URBANTECH®

# FUNCTIONAL SERVICING & STORMWATER MANAGEMENT REPORT

## 5160-5170 Ninth Line

CITY OF MISSISSAUGA

REGION OF PEEL

PREPARED FOR
**BRANTHAVEN NINTH LINE INC.**

Urbantech File No.: 21-680
City File No.: OZ 22-4 W10

1st SUBMISSION – NOVEMBER 2021
2nd SUBMISSION – AUGUST 2022

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# 1 INTRODUCTION

## *1.1. BACKGROUND*

This report provides functional servicing design and stormwater management information in support of the draft plan application for the proposed residential development located at 5160-5170 Ninth Line, hereafter referred to as the subject property.

The development concepts contained in this report are an extension of the information contained within the following reports:

- Ninth Line South Urban Design Study by NAK Design Strategies (2019)
- Ninth Line Lands Scoped Subwatershed Study by Wood (2018)
- Ninth Line Lands: Servicing Strategy Report by Region of Peel (2016)

This study presents the recommended stormwater management and municipal servicing scheme for the development of the subject property. This report is also applicable for any future revisions to the site plan, assuming the revisions are minor and in general conformance with the concepts outlined herein.

The information presented in this report conforms to the following guidelines:

- City of Mississauga T&W Development Requirements
- Region of Peel Public Works Design, Specifications & Procedures Manual
- Stormwater Management Planning and Design Manual by the Ministry of Environment (MOE)

## *1.2. SUBJECT PROPERTY*

The subject property is approximately 0.72 ha in size including the 0.07 ha associated with the 10 m buffer from the woodlot to the north. The site currently consists of a commercial and a residential building. The site is bounded by a proposed development to the west and south (5150 Ninth Line, City File 21T-M19006), a woodlot to the north, and Ninth Line to the east.

## *1.3. LAND USE*

The proposed land use consists of a six-storey residential building with 187 units, with surface and underground parking as well as amenity spaces. Two accesses from the private driveway will connect to CEC Road “F” in the development to the west.

## 2 GRADING

The site grading design considers the following objectives and constraints:

- Conform to City of Mississauga grading criteria
- Match existing boundary conditions
- Provide overland flow conveyance for major storm conditions
- Maximize usable space

A future road widening is anticipated to be completed by the City of Mississauga to increase Ninth Line from two lanes to four lanes and create additional facilities for pedestrians and cyclists. A road widening will be conveyed along the Ninth Line frontage in accordance with the proposed right-of-way width as identified in the ongoing Environmental Assessment. The proposed elevations along the ultimate streetline have been established based on the future elevation of Ninth Line to ensure that the proposed development is compatible with the ultimate Ninth Line design. Timing of construction of the widening works is unknown at this time; should the proposed development proceed in advance of the widening, temporary grade transition to the existing conditions of Ninth Line will be required, ensuring positive drainage to the existing ditch.

Refer to **Drawing 201**, "*Site Grading,*" for additional grading details.

# 3 STORM SERVICING AND STORMWATER MANAGEMENT

## *3.1. EXISTING STORM DRAINAGE*

The site is within the Credit Valley Conservation Authority jurisdiction, within the Sawmill Creek Subwatershed. There are no regulated features on the subject lands.

Existing drainage patterns for the subject property are shown on **Drawing 301**, "*Existing Storm Drainage*." The property drains to the existing storm sewers on Ninth Line via several existing culverts and catchbasins. The Ninth Line storm sewers are adequately sized to convey the 10-year storm event from the contributing areas.

The Ninth Line Lands Scoped Subwatershed Study by Wood (2018) established the following criteria for new pre-development flow targets in the Sawmill Creek watershed (for the overall Ninth Line study area between Ninth Line and Highway 407). Please refer to the excerpt from the SWS below:

| Table 2.6.2 Stormwater Management Facility Sizing Criteria for Flood Control | | |
|---|---|---|
| **Quantity Component** | **Cumulative Unitary Volume ($m^3$/impervious ha)** | Unitary Discharge ($m^3$/s/ha) |
| **Sawmill Creek Subwatershed** | | |
| 5 Year | 500 | 0.015 |
| 100 Year | 800 | 0.050 |

## *3.2. PROPOSED STORM SERVICING*

The storm drainage concept for the site has been designed to maintain flows and contributing drainage areas to the existing outlets on the site and meet the existing targets established in the preceding section. A new storm sewer connection and control manhole will be provided for the site from the existing sewers on Ninth Line. An underground storage tank located within the parking garage of the development is proposed to control the post development flows to acceptable rates such that the total flow to Ninth Line is not exceeded.

Due to grading constraints, some areas will flow uncontrolled from the site. The tank is designed to overcontrol for this drainage. Drainage flowing to the Mattamy site has already been conservatively accounted for in their engineering design and does not have any negative impact on the approved stormwater design for that development.

Refer to **Drawing 302**, "*Storm Drainage Plan,*" for additional details.

## *3.3. STORM WATER MANAGEMENT*

The following section describes the SWM criteria applicable to the subject lands.

**Water Balance / Recharge**

The City of Mississauga requires retention of the first 5 mm of runoff to promote water balance and erosion control. Based on the site area, approximately 32.5 $m^3$ should be infiltrated/retained on site. As the majority of the site is full coverage with underground parking there will be limited

opportunities for infiltration on site. Filtration is permitted where retention (via infiltration or re-use) is not feasible. The following hierarchy of retention / reuse / filtration will be considered:

| Target | Description |
|---|---|
| **Capability to retain 5mm** | Not possible due to density requirements. The majority of site consists of underground parking and infiltration is not feasible. Runoff volume captured in landscaped areas will ultimately drain to the underground parking structure via area drains and be captured in the stormwater tank.<br><br>Precipitation falling directly on any vegetated / landscaped areas will be temporarily retained in the soil and provided with an opportunity for evapotranspiration. |
| **Capability to reuse 5mm** | Opportunities for re-use runoff, including irrigation and mechanical uses. |
| **Capability to filter 5mm** | Water from the site, where possible, will be directed to vegetated / landscaped areas for filtration prior to entering the underground storage tanks. These features will have sufficient storage to temporarily filter the 5mm storm from the contributing area. |

**Quality Control**

Stormwater quality control for the future development within the Ninth Line Lands is required to control runoff to an "Enhanced" standard of treatment or 80% removal of total suspended solids. A suitable quality control system will be incorporated into the underground storm tank design to ensure that the required TSS removal is being achieved.

**Quantity Control**

As mentioned in section 3.1 above, the Ninth Line Lands Scoped Subwatershed Study by Wood (2018) established quantity control criteria for stormwater management. It is recognized that the subwatershed study targets may be conservative and that modified release rates and storage targets may be considered if the subwatershed study model verification demonstrates that there is additional capacity for the subject lands and to ensure that the tank is overcontrolled to address the uncontrolled flows.

**Table 3-1** below outlines the target storage and flow rates for the whole subject property under post-development conditions.

