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Traditions II - Block 349 Medium Density

Servicing and Stormwater Management Report

Prepared for: Mattamy Homes

Traditions II - Block 349 Medium Density

Ottawa, ON

Servicing and Stormwater Management Report

Prepared By:

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

October 29, 2024
Revised: January 23, 2025
Revised: April 15, 2025

Novatech File: 124097
Ref: R-2024-123

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Engineers, Planners & Landscape Architects

April 15, 2025

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

Attention: **Solé Soyak, Planner II**

Reference: **Traditions II - Block 349 Medium Density**
Servicing and Stormwater Management Report
Our File No.: 124097

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.

This report has been revised in response to City comments dated December 6, 2024. Refer to Appendix F of this report for responses to the applicable Engineering comments.

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

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1.0 INTRODUCTION

1.1 Background

This report addresses the approach to site servicing and stormwater management for the development at the Traditions II – Block 349 (Subject Site), which is being proposed by Mattamy Homes (Developer).

The Subject Site is located at the south-east corner of the Stittsville Main Street and Parade Drive intersection, as shown on **Figure 1.1** – Key Plan. The site is bound to the north by Parade Drive, to the south by Campolina Way, to the west by Stitsville Main Street, and to the east by Falabella Street.

The existing land usage consists of one single family home (1883 Stittsville Main Street), as shown on **Figure 1.2** – Existing Conditions Plan. An existing asphalt laneway which serves as an access to the single-family home is located at the west side of the property, off Stittsville Main Street, approximately 25m south of Parade Drive. The existing home has been demolished in late 2024, as per the demolition permit. A separate application for decommissioning of the septic system has been applied for to the Ottawa Septic System Office and has been granted (September 2023). Existing septic tank would be removed to approved location or filled with sand, gravel, or other soils by contractor. The existing well would be decommissioned as per MECP procedures.

The majority of the existing site drains overland from west to east towards Falabella Street. Stormwater runoff directed towards Falabella, Parade, and Campolina are conveyed to the existing storm sewer via roadside catchbasins. The small portion of stormwater runoff directed towards Stittsville Main Street is captured by the existing roadside ditch.

1.2 Development Intent

The Subject Site has an area of 1.04ha, and the proposed development will comprise of 7 townhome blocks, 3 storeys in height, containing 12 units each (84 units total), as shown in **Table 1.1** below. The development will contain a 6.0m wide private drive aisle through the site, connecting to Falabella Street at two locations. Parking spaces would be provided on-site adjacent to the 6.0m drive aisle. The proposed Site Plan (Drawing A – Block 349 Site Plan) is included in **Appendix F**.

Table 1.1: Land Use, Development Potential, and Yield

Unit Type[1]	Number of Townhome Blocks	Number of Units	Area
Stacked Townhomes	7	84	1.04 ha

[1]*The development does not consist of singles, semis, or multi-unit residential / apartments.*

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.

All the private roads, sewers, watermain and stormwater collection system within the Subject Site shall remain private and operated through a Joint Use and Maintenance Agreement (JUMA).

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**.

2.0 GEOTECHNICAL INVESTIGATION

Paterson Group Inc. (Paterson) conducted a geotechnical investigation in support of the proposed residential development: *Geotechnical Investigation – Proposed Residential Development 1883 Stittsville Main Street, Ottawa, Ontario; Report No. PG7178-1, Paterson Group Inc., July 2, 2024.* 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 PG7178-1 included in the report for the test hole location plan. A summary of the geotechnical report findings is provided in **Table 2.1** below.

Table 2.1: Summary of Geotechnical Servicing and Grading Considerations

Parameter	Summary	
Sub-Soil Conditions	Glacial till, Dense brown silty sand with gravel, Cobbles and boulders	
OHSA Soil Type	Type 2 and 3	
Groundwater Considerations	Groundwater table within the bedrock	
Bedrock	Weathered bedrock from 0.9m to 2.7m depth	
Pipe Bedding / Backfill	Pipe Bedding Pipe Cover Backfill	150 mm to 300 mm Granular A 300 mm Granular A 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)

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 124097-GP) and Grading Plan (Drawing 124097-GR)

3.2 General Grading

The proposed grading within the Subject Site will direct overland flows to the Falabella Street right-of-way.

Portions of the Subject Site fronting onto the existing right-of-ways on Stittsville Main Street, Parade Drive, Falabella Street, and Campolina Way will direct overland flows to the corresponding right-of-ways.

Refer to the Grading Plan (Drawing 124097-GR) 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 249 L/s (240L/s/ha), allocated to the development site as part of the Detailed Servicing and Stormwater Management Report for the Stittsville South Development (Novatech, 2016). An excerpt from the Detailed Servicing and Stormwater Management Report for the Stittsville South Development (Novatech, 2016) 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 Falabella Street right-of-way 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 west to east towards Falabella Street. Stormwater runoff directed towards Falabella, Parade, and Campolina would

enter the existing storm sewer via roadside catchbasins. The small portion of stormwater runoff directed towards Stittsville Main Street would be captured by the existing roadside ditch.

4.3 Proposed Storm Drainage System

Stormwater servicing for the proposed development would be provided using an underground storm sewer system. Surface stormwater runoff would be captured and conveyed to the underground system via roadside catchbasins located throughout the site. The underground storm sewer system would include underground storage chambers to provide on-site quantity control. These underground chambers are discussed further in the section below. Storm services for the townhouse blocks are proposed to provide foundation drainage.

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**.

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	0.8 m/s
Maximum Velocity	3.0 m/s
Minimum Diameter	250 mm

The proposed storm drainage systems include the following:

- Approximately 131m of storm sewers within the drive aisle for collection and conveyance of stormwater runoff to the proposed underground storage system and collection of foundation drainage of the townhouse blocks, including a connection to the existing storm sewer stub on Falabella Street.

Hydraulic Grade Line (HGL)

The 100-year hydraulic grade line of the existing downstream storm sewer on Falabella Street was reviewed and is below the obvert of the pipe. Therefore, the 100-year hydraulic grade line of the storm sewers within the proposed development have not been reviewed as part of this report. Underside of footing (USF) elevations have been set to be at least 0.3m above the obvert of the nearest storm sewer pipe within the Subject Site.

4.3.2 Stormwater Quality Control

The Subject Site is within the catchment area of the existing stormwater management facility, located approximately 1.2km northwest 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 (80% TSS removal). Onsite quality control is not required and is not proposed.

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 subcatchment locations:

- *Area STM-1, STM-2, STM-3 (Private Drive Aisle and Portions of Townhomes) – Controlled*

  These subcatchments represent areas draining towards the paved drive aisles. Storm runoff will be collected by catchbasins and conveyed to the StormTech chambers.

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

  These subcatchments represent portions of the Subject Site that will drain uncontrolled to the existing right-of-ways adjacent to the Subject Site. The overall site release rates have accounted for the uncontrolled release rates of these areas.

StormTech Chambers

Quantity control storage (to meet the allowable release rates) will be provided by StormTech chambers (model MC-3500 or approved equivalent). Inlet control devices (ICD's) will be installed in the outlet structures to control outflows from the StormTech chambers to the allowable release rate. The road and landscaped areas drainage system will connect to the StormTech chambers. The total storage provided by the StormTech chambers is approximately 188 m^3 based on the layout presented on the General Plan of Services (Drawing 124097-GP). Supporting documentation is provided in **Appendix C**.

The StormTech chambers would provide sufficient storage volume to provide quantity control for the proposed development up to and including the 1:100 year storm event. As such, no surface ponding storage has been included in the stormwater quantity control calculations. Surface ponding is not expected to be present after a storm event, however during storm events, some localized dynamic flow depth would occur at catchbasins.

The StormTech chambers will be privately owned and maintained through a Joint Unit Maintenance Agreement (JUMA), that will be registered on title.

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 Falabella Street.

Runoff from storms that exceed the minor system capacity are to be conveyed overland within the site drive aisles to Falabella Street.

4.3.5 Retention and Infiltration

There are no identified opportunities for re-use of retained storm runoff and the site is not suitable for infiltration due to the bedrock conditions identified in the Geotechnical Investigation (Patterson Group, 2024). The MOE SWM Manual recommends that infiltration systems for stormwater management be located a minimum of 1.0 m from the seasonally high groundwater table and bedrock.

The StormTech chambers have not been designed as infiltration systems as they will not meet the applicable MOE SWM Manual criteria due to the shallow depth to bedrock and groundwater. Design details of the StormTech Chambers would be included in the shop drawings, to be reviewed by the design engineer in order to meet the approved design intent.

5.0 SANITARY SEWER SYSTEM

5.1 Existing Sanitary Infrastructure

There is an existing 200mm diameter sanitary sewer (gravity) located on Falabella Street. A 9.0m – 200mm diameter stub was installed at the time of construction of the sanitary sewer on Falabella Street. The stub was capped at the Subject Site's property boundary. Refer to the General Plan of Services (Drawings 124097-GP) for the sanitary layout.

5.2 Proposed Sanitary Infrastructure

The proposed on-site works will require approximately 132 m 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 Falabella Street. The layout of the proposed sanitary sewer is shown on the General Plan of Services (Drawing 124097-GP).

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: Row Townhomes	2.7 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	0.33 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	2.5 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 2.57 L/s.

The capacity of the existing downstream sanitary was reviewed to confirm sufficient capacity to service the development. The Detailed Servicing and Stormwater Management Report for the Stittsville South Development (Novatech, 2016), includes sanitary sewer design calculations for the existing sanitary sewer which the development would connect to on Falabella Street. The report indicates that the existing sanitary sewer on Falabella Street has a capacity of 24.2 L/s and is currently capturing 3.76 L/s from the existing houses on Falabella Street. Therefore, there is existing capacity in the existing downstream sewer on Falabella Street to service the proposed development. The sanitary sewer design table from the Detailed Servicing and Stormwater Management Report for the Stittsville South Development (Novatech, 2016) 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 on Falabella Drive. It is proposed to connect to the existing 200mm diameter watermain at two locations to service the proposed development.

6.2 Proposed Water Infrastructure

The proposed on-site watermain would include approximately 83m of 250mm diameter watermain and 82m of 200mm diameter watermain. 50mm watermains are proposed at the dead-end locations within the site to reduce stagnant water / water age.

Refer to the General Plan of Services **(124097-GP)** 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: Row Townhome	2.7 people/unit
Basic Day Residential Demand (BSDY)	280 L/c/d
Maximum Day Demand (MXDY)	2.5 x BSDY
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 (BSDY) Condition	< 552 kPa (80 psi) occupied areas < 690 kPa (100 psi) unoccupied areas
Minimum Pressure (PKHR) Condition	> 276 kPa (40 psi) or 304 kPa (44psi) 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 **Figure 6.1** – EPANET Model Schematic

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 2025)			
Average Daily Demand	0.74	80 (Max)	53
Peak Hour Demand	4.04	44 (Min)	44

Based on a three-storey unit product, site-specific boundary conditions and previous experience in the subdivision (where roadway elevations are greater than 121.00 ASL), the peak hour system criteria threshold has been increased to 44 psi (from 40 psi). In order to mitigate marginally low expected pressures during the peak hour scenario (1 or 2 psi below the foregoing target), it is proposed that service laterals be increased from 19mm to 25mm for reduced head losses to

alleviate low pressure concerns. Given the site grading and modelling, all the units will have 25mm services from the private main.

Fire Demand

Furthermore, 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, existing hydrants 1 and 2 were considered as hydrant class AA (5,700 L/min) given their relative location to the boundary conditions received from the city. Existing hydrant 3 was considered as hydrant class A (3,800 L/min) given it's location on a dead-end watermain. Proposed hydrant A would be hydrant class AA. With this approach, under the maximum required fire flow condition (Block 2) an available aggregate hydrant flow of 15,200 L/min can be achieved under maximum day and fire flow demands by drawing 5,700 L/min, 5,700 L/min, and 3,800 L/min from proposed hydrant A, and existing hydrants 2 and 3, respectively. 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 townhouse block, 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.

Table 6.3: Summary of Available Aggregate Hydrant Flow

Block #	Fire Hydrants providing 5,700L/min (1)	Fire Hydrants providing 3,800L/min (2)	Combined Hydrant Flow Rates (L/min)	Modeled Fire Flow - (L/min) (4)	Required Fire Flow per FUS Calculations (L/min)
1	1	2	13,300	13,000	12,000
2	2	1	15,200		13,000
3	2	1	15,200		12,000
4	3	0	17,100		12,000
5	3	0	17,100		12,000
6	2	1	15,200		12,000
7	2	1	15,200		11,000

Therefore, in the maximum fire flow demand scenario, (Block 2) the combined fire flow from the proposed on-site hydrant and existing hydrants of 15,200 L/min exceeds the required fire flow of 13,000 L/min.

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.

6.5 Water Age Analysis

The OWDG indicates that a total travel time of 5 days or less during basic day demands is reasonable, and a residence time of 8 days should not be exceeded.

The Subject Site is located within Zone 3W of the City of Ottawa 2013 Water Master Plan, where the average water age is 3 days during basic day demand conditions. Based on the modelling results provided in **Appendix E**, the maximum local water age is 3.59 hours. **Table 6.4** below demonstrates that the maximum water age will be 3 days and 3.59 hours (3.15 days), falling below a total travel time of 5 days and not exceeding the allowable residence time of 8 days. Alternately, when considering a travel time of 5 days maximum, the total water age is 5 days and 3.59 hours, remaining below the allowable 8-day residence time.

Table 6.4: Summary of Water Age Analysis

Condition	Allowable Residence Time	Zone	Max Water Age
Proposed Development	8 Days	3W	3 days + 3.59 hours

Based on the above, the water age analysis demonstrates that the OWDG requirements are being met.

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 124097-GR). 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
- Light duty straw bale check dam per OPSD 219.180

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 NEXT STEPS, COORDINATION, AND APPROVALS

The proposed private infrastructure may be subject, but not limited to the following approvals:

- MECP EASR. Submitted to: MECP. Proponent: Developer.
- MECP Environmental Certificate of Approval (ECA) – Consolidated Linear Infrastructure (CLI) for extension of services. Submitted to City of Ottawa.
- Road Cut Permit. Submitted to City of Ottawa. Proponent: Developer, or its contractor/agent.

9.0 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 131m of on-site storm sewers 450mm in diameter. The on-site storm sewers will outlet to the existing storm sewer on Falabella Street.
- Stormwater management will be provided to adhere to the allowable release rates.
- Underground storage will be provided by StormTech MC-3500 arch-type chambers (or approved equivalent). ICDs will be placed on the outlet structures to control flows from the Stormtech Chambers.

Sanitary and Wastewater Collection System

- The sanitary outlet would be the existing 200mm sanitary sewer on Falabella Street. The existing sanitary sewer has capacity to facilitate the proposed development.
- The proposed on-site works would require approximately 132m 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 on the existing 250 mm watermain on Falabella Street.
- The proposed on-site watermain would include approximately:
    - 83m of 250mm diameter watermain
    - 82m of 200mm diameter watermain
    - 50m of 50mm diameter watermain
- The townhouse units would be serviced with 25mm water services.
- One private hydrant location has been provided for fire protection purposes. The proposed hydrant would be a Class AA hydrant. To ensure a residual pressure of 20 psi is maintained within the system, existing hydrants 1 and 2 were considered as Class AA hydrants, and existing hydrant 3 was considered as Class A hydrant, given that it is located on a dead end watermain.
- A water age analysis was completed for the Subject Site to determine if the requirements outlined in the OWDG were being met. The Subject Site is located within Zone 3W, where the average water age is 3 days during basic day demand conditions. Based on the modelling results the maximum local water age is 3.59 hours, resulting in a total water age of 3 days and 3.59 hours (3.15 days).

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).

Next Steps, Coordination, and Approvals

- MECP ECA – CLI for extension of services. Submitted to City of Ottawa.
- Road Cut Permit.

