

**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**

JANUARY 2023

CFCA FILE NO. 1060-5384

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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	471	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 0.52 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. The proposed Site Plan can be seen in **Figure 4**.

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. 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.

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 Mat
 - 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

APPENDIX A

Water & Wastewater Capacity Calculations



Project: Edgewood Commercial
Project No.: 1060-5384
Date: 2023.01.11
By: AM
Check By: JL'A

Flato Commercial - Water Flow Requirements

Developed Site Area	0.52 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
Average Retail Daily Flow	0.03 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 Retail Flow	0.07 L/sec
Peak Hour Factor (per MOECC Design Guidelines 2008)	4.13
Peak Hour 24 Hour Drive-Through Restaurant Flow	0.86 L/sec
Peak Hour Retail Flow	0.11 L/sec
Fire Flow Demand (FUS)	66.7 L/sec
Overall Design Flow	67.35 L/sec



Project: Edgewood Commercial
 Project No.: 1060-5384
 Date: 2023.01.11
 By: AM
 Check By: JL'A

Flato Commercial - Sanitary Flow Requirements

Developed Site Area	0.52 ha	
Land Use Summary		
1) 24 Hour Restaurant	90 seats	
2) Commercial	454.00 m ²	
Unit Sewage flows		
Shopping Centre (MOE Design Guidelines, 2017)	5 L/m ² -day	
24 Hour Restaurant (Ontario Building Code, 2006)	200 L/seat-day	
Commercial (MOE Design Guidelines, 2017)	28000 L/ha-day	
Possible Design Flows		
Commercial (MOE Design Guidelines, 2017)	14560 L/day	
24 Hour Restaurant (Ontario Building Code, 2006) and Shopping Centre (MOE Design Guidelines, 2017)	20270 L/day	DESIGN FLOW
Combined Average Daily Flow Rate	34.8 m ³ /day	
Therefore use a 20,270 L/day Design Flow		
Equivalent 24 Hour Restaurant Residential Population	52 Persons	
Equivalent Shopping Centre Restaurant Residential Population	7 Persons	
Equivalent Residential Units	22 Residential Units	
Infiltration (Clearview Township Engineering Standards, 2017)	0.23 L/s/ha	
Total Design Sewage Flows		
Infiltration/Inflow Commercial	0.12 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)	4.31	
Shopping Centre Commercial Peak Factor (Harmon Formula)	4.43	
Total 24 Hour Restaurant Peak Daily Flow	0.96 L/s	
Total Shopping Centre Peak Daily Flow	0.18 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	1,165	m ³ /day
Reserve Capacity	667	1,860	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	716	1997	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)	68	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
Edgewood Commercial	0	0	0
Glenelg (Phase 3)	0	0	459
TOTAL UNCOMMITTED UNITS			1218
Total Number of Available ERUs Upon Completion of WWTF Upgrades			1997
Total Projected ERUs of Reserve Capacity Available Upon Occupation of Committed Units			1256
Projected ERUs of Reserve Capacity Available Upon Occupation of The Above Uncommitted Units			38



Project: Edgewood Greens - Phase 11
 Project No.: 1060-5771
 Date: 18-Jan-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



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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**

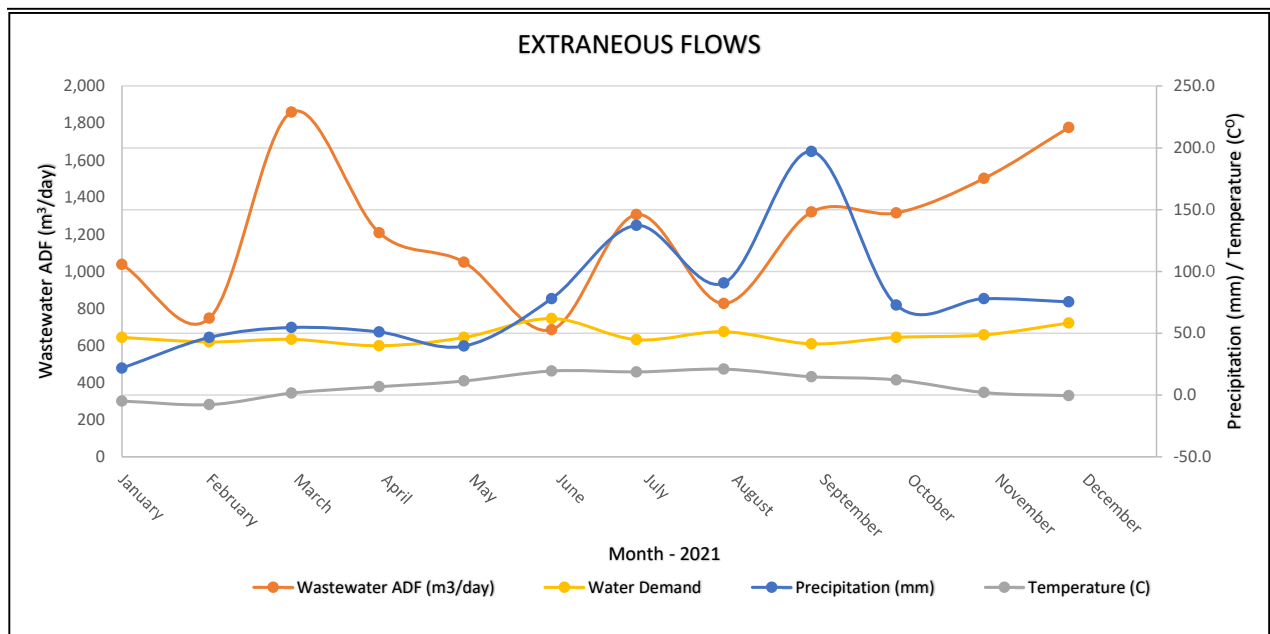
MONTH	PRECIPITATION (mm) ⁴	AMBIENT TEMP. (C°) ⁴	WASTEWATER ADF (m ³ /day)	WATER ADD (m ³ /day)	EXTRANEOUS FLOW (m ³ /day) ¹
January-2021	21.6	-4.9	1,038	643	395
February-2021	46.6	-7.8	747	620	127
March-2021	54.6	1.4	1,860	633	1,227
April-2021	50.9	6.7	1,209	598	611
May-2021	39.5	11.2	1,050	643	407
June-2021	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	0.24	0.68	0.45	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	8	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)	Infil. (l/s)	Total Infil.	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	75.00	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	39.30	0.10	1.06	2	7	94	4.25	0.38	1.62	0.02	0.16	1.78	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	14	49	49	4.32	0.20	0.86	0.07	0.07	0.93	200	515.35	514.56	1.00%	32.80	1.04	0.03	0.12	0.44	0.46	518.06	517.92	2.5	2.8		
	3	17	18	80.00	0.23	1.76	7	25	168	4.18	0.68	2.83	0.03	0.26	3.10	200	514.48	514.08	0.50%	23.19	0.74	0.13	0.24	0.68	0.50	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	2.45	7	25	255	4.11	1.03	4.24	0.03	0.37	4.61	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	2.52	4	14	269	4.10	1.09	4.47	0.01	0.38	4.84	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	2.93	14	49	318	4.07	1.29	5.24	0.06	0.44	5.68	200	513.51	513.14	0.50%	23.19	0.74	0.24	0.33	0.82	0.61	516.97	517.09	3.3	3.4		
	7	21	22	70.00	0.36	3.29	10	35	353	4.05	1.43	5.79	0.05	0.49	6.28	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	0.24	0.68	0.50	518.04	517.64	3.0	2.6		
	12A				0.14	0.14	0	0	0	4.50	0.00	0.00	0.02	0.02	0.02	200															
	10	42	39	81.00	0.56	0.70	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	2.69	6	21	249	4.11	1.01	4.14	0.05	0.40	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	4.32	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	7.77	0	0	752	3.88	3.05	11.81	0.02	1.17	12.97	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		SAN PLUG 1	13	32.0	0.05	7.82	0	0	752	3.88	3.05	11.81	0.01	1.17	12.98	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		
	15	13	14	42.60	0.18	17.97	3	11	1358	3.71	5.50	20.40	0.03	2.70	23.10	250	509.13	509.01	0.30%	32.57	0.66	0.71	0.62	1.12	0.74	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	0.12	0.44	0.65	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	20.63	0	0	1561	3.67	6.32	23.18	0.00	3.09	26.28	250	508.93	508.88	0.30%	32.57	0.66	0.81	0.68	0.00	0.00	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)

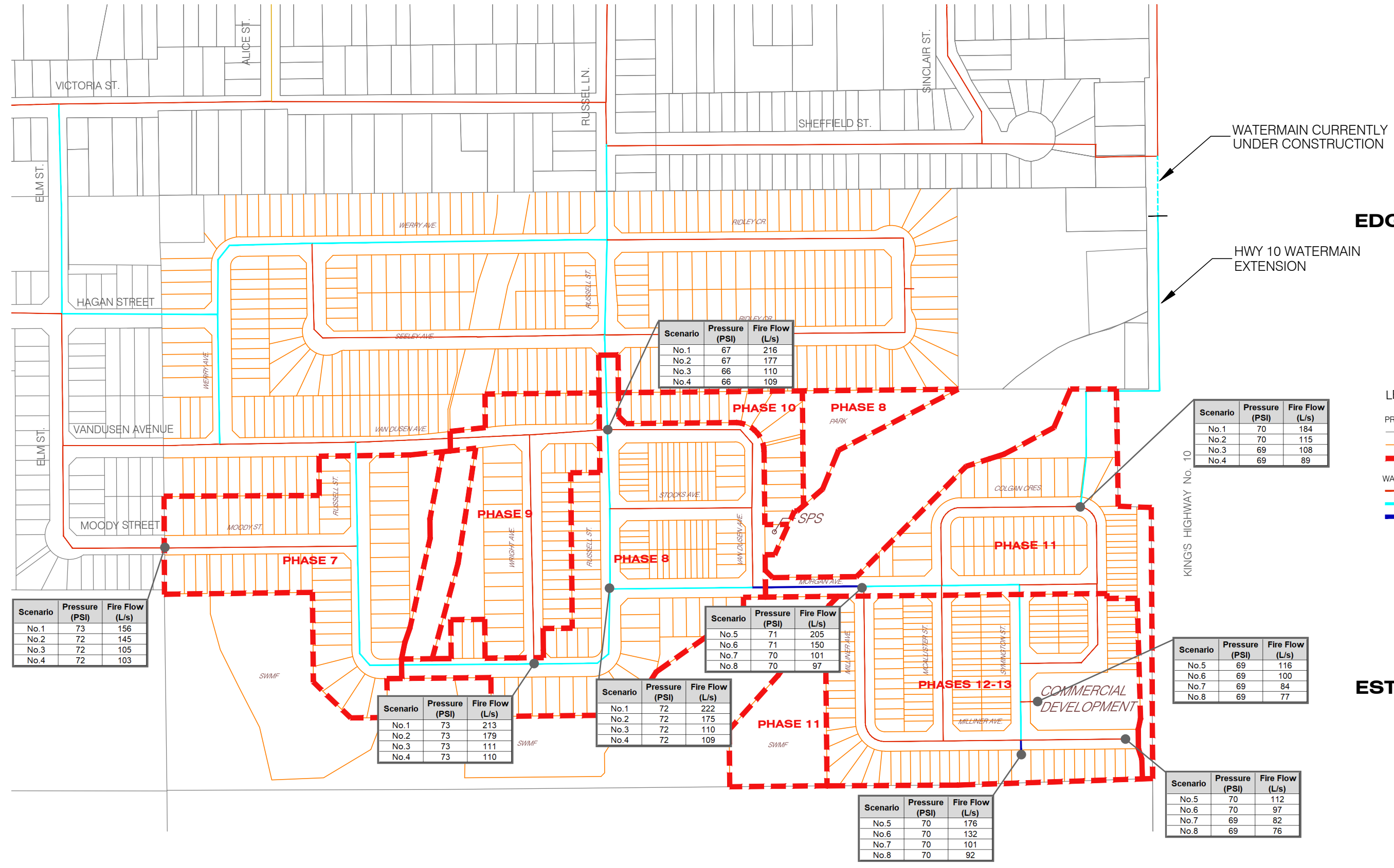
Scenario	Pressure		Fire Flow	
	Maximum (PSI)	Minimum (PSI)	Maximum (L/S)	Minimum (L/S)
No.5: Tower & HWY 10 Connection	71 Milliner-Morgan Intersection	69 Commercial Development	205 Milliner-Morgan Intersection	112 Milliner Stub at HWY-10 Intersection
No.6: Tower & No HWY 10 Connection	71 Milliner-Morgan 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



