MATTAMY (MILTON WEST) LTD.

FRAMGARD NORTH AND SOUTH BLOCKS

FUNCTIONAL SERVICING REPORT

JULY 28, 2023

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MATTAMY (MILTON WEST) LTD.

FUNCTIONAL SERVICING REPORT

PROJECT NO.: 231-00962-00
DATE: JULY 28, 2023

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1 INTRODUCTION

1.1 INTRODUCTION

WSP Canada Inc. (WSP) has been retained by Mattamy (Milton West) Ltd. to prepare a Functional Servicing Report in support of the Zoning By-law Amendment Application for the proposed development of Framgard North and South Blocks located at the intersection of Regional Road 25 and Etheridge Avenue in the Town of Milton. This report provides the conceptual framework for water distribution, sanitary sewage and storm drainage for the proposed development blocks. A Stormwater Management Report outlining the proposed quality and quantity controls for stormwater within these development blocks has been prepared by WSP under separate cover.

The Site will be serviced by proposed local municipal sewers and watermains within the adjacent municipal and regional right-of-way. Service connections will be constructed and extended into the proposed Site. Coordination with the building and mechanical consultants will be required to determine the service connections to the building during detailed design.

In addition, WSP used the latest architectural plan prepared by Core Architects Inc. dated July 25, 2023, topographic survey for the Framgard North Block, dated April 23, 2018, and topographical survey for the Framgard South Block, dated February 9, 2018, both prepared by Rady-Pentek & Edward Surveying Ltd.

The following information was used to evaluate the servicing options for the Site:

- As-Built Submission Drawings for Mattamy Framgard Phase 1, by DSEL – David Schaeffer Engineering Ltd. dated April 2014;
- As-Constructed Submission Drawings for Mattamy Framgard Phase 3, by DSEL – David Schaeffer Engineering Ltd. dated July 2017;
- Issued for Construction Drawings for West Country Milton Properties Ltd. Phase 1, by TMIG – The Municipal Infrastructure Group dated September 2016;
- Water and Wastewater Functional Servicing Report for the Framgard Development by DSEL – David Schaeffer Engineering Ltd. dated September 2014;
- Boyne Survey Block 2 Final Subwatershed Impact Study by MTE Consultants Inc. dated August 25, 2016; and,
- Hydrogeological, Geotechnical, and Water Balance reports all under separate cover by McClymont & Rak Engineers Inc. dated July 2023.

1.2 SITE DESCRIPTION

The Site is comprised of two development blocks, namely the North Block and the South Block. The north and south development blocks are located at the southwest and northwest corner of Etheridge

Avenue and Regional Road 25 (Ontario Street) in the Town of Milton, respectively. The nearest major intersection is Britannia Road and Regional Road 25. The North Block is a 2.4 ha parcel of land bounded by Regional Road 25 to the east, Etheridge Avenue to the south, tributary SWS-2-A of the Natural Heritage System (NHS) to the west and tributary SWS-2-A-1 to the north. A stormwater management block is located to the north of tributary SWS-2-A-1; part of the Gulfbeck Development Subdivision to the west. The North Block includes a 0.34 ha holdout consisting of a single-family home fronting Regional Road 25, while the rest of the block undeveloped. The South Block is a 2.4 ha vacant greenfield parcel bounded by Regional Road 25 to the east, Britannia Road to the south, tributary SWS-2-A of the NHS to the west and Etheridge Avenue to the north.

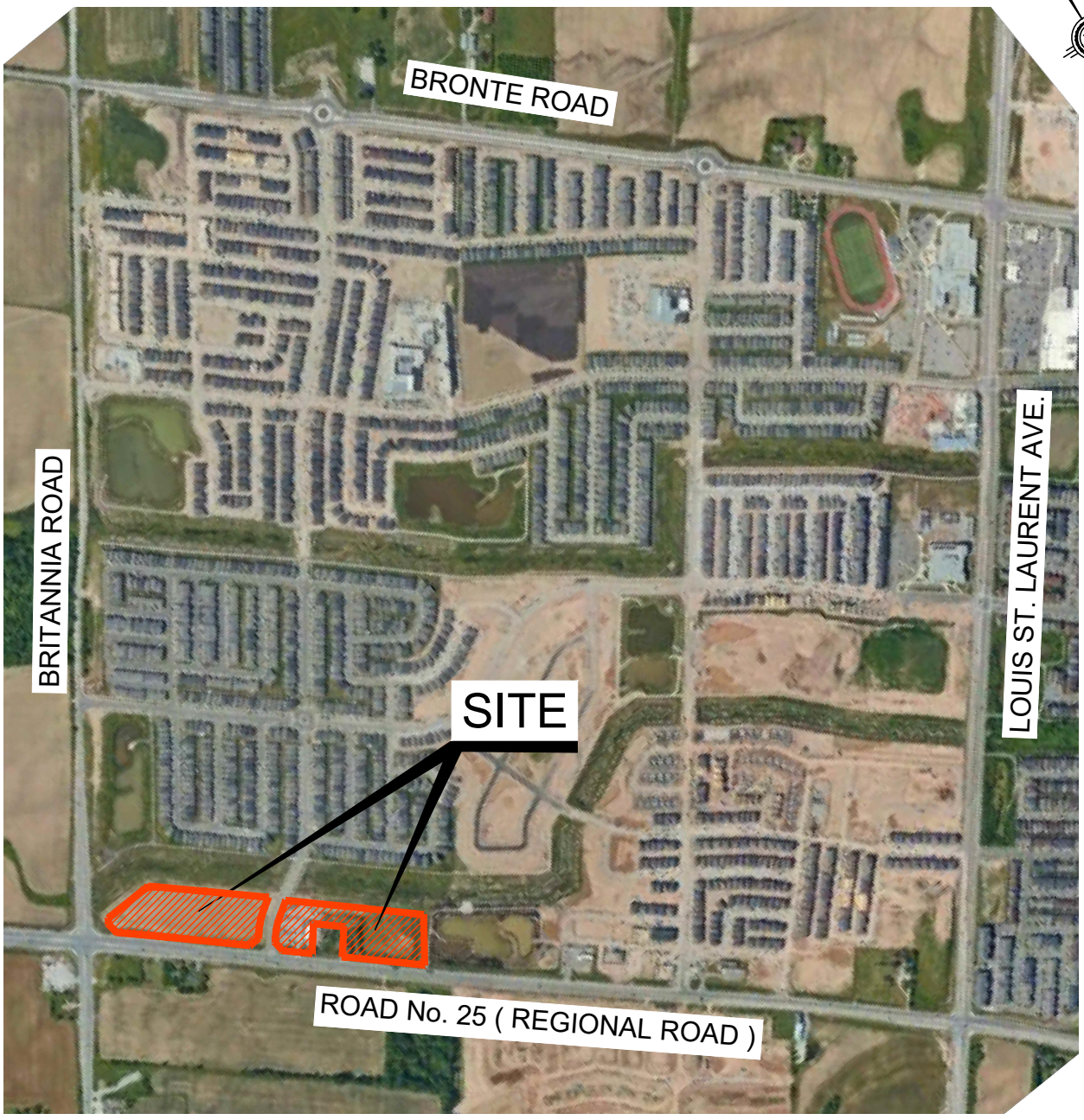
Both blocks fall within the Phase III West Tertiary Plan of the Boyne Survey Secondary Plan Area. There is an existing watercourse (drainage course); tributary SWS-2-A, that borders the west property limits of both blocks. The blocks are located within the Subwatershed Impact Study (SIS) – Block 2 Boundary of the Sixteen Mile Creek Watershed, which is under the jurisdiction of the Halton Region Conservation Authority (HRCA).

1.3 PROPOSED DEVELOPMENT

The proposed development will be built in seven phases, with one phase for each building. The existing site area of the North Block is 2.4 ha, however, the lands adjacent to Regional Road 25 will be dedicated to the Region for future road widening purposes, resulting in a proposed site area of 2.35 ha. The North Block consists of three (3) proposed buildings; Buildings 5, 6 and 7. Building 7 is located adjacent to Etheridge Avenue and will contain fifteen (15) floors of residential units along with 529m^2 of retail space at ground level. Buildings 5 and 6 are located north of the holdout, fronting Regional Road 25 and will contain twelve (2) and thirteen (13) floors of residential units respectively. Site access for Building 7 is provided via a driveway entrance off Etheridge Avenue while site access for Buildings 5 and 6 are provided by a driveway entrance off Regional Road 25. Parking for the buildings within the North block will be provided by an at-grade parking lot and a parking garage with two (2) levels of underground parking covering the majority of the North Block.

The existing and proposed site area of the South Block is 2.4 ha. The proposed development consists of four (4) buildings, Buildings 1-4. Building 4 is located at the intersection of Regional Road 25 and Britannia Road and will contain fifteen (15) floors of residential units. Buildings 2 and 3 are located north of Building 4 and will contain fourteen (14) and thirteen (13) levels of residential units respectively. Building 1 will front Etheridge Avenue and will consist of fifteen (15) floors and 503 m^2 of ground floor retail space. At-grade parking is provided and an underground parking garage, consisting of two (2) levels will cover the majority of the South Block. Access to the Site will be provided by two driveway entrances; one from Regional Road 25 and another from Etheridge Avenue.

Please refer to **Figure 1** for the Location Map, **Figure 2** for the Pre-Development Plan and **Figure 3** for an illustration of the Proposed Development Plan.



CLIENT

MATTAMY (MILTON WEST) LIMITED

TITLE

FRAMGARD NORTH AND SOUTH BLOCKS

LOCATION PLAN

Checked P.M.D.	Drawn 10/12 Cad
Date JULY 2023	Proj. No. 231-00962-00
Scale NTS	Figure No.

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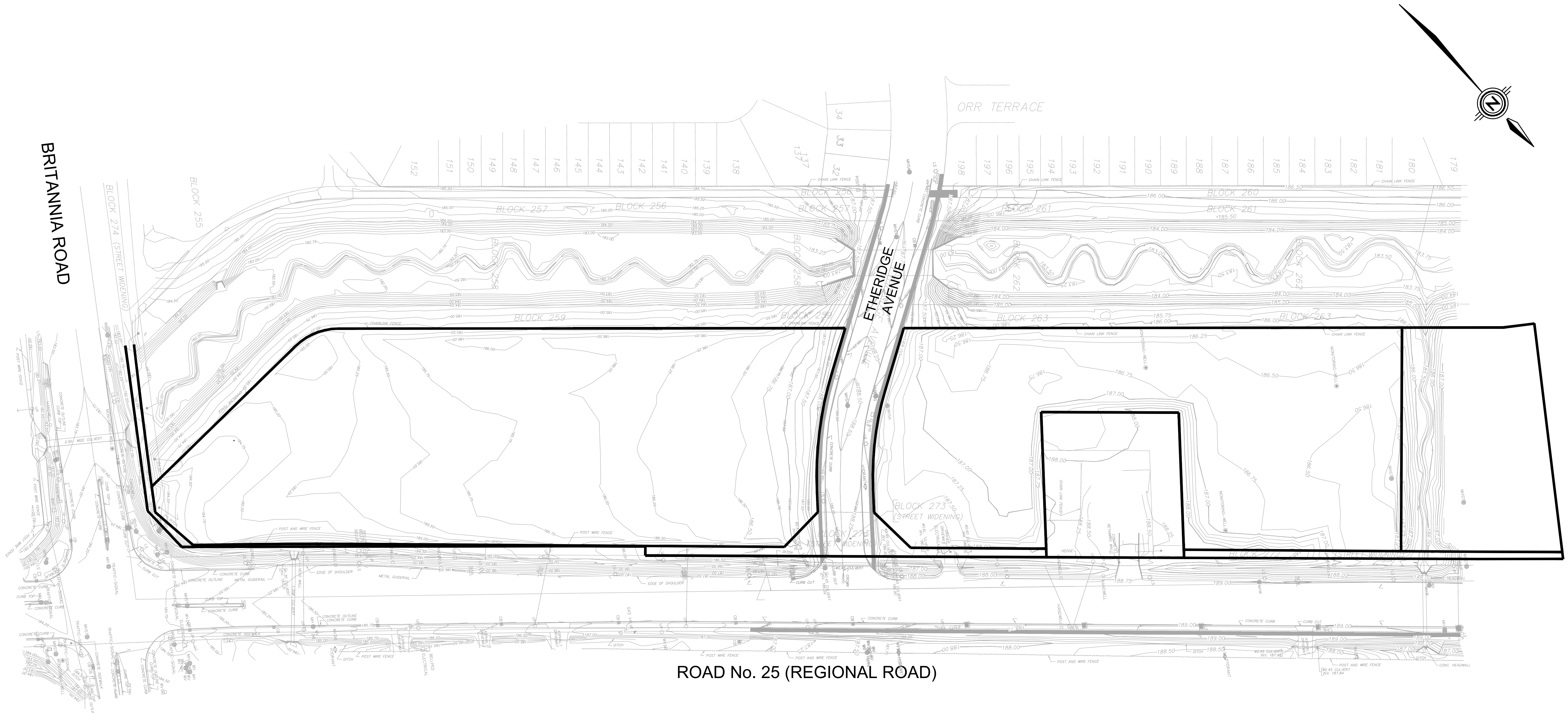

LEGEND

LIMIT OF PROPERTY

CLIENT	MATTAMY (MILTON WEST) LIMITED
TITLE	FRAMGARD NORTH AND SOUTH BLOCKS PRE- DEVELOPMENT PLAN

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Date	JULY 2023	Proj. No.	231-00962
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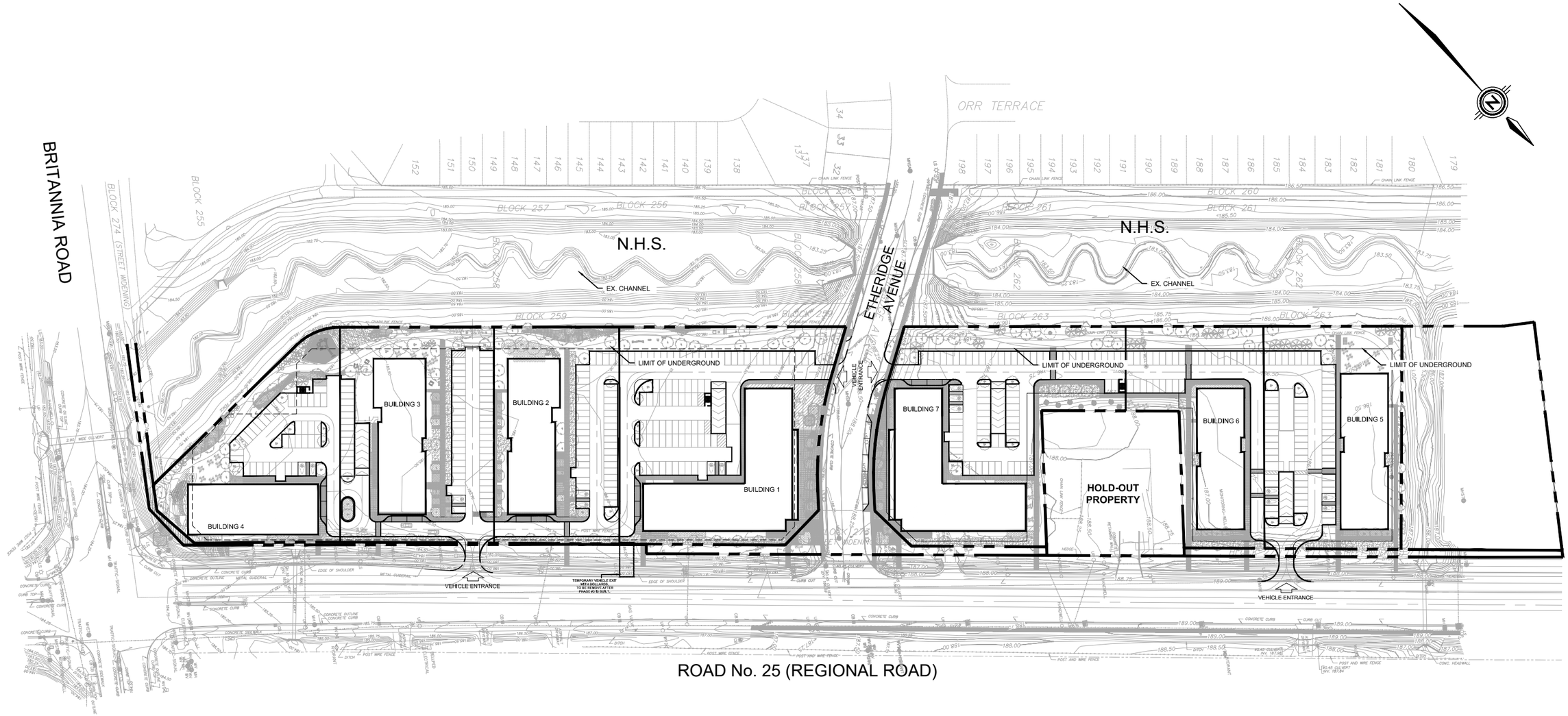

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LIMIT OF PROPERTY

CLIENT	MATTAMY (MILTON WEST) LIMITED
TITLE	FRAMGARD NORTH AND SOUTH BLOCKS
	PROPOSED DEVELOPMENT PLAN

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2 WATER SUPPLY

2.1 EXISTING CONDITIONS

Based on the As-Built Submission Drawings for Mattamy Framgard Phase 1, there is an existing 750mm diameter watermain on Britannia Road, 900mm diameter watermain on the west side of Regional Road 25 adjacent to the site, a 300mm diameter watermain on the east side of Regional Road 25 and a 300mm diameter watermain on Etheridge Avenue. Refer to **Figure 4** for the location of existing watermains and appurtenances in the area.