10.0 CLOSURE

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

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Land Development Engineering

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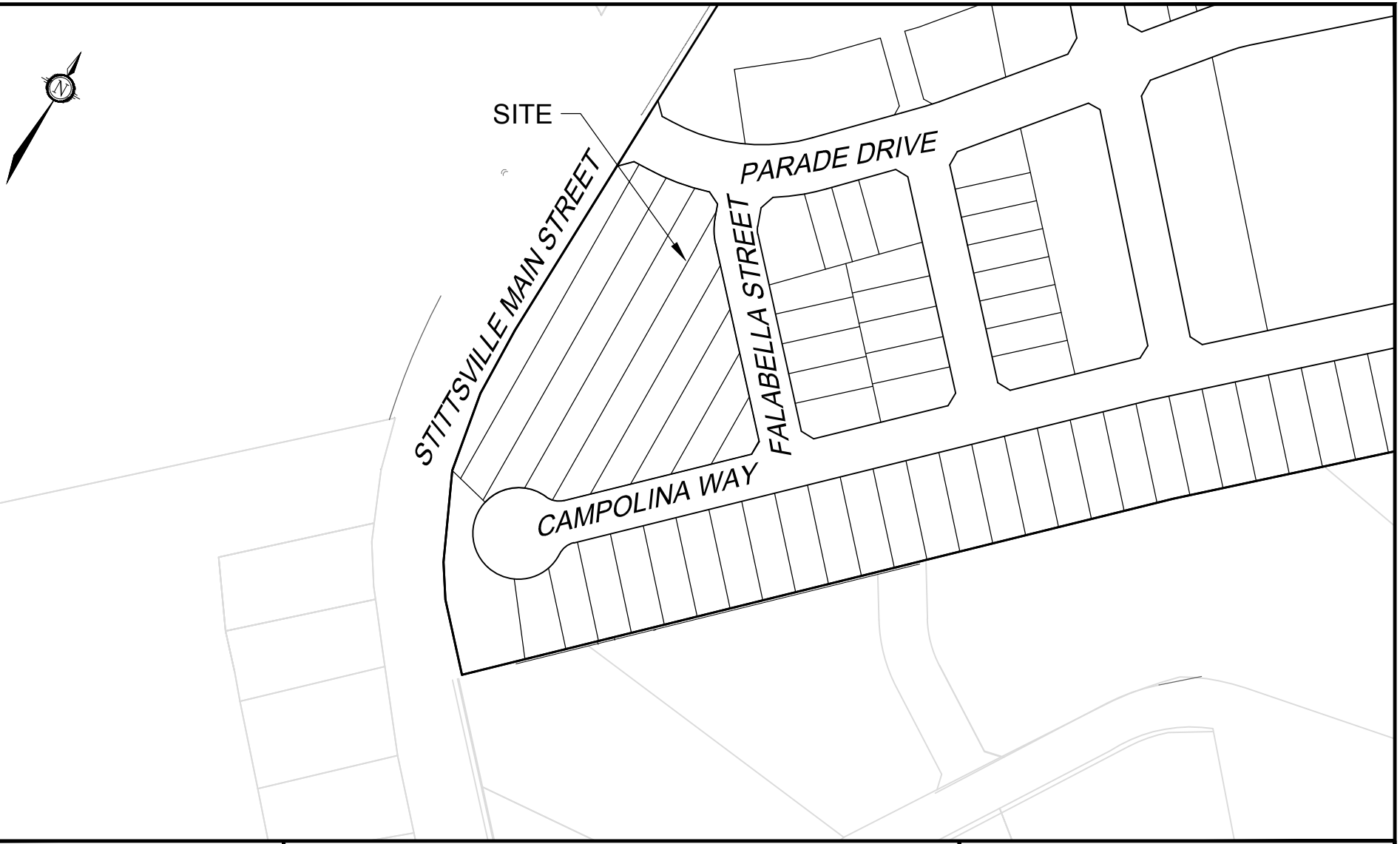
Senior Project Manager | Land Development Engineering



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BLOCK 349

KEY PLAN

SCALE		
NOT TO SCALE		
DATE	JOB	FIGURE
APR 2025	124097	1.1

SHT8X11.DWG - 216mmx279mm

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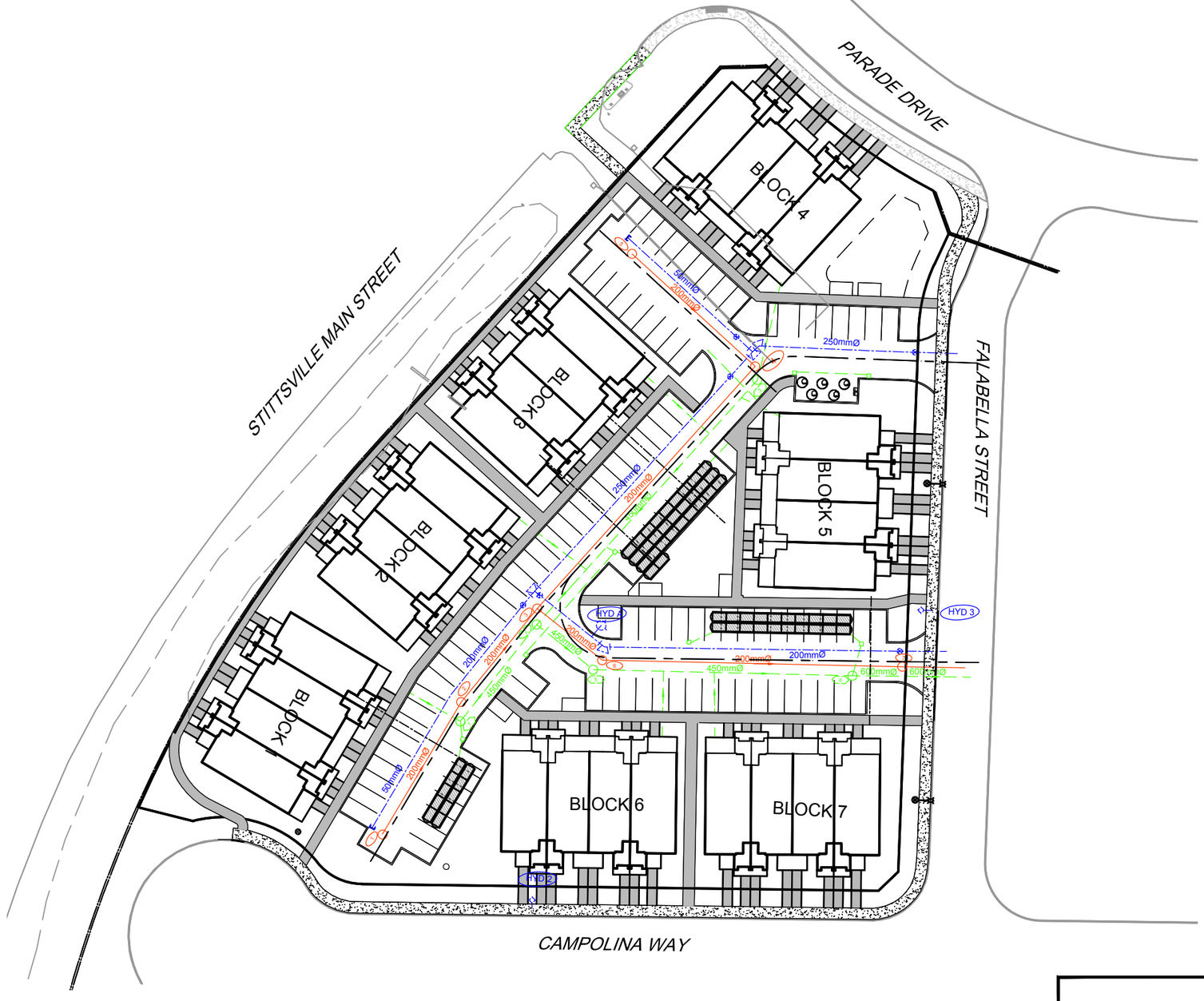
BLOCK 349

EXISTING CONDITIONS

SCALE: NOT TO SCALE

DATE	JOB	FIGURE
APR 2025	124097	1.2



LEGEND

- EXISTING WATERMAIN
- EXISTING HYDRANT
- PROPOSED WATERMAIN
- PROPOSED 50mmØ WATERMAIN
- PROPOSED HYDRANT
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING CULVERT
- PROPOSED STORM SEWER
- EXISTING GAS LINE
- EXISTING DITCH
- STORMTECH CHAMBERS

N

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TRADITIONS II - BLOCK 349

PROPOSED SERVICING LAYOUT PLAN

SCALE 1 : 750 (0, 10, 20, 30)
DATE APR 2025
JOB 124097
FIGURE 3.1

SHT11X17.DWG - 279mmX432mm

M:\2024\124097\DATA\Reports\Design Brief\Final Submission\Figures\124097-Proposed Servicing Layout Plan.dwg, 11x17 landscape, Oct 28, 2024 - 3:58pm, mparker

0.500
STM-1
0.70

DRAINAGE AREA (hectares)

DRAINAGE AREA ID

RUNOFF COEFFICIENT (C)

DRAINAGE AREA BOUNDARY

MAJOR OVERLAND FLOW DIRECTION

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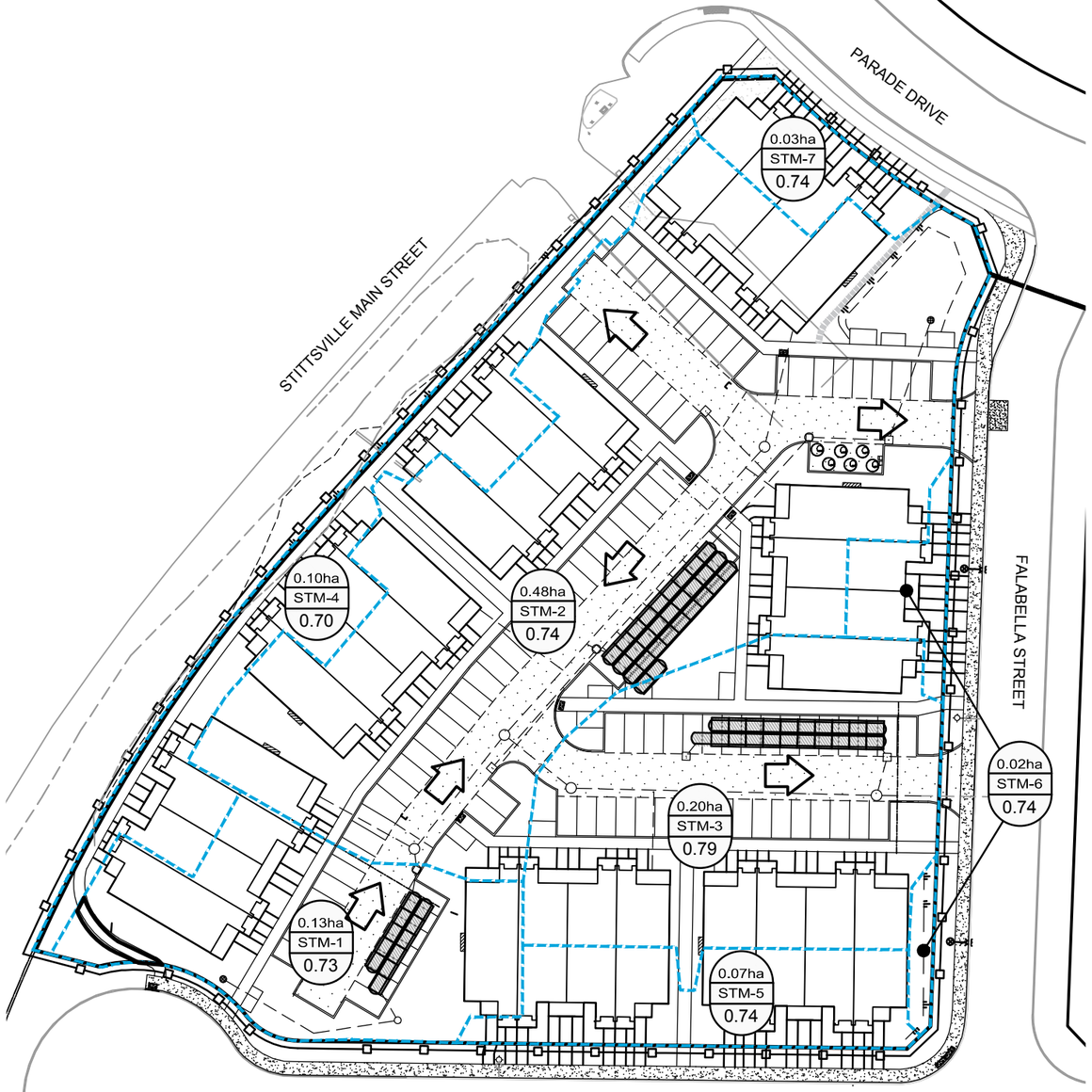
TRADITIONS II - BLOCK 349

PRE-DEVELOPMENT STORM DRAINAGE AREA PLAN

SCALE 1 : 750 (0 10 20 30)

DATE APR 2025 | JOB 124097 | FIGURE 4.1

SHT11X17.DWG - 279mmX432mm



0.500
STM-1
0.70

DRAINAGE AREA (hectares)

DRAINAGE AREA ID

RUNOFF COEFFICIENT (C)

DRAINAGE AREA BOUNDARY

MAJOR OVERLAND FLOW DIRECTION

REVISED JAN 17/25

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

TRADITIONS II - BLOCK 349

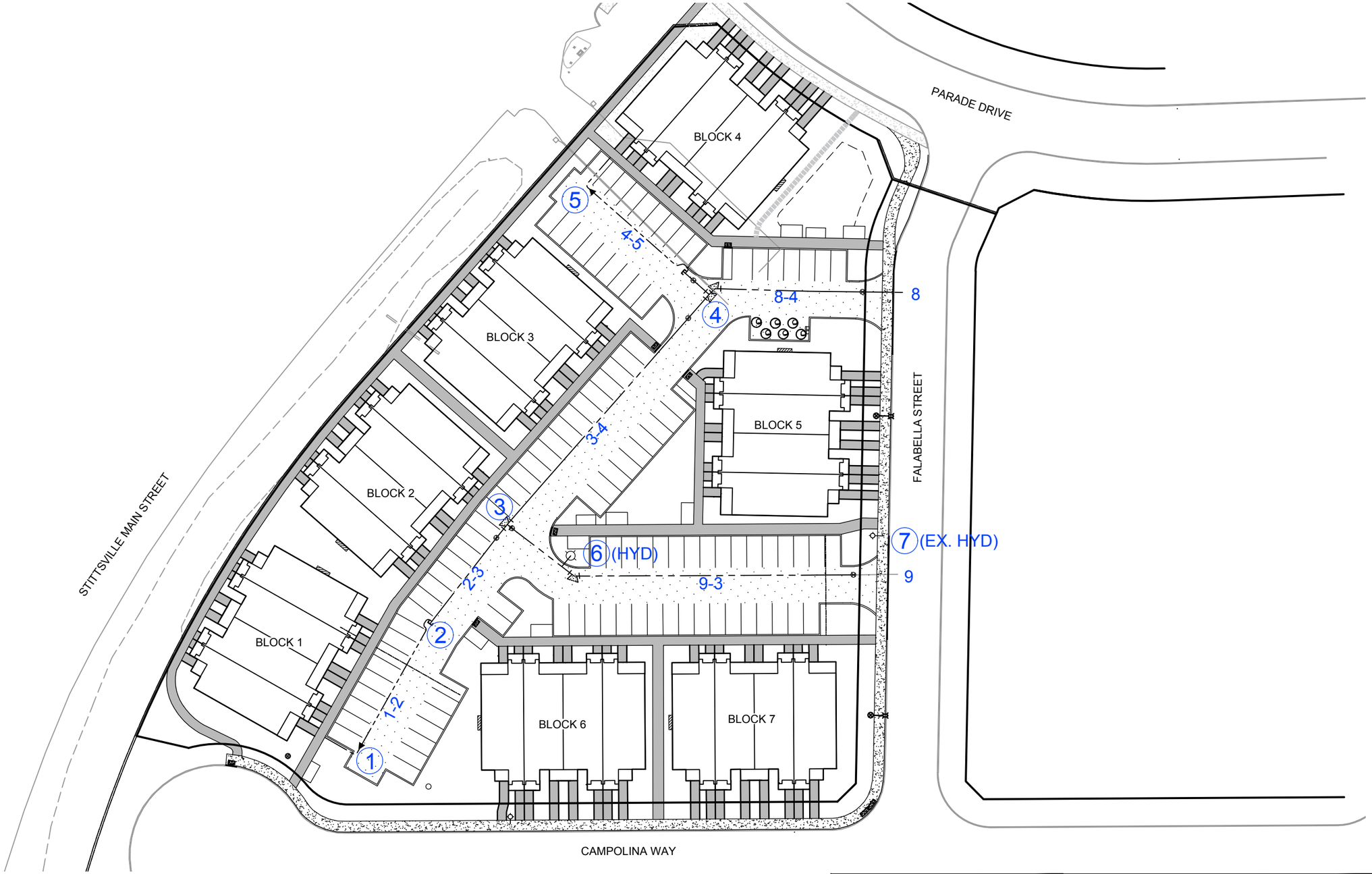
POST-DEVELOPMENT STORM DRAINAGE AREA PLAN

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

DATE APR 2025 | JOB 124097 | FIGURE 5.1

M:\2024\124097\CAD\Civil\Figures\124097-SWM.dwg, 11x17 landscape, Jan 16, 2025 - 3:01pm, mparker

