Final Report

FUNCTIONAL SERVICING and STORMWATER MANAGEMENT REPORT

1 Rosetta Street



Prepared for 1 Rosetta Street (Halton Hills) GP Limited by IBI Group May 12, 2022

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1 Introduction

1.1 Background

IBI Group has been retained by 1 Rosetta Street (Halton Hills) GP Limited to prepare a Functional Servicing Report (FSR) for a proposed multi-use residential building at 1 Rosetta Street in Georgetown (Town of Halton Hills).

The purpose of this report is to development a municipal site servicing strategy (stormwater, sanitary discharge, and water supply). More specifically, the report will present the following:

- Calculate allowable and proposed runoff rates for the development;
- Evaluate suitable methods for attenuation and treatment of stormwater runoff;
- Develop on-site control measures and examine theoretical performance;
- Identify sanitary servicing opportunities and constraints and evaluate the capacity of the receiving municipal sewer.
- Identify water servicing opportunities and constraints, calculate the proposed domestic water and firefighting supply needs; and evaluate the capacity of the municipal infrastructure.

The following documents have been obtained from various sources:

- Halton Region plan and profile drawings for River Drive and John Street;
- Topographic Survey prepared by J. D. Barnes Ltd., dated July 2, 2020; and,
- Architectural plans and site statistics prepared by Icon Architects.

1.2 Existing Site Description

Under the existing conditions, the 1.343-ha site consists of three parcels and is currently used as single family residential and industrial warehouse. The properties will be merged as part of this application. Please see **Figure 1** following the report for an aerial view of the site.

1.3 Site Proposal

The proposed development includes the construction of two (2) twelve-storey residential building and one (1) eight-storey residential building, including proposed underground parking structure, surface level parking, drive aisles and landscaped areas. A preliminary concept plan is provided in **Appendix A**.

2 Terms of Reference and Methodology

2.1 Terms of Reference

The terms of reference used for the scope of this report have been based on the Halton Region Water and Wastewater Linear Design manual, dated April 2019.

2.2 Methodology: Water Supply

The domestic water usage will be calculated based on the following Region of Halton and Ontario Building Code design criteria:

Population I	Peaking Factors			
Population I	Land Use	Peak Hour	Max Day	
1 Bedroom Unit	1.328 people/unit	Residential	4.00	2.25
2 Bedroom Unit	1.724 people/unit	Residentia	4.00	2.25
Average Daily Demand	275 L/person/day			

Table 2.1	Water Design	Parameters
	Trator Boolgin	

Pressure and flow testing to determine the adequacy of the existing watermain to support the development with fire suppression in accordance with the Fire Underwriters Survey (FUS) Guidelines will be discussed in the subsequent sections.

2.3 Methodology: Sanitary Discharge

Pre- and post-development peak sewer flows will be calculated based on the following Halton Region design criteria:

	Table III Gaintary			
De	esign Flows	Population Densities		
275 L/c/day Proposed Residential		1.328 people / unit	1 Bedroom Units	
0.286 L/s/ha	Infiltration Allowance	1.724 people / unit	2 Bedroom Units	
Peaking Factor	Harmon Equation			

Table 2.2 Sanitary Design Parameters

Based on the calculated peak flows, the adequacy of the existing infrastructure to support the proposed development will be discussed.

2.4 Methodology: Stormwater Management

As identified in the pre-consultation for the development, stormwater management will be required to be reviewed at the Zoning Application Stage.

Quantity Control

Post-development flows for all storm events are to be attenuated to the corresponding predevelopment levels.

Quality Control

Long-term average removal of 80% of the total suspended solids (TSS) on an annual loading basis must be achieved.

3 Water Supply System

3.1 Existing Water Infrastructure

Per the Region's record information, the following water infrastructure is available in the vicinity of the site:

- 150mm dia. watermain on St. Michaels Street
- 150mm dia. watermain on Caroline Street
- 150mm dia. watermain on Rosetta Street
- 300mm dia. watermain on Rosetta Street
- 300mm dia. watermain on River Drive

Additionally, a variety of fire hydrants are located in proximity of the site:

- Fire Hydrant on River Drive at St. Michael Street
- Fire Hydrant on River Drive (south east corner of the 1 Rosetta St property)
- Fire Hydrant on River Drive (south west corner of the 2 Rosetta St property)
- Fire Hydrant on River Drive at Rosetta Street
- Fire Hydrant on Rosetta Street at Caroline Street

The existing industrial warehouse is serviced via two services extending from the 300mm dia. Watermain along River Drive. The water services are 150mm and 200mm in diameter. The existing residential lots on St Michael Street are serviced via individual service connections to the existing 150mm dia. watermain on St. Michaels Street.

3.2 Domestic Water Supply Demands

Using the criteria set in **Section 2.4** and the site statistics provided by the architect, the Average Day Demand (ADD), Peak Hour Demand (PHD), and Max Day Demand (MDD) have been calculated based on the number of units, as shown in **Table 3.1**.

Building	Number of Units	Population	ADD (L/s)	PHD (L/s)	MDD (L/s)
Residential – 1 Bedroom	490	651	2.07	8.28	4.66
Residential – 2+ Bedrooms	150	259	0.82	3.29	1.85
Total	640	909	2.89	11.58	6.51

Table 3.1 Domestic Water Demands

The domestic supply line for the building will be designed based on PHD while maintaining a minimum available pressure of 40 psi (275 kPa) at the face of the building. Please see **Appendix B** for the detailed calculations.

3.3 Fire Supply Demands

The recommended fire flow demand for the subject site has been calculated using the design criteria outlined in the Water Supply for Public Fire Protection Manual, 1999 by the Fire Underwriters Survey (FUS).

As the building will be constructed using fire resistive materials, the effective floor area is taken as the largest floor area plus 25 % of the two adjacent floors.

- Effective Floor Area = Largest Floor Area + 25% (two adjoining floors)
- Effective Floor Area = 3,148 m² + 25% (3,148 m² + 3,148 m²)
- Effective Floor Area = 4,722 m²

The corresponding floor area and FUS factors will be applied as follows:

Construction	Building	Sprinkler	Proximity
Coefficient	Occupancy	Adjustment	Factor
0.6 (resistive)	- 15 % (limited)	- 30 %	+ 30 %

Table 3.2 Fire Underwriters Survey Factors

Using the effective floor area for each building and the appropriate FUS factors, the required fire flow for each building is calculated as follows:

Fire Flow (F) Calculation	Applying FUS factors	Adjusted Fire Flow	Total Demand (TD)	
F = 220 · 0.6 √Area	F ₁ =F·0.85 = 7,650 L/min	Fire Flow = $F_1 - F_2 + F_3$	TD= FF + MDD	
F = 220 · 0.6 √4,722 m ²	F ₂ =F ₁ ·0.30 = 2,295 L/min	FF= 8,000 L/min (rnd'd)	TD= 133.3 L/s + 11.6 L/s	
F = 9,000 L/min (<i>rnd'd</i>)	F ₃ =F ₁ ·0.30 = 2,295 L/min	FF = 133.3 L/s	TD= 139.8 L/s	

Table 3.3 Fire Demand Calculations

The fire supply line for the building will be designed based on Total Demand (Fire Flow + MDD) while maintaining a minimum available pressure of 20 psi (140 kPa) at the face of the building. Please see **Appendix E** for the detailed calculations.

3.4 System Pressure Under Normal Operation

As previously mentioned, the domestic service shall be sized to convey domestic demands under normal system operating conditions (PHD) while maintaining a minimum available pressure of 40 psi (275 kPa). The residual pressure at the building is calculated by first interpolating the PHD residual pressure within the existing watermain, and then subtracting head losses within the system using the Hazen-Williams formula. The following table summarizes the residual pressure for the proposed domestic service:

Flow Conditions	PHD Domest			Pressure @ Main	Residual Pressure @ Bldg.	
Conditions	(L/s)	(mm)	(psi)	(kPa)	(psi)	(kPa)
PHD	11.58	200	64.9	447	64.2	442

Table 3.4 Residual Pressure under PHD Conditions

As shown above, there is no appreciable head loss within the system, and the residual pressure at the building face is above the minimum acceptable pressure of 40 psi (275 kPa) under PHD conditions. Please see **Appendix B** for the detailed design calculations.

3.5 System Pressure Under Fire Flow

As previously mentioned, the fire service shall be sized to convey the total fire demand (Fire + MDD) while maintaining a minimum available pressure of 20 psi (140 kPa). The residual pressure at the building is calculated by first interpolating the residual pressure within the existing watermain, and then subtracting head losses within the system using the Hazen-Williams formula. The following table summarizes the residual pressure for the proposed fire service:

Flow	FF+MDD	Fire	Residual	Pressure @	Residual	Pressure
Flow Conditions	(L/s)	Service (mm)	Main (psi) (psi)		@ Bldg. (psi) (kPa)	
FF+MDD	139.8	200	53.2	367	38.1	263

Table 3.5	Residual Pressure under Fire + MDD Conditions

As shown above, the residual pressure at the building face for the fire service is above the minimum acceptable pressure of 20 psi (140 kPa) under fire demand conditions (Fire + MDD). Please see **Appendix B** for the detailed design calculations.

3.6 Water Service Connection

The existing 150 mm and 200 mm water services will be removed, with a new 200 mm fire service and a 150 mm domestic service proposed to service the development.

3.7 Hydrant Coverage

The hydrants along the north side of River Drive along the 1 Rosetta Street property will be relocated and/or decommissioned. As previously mentioned, the building will be sprinklered, therefore, a private hydrant is proposed to be included south of the above ground parking in the centre of the subject site and shall be placed within 45 m of the Siamese connections to satisfy OBC requirements.

Please see drawing **SS-01** for the location of all existing and proposed water infrastructure.

4 Sanitary Drainage System

4.1 Existing Sanitary Drainage System

Per the City's record information, local sanitary infrastructure consists of:

- a 200mm dia. sanitary sewer on St. Michaels Street;
- a 200mm dia. sanitary sewer on Caroline Street; and
- a 250 mm dia. sanitary sewer on Rosetta Street.

Existing sanitary infrastructure is shown on the engineering drawing **SS-01** which can be found in **Appendix E** for reference.

4.2 Pre-Development Sanitary Design Flow

Under existing conditions, the site houses an industrial paper mill and a couple of residential dwellings. Therefore, taking into account infiltration, the pre-development peak sanitary flow are summarized in the table below:

Land Use	Area (ha)	Density	Population	Kav	Peaking Factor	Sewage/ Industrial Flow (L/s)	Infiltration Flow (L/s)	Total Flow (L/s)
Industrial	1.3492	125 pp/ha	162	0.81	3.39	0.067	0.386	0.45
Residential	0.0865	55 pp/ha	5	0.81	3.61	0.015	0.025	0.04
Total								0.49

Table 4.1 Pre-Development Sanitary Flows

4.3 Post-Development Sanitary Design Flow

Based on the criteria set in **Section 2.3**, the corresponding post-development sanitary sewer flows are summarized below:

Land Use	Area (ha) Number of Units	Density	Population	Kav	Peaking Factor	Sanitary Flow (L/s)
Infiltration	1.4356			1	3.83	0.411
1 Bedroom	490 Units	1.328 pp/unit	651	1	3.83	7.936
2+ Bedrooms	150 Units	1.724 pp/unit	259	1	3.83	3.157
					Total	11.504

Table 4.2 Post-Development Sanitary Flows

As shown above, the post-development sanitary sewer flow is calculated to be 11.504 L/s. Please refer to the detailed design sheet which can be found in **Appendix C**.

4.4 Sanitary Service Connection

It is proposed that a new 250 mm sanitary service at a 1.0% slope be installed from the control manhole at the property line to a new municipal manhole within the River Drive and Rosetta Street intersection. The following table illustrates the peak flow and corresponding capacity of the proposed sanitary service and sewer:

From	То	Pipe Size (mm)	Pipe Slope	Peak Flow (L/s)	Capacity (L/s)	Percent of Full Flow
Cntrl.MH	Existing Manhole	250	1.0 %	11.504	62.0	18.5%

Table 4.3 Sanitary Service Performance

As shown above, the proposed sanitary service and sewer will easily convey the postdevelopment peak sanitary flow while operating at 18.5% or less of full flow capacity. Please see the detailed design sheet which can be found in **Appendix C**, and Drawing **SS-01** which can be found in **Appendix E**.

4.5 Down Stream Analysis

The Sanitary Capacity Review completed by TMIG (February 2022) indicates the sanitary peak flows are 11.1 L/s based on the proposed population density and the Region's sanitary peak flow per capita. Based on the review of the existing system, the sanitary sewer on River Drive has sufficient capacity for the flows anticipated from this development. A memo detailing the Sanitary Capacity Review is included in **Appendix C**.

5 Stormwater Management

5.1 Pre-Development Conditions

Per the City's record information, local storm infrastructure consists of:

- 450mm dia. storm sewer on River Drive (east)
- 250mm dia. storm sewer at the corner of Rosetta Street and Caroline Street
- 300mm dia. storm sewer on River Drive (west)

The site is largely occupied by the existing industrial building and accompanying parking lot.

5.2 Grading

Under pre-development conditions the site topography falls from north to south (Caroline Street to River Drive). The existing loading dock houses a localized low point drained by an existing catch basin, with additional catch basins located to the northeast of the site on Rosetta Street, at the intersection of River Drive and Rosetta Street as well as River Drive and St Michael Street. Drainage in the right-of-way is directed to existing swales along the roadside where it is collected by this storm infrastructure.

The proposed grades will match current drainage patterns and grades will be maintained along property lines to the extent practical. The proposed site plan features a 'woonerf', an open style street, with no curb for ease of movement.

Emergency overland flow route in excess of a 100-year storm event will be directed along the internal roadway to the municipal right-of-way.

5.3 Quantity Control

Under existing conditions, the subject site has a runoff coefficient of 0.85. The proposed development will remove the existing structure and much of the paved area, resulting in a reduction of imperviousness and a runoff coefficient of 0.62 under proposed conditions.

This reduction in imperviousness will result in a reduction of peak, resulting in all post-development peak flows remaining less than or equal to predevelopment peak flows. Impervious areas of preand post-development conditions are summarized below.

