

**SERVICING & STORMWATER MANAGEMENT
IMPLEMENTATION REPORT**

EDGEWOOD COMMERCIAL

**TOWNSHIP OF SOUTHGATE
VILLAGE OF DUNDALK**

PREPARED FOR:

FLATO DUNDALK MEADOWS INC.

PREPARED BY:

**C.F. CROZIER & ASSOCIATES INC.
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1**

APRIL 2023

CFCA FILE NO. 1060-5384

The material in this report reflects best judgment in light of the information available at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. C.F. Crozier & Associates Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.



TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	SITE DESCRIPTION.....	1
3.0	PROPOSED DEVELOPMENT	2
4.0	PROPOSED SERVICING STRATEGY	2
4.1	Sanitary Servicing.....	2
4.2	Water Servicing.....	2
4.3	Utility Servicing.....	4
5.0	STORMWATER MANAGEMENT & SITE DRAINAGE	4
5.1	Design Criteria	4
5.2	Pre-Development Drainage Conditions	4
5.3	Proposed Drainage Conditions	4
5.4	Stormwater Quality Control.....	5
6.0	EROSION & SEDIMENTATION CONTROLS DURING CONSTRUCTION.....	5
7.0	CONCLUSIONS & RECOMMENDATIONS.....	5

LIST OF TABLES

Table 1: Edgewood Greens Development Details and Status

LIST OF APPENDICES

Appendix A: Water & Wastewater Capacity Calculations

Appendix B: Sanitary Sewer Design Sheet

Appendix C: Fire Flow Calculations

Appendix D: Storm Sewer Design Sheet

LIST OF FIGURES & DRAWINGS

Figure 1: Site Location Plan

Figure 2: Flato East Draft Plan

Figure 3: Edgewood Greens Composite Phasing Plan

Figure 4: Site Plan

Figure 5: Pre-Development Drainage Plan

Drawing C101: General Servicing Plan

Drawing C102: General Grading Plan

Drawing C103: Erosion and Sediment Control Plan

Drawing C109: Sanitary Drainage Plan (Edgewood Greens - Phase 11)

Drawing C110: Storm Drainage Plan (Edgewood Greens - Phase 11)

1.0 Introduction

C.F. Crozier & Associates Inc. (Crozier) has been retained by Flato Developments Inc. (Developer) to complete a Servicing and Stormwater Management Implementation Report and engineering design to support the Site Plan Application for a proposed commercial development known as Edgewood Commercial, referred to in this report as the Subject Development.

The Subject Development is located within the Draft Plan Approved Dundalk Meadows East Subdivision, herein referred to as Flato East. The general location of the Subject Development is shown on **Figure 1**.

2.0 Site Description

The 70 ha Flato Edgewood Greens Development in the southeast end of the Village of Dundalk is comprised of three Draft Plan Approved subdivisions:

- Dundalk Meadows West
- Dundalk Meadows East
- Dundalk Meadows North

The Subject Development is located within the Edgewood Greens Development, which is bounded by the Flato Meadows North Development to the north, Highway 10 to the east, open space to the south, and the Dundalk Meadows West Development to the west. Dundalk Meadows East is legally described as Part of Lot 233 and Lot 234, Concession 1, Village of Dundalk, Township of Southgate, County of Grey. The Dundalk Meadows East Draft Plan is shown in **Figure 2**.

The Edgewood Greens Development is being built out in phases. The boundaries of each of the phases within Edgewood Greens is shown in **Figure 3** and for additional information **Table 1** details the individual developments, their legal description, and their approval/design status.

Table 1: Edgewood Greens Development Details and Status

Development Property	Area (ha)	Units	Legal Description ⁽¹⁾	Phase of Development	Approval/Design Status
Dundalk Meadows West	13.1	70	Lot 18 and Part of Lots 17 and 21, Block P, Registered Plan 480 and Part of Lot 233 Concession 2	1	Built-Out
Dundalk Meadows East	40.2	470	Part of Lot 233 and Lot 234, Concession 1	2B	Built-Out
				7, 8 & 10	Draft Plan Approved/ Under Construction
				11	Draft Plan Approved/ Under Construction
				9	Draft Plan Approved/ Detailed Design
Dundalk Meadows North	16.2	267	Part of Lots 232, Concession 1	2A, 3-6	Built-Out

⁽¹⁾ Legal descriptions for all developments include "Village of Dundalk, Township of Southgate, County of Grey"

Within the Flato East Subdivision, the Subject Development is bounded by future Milliner Avenue to the south, future Symington Street to the west, future Colgan Crescent to the north, and Highway 10 to the east.

Geotechnical analysis determined that the site is underlain by Parkhill Loam, a medium textured soil derived from dolomitic limestone till, and Listowel Silt Loam, which carries the same characteristics as the Parkhill Loam. (Soil Survey of Grey County, 1979). Both soils are known to have poor drainage and are classified within the hydrologic soil group BC (Ministry of Transportation, 1997).

3.0 Proposed Development

The Subject Development is approximately 0.55 ha and is comprised of one single-story restaurant building with a gross floor area (GFA) of 454.1 square meters that can accommodate 90 seats. The development also includes 2 drive lane entrances and a 24-hour drive thru. The Subject Development also includes stormwater management, water, sanitary, typical utility, and site lighting infrastructure. Refer to **Figure 4** for the proposed Site Plan.

4.0 Proposed Servicing Strategy

4.1 Sanitary Servicing

As per the Township of Southgate "2022 Reserve Capacity" the existing wastewater treatment plant has an uncommitted reserve capacity of 182 new development equivalent residential units (ERUs). As of September 2022, allocation to service 29 ERUs required for the commercial block was granted by the Township of Southgate. For further information of the reserve capacities and summary of ERUs refer to **Appendix A** for relevant calculations.

Upon completion of Phase 11 of Edgewood Greens Subdivision, municipal gravity sanitary sewers will be available adjacent to the Subject Development with a 200 mm diameter service stub and maintenance hole constructed on the southwestern limit of the site along future Milliner Avenue. Refer to **Drawing C101** for location of the service stub and sanitary maintenance hole. The Sanitary Drainage Plan for Edgewood Greens - Phase 11 is shown in **Drawing C109**. It is anticipated that this servicing work will be complete and operational by June 2023.

Sanitary servicing within the proposed commercial building is to be provided by a 150 mm diameter internal sanitary sewer, connecting the building's internal plumbing systems to the 200 mm diameter sanitary on Milliner Avenue.

Sanitary sewage discharge from the commercial block will flow west to the sanitary pumping station (SPS) located on VanDusen Avenue. The operation of the commercial block will be contingent on the complete commissioning of the SPS. From the SPS a forcemain discharges wastewater into SANMH#11A located on Moody Street. Gravity sewers along Moody, Elm and Hagan Streets convey the wastewater into the trunk sanitary sewer on Young Street, which subsequently discharges to the Town's wastewater treatment plant. The existing Town sanitary sewer network has been evaluated by the Town's Engineer and has capacity to convey sanitary flows from the entire Edgewood Greens Development. Refer to **Appendix B** for the Sanitary Sewer Design Sheet.

4.2 Water Servicing

The Subject Development will connect to the Town's water distribution system via the 150mm dia. watermain service stub located off of Colgan Court. From this 150 mm dia. service the watermain

will connect to the building via a split connection with one for domestic use and the other for fire protection. Watermain layout and connections are shown in **Drawing C101**.

The Township of Southgate within their "2022 Reserve Capacity" analysis determined the Township's water supply system has an available uncommitted reserve capacity of 1,999 units. Based on the analysis the Township has sufficient water supply to service the proposed development. Refer to **Appendix B** for relevant capacity calculations.

Potable water demands for the 24-hour drive-through restaurant and retail development were determined using the following criteria as specified in the Ministry of Environment Design Guidelines for Drinking Water Systems, OBC and Township Standards:

24-Hour Drive-Through Restaurant

- 24-Hour drive-through restaurant flow – 200L/seat/day
- Number of seats – 90 seats
- Max Day/Peak Hour factors – 2.75/4.13

Based on these values it is estimated that the water demands for the 24-hour drive-through restaurant are as follows:

- Average Daily Flow Rate – 0.21 L/s
- Max Day Flow – 0.57 L/s
- Peak Hour Flow – 0.86 L/s

Fire flow requirements and available flows for the Commercial Block have been examined by Triton Engineering Services Limited (TESL), in conjunction with Crozier. Refer to **Appendix C** for the TESL Flato East (Edgewood Greens) Phases 7-11 Available Water Service Memorandum. TESL examined various scenarios for the expected maximum and minimum available pressure and fire flow within the bounds of the Subject Development. It is understood that the proposed Highway 10 connection will be completed in conjunction with Phase 11 of Dundalk Meadows East, and the proposed water tower is under construction. As such, it is anticipated that the proposed Water Tower will take place before the Subject Development is open. Therefore, the available fire flows per the Scenario #5 condition (Water Tower and Highway 10 connection – Refer to **Appendix C**) has been compared against the required fire flows. The proposed water distribution system will meet the fire flow requirements per the Office of the Fire Marshall – Fire Protection Water Supply Guideline for Part 3 in the OBC (2006) methodology for a commercial development. This is based on TESL Flato East (Edgewood Greens) Phases 7-11 Available Water Service Memorandum water distribution analysis scenario:

- Scenario #5 Condition – Dundalk Water Tower in operation, Highway 10 connection, and Phase 11 buildout.

Preliminary fire flows required to service the Commercial Block were determined to be 66.7 L/s as per the Fire Underwriters Survey, and 60 L/s as per the Office of the Fire Marshal. Refer to **Appendix C** for fire flow demand calculations.

The Township has indicated that the watermain distribution network located in the privately held portions of the development will remain under private ownership and will not be assumed by the municipality.

4.3 Utility Servicing

Edgewood Commercial will be serviced with natural gas, telephone, cable, TV and hydro. Coordination will be required with utility companies to ensure that sufficient capacity will exist within future facilities along Morgan Avenue and/or Colgan Crescent.

5.0 Stormwater Management & Site Drainage

5.1 Design Criteria

The stormwater management features for this site have been designed to comply with the policies and standards of the various agencies including the Township of Southgate, Ministry of the Environment, Conservation, and Parks, and the Grand River Conservation Authority. The stormwater management strategies for the proposed development are listed below:

- Water Quantity Control
 - Control of the post development peak flows to pre-development levels for all storms up to and including the 100-year at the selected point of interest.
- Water Quality Control
 - 80% removal efficiency of total suspended solids per MECP "Enhanced Protection" requirements.
- Development Standard
 - Minor and major drainage system to convey frequent and infrequent rainfall and runoff events, respectively.

In meeting the applicable policies and standards of the aforementioned agencies, the development will also be required to meet the following criteria:

- Manage the internal stormwater by safely conveying peak flows to suitable outlets and provide the necessary water quality controls.
- Manage any external drainage entering the site by providing safe conveyance across the Subject Development.
- Ensuring the development lands are not susceptible to flood inundation during all storm events.

5.2 Pre-Development Drainage Conditions

The existing drainage patterns of the site have been reflected in the Pre-Development Drainage Plan presented in **Figure 5**. The topographic survey of the site indicates the site is generally raised in the middle and slopes to the east and west. As such, runoff currently sheet flows towards Highway 10 to the east, and towards the Foley Drain to the west. The Foley Drain then flows south ultimately discharging to the Grand River.

5.3 Proposed Drainage Conditions

The internal drainage system for the Subject Development will consist of surface catchbasins and storm sewers to collect and convey flows to the storm sewer stub located near the south entrance of the site at Milliner Avenue. The Storm Drainage Plan and Storm Sewer Design Sheet for Edgewood Greens Phase 11 is shown in **Drawing C110** and **Appendix D**, respectively. The primary drainage

areas consist of the parking lot area and the building rooftop referred to as catchment 104 in **Drawing C110**. Runoff from the building rooftop will be directed into the storm sewer system using storm drains. The parking lot will be graded to direct minor storm event runoff towards the catchbasins that flow towards STMMH01. Due to grading constraints, catchment 104A sheet flows north towards a swale that conveys runoff to a catchbasin which connects to the Phase 11 storm sewer system through STM PLUG 1. The storm sewer system conveys flows generated from minor storm events up to and including the five-year design storms. For larger storms the Subject Development will have overland flow routes that direct flows towards both entrances at Milliner and Colgan Court where the right-of-way will safely convey flows towards SWM Facility #3. The overland flow routes are designed to convey the major design storm flows, up to and including the 100-year and the regional storm with a maximum allowable onsite pond level of 250mm. Refer to **Drawing C102** for site grading and overland flow routes.

5.4 Stormwater Quality Control

The water quality and erosion controls will be provided by SWM Facility #3 which is currently under construction and will accommodate and provide both stormwater quality and quantity control for the Subject Development. Refer to the Edgewood Greens - Phase 11 Servicing & Stormwater Management Implementation Report for detailed stormwater management calculations, provided under separate cover. The Grand River is the ultimate receiver from the Subject Lands; therefore, the development will incorporate measures to provide "enhanced protection" quality control (*Stormwater Management Planning and Design Manual*, Ministry of the Environment, 2003).

6.0 Erosion & Sedimentation Controls During Construction

Erosion and sediment controls will be implemented on-site prior to construction where required and as directed by the Developer and their site representative. See **Drawing C103** for the Erosion & Sediment Control Plan. The following controls are to be implemented:

- Stone Mud Mats
 - A mud mat will be installed to reduce the amount of mud tracking onto existing paved roadways during site servicing operations.
- Silt Fencing
 - Silt fencing will be constructed in accordance with GRCA's Typical Detail of Silt/Sediment Fence (BSD-23 Draft). It should be noted that additional silt fencing may be added based on field decisions by the Engineer and Developer prior to, during, and following earthworks operations.

7.0 Conclusions & Recommendations

The analysis presented above provides a comprehensive servicing and stormwater management assessment in support of the proposed Edgewood Commercial Block Site Plan Application.

- Stormwater management objectives for water quality control have been addressed in the design of the Edgewood Commercial Block. Quantity controls up to and including the 100-year storm will be provided.
- Sanitary services for the Edgewood Commercial Block will be provided by a service extension from the sewer along future Milliner Avenue. The Edgewood Greens – Phase 11 sewer system has adequate capacity for the Subject Development.

- An internal watermain system will be provided connecting the future Colgan Crescent watermain to the proposed commercial building. The proposed water distribution system will meet the fire flow requirements.
- Sediment and erosion controls as specified, will be effective in preventing and controlling sediment from migrating into nearby swales, ditches, and watercourses.

Given the above noted conclusions, we support the development of the subject lands from the perspective of engineering servicing and stormwater management requirements.

Respectfully submitted,

C.F. CROZIER & ASSOCIATES INC.



Dylan Emery, P.Eng.
Project Engineer

C.F. CROZIER & ASSOCIATES INC.



Justin L'Abbe, P.Eng.
Project Engineer

J:\1000\1060-Flato Dev\5384-Flato Dundalk Commercial Blk\Reports\SSWMIR - McDonalds - 2nd Sub\2023.04.25_Servicing & Stormwater Management Implementation Report.docx

APPENDIX A

Water & Wastewater Capacity Calculations



Project: Edgewood Commercial
Project No.: 1060-5384
Date: 2023-04-24
By: AM
Check By: JL'A

Flato Commercial - Water Flow Requirements

Developed Site Area	0.55 ha
Number of Restaurant Seats	90 seats
Retail Floor Area	454.00 m ²
<u>Potable Water Design Flows</u>	
24 Hour Drive-Through Restaurant	200 L/seat-day
Retail	5 L/m ² -day
<u>Total Potable Water Design Flows</u>	
Average 24 Hour Drive-Through Restaurant Daily Flow	0.21 L/sec
Max Day Peak Factor (per MOECC Design Guidelines 2008)	2.75
Max Day Demand 24 Hour Drive-Through Restaurant Flow	0.57 L/sec
Max Day Demand 24 Hour Drive-Through Restaurant Flow	49.50 m ³ /day
Max Day Per Capita Flow (Triton, 2022)	0.279 m ³ /day
Person Per Unit (2017 DC Background Study)	2.66
ERU Equivalent	67 ERU
Peak Hour Factor (per MOECC Design Guidelines 2008)	4.13
Peak Hour 24 Hour Drive-Through Restaurant Flow	0.86 L/sec
Fire Flow Demand (FUS)	66.7 L/sec
Overall Design Flow	67.27 L/sec



Project: Edgewood Commercial
 Project No.: 1060-5384
 Date: 2023-04-24
 By: AM
 Check By: JL'A

Flato Commercial - Sanitary Flow Requirements

Developed Site Area	0.55 ha	
Land Use Summary		
1) 24 Hour Restaurant	90 seats	
2) Commercial	454.00 m ²	
<u>Unit Sewage flows</u>		
24 Hour Restaurant (Ontario Building Code, 2006)	200 L/seat-day	
<u>Possible Design Flows</u>		
24 Hour Restaurant (Ontario Building Code, 2006) and Shopping Centre (MOE Design Guidelines, 2017)	20270 L/day	DESIGN FLOW
25 Hour Restaurant (Ontario Building Code, 2006) and Shopping Centre (MOE Design Guidelines, 2017)	0.23 L/sec	
Combined Average Daily Flow Rate	20.3 m ³ /day	
Therefore use a 20,270 L/day Design Flow		
Equivalent 24 Hour Restaurant Residential Population	65 Persons	
Equivalent Residential Units	24 Residential Units	
Infiltration	0.23 L/s/ha	
<u>Total Design Sewage Flows</u>		
Infiltration/Inflow Commercial	0.13 L/s	
24 Hour Restaurant Average Daily Commercial Flow	0.21 L/s	
Shopping Centre Average Daily Commercial Flow	0.03 L/s	
24 Hour Restaurant Commercial Peak Factor (Harmon Formula)	4.29	
Total 24 Hour Restaurant Peak Daily Flow	0.96 L/s	

Dundalk Sanitary Capacity Evaluation

DESCRIPTION	MARCH 2022	POST WWTF UPGRADES	UNITS
Available Capacity	1,832	3,025	m ³ /day
Average Day Flow	1,165	1,220	m ³ /day
Reserve Capacity	667	1,805	m ³ /day
Serviced Households	1,144	1,144	ERUs
Persons Per New Equivalent Residential Unit (2017 DC Background Study)	2.66	2.66	Persons
Average New Development Per Capita Flow	0.35	0.35	m ³ /day
Equivalent Flow Per Residential Unit	0.931	0.931	m ³ /day
Additional ERUs that can be serviced	<u>716</u>	<u>1938</u>	ERUs

TOTAL EQUIVALENT RESIDENTIAL UNIT (ERU) SUMMARY OF OCCUPIED, COMMITTED AND UNCOMMITTED UNITS

DEVELOPMENT	OCCUPIED UNITS 2021	COMMITTED UNITS (ERUs)	UNCOMMITTED UNITS (ERUs)
White Rose (Phase 1 & 2)	63	3	0
Flato North (Phase 2A)	72	0	0
Flato North (Phase 3)	42	4	0
Flato North (Phase 4)	22	0	0
Flato North (Phase 5)	10	49	0
Flato North (Phase 6)	20	48	0
Glenelg (Phase 1)	0	183	0
Flato West Block 75	0	56	0
Flato East (Phase 7, 8 & 10)	0	188	0
Flato East (Phase 11)	0	123	0
White Rose (Phase 3)	0	30	0
Edgewood Commercial	0	29	0
Infill Lots	3	3	0
TOTAL COMMITTED UNITS 2022		<u>716</u>	
White Rose (Phase 3)	0	0	47
Flato East (Phase 9)	0	0	47
Flato East (Phase 11)	0	0	50
Glenelg (Phase 2)	0	0	155
Glenelg (Phase 3)	0	0	459
TOTAL UNCOMMITTED UNITS			<u>1207</u>
Total Number of Available ERUs Upon Completion of WWTF Upgrades			1938
Total Projected ERUs of Reserve Capacity Available Upon Occupation of Committed Units			1222
Projected ERUs of Reserve Capacity Available Upon Occupation of The Above Uncommitted Units			15



Project: Edgewood Commercial
 Project No.: 1060-5771
 Date: 24-Apr-23
 By: AM
 Check: JL'A

Dundalk Water System Capacity Evaluation

DESCRIPTION	2022	UNITS
Available Capacity	2,817	m ³ /day
Max Day Flow	941	m ³ /day
Reserve Capacity	1,876	m ³ /day
Serviced Households	1,299	ERUs
Persons Per Existing Residential Unit (2016 Census Data)	2.6	Persons
Maximum Day Per Capita Flow	0.279	m ³ /day
Persons Per New Equivalent Residential Unit (2017 DC Background Study)	2.66	Persons
Additional population that can be served	6724	Persons
Additional ERUs that can be served	2528	ERUs

TOTAL EQUIVALENT RESIDENTIAL UNIT (ERU) SUMMARY OF OCCUPIED, COMMITTED AND UNCOMMITTED UNITS

DEVELOPMENT	OCCUPIED UNITS 2021	COMMITTED UNITS	UNCOMMITTED UNITS
White Rose (Phase 1 & 2)	63	3	0
Flato North (Phase 2A)	72	0	0
Flato North (Phase 3)	42	4	0
Flato North (Phase 4)	22	0	0
Flato North (Phase 5)	10	49	0
Flato North (Phase 6)	20	48	0
Glenelg (Phase 1)	0	183	0
Flato West Block 75	0	56	0
Flato East (Phase 7, 8 & 10)	0	188	0
Flato East (Phase 11)	0	143	0
White Rose (Phase 3)	0	35	0
Edgewood Commercial	0	29	0
Infill Lots	3	3	0
TOTAL COMMITTED UNITS 2022		741	
White Rose (Phase 3)	0	0	53
Flato East (Phase 9)	0	0	47
Flato East (Phase 11)	0	0	55
Glenelg (Phase 2)	0	0	155
Glenelg (Phase 3)	0	0	459
TOTAL UNCOMMITTED UNITS			1218
Total Number of Available ERUs			2528
Total Projected ERUs of Reserve Capacity Available Upon Occupation of Committed Units			1787
Projected ERUs of Reserve Capacity Available Upon Occupation of The Above Uncommitted Units			569



**TRITON
ENGINEERING
SERVICES
LIMITED**

Consulting Engineers

105 Queen Street West, Unit 14
Fergus
Ontario N1M 1S6
Tel: (519) 843-3920
Fax: (519) 843-1943
Email: info@tritoneng.on.ca

ORANGEVILLE • FERGUS • HARRISTON

March 28, 2022

Township of Southgate
R.R. #1
185667 Grey Road 9
Dundalk, Ontario
N0C 1B0

ATTENTION: Jim Ellis,
Public Works Manager

RE: Township of Southgate
Dundalk Water Supply and
Sewage Treatment Systems
2022 Reserve Capacity Calculations
Our File: A4160(22)-R04

Dear Sir:

The attached tables outline the 2022 reserve capacity calculations for the water supply and sewage treatment systems in Dundalk. The reserve capacities have been calculated in accordance with Ministry of Environment and Conservation and Parks (MECP) guidelines. 251 new residential units were connected to and **232** occupied within the municipal systems of Dundalk in 2021.