2.2 DOMESTIC WATER DEMANDS

The following table shows the water demand calculations prepared for ultimate buildout of the proposed development using the Halton Region Water and Wastewater Linear Design Manual dated October 2019:

Table 1: Domestic Water Demand

Site	North Block	South Block	Total
Water Demand Rate	275 L/cap/day		
Equivalent Population Density	Light Commercial Areas: 90 persons/ha Residential (Apartments over 6 stories high): 285 persons/ha		
Commercial Gross Floor Area (GFA)	529m^2	504m^2	1,033m^2
Building Gross Floor Area (GFA)	51,497m^2	72,648m^2	124,125m^2
Equivalent Population	1,473 ppl	2,075 ppl	3,548 ppl
Average Day Demand	4.69 L/s	6.61 L/s	11.29 L/s
Max. Day Peaking Factor	Commercial/Residential: 2.25		
Max. Day Demand	10.55 L/s	14.86 L/s	25.41 L/s
Max. Hourly Peaking Factor	Residential: 4.00 Commercial: 2.25		
Peak Hour Demand	18.72 L/s	26.40 L/s	45.12 L/s

Since the Site is presently vacant, the average domestic demand under existing conditions is 0.00 L/s. The estimated average day domestic demand for the proposed development is 11.29 L/s and the maximum daily and peak hour demand is 25.41 L/s and 45.12 L/s respectively. Therefore, the average day water demand will increase due to the proposed development.

A detailed fire flow calculation has been prepared using the recommendations of the Water Supply for Public Fire Protection, 1999 – Fire Underwriters Survey (FUS). The fire flow demand is governed by Building 7 within the North Block and was calculated to be 5,000 L/min (equal to 83.2 L/s or 1,319 US GPM). The fire flow calculations have been prepared with the assumption that the buildings will be classified as fire-resistive and will be equipped with a sprinkler system. For detailed calculations, refer to **Appendix A**.

To estimate the water demand of the development, two (2) scenarios were compared: peak hour demand, and fire flow plus maximum day demand. The fire flow plus maximum day demand scenario generates a demand of 108.61 L/s which is greater than the peak hour demand of 45.12 L/s.

A Water Usage and Sanitary Discharge Report has been prepared by WSP per Region requirements and is included in **Appendix B**. It should be noted that the Water Usage and Sanitary Report references the Ontario Building Code (OBC) Table 8.2.1.3 for calculation of the water usage and sanitary discharge from the buildings as it is expected to be a more accurate assessment of the servicing requirements according to the proposed residential use. As such, there is a discrepancy between the results determined using the Region of Halton design criteria and OBC design criteria.

2.3 PROPOSED WATER SERVICES

New domestic and fire water services to the proposed development will be provided in compliance with the Region's standards. Eight (8) new water service connections will be provided for the proposed development in the form of four (4) 'h-style' combined domestic and fire services from the existing 300 mm watermain on Etheridge Avenue and existing 300 mm watermain on the east side of Regional Road 25. The fire service on the 'h-style' connection will be 200 mm diameter and the domestic service will be 150 mm diameter.

The connections are proposed to include valve and boxes at the property line. In addition, a water meter, backflow preventer and a double detector check valve will be installed in the mechanical room within the building in accordance with the Region standards. The mechanical room will need to be accessible by the Region and provide remote read-out locations for the Region's use in reading the meters. The on-site watermains within the proposed building will be designed by the site mechanical consultant. Refer to **Figure 4** for proposed water servicing layout.

2.4 HYDRANT FLOW TEST

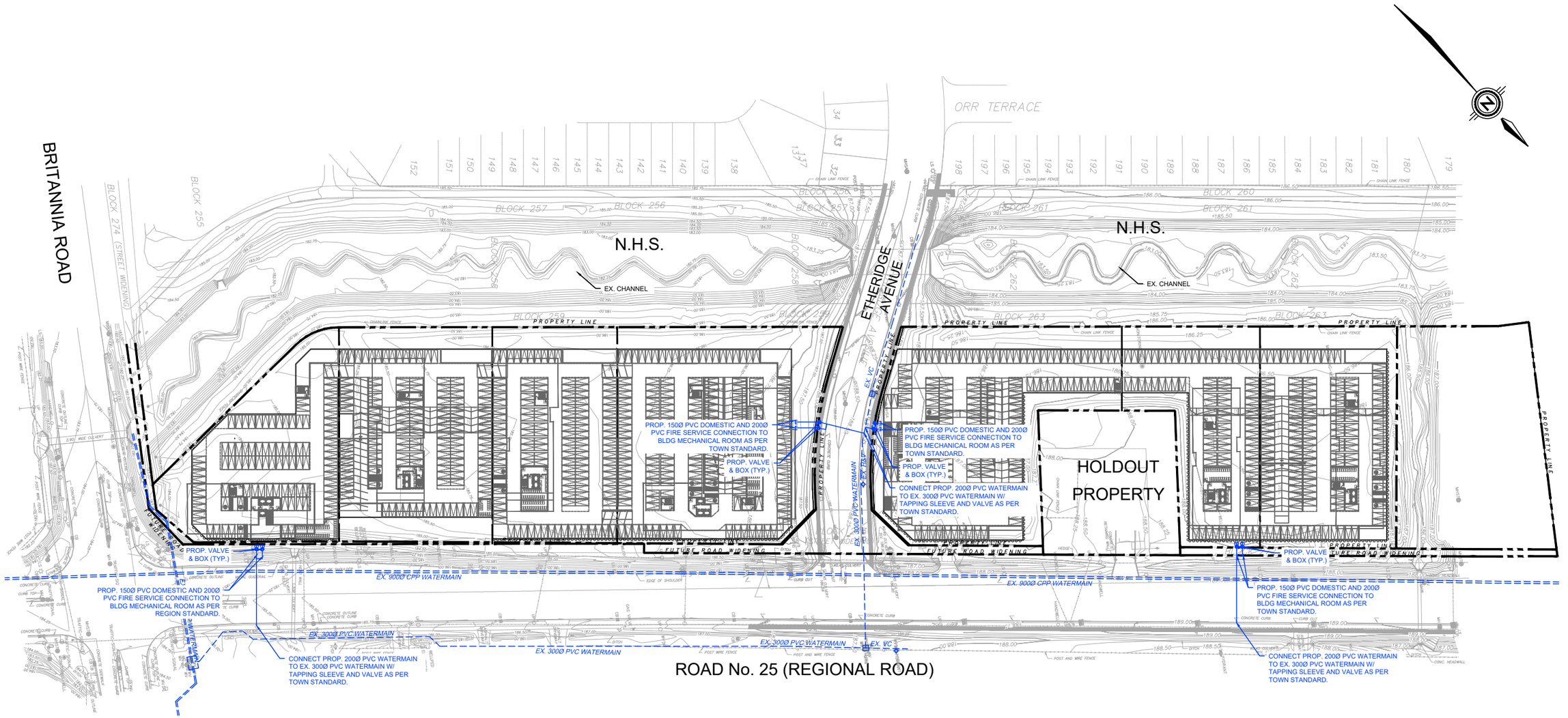
There are five (5) hydrants located adjacent to the Site, on Etheridge Avenue and Regional Road 25. Pressure and flow tests were conducted by WSP Canada Inc. on April 6, 2023 to confirm that the existing system has adequate flow available. The results indicate that at 20 psi, a fire flow of 11,600 GPM (732 L/s) is available from the hydrant on Regional Road 25, which is connected to the existing 300

mm watermain on Regional Road 25. The available fire flow exceeds the proposed demand and WSP therefore concludes that the watermain will provide sufficient fire flow for the proposed development. The results of the hydrant flow test can be found in **Appendix A**.

2.5 WATERMAIN APPURTENANCES

Building code requirements stipulate that each building be serviced by a fire hydrant which is located no more than 45 m away from the building's Siamese connections. There are five (5) existing fire hydrants adjacent to the Site on Etheridge Avenue and Regional Road 25. The location of the siamese connections will be coordinated with the mechanical consultant during detailed design and will comply with the code. Additional hydrant locations are to be proposed internal to the Site. Proposed hydrant locations will be confirmed by the mechanical consultant.

There are proposed underground parking structures below the entire footprint of the proposed buildings, for both blocks. The on-site watermains within the proposed parking structure will be designed by the mechanical consultant. In accordance with Region standards, a water meter and a backflow preventer valve will be installed on the domestic line within the mechanical room. A detector assembly will be installed on the fire service line in compliance with the OBC. The meter room will need to be accessible to the Region and provide remote read-out locations for the Region's use in reading the meters. Details of the room's layout will be provided by the mechanical engineer.



LEGEND

- LIMIT OF PROPERTY
- EX. WATERMAIN
- PROP. W/M CONNECTION
- PROP. VALVE & CHAMBER
- PROP. VALVE & BOX

CLIENT
MATTAMY (MILTON WEST) LIMITED

TITLE
FRAMGARD NORTH AND SOUTH BLOCKS

WATER SERVICING PLAN

Checked P.M.D.	Drawn 10/12 Cad
Date JULY 2023	Proj. No. 231-00962
Scale 1:1750	Figure No. 4

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3 SANITARY DRAINAGE

3.1 EXISTING SEWER SYSTEM

According to the As-Built Submission Drawings for Mattamy Framgard Phase 1, there is a 200mm diameter sanitary sewer on Etheridge Avenue which flows east and connects to the 1350mm sanitary trunk sewer on Regional Road 25. From there, the 1350mm diameter sanitary trunk sewer on Regional Road 25 flows southwest towards the intersection of Regional Road 25 and Britannia Road. On Britannia Road, there is a 675mm diameter sanitary sewer which flows northeast and also connects to the 1350mm sanitary trunk sewer on Regional Road 25. Additionally, on Britannia Road, there is a 1200mm diameter sanitary trunk sewer that flows east past the Regional Road 25 and Britannia Road intersection. Refer to **Figure 5** for the location of existing sanitary servicing in the area.

3.2 PRE- AND POST-DEVELOPMENT FLOWS

As mentioned in the previous sections, the Site is currently vacant and therefore no sewage flow is expected from the Site. In order to calculate the peak sanitary flows to the sanitary sewer system under ultimate condition, the following design criteria, based on the Halton Region Water and Wastewater Linear Design Manual dated October 2019:

Table 2: Sanitary flows

Site	North Block	South Block	Total
Average Sanitary Flow Rate	Residential: 275 L/cap/day Commercial: 0.02475 L/ha/day		
Equivalent Population Density	Light Commercial Areas: 90 persons/ha Residential (Apartments over 6 stories high): 285 persons/ha		
Commercial Gross Floor Area (GFA)	529m^2	504m^2	1,033m^2
Building Gross Floor Area (GFA)	51,497m^2	72,648m^2	124,125m^2
Equivalent Population	1,473 ppl	2,075 ppl	3,548 ppl
Average Sanitary Flow	4.67 L/s	6.54 L/s	11.24 L/s
Peak Sanitary Flow	18.61 L/s	25.98 L/s	44.59 L/s
Infiltration	0.50 L/s	0.69 L/s	1.19 L/s

Total Sanitary Flow (L/s)	19.11 L/s	26.67 L/s	45.77 L/s
Net Increase in Flow to Sanitary Sewer	**45.77 L/s**		

The proposed development will consist of two (2) mixed-use and five (5) residential buildings. Theoretical, estimated peak sanitary flows for the pre- and post-development are 0 L/s and 45.77 L/s respectively. Consequently, the approximate increase in peak sanitary design flow resulting from this development is 45.77 L/s. An estimate of the post-development sanitary sewage flows has been calculated and is included in **Appendix C**.

As per the Water and Wastewater Functional Servicing Report for the Framgard Development prepared by DSEL, sanitary flows from the North Block were considered in the design of the 200 mm sanitary sewer on Etheridge Avenue, which flows east to the existing 1350 mm sanitary trunk within Regional Road 25. A capacity analysis was completed for the existing 200 mm sanitary sewers on Etheridge Avenue and it was determined that the existing sanitary sewers have sufficient capacity to accommodate the flows from Building 1 and Builidng 7 of the proposed development. Refer to **Appendix D** for sanitary design sheets and drainage areas for the Framgard Subdivision. All flows from the proposed development are ultimately conveyed to the existing 1350 mm diameter trunk sewer on Regional Road 25. It is expected that the existing trunk sewer has available capacity to allow for the increase in flow of 45.77 L/s, to be confirmed by the Region.

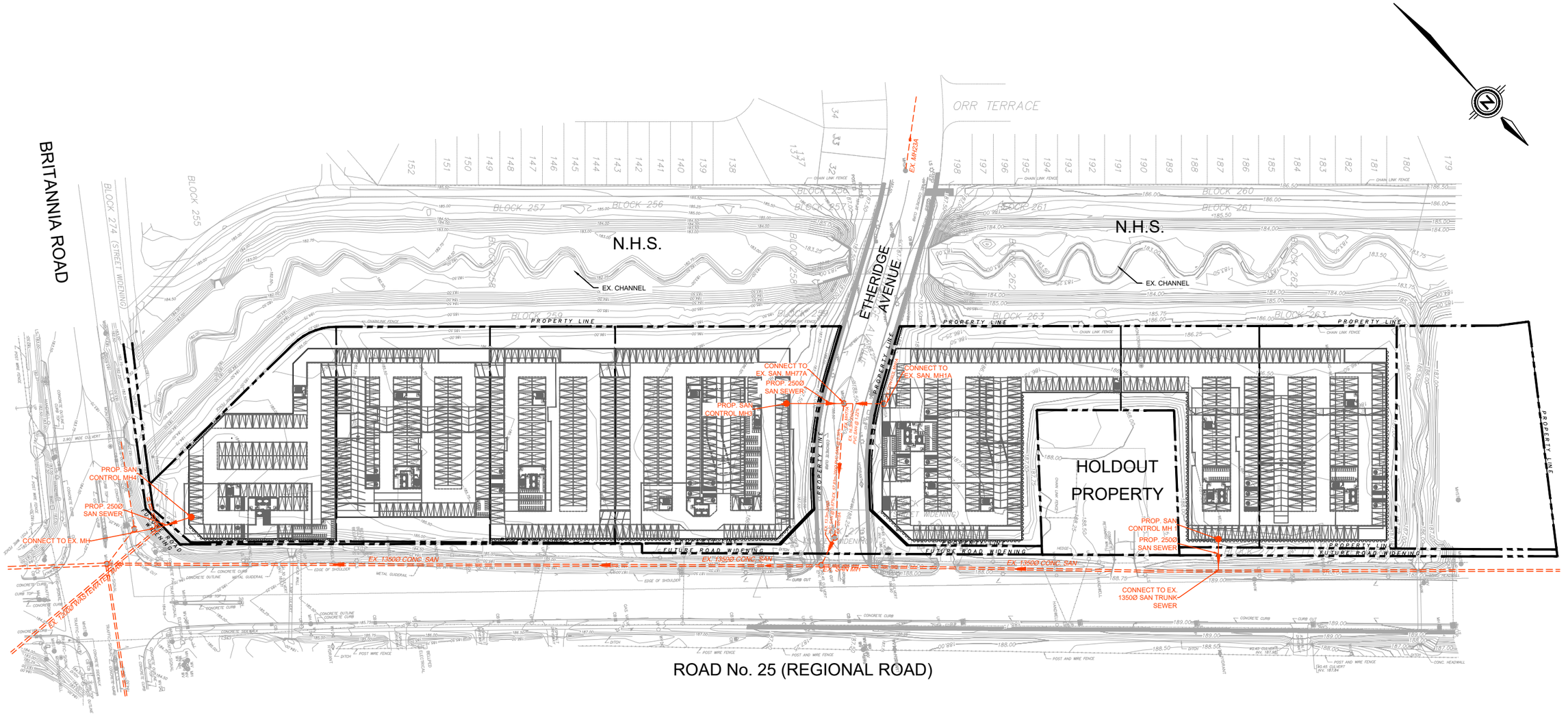
A Water Usage and Sanitary Discharge Report has been prepared by WSP per Region requirements and is included in **Appendix B**. It should be noted that the Water Usage and Sanitary Report references the Ontario Building Code (OBC) Table 8.2.1.3 for calculation of the water usage and sanitary discharge from the buildings as it is expected to be a more accurate assessment of the servicing requirements according to the proposed residential use. As such, there is a discrepancy between the results determined using the Region of Halton design criteria and OBC design criteria.

