NOVATECH

Engineers, Planners & Landscape Architects

Engineering
- Land/Site Development
- Municipal Infrastructure
- Environmental/ Water Resources
- Traffic/ Transportation
- Recreational

Planning
- Land/Site Development
- Planning Application Management
- Municipal Planning
- Urban Design
- Expert Witness (OLT)
- Wireless Industry

Landscape Architecture
- Streetscapes & Public Amenities
- Open Space, Parks & Recreation
- Community & Residential
- Commercial & Institutional
- Environmental Restoration

4829 Abbott Street East, Ottawa
Block 123 – Trail View Subdivision

Servicing and Stormwater Management Report

Prepared for: SPB Developments Inc.

4829 Abbott Street East, Ottawa

Block 123 – Trail View Subdivision

Servicing and Stormwater Management Report

Prepared By:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

June 13, 2025

Novatech File: 110037
Ref: R-2025-013

NOVATECH
Engineers, Planners & Landscape Architects

June 13, 2025

City of Ottawa
Development Review West - Planning,
Development and Building Services Department
110 Laurier Avenue West
Ottawa, ON K1P 1J1

Attention: **Nishant Dave, Planner I**

Reference: **4829 Abbott Street East, Ottawa, ON**
Block 123 – Trail View Subdivision
Servicing and Stormwater Management Report
Our File No.: 110037
City File No.: PC2024-0509

Please find enclosed the 'Servicing and Stormwater Management Report' for the above noted project. This report has been prepared in support of a Site Plan Application and is submitted for your review and approval.

Should you have any questions or require additional information, please contact us.

Yours truly,

NOVATECH

Alex McAuley, P.Eng.
Senior Project Manager | Land Development Engineering

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

Table of Contents

Tables

Figures

Drawings

Site Plan	Block 123 Site Plan – Hobin Architecture, June 2025
General Plan of Services	110037-GP123, revision 5, June 13, 2025
Grading Plan	110037-GR123, revision 5, June 13, 2025

Appendices

1.0 INTRODUCTION

1.1 Background

This report addresses the approach to site servicing and stormwater management for the development at the Trail View Subdivision – Block 123 (Subject Site), which is being proposed by SPB Developments Inc. (Developer).

The Subject Site is located on Abbott Street East, currently known municipally as 4829 Abbott Street East, as shown on **Figure 1.1** – Key Plan. The site is part of the Trail View Subdivision and is bound to the north by a servicing easement, to the south by residential lots (Cranesbill Road), to the west by Adstock Heights, and to the east by Abbott Street East.

The existing site drains overland from southwest to northeast towards the servicing easement / existing stormwater management pond.

The existing land is mostly vacant. There is an existing sales center building on the site that would remain and be converted in the future to a rental office and one residential unit. This is separately serviced and does not impact the proposed development as shown on **Figure 1.2** – Existing Conditions Plan.

1.2 Development Intent

The Subject Site has an area of 0.93ha, and the proposed development will comprise of 5 apartment blocks, 3 storeys in height, containing 12 units each (60 units total), as shown in **Table 1.1** below. The development will include a shared parking area with a 6.0m wide drive aisle. Access to the site will be via Abbott Street East. The proposed Site Plan (Block 123 Site Plan) is included in **Appendix B**.

Table 1.1: Land Use, Development Potential, and Yield

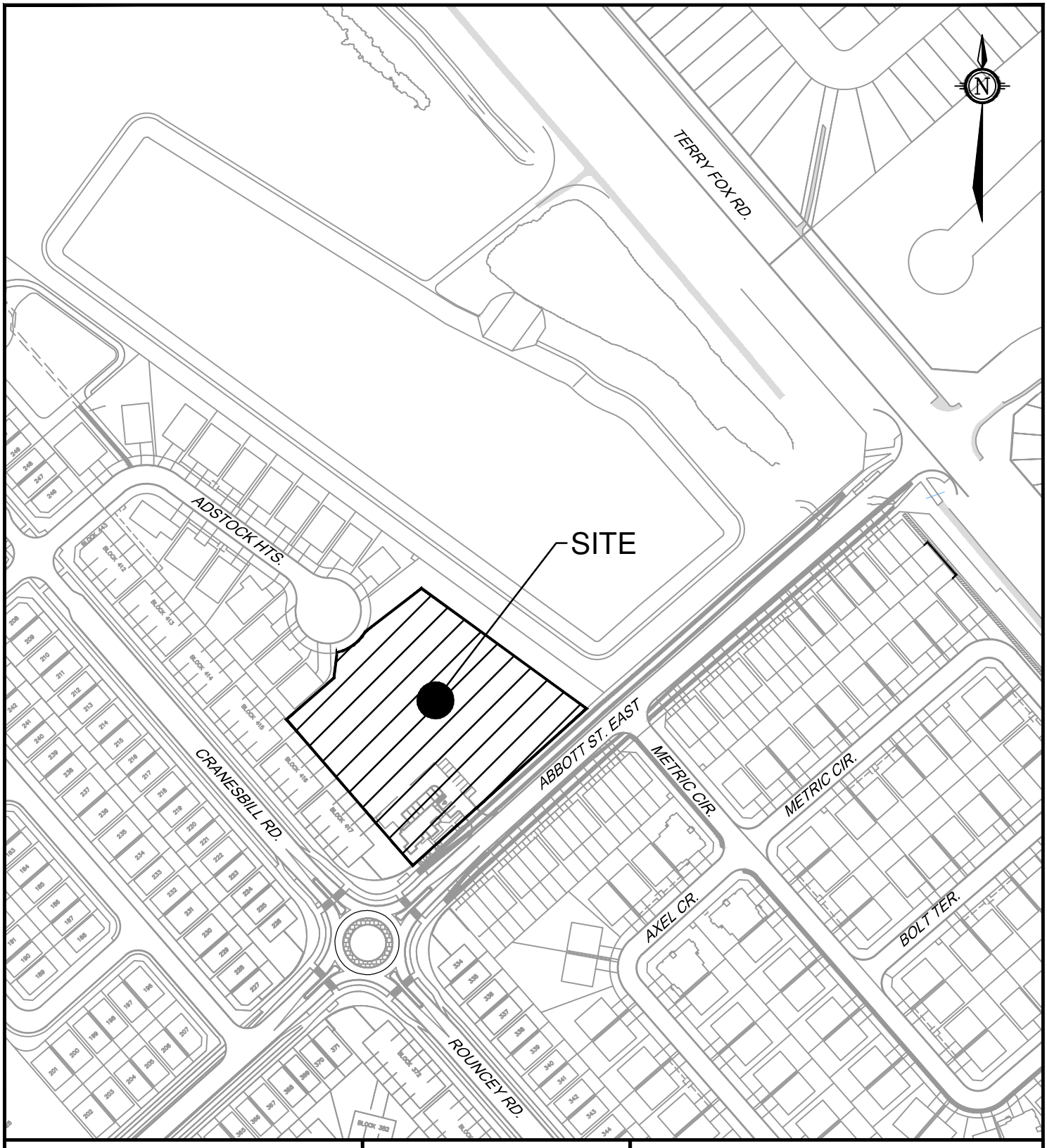
Unit Type[1]	Number of Buildings	Number of Units	Area
Stacked Apartments	5	60	0.79 ha
Sales Office	1	1	0.14 ha

The Subject Site is located within the serviced area in the City of Ottawa Official Plan; therefore, the site has been designed with municipal water, storm, and sanitary sewage collection.

1.3 Report Objective

This report assesses the adequacy of existing and proposed services to support the proposed development. This report will be provided to the various agencies for approval and to obtain any applicable permits.

The City of Ottawa Servicing Study Guidelines for Development Applications checklist has been completed and is provided in **Appendix B**.



NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

KEY PLAN

SPB DEVELOPMENTS INC. (METRIC HOMES)

BLOCK 123 (4829 ABBOTT ST. EAST)

DATE	JOB	FIGURE
JUN 2025	110037	1.1

M:\2010\110037\CAD\Design_Block123\Figures\110037-KP.dwg, 8x11 Keyplan, Feb 25, 2025 - 4:36pm, mblanton

SHT8X11.DWG - 216mmx279mm

LEGEND

PROPERTY BOUNDARY

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

BLOCK 123 (4829 ABBOTT STREET EAST)

EXISTING CONDITIONS

SCALE 1 : 750 (0, 10, 20, 30)

DATE JUN 2025 | JOB 110037 | FIGURE 1.2

SHT11X17.DWG - 279mmX432mm

M:\2010\11\110037\CAD\Design_Block123\Figures\110037-EX.dwg, 11x17 landscape, May 09, 2025 - 7:53pm, mblanton

2.0 GEOTECHNICAL INVESTIGATION

Paterson Group Inc. (Paterson) conducted a geotechnical investigation in support of the proposed residential development: *Geotechnical Investigation – Proposed Residential phase 5 – Block 123, 429 Abbott Street East, Ottawa, Ontario; Report No. PG2855-3, Paterson Group Inc., February 21, 2025.* Based on the geotechnical study, it is not anticipated that there will be any significant geotechnical concerns with respect to servicing and developing the site. Refer to drawing PG2855-9 included in the report for the test hole location plan. A summary of the geotechnical report findings is provided in **Table 2.1** below.

Parameter	Summary	
Sub-Soil Conditions	Loose brown silty sand with clay, grey clayey sand with silt, firm brown and grey silty clay	
Groundwater Considerations	Groundwater table 2.0m to 3.0m below original ground surface elevation. Clay seals should be provided in the service trenches.	
Bedrock	Bedrock not encountered.	
Pipe Bedding / Backfill	Pipe Bedding Pipe Cover Backfill	150 mm to 300 mm Granular A 300 mm Granular A Dry Native Material
Pavement Structure (Parking Areas)	50mm Wear Course 150mm Base 300mm Subbase	(SuperPave 12.5) (Granular A) (Granular B Type II)
Pavement Structure (Drive Aisles)	40mm Wear Course 50mm Binder Course 150mm Base 450mm Subbase	(SuperPave 12.5) (SuperPave 19.0) (Granular A) (Granular B Type I or II)

Table 2.1: Summary of Geotechnical Servicing and Grading Considerations

3.0 SERVICING AND GRADING

3.1 General Servicing

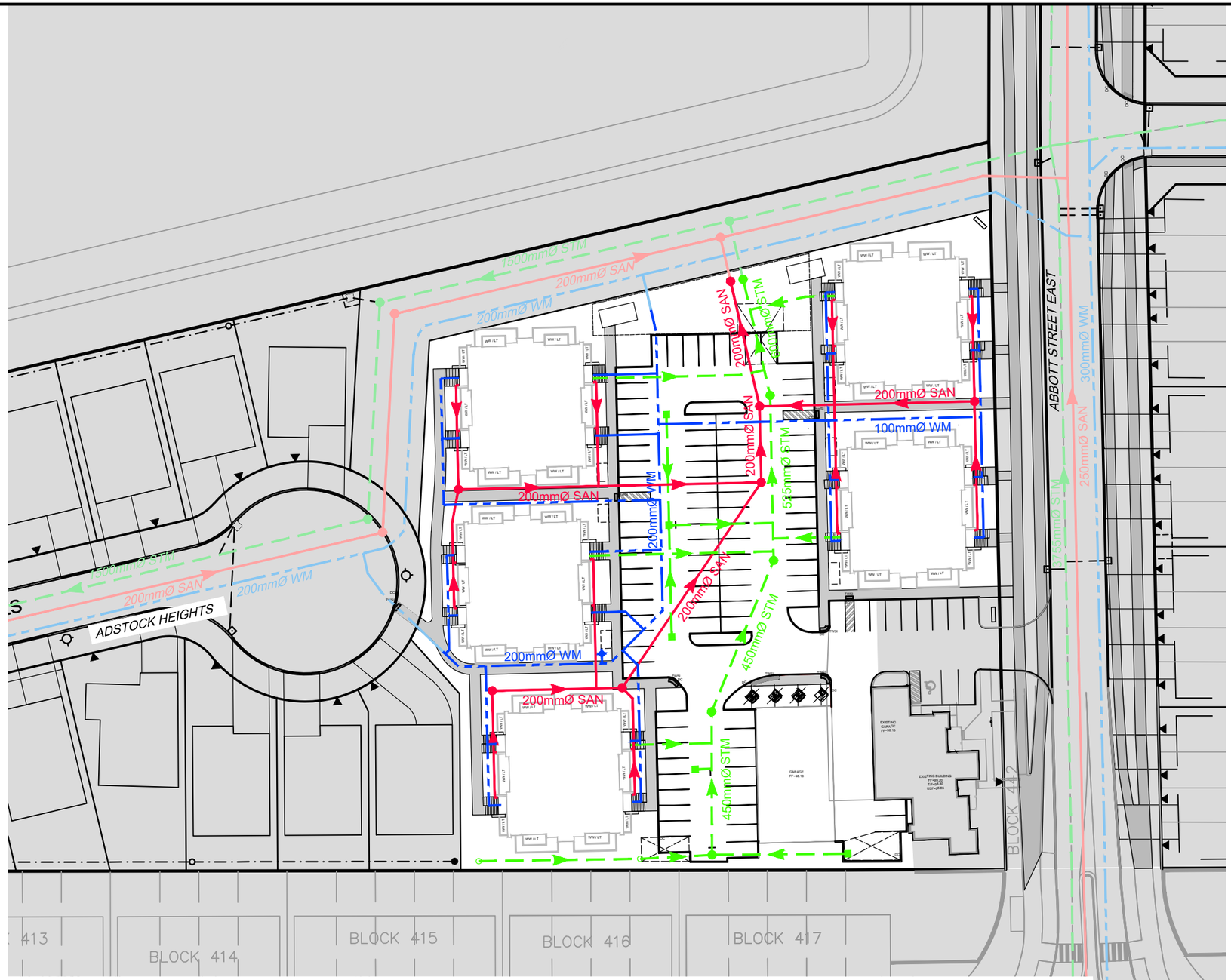
The Subject Site will be serviced using local storm and sanitary sewers, and watermain. The storm drainage / stormwater management, sanitary and water servicing strategy is discussed in further detail in the following sections.

Refer to **Figure 3.1** – Proposed Servicing Layout Plan. For additional details refer to the General Plan of Services (Drawing 110037-GP123) and Grading Plan (Drawing 110037-GR123)

3.2 General Grading

The proposed grading within the Subject Site will direct overland flows to the servicing and drainage easement Block 130.

Portions of the Subject Site fronting onto Abbott Street East and the Adstock Heights right-of-way will direct overland flows towards the existing Abbott Street right-of-way and the Adstock Heights right-of-way.



LEGEND

- PROPOSED WATERMAIN
- PROPOSED STORM SEWER AND DIRECTION OF FLOW
- PROPOSED SANITARY SEWER AND DIRECTION OF FLOW
- EXISTING WATERMAIN
- EXISTING STORM SEWER AND DIRECTION OF FLOW
- EXISTING SANITARY SEWER AND DIRECTION OF FLOW

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

BLOCK 123 (4829 ABBOTT STREET EAST)

PROPOSED SERVICING LAYOUT PLAN

SCALE 1 : 750 (0, 10, 20, 30)
DATE JUN 2025
JOB 110037
FIGURE 3.1

SHT11X17.DWG - 279mmX432mm

M:\2010\110037\CAD\Design_Block123\Figures\110037-SERVICING.dwg, Servicing, Apr 25, 2025 - 10:37am, lstaff

Refer to the Grading Plan (Drawing 110037-GR123) for details.

4.0 STORM SEWER SYSTEM AND STORMWATER MANAGEMENT

4.1 Stormwater Management Criteria

The following stormwater management criteria was followed for the stormwater management design of the proposed development:

- Control post-development flow from the site to the release rate of 186 L/s (200L/s/ha), allocated to the development site as part of the Detailed Servicing and Stormwater Management Report for the Trail View Subdivision (Novatech, 2018). An excerpt is included in **Appendix C.**
- Minor System (Storm Sewers) designed per the City of Ottawa Design Guidelines.
- Provide a major system (overland flow route) to the existing Servicing Block 130 for storms that exceed capacity of the minor system.
- Best Management Practices: implement lot level and conveyance Best Management Practices (BMPs) to promote infiltration and treatment of storm runoff.

4.2 Pre-Development Conditions

Refer to **Figure 4.1** – Pre-Development Storm Drainage Areas for an illustration of the pre-development drainage areas of the Subject Site.

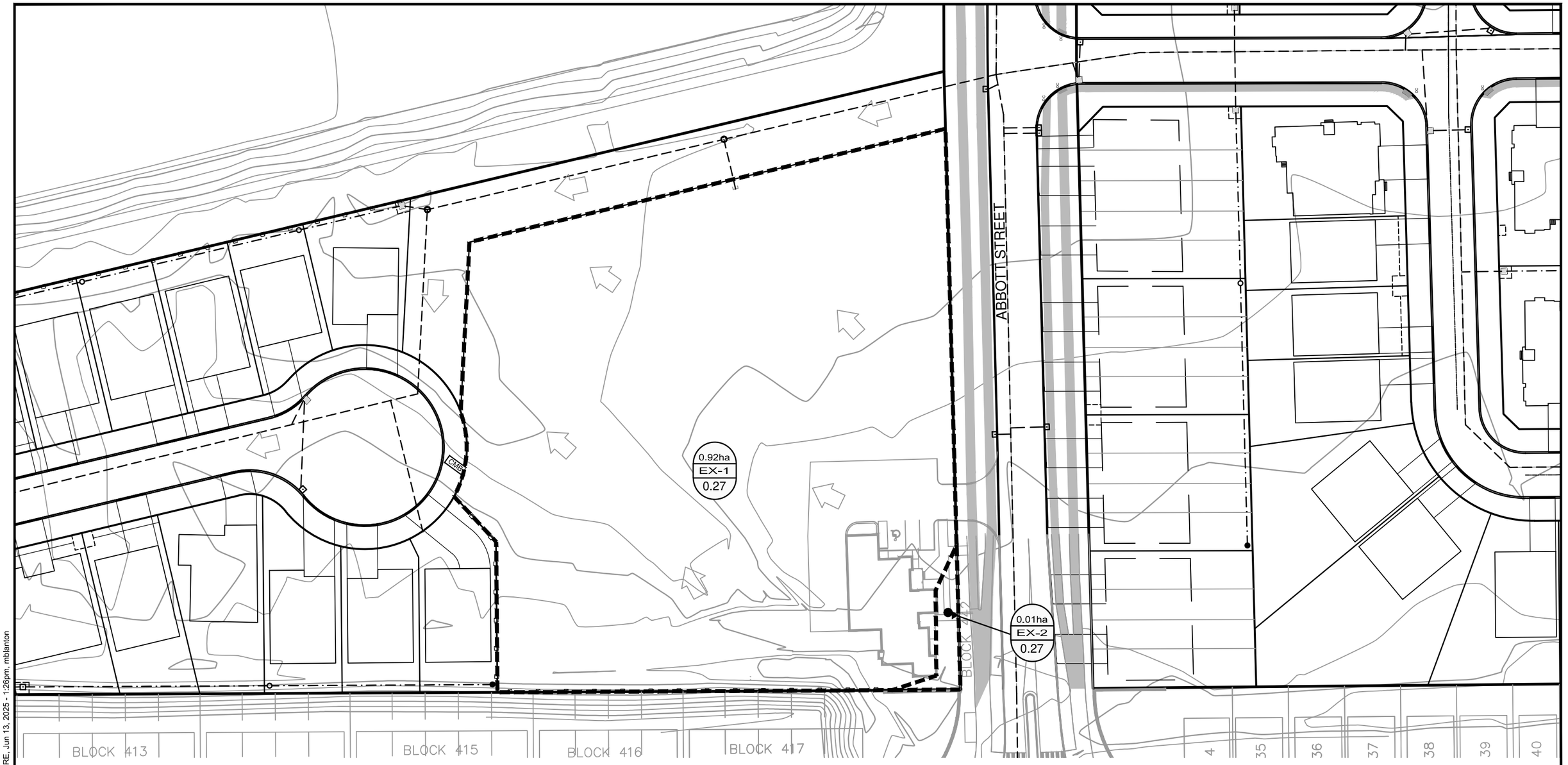
Under existing conditions, the majority of the site drains overland from southwest to northeast towards the existing stormwater management pond.

4.3 Proposed Storm Drainage System

Stormwater servicing for the proposed development would be provided using an underground storm sewer system. Surface stormwater runoff, including from the existing building, would be captured and conveyed to the underground system via catch basins located throughout the site. Storm services for the apartment buildings are proposed to provide foundation drainage. The existing building foundation drainage is serviced independently to Abbott Street.

4.3.1 Storm Sewers (Minor System)

The proposed storm sewers have been designed using the Rational Method. The on-site storm sewers were sized to convey an uncontrolled peak flow corresponding to a 2-year return period. The criteria used to size the storm sewers are summarized in **Table 4.1**. The storm sewer design sheets are provided in **Appendix C**.



LEGEND

0.500 / EX-1 / 0.70 — DRAINAGE AREA (hectares) / DRAINAGE AREA ID / RUNOFF COEFFICIENT (C)

DRAINAGE AREA BOUNDARY

MAJOR OVERLAND FLOW DIRECTION

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

BLOCK 123 (4829 ABBOTT STREET EAST)

PRE-DEVELOPMENT STORM DRAINAGE AREA PLAN

SCALE 1 : 750 (0 10 20 30)

DATE JUN 2025 | JOB 110037 | FIGURE 4.1

M:\2010\110037\CAD\Design_Block123\Figures\110037-POST.dwg, PRE, Jun 13, 2025 - 1:26pm, mblanton

SHT11X17.DWG - 279mmX432mm

Table 4.1: Storm Sewer Design Parameters

Parameter	Design Criteria
Local Roads	2-year Return Period
Storm Sewer Design	Rational Method/Modeling
IDF Rainfall Data	OSDG
Initial Time of Concentration (T_c)	10 minutes
Minimum Velocity	0.9 m/s
Maximum Velocity	1.8 m/s
Minimum Diameter	300 mm

The proposed storm drainage systems include the following:

- Approximately 98.5m of storm sewers for collection and conveyance of stormwater runoff and foundation drainage including a connection to the existing storm sewer stub within the servicing easement (Block 130).

Hydraulic Grade Line (HGL)

The 100-year hydraulic grade line of the existing downstream storm sewer in the servicing easement was reviewed and is approximately 95.52m. The 100-year hydraulic grade line has been reviewed on-site, and all underside of footing (USF) elevations have been set accordingly. The results of the storm sewer hydraulic grade line analysis can be found in **Appendix C**.

4.3.2 Stormwater Quality Control

The Subject Site is within the catchment area of the existing stormwater management facility (Fernbank SWM Pond 3), located to the north of the Subject Site. The design of the existing stormwater management facility accounted for stormwater runoff from the Subject Site. The existing stormwater management facility provides quality control in accordance with MOE Level 1 – Enhance protection (70% TSS removal). Onsite quality control is not required and is not proposed.