WATERMAIN CURRENTLY UNDER CONSTRUCTION

HWY 10 WATERMAIN EXTENSION

LEGEND:

- PROPERTY
- EXISTING DEVELOPMENT PARCEL
- FUTURE DEVELOPMENT PARCEL
- FUTURE DEVELOPMENT PHASES

- WATERMAIN
- 150mm DIAMETER WATERMAIN
- 200mm DIAMETER WATERMAIN
- 250mm DIAMETER WATERMAIN

Scenario	Pressure (PSI)	Fire Flow (L/s)
No.1	67	216
No.2	67	177
No.3	66	110
No.4	66	109

Scenario	Pressure (PSI)	Fire Flow (L/s)
No.1	70	184
No.2	70	115
No.3	69	108
No.4	69	89

Scenario	Pressure (PSI)	Fire Flow (L/s)
No.1	73	156
No.2	72	145
No.3	72	105
No.4	72	103

Scenario	Pressure (PSI)	Fire Flow (L/s)
No.1	73	213
No.2	73	179
No.3	73	111
No.4	73	110

Scenario	Pressure (PSI)	Fire Flow (L/s)
No.1	72	222
No.2	72	175
No.3	72	110
No.4	72	109

Scenario	Pressure (PSI)	Fire Flow (L/s)
No.5	71	205
No.6	71	150
No.7	70	101
No.8	70	97

Scenario	Pressure (PSI)	Fire Flow (L/s)
No.5	69	116
No.6	69	100
No.7	69	84
No.8	69	77

Scenario	Pressure (PSI)	Fire Flow (L/s)
No.5	70	176
No.6	70	132
No.7	70	101
No.8	70	92

Scenario	Pressure (PSI)	Fire Flow (L/s)
No.5	70	112
No.6	70	97
No.7	69	82
No.8	69	76

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
Coef. C=			
FREQUENCY - 100 YEAR - MTO LOOKUP TOOL			
Coef. A=	51	Coef. B=	-0.69
Coef. C=			
FOUNDATION SERVICES FLOW (L/sec/lot) =		0.075	
INITIAL TIME OF CONCENTRATION (minutes) =		10.00	

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

DESIGNED BY: AM
CHECKED BY: DTE
DATE: 2023.01.18
ISSUED FOR: 4th Submission

CATCHMENT I.D.	STREET	FROM MH	TO MH	AREA (A) (Ha)	5 YEAR RUN-OFF COEFF (C ₅)	100 YEAR RUN-OFF COEFF (C ₁₀₀)	DESIGN STORM	A x C	5 YEAR CUMUL A x C ₅	100 YEAR CUMUL A x C ₁₀₀	TIME OF CONC. (min.)	5 YEAR I (mm/hr)	100 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	0.00	5 year	0.00	0.00	0.00	10.00	107.07	175.59	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	0.85	5 year	0.06	0.06	0.00	10.00	107.07	175.59	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	0.85	5 year	0.08	0.14	0.00	11.04	99.90	163.98	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	0.85	5 year	0.05	0.05	0.00	10.00	107.07	175.59	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	0.66	5 year	0.06	0.06	0.00	10.00	107.07	175.59	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	0.85	5 year	0.06	0.31	0.00	11.75	95.64	157.07	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	STMMH13	CBMH13	0.00	0	0.00	5 year	0.00	0.31	0.00	12.06	93.92	154.29	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	0.85	5 year	0.04	0.04	0.00	10.00	107.07	175.59	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	0.66	5 year	0.05	0.40	0.00	12.43	91.99	151.15	1.45	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	0.85	5 year	0.13	0.13	0.00	10.00	107.07	175.59	0.08	38.46	38.53	0.50%	300	0.013	0.97	8.0	0.14	68.38	54%	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	0.85	5 year	0.07	0.61	0.00	13.09	88.71	145.83	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	0.00	5 year	0.00	0.00	0.00	10.00	107.07	175.59	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	0.00	5 year	0.00	0.00	0.00	10.19	105.70	173.37	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	0.85	5 year	0.08	0.08	0.00	10.00	107.07	175.59	0.00	24.29	24.29	0.50%	300	0.013	0.97	8.0	0.14	68.38	34%	516.75	516.71	517.05	517.01	517.36	518.26	0.31	1.25
127A	Colgan Cr	CBMH10B	CBMH10	0.06	0.68	0.85	5 year	0.04	0.12	0.00	10.51	103.44	169.72	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	0.66	5 year	0.02	0.02	0.00	10.00	107.07	175.59	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	518.85	518.89	1.49	1.66
128B	Colgan Cr	RLCBMH8	RLCBMH5	0.03	0.53	0.66	5 year	0.02	0.03	0.00	10.49	103.53	169.87	0.40	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	0.66	5 year	0.02	0.02	0.00	10.00	107.07	175.59	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	0.66	5 year	0.02	0.07	0.00	10.96	100.44	164.86	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	0.85	5 year	0.08	0.15	0.00	11.58	96.62	158.66	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	0.66	5 year	0.04	0.31	0.00	11.75	95.66	157.10	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	0.66	5 year	0.02	0.02	0.00	10.00	107.07	175.59	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	0.66	5 year	0.01	0.01	0.00	10.00	107.07	175.59	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	0.66	5 year	0.02	0.03	0.00	10.32	104.75	171.83	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	0.66	5 year	0.01	0.06	0.00	10.57	103.01	169.02	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	0.00	5 year	0.00	0.06	0.00	11.20	98.93	162.40	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	0.00	5 year	0.00	0.06	0.00	11.35	98.02	160.93	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	0.85	5 year	0.07	0.13	0.00	12.04	94.04	154.48	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	0.85	5 year	0.14	0.14	0.00	10.00	107.07	175.59	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	0.00	5 year	0.00	0.58	0.00	12.21	93.11	152.97	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	0.66	5 year	0.03	0.03	0.00	10.00	107.07	175.59	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	0.66	5 year	0.05	0.05	0.00	10.00	107.07	175.59	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					

EDGEWOOD GREENS - PHASE 11

1060-5771

STORM SEWER DESIGN SHEET



FREQUENCY - 5 YEAR - MTO LOOKUP TOOL		
Coef. A=	30.6	Coef. B= -0.699
Coef. C=		
FREQUENCY - 100 YEAR - MTO LOOKUP TOOL		
Coef. A=	51	Coef. B= -0.69
Coef. C=		
FOUNDATION SERVICES FLOW (L/sec/lot) =	0.075	
INITIAL TIME OF CONCENTRATION (minutes) =	10.00	

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

DESIGNED BY: AM
 CHECKED BY: DTE
 DATE: 2023.01.18
 ISSUED FOR: 4th Submission

CATCHMENT I.D.	STREET	FROM MH	TO MH	AREA (A) (Ha)	5 YEAR RUN-OFF COEFF		DESIGN STORM	5 YEAR		100 YEAR		TIME OF CONC. (min.)	5 YEAR		100 YEAR		CONTROLLED FLOW (FOUNDATION SERVICES) (l/sec)	Q (RUNOFF) (l/sec)	DESIGN FLOW (l/sec)	SLOPE (%)	PIPE DIAL. (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	
					(C ₁)	(C ₁₀₀)		A x C ₅	A x C ₁₀₀	I	I		UPPER	LOWER	UPPER	LOWER												UPPER	LOWER	UPPER	LOWER				
					(C ₂)	(C ₁₀₀)		A x C ₅	A x C ₁₀₀	I	I		END	END	END	END												END	END	END	END				
125	Milliner Ave	RLCBMH9	DCBMH10	0.09	0.53	0.66	5 year	0.05	0.07	0.00	10.24	105.33	172.78	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	0.85	5 year	0.18	0.25	0.00	10.54	103.21	169.35	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	CBMH1A	0.08	0.25	0.31	5 year	0.02	0.02	0.00	10.00	107.07	175.59	0.00	5.95	5.95	0.40%	300	0.013	0.87	16.5	0.32	61.16	10%	516.40	516.33	516.70	516.63	516.71	518.22	0.01	1.59			
	Milliner Ave	CBMH1A	CBMH1	0.00	0	0.00	5 year	0.00	0.02	0.00	10.32	104.75	171.84	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	0.85	5 year	0.03	0.05	0.00	10.84	101.18	166.06	0.60	15.19	15.79	0.50%	300	0.013	0.97	41.9	0.72	68.38	23%	516.16	515.95	516.46	516.25	518.07	517.87	1.61	1.62			
110D	Milliner Ave	RLCB22	CBMH2	0.02	0.53	0.66	5 year	0.01	0.01	0.00	10.00	107.07	175.59	0.08	3.16	3.23	0.50%	300	0.013	0.97	14.7	0.25	68.38	5%	516.57	516.50	516.87	516.80	518.06	517.87	1.19	1.07			
104	Milliner Ave	STMMH01	CBMH2	0.43	0.81	1.00	5 year	0.35	0.35	0.00	10.00	107.07	175.59	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	0.85	5 year	0.05	0.46	0.00	11.56	96.73	158.84	0.75	123.83	124.58	0.50%	450	0.013	1.27	19.0	0.25	201.60	62%	515.80	515.70	516.25	516.15	517.87	517.76	1.62	1.61			
107	Milliner Ave	DCB1	DCBMH1	0.11	0.68	0.85	5 year	0.07	0.07	0.00	10.00	107.07	175.59	0.00	22.26	22.26	2.00%	300	0.013	1.93	8.0	0.07	136.76	14%	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	0.85	5 year	0.04	0.58	0.00	11.81	95.29	156.51	0.83	152.61	153.44	0.50%	475	0.013	1.31	19.4	0.25	232.87	64%	515.68	515.58	516.15	516.05	517.76	517.82	1.61	1.77			
109B	Colgan Cr	RLCB12A	CBMH9	0.04	0.53	0.66	5 year	0.02	0.02	0.00	10.00	107.07	175.59	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	518.33	517.94	1.36	1.01			
110C	Colgan Cr	RLCB21	CBMH9A	0.02	0.53	0.66	5 year	0.01	0.01	0.00	10.00	107.07	175.59	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	517.94	1.06	0.92			
109	Colgan Cr	CBMH9A	CBMH9	0.13	0.68	0.85	5 year	0.09	0.10	0.00	10.14	106.01	173.88	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	517.94	517.94	0.97	1.01			
109A	Colgan Cr	CBMH9	DCBMH9A	0.07	0.53	0.66	5 year	0.04	0.16	0.00	10.28	105.01	172.26	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	517.94	517.82	1.09	1.09			
110A	Colgan Cr	DCB9A	DCBMH9A	0.04	0.68	0.85	5 year	0.03	0.03	0.00	10.00	107.07	175.59	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	517.22	517.82	0.40	1.03			
134B	Colgan Cr	DCBMH9A	CBMH4A	0.06	0.53	0.66	5 year	0.03	0.22	0.00	10.72	101.99	167.36	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	517.82	517.95	1.11	1.34			
	Symington St	CBMH4A	DCBMH5	0.00	0	0.00	5 year	0.00	0.22	0.00	11.03	99.97	164.10	0.68	60.11	60.79	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	0.17	0.68	0.85	5 year	0.12	0.12	0.00	10.00	107.07	175.59	0.00	34.41	34.41	0.50%	300	0.013	0.97	8.0	0.14	68.38	50%	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	0.85	5 year	0.12	0.45	0.00	12.22	93.07	152.91	0.75	115.78	114.53	0.50%	375	0.013	1.12	18.0	0.27	123.98	94%	515.81	515.72	516.19	516.10	517.65	517.82	1.46	1.72			
	Milliner Ave	CBMH2A	CBMH3	0.00	0	0.00	5 year	0.00	1.02	0.00	12.49	91.67	150.64	1.88	260.86	262.74	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	0.66	5 year	0.03	0.03	0.00	10.00	107.07	175.59	0.00	7.89	7.89	2.00%	300	0.013	1.93	8.6	0.07	136.76	6%	515.94	515.76	516.24	516.06	517.97	517.61	1.73	1.55			
113A	Milliner Ave	CBMH3A	CBMH3	0.04	0.68	0.85	5 year	0.03	0.05	0.00	10.07	106.51	174.69	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	0.85	5 year	0.06	1.14	0.00	13.02	89.03	146.36	2.18	281.79	283.97	0.50%	600	0.013	1.54	40.2	0.44	434.17	65%	515.19	514.99	515.79	515.59	517.57	517.37	1.79	1.79			
	McAlister St	CBMH24	CBMH17	0.00	0	0.00	5 year	0.00	0.05	0.00	10.92	100.68	165.24	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	0.66	5 year	0.02	0.02	0.00	10.00	107.07	175.59	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	0.66	5 year	0.04	0.06	0.00	10.24	105.33	172.77	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	0.66	5 year	0.01	0.07	0.00	10.46	103.75	170.21	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	0.66	5 year	0.02	0.02	0.00	10.00	107.07	175.59	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	0.66	5 year	0.04	0.13	0.00	10.68	102.25	167.79	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	0.85	5 year	0.09	0.22	0.00	11.28	98.40	161.55	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	0.85	5 year	0.09	0.36	0.00	11.87	94.99	156.02	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	0.85	5 year	0.10	0.10	0.00	10.00	107.07	175.59	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	CBMH4	0.11	0.68	0.85	5 year	0.07	0.53	0.00	12.45	91.88	150.98	2.55	134.61	137.16	0.50%	450	0.013	1.27	20.3	0.27	201.60	68%	515.28	515.18	515.73	515.63	517.28	517.37	1.55	1.74			
114	Milliner Ave	CBMH4	CBMH5	0.07	0.68	0.85	5 year	0.05	1.71	0.00	13.46	87.01	143.07	4.95	414.35	419.30	0.40%	675	0.013	1.49	30.1	0.34	531.63	79%	514.91	514.79	515.59	515.47	517.37	517.22	1.79	1.76			
120	Milliner Ave	RLCB10	CBMH5A	0.04	0.53	0.66	5 year	0.02	0.02	0.00	10.00	107.07	175.59	0.00	6.31	6.31	0.50%	300	0.013	0.97	9.9	0.17	68.38	9%	515.42	515.									

