NOVATECH

Engineers, Planners & Landscape Architects

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

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

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

Site Servicing Brief

Greystone Village Forecourt Townhomes

295 & 355 Deschâtelets Avenue

Prepared for: Greystone Village Inc.

Greystone Village Forecourt Townhomes
295 & 355 Deschâtelets Avenue
Site Servicing Brief

Prepared For:

Greystone Village Inc.

Prepared By:

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

Prepared: August 14, 2024
Revised: October 17, 2024
Revised: November 29, 2024
Revised: December 20, 2024
Revised: March 4, 2025
Revised: March 25, 2025

Novatech File: 114025
Ref: R-2024-097

March 25, 2025

City of Ottawa
Planning, Infrastructure and Economic Development Department
Infrastructure Approvals Division,
110 Laurier Avenue West, 4th Floor
Ottawa, ON K1P 1J1

Attention: **Vincent Duquette**

Reference: **Greystone Village Forecourt Townhomes – 295 & 355 Deschâtelets Avenue**
Site Servicing Brief
Novatech File No.: 114025

Please find enclosed a copy of the revised Site Servicing Brief for the Greystone Village Forecourt Townhomes, located at 295 and 355 Deschâtelets Avenue in Old Ottawa East, east of Main Street/Deschâtelets Avenue, south of des Oblats Avenue, west of Scholastic Drive and north of Deschâtelets Avenue within the City of Ottawa. The report demonstrates how the proposed site will be serviced with storm, sanitary, watermain, utilities, and stormwater management and is submitted for your review and approval.

This report is supplementary to the following reports to provide specifics related to the Greystone Village Forecourt Townhome buildings which are part of the overall Greystone Village subdivision development:

- *"Greystone Village, 175 Main Street – Site Servicing, Stormwater Management, Noise, Erosion and Sediment Control Brief" dated February 24, 2016*
- "*Greystone Village - 175 Main Street: Site Servicing, Stormwater Management, Noise, Erosion and Sediment Control Brief (Phase 2 and 3), R-2017-089", dated May 26, 2017*
- *"Greystone Village - 175 Main Street: Site Servicing, Stormwater Management, Noise, Erosion and Sediment Control Brief - Phase 2 and 3 (Master Servicing Study Update), R 2017 089", dated March 4, 2025.*

If you have any questions or comments, please do not hesitate to contact us.

Sincerely,

NOVATECH

Trevor McKay, P. Eng.
Senior Project Manager | Land Development Engineering

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

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICIES

LIST OF DRAWINGS (APPENDIX E)

1.0 INTRODUCTION

Novatech has been retained by Greystone Village Inc. to prepare this Site Servicing Brief in support of the site plan application of the Greystone Village Forecourt Townhomes at 295 Deschâtelets Avenue (Block 29) and 355 Deschâtelets Avenue (Block 28) in Old Ottawa East, located within the Greystone Village plan of subdivision limits. The key plan (**Figure 1**) highlights the Greystone Village subdivision limits and the Forecourt Townhome site locations (the Subject Property).

The Subject Property is comprised of two development blocks (Block 28 and Block 29) separated by a landscaped pedestrian connection through the heritage designated grand allée between Deschâtelets Avenue and the proposed Forecourt Park. The property is currently vacant. The subject property was historically grassed, with mature trees located on the adjacent lands to the east. The topsoil has been stripped from the majority of the subject property and granular material placed for temporary construction use, as shown on the existing conditions plan (**Figure 2**).

It is proposed to construct a total of 18 semi-detached dwellings and 12 townhouse dwellings on the Subject Property. Refer to **Figure 3 –** Concept Plan – Forecourt Townhomes for proposed site layout. This Site Servicing Brief will confirm how the property will be serviced by sanitary, water, stormwater management, and utilities.

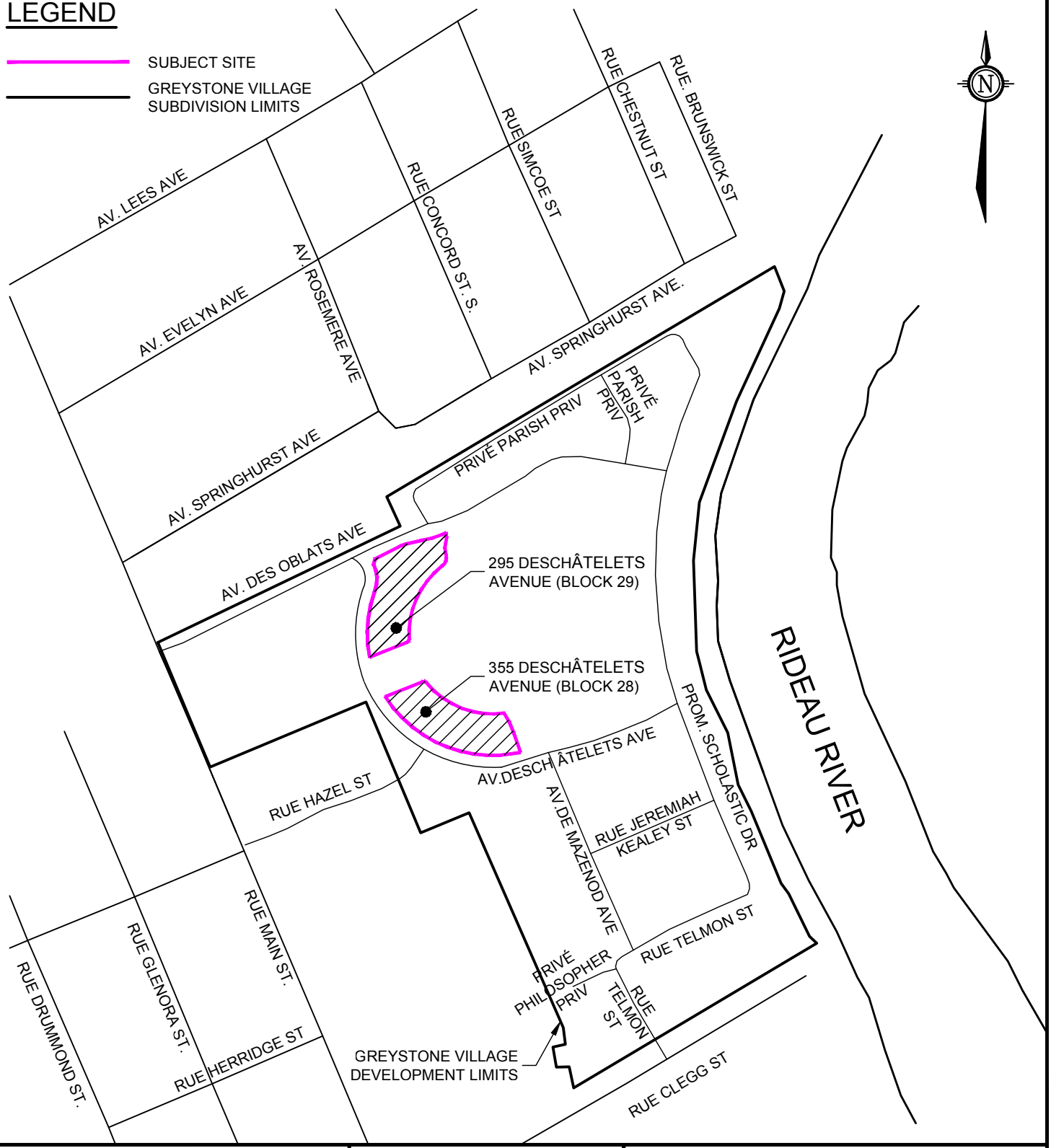
1.1 Geotechnical Investigation

Refer to Paterson's geotechnical report (*Geotechnical Investigation – Proposed Residential Development – 295 & 355 Deschatelets Avenue – Ottawa, Ontario*, PG6948-1, dated February 1, 2024) and the subsequent memorandums (*Geotechnical Tree Planting Recommendations within 4.5m Setback – Proposed Residential Development – 295 & 355 Deschatelets Avenue – Ottawa, Ontario*, PG6948-MEMO.01, dated April 29, 2024 and *Geotechnical Response to City Comment – Proposed Residential Development – 295 & 355 Deschatelets Avenue – Ottawa, Ontario*; PG6948-MEMO.02, dated October 7, 2024, *Grading and Landscaping Review – Proposed Residential Development – 295 & 355 Deschatelets Avenue – Ottawa, Ontario*; PG6948-MEMO.03, dated February 6, 2025 and *Foundation Drainage Review – Proposed Residential Development – 295 & 355 Deschatelets Avenue – Ottawa, Ontario*; PG6948-MEMO.04, dated March 18, 2025) for geotechnical considerations.

1.2 Additional Reports

This report provides information on the considerations and approach by which Novatech has designed and evaluated the proposed servicing for the Greystone Village Forecourt Townhomes. This report should be read in conjunction with the following:

- *Greystone Village, 175 Main Street – Site Servicing, Stormwater Management, Noise, Erosion and Sediment Control Brief, dated February 24, 2016 (Referred to as Master Servicing Study 2016);*
- *Greystone Village, 175 Main Street – Site Servicing, Stormwater Management, Noise, Erosion and Sediment Control Brief – Phase 2 and 3, dated May 26, 2017 (Referred to as Master Servicing Study 2017);*
- *Greystone Village Phase 3 Condos 375 Deschâtelets Avenue Site Servicing Brief (dated February 10, 2023).*
- *Greystone Village - 175 Main Street: Site Servicing, Stormwater Management, Noise, Erosion and Sediment Control Brief - Phase 2 and 3 (Master Servicing Study Update), R 2017-089", March 4, 2025.*



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

GREYSTONE VILLAGE FORECOURT TOWNS

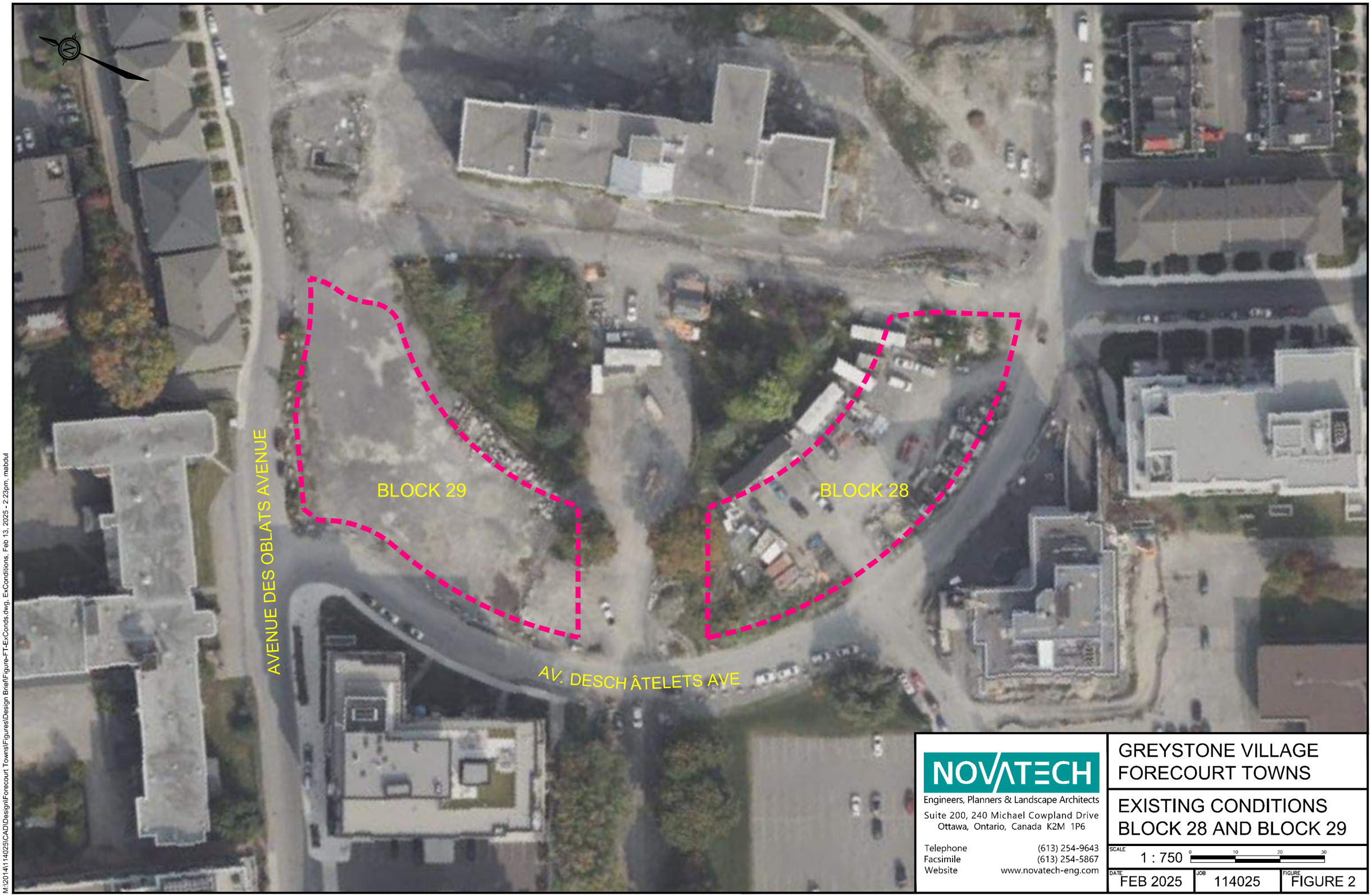
KEY PLAN

N.T.S.

FEB 2025	114025	FIGURE 1

SHT8X11.DWG - 216mmx279mm

M:\2014\114025\CAD\Design\Forecourt Towns\Figures\Design Brief\Figure1-FT-KP.dwg, FIG-FT-KP, Nov 28, 2024 - 2:29pm, mabdul



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

GREYSTONE VILLAGE FORECOURT TOWNS

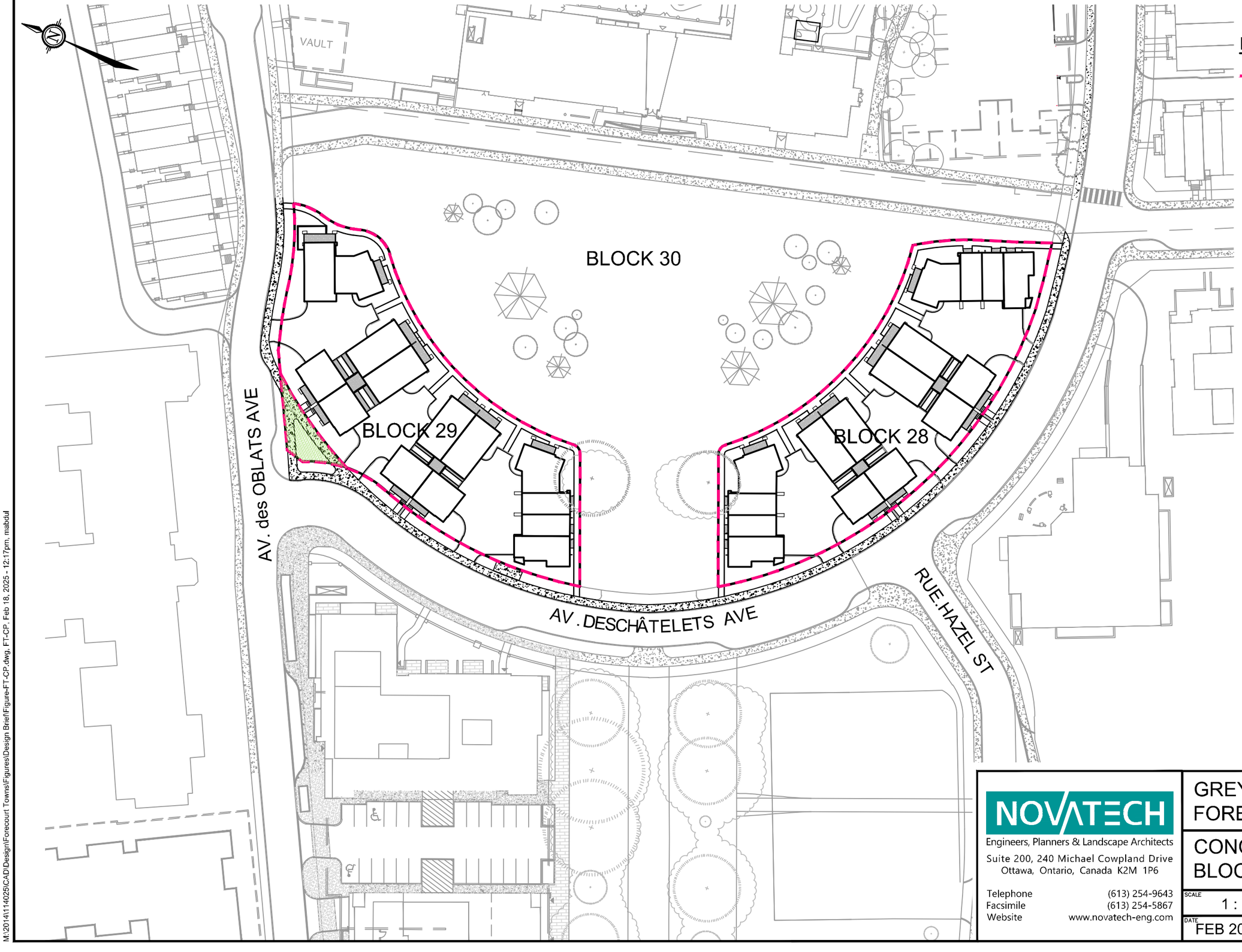
EXISTING CONDITIONS BLOCK 28 AND BLOCK 29

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

DATE FEB 2025 | JOB 114025 | FIGURE FIGURE 2

SHT11X17.DWG - 279mmX432mm

M:\2014\11\14025\CAD\Design\Forecourt Towns\Figures\Design Brief\Figure-FT-ExConds.dwg, ExConditions, Feb 13, 2025 - 2:23pm, mabdul



M:\2014\114025\CAD\Design\Forecourt Towns\Figures\Design Brief\Figure-FT-CP.dwg, FT-CP, Feb 18, 2025 - 12:17pm, mabdul

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

GREYSTONE VILLAGE FORECOURT TOWNS

CONCEPT PLAN BLOCK 28 & 29

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

DATE FEB 2025 | JOB 114025 | FIGURE FIGURE 3

SHT11X17.DWG - 279mmX432mm

1.3 Approvals

The Greystone Village subdivision has received approvals by the Rideau Valley Conservation Authority and the Ministry of the Environment, Conservation and Parks and the City of Ottawa, for the right of way pipes and storm sewer outlets which will service the development blocks (Block 28 & Block 29). Relevant approvals are as follows. Refer to **Appendix D** for details.

MECP

- ECA Number 4082-AAZQ6P – Storm and Sanitary Sewers within Phase 1;
- ECA Number 8946-ACUP7W – Stormwater Outfall and Oil / Grit Separator within Phase 1;
- ECA Number 0292-AP6PWR – Storm and Sanitary Sewers within Phase 2 & 3;
- ECA Number 3454-APEHFQ – Stormwater Outfall and Oil / Grit Separator within Phase 2 & 3;

RVCA

- File Number RV3-34/16 – Phase 1 Stormwater Outlet
- File Number RV3-08/17 – Phase 2 Stormwater Outlet

The City of Ottawa will be completing a Notice to the Director under the CLI ECA to address the change in flows directed to the stormwater outflows as detailed in the Master Servicing Study Update (MSSU, 2025).

It is also understood that the site will require ECA's for the sanitary and storm sewers. A transfer of review (ToR) ECA application will be submitted concurrently with this report.

2.0 SANITARY SERVICING

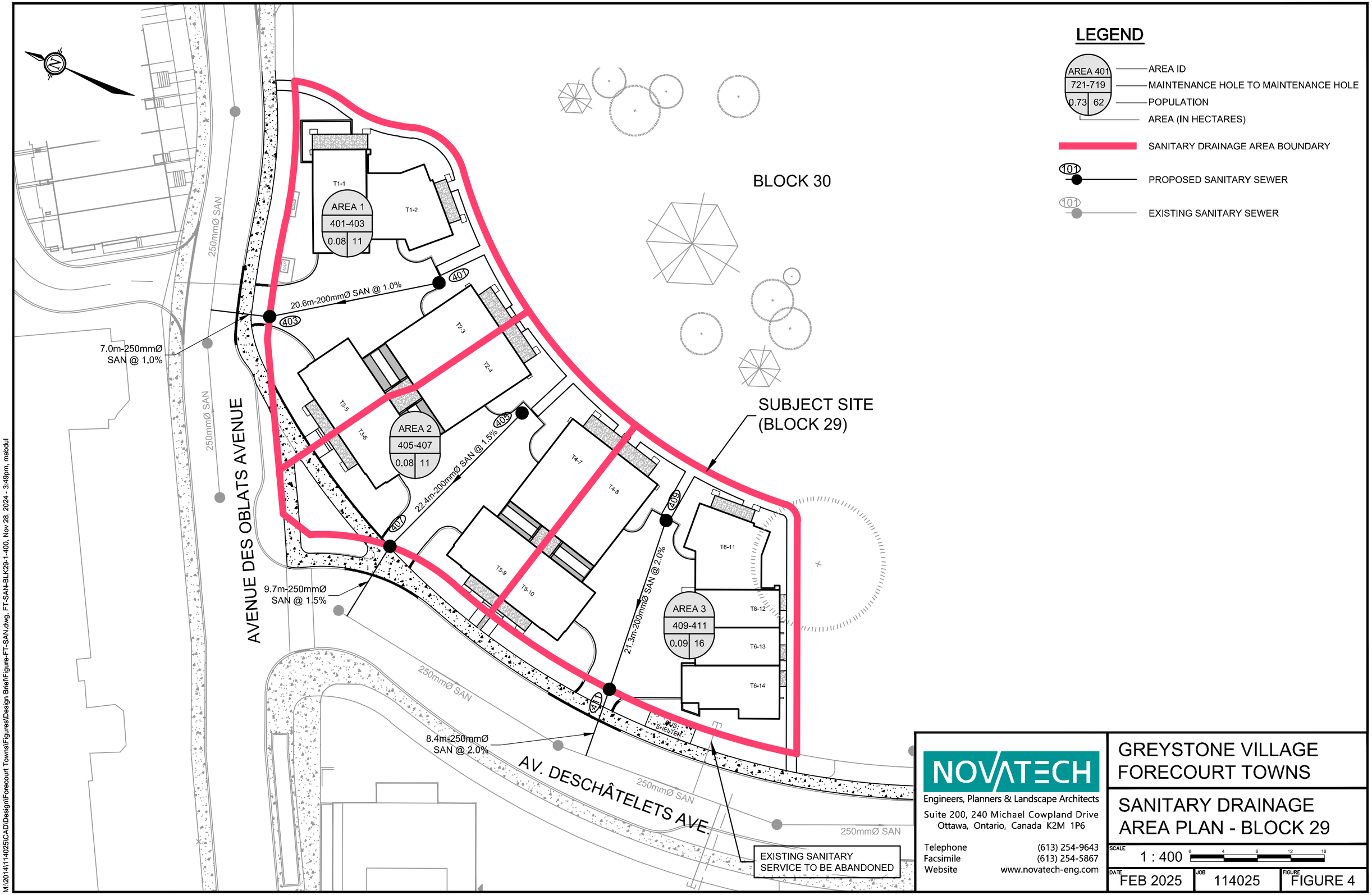
Each car court will be serviced by 200mm dia. sanitary sewers within the property, connecting to a maintenance hole at the property line and a 250mm diameter sanitary sewer within the city right-of-way which connects to the existing 250mm diameter sanitary sewers on Oblats Avenue and Deschâtelets Avenue respectively. Each townhome unit will be serviced individually with 135mm diameter sanitary services, complete with backwater valves, and will be connected the proposed 200mm diameter sanitary sewer located in the adjacent car court. Refer to **Figure 4** – Sanitary Drainage Area Plan – Block 29 and **Figure 5** – Sanitary Drainage Area Plan – Block 28 for proposed sanitary sewer locations and drainage area boundaries.

2.1 Design Criteria

2.1.1 Proposed System

The current sanitary design is based on design criteria outlined in the City of Ottawa's Technical Bulletin ISTB 2018-01 and are as follows:

- Residential Average Sewage Flow = 280 L/capita/day
- Residential Peaking Factor = Harmon Equation
- Max Peaking Factor = 4.0
- Infiltration Allowance = 0.33 L/s/ha
- Population Density:
    - 2.7/unit (Towns)



M:\2014\114025\CAD\Design\Forecourt Towns\Figures\Design Brief\Figure-FT-SAN.dwg, FT-SAN-BLK29-1-400, Nov 28, 2024 - 3:49pm, mabdul

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

GREYSTONE VILLAGE FORECOURT TOWNS

SANITARY DRAINAGE AREA PLAN - BLOCK 29

SCALE 1 : 400 (0, 4, 8, 12, 16)

DATE FEB 2025 | JOB 114025 | FIGURE FIGURE 4

SHT11X17.DWG - 279mmX432mm

LEGEND

AREA 401 | 721-719 | 0.73 | 62

- AREA ID
- MAINTENANCE HOLE TO MAINTENANCE HOLE
- POPULATION
- AREA (IN HECTARES)
- SANITARY DRAINAGE AREA BOUNDARY
- 101 — PROPOSED SANITARY SEWER
- 101 — EXISTING SANITARY SEWER

BLOCK 30

SUBJECT SITE
(BLOCK 28)

AREA 6
421-423
0.09 | 16

AREA 5
417-419
0.07 | 11

AREA 4
413-415
0.09 | 16

421
21.9m-200mmØ SAN @ 2.0%
423
7.8m-250mmØ
SAN @ 1.9%
417
20.2m-200mmØ SAN @ 2.0%
419
413
21.1m-200mmØ SAN @ 2.0%
415
8.3m-250mmØ
SAN @ 2.0%
7.3m-250mmØ
SAN @ 1.5%

T12-27, T12-28, T12-29, T12-30
T10-24, T10-23, T11-26, T11-25
T8-20, T8-19, T9-22, T9-21
T7-18, T7-17, T7-16, T7-15
T6-11, T6-12, T6-13, T6-14

250mmØ SAN

AV.DESCHÂTELETS AVE

RUE.HAZEL ST

EXISTING SANITARY
SERVICE TO BE ABANDONED

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

GREYSTONE VILLAGE
FORECOURT TOWNS

SANITARY DRAINAGE AREA PLAN - BLOCK 28

SCALE 1 : 400 (0, 4, 8, 12, 16)
DATE FEB 2025
JOB 114025
FIGURE FIGURE 5

M:\2014\114025\CAD\Design\Forecourt Towns\Figures\Design Brief\Figure-FT-SAN.dwg, FT-SAN-BLK28-1-400, Nov 28, 2024 - 3:49pm, mabdul

SHT11X17.DWG - 279mmX432mm

- Minimum Pipe Slope (200mm) = 0.32%
- Minimum Full Flow Velocity = 0.6m/s
- Maximum Full Flow Velocity = 3.0m/s

2.2 Proposed Sanitary Design – Forecourt Townhomes

2.2.1 Proposed System

The peak sanitary flows are summarized below in **Table 2.2**. Refer to **Appendix A** for proposed Sanitary Design Sheets and to the Sanitary Drainage Areas Plans **Figure 4** & **Figure 5** for additional information.

Table 2.1: Forecourt Townhome - Proposed Sanitary Flow Summary

Development Condition	Population	Peak Res. Flow (L/s)	Peak Ext. Flow (L/s)	Peak Design Flow (L/s)
Total Flow Outlet 1	11	0.13	0.03	0.16
Total Flow Outlet 2	70	0.83	0.14	0.97
Total Flow to Rideau River Interceptor from Blocks 28 & 29				**1.13**

The original MSS (2017) contemplated the site plan design for the Forecourt Townhome blocks to direct all sanitary sewer flows to the Phase 1 sanitary sewer outlet via Deschâtelets Avenue. The proposed site plan necessitates a portion of the sanitary sewer flows from 295 Deschatelets Avenue (Block 29) to be directed to the Phase 2 sanitary sewer.

The original MSS (2017) contemplated sanitary sewer flows of 1.98L/s from these Block (refer to **Appendix A** for MSS design sheet and drainage area plan). The MSSU (2025) has been updated to reflect the updated proposal, resulting in a net decrease of sanitary sewer flows from these two areas of 0.85L/s. The overall decrease is due to a reduction in the number of proposed units (30 instead of 42) and the change in the City of Ottawa design criteria (280L/capita/day instead of 350L/capita/day).

There is a slight increase in flow (+/- 0.16L/s) to the Phase 2 sanitary sewer system on Oblats Avenue from the MSS (2017), however the MSSU (2025) demonstrates that this increase has a negligible impact on sewer, which ultimately outlets to the same trunk sewer as Phase 1.

2.3 Sanitary Conclusion

For the proposed Forecourt Townhome site there is a net decrease of 0.85 L/s to the peak sanitary flow contributing to the Greystone Village subdivision sewer system, compared to the sanitary flows accounted for in the original Master Servicing Studies (2016 & 2017). As confirmed by the MSSU (2025), the downstream sanitary sewers have adequate capacity to accommodate the flows from this development.

3.0 WATERMAIN

The two (2) proposed development blocks will have a number of townhomes accessed from one of 3 communal car courts per block. Each car court will be serviced by a 50mm diameter watermain, connecting to the existing 250mm diameter watermains on Oblats Avenue and Deschâtelets Avenue respectively. Each townhome unit will be serviced individually with 19mm diameter water services, complete with curb stops and standposts located 2m from the foundations. Refer to **Figure 6** – Watermain Layout and Nodes – Block 29 and **Figure 7** – Watermain Layout and Nodes – Block 28 and for proposed watermain locations. Fire flows for the development blocks are to be provided by the hydrant network located within the existing right-of-ways (ROW). Refer to **Figure 8** - Hydrant Coverage for the location of the existing hydrants.

3.1 Design Criteria

3.1.1 Previous Studies

The Master Site Servicing, Stormwater Management, Noise, Erosion and Sediment Control Briefs (2016 & 2017) as listed above were completed prior to the City of Ottawa issuing Technical Bulletin ISTB 2018-01 & ISTB-2021-03. Therefore, the master servicing studies for Greystone Village were based on the following City of Ottawa design criteria:

Demands:

- Average Daily Demand = 350L/capita/day
- Maximum Daily Demand = 2.5 x Average Daily Demand
- Peak Hour Demand = 2.2 x Maximum Daily Demand
- Fire Flow Demand = 167.0L/s to 300.24L/s

Residential

- Population Density:
    - 3.4/unit (Singles)
    - 2.7/unit (Towns)
    - 2.1/unit (Apartment)

System Requirements

- Maximum Pressure (System) = 100psi (690 kPa)
- Maximum Pressure (Service) = 80psi (552kPa)
- Minimum Allowable Pressure (excluding fire flow conditions) = 40psi (276 kPa)
- Minimum Allowable Pressure (including fire flow conditions) = 20psi (138 kPa)

Friction Factors:

Watermain Size:	C-Factor:
300mm diameter	120
200mm and 250mm diameter	110
50mm to 150mm diameter	100

The water distribution network included with the MSS (2017) provided adequate system pressures during all scenarios within the development. The conclusions of the report, with respect to watermain, remain valid, and were substantiated by the MSSU (2025).

3.1.2 Proposed System

The current design is based on design criteria outlined in the City of Ottawa's Technical Bulletin ISTB 2018-01 & ISTB 2021-03. The development population is less than 500 people, therefore peaking factors have been based on Table 3-3 of the MOE Guidelines.

LEGEND

- SITE BOUNDARY
- PROPOSED 50mmØ WATERMAIN
- EXISTING 250mmØ WATERMAIN
- N1 — PROPOSED WATERMAIN NODE
- P1 — PROPOSED WATERMAIN PIPE NUMBER
- LOCATION OF EXISTING FIRE HYDRANT

BLOCK 30

SUBJECT SITE (BLOCK 29)

T1-01
T1-02
T2-03
T2-04
T3-05
T3-06
T4-07
T4-08
T5-09
T5-10
T6-11
T6-12
T6-13
T6-14

P1
P2
P3
N1
N2
N3
R1
R2
R3

CONNECT TO EXISTING 250mmØ WATERMAIN

CONNECT TO EXISTING 250mmØ WATERMAIN

CONNECT TO EXISTING 250mmØ WATERMAIN

AVENUE DES OBLATS

AV. DESCHÂTELETS AVE.

M:\2014\114025\CAD\Design\Forecourt Towns\Figures\Design Brief\Figure-FT-WM.dwg, FT-WM-BLK29-1-400, Nov 28, 2024 - 2:22pm, mabdul

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

GREYSTONE VILLAGE FORECOURT TOWNS

WATERMAIN LAYOUT AND NODES - BLOCK 29

SCALE 1 : 400 (0, 4, 8, 12, 16)

DATE FEB 2025 | JOB 114025 | FIGURE FIGURE 6

SHT11X17.DWG - 279mmX432mm

LEGEND

- SITE BOUNDARY
- PROPOSED 50mmØ WATERMAIN
- EXISTING 250mmØ WATERMAIN
- N1 — PROPOSED WATERMAIN NODE
- P1 — PROPOSED WATERMAIN PIPE NUMBER
- LOCATION OF EXISTING FIRE HYDRANT

BLOCK 30

SUBJECT SITE
(BLOCK 28)

T12-27
T12-28
T12-29
T12-30
T10-24
T10-23
T11-26
T11-25
T8-20
T8-19
T9-22
T9-21
T7-18
T7-17
T7-16
T7-15
T6-11
T6-12
T6-13
T6-14

N6
P6
R6
N5
P5
R5
N4
P4
R4

CONNECT TO EXISTING
250mmØ WATERMAIN

CONNECT TO EXISTING
250mmØ WATERMAIN

CONNECT TO EXISTING
250mmØ WATERMAIN

AV.DESCHÂTELETS AVE

RUE.HAZEL ST

M:\2014\11\14025\CAD\Design\Forecourt Towns\Figures\Design Brief\Figure-FT-WM.dwg, FT-STM-BLK28-1-400, Nov 28, 2024 - 2:22pm, mabdul

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

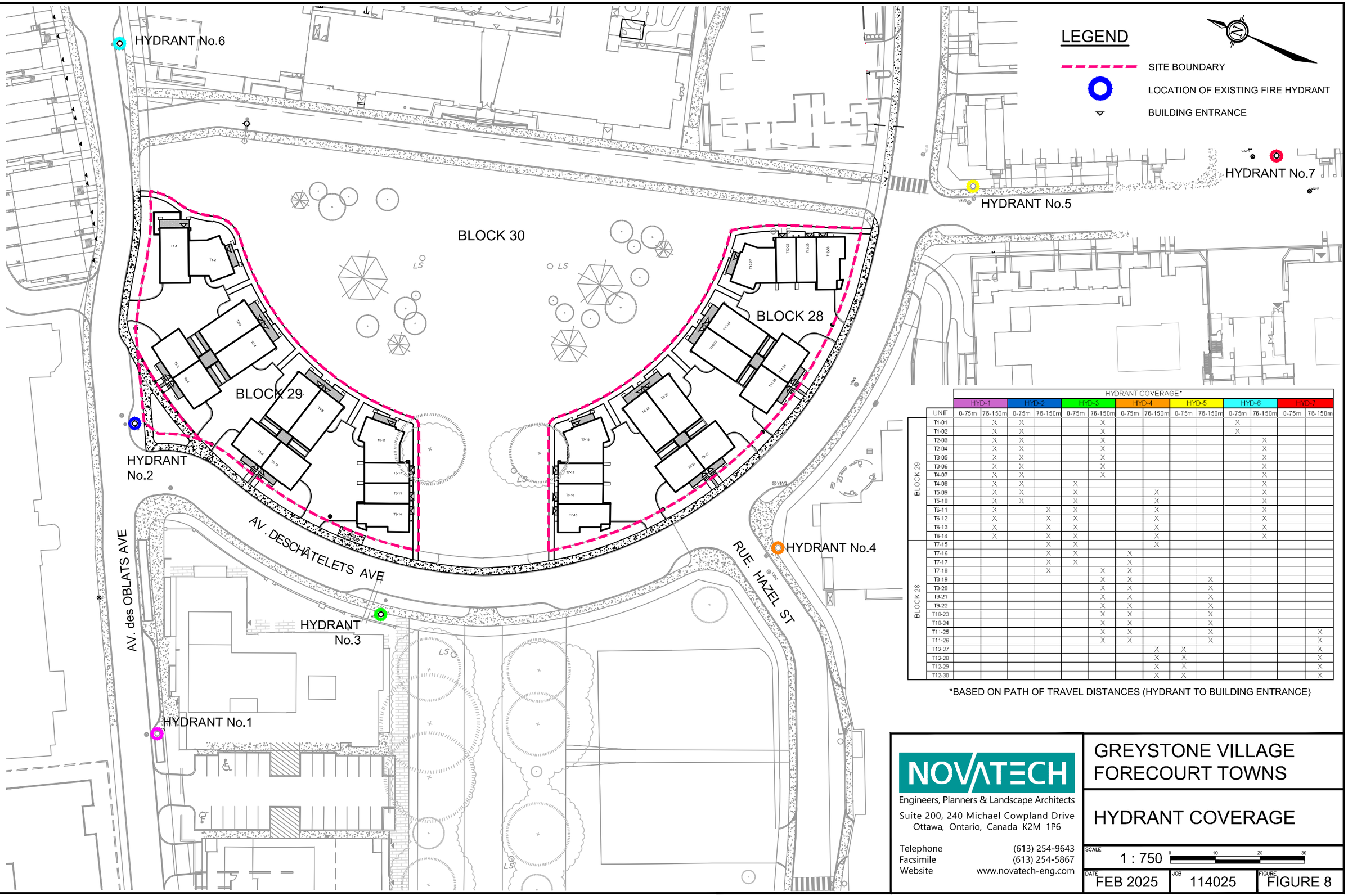
GREYSTONE VILLAGE FORECOURT TOWNS

WATERMAIN LAYOUT AND NODES - BLOCK 28

SCALE 1 : 400 (0, 4, 8, 12, 16)

DATE FEB 2025 | JOB 114025 | FIGURE FIGURE 7

SHT11X17.DWG - 279mmX432mm



HYDRANT COVERAGE*

	UNIT	HYD-1		HYD-2		HYD-3		HYD-4		HYD-5		HYD-6		HYD-7	
		0-75m	76-150m	0-75m	76-150m	0-75m	76-150m	0-75m	76-150m	0-75m	76-150m	0-75m	76-150m	0-75m	76-150m
BLOCK 29	T1-01		X	X			X					X			
	T1-02		X	X			X					X			
	T2-03		X	X			X						X		
	T2-04		X	X			X						X		
	T3-05		X	X			X						X		
	T3-06		X	X			X						X		
	T4-07		X	X			X						X		
	T4-08		X	X		X							X		
	T5-09		X	X		X			X				X		
	T5-10		X	X		X			X				X		
	T6-11		X		X	X			X				X		
	T6-12		X		X	X			X				X		
	T6-13		X		X	X			X				X		
	T6-14		X		X	X			X				X		
BLOCK 28	T7-15				X	X			X						
	T7-16				X	X		X							
	T7-17				X	X		X							
	T7-18				X		X	X							
	T8-19						X	X			X				
	T8-20						X	X			X				
	T9-21						X	X			X				
	T9-22						X	X			X				
	T10-23						X	X			X				
	T10-24						X	X			X				
	T11-25						X	X			X				X
	T11-26						X	X			X				X
	T12-27								X	X					X
	T12-28								X	X					X
	T12-29								X	X					X
	T12-30								X	X					X

*BASED ON PATH OF TRAVEL DISTANCES (HYDRANT TO BUILDING ENTRANCE)

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

GREYSTONE VILLAGE FORECOURT TOWNS

HYDRANT COVERAGE

SCALE 1 : 750 (0, 10, 20, 30)
DATE FEB 2025
JOB 114025
FIGURE FIGURE 8

SHT11X17.DWG - 279mmX432mm

M:\2014\114025\CAD\Design\Forecourt Towns\Figures\Design Brief\Figure-FT-Hyd-Cov.dwg, FT-HYD-Coverage-2, Feb 18, 2025 - 3:55pm, mabdul

Demands:

- Average Daily Demand = 280L/capita/day
- Maximum Daily Demand = 9.5 x Average Daily Demand
- Peak Hour Demand = 14.3 x Average Daily Demand

Population densities, system requirements and friction factors are consistent with the design criteria utilized for the previous studies. Refer to **Appendix B** for the residential demand calculations.

3.2 Proposed Watermain Design

High pressure and maximum age (average day demand) checks; and minimum pressure (peak hour demand) checks were completed for the proposed watermains. Hydraulic modeling was completed using EPAnet, Version 2.2, based on the boundary conditions provided by the City of Ottawa (refer to **Appendix B).** The results are listed in **Table 3.1** below:

Table 3.1: Water Operating Conditions

Connection	Average Daily			Peak Hour	
	Demand (L/s)	Pressure (kPa / psi)	Age (hrs)	Demand (L/s)	Pressure (kPa / psi)
1	0.035	*492.3 / 71.4*	*0.38*	0.50	*395.1 / 57.3*
2	0.035	*488.8 / 70.9*	*0.52*	0.50	*390.9 / 56.7*
3	0.052	*489.5 / 71.0*	*0.38*	0.75	*390.2 / 56.6*
4	0.052	*493.7 / 71.6*	*0.36*	0.75	*394.4 / 57.2*
5	0.035	*495.7 / 71.9*	*0.44*	0.50	*397.8 / 57.7*
6	0.052	*499.2 / 72.9*	*0.34*	0.75	*400.6 / 58.1*

Refer to **Figure 6** and **Figure 7** for the location of the connection points and the layout of the proposed development blocks. Based on the results listed in **Table 3.1**, the proposed development blocks can be serviced with 50mm watermain from the existing Oblats Avenue and Deschatelets Avenue watermain. In addition, the pipe properties were also reviewed to ensure that hydraulic losses within the 50mm pipe were acceptable. Refer to **Appendix B** for complete hydraulic analysis results.

The required fire flows for the proposed units vary between 8000L/min and 11000L/min (133.3L/s to 183.3L/s, refer to fire flow calculations in **Appendix B**). The boundary conditions provided by the City of Ottawa confirmed that pressures within the existing watermain network were greater than 20psi at the maximum requested fire flows (minimum head of 103.5m available at the property limits during fire flow conditions). In addition, the existing watermain system was modelled for the MSSU (2025) and confirmed that fire flow in excess of the specific requirements for the Forecourt Townhome blocks could be provided within the study area while maintaining residual system pressures above 20psi. Refer to excerpts from the MSSU (2025) in **Appendix B**.

All units have a fire hydrant located within 90m (path of travel distance) of the entrance. In addition, a check was completed to ensure that the existing hydrant spacing was sufficient to provide the required fire flows for each unit, as the capacity of the individual hydrants is limited.

City of Ottawa guidelines (ISTB-2021-03, August 2021) note that Class AA hydrants can supply 5700L/min of fire flow if located within 75m of the unit and 3800L/min if located within 76-150m of the location. Refer to **Table 3.2** for verification that there is sufficient hydrant coverage within the existing ROW to supply the fire flow demand for the proposed development.

Table 3.2: Available Fire Flows

Housing Block	Required Fire Flow (L/min)	Hydrants <75m	Hydrants 75m-150m	Maximum Available Hydrant Flow* (L/min)
1	8000	2	2	*19000*
2	10000	1	3	*17100*
3	9000	1	3	*17100*
4	10000	1	3	*17100*
5	9000	2	3	*22800*
6	10000	1	4	*20900*
7	10000	1	2	*13300*
8	10000	1	2	*13300*
9	9000	1	2	*13300*
10	10000	1	2	*13300*
11	9000	1	3	*17100*
12	11000	1	2	*13300*

1 – Distance to hydrants has been calculated using path of travel distances.
2 - Theoretical maximum flow from the hydrants within 150m of the unit that could be supplied based on Class AA hydrants with no system constraints. Note: this calculation is supplied only to demonstrate that the existing hydrant spacing is sufficient to provide the minimum required fire flow. The actual fire flow that will be available is dependant on the system pressures. Refer to the MSSU (2025) and excerpts in Appendix B for EPAnet modelling results for actual system pressures available.

Based on the results listed in **Table 3.2**, the existing hydrants located on Oblats Avenue, Deschâtelets Avenue, De Mazenod Avenue and Hazel Street allow for adequate coverage to provide fire flows in excess of the demands for the proposed units.

EPAnet modelling of the existing watermain network was completed as part of the the MSSU (2025). The boundary conditions provided by the City of Ottawa, as presented in **Table 3.3**, confirmed that the minimum system pressure adjacent to the development during max day + fire flow is 55.2psi, which greatly exceeds the 20psi minimum.

Table 3.3: Boundary Conditions - Minimum System Pressures (Max Day + Fire Flow)

Connection	Required Fire Flow (L/min)	Ground Elevation (m)	Head (m)	Pressure (m)	Pressure (psi)
1	10000	64.88	103.50	38.62	*55.2*
2	10000	65.25	103.90	38.65	*55.2*
3	10000	65.23	104.30	39.07	*55.8*
4	10000	64.80	106.10	41.30	*59.0*
5	10000	64.51	106.20	41.69	*59.6*
6	11000	64.13	105.30	41.17	*58.8*

3.3 Watermain Conclusion

The existing 250mm dia. Deschâtelets Avenue and Oblats Avenue watermains provide adequate pressures to service the proposed development blocks. The proposed 50mm private mains are sufficient to meet the residential demand flows. The existing fire hydrants located on Oblats Avenue, Deschâtelets Avenue, De Mazenod Avenue and Hazel Street provide adequate fire protection to the proposed development.

4.0 STORMWATER MANAGEMENT

The storm drainage design for the Greystone Village Forecourt Townhomes is shown on the Storm Drainage Area Plans provided as **Figure 9** (Block 29) and **Figure 10** (Block 28). Each block consists of four clusters of slab-on-grade townhomes (i.e. no basements) separated by three car courts:

- Surface drainage from the Forecourt Townhomes will be collected by catchbasins (CBs) and catchbasin maintenance holes (CBMHs). The locations of the storm sewer inlets are shown on Figures 9 and 10.
- The proposed 250mm storm sewer in the northwest car court of Block 29 will outlet to the existing storm sewer on Oblats Avenue. The remaining storm sewers and CB leads for the Forecourt Townhomes will outlet to the existing storm sewer on Deschatelets Avenue.
- No storm sewer services will be provided, as they are not required due to the slab on grade unit type. Refer to *Foundation Drainage Review – Proposed Residential Development – 295 & 355 Deschatelets Avenue – Ottawa, Ontario; PG6948-MEMO.04, dated March 18, 2025,* in Appendix C for geotechnical confirmation of this requirement.

There will be some direct runoff from front and side yard areas adjacent to Oblats Avenue and Deschatelets Avenue. The direct runoff areas are identified on the Storm Drainage Area Plans.

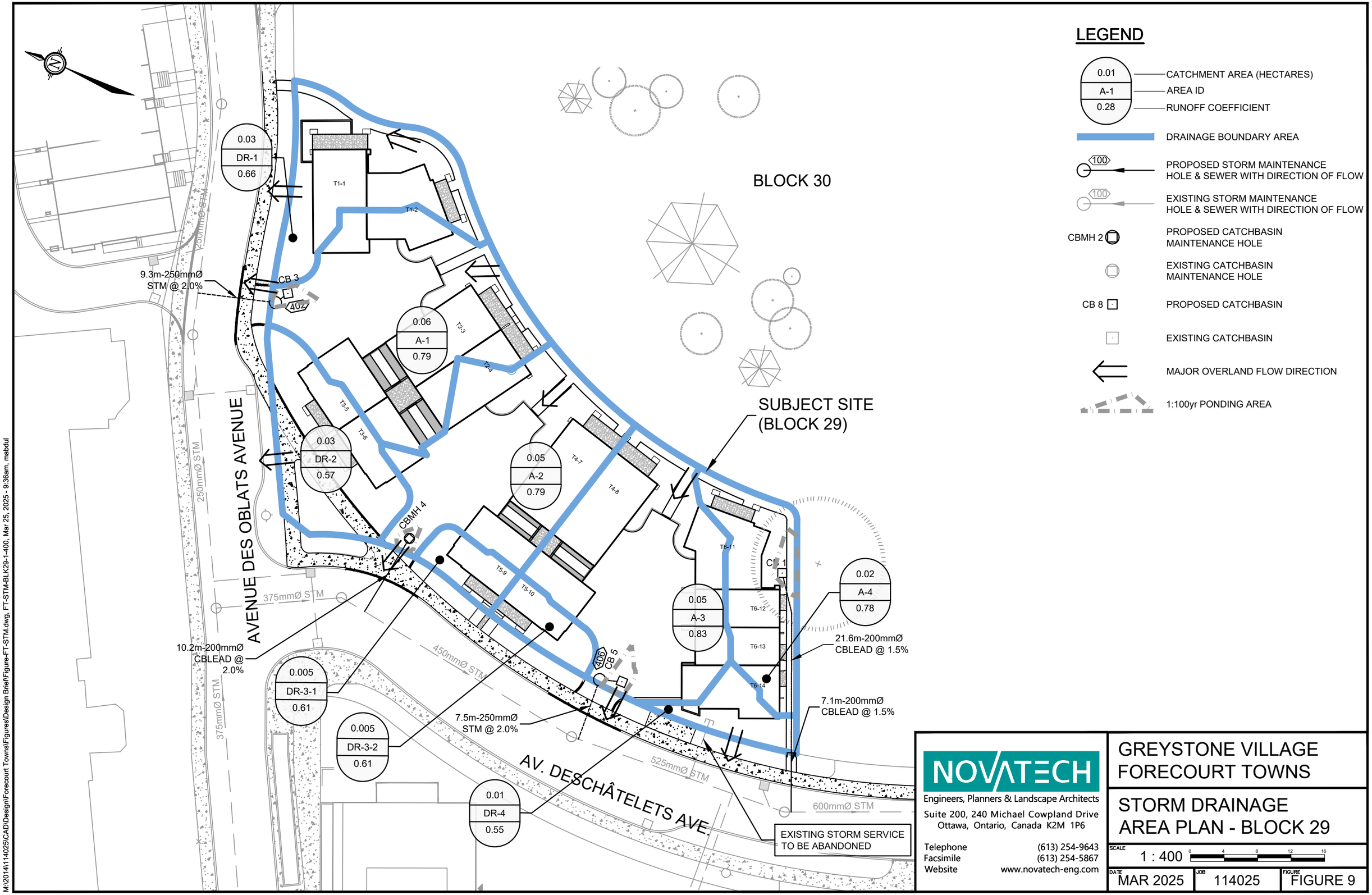
4.1 Stormwater Management Criteria

The stormwater management criteria used in the design of the Greystone Village Forecourts Townhomes have been based on the following:

- Greystone Village, 175 Main Street – Site Servicing, Stormwater Management, Noise, Erosion and Sediment Control Brief – Phase 2 and 3 dated May 26, 2017, (Novatech, May 2017/Ref. # R-2017-089).
    - This report outlined the design criteria for all future development within Greystone Village, including the Forecourt Townhome Blocks.
    - Master Servicing Study Update (MSSU, 2025) includes the same stormwater management criteria as the 2017 MSS report.
- City of Ottawa Sewer Design Guidelines (October 2012).

4.1.1 Minor System (Storm Sewers)

- Storm sewers are to be sized to convey the post-development 1:5-year peak flow.
- Provide additional storage (if necessary) to control the total site runoff to the allowable minor system release rate (5-year storm) for all storms up to the 100-year event.


LEGEND
0.01
A-1
0.28
CATCHMENT AREA (HECTARES)
AREA ID
RUNOFF COEFFICIENT
DRAINAGE BOUNDARY AREA
100
PROPOSED STORM MAINTENANCE HOLE & SEWER WITH DIRECTION OF FLOW
EXISTING STORM MAINTENANCE HOLE & SEWER WITH DIRECTION OF FLOW
CBMH 2
PROPOSED CATCHBASIN MAINTENANCE HOLE
EXISTING CATCHBASIN MAINTENANCE HOLE
CB 8
PROPOSED CATCHBASIN
EXISTING CATCHBASIN
MAJOR OVERLAND FLOW DIRECTION
1:100yr PONDING AREA
BLOCK 30
SUBJECT SITE (BLOCK 29)
AVENUE DES OBLATS
AV. DESCHÂTELETS AVE.
0.03 DR-1 0.66
0.06 A-1 0.79
0.03 DR-2 0.57
0.05 A-2 0.79
0.05 A-3 0.83
0.02 A-4 0.78
0.005 DR-3-1 0.61
0.005 DR-3-2 0.61
0.01 DR-4 0.55
T1-1
T1-2
T2-3
T2-4
T3-5
T3-6
T4-7
T4-8
T5-9
T5-10
T6-11
T6-12
T6-13
T6-14
CB 1
CB 3
CB 5
CBMH 4
406
402
9.3m-250mmØ STM @ 2.0%
10.2m-200mmØ CBLEAD @ 2.0%
7.5m-250mmØ STM @ 2.0%
21.6m-200mmØ CBLEAD @ 1.5%
7.1m-200mmØ CBLEAD @ 1.5%
EXISTING STORM SERVICE TO BE ABANDONED
250mmØ STM
375mmØ STM
450mmØ STM
525mmØ STM
600mmØ STM
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
GREYSTONE VILLAGE
FORECOURT TOWNS
STORM DRAINAGE AREA PLAN - BLOCK 29
SCALE 1 : 400
0 4 8 12 16
DATE MAR 2025
JOB 114025
FIGURE FIGURE 9
SHT11X17.DWG - 279mmX432mm
M:\2014\114025\CAD\Design\Forecourt Towns\Figures\Design Brief\Figure-FT-STM.dwg, FT-STM-BLK29-1-400, Mar 25, 2025 - 9:36am, mabdul

BLOCK 30

SUBJECT SITE
(BLOCK 28)

AV.DESCHÂTELETS AVE

RUE HAZEL ST

0.02
A-5
0.78

0.02
A-4
0.78

0.06
A-8
0.82

0.06
A-7
0.78

0.04
A-6
0.86

0.03
DR-8
0.72

0.01
DR-7
0.61

0.01
DR-6
0.62

0.01
DR-5
0.56

CB 1

CB 2

CB 8

CB 6

CBMH 7

414

410

T6-11
T6-12
T6-13
T6-14
T7-15
T7-16
T7-17
T7-18
T8-19
T8-20
T9-21
T9-22
T10-23
T10-24
T11-25
T11-26
T12-27
T12-28
T12-29
T12-30

21.6m-200mmØ CBLEAD @ 1.5%

21.6m-200mmØ CBLEAD @ 1.5%

7.0m-200mmØ CBLEAD @ 1.5%

7.1m-200mmØ CBLEAD @ 1.5%

7.1m-200mmØ CBLEAD @ 2.0%

7.1m-200mmØ CBLEAD @ 2.0%

7.1m-250mmØ STM @ 1.5%

7.6m-250mmØ STM @ 2.0%

EXISTING STORM SERVICE TO BE ABANDONED

600mmØ STM

600mmØ STM

600mmØ STM

750mmØ STM

750mmØ STM

525mmØ STM

LEGEND

- 0.01 / A-1 / 0.28 — CATCHMENT AREA (HECTARES) / AREA ID / RUNOFF COEFFICIENT
- DRAINAGE BOUNDARY AREA
- 100 — PROPOSED STORM MAINTENANCE HOLE & SEWER WITH DIRECTION OF FLOW
- 100 — EXISTING STORM MAINTENANCE HOLE & SEWER WITH DIRECTION OF FLOW
- CBMH 2 — PROPOSED CATCHBASIN MAINTENANCE HOLE
- EXISTING CATCHBASIN MAINTENANCE HOLE
- CB 8 — PROPOSED CATCHBASIN
- EXISTING CATCHBASIN
- MAJOR OVERLAND FLOW DIRECTION
- 1:100yr PONDING AREA

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

GREYSTONE VILLAGE
FORECOURT TOWNS

STORM DRAINAGE AREA PLAN - BLOCK 28

SCALE 1 : 400 (0, 4, 8, 12, 16)

DATE MAR 2025 | JOB 114025 | FIGURE FIGURE 10

SHT11X17.DWG - 279mmX432mm

M:\2014\114025\CAD\Design\Forecourt Towns\Figures\Design Brief\Figure-FT-STM.dwg, FT-STM-BLK28-1-400, Mar 25, 2025 - 9:36am, mabdul

- Ensure 100-year controlled flow rates do not exceed or have no adverse effects on the existing storm system.
- Inlet control device (ICD) flow rates are to be calculated for each drainage area to ensure that the following stormwater management (SWM) objectives are satisfied:
    - Surface water accumulation at street low points shall not be present for storm events up to and including the 1:5-year event.
    - Ponding depths shall not exceed 0.30 m and shall not be within 0.30 m (vertical) of the nearest building opening.

4.1.2 Major System (Emergency Overland Flow)

- Runoff that exceeds the 100-year storm event is to be conveyed overland to Deschâtelets Avenue and Oblats Avenue.

4.1.3 Water Quality Control

- Water quality control will be provided via two existing Vortechnic hydrodynamic separators at the storm outlets to the Rideau River. These Vortechnic units have been designed to provide an Enhanced level of water quality treatment for the entire Greystone Village development, including the Forecourt Townhome blocks. No additional water quality treatment measures are proposed.

4.1.4 Erosion and Sediment Control

- A qualified inspector should conduct daily visits during construction to ensure that the contractor is working in accord with the design drawings and that mitigation measures are being implemented as specified;
- Inserts and filter fabric are to be placed under all proposed and existing catchbasins and storm manhole covers;
- After complete build-out, all sewers are to be inspected and cleaned and all sediment and construction fencing is to be removed.

4.2 Stormwater Management Modeling

The City of Ottawa Sewer Design Guidelines (October 2012) requires hydrologic / hydraulic modeling for all dual drainage systems. The performance of the proposed storm drainage system was originally evaluated using the PCSWMM model as part of the Master Servicing Study (MSS 2017). The MSS PCSWMM model has been updated using available as-built information for the storm drainage infrastructure in Greystone Village and all current development proposals as part of the Master Servicing Study Update (MSSU, 2025). The results of the analysis were used to:

- Calculate the total post-development runoff from Forecourt Townhomes.
- Calculate the storm sewer hydraulic grade line for 100-year event.

The PCSWMM model was prepared and submitted as part of the MSSU (2025). Model schematics and output files are provided in **Appendix C**. The MSSU (2025) has been submitted under a separate cover.

4.2.1 Design Storms

The hydrologic / hydraulic analysis was completed using the following synthetic design storms and historical storms. The IDF parameters used to generate the design storms were taken from the City of Ottawa Sewer Design Guidelines (October 2012).

3 Hour Chicago Storms:	*24 Hour Chicago Storms*:
5-year 3hr Chicago storm	100-year 24hr Chicago storm
100-year 3hr Chicago storm	
100-year+20% 3hr Chicago storm	
12 Hour SCS Type II Storms:	*Historical Storms*:
5-year 24-hour SCS Type II storm	July 1, 1979 storm
100-year 24-hour SCS Type II storm	August 4, 1988 storm
	August 8, 1996 storm

The 3-hour Chicago distribution generates the highest peak flows for both the minor and major systems and was determined to be the critical storm distribution for the design of the storm drainage system.

The proposed drainage system has also been stress tested using a 3-hour Chicago design storm that has a 20% higher intensity and total volume compared to the 100-year event. This storm distribution is provided in **Appendix C**.

4.2.2 Modelling Parameters

The hydrologic parameters for each subcatchment were developed based on the proposed land use and grading. Subcatchments were modeled using the standard SWMM5 runoff module with Horton's Equation for infiltration.

Infiltration

Infiltration losses for all subcatchments were modeled using Horton's infiltration equation, which defines the infiltration capacity of soil over the duration of a precipitation event using a decay function that ranges from an initial maximum infiltration rate to a minimum rate as the storm progresses. The default values for the City of Ottawa were used for all catchments.

Horton's Equation:
$f(t) = f_c + (f_o - f_c)e^{-k(t)}$

Initial infiltration rate: f_o = 76.2 mm/hr
Final infiltration rate: f_c = 13.2 mm/hr
Decay Coefficient: k = 4.14/hr

Depression Storage

The default values for depression storage in the City of Ottawa were used for all catchments. Rooftops were assumed to provide no depression storage (zero-impervious parameter).

- Depression Storage (pervious areas): 4.67 mm
- Depression Storage (impervious areas): 1.57 mm

Equivalent Width

'Equivalent Width' refers to the width of the subcatchment flow path. This parameter is calculated as described in Section 5.4.5.6 of the *City of Ottawa Sewer Design Guidelines* (October 2012).

Impervious Values

Runoff coefficients for each subcatchment were determined based on the proposed site plan. Percent impervious values were calculated using the following equation:

$$\%imp = (C - 0.20) / 0.70$$

A table with the subcatchment parameters for each of the Forecourt Townhomes drainage areas (previously defined as subcatchments A3 and A7 in the 2017 MSS) are provided in **Appendix C**.

Boundary Condition

The existing storm sewers outlet to the Rideau River in two locations, which has a 100-year flood elevation of 57.85m adjacent the site. Outlet 1 is located in the southeast corner of Phase 1 of the subdivision development, east of the Telmon Street and Scholastic Drive intersection. Outlet 2 is in the eastern portion of Phase 2, directly east of the Oblats Avenue and Scholastic Drive intersection. Refer to **Appendix C** for model schematics and outlet locations.

4.3 Proposed Stormwater System

4.3.1 Previous Studies (2017 MSS)

The existing sewers on Oblates Avenue and Deschâtelets Avenue were sized using the Rational Method based on a 5-year level of service, using the drainage areas and runoff coefficients from the Master Servicing Study (MSS 2017). Stormwater flows from the Forecourt Townhome blocks were allocated to discharge to the Rideau River via the following outlets.

- Outlet 1 - Located within Phase 1 of the Greystone Village development.
  - All of Block 28 and the majority of Block 29.
- Outlet 2 - Located within Phase 2-3 of the Greystone Village development.
  - The northeast portion of Block 29.

Master Servicing Study Update (MSSU 2025)

The drainage patterns and outlets for the Forecourt Townhomes site are generally consistent with the drainage patterns considered in the MSS (2017), but there have been some changes to drainage patterns and release rates from some of the other development areas within the study limits. The overall storm drainage model from the MSS (2017) has been updated (MSSU, 2025) to reflect the proposed storm drainage system for the Forecourt Townhomes, along with the other development blocks within the study area. The subcatchment area updates to reflect the Forecourt Townhomes have required some adjustments to the subcatchment boundaries for adjacent areas.

In addition, the storm drainage model prepared for the MSS (2017), the Forecourt Townhomes were represented by two catchment areas (Areas A3 and A7). These catchments have been updated and discretized into sixteen (16) smaller subcatchment areas to reflect the detailed grading design for the Forecourt Townhomes as shown on **Figure 9** and **Figure 10**. For details of the changes refer to the MSSU (2025).

4.3.2 Storm System

Runoff from the proposed site will be captured by a combination of onsite catchbasins and catchbasin maintenance holes, with some limited direct runoff to Deschâtelets Avenue and Oblats Avenue which will be captured by the existing catchbasins in the ROW. Refer to **Figure 9** – Storm Drainage Area Plan – Block 29 and **Figure 10** – Storm Drainage Area Plan – Block 28.

Inlet Control Devices

Inlet control devices (ICDs) are to be installed within the proposed catchbasins and catchbasin maintenance holes in the Forecourt Townhome blocks to limit the inflows to the minor system during larger events. The ICDs have been sized based on the City of Ottawa standard orifice style ICD sizes (i.e. 83, 94, 102, 108, 127, 157, & 178mm) or low flow IPEX Tempest as required. ICD discharge curves for all proposed sizes are provided in **Appendix C**.

The onsite ICDs have been sized to provide a 5-year inlet capture rate to prevent surface ponding during a 5-year storm event; and to ensure that during the 100-year storm event surface ponding does not exceed 0.30m.

4.4 Results

To capture the Forecourt Townhomes design and other updates within Greystone Village development, a Master Servicing Study Update (MSSU 2025) has been prepared and submitted under a separate cover. The results of this report are consistent with the MSSU (2025) and the same PCSWMM model has been used.

4.4.1 Storm Flows – Forecourt Townhomes

Storm flows from the Forecourt Townhomes site will be captured by a combination of catchbasins and catchbasin maintenance holes within the proposed site and some overland drainage to existing catchbasins on Oblats Avenue and Deschâtelets Avenue. A summary of the flows in comparison with Areas A3 and A7 of MSS 2017 (previously assumed condition) is provided in **Table 4.1** (reference Table 3.2 in MSSU 2025). Refer to the Model Schematics in **Appendix C** for Subcatchment locations.

Table 4.1: Storm Flows – Forecourt Townhomes

Subcatchment ID	Outlet	System	Approaching Flow Rate (L/s)		Captured Flow Rate (L/s)	
			5yr	100yr	5yr	100yr
Proposed Condition (MSSU 2025)						
A3-A-1	CB3	Minor System	17	29	16	16
A3-A-2	CBMH4	Minor System	14	24	13	16
A3-A-3	CB5	Minor System	14	24	13	16
A3-A-4	CB1	Minor System	6	10	3	4
A3-DR1	Oblats Ave.	Overland	8	14	-	-
A3-DR2	Oblats Ave.	Overland	6	13	-	-
A3-DR3	Deschâtelets Ave.	Overland	2	5	-	-
A3-DR4	Deschâtelets Ave.	Minor System	2	5	-	-
A7-A-5	CB2	Minor System	6	10	4	4
A7-A-6	CB6	Minor System	11	20	11	11
A7-A-7	CBMH7	Minor System	17	29	16	16

Subcatchment ID	Outlet	System	Approaching Flow Rate (L/s)		Captured Flow Rate (L/s)	
			5yr	100yr	5yr	100yr
A7-A-8	CB8	Minor System	17	29	16	16
A7-DR5	Deschâtelets Ave.	Overland	2	4	-	-
A7-DR6	Deschâtelets Ave.	Overland	2	5	-	-
A7-DR7	Deschâtelets Ave.	Overland	2	5	-	-
A7-DR8	Deschâtelets Ave.	Overland	8	14	-	-
Previous Condition (MSS 2017)						
A3	Deschâtelets Ave.	Overland	69	40	-	-
A7	Deschâtelets Ave.	Overland	69	40	-	-

4.4.2 HGL Check

The hydraulic grade line (HGL) in the proposed storm sewers was evaluated using the PCSWMM model. The HGL is provided in **Table 4.2** (reference Table 3.2 in MSSU 2025). It provides the estimated HGL elevations for the 100-year storm event and proposed underside-of-footing (USF) elevations. In addition, this table includes the resulting HGL elevations from the 'stress test' event; using a 3-hour Chicago design storm that has a 20% higher intensity and total volume compared to the 100-year event.

As the proposed development does not provide any storm service connections to the proposed units, the HGL clearance relative to the proposed building is not applicable, however the table is provided for reference.

Table 4.2 – Hydraulic Grade Line Elevations and USF Clearance

MH ID	Obvert Elev (m)	T/G Elev (m)	100yr HGL* Elev(m)	100yr+20% HGL* Elev(m)	Min USF (m)	Design USF** (m)	Top of Slab** (m)	Clearance*** (m)	
								100yr	100yr+ 20%
MH402	63.14	64.88	62.95	62.95	63.44	63.11	65.45	2.50	2.50
MH406	63.07	65.21	62.86	62.86	63.37	63.41	65.75	2.89	2.89
MH410	62.81	64.76	62.55	62.55	63.11	62.96	65.30	2.75	2.75
MH414	62.18	64.27	62.05	62.11	62.48	62.56	64.90	2.85	2.79

* Results of 3hour Chicago Storm
** All units are Slab on Grade (i.e. No Basements)
*** Clearance is calculated to Top of Slab

4.4.3 Inlet Control Devices

Table 4.3 summarizes the ICD sizes, types and heads for the 5-year and 100-year design events for each inlet to the storm sewer. As noted in this table, there is no surface ponding during the 5-year storm event as the hydraulic grade line is below the top of grate elevation of the structure.