Onsite Conveyance Controls

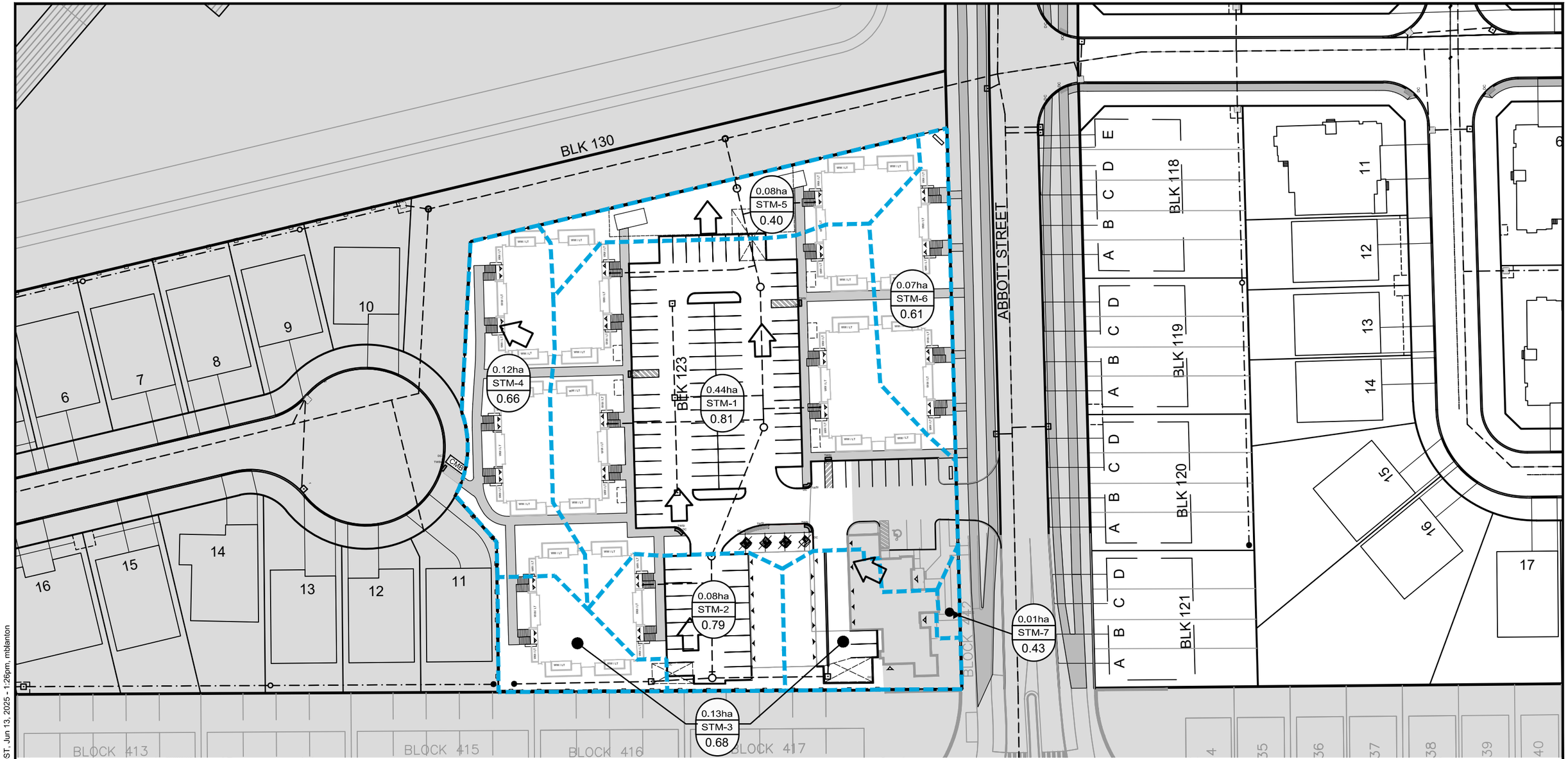
The following lot level and conveyance best management practices would be implemented to promote infiltration and filter sediment, thus providing quality control.

- Roof leaders directed to grass surfaces.
- Grassed swales constructed at minimum grade, where possible.
- Grassed swales would be vegetated.
- Landscape catch basin leads would be perforated to promote infiltration.

4.3.3 Stormwater Quantity Control

The following provides an overview of the proposed stormwater management strategy for controlled and uncontrolled areas. Refer to **Figure 5.1** – Post-Development Drainage Areas for sub-catchment locations:

- *Area STM-1, STM-2, STM-3 (Paved parking area and Portions of the Apartment Buildings) – Controlled*



LEGEND

0.500 / STM-1 / 0.70 — DRAINAGE AREA (hectares) / DRAINAGE AREA ID / RUNOFF COEFFICIENT (C)

DRAINAGE AREA BOUNDARY

MAJOR OVERLAND FLOW DIRECTION

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

BLOCK 123 (4829 ABBOTT STREET EAST)

POST-DEVELOPMENT STORM DRAINAGE AREA PLAN

SCALE 1 : 750 (0 10 20 30)

DATE JUN 2025 | JOB 110037 | FIGURE 5.1

SHT11X17.DWG - 279mmX432mm

M:\2010\11003\7\CAD\Design_Block123\Figures\110037-POST.dwg, POST, Jun 13, 2025 - 1:26pm, mblanton

These sub-catchments represent areas draining towards the paved parking area. Storm runoff will be collected by catch basins and conveyed to the existing storm sewer in the servicing easement Block 130.

- *Areas STM-4, STM-5, STM-6, & STM-7 – Uncontrolled*

[redacted]hese sub-catchments repres[redacted]ns of the[redacted]Site that [redacted]uncontrolled to the existing right-of-ways and servicing easement adjacent to the Subject Site. The overall site release rates have accounted for the uncontrolled release rates of these areas.

Surface Ponding

Quantity control storage (to meet the allowable release rates) will be provided by surface storage around the catch basins in the parking area. Inlet control devices (ICD's) would be installed in the catch basins to control outflows to the allowable release rate. The total volume provided by the surface storage is approximately 180 m^3 based on the layout presented on the Grading Plan (Drawing 110037-GR123). Supporting documentation is provided in **Appendix C**.

The catch basins will be privately owned and maintained.

4.3.4 Grading & Overland Flow (Major System)

The site will be graded to provide an overland flow route (major system) for large infrequent storms or in the event that the storm sewer / stormwater management system becomes obstructed. Major system flows will be directed to Servicing Block 130.

Runoff from storms that exceed the minor system capacity are to be conveyed overland to Servicing Block 130.

4.3.5 Retention and Infiltration

Clay seals will be used in service trenches to reduce the long-term lowering of the groundwater level at the site. Due to the poor hydraulic properties of the underlying silt/clay soil, infiltration type LID measures are not permitted. Where possible, runoff from roofs will be directed to grassed areas to promote infiltration.

5.0 SANITARY SEWER SYSTEM

5.1 Existing Sanitary Infrastructure

There is an existing 200mm diameter sanitary sewer (gravity) located in the servicing easement Block 130. A 7.5m – 200mm diameter stub was installed at the time of construction of the sanitary sewer on Block 130. The stub was capped at the Subject Site's property boundary. Refer to the General Plan of Services (Drawing 110037-GP123) for the sanitary layout.

5.2 Proposed Sanitary Infrastructure

The proposed on-site works will require approximately 192m of on-site sanitary sewer (gravity) to collect wastewater flows and to direct flows to the existing 200mm sanitary sewer stub connecting to the existing 200mm sanitary sewer on Block 130. The layout of the proposed sanitary sewer is shown on the General Plan of Services (Drawing 110037-GP123). To meet Ontario Building Code requirements for the mechanical design within the buildings, sanitary services are proposed for all four quadrants of each apartment building.

5.3 Sanitary Demand and Design Parameters

The peak design flow parameters in **Table 5.1** have been used in the sewer capacity analysis. Unit and population densities and all other design parameters are specified in the OSDG.

Table 5.1: Sanitary Sewer Design Parameters

Design Component	Design Parameter
Unit Population: Apartments	2.1 people/unit
Residential Flow Rate, Average Daily	280 L/cap/day
Residential Peaking Factor	Harmon Equation (min=2.0, max=4.0) Harmon Correction Factor = 0.8
Extraneous Flow Rate	0.31 L/s/ha
Minimum Pipe Size	200 mm (Res)
Minimum Velocity[1]	0.6 m/s
Maximum Velocity	3.0 m/s
Minimum Pipe Cover	2.2 m (Unless frost protection provided)

The sanitary sewer design sheet, located in **Appendix D**, confirms the peaked sanitary flows from the Subject Site to the receiving sewer will be 1.77 L/s.

The capacity of the existing downstream sanitary was reviewed to confirm sufficient capacity to service the development. The Subdivision Servicing & SWM Report (Novatech, 2018) includes sanitary sewer design calculations for the existing sanitary sewer which the development would connect to in Servicing Block 130. The report accounts for a peak design flow of 2.89 L/s for the Block 123 development. Since total peak design flow is 1.77 L/s, there is capacity in the existing downstream sewer in Block 130. The sanitary sewer design table from the Subdivision Servicing & SWM Report (Novatech, 2018) is included in **Appendix D.**

6.0 WATER SUPPLY SYSTEM

6.1 Existing Water Infrastructure

There is an existing 200mm diameter watermain adjacent to the Subject Site in the servicing easement Block 130 and Adstock Heights. Two 200mm diameter stubs were installed at the time of construction of the watermain, located in the Adstock Heights right of way and in servicing easement Block 130. The stubs were capped 6.0m past the Block 123 property line. It is proposed to connect to the existing 200mm diameter watermain stubs to service the proposed development.

6.2 Proposed Water Infrastructure

The proposed on-site watermain would connect to the two existing stubs and would include approximately 92m of 200mm diameter watermain and approximately 54m of 100mm watermain. To meet Ontario Building Code requirements for the mechanical design within the buildings water services are proposed for all four quadrants of each apartment building.

Refer to the General Plan of Services **(110037-GP123)** for the proposed watermain layout.

6.3 Watermain Design Parameters

Boundary conditions were provided by the City of Ottawa, based on the OWDG water demand criteria, for existing and proposed development. The boundary conditions are included in **Appendix E**.

The domestic demand design parameters, fire fighting demand design scenarios and system pressure criteria design parameters are outlined in **Table 6.1** below. The system pressure design criteria are used to determine the size of the watermains, required within the Subject Site, and are based on a conservative approach that considers three possible scenarios.

Table 6.1: Watermain Design Parameters and Criteria

Domestic Demand Design Parameters	**Design Parameters**
Population: Apartments – 2-bedroom	2.1 people/unit
Average Day Residential Demand (AVG)	280 L/c/d
Maximum Day Demand (MXDY)	2.5 x AVG
Peak Hour Demand (PKHR)	2.2 x MXDY
Fire Demand Design	**Design Flows**
Fire Demand (FF)	217 L/s per FUS / OWDG TB-2014
System Pressure Criteria Design Parameters	**Criteria**
Maximum Pressure (AVG) Condition	< 552 kPa (80 psi) occupied areas < 690 kPa (100 psi) unoccupied areas
Minimum Pressure (PKHR) Condition	> 276 kPa (40 psi) or 300 kPa (43.5psi) preferred (for 3-storey product)
Minimum Pressure (MXDY + FF) Condition	> 140 kPa (20 psi)

6.4 System Pressure Modelling and Results

System pressures for the Subject Site for both the existing and planned conditions were estimated using the EPANET modeling software.

The EPANET model layout is demonstrated in **Appendix F**.

Domestic Demand

The water demand summary for the build out of the Subject Site for the basic daily and peak hour demands has been provided in **Table 6.2** below. For detailed results refer to the tables provided in **Appendix E**.

Table 6.2: System Pressure (EPANET)

Condition	Demand (L/s)	Allowable Pressure (psi)	Max/Min Pressure (psi)
Planned Conditions (Summer 2022)			
Average Daily Demand	0.25	80 (Max)	91
Peak Hour Demand	1.35	40 (Min)	83

6.4.1 High Pressures

As summarized in the Table 6.2 above, under average day demands, pressure in the system exceeds the OWDG allowable pressure of 80 psi. Therefore, all units within Block 123 will require pressure reducing valves.

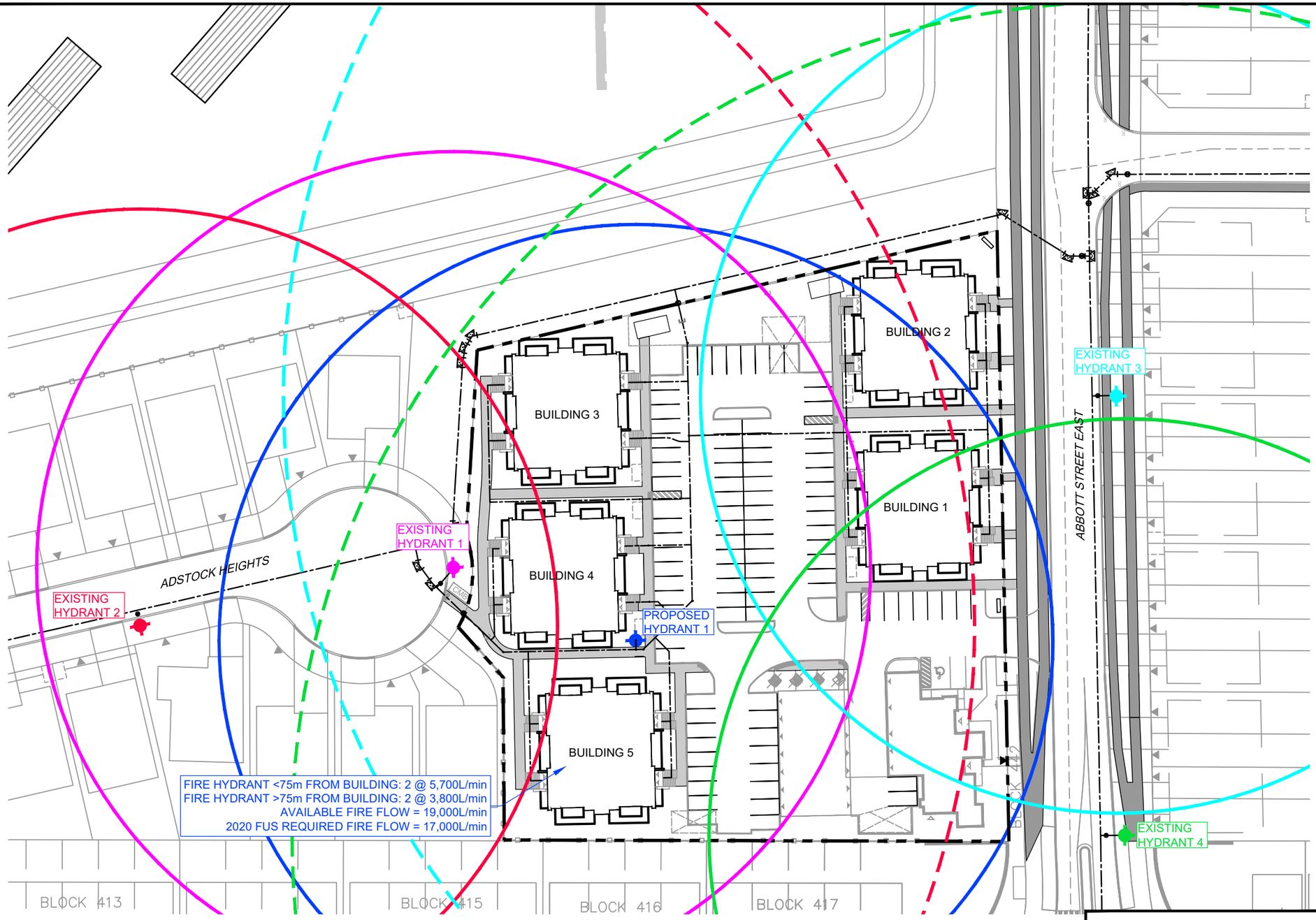
6.5 Fire Demand

An analysis was carried out to determine the available fire flow under maximum day demand while maintaining a residual pressure of 20psi. This was completed using the EPANET modeling software.

To achieve the required fire flow and optimize watermain sizes, the OWDG and its subsequent revisions (specifically ISTB-2018-02) allow for multiple hydrants to be drawn from, as opposed to drawing from a single hydrant to meet the required demand. Upon review of the Subject Site and the proposed hydrant location, the required fire flows can be achieved for the proposed structures by utilizing multiple hydrants.

For the purpose of this analysis, and to ensure a residual pressure of 20 psi is maintained within the system, all existing hydrants were considered as hydrant class AA. Proposed Hydrant 1 will be hydrant class AA (5,700 L/min). With this approach, the maximum required fire flow condition can be achieved at all buildings. For detailed results refer to the tables provided in **Appendix E.**

Please see **Table 6.3** below for a summary of the required fire flows for each apartment building, and the available fire flows based on distances to the proposed and existing hydrants. The maximum required fire flow scenario is highlighted in blue. Refer to **Figure 7.1** for the Fire Hydrant coverage plan.



LEGEND

75m HYDRANT RADIUS

150m HYDRANT RADIUS

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

BLOCK 123 (4829 ABBOTT STREET EAST)

FIRE HYDRANT COVERAGE PLAN

SCALE 1 : 750 (0, 10, 20, 30)

DATE JUN 2025 | JOB 110037 | FIGURE 7.1

SHT11X17.DWG - 279mmX432mm

M:\2010\110037\CAD\Design_Block123\Figures\110037-FH.dwg, FH, Jun 13, 2025 - 12:48pm, mblanton

Table 6.3: Summary of Available Aggregate Hydrant Flow

Building # [redacted]	Fire Hydrants providing 5,700L/min	Fire Hydrants providing [redacted] 3,800L/min	Combined Hydrant Flow [redacted] Rates (L/min)	Required Fire Flow per FUS [redacted] Calculations (L/min)
1	2	1	15,200	14,000
2	2	1	15,200	12,000
3	2	1	15,200	14,000
4	2	1	17,100	14,000
5	2	2	19,000	17,000

Therefore, in the maximum fire flow demand scenario (Block 5), the combined fire flow from the proposed on-site hydrant and existing hydrants exceeds the required fire flow.

Based on the boundary condition information provided by the City and the existing fire hydrants in the area, the existing watermain infrastructure can provide adequate flow and pressure for domestic demand and fire protection for the proposed development. Refer to **Appendix E** for water demands, fire flow calculations, boundary conditions, and hydraulic analysis calculations.

7.0 EROSION AND SEDIMENT CONTROL AND DEWATERING MEASURES

Temporary erosion and sediment control measures will be implemented during construction in accordance with the “Guidelines on Erosion and Sediment Control for Urban Construction Sites” (Government of Ontario, May 1987). Details are provided on the Grading Plan (Drawing 110037-GR123). Erosion and sediment control measures may include:

- Placement of filter fabric under all catch basin and maintenance hatches
- Tree protection fence around the trees to be maintained
- Silt fence around the area under construction placed as per OPSS 577 / OPSD 219.110

The erosion and sediment control measures will need to be installed to the satisfaction of the engineer, the City, and the Ontario Ministry of Environment Conservation and Parks (MECP), prior to construction and will remain in place during construction until vegetation is established. The erosion and sediment control measure will also be subject to regular inspection to ensure that measures are operational.

8.0 SUMMARY AND CONCLUSIONS

This report demonstrates that the proposed development can be adequately serviced with storm and sanitary sewers and watermain. The report is summarized below:

Stormwater Management

- The Subject Site will be serviced with approximately 98m of on-site storm sewers 450mm, 525mm, and 600mm in diameter. The on-site storm sewers will outlet to the existing storm sewer on Block 130.
- The existing sewer was designed for and has capacity for the proposed development.
- Stormwater management will be provided onsite to adhere to the allowable release rates.
- Surface storage will be provided at the catch basins located in the parking area.

Sanitary and Wastewater Collection System

- The sanitary outlet would be the existing 200mm sanitary sewer on Block 130. The existing sanitary sewer has capacity for the proposed development.
- The proposed on-site works would require approximately 192m of on-site sanitary 200mm diameter sewers to collect wastewater flows and to direct flows to the sanitary outlet. The proposed sanitary sewers have been designed per the OSDG design parameters.

Water Supply System

- The watermain connection point for the Subject Site is two locations:
    - Existing 200mm watermain on Block 130
    - Existing 200mm watermain on Adstock Heights
- The proposed on-site watermain would include approximately 92m of 200mm diameter watermain and 54m of 100mm diameter watermain.
- The apartment blocks would be serviced with 50mm water services.
- Pressure reducing valves would be required on each building service.
- One private hydrant location has been provided for fire protection purposes.
- The existing municipal watermain system has the capacity to provide domestic and fire protection for the proposed development.

Erosion and Sediment Control

- Temporary erosion and sediment control measures would be implemented both prior to commencement and during construction in accordance with the “Guidelines on Erosion and Sediment Control for Urban Construction Sites” (Government of Ontario, May 1987).

9.0 CLOSURE

This report is respectfully submitted for review and subsequent approval. Please contact the undersigned should you have questions or require additional information.

NOVATECH

Prepared by:

Matthew Blanton, B.Eng.
Land Development Engineering

Reviewed by:

Alex McAuley, P.Eng.
Senior Project Manager | Land Development Engineering

Appendix A

File No.: PC2024-0509

January 24, 2025

Miranda Virginillo
Novatech
Via email: m.virginillo@novatech-eng.com

Subject: **Pre-Consultation: Meeting Feedback**
Proposed Zoning By-law Amendment and Site Plan Control Application – 4829 Abbott Street East

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on December 19, 2024.

Pre-Consultation Preliminary Assessment

1 ☐	**2** ☐	**3** ☐	**4** ☒	**5** ☐

One (1) indicates that considerable major revisions are required while five (5) suggests that the proposal appears to meet the City's key land use policies and guidelines. This assessment is purely advisory and does not consider technical aspects of the proposal or in any way guarantee application approval.

Next Steps

A review of the proposal and materials submitted for the above-noted pre-consultation has been undertaken.

In your subsequent submission, please ensure that all comments or issues detailed herein are addressed. A detailed cover letter stating how each issue has been addressed must be included with the submission materials. Please coordinate the numbering of your responses within the cover letter with the comment number(s) herein.

Please note, if your development proposal changes significantly in scope, design, or density before the next submission, you may be recommended to repeat the pre-consultation process before filing an official application.

Supporting Information and Material Requirements

1. The attached **Study and Plan Identification List** outlines the information and material that has been identified, during this phase of pre-consultation, as either required (R) or advised (A) as part of a future complete application submission.

    a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline

the specific requirements that must be met for each plan or study to be deemed adequate.

Consultation with Technical Agencies

1. You are encouraged to consult with technical agencies early in the development process and throughout the development of your project concept. A list of technical agencies and their contact information is enclosed.

Planning

Comments:

1. Please ensure the landscape buffer provided between the parking lot and the adjacent residential property is sufficient and meets the zoning requirements as per Section 110.
2. In your subsequent submission, please ensure the number of parking spaces and accessible parking spaces required for the commercial/office use is met.
3. Please ensure the planning rationale includes detail on the requested amendment to the exception as it relates to the sale centre.
4. Staff understand the applicant's desire to provide more parking than the required, however, please consider removing the 8 parking spaces adjacent to the communal amenity area to provide a greater communal amenity area.
5. Staff would like to see more trees planted within the PUD.
6. Submission Requirements and Fees.
    a. Zoning By-law Amendment, Site Plan Control (Complex)
    b. Additional information regarding fees related to planning applications can be found here.

Urban Design

Comments:

7. No major concerns from an urban design perspective.
8. Staff are looking for additional details on the proposed garage.
9. A scoped Urban Design Brief (Terms of Reference attached) is required.
10. The following architectural drawings are required.
    a. Site Plan,
    b. Building Elevations
    c. Landscape Plan.

Feel free to contact Nader Kadri, Senior Urban Designer, for follow up questions.

Engineering

Comments:

1. The Stormwater Management Criteria, for the subject site, is to be based on the criteria and allocated flows approved in the **SPB Development Inc. Subdivision Servicing and Stormwater Management Report, prepared by Novatech Consulting Engineers, dated April 19, 2018**:

    a. **Water Quantity Control:** Control post-development runoff from the subject site, up to and including the **100-year storm event**, to **a 2-year storm event**. See approved report noted above for details.

    Any storm events greater than the established **2-year allowable** release rate, up to and including the **100-year storm event**, shall be detained on-site.

    Water Quality Control: Not required as quality control is provided by SWM Pond 3.

2. Water Boundary condition requests must include the location of the service (map or plan with connection location(s) indicated) and the expected loads required by the proposed development, including calculations. Please provide the following information:
    a. Location of service
    b. Type of development and the amount of fire flow required (as per FUS).
    c. Average daily demand: ___ l/s.
    d. Maximum daily demand: ___l/s.
    e. Maximum hourly daily demand: ___ l/s.

3. **Water**
    a. Water Supply Redundancy: Residential buildings with 50 or more units are required to be connected to a minimum of two water services separated by an isolation valve to avoid a vulnerable service area as per the Ottawa Design Guidelines - Water Distribution, WDG001, July 2010 Clause 4.3.1 Configuration.
    b. Please review Technical Bulletin ISTB-2018-02, maximum fire flow hydrant capacity is provided in Section 3 Table 1 of Appendix I. A hydrant coverage figure shall be provided and demonstrate there is adequate fire protection for the proposal. Two or more public hydrants are anticipated to be required to handle fire flow.