Table 3 provides a summary of Committed Developments which include White Rose Phases 1 and 2, Flato Phases 2-8 and 10, Flato Glenelg Development Phase 1 and the Flato West Apartment Building, totalling **534** equivalent residential units (ERUs). As Committed Units, these ERUs will not come out of the Uncommitted Reserve Capacity figures indicated on Tables 1 and Table 2. Table 3 further outlines the various potential developments that have been granted Draft Plan Approval, or are being considered, however have not been granted allocation.

Water System:

The three (3) year average maximum day demand of the water system increased from 918m³/d to **941m³/d** over the past year. The 2022 uncommitted reserve capacity of the water system is **1,999 ERU**. This is based on the Townships' amount of water taking permitted by the Permit to Take Water and committed developments as outlined in Table 3. The Permit to Take Water, indicates an allowable water taking of 2,817m³/day.

Refer to Table 1 for additional information regarding water system reserve capacity calculations.



Sewage Treatment Facility:

Table 2 summarizes the sewage treatment reserve capacity calculations for 2022. The three-year annual average day flow increased from 1,127 m³/d to **1,165m³/d**. Despite an increase in the serviced population in 2021, the 2021 uncommitted reserve capacity for the sewage treatment facility has increased from 127 ERUs to **182** new development ERUs.

Refer to Table 2 for additional information regarding sewage treatment system reserve capacity calculations.

Extraneous Flow:

In conjunction with the reserve capacity calculations, we have completed a high-level assessment of the extraneous flows within the Dundalk sewage collection system. This assessment compares the precipitation, temperature, average day demand of water and the average day sewage flow measured at the WWTP on a monthly basis. The results indicate that the extraneous flows over and above the expected amount within a typical system is, on average, **367m³/day**, which equates to an estimated **395 ERUs**. The relationship between the wastewater flows, precipitation and temperature is indicative of a system that is subject to both groundwater infiltration, and direct inflow. This is based on peaking of wastewater flows noted during the spring melt (i.e., March) and correlation noted to times of high precipitation but lower groundwater levels (i.e., July). Sump pump connections are likely a significant contributor.

Recommendation:

Following Council's review and adoption of the attached report, we would recommend that a copy of the report be forwarded to the MECP District Office in Owen Sound and the Grey County Planning Department. We trust you will find the enclosed to be in order. Should you have any questions, please do not hesitate to contact this office.

Respectfully,
Triton Engineering Services Limited



Dustin Lyttle, P. Eng.

cc: Dave Milliner, Township of Southgate
Clinton Stredwick, Township of Southgate
Bev Fisher, Township of Southgate

**TABLE 1
TOWNSHIP OF SOUTHGATE
2022 RESERVE CAPACITY
DUNDALK WATER SYSTEM**

DESCRIPTION	2021
1 Available Capacity ¹	2,817
2 Max Day Flow (m ³ /d) ²	941
3 Reserve Capacity (m ³ /d) (1) - (2)	1,876
4 Serviced Occupied Households ³	1,299
5 Persons Per Existing Residential Unit (2016 Census Data)	2.60
6 Population Served (4) x (5)	3,377
7 Maximum Day Per Capita Flow (m ³ /d) (2) ÷ (6)	0.279
8 Additional Population that can be Served (3) ÷ (7)	6,737
9 Person Per New Equivalent Residential Unit (2017 DC Background Study)	2.66
10 Additional ERUs that can be served. (8) ÷ (9)	2,533
11 Committed Development ERUs (Table 3)	534
12 Uncommitted Reserve Capacity (ERUs) (10) - (11)	1,999
¹ Available Capacity is based on lesser of Firm Capacity or Permit to Take Water. Firm capacity is 2,819m ³ /day, PTTW is 2,817m ³ /d. Well Production is 4,780m ³ /day.	
² Max day flow is the average of the maximum day flows from 2019, 2020 and 2021 (913, 905 and 1,004m ³ /d respectively). 2020 and 2019 Maximum day flows have been adjusted to account for high demands during various infrastructure works.	
³ Serviced occupied households is 1,067 (2020) + 232 units occupied in 2021.	



**TABLE 2
TOWNSHIP OF SOUTHGATE
2022 RESERVE CAPACITY
DUNDALK SEWAGE TREATMENT FACILITY**

DESCRIPTION	2021
1 Design Capacity of Sewage Treatment Facility (m ³ /d)	1,832
2 Average Day Flow ¹ (m ³ /d) (Average of 2019, 2020 and 2021 Average Day Flows)	1,165
3 Reserve Capacity (m ³ /d) (1) - (2)	667
4 Average New Development Per Capita Flow ² (m ³ /d)	0.350
5 Additional Population that can be Served (3) ÷ (4)	1,906
6 Person Per Equivalent Residential Unit (2017 DC Background Study)	2.66
7 ERU Flow Rate (m ³ /d) (4) x (6)	0.931
8 Additional ERUs that can be Served (5) ÷ (6)	716
9 Committed Development ERUs (Table 3)	534
10 Uncommitted Reserve Capacity (ERUs) (7) - (8)	182
¹ Average of the average day flows in 2019, 2020 and 2021 (1,114m ³ /day, 1,161m ³ /day and 1,220m ³ /day respectively).	
² As determined by new development flow analysis supported by flow monitoring program.	



**TABLE 3
TOWNSHIP OF SOUTHGATE
2022 RESERVE CAPACITY
SUMMARY OF DUNDALK DEVELOPMENTS**

COMMITTED DEVELOPMENTS	TOTAL UNITS	UNITS OCCUPIED IN 2021	REMAINING UNITS AT END OF 2021
White Rose (Phase 1 & 2)	66	63	3
Flato North (Phase 2A)	72	72	0
Flato North (Phase 3)	46	42	4
Flato North (Phase 4)	22	22	0
Flato North (Phase 5)	59	10	49
Flato North (Phase 6)	68	20	48
Flato Glenelg (Phase 1)	183	0	183
Flato West Block 75 (Phase 2) Apartment Building ¹	56	0	56
Flato East (7, 8 & 10)	188	0	188
INFILL LOTS ²		3	3
SUB-TOTAL		232	534
TOTAL COMMITTED UNITS			534
UNCOMMITTED DEVELOPMENT (DRAFT PLAN APPROVED)	TOTAL UNITS		
White Rose (Phase 3)	88		
Flato East (Phase 9)	47		
Flato East (11)	193		
Glenelg (Phase 2)	155		
Dundalk Commercial	24		
SUB-TOTAL	507		
¹ Apartment units based on assumption that each unit is 0.7 ERU.			
² 3 Infill Lots allocated annually.			



**TABLE 4
TOWNSHIP OF SOUTHGATE
2022 RESERVE CAPACITY
DUNDALK EXTRANEOUS FLOWS**

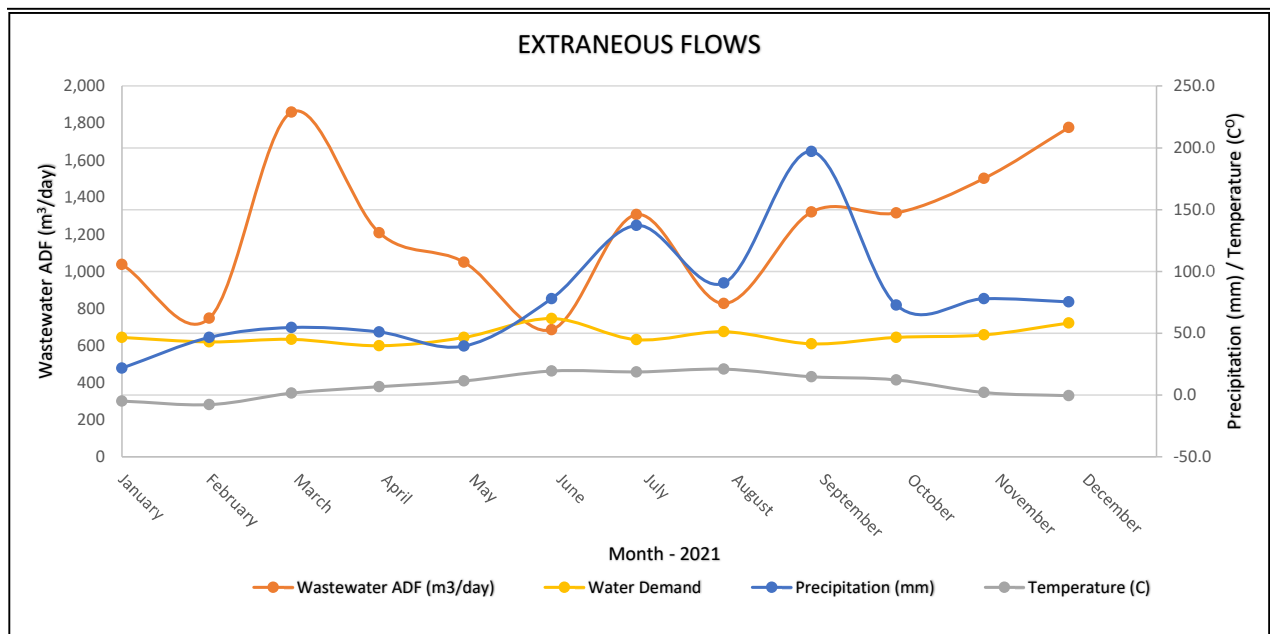
MONTH	PRECIPITATION (mm) ⁴	AMBIENT TEMP. (C°) ⁴	WASTEWATER ADF (m ³ /day)	WATER ADD (m ³ /day)	EXTRANEOUS FLOW (m ³ /day) ¹
January-2021	21.6	-4.9	1,038	643	395
February-2021	46.6	-7.8	747	620	127
March-2021	54.6	1.4	1,860	633	1,227
April-2021	50.9	6.7	1,209	598	611
May-2021	39.5	11.2	1,050	643	407
June-2021	77.9	19.4	685	745	0
July-2021	137.2	18.7	1,306	632	674
August-2021	90.7	20.8	827	674	153
September-2021	196.9	14.7	1,320	609	711
October-2021	72.6	12.2	1,316	644	672
November-2021	77.9	1.9	1,501	657	844
December-2021	75.4	-0.7	1,776	722	1,054
AVERAGE			1,220	652	573
REASONABLE EXTRANEOUS FLOW BASED ON POPULATION(m³/day)²					203
EXTRANEOUS FLOW OVER AND ABOVE REASONABLE AMOUNT(m³/day)					370
EQUIVALENT RESIDENTIAL UNITS USED BY EXTRANEOUS FLOWS (ERU)³					398

¹ This is the Wastewater ADF minus the Water ADD, used to determine Sanitary Flow over and above expected.

² Expected infiltration is 60 Litres per person per day based on modified historic MOE Standard.

³ Based on New Development Equivalent Residential Unit Sanitary Flow Rate

⁴ As recorded at Mount Forest Station.



APPENDIX B

Sanitary Sewer Design Sheet



EDGEWOOD GREENS - PHASE 11
 SANITARY SEWER DESIGN MODEL

DESIGN: JK/VP/AC/AM
 CHECK: DTE
 SUBMISSION: 4th Submission

N = 0.013
 Population = 3.5 p.p.u.
 Peak Factor (M) = 1+(14/4+(P/1000)^{0.5})
 Avg. Daily/Capita Flow = 350 L/cap.d
 Q infiltration = 0.15 L/ha.s
 Commercial Avg Flow = 350 L/cap.d

Edgewood Greens Phase #	Catchment Area	FROM MH	TO MH	Length (m)	Inc. Area (Ha)	Cum. Area (Ha)	Lots	Inc. Pop	Total Trib Pop	Peak Factor	Avg. Flow (l/s)	Max Flow (l/s)	Infiltr. (l/s)	Total Infiltr.	Combined (l/s)	Pipe Diam (mm)	Upper Inv. El.	Lower Inv. El.	Slope (%)	Cap. (l/s)	Vel. (m/s)	q/Q	d/D	v/V	Act. Vel. m/s	Ground Upper	Ground Lower	Cover Upper	Cover Lower
7/8/10	1	EX. 11A	11B	29.00	0.35	0.35	6	21	21	4.38	0.09	0.37	0.05	0.05	0.42	200	513.73	513.06	2.30%	49.74	1.58	0.01	0.07	0.32	0.51	516.33	516.39	2.4	2.8
	1A	11B	3A	55.70	0.49	0.84	8	28	49	4.32	0.20	0.86	0.13	0.13	0.98	200	513.03	512.81	0.40%	20.74	0.66	0.05	0.15	0.52	0.34	516.39	516.15	3.2	2.8
	2	3A	3	84.65	0.48	1.32	7	25	74	4.28	0.30	1.27	0.07	0.20	1.47	200	512.79	512.45	0.40%	20.74	0.66	0.07	0.18	0.58	0.38	516.15	516.20	3.2	3.2
	3	1	2	37.90	0.43	0.43	7	25	25	4.37	0.10	0.43	0.06	0.06	0.50	200	512.79	512.04	2.00%	46.38	1.48	0.01	0.07	0.32	0.47	516.43	516.24	3.4	3.7
	4	2	3	43.40	0.35	0.78	5	18	42	4.33	0.17	0.74	0.05	0.12	0.85	200	512.01	511.84	0.40%	20.74	0.66	0.04	0.14	0.50	0.33	516.24	516.20	4.0	3.8
	5	3	4	57.53	0.54	2.64	7	25	140	4.20	0.57	2.38	0.08	0.40	2.78	200	511.82	511.59	0.40%	20.74	0.66	0.13	#N/A	#N/A	#N/A	516.20	515.80	4.2	3.7
	6	4	5	57.50	0.60	3.24	9	32	172	4.17	0.69	2.90	0.09	0.49	3.38	200	511.57	511.34	0.40%	20.74	0.66	0.16	0.27	0.73	0.48	515.80	516.22	4.0	4.4
	7	5	6	20.90	0.30	3.54	3	11	182	4.16	0.74	3.07	0.05	0.53	3.60	200	511.29	511.21	0.40%	20.74	0.66	0.17	0.28	0.74	0.49	516.22	516.01	4.7	4.3
	8	6	7	62.10	0.19	3.73	1	4	186	4.16	0.75	3.13	0.03	0.56	3.69	200	511.16	510.91	0.40%	20.74	0.66	0.18	0.29	0.76	0.50	516.01	515.76	4.6	4.3
	9	7	98.00	0.50	4.23	6	21	207	4.14	0.84	3.47	0.08	0.63	4.10	200	510.89	510.50	0.40%	20.74	0.66	0.20	0.30	0.78	0.52	515.76	516.06	4.7	5.0	
9	26	29	28	39.27	0.23	0.23	5	18	18	4.39	0.07	0.31	0.03	0.03	0.35	200	515.49	515.10	1.00%	32.80	1.04	0.01	0.07	0.32	0.33	518.09	518.83	2.4	3.2
	25	25	28	82.0	0.55	0.55	11	39	39	4.34	0.16	0.68	0.08	0.08	0.76	200	517.49	515.47	2.50%	51.86	1.65	0.01	0.07	0.32	0.53	520.63	518.83	2.9	2.8
	27	28	30	80.0	0.58	1.36	9	32	88	4.26	0.35	1.51	0.09	0.20	1.71	200	515.10	514.46	0.80%	29.34	0.93	0.06	0.16	0.54	0.50	518.83	517.80	3.5	2.8
	28	30	31	80.0	0.67	2.03	13	46	133	4.21	0.54	2.27	0.10	0.30	2.57	200	514.20	513.80	0.80%	29.34	0.93	0.09	0.20	0.62	0.58	517.80	516.87	3.4	2.6
	29	31	8	80.00	0.56	2.59	9	32	165	4.18	0.67	2.78	0.08	0.39	3.17	200	513.78	512.18	2.00%	46.38	1.48	0.07	0.18	0.58	0.86	516.87	516.06	2.9	3.4
7/8/10	10	8	9	65.50	0.53	7.35	9	32	403	4.02	1.63	6.56	0.08	1.10	7.66	200	510.48	510.22	0.40%	20.74	0.66	0.37	0.42	0.86	0.57	516.06	516.38	5.4	5.6
	11	9	10	20.90	0.25	7.60	3	11	413	4.02	1.67	6.72	0.04	1.14	7.86	200	510.17	510.08	0.40%	20.74	0.66	0.38	0.43	0.93	0.61	516.38	516.46	6.0	5.9
	12	10	11	67.30	0.56	8.16	9	32	445	4.00	1.80	7.20	0.08	1.22	8.43	200	510.03	509.76	0.40%	20.74	0.66	0.41	0.45	0.95	0.63	516.46	516.89	6.2	6.6
	20	25	24	80.0	0.45	0.45	12	42	42	4.33	0.17	0.74	0.07	0.07	0.80	200	517.57	515.97	2.00%	46.38	1.48	0.02	0.10	0.40	0.59	520.63	518.86	2.9	2.4
	19	24	11	80.0	0.59	1.04	16	56	98	4.25	0.40	1.69	0.09	0.16	1.84	200	513.97	513.43	0.70%	27.44	0.87	0.07	0.18	0.58	0.51	518.86	516.89	4.7	2.9
	13	11	12	74.62	0.33	9.53	6	21	564	3.95	2.28	9.01	0.05	1.43	10.44	250	509.68	509.46	0.30%	32.57	0.66	0.32	0.39	0.89	0.59	516.89	517.04	7.0	7.1
	14	12	13	74.62	0.44	9.97	9	32	595	3.93	2.41	9.48	0.07	1.50	10.98	250	509.44	509.21	0.30%	32.57	0.66	0.34	0.40	0.00	0.00	517.04	517.42	7.3	7.7



EDGEWOOD GREENS - PHASE 11
 SANITARY SEWER DESIGN MODEL

DESIGN: JK/VP/AC/AM
 CHECK: DTE
 SUBMISSION: 4th Submission

N = 0.013
 Population = 3.5 p.p.u.
 Peak Factor (M) = $1 + (14/4 + (P/1000)^{0.5})$
 Avg. Daily/Capita Flow = 350 L/cap.d
 Q infiltration = 0.15 L/ha.s
 Commercial Avg Flow = 350 L/cap.d

Edgewood Greens Phase #	Catchment Area	FROM MH	TO MH	Length (m)	Inc. Area (Ha)	Cum. Area (Ha)	Lots	Inc. Pop	Total Trib Pop	Peak Factor	Avg. Flow (l/s)	Max Flow (l/s)	Infiltr. (l/s)	Total Infiltr.	Combined (l/s)	Pipe Diam (mm)	Upper Inv. El.	Lower Inv. El.	Slope (%)	Cap. (l/s)	Vel. (m/s)	q/Q	d/D	v/V	Act. Vel. m/s	Ground Upper	Ground Lower	Cover Upper	Cover Lower		
11	1	15	16	74.10	0.22	0.22	8	28	28	4.36	0.11	0.49	0.03	0.03	0.53	200	515.49	514.72	1.00%	32.80	1.04	0.02	0.10	0.40	0.42	518.30	517.97	2.6	2.7		
	13	01	16	10.00	0.52	0.74	N/A	59	59	4.30	0.24	1.03	0.08	0.11	1.14	200	514.85	514.80	0.50%	23.19	0.74	0.05	0.15	0.52	0.38	518.24	517.97	3.2	2.7		
	2	16	17	40.20	0.17	1.13	4	14	101	4.24	0.41	1.74	0.03	0.17	1.91	200	514.72	514.52	0.50%	23.19	0.74	0.08	0.19	0.60	0.44	517.97	517.92	3.1	2.9		
	11	42	17	79.00	0.47	0.47	11	39	39	4.34	0.16	0.68	0.07	0.07	0.75	200	515.35	514.56	1.00%	32.80	1.04	0.02	0.10	0.40	0.42	518.06	517.92	2.5	2.8		
	3	17	18	80.00	0.23	1.83	7	25	164	4.18	0.66	2.78	0.03	0.27	3.05	200	514.48	514.08	0.50%	23.19	0.74	0.13	#N/A	#N/A	#N/A	517.92	517.44	3.2	2.8		
	9	43	18	74.00	0.50	0.50	18	63	63	4.29	0.26	1.10	0.08	0.08	1.17	200	514.87	514.13	1.00%	32.80	1.04	0.04	0.14	0.50	0.52	517.66	517.44	2.6	2.8		
	4	18	19	67.80	0.19	2.52	7	25	252	4.11	1.02	4.19	0.03	0.38	4.57	200	514.05	513.72	0.50%	23.19	0.74	0.20	0.30	0.78	0.58	517.44	517.09	3.2	2.9		
	5	19	20	20.20	0.07	2.59	4	14	266	4.10	1.08	4.41	0.01	0.39	4.80	200	513.67	513.56	0.50%	23.19	0.74	0.21	0.31	0.79	0.58	517.09	516.97	3.2	2.9		
	6	20	21	73.90	0.41	3.00	14	49	315	4.07	1.27	5.18	0.06	0.45	5.63	200	513.51	513.14	0.50%	23.19	0.74	0.24	#N/A	#N/A	#N/A	516.97	517.09	3.3	3.4		
	7	21	22	70.00	0.36	3.36	10	35	350	4.05	1.42	5.73	0.05	0.50	6.24	200	513.11	512.06	1.50%	40.17	1.28	0.16	0.27	0.73	0.93	517.09	517.53	3.8	5.0		
	12	41	40	22.00	0.21	0.21	7	25	25	4.37	0.10	0.43	0.03	0.03	0.47	200	515.55	515.33	1.00%	32.80	1.04	0.01	0.07	0.32	0.33	518.22	518.35	2.5	2.5		
	14	40	38	59.00	0.43	0.64	15	53	77	4.27	0.31	1.33	0.06	0.10	1.43	200	515.30	515.01	0.50%	23.19	0.74	0.06	0.16	0.54	0.40	518.35	518.04	2.9	2.5		
	15	32	36	26.60	0.19	0.19	6	21	21	4.38	0.09	0.37	0.03	0.03	0.40	200	515.83	515.56	1.00%	32.80	1.04	0.01	0.07	0.32	0.33	518.53	518.45	2.5	2.4		
	16	36	37	16.60	0.13	0.32	2	7	28	4.36	0.11	0.49	0.02	0.05	0.54	200	515.51	515.35	1.00%	32.80	1.04	0.02	0.10	0.40	0.42	518.45	518.44	2.7	2.6		
	17	37	38	68.30	0.33	0.65	10	35	63	4.29	0.26	1.10	0.05	0.10	1.19	200	515.30	514.96	0.50%	23.19	0.74	0.05	0.15	0.52	0.38	518.44	518.04	2.9	2.6		
	18	38	39	80.00	0.37	1.66	7	25	165	4.18	0.67	2.78	0.06	0.25	3.03	200	514.88	514.48	0.50%	23.19	0.74	0.13	#N/A	#N/A	#N/A	518.04	517.64	3.0	2.6		
	12A		42		0.15	0.15	0	0	0	4.50	0.00	0.00	0.02	0.02	0.02																
	10	42	39	81.00	0.56	0.71	18	63	63	4.29	0.26	1.10	0.08	0.11	1.20	200	515.22	514.41	1.00%	32.80	1.04	0.04	0.14	0.50	0.52	518.06	517.64	2.6	2.7		
	19	39	35	80.00	0.33	2.70	6	21	249	4.11	1.01	4.14	0.05	0.41	4.54	200	514.33	513.93	0.50%	23.19	0.74	0.20	0.30	0.78	0.58	517.64	517.56	3.1	3.1		
	20	32	32A	50.00	0.24	0.24	7	25	25	4.37	0.10	0.43	0.04	0.04	0.47	200	515.56	515.06	1.00%	32.80	1.04	0.01	0.07	0.32	0.33	518.53	518.28	2.8	2.7		
	20A	32A	33	60.00	0.36	0.60	10	35	60	4.30	0.24	1.04	0.05	0.09	1.13	200	515.03	514.73	0.50%	23.19	0.74	0.05	0.15	0.52	0.38	518.28	517.93	3.1	2.7		
	21	33	33A	16.60	0.06	0.66	0	0	60	4.30	0.24	1.04	0.01	0.10	1.14	200	514.68	514.60	0.50%	23.19	0.74	0.05	0.15	0.52	0.38	517.93	517.82	3.1	2.7		
	22	33A	35	68.30	0.16	0.82	3	11	70	4.28	0.28	1.21	0.02	0.12	1.34	200	514.55	514.21	0.50%	23.19	0.74	0.06	0.16	0.54	0.40	517.82	517.56	3.1	2.8		
	8	43	35	86.00	0.63	0.63	22	77	77	4.27	0.31	1.33	0.09	0.09	1.43	200	514.91	514.05	1.00%	32.80	1.04	0.04	0.14	0.50	0.52	517.66	517.56	2.6	3.0		
23	35	22	80.00	0.18	4.33	1	4	399	4.02	1.62	6.50	0.03	0.65	7.15	200	513.83	512.23	2.00%	46.38	1.48	0.15	0.26	0.72	1.06	517.56	517.53	3.5	4.8			
24	22	SAN PLUG 1	80.30	0.16	7.85	0	0	749	3.88	3.03	11.76	0.02	1.18	12.93	200	511.24	510.48	0.94%	31.80	1.01	0.41	0.45	0.95	0.96	517.53	N/A	6.1	N/A			
7/8/10	15	SAN PLUG1	13	32.0	0.05	7.90	0	0	749	3.88	3.03	11.76	0.01	1.19	12.94	200	510.48	510.19	0.90%	31.12	0.99	0.42	0.45	0.95	0.94	N/A	517.42	N/A	6.7		
		13	14	42.60	0.18	18.05	3	11	1354	3.71	5.48	20.36	0.03	2.71	23.06	250	509.13	509.01	0.30%	32.57	0.66	0.71	#N/A	#N/A	#N/A	517.42	517.41	8.0	7.9		
	21	25	32	71.8	0.43	0.43	11	39	39	4.34	0.16	0.68	0.06	0.06	0.74	200	517.56	516.12	2.00%	46.38	1.48	0.02	0.10	0.40	0.59	520.63	520.04	2.9	3.4		
	22	32	33	65.72	0.52	0.95	12	42	81	4.27	0.33	1.39	0.08	0.14	1.53	200	516.10	514.79	2.00%	46.38	1.48	0.03	#N/A	#N/A	#N/A	520.04	518.56	3.7	3.3		
	23	33	34	16.60	0.24	1.19	2	7	88	4.26	0.35	1.51	0.04	0.18	1.69	200	514.74	514.41	2.00%	46.38	1.48	0.04	0.14	0.50	0.74	518.56	518.13	3.6	3.2		
	24	34	27	68.30	0.61	1.80	10	35	123	4.22	0.50	2.09	0.09	0.27	2.36	200	514.36	513.85	0.75%	28.40	0.90	0.08	0.19	0.60	0.54	518.13	517.42	3.6	3.1		
	18	24	26	76.12	0.37	0.37	11	39	39	4.34	0.16	0.68	0.06	0.06	0.73	200	515.92	514.40	2.00%	46.38	1.48	0.02	0.10	0.40	0.59	518.86	518.14	2.7	3.2		
	17	26	27	73.1	0.31	0.68	9	32	70	4.28	0.28	1.21	0.05	0.10	1.32	200	514.38	513.91	0.65%	26.44	0.84	0.05	0.15	0.52	0.44	518.14	517.42	3.6	3.0		
16	27	14	37.43	0.18	2.66	3	11	203	4.15	0.82	3.41	0.03	0.40	3.81	200	513.83	513.64	0.50%	23.19	0.74	0.16	0.27	0.73	0.54	517.42	517.41	3.4	3.3			
	14	SPS	13.48	0.00	20.71	0	0	1557	3.67	6.31	23.13	0.00	3.11	26.24	250	508.93	508.88	0.30%	32.57	0.66	0.81	#N/A	#N/A	#N/A	517.41	518.32	8.2	8.9			

APPENDIX C

Fire Flow Calculations

Water Supply for Public Fire Protection - 1999
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

1. An estimate of fire flow required for a given area may be determined by the formula:

$$F = 220 * C * \text{sqrt } A$$

where

- F = the required fire flow in litres per minute
- C = coefficient related to the type of construction
 - = 1.5 for wood frame construction (structure essentially all combustible)
 - = 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior)
 - = 0.8 for non-combustible construction (unprotected metal structural components)
 - = 0.6 for fire-resistive construction (fully protected frame, floors, roof)
- A = The total floor area in square metres (including all storeys, but excluding basements at least 50 percent below grade) in the building considered.

Proposed Buildings 1 number of floors 454.1 sq.m. floor area 100% Floor 1 0% Floor 2 0% Floor 3 0% Floor 4 454.1 sq.m. total floor area	Ordinary Construction 0.8 C
--	--------------------------------

Therefore F= 4,000 L/min (rounded to nearest 1000 L/min)

Fire flow determined above shall not exceed:
 30,000 L/min for wood frame construction
 30,000 L/min for ordinary construction
 25,000 L/min for non-combustible construction
 25,000 L/min for fire-resistive construction

2. Values obtained in No. 1 may be reduced by as much as 25% for occupancies having low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

Non-Combustible	-25%	Free Burning	15%
Limited Combustible	-15%	Rapid Buring	25%
Combustible	No Charge		

Low fire Hazard occupancy for dwellings 0% reduction 0 L/min reduction

Therefore UPDATED F= 4,000 L/min (rounded to nearest 1000 L/min)

Note: Flow determined shall not be less than 2,000 L/min

3. Sprinklers - The value obtained in No. 2 above maybe reduce by up to 50% for complete automatic sprinkler protection.

Sprinkler System Assume 30% reduction
1,200 L/min reduction

Water Supply for Public Fire Protection - 1999
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 45 metres by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

Separation	Charge	Separation	Charge
0 to 3 m	25%	20.1 to 30 m	10%
3.1 to 10 m	20%	30.1 to 45 m	5%
10.1 to 20 m	15%		

Exposed buildings

Name	Distance		
North	14	15%	600
South	35	5%	200
West	60	0%	0
East		0%	0

800 L/min Surcharge

Determine Required Fire Flow

No.1	4,000	
No. 2	0 reduction	
No. 3	1,200 reduction	
No. 4	800 surcharge	
Required Flow:	3,600 L/min	
Rounded to nearest 1000l/min:	4,000 L/min	or 66.7 L/s 1,057 USGPM

Required Duration of Fire Flow

Flow Required L/min	Duration (hours)
2,000 or less	1.0
3,000	1.25
4,000	1.5
5,000	1.75
6,000	2.0
8,000	2.0
10,000	2.0
12,000	2.5
14,000	3.0
16,000	3.5
18,000	4.0
20,000	4.5
22,000	5.0
24,000	5.5
26,000	6.0
28,000	6.5
30,000	7.0
32,000	7.5
34,000	8.0
36,000	8.5
38,000	9.0
40,000 and over	9.5

Determine Required Fire Storage Volume

Flow from above	4,000 L/min
Required duration	1.50 hours
Therefore:	360,000 Litres or 360 cu.m. is the required fire storage volume.

Fire Protection Water Supply Guideline
Part 3 of the Ontario Building Code (2006)

$$Q = KVS_{TOT}$$

Q = minimum supply of water in litres (L)

K = water supply coefficient

V = total building volume in cubic metres

S_{TOT} = total of spatial coefficient values from property line exposures on all sides

K = 31.0 Group E building with combustible construction (Table 1)

V = 2043.45 h = 4.5m A = 454.1sqm

S_{TOT} = 2 S_{TOT} Need Not Exceed 2.0

$$Q = 126693.9 \text{ L}$$

Based on ranges listed in Table 2, the required minimum water supply flow rate is **3,600 L/min**

60 L/s



DATE: July 15, 2021
 TO: Darrin Tone & Haley Birrell
 FROM: Dustin Lyttle & John Koolhaas
 RE: Flato East (Edgewood Greens)
 Phases 7-11
 Available Water Service
 FILE: A4167B & A4167F

Introduction:

This memo is intended to provide insight on the expected water system configuration, operating conditions and available flow within Phases 7-13 of the Edgewood Greens Subdivision.

The following estimates are based on the topographic and watermain design information presented in:

- Revision 5 of the Edgewood Greens Phases 7, 8 and 10 design drawings, dated May 27, 2021
- Revision 2 of the Edgewood Greens Phases 11-13 Preliminary Future Road Profiles, dated August 19, 2020
- Servicing and Stormwater Management Implementation Report, Flato East Commercial Block, dated November 2020 - Submission No. 1, prepared by C.F. Crozier & Associates Inc.

Note: The watermain crossing the Foley Drain on Morgan Ave. is to be 250mm diameter east of Van Dusen until Milliner Ave.

The watermain is to be sized as 150mm throughout Phases 7 to 13 except for the following locations:

Diameter (mm)	Location	From	To
200	Russel Street		
200	Morgan Avenue	Russel Street	Van Dusen Avenue
250	Morgan Avenue	Van Dusen Avenue	Milliner Avenue
200	Morgan Avenue	Milliner Avenue	Symington Street
200	Symington Street	Morgan Avenue	Milliner Avenue
250	Symington Street	Milliner Avenue	Block 369 Stub
200	Highway 10 and through Lots 230/231 (Servicing Block)	Existing Highway 10 stub	Colgan Crescent

Assessment:

The following assessment has been completed under eight scenarios as described below.

Scenario 1: Phase 7 – 11: Water Tower & HWY 10 Connection

This scenario models the maximum and minimum expected available pressure and fire flow within the bounds of **Phases 7 – 11** under the following arrangement:

- Build out up to Phase 11.
- 200mm diameter watermain connection on Highway 10 **is provided** from the existing stub through to Colgan Crescent. *The details of how this connection will be made through the sideyard and/or park block will be determined at a later date.*
- Proposed Water Tower **is** in operation.

Scenario 2: Phase 7 – 11: Water Tower – No HWY 10 Connection

This scenario models the maximum and minimum expected available pressure and fire flow within the bounds of **Phases 7 – 11** under the following arrangement:

- Build out up to Phase 11.
- 200mm diameter watermain connection on Highway 10 **is not provided** from the existing stub through to Colgan Crescent.
- Proposed Water Tower **is** in operation.

Scenario 3: Phase 7 – 11: No Water Tower – HWY 10 Connection

This scenario models the maximum and minimum expected available pressure and fire flow within the bounds of **Phases 7 – 11** under the following arrangement:

- Build out up to Phase 11.
- 200mm diameter watermain connection on Highway 10 **is provided** from the existing stub through to Colgan Crescent.
- Proposed Water Tower **not** in operation.

Scenario 4: Phase 7 – 11: No Water Tower – No HWY 10 Connection

This scenario models the maximum and minimum expected available pressure and fire flow within the bounds of **Phases 7 – 11** under the following arrangement:

- Build out up to Phase 11.
- 200mm diameter watermain connection on Highway 10 **is not provided**.
- Proposed Water Tower **not** in operation.

For the above scenarios under the arrangement of build out up to Phase 11, all watermain south of Morgan Avenue (i.e., within Phases 12 and 13) has been assumed to have not yet been constructed including Milliner Avenue, McAllister Street, Symington Street, Colgan Crescent (only the section south of Morgan), and the commercial development.

Scenario 5: Phases 12 & 13: Water Tower & HWY 10 Connection

This scenario models the maximum and minimum expected available pressure and fire flow within the bounds of **Phases 12 & 13** under the following arrangement:

- Complete build out of all phases.
- 200mm diameter watermain connection on Highway 10 **is provided** from the existing stub through to Colgan Crescent. *The details of how this connection will be made through the sideyard and/or park block will be determined at a later date.*
- Proposed Water Tower **is** in operation.

Scenario 6: Phases 12 & 13: Water Tower & No HWY 10 Connection

This scenario models the maximum and minimum expected available pressure and fire flow within the bounds of **Phases 12 & 13** under the following arrangement:

- Complete build out of all phases.
- 200mm diameter watermain connection on Highway 10 **is not provided** from the existing stub through to Colgan Crescent. *The details of how this connection will be made through the sideyard and/or park block will be determined at a later date.*
- Proposed Water Tower **is** in operation.

Scenario 7: Phases 12 & 13: No Water Tower & HWY 10 Connection

This scenario models the maximum and minimum expected available pressure and fire flow within the bounds of **Phases 12 & 13** under the following arrangement:

- Complete build out of all phases.
- 200mm diameter watermain connection on Highway 10 **is provided** from the existing stub through to Colgan Crescent.
- Proposed Water Tower **not** in operation.

Scenario 8: Phases 12 & 13: No Water Tower & No HWY 10 Connection

This scenario models the maximum and minimum expected available pressure and fire flow within the bounds of **Phases 12 & 13** under the following arrangement:

- Complete build out of all phases.
- 200mm diameter watermain connection on Highway 10 **is not provided**.
- Proposed Water Tower **not** in operation.

Results:

Note: all pressures and flows modelled are at the proposed road centre line elevation. Watermain placement and sizing has been assumed for developments where detailed design is not available.

Refer to attached Figure 1 for additional information.

Table 1: Phase 7 -11 Modelling Results (Scenarios 1 – 4)

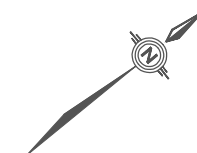
Scenario	Pressure		Fire Flow	
	Maximum (PSI)	Minimum (PSI)	Maximum (L/s)	Minimum (L/s)
No.1: Tower & HWY 10 Connection	73 Russel-Wright intersection	67 Russel-Van Dusen intersection	222 Russel-Morgan intersection	156 West end of Moody Street at connection to Existing
No.2: Tower & No HWY 10 Connection	73 Russel-Wright Intersection	67 Russel-Van Dusen intersection	175 Russel-Morgan intersection	115 Colgan Crescent
No.3: No Water Tower & HWY 10 Connection	73 Russel-Wright Intersection	66 Russel-Van Dusen intersection	110 Russel-Morgan intersection	105 West end of Moody Street at connection to Existing
No.4: No Water Tower & No HWY 10 Connection	73 Russel-Wright intersection	66 Russel-Van Dusen intersection	109 Russel-Morgan intersection	89 Colgan Crescent

Table 2: Phase 11 – 13 Modelling Results (Scenarios 5 – 8)

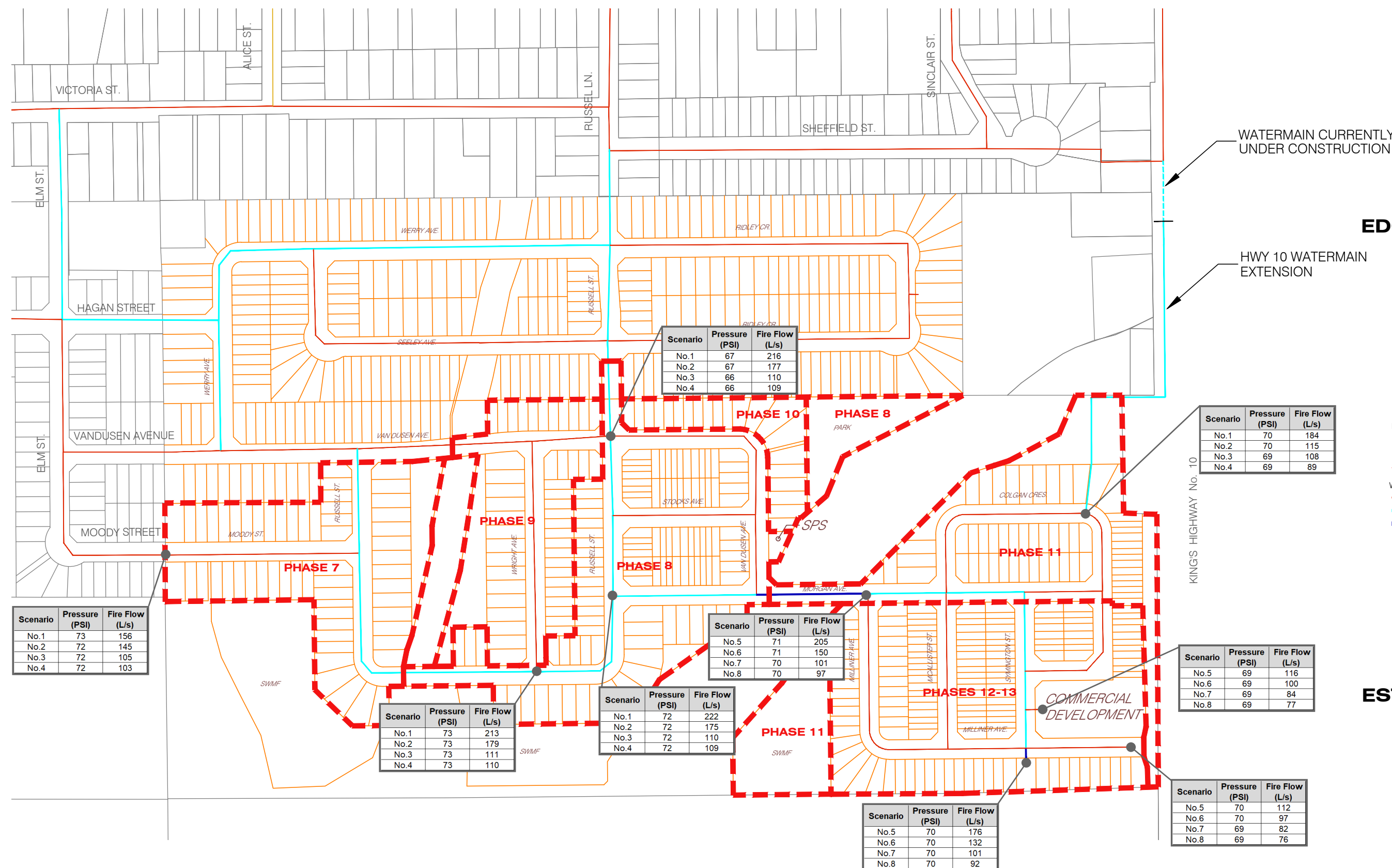
Scenario	Pressure		Fire Flow	
	Maximum (PSI)	Minimum (PSI)	Maximum (L/S)	Minimum (L/S)
No.5: Tower & HWY 10 Connection	71 Milliner-Morgan Intersection	69 Commercial Development	205 Milliner-Morgan Intersection	112 Milliner Stub at HWY-10 Intersection
No.6: Tower & No HWY 10 Connection	71 Milliner-Morgan Intersection	69 Commercial Development	150 Milliner-Morgan Intersection	97 Milliner Stub at HWY-10 Intersection
No.7: No Water Tower & HWY 10 Connection	70 Milliner-Morgan Intersection	69 Commercial Development	101 Milliner-Morgan Intersection	82 Milliner Stub at HWY-10 Intersection
No.8: No Water Tower & No HWY 10 Connection	70 Milliner-Morgan Intersection	69 Commercial Development	97 Milliner-Morgan Intersection	76 Milliner Stub at HWY-10 Intersection

Any questions please contact us.

TOWNSHIP OF SOUTHGATE



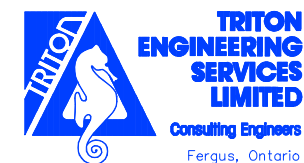
DUNDALK EDGEWOOD GREENS SUBDIVISION



- LEGEND:
- PROPERTY
 - EXISTING DEVELOPMENT PARCEL
 - FUTURE DEVELOPMENT PARCEL
 - FUTURE DEVELOPMENT PHASES
 - WATERMAIN
 - 150mm DIAMETER WATERMAIN
 - 200mm DIAMETER WATERMAIN
 - 250mm DIAMETER WATERMAIN

FIGURE 1
ESTIMATED AVAILABLE
WATER SERVICE

JULY 2021
SCALE 1:4,000
A4167B



APPENDIX D

Storm Sewer Design Sheet

EDGEWOOD GREENS - PHASE 11

1060-5771

STORM SEWER DESIGN SHEET



FREQUENCY - 5 YEAR - MTO LOOKUP TOOL			
Coef. A=	30.6	Coef. B=	-0.699
FREQUENCY - 100 YEAR - MTO LOOKUP TOOL			
Coef. A=	51	Coef. B=	-0.69

FOUNDATION SERVICES FLOW (L/Sec) 0.075
INITIAL TIME OF CONCENTRATION (min) 10.00

MATERIAL	MANNINGS "n"
PVC	0.013
CONC.	0.013
CSP	0.024

DESIGNED BY: AM
CHECKED BY: DTE
DATE: 2023.04.25
ISSUED FOR: 4th Submission

CATCHMENT I.D.	STREET	FROM MH	TO MH	AREA (A) (Ha)	5 YEAR RUN-OFF COEFF (C _s)	DESIGN STORM	A x C	5 YEAR CUMUL. A x C _s	TIME OF CONC. (min.)	5 YEAR I (mm/hr)	CONTROLLED FLOW (FOUNDATION SERVICES) (l/sec)	Q (RUNOFF) (l/sec)	DESIGN FLOW (l/sec)	SLOPE (%)	PIPE DIA. (mm)	MANNING'S "n"	VEL. (m/sec)	LENGTH (m)	TIME OF FLOW (min)	PIPE CAPACITY (l/sec)	CAPACITY (%)	PIPE INV. ELEV.		PIPE OBV. ELEV.		GROUND ELEV.		COVER	
																						UPPER END	LOWER END	UPPER END	LOWER END	UPPER END	LOWER END	UPPER END	LOWER END
	Colgan Cr	CBMH8A	CBMH11	0.00	0	5 year	0.00	0.00	10.00	107.07	0.75	0.00	0.75	0.50%	300	0.013	0.97	60.5	1.04	68.38	1%	516.68	516.37	516.98	516.67	518.47	518.22	1.49	1.54
139A	Colgan Cr	CB6	CBMH11	0.09	0.68	5 year	0.06	0.06	10.00	107.07	0.00	18.22	18.22	0.50%	300	0.013	0.97	8.0	0.14	68.38	27%	516.72	516.68	517.02	516.98	518.22	518.22	1.20	1.24
139	Colgan Cr	CBMH11	CBMH22	0.12	0.68	5 year	0.08	0.14	11.04	99.90	1.28	39.66	40.93	0.50%	300	0.013	0.97	41.2	0.71	68.38	60%	516.35	516.15	516.65	516.45	518.22	518.01	1.56	1.56
140A	Colgan Cr	CB8	CBMH22	0.07	0.68	5 year	0.05	0.05	10.00	107.07	0.00	14.17	14.17	0.50%	300	0.013	0.97	8.1	0.14	68.38	21%	516.51	516.47	516.81	516.77	518.01	518.01	1.20	1.24
141	Colgan Cr	RLCB16	CBMH22	0.11	0.53	5 year	0.06	0.06	10.00	107.07	0.00	17.35	17.35	0.50%	300	0.013	0.97	35.0	0.60	68.38	25%	516.33	516.15	516.63	516.45	517.96	518.01	1.33	1.56
140	Colgan Cr	CBMH22	STMMH11	0.09	0.68	5 year	0.06	0.31	11.75	95.64	1.50	82.39	83.89	0.50%	375	0.013	1.12	20.7	0.31	123.98	68%	516.07	515.97	516.45	516.34	518.01	517.91	1.56	1.57
	Colgan Cr	STMMH11	CBMH13	0.00	0	5 year	0.00	0.31	12.06	93.92	1.50	80.92	82.42	0.50%	375	0.013	1.12	24.6	0.36	123.98	66%	515.92	515.80	516.29	516.17	517.91	517.71	1.62	1.53
142	Colgan Cr	CB7	CBMH13	0.06	0.68	5 year	0.04	0.04	10.00	107.07	0.00	12.14	12.14	0.50%	300	0.013	0.97	8.0	0.14	68.38	18%	515.86	515.82	516.16	516.12	517.71	517.71	1.55	1.59
142A	Colgan Cr	CBMH13	DCBMH7	0.10	0.53	5 year	0.05	0.40	12.43	91.99	1.65	103.24	104.89	0.50%	375	0.013	1.12	44.6	0.66	123.98	85%	515.75	515.52	516.12	515.90	517.71	517.35	1.59	1.45
143	Colgan Cr	DCB7	DCBMH7	0.19	0.68	5 year	0.13	0.13	10.00	107.07	0.08	38.46	38.53	0.50%	300	0.013	0.97	8.0	0.14	68.38	56%	515.67	515.63	515.97	515.93	517.35	517.35	1.38	1.42
143A	Colgan Cr	DCBMH7	STMMH13	0.11	0.68	5 year	0.07	0.61	13.09	88.71	1.80	149.86	151.66	0.50%	450	0.013	1.27	18.0	0.24	201.60	75%	515.45	515.36	515.90	515.81	517.35	517.50	1.45	1.69
	Colgan Cr	CBMH8A	STMMH9	0.00	0	5 year	0.00	0.00	10.00	107.07	0.08	0.00	0.08	0.50%	300	0.013	0.97	10.8	0.19	68.38	0%	516.76	516.71	517.06	517.01	518.47	518.43	1.41	1.42
	Colgan Cr	STMMH9	CBMH10B	0.00	0	5 year	0.00	0.00	10.19	105.70	0.30	0.00	0.30	0.50%	300	0.013	0.97	18.5	0.32	68.38	0%	516.63	516.53	516.93	516.83	518.43	518.26	1.50	1.43
127B	Colgan Cr	CB10	CBMH10B	0.12	0.68	5 year	0.08	0.08	10.00	107.07	0.00	24.29	24.29	0.50%	300	0.013	0.97	8.0	0.14	68.38	36%	516.75	516.71	517.05	517.01	518.26	518.26	1.21	1.25
127A	Colgan Cr	CBMH10B	CBMH10	0.06	0.68	5 year	0.04	0.12	10.51	103.44	0.30	35.20	35.50	0.50%	300	0.013	0.97	45.0	0.78	68.38	52%	516.48	516.26	516.78	516.56	518.26	518.04	1.48	1.48
128C	Colgan Cr	RLCB17	RLCBMH8	0.03	0.53	5 year	0.02	0.02	10.00	107.07	0.23	4.73	4.96	0.50%	300	0.013	0.97	28.5	0.49	68.38	7%	517.07	516.93	517.37	517.23	518.86	518.89	1.50	1.66
128B	Colgan Cr	RLCBMH8	RLCBMH5	0.03	0.53	5 year	0.02	0.03	10.49	103.53	0.60	9.15	9.75	0.50%	300	0.013	0.97	27.0	0.47	68.38	14%	516.91	516.77	517.21	517.07	518.89	519.09	1.68	2.01
128A	Colgan Cr	RLCB18	RLCBMH5	0.04	0.53	5 year	0.02	0.02	10.00	107.07	0.38	6.31	6.69	0.50%	300	0.013	0.97	26.5	0.46	68.38	10%	516.90	516.77	517.20	517.07	519.20	519.09	2.00	2.01
128	Colgan Cr	RLCBMH5	CBMH10A	0.03	0.53	5 year	0.02	0.07	10.96	100.44	0.98	19.24	20.21	0.50%	300	0.013	0.97	36.3	0.63	68.38	30%	516.69	516.51	516.99	516.81	519.09	518.06	2.09	1.25
127	Colgan Cr	CBMH10A	CBMH10	0.12	0.68	5 year	0.08	0.15	11.58	96.62	0.98	40.42	41.40	0.50%	300	0.013	0.97	9.7	0.17	68.38	61%	516.46	516.41	516.76	516.71	518.06	518.04	1.30	1.32
127B	Colgan Cr	CBMH10	STMMH7	0.07	0.53	5 year	0.04	0.31	11.75	95.66	1.28	82.44	83.71	0.50%	375	0.013	1.12	19.0	0.28	123.98	68%	516.18	516.09	516.56	516.46	518.04	517.98	1.48	1.52
108A	Colgan Cr	RLCB20	RLCBMH7	0.04	0.53	5 year	0.02	0.02	10.00	107.07	0.38	6.31	6.69	0.50%	300	0.013	0.97	25.5	0.44	68.38	10%	517.00	516.87	517.30	517.17	519.13	518.94	1.83	1.77
108C	Colgan Cr	RLCB19	RLCBMH6	0.02	0.53	5 year	0.01	0.01	10.00	107.07	0.23	3.16	3.38	0.50%	300	0.013	0.97	18.5	0.32	68.38	5%	517.06	516.96	517.36	517.26	518.31	518.46	0.96	1.20
108B	Colgan Cr	RLCBMH6	RLCBMH7	0.03	0.53	5 year	0.02	0.03	10.32	104.75	0.38	7.72	8.09	0.50%	300	0.013	0.97	14.5	0.25	68.38	12%	516.94	516.87	517.24	517.17	518.46	518.94	1.22	1.77
108	Colgan Cr	RLCBMH7	CBMH23	0.02	0.53	5 year	0.01	0.06	10.57	103.01	0.75	16.69	17.44	0.50%	300	0.013	0.97	36.5	0.63	68.38	26%	516.79	516.61	517.09	516.91	518.94	518.25	1.85	1.34
	Colgan Cr	CBMH23	CBMH6A	0.00	0	5 year	0.00	0.06	11.20	98.93	0.75	16.03	16.78	0.50%	300	0.013	0.97	8.6	0.15	68.38	25%	516.56	516.52	516.86	516.82	518.25	518.23	1.39	1.42
	Colgan Cr	CBMH6A	CBMH8	0.00	0	5 year	0.00	0.06	11.35	98.02	1.20	15.89	17.09	0.50%	300	0.013	0.97	40.3	0.69	68.38	25%	516.44	516.23	516.74	516.53	518.23	518.03	1.50	1.50
129	Colgan Cr	CBMH8	STMMH7	0.11	0.68	5 year	0.07	0.13	12.04	94.04	1.28	34.79	36.07	0.50%	300	0.013	0.97	10.0	0.17	68.38	53%	516.21	516.16	516.51	516.46	518.03	517.98	1.52	1.52
129A	Colgan Cr	DCB5	STMMH7	0.20	0.68	5 year	0.14	0.14	10.00	107.07	0.00	40.48	40.48	0.50%	300	0.013	0.97	8.3	0.14	68.38	59%	516.46	516.42	516.76	516.72	517.96	517.98	1.20	1.26
	Morgan Ave	STMMH7	CBMH14	0.00	0	5 year	0.00	0.58	12.21	93.11	2.78	149.89	152.67	0.50%	450	0.013	1.27	36.5	0.48	201.60	76%	516.01	515.83	516.46	516.28	517.98	517.76	1.52	1.48
131	Morgan Ave	RLCB13	CBMH14	0.05	0.53	5 year	0.03	0.03	10.00	107.07	0.00	7.89	7.89	0.50%	300	0.013	0.97	6.5	0.11	68.38	12%	515.96	515.93	516.26	516.23	518.09	517.76	1.83	1.53
132	Morgan Ave	RLCB14	CBMH14A	0.10	0.53	5 year	0.05	0.05	10.00	107.07	0.00	15.78	15.78	0.50%	300	0.013	0.97	35.0	0.60	68.38	23%	516.53	516.36	516.83	516.66	518.35	517.74	1.52	1.09
130	Morgan Ave	CBMH14A	CBMH14	0.13	0.68	5 year	0.09	0.14	10.60	102.77	0.00	40.40	40.40	0.50%	300	0.013	0.97	8.5	0.15	68.38	59%	516.28	516.24	516.58	516.54	517.74	517.76	1.16	1.22
131A	Morgan Ave	CBMH14	STMMH14	0.05	0.53	5 year	0.03	0.77	12.69	90.63	3.08	194.89	197.96	0.50%	525	0.013	1.40	44.2	0.52	304.10	65%	515.76	515.54	516.28	516.06	517.76	517.59	1.48	1.53
137A	Morgan Ave	RLCB15	RLCBMH15	0.02	0.53	5 year	0.01	0.01	10.00	107.07	0.00	3.16	3.16	0.50%	300	0.013	0.97	20.6	0.36	68.38	5%	516.18	516.08	516.48	516.38	518.35	518.35	1.87	1.98
137	Morgan Ave	RLCBMH15	DCBMH																										

EDGEWOOD GREENS - PHASE 11

1060-5771

STORM SEWER DESIGN SHEET



FREQUENCY - 5 YEAR - MTO LOOKUP TOOL			
Coef. A=	30.6	Coef. B=	-0.699
FREQUENCY - 100 YEAR - MTO LOOKUP TOOL			
Coef. A=	51	Coef. B=	-0.69

MATERIAL	MANNINGS "n"
PVC	0.013
CONC.	0.013
CSP	0.024

DESIGNED BY: AM
 CHECKED BY: DTE
 DATE: 2023.04.25
 ISSUED FOR: 4th Submission

FOUNDATION SERVICES FLOW (L/Sec) 0.075
 INITIAL TIME OF CONCENTRATION (min) 10.00

CATCHMENT I.D.	STREET	FROM MH	TO MH	5 YEAR RUN-OFF COEFF		DESIGN STORM	5 YEAR		TIME OF CONC.	5 YEAR I	CONTROLLED FLOW (FOUNDATION SERVICES)	Q (RUNOFF)	DESIGN FLOW	SLOPE (%)	PIPE DIA. (mm)	MANNING'S "n"	VEL. (m/sec)	LENGTH (m)	TIME OF FLOW (min)	PIPE CAPACITY (l/Sec)	CAPACITY (%)	PIPE INV. ELEV.		PIPE OBV. ELEV.		GROUND ELEV.		COVER	
				AREA (A) (Ha)	(Cs)		A x C	CUMUL. A x Cs														UPPER END	LOWER END	UPPER END	LOWER END	UPPER END	LOWER END	UPPER END	LOWER END
147	Milliner Ave	RLCB8	CBMH18	0.08	0.53	5 year	0.04	0.04	10.00	107.07	0.08	12.62	12.70	1.50%	300	0.013	1.68	35.0	0.35	118.43	11%	515.56	515.04	515.86	515.34	517.39	516.99	1.53	1.65
148	Milliner Ave	CBMH18	CBMH16	0.20	0.68	5 year	0.14	0.18	10.35	104.53	0.08	51.84	51.92	2.00%	300	0.013	1.93	8.0	0.07	136.76	38%	515.02	514.86	515.32	515.16	516.99	516.99	1.67	1.83
148A	Milliner Ave	CBMH16	DCBMH4	0.13	0.68	5 year	0.09	2.81	15.84	77.62	8.70	606.57	615.27	0.30%	825	0.013	1.47	36.8	0.42	786.22	78%	514.33	514.22	515.16	515.05	516.99	516.81	1.83	1.76
125A	Milliner Ave	RLCB9	RLCBMH9	0.04	0.53	5 year	0.02	0.02	10.00	107.07	0.15	6.31	6.46	0.50%	300	0.013	0.97	13.7	0.24	68.38	9%	515.83	515.76	516.13	516.06	517.46	517.18	1.33	1.12
125	Milliner Ave	RLCBMH9	DCBMH10	0.09	0.53	5 year	0.05	0.07	10.24	105.33	0.23	20.18	20.40	2.00%	300	0.013	1.93	35.0	0.30	136.76	15%	515.68	514.98	515.98	515.28	517.18	516.83	1.20	1.55
149+126	Milliner Ave	DCBMH10	DCBMH4	0.26	0.68	5 year	0.18	0.25	10.54	103.21	0.23	70.50	70.73	2.00%	300	0.013	1.93	9.3	0.08	136.76	52%	514.93	514.75	515.23	515.05	516.83	516.81	1.60	1.76
104A	Milliner Ave	STMPUG1	STMMH1	0.08	0.25	5 year	0.02	0.02	10.00	107.07	0.00	5.95	5.95	0.40%	300	0.013	0.87	16.5	0.32	61.14	10%	516.40	516.33	516.70	516.63	516.71	518.22	0.01	1.59
101	Milliner Ave	STMMH1	CBMH1	0.00	0	5 year	0.00	0.02	10.32	104.75	0.30	5.82	6.12	0.50%	300	0.013	0.97	30.4	0.52	68.38	9%	516.33	516.18	516.63	516.48	518.22	518.07	1.59	1.59
101	Milliner Ave	CBMH1	CBMH2	0.05	0.68	5 year	0.03	0.05	10.84	101.18	0.53	15.19	15.71	0.50%	300	0.013	0.97	39.4	0.68	68.38	23%	516.16	515.96	516.46	516.26	518.07	517.87	1.61	1.61
104	Milliner Ave	STMMH01	CBMH2	0.43	0.81	5 year	0.35	0.35	10.00	107.07	0.00	103.67	103.67	0.50%	450	0.013	1.27	14.0	0.18	201.60	51%	515.96	515.89	516.41	516.34	518.22	517.87	1.81	1.53
103	Milliner Ave	CBMH2	DCBMH1	0.07	0.68	5 year	0.05	0.45	11.52	96.98	0.83	121.29	122.12	0.50%	450	0.013	1.27	21.5	0.28	201.60	61%	515.81	515.70	516.26	516.15	517.87	517.76	1.61	1.61
107	Milliner Ave	DCB1	DCBMH1	0.14	0.68	5 year	0.10	0.10	10.00	107.07	0.08	28.34	28.41	2.00%	300	0.013	1.93	8.0	0.07	136.76	21%	516.12	515.96	516.42	516.26	517.76	517.76	1.34	1.50
106	Milliner Ave	DCBMH1	CBMH2A	0.06	0.68	5 year	0.04	0.59	11.80	95.35	0.90	155.30	156.20	0.50%	525	0.013	1.40	19.4	0.23	304.10	51%	515.67	515.57	516.20	516.10	517.76	517.82	1.57	1.72
109B	Colgan Cr	RLCB12A	CBMH9	0.04	0.53	5 year	0.02	0.02	10.00	107.07	0.15	6.31	6.46	0.50%	300	0.013	0.97	6.7	0.11	68.38	9%	516.66	516.63	516.96	516.93	518.31	517.93	1.35	1.00
110C	Colgan Cr	RLCB21	CBMH9A	0.02	0.53	5 year	0.01	0.01	10.00	107.07	0.08	3.16	3.23	0.50%	300	0.013	0.97	8.3	0.14	68.38	5%	516.76	516.72	517.06	517.02	518.12	517.93	1.06	0.91
109	Colgan Cr	CBMH9A	CBMH9	0.13	0.68	5 year	0.09	0.10	10.14	106.01	0.08	29.18	29.25	0.50%	300	0.013	0.97	8.0	0.14	68.38	43%	516.67	516.63	516.97	516.93	517.93	517.93	0.96	1.00
109A	Colgan Cr	CBMH9	DCBMH9A	0.07	0.53	5 year	0.04	0.16	10.28	105.02	0.38	45.92	46.30	0.50%	300	0.013	0.97	25.5	0.44	68.38	68%	516.55	516.42	516.85	516.72	517.93	517.80	1.08	1.08
110A	Colgan Cr	DCB9A	DCBMH9A	0.04	0.68	5 year	0.03	0.03	10.00	107.07	0.00	8.10	8.10	0.50%	300	0.013	0.97	8.0	0.14	68.38	12%	516.52	516.48	516.82	516.78	517.80	517.80	0.98	1.02
134B	Colgan Cr	DCBMH9A	CBMH4A	0.06	0.53	5 year	0.03	0.22	10.72	101.99	0.38	61.33	61.70	0.50%	300	0.013	0.97	18.0	0.31	68.38	90%	516.40	516.31	516.70	516.61	517.80	517.95	1.10	1.34
134B	Symington St	CBMH4A	DCBMH5	0.00	0	5 year	0.00	0.22	11.03	99.98	0.53	60.12	60.64	0.50%	300	0.013	0.97	69.0	1.19	68.38	89%	516.23	515.89	516.53	516.19	517.95	517.65	1.42	1.46
110B	Symington St	DCB4	DCBMH5	0.16	0.68	5 year	0.11	0.11	10.00	107.07	0.00	32.38	32.38	0.50%	300	0.013	0.97	8.0	0.14	68.38	47%	515.93	515.89	516.23	516.19	517.65	517.65	1.41	1.45
111	Symington St	DCBMH5	CBMH2A	0.17	0.68	5 year	0.12	0.44	12.22	93.07	0.60	114.03	114.63	0.50%	375	0.013	1.12	18.0	0.27	123.98	92%	515.81	515.72	516.19	516.10	517.65	517.82	1.46	1.72
111	Milliner Ave	CBMH2A	CBMH3	0.00	0	5 year	0.00	1.03	12.49	91.68	1.80	261.64	263.44	0.50%	600	0.013	1.54	49.1	0.53	434.17	61%	515.45	515.21	516.05	515.81	517.82	517.57	1.77	1.77
113	Milliner Ave	RLCB11	CBMH3A	0.05	0.53	5 year	0.03	0.03	10.00	107.07	0.00	7.89	7.89	2.00%	300	0.013	1.93	8.3	0.07	136.76	6%	515.93	515.76	516.23	516.06	517.97	517.61	1.74	1.55
113A	Milliner Ave	CBMH3A	CBMH3	0.04	0.68	5 year	0.03	0.05	10.07	106.53	0.00	15.90	15.90	2.00%	300	0.013	1.93	10.6	0.09	136.76	12%	515.74	515.53	516.04	515.83	517.61	517.57	1.57	1.74
113B	Milliner Ave	CBMH3	CBMH4	0.09	0.68	5 year	0.06	1.14	13.02	89.04	2.10	282.54	284.64	0.50%	600	0.013	1.54	40.2	0.44	434.17	66%	515.19	514.99	515.79	515.59	517.57	517.37	1.79	1.79
	McAlister St	CBMH24	CBMH17	0.00	0	5 year	0.00	0.05	10.92	100.68	0.53	14.83	15.36	0.50%	300	0.013	0.97	55.0	0.95	68.38	22%	515.90	515.63	516.20	515.93	517.75	517.48	1.55	1.55
117D	McAlister St	RLCB3A	RLCBMH3A	0.03	0.53	5 year	0.02	0.02	10.00	107.07	0.30	4.73	5.03	0.50%	300	0.013	0.97	13.8	0.24	68.38	7%	516.18	516.11	516.48	516.41	517.92	517.70	1.44	1.29
117C	McAlister St	RLCBMH3A	RLCBMH3	0.08	0.53	5 year	0.04	0.06	10.24	105.33	0.75	17.07	17.82	0.50%	300	0.013	0.97	13.0	0.22	68.38	26%	516.09	516.03	516.39	516.33	517.70	517.94	1.31	1.61
117B	McAlister St	RLCBMH3	RLCBMH4	0.02	0.53	5 year	0.01	0.07	10.46	103.75	1.05	19.87	20.92	0.50%	300	0.013	0.97	12.8	0.22	68.38	31%	516.01	515.94	516.31	516.24	517.94	517.85	1.63	1.61
117A	McAlister St	RLCB4A	RLCBMH4	0.04	0.53	5 year	0.02	0.02	10.00	107.07	0.45	6.31	6.76	0.50%	300	0.013	0.97	14.8	0.25	68.38	10%	516.02	515.94	516.32	516.24	518.12	517.85	1.80	1.61
117	McAlister St	RLCBMH4	CBMH21	0.07	0.53	5 year	0.04	0.13	10.68	102.25	1.50	36.16	37.66	0.50%	300	0.013	0.97	35.0	0.60	68.38	55%	515.86	515.69	516.16	515.99	517.85	517.48	1.69	1.49
116	McAlister St	CBMH21	CBMH17	0.13	0.68	5 year	0.09	0.22	11.28	98.40	1.50	58.98	60.48	0.50%	300	0.013	0.97	8.0	0.14	68.38	88%	515.67	515.63	515.97	515.93	517.48	517.48	1.51	1.55
116A	McAlister St	CBMH17	DCBMH9	0.13	0.68	5 year	0.09	0.36	11.87	94.99	2.40	94.27	96.67	0.50%	375	0.013	1.12	39.0	0.58	123.98	78%	515.55	515.36	515.93	515.73	517.48	517.28	1.55	1.55
118	McAlister St	DCB11	DCBMH9	0.14	0.68	5 year	0.10	0.10	10.00	107.07	0.08	28.34	28.41	0.50%	300	0.013	0.97	8.0	0.14	68.38	42%	515.79	515.75	516.09	516.05	517.28	517.28	1.19	1.23
119	McAlister St	DCBMH9	CBMH																										