Table 4.3 – Inlet Control Devices & Ponding Depths

ICD Name	Inlet Node	Outlet Node	Inlet Elev. (m)	ICD Type	5yr		100yr	
					Ponding (m)	Head (m)	Ponding (m)	Head (m)
A3-A1-OR	CB3	MH402	63.64	83mm	0.00	1.20	0.07	1.27
A3-A2-OR	CBMH4	MH172	63.95	83mm	0.00	0.87	0.05	1.25
A3-A3-OR	CB5	MH406	63.93	83mm	0.00	0.89	0.06	1.26
A3-A4-LMF	CB1	MH168	63.72	LMF 60	0.00	1.17	0.06	1.26
A7-A5-LMF	CB2	MH166	63.64	LMF 60	0.00	1.22	0.05	1.25
A7-A6-LMF	CB6	MH410	63.51	LMF 105	0.00	1.18	0.05	1.25
A7-A7-LMF	CBMH7	MH164	63.25	83mm	0.00	1.19	0.06	1.26
A7-A8-OR	CB8	MH414	62.83	83mm	0.00	1.22	0.04	1.25

4.4.4 Major System Flows

The uncontrolled flows from Forecourt Townhomes will flow overland to either Oblats Avenue or Deschâtelets Avenue. The MSSU (2025) checked overland flow depths and velocities using the updated PCSWMM model to ensure that the results conform to the SWM design criteria. **Table 4.4** shows the summary of major system flows for the 5-year, 100-year and stress test model runs.

Direct Runoff Areas

Based on the detailed grading design for the Forecourt Townhomes, storm runoff from Areas A3-DR1 and A3-DR2 will flow to the major system in Oblats Avenue (Outlet 2). Storm runoff from Areas A3-DR4 and A7-DR5, A7-DR6, A7-DR7, A7-DR8 will flow to the major system in Deschâtelets Avenue (Outlet 1). Area A3-DR3 is located at the drainage divide (high point) between Outlet 1 and Outlet 2 on Deschatelets Avenue. 50% of the flow from Area A3-DR3 (Area DR-3-1) will flow to the major system on Oblats Avenue (Outlet 2) and the remaining 50% (Area DR-3-2) will flow to the major system on Deschâtelets Avenue (Outlet 1).

Overland Flow From Controlled Areas

Runoff from less frequent storms (greater than the 5-year event) that exceed the minor system capacity will flow overland towards Oblats Avenue (Outlet 2) from area A3-A-1, while excess flows from A3-A-2, A3-A-3, A3-A-4, A7-A-5, A7-A-6, A7-A-7 and A7-A-8 will flow overland towards Deschâtelets Avenue (Outlet 1). Based on the model results (refer to MSSU 2025: Tables 3.3 and 3.4), the Forecourt Townhomes site will have no adverse effects on the major system flows throughout the development.

Table 4.4 – Summary of Flows to Major System from Forecourt Townhomes

Area	Flow to Major System (L/s)		
	5-year	100-year	Stress Test
Controlled Areas			
A3-A1	0	13.0	18.9
A3-A2	0	8.2	13.2
A3-A3	0	8.2	13.2
A3-A4	0	0.9	5.0
A7-A5	0	5.7	7.9
A7-A6	0	9.7	14.8
A7-A7	0	13.0	19.0
A7-A8	0	13.3	19.2
Area	**Flow to Major System (L/s)**		
	5-year	**100-year**	**Stress Test**
Uncontrolled Areas			
A3-DR1	7.8	14.3	17.3
A3-DR2	5.7	12.9	16.1
A3-DR3-1	1.15	2.3	2.85
A3-DR3-2	1.15	2.3	2.85
A3-DR4	2.3	4.6	5.7
A7-DR5	2.1	4.4	5.5
A7-DR6	2.3	4.6	5.7
A7-DR7	2.3	4.6	5.6
A7-DR8	8.2	14.5	17.5

4.5 LID Features

The site design will incorporate permeable surfaces wherever practical (walkways, garbage pads, landscaped areas) to promote infiltration and reduce stormwater runoff. The stormwater design does not account for the presence of these measures on the site based on the previous report, *Greystone Village – 175 Main Street – Potential Low Impact Development Opportunities, Prepared by Novatech, dated November 25, 2015, Ref. R-2015-182,* which indicated that LID features were not feasible for the development given the existing soils.

5.0 SITE GRADING

5.1 Existing Conditions

The site is currently vacant. Both blocks previously had the topsoil removed and granular material placed to provide temporary construction staging areas. The current grades are general in line with the original (pre-development) grading of the property which was primarily a grassed area surrounded by mature trees prior to the development works. The site has minimal slopes with the topography slightly higher in the central portions sloping gradually to the northeast and southeast.

There are currently no operational drainage structures located within the site limits or on the adjacent park block (Block 30) and surface flows from all three block (Block 28, Block 29 and Block 30) eventually reach the drainage structures located within the Oblats Avenue and Deschâtelets Avenue ROW.

5.2 Proposed Conditions

The design grades will tie into proposed back of sidewalk elevations along Oblats Avenue and Deschâtelets Avenue. Elevations along the eastern boundary of the site are set to direct drainage away from the Block 30 property line. This requires a proposed elevation difference of up to 0.6m from the existing elevations. It is proposed to provide terracing from the property line to the existing ground elevations where required onto the Block 30 property. It is anticipated the maximum extent of the grading impacts onto the adjacent block will be 2m. The terracing would be reviewed to ensure that the terracing did not create any new drainage issues on the adjacent block. For detailed grading refer to the Grading Plans **(114025-FT-GR1 & 114025-FT-GR2, Appendix E)**.

The proposed grading will fall within these ranges:

- Landscaped Areas: Minimum 2% - Maximum 6%, Maximum Terracing: 3H:1V
- Driveway and Parking Areas: 0.5% - 5%
- Entrance: 2% maximum

5.3 Emergency Overland Flow Route

In the case of a major rainfall event exceeding the capture capacity of the on-site drainage structures, the site will be graded to provide an overland flow route for the stormwater to leave the site. The major system flow route from the subject site will overflow through the car court entrances to the adjacent ROW (Oblats Avenue and Deschâtelets Avenue), as discussed in **Section 4.4.4**. There are two small drainage areas along the eastern portions of the property, specifically adjacent to the large heritage trees, where major system flows are unable to be directed to the City ROW before outletting to the adjacent park block. This is consistent with the existing drainage conditions and is unavoidable without significant impacts to the critical root zones of the heritage trees. The finished floor elevations of the buildings are a minimum of 0.15m above the major system overflow points along hard surfaced areas and 0.3m in landscaped areas. The emergency overland flow routes are shown on the Storm Drainage Area Plans (**Figure 9** & **Figure 10**).

6.0 UTILITIES

The Forecourt Townhome blocks will be serviced with hydro (Hydro Ottawa), gas (Enbridge), communications (Bell and Rogers) with connections to the existing utility networks on Oblats Avenue and Deschâtelets Avenue. Canada Post will service the site with community mailboxes. Site lighting will be provided along roadways, sidewalks and walkways as per City standards.

7.0 EROSION AND SEDIMENT CONTROL

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). Typical erosion and sediment control measures recommended include, but are not limited to, the use of silt fences around perimeter of site, filter fabric or inserts under catch basin/maintenance hole lids, heavy duty silt fence barrier, straw bale check dams, rock check dams, turbidity curtain, dewatering trap, temporary water passage system, riprap, mud mats, silt bags for dewatering operations, topsoil and sod to disturbed areas and natural grassed waterways. Dewatering and sediment control techniques will be developed for the individual situations based on the above guidelines and utilizing typical measures to ensure erosion and sediment control is controlled in an acceptable manner and there is no negative impact to adjacent lands, water bodies or water treatment/conveyance facilities.

The following erosion and sediment control measures will be implemented during construction. Details are provided on the Erosion and Sediment Control Plan.

- All erosion and sediment control measures are to be installed to the satisfaction of the engineer, the municipality and the conservation authority prior to undertaking any site alterations (filling, grading, removal of vegetation, etc.) and remain present during all phases of site preparation and construction.
- A qualified inspector should conduct daily visits during construction to ensure that the contractor is working in accordance with the design drawings and that mitigation measures are being implemented as specified.
    - A light duty silt fence barrier is to be installed in the locations shown on the Erosion and Sediment Control & Removals Plan **(114025-FT-ESC1 & 114025-FT-ESC2, Appendix E).**
    - Catch basin inlet protection measures are to be established for all proposed and existing catch basins and storm sewer structures.
    - After complete build-out, all sewers are to be inspected and cleaned and all sediment and construction fencing is to be removed.
- The contractor shall ensure that proper dust control is provided with the application of water (and if required, calcium chloride) during dry periods.
- The contractor shall immediately report to the engineer or inspector any accidental discharges of sediment material into any ditch or sewer system. Appropriate response measures shall be carried out by the contractor without delay.

- The contractor acknowledges that failure to implement erosion and sediment control measures may result in penalties imposed by any applicable regulatory agency.

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).

8.0 CONCLUSIONS

This report confirms the proposed Greystone Village Forecourt Townhome development can be adequately serviced with storm and sanitary sewers and watermain. The report is summarized below:

Sanitary Servicing

- The sanitary flows have decreased for the Forecourt Townhome site compared to the calculated flows in the Master Servicing Study (MSS 2017) and is consistent with the Master Servicing Study Update (MSSU 2025). There is adequate servicing capacity in the existing sanitary sewer to support the proposed development.

Watermain

- The proposed 50mm dia. watermains are sufficient to provide the required residential water demands for the development.
- The existing hydrants on De Mazenod Avenue, Deschâtelets Avenue, Oblats Avenue and Hazel Street are sufficient to provide the required fire flow demands for the proposed development.

Stormwater Management

- The two (2) proposed development parcels, each consisting of six (6) semi-detached or townhome blocks, are proposed to be serviced by a combination of 250mm diameter storm sewers and 200mm diameter catchbasin leads. Each parcel will require four (4) connections to the existing storm sewers within the Oblats Avenue and Deschâtelets Avenue ROW.
- Runoff from the site will be captured by a combination of catchbasins and catchbasin maintenance holes or will drain overland to Oblats Avenue or Deschâtelets Avenue.
    - There will be no ponding in the 5-year event.
    - Ponding depths in the 100-year event will be less than 0.30m.
    - The ponding will not touch the building envelops in the stress test event.
- The impact of the proposed development on the existing sewers (Capacity, HGL, and Overland flow depths and velocities) within the Greystone Subdivision ROW have been analyzed in the MSSU (2025) and found to have no negative impacts on the downstream system.
- Updated approvals (CLI ECA) will be obtained for the existing storm sewer outlets through the subdivision approvals based on the MSSU (2025).

Utilities

- The development will be serviced by hydro (Hydro Ottawa), gas (Enbridge), Bell and Rogers from the existing services on Deschâtelets Avenue and Oblats Avenue.

Erosion and Sediment Control

- Erosion and sediment control measures will be implemented prior to construction and remain in place until vegetation is established.

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

NOVATECH

Prepared by:

Trevor McKay, P. Eng.
Senior Project Manager | Land Development Engineering

APPENDIX A

Sanitary Sewer Design

SANITARY SEWER DESIGN SHEET

Novatech Project #: 114025-5
Project Name: Greystone Village - Forecourt Townhomes - Block 28 (355 Deschatelets Avenue)
Date: 3/4/2025
Input By: Mo Abdul
Reviewed By: Trevor McKay
Drawing Reference: Figure 5 - Sanitary Drainage Area Plan (Block 28)

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

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

Location				Demand											Design Capacity							
				Residential Flow									Extraneous Flow Area Method		Total Design Flow	Proposed Sewer Pipe Sizing / Design							
Street	Area ID	From MH	To MH	Singles	Semis / Towns	Apts	Population (in 1000's)	Cumulative Population (in 1000's)	Average Pop. Flow Q(q) (L/s)	Design Peaking Factor M	Peak Design Pop. Flow Q(p) (L/s)	Res. Drainage Area (ha.)	Cumulative Res. Drainage Area (ha.)	Cumulative Extraneous Drainage Area (ha.)	Design Extraneous Flow Q(e) (L/s)	Total Peak Design Flow Q(D) (L/s)	Pipe Length (m)	Pipe Size (mm) and Material	Pipe ID Actual (m)	Roughness n	Design Grade So (%)	Capacity Qfull (L/s)	Full Flow Velocity (m/s)	Q(D) / Qfull
Block 28	A4	413	415		6		0.016	0.016	0.05	3.71	0.19	0.088	0.088	0.088	0.03	0.22	21.1	200 PVC	0.203	0.013	2.00	48.4	1.49	0.5%
Block 28		415	EX-PH1				0.000	0.016	0.05	3.71	0.19	0.000	0.088	0.088	0.03	0.22	8.3	250 PVC	0.254	0.013	2.00	87.7	1.73	0.3%
Block 28	A5	417	419		4		0.011	0.011	0.04	3.73	0.13	0.066	0.066	0.066	0.02	0.15	20.2	200 PVC	0.203	0.013	2.00	48.4	1.49	0.3%
Block 28		419	EX-PH1				0.000	0.011	0.04	3.73	0.13	0.000	0.066	0.066	0.02	0.15	7.3	250 PVC	0.254	0.013	1.50	76.0	1.50	0.2%
Block 28	A6	421	423		6		0.016	0.016	0.05	3.71	0.19	0.088	0.088	0.088	0.03	0.22	21.9	200 PVC	0.203	0.013	2.00	48.4	1.49	0.5%
Block 28		423	EX-PH1				0.000	0.016	0.05	3.71	0.19	0.000	0.088	0.088	0.03	0.22	7.8	250 PVC	0.254	0.013	1.90	85.5	1.69	0.3%
Total to Phase 1 Sewers	**A4+A5+A6**			**0**	**16**	**0**	**0.043**	**0.043**	**0.14**	**3.66**	**0.51**	**0.242**	**0.242**	**0.242**	**0.08**	**0.59**	**86.6**							

Demand Equation / Parameters

1. **Q(D) =** Q(p) + Q(ici) + Q(e)
2. **Q(p) =** (P x q x M x K / 86,400)
3. **q =** 280 L/per person/day (design)
4. **M = Harmon Formula (maximum of 4.0)**
5. **K =** 0.8 (design)
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(ici) =** ICI Area x ICI Flow x ICI Peak
8. **Q(e) =** 0.33 L/s/ha (design)

Definitions

Q(D) = Peak Design 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
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
ICI Peak *				
	Design =	1.0	1.5	* ICI Peak = 1.0 Default, 1.5 if ICI in contributing area is >20% (design only)

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

SANITARY SEWER DESIGN SHEET

Novatech Project #: 114025-5
Project Name: Greystone Village - Forecourt Townhomes - Block 29 (295 Deschatelets Avenue)
Date: 3/4/2025
Input By: Mo Abdul
Reviewed By: Trevor McKay
Drawing Reference: Figure 4 - Sanitary Drainage Area Plan (Block 29)

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

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

Location				Demand												Design Capacity							
				Residential Flow									Extraneous Flow Area Method		Total Design Flow	Proposed Sewer Pipe Sizing / Design							
Street	Area ID	From MH	To MH	Singles	Semis / Towns	Apts	Population (in 1000's)	Cumulative Population (in 1000's)	Average Pop. Flow Q(q) (L/s)	Design Peaking Factor M	Peak Design Pop. Flow Q(p) (L/s)	Res. Drainage Area (ha.)	Cumulative Res. Drainage Area (ha.)	Cumulative Extraneous Drainage Area (ha.)	Design Extraneous Flow Q(e) (L/s)	Total Peak Design Flow Q(D) (L/s)	Pipe Length (m)	Pipe Size (mm) and Material	Pipe ID Actual (m)	Roughness n	Design Grade So (%)	Capacity Qfull (L/s)	Full Flow Velocity (m/s)	Q(D) / Qfull
Block 29	A1	401	403		4		0.011	0.011	0.04	3.73	0.13	0.085	0.085	0.085	0.03	0.16	20.6	200 PVC	0.203	0.013	1.00	34.2	1.06	0.5%
Block 29		403	EX-PH2				0.000	0.011	0.04	3.73	0.13	0.000	0.085	0.085	0.03	0.16	7.0	250 PVC	0.254	0.013	1.00	62.0	1.22	0.3%
Total to Phase 2 Sewers	**A1**			**0**	**4**	**0**	**0.011**	**0.011**	**0.04**	**3.73**	**0.13**	**0.085**	**0.085**	**0.085**	**0.03**	**0.16**	**27.6**							
Block 29	A2	405	407		4		0.011	0.011	0.04	3.73	0.13	0.078	0.078	0.078	0.03	0.16	22.4	200 PVC	0.203	0.013	1.50	41.9	1.29	0.4%
Block 29		407	EX-PH1				0.000	0.011	0.04	3.73	0.13	0.000	0.078	0.078	0.03	0.16	9.7	250 PVC	0.254	0.013	1.50	76.0	1.50	0.2%
Block 29	A3	409	411		6		0.016	0.016	0.05	3.71	0.19	0.089	0.089	0.089	0.03	0.22	21.3	200 PVC	0.203	0.013	2.00	48.4	1.49	0.5%
Block 29		411	EX-PH1				0.000	0.016	0.05	3.71	0.19	0.000	0.089	0.089	0.03	0.22	8.4	250 PVC	0.254	0.013	2.00	87.7	1.73	0.3%
Total to Phase 1 Sewers	**A2+A3**			**0**	**10**	**0**	**0.027**	**0.027**	**0.09**	**3.69**	**0.32**	**0.167**	**0.167**	**0.167**	**0.06**	**0.38**	**61.8**							

Demand Equation / Parameters

1. **Q(D) =** Q(p) + Q(ici) + Q(e)
2. **Q(p) =** (P x q x M x K / 86,400)
3. **q =** 280 L/per person/day (design)
4. **M = Harmon Formula (maximum of 4.0)**
5. **K =** 0.8 (design)
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(ici) =** ICI Area x ICI Flow x ICI Peak
8. **Q(e) =** 0.33 L/s/ha (design)

Definitions

Q(D) = Peak Design 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
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
ICI Peak *			
Design =	1.0	1.5	* ICI Peak = 1.0 Default, 1.5 if ICI in contributing area is >20% (design only)

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

SANITARY SEWER DESIGN SHEET
Greystone Village - 175 Main Street
Developer: Greystone Village Inc.
Additional Condo Units

NOVATECH
Engineers, Planners & Landscape Architects

PROJECT # : 114025
DESIGNED BY : SZ
CHECKED BY : JAG
DATE PREPARED : 15-Dec-15
DATE REVISED : 04-Apr-16
DATE REVISED : 21-Jun-16
DATE REVISED : 15-Mar-17
DATE REVISED : 26-May-17

LOCATION				INDIVIDUAL							CUMULATIVE		PEAK FACTOR M	POPULATION FLOW Q(p) (L/s)	PEAK EXTRAN. FLOW Q(i) (L/s)	PEAK DESIGN FLOW Q(d) (L/s)	PROPOSED SEWER							
STREET	FROM MH	TO MH	Area	Single Units	Townhouse Units	Condo Units	Future School Residence	Retirement Home Units	Population (in 1000's)	AREA (ha.)	Population (in 1000's)	AREA (ha.)					LENGTH (m)	PIPE SIZE (mm)	PIPE ID (mm)	TYPE OF PIPE	GRADE %	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	Qpeak/ Qcap
*DESCHATELETS AVENUE	151	149	1&2	Block 29	21	80			0.225	0.64	0.225	0.640	4.0	3.64	0.18	3.82	30.6	200	203.20	DR 35	0.65	27.6	0.85	14%
*DESCHATELETS AVENUE	149	147	3							0.05	0.225	0.690	4.0	3.64	0.19	3.83	27.8	200	203.20	DR 35	0.40	21.6	0.67	18%
*DESCHATELETS AVENUE	147	145	4							0.31	0.225	1.000	4.0	3.64	0.28	3.92	33.6	200	203.20	DR 35	0.40	21.6	0.67	18%
*DESCHATELETS AVENUE	145	193	5	Block 28	21		112		0.281	0.74	0.505	1.740	4.0	8.13	0.49	8.62	20.2	200	203.20	DR 35	0.40	21.6	0.67	40%
*DESCHATELETS AVENUE	193	143									0.505	1.74	4.0	8.13	0.49	8.62	20.2	200	203.20	DR 35	0.40	21.6	0.67	40%
DESCHATELETS AVENUE	143	141	6			75			0.158	0.21	0.663	1.95	3.9	10.49	0.55	11.04	31.1	200	203.20	DR 35	0.40	21.6	0.67	51%
DESCHATELETS AVENUE	141	139	7							0.08	0.663	2.030	3.9	10.49	0.57	11.06	27.0	200	203.20	DR 35	0.40	21.6	0.67	51%
DESCHATELETS AVENUE	139	133	8							0.09	0.663	2.120	3.9	10.49	0.59	11.09	21.8	200	203.20	DR 35	0.40	21.6	0.67	51%
**FORECOURT	133	131	9						0.149	0.80			1.5	0.05	0.22	0.28	75.3	200	203.20	DR 35	0.40	21.6	0.67	68%
DE MAZENOD AVENUE			10		12	102			0.247	0.47	0.910	2.590	3.8	14.10	0.73	14.82								
DE MAZENOD AVENUE	105	131	11		12	102			0.247	0.48	0.247	0.480	4.0	4.00	0.13	4.13	73.6	200	203.20	DR 35	0.40	21.6	0.67	19%
JEREMIAH KEALEY STREET	131	129	12		6				0.016	0.19	1.172	3.260	3.8	17.83	0.91	19.02	47.7	250	254.00	DR 35	0.40	39.2	0.77	48%
JEREMIAH KEALEY STREET	129	127	13		6				0.016	0.19	1.189	3.450	3.8	18.06	0.97	19.30	48.7	250	254.00	DR 35	0.40	39.2	0.77	49%
DESCHATELETS AVENUE	133	135	14		3	47			0.107	0.34	0.107	0.340	4.0	1.73	0.10	1.83	51.2	200	203.20	DR 35	0.65	27.6	0.85	7%
DESCHATELETS AVENUE	135	137	15		3	20			0.050	0.13	0.157	0.470	4.0	2.54	0.13	2.67	49.3	200	203.20	DR 35	0.40	21.6	0.67	12%
SCHOLASTIC DRIVE	137	127	16	4					0.014	0.19	0.171	0.660	4.0	2.76	0.18	2.95	69.9	200	203.20	DR 35	0.40	21.6	0.67	14%
SCHOLASTIC DRIVE	127	125	17	4					0.014	0.17	1.373	4.280	3.7	20.61	1.20	22.09	59.6	250	254.00	DR 35	0.40	39.2	0.77	56%
SCHOLASTIC DRIVE	125	109									1.373	4.280	3.7	20.61	1.20	22.09	13.6	250	254.00	DR 35	0.40	39.2	0.77	56%
PHILOSOPHER PRIVATE	101	111	18	4					0.014	0.17	0.014	0.170	4.0	0.22	0.05	0.27	24.8	200	203.20	DR 35	0.65	27.6	0.85	1%
TELMON STREET	111	103	19							0.07	0.014	0.240	4.0	0.22	0.07	0.29	17.1	200	203.20	DR 35	0.40	21.6	0.67	1%
TELMON STREET	103	105	20	1					0.003	0.03	0.017	0.270	4.0	0.28	0.08	0.35	8.4	200	203.20	DR 35	0.40	21.6	0.67	2%
TELMON STREET	105	107	21	7	3				0.032	0.26	0.049	0.530	4.0	0.79	0.15	0.94	46.3	200	203.20	DR 35	0.40	21.6	0.67	4%
TELMON STREET	107	109	22	4	3				0.022	0.21	0.071	0.740	4.0	1.14	0.21	1.35	39.7	200	203.20	DR 35	0.40	21.6	0.67	6%
OUTLET	109	113									1.443	5.020	3.7	21.58	1.41	23.26	11.9	250	254.00	DR 35	0.40	39.2	0.77	59%
OUTLET	113	115	23							0.04	1.443	5.060	3.7	21.58	1.42	23.27	43.3	250	254.00	DR 35	5.13	140.5	2.77	17%
CLEGG	123	121	24	6					0.020	0.19	0.020	0.190	4.0	0.33	0.05	0.38	72.5	200	203.20	DR 35	3.16	60.8	1.88	1%
CLEGG	121	117	25	8					0.027	0.18	0.048	0.370	4.0	0.77	0.10	0.87	77.0	200	203.20	DR 35	0.40	21.6	0.67	4%
CLEGG	117	115									0.048	0.370	4.0	0.77	0.10	0.87	9.5	200	203.20	DR 35	0.42	22.2	0.68	4%
OUTLET	115	119									1.491	5.430	3.7	22.23	1.52	24.03	10.6	250	254.00	DR 35	0.41	39.7	0.78	60%

SANITARY SEWER DESIGN SHEET
Greystone Village - 175 Main Street
Developer: Greystone Village Inc.
Additional Condo Units

NOVATECH
Engineers, Planners & Landscape Architects

PROJECT # :	114025
DESIGNED BY :	SZ
CHECKED BY :	JAG
DATE PREPARED :	15-Dec-15
DATE REVISED :	04-Apr-16
DATE REVISED :	21-Jun-16
DATE REVISED :	15-Mar-17
DATE REVISED :	26-May-17

LOCATION				INDIVIDUAL							CUMULATIVE		PEAK FACTOR M	POPULATION FLOW Q(p) (L/s)	PEAK EXTRAN. FLOW Q(i) (L/s)	PEAK DESIGN FLOW Q(d) (L/s)	PROPOSED SEWER							
STREET	FROM MH	TO MH	Area	Single Units	Townhouse Units	Condo Units	Future School Residence	Retirement Home Units	Population (in 1000's)	AREA (ha.)	Population (in 1000's)	AREA (ha.)					LENGTH (m)	PIPE SIZE (mm)	PIPE ID (mm)	TYPE OF PIPE	GRADE %	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	Qpeak/ Qcap

*Part of future phase 2 outletting through phase 1A at outlet 1.

Notes:

1. Q(d) = Q(p) + Q(i)
2. Q(i) = 0.28 L/sec/ha
3. Q(p) = (PxqxM/86,400)

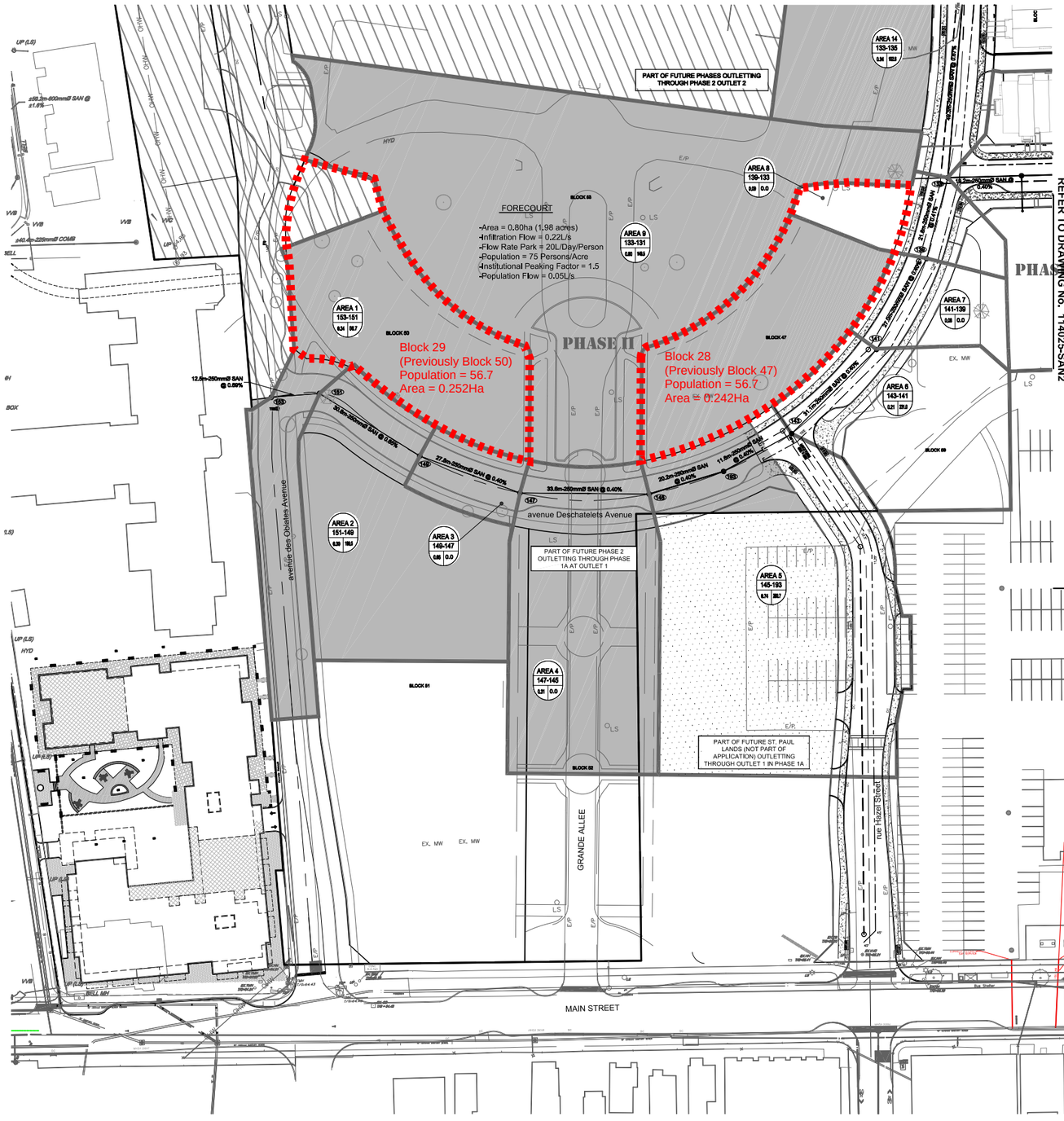
Definitions:

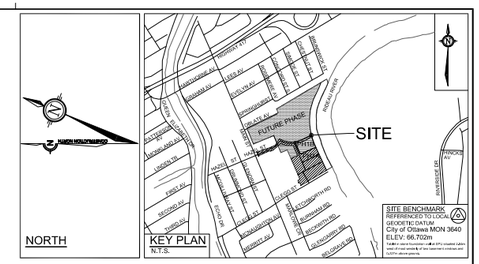
Q(d) = Design Flow (L/sec)
Q(p) = Population Flow (L/sec)
Q(i) = Extraneous Flow (L/sec)

P = Population (3.4 persons/single unit, 2.7 persons/townhouse, 2.1 persons/apartment, 2.0 persons/ school residence, 1.4 persons/retirement residence)
q = Average per capita flow = 350 L/cap/day - Residential
q = Average per gross ha. flow = 35000 L/gross ha/day - Light industrial
q = Average per gross ha. flow = 50000 L/gross ha/day - Commercial/Mixed use
M = Harmon Formula (maximum of 4.0)
Min pipe size 200mm @ min. slope 0.32%

** Parkland: Area = 0.91 ha, Flow Rate for parks with flush toilets = 20L/Day/Person, peak design flow from parkland to be added to peak design flow of subsequent pipes.

Population = 75 Persons/acre Details from Appendix 4-A OSDG
Institutional Peaking factor = 1.5





LEGEND

- SITE BOUNDARY
- PHASING LIMITS
- AREA ID
- MANHOLE TO MANHOLE
- POPULATION EQUIVALENT
- AREA IN HECTARES
- SANITARY DRAINAGE AREA BOUNDARY
- PROPOSED SANITARY SEWER AND MANHOLE WITH DIRECTION OF FLOW
- EXISTING SANITARY SEWER AND MANHOLE WITH DIRECTION OF FLOW
- PART OF FUTURE PH.2 OUTLETTING THROUGH PH.1A AT OUTLET 1
- PART OF FUTURE ST. PAUL LANDS (NOT PART OF APPLICATION) OUTLETTING THROUGH PH.1A AT OUTLET 1
- PART OF FUTURE PHASES OUTLETTING THROUGH PHASE 2 OUTLET 2
- PROPOSED CONCRETE SIDEWALK

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
4.	REVISED AS PER CITY COMMENTS & ISSUED FOR E.C.A.	MAY 24/16	JAG
3.	ISSUED FOR TENDER	APR 20/16	JAG
2.	REVISED AS PER CITY COMMENTS	APR 13/16	JAG
1.	ISSUED FOR CITY OF OTTAWA REVIEW	DEC 18/15	JAG

SCALE 1:500

1:500
0 5 10 15 20

DESIGN JAG
CHECKED MSP
DRAWN MTM
CHECKED JAG
APPROVED JGR

FOR REVIEW ONLY

PROFESSIONAL ENGINEER J.G. RIDDELL PROVINCE OF ONTARIO

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

CITY OF OTTAWA
GREYSTONE VILLAGE
175 MAIN STREET

DRAWING NAME
SANITARY DRAINAGE AREAS PLAN
PHASE 1A AND 1B

PROJECT No. 114025-00
REV. REV # 4
DRAWING No. 114025-SAN1

P:\2014\114025\CAD\Design\Phase 1A - 181\114025-SAN1.dwg, SAN1, May 24, 2016 - 3:18pm, rmmckeogh

APPENDIX B

Water Boundary Conditions & Hydraulic Calculations

Water Demand Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

Boundary Condition Request

Novatech Project #: 114025-5
Project Name: Greystone Village - Forecourt Townhomes: Block 29
Date: 6/28/2024
Input By: Trevor McKay
Reviewed By: Trevor McKay
Drawing Reference: 114025-FT-GP1, Revision 1 - Markup

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

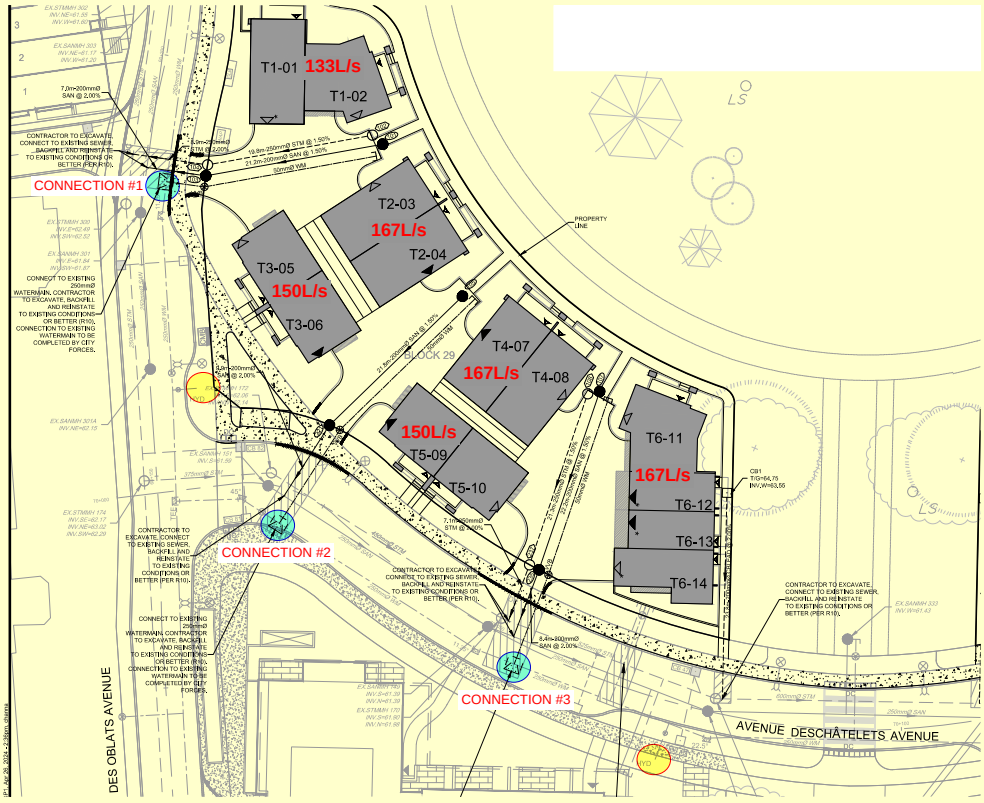
Reference: Ottawa Design Guidelines - Water Distribution (2010 and TBs)
MOE Design Guidelines for Drinking-Water Systems (2008)
Fire Underwriter's Survey Guideline (2020)
Ontario Building Code, Part 3 (2012)

Small System = YES

	# of Dwellings	Area (ha.)	Pop. Equiv.	Average Day Demand (L/s)	Maximum Day Demand (L/s)	Peak Hour Demand (L/s)
Residential Input - Connection 1						
Semis / Townhomes	4		10.80	0.04	0.33	0.50
Residential Input - Connection 2						
Semis / Townhomes	4		10.80	0.04	0.33	0.50
Residential Input - Connection 3						
Semis / Townhomes	6		16.20	0.05	0.50	0.75
Totals	**14**	**0.00**	**37.80**	**0.12**	**1.16**	**1.75**

Summary

i. Type of Development and Units:	Residential, Freehold Townhomes
ii. Site Address:	295 Deschatelets Avenue
iii. Proposed Water Service Connection Location(s):	3 Individual - 50mm diameter service connections (dead ends) servcing 4 (Oblats Avenue), 4 (Deschatelets Avenue), and 6 units (Deschatelets Avenue) respectively



Water Demand Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

CONNECTION 1:

iv. Average Day Flow Demand:		0.04	L/s
v. Peak Hour Flow Demand:		0.50	L/s
vi. Maximum Day Flow Demand:		0.33	L/s
vii. Required Fire Flow #1:		10000	L/min

CONNECTION 2:

iv. Average Day Flow Demand:		0.04	L/s
v. Peak Hour Flow Demand:		0.50	L/s
vi. Maximum Day Flow Demand:		0.33	L/s
vii. Required Fire Flow #2:		10000	L/min

CONNECTION 3:

iv. Average Day Flow Demand:		0.05	L/s
v. Peak Hour Flow Demand:		0.75	L/s
vi. Maximum Day Flow Demand:		0.50	L/s
vii. Required Fire Flow #3:		10000	L/min

Design Parameters

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

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

Water Demand Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

Boundary Condition Request

Novatech Project #:	114025-5
Project Name:	Greystone Village - Forecourt Townhomes: Block 28
Date:	6/28/2024
Input By:	Trevor McKay
Reviewed By:	Trevor McKay
Drawing Reference:	114025-FT-GP2, Revision 1 - Markup

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

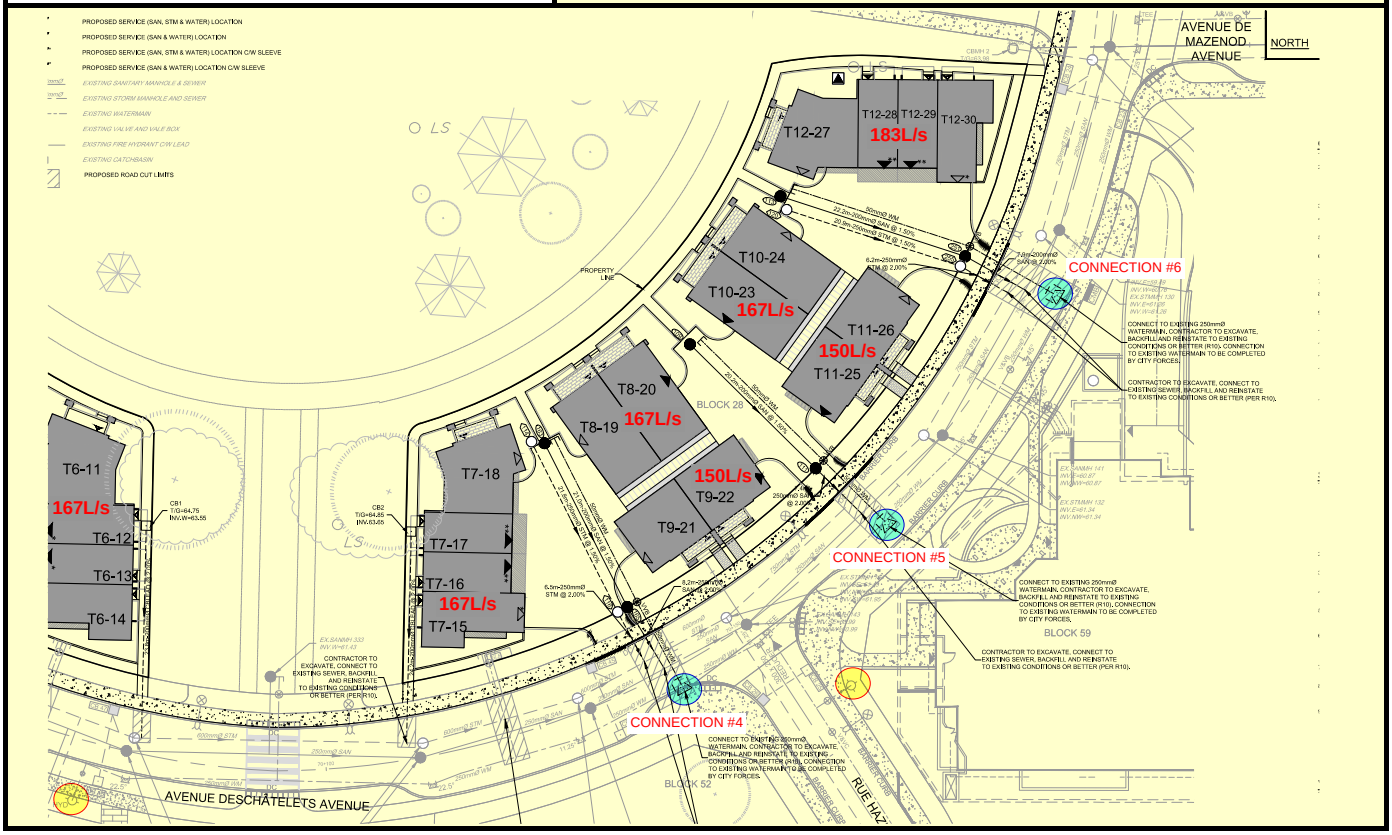
Reference: Ottawa Design Guidelines - Water Distribution (2010 and TBs)
MOE Design Guidelines for Drinking-Water Systems (2008)
Fire Underwriter's Survey Guideline (2020)
Ontario Building Code, Part 3 (2012)

Small System = YES

	# of Dwellings	Area (ha.)	Pop. Equiv.	Average Day Demand (L/s)	Maximum Day Demand (L/s)	Peak Hour Demand (L/s)
Residential Input - Connection 1						
Semis / Townhomes	6		16.20	0.05	0.50	0.75
Residential Input - Connection 2						
Semis / Townhomes	4		10.80	0.04	0.33	0.50
Residential Input - Connection 3						
Semis / Townhomes	6		16.20	0.05	0.50	0.75
Totals	**16**	**0.00**	**43.20**	**0.14**	**1.33**	**2.00**

Summary

i. Type of Development and Units:	Residential, Freehold Townhomes
ii. Site Address:	295 Deschatelets Avenue
iii. Proposed Water Service Connection Location(s):	3 Individual - 50mm diameter service connections (dead ends) servcing 6 units, 4 units, and 6 units from Deschatelets Avenue



Water Demand Design Sheet

NOVATECH
Engineers, Planners & Landscape Architects

CONNECTION 4:

iv. Average Day Flow Demand:		0.05	L/s
v. Peak Hour Flow Demand:		0.75	L/s
vi. Maximum Day Flow Demand:		0.50	L/s
vii. Required Fire Flow #4:		10000	L/min

CONNECTION 5:

iv. Average Day Flow Demand:		0.04	L/s
v. Peak Hour Flow Demand:		0.50	L/s
vi. Maximum Day Flow Demand:		0.33	L/s
vii. Required Fire Flow #5:		10000	L/min

CONNECTION 6:

iv. Average Day Flow Demand:		0.05	L/s
v. Peak Hour Flow Demand:		0.75	L/s
vi. Maximum Day Flow Demand:		0.50	L/s
vii. Required Fire Flow #6:		11000	L/min

Design Parameters

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

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

From: Duquette, Vincent <Vincent.Duquette@ottawa.ca>

Sent: Tuesday, July 30, 2024 9:34 PM

To: Trevor McKay

Cc: Evan Garfinkel

Subject: RE: Pre-Consultation Phase 2 Follow-up - 295-355 Deschâtelets Avenue - PC2024-0184

Attachments: 295 & 355 Deschatelets Avenue July 2024.pdf

Hi Trevor,

Thanks for your patience on this as well, the result just came in today. See below results of the boundary conditions requested.

The following are boundary conditions, HGL, for hydraulic analysis at 295 & 355 Deschatelets Avenue (zone 1W) assumed to connected via six connections (three for each parcel) to the 254mm watermain on Oblats Avenue and the 254mm watermain on Deschatelets Avenue (see attached PDF for location).

All Connections:

Minimum HGL: 105.3 m

Maximum HGL: 115.1 m

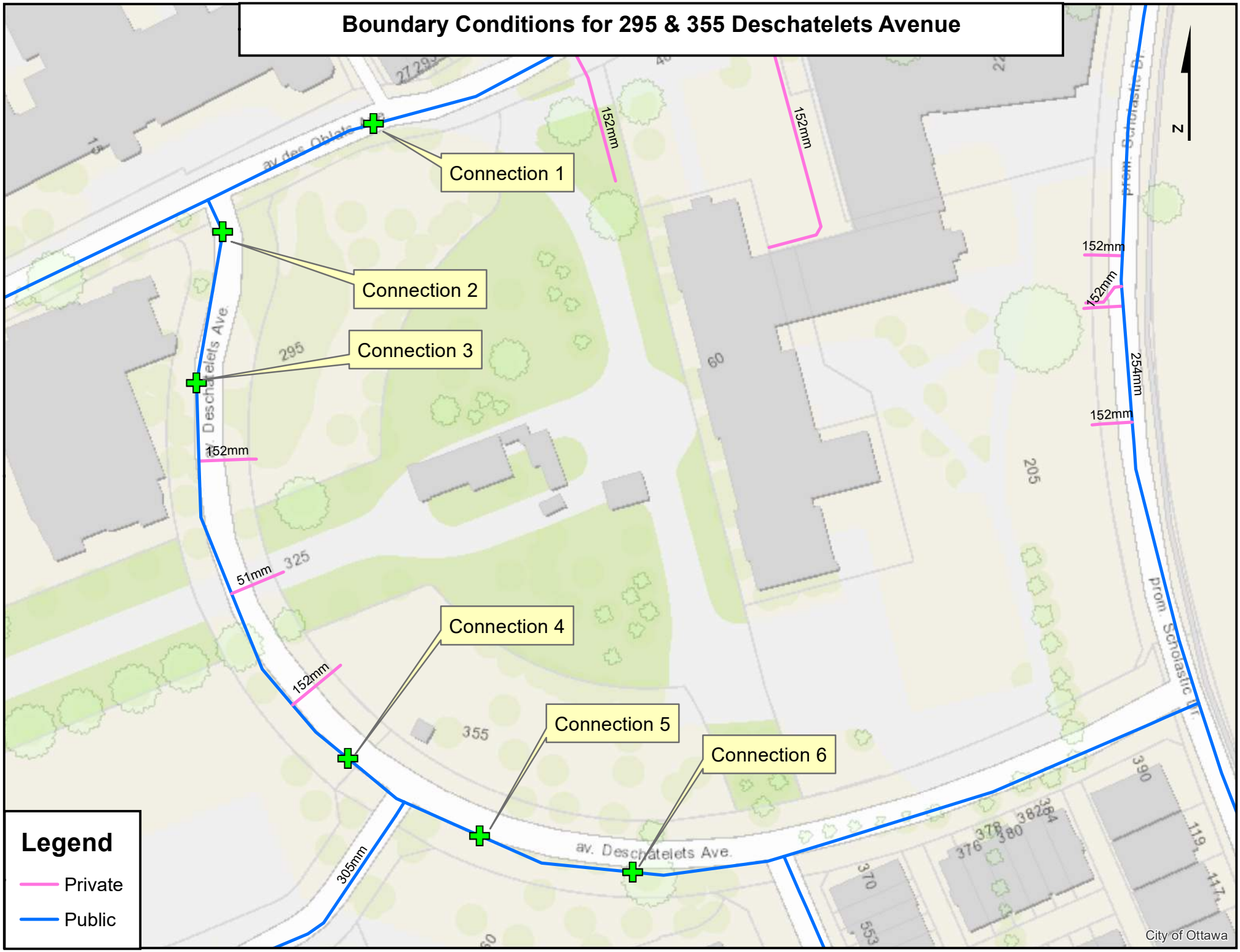
	Fire Flow rate	Max Day + Fire Flow (m)
Connection 1	167 (L/s)	103.5
Connection 2		103.9
Connection 3		104.3
Connection 4		106.1
Connection 5		106.2
Connection 6	183 (L/s)	105.3

These are for current conditions and are based on computer model simulation.

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.

Best Regards,

Boundary Conditions for 295 & 355 Deschatelets Avenue



FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 114025-05
Project Name: Greystone Village - Forecourt Townhomes
Date: 6/28/2024
Input By: Trevor McKay
Reviewed By: Trevor McKay
Drawing Reference: 114025-FT-GP2, Revision 1 - Markup

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

Building Description: Block 28: Townhome Block 7 (A3 unit + 2 x B1 units + B2 unit)
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)	229.5			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**689**	
	F	**Base fire flow without reductions**				**9,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**7,650**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)		-30%		**0**
		Standard Water Supply		-10%		
		Fully Supervised System		-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)		0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	>30m		0%	**2,678**
		East Side	>30m		0%	
		South Side	3.1 - 10 m		20%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**35%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**10,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**167**
				or	USGPM	2,642

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 114025-05
Project Name: Greystone Village - Forecourt Townhomes
Date: 6/28/2024
Input By: Trevor McKay
Reviewed By: Trevor McKay
Drawing Reference: 114025-FT-GP2, Revision 1 - Markup

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

Building Description: Block 28: Townhome Block 8 (2 x A2 units)
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)	158.6			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**476**	
	F	**Base fire flow without reductions**				**7,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**5,950**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)		-30%		**0**
		Standard Water Supply		-10%		
		Fully Supervised System		-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)		0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	3.1 - 10 m		20%	**3,868**
		East Side	>30m		0%	
		South Side	3.1 - 10 m		20%	
		West Side	0 - 3 m		25%	
				Cumulative Total	**65%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**10,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**167**
				or	USGPM	2,642

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 114025-05
Project Name: Greystone Village - Forecourt Townhomes
Date: 6/28/2024
Input By: Trevor McKay
Reviewed By: Trevor McKay
Drawing Reference: 114025-FT-GP2, Revision 1 - Markup

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

Building Description: Block 28: Townhome Block 9 (2 x C units)
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)	123.2			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**370**	
	F	**Base fire flow without reductions**				**6,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%		
		Limited combustible	Yes	-15%		
		Combustible		0%	-15%	**5,100**
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)		-30%		
		Standard Water Supply		-10%		
		Fully Supervised System		-10%		**0**
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)		0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	10.1 - 20 m		15%	
		East Side	0 - 3 m		25%	
		South Side	3.1 - 10 m		20%	**3,825**
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**75%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**9,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**150**
				or	USGPM	2,378

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 114025-05
Project Name: Greystone Village - Forecourt Townhomes
Date: 6/28/2024
Input By: Trevor McKay
Reviewed By: Trevor McKay
Drawing Reference: 114025-FT-GP2, Revision 1 - Markup

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

Building Description: Block 28: Townhome Block 10 (2 x A2 units)
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)	158.6			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**476**	
	F	**Base fire flow without reductions**				**7,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**5,950**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)		-30%		**0**
		Standard Water Supply		-10%		
		Fully Supervised System		-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)		0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	3.1 - 10 m		20%	**3,868**
		East Side	>30m		0%	
		South Side	3.1 - 10 m		20%	
		West Side	0 - 3 m		25%	
				Cumulative Total	**65%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**10,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**167**
				or	USGPM	2,642

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 114025-05
Project Name: Greystone Village - Forecourt Townhomes
Date: 6/28/2024
Input By: Trevor McKay
Reviewed By: Trevor McKay
Drawing Reference: 114025-FT-GP2, Revision 1 - Markup

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

Building Description: Block 28: Townhome Block 11 (2 x C units)
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)	123.2			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**370**	
	F	**Base fire flow without reductions**				**6,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**5,100**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)		-30%		**0**
		Standard Water Supply		-10%		
		Fully Supervised System		-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)		0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	3.1 - 10 m		20%	**3,825**
		East Side	0 - 3 m		25%	
		South Side	10.1 - 20 m		15%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**75%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**9,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**150**
				or	USGPM	2,378

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 114025-05
Project Name: Greystone Village - Forecourt Townhomes
Date: 6/28/2024
Input By: Trevor McKay
Reviewed By: Trevor McKay
Drawing Reference: 114025-FT-GP2, Revision 1 - Markup

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

Building Description: Block 28: Townhome Block 12 (A3 unit + 2 x B1 units + B2 unit)
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)	229.5			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**689**	
	F	**Base fire flow without reductions**				**9,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**7,650**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)		-30%		**0**
		Standard Water Supply		-10%		
		Fully Supervised System		-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)		0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	>30m		0%	**3,443**
		East Side	10.1 - 20 m		15%	
		South Side	20.1 - 30 m		10%	
		West Side	3.1 - 10 m		20%	
				Cumulative Total	**45%**	
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

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 114025-05
Project Name: Greystone Village - Forecourt Townhomes
Date: 6/28/2024
Input By: Trevor McKay
Reviewed By: Trevor McKay
Drawing Reference: 114025-FT-GP1, Revision 1 - Markup

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

Building Description: Block 29: Townhome Block 1 (A2b unit + A3 unit)
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)	155			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**465**	
	F	**Base fire flow without reductions**				**7,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**5,950**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)		-30%		**0**
		Standard Water Supply		-10%		
		Fully Supervised System		-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)		0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	10.1 - 20 m		15%	**2,083**
		East Side	>30m		0%	
		South Side	>30m		0%	
		West Side	3.1 - 10 m		20%	
				Cumulative Total	**35%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**8,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**133**
				or	USGPM	2,114

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 114025-05
Project Name: Greystone Village - Forecourt Townhomes
Date: 6/28/2024
Input By: Trevor McKay
Reviewed By: Trevor McKay
Drawing Reference: 114025-FT-GP1, Revision 1 - Markup

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

Building Description: Block 29: Townhome Block 2 (2 x A2 units)
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)	158.6			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**476**	
	F	**Base fire flow without reductions**				**7,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**5,950**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)		-30%		**0**
		Standard Water Supply		-10%		
		Fully Supervised System		-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)		0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	3.1 - 10 m		20%	**3,570**
		East Side	3.1 - 10 m		20%	
		South Side	>30m		0%	
		West Side	3.1 - 10 m		20%	
				Cumulative Total	**60%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**10,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**167**
				or	USGPM	2,642

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 114025-05
Project Name: Greystone Village - Forecourt Townhomes
Date: 6/28/2024
Input By: Trevor McKay
Reviewed By: Trevor McKay
Drawing Reference: 114025-FT-GP1, Revision 1 - Markup

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

Building Description: Block 29: Townhome Block 3 (2 x C units)
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)	123.2			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**370**	
	F	**Base fire flow without reductions**				**6,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**5,100**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)		-30%		**0**
		Standard Water Supply		-10%		
		Fully Supervised System		-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)		0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	10.1 - 20 m		15%	**3,570**
		East Side	10.1 - 20 m		15%	
		South Side	3.1 - 10 m		20%	
		West Side	3.1 - 10 m		20%	
				Cumulative Total	**70%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**9,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**150**
				or	USGPM	2,378

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 114025-05
Project Name: Greystone Village - Forecourt Townhomes
Date: 6/28/2024
Input By: Trevor McKay
Reviewed By: Trevor McKay
Drawing Reference: 114025-FT-GP1, Revision 1 - Markup

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

Building Description: Block 29: Townhome Block 4 (2 x A2 units)
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)	158.6			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**476**	
	F	**Base fire flow without reductions**				**7,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**5,950**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)		-30%		**0**
		Standard Water Supply		-10%		
		Fully Supervised System		-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)		0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	3.1 - 10 m		20%	**3,868**
		East Side	>30m		0%	
		South Side	3.1 - 10 m		20%	
		West Side	0 - 3 m		25%	
				Cumulative Total	**65%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**10,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**167**
				or	USGPM	2,642

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 114025-05
Project Name: Greystone Village - Forecourt Townhomes
Date: 6/28/2024
Input By: Trevor McKay
Reviewed By: Trevor McKay
Drawing Reference: 114025-FT-GP1, Revision 1 - Markup

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

Building Description: Block 29: Townhome Block 5 (2 x C units)
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)	123.2			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**370**	
	F	**Base fire flow without reductions**				**6,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**5,100**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)		-30%		**0**
		Standard Water Supply		-10%		
		Fully Supervised System		-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)		0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	3.1 - 10 m		20%	**3,825**
		East Side	0 - 3 m		25%	
		South Side	10.1 - 20 m		15%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**75%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**9,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**150**
				or	USGPM	2,378

FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 114025-05
Project Name: Greystone Village - Forecourt Townhomes
Date: 6/28/2024
Input By: Trevor McKay
Reviewed By: Trevor McKay
Drawing Reference: 114025-FT-GP1, Revision 1 - Markup

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

Building Description: Block 29: Townhome Block 6 (A3 unit + 2 x B1 units + B2 unit)
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)	229.5			
		Number of Floors/Storeys	3			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m^2)			**689**	
	F	**Base fire flow without reductions**				**9,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**7,650**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)		-30%		**0**
		Standard Water Supply		-10%		
		Fully Supervised System		-10%		
				Cumulative Sub-Total	**0%**	
		Area of Sprinklered Coverage (m^2)		0%		
				Cumulative Total	**0%**	
5	**Exposure Surcharge**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	3.1 - 10 m		20%	**2,678**
		East Side	>30m		0%	
		South Side	>30m		0%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**35%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**10,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**167**
				or	USGPM	2,642

Greystone Village Forecourt Towns
295 & 355 Deschateletes Avenue
Average Daily Demand

Node		Demand (LPS)	Head (m)	Pressure		Unit Headloss	Age
No.	Elev (m)			(m)	(PSI)	(m/km)	(hrs)
N1	65.1	0.04	115.1	50.0	71.4	0.03	0.4
N2	65.5	0.04	115.1	49.6	70.9	0.03	0.5
N3	65.4	0.05	115.1	49.7	71.0	0.05	0.4
N4	65.0	0.05	115.1	50.1	71.6	0.05	0.4
N5	64.8	0.04	115.1	50.3	71.9	0.03	0.4
N6	64.4	0.05	115.1	50.7	72.4	0.05	0.4
R1			115.1				
R2			115.1				
R3			115.1				
R4			115.1				
R5			115.1				
R6			115.1				

Greystone Village Forecourt Towns 295 & 355 Deschateletes Avenue Peak Hour Demand						
Node		Demand (LPS)	Head (m)	Pressure		Unit Headloss
No.	Elev (m)			(m)	(PSI)	(m/km)
N1	65.1	0.50	105.2	40.1	57.3	3.53
N2	65.5	0.50	105.2	39.7	56.7	3.53
N3	65.4	0.75	105.0	39.6	56.6	7.48
N4	65.0	0.75	105.1	40.1	57.2	7.48
N5	64.8	0.50	105.2	40.4	57.7	3.53
N6	64.4	0.75	105.1	40.7	58.1	7.48
R1			105.3			
R2			105.3			
R3			105.3			
R4			105.3			
R5			105.3			
R6			105.3			

5.3 Proposed Water Supply System

It is proposed to service the site with a combination of 300mm, 250mm, 200mm PVC and 50mm copper pipe. Several options were explored to connect to the Greystone subdivision that included a combination (up to 5) of connection points along Clegg Street, Main Street and Springhurst Avenue to the existing watermains. The most economical and simple combination was chosen that will connect to the existing 200mm dia. watermain along Clegg Street as well as the watermain along Main Street (existing 200mm dia. was replaced by a new 400mm dia. in the Spring of 2015). **Figure 13** – Overall Watermain Alignment highlights the proposed works and connection points. All existing watermain boundary conditions were provided by the City of Ottawa and are included in **Appendix C**. Refer to **Figure 14** – Overall Watermain Node Locations for details on the watermain node network.

5.4 Hydraulic Modeling

A hydraulic analysis was performed for the Greystone Village subdivision. **Table 5.1** summarizes the watermain operating conditions during the high pressure, maximum daily demand and fire flow, and peak hour demands. Results of the hydraulic analysis are included in **Appendix D**.

Table 5.1: Water Demand Summary

Condition	Demand (L/s)	Min/Max Allowable Pressure (kPa/psi)	Peak Operating Pressure (kPa/psi)
High Pressure	8.92	689.5/100 (Max)	551.91/80.05 (Max)
Maximum Daily Demand (c/w Fire Flow)	300.24 (worst case)	137.9/20.0 (Min)	210.03/30.46 (Min)
Peak Hour	48.86	275.8/40.0 (Min)	385.93/55.97 (Min)

Detailed hydraulic modeling of the proposed system network was conducted for Greystone Village to confirm the proposed watermain layout and system has adequate capacity to service the development. The analysis pinpoints the minimum system pressures expected as a result of the maximum daily demand, the maximum daily demand plus fire flow and the peak hour demand design conditions in various locations throughout the site, as shown in **Table 5.2**. Refer to **Appendix D** for the detailed results and additional information.

Table 5.2: Hydraulic Model Results

Operating Condition	Minimum Operating Pressure
Max Daily Demand + Fire Flow	**Watermain**
MD = 0.45 L/s FF= 286.45 L/s at node N3	296.46 kPa 43.00 psi
MD = 0.36 L/s FF= 167 L/s at node N4	299.99 kPa 43.51 psi
MD = 4.83 L/s FF= 286.45 L/s at node N6	293.91 kPa 42.63 psi

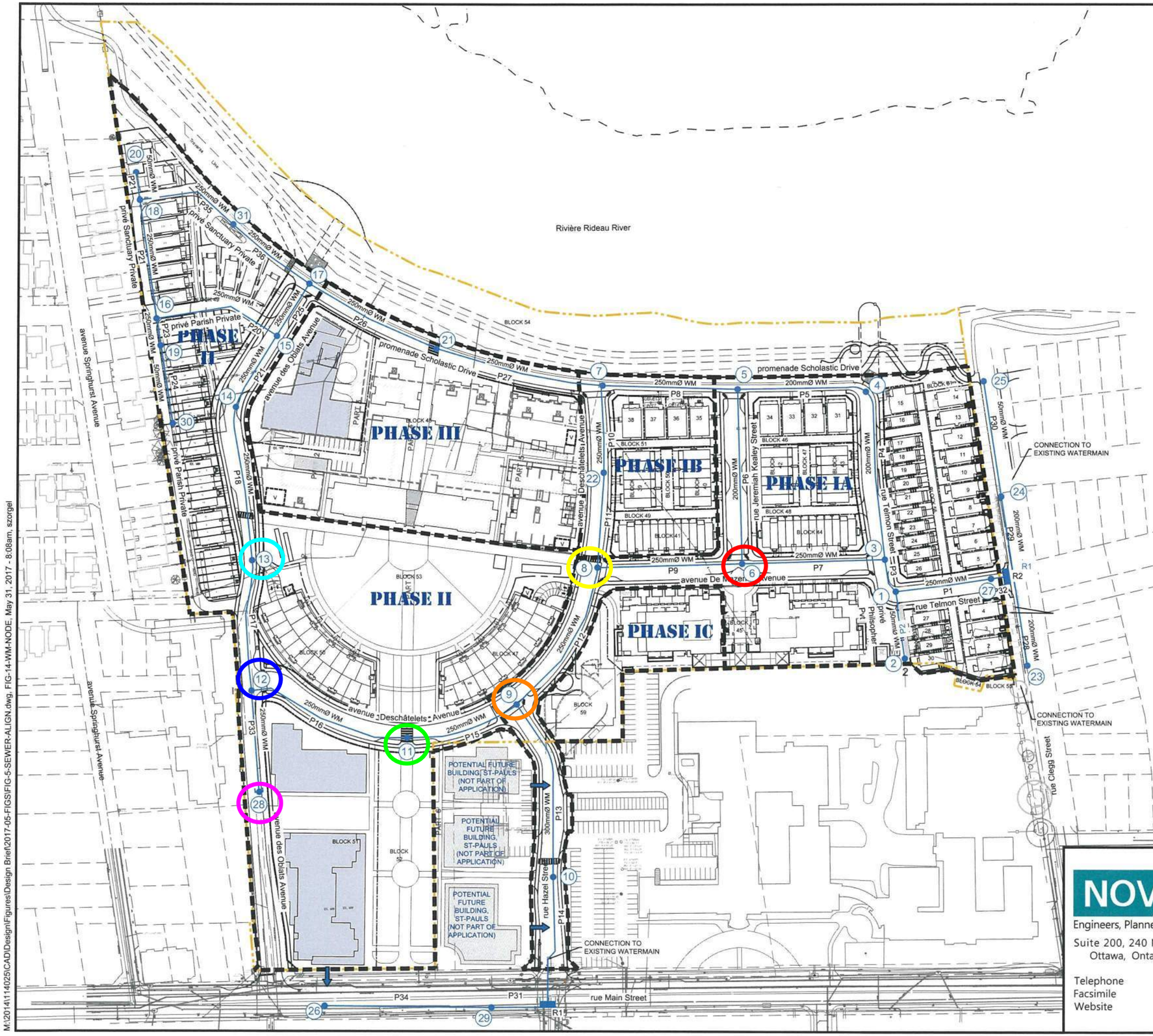
MD = 0.62 L/s FF= 167.00 L/s at node N7	319.51 kPa 46.34 psi
MD = 0.16 L/s FF= 286.45 L/s at node N8	300.48 kPa 43.58 psi
MD = 0.57 L/s FF= 219.97 L/s at node N12	257.71 kPa 37.38 psi
MD = 2.25 L/s FF= 300.24 L/s at node N15	211.01 kPa 30.60 psi
MD = 2.48 L/s FF= 300.24 L/s at node N21	238.19 kPa 34.55 psi
MD = 0.14 L/s FF= 141.40 L/s at node N23	300.38 kPa 43.57 psi
MD = 2.29 L/s FF= 251.52 L/s at node N26	330.99 kPa 48.01 psi
MD = 1.70 L/s FF= 181.08 L/s at node N28	246.62 kPa 35.77 psi
Peak Hour Demand	
PH = 48.86 L/s	385.93 kPa (At Node 10) 55.97 psi
Maximum High Pressure	
MHP = node N25	551.91 kPa 80.05 psi
Maximum Time On Site	
MTS = node N30	38.3 hours

The results indicate that acceptable minimum system pressures will exist throughout the proposed distribution system under all design conditions.

In some locations (Clegg Street) the maximum system pressures modeled during the high pressure check are above 555 kPa (80 psi). Pressure reducing valves will be required in these areas, to be confirmed at detailed design stage. Refer to **Figure 13** – Overall Watermain Alignment for locations.

The Domicile building is currently under construction and will have a Siamese connection fronting Oblats Avenue located within 45m of the hydrant (Node 28) for fire protection. There will be no domestic demand from this building.

The only demand on the dead end watermain (Node 28) serving as fire protection (mentioned above) on Oblats Avenue is the 6 Storey Condo building. Until the condo is completed, as an interim condition to prevent stagnation, the fire hydrant will require flushing approximately once a week for a couple years to stay within the City of Ottawa's acceptable maximum age guidelines.