	Area (m³)	Runoff Coefficient	Contributing Coefficient
Conventional Roof	8,269	0.9	0.55
Landscaped Area	1,002	0.25	0.02
Impervious Area	4,301	0.9	0.28
Total	13,572		0.85

Table 5.1 Pre-Development Site Imperviousness

	Area (m³)	Runoff Coefficient	Contributing Coefficient
Conventional Roof	6,271	0.9	0.42
Landscaped Area	4,005	0.25	0.07
Permeable Pavers	3,296	0.55	0.13
Total	13,572		0.62

Table 5.2 Post-Development Site Imperviousness

As demonstrated in the tables above the proposed development will reduce the overall site imperviousness. This will in turn reduce peak flows from the site and mitigate the need for stormwater quantity controls.

5.4 Quality Control

As previously mentioned, 80% TSS removal is required to provide enhanced water cleansing to the site. Parking and drive aisle areas are proposed to be paved with permeable pavers to provide enhanced cleanings to stormwater flows.

5.5 Storm Sewer Connection

A storm sewer network is proposed to be included though the site drive aisle, catch basins will be placed at low points to collect run off and covey flows to the manhole within the River Drive boulevard. Please refer to the detailed design calculations which can be found in **Appendix D**, and the design **Drawing SS-01** which can be found in **Appendix E**.

5.6 Emergency Overflow

Overland flow from the proposed development will continue to be directed to River Drive, St. Michaels Street, Rosetta Street, and Caroline Street.

6 Conclusions and Recommendations

Storm Sewer and Stormwater Management

The proposed development will see a reduction in the imperviousness of the site, this in turn will result in a reduction of peak flows, eliminating the need for stormwater attenuation.

By incorporating inherently clean rooftop, landscape, and pavers, the site will meet the target for quality control.

Sanitary Sewers

As the site represents a manageable increase in sanitary flow, the proposed development can proceed without improvements to the municipal sewer system.

Water Supply

The existing municipal water supply has sufficient capacity to support the proposed fire and domestic water demands without improvements to the system.

Summary

In summary, it can be concluded that the Zoning By- Law Amendment can be supported for the proposed development from both municipal servicing and stormwater management perspectives.

Should you have any questions, please do not hesitate to contact the undersigned.

Respectfully Submitted,

IBI Group Canada Inc.



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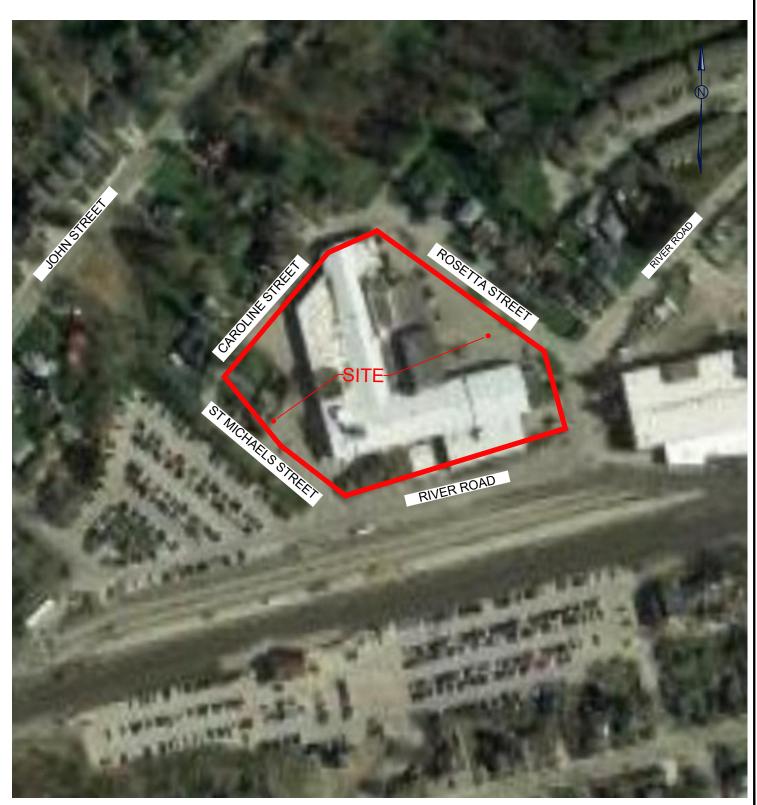
E-Mail: Jason.Jenkins@ibigroup.com

https://ibigroup.sharepoint.com/sites/projects1/125082/internal documents/6.0_technical/6.03_tech-reports/fsr/second submission/125082 - fsr - revision 2.docx

IBI GROUP FINAL REPORT FUNCTIONAL SERVICING and STORMWATER MANAGEMENT REPORT 1 Rosetta Street Prepared for 1 Rosetta Street (Halton Hills) GP Limited

Figure 1

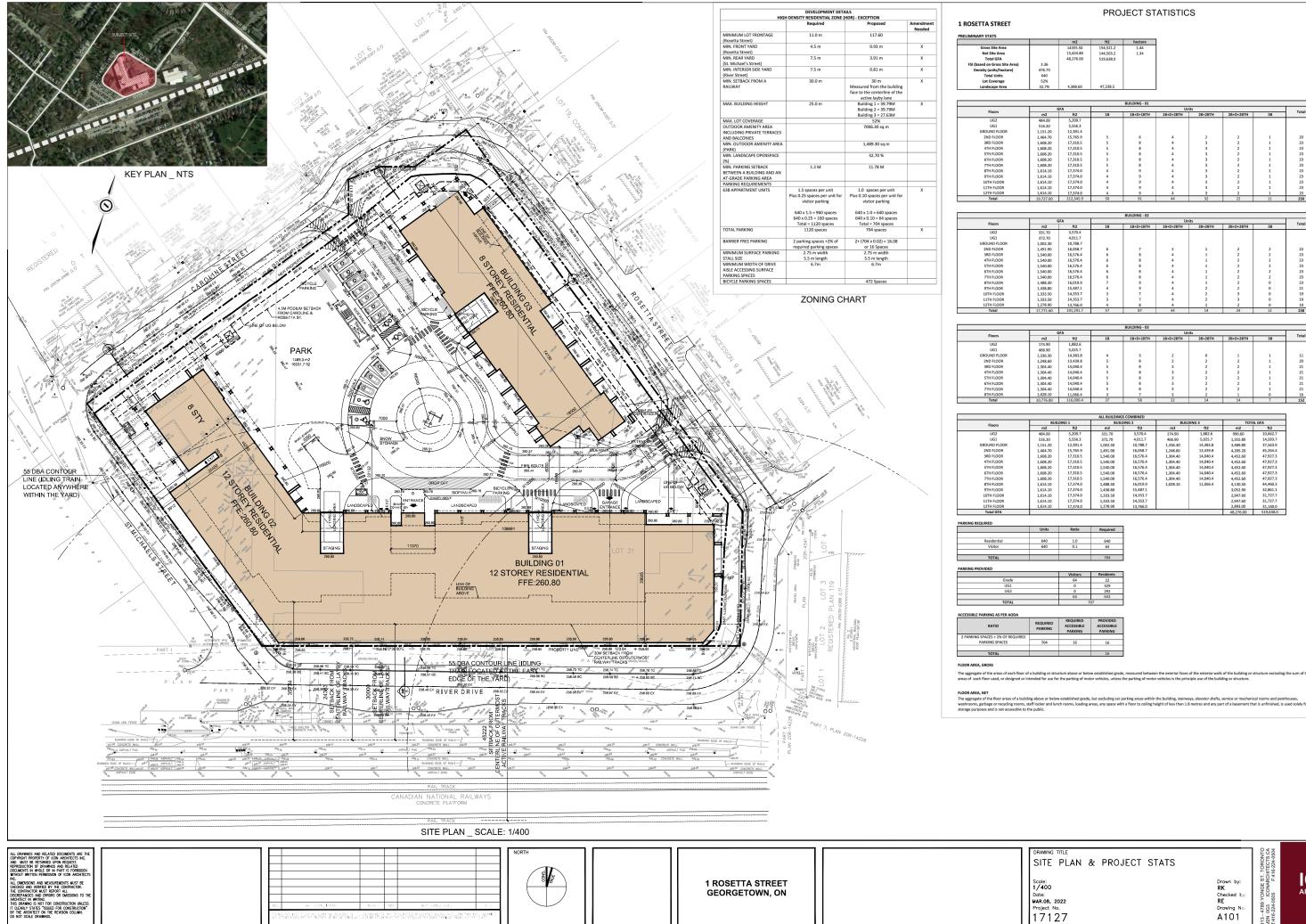
Aerial Plan



CLIENT 1 ROSETTA STREET (HALTON HILLS) GP LTD.	PROJECT NAME 1 ROSETTA S	TREET	IBI Suit Han tel 9	GROUP te 200 - 360 James milton ON L8L 1H5 905 546 1010 fax s group.com	5 Canada	
	SCALE: NTS	DATE: 2022-02-25	FIGURE NAME		FIGURE NO.	REVISION
	PROJECT ENG:	DRAWN BY: CMM				4
	CHECKED BY:	APPROVED BY:			FIG.1	I
	PROJECT NO: 125082					

Appendix A – Background Information

Sample Architectural Drawings (Icon Architects) Plan and Profile Drawings (Region of Halton) Topographic Survey (J.D Barnes)



	m2	ft2	hectare
	14355.50	154,521.2	1.44
	13,424.80	144,503.2	1.34
	48,276.00	519,638.0	
3.36			
476.73			
640			
52%			
32.7%	4,388.60	47,238.5	

BUILDING - 01									
GFA			Units					Total	
m2	ft2	1B	1B+D+1BTH	1B+D+2BTH	2B+2BTH	2B+D+2BTH	3B	Total	
484.00	5,209.7								
516.20	5,556.3								
1,151.20	12,391.4								
1,464.70	15,765.9	5	6	4	2	2	1	20	
1,608.20	17,310.5	5	8	4	3	2	1	23	
1,608.20	17,310.5	5	8	4	3	2	1	23	
1,608.20	17,310.5	5	8	4	3	2	1	23	
1,608.20	17,310.5	5	8	4	3	2	1	23	
1,608.20	17,310.5	5	8	4	3	2	1	23	
1,614.10	17,374.0	4	9	4	3	2	1	23	
1,614.10	17,374.0	4	9	4	3	2	1	23	
1,614.10	17,374.0	4	9	4	3	2	1	23	
1,614.10	17,374.0	4	9	4	3	2	1	23	
1,614.10	17,374.0	4	9	4	3	2	1	23	
19,727.60	212,345.9	50	91	44	32	22	11	250	

			BUILDING - 02					
	SFA			Units				
m2	ft2	1B	1B+D+1BTH	1B+D+2BTH	2B+2BTH	2B+D+2BTH	3B	Total
331.70	3,570.4							
372.70	4,011.7							
1,002.30	10,788.7							
1,491.90	16,058.7	6	7	4	1	2	2	22
1,540.00	16,576.4	6	8	4	1	2	2	23
1,540.00	16,576.4	6	8	4	1	2	2	23
1,540.00	16,576.4	6	8	4	1	2	2	23
1,540.00	16,576.4	6	8	4	1	2	2	23
1,540.00	16,576.4	6	8	4	1	2	2	23
1,488.30	16,019.9	7	9	4	1	2	0	23
1,438.80	15,487.1	4	9	4	2	2	0	21
1,333.50	14,353.7	3	7	4	2	3	0	19
1,333.50	14,353.7	3	7	4	2	3	0	19
1,278.90	13,766.0	4	8	4	1	2	0	19
17,771.60	191,291.7	57	87	44	14	24	12	238

BUILDING - 03										
(6FA			Total						
m2	ft2	1B	1B+D+1BTH	1B+D+2BTH	2B+2BTH	2B+D+2BTH	3B	Total		
174.90	1,882.6									
466.90	5,025.7									
1,336.30	14,383.8	4	3	2	0	1	1	11		
1,248.60	13,439.8	5	8	2	2	2	1	20		
1,304.40	14,040.4	5	8	3	2	2	1	21		
1,304.40	14,040.4	5	8	3	2	2	1	21		
1,304.40	14,040.4	5	8	3	2	2	1	21		
1,304.40	14,040.4	5	8	3	2	2	1	21		
1,304.40	14,040.4	5	8	3	2	2	1	21		
1,028.10	11,066.4	3	7	3	2	1	0	16		
10,776.80	116,000.4	37	58	22	14	14	7	152		

		ALL BUILDING	S COMBINED					
BUIL	DING 1	BUILD	DING 2	BUIL	DING 3	TOT/	TOTAL GFA	
m2	ft2	m2	ft2	m2	ft2	m2	ft2	
484.00	5,209.7	331.70	3,570.4	174.90	1,882.6	990.60	10,662.7	
516.20	5,556.3	372.70	4,011.7	466.90	5,025.7	1,355.80	14,593.7	
1,151.20	12,391.4	1,002.30	10,788.7	1,336.30	14,383.8	3,489.80	37,563.9	
1,464.70	15,765.9	1,491.90	16,058.7	1,248.60	13,439.8	4,205.20	45,264.4	
1,608.20	17,310.5	1,540.00	16,576.4	1,304.40	14,040.4	4,452.60	47,927.3	
1,608.20	17,310.5	1,540.00	16,576.4	1,304.40	14,040.4	4,452.60	47,927.3	
1,608.20	17,310.5	1,540.00	16,576.4	1,304.40	14,040.4	4,452.60	47,927.3	
1,608.20	17,310.5	1,540.00	16,576.4	1,304.40	14,040.4	4,452.60	47,927.3	
1,608.20	17,310.5	1,540.00	16,576.4	1,304.40	14,040.4	4,452.60	47,927.3	
1,614.10	17,374.0	1,488.30	16,019.9	1,028.10	11,066.4	4,130.50	44,460.3	
1,614.10	17,374.0	1,438.80	15,487.1			3,052.90	32,861.1	
1,614.10	17,374.0	1,333.50	14,353.7			2,947.60	31,727.7	
1,614.10	17,374.0	1,333.50	14,353.7			2,947.60	31,727.7	
1,614.10	17,374.0	1,278.90	13,766.0			2,893.00	31,140.0	

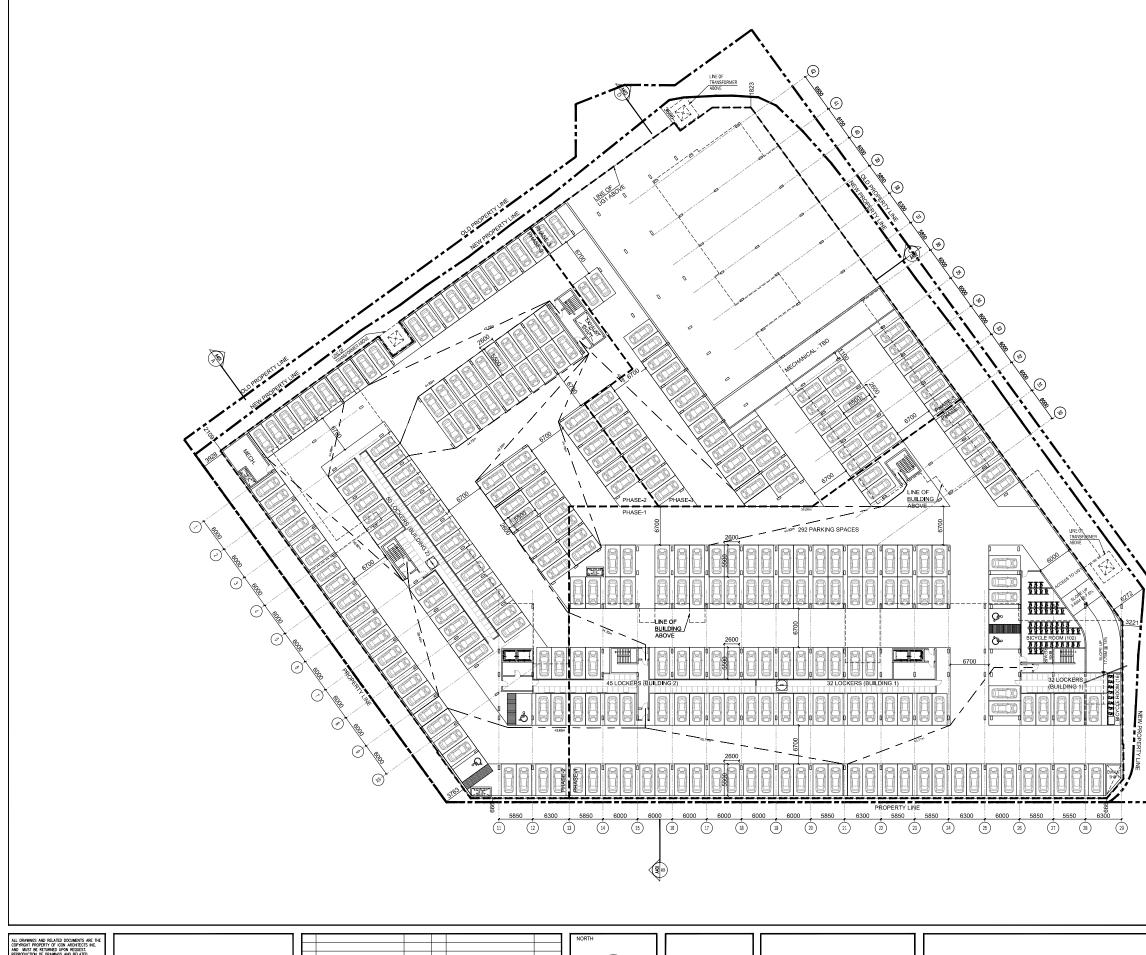
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	640	0.1	64
Т			
			704

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0	329
0	292
64	643
7	07

REQUIRED PARKING	REQUIRED ACCESSIBLE PARKING	PROVIDED ACCESSIBLE PARKING
704	16	16
		16

YONGE ST. TORONTO ICONARCHITECTS.CA 505 F-416-224.0604 4789 0G3 -224-0





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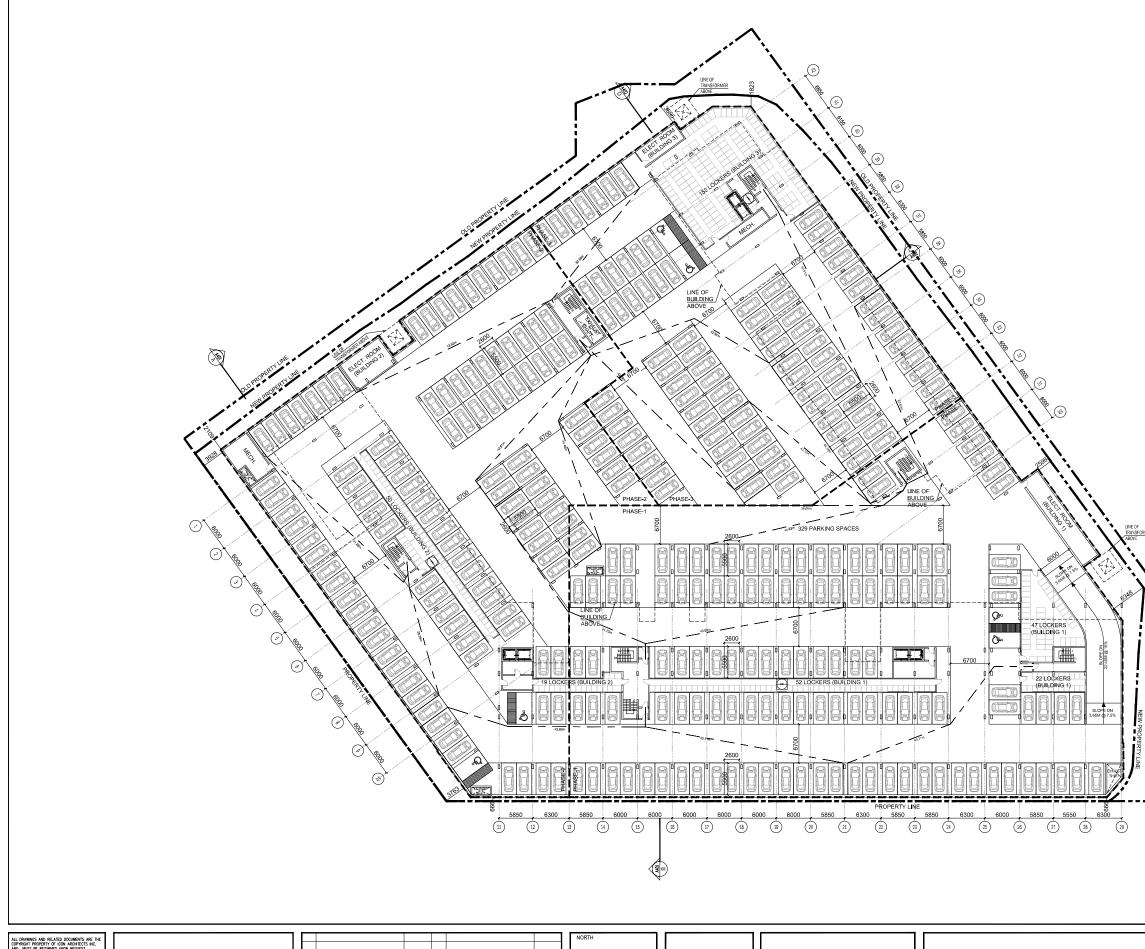
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DRAWING TITLE UG2 FLOOR PLAN Scole: 1/300 Date: MAR.08, 2022 Project No. 17127

Drawn by: RK Checked by: RE Drawing No. A201

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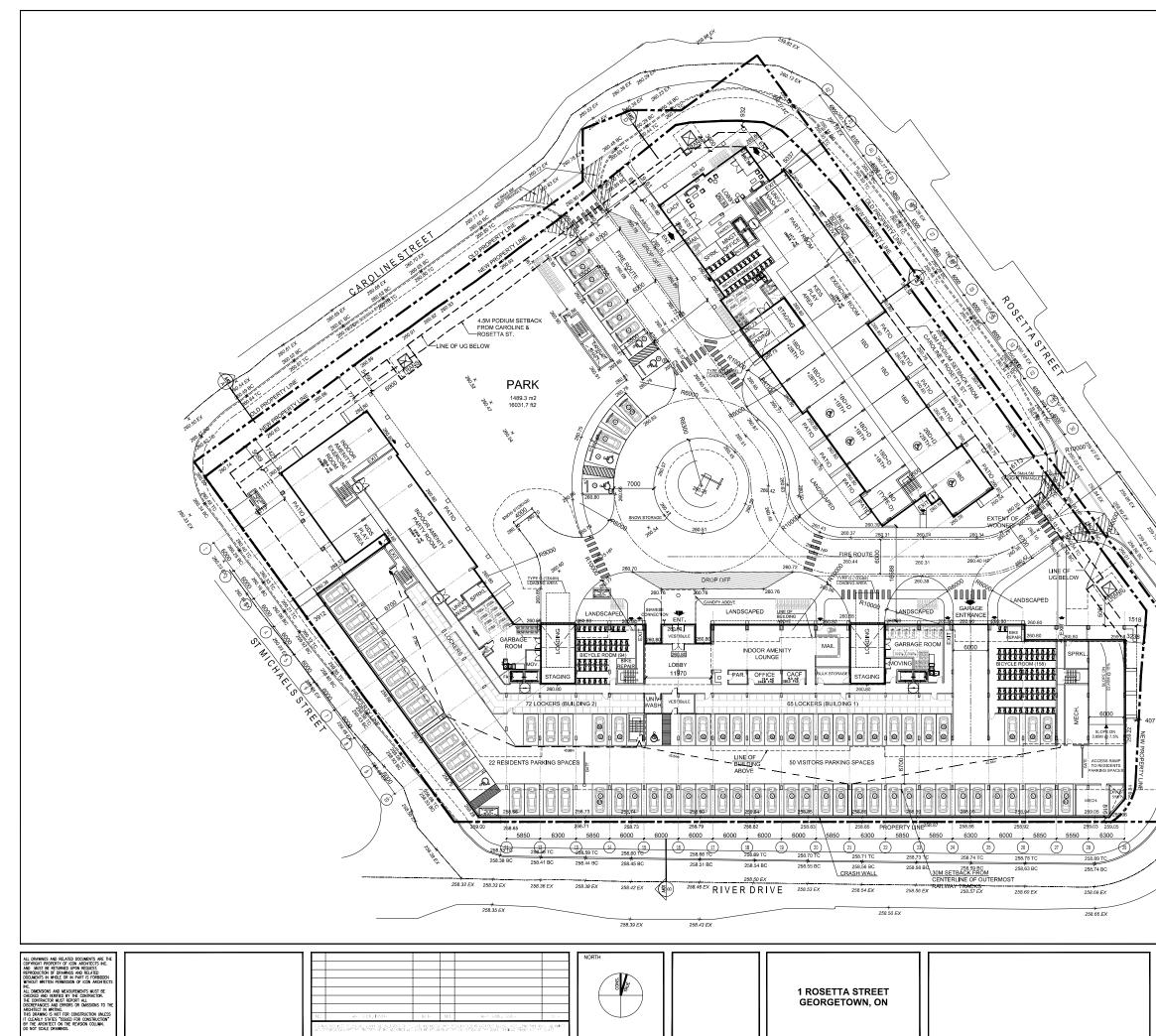
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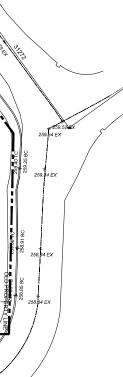
DRAWING TITLE UG1 FLOOR PLAN Scale: 1/300 Date: MAR.08, 2022 Project No. 17127

9 YONGE ST. TORONTO ICONARCHITECTS CA 0505 F.416-224-0504 Drawn by: RK Checked by: RE Drawing No. A202

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GROUND	FLOOR	PLAN	
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Scale:			
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Date:			
MAR.08, 2022			
Project No.			
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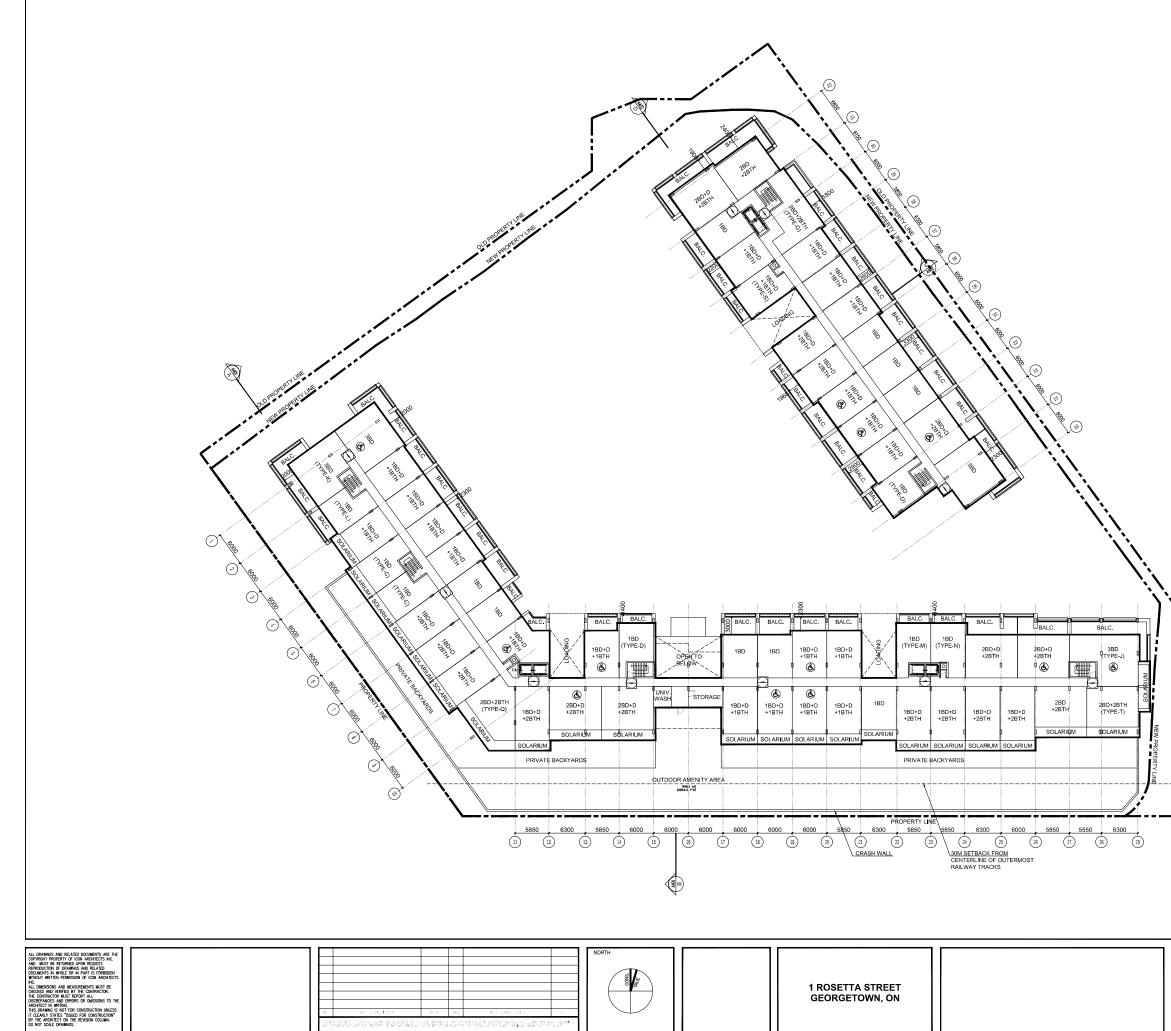
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YONGE ST. TORONTO ICONARCHITECTS CA 3505 F:418-224-0504

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DRAWING TITLE	
2ND FLOOR	PLAN
Scale: 1/300	
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MAR.08, 2022	
Project No.	
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Drawn by: RK Checked by: RE Drawing No. A204

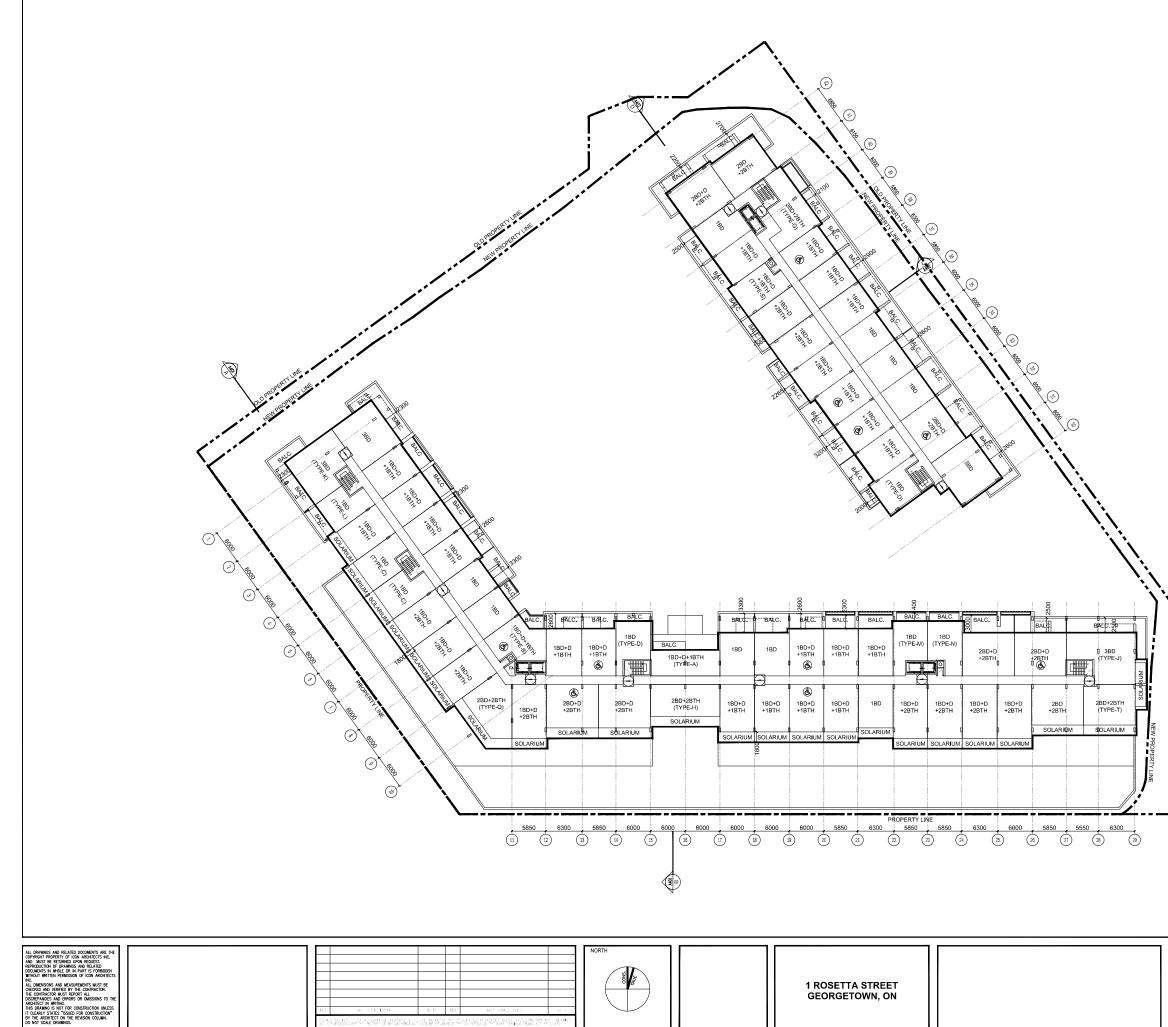




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DRAWING TITLE 3RD FLOOR PLAN Scale: 1/300 Date: MAR.08, 2022 Project No. 17127





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DRAWING TITLE 4TH FLOOR PLAN Scale: 1/300 Date: MAR.08, 2022 Project No. 17127

Drawn by: RK Checked by: RE Drawing No. A206





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DRAWING TITLE 5TH FLOOR PLAN Scale: 1/300 Date: MAR.08, 2022 Project No. 17127





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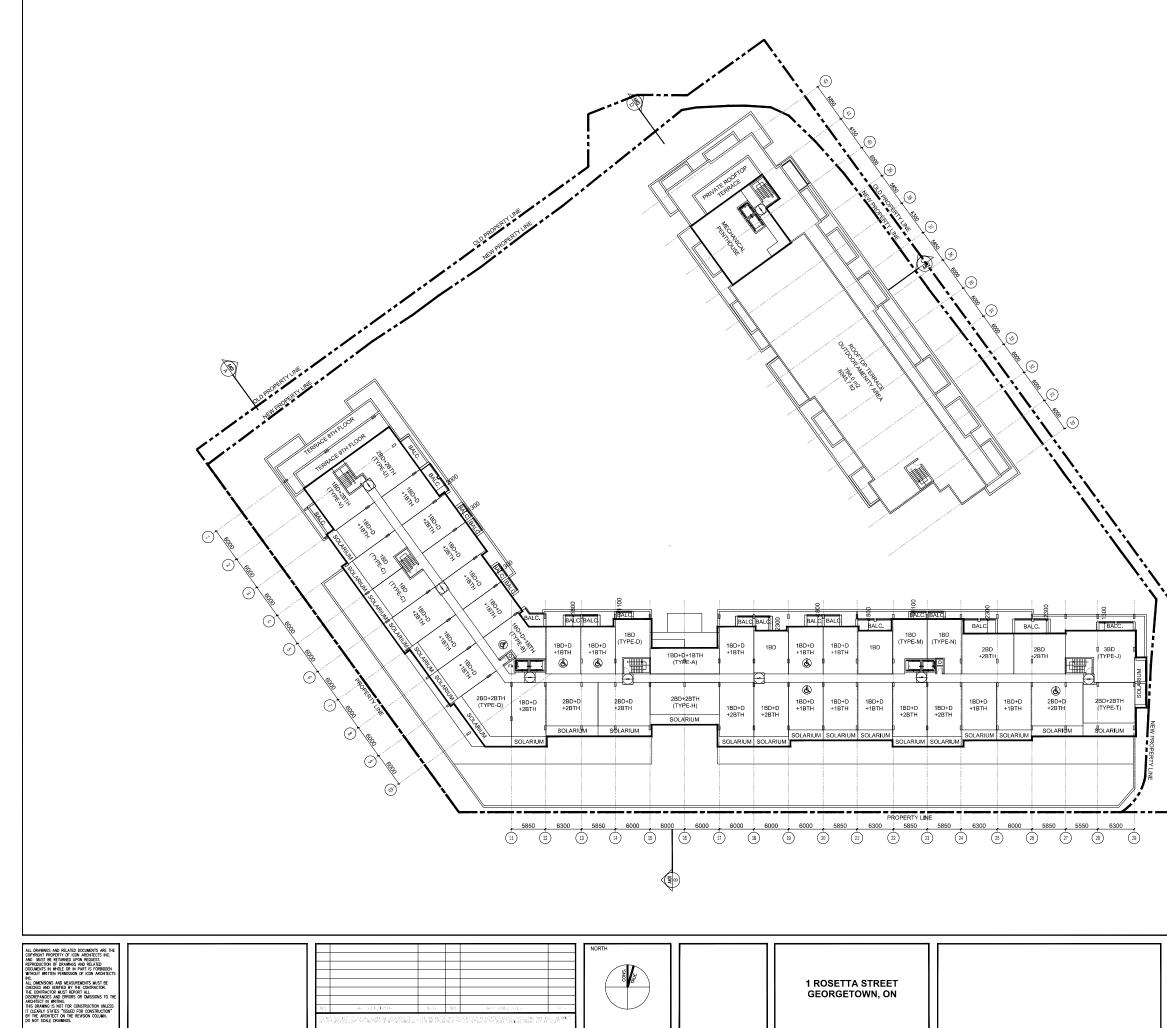


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Drawn by: RK Checked by: RE Drawing No. A209





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DRAWING TITLE 9TH FLOOR PLAN Scale: 1/300 Date: MAR.08, 2022 Project No. 17127





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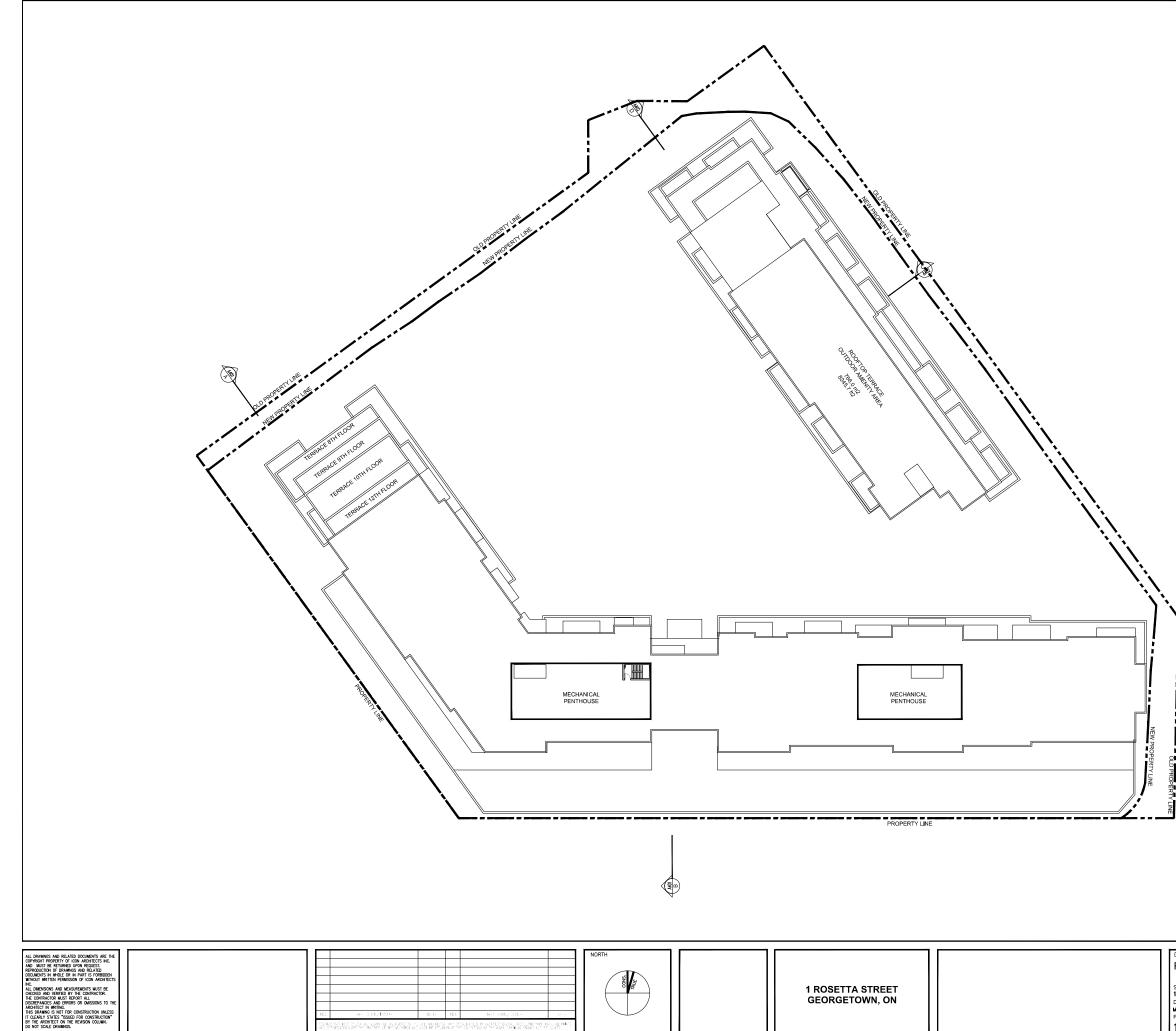


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DRAWING TITLE 12TH FLOOR PLAN Scale: 1/300 Date: MAR.08, 2022 Project No. 17127





DRAWING TITLE ROOF FLOOR PLAN Scale: 1/300 Date: MAR.08, 2022 Project No. 17127

Drawn by: RK Checked by: RE Drawing No. A213





(BUILDINGS-1&2)

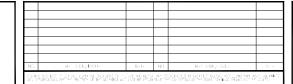
YONGE ST. TORONTO ICONARCHITECTS CA 505 F-416-224_0604 Drawn by: RK Checked by: RE Drawing No. A301

4789 0G3

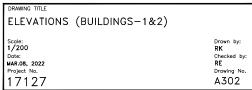




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1 ROSETTA STREET GEORGETOWN, ON





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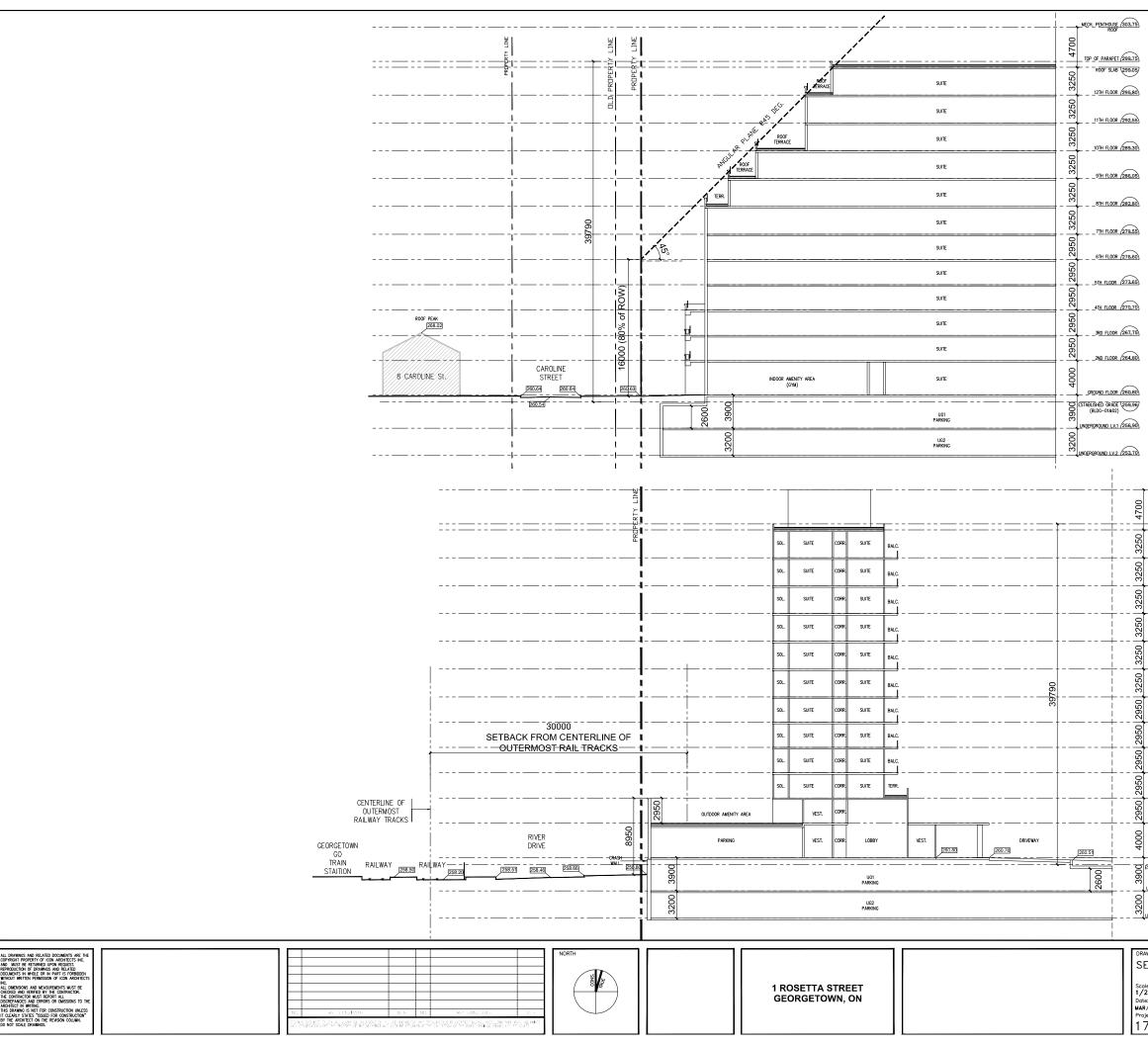
BUILDING - 3 _ EAST ELEVATION _ SCALE 1:200





BUILDING - 3 _ NORTH ELEVATION _ SCALE 1:200





SECTIONS Scale: 1/200 Date: MAR.08, 2022 Project No. 17127

RAWING TITLE

YONGE ST. TORONTO ICONARCHITECTS.CA 0505 F:416-224-0504 Drawn by: RK Checked by: RE Drawing No. A401

4789 . 0G3 -224 0

SECTION B _ SCALE 1:200



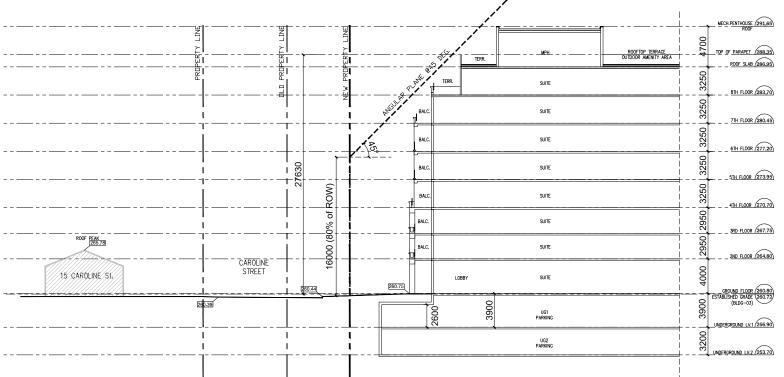
	11 <u>TH_FLOOR (292.55)</u>
3250	
3250	9TH FLOOR (286.05)
3250	8TH FLOOR (282.80)
3250	7TH FLOOR (279.55)
2950	6TH FLOOR 276.60
2950	5TH FLOOR 273.65
2950	4T <u>H FLOOR 270.70</u>
2950	
2950	
4000	
3900	ESTABLISHED GRADE 259.96/ (BLDG-01&02)
3200	UNDERGROUND LV.2 (253.70)
	•

4700 TOP_OF_PARAPET 299.75 - - - ROOF SLAB (299.05) 3250 12TH FLOOR 295.80 3250

MECH. PENTHOUSE (303.75) ROOF

SECTION A _ SCALE 1:200

291.65 MECH.PENTHOUSE						``,	`						
286.95 ROOF SLAB	· · · _ · · _ · · · · ·									<u></u>		1	
283.70) BTH FLOOR			T	BALC.	SUITE	CORR.	SUITE						
280.45) 7TH FLOOR				BALC.	SUITE	CORR.	SUITE	BALC.	1. 20				
277.20) 6TH FLOOR				BALC.	SUITE	CORR.	SUITE			ĹĹ			
273.95) 5TH FLOOR	1630			BALC.	SUITE	CORR.	SUITE	BALC.	·	╋╼┑╿ ╏╶╎┵			
270.70 4TH FLOOR				BALC.	SUITE	CORR.	SUITE	BALC.	<u>t</u>	of ROW)		Ì	
267.75) 3RD FLOOR			P	BALC.	SUITE	CORR.	SUITE	BALC.	u u	(80% of 			R00F PEAK
264.80) 2ND FLOOR				BALC.	SUITE	CORR.	SUITE	TERR.		16000 (8			
260.80 GROUND FLOOR	260.45	260.51 260.67	260.77	PATIO	SUITE	CORR.	EXERCISE ROOM		[260.80]	260.54	ROSETTA STREET [260.29] [260.28		10 ROSETTA St.
(260.80) GROUND FLOOR (260.72) ESTABLISHED GRADE (BLDG-03)			2600		3700	UG1 PARKING						260.19	
256.90 UNDERGROUND LV.1 (253.70) UNDERGROUND LV.2	UG2 PARKING M								<u> Щ</u>				
		<u>_</u>											



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Scale: 1/200 Date: MAR.08, 2022 Project No. 17127

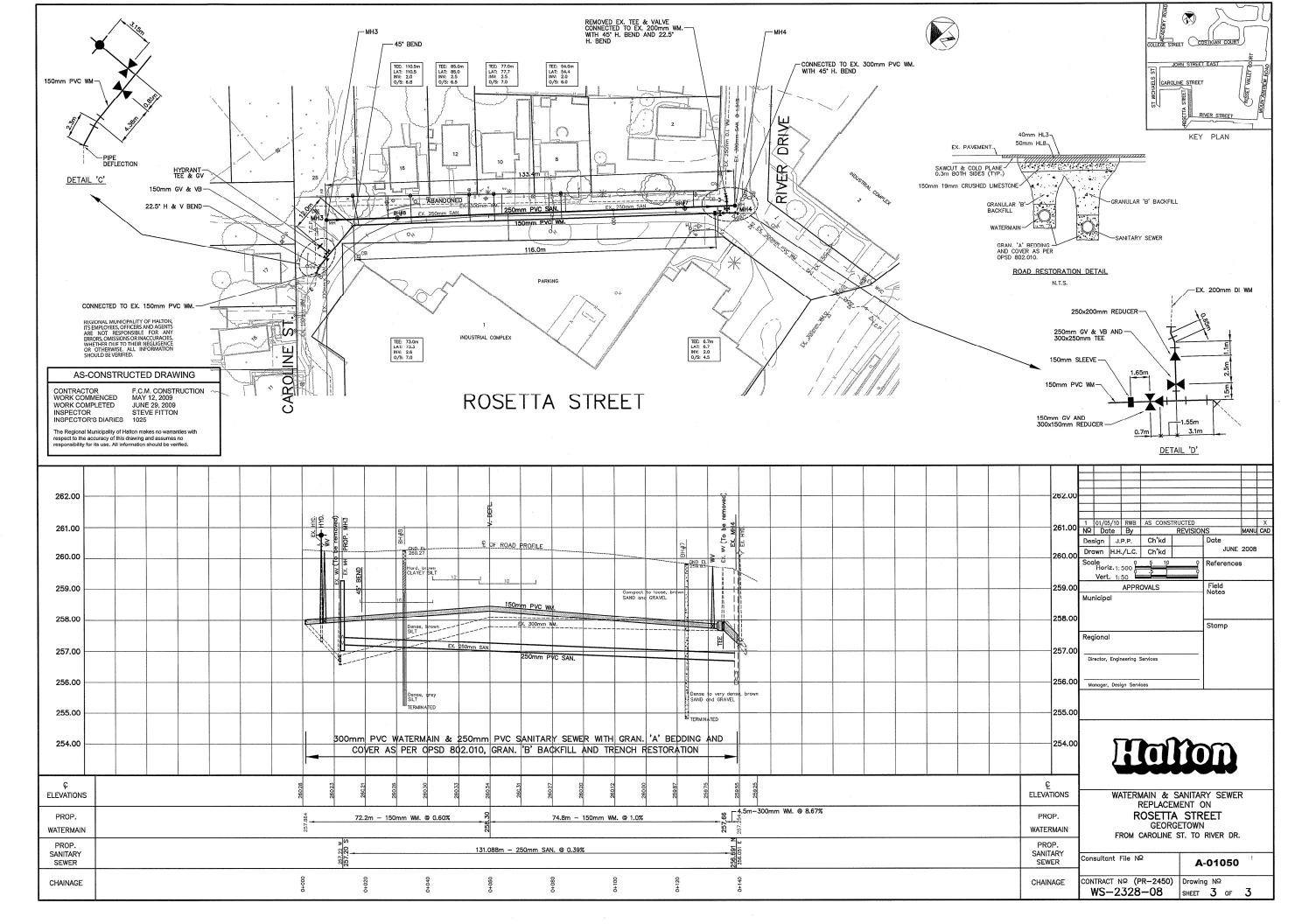
- 4789 YONGE ST. TORONTO 1 0G3 ICONARCHITECTS.CA 6-224-0505 F:418-224-0504 Drawn by: RK Checked by: RE Drawing No. A402



SECTION D_SCALE 1:200

SECTION C _ SCALE 1:200

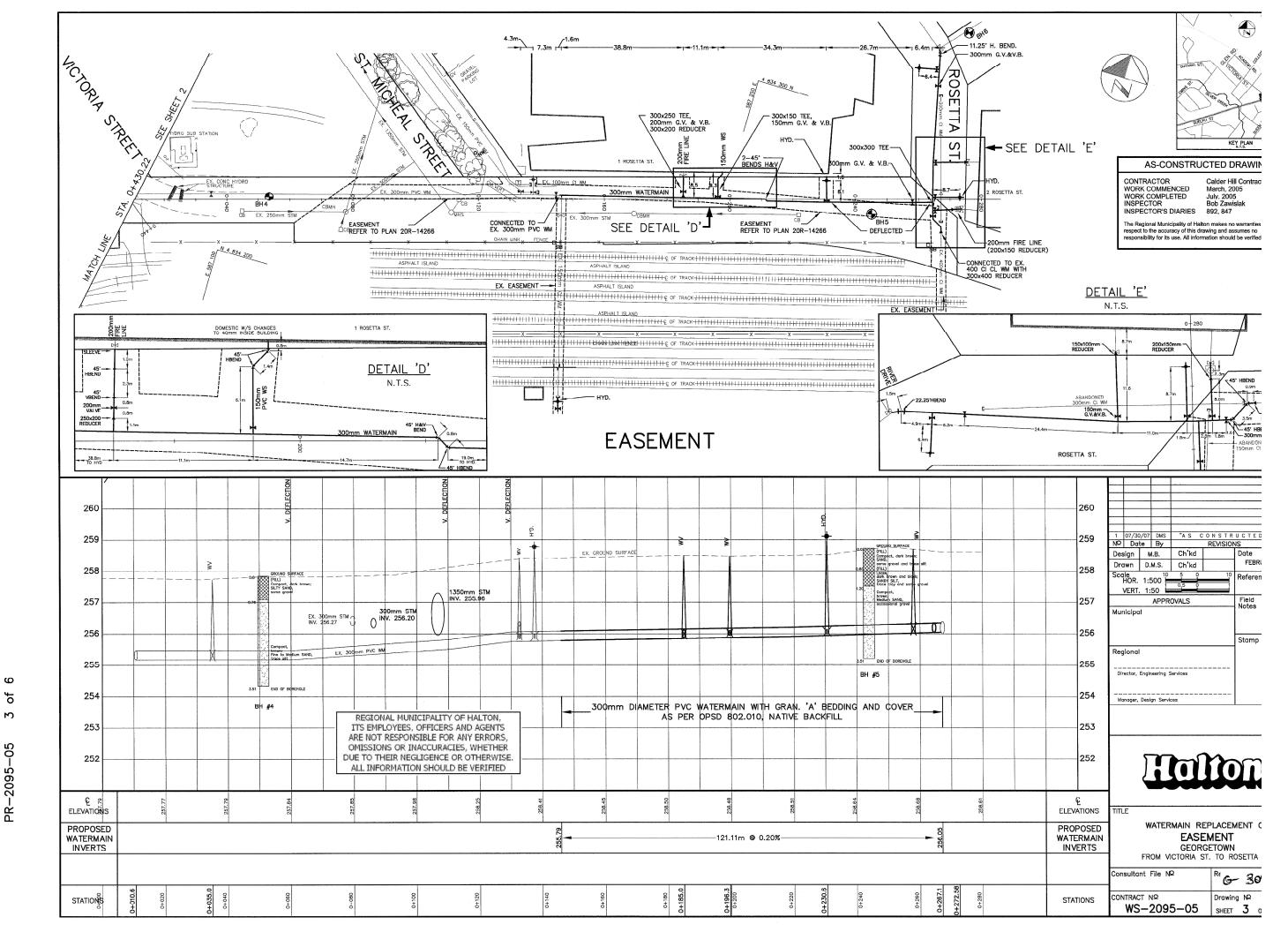
DRAWING TITLE



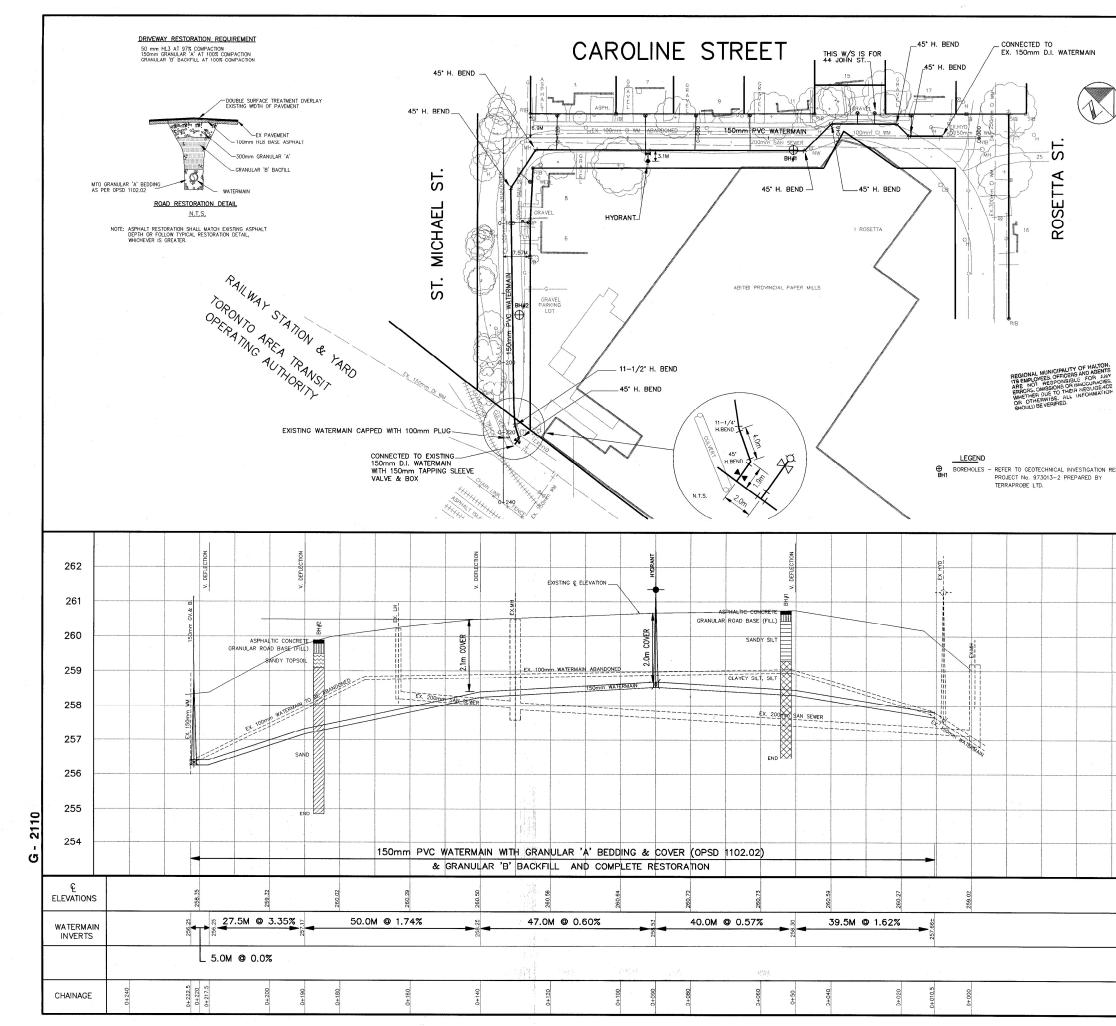
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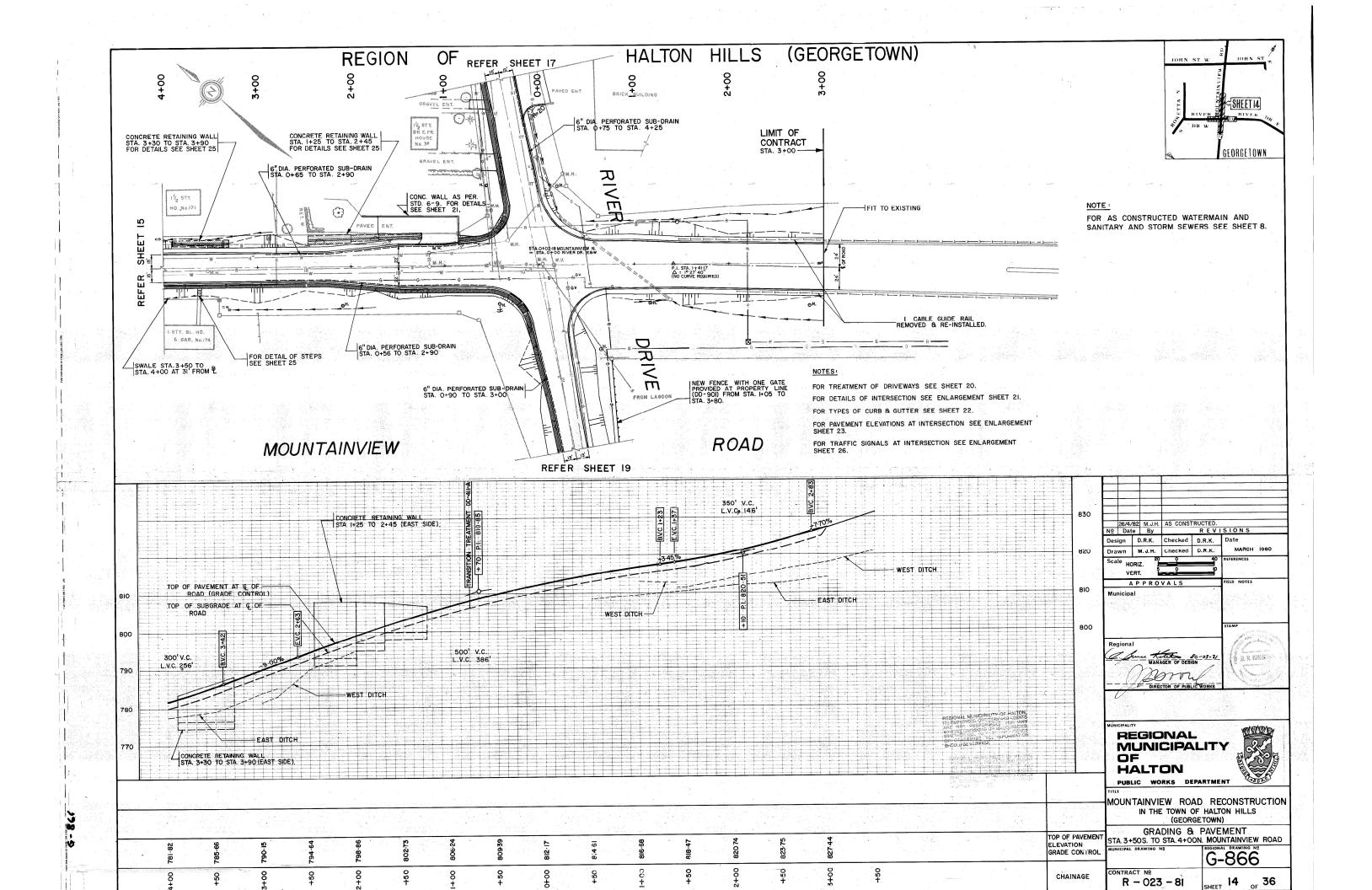
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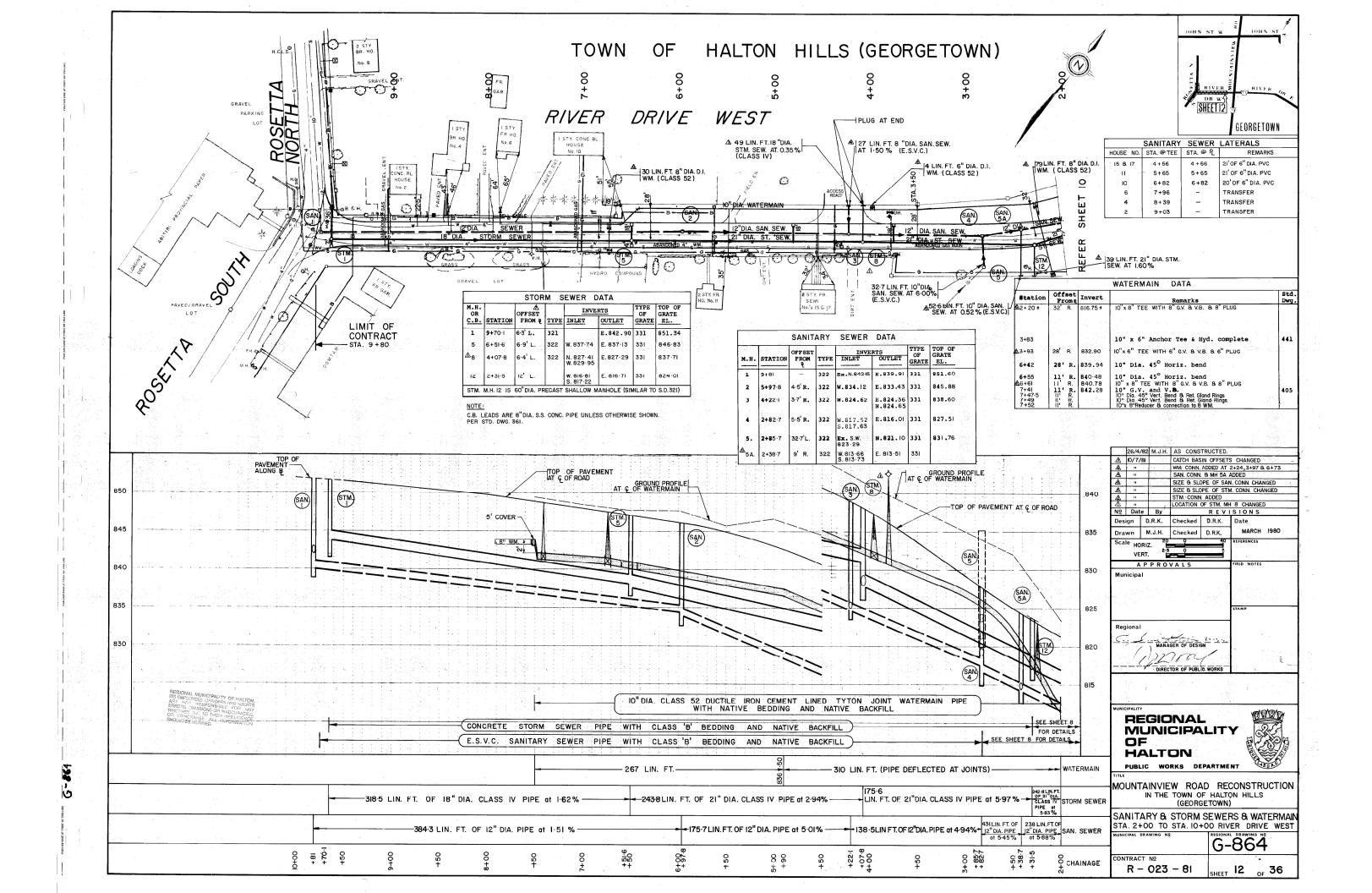


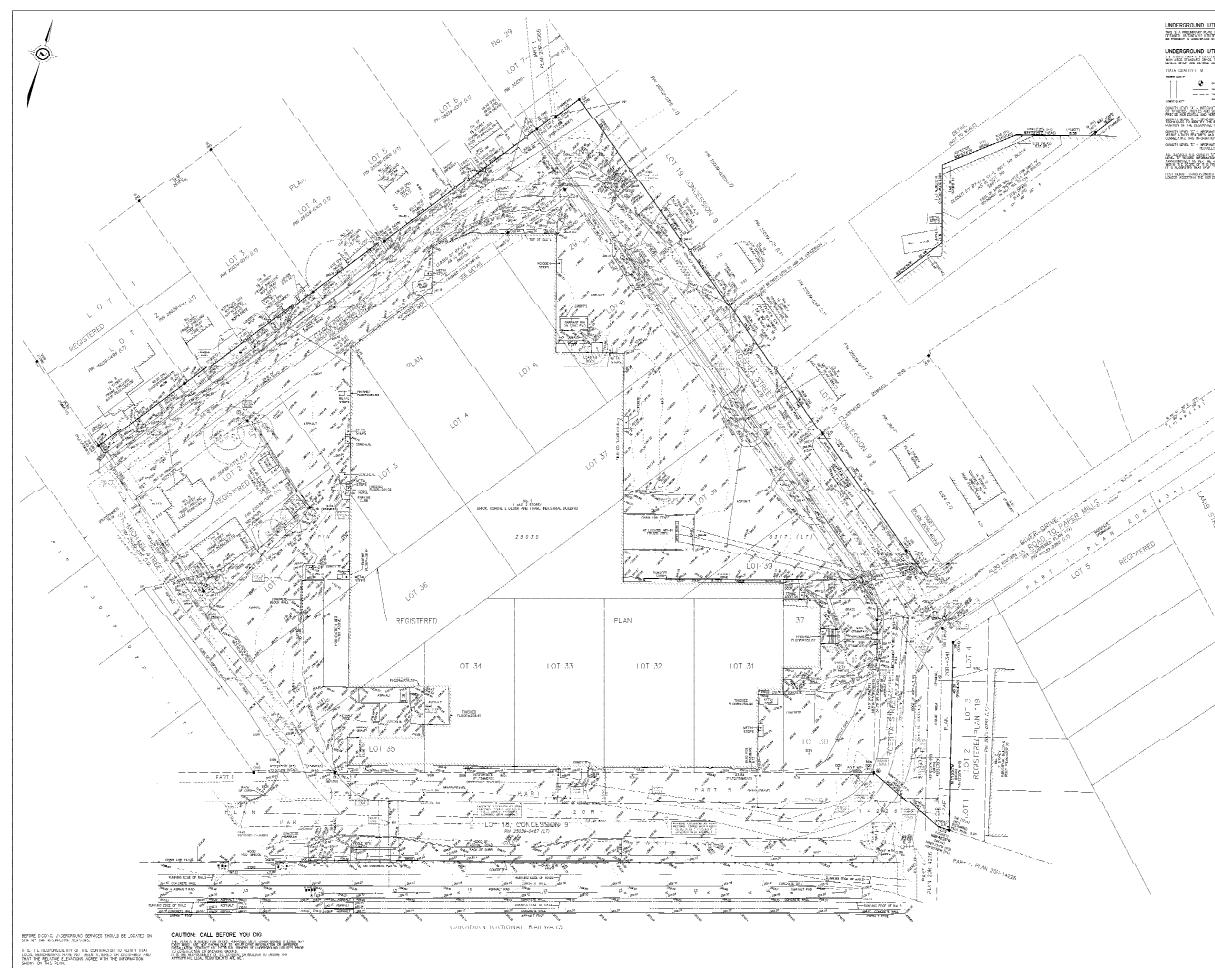
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	GENED	CAROLINE Y CAROLINE Y CRIVER
	1. AI Or os J. TI Se loc 4. W pe 5. Ai co co co ti- bio 7. M sh 8. CC Se os os PC 9. Ei Se os se os se os 10. If pio 10.	I dimensions are in Metres unless otherwise specified. Il Watermain installation shall conform to the latest revisions of the tario Provincial Standard Drawings (OPSD) and specifications (OPSS) amended by the Regional Municipality of Halton. The locations of all existing Watermain. Sanitary Sever. Utilities and tride Laterals are approximate. The Contractor must verify the atlandin, size and elevation in the field prior to construction. atermain can be either Ductile Iron Pressure Class 350 as r AWWA C-150 or PVC SDR-18 CL-150 as per AWWA C-900. Il existing water services to be replaced with 20mm meter copper for residential dwellings and 25mm diameter per for industrial and commercial premises as per APWA Data of the property line, unless otherwise noted. The contractor shall provide all temporary caps, plugs and words required for testing the new watermain. all be 70% of the Monufacturer's specifications. Darosin protection is required for all metallic pipe, valves, fittings process and yafants. Use either contaction or 8mil medium density hyberhyben encosement as per AWWA C-105 disting valve baves to be removed are to have granular chilling and complete restoration. Existing valves in valve chilling and complete restoration. All existing hybrants to removed ore to be returned to Regional Stores 2316 South rvice Road, Oakville or 1600 Steeles Ave. Milton. hydrant exceeds 1.7M. a hydrant that can be roised from the thom without increasing the rod length must be used. Bajonal Municipality of Halton Approved Mechanical
PORTS	fit pip	ND H. BEND H. BEND TEE & REDUCER & HYDRANT
	262	1 17/03/99 WWC AS CONSTRUCTED X-
	261	№ Dote By REVISIONS MANUCAD Design BW/WWC Ch'kd Dote MARCH 1997 Drawn WWC Ch'kd References 1:500 Horiz. Dote References 1:500 Vert. Field
	259 258	Municipal Notes REGION BOOK Stamp
	257	Director, Design and Construction Services Manager, Design Services
	255	AS CONSTRUCTED
,	ELEVATIONS	TITLE 150mm WATERMAIN REPLACEMENT ON CAROLINE ST. & ST. MICHAEL ST.
	INVERTS	In The Town Of HALTON HILLS (Georgetown) ROSETTA ST. TO C.N.R. TRACKS
		Consultant File Nº Regional Drawing Nº G - 2110







UNDERGROUND UTILITY NOTE: THIS S A PRELIMINARY PLAY, RECEIPS HAVE NOT VET BEEN RETAINED UNTONFAINE UTILITES AND INTRASTRUCTURE MAY be present in workspace when have not been depicted

UNDERGROUND UTILITY NOTES

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INVERTIDERTH MERSURFAMENT'S HEREON ARE PROMOED IN WETRES AND CAN BE CONVERTED TO HEAT BY DIVORD BY DUSING.

PLAN CF SURVEY ILLUSTRATING TOPOGRAPHY CAROLINE STREET, LYING BETWEEN ST. MICHAEL STREET AND ROSETTA STREET DECONTROL TO THE STREET REGISTERED PLAN 29 AND PART OF RUSETTA STREET REGISTERED PLAN 37 TOWN OF ITALTON TILLS REGIONAL MUNICIPALITY OF HALTON

J.D. BARNES LIMITED METRIC DISIANCES AND ARL SCORDINALES SHOWN ON THE PLAN, ARE IN.

ELEVATION NOTE LL-M PROBLEMM ON INTO PAY ARE RELATED TO SLOBELIC DATEM NO AND EXECUTION FROM THE MINISTRY OF TRANSPORTATION BARCH MARKS: INTERNATIONAL CARDS No MORENTARY LEVATION-22 (19):

NOTES

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стото) на интерно, сулу издатил над. у на досе или лице (сво) ретилорание и совержать на совержать на совержать стото ретилествие ет по совержать и совержать совержать совержать совержать совержать развита с полнатора совержать совержать совержать совержать развита с полнателя совержать со полнать совержать по полнать с полнателя со волгати со полнать совержать по полнать с полнателя со волгати со полнать совержать по полнать совержать совержать совержать совержать по полнать совержать совержать совержать совержать по полнать совержать совержать совержать совержать совержать по полнать совержать совержать совержать совержать совержать совержать по полнать совержать по полнать совержать совержат

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	u	DENOTES	SURVEY MONUVENT SET
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κ	IB.	ULNO LS	INON BAH
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	'diT	DENOTES	WITHFESS
	P1	DENOTES	SURVEYOR'S REAL PROPERTY REPORT BY VOCAULAY, WHITE
			& WUIR LTD, DATED NOVENBER 27, 2003. FILE Vol 03-168
	P2	L'ENU ES	PLAN OF CURVET BY WE. CARR. OL S. JANES JULY 20, 1068. FLE No. 62-160.
			NLL No. 65-160.
	P3	DENO LS	PLAN 20R 14226
	P4	DENOTES	PLAN OF SURVEY BY R.E. CLIPSHAW LTD, OLS
			DATED REBRUARY 14th, 1383, FILE 83 0244 10 PLAN 208 4341
	P5	DENOTES	
	P6	DENO LS	PLAN 200 4093 SURVEYOR'S REAL PROPERTY REPORT BY FIDDES CLIPSHAM IVC.
	100	DEND ES	DATED NOVENBER 21, 2014. FUE No. 14 6235.
	P8	DENOTES	PLON ZORVERSEN ZI, ZULA, NEE NO. 14 02200.
	På -	DENOTES	
	DI	DENOTES	INSTRUMENT NO. 294023
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	NEAS	DENO ES DENOTES	INSTRUCTION IN CONTRACTOR MEASURED
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TOPOGRAPHIC LEGEND

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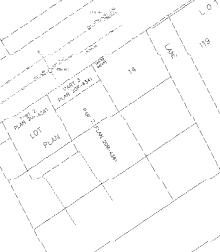
UNDERGROUND UTITLITY LEGEND

- SAN - DENOTES UNDERCHOUND S	ANITARY SEVER
- CT- DENOTES UNDERCROUND C	
W DENOTES UNDERGROUND W	
- UE - DEKOTES UNDERGROUND H	HIDRO LINE
- UT - CENDIES UNDERCHOUND II	ELEPHONE JNE
EC DENOTES UNDERGROUND ET	
— UNX — DENDLES UNDERSCHIED 11	
E DENOTES END CAP/ CAPPI	ED
FIV GENOLES POST IN ACATOR	VALVE

SURVEYOR'S CERTIFICATE LOCYTET ING: 1. DIS JUNEY: MID IT AV ACT CORPLET AND IN ACCOMMENT WITH ITS JUNEY ACL, IN: MARTING, MIT 200, THE MEDIA ALLAR, AURIE HEM. 2. THE SURVEY WAS COMPETED ON THE SUBMENT OF LARF, 200.







Appendix B – Water Analysis

Hydrant Flow Test (River Road) Water Demand, Fire Demand, and Hazen-Williams Calculations



81 Todd Road Suite 202 Georgetown Ont. L7G 4R8

(o) 905-467-5853 (C) 905-971-9956 (e) mark@aquacom.ca

SITE NAME	I B I GROUP	
TEST DATE TIME	MONDAY 14 DECEBER 2020 @ 1105 AM	
SITE ADDRESS	7 RIVER RD, GEORGETOWN, R OF HALTON	
TECHNICIANS	G. SUTHERLAND, B. SUTHERLAND	
COMMENTS	ASSISTANCE FROM RofH OPERATOR	

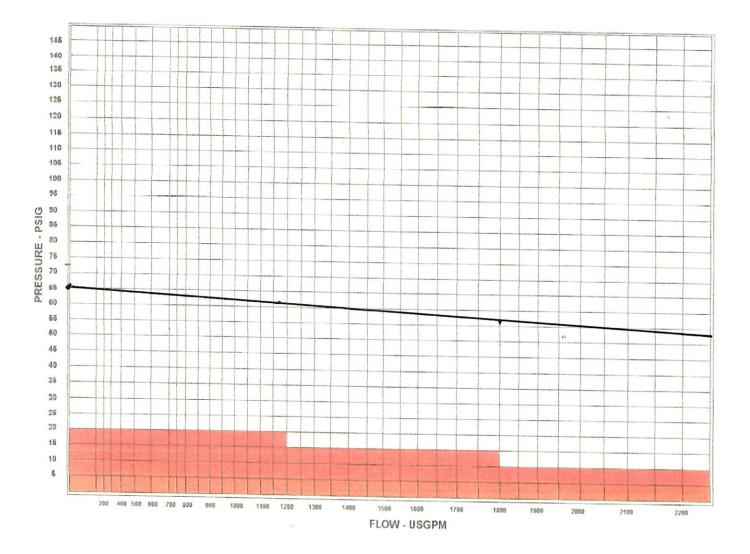
LOCATION OF FLOW HYDRANT

LOCATION OF RESIDUAL HYDRANT

7 RIVER RD

4 DANIEL CT AT RIVER RD

# OUTLETS	SIZE INCHES	PITO PSI	FLOW USGPM	RESIDUAL PSI	STATIC PSI	PIPE DIA. MM
ONE	2.50	45	1151	61	65	
TWO	2.50	29	1798	57		200MM
		THEORETICAL	4569	20	TEST #	ONE
NOZZLE COE	CFF.	.90				-



1 Rosetta Street, Georgetown

The Paper Mill



DOMESTIC DEMAND CALCULATIONS

Project Name: 1 Rosetta Street Project Number: 125082 Date: February 25, 2022 Designed By: Carly Mason, B.Eng

Peaking Factors						
Land Use Peak Hour Maximum Day						
Residential	4.00	2.25				

1. Based on the City of Toronto Standards and 2. OBC, Part 8 "Sewage Systems", OBC Table 8.2.1.3.A and 8.2.1.3.B

3. ADD = 275 L/cap/day for residential uses

4. ADD = 250 L/cap/day for commercial uses

					(ADDxP.F.)	(ADDxP.F.)
Component	No. Units	Density	Population	ADD (L/s)	PHD (L/s)	MDD (L/s)
Residential - 1 Bedroom	490	1.328 pp/unit	651	2.07	8.28	4.66
Residential - 2+ Bedroom	150	1.724 pp/unit	259	0.82	3.29	1.85
	0	0.000 pp/unit	0	0.00	0.00	0.00
	909	2.89	11.58	6.51		

FIRE FLOW DEMAND CALCULATIONS

 $F = 220C\sqrt{A}$

Based on the Water Supply for Public Fire Protecetion Manual, 1999 by the Fire Underwriters Survey

Step 1: Calculate Fire Flow (based on area)

Construction Coefficient =	0.6	
Largest Floor Area =	3,148	m2
Floor Above =	3,148	m2
Floor Below =	3,148	m2
Area =	4,722	m2
Fire Flow (F) =	9,000	L/min

F = required fire flow (L/min) C = coefficient related to type of construction

0.6 for fire resistive (fully protected, 3-hr ratings)

0.8 for non combustable (i.e. unprotected metal buildings) 1.0 for ordinary construction

1.5 for wood frame construction

Automatic Sprinklers (monitored)

Adequately Designed System

A = total floor area excluding basements 50% below grade

* If vertical openings are inadequately protected, consider two largest two largest adjoining floors plus 50% of each of any floors above up to eight floors.

* If vertical openings are adequately protected (one hour rating), consider largest floor area + 25% of two immediately floors.