SHT11X17.DWG - 279mmX432mm



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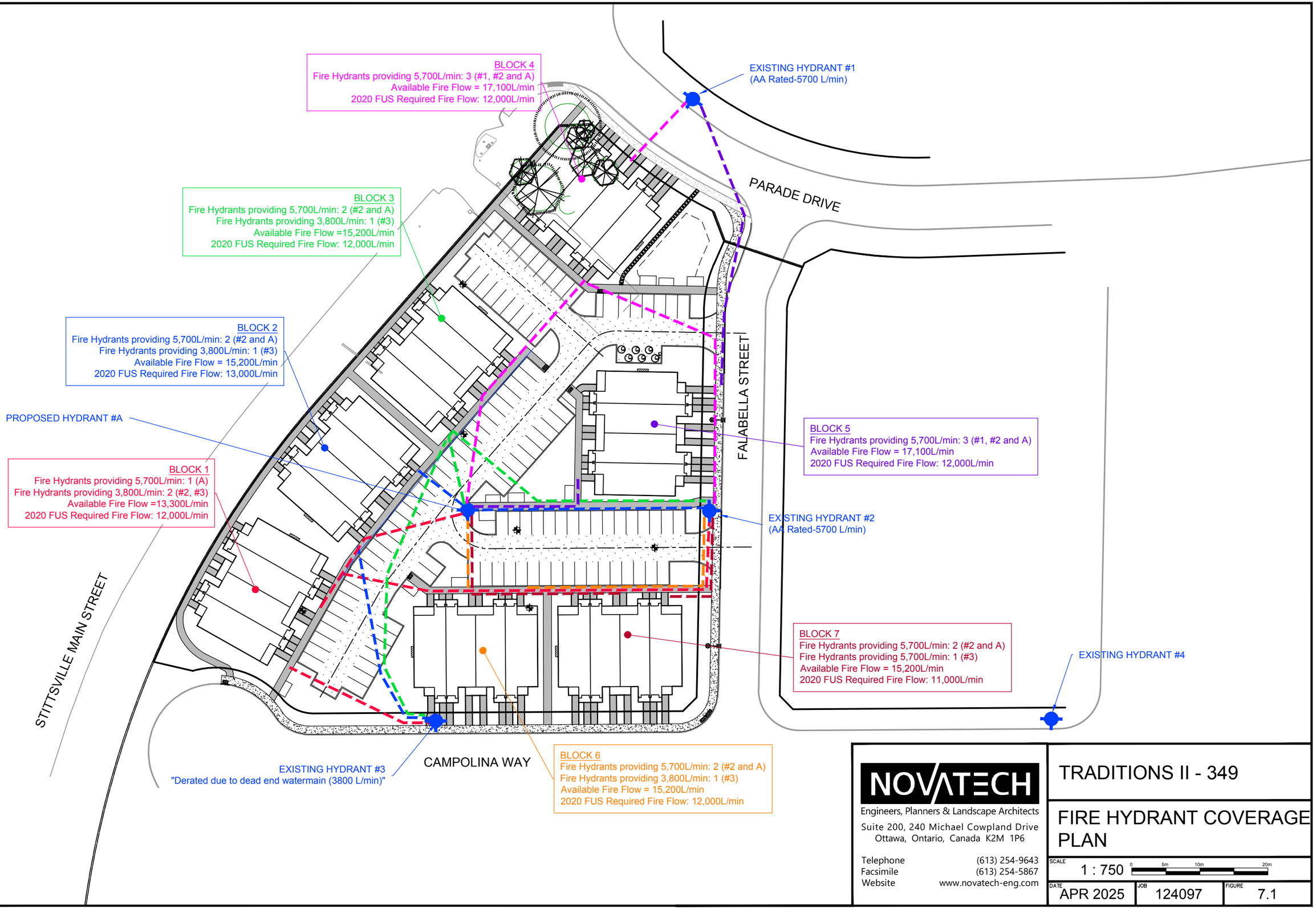
TRADITIONS II - BLOCK 349

EPA NET MODEL SCHEMATIC

SCALE		
NTS		
DATE	JOB	FIGURE
APR 2025	124097	6.1

SHT11X17.DWG - 279mmX432mm



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TRADITIONS II - 349

FIRE HYDRANT COVERAGE PLAN

SCALE 1 : 750 (0, 5m, 10m, 20m)
DATE APR 2025
JOB 124097
FIGURE 7.1

Appendix A

File Number: D07-12-24-0142

December 6, 2024

James Ireland
NOVATECH
Via email: j.ireland@novatech-eng.com

Subject: Site Plan Control - Complex – 1883 Stittsville Main Street – Completeness Review Comments

Please find below the consolidated comments from the formal completeness review of the above noted application.

Planning

List of Studies and Plans Reviewed:

- **Block 349 Site Plan**, A, dated September 11, 2024.
- **Landscape Plan**, 124097-L1, prepared by Novatech, Revision #3, dated November 1, 2024.
- **Elevations**,A2.00, A2.10, A2.11, A2.20, A2.30, A2.31, prepared by BIM Studio, dated 2024/08/21.
- **Zoning Confirmation Report**, prepared by Novatech, dated November 1, 2024.

Deficiencies:

- A topographic map of survey is required.
- Site Plan
    a. The legal description states the lands are within the Geography Township of Nepean, however, the 4M plan indicates the lands are within the Geographic Township of Goulbourn. Please revise.
    b. Project's team information is missing. Please include the name and address of: architect(s), designer(s), engineer(s) and surveyor(s).
    c. Lengths of all property lines is missing.
    d. Existing topography is missing.
    e. Pedestrian walking areas and surface treatment/materials are shown in the legend but not on the plan, please revise.

f. The location, width and name of any roads within or abutting the subject land, indicating whether it is an unopened road allowance, a public travelled road, a private road or a right of way needs to be indicated.

g. Location of existing/proposed fire hydrants, proposed fire route and fire route sign locations to be shown in metres.

h. Include the location of snow storage, if any.

i. Include waste management and recycling enclosure location and design details.

j. Include bicycle parking location and design details.

k. Please show the location of all natural and artificial features within 5 metres of limit of site development (for example, railways, watercourses, drainage ditches, banks of rivers or streams, wetlands, trees, wooded areas, wells and septic tanks)

l. Are there any existing features to be retained, removed or relocated?

m. The location and nature of any easement affecting the subject land.

- Zoning Confirmation Report

    a. Amenity area requirement as per Section 137 is missing from the table.

    b. Refuse Collection as per Section 110 is missing from the table.

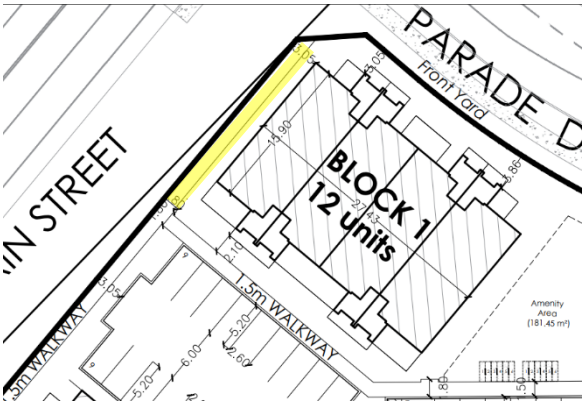
- Please ensure all measurements on the elevation drawings are shown in metric including the scale.

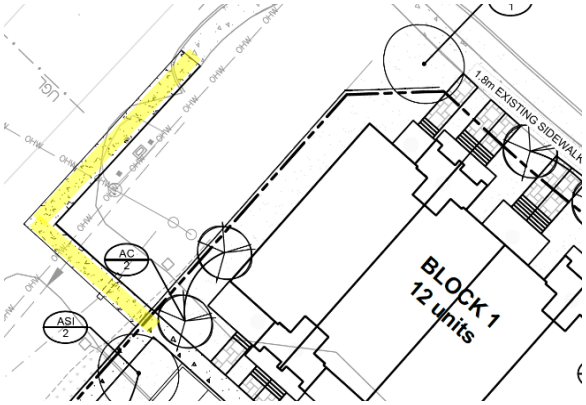
- Landscape Plan

    a. Designer and surveyor’s name are missing.

    b. Include the legal description on plan.

- Please ensure the drawings are consistent with each other for instance, the site plan shows a walkway extending towards Pared Drive on Block 1 whereas the landscape plan shows the walkway extending to connect with the existing walkway on Stittsville Main Street.





Comments:

- Please include snow storage area on landscape plan, if provided.
- Please confirm whether the waste management area will be enclosed.
- Please confirm whether a molok waste system will be used. Please note that the city cannot service this type of waste system and private collection will be required.
- Are there any projections into Required Yards? If yes, please indicate compliance in the Zoning Confirmation Report.

Feel free to contact Solé Soyak, Planner II, for follow-up questions.

Urban Design

Deficiencies:

- No deficiencies

Engineering

List of Studies and Plans Reviewed:

- **Block 349**, Drawing A, prepared by Mattamy Homes, dated 11/09/24.
    - Not reviewed in detail, revied to the extent of confirming accuracy of other plans/studies

- **Traditions II – Block 349 Medium Density**, prepared by Novatech, dated October 28, 2024.

- **Geotechnical Investigation, 1883 Stittsville Main Street**, prepared by Paterson Group, dated July 2, 2024.

- **Phase 1 – Environmental Site Assessment, 1883 Stittsville Main Street**, prepared by Paterson Group, dated June 27, 2024.

Deficiencies:

- Submit plans as separate documents (i.e.. not within reports).

    a. Please ensure all plans adhere to City of Ottawa terms of reference.

Comments:

Geotechnical Investigation

- Page 27/35, TP 5-24, there are two subsequent “glacial till” layers. Based on the review of the report, it is assumed that the layer from 1.1-1.6 is incorrectly labelled and should be “bedrock”. Please confirm.

ESA

- It is noted that a response from the MECP, and the City of Ottawa (as part of the HLUI) was not received prior to the creation of the report. The report should be updated with these responses.

- As part of the ERIS database records, it is noted that a “pipeline incident was identified. Please expand on the rational for deeming that this incident is not “considered to pose an environmental concern for the Phase I property.

- As part of section 6.1, it is noted that the site inspection was completed on February 9, 2024, and that the temperature was approximately 29^{o}C. Please clarify.

    a. It is noted that in February there may have been snow/ice coverage of the site. Please confirm the ground surface was able to be reasonably reviewed as part of the site inspection.

- Document must be signed and stamped.

Servicing and Stormwater Management Report

- Details of the Joint Use and Maintenance Agreement (JUMA) must be submitted as part of the submission materials for review and comment.

a. Will a Condo board be in place to execute the responsibilities of the JUMA?

- Page 10/66, Section 4.3.5, “However, they will provide some runoff volume retention for the proposed development”. Please clarify this statement.

- Please provide a discussion related to any surface ponding on site, including relevant details on plans/stage storage calculation (if applicable).

- It is noted that “major overland flow direction” arrows are provided on the “Post-development Storm Drainage Area Plan”. Please also include this on the Grading Plan.

- Please include relevant notes and details on all plans (General Plan of Services, Grading Plan, etc.).

General

- Please elaborate on the decommissioning/removal of the existing septic system (tank and field) in all relevant reports/plans. Please include information on the disposal of the septic tank and field.

- Please note that this review was completed to support deeming the application complete. A detailed review was not completed at this stage and as such additional comments may be provided during the circulation period.

Feel free to contact Ryan Brault, Infrastructure Project Manager, for follow-up questions.

Transportation

List of Studies and Plans Reviewed:

- **B**lock 349 Site Plan, Drawing A, prepared by Mattamy Homes, dated 11/09/24

Deficiencies:

- Right of way protection must be shown on the site plan. This dimension must be measured from the centerline of the existing road.

Comments:

- A connection from the internal walkway to the Parade/Stittsville Main intersection is recommended. This corner should be clearly shown on the site plan.

Feel free to contact Mike Giampa, Transportation Project Manager, for follow-up questions.

Noise

List of Studies and Plans Reviewed:

- 1883 Stittsville Main Street, Ottawa Noise Impact Feasibility Report, prepared by Noise Impact Feasibility Report, dated November 13, 2024.

Comments:

- No comments.

Feel free to contact Mike Giampa, Transportation Project Manager, for follow-up questions.

Forestry

Deficiencies:

- None

Comments:

- The Kilgour TCR contains all the information required to complete a review when circulated.

- The Novatech LP contains all the information required to complete a review when circulated.

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

Other

ROW Utility Approvals

- Unless otherwise agreed upon by the affected asset/utility owner(s), maintain the minimum standard clearances between utilities and municipal assets.

- Excluding service laterals/connections, private utility owners shall request Municipal Consent prior to installing their infrastructure within an existing Right-of-way (ROW).

- The installation of any structure **(including shoring/tie-backs**), structure footing, geo-membrane or perforated pipe encroaching into the existing ROW is subject to additional review, Municipal Consent authorization, and/or other approvals as may be deemed necessary upon review of such a request. For more information, visit: https://ottawa.ca/en/planning-development-and-construction/construction-right-way#section-63801577-42b6-4516-9a62-3ff7217e7a08

- Unless otherwise covered under an existing RMA, a ROW utility circulation is recommended for any proposed road modifications affecting utilities within the existing Right-of-way.

- Coordinate accordingly with any planned and/or ongoing utility projects and Capital projects affected by the proposed development. For more details, please visit the City of Ottawa website: *Planned Construction and Infrastructure Projects*.

- The proponent shall be responsible for requesting and coordinating any utility/infrastructure relocations/removals, as necessary

- The proponent shall obtain such permits/approvals as may be required from government and regulatory authorities.

Next Submission

- ☐ The next submission should address each of the comments, to ensure the effectiveness and consistency of the next review.
- ☐ A cover letter must be included that states how each comment was addressed in the resubmission. Please co-ordinate the numbering of each resubmission comment with the above noted comment number.
- ☐ Plans are to be standard A1 size (594 mm x 841 mm) or Arch D size (609.6 mm x 914.4 mm) sheets, utilizing an appropriate Metric scale (1:200, 1:250, 1:300, 1:400 or 1:500).
- ☐ All addenda or revisions to any studies or plans must be provided in PDF. All PDF documents are to be unlocked, flattened and not saved as a portfolio file.