LEGEND

- PROPERTY LINE
- P5 P1 — PROPOSED WATERMAIN AND ID NUMBER
- 1 — PROPOSED NODE AND ID NUMBER
- R1 — EXISTING RESERVOIR AND ID NUMBER
- PROPOSED SERVICE LOCATION
- PHASING LIMITS

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

CITY OF OTTAWA
GREYSTONE VILLAGE
175 MAIN STREET

OVERALL WATERMAIN NODE LOCATIONS

0 20 40 60 80
1:2000

MAY 2017 | 114025 | FIGURE 14

SHT11X17.DWG - 279mmX432mm

M:\2014\114025\CAD\Design\Figures\Design Brief\2017-05-FIGS\FIG-5-SEWER-ALIGN.dwg, FIG-14-WM-NODE, May 31, 2017 - 8:08am, szorgel

APPENDIX C

Stormwater Management Design

STORM SEWER DESIGN SHEET (5 YEAR DESIGN EVENT)

Greystone Village - Forecourt Townhomes

355 Deschatelets Avenue (Block 28)

LOCATION			AREA							PROPOSED SEWER							
Location	From Node	To Node	Total Area	Weighted Runoff Coefficient	Indiv 2.78 AR	Time of Concentration	Rain Intensity (5 year)	Peak Flow	**Total Peak Flow (Q)**	Pipe	Size	Grade	Length	Capacity	Full Flow Velocity	Time of Flow	Q/Qfull
			(ha)			(min)	(mm/hr)	(L/s)	**(L/s)**	Type	(mm)	(%)	(m)	(l/s)	(m/s)	(min.)	(%)
A-5	**CB-2**	**EXIS**	**0.02**	**0.78**	**0.05**	**10.00**	**104.19**	**4.9**	**4.9**	**PVC**	**200**	**1.50**	**28.6**	**41.9**	**1.29**	**0.37**	**11.7%**
A-6	**410**	**EXIS**	**0.04**	**0.86**	**0.09**	**10.00**	**104.19**	**9.8**	**9.8**	**PVC**	**250**	**2.00**	**7.6**	**87.7**	**1.73**	**0.07**	**11.1%**
A-7	**CBMH-7**	**EXIS**	**0.06**	**0.78**	**0.12**	**10.00**	**104.19**	**12.4**	**12.4**	**PVC**	**200**	**2.00**	**7.1**	**48.4**	**1.49**	**0.08**	**25.6%**
A-8	**414**	**EXIS**	**0.06**	**0.82**	**0.14**	**10.00**	**104.19**	**14.1**	**14.1**	**PVC**	**250**	**1.50**	**7.1**	**76.0**	**1.50**	**0.08**	**18.5%**

Project: Forecourt Townhomes (114025)

Q = 2.78 AIR

WHERE : Q = PEAK FLOW IN LITRES PER SECOND (L/s)
A = AREA IN HECTARES (ha)
I = RAINFALL INTENSITY IN MILLIMETERS PER HOUR (mm/hr)
R = WEIGHTED RUNOFF COEFFICIENT

WHERE : Q = CAPACITY (L/s)
n = MANNING COEFFICIENT OF ROUGHNESS (0.013)
A = FLOW AREA (m^2)

Designed: Mo Abdul
Checked: T. McKay
Date: March 25, 2025

NOVATECH
Engineers, Planners & Landscape Architects

STORM SEWER DESIGN SHEET (5 YEAR DESIGN EVENT)

Greystone Village - Forecourt Townhomes

295 Deschatelets Avenue (Block 29)

LOCATION			AREA							PROPOSED SEWER							
Location	From Node	To Node	Total Area	Weighted Runoff Coefficient	Individ 2.78 AR	Time of Concentration	Rain Intensity (5 year)	Peak Flow	**Total Peak Flow (Q)**	Pipe	Size	Grade	Length	Capacity	Full Flow Velocity	Time of Flow	Q/Qfull
			(ha)			(min)	(mm/hr)	(L/s)	**(L/s)**	Type	(mm)	(%)	(m)	(l/s)	(m/s)	(min.)	(%)
A-1	**402**	**EXIS**	**0.06**	**0.79**	**0.12**	**10.00**	**104.09**	**12.7**	**12.7**	**PVC**	**250**	**2.00**	**9.3**	**87.7**	**1.73**	**0.09**	**14.5%**
A-2	**CBMH-4**	**EXIS**	**0.05**	**0.79**	**0.10**	**10.00**	**104.09**	**10.5**	**10.5**	**PVC**	**200**	**2.00**	**10.2**	**48.4**	**1.49**	**0.11**	**21.7%**
A-3	**406**	**EXIS**	**0.05**	**0.83**	**0.12**	**10.00**	**104.09**	**12.6**	**12.6**	**PVC**	**250**	**2.00**	**7.5**	**87.7**	**1.73**	**0.07**	**14.3%**
A-4	**CB-1**	**EXIS**	**0.02**	**0.78**	**0.05**	**10.00**	**104.09**	**4.8**	**4.8**	**PVC**	**200**	**1.50**	**28.7**	**41.9**	**1.29**	**0.37**	**11.6%**

Project: Forecourt Townhomes (114025)

Q = 2.78 AIR

WHERE : Q = PEAK FLOW IN LITRES PER SECOND (L/s)
A = AREA IN HECTARES (ha)
I = RAINFALL INTENSITY IN MILLIMETERS PER HOUR (mm/hr)
R = WEIGHTED RUNOFF COEFFICIENT

WHERE : Q = CAPACITY (L/s)
n = MANNING COEFFICIENT OF ROUGHNESS (0.013)
A = FLOW AREA (m^2)

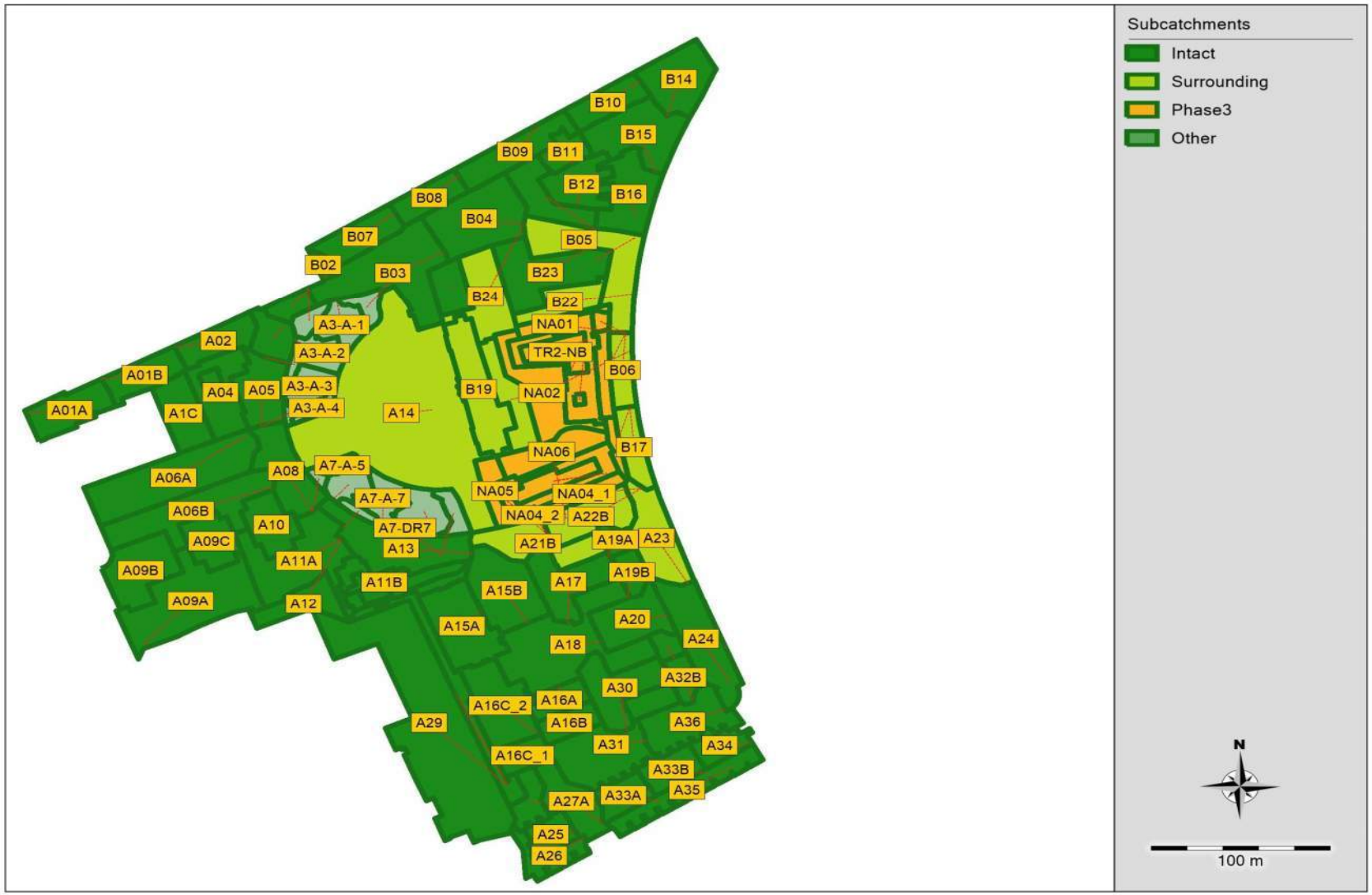
Designed: Mo Abdul
Checked: T. McKay
Date: March 25, 2025

NOVATECH
Engineers, Planners & Landscape Architects

Forecourt Townhomes Subcatchments

Model Details for Forecourt Townhomes

Greystone Subcatchments



Model Details

Subcatchment Parameters

Area ID Model	Area ID Storm Drainage Plans	Catchment Area (ha)	Runoff Coefficient (C)	% Imperv (%)	No Depression (%)	Equivalent Width (m)	Slope (%)
A3-A-1	A3-A1	0.06	0.79	84	50	17	1.5
A3-A-2	A3-A2	0.05	0.79	84	50	15	1.0
A3-A-3	A3-A3	0.05	0.83	90	50	15	0.5
A3-A-4	A3-A4	0.02	0.78	83	50	10	2.0
A7-A-5	A7-A5	0.02	0.78	83	50	10	2.2
A7-A-6	A7-A6	0.04	0.86	94	50	13	2.0
A7-A-7	A7-A7	0.06	0.78	83	50	17	1.5
A7-A-8	A7-A8	0.06	0.82	89	50	17	1.6
A3-DR1	A3-DR1	0.03	0.66	66	50	13	1.8
A3-DR2	A3-DR2	0.03	0.57	53	50	10	1.5
A3-DR3	A3-DR3	0.01	0.61	59	50	4	1.5
A3-DR4	A3-DR4	0.01	0.55	50	50	6	2.3
A7-DR5	A7-DR5	0.01	0.56	51	50	6	1.0
A7-DR6	A7-DR6	0.01	0.62	60	50	4	1.5
A7-DR7	A7-DR7	0.01	0.61	59	50	4	1.5
A7-DR8	A7-DR8	0.03	0.72	74	50	11	2.0

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.011)

Latest Update:

January 21, 2025 – Vahid Mehdipour Novatech

****

Element Count

****

Number of rain gages 1

Number of subcatchments ... 104

Number of nodes 263

Number of links 381

Number of pollutants 0

Number of land uses 0

****

Raingage Summary

****

Name	Data Source	Data Type	Recording Interval
RG01	3hrChic-100yr	INTENSITY	10 min.

****

Subcatchment Summary

****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
A01A	0.09	94.00	85.70	0.7000	RG01	CB53(MS)
A01B	0.08	88.00	61.40	0.5000	RG01	CB51(MS)
A02	0.07	90.00	70.00	0.5000	RG01	CB49(MS)
A04	0.10	14.29	100.00	1.5000	RG01	A04(STOR)

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

A05	0.10	82.00	57.10	0.5000 RG01	CB47(MS)
A06A	0.25	100.00	54.00	1.5000 RG01	CB1-GAPark
A06B	0.18	100.00	3.00	1.5000 RG01	GA-ParkSouthStorage
A08	0.12	110.00	83.00	0.5000 RG01	CB45(MS)
A09A	0.26	150.00	47.00	0.5000 RG01	CB28(MS)
A09B	0.13	33.50	100.00	1.5000 RG01	A09B(STOR)
A09C	0.08	32.42	100.00	1.5000 RG01	A09C(STOR)
A10	0.09	36.38	100.00	1.5000 RG01	A10(STOR)
A11A	0.20	60.00	47.00	0.5000 RG01	CB26(MS)
A11B	0.08	17.00	100.00	1.5000 RG01	A11B(STOR)
A11B-TR	0.03	15.00	100.00	1.5000 RG01	J2
A12	0.08	17.80	86.00	0.5000 RG01	CB26(MS)
A13	0.19	100.00	73.00	0.5000 RG01	CB24(MS)
A14	0.80	53.33	46.00	1.5000 RG01	A14(STOR)
A15A	0.15	30.00	100.00	1.5000 RG01	A15A(STOR)
A15B	0.16	106.00	71.00	0.5000 RG01	CB22(MS)
A16A	0.05	30.00	76.00	0.5000 RG01	CB08(MS)
A16B	0.05	30.00	73.00	0.5000 RG01	CB06(MS)
A16C_1	0.05	31.79	100.00	1.5000 RG01	A16C(STOR)
A16C_2	0.14	28.00	100.00	1.5000 RG01	J5
A17	0.12	40.67	94.00	0.5000 RG01	CB39(MS)
A18	0.28	80.00	71.00	0.6000 RG01	CB09(MS)
A19A	0.03	24.32	77.00	0.5000 RG01	CB35(MS)
A19B	0.04	29.36	77.00	0.5000 RG01	CB36(MS)
A1C	0.09	21.06	100.00	1.5000 RG01	CB-PL
A20	0.11	80.00	60.00	0.5000 RG01	CB18(MS)
A21B	0.11	70.00	71.40	1.2000 RG01	CB34(MS)
A22B	0.11	100.00	47.10	0.7000 RG01	CB20(MS)
A23	0.13	58.44	70.00	0.5000 RG01	CB16(MS)
A24	0.16	78.00	74.00	0.5000 RG01	CB15(x2-DICBs)
A25	0.05	29.41	76.00	0.5000 RG01	CB29(MS)
A26	0.05	15.00	39.00	0.5000 RG01	CB29B(L)
A27A	0.10	80.00	69.00	0.5000 RG01	CB01(MS)
A27B	0.05	17.86	80.00	0.5000 RG01	CB55
A28	0.11	8.09	14.00	0.5000 RG01	CBMH1
A29	0.58	38.09	39.00	0.5000 RG01	CBMH1

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

A30	0.12	25.67	94.00	0.5000 RG01	CB42(MS)
A31	0.20	70.00	79.00	0.5000 RG01	CB12(MS)
A32A	0.02	12.74	77.00	0.5000 RG01	CB40(MS)
A32B	0.04	50.00	77.00	0.5000 RG01	CB41(MS)
A33A	0.06	35.29	76.00	0.5000 RG01	CB30(MS)
A33B	0.07	41.18	76.00	0.5000 RG01	CB31(MS)
A34	0.05	29.41	80.00	0.5000 RG01	CB32
A35	0.10	93.00	39.00	0.5000 RG01	CB31B(L)
A36	0.13	94.00	71.00	0.5000 RG01	CB14(MS)
A3-A-1	0.06	17.14	84.00	1.5000 RG01	CB3
A3-A-2	0.05	14.71	84.00	1.0000 RG01	CBMH4
A3-A-3	0.05	14.71	90.00	0.5000 RG01	CB5
A3-A-4	0.02	10.00	83.00	2.0000 RG01	CB1
A3-DR1	0.03	13.04	66.00	1.8000 RG01	60+224.17
A3-DR2	0.03	10.00	53.00	1.5000 RG01	CB60(MS)
A3-DR3	0.01	4.17	59.00	1.5000 RG01	70-034.26
A3-DR4	0.01	6.25	50.00	2.3000 RG01	CB47(MS)
A7-A-5	0.02	10.00	83.00	2.2000 RG01	CB2
A7-A-6	0.04	13.33	94.00	2.0000 RG01	CB6
A7-A-7	0.06	17.14	83.00	1.5000 RG01	CBMH7
A7-A-8	0.06	17.14	89.00	1.6000 RG01	CB8
A7-DR5	0.01	5.56	51.00	1.0000 RG01	CB45(MS)
A7-DR6	0.01	4.00	60.00	1.5000 RG01	70-152.02
A7-DR7	0.01	4.00	59.00	1.5000 RG01	70-208.50
A7-DR8	0.03	10.71	74.00	2.0000 RG01	70-208.50
B01A	0.03	27.76	80.00	1.1000 RG01	CB60(MS)
B01B	0.06	64.00	74.00	0.6000 RG01	CB82
B02	0.01	18.00	70.00	0.9000 RG01	CB58(MS)
B03	0.24	130.00	90.00	2.1000 RG01	CB62(MS)
B04	0.19	100.00	66.00	2.7000 RG01	CB65(MS)
B05	0.18	107.00	57.00	3.8000 RG01	CB75(MS)
B06	0.06	45.00	69.00	2.0000 RG01	CB76(MS)
B07	0.09	47.00	76.00	1.2000 RG01	CB80(MS)
B08	0.07	40.00	86.00	1.5000 RG01	CB63(MS)
B09	0.11	70.00	86.00	4.0000 RG01	CB78
B10	0.07	45.00	76.00	1.7000 RG01	CB71(MS)

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

B11	0.04	20.00	70.00	1.8000 RG01	CB69(MS)
B12	0.09	28.00	84.00	1.0000 RG01	CB67(MS)
B13	0.09	15.00	64.00	2.5000 RG01	CB70(MS)
B14	0.08	36.00	61.00	0.5000 RG01	CB73(MS)
B15	0.15	60.00	60.00	0.5000 RG01	CB79(MS)
B16	0.12	90.00	64.00	0.5000 RG01	CB74(4x-DICBs)
B17	0.07	45.00	81.00	1.0000 RG01	CB77(MS)
B19	0.16	18.68	100.00	1.5000 RG01	B19(STOR)
B20A	0.08	13.55	40.00	0.5000 RG01	NA02
B22	0.07	14.80	57.00	0.5000 RG01	MH328
B23	0.17	32.81	100.00	1.5000 RG01	B23(STOR)
B24	0.12	23.44	86.00	0.5000 RG01	CB65(MS)
B25	0.06	20.80	100.00	1.5000 RG01	B25(STOR)
Condo2B_TR	0.02	11.77	100.00	1.5000 RG01	J4
MR-NB	0.11	6.47	100.00	0.5000 RG01	B21(STOR)
MR-SB	0.09	7.50	100.00	0.5000 RG01	A22A(STOR)
NA01	0.04	7.27	21.00	0.5000 RG01	CB76(MS)
NA02	0.12	24.00	31.00	0.5000 RG01	MH326
NA03_1	0.03	5.71	53.00	0.5000 RG01	CB77(MS)
NA03_2	0.04	6.15	53.00	0.5000 RG01	CB76(MS)
NA03_3	0.01	2.50	53.00	0.5000 RG01	CB76(MS)
NA04_1	0.04	5.38	43.00	0.5000 RG01	CB20(MS)
NA04_2	0.01	6.25	43.00	0.5000 RG01	CB34(MS)
NA05	0.05	8.33	29.00	0.5000 RG01	CB34(MS)
NA06	0.09	15.00	28.50	0.5000 RG01	MH126
TR1-NB	0.01	16.67	100.00	0.5000 RG01	B21(STOR)
TR2-NB	0.04	5.00	100.00	0.5000 RG01	B21(STOR)
TR-SB	0.05	10.42	100.00	0.5000 RG01	A22A(STOR)

****

Node Summary

****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

10+171.51	JUNCTION	62.19	0.30	0.0
10+207.77	JUNCTION	62.95	0.30	0.0
10+314.72	JUNCTION	62.96	0.30	0.0
20.033.19	JUNCTION	62.71	0.30	0.0
20+069.15	JUNCTION	62.92	0.30	0.0
20+115.54	JUNCTION	63.18	0.30	0.0
30+038.20	JUNCTION	63.17	0.30	0.0
30+074.39	JUNCTION	62.99	0.30	0.0
40+015.59	JUNCTION	63.53	0.30	0.0
40+084.71	JUNCTION	63.25	0.30	0.0
40+121.60	JUNCTION	63.57	0.30	0.0
40+157.95	JUNCTION	63.10	0.30	0.0
50+102.24	JUNCTION	65.72	0.30	0.0
50+127.37	JUNCTION	65.53	0.30	0.0
60+148.01	JUNCTION	65.19	0.30	0.0
60+224.17	JUNCTION	63.88	0.30	0.0
60+288.71	JUNCTION	61.96	0.30	0.0
70-034.26	JUNCTION	65.16	0.30	0.0
70-152.02	JUNCTION	64.61	0.30	0.0
70-208.50	JUNCTION	63.90	0.32	0.0
80+003.32	JUNCTION	64.85	0.30	0.0
80+025.67	JUNCTION	64.79	0.30	0.0
80+078.80	JUNCTION	64.12	0.30	0.0
80+121.22	JUNCTION	62.54	0.30	0.0
80+187.36	JUNCTION	60.33	0.30	0.0
80+216.33	JUNCTION	59.71	0.30	0.0
80+267	JUNCTION	59.16	0.30	0.0
90.071.47	JUNCTION	59.98	0.30	0.0
90+008.28	JUNCTION	60.60	0.30	0.0
A15A(STOR)	JUNCTION	63.40	0.30	0.0
B19(STOR)	JUNCTION	63.00	0.30	0.0
CB01	JUNCTION	60.14	1.49	0.0
CB01(MS)	JUNCTION	61.33	0.30	0.0
CB06	JUNCTION	61.94	1.59	0.0
CB06(MS)	JUNCTION	63.23	0.30	0.0
CB08	JUNCTION	62.05	1.66	0.0

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

CB08(MS)	JUNCTION	63.41	0.30	0.0
CB09	JUNCTION	61.74	1.60	0.0
CB09(MS)	JUNCTION	63.04	0.30	0.0
CB1	JUNCTION	63.72	1.42	0.0
CB12	JUNCTION	61.45	1.78	0.0
CB12(MS)	JUNCTION	62.93	0.30	0.0
CB14	JUNCTION	61.23	1.75	0.0
CB14(MS)	JUNCTION	62.68	0.30	0.0
CB15(x2-DICBs)	JUNCTION	61.08	1.86	0.0
CB16(2x-DICBs)	JUNCTION	61.63	1.61	0.0
CB16(MS)	JUNCTION	62.94	0.30	0.0
CB18	JUNCTION	61.54	1.57	0.0
CB18(MS)	JUNCTION	62.81	0.30	0.0
CB2	JUNCTION	63.64	1.50	0.0
CB20	JUNCTION	61.46	1.99	0.0
CB20(MS)	JUNCTION	63.15	0.30	0.0
CB22	JUNCTION	62.08	1.52	0.0
CB22(MS)	JUNCTION	63.30	0.30	0.0
CB24	JUNCTION	62.40	1.66	0.0
CB24(MS)	JUNCTION	63.76	0.30	0.0
CB26	JUNCTION	63.38	1.51	0.0
CB26(MS)	JUNCTION	64.59	0.30	0.0
CB28	JUNCTION	63.57	1.84	0.0
CB28(MS)	JUNCTION	65.11	0.30	0.0
CB29	JUNCTION	60.45	1.70	0.0
CB29(MS)	JUNCTION	61.85	0.30	0.0
CB29B(L)	JUNCTION	60.38	2.13	0.0
CB3	JUNCTION	63.64	1.50	0.0
CB30	JUNCTION	59.71	1.82	0.0
CB30(MS)	JUNCTION	61.23	0.30	0.0
CB31	JUNCTION	59.50	1.82	0.0
CB31(MS)	JUNCTION	61.02	0.30	0.0
CB31B(L)	JUNCTION	59.39	1.80	0.0
CB32	JUNCTION	59.47	1.72	0.0
CB34	JUNCTION	62.16	1.61	0.0
CB34(MS)	JUNCTION	63.47	0.30	0.0

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

CB35	JUNCTION	61.90	1.82	0.0
CB35(MS)	JUNCTION	63.42	0.30	0.0
CB36	JUNCTION	61.92	1.71	0.0
CB36(MS)	JUNCTION	63.33	0.30	0.0
CB39	JUNCTION	62.00	1.70	0.0
CB39(MS)	JUNCTION	63.40	0.30	0.0
CB40	JUNCTION	61.77	1.53	0.0
CB40(MS)	JUNCTION	63.00	0.30	0.0
CB41	JUNCTION	61.60	1.55	0.0
CB41(MS)	JUNCTION	62.85	0.30	0.0
CB42	JUNCTION	61.81	1.70	0.0
CB42(MS)	JUNCTION	63.21	0.30	0.0
CB45	JUNCTION	62.92	2.09	0.0
CB45(MS)	JUNCTION	64.71	0.30	0.0
CB47	JUNCTION	63.22	2.04	0.0
CB47(MS)	JUNCTION	64.96	0.35	0.0
CB49	JUNCTION	64.82	0.71	0.0
CB49(MS)	JUNCTION	65.23	0.30	0.0
CB5	JUNCTION	63.93	1.50	0.0
CB51	JUNCTION	63.02	1.98	0.0
CB51(MS)	JUNCTION	64.70	0.30	0.0
CB53	JUNCTION	63.04	1.74	0.0
CB53(MS)	JUNCTION	64.48	0.30	0.0
CB55	JUNCTION	62.51	1.82	0.0
CB56	JUNCTION	62.42	1.57	0.0
CB58	JUNCTION	63.26	1.80	0.0
CB58(MS)	JUNCTION	64.76	0.30	0.0
CB6	JUNCTION	63.51	1.50	0.0
CB60	JUNCTION	63.16	2.04	0.0
CB60(MS)	JUNCTION	64.90	0.30	0.0
CB62	JUNCTION	61.16	2.14	0.0
CB62(MS)	JUNCTION	63.00	0.30	0.0
CB63	JUNCTION	61.06	1.90	0.0
CB63(MS)	JUNCTION	62.66	0.30	0.0
CB65	JUNCTION	59.43	2.12	0.0
CB65(MS)	JUNCTION	61.25	0.30	0.0

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

CB67	JUNCTION	58.43	2.11	0.0
CB67(MS)	JUNCTION	60.24	0.30	0.0
CB69	JUNCTION	58.38	1.89	0.0
CB69(MS)	JUNCTION	59.97	0.30	0.0
CB70	JUNCTION	57.81	2.10	0.0
CB70(MS)	JUNCTION	59.26	0.41	0.0
CB71	JUNCTION	57.66	2.23	0.0
CB71(MS)	JUNCTION	59.59	0.30	0.0
CB73	JUNCTION	57.75	1.85	0.0
CB73(MS)	JUNCTION	59.30	0.30	0.0
CB74(4x-DICBs)	JUNCTION	56.95	2.47	0.0
CB75	JUNCTION	57.62	1.83	0.0
CB75(MS)	JUNCTION	59.15	0.30	0.0
CB76	JUNCTION	59.61	1.90	0.0
CB76(MS)	JUNCTION	61.21	0.30	0.0
CB77	JUNCTION	60.97	1.90	0.0
CB77(MS)	JUNCTION	62.57	0.30	0.0
CB78	JUNCTION	58.46	1.95	0.0
CB79	JUNCTION	57.34	1.91	0.0
CB79(MS)	JUNCTION	58.95	0.30	0.0
CB8	JUNCTION	62.83	1.51	0.0
CB80	JUNCTION	62.53	1.90	0.0
CB80(MS)	JUNCTION	64.13	0.30	0.0
CB82	JUNCTION	63.39	2.00	0.0
CBMH1	JUNCTION	61.92	3.38	0.0
CBMH4	JUNCTION	63.95	1.50	0.0
CBMH7	JUNCTION	63.25	1.50	0.0
CB-PL	JUNCTION	64.93	0.37	0.0
HP	JUNCTION	59.20	0.30	0.0
HP01	JUNCTION	61.04	0.30	0.0
HP02	JUNCTION	61.28	0.30	0.0
HP03	JUNCTION	60.87	0.30	0.0
HP04	JUNCTION	62.65	0.30	0.0
J1	JUNCTION	62.76	0.32	0.0
J10	JUNCTION	64.87	0.30	0.0
J11	JUNCTION	64.75	0.30	0.0

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

J12	JUNCTION	64.50	0.30	0.0
J13	JUNCTION	64.07	0.30	0.0
J14	JUNCTION	63.60	1.63	0.0
J15	JUNCTION	58.41	4.44	0.0
J16	JUNCTION	64.32	0.30	0.0
J17	JUNCTION	56.35	2.46	0.0
J18	JUNCTION	59.06	0.50	0.0
J19	JUNCTION	58.39	4.05	0.0
J20	JUNCTION	56.34	2.94	0.0
J3	JUNCTION	60.28	1.93	0.0
J5	JUNCTION	61.42	0.20	0.0
J6	JUNCTION	64.90	0.30	0.0
J7	JUNCTION	65.20	0.30	0.0
J8	JUNCTION	65.18	0.30	0.0
J9	JUNCTION	64.95	0.30	0.0
MH314(DUMMY)	JUNCTION	58.40	1.85	0.0
MH328(DUMMY)	JUNCTION	57.01	2.51	0.0
Clegg	OUTFALL	61.30	0.30	0.0
MainNorth	OUTFALL	64.70	0.30	0.0
MainSouth	OUTFALL	65.02	0.30	0.0
OF1	OUTFALL	56.00	0.30	0.0
Out1	OUTFALL	60.50	0.30	0.0
Out2	OUTFALL	60.50	0.30	0.0
Out3	OUTFALL	62.50	0.30	0.0
Outlet1-Phase1	OUTFALL	56.03	0.90	0.0
Outlet2-Phase2&3	OUTFALL	56.03	0.75	0.0
Phase1-EmergencyOverflow	OUTFALL	56.00	4.30	0.0
Phase2-EmergencyOverflow	OUTFALL	56.00	0.50	0.0
A04(STOR)	STORAGE	61.13	4.00	0.0
A09B(STOR)	STORAGE	100.00	0.15	0.0
A09C(STOR)	STORAGE	100.00	0.15	0.0
A10(STOR)	STORAGE	100.00	0.15	0.0
A11B(STOR)	STORAGE	60.98	3.05	0.0
A14(STOR)	STORAGE	62.70	1.50	0.0
A16C(STOR)	STORAGE	65.22	0.78	0.0
A22A(STOR)	STORAGE	100.00	0.15	0.0

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

B21(STOR)	STORAGE	100.00	0.15	0.0
B23(STOR)	STORAGE	56.51	3.69	0.0
B25(STOR)	STORAGE	100.00	0.15	0.0
CB1-GAPark	STORAGE	61.99	3.23	0.0
CBMH2	STORAGE	60.98	3.00	0.0
Dummy-MH128	STORAGE	59.91	3.81	0.0
GA-ParkSouthStorage	STORAGE	63.10	2.30	0.0
J2	STORAGE	65.37	0.15	0.0
J4	STORAGE	100.00	0.15	0.0
MH100	STORAGE	59.97	1.72	0.0
MH102	STORAGE	59.90	4.96	0.0
MH104	STORAGE	59.84	3.13	0.0
MH106	STORAGE	59.65	2.53	0.0
MH108	STORAGE	59.59	2.41	0.0
MH110	STORAGE	59.63	3.81	0.0
MH110B	STORAGE	59.42	3.77	0.0
MH112B	STORAGE	59.24	3.74	0.0
MH114	STORAGE	58.08	4.96	0.0
MH118	STORAGE	58.41	4.44	0.0
MH122	STORAGE	59.30	3.63	0.0
MH122B	STORAGE	58.58	4.26	0.0
MH124	STORAGE	60.55	2.82	0.0
MH126	STORAGE	61.31	2.15	0.0
MH128	STORAGE	60.02	3.81	0.0
MH130	STORAGE	60.98	3.00	0.0
MH132	STORAGE	61.34	2.97	0.0
MH136	STORAGE	60.90	2.25	0.0
MH140	STORAGE	60.80	2.25	0.0
MH144	STORAGE	59.44	3.61	0.0
MH148	STORAGE	61.22	2.25	0.0
MH152	STORAGE	59.92	3.66	0.0
MH164	STORAGE	61.43	3.23	0.0
MH166	STORAGE	61.65	3.22	0.0
MH168	STORAGE	61.74	3.30	0.0
MH170	STORAGE	61.13	4.09	0.0
MH172	STORAGE	62.06	3.16	0.0

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

MH174	STORAGE	62.17	3.06	0.0
MH176	STORAGE	62.90	2.34	0.0
MH178	STORAGE	62.02	3.42	0.0
MH180	STORAGE	62.85	1.76	0.0
MH182	STORAGE	62.48	2.43	0.0
MH220	STORAGE	59.47	2.25	0.0
MH222	STORAGE	59.03	1.97	0.0
MH224	STORAGE	59.17	1.75	0.0
MH226	STORAGE	60.21	2.46	0.0
MH228	STORAGE	60.07	1.79	0.0
MH230	STORAGE	59.77	3.67	0.0
MH238	STORAGE	58.14	4.28	0.0
MH242	STORAGE	56.00	5.68	0.0
MH246	STORAGE	59.84	4.44	0.0
MH248	STORAGE	61.61	3.16	0.0
MH250	STORAGE	62.63	3.11	0.0
MH300	STORAGE	62.40	2.46	0.0
MH302	STORAGE	61.52	2.79	0.0
MH304	STORAGE	60.91	2.53	0.0
MH306	STORAGE	59.44	2.65	0.0
MH308	STORAGE	58.67	2.95	0.0
MH310	STORAGE	56.51	3.55	0.0
MH312	STORAGE	61.64	2.55	0.0
MH314	STORAGE	60.61	2.45	0.0
MH316	STORAGE	57.13	3.07	0.0
MH318	STORAGE	57.52	2.07	0.0
MH320	STORAGE	56.95	3.02	0.0
MH322	STORAGE	56.91	3.12	0.0
MH324	STORAGE	60.65	2.14	0.0
MH326	STORAGE	59.17	2.64	0.0
MH328	STORAGE	58.04	2.39	0.0
MH330	STORAGE	57.05	2.25	0.0
MH332	STORAGE	56.53	2.67	0.0
MH334	STORAGE	56.33	2.70	0.0
MH336	STORAGE	56.35	2.96	0.0
MH338	STORAGE	56.33	2.98	0.0

MH340	STORAGE	56.01	2.32	0.0
MH400	STORAGE	62.79	2.45	0.0
MH402	STORAGE	62.86	2.02	0.0
MH404	STORAGE	63.26	2.27	0.0
MH406	STORAGE	62.79	2.42	0.0
MH408	STORAGE	62.98	2.32	0.0
MH410	STORAGE	62.49	2.27	0.0
MH412	STORAGE	62.28	2.28	0.0
MH414	STORAGE	61.90	2.37	0.0
VortechsPh1	STORAGE	58.40	4.04	0.0
VortechsPh2	STORAGE	56.34	2.95	0.0

****

Link Summary

****

Name	From Node	To Node	Type	Length	%Slope	Roughness
1	A04(STOR)	CB47(MS)	CONDUIT	22.3	0.7629	0.0350
10	CBMH4	J7	CONDUIT	2.6	-1.9497	0.0160
11	MH406	MH170	CONDUIT	7.5	1.9898	0.0130
12	J8	CB47(MS)	CONDUIT	5.0	4.4043	0.0160
13	J6	80+003.32	CONDUIT	5.0	1.0001	0.0160
14	J9	CB47(MS)	CONDUIT	36.2	-0.0276	0.0160
15	J7	CB82	CONDUIT	5.0	38.8338	0.0160
16	CB5	J8	CONDUIT	5.0	-1.0001	0.0160
17	CB74(4x-DICBs)	J18	CONDUIT	5.0	-2.8011	0.0160
18	J10	CB45(MS)	CONDUIT	57.6	0.2778	0.0160
19	MH412	MH414	CONDUIT	19.5	1.7924	0.0130
2	MH402	MH300	CONDUIT	9.3	2.0391	0.0130
20	MH408	MH410	CONDUIT	20.9	2.0090	0.0130
21	J18	Phase2-EmergencyOverflow	CONDUIT	3.0	102.0000	0.0350
22	MH410	MH248	CONDUIT	7.6	1.9689	0.0130
23	J11	CB45(MS)	CONDUIT	5.0	0.8000	0.0160
24	CB1	J9	CONDUIT	5.0	-2.2005	0.0160
25	CB2	J10	CONDUIT	1.8	-1.6753	0.0160

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

26	CB15(x2-DICBs)	J1	CONDUIT	5.0	-2.4007	0.0160
27	J1	Phase1-EmergencyOverflow	CONDUIT	5.0	66.1994	0.0350
28	J12	J16	CONDUIT	5.0	3.6224	0.0160
29	CB6	J11	CONDUIT	5.0	-0.8000	0.0160
3	GA-ParkSouthStorage	CB45(MS)	CONDUIT	5.0	6.4131	0.0350
30	CBMH7	J12	CONDUIT	5.0	-1.0001	0.0160
31	CB79(MS)	HP	CONDUIT	6.5	-3.8490	0.0160
32	CB8	J13	CONDUIT	5.0	-0.6000	0.0160
33	J13	70-208.50	CONDUIT	5.0	3.0014	0.0160
35	J14	CB-PL	CONDUIT	5.9	0.0052	0.0160
36	A14(STOR)	40+015.59	CONDUIT	5.0	8.5915	0.0160
37	CB-PL	CB49(MS)	CONDUIT	5.0	-4.6049	0.0160
4	CB3	J6	CONDUIT	5.0	-1.2001	0.0160
5	B23(STOR)	CB70(MS)	CONDUIT	10.3	7.2017	0.0160
6	J5	J3	CONDUIT	20.0	5.7244	0.0130
7	CB1-GAPark	CB47(MS)	CONDUIT	5.0	-0.8000	0.0350
8	HP	OF1	CONDUIT	32.0	10.0504	0.0350
9	MH414	MH132	CONDUIT	7.1	1.5495	0.0130
A15A(OUT)	A15A(STOR)	Dummy-MH128	CONDUIT	6.8	53.3333	0.0130
B19(OUT)	B19(STOR)	MH306	CONDUIT	110.0	1.8185	0.0130
C01	10+171.51	CB76(MS)	CONDUIT	24.5	3.9841	0.0160
C02	10+207.77	CB77(MS)	CONDUIT	15.0	2.5158	0.0160
C03	10+314.72	CB15(x2-DICBs)	CONDUIT	54.8	0.5788	0.0160
C04	20.033.19	CB14(MS)	CONDUIT	14.5	0.2063	0.0160
C05	20+069.15	CB12(MS)	CONDUIT	5.4	-0.1866	0.0160
C06	20+115.54	40+157.95	CONDUIT	14.5	0.5522	0.0160
C07	20+115.54	CB01(MS)	CONDUIT	27.3	6.8039	0.0160
C08	30+038.20	CB09(MS)	CONDUIT	7.8	1.7202	0.0160
C09	30+074.39	CB18(MS)	CONDUIT	11.2	1.6519	0.0160
C10	40+015.59	CB34(MS)	CONDUIT	33.5	0.1851	0.0160
C100	CB55	CB56	CONDUIT	19.4	1.7515	0.0350
C101	CB56	20+115.54	CONDUIT	13.4	3.8084	0.0350
C102	CB58	CB58(MS)	CONDUIT	5.0	0.0061	0.0160
C103	CB58(MS)	80+003.32	CONDUIT	7.4	-1.2218	0.0160
C104	CB58(MS)	80+025.67	CONDUIT	17.5	-0.1718	0.0160
C105	CB60	CB60(MS)	CONDUIT	5.0	0.0061	0.0160

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C106	CB60(MS)	80+003.32	CONDUIT	16.1	0.3110	0.0160
C107	CB62	CB62(MS)	CONDUIT	5.0	0.0061	0.0160
C108	CB62(MS)	60+288.71	CONDUIT	35.1	2.9504	0.0160
C109	CB63	CB63(MS)	CONDUIT	5.0	0.0061	0.0160
C11	40+015.59	CB22(MS)	CONDUIT	50.4	0.4606	0.0160
C110	CB63(MS)	80+121.22	CONDUIT	5.0	2.4007	0.0160
C111	CB65	CB65(MS)	CONDUIT	5.0	0.0061	0.0160
C112	CB65(MS)	90.071.47	CONDUIT	33.8	3.7497	0.0160
C113	CB67	CB67(MS)	CONDUIT	5.0	0.0061	0.0160
C114	CB67(MS)	90.071.47	CONDUIT	11.3	2.2636	0.0160
C115	CB69	CB69(MS)	CONDUIT	5.0	0.0061	0.0160
C116	CB69(MS)	CB67(MS)	CONDUIT	28.2	-0.9585	0.0160
C117	CB70	CB70(MS)	CONDUIT	5.0	0.0061	0.0160
C118	CB70(MS)	CB74(4x-DICBs)	CONDUIT	6.0	5.6758	0.0160
C119	CB71	CB71(MS)	CONDUIT	5.0	0.0061	0.0160
C12	40+084.71	30+038.20	CONDUIT	26.7	0.2880	0.0160
C120	CB71(MS)	CB73(MS)	CONDUIT	27.2	1.0652	0.0160
C121	CB73	CB73(MS)	CONDUIT	5.0	0.0061	0.0160
C122	CB73(MS)	80+267	CONDUIT	5.0	2.8011	0.0160
C123	CB74(4x-DICBs)	CB75(MS)	CONDUIT	8.0	-2.8762	0.0160
C124	CB74(4x-DICBs)	MH332	CONDUIT	5.0	1.0001	0.0130
C125	CB75	CB75(MS)	CONDUIT	5.0	0.0061	0.0160
C126	CB76	CB76(MS)	CONDUIT	5.0	0.0061	0.0160
C127	CB76(MS)	CB75(MS)	CONDUIT	60.0	3.4342	0.0160
C128	CB77	CB77(MS)	CONDUIT	5.0	0.0061	0.0160
C129	CB77(MS)	10+171.51	CONDUIT	21.2	1.8082	0.0160
C13	40+121.60	CB08(MS)	CONDUIT	15.3	1.0579	0.0160
C130	CB78	80+187.36	CONDUIT	20.6	-1.0697	0.0160
C131	CB79	CB79(MS)	CONDUIT	5.0	0.0061	0.0160
C132	CB79(MS)	CB74(4x-DICBs)	CONDUIT	32.7	0.0917	0.0160
C133	CB80	CB80(MS)	CONDUIT	5.0	0.0061	0.0160
C134	CB80(MS)	80+078.80	CONDUIT	5.0	0.2000	0.0160
C135	CBMH1	CB56	CONDUIT	31.1	4.2138	0.0350
C136	HP01	Out2	CONDUIT	5.0	10.8635	0.0350
C137	HP02	Clegg	CONDUIT	5.0	-0.4000	0.0160
C138	HP03	Out1	CONDUIT	5.0	7.4203	0.0350

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C139	HP04	Out3	CONDUIT	5.0	3.0014	0.0350
C14	40+121.60	CB06(MS)	CONDUIT	16.1	2.1287	0.0160
C140	MH100	MH104	CONDUIT	25.1	0.4787	0.0130
C141	MH102	MH246	CONDUIT	10.6	0.5192	0.0130
C142	MH104	MH106	CONDUIT	10.6	0.3774	0.0130
C143	MH106	MH108	CONDUIT	12.4	0.4039	0.0130
C144	MH108	MH144	CONDUIT	30.9	0.2593	0.0130
C145_1	MH108	J3	CONDUIT	10.0	0.5300	0.0130
C145_2	J3	MH110	CONDUIT	63.8	0.4969	0.0130
C146	MH110	MH110B	CONDUIT	31.4	0.6688	0.0130
C147	MH110B	MH112B	CONDUIT	36.2	0.4972	0.0130
C148	MH112B	MH114	CONDUIT	31.9	0.5014	0.0130
C149	MH114	MH118	CONDUIT	69.0	0.4928	0.0130
C15	40+157.95	20+069.15	CONDUIT	30.6	0.5877	0.0160
C150	J15	MH238	CONDUIT	4.8	2.0751	0.0130
C151	MH118	VortechsPh1	CONDUIT	5.0	0.2000	0.0130
C152	MH122	MH122B	CONDUIT	18.9	0.2541	0.0130
C153	MH122B	MH118	CONDUIT	31.1	0.2891	0.0130
C154	MH124	MH114	CONDUIT	70.2	0.2707	0.0130
C155	MH126	MH124	CONDUIT	54.8	0.4839	0.0130
C156_1	MH128	Dummy-MH128	CONDUIT	21.5	0.5114	0.0130
C156_2	Dummy-MH128	MH110	CONDUIT	54.7	0.5117	0.0130
C158	MH128	MH126	CONDUIT	49.4	0.5062	0.0130
C159	MH130	MH128	CONDUIT	19.8	0.4541	0.0130
C16	50+102.24	CB28(MS)	CONDUIT	72.0	0.8543	0.0160
C160	MH132	MH130	CONDUIT	26.4	0.3028	0.0130
C161	MH136	MH144	CONDUIT	36.4	0.4996	0.0130
C162	MH140	MH122B	CONDUIT	39.3	0.5007	0.0130
C163	MH144	MH122	CONDUIT	18.2	0.6590	0.0130
C164	MH148	MH112B	CONDUIT	41.5	0.4989	0.0130
C165	MH152	MH110B	CONDUIT	36.5	0.5007	0.0130
C166	MH164	MH132	CONDUIT	30.8	0.2595	0.0130
C167	MH166	MH248	CONDUIT	17.3	0.1734	0.0130
C168	MH168	MH166	CONDUIT	33.4	0.2698	0.0130
C169	MH170	MH168	CONDUIT	27.2	0.2574	0.0130
C17	50+102.24	50+127.37	CONDUIT	26.2	0.7620	0.0160

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C170	MH172	MH170	CONDUIT	32.2	0.3102	0.0130
C171	MH174	MH172	CONDUIT	15.2	0.1318	0.0130
C172	MH174	MH300	CONDUIT	32.9	1.7931	0.0130
C173	MH176	MH250	CONDUIT	60.4	0.4801	0.0130
C174	MH178	MH164	CONDUIT	37.3	0.2410	0.0130
C175	MH180	MH182	CONDUIT	61.8	0.3725	0.0130
C176	MH182	MH174	CONDUIT	71.5	0.3076	0.0130
C177	MH220	MH222	CONDUIT	75.1	0.5061	0.0130
C178	MH222	MH122B	CONDUIT	30.9	0.4989	0.0130
C179	MH224	MH222	CONDUIT	16.4	0.5014	0.0130
C18	50+127.37	CB26(MS)	CONDUIT	33.5	2.7931	0.0160
C180	MH226	MH228	CONDUIT	28.3	0.5026	0.0130
C181	MH228	MH100	CONDUIT	7.6	0.5283	0.0130
C182	MH230	MH106	CONDUIT	9.1	0.4952	0.0130
C183	MH238	MH242	CONDUIT	15.1	1.3890	0.0130
C184	MH242	Outlet1-Phase1	CONDUIT	9.4	0.8538	0.0130
C185	MH246	MH230	CONDUIT	14.8	0.4744	0.0130
C186	MH248	MH164	CONDUIT	12.2	0.5757	0.0130
C187	MH250	MH178	CONDUIT	38.5	0.4669	0.0130
C188	MH300	MH302	CONDUIT	26.3	3.0825	0.0130
C189	MH302	MH304	CONDUIT	34.1	1.7865	0.0130
C190	MH304	MH306	CONDUIT	44.7	3.2874	0.0130
C191	MH306	MH308	CONDUIT	13.6	3.8943	0.0130
C192	MH308	MH310	CONDUIT	39.7	2.8950	0.0130
C193	MH310	MH334	CONDUIT	34.2	0.2632	0.0130
C194	MH312	MH314	CONDUIT	33.0	3.1256	0.0130
C195	MH314	MH314(DUMMY)	CONDUIT	72.7	3.0400	0.0130
C196	MH314(DUMMY)	MH316	CONDUIT	7.7	5.7446	0.0130
C197	MH316	MH320	CONDUIT	38.6	0.4404	0.0130
C198	MH318	MH316	CONDUIT	61.1	-0.1145	0.0130
C199	MH320	MH322	CONDUIT	7.3	0.5472	0.0130
C20	60+148.01	CB49(MS)	CONDUIT	55.0	-0.0818	0.0160
C200	MH322	MH310	CONDUIT	21.9	0.2738	0.0130
C201	MH324	MH326	CONDUIT	37.7	3.7131	0.0130
C202	MH326	MH328	CONDUIT	35.4	3.1407	0.0130
C203	MH328	MH328(DUMMY)	CONDUIT	29.6	3.4783	0.0130

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C204	MH328(DUMMY)	MH334	CONDUIT	10.0	2.4007	0.0130
C205	MH330	MH332	CONDUIT	36.8	0.4072	0.0130
C206	MH332	MH334	CONDUIT	35.8	0.5585	0.0130
C207	MH334	MH336	CONDUIT	5.0	0.2000	0.0130
C208	MH336	VortechsPh2	CONDUIT	5.0	0.2000	0.0130
C209	J17	MH338	CONDUIT	3.6	0.0085	0.0130
C21	60+148.01	CB60(MS)	CONDUIT	27.7	1.0286	0.0160
C210	MH338	MH340	CONDUIT	14.2	0.4237	0.0130
C211	MH340	Outlet2-Phase2&3	CONDUIT	2.5	0.4000	0.0130
C212_2	J19	MH238	CONDUIT	5.0	0.0061	0.0130
C213_2	J20	MH338	CONDUIT	5.0	0.0061	0.0130
C22	60+148.01	CB82	CONDUIT	21.6	0.4389	0.0160
C23	60+224.17	CB62(MS)	CONDUIT	29.5	2.9667	0.0160
C24	60+288.71	CB65(MS)	CONDUIT	16.5	4.3385	0.0160
C25	70-034.26	CB82	CONDUIT	24.9	0.2688	0.0160
C26	70-034.26	CB47(MS)	CONDUIT	42.7	0.4610	0.0160
C27_1	70-152.02	J16	CONDUIT	24.0	1.1915	0.0160
C27_2	J16	70-208.50	CONDUIT	35.0	1.1903	0.0160
C28	70-208.50	CB24(MS)	CONDUIT	17.5	0.8136	0.0160
C29	80+003.32	60+224.17	CONDUIT	38.7	2.5211	0.0160
C30	80+025.67	CB80(MS)	CONDUIT	50.3	1.3125	0.0160
C31	80+078.80	CB63(MS)	CONDUIT	38.4	3.8029	0.0160
C32	80+121.22	CB78	CONDUIT	53.9	4.5098	0.0160
C33	80+187.36	90+008.28	CONDUIT	10.7	-2.5152	0.0160
C34	80+187.36	80+216.33	CONDUIT	28.9	2.1432	0.0160
C35	80+216.33	CB71(MS)	CONDUIT	17.4	0.6911	0.0160
C36	80+267	CB79(MS)	CONDUIT	36.3	0.5789	0.0160
C37	90.071.47	CB70(MS)	CONDUIT	19.0	3.8186	0.0160
C38	90+008.28	CB69(MS)	CONDUIT	23.3	2.7014	0.0160
C39	CB01	CB01(MS)	CONDUIT	5.0	0.0061	0.0160
C40	CB01(MS)	CB30(MS)	CONDUIT	36.6	0.2735	0.0160
C41	CB01(MS)	HP02	CONDUIT	5.5	0.9091	0.0160
C42	CB06	CB06(MS)	CONDUIT	5.0	0.0061	0.0160
C43	CB06(MS)	40+157.95	CONDUIT	22.2	0.5845	0.0160
C44	CB08	CB08(MS)	CONDUIT	5.0	0.0061	0.0160
C45	CB08(MS)	40+084.71	CONDUIT	21.2	0.7448	0.0160

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C46	CB09	CB09(MS)	CONDUIT	5.0	0.0061	0.0160
C47	CB09(MS)	30+074.39	CONDUIT	30.6	0.1472	0.0160
C48	CB12	CB12(MS)	CONDUIT	5.0	0.0061	0.0160
C49	CB12(MS)	20.033.19	CONDUIT	33.2	0.6627	0.0160
C50	CB14	CB14(MS)	CONDUIT	5.0	0.0061	0.0160
C51	CB14(MS)	CB15(x2-DICBs)	CONDUIT	17.9	0.2232	0.0160
C52	CB16(2x-DICBs)	CB16(MS)	CONDUIT	5.0	0.0061	0.0160
C53	CB16(MS)	10+314.72	CONDUIT	13.2	-0.1285	0.0160
C54	CB18	CB18(MS)	CONDUIT	5.0	0.0061	0.0160
C55	CB18(MS)	10+314.72	CONDUIT	13.6	-1.0819	0.0160
C56	CB20	CB20(MS)	CONDUIT	5.0	0.0061	0.0160
C57	CB20(MS)	CB16(MS)	CONDUIT	65.7	0.3196	0.0160
C58	CB20(MS)	10+207.77	CONDUIT	37.6	0.5403	0.0160
C59	CB22	CB22(MS)	CONDUIT	5.0	0.0061	0.0160
C60	CB22(MS)	40+084.71	CONDUIT	21.7	0.2216	0.0160
C61	CB24	CB24(MS)	CONDUIT	5.0	0.0061	0.0160
C62	CB24(MS)	40+015.59	CONDUIT	10.6	2.1474	0.0160
C63	CB26	CB26(MS)	CONDUIT	5.0	0.0061	0.0160
C64	CB26(MS)	70-152.02	CONDUIT	7.5	-0.1999	0.0160
C65	CB28	CB28(MS)	CONDUIT	5.0	0.0061	0.0160
C66	CB28(MS)	MainSouth	CONDUIT	15.5	0.6017	0.0160
C67	CB29	CB29(MS)	CONDUIT	5.0	0.0061	0.0160
C68	CB29(MS)	CB01(MS)	CONDUIT	16.3	3.1971	0.0160
C69	CB29B(L)	HP04	CONDUIT	5.0	-51.0954	0.0350
C70	CB30	CB30(MS)	CONDUIT	5.0	0.0061	0.0160
C71	CB30(MS)	CB31(MS)	CONDUIT	32.6	0.6438	0.0160
C72	CB31	CB31(MS)	CONDUIT	5.0	0.0061	0.0160
C73	CB31(MS)	CB32	CONDUIT	31.5	0.4004	0.0160
C74	CB31B(L)	HP01	CONDUIT	5.0	-2.9212	0.0350
C75	CB32	HP03	CONDUIT	5.0	0.0061	0.0350
C76	CB34	CB34(MS)	CONDUIT	5.0	0.0061	0.0160
C77	CB34(MS)	CB20(MS)	CONDUIT	63.4	0.5045	0.0160
C78	CB35	CB35(MS)	CONDUIT	5.0	0.0061	0.0160
C79	CB35(MS)	CB36(MS)	CONDUIT	28.2	0.3187	0.0160
C80	CB36	CB36(MS)	CONDUIT	5.0	0.0061	0.0160
C81	CB36(MS)	30+074.39	CONDUIT	20.3	1.6493	0.0160

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C82	CB39	CB39(MS)	CONDUIT	5.0	0.0061	0.0160
C83	CB39(MS)	30+038.20	CONDUIT	18.0	1.2471	0.0160
C84	CB40	CB40(MS)	CONDUIT	5.0	0.0061	0.0160
C85	CB40(MS)	CB41(MS)	CONDUIT	29.2	0.5143	0.0160
C86	CB41	CB41(MS)	CONDUIT	5.0	0.0061	0.0160
C87	CB41(MS)	20.033.19	CONDUIT	11.4	1.2325	0.0160
C88	CB42	CB42(MS)	CONDUIT	5.0	0.0061	0.0160
C89	CB42(MS)	20+069.15	CONDUIT	13.8	2.1080	0.0160
C90	CB45	CB45(MS)	CONDUIT	5.0	0.0061	0.0160
C91	CB45(MS)	70-152.02	CONDUIT	20.1	0.5224	0.0160
C92	CB47	CB47(MS)	CONDUIT	5.0	0.0061	0.0160
C93	CB47(MS)	CB45(MS)	CONDUIT	61.3	0.4079	0.0160
C94	CB49	CB49(MS)	CONDUIT	5.0	0.0061	0.0160
C95	CB49(MS)	CB51(MS)	CONDUIT	45.7	1.1604	0.0160
C96	CB51	CB51(MS)	CONDUIT	5.0	0.0061	0.0160
C97	CB51(MS)	CB53(MS)	CONDUIT	45.8	0.4806	0.0160
C98	CB53	CB53(MS)	CONDUIT	5.0	0.0061	0.0160
C99	CB53(MS)	MainNorth	CONDUIT	17.8	-1.2388	0.0160
OR52	CBMH1	MH102	CONDUIT	7.6	0.3947	0.0130
STM-15	MH404	MH406	CONDUIT	22.1	1.9913	0.0130
STM-390	CBMH2	MH128	CONDUIT	9.2	0.9804	0.0130
STM-68	MH400	MH402	CONDUIT	20.4	0.9804	0.0130
W1	VortechsPh2	J20	CONDUIT	5.0	0.0061	0.0160
Weir-Outlet1	MH118	J15	CONDUIT	5.0	0.2000	0.0130
Weir-Outlet2	MH336	J17	CONDUIT	5.0	0.2000	0.0130
1C-OR	J14	MH168	ORIFICE			
A06(OUT)	CB1-GAPark	MH168	ORIFICE			
A3-A1-OR	CB3	MH402	ORIFICE			
A3-A2-OR	CBMH4	MH172	ORIFICE			
A3-A3-OR	CB5	MH406	ORIFICE			
A7-A7-OR	CBMH7	MH164	ORIFICE			
A7-A8-OR	CB8	MH414	ORIFICE			
C212_1	VortechsPh1	J19	ORIFICE			
C213_1	VortechsPh2	J20	ORIFICE			
OR01	CB01	MH100	ORIFICE			
OR02	CB06	MH108	ORIFICE			

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

OR03	CB08	MH108	ORIFICE
OR04	CB09	MH110B	ORIFICE
OR05	CB12	MH144	ORIFICE
OR06	CB14	MH122B	ORIFICE
OR07	CB15(x2-DICBs)	MH114	ORIFICE
OR08	CB16(2x-DICBs)	MH124	ORIFICE
OR09	CB18	MH112B	ORIFICE
OR1	GA-ParkSouthStorage	MH166	ORIFICE
OR10	CB20	MH126	ORIFICE
OR11	CB22	MH110	ORIFICE
OR12	CB24	MH130	ORIFICE
OR13	CB26	MH178	ORIFICE
OR14	CB28	MH176	ORIFICE
OR15	CB29	MH226	ORIFICE
OR16	CB29B(L)	MH228	ORIFICE
OR17	CB30	MH220	ORIFICE
OR18	CB31	MH220	ORIFICE
OR19	CB31B(L)	MH222	ORIFICE
OR20	CB32	MH224	ORIFICE
OR21	CB34	MH126	ORIFICE
OR22	CB35	MH148	ORIFICE
OR23	CB36	MH148	ORIFICE
OR24	CB39	MH152	ORIFICE
OR25	CB40	MH140	ORIFICE
OR26	CB41	MH140	ORIFICE
OR27	CB42	MH136	ORIFICE
OR28	CB45	MH248	ORIFICE
OR29	CB47	MH170	ORIFICE
OR30	CB49	MH182	ORIFICE
OR31	CB51	MH180	ORIFICE
OR32	CB53	MH180	ORIFICE
OR33	CB55	MH102	ORIFICE
OR34	CB56	MH230	ORIFICE
OR35	CB58	MH300	ORIFICE
OR36	CB60	MH174	ORIFICE
OR37	CB62	MH304	ORIFICE

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

OR38	CB63	MH314	ORIFICE
OR39	CB65	MH308	ORIFICE
OR40	CB67	MH322	ORIFICE
OR41	CB69	MH316	ORIFICE
OR42	CB70	MH310	ORIFICE
OR43	CB71	MH318	ORIFICE
OR44	CB73	MH330	ORIFICE
OR45	CB75	MH328(DUMMY)	ORIFICE
OR46	CB76	MH326	ORIFICE
OR47	CB77	MH324	ORIFICE
OR48	CB78	MH314(DUMMY)	ORIFICE
OR49	CB79	MH330	ORIFICE
OR50	CB80	MH312	ORIFICE
OR51	CB82	MH174	ORIFICE
34	VortechsPh1	J19	WEIR
1C-Out	CB-PL	J14	OUTLET
1CTopofRooftoTank	J2	A11B(STOR)	OUTLET
A04(OUT)	A04(STOR)	MH170	OUTLET
A09B(OUT)	A09B(STOR)	MH176	OUTLET
A09C(OUT)	A09C(STOR)	MH176	OUTLET
A10(OUT)	A10(STOR)	MH176	OUTLET
A11B(OUT)	A11B(STOR)	MH130	OUTLET
A14(OUT)	A14(STOR)	CBMH2	OUTLET
A16C(OUT)	A16C(STOR)	J3	OUTLET
A22A(OUT)	A22A(STOR)	MH126	OUTLET
A3-A4-LMF	CB1	MH168	OUTLET
A7-A5-LMF	CB2	MH166	OUTLET
A7-A6-LMF	CB6	MH410	OUTLET
B21(OUT)	B21(STOR)	MH326	OUTLET
B23(OUT)	B23(STOR)	MH310	OUTLET
B25(OUT)	B25(STOR)	MH304	OUTLET
O01	CB01(MS)	CB01	OUTLET
O02	CB06(MS)	CB06	OUTLET
O03	CB08(MS)	CB08	OUTLET
O04	CB09(MS)	CB09	OUTLET
O05	CB12(MS)	CB12	OUTLET

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

O06	CB14(MS)	CB14	OUTLET
O07	CB16(MS)	CB16(2x-DICBs)	OUTLET
O08	CB18(MS)	CB18	OUTLET
O09	CB20(MS)	CB20	OUTLET
O10	CB22(MS)	CB22	OUTLET
O11	CB24(MS)	CB24	OUTLET
O12	CB26(MS)	CB26	OUTLET
O13	CB28(MS)	CB28	OUTLET
O14	CB29(MS)	CB29	OUTLET
O15	CB30(MS)	CB30	OUTLET
O16	CB31(MS)	CB31	OUTLET
O17	CB34(MS)	CB34	OUTLET
O18	CB35(MS)	CB35	OUTLET
O19	CB36(MS)	CB36	OUTLET
O20	CB39(MS)	CB39	OUTLET
O21	CB40(MS)	CB40	OUTLET
O22	CB41(MS)	CB41	OUTLET
O23	CB42(MS)	CB42	OUTLET
O24	CB45(MS)	CB45	OUTLET
O25	CB47(MS)	CB47	OUTLET
O26	CB49(MS)	CB49	OUTLET
O27	CB51(MS)	CB51	OUTLET
O28	CB53(MS)	CB53	OUTLET
O29	CB58(MS)	CB58	OUTLET
O30	CB60(MS)	CB60	OUTLET
O31	CB62(MS)	CB62	OUTLET
O32	CB63(MS)	CB63	OUTLET
O33	CB65(MS)	CB65	OUTLET
O34	CB67(MS)	CB67	OUTLET
O35	CB69(MS)	CB69	OUTLET
O36	CB70(MS)	CB70	OUTLET
O37	CB71(MS)	CB71	OUTLET
O38	CB73(MS)	CB73	OUTLET
O39	CB75(MS)	CB75	OUTLET
O40	CB76(MS)	CB76	OUTLET
O41	CB77(MS)	CB77	OUTLET

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

O42 CB79(MS) CB79 OUTLET

O43 CB80(MS) CB80 OUTLET

OL1 J4 A04(STOR) OUTLET

****

Cross Section Summary

****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
1	TRIANGULAR	0.30	0.45	0.15	3.00	1	312.94
10	RECT_OPEN	0.30	1.50	0.27	5.00	1	5439.79
11	CIRCULAR	0.25	0.05	0.06	0.25	1	83.89
12	RECT_OPEN	0.30	1.50	0.27	5.00	1	8175.91
13	RECT_OPEN	0.30	1.50	0.27	5.00	1	3895.92
14	RECT_OPEN	0.30	0.42	0.21	1.40	1	154.15
15	RECT_OPEN	0.30	1.50	0.27	5.00	1	24277.53
16	RECT_OPEN	0.30	1.50	0.27	5.00	1	3895.92
17	RECT_OPEN	0.50	0.15	0.12	0.30	1	371.90
18	RECT_OPEN	0.30	0.42	0.21	1.40	1	488.81
19	CIRCULAR	0.25	0.05	0.06	0.25	1	79.62
2	CIRCULAR	0.25	0.05	0.06	0.25	1	84.92
20	CIRCULAR	0.25	0.05	0.06	0.25	1	84.29
21	RECT_OPEN	0.50	0.15	0.12	0.30	1	1025.92
22	CIRCULAR	0.25	0.05	0.06	0.25	1	83.45
23	RECT_OPEN	0.30	1.50	0.27	5.00	1	3484.59
24	RECT_OPEN	0.30	1.50	0.27	5.00	1	5779.14
25	RECT_OPEN	0.30	1.50	0.27	5.00	1	5042.46
26	RECT_OPEN	0.30	1.50	0.27	5.00	1	6036.26
27	RECT_OPEN	0.30	1.50	0.27	5.00	1	14490.34
28	RECT_OPEN	0.30	1.50	0.27	5.00	1	7414.75
29	RECT_OPEN	0.30	1.50	0.27	5.00	1	3484.59
3	RECT_OPEN	0.30	1.50	0.27	5.00	1	4510.11
30	RECT_OPEN	0.30	1.50	0.27	5.00	1	3895.92
31	RECT_OPEN	0.30	1.50	0.27	5.00	1	7643.17

32	RECT_OPEN	0.30	1.50	0.27	5.00	1	3017.72
33	RECT_OPEN	0.30	1.50	0.27	5.00	1	6749.29
35	RECT_OPEN	0.30	1.50	0.27	5.00	1	280.54
36	RECT_OPEN	0.30	1.50	0.27	5.00	1	11419.18
37	RECT_OPEN	0.30	1.50	0.27	5.00	1	8360.04
4	RECT_OPEN	0.30	1.50	0.27	5.00	1	4267.82
5	TRIANGULAR	0.30	0.45	0.15	3.00	1	2103.22
6	CIRCULAR	0.20	0.03	0.05	0.20	1	78.48
7	RECT_OPEN	0.35	1.05	0.28	3.00	1	1158.84
8	RECT_OPEN	0.30	1.50	0.27	5.00	1	5646.02
9	CIRCULAR	0.25	0.05	0.06	0.25	1	74.03
A15A(OUT)	CIRCULAR	0.20	0.03	0.05	0.20	1	239.54
B19(OUT)	CIRCULAR	0.30	0.07	0.07	0.30	1	130.41
C01	HALF(A1-A1)Scholastic(13mROW)	0.30	1.12	0.17	6.51	1	4235.12
C02	HALF(A1-A1)Scholastic(13mROW)	0.30	1.12	0.17	6.51	1	3365.43
C03	HALF(A-A)Scholastic(10.5mROW)	0.30	1.03	0.19	5.26	1	1609.23
C04	(I-I)Telmon(upper)(16mROW)	0.30	2.52	0.16	16.00	1	2075.23
C05	(I-I)Telmon(upper)(16mROW)	0.30	2.52	0.16	16.00	1	1973.36
C06	(B-B)Telmon(lower)(16mROW)	0.30	2.52	0.16	16.00	1	3395.06
C07	(B-B)Telmon(lower)(16mROW)	0.30	2.52	0.16	16.00	1	11917.03
C08	(D-D)Oblates(upper)(20mROW)	0.30	3.07	0.00	20.00	1	475.52
C09	(D-D)Oblates(upper)(20mROW)	0.30	3.07	0.00	20.00	1	465.97
C10	(E1-E1)Deschatelets(upper)16.5mROW	0.30	2.61	0.16	16.50	1	2032.76
C100	Ditch	0.30	0.45	0.15	3.00	1	472.89
C101	Ditch	0.30	0.45	0.15	3.00	1	697.31
C102	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C103	(PVT)PrivateSt(11mROW)	0.30	2.15	0.20	11.00	1	5020.42
C104	(PVT)PrivateSt(11mROW)	0.30	2.15	0.20	11.00	1	1882.67
C105	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C106	(D-D)Oblates(upper)(20mROW)	0.30	3.07	0.00	20.00	1	202.20
C107	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C108	(D-D)Oblates(upper)(20mROW)	0.30	3.07	0.00	20.00	1	622.76
C109	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C11	(E-E)DeMazenod(16.5mROW)	0.30	2.61	0.16	16.50	1	3206.46
C110	(PVT)PrivateSt(11mROW)	0.30	2.15	0.20	11.00	1	7037.47
C111	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C112	(D-D)Oblates(upper)(20mROW)	0.30	3.07	0.00	20.00	1	702.06
C113	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C114	(PVT)PrivateSt(11mROW)	0.30	2.15	0.20	11.00	1	6833.62
C115	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C116	(PVT)PrivateSt(11mROW)	0.30	2.15	0.20	11.00	1	4446.87
C117	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C118	OblateFinalSection	0.41	3.89	0.14	20.00	1	15529.43
C119	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C12	(D-D)Oblates(upper)(20mROW)	0.30	3.07	0.00	20.00	1	194.57
C120	(A2-A2)Sanctuary(11mROW)	0.30	2.15	0.20	11.00	1	4687.70
C121	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C122	(A2-A2)Sanctuary(11mROW)	0.30	2.15	0.20	11.00	1	7601.73
C123	HALF(A2-A2)Sanctuary(11mROW)	0.30	1.07	0.19	5.51	1	3750.07
C124	CIRCULAR	0.38	0.11	0.09	0.38	4	175.35
C125	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C126	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C127	HALF(A1-A1)Scholastic(13mROW)	0.30	1.12	0.17	6.51	1	3932.02
C128	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C129	HALF(A1-A1)Scholastic(13mROW)	0.30	1.12	0.17	6.51	1	2853.13
C13	(E-E)DeMazenod(16.5mROW)	0.30	2.61	0.16	16.50	1	4859.44
C130	(PVT)PrivateSt(11mROW)	0.30	2.15	0.20	11.00	1	4697.71
C131	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C132	HALF(A2-A2)Sanctuary(11mROW)	0.30	1.07	0.19	5.51	1	669.55
C133	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C134	(PVT)PrivateSt(11mROW)	0.30	2.15	0.20	11.00	1	2031.05
C135	Ditch	0.30	0.45	0.15	3.00	1	733.48
C136	Ditch	0.30	0.45	0.15	3.00	1	1177.71
C137	(B-B)Telmon(lower)(16mROW)	0.30	2.52	0.16	16.00	1	2889.48
C138	Ditch	0.30	0.45	0.15	3.00	1	973.34
C139	Ditch	0.30	0.45	0.15	3.00	1	619.03
C14	(E-E)DeMazenod(16.5mROW)	0.30	2.61	0.16	16.50	1	6893.11
C140	CIRCULAR	0.30	0.07	0.07	0.30	1	66.91
C141	CIRCULAR	0.38	0.11	0.09	0.38	1	126.34
C142	CIRCULAR	0.30	0.07	0.07	0.30	1	59.41
C143	CIRCULAR	0.45	0.16	0.11	0.45	1	181.20
C144	CIRCULAR	0.45	0.16	0.11	0.45	1	145.19