EDGEWOOD GREENS - PHASE 11

1060-5771

STORM SEWER DESIGN SHEET



FREQUENCY - 5 YEAR - MTO LOOKUP TOOL			
Coef. A=	30.6	Coef. B=	-0.699
FREQUENCY - 100 YEAR - MTO LOOKUP TOOL			
Coef. A=	51	Coef. B=	-0.69

MATERIAL	MANNINGS "n"
PVC	0.013
CONC.	0.013
CSP	0.024

DESIGNED BY: AM
 CHECKED BY: DTE
 DATE: 2023.04.25
 ISSUED FOR: 4th Submission

FOUNDATION SERVICES FLOW (L/se) 0.075
 INITIAL TIME OF CONCENTRATION (min) 10.00

CATCHMENT I.D.	STREET	FROM MH	TO MH	5 YEAR RUN-OFF COEFF		DESIGN STORM	5 YEAR		TIME OF CONC.	5 YEAR I	CONTROLLED FLOW (FOUNDATION SERVICES) (l/sec)	Q (RUNOFF) (l/sec)	DESIGN FLOW (l/sec)	SLOPE (%)	PIPE DIA. (mm)	MANNING'S "n"	VEL. (m/sec)	LENGTH (m)	TIME OF FLOW (min)	PIPE CAPACITY		PIPE INV. ELEV.		PIPE OBV. ELEV.		GROUND ELEV.		COVER	
				AREA (A) (Ha)	(C ₂)		A x C	CUMUL. A x C _s												UPPER CAPACITY (l/sec)	CAPACITY (%)	UPPER END	LOWER END	UPPER END	LOWER END	UPPER END	LOWER END	UPPER END	LOWER END
146A	Morgan Ave	DCB12	FOLEY	0.08	0.68	5 year	0.05	0.05	10.00	107.07	0.00	16.19	16.19	0.50%	300	0.013	0.97	21.0	0.36	68.38	24%	515.32	515.21	515.62	515.51	517.09	N/A	1.47	N/A
100	South East Rear Lots	RLCB01A	RLCBMH02A	0.09	0.6	100 year	0.07	0.00	10.00	107.07	0.00	32.95	32.95	0.30%	300	0.013	0.75	20.9	0.47	52.97	62%	514.55	514.49	514.85	514.79	515.78	516.42	0.93	1.63
100A	South East Rear Lots	RLCBMH02A	RLCBMH03A	0.05	0.6	100 year	0.04	0.00	10.47	103.71	0.00	49.67	49.67	0.30%	375	0.013	0.87	20.9	0.40	96.03	52%	514.41	514.35	514.79	514.72	516.42	517.03	1.63	2.31
102	South East Rear Lots	RLCBMH03A	RLCBMH04A	0.08	0.6	100 year	0.06	0.00	10.87	101.02	0.00	76.05	76.05	0.30%	375	0.013	0.87	30.4	0.58	96.03	79%	514.33	514.24	514.70	514.61	517.03	517.24	2.33	2.63
105	South East Rear Lots	RLCBMH04A	RLCBMH05A	0.05	0.6	100 year	0.04	0.00	11.45	97.40	0.00	90.03	90.03	0.30%	375	0.013	0.87	67.4	1.29	96.03	94%	514.22	514.02	514.59	514.39	517.24	516.72	2.65	2.33
112	South East Rear Lots	RLCBMH05A	RLCBMH06A	0.06	0.6	100 year	0.05	0.00	12.74	90.38	0.00	102.21	102.21	0.30%	450	0.013	0.98	20.1	0.34	156.16	65%	513.94	513.88	514.39	514.33	516.72	516.26	2.33	1.93
112A	South East Rear Lots	RLCBMH06A	RLCBMH07A	0.07	0.6	100 year	0.05	0.00	13.08	88.72	0.00	121.65	121.65	0.30%	450	0.013	0.98	20.1	0.34	156.16	78%	513.86	513.80	514.31	514.25	516.26	516.26	1.95	2.01
115	South East Rear Lots	RLCBMH07A	RLCBMH08A	0.02	0.6	100 year	0.02	0.00	13.43	87.14	0.00	125.48	125.48	0.30%	450	0.013	0.98	20.1	0.34	156.16	80%	513.78	513.72	514.23	514.17	516.26	515.86	2.03	1.69
115A	South East Rear Lots	RLCBMH08A	RLCBMH09A	0.07	0.6	100 year	0.05	0.00	13.77	85.62	0.00	143.88	143.88	0.30%	450	0.013	0.98	30.2	0.51	156.16	92%	513.67	513.58	514.12	514.03	515.86	515.80	1.74	1.77
121	South East Rear Lots	RLCBMH09A	RLCBMH10A	0.09	0.6	100 year	0.07	0.00	14.28	83.47	0.00	166.07	166.07	0.30%	525	0.013	1.09	39.6	0.61	235.55	70%	513.50	513.39	514.03	513.91	515.80	515.41	1.77	1.50
121A	South East Rear Lots	RLCBMH10A	RLCBMH11A	0.04	0.6	100 year	0.03	0.00	14.89	81.08	0.00	172.50	172.50	0.30%	525	0.013	1.09	36.5	0.56	235.55	73%	513.37	513.26	513.89	513.78	515.41	514.68	1.52	0.90
121B	South East Rear Lots	RLCBMH11A	STM.MH01A	0.16	0.53	100 year	0.11	0.00	15.44	79.01	0.00	206.50	206.50	0.30%	525	0.013	1.09	17.7	0.27	235.55	88%	513.21	513.15	513.73	513.68	514.68	515.80	0.95	2.12
	South East Rear Lots	STM.MH01A	STM.MH02A	0.00	0	100 year	0.00	0.00	15.72	78.06	0.00	204.03	204.03	0.30%	525	0.013	1.09	67.4	1.03	235.55	87%	513.10	512.90	513.63	513.43	515.80	515.80	2.17	2.38
	South East Rear Lots	STM.MH02A	HW01A	0.00	0	100 year	0.00	0.00	16.75	74.66	0.00	195.27	195.27	0.30%	525	0.013	1.09	16.4	0.25	235.55	83%	512.85	512.80	513.38	513.33	515.80	513.34	2.42	0.02

FIGURES & DRAWINGS


- Figure 1:** Site Location Plan
- Figure 2:** Flato East Draft Plan
- Figure 3:** Edgewood Greens Composite Phasing Plan
- Figure 4:** Site Plan
- Figure 5:** Pre-Development Drainage Plan
- Drawing C101:** General Servicing Plan
- Drawing C102:** General Grading Plan
- Drawing C103:** Erosion and Sediment Control Plan
- Drawing C109:** Sanitary Drainage Plan (Edgewood Greens - Phase 11)
- Drawing C110:** Storm Drainage Plan (Edgewood Greens - Phase 11)



DUNDALK
PHASE 11

SUBJECT
DEVELOPMENT

DUNDALK
MEADOWS

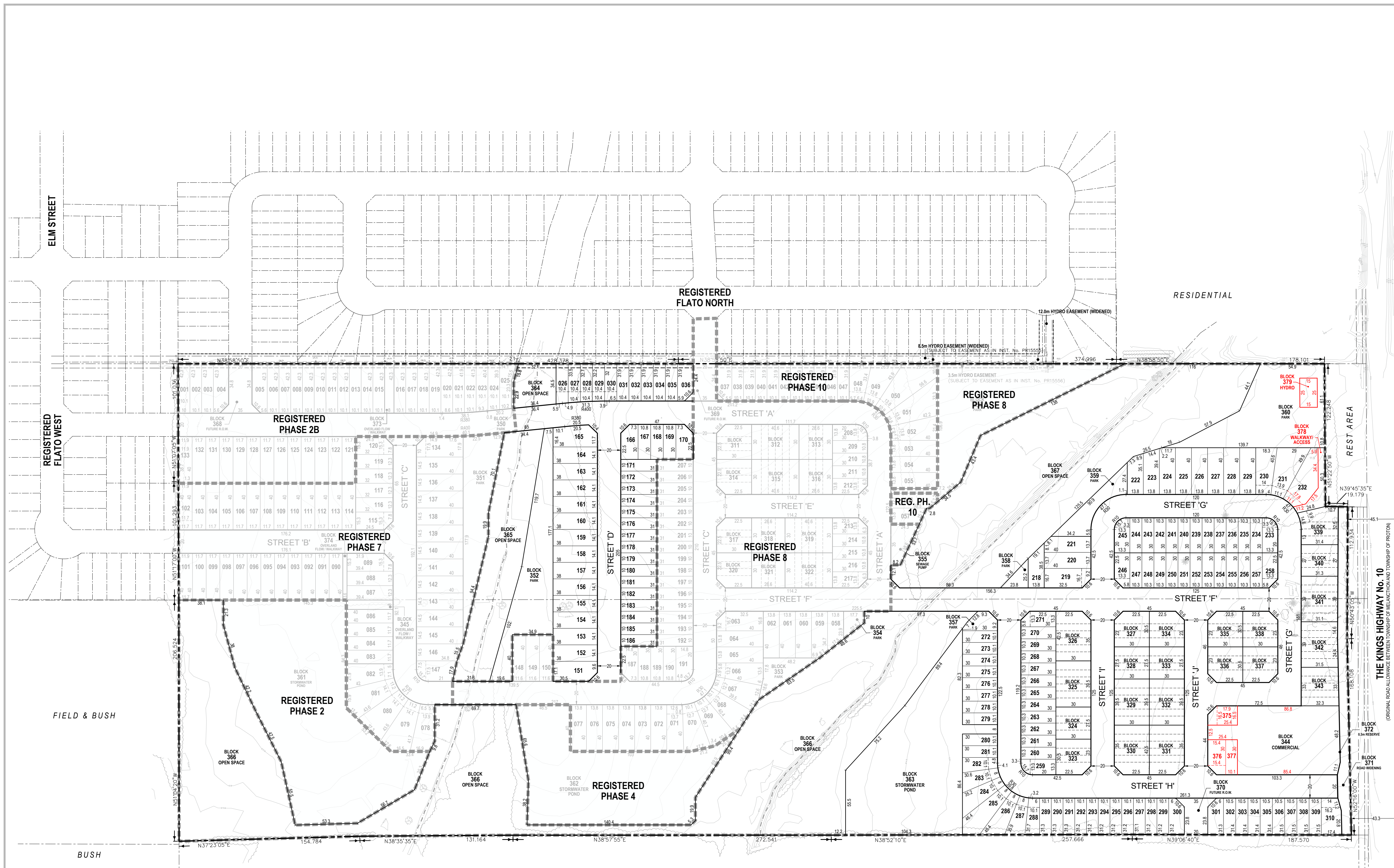
Legend
 = SUBJECT DEVELOPMENT

Project
 DUNDALK COMMERCIAL BLOCK
 TOWNSHIP OF SOUTHGATE

Drawing
 SITE LOCATION



Drawn By	T.M.	Design By	A.M.	Project	1060-5384	
Scale	N.T.S.	Date	04/25/2023	Check By	A.M.	
					Drawing	FIG. 1



LAND USE SUMMARY

LAND USE	LOTS / BLOCKS	UNITS	AREA
SINGLE DETACHED - 10.0m LOTS	001-047, 166-217, 233-310, 377	177 178	6.13ha / 6.17ha
SINGLE DETACHED - 11.6m LOTS	056, 083-133, 148-150, 376	55 56	2.56ha / 2.60ha
SINGLE DETACHED - 13.7m LOTS	048-055, 057-082, 134-147, 151-165, 218-232	78	4.71ha / 4.65ha
SINGLE DETACHED - WIDE SHALLOW	375	1	0.04ha
TOWNHOUSE - 4 UNITS	311, 313-314, 316-318, 320-321, 323-324, 327-328, 333-340	80	1.74ha
TOWNHOUSE - 5 UNITS	343	5	0.10ha
TOWNHOUSE - 6 UNITS	312, 315, 319, 322, 325-326, 329-332, 341-342	72	1.46ha
COMMERCIAL	344		0.66ha / 0.55ha
PARK	350-354, 356-360		2.42ha / 2.39ha
SEWAGE PUMP	355		0.09ha
STORMWATER POND	361-363		4.19ha
OPEN SPACE	364-367		8.39ha
FUTURE RIGHT OF WAY	368-370		0.22ha
ROAD WIDENING	371		0.23ha
0.3m RESERVE	372		<0.01ha
OVERLAND FLOW / WALKWAY	345, 373-374		0.07ha
ACCESS / WALKWAY	378		0.05ha
HYDRO	379		0.03ha
RIGHT OF WAY			7.27ha
TOTALS		467 / 470	40.22ha

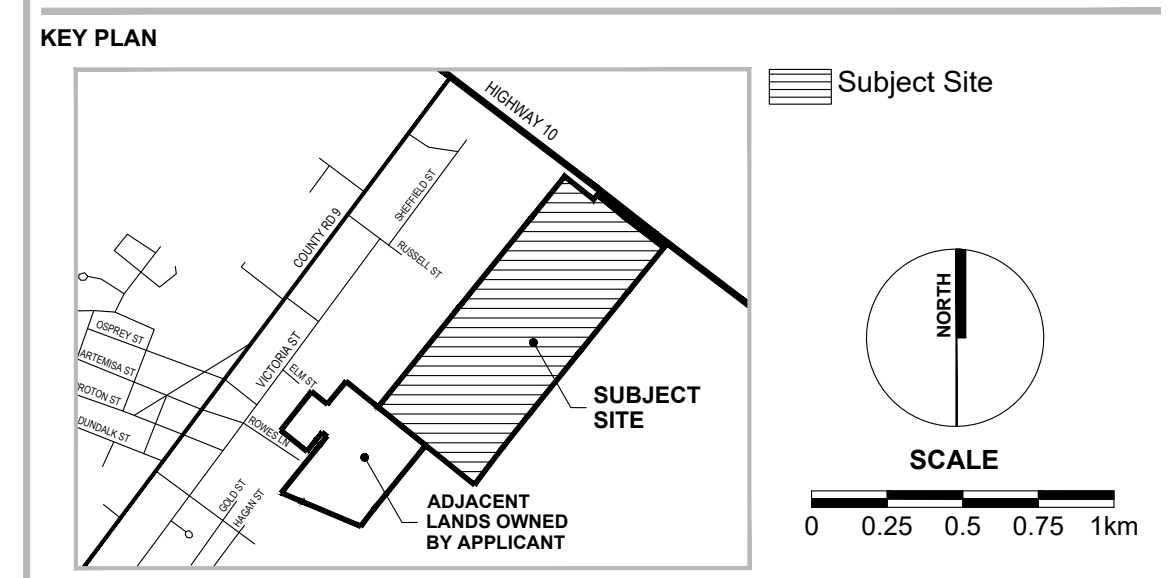
LEGEND

--- BOUNDARY LINE	--- OVERHEAD HYDRO
--- RIGHT OF WAY LINE	--- FENCE
--- BLOCK LINE	--- WATERCOURSE
--- LOT LINE	--- WOODED AREA
--- UNIT LINE	--- TREES
--- LEGAL FABRIC	--- PHASE LINE

LEGAL DESCRIPTION
 PART OF LOTS 233 AND 234
 CONCESSION 1, SOUTHWEST OF THE TORONTO AND SYDENHAM ROAD
 GEOGRAPHIC TOWNSHIP OF PROTON
 TOWNSHIP OF SOUTHGATE
 COUNTY OF GREY

OWNER'S CERTIFICATE
 I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL.
 DATE: _____ SHAKIR REHMATULLAH - PRESIDENT
 FLATO DUNDALK MEADOWS INC.

SURVEYOR'S CERTIFICATE
 I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.
 DATE: _____



REV. No.	DATE	ISSUED / REVISION	BY
No. 7	Apr. 3, 2023	<ul style="list-style-type: none"> Added single detached lots to Block 344 Turned Easement along Lot 232 into Walkway / Access Block Added hydro block 	M.M.
No. 6	Jul. 13, 2021	<ul style="list-style-type: none"> Shift lots 090-098 to accommodate overland flow / walkway Block 374 Convert Block 355 from park to sewage pumping station and expand Added 6m water service easement between Lot 232 and Block 339 by shifting Blocks 339-343 the commercial Block 344 	M.M.
No. 5	Jan. 28, 2020	<ul style="list-style-type: none"> Removed townhouses along Streets J & G Added Commercial block Realigned Street G Added registered phases Added surrounding registered subdivisions 	M.M.
No. 4	Nov. 1, 2019	<ul style="list-style-type: none"> Moved walkway from between lots 051 & 052 to between lots 055 & 056 Widened walkway from 3m to 4m Narrowed lot 056 from 13.8m to 12.7m 	M.M.
No. 3	Mar. 13, 2019	<ul style="list-style-type: none"> Widened Block 362 street frontage Revised lots backing on to Block 362 Shifted Street D west by 2m and adjust lots to fit 	M.M.
No. 2	Feb. 9, 2017	<ul style="list-style-type: none"> Widened Hydro Easement Added daylighting triangles to Future R.O.W. Added Overland Flow/Walkway Block 372 Added Park Block 350 Remove one Lot Rearrange Lots to fit Revised labels and dimensions 	M.M.
No. 1	Jul. 5, 2016	<ul style="list-style-type: none"> Revised as per MTO comments March 17, 2016 Added road widening, 0.3m reserve, and daylighting triangles Relocated Highway 10 entrance and future right of ways Reorganized subdivision layout along Highway 10 Added walkways to Open Space 	M.M.
No. 0	Dec. 11, 2015	Draft Plan Application Submission	M.M.

