinated with the City.

With respect to the City of Burlington, an Area Specific Plan for the Aldershot Mobility Hub is currently being completed. The Aldershot Mobility Hub is considered a Major Transit Station Area. As part of the ASP, the City of Burlington will be making recommendations with respect to infrastructure

improvements. MTE understands that specific recommendations for infrastructure improvements are currently being finalized. We note that the OPA/ZBA approvals for 1120 Cooke Blvd. are expected to take place prior to completion of the ASP. Therefore, the recommendations included in the City ASP and Region Master Plan will take into account current development applications, proposed land uses as per the MTSA and the expected zoning/engineering approvals for 1120 Cooke Blvd..

Updated Analysis

As part of the OPA/ZBA submission, Halton Region staff have reviewed the above information, studies in progress and work completed to date. During November 2023, Halton Region staff provided their feedback on the previously completed downstream sanitary sewer analysis. Based on the feedback, an updated downstream sanitary capacity sewer analysis has been completed and is attached to this addendum. As part of the analysis, the latest known development applications and land uses for the sewershed were confirmed. In the current analysis and addendum, these items remained the same as in the previously completed July 21, 2023 technical memo. As per the Region's feedback, the proposed pipe size upgrades were updated to reflect a consistent 525mm diameter pipe size along the same 8 reaches of external sanitary sewer. Figure SA1 and the associated sanitary sewer design spreadsheet were also updated and are attached as part of this addendum. The results confirm that a 525mm diameter pipe size is acceptable and provides sufficient sanitary sewer capacity to accommodate the known development applications and proposed land uses for the sewershed. The analysis shows that the sewer will operate without any surcharging and at less than 60% of design capacity.

Recommendations

We recommend that this addendum be submitted to Halton Region and City of Burlington to assist with their review of the OPA/ZBA applications. In addition, we recommend that Adi Development Group enter into an agreement with Halton Region to proceed with detailed design and implementation of the required external sanitary sewer upgrades. We note that 525mm diameter sanitary sewers qualify as DC eligible projects and recommend the agreement include details with respect to cost-sharing and cost recoveries. During detailed design, we recommend that details with respect to pipe slopes, horizontal/vertical alignments and service locations be confirmed. It should be noted that ECA applications will be required for the upgraded sanitary sewers. It is also MTE's understanding that separate Environmental Assessments and public notice processes are not required to implement the project.

Conclusions

Based on the analysis above, it is concluded that the proposed replacement of 5 reaches of sewer on Cooke Blvd and 3 reaches of sanitary sewer on Plains Road E with 525mm diameter sanitary sewers is the recommended solution to accommodate the known developments and proposed land uses within the sewershed. The recommended pipe upgrades will improve the level of sanitary service for the sewershed are not expected to create any negative impacts. The sewer design flows will be reduced to less than 60% of available pipe capacity without any surcharging as per Halton Region requirements. We also note that the detailed servicing design for the site and the external sewers will not impact the implementation of the Official Plan Amendment and Zoning By-Law Amendments proposed for the development.

We trust the above meets with the Regions' requirement for upgrades to the downstream sanitary sewer system.

Yours truly,

MTE Consultants Inc.