C145_1	CIRCULAR	0.38	0.11	0.09	0.38	1	127.65
C145_2	CIRCULAR	0.38	0.11	0.09	0.38	1	123.60
C146	CIRCULAR	0.82	0.53	0.21	0.82	1	1173.98
C147	CIRCULAR	0.82	0.53	0.21	0.82	1	1012.27
C148	CIRCULAR	0.82	0.53	0.21	0.82	1	1016.50
C149	CIRCULAR	0.90	0.64	0.23	0.90	1	1270.86
C15	(I-I)Telmon(upper)(16mROW)	0.30	2.52	0.16	16.00	1	3502.31
C150	CIRCULAR	0.90	0.64	0.23	0.90	1	2607.97
C151	CIRCULAR	0.60	0.28	0.15	0.60	1	274.61
C152	CIRCULAR	0.53	0.22	0.13	0.53	1	216.80
C153	CIRCULAR	0.60	0.28	0.15	0.60	1	330.17
C154	CIRCULAR	0.45	0.16	0.11	0.45	1	148.33
C155	CIRCULAR	0.38	0.11	0.09	0.38	1	121.98
C156_1	CIRCULAR	0.75	0.44	0.19	0.75	1	796.19
C156_2	CIRCULAR	0.75	0.44	0.19	0.75	1	796.40
C158	CIRCULAR	0.30	0.07	0.07	0.30	1	68.80
C159	CIRCULAR	0.75	0.44	0.19	0.75	1	750.24
C16	(G-G)Hazel(15mROW)	0.30	2.34	0.15	15.00	1	3880.91
C160	CIRCULAR	0.75	0.44	0.19	0.75	1	612.65
C161	CIRCULAR	0.25	0.05	0.06	0.25	1	42.04
C162	CIRCULAR	0.25	0.05	0.06	0.25	1	42.08
C163	CIRCULAR	0.53	0.22	0.13	0.53	1	349.14
C164	CIRCULAR	0.25	0.05	0.06	0.25	1	42.01
C165	CIRCULAR	0.25	0.05	0.06	0.25	1	42.08
C166	CIRCULAR	0.75	0.44	0.19	0.75	1	567.14
C167	CIRCULAR	0.60	0.28	0.15	0.60	1	255.71
C168	CIRCULAR	0.60	0.28	0.15	0.60	1	318.94
C169	CIRCULAR	0.53	0.22	0.13	0.53	1	218.18
C17	(G-G)Hazel(15mROW)	0.30	2.34	0.15	15.00	1	3665.07
C170	CIRCULAR	0.45	0.16	0.11	0.45	1	158.79
C171	CIRCULAR	0.38	0.11	0.09	0.38	1	63.67
C172	CIRCULAR	0.25	0.05	0.06	0.25	1	79.63
C173	CIRCULAR	0.45	0.16	0.11	0.45	1	197.55
C174	CIRCULAR	0.53	0.22	0.13	0.53	1	211.15
C175	CIRCULAR	0.30	0.07	0.07	0.30	1	59.02
C176	CIRCULAR	0.38	0.11	0.09	0.38	1	97.24

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C177	CIRCULAR	0.25	0.05	0.06	0.25	1	42.31
C178	CIRCULAR	0.30	0.07	0.07	0.30	1	68.31
C179	CIRCULAR	0.25	0.05	0.06	0.25	1	42.11
C18	(G-G)Hazel(15mROW)	0.30	2.34	0.15	15.00	1	7017.20
C180	CIRCULAR	0.25	0.05	0.06	0.25	1	42.16
C181	CIRCULAR	0.25	0.05	0.06	0.25	1	43.23
C182	CIRCULAR	0.38	0.11	0.09	0.38	1	123.39
C183	CIRCULAR	0.90	0.64	0.23	0.90	1	2133.70
C184	CIRCULAR	0.90	0.64	0.23	0.90	1	1672.87
C185	CIRCULAR	0.38	0.11	0.09	0.38	1	120.77
C186	CIRCULAR	0.60	0.28	0.15	0.60	1	465.90
C187	CIRCULAR	0.45	0.16	0.11	0.45	1	194.83
C188	CIRCULAR	0.25	0.05	0.06	0.25	1	104.41
C189	CIRCULAR	0.25	0.05	0.06	0.25	1	79.49
C190	CIRCULAR	0.30	0.07	0.07	0.30	1	175.34
C191	CIRCULAR	0.30	0.07	0.07	0.30	1	190.84
C192	CIRCULAR	0.38	0.11	0.09	0.38	1	298.34
C193	CIRCULAR	0.60	0.28	0.15	0.60	1	315.00
C194	CIRCULAR	0.25	0.05	0.06	0.25	1	105.14
C195	CIRCULAR	0.25	0.05	0.06	0.25	1	103.69
C196	CIRCULAR	0.25	0.05	0.06	0.25	1	142.54
C197	CIRCULAR	0.38	0.11	0.09	0.38	1	116.36
C198	CIRCULAR	0.25	0.05	0.06	0.25	1	20.12
C199	CIRCULAR	0.38	0.11	0.09	0.38	1	129.71
C20	(H-H)Oblates(lower)12.2mROW	0.30	2.13	0.18	12.20	1	1196.90
C200	CIRCULAR	0.38	0.11	0.09	0.38	1	91.76
C201	CIRCULAR	0.30	0.07	0.07	0.30	1	186.35
C202	CIRCULAR	0.38	0.11	0.09	0.38	1	310.74
C203	CIRCULAR	0.38	0.11	0.09	0.38	1	327.01
C204	CIRCULAR	0.38	0.11	0.09	0.38	1	271.68
C205	CIRCULAR	0.38	0.11	0.09	0.38	1	111.88
C206	CIRCULAR	0.75	0.44	0.19	0.75	1	832.04
C207	CIRCULAR	0.75	0.44	0.19	0.75	1	497.90
C208	CIRCULAR	0.60	0.28	0.15	0.60	1	274.61
C209	CIRCULAR	0.75	0.44	0.19	0.75	1	102.44
C21	(D-D)Oblates(upper)(20mROW)	0.30	3.07	0.00	20.00	1	367.70

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C210	CIRCULAR	0.75	0.44	0.19	0.75	1	724.73	
C211	CIRCULAR	0.75	0.44	0.19	0.75	1	704.14	
C212_2	CIRCULAR	0.60	0.28	0.15	0.60	1	47.94	
C213_2	CIRCULAR	0.60	0.28	0.15	0.60	1	47.94	
C22	(F-F)Deschatelets(lower)(17.5mROW)	0.30	2.77	0.16	17.50	1	3320.08	
C23	(D-D)Oblates(upper)(20mROW)	0.30	3.07	0.00	20.00	1	624.47	
C24	(D-D)Oblates(upper)(20mROW)	0.30	3.07	0.00	20.00	1	755.17	
C25	(F-F)Deschatelets(lower)(17.5mROW)	0.30	2.77	0.16	17.50	1	2598.18	
C26	(F-F)Deschatelets(lower)(17.5mROW)	0.30	2.77	0.16	17.50	1	3402.69	
C27_1	(E1-E1)Deschatelets(upper)16.5mROW	0.30	2.61	0.16	16.50	1	5157.14	
C27_2	(E1-E1)Deschatelets(upper)16.5mROW	0.30	2.61	0.16	16.50	1	5154.43	
C28	(E1-E1)Deschatelets(upper)16.5mROW	0.30	2.61	0.16	16.50	1	4261.64	
C29	(D-D)Oblates(upper)(20mROW)	0.30	3.07	0.00	20.00	1	575.66	
C30	(PVT)PrivateSt(11mROW)	0.30	2.15	0.20	11.00	1	5203.58	
C31	(PVT)PrivateSt(11mROW)	0.30	2.15	0.20	11.00	1	8857.33	
C32	(PVT)PrivateSt(11mROW)	0.30	2.15	0.20	11.00	1	9645.59	
C33	(PVT)PrivateSt(11mROW)	0.30	2.15	0.20	11.00	1	7203.39	
C34	(A2-A2)Sanctuary(11mROW)	0.30	2.15	0.20	11.00	1	6649.28	
C35	(A2-A2)Sanctuary(11mROW)	0.30	2.15	0.20	11.00	1	3775.78	
C36	(A2-A2)Sanctuary(11mROW)	0.30	2.15	0.20	11.00	1	3455.87	
C37	(D-D)Oblates(upper)(20mROW)	0.30	3.07	0.00	20.00	1	708.48	
C38	(PVT)PrivateSt(11mROW)	0.30	2.15	0.20	11.00	1	7465.18	
C39	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55	
C40	(PVT)PrivateSt(11mROW)	0.30	2.15	0.20	11.00	1	2375.48	
C41	(B-B)Telmon(lower)(16mROW)	0.30	2.52	0.16	16.00	1	4356.13	
C42	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55	
C43	(E-E)DeMazenod(16.5mROW)	0.30	2.61	0.16	16.50	1	3612.18	
C44	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55	
C45	(E-E)DeMazenod(16.5mROW)	0.30	2.61	0.16	16.50	1	4077.31	
C46	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55	
C47	(D-D)Oblates(upper)(20mROW)	0.30	3.07	0.00	20.00	1	139.11	
C48	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55	
C49	(I-I)Telmon(upper)(16mROW)	0.30	2.52	0.16	16.00	1	3719.08	
C50	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55	
C51	HALF(A-A)Scholastic(10.5mROW)	0.30	1.03	0.19	5.26	1	999.16	
C52	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55	

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C53 HALF(A-A)Scholastic(10.5mROW) 0.30 1.03 0.19 5.26 1 758.28

C54 RECT_OPEN 0.30 1.50 0.28 5.00 1 315.55

C55 (D-D)Oblates(upper)(20mROW) 0.30 3.07 0.00 20.00 1 377.11

C56 RECT_OPEN 0.30 1.50 0.28 5.00 1 315.55

C57 HALF(A-A)Scholastic(10.5mROW) 0.30 1.03 0.19 5.26 1 1195.77

C58 HALF(A1-A1)Scholastic(13mROW) 0.30 1.12 0.17 6.51 1 1559.67

C59 RECT_OPEN 0.30 1.50 0.28 5.00 1 315.55

C60 (E-E)DeMazenod(16.5mROW) 0.30 2.61 0.16 16.50 1 2224.30

C61 RECT_OPEN 0.30 1.50 0.28 5.00 1 315.55

C62 (E1-E1)Deschatelets(upper)16.5mROW 0.30 2.61 0.16 16.50 1 6923.35

C63 RECT_OPEN 0.30 1.50 0.28 5.00 1 315.55

C64 (G-G)Hazel(15mROW) 0.30 2.34 0.15 15.00 1 1877.10

C65 RECT_OPEN 0.30 1.50 0.28 5.00 1 315.55

C66 (G-G)Hazel(15mROW) 0.30 2.34 0.15 15.00 1 3256.87

C67 RECT_OPEN 0.30 1.50 0.28 5.00 1 315.55

C68 (PVT)PrivateSt(11mROW) 0.30 2.15 0.20 11.00 1 8121.33

C69 Ditch 0.30 0.45 0.15 3.00 1 2554.13

C70 RECT_OPEN 0.30 1.50 0.28 5.00 1 315.55

C71 (PVT)PrivateSt(11mROW) 0.30 2.15 0.20 11.00 1 3644.41

C72 RECT_OPEN 0.30 1.50 0.28 5.00 1 315.55

C73 (PVT)PrivateSt(11mROW) 0.30 2.15 0.20 11.00 1 2874.14

C74 Ditch 0.30 0.45 0.15 3.00 1 610.71

C75 Ditch 0.30 0.45 0.15 3.00 1 27.90

C76 RECT_OPEN 0.30 1.50 0.28 5.00 1 315.55

C77 (E1-E1)Deschatelets(upper)16.5mROW 0.30 2.61 0.16 16.50 1 3355.76

C78 RECT_OPEN 0.30 1.50 0.28 5.00 1 315.55

C79 (PVT)PrivateSt(11mROW) 0.30 2.15 0.20 11.00 1 2564.21

C80 RECT_OPEN 0.30 1.50 0.28 5.00 1 315.55

C81 (PVT)PrivateSt(11mROW) 0.30 2.15 0.20 11.00 1 5833.00

C82 RECT_OPEN 0.30 1.50 0.28 5.00 1 315.55

C83 (PVT)PrivateSt(11mROW) 0.30 2.15 0.20 11.00 1 5072.27

C84 RECT_OPEN 0.30 1.50 0.28 5.00 1 315.55

C85 (PVT)PrivateSt(11mROW) 0.30 2.15 0.20 11.00 1 3257.14

C86 RECT_OPEN 0.30 1.50 0.28 5.00 1 315.55

C87 (PVT)PrivateSt(11mROW) 0.30 2.15 0.20 11.00 1 5042.43

C88 RECT_OPEN 0.30 1.50 0.28 5.00 1 315.55

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C89	(PVT)PrivateSt(11mROW)	0.30	2.15	0.20	11.00	1	6594.57
C90	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C91	(F-F)Deschatelets(lower)(17.5mROW)	0.30	2.77	0.16	17.50	1	3622.38
C92	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C93	(F-F)Deschatelets(lower)(17.5mROW)	0.30	2.77	0.16	17.50	1	3200.63
C94	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C95	(H-H)Oblates(lower)12.2mROW	0.30	2.13	0.18	12.20	1	4506.89
C96	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C97	(H-H)Oblates(lower)12.2mROW	0.30	2.13	0.18	12.20	1	2900.43
C98	RECT_OPEN	0.30	1.50	0.28	5.00	1	315.55
C99	(H-H)Oblates(lower)12.2mROW	0.30	2.13	0.18	12.20	1	4656.58
OR52	CIRCULAR	0.38	0.11	0.09	0.38	1	110.16
STM-15	CIRCULAR	0.25	0.05	0.06	0.25	1	83.92
STM-390	CIRCULAR	0.30	0.07	0.07	0.30	1	95.76
STM-68	CIRCULAR	0.25	0.05	0.06	0.25	1	58.89
W1	RECT_CLOSED	0.77	0.19	0.10	0.25	1	19.82
Weir-Outlet1	RECT_OPEN	0.90	2.16	0.51	2.40	1	4770.04
Weir-Outlet2	RECT_OPEN	0.75	1.35	0.41	1.80	1	2559.44

****

Transect Summary

****

Transect (A1-A1)Scholastic(13mROW)

Area:

0.0005	0.0021	0.0048	0.0085	0.0133
0.0192	0.0262	0.0342	0.0433	0.0534
0.0646	0.0769	0.0902	0.1047	0.1201
0.1367	0.1543	0.1730	0.1928	0.2129
0.2330	0.2531	0.2732	0.2934	0.3135
0.3339	0.3549	0.3765	0.3987	0.4215
0.4448	0.4687	0.4933	0.5184	0.5441
0.5704	0.5972	0.6247	0.6528	0.6814
0.7106	0.7404	0.7708	0.8018	0.8334

0.8655 0.8983 0.9316 0.9655 1.0000

Hrad:

0.0167 0.0334 0.0500 0.0667 0.0834

0.1001 0.1167 0.1334 0.1501 0.1668

0.1835 0.2001 0.2168 0.2335 0.2502

0.2669 0.2835 0.3002 0.3196 0.3524

0.3851 0.4177 0.4502 0.4826 0.5149

0.5473 0.5782 0.6077 0.6359 0.6628

0.6885 0.7129 0.7362 0.7584 0.7796

0.7997 0.8189 0.8372 0.8546 0.8712

0.8870 0.9021 0.9164 0.9301 0.9432

0.9557 0.9675 0.9789 0.9897 1.0000

Width:

0.0307 0.0614 0.0921 0.1228 0.1535

0.1842 0.2149 0.2456 0.2763 0.3069

0.3376 0.3683 0.3990 0.4297 0.4604

0.4911 0.5218 0.5525 0.5781 0.5782

0.5782 0.5783 0.5783 0.5784 0.5785

0.5953 0.6122 0.6290 0.6459 0.6628

0.6796 0.6965 0.7134 0.7302 0.7471

0.7639 0.7808 0.7977 0.8145 0.8314

0.8482 0.8651 0.8820 0.8988 0.9157

0.9326 0.9494 0.9663 0.9831 1.0000

Transect (A2-A2)Sanctuary(11mROW)

Area:

0.0006 0.0022 0.0050 0.0090 0.0140

0.0202 0.0274 0.0358 0.0453 0.0560

0.0677 0.0806 0.0946 0.1097 0.1259

0.1433 0.1618 0.1814 0.2021 0.2239

0.2463 0.2687 0.2911 0.3135 0.3359

0.3585 0.3814 0.4046 0.4282 0.4521

0.4763 0.5009 0.5258 0.5510 0.5766

0.6025 0.6287 0.6553 0.6822 0.7094

0.7369 0.7648 0.7931 0.8216 0.8505

0.8798 0.9093 0.9392 0.9694 1.0000

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

Hrad:

0.0148 0.0295 0.0443 0.0591 0.0738

0.0886 0.1034 0.1181 0.1329 0.1476

0.1624 0.1772 0.1919 0.2067 0.2215

0.2362 0.2510 0.2658 0.2805 0.2953

0.3243 0.3533 0.3822 0.4110 0.4398

0.4688 0.4971 0.5249 0.5520 0.5785

0.6044 0.6297 0.6544 0.6786 0.7022

0.7254 0.7479 0.7700 0.7916 0.8127

0.8334 0.8536 0.8733 0.8926 0.9115

0.9300 0.9481 0.9657 0.9831 1.0000

Width:

0.0364 0.0729 0.1093 0.1457 0.1822

0.2186 0.2551 0.2915 0.3279 0.3644

0.4008 0.4372 0.4737 0.5101 0.5465

0.5830 0.6194 0.6559 0.6923 0.7287

0.7288 0.7289 0.7289 0.7290 0.7291

0.7399 0.7508 0.7616 0.7724 0.7833

0.7941 0.8049 0.8158 0.8266 0.8375

0.8483 0.8591 0.8700 0.8808 0.8916

0.9025 0.9133 0.9241 0.9350 0.9458

0.9567 0.9675 0.9783 0.9892 1.0000

Transect (A-A)Scholastic(10.5mROW)

Area:

0.0006 0.0023 0.0052 0.0093 0.0146

0.0210 0.0286 0.0373 0.0472 0.0583

0.0705 0.0839 0.0985 0.1142 0.1311

0.1492 0.1684 0.1888 0.2104 0.2323

0.2543 0.2762 0.2982 0.3201 0.3421

0.3642 0.3867 0.4096 0.4327 0.4563

0.4801 0.5044 0.5290 0.5539 0.5791

0.6048 0.6307 0.6570 0.6837 0.7107

0.7381 0.7658 0.7939 0.8223 0.8510

0.8801 0.9096 0.9394 0.9695 1.0000

Hrad:

0.0147 0.0294 0.0441 0.0588 0.0735

0.0882 0.1029 0.1176 0.1323 0.1470

0.1617 0.1764 0.1911 0.2058 0.2205

0.2352 0.2499 0.2646 0.2816 0.3105

0.3394 0.3681 0.3967 0.4253 0.4538

0.4826 0.5107 0.5381 0.5649 0.5910

0.6165 0.6414 0.6657 0.6894 0.7125

0.7351 0.7571 0.7786 0.7995 0.8200

0.8400 0.8595 0.8786 0.8972 0.9153

0.9331 0.9504 0.9673 0.9838 1.0000

Width:

0.0380 0.0760 0.1140 0.1520 0.1900

0.2280 0.2660 0.3040 0.3420 0.3800

0.4180 0.4560 0.4940 0.5320 0.5700

0.6080 0.6460 0.6841 0.7157 0.7158

0.7159 0.7160 0.7160 0.7161 0.7162

0.7275 0.7389 0.7502 0.7616 0.7730

0.7843 0.7957 0.8070 0.8184 0.8297

0.8411 0.8524 0.8638 0.8751 0.8865

0.8978 0.9092 0.9205 0.9319 0.9432

0.9546 0.9659 0.9773 0.9886 1.0000

Transect (B-B)Telmon(lower)(16mROW)

Area:

0.0005 0.0019 0.0043 0.0076 0.0119

0.0172 0.0234 0.0305 0.0386 0.0477

0.0577 0.0686 0.0805 0.0934 0.1072

0.1220 0.1377 0.1544 0.1720 0.1906

0.2097 0.2288 0.2478 0.2669 0.2860

0.3054 0.3256 0.3466 0.3683 0.3908

0.4141 0.4381 0.4628 0.4884 0.5146

0.5417 0.5695 0.5981 0.6274 0.6575

0.6883 0.7199 0.7522 0.7854 0.8192

0.8539 0.8893 0.9254 0.9623 1.0000

Hrad:

0.0186 0.0373 0.0559 0.0745 0.0932

0.1118 0.1304 0.1490 0.1677 0.1863

0.2049 0.2236 0.2422 0.2608 0.2795

0.2981 0.3167 0.3354 0.3540 0.3726

0.4093 0.4459 0.4823 0.5187 0.5549

0.5908 0.6246 0.6563 0.6859 0.7136

0.7395 0.7637 0.7862 0.8072 0.8268

0.8451 0.8620 0.8778 0.8925 0.9062

0.9190 0.9308 0.9418 0.9521 0.9616

0.9705 0.9787 0.9863 0.9934 1.0000

Width:

0.0251 0.0501 0.0752 0.1002 0.1253

0.1503 0.1754 0.2004 0.2255 0.2505

0.2756 0.3006 0.3257 0.3507 0.3758

0.4008 0.4259 0.4509 0.4760 0.5010

0.5011 0.5011 0.5012 0.5012 0.5013

0.5212 0.5412 0.5611 0.5811 0.6010

0.6210 0.6409 0.6609 0.6808 0.7008

0.7207 0.7407 0.7606 0.7806 0.8005

0.8205 0.8404 0.8604 0.8803 0.9002

0.9202 0.9402 0.9601 0.9801 1.0000

Transect (C-C)Oblates(mid)(19mROW)

Area:

0.0004 0.0016 0.0036 0.0064 0.0100

0.0145 0.0197 0.0257 0.0325 0.0401

0.0486 0.0578 0.0678 0.0787 0.0903

0.1028 0.1160 0.1301 0.1449 0.1606

0.1770 0.1943 0.2123 0.2312 0.2509

0.2717 0.2939 0.3175 0.3418 0.3667

0.3923 0.4185 0.4454 0.4729 0.5011

0.5299 0.5593 0.5893 0.6201 0.6514

0.6834 0.7160 0.7493 0.7832 0.8177

0.8529 0.8887 0.9252 0.9623 1.0000

Hrad:

0.0190 0.0380 0.0570 0.0760 0.0950

0.1140 0.1329 0.1519 0.1709 0.1899

0.2089 0.2279 0.2469 0.2659 0.2849

0.3039 0.3229 0.3419 0.3609 0.3798

0.3988 0.4178 0.4368 0.4558 0.4748

0.4935 0.5106 0.5355 0.5680 0.5991

0.6288 0.6572 0.6843 0.7102 0.7349

0.7586 0.7811 0.8027 0.8234 0.8432

0.8621 0.8801 0.8975 0.9140 0.9299

0.9452 0.9597 0.9737 0.9871 1.0000

Width:

0.0211 0.0422 0.0633 0.0844 0.1055

0.1266 0.1477 0.1688 0.1899 0.2109

0.2320 0.2531 0.2742 0.2953 0.3164

0.3375 0.3586 0.3797 0.4008 0.4219

0.4430 0.4641 0.4852 0.5063 0.5274

0.5652 0.6031 0.6304 0.6472 0.6640

0.6808 0.6976 0.7144 0.7312 0.7480

0.7648 0.7816 0.7984 0.8152 0.8320

0.8488 0.8656 0.8824 0.8992 0.9160

0.9328 0.9496 0.9664 0.9832 1.0000

Transect (D-D)Oblates(upper)(20mROW)

Area:

0.0004 0.0016 0.0035 0.0063 0.0098

0.0141 0.0192 0.0251 0.0317 0.0392

0.0474 0.0564 0.0662 0.0768 0.0881

0.1002 0.1132 0.1269 0.1414 0.1566

0.1727 0.1895 0.2072 0.2256 0.2447

0.2651 0.2869 0.3101 0.3341 0.3587

0.3841 0.4102 0.4370 0.4645 0.4927

0.5216 0.5513 0.5816 0.6126 0.6443

0.6767 0.7098 0.7436 0.7781 0.8134

0.8493 0.8859 0.9232 0.9613 1.0000

Hrad:

0.4342 0.8683 1.3025 1.7367 2.1709

2.6050 3.0392 3.4734 3.9075 4.3417

4.7759 5.2100 5.6442 6.0784 6.5126

6.9467 7.3809 7.8151 8.2492 8.6834

9.1176 9.5517 9.9859 10.4201 10.8543

11.2588 11.6279 0.4937 0.5205 0.5467

0.5723 0.5974 0.6220 0.6463 0.6702

0.6937 0.7170 0.7399 0.7627 0.7851

0.8074 0.8294 0.8513 0.8730 0.8945

0.9159 0.9371 0.9582 0.9792 1.0000

Width:

0.0200 0.0401 0.0601 0.0802 0.1002

0.1202 0.1403 0.1603 0.1804 0.2004

0.2204 0.2405 0.2605 0.2806 0.3006

0.3206 0.3407 0.3607 0.3808 0.4008

0.4208 0.4409 0.4609 0.4810 0.5010

0.5390 0.5769 0.6049 0.6228 0.6408

0.6588 0.6767 0.6947 0.7126 0.7306

0.7486 0.7665 0.7845 0.8024 0.8204

0.8384 0.8563 0.8743 0.8922 0.9102

0.9282 0.9461 0.9641 0.9820 1.0000

Transect (E1-E1)Deschatelets(upper)16.5mROW

Area:

0.0005 0.0018 0.0041 0.0073 0.0115

0.0165 0.0225 0.0294 0.0372 0.0459

0.0555 0.0661 0.0776 0.0900 0.1033

0.1175 0.1327 0.1487 0.1657 0.1836

0.2024 0.2220 0.2416 0.2612 0.2808

0.3007 0.3214 0.3428 0.3650 0.3879

0.4115 0.4359 0.4610 0.4868 0.5134

0.5407 0.5687 0.5975 0.6270 0.6572

0.6882 0.7199 0.7524 0.7855 0.8194

0.8541 0.8895 0.9256 0.9624 1.0000

Hrad:

0.0186 0.0373 0.0559 0.0745 0.0931

0.1118 0.1304 0.1490 0.1677 0.1863

0.2049 0.2235 0.2422 0.2608 0.2794

0.2980 0.3167 0.3353 0.3539 0.3726

0.3912 0.4218 0.4584 0.4949 0.5313

0.5674 0.6014 0.6334 0.6636 0.6919

0.7185 0.7434 0.7668 0.7887 0.8093

0.8286 0.8466 0.8635 0.8794 0.8942

0.9082 0.9212 0.9334 0.9449 0.9556

0.9657 0.9751 0.9840 0.9922 1.0000

Width:

0.0242 0.0484 0.0726 0.0968 0.1210

0.1452 0.1694 0.1936 0.2178 0.2420

0.2662 0.2904 0.3146 0.3387 0.3629

0.3871 0.4113 0.4355 0.4597 0.4839

0.5081 0.5162 0.5163 0.5163 0.5164

0.5357 0.5551 0.5744 0.5937 0.6131

0.6324 0.6518 0.6711 0.6905 0.7098

0.7292 0.7485 0.7679 0.7872 0.8065

0.8259 0.8452 0.8646 0.8839 0.9033

0.9226 0.9420 0.9613 0.9807 1.0000

Transect (E-E)DeMazenod(16.5mROW)

Area:

0.0005 0.0018 0.0041 0.0073 0.0115

0.0165 0.0225 0.0294 0.0372 0.0459

0.0555 0.0661 0.0776 0.0900 0.1033

0.1175 0.1327 0.1487 0.1657 0.1836

0.2024 0.2220 0.2416 0.2612 0.2808

0.3007 0.3214 0.3428 0.3650 0.3879

0.4115 0.4359 0.4610 0.4868 0.5134

0.5407 0.5687 0.5975 0.6270 0.6572

0.6882 0.7199 0.7524 0.7855 0.8194

0.8541 0.8895 0.9256 0.9624 1.0000

Hrad:

0.0186 0.0373 0.0559 0.0745 0.0931

0.1118 0.1304 0.1490 0.1677 0.1863

0.2049 0.2235 0.2422 0.2608 0.2794

0.2980 0.3167 0.3353 0.3539 0.3726

0.3912 0.4218 0.4584 0.4949 0.5313

0.5674 0.6014 0.6334 0.6636 0.6919

0.7185 0.7434 0.7668 0.7887 0.8093

0.8286 0.8466 0.8635 0.8794 0.8942

0.9082 0.9212 0.9334 0.9449 0.9556

0.9657 0.9751 0.9840 0.9922 1.0000

Width:

0.0242 0.0484 0.0726 0.0968 0.1210

0.1452 0.1694 0.1936 0.2178 0.2420

0.2662 0.2904 0.3146 0.3387 0.3629

0.3871 0.4113 0.4355 0.4597 0.4839

0.5081 0.5162 0.5163 0.5163 0.5164

0.5357 0.5551 0.5744 0.5937 0.6131

0.6324 0.6518 0.6711 0.6905 0.7098

0.7292 0.7485 0.7679 0.7872 0.8065

0.8259 0.8452 0.8646 0.8839 0.9033

0.9226 0.9420 0.9613 0.9807 1.0000

Transect (F-F)Deschatelets(lower)(17.5mROW)

Area:

0.0004 0.0017 0.0039 0.0069 0.0108

0.0156 0.0212 0.0276 0.0350 0.0432

0.0523 0.0622 0.0730 0.0847 0.0972

0.1106 0.1248 0.1400 0.1559 0.1728

0.1905 0.2091 0.2285 0.2488 0.2694

0.2903 0.3120 0.3343 0.3573 0.3810

0.4054 0.4305 0.4562 0.4827 0.5099

0.5377 0.5662 0.5955 0.6254 0.6560

0.6873 0.7193 0.7519 0.7853 0.8194

0.8541 0.8895 0.9257 0.9625 1.0000

Hrad:

0.0187 0.0374 0.0561 0.0748 0.0935

0.1121 0.1308 0.1495 0.1682 0.1869

0.2056 0.2243 0.2430 0.2617 0.2804

0.2991 0.3177 0.3364 0.3551 0.3738

0.3925 0.4112 0.4299 0.4516 0.4884

0.5248 0.5593 0.5921 0.6232 0.6526

0.6805 0.7068 0.7318 0.7553 0.7777

0.7988 0.8187 0.8377 0.8556 0.8725

0.8885 0.9037 0.9181 0.9318 0.9447

0.9570 0.9686 0.9796 0.9901 1.0000

Width:

0.0228 0.0456 0.0685 0.0913 0.1141

0.1369 0.1598 0.1826 0.2054 0.2282

0.2511 0.2739 0.2967 0.3195 0.3423

0.3652 0.3880 0.4108 0.4336 0.4565

0.4793 0.5021 0.5249 0.5440 0.5440

0.5622 0.5805 0.5987 0.6170 0.6352

0.6534 0.6717 0.6899 0.7082 0.7264

0.7446 0.7629 0.7811 0.7994 0.8176

0.8358 0.8541 0.8723 0.8906 0.9088

0.9270 0.9453 0.9635 0.9818 1.0000

Transect (G-G)Hazel(15mROW)

Area:

0.0005 0.0021 0.0046 0.0082 0.0129

0.0185 0.0252 0.0329 0.0417 0.0515

0.0623 0.0741 0.0870 0.1009 0.1158

0.1318 0.1488 0.1667 0.1847 0.2027

0.2207 0.2388 0.2568 0.2748 0.2929

0.3113 0.3306 0.3507 0.3716 0.3933

0.4158 0.4392 0.4634 0.4884 0.5142

0.5409 0.5683 0.5966 0.6257 0.6556

0.6864 0.7180 0.7503 0.7835 0.8176

0.8524 0.8881 0.9246 0.9619 1.0000

Hrad:

0.0188 0.0377 0.0565 0.0753 0.0942

0.1130 0.1318 0.1507 0.1695 0.1883

0.2072 0.2260 0.2448 0.2637 0.2825

0.3013 0.3202 0.3481 0.3851 0.4220

0.4588 0.4954 0.5319 0.5684 0.6047

0.6406 0.6741 0.7052 0.7340 0.7606

0.7851 0.8077 0.8284 0.8475 0.8649

0.8809 0.8956 0.9089 0.9212 0.9323

0.9424 0.9517 0.9600 0.9677 0.9745

0.9808 0.9864 0.9914 0.9960 1.0000

Width:

0.0267 0.0534 0.0802 0.1069 0.1336

0.1603 0.1870 0.2138 0.2405 0.2672

0.2939 0.3206 0.3474 0.3741 0.4008

0.4275 0.4542 0.4676 0.4677 0.4677

0.4678 0.4678 0.4679 0.4679 0.4680

0.4893 0.5106 0.5318 0.5531 0.5744

0.5957 0.6170 0.6382 0.6595 0.6808

0.7021 0.7234 0.7446 0.7659 0.7872

0.8085 0.8298 0.8510 0.8723 0.8936

0.9149 0.9362 0.9574 0.9787 1.0000

Transect (H-H)Oblates(lower)12.2mROW

Area:

0.0006 0.0023 0.0051 0.0091 0.0141

0.0204 0.0277 0.0362 0.0458 0.0566

0.0684 0.0815 0.0956 0.1109 0.1273

0.1448 0.1635 0.1831 0.2029 0.2228

0.2426 0.2624 0.2822 0.3020 0.3218

0.3419 0.3626 0.3839 0.4058 0.4282

0.4512 0.4749 0.4991 0.5238 0.5492

0.5752 0.6017 0.6288 0.6566 0.6849

0.7137 0.7432 0.7733 0.8039 0.8351

0.8669 0.8993 0.9323 0.9659 1.0000

Hrad:

0.0164 0.0329 0.0493 0.0658 0.0822

0.0986 0.1151 0.1315 0.1480 0.1644

0.1808 0.1973 0.2137 0.2301 0.2466

0.2630 0.2795 0.3039 0.3362 0.3684

0.4004 0.4324 0.4643 0.4961 0.5278

0.5596 0.5899 0.6189 0.6466 0.6729

0.6981 0.7220 0.7447 0.7664 0.7870

0.8066 0.8253 0.8431 0.8600 0.8761

0.8914 0.9059 0.9198 0.9330 0.9456

0.9575 0.9689 0.9798 0.9901 1.0000

Width:

0.0329 0.0657 0.0986 0.1314 0.1643

0.1971 0.2300 0.2628 0.2957 0.3285

0.3614 0.3942 0.4271 0.4599 0.4928

0.5256 0.5585 0.5750 0.5750 0.5751

0.5751 0.5752 0.5753 0.5753 0.5754

0.5924 0.6094 0.6264 0.6433 0.6603

0.6773 0.6943 0.7113 0.7283 0.7452

0.7622 0.7792 0.7962 0.8132 0.8302

0.8471 0.8641 0.8811 0.8981 0.9151

0.9321 0.9490 0.9660 0.9830 1.0000

Transect (I-I)Telmon(upper)(16mROW)

Area:

0.0005 0.0019 0.0043 0.0076 0.0119

0.0172 0.0234 0.0305 0.0386 0.0477

0.0577 0.0686 0.0805 0.0934 0.1072

0.1220 0.1377 0.1544 0.1720 0.1906

0.2097 0.2288 0.2478 0.2669 0.2860

0.3054 0.3256 0.3466 0.3683 0.3908

0.4141 0.4381 0.4628 0.4884 0.5146

0.5417 0.5695 0.5981 0.6274 0.6575

0.6883 0.7199 0.7522 0.7854 0.8192

0.8539 0.8893 0.9254 0.9623 1.0000

Hrad:

0.0186 0.0373 0.0559 0.0745 0.0932

0.1118 0.1304 0.1490 0.1677 0.1863

0.2049 0.2236 0.2422 0.2608 0.2795

0.2981 0.3167 0.3354 0.3540 0.3726

0.4093 0.4459 0.4823 0.5187 0.5549

0.5908 0.6246 0.6563 0.6859 0.7136

0.7395 0.7637 0.7862 0.8072 0.8268

0.8451 0.8620 0.8778 0.8925 0.9062

0.9190 0.9308 0.9418 0.9521 0.9616

0.9705 0.9787 0.9863 0.9934 1.0000

Width:

0.0251 0.0501 0.0752 0.1002 0.1253

0.1503 0.1754 0.2004 0.2255 0.2505

0.2756 0.3006 0.3257 0.3507 0.3758

0.4008 0.4259 0.4509 0.4760 0.5010

0.5011 0.5011 0.5012 0.5012 0.5013

0.5212 0.5412 0.5611 0.5811 0.6010

0.6210 0.6409 0.6609 0.6808 0.7008

0.7207 0.7407 0.7606 0.7806 0.8005

0.8205 0.8404 0.8604 0.8803 0.9002

0.9202 0.9402 0.9601 0.9801 1.0000

Transect (J1-J1)Clegg(lower)(20mROW)

Area:

0.0004 0.0016 0.0037 0.0066 0.0103

0.0148 0.0202 0.0263 0.0333 0.0412

0.0498 0.0593 0.0696 0.0807 0.0926

0.1054 0.1190 0.1334 0.1486 0.1647

0.1816 0.1993 0.2177 0.2362 0.2548

0.2737 0.2936 0.3144 0.3361 0.3587

0.3822 0.4066 0.4319 0.4581 0.4852

0.5132 0.5421 0.5719 0.6026 0.6342

0.6667 0.7002 0.7345 0.7697 0.8058

0.8429 0.8808 0.9196 0.9594 1.0000

Hrad:

0.0209 0.0418 0.0627 0.0836 0.1045

0.1254 0.1463 0.1671 0.1880 0.2089

0.2298 0.2507 0.2716 0.2925 0.3134

0.3343 0.3552 0.3761 0.3970 0.4179

0.4388 0.4597 0.4907 0.5318 0.5727

0.6129 0.6501 0.6844 0.7160 0.7451

0.7718 0.7962 0.8185 0.8390 0.8576

0.8747 0.8902 0.9044 0.9173 0.9290

0.9397 0.9493 0.9581 0.9661 0.9733

0.9798 0.9857 0.9910 0.9957 1.0000

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

Width:

0.0200 0.0401 0.0601 0.0802 0.1002

0.1202 0.1403 0.1603 0.1804 0.2004

0.2204 0.2405 0.2605 0.2806 0.3006

0.3206 0.3407 0.3607 0.3808 0.4008

0.4208 0.4409 0.4509 0.4510 0.4510

0.4730 0.4949 0.5169 0.5388 0.5608

0.5828 0.6047 0.6267 0.6486 0.6706

0.6926 0.7145 0.7365 0.7584 0.7804

0.8024 0.8243 0.8463 0.8682 0.8902

0.9122 0.9341 0.9561 0.9780 1.0000

Transect (J-J)Clegg(upper)(20mROW)

Area:

0.0004 0.0016 0.0037 0.0066 0.0103

0.0148 0.0202 0.0263 0.0333 0.0412

0.0498 0.0593 0.0696 0.0807 0.0926

0.1054 0.1190 0.1334 0.1486 0.1647

0.1816 0.1993 0.2177 0.2362 0.2548

0.2737 0.2936 0.3144 0.3361 0.3587

0.3822 0.4066 0.4319 0.4581 0.4852

0.5132 0.5421 0.5719 0.6026 0.6342

0.6667 0.7002 0.7345 0.7697 0.8058

0.8429 0.8808 0.9196 0.9594 1.0000

Hrad:

0.0209 0.0418 0.0627 0.0836 0.1045

0.1254 0.1463 0.1671 0.1880 0.2089

0.2298 0.2507 0.2716 0.2925 0.3134

0.3343 0.3552 0.3761 0.3970 0.4179

0.4388 0.4597 0.4907 0.5318 0.5727

0.6129 0.6501 0.6844 0.7160 0.7451

0.7718 0.7962 0.8185 0.8390 0.8576

0.8747 0.8902 0.9044 0.9173 0.9290

0.9397 0.9493 0.9581 0.9661 0.9733

0.9798 0.9857 0.9910 0.9957 1.0000

Width:

0.0200 0.0401 0.0601 0.0802 0.1002

0.1202 0.1403 0.1603 0.1804 0.2004

0.2204 0.2405 0.2605 0.2806 0.3006

0.3206 0.3407 0.3607 0.3808 0.4008

0.4208 0.4409 0.4509 0.4510 0.4510

0.4730 0.4949 0.5169 0.5388 0.5608

0.5828 0.6047 0.6267 0.6486 0.6706

0.6926 0.7145 0.7365 0.7584 0.7804

0.8024 0.8243 0.8463 0.8682 0.8902

0.9122 0.9341 0.9561 0.9780 1.0000

Transect (P-P)PrivateSt(4mRoad)

Area:

0.0007 0.0028 0.0063 0.0111 0.0174

0.0250 0.0340 0.0445 0.0563 0.0695

0.0841 0.1001 0.1174 0.1362 0.1563

0.1779 0.2008 0.2249 0.2491 0.2732

0.2974 0.3216 0.3458 0.3700 0.3942

0.4184 0.4426 0.4668 0.4910 0.5152

0.5394 0.5637 0.5879 0.6121 0.6363

0.6606 0.6848 0.7090 0.7333 0.7575

0.7817 0.8060 0.8302 0.8545 0.8787

0.9030 0.9272 0.9515 0.9757 1.0000

Hrad:

0.0130 0.0260 0.0389 0.0519 0.0649

0.0779 0.0909 0.1038 0.1168 0.1298

0.1428 0.1557 0.1687 0.1817 0.1947

0.2077 0.2206 0.2412 0.2665 0.2917

0.3168 0.3418 0.3667 0.3915 0.4162

0.4407 0.4652 0.4895 0.5138 0.5379

0.5620 0.5859 0.6098 0.6335 0.6571

0.6807 0.7041 0.7275 0.7507 0.7739

0.7969 0.8198 0.8427 0.8654 0.8881

0.9107 0.9331 0.9555 0.9778 1.0000

Width:

0.0573 0.1146 0.1719 0.2292 0.2864

0.3437 0.4010 0.4583 0.5156 0.5729

0.6302 0.6875 0.7448 0.8020 0.8593

0.9166 0.9739 0.9964 0.9966 0.9967

0.9969 0.9970 0.9972 0.9973 0.9975

0.9977 0.9978 0.9980 0.9981 0.9983

0.9984 0.9986 0.9987 0.9988 0.9989

0.9989 0.9990 0.9991 0.9992 0.9992

0.9993 0.9994 0.9995 0.9995 0.9996

0.9997 0.9998 0.9998 0.9999 1.0000

Transect (PVT)PrivateSt(11mROW)

Area:

0.0006 0.0022 0.0050 0.0090 0.0140

0.0202 0.0274 0.0358 0.0453 0.0560

0.0677 0.0806 0.0946 0.1097 0.1259

0.1433 0.1618 0.1814 0.2021 0.2239

0.2463 0.2687 0.2911 0.3135 0.3359

0.3585 0.3814 0.4046 0.4282 0.4521

0.4763 0.5009 0.5258 0.5510 0.5766

0.6025 0.6287 0.6553 0.6822 0.7094

0.7369 0.7648 0.7931 0.8216 0.8505

0.8798 0.9093 0.9392 0.9694 1.0000

Hrad:

0.0148 0.0295 0.0443 0.0591 0.0738

0.0886 0.1034 0.1181 0.1329 0.1476

0.1624 0.1772 0.1919 0.2067 0.2215

0.2362 0.2510 0.2658 0.2805 0.2953

0.3243 0.3533 0.3822 0.4110 0.4398

0.4688 0.4971 0.5249 0.5520 0.5785

0.6044 0.6297 0.6544 0.6786 0.7022

0.7254 0.7479 0.7700 0.7916 0.8127

0.8334 0.8536 0.8733 0.8926 0.9115

0.9300 0.9481 0.9657 0.9831 1.0000

Width:

0.0364 0.0729 0.1093 0.1457 0.1822

0.2186 0.2551 0.2915 0.3279 0.3644

0.4008 0.4372 0.4737 0.5101 0.5465

0.5830 0.6194 0.6559 0.6923 0.7287

0.7288 0.7289 0.7289 0.7290 0.7291

0.7399 0.7508 0.7616 0.7724 0.7833

0.7941 0.8049 0.8158 0.8266 0.8375

0.8483 0.8591 0.8700 0.8808 0.8916

0.9025 0.9133 0.9241 0.9350 0.9458

0.9567 0.9675 0.9783 0.9892 1.0000

Transect Ditch

Area:

0.0004 0.0016 0.0036 0.0064 0.0100

0.0144 0.0196 0.0256 0.0324 0.0400

0.0484 0.0576 0.0676 0.0784 0.0900

0.1024 0.1156 0.1296 0.1444 0.1600

0.1764 0.1936 0.2116 0.2304 0.2500

0.2704 0.2916 0.3136 0.3364 0.3600

0.3844 0.4096 0.4356 0.4624 0.4900

0.5184 0.5476 0.5776 0.6084 0.6400

0.6724 0.7056 0.7396 0.7744 0.8100

0.8464 0.8836 0.9216 0.9604 1.0000

Hrad:

0.0200 0.0400 0.0600 0.0800 0.1000

0.1200 0.1400 0.1600 0.1800 0.2000

0.2200 0.2400 0.2600 0.2800 0.3000

0.3200 0.3400 0.3600 0.3800 0.4000

0.4200 0.4400 0.4600 0.4800 0.5000

0.5200 0.5400 0.5600 0.5800 0.6000

0.6200 0.6400 0.6600 0.6800 0.7000

0.7200 0.7400 0.7600 0.7800 0.8000

0.8200 0.8400 0.8600 0.8800 0.9000

0.9200 0.9400 0.9600 0.9800 1.0000

Width:

0.0200 0.0400 0.0600 0.0800 0.1000

0.1200 0.1400 0.1600 0.1800 0.2000

0.2200 0.2400 0.2600 0.2800 0.3000

0.3200 0.3400 0.3600 0.3800 0.4000

0.4200 0.4400 0.4600 0.4800 0.5000

0.5200 0.5400 0.5600 0.5800 0.6000

0.6200 0.6400 0.6600 0.6800 0.7000

0.7200 0.7400 0.7600 0.7800 0.8000

0.8200 0.8400 0.8600 0.8800 0.9000

0.9200 0.9400 0.9600 0.9800 1.0000

Transect HALF(A1-A1)Scholastic(13mROW)

Area:

0.0005 0.0021 0.0048 0.0085 0.0133

0.0192 0.0261 0.0341 0.0432 0.0534

0.0646 0.0768 0.0902 0.1046 0.1200

0.1366 0.1542 0.1729 0.1926 0.2127

0.2328 0.2529 0.2730 0.2931 0.3133

0.3337 0.3547 0.3763 0.3984 0.4212

0.4446 0.4685 0.4930 0.5182 0.5439

0.5702 0.5970 0.6245 0.6526 0.6812

0.7104 0.7403 0.7707 0.8017 0.8333

0.8654 0.8982 0.9315 0.9655 1.0000

Hrad:

0.0175 0.0349 0.0524 0.0698 0.0873

0.1047 0.1222 0.1396 0.1571 0.1745

0.1920 0.2094 0.2269 0.2443 0.2618

0.2792 0.2967 0.3141 0.3343 0.3680

0.4016 0.4349 0.4681 0.5010 0.5338

0.5665 0.5976 0.6272 0.6553 0.6820

0.7074 0.7314 0.7542 0.7758 0.7963

0.8156 0.8340 0.8514 0.8679 0.8835

0.8982 0.9122 0.9254 0.9379 0.9498

0.9610 0.9716 0.9816 0.9910 1.0000

Width:

0.0306 0.0613 0.0919 0.1226 0.1532

0.1839 0.2145 0.2452 0.2758 0.3065

0.3371 0.3678 0.3984 0.4291 0.4597

0.4904 0.5210 0.5517 0.5772 0.5773

0.5774 0.5775 0.5777 0.5778 0.5779

0.5948 0.6116 0.6285 0.6454 0.6623

0.6792 0.6961 0.7130 0.7298 0.7467

0.7636 0.7805 0.7974 0.8143 0.8312

0.8480 0.8649 0.8818 0.8987 0.9156

0.9325 0.9493 0.9662 0.9831 1.0000

Transect HALF(A2-A2)Sanctuary(11mROW)

Area:

0.0006 0.0022 0.0050 0.0089 0.0140

0.0201 0.0274 0.0358 0.0453 0.0559

0.0677 0.0805 0.0945 0.1096 0.1258

0.1432 0.1616 0.1812 0.2019 0.2237

0.2461 0.2685 0.2909 0.3132 0.3356

0.3582 0.3811 0.4043 0.4279 0.4518

0.4760 0.5006 0.5255 0.5507 0.5763

0.6022 0.6284 0.6550 0.6819 0.7092

0.7367 0.7647 0.7929 0.8215 0.8504

0.8797 0.9092 0.9392 0.9694 1.0000

Hrad:

0.0154 0.0308 0.0462 0.0615 0.0769

0.0923 0.1077 0.1231 0.1385 0.1539

0.1693 0.1846 0.2000 0.2154 0.2308

0.2462 0.2616 0.2770 0.2923 0.3077

0.3375 0.3672 0.3966 0.4259 0.4550

0.4844 0.5130 0.5408 0.5679 0.5944

0.6201 0.6452 0.6696 0.6934 0.7166

0.7391 0.7611 0.7825 0.8034 0.8237

0.8435 0.8627 0.8815 0.8998 0.9176

0.9349 0.9518 0.9683 0.9844 1.0000

Width:

0.0364 0.0727 0.1091 0.1455 0.1819

0.2182 0.2546 0.2910 0.3273 0.3637

0.4001 0.4364 0.4728 0.5092 0.5456

0.5819 0.6183 0.6547 0.6910 0.7274

0.7275 0.7277 0.7278 0.7279 0.7281

0.7389 0.7498 0.7607 0.7716 0.7825

0.7933 0.8042 0.8151 0.8260 0.8368

0.8477 0.8586 0.8695 0.8804 0.8912

0.9021 0.9130 0.9239 0.9347 0.9456

0.9565 0.9674 0.9782 0.9891 1.0000

Transect HALF(A-A)Scholastic(10.5mROW)

Area:

0.0006 0.0023 0.0052 0.0093 0.0146

0.0210 0.0285 0.0373 0.0472 0.0582

0.0704 0.0838 0.0984 0.1141 0.1310

0.1490 0.1683 0.1886 0.2102 0.2321

0.2540 0.2760 0.2979 0.3199 0.3418

0.3640 0.3864 0.4093 0.4324 0.4560

0.4798 0.5041 0.5287 0.5536 0.5789

0.6045 0.6305 0.6568 0.6835 0.7105

0.7379 0.7656 0.7937 0.8221 0.8509

0.8800 0.9095 0.9393 0.9695 1.0000

Hrad:

0.0154 0.0308 0.0461 0.0615 0.0769

0.0923 0.1077 0.1231 0.1384 0.1538

0.1692 0.1846 0.2000 0.2153 0.2307

0.2461 0.2615 0.2769 0.2947 0.3244

0.3540 0.3834 0.4126 0.4416 0.4705

0.4996 0.5279 0.5554 0.5822 0.6083

0.6336 0.6582 0.6821 0.7053 0.7279

0.7499 0.7712 0.7920 0.8121 0.8317

0.8508 0.8693 0.8873 0.9048 0.9218

0.9383 0.9544 0.9700 0.9852 1.0000

Width:

0.0379 0.0759 0.1138 0.1517 0.1897

0.2276 0.2655 0.3034 0.3414 0.3793

0.4172 0.4552 0.4931 0.5310 0.5690

0.6069 0.6448 0.6828 0.7144 0.7145

0.7147 0.7148 0.7149 0.7151 0.7152

0.7266 0.7380 0.7494 0.7608 0.7722

0.7836 0.7949 0.8063 0.8177 0.8291

0.8405 0.8519 0.8633 0.8747 0.8861

0.8975 0.9089 0.9203 0.9316 0.9430

0.9544 0.9658 0.9772 0.9886 1.0000

Transect OblateFinalSection

Area:

0.0004 0.0017 0.0039 0.0069 0.0108

0.0156 0.0212 0.0277 0.0351 0.0433

0.0524 0.0623 0.0732 0.0849 0.0974

0.1100 0.1227 0.1354 0.1483 0.1619

0.1764 0.1916 0.2077 0.2246 0.2423

0.2608 0.2801 0.3002 0.3211 0.3428

0.3654 0.3887 0.4129 0.4383 0.4654

0.4942 0.5246 0.5560 0.5882 0.6214

0.6553 0.6902 0.7259 0.7625 0.7999

0.8382 0.8773 0.9174 0.9583 1.0000

Hrad:

0.0288 0.0577 0.0865 0.1154 0.1442

0.1731 0.2019 0.2308 0.2596 0.2885

0.3173 0.3462 0.3750 0.4039 0.4429

0.4992 0.5552 0.6109 0.6656 0.7154

0.7600 0.7997 0.8350 0.8663 0.8939

0.9182 0.9395 0.9582 0.9746 0.9888

1.0011 1.0118 1.0210 1.0285 1.0320

1.0324 1.0304 1.0283 1.0262 1.0240

1.0217 1.0194 1.0170 1.0147 1.0122

1.0098 1.0074 1.0049 1.0025 1.0000

Width:

0.0205 0.0411 0.0616 0.0821 0.1026

0.1232 0.1437 0.1642 0.1847 0.2053

0.2258 0.2463 0.2669 0.2874 0.3004

0.3005 0.3005 0.3006 0.3141 0.3333

0.3524 0.3715 0.3907 0.4098 0.4289

0.4481 0.4672 0.4863 0.5055 0.5246

0.5437 0.5629 0.5835 0.6231 0.6626

0.7022 0.7339 0.7544 0.7748 0.7953

0.8158 0.8362 0.8567 0.8772 0.8976

0.9181 0.9386 0.9591 0.9795 1.0000

****

NOTE: The summary statistics displayed in this report are

based on results found at every computational time step,

not just on results from each reporting time step.

****

****

Analysis Options

****

Flow Units ..... LPS

Process Models:

Rainfall/Runoff ..... YES

RDII ..... NO

Snowmelt ..... NO

Groundwater ..... NO

Flow Routing ..... YES

Ponding Allowed ..... YES

Water Quality ..... NO

Infiltration Method ..... HORTON

Flow Routing Method ..... DYNWAVE

Starting Date 01/07/2025 00:00:00

Ending Date 01/08/2025 00:00:00

Antecedent Dry Days 0.0

Report Time Step 00:10:00

Wet Time Step 00:00:30

Dry Time Step 00:01:00

Routing Time Step ..... 1.00 sec

Variable Time Step ..... NO

Maximum Trials 8

Number of Threads 4

Head Tolerance ..... 0.001500 m

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

****

Control Actions Taken

****

**********	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
**********	---------	-------
Initial LID Storage	0.005	0.491
Total Precipitation	0.723	71.667
Evaporation Loss	0.000	0.000
Infiltration Loss	0.166	16.403
Surface Runoff	0.558	55.283
Final Storage	0.005	0.492
Continuity Error (%)	-0.027	

**********	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
**********	---------	---------
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.558	5.578
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.558	5.581
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.015	0.154
Final Stored Volume	0.016	0.156
Continuity Error (%)	-0.106	

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

****

Highest Continuity Errors

****

Node 60+148.01 (14.49%)

Node CB6 (-12.28%)

Node J9 (-10.68%)

Node 40+157.95 (9.21%)

Node 80+267 (-4.25%)

****

Highest Flow Instability Indexes

****

Link C213_1 (143)

Link W1 (142)

Link C208 (142)

Link C213_2 (140)

Link OR44 (134)

****

Routing Time Step Summary

****

Minimum Time Step : 1.00 sec

Average Time Step : 1.00 sec

Maximum Time Step : 1.00 sec

Percent in Steady State : 0.00

Average Iterations per Step : 2.00

Percent Not Converging : 0.02

****

Subcatchment Runoff Summary

****

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
A01A	71.67	0.00	0.00	6.26	65.44	0.06	43.65	0.913
A01B	71.67	0.00	0.00	17.07	54.62	0.04	35.59	0.762
A02	71.67	0.00	0.00	13.20	58.50	0.04	32.61	0.816
A04	71.67	0.00	0.00	0.00	71.68	0.07	49.39	1.000
A05	71.67	0.00	0.00	19.13	52.56	0.05	43.24	0.733
A06A	71.67	0.00	0.00	25.07	46.63	0.12	111.46	0.651
A06B	71.67	0.00	0.00	44.48	27.20	0.05	47.25	0.379
A08	71.67	0.00	0.00	7.46	64.23	0.08	57.64	0.896
A09A	71.67	0.00	0.00	24.00	47.68	0.12	93.84	0.665
A09B	71.67	0.00	0.00	0.00	71.68	0.09	64.46	1.000
A09C	71.67	0.00	0.00	0.00	71.69	0.06	39.68	1.000
A10	71.67	0.00	0.00	0.00	71.69	0.06	44.64	1.000
A11A	71.67	0.00	0.00	24.73	46.94	0.09	62.29	0.655
A11B	71.67	0.00	0.00	0.00	71.68	0.06	39.64	1.000
A11B-TR	71.67	0.00	0.00	0.00	71.69	0.02	14.88	1.000
A12	71.67	0.00	0.00	8.91	62.77	0.05	38.38	0.876
A13	71.67	0.00	0.00	12.03	59.66	0.11	84.69	0.832
A14	71.67	0.00	0.00	27.11	44.56	0.36	206.06	0.622
A15A	71.67	0.00	0.00	0.00	71.68	0.11	74.31	1.000
A15B	71.67	0.00	0.00	12.88	58.81	0.09	71.84	0.821
A16A	71.67	0.00	0.00	10.64	61.05	0.03	22.94	0.852
A16B	71.67	0.00	0.00	11.99	59.69	0.03	22.54	0.833
A16C_1	71.67	0.00	0.00	0.00	71.70	0.04	24.80	1.000
A16C_2	71.67	0.00	0.00	0.00	71.68	0.10	69.36	1.000
A17	71.67	0.00	0.00	2.63	69.05	0.08	58.70	0.963
A18	71.67	0.00	0.00	17.12	54.57	0.15	126.45	0.761
A19A	71.67	0.00	0.00	13.56	58.14	0.02	14.57	0.811
A19B	71.67	0.00	0.00	13.59	58.11	0.02	19.41	0.811
A1C	71.67	0.00	0.00	0.00	71.68	0.06	44.61	1.000
A20	71.67	0.00	0.00	22.27	49.43	0.05	50.99	0.690
A21B	71.67	0.00	0.00	12.62	59.08	0.06	50.88	0.824
A22B	71.67	0.00	0.00	23.54	48.15	0.05	44.92	0.672

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

A23	71.67	0.00	0.00	13.45	58.23	0.08	55.78	0.813
A24	71.67	0.00	0.00	11.59	60.09	0.10	71.33	0.839
A25	71.67	0.00	0.00	14.20	57.50	0.03	24.16	0.802
A26	71.67	0.00	0.00	32.35	39.33	0.02	13.36	0.549
A27A	71.67	0.00	0.00	13.73	57.96	0.06	45.04	0.809
A27B	71.67	0.00	0.00	12.17	59.51	0.03	24.07	0.830
A28	71.67	0.00	0.00	50.05	21.62	0.02	6.27	0.302
A29	71.67	0.00	0.00	37.58	34.09	0.20	57.16	0.476
A30	71.67	0.00	0.00	4.05	67.64	0.08	58.66	0.944
A31	71.67	0.00	0.00	9.39	62.29	0.12	89.97	0.869
A32A	71.67	0.00	0.00	13.63	58.07	0.01	9.69	0.810
A32B	71.67	0.00	0.00	13.46	58.24	0.02	19.44	0.813
A33A	71.67	0.00	0.00	14.20	57.50	0.03	29.00	0.802
A33B	71.67	0.00	0.00	14.20	57.50	0.04	33.83	0.802
A34	71.67	0.00	0.00	12.00	59.69	0.03	24.33	0.833
A35	71.67	0.00	0.00	27.34	44.35	0.04	37.28	0.619
A36	71.67	0.00	0.00	12.86	58.83	0.08	58.73	0.821
A3-A-1	71.67	0.00	0.00	9.80	61.90	0.04	29.32	0.864
A3-A-2	71.67	0.00	0.00	9.85	61.84	0.03	24.39	0.863
A3-A-3	71.67	0.00	0.00	6.42	65.27	0.03	24.49	0.911
A3-A-4	71.67	0.00	0.00	10.20	61.50	0.01	9.78	0.858
A3-DR1	71.67	0.00	0.00	19.27	52.43	0.02	14.28	0.732
A3-DR2	71.67	0.00	0.00	25.59	46.10	0.01	12.88	0.643
A3-DR3	71.67	0.00	0.00	22.75	48.95	0.00	4.61	0.683
A3-DR4	71.67	0.00	0.00	26.58	45.13	0.00	4.62	0.630
A7-A-5	71.67	0.00	0.00	10.19	61.51	0.01	9.78	0.858
A7-A-6	71.67	0.00	0.00	3.82	67.88	0.03	19.74	0.947
A7-A-7	71.67	0.00	0.00	10.37	61.33	0.04	29.28	0.856
A7-A-8	71.67	0.00	0.00	6.87	64.82	0.04	29.48	0.905
A7-DR5	71.67	0.00	0.00	26.33	45.37	0.00	4.44	0.633
A7-DR6	71.67	0.00	0.00	22.29	49.41	0.00	4.62	0.689
A7-DR7	71.67	0.00	0.00	22.77	48.93	0.00	4.59	0.683
A7-DR8	71.67	0.00	0.00	15.20	56.49	0.02	14.49	0.788
B01A	71.67	0.00	0.00	8.77	62.94	0.02	14.39	0.878
B01B	71.67	0.00	0.00	11.44	60.26	0.04	28.22	0.841
B02	71.67	0.00	0.00	17.03	54.70	0.01	4.82	0.763

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

B03	71.67	0.00	0.00	4.37	67.33	0.16	115.27	0.939
B04	71.67	0.00	0.00	14.99	56.71	0.11	87.05	0.791
B05	71.67	0.00	0.00	18.95	52.75	0.09	81.10	0.736
B06	71.67	0.00	0.00	13.62	58.08	0.03	28.03	0.810
B07	71.67	0.00	0.00	10.59	61.10	0.05	42.02	0.853
B08	71.67	0.00	0.00	6.13	65.56	0.05	33.92	0.915
B09	71.67	0.00	0.00	6.12	65.59	0.07	53.46	0.915
B10	71.67	0.00	0.00	10.55	61.15	0.04	33.16	0.853
B11	71.67	0.00	0.00	13.25	58.44	0.02	18.35	0.816
B12	71.67	0.00	0.00	7.08	64.60	0.06	42.42	0.901
B13	71.67	0.00	0.00	20.61	51.08	0.05	39.30	0.713
B14	71.67	0.00	0.00	21.99	49.70	0.04	35.20	0.694
B15	71.67	0.00	0.00	22.54	49.15	0.07	63.80	0.686
B16	71.67	0.00	0.00	20.30	51.39	0.06	56.60	0.717
B17	71.67	0.00	0.00	8.35	63.34	0.04	33.42	0.884
B19	71.67	0.00	0.00	0.00	71.68	0.11	78.72	1.000
B20A	71.67	0.00	0.00	33.10	38.57	0.03	15.03	0.538
B22	71.67	0.00	0.00	20.24	51.44	0.04	23.48	0.718
B23	71.67	0.00	0.00	0.00	71.68	0.12	84.21	1.000
B24	71.67	0.00	0.00	6.29	65.39	0.08	54.75	0.912
B25	71.67	0.00	0.00	0.00	71.69	0.04	29.76	1.000
Condo2B_TR	71.67	0.00	0.00	0.00	71.69	0.01	9.92	1.000
MR-NB	71.67	0.00	0.00	0.00	71.66	0.08	47.95	1.000
MR-SB	71.67	0.00	0.00	0.00	71.67	0.06	41.61	1.000
NA01	71.67	0.00	0.00	41.83	29.85	0.01	4.93	0.416
NA02	71.67	25.72	0.00	38.52	58.88	0.07	26.59	0.605
NA03_1	71.67	0.00	0.00	26.60	45.08	0.01	8.29	0.629
NA03_2	71.67	0.00	0.00	26.97	44.71	0.02	9.69	0.624
NA03_3	71.67	0.00	0.00	26.23	45.45	0.00	3.21	0.634
NA04_1	71.67	0.00	0.00	28.04	43.64	0.02	9.44	0.609
NA04_2	71.67	0.00	0.00	25.33	46.37	0.00	2.08	0.647
NA05	71.67	0.00	0.00	38.42	33.25	0.02	7.06	0.464
NA06	71.67	0.00	0.00	35.62	36.05	0.03	18.38	0.503
TR1-NB	71.67	0.00	0.00	0.00	71.70	0.01	4.96	1.000
TR2-NB	71.67	0.00	0.00	0.00	71.67	0.03	19.26	1.000
TR-SB	71.67	0.00	0.00	0.00	71.68	0.04	24.62	1.000

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

****

Node Depth Summary

****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
10+171.51	JUNCTION	0.00	0.05	62.24	0 01:10	0.05
10+207.77	JUNCTION	0.00	0.04	62.99	0 01:11	0.04
10+314.72	JUNCTION	0.00	0.09	63.04	0 01:15	0.07
20.033.19	JUNCTION	0.00	0.09	62.80	0 01:10	0.09
20+069.15	JUNCTION	0.01	0.08	63.00	0 01:10	0.08
20+115.54	JUNCTION	0.00	0.00	63.18	0 00:00	0.00
30+038.20	JUNCTION	0.00	0.07	63.25	0 01:10	0.07
30+074.39	JUNCTION	0.00	0.09	63.08	0 01:11	0.08
40+015.59	JUNCTION	0.00	0.07	63.60	0 01:10	0.07
40+084.71	JUNCTION	0.00	0.10	63.35	0 01:12	0.09
40+121.60	JUNCTION	0.00	0.00	63.57	0 00:00	0.00
40+157.95	JUNCTION	0.00	0.02	63.12	0 01:11	0.02
50+102.24	JUNCTION	0.00	0.00	65.72	0 00:00	0.00
50+127.37	JUNCTION	0.00	0.00	65.53	0 00:00	0.00
60+148.01	JUNCTION	0.00	0.01	65.20	0 01:13	0.01
60+224.17	JUNCTION	0.00	0.04	63.91	0 01:10	0.04
60+288.71	JUNCTION	0.00	0.06	62.02	0 01:10	0.06
70-034.26	JUNCTION	0.00	0.02	65.18	0 01:10	0.02
70-152.02	JUNCTION	0.00	0.06	64.66	0 01:10	0.06
70-208.50	JUNCTION	0.00	0.07	63.98	0 01:10	0.07
80+003.32	JUNCTION	0.00	0.03	64.88	0 01:10	0.03
80+025.67	JUNCTION	0.00	0.00	64.79	0 00:00	0.00
80+078.80	JUNCTION	0.00	0.03	64.15	0 01:10	0.03
80+121.22	JUNCTION	0.00	0.03	62.57	0 01:10	0.03
80+187.36	JUNCTION	0.00	0.00	60.33	0 00:00	0.00