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT R.S.O. 1990 C.P.13 AS AMENDED

A. AS SHOWN	F. AS SHOWN	K. MUNICIPAL WATER AND SANITARY SERVICES. ALL MUNICIPAL SERVICES AS REQUIRED.
B. AS SHOWN	G. AS SHOWN	H. MUNICIPAL WATER SUPPLY
C. AS SHOWN	I. SILT LOAM	L. AS SHOWN
D. RESIDENTIAL / COMMERCIAL	J. AS SHOWN	
E. AS SHOWN		

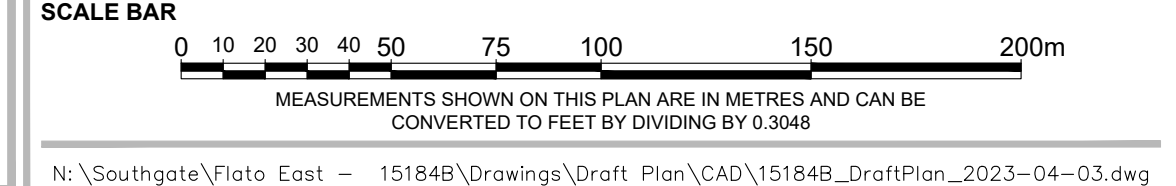
PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
MHBC PLANNING
 113 COLLIER STREET
 BARRIE, ON, L4M 1H2
 P: 705 728 0045 F: 705 728 2010
 WWW.MHBCPLAN.COM

STAMP

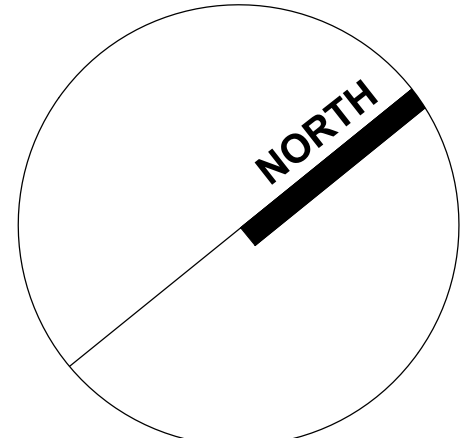
DATE	DEC. 11, 2015
FILE No.	15184B
SCALE	1:1,800 (ARCH D)
DRAWN BY	M.M.
CHECKED BY	K.M.

PROJECT
FLATO EAST
 FLATO GROUP INC.
 3621 HIGHWAY 7 EAST, SUITE 503
 MARKHAM, ON L3R 0G6
 P:(905) 479-9292 F:(905) 429-9165
 WWW.FLATOGROUP.COM

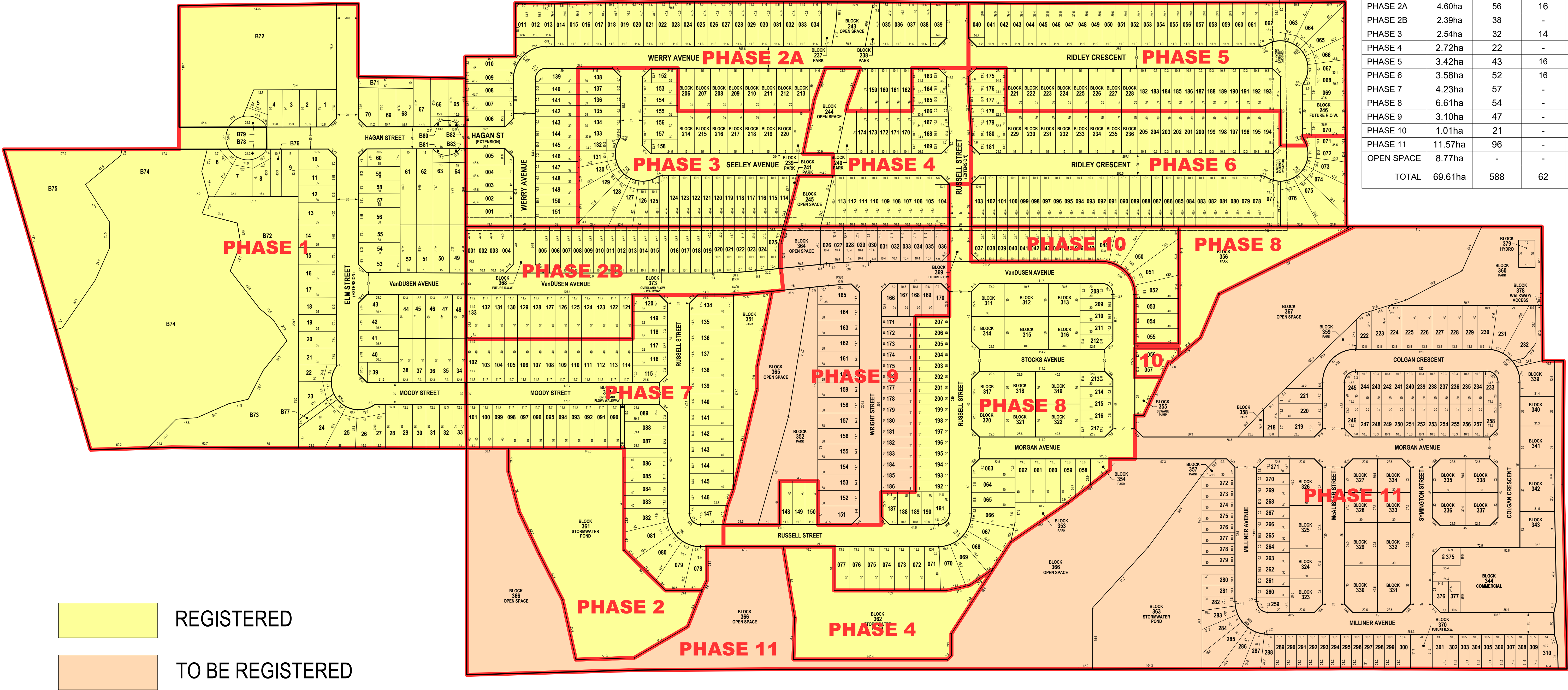
FILE NAME REDLINE
DRAFT PLAN OF SUBDIVISION **DWG No.** 1 of 1



EDGEWOOD GREENS COMPOSITE PHASING PLAN



PHASE	AREA	SINGLES	SEMIS	TOWNS	TOTAL
PHASE 1	13.22ha	70	-	-	70
PHASE 2	1.85ha	-	-	-	-
PHASE 2A	4.60ha	56	16	-	72
PHASE 2B	2.39ha	38	-	-	38
PHASE 3	2.54ha	32	14	-	46
PHASE 4	2.72ha	22	-	-	22
PHASE 5	3.42ha	43	16	-	59
PHASE 6	3.58ha	52	16	-	68
PHASE 7	4.23ha	57	-	-	57
PHASE 8	6.61ha	54	-	56	110
PHASE 9	3.10ha	47	-	-	47
PHASE 10	1.01ha	21	-	-	21
PHASE 11	11.57ha	96	-	101	197
OPEN SPACE	8.77ha	-	-	-	-
TOTAL	69.61ha	588	62	157	807



REGISTERED
 TO BE REGISTERED

BLOCK 107

BLOCK 108

BLOCK 114 234

LOT COLGAN CRESCENT

37268

0711

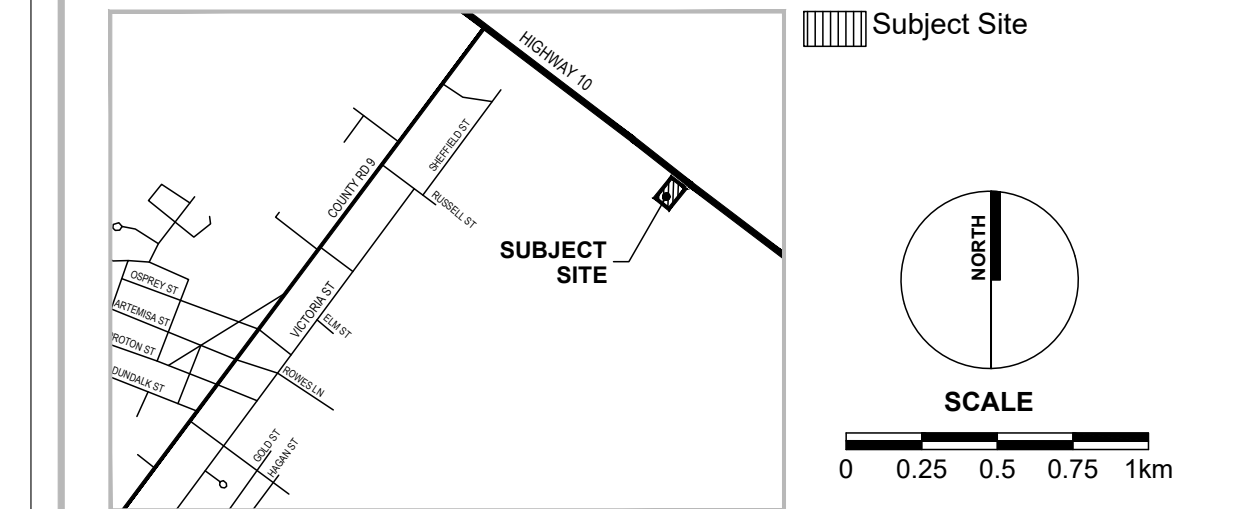
SYMINGTON STREET

KING'S HIGHWAY No. 10

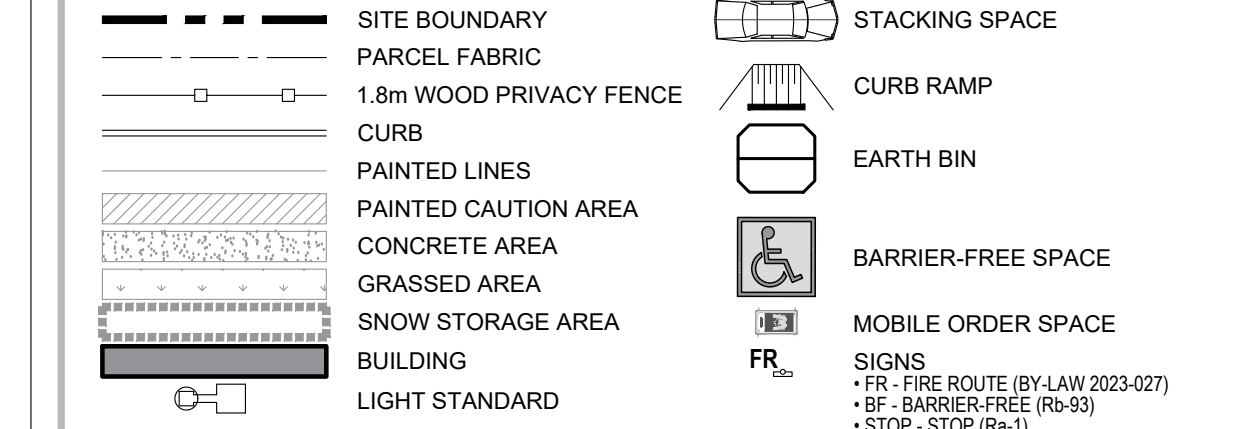
LEGAL DESCRIPTION

PART OF LOT 233 AND LOT 234
CONCESSION 1
VILLAGE OF DUNDALK
TOWNSHIP OF SOUTHGATE
COUNTY OF GREY

KEY PLAN



LEGEND



NOTES

- SITE PLAN INFORMATION PROVIDED BY ARCADIS + IBI GROUP, DATED OCTOBER 28, 2022
- ALL SITE FEATURES ARE EXISTING UNLESS OTHERWISE NOTED
- THESE DRAWINGS ARE COMPILED FROM INFORMATION SUPPLIED BY MCDONALD'S AND SHALL BE SITE VERIFIED BY CONTRACTOR AT BID TIME.
- GC TO COORDINATE AND PROVIDE SERVICING LOCATES TO IBI GROUP PRIOR TO CONSTRUCTION START TO CONFIRM THERE ARE NO CONFLICTS WITH PROPOSED.
- CONTRACTOR SHALL VERIFY ALL SITE CONDITIONS PERTINENT TO WORK BEING PERFORMED, PRIOR TO STARTING CONSTRUCTION, AND REPORT ANY DISCREPANCIES OR VARIANCES TO PROJECT MANAGER.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION AND BE RESPONSIBLE FOR SAME.
- ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF LOCAL CODES.

REVISION No. DATE ISSUED/REVISION BY

PLANNER'S CERTIFICATE

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY OR UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL PLANNER, WITHIN THE MEANING OF THE ONTARIO PROFESSIONAL PLANNERS INSTITUTE ACT, 1994.

DATE: _____ KORY CHISHOLM - B.S., M.Sc., M.C.P., R.P.P.
REGISTERED PROFESSIONAL PLANNER

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
113 COLLIER STREET, BARRIE, ON, L4M 1H2 | P: 705.728.0045 | WWW.MHBCPLAN.COM

STAMP DATE Apr. 24, 2023

DRAWN BY M.M.

PLAN SCALE 1:200 (ARCH D)

FILE No. 9922 M

CHECKED BY S.C.

OTHER

PROJECT

MCDONALD'S 41288 - DUNDALK
McDonald's Restaurants of Canada Ltd.
McDonald's Place
Toronto, Ontario M3C 3L4
Tel: 416-443-1000
Fax: 416-446-3376

FILE NAME SITE PLAN DWG No. 1 of 1

SCALE BAR 0 1 2 3 4 5 7.5 10 15 20m

MEASUREMENTS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

N:\Southgate\Dundalk Commercial\Place - 151844H\Drawings\McDonald's Site Plan\CAU\151848 - Site Plan - 2023-04-24.dwg

TOWNSHIP OF SOUTHGATE ZONING BY-LAW 19-2002 LOCAL COMMERCIAL EXCEPTION 465 (C1-465) ZONE

PROVISION	REQUIRED	PROVIDED
LOT FRONTAGE (MIN.)	32m FROM CENTRE OF HWY 10	59.01m
LOT AREA (MIN.)	690m ²	5,502.4m ²
LOT COVERAGE (MAX.)	30%	8.3%(454.1m ²)
GROSS FLOOR AREA (MAX.)	45% OF LOT AREA	8.3% (454.1m ²)
FRONT YARD (MIN.)	32m FROM CENTRE OF HWY 10	55.33m
INTERIOR SIDE YARD (MIN.)	3m	10.80m
EXTERIOR SIDE YARD (MIN.)	3m	17.32m
REAR YARD (MIN.)	10m	52.69m
BUILDING HEIGHT (MAX.)	2 STOREYS	1 STOREY
RESTAURANT GFA (MAX.)	600m ²	454.1m ²
RESTAURANT SEATS	-	90 SEATS
PARKING (MIN.)	33 SPACES	51 SPACES (INCL. 2 BARRIER FREE & 3 MOBILE ORDER PICKUP SPACES)
DRIVE THROUGH STACKING SPACE	-	15 SPACES
LOADING SPACE (MIN.)	1 SPACE (4m x 9m)	1 SPACE (4.2m x 21.98m)

SITE STATISTICS

STATISTIC	AREA	PERCENTAGE
BUILDING AREA	454.1m ²	8.2%
LANDSCAPED AREA	1,566.7m ²	28.5%
ASPHALT AND CONCRETE AREA (SNOW STORAGE - 10% OF CLEARED AREA)	3,481.6m ² (533.5m ²)	63.3% (15.3%)
TOTAL SITE AREA	5,502.4m ²	100%

MILLINER AVENUE

LOT 87 LOT 88 LOT 89 LOT 90 LOT 91 LOT 92 LOT 93

51 PARKING SPACES
46 STANDARD SPACES
3 "MOBILE ORDERING" SPACES
2 BARRIER-FREE SPACES

PROPOSED MCDONALD'S RESTAURANT
454.1 m²
(4,888 ft²)



1. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.

2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.

3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.

4. DO NOT SCALE THE DRAWINGS.

5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

TEMPORARY BENCHMARKS	
TBM#1 CONCRETE PIN IN ASPHALT, WEST EDGE OF PAVEMENT ON ROWES LANE LOCATED 5m NORTH OF MN.135 ELEVATION 514.870m.	Town
TBM#2 RUSSELL STREET CC ON CONCRETE CURB ELEVATION 520.79m.	
TBM#3 FLATO EAST PHASE 2&3 STORMWATER FACILITY CC ON CONCRETE HEADWALL ELEVATION 514.43m.	

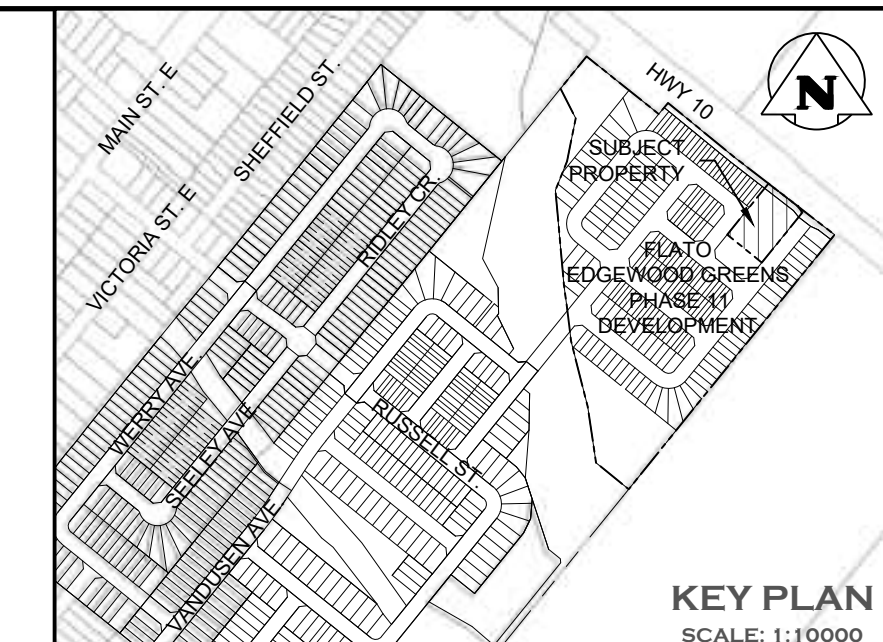
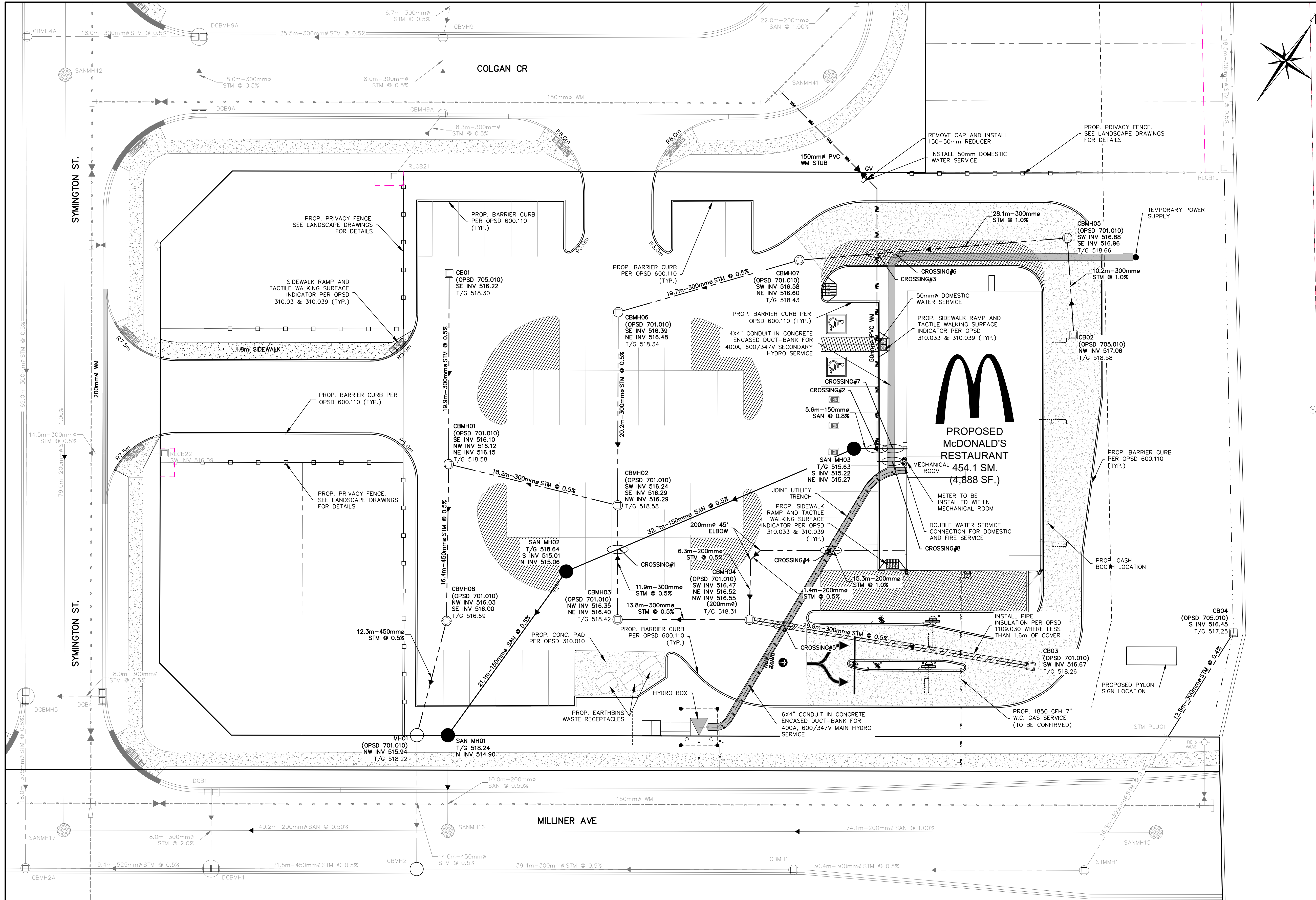
No.	ISSUE	DATE: YYYY/MM/DD	Engineer
1	ISSUED FOR 1st SUBMISSION	2020/11/06	
2	ISSUED FOR 2nd SUBMISSION	2023/01/17	
3	ISSUED FOR 3RD SUBMISSION	2023/04/25	

Project		DUNDALK COMMERCIAL BLOCK TOWNSHIP OF SOUTHGATE
Drawing		MODELLING CATCHMENT PLAN – INTERNAL PRE-DEVELOPMENT

Drawn By	V.P.	Design By	V.P./D.E.	Project	1060-5384
Check By	D.E.	Check By	J.L.A.	Scale	1:1500
				Drawing	FIG. 5

CROZIER CONSULTING ENGINEERS

Admiral Building
1 First Street, Suite 200
Collingwood, ON, L9Y 1A1
705 446-3510 T
705 446-3520 F
www.crozier.ca
info@crozier.ca



LEGEND

- EX. CONTOUR (0.5m INTERVALS)
- PROPOSED BOUNDARY LINE
- PROPOSED PRIVACY FENCE
- FFE FINISHED FLOOR ELEVATION
- STMH STORM SEWER MANHOLE
- CBMH CATCHBASIN MANHOLE
- CB CATCHBASIN
- SANMH SANITARY MANHOLE
- 3m WIDE DRAINAGE EASEMENT
- 50mm INSULATION
- CONCRETE ENCASED UTILITY TRENCH
- CONCRETE PAVED AREA

BUILDING FOOTING DEPTH REQUIREMENTS

FOR SOIL ENGINEERS LTD. RECOMMENDATIONS.