EDGEWOOD GREENS - PHASE 11
1060-5771
STORM SEWER DESIGN SHEET



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

FOUNDATION SERVICES FLOW (L/sec/lot) = 0.075
INITIAL TIME OF CONCENTRATION (minutes) = 10.00

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


DESIGNED BY: AM
CHECKED BY: DTE
DATE: 2023.01.18
ISSUED FOR: 4th Submission

CATCHMENT I.D.	STREET	FROM MH	TO MH	AREA (A) (Ha)	5 YEAR RUN-OFF COEFF (C _s)	100 YEAR RUN-OFF COEFF (C ₁₀₀)	DESIGN STORM	A x C	5 YEAR	100 YEAR	TIME OF CONC. (min.)	5 YEAR	100 YEAR	CONTROLLED FLOW (FOUNDATION SERVICES) (l/sec)	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	
									A x C _s	A x C ₁₀₀		I (mm/hr)	I (mm/hr)		(l/sec)	(l/sec)									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	0.85	5 year	0.05	0.05	0.00	10.00	107.07	175.59	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	517.12	N/A	1.51	N/A
100	South East Rear Lots	RLCB01A	RLCBMH02A	0.09	0.6	0.75	100 year	0.07	0.00	0.07	10.00	107.07	175.59	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	0.75	100 year	0.04	0.00	0.11	10.47	103.71	170.16	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	0.75	100 year	0.06	0.00	0.17	10.87	101.02	165.80	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	0.75	100 year	0.04	0.00	0.20	11.45	97.40	159.92	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	0.75	100 year	0.05	0.00	0.25	12.74	90.38	148.54	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	0.75	100 year	0.05	0.00	0.30	13.08	88.72	145.86	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	0.75	100 year	0.02	0.00	0.32	13.43	87.14	143.29	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	0.75	100 year	0.05	0.00	0.37	13.77	85.62	140.83	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	0.75	100 year	0.07	0.00	0.44	14.28	83.47	137.32	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	0.75	100 year	0.03	0.00	0.47	14.89	81.08	133.44	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	0.66	100 year	0.11	0.00	0.57	15.44	79.01	130.09	0.00	204.50	204.50	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	0.00	100 year	0.00	0.00	0.57	15.72	78.06	128.53	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	0.00	100 year	0.00	0.00	0.57	16.75	74.66	123.01	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	513.54	2.42	0.22


FIGURES

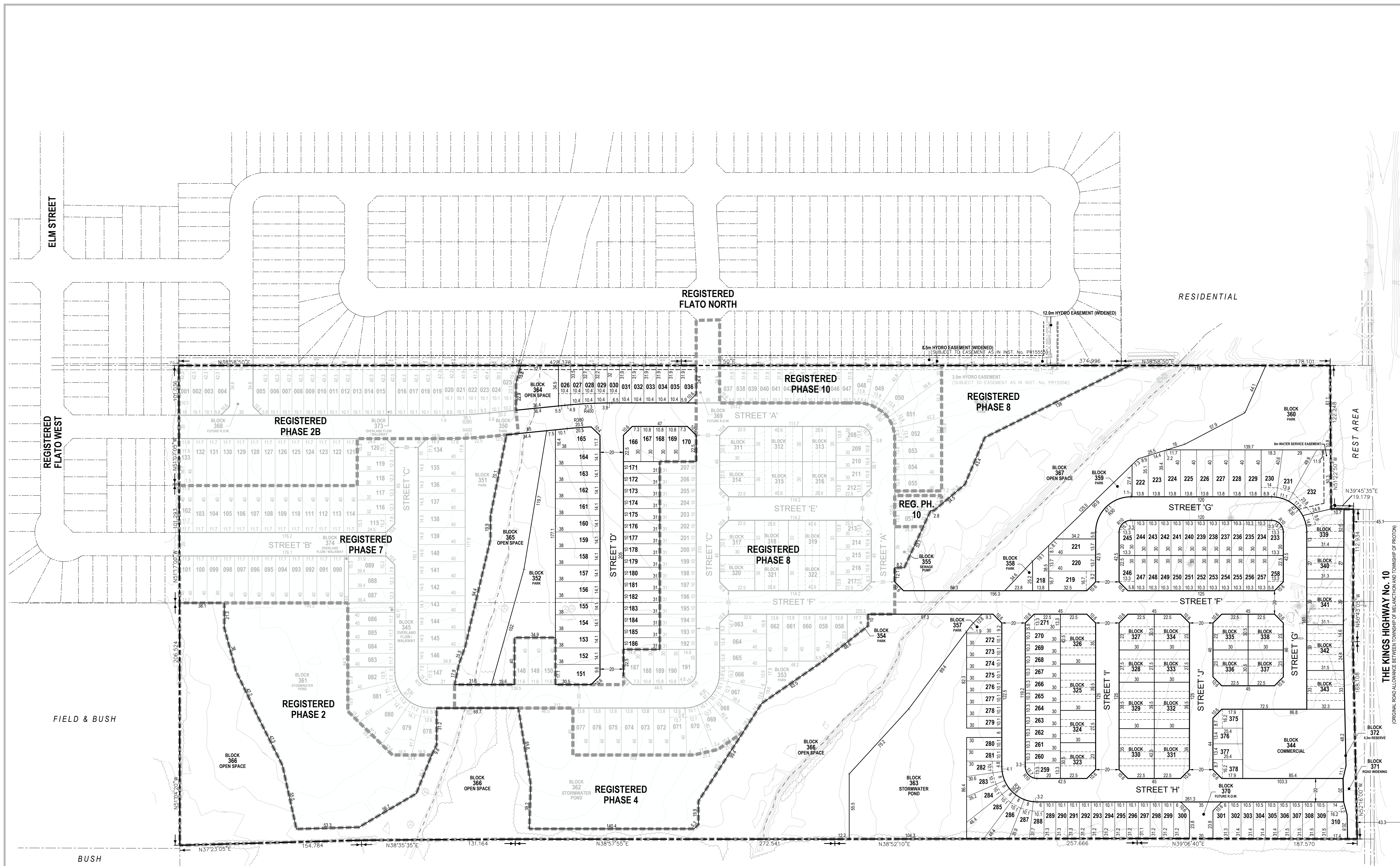
- Figure 1: Site Location Plan
- Figure 2: Flato East Draft Plan
- Figure 3: Edgewood Greens Composite Phasing Plan
- Figure 4: Concept Site Plan
- Figure 5: Pre-Development Drainage Plan
- Drawing C101: General Servicing Plan
- Drawing C102: General Grading Plan
- Drawing C103: Erosion and Sediment Control Plan
- Drawing C104: Construction Staging Plan
- Drawing C109: Sanitary Drainage Plan (Edgewood Greens - Phase 11)
- Drawing C110: Storm Drainage Plan (Edgewood Greens - Phase 11)



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	01/17/2023	Check By	A.M.



LAND USE SUMMARY

LAND USE	LOTS / BLOCKS	UNITS	AREA
SINGLE DETACHED - 10.0m LOTS	001-047, 106-217, 233-310	177	6.13ha
SINGLE DETACHED - 11.6m LOTS	056, 063-153, 148-150	55	2.56ha
SINGLE DETACHED - 13.7m LOTS	048-055, 057-082, 134-147, 151-165, 218-232	78	4.71ha
SINGLE DETACHED - WIDE SHALLOW	375-378	4	0.14ha
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		0.52ha
PARK	350-354, 356-360		2.42ha
SEWAGE PUMP	355		0.06ha
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
RIGHT OF WAY			7.27ha
TOTALS		471	40.22ha

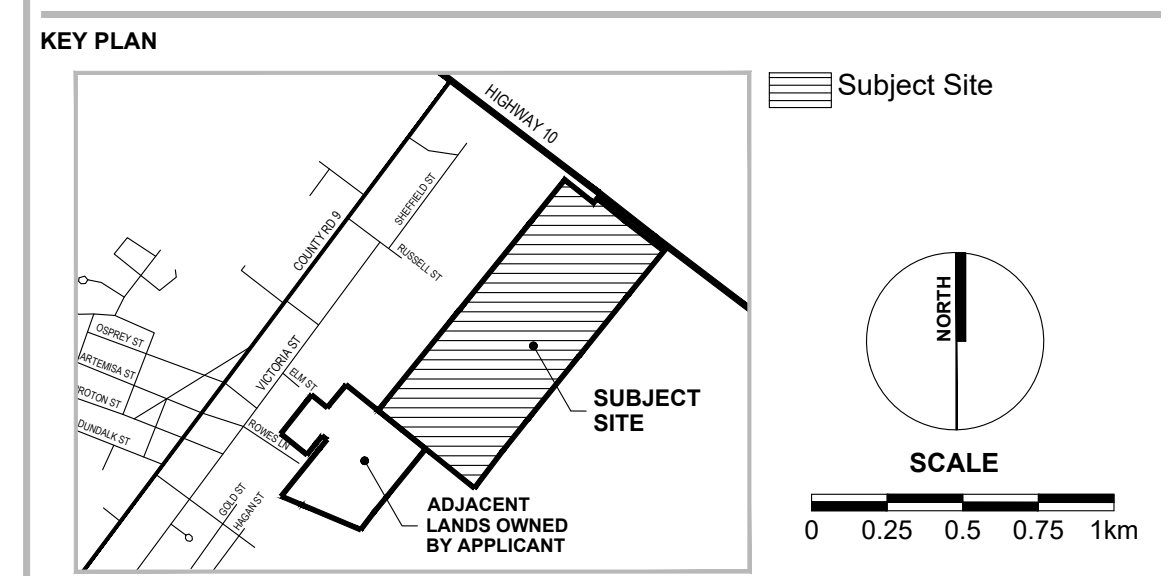
LEGEND

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

**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: DECEMBER 9, 2022
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: DECEMBER 9, 2022
SEE PRIOR SUBMISSION