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

80+216.33	JUNCTION	0.00	0.00	59.71	0	00:00	0.00
80+267	JUNCTION	0.00	0.04	59.20	0	01:11	0.04
90.071.47	JUNCTION	0.00	0.08	60.07	0	01:08	0.08
90+008.28	JUNCTION	0.00	0.00	60.60	0	00:00	0.00
A15A(STOR)	JUNCTION	0.00	0.08	63.48	0	01:10	0.08
B19(STOR)	JUNCTION	0.01	0.17	63.17	0	01:10	0.17
CB01	JUNCTION	0.02	1.20	61.34	0	01:10	1.20
CB01(MS)	JUNCTION	0.00	0.03	61.36	0	01:10	0.03
CB06	JUNCTION	0.02	1.30	63.24	0	01:10	1.30
CB06(MS)	JUNCTION	0.00	0.03	63.26	0	01:10	0.03
CB08	JUNCTION	0.02	1.37	63.42	0	01:10	1.37
CB08(MS)	JUNCTION	0.00	0.02	63.43	0	01:10	0.02
CB09	JUNCTION	0.03	1.33	63.07	0	01:11	1.33
CB09(MS)	JUNCTION	0.00	0.15	63.19	0	01:11	0.14
CB1	JUNCTION	0.04	1.26	64.98	0	01:13	1.25
CB12	JUNCTION	0.02	1.48	62.93	0	01:10	1.48
CB12(MS)	JUNCTION	0.00	0.06	62.99	0	01:10	0.06
CB14	JUNCTION	0.03	1.52	62.75	0	01:10	1.52
CB14(MS)	JUNCTION	0.00	0.11	62.79	0	01:10	0.11
CB15(x2-DICBs)	JUNCTION	0.01	0.80	61.88	0	01:10	0.78
CB16(2x-DICBs)	JUNCTION	0.03	1.40	63.03	0	01:14	1.38
CB16(MS)	JUNCTION	0.00	0.11	63.05	0	01:14	0.09
CB18	JUNCTION	0.03	1.47	63.01	0	01:14	1.45
CB18(MS)	JUNCTION	0.00	0.24	63.05	0	01:14	0.22
CB2	JUNCTION	0.03	1.25	64.89	0	01:10	1.25
CB20	JUNCTION	0.03	1.72	63.18	0	01:11	1.72
CB20(MS)	JUNCTION	0.00	0.06	63.21	0	01:10	0.06
CB22	JUNCTION	0.02	1.08	63.16	0	01:11	1.05
CB22(MS)	JUNCTION	0.00	0.08	63.38	0	01:10	0.08
CB24	JUNCTION	0.02	1.37	63.77	0	01:10	1.36
CB24(MS)	JUNCTION	0.00	0.06	63.82	0	01:10	0.06
CB26	JUNCTION	0.02	1.09	64.47	0	01:10	1.09
CB26(MS)	JUNCTION	0.00	0.08	64.67	0	01:10	0.08
CB28	JUNCTION	0.01	0.85	64.42	0	01:10	0.84
CB28(MS)	JUNCTION	0.00	0.04	65.15	0	01:10	0.04
CB29	JUNCTION	0.01	0.74	61.19	0	01:10	0.73

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

CB29(MS)	JUNCTION	0.00	0.02	61.87	0	01:10	0.02
CB29B(L)	JUNCTION	0.01	0.86	61.23	0	01:10	0.82
CB3	JUNCTION	0.02	1.27	64.91	0	01:10	1.27
CB30	JUNCTION	0.02	1.52	61.23	0	01:11	1.43
CB30(MS)	JUNCTION	0.00	0.04	61.27	0	01:10	0.04
CB31	JUNCTION	0.02	1.52	61.02	0	01:11	1.41
CB31(MS)	JUNCTION	0.00	0.05	61.07	0	01:10	0.05
CB31B(L)	JUNCTION	0.03	1.73	61.12	0	01:10	1.73
CB32	JUNCTION	0.03	1.54	61.01	0	01:11	1.53
CB34	JUNCTION	0.02	1.13	63.29	0	01:10	1.07
CB34(MS)	JUNCTION	0.00	0.05	63.52	0	01:10	0.05
CB35	JUNCTION	0.01	0.64	62.54	0	01:10	0.63
CB35(MS)	JUNCTION	0.00	0.02	63.44	0	01:10	0.02
CB36	JUNCTION	0.01	0.78	62.70	0	01:11	0.77
CB36(MS)	JUNCTION	0.00	0.03	63.36	0	01:10	0.03
CB39	JUNCTION	0.03	1.41	63.41	0	01:10	1.41
CB39(MS)	JUNCTION	0.00	0.05	63.45	0	01:10	0.05
CB40	JUNCTION	0.00	0.34	62.11	0	01:10	0.33
CB40(MS)	JUNCTION	0.00	0.02	63.02	0	01:10	0.02
CB41	JUNCTION	0.01	0.79	62.39	0	01:10	0.78
CB41(MS)	JUNCTION	0.00	0.03	62.88	0	01:10	0.03
CB42	JUNCTION	0.03	1.41	63.22	0	01:10	1.41
CB42(MS)	JUNCTION	0.00	0.04	63.25	0	01:10	0.04
CB45	JUNCTION	0.02	1.80	64.72	0	01:10	1.80
CB45(MS)	JUNCTION	0.00	0.05	64.76	0	01:10	0.05
CB47	JUNCTION	0.02	1.22	64.44	0	01:11	1.14
CB47(MS)	JUNCTION	0.00	0.04	65.00	0	01:10	0.04
CB49	JUNCTION	0.01	0.44	65.26	0	01:10	0.44
CB49(MS)	JUNCTION	0.00	0.04	65.27	0	01:10	0.04
CB5	JUNCTION	0.02	1.26	65.19	0	01:10	1.26
CB51	JUNCTION	0.03	1.70	64.72	0	01:10	1.70
CB51(MS)	JUNCTION	0.00	0.05	64.75	0	01:10	0.05
CB53	JUNCTION	0.04	1.54	64.58	0	01:13	1.53
CB53(MS)	JUNCTION	0.00	0.12	64.60	0	01:13	0.10
CB55	JUNCTION	0.02	1.58	64.09	0	01:10	1.58
CB56	JUNCTION	0.00	0.15	62.57	0	01:10	0.13

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

CB58	JUNCTION	0.00	0.61	63.87	0	01:11	0.49
CB58(MS)	JUNCTION	0.00	0.01	64.77	0	01:10	0.01
CB6	JUNCTION	0.02	1.25	64.76	0	01:10	1.25
CB60	JUNCTION	0.02	1.75	64.91	0	01:10	1.75
CB60(MS)	JUNCTION	0.00	0.03	64.93	0	01:10	0.03
CB62	JUNCTION	0.03	1.53	62.69	0	01:10	1.52
CB62(MS)	JUNCTION	0.00	0.06	63.06	0	01:10	0.06
CB63	JUNCTION	0.02	1.06	62.12	0	01:10	1.05
CB63(MS)	JUNCTION	0.00	0.04	62.70	0	01:10	0.04
CB65	JUNCTION	0.04	1.85	61.28	0	01:10	1.85
CB65(MS)	JUNCTION	0.00	0.08	61.33	0	01:10	0.08
CB67	JUNCTION	0.03	1.82	60.25	0	01:10	1.82
CB67(MS)	JUNCTION	0.00	0.03	60.27	0	01:10	0.03
CB69	JUNCTION	0.02	1.62	60.00	0	01:11	1.62
CB69(MS)	JUNCTION	0.00	0.05	60.02	0	01:11	0.05
CB70	JUNCTION	0.06	1.49	59.30	0	01:10	1.48
CB70(MS)	JUNCTION	0.00	0.08	59.34	0	01:10	0.08
CB71	JUNCTION	0.22	1.94	59.60	0	01:10	1.94
CB71(MS)	JUNCTION	0.00	0.04	59.63	0	01:10	0.04
CB73	JUNCTION	0.11	1.56	59.31	0	01:10	1.55
CB73(MS)	JUNCTION	0.00	0.03	59.33	0	01:10	0.03
CB74(4x-DICBs)	JUNCTION	0.91	1.83	58.78	0	01:10	1.80
CB75	JUNCTION	0.25	1.55	59.17	0	01:10	1.54
CB75(MS)	JUNCTION	0.00	0.07	59.22	0	01:10	0.07
CB76	JUNCTION	0.02	1.33	60.94	0	01:11	1.21
CB76(MS)	JUNCTION	0.00	0.06	61.27	0	01:10	0.06
CB77	JUNCTION	0.03	1.62	62.59	0	01:10	1.62
CB77(MS)	JUNCTION	0.00	0.06	62.63	0	01:10	0.06
CB78	JUNCTION	0.03	1.76	60.22	0	01:11	1.75
CB79	JUNCTION	0.54	1.71	59.05	0	01:12	1.69
CB79(MS)	JUNCTION	0.00	0.12	59.07	0	01:12	0.10
CB8	JUNCTION	0.02	1.25	64.08	0	01:10	1.25
CB80	JUNCTION	0.03	1.61	64.14	0	01:10	1.61
CB80(MS)	JUNCTION	0.00	0.05	64.18	0	01:10	0.05
CB82	JUNCTION	0.01	0.44	63.83	0	01:10	0.43
CBMH1	JUNCTION	0.02	0.26	62.18	0	01:20	0.26

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

CBMH4	JUNCTION	0.02	1.25	65.20	0	01:06	1.25
CBMH7	JUNCTION	0.02	1.26	64.51	0	01:10	1.26
CB-PL	JUNCTION	0.00	0.03	64.96	0	01:10	0.03
HP	JUNCTION	0.00	0.00	59.20	0	00:00	0.00
HP01	JUNCTION	0.00	0.07	61.11	0	01:10	0.06
HP02	JUNCTION	0.02	0.06	61.34	0	01:10	0.06
HP03	JUNCTION	0.00	0.08	60.95	0	01:11	0.07
HP04	JUNCTION	0.00	0.00	62.65	0	00:00	0.00
J1	JUNCTION	0.00	0.00	62.76	0	00:00	0.00
J10	JUNCTION	0.00	0.02	64.89	0	01:10	0.02
J11	JUNCTION	0.00	0.01	64.76	0	01:10	0.01
J12	JUNCTION	0.00	0.01	64.51	0	01:10	0.01
J13	JUNCTION	0.00	0.01	64.08	0	01:10	0.01
J14	JUNCTION	0.01	0.36	63.96	0	01:10	0.36
J15	JUNCTION	0.01	0.47	58.88	0	01:13	0.44
J16	JUNCTION	0.00	0.06	64.38	0	01:10	0.06
J17	JUNCTION	1.50	1.85	58.20	0	01:11	1.83
J18	JUNCTION	0.00	0.00	59.06	0	00:00	0.00
J19	JUNCTION	0.06	0.61	59.00	0	01:13	0.60
J20	JUNCTION	1.51	1.85	58.19	0	01:11	1.83
J3	JUNCTION	0.01	0.34	60.62	0	01:11	0.31
J5	JUNCTION	0.01	0.15	61.57	0	01:10	0.15
J6	JUNCTION	0.00	0.01	64.91	0	01:10	0.01
J7	JUNCTION	0.00	0.00	65.20	0	01:10	0.00
J8	JUNCTION	0.00	0.00	65.18	0	01:10	0.00
J9	JUNCTION	0.01	0.03	64.98	0	01:13	0.03
MH314(DUMMY)	JUNCTION	0.01	0.94	59.34	0	01:12	0.85
MH328(DUMMY)	JUNCTION	0.85	1.64	58.65	0	01:11	1.58
Clegg	OUTFALL	0.00	0.04	61.34	0	01:10	0.04
MainNorth	OUTFALL	0.00	0.00	64.70	0	00:00	0.00
MainSouth	OUTFALL	0.00	0.04	65.05	0	01:10	0.04
OF1	OUTFALL	0.00	0.00	56.00	0	00:00	0.00
Out1	OUTFALL	0.00	0.08	60.58	0	01:11	0.07
Out2	OUTFALL	0.00	0.06	60.56	0	01:10	0.06
Out3	OUTFALL	0.00	0.00	62.50	0	00:00	0.00
Outlet1-Phase1	OUTFALL	1.82	1.82	57.85	0	00:00	1.82

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

Outlet2-Phase2&3	OUTFALL	1.82	1.82	57.85	0	00:00	1.82
Phase1-EmergencyOverflow	OUTFALL	0.00	0.00	56.00	0	00:00	0.00
Phase2-EmergencyOverflow	OUTFALL	0.00	0.00	56.00	0	00:00	0.00
A04(STOR)	STORAGE	0.84	2.51	63.64	0	01:26	2.51
A09B(STOR)	STORAGE	0.00	0.04	100.04	0	01:26	0.04
A09C(STOR)	STORAGE	0.00	0.04	100.04	0	01:25	0.04
A10(STOR)	STORAGE	0.00	0.04	100.04	0	01:25	0.04
A11B(STOR)	STORAGE	0.41	1.98	62.96	0	01:30	1.97
A14(STOR)	STORAGE	0.05	1.25	63.95	0	01:13	1.25
A16C(STOR)	STORAGE	0.00	0.01	65.23	0	01:10	0.01
A22A(STOR)	STORAGE	0.01	0.11	100.11	0	01:37	0.11
B21(STOR)	STORAGE	0.01	0.11	100.11	0	01:40	0.11
B23(STOR)	STORAGE	1.43	3.57	60.08	0	01:09	3.57
B25(STOR)	STORAGE	0.00	0.04	100.04	0	01:25	0.04
CB1-GAPark	STORAGE	0.02	2.22	64.21	0	01:11	2.12
CBMH2	STORAGE	0.02	0.41	61.39	0	01:12	0.29
Dummy-MH128	STORAGE	0.04	1.26	61.17	0	01:12	1.18
GA-ParkSouthStorage	STORAGE	0.03	1.45	64.55	0	01:20	1.45
J2	STORAGE	0.01	0.04	65.41	0	01:30	0.04
J4	STORAGE	0.01	0.03	100.03	0	01:20	0.03
MH100	STORAGE	0.02	0.37	60.34	0	01:13	0.24
MH102	STORAGE	0.01	0.40	60.30	0	01:13	0.23
MH104	STORAGE	0.03	0.42	60.26	0	01:13	0.29
MH106	STORAGE	0.08	0.56	60.21	0	01:13	0.43
MH108	STORAGE	0.09	0.59	60.18	0	01:13	0.48
MH110	STORAGE	0.03	1.04	60.67	0	01:12	0.98
MH110B	STORAGE	0.04	1.15	60.57	0	01:12	1.08
MH112B	STORAGE	0.04	1.18	60.42	0	01:12	1.12
MH114	STORAGE	0.87	1.97	60.05	0	01:12	1.92
MH118	STORAGE	0.11	1.05	59.46	0	01:13	1.03
MH122	STORAGE	0.10	0.57	59.87	0	01:13	0.48
MH122B	STORAGE	0.10	1.19	59.77	0	01:13	1.10
MH124	STORAGE	0.03	0.35	60.90	0	01:11	0.34
MH126	STORAGE	0.02	0.31	61.62	0	01:10	0.30
MH128	STORAGE	0.04	1.25	61.27	0	01:12	1.16
MH130	STORAGE	0.32	0.99	61.97	0	01:12	0.97

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

MH132	STORAGE	0.04	0.70	62.04	0	01:11	0.68
MH136	STORAGE	0.01	0.12	61.02	0	01:10	0.12
MH140	STORAGE	0.01	0.14	60.94	0	01:11	0.14
MH144	STORAGE	0.04	0.52	59.96	0	01:13	0.42
MH148	STORAGE	0.01	0.15	61.37	0	01:11	0.15
MH152	STORAGE	1.42	1.53	61.45	0	01:10	1.53
MH164	STORAGE	0.03	0.69	62.12	0	01:12	0.67
MH166	STORAGE	0.02	0.58	62.23	0	01:11	0.55
MH168	STORAGE	0.02	0.58	62.32	0	01:11	0.56
MH170	STORAGE	0.77	1.24	62.37	0	01:11	1.21
MH172	STORAGE	0.03	0.37	62.43	0	01:11	0.34
MH174	STORAGE	0.05	0.38	62.55	0	01:11	0.37
MH176	STORAGE	0.07	0.27	63.17	0	01:10	0.27
MH178	STORAGE	0.02	0.41	62.43	0	01:11	0.40
MH180	STORAGE	0.01	0.22	63.07	0	01:12	0.22
MH182	STORAGE	0.05	0.28	62.76	0	01:17	0.27
MH220	STORAGE	0.01	0.75	60.22	0	01:14	0.58
MH222	STORAGE	0.03	0.92	59.95	0	01:14	0.79
MH224	STORAGE	0.02	0.80	59.97	0	01:14	0.66
MH226	STORAGE	0.00	0.16	60.38	0	01:13	0.09
MH228	STORAGE	0.01	0.29	60.36	0	01:13	0.18
MH230	STORAGE	0.01	0.46	60.23	0	01:13	0.31
MH238	STORAGE	0.03	0.64	58.78	0	01:13	0.61
MH242	STORAGE	1.86	2.29	58.29	0	01:13	2.24
MH246	STORAGE	0.02	0.44	60.28	0	01:13	0.28
MH248	STORAGE	0.03	0.56	62.17	0	01:11	0.54
MH250	STORAGE	0.05	0.27	62.90	0	01:10	0.27
MH300	STORAGE	0.00	0.09	62.49	0	01:11	0.09
MH302	STORAGE	0.00	0.10	61.62	0	01:12	0.10
MH304	STORAGE	0.01	0.15	61.06	0	01:10	0.15
MH306	STORAGE	0.01	0.23	59.67	0	01:10	0.23
MH308	STORAGE	0.01	0.53	59.20	0	01:11	0.39
MH310	STORAGE	1.35	2.14	58.65	0	01:11	2.07
MH312	STORAGE	0.00	0.07	61.71	0	01:10	0.07
MH314	STORAGE	0.01	0.10	60.71	0	01:10	0.10
MH316	STORAGE	0.73	1.87	59.00	0	01:12	1.76

MH318	STORAGE	0.34	1.51	59.03	0	01:12	1.37
MH320	STORAGE	0.91	1.90	58.85	0	01:11	1.81
MH322	STORAGE	0.95	1.91	58.82	0	01:11	1.82
MH324	STORAGE	0.02	0.08	60.73	0	01:10	0.08
MH326	STORAGE	0.01	0.13	59.30	0	01:12	0.12
MH328	STORAGE	0.01	0.69	58.73	0	01:11	0.62
MH330	STORAGE	0.81	1.64	58.69	0	01:10	1.59
MH332	STORAGE	1.33	2.13	58.66	0	01:10	2.10
MH334	STORAGE	1.53	2.20	58.53	0	01:11	2.16
MH336	STORAGE	1.50	1.86	58.21	0	01:11	1.83
MH338	STORAGE	1.52	1.85	58.18	0	01:11	1.83
MH340	STORAGE	1.84	2.08	58.09	0	01:11	2.06
MH400	STORAGE	0.00	0.00	62.79	0	00:00	0.00
MH402	STORAGE	0.00	0.09	62.95	0	01:10	0.09
MH404	STORAGE	0.00	0.00	63.26	0	00:00	0.00
MH406	STORAGE	0.00	0.07	62.86	0	01:10	0.07
MH408	STORAGE	0.00	0.00	62.98	0	00:00	0.00
MH410	STORAGE	0.00	0.06	62.55	0	01:10	0.06
MH412	STORAGE	0.00	0.00	62.28	0	00:00	0.00
MH414	STORAGE	0.00	0.15	62.05	0	01:11	0.11
VortechsPh1	STORAGE	0.12	0.95	59.35	0	01:13	0.94
VortechsPh2	STORAGE	1.51	1.86	58.20	0	01:11	1.83

****

Node Inflow Summary

****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
10+171.51	JUNCTION	0.00	41.74	0 01:10	0	0.0243	0.031
10+207.77	JUNCTION	0.00	25.55	0 01:10	0	0.0134	0.608

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

10+314.72	JUNCTION	0.00	97.50	0	01:13	0	0.0467	0.576
20.033.19	JUNCTION	0.00	77.78	0	01:10	0	0.0493	0.780
20+069.15	JUNCTION	0.00	43.47	0	01:10	0	0.0339	-0.073
20+115.54	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
30+038.20	JUNCTION	0.00	86.42	0	01:10	0	0.0669	-0.337
30+074.39	JUNCTION	0.00	129.59	0	01:11	0	0.0757	-0.032
40+015.59	JUNCTION	0.00	126.17	0	01:10	0	0.0717	0.637
40+084.71	JUNCTION	0.00	71.63	0	01:10	0	0.0373	2.790
40+121.60	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
40+157.95	JUNCTION	0.00	4.55	0	01:10	0	0.00154	10.140
50+102.24	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
50+127.37	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
60+148.01	JUNCTION	0.00	2.10	0	01:10	0	0.00119	16.947
60+224.17	JUNCTION	14.28	22.02	0	01:10	0.0157	0.0187	0.779
60+288.71	JUNCTION	0.00	74.73	0	01:10	0	0.051	0.336
70-034.26	JUNCTION	4.61	4.61	0	01:10	0.00489	0.00489	1.217
70-152.02	JUNCTION	4.62	68.73	0	01:10	0.00494	0.0357	-0.168
70-208.50	JUNCTION	19.08	106.56	0	01:10	0.0218	0.067	0.141
80+003.32	JUNCTION	0.00	16.69	0	01:10	0	0.00581	1.383
80+025.67	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
80+078.80	JUNCTION	0.00	22.53	0	01:10	0	0.0119	0.462
80+121.22	JUNCTION	0.00	35.61	0	01:10	0	0.0216	-0.210
80+187.36	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
80+216.33	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
80+267	JUNCTION	0.00	23.88	0	01:10	0	0.0112	-4.072
90.071.47	JUNCTION	0.00	181.44	0	01:10	0	0.113	0.016
90+008.28	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
A15A(STOR)	JUNCTION	74.31	74.31	0	01:10	0.108	0.108	0.016
B19(STOR)	JUNCTION	78.72	78.72	0	01:10	0.115	0.115	-0.003
CB01	JUNCTION	0.00	39.97	0	01:05	0	0.0591	0.010
CB01(MS)	JUNCTION	45.04	56.58	0	01:10	0.058	0.0656	-0.098
CB06	JUNCTION	0.00	18.77	0	01:07	0	0.0283	0.007
CB06(MS)	JUNCTION	22.54	22.54	0	01:10	0.0298	0.0298	-0.009
CB08	JUNCTION	0.00	18.95	0	01:07	0	0.0288	0.015
CB08(MS)	JUNCTION	22.94	22.94	0	01:10	0.0305	0.0305	-0.532
CB09	JUNCTION	0.00	77.00	0	01:08	0	0.15	0.004

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

CB09(MS)	JUNCTION	126.45	205.41	0	01:10	0.153	0.22	-0.146
CB1	JUNCTION	9.78	9.78	0	01:10	0.0123	0.0123	-0.066
CB12	JUNCTION	0.00	59.45	0	01:09	0	0.114	0.011
CB12(MS)	JUNCTION	89.97	131.10	0	01:10	0.125	0.158	-0.193
CB14	JUNCTION	0.00	48.96	0	01:03	0	0.0869	0.005
CB14(MS)	JUNCTION	58.73	127.51	0	01:10	0.0765	0.125	0.046
CB15(x2-DICBs)	JUNCTION	71.33	156.18	0	01:10	0.0962	0.175	0.000
CB16(2x-DICBs)	JUNCTION	0.00	44.70	0	01:03	0	0.0883	0.013
CB16(MS)	JUNCTION	55.78	76.66	0	01:10	0.0757	0.0926	0.470
CB18	JUNCTION	0.00	48.66	0	01:09	0	0.0877	0.019
CB18(MS)	JUNCTION	50.99	163.23	0	01:11	0.0544	0.131	0.651
CB2	JUNCTION	9.78	9.78	0	01:10	0.0123	0.0125	-0.019
CB20	JUNCTION	0.00	34.90	0	01:05	0	0.0646	-0.005
CB20(MS)	JUNCTION	54.37	90.93	0	01:10	0.0682	0.0893	-0.431
CB22	JUNCTION	0.00	67.74	0	01:10	0	0.108	0.010
CB22(MS)	JUNCTION	71.84	147.97	0	01:10	0.0941	0.142	-0.552
CB24	JUNCTION	0.00	58.04	0	01:08	0	0.109	0.008
CB24(MS)	JUNCTION	84.69	184.84	0	01:10	0.113	0.18	-0.093
CB26	JUNCTION	0.00	68.10	0	01:10	0	0.132	0.004
CB26(MS)	JUNCTION	100.68	100.68	0	01:10	0.144	0.145	-0.029
CB28	JUNCTION	0.00	74.77	0	01:10	0	0.116	0.006
CB28(MS)	JUNCTION	93.84	93.84	0	01:10	0.124	0.124	-0.042
CB29	JUNCTION	0.00	12.59	0	01:10	0	0.0211	0.000
CB29(MS)	JUNCTION	24.16	24.16	0	01:10	0.0287	0.0287	0.022
CB29B(L)	JUNCTION	13.36	13.36	0	01:10	0.0197	0.0197	-0.303
CB3	JUNCTION	29.32	29.32	0	01:10	0.0371	0.0372	0.037
CB30	JUNCTION	0.00	18.36	0	01:10	0	0.0274	-0.005
CB30(MS)	JUNCTION	29.00	35.38	0	01:10	0.0345	0.0368	0.397
CB31	JUNCTION	0.00	23.30	0	01:10	0	0.0349	-0.003
CB31(MS)	JUNCTION	33.83	49.68	0	01:10	0.0402	0.0495	0.248
CB31B(L)	JUNCTION	37.28	37.28	0	01:10	0.0444	0.0444	-0.010
CB32	JUNCTION	24.33	48.82	0	01:10	0.0298	0.0443	0.038
CB34	JUNCTION	0.00	51.52	0	01:10	0	0.0863	0.009
CB34(MS)	JUNCTION	59.84	97.26	0	01:10	0.0839	0.107	-0.274
CB35	JUNCTION	0.00	11.62	0	01:10	0	0.0157	0.000
CB35(MS)	JUNCTION	14.57	14.57	0	01:10	0.0174	0.0174	-0.021

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

CB36	JUNCTION	0.00	13.00	0	01:10	0	0.0194	0.000
CB36(MS)	JUNCTION	19.41	22.32	0	01:10	0.0232	0.025	-0.660
CB39	JUNCTION	0.00	21.01	0	01:04	0	0.0523	0.000
CB39(MS)	JUNCTION	58.70	58.70	0	01:10	0.0829	0.0829	-0.029
CB40	JUNCTION	0.00	8.09	0	01:10	0	0.0107	0.000
CB40(MS)	JUNCTION	9.69	9.69	0	01:10	0.0116	0.0116	0.093
CB41	JUNCTION	0.00	12.99	0	01:10	0	0.0192	0.000
CB41(MS)	JUNCTION	19.44	21.00	0	01:10	0.0233	0.0242	-0.286
CB42	JUNCTION	0.00	19.82	0	01:07	0	0.0489	-0.009
CB42(MS)	JUNCTION	58.66	58.66	0	01:10	0.0812	0.0812	0.067
CB45	JUNCTION	0.00	48.22	0	01:08	0	0.0763	-0.004
CB45(MS)	JUNCTION	62.09	89.34	0	01:10	0.0816	0.0944	-0.105
CB47	JUNCTION	0.00	38.49	0	01:10	0	0.058	0.009
CB47(MS)	JUNCTION	47.87	59.00	0	01:10	0.059	0.0653	0.026
CB49	JUNCTION	0.00	14.11	0	01:01	0	0.0289	-0.014
CB49(MS)	JUNCTION	32.61	32.61	0	01:10	0.0409	0.0409	-0.266
CB5	JUNCTION	24.49	24.49	0	01:10	0.0326	0.0326	-0.018
CB51	JUNCTION	0.00	30.04	0	01:06	0	0.0449	0.003
CB51(MS)	JUNCTION	35.59	55.62	0	01:10	0.0437	0.0547	-1.472
CB53	JUNCTION	0.00	38.22	0	01:02	0	0.0685	-0.004
CB53(MS)	JUNCTION	43.65	67.91	0	01:10	0.0589	0.0695	1.498
CB55	JUNCTION	24.07	24.07	0	01:10	0.0298	0.0298	-0.005
CB56	JUNCTION	0.00	5.43	0	01:10	0	0.00118	0.003
CB58	JUNCTION	0.00	12.43	0	01:10	0	0.00828	0.003
CB58(MS)	JUNCTION	4.82	12.73	0	01:10	0.00547	0.00828	-0.040
CB6	JUNCTION	19.74	19.74	0	01:10	0.0272	0.0272	-10.937
CB60	JUNCTION	0.00	23.59	0	01:07	0	0.032	0.005
CB60(MS)	JUNCTION	27.27	27.69	0	01:10	0.0327	0.0332	-0.024
CB62	JUNCTION	0.00	59.84	0	01:10	0	0.127	0.009
CB62(MS)	JUNCTION	115.27	135.85	0	01:10	0.159	0.177	-0.206
CB63	JUNCTION	0.00	19.65	0	01:10	0	0.0362	0.008
CB63(MS)	JUNCTION	33.92	55.91	0	01:10	0.0459	0.0577	-0.113
CB65	JUNCTION	0.00	56.43	0	01:02	0	0.132	0.010
CB65(MS)	JUNCTION	141.80	215.41	0	01:10	0.186	0.237	-0.009
CB67	JUNCTION	0.00	24.28	0	01:05	0	0.0454	0.014
CB67(MS)	JUNCTION	42.42	42.42	0	01:10	0.0581	0.0581	-0.159

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

CB69	JUNCTION	0.00	22.67	0	01:06	0	0.028	-0.029
CB69(MS)	JUNCTION	18.35	27.68	0	01:10	0.0234	0.0282	0.753
CB70	JUNCTION	0.00	29.05	0	01:06	0	0.0466	0.019
CB70(MS)	JUNCTION	39.30	288.41	0	01:10	0.046	0.18	0.183
CB71	JUNCTION	0.00	16.81	0	01:07	0	0.0321	-0.062
CB71(MS)	JUNCTION	33.16	33.16	0	01:10	0.0428	0.0428	0.204
CB73	JUNCTION	0.00	31.51	0	01:09	0	0.0404	0.113
CB73(MS)	JUNCTION	35.20	54.61	0	01:10	0.0398	0.0505	0.256
CB74(4x-DICBs)	JUNCTION	56.60	460.04	0	01:10	0.0617	0.301	-0.001
CB75	JUNCTION	0.00	31.11	0	01:08	0	0.0673	-0.007
CB75(MS)	JUNCTION	81.10	133.91	0	01:10	0.095	0.133	0.009
CB76	JUNCTION	0.00	26.67	0	01:10	0	0.0557	0.002
CB76(MS)	JUNCTION	45.56	84.76	0	01:10	0.0692	0.0935	0.182
CB77	JUNCTION	0.00	22.14	0	01:06	0	0.0468	-0.021
CB77(MS)	JUNCTION	41.64	62.85	0	01:10	0.0579	0.0712	0.093
CB78	JUNCTION	53.46	88.04	0	01:10	0.0722	0.0938	-0.243
CB79	JUNCTION	0.00	21.63	0	01:05	0	0.0463	-0.017
CB79(MS)	JUNCTION	63.80	83.57	0	01:10	0.0737	0.0854	0.808
CB8	JUNCTION	29.48	29.48	0	01:10	0.0389	0.0389	-0.013
CB80	JUNCTION	0.00	21.05	0	01:06	0	0.043	-0.004
CB80(MS)	JUNCTION	42.02	42.02	0	01:10	0.055	0.055	0.163
CB82	JUNCTION	28.22	37.98	0	01:10	0.0362	0.0407	-0.000
CBMH1	JUNCTION	63.44	63.44	0	01:20	0.221	0.221	-0.000
CBMH4	JUNCTION	24.39	24.39	0	01:10	0.0309	0.0309	0.020
CBMH7	JUNCTION	29.28	29.28	0	01:10	0.0368	0.0368	-0.008
CB-PL	JUNCTION	44.61	44.61	0	01:10	0.0645	0.0645	-0.078
HP	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
HP01	JUNCTION	0.00	20.10	0	01:10	0	0.00561	0.110
HP02	JUNCTION	0.00	11.67	0	01:10	0	0.00419	0.270
HP03	JUNCTION	0.00	24.73	0	01:11	0	0.0123	0.045
HP04	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J1	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J10	JUNCTION	0.00	7.62	0	01:04	0	0.00242	-0.015
J11	JUNCTION	0.00	9.23	0	01:05	0	0.00322	-0.164
J12	JUNCTION	0.00	13.04	0	01:10	0	0.00475	0.000
J13	JUNCTION	0.00	13.29	0	01:10	0	0.00545	-0.040

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

J14	JUNCTION	0.00	44.61	0	01:10	0	0.0646	0.011
J15	JUNCTION	0.00	1359.58	0	01:13	0	2.2	0.000
J16	JUNCTION	0.00	79.17	0	01:10	0	0.0399	0.391
J17	JUNCTION	0.00	830.62	0	01:11	0	1.57	-0.005
J18	JUNCTION	0.00	0.00	0	00:00	0	0	0.000 ltr
J19	JUNCTION	0.00	335.59	0	01:13	0	1.69	-0.000
J20	JUNCTION	0.00	89.48	0	01:11	0	0.243	-1.130
J3	JUNCTION	0.00	94.16	0	01:10	0	0.15	0.922
J5	JUNCTION	69.36	69.36	0	01:10	0.1	0.1	0.004
J6	JUNCTION	0.00	13.25	0	01:05	0	0.00462	-0.001
J7	JUNCTION	0.00	9.07	0	01:06	0	0.00245	0.013
J8	JUNCTION	0.00	8.82	0	01:07	0	0.00218	-0.018
J9	JUNCTION	0.00	8.85	0	01:08	0	0.000827	-9.653
MH314(DUMMY)	JUNCTION	0.00	90.08	0	01:04	0	0.173	-0.013
MH328(DUMMY)	JUNCTION	0.00	127.48	0	01:13	0	0.391	0.008
Clegg	OUTFALL	0.00	11.27	0	01:10	0	0.00418	0.000
MainNorth	OUTFALL	0.00	0.00	0	00:00	0	0	0.000 ltr
MainSouth	OUTFALL	0.00	16.26	0	01:10	0	0.00821	0.000
OF1	OUTFALL	0.00	0.00	0	00:00	0	0	0.000 ltr
Out1	OUTFALL	0.00	24.72	0	01:11	0	0.0123	0.000
Out2	OUTFALL	0.00	19.96	0	01:10	0	0.00559	0.000
Out3	OUTFALL	0.00	0.00	0	00:00	0	0	0.000 ltr
Outlet1-Phase1	OUTFALL	0.00	1695.26	0	01:13	0	3.89	0.000
Outlet2-Phase2&3	OUTFALL	0.00	920.19	0	01:11	0	1.66	0.000
Phase1-EmergencyOverflow	OUTFALL	0.00	0.00	0	00:00	0	0	0.000 ltr
Phase2-EmergencyOverflow	OUTFALL	0.00	0.00	0	00:00	0	0	0.000 ltr
A04(STOR)	STORAGE	49.39	51.79	0	01:10	0.0717	0.1	0.455
A09B(STOR)	STORAGE	64.46	64.46	0	01:10	0.0932	0.0932	-0.011
A09C(STOR)	STORAGE	39.68	39.68	0	01:10	0.0574	0.0574	-0.009
A10(STOR)	STORAGE	44.64	44.64	0	01:10	0.0645	0.0645	-0.009
A11B(STOR)	STORAGE	39.64	41.74	0	01:10	0.0573	0.0845	0.035
A14(STOR)	STORAGE	206.06	206.06	0	01:10	0.356	0.356	-0.003
A16C(STOR)	STORAGE	24.80	24.80	0	01:10	0.0358	0.0358	-0.021
A22A(STOR)	STORAGE	66.23	66.23	0	01:10	0.1	0.1	0.000
B21(STOR)	STORAGE	72.17	72.17	0	01:10	0.115	0.115	0.001
B23(STOR)	STORAGE	84.21	84.21	0	01:10	0.122	0.14	0.019

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

B25(STOR)	STORAGE	29.76	29.76	0	01:10	0.043	0.043	-0.009
CB1-GAPark	STORAGE	111.46	111.46	0	01:10	0.117	0.117	0.003
CBMH2	STORAGE	0.00	109.00	0	01:01	0	0.356	-0.001
Dummy-MH128	STORAGE	0.00	804.44	0	01:11	0	1.95	0.012
GA-ParkSouthStorage	STORAGE	47.25	47.25	0	01:10	0.049	0.049	0.005
J2	STORAGE	14.88	14.88	0	01:10	0.0215	0.0245	-0.209
J4	STORAGE	9.92	9.92	0	01:10	0.0143	0.0173	-2.651
MH100	STORAGE	0.00	59.95	0	01:10	0	0.1	0.086
MH102	STORAGE	0.00	74.34	0	01:13	0	0.25	0.025
MH104	STORAGE	0.00	57.03	0	01:10	0	0.1	0.188
MH106	STORAGE	0.00	130.57	0	01:16	0	0.351	-0.000
MH108	STORAGE	0.00	243.19	0	01:12	0	0.462	0.002
MH110	STORAGE	0.00	868.01	0	01:11	0	2.16	-0.066
MH110B	STORAGE	0.00	925.09	0	01:10	0	2.35	-0.000
MH112B	STORAGE	0.00	980.59	0	01:11	0	2.47	-0.003
MH114	STORAGE	0.00	1267.14	0	01:12	0	3.02	0.015
MH118	STORAGE	0.00	1695.14	0	01:13	0	3.89	-0.014
MH122	STORAGE	0.00	310.63	0	01:12	0	0.626	0.008
MH122B	STORAGE	0.00	431.78	0	01:13	0	0.875	0.011
MH124	STORAGE	0.00	138.92	0	01:11	0	0.372	-0.002
MH126	STORAGE	18.38	102.33	0	01:10	0.0324	0.284	0.000
MH128	STORAGE	0.00	763.71	0	01:12	0	1.85	0.000
MH130	STORAGE	0.00	656.38	0	01:11	0	1.49	-0.007
MH132	STORAGE	0.00	592.46	0	01:11	0	1.3	0.009
MH136	STORAGE	0.00	17.20	0	01:10	0	0.0489	-0.002
MH140	STORAGE	0.00	20.71	0	01:10	0	0.0299	-0.006
MH144	STORAGE	0.00	312.96	0	01:12	0	0.625	0.002
MH148	STORAGE	0.00	24.04	0	01:10	0	0.0351	-0.005
MH152	STORAGE	0.00	17.23	0	01:10	0	0.0539	-0.001
MH164	STORAGE	0.00	576.56	0	01:10	0	1.27	0.008
MH166	STORAGE	0.00	343.53	0	01:10	0	0.67	0.002
MH168	STORAGE	0.00	321.21	0	01:10	0	0.611	0.065
MH170	STORAGE	0.00	189.43	0	01:11	0	0.419	-0.012
MH172	STORAGE	0.00	125.56	0	01:11	0	0.244	-0.091
MH174	STORAGE	0.00	109.80	0	01:10	0	0.216	0.171
MH176	STORAGE	0.00	98.01	0	01:10	0	0.331	0.221

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

MH178	STORAGE	0.00	164.00	0	01:11	0	0.463	-0.001
MH180	STORAGE	0.00	51.37	0	01:11	0	0.113	-0.004
MH182	STORAGE	0.00	60.53	0	01:11	0	0.142	-0.473
MH220	STORAGE	0.00	36.82	0	01:10	0	0.0623	-0.072
MH222	STORAGE	0.00	64.22	0	01:15	0	0.133	0.111
MH224	STORAGE	0.00	17.38	0	01:04	0	0.032	-0.028
MH226	STORAGE	0.00	12.32	0	01:10	0	0.0211	-0.074
MH228	STORAGE	0.00	25.57	0	01:10	0	0.0409	-0.149
MH230	STORAGE	0.00	78.42	0	01:16	0	0.251	-0.053
MH238	STORAGE	0.00	1695.13	0	01:13	0	3.89	0.000
MH242	STORAGE	0.00	1695.24	0	01:13	0	3.9	-0.000
MH246	STORAGE	0.00	75.45	0	01:15	0	0.25	-0.031
MH248	STORAGE	0.00	399.00	0	01:10	0	0.773	-0.036
MH250	STORAGE	0.00	97.54	0	01:10	0	0.33	-0.280
MH300	STORAGE	0.00	27.38	0	01:11	0	0.0408	-0.001
MH302	STORAGE	0.00	27.35	0	01:11	0	0.0408	0.029
MH304	STORAGE	0.00	90.30	0	01:10	0	0.21	-0.007
MH306	STORAGE	0.00	167.90	0	01:10	0	0.325	0.023
MH308	STORAGE	0.00	214.36	0	01:10	0	0.457	-0.008
MH310	STORAGE	0.00	363.90	0	01:12	0	0.887	-0.034
MH312	STORAGE	0.00	18.43	0	01:10	0	0.043	-0.003
MH314	STORAGE	0.00	37.44	0	01:10	0	0.0792	0.021
MH316	STORAGE	0.00	111.67	0	01:08	0	0.235	-0.041
MH318	STORAGE	0.00	13.67	0	01:07	0	0.0329	0.024
MH320	STORAGE	0.00	120.59	0	01:15	0	0.236	-0.000
MH322	STORAGE	0.00	142.68	0	01:15	0	0.281	-0.000
MH324	STORAGE	0.00	18.50	0	01:10	0	0.0468	-0.001
MH326	STORAGE	26.59	77.37	0	01:12	0.0707	0.288	-0.051
MH328	STORAGE	23.48	96.52	0	01:10	0.036	0.324	0.065
MH330	STORAGE	0.00	38.38	0	01:08	0	0.0884	-0.055
MH332	STORAGE	0.00	488.08	0	01:10	0	0.389	-0.000
MH334	STORAGE	0.00	925.62	0	01:10	0	1.67	0.000
MH336	STORAGE	0.00	920.75	0	01:11	0	1.74	-0.001
MH338	STORAGE	0.00	920.06	0	01:11	0	1.74	0.010
MH340	STORAGE	0.00	920.18	0	01:11	0	1.67	0.000
MH400	STORAGE	0.00	0.00	0	00:00	0	0	0.000 ltr

MH402	STORAGE	0.00	16.32	0	01:10	0	0.0325	-0.000
MH404	STORAGE	0.00	0.00	0	00:00	0	0	0.000 ltr
MH406	STORAGE	0.00	16.22	0	01:10	0	0.0305	-0.001
MH408	STORAGE	0.00	0.00	0	00:00	0	0	0.000 ltr
MH410	STORAGE	0.00	11.01	0	01:10	0	0.0273	2.203
MH412	STORAGE	0.00	0.00	0	00:00	0	0	0.000 ltr
MH414	STORAGE	0.00	16.19	0	01:10	0	0.0334	0.044
VortechsPh1	STORAGE	0.00	335.59	0	01:13	0	1.69	0.000
VortechsPh2	STORAGE	0.00	89.94	0	01:10	0	0.245	0.158

****

Node Surcharge Summary

****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Meters	Min. Depth Below Rim Meters
CB29B(L)	JUNCTION	0.23	0.557	1.268
J17	JUNCTION	24.00	0.515	0.605
J20	JUNCTION	24.00	0.473	1.087
MH314(DUMMY)	JUNCTION	0.26	0.689	0.911
MH328(DUMMY)	JUNCTION	24.00	1.264	0.871

****

Node Flooding Summary

****

No nodes were flooded.

****

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

Storage Volume Summary

****

Storage Unit	Average Volume 1000 m3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
A04(STOR)	0.015	21	0	0	0.045	63	0 01:26	11.20
A09B(STOR)	0.002	1	0	0	0.043	23	0 01:26	10.40
A09C(STOR)	0.002	1	0	0	0.027	23	0 01:25	6.40
A10(STOR)	0.002	1	0	0	0.030	23	0 01:25	7.20
A11B(STOR)	0.007	14	0	0	0.035	65	0 01:30	7.73
A14(STOR)	0.001	0	0	0	0.040	3	0 01:13	109.00
A16C(STOR)	0.000	0	0	0	0.000	1	0 01:10	24.80
A22A(STOR)	0.005	5	0	0	0.056	53	0 01:37	8.84
B21(STOR)	0.006	5	0	0	0.063	50	0 01:40	10.17
B23(STOR)	0.019	39	0	0	0.048	97	0 01:09	84.24
B25(STOR)	0.001	1	0	0	0.020	23	0 01:25	4.80
CB1-GAPark	0.000	0	0	0	0.009	58	0 01:11	93.30
CBMH2	0.000	1	0	0	0.000	14	0 01:12	112.63
Dummy-MH128	0.000	1	0	0	0.000	33	0 01:12	800.74
GA-ParkSouthStorage	0.000	0	0	0	0.009	6	0 01:20	22.35
J2	0.004	8	0	0	0.013	29	0 01:30	2.10
J4	0.003	7	0	0	0.008	17	0 01:20	2.40
MH100	0.000	1	0	0	0.000	21	0 01:13	57.03
MH102	0.000	0	0	0	0.000	8	0 01:13	75.45
MH104	0.000	1	0	0	0.000	13	0 01:13	53.63
MH106	0.000	3	0	0	0.001	22	0 01:13	133.87
MH108	0.000	4	0	0	0.001	25	0 01:13	242.69
MH110	0.000	1	0	0	0.003	27	0 01:12	865.39
MH110B	0.000	1	0	0	0.002	31	0 01:12	916.32
MH112B	0.000	1	0	0	0.002	32	0 01:12	975.93
MH114	0.004	18	0	0	0.009	40	0 01:12	1265.21
MH118	0.001	2	0	0	0.005	24	0 01:13	1695.17
MH122	0.000	3	0	0	0.001	16	0 01:13	310.29

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

MH122B	0.000	2	0	0	0.001	28	0	01:13	431.98
MH124	0.000	1	0	0	0.000	12	0	01:11	138.32
MH126	0.000	1	0	0	0.000	14	0	01:10	99.33
MH128	0.000	1	0	0	0.003	33	0	01:12	763.79
MH130	0.001	11	0	0	0.002	33	0	01:12	654.87
MH132	0.000	1	0	0	0.001	24	0	01:11	592.91
MH136	0.000	0	0	0	0.000	5	0	01:10	17.20
MH140	0.000	0	0	0	0.000	6	0	01:11	20.62
MH144	0.000	1	0	0	0.001	14	0	01:13	310.63
MH148	0.000	0	0	0	0.000	7	0	01:11	23.91
MH152	0.002	39	0	0	0.002	42	0	01:10	17.23
MH164	0.000	1	0	0	0.001	21	0	01:12	576.21
MH166	0.000	1	0	0	0.001	18	0	01:11	342.64
MH168	0.000	1	0	0	0.001	17	0	01:11	317.94
MH170	0.001	19	0	0	0.001	30	0	01:11	190.17
MH172	0.000	1	0	0	0.000	12	0	01:11	125.31
MH174	0.000	2	0	0	0.000	12	0	01:11	109.37
MH176	0.000	3	0	0	0.000	12	0	01:10	97.54
MH178	0.000	1	0	0	0.000	12	0	01:11	163.36
MH180	0.000	1	0	0	0.000	13	0	01:12	51.36
MH182	0.000	2	0	0	0.000	11	0	01:17	60.62
MH220	0.000	1	0	0	0.001	33	0	01:14	33.43
MH222	0.000	2	0	0	0.001	47	0	01:14	69.27
MH224	0.000	1	0	0	0.001	46	0	01:14	17.63
MH226	0.000	0	0	0	0.000	7	0	01:13	12.31
MH228	0.000	0	0	0	0.000	16	0	01:13	25.58
MH230	0.000	0	0	0	0.001	12	0	01:13	81.59
MH238	0.000	1	0	0	0.002	15	0	01:13	1695.24
MH242	0.005	33	0	0	0.006	40	0	01:13	1695.26
MH246	0.000	0	0	0	0.001	10	0	01:13	78.20
MH248	0.000	1	0	0	0.001	18	0	01:11	398.32
MH250	0.000	1	0	0	0.000	9	0	01:10	96.28
MH300	0.000	0	0	0	0.000	4	0	01:11	27.35
MH302	0.000	0	0	0	0.000	4	0	01:12	27.33
MH304	0.000	0	0	0	0.000	6	0	01:10	90.20
MH306	0.000	0	0	0	0.000	9	0	01:10	168.25

MH308	0.000	0	0	0	0.001	18	0	01:11	207.57
MH310	0.002	38	0	0	0.002	60	0	01:11	375.71
MH312	0.000	0	0	0	0.000	3	0	01:10	18.43
MH314	0.000	0	0	0	0.000	4	0	01:10	37.40
MH316	0.001	24	0	0	0.002	61	0	01:12	120.59
MH318	0.000	17	0	0	0.002	73	0	01:12	17.76
MH320	0.001	30	0	0	0.002	63	0	01:11	126.55
MH322	0.001	31	0	0	0.002	61	0	01:11	147.06
MH324	0.000	1	0	0	0.000	4	0	01:10	18.49
MH326	0.000	0	0	0	0.000	5	0	01:12	77.37
MH328	0.000	1	0	0	0.001	29	0	01:11	100.24
MH330	0.001	36	0	0	0.002	73	0	01:10	45.34
MH332	0.001	50	0	0	0.002	80	0	01:10	480.52
MH334	0.004	57	0	0	0.006	82	0	01:11	920.75
MH336	0.004	51	0	0	0.005	63	0	01:11	920.17
MH338	0.004	51	0	0	0.005	62	0	01:11	920.18
MH340	0.003	79	0	0	0.004	90	0	01:11	920.19
MH400	0.000	0	0	0	0.000	0	0	00:00	0.00
MH402	0.000	0	0	0	0.000	4	0	01:10	16.32
MH404	0.000	0	0	0	0.000	0	0	00:00	0.00
MH406	0.000	0	0	0	0.000	3	0	01:10	16.22
MH408	0.000	0	0	0	0.000	0	0	00:00	0.00
MH410	0.000	0	0	0	0.000	3	0	01:10	11.01
MH412	0.000	0	0	0	0.000	0	0	00:00	0.00
MH414	0.000	0	0	0	0.000	6	0	01:11	21.14
VortechsPh1	0.000	3	0	0	0.002	23	0	01:13	335.59
VortechsPh2	0.002	51	0	0	0.002	63	0	01:11	89.48

****

Outfall Loading Summary

****

	Flow	Avg	Max	Total
	Freq	Flow	Flow	Volume

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

Outfall Node	Pcnt	LPS	LPS	10^6 ltr
Clegg	2.75	1.75	11.27	0.004
MainNorth	0.00	0.00	0.00	0.000
MainSouth	3.81	2.48	16.26	0.008
OF1	0.00	0.00	0.00	0.000
Out1	1.44	9.89	24.72	0.012
Out2	0.95	6.84	19.96	0.006
Out3	0.00	0.00	0.00	0.000
Outlet1-Phase1	48.75	92.38	1695.26	3.891
Outlet2-Phase2&3	70.63	27.25	920.19	1.663
Phase1-EmergencyOverflow	0.00	0.00	0.00	0.000
Phase2-EmergencyOverflow	0.00	0.00	0.00	0.000
System	11.67	140.59	2630.80	5.584

****

Link Flow Summary

****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
1	CONDUIT	0.00	0 00:00	0.00	0.00	0.07
10	CONDUIT	9.07	0 01:06	0.07	0.00	0.09
11	CONDUIT	16.22	0 01:10	1.32	0.19	0.30
12	CONDUIT	8.25	0 01:10	0.08	0.00	0.07
13	CONDUIT	12.99	0 01:10	0.26	0.00	0.06
14	CONDUIT	0.90	0 01:18	0.03	0.01	0.11
15	CONDUIT	8.18	0 01:10	0.01	0.00	0.50
16	CONDUIT	8.82	0 01:07	0.06	0.00	0.10
17	CONDUIT	0.00	0 00:00	0.00	0.00	0.00
18	CONDUIT	5.67	0 01:10	0.12	0.01	0.12

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

19	CONDUIT	0.00	0	00:00	0.00	0.00	0.24
2	CONDUIT	16.32	0	01:10	1.18	0.19	0.33
20	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
21	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
22	CONDUIT	11.01	0	01:10	1.18	0.13	0.25
23	CONDUIT	9.73	0	01:10	0.07	0.00	0.11
24	CONDUIT	8.85	0	01:08	0.03	0.00	0.29
25	CONDUIT	7.62	0	01:04	0.09	0.00	0.11
26	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
27	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
28	CONDUIT	13.03	0	01:10	0.10	0.00	0.11
29	CONDUIT	9.23	0	01:05	0.08	0.00	0.11
3	CONDUIT	0.00	0	00:00	0.00	0.00	0.09
30	CONDUIT	13.04	0	01:10	0.08	0.00	0.11
31	CONDUIT	0.00	0	00:00	0.00	0.00	0.19
32	CONDUIT	13.29	0	01:10	0.11	0.00	0.08
33	CONDUIT	13.29	0	01:10	0.14	0.00	0.10
35	CONDUIT	18.05	0	01:10	0.20	0.06	0.06
36	CONDUIT	0.00	0	00:00	0.00	0.00	0.12
37	CONDUIT	0.00	0	00:00	0.00	0.00	0.06
4	CONDUIT	13.25	0	01:05	0.08	0.00	0.13
5	CONDUIT	69.44	0	01:10	2.09	0.03	0.27
6	CONDUIT	69.36	0	01:10	2.40	0.88	0.87
7	CONDUIT	0.00	0	00:00	0.00	0.00	0.06
8	CONDUIT	0.00	0	00:00	0.00	0.00	0.00
9	CONDUIT	21.14	0	01:13	1.21	0.29	0.80
A15A(OUT)	CONDUIT	74.31	0	01:10	5.47	0.31	0.69
B19(OUT)	CONDUIT	78.38	0	01:10	1.93	0.60	0.56
C01	CHANNEL	41.01	0	01:10	0.90	0.01	0.17
C02	CHANNEL	25.07	0	01:11	0.64	0.01	0.17
C03	CHANNEL	72.39	0	01:15	0.60	0.04	0.28
C04	CHANNEL	73.84	0	01:10	0.25	0.04	0.33
C05	CHANNEL	44.34	0	01:11	0.27	0.02	0.25
C06	CHANNEL	0.00	0	00:00	0.00	0.00	0.03
C07	CHANNEL	0.00	0	00:00	0.00	0.00	0.05
C08	CHANNEL	82.74	0	01:10	0.35	0.17	0.36

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C09	CHANNEL	125.04	0	01:12	0.26	0.27	0.54
C10	CHANNEL	38.81	0	01:10	0.29	0.02	0.21
C100	CHANNEL	5.43	0	01:10	0.37	0.01	0.18
C101	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C102	CONDUIT	0.00	0	00:00	0.00	0.00	0.02
C103	CHANNEL	8.16	0	01:10	0.59	0.00	0.07
C104	CHANNEL	0.00	0	00:00	0.00	0.00	0.02
C105	CONDUIT	0.00	0	00:00	0.00	0.00	0.08
C106	CHANNEL	3.79	0	01:10	0.12	0.02	0.10
C107	CONDUIT	0.00	0	00:00	0.00	0.00	0.11
C108	CHANNEL	74.73	0	01:10	0.59	0.12	0.20
C109	CONDUIT	0.00	0	00:00	0.00	0.00	0.07
C11	CHANNEL	79.06	0	01:10	0.42	0.02	0.25
C110	CHANNEL	35.61	0	01:10	0.77	0.01	0.12
C111	CONDUIT	0.00	0	00:00	0.00	0.00	0.19
C112	CHANNEL	167.09	0	01:10	0.72	0.24	0.28
C113	CONDUIT	0.00	0	00:00	0.00	0.00	0.06
C114	CHANNEL	14.35	0	01:10	0.15	0.00	0.19
C115	CONDUIT	0.00	0	00:00	0.00	0.00	0.14
C116	CHANNEL	9.34	0	01:10	0.37	0.00	0.13
C117	CONDUIT	0.00	0	00:00	0.00	0.00	0.19
C118	CHANNEL	265.73	0	01:10	1.70	0.02	0.19
C119	CONDUIT	0.00	0	00:00	0.00	0.00	0.08
C12	CHANNEL	54.29	0	01:11	0.24	0.28	0.28
C120	CHANNEL	19.51	0	01:10	0.53	0.00	0.12
C121	CONDUIT	0.00	0	00:00	0.00	0.00	0.06
C122	CHANNEL	23.88	0	01:10	0.53	0.00	0.13
C123	CHANNEL	101.49	0	01:10	1.14	0.03	0.24
C124	CONDUIT	457.23	0	01:10	1.03	0.65	1.00
C125	CONDUIT	0.00	0	00:00	0.00	0.00	0.15
C126	CONDUIT	0.00	0	00:00	0.00	0.00	0.09
C127	CHANNEL	54.05	0	01:10	0.82	0.01	0.21
C128	CONDUIT	0.00	0	00:00	0.00	0.00	0.13
C129	CHANNEL	41.74	0	01:10	0.87	0.01	0.18
C13	CHANNEL	0.00	0	00:00	0.00	0.00	0.04
C130	CHANNEL	0.00	0	00:00	0.00	0.00	0.18

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C131	CONDUIT	0.00	0	00:00	0.00	0.00	0.35
C132	CHANNEL	52.03	0	01:12	0.35	0.08	0.31
C133	CONDUIT	0.00	0	00:00	0.00	0.00	0.09
C134	CHANNEL	22.53	0	01:10	0.45	0.01	0.13
C135	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C136	CHANNEL	19.96	0	01:10	0.94	0.02	0.22
C137	CHANNEL	11.27	0	01:10	0.14	0.00	0.16
C138	CHANNEL	24.72	0	01:11	0.86	0.03	0.25
C139	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C14	CHANNEL	0.00	0	00:00	0.00	0.00	0.04
C140	CONDUIT	57.03	0	01:10	0.93	0.85	1.00
C141	CONDUIT	75.45	0	01:15	0.92	0.60	1.00
C142	CONDUIT	53.63	0	01:09	1.02	0.90	1.00
C143	CONDUIT	133.87	0	01:16	1.00	0.74	1.00
C144	CONDUIT	242.69	0	01:13	1.59	1.67	0.92
C145_1	CONDUIT	90.16	0	01:12	1.02	0.71	0.75
C145_2	CONDUIT	71.81	0	01:06	1.08	0.58	0.95
C146	CONDUIT	832.52	0	01:10	1.77	0.71	1.00
C147	CONDUIT	916.32	0	01:10	1.71	0.91	1.00
C148	CONDUIT	975.93	0	01:11	1.83	0.96	1.00
C149	CONDUIT	1265.21	0	01:12	1.99	1.00	1.00
C15	CHANNEL	2.77	0	01:11	0.03	0.00	0.17
C150	CONDUIT	1359.60	0	01:13	4.07	0.52	0.52
C151	CONDUIT	335.59	0	01:13	1.19	1.22	1.00
C152	CONDUIT	310.29	0	01:13	1.59	1.43	0.88
C153	CONDUIT	431.98	0	01:13	1.53	1.31	1.00
C154	CONDUIT	138.32	0	01:12	1.24	0.93	0.66
C155	CONDUIT	99.33	0	01:11	1.17	0.81	0.72
C156_1	CONDUIT	763.79	0	01:12	1.73	0.96	1.00
C156_2	CONDUIT	800.74	0	01:11	1.81	1.01	1.00
C158	CONDUIT	0.00	0	00:00	0.00	0.00	0.39
C159	CONDUIT	654.87	0	01:12	1.72	0.87	0.80
C16	CHANNEL	0.00	0	00:00	0.00	0.00	0.06
C160	CONDUIT	592.91	0	01:11	1.39	0.97	0.93
C161	CONDUIT	17.20	0	01:11	0.79	0.41	0.45
C162	CONDUIT	20.62	0	01:11	0.83	0.49	0.50

C163	CONDUIT	310.63	0	01:12	1.46	0.89	0.98
C164	CONDUIT	23.91	0	01:11	0.86	0.57	0.55
C165	CONDUIT	17.23	0	01:10	0.80	0.41	0.45
C166	CONDUIT	576.21	0	01:11	1.36	1.02	0.92
C167	CONDUIT	342.64	0	01:10	1.28	1.34	0.94
C168	CONDUIT	317.94	0	01:10	1.17	1.00	0.96
C169	CONDUIT	190.17	0	01:12	1.06	0.87	0.94
C17	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C170	CONDUIT	125.31	0	01:11	1.16	0.79	0.81
C171	CONDUIT	109.37	0	01:11	1.18	1.72	0.79
C172	CONDUIT	0.00	0	00:00	0.00	0.00	0.16
C173	CONDUIT	97.54	0	01:10	1.18	0.49	0.51
C174	CONDUIT	163.36	0	01:11	1.11	0.77	0.65
C175	CONDUIT	51.36	0	01:12	1.04	0.87	0.66
C176	CONDUIT	60.62	0	01:10	0.91	0.62	0.63
C177	CONDUIT	33.43	0	01:14	0.68	0.79	1.00
C178	CONDUIT	69.27	0	01:18	0.98	1.01	1.00
C179	CONDUIT	17.63	0	01:22	0.36	0.42	1.00
C18	CHANNEL	0.00	0	00:00	0.00	0.00	0.13
C180	CONDUIT	12.31	0	01:11	0.56	0.29	0.83
C181	CONDUIT	25.58	0	01:15	0.72	0.59	1.00
C182	CONDUIT	81.59	0	01:16	1.01	0.66	1.00
C183	CONDUIT	1695.24	0	01:13	3.60	0.79	0.69
C184	CONDUIT	1695.26	0	01:13	2.66	1.01	1.00
C185	CONDUIT	78.20	0	01:16	0.92	0.65	1.00
C186	CONDUIT	398.32	0	01:10	1.52	0.85	0.94
C187	CONDUIT	96.28	0	01:11	1.19	0.49	0.51
C188	CONDUIT	27.35	0	01:11	1.78	0.26	0.35
C189	CONDUIT	27.33	0	01:12	1.15	0.34	0.50
C190	CONDUIT	90.20	0	01:10	2.03	0.51	0.63
C191	CONDUIT	168.25	0	01:10	2.99	0.88	0.85
C192	CONDUIT	207.57	0	01:09	1.99	0.70	1.00
C193	CONDUIT	375.71	0	01:13	1.33	1.19	1.00
C194	CONDUIT	18.43	0	01:10	1.23	0.18	0.35
C195	CONDUIT	37.40	0	01:10	1.45	0.36	0.71
C196	CONDUIT	88.06	0	01:05	2.13	0.62	1.00

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C197	CONDUIT	120.59	0	01:15	1.09	1.04	1.00
C198	CONDUIT	17.76	0	01:22	0.36	0.88	1.00
C199	CONDUIT	126.55	0	01:15	1.15	0.98	1.00
C20	CHANNEL	2.10	0	01:10	0.11	0.00	0.08
C200	CONDUIT	147.06	0	01:15	1.33	1.60	1.00
C201	CONDUIT	18.49	0	01:10	1.68	0.10	0.21
C202	CONDUIT	77.37	0	01:12	2.24	0.25	0.67
C203	CONDUIT	100.24	0	01:13	1.00	0.31	1.00
C204	CONDUIT	127.64	0	01:13	1.16	0.47	1.00
C205	CONDUIT	45.34	0	01:12	0.41	0.41	1.00
C206	CONDUIT	480.52	0	01:10	1.09	0.58	1.00
C207	CONDUIT	920.75	0	01:11	2.08	1.85	1.00
C208	CONDUIT	89.94	0	01:10	0.32	0.33	1.00
C209	CONDUIT	830.61	0	01:11	1.88	8.11	1.00
C21	CHANNEL	0.66	0	01:13	0.11	0.00	0.08
C210	CONDUIT	920.18	0	01:11	2.08	1.27	1.00
C211	CONDUIT	920.19	0	01:11	2.08	1.31	1.00
C212_2	CONDUIT	335.56	0	01:13	1.34	7.00	0.83
C213_2	CONDUIT	89.45	0	01:11	0.32	1.87	1.00
C22	CHANNEL	0.54	0	01:13	0.13	0.00	0.04
C23	CHANNEL	21.02	0	01:10	0.32	0.03	0.17
C24	CHANNEL	73.89	0	01:10	0.46	0.10	0.23
C25	CHANNEL	1.28	0	01:10	0.14	0.00	0.06
C26	CHANNEL	2.94	0	01:10	0.17	0.00	0.10
C27_1	CHANNEL	66.74	0	01:10	0.59	0.01	0.19
C27_2	CHANNEL	76.76	0	01:10	0.52	0.01	0.22
C28	CHANNEL	103.89	0	01:10	0.70	0.02	0.23
C29	CHANNEL	7.93	0	01:10	0.21	0.01	0.11
C30	CHANNEL	0.00	0	00:00	0.00	0.00	0.08
C31	CHANNEL	22.21	0	01:10	0.56	0.00	0.12
C32	CHANNEL	34.89	0	01:10	0.76	0.00	0.24
C33	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C34	CHANNEL	0.00	0	00:00	0.00	0.00	0.00
C35	CHANNEL	0.00	0	00:00	0.00	0.00	0.06
C36	CHANNEL	22.02	0	01:11	0.15	0.01	0.26
C37	CHANNEL	180.09	0	01:10	0.86	0.25	0.27

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C38	CHANNEL	0.00	0	00:00	0.00	0.00	0.08
C39	CONDUIT	0.00	0	00:00	0.00	0.00	0.07
C40	CHANNEL	6.40	0	01:10	0.16	0.00	0.11
C41	CHANNEL	11.67	0	01:10	0.16	0.00	0.15
C42	CONDUIT	0.00	0	00:00	0.00	0.00	0.06
C43	CHANNEL	4.55	0	01:10	0.32	0.00	0.07
C44	CONDUIT	0.00	0	00:00	0.00	0.00	0.05
C45	CHANNEL	4.50	0	01:10	0.19	0.00	0.19
C46	CONDUIT	0.00	0	00:00	0.00	0.00	0.30
C47	CHANNEL	121.61	0	01:11	0.27	0.87	0.38
C48	CONDUIT	0.00	0	00:00	0.00	0.00	0.11
C49	CHANNEL	69.82	0	01:10	0.40	0.02	0.25
C50	CONDUIT	0.00	0	00:00	0.00	0.00	0.29
C51	CHANNEL	79.13	0	01:10	0.50	0.08	0.32
C52	CONDUIT	0.00	0	00:00	0.00	0.00	0.32
C53	CHANNEL	21.34	0	01:10	0.26	0.03	0.32
C54	CONDUIT	0.00	0	00:00	0.00	0.00	0.74
C55	CHANNEL	97.50	0	01:13	0.11	0.26	0.55
C56	CONDUIT	0.00	0	00:00	0.00	0.00	0.16
C57	CHANNEL	22.11	0	01:10	0.23	0.02	0.26
C58	CHANNEL	25.55	0	01:10	0.55	0.02	0.18
C59	CONDUIT	0.00	0	00:00	0.00	0.00	0.13
C60	CHANNEL	67.36	0	01:10	0.30	0.03	0.28
C61	CONDUIT	0.00	0	00:00	0.00	0.00	0.12
C62	CHANNEL	126.17	0	01:10	0.82	0.02	0.23
C63	CONDUIT	0.00	0	00:00	0.00	0.00	0.13
C64	CHANNEL	28.21	0	01:10	0.18	0.02	0.23
C65	CONDUIT	0.00	0	00:00	0.00	0.00	0.06
C66	CHANNEL	16.26	0	01:10	0.34	0.00	0.13
C67	CONDUIT	0.00	0	00:00	0.00	0.00	0.04
C68	CHANNEL	11.54	0	01:10	0.60	0.00	0.09
C69	CHANNEL	0.00	0	00:00	0.00	0.00	0.50
C70	CONDUIT	0.00	0	00:00	0.00	0.00	0.07
C71	CHANNEL	15.99	0	01:10	0.26	0.00	0.14
C72	CONDUIT	0.00	0	00:00	0.00	0.00	0.08
C73	CHANNEL	24.79	0	01:10	0.27	0.01	0.27