George Berenyi, P.Eng.
Division Manager
905-639-2552 ext.2461
GBerenyi@mte85.com

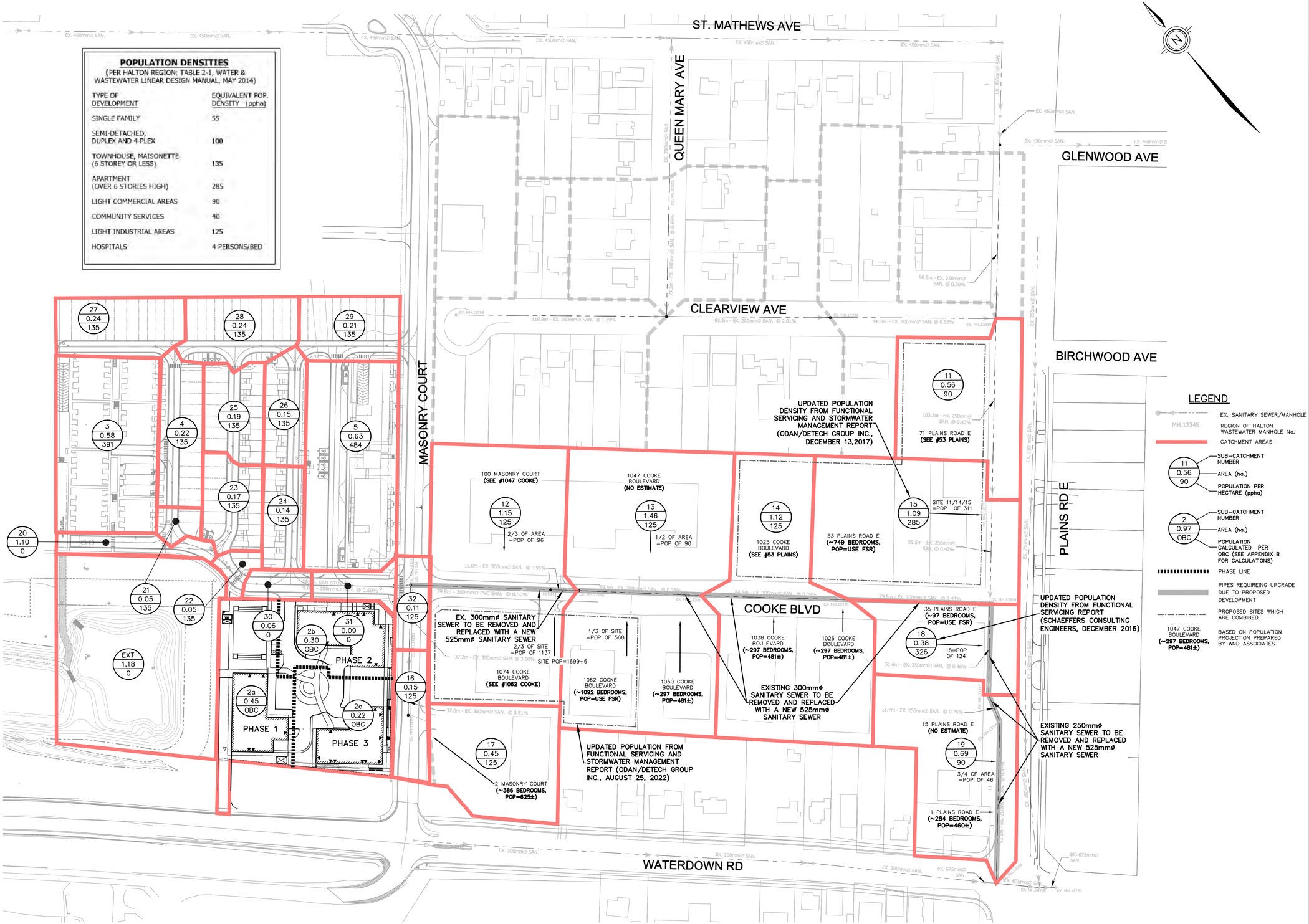
GPB:cnf
M:\48247\100\Reports\MTE\FSR + SWM Report\2023-12-05\2023-12-05 FSR Addendum No. 1.docx
Attachments.

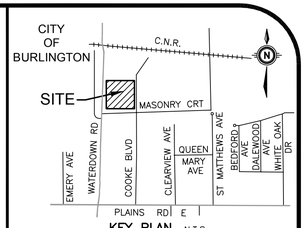
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MTE FILE PATH:

POPULATION DENSITIES
(PER HALTON REGION; TABLE 2-1, WATER & WASTEWATER LINEAR DESIGN MANUAL, MAY 2014)

TYPE OF DEVELOPMENT	EQUIVALENT POP. DENSITY (ppha)
SINGLE FAMILY	55
SEMI-DETACHED, DUPLEX AND 4-PLEX	100
TOWNHOUSE, MAISONETTE (6 STOREY OR LESS)	135
APARTMENT (OVER 6 STORIES HIGH)	285
LIGHT COMMERCIAL AREAS	90
COMMUNITY SERVICES	40
LIGHT INDUSTRIAL AREAS	125
HOSPITALS	4 PERSONS/BED





KEY PLAN N.T.S.