No.	Date	Description	M.M.
No. 7	Dec. 15, 2022	• Add single detached lots to Block 344	M.M.
No. 6	Jul. 13, 2021	• Shift lots 090-098 to accommodate overland flow / walkway Block 374 • Convert Block 355 from park to sewage pumping station and expand • Add 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	• 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	• Moved walkway from between lots 051 & 052 to between lots 055 & 056 • Widened walkway from 3m to 4m • Narrowed lot 056 from 13.6m to 12.7m	M.M.
No. 3	Mar. 13, 2019	• 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	• 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	• 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 REQUIRED.
B. AS SHOWN	G. AS SHOWN	H. MUNICIPAL WATER SUPPLY REQUIRED.
C. AS SHOWN	H. MUNICIPAL WATER SUPPLY	I. SILT LOAM REQUIRED.
D. RESIDENTIAL / COMMERCIAL	J. AS SHOWN	L. AS SHOWN
E. AS SHOWN		

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

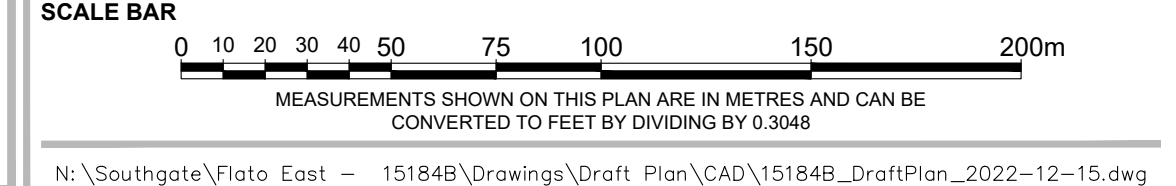
STAMP

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

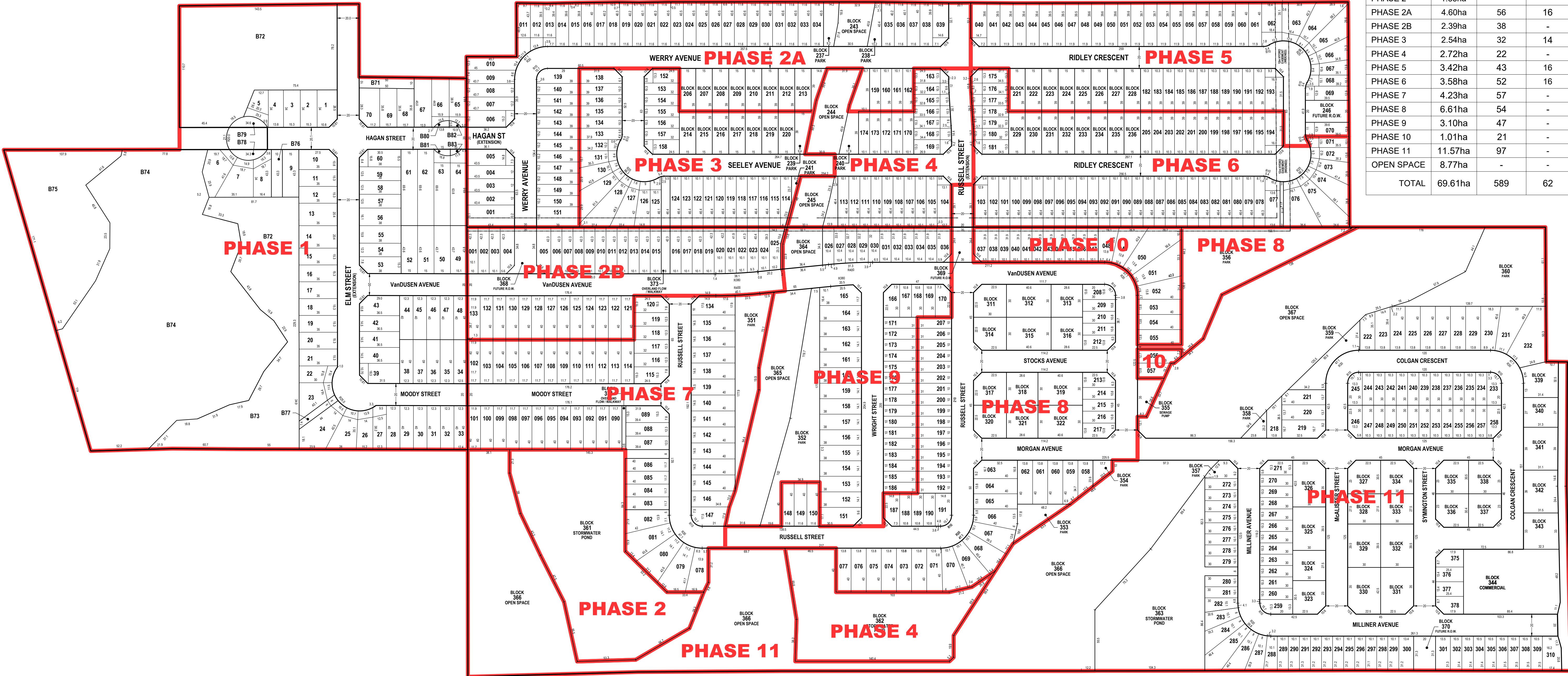
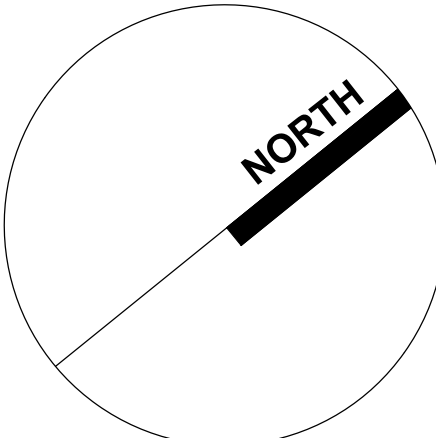
PROJECT
FLATO EAST
FLATO GROUP INC.
3621 HIGHWAY 7 EAST, SUITE 503
MARKHAM, ON L3R 0G6
P:(905) 479-9292 F:(905) 429-9165
WWW.FLATOGROUP.COM

FILE NAME
DRAFT PLAN OF SUBDIVISION

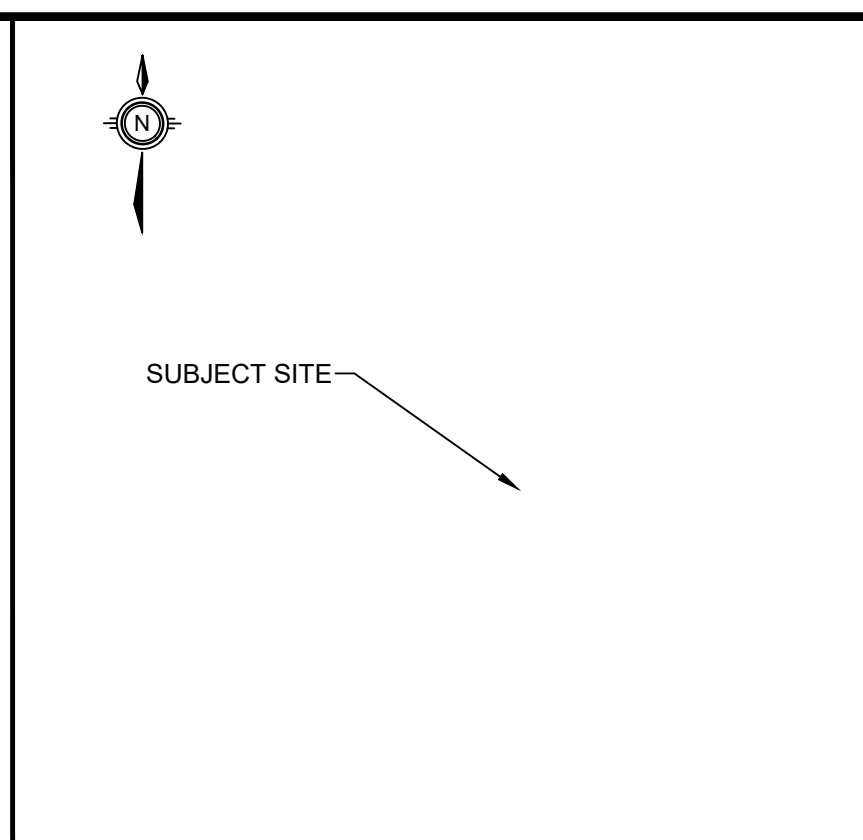
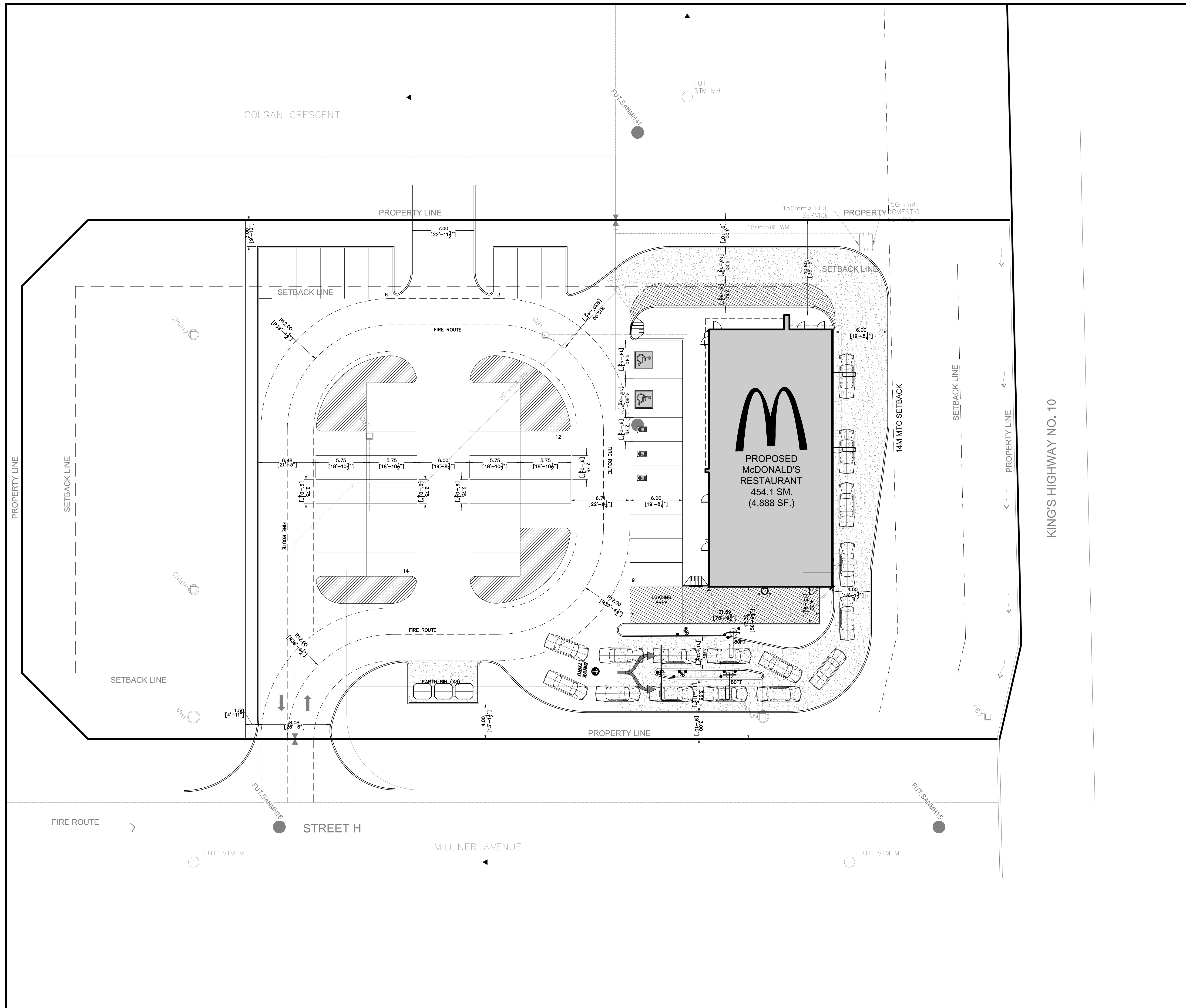
DWG No.
1 of 1




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	97	-	101	198
OPEN SPACE	8.77ha	-	-	-	-
TOTAL	69.61ha	589	62	157	808



CLIENT


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

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#	DATE	BY	DESCRIPTION
1			DRAWING ISSUE RECORD

DETAILS OF DEVELOPMENT			
	DATA	REQUIRED	PROPOSED
ZONING	C1-465		
SETBACK	FY (FROM C/L OF ROAD)	32.0 m	>32.0 m
	RY	10.0 m	>10.0 m
	SY (WEST)	3.0 m	10.8 m
	SY (EAST)	3.0 m	17.32 m
LOT AREA			
RESTAURANT AREA		454.1 SM	
SEATS		90	
LOT COVERAGE		6.7%	
# OF LOADING SPACES		1	
LANDSCAPE AREA		-	
DT STACKING		15	
PARKING REQUIRED		33	
PARKING PROVIDED		44	

NOTES

- 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.

PRIME CONSULTANT


ARCADIS | IBI GROUP
 200-360 James Street North
 Hamilton ON L8L 1H5 Canada
 Tel: 905 546 1010
 ibigroup.com

PROJECT

McDONALD'S
41288-DUNDALK
 HIGHWAY 10, DUNDALK, ON

PROJECT NO: 140787

DRAWN BY: SC

CHKD BY: TW

SCALE: 1:200

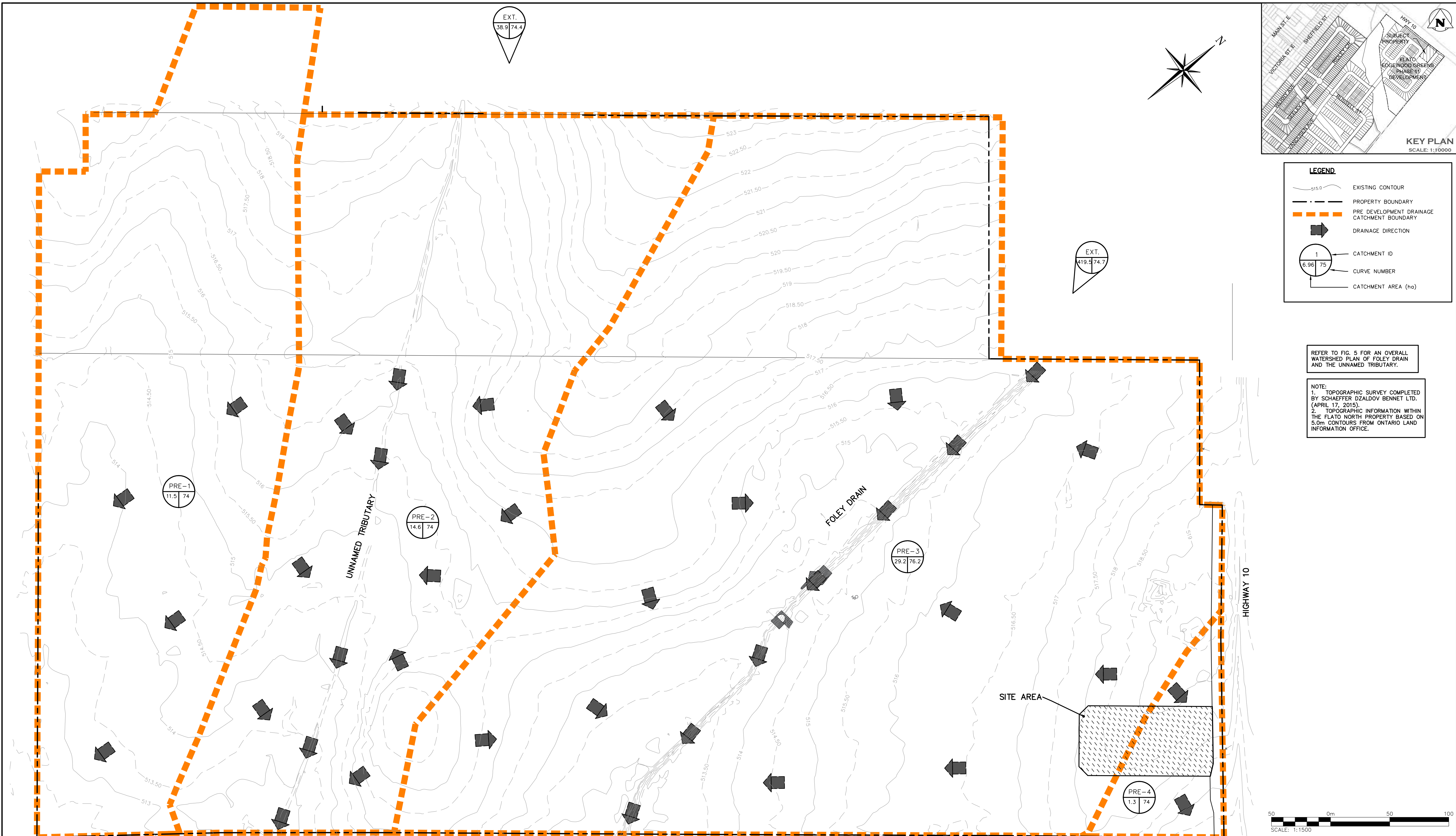
DATE: 2022 10 28

SHEET TITLE

CONCEPT PLAN

LEGAL DESCRIPTION

File Location: \\1142787_McD_Dundalk\7.0_Productions\7.02_Conceptual_Design\17_Planning\410787\04_2022\12_16.dwg, Last Saved: December 16, 2022 2:55:43 AM by Tony Withall, Plotted: Friday, December 16, 2022 2:55:43 AM by Tony Withall



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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 2nd SUBMISSION	2023/01/17

Engineer	Engineer	Project

DRAFT
FOR DISCUSSION PURPOSES ONLY

DUNDALK COMMERCIAL BLOCK
TOWNSHIP OF SOUTHGATE

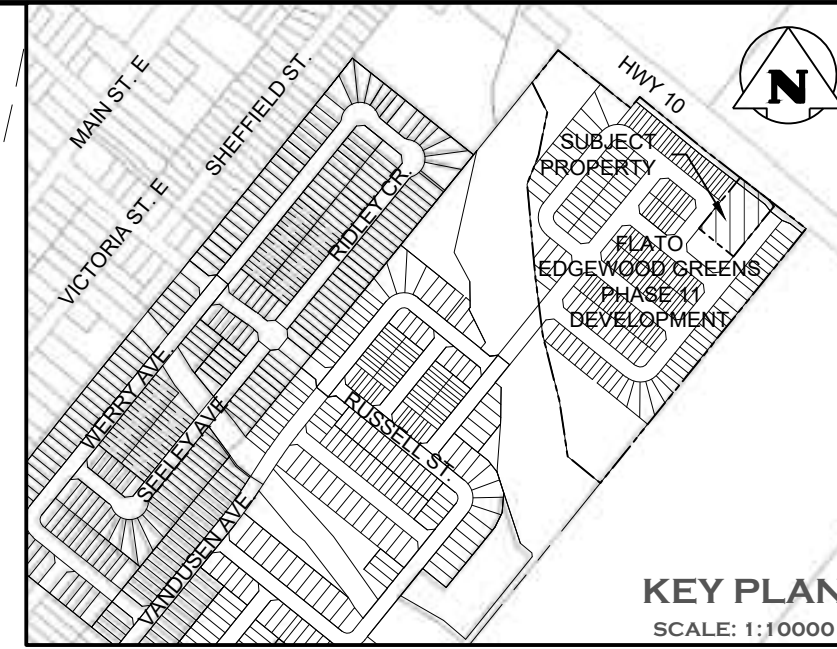
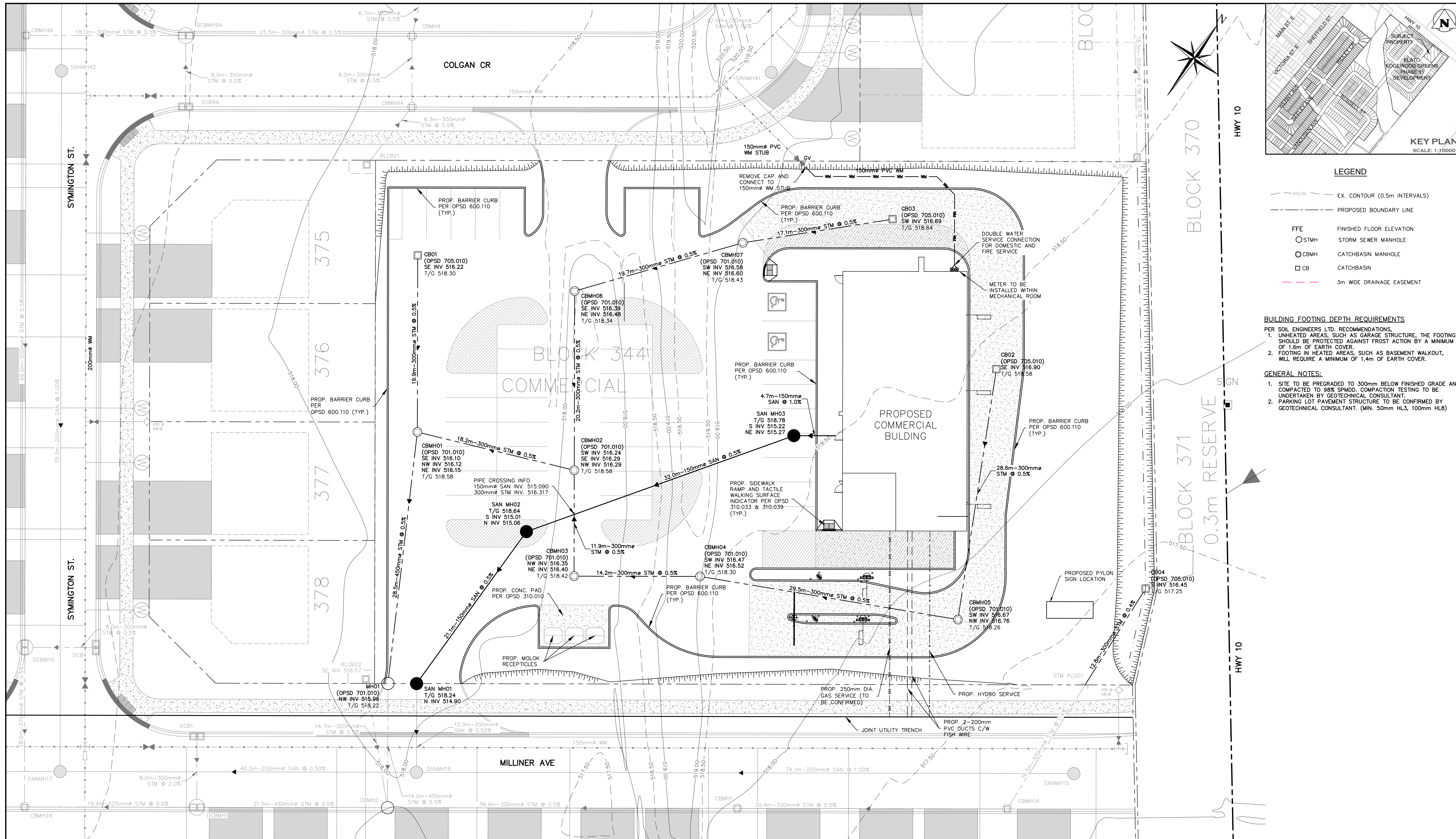
MODELLING CATCHMENT PLAN –
INTERNAL PRE-DEVELOPMENT

CROZIER CONSULTING ENGINEERS

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

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

Check By: D.E. Check By: D.E. Scale: 1:1500 Drawing: **FIG. 5**



LEGEND

- EX. CONTOUR (0.5m INTERVALS)
- PROPOSED BOUNDARY LINE
- FFE FINISHED FLOOR ELEVATION
- STMH STORM SEWER MANHOLE
- CBMH CATCHBASIN MANHOLE
- CB CATCHBASIN
- 3m WIDE DRAINAGE EASEMENT

BUILDING FOOTING DEPTH REQUIREMENTS
 PER SOIL ENGINEERS LTD. RECOMMENDATIONS,
 1. UNHEATED AREAS, SUCH AS GARAGE STRUCTURE, THE FOOTING SHOULD BE PROTECTED AGAINST FROST ACTION BY A MINIMUM OF 1.6m OF EARTH COVER.
 2. FOOTING IN HEATED AREAS, SUCH AS BASEMENT WALKOUT, WILL REQUIRE A MINIMUM OF 1.4m OF EARTH COVER.