4. **Sewer (sanitary and storm)**
    a. Sanitary flows to be consistent with allocated flows indicated in the SPB **Development Inc. Subdivision Servicing and Stormwater Management Report, prepared by Novatech Consulting Engineers, dated April 19, 2018.**

b. A storm sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) Monitoring Devices.

c. Sanitary sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) Monitoring Devices.

d. Document how any foundation drainage system will be integrated into the servicing design and show the positive outlet on the plan. Foundation drainage is to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention. It is recommended that the foundation drainage system be drained by a sump pump connection to the storm sewer to minimize risk of basement flooding as it will provide the best protection from the uncontrolled sewer system compared to relying on the backwater valve.

e. Please note that the minimum orifice dia. for a plug style ICD is 83mm and the minimum flow rate from a vortex ICD is 6 L/s in order to reduce the likelihood of plugging.

f. Please provide a Pre-Development Drainage Area Plan to define the pre-development drainage areas/patterns. Existing drainage patterns shall be maintained and discussed as part of the proposed SWM solution.

g. Post-development site grading shall match existing property line grades in order to minimize disruption to the adjacent residential properties. A **topographical plan of survey** shall be provided as part of the submission and a note provided on the plans.

h. There must be at least **15cm of vertical clearance** between the spill elevation and the ground elevation at the building envelope that is in proximity of the flow route or ponding area. The exception in this case would be at reverse sloped loading dock locations. At these locations, a minimum of 15cm of vertical clearance must be provided below loading dock openings. Ensure to provide discussion in report and ensure grading plan matches if applicable.

i. **Underground Storage:** Please note that the Modified Rational Method for storage computation in the Sewer Design Guidelines was originally intended to be used for above ground storage (i.e., parking lot) where the change in head over the orifice varied from 1.5 m to 1.2 m (assuming a 1.2 m deep CB and a max ponding depth of 0.3 m). This change in head was small and hence the release rate fluctuated little, therefore there was no need to use an average release rate.

j. When underground storage is used, the release rate fluctuates from a maximum peak flow based on maximum head down to a release rate of zero. This difference is large and has a significant impact on storage requirements. **We therefore require that an average release rate equal to 50% of the peak allowable rate shall be applied to estimate the**

required volume. Alternatively, the consultant may choose to use a submersible pump in the design to ensure a constant release rate.

k. If there is a disagreement from the designer regarding the required storage, the City will require that the designer demonstrate their rationale utilizing dynamic modelling, that will then be reviewed by City modellers in the Water Resources Group.

l. Provide information on type of underground storage system including product name and model, number of chambers, chamber configuration, confirm invert of chamber system, top of chamber system, required cover over system and details, interior bottom slope (for self-cleansing), chart of storage values, length, width and height, capacity, entry ports (maintenance) etc. UG storage to provide actual 2- and 100-year event storage requirements.

m. In regard to all proposed UG storage, ground water levels (and in particular HGW levels) will need to be reviewed to ensure that the proposed system does not become surcharged and thereby ineffective.

n. Modeling can be provided to ensure capacity for both storm and sanitary sewers for the proposed development by City's Water Distribution Dept. – Modeling Group, through PM and upon request.

o. If rooftop control and storage is proposed as part of the SWM solutions sufficient details (Cl. 8.3.8.4) shall be discussed and document in the report and on the plans. Roof drains are to be connected downstream of any incorporated ICDs within the SWM system and not to the foundation drain system. Provide a Roof Drain Plan as part of the submission.

p. Street catch basins are not to be located at any proposed entrances.

q. Sewer connections to be made above the springline of the sewermain as per:

   i) Std Dwg S11.1 for flexible main sewers – connections made using approved tee or wye fittings.

   ii) Std Dwg S11 (For rigid main sewers) – lateral must be less that 50% the diameter of the sewermain,

   iii) Std Dwg S11.2 (for rigid main sewers using bell end insert method) – for larger diameter laterals where manufactured inserts are not available; lateral must be less that 50% the diameter of the sewermain,

   iv) Connections to manholes permitted when the connection is to rigid main sewers where the lateral exceeds 50% the diameter of the sewermain. – Connect obvert to obvert with the outlet pipe unless pipes are a similar size.

   v) No submerged outlet connections.

5. **Grading**

Post-development site grading shall match existing property line grades to minimize disruption to the adjacent residential properties. A **topographical plan of survey** shall be provided as part of the submission and a note provided on the plans.

6. **Geotechnical (including sensitive marine clay, where appropriate)**

Geotechnical Study shall be consistent with the Geotechnical Investigation and Reporting Guidelines for Development Applications.
https://documents.ottawa.ca/sites/documents/files/geotech_report_en.pdf

7. **Snow Storage**

Any portion of the subject property which is intended to be used for permanent or temporary snow storage shall be as shown on the approved site plan and grading plan. Snow storage shall not interfere with approved grading and drainage patters or servicing. Snow storage areas shall be setback from the property lines, foundations, fencing or landscaping a minimum of 1.5m. Snow storage areas shall not occupy driveways, aisles, required parking spaces or any portion of a road allowance. If snow is to be removed from the site please indicate this on the plan(s).

8. **Road Reinstatement**

Where servicing involves three or more service trenches, either a full road width or full lane width 40 mm asphalt overlay will be required, as per amended Road Activity By- Law 2003-445 and City Standard Detail Drawing R10. The amount of overlay will depend on condition of roadway and width of roadway(s).

9. **Gas pressure regulating station**

A gas pressure regulating station may be required depending on HVAC needs (typically for 12+ units). Be sure to include this on the Grading, Site Servicing, SWM and Landscape plans. This is to ensure that there are no barriers for overland flow routes (SWM) or conflicts with any proposed grading or landscape features with installed structures and has nothing to do with supply and demand of any product.

10. **Phase One Environmental Site Assessment**

a. A Phase I ESA is required to be completed in accordance with Ontario Regulation 153/04 in support of this development proposal to determine the potential for site contamination. Depending on the Phase I recommendations a Phase II ESA may be required.

b. The Phase I ESA shall provide all the required Environmental Source Information as required by O. Reg. 153/04. ERIS records are available to public at a reasonable cost and need to be included in the ESA report to comply with O.Reg. 153/04 and the Official Plan. The City will not be in a position to approve the Phase I ESA without the inclusion of the ERIS reports.

c. Official Plan Section 10.1.6

d. Record of Site Condition (RSC) will not be required.

11. **General**
    a. It is the sole responsibility of the consultant to investigate the location of existing underground utilities in the proposed servicing area and submit a request for locates to avoid conflict(s). The location of existing utilities and services shall be documented on an **Existing Conditions Plan**.
    b. Any easements on the subject site shall be identified and respected by any development proposal and shall adhere to the conditions identified in the easement agreement. A **legal survey plan** shall be provided, and all easements shall be shown on the engineering plans.
    c. All underground and above ground building footprints and permanent walls need to be shown on the plans to confirm that any permanent structure does not extend either above or below into the existing property lines and sight triangles.
    d. **Construction approach** – Please contact the Right-of-Ways Permit Office TMconstruction@ottawa.ca early in the Site Plan process to determine the ability to construct site and copy File Lead on this request.

Feel free to contact Mohammed Fawzi Senior Project Manager for follow-up questions.

Noise

Comments:

11. A noise study is required due to proximity to Abbott Street.

Feel free to contact Reed Adams, Transportation Project Manager, for follow-up questions.

Transportation

Comments:

12. **TIA:**
    a. A Transportation Impact Assessment is required. Please submit the Scoping/Forecasting report to reed.adams@ottawa.ca at your earliest convenience. The applicant is responsible to submit the Scoping Report prior to application and must allow for a 14 day circulation period.
    b. The Strategy Report must be submitted with the formal submission to deem complete. The applicant is strongly encouraged to submit the Strategy Report to the TPM prior to formal submission and allow for a 14 day circulation period.
    c. Complete and submit the Transportation Demand Management Measures Checklist and the Transportation Demand Management Supportive Development Design and Infrastructure Checklist in support of the application.

d. If an RMA is required to support the proposed development, the functional plan and/or RMA plans must be submitted with the formal submission to deem complete. Request base mapping asap if RMA is required, contact Engineering Services

e. The “Urban” area designation is based upon the Transportation Master Plan ‘Inner Urban’ area (i.e. 400m Radius for study area).

13. ROW:

a. None required.

14. Site Plan:

a. Corner clearances should follow minimum distances set out within TAC Figure 8.8.2.

b. As the site proposed is residential, AODA legislation applies for all areas accessible to the public (i.e. outdoor pathways, parking, etc.).

c. Ensure site access meets the City’s Private Approach Bylaw.

d. Turning movement diagrams required for all accesses showing the largest vehicle to access/egress the site (garbage, fire)

e. Show all curb radii measurements; ensure that all curb radii are reduced as much as possible and fall within TAC guidelines (Figure 8.5.1).

f. Show dimensions for site elements (i.e. lane/aisle widths, access width and throat length, parking stalls, sidewalks, pedestrian pathways, etc.)

g. Parking stalls at the end of dead-end parking aisles require adequate turning around space.

Feel free to contact Reed Adams, Transportation Project Manager, for follow-up questions.

Environment

Comments:

15. Adjacent to a green/open space with a pathway block in between, the greenspace is a pond it does not trigger an EIS.

16. Please add features that reduce the urban heat island effect (see OP 10.3.3) produced by the parking lot and a building footprint. For example, this impact can be reduced by adding large canopy trees, green roofs or vegetation walls, or constructing the parking lot or building with low heat absorbing materials.

Feel free to contact Matthew Hayley, Environmental Planner, for follow-up questions.

Forestry

Comments:

17. A Tree Conservation Report is required to address the city-owned trees planted along Abbott.
    a. It may be combined with the Landscape Plan.
    b. If these trees need to be removed, a tree permit will be required and can be made available at site plan approval
    c. Seek opportunities to replace any trees that need removal
18. **Landscape Plan tree planting requirements**
    a. Please ensure all retained trees are shown on the LP
    b. Minimum Setbacks
        i. Maintain 1.5m from sidewalk, MUP/cycle track, water service laterals.
        ii. Maintain 2.5m from curb.
        iii. Coniferous species require a minimum 4.5m setback from curb, sidewalk, or MUP/cycle track/pathway.
        iv. Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing, except where otherwise approved in naturalization / afforestation areas.
    c. Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.
    d. Tree specifications
        i. Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.
        ii. Maximize the use of large deciduous species wherever possible to maximize future canopy coverage.
    e. Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; if possible, include watering and warranty as described in the specification.
    f. No root barriers, dead-man anchor systems, or planters are permitted.
    g. No tree stakes unless necessary
    h. Hard surface planting
        i. If there are hard surface plantings, a planting detail must be provided.
        ii. Curb style planter is highly recommended.
        iii. No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.

i. Trees are to be planted at grade.

j. Soil Volume - Please demonstrate as per the Landscape Plan Terms of Reference that the available soil volumes for new plantings will meet or exceed the following:

Tree Type/Size	Single Tree Soil Volume (m3)	Multiple Tree Soil Volume (m3/tree)
Ornamental	15	9
Columnar	15	9
Small	20	12
Medium	25	15
Large	30	18
Conifer	25	15

k. Sensitive Marine Clay - Please follow the City's 2017 Tree Planting in Sensitive Marine Clay guidelines.

l. The city requests that consideration be given to planting native species where ever there is a high probability of survival to maturity.

m. Efforts shall be made to provide as much future canopy cover as possible at a site level, through tree planting and tree retention. The Landscape Plan shall show/document that the proposed tree planting and retention will contribute to the City's overall canopy cover over time. Please provide a projection of the future canopy cover for the site to 40 years.

n. Page 7 of the Landscape Plan Terms of Reference requires applicants to submit a digital, georeferenced CAD or GIS file of the final approved LP. Please follow this link to review the submission requirements: https://documents.ottawa.ca/sites/documents/files/landscape_tor_en.pdf . The file can be sent to the Planning Forester or Planning File Lead.

Feel free to contact Mark Richardson, Planning Forester, for follow-up questions.

Parkland

Comments:

1. The conveyance of Block 126 on plan 4M-1616 (Metric Park) has satisfied the parkland dedication requirement for the entire subdivision. Block 123 which is now under review being part of the larger subdivision will not trigger a separate parkland dedication or cash in lieu of parkland requirement unless the unit count for the entire subdivision is higher than the 325 units anticipated at the time the subdivision was signed. This is to satisfy condition 9(a) of the subdivision agreement.

2. Please verify the unit count for the entire subdivision including Block 123, so as to determine if the unit count has exceeded the 325 units anticipated at the time

of the subdivision agreement. As noted in condition 9(a) of the subdivision agreement.

3. The parkland dedication was calculated at a rate of 1 hectare per 300 units. Which generated a dedication requirement of 0.78 hectares of land. Please verify the size of Block 126 (Metric Park) to determine that the full parkland owning has been transferred to the City.

4. To satisfy conditions 9(c and d) of the subdivision agreement please verify that the blocks of land required for retaining walls abutting Terry Fox Drive and the Trans Canada Trail are separate from parkland Block 126 and that the construction of these retaining walls does not impact on parkland block 126.

5. It is acknowledged that the park Block 126 has been built and substantially completed by the developer in satisfaction of condition 9 (e) of the subdivision agreement. A final take over meeting will be required to ensure that condition 9(f) is satisfied. This condition indicates that all obligations with park Block 126 must be completed to the City's satisfaction during Phase 4 of the Subdivision.

6. Please provide documentation to confirm that an accessible pedestrian connection between Block 126 (Metric Park) and the abutting Trans Canada Trail has been completed to the City's satisfaction. This is to satisfy condition 9 (u) of the subdivision conditions.

Feel free to contact Diane Emmerson, Parks Planner, for follow-up questions.

Other

19. The High Performance Development Standard (HPDS) is a collection of voluntary and required standards that raise the performance of new building projects to achieve sustainable and resilient design and will be applicable to Site Plan Control and Plan of Subdivision applications.

    d. The HPDS was passed by Council on April 13, 2022, but is not in effect at this time, as Council has referred the 2023 HPDS Update Report back to staff with the direction to bring forward an updated report to Committee at a later date. The timing of an updated report to Committee is unknown at this time, and updates will be shared when they are available.

    e. Please refer to the HPDS information at ottawa.ca/HPDS for more information.

20. Under the Affordable Housing Community Improvement Plan, a Tax Increment Equivalent Grant (TIEG) program was created to incentivize the development of affordable rental units. It provides a yearly fixed grant for 20 years. The grant helps offset the revenue loss housing providers experience when incorporating affordable units in their developments.

a. To be eligible for the TIEG program you must meet the following criteria:

   i. the greater of five units OR 15 per cent of the total number of units within the development must be made affordable

   ii. provide a minimum of 15 per cent of each unit type in the development as affordable

   iii. enter into an agreement with the city to ensure the units maintain affordable for a minimum period of 20 years at or below the city-wide average market rent for the entire housing stock based on building form and unit type, as defined by the Canada Mortgage and Housing Corporation

   iv. must apply after a formal Site Plan Control submission, or Building Permit submission for projects not requiring Site Plan Control, and prior to Occupancy Permit issuance

b. Please refer to the TIEG information *at Affordable housing community improvement plan / Plan d'améliorations communautaires pour le logement abordable for more details or contact the TIEG coordinator via email at affordablehousingcip@ottawa.ca.*

The attached **Study and Plan Identification List** outlines the information and material that has been identified as either required (R) or advised (A) as part of a future complete application submission for Zoning By-law Amendment and Site Plan Control.

a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.

All of the above comments or issues should be addressed to ensure the effectiveness of the application submission review.

Should there be any questions, please do not hesitate to contact myself or the contact identified for the above areas / disciplines.

Yours Truly,
Solé Soyak

APPLICANT'S STUDY AND PLAN IDENTIFICATION LIST

Proposed Zoning By-law Amendment and Site Plan Control Application – 4829 Abbott Street East – PC2024-0509

Legend: **R** = Required, the study or plan is required with application submission
A = Advised, the study or plan is advised to evaluate the application or satisfy a condition of approval/draft approval
1 - OPA, **2** - ZBA, **3** - Plan of Subdivision, **4** - Plan of Condominium, **5** - SPC

Core studies required for certain applications all the time (Remaining studies are site specific)

For information and guidance on preparing required studies and plans refer here:

ENGINEERING										
R	**A**	**Study/ Plan Name**	**Description**	**When Required**					**Applicable Study Components & Other Comments**
				1	**2**	**3**	**4**	**5**	
☒	☐	1. Environmental Site Assessment (Phase 1 & Phase 2)	Ensures development only takes place on sites where the environmental conditions are suitable for the proposed use	☒	☒	☒	☒	☒	Record of Site Condition Yes ☐ No ☒
				Study Trigger Details: All cases					
☒	☐	2. Geotechnical Study	Geotechnical design requirements for the subsurface conditions	☒	☒	☒	☒	☒	
				Study Trigger Details: All cases					
☒	☐	3. Grading and Drainage Plan	Grading relationships between connecting (or abutting) properties and surface runoff control	☐	☐	☒	☐	☒	
				Study Trigger Details: All cases					
☐	☐	4. Hydrogeological and Terrain Analysis	A scientific study or evaluation that includes a description of the ground and surface hydrology, geology, terrain, affected landform and its susceptibility	☐	☐	☒	☒	☒	Reasonable Use Study Yes ☐ No ☐ Groundwater Impact Study Yes ☐ No ☐
				Study Trigger Details: When developing on private services or when urban development is in close proximity to existing private serviced development					
☒	☐	5. Noise Control Study	Potential impacts of noise on a development	☒	☒	☒	☒	☒	Vibration Study Yes ☐ No ☒
				Study Trigger Details: See Terms of Reference for full details.					

☐	☐	6. Rail Proximity Study	Development on land adjacent to all Protected Transportation Corridors and facilities shown on Schedule C2 of the Official Plan, to follow rail safety and risk mitigation best practices	☐	☒	☒	☒	☒	Rail Safety Report Yes ☐ No ☐ O-Train Network Proximity Study Yes ☐ No ☐
				Study Trigger Details: Within the Development Zone of Influence for existing and future rapid transit stations and corridors, as shown on Annex 2 of the OP OR on land adjacent to all Protected Transportation Corridors and facilities shown on Schedule C2 of the Official Plan					
☒	☐	7. Site Servicing Study	Provides servicing details based on proposed scale of development with an engineering overview taking into consideration surrounding developments and connections.	☐	☒	☒	☒	☒	Fluvial Geomorphological Report Yes ☐ No ☐ Assessment of Adequacy of Public Services Yes ☐ No ☐ Servicing Options Report Yes ☐ No ☐ Erosion and Sediment Control Plan / Brief Yes ☐ No ☐ Hydraulic Water Main Analysis Yes ☐ No ☐ Stormwater Management Report and Detailed Design Brief Yes ☒ No ☐
				Study Trigger Details: All cases					
☐	☐	8. Slope Stability Study	Assessment of slope stability and measures to provide safe set-back.	☐	☒	☒	☒	☒	Retrogressive Landslide Analysis Yes ☐ No ☐
				Study Trigger Details: Where the potential for Hazard Lands exists on a site.					
☒	☐	9. Transportation Impact Assessment	Identify on and off-site measures to align a development with City transportation objectives.	☐	☒	☒	☒	☒	Roadway Modification Functional Design Yes ☐ No ☒
				Study Trigger Details: If the development generates 60 person-trips or more; or if the development is located in a Location Trigger; or if the development has a Safety Trigger.					

☐	☐	10. Water Budget Assessment	Identify impact of land use changes on the hydrologic cycle and post-development mitigation targets.	☐	☒	☒	☒	☒	
				Study Trigger Details: May be required for site plan control applications for sites with private servicing and / or proximity to hydrogeologically-sensitive areas. Draft plans of subdivision are required to integrate water budget assessments into supporting stormwater management plans and analysis for the study area.					
☐	☐	11. Wellhead Protection Study	Delineate a Wellhead Protection Area (WHPA) and characterize vulnerability for new communal residential drinking water well systems, in accordance with Technical Rules under *Clean Water Act*.	☐	☒	☒	☒	☒	
				Study Trigger Details: Required for all new communal residential drinking water well systems; including new municipal wells, new private communal wells (small water works) that require a Municipal Responsibility Agreement (MRA), expansions or increased water takings from an existing municipal well or existing private communal well and new private communal wells.					

PLANNING									
R	**A**	**Study/Plan Name**	**Description**	**When Required**					**Applicable Study Components & Other Comments**
				1	**2**	**3**	**4**	**5**	
☐	☐	12. Agrology and Soil Capability Study	Confirm or recommend alterations to mapping of agricultural lands in the City.	☒	☐	☐	☐	☐	
				Study Trigger Details: For the expansion of a settlement area or identification of a new settlement area through a comprehensive review; or where it is demonstrated that the land does not meet the requirements for an Agricultural Resource Area.					
☐	☐	13. Archaeological Assessment	Discover any archaeological resources on site, evaluate cultural heritage value and conservation strategies	☒	☒	☒	☒	☒	
				Study Trigger Details: When the land has either: a known archaeological site; or the potential to have archaeological sites; or where the City's Archaeological Resource Potential Mapping Study indicates archaeological potential, outside of the historic core; or upon discovery of any archaeological resource during construction in the City's historic core area.					
☒	☐	14. Building Elevations	Visual of proposed development to understand facing of building including direction of sunlight, height, doors, and windows.	☒	☒	☐	☐	☒	
				Study Trigger Details: Site Plan: for residential buildings with 25 or more residential units; or for residential buildings with less than 25 residential units, if the units are within the Urban area or the High-performance Development Standard threshold in the rural area. Official Plan or Zoning By-law: if staff deem it necessary to determine compliance with OP policies, the Zoning By-law or City of Ottawa Urban Design Guidelines.					

☐	☐	15. Heritage Impact Assessment	Determine impacts of proposed development on cultural heritage resources.	☒	☒	☒	☒	☒	Study Trigger Details: Where development or an application under the Ontario Heritage Act is proposed on, adjacent to, across the street from or within 30 metres of a protected heritage property; or for any development adjacent to the Rideau Canal UNESCO World Heritage Site and its landscaped buffer.	Conservation Plan Yes ☐ No ☐
☐	☐	16. Heritage Act Acknowledgement Report	A submission requirement to demonstrate that the *Ontario Heritage Act* requirements have been satisfied, to ensure that multiple applications are considered currently.	☐	☒	☒	☒	☒	Study Trigger Details: Where the subject property is listed on the Heritage Register and the applicant must submit a Heritage Permit Application (designated heritage property listed on the Heritage Register) or provide notice of intent to demolish or remove a building (non-designated property listed on the Heritage Register).	Heritage Permit Application Yes ☐ No ☐ Notice of Intent to Demolish Yes ☐ No ☐
☐	☐	17. Impact Assessment Study – Mineral Aggregate	Mineral aggregate extraction activities; and to protect known high quality mineral aggregate resources from development and activities that would preclude or hinder their existence (ability to be extracted) or expansion.	☒	☒	☒	☒	☒	Study Trigger Details: New Development within 500 metres of lands within the Bedrock Overlay , or within 300 metres of lands within the Sand and Gravel Resource Area Overlay.	
☐	☐	18. Impact Assessment Study – Mining Hazards	To identify or confirm known mineral deposits or petroleum resources and significant areas of mineral potential. To protect mineral and petroleum resources from development and activities which would preclude or hinder the establishment of new operations or access to the resources.	☒	☒	☒	☒	☒	Study Trigger Details: For all applications in proximity to mining operations.	

☐	☐	19. Impact Assessment Study – Waste Disposal Sites / Former Landfill Sites	To identify or confirm known proximity of existing or former waste disposal sites. To ensure issues of public health, public safety and environmental impact are addressed.	☒	☒	☒	☒	☒	Study Trigger Details: For the establishment of any new Solid Waste Disposal Site or for a footprint expansion of an operating Solid Waste Disposal Site; or development within three kilometers of an operating or non-operating Waste Disposal Site.	
☒	☐	20. Landscape Plan	A plan to demonstrate how the canopy cover, urban design, health, and climate change objectives of Official Plan will be met through tree planting and other site design elements.	☒	☒	☒	☒	☒	Study Trigger Details: Site Plan, Plan of Subdivision, and Plan of Condominium: always required, except where it is demonstrated that the landscape component of a project is not relevant to the review of the application. A high-level conceptual Landscape Plan may be required to support Zoning By-law and Official Plan Amendment applications.	
☐	☐	21. Mature Neighbourhood Streetscape Character Analysis	In the Mature Neighbourhoods a Streetscape Character Analysis is required to determine the applicable zoning requirements.	☐	☒	☐	☐	☐	Study Trigger Details: Zoning By-law amendment application in areas covered by the Mature Neighbourhoods zoning overlay for applications of residential development of four storeys or less located in a R1, R2, R3, or R4 zone.	
☐	☐	22. Minimum Distance Separation	Provincial land use planning tool that determines setback distances between livestock barns, manure storages or anaerobic digesters and surrounding land uses, with the objective of minimizing land use conflicts and nuisance complaints related to odour.	☒	☒	☒	☒	☒	Study Trigger Details: Applications in the Rural Area, outside of a village.	

