APPENDIX D

Appendix D1 – Tor (Phase 1): Storm Drainage Plan & Design Sheets

(David Schaeffer Engineering Ltd., August 2024)

Appendix D2 – Tor Subnode Storm Design Sheets

(David Schaeffer Engineering Ltd., October 2024)

Appendix D3 – Easement Conveyance Calculations

(David Schaeffer Engineering Ltd, April 2024)

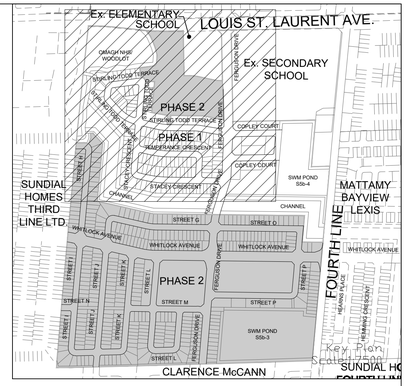
Appendix D1

Tor (Phase 1) Engineering Drawings:

- Drawing 24: Storm Drainage Plan
- Drawing 26: External Pre & Post Storm Drainage Plan
- Drawing 27: Storm Sewer Design Sheets

(David Schaeffer Engineering Ltd., October 2024)

ALL DWELLINGS WITH EXCEPTION OF SLAB-ON-GRADE UNITS, SHALL BE PROVIDED WITH SUMP PUMPS IN ACCORDANCE WITH SECTION 1.1.27.1, STD. DWG. E-25, TO THE SATISFACTION OF THE TOWN OF MILTON.



DWG # 25

DWG # ##

LEGEND

- UPSTREAM MH TO DOWNSTREAM MH
- RUN-OFF COEFFICIENT
- DRAINAGE AREA IN HECTARES
- UPSTREAM MH TO DOWNSTREAM MH
- RUN-OFF COEFFICIENT
- DRAINAGE AREA IN HECTARES (EXTERNAL)
- OVERLAND FLOW DIRECTION
- EXTERNAL OVERLAND FLOW DIRECTION
- ANTI SEEPAGE COLLAR
- SINGLE/DOUBLE CATCHBASIN
- STORM SEWER TRIBUTARY BOUNDARY
- STORM SEWER SUB-CATCHMENT BOUNDARY
- EXTERNAL STORM TRIBUTARY BOUNDARY
- LIMIT OF PHASE 1 CONSTRUCTION
- POND WATERSHED BOUNDARY
- OTHER PHASES

NOT FOR CONSTRUCTION

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY R-PE SURVEYING LTD., REFERENCE No. 22-049, CAD FILE No.22049tp05, SURVEY RECEIVED FEBRUARY 16, 2023.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY R-PE SURVEYING LTD., JOB No. 22-049, CAD FILE No.22049s03, SURVEY RECEIVED OCTOBER 11, 2023.

BENCHMARK (MINISTRY OF TRANSPORTATION)
No. 00819828155 ELEVATION = 185.351m

No.	DATE	BY	DESCRIPTION	APPROVED
6.	23-10-30	C.J.M.	TOWN PRE-MYLAR SUBMISSION	
5.	23-10-25	C.J.M.	ISSUED FOR REGIONAL APPROVAL	
4.	23-10-18	C.J.M.	FOR CH PERMIT SUBMISSION	
3.	23-08-25	C.J.M.	3rd REGION SUBMISSION	
2.	23-07-26	C.J.M.	2nd SUBMISSION	
1.	23-04-10	C.J.M.	1st SUBMISSION	

SCALE: 1:1000 (0 10 20 30 40)

REFERENCES

APPROVALS

FIELD NOTES

MUNICIPAL APPROVAL

DEVELOPMENT SERVICES — DATE

BELL ☐ HYDRO ☐
GAS ☐ CABLE ☐
TRAFFIC ☐ WATER ☐

REGIONAL APPROVAL

DESIGN OF SANITARY, WATER SERVICES AND REGIONAL ROAD WORKS APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO HALTON REGION STANDARDS & SPECIFICATIONS & LOCATIONAL APPROVAL FROM AREA MUNICIPALITY

APPROVED BY ALEX HILDER VIA EMAIL — OCTOBER 30, 2023
LEGISLATIVE AND PLANNING SERVICES — DATE

STAMP

LICENCED PROFESSIONAL ENGINEER
C. J. MANZO
100511578
23-10-30
PROVINCE OF ONTARIO

DSEL
600 Alden Road, Suite 606
Markham, Ontario, L3R 0E7
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TOWN OF MILTON
DEVELOPMENT SERVICES

TOWN OF MILTON FILE No: 24T-22001/M(A)

Halton REGION
The Regional Municipality of Halton

REGION OF HALTON FILE No: DM-1075

DEVELOPER
MATTAMY (BROWNRIDGE) LIMITED

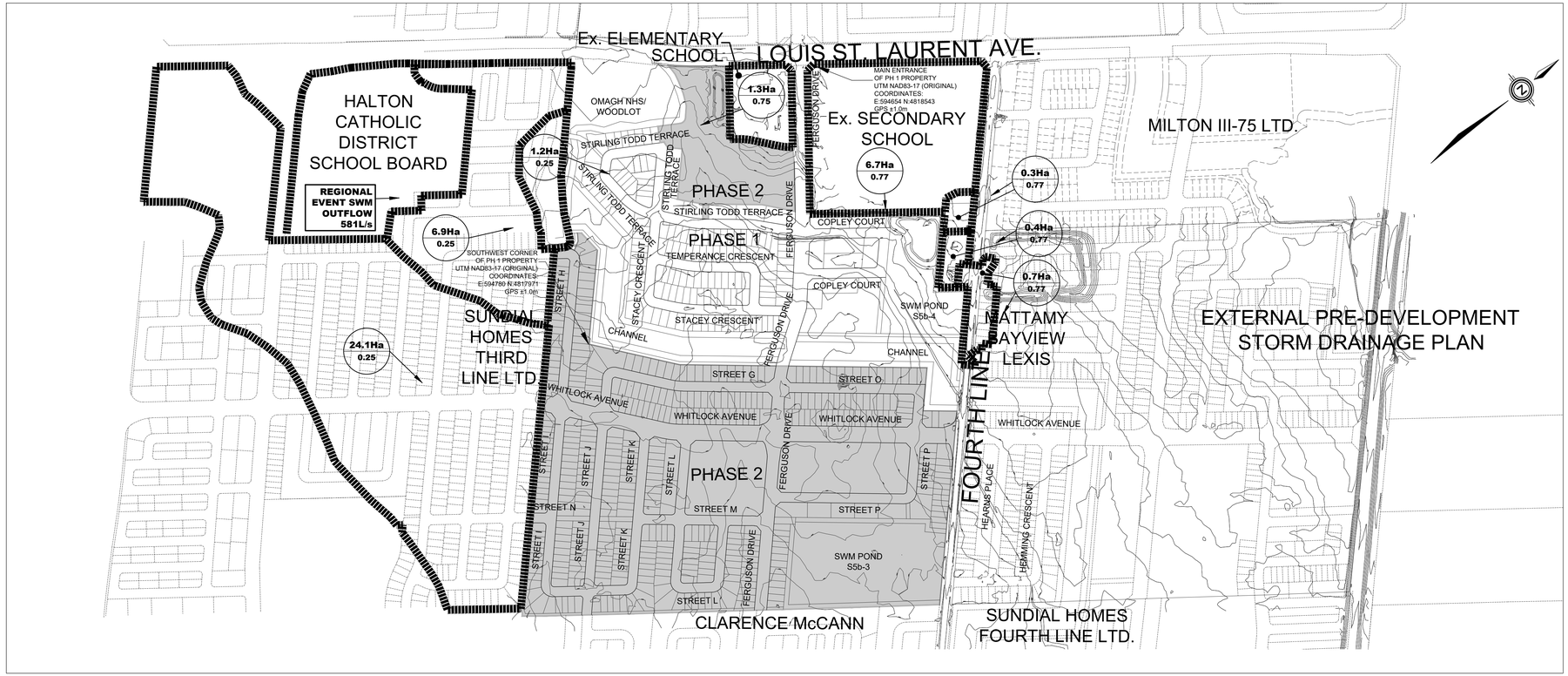
DEVELOPMENT MANAGER
mattamyHOMES

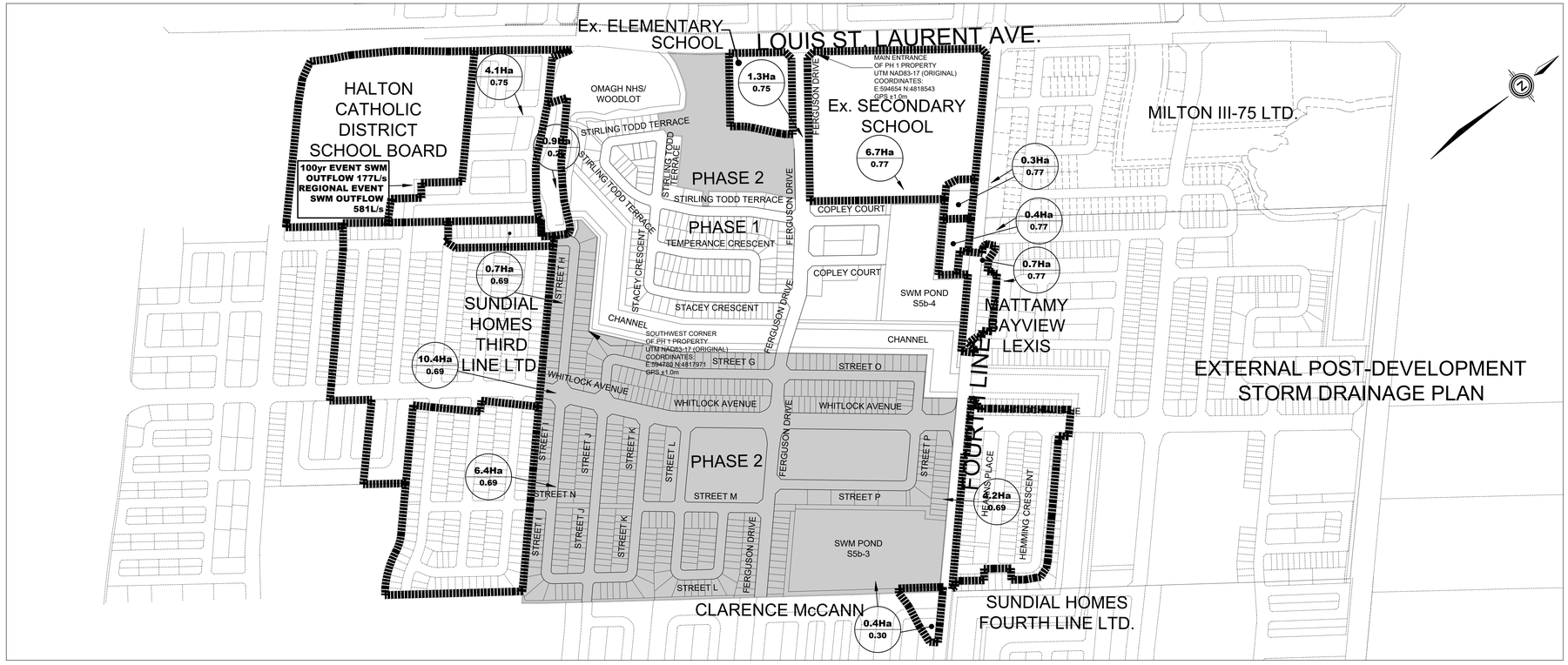
PROJECT
MATTAMY - GARITO BARBUTO TOR PHASE 1

TITLE
STORM DRAINAGE PLAN

© DSEL

DRAWN BY: H.P.	CHECKED BY: C.M.K.
DESIGNED BY: H.C.	CHECKED BY: C.J.M.
PROJECT NO. 22-1333	SHEET 24 OF 73





NOT FOR CONSTRUCTION

TOPOGRAPHIC INFORMATION

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LEGAL INFORMATION

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BENCHMARK (MINISTRY OF TRANSPORTATION)
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3.	23-08-25	C.J.M.	3rd REGION SUBMISSION	
2.	23-07-26	C.J.M.	2nd SUBMISSION	
1.	23-04-10	C.J.M.	1st SUBMISSION	