Step 2: Adjustment for Building Occupancy (shall not be less than 2000 L/s)

Occupancy Adjustment = -0.15 F ₁ = Fire Flow x Adjustment = 7,650	L/min	Non-Combustable Limited Combustable)	-25% -15% No change	Free Burning Rapid Burning	15% 25%
djust F1 for Fire Supression System					

Step 3: Ad

Sprinkler Adjustment =	30%	
F ₂ = F ₁ x Adjustment =	2,295	L/min

Step 4: Adjust F1 for Exposure / Proximity (shall not exceed 75%)

Proximity Adjustment = (max 75%) 30% $F_3 = F_1 x$ Factor = 2,295 L/min

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

-50%

-30%

Step 5: Calculate Adjusted Fire Flow (shall not be less than 2000 L/min or greater than 45,000 L/min)

F ₁ = - F ₂ =	7,650 2,295	L/min L/min
+ F3 =	2,295	L/min
Fire Flow =	8,000	L/min
Fire Flow =	133.3	L/s
Total Demand (Fire Flow + MDD) =	139.8	L/s

Fire Flow = $F_1 - F_2 + F_3$

Checks:

Fire Flow greater than 2000 L/min Fire Flow less than 45,000 L/min

1 Rosetta Street, Georgetown

Head Loss Calculations

The Paper Mill



Project Name:1 Rosetta StreetProject Number:125082Date:February 25, 2022Designed By:Carly Mason, B.Eng

Hydrant Flow Test Results

Flow	Flow	Flow	Pressure	Pressure
(gpm)	(L/s)	(L/min)	(psi)	(kPa)
0	0.00	0	65	448
1,151	72.62	4,357	61	421
1,798	113.44	6,806	57	393
(1 gal = 3.785 L)				

Residual Pressure at Main

Source: Walski, Thomas M. (2007): Advanced Water Distribution Modeling and Management

$$Q_{\rm R} = Q_{\rm F} \times \frac{hr^{0.54}}{hf^{0.54}}$$

where: Q_R = flow predicted at desired residual pressure

 Q_F = total flow measured during test

 h_r = pressure drop to desired residual pressure

 h_f = pressure drop to measured during test

	Flow	Flow	Flow	Residual Pressure @ Mai		
	(gpm)	(L/s)	(L/min)	(psi)	(kPa)	
Domestic	184	11.6	695	64.9	447	
Fire	2,217	139.8	8,391	53.2	367	

Residual Pressure at Building

h —	10.675 * L * Q ^{1.85}
$h_L =$	C ^{1.85} * D ^{4.8655}

Do	omestic	
L=	90.0	m
	0.012	m³/s
C=	100	
D=	150	m
h _L =	0.5	m
h _L =	20.1	in
h _L =	0.7	psi
h _L =	5.0	kPa

where: h_L = Pressure Drop (m)

L = Length of Service (m)

Q = Flow Rate (m³/s)

C = Roughness Coefficient

D = Pipe Diameter (m)

	Fire	
L=	90.0	m
Q=	0.140	m ³ /s
C=	110	
D=	200	m
$h_L =$	10.6	m
h _L =	418.3	in
h _L =	15.1	psi
h _L =	104.2	kPa

	Flow	Flow	Flow	Residual Pres	ssure @ Bldg.	
	(gpm)	(L/s)	(L/min)	(psi)	(kPa)	
Domestic	184	11.6	695	64.2	442	
Fire	2,217	139.8	8,391	38.1	263	

Residual Pressure (DOMESTIC) at building is greater than 40 psi (275 kPa). Residual Pressure (FIRE) at building is greater than 20 psi (140 kPa).

Appendix C – Sanitary Analysis

Sanitary Design Calculations Sanitary Capacity Review (TMIG)

BI			Pre-developm	ent San. Flow - ent San. Flow - nent San. Flow weather) =	Residential =	34 L/cd 275 L/cd 275 L/cd 0.286 L/s/ha	-	Mannings= Minimum flow Maximum flow	,	0.013 0.6 m/s 3.0 m/s						Project Name: roject Number: Date: Designed By:	125082 February 25	i, 2022	
				DES	SIGN FLOW C	CALCULATIC	ONS				1 1				SEWER D	DESIGN & AN	IALYSIS		
	Area (ha) Nimber of	Density	Population		Cumulative Population	Kav	Peaking Factor	Sewage Flow (L/s)	Infiltration Flow (L/s)	Industrial Flow (L/s)	Total Flow, Qd (L/s)	Nominal Diameter	Pipe Slope	Pipe Length	Full Flow Capacity,	Full Flow Velocity	Actual Velocity	Percent of Full Flow (%)	Not
	Units							(1)	(2)	(3)		(mm)	(%)	(m)	Qf (L/s)	(m/s)	V (m/s)		
e-Development																			<u> </u>
dustrial	1.3492 ha	125 pp/ha	169	1.3492	169	0.81	3.39	0.000	0.386	0.067	0.45								
sidential	0.0865 ha	55 pp/ha	5	0.0865	5	0.81	3.61	0.012	0.025	0.000	0.04								
										Total	0.49								
st-Development																			┣—
tration	1.4356 ha		0.00	1.4356	0	1	3.83	0.000	0.411		0.411								<u> </u>
edroom	490 Units	1.328 pp/unit	651	1.+330	651	1	3.83	7.936	0.411		7.936								<u> </u>
Bedrooms	150 Units	1.724 pp/unit	259		259	1	3.83	3.157			3.157								
																			\square
										Total	11.504	250	1.00%	16.5	62.0	1.22	0.93	18.5%	1

Appendix D – Stormwater Analysis

Stormwater Design Calculations Pre- and Post-Development Drainage Area Plans

1 Rosetta Drive

The Paper Mill

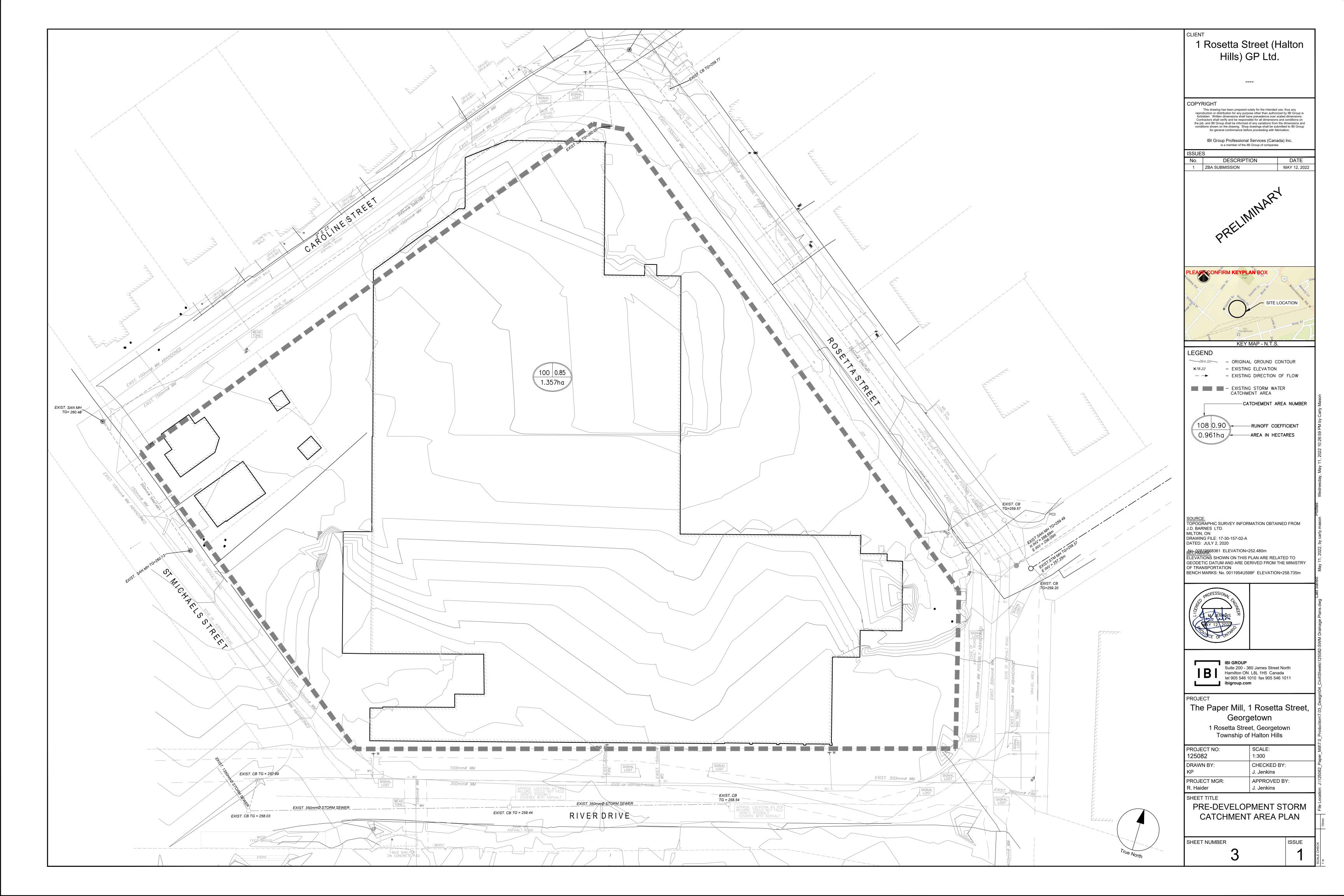
Post-Development Runoff Coefficients

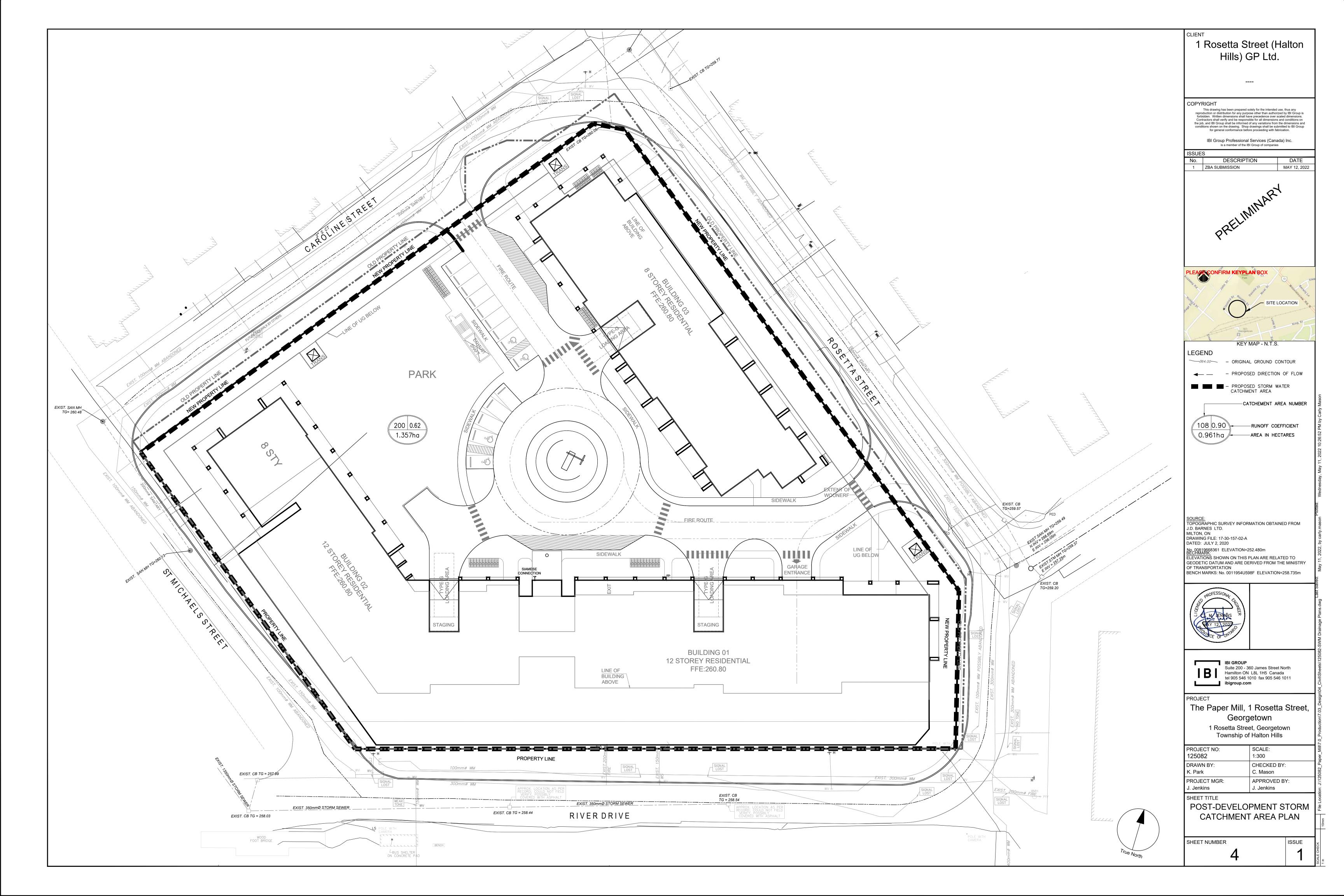
Project Name: 1 Rosetta Drive Project Number: 125082 Date: May 10, 2022 Designed By: Carly Mason, B.Eng

Pre-Development									
Conventional Roof	8,269	60.9%	0.90	0.55					
Green Roof:	0	0.0%	0.50	0.00					
Landscaping:	1,002	7.4%	0.25	0.02					
Permeable Pavers:	0	0.0%	0.55	0.00					
Impervious:	4,301	31.7%	0.90	0.28					
Total Area:	13,572	100%		0.85					

Total Post-Developme	ent			
Conventional Roof	6,271	46.2%	0.90	0.42
Green Roof:	0	0.0%	0.50	0.00
Landscaping:	4,005	29.5%	0.25	0.07
Permeable Pavers:	3,296	24.3%	0.55	0.13
Impervious:		0.0%	0.90	0.00
Total Area:	13,572	100.0%		0.62

IBI





Appendix E – Engineering Plans

Site Grading Plan Site Servicing Plan