☐	☐	23. Parking Plan	A tool to assess the sufficiency of on-street parking in plans of subdivision.	☐	☐	☒	☒	☐	
				Study Trigger Details: For new or revised plans of subdivision with public streets.					
☒	☐	24. Plan of Survey	A Plan of Survey depicts legal boundaries and is a specialized map of a parcel of land and it delineates boundary locations, building locations, physical features and other items of spatial importance.	☒	☒	☒	☒	☒	
				Study Trigger Details: Required for all *Planning Act* applications.					
☐	☐	25. Plan of Subdivision	Proposed subdivision layout to be used for application approval	☐	☒	☒	☐	☐	
				Study Trigger Details: Always required with the submission of plan of subdivision application. Only required with a Zoning By-law Amendment application, where such ZBLA is in response to enable a subdivision.					
☐	☐	26. Plan of Condominium	Proposed condominium layout to be used for application approval	☐	☐	☐	☒	☐	
				Study Trigger Details: With the submission of plan of condominium application.					
☒	☐	27. Planning Rationale	Provides the planning justification in support of the *Planning Act* application and to assist staff and the public in the review of the proposal.	☒	☒	☒	☐	☐	Integrated Environmental Review Summary Yes ☐ No ☐
				Study Trigger Details: For all Official Plan amendment, Zoning By-law amendment, or plan of subdivision applications.					
☒	☐	28. Preliminary Construction Management Plan	A checklist that shows a development proposal's anticipated impacts to all modes of transportation and all elements in the right of way during construction.	☐	☐	☒	☐	☒	
				Study Trigger Details: For all Site Plan and plan of subdivision applications.					

☒	☐	29. Public Consultation Strategy	Proposal to reach and collect public input as part of development application.	☒	☒	☒	☒	☒	Study Trigger Details: Official Plan Amendment, Zoning By-law Amendment and Subdivision: Always required. Condominium: Vacant Land only Site Plan: At the discretion of the City's file lead in consultation with the Business and Technical Support Services Manager.	
☐	☐	30. Shadow Analysis	A visual model of how the proposed development will cast its shadow.	☐	☒	☐	☐	☐	Study Trigger Details: When there is an increase in height or massing proposed for a residential, commercial or office use. Two triggers: 1. Inside the Greenbelt: proposed development is over 5 storeys in height (≤15 meters). If a development proposal is 5 storeys or less, but is proposing an increase in height and/or massing and is in close proximity to a shadow sensitive area, a shadow analysis may be requested. 2. Outside the Greenbelt: proposed development is over 3 storeys in height (≤9 meters) and is in close proximity to a shadow sensitive area. Where a proposed development is not in close proximity to a shadow sensitive area (e.g. industrial development) the trigger for a shadow analysis is over 5 storeys in height (≤15 meters).	
☒	☐	31. Site Plan	A Site Plan is a visual drawing that illustrates the proposed development of a site in two dimensions.	☒	☒	☒	☒	☒	Study Trigger Details: Site Plan: All Other applications: where a layout of the	Site Plan Yes ☐ No ☐ Concept Plan Yes ☐ No ☐

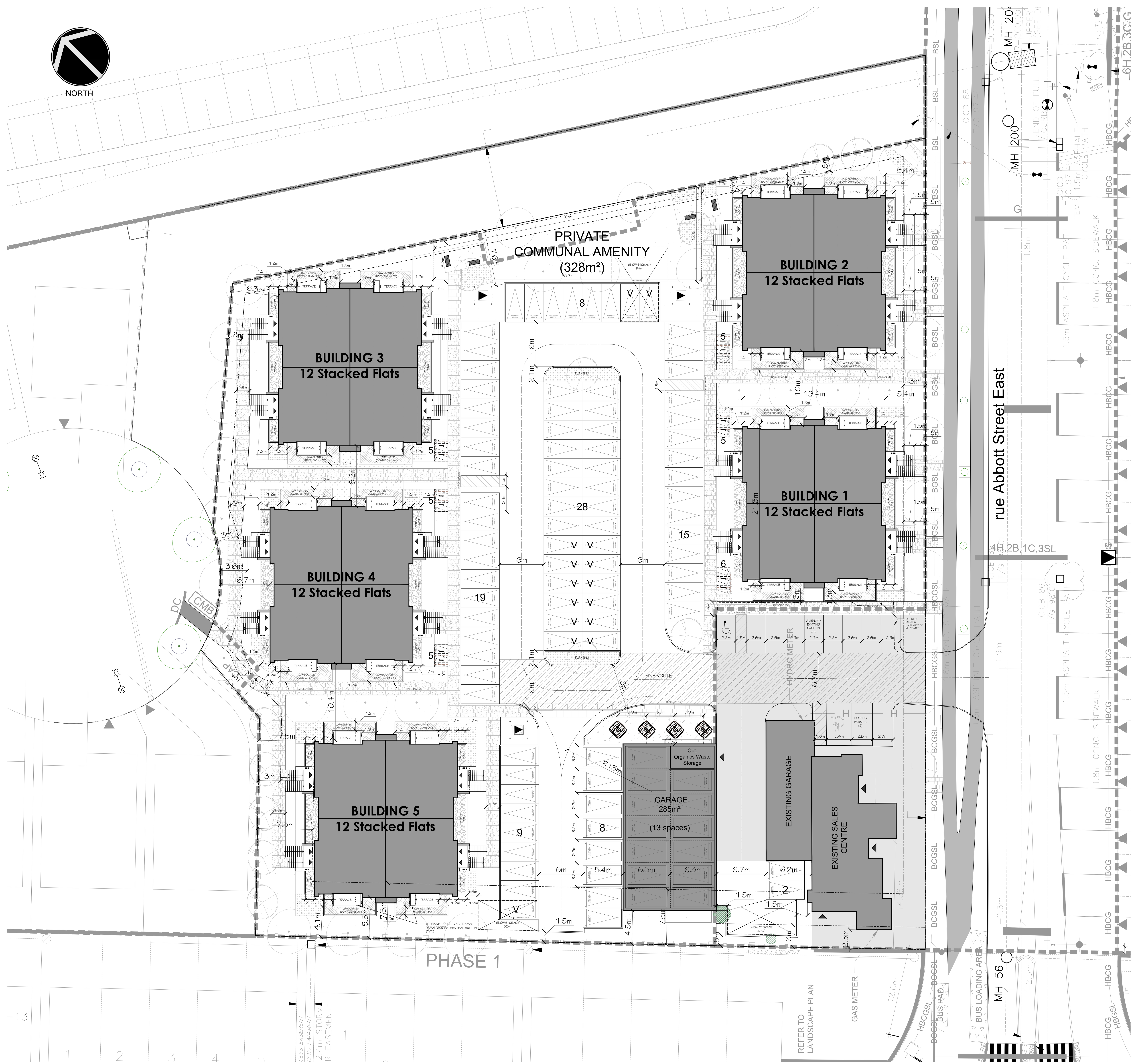
				public realm, building massing, heights, densities or massing of the proposal provides changes to the planned context; sites proposing multiple land uses; sites with multiple landowners; sites with two or more buildings, on-site park dedication, and/or a new public or private street(s); sites with proposed changes to connectivity (such as active transportation networks, vehicular circulation or access to transit); sites where the development potential on adjacent properties may be impacted by or could be integrated into the proposed site.	Facility Fit Plan Yes ☐ No ☐
☒	☐	32. Urban Design Brief	Illustrate how a development proposal represents high-quality and context sensitive design that implements policies of the Official Plan, relevant secondary plans, and Council approved plans and guidelines.	☒ ☒ ☒ ☐ ☒ Study Trigger Details: For all Official Plan amendment, Zoning By-law amendment, and plan of subdivision applications. For SPC applications: proposals for residential buildings with 25 or more residential units, or for proposals for residential buildings with less than 25 residential units, if the units are within the Urban area or the High-performance Development Standard threshold in the rural area where OP Policy 11.3 (3) is relevant; for non-residential and mixed-use proposals.	
☐	☐	33. Urban Design Review Panel Report	Demonstrates that a development proposal has attended an Urban Design Review Panel formal review meeting, received, and responded to the associated recommendations, if applicable	☒ ☒ ☒ ☒ ☒ Study Trigger Details: Required for all planning act applications subject to UDRP review, in accordance with the UDRP Panel Terms of Reference.	
☐	☐	34. Wind Analysis	A visual model and a written evaluation of how a proposed development will impact pedestrian-level wind conditions.	☐ ☒ ☐ ☐ ☒ Study Trigger Details: Applications seeking an increase in height and/or massing which is either: a tall building(s), 10 storeys or more or a proposed building that is more than twice the height of	

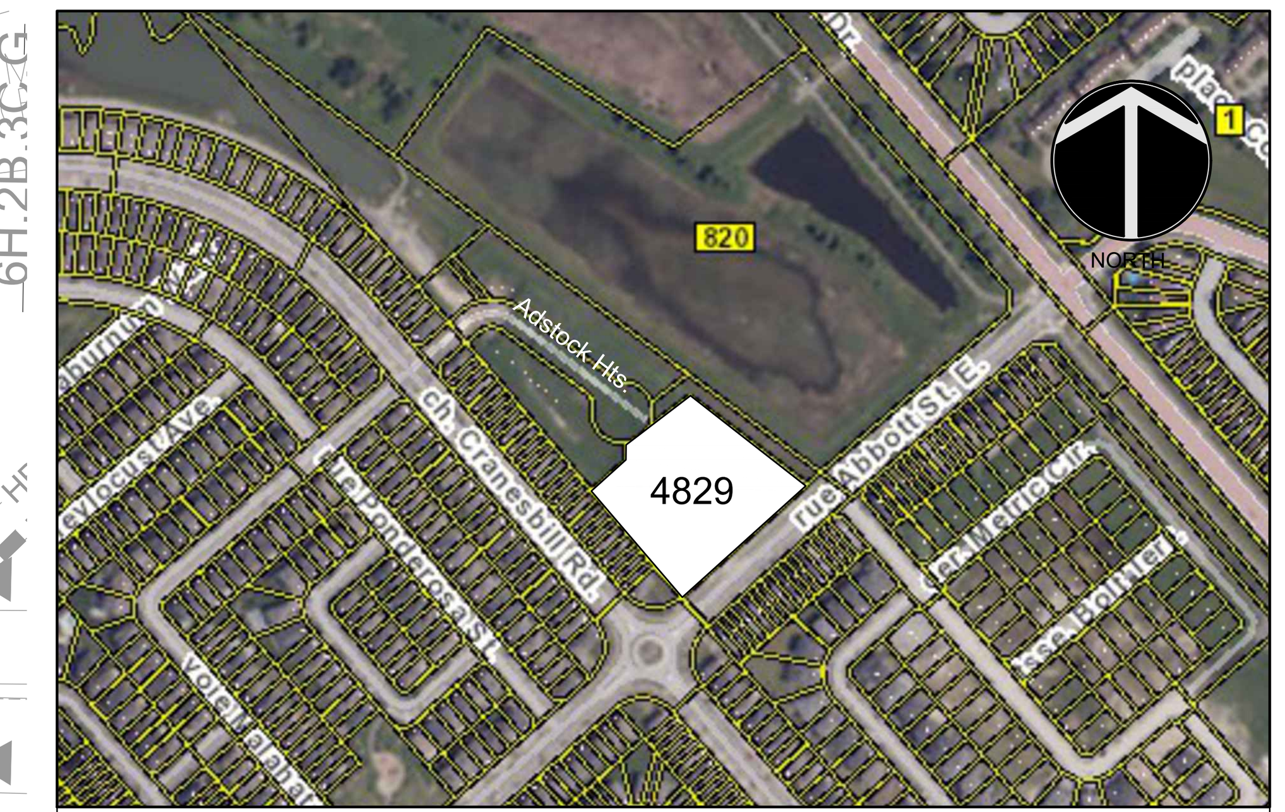
				adjacent existing buildings and is greater than five storeys in height and is adjacent to existing or planned low rise development, open spaces, water bodies and large public amenity areas.						
☒	☐	35. Zoning Confirmation Report	The purpose of the Zoning Confirmation Report (ZCR) is to identify all zoning compliance issues, if any, at the outset of a planning application.	☐	☒	☐	☐	☒	Study Trigger Details: Required for all SPC and ZBLA applications.	

ENVIRONMENTAL										
R	**A**	**Study / Plan Name**	**Description**	**When Required**					**Applicable Study Components & Other Comments**
				1	**2**	**3**	**4**	**5**	
☐	☐	36. Community Energy Plan	Includes a community energy analysis, alongside mitigation measures, and other associated information. The community energy analysis refers to the overall assessment process to identify on and off-site measures to align the design of the development with City climate objectives.	☐	☐	☐	☐	☐	NOT IMPLEMENTED & NOT REQUIRED	
☐	☐	37. Energy Modelling Report	The Energy Modeling Report is a Site Plan Control application submission requirement to show how climate change mitigation, and energy objectives will be met through exterior building design elements.	☐	☐	☐	☐	☐	NOT IMPLEMENTED & NOT REQUIRED	
☐	☐	38. Environmental Impact Study	Assessment of environmental impacts of a project and documents the existing natural features, identifies the potential environmental impacts,	☒	☒	☒	☐	☒	Study Trigger Details: Is required when development or site alteration is proposed in or within a	Assessment of Landform Features Yes ☐ No ☐ Integrated Environmental Review Yes ☐ No ☐

			recommends ways to avoid and reduce the negative impacts, and proposes ways to enhance natural features and functions.	specified distance of environmentally designated lands, natural heritage features, the City's Natural Heritage System, or hazardous forest types for wildland fire. The EIS Decision Tool (Appendix 2 of the Environmental Impact Study Guidelines) provides a checklist of the natural heritage features and adjacent areas within which an EIS is required to support development applications under the *Planning Act.*	Protocol for Wildlife Protection during Construction Yes ☐ No ☐ Significant Woodlands Guidelines for Identification, Evaluation, and Impact Assessment Yes ☐ No ☐
☐	☐	39. Environmental Management Plan	A comprehensive environmental planning document that identifies, evaluates, and mitigates the potential impacts of proposed development on the natural environment and its ecological functions at local planning stage.	☒ ☐ ☐ ☐ ☐ Study Trigger Details: Official Plan amendments for local plans (area-specific policy or secondary plan, where: there is significant change in the conditions upon which the original study was based; there are proposed changes to planned infrastructure needed to service a subdivision that would have a significant impact on the infrastructure needs of another subdivision within the EMP study area, or the applicable Class Environmental Assessment approval has expired.	
☐	☐	40. High-performance Development Standard	A collection of voluntary and required standards that raise performance of new building projects to achieve sustainable and resilient design	☐ ☐ ☐ ☐ ☐ NOT IMPLEMENTED & NOT REQUIRED	
☒	☐	41. Tree Conservation Report	Demonstrates how tree cover will be retained and protected on the site, including mature trees, stands of trees, and hedgerows.	☐ ☐ ☒ ☒ ☒ Study Trigger Details: Where there is a tree of 10 centimeters in diameter or greater on the site and/or if there is a tree on an adjacent site that has a Critical Root Zone (CRZ) extending onto the development site.	

Appendix B





KEY PLAN 1:5000

SITE DATA - BLOCK 123

SITE STATISTICS *(# OF UNITS & GROSS BUILDING FOOTPRINT AREA)*

BLOCK 1	12 UNITS	394m²
BLOCK 2	12 UNITS	394m²
BLOCK 3	12 UNITS	394m²
BLOCK 4	12 UNITS	394m²
BLOCK 5	12 UNITS	394m²
ACCESSORY GARAGE		285m²
EXISTING OFFICE		319m²
TOTAL	60 UNITS	2,574m²

LOT COVERAGE

TOTAL LOT AREA:	8,155m²
TOTAL BUILDING FOOTPRINT AREA:	2,574m²
TOTAL LOT COVERAGE	**31.6%**
TOTAL HARD SURFACE AREA:	2,722m²
TOTAL LOT COVERAGE	**33.4%**
TOTAL LANDSCAPE AREA:	2,899m²
TOTAL LOT COVERAGE	**35.5%**

AMENITY AREA

TOTAL REQUIRED

6m² per dwelling unit
60 UNITS x 6m² = 360m²

COMMUNAL AMENITY AREA:
50% of total required amenity area
360(0.5) = 180m²

PROVIDED

PRIVATE AMENITY AREA (BALCONIES)
60 UNITS x 7.4m² 444m²

COMMUNAL AMENITY AREA 328m²

TOTAL PROVIDED: 772m²

ZONING STATISTICS

ZONING: R4S[2351] - RESIDENTIAL FOURTH DENSITY ZONE

DWELLING TYPE: PUD - 60 STACKED FLATS

PARKING REQUIREMENTS - RESIDENTS

(PARKING PROVISIONS 2008-250 SECTION 101, 106, 111)

RESIDENTS REQUIRE
72 RESIDENT SPACES [60 X 1.2]

12 VISITORS [60 X 0.2]

84 SPACES TOTAL

BICYCLE
0.5 x 60 UNITS = 31 SPACES

PROVIDED
74 RESIDENT SPACES @ 2.6mx5.2m
13 GARAGE
15 VISITORS @ 2.6mx5.2m

102 TOTAL

BICYCLE
31 @ 0.6mx1.8m

PROJECT TEAM

Owner / Applicant

SPB DEVELOPMENTS INC (Project Owner)
METRIC HOMES (Project Builder)
4829 Abbott Street East
Kanata, ON, K2V 0L4

Contact:
Shawn Bernier, Owner, VP – Operations, Metric Homes
phone: (613) 301-7792 email: Shawn@MetricHomes.com

Chris Bernier, Owner, VP – Construction
phone: (613) 302-0727 email: Christopher@MetricHomes.com

Architect

Hobin Architecture Inc.
63 Pamilla Street
Ottawa, ON K1S 3K7

Contact:
Todd Duckworth
phone: (613) 238-7200 x 130 email: tduckworth@hobinarc.com

web: www.hobinarc.com

Planning

Novatech
240 Michael Cowpland Drive, Suite 200,
Ottawa, ON, K2M 1P6

Contact:
Miranda Virginillo
phone: (613) 254-9643 x 204
email: m.virginillo@novatech-eng.com

Landscape

Novatech
240 Michael Cowpland Drive, Suite 200,
Ottawa, ON, K2M 1P6

Contact:
Kathleen Watson
phone: (613) 254-9643 x313
email: k.watson@novatech-eng.com

CIVIL

Novatech
240 Michael Cowpland Drive, Suite 200,
Ottawa, ON, K2M 1P6

Contact:
Alex McAuley
phone: (613) 254-9643 x292
email: a.mcauley@novatech-eng.com

Surveyor

no.	date	revision
6	2025-06-12	ISSUED FOR SITE PLAN
5	2025-05-26	REVIEW & COORDINATION
4	2025-04-30	REVIEW & COORDINATION
3	2025-03-20	REVIEW & COORDINATION
2	2024-10-17	ISSUED FOR REVIEW
1	2024-09-26	ISSUED FOR REVIEW

It is the responsibility of the appropriate contractor to check and verify all dimensions on site and report all errors and/or omissions to the architect.

All contractors must comply with all pertinent codes and by-laws.

Do not scale drawings.

This drawing may not be used for construction until signed.

Copyright reserved.

METRIC HOMES

Hobin Architecture Incorporated
63 Pamilla Street
Ottawa, Ontario
Canada K1S 3K7
T: 613-238-7200
F: 613-235-2005
E: mail@hobinarc.com
hobinarc.com

HOBIN ARCHITECTURE

PROJECT/LOCATION:
TRAIL VIEW VILLAGE
LOW-RISE STACKED DWELLINGS
4829 ABBOTT STREET E, STITTSVILLE, ONTARIO

DRAWING TITLE:
BLOCK 123 SITE PLAN

DRAWN BY:	DATE:	SCALE:
TD	AUG 2024	1:250

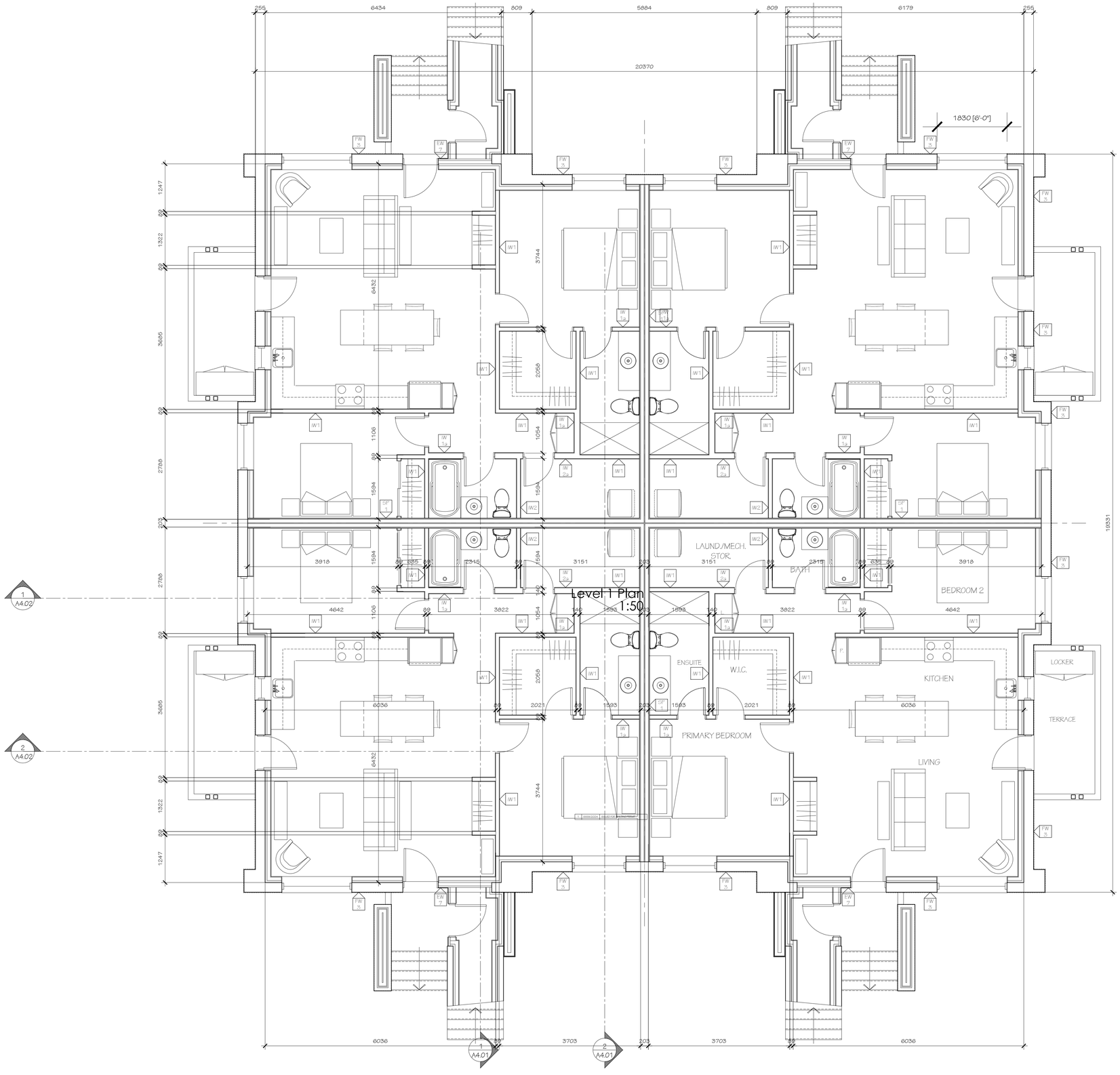
PROJECT: 2223

DRAWING NO.: SP-1

REVISION NO.:

#XX XXX

PC2024-0509



no.	date	revision
1	XXXX/2024	ISSUED FOR BUILDING PERMIT

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND REPORT ALL ERRORS AND/ OR OMISSIONS TO THE ARCHITECT.

ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.

DO NOT SCALE DRAWINGS.

THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNTIL SIGNED.

COPYRIGHT RESERVED.

METRIC HOMES

Hobin Architecture Incorporated
63 Pamilla Street
Ottawa, Ontario
Canada K1S 3K7
T: 613-238-7200
F: 613-235-2005
E: mail@hobinarc.com
hobinarc.com

HOBIN ARCHITECTURE

PROJECT/LOCATION:
TRAILVIEW VILLAGE
BLOCK 1

DRAWING TITLE:
LEVEL 1 PLAN

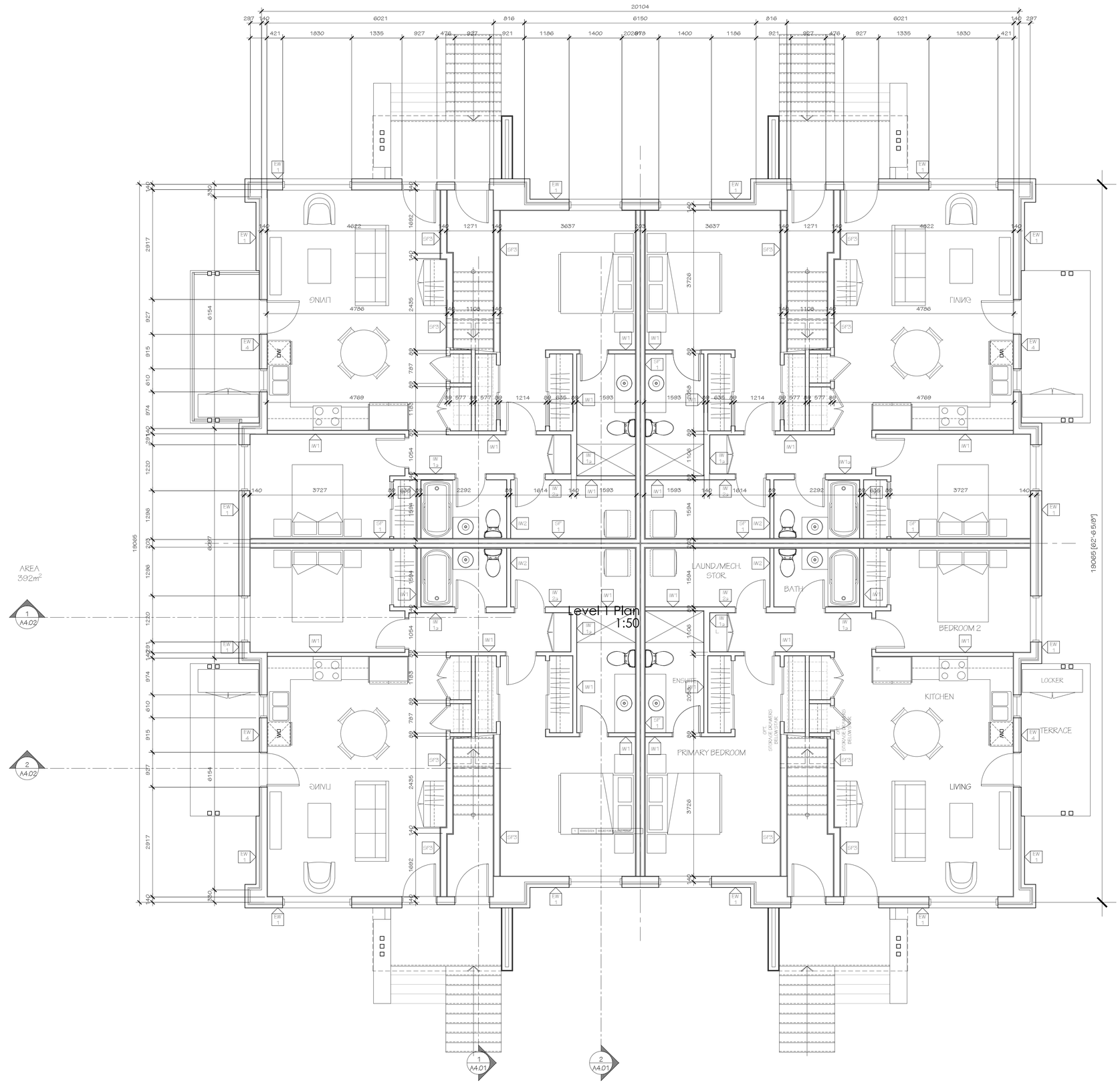
DRAWN BY:	DATE:	SCALE:
KG	01-29-2025	1:50

PROJECT: 2223

DRAWING NO.: A2.01

REVISION NO.:

None
None



no.	date	revision
1	XXXX/2024	ISSUED FOR BUILDING PERMIT

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND REPORT ALL ERRORS AND/ OR OMISSIONS TO THE ARCHITECT.

ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.

DO NOT SCALE DRAWINGS.

THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNTIL SIGNED.

COPYRIGHT RESERVED.

METRIC HOMES

Hobin Architecture Incorporated
63 Pamilla Street
Ottawa, Ontario
Canada K1S 3K7

T: 613-238-7200
F: 613-235-2005
E: mail@hobinarc.com

hobinarc.com

HOBIN ARCHITECTURE

PROJECT/LOCATION:
TRAILVIEW VILLAGE
BLOCK 1

DRAWING TITLE:
LEVEL 2 PLAN

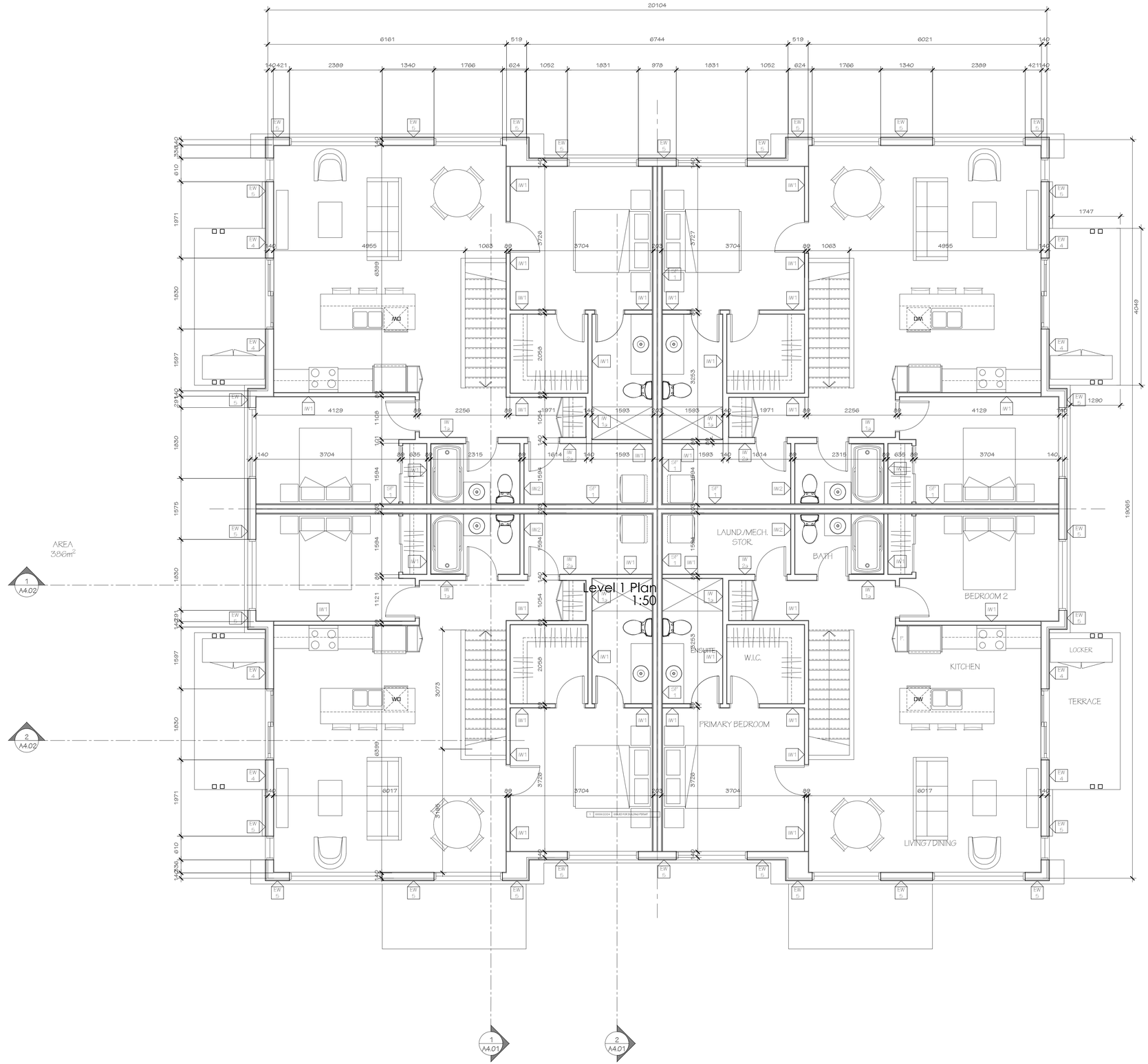
DRAWN BY:	DATE:	SCALE:
KG	01-29-2025	1:50

PROJECT: 2223

DRAWING NO.: A2.01

REVISION NO.:

None
None



1	XXXX/2024	ISSUED FOR BUILDING PERMIT
no.	date	revision

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND REPORT ALL ERRORS AND/ OR OMISSIONS TO THE ARCHITECT.

ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.

DO NOT SCALE DRAWINGS.

THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNTIL SIGNED.

COPYRIGHT RESERVED.

METRIC HOMES

Hobin Architecture Incorporated
63 Parmilla Street
Ottawa, Ontario
Canada K1S 3K7
T: 613-238-7200
F: 613-235-2005
E: mail@hobinarc.com
hobinarc.com

HOBIN ARCHITECTURE

PROJECT/LOCATION:
TRAILVIEW VILLAGE
BLOCK 1

DRAWING TITLE:
LEVEL 3 PLAN

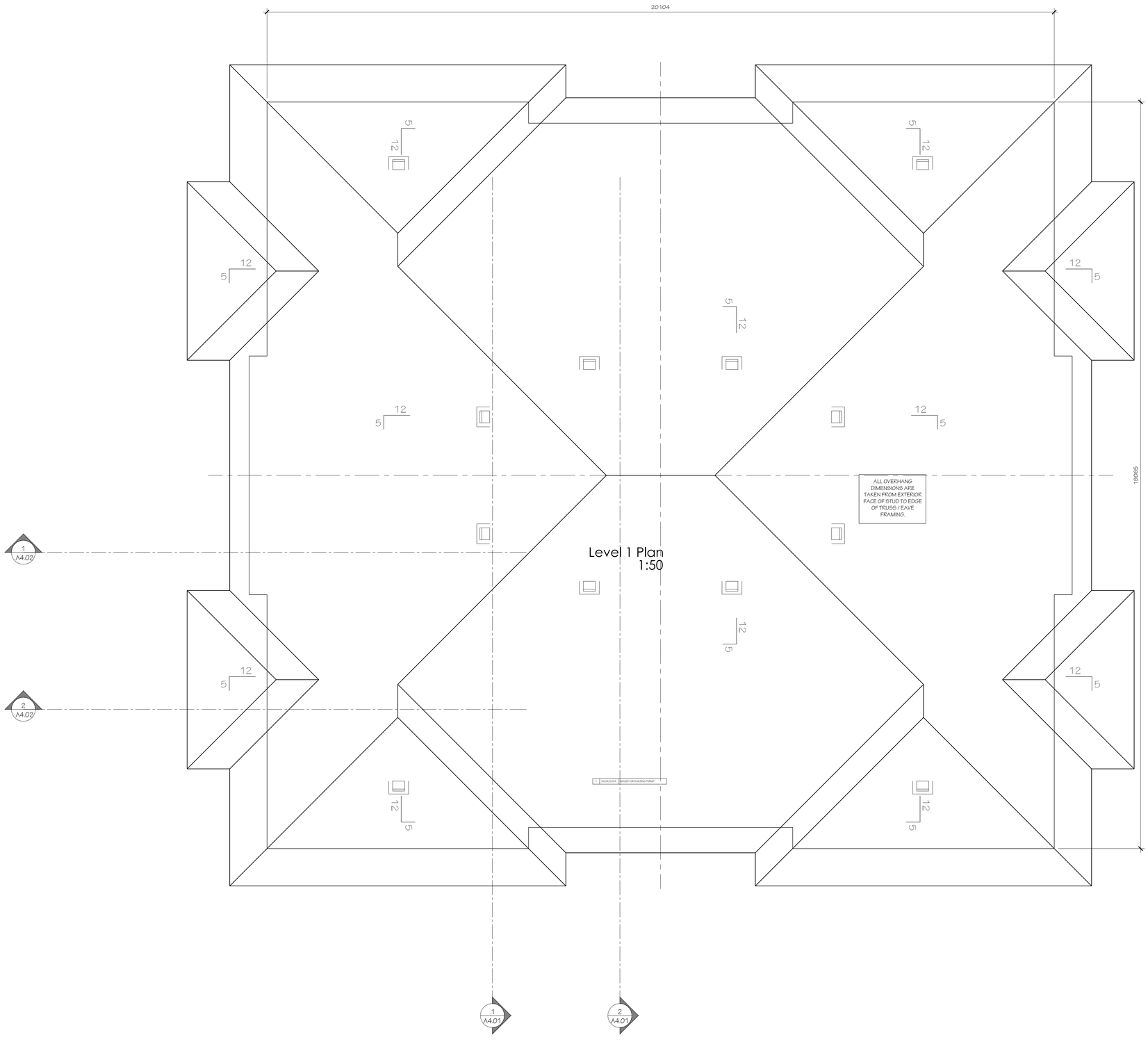
DRAWN BY:	DATE:	SCALE:
KG	01-29-2025	1:50

PROJECT: 2223

DRAWING NO.: A2.01

REVISION NO.:

None
None



Level 1 Plan
1:50

no.	date	revision
1	XXXX/2024	ISSUED FOR BUILDING PERMIT

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND REPORT ALL ERRORS AND/ OR OMISSIONS TO THE ARCHITECT.

ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.

DO NOT SCALE DRAWINGS.

THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNTIL SIGNED.

COPYRIGHT RESERVED.

METRIC HOMES

Hobin Architecture Incorporated
63 Pamilla Street
Ottawa, Ontario
Canada K1S 3K7
T: 613-238-7200
F: 613-235-2005
E: mail@hobinarc.com
hobinarc.com

HOBIN ARCHITECTURE

PROJECT/LOCATION:
TRAILVIEW VILLAGE
BLOCK 1

DRAWING TITLE:
ROOF PLAN

DRAWN BY:	DATE:	SCALE:
KG	01-29-2025	1:50

PROJECT: 2223

DRAWING NO.: A2.01

REVISION NO.:

None
None

Appendix C

Servicing study guidelines for development applications

4. Development Servicing Study Checklist

The following section describes the checklist of the required content of servicing studies. It is expected that the proponent will address each one of the following items for the study to be deemed complete and ready for review by City of Ottawa Infrastructure Approvals staff.

The level of required detail in the Servicing Study will increase depending on the type of application. For example, for Official Plan amendments and re-zoning applications, the main issues will be to determine the capacity requirements for the proposed change in land use and confirm this against the existing capacity constraint, and to define the solutions, phasing of works and the financing of works to address the capacity constraint. For subdivisions and site plans, the above will be required with additional detailed information supporting the servicing within the development boundary.

4.1 General Content

- ☐ Executive Summary (for larger reports only).
- ☒ Date and revision number of the report.
- ☒ Location map and plan showing municipal address, boundary, and layout of proposed development.
- ☒ Plan showing the site and location of all existing services.
- ☒ Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.
- ☐ Summary of Pre-consultation Meetings with City and other approval agencies.
- ☐ Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.
- ☒ Statement of objectives and servicing criteria.
- ☒ Identification of existing and proposed infrastructure available in the immediate area.
- ☐ Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).
- ☒ Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.
- ☐ Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.
- ☐ Proposed phasing of the development, if applicable.

☒ Reference to geotechnical studies and recommendations concerning servicing.

☒ All preliminary and formal site plan submissions should have the following information:
- Metric scale
- North arrow (including construction North)
- Key plan
- Name and contact information of applicant and property owner
- Property limits including bearings and dimensions
- Existing and proposed structures and parking areas
- Easements, road widening and rights-of-way
- Adjacent street names

4.2 Development Servicing Report: Water

☐ Confirm consistency with Master Servicing Study, if available
☒ Availability of public infrastructure to service proposed development
☒ Identification of system constraints
☒ Identify boundary conditions
☒ Confirmation of adequate domestic supply and pressure
☒ Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.
☒ Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.
☐ Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design
☒ Address reliability requirements such as appropriate location of shut-off valves
☐ Check on the necessity of a pressure zone boundary modification.
☒ Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range

- ☒ Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.
- ☐ Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.
- ☒ Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.
- ☒ Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.

4.3 Development Servicing Report: Wastewater

- ☒ Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).
- ☐ Confirm consistency with Master Servicing Study and/or justifications for deviations.
- ☒ Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.
- ☒ Description of existing sanitary sewer available for discharge of wastewater from proposed development.
- ☒ Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)
- ☒ Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix ‘C’) format.
- ☒ Description of proposed sewer network including sewers, pumping stations, and forcemains.
- ☐ Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).
- ☐ Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.
- ☐ Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.
- ☐ Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.
- ☐ Special considerations such as contamination, corrosive environment etc.

4.4 Development Servicing Report: Stormwater Checklist

- ☒ Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)
- ☒ Analysis of available capacity in existing public infrastructure.
- ☒ A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.
- ☒ Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.
- ☒ Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.
- ☒ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.
- ☐ Set-back from private sewage disposal systems.
- ☐ Watercourse and hazard lands setbacks.
- ☐ Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.
- ☐ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.
- ☒ Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).
- ☐ Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.
- ☒ Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.
- ☐ Any proposed diversion of drainage catchment areas from one outlet to another.
- ☒ Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.
- ☐ If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100 year return period storm event.
- ☐ Identification of potential impacts to receiving watercourses
- ☐ Identification of municipal drains and related approval requirements.
- ☒ Descriptions of how the conveyance and storage capacity will be achieved for the development.
- ☒ 100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.

- ☐ Inclusion of hydraulic analysis including hydraulic grade line elevations.
- ☒ Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.
- ☐ Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.
- ☐ Identification of fill constraints related to floodplain and geotechnical investigation.

4.5 Approval and Permit Requirements: Checklist

The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development as well as the relevant issues affecting each approval. The approval and permitting shall include but not be limited to the following:

- ☐ Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.
- ☐ Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.
- ☐ Changes to Municipal Drains.
- ☐ Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)

4.6 Conclusion Checklist

- ☒ Clearly stated conclusions and recommendations
- ☒ Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.
- ☒ All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario

Appendix D

6.2 Results of Hydrologic / Hydraulic Analysis

Flows generated from PCSWMM for the 2-year storm were compared with flows generated using the rational method using a time of concentration of 10 minutes. In general, the flows generated by PCSWMM were very comparable to those generated by the Rational Method. The differences are attributed to the difference between the time of concentration calculated by PCSWMM and the 10-minute time of concentration used by the Rational Method. This comparison is included in **Appendix F**.

6.2.1 Minor System

The storm sewers have been designed to allow uncontrolled 2-year flows without surcharging. A portion of the downstream storm sewers adjacent to Pond 3 will be paritally submerged. Refer to **Section 6.2.5** for details.

The proposed inlet control devices (ICDs) have been sized to capture the approximate 2-year peak flow at each inlet to the storm sewer. As a result, there will be effectively no ponding within the rights-of-way during the 2-year event. The selection of ICDs takes into account the overland flow that bypasses catch basins on-grade by providing additional capacity at the downstream inlets. The list of ICD sizes and peak flows is provided in **Table 6.2,** and locations are indicated on the drawings.

ICDs were provided for the catch basins on a continuous grade in addition to those at sag points. During the minor system storm event, the inlet capacity of the catch basin controls the flow at those locations, but the ICD becomes the control in most cases during the major system storm event.

The multi-unit residential block, Block 123, has been modeled with on-site controls to limit the overall release rate to 200 L/s/ha. This release rate is roughly equivalent to a 5-year storm event. Storm events up to and including the 100-year event will require onsite storage. This can be achieved by means of surface ponding, and storage underground within pipes and structures.

EXCERPT FROM NOVATECH REPORT
APRIL 19, 2018
R-2017-164

STORM SEWER DESIGN SHEET

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 110037
Project Name: Block 123 - Trail View Subdivision
Date: 5/29/2025
Input By: MJB
Reviewed By: ARM
Drawing Reference: 110037-GP123

Storm Design Event = 2 Year

Legend:
- Design Input by User
- As-Built Input by User
- Cumulative Cell
- Calculated Design Cell Output
- Calculated Uncontrolled Peak Flow Cell Output
- Design Input Restricted Peak Flow Cell

Reference: City of Ottawa - Sewer Design Guidelines (2012 and TBs)
MOE - Design Guidelines for Sewage Works (2008)

Location				Flow							Design Capacity / Proposed Sewer Pipe Sizing / Design								
Street	Area ID	From MH	To MH	Area A (ha.)	Runoff Coefficient C	Indivi. 2.78 AC	Accum. 2.78 AC	Time of Conc. Tc (min.)	Rain Intensity I (mm/hr)	Total Uncontrolled Peak Flow Q (L/s)	Pipe Length (m)	Pipe Size (mm) and Material	Pipe ID Actual (m)	Roughness n	Design Grade So (%)	Capacity Qfull (L/s)	Full Flow Velocity (m/s)	Time of Flow (min.)	Q / Qfull
Private Site	STM-2 & STM-3	278	276	0.21	0.72	0.42	0.42	10.00	76.81	32.3	23.8	450 PVC	0.4572	0.013	1.00	297.4	1.81	0.22	10.9%
Private Site	N/A	276	274	0.00	0.00	0.00	0.42	10.22	75.97	31.9	27.3	450 CONC	0.4572	0.013	1.00	297.4	1.81	0.25	10.7%
Private Site	STM-1	274	272	0.44	0.81	0.99	1.41	10.47	75.05	105.9	27.5	525 CONC	0.5334	0.013	1.00	448.7	2.01	0.23	23.6%
Private Site	N/A	272	270	0.00	0.00	0.00	1.41	10.70	74.22	104.7	21.4	600 CONC	0.6096	0.013	1.00	640.6	2.19	0.16	16.4%
Private Site	N/A	270	EX 252	0.00	0.00	0.00	1.41	10.86	73.65	103.9	10.0	600 CONC	0.6096	0.013	1.00	640.6	2.19	0.08	16.2%
Totals				**0.65**							**110.0**								

Demand Equation / Parameters

1. Q = 2.78 ACI

Definitions

Q = Peak flow in litres per second (L/s)
A = Area in hectares (ha)
C = Weighted runoff coefficient (increased by 25% for 100-year)
I = Rainfall intensity in millimeters per hour (mm/hr)

Rainfall intensity is based on City of Ottawa IDF data presented in the City of Ottawa - Sewer Design Guidelines

Capacity Equation

Q full = $1000*(1/n)*A_p*R^{2/3}*So^{0.5}$

Definitions

Q full = Capacity (L/s)
n = Manning coefficient of roughness (0.013)
A_p = Pipe flow area (m^2)
R = Hydraulic Radius of wetted area (dia./4 for full pipes)
So = Pipe slope/gradient

STORM SEWER HYDRAULIC GRADE LINE ANALYSIS (100 YEAR EVENT)

Project: Block 123 - Trail View Subdivision
Developer: SPB Developments Inc.