SCALE: 1:4000 (0, 40, 80, 120, 160)

REFERENCES

APPROVALS

FIELD NOTES

MUNICIPAL APPROVAL

DEVELOPMENT SERVICES — DATE

BELL ☐ HYDRO ☐ GAS ☐ CABLE ☐ TRAFFIC ☐ WATER ☐

STAMP

LICENSED PROFESSIONAL ENGINEER — C. J. MANZO — 100511579 — 23-10-30 — PROVINCE OF ONTARIO

REGIONAL APPROVAL

DESIGN OF SANITARY, WATER SERVICES AND REGIONAL ROAD WORKS APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO HALTON REGION STANDARDS & SPECIFICATIONS & LOCATIONAL APPROVAL FROM AREA MUNICIPALITY

APPROVED BY ALEX HILDER VIA EMAIL — LEGISLATIVE AND PLANNING SERVICES — OCTOBER 30, 2023 — DATE

DSEL
600 Alden Road, Suite 606
Markham, Ontario, L3R 0E7
Tel. (905) 475-3080
Fax. (905) 475-3081
www.DSEL.ca

TOWN OF MILTON DEVELOPMENT SERVICES — TOWN OF MILTON FILE No: 24T-22001/M(A)

Halton REGION — The Regional Municipality of Halton — REGION OF HALTON FILE No: DM-1075

DEVELOPER
MATTAMY (BROWNRIDGE) LIMITED

DEVELOPMENT MANAGER
mattamyHOMES

PROJECT
MATTAMY - GARITO BARBUTO TOR PHASE 1

TITLE
EXTERNAL PRE&POST-DEVELOPMENT STORM DRAINAGE PLAN

© DSEL

DRAWN BY: H.P.	CHECKED BY: C.M.K.
DESIGNED BY: H.C.	CHECKED BY: C.J.M.
PROJECT NO. 22-1333	SHEET 26 OF 73

STORM SEWER DESIGN – SHEET 1 OF 7

LOCATION			CONTRIBUTING AREA				FLOW		SEWER DESIGN											
(1) STREET	(2) FROM MANHOLE	(3) TO MANHOLE	(4) AREA "A" (ha)	(5) STORM COEFFICIENT "C"	(6) SECTION AxC	(7) ACCUMULATED AxC	(8) 5 YR RATIONAL INTENSITY "I" (mm/hr)	(9) FLOW Q (L/s)	(10) LENGTH (m)	(11) SLOPE (%)	(12) DIAMETER (mm)	(13) FULL FLOW CAPACITY (L/s)	(14) FULL FLOW VELOCITY (m/s)	(15) TIME OF FLOW IN PIPE (min)	(16) TIME OF CONCENTRATION (min)	(17) FALL IN PIPE SECTION (m)	(18) MANHOLE INLET INVERT (m)	(19) MANHOLE LOSSES (m)	(20) MANHOLE OUTLET INVERT (m)	(21) PIPE % CAPACITY
BLOCK 157																				
															12.27					
	135	152	0.88	0.90	0.79	0.79	94.55	208	8.5	0.25	600	307	1.09	0.13	12.40					68%
To COPLEY COURT, Pipe 152 - 153						0.79									12.40					
TEMPERANCE CRESCENT															10.00					
	136	137	0.51	0.77	0.39	0.39	105.37	115	95.0	0.50	375	147	1.33	1.19	11.19					78%
	137	138			0.00	0.39	99.35	108	10.5	0.50	375	147	1.33	0.13	11.33					74%
	138	139			0.00	0.39	98.74	108	26.0	0.50	375	147	1.33	0.33	11.65					74%
			0.18	0.56	0.10	0.49														
	139	146	0.30	0.77	0.23	0.72	97.24	196	36.5	0.25	600	307	1.09	0.56	12.21					64%
To STACEY CRESCENT, Pipe 146 - 147						0.72									12.21					
STACEY CRESCENT															10.00					
	140	141	0.17	0.77	0.13	0.13	105.37	38	22.5	0.50	300	81	1.14	0.33	10.33					47%
	141	142			0.00	0.13	103.63	38	10.0	0.50	300	81	1.14	0.15	10.47					47%
	142	143			0.00	0.13	102.88	37	37.5	0.50	300	81	1.14	0.55	11.02					46%
			0.16	0.56	0.09	0.22														
	143	144	0.30	0.77	0.23	0.45	100.18	126	24.5	0.55	375	154	1.39	0.29	11.31					82%
	144	145			0.00	0.45	98.79	124	25.0	0.25	600	307	1.09	0.38	11.70					40%
			0.14	0.56	0.08	0.53														
	145	146	0.35	0.77	0.27	0.80	97.04	215	81.0	0.25	600	307	1.09	1.24	12.94					70%
Contribution From TEMPERANCE CRESCENT, Pipe 139 - 146						0.72									12.21					
	146	147	0.26	0.77	0.20	1.72	91.81	440	77.5	0.25	750	557	1.26	1.03	13.97					79%
To FERGUSON DRIVE, Pipe 147 - 148						1.72									13.97					

NOTES:
Q = 2.78ACI L/s — Initial time of concentration = 10 min.
C = Runoff Co-efficient
I = Intensity (mm/hr) — $I5 = \frac{959}{(td + 5.7)^{0.802}}$
A = Area (hectares)
n = 0.013 (conc.) for sewers =>525mm

PROJECT: MATTAMY - GARITO BARBUTO TOR PHASE 1
PROJECT NO: 22-1333 — DESIGNED BY: C.M.K. — CHECKED BY: C.J.M.
CONSULTANT: DAVID SCHAEFFER ENGINEERING LTD. — DATE: 23 Oct 2023

TOWN OF MILTON — STORM SEWER DESIGN — SHEET 1 OF 7

STORM SEWER DESIGN – SHEET 2 OF 7

LOCATION			CONTRIBUTING AREA				FLOW		SEWER DESIGN											
(1) STREET	(2) FROM MANHOLE	(3) TO MANHOLE	(4) AREA "A" (ha)	(5) STORM COEFFICIENT "C"	(6) SECTION AxC	(7) ACCUMULATED AxC	(8) 5 YR RATIONAL INTENSITY "I" (mm/hr)	(9) FLOW Q (L/s)	(10) LENGTH (m)	(11) SLOPE (%)	(12) DIAMETER (mm)	(13) FULL FLOW CAPACITY (L/s)	(14) FULL FLOW VELOCITY (m/s)	(15) TIME OF FLOW IN PIPE (min)	(16) TIME OF CONCENTRATION (min)	(17) FALL IN PIPE SECTION (m)	(18) MANHOLE INLET INVERT (m)	(19) MANHOLE LOSSES (m)	(20) MANHOLE OUTLET INVERT (m)	(21) PIPE % CAPACITY
FERGUSON DRIVE															10.00					
			0.05	0.81	0.04	0.04														
			0.07	0.56	0.04	0.08														
	127	128	0.10	0.77	0.08	0.16	105.37	46	19.0	0.50	300	81	1.14	0.28	10.28					57%
	128	129	0.15	0.56	0.08	0.24	103.90	69	34.0	0.50	375	147	1.33	0.43	10.70					47%
	129	130			0.00	0.24	101.72	68	7.5	0.50	375	147	1.33	0.09	10.80					46%
To COPLEY COURT, Pipe 130 - 131TEE						0.24									10.80					
															10.00					
	122	123	0.29	0.77	0.22	0.22	105.37	65	41.0	0.50	300	81	1.14	0.60	10.60					81%
Contribution From SCHOOL CONNECTION, Pipe 121 - 123						0.96									12.40					
	123	1300	0.12	0.77	0.09	1.28	93.99	333	63.5	0.75	600	532	1.88	0.56	12.97					63%
Contribution From BLOCK 458, Pipe 1301 - 1300						0.35									10.19					
	1300	124			0.00	1.63	93.99	425	11.0	0.35	675	497	1.39	0.13	13.10					85%
Contribution From BLOCK 458, Pipe 118 - 124						0.58									10.20					
	124	125			0.00	2.20	91.19	558	37.5	0.25	825	718	1.34	0.47	13.56					78%
			0.04	0.60	0.02	2.23														
			0.05	0.60	0.03	2.26														
	125	126	0.13	0.77	0.10	2.36	89.42	585	21.0	0.30	825	786	1.47	0.24	13.80					74%
	126	130			0.00	2.36	88.55	580	10.0	0.30	825	786	1.47	0.11	13.92					74%
To COPLEY COURT, Pipe 130 - 131TEE						2.36									13.92					
Contribution From STACEY CRESCENT, Pipe 146 - 147						1.72									13.97					
	147	148	0.04	0.81	0.03	1.76	87.95	429	33.0	0.25	750	557	1.26	0.44	14.40					77%
			0.11	0.77	0.08	1.84														
			0.12	0.56	0.07	1.91														
	148	149	0.11	0.81	0.09	2.00	86.42	480	27.5	0.30	750	610	1.38	0.33	14.73					79%
To COPLEY COURT, Pipe 149 - 150						2.00									14.73					

NOTES:
Q = 2.78ACI L/s — Initial time of concentration = 10 min.
C = Runoff Co-efficient
I = Intensity (mm/hr) — $I5 = \frac{959}{(td + 5.7)^{0.802}}$
A = Area (hectares)
n = (conc.) for sewers =>525mm

PROJECT: MATTAMY - GARITO BARBUTO TOR PHASE 1
PROJECT NO: 22-1333 — DESIGNED BY: C.M.K. — CHECKED BY: C.J.M.
CONSULTANT: DAVID SCHAEFFER ENGINEERING LTD. — DATE: 23 Oct 2023

TOWN OF MILTON — STORM SEWER DESIGN — SHEET 2 OF 7

STORM SEWER DESIGN – SHEET 3 OF 7

LOCATION			CONTRIBUTING AREA				FLOW		SEWER DESIGN											
(1) STREET	(2) FROM MANHOLE	(3) TO MANHOLE	(4) AREA "A" (ha)	(5) STORM COEFFICIENT "C"	(6) SECTION AxC	(7) ACCUMULATED AxC	(8) 5 YR RATIONAL INTENSITY "I" (mm/hr)	(9) FLOW Q (L/s)	(10) LENGTH (m)	(11) SLOPE (%)	(12) DIAMETER (mm)	(13) FULL FLOW CAPACITY (L/s)	(14) FULL FLOW VELOCITY (m/s)	(15) TIME OF FLOW IN PIPE (min)	(16) TIME OF CONCENTRATION (min)	(17) FALL IN PIPE SECTION (m)	(18) MANHOLE INLET INVERT (m)	(19) MANHOLE LOSSES (m)	(20) MANHOLE OUTLET INVERT (m)	(21) PIPE % CAPACITY
SCHOOL CONNECTION																				
			1.28	0.75	0.96	0.96									10.80					
	119	120			0.00	0.96	101.25	270	20.0	0.30	600	336	1.19	0.28	11.08					80%
	120	121			0.00	0.96	99.89	266	64.0	0.30	600	336	1.19	0.90	11.98					79%
	121	123			0.00	0.96	95.81	255	30.5	0.30	600	336	1.19	0.43	12.40					76%
To FERGUSON DRIVE, Pipe 123 - 124						0.96									12.40					
STIRLING TODD TERRACE																				
															10.00					
	106	107	0.13	0.77	0.10	0.10	105.37	29	9.0	0.75	300	99	1.40	0.11	10.11					30%
	107	108	0.17	0.77	0.13	0.23	104.79	67	50.5	0.60	300	89	1.25	0.67	10.78					76%
	108	109			0.00	0.23	101.35	65	29.0	0.55	300	85	1.20	0.40	11.18					77%
	109	110			0.00	0.23	99.41	64	19.5	0.55	300	85	1.20	0.27	11.45					75%
To STIRLING TODD TERRACE, Pipe 110 - 111						0.23									11.45					
															10.00					
	101	102	0.09	0.56	0.05	0.05	105.37	15	35.0	0.50	300	81	1.14	0.51	10.51					18%
			0.07	0.56	0.04	0.09														
	102	103	0.21	0.77	0.16	0.25	102.70	72	28.0	0.65	300	92	1.30	0.36	10.87					78%
	103	104			0.00	0.25	100.92	70	10.5	0.50	375	147	1.33	0.13	11.00					48%
			0.03	0.60	0.02	0.27														
			0.07	0.81	0.06	0.33														
	104	1050	0.12	0.78	0.09	0.42	100.28	117	29.0	0.25	600	307	1.09	0.45	11.45					38%
	1050	105	0.04	0.60	0.02	0.44	98.18	121	37.0	0.25	600	307	1.09	0.57	12.01					39%
			0.07	0.56	0.04	0.48														
			0.07	0.60	0.04	0.52														
			0.11	0.81	0.09	0.61														
	105	110	0.20	0.77	0.15	0.77	98.18	209	31.0	0.25	600	307	1.09	0.48	12.49					68%

NOTES:
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I = Intensity (mm/hr) — $I5 = \frac{959}{(td + 5.7)^{0.802}}$
A = Area (hectares)
n = (conc.) for sewers =>525mm

PROJECT: MATTAMY - GARITO BARBUTO TOR PHASE 1
PROJECT NO: 22-1333 — DESIGNED BY: C.M.K. — CHECKED BY: C.J.M.
CONSULTANT: DAVID SCHAEFFER ENGINEERING LTD. — DATE: 23 Oct 2023

TOWN OF MILTON — STORM SEWER DESIGN — SHEET 3 OF 7

STORM SEWER DESIGN – SHEET 4 OF 7

LOCATION			CONTRIBUTING AREA				FLOW		SEWER DESIGN											
(1) STREET	(2) FROM MANHOLE	(3) TO MANHOLE	(4) AREA "A" (ha)	(5) STORM COEFFICIENT "C"	(6) SECTION AxC	(7) ACCUMULATED AxC	(8) 5 YR RATIONAL INTENSITY "I" (mm/hr)	(9) FLOW Q (L/s)	(10) LENGTH (m)	(11) SLOPE (%)	(12) DIAMETER (mm)	(13) FULL FLOW CAPACITY (L/s)	(14) FULL FLOW VELOCITY (m/s)	(15) TIME OF FLOW IN PIPE (min)	(16) TIME OF CONCENTRATION (min)	(17) FALL IN PIPE SECTION (m)	(18) MANHOLE INLET INVERT (m)	(19) MANHOLE LOSSES (m)	(20) MANHOLE OUTLET INVERT (m)	(21) PIPE % CAPACITY
Contribution From STIRLING TODD TERRACE, Pipe 109-110						0.23									11.45					
			0.08	0.81	0.06	1.06														
	110	111	0.38	0.77	0.29	1.36	93.64	353	42.0	0.30	675	460	1.29	0.54	13.03					77%
	111	112	0.13	0.56	0.07	1.43	91.45	363	37.5	0.30	675	460	1.29	0.49	13.52					79%
			0.05	0.60	0.03	1.46														
	112	114	0.15	0.56	0.08	1.54	89.59	384	10.0	0.25	750	557	1.26	0.13	13.65					69%
Contribution From BLOCK 458, Pipe 113 - 114						1.79									11.93					
			0.03	0.60	0.02	3.35														
			0.17	0.81	0.14	3.49														
	114	115TEE	0.19	0.77	0.15	3.64	89.10	900	44.5	0.25	1800x900	2726	1.77	0.42	14.07					33%
			0.06	0.60	0.04	3.67														
	115TEE	116TEE	0.16	0.56	0.09	3.76	87.58	915	22.5	0.25	1800x900	2726	1.77	0.21	14.28					34%
	116TEE	117TEE			0.00	3.76	86.84	907	21.5	0.25	1800x900	2726	1.77	0.20	14.48					33%
			0.07	0.60	0.04	3.80														
			0.12	0.56	0.07	3.87														
			0.19	0.81	0.15	4.02														
	117TEE	130	0.22	0.77	0.17	4.19	86.14	1004	74.0	0.25	1800x900	2726	1.77	0.70	15.18					37%
To COPLEY COURT, Pipe 130 - 131TEE						4.19									15.18					
COPLEY COURT																				
Contribution From FERGUSON DRIVE, Pipe 148 - 149						2.00									14.73					
	149	150	0.07	0.81	0.06	2.05	85.29	487	34.0	0.30	750	610	1.38	0.41	15.15					80%
			0.08	0.60	0.05	2.10														
	150	151	0.24	0.81	0.19	2.30	83.94	535	57.5	0.25	825	718	1.34	0.71	15.86					75%
	151	152	0.05	0.60	0.03	2.33	81.70	528	31.0	0.25	825	718	1.34	0.38	16.24					74%
Contribution From BLOCK 158, Pipe 135 - 152						0.79									12.40					
	152	153			0.00	3.12	80.55	698	11.5	0.35	825	849	1.59	0.12	16.36					82%
	153	154	0.29	0.81	0.23	3.35	80.20	747	64.5	0.25	900	905	1.42	0.76	17.12					83%
To POND S5B-4 WEST INLET, Pipe 154 - 155TEE						3.35									17.12					

NOTES:
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A = Area (hectares)
n = (conc.) for sewers =>525mm

PROJECT: MATTAMY - GARITO BARBUTO TOR PHASE 1
PROJECT NO: 22-1333 — DESIGNED BY: C.M.K. — CHECKED BY: C.J.M.
CONSULTANT: DAVID SCHAEFFER ENGINEERING LTD. — DATE: 23 Oct 2023

TOWN OF MILTON — STORM SEWER DESIGN — SHEET 4 OF 7

STORM SEWER DESIGN – SHEET 5 OF 7

LOCATION			CONTRIBUTING AREA				FLOW		SEWER DESIGN											
(1) STREET	(2) FROM MANHOLE	(3) TO MANHOLE	(4) AREA "A" (ha)	(5) STORM COEFFICIENT "C"	(6) SECTION AxC	(7) ACCUMULATED AxC	(8) 5 YR RATIONAL INTENSITY "I" (mm/hr)	(9) FLOW Q (L/s)	(10) LENGTH (m)	(11) SLOPE (%)	(12) DIAMETER (mm)	(13) FULL FLOW CAPACITY (L/s)	(14) FULL FLOW VELOCITY (m/s)	(15) TIME OF FLOW IN PIPE (min)	(16) TIME OF CONCENTRATION (min)	(17) FALL IN PIPE SECTION (m)	(18) MANHOLE INLET INVERT (m)	(19) MANHOLE LOSSES (m)	(20) MANHOLE OUTLET INVERT (m)	(21) PIPE % CAPACITY
Contribution From STIRLING TODD TERRACE, Pipe 117TEE - 130						4.19									15.18					
Contribution From FERGUSON DRIVE, Pipe 126 - 130						2.36									13.92					
Contribution From FERGUSON DRIVE, Pipe 129 - 130						0.24									10.80					
	130	131TEE	0.22	0.81	0.18	6.97	83.83	1623	28.5	0.25	1800x900	2726	1.77	0.27	15.45					60%
	131TEE	132TEE	0.12	0.60	0.07	7.04	82.97	1623	38.5	0.25	1800x900	2726	1.77	0.36	15.81					60%
			0.05	0.60	0.03	7.07														
	132TEE	133TEE	0.26	0.81	0.21	7.28	81.85	1656	25.5	0.25	1800x900	2726	1.77	0.24	16.05					61%
	133TEE	134TEE	0.13	0.60	0.08	7.36	81.12	1659	26.0	0.25	1800x900	2726	1.77	0.24	16.30					61%
	134TEE	154			0.00	7.36	80.40	1644	9.5	0.25	1800x900	2726	1.77	0.09	16.39					60%
To POND S5B-4 WEST INLET, Pipe 154 - 155TEE						7.36									16.39					
POND S5B-4 WEST INLET																				
Contribution From COPLEY COURT, Pipe 134TEE - 154						7.36									16.39					
Contribution From COPLEY COURT, Pipe 153 - 154						3.35									17.12					
	154	155TEE			0.00	10.71	78.06	2323	21.0	0.25	1800x900	2726	1.77	0.20	17.32					85%
	155TEE	156TEE	0.06	0.60	0.04	10.75	77.53	2315	24.0	0.25	1800x900	2726	1.77	0.23	17.54					85%
	156TEE	157TEE			0.00	10.75	76.92	2297	7.5	0.25	1800x900	2726	1.77	0.07	17.61					84%
	157TEE	HW1001			0.00	10.75	76.73	2291	3.5	0.25	1800x900	2726	1.77	0.03	17.65					84%
To POND S5B-4						10.75									17.65					
POND S5B-4 NORTH INLET															10.00					
	DICB 215	DICB 216	0.76	0.46	0.35	0.35	105.37	102	10.0	0.50	375	147	1.33	0.13	10.13					70%
	DICB 216	HW 1003	0.07	0.46	0.03	0.38	104.70	111	16.5	0.50	375	147	1.33	0.21	10.33					76%
To POND S5B-4						0.38									10.33					

NOTES:
Q = 2.78ACI L/s — Initial time of concentration = 10 min.
C = Runoff Co-efficient
I = Intensity (mm/hr) — $I5 = \frac{959}{(td + 5.7)^{0.802}}$
A = Area (hectares)
n = (conc.) for sewers =>525mm

PROJECT: MATTAMY - GARITO BARBUTO TOR PHASE 1
PROJECT NO: 22-1333 — DESIGNED BY: C.M.K. — CHECKED BY: C.J.M.
CONSULTANT: DAVID SCHAEFFER ENGINEERING LTD. — DATE: 23 Oct 2023

TOWN OF MILTON — STORM SEWER DESIGN — SHEET 5 OF 7

STORM SEWER DESIGN – SHEET 6 OF 7

LOCATION			CONTRIBUTING AREA				FLOW		SEWER DESIGN											
(1) STREET	(2) FROM MANHOLE	(3) TO MANHOLE	(4) AREA "A" (ha)	(5) STORM COEFFICIENT "C"	(6) SECTION AxC	(7) ACCUMULATED AxC	(8) 5 YR RATIONAL INTENSITY "I" (mm/hr)	(9) FLOW Q (L/s)	(10) LENGTH (m)	(11) SLOPE (%)	(12) DIAMETER (mm)	(13) FULL FLOW CAPACITY (L/s)	(14) FULL FLOW VELOCITY (m/s)	(15) TIME OF FLOW IN PIPE (min)	(16) TIME OF CONCENTRATION (min)	(17) FALL IN PIPE SECTION (m)	(18) MANHOLE INLET INVERT (m)	(19) MANHOLE LOSSES (m)	(20) MANHOLE OUTLET INVERT (m)	(21) PIPE % CAPACITY
POND S5B-4 EAST INLET															10.89					
	278	159	0.72	0.77	0.55	0.55	100.81	155	63.0	0.25	600	307	1.09	0.97	11.86					51%
	159	160			0.00	0.55	96.33	148	114.5	0.25	600	307	1.09	1.76	13.61					48%
	160	161	0.29	0.77	0.22	0.78	89.24	193	20.0	0.25	600	307	1.09	0.31	13.92					63%
			5.85	0.77	4.50	5.28	88.11	1293							17.80					
	161	162			0.00	5.28	76.25	1119	14.0	0.30	1050	1496	1.73	0.14	17.94					75%
	162	HW1002			0.00	5.28	75.90	1114	8.5	0.30	1050	1496	1.73	0.08	18.02					74%
To POND S5B-4						5.28									18.02					
POND S5B-4 OUTLET																				
SWM Pond S5b-4 100 year event outflow as per PDB - DSEL March 2023 Regional Peak Outflow								1810							10.00					
	6005	6006						1810	3.0	1.00	975	2241	3.00	0.02	10.02					81%
	6006	HW 4000						1810	18.0	1.00	975	2241	3.00	0.10	10.12					81%
OMAGH WOODLOT (100 YEAR CAPTURE)															10.00					
	607	608TEE	1.17	0.25	0.29	0.29	174.15	141	5.0	3.00	300	198	2.80	0.03	10.03					71%
To Unknown Road1 - 6000, Pipe 608TEE - 609TEE						0.29									10.03					
HCDSB OUTLET TRUNK (100 YEAR CAPTURE) HCDSB FSR 100yr EVENT SWM CONTROL OUTFLOW								176							12.50					
	TEMP HW	608TEE	4.20	0.75	3.15	3.15	154.76	1530	17.5	0.25	1800x900	2726	1.77	0.16	12.66					56%
Contribution From Omagh Woodlot Headwall, Pipe 607 - 608TEE						0.29									10.03					
	608TEE	609TEE			0.00	3.44	153.66	1645	9.0	0.25	1800x900	2726	1.77	0.08	12.75					60%
	609TEE	610TEE			0.00	3.44	153.10	1640	9.0	0.25	1800x900	2726	1.77	0.08	12.83					60%
	610TEE	611TEE			0.00	3.44	152.54	1635	56.0	0.25	1800x900	2726	1.77	0.53	13.36					60%
	611TEE	HW			0.00	3.44	149.17	1602	8.0	0.25	1800x900	2726	1.77	0.08	13.44					59%

NOTES:
Q = 2.78ACI L/s — Initial time of concentration = 10 min.
C = Runoff Co-efficient
I = Intensity (mm/hr) — $I5 = \frac{959}{(td + 5.7)^{0.802}}$
A = Area (hectares)
n = (conc.) for sewers =>525mm

PROJECT: MATTAMY - GARITO BARBUTO TOR PHASE 1
PROJECT NO: 22-1333 — DESIGNED BY: C.M.K. — CHECKED BY: C.J.M.
CONSULTANT: DAVID SCHAEFFER ENGINEERING LTD. — DATE: 23 Oct 2023

TOWN OF MILTON — STORM SEWER DESIGN — SHEET 6 OF 7

STORM SEWER DESIGN – SHEET 7 OF 7

(1) STREET	(2) FROM MANHOLE	(3) TO MANHOLE	(4) AREA "A" (ha)	(5) STORM COEFFICIENT "C"	(6) SECTION AxC	(7) ACCUMULATED AxC	(8) *100 YR RATIONAL INTENSITY "I" (mm/hr)	(9) FLOW Q (L/s)	(10) LENGTH (m)	(11) SLOPE (%)	(12) DIAMETER (mm)	(13) FULL FLOW CAPACITY (L/s)	(14) FULL FLOW VELOCITY (m/s)	(15) TIME OF FLOW IN PIPE (min)	(16) TIME OF CONCENTRATION (min)	(17) FALL IN PIPE SECTION (m)	(18) MANHOLE INLET INVERT (m)	(19) MANHOLE LOSSES (m)	(20) MANHOLE OUTLET INVERT (m)	(21) PIPE % CAPACITY
BLOCK 458															10.00					
	118	124	0.64	0.90	0.58	0.58	105.37	169	16.5	0.50	525	304	1.40	0.20	10.20					55%
To FERGUSON DRIVE, Pipe 124 - 125						0.58									10.20					
															10.00					
	1301	1300	0.39	0.90	0.35	0.35	105.37	103	16.0	0.50	525	304	1.40	0.19	10.19					34%
To FERGUSON DRIVE, Pipe 1300-124						0.35									10.19					
			0.71	0.90	0.64	0.64														
			1.28	0.90	1.15	1.79									11.82					
	113	114			0.00	1.79	96.49	480	9.0	0.25	825	718	1.34	0.11	11.93					67%
To STIRLING TODD TERRACE, Pipe 114 - 115TEE						1.79									11.93					

NOTES:
Q = 2.78ACI L/s — Initial time of concentration = 10 min.
C = Runoff Co-efficient
I = Intensity (mm/hr) — $I5 = \frac{959}{(td + 5.7)^{0.802}}$
A = Area (hectares)
n = (conc.) for sewers =>525mm

PROJECT: MATTAMY - GARITO BARBUTO TOR PHASE 1
PROJECT NO: 22-1333 — DESIGNED BY: C.M.K. — CHECKED BY: C.J.M.
CONSULTANT: DAVID SCHAEFFER ENGINEERING LTD. — DATE: 23 Oct 2023

TOWN OF MILTON — STORM SEWER DESIGN — SHEET 7 OF 7

NOT FOR CONSTRUCTION

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY R-PE SURVEYING LTD., REFERENCE No. 22-049, CAD FILE No.22049tp05, SURVEY RECEIVED FEBRUARY 16, 2023.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY R-PE SURVEYING LTD., JOB No. 22-049, CAD FILE No.22049s03, SURVEY RECEIVED OCTOBER 11, 2023.

BENCHMARK (MINISTRY OF TRANSPORTATION)
No. 00819828155 ELEVATION = 185.351m

No.	DATE	BY	DESCRIPTION	APPROVED
6.	23-10-30	C.J.M.	TOWN PRE-MYLAR SUBMISSION	
5.	23-10-25	C.J.M.	ISSUED FOR REGIONAL APPROVAL	
4.	23-10-18	C.J.M.	FOR CH PERMIT SUBMISSION	
3.	23-08-25	C.J.M.	3rd REGION SUBMISSION	
2.	23-07-26	C.J.M.	2nd SUBMISSION	
1.	23-04-10	C.J.M.	1st SUBMISSION	

SCALE: N/A

REFERENCES

APPROVALS

FIELD NOTES

MUNICIPAL APPROVAL
DEVELOPMENT SERVICES — DATE

BELL ☐ HYDRO ☐
GAS ☐ CABLE ☐
TRAFFIC ☐ WATER ☐

REGIONAL APPROVAL
DESIGN OF SANITARY, WATER SERVICES AND REGIONAL ROAD WORKS APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO HALTON REGION STANDARDS & SPECIFICATIONS & LOCATIONAL APPROVAL FROM AREA MUNICIPALITY
APPROVED BY ALEX HILDER VIA EMAIL — OCTOBER 30, 2023
LEGISLATIVE AND PLANNING SERVICES — DATE

STAMP
LICENSED PROFESSIONAL ENGINEER
C. J. MANZO
100511578
23-10-30
PROVINCE OF ONTARIO

DSEL
600 Alden Road, Suite 606
Markham, Ontario, L3R 0E7
Tel. (905) 475-3080
Fax. (905) 475-3081
www.DSEL.ca

MILTON — TOWN OF MILTON DEVELOPMENT SERVICES
TOWN OF MILTON FILE No: 24T-22001/M(A)

Halton REGION — The Regional Municipality of Halton
REGION OF HALTON FILE No: DM-1075

DEVELOPER: MATTAMY (BROWNRIDGE) LIMITED

DEVELOPMENT MANAGER: mattamyHOMES

PROJECT: MATTAMY - GARITO BARBUTO TOR PHASE 1

TITLE: STORM DESIGN SHEETS

© DSEL

DRAWN BY: H.P. — CHECKED BY: C.M.K.
DESIGNED BY: H.C. — CHECKED BY: C.J.M.
PROJECT NO. 22-1333

Appendix D2

Tor Phase 2 Minor Subnode Sanitary Design Sheets

(David Schaeffer Engineering Ltd., October 2024)

LOCATION			CONTRIBUTING AREA				FLOW		SEWER DESIGN											
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
STREET	FROM MANHOLE	TO MANHOLE	AREA "A" (ha)	STORM COEFFICIENT "C"	SECTION AxC	ACCUMULATED AxC	5 YR RATIONAL INTENSITY "I" (mm/hr)	FLOW Q (L/s)	LENGTH (m)	SLOPE (%)	DIAMETER (mm)	FULL FLOW CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	TIME OF FLOW IN PIPE (min)	TIME OF CONCENTRATION (min)	FALL IN PIPE SECTION (m)	MANHOLE INLET INVERT (m)	MANHOLE LOSSES (m)	MANHOLE OUTLET INVERT (m)	PIPE % CAPACITY
LANE 'B'																				
			0.08	0.81	0.06	0.06									10.00					
			0.37	0.90	0.33	0.40									10.00					
	PLUG	377			0.00	0.40	105.37	116	12.0	0.50	450	202	1.27	0.16	10.16					58%
Contribution From LANE 'A', Pipe 374 - 377						0.38									11.05					
Contribution From LANE 'A', Pipe 376 - 377						0.02									10.41					
			0.14	0.81	0.11	0.91									10.00					
	377	383			0.00	0.91	100.05	254	29.0	0.35	600	363	1.28	0.38	11.42					70%
Contribution From LANE 'C', Pipe 384 - 383						0.00									10.69					
	383	378	0.21	0.81	0.17	1.08	98.28	296	32.5	0.35	600	363	1.28	0.42	11.84					81%
To LANE 'D', Pipe 378 - 379						1.08									11.84					
WALKWAY																				
Contribution From LANE 'D', Pipe 378 - 379						1.21									12.06					
Contribution From LANE 'D', Pipe 386 - 379						0.00									10.93					
			0.12	0.81	0.10	1.31									10.00					
	379	Ex. CTRL 113			0.00	1.31	95.46	347	54.5	0.25	675	420	1.17	0.77	12.83					83%
			0.06	0.81	0.05	1.36									10.00					
	Ex. CTRL 113	Ex. 114			0.00	1.36	92.25	348	9.0	0.25	825	848	1.59	0.09	12.93					41%
To STIRLING TODD TERRACE (PHASE 1), Pipe Ex. 114 - Ex. 115 TEE						1.36									12.93					
LANE 'C'															10.00					
	384	385			0.00	0.00	105.37	0	42.0	0.50	300	81	1.14	0.61	10.61					0%
To LANE 'A', Pipe 385 - 381						0.00									10.61					
															10.00					
	384	383			0.00	0.00	105.37	0	47.0	0.50	300	81	1.14	0.69	10.69					0%
To LANE 'B', Pipe 383 - 378						0.00									10.69					

NOTES:
Q = 2.78ACI L/s
C = Runoff Co-efficient
I = Intensity (mm/hr)
A = Area (hectares)
n = 0.013 (conc.) for sewers =>525mm

Initial time of concentration = 10 min.

$$I5 = \frac{959}{(td + 5.7)^{0.802}}$$

PROJECT: TOR PH2-SUBNODE
PROJECT NO: 24-1377 DESIGNED BY: H.C.
CHECKED BY: C.J.M.
CONSULTANT DAVID SCHAEFFER ENGINEERING LTD. DATE: 09 Sep 2024

TOWN OF MILTON

STORM SEWER DESIGN

SHEET 1 OF 3

LOCATION			CONTRIBUTING AREA				FLOW		SEWER DESIGN											
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
STREET	FROM MANHOLE	TO MANHOLE	AREA "A" (ha)	STORM COEFFICIENT "C"	SECTION AxC	ACCUMULATED AxC	5 YR RATIONAL INTENSITY "I" (mm/hr)	FLOW Q (L/s)	LENGTH (m)	SLOPE (%)	DIAMETER (mm)	FULL FLOW CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	TIME OF FLOW IN PIPE (min)	TIME OF CONCENTRATION (min)	FALL IN PIPE SECTION (m)	MANHOLE INLET INVERT (m)	MANHOLE LOSSES (m)	MANHOLE OUTLET INVERT (m)	PIPE % CAPACITY
LANE 'A'																				
			0.03	0.81	0.02	0.02									10.00					
	375	376			0.00	0.02	105.37	7	10.5	0.50	300	81	1.14	0.15	10.15					9%
	376	377			0.00	0.02	104.55	7	24.0	0.90	300	108	1.53	0.26	10.41					7%
To LANE 'B', Pipe 377 - 383						0.02									10.41					
			0.28	0.81	0.23	0.23									10.00					
	380	385			0.00	0.23	105.37	66	24.0	0.50	300	81	1.14	0.35	10.35					82%
Contribution From LANE 'C', Pipe 384 - 385						0.00									10.61					
	385	381			0.00	0.23	102.18	64	31.0	0.50	300	81	1.14	0.45	11.06					80%
To LANE 'D', Pipe 381 - 118						0.23									11.06					
															10.00					
	382	373			0.00	0.00	105.37	0	42.5	0.50	300	81	1.14	0.62	10.62					0%
			0.42	0.90	0.38	0.38									10.00					
	PLUG	373			0.00	0.38	105.37	111	11.0	0.50	450	202	1.27	0.14	10.14					55%
	373	374			0.00	0.38	102.15	107	23.5	0.50	450	202	1.27	0.31	10.93					53%
	374	377			0.00	0.38	100.62	106	9.0	0.50	450	202	1.27	0.12	11.05					52%
To LANE 'B', Pipe 377 - 383						0.38									11.05					
LANE 'D'															10.00					
	386	379			0.00	0.00	105.37	0	64.0	0.50	300	81	1.14	0.93	10.93					0%
To WALKWAY, Pipe 379 - 113						0.00									10.93					
Contribution From LANE 'A', Pipe 385 - 381						0.23									11.06					
			0.36	0.81	0.29	0.52									10.00					
			0.16	0.90	0.14	0.66									10.00					
	381	Ex. CTRL 118			0.00	0.66	99.97	184	66.0	0.60	450	221	1.39	0.79	11.86					83%

NOTES:
Q = 2.78ACI L/s
C = Runoff Co-efficient
I = Intensity (mm/hr)
A = Area (hectares)
n = (conc.) for sewers =>525mm

Initial time of concentration = 10 min.

$$I5 = \frac{959}{(td + 5.7)^{0.802}}$$

PROJECT: TOR PH2-SUBNODE
PROJECT NO: 24-1377 DESIGNED BY: H.C.
CHECKED BY: C.J.M.
CONSULTANT DAVID SCHAEFFER ENGINEERING LTD. DATE: 09 Sep 2024

TOWN OF MILTON

STORM SEWER DESIGN

SHEET 2 OF 3

LOCATION			CONTRIBUTING AREA				FLOW		SEWER DESIGN											
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
STREET	FROM MANHOLE	TO MANHOLE	AREA "A" (ha)	STORM COEFFICIENT "C"	SECTION AxC	ACCUMULATED AxC	5 YR RATIONAL INTENSITY "I" (mm/hr)	FLOW Q (L/s)	LENGTH (m)	SLOPE (%)	DIAMETER (mm)	FULL FLOW CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	TIME OF FLOW IN PIPE (min)	TIME OF CONCENTRATION (min)	FALL IN PIPE SECTION (m)	MANHOLE INLET INVERT (m)	MANHOLE LOSSES (m)	MANHOLE OUTLET INVERT (m)	PIPE % CAPACITY
	Ex. CTRL 118	Ex. 124			0.00	0.66	96.33	177	16.5	0.50	525	304	1.40	0.20	12.05					58%
To FERGUSON DRIVE (PHASE 1), Pipe Ex. 124 - Ex. 125						0.66									12.05					
Contribution From LANE 'B', Pipe 383 - 378						1.08									11.84					
			0.16	0.81	0.13	1.21									10.00					
	378	379			0.00	1.21	96.39	325	15.0	0.25	675	420	1.17	0.21	12.06					77%
To WALKWAY, Pipe 379 - 113						1.21									12.06					

NOTES:
Q = 2.78ACI L/s
C = Runoff Co-efficient
I = Intensity (mm/hr)
A = Area (hectares)
n = (conc.) for sewers =>525mm

Initial time of concentration = 10 min.

$$I5 = \frac{959}{(td + 5.7)^{0.802}}$$

PROJECT: TOR PH2-SUBNODE
PROJECT NO: 24-1377 DESIGNED BY: H.C.
CHECKED BY: C.J.M.
CONSULTANT DAVID SCHAEFFER ENGINEERING LTD. DATE: 09 Sep 2024

TOWN OF MILTON

STORM SEWER DESIGN

SHEET 3 OF 3

NOT FOR CONSTRUCTION

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY R-PE SURVEYING LTD.,
REFERENCE No. 22-049, CAD FILE No.22049tp05, SURVEY
RECEIVED FEBRUARY 16, 2023.

LEGAL INFORMATION

SITE PLAN PROVIDED BY KNYMH INC., PROJECT NUMBER 21407,
FOR GARITO BARBUTO TOR PH 2 BLOCK 458, RECEIVED SEPTEMBER 11, 2024.

BENCHMARK (MINISTRY OF TRANSPORTATION)
No. 00819828155 ELEVATION = 185.351m

No.	DATE	BY	DESCRIPTION	APPROVED
2.	24-10-07	C.J.M.	2nd SUBMISSION	
1.	24-04-05	C.J.M.	1st SUBMISSION	

SCALE: NTS

REFERENCES

FIELD NOTES

APPROVALS

MUNICIPAL APPROVAL

DEVELOPMENT SERVICES DATE

BELL ☐ HYDRO ☐
GAS ☐ CABLE ☐
TRAFFIC ☐ WATER ☐

REGIONAL APPROVAL

DESIGN OF SANITARY, WATER SERVICES AND REGIONAL ROAD WORKS APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO HALTON REGION STANDARDS & SPECIFICATIONS & LOCATIONAL APPROVAL FROM AREA MUNICIPALITY

LEGISLATIVE AND PLANNING SERVICES DATE

STAMP

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TOWN OF MILTON
DEVELOPMENT SERVICES

TOWN OF MILTON FILE No: XXXXXXX

Halton REGION The Regional Municipality of Halton

REGION OF HALTON FILE No: XXXXXXX

DEVELOPER
MATTAMY (BROWNRIDGE) LIMITED

DEVELOPMENT MANAGER
mattamyHOMES

PROJECT
TOR SUBNODE SITEPLAN

TITLE
STORM DESIGN SHEETS

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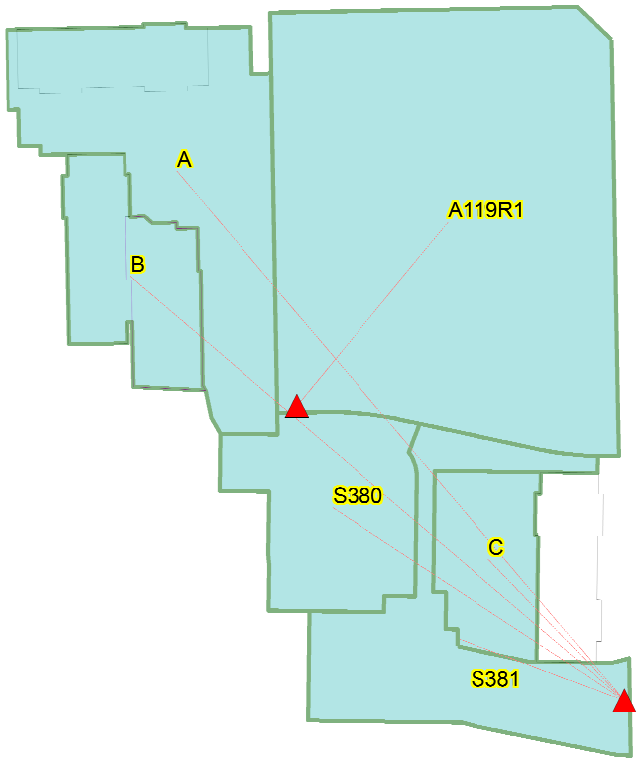
DRAWN BY: H.P. CHECKED BY: E.G.
DESIGNED BY: H.C. CHECKED BY: C.J.M.
PROJECT NO. 24-1377
SHEET 7 OF 18

Appendix D3

Easement Conveyance Calculations for the Tor Phase 2 Minor Subnode

(David Schaeffer Engineering Ltd., April 2024)



Easement Peak Flows Legend

Outfalls

Subcatchments

N

50 m

100-Year Chicago Design Storm

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

****
Element Count
****
Number of rain gages 12
Number of subcatchments ... 6
Number of nodes 2
Number of links 0
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
100yr/6hr_AES_Storm	100yr/6hr_AES_Storm	INTENSITY	15 min.
100yr_Chicago_4h	100yr_Chicago_4h	INTENSITY	10 min.
10mm_Drawdown_Check	10mm_Drawdown_Time	INTENSITY	15 min.
10yr/6hr_AES_Storm	10yr/6hr_AES_Storm	INTENSITY	15 min.
25mm	25mm	INTENSITY	5 min.
25yr/6hr_AES_Storm	25yr/6hr_AES_Storm	INTENSITY	15 min.
2yr/6hr_AES_Storm	2yr/6hr_AES_Storm	INTENSITY	15 min.
50yr/6hr_AES_Storm	50yr/6hr_AES_Storm	INTENSITY	15 min.
50yr_Chicago_4h	50yr_Chicago_4h	INTENSITY	10 min.
5yr/6hr_AES_Storm	5yr/6hr_AES_Storm	INTENSITY	15 min.
5yr_Chicago_4h	5yr_Chicago_4h	INTENSITY	10 min.
Hurricane_Hazel_(0-25)	Hurricane_Hazel_(0-25)	INTENSITY	60 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
A	0.51	61.34	100.00	1.0000	100yr_Chicago_4h	MH-118
A119R1	1.28	102.44	76.00	1.5000	100yr_Chicago_4h	MH-119
B	0.21	103.85	100.00	2.0000	100yr_Chicago_4h	MH-118
C	0.16	53.07	100.00	2.0000	100yr_Chicago_4h	MH-118
S380	0.28	152.94	87.00	1.5000	100yr_Chicago_4h	MH-118
S381	0.35	230.13	87.00	1.5000	100yr_Chicago_4h	MH-118

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
MH-118	OUTFALL	193.59	0.00	0.0	
MH-119	OUTFALL	194.75	0.00	0.0	

****
Transect Summary
****

Transect 14mROW-No-Sidewalk
Area:

0.0004	0.0015	0.0034	0.0061	0.0095
0.0136	0.0186	0.0242	0.0307	0.0379
0.0458	0.0551	0.0657	0.0772	0.0895
0.1025	0.1163	0.1309	0.1462	0.1623
0.1791	0.1967	0.2151	0.2343	0.2542
0.2748	0.2963	0.3185	0.3414	0.3651
0.3896	0.4149	0.4409	0.4677	0.4952
0.5235	0.5526	0.5824	0.6130	0.6444
0.6765	0.7094	0.7430	0.7775	0.8126
0.8486	0.8853	0.9228	0.9610	1.0000

Hrad:

0.0283	0.0567	0.0850	0.1134	0.1417
0.1701	0.1984	0.2268	0.2551	0.2835
0.3119	0.3369	0.3706	0.4132	0.4518
0.4869	0.5190	0.5485	0.5758	0.6010
0.6246	0.6466	0.6672	0.6866	0.7050
0.7224	0.7389	0.7547	0.7698	0.7842
0.7981	0.8115	0.8244	0.8369	0.8490
0.8607	0.8721	0.8832	0.8941	0.9046
0.9150	0.9251	0.9350	0.9448	0.9544
0.9638	0.9730	0.9821	0.9911	1.0000

Width:

0.0192	0.0385	0.0577	0.0769	0.0962
0.1154	0.1346	0.1539	0.1731	0.1923
0.2148	0.2534	0.2824	0.3018	0.3212
0.3406	0.3600	0.3794	0.3988	0.4182
0.4376	0.4570	0.4764	0.4958	0.5152
0.5346	0.5539	0.5733	0.5927	0.6121
0.6315	0.6509	0.6703	0.6897	0.7091
0.7285	0.7479	0.7673	0.7867	0.8061
0.8255	0.8449	0.8642	0.8836	0.9030
0.9224	0.9418	0.9612	0.9806	1.0000

Transect 16.5mROW-No-Sidewalk
Area:

0.0004	0.0018	0.0040	0.0071	0.0112
0.0161	0.0219	0.0286	0.0362	0.0447
0.0541	0.0637	0.0737	0.0847	0.0964
0.1089	0.1221	0.1362	0.1511	0.1667
0.1831	0.2003	0.2183	0.2370	0.2566
0.2769	0.2980	0.3199	0.3426	0.3661
0.3903	0.4153	0.4412	0.4678	0.4952
0.5233	0.5523	0.5820	0.6125	0.6438
0.6759	0.7088	0.7425	0.7769	0.8121
0.8481	0.8849	0.9225	0.9609	1.0000

Hrad:

0.0266	0.0531	0.0797	0.1062	0.1328
0.1593	0.1859	0.2124	0.2390	0.2655
0.2964	0.3485	0.3839	0.4313	0.4738
0.5120	0.5466	0.5779	0.6064	0.6324
0.6563	0.6783	0.6988	0.7177	0.7355
0.7521	0.7677	0.7825	0.7965	0.8098
0.8225	0.8346	0.8463	0.8574	0.8682
0.8786	0.8887	0.8985	0.9080	0.9173
0.9263	0.9351	0.9438	0.9522	0.9605
0.9687	0.9767	0.9846	0.9923	1.0000

Width:

0.0226	0.0452	0.0678	0.0904	0.1130
0.1356	0.1582	0.1808	0.2034	0.2260
0.2449	0.2449	0.2664	0.2862	0.3061
0.3259	0.3457	0.3655	0.3854	0.4052
0.4250	0.4448	0.4647	0.4845	0.5043
0.5241	0.5440	0.5638	0.5836	0.6035
0.6233	0.6431	0.6629	0.6828	0.7026
0.7224	0.7422	0.7621	0.7819	0.8017
0.8216	0.8414	0.8612	0.8810	0.9009
0.9207	0.9405	0.9603	0.9802	1.0000

Transect 16.5mROW-Sidewalk
Area:

0.0004	0.0017	0.0037	0.0066	0.0104
0.0149	0.0203	0.0266	0.0336	0.0415
0.0502	0.0592	0.0694	0.0815	0.0943
0.1078	0.1220	0.1370	0.1526	0.1691
0.1862	0.2041	0.2227	0.2420	0.2621
0.2828	0.3043	0.3266	0.3496	0.3732
0.3977	0.4228	0.4487	0.4753	0.5026
0.5307	0.5595	0.5890	0.6193	0.6502
0.6819	0.7144	0.7475	0.7814	0.8160
0.8514	0.8874	0.9242	0.9617	1.0000

Hrad:

0.0249	0.0499	0.0748	0.0997	0.1247
0.1496	0.1746	0.1995	0.2244	0.2494
0.2783	0.3273	0.3057	0.3513	0.3932
0.4317	0.4672	0.5001	0.5307	0.5591
0.5857	0.6106	0.6340	0.6561	0.6770
0.6967	0.7155	0.7333	0.7504	0.7666
0.7822	0.7972	0.8116	0.8254	0.8388
0.8517	0.8642	0.8763	0.8881	0.8995
0.9107	0.9215	0.9321	0.9424	0.9525
0.9624	0.9721	0.9815	0.9909	1.0000

Width:

0.0215	0.0430	0.0645	0.0860	0.1074
0.1289	0.1504	0.1719	0.1934	0.2149
0.2328	0.2329	0.3026	0.3214	0.3403
0.3591	0.3780	0.3968	0.4157	0.4345
0.4534	0.4722	0.4911	0.5099	0.5288
0.5476	0.5665	0.5853	0.6042	0.6230

0.6419 0.6607 0.6796 0.6984 0.7173
0.7361 0.7550 0.7738 0.7927 0.8115
0.8304 0.8492 0.8681 0.8869 0.9058
0.9246 0.9435 0.9623 0.9812 1.0000

Transect 16mROW-No-Sidewalk
Area:
0.0004 0.0016 0.0036 0.0063 0.0099
0.0142 0.0194 0.0253 0.0320 0.0395
0.0478 0.0569 0.0668 0.0775 0.0890
0.1012 0.1143 0.1281 0.1427 0.1581
0.1744 0.1914 0.2091 0.2277 0.2471
0.2673 0.2882 0.3100 0.3325 0.3558
0.3799 0.4049 0.4306 0.4577 0.4863
0.5157 0.5459 0.5767 0.6082 0.6405
0.6733 0.7069 0.7412 0.7761 0.8117
0.8480 0.8850 0.9226 0.9610 1.0000
Hrad:
0.0172 0.0344 0.0516 0.0689 0.0861
0.1033 0.1205 0.1377 0.1549 0.1721
0.1894 0.2066 0.2238 0.2410 0.2582
0.2754 0.2927 0.3099 0.3271 0.3443
0.3615 0.3787 0.3959 0.4132 0.4304
0.4476 0.4648 0.4820 0.4992 0.5164
0.5337 0.5509 0.5681 0.5846 0.6038
0.6351 0.6656 0.6953 0.7241 0.7522
0.7796 0.8063 0.8324 0.8579 0.8829
0.9073 0.9312 0.9546 0.9775 1.0000
Width:
0.0201 0.0402 0.0603 0.0803 0.1004
0.1205 0.1406 0.1607 0.1808 0.2009
0.2210 0.2410 0.2611 0.2812 0.3013
0.3214 0.3415 0.3616 0.3817 0.4017
0.4218 0.4419 0.4620 0.4821 0.5022
0.5223 0.5424 0.5624 0.5825 0.6026
0.6227 0.6428 0.6697 0.7071 0.7401
0.7574 0.7748 0.7921 0.8094 0.8267
0.8441 0.8614 0.8787 0.8960 0.9134
0.9307 0.9480 0.9653 0.9827 1.0000

Transect 16mROW-Sidewalk

0.2943 0.3159 0.3381 0.3611 0.3847
0.4091 0.4340 0.4597 0.4861 0.5131
0.5408 0.5692 0.5983 0.6280 0.6584
0.6895 0.7213 0.7538 0.7869 0.8207
0.8552 0.8904 0.9263 0.9628 1.0000
Hrad:
0.0230 0.0460 0.0690 0.0920 0.1150
0.1380 0.1575 0.1712 0.1860 0.2016
0.2189 0.2499 0.2794 0.3074 0.3343
0.3600 0.3849 0.4089 0.4322 0.4548
0.4768 0.4983 0.5193 0.5399 0.5601
0.5800 0.5995 0.6188 0.6378 0.6565
0.6750 0.6933 0.7114 0.7294 0.7471
0.7647 0.7822 0.7996 0.8168 0.8339
0.8509 0.8678 0.8846 0.9013 0.9179
0.9345 0.9510 0.9674 0.9837 1.0000
Width:
0.0200 0.0400 0.0600 0.0800 0.1000
0.1199 0.1460 0.1840 0.2221 0.2602
0.2949 0.3130 0.3311 0.3491 0.3672
0.3853 0.4034 0.4215 0.4395 0.4576
0.4757 0.4938 0.5119 0.5299 0.5480
0.5661 0.5842 0.6023 0.6203 0.6384
0.6565 0.6746 0.6927 0.7107 0.7288
0.7469 0.7650 0.7830 0.8011 0.8192
0.8373 0.8554 0.8734 0.8915 0.9096
0.9277 0.9458 0.9638 0.9819 1.0000

Transect 18mROW-Sidewalk
Area:
0.0003 0.0014 0.0031 0.0055 0.0086
0.0124 0.0171 0.0261 0.0369 0.0488
0.0620 0.0760 0.0905 0.1055 0.1211
0.1372 0.1538 0.1709 0.1886 0.2068
0.2255 0.2448 0.2646 0.2850 0.3058
0.3272 0.3491 0.3716 0.3946 0.4181
0.4422 0.4667 0.4918 0.5175 0.5437
0.5704 0.5976 0.6254 0.6537 0.6825
0.7119 0.7418 0.7722 0.8031 0.8346
0.8666 0.8992 0.9323 0.9659 1.0000
Hrad:

Area:
0.0004 0.0016 0.0036 0.0063 0.0099
0.0142 0.0194 0.0253 0.0320 0.0395
0.0478 0.0569 0.0668 0.0775 0.0890
0.1012 0.1143 0.1281 0.1427 0.1581
0.1744 0.1914 0.2091 0.2277 0.2471
0.2673 0.2882 0.3100 0.3325 0.3558
0.3799 0.4049 0.4306 0.4577 0.4863
0.5157 0.5459 0.5767 0.6082 0.6405
0.6733 0.7069 0.7412 0.7761 0.8117
0.8480 0.8850 0.9226 0.9610 1.0000
Hrad:
0.0172 0.0344 0.0516 0.0689 0.0861
0.1033 0.1205 0.1377 0.1549 0.1721
0.1894 0.2066 0.2238 0.2410 0.2582
0.2754 0.2927 0.3099 0.3271 0.3443
0.3615 0.3787 0.3959 0.4132 0.4304
0.4476 0.4648 0.4820 0.4992 0.5164
0.5337 0.5509 0.5681 0.5846 0.6038
0.6351 0.6656 0.6953 0.7241 0.7522
0.7796 0.8063 0.8324 0.8579 0.8829
0.9073 0.9312 0.9546 0.9775 1.0000
Width:
0.0201 0.0402 0.0603 0.0803 0.1004
0.1205 0.1406 0.1607 0.1808 0.2009
0.2210 0.2410 0.2611 0.2812 0.3013
0.3214 0.3415 0.3616 0.3817 0.4017
0.4218 0.4419 0.4620 0.4821 0.5022
0.5223 0.5424 0.5624 0.5825 0.6026
0.6227 0.6428 0.6697 0.7071 0.7401
0.7574 0.7748 0.7921 0.8094 0.8267
0.8441 0.8614 0.8787 0.8960 0.9134
0.9307 0.9480 0.9653 0.9827 1.0000

Transect 18mROW-No-Sidewalk
Area:
0.0004 0.0015 0.0034 0.0060 0.0094
0.0135 0.0184 0.0246 0.0323 0.0413
0.0518 0.0632 0.0753 0.0881 0.1015
0.1156 0.1304 0.1459 0.1621 0.1789
0.1965 0.2147 0.2336 0.2531 0.2734

0.0226 0.0452 0.0679 0.0905 0.1131
0.1357 0.1264 0.1305 0.1583 0.1852
0.2118 0.2484 0.2834 0.3169 0.3489
0.3796 0.4090 0.4372 0.4643 0.4905
0.5156 0.5399 0.5633 0.5859 0.6078
0.6290 0.6495 0.6694 0.6887 0.7074
0.7257 0.7434 0.7606 0.7774 0.7938
0.8097 0.8253 0.8405 0.8554 0.8699
0.8841 0.8980 0.9117 0.9250 0.9381
0.9509 0.9635 0.9759 0.9881 1.0000
Width:
0.0200 0.0400 0.0600 0.0800 0.1000
0.1199 0.1909 0.2951 0.3306 0.3660
0.3981 0.4135 0.4290 0.4444 0.4598
0.4753 0.4907 0.5061 0.5216 0.5370
0.5524 0.5679 0.5833 0.5987 0.6142
0.6296 0.6450 0.6605 0.6759 0.6913
0.7068 0.7222 0.7376 0.7531 0.7685
0.7839 0.7994 0.8148 0.8302 0.8457
0.8611 0.8765 0.8920 0.9074 0.9228
0.9383 0.9537 0.9691 0.9846 1.0000

Transect 18mROW-Sidewalk-Half
Area:
0.0003 0.0012 0.0027 0.0047 0.0074
0.0106 0.0149 0.0255 0.0381 0.0518
0.0665 0.0819 0.0977 0.1139 0.1306
0.1478 0.1654 0.1835 0.2020 0.2210
0.2404 0.2602 0.2806 0.3013 0.3226
0.3442 0.3664 0.3890 0.4120 0.4355
0.4594 0.4838 0.5086 0.5339 0.5597
0.5859 0.6125 0.6396 0.6672 0.6952
0.7236 0.7525 0.7819 0.8117 0.8419
0.8726 0.9038 0.9354 0.9675 1.0000
Hrad:
0.0197 0.0394 0.0591 0.0788 0.0985
0.1182 0.0853 0.0859 0.1193 0.1501
0.1798 0.2143 0.2476 0.2798 0.3108
0.3409 0.3700 0.3981 0.4254 0.4519
0.4776 0.5025 0.5267 0.5502 0.5731
0.5954 0.6171 0.6382 0.6588 0.6789

0.6985 0.7176 0.7363 0.7545 0.7724
0.7898 0.8068 0.8235 0.8399 0.8559
0.8715 0.8869 0.9020 0.9168 0.9313
0.9455 0.9595 0.9732 0.9867 1.0000

Width:

0.0180 0.0361 0.0541 0.0721 0.0902
0.1082 0.2136 0.3696 0.4014 0.4332
0.4621 0.4759 0.4897 0.5034 0.5172
0.5310 0.5448 0.5586 0.5724 0.5862
0.6000 0.6138 0.6276 0.6414 0.6552
0.6690 0.6828 0.6966 0.7103 0.7241
0.7379 0.7517 0.7655 0.7793 0.7931
0.8069 0.8207 0.8345 0.8483 0.8621
0.8759 0.8897 0.9034 0.9172 0.9310
0.9448 0.9586 0.9724 0.9862 1.0000

Transect 20mROW-Dbl-Sidewalk

Area:

0.0004 0.0014 0.0032 0.0058 0.0090
0.0130 0.0176 0.0230 0.0291 0.0360
0.0435 0.0518 0.0608 0.0705 0.0810
0.0921 0.1040 0.1166 0.1299 0.1439
0.1587 0.1742 0.1903 0.2073 0.2249
0.2432 0.2623 0.2821 0.3026 0.3238
0.3461 0.3698 0.3949 0.4214 0.4493
0.4786 0.5093 0.5414 0.5749 0.6098
0.6458 0.6824 0.7197 0.7577 0.7964
0.8357 0.8758 0.9165 0.9579 1.0000

Hrad:

0.0192 0.0384 0.0576 0.0768 0.0961
0.1153 0.1345 0.1537 0.1729 0.1921
0.2113 0.2305 0.2498 0.2690 0.2882
0.3074 0.3266 0.3458 0.3650 0.3842
0.4035 0.4227 0.4419 0.4611 0.4803
0.4995 0.5187 0.5379 0.5572 0.5764
0.5951 0.6125 0.6287 0.6440 0.6586
0.6726 0.6862 0.6993 0.7122 0.7249
0.7547 0.7840 0.8127 0.8409 0.8685
0.8957 0.9225 0.9487 0.9746 1.0000

Width:

0.0170 0.0339 0.0509 0.0678 0.0848
0.1018 0.1187 0.1357 0.1526 0.1696
0.1866 0.2035 0.2205 0.2374 0.2544
0.2714 0.2883 0.3053 0.3223 0.3392
0.3562 0.3731 0.3901 0.4071 0.4240
0.4410 0.4579 0.4749 0.4919 0.5088
0.5419 0.5749 0.6079 0.6410 0.6740
0.7071 0.7401 0.7731 0.8062 0.8392
0.8553 0.8714 0.8874 0.9035 0.9196
0.9357 0.9518 0.9678 0.9839 1.0000

Transect 24mROW-Dbl-Sidewalk

Area:

0.0004 0.0014 0.0032 0.0056 0.0088
0.0127 0.0173 0.0226 0.0286 0.0353
0.0427 0.0503 0.0613 0.0762 0.0916
0.1076 0.1242 0.1414 0.1592 0.1776
0.1965 0.2160 0.2361 0.2568 0.2781
0.3000 0.3224 0.3455 0.3691 0.3933
0.4181 0.4434 0.4694 0.4959 0.5231
0.5508 0.5790 0.6079 0.6374 0.6674
0.6981 0.7293 0.7611 0.7934 0.8264
0.8600 0.8941 0.9288 0.9641 1.0000

Hrad:

0.0214 0.0427 0.0641 0.0854 0.1068
0.1282 0.1495 0.1709 0.1922 0.2136
0.2384 0.2804 0.1850 0.2258 0.2646
0.3015 0.3366 0.3702 0.4023 0.4330
0.4625 0.4907 0.5179 0.5440 0.5691
0.5933 0.6166 0.6392 0.6610 0.6821
0.7025 0.7222 0.7414 0.7600 0.7780
0.7956 0.8126 0.8292 0.8454 0.8612
0.8765 0.8915 0.9062 0.9205 0.9344
0.9481 0.9615 0.9746 0.9874 1.0000

Width:

0.0195 0.0390 0.0585 0.0780 0.0975
0.1170 0.1365 0.1560 0.1755 0.1950
0.2112 0.2112 0.4024 0.4186 0.4347
0.4509 0.4670 0.4832 0.4993 0.5155
0.5316 0.5478 0.5639 0.5801 0.5962
0.6124 0.6285 0.6447 0.6608 0.6770
0.6931 0.7093 0.7254 0.7416 0.7577
0.7739 0.7900 0.8062 0.8223 0.8385
0.8546 0.8708 0.8869 0.9031 0.9192
0.9354 0.9515 0.9677 0.9838 1.0000

Transect 24mROW-Sidewalk

Area:

0.0004 0.0016 0.0036 0.0065 0.0101
0.0146 0.0198 0.0259 0.0328 0.0405
0.0490 0.0583 0.0684 0.0793 0.0911
0.1036 0.1170 0.1311 0.1461 0.1619
0.1785 0.1959 0.2141 0.2331 0.2529
0.2736 0.2950 0.3173 0.3404 0.3646
0.3896 0.4154 0.4419 0.4692 0.4972
0.5259 0.5554 0.5856 0.6166 0.6483
0.6808 0.7140 0.7479 0.7826 0.8179
0.8535 0.8896 0.9260 0.9628 1.0000

Hrad:

0.0150 0.0301 0.0451 0.0602 0.0752
0.0902 0.1053 0.1203 0.1354 0.1504
0.1654 0.1805 0.1955 0.2106 0.2256
0.2406 0.2557 0.2707 0.2858 0.3008
0.3158 0.3309 0.3459 0.3610 0.3760
0.3910 0.4061 0.4211 0.4362 0.4593
0.4877 0.5155 0.5428 0.5696 0.5962
0.6225 0.6486 0.6746 0.7005 0.7263
0.7520 0.7777 0.8034 0.8291 0.8564
0.8845 0.9130 0.9418 0.9708 1.0000