3.3 PROPOSED SANITARY SERVICES

It is proposed to service the proposed development with four (4) 200 mm diameter PVC sanitary services. The sanitary service for Building 7 will connect to existing control MH1A which connects to the existing 200 mm diameter sanitary sewer along Etheridge Avenue, 2 legs upstream of the 1350 mm diameter trunk sanitary sewer on Regional Road 25. Similarly, a sanitary service for Building 1 will connect to the existing 200 mm diameter sanitary sewer along Etheridge Avenue.

Buildings 2, 3 and 4 of the South Block will connect to the existing 1350 mm diameter sanitary trunk sewer along Regional Road 25. A separate sanitary service connection will be provided directly to the 1350 mm diameter sanitary trunk sewer for Buildings 5 and 6 of the North Block.

Proposed sanitary sewers within the proposed buildings will be designed by the site mechanical consultant to meet Ontario Plumbing Code Standards. For each sanitary service, a sanitary control manhole will be provided on private property close to the property line and will be accessible by the Region. The proposed sanitary servicing plan is shown on **Figure 5.**



LEGEND

- LIMIT OF PROPERTY
- EX. SANITARY SEWER
- PROP. SAN CONNECTION

CLIENT
MATTAMY (MILTON WEST) LIMITED

TITLE
FRAMGARD NORTH AND SOUTH BLOCKS

SANITARY SERVICING PLAN

Checked P.M.D.	Drawn 10/12 Cad
Date JULY 2023	Proj. No. 231-00962
Scale 1:1750	Figure No. 5

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4 STORMWATER MANAGEMENT

4.1 STORMWATER MANAGEMENT REPORT

A Stormwater Management Report for this development has been prepared under a separate cover. The Report is in compliance with the Town of Milton Design Criteria for Stormwater Management and Storm Drainage and identifies the Stormwater quantity and quality controls under which this Site will operate.

4.2 EXISTING CONDITIONS

As per the As-Built Submission Drawings for Mattamy Framgard Phase 1, there are existing 300 mm – 450 mm storm sewers along the east side of Regional Road 25 that drains south. On the west side of Regional Road 25, adjacent to the site, there is an existing roadside ditch, draining south. On Britannia Road, there is an existing 300 mm storm sewer, draining across the existing culvert on Britannia Road.

There is an existing storm control manhole and storm outfall to Stormwater Management Pond 1 (SWM Pond 1) within the North Block which were installed in the design and construction of the Gulfbeck Subdivision. Refer to **Appendix E** for the Stormwater Management Pond drawing by TMIG.

Under existing conditions, the North Block generally drains by sheet flow to the tributary SWS-2-A channel to the west, to the SWS-2A-1 tributary to the north and to the existing roadside ditch within the Regional Road 25 right-of-way to the east. The South Block generally drains to the SWS-2-1 tributary to the west and the existing roadside ditch within the Regional Road 25 right-of-way to the east.

4.3 MINOR STORM SYSTEM

The proposed development incorporates hardscape and landscaped areas which will result in a higher average imperviousness in comparison to the existing condition. The onsite storm drainage system will be designed to convey the runoff from the 100-year storm event. This will ensure runoff from the controlled areas of the Site for all storm events up to and including the 100-year storm event will be conveyed to the proposed stormwater storage cistern or the mechanical room. For the North Block, storm flows will be captured by proposed area drains and directed to the mechanical room. Flows from the Building 6 and 7 at-grade areas and holdout property will be directed to the stormwater storage cistern on the P1 level and controlled to an allowable release rate. For the North Block, a cistern with a footprint of 205 m^2 and a height of 3.5 m will be located on the west side of the proposed underground parking lot. Outflow from the storm cistern will be controlled by a 80 mm orifice tube to match the design release rate outlined in the SWM report prepared by WSP under separate cover. The flows from the Building 5 parking lot area will be conveyed to the existing storm manhole within the Site and directed to the existing SWM Pond 1. Flows from the North Block were

considered in the design of the SWM Pond 1 as part of the Gulfbeck Subdivision to provide water quality treatment and water quantity attenuation.

For the South Block, storm flows will be captured by proposed area drains and directed to four (4) stormwater cisterns on the P1 level and controlled to an allowable release rate. The cisterns will have a footprint of 230 m^2, height of 2.5 m and will be equipped with a Hydrobrake.

For all cisterns, as per Town requirements a control manhole is proposed to be placed immediately inside the property line and a storm service connection will direct flows to tributary SWS-2-A of the NHS. The control manhole and cistern will be accessible at grade outside the building. An emergency overflow will be provided at the top of the cistern with discharge to grade to ensure flows will not back up into the building during major storm events. The new on-site storm sewers, which will be located within the parking garage, will be designed by a mechanical engineer to meet the standards of the Ontario Building Code.

Quality control for at-grade areas of the South Block will be provided by four (4) Jellyfish Units located upstream of the cisterns and quality control for Buildings 6 and 7 at-grade areas of the North Block will be provided by a Jellyfish Unit.

Storm flows from the rooftops of all seven buildings will be collected and directed to proposed infiltration trench or soakaway pits located within NHS Promenade along the western limits of the Site, to satisfy the water balance requirements set out in the Preliminary Water Balance Assessment prepared by McClymont and Rak, dated February 2023.

The proposed Storm Servicing is shown in **Figure 6**. For detailed storage and storm flow calculations, refer to the separate Stormwater Management Report prepared by WSP.

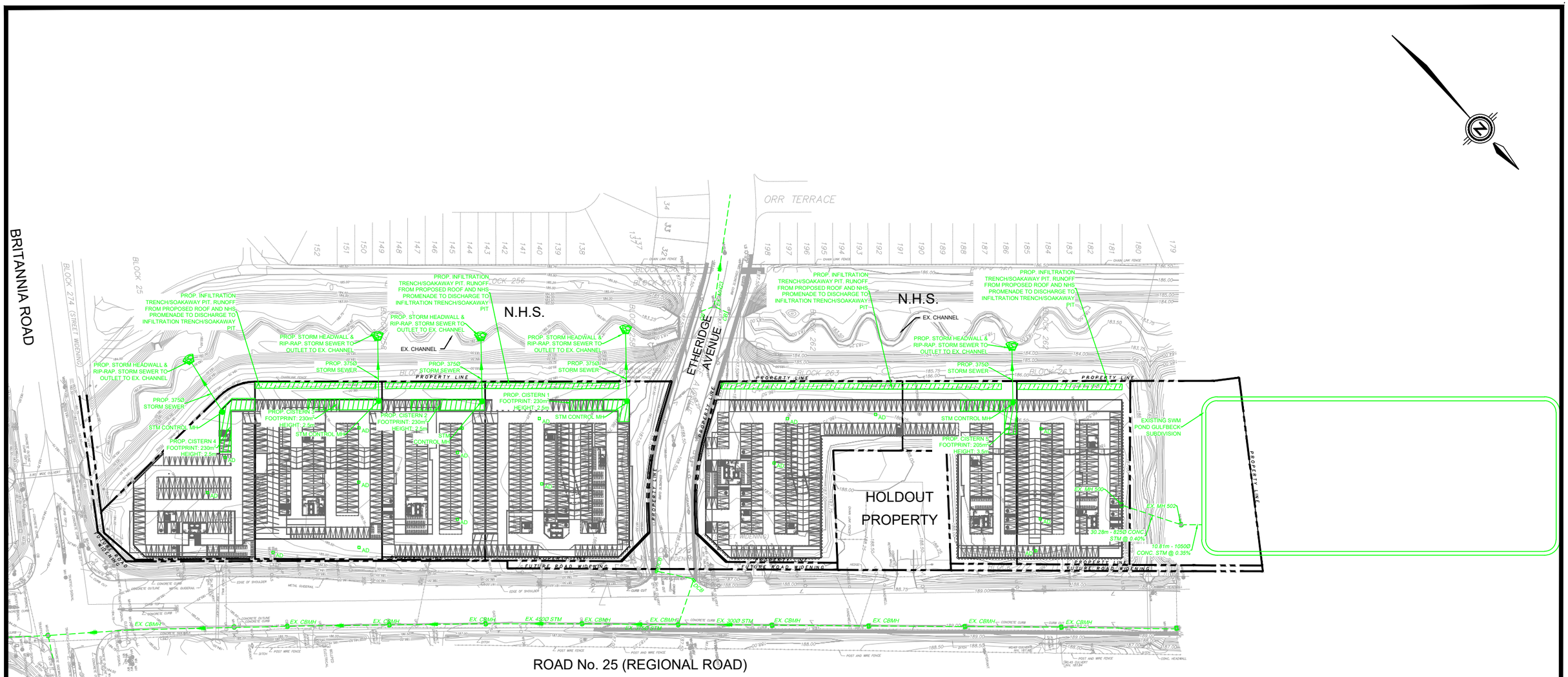
4.4 MAJOR STORM SYSTEM

The major storm system is a conveyance system for flows in excess of the minor system flows. Stormwater runoff for the at-grade area from events up to and including the 100-year storm event will be contained on-site and directed to the NHS, with the exception of Building 5 which will be directed to the existing stormwater management facility to the north.

For major storms exceeding the 100-year storm, flows from the majority of the North Block and South Block will be directed to the NHS. The only exception is overland flow for Building 4 within the South Block which will be directed to the Britannia Road right-of-way. Refer to **Figure 6** for further details.

4.5 GROUNDWATER DISCHARGE

A preliminary hydrogeological investigation prepared by McClymont & Rak Engineers Inc. indicates the quality of the groundwater is within the acceptable Town of Milton standards for discharge to the storm sewer with no additional treatment and as such, groundwater flows can be discharged to the SWM Pond and NHS. Refer to the Preliminary Geohydrology Assessment prepared by McClymont and Rak dated July 2023 for further details.



LEGEND

- LIMIT OF PROPERTY
- EX. STORM SEWER
- PROP. STORM CONNECTION
- PROP. AREA DRAIN

CLIENT: MATTAMY (MILTON WEST) LIMITED

TITLE: FRAMGARD NORTH AND SOUTH BLOCKS

STORM SERVICING PLAN

Checked: P.M.D.	Drawn: 10/12 Cad
Date: JULY 2023	Proj. No.: 231-00962
Scale: 1:2000	Figure No.: 6

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5 GRADING

5.1 SITE GRADING

Under existing conditions, the South Block of the proposed development generally slopes from north to south, with elevations of approximately 188.00 masl near Etheridge to 183.50 masl near Britannia Road. The North Block is generally flat and mostly drains west towards the NHS.

The grading design of the proposed development will direct minor storm drainage (up to and including the 100-year storm event) to the on-site collection points where possible so that this drainage is self-contained. An overland flow route for the major storm drainage will be provided to direct drainage away from proposed and existing structures on-site and surrounding the Site to the proposed stormwater management pond. Site grading will also take into consideration into the following:

- Existing grades along all boundaries are to be matched so that there will be no impact to adjacent properties;
- Existing drainage patterns on adjacent properties shall not be altered and stormwater runoff from the subject development shall not be directed to drain onto adjacent properties. Minimize disruption to existing municipal rights-of-way containing existing utilities and services;
- Promote drainage into the minor storm sewer system;
- There may be runoff from rainstorms that exceeds the capacity of the Town's storm service connections. Therefore, the owner shall be responsible to provide flood protection or a safe overland flow route for the proposed development without causing damage to the proposed and adjacent public and private properties;
- Building floor level will be set to avoid building / property damage during all design storms; and,
- Entrance ramps into loading areas will be protected from major storm flows.

Refer to preliminary grading drawings SG1 and SG2 in **Appendix F** for further detail.

During construction, Erosion and Sediment Control measures will be provided to prevent sediment runoff to the municipal storm system. Fencing and hoarding will be erected surrounding the perimeter of the Site, and mud mats will be required at Site access points. In addition, municipal catchbasins on the adjacent rights-of-way will be protected with geotextile fabric. Please refer to the Erosion and Sediment Control Plan for more information.

5.2 ROAD GRADING

As discussed in Section 1.3, it is expected that Regional Road 25 will be widened in the future. A portion of the lands adjacent to Regional Road 25 will be dedicated to the Region for future road widening purposes. It is proposed to raise the Site above existing grade to ensure positive drainage after the re-development and urbanization of Regional Road 25. For the proposed development, uncontrolled flows to the roadside ditch have been minimized and will not exceed the existing flow rate.

6 CONCLUSIONS

6.1 WATER

The proposed water servicing for the Site will include eight (8) new water service connections consisting of four (4) 'h-style' combined domestic and fire service from the existing 300 mm diameter watermain on Etheridge Avenue and 300 mm diameter watermain on Regional Road 25. The fire service on the 'h-style' connection will be 200 mm diameter and the domestic service will be 150 mm diameter. A domestic and fire flow calculation for the proposed development have been completed. A Hydrant Flow Test has been conducted and it has been determined that the watermain will provide sufficient fire flow for the proposed development.

6.2 SANITARY

The proposed sanitary servicing for the Buildings 2, 3 and 4 of the South Block and Buildings 5 and 6 of the North Block will connect directly to the proposed sanitary trunk sewer on Regional Road 25. Buildings 1 and 7 will connect to the existing 200 mm diameter sanitary sewer on Etheridge Avenue, which ultimately flows to the trunk sewer on Regional Road 25. The proposed development will result in an increase of sanitary flow of 45.77 L/s when compared to the pre-development conditions. It is expected that the sanitary trunk sewer has available capacity to accommodate the proposed development, to be confirmed with the Region.

6.3 STORM

For the North Block, minor storm drainage will be collected by the site drainage system and directed to either the existing SWM Pond 1 or the stormwater storage cistern in the underground parking garage. Major flows will be conveyed by the overland flow route to the NHS along the west boundary of the Site.

For the South Block, minor storm drainage will be collected and directed to four cisterns in the underground parking garage, fitted with Hydrobrakes to control discharge to the allowable release rate. The cisterns will discharge to tributary SWS-2-A of the NHS via storm service connections. The Site will be graded to direct runoff in major storm events away from the proposed building toward the NHS. For details concerning stormwater management, refer to the Stormwater Management Report under a separate cover.

APPENDIX

A WATER DEMAND AND FIRE FLOW CALCULATIONS

APPENDIX A
DOMESTIC WATER DEMANDS

Project: Framgard North and South Blocks
Job No.: 231-00962
Date: 2023-07-26

South Block

Building	Unit Type	GFA (ha)	Equivalent Population Density (Persons/ha)	Population	Average Day Demand Rate L/cap/d	Average Day Demand (L/s)	Max Daily Peaking Factor	Max Day Demand (L/s)	Peak Hour Peaking Factor	Peak Hour Demand (L/s)
Building 1	Residential (Apartments - over 6 stories high)	2.34	285	668	275	2.13	2.25	4.78	4.00	8.50
Building 2	Residential (Apartments - over 6 stories high)	1.70	285	485	275	1.54	2.25	3.47	4.00	6.17
Building 3	Residential (Apartments - over 6 stories high)	1.57	285	448	275	1.43	2.25	3.21	4.00	5.70
Building 4	Residential (Apartments - over 6 stories high)	1.65	285	470	275	1.50	2.25	3.37	4.00	5.99
Building 1 Retail	Light Commercial Areas	0.05	90	5	275	0.02	2.25	0.04	2.25	0.04
Total				2075		6.61		**14.86**		**26.40**

North Block

Building	Unit Type	GFA (ha)	Equivalent Population Density (Persons/ha)	Population	Average Day Demand Rate L/cap/d	Average Day Demand (L/s)	Max Daily Peaking Factor	Max Day Demand (L/s)	Peak Hour Peaking Factor	Peak Hour Demand (L/s)
Building 5	Residential (Apartments - over 6 stories high)	1.57	285	447	275	1.42	2.25	3.20	4.00	5.69
Building 6	Residential (Apartments - over 6 stories high)	1.37	285	389	275	1.24	2.25	2.79	4.00	4.96
Building 7	Residential (Apartments - over 6 stories high)	2.21	285	631	275	2.01	2.25	4.52	4.00	8.04
Building 7 Retail	Light Commercial Areas	0.05	90	5	275	0.02	2.25	0.04	2.25	0.04
Total				1473		4.69		**10.55**		**18.72**

Summary (North Block and South Block)	Average Day Demand (L/s)	Max Day Demand (L/s)	Peak Hour Demand (L/s)
Total	11.29	25.41	45.12

Proposed Fire Water Demands **83.20**

Total Domestic + Fire Water Demand **108.61**

Notes:
1. Site statistics are based on the site plan information provided by Core Architects, dated July 25, 2023.
2. Equivalent population density, average day demand rates and peaking factors are based on the Halton Region "Water and Wastewater Linear Design Manual" Section 2.3 and Section 2.4, Pages 4 and 5.

APPENDIX B

FIRE FLOW CALCULATIONS

Project: **Framgard North and South Blocks (Bldg 1)**
Job No.: **231-00962**

Fire Flow Calculation Procedure per Water Supply for Public Fire Protection, 1999 by Fire Underwriter Survey, p 20.

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

where

F = Fire flow in Litres per minute (Lpm)
C = coefficient related to the type of construction
A = total floor area in square metres

A. **Determine Type of Construction**
=> Fire resistive Construction
Therefore C = 0.6

B. **Determine Ground Floor Area**
=> Fire-resistive building with vertical openings and exterior vertical communications properly protected
Therefore A = Largest Floor + 25% of 2 immediately adjoining floors
A = 2098.7 + 0.25*(1732 + 2099.3)
A = 3,057 m2

C. **Determine Height in Storeys**
=> 15 Storeys

D. **Determined the Fire Flow**
F = 220 x 0.6 x √3057
F = 7,298 Lpm

E. **Determine Increase or Decrease for Occupancy**
=> Reduction for Limited Combustible Occupancies
Therefore 15% reduction
15% reduction of 7298 Lpm = 1,095 Lpm
7298 - 1095 = 6,204 Lpm

F. **Determine Decrease for Automatic Sprinkler Protection**
=> Has Automatic Sprinkler Protection (Per NFPA 13 Standards)
Therefore 30% reduction
30% reduction of 6204 Lpm = 1,861 Lpm

G. **Determine the Total Increase For Exposures**

Face	Distance (m)	Charge
West Side	90	0%
East Side	60	0%
North Side	39	5%
South Side	37	5%

Total 10% of 6,204 = 620 Lpm

H. **Req'd Fire Flow = D - F + G**
F = 4,963 Lpm
F = 5,000 Lpm (2,000 Lpm < F < 45,000 Lpm; OK)
F = 1,319 US GPM

APPENDIX B

FIRE FLOW CALCULATIONS

Project: **Framgard North and South Blocks (Bldg 2)**
Job No.: **231-00962**

Fire Flow Calculation Procedure per Water Supply for Public Fire Protection, 1999 by Fire Underwriter Survey, p 20.

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

where

F = Fire flow in Litres per minute (Lpm)
C = coefficient related to the type of construction
A = total floor area in square metres

A. **Determine Type of Construction**
=> Fire resistive Construction
Therefore C = 0.6

B. **Determine Ground Floor Area**
=> Fire-resistive building with vertical openings and exterior vertical communications properly protected
Therefore A = Largest Floor + 25% of 2 immediately adjoining floors
A = 1378.9 + 0.25*(1378.9 + 1378.9)
A = 2,068 m2

C. **Determine Height in Storeys**
=> 14 Storeys

D. **Determined the Fire Flow**
F = 220 x 0.6 x √2068
F = 6,003 Lpm

E. **Determine Increase or Decrease for Occupancy**
=> Reduction for Limited Combustible Occupancies
Therefore 15% reduction
15% reduction of 6003 Lpm = 900 Lpm
6003 - 900 = 5,102 Lpm

F. **Determine Decrease for Automatic Sprinkler Protection**
=> Has Automatic Sprinkler Protection (Per NFPA 13 Standards)
Therefore 30% reduction
30% reduction of 5102 Lpm = 1,531 Lpm

G. **Determine the Total Increase For Exposures**

Face	Distance (m)	Charge
West Side	77	0%
East Side	60	0%
North Side	37	5%
South Side	35	5%

Total 10% of 5,102 = 510 Lpm

H. **Req'd Fire Flow = D - F + G**
F = 4,081 Lpm
F = 4,000 Lpm (2,000 Lpm < F < 45,000 Lpm; OK)
F = 1,055 US GPM

APPENDIX B

FIRE FLOW CALCULATIONS

Project: **Framgard North and South Blocks (Bldg 3)**
Job No.: **231-00962**

Fire Flow Calculation Procedure per Water Supply for Public Fire Protection, 1999 by Fire Underwriter Survey, p 20.

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

where

F = Fire flow in Litres per minute (Lpm)
C = coefficient related to the type of construction
A = total floor area in square metres

A. **Determine Type of Construction**
=> Fire resistive Construction
Therefore C = 0.6

B. **Determine Ground Floor Area**
=> Fire-resistive building with vertical openings and exterior vertical communications properly protected
Therefore A = Largest Floor + 25% of 2 immediately adjoining floors
A = 1358.6 + 0.25*(1336.8 + 1336.8)
A = 2,027 m2

C. **Determine Height in Storeys**
=> 13 Storeys

D. **Determined the Fire Flow**
F = 220 x 0.6 x √2027
F = 5,943 Lpm

E. **Determine Increase or Decrease for Occupancy**
=> Reduction for Limited Combustible Occupancies
Therefore 15% reduction
15% reduction of 5943 Lpm = 891 Lpm
5943 - 891 = 5,051 Lpm

F. **Determine Decrease for Automatic Sprinkler Protection**
=> Has Automatic Sprinkler Protection (Per NFPA 13 Standards)
Therefore 30% reduction
30% reduction of 5051 Lpm = 1,515 Lpm

G. **Determine the Total Increase For Exposures**

Face	Distance (m)	Charge
West Side	77	0%
East Side	60	0%
North Side	35	5%
South Side	25	10%

Total 15% of 5,051 = 758 Lpm

H. **Req'd Fire Flow = D - F + G**
F = 4,294 Lpm
F = 4,000 Lpm (2,000 Lpm < F < 45,000 Lpm; OK)
F = 1,055 US GPM

APPENDIX B

FIRE FLOW CALCULATIONS

Project: **Framgard North and South Blocks (Bldg 3)**
Job No.: **231-00962**

Fire Flow Calculation Procedure per Water Supply for Public Fire Protection, 1999 by Fire Underwriter Survey, p 20.

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

where

F = Fire flow in Litres per minute (Lpm)
C = coefficient related to the type of construction
A = total floor area in square metres

A. **Determine Type of Construction**
=> Fire resistive Construction
Therefore C = 0.6

B. **Determine Ground Floor Area**
=> Fire-resistive building with vertical openings and exterior vertical communications properly protected
Therefore A = Largest Floor + 25% of 2 immediately adjoining floors
A = 1198.6 + 0.25*(1198.6 + 1198.6)
A = 1,798 m2

C. **Determine Height in Storeys**
=> 15 Storeys

D. **Determined the Fire Flow**
F = 220 x 0.6 x √1798
F = 5,597 Lpm

E. **Determine Increase or Decrease for Occupancy**
=> Reduction for Limited Combustible Occupancies
Therefore 15% reduction
15% reduction of 5597 Lpm = 840 Lpm
5597 - 840 = 4,758 Lpm

F. **Determine Decrease for Automatic Sprinkler Protection**
=> Has Automatic Sprinkler Protection (Per NFPA 13 Standards)
Therefore 30% reduction
30% reduction of 4758 Lpm = 1,427 Lpm

G. **Determine the Total Increase For Exposures**

Face	Distance (m)	Charge
West Side	80	0%
East Side	100	0%
North Side	30	10%
South Side	36	5%

Total 15% of 4,758 = 714 Lpm

H. **Req'd Fire Flow = D - F + G**
F = 4,045 Lpm
F = 4,000 Lpm (2,000 Lpm < F < 45,000 Lpm; OK)
F = 1,055 US GPM

APPENDIX B

FIRE FLOW CALCULATIONS

Project: **Framgard North and South Blocks (Bldg 4)**
Job No.: **231-00962**

Fire Flow Calculation Procedure per Water Supply for Public Fire Protection, 1999 by Fire Underwriter Survey, p 20.

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

where

F = Fire flow in Litres per minute (Lpm)
C = coefficient related to the type of construction
A = total floor area in square metres

A. **Determine Type of Construction**
=> Fire resistive Construction
Therefore C = 0.6

B. **Determine Ground Floor Area**
=> Fire-resistive building with vertical openings and exterior vertical communications properly protected
Therefore A = Largest Floor + 25% of 2 immediately adjoining floors
A = 1336.8 + 0.25*(1336.8 + 1336.8)
A = 2,005 m2

C. **Determine Height in Storeys**
=> 13 Storeys

D. **Determined the Fire Flow**
F = 220 x 0.6 x √2005
F = 5,911 Lpm

E. **Determine Increase or Decrease for Occupancy**
=> Reduction for Limited Combustible Occupancies
Therefore 15% reduction
15% reduction of 5911 Lpm = 887 Lpm
5911 - 887 = 5,024 Lpm

F. **Determine Decrease for Automatic Sprinkler Protection**
=> Has Automatic Sprinkler Protection (Per NFPA 13 Standards)
Therefore 30% reduction
30% reduction of 5024 Lpm = 1,507 Lpm

G. **Determine the Total Increase For Exposures**

Face	Distance (m)	Charge
West Side	80	0%
East Side	60	0%
North Side	100	0%
South Side	41	5%

Total 5% of 5,024 = 251 Lpm

H. **Req'd Fire Flow = D - F + G**
F = 3,768 Lpm
F = 4,000 Lpm (2,000 Lpm < F < 45,000 Lpm; OK)
F = 1,055 US GPM

APPENDIX B

FIRE FLOW CALCULATIONS

Project: **Framgard North and South Blocks (Bldg 6)**
Job No.: **231-00962**

Fire Flow Calculation Procedure per Water Supply for Public Fire Protection, 1999 by Fire Underwriter Survey, p 20.

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

where

F = Fire flow in Litres per minute (Lpm)
C = coefficient related to the type of construction
A = total floor area in square metres

A. **Determine Type of Construction**
=> Fire resistive Construction
Therefore C = 0.6

B. **Determine Ground Floor Area**
=> Fire-resistive building with vertical openings and exterior vertical communications properly protected
Therefore A = Largest Floor + 25% of 2 immediately adjoining floors
A = 1206.9 + 0.25*(1206.9 + 1206.9)
A = 1,810 m2

C. **Determine Height in Storeys**
=> 12 Storeys

D. **Determined the Fire Flow**
F = 220 x 0.6 x √1810
F = 5,616 Lpm

E. **Determine Increase or Decrease for Occupancy**
=> Reduction for Limited Combustible Occupancies
Therefore 15% reduction
15% reduction of 5616 Lpm = 842 Lpm
5616 - 842 = 4,773 Lpm

F. **Determine Decrease for Automatic Sprinkler Protection**
=> Has Automatic Sprinkler Protection (Per NFPA 13 Standards)
Therefore 30% reduction
30% reduction of 4773 Lpm = 1,432 Lpm

G. **Determine the Total Increase For Exposures**

Face	Distance (m)	Charge
West Side	80	0%
East Side	60	0%
North Side	41	5%
South Side	20	15%

Total 20% of 4,773 = 955 Lpm

H. **Req'd Fire Flow = D - F + G**
F = 4,296 Lpm
F = 4,000 Lpm (2,000 Lpm < F < 45,000 Lpm; OK)
F = 1,055 US GPM

APPENDIX B

FIRE FLOW CALCULATIONS

Project: **Framgard North and South Blocks (Bldg 7)**
Job No.: **231-00962**

Fire Flow Calculation Procedure per Water Supply for Public Fire Protection, 1999 by Fire Underwriter Survey, p 20.

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

where

F = Fire flow in Litres per minute (Lpm)
C = coefficient related to the type of construction
A = total floor area in square metres

A. **Determine Type of Construction**
=> Fire resistive Construction
Therefore C = 0.6

B. **Determine Ground Floor Area**
=> Fire-resistive building with vertical openings and exterior vertical communications properly protected
Therefore A = Largest Floor + 25% of 2 immediately adjoining floors
A = 1961.6 + 0.25*(1541.8 + 1941.9)
A = 2,833 m2

C. **Determine Height in Storeys**
=> 12 Storeys

D. **Determined the Fire Flow**
F = 220 x 0.6 x √2833
F = 7,026 Lpm

E. **Determine Increase or Decrease for Occupancy**
=> Reduction for Limited Combustible Occupancies
Therefore 15% reduction
15% reduction of 7026 Lpm = 1,054 Lpm
7026 - 1054 = 5,972 Lpm

F. **Determine Decrease for Automatic Sprinkler Protection**
=> Has Automatic Sprinkler Protection (Per NFPA 13 Standards)
Therefore 30% reduction
30% reduction of 5972 Lpm = 1,792 Lpm

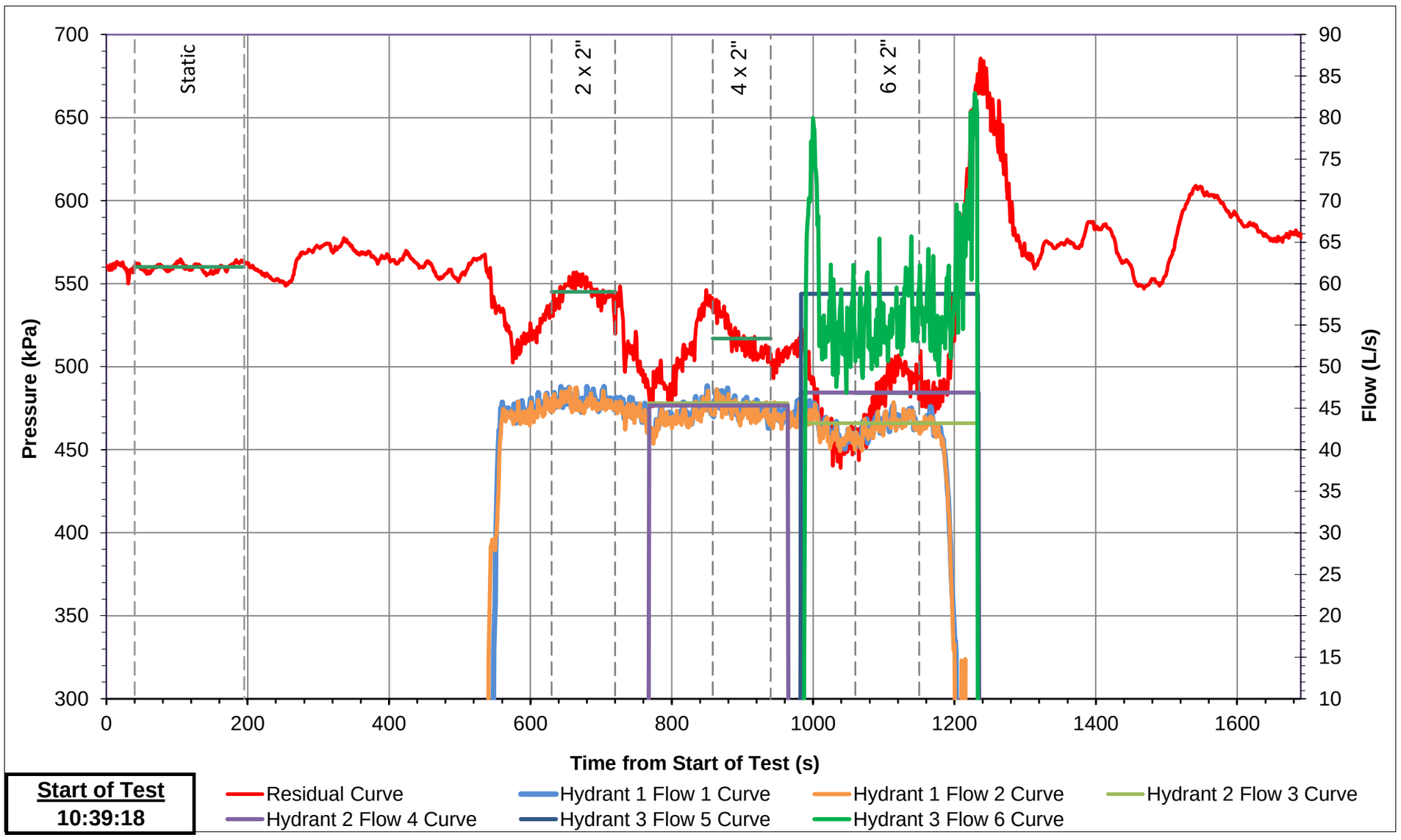
G. **Determine the Total Increase For Exposures**

Face	Distance (m)	Charge
West Side	80	0%
East Side	60	0%
North Side	18	15%
South Side	39	5%

Total 20% of 5,972 = 1,194 Lpm

H. **Req'd Fire Flow = D - F + G**
F = 5,374 Lpm
F = 5,000 Lpm (2,000 Lpm < F < 45,000 Lpm; OK)
F = 1,319 US GPM

6100 Regional Rd 25



Subject Watermain Details

Diameter:	300 mm	**Material:**	PVC
Area:	0.071 m2		

Subject Hydrant & Valve Details

Residual Hydrant:	
Flow Hydrant 1:	
Flow Hydrant 2:	
Flow Hydrant 3:	

TABLE A: TESTED PRESSURES AND FLOWS

Point	Time		Residual 1		Hydrant 1		Hydrant 2		Hydrant 3				Total Flow		Velocity
	Start	Finish	(kPa)	(psi)	(L/s)	(GPM)	(L/s)	(GPM)	(L/s)	(GPM)			(L/s)	(GPM)	(m/s)
Static	40	195	560	81.2	0.0	0	0.0	0	0.0	0			0.0	0	0.0
2 x 2"	630	720	545	79.0	91.6	1452	0.0	0	0.0	0			91.6	1452	1.3
4 x 2"	858	940	517	75.0	89.9	1425	90.9	1441	0.0	0			180.8	2866	2.6
6 x 2"	1060	1150	484	70.2	86.1	1365	90.1	1428	114.3	1812			290.5	4605	4.1

6100 Regional Rd 25

HYDRANT FLOW TEST RESULTS

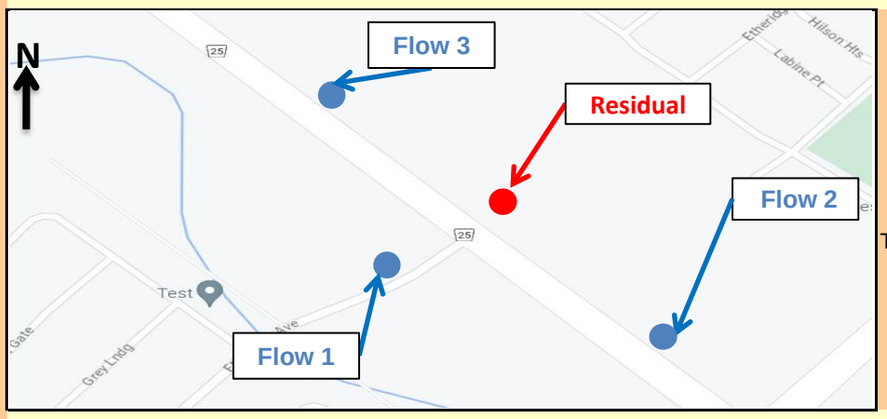
Date: 06-Apr-23 Time: 10:39 (hh/mm)

Municipality: City of Milton

Operator:

Tested By: Sen, Isaac, Steven

Test No: 1



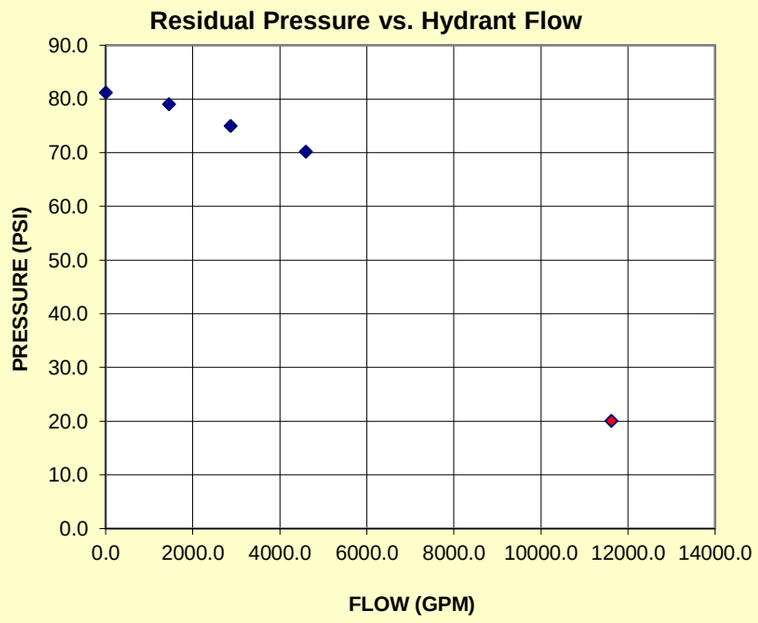
Conditions before Test (STATIC)

Residual Hydrant:	81.2 psi	560 kPa
Hydrant that will Flow:	81.2 psi	560 kPa
Δ pressure:	0.0 psi	0 kPa
Elevation Difference: (Flow El. - Residual El.)	0.0 ft	0.0 m

Test Notes:

TEST		TEST FLOW		RESIDUAL PRESSURE (psi)		Minimum Residual P_r (psi)	Fire Flow at Minimum Residual, Q_r (USGPM)	Fire Flow at Minimum Residual, Q_r (L/s)	10% Pressure Drop Achieved?
Port Size (in)	Nozzle Pressure (psi)	(USGPM)	(L/s)	Monitoring Hydrant	Flow Hydrant (Corrected) *				
STATIC	n/a	0	0	81.2	81.2				
Single Hydrant									
Hydrant 1	18.8	1452.0	91.6	79.0	79.0	20	8704	549	NO
Dual Hydrant									
Hydrant 1	18.1	1425.0	89.9	75	75.0	20	9852	622	NO
Hydrant 2	21.3	1441.0	90.9						
Triple Hydrant									
Hydrant 1 & 2	17.4	2793.0	176.2	70.2	70.2	20	11624	733	YES
Hydrant 3	33.7	1812.0	114.3						

* Pressure correction is equal to the elevation difference. Column 2 (and Table A) show the nozzle pressure while flowing.



Results			
Static Pressure		Flow at 20 psi (140kPa)*	
(psi)	(kPa)	(gpm)	(L/s)
81.2	560	11600	732

* Results carried to nearest 50 gpm or 100 gpm if over 1000 gpm

Hydrant Classification as per NFPA 291			
Class	AA	Color	BLUE

Water Discharged During Test:	48500 L

Rounded up to closest 100L

APPENDIX

B WATER USAGE AND SANITARY DISCHARGE REPORT

The Regional Municipality of Halton
1151 Bronte Road
Oakville ON L6M 3L1

Dear Sir/Madam:

Re: Water Usage and Sanitary Discharge Report for Framgard North and South Blocks

---

Background

Mattamy (Milton West) Ltd. proposes to construct five (5) residential and two (2) mixed-use buildings with a total gross floor area of 124,125m^2 at the northwest corner of Regional Road 5 and Britannia Road intersection in the Town of Milton. The site is currently vacant.

The site has an area of 4.8 ha. The property will be developed in seven phases.

Table 8.2.1.3 of the Ontario Building Code has been used to calculate water usage and sanitary discharge for occupant loadings. The proposed residential and mixed-use development does not require water in the process and cooling water will not be required.

Water Usage

- Occupant Load
  - Residential
    275 L/d/person x 3,548 persons
    = 975.7 m^3/d
  - Commercial
    5 L/d/1.0m^2 of floor area x 1,033m^2
    = 5.165 m^3/d
- Process Water 0 m^3/d
- Cooling Water 0 m^3/d

Total water usage = 975.7 m^3/d + 5.165 m^3/d + 0 m^3/d +0 m^3/d
= 980.87 m^3/d

Sanitary Discharge

- Occupant Load
  - Residential
    275 L/d/person x 3,548 persons
    = 975.7 m^3/d
  - Commercial
    5 L/d/1.0m^2 of floor area x 1,033m^2
    = 5.165 m^3/d
- Process Water 0 m^3/d
- Cooling Water 0 m^3/d

Total sanitary discharge = 975.7 m^3/d + 5.165 m^3/d + 0 m^3/d +0 m^3/d
= 980.87 m^3/d

Yours truly,

Philip de Sousa, P.Eng., PMP
Project Manager
Land Development Ontario

APPENDIX

C SANITARY DEMAND CALCULATIONS

SANITARY FLOW GENERATION

Project: Framgard North and South Block

Job No.: 231-00962

Proposed Flow

North Block

Building	Unit Type	Site Area	Building Gross Floor Area (GFA)[1]	Light Commercial Floor Area (GFA)[1]	Equivalent Residential Population	Equivalent Commerical Population	Equivalent Total Population	Average Residential Sanitary Flow (275 L/cap/d)[2]	Average Commercial Sanitary Flow (24.75 m3/ha/d)[2]	Peaking Factor (Harmon)	Peak Sanitary Flow	Infiltration (0.286 L/ha/s)	Total Sanitary Flow
		(ha)	(ha)	(ha)	(285 Person/ ha)	(90 Person/ ha)		(L/s)	(L/s)		(L/s)	(L/s)	(L/s)
Building 5	Residential (Apartments - over 6 stories high)	0.56	1.57	0.00	447	0	447	1.42	0.00	4.00	5.7	0.2	**5.85**
Building 6	Residential (Apartments - over 6 stories high)	0.42	1.37	0.00	389	0	389	1.24	0.00	4.03	5.0	0.1	**5.11**
Building 7	Residential (Apartments - over 6 stories high)	0.77	2.21	0.05	631	5	636	2.01	0.01	3.92	7.9	0.2	**8.15**
Total			5.15		1468	5	1473	4.67	0.01		18.61	0.50	19.11

South Block

Building	Unit Type	Site Area	Building Gross Floor Area (GFA)[1]	Light Commercial Floor Area (GFA)[1]	Equivalent Residential Population	Equivalent Commerical Population	Equivalent Total Population	Average Residential Sanitary Flow (275 L/cap/d)[2]	Average Commercial Sanitary Flow (24.75 m3/ha/d)[2]	Peaking Factor (Harmon)	Peak Sanitary Flow	Infiltration (0.286 L/ha/s)	Total Sanitary Flow
		(ha)	(ha)	(ha)	(285 Person/ ha)	(90 Person/ ha)		(L/s)	(L/s)		(L/s)	(L/s)	(L/s)
Building 1	Residential (Apartments - over 6 stories high)	0.81	2.34	0.05	668	5	673	2.14	0.01	3.90	8.4	0.2	**8.65**
Building 2	Residential (Apartments - over 6 stories high)	0.5	1.70	0	485	0	485	1.48	0.00	3.98	5.9	0.1	**6.04**
Building 3	Residential (Apartments - over 6 stories high)	0.61	1.57	0.00	448	0	448	1.43	0.00	4.00	5.7	0.2	**5.87**
Building 4	Residential (Apartments - over 6 stories high)	0.49	1.65	0.00	470	0	470	1.50	0.00	3.99	6.0	0.1	**6.11**
Total			7.26		2071	5	2076	6.54	0.01		25.98	0.69	**26.67**

Summary (North Block and South Block)	AverageSanitary Flow (L/s)	Peak Sanitary Flow (L/s)	Infiltration (L/s)	Total Sanitary Flow (L/s)
Total	11.24	44.59	1.19	**45.77**

Pipe Capacity Check

	Nominal Pipe Size (mm)	Pipe Area (m^2)	Slope (%)	Full Flow Capacity (L/s)	Full Flow Velocity (m/s)	% Full
San Plug 1 (Buildng 5 and 6)	200	0.03	1.00%	32.80	1.04	33.4%

	Nominal Pipe Size (mm)	Pipe Area (m^2)	Slope (%)	Full Flow Capacity (L/s)	Full Flow Velocity (m/s)	% Full
Ex. SANMH1A (Buildngs 7)	200	0.03	1.00%	32.80	1.04	24.8%

	Nominal Pipe Size (mm)	Pipe Area (m^2)	Slope (%)	Full Flow Capacity (L/s)	Full Flow Velocity (m/s)	% Full
San Plug 3 (Buildng 1)	200	0.03	1.00%	32.80	1.04	26.4%

	Nominal Pipe Size (mm)	Pipe Area (m^2)	Slope (%)	Full Flow Capacity (L/s)	Full Flow Velocity (m/s)	% Full
San Plug 4 (Buildng 2-4)	200	0.03	1.00%	32.80	1.04	54.9%

Notes:

1. Site statistics are based on the site plan information provided by Core Architects, dated July 25, 2023.

2. Equivalent population density, average day flow rates, peaking factors and infiltration rates are based on the Halton Region "Water and Wastewater Linear Design Manual" Section 3.2, Pages 19-21.

POPULATION DENSITIES:

RESIDENTIAL (APARTMENT): 285 PERSONS/HA

LIGHT COMMERCIAL: 90 PERSONS/HA

INFILTRATION RATE = 0.286L /s /ha

MANNING'S n = 0.013

REGION OF HALTON
SANITARY SEWER DESIGN

LOCATION			SECTION						CUMULATIVE			M	COMMERCIAL/INSTITUTIONAL		POP.	INFIL.	CUM.		ELEVATIONS			LENGTH		PIPE	TYPE				FULL	
	MANHOLE		UNITS				POP.	AREA	POP.	AREA			AREA	FLOW	FLOW		FLOW	Actual VEL.	M.H.	M.H.	M.H.	OF		SIZE	OF	SLOPE		CAP.	VEL.	Qact / Qfull
STREET			SINGLE	SEMI	TOWN	APT													FROM	TO	TO	SEWER			PIPE	m	%	m^3/s	m/s	
	FROM	TO						ha		ha			ha	m^3/s	m^3/s	m^3/s	m^3/s	m/s	INVERT	SURFACE	INVERT	m		mm						
North Block	North Block	*EX. CTL MH1A*					631	0.56	631	0.56	3.92	3.92	0.05	0.01432	7.929	0.219	8.148													
Etheridge Avenue	*EX. CTL MH1A*	*EX. SAN MH77A*					0	0.00	631	0.56	3.92	3.92	0.05	0.01432	7.929	0.219	8.148					16.3		200	PVC		1.22%	36.23	1.15	22.49%
South Block	South Block	*EX. SAN MH77A*					668	0.81	668	0.81	3.91	3.91	0.05	0.01432	8.417	0.232	8.649													
Etheridge Avenue	*EX. SAN MH77A*	*EX. SAN MH78A*					0	0.00	1299	1	3.72	3.72	0.10	0.02865	16.346	0.450	16.797							200	PVC		0.38%	20.22	0.64	83.08%
	EX. SAN MH78A	*Trunk Sewer*					0	0.00	1299	1	3.72	3.72	0.10	0.02865	16.346	0.450	16.797							200	PVC		0.67%	26.85	0.85	62.56%

APPENDIX

D FRAMGARD SUBDIVISION SANITARY DESIGN SHEET AND DRAINAGE PLAN

DAVID SCHAEFFER ENGINEERING LTD.
600 ALDEN ROAD, SUITE 500
MARKHAM, ONTARIO
L3R 0E7
TEL: (905) 475-3080
FAX: (905) 475-3081

THE REGIONAL MUNICIPALITY OF HALTON

SANITARY SEWER DESIGN

AS-CONSTRUCTED

n (PVC): 0.013
n (Conc): 0.013

Single Family: 55 pph
Semi-detached: 100 pph
Townhouse: 135 pph
Commercial: 90 pph
Park: 40 pph

Infil.Flow (INF): 0.286 L/s/ha

SHEET No.: 1 OF 3
LOCATION: Framgard - Phase 1
PROJECT No.: 11-553
REVISED DATE: June, 2016
DESIGNED BY: P.P.
CHECKED BY: K.M.
REVISED BY: K.A.
CHECKED BY: D.C.

STREET	MANHOLE		LENGTH	TRIBUTARY AREA HECTARE							POPULATION TRIBUTARY						AVG. m^3/s	AVG. m^3/s	PEAKING	MAX m^3/s	INF. m^3/s	MAX FLOW	SEWER					PIPE		REMARKS
				INCREMENT						TOTAL	INCREMENT					TOTAL						EXP.	SIZE	SLOPE	Q m^3/s	VEL (m/s)				
	FROM	TO	(m)	SINGLE F.	SEMI.	TOWNHOUSE	COMM.	PARK	INFILT		SINGLE F.	SEMI.	TOWNHOUSE	COMM.	PARK		INC.	TOTAL	FACTOR						FULL	ACT.	TYPE	CLASS	
CONNAUGHT TERRACE																														
Contribution From Phase 2 CONNAUGHT TERRACE, Pipe 30A - Plug										2.88						162														
	Plug	**33A**	**34.18**							**2.88**						**162**	**0.0000**	**0.0005**	**4.18**	**0.0022**	**0.0008**	**0.0030**	**200**	**0.48**	**0.023**	**0.72**	**0.50**	**PVC**	**SDR-35**	**As-constructed**
To ETHERIDGE AVENUE, Pipe 33A - 34A										2.88						162														
ORR TERRACE																														
Contribution From Phase 2 ORR TERRACE, Pipe 23A - Plug										1.06						60														
	Plug	**24A**	**40.00**							**1.06**						**60**	**0.0000**	**0.0002**	**4.30**	**0.0008**	**0.0003**	**0.0011**	**200**	**0.50**	**0.023**	**0.74**	**0.38**	**PVC**	**SDR-35**	**As-constructed**
To ETHERIDGE AVENUE, Pipe 24A - 25A										1.06						60														
ETHERIDGE AVENUE																														
Contribution From FUTURE PHASE MAJOR NODE	**CTRL 1A**	**77A**	**16.34**			**2.09**				**2.09**			**283**			**283**	**0.0009**	**0.0009**	**4.09**	**0.0037**	**0.0006**	**0.0043**	**200**	**1.22**	**0.036**	**1.15**	**0.77**	**PVC**	**SDR-35**	**As-constructed**
	77A	**78A**	**57.83**						**0.17**	**2.26**						**283**	**0.0000**	**0.0009**	**4.09**	**0.0037**	**0.0006**	**0.0043**	**200**	**0.38**	**0.020**	**0.64**	**0.51**	**PVC**	**SDR-35**	**As-constructed**
	78A	***Ex MH***	**13.34**						**0.03**	**2.29**						**283**	**0.0000**	**0.0009**	**4.09**	**0.0037**	**0.0007**	**0.0043**	**200**	**0.67**	**0.027**	**0.85**	**0.62**	**PVC**	**SDR-35**	**As-constructed**
To REGIONAL ROAD 25 Existing Sanitary Trunk										2.29						283														
	21A	24A	29.00	0.18					0.22	0.40	10					10	0.0000	0.0000	4.41	0.0001	0.0001	0.0003	200	3.00	0.057	1.81	0.02	PVC	SDR-35	
Contribution From ORR TERRACE, Pipe Plug - 24A										1.06						60														
	24A	**25A**	**99.50**	**0.79**						**2.25**	**44**					**114**	**0.0001**	**0.0004**	**4.23**	**0.0015**	**0.0006**	**0.0022**	**200**	**0.53**	**0.024**	**0.76**	**0.46**	**PVC**	**SDR-35**	**As-constructed**
	25A	**35A**	**99.47**	**0.50**						**2.75**	**28**					**142**	**0.0001**	**0.0005**	**4.20**	**0.0019**	**0.0008**	**0.0027**	**200**	**1.12**	**0.035**	**1.10**	**0.65**	**PVC**	**SDR-35**	**As-constructed**
To FARMSTEAD DRIVE, Pipe 35A - 39A										2.75						142														
Contribution From CONNAUGHT TERRACE, Pipe Plug - 33A										2.88						162														
									0.13	3.01						162														
	33A	**34A**	**68.79**	**0.53**					**0.05**	**3.59**	**30**					**192**	**0.0001**	**0.0006**	**4.15**	**0.0025**	**0.0010**	**0.0036**	**200**	**0.51**	**0.023**	**0.75**	**0.54**	**PVC**	**SDR-35**	**As-constructed**
	34A	**35A**	**150.73**	**0.93**						**4.52**	**52**					**244**	**0.0002**	**0.0008**	**4.12**	**0.0032**	**0.0013**	**0.0045**	**200**	**0.77**	**0.029**	**0.92**	**0.66**	**PVC**	**SDR-35**	**As-constructed**
To FARMSTEAD DRIVE, Pipe 35A - 39A										4.52						244														
ENGLISH MILL COURT																														
	37A	**38A**	**93.68**	**0.67**						**0.67**	**37**					**37**	**0.0001**	**0.0001**	**4.34**	**0.0005**	**0.0002**	**0.0007**	**200**	**0.96**	**0.032**	**1.02**	**0.01**	**PVC**	**SDR-35**	**As-constructed**
	38A	**39A**	**87.67**	**0.44**						**1.11**	**25**					**62**	**0.0001**	**0.0002**	**4.29**	**0.0008**	**0.0003**	**0.0012**	**200**	**1.23**	**0.036**	**1.16**	**0.49**	**PVC**	**SDR-35**	**As-constructed**
To FARMSTEAD DRIVE, Pipe 39A - 42A										1.11						62														
	36A	**43A**	**126.23**	**0.67**						**0.67**	**37**					**37**	**0.0001**	**0.0001**	**4.34**	**0.0005**	**0.0002**	**0.0007**	**200**	**0.97**	**0.032**	**1.03**	**0.36**	**PVC**	**SDR-35**	**As-constructed**
	43A	**44A**	**10.46**	**0.12**						**0.79**	**7**					**44**	**0.0000**	**0.0001**	**4.33**	**0.0006**	**0.0002**	**0.0008**	**200**	**0.49**	**0.023**	**0.73**	**0.34**	**PVC**	**SDR-35**	**As-constructed**
	44A	**45A**	**143.05**	**1.04**						**1.83**	**58**					**102**	**0.0002**	**0.0003**	**4.24**	**0.0014**	**0.0005**	**0.0019**	**200**	**0.52**	**0.024**	**0.75**	**0.44**	**PVC**	**SDR-35**	**As-constructed**
	45A	**70A**	**45.18**	**0.12**						**1.95**	**7**					**109**	**0.0000**	**0.0003**	**4.23**	**0.0015**	**0.0006**	**0.0020**	**200**	**1.06**	**0.034**	**1.07**	**0.58**	**PVC**	**SDR-35**	**As-constructed**
To FARMSTEAD DRIVE, Pipe 70A - 71A										1.95						109														
EMMETT LANDING																														
	40A	**41A**	**79.17**	**0.61**						**0.61**	**34**					**34**	**0.0001**	**0.0001**	**4.35**	**0.0005**	**0.0002**	**0.0006**	**200**	**0.97**	**0.032**	**1.03**	**0.36**	**PVC**	**SDR-35**	**As-constructed**
	41A	**42A**	**93.18**	**0.44**						**1.05**	**25**					**59**	**0.0001**	**0.0002**	**4.30**	**0.0008**	**0.0003**	**0.0011**	**200**	**1.19**	**0.036**	**1.14**	**0.48**	**PVC**	**SDR-35**	**As-constructed**
To FARMSTEAD DRIVE, Pipe 42A - 70A										1.05						59														

Bolded text denotes Phase 1 as-built information provided by Niran Construction Ltd.
Bolded Italic text denotes Phase 1 as-built information provided by Kapp Contracting Inc.

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THE REGIONAL MUNICIPALITY OF HALTON

SANITARY SEWER DESIGN

AS-CONSTRUCTED

n (PVC): 0.013
n (Conc): 0.013

Single Family:	55	pph
Semi-detached:	100	pph
Townhouse:	135	pph
Commercial:	90	pph
School	40	pph
Infil.Flow (INF):	0.286	L/s/ha

SHEET No.: 2 OF 3
LOCATION: Framgard - Phase 1
PROJECT No.: 11-553
REVISED DATE: June, 2016
DESIGNED BY: P.P.
CHECKED BY: K.M.
REVISED BY: K.A.
CHECKED BY: D.C.

STREET	MANHOLE		LENGTH	TRIBUTARY AREA HECTARE							POPULATION TRIBUTARY						AVG. m^3/s	AVG. m^3/s	PEAKING	MAX m^3/s	INF. m^3/s	MAX FLOW	SEWER					PIPE		REMARKS
				INCREMENT						TOTAL	INCREMENT					TOTAL							SIZE	SLOPE	Q m^3/s	VEL (m/s)				
	FROM	TO	(m)	SINGLE F.	SEMI.	TOWNHOUSE	COMM.	PARK	INFILT		SINGLE F.	SEMI.	TOWNHOUSE	COMM.	PARK		INC.	TOTAL	FACTOR			EXP.				FULL	ACT.	TYPE	CLASS	
CASSON POINT																														
	64A	**65A**	**88.89**			**0.36**				**0.36**			**49**			**49**	**0.0002**	**0.0002**	**4.32**	**0.0007**	**0.0001**	**0.0008**	**200**	**1.55**	**0.041**	**1.30**	**0.45**	**PVC**	**SDR-35**	**As-constructed**
To GOODING CRESCENT, Pipe 65A - 66A										0.36						49														
	64A	**47A**	**60.26**			**0.24**				**0.24**			**33**			**33**	**0.0001**	**0.0001**	**4.35**	**0.0005**	**0.0001**	**0.0005**	**200**	**1.06**	**0.034**	**1.07**	**0.37**	**PVC**	**SDR-35**	**As-constructed**
To CLITHEROW STREET, Pipe 47A - 50A										0.24						33														
LEBLANC COURT																														
	57A	**67A**	**90.14**			**0.49**				**0.49**			**67**			**67**	**0.0002**	**0.0002**	**4.29**	**0.0009**	**0.0001**	**0.0011**	**200**	**1.53**	**0.041**	**1.29**	**0.55**	**PVC**	**SDR-35**	**As-constructed**
To EVES GATE, Pipe 67A - 70A										0.49						67														
	55A	**56A**	**99.68**			**0.46**				**0.46**			**63**			**63**	**0.0002**	**0.0002**	**4.29**	**0.0009**	**0.0001**	**0.0010**	**200**	**1.19**	**0.036**	**1.14**	**0.48**	**PVC**	**SDR-35**	**As-constructed**
To EVES GATE, Pipe 56A - 67A										0.46						63														
CLITHEROW STREET																														
	46A	**47A**	**150.11**	**0.69**						**0.69**	**38**					**38**	**0.0001**	**0.0001**	**4.34**	**0.0005**	**0.0002**	**0.0007**	**200**	**1.01**	**0.033**	**1.05**	**0.36**	**PVC**	**SDR-35**	**As-constructed**
Contribution From CASSON POINT, Pipe 64A - 47A										**0.24**						**33**														
	47A	**50A**	**44.56**	**0.23**						**1.16**	**13**					**84**	**0.0000**	**0.0003**	**4.26**	**0.0011**	**0.0003**	**0.0015**	**200**	**0.40**	**0.021**	**0.66**	**0.38**	**PVC**	**SDR-35**	**As-constructed**
To EVES GATE, Pipe 50A - 54A										1.16						84														
	48A	**49A**	**95.25**	**0.67**						**0.67**	**37**					**37**	**0.0001**	**0.0001**	**4.34**	**0.0005**	**0.0002**	**0.0007**	**200**	**1.02**	**0.033**	**1.05**	**0.36**	**PVC**	**SDR-35**	**As-constructed**
	49A	**50A**	**8.50**						**0.01**	**0.68**						**37**	**0.0000**	**0.0001**	**4.34**	**0.0005**	**0.0002**	**0.0007**	**200**	**1.06**	**0.034**	**1.07**	**0.37**	**PVC**	**SDR-35**	**As-constructed**
To EVES GATE, Pipe 50A - 54A										0.68						37														
	51A	**52A**	**38.73**			**0.19**				**0.19**			**26**			**26**	**0.0001**	**0.0001**	**4.36**	**0.0004**	**0.0001**	**0.0004**	**200**	**1.01**	**0.033**	**1.05**	**0.23**	**PVC**	**SDR-35**	
	52A	**53A**	**13.52**			**0.06**				**0.25**			**9**			**35**	**0.0000**	**0.0001**	**4.34**	**0.0005**	**0.0001**	**0.0006**	**200**	**0.89**	**0.031**	**0.98**	**0.34**	**PVC**	**SDR-35**	**As-constructed**
	53A	**54A**	**95.49**			**0.42**				**0.67**			**57**			**92**	**0.0002**	**0.0003**	**4.25**	**0.0012**	**0.0002**	**0.0014**	**200**	**0.92**	**0.031**	**1.00**	**0.51**	**PVC**	**SDR-35**	**As-constructed**
To EVES GATE, Pipe 54A - 56A										0.67						92														
REIS PLACE																														
	61A	**62A**	**123.92**			**0.73**				**0.73**			**99**			**99**	**0.0003**	**0.0003**	**4.24**	**0.0013**	**0.0002**	**0.0015**	**200**	**1.00**	**0.033**	**1.04**	**0.01**	**PVC**	**SDR-35**	**As-constructed**
	62A	**63A**	**12.56**						**0.01**	**0.74**						**99**	**0.0000**	**0.0003**	**4.24**	**0.0013**	**0.0002**	**0.0015**	**200**	**1.11**	**0.035**	**1.10**	**0.52**	**PVC**	**SDR-35**	**As-constructed**
To GOODING CRESCENT, Pipe 63A - 65A										0.74						99														
GOODING CRESCENT																														
	58A	**59A**	**129.75**			**0.89**				**0.89**			**121**			**121**	**0.0004**	**0.0004**	**4.22**	**0.0016**	**0.0003**	**0.0019**	**200**	**0.96**	**0.032**	**1.02**	**0.55**	**PVC**	**SDR-35**	**As-constructed**
	59A	**60A**	**11.96**			**0.17**				**1.06**			**23**			**144**	**0.0001**	**0.0005**	**4.20**	**0.0019**	**0.0003**	**0.0022**	**200**	**0.50**	**0.023**	**0.74**	**0.47**	**PVC**	**SDR-35**	**As-constructed**
	60A	**63A**	**60.91**			**0.24**				**1.30**			**33**			**177**	**0.0001**	**0.0006**	**4.17**	**0.0023**	**0.0004**	**0.0027**	**200**	**0.49**	**0.023**	**0.73**	**0.49**	**PVC**	**SDR-35**	**As-constructed**
Contribution From REIS PLACE, Pipe 62A - 63A										0.74						99														
	63A	**65A**	**39.61**			**0.17**				**2.21**			**23**			**299**	**0.0001**	**0.0010**	**4.08**	**0.0039**	**0.0006**	**0.0045**	**200**	**0.43**	**0.022**	**0.68**	**0.54**	**PVC**	**SDR-35**	**As-constructed**
Contribution From CASSON POINT, Pipe 64A - 65A										0.36						49														
	65A	**66A**	**31.48**			**0.13**				**2.70**			**18**			**366**	**0.0001**	**0.0012**	**4.04**	**0.0047**	**0.0008**	**0.0055**	**200**	**0.57**	**0.025**	**0.79**	**0.63**	**PVC**	**SDR-35**	**As-constructed**
	66A	**67A**	**11.50**						**0.01**	**2.71**						**366**	**0.0000**	**0.0012**	**4.04**	**0.0047**	**0.0008**	**0.0055**	**200**	**0.50**	**0.023**	**0.74**	**0.61**	**PVC**	**SDR-35**	**As-constructed**
To EVES GATE, Pipe 67A - 69A										2.71						366														

Bolded text denotes Phase 1 as-built information provided by Niran Construction Ltd.
Bolded Italic text denotes Phase 1 as-built information provided by Kapp Contracting Inc.

DAVID SCHAEFFER ENGINEERING LTD.
600 ALDEN ROAD, SUITE 500
MARKHAM, ONTARIO
L3R 0E7
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THE REGIONAL MUNICIPALITY OF HALTON

SANITARY SEWER DESIGN

AS-CONSTRUCTED

n (PVC): 0.013
n (Conc): 0.013

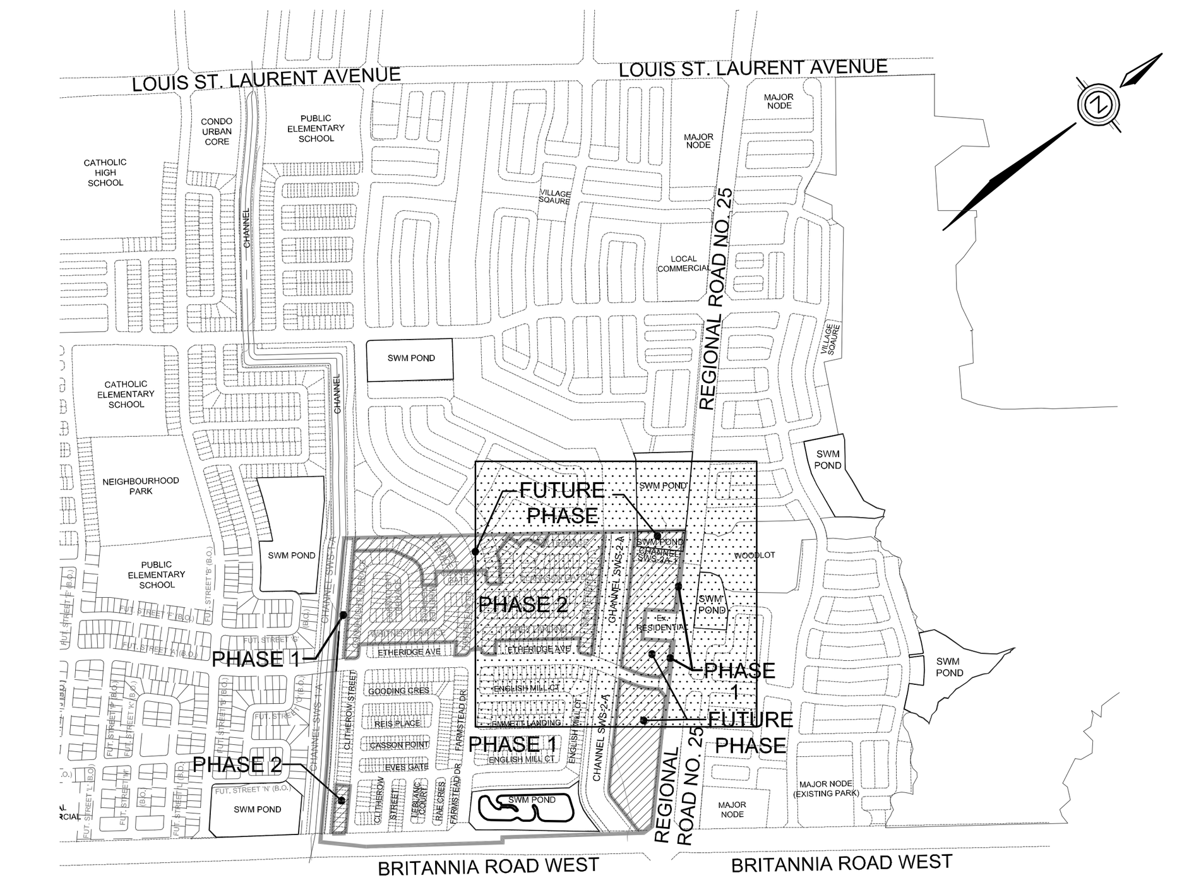
Single Family: 55 pph
Semi-detached: 100 pph
Townhouse: 135 pph
Commercial: 90 pph
School 40 pph

Infil.Flow (INF): 0.286 L/s/ha

SHEET No.: 3 OF 3
LOCATION: Framgard - Phase 1
PROJECT No.: 11-553
REVISED DATE: June, 2016
DESIGNED BY: P.P.
CHECKED BY: K.M.
REVISED BY: K.A.
CHECKED BY: D.C.