NOVATECH
Engineers, Planners & Landscape Architects

Area	MANHOLE			INVERT ELEVATION		OBVERT ELEVATION		GROUND ELEVATION	COVER	PIPE PARAMETERS			TOTAL FLOW	Q_{cap}	Q_{in}/Q_{cap}	COMPUTATIONAL COLUMNS					HEAD LOSS	SURCHARGE	HGL			PIPE SLOPE	MIN. USF ELEVATION
	U/S	D/S		U/S (m)		D/S (m)	U/S (m)	D/S (m)	Upstream (m)	Upstream (m)	Dia (mm)	Length (m)	'n'	(m^3/s)	(m^3/s)		Pipe Area (m^2)	L/D	Friction Factor (f)	Velocity V (m/s)	$V^2/2g$	HL (m)	Upstream (m)	U/S (m)	D/S (m)	SLOPE (%)	(%)	Upstream (m)
																								95.52	**(100 year HGL in STM MH 252)**			
	270	252	NE	94.27	SW	94.25	94.87	94.85	97.68	2.81	600	10.0	0.013	0.094	0.286	0.33	0.292	17	0.0248	0.32	0.01	0.00	0.65	95.52	95.52	0.03	0.20	95.82
B3-21	272	270	NE	94.49	SW	94.29	95.09	94.89	97.76	2.67	600	19.8	0.013	0.094	0.644	0.15	0.292	33	0.0248	0.32	0.01	0.01	0.44	95.53	95.52	0.03	1.01	95.83
B3-20	274	272	NE	94.84	SW	94.70	95.37	95.23	98.03	2.66	525	27.5	0.013	0.094	0.320	0.29	0.223	52	0.0260	0.42	0.01	0.02	0.18	95.55	95.53	0.06	0.51	95.85
	276	274	E	95.19	W	94.91	94.84	95.36	97.92	2.28	450	27.3	0.013	0.046	0.301	0.15	0.164	61	0.0273	0.28	0.00	0.01	0.00	95.64	95.55	0.35	1.03	95.94
B3-19	278	276	NE	95.42	SW	95.19	95.87	95.64	97.98	2.11	450	23.8	0.013	0.046	0.292	0.16	0.164	53	0.0273	0.28	0.00	0.01	0.00	95.87	95.64	0.97	0.97	96.17

DESIGN PARAMETERS

DOWNSTREAM WATER LEVEL AT OUTLET = 95.52m
RETURN FREQUENCY = 100 YEAR CONTROLLED BY 2 YEAR ICDs
FLOWS TAKEN FROM SWM (ICD) CALCULATIONS FOR 100-YEAR

MINIMUM VELOCITY= 0.80 m/s
MANNING'S n= 0.013
MIN. HGL CLEARANCE = 0.30m

HGL=Major + Minor Losses
Major Loss= Pipe Friction (Darcy-Weisbach)
Friction Factor= 8g/c^2, where c=(1/n)*(D/4)^1/6
Minor losses = see equations on page 2

Designed: MJB
Checked: ARM
Dwg. Reference: 110037-GP123

PROJECT: Block 123 - Trail View Subdivision
CLIENT: SPB Developments Inc.
Date: May 29, 2025

Manhole Loss

U/S MH	Diameters (mm) U/S MH	Pipe In	Pipe Out	Bend Angle	K_O	C_D	C_d	C_Q	C_B	K_{tot}	HL_{MH} (m)
270	1200	600	600	180	0.20	1.00	0.78	1.00	1.00	0.16	0.00
272	1200	600	600	168	0.48	1.00	0.69	1.00	1.00	0.33	0.00
274	1200	525	525	157	0.76	1.00	0.59	1.00	1.00	0.45	0.00
276	1200	450	450	158	0.77	1.00	0.44	1.00	1.00	0.34	0.00
278	1200		450	0	0.27	1.00	0.33	1.00	1.00	0.09	0.00

Equations for Manhole Loss

K_O: Initial head loss coefficient based on relative access hole size

$K_O = 0.1 \times (b/D_o) \times (1-\sin\theta) + 1.4 \times (b/D_o)^{0.15} \times \sin\theta$

b: Upstream manhole diameter (m)
D_o: Diameter of outlet pipe (m)
θ: Angle between pipes (degrees)

C_D: Correction facto for pipe diameter (pressure flow only)

If the depth of water in structure / diameter of the outlet pipe > 3.2 pressure flow applies

$C_D = (D_o/D_i)^3$

D_o: Diameter of outlet pipe (m)
D_i: Diameter of inlet pipe (m)

If the depth of water in structure / diameter of the outlet pipe < 3.2 pressure flow does not apply

$C_D = 1.00$

C_d: Correction factor for flow depth (free flow or low pressure flow)

If the depth of water in structure / diameter of the outlet pipe < 3.2 free flow or low pressure flow applies

$C_d = 0.5 \times (d_{MH}/D_o)^{0.6}$

D_o: Diameter of outlet pipe (m)
d_{MH}: Depth of water in the upstream manhole (m)

If the depth of water in structure / diameter of the outlet pipe > 3.2 pressure flow does not apply

$C_d = 1.00$

C_Q: Correction factor for relative flow (more than one inlet pipe to structure)

$C_Q = (1-2\sin\theta) \times (1-(Qi/Qo))^{0.75} + 1$

θ: Angle between inflow and outflow pipes (degrees)
Q_i: Flow in the inlet pipe
Q_o: Flow in the outlet pipe

C_B: Correction factor for benching

Only applies when outlet pipe is > 825mm

$C_B = (0.3636 \times d_{MH}) - 0.202$

If C_B applies (outlet pipe > 825mm) it can not exceed 0.95
If outlet pipe < 825mm CB =1.0

This spreadsheet uses the Darcy-Weisbach equation to calculate hydraulic losses through a pipe network with a specified flow rate. Minor losses are accounted for including both pipe bend losses and structure losses.
The spreadsheet returns the upstream hydraulic grade line if surcharged, or the pipe obvert if free flow conditions exist. The slope of the HGL is calculated and the minimum USF elevations can be established +0.30m above the HGL.
The theoretical 100-year event storm sewer peak flows will be controlled to the actual 5-year flow rates using various roadway inlet controls within CBs. Additional flows will be directed using overland flow routes.
The Ultimate Condition accounts for the entire drainage areas flowing through the completed storm sewer network.

Table 1: Area STM-1, Post-Development Controlled Flow

Runoff Coefficient "C"

			2/5 Year Event		100 Year Event	
Area	Surface	Ha	"C"	C_{avg}	"C" + 25%	*C_{avg}
Total	Hard	0.385	0.90		1.00	
0.442	Soft	0.057	0.20	0.81	0.25	0.90
	Pond	0.000	0.00		0.00	

2 YEAR EVENT QUANTITY STORAGE REQUIREMENT - T-2

0.442 =Area (ha)
0.81 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
2 YEAR	5	103.57	103.05	46.0	57.00	17.10
	10	**76.81**	**76.42**	**46.0**	**30.37**	**18.22**
	15	61.77	61.46	46.0	15.41	13.87
	20	52.03	51.77	46.0	5.72	6.87
	25	45.17	44.94	46.0	-1.11	-1.66

5 YEAR EVENT QUANTITY STORAGE REQUIREMENT

0.442 =Area (ha)
0.81 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
5 YEAR	5	141.18	140.47	46.6	93.82	28.15
	10	**104.19**	**103.67**	**46.6**	**57.02**	**34.21**
	15	83.56	83.14	46.6	36.49	32.84
	20	70.25	69.90	46.6	23.25	27.90
	25	60.90	60.59	46.6	13.94	20.91

100 YEAR EVENT QUANTITY STORAGE REQUIREMENT

0.442 =Area (ha)
0.90 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
100 YEAR	10	178.56	198.19	47.8	150.34	90.21
	15	142.89	158.60	47.8	110.76	99.68
	20	**119.95**	**133.13**	**47.8**	**85.29**	**102.35**
	25	103.85	115.26	47.8	67.42	101.13
	30	91.87	101.97	47.8	54.12	97.42

Equations:

Flow Equation

$Q = 2.78 \times C \times I \times A$

Where:

C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

Runoff Coefficient Equation

$C_5 = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

$C_{100} = (A_{hard} \times 1.0 + A_{soft} \times 0.25)/A_{Tot}$

ORIFICE SIZING

Control Device		
Circular Plug Type ICD	127	mm

Design Event	**Flow**	**Head**	**Elevation**	**Orifice Area (m^2)**	**Circ (mm)**
1:2 Year	46.0	1.76	97.58	0.012652	127
1:5 Year	46.6	1.80	97.62	0.012673	127
1:100 Year	47.8	1.90	97.72	0.012650	127

Outlet Invert	95.76

Orifice Control Sizing

$Q = 0.62 \times A \times (2gh) \times 0.5$

Where:

Q is the release rate in m^3/s
A is the orifice area in m^2
g is the acceleration due to gravity, 9.81 m/s^2
h is the head of water above the orifice center in m
d is the diameter of the orifice in m

Table 2: Area STM-1, Storage Provided

Max Water Elevation = 97.72

Description		Pipe Diameter (mm)	Length (m)	Depth (m)	Volume (cu.m)	Cumulative Volume (cu.m)
Pipe Storage		200	37	N/A	1.16	1.16
Catchbasin Storage	CB1	N/A	N/A	1.50	0.54	1.70
	CB2	N/A	N/A	1.69	0.61	2.31
	CB3	N/A	N/A	1.50	0.54	2.85
CBMH/MH Storage						
Surface Ponding	2 Year	N/A	N/A	0.13	15.92	18.77
	5 Year	N/A	N/A	0.17	32.75	35.60
	100 Year	N/A	N/A	0.26	106.17	109.02

TOTAL STORAGE = 109.02

Table 3: Area STM-2, Post-Development Controlled Flow

Runoff Coefficient "C"

			2/5 Year Event		100 Year Event	
Area	Surface	Ha	"C"	C_{avg}	"C" + 25%	*C_{avg}
Total	Hard	0.070	0.90	0.79	1.00	0.88
0.083	Soft	0.013	0.20		0.25	
	Pond	0.000	0.00		0.00	

2 YEAR EVENT QUANTITY STORAGE REQUIREMENT - T-2

0.083 =Area (ha)
0.79 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
2 YEAR	0	167.22	30.50	17.9	12.63	0.00
	5	**103.57**	**18.89**	**17.9**	**1.02**	**0.31**
	10	76.81	14.01	17.9	-3.86	-2.31
	15	61.77	11.26	17.9	-6.60	-5.94
	20	52.03	9.49	17.9	-8.38	-10.05

5 YEAR EVENT QUANTITY STORAGE REQUIREMENT

0.083 =Area (ha)
0.79 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
5 YEAR	**5**	**141.18**	**25.75**	**18.6**	**7.15**	**2.14**
	10	104.19	19.00	18.6	0.40	0.24
	15	83.56	15.24	18.6	-3.36	-3.03
	20	70.25	12.81	18.6	-5.79	-6.95
	25	60.90	11.11	18.6	-7.49	-11.24

100 YEAR EVENT QUANTITY STORAGE REQUIREMENT

0.083 =Area (ha)
0.88 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
100 YEAR	5	242.70	49.42	19.0	30.42	9.13
	10	**178.56**	**36.36**	**19.0**	**17.36**	**10.42**
	15	142.89	29.10	19.0	10.10	9.09
	20	119.95	24.43	19.0	5.43	6.51
	25	103.85	21.15	19.0	2.15	3.22

Equations:

Flow Equation

$Q = 2.78 \times C \times I \times A$

Where:

C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

Runoff Coefficient Equation

$C_5 = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

$C_{100} = (A_{hard} \times 1.0 + A_{soft} \times 0.25)/A_{Tot}$

ORIFICE SIZING

Orifice Control Sizing

$Q = 0.62 \times A \times (2gh) \times 0.5$

Where:

Q is the release rate in m^3/s
A is the orifice area in m^2
g is the acceleration due to gravity, 9.81 m/s^2
h is the head of water above the orifice center in m
d is the diameter of the orifice in m

Control Device					
Circular Plug Type ICD	83	mm			
Design Event	**Flow**	**Head**	**Elevation**	**Orifice Area (m^2)**	**Circ (mm)**
1:2 Year	17.9	1.46	97.80	0.005387	83
1:5 Year	18.6	1.54	97.88	0.005460	83
1:100 Year	19.0	1.61	97.95	0.005455	83

Outlet Invert	96.30

Table 4: Area STM-2, Storage Provided

Max Water Elevation = 97.85

Description		Pipe Diameter (mm)	Length (m)	Depth (m)	Volume (cu.m)	Cumulative Volume (cu.m)
Pipe Storage						
Catchbasin Storage	CB4	N/A	N/A	1.50	0.54	0.54
CBMH/MH Storage						
Surface Ponding	2 Year	N/A	N/A	0.00	0.00	0.54
	5 Year	N/A	N/A	0.08	1.82	2.36
	100 Year	N/A	N/A	0.15	9.47	10.01

TOTAL STORAGE = 10.55

Table 5: Area STM-3, Post-Development Controlled Flow

Runoff Coefficient "C"

			2/5 Year Event		100 Year Event	
Area	Surface	Ha	"C"	C_{avg}	"C" + 25%	*C_{avg}
Total	Hard	0.088	0.90	0.68	1.00	0.76
0.129	Soft	0.041	0.20		0.25	
	Pond	0.000	0.00		0.00	

2 YEAR EVENT QUANTITY STORAGE REQUIREMENT - T-2

0.129 =Area (ha)
0.68 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
2 YEAR	**5**	**103.57**	**25.16**	**24.3**	**0.86**	**0.26**
	10	76.81	18.66	24.3	-5.64	-3.38
	15	61.77	15.01	24.3	-9.29	-8.36
	20	52.03	12.64	24.3	-11.66	-13.99
	25	45.17	10.97	24.3	-13.33	-19.99

5 YEAR EVENT QUANTITY STORAGE REQUIREMENT

0.129 =Area (ha)
0.68 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
5 YEAR	**5**	**141.18**	**34.30**	**24.3**	**10.00**	**3.00**
	10	104.19	25.32	24.3	1.02	0.61
	15	83.56	20.30	24.3	-4.00	-3.60
	20	70.25	17.07	24.3	-7.23	-8.68
	25	60.90	14.80	24.3	-9.50	-14.26

100 YEAR EVENT QUANTITY STORAGE REQUIREMENT

0.129 =Area (ha)
0.76 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
100 YEAR	5	242.70	66.29	27.3	39.00	11.70
	10	**178.56**	**48.77**	**27.3**	**21.48**	**12.89**
	15	142.89	39.03	27.3	11.74	10.57
	20	119.95	32.76	27.3	5.47	6.57
	25	103.85	28.36	27.3	1.07	1.61

Equations:

Flow Equation

$Q = 2.78 \times C \times I \times A$

Where:

C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

Runoff Coefficient Equation

$C_5 = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

$C_{100} = (A_{hard} \times 1.0 + A_{soft} \times 0.25)/A_{Tot}$

ORIFICE SIZING

Orifice Control Sizing

$Q = 0.62 \times A \times (2gh) \times 0.5$

Where:

Q is the release rate in m^3/s
A is the orifice area in m^2
g is the acceleration due to gravity, 9.81 m/s^2
h is the head of water above the orifice center in m
d is the diameter of the orifice in m

Control Device		
Circular Plug Type ICD	108	mm

Design Event	**Flow**	**Head**	**Elevation**	**Orifice Area (m^2)**	**Circ (mm)**
1:2 Year	24.3	0.95	97.60	0.009097	108
1:5 Year	24.3	0.95	97.60	0.009097	108
1:100 Year	27.3	1.18	97.83	0.009163	108

Outlet Invert	96.60

Table 6: Area STM-3, Storage Provided

Max Water Elevation = 97.85

Description		Pipe Diameter (mm)	Length (m)	Depth (m)	Volume (cu.m)	Cumulative Volume (cu.m)
Pipe Storage						
		200	23	N/A	0.72	0.72
		250	38.7	N/A	1.90	2.62
		Clear Stone	23	0.8	4.42	7.04
Catchbasin Storage	CB1	N/A	N/A	1.00	0.36	7.40
	CB2	N/A	N/A	1.50	0.54	7.94
	CB3	N/A	N/A	1.50	0.54	8.48
CBMH/MH Storage						
	STMMH101	1200	N/A	2.00	2.26	10.74
Surface Ponding	2 Year	N/A	N/A	0.00	0.00	8.48
	5 Year	N/A	N/A	0.00	0.00	10.74
	100 Year	N/A	N/A	0.30	2.31	13.05

TOTAL STORAGE = 13.05

Table 7: Area STM-4, Post-Development Uncontrolled Flows

Runoff Coefficient "C"

Area	Surface	Ha	"C"	C_{avg}	$*C_{100}$
Total	Hard	0.077	0.90	0.66	0.75
0.116	Soft	0.039	0.20		

Runoff Coefficient Equation

$C = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

* Runoff Coefficient increases by 25% up to a maximum value of 1.00 for the 100-Year event

Uncontrolled Flow

Outlet Options	Area (ha)	C_{avg}	Tc (min)	$Q_{2\ Year}$ (L/s)	$Q_{5\ Year}$ (L/s)	$Q_{100\ Year}$ (L/s)
Adstock Heights	0.116	0.66	10	**16.5**	**22.3**	**43.1**

Time of Concentration	Tc=	10	min
Intensity (2 Year Event)	I_2=	76.81	mm/hr
Intensity (5 Year Event)	I_5=	104.19	mm/hr
Intensity (100 Year Event)	I_{100}=	178.56	mm/hr

100 year Intensity = 1735.688 / (Time in min + 6.014)$^{0.820}$
5 year Intensity = 998.071 / (Time in min + 6.053)$^{0.814}$
2 year Intensity = 732.951 / (Time in min + 6.199)$^{0.810}$

Equations:
Flow Equation
$Q = 2.78 \times C \times I \times A$

Where:
C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

Table 8: Area STM-5, Post-Development Uncontrolled Flows

Runoff Coefficient "C"

Area	Surface	Ha	"C"	C_{avg}	$*C_{100}$
Total	Hard	0.023	0.90	0.40	0.46
0.081	Soft	0.058	0.20		

Runoff Coefficient Equation

$C = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

* Runoff Coefficient increases by 25% up to a maximum value of 1.00 for the 100-Year event

Uncontrolled Flow

Outlet Options	Area (ha)	C_{avg}	Tc (min)	$Q_{2\ Year}$ (L/s)	$Q_{5\ Year}$ (L/s)	$Q_{100\ Year}$ (L/s)
Block 130	0.081	0.40	10	**6.9**	**9.4**	**18.6**

Time of Concentration	Tc=	10	min
Intensity (2 Year Event)	I_2=	76.81	mm/hr
Intensity (5 Year Event)	I_5=	104.19	mm/hr
Intensity (100 Year Event)	I_{100}=	178.56	mm/hr

100 year Intensity = 1735.688 / (Time in min + 6.014) $^{0.820}$
5 year Intensity = 998.071 / (Time in min + 6.053) $^{0.814}$
2 year Intensity = 732.951 / (Time in min + 6.199) $^{0.810}$

Equations:
Flow Equation
Q = 2.78 x C x I x A

Where:
C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

Table 9: Area STM-6, Post-Development Uncontrolled Flows

Runoff Coefficient "C"

Area	Surface	Ha	"C"	C_{avg}	$*C_{100}$
Total	Hard	0.043	0.90	0.61	0.69
0.073	Soft	0.030	0.20		

Runoff Coefficient Equation

$C = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

* Runoff Coefficient increases by 25% up to a maximum value of 1.00 for the 100-Year event

Uncontrolled Flow

Outlet Options	Area (ha)	C_{avg}	Tc (min)	$Q_{2\ Year}$ (L/s)	$Q_{5\ Year}$ (L/s)	$Q_{100\ Year}$ (L/s)
Abbott Street East	0.073	0.61	10	**9.5**	**12.9**	**25.1**

Time of Concentration	Tc=	10	min
Intensity (2 Year Event)	I_2=	76.81	mm/hr
Intensity (5 Year Event)	I_5=	104.19	mm/hr
Intensity (100 Year Event)	I_{100}=	178.56	mm/hr

100 year Intensity = 1735.688 / (Time in min + 6.014)$^{0.820}$
5 year Intensity = 998.071 / (Time in min + 6.053)$^{0.814}$
2 year Intensity = 732.951 / (Time in min + 6.199)$^{0.810}$

Equations:
Flow Equation
$Q = 2.78 \times C \times I \times A$

Where:
C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

Table 10: Area STM-7, Post-Development Uncontrolled Flows

Runoff Coefficient "C"

Area	Surface	Ha	"C"	C_{avg}	$*C_{100}$
Total	Hard	0.002	0.90	0.43	0.50
0.006	Soft	0.004	0.20		

Runoff Coefficient Equation

$C = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

* Runoff Coefficient increases by 25% up to a maximum value of 1.00 for the 100-Year event

Uncontrolled Flow

Outlet Options	Area (ha)	C_{avg}	Tc (min)	$Q_{2\ Year}$ (L/s)	$Q_{5\ Year}$ (L/s)	$Q_{100\ Year}$ (L/s)
Parade Drive	0.006	0.43	10	**0.6**	**0.8**	**1.5**

Time of Concentration	Tc=	10	min
Intensity (2 Year Event)	I_2=	76.81	mm/hr
Intensity (5 Year Event)	I_5=	104.19	mm/hr
Intensity (100 Year Event)	I_{100}=	178.56	mm/hr

100 year Intensity = 1735.688 / (Time in min + 6.014)$^{0.820}$
5 year Intensity = 998.071 / (Time in min + 6.053)$^{0.814}$
2 year Intensity = 732.951 / (Time in min + 6.199)$^{0.810}$

Equations:
Flow Equation
$Q = 2.78 \times C \times I \times A$

Where:
C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

Table 11: Post-Development Stormwater Management Summary

Area ID	Area (ha)	1:2 & 1:5 Year Weighted Cw	1:100 Year Weighted Cw	2 Year Storm Event				5 Year Storm Event				100 Year Storm Event			
				Release (L/s)	Ponding Depth (m)	Req'd Vol (cu.m)	Max. Vol. Provided (cu.m.)	Release (L/s)	Ponding Depth (m)	Req'd Vol (cu.m)	Max. Vol. Provided (cu.m.) [2]	Release (L/s)	Ponding Depth (m)	Req'd Vol (cu.m)	Max. Vol. Provided (cu.m.)
1	0.442	0.81	0.90	76.4	0.13	18.22	18.77	103.7	0.17	34.21	35.60	47.8	0.26	102.35	109.02
2	0.083	0.88	0.88	18.9	0.00	0.31	0.54	19.0	0.08	2.14	2.36	19.0	0.15	10.42	10.55
3	0.129	0.68	0.76	25.2	0.00	0.26	8.48	20.3	0.00	3.00	13.05	27.3	0.30	12.89	13.05
4	0.116	0.66	0.75	16.5	0.00	N/A	N/A	22.3	0.00	N/A	N/A	43.1	0.00	N/A	N/A
5	0.081	0.40	0.46	6.9	0.00	N/A	N/A	9.4	0.00	N/A	N/A	18.6	0.00	N/A	N/A
6	0.073	0.61	0.69	9.5	0.00	N/A	N/A	12.9	0.00	N/A	N/A	25.1	0.00	N/A	N/A
7	0.006	0.43	0.50	0.6	0.00	N/A	N/A	0.8	0.00	N/A	N/A	1.5	0.00	N/A	N/A
Total				**137.0**				**188.4**		**39.4**	**51.0**	**182.4**		**125.7**	**132.6**
Allowable*(1)				**186.0**				**186.0**				**186.0**			

(1) Allowable release rate based on allocated release rate of 200 L/s/ha, indicated in the Servicing and Stormwater Management Report for the SPB Developments Subdivsion (Novatech, 2018)

Appendix E

SANITARY SEWER DESIGN SHEET

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 110037
Project Name: Block 123
Date: 4/28/2025
Input By: MJB
Reviewed By: ARM
Drawing Reference: 110037-GP123

Legend:
- Design Input by User
- As-Built Input by User
- Cumulative Cell
- Calculated Design Cell Output
- Calculated Annual Cell Output
- Calculated Rare Cell Output

Reference: City of Ottawa - Sewer Design Guidelines (2012 and TBs)
MOE - Design Guidelines for Sewage Works (2008)

Location				Demand											Design Capacity							
				Residential Flow									Extraneous Flow Area Method		Total Design Flow	Proposed Sewer Pipe Sizing / Design							
Street	Area ID	From MH	To MH	Apts	Population (in 1000's)	Cumulative Population (in 1000's)	Average Pop. Flow Q(q) (L/s)	Design Peaking Factor M	Peak Design Pop. Flow Q(p) (L/s)	Res. Drainage Area (ha.)	Cumulative Res. Drainage Area (ha.)	Cumulative Extraneous Drainage Area (ha.)	Design Extraneous Flow Q(e) (L/s)	Total Peak Design Flow Q(D) (L/s)	Pipe Length (m)	Pipe Size (mm) and Material	Pipe ID Actual (m)	Roughness n	Design Grade So (%)	Capacity Qfull (L/s)	Full Flow Velocity (m/s)	Q(D) / Qfull
Private	A1	183	173	24	0.050	0.050	0.16	3.65	0.60	0.260	0.260	0.260	0.09	0.68	35.8	200 PVC	0.203	0.013	0.50	24.2	0.75	2.8%
Private	A8	181	175	18	0.038	0.038	0.12	3.67	0.45	0.180	0.180	0.180	0.06	0.51	50.4	200 PVC	0.203	0.013	0.50	24.2	0.75	2.1%
Private	A9	179	177	12	0.025	0.025	0.08	3.69	0.30	0.330	0.330	0.330	0.11	0.41	21.7	200 PVC	0.203	0.013	0.50	24.2	0.75	1.7%
Private	A10	177	175	6	0.013	0.038	0.12	3.67	0.45	0.100	0.430	0.430	0.14	0.59	41.3	200 PVC	0.203	0.013	0.50	24.2	0.75	2.4%
Private	A10	175	173		0.000	0.076	0.25	3.62	0.89	0.010	0.620	0.620	0.20	1.09	12.7	200 PVC	0.203	0.013	0.50	24.2	0.75	4.5%
Private	A10	173	171		0.000	0.126	0.41	3.57	1.46	0.040	0.920	0.920	0.30	1.76	21.4	200 PVC	0.203	0.013	0.50	24.2	0.75	7.3%
Private	A10	171	EX 153		0.000	0.126	0.41	3.57	1.46	0.010	0.930	0.930	0.31	1.77	7.5	200 PVC	0.203	0.013	0.50	24.2	0.75	7.3%
Totals				**60**	**0.126**	**0.126**	**0.41**	**3.57**	**1.46**	**0.930**	**0.930**	**0.930**	**0.31**	**1.77**	**190.8**							