GEODETIC BM ELEV. = 100.718m
ELEVATIONS ARE REFERRED TO THE CITY OF BURLINGTON BENCHMARK NO. 0011922u2445.

SITE BENCHMARK ELEV. = m

NOTE TO CONTRACTOR :

DO NOT SCALE DRAWINGS.

CONTRACTORS MUST CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.

ALL DRAWINGS REMAIN THE PROPERTY OF THE ENGINEER AND SHALL NOT BE REPRODUCED OR REUSED WITHOUT THE ENGINEER'S WRITTEN PERMISSION.

THE OWNER/ARCHITECT/CONTRACTOR IS ADVISED THAT M.T.E. CONSULTANTS INC. CANNOT CERTIFY ANY COMPONENT OF THE SITE WORKS NOT INSPECTED DURING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO NOTIFY M.T.E. CONSULTANTS INC. PRIOR TO COMMENCEMENT OF CONSTRUCTION TO ARRANGE FOR INSPECTION.

LEGEND

- EX. SANITARY SEWER/MANHOLE
- MH.12345 — REGION OF HALTON WASTEWATER MANHOLE No.
- CATCHMENT AREAS
- 11 / 0.56 / 90 — SUB-CATCHMENT NUMBER; AREA (ha.); POPULATION PER HECTARE (ppha)
- 2 / 0.97 / OBC — SUB-CATCHMENT NUMBER; AREA (ha.); POPULATION CALCULATED PER OBC (SEE APPENDIX B FOR CALCULATIONS)
- PHASE LINE
- PIPES REQUIREING UPGRADE DUE TO PROPOSED DEVELOPMENT
- PROPOSED SITES WHICH ARE COMBINED
- 1047 COOKE BOULEVARD (~297 BEDROOMS, POP=481±) — BASED ON POPULATION PROJECTION PREPARED BY WND ASSOCIATES

No.	REVISION	BY	YYYY-MM-DD
8.			
7.			
6.			
5.	REVISED SANITARY SEWER SIZE	GPB	2023-12-04
4.	REVISED PER TECHNICAL MEMO	GPB	2023-07-21
3.	RE-ISSUED FOR CITY COMMENTS	GPB	2023-06-16
2.	RE-ISSUED FOR ZBA	GPB	2023-02-17
1.	ISSUED FOR ZBA	GPB	2021-11-22

MTE
Engineers, Scientists, Surveyors
905-639-2552

NOT FOR CONSTRUCTION

CLIENT
ADI DEVELOPMENT (MASONRY INC)
1100 BURLOAK DR SUITE 700 BURLINGTON, ON

PROJECT
1120 COOKE BLVD
THREE MULTI-STOREY BUILDING
1120 COOKE BLVD BURLINGTON, ON

DRAWING
EXTERNAL SANITARY SEWER CATCHMENT - AREA SERVICING PLAN

Project Manager	G. BERENYI	Project No.	48247-100
Design By	EXK/CNF	Checked By	GPB
Drawn By	LXQ/DXC	Checked By	GPB
Surveyed By	OTHERS	Drawing No.	SA1
Date	Apr.19/21		
Scale	1:1000	Sheet 2 of 4	

December 4, 2023 - 1:51:27 PM - Plotted By: Tao Liao

Station West- Phase 2 - Proposed Phase 2 Demands- Upgrading d/s Pipes (per REGION)