**Table 3-1: Target release rates and Volumes**

| Area [ha] | % IMP | Unitary Discharge ($m^3/s/ha$) | | Cumulative Unitary Volume ($m^3$/impervious ha) | | Flow Target ($m^3/s$) | | Storage Target ($m^3$) | |
|---|---|---|---|---|---|---|---|---|---|
| | | 5-Year | 100-Year | 5-Year | 100-Year | 5-Year | 100-Year | 5-Year | 100-Year |
| 0.65 | 99 | 0.015 | 0.050 | 500 | 800 | 0.01 | 0.03 | 325 | 520 |

The required storage will be provided in an underground tank within the underground parking that will be pumped to match the target release rates and will drain to a 450 mm PVC pipe which connects to Ninth Line sewers at existing MH2.

The tank storage will be verified with the Wood model after modelling has been completed during detailed design.

**Erosion Control**

The Ninth Line Lands Scoped Subwatershed Study by Wood (2020) established criteria for erosion control based on the 25mm 4-hour storm. The SWS established the following targets for erosion control. Please refer to the excerpt from the SWS below:

**Table 2.6.1 Stormwater Management Facility Sizing Criteria for Erosion Control for Ninth Line Lands – Sawmill Creek Subwatershed**

| Quantity Component | Cumulative Unitary Volume ($m^3$/impervious ha) | Unitary Discharge ($m^3$/s/ha) |
|---|---|---|
| **Erosion** | 275 | 0.002 |

Using the above table, the discharge rate for the subject property is 0.0013 $m^3$/s. Erosion targets specified in the SWS by Wood are not realistic for a site of this size. However, as shown in the Water Balance Recharge section of the report, the 5 mm City of Mississauga T&W Developments Manual Requirements will be targeted, which will provide sufficient erosion control.

# 4 SANITARY SERVICING

## *4.1. EXISTING SANITARY SERVICING*

The subject lands fall within Erin Centre and Motorway Sewersheds of the West Trunk System which ultimately discharges to the Clarkson Water Pollution Control Plant. Existing wastewater infrastructure in and around the subject lands is outlined below:

- 1050 mm sanitary trunk sewer on Ninth Line from Erin Centre Boulevard north to Britannia Road West
- 900 mm sanitary sewer on Erin Centre Boulevard
- Proposed 250 mm sanitary sewer on CEC Road "E" and CEC Road "G" in the 5150 Ninth Line development
- Local sewers within subdivisions east of Ninth Line

As outlined in the Region's *Ninth Line Lands Servicing Strategy Report*, the Clarkson WPCP is anticipated to be expanded in the future and the existing 900 mm trunk sewer on Erin Centre Boulevard is adequately sized to handle projected flows from the subject property. Therefore, it is assumed that there are no downstream sanitary capacity issues associated with the development of the subject property.

## *4.2. PROPOSED SANITARY SERVICING*

The neighbouring property has proposed construction of a new trunk sanitary sewer on Ninth Line to provide an outlet for all future developments on the west side of Ninth Line (north of Eglinton Avenue) to the existing 900 mm sanitary sewer at Erin Centre Boulevard in accordance with the Region's *Ninth Line Lands Servicing Strategy Report*.

The subject lands require a 250 mm sanitary sewer connection, per Region standards, to the existing 375 mm sanitary sewer on Ninth Line.

Population densities of 2.7 people per unit for high-rise/apartments have been assumed based on marketing and demographic info for the area. Note these densities result in higher projected populations than the Region standard densities based on land area (475 people per hectare for apartments).

Refer to **Drawing 303**, "*Sanitary Drainage Plan*," for further details. Sanitary design calculations are included in **Appendix A**.

# 5 WATER DISTRIBUTION

## *5.1. EXISTING WATER SERVICING*

A 400 mm trunk watermain exists within the east boulevard Ninth Line that will supply the proposed development through the construction of new water infrastructure. This watermain is within Pressure Zone 4W of the Region's water distribution system servicing elevations between 166.3m and 198.1m. Pressure Zone 4W is supplied by the Streetsville High-Lift Pumping Station and the Meadowvale North Low-Lift Pumping Station.

As outlined in the Region's *Ninth Line Lands Servicing Strategy Report*, the need to expand existing water distribution infrastructure in the area of Ninth Line is currently under review.

## *5.2. PROPOSED WATER SERVICING*

A 200 mm watermain is proposed to service the subject property. This watermain will be tapped to the existing Pressure Zone 4W 400 mm watermain on Ninth Line. The development is provided with a 150 mm dia. domestic and 200 mm dia. fireline water services as per Region of Peel Standard 1-8-3. Refer to **Drawing 101** in **Appendix B** for further details.

Water demand calculations based on the proposed 187-unit development have been provided in **Appendix A**.

# 6 EROSION AND SEDIMENT CONTROL

The erosion and sediment control plan for the site will be designed in conformance with the City of Mississauga guidelines and Credit Valley Conservation Authority. The following erosion and sediment control measures will be installed and maintained during construction:

- A temporary sediment control fence will be placed around the site
- Sediment filters will be placed in all existing catchbasins
- Gravel mud mats will be provided at construction vehicle access points to minimize off-site tracking of sediments
- All temporary erosion and sediment control measures will be routinely inspected and repaired during construction. Temporary controls will not be removed until the areas they serve are restored and stable.

# 7 CONCLUSION

The proposed residential development at 5160-5170 Ninth Line, which includes a 6-storey building with 187 units, can be adequately serviced via the existing storm, sanitary and water distribution infrastructure and does not adversely impact any of the surrounding infrastructure or properties.

Stormwater quantity and quality control for the development is provided by an underground storage tank within the underground parking structure. Storm drainage will discharge to the existing Ninth Line sewers.

Sanitary servicing is provided by the proposed 375 mm sanitary sewer on Ninth Line to the existing 900mm trunk sewer on Erin Centre Boulevard, ultimately draining to the Clarkson Water Pollution Control Plant.

Water servicing is provided from the existing Pressure Zone 4W 400mm watermain on Ninth Line.

Report Prepared by:


Scott Riemer, P. Eng.
*Associate, Design*

# APPENDIX A

# DESIGN CALCULATIONS

Sanitary Sewer Design Sheet
Storm Sewer Design Sheet
Water Demand Calculations

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# SANITARY SEWER DESIGN SHEET

## 5160-5170 NINTH LINE

**CITY OF MISSISSAUGA, REGION OF PEEL**

**PROJECT DETAILS**

**Project No: 21-680**
**Date: Aug 2022**
**Designed by: SR**
**Checked by: DZ**

LICENSED PROFESSIONAL ENGINEER
S.B. RIEMER
100214712
Aug. 2022
PROVINCE OF ONTARIO

**DESIGN CRITERIA**

| | | | | | |
|---|---|---|---|---|---|
| **Min. Flow =** | **13** | **l/s** | | | |
| **Min Diameter =** | **250** | **mm** | **Avg. Domestic Flow =** | **302.8** | **l/c/d** |
| **Mannings 'n'=** | **0.013** | | **Infiltration =** | **0.200** | **l/s/ha** |
| **Min. Velocity =** | **0.75** | **m/s** | **Max. Peaking Factor =** | **4.00** | |
| **Max. Velocity =** | **3.50** | **m/s** | **Min. Peaking Factor=** | **1.50** | |
| | | | **Domestic Sewage flow for < 1000 ppl = 0.013m$^3$/s** | | |
| **Factor of Safety =** | **15** | **%** | **(Region of Peel Std. 2-5-2)** | | |