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C74	CHANNEL	20.10	0	01:10	0.19	0.03	0.49
C75	CHANNEL	24.73	0	01:11	0.43	0.89	0.36
C76	CONDUIT	0.00	0	00:00	0.00	0.00	0.09
C77	CHANNEL	37.35	0	01:10	0.34	0.01	0.19
C78	CONDUIT	0.00	0	00:00	0.00	0.00	0.04
C79	CHANNEL	2.91	0	01:10	0.15	0.00	0.08
C80	CONDUIT	0.00	0	00:00	0.00	0.00	0.04
C81	CHANNEL	9.24	0	01:10	0.34	0.00	0.18
C82	CONDUIT	0.00	0	00:00	0.00	0.00	0.10
C83	CHANNEL	41.36	0	01:10	0.47	0.01	0.20
C84	CONDUIT	0.00	0	00:00	0.00	0.00	0.03
C85	CHANNEL	1.56	0	01:10	0.11	0.00	0.07
C86	CONDUIT	0.00	0	00:00	0.00	0.00	0.04
C87	CHANNEL	7.97	0	01:10	0.12	0.00	0.19
C88	CONDUIT	0.00	0	00:00	0.00	0.00	0.08
C89	CHANNEL	41.31	0	01:10	0.32	0.01	0.21
C90	CONDUIT	0.00	0	00:00	0.00	0.00	0.10
C91	CHANNEL	36.04	0	01:10	0.36	0.01	0.18
C92	CONDUIT	0.00	0	00:00	0.00	0.00	0.07
C93	CHANNEL	14.51	0	01:10	0.21	0.00	0.15
C94	CONDUIT	0.00	0	00:00	0.00	0.00	0.11
C95	CHANNEL	20.05	0	01:10	0.43	0.00	0.14
C96	CONDUIT	0.00	0	00:00	0.00	0.00	0.11
C97	CHANNEL	24.73	0	01:10	0.20	0.01	0.26
C98	CONDUIT	0.00	0	00:00	0.00	0.00	0.36
C99	CHANNEL	0.00	0	00:00	0.00	0.00	0.19
OR52	CONDUIT	63.38	0	01:20	0.93	0.58	0.60
STM-15	CONDUIT	0.00	0	00:00	0.00	0.00	0.09
STM-390	CONDUIT	112.63	0	01:14	1.68	1.18	1.00
STM-68	CONDUIT	0.00	0	00:00	0.00	0.00	0.12
W1	CONDUIT	84.97	0	01:11	0.44	4.29	1.00
Weir-Outlet1	CONDUIT	1359.58	0	01:13	1.76	0.29	0.36
Weir-Outlet2	CONDUIT	830.62	0	01:11	0.62	0.32	1.00
1C-OR	ORIFICE	44.60	0	01:10			1.00
A06(OUT)	ORIFICE	93.30	0	01:11			1.00
A3-A1-OR	ORIFICE	16.32	0	01:10			1.00

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

A3-A2-OR	ORIFICE	16.21	0	01:06	1.00
A3-A3-OR	ORIFICE	16.22	0	01:10	1.00
A7-A7-OR	ORIFICE	16.24	0	01:10	1.00
A7-A8-OR	ORIFICE	16.19	0	01:10	1.00
C212_1	ORIFICE	81.45	0	00:50	1.00
C213_1	ORIFICE	5.07	0	01:09	1.00
OR01	ORIFICE	36.76	0	01:08	1.00
OR02	ORIFICE	16.50	0	01:10	1.00
OR03	ORIFICE	16.94	0	01:10	1.00
OR04	ORIFICE	75.50	0	01:11	1.00
OR05	ORIFICE	58.53	0	01:10	1.00
OR06	ORIFICE	41.53	0	01:10	1.00
OR07	ORIFICE	154.49	0	01:10	1.00
OR08	ORIFICE	39.79	0	01:14	1.00
OR09	ORIFICE	40.86	0	01:14	1.00
OR1	ORIFICE	22.35	0	01:20	1.00
OR10	ORIFICE	28.09	0	01:20	1.00
OR11	ORIFICE	67.46	0	01:11	1.00
OR12	ORIFICE	56.05	0	01:10	1.00
OR13	ORIFICE	67.89	0	01:10	1.00
OR14	ORIFICE	74.01	0	01:10	1.00
OR15	ORIFICE	12.32	0	01:10	1.00
OR16	ORIFICE	13.29	0	01:10	1.00
OR17	ORIFICE	15.73	0	01:10	1.00
OR18	ORIFICE	21.22	0	01:10	1.00
OR19	ORIFICE	17.82	0	01:05	1.00
OR20	ORIFICE	17.38	0	01:04	1.00
OR21	ORIFICE	50.58	0	01:10	1.00
OR22	ORIFICE	11.37	0	01:10	1.00
OR23	ORIFICE	12.68	0	01:11	1.00
OR24	ORIFICE	17.23	0	01:10	1.00
OR25	ORIFICE	7.97	0	01:10	1.00
OR26	ORIFICE	12.73	0	01:10	1.00
OR27	ORIFICE	17.20	0	01:10	1.00
OR28	ORIFICE	45.36	0	01:10	1.00
OR29	ORIFICE	37.12	0	01:11	1.00

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

OR30	ORIFICE	9.26	0	01:10	1.00
OR31	ORIFICE	24.27	0	01:10	1.00
OR32	ORIFICE	27.15	0	01:13	1.00
OR33	ORIFICE	18.26	0	01:10	1.00
OR34	ORIFICE	4.95	0	01:10	1.00
OR35	ORIFICE	11.08	0	01:11	1.00
OR36	ORIFICE	19.27	0	01:10	1.00
OR37	ORIFICE	59.47	0	01:10	1.00
OR38	ORIFICE	19.01	0	01:10	1.00
OR39	ORIFICE	46.11	0	01:10	1.00
OR40	ORIFICE	19.61	0	01:06	1.00
OR41	ORIFICE	16.84	0	01:06	1.00
OR42	ORIFICE	24.39	0	01:06	1.00
OR43	ORIFICE	13.67	0	01:07	1.00
OR44	ORIFICE	28.50	0	01:12	1.00
OR45	ORIFICE	28.61	0	01:08	1.00
OR46	ORIFICE	25.17	0	01:11	1.00
OR47	ORIFICE	18.50	0	01:10	1.00
OR48	ORIFICE	60.38	0	01:04	1.00
OR49	ORIFICE	15.30	0	01:33	1.00
OR50	ORIFICE	18.43	0	01:10	1.00
OR51	ORIFICE	29.91	0	01:10	1.00
34	WEIR	259.86	0	01:13	0.38
1C-Out	DUMMY	26.56	0	01:10	
1CTopofRooftoTank	DUMMY	2.10	0	00:42	
A04(OUT)	DUMMY	11.20	0	00:58	
A09B(OUT)	DUMMY	10.40	0	01:01	
A09C(OUT)	DUMMY	6.40	0	01:01	
A10(OUT)	DUMMY	7.20	0	01:01	
A11B(OUT)	DUMMY	7.73	0	00:59	
A14(OUT)	DUMMY	109.00	0	01:01	
A16C(OUT)	DUMMY	24.80	0	01:10	
A22A(OUT)	DUMMY	8.84	0	01:37	
A3-A4-LMF	DUMMY	3.62	0	01:13	
A7-A5-LMF	DUMMY	3.60	0	01:10	
A7-A6-LMF	DUMMY	11.01	0	01:10	

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

B21(OUT)	DUMMY	10.17	0	01:40
B23(OUT)	DUMMY	14.80	0	00:54
B25(OUT)	DUMMY	4.80	0	01:01
O01	DUMMY	39.97	0	01:05
O02	DUMMY	18.77	0	01:07
O03	DUMMY	18.95	0	01:07
O04	DUMMY	77.00	0	01:08
O05	DUMMY	59.45	0	01:09
O06	DUMMY	48.96	0	01:03
O07	DUMMY	44.70	0	01:03
O08	DUMMY	48.66	0	01:09
O09	DUMMY	34.90	0	01:05
O10	DUMMY	67.74	0	01:10
O11	DUMMY	58.04	0	01:08
O12	DUMMY	68.10	0	01:10
O13	DUMMY	74.77	0	01:10
O14	DUMMY	12.59	0	01:10
O15	DUMMY	18.36	0	01:10
O16	DUMMY	23.30	0	01:10
O17	DUMMY	51.52	0	01:10
O18	DUMMY	11.62	0	01:10
O19	DUMMY	13.00	0	01:10
O20	DUMMY	21.01	0	01:04
O21	DUMMY	8.09	0	01:10
O22	DUMMY	12.99	0	01:10
O23	DUMMY	19.82	0	01:07
O24	DUMMY	48.22	0	01:08
O25	DUMMY	38.49	0	01:10
O26	DUMMY	14.11	0	01:01
O27	DUMMY	30.04	0	01:06
O28	DUMMY	38.22	0	01:02
O29	DUMMY	12.43	0	01:10
O30	DUMMY	23.59	0	01:07
O31	DUMMY	59.84	0	01:10
O32	DUMMY	19.65	0	01:10
O33	DUMMY	56.43	0	01:02

O34	DUMMY	24.28	0	01:05
O35	DUMMY	22.67	0	01:06
O36	DUMMY	29.05	0	01:06
O37	DUMMY	16.81	0	01:07
O38	DUMMY	31.51	0	01:09
O39	DUMMY	31.11	0	01:08
O40	DUMMY	26.67	0	01:10
O41	DUMMY	22.14	0	01:06
O42	DUMMY	21.63	0	01:05
O43	DUMMY	21.05	0	01:06
OL1	DUMMY	2.40	0	00:50

****

Flow Classification Summary

****

	Adjusted	---------- Fraction of Time in Flow Class ----------								
	/Actual	Up	Down	Sub	Sup	Up	Down	Norm	Inlet	
Conduit	Length	Dry	Dry	Dry	Crit	Crit	Crit	Crit	Ltd	Ctrl
1	1.00	0.83	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	1.00	0.99	0.00	0.00	0.01	0.00	0.00	0.00	0.95	0.00
11	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
12	1.00	0.83	0.16	0.00	0.01	0.00	0.00	0.00	0.95	0.00
13	1.00	0.00	0.98	0.00	0.02	0.00	0.00	0.00	0.95	0.00
14	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
15	1.00	0.35	0.65	0.00	0.01	0.00	0.00	0.00	0.95	0.00
16	1.00	0.99	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
17	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	1.00	0.83	0.14	0.00	0.03	0.00	0.00	0.00	0.95	0.00
19	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
20	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

22	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
23	1.00	0.83	0.15	0.00	0.03	0.00	0.00	0.00	0.95	0.00
24	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.00	0.00
25	1.00	0.97	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.00
26	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	1.00	0.00	0.99	0.00	0.01	0.00	0.00	0.00	0.95	0.00
29	1.00	0.97	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.00
3	1.00	0.83	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	1.00	0.99	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
31	1.00	0.90	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	1.00	0.98	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00
33	1.00	0.97	0.01	0.00	0.02	0.00	0.00	0.00	0.96	0.00
35	1.00	0.79	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00
36	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37	1.00	0.85	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00
4	1.00	0.98	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00
5	1.00	0.84	0.14	0.00	0.00	0.01	0.00	0.00	0.95	0.00
6	1.00	0.00	0.00	0.00	0.83	0.17	0.00	0.00	0.97	0.00
7	1.00	0.83	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00
8	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	1.00	0.00	0.00	0.00	0.01	0.00	0.00	0.99	0.00	0.00
A15A(OUT)	1.00	0.00	0.00	0.00	0.01	0.02	0.00	0.97	0.03	0.00
B19(OUT)	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C01	1.00	0.00	0.00	0.00	0.91	0.09	0.00	0.00	0.11	0.00
C02	1.00	0.00	0.00	0.00	0.99	0.01	0.00	0.00	0.12	0.00
C03	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C04	1.00	0.00	0.00	0.00	0.77	0.23	0.00	0.00	0.02	0.00
C05	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.03	0.00
C06	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C07	1.00	0.85	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C08	1.00	0.00	0.00	0.00	0.66	0.34	0.00	0.00	0.03	0.00
C09	1.00	0.00	0.00	0.00	0.79	0.21	0.00	0.00	0.02	0.00
C10	1.00	0.00	0.00	0.00	0.77	0.23	0.00	0.00	0.02	0.00
C100	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C101	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C102	1.00	0.90	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00
C103	1.00	0.00	0.00	0.00	0.90	0.10	0.00	0.00	0.01	0.00
C104	1.00	0.90	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C105	1.00	0.85	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00
C106	1.00	0.00	0.85	0.00	0.14	0.01	0.00	0.00	0.94	0.00
C107	1.00	0.79	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.00
C108	1.00	0.00	0.79	0.00	0.19	0.02	0.00	0.00	0.88	0.00
C109	1.00	0.83	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00
C11	1.00	0.00	0.00	0.00	0.71	0.29	0.00	0.00	0.04	0.00
C110	1.00	0.00	0.83	0.00	0.05	0.12	0.00	0.00	0.94	0.00
C111	1.00	0.75	0.00	0.00	0.01	0.00	0.24	0.00	0.00	0.00
C112	1.00	0.00	0.75	0.00	0.23	0.02	0.00	0.00	0.97	0.00
C113	1.00	0.81	0.00	0.00	0.01	0.00	0.19	0.00	0.00	0.00
C114	1.00	0.00	0.81	0.00	0.19	0.01	0.00	0.00	0.99	0.00
C115	1.00	0.85	0.00	0.00	0.01	0.00	0.14	0.00	0.00	0.00
C116	1.00	0.81	0.00	0.00	0.08	0.11	0.00	0.00	0.01	0.00
C117	1.00	0.84	0.00	0.00	0.01	0.00	0.15	0.00	0.00	0.00
C118	1.00	0.84	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00
C119	1.00	0.83	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00
C12	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.98	0.00
C120	1.00	0.83	0.00	0.00	0.06	0.11	0.00	0.00	0.00	0.00
C121	1.00	0.89	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00
C122	1.00	0.00	0.89	0.00	0.10	0.01	0.00	0.00	0.98	0.00
C123	1.00	0.84	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00
C124	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C125	1.00	0.84	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00
C126	1.00	0.85	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00
C127	1.00	0.83	0.02	0.00	0.08	0.08	0.00	0.00	0.95	0.00
C128	1.00	0.82	0.00	0.00	0.01	0.00	0.17	0.00	0.00	0.00
C129	1.00	0.00	0.82	0.00	0.05	0.12	0.00	0.00	0.87	0.00
C13	1.00	0.84	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C130	1.00	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C131	1.00	0.90	0.00	0.00	0.02	0.00	0.08	0.00	0.00	0.00
C132	1.00	0.90	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00
C133	1.00	0.82	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.00
C134	1.00	0.00	0.82	0.00	0.18	0.00	0.00	0.00	0.87	0.00

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C135	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C136	1.00	0.00	0.00	0.00	0.97	0.03	0.00	0.00	0.93	0.00
C137	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.01	0.00
C138	1.00	0.00	0.00	0.00	0.95	0.05	0.00	0.00	0.93	0.00
C139	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C14	1.00	0.84	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C140	1.00	0.00	0.11	0.00	0.89	0.00	0.00	0.00	0.96	0.00
C141	1.00	0.00	0.00	0.00	0.10	0.01	0.00	0.89	0.01	0.00
C142	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.00	0.00
C143	1.00	0.00	0.45	0.00	0.55	0.00	0.00	0.00	0.92	0.00
C144	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C145_1	1.00	0.00	0.94	0.00	0.00	0.00	0.06	0.00	0.00	0.00
C145_2	1.00	0.00	0.00	0.00	0.01	0.00	0.00	0.99	0.00	0.00
C146	1.00	0.00	0.00	0.00	0.88	0.12	0.00	0.00	0.82	0.00
C147	1.00	0.00	0.01	0.00	0.98	0.01	0.00	0.00	0.88	0.00
C148	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.00	0.00
C149	1.00	0.00	0.00	0.00	0.13	0.00	0.00	0.87	0.02	0.00
C15	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00
C150	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C151	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C152	1.00	0.00	0.00	0.00	0.01	0.00	0.00	0.99	0.00	0.00
C153	1.00	0.00	0.00	0.00	0.14	0.00	0.00	0.86	0.01	0.00
C154	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C155	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C156_1	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.84	0.00
C156_2	1.00	0.00	0.00	0.00	0.90	0.10	0.00	0.00	0.10	0.00
C158	1.00	0.91	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C159	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C16	1.00	0.84	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C160	1.00	0.00	0.07	0.00	0.93	0.00	0.00	0.00	0.88	0.00
C161	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C162	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C163	1.00	0.00	0.05	0.00	0.95	0.00	0.00	0.00	0.96	0.00
C164	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C165	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C166	1.00	0.00	0.00	0.00	0.93	0.00	0.00	0.07	0.00	0.00

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C167	1.00	0.00	0.03	0.00	0.97	0.00	0.00	0.00	0.73	0.00
C168	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.73	0.00
C169	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.00	0.00
C17	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C170	1.00	0.00	0.00	0.00	0.01	0.00	0.00	0.99	0.00	0.00
C171	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C172	1.00	0.90	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C173	1.00	0.00	0.06	0.00	0.94	0.00	0.00	0.01	0.96	0.00
C174	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C175	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C176	1.00	0.00	0.00	0.00	0.01	0.00	0.00	0.99	0.00	0.00
C177	1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.91	0.07	0.00
C178	1.00	0.00	0.00	0.00	0.11	0.00	0.00	0.89	0.01	0.00
C179	1.00	0.00	0.00	0.00	0.09	0.00	0.00	0.91	0.05	0.00
C18	1.00	0.81	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C180	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.95	0.00
C181	1.00	0.00	0.00	0.00	0.02	0.00	0.00	0.98	0.00	0.00
C182	1.00	0.00	0.00	0.00	0.07	0.00	0.00	0.93	0.03	0.00
C183	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C184	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C185	1.00	0.00	0.82	0.00	0.18	0.00	0.00	0.00	0.85	0.00
C186	1.00	0.00	0.00	0.00	0.01	0.00	0.00	0.98	0.00	0.00
C187	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C188	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C189	1.00	0.00	0.84	0.00	0.15	0.01	0.00	0.00	0.97	0.00
C190	1.00	0.00	0.00	0.00	0.86	0.14	0.00	0.00	0.99	0.00
C191	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C192	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.98	0.00
C193	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C194	1.00	0.00	0.00	0.00	0.84	0.16	0.00	0.00	0.33	0.00
C195	1.00	0.00	0.00	0.00	0.83	0.17	0.00	0.00	0.99	0.00
C196	1.00	0.00	0.00	0.00	0.01	0.00	0.00	0.98	0.00	0.00
C197	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C198	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C199	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C20	1.00	0.00	0.85	0.00	0.15	0.00	0.00	0.00	0.95	0.00

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C200	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C201	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C202	1.00	0.00	0.00	0.00	0.01	0.00	0.00	0.99	0.01	0.00
C203	1.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00	0.98	0.00
C204	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C205	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C206	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C207	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C208	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C209	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C21	1.00	0.00	0.00	0.00	0.87	0.13	0.00	0.00	0.02	0.00
C210	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C211	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C212_2	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C213_2	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
C22	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C23	1.00	0.00	0.00	0.00	0.72	0.28	0.00	0.00	0.05	0.00
C24	1.00	0.00	0.00	0.00	0.92	0.08	0.00	0.00	0.92	0.00
C25	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
C26	1.00	0.00	0.00	0.00	0.83	0.17	0.00	0.00	0.05	0.00
C27_1	1.00	0.00	0.00	0.00	0.98	0.02	0.00	0.00	0.95	0.00
C27_2	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00
C28	1.00	0.00	0.00	0.00	0.58	0.42	0.00	0.00	0.03	0.00
C29	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00
C30	1.00	0.82	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C31	1.00	0.00	0.00	0.00	0.95	0.05	0.00	0.00	0.12	0.00
C32	1.00	0.00	0.00	0.00	0.01	0.00	0.00	0.99	0.01	0.00
C33	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C34	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C35	1.00	0.83	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C36	1.00	0.00	0.00	0.00	0.97	0.03	0.00	0.00	0.08	0.00
C37	1.00	0.00	0.00	0.00	0.76	0.24	0.00	0.00	0.00	0.00
C38	1.00	0.85	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C39	1.00	0.85	0.00	0.00	0.01	0.00	0.15	0.00	0.00	0.00
C40	1.00	0.85	0.00	0.00	0.15	0.01	0.00	0.00	0.96	0.00
C41	1.00	0.00	0.85	0.00	0.15	0.00	0.00	0.00	0.99	0.00

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C42	1.00	0.84	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00
C43	1.00	0.00	0.84	0.00	0.14	0.02	0.00	0.00	0.95	0.00
C44	1.00	0.84	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00
C45	1.00	0.00	0.84	0.00	0.15	0.02	0.00	0.00	0.96	0.00
C46	1.00	0.83	0.00	0.00	0.01	0.00	0.17	0.00	0.00	0.00
C47	1.00	0.00	0.83	0.00	0.17	0.00	0.00	0.00	0.93	0.00
C48	1.00	0.77	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00
C49	1.00	0.00	0.77	0.00	0.22	0.02	0.00	0.00	0.96	0.00
C50	1.00	0.80	0.00	0.00	0.01	0.00	0.19	0.00	0.00	0.00
C51	1.00	0.80	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00
C52	1.00	0.83	0.00	0.00	0.01	0.00	0.16	0.00	0.00	0.00
C53	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.02	0.00
C54	1.00	0.88	0.00	0.00	0.02	0.00	0.10	0.00	0.00	0.00
C55	1.00	0.00	0.00	0.00	0.93	0.07	0.00	0.00	0.03	0.00
C56	1.00	0.83	0.00	0.00	0.01	0.00	0.16	0.00	0.00	0.00
C57	1.00	0.81	0.02	0.00	0.14	0.02	0.00	0.00	0.01	0.00
C58	1.00	0.00	0.83	0.00	0.13	0.03	0.00	0.00	0.91	0.00
C59	1.00	0.80	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00
C60	1.00	0.00	0.80	0.00	0.18	0.02	0.00	0.00	0.95	0.00
C61	1.00	0.76	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.00
C62	1.00	0.00	0.76	0.00	0.19	0.04	0.00	0.00	0.96	0.00
C63	1.00	0.81	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.00
C64	1.00	0.00	0.00	0.00	0.97	0.03	0.00	0.00	0.06	0.00
C65	1.00	0.84	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00
C66	1.00	0.84	0.00	0.00	0.14	0.03	0.00	0.00	0.91	0.00
C67	1.00	0.89	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00
C68	1.00	0.85	0.05	0.00	0.01	0.09	0.00	0.00	0.01	0.00
C69	1.00	0.87	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C70	1.00	0.89	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00
C71	1.00	0.89	0.00	0.00	0.11	0.00	0.00	0.00	0.96	0.00
C72	1.00	0.89	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00
C73	1.00	0.89	0.00	0.00	0.01	0.00	0.00	0.09	0.01	0.00
C74	1.00	0.00	0.00	0.00	0.01	0.00	0.00	0.99	0.00	0.00
C75	1.00	0.00	0.00	0.00	0.01	0.00	0.99	0.00	0.00	0.00
C76	1.00	0.82	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.00
C77	1.00	0.80	0.02	0.00	0.14	0.04	0.00	0.00	0.01	0.00

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C78	1.00	0.89	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00
C79	1.00	0.89	0.00	0.00	0.11	0.00	0.00	0.00	0.96	0.00
C80	1.00	0.89	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00
C81	1.00	0.00	0.89	0.00	0.10	0.01	0.00	0.00	0.96	0.00
C82	1.00	0.74	0.00	0.00	0.01	0.00	0.25	0.00	0.00	0.00
C83	1.00	0.00	0.74	0.00	0.24	0.02	0.00	0.00	0.98	0.00
C84	1.00	0.89	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00
C85	1.00	0.89	0.00	0.00	0.11	0.00	0.00	0.00	0.96	0.00
C86	1.00	0.89	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00
C87	1.00	0.00	0.89	0.00	0.11	0.00	0.00	0.00	0.97	0.00
C88	1.00	0.87	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00
C89	1.00	0.00	0.87	0.00	0.13	0.00	0.00	0.00	0.98	0.00
C90	1.00	0.83	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00
C91	1.00	0.00	0.83	0.00	0.15	0.03	0.00	0.00	0.96	0.00
C92	1.00	0.83	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00
C93	1.00	0.81	0.02	0.00	0.17	0.00	0.00	0.00	0.99	0.00
C94	1.00	0.85	0.00	0.00	0.01	0.00	0.14	0.00	0.00	0.00
C95	1.00	0.84	0.01	0.00	0.07	0.08	0.00	0.00	0.10	0.00
C96	1.00	0.85	0.00	0.00	0.01	0.00	0.14	0.00	0.00	0.00
C97	1.00	0.84	0.01	0.00	0.08	0.07	0.00	0.00	0.02	0.00
C98	1.00	0.85	0.00	0.00	0.02	0.00	0.13	0.00	0.00	0.00
C99	1.00	0.85	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OR52	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
STM-15	1.00	0.97	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
STM-390	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
STM-68	1.00	0.96	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
W1	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Weir-Outlet1	1.00	0.92	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00
Weir-Outlet2	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00

****

Conduit Surcharge Summary

****

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

Conduit	Hours Full: Both Ends	Hours Full: Upstream	Hours Full: Dnstream	Hours Above Full: Normal Flow	Capacity Limited
15	0.01	0.01	0.11	0.01	0.01
6	0.01	0.01	0.24	0.01	0.01
9	0.01	0.01	0.03	0.01	0.01
A15A(OUT)	0.01	0.01	0.37	0.01	0.01
C124	24.00	24.00	24.00	0.17	0.09
C140	0.07	0.07	0.10	0.01	0.01
C141	0.05	0.05	0.08	0.01	0.01
C142	0.10	0.10	0.10	0.01	0.10
C143	0.07	0.07	0.09	0.01	0.01
C144	0.01	0.09	0.01	0.19	0.01
C145_2	0.01	0.01	0.19	0.01	0.01
C146	0.15	0.15	0.21	0.01	0.01
C147	0.21	0.21	0.25	0.01	0.01
C148	0.16	0.25	0.16	0.01	0.16
C149	0.01	0.23	0.01	0.01	0.01
C151	2.55	2.55	2.56	0.30	2.22
C152	0.01	0.01	0.01	0.18	0.01
C153	0.94	0.94	2.07	0.18	0.32
C156_1	0.19	0.19	0.20	0.01	0.01
C156_2	0.18	0.20	0.18	0.03	0.18
C163	0.01	0.01	0.03	0.01	0.01
C166	0.01	0.01	0.01	0.04	0.01
C167	0.01	0.01	0.01	0.21	0.01
C171	0.01	0.01	0.01	0.33	0.01
C177	0.29	0.29	0.49	0.01	0.01
C178	0.51	0.51	1.23	0.04	0.19
C179	0.40	0.40	0.49	0.01	0.01
C180	0.01	0.01	0.06	0.01	0.01
C181	0.06	0.06	0.07	0.01	0.01
C182	0.09	0.09	0.11	0.01	0.01
C184	24.00	24.00	24.00	0.05	0.45
C185	0.08	0.08	0.09	0.01	0.01

114025 (MSSU) PCSWMM Model Output
100-year, 3-Hour Chicago Storm

C192	0.04	0.04	0.53	0.01	0.01
C193	24.00	24.00	24.00	0.19	0.19
C195	0.01	0.01	0.26	0.01	0.01
C196	0.26	0.26	0.33	0.01	0.01
C197	24.00	24.00	24.00	0.07	0.09
C198	24.00	24.00	24.00	0.01	0.01
C199	24.00	24.00	24.00	0.01	0.08
C200	24.00	24.00	24.00	0.30	0.35
C202	0.01	0.01	0.13	0.01	0.01
C203	0.14	0.14	23.83	0.01	0.01
C204	24.00	24.00	24.00	0.01	0.01
C205	24.00	24.00	24.00	0.01	0.01
C206	24.00	24.00	24.00	0.01	0.01
C207	24.00	24.00	24.00	0.28	0.69
C208	24.00	24.00	24.00	0.01	0.01
C209	24.00	24.00	24.00	0.96	0.97
C210	24.00	24.00	24.00	0.13	0.13
C211	24.00	24.00	24.00	0.14	0.56
C212_2	0.01	0.10	0.01	2.94	0.01
C213_2	24.00	24.00	24.00	0.28	11.93
STM-390	0.07	0.08	0.07	0.53	0.07
W1	24.00	24.00	24.00	0.51	11.90
Weir-Outlet2	24.00	24.00	24.00	0.01	0.01

Analysis begun on: Fri Jan 17 10:30:44 2025

Analysis ended on: Fri Jan 17 10:30:58 2025

Total elapsed time: 00:00:14

5yr 12hr SCS		100yr 12hr SCS		100yr +20% 12hr SCS	
Time (h:mm)	**Intensity (mm/hr)**	**Time (h:mm)**	**Intensity (mm/hr)**	**Time (h:mm)**	**Intensity (mm/hr)**
0:00	0.00	0:00	0.00	0:00	0.00
0:30	1.69	0:30	2.82	0:30	3.38
1:00	0.79	1:00	1.31	1:00	1.58
1:30	1.46	1:30	2.44	1:30	2.93
2:00	1.46	2:00	2.44	2:00	2.93
2:30	1.91	2:30	3.19	2:30	3.83
3:00	1.69	3:00	2.82	3:00	3.38
3:30	2.25	3:30	3.76	3:30	4.51
4:00	2.25	4:00	3.76	4:00	4.51
4:30	3.03	4:30	5.07	4:30	6.09
5:00	3.82	5:00	6.39	5:00	7.66
5:30	6.07	5:30	10.14	5:30	12.17
6:00	48.08	6:00	80.38	6:00	96.46
6:30	12.25	6:30	20.47	6:30	24.57
7:00	5.39	7:00	9.02	7:00	10.82
7:30	3.60	7:30	6.01	7:30	7.21
8:00	3.15	8:00	5.26	8:00	6.31
8:30	2.47	8:30	4.13	8:30	4.96
9:00	2.58	9:00	4.32	9:00	5.18
9:30	1.69	9:30	2.82	9:30	3.38
10:00	1.35	10:00	2.25	10:00	2.70
10:30	1.91	10:30	3.19	10:30	3.83
11:00	1.24	11:00	2.07	11:00	2.48
11:30	1.12	11:30	1.88	11:30	2.25
12:00	1.12	12:00	1.88	12:00	2.25
Total Rainfall	**56.17 mm**	**Total Rainfall**	**93.91 mm**	**Total Rainfall**	**112.69 mm**

July 1 1979		August 4 1988		August 8 1996	
Time (h:mm)	**Intensity (mm/hr)**	**Time (h:mm)**	**Intensity (mm/hr)**	**Time (h:mm)**	**Intensity (mm/hr)**
0:00	0.0	0:00	0.0	0:00	0.0
0:05	2.3	0:05	0.1	0:05	4.0
1:05	2.3	1:05	0.1	1:05	11.9
2:05	8.9	2:05	0.0	2:05	26.5
3:05	8.9	3:05	3.7	3:05	13.3
4:05	8.9	4:05	6.2	4:05	0.0
5:05	8.9	5:05	101.5	5:05	2.7
6:05	38.1	6:05	15.5	6:05	0.0
7:05	38.1	7:05	29.3	7:05	8.0

Design Storm Time Series Data **City of Ottawa**

NOVATECH
Engineers, Planners & Landscape Architects

8:05	38.1	8:05	19.8	8:05	18.6
9:05	38.1	9:05	1.5	9:05	10.6
10:05	38.1	10:05	1.7	10:05	21.2
11:05	38.1	11:05	5.4	11:05	2.7
12:05	38.1	12:05	24.6	12:05	2.7
13:05	50.8	13:05	26.5	13:05	15.9
14:05	50.8	14:05	34.9	14:05	66.3
15:05	76.2	15:05	10.2	15:05	55.7
16:05	106.7	16:05	27.1	16:05	122.0
17:05	106.7	17:05	104.4	17:05	88.9
18:05	71.1	18:05	27.5	18:05	9.3
19:05	71.1	19:05	62.5	19:05	8.0
20:05	30.5	20:05	31.8	20:05	4.0
21:05	30.5	21:05	79.8	21:05	0.0
22:05	30.5	22:05	67.5	22:05	2.7
23:05	30.5	23:05	156.2	23:05	0.0
0:05	3.8	0:05	5.1	0:05	0.0
1:05	3.8	1:05	0.2	1:05	0.0
2:05	3.8	2:05	0.2	2:05	5.3
3:05	3.8	3:05	0.2	3:05	0.0
4:05	3.8	4:05	0.2	4:05	0.0
5:05	3.8	5:05	0.2	5:05	0.0
6:05	3.8	6:05	0.2	6:05	0.0
7:05	3.8	7:05	0.2	7:05	0.0
8:05	3.8	8:05	0.2	8:05	0.0
9:05	3.8	9:05	0.2	9:05	4.0
10:05	3.8	10:05	0.2	10:05	53.1
11:05	3.8	11:05	12.8	11:05	69.0
		12:05	14.0	12:05	63.7
Total Rainfall	**83.99 mm**	13:05	22.2	13:05	58.4
		14:05	21.8	14:05	47.8
		15:05	1.4	15:05	15.9
		16:05	0.2	16:05	13.3
		17:05	0.2	17:05	8.0
		18:05	0.2	18:05	5.3
		19:05	0.2	19:05	6.6
		20:05	0.2	20:05	2.7
		21:05	0.2	21:05	4.0
		22:05	0.2	22:05	2.7
		23:05	0.2	23:05	4.0
		0:05	0.2	0:05	2.7
		1:05	0.2	1:05	5.3
		2:05	0.2	2:05	4.0
		3:05	0.2	3:05	2.7
		4:05	0.2	4:05	4.0
		5:05	0.2	5:05	2.7
		6:05	0.2	6:05	1.3

7:05	0.2	7:05	1.3
8:05	0.2	8:05	0.0
9:05	0.2	9:05	0.0
10:05	0.2	10:05	0.0
11:05	2.9	11:05	0.0
12:05	7.8	12:05	2.7
13:05	10.0	13:05	0.0
14:05	6.3	14:05	0.0
15:05	5.1	15:05	0.0
16:05	9.8	16:05	0.0
17:05	2.6	17:05	0.0
18:05	1.7	18:05	0.0
19:05	0.0	19:05	0.0
20:05	0.0	20:05	1.3
21:05	0.0	21:05	0.0
22:05	0.0	22:05	0.0
23:05	0.0	23:05	0.0
Total Rainfall	**80.59 mm**	**Total Rainfall**	**73.90 mm**

5yr 3hr Chicago

Time (h:mm)	Intensity (mm/hr)
0:00	0.00
0:10	3.68
0:20	4.58
0:30	6.15
0:40	9.61
0:50	24.17
1:00	104.19
1:10	32.04
1:20	16.34
1:30	10.96
1:40	8.29
1:50	6.69
2:00	5.63
2:10	4.87
2:20	4.30
2:30	3.86
2:40	3.51
2:50	3.22
3:00	2.98
Total Rainfall	**42.51 mm**

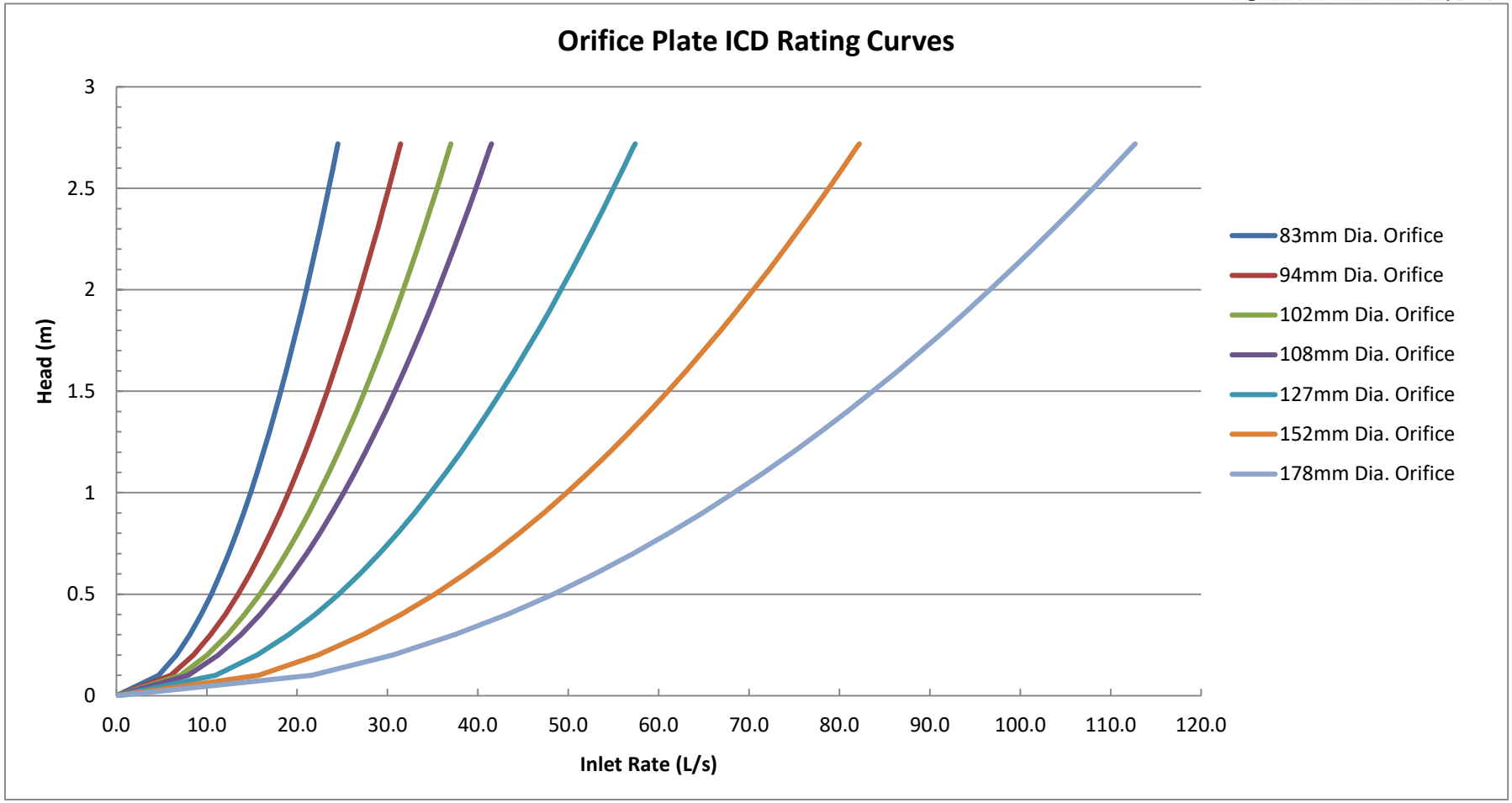
100yr 3hr Chicago

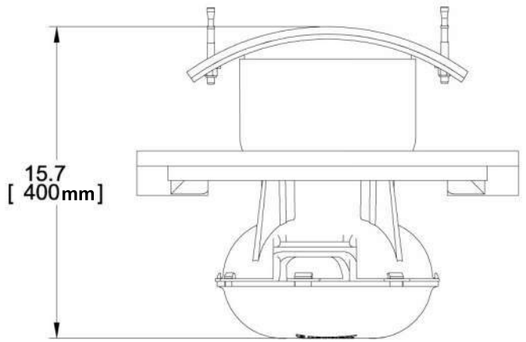
Time (h:mm)	Intensity (mm/hr)
0:00	0.00
0:10	6.05
0:20	7.54
0:30	10.16
0:40	15.97
0:50	40.65
1:00	178.56
1:10	54.05
1:20	27.32
1:30	18.24
1:40	13.74
1:50	11.06
2:00	9.29
2:10	8.02
2:20	7.08
2:30	6.35
2:40	5.76
2:50	5.28
3:00	4.88
Total Rainfall	**71.67 mm**

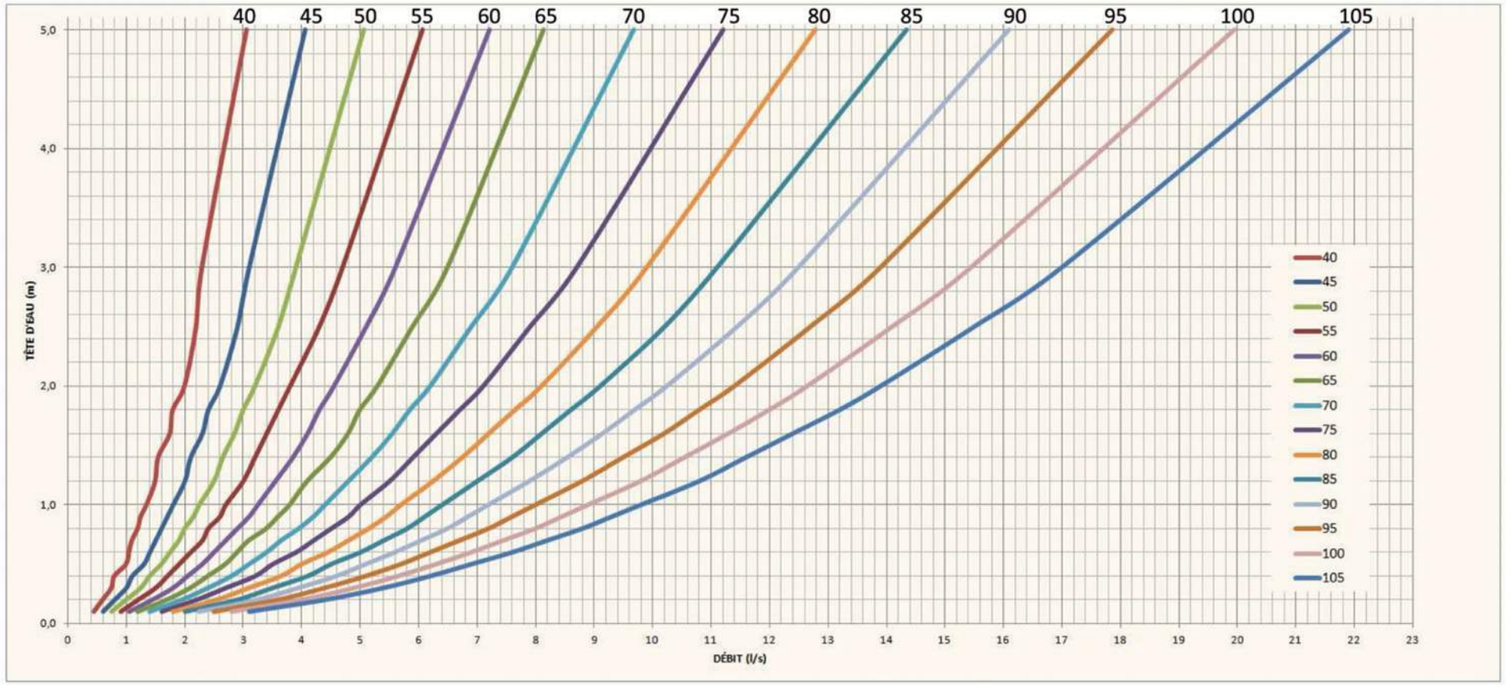
100yr +20% 3hr Chicago

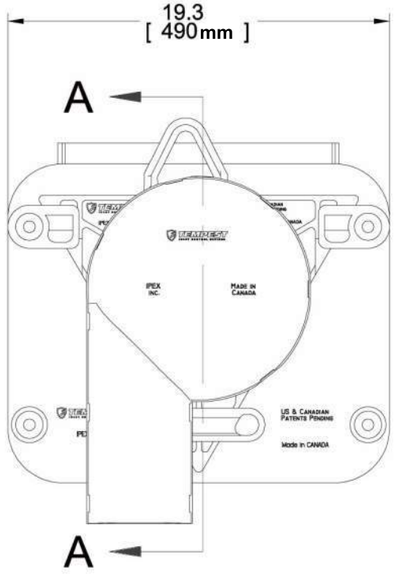
Time (h:mm)	Intensity (mm/hr)
0:00	0.00
0:10	7.26
0:20	9.05
0:30	12.19
0:40	19.16
0:50	48.78
1:00	214.27
1:10	64.86
1:20	32.78
1:30	21.89
1:40	16.49
1:50	13.27
2:00	11.15
2:10	9.62
2:20	8.50
2:30	7.62
2:40	6.91
2:50	6.34
3:00	5.86
Total Rainfall	**86.00 mm**

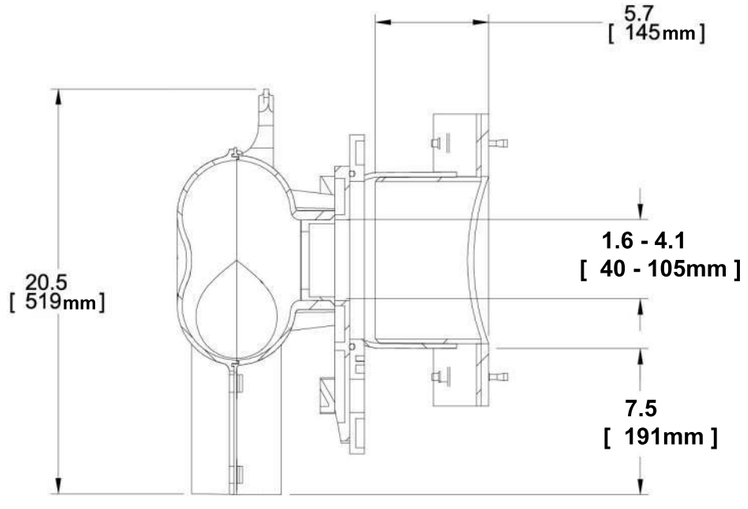
Clarence Crossing 112057
ICD Rating Curves



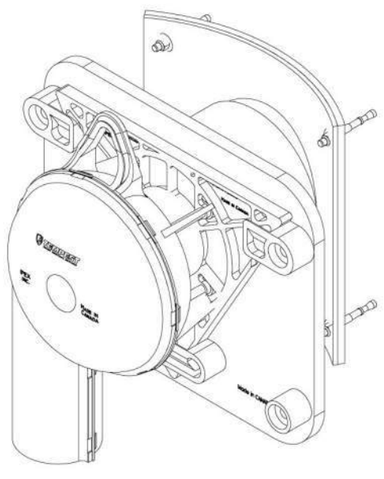








SECTION A-A



IPEX — Product development engineering, 3 Place du commerce, Suite 101, Île des Soeurs, Montréal, QC, H3E 1H7, Canada Tel 514 769 2200, www.ipexna.com			
PROJECTION	UNITS	TITLE	
	in [mm]	Tempest LMF round CB assembly [VORTEX]	SIZE B · SCALE(S) 1/8 · 1-2014

PATERSON GROUP

memorandum

re: **Foundation Drainage Review**
Proposed Residential Development – 295 & 355 Deschatelets Avenue
Greystone Village – Blocks 28 & 29 – Ottawa , Ontario

cc: Regional Group – **Mr. Evan Garfinkel** - egarfinkel@regionalgroup.com

date: March 18, 2025

file: PG6948-MEMO.04

Further to your request, Paterson Group (Paterson) prepared this memorandum to provide a foundation drainage review for the proposed residential development to be located at 295 & 355 Deschatelets Avenue in the City of Ottawa. This memo should be read in conjunction with the current Geotechnical Investigation Report (Paterson Group Report PG6948-1 dated February 1, 2024).

Paterson reviewed the following grading plans prepared by Novatech during the preparation of this memo:

- Grading Plan - Block 28 - Project No. 114025-00 – Drawing No. 114025-FT-GR2 Revision 5 dated December 20, 2024
- Grading Plan - Block 29 - Project No. 114025-00 – Drawing No. 114025-FT-GR1 Revision 5 dated December 20, 2024

Based on our review of these drawings, the proposed buildings do not contain below-grade space. Further, groundwater was encountered during the geotechnical investigation at approximate depths of 3 to 4 m below the existing ground surface.

Therefore, foundation drains and storm laterals are not required for the proposed buildings.

We trust that the current submission meets your immediate requirements.

Best Regards,

Paterson Group Inc.

Scott S. Dennis, P.Eng.

APPENDIX D

Existing Approvals

CONTENT COPY OF ORIGINAL

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 4082-AAZQ6P
Issue Date: June 24, 2016

Greystone Village Inc.
1737 Woodward Drive, 2nd Floor
Ottawa, Ontario
K2C 0P9

Site Location: 175 Main Street
City of Ottawa, Ontario

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

sanitary and storm sewers to be constructed in the City of Ottawa, as follows:

- sanitary sewers on Hazel Street (from Station 50+0000 to Station 50+175), Deschatelets Avenue (from Station 70+125 to Station 70+335), Scholastic Drive (from Station 10+225 to Station 10+392), Jeremiah Kealey Street (from Station 30+000 to Station 30+108), De Mazenod Avenue (from Station 40+000 to Station 40+168), Telmon Street (from Station 20+000 to Station 20+189), Clegg Street (from Station 90+000 to Station 90+179), and Easement (Block 61) (from Station 10+392 to Station 10+435); and
- storm sewers on Hazel Street (from Station 50+0000 to Station 50+175), Deschatelets Avenue (from Station 70+125 to Station 70+335), Scholastic Drive (from Station 10+225 to Station 10+392), Jeremiah Kealey Street (from Station 30+000 to Station 30+108), De Mazenod Avenue (from Station 40+000 to Station 40+168), and Telmon Street (from Station 20+000 to Station 20+189);

all in accordance with the application from Greystone Village Inc., dated May 18, 2016, including final plans and specifications prepared by Novatech Engineering.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

CONTENT COPY OF ORIGINAL

The Secretary*****
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of the Environmental Protection Act
Ministry of the Environment and Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 24th day of June, 2016

Gregory Zimmer, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

YH/
c: District Manager, MOECC Ottawa District Office
M. Rick O'Connor, City Clerk, City of Ottawa
Joshua White, P.Eng., Project Manager, Development Review, City of Ottawa
Linda Carkner, Program Manager, Infrastructure, City of Ottawa
J.G. Riddell, P.Eng., Novatech Engineering

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 8946-ACUP7W
Issue Date: August 17, 2016

Greystone Village Inc.
1737 Woodward Drive, Unit. 2
Ottawa, Ontario
K2C 0P9

Site Location: 175 Main Street
Lot H, Concession D
City of Ottawa,

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

an amendment of stormwater management Works for the Phase I of Greystone Village subdivision development, located on the north side of Clegg Street, south side of Springhurst Avenue, between Main Street and Rideau River within the Rideau watershed, in the City of Ottawa, for the collection, treatment and disposal of stormwater run-off, to add stormwater management facilities, to service approximately 7.48 hectares, discharging to Rideau River, providing Enhanced Level of quality control and erosion protection, consisting of the following:

Proposed Works:

oil and grit separator (catchment area 7.48 hectares): - one (1) oil and grit separator (Vortechs 11000 or Equivalent), located at the intersection of Telmon Street and Scholastic Drive, west side of Rideau River, receiving inflows from the storm sewers of the subdivision development, identified below, having a sediment storage capacity of approximately 4.280 m^3, an oil storage capacity of approximately 2,378 L, a total storage volume of approximately 13.592 m^3, and a maximum treatment flow rate of approximately 495 L/s, discharging via a 600 mm diameter outflow pipe to the storm sewer outfall, identified below;

storm sewer outfall (Outlet#1-catchment area 7.48 hectares): - one (1) 825 mm diameter storm sewer outfall with a concrete headwall and rip-rap protection, receiving inflows from the oil and grit separator, identified above, discharging to the Rideau River;

Previous Works:

sanitary sewers on Hazel Street (from Station 50+0000 to Station 50+175), Deschatelets Avenue (from Station 70+125 to Station 70+335), Scholastic Drive (from Station 10+225 to Station 10+392), Jeremiah Kealey Street (from Station 30+000 to Station 30+108), De Mazenod Avenue (from Station 40+000 to Station 40+168), Telmon Street (from Station 20+000 to Station 20+189), Clegg Street (from Station 90+000 to Station 90+179), and Easement (Block 61) (from Station 10+392 to Station 10+435); and

storm sewers on Hazel Street (from Station 50+0000 to Station 50+175), Deschatelets Avenue (from Station 70+125 to Station 70+335), Scholastic Drive (from Station 10+225 to Station 10+392), Jeremiah Kealey Street (from Station 30+000 to Station 30+108), De Mazenod Avenue (from Station 40+000 to Station 40+168), and Telmon Street (from Station 20+000 to Station 20+189);

including erosion/sedimentation control measures during construction and all other controls and appurtenances essential for the proper operation of the aforementioned Works;

all in accordance with the submitted supporting documents listed in Schedule "A" forming part of this Approval.

For the purpose of this environmental compliance approval, the following definitions apply:

"Approval" means this entire document including the application and any supporting documents listed in any schedules in this Approval;

"Director" means a person appointed by the Minister pursuant to section 5 of the Environmental Protection Act for the purposes of Part II.1 of the Environmental Protection Act;

“Equivalent” means a substituted product that meets the required quality and performance standards of a named product;

"Ministry" means the ministry of the government of Ontario responsible for the Environmental Protection Act and the Ontario Water Resources Act and includes all officials, employees or other persons acting on its behalf;

"Owner" means the Greystone Village Inc., and includes their successors and assignees;

"Previous Works" means those portions of the sewage Works previously approved under an Approval;

"Works" means the sewage works described in the Owner's application(s) and this Approval.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

(1) The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the Conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) The designation of the City of Ottawa as the operating authority of the site on the application for approval of the Works dose not relieve the owner from the responsibility of complying with any and all of the this approval.

(3) Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with the description given in this Approval, and the application for approval of the Works.

(4) Where there is a conflict between a provision of any submitted document referred to in this Approval and the Conditions of this Approval, the Conditions in this Approval shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

(5) Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

(6) The Conditions of this Approval are severable. If any Condition of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such Condition to other circumstances and the remainder of this Approval shall not be affected thereby.

(7) The issuance of, and compliance with the Conditions of this Approval does not:

(a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approval from the local conservation authority necessary to construct or operate the sewage Works; or

(b) limit in any way the authority of the Ministry to require certain steps be taken to require the Owner to furnish any further information related to compliance with this Approval.

2. EXPIRY OF APPROVAL

(1) This Approval will cease to apply to those parts of the Works which have not been constructed within **five (5) years** of the date of this Approval.

3. CHANGE OF OWNER

(1) The Owner shall notify the Director, in writing, of any of the following changes within **thirty (30) days** of the change occurring:

(a) change of Owner;

(b) change of address of the Owner;

(c) change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c. B17 shall be included in the notification to the Director;

(d) change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C39 shall be included in the notification to the Director.

4. OPERATION AND MAINTENANCE

(1) The Owner shall inspect the Works at least **once a year** and, if necessary, clean and maintain the Works to prevent the excessive build-up of sediments and/or vegetation.

(2) The Owner shall maintain a record of the results of these inspections and any cleaning and maintenance operations undertaken, and shall make the record available for inspection by the Ministry. The record shall include the following:

(a) the name of the Works; and

(b) the date and results of each inspection, maintenance and cleaning, including an estimate of the quantity of any materials removed.

5. MONITORING AND REPORTING

(1) The Owner shall carry out a monitoring program for the inspection and maintenance of the Works as outline in this Approval and shall make the information available to the Ministry staff upon request. The monitoring program shall consist of annul maintenance logs listing the depth of sediment in the oil and grit separator and shall note the date of each inspection, maintenance and cleaning including an estimate of the quantity of materials removed, and maintenance operations undertaken.

6. TEMPORARY EROSION AND SEDIMENT CONTROL

(1) The Owner shall install and maintain temporary sediment and erosion control measures during construction and conduct inspections once every **two (2) weeks** and after each significant storm event (a significant storm event is defined as a minimum of 25 mm of rain in any 24 hours period). The inspections and maintenance of the temporary sediment and erosion control

measures shall continue until they are no longer required and at which time they shall be removed and all disturbed areas reinstated properly.

(2) The Owner shall maintain records of inspections and maintenance which shall be made available for inspection by the Ministry, upon request. The record shall include the name of the inspector, date of inspection, and the remedial measures, if any, undertaken to maintain the temporary sediment and erosion control measures.

7. RECORD KEEPING

The Owner shall retain for a minimum of **five (5) years** from the date of their creation, all records and information related to or resulting from the operation, maintenance and monitoring activities required by this Approval.

Schedule "A"

1. Application for Environmental Compliance Approval, dated March 9, 2016, received on March 31, 2016, submitted by Novatech;

2. Site Servicing, Stormwater Management, Noise Erosion and Sediment Control Brief, for Greystone Village 175 Main Street, Ottawa, Ontario, dated December 18, 2015, prepared by Novatech;

3. Pipe Data Form and Storm and Sanitary Sewer Design Sheets, prepared by Novatech;

4. Set of Engineering Drawings (8 drawings) for Greystone Village Phase 1A & 1B , City of Ottawa, dated December, 2015, prepared by Novatech;

5. E-mail from Justin Gauthier of Novatech to the Ministry, dated August 15, 2016; and

6. E-mail from Justin Gauthier of Novatech to the Ministry, dated August 16, 2016.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which approval was granted. This Condition is also included to emphasize the precedence of Conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review.

2. Condition 2 is included to ensure that, when the Works are constructed, the Works will meet the standards that apply at the time of construction to ensure the ongoing protection of the environment.

3. Condition 3 is included to ensure that the Ministry records are kept accurate and current with respect to approved Works and to ensure that any subsequent Owner of the Works is made aware of the Approval and continue to operate the Works in compliance with it.

4. Condition 4 is included to require that the Works be properly operated and maintained such that the environment is protected.

5. Condition 5 is included to enable the Owner to evaluate and demonstrate the performance of the Works on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives specified in the Approval and that the Works do not cause any impairment of the receiving watercourse.

6. Condition 6 is included as installation, regular inspection and maintenance of the temporary sediment and erosion control measures is required to mitigate the impact on the downstream receiving watercourse during construction, until they are no longer required.

7. Condition 7 is included to require that all records are retained for a sufficient time period to adequately evaluate the long-term operation and maintenance of the Works.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 4082-AAZQ6P issued on June 24, 2016.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me, the Environmental Review Tribunal and in accordance with Section 47 of the Environmental Bill of Rights, 1993, S.O. 1993, c. 28 (Environmental Bill of Rights), the Environmental Commissioner, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner will place notice of your appeal on the Environmental Registry. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in

respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Environmental Commissioner
1075 Bay Street, Suite 605
Toronto, Ontario
M5S 2B1

AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment and
Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

This instrument is subject to Section 38 of the Environmental Bill of Rights, 1993, that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek leave to appeal within 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry at www.ebr.gov.on.ca , you can determine when the leave to appeal period ends.

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 17th day of August, 2016

Gregory Zimmer, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

TN/

c: District Manager, MOECC Ottawa Office
M. Rick O'Connor, City Clerk, City of Ottawa
Joshua White, P.Eng., Project Manager, Development Review, City of Ottawa
Linda Carkner, Program Manager, Infrastructure, City of Ottawa
J.G. Riddell, Novatech Engineering
Justin Gauthier, Novatech Engineering

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 0292-AP6PWR
Issue Date: July 12, 2017

Greystone Village Inc.
1737 Woodward Drive, Unit 2
Ottawa, Ontario
K2C 0P9

Site Location: Greystone Village, Phase 2 and 3
175 Main Street
City of Ottawa, Ontario

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

storm and sanitary sewers to be constructed in the City of Ottawa, as follows:

- sanitary sewers on Oblates Avenue (from Station 60+007.53 to Station 60+373.35), Scholastics Drive (from Station 10+0075 to Station 10+195.89), Deschatelets Avenue (from Station 70+000 to Station 70+132), and Block 58 (from Station 0+002 to Station 0+048.5); and

- storm sewers on Oblates Avenue (from Station 60+007.53 to Station 60+373.35), Scholastics Drive (from Station 10+0075 to Station 10+195.89), and Deschatelets Avenue (from Station 70+000 to Station 70+132);

all in accordance with the submitted application and supporting documents listed in Schedule "A" forming part of this Approval.

For the purpose of this environmental compliance approval, the following definitions apply:

1. "*Approval* " means this entire document and any schedules attached to it, and the application;

2. "*Director* " means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;

3. "*District Manager* " means the District Manager of the appropriate local District Office of the Ministry, where the Works are geographically located;

4. "*EPA* " means the Environmental Protection Act, R.S.O. 1990, c.E.19, as amended;

5. "*Ministry* " means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

6. "*Owner* " means Greystone Village Inc., and includes their successors and assignees;

7. "*OWRA* " means the Ontario Water Resources Act, R.S.O. 1990, c. O.40, as amended;

8. "*Works* " means the sewage works described in the Owner's application, and this Approval;

9. "*Professional Engineer* " means a person entitled to practice as a Professional Engineer in the Province of Ontario under a licence issued under the *Professional Engineers Act.*

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL CONDITIONS

1. The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

2. Except as otherwise provided by these Conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with the description given in this Approval, and the application for approval of the Works.

3. Where there is a conflict between a provision of any document in the schedule referred to in this Approval and the conditions of this Approval, the conditions in this Approval shall take precedence, and where there is a conflict between the documents in the schedule, the document bearing the most recent date shall prevail.

4. Where there is a conflict between the documents listed in Schedule 'A' and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

5. The conditions of this Approval are severable. If any condition of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this Approval shall not be affected thereby.

6. The issuance of, and compliance with the conditions of, this Approval does not:

   a. relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approval from the local conservation authority/MNR necessary to construct or operate the sewage works; or

   b. limit in any way the authority of the Ministry to require certain steps be taken to require the Owner to furnish any further information related to compliance with this Approval.

2. EXPIRY OF APPROVAL

1. This Approval will cease to apply to those parts of the Work which have not been constructed within five (5) years of the date of this Approval.

2. In the event that completion and commissioning of any portion of the Works is anticipated to be delayed beyond the specified expiry period, the Owner shall submit an application of extension to the expiry period, at least twelve (12) months prior to the end of the period. The application for extension shall include the reason(s) for the delay, whether there is any design change(s) and a review of whether the standards applicable at the time of Approval of the Works are still applicable at the time of request for extension, to ensure the ongoing protection of the environment.

3. CHANGE OF OWNER

1. The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within thirty (30) days of the change occurring:

   a. change of Owner;

   b. change of address of the Owner;

   c. change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c.B17 shall be included in the notification to the District Manager; or

   d. change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C39 shall be included in the notification to the District Manager.

2. In the event of any change in ownership of the Works, other than a change to a successor municipality, the Owner shall notify in writing the succeeding owner of the existence of this Approval, and a copy of such notice shall be forwarded to the District Manager and the Director.

3. The Owner shall ensure that all communications made pursuant to this condition refer to the

number at the top of this Approval.

4. Notwithstanding any other requirements in this Approval, upon transfer of the ownership or assumption of the Works to a municipality if applicable, any reference to the District Manager shall be replaced with the Water Supervisor.

4. OPERATION AND MAINTENANCE

1. If applicable, any proposed storm sewers or other stormwater conveyance in this Approval can be constructed but not operated until the proposed stormwater management facilities in this Approval or any other Approval that are designed to service the storm sewers or other stormwater conveyance are in operation.

Schedule "A"

1. Application for Environmental Compliance Approval for Municipal and Private Sewage Works, dated May 17, 2017 and received on June 14, 2017, submitted by Greystone Village Inc.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is imposed to ensure that the Works are constructed and operated in the manner in which they were described and upon which approval was granted. This condition is also included to emphasize the precedence of conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review. Condition 1.6 is included to emphasize that the issuance of this Approval does not diminish any other statutory and regulatory obligations to which the Owner is subject in the construction, maintenance and operation of the Works. The Condition specifically highlights the need to obtain any necessary conservation authority approvals. The Condition also emphasizes the fact that this Approval doesn't limit the authority of the Ministry to require further information.

2. Condition 2 is included to ensure that, when the Works are constructed, the Works will meet the standards that apply at the time of construction to ensure the ongoing protection of the environment.

3. Condition 3 is included to ensure that the Ministry records are kept accurate and current with respect to approved Works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the Works in compliance with it.

4. Condition 4 is included to prevent the operation of stormwater pipes and other conveyance until such time that their required associated stormwater management Works are also constructed.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario

AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment and
Climate Change
135 St. Clair Avenue West, 1st Floor

M5G 1E5

Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 12th day of July, 2017

C. Labarge

Christina Labarge, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

SW/

c: District Manager, MOECC Ottawa District Office
City Clerk, City of Ottawa (File No. D07-16-15-0001)
Justin Gauthier, Project Manager, Novatech Engineering
Joshua White, P.Eng., Senior Engineer, Development Review, City of Ottawa
Linda Carkner, Program Manager, ROW Unit, City of Ottawa

Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 3454-APEHFQ
Issue Date: July 31, 2017

Greystone Village Inc.
1737 Woodward Drive, 2nd Floor
Ottawa, Ontario
K2C 0P9

Site Location: Greystone Village Phase 2 and 3
175 Main Street
City of Ottawa, Ontario

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

storm sewers and an associated **stormwater outfall** to be constructed in the City of Ottawa on Block 58, from Station (0+024.35) to Station (0+056.7), and discharging to the Rideau River;

one (1) oil/grit separator (catchment area - 2.7 hectares): - the establishment of an off-line oil/grit separator (model stormceptor 5000 or Equivalent) in the City of Ottawa, for the treatment and disposal of stormwater run-off for all storm events up to and including the 100-year storm event, to provide Enhanced Level water quality protection for a total catchment area of approximately 2.7 hectares, having a sediment storage capacity of 20,940 litres, an oil storage capacity of 3,360 litres, a total holding capacity of 24,710 litres, and a maximum treatment flow rate of 61 litres/second, discharging to Rideau River;

including erosion/sedimentation control measures during construction and all other controls and appurtenances essential for the proper operation of the aforementioned Works;

all in accordance with the submitted supporting documents listed in Schedule "A" forming part of this Approval.

For the purpose of this environmental compliance approval, the following definitions apply:

1. "*Approval* " means this entire document and any schedules attached to it, and the application;

2. *"Director* " means a person appointed by the Minister pursuant to section 5 of the *EPA* for the

purposes of Part II.1 of the *EPA;*

3. "*District Manager* " means the *District Manager* of the appropriate local District Office of the *Ministry* , where the *Works* are geographically located;

4. "*EPA* " means the Environmental Protection Act, R.S.O. 1990, c.E.19, as amended;

5. "*Equivalent* " means a substituted oil and grit separator that meets the required quality and performance standards of the approved oil and grit separator;

6. "*Ministry* " means the ministry of the government of Ontario responsible for the *EPA* and *OWRA* and includes all officials, employees or other persons acting on its behalf;

7. "*Owner* " means Greystone Village Inc., and includes its successors and assignees;

8. "*OWRA* " means the Ontario Water Resources Act, R.S.O. 1990, c. O.40, as amended;

9. "*Water Supervisor* " means the *Water Supervisor* of the appropriate local office of the Safe Drinking Water Branch of the *Ministry,* where the *Works* are geographically located;

10. "*Works* " means the sewage works described in the *Owner's* application, and this *Approval.*

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL CONDITIONS

1. The *Owner* shall ensure that any person authorized to carry out work on or operate any aspect of the *Works* is notified of this *Approval* and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

2. Except as otherwise provided by these Conditions, the *Owner* shall design, build, install, operate and maintain the *Works* in accordance with the description given in this *Approval,* and the application for approval of the *Works.*

3. Where there is a conflict between a provision of any document in the schedule referred to in this *Approval* and the conditions of this *Approval,* the conditions in this *Approval* shall take precedence, and where there is a conflict between the documents in the schedule, the document bearing the most recent date shall prevail.

4. Where there is a conflict between the documents listed in Schedule ‘A’ and the application, the

application shall take precedence unless it is clear that the purpose of the document was to amend the application.

5. The conditions of this *Approval* are severable. If any condition of this *Approval,* or the application of any requirement of this *Approval* to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this *Approval* shall not be affected thereby.

6. The issuance of, and compliance with the conditions of, this *Approval* does not:

   a. relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approval from the local conservation authority/MNR necessary to construct or operate the sewage works; or

   b. limit in any way the authority of the *Ministry* to require certain steps be taken to require the *Owner* to furnish any further information related to compliance with this *Approval.*

2. EXPIRY OF APPROVAL

1. This *Approval* will cease to apply to those parts of the *Work* which have not been constructed within five (5) years of the date of this *Approval.*
2. In the event that completion and commissioning of any portion of the *Works* is anticipated to be delayed beyond the specified expiry period, the *Owner* shall submit an application of extension to the expiry period, at least twelve (12) months prior to the end of the period. The application for extension shall include the reason(s) for the delay, whether there is any design change(s) and a review of whether the standards applicable at the time of *Approval* of the *Works* are still applicable at the time of request for extension, to ensure the ongoing protection of the environment.