Demand Equation / Parameters

1. **Q(D), Q(A), Q(R) =** Q(p) + Q(fd) + Q(ici) + Q(e)
2. **Q(p) =** (P x q x M x K / 86,400)
3. **q =** 280 L/per person/day
   200 L/per person/day
4. **M = Harmon Formula (maximum of 4.0)**
5. **K =** 0.8
   0.6
6. **Park flow is considered equivalent to a single unit / ha**
   Park Demand = 4 single unit equivalent / park ha (~ 3,60
7. **Q(fd) =** 0.45 L/s/unit
8. **Q(ici) =** ICI Area x ICI Flow x ICI Peak
9. **Q(e) =** 0.33 L/s/ha
   0.30 L/s/ha
   0.55 L/s/ha

Definitions

Q(D) = Peak Design Flow (L/s)
Q(A) = Peak Annual Flow (L/s)
Q(R) = Peak Rare Flow (L/s)
Q(p) = Peak Design Population Flow (L/s)
Q(q) = Average Population Flow (L/s)

	Singles	Semis / Towns	Apts
P = Residential Population =	3.4	2.7	2.1
q = Average Capita Flow			
M = Harmon Formula			
K = Harmon Correction Factor			
Typ. Service Diameter (mm) =	135		
Typ. Service Length (m) =	15	15	
I/I Pipe Rate (L/mm dia/m/hr) =	0.007		

Q(fd) = Foundation Flow (L/s)
Q(ici) = Industrial / Commercial / Institutional Flow (L/s)
Q(e) = Extraneous Flow (L/s)

Capacity Equation

Q full = $1000*(1/n)*A_p*R^{2/3}*So^{0.5}$

Definitions

Q full = Capacity (L/s)
n = Manning coefficient of roughness (0.013)
A_p = Pipe flow area (m^2)
R = Hydraulic Radius of wetted area (dia./4 for full pipes)
So = Pipe slope/gradient

Appendix F

Water Demand Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

Boundary Condition Request

Novatech Project #: 110037
Project Name: Block 123- Trail View Subdivision
Date: 1/15/2025
Input By: MNP
Reviewed By: ARM
Drawing Reference: Boundary Condition Figure Markup (Jan. 20, 2025)

Small System = YES

Legend: Input by User | No Input Required | Calculated Cells →

Reference: Ottawa Design Guidelines - Water Distribution (2010 and TBs)
MOE Design Guidelines for Drinking-Water Systems (2008)
Fire Underwriter's Survey Guideline (2020)
Ontario Building Code, Part 3 (2012)

	# of Dwellings	Area (ha.)	Pop. Equiv.	Average Day Demand (L/s)	Maximum Day Demand (L/s)	Peak Hour Demand (L/s)
Residential Input						
Singles			0.00	0.00	0.00	0.00
Semis / Townhomes			0.00	0.00	0.00	0.00
Apartments (2-BR)	60		126.00	0.41	3.88	5.84
Apartments (1-BR)			0.00	0.00	0.00	0.00
Apartments (Avg)			0.00	0.00	0.00	0.00
Totals	**60**	**0.00**	**126.00**	**0.41**	**3.88**	**5.84**

Summary

i. Type of Development and Units:	Residential; Stacks Townhomes (12-units per building)		
ii. Site Address:	4829 Abbott Street East		
iii. Proposed Water Service Connection Location(s):	1) Connection to existing 300mm diameter watermain on Abbott Street East		
	2) Connection to existing 200mm diameter watermain on Adstock Heights		
iv. Average Day Flow Demand:		0.41	L/s
v. Peak Hour Flow Demand:		5.84	L/s
vi. Maximum Day Flow Demand:		3.88	L/s
vii. Required Fire Flow #1:		15,000.00	L/min
viii. Required Fire Flow #2:		17,000.00	L/min
ix. Required Fire Flow #3:		19,000.00	L/min

Water Demand Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

Design Parameters

Residential					
Unit Type	**Singles**	**Semis/ Towns**	**Apts (2-BR)**	**Apts (1-BR)**	**Apts (Avg)**
Population Equiv.	3.4	2.7	2.1	1.4	1.8
Dailly Demand	L/per person/day				
Average Demand	280				
Basic Demand	200				

Residential Peaking Factors		**Max Day (x Avg Day)**	**Peak Hour (x Avg Day)**
	Pop.		
Small System (If Applicable)	0	9.50	14.30
	30	9.50	14.30
	150	4.90	7.40
Modified	300	3.60	*5.50*
	450	3.00	*5.50*
	500	2.90	*5.50*
Large System (Default)	> 500	2.50	5.50

Boundary Conditions
4829 Abbott Street

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	25	0.41
Maximum Daily Demand	233	3.88
Peak Hour	350	5.84
Fire Flow Demand	17,000	283.33

Location

Results

Connection 1 – Abbott Street

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	161.3	93.0
Peak Hour	156.5	86.2
Max Day plus Fire Flow #1	151.4	78.9

[1] Ground Elevation = 95.9 m

Connection 2 – Cranesbill Road

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	161.3	92.7
Peak Hour	156.5	85.9
Max Day plus Fire Flow #1	148.9	75.1

[1] Ground Elevation = 96.1 m

Notes

1. Demands for proposed Connection 1 at proposed future water main were assigned to upstream junction at Abbott Street & Metric Circle off the public looped watermains. The engineer must calculate headloss off the proposed future watermain network.
2. Demands for proposed Connection 2 at Adstock Heights were assigned to upstream junction at Cranesbill Road & Malahat Way off the public looped watermains. The engineer must calculate headloss off the proposed future watermain network.
3. As per the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi.) Pressure control measures to be considered are as follows, in order of preference:
    - If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
    - Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/ building, located downstream of the meter so it is owner maintained.

Disclaimer

The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 110037
Project Name: Block 123
Date: 4/29/2025
Input By: MJB
Reviewed By: ARM
Drawing Reference: 110037-GP123

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Building Description: Building 1 - 3-storey
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	423			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**1,269**	
	F	**Base fire flow without reductions**				**12,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**10,200**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)	0	0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	3.1 - 10 m		20%	**3,570**
		East Side	>30m		0%	
		South Side	10.1 - 20 m		15%	
		West Side	>30m		0%	
				Cumulative Total	**35%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**14,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**233**
				or	USGPM	3,699

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 110037
Project Name: Block 123
Date: 4/29/2025
Input By: MJB
Reviewed By: ARM
Drawing Reference: 110037-GP123

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Building Description: Building 2 - 3-storey
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	423			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**1,269**	
	F	**Base fire flow without reductions**				**12,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**10,200**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)	0	0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	>30m		0%	**2,040**
		East Side	>30m		0%	
		South Side	3.1 - 10 m		20%	
		West Side	>30m		0%	
				Cumulative Total	**20%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**12,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**200**
				or	USGPM	3,170

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 110037
Project Name: Block 123
Date: 4/29/2025
Input By: MJB
Reviewed By: ARM
Drawing Reference: 110037-GP123

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Building Description: Building 3 - 3-storey
Type V - Wood frame

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	423			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**1,269**	
	F	**Base fire flow without reductions**				**12,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**10,200**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)	0	0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	>30m		0%	**3,570**
		East Side	>30m		0%	
		South Side	3.1 - 10 m		20%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**35%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**14,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**233**
				or	USGPM	3,699

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 110037
Project Name: Block 123
Date: 4/29/2025
Input By: MJB
Reviewed By: ARM
Drawing Reference: 110037-GP123

Building Description: Building 4 - 3-storey
Type V - Wood frame

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	423			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**1,269**	
	F	**Base fire flow without reductions**				**12,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**10,200**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)	0	0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	3.1 - 10 m		20%	**4,080**
		East Side	>30m		0%	
		South Side	3.1 - 10 m		20%	
		West Side	>30m		0%	
				Cumulative Total	**40%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**14,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**233**
				or	USGPM	3,699

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

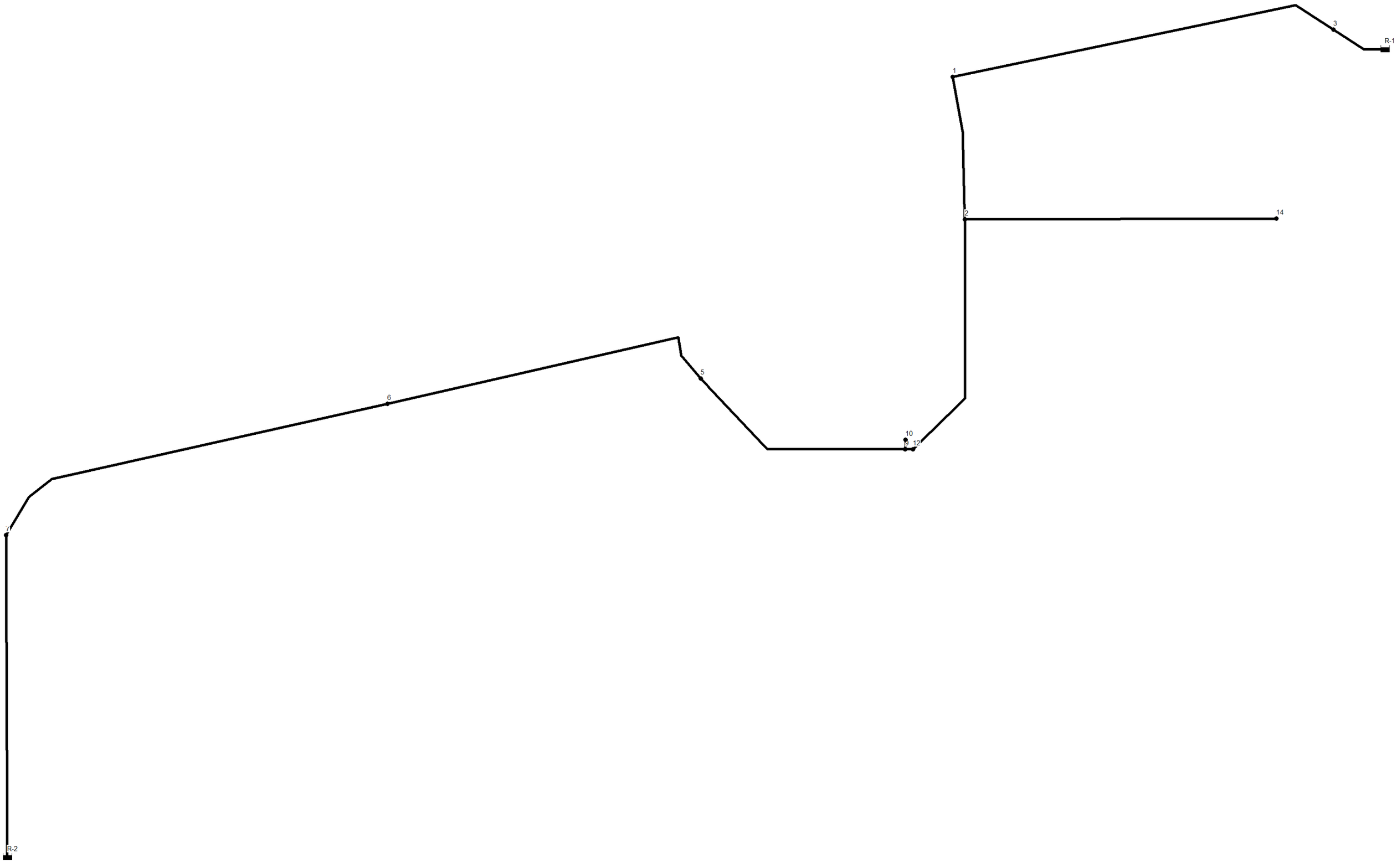
Novatech Project #: 110037
Project Name: Block 123
Date: 4/29/2025
Input By: MJB
Reviewed By: ARM
Drawing Reference: 110037-GP123

Building Description: Building 5 - 3-storey
Type V - Wood frame

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Type V - Wood frame	Yes	1.5	1.5	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction		0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	423			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**1,269**	
	F	**Base fire flow without reductions**				**12,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**10,200**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	No	-30%		**0**
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)	0	0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	3.1 - 10 m		20%	**7,140**
		East Side	20.1 - 30 m		10%	
		South Side	3.1 - 10 m		20%	
		West Side	3.1 - 10 m		20%	
				Cumulative Total	**70%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**17,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**283**
				or	USGPM	4,491

EPANET Model Schematic
110037
May 2025



Water Demand Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 110037
Project Name: Block 123 - Trail View Subdivision
Date: 4/30/2025
Input By: MJB
Reviewed By: ARM
Drawing Reference: 110037-GP123

Legend: Input by User | No Input Required | Calculated Cells →

Reference: Ottawa Design Guidelines - Water Distribution (2010 and TBs)
MOE Design Guidelines for Drinking-Water Systems (2008)
Fire Underwriter's Survey Guideline (2020)
Ontario Building Code, Part 3 (2012)

Small System = NO

Location	Total Water Demand													
	Residential Input & Average Demand							Maximum Day & Peak Hour Demand				Design Fire Demand		
Node	Singles	Semis / Towns	Apts (2-BR)	Apts (1-BR)	Apts (Avg)	Pop. Equiv.	Res. Average Day Flow Demand (L/s)	Maximum Day Demand		Peak Hour Demand		Required Fire Flow (RFF)		Max Day + RFF (L/s)
								Res. Peaking Factor	Max Day Flow Demand (L/s)	Res. Peaking Factor	Peak Hour Flow Demand (L/s)	FUS (L/min)		
Existing														
J-1						0.00	0.00	2.50	0.00	5.50	0.00			0.00
J-3 (Ex. Hydrant #3)						0.00	0.00	2.50	0.00	5.50	0.00	3,800		63.33
J-5 (Ex. Hydrant #1)						0.00	0.00	2.50	0.00	5.50	0.00	5,700		95.00
J-6 (Ex. Hydrant #2)	17					57.80	0.19	2.50	0.47	5.50	1.03	3,800		63.80
J-7						0.00	0.00	2.50	0.00	5.50	0.00			0.00
Block 123														
J-2			12			25.20	0.08	2.50	0.20	5.50	0.45			0.20
J-9						0.00	0.00	2.50	0.00	5.50	0.00			0.00
J-10 (Proposed Hydrant)						0.00	0.00	2.50	0.00	5.50	0.00	5,700		95.00
J-12			24			50.40	0.16	2.50	0.41	5.50	0.90			0.41
J-14			24			50.40	0.16	2.50	0.41	5.50	0.90			0.41
Total			**60**			**75.60**	**0.25**	2.50	**0.61**	5.50	**1.35**			
CumulativeTotals	**17**	**0**	**60**	**0**	**0**	**183.80**	**0.60**	**2.50**	**1.49**	**5.50**	**3.28**			

Demand Parameters

Residential					
Unit Type	**Singles**	**Semis/ Towns**	**Apts (2-BR)**	**Apts (1-BR)**	**Apts (Avg)**
Population Equiv.	3.4	2.7	2.1	1.4	1.8
Dailly Demand	L/per person/day				
Average Demand	280				
Basic Demand	200				

Residential Peaking Factors		Max Day (x Avg Day)	Peak Hour (x Avg Day)
	Pop.		
Small System (If Applicable)	0	9.50	14.30
	30	9.50	14.30
	150	4.90	7.40
Modified	300	3.60	*5.50*
	450	3.00	*5.50*
	500	2.90	*5.50*
Large System (Default)	> 500	2.50	5.50

Quick Fire Flow Reference Guide			
FUS (L/min)	**Comments**	**OBC (L/min)**	**Comments**
> 2,000	**Min FUS**	**< 9,000**	**Unsprinklered Non- Combustible**
10,000	**Low Density** - Singles/Towns Complies w/ TB2014-01 Cap. (10m rear spacing, 6 units max, <600 m²)		
13,000	Non-complying w/TB2014-01. Calculate.		
15,000	**Medium Density** Back-to-back Towns.		
20,000	**High Density** Wood Frame 4-Storey		
5,000	Fire-Resisitve Podium/Multi-Storey		
30,000	**High Contiguous / Hazard Areas**		
< 45,000	**Max FUS**		

Water Demand Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

Maximum Pressure During Average Day (AVDY) Conditions

Novatech Project #: 110037
Project Name: Block 123 (4829 Abbott)
Date: 4/30/2025
Input By: MJB
Reviewed By: ARM
Drawing Reference: 110037-GP123

Legend: Input by User | No Input Required
Acceptable (40psi - 80psi)
Acceptable w/ PRV (81psi - 100psi)
Unacceptable (< 40psi or > 100psi)

Note: Hydraulic modelling completed using EPANET 2.0.

Node	Elevation (m)	Demand (L/s)	Total Head (m)	Pressure (m)	Pressure (psi)
Existing					
J-1	97.70	0.00	161.30	63.60	90
J-3 (Ex. Hydrant #3)	97.80	0.00	161.30	63.50	90
J-5 (Ex. Hydrant #1)	97.70	0.00	161.30	63.60	90
J-6 (Ex. Hydrant #2)	97.60	0.19	161.30	63.70	91
J-7	97.60	0.00	161.30	63.70	91
Block 123					
J-2	98.00	0.08	161.30	63.30	90
J-9	97.80	0.00	161.30	63.50	90
J-10 (Proposed Hydrant)	97.90	0.00	161.30	63.40	90
J-12	97.80	0.16	161.30	63.50	90
J-14	98.30	0.16	161.30	63.00	90

Water Demand Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

Minimum Pressure During Max Day Plus Fire Flow (MXDY+FF) Condition

Novatech Project #: 110037
Project Name: Block 123 - Trail View Subdivision
Date: 4/30/2025
Input By: MJB
Reviewed By: ARM
Drawing Reference: 110037-GP123

Legend: Input by User | No Input Required
Acceptable (=> 20psi)
Unacceptable (< 20psi)

Note: Hydraulic modelling completed using EPANET 2.0.

Node	Elevation (m)	Demand (L/s)	Total Head (m)	Pressure (m)	Pressure (psi)
Existing					
J-1	97.70	0.00	143.16	45.46	65
J-3 (Ex. Hydrant #3)	97.80	63.33	149.49	51.69	74
J-5 (Ex. Hydrant #1)	97.70	95.00	136.44	38.74	55
J-6 (Ex. Hydrant #2)	97.60	63.80	137.84	40.24	57
J-7	97.60	0.00	144.28	46.68	66
Block 123					
J-2	98.00	0.20	140.84	42.84	61
J-9	97.80	0.00	136.75	38.95	55
J-10 (Proposed Hydrant)	97.90	95.00	133.39	35.49	50
J-12	97.80	0.41	136.87	39.07	56
J-14	98.30	0.41	140.84	42.54	60

Water Demand Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

Minimum Pressure During Peak Hour (PKHR) Conditions

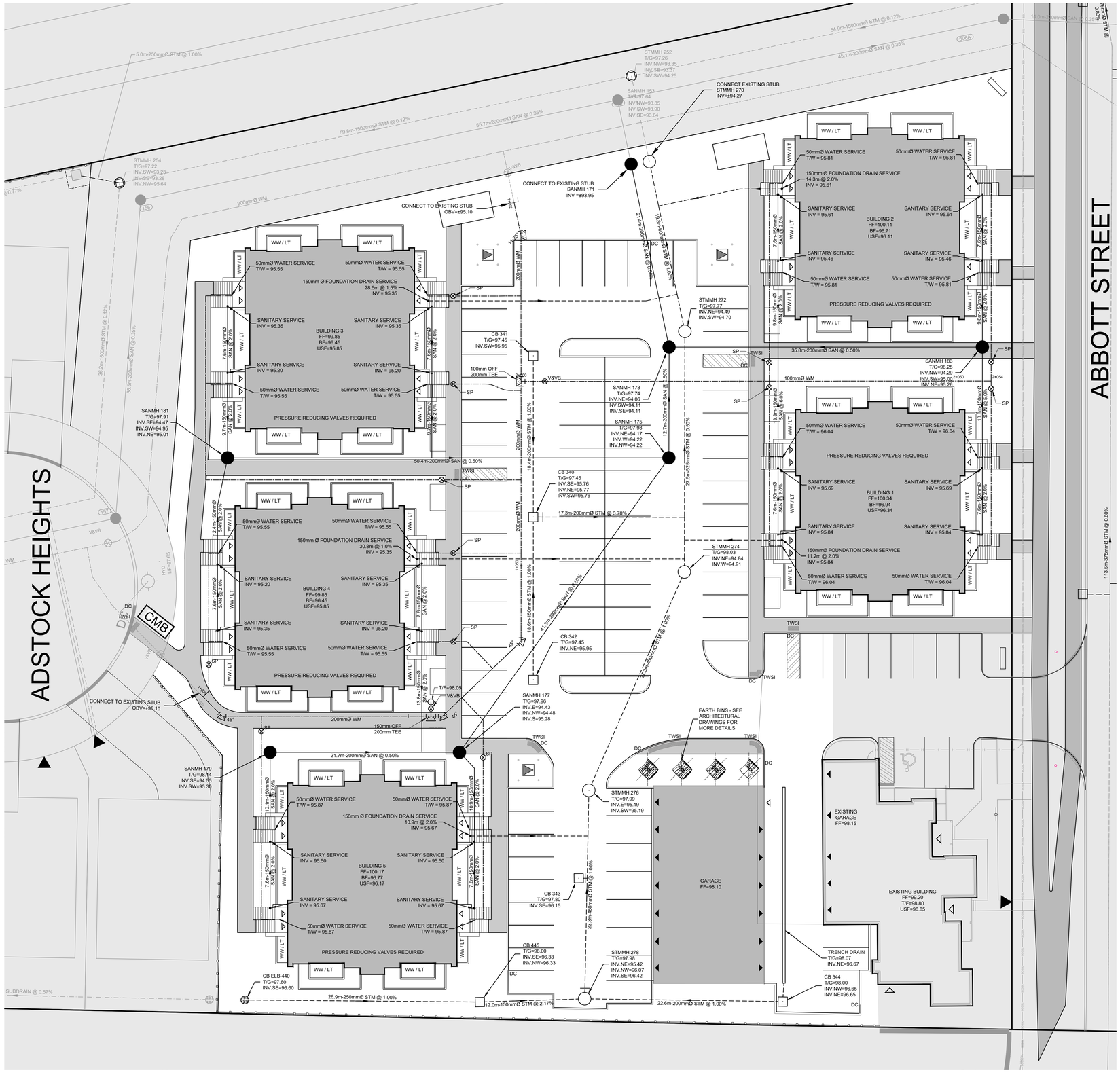
Novatech Project #: 110037
Project Name: Block 123 - Trail View Subdivision
Date: 4/30/2025
Input By: MJB
Reviewed By: ARM
Drawing Reference: 110037-GP123

Legend: Input by User | No Input Required
Acceptable (=> 40psi)
Unacceptable (< 40psi)

Note: Hydraulic modelling completed using EPANET 2.0.

Node	Elevation (m)	Demand (L/s)	Total Head (m)	Pressure (m)	Pressure (psi)
Existing					
J-1	97.70	0.00	156.50	58.80	84
J-3 (Ex. Hydrant #3)	97.80	0.00	156.50	58.70	83
J-5 (Ex. Hydrant #1)	97.70	0.00	156.50	58.80	84
J-6 (Ex. Hydrant #2)	97.60	1.03	156.50	58.90	84
J-7	97.60	0.00	156.50	58.90	84
Block 123					
J-2	98.00	0.45	156.50	58.50	83
J-9	97.80	0.00	156.50	58.70	83
J-10 (Proposed Hydrant)	97.90	0.00	156.50	58.60	83
J-12	97.80	0.90	156.50	58.70	83
J-14	98.30	0.90	156.48	58.18	83

Appendix G



NORTH

KEY PLAN
N.T.S.

LEGEND

200mmØ WM	PROPOSED WATERMAIN AND DIAMETER
⊗ V&VB	PROPOSED VALVE AND VALVE BOX
	PROPOSED HYDRANT C/W VALVE & LEAD
T/F = 98.45	PROPOSED TOP OF BOTTOM FLANGE
	PROPOSED BEND AND THRUSTBLOCK 11.25°, 22.5°, 45° or TEE
⊗ SP	PROPOSED WATER SERVICE STANDPOST
200mmØ STM	PROPOSED STORM SEWER AND FLOW DIRECTION
200mmØ SAN	PROPOSED SANITARY SEWER AND FLOW DIRECTION
	PROPOSED SANITARY MH
	PROPOSED STORM MH
	PROPOSED CATCHBASIN
	BARRIER CURB
	DEVELOPMENT BY OTHERS PART OF SEPARATE APPLICATION
	PROPOSED TRANSFORMER c/w PAD AND BOLLARDS
WW / LT	WINDOW WELL / LOWERED TERRACE - SEE ARCHITECTURAL DRAWING FOR MORE DETAILS

GENERAL NOTES:

1. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
2. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
3. OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
4. BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR $5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED.
5. RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
6. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
7. ALL ELEVATIONS ARE GEODETIC.
8. REFER TO GEOTECHNICAL REPORT (No. PG2855-3, DATED FEBRUARY 21, 2025), PREPARED BY PATERSON GROUP FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
9. REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARDSURFACE AREAS AND DIMENSIONS.
10. REFER TO STORMWATER MANAGEMENT REPORT (R-2025-013) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
11. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
12. PROVIDE LINE/PARKING PAINTING.
13. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GENERAL PLAN OF SERVICES INDICATING ALL SERVICING AS-BUILT INFORMATION SHOWN ON THIS PLAN. AS-BUILT INFORMATION MUST INCLUDE: PIPE MATERIAL, SIZES, LENGTHS, SLOPES, INVERT AND T/G ELEVATIONS, STRUCTURE LOCATIONS, VALVE AND HYDRANT LOCATIONS, T/WM ELEVATIONS AND ANY ALIGNMENT CHANGES, ETC.

WATERMAIN NOTES:

1. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22	CITY OF OTTAWA
WATERMAIN CROSSING BELOW SEWER	W25	CITY OF OTTAWA
WATERMAIN	PVC DR 18	

2. SUPPLY AND CONSTRUCT ALL WATERMAINS AND APPURTENANCES IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. EXCAVATION, INSTALLATION, BACKFILL AND RESTORATION OF ALL WATERMAINS BY THE CONTRACTOR. CONNECTIONS AND SHUT-OFFS AT THE MAIN AND CHLORINATION OF THE WATER SYSTEM SHALL BE PERFORMED BY CITY OFFICIALS.
3. WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE UNLESS OTHERWISE INDICATED.
4. PROVIDE MINIMUM 0.25m CLEARANCE BETWEEN OUTSIDE OF PIPES AT ALL CROSSINGS.
5. WATER SERVICE IS TO BE CONSTRUCTED TO WITHIN 1.0m OF FOUNDATION WALL AND CAPPED, UNLESS OTHERWISE INDICATED.

ICD DATA TABLE

STRUCTURE No.	T/G ELEVATIAON	INVERT OUT ELEVATION	ICD DIA. (mm)	OUTLET DIA. (mm)
CB 340	97.45	95.76	127	200
CB 343	97.65	96.15	83	200
STMMH 278	97.98	95.42	108	450

SEWER NOTES:

1. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
CATCHBASIN (600x600mm)	705.010	OPSD
STORM / SANITARY MANHOLE (1200Ø)	701.010	OPSD
CB, FRAME & COVER	S19.1, S22, & S 23	CITY OF OTTAWA
STORM / SANITARY MH FRAME & COVER	S24, S24.1, & S25	CITY OF OTTAWA
SEWER TRENCH - BEDDING (GRANULAR A) COVER (GRANULAR A OR GRANULAR B TYPE I, WITH MAXIMUM PARTICLE SIZE=25mm)		
STORM SEWER	PVC DR 35	
SANITARY SEWER	PVC DR 35	
CATCHBASIN LEAD	PVC DR 35	

2. INSULATE ALL PIPES (SAN/STM) THAT HAVE LESS THAN 1.5m COVER WITH 50mmX1200mm HI-40 INSULATION. PROVIDE 150mm CLEARANCE BETWEEN PIPE AND INSULATION.
3. SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM FACE OF BUILDING AT A MINIMUM SLOPE OF 1.0%.
4. PIPE BEDDING, COVER AND BACKFILL ARE TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. THE USE OF CLEAR CRUSHED STONE AS A BEDDING LAYER SHALL NOT BE PERMITTED.
5. FLEXIBLE CONNECTIONS ARE REQUIRED FOR CONNECTING PIPES TO MANHOLES (FOR EXAMPLE KOR-N-SEAL, PSX, POSITIVE SEAL AND DURASEAL). THE CONCRETE CRADLE FOR THE PIPE CAN BE ELIMINATED.
6. THE OWNER SHALL REQUIRE THAT THE SITE SERVICING CONTRACTOR PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.07.16, 410.07.16.04 AND 407.07.24. DYE TESTING IS TO BE COMPLETED ON ALL SANITARY SERVICES TO CONFIRM PROPER CONNECTION TO THE SANITARY SEWER MAIN. THE FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF A CERTIFIED PROFESSIONAL ENGINEER WHO SHALL SUBMIT A CERTIFIED COPY OF THE TEST RESULTS.
7. STORM MANHOLES AND CBMHS ARE TO HAVE 300mm SUMPS UNLESS OTHERWISE INDICATED.
8. CONTRACTOR TO TELEVISE (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.

100mmØ WATERMAIN TABLE

STATION	SURFACE ELEVATION	TOP OF WM ELEVATION	DESCRIPTION
2+000	97.54	95.00	100 OFF 200 TEE c/w ISOLATION VALVE
2+001	97.50	95.00	CROSS UNDER 200mmØ CB LEAD (INV = 95.93, 0.9m CLEARANCE)
2+017	97.80	95.30 ✱✱	CROSS OVER 200mmØ SAN (OBV = 94.32, 0.9m CLEARANCE)
2+019	97.85	95.80 ✱✱	CROSS OVER 525mmØ STM (OBV = 95.15, 0.3m CLEARANCE) c/w VERTICAL BENDS AND INSULATION
2+025	98.03	95.60 ✱✱	100mmØ WM
2+028	98.20	95.80	50 OFF 100 CROSS (BUILDING 1 & 2 SERVICE) c/w STANDPOSTS
2+029	98.24	95.80	CROSS UNDER 150mmØ SAN SERV (INV = 94.49, 0.4m CLEARANCE)
2+050	98.38	95.95	100mmØ WM
2+053	98.35	95.95	CROSS UNDER 150mmØ SAN SERV (INV = 94.49, 0.4m CLEARANCE)
2+053.7	98.34	95.90	100 OFF 50 TEE (BUILDING 1 & 2 SERVICE) c/w STANDPOSTS

200mmØ WATERMAIN TABLE

STATION	SURFACE ELEVATION	TOP OF WM ELEVATION	DESCRIPTION
1+000	97.85	95.10 ✱	CONNECT TO EXISTING 200mmØ WM STUBOUT
1+001	97.86	95.10	50 OFF 200 TEE (BUILDING 4 SERVICE) c/w STANDPOST
1+004	97.87	95.25	45° HORIZONTAL BEND
1+008	97.92	95.40	50 OFF 200 TEE (BUILDING 5 SERVICE) c/w STANDPOST
1+025	97.88	95.40	200mmØ WM
1+027	97.52	94.50	CROSS UNDER 150mmØ SAN SERV (INV = 95.01, 0.5m CLEARANCE) c/w VERTICAL BENDS
1+028	97.84	94.70	150 OFF 200 FIRE HYDRANT TEE
1+029	97.82	94.70	45° HORIZONTAL BEND
1+032	97.71	95.10	50 OFF 200 TEE (BUILDING 5 SERVICE) c/w STANDPOST
1+037	97.59	95.10	50 OFF 200 TEE (BUILDING 4 SERVICE) c/w STANDPOST
1+041	97.53	95.10	45° HORIZONTAL BEND
1+050	97.54	95.00	200mmØ WM
1+050.8	97.53	95.00	CROSS UNDER 150mmØ STM SERV (INV = 95.31, 0.5m CLEARANCE) c/w VERTICAL BENDS
1+051.4	97.52	95.00	50 OFF 200 TEE (BUILDING 4 SERVICE) c/w STANDPOST
1+060	97.51	95.10	50 OFF 200 TEE (BUILDING 3 SERVICE) c/w STANDPOST
1+062	97.54	95.20 ✱✱	CROSS OVER 200mmØ SAN (OBV = 94.50, 0.4m CLEARANCE) c/w INSULATION
1+069	97.52	95.00	50 OFF 200 TEE (BUILDING 3 SERVICE) c/w STANDPOST
1+070	97.49	95.00	100 OFF 200 TEE c/w ISOLATION VALVE
1+075	97.48	95.00	200mmØ WM
1+080	97.61	94.70	CROSS UNDER 150mmØ STM SERV (INV = 95.20, 0.5m CLEARANCE) c/w VERTICAL BENDS
1+081	97.62	94.70	50 OFF 200 TEE (BUILDING 3 SERV.) c/w STANDPOST
1+088	97.83	95.10	11.25° HORIZONTAL BEND
1+091.6	97.74	95.10 ✱	CONNECT TO EXISTING 200mmØ WM STUBOUT

✱ CONNECTION TO EXISTING 200mmØ WATERMAIN. EXACT ELEVATION TO BE FIELD DETERMINED.
✱✱ PROVIDE THERMAL INSULATION AS PER CITY OF OTTAWA DETAIL W23 AND DETAIL W22 WHERE COVER IS LESS THAN 2.4m AND/OR ADJACENT TO OPEN STRUCTURES.

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
5.	ISSUED FOR REVIEW	JUN 13/25	ARM
4.	ISSUED FOR COORDINATION	JUN 05/25	ARM
3.	ISSUED FOR COORDINATION	FEB 18/25	ARM
2.	ISSUED WITH ADDENDUM #3	OCT 19/22	ARM
1.	ISSUED FOR PHASE 4/5 TENDER	OCT 6/22	ARM

SCALE
1:200
1:200
0 2 4 6 8

DESIGN AAR
CHECKED ARM
DRAWN AAR
CHECKED ARM
APPROVED SMG

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
June 13, 2025
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

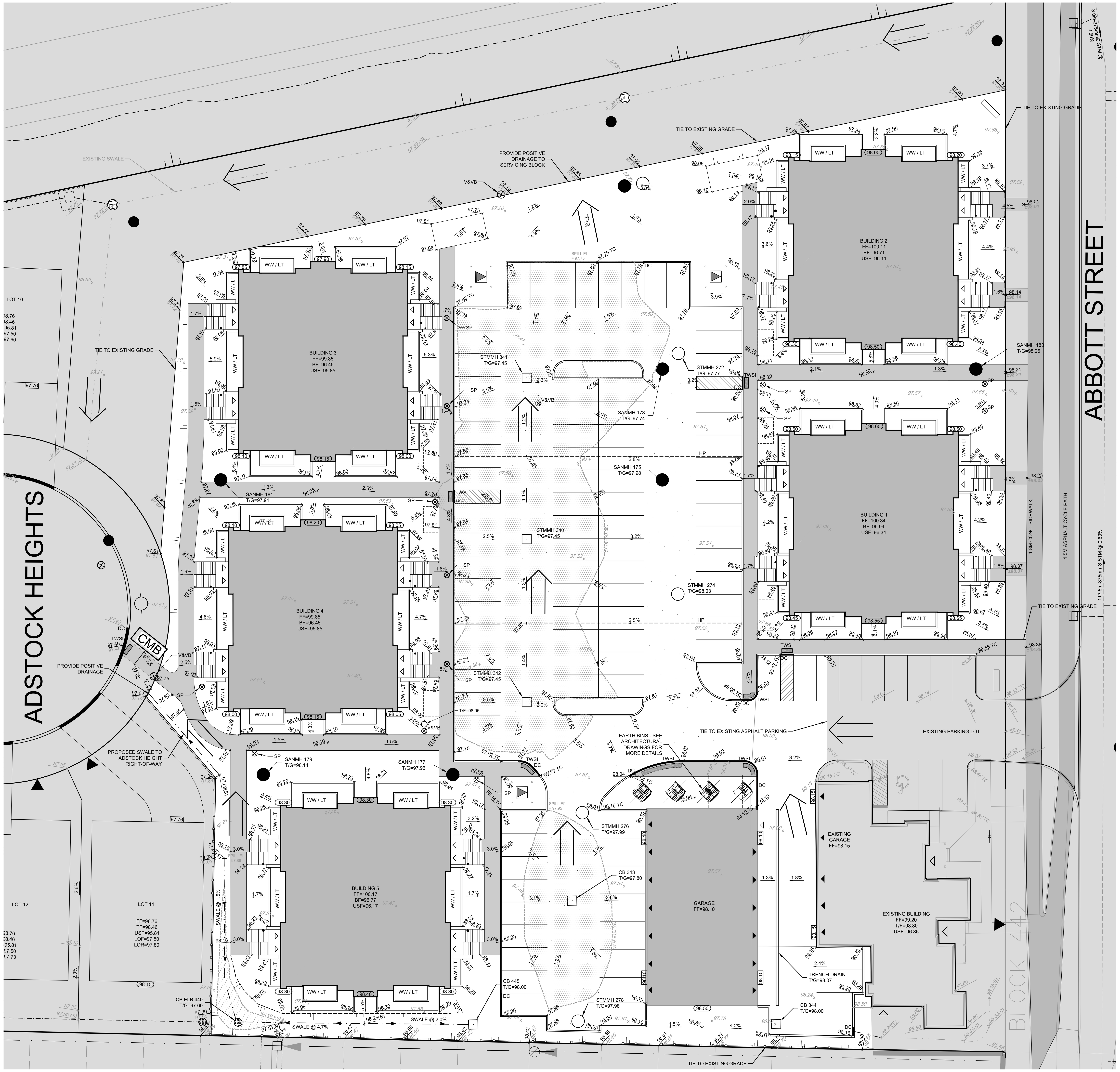
SPB DEVELOPMENT INC.
(METRIC HOMES) SUBDIVISION - BLOCK 123
950 TERRY FOX DRIVE

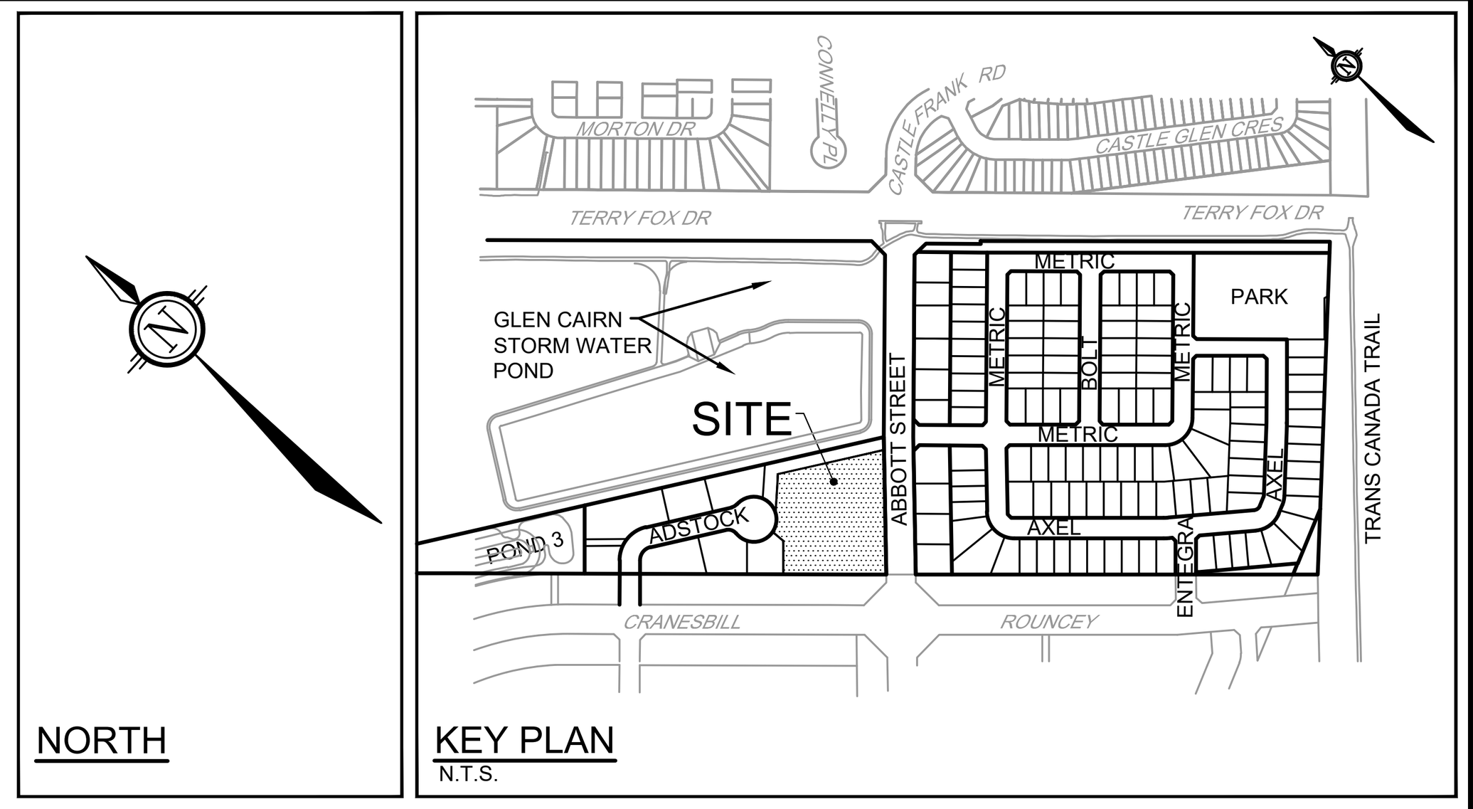
DRAWING NAME
GENERAL PLAN OF SERVICES
BLOCK 123

PROJECT No. 110037
REV REV # 5
DRAWING No. 110037-GP123

PLEASE DO NOT SCALE DRAWING

M:\2025\110037\CAD\Design\ Block 123\110037-GP123.dwg, GP, Jun 13, 2025 - 11:50am, mtaliano





NORTH

KEY PLAN
N.T.S.

LEGEND

x 97.15	EXISTING GRADE
98.20	PROPOSED ELEVATION
98.39(S)	PROPOSED SWALE ELEVATION
99.00TW	PROPOSED TOP OF WALL ELEVATION
98.39BW	PROPOSED BOTTOM OF WALL ELEVATION
97.92	PROPOSED ELEVATION BY OTHERS
137.25	PROPOSED TERRACE ELEVATION
137.25	PROPOSED GARAGE ELEVATION
LO	REAR LOOKOUT, FOOTING INSULATION MAY BE REQUIRED
BF=	BASEMENT FINISHED FLOOR ELEVATION
USF=	UNDERSIDE OF FOOTING ELEVATION
FF=	FINISHED FLOOR ELEVATION
2.0%	GRADE AND DIRECTION
	PROPOSED TERRACE GRADING (3:1 MAX)
	BARRIER CURB
DC	DEPRESSED CURB
	DEVELOPMENT BY OTHERS PART OF SEPARATE APPLICATION
	PROPOSED TRANSFORMER c/w PAD AND BOLLARDS
	PROPOSED HYDRANT C/W VALVE & LEAD
T/F = 98.45	PROPOSED TOP OF BOTTOM FLANGE
	PROPOSED CATCH BASIN
	PROPOSED CATCH BASIN WITH INLET CONTROL DEVICE
TEE	PROPOSED LANDSCAPE TEE CATCH BASIN
ELB	PROPOSED LANDSCAPE ELBOW CATCH BASIN
	PROPOSED SWALE c/w SUBDRAIN
	PROPOSED SWALE
FH	EXISTING FIRE HYDRANT
VC	EXISTING VALVE CHAMBER
	DIRECTION OF EMERGENCY OVERLAND FLOW
100 YR = 97.69	100 YEAR PONDING LIMIT 100 YEAR PONDING ELEVATION
SPILL EL =97.71	OVERLAND SPILL ELEVATION
TWSI	TACTILE WALKING SURFACE INDICATOR PER CITY OF OTTAWA ACCESSIBILITY DESIGN STANDARDS
WW / LT	WINDOW WELL / LOWERED TERRACE - SEE ARCHITECTURAL DRAWING FOR MORE DETAILS

GENERAL NOTES:

1. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
2. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
3. OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
4. BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR $5,000,000.00. INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED.
5. RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES AND SURFACES ON PUBLIC ROAD ALLOWANCES TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
6. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL, ORGANIC MATERIAL AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER. EXCAVATE AND REMOVE FROM SITE ANY CONTAMINATED MATERIAL. ALL CONTAMINATED MATERIAL SHALL BE DISPOSED OF AT A LICENSED LANDFILL FACILITY.
7. ALL ELEVATIONS ARE GEODETIC.
8. REFER TO GEOTECHNICAL REPORT (No. PG2855-3, DATED FEBRUARY 21, 2025), PREPARED BY PATERSON GROUP FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS. THE GEOTECHNICAL CONSULTANT IS TO REVIEW ON-SITE CONDITIONS AFTER EXCAVATION PRIOR TO PLACEMENT OF THE GRANULAR MATERIAL.
9. REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARDSURFACE AREAS AND DIMENSIONS.
10. REFER TO STORMWATER MANAGEMENT REPORT (R-2025-013) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
11. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
12. PROVIDE LINE/PARKING PAINTING.

GRADING NOTES:

1. ALL TOPSOIL, ORGANIC OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED PAVED AREAS AS DIRECTED BY THE SITE ENGINEER OR GEOTECHNICAL ENGINEER.
2. EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE PROOF ROLLED WITH A LARGE STEEL DRUM ROLLER AND INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF GRANULARS.
3. ANY SOFT AREAS EVIDENT FROM THE PROOF ROLLING SHOULD BE SUB-EXCAVATED AND REPLACED WITH SUITABLE MATERIAL THAT IS FROST COMPATIBLE WITH THE EXISTING SOILS AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
4. THE GRANULAR BASE SHOULD BE COMPACTED TO AT LEAST 100% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE. ANY ADDITIONAL GRANULAR FILL USED BELOW THE PROPOSED PAVEMENT SHOULD BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE.
5. MINIMUM OF 2% GRADE FOR ALL GRASS AREAS UNLESS OTHERWISE NOTED.
6. MAXIMUM TERRACING GRADE TO BE 3:1 UNLESS OTHERWISE NOTED.
7. ALL GRADES BY CURBS ARE EDGE OF PAVEMENT GRADES UNLESS OTHERWISE INDICATED.
8. ALL CURBS SHALL BE BARRIER CURB (150mm) UNLESS OTHERWISE NOTED AND CONSTRUCTED AS PER CITY OF OTTAWA STANDARDS (SC1.1).
9. REFER TO LANDSCAPE PLAN FOR PLANTING AND OTHER LANDSCAPE FEATURE DETAILS.
13. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GRADING PLAN INDICATING AS-BUILT ELEVATIONS OF ALL DESIGN GRADES SHOWN ON THIS PLAN.

PAVEMENT STRUCTURE:

LIGHT DUTY
50mm HL-3 OR SUPERPAVE 12.5
150mm GRAN "A"
300mm GRAN "B" TYPE II

HEAVY DUTY
40mm HL-3 OR SUPERPAVE 12.5
50mm HL-8 OR SUPERPAVE 19.0
150mm GRAN "A"
450mm GRAN "B" TYPE II

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
5.	ISSUED FOR REVIEW	JUN 13/25	ARM
4.	ISSUED FOR COORDINATION	JUN 05/25	ARM
3.	ISSUED FOR COORDINATION	MAY 16/25	ARM
2.	ISSUED FOR COORDINATION	FEB 18/25	ARM
1.	ISSUED FOR PHASE 4/5 TENDER	OCT 6/22	ARM

SCALE 1:200

DESIGN MJB
CHECKED ARM
DRAWN MJB
CHECKED ARM
APPROVED ARM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
A.R. MCAULEY
100141256
June 13, 2025
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

SPB DEVELOPMENTS INC.
(METRIC HOMES) SUBDIVISION - BLOCK 123
950 TERRY FOX DRIVE

DRAWING NAME
GRADING PLAN

PROJECT No. 110037
REV # 5
DRAWING No. 110037-GR

M:\2010\110037\CAD\Design_Block123\110037-GR123.dwg, GR, Jun 13, 2025 - 11:58am, mblanton