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

Sincerely,

Sole Soyak

c.c. Kimberly Baldwin, Senior Planner
Ryan Brault, Infrastructure Project Manager
Abi Dieme, Infrastructure Project Manager
Mike Giampa, Transportation Project Manager
Nader Kadri, Urban Design Planner
Mark Richardson, Planning Forester

Appendix B

NOVATECH
Engineers, Planners & Landscape Architects

Development Servicing Study Checklist

Project Name: TRaditions II - Block 349
Project Number: 124097
Date: October 23, 2024

4.1 General Content	Addressed (Y/N/NA)	Section	Comments
Executive Summary (for larger reports only).	**NA**		
Date and revision number of the report.	Y	Cover	
Location map and plan showing municipal address, boundary, and layout of proposed development.	Y	Fig 1.1, 1.2, 1.3	
Plan showing the site and location of all existing services.	Y	GP	
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.	NA		
Summary of Pre-consultation Meetings with City and other approval agencies.	N		
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.	Y	2	
Statement of objectives and servicing criteria.	Y	1	
Identification of existing and proposed infrastructure available in the immediate area.	Y	4,5,6	
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).	NA		
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 neighboring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	Y	GR	

4.1 General Content	**Addressed (Y/N/NA)**	**Section**	**Comments**
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.	NA		
Proposed phasing of the development, if applicable.	NA		
Reference to geotechnical studies and recommendations concerning servicing.	Y	2.2	
All preliminary and formal site plan submissions should have the following information:			
Metric scale	NA		
North arrow (including construction North)	NA		
Key plan	NA		
Name and contact information of applicant and property owner	NA		
Property limits including bearings and dimensions	NA		
Existing and proposed structures and parking areas	NA		
Easements, road widening and rights-of-way	NA		
Adjacent street names	NA		

4.2 Water	**Addressed (Y/N/NA)**	**Section**	**Comments**
Confirm consistency with Master Servicing Study, if available.	NA		
Availability of public infrastructure to service proposed development.	Y	6	
Identification of system constraints.	Y	6	
Identify boundary conditions.	Y	6	
Confirmation of adequate domestic supply and pressure.	Y	6	
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.	Y	6	
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.	Y	6	
Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design.	NA		
Address reliability requirements such as appropriate location of shut-off valves.	Y	GP	
Check on the necessity of a pressure zone boundary modification.	NA		
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.	Y	6	
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.	Y	6, GP	
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.	NA		
Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Y	6	
Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	Y	App E	

4.3 Wastewater	**Addressed (Y/N/NA)**	**Section**	**Comments**
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).	Y	5	
Confirm consistency with Master Servicing Study and/or justifications for deviations.	NA		
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.	NA		
Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Y	5	
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)	Y	5	
Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	N		
Description of proposed sewer network including sewers, pumping stations, and forcemains.	Y	5	
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).	NA		
Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	NA		
Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	NA		
Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	NA		
Special considerations such as contamination, corrosive environment etc.	NA		

4.4 Stormwater	Addressed (Y/N/NA)	Section	Comments
Description of drainage outlets and downstream constraints including legality of outlet (i.e. municipal drain, right-of-way, watercourse, or private property).	Y	4	
Analysis of the available capacity in existing public infrastructure.	NA		
A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns and proposed drainage patterns.	Y	Fig 4.1, STM	
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.	Y	4	
Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Y	4	
Description of stormwater management concept with facility locations and descriptions with references and supporting information.	Y	4	
Set-back from private sewage disposal systems.	NA		
Watercourse and hazard lands setbacks.	NA		
Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	NA		
Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	NA		
Storage requirements (complete with calcs) and conveyance capacity for 5 yr and 100 yr events.	Y	4	
Identification of watercourse within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	Y	4	
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.	Y	4	
Any proposed diversion of drainage catchment areas from one outlet to another.	NA		
Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and SWM facilities.	Y	4	
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.	NA		

4.4 Stormwater	**Addressed (Y/N/NA)**	**Section**	**Comments**
Identification of municipal drains and related approval requirements.	NA		
Description of how the conveyance and storage capacity will be achieved for the development.	Y	4	
100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	Y	4	
Inclusion of hydraulic analysis including HGL elevations.	Y	4	
Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Y	8	
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.	Y	4	
Identification of fill constrains related to floodplain and geotechnical investigation.	NA		

4.5 Approval and Permit Requirements	Addressed (Y/N/NA)	Section	Comments
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.	Y	9	
Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	Y	9	
Changes to Municipal Drains.	NA		
Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	Y	9	

4.6 Conclusion	Addressed (Y/N/NA)	Section	Comments
Clearly stated conclusions and recommendations.	Y	10	
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.	NA		
All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario.	Y	11	

Appendix C

7.0 BLOCK 349, BLOCK 353 AND BELL LANDS (FL1) SERVICING POTENTIAL

Due to the location of high density residential lands that are upstream of Stage 1A, namely Block 349, Block 353 and the Bell Lands, the following sections will provide preliminary details for the servicing of the aforementioned blocks. Refer to **Figure 7.1** for illustration.

7.1 Block 349

Based on the current demonstration plan, the proposed development of Block 349 consists of 72 high density residential dwellings to be managed by a condominium corporation. Municipal servicing and utilities will be connected to the public infrastructure on Falabella Street.

The demand for this block has been accounted for in the downstream sewers and potable water hydraulic analysis. Similarly, public utilities have taken into account the development potential of this block. Block 349 has been assigned a release rate of 240 L/s/ha. It is estimated that this release rate can be achieved in the 100-year storm with on-site storage of approximately 100 m^3. This storage requirement could be achieved using the estimated available 130m^3 of surface storage in the parking lot areas.

As per Section 6.5.1, with regard to the water servicing constraints and proposed elevations of this Block, there is low pressures during peak hour conditions that do not meet the design criterial (<40 psi). As potential mitigation measures, it is proposed to install jet pumps at building services, where buildings are greater than two stories tall, to meet the design criteria. The jet pumps will be owned and maintained by the condominium corporation. Such mitigation measures, including the jet pumps, will be finalized within the servicing report in support of the Block 349's site plan application.

7.2 Block 353

The current demonstration plan proposes the development of Block 353 to consist of a 80 units, high density residential apartment building to be managed by a condominium corporation. Municipal servicing and utilities will be connected to the public infrastructure on Parade Drive.

The demand for this block has been accounted for in the downstream sewers and potable water hydraulic analysis. Similarly, public utilities have taken into account the development potential of this block. Block 353 has been assigned a release rate of 110 L/s/ha. It is estimated that this release rate can be achieved in the 100-year storm with on-site storage of approximately 210 m^3. This storage requirement could be achieved with a combination of underground storage using 80m of 1200mm diameter pipe (90m^3) and 120m^3 of surface storage in the parking lot areas.

As per Section 6.5.1, with regard to the water servicing constraints, proposed elevations and building configuration of this Block, there is low pressures during peak hour conditions that do not meet the design criterial (<40 psi). As potential mitigation measures, it is proposed to install a jet pump at the building mechanical room to meet the design criteria. Such measures will be owned and maintained by the condominium corporation. These details will be finalized within servicing reports in support of the Block 353's site plan application.

STORM SEWER DESIGN SHEET

Novatech Project #: 124097
Project Name: Traditions II - Block 349 Medium Density
Date: 10/18/2024
Revised: 1/23/2025
Input By: MNP
Reviewed By: ARM
Drawing Reference: 124097-GP and 124097-STM

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
Drive Aisle A	STM-1	STMMH 1	STMMH 2	0.13	0.73	0.26	0.26	10.00	76.81	20.3	19.4	450 CONC	0.4572	0.013	2.24	445.2	2.71	0.12	4.6%
Drive Aisle A	STM-2	STMMH 3	STMMH 2	0.48	0.74	0.99	1.25	10.12	76.35	95.5	51.8	450 CONC	0.4572	0.013	0.43	195.0	1.19	0.73	49.0%
Drive Aisle B	--	STMMH 2	STMMH 4	0.00	0.00	0.00	1.52	10.85	73.70	111.7	11.4	450 CONC	0.4572	0.013	1.48	361.8	2.20	0.09	30.9%
Drive Aisle B	--	STMMH 4	STMMH 5	0.00	0.00	0.00	1.52	10.93	73.40	111.2	40.8	450 CONC	0.4572	0.013	1.49	363.1	2.21	0.31	30.6%
Drive Aisle B	STM-3	STMMH 5	Existing Stub	0.20	0.79	0.44	1.95	10.00	76.81	150.1	5.9	600 CONC	0.6096	0.013	0.43	420.0	1.44	0.07	35.7%
Totals				**0.81**							**129.3**								

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

Table 1: Area STM-1, Post-Development Controlled Flow (Underground Storage #1)

Runoff Coefficient "C"

			2/5 Year Event		100 Year Event	
Area	Surface	Ha	"C"	C_{avg}	"C" + 25%	*C_{avg}
Total	Hard	0.094	0.90	0.73	1.00	0.81
0.125	Soft	0.031	0.20		0.25	
	Pond	0.000	0.00		0.00	

2 YEAR EVENT QUANTITY STORAGE REQUIREMENT - T-2

0.125 =Area (ha)
0.73 = 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	26.14	4.2	21.93	6.58
	30	**40.04**	**10.11**	**4.2**	**5.89**	**10.61**
	35	36.06	9.10	4.2	4.89	10.26
	40	32.86	8.30	4.2	4.08	9.79
	45	30.24	7.63	4.2	3.42	9.23

5 YEAR EVENT QUANTITY STORAGE REQUIREMENT

0.125 =Area (ha)
0.73 = 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	15	83.56	21.09	5.2	15.88	14.29
	20	70.25	17.73	5.2	12.52	15.02
	25	**60.90**	**15.37**	**5.2**	**10.16**	**15.23**
	30	53.93	13.61	5.2	8.40	15.11
	35	48.52	12.25	5.2	7.03	14.76

* Release rate for storage is based on 1/2 the allowable to account for falling head on the orifice control.

100 YEAR EVENT QUANTITY STORAGE REQUIREMENT

0.125 =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)
100 YEAR	25	103.85	29.37	7.5	21.87	32.81
	30	91.87	25.99	7.5	18.49	33.28
	35	**82.58**	**23.36**	**7.5**	**15.86**	**33.30**
	40	75.15	21.26	7.5	13.76	33.01
	45	69.05	19.53	7.5	12.03	32.49

* Release rate for storage is based on 1/2 the allowable to account for falling head on the orifice control.

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	72	mm			
Design Event	**Flow**	**Head**	**Elevation**	**Orifice Area (m^2)**	**Circ (mm)**
1:2 Year	8.4	0.56	122.14	0.004099	72
1:5 Year	10.4	0.86	122.44	0.004099	72
1:100 Year	15.0	1.75	123.33	0.004124	72

Outlet Invert	121.54

Table 2: Area STM-2, Post-Development Controlled Flow (Underground Storage #2)

Runoff Coefficient "C"

			2/5 Year Event		100 Year Event	
Area	Surface	Ha	"C"	C_{avg}	"C" + 25%	*C_{avg}
Total	Hard	0.376	0.90	0.74	1.00	0.83
0.484	Soft	0.108	0.20		0.25	
	Pond	0.000	0.00		0.00	

2 YEAR EVENT QUANTITY STORAGE REQUIREMENT - T-2

0.484 =Area (ha)
0.74 = 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	167.36	32.6	134.72	0.00
	5	103.57	103.65	32.6	71.01	21.30
	10	**76.81**	**76.87**	**32.6**	**44.23**	**26.54**
	15	61.77	61.82	32.6	29.18	26.26
	20	52.03	52.07	32.6	19.43	23.32

5 YEAR EVENT QUANTITY STORAGE REQUIREMENT

0.484 =Area (ha)
0.74 = 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	141.29	41.1	100.23	30.07
	10	104.19	104.28	41.1	63.22	37.93
	15	**83.56**	**83.62**	**41.1**	**42.56**	**38.31**
	20	70.25	70.31	41.1	29.25	35.10
	25	60.90	60.94	41.1	19.89	29.83

* Release rate for storage is based on 1/2 the allowable to account for falling head on the orifice control.

100 YEAR EVENT QUANTITY STORAGE REQUIREMENT

0.484 =Area (ha)
0.83 = 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	271.91	60.0	211.91	63.57
	10	178.56	200.05	60.0	140.05	84.03
	15	**142.89**	**160.09**	**60.0**	**100.09**	**90.08**
	20	119.95	134.39	60.0	74.39	89.26
	25	103.85	116.34	60.0	56.34	84.52

* Release rate for storage is based on 1/2 the allowable to account for falling head on the orifice control.

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 204 mm

Design Event	Flow	Head	Elevation	Orifice Area (m^2)	Circ (mm)
1:2 Year	65.3	0.52	121.38	0.032807	204
1:5 Year	82.1	0.84	121.69	0.032665	204
1:100 Year	120.0	1.78	122.63	0.032770	204

Outlet Invert	120.75

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 3: Area STM-3, Post-Development Controlled Flow (Underground Storage #3)

Runoff Coefficient "C"

			2/5 Year Event		100 Year Event	
Area	Surface	Ha	"C"	C_{avg}	"C" + 25%	*C_{avg}
Total	Hard	0.169	0.90	0.79	1.00	0.88
0.200	Soft	0.031	0.20		0.25	
	Pond	0.000	0.00		0.00	

2 YEAR EVENT QUANTITY STORAGE REQUIREMENT - T-2

0.200 =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	20	52.03	22.90	5.7	17.16	20.59
	25	45.17	19.88	5.7	14.14	21.21
	30	**40.04**	**17.62**	**5.7**	**11.89**	**21.40**
	35	36.06	15.87	5.7	10.13	21.28
	40	32.86	14.46	5.7	8.73	20.94

5 YEAR EVENT QUANTITY STORAGE REQUIREMENT

0.200 =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	20	70.25	30.92	7.0	23.89	28.67
	25	60.90	26.80	7.0	19.77	29.66
	30	**53.93**	**23.73**	**7.0**	**16.70**	**30.07**
	35	48.52	21.35	7.0	14.32	30.08
	40	44.18	19.44	7.0	12.42	29.80

* Release rate for storage is based on 1/2 the allowable to account for falling head on the orifice control.

100 YEAR EVENT QUANTITY STORAGE REQUIREMENT

0.200 =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	30	91.87	45.14	10.0	35.14	63.25
	35	82.58	40.58	10.0	30.58	64.21
	40	**75.15**	**36.92**	**10.0**	**26.92**	**64.62**
	45	69.05	33.93	10.0	23.93	64.61
	50	63.95	31.42	10.0	21.42	64.27

* Release rate for storage is based on 1/2 the allowable to account for falling head on the orifice control.