**NOMINAL PIPE SIZE USED**

| STREET | FROM MH | TO MH | RESIDENTIAL | | | | | | | COMMERCIAL/INDUSTRIAL/INSTITUTIONAL | | | | | | FLOW CALCULATIONS | | | | | | | | PIPE DATA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | AREA (ha) | ACC. AREA (ha) | UNITS (#) | DENISTY (P/ha) | DENSITY (P/unit) | POP | ACCUM. RES. POP. | AREA (ha) | ACC. AREA (ha) | EQUIV. POP. (p/ha) | FLOW RATE (l/s/ha) | EQUIV. POP. | ACCUM. EQUIV. POP. | INFILTRATION (l/s) | TOTAL ACCUM. POP. | PEAKING FACTOR | RES. FLOW (l/s) | MIN. RES. FLOW (l/s) | COMM. FLOW (l/s) | ACCUM. COMM. FLOW (l/s) | TOTAL FLOW (l/s) | SLOPE (%) | PIPE DIAMETER (mm) | FULL FLOW CAPACITY (l/s) | FULL FLOW VELOCITY (m/s) | ACTUAL VELOCITY (m/s) | PERCENT FULL (%) |
| 1087 E LOWER BASE LINE | | FUT1 | 1.50 | 1.50 | 405 | | 2.7 | 1094 | 1094 | | | | | | | 0.3 | 1094 | 3.77 | 14.5 | 14.5 | | | 14.8 | | | | | | |
| FUT. VIOLA DESMOND DR | FUT1 | FUT2 | 6.72 | 8.22 | 1300 | | 2.7 | 3510 | 4604 | | | | | | | 1.6 | 4604 | 3.28 | 52.9 | 52.9 | | | 54.5 | 0.35 | 375 | 103.7 | 0.94 | 0.93 | 53% |
| FUT. VIOLA DESMOND DR | FUT2 | FUT3 | | 8.22 | | | 2.7 | | 4604 | | | | | | | 1.6 | 4604 | 3.28 | 52.9 | 52.9 | | | 54.5 | 0.35 | 375 | 103.7 | 0.94 | 0.93 | 53% |
| FUT. VIOLA DESMOND DR | FUT3 | FUT4 | | 8.22 | | | 2.7 | | 4604 | | | | | | | 1.6 | 4604 | 3.28 | 52.9 | 52.9 | | | 54.5 | 0.35 | 375 | 103.7 | 0.94 | 0.93 | 53% |
| FUT. VIOLA DESMOND DR | FUT4 | 17A | 0.77 | 8.99 | 29 | | 3.5 | 102 | 4706 | | | | | | | 1.8 | 4706 | 3.27 | 53.9 | 53.9 | | | 55.7 | 0.35 | 375 | 103.7 | 0.94 | 0.93 | 54% |
| BLOCK 1 | 16A | 17A | 3.00 | 3.00 | 129 | | 3.5 | 452 | 452 | | | | | | | 0.6 | 452 | 4.00 | 6.3 | 13.0 | | | 13.6 | 1.00 | 250 | 59.5 | 1.21 | 0.96 | 23% |
| VIOLA DESMOND DR | 17A | 18A | 0.65 | 12.64 | 15 | | 3.5 | 53 | 5211 | | | | | | | 2.5 | 5211 | 3.23 | 59.0 | 59.0 | | | 61.5 | 0.35 | 375 | 103.7 | 0.94 | 0.95 | 59% |
| VIOLA DESMOND DR | 18A | 19A | | 12.64 | | | 3.5 | | 5211 | | | | | | | 2.5 | 5211 | 3.23 | 59.0 | 59.0 | | | 61.5 | 0.35 | 375 | 103.7 | 0.94 | 0.95 | 59% |
| VIOLA DESMOND DR | 19A | 20A | | 12.64 | | | 3.5 | | 5211 | | | | | | | 2.5 | 5211 | 3.23 | 59.0 | 59.0 | | | 61.5 | 0.35 | 375 | 103.7 | 0.94 | 0.95 | 59% |
| VIOLA DESMOND DR | 20A | 1T | | 12.64 | | | 3.5 | | 5211 | | | | | | | 2.5 | 5211 | 3.23 | 59.0 | 59.0 | | | 61.5 | 0.35 | 375 | 103.7 | 0.94 | 0.95 | 59% |
| NINTH LINE | 1T | 2T | | 12.64 | | | | | 5211 | | | | | | | 2.5 | 5211 | 3.23 | 59.0 | 59.0 | | | 61.5 | 0.35 | 375 | 103.7 | 0.94 | 0.95 | 59% |
| BLOCK 2 | 25A | 20A | 0.57 | 0.57 | 25 | | 3.5 | 88 | 88 | | | | | | | 0.1 | 88 | 4.00 | 1.2 | 13.0 | | | 13.1 | 1.00 | 250 | 59.5 | 1.21 | 0.96 | 22% |
| 5160-5170 NINTH LINE | 2-1T | 2T | 0.73 | 0.73 | 187 | 0 | 2.7 | 505 | 505 | 0.00 | 0.00 | 0 | 0.000 | 0 | 0 | 0.1 | 505 | 3.97 | 7.0 | 13.0 | 0.0 | 0.0 | 13.1 | 1.00 | 250 | 59.5 | 1.21 | 0.96 | 22% |
| NINTH LINE | 2T | 3T | | 13.37 | | | | | 5716 | | | | | | | 2.7 | 5716 | 3.19 | 63.9 | 63.9 | | | 66.6 | 0.35 | 375 | 103.7 | 0.94 | 0.97 | 64% |

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URBANTECH®

# STORM SEWER DESIGN SHEET

**10 Year Storm**

## 5160-5170 NINTH LINE

**CITY OF MISSISSAUGA**

**PROJECT DETAILS**

**Project No:** 21-680
**Date:** Aug. 2022
**Designed by:** sr
**Checked by:** SR

LICENSED PROFESSIONAL ENGINEER
S.B. RIEMER
100214712
Aug. 2022
PROVINCE OF ONTARIO

**DESIGN CRITERIA**

| | | | | |
|---|---|---|---|---|
| Min. Diameter = | 300 | mm | Rainfall Intensity = | A / (Tc+B)^c |
| Mannings 'n'= | 0.013 | | | |
| Starting Tc = | 15 | min | A = | 1010 |
| | | | B = | 4.6 |
| Factor of Safety = | 15 | % | c = | 0.78 |

**NOMINAL PIPE SIZE USED**

| STREET | FROM MH | TO MH | AREA (ha) | RUNOFF COEFFICIENT "R" | 'AR' | ACCUM. 'AR' | RAINFALL INTENSITY (mm/hr) | FLOW (m3/s) | CONSTANT FLOW (m3/s) | ACCUM. CONSTANT FLOW (m3/s) | TOTAL FLOW (m3/s) | LENGTH (m) | SLOPE (%) | PIPE DIAMETER (mm) | FULL FLOW CAPACITY (m3/s) | FULL FLOW VELOCITY (m/s) | INITIAL Tc (min) | TIME OF CONCENTRATION (min) | ACC. TIME OF CONCENTRATION (min) | PERCENT FULL (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5160-5170 Ninth Line | MH1 | EX.MH2 | 0.65 | 0.90 | 0.59 | 0.59 | 99.2 | | 0.030 | 0.030 | 0.030 | 19.0 | 1.00 | 450 | 0.285 | 1.79 | 15.00 | 0.18 | 15.18 | 11% |

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# WATER DEMAND CALCULATIONS

**Project Name:** 5160-5170 Ninth Line
**Municipality:** City of Mississauga
**Project No.:** 21-680

**Prepared by:** J.P.O
**Checked by:** S.R
**Last Revised:** 10-Aug-22

## Fire Flow Calculations

Based on the *Water Supply for Public Fire Protection, 1999* by Fire Underwriters Survey

### 1 Estimate of Fire Flow

F = 220 C (A)1/2

F = Fire Flow (L/min)
C = Construction Type Coefficient
= 0.6 ,for fire-resistive construction (fully protected frame, floors, roof)

A = Total flow area ($m^2$)
= If vertical openings and exterior vertical communications are properly protected (one hour rating), Largest Floor + 25% of two immediately adjoining floors

**Building 1**

| Floor | Area ($m^2$) | % |
|---|---|---|
| Level 3 | 2,284 | 25% |
| Level 4 | 2,350 | 100% |
| Level 5 | 2,108 | 25% |

= 3448 $m^2$

F = 7751 L/min
= 8000 L/min, rounded to the nearest 1000 L/min

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## WATER DEMAND CALCULATIONS

**Project Name:** 5160-5170 Ninth Line
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**Last Revised:** 10-Aug-22

### 2 Occupancy Reduction

15% for low hazard occupancies (apartments)

F = 6800 L/min

### 3 Sprinkler Reduction

30% for adequately designed sprinkler protection conforming to NFPA 13 and other NFPA sprinkler standards

F = 4760 L/min

### 4 Separation Charge

| Direction | Separation (m) | Charge |
|---|---|---|
| North | | |
| West | 25.0 | 10% |
| South | 25.7 | 10% |
| East | | |

Total Charge = 20%

F = 1360 L/min

### Required Fire Flow

F = 6120 L/min

= 6000 L/min, rounded to the nearest 1000 L/min

Fire Flow Demand = 100.0 L/s

= 1585 USGPM

# WATER DEMAND CALCULATIONS

**Project Name:** 5160-5170 Ninth Line
**Municipality:** City of Mississauga
**Project No.:** 21-680

**Prepared by:** J.P.O
**Checked by:** S.R
**Last Revised:** 10-Aug-22

## Domestic Flow Calculations

| | | |
|---|---|---|
| Units = | 187 | |
| Population Density = | 2.7 | persons/unit |
| Population = | 505 | persons, from Sanitary Calculations |
| Average Day Demand = | 280 | L/person/day, from Region of Peel design criteria |
| = | 1.6 | L/s |

Use Peaking Factor the Greater of

| | | |
|---|---|---|
| Max Daily Demand PF = | 2 | , from Region of Peel design criteria |
| Max Daily Demand = | 3.3 | L/s |
| or | | |
| Max Peak Hour PF = | 3 | , from Region of Peel design criteria |
| Max Peak Hour Demand = | 4.9 | L/s |

| | | |
|---|---|---|
| Domestic Flow Demand = | 4.9 | L/s |
| = | 78 | USGPM |

# Connection Single Use Demand Table

**WATER CONNECTION**

| **Connection point** [3] | | | |
|---|---|---|---|
| Ninth Line | | | |
| **Pressure zone of connection point** | | Zone 4W | |
| **Total equivalent population to be serviced** [1] | | 505 | |
| **Total lands to be serviced** | | 0.65 ha | |
| **Hydrant flow test** | | | |
| Hydrant flow test location | | | |
| | | | |
| | Pressure (kPa) | Flow (in l/s) | Time |
| Minimum water pressure | | | |
| Maximum water pressure | | | |

| **No.** | **Water demands** | | |
|---|---|---|---|
| | **Demand type** | **Demand** | **Units** |
| 1 | Average day flow | 1.6 | l/s |
| 2 | Maximum day flow | 3.3 | l/s |
| 3 | Peak hour flow | 4.9 | l/s |
| 4 | Fire flow [2] | 100 | l/s |
| **Analysis** | | | |
| 5 | Maximum day plus fire flow | 100.0 | l/s |

**WASTEWATER CONNECTION**

| **Connection point** [4] | |
|---|---|
| **Total equivalent population to be serviced** [1] | |
| **Total lands to be serviced** | |
| 6 Wastewater sewer effluent (in l/s) | |

[1] The calculations should be based on the development estimated population (employment or residential).

[2] Please reference the Fire Underwriters Survey Document

[3] Please specify the connection point ID

[4] Please specify the connection point (wastewater line or manhole ID)
Also, the "total equivalent popopulation to be serviced" and the "total lands to be serviced" should reference the connection point. (The FSR should contain one copy of Site Servicing Plan)

Please include the graphs associated with the hydrant flow test information table
Please provide Professional Engineer's signature and stamp on the demand table
All required calculations must be submitted with the demand table submission.

## Hydrant Flow Test Report

Date: 10-Sep-20 Time: 10:20 AM Operator: Derek Rowles

**Test Location: 5170 Ninth Line** Hydrant Number 6548000

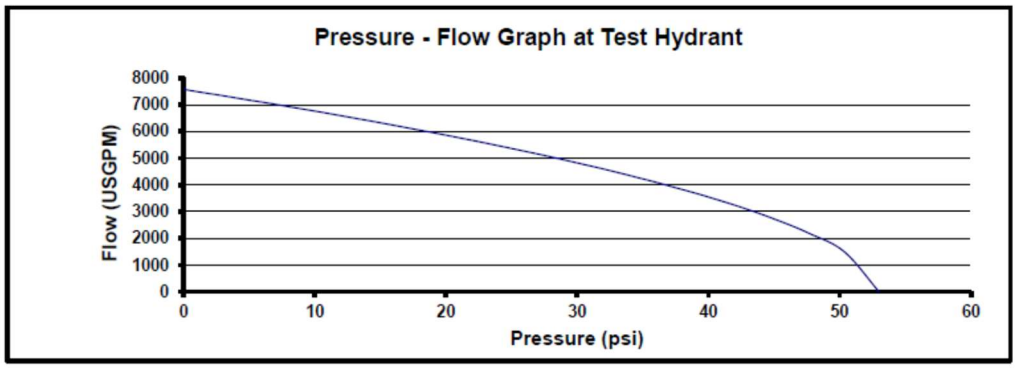
Test Number: 1
N.F.P.A. Colour Code: **BLUE**

STATIC PRESSURE: 53 psi Pressure Drop 11%
RESIDUAL PRESSURE: 47 psi

**Flow Hydrant Location:** 5150 Ninth Line Hydrant Number 6548001
**Flow Hydrant Location:** Hydrant Number

| Hydrant No. | Logger No. | Outlet Dia. (in.) | Coefficient (~0.9) | Pitot Gauge Reading (psi) | Flow (USGPM) |
|---|---|---|---|---|---|
| | HoseMonster | 4" | | | 1300 |
| | HoseMonster | 2.5" | | | 517 |
| | HoseMonster | 2.5" | | | 517 |
| | | | Total Flow (USGPM) | | 2334 |

Available Flow At Test Hydrant at 20 psi 5860 USGPM 4843 IGPM

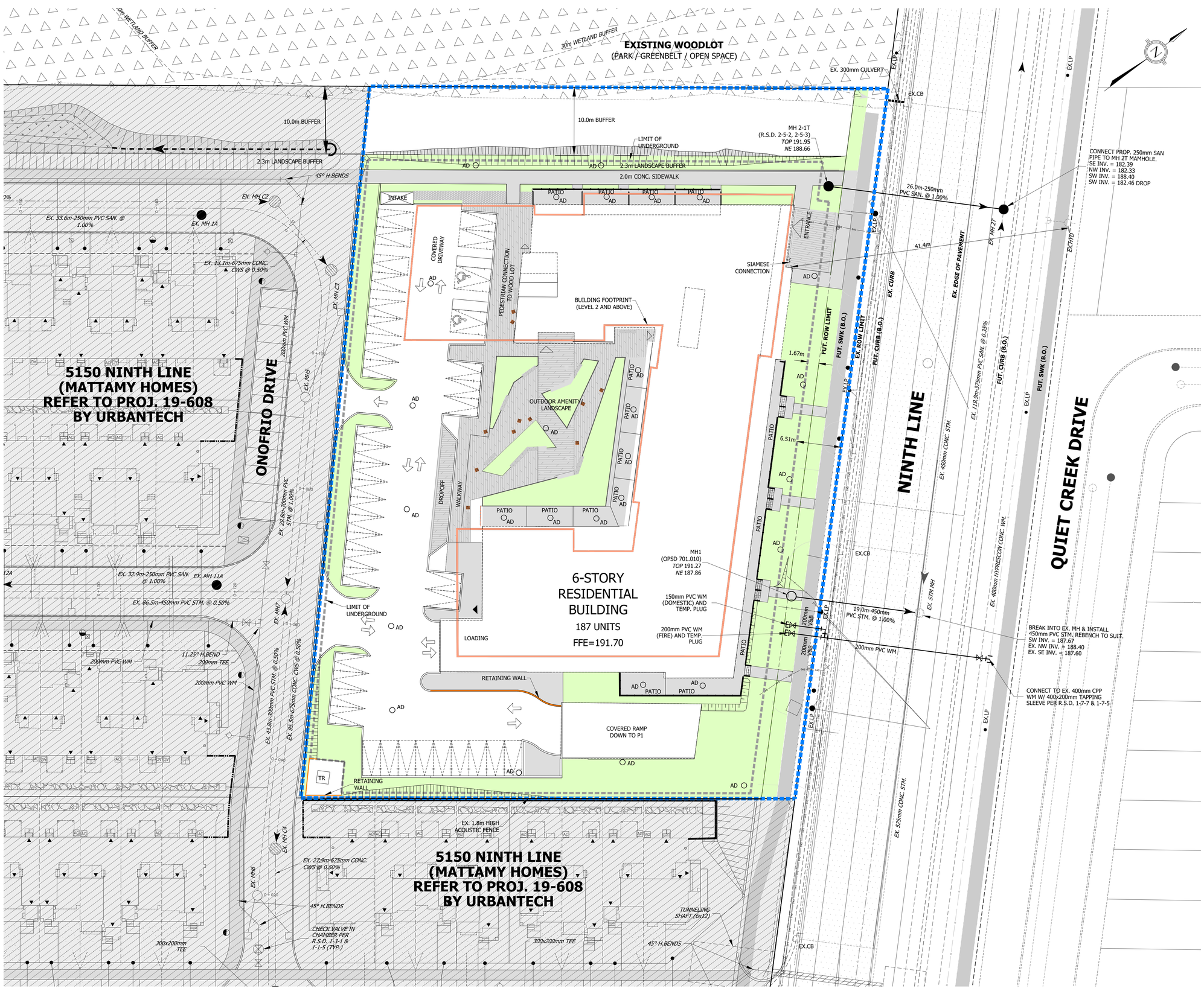


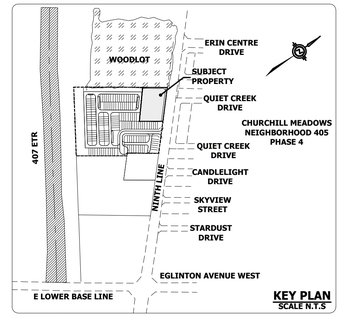

**Comments/Discrepencies/Diagram:**

## APPENDIX B

# DRAWINGS

- 101 – Servicing Plan
- 201 – Grading Plan
- 202 – Sections
- 301 – Existing Storm Drainage Plan
- 302 – Storm Drainage Plan
- 303 – Sanitary Drainage Plan




## LEGEND

- PROPERTY LINE
- STORM SEWER AND MANHOLE
- STORM SEWER AND MANHOLE (B.O.)
- SANITARY SEWER AND MANHOLE
- SANITARY SEWER AND MANHOLE (B.O.)
- EXISTING STORM SEWER AND MANHOLE
- EXISTING SANITARY SEWER AND MANHOLE
- EXISTING WATERMAIN
- EXISTING GAS LINE
- EXISTING HYDRO
- AD — AREA DRAIN
- BOREHOLE LOCATION
- HYDRANT & VALVE
- VALVE AND BOX
- EXTERNAL / EXISTING WORKS, NOT PART OF THIS APPROVAL
- EXISTING EDGE OF PAVEMENT
- LANDSCAPE AREA
- WETLAND
- WOODLOT

## BENCHMARK:

ELEVATIONS ARE REFERRED TO THE CITY OF MISSISSAUGA CONTROL MONUMENT No. 075033001. A BRASS CAP IN CONCRETE CYLINDER, LOCATED 9m ON EAST SIDE OF THE CENTRELINE OF NINTH LINE, 14m NORTH OF THE CENTRELINE OF ROADSIDE WAY, HAVING A PUBLISHED ELEVATION OF 193.80 METRES.

CUT CROSS IN THE CONCRETE SIDEWALK ON THE SOUTH SIDE OF THE MIDDLE ENTRANCE INTO THE SUBJECT PROPERTY, 2.3m WEST OF THE SIGN SHOWN ON THE FACE OF THE PLAN. ELEVATION = 191.05 METERS.

| No. | REVISION | DATE | BY |
|---|---|---|---|
| 5 | | | |
| 4 | | | |
| 3 | | | |
| 2 | ISSUED FOR SECOND ZONING SUBMISSION | AUG. 2022 | S.R. |
| 1 | ISSUED FOR FIRST ZONING SUBMISSION | NOV. 2021 | S.R. |

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100214712
AUG. 10, 2022
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# SERVICING PLAN

| | | | |
|---|---|---|---|
| PROJECT #: | 21-680 | DRAWING: | 101 |
| DESIGNED: | Z.K. | CHECKED: | S.R. |
| DRAWN: | Z.K. | DATE: | OCTOBER 2021 |
| SCALE: | 1:250 | 2.5m 0m 2.5m 5m 10m | |

# EXISTING WOODLOT
## (PARK / GREENLAND / OPEN SPACE)

30m WETLAND BUFFER

WETLAND BUFFER

10.0m BUFFER

1.2m CHAINLINK FENCE

2.3m LANDSCAPE BUFFER

10.0m BUFFER

MATCH TO EXISTING GRADE W/ 3:1 SLOPE

LIMIT OF UG PARKING

EX. 300mm CULVERT

EX.CB

EX.LP

EX. ROAD C.L.

EX. CURB

EX. EDGE OF PAVEMENT

2.0m CONC. SIDEWALK

2.0m CONC. SWK.

INTAKE

PATIO

ENTRANCE

COVERED DRIVEWAY

PEDESTRIAN CONNECTION TO WOOD LOT

BUILDING FOOTPRINT (LEVEL 2 AND ABOVE)

## 5150 NINTH LINE (MATTAMY HOMES)
## 2 REFER TO PROJ. 19-608 BY URBANTECH

RLCB (STD 2851.070) T/G 191.71 INV. 189.71

ONOFRIO DRIVE

64.01m @ 1.08%

54.74m @ 2.50%

1.8m WOOD PRIVACY FENCE

## 6-STORY RESIDENTIAL BUILDING
187 UNITS
FFE=191.70

LOADING

RETAINING WALL

COVERED RAMP TO UNDERGROUND

LANDSCAPE

EX. 1.8m HIGH ACOUSTIC FENCE

BLOCK 4

BLOCK 5

BLOCK 10 (0.3m RESERVE)

50mm DRAINAGE GAP

BERM WITH 2.4m ACOUSTIC FENCE ON TOP

S.P.

NINTH LINE

QUIET CREEK DRIVE

FUT. ROAD C.L. (B.O.)

FUT. CURB (B.O.)

FUT. SWK (B.O.)

FUT. ROW LIMIT

EX. ROW LIMIT

10+720 (192.01)

10+700 (192.01)

10+680 (191.81)

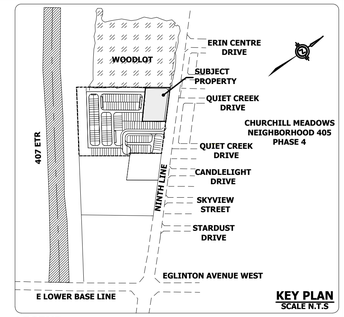
10+660 (191.66)

10+640 (191.37)

10+620 (191.07)

10+600 (190.70)

10+580 (190.23)




**KEY PLAN** SCALE N.T.S

**LEGEND**

- PROPERTY LINE
- EXISTING CONTOUR AND ELEVATION
- EXISTING ELEVATION
- PROPOSED ELEVATION
- FUTURE ELEVATION
- TOP/BOTTOM OF CURB ELEVATION
- STANDARD CURB AND GUTTER
- SEMI-MOUNTABLE CURB AND GUTTER
- STORM MANHOLE
- SANITARY MANHOLE
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- AREA DRAIN
- HYDRANT & VALVE
- VALVE & BOX
- PROPOSED SWALE
- MAXIMUM 3:1 SLOPE (UNLESS OTHERWISE NOTED)
- PROPOSED OVERLAND FLOW DIRECTION
- EXTERNAL DEVELOPMENT, NOT PART OF THIS APPROVAL
- EXISTING EDGE OF PAVEMENT
- ACOUSTIC FENCE
- LANDSCAPE AREA
- WETLAND
- WOODLOT

**BENCHMARK:**

ELEVATIONS ARE REFERRED TO THE CITY OF MISSISSAUGA CONTROL MONUMENT No. 075033001, A BRASS CAP IN CONCRETE CYLINDER, LOCATED 9m ON EAST SIDE OF THE CENTRELINE OF NINTH LINE, 14m NORTH OF THE CENTRELINE OF ROADSIDE WAY, HAVING A PUBLISHED ELEVATION OF 193.80 METRES.

CUT CROSS IN THE CONCRETE SIDEWALK ON THE SOUTH SIDE OF THE MIDDLE ENTRANCE INTO THE SUBJECT PROPERTY, 2.3m WEST OF THE SIGN SHOWN ON THE FACE OF THE PLAN. ELEVATION = 191.05 METERS.

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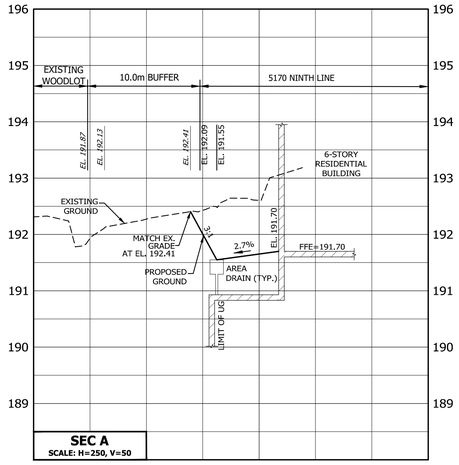
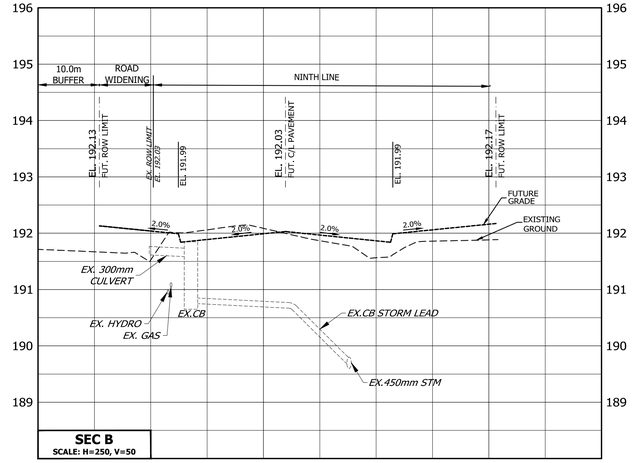
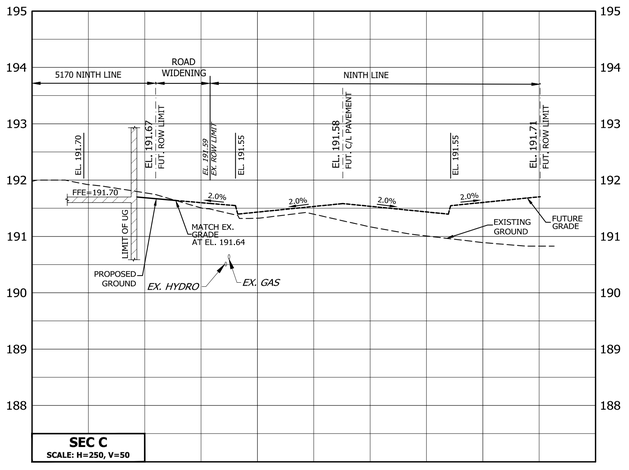
# GRADING PLAN

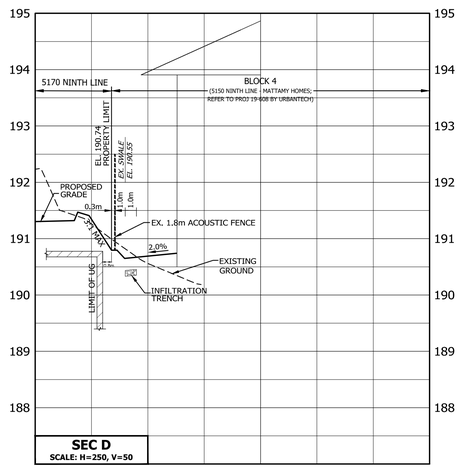
| | | | |
|---|---|---|---|
| PROJECT #: | 21-680 | DRAWING: | 201 |
| DESIGNED: | Z.K. | CHECKED: | S.R. |
| DRAWN: | Z.K. | DATE: | OCTOBER 2021 |
| SCALE: | 1:250 | 2.5m 0m 2.5m 5m 10m | |

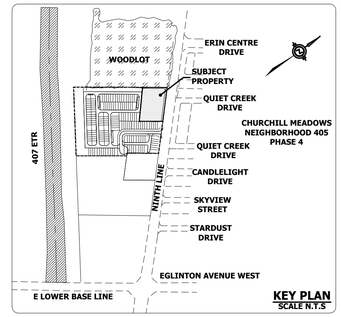

FILE: P:\PROJECTS\21-680 - 5160 & 5170 NINTH LINE (BRANTHAVEN - MISSISSAUGA)\DRAWINGS_SITE PLAN\201-GRADING.DWG REVISED BY [SRIEMER] ON August 10, 2022 AT 1:13 PM




**BENCHMARK:**

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100214712
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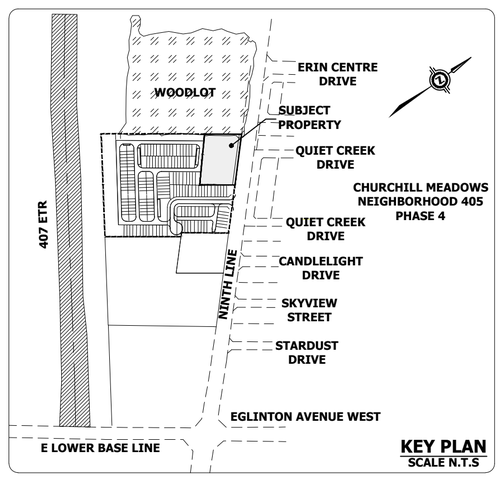
# CROSS SECTIONS

| | | | |
|---|---|---|---|
| PROJECT #: | 21-680 | DRAWING: | 202 |
| DESIGNED: | Z.K. | CHECKED: | S.R. |
| DRAWN: | Z.K. | DATE: | OCTOBER 2021 |
| SCALE: | 1:250 | 2.5m 0m 2.5m 5m 10m | |


## LEGEND

- SUBJECT PROPERTY
- NON-PARTICIPATING LAND OWNERS
- WETLAND
- 256.00 — EXISTING CONTOUR
- 2.50ha / 50% — DRAINAGE AREA (ha) / IMPERVIOUSNESS
- EXISTING STORM SEWER AND MANHOLE
- EXISTING OVERLAND FLOW DIRECTION
- EXISTING DRAINAGE BOUNDARY

## BENCHMARK:

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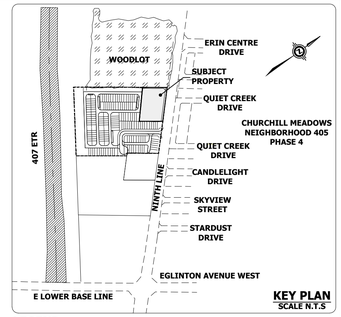
# EXISTING STORM DRAINAGE

| | |
|---|---|
| PROJECT #: 20-680 | DRAWING: 301 |
| DESIGNED: Z.K. | CHECKED: S.R. |
| DRAWN: Z.K. | DATE: OCTOBER 2021 |
| SCALE: 1:1250 | |


**KEY PLAN**
SCALE N.T.S

**LEGEND**

- STORM SEWER AND MANHOLE
- STORM SEWER AND MANHOLE (B.O.)
- EXISTING STORM SEWER AND MANHOLE
- AD — AREA DRAIN
- 0.25 / 0.60 — PROPOSED DRAINAGE AREA (ha) FOR MINOR SYSTEM (5 YEAR) FLOW; IMPERVIOUSNESS (%)
- MINOR SYSTEM DRAINAGE AREA BOUNDARY
- EXISTING DRAINAGE AREA BOUNDARY
- OVERLAND FLOW ROUTE
- EXTERNAL WORKS, NOT PART OF THIS APPROVAL
- WETLAND
- WOODLOT

**STORMWATER MANAGEMENT NOTES:**

QUANTITY CONTROL
- TOTAL 100-YR STORAGE TARGET VOL. = 520m³
- APPROXIMATE REQUIRED SWM TANK FOOTPRINT WITHIN UG PARKING IS INDICATED ON THIS PLAN. TO BE REFINED FURTHER THROUGH SPA AND BUILDING PERMIT APPROVALS.

QUALITY CONTROL
- INTERNAL QUALITY CONTROL WITHIN TANK TO BE PROVIDED TO ACHIEVE ENHANCED 80% TSS REMOVAL FOR THE SITE. TO BE REFINED FURTHER THROUGH SPA AND BUILDING PERMIT APPROVALS.

**BENCHMARK:**
ELEVATIONS ARE REFERRED TO THE CITY OF MISSISSAUGA CONTROL MONUMENT No. 075033001, A BRASS CAP IN CONCRETE CYLINDER, LOCATED 9m ON EAST SIDE OF THE CENTRELINE OF NINTH LINE, 14m NORTH OF THE CENTRELINE OF ROADSIDE WAY, HAVING A PUBLISHED ELEVATION OF 193.80 METRES.

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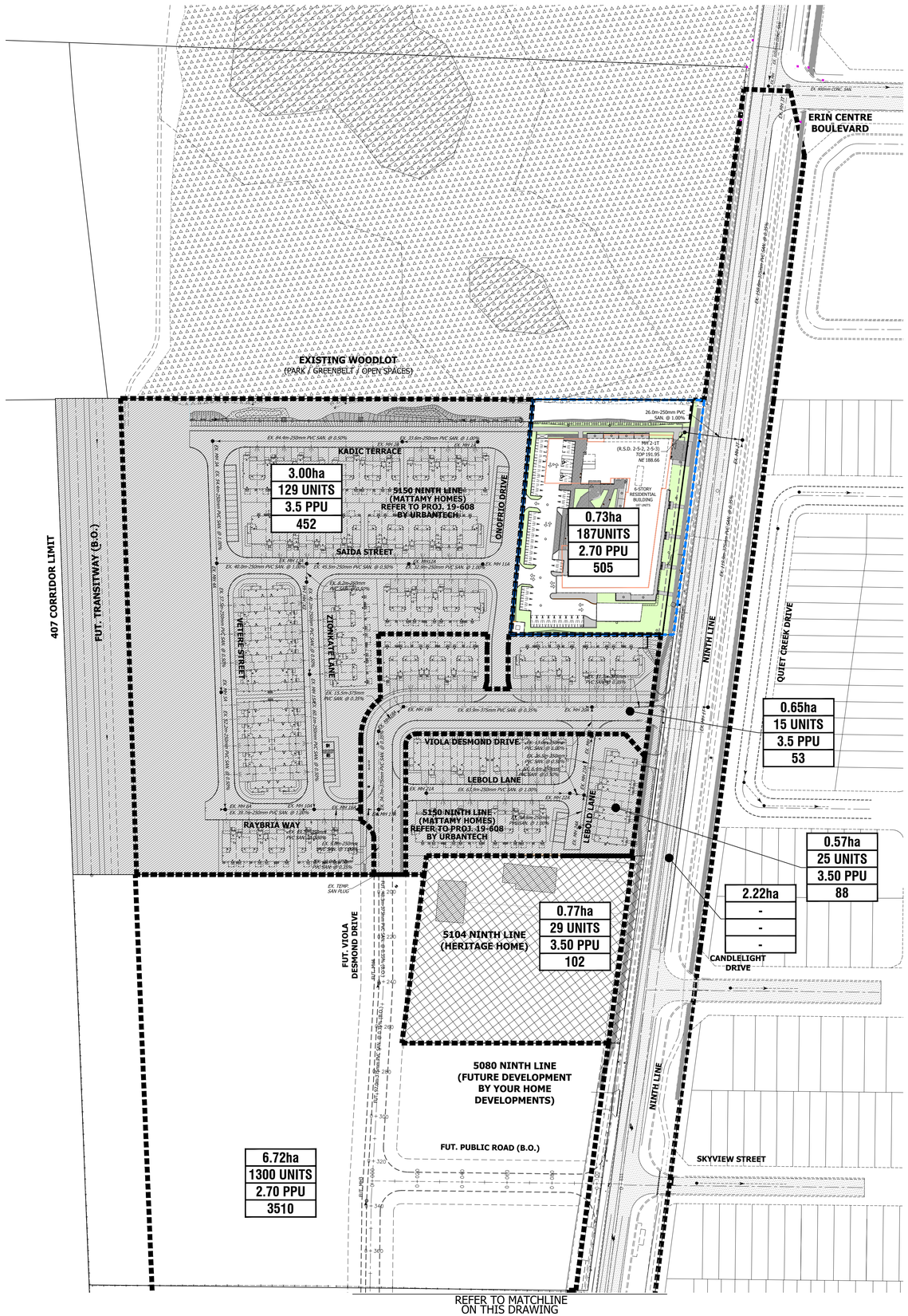
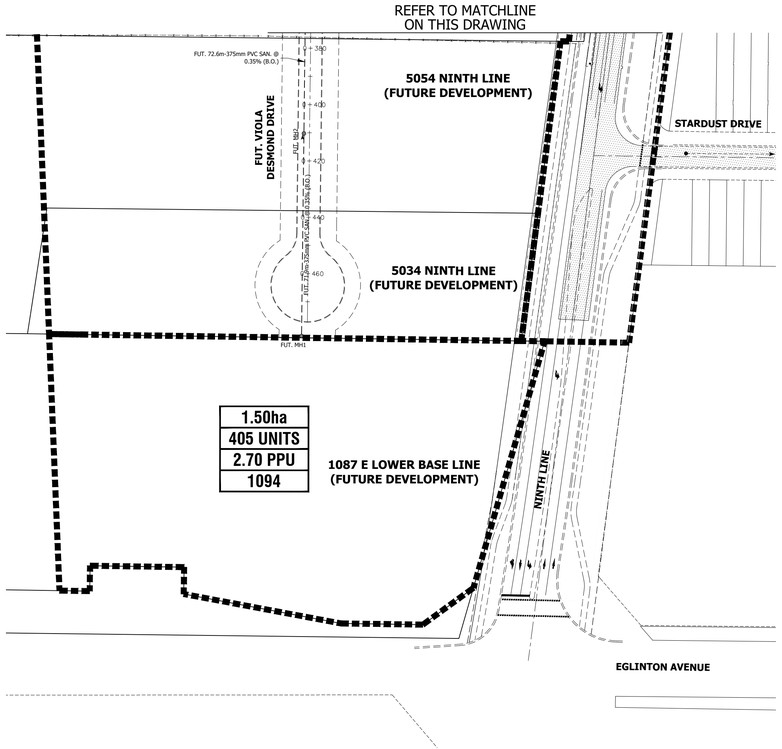
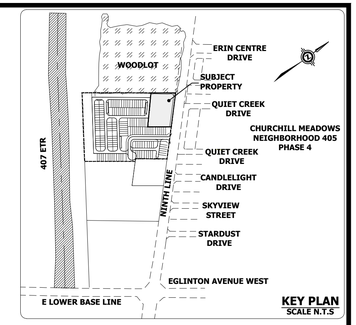
# STORM DRAINAGE PLAN

| | | | |
|---|---|---|---|
| PROJECT #: | 21-680 | DRAWING: | 302 |
| DESIGNED: | Z.K. | CHECKED: | S.R. |
| DRAWN: | Z.K. | DATE: | OCTOBER 2021 |
| SCALE: | 1:1000 (10m 0m 10m 20m 40m) | | |




LEGEND

- SANITARY SEWER AND MANHOLE
- SANITARY SEWER AND MANHOLE (B.O.)
- EXISTING SANITARY SEWER AND MANHOLE
- FUTURE SANITARY SEWER AND MANHOLE

| | |
|---|---|
| 0.50ha | DRAINAGE AREA (Ha.) |
| 10 UNITS | |
| 3.50 PPU | PERSONS PER UNIT |
| 35 | POPULATION |

- DRAINAGE AREA BOUNDARY
- EXTERNAL DRAINAGE AREA BOUNDARY
- PROPERTY LINE
- EXTERNAL WORKS, NOT PART OF THIS APPROVAL

**BENCHMARK:**

ELEVATIONS ARE REFERRED TO THE CITY OF MISSISSAUGA CONTROL MOMUMENT No. 075033001, A BRASS CAP IN CONCRETE CYLINDER, LOCATED 9m ON EAST SIDE OF THE CENTRELINE OF NINTH LINE, 14m NORTH OF THE CENTRELINE OF ROADSIDE WAY, HAVING A PUBLISHED ELEVATION OF 193.80 METRES.

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# SANITARY DRAINAGE PLAN

INTERNAL & EXTERNAL AREAS

| | | | |
|---|---|---|---|
| PROJECT #: | 21-680 | DRAWING: | 303 |
| DESIGNED: | Z.K. | CHECKED: | S.R. |
| DRAWN: | Z.K. | DATE: | OCTOBER 2021 |
| SCALE: | 1:500 | 5m 0m 5m 10m 20m | |