CITY OF BURLINGTON

SANITARY SEWER DESIGN SHEET

ENGINEERING SERVICES

Project No. 48247-100
Date: December 4, 2023
Designed By: EXK/CNF
Checked By: GPB
File: Q:\48247\100\SAN\48247-100 Sanitary Sewer Design Sheet.xls

DESIGN PARAMETERS

Design Flow

Design flow factor	275	L/c/d
Infiltration Factor:	0.286	L/s/ha
Mannings n:	0.015	dia < 600mm
	0.013	dia ≥ 600mm
Min Velocity:	0.6	m/s
Max Velocoty:	3	m/s

Peaking Factor

Harmon Formula

$$M = K_{ex} \times \left(1 + \frac{14}{4 + \sqrt{P \div P_k}}\right)$$

$$K_{ex} = \frac{A_d + 0.80 \times (A_i + A_c)}{A_d + A_i + A_c}$$

Max Peaking factor	5
Min Peaking Factor	2

LOCATION				RESIDENTIAL / COMMERCIAL							DESIGN												
																Proposed Sewer Design							
Area No. (Reg. drawing SA1)	Street Name	From MH	To MH	Incremental Area [ha]	Cumulative Area [ha]	Units (#)	Density (P/ha)	Density (P/ unit)	Population	Accum. Res. Population	Infil-tration l/s	Peaking Factor M	Average Flow l/s	Peak Flow l/s	Total Flow l/s	Diameter [mm]	Material n=0.015	Grade %	Capacity l/s	Velocity m/s	Actual Velocity m/s	% Pipe Full	Remarks
27	Private Site	EX. MH 10A	EX. MH 9A	0.24	0.24		135.00		33	33	0.1	4.35	0.11	0.5	0.5	200	PVC	0.50%	20.4	0.64	0.27	3%	
24	Private Site	EX. MH 14A	EX. MH 13A	0.14	0.14		135.00		19	19	0.0	4.38	0.06	0.3	0.3	200	PVC	0.50%	20.4	0.64	0.23	1%	
26	Private Site	EX. MH 13A	EX. MH 11A	0.15	0.29		135.00		20	39	0.1	4.34	0.12	0.5	0.6	200	PVC	0.50%	20.4	0.64	0.29	3%	
29	Private Site	EX. MH 12A	EX. MH 11A	0.21	0.21		135.00		29	29	0.1	4.36	0.09	0.4	0.5	200	PVC	0.50%	20.4	0.64	0.26	2%	
28	Private Site	EX. MH 11A	EX. MH 9A	0.24	0.74		135.00		32	100	0.2	4.24	0.32	1.4	1.6	200	PVC	0.50%	20.4	0.64	0.38	8%	
4	Private Site	EX. MH 9A	EX. MH 8A	0.22	1.20		135.00		30	163	0.3	4.18	0.52	2.2	2.5	200	PVC	0.50%	20.4	0.64	0.44	12%	
3	Private Site	EX. SAN STUB 2 (PH1 STACKED)	EX. MH 8A	0.58	0.58	140.00		1.62	227	227	0.2	4.13	0.72	3.0	3.1	200	PVC	1.00%	28.9	0.91	0.60	11%	
21	Private Site	EX. MH 8A	EX. MH 7A	0.05	1.83		135.00		7	397	0.5	4.02	1.26	5.1	5.6	200	PVC	0.50%	20.4	0.64	0.55	27%	
20	Private Site	EX. MH 7A	EX. MH 6A	0.10	1.93					397	0.6	4.02	1.26	5.1	5.6	200	PVC	0.50%	20.4	0.64	0.55	28%	
	Private Site	EX. MH 6A	EX. MH 5A		1.93					397	0.6	4.02	1.26	5.1	5.6	200	PVC	0.50%	20.4	0.64	0.55	28%	
25	Private Site	EX. MH 17A	EX. MH16A	0.19	0.19		135.00		26	26	0.1	4.36	0.08	0.4	0.4	200	PVC	0.50%	20.4	0.64	0.26	2%	
23	Private Site	EX. MH 16A	EX. MH 15A	0.17	0.36		135.00		23	49	0.1	4.32	0.16	0.7	0.8	200	PVC	0.50%	20.4	0.64	0.31	4%	
	Cooke Blvd. (New ROW)	EX. MH 15A	EX. MH 5A		0.36					49	0.1	4.32	0.16	0.7	0.8	200	PVC	0.50%	20.4	0.64	0.31	4%	
22	Cooke Blvd. (New ROW)	EX. MH 5A	EX. MH 4A	0.05	2.34		135.00		7	453	0.7	4.00	1.44	5.8	6.4	200	PVC	0.57%	21.8	0.69	0.60	29%	
2A	Cooke Blvd. (New ROW)	PR.NEW-1A (PH2- HIGH DENSITY) - PHASE 1	EX. MH 4A	0.38	0.38				1351	1351	0.1	3.71	4.30	16.0	16.1	200	PVC	2.00%	40.8	1.28	1.21	39%	
30	Cooke Blvd. (New ROW)	EX. MH 4A	EX. MH 3A	0.06	2.78					1804	0.8	3.62	5.74	20.8	21.6	250	PVC	0.69%	43.5	0.88	0.87	50%	
2B	Cooke Blvd. (New ROW)	PR.NEW-3A (PH2- HIGH DENSITY) - PHASE 2	EX. MH 14204	0.27	0.27				1156	1166	0.08	3.76	3.71	13.9	14.0	200	PVC	2.00%	40.8	1.28	1.16	34%	+POP RE: COMM area. Refer to SAN calcs for detailed demands.
5	Cooke Blvd. (New ROW)	EX. SAN C -MH 1 (PH1- MID RISE)	EX. MH 3A	0.63	0.63	188.00		1.62	305	305	0.2	4.08	0.97	4.0	4.1	200	PVC	1.56%	36.1	1.13	0.75	11%	
31	Cooke Blvd. (New ROW)	EX. MH 3A	EX. SAN STUB 4	0.09	3.77					3275	1.1	3.41	10.42	35.5	36.6	300	PVC	1.04%	85.0	1.21	1.16	43%	
	Cooke Blvd. (New ROW)	EX. SAN STUB 4	EX. MH1A		3.77					3275	1.1	3.41	10.42	35.5	36.6	300	PVC	1.04%	85.0	1.21	1.16	43%	
2C	Masonry Ct.	PR.NEW-4A (PH2- HIGH DENSITY) - PHASE 3	EX. MH3A	0.32	0.32				1103	1113	0.1	3.77	3.54	13.4	13.4	200	PVC	2.00%	40.8	1.28	1.15	33%	+POP RE: COMM area. Refer to SAN calcs for detailed demands.

Station West- Phase 2 - Proposed Phase 2 Demands- Upgrading d/s Pipes (per REGION)

CITY OF BURLINGTON

SANITARY SEWER DESIGN SHEET

ENGINEERING SERVICES

Project No. 48247-100
Date: December 4, 2023
Designed By: EXK/CNF
Checked By: GPB
File: Q:\48247\100\SAN\48247-100 Sanitary Sewer Design Sheet.xls

DESIGN PARAMETERS

Design Flow

Design flow factor	275	L/c/d
Infiltration Factor:	0.286	L/s/ha
Mannings n:	0.015	dia < 600mm
	0.013	dia ≥ 600mm
Min Velocity:	0.6	m/s
Max Velocoty:	3	m/s

Peaking Factor

Harmon Formula

$$M = K_{ex} \times \left(1 + \frac{14}{4 + \sqrt{P + P_e}}\right)$$

$$K_{ex} = \frac{A_s + 0.80 \times (A_i + A_c)}{A_s + A_i + A_c}$$

Max Peaking factor 5
Min Peaking Factor 2

LOCATION				RESIDENTIAL / COMMERCIAL						DESIGN													
																Proposed Sewer Design							
Area No. (Reg. drawing SA1)	Street Name	From MH	To MH	Incremental Area [ha]	Cumulative Area [ha]	Units (#)	Density (P/ha)	Density (P/ unit)	Population	Accum. Res. Population	Infil-tration l/s	Peaking Factor M	Average Flow l/s	Peak Flow l/s	Total Flow l/s	Diameter [mm]	Material n=0.015	Grade %	Capacity l/s	Velocity m/s	Actual Velocity m/s	% Pipe Full	Remarks
16, 17, 32	Masonry Ct.	EX. MH 14204	EX. MH 14203	0.71	1.03		125.00		625	1738	0.3	3.63	5.53	20.1	20.4	300	PVC	3.80%	162.4	2.31	1.57	13%	Mod.POP per Dwg SA1
	Masonry Ct.	EX. MH 14203	EX. MH 1A		1.03				0	1738	0.3	3.63	5.53	20.1	20.4	300	PVC	3.80%	162.4	2.31	1.57	13%	
12	Cooke Blvd.	EX. MH 1A	EX. MH 3A	1.15	5.95		125.00		96	5109	1.7	3.24	16.26	52.6	54.3	**525**	PVC	0.50%	267.6	1.22	0.96	20%	Mod.POP per Dwg SA1
	Cooke Blvd.	EX. MH 3A	EX. MH 13295		5.95		125.00	>>	1137	6245	1.7	3.15	19.88	62.7	64.4	**525**	PVC	3.95%	752.1	3.43	2.10	9%	Mod.POP per Dwg SA1
13	Cooke Blvd.	EX. MH 13295	EX. MH 13301	1.46	7.41		125.00	>>	1141	7386	2.1	3.08	23.51	72.5	74.6	**525**	PVC	0.38%	233.3	1.07	0.95	32%	Mod.POP per Dwg SA1
14	Cooke Blvd.	EX. MH 13301	EX. MH 13310	1.12	8.53		125.00		481	7867	2.4	3.06	25.04	76.6	79.0	**525**	PVC	0.39%	236.3	1.08	0.97	33%	Mod.POP per Dwg SA1
	Cooke Blvd.	EX. MH 13310	EX. MH 13319		8.53				481	8348	2.4	3.03	26.57	80.6	83.0	**525**	PVC	0.40%	239.3	1.09	0.99	35%	Mod.POP per Dwg SA1
11	Plains Road	EX. MH 13339	EX. MH 13327	0.56	0.56		90.00		0	0	0.2	4.50	0.00	0.0	0.2	250	PVC	0.43%	34.3	0.69	0.18	0%	Mod.POP per Dwg SA1
15	Plains Road	EX. MH 13327	EX. MH 13319	1.09	1.65		285.00		311	311	0.5	4.07	0.99	4.0	4.5	250	PVC	0.43%	34.3	0.69	0.48	13%	
18	Plains Road	EX. MH 13319	EX. MH 13317	0.38	10.56		326.00		124	8783	3.0	3.01	27.96	84.2	87.2	**525**	PVC	0.46%	256.6	1.17	1.06	34%	
	Plains Road	EX. MH 13317	EX. MH 13314		10.56					8783	3.0	3.01	27.96	84.2	87.2	**525**	PVC	0.76%	329.9	1.51	1.27	26%	
19	Plains Road	EX. MH 13314	EX. MH 19205	0.69	11.25		90.00		507	9290	3.2	2.99	29.57	88.3	91.5	**525**	PVC	0.47%	259.4	1.18	1.08	35%	Mod.POP per Dwg SA1

Indicates that the sewer requires replacement based off Halton Region Design Guidelines (sewers equal or less than 450mm diam. should be designed to no more than 60% full, and triggered for upsizing if it reaches 70% full)

Proposed Pipes to be upgraded part of this development, per the Region's request for 525mm.

Updated per current development projects underway as found on City of Burlington website and by BA Group's research for traffic impacts in the area.