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	84	mm

Design Event	Flow	Head	Elevation	Orifice Area (m^2)	Circ (mm)
1:2 Year	11.5	0.55	120.49	0.005607	84
1:5 Year	14.1	0.85	120.79	0.005541	84
1:100 Year	20.0	1.75	121.68	0.005508	84

Outlet Invert	119.89

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

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

Runoff Coefficient "C"

Area	Surface	Ha	"C"	C_{avg}	*C_{100}
Total	Hard	0.070	0.90	0.69	0.78
0.100	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)
Stittsville Main Street	0.100	0.69	10	**14.7**	**20.0**	**38.5**

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

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

Runoff Coefficient "C"

Area	Surface	Ha	"C"	C_{avg}	*C_{100}
Total	Hard	0.050	0.90	0.70	0.79
0.070	Soft	0.020	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)
Campolina Way	0.070	0.70	10	**10.5**	**14.2**	**27.3**

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

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

Runoff Coefficient "C"

Area	Surface	Ha	"C"	C_{avg}	*C_{100}
Total	Hard	0.020	0.90	0.90	1.00
0.020	Soft	0.000	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)
Falabella Street	0.020	0.90	10	**3.8**	**5.2**	**9.9**

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

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

Runoff Coefficient "C"

Area	Surface	Ha	"C"	C_{avg}	*C_{100}
Total	Hard	0.020	0.90	0.67	0.75
0.030	Soft	0.010	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	0.030	0.67	10	**4.3**	**5.8**	**11.2**

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: Post-Development Stormwater Management Summary

Area ID	Area (ha)	1:2 & 1:5 Year Weighted Cw	1:100 Year Weighted Cw	5 Year Storm Event				100 Year Storm Event			
				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	0.125	0.73	0.81	10.4	0.00	15.23	6.30	15.0	0.00	33.30	12.60
2	0.484	0.83	0.83	82.1	0.00	38.31	N/A	120.0	0.00	90.08	N/A
3	0.200	0.79	0.88	14.1	0.00	30.07	N/A	20.0	0.00	64.62	N/A
4	0.100	0.69	0.78	20.0	0.00	N/A	N/A	38.5	0.00	N/A	N/A
5	0.070	0.70	0.79	14.2	0.00	29.80	N/A	27.3	0.00	N/A	N/A
6	0.020	0.90	1.00	5.2	0.00	0.00	N/A	9.9	0.00	N/A	N/A
7	0.030	0.67	0.75	5.8	0.00	0.00	N/A	11.2	0.00	N/A	N/A
Total				**151.8**				**241.9**		**188.0**	
Allowable*				**197.0**				**249 (1)**			

(1) Allowable release rate based on allocated release rate of 240 L/s/ha, indicated in The Detailed Servicing and Stormwater Management Report for the Sittsville South Development (Novatech, 2016)

Appendix D

SANITARY SEWER DESIGN SHEET

NOVATECH
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Novatech Project #: 124097
Project Name: Traditions II - Block 349 Medium Density
Date: 10/18/2024
Input By: MNP
Reviewed By: ARM
Drawing Reference: 124097-GP

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										Proposed Sewer Pipe Sizing / Design							
Street	Blocks	From MH	To MH	Singles	Semis / Towns	Apts	Park Area	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.)	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
Drive Aisle C	A1	SANMH 5	SANMH 4		12			0.032	0.032	0.11	3.68	0.39	0.165	0.165	26.2	200 PVC	0.203	0.013	1.82	46.2	1.42	1.0%
Drive Aisle A	A5	SANMH 4	SANMH 3		24			0.065	0.097	0.32	3.60	1.13	0.159	0.159	51.8	200 PVC	0.203	0.013	0.43	22.4	0.69	5.3%
Drive Aisle A	A6	SANMH 1	SANMH 2		12			0.032	0.032	0.11	3.68	0.39	0.115	0.274	24.2	200 PVC	0.203	0.013	1.81	46.0	1.42	1.0%
Drive Aisle A	A7	SANMH 2	SANMH 3		12			0.032	0.065	0.21	3.63	0.76	0.088	0.362	19.0	200 PVC	0.203	0.013	2.02	48.6	1.50	1.8%
Drive Aisle B	A8	SANMH 3	SANMH 6		6			0.016	0.178	0.58	3.53	2.04	0.019	0.381	13.0	200 PVC	0.203	0.013	0.66	27.8	0.86	7.8%
Drive Aisle B	A9	SANMH 6	SANMH 7		18			0.049	0.227	0.74	3.50	2.57	0.171	0.717	47.2	200 PVC	0.203	0.013	1.24	38.1	1.17	7.4%
Totals				**0**	**84**	**0**	**0.000**	**0.227**	**0.227**	**0.74**	**3.50**	**2.57**	**0.717**	**0.717**	**181.4**							

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	(design)	
	200	L/per person/day	(annual and rare)	
4. M = Harmon Formula (maximum of 4.0)				
5. K =	0.8		(design)	
	0.6		(annual and rare)	
6. Park flow is considered equivalent to a single unit / ha				
Park Demand =	4	single unit equivalent / park ha (~ 3,600 L/ha/day)		
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	(design)	
	0.30	L/s/ha	(annual)	
	0.55	L/s/ha	(rare)	

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)

Institutional / Commercial / Industrial	**Industrial**	**Commercial / Institutional**	
Design =	35000	28000	L/gross ha/day
Annual / Rare =	10000	17000	L/gross ha/day
ICI Peak *			
Design =	1.0	1.5	* ICI Peak = 1.0 Default, 1.5 if ICI in contributing area is >20% (design only)
Annual / Rare =		1.0	

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

Excerpt from Detailed Servicing and Stormwater Management Report - Stittsville South Subdivision, dated July 18, 2016

STITTSVILLE SOUTH - AREA 6
SANITARY SEWER DESIGN SHEET

JOB# 113004

NOVATECH
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LOCATION			FLOW																PROPOSED SEWER						
FROM MH	TO MH	STREET	RESIDENTIAL UNITS				PARK	COMMERCIAL	INDIVIDUAL		CUMULATIVE				PEAK FACTOR (M)	POPUL. FLOW	PEAK PARK FLOW	PEAK COMMERCIAL FLOW	PEAK EXTRAN. FLOW	PEAK DESIGN FLOW	LENGTH (m)	PIPE SIZE (mm)	TYPE	SLOPE %	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	RATIO (Q/Qfull)
			SINGLES	SEMIS/ TOWNS	STACKS	APT.	PARK AREA (ha.)	COMMERCIAL AREA (ha.)	POPUL. (1000's)	AREA (ha.)	POPUL. (1000's)	PARK AREA (ha)	COMMERCIAL AREA (ha)	RESIDENTIAL AREA (ha.)		Q(p) L/s	Q(pk) L/s	Q(c) L/s	Q(e) (L/s)	Q(d) (L/s)							
221	219	PARADE			70				0.161	1.023	0.161	0.00	0.00	1.023	4.000	2.609	0.00	0.00	0.287	2.895	35.3	200	PVC	1.15	36.693	1.13	8%
219	217	PARADE	4	9					0.038	0.596	0.199	0.00	0.00	1.620	4.000	3.223	0.00	0.00	0.454	3.676	75.7	200	PVC	1.85	46.540	1.44	8%
217	215	PARADE		5					0.014	0.293	0.212	0.00	0.00	1.913	4.000	3.442	0.00	0.00	0.536	3.977	83.3	200	PVC	2.20	50.751	1.56	8%
267	215	HARSTMERE		12		100			0.242	1.027	0.242	0.00	0.00	1.027	4.000	3.928	0.00	0.00	0.288	4.215	84.3	200	PVC	0.40	21.640	0.67	19%
215	213	PARADE	2						0.007	0.190	0.462	0.00	0.00	3.131	3.992	7.464	0.00	0.00	0.877	8.341	54.0	200	PVC	1.85	46.540	1.44	18%
213	211	PARADE	7						0.024	0.412	0.485	0.00	0.00	3.543	3.981	7.828	0.00	0.00	0.992	8.820	69.0	200	PVC	1.85	46.540	1.44	19%
211	209	PARADE	6				1.33		0.020	1.694	0.506	1.33	0.00	5.238	3.972	8.138	0.06	0.00	1.467	9.665	75.0	200	PVC	1.55	42.599	1.31	23%
257	255	CAPMOLINA	9						0.031	0.893	0.031	0.00	0.00	0.893	4.000	0.496	0.00	0.00	0.250	0.746	120.0	200	PVC	1.50	41.907	1.29	2%
265	255	FALABELLA	5		82				0.206	1.531	0.206	0.00	0.00	1.531	4.000	3.331	0.00	0.00	0.429	3.760	77.4	200	PVC	0.50	24.195	0.75	16%
255	253	CAPMOLINA	7						0.024	0.557	0.260	0.00	0.00	2.982	4.000	4.213	0.00	0.00	0.835	5.048	84.0	200	PVC	0.55	25.376	0.78	20%
263	253	QUARTER HORSE	13						0.044	0.761	0.044	0.00	0.00	0.761	4.000	0.716	0.00	0.00	0.213	0.929	119.4	200	PVC	0.40	21.640	0.67	4%
253	251	CAPMOLINA	5						0.017	0.425	0.321	0.00	0.00	4.169	4.000	5.205	0.00	0.00	1.167	6.372	81.9	200	PVC	1.60	43.281	1.33	15%
261	251	LIPIZZANER		31					0.084	0.940	0.084	0.00	0.00	0.940	4.000	1.356	0.00	0.00	0.263	1.620	117.2	200	PVC	0.60	26.504	0.82	6%
251	249	CAPMOLINA	7						0.024	0.573	0.429	0.00	0.00	5.683	4.000	6.947	0.00	0.00	1.591	8.538	90.3	200	PVC	1.35	39.756	1.23	21%
249	247	CAPMOLINA	7						0.024	0.616	0.453	0.00	0.00	6.299	3.996	7.325	0.00	0.00	1.764	9.089	98.3	200	PVC	1.35	39.756	1.23	23%
247	245	CAPMOLINA	1						0.003	0.148	0.456	0.00	0.00	6.448	3.995	7.377	0.00	0.00	1.805	9.182	10.9	200	PVC	1.35	39.756	1.23	23%
245	243	CAPMOLINA	11						0.037	0.632	0.493	0.00	0.00	7.080	3.977	7.948	0.00	0.00	1.982	9.930	71.4	200	PVC	0.60	26.504	0.82	37%
243	209	CAPMOLINA	8						0.027	0.432	0.521	0.00	0.00	7.512	3.965	8.361	0.00	0.00	2.103	10.464	55.9	200	PVC	0.60	26.504	0.82	39%
209	207	PARADE	7						0.024	0.411	1.050	1.33	0.00	13.162	3.786	16.106	0.06	0.00	3.685	19.850	82.0	250	PVC	0.85	57.197	1.13	35%
207	205	PARADE	7	9					0.048	0.622	1.098	1.33	0.00	13.784	3.773	16.787	0.06	0.00	3.860	20.704	82.0	250	PVC	0.85	57.197	1.13	36%
241	205	PEDIGREE	14						0.048	0.776	0.048	0.00	0.00	0.776	4.000	0.771	0.00	0.00	0.217	0.989	119.0	200	PVC	0.35	20.243	0.62	5%
205	203	PARADE	7	9					0.048	0.609	1.194	1.33	0.00	15.170	3.749	18.132	0.06	0.00	4.248	22.437	82.0	250	PVC	0.60	48.055	0.95	47%
239A	239B	MANEGE	16						0.054	0.865	0.054	0.00	0.00	0.865	4.000	0.881	0.00	0.00	0.242	1.124	107.7	200	PVC	0.40	21.640	0.67	5%
239B	203	MANEGE							0.000	0.000	0.054	0.00	0.00	0.865	4.000	0.881	0.00	0.00	0.242	1.124	11.1	200	PVC	0.40	21.640	0.67	5%
203	201	PARADE	7						0.024	0.417	1.272	1.33	0.00	16.453	3.730	19.222	0.06	0.00	4.607	23.886	82.0	250	PVC	0.60	48.055	0.95	50%
237	235	STALLION	1	28					0.079	0.893	0.079	0.00	0.00	0.893	4.000	1.280	0.00	0.00	0.250	1.530	112.8	200	PVC	0.50	24.195	0.75	6%
235	233	STALLION	2						0.007	0.256	0.086	0.00	0.00	1.150	4.000	1.390	0.00	0.00	0.322	1.712	11.0	200	PVC	0.50	24.195	0.75	7%
233	231	STALLION	5						0.017	0.431	0.103	0.00	0.00	1.581	4.000	1.666	0.00	0.00	0.443	2.108	74.2	200	PVC	0.50	24.195	0.75	9%
231	229	STALLION	4						0.014	0.499	0.116	0.00	0.00	2.081	4.000	1.886	0.00	0.00	0.583	2.469	82.0	200	PVC	0.50	24.195	0.75	10%
229	227	STALLION	4						0.014	0.483	0.130	0.00	0.00	2.564	4.000	2.106	0.00	0.00	0.718	2.824	74.7	200	PVC	0.50	24.195	0.75	12%
227	225	STALLION	2						0.007	0.230	0.137	0.00	0.00	2.794	4.000	2.217	0.00	0.00	0.782	2.999	10.9	200	PVC	0.50	24.195	0.75	12%
225	223	STALLION	11						0.037	0.541	0.174	0.00	0.00	3.336	4.000	2.823	0.00	0.00	0.934	3.757	113.2	200	PVC	0.50	24.195	0.75	16%
223	201	STALLION	8						0.027	0.418	0.201	0.00	0.00	3.754	4.000	3.263	0.00	0.00	1.051	4.315	11.1	200	PVC	0.50	24.195	0.75	18%
201	159	PARADE	6						0.020	0.410	1.494	1.33	0.00	20.62	3.681	22.275	0.06	0.00	5.773	28.105	82.0	300	PVC	0.50	71.334	0.98	39%
157	155	BECKETT	11						0.037	0.530	0.037	0.00	0.00	0.530	4.000	0.606	0.00	0.00	0.148	0.754	112.7	200	PVC	0.40	21.640	0.67	3%
155	159	BECKETT	6						0.020	0.330	0.058	0.00	0.00	0.860	4.000	0.937	0.00	0.00	0.241	1.177	12.0	200	PVC	0.70	28.628	0.88	4%
159	145	PARADE	13						0.044	0.631	1.596	1.33	0.00	22.108	3.660	23.661	0.06	0.00	6.190	29.908	82.0	300	PVC	0.50	71.334	0.98	42%
157	153	BECKETT	2						0.007	0.244	0.007	0.00	0.00	0.244	4.000	0.110	0.00	0.00	0.068	0.179	10.9	200	PVC	0.30	18.741	0.58	1%
153	151	BECKETT	6						0.020	0.561	0.027	0.00	0.00	0.805	4.000	0.441	0.00	0.00	0.226	0.666	66.8	200	PVC	0.30	18.741	0.58	4%
151	149	BECKETT	1						0.003	0.114	0.031	0.00	0.00	0.920	4.000	0.496	0.00	0.00	0.258	0.753	11.1	200	PVC	0.50	24.195	0.75	3%
149	147	BECKETT		14					0.038	0.445	0.068	0.00	0.00	1.365	4.000	1.108	0.00	0.00	0.382	1.491	112.3	200	PVC	0.50	24.195	0.75	6%
147	145	BECKETT		9					0.024	0.393	0.093	0.00	0.00	1.759	4.000	1.502	0.00	0.00	0.492	1.994	11.9	200	PVC	0.85	31.546	0.97	6%
145	143	PARADE	9						0.031	0.589	1.719	1.33	0.00	24.456	3.636	25.322	0.06	0.00	6.848	32.226	74.3	300	PVC	0.50	71.334	0.98	45%
143	141	PARADE	3						0.010	0.262	1.729	1.33	0.00	24.719	3.634	25.459	0.06	0.00	6.921	32.436	13.9	300	PVC	0.50	71.334	0.98	45%
141	139	PARADE	6						0.020	0.359	1.750	1.33	0.00	25.078	3.630	25.732	0.06	0.00	7.022	32.810	61.2	300	PVC	0.50	71.334	0.98	46%
139	137	PARADE	12						0.041	0.569	1.791	1.33	0.00	25.647	3.623	26.277	0.06	0.00	7.181	33.514	60.8	300	PVC	0.50	71.334	0.98	47%
137	135	PARADE	2						0.007	0.222	1.797	1.33	0.00	25.870	3.621	26.368	0.06	0.00	7.244	33.667	12.3	300	PVC	0.50	71.334	0.98	47%
135	133	PARADE	5						0.017	0.404	1.814	1.33	0.00	26.274	3.618	26.594	0.06	0.00	7.357	34.007	74.3	300	PVC	0.50	71.334	0.98	48%

Appendix E

Boundary Conditions
1883 Stittsville Main Street

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	44	0.74
Maximum Daily Demand	110	1.84
Peak Hour	242	4.04
Fire Flow Demand #1	5,700	95.00
Fire Flow Demand #2	10,002	166.70
Fire Flow Demand #3	12,000	200.00
Fire Flow Demand #4	14,000	233.33

Location

Results

Connection 1 – Falabella St. (North)

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	160.7	53.8
Peak Hour	155.0	45.7
Max Day plus Fire Flow #1	152.6	42.3
Max Day plus Fire Flow #2	145.7	32.4
Max Day plus Fire Flow #3	141.6	26.6
Max Day plus Fire Flow #4	136.9	20.0 (19.97)

[1] Ground Elevation = 122.9 m

Connection 2 – Falabella St. (South)

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	160.7	56.9
Peak Hour	155.0	48.8
Max Day plus Fire Flow #1	152.5	45.2
Max Day plus Fire Flow #2	145.3	35.0
Max Day plus Fire Flow #3	141.0	28.9
Max Day plus Fire Flow #4	136.2	22.1

[1] Ground Elevation = 120.7 m

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

Engineers, Planners & Landscape Architects

Novatech Project #: 124097
Project Name: Traditions II - Block 349 Medium Density
Date: 10/17/2024
Input By: MNP
Reviewed By: ARM
Drawing Reference: 124097-GP

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

Building Description: Block 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)	478			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**1,434**	
	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	Yes	-25%	-25%	**9,000**
		Limited combustible		-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%	**2,700**
		East Side	20.1 - 30 m		10%	
		South Side	>30m		0%	
		West Side	>30m		0%	
				Cumulative Total	**30%**	
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

Engineers, Planners & Landscape Architects

Novatech Project #: 124097
Project Name: Traditions II - Block 349 Medium Density
Date: 10/17/2024
Input By: MNP
Reviewed By: ARM
Drawing Reference: 124097-GP

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

Building Description: Block 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)	478			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**1,434**	
	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	Yes	-25%	-25%	**9,000**
		Limited combustible		-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 6**		**Surcharge**	
	(3)	North Side	3.1 - 10 m		17%	**4,230**
		East Side	10.1 - 20 m		13%	
		South Side	3.1 - 10 m		17%	
		West Side	>30m		0%	
				Cumulative Total	**47%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**13,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**217**
				or	USGPM	3,435

FUS - Fire Flow Calculations
Block 2

NOVATECH
Engineers, Planners & Landscape Architects

Table 6 Worksheet

To be used only if adjacent *Exposed Building* construction is known

Source of Information: 124097-GP

Legend: Input by User
No Input Required

Exposed Building North	
Description/Address	Block 3
Height (storeys*)	3
Construction Type	Type V - Wood frame
Protected Openings	No
Length-Height Factor	48
Automatic Sprinklers	No
Exposure Surcharge Adjustment	17%

Calculated Exposure Charges	
	Table 6
North Side	17%
East Side	13%
South Side	17%
West Side	0%
Total	**47%**

Exposed Building West	
Description/Address	Existing House Opposite Stittsville Main Street
Height (storeys*)	2
Construction Type	Type V - Wood frame
Protected Openings	No
Length-Height Factor	20
Automatic Sprinklers	No
Exposure Surcharge Adjustment	0%

Length (m) 10
Distance (m) 55

Length (m) 16
Distance (m) 4.6

Subject Building (Block 2)

Length (m) 25
Distance (m) 25

Exposed Building East	
Description/Address	Block 6
Height (storeys*)	3
Construction Type	Type V - Wood frame
Protected Openings	No
Length-Height Factor	75
Automatic Sprinklers	No
Exposure Surcharge Adjustment	13%

Length (m) 16
Distance (m) 4.6

Exposed Building South	
Description/Address	Block 1
Height (storeys*)	3
Construction Type	Type V - Wood frame
Protected Openings	No
Length-Height Factor	48
Automatic Sprinklers	No
Exposure Surcharge Adjustment	17%

* Storey assumption is based on 4m or fraction thereoff.
Adjust number of stories for non-standard storey heights
(i.e. 10m single storey warehouse)

FUS - Fire Flow Calculations

Engineers, Planners & Landscape Architects

Novatech Project #: 124097
Project Name: Traditions II - Block 349 Medium Density
Date: 10/17/2024
Input By: MNP
Reviewed By: ARM
Drawing Reference: 124097-GP

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

Building Description: Block 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)	478			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**1,434**	
	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	Yes	-25%	-25%	**9,000**
		Limited combustible		-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 6**		**Surcharge**	
	(3)	North Side	20.1 - 30 m		8%	**2,970**
		East Side	20.1 - 30 m		8%	
		South Side	3.1 - 10 m		17%	
		West Side	>30m		0%	
				Cumulative Total	**33%**	
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
Block 3

NOVATECH
Engineers, Planners & Landscape Architects

Table 6 Worksheet

To be used only if adjacent *Exposed Building* construction is known

Source of Information: 124097-GP

Legend: Input by User
No Input Required

Exposed Building North	
Description/Address	Block 4
Height (storeys*)	3
Construction Type	Type V - Wood frame
Protected Openings	No
Length-Height Factor	81
Automatic Sprinklers	No
Exposure Surcharge Adjustment	8%

Calculated Exposure Charges	
	Table 6
North Side	8%
East Side	8%
South Side	17%
West Side	0%
Total	**33%**

Exposed Building West	
Description/Address	Existing House Opposite Stittsville Main Street
Height (storeys*)	2
Construction Type	Type V - Wood frame
Protected Openings	No
Length-Height Factor	20
Automatic Sprinklers	No
Exposure Surcharge Adjustment	0%

Length (m) 10
Distance (m) 55

Length (m) 27
Distance (m) 22

Subject Building (Block 3)

Length (m) 27
Distance (m) 23

Distance (m) 4.6
Length (m) 16

Exposed Building East	
Description/Address	Block 5
Height (storeys*)	3
Construction Type	Type V - Wood frame
Protected Openings	No
Length-Height Factor	81
Automatic Sprinklers	No
Exposure Surcharge Adjustment	8%

Exposed Building South	
Description/Address	Block 2
Height (storeys*)	3
Construction Type	Type V - Wood frame
Protected Openings	No
Length-Height Factor	48
Automatic Sprinklers	No
Exposure Surcharge Adjustment	17%

* Storey assumption is based on 4m or fraction thereoff.
Adjust number of stories for non-standard storey heights
(i.e. 10m single storey warehouse)

FUS - Fire Flow Calculations

Engineers, Planners & Landscape Architects

Novatech Project #: 124097
Project Name: Traditions II - Block 349 Medium Density
Date: 10/17/2024
Input By: MNP
Reviewed By: ARM
Drawing Reference: 124097-GP

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

Building Description: Block 4 - 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)	478			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**1,434**	
	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	Yes	-25%	-25%	**9,000**
		Limited combustible		-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%	**2,700**
		East Side	20.1 - 30 m		10%	
		South Side	3.1 - 10 m		20%	
		West Side	>30m		0%	
				Cumulative Total	**30%**	
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

Engineers, Planners & Landscape Architects

Novatech Project #: 124097
Project Name: Traditions II - Block 349 Medium Density
Date: 10/17/2024
Input By: MNP
Reviewed By: ARM
Drawing Reference: 124097-GP

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

Building Description: Block 5 - 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)	478			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**1,434**	
	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	Yes	-25%	-25%	**9,000**
		Limited combustible		-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%	**2,700**
		East Side	20.1 - 30 m		10%	
		South Side	20.1 - 30 m		10%	
		West Side	20.1 - 30 m		10%	
				Cumulative Total	**30%**	
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 #: 124097
Project Name: Traditions II - Block 349 Medium Density
Date: 10/17/2024
Input By: MNP
Reviewed By: ARM
Drawing Reference: 124097-GP

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

Building Description: Block 6 - 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)	478			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**1,434**	
	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	Yes	-25%	-25%	**9,000**
		Limited combustible		-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 6**		**Surcharge**	
	(3)	North Side	20.1 - 30 m		8%	**2,790**
		East Side	3.1 - 10 m		17%	
		South Side	20.1 - 30 m		2%	
		West Side	20.1 - 30 m		4%	
				Cumulative Total	**31%**	
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
Block 6

NOVATECH
Engineers, Planners & Landscape Architects

Table 6 Worksheet

To be used only if adjacent *Exposed Building* construction is known

Source of Information: 12097-GP

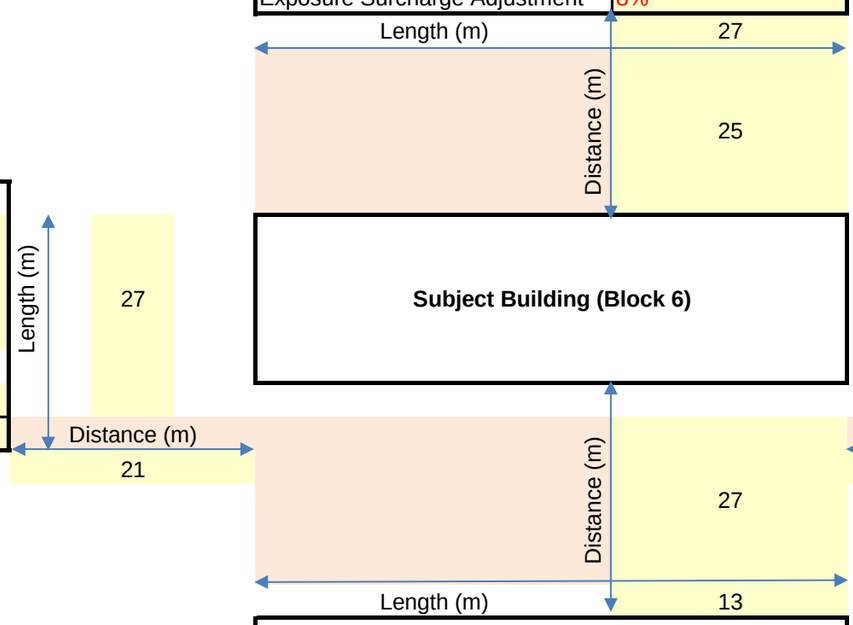
Legend: Input by User
No Input Required

Exposed Building North	
Description/Address	Block 5
Height (storeys*)	3
Construction Type	Type V - Wood frame
Protected Openings	No
Length-Height Factor	81
Automatic Sprinklers	No
Exposure Surcharge Adjustment	8%

Exposed Building West	
Description/Address	Block 2
Height (storeys*)	2
Construction Type	Type V - Wood frame
Protected Openings	No
Length-Height Factor	54
Automatic Sprinklers	No
Exposure Surcharge Adjustment	4%

Exposed Building East	
Description/Address	Block 7
Height (storeys*)	3
Construction Type	Type V - Wood frame
Protected Openings	No
Length-Height Factor	48
Automatic Sprinklers	No
Exposure Surcharge Adjustment	17%

Exposed Building South	
Description/Address	Existing House Opposite Campolina Way
Height (storeys*)	2
Construction Type	Type V - Wood frame
Protected Openings	No
Length-Height Factor	26
Automatic Sprinklers	No
Exposure Surcharge Adjustment	2%



Calculated Exposure Charges	
	Table 6
North Side	8%
East Side	17%
South Side	2%
West Side	4%
Total	**31%**

* Storey assumption is based on 4m or fraction thereoff.
Adjust number of stories for non-standard storey heights
(i.e. 10m single storey warehouse)

FUS - Fire Flow Calculations

Engineers, Planners & Landscape Architects

Novatech Project #: 124097
Project Name: Traditions II - Block 349 Medium Density
Date: 10/17/2024
Input By: MNP
Reviewed By: ARM
Drawing Reference: 124097-GP

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

Building Description: Block 7 - 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)	478			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**1,434**	
	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	Yes	-25%	-25%	**9,000**
		Limited combustible		-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 6**		**Surcharge**	
	(3)	North Side	20.1 - 30 m		4%	**2,160**
		East Side	20.1 - 30 m		2%	
		South Side	20.1 - 30 m		2%	
		West Side	3.1 - 10 m		16%	
				Cumulative Total	**24%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**11,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**183**
				or	USGPM	2,906

FUS - Fire Flow Calculations
Block 7

NOVATECH
Engineers, Planners & Landscape Architects

Table 6 Worksheet

To be used only if adjacent *Exposed Building* construction is known

Source of Information: 124097-GP

Legend: Input by User
No Input Required

Exposed Building North	
Description/Address	Block 5
Height (storeys*)	3
Construction Type	Type V - Wood frame
Protected Openings	No
Length-Height Factor	48
Automatic Sprinklers	No
Exposure Surcharge Adjustment	4%

Calculated Exposure Charges	
	Table 6
North Side	4%
East Side	2%
South Side	2%
West Side	16%
Total	**24%**

Exposed Building West	
Description/Address	Block 6
Height (storeys*)	2
Construction Type	Type V - Wood frame
Protected Openings	No
Length-Height Factor	32
Automatic Sprinklers	No
Exposure Surcharge Adjustment	16%

Length (m) 16
Distance (m) 4.6

Distance (m) 26
Length (m) 16

Subject Building (Block 7)

Length (m) 13
Distance (m) 26

Distance (m) 26
Length (m) 13

Exposed Building East	
Description/Address	Existing House Opposite Falabella Street
Height (storeys*)	2
Construction Type	Type V - Wood frame
Protected Openings	No
Length-Height Factor	26
Automatic Sprinklers	No
Exposure Surcharge Adjustment	2%

Exposed Building South	
Description/Address	Existing House Opposite Campolina Way
Height (storeys*)	2
Construction Type	Type V - Wood frame
Protected Openings	No
Length-Height Factor	26
Automatic Sprinklers	No
Exposure Surcharge Adjustment	2%

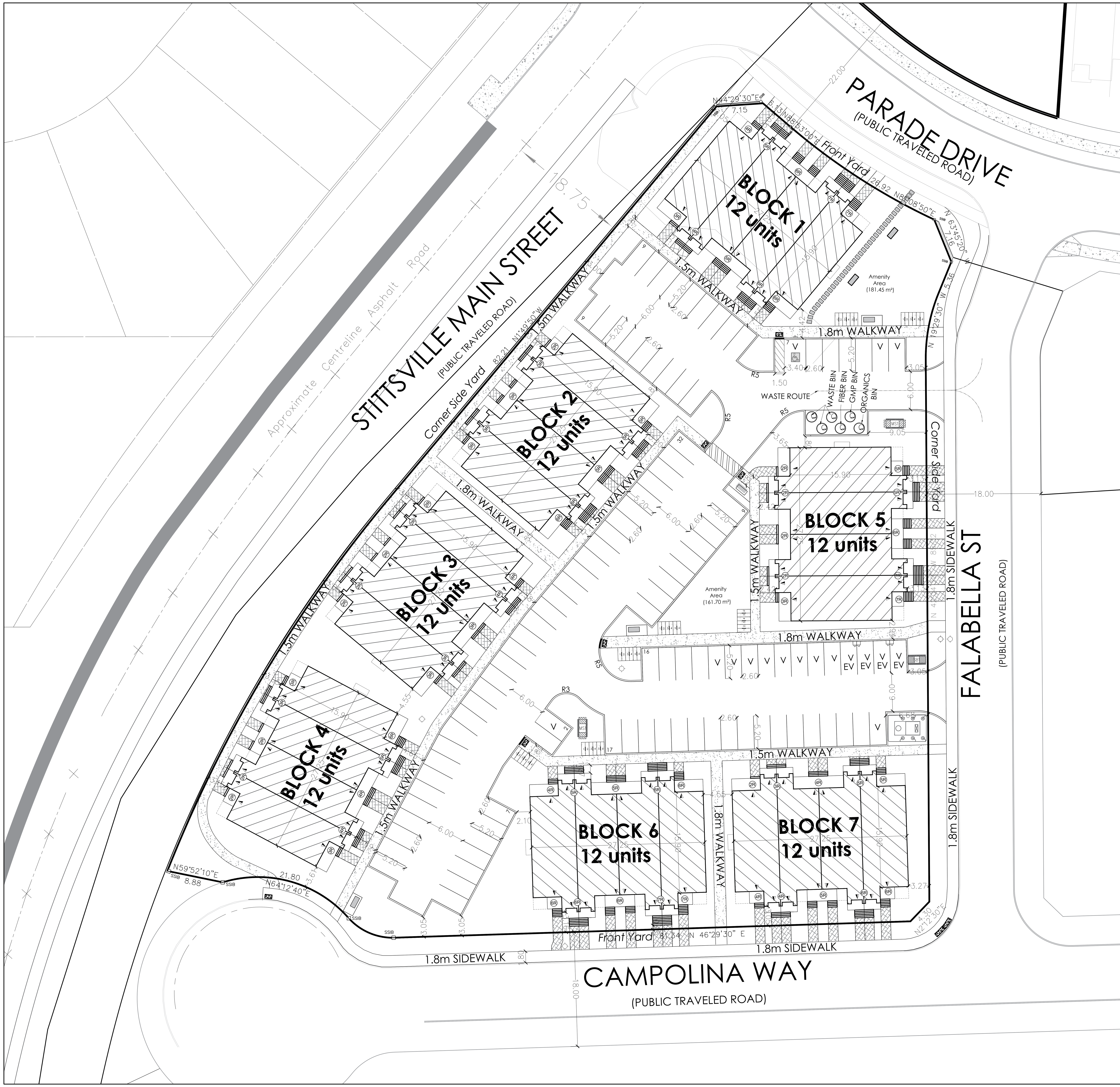
* Storey assumption is based on 4m or fraction thereoff.
Adjust number of stories for non-standard storey heights
(i.e. 10m single storey warehouse)