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

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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

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

DUNDALK COMMERCIAL BLOCK
TOWNSHIP OF SOUTHGATE

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

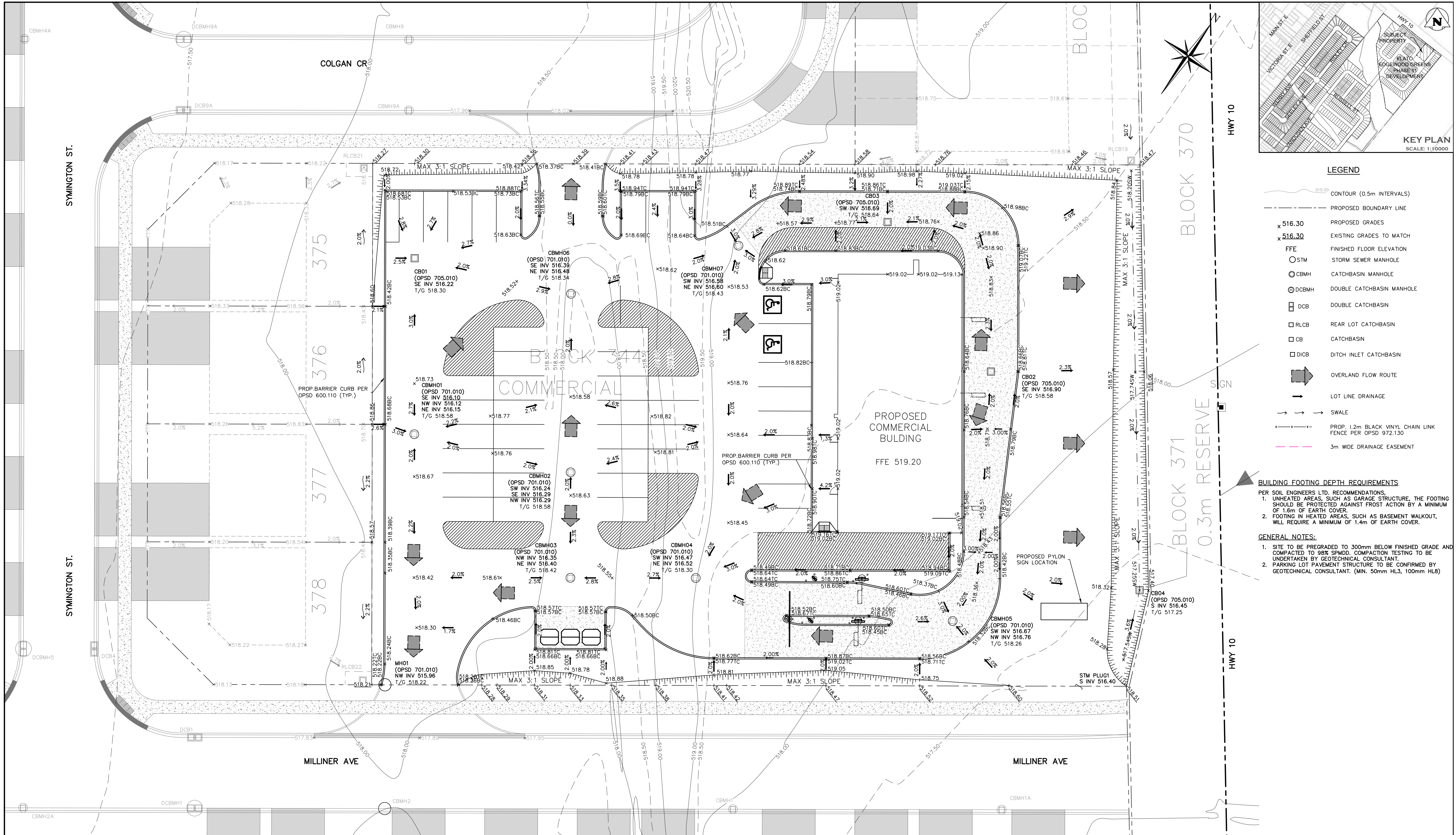
Drawing: **GENERAL SERVICING PLAN**

CROZIER CONSULTING ENGINEERS

ADMIRAL BUILDING
 1 FIRST STREET, SUITE 200
 COLLINGWOOD, ON, L3Y 1A1
 705 446-3510 T
 705 446-3520 F
 WWW.CFCROZIER.CA
 INFO@CFCROZIER.CA

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

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



- LEGEND**
- CONTOUR (0.5m INTERVALS)
 - PROPOSED BOUNDARY LINE
 - PROPOSED GRADES
 - EXISTING GRADES TO MATCH
 - FINISHED FLOOR ELEVATION
 - STORM SEWER MANHOLE
 - CATCHBASIN MANHOLE
 - DOUBLE CATCHBASIN MANHOLE
 - DOUBLE CATCHBASIN
 - REAR LOT CATCHBASIN
 - CATCHBASIN
 - DITCH INLET CATCHBASIN
 - OVERLAND FLOW ROUTE
 - LOT LINE DRAINAGE
 - SWALE
 - PROP. 1.2m BLACK VINYL CHAIN LINK FENCE PER OPSD 972.130
 - 3m WIDE DRAINAGE EASEMENT

- BUILDING FOOTING DEPTH REQUIREMENTS**
 PER SOIL ENGINEERS LTD. RECOMMENDATIONS.
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PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

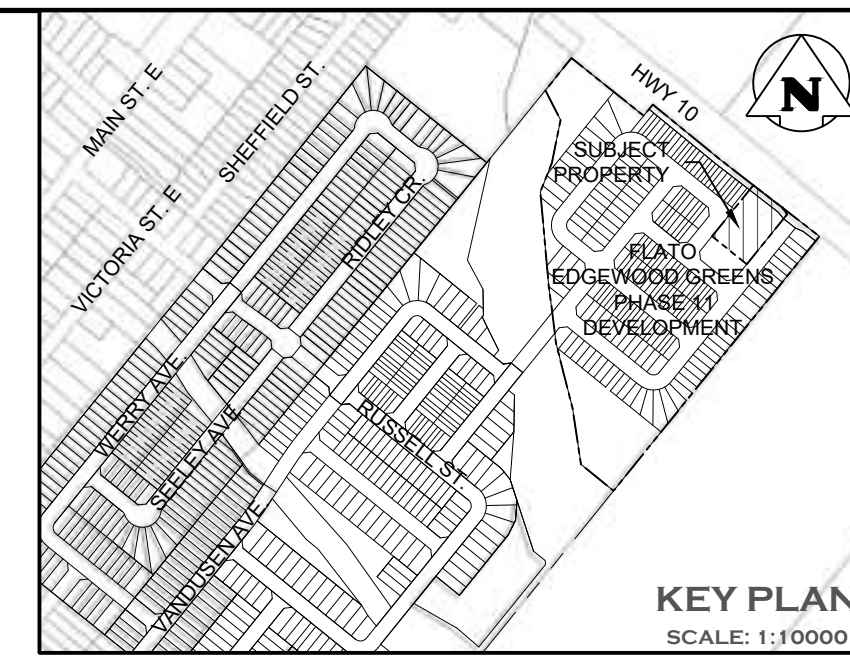
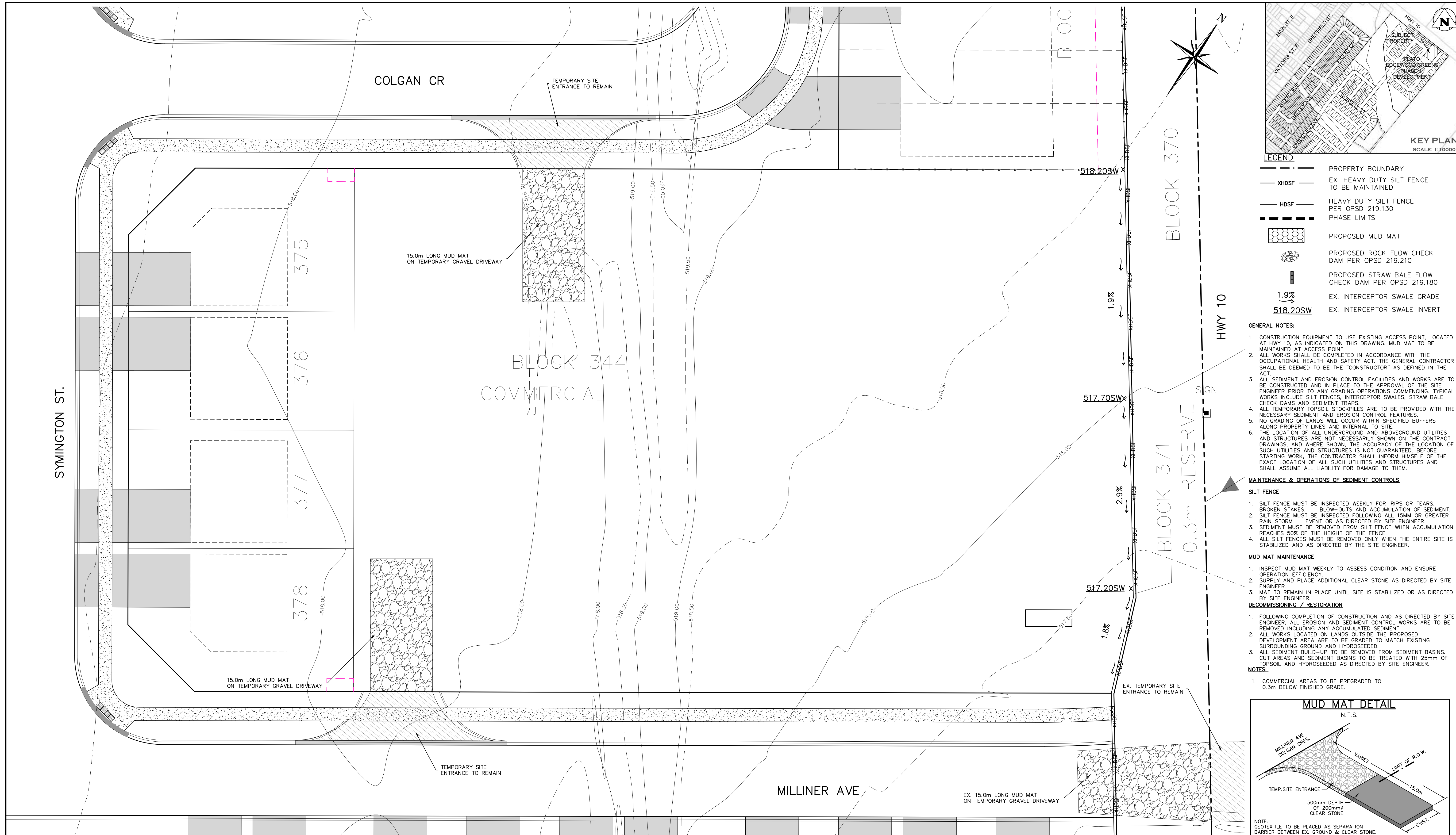
Project: **DUNDALK COMMERCIAL BLOCK**
 Township of Southgate

Drawing: **SITE GRADING PLAN**

CROZIER
CONSULTING ENGINEERS

ADAMANT BUILDING
 1 FIRST STREET, SUITE 200
 COLLINGWOOD, ON L3Y 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.	Scale: 1:200	Drawing: C102



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

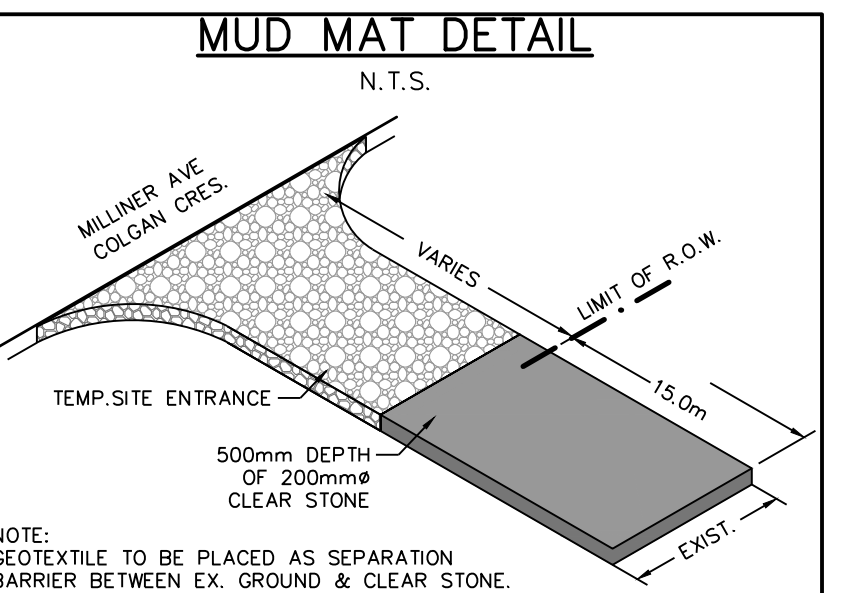
- GENERAL NOTES:**
- CONSTRUCTION EQUIPMENT TO USE EXISTING ACCESS POINT, LOCATED AT HWY 10, AS INDICATED ON THIS DRAWING. MUD MAT TO BE MAINTAINED AT ACCESS POINT.
 - ALL WORKS SHALL BE COMPLETED IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT. THE GENERAL CONTRACTOR SHALL BE DEEMED TO BE 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 HYDROSEDED.
 - ALL SEDIMENT BUILD-UP TO BE REMOVED FROM SEDIMENT BASINS, CUT AREAS AND SEDIMENT BASINS TO BE TREATED WITH 25mm OF TOPSOIL AND HYDROSEDED AS DIRECTED BY SITE ENGINEER.