STREET	MANHOLE		LENGTH	TRIBUTARY AREA HECTARE							POPULATION TRIBUTARY						AVG. m^3/s INC.	AVG. m^3/s TOTAL	PEAKING FACTOR	MAX m^3/s	INF. m^3/s	MAX FLOW EXP.	SEWER					PIPE		REMARKS
				INCREMENT						TOTAL	INCREMENT					TOTAL							SIZE	SLOPE	Q m^3/s	VEL (m/s)			
	FROM	TO	(m)	SINGLE F.	SEMI.	TOWNHOUSE	COMM.	PARK	INFILT		SINGLE F.	SEMI.	TOWNHOUSE	COMM.	PARK											FULL	ACT.	TYPE	CLASS	
EVES GATE																														
Contribution From CLITHEROW STREET, Pipe 47A - 50A										1.16						84														
Contribution From CLITHEROW STREET, Pipe 49A - 50A										0.68						37														
	50A	**54A**	**64.48**			**0.17**				**2.01**			**23**			**144**	**0.0001**	**0.0005**	**4.20**	**0.0019**	**0.0006**	**0.0025**	**200**	**0.50**	**0.023**	**0.74**	**0.48**	**PVC**	**SDR-35**	**As-constructed**
Contribution From CLITHEROW STREET, Pipe 53A - 54A										0.67						92														
	54A	**56A**	**42.87**			**0.12**				**2.80**			**17**			**253**	**0.0001**	**0.0008**	**4.11**	**0.0033**	**0.0008**	**0.0041**	**200**	**0.54**	**0.024**	**0.77**	**0.56**	**PVC**	**SDR-35**	**As-constructed**
Contribution From LEBLANC COURT, Pipe 55A - 56A										0.46						63														
	56A	**67A**	**42.96**			**0.09**				**3.35**			**13**			**329**	**0.0000**	**0.0010**	**4.06**	**0.0043**	**0.0010**	**0.0052**	**200**	**0.54**	**0.024**	**0.77**	**0.61**	**PVC**	**SDR-35**	**As-constructed**
Contribution From LEBLANC COURT, Pipe 57A - 67A										0.49						67														
Contribution From GOODING CRESCENT, Pipe 66A - 67A										2.71						366														
	67A	**70A**	**65.09**						**0.23**	**6.78**						**762**	**0.0000**	**0.0024**	**3.87**	**0.0094**	**0.0019**	**0.0113**	**200**	**0.55**	**0.024**	**0.77**	**0.75**	**PVC**	**SDR-35**	**As-constructed**
To FARMSTEAD DRIVE, Pipe 70A - 71A										6.78						762														
FARMSTEAD DRIVE																														
LOCAL																														
	710A	**720A**	**76.41**			**0.42**				**0.42**			**57**			**57**	**0.0002**	**0.0002**	**4.30**	**0.0008**	**0.0001**	**0.0009**	**200**	**1.02**	**0.033**	**1.05**	**0.45**	**PVC**	**SDR-35**	**As-constructed**
	720A	**72A**	**2.88**							**0.42**						**57**	**0.0000**	**0.0002**	**4.30**	**0.0008**	**0.0001**	**0.0009**	**200**	**1.04**	**0.033**	**1.06**	**0.45**	**PVC**	**SDR-35**	**As-constructed**
To Future Sanitary Pipe (B.O.)										0.42						57														
Contribution From Phase 2 FARMSTEAD DRIVE, Pipe 20A - Plug										38.70						3056														
	Plug	**35A**	**26.31**							**38.70**						**3056**	**0.0000**	**0.0097**	**3.44**	**0.0335**	**0.0111**	**0.0445**	**375**	**0.30**	**0.096**	**0.87**	**0.84**	**PVC**	**SDR-35**	**As-constructed**
Contribution From ETHERIDGE AVENUE, Pipe 34A - 35A										4.52						244														
Contribution From ETHERIDGE AVENUE, Pipe 25A - 35A										2.75						142														
	35A	**39A**	**71.39**	**0.47**						**46.44**	**26**					**3468**	**0.0001**	**0.0110**	**3.39**	**0.0374**	**0.0133**	**0.0507**	**375**	**0.34**	**0.102**	**0.93**	**0.91**	**PVC**	**SDR-35**	**As-constructed**
Contribution From ENGLISH MILL COURT, Pipe 38A - 39A										1.11						62														
	39A	**42A**	**71.20**	**0.51**						**48.06**	**29**					**3559**	**0.0001**	**0.0113**	**3.38**	**0.0383**	**0.0137**	**0.0520**	**375**	**0.29**	**0.094**	**0.85**	**0.86**	**PVC**	**SDR-35**	**As-constructed**
Contribution From EMMETT LANDING, Pipe 41A- 42A										1.05						59														
	42A	**70A**	**75.61**	**0.48**						**49.59**	**27**					**3645**	**0.0001**	**0.0116**	**3.37**	**0.0391**	**0.0142**	**0.0533**	**375**	**0.30**	**0.096**	**0.87**	**0.88**	**PVC**	**SDR-35**	**As-constructed**
Contribution From ENGLISH MILL COURT, Pipe 45A - 70A										1.95						109														
Contribution From EVES GATE, Pipe 69A - 70A										6.78						762														
	70A	**71A**	**23.32**							**58.32**						**4516**	**0.0000**	**0.0144**	**3.29**	**0.0473**	**0.0167**	**0.0640**	**450**	**0.34**	**0.166**	**1.05**	**0.96**	**CONC**	**100-D**	**As-constructed**
	71A	**72A**	**75.25**							**58.32**						**4516**	**0.0000**	**0.0144**	**3.29**	**0.0473**	**0.0167**	**0.0640**	**450**	**0.25**	**0.143**	**0.90**	**0.86**	**CONC**	**100-D**	**As-constructed**
Contribution From FARMSTEAD DRIVE, Pipe 720A - 72A										0.42						57														
Future Sanitary Pipe (B.O.)	72A	Fut. MH (B.O.)	30.50						0.12	58.86						4573	0.0000	0.0146	3.28	0.0477	0.0168	0.0646	450	2.70	0.468	2.95	2.06	CONC	100-D	Not As-constructed
To BRITANNIA ROAD WEST (B.O.)										58.86						4573														
BRITANNIA ROAD WEST INTERIM TRUNK																														
Contribution From FARMSTEAD DRIVE, Pipe 720A - 72A										0.42						57														
Contribution From FARMSTEAD DRIVE, Pipe 71A - 72A										58.32						4516														
	72A	***73A***	***22.50***						***0.12***	***58.86***						***4573***	***0.0000***	***0.0146***	***3.28***	***0.0477***	***0.0168***	***0.0646***	***450***	***0.44***	***0.189***	***1.19***	***1.06***	***CONC***	***100-D***	***As-constructed***
	73A	***74A***	***122.50***							***58.86***						***4573***	***0.0000***	***0.0146***	***3.28***	***0.0477***	***0.0168***	***0.0646***	***450***	***0.25***	***0.143***	***0.90***	***0.86***	***CONC***	***100-D***	***As-constructed***
	74A	***740A***	***122.00***							***58.86***						***4573***	***0.0000***	***0.0146***	***3.28***	***0.0477***	***0.0168***	***0.0646***	***450***	***0.22***	***0.134***	***0.84***	***0.82***	***CONC***	***100-D***	***As-constructed***
Sanitary Pipe (B.O.)	***740A***	***75A (B.O.)***	***26.00***							***58.86***						***4573***	***0.0000***	***0.0146***	***3.28***	***0.0477***	***0.0168***	***0.0646***	***675***	***0.69***	***0.698***	***1.95***	***1.19***	***CONC***	***100-D***	***As-constructed***
To BRITANNIA ROAD WEST (B.O.)										***58.86***						***4573***														

Bolded text denotes Phase 1 as-built information provided by Niran Construction Ltd.
Bolded Italic text denotes Phase 1 as-built information provided by Kapp Contracting Inc.



KEY PLAN

SCALE 1:15000

LEGEND

Symbol	Description
0.82Ha / 135 / 111	AREA IN HECTARES POPULATION DENSITY (PERSONS PER HECTARE) POPULATION
0.17Ha / 55 / 10	AREA IN HECTARES (EXTERNAL) POPULATION DENSITY (PERSONS PER HECTARE) POPULATION
	SANITARY MANHOLE BY OTHERS
	SANITARY PAIRED SINGLE HOUSE CONNECTION
	SANITARY SINGLE HOUSE CONNECTION
	SANITARY SEWER TRIBUTARY BOUNDARY
	SANITARY TRIBUTARY SUB-CATCHMENT BOUNDARY
	EXTERNAL SANITARY SEWER TRIBUTARY BOUNDARY
	OTHER PHASES

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY RADY-PENTEK & EDWARD SURVEYING LTD., JOB No. 14-014, SURVEYED ON SEPT 09, 2014, RECEIVED NOVEMBER 03, 2014.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY RADY-PENTEK & EDWARD SURVEYING LTD., PROJECT No. 14-014, SURVEY DATED JUNE 29, 2015.

BENCH MARK No. 00819828156

ELEVATIONS ARE GEODETIC AND REFERRED TO THE MTO BENCHMARK No 00819828156. CONCRETE AND STEEL BRIDGE CARRYING HWY 25 OVER SIXTEEN MILE CREEK, 3.2 KM SOUTH OF HWY 25, AND CPR OVERPASS AT MILTON, 71.0 M SOUTH OF DRIVEWAY TO SARGENT FARMS, TABLET IS SET HORIZONTALLY IN EAST FACE OF CONCRETE COPING, 7.1 M EAST OF CENTRELINE OF HWY 25, 87 CM NORTH OF SOUTHEAST END OF BRIDGE, 10 CM BELOW TOP OF COPING, 54 CM ABOVE GROUND.
ELEVATION = 187.173m

No.	BY	DATE	DESCRIPTION	APPROVED
5.	K.M.	17-05-31	FINAL SUBMISSION	
4.	K.M.	15-07-17	FINAL SUBMISSION – REGION	
3.	K.M.	15-04-29	3rd SUBMISSION	
2.	K.M.	14-10-02	2nd SUBMISSION	
1.	K.M.	14-07-11	1st SUBMISSION	

TOWN OF MILTON
ENGINEERING

REGION OF HALTON FILE No:
DM-1001

MUNICIPAL

COMMISSIONER, ENGINEERING SERVICES — DATE

LICENSED PROFESSIONAL ENGINEER
K. MITIC
100122349
17-05-31
PROVINCE OF ONTARIO

Halton
The Regional Municipality of Halton

REGIONAL APPROVAL

DESIGN OF SANITARY, WATER SERVICES AND REGIONAL ROAD WORKS APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO HALTON REGION STANDARDS & SPECIFICATIONS & LOCATIONAL APPROVAL FROM AREA MUNICIPALITY

LEGISLATIVE AND PLANNING SERVICES — DATE: Aug 4/15

LICENSED PROFESSIONAL ENGINEER
Z. LI
17-05-31
PROVINCE OF ONTARIO

SANITARY DRAINAGE PLAN

© DSEL

MATTAMY (MILTON WEST) LIMITED

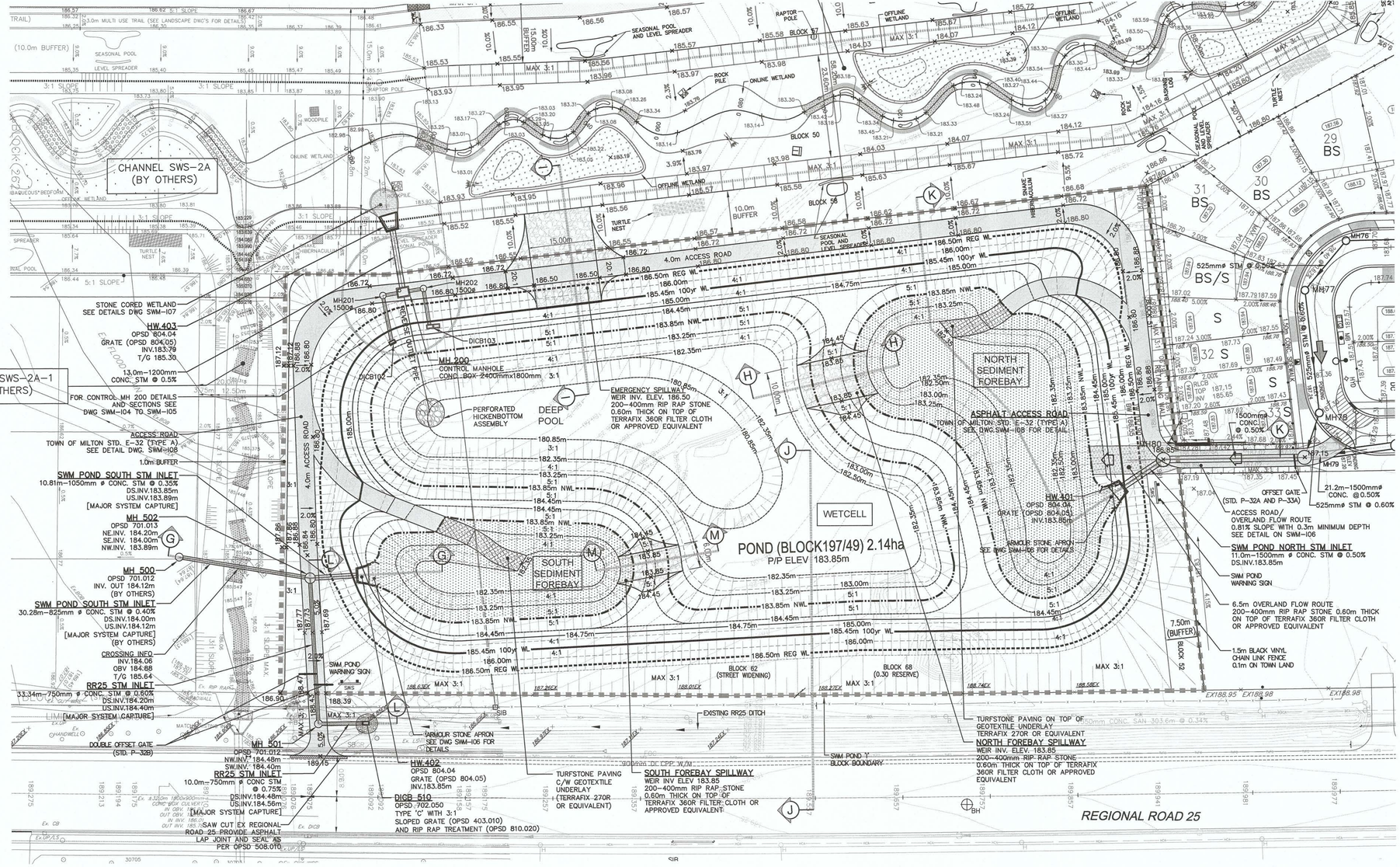
MATTAMY FRAMGARD PHASE 1
24T – 14002/M

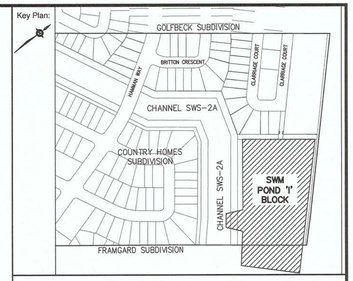
DSEL
david schaeffer engineering ltd
600 Alden Road, Suite 500
Markham, Ontario, L3R 0E7
Tel. (905) 475-3080
Fax. (905) 475-3081
www.DSEL.ca

		PROJECT NO.	DRAWING NO.
DRAWN BY: P.P	CHECKED BY: K.M.	11-553	21
DESIGNED BY: K.M.	CHECKED BY: K.M./Z.L.		
SCALE: 1:1000	DATE: APRIL 2014		

APPENDIX

E STORMWATER MANAGEMENT POND AND STORM SERVICING DRAWINGS





LEGEND

- PROPOSED SANITARY MANHOLE
- PROPOSED STORM MANHOLE
- PROPOSED CATCHBASIN
- PROPOSED DOUBLE CATCHBASIN
- PROPOSED VALVE & CHAMBER
- PROPOSED HYDRANT & VALVE
- EXISTING SANITARY MANHOLE
- EXISTING STORM MANHOLE
- EX.CB. EXISTING CATCHBASIN
- EX.V&C EXISTING VALVE & CHAMBER
- EX.H&V EXISTING HYDRANT & VALVE
- 34 PROPOSED LOT NUMBERS
- BS LOT DRAINAGE TYPE
- +205.36 PROPOSED ELEVATIONS
- 208.65 EXISTING ELEVATIONS
- EXISTING CONTOURS
- (203.48) GRADE AT FRONT AND REAR OF STRUCTURE
- T/B TOP OF BANK
- OVERLAND FLOW ROUTE
- LIMIT OF SUBDIVISION
- WARNING SIGN
- OFFSET GATE

BENCHMARKS:
ELEVATIONS ARE GEODETIC AND ARE REFERRED TO MTO VERTICAL BENCH MARK NUMBER 008198282155 HAVING AN ORTHOMETRIC ELEVATION OF 185.351 METRES. ELEVATIONS ARE REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928, 1978 ADJUSTMENT (CGVD-1928:1978).

LOCAL BENCHMARK
CONCRETE CULVERT UNDER BRITANNIA RD W, 1.4 KM WEST OF HWY 25, 75.4 M WEST OF FIRST LINE RD, 6.3 M NORTH OF CENTRELINE OF BRITTANIA RD W (HALTON REG RD 6). TABLET IS SET VERTICALLY IN TOP OF NORTH END OF CULVERT, 33 CM SOUTH OF NORTH END OF CULVERT, 32 CM WEST OF EAST FACE OF CULVERT.

No.	By	Date	Description	Approval
4				
3	L.R.	MAR 2017	ISSUED FOR MYLARS	
2	DNS	SEPT 2016	ISSUED FOR CONSTRUCTION	
1	DNS	JUNE 2016	1ST SUBMISSION	

TOWN OF MILTON
ENGINEERING SERVICES DEPARTMENT

DIRECTOR OF ENGINEERING SERVICES

Professional Stamp:
LICENSED PROFESSIONAL ENGINEER
L. N. RUSSELL
100032788
Feb. 28/17
PROVINCE OF ONTARIO

Regional:
DESIGN OF WASTEWATER AND WATER SERVICES APPROVED SUBJECT TO DETAIL CONSTRUCTION CONFORMING TO HALTON STANDARDS AND SPECIFICATIONS AND LOCATION APPROVAL FROM AREA MUNICIPALITY.
Signed:
Planning and Public Works, Halton Region
Date:

TMIG
The Municipal Infrastructure Group Ltd
8800 Dufferin Street, Suite 200 Vaughan, ON L4K 0C5
p: 905.738.5700 f: 905.738.0065

WEST COUNTRY MILTON PROPERTIES LTD. Phase 1

SWM POND 'I' PLAN VIEW

SCALE: 1:500 (10 5 0 10)		PROJECT No.	13138
DATE: MARCH 2015			
DESIGNED BY: E.T.	DRAWN BY: CAD	DRAWING No.	SWM-I01
CHECKED BY: L.R.	CHECKED BY: E.B.		
PROJECT No./24T No.:	24T-14008/M Z-1/14		(Page 39 of 58)

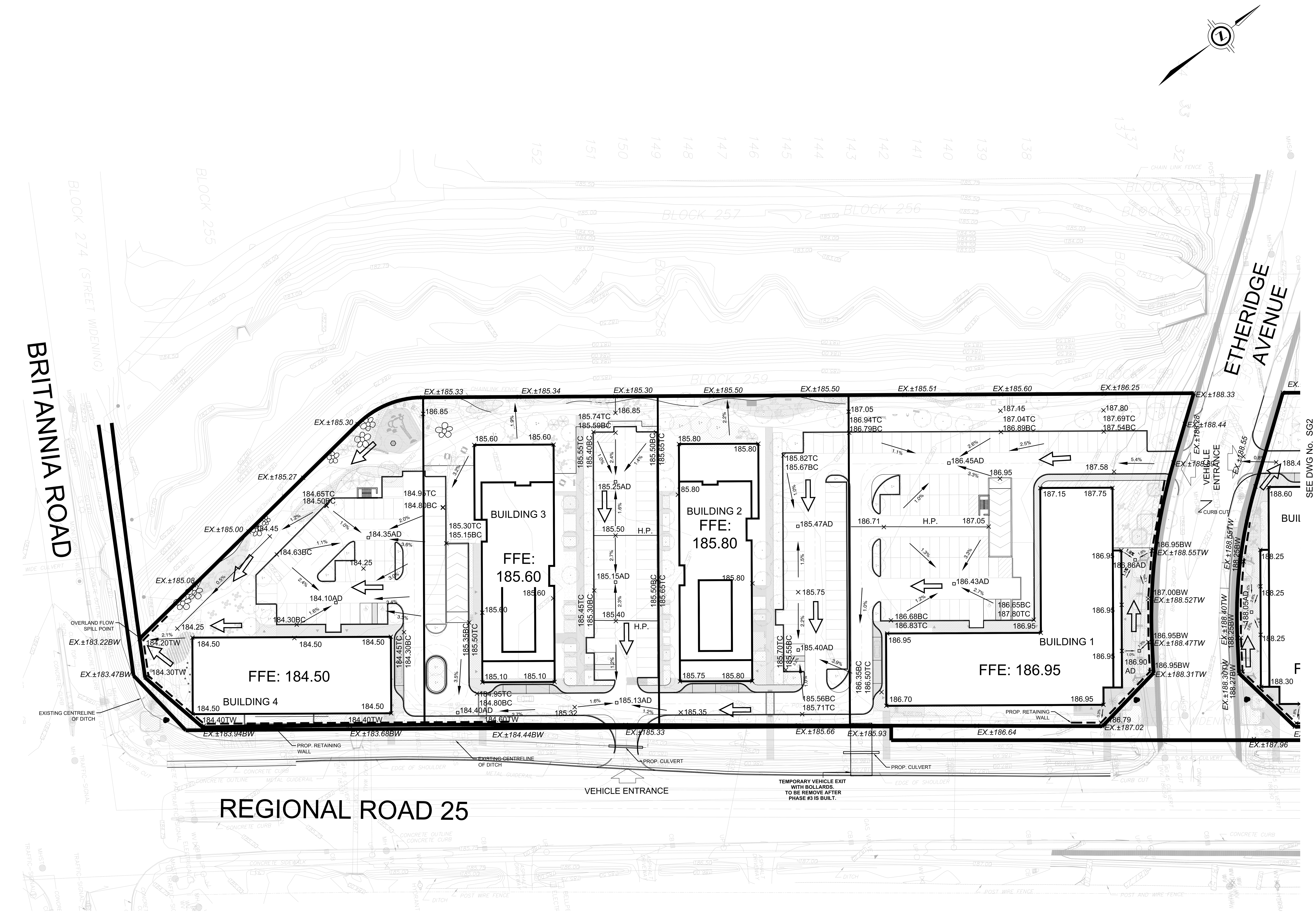
DESCRIPTION	REQUIRED STORAGE	PROVIDED STORAGE	TARGET RELEASE RATE	PROVIDED RELEASE RATE
PERMANENT POOL EL. 182.35 – EL. 183.85	5,917 m^3	9,768 m^3	N/A	N/A
EXTENDED DETENTION EL. 183.85 – EL. 184.75	9,102 m^3	9,734 m^3	0.020 m^3/s	0.020 m^3/s
25 YEAR EL. 183.85 – EL. 185.10	13,653 m^3	14,196 m^3	0.685 m^3/s	0.668 m^3/s
100 YEAR EL. 183.85 – EL. 185.45	18,772 m^3	18,916 m^3	1.712 m^3/s	1.705 m^3/s
REGIONAL EL. 183.85 – EL. 186.50	32,994 m^3	34,644 m^3	2.396 m^3/s	2.289 m^3/s

SPECIFICATION FOR 200-400mm RIP RAP STONE:
NOMINAL DIAMETER: 275mm
NONE GREATER THAN: 400mm
20% TO 50%: 300mm
50% TO 80%: 275mm
100% GREATER THAN 200mm

REFER TO:
SWM-I01 – PLAN VIEW OF SWM POND AND SECTION LOCATION
SWM-I02 AND SWM-I03 – CROSS SECTION DETAILS
SWM-I04 AND SWM-I05 – CONTROL MANHOLE DETAILS
SWM-I06 – DETAILS
SWM-I07 – OUTLET DESIGN
SWM-I08 – STANDARD DRAWINGS

APPENDIX

F GRADING PLANS



×210.09	EX. ELEVATION
+174.50	PROP. ELEVATION
⇨	OVERLAND FLOW
→	DIRECTION OF FLOW
●	SANITARY MANHOLE
○	STORM MANHOLE
□CB	CATCHBASIN
□□DCB	DOUBLE CATCHBASIN
V&B	VALVE AND BOX
H&V	HYDRANT AND VALVE
▬ ▬	LIMIT OF PROPERTY

ALL DIMENSIONS AND ELEVATIONS ARE IN METRES UNLESS OTHERWISE NOTED.
DRAWINGS ARE NOT DIGITALLY CORRECT.
LAYOUT TO BE COMPLETED BY OFFSETS.

BENCHMARKS
REFER TO SURVEY COMPLETED BY RADY-PENTEK & EDWARD SURVEYING LTD. ON APRIL 23, 2018 AND FEBRUARY 9, 2018 FOR DETAILS.

No	Date	By

Design	Z.B.	Ch'kd	P.M.D.	Date
Drawn	CAD 10/12	Ch'kd		FEBRUARY 2023
Scale	1:500			References

PRELIMINARY

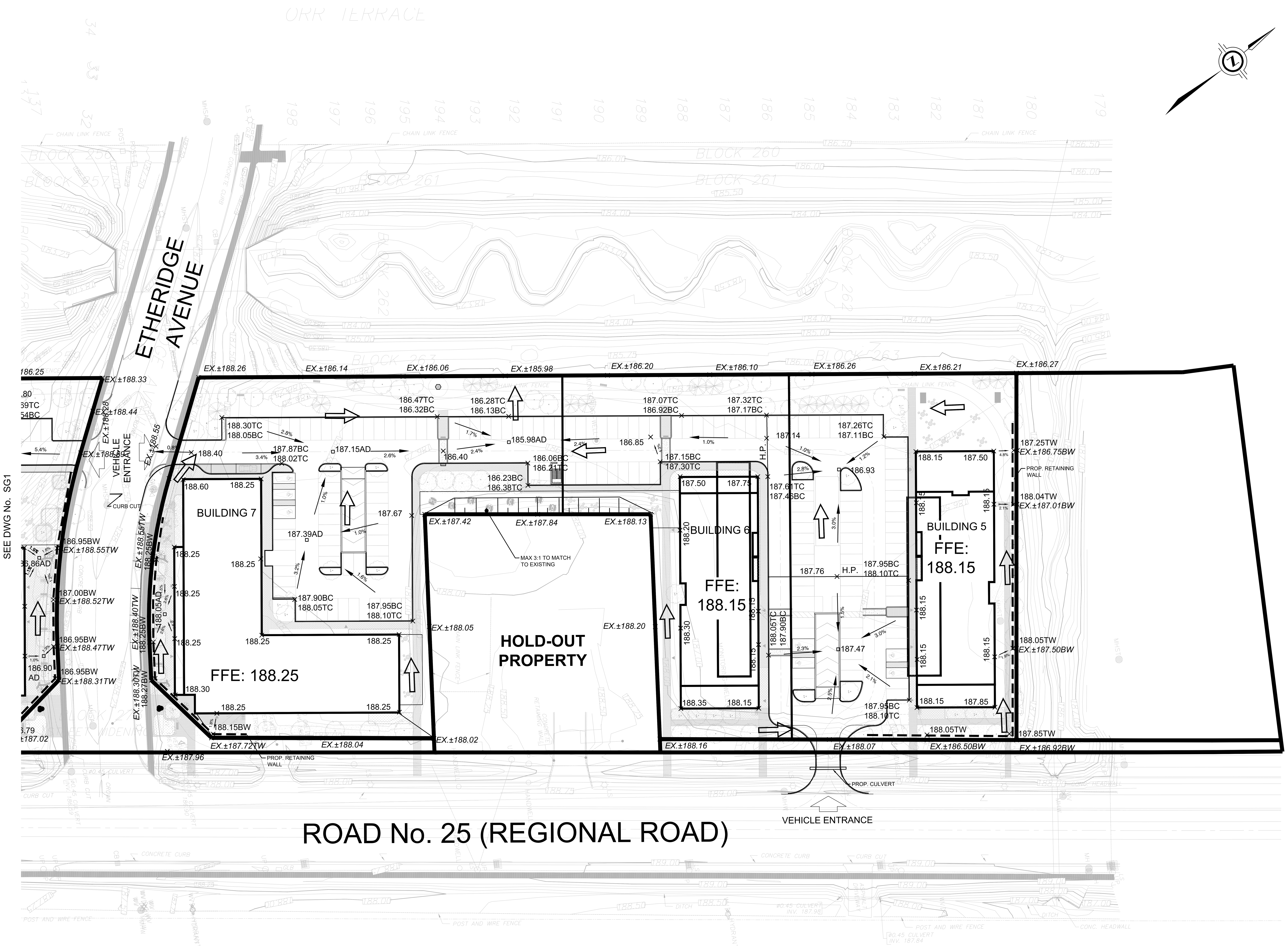
CONSULTANT
wsp

MUNICIPALITY
TOWN OF MILTON

TITLE
FRAMGARD NORTH AND SOUTH BLOCKS
TOWN OF MILTON

SITE GRADING PLAN

Municipal Drawing No	Regional Drawing No
WSP File No 231-00962	Drawing No SG1



Symbol	Description
×210.09	EX. ELEVATION
+174.50	PROP. ELEVATION
⇨	OVERLAND FLOW
→	DIRECTION OF FLOW
●	SANITARY MANHOLE
○	STORM MANHOLE
□ CB	CATCHBASIN
◫ DCB	DOUBLE CATCHBASIN
⊗ V&B	VALVE AND BOX
H&V	HYDRANT AND VALVE
▬ ▬ ▬	LIMIT OF PROPERTY

ALL DIMENSIONS AND ELEVATIONS ARE IN METRES UNLESS OTHERWISE NOTED.
DRAWINGS ARE NOT DIGITALLY CORRECT.
LAYOUT TO BE COMPLETED BY OFFSETS.

BENCHMARKS
REFER TO SURVEY COMPLETED BY RADY-PENTEK & EDWARD SURVEYING LTD. ON APRIL 23, 2018 AND FEBRUARY 9, 2018 FOR DETAILS.

No	Date	By	

Design	Z.B.	Ch'kd	P.M.D.	Date: FEBRUARY 2023
Drawn	CAD 10/12	Ch'kd		
Scale	1:500			References

PRELIMINARY

CONSULTANT: WSP

MUNICIPALITY
TOWN OF MILTON

TITLE
FRAMGARD NORTH AND SOUTH BLOCKS
TOWN OF MILTON

SITE GRADING PLAN

Municipal Drawing No	Regional Drawing No
WSP File No: 231-00962	Drawing No: SG2

FILENAME: C:\Users\CAWZ071593\ACCDocs\WSP Canada projects (AMER)\LDO\Files\231-00962-00 Framgard North and South Blocks\Mun\Engineering Drawings\231-00962_SG1-SG2.dwg
PLOTDATE: Jul 25, 2023 - 6:27pm, CAWZ071593