FUS - Fire Flow Calculations
Table 6 Adjustments

NOVATECH
Engineers, Planners & Landscape Architects

FUS Table 6 Exposure Charges Adjustment						
Separation	Length-Height Ratio	Type V	Unprotected		Protected Openings	
	Unitless		Type III-IV	Type I-II	Type III-IV	Type I-II
0 - 3 m	0-20	20%	15%	10%	5%	0%
	21-40	21%	16%	11%	6%	1%
	41-60	22%	17%	12%	7%	2%
	61-80	23%	18%	13%	8%	3%
	81-100	24%	19%	14%	9%	4%
	>100	25%	20%	15%	10%	5%
3.1 - 10 m	0-20	15%	10%	6%	3%	0%
	21-40	16%	11%	7%	4%	0%
	41-60	17%	12%	8%	5%	1%
	61-80	18%	13%	9%	6%	2%
	81-100	19%	14%	10%	7%	3%
	>100	20%	15%	11%	8%	4%
10.1 - 20 m	0-20	10%	5%	3%	0%	0%
	21-40	11%	6%	4%	1%	0%
	41-60	12%	7%	5%	2%	0%
	61-80	13%	8%	6%	3%	1%
	81-100	14%	9%	7%	4%	2%
	>100	15%	10%	8%	5%	3%
20.1 - 30 m	0-20	0%	0%	0%	0%	0%
	21-40	2%	1%	0%	0%	0%
	41-60	4%	2%	1%	0%	0%
	61-80	6%	3%	2%	1%	0%
	81-100	8%	4%	3%	2%	0%
	>100	10%	5%	4%	3%	0%
>30m	all sizes	0%	0%	0%	0%	0%

Appendix F



SITE STATISTICS AND DEVELOPMENT DATA

SITE AREA	10,476m² (1.05 ha)
PAVED AREA	2,924.58m² (28%)
LANDSCAPED AREA	3,550.80m² (34%)
TOTAL BUILDING COVERAGE	4,000.84m² (38%)
TOTAL APPROXIMATE GROSS FLOOR AREA	9,751.49m² (0.97 ha)
TOTAL UNITS	84
DENSITY (UPH)	80 UPH
ZONE CATEGORY	R4(Z) (RESIDENTIAL FOURTH DENSITY)

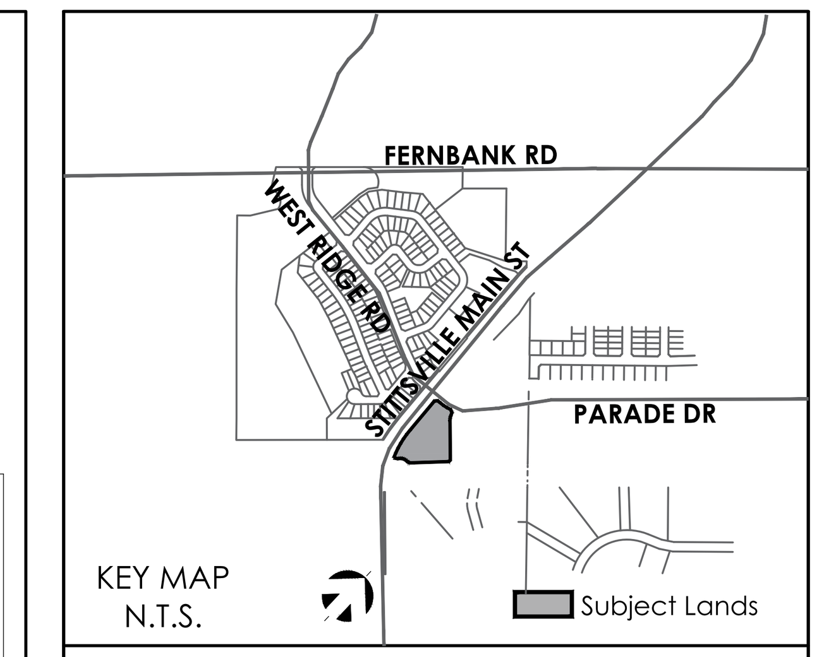
DWELLING BLOCK	DWELLING TYPE	GROSS FLOOR AREA (m2)	UNITS
BLOCK 1	STACKED TOWNHOUSE	1,393.07	12
BLOCK 2	STACKED TOWNHOUSE	1,393.07	12
BLOCK 3	STACKED TOWNHOUSE	1,393.07	12
BLOCK 4	STACKED TOWNHOUSE	1,393.07	12
BLOCK 5	STACKED TOWNHOUSE	1,393.07	12
BLOCK 6	STACKED TOWNHOUSE	1,393.07	12
BLOCK 7	STACKED TOWNHOUSE	1,393.07	12
	TOTAL	**9,751.49m²**	**84**

SECTION	ZONE PROVISION - PLANNED UNIT DEVELOPMENT	REQUIRED	PROPOSED
162A(Table)(Z)	MIN. LOT AREA (m²)	450m²	10,476m²
162A(Table)(Z)	MIN. LOT WIDTH (m)	18m	44.86m
162A(Table)(Z)	MIN. FRONT YARD SETBACK (m)	3.0m	3.05m
162A(Table)(Z)	MIN. CORNER SIDE YARD SETBACK:	3.0m	3.05m
162A(Table)(Z)	MAX. BUILDING HEIGHT (m)	15m	12.0m (3 storeys)
101(Table)	RESIDENT PARKING -84 Units @ 1.0 spaces/unit	84	91
102(Table)	VISITOR PARKING -84 Units @ 0.2 spaces/unit	17	17
111A(Table)	MIN. BICYCLE PARKING -84 Units @ 0.5 spaces/unit	42	42
131(Table)(1)	MIN. WIDTH OF PRIVATE WAY/ PARKING AISLE (m)	6.0m	6.0m
131(Table)(2)	MIN. SETBACK FOR ANY WALL OF A RESIDENTIAL USE BUILDING TO A PRIVATE WAY (m)	1.8m	3.4m
131(Table)(4)	MIN. SEPARATION DISTANCE BETWEEN BUILDINGS WITHIN A PLANNED UNIT DEVELOPMENT (m)	1.2m	4.5m
137(Table)	AMENITY AREA:		
	TOTAL MIN. AMENITY AREA (6m² per unit)	504m²	749m²*
	MIN. COMMUNAL AMENITY AREA (min. 50% area)	252m²	345m²

*Individual amenity areas are provided on the balconies

SECTION	ADDITIONAL PROVISIONS	REQUIRED	PROPOSED
65(Table)	PERMITTED PROJECTIONS INTO REQUIRED YARDS:		
65(Table)(5)	FIRE ESCAPES, OPEN STAIRWAYS, STOOP (m)	>0.6m to lot line	0.6m
65(Table)(6)	COVERED OR UNCOVERED BALCONY, PORCH, DECK	>1m to lot line	1.7m
106(1)(a)	MIN. PERPENDICULAR PARKING SPACE SIZE (m)	2.6m x 5.2m	2.6m x 5.2m
106(2)	MIN. BARRIER FREE PARKING**		
	TYPE A PARKING SPACE SIZE (m)	3.4m wide	3.4m wide
	TYPE B PARKING SPACE SIZE (m)	2.4m wide	2.4m wide
	ACCESS AISLE (m)	1.5m	1.5m
111B(Table)	MIN. BICYCLE PARKING SPACE DIMENSION, HORIZONTAL (m)	Width: 0.6m Length: 1.8m	Width: 0.6m Length: 1.8m
111(9)	MIN. BICYCLE PARKING SPACE ACCESS AISLE WIDTH (m)	1.5m	1.5m
109(3)(b)	MAX. WALKWAY WIDTH PERMITTED IN YARD (m)	1.8m	1.8m
110(1)	MIN. % OF PARKING LOT LANDSCAPED	15%	25%
110(Table)(IV)	LANDSCAPED AREA SURROUNDING PARKING LOT ABUTTING A STREET (m)	3.0m	3.05m
110(3)	REFUSE COLLECTION AREAS:		
110(3)(b)	MIN. WASTE COLLECTION SETBACK FROM A LOT LINE ABUTTING A PUBLIC STREET (m)	9.0m	9.05m
110(3)(c)	OPAQUE SCREEN MIN. HEIGHT (m)	2.0m***	See Note***

**Per the 2014 Guide to the Integrated Accessibility Standards Regulation - Design of Public Spaces Standard, 4% of parking spaces provided for public use must be accessible. 1 of the provided 17 visitor spaces have been designed to be barrier-free, Type A.
***Section 110(3)(d) where an in-ground refuse container is provide, the screening requirement of Section (3)(c) above may be achieved with soft landscaping (Bylaw 2020-299)



KEY MAP
N.T.S.

SCALE 1:300

LEGEND

- STACKED TOWNS
- CROSSWALK
- WALKWAY TO ENTRY (PAVERS)
- CONCRETE
- TWSI (TACTILE WALKING SURFACE INDICATOR)
- CURB (0.2m)
- DEPRESSED CURB
- MOUNTABLE CURB
- BALCONY
- PORCH
- L/A LANDSCAPED AREA
- EV CHARGER
- ENTRANCE
- V VISITOR PARKING
- BARRIER FREE SIGNAGE
- BARRIER FREE PARKING
- MOLOK BIN
- ORGANICS CARTS
- TRANSFORMER
- HYDRO CABINET
- MINI SUBS (HYDRO)
- EV CHARGERS
- HYDRANT
- SECONDARY PEDESTRIAN ACCESS
- BENCH

DATE [D.M.Y]	REVISION	BY
21/03/25	Site Plan Revisions	CR
25/02/25	Site Plan Revisions	WS
01/09/25	Site Plan Revisions	WS
11/09/24	Draft site plan	JH
21/08/24	Draft site plan	WS

GENERAL NOTES

1. DO NOT SCALE DRAWINGS FOR PRINT.
2. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF KORSIAK URBAN PLANNING. COPYRIGHT RESERVED.
3. WALKWAYS AND CURBS TO BE TIED INTO PUBLIC ROW WHERE APPLICABLE.
4. REFERENCES CITY OF OTTAWA T.W.S.I. DETAIL SC7.3
5. SURVEY BOUNDARY BY J.D. BARNES LIMITED.
   2430 DON REID DRIVE, SUITE 204, OTTAWA, ON
   TEL: (613) 731-7244 FAX: (613) 731-8955
6. SNOW WILL BE REMOVED FROM THE SITE IMMEDIATELY.

PROJECT TEAM

SITE PLAN DESIGN: KORSIAK Urban Planning, 206-277 LAKESHORE ROAD EAST OAKVILLE, ON, L6J 1H9

LANDSCAPE ARCHITECTURE: NOVATECH Engineers, Planners & Landscape Architects, 240 MICHAEL COWPLAND DRIVE, SUITE 101, KANATA, ON K2M 1P6

PLANNING: NOVATECH Engineers, Planners & Landscape Architects, 240 MICHAEL COWPLAND DRIVE, SUITE 101, KANATA, ON K2M 1P6

ARCHITECTURE: BNM STUDIO, 636 KING STREET WEST, 3RD FLOOR, TORONTO, ON M5V 1M7

TRANSPORTATION: NOVATECH Engineers, Planners & Landscape Architects, 240 MICHAEL COWPLAND DRIVE, SUITE 101, KANATA, ON K2M 1P6

CIVIL ENGINEER: NOVATECH Engineers, Planners & Landscape Architects, 240 MICHAEL COWPLAND DRIVE, SUITE 101, KANATA, ON K2M 1P6

ELECTRICAL: LRL ENGINEERING, 5430 CANOTEK ROAD, OTTAWA, ON K1J 9G2

mattamyHOMES
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BLOCK 349 STITTSVILLE OTTAWA

GEOGRAPHIC TOWNSHIP OF GOULBOURN
CITY OF OTTAWA

TITLE: BLOCK 349 SITE PLAN

DATE: March 21, 2025
DRAWN BY: JH
CHECKED BY: CR
DRAWING NO. A
FILE NO.: D07-12-24-0142
JOB NO.:

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. PG7178-1, DATED JULY 2, 2024), 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 HARD SURFACE AREAS AND DIMENSIONS.
10. REFER TO STORMWATER MANAGEMENT REPORT(R-2024-123) 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.

SEWER NOTES:

1. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
CATCHBASIN (600x600mm)	705.010	OPSD
STORM / SANITARY MANHOLE (1200Ø)	701.010	OPSD
CB, FRAME & COVER	400.020	OPSD
STORM / SANITARY MH FRAME & COVER	401.010	OPSD
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	

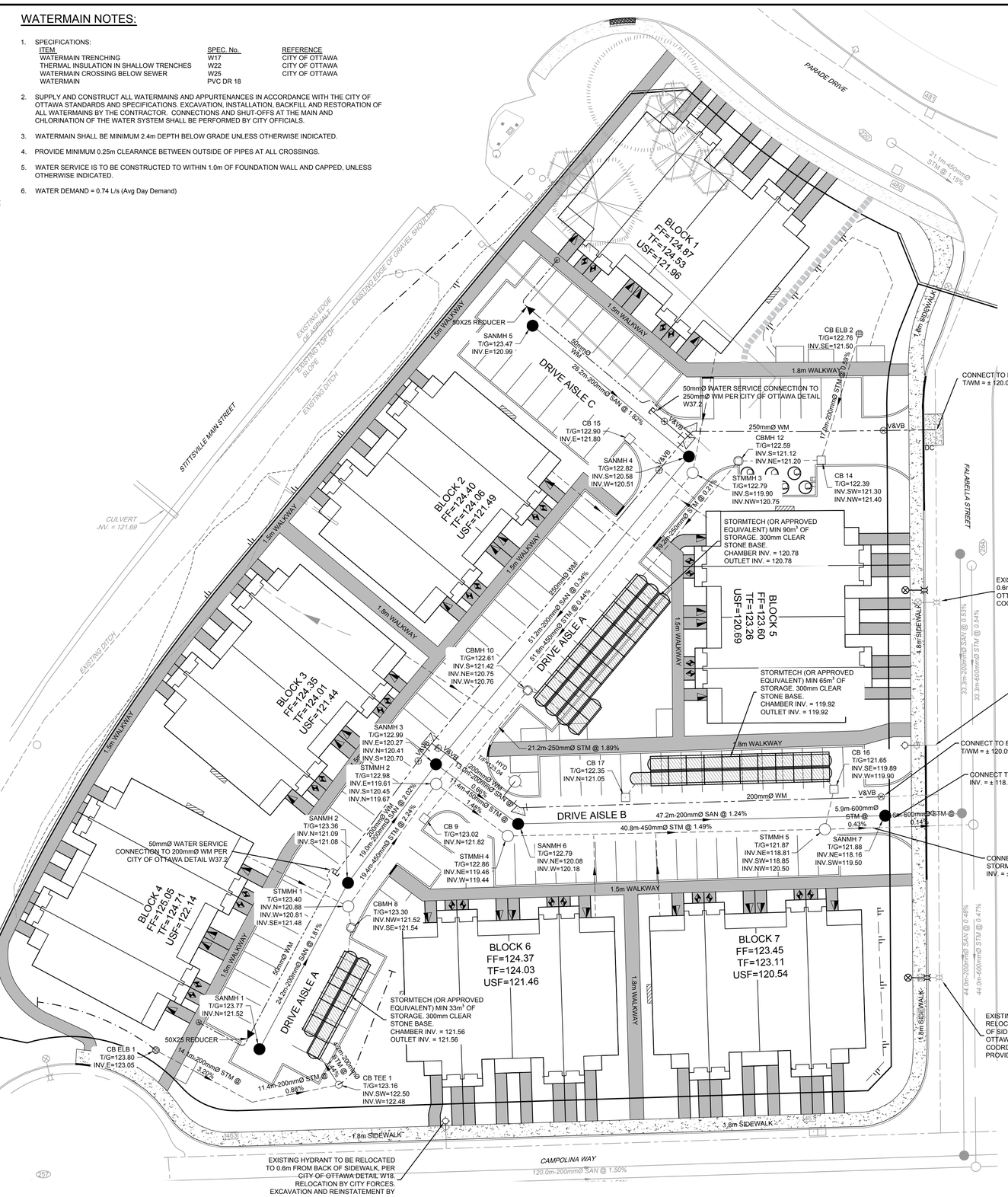
2. INSULATE ALL PIPES (SAN/STM) THAT HAVE LESS THAN 1.5m COVER WITH 50mmX1200mm HI-40 INSULATION. PROVIDE 150mm CLEARANCE BETWEEN PIPE AND INSULATION.
3. SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM FACE OF BUILDING AT A MINIMUM SLOPE OF 1.0%.
4. PIPE BEDDING, COVER AND BACKFILL ARE TO BE COMPACTED TO 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 ELMINATED.
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.

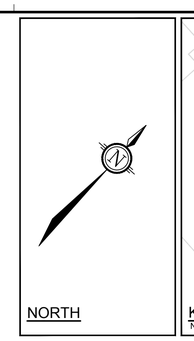
WATERMAIN NOTES:

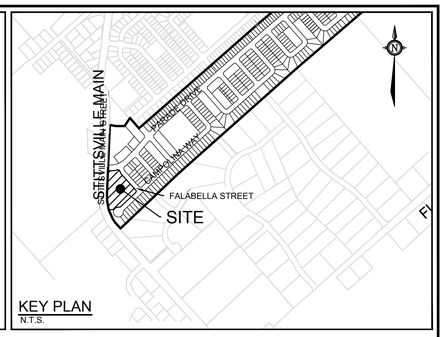
1. SPECIFICATIONS:

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.
6. WATER DEMAND = 0.74 L/s (Avg Day Demand)







LEGEND

200mmØ WM	PROPOSED WATERMAIN
	PROPOSED VALVE LOCATION
V&VB	VALVE & VALVE BOX
HYD	PROPOSED HYDRANT C/W VALVE & LEAD
T/F=98.45	PROPOSED TOP OF BOTTOM FLANGE
BEND	PROPOSED BEND AND THRUSTBLOCK 11.25°, 22.5°, 45° or TEE
	PROPOSED SANITARY MH & SEWER
	PROPOSED STORM MH & SEWER
CBMH	PROPOSED CATCHBASIN MANHOLE
CB	PROPOSED ROAD CATCHBASIN
CB ELB	PROPOSED LANDSCAPE ELBOW CATCHBASIN
CB TEE	PROPOSED LANDSCAPE TEE CATCHBASIN
	PROPOSED WATER SERVICE (3 x 25mm SERVICES)
	PROPOSED SANITARY SERVICE (1 x 125mm SERVICE)
	EXISTING SANITARY MH & SEWER
	EXISTING STORM MH & SEWER

200mmØ & 250mmØ WATERMAIN TABLE (DRIVE AISLE A)

STATION	ELEVATION	TOP OF WATERMAIN	DESCRIPTION
0+000	123.75	121.35	50mmØ X 25mmØ REDUCER
0+023.0	123.32	120.92	200mmØ WATERMAIN CAP
0+023.5	123.30	120.90	50mmØ WATERMAIN CONNECTION
0+042	122.99	120.59	VALVE AND VALVE BOX
0+044.5	122.95	120.55	TEE CONNECTION / 250mmØ WATERMAIN CONNECTION
0+054.60	122.67	120.27	VERTICAL BEND
0+075	122.69	120.29	TOP OF WATERMAIN
0+078.90	122.98	120.58	VERTICAL BEND
0+085.50	122.88	120.48	VALVE AND VALVE BOX
0+090.00	122.80	120.40	TEE CONNECTION
0+100.00	122.72	120.32	TOP OF WATERMAIN
0+105.20	122.53	120.13	VERTICAL BEND
0+114.40	122.56	120.16	VALVE AND VALVE BOX
0+121.1	122.42	120.22	CONNECT TO EXISTING 250mmØ WATERMAIN

200mmØ WATERMAIN TABLE (DRIVE AISLE C)

STATION	ELEVATION	TOP OF WATERMAIN	DESCRIPTION
0+000	123.50	121.10	50mmØ X 25mmØ REDUCER
0+020.91	120.90	120.42	200mmØ WATERMAIN CAP
0+021.41	120.90	120.42	50mmØ WATERMAIN CONNECTION
0+023.26	122.92	120.52	VALVE AND VALVE BOX
0+026.70	120.90	120.42	TEE CONNECTION

200mmØ WATERMAIN TABLE (DRIVE AISLE C)

STATION	ELEVATION	TOP OF WATERMAIN	DESCRIPTION
0+000	123.50	121.10	50mmØ X 25mmØ REDUCER
0+020.91	120.90	120.42	200mmØ WATERMAIN CAP
0+021.41	120.90	120.42	50mmØ WATERMAIN CONNECTION
0+023.26	122.92	120.52	VALVE AND VALVE BOX
0+026.70	120.90	120.42	TEE CONNECTION

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
6.	RE-ISSUED FOR SITE PLAN APPLICATION	APR 11/25	DJC
5.	REVISED PER CITY COMMENTS	JAN 23/25	ARM
4.	ISSUED FOR COORDINATION	NOV 21/24	ARM
3.	ISSUED WITH SERVICING & SWM REPORT	OCT 22/24	ARM
2.	ISSUED FOR COORDINATION	OCT 9/24	ARM
1.	ISSUED FOR COORDINATION	SEP 11/24	ARM

SCALE: 1:300 (1:300, 0 3 6 9 12)

DESIGN: MNP
CHECKED: ARM
DRAWN: MNP
CHECKED: ARM
APPROVED: ARM

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — B. H. BAHIA — 100164647 — Apr 15, 2025 — PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
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Telephone (613) 254-9643
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LOCATION
CITY OF OTTAWA
BLOCK 349

DRAWING NAME
GENERAL PLAN OF SERVICES

PROJECT No. 124097
REV REV # 6
DRAWING No. 124097-GP

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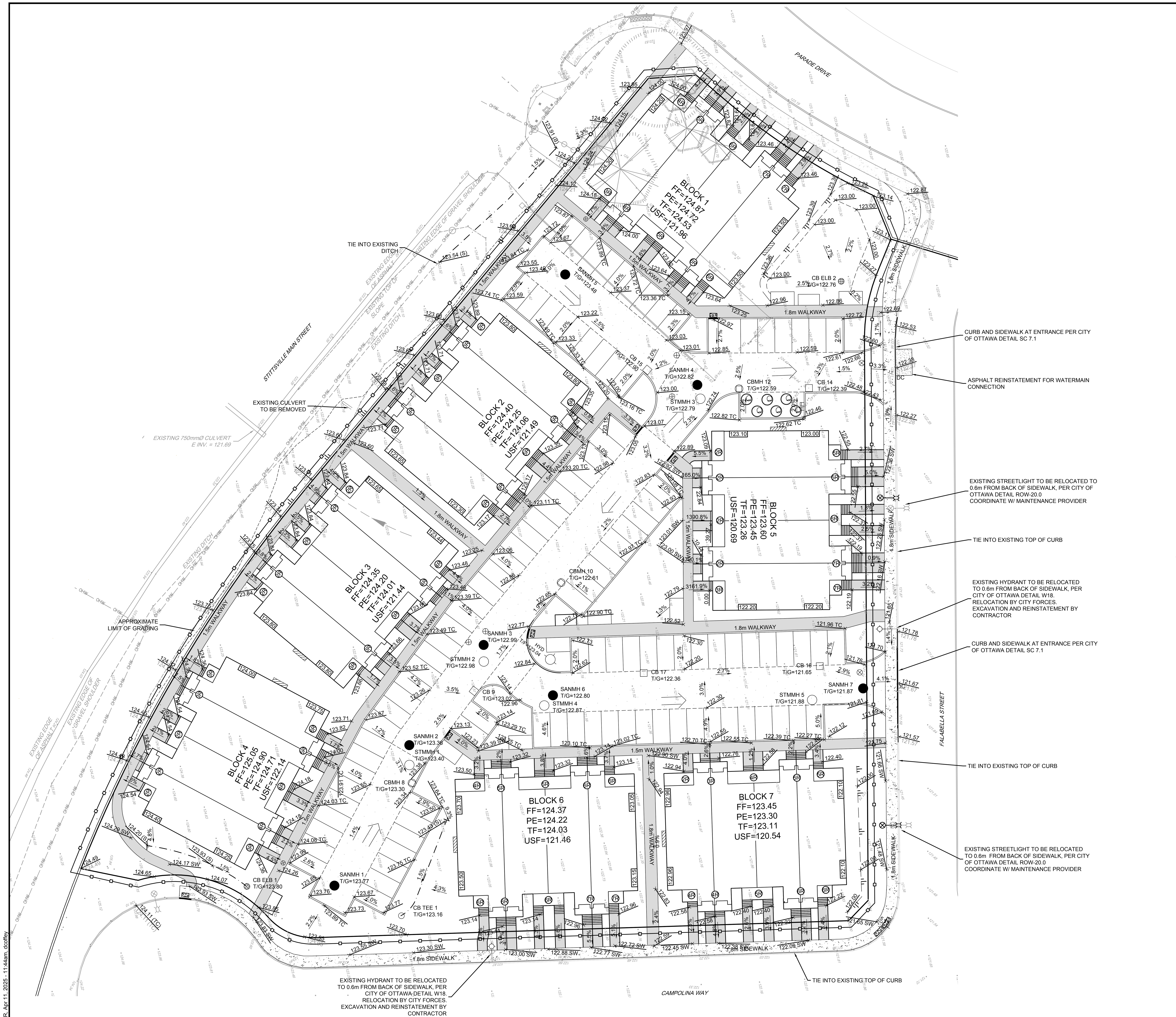
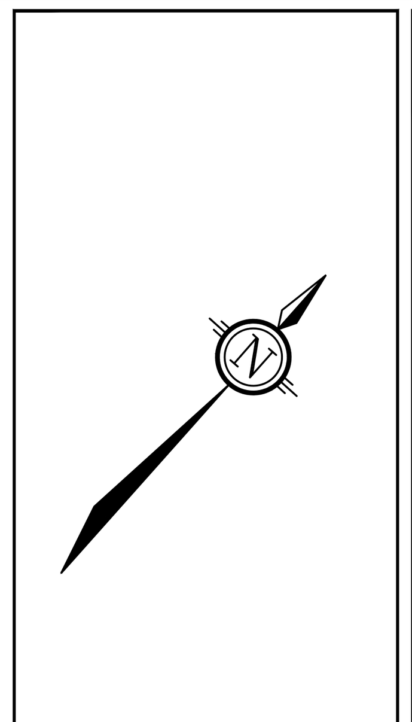
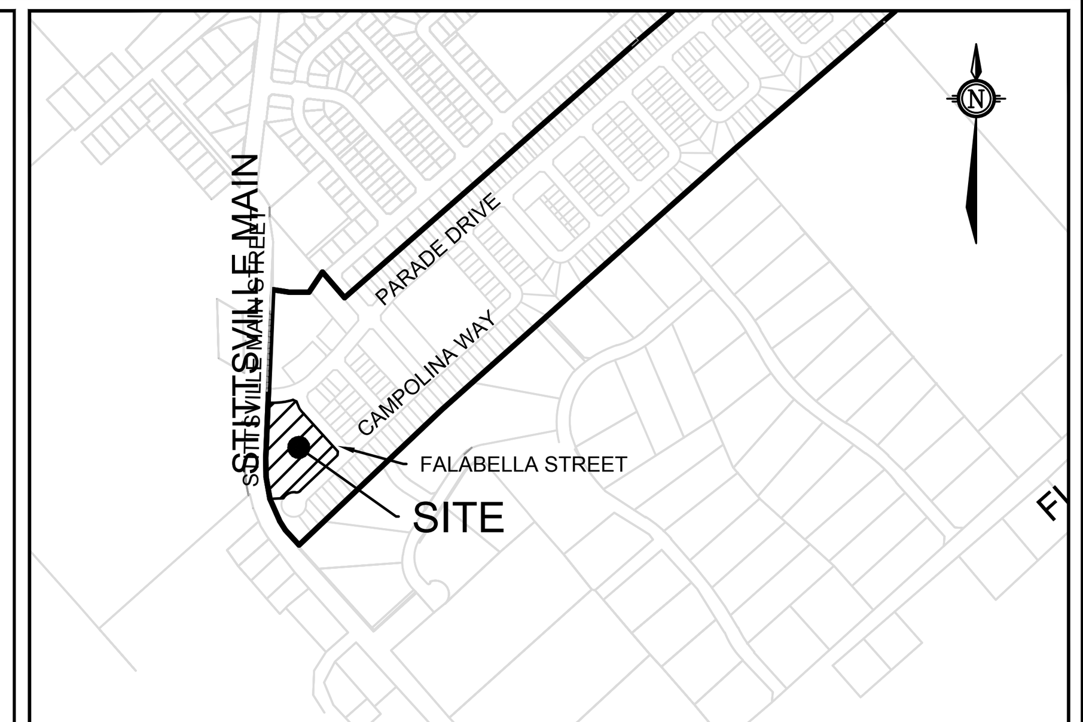
PLAN417.DWG - 841mmx594mm





NORTH



KEY PLAN
N.T.S.

LEGEND

120.46 / 118.56	PROPOSED ELEVATION / EXISTING ELEVATION
120.46(S)	PROPOSED SWALE ELEVATION
120.46T/G	PROPOSED TOP OF GRATE ELEVATION
3.2%	GRADE AND DIRECTION
127.55	PROPOSED TERRACE ELEVATION
3R	NUMBER OF RISERS (RAILINGS AS REQUIRED BY OBC)
FF=	FINISHED FLOOR ELEVATION
PE=	PORCH ELEVATION
TF=	TOP OF FOUNDATION ELEVATION
USF=	UNDERSIDE OF FOOTING ELEVATION
	PROPOSED TERRACING
	PROPOSED SWALE
MH 101	PROPOSED SANITARY MH
MH 100	PROPOSED STORM MH
CBMH	PROPOSED CATCHBASIN MANHOLE
CB	PROPOSED ROAD CATCHBASIN
CB ELB	PROPOSED LANDSCAPE ELBOW CATCHBASIN
CB TEE	PROPOSED LANDSCAPE TEE CATCHBASIN
	PROPOSED 1.5m CONCRETE WALKWAY
	PROPOSED 1.8m SIDEWALK
	EXISTING 1.8m SIDEWALK
	PROPOSED EROSION CONTROL SILT FENCE
	MAJOR OVERLAND FLOW ROUTE
	PROPOSED HYDRO NICHE LOCATION

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 - CAR ONLY PARKING AREAS
50mm HL3
150mm GRAN "A"
300mm GRAN "B" TYPE II

HEAVY DUTY - DRIVE AISLES
40mm SUPERPAVE 12.5
50mm SUPERPAVE 19.0
150mm GRAN "A"
300mm GRAN "B" TYPE II

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8.	RE-ISSUED FOR SITE PLAN APPLICATION	APR 11/25	DJC
7.	ISSUED FOR COORDINATION	JAN 23/25	ARM
6.	ISSUED FOR COORDINATION	JAN 7/25	ARM
5.	ISSUED FOR COORDINATION	DEC 3/24	ARM
4.	ISSUED FOR COORDINATION	NOV 21/24	ARM
3.	ISSUED FOR COORDINATION	OCT 22/24	ARM
2.	ISSUED FOR COORDINATION	OCT 9/24	ARM
1.	ISSUED FOR COORDINATION	SEP 11/24	ARM

SCALE
1:300
1:300
0 3 6 9 12

DESIGN MNP
CHECKED ARM
DRAWN MNP
CHECKED ARM
APPROVED ARM

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LOCATION
CITY OF OTTAWA
BLOCK 349

DRAWING NAME
GRADING PLAN

PROJECT No. 124097
REV
REV # 8
DRAWING No.
124097-GR