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



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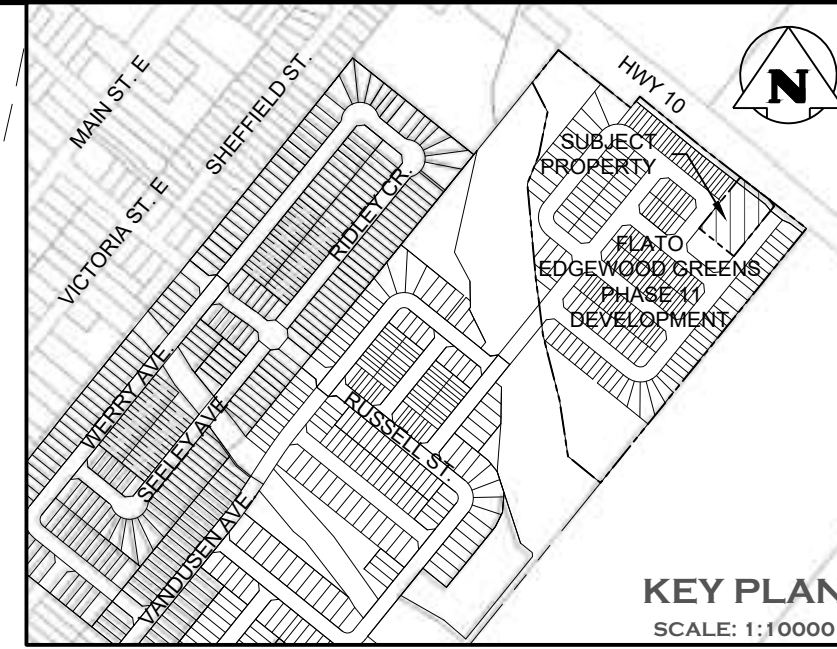
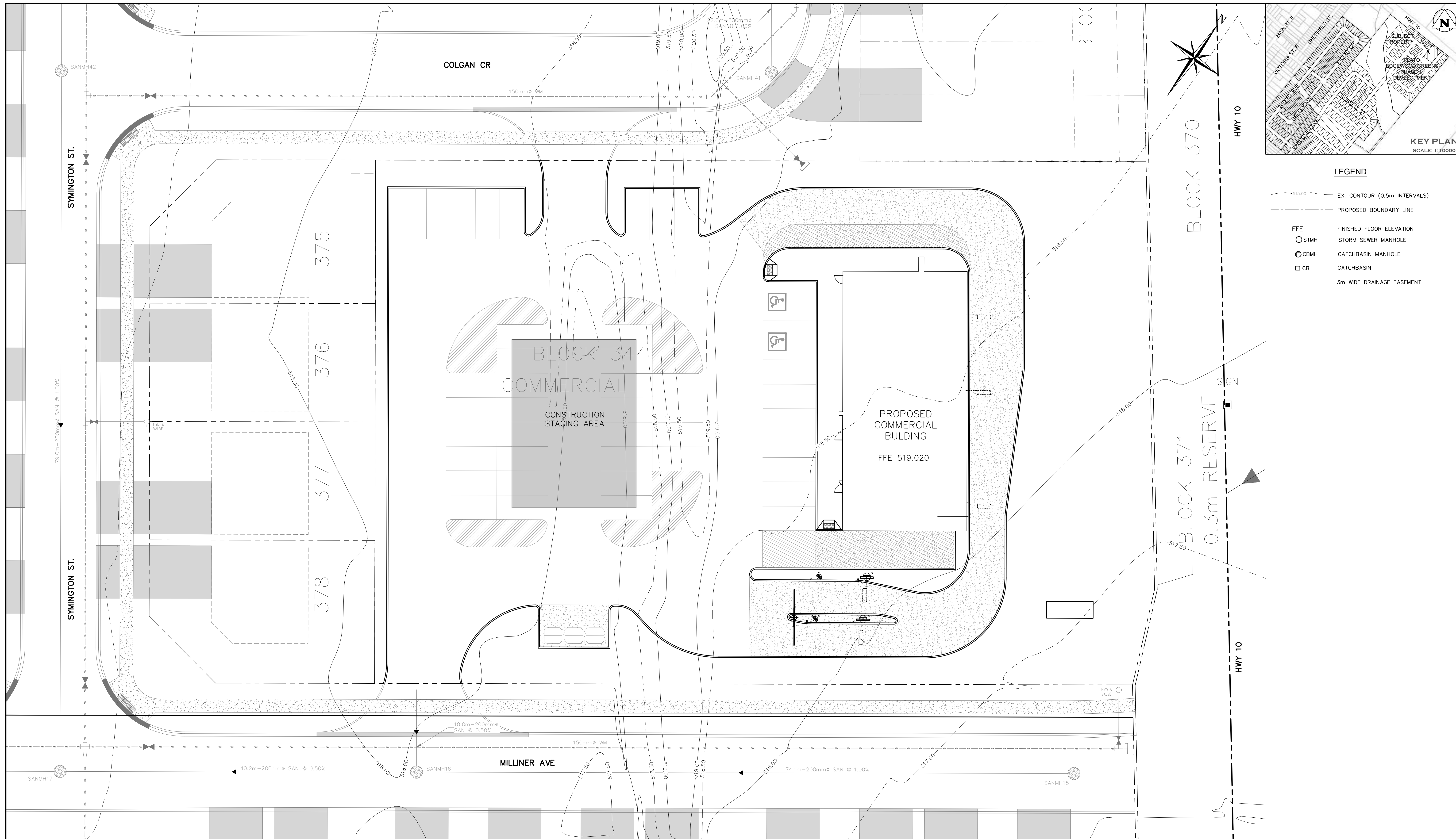
Engineer	
Engineer	
Project	DUNDALK COMMERCIAL BLOCK TOWNSHIP OF SOUTHGATE
Drawing	EROSION AND SEDIMENT CONTROL PLAN

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

Check By: D.E. Check By: D.E. Scale: 1:200 Drawing: C103

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



- LEGEND**
- - - 515.00 EX. CONTOUR (0.5m INTERVALS)
 - - - PROPOSED BOUNDARY LINE
 - FFE FINISHED FLOOR ELEVATION
 - STMH STORM SEWER MANHOLE
 - CBMH CATCHBASIN MANHOLE
 - CB CATCHBASIN
 - 3m WDE DRAINAGE EASEMENT

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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

No.	ISSUE	DATE: YYYY/MM/DD	Engineer

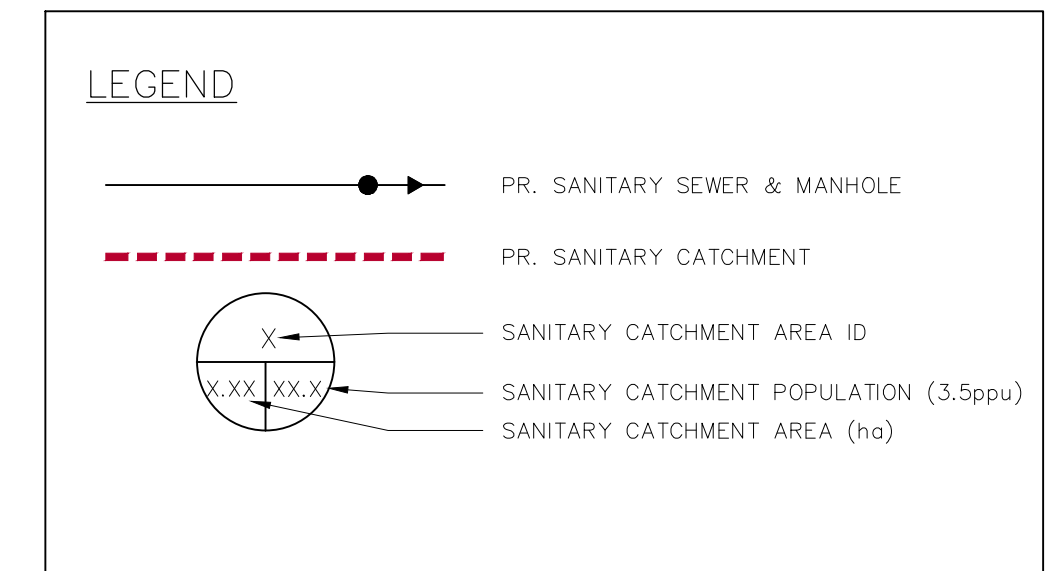
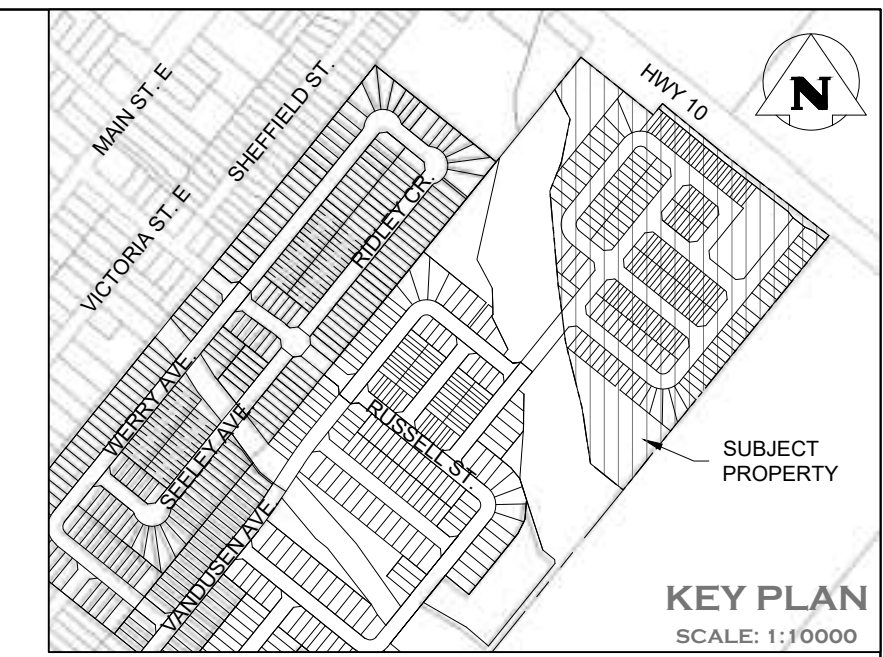
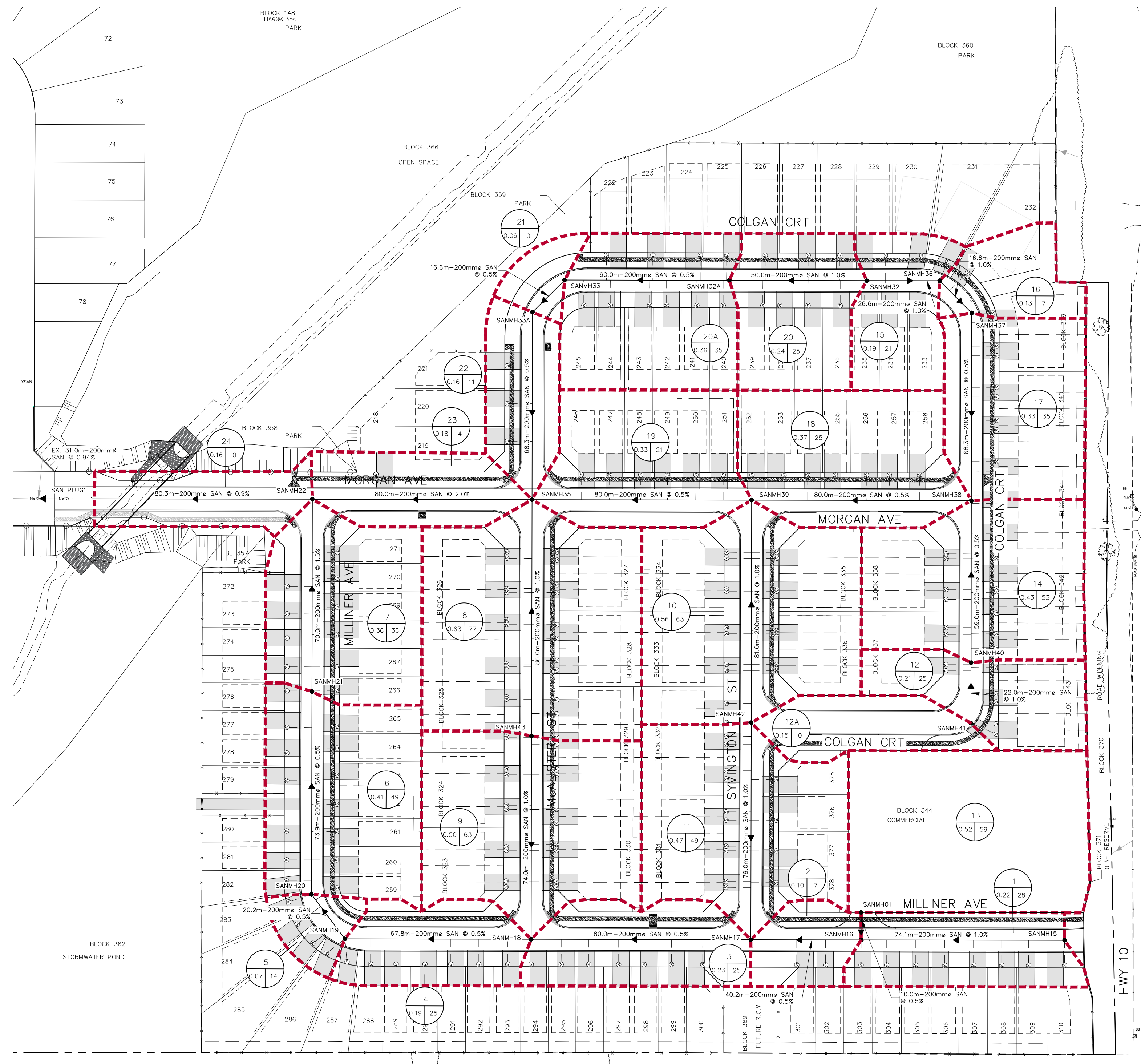
Project
DUNDALK COMMERCIAL BLOCK
TOWNSHIP OF SOUTHGATE

Drawing
CONSTRUCTION STAGING PLAN

CROZIER
CONSULTING ENGINEERS

ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
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705 446-3520 F
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Drawn By	V.P.	Design By	V.P./D.E.	Project	1060-5384
Check By	D.E.	Check By	D.E.	Scale	1:200
				Drawing	C104



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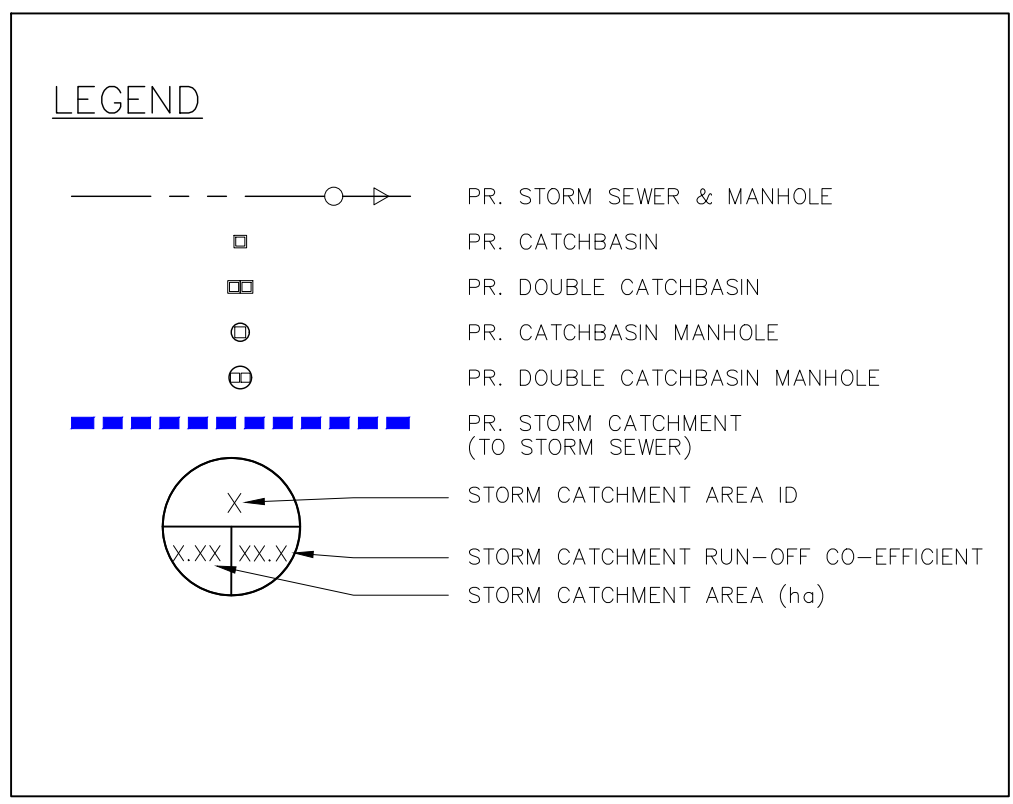
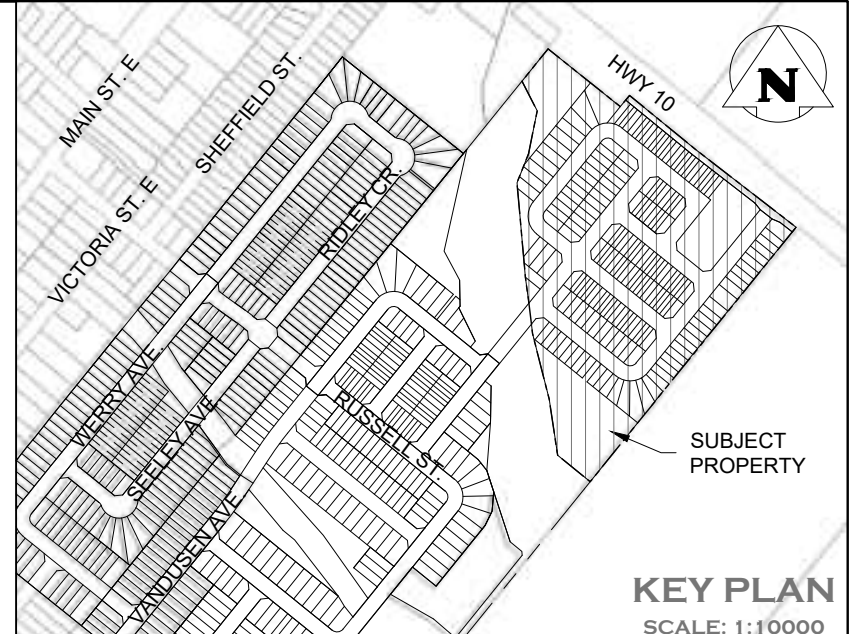
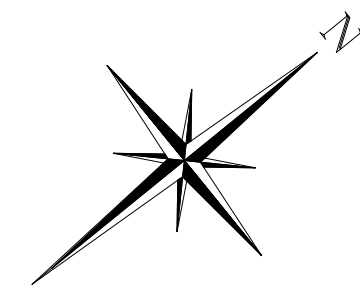
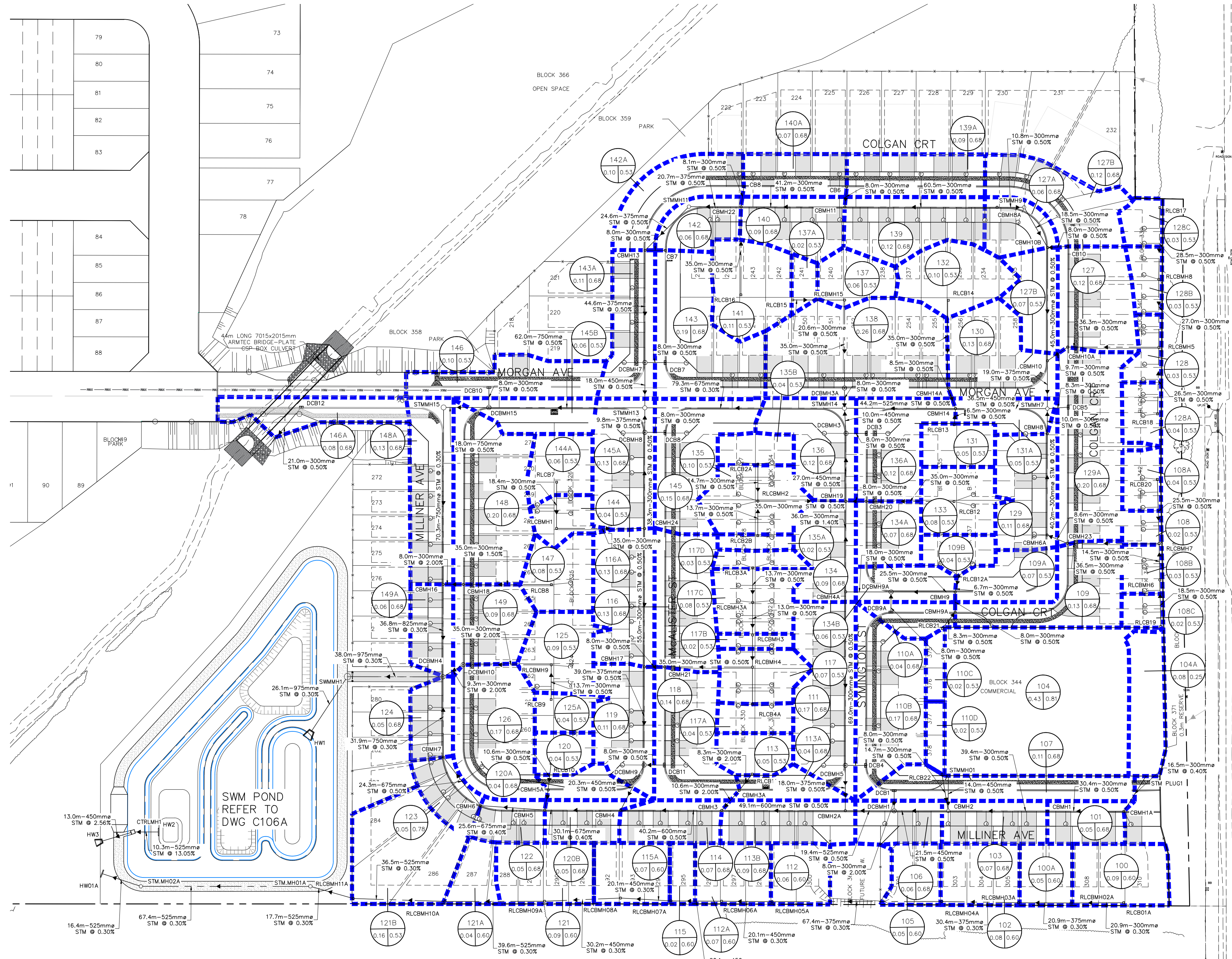
TEMPORARY BENCHMARKS	
TBM#1 CONCRETE PIN IN ASPHALT, WEST EDGE OF PAVEMENT ON ROWES LANE LOCATED 5m NORTH OF MN.135 ELEVATION 514.870m.	
TBM#2 RUSSELL STREET CC ON CONCRETE CURB ELEVATION 520.79m.	
TBM#3 FLATO EAST PHASE 2&3 STORMWATER FACILITY CC ON CONCRETE HEADWALL ELEVATION 514.43m.	

No.	ISSUE	DATE: MMM/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	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

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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	
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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**

Drawing
STORM DRAINAGE PLAN

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