- UNHEATED AREAS, SUCH AS GARAGE STRUCTURE, THE FOOTING SHOULD BE PROTECTED AGAINST FROST ACTION BY A MINIMUM OF 1.6m OF EARTH COVER.
- FOOTING IN HEATED AREAS, SUCH AS BASEMENT WALKOUT, WILL REQUIRE A MINIMUM OF 1.4m OF EARTH COVER.

GENERAL NOTES:

- SITE TO BE PREGRADED TO 300mm BELOW FINISHED GRADE AND COMPACTED TO 98% SPDMDD. COMPACTION TESTING TO BE UNDERTAKEN BY GEOTECHNICAL CONSULTANT.
- PARKING LOT PAVEMENT STRUCTURE TO BE CONFIRMED BY GEOTECHNICAL CONSULTANT. (MIN. 50mm HL3, 100mm HL8)

STORM MAINTENANCE HOLE

MHA#	T/G	INV	SIZE
STMMH01	518.22	SE INV OUT = 515.96	1200mmØ
PLUG	N/A	SW INV OUT = 516.74	200mmØ
CBMH08	516.69	NW INV IN = 516.03 SE INV OUT = 516.00	1200mmØ
CBMH07	518.43	NE INV IN = 516.60 SW INV OUT = 516.58	1200mmØ
CBMH06	518.34	NE INV IN = 516.48 SE INV OUT = 516.39	1200mmØ
CBMH05	518.66	SE INV IN = 516.96 SW INV OUT = 516.88	1200mmØ
CBMH04	518.31	NE INV IN = 516.52 NW INV IN = 516.55 SW INV OUT = 516.47	1200mmØ
CBMH03	518.42	NE INV IN = 516.40 NW INV OUT = 516.35	1200mmØ
CBMH02	518.58	SE INV IN = 516.29 NW INV IN = 516.29 SW INV OUT = 516.24	1200mmØ
CBMH01	518.58	NW INV IN = 516.12 NE INV IN = 516.15 SE INV OUT = 516.10	1200mmØ
CB03	518.26	SW INV OUT = 516.67	600mmx600mm
CB02	518.58	NW INV OUT = 517.06	600mmx600mm
CB01	518.30	SE INV OUT = 516.22	600mmx600mm

SANITARY MAINTENANCE HOLE

MHA#	T/G	INV	SIZE
SAN MH03	515.63	NE INV IN = 515.27 S INV OUT = 515.22	1200mmØ
SAN MH02	518.64	N INV IN = 515.06 S INV OUT = 515.01	1200mmØ
SAN MH01	518.24	N INV IN = 514.90	1200mmØ

SERVICE CROSSING TABLE

I.D.	UPPER	LOWER	SEPARATION
CROSSING #1	STM INV = 516.31	SAN OBV = 515.24	1.07m
CROSSING #2	W/M INV = 517.13	SAN OBV = 515.43	1.70m
CROSSING #3	STM INV = 516.64	W/M OBV = 516.14	0.50m
CROSSING #4	UTL INV = 517.75	STM OBV = 516.96	0.79m
CROSSING #5	UTL INV = 517.57	STM OBV = 516.84	0.73m
CROSSING #6	UTL INV = 518.19	STM OBV = 516.99	1.20m
CROSSING #7	UTL INV = 518.20	SAN OBV = 515.46	2.74m
CROSSING #8	UTL INV = 518.20	WM OBV = 517.25	0.95m

1. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.

2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.

3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.

4. DO NOT SCALE THE DRAWINGS.

5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

TEMPORARY BENCHMARKS

TBM#1 CONCRETE PIN IN ASPHALT, WEST EDGE OF PAVEMENT ON ROWES LANE LOCATED 5m NORTH OF MN.135 ELEVATION 514.870m.

TBM#2 RUSSELL STREET CC ON CONCRETE CURB ELEVATION 520.79m.

TBM#3 FLATO EAST PHASE 2&3 STORMWATER FACILITY CC ON CONCRETE HEADWALL ELEVATION 514.43m.

No.	ISSUE	DATE: YYYY/MM/DD
1	ISSUED FOR 1st SUBMISSION	2020/11/06
2	ISSUED FOR 2nd SUBMISSION	2023/01/17
3	ISSUED FOR 3RD SUBMISSION	2023/04/24

Project: **DUNDALK COMMERCIAL BLOCK TOWNSHIP OF SOUTHGATE**

Drawing: **GENERAL SERVICING PLAN**

Engineer: **J. R. L'ABBE** (100543708) - LICENSED PROFESSIONAL ENGINEER, PROVINCE OF ONTARIO

Engineer: **D. T. EMERY** (100503151) - LICENSED PROFESSIONAL ENGINEER, PROVINCE OF ONTARIO

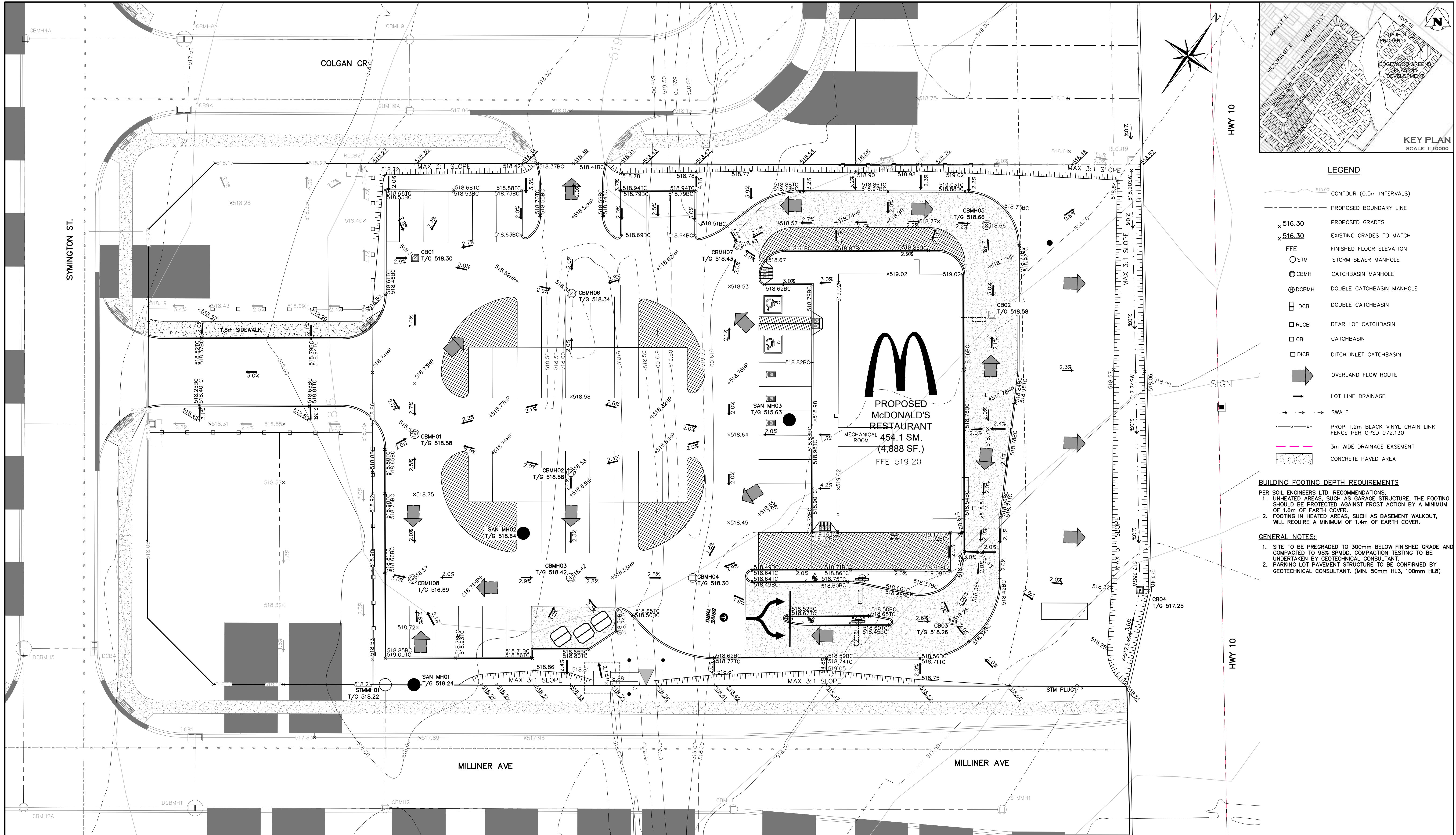
CROZIER CONSULTING ENGINEERS

ADAMANT BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
WWW.CROZIER.CA
INFO@CROZIER.CA

Scale: 1:200

Drawn By: V.P. Design By: V.P./D.E. Project: **1060-5384**

Check By: D.E. Check By: J.L.A. Scale: 1:200 Drawing: **C101**



1. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.

2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.

3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.

4. DO NOT SCALE THE DRAWINGS.

5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

TEMPORARY BENCHMARKS	
TBM#1	CONCRETE PIN IN ASPHALT, WEST EDGE OF PAVEMENT ON ROWS LANE LOCATED 5m NORTH OF MN.135 ELEVATION 514.870m.
TBM#2	RUSSELL STREET CC ON CONCRETE CURB ELEVATION 520.79m.
TBM#3	FLATO EAST PHASE 2&3 STORMWATER FACILITY CC ON CONCRETE HEADWALL ELEVATION 514.43m.

No.	ISSUE	DATE: YYYY/MM/DD
1	ISSUED FOR 1st SUBMISSION	2020/11/06
2	ISSUED FOR 2nd SUBMISSION	2023/01/17
3	ISSUED FOR 3RD SUBMISSION	2023/04/24

Engineer	

Project: **DUNDALK COMMERCIAL BLOCK TOWNSHIP OF SOUTHGATE**

Drawing: **SITE GRADING PLAN**

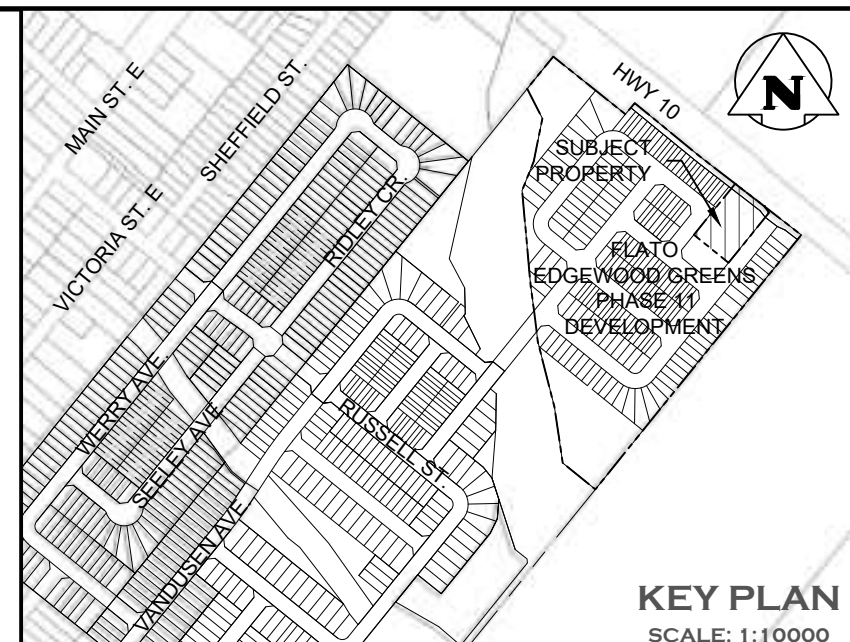
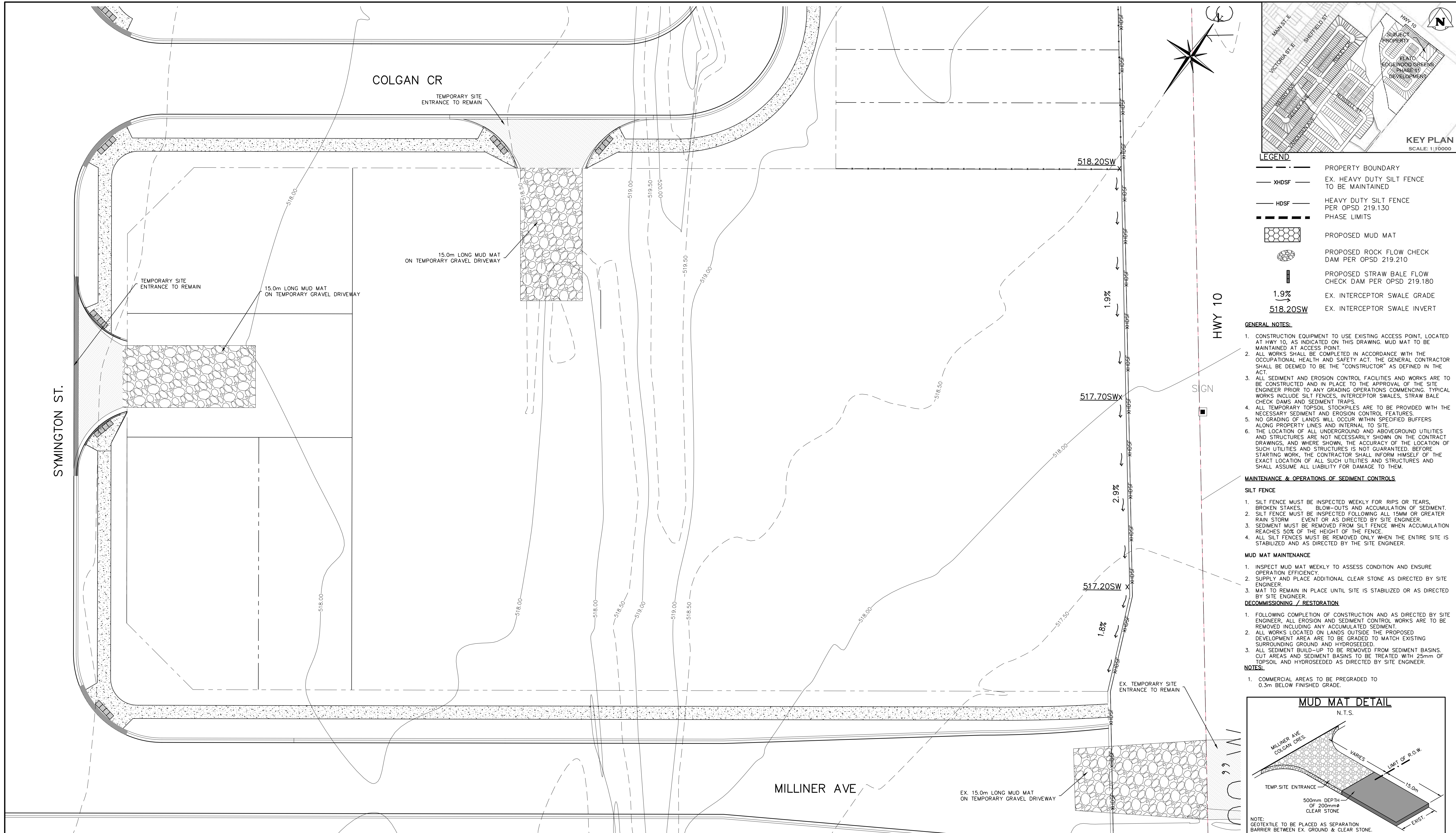
Drawn By: V.P.
 Check By: D.E.

Design By: V.P./D.E.
 Check By: J.L.A.

Project: **1060-5384**
 Scale: 1:200
 Drawing: **C102**

CROZIER CONSULTING ENGINEERS

ADMIRAL BUILDING
 1 FIRST STREET, SUITE 200
 COLLINGWOOD, ON L9Y 1A1
 705 446-3510 T
 705 446-3520 F
 WWW.CF-CROZIER.CA
 INFO@CF-CROZIER.CA



LEGEND

	PROPERTY BOUNDARY
	EX. HEAVY DUTY SILT FENCE TO BE MAINTAINED
	HEAVY DUTY SILT FENCE PER OPSD 219.130
	PHASE LIMITS
	PROPOSED MUD MAT
	PROPOSED ROCK FLOW CHECK DAM PER OPSD 219.210
	PROPOSED STRAW BALE FLOW CHECK DAM PER OPSD 219.180
	EX. INTERCEPTOR SWALE GRADE
	EX. INTERCEPTOR SWALE INVERT

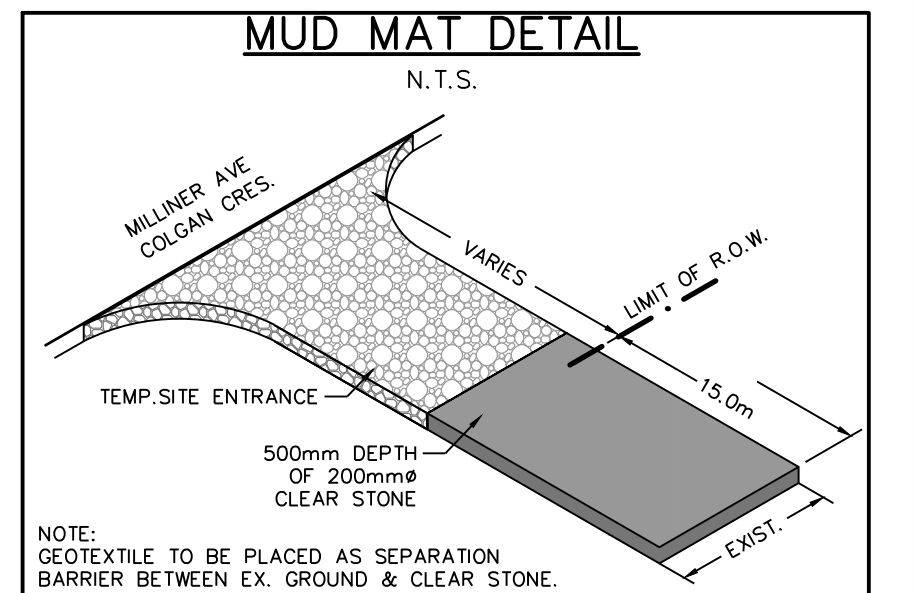
- GENERAL NOTES:**
- CONSTRUCTION EQUIPMENT TO USE EXISTING ACCESS POINT, LOCATED AT HWY 10, AS INDICATED ON THIS DRAWING. MUD MAT TO BE MAINTAINED AT ACCESS POINT.
 - ALL WORKS SHALL BE COMPLETED IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT. THE GENERAL CONTRACTOR SHALL BE DEEMED TO BE THE "CONSTRUCTOR" AS DEFINED IN THE ACT.
 - ALL SEDIMENT AND EROSION CONTROL FACILITIES AND WORKS ARE TO BE CONSTRUCTED AND IN PLACE TO THE APPROVAL OF THE SITE ENGINEER PRIOR TO ANY GRADING OPERATIONS COMMENCING. TYPICAL WORKS INCLUDE SILT FENCES, INTERCEPTOR SWALES, STRAW BALE CHECK DAMS AND SEDIMENT TRAPS.
 - ALL TEMPORARY TOPSOIL STOCKPILES ARE TO BE PROVIDED WITH THE NECESSARY SEDIMENT AND EROSION CONTROL FEATURES.
 - NO GRADING OF LANDS WILL OCCUR WITHIN SPECIFIED BUFFERS ALONG PROPERTY LINES AND INTERNAL TO SITE.
 - THE LOCATION OF ALL UNDERGROUND AND ABOVEGROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE LOCATION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

- MAINTENANCE & OPERATIONS OF SEDIMENT CONTROLS**
- SILT FENCE**
- SILT FENCE MUST BE INSPECTED WEEKLY FOR RIPS OR TEARS, BROKEN STAKES, BLOW-OUTS AND ACCUMULATION OF SEDIMENT.
 - SILT FENCE MUST BE INSPECTED FOLLOWING ALL 15MM OR GREATER RAIN STORM EVENT OR AS DIRECTED BY SITE ENGINEER.
 - SEDIMENT MUST BE REMOVED FROM SILT FENCE WHEN ACCUMULATION REACHES 50% OF THE HEIGHT OF THE FENCE.
 - ALL SILT FENCES MUST BE REMOVED ONLY WHEN THE ENTIRE SITE IS STABILIZED AND AS DIRECTED BY THE SITE ENGINEER.

- MUD MAT MAINTENANCE**
- INSPECT MUD MAT WEEKLY TO ASSESS CONDITION AND ENSURE OPERATION EFFICIENCY.
 - SUPPLY AND PLACE ADDITIONAL CLEAR STONE AS DIRECTED BY SITE ENGINEER.
 - MAT TO REMAIN IN PLACE UNTIL SITE IS STABILIZED OR AS DIRECTED BY SITE ENGINEER.

- DECOMMISSIONING / RESTORATION**
- FOLLOWING COMPLETION OF CONSTRUCTION AND AS DIRECTED BY SITE ENGINEER, ALL EROSION AND SEDIMENT CONTROL WORKS ARE TO BE REMOVED INCLUDING ANY ACCUMULATED SEDIMENT.
 - ALL WORKS LOCATED ON LANDS OUTSIDE THE PROPOSED DEVELOPMENT AREA ARE TO BE GRADED TO MATCH EXISTING SURROUNDING GROUND AND HYDROSEEDED.
 - ALL SEDIMENT BUILD-UP TO BE REMOVED FROM SEDIMENT BASINS, CUT AREAS AND SEDIMENT BASINS TO BE TREATED WITH 25mm OF TOPSOIL AND HYDROSEEDED AS DIRECTED BY SITE ENGINEER.

- NOTES:**
- COMMERCIAL AREAS TO BE PREGRADED TO 0.3m BELOW FINISHED GRADE.



1. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.

2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.

3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.

4. DO NOT SCALE THE DRAWINGS.

5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

TEMPORARY BENCHMARKS

TBM#1 CONCRETE PIN IN ASPHALT, WEST EDGE OF PAVEMENT ON ROWES LANE LOCATED 5m NORTH OF MN.135 ELEVATION 514.870m.
TBM#2 RUSSELL STREET CC ON CONCRETE CURB ELEVATION 520.79m.
TBM#3 FLATO EAST PHASE 2&3 STORMWATER FACILITY CC ON CONCRETE HEADWALL ELEVATION 514.43m.

No.	ISSUE	DATE: YYYY/MM/DD
1	ISSUED FOR 1st SUBMISSION	2020/11/06
2	ISSUED FOR 2nd SUBMISSION	2023/01/17
3	ISSUED FOR 3RD SUBMISSION	2023/04/24

Engineer

Engineer

Project

**DUNDALK COMMERCIAL BLOCK
TOWNSHIP OF SOUTHGATE**

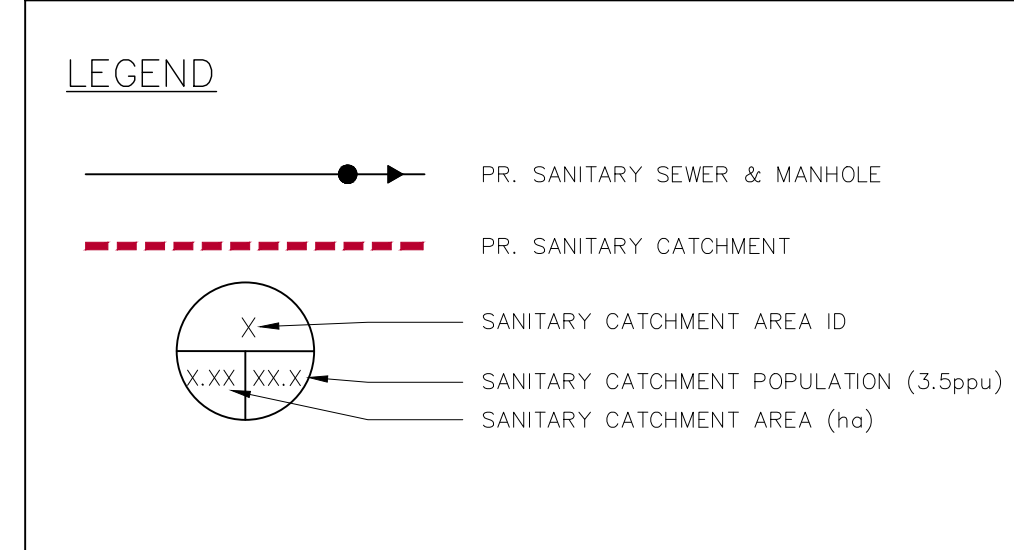
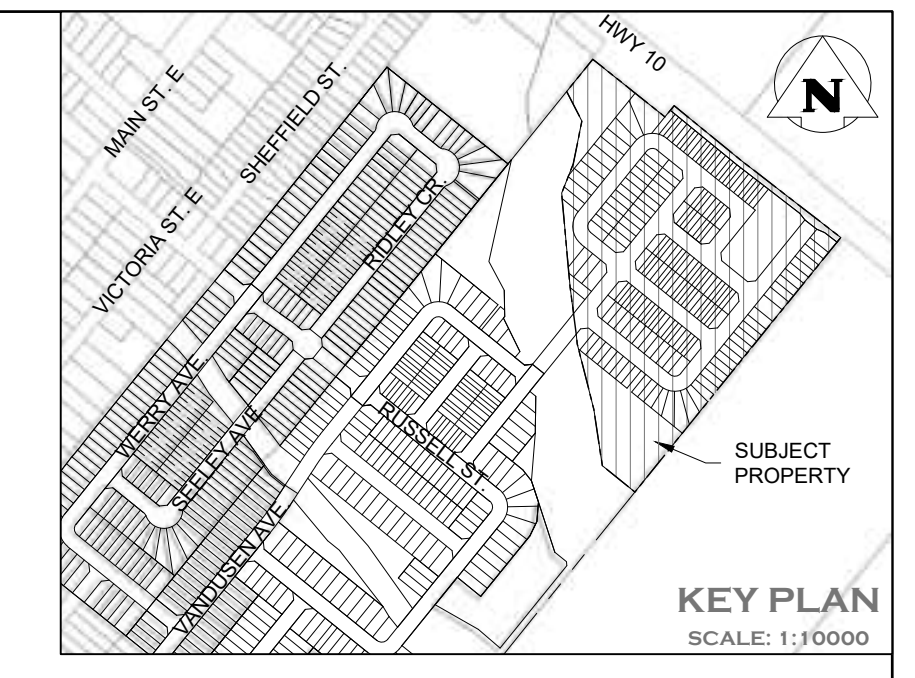
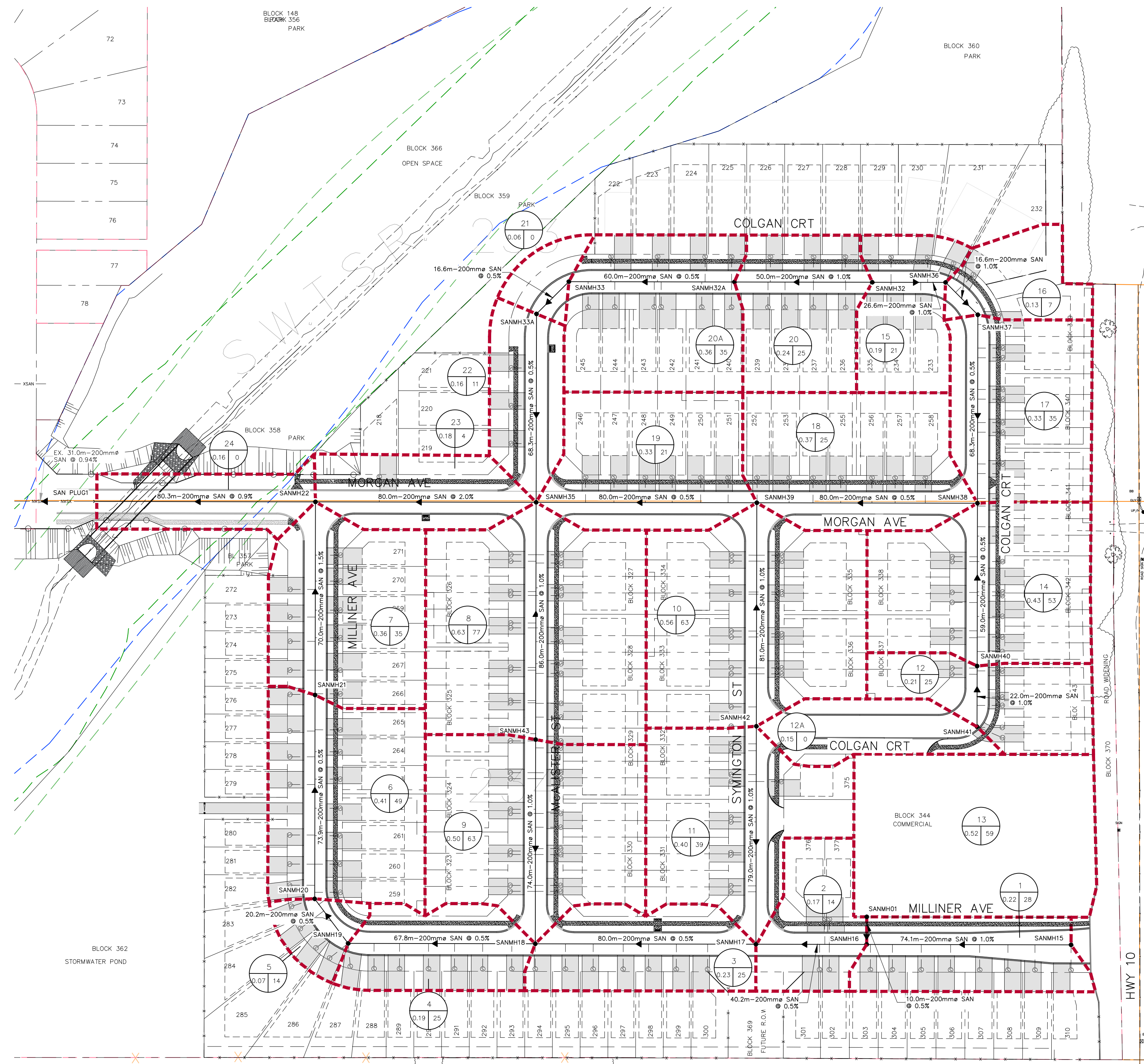
Drawing

EROSION AND SEDIMENT CONTROL PLAN

ADAM BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
WWW.CROZIER.CA
INFO@CROZIER.CA

Drawn By: V.P. Design By: V.P./D.E. Project: **1060-5384**

Check By: D.E. Check By: J.L.A. Scale: 1:200 Drawing: **C103**



1. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.

2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.

3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.

4. DO NOT SCALE THE DRAWINGS.

5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

TEMPORARY BENCHMARKS

TBM#1 CONCRETE PIN IN ASPHALT, WEST EDGE OF PAVEMENT ON ROWES LANE LOCATED 5m NORTH OF MN:135 ELEVATION 514.870m.

TBM#2 RUSSELL STREET CC ON CONCRETE CURB ELEVATION 520.79m.

TBM#3 FLATO EAST PHASE 2&3 STORMWATER FACILITY CC ON CONCRETE HEADWALL ELEVATION 514.43m.

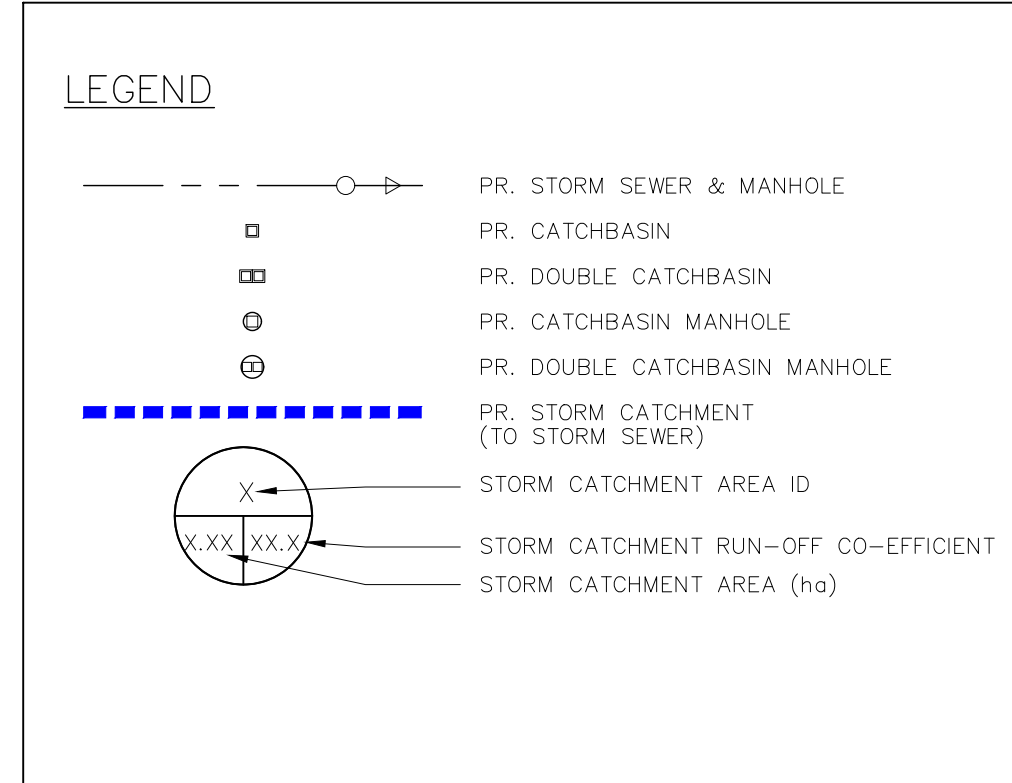
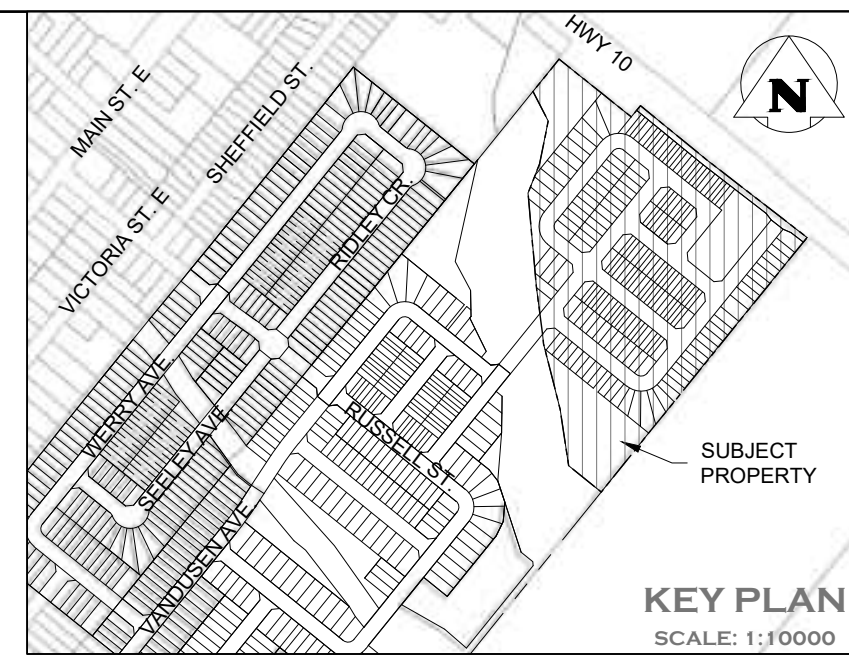
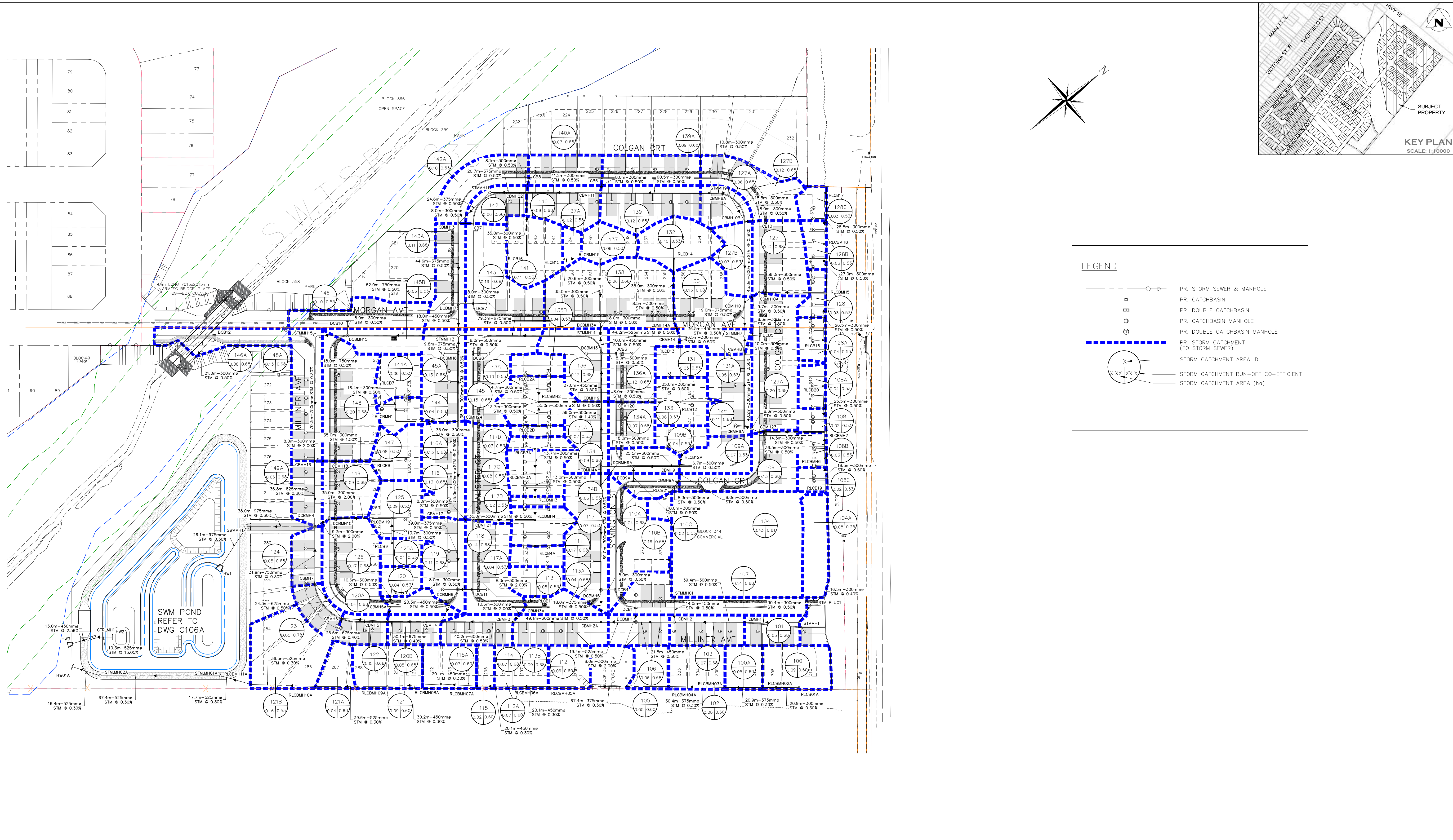
No.	ISSUE	DATE: MM/DD/YYYY
1	ISSUED FOR 1st SUBMISSION	JAN/10/2022
2	ISSUED FOR 2nd SUBMISSION	JUN/24/2022
3	ISSUED FOR 3rd SUBMISSION	OCT/17/2022
4	ISSUED FOR TENDER	NOV/07/2022
5	ISSUED FOR MATERIAL ORDERING	DEC/07/2022
6	ISSUED FOR 4th SUBMISSION	JAN/18/2023

Engineer	Engineer	Project
		FLATO EDGEWOOD GREENS PHASE 11 TOWNSHIP OF SOUTHGATE
		SANITARY DRAINAGE PLAN

Drawn By	Design By	Project
J.K./V.P.	J.K./V.P./B.H./D.E.	1060-5771
Check By	Scale	Drawing
B.H./D.E.	1:1000	C109

CROZIER CONSULTING ENGINEERS

ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON, L9Y 1A1
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA



1. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.

2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.

3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.

4. DO NOT SCALE THE DRAWINGS.

5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

TEMPORARY BENCHMARKS

TBM#1 CONCRETE PIN IN ASPHALT, WEST EDGE OF PAVEMENT ON ROWES LANE LOCATED 5m NORTH OF MN:135 ELEVATION 514.870m.

TBM#2 RUSSELL STREET CC ON CONCRETE CURB ELEVATION 520.79m.

TBM#3 FLATO EAST PHASE 2&3 STORMWATER FACILITY CC ON CONCRETE HEADWALL ELEVATION 514.43m.

No.	ISSUE	DATE: MM/DD/YYYY
1	ISSUED FOR 1st SUBMISSION	JAN/10/2022
2	ISSUED FOR 2nd SUBMISSION	JUN/24/2022
3	ISSUED FOR 3rd SUBMISSION	OCT/17/2022
4	ISSUED FOR TENDER	NOV/07/2022
5	ISSUED FOR MATERIAL ORDERING	DEC/07/2022
6	ISSUED FOR 4th SUBMISSION	JAN/18/2023

Engineer: **B.R.C. HUMMELN** 100173708
 PROVINCE OF ONTARIO
 18/2/2023

Engineer: **D.T. EMERY** 100503151
 PROVINCE OF ONTARIO
 2023/01/18

Project: **FLATO EDGEWOOD GREENS PHASE 11 TOWNSHIP OF SOUTHGATE**

Drawing: **STORM DRAINAGE PLAN**

CROZIER CONSULTING ENGINEERS

ADMIRAL BUILDING
 1 FIRST STREET, SUITE 200
 COLLINGWOOD, ON, L9Y 1A1
 705 446-3510 T
 705 446-3520 F
 WWW.CFCROZIER.CA
 INFO@CFCROZIER.CA

Drawn By: J.K./V.P. Design By: J.K./V.P./B.H./D.E. Project: **1060-5771**

Check By: B.H./D.E. Scale: 1:1000 Drawing: **C110**