Width:

0.0217 0.0433 0.0650 0.0867 0.1083
0.1300 0.1517 0.1733 0.1950 0.2167
0.2383 0.2600 0.2817 0.3033 0.3250
0.3467 0.3683 0.3900 0.4117 0.4333
0.4550 0.4767 0.4983 0.5200 0.5417
0.5633 0.5850 0.6067 0.6314 0.6604
0.6802 0.7000 0.7199 0.7397 0.7595
0.7794 0.7992 0.8190 0.8389 0.8587
0.8785 0.8984 0.9182 0.9380 0.9503
0.9602 0.9702 0.9801 0.9901 1.0000

Transect 26mROW-Dbl-Sidewalk

Area:

0.0004 0.0015 0.0035 0.0062 0.0097
0.0139 0.0189 0.0247 0.0313 0.0386
0.0468 0.0556 0.0653 0.0757 0.0869
0.0989 0.1117 0.1252 0.1395 0.1545
0.1704 0.1870 0.2044 0.2226 0.2415
0.2612 0.2817 0.3029 0.3249 0.3477
0.3717 0.3971 0.4241 0.4520 0.4807
0.5101 0.5403 0.5712 0.6029 0.6353
0.6684 0.7023 0.7369 0.7723 0.8084
0.8452 0.8828 0.9211 0.9602 1.0000

Hrad:

0.0175 0.0351 0.0526 0.0702 0.0877
0.1052 0.1228 0.1403 0.1579 0.1754
0.1930 0.2105 0.2280 0.2456 0.2631
0.2807 0.2982 0.3157 0.3333 0.3508
0.3684 0.3859 0.4035 0.4210 0.4385
0.4561 0.4736 0.4912 0.5087 0.5262
0.5434 0.5592 0.5774 0.6082 0.6380
0.6669 0.6950 0.7222 0.7486 0.7743
0.7994 0.8238 0.8476 0.8708 0.8935
0.9157 0.9375 0.9587 0.9796 1.0000

Width:

0.0192 0.0385 0.0577 0.0769 0.0962
0.1154 0.1346 0.1538 0.1731 0.1923
0.2115 0.2308 0.2500 0.2692 0.2885
0.3077 0.3269 0.3462 0.3654 0.3846
0.4038 0.4231 0.4423 0.4615 0.4808
0.5000 0.5192 0.5385 0.5577 0.5769
0.6146 0.6523 0.6862 0.7046 0.7231
0.7415 0.7600 0.7785 0.7969 0.8154
0.8338 0.8523 0.8708 0.8892 0.9077
0.9262 0.9446 0.9631 0.9815 1.0000

Transect 26mROW-Sidewalk

Area:

0.0004 0.0016 0.0036 0.0064 0.0100
0.0144 0.0196 0.0255 0.0323 0.0399
0.0483 0.0575 0.0675 0.0782 0.0898
0.1022 0.1154 0.1293 0.1441 0.1597
0.1760 0.1932 0.2112 0.2299 0.2495
0.2698 0.2910 0.3130 0.3361 0.3601

```
            0.3848     0.4103     0.4366     0.4637     0.4915
            0.5202     0.5496     0.5798     0.6107     0.6425
            0.6750     0.7083     0.7424     0.7772     0.8129
            0.8493     0.8864     0.9239     0.9618     1.0000
Hrad:
            0.0172     0.0343     0.0515     0.0687     0.0858
            0.1030     0.1201     0.1373     0.1545     0.1716
            0.1888     0.2060     0.2231     0.2403     0.2575
            0.2746     0.2918     0.3090     0.3261     0.3433
            0.3604     0.3776     0.3948     0.4119     0.4291
            0.4463     0.4634     0.4806     0.5082     0.5399
            0.5702     0.5994     0.6274     0.6544     0.6805
            0.7057     0.7300     0.7536     0.7764     0.7986
            0.8202     0.8412     0.8616     0.8815     0.9010
            0.9200     0.9396     0.9597     0.9798     1.0000
Width:
            0.0208     0.0415     0.0623     0.0831     0.1038
            0.1246     0.1454     0.1662     0.1869     0.2077
            0.2285     0.2492     0.2700     0.2908     0.3115
            0.3323     0.3531     0.3738     0.3946     0.4154
            0.4362     0.4569     0.4777     0.4985     0.5192
            0.5400     0.5608     0.5860     0.6132     0.6335
            0.6537     0.6740     0.6942     0.7145     0.7347
            0.7550     0.7752     0.7955     0.8157     0.8360
            0.8562     0.8765     0.8967     0.9170     0.9372
            0.9575     0.9704     0.9803     0.9901     1.0000

Transect 8.5mROW-No-Sidewalk
Area:
            0.0005     0.0020     0.0046     0.0082     0.0128
            0.0184     0.0250     0.0319     0.0387     0.0455
            0.0528     0.0609     0.0699     0.0797     0.0904
            0.1019     0.1142     0.1275     0.1415     0.1564
            0.1722     0.1888     0.2063     0.2246     0.2438
            0.2638     0.2847     0.3065     0.3290     0.3525
            0.3768     0.4019     0.4279     0.4547     0.4824
            0.5110     0.5404     0.5706     0.6017     0.6337
            0.6665     0.7001     0.7346     0.7700     0.8062
            0.8433     0.8812     0.9199     0.9595     1.0000
Hrad:
            0.0341     0.0681     0.1022     0.1363     0.1704
```

```
            0.2044     0.2495     0.3162     0.3824     0.4480
            0.5093     0.5603     0.6026     0.6379     0.6675
            0.6925     0.7140     0.7326     0.7488     0.7633
            0.7763     0.7881     0.7989     0.8090     0.8184
            0.8274     0.8359     0.8441     0.8520     0.8597
            0.8673     0.8746     0.8819     0.8891     0.8962
            0.9032     0.9102     0.9171     0.9240     0.9310
            0.9378     0.9447     0.9516     0.9585     0.9654
            0.9723     0.9792     0.9861     0.9931     1.0000
Width:
            0.0251     0.0501     0.0752     0.1002     0.1253
            0.1504     0.1671     0.1671     0.1671     0.1671
            0.1879     0.2087     0.2296     0.2504     0.2712
            0.2920     0.3129     0.3337     0.3545     0.3753
            0.3961     0.4170     0.4378     0.4586     0.4794
            0.5003     0.5211     0.5419     0.5627     0.5835
            0.6044     0.6252     0.6460     0.6668     0.6877
            0.7085     0.7293     0.7501     0.7710     0.7918
            0.8126     0.8334     0.8542     0.8751     0.8959
            0.9167     0.9375     0.9584     0.9792     1.0000


*********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*********************************************************

****************
Analysis Options
****************
Flow Units ............... CMS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Surcharge Method ......... EXTRAN
```

```
Starting Date ............ 01/01/2019 00:00:00
Ending Date .............. 01/08/2019 00:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:05:00
Wet Time Step ............ 00:05:00
Dry Time Step ............ 00:05:00

**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.224        80.685
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.016         5.805
Surface Runoff ...........         0.204        73.470
Final Storage ............         0.005         1.890
Continuity Error (%) .....        -0.594


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.204         2.038
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.204         2.038
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


***************************
Subcatchment Runoff Summary
***************************

  ------------------------------------------------------------------------------------------------------------------
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```
                          Total      Total      Total      Total     Imperv       Perv      Total       Total
Peak  Runoff
                         Precip     Runon       Evap      Infil     Runoff     Runoff     Runoff      Runoff
Runoff   Coeff
  Subcatchment               mm         mm         mm         mm         mm         mm         mm    10^6 ltr
CMS
  ------------------------------------------------------------------------------------------------------------------
-------------
  A                       80.69       0.00       0.00       0.00      79.28       0.00      79.28        0.40
0.24   0.983
  A119R1                  80.69       0.00       0.00      10.03      60.25       9.14      69.39        0.89
0.51   0.860
  B                       80.69       0.00       0.00       0.00      78.91       0.00      78.91        0.16
0.10   0.978
  C                       80.69       0.00       0.00       0.00      79.01       0.00      79.01        0.13
0.08   0.979
  S380                    80.69       0.00       0.00       5.30      68.64       5.23      73.87        0.20
0.13   0.915
  S381                    80.69       0.00       0.00       5.30      68.61       5.24      73.85        0.25
0.16   0.915

  Analysis begun on:  Thu Apr  4 14:41:09 2024
  Analysis ended on:  Thu Apr  4 14:41:10 2024
  Total elapsed time: 00:00:01
```

Summary of Easement Peak Flows

Catchment	Major system flow Roof (m^3/s)	Major system flow Land (m^3/s)
A	0.00	0.08
B	0.03	0.11
A119R1	---	0.23
C	---	0.03
S380	---	0.06
S381	---	0.07
Total	**0.61**	

Major System Surface Drainage determined as follows:

A	Roof is 100yr minus 50yr, rest is 100-yr minus 50yr
B	Roof is 100yr minus 50yr, rest is 100-yr minus 50yr
A119R1	100-yr Minus 5 yr
C	100-yr Minus 5 yr (roof portion not included in model)
S380	100-yr Minus 5 yr
S381	100-yr Minus 5 yr

Project Name:	Tor Subnode
Project Number:	1377
Designed By:	AL
Checked By:	MLH
Date	04-Apr-24

David Schaeffer Engineering Limited
600 Alden Road, Suite 606
Markham, ON L3R 0E7

ROW CONVEYANCE CALCULATOR

8.6 m Laneway

Inputs		Units	Notes
So	0.005	m/m	Longitudinal road slope
d	0.140	m	max. flow depth
dc	**0.14**	m	flow depth at curb (150mm max value)
de	**0.000**	m	boulevard height
dw	**0.025**	m	gutter height (25mm max. value)
dd	0.048	m	
ds	0.115	m	
Se	**0**	m/m	boulevard slope
Sw	**0.083**	m/m	gutter slope
Sx	**0.020**	m/m	road slope
Te	**0**	m	boulevard length + curb length (200mm)
Tr	**3.65**	m	half road length + gutter length (300mm)
Ts	5.750	m	
T	6.050	m	
W	0.3	m	gutter length (300mm)
n shoulder	0.025	m/m	N Manning - boulevard (grass)
n road	0.013	m/m	N Manning - road

Summary of calculations		Units	
Q (E)	0	m3/s	
Q (A+B)	0.129264013	m3/s	
Q (B)	0.076495397	m3/s	
Q (A)	0.052768616	m3/s	
Q (B+C+D)	0.319	m3/s	
Q (D)	0.031	m3/s	
Q (C)	0.211	m3/s	

Results		Units	
$Q_{(A+B+C+E)}$	0.340	m3/s	
$Q_{(total)}$	**0.681**	**m3/s**	Total conveyance at 'd' flow depth

Notes

(1) The calculations assume that the total flow conveyance is evenly split between both sides of the road.

(2) The computations follow the methodology described in MTO Drainage Management Manual, 1997, Ch.4, pp, 59-60, methodolody