3. CHANGE OF OWNER

1. The *Owner* shall notify the District Manager and the *Director,* in writing, of any of the following changes within thirty (30) days of the change occurring:

   a. change of *Owner;*

   b. change of address of the *Owner;*

   c. change of partners where the *Owner* is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c.B17 shall be included in the notification to the District Manager*;* or

   d. change of name of the corporation where the *Owner* is or at any time becomes a corporation, and a copy of the most current information filed under the Corporations Information Act,

R.S.O. 1990, c. C39 shall be included in the notification to the District Manager.

2. In the event of any change in ownership of the *Works* , other than a change to a successor municipality, the *Owner* shall notify in writing the succeeding owner of the existence of this *Approval* , and a copy of such notice shall be forwarded to the District Manager and the *Director*.

3. The *Owner* shall ensure that all communications made pursuant to this condition refer to the number at the top of this *Approval.*

4. Notwithstanding any other requirements in this *Approval* , upon transfer of the ownership or assumption of the *Works* to a municipality if applicable, any reference to the *District Manager* shall be replaced with the *Water Supervisor.*

4. OPERATION AND MAINTENANCE

1. If applicable, any proposed storm sewers or other stormwater conveyance in this *Approval* can be constructed but not operated until the proposed stormwater management facilities in this *Approval* or any other *Approval* that are designed to service the storm sewers or other stormwater conveyance are in operation.

2. The *Owner* shall make all necessary investigations, take all necessary steps and obtain all necessary approvals so as to ensure that the physical structure, siting and operations of the *Works* do not constitute a safety or health hazard to the general public.

3. The *Owner* shall undertake an inspection of the condition of the *Works,* at least once a year, and undertake any necessary cleaning and maintenance to ensure that sediment, debris and excessive decaying vegetation are removed from the *Works* to prevent the excessive build-up of sediment, oil/grit, debris and/or decaying vegetation, to avoid reduction of the capacity and/or permeability of the *Works,* as applicable. The *Owner* shall also regularly inspect and clean out the inlet to and outlet from the *Works* to ensure that these are not obstructed.

4. The *Owner* shall design, construct and operate the *Works* with the objective that the effluent from the *Works* is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film, sheen, foam or discoloration on the receiving waters.

5. The *Owner* shall maintain a logbook to record the results of these inspections and any cleaning and maintenance operations undertaken, and shall keep the logbook at the *Owner's* administration office for inspection by the *Ministry*. The logbook shall include the following:

   a. the name of the *Works;* and

   b. the date and results of each inspection, maintenance and cleaning, including an estimate of the quantity of any materials removed and method of clean-out of the *Works.*

6. The *Owner* shall prepare an operations manual prior to the commencement of operation of the *Works* that includes, but is not necessarily limited to, the following information:

    a. operating and maintenance procedures for routine operation of the *Works;*

    b. inspection programs, including frequency of inspection, for the *Works* and the methods or tests employed to detect when maintenance is necessary;

    c. repair and maintenance programs, including the frequency of repair and maintenance for the *Works;*

    d. contingency plans and procedures for dealing with potential spills and any other abnormal situations and for notifying the District Manager*;* and

    e. procedures for receiving, responding and recording public complaints, including recording any follow-up actions taken.

7. The *Owner* shall maintain the operations manual current and retain a copy at the location of the *Works* for the operational life of the *Works.* Upon request, the *Owner* shall make the manual available to *Ministry* staff.

5. TEMPORARY EROSION AND SEDIMENT CONTROL

1. The *Owner* shall install and maintain temporary sediment and erosion control measures during construction and conduct inspections once every two (2) weeks and after each significant storm event (a significant storm event is defined as a minimum of 25 mm of rain in any 24 hours period). The inspections and maintenance of the temporary sediment and erosion control measures shall continue until they are no longer required and at which time they shall be removed and all disturbed areas reinstated properly.

2. The *Owner* shall maintain records of inspections and maintenance which shall be made available for inspection by the *Ministry,* upon request. The record shall include the name of the inspector, date of inspection, and the remedial measures, if any, undertaken to maintain the temporary sediment and erosion control measures.

6. REPORTING

1. One (1) week prior to the start-up of the operation of the *Works,* the *Owner* shall notify the District Manager (in writing) of the pending start-up date.

2. The *Owner* shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to *Ministry* staff.

3. The *Owner* shall prepare and submit a performance report to the District Manager on an annual basis, within ninety (90) days following the end of the period being reported upon. The first such report shall cover the first annual period following the commencement of operation of the *Works* and subsequent reports shall be submitted to cover successive annual periods following

thereafter. The reports shall contain, but shall not be limited to, the following information:

a. a description of any operating problems encountered and corrective actions taken;

b. a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the *Works,* including an estimate of the quantity of any materials removed from the *Works;*

c. a summary of any complaints received during the reporting period and any steps taken to address the complaints;

d. a summary of all spill or abnormal discharge events; and

e. any other information the District Manager requires from time to time.

Schedule "A"

1. Application for Environmental Compliance Approval under M&P Sewage Works, dated May 15, 2017 and received on June 29, 2017, submitted by The Greystone Village Inc.;

2. Greystone Village Phase 2 and 3, 175 Main Street, Plan and Profile, Storm Outlet 2 (including Grading, Erosion and Sediment Control) Revision 4, dated May 26, 2017, prepared by Novatech Engineering;

3. Greystone Village Phase 2 and 3, 175 Main Street, Site Servicing, stormwater management, Noise, Erosion & Sediment Control design beirf, revised May 26, 2017, prepared by Novatech Engineering;

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is imposed to ensure that the *Works* are constructed and operated in the manner in which they were described and upon which approval was granted. This condition is also included to emphasize the precedence of conditions in the *Approval* and the practice that the *Approval* is based on the most current document, if several conflicting documents are submitted for review. Condition 1.6 is included to emphasize that the issuance of this *Approval* does not diminish any other statutory and regulatory obligations to which the *Owner* is subject in the construction, maintenance and operation of the *Works* . The Condition specifically highlights the need to obtain any necessary conservation authority approvals. The Condition also emphasizes the fact that this *Approval* doesn't limit the authority of the *Ministry* to require further information.

2. Condition 2 is included to ensure that, when the *Works* are constructed, the *Works* will meet the standards that apply at the time of construction to ensure the ongoing protection of the environment.

3. Condition 3 is included to ensure that the *Ministry* records are kept accurate and current with respect to approved *Works* and to ensure that subsequent owners of the *Works* are made aware of the *Approval* and continue to operate the *Works* in compliance with it.

4. Condition 4 is included as regular inspection and necessary removal of sediment and excessive decaying vegetation from the *Works* are required to mitigate the impact of sediment, debris and/or decaying vegetation on the treatment capacity of the *Works* . The Condition also ensures that adequate storage is maintained in the *Works* at all times as required by the design. Furthermore, this Condition is included to ensure that the *Works* are operated and maintained to function as designed. Condition 4.1 is included to prevent the operation of stormwater pipes and other conveyance until such time that their required associated stormwater management Works are also constructed.

5. Condition 5 is included as installation, regular inspection and maintenance of the temporary sediment and erosion control measures is required to mitigate the impact on the downstream receiving watercourse during construction until they are no longer required.

6. Condition 6 is included to provide a performance record for future references, to ensure that the *Ministry* is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this *Approval* , so that the *Ministry* can work with the *Owner* in resolving any problems in a timely manner.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance

approval in respect of which the hearing is required, and;

b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*****
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment and
Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 31st day of July, 2017

C. Labarge

Christina Labarge, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

MS/

c: District Manager, MOECC Ottawa office
Justin Gauthier, Project Manager, Novatech Engineering
City Clerk, City of Ottawa (File No. D07-16-15-0001)
Joshua White, P.Eng., Senior Engineer, Development Review, City of Ottawa
Linda Carkner, Program Manager, Row Unit, City of Ottawa

RIDEAU VALLEY
CONSERVATION AUTHORITY

3889 Rideau Valley Drive, P.O. Box 599, Manotick, ON K4M 1A5
tel 613-692-3571 | 1-800-267-3504 | fax 613-692-0831 | www.rvca.ca

LETTER OF PERMISSION – ONT. REG. 174/06, SECTION 28 CONSERVATION AUTHORITIES ACT 1990, AS AMENDED.

Date: 15 July, 2016.
File: RV3-34/16
Contact: Hal Stimson
(613) 692-3571 Ext 1127
hal.stimson@rvca.ca

Mr. David Kardish
Greystone Village Inc.
c/o The Regional Group
1737 Woodward Dr.
Ottawa, Ontario
K2C 0P9

Permit for development under Section 28 of the Conservation Authorities Act for storm water outlet in a regulated area at Lot Part H Concession D (old Nepean Township) City of Ottawa known municipally as 175 Main Street

Dear Mr. Kardish

The Rideau Valley Conservation Authority has reviewed your application on behalf of Regional Group and understands the proposal to be for: the installation of a new 900 mm diameter concrete stormwater outlet pipe including headwall and river stone plunge pool discharging to the Rideau River just downstream of Clegg Street in the vicinity of the future Telmon Street.

This proposal was reviewed under Ontario Regulation 174/06, the "*Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*" regulation.

PERMISSION AND CONDITIONS

By this letter the Rideau Valley Conservation Authority hereby grants you approval to undertake this project as outlined in your permit application but subject to the following conditions:

1. Approval is subject to the understanding of the project as described above and outlined in the application and submitted plans including:
   - Drawing No. 114025-PR9 for Project No. 114025-00 titled Storm Outlet Plan and Profile & Grading, Erosion and Sediment Control Plan Station 0+000 to 0+050, dated May 24/16, revision No. 6, as prepared by Novatech Engineering and stamped by J. G. Riddell, P. Eng.

   No conditions are subject to change/revision by the on-site contractor(s).

2. **There will be no in-water works between March 15 and July 1, of any given year to protect local aquatic species populations during their spawning and nursery time periods.**

3. It is recommended that you retain the services of an engineer to conduct on-site inspections to ensure adequacy of the work, verify stability of the final grade and confirm all imported fill is of a suitable type and has been adequately placed and compacted.

4. **A De-watering Plan and Sediment and Erosion Control Plan must be submitted by the contractor to this office for review prior to construction activities commencing.**

5. It is recommended that you ensure your contractor(s) are provided with a copy of this letter so as to ensure compliance with the conditions listed herein.

6. Any excess excavated material, as a result of the work, must be disposed of in a suitable location outside any regulatory floodplain and fill regulated area. No changes to area grades are to occur as a result of the work.

7. Only clean material free from particulate matter may be placed in the water.

8. Operate machinery from outside the water, or on the water in a manner that minimizes disturbance to the banks or bed of the watercourse. Equipment shall not be cleaned in the watercourse or where wash-water can enter any watercourse. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.

9. All materials and equipment used for the purpose of site preparation and project completion must be operated (washed, refuelled, and serviced) and all fuel stored in a manner that prevents any deleterious substance (e.g. petroleum products, silt, debris etc.) from entering any watercourse.

10. Any stockpiled materials shall be stored and stabilized away from the water.

11. Work in water shall not be conducted at times when flows are elevated due to local rain events, storms or seasonal floods.

12. Sediment barriers should be used on site in an appropriate method according to the Ontario Provincial Standard Specifications (OPSS) for silt barriers as a minimum. If the sediment and erosion control methods include silt fence it should be placed along the shoreline to prevent overland flow on disturbed areas from entering the watercourse. Soil type, slope of land, drainage area, weather, predicted sediment load and deposition should be considered when selecting the type of sediment/erosion control.

13. Sediment and erosion control measures shall be in place before any excavation or construction works commence. All sediment/erosion control measures are to be monitored regularly by experienced personnel and maintained as necessary to ensure good working order. In the event that the erosion and sedimentation control measures are deemed not to be performing adequately, the contractor shall undertake immediate additional measures as appropriate to the situation to the satisfaction of the Conservation Authority.

14. Develop a response plan that is to be implemented immediately in the event of flooding, a sediment release or spill of a deleterious substance. This plan is to include measures to: a) stop work, contain sediment-laden water and other deleterious substances and prevent their further migration into the watercourse and downstream receiving watercourses; b) notify the RVCA and all applicable authorities in the area c) promptly clean-up and appropriately dispose of the sediment-laden water and deleterious substances; and d) ensure clean-up measures are suitably applied so as not to result in further alteration of the bed and/or banks of the watercourse.

15. The owner is ultimately responsible for failure to comply with any and/or all of these conditions and must take all precautions to ensure no sediment runoff from the work site into any watercourse during and after the construction period. Failure to comply with the approval and/or conditions of this letter will result in the permit being revoked and may also result in legal action being initiated to resolve the matter to the Conservation Authority's satisfaction.

16. The applicant agrees that Authority staff may visit the subject property, before, during and after project completion, to ensure compliance with the conditions as set out in this letter of permission.

17. A new application must be submitted should any work as specified in this letter be ongoing or planned for or after July 18, 2018.

18. That the Authority be given twenty-four hours notice prior to the start of construction and within twenty-four hours of project completion.

19. All other approvals as might be required from the Municipality, and/or other Provincial or Federal Agencies must be obtained prior to initiation of work. This includes but is not limited to the Endangered Species Act., the Ontario Water Resources Act., Environmental Protection Act., Public Lands Act, and the Fisheries Act.

By this letter the Rideau Valley Conservation Authority assumes no responsibility or liability for any flood, erosion, or slope failure damage which may occur either to your property or the structures on it or if any activity undertaken by you adversely affects the property or interests of adjacent landowners. This letter does not relieve you of the necessity or responsibility for obtaining any other federal, provincial or municipal permits. This permit is not transferable to subsequent property owners.

Should you have any questions regarding this letter, please contact Hal Stimson at our Manotick office.

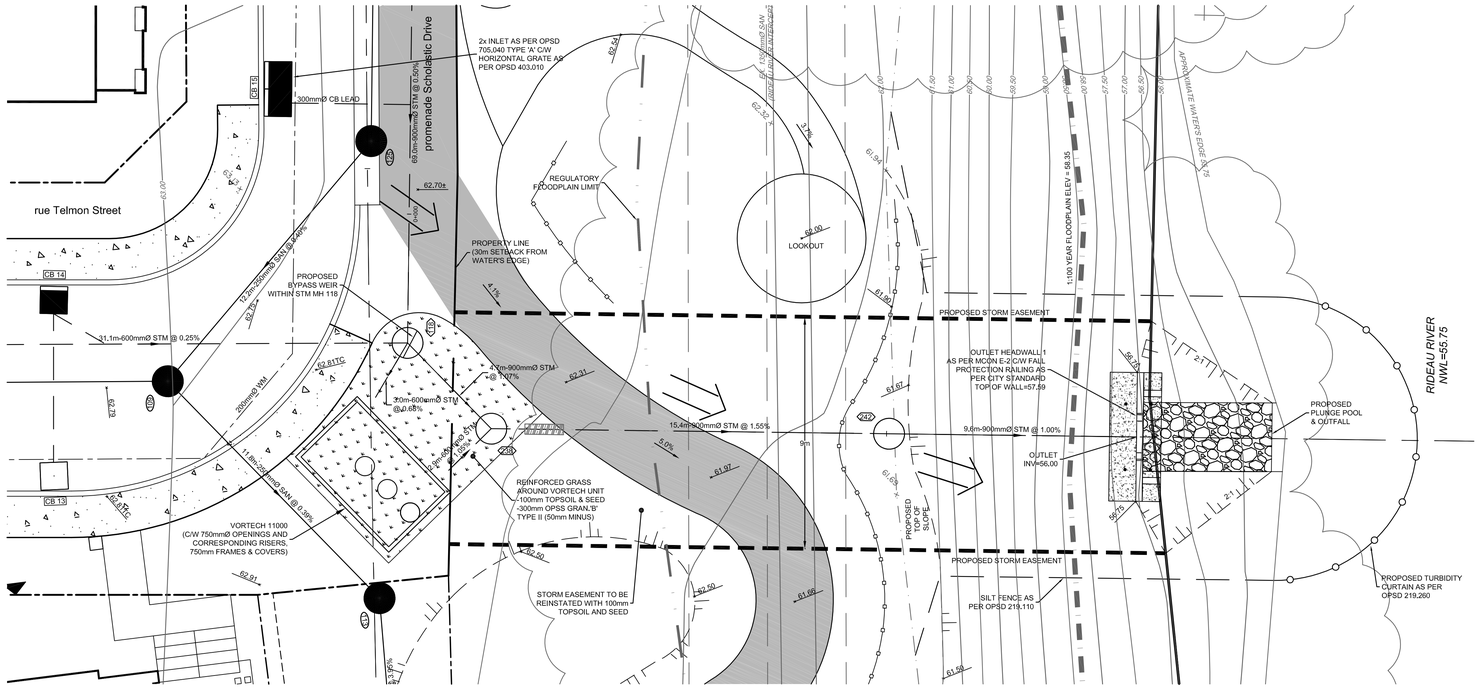
Terry K. Davidson, P. Eng.
Conservation Authority S. 28 Signing delegate
O. Reg. 174/06

Cc: M. St. Pierre, P. Eng. Novatech
T. McLaurin, MNRF Kemptville

- Pursuant to the provisions of S. 28(12) of the Conservation Authorities Act (R.S.O.1990, as amended.) any or all of the conditions set out above may be appealed to the Executive Committee of the Conservation Authority in the event that they are not satisfactory or cannot be complied with.
- Failure to comply with the conditions of approval or the scope of the project may result in the cancelling of the permission and/or initiation of legal action under S. 28(16) of the Act.
- This letter of permission does not come into full force and effect until the attached copy of this letter is returned to the Authority offices in Manotick signed and dated which return shall be taken as indicating acceptance of the conditions of the Authority's approval and acknowledgement that the details of the proposal as described in this letter are a fair and accurate representation of the proposed undertaking.

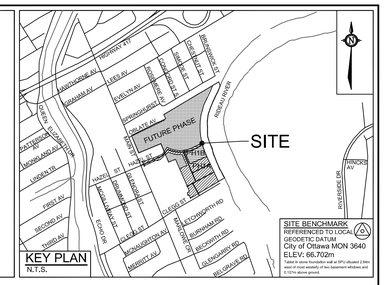
Name: DAVID KARASIEK ASO (print)

Signed: _____ Date: July 18/2016



NORTH

KEY PLAN
N.T.S.



LEGEND

- PROPOSED WATERMAIN AND DIAMETER (200mmØ WM)
- PROPOSED SANITARY MH & SEWER WITH DIRECTION OF FLOW (100)
- PROPOSED STORM MH & SEWER WITH DIRECTION OF FLOW (100)
- PROPOSED CLAY DYKE
- PROPOSED CATCH BASIN LEAD
- PROPOSED ROADSIDE CATCHBASIN (CB 14)
- PROPOSED ROADSIDE CATCH BASIN WITH INLET CONTROL DEVICE (CB 28)
- PROPOSED VORTECHS 11000 STORMWATER TREATMENT UNIT
- PROPOSED PLUNGE POOL & OUTFALL
- PROPOSED STORM EASEMENT
- PROPOSED ELEVATION (61.97)
- PROPOSED GRADE AND DIRECTION (4.0%)
- MAXIMUM 2:1 SIDELSOPE
- MAJOR OVERLAND FLOW ROUTE
- PROPOSED FENCELINE
- EXISTING GROUND SURFACE CONTOUR (MAJOR/MINOR) (61.00)
- PROPOSED SILT FENCE PER OPSD 219.110
- PROPOSED TURBIDITY CURTAIN AS PER OPSD 219.260
- PROPOSED MULTI-USE PATHWAY

TABLE 1: RIVERSTONE GRADATION	
% PASSING	STONE DIAMETER (mm)
100	450
85	400
50	300
30	200
15	GRANULAR "A"

NOTE:

* LIGHT COMPACTION EQUIPMENT & NOMINAL LEVELS OF COMPACTION EFFORT WITHIN 2.0m OF EXISTING 1350mmØ SANITARY PIPE

** NO PROOF ROLLING/COMPACTION DIRECTLY OVER EXISTING 1350mmØ SANITARY PIPE

REFER TO 114025-N&L FOR ADDITIONAL NOTES

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
7.	ISSUED FOR ORDERING OF MATERIAL	JUNE 14/16	JAG
6.	REVISED AS PER CITY COMMENTS & ISSUED FOR E,C,A,	MAY 24/16	JAG
5.	ISSUED FOR TENDER	APR 20/16	JAG
4.	REVISED AS PER CITY COMMENTS	APR 13/16	JAG
3.	REVISED AS PER CITY STORM OUTFALL COMMENTS #2	MAR 11/16	JAG
2.	REVISED AS PER CITY STORM OUTFALL COMMENTS	FEB 25/16	JAG
1.	ISSUED FOR CITY OF OTTAWA REVIEW	DEC 18/15	JAG

SCALE
1:100 HORIZONTAL
1:100 VERTICAL
1:100 (0 1 2 3 4)

DESIGN DDB
CHECKED DDB
DRAWN BET
CHECKED DDB
APPROVED JGR

FOR REVIEW ONLY

REGISTERED PROFESSIONAL ENGINEER J.G. RIDDELL PROVINCE OF ONTARIO

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

CITY OF OTTAWA
GREYSTONE VILLAGE
175 MAIN STREET

DRAWING NAME
STORM OUTLET
PLAN AND PROFILE &
GRADING, EROSION AND
SEDIMENT CONTROL PLAN
STATION 0+000 TO 0+050

PROJECT No. 114025-00
REV REV # 7
DRAWING No. 114025-PR9

I:\projects\2015\nova\2015141\114025\CAD\Design\Figures\STM\114025-PR9.dwg, PR # (B1), Jun 17, 2016 - 10:33am, mmckeough

PLAMP1.DVG - 1088mmx597mm

RIDEAU VALLEY
CONSERVATION AUTHORITY

3889 Rideau Valley Drive, P.O. Box 599, Manotick, ON K4M 1A5
tel 613-692-3571 | 1-800-267-3504 | fax 613-692-0831 | www.rvca.ca

A member of Conservation Ontario

LETTER OF PERMISSION – ONT. REG. 174/06, SECTION 28 CONSERVATION AUTHORITIES ACT 1990, AS AMENDED.

Date: 21 April, 2017.
File: RV3-08/17
Contact: Hal Stimson
(613) 692-3571 Ext 1127
hal.stimson@rvca.ca

Mr. David Kardish
Greystone Village Inc.
c/o The Regional Group
1737 Woodward Dr.
Ottawa, Ontario
K2C 0P9

Permit for development under Section 28 of the Conservation Authorities Act for storm water outlet and soil remediation in a regulated area at Lot Part H Concession D (old Nepean Township) City of Ottawa known municipally as 175 Main Street

Dear Mr. Kardish

The Rideau Valley Conservation Authority has reviewed your application on behalf of Regional Group and understands the proposal to be for: 1) the installation of a new 750 mm diameter concrete stormwater outlet pipe including headwall and river stone plunge pool discharging to the Rideau River east of the intersection of Oblate Avenue and Scholastic Drive and including a compensatory cut of fill previously approved.2) removal and replacement of contaminated soil in the RVCA regulated area with existing grades to be re-established.

This proposal was reviewed under Ontario Regulation 174/06, the "*Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*" regulation and is approved in an amended form noting that the construction of buildings request (lots 12 and 13) will need to form a separate application pending registration of the lots and verification of appropriate flood proofing measures in the final building design.

PERMISSION AND CONDITIONS

By this letter the Rideau Valley Conservation Authority hereby grants you approval to undertake this project as outlined in your permit application but subject to the following conditions:

1. Approval is subject to the understanding of the project as described above and outlined in the application and submitted plans including:
   - Drawing No. 114025-PR6-B for Project No. 114025-00 titled Plan and Profile Phase 2 and 3 Storm Outlet 2 (Incl. Grading, Erosion and Sediment Control) Station 0+000 to 0+54, dated Nov 21/16, revision No. 1, as prepared by Novatech Engineering and stamped by J. G. Riddell, P. Eng.
   - Drawing No. 114025-GR3-B for Project No. 114025-00 titled Grading, Erosion and Sediment Control Plan Phase 2 and 3, dated Nov 21/16, revision No. 1, as prepared by Novatech Engineering and stamped by J. G. Riddell, P. Eng.
   - Drawing No. 114025-GP3-B for Project No. 114025-00 titled General Plan of Services Phase 2 and 3, dated Nov 21/16, revision No. 1, as prepared by Novatech Engineering.
   - Drawing No. 114025-LG-B for Project No. 114025-00 titled RVCA Remediation Permit Plan, dated Feb 13/17, revision No. 1, as prepared by Novatech Engineering.
   - Technical memorandum for project 14-1122-0005 dated February 3, 2017 from Susan Trickey, P. Eng. of Golder Associates.

   No conditions are subject to change/revision by the on-site contractor(s).

2. **<u>There will be no in-water works between March 15 and July 1, of any given year</u> to protect local aquatic species populations during their spawning and nursery time periods.**

3. No encroachment for fill remediation purposes is to occur within 15m of the top of the river bank. Construction access fencing should be installed to clearly demarcate the construction access limits.

4. All grades within the 30m setback are to be restored to existing and stabilized upon completion of the remediation work.

5. It is recommended that you retain the services of an engineer to conduct on-site inspections to ensure adequacy of the work, verify stability of the final grade and confirm all imported fill is of a suitable type and has been adequately placed and compacted and that the recommendations of the geotechnical technical memorandum are followed.

6. **A De-watering Plan and Sediment and Erosion Control Plan must be submitted by the contractor to this office for review prior to construction activities commencing on the storm outlet.**

7. It is recommended that you ensure your contractor(s) are provided with a copy of this letter so as to ensure compliance with the conditions listed herein.

8. All disturbed soil areas must be appropriately stabilized to prevent erosion.

9. Any excess excavated material, as a result of the work, must be disposed of in a suitable location outside any regulatory floodplain and fill regulated area. No changes to area grades are to occur as a result of the work.

10. A final as built grading plan shall be submitted immediately upon completion of the approved works prepared by an Ontario Land Surveyor or Professional Engineer licensed to practice in Ontario indicating that grades achieved on the site conform to those indicated on the approved plan. Only clean material free from particulate matter may be placed in the water.

11. Operate machinery from outside the water, or on the water in a manner that minimizes disturbance to the banks or bed of the watercourse. Equipment shall not be cleaned in the watercourse or where wash-water can enter any watercourse. Machinery is to arrive on site in a clean condition and is to be maintained free of fluid leaks.

12. All materials and equipment used for the purpose of site preparation and project completion must be operated (washed, refuelled, and serviced) and all fuel stored in a manner that prevents any deleterious substance (e.g. petroleum products, silt, debris etc.) from entering any watercourse.

13. Any stockpiled materials shall be stored and stabilized away from the water.

14. Work in water shall not be conducted at times when flows are elevated due to local rain events, storms or seasonal floods.

15. Sediment barriers should be used on site in an appropriate method according to the Ontario Provincial Standard Specifications (OPSS) for silt barriers as a minimum. If the sediment and erosion control methods include silt fence it should be placed along the shoreline to prevent overland flow on disturbed areas from entering the watercourse. Soil type, slope of land, drainage area, weather, predicted sediment load and deposition should be considered when selecting the type of sediment/erosion control.

16. Sediment and erosion control measures shall be in place before any excavation or construction works commence. All sediment/erosion control measures are to be monitored regularly by experienced personnel and maintained as necessary to ensure good working order. In the event that the erosion and sedimentation control measures are deemed not to be performing adequately, the contractor shall undertake immediate additional measures as appropriate to the situation to the satisfaction of the Conservation Authority.

17. Develop a response plan that is to be implemented immediately in the event of flooding, a sediment release or spill of a deleterious substance. This plan is to include measures to: a) stop work, contain sediment-laden water and other deleterious substances and prevent their further migration into the watercourse and downstream receiving watercourses; b) notify the RVCA and all applicable authorities in the area c) promptly clean-up and appropriately dispose of the sediment-laden water and deleterious

substances; and d) ensure clean-up measures are suitably applied so as not to result in further alteration of the bed and/or banks of the watercourse.

18. The owner is ultimately responsible for failure to comply with any and/or all of these conditions and must take all precautions to ensure no sediment runoff from the work site into any watercourse during and after the construction period. Failure to comply with the approval and/or conditions of this letter will result in the permit being revoked and may also result in legal action being initiated to resolve the matter to the Conservation Authority's satisfaction.

19. The applicant agrees that Authority staff may visit the subject property, before, during and after project completion, to ensure compliance with the conditions as set out in this letter of permission.

20. A new application must be submitted should any work as specified in this letter be ongoing or planned for or after April 25, 2019.

21. That the Authority be given twenty-four hours notice prior to the start of construction and within twenty-four hours of project completion.

22. All other approvals as might be required from the Municipality, and/or other Provincial or Federal Agencies must be obtained prior to initiation of work. This includes but is not limited to the Endangered Species Act., the Ontario Water Resources Act., Environmental Protection Act., Public Lands Act, and the Fisheries Act.

By this letter the Rideau Valley Conservation Authority assumes no responsibility or liability for any flood, erosion, or slope failure damage which may occur either to your property or the structures on it or if any activity undertaken by you adversely affects the property or interests of adjacent landowners. This letter does not relieve you of the necessity or responsibility for obtaining any other federal, provincial or municipal permits. This permit is not transferable to subsequent property owners.

Should you have any questions regarding this letter, please contact Hal Stimson at our Manotick office.

Terry K. Davidson

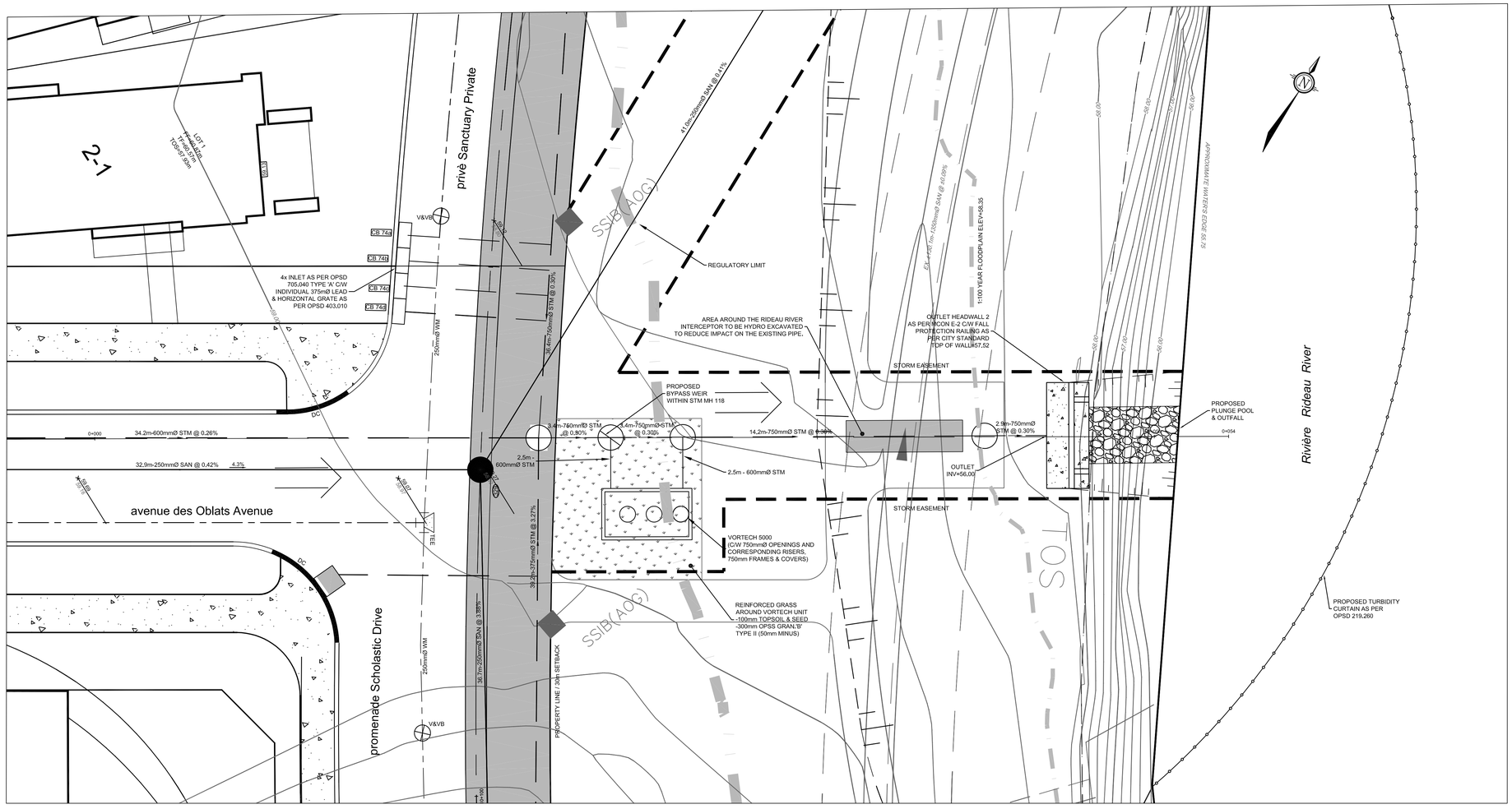
Terry K. Davidson, P. Eng.
Conservation Authority S. 28 Signing delegate
O. Reg. 174/06

Cc: J. Gauthier, E.I.T. Novatech
T. McLaurin, MNRF Kemptville

- Pursuant to the provisions of S. 28(12) of the Conservation Authorities Act (R.S.O.1990, as amended.) any or all of the conditions set out above may be appealed to the Executive Committee of the Conservation Authority in the event that they are not satisfactory or cannot be complied with.
- Failure to comply with the conditions of approval or the scope of the project may result in the cancelling of the permission and/or initiation of legal action under S. 28(16) of the Act.
- This letter of permission does not come into full force and effect until the attached copy of this letter is returned to the Authority offices in Manotick signed and dated which return shall be taken as indicating acceptance of the conditions of the Authority's approval and acknowledgement that the details of the proposal as described in this letter are a fair and accurate representation of the proposed undertaking.

Name: _____ (print)

Signed: _____ Date: _____



LEGEND

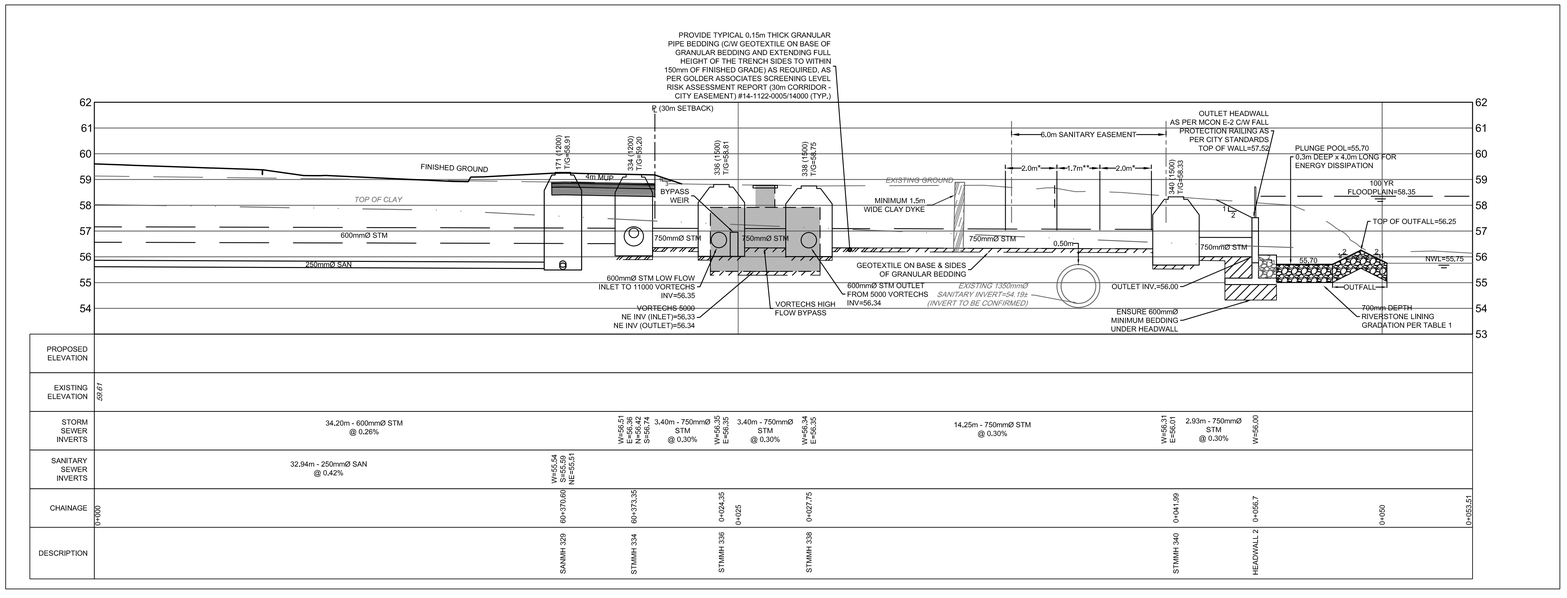
- 200mmØ WM — PROPOSED WATERMAIN AND DIAMETER
- MH — PROPOSED SANITARY MH & SEWER WITH DIRECTION OF FLOW
- MH — PROPOSED STORM MH & SEWER WITH DIRECTION OF FLOW
- PROPOSED CLAY DYKE
- PROPOSED CATCH BASIN LEAD
- CB 14 — PROPOSED ROADSIDE CATCHBASIN
- CB 26 — PROPOSED ROADSIDE CATCH BASIN WITH INLET CONTROL DEVICE
- PROPOSED VORTECHS 11000 STORMWATER TREATMENT UNIT
- PROPOSED PLUNGE POOL & OUTFALL
- PROPOSED STORM EASEMENT
- 61.97 — PROPOSED ELEVATION
- 4.0% — PROPOSED GRADE AND DIRECTION
- MAXIMUM 2:1 SIDELSOPE
- MAJOR OVERLAND FLOW ROUTE
- PROPOSED FENCELINE
- 61.00 — EXISTING GROUND SURFACE CONTOUR (MAJOR/MINOR)
- PROPOSED SILT FENCE PER OPSD 219.110
- PROPOSED TURBIDITY CURTAIN AS PER OPSD 219.260
- PROPOSED MULTI-USE PATHWAY

TABLE 1: RIVERSTONE GRADATION	
% PASSING	STONE DIAMETER (mm)
100	450
85	400
50	300
30	200
15	GRANULAR "A"

NOTE:

★ LIGHT COMPACTION EQUIPMENT & NOMINAL LEVELS OF COMPACTION EFFORT WITHIN 2.0m OF EXISTING 1350mmØ SANITARY PIPE

★★ NO PROOF ROLLING/COMPACTION DIRECTLY OVER EXISTING 1350mmØ SANITARY PIPE



D07-16-15-0001 PHASE 2 AND 3

REFER TO 114025-N&L-B FOR ADDITIONAL NOTES AND CATCHBASIN TABLES

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.

PRELIMINARY
NOT FOR
CONSTRUCTION

No.	REVISION	DATE	BY
1.	ISSUED FOR CITY OF OTTAWA REVIEW	NOV 21/16	JAG

SCALE
1:100 HORIZONTAL
1:100 VERTICAL
1:100
0 1 2 3 4

DESIGN JAG
CHECKED MSP
DRAWN MTM
CHECKED JAG
APPROVED JGR

FOR REVIEW ONLY

REGISTERED PROFESSIONAL ENGINEER J.G. RIDDELL PROVINCE OF ONTARIO

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

CITY OF OTTAWA
GREYSTONE VILLAGE
175 MAIN STREET

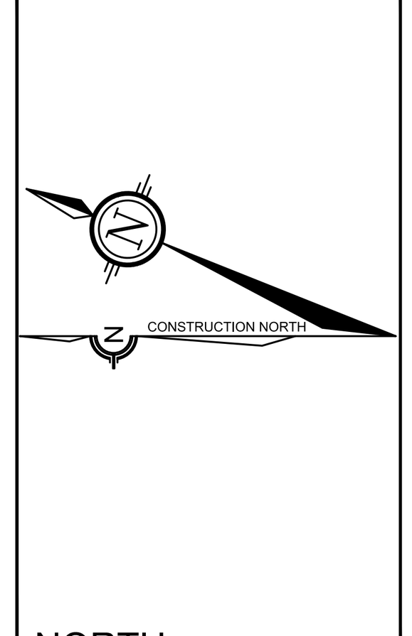
DRAWING NAME
PLAN AND PROFILE
PHASE 2 AND 3
STORM OUTLET 2 (INCL. GRADING, EROSION AND SEDIMENT CONTROL)
STATION 0+000 TO 0+54

PROJECT No. 114025-00
REV REV # 1
DRAWING No. 114025-PR6-B

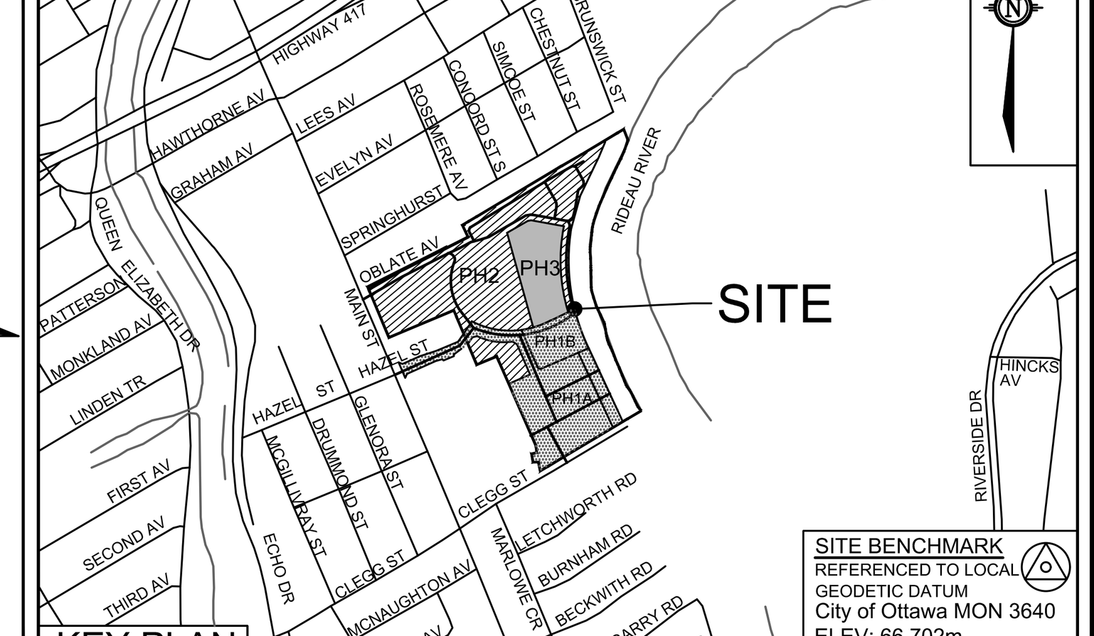
M:\2014\114025\CAD\Design\Phase 2-3\Phase 2 Storm Outlet\114025-PR-6B.dwg, PR 6-B, Nov 22, 2016, 1:250(hm, mmckeough)

PLANBY.DWG - 8383mm/50mm

D07-16-15-0001 PHASE 2 AND 3



NORTH



KEY PLAN
N.T.S.

SITE BENCHMARK
REFERENCED TO LOCAL GEODETIC DATUM
City of Ottawa MON 3640
ELEV: 66.702m
Tablet in stone foundation wall at SPU situated 2.84m west of most westerly of two basement windows and 0.127m above ground.

LEGEND

Symbol	Description
	SITE BOUNDARY
	PHASING LIMITS
63.52 / 63.46	PROPOSED ELEVATION / EXISTING ELEVATION
65.25(S)	PROPOSED SWALE ELEVATION
65.00(T/S)	PROPOSED TOP OF SLOPE
65.50(HP)	PROPOSED HIGH POINT
65.50(T/W) / 63.31(B/W)	PROPOSED TOP OF RETAINING WALL / PROPOSED BOTTOM OF RETAINING WALL
FFE=	FINISHED FLOOR ELEVATION
TF=	TOP OF FOOTING ELEVATION
TOS=	TOP OF SLAB ELEVATION
USF=	UNDERSIDE OF FOOTING ELEVATION
MUSF=	MINIMUM UNDERSIDE OF FOOTING ELEVATION
SD	INDICATES A STANDARD UNIT
L/O	INDICATES A LOOK OUT UNIT
W/O	INDICATES A WALK OUT UNIT
127.55	PROPOSED TERRACE ELEVATION
2.0%	PROPOSED GRADE AND DIRECTION
	MAJOR OVERLAND FLOW ROUTE
	MAXIMUM 3:1 SIDESLOPE
	PROPOSED CENTRELINE SWALE
	PART OF PH.2 OUTLETTING THROUGH PH.1A AT OUTLET 1
	PHASE 1A AND 1B OUTLETTING THOUGH PH.1A AT OUTLET 1
HYD	PROPOSED HYDRANT LOCATION
TF=127.55	PROPOSED TOP OF BOTTOM FLANGE
V&VB	PROPOSED VALVE AND VALVE BOX
101	PROPOSED SANITARY MANHOLE
100	PROPOSED STORM MANHOLE
CB 10	PROPOSED ROADSIDE CATCH BASIN
CB 20	PROPOSED ROADSIDE CATCH BASIN WITH INLET CONTROL DEVICE
RYCB 1 T/G=97.05	PROPOSED REARYARD CATCHBASIN MANHOLE WITH TOP OF GRATE ELEVATION
RYCBMH 1 T/G=97.01	PROPOSED REARYARD CATCHBASIN WITH TOP OF GRATE ELEVATION
RYE-1 T/G=98.67	REAR YARD ELBOW WITH TOP OF GRATE
RYT-1 T/G=98.67	REAR YARD TEE WITH TOP OF GRATE
CMB	PROPOSED COMMUNITY MAIL BOX
	PROPOSED STREET LIGHT
	PROPOSED SERVICE LOCATION (REFER TO DETAIL)

NOTE: SILT FENCE TO BE INSTALLED AROUND ENTIRE SITE. (SEE OPSD 219.110 ON SHEET 114025-D3-B)

REFER TO 114025-N&L-B FOR ADDITIONAL NOTES AND CATCHBASIN TABLES

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.

PRELIMINARY NOT FOR CONSTRUCTION

No.	REVISION	DATE	BY
1.	ISSUED FOR CITY OF OTTAWA REVIEW	NOV 21/16	JAG

SCALE 1:300

DESIGN JAG · CHECKED MSP · DRAWN MTM · CHECKED JAG · APPROVED JGR

FOR REVIEW ONLY

REGISTERED PROFESSIONAL ENGINEER · J.G. RIDDELL · PROVINCE OF ONTARIO

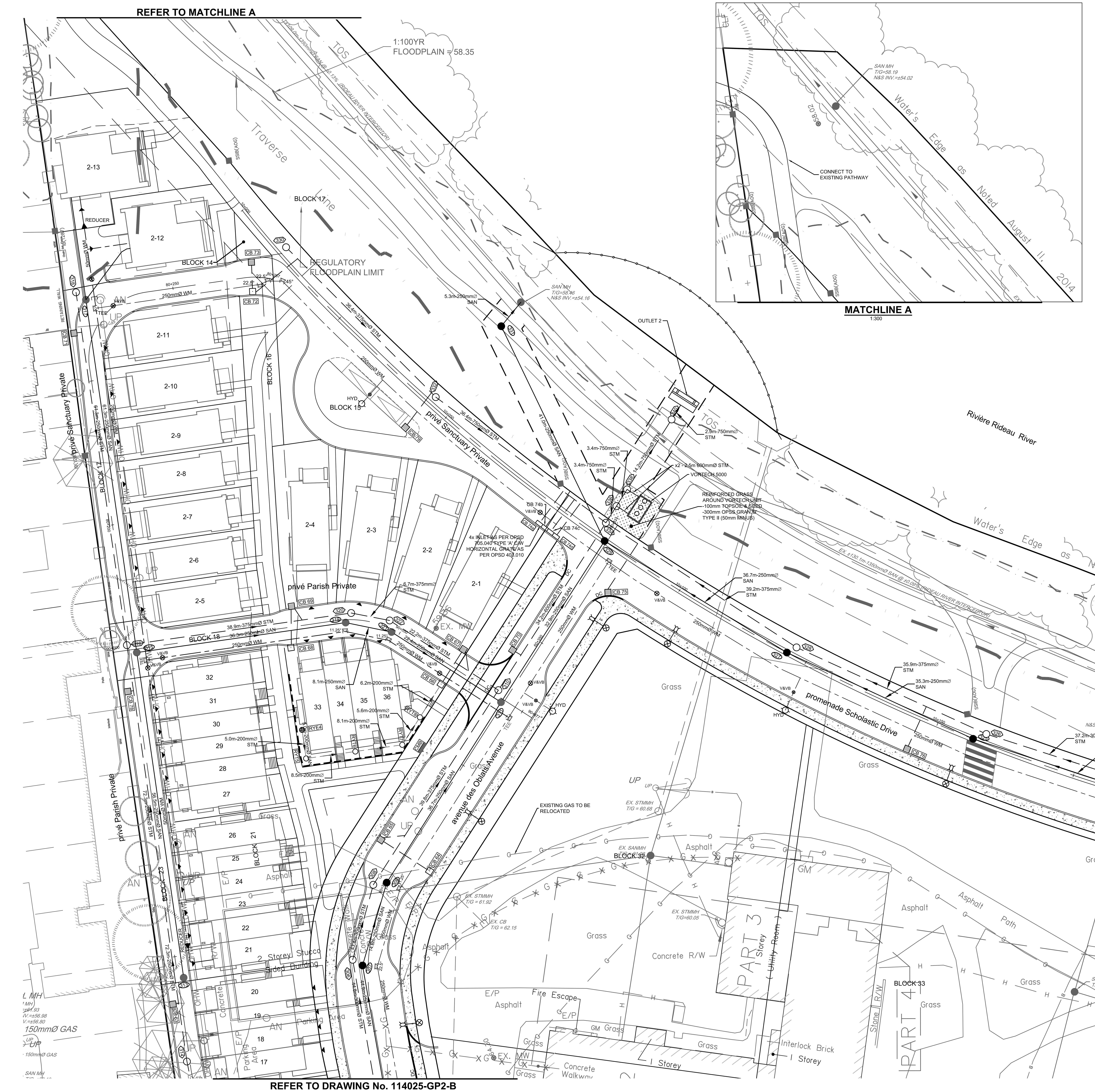
NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

CITY OF OTTAWA
GREYSTONE VILLAGE
175 MAIN STREET

DRAWING NAME
GRADING, EROSION AND SEDIMENT CONTROL PLAN PHASE 2 AND 3

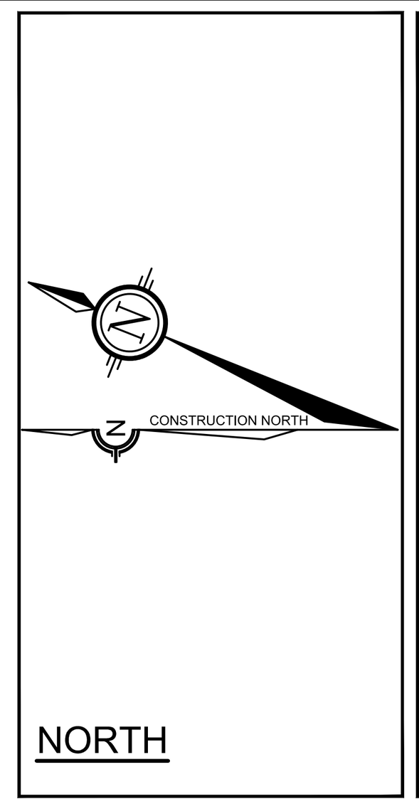
PROJECT No. 114025-00
REV REV # 1
DRAWING No. 114025-GR3-B

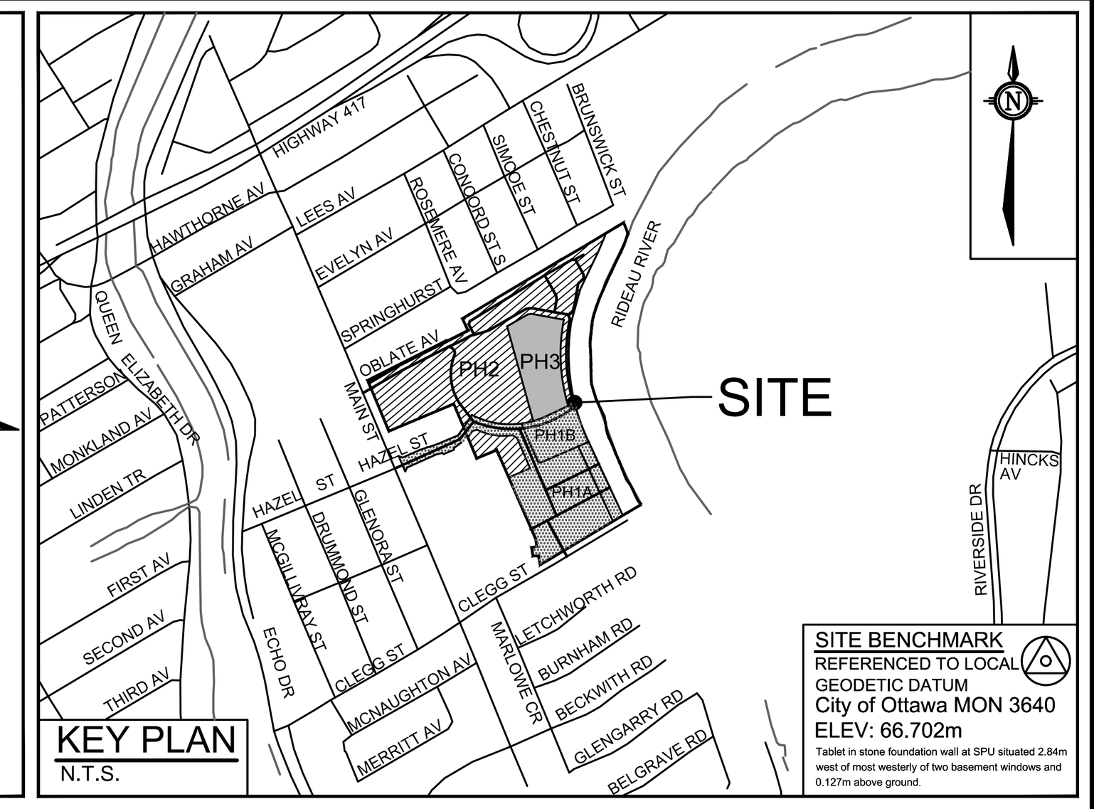
PLANB1.DWG - 1000mmx707mm



CATCHBASIN TABLE				
CB No.	STATION	T/G ELEVATION	INVERT	ICD DIA.
CB 63	80+116.98	62.66	61.06	83mmØ 1:100YR CAPTURE RATE=16L/s
CB 64	60+306.59	61.25	59.71	———
CB 65	60+306.59	61.25	59.60	127mmØ 1:100YR CAPTURE RATE=40L/s
CB 66	90+060.73	60.25	58.51	———
CB 67	90+060.73	60.11	58.43	83mmØ 1:100YR CAPTURE RATE=19L/s
CB 68	90+030.30	60.06	58.46	———
CB 69	90+031.41	59.97	58.38	83mmØ 1:100YR CAPTURE RATE=20L/s
CB 70	60+346.26	59.95	58.25	108mmØ 1:100YR CAPTURE RATE=27L/s
CB 71	80+232.19	58.44	56.84	83mmØ 1:100YR CAPTURE RATE=16L/s
CB 72	80+263.73	58.90	57.54	———
CB 73	80+263.73	59.20	57.60	127mmØ 1:100YR CAPTURE RATE=30L/s
CB 74a	10+073.78	59.00	57.05	375mmØ LEAD 1:100YR CAPTURE RATE=495L/s
CB 74b	10+074.96	59.01	57.51	375mmØ LEAD 1:100YR CAPTURE RATE=495L/s
CB 74c	10+076.14	59.03	57.04	375mmØ LEAD 1:100YR CAPTURE RATE=495L/s
CB 74d	10+077.33	59.06	57.56	375mmØ LEAD 1:100YR CAPTURE RATE=495L/s
CB 75	60+363.05	59.04	57.44	127mmØ 1:100YR CAPTURE RATE=30L/s
CB 76	10+146.90	61.18	59.58	102mmØ 1:100YR CAPTURE RATE=28L/s
CB 77	10+192.63	62.57	60.97	83mmØ 1:100YR CAPTURE RATE=18L/s
CB 78	80+171.29	60.11	58.51	83mmØ 1:100YR CAPTURE RATE=16L/s

REARYARD MANHOLE TABLE			
MANHOLE ID	MANHOLE SIZE	T/G ELEV	INVERT
RYE4	300∅	60.32	SW=59.12
RYT5	300∅	60.15	NE=59.10 SE=59.10
RYT6	300∅	60.12	NW=59.06 SE=59.06
RYT7	300∅	60.15	NW=59.02 E=59.02
RYT8	300∅	60.09	W=58.99 E=58.99





LEGEND

- SITE BOUNDARY
- PHASING LIMITS
- 63.52 / 63.46 — PROPOSED ELEVATION / EXISTING ELEVATION
- 65.25(S) — PROPOSED SWALE ELEVATION
- 65.00(T/S) — PROPOSED TOP OF SLOPE
- 65.50(HP) — PROPOSED HIGH POINT
- 65.50(T/W) / 63.31(B/W) — PROPOSED TOP OF RETAINING WALL / PROPOSED BOTTOM OF RETAINING WALL
- FFE= FINISHED FLOOR ELEVATION
- TF= TOP OF FOOTING ELEVATION
- USF= UNDERSIDE OF FOOTING ELEVATION
- MUSF= MINIMUM UNDERSIDE OF FOOTING ELEVATION
- SD INDICATES A STANDARD UNIT
- L/O INDICATES A LOOK OUT UNIT
- W/O INDICATES A WALK OUT UNIT
- 127.55 — PROPOSED TERRACE ELEVATION
- 2.0% — PROPOSED GRADE AND DIRECTION
- MAJOR OVERLAND FLOW ROUTE
- MAXIMUM 3:1 SIDESLOPE
- PROPOSED CENTRELINE SWALE
- PART OF PH.2 OUTLETTING THROUGH PH.1A AT OUTLET 1
- PHASE 1A AND 1B OUTLETTING THOUGH PH.1A AT OUTLET 1
- HYD — PROPOSED HYDRANT LOCATION
- TF=127.55 — PROPOSED TOP OF BOTTOM FLANGE
- V&VB — PROPOSED VALVE AND VALVE BOX
- 101 — PROPOSED SANITARY MANHOLE
- 100 — PROPOSED STORM MANHOLE
- CB 10 — PROPOSED ROADSIDE CATCH BASIN
- CB 20 — PROPOSED ROADSIDE CATCH BASIN WITH INLET CONTROL DEVICE
- RYCB 1 T/G=97.05 — PROPOSED REARYARD CATCHBASIN MANHOLE WITH TOP OF GRATE ELEVATION
- RYCBMH 1 T/G=97.01 — PROPOSED REARYARD CATCHBASIN WITH TOP OF GRATE ELEVATION
- RYE-1 T/G=98.67 — REAR YARD ELBOW WITH TOP OF GRATE
- RYT-1 T/G=98.67 — REAR YARD TEE WITH TOP OF GRATE
- CMB — PROPOSED COMMUNITY MAIL BOX
- PROPOSED STREET LIGHT
- PROPOSED SERVICE LOCATION (REFER TO DETAIL)

NOTE: SILT FENCE TO BE INSTALLED AROUND ENTIRE SITE. (SEE OPSD 219.110 ON SHEET 114025-D3-B)

D07-16-15-0001 PHASE 2 AND 3

REFER TO 114025-N&L-B FOR ADDITIONAL NOTES AND CATCHBASIN TABLES

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.

PRELIMINARY NOT FOR CONSTRUCTION

No.	REVISION	DATE	BY
1.	ISSUED FOR CITY OF OTTAWA REVIEW	NOV 21/16	JAG

SCALE 1:300

DESIGN JAG
CHECKED MSP
DRAWN MTM
CHECKED JAG
APPROVED JGR

FOR REVIEW ONLY

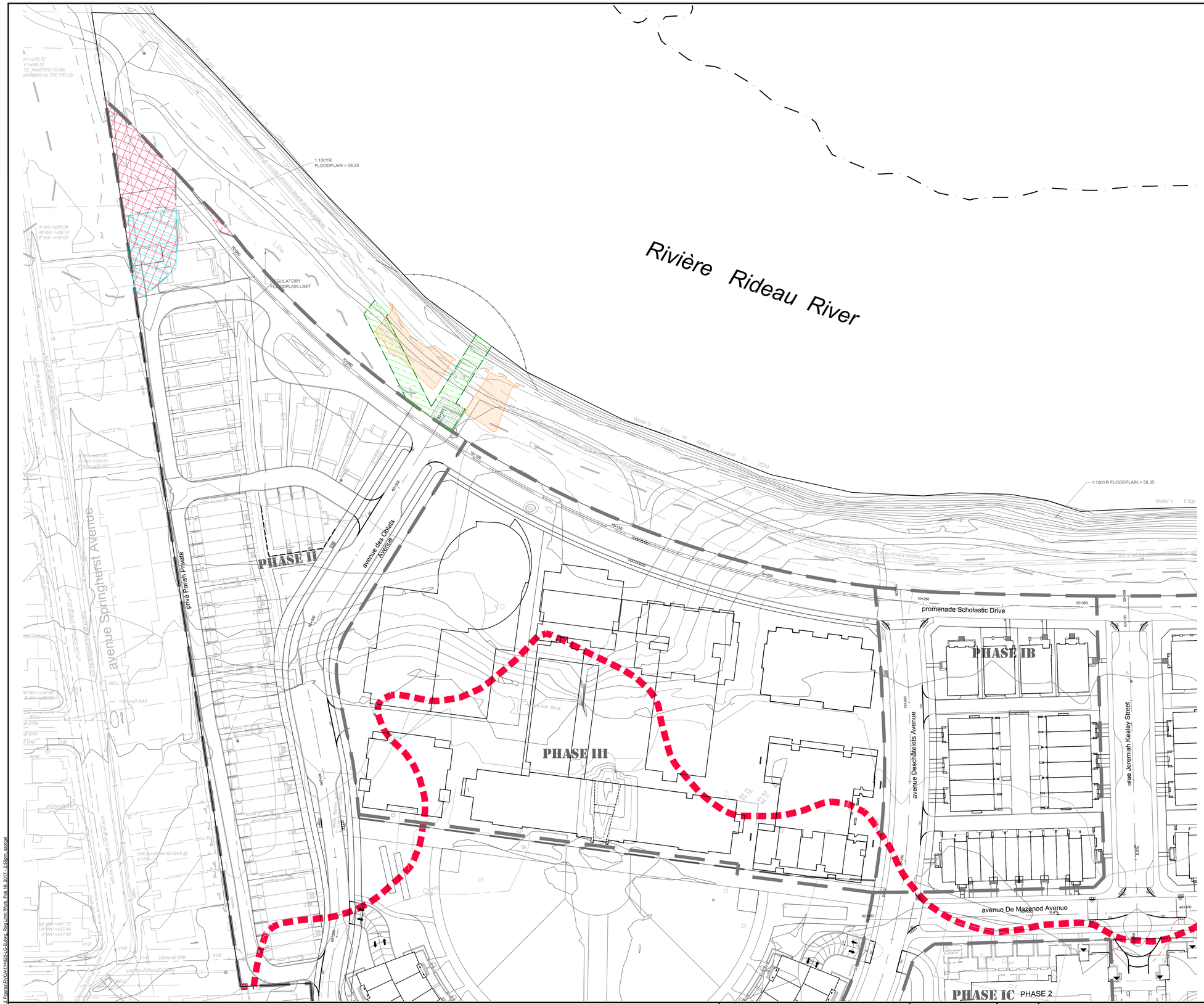
NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

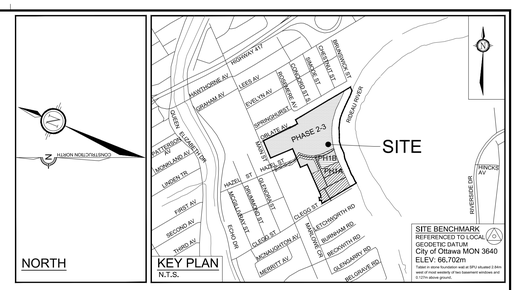
CITY OF OTTAWA
GREYSTONE VILLAGE
175 MAIN STREET

DRAWING NAME
GENERAL PLAN OF SERVICES PHASE 2 AND 3

PROJECT No. 114025-00
REV # 1
DRAWING No. 114025-GP3-B

PLANB1.DWG - 1000mmx707mm
M:\2014\114025\CAD\Design\Phase 2-3\114025-GP-PH2.dwg, GP3, Nov 22, 2016 - 2:45pm, grayton





LEGEND

- SITE BOUNDARY
- PHASING LIMITS
- APPROXIMATE DEBRIS FILL BOUNDARY LIMIT
- 1:100YR FLOODPLAIN LIMIT
- FLOODPLAIN REGULATORY LIMIT
- 61.00 / 60.00 — ORIGINAL GROUND CONTOUR LINE AND CONTOUR ELEVATION
- REMEDIATION AREA REQUIRING A RVCA PERMIT
- RESIDENTIAL DWELLING TO BE CONSTRUCTED REQUIRING A RVCA PERMIT
- STORM AND SANITARY OUTLETS TO BE CONSTRUCTED REQUIRING A RVCA PERMIT
- PREVIOUSLY APPROVED CUT COMPENSATION AREA

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
1.	ISSUED FOR RVCA PERMIT	FEB 13/17	JAG

SCALE 1:500 (1:500, 0 5 10 15 20)

DESIGN JAG
CHECKED MSP
DRAWN RBG
CHECKED JAG
APPROVED JGR

FOR REVIEW ONLY

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

CITY OF OTTAWA
GREYSTONE VILLAGE
175 MAIN STREET

DRAWING NAME
RVCA REMEDIATION PERMIT PLAN (OUTLET WORK, RESIDENTIAL CONSTRUCTION AND PREVIOUSLY APPROVED CUT COMPENSATION LIMITS WITHIN REGULATORY LIMITS)

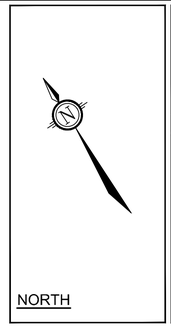
PROJECT No. 114025-00
REV REV # 1
DRAWING No. 114025-LG-B

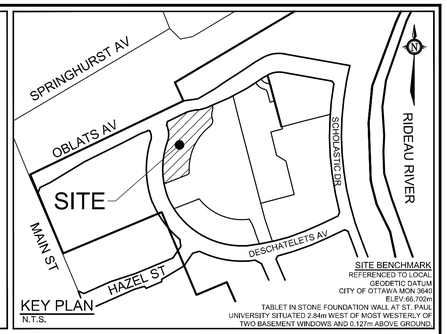
M:\2014\114025\CAD\Design\Figures\Phase 2 Figures\RVCA\114025-LG-B.dwg, Reg Limit Work, Feb 16, 2017 - 2:58pm, scorgel

PLAN81.DWG - 1088mm/597mm

APPENDIX E

Drawings





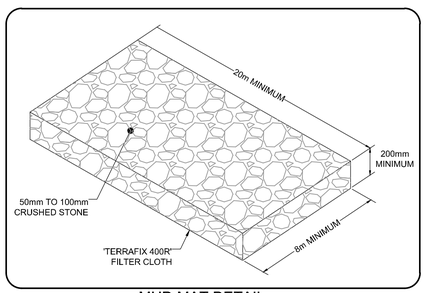
SOURCE REFERENCE:
PLAN OF SUBDIVISION OF PART OF LOT "H" CONCESSION "D" (RIDEAU FRONT), PREPARED BY ANNIS, O-SULLIVAN, VOLLEBEKK LTD. ON DECEMBER 15, 2017. (PLAN 4M-1596)
TOPOGRAPHIC INFORMATION:
HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9
VERTICAL DATUM: CGVD28:78
1. *DRAFT PLAN OF SUBDIVISION OF PART OF LOT "H" CONCESSION "D" (RIDEAU FRONT), PREPARED BY ANNIS, O-SULLIVAN, VOLLEBEKK LTD (2015)*
2. *NOVATECH TOPOGRAPHIC SURVEY, APRIL 2024*

LEGEND

- PROPERTY LINE
- MUD MAT
- BOREHOLE
- SILT FENCE PER OPSD 219.110
- TERRAFIX SILT SOXX/SILT SACK (OR APPROVED EQUIVALENT INLET PROTECTION) INSTALLED AT CATCH BASIN
- TREE PROTECTION FENCING
- EXISTING CONTOUR LINES AND ELEVATIONS (92.50, 92.00, 91.50)
- EXISTING SANITARY MANHOLE
- EXISTING STORM MANHOLE
- EXISTING CATCHBASIN
- LAND TO BE TRANSFERRED TO THE CITY

EROSION AND SEDIMENT CONTROL NOTES :

1. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE INSTALLED TO THE SATISFACTION OF THE ENGINEER, THE MUNICIPALITY AND THE CONSERVATION AUTHORITY. THEY ARE TO BE APPROPRIATE TO THE SITE CONDITIONS, INSTALLED PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.) AND DURING ALL PHASES OF SITE PREPARATION AND CONSTRUCTION. THESE PRACTICES ARE TO BE IMPLEMENTED IN ACCORDANCE WITH THE CURRENT BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL AND SHOULD INCLUDE AS A MINIMUM THOSE MEASURES INDICATED ON THE PLAN.
2. TO PREVENT SURFACE EROSION FROM ENTERING THE STORM SYSTEM DURING CONSTRUCTION, TERRAFIX SILT SOXX OR SILT SACKS, OR APPROVED EQUIVALENTS, WILL BE PLACED AROUND/UNDER GRATES OF ALL PROPOSED AND EXISTING CATCHBASINS AND STRUCTURES. A LIGHT DUTY SILT FENCE BARRIER WILL ALSO BE INSTALLED IN SELECTED LOCATIONS SHOWN ON THIS PLAN, AND STRAW BALE BARRIERS WILL BE INSTALLED WITHIN THE OUTLET DITCHES. THESE CONTROL MEASURES WILL REMAIN IN PLACE UNTIL VEGETATION HAS BEEN ESTABLISHED AND CONSTRUCTION COMPLETE.
3. THE SEDIMENT CONTROL MEASURES SHALL ONLY BE REMOVED WHEN, IN THE OPINION OF THE ENGINEER, THE MEASURES ARE NO LONGER REQUIRED. NO CONTROL MEASURES MAY BE PERMANENTLY REMOVED WITHOUT PRIOR AUTHORIZATION FROM THE ENGINEER.
4. THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY ACCIDENTAL DISCHARGES OF SEDIMENT MATERIAL INTO ANY DITCH OR STORM SEWER SYSTEM. APPROPRIATE RESPONSE MEASURES, INCLUDING ANY REPAIRS TO EXISTING CONTROL MEASURES OR THE IMPLEMENTATION OF ADDITIONAL CONTROL MEASURES, SHALL BE CARRIED OUT BY THE CONTRACTOR WITHOUT DELAY.
5. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
6. THE CONTRACTOR SHALL ENSURE PROPER DUST CONTROL IS PROVIDED WITH THE APPLICATION OF WATER (AND IF REQUIRED, CALCIUM CHLORIDE) DURING DRY PERIODS.
7. THE CONTRACTOR SHALL PROTECT ALL SURVEY MONUMENTS.
8. ALL TOPSOIL AND ANY SOFT, WET OR DELETERIOUS MATERIAL SHALL BE REMOVED FROM IMPROVED AREAS UNLESS OTHERWISE DIRECTED BY ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR ADHERING TO ALL LEGISLATION REGARDING REMOVALS, INCLUDING EXCESS SOILS.



MUD MAT DETAIL
N.T.S.

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
4.	REVISED PER CITY COMMENTS	DEC 20/24	TJM
3.	REVISED PER CITY COMMENTS	NOV 29/24	TJM
2.	RE-ISSUED FOR SITE PLAN APPROVAL	OCT 17/24	TJM
1.	ISSUED FOR SITE PLAN APPROVAL	AUG 14/24	TJM

SCALE
1:250
1:250
0 2 4 6 8 10

DESIGN SAM
CHECKED TJM
DRAWN SAM
CHECKED TJM
APPROVED TJM

LICENSED PROFESSIONAL ENGINEER
T. J. MCKAY
100195434
December 20, 2024
PROVINCE OF ONTARIO

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

LOCATION
CITY of OTTAWA
GREYSTONE VILLAGE

DRAWING NAME
BLOCK 29
EROSION, SEDIMENT CONTROL AND REMOVALS PLAN

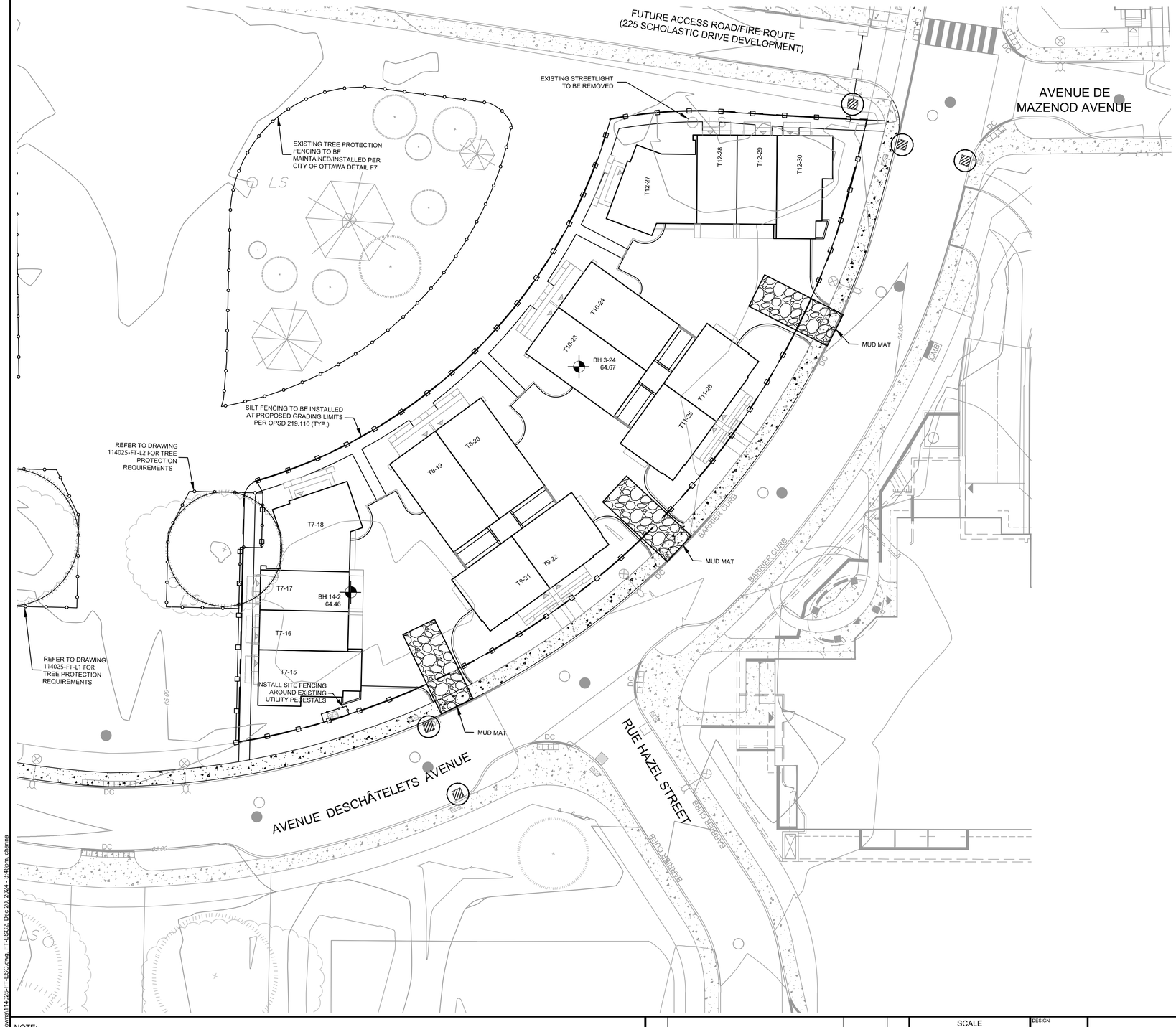
PROJECT No. 114025
REV REV # 4
DRAWING No. 114025-FT-ESC1

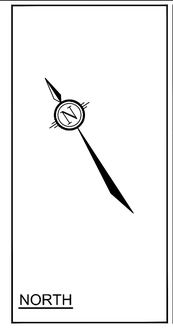
D07-12-24-0130

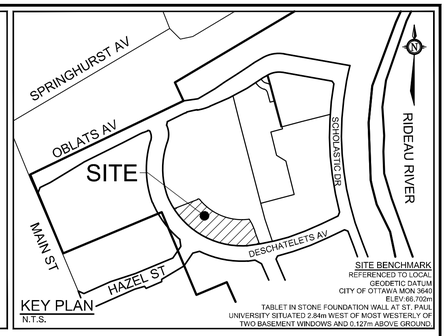
M:\2014\114025\CAD\Design\Forecourt Towns\114025-FT-ESC.dwg FT-ESC1 Dec 20, 2024 - 3:48pm charma

PLEASE DRAW TO SCALE

#19191







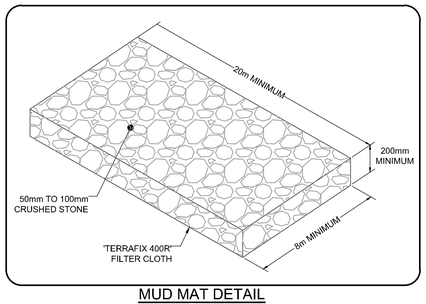
SOURCE REFERENCE:
PLAN OF SUBDIVISION OF PART OF LOT "H" CONCESSION "D" (RIDEAU FRONT), PREPARED BY ANNIS, O-SULLIVAN, VOLLEBEKK LTD. ON DECEMBER 15, 2017. (PLAN 4M-1596)
TOPOGRAPHIC INFORMATION:
HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9
VERTICAL DATUM: CGVD28:78
1. *DRAFT PLAN OF SUBDIVISION OF PART OF LOT "H" CONCESSION "D" (RIDEAU FRONT), PREPARED BY ANNIS, O-SULLIVAN, VOLLEBEKK LTD (2015)*
2. *NOVATECH TOPOGRAPHIC SURVEY, APRIL 2024*

LEGEND

- PROPERTY LINE
- MUD MAT
- BOREHOLE
- SILT FENCE PER OPSD 219.110
- TERRAFIX SILT SOXX/SILT SACK (OR APPROVED EQUIVALENT INLET PROTECTION) INSTALLED AT CATCH BASIN
- TREE PROTECTION FENCING
- EXISTING CONTOUR LINES AND ELEVATIONS (92.50, 92.00, 91.50)
- EXISTING SANITARY MANHOLE
- EXISTING STORM MANHOLE
- EXISTING CATCHBASIN

EROSION AND SEDIMENT CONTROL NOTES :

1. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE INSTALLED TO THE SATISFACTION OF THE ENGINEER, THE MUNICIPALITY AND THE CONSERVATION AUTHORITY. THEY ARE TO BE APPROPRIATE TO THE SITE CONDITIONS, INSTALLED PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.) AND DURING ALL PHASES OF SITE PREPARATION AND CONSTRUCTION. THESE PRACTICES ARE TO BE IMPLEMENTED IN ACCORDANCE WITH THE CURRENT BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL AND SHOULD INCLUDE AS A MINIMUM THOSE MEASURES INDICATED ON THE PLAN.
2. TO PREVENT SURFACE EROSION FROM ENTERING THE STORM SYSTEM DURING CONSTRUCTION, TERRAFIX SILT SOXX OR SILT SACKS, OR APPROVED EQUIVALENTS, WILL BE PLACED AROUND/UNDER GRATES OF ALL PROPOSED AND EXISTING CATCHBASINS AND STRUCTURES. A LIGHT DUTY SILT FENCE BARRIER WILL ALSO BE INSTALLED IN SELECTED LOCATIONS SHOWN ON THIS PLAN, AND STRAW BALE BARRIERS WILL BE INSTALLED WITHIN THE OUTLET DITCHES. THESE CONTROL MEASURES WILL REMAIN IN PLACE UNTIL VEGETATION HAS BEEN ESTABLISHED AND CONSTRUCTION COMPLETE.
3. THE SEDIMENT CONTROL MEASURES SHALL ONLY BE REMOVED WHEN, IN THE OPINION OF THE ENGINEER, THE MEASURES ARE NO LONGER REQUIRED. NO CONTROL MEASURES MAY BE PERMANENTLY REMOVED WITHOUT PRIOR AUTHORIZATION FROM THE ENGINEER.
4. THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY ACCIDENTAL DISCHARGES OF SEDIMENT MATERIAL INTO ANY DITCH OR STORM SEWER SYSTEM. APPROPRIATE RESPONSE MEASURES, INCLUDING ANY REPAIRS TO EXISTING CONTROL MEASURES OR THE IMPLEMENTATION OF ADDITIONAL CONTROL MEASURES, SHALL BE CARRIED OUT BY THE CONTRACTOR WITHOUT DELAY.
5. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
6. THE CONTRACTOR SHALL ENSURE PROPER DUST CONTROL IS PROVIDED WITH THE APPLICATION OF WATER (AND IF REQUIRED, CALCIUM CHLORIDE) DURING DRY PERIODS.
7. THE CONTRACTOR SHALL PROTECT ALL SURVEY MONUMENTS.
8. ALL TOPSOIL AND ANY SOFT, WET OR DELETERIOUS MATERIAL SHALL BE REMOVED FROM IMPROVED AREAS UNLESS OTHERWISE DIRECTED BY ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR ADHERING TO ALL LEGISLATION REGARDING REMOVALS, INCLUDING EXCESS SOILS.



MUD MAT DETAIL
N.T.S.

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
4.	REVISED PER CITY COMMENTS	DEC 20/24	TJM
3.	REVISED PER CITY COMMENTS	NOV 29/24	TJM
2.	RE-ISSUED FOR SITE PLAN APPROVAL	OCT 17/24	TJM
1.	ISSUED FOR SITE PLAN APPROVAL	AUG 14/24	TJM

SCALE
1:250
1:250
0 2 4 6 8 10

DESIGN SAM
CHECKED TJM
DRAWN SAM
CHECKED TJM
APPROVED TJM

LICENSED PROFESSIONAL ENGINEER
T. J. MCKAY
100195434
December 20, 2024
PROVINCE OF ONTARIO

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

LOCATION
CITY of OTTAWA
GREYSTONE VILLAGE

DRAWING NAME
BLOCK 28
EROSION, SEDIMENT CONTROL AND REMOVALS PLAN

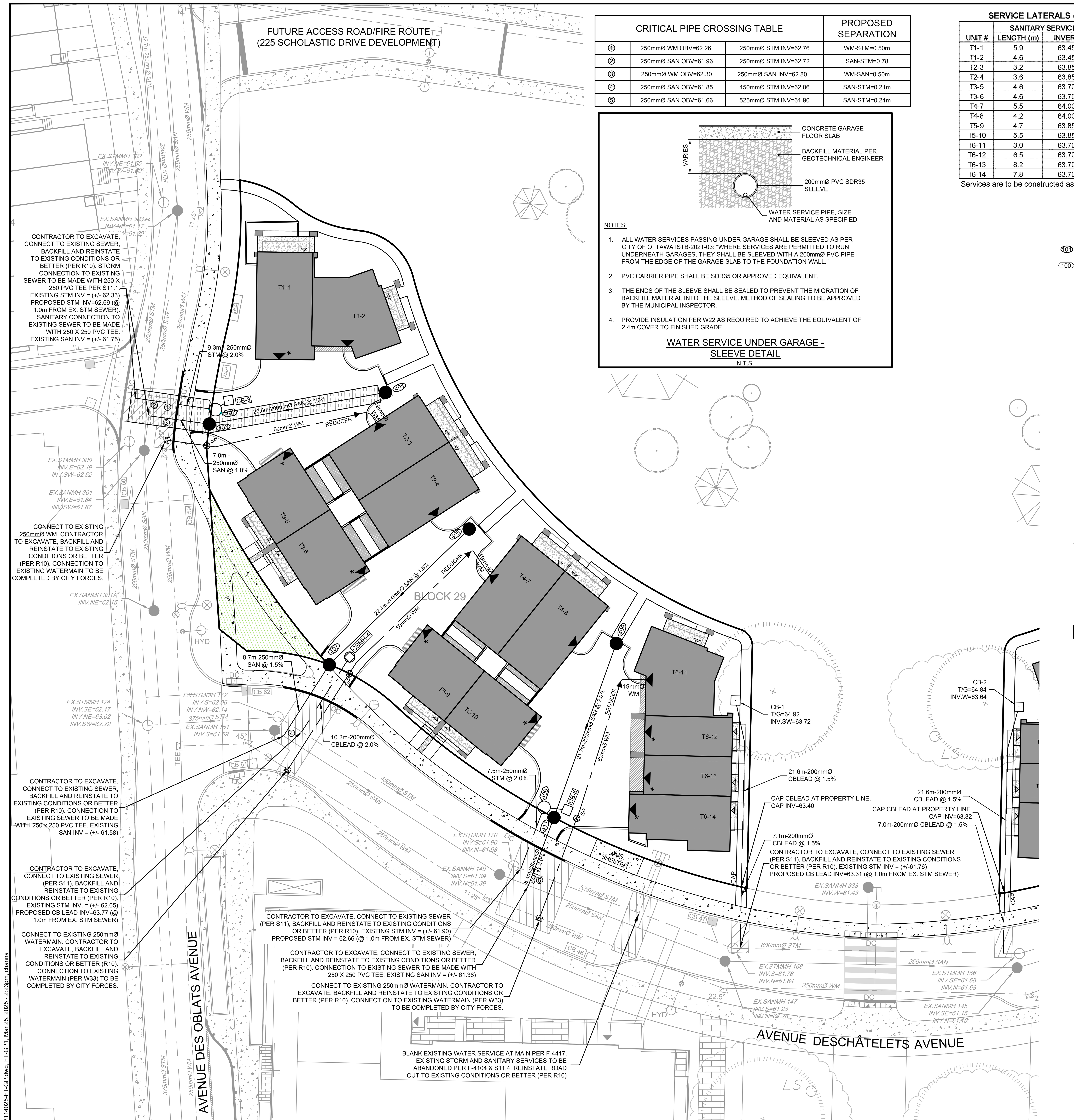
PROJECT No. 114025
REV REV # 4
DRAWING No. 114025-FT-ESC2

D07-12-24-0130

M:\2024\114029\CAD\Design\Forecourt Towns\114025-FT-ESC.dwg, FT-ESC2, Dec 20, 2024 - 3:48pm, charnia

PLEASE CHECK - full measure

#19191



CRITICAL PIPE CROSSING TABLE			PROPOSED SEPARATION
①	250mmØ WM OBV=62.26	250mmØ STM INV=62.76	WM-STM=0.50m
②	250mmØ SAN OBV=61.96	250mmØ STM INV=62.72	SAN-STM=0.78
③	250mmØ WM OBV=62.30	250mmØ SAN INV=62.80	WM-SAN=0.50m
④	250mmØ SAN OBV=61.85	450mmØ STM INV=62.06	SAN-STM=0.21m
⑤	250mmØ SAN OBV=61.66	525mmØ STM INV=61.90	SAN-STM=0.24m

CONCRETE GARAGE FLOOR SLAB
BACKFILL MATERIAL PER GEOTECHNICAL ENGINEER
VARIES
200mmØ PVC SDR35 SLEEVE
WATER SERVICE PIPE, SIZE AND MATERIAL AS SPECIFIED

NOTES:

1. ALL WATER SERVICES PASSING UNDER GARAGE SHALL BE SLEEVED AS PER CITY OF OTTAWA ISTB-2021-03: "WHERE SERVICES ARE PERMITTED TO RUN UNDERNEATH GARAGES, THEY SHALL BE SLEEVED WITH A 200mmØ PVC PIPE FROM THE EDGE OF THE GARAGE SLAB TO THE FOUNDATION WALL."
2. PVC CARRIER PIPE SHALL BE SDR35 OR APPROVED EQUIVALENT.
3. THE ENDS OF THE SLEEVE SHALL BE SEALED TO PREVENT THE MIGRATION OF BACKFILL MATERIAL INTO THE SLEEVE. METHOD OF SEALING TO BE APPROVED BY THE MUNICIPAL INSPECTOR.
4. PROVIDE INSULATION PER W22 AS REQUIRED TO ACHIEVE THE EQUIVALENT OF 2.4m COVER TO FINISHED GRADE.

WATER SERVICE UNDER GARAGE - SLEEVE DETAIL
N.T.S.

SERVICE LATERALS (TO BUILDING FACE)

	SANITARY SERVICE		WATER SERVICE	
UNIT #	LENGTH (m)	INVERT	LENGTH (m)	TOP W/M
T1-1	5.9	63.45	8.2	63.05
T1-2	4.6	63.45	6.4	63.05
T2-3	3.2	63.85	1.4	63.45
T2-4	3.6	63.85	5.6	63.45
T3-5	4.6	63.70	2.3	63.30
T3-6	4.6	63.70	6.6	63.30
T4-7	5.5	64.00	3.5	63.60
T4-8	4.2	64.00	5.8	63.60
T5-9	4.7	63.85	2.7	63.45
T5-10	5.5	63.85	7.6	63.45
T6-11	3.0	63.70	1.2	63.30
T6-12	6.5	63.70	4.6	63.30
T6-13	8.2	63.70	6.0	63.30
T6-14	7.8	63.70	5.4	63.30

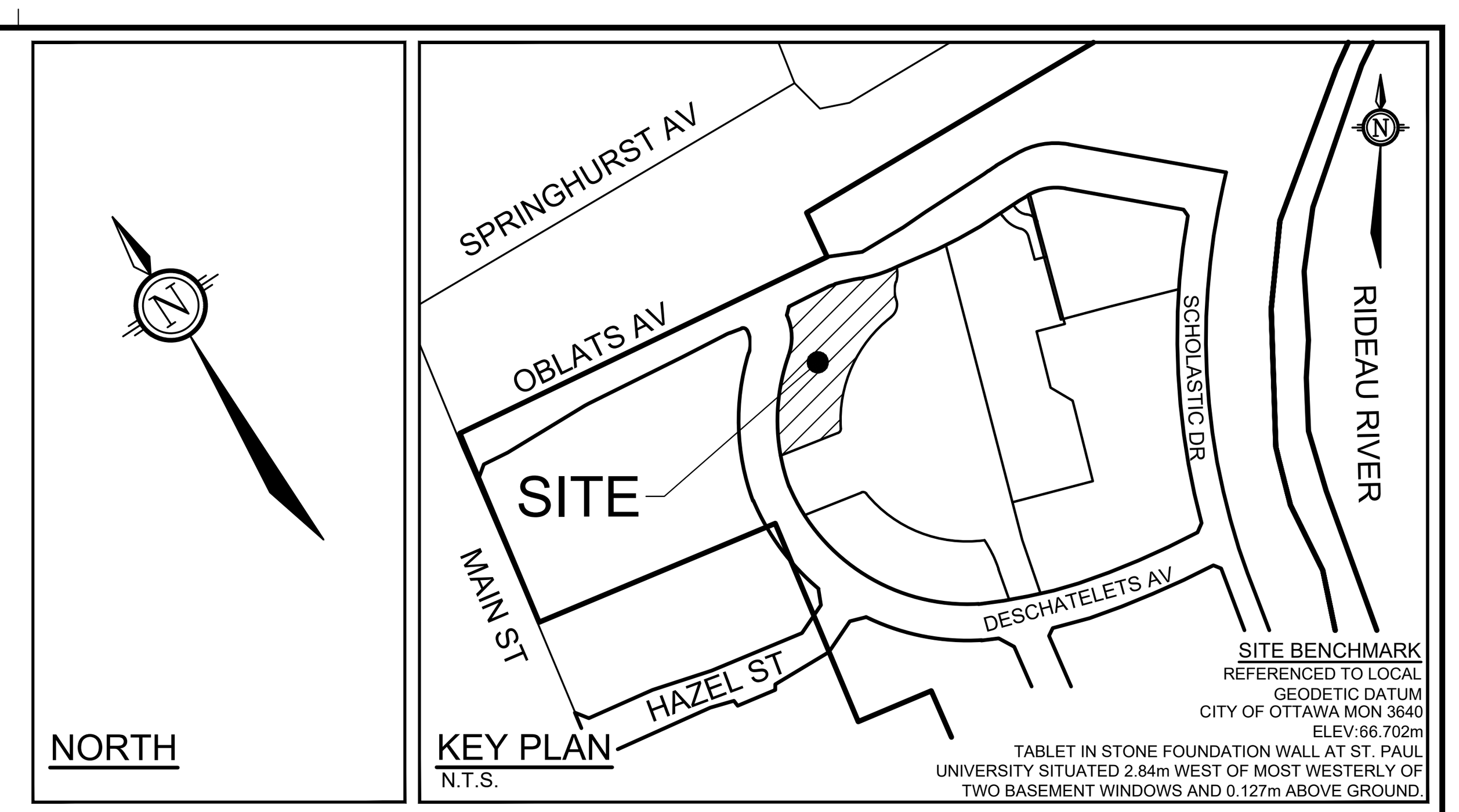
Services are to be constructed as per S11.3.

LEGEND

SITE BOUNDARY
PROPOSED CURB
PROPOSED SANITARY MANHOLE & SEWER
PROPOSED STORM MANHOLE & SEWER
PROPOSED WATERMAIN
PROPOSED CATCHBASIN AND LEAD
PROPOSED CATCHBASIN MANHOLE
PROPOSED DIRECTION OF FLOW
PROPOSED VALVE & VALVE BOX LOCATION
PROPOSED STAND POST LOCATION
PROPOSED SERVICE LOCATION
- SAN - 135mmØ PVC DR28 @ 2.0% (1.0% MIN)
- WATER - 19mmØ PEX

PROPOSED SERVICE LOCATION C/W SLEEVE
- SAN - 135mmØ PVC DR28 @ 2.0% (1.0% MIN)
- WATER - 19mmØ PEX

EXISTING SANITARY MANHOLE & SEWER
EXISTING STORM MANHOLE & SEWER
EXISTING WATERMAIN
EXISTING VALVE AND VALE BOX
EXISTING FIRE HYDRANT C/W LEAD
EXISTING CATCHBASIN
PROPOSED ROAD CUT LIMITS
PROPOSED INSULATION FOR SHALLOW SEWERS AS PER S35
LAND TO BE TRANSFERRED TO THE CITY



SITE BENCHMARK
REFERENCED TO LOCAL GEODETIC DATUM
CITY OF OTTAWA MON 3640
ELEV:66.702m
TABLET IN STONE FOUNDATION WALL AT ST. PAUL UNIVERSITY SITUATED 2.84m WEST OF MOST WESTERLY OF TWO BASEMENT WINDOWS AND 0.127m ABOVE GROUND

SOURCE REFERENCE:
PLAN OF SUBDIVISION OF PART OF LOT "H" CONCESSION "D" (RIDEAU FRONT), PREPARED BY ANNIS, O-SULLIVAN, VOLLEBEKK LTD. ON DECEMBER 15, 2017. (PLAN 4M-1596)
TOPOGRAPHIC INFORMATION:
HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9
VERTICAL DATUM: CGVD28:78
1. DRAFT PLAN OF SUBDIVISION OF PART OF LOT "H" CONCESSION "D" (RIDEAU FRONT), PREPARED BY ANNIS, O-SULLIVAN, VOLLEBEKK LTD (2015)
2. NOVATECH TOPOGRAPHIC SURVEY, APRIL 2024

GENERAL NOTES:

1. DIMENSIONS AND LAYOUT INFORMATION SHALL BE CONFIRMED PRIOR TO START OF CONSTRUCTION.
2. THE ORIGINAL TOPOGRAPHY AND GROUND ELEVATIONS, SERVICING AND SURVEY INFORMATION SHOWN ON THIS PLAN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF ALL INFORMATION OBTAINED FROM THIS PLAN. PRIOR TO COMMENCING ANY ON SITE SERVICING THE CONTRACTOR SHALL VERIFY THE ELEVATIONS OF THE EXISTING SEWERS, WATERMAINS AND UTILITIES IN THE OBLATS AVENUE AND DESCHÂTELETS AVENUE RIGHT OF WAY.
3. CO-ORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
4. BEFORE COMMENCING CONSTRUCTION, PROVIDE PROOF OF COMPREHENSIVE ALL RISK AND OPERATIONAL LIABILITY INSURANCE. INSURANCE POLICY TO NAME THE OWNER, ENGINEER AND THE CITY AS CO-INSURED.
5. CONNECT TO EXISTING SYSTEMS AS DETAILED, INCLUDING ALL RESTORATION WORK NECESSARY TO REINSTATE SURFACES TO EXISTING CONDITIONS OR BETTER.
6. 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 THESE DRAWINGS.
7. OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS BEFORE COMMENCING CONSTRUCTION.
8. RESTORE ALL TRENCHES AND SURFACE FEATURES TO EXISTING CONDITIONS OR BETTER AND TO THE SATISFACTION OF MUNICIPAL AUTHORITIES.
9. REMOVE FROM SITE ALL DEBRIS AND EXCESS EXCAVATED MATERIAL UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER.
10. ALL ELEVATIONS ARE GEODETIC AND UTILIZE METRIC UNITS.
11. REFER TO STRUCTURAL PLANS FOR UNDERSIDE OF FOOTING AND TOP OF FOUNDATION INFORMATION.
12. REFER TO GEOTECHNICAL INVESTIGATION PG6948-1 (DATED FEBRUARY 1, 2024), PREPARED BY PATERSON GROUP
13. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A MARKED UP COPY OF THE 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.
14. ALL WORK TO BE CONSTRUCTED TO CITY OF OTTAWA AND ONTARIO PROVINCIAL STANDARDS.
15. ALL UNITS ARE PROPOSED TO BE SLAB ON GRADE (I.E. NO BASEMENTS).

SEWER NOTES:

1. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
CATCHBASIN (600x600mm)	705.010	OPSD
STORM / SANITARY MAINTENANCE HOLE (1200Ø)	701.010	OPSD
STORM / SANITARY MH FRAME & COVER	S24.1 / S24 & S25	CITY OF OTTAWA
STORM SEWER	PVC SDR 35	
SANITARY SEWER	PVC SDR 35	
CATCHBASIN LEAD	PVC SDR 35	
SEWER TRENCH	S6	CITY OF OTTAWA
SANITARY SERVICES	PVC SDR28 (S11.3)	CITY OF OTTAWA
CBMH FRAME & COVER	S25 & S28.1	CITY OF OTTAWA
CB FRAME & COVER	S19	CITY OF OTTAWA

2. ALL CATCHBASIN AND CATCHBASIN MAINTENANCE LEADS ARE TO BE 200mm DIA. PVC SDR 35 AT 2% SLOPE UNLESS OTHERWISE SPECIFIED ON THE DRAWING.
3. INSULATE ALL PIPES (SAN/STM) THAT HAVE LESS THAN 2.0m COVER AS PER THE INSULATION DETAIL FOR SHALLOW SEWERS AS PER DETAIL S35.
4. SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM BUILDING FACE AT 2.0% SLOPE (1.0% MINIMUM). SERVICES TO BE CONNECTED TO MAINLINE SEWER AS PER CITY OF OTTAWA S11.1.
5. PIPE BEDDING AND COVER ARE TO BE COMPACTED TO AT LEAST 98% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. THE COVER MATERIAL SHALL CONSIST OF OPSS GRANULAR 'A' AND SHOULD EXTEND FROM THE SPRING LINE OF THE PIPE TO AT LEAST 300mm ABOVE THE OBVERT OF THE PIPE.
6. SANITARY PIPE TO BE IPEX SDR 35 OR EQUIVALENT WITH JOINT PRESSURE RATING OF 345kPA MINIMUM. WHERE PRIVATE SANITARY SEWER DOES NOT HAVE 2.5m CLEARANCE TO THE WATERMAIN, THE CONTRACTOR SHALL COMPLETE PRESSURE TESTING OF THE SANITARY SEWER TO CONFIRM THE 345kPa (min.) PRESSURE RATING OF THE SANITARY PIPE. TESTING TO BE COMPLETED PRIOR TO SANITARY LATERAL INSTALLATIONS
7. THE SITE SERVICING CONTRACTOR SHALL PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.07.16 AND 407.07.24. DYE TESTING IS TO BE COMPLETED ON ALL SANITARY AND STORM SERVICES TO CONFIRM PROPER CONNECTION TO THE SEWER MAINS. THE FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER.
8. STORM MAINTENANCE HOLES SHALL HAVE 300mm SUMPS AND CATCHBASIN MAINTENANCE HOLES SHALL HAVE 600mm SUMPS UNLESS OTHERWISE INDICATED.
9. 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.
10. CONTRACTOR SHALL OBTAIN A VIDEO INSPECTION OF THE CITY SEWER SYSTEM WITHIN OBLATS AVENUE AND DESCHÂTELETS AVENUE RIGHT OF WAY UPON COMPLETION OF CONSTRUCTION TO DETERMINE IF THE CITY SEWER SYSTEM SUSTAINED ANY DAMAGES AS A RESULT OF CONSTRUCTION ON THE LANDS.
11. STORM SERVICES ARE NOT REQUIRED AS UNITS ARE SLAB ON GRADE CONSTRUCTION WITH NO BASEMENTS. REFER TO THE FOUNDATION DRAINAGE REVIEW GEOTECHNICAL MEMORANDUM, PG6948-MEMO.04. DATED MARCH 18, 2025 BY PATERSON GROUP.

WATERMAIN NOTES:

1. GENERAL:

ITEM	DETAIL. No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22	CITY OF OTTAWA
WATERMAIN CROSSING BELOW SEWER / OVER SEWER	W25 / W25.2	CITY OF OTTAWA
WATER SERVICE: 19mm PEX SDR9CTS	W26	CITY OF OTTAWA
WATERMAIN: 50mm PEX SDR9CTS	W33	CITY OF OTTAWA

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 SHALL BE PERFORMED BY CITY OFFICIALS.
3. WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE UNLESS OTHERWISE INDICATED. CONTRACTOR TO SUPPLY AND INSTALL INSULATION AS PER W22 FOR ALL WATERMAIN LESS THAN 2.4m BELOW GRADE.
4. PROVIDE MINIMUM CLEARANCE BETWEEN OUTSIDE OF PIPES AT ALL CROSSINGS PER W25 (0.50m) AND W25.2 (0.25m).
5. WATER SERVICES ARE TO BE INSTALLED 1.0m FROM THE BUILDING FACE, WITH 15m OF PIPE LEFT COILED
6. CURB STOPS ARE TO BE LOCATED 2.0m FROM THE FOUNDATION WALL WHEREVER POSSIBLE
7. WATERMAINS LOCATED WITHIN 2.4m FROM OPEN STRUCTURES ARE TO BE INSULATED AS PER CITY OF OTTAWA STANDARD DETAIL W23

SAN MANHOLE TABLE

MANHOLE ID	SIZE (mm)	T/G ELEV (m)	INVERT (m)
401 [2.]	1200mmØ	65.26	NW=63.10
403	1200mmØ	64.96	SE=62.89 N=62.84
405 [2.]	1200mmØ	65.49	NW=62.78
407 [1.]	1200mmØ	65.21	SE=62.44 W=61.73
409 [2.]	1200mmØ	65.41	W=62.70
411 [1.]	1200mmØ	65.23	E=62.27 W=61.55

1. MAINTENANCE HOLE TO HAVE EXTERNAL DROP STRUCTURE AS PER OPSD 1003.010
2. MAINTENANCE HOLE FRAME AND COVER TO BE WATERTIGHT, "CAMPRESSION" (#41420049W01) BY EJ.

STM MANHOLE TABLE

MANHOLE ID	SIZE (mm)	T/G ELEV (m)	INVERT (m)
402	1200mmØ	64.88	N=62.86 SE=63.60
406	1200mmØ	65.21	W=62.79 S=63.88

CATCHBASIN TABLE

CB ID	SIZE (mm)	T/G ELEV (m)	INVERT (m)	ICD DIA (mm)	100yr CAPTURE RATE (L/s)
CB-1	610 x 610 CB	64.92	SW=63.72	LMF 60	3.7
CB-3	610 x 610 CB	64.84	NW=63.64	83mmØ	16.3
CB-5	610 x 610 CB	65.13	N=63.93	83mmØ	16.2
CBMH-4	1,200 mm dia CBMH	65.15	W=63.95	83mmØ	16.2

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
7.	STORM SERVICES REMOVED	MAR 25/25	TJM
6.	REVISED PER CITY COMMENTS	FEB 19/25	TJM
5.	REVISED PER CITY COMMENTS	DEC 20/24	TJM
4.	REVISED PER CITY COMMENTS	NOV 29/24	TJM
3.	RE-ISSUED FOR SITE PLAN APPROVAL	OCT 17/24	TJM
2.	ISSUED FOR SITE PLAN APPROVAL	AUG 14/24	TJM
1.	ISSUED FOR DISCUSSION	APR 26/24	TJM

SCALE 1:250

DESIGN SAM
CHECKED TJM
DRAWN SAM
CHECKED TJM
APPROVED TJM

LICENSED PROFESSIONAL ENGINEER
T. J. MCKAY
100195434
MARCH 25, 2025
PROVINCE OF ONTARIO

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

LOCATION
CITY of OTTAWA
GREYSTONE VILLAGE

DRAWING NAME
BLOCK 29
GENERAL PLAN OF SERVICES

PROJECT No. 114025
REV REV #7
DRAWING No. 114025-FT-GP1

D07-12-24-0130

#19191

LEGEND

- SITE BOUNDARY
- PROPOSED CURB
- (101) PROPOSED SANITARY MANHOLE & SEWER
- (100) PROPOSED STORM MANHOLE & SEWER
- 50mmØ PROPOSED WATERMAIN
- PROPOSED DIRECTION OF FLOW
- V&VB PROPOSED VALVE & VALVE BOX LOCATION
- SP PROPOSED STAND POST LOCATION
- PROPOSED SERVICE LOCATION
  - SAN - 135mmØ PVC DR28 @ 2.0% (1.0% MIN)
  - WATER - 19mmØ PEX
- PROPOSED SERVICE LOCATION C/W SLEEVE
  - SAN - 135mmØ PVC DR28 @ 2.0% (1.0% MIN)
  - WATER - 19mmØ PEX
- 200mmØ *EXISTING SANITARY MANHOLE & SEWER*
- 250mmØ *EXISTING STORM MANHOLE AND SEWER*
- *EXISTING WATERMAIN*
- VVB *EXISTING VALVE AND VALE BOX*
- HYD *EXISTING FIRE HYDRANT C/W LEAD*
- EX.CB *EXISTING CATCHBASIN*
- PROPOSED ROAD CUT LIMITS

SAN MANHOLE TABLE

MANHOLE ID	SIZE (mm)	T/G ELEV (m)	INVERT (m)
413 [2.]	1200mmØ	65.14	SW=62.44
415 [1.]	1200mmØ	64.76	NE=62.02 SW=61.21
417 [2.]	1200mmØ	64.81	SW=62.10
419 [1.]	1200mmØ	64.52	NE=61.70 SW=61.03
421 [2.]	1200mmØ	64.54	S=61.82
423	1200mmØ	64.09	N=61.38 S=60.95

1. MAINTENANCE HOLE TO HAVE EXTERNAL DROP STRUCTURE AS PER OPSD 1003.010
2. MAINTENANCE HOLE FRAME AND COVER TO BE WATERTIGHT, "CAMPRESSION" (41420049W01) BY EJ.

STM MANHOLE TABLE

MANHOLE ID	SIZE (mm)	T/G ELEV (m)	INVERT (m)
410	1200mmØ	64.76	SW=62.49 SE=63.45
414	1200mmØ	64.27	S=61.90 E=62.77

CATCHBASIN TABLE

CB ID	SIZE (mm)	T/G ELEV (m)	INVERT (m)	ICD DIA (mm)	100yr CAPTURE RATE (L/s)
CB-2	610 x 610 CB	64.84	W=63.64	LMF 60	3.6
CB-6	610 x 610 CB	64.71	NW=63.51	LMF 105	11.5
CB-8	610 x 610 CB	64.05	W=62.83	83mmØ	16.3
CBMH-7	1,200 mm dia CBMH	64.45	SW=63.25	83mmØ	16.2

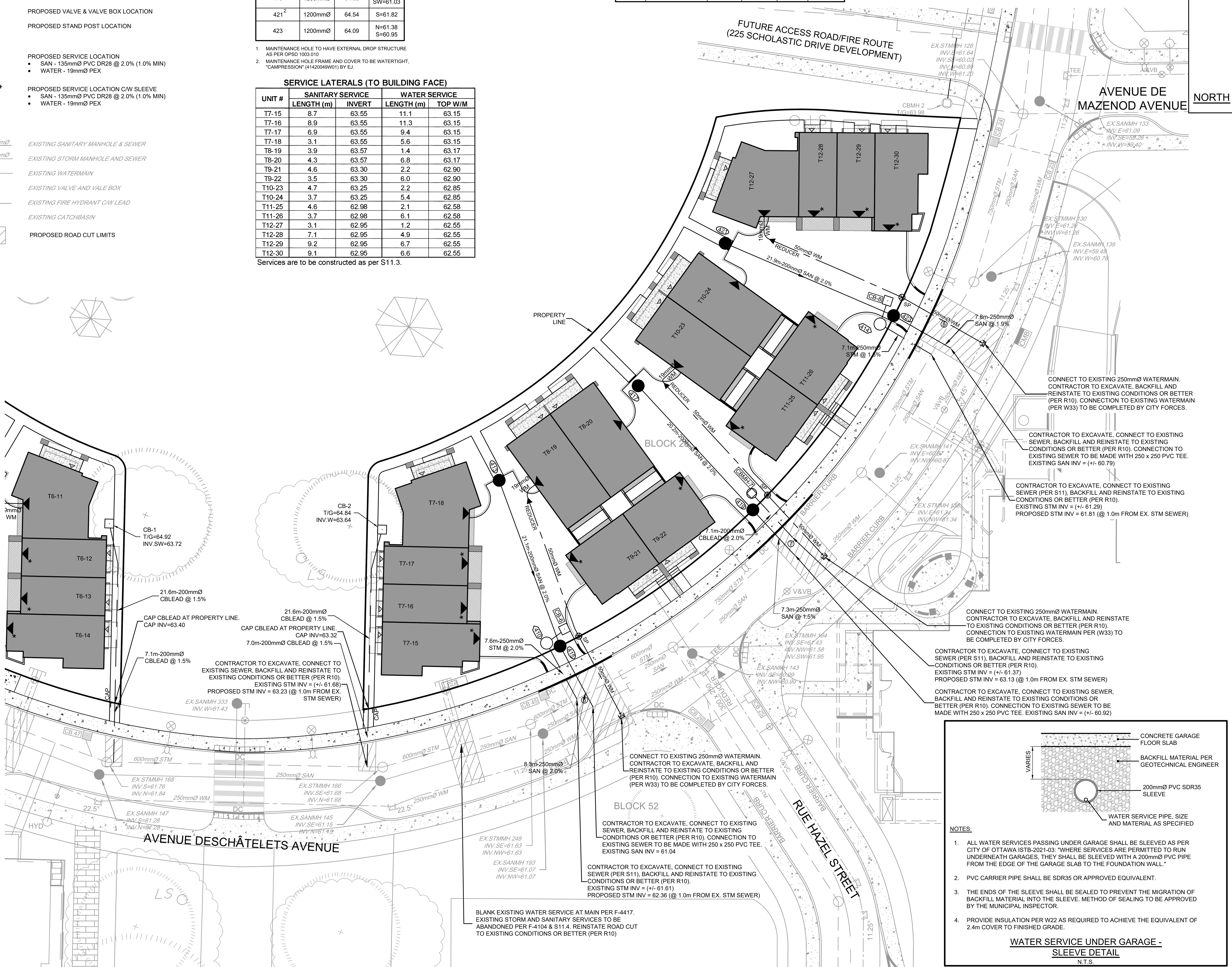
CRITICAL PIPE CROSSING TABLE

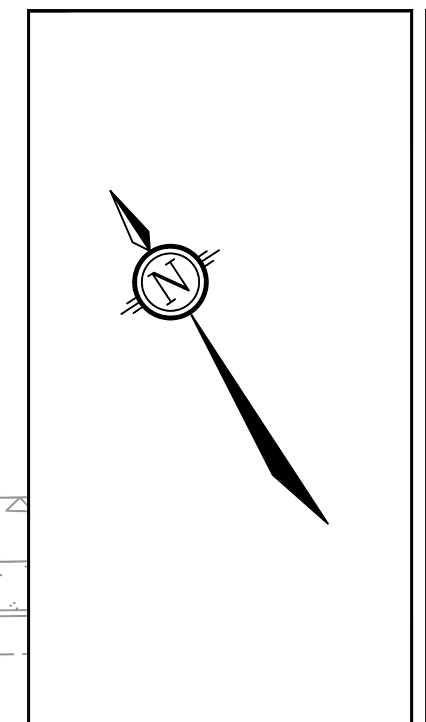
CRITICAL PIPE CROSSING TABLE			PROPOSED SEPARATION
⑥	250mmØ SANOBV=61.32	600mmØ STM INV=61.61	SAN-STM=0.29m
⑦	250mmØ SAN OBV=61.20	750mmØ STM INV=61.38	SAN-STM=0.18m
⑧	250mmØ SAN OBV=61.07	750mmØ STM INV=61.28	SAN-STM=0.21m

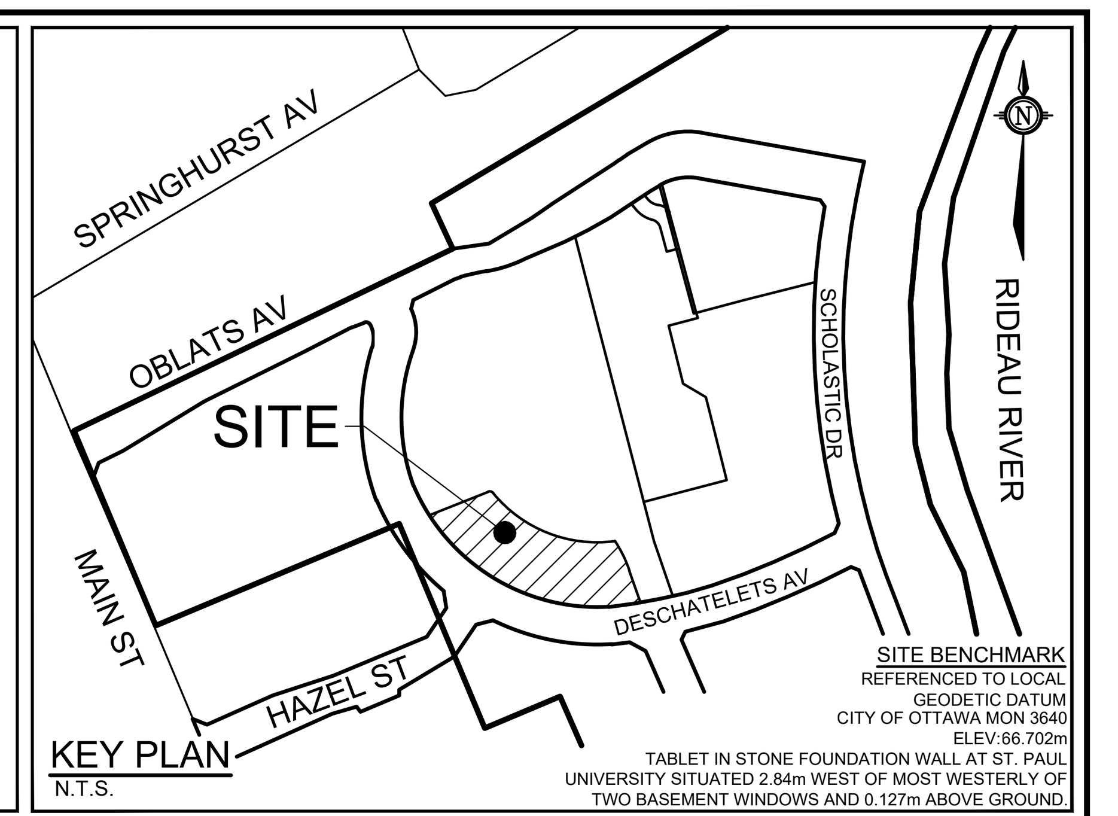
SERVICE LATERALS (TO BUILDING FACE)

UNIT #	SANITARY SERVICE		WATER SERVICE	
	LENGTH (m)	INVERT	LENGTH (m)	TOP W/M
T7-15	8.7	63.55	11.1	63.15
T7-16	8.9	63.55	11.3	63.15
T7-17	6.9	63.55	9.4	63.15
T7-18	3.1	63.55	5.6	63.15
T8-19	3.9	63.57	1.4	63.17
T8-20	4.3	63.57	6.8	63.17
T9-21	4.6	63.30	2.2	62.90
T9-22	3.5	63.30	6.0	62.90
T10-23	4.7	63.25	2.2	62.85
T10-24	3.7	63.25	5.4	62.85
T11-25	4.6	62.98	2.1	62.58
T11-26	3.7	62.98	6.1	62.58
T12-27	3.1	62.95	1.2	62.55
T12-28	7.1	62.95	4.9	62.55
T12-29	9.2	62.95	6.7	62.55
T12-30	9.1	62.95	6.6	62.55

Services are to be constructed as per S11.3.







KEY PLAN
N.T.S.

SITE BENCHMARK
REFERENCED TO LOCAL GEODETIC DATUM
CITY OF OTTAWA MON 3640
ELEV:66.702m
TABLET IN STONE FOUNDATION WALL AT ST. PAUL UNIVERSITY SITUATED 2.84m WEST OF MOST WESTERLY OF TWO BASEMENT WINDOWS AND 0.127m ABOVE GROUND.

SOURCE REFERENCE:
PLAN OF SUBDIVISION OF PART OF LOT "H" CONCESSION "D" (RIDEAU FRONT), PREPARED BY ANNIS, O-SULLIVAN, VOLLEBEKK LTD. ON DECEMBER 15, 2017. (PLAN 4M-1596)
TOPOGRAPHIC INFORMATION:
HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9
VERTICAL DATUM: CGVD28:78
1. *DRAFT PLAN OF SUBDIVISION OF PART OF LOT "H" CONCESSION "D" (RIDEAU FRONT), PREPARED BY ANNIS, O-SULLIVAN, VOLLEBEKK LTD (2015)*
2. *NOVATECH TOPOGRAPHIC SURVEY, APRIL 2024*

GENERAL NOTES:

1. DIMENSIONS AND LAYOUT INFORMATION SHALL BE CONFIRMED PRIOR TO START OF CONSTRUCTION.
2. THE ORIGINAL TOPOGRAPHY AND GROUND ELEVATIONS, SERVICING AND SURVEY INFORMATION SHOWN ON THIS PLAN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF ALL INFORMATION OBTAINED FROM THIS PLAN. PRIOR TO COMMENCING ANY ON SITE SERVICING THE CONTRACTOR SHALL VERIFY THE ELEVATIONS OF THE EXISTING SEWERS, WATERMAINS AND UTILITIES IN THE OBLATS AVENUE AND DESCHÂTELETS AVENUE RIGHT OF WAY.
3. CO-ORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
4. BEFORE COMMENCING CONSTRUCTION, PROVIDE PROOF OF COMPREHENSIVE ALL RISK AND OPERATIONAL LIABILITY INSURANCE. INSURANCE POLICY TO NAME THE OWNER, ENGINEER AND THE CITY AS CO-INSURED.
5. CONNECT TO EXISTING SYSTEMS AS DETAILED, INCLUDING ALL RESTORATION WORK NECESSARY TO REINSTATE SURFACES TO EXISTING CONDITIONS OR BETTER.
6. 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 THESE DRAWINGS.
7. OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS BEFORE COMMENCING CONSTRUCTION.
8. RESTORE ALL TRENCHES AND SURFACE FEATURES TO EXISTING CONDITIONS OR BETTER AND TO THE SATISFACTION OF MUNICIPAL AUTHORITIES.
9. REMOVE FROM SITE ALL DEBRIS AND EXCESS EXCAVATED MATERIAL UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER.
10. ALL ELEVATIONS ARE GEODETIC AND UTILIZE METRIC UNITS.
11. REFER TO STRUCTURAL PLANS FOR UNDERSIDE OF FOOTING AND TOP OF FOUNDATION INFORMATION.
12. REFER TO GEOTECHNICAL INVESTIGATION PG6948-1 (DATED FEBRUARY 1, 2024), PREPARED BY PATERSON GROUP
13. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A MARKED UP COPY OF THE 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.
14. ALL WORK TO BE CONSTRUCTED TO CITY OF OTTAWA AND ONTARIO PROVINCIAL STANDARDS.
15. ALL UNITS ARE PROPOSED TO BE SLAB ON GRADE (I.E. NO BASEMENTS).

SEWER NOTES:

1. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
CATCHBASIN (600x600mm)	705.010	OPSD
STORM / SANITARY MAINTENANCE HOLE (1200Ø)	701.010	OPSD
STORM / SANITARY MH FRAME & COVER	S24.1 / S24 & S25	CITY OF OTTAWA
STORM SEWER	PVC SDR 35	
SANITARY SEWER	PVC SDR 35	
CATCHBASIN LEAD	PVC SDR 35	
SEWER TRENCH	S6	CITY OF OTTAWA
SANITARY SERVICES	PVC SDR28 (S11.3)	CITY OF OTTAWA
CBMH FRAME & COVER	S25 & S28.1	CITY OF OTTAWA
CB FRAME & COVER	S19	CITY OF OTTAWA

2. ALL CATCHBASIN AND CATCHBASIN MAINTENANCE LEADS ARE TO BE 200mm DIA. PVC SDR 35 AT 2% SLOPE UNLESS OTHERWISE SPECIFIED ON THE DRAWING.
3. INSULATE ALL PIPES (SAN/STM) THAT HAVE LESS THAN 2.0m COVER AS PER THE INSULATION DETAIL FOR SHALLOW SEWERS AS PER DETAIL S35.
4. SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM BUILDING FACE AT 2.0% SLOPE (1.0% MINIMUM). SERVICES TO BE CONNECTED TO MAINLINE SEWER AS PER CITY OF OTTAWA S11.1.
5. PIPE BEDDING AND COVER ARE TO BE COMPACTED TO AT LEAST 98% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. THE COVER MATERIAL SHALL CONSIST OF OPSS GRANULAR 'A' AND SHOULD EXTEND FROM THE SPRING LINE OF THE PIPE TO AT LEAST 300mm ABOVE THE OBVERT OF THE PIPE.
6. SANITARY PIPE TO BE IPEX SDR 35 OR EQUIVALENT WITH JOINT PRESSURE RATING OF 345kPA MINIMUM. WHERE PRIVATE SANITARY SEWER DOES NOT HAVE 2.5m CLEARANCE TO THE WATERMAIN, THE CONTRACTOR SHALL COMPLETE PRESSURE TESTING OF THE SANITARY SEWER TO CONFIRM THE 345kPa (min.) PRESSURE RATING OF THE SANITARY PIPE. TESTING TO BE COMPLETED PRIOR TO SANITARY LATERAL INSTALLATIONS
7. THE SITE SERVICING CONTRACTOR SHALL PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.07.16 AND 407.07.24. DYE TESTING IS TO BE COMPLETED ON ALL SANITARY AND STORM SERVICES TO CONFIRM PROPER CONNECTION TO THE SEWER MAINS. THE FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER.
8. STORM MAINTENANCE HOLES SHALL HAVE 300mm SUMPS AND CATCHBASIN MAINTENANCE HOLES SHALL HAVE 600mm SUMPS UNLESS OTHERWISE INDICATED.
9. 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.
10. CONTRACTOR SHALL OBTAIN A VIDEO INSPECTION OF THE CITY SEWER SYSTEM WITHIN OBLATS AVENUE AND DESCHÂTELETS AVENUE RIGHT OF WAY UPON COMPLETION OF CONSTRUCTION TO DETERMINE IF THE CITY SEWER SYSTEM SUSTAINED ANY DAMAGES AS A RESULT OF CONSTRUCTION ON THE LANDS.
11. STORM SERVICES ARE NOT REQUIRED AS UNITS ARE SLAB ON GRADE CONSTRUCTION WITH NO BASEMENTS. REFER TO THE FOUNDATION DRAINAGE REVIEW GEOTECHNICAL MEMORANDUM, PG6948-MEMO.04. DATED MARCH 18, 2025 BY PATERSON GROUP.

WATERMAIN NOTES:

1. GENERAL:

ITEM	DETAIL. No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22	CITY OF OTTAWA
WATERMAIN CROSSING BELOW SEWER / OVER SEWER	W25 / W25.2	CITY OF OTTAWA
WATER SERVICE: 19mm PEX SDR9CTS	W26	CITY OF OTTAWA
WATERMAIN: 50mm PEX SDR9CTS	W33	CITY OF OTTAWA

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 SHALL BE PERFORMED BY CITY OFFICIALS.
3. WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE UNLESS OTHERWISE INDICATED. CONTRACTOR TO SUPPLY AND INSTALL INSULATION AS PER W22 FOR ALL WATERMAIN LESS THAN 2.4m BELOW GRADE.
4. PROVIDE MINIMUM CLEARANCE BETWEEN OUTSIDE OF PIPES AT ALL CROSSINGS PER W25 (0.50m) AND W25.2 (0.25m).
5. WATER SERVICES ARE TO BE INSTALLED 1.0m FROM THE BUILDING FACE, WITH 15m OF PIPE LEFT COILED
6. CURB STOPS ARE TO BE LOCATED 2.0m FROM THE FOUNDATION WALL WHEREVER POSSIBLE
7. WATERMAINS LOCATED WITHIN 2.4m FROM OPEN STRUCTURES ARE TO BE INSULATED AS PER CITY OF OTTAWA STANDARD DETAIL W23

NOTES:

1. ALL WATER SERVICES PASSING UNDER GARAGE SHALL BE SLEEVED AS PER CITY OF OTTAWA ISTB-2021-03: "WHERE SERVICES ARE PERMITTED TO RUN UNDERNEATH GARAGES, THEY SHALL BE SLEEVED WITH A 200mmØ PVC PIPE FROM THE EDGE OF THE GARAGE SLAB TO THE FOUNDATION WALL."
2. PVC CARRIER PIPE SHALL BE SDR35 OR APPROVED EQUIVALENT.
3. THE ENDS OF THE SLEEVE SHALL BE SEALED TO PREVENT THE MIGRATION OF BACKFILL MATERIAL INTO THE SLEEVE. METHOD OF SEALING TO BE APPROVED BY THE MUNICIPAL INSPECTOR.
4. PROVIDE INSULATION PER W22 AS REQUIRED TO ACHIEVE THE EQUIVALENT OF 2.4m COVER TO FINISHED GRADE.

WATER SERVICE UNDER GARAGE - SLEEVE DETAIL
N.T.S.

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
7.	STORM SERVICES REMOVED	MAR 25/25	TJM
6.	REVISED PER CITY COMMENTS	FEB 19/25	TJM
5.	REVISED PER CITY COMMENTS	DEC 20/24	TJM
4.	REVISED PER CITY COMMENTS	NOV 29/24	TJM
3.	RE-ISSUED FOR SITE PLAN APPROVAL	OCT 17/24	TJM
2.	ISSUED FOR SITE PLAN APPROVAL	AUG 14/24	TJM
1.	ISSUED FOR DISCUSSION	APR 26/24	TJM

SCALE 1:250

DESIGN SAM
CHECKED TJM
DRAWN SAM
CHECKED TJM
APPROVED TJM

LICENSED PROFESSIONAL ENGINEER
T. J. MCKAY
100195434
MARCH 25, 2025
PROVINCE OF ONTARIO

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

LOCATION
CITY of OTTAWA
GREYSTONE VILLAGE

DRAWING NAME
BLOCK 28
GENERAL PLAN OF SERVICES

PROJECT No. 114025
REV #7
DRAWING No. 114025-FT-GP2

D07-12-24-0130

M:\2014\114025\CAD\Design\Forecourt Towns\114025-FT-GP.dwg, FT-GP2, Mar 25, 2025 - 2:27pm, channa

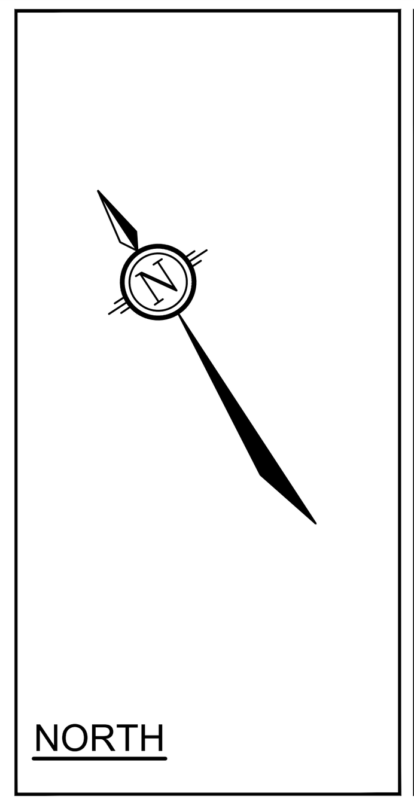
PLANA1.DWG - 841mmx594mm

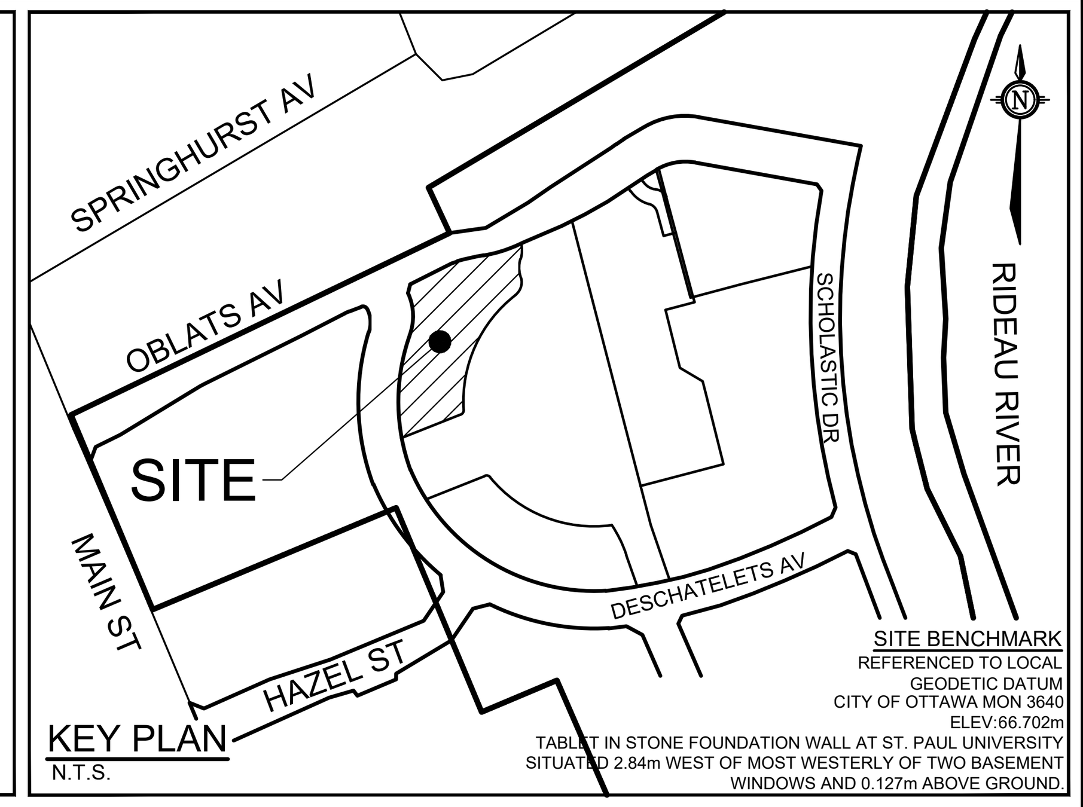
#19191

PAVEMENT STRUCTURE:

DESCHÂTELETS AVENUE
40mm ASPHALT SP12.5 (LEVEL B)
50mm ASPHALT SP19.0 (LEVEL B)
50mm ASPHALT SP19.0 (LEVEL B)
150mm GRANULAR "A"
450mm GRANULAR "B"
740mm TOTAL DEPTH

CAR COURT AREAS
50mm ASPHALT SP12.5 (LEVEL B)
150mm GRANULAR "A"
300mm GRANULAR "B"
500mm TOTAL DEPTH





SITE BENCHMARK
REFERENCED TO LOCAL GEODETIC DATUM
CITY OF OTTAWA MON 3640
ELEV:66.702m
TABLET IN STONE FOUNDATION WALL AT ST. PAUL UNIVERSITY SITUATED 2.84m WEST OF MOST WESTERLY OF TWO BASEMENT WINDOWS AND 0.127m ABOVE GROUND.

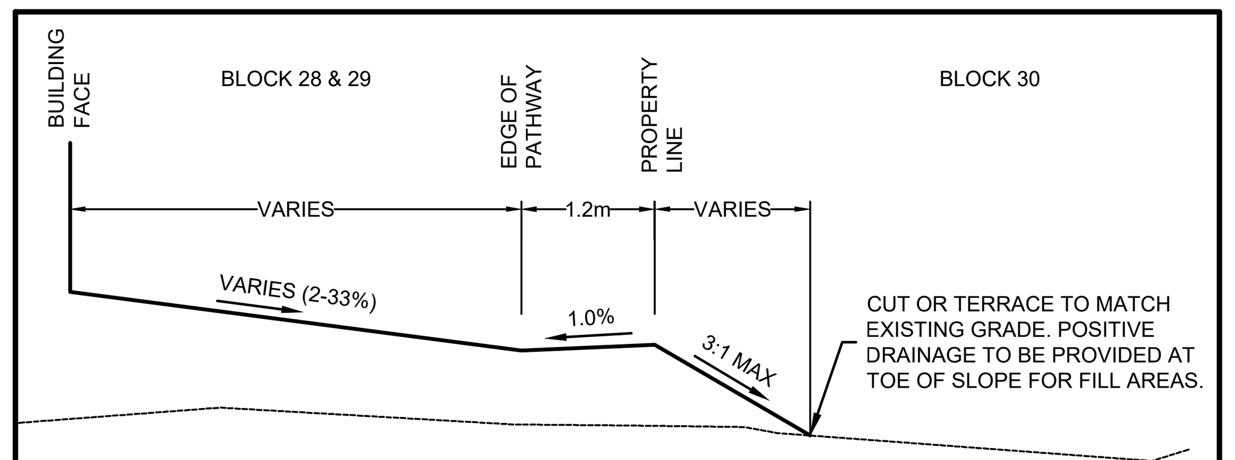
SOURCE REFERENCE:
PLAN OF SUBDIVISION OF PART OF LOT "H" CONCESSION "D" (RIDEAU FRONT), PREPARED BY ANNIS, O-SULLIVAN, VOLLEBEKK LTD. ON DECEMBER 15, 2017. (PLAN 4M-1596)
TOPOGRAPHIC INFORMATION:
HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9
VERTICAL DATUM: CGVD28:78
1. *DRAFT PLAN OF SUBDIVISION OF PART OF LOT "H" CONCESSION "D" (RIDEAU FRONT), PREPARED BY ANNIS, O-SULLIVAN, VOLLEBEKK LTD (2015)*
2. *NOVATECH TOPOGRAPHIC SURVEY, APRIL 2024*

LEGEND

97.00 / 96.50 — PROPOSED ELEVATION / EXISTING GROUND ELEVATION
97.00 / 96.50 — PROPOSED ELEVATION / PROPOSED ELEVATION (SUBDIVISION)
EXISTING CONTOUR AND ELEVATION
TERRACE TO EXISTING (3:1 MAX)
PROPOSED GRADING TIE-IN LIMITS
101 — PROPOSED SANITARY MAINTENANCE HOLE
100 — PROPOSED STORM MAINTENANCE HOLE
CB — PROPOSED CATCHBASIN
SP — PROPOSED STAND POST LOCATION
DC — DEPRESSED CURB
T6-12 — UNIT ID
FF=65.75 — FINISHED FLOOR ELEVATION
TF=65.75 — TOP OF FOUNDATION ELEVATION
USF=63.41 — UNDERSIDE OF FOOTING ELEVATION
SF=65.35 — SUNKEN FLOOR ELEVATION
EXISTING SