



URBANTECH®

FUNCTIONAL SERVICING &  
STORMWATER MANAGEMENT REPORT

**5160-5170 Ninth Line**

CITY OF MISSISSAUGA

REGION OF PEEL

PREPARED FOR  
**BRANTHAVEN**

Urbantech File No.: 21-680

1<sup>st</sup> SUBMISSION – NOVEMBER 2021



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## 1 INTRODUCTION

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### 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 198 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

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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 <sup>3</sup> /impervious ha)	Unitary Discharge (m <sup>3</sup> /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.

#### 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<sup>3</sup> 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
<b>Capability to retain 5mm</b>	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.  Precipitation falling directly on any vegetated / landscaped areas will be temporarily retained in the soil and provided with an opportunity for evapotranspiration.
<b>Capability to reuse 5mm</b>	Opportunities for re-use runoff, including irrigation and mechanical uses.
<b>Capability to filter 5mm</b>	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 <sup>3</sup> /s/ha)		Cumulative Unitary Volume (m <sup>3</sup> /impervious ha)		Flow Target (m <sup>3</sup> /s)		Storage Target (m <sup>3</sup> )	
		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 <sup>3</sup> /impervious ha)	Unitary Discharge (m <sup>3</sup> /s/ha)
<b>Erosion</b>	275	0.002

Using the above table, the discharge rate for the subject property is 0.0013 m<sup>3</sup>/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

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### 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 proposed 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

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### 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.

## 6 EROSION AND SEDIMENT CONTROL

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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

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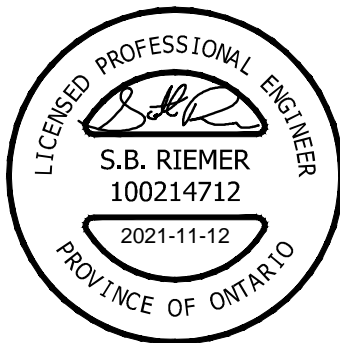
The proposed residential development at 5160-5170 Ninth Line, which includes a 6-storey building with 198 units, can be adequately serviced via the existing storm, sanitary and water distribution infrastructure and does not adversely impact any of the surrounding infrastructure or properties.

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.  
*Senior Project Manager*



URBANTECH®

Branthaven  
5160-5170 Ninth Line, City of Mississauga  
November 2021

## **APPENDIX A**

### **DESIGN CALCULATIONS**

Sanitary Sewer Design Sheet  
Storm Sewer Design Sheet

SANITARY SEWER DESIGN SHEET

5160-5170 NINTH LINE

CITY OF MISSISSAUGA, REGION OF PEEL

PROJECT DETAILS

Project No: 21-680

Date: 12-Nov-21

Designed by: SR

Checked by: DZ



DESIGN CRITERIA

Min. Flow = 13 l/s

Min Diameter = 250 mm

Mannings 'n'= 0.013

Min. Velocity = 0.75 m/s

Max. Velocity = 3.50 m/s

Factor of Safety = 15 %

Avg. Domestic Flow = 302.8 l/c/d

Infiltration = 0.200 l/s/ha

Max. Peaking Factor = 4.00

Min. Peaking Factor= 1.50

Domestic Sewage flow for < 1000 ppl = 0.013m³/s

(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	198	0	2.7	535	535	0.00	0.00	0	0.000	0	0	0.1	535	3.96	7.4	13.0	0.0	0.0	13.1	1.00	250	59.5	1.21	0.96	22%
NINTH LINE	2T	3T		13.37					5746							2.7	5746	3.19	64.2	64.2			66.9	0.35	375	103.7	0.94	0.97	64%



# STORM SEWER DESIGN SHEET

## 10 Year Storm

## 5160-5170 NINTH LINE

CITY OF MISSISSAUGA

## PROJECT DETAILS

**Project No: 21-680**

**Date: 12-Nov-2**

**Designed by: JPC**

**Checked by: SR**



## DESIGN CRITERIA

Min. Diameter = 300 mm

**Mannings 'n' = 0.01**

**Starting Tc = 15 mi**

**Factor of Safety = 15 %**

$$\text{Rainfall Intensity} = \frac{A}{(T_c + B)^c}$$

**A = 1010**

**B = 4.6**

**c = 0.78**

## NOMINAL PIPE SIZE USED

[illegible]

**Urbantech Consulting, A Division of Leighton-Zec Ltd**

3760 14th Ave, Suite 301 Markham, Ontario L3R 3T

TEL: 905.946.9461    FAX: 905.946.959

**www.urbantech.com**

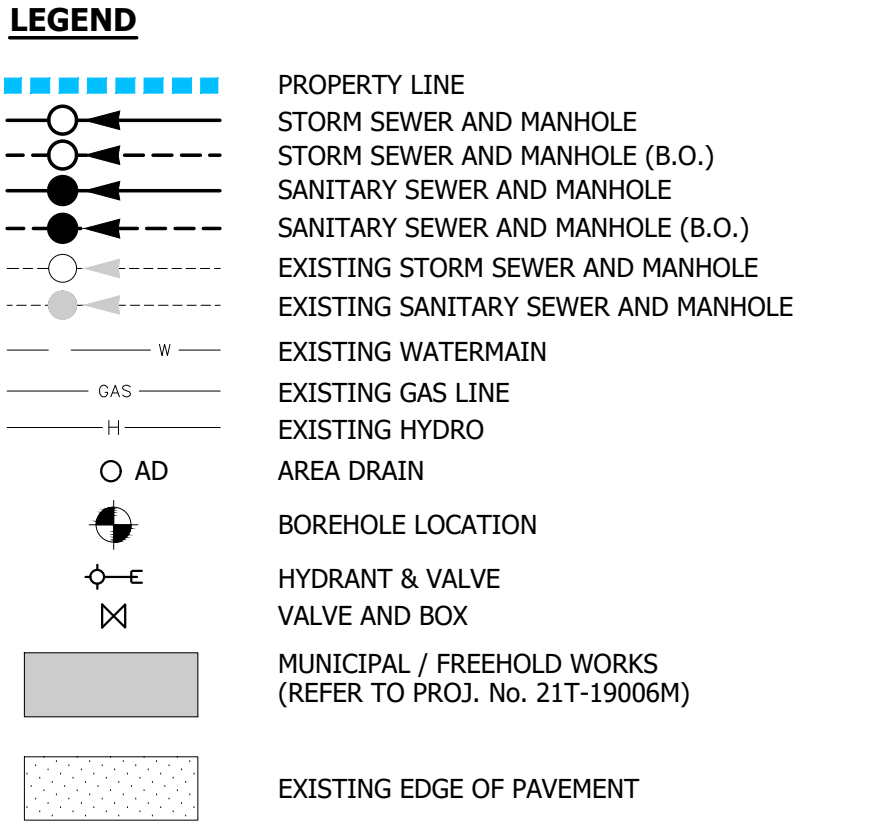
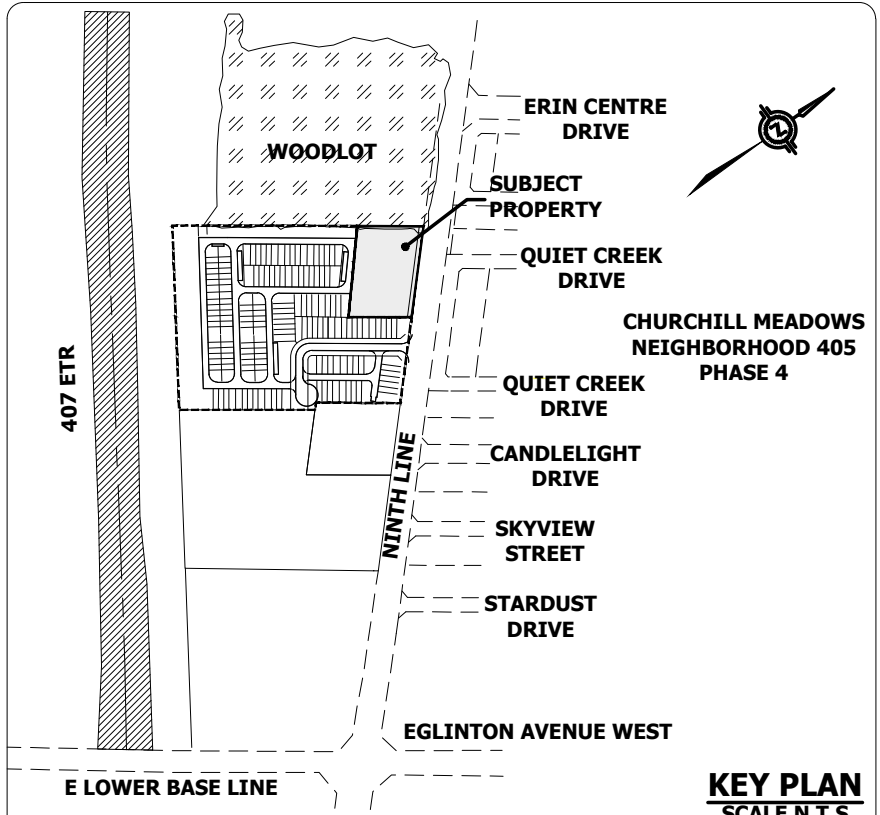
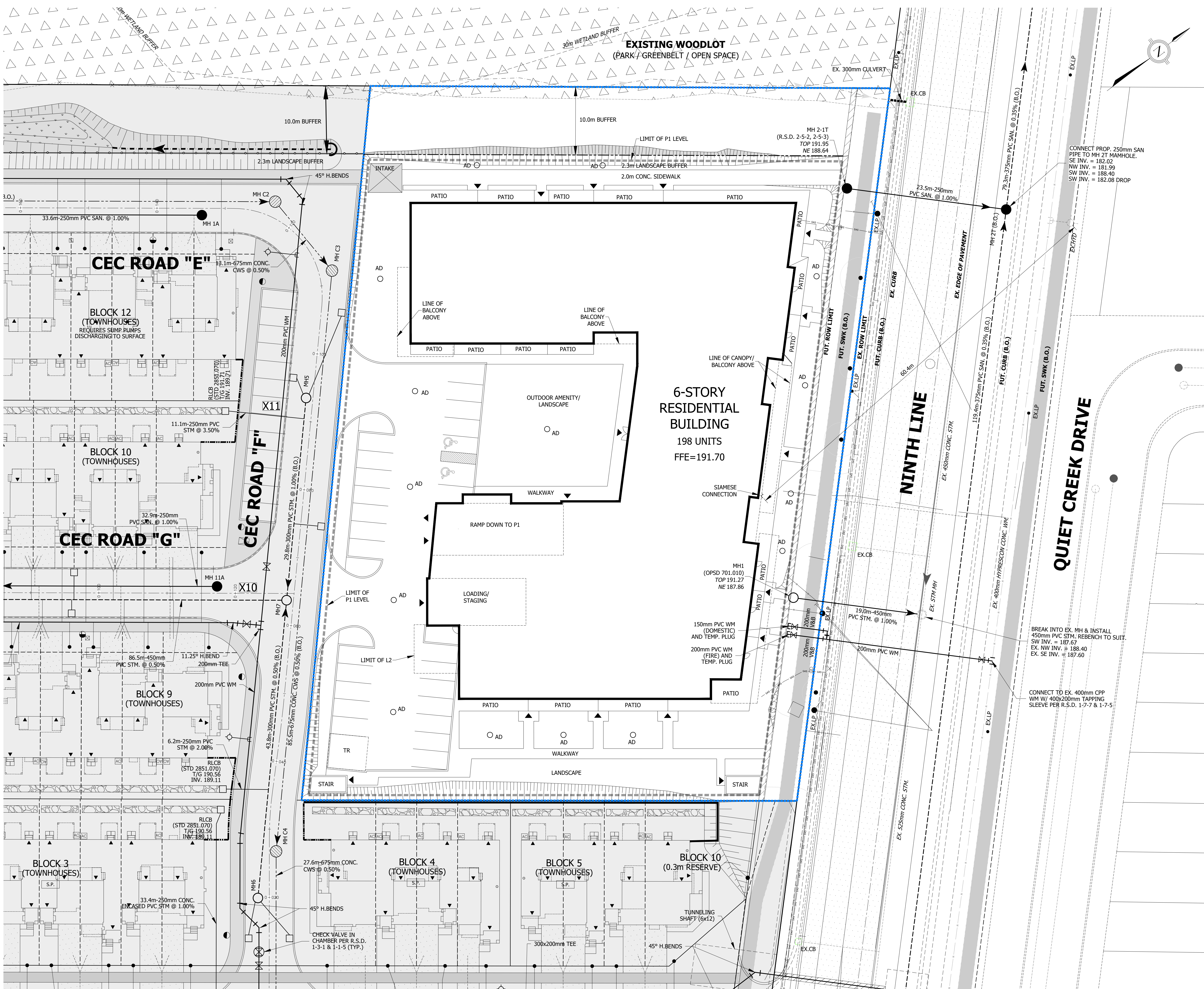


## **APPENDIX B**

### **DRAWINGS**

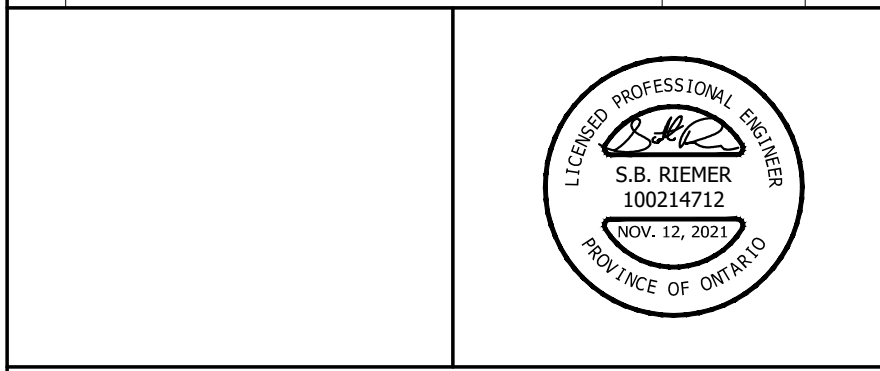
- 101 – Servicing Plan
- 201 – Grading Plan
- 301 – Existing Storm Drainage Plan
- 302 – Storm Drainage Plan
- 303 – Sanitary Drainage Plan





**LOCAL BENCHMARK:**  
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.

5			
4			
3			
2			
1	ISSUED FOR FIRST SPA SUBMISSION	NOV. 2021	S.R.
No.	REVISION	DATE	BY



**URBANTECH® Consulting**  
A Division of Leighton-Zec Ltd.  
3760 14th Avenue, Suite 301,  
Markham, ON, L3R 3T7  
TEL. 905.946.9461 • urbantech.com

**5160-5170 NINTH LINE**

MATTAMY (5150 NINTH LINE) LIMITED  
7880 KEELE STREET  
VAUGHAN, ON, L4K 4G7  
(905)-907-8888

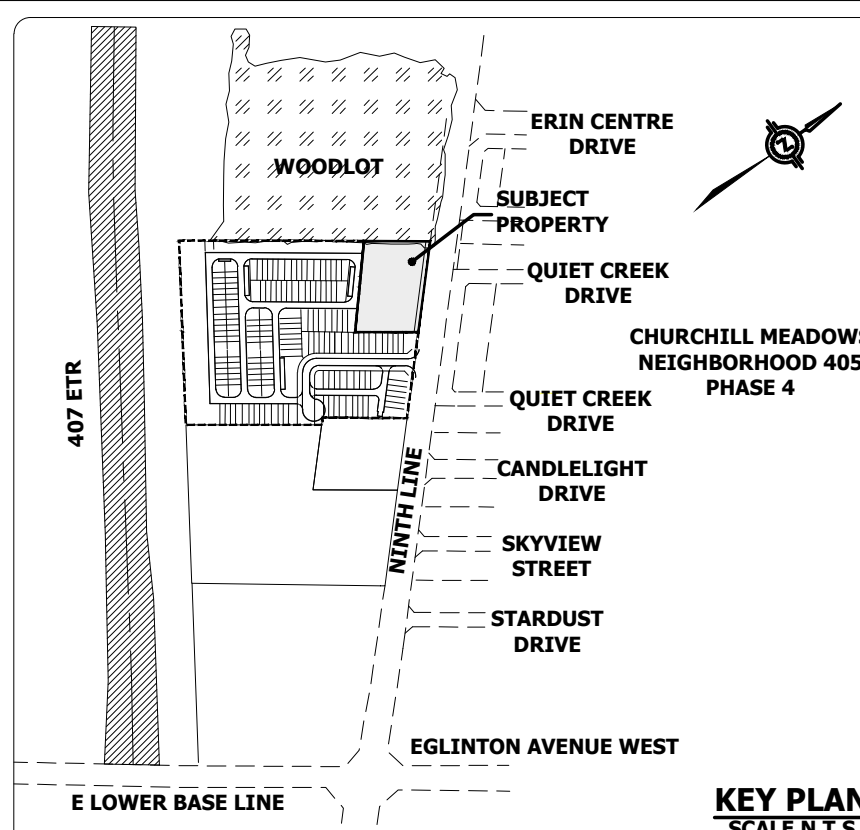
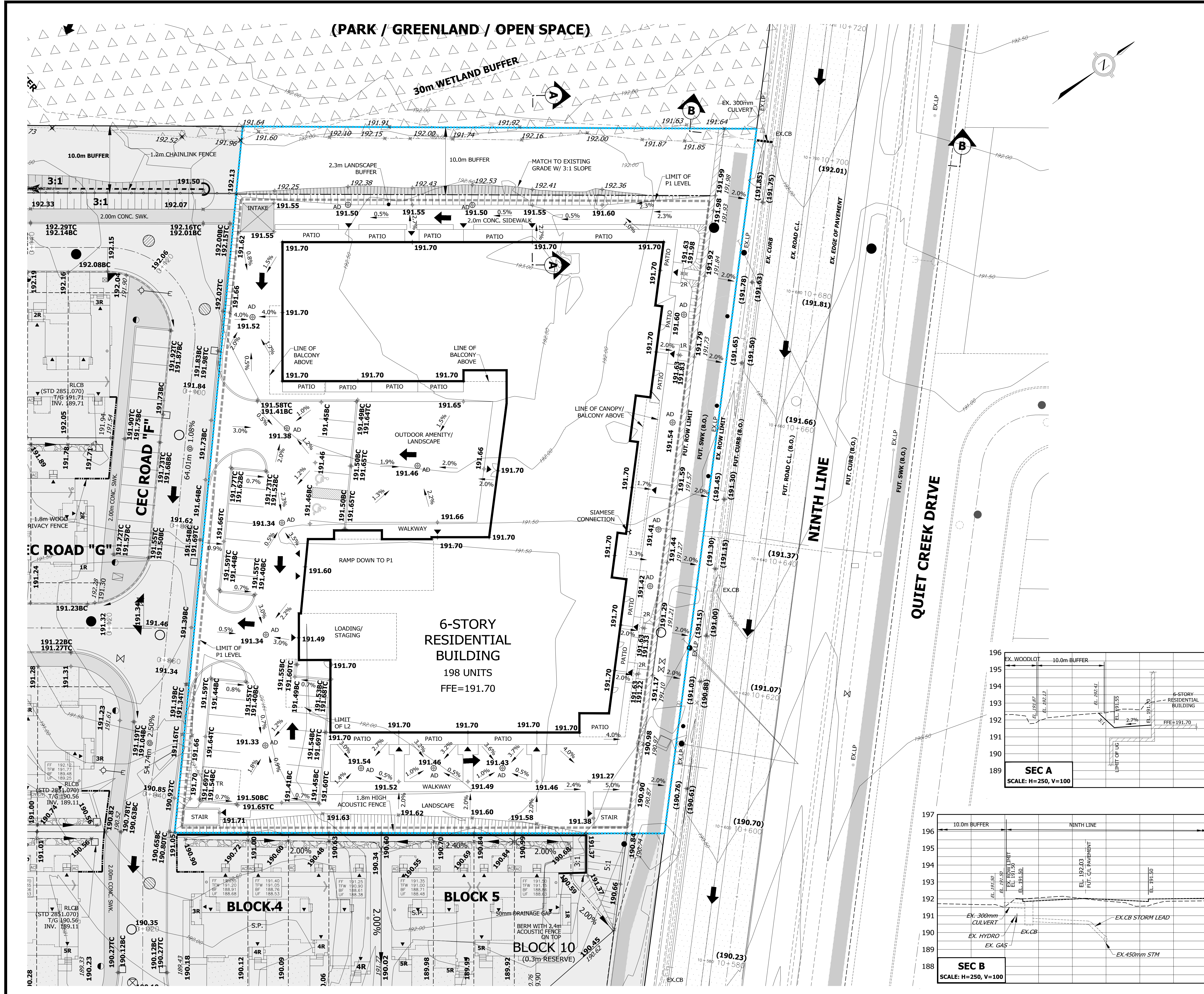
KORSAK URBAN PLANNING  
277 LAKESHORE ROAD EAST  
OAKVILLE, ON, L6J 1H9  
(905)-257-0227



**SERVICING PLAN**

PROJECT #:	21-680	DRAWING:	101
DESIGNED:	Z.K.	CHECKED:	S.R.
DRAWN:	Z.K.	DATE:	OCTOBER 2021
SCALE:	1:250		

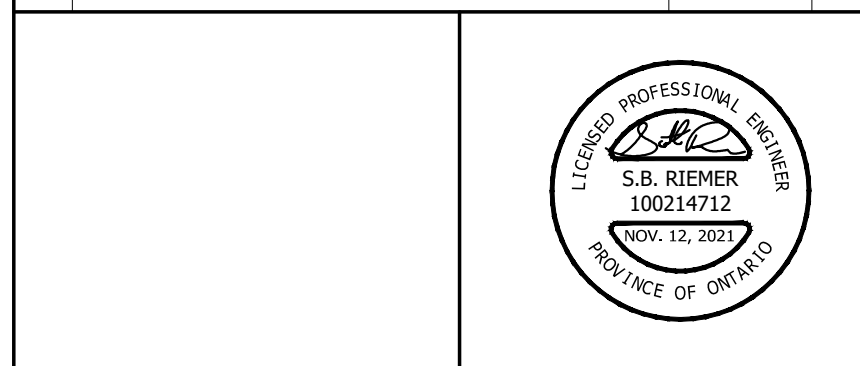




- LEGEND**
- PROPERTY LINE
  - EXISTING CONTOUR AND ELEVATION
  - EXISTING ELEVATION
  - PROPOSED ELEVATION
  - FUTURE ELEVATION
  - TOP/BOTTOM OF CURB ELEVATION
  - STANDARD CURB AND GUTTER
  - SEMI-MOUNTABLE CURB AND GUTTER
  - STORM MANHOLE
  - SANITARY MANHOLE
  - EXISTING STORM MANHOLE
  - EXISTING SANITARY MANHOLE
  - AREA DRAIN
  - HYDRANT & VALVE
  - VALVE & BOX
  - PROPOSED SWALE
  - MAXIMUM 3:1 SLOPE (UNLESS OTHERWISE NOTED)
  - PROPOSED OVERLAND FLOW DIRECTION
  - EXTERNAL DEVELOPMENT, BY OTHERS (REFER TO PROJ. NO. 21T-M19006)
  - EXISTING EDGE OF PAVEMENT
  - ACOUSTIC FENCE

**LOCAL BENCHMARK:**  
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
4			
3			
2			
1	ISSUED FOR FIRST ZONING SUBMISSION	NOV. 2021	S.R.



**Urbantech Consulting**  
A Division of Leighton-Zec Ltd.  
3760 14th Avenue, Suite 301,  
Markham, ON, L3R 3T7  
TEL 905.946.9461 • urbantech.com

**5160-5170 NINTH LINE**

MATTAMY (5150 NINTH LINE) LIMITED  
7880 KEELE STREET  
VAUGHAN, ON, L4K 4G7  
(905)-907-8888

KORSIAK URBAN PLANNING  
277 LAKESHORE ROAD EAST  
OAKVILLE, ON, L6J 1H9  
(905)-257-0227

**Region of Peel**  
Working for you

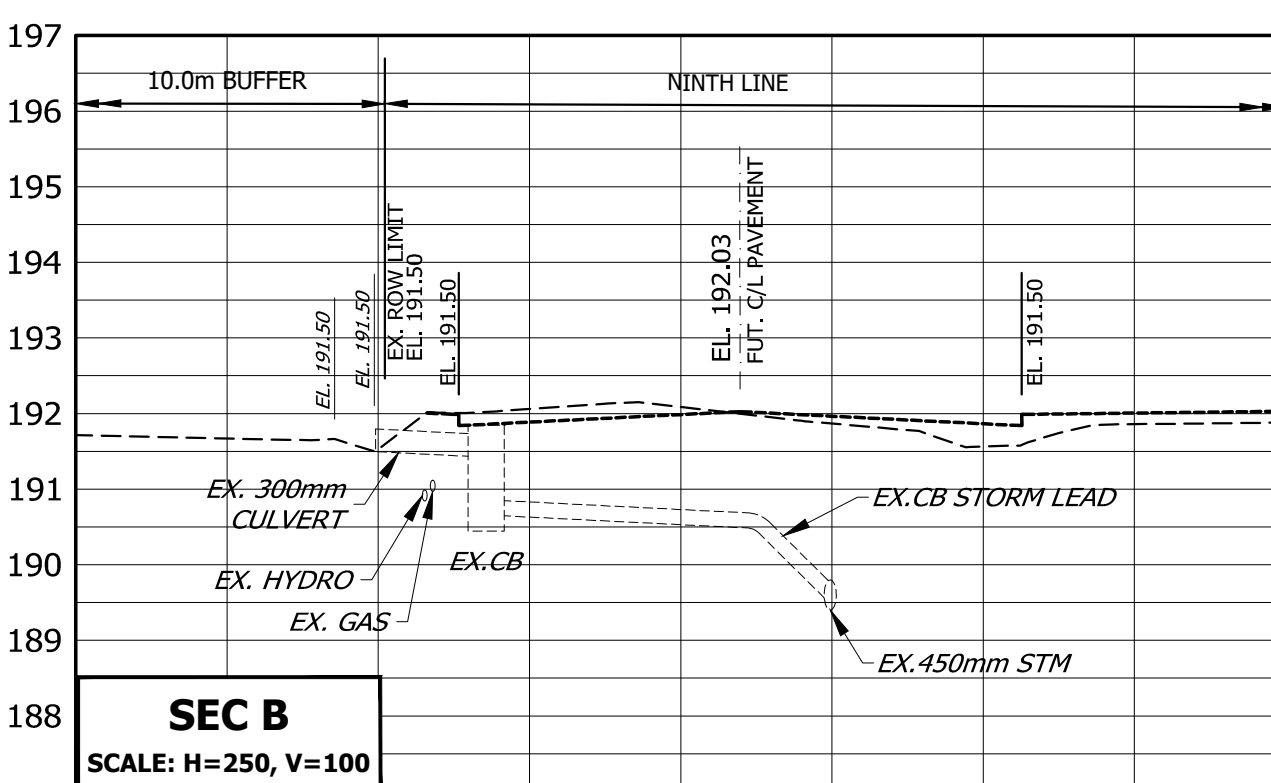
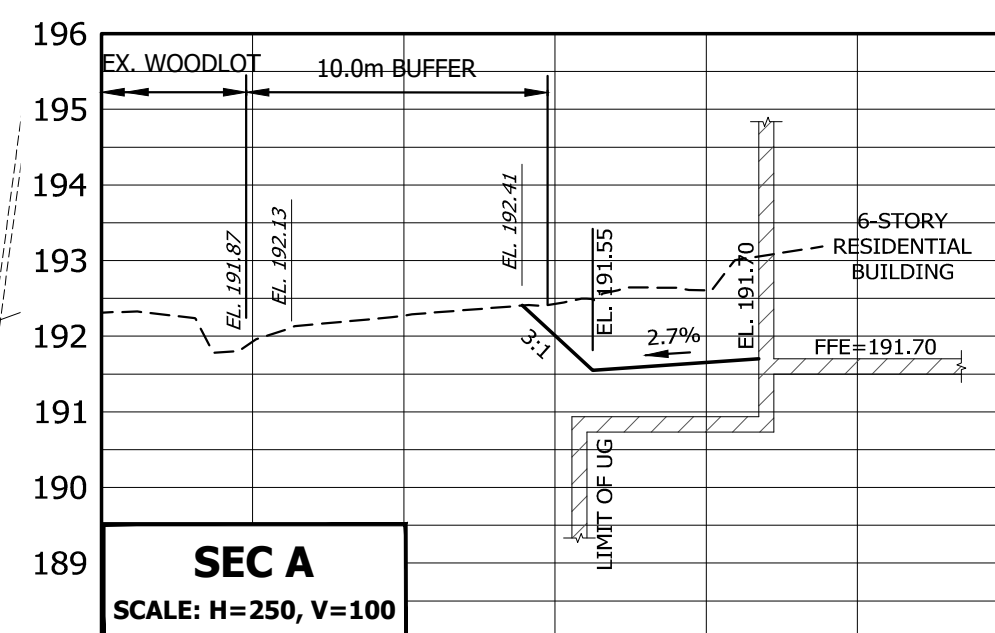
**MISSISSAUGA**

**GRADING PLAN**

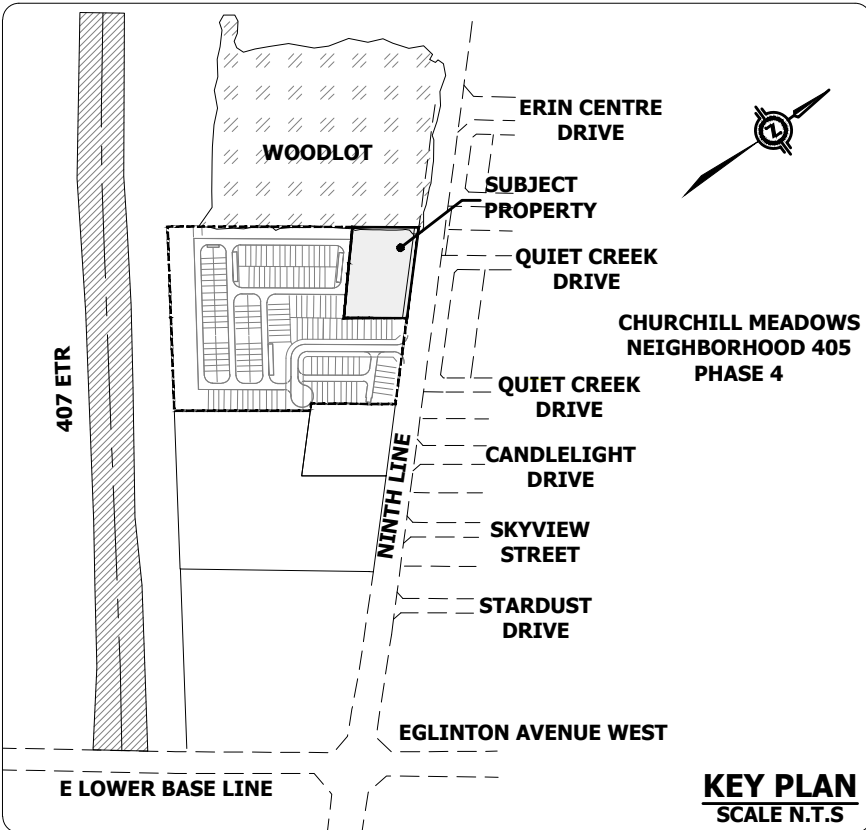
PROJECT #: 21-680 DRAWING: 201

DESIGNED: Z.K. CHECKED: S.R.  
DRAWN: Z.K. DATE: OCTOBER 2021

SCALE: 1:250







- LEGEND**
- SUBJECT PROPERTY
  - NON-PARTICIPATING LAND OWNERS
  - WETLAND
  - EXISTING CONTOUR
  - DRAINAGE AREA (ha)
  - IMPERVIOUSNESS
  - EXISTING STORM SEWER AND MANHOLE
  - EXISTING OVERLAND FLOW DIRECTION
  - EXISTING DRAINAGE BOUNDARY

**LOCAL BENCHMARK:**  
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 = 193.05 METERS.

5			
4			
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2			
1	ISSUED FOR FIRST ZONING SUBMISSION	NOV. 2021	S.R.
No.	REVISION	DATE	BY



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URBANTECH® Consulting  
A Division of Leighton-Zec Ltd.  
3760 14th Avenue, Suite 301,  
Markham, ON, L3R 3T7  
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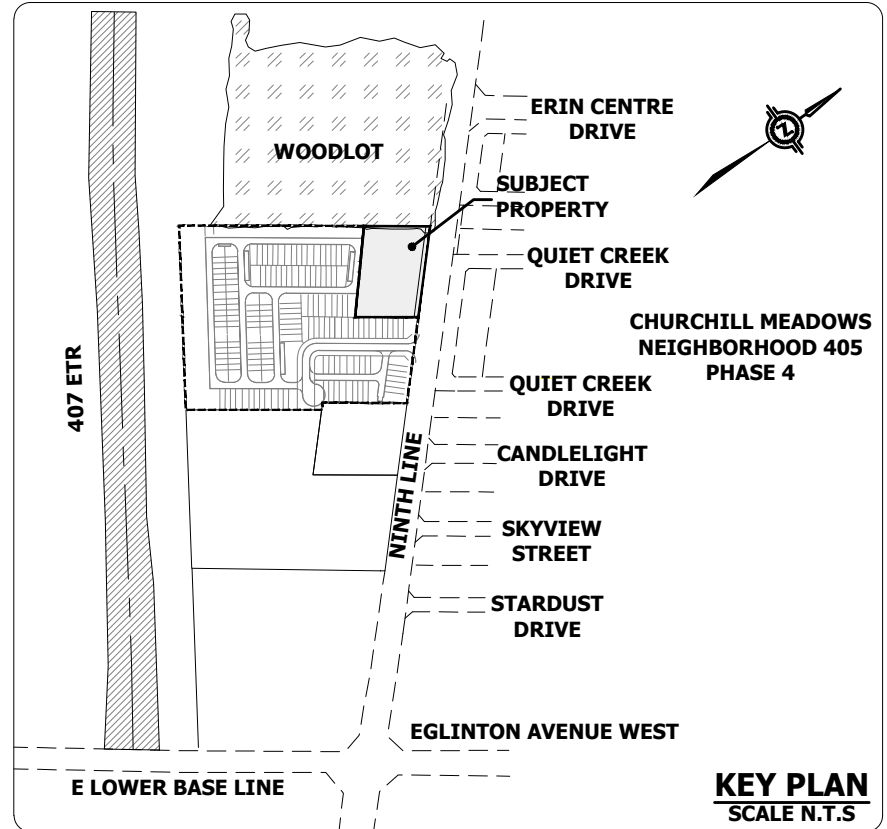
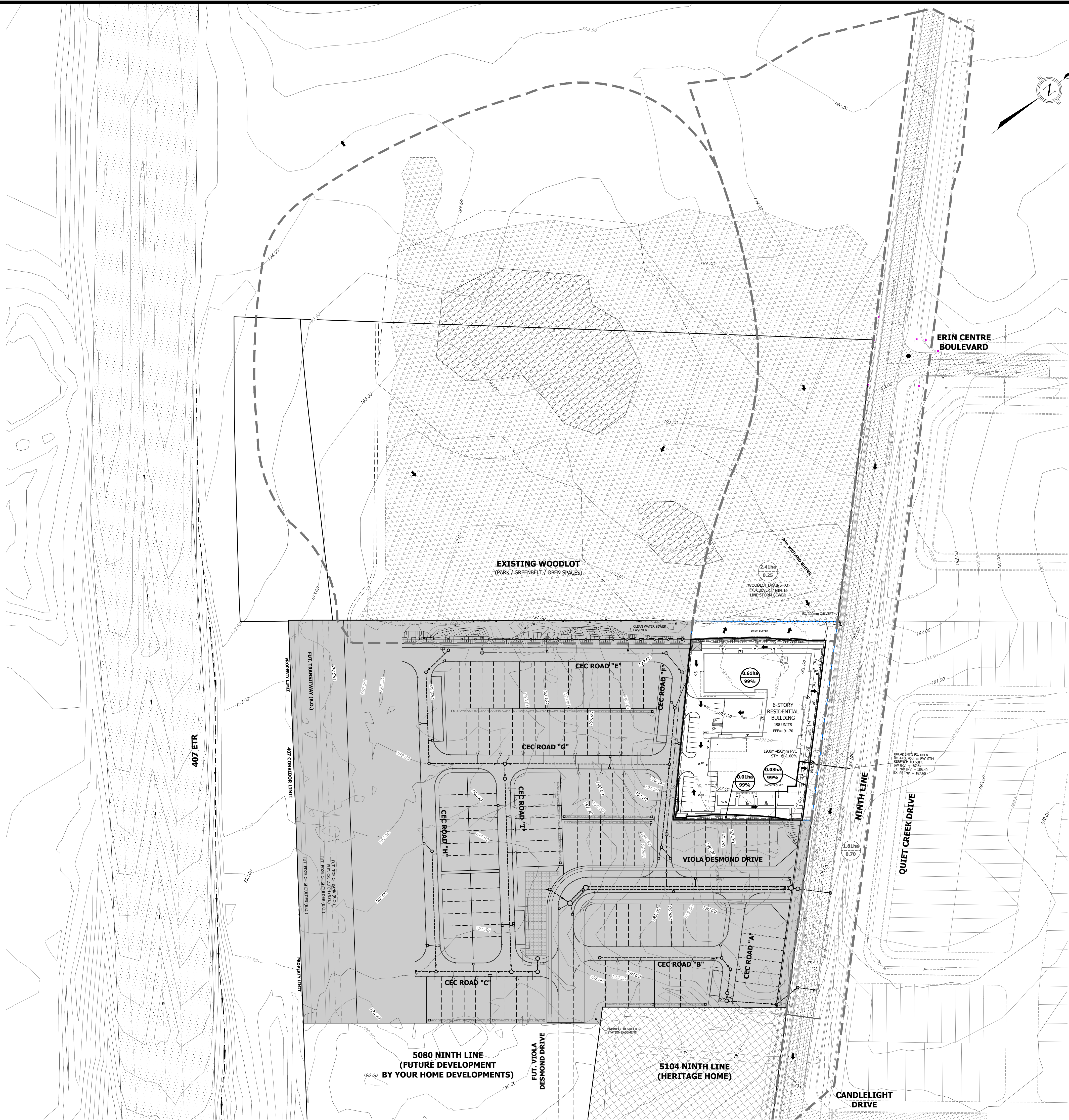
5160-5170 NINTH LINE



**EXISTING STORM DRAINAGE**

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





- LEGEND**
- STORM SEWER AND MANHOLE
  - STORM SEWER AND MANHOLE (B.O.)
  - EXISTING STORM SEWER AND MANHOLE
  - AREA DRAIN
  - 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 (REFER TO PROJECT 21T-M 19006)
  - WETLAND
  - WOODLOT

**LOCAL BENCHMARK:**  
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.

5			
4			
3			
2			
1	ISSUED FOR FIRST ZONING SUBMISSION	NOV. 2021	S.R.
No.	REVISION	DATE	BY

**Urbantech® Consulting**  
A Division of Leighton-Zec Ltd.  
3760 14th Avenue, Suite 301,  
Markham, ON. L3R 3T7  
TEL. 905.946.9461 • [urbantech.com](http://urbantech.com)

**5160-5170 NINTH LINE**

MATTAY (5150 NINTH LINE) LIMITED  
7880 KEELE STREET  
VAUGHAN, ON, L4K 4G7  
(905)-907-8888

KORSIAK URBAN PLANNING  
277 LAKESHORE ROAD EAST  
OAKVILLE, ON, L6J 1H9  
(905)-257-0227

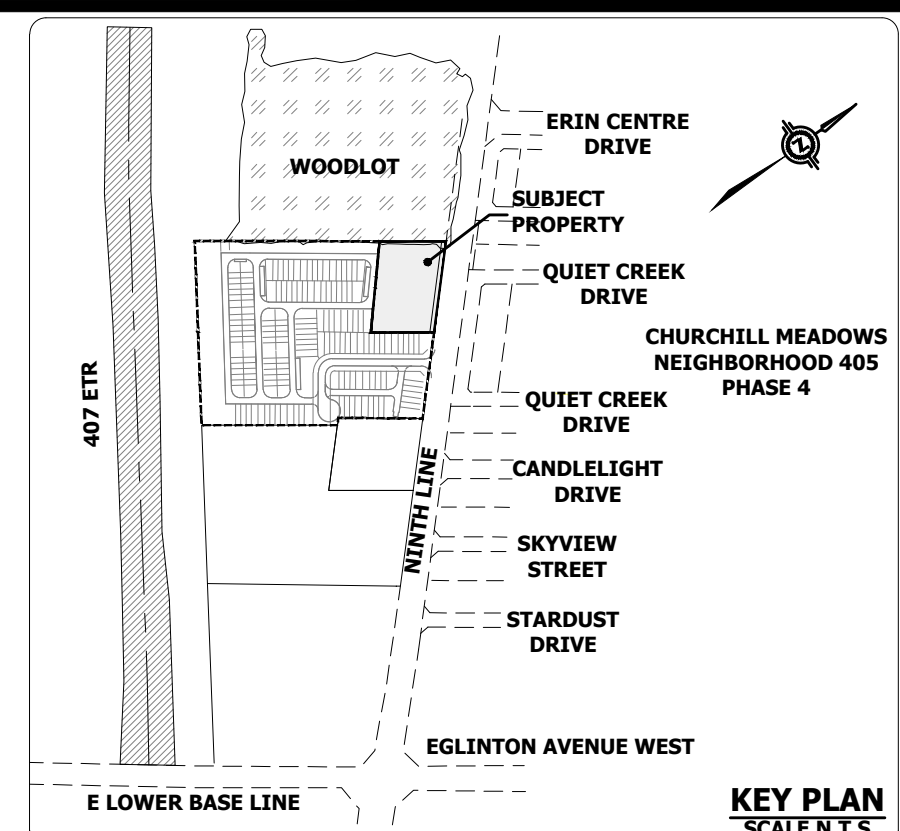
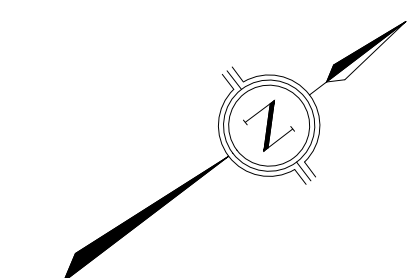
**Region of Peel**  
Working for you

**MISSISSAUGA**

## STORM DRAINAGE PLAN

PROJECT #:	21-680	DRAWING:	302
DESIGNED:	Z.K.	CHECKED:	S.R.
DRAWN:	Z.K.	DATE:	OCTOBER 2021
SCALE:	1:1000		





- 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	← PERSONS PER UNIT
3.50 PPU	← POPULATION
35	

- DRAINAGE AREA BOUNDARY
- EXTERNAL DRAINAGE AREA BOUNDARY
- LIMIT OF PROPOSED R.O.W.
- EXTERNAL WORKS

**LOCAL BENCHMARK:**  
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.

5			
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2			
1	ISSUED FOR FIRST ZONING SUBMISSION	NOV. 2021	S.R.

No.	REVISION	DATE	BY

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A Division of Leighton-Zec Ltd.  
3760 14th Avenue, Suite 301,  
Markham, ON L3R 3T7  
TEL 905.946.9461 • urbantech.com

5160-5170 NINTH LINE	
MATTAMY (5150 NINTH LINE) LIMITED 7880 KEELE STREET VAUGHAN, ON, L4K 4G7 (905)-907-8888	KORSIAK URBAN PLANNING 277 LAKESHORE ROAD EAST OAKVILLE, ON, L6J 1H9 (905)-257-0227



## SANITARY DRAINAGE PLAN

INTERNAL & EXTERNAL AREAS

PROJECT #:	21-680	DRAWING:	
			<b>303</b>

DESIGNED:	Z.K.	CHECKED:	S.R.
DRAWN:	Z.K.	DATE:	OCTOBER 2021

SCALE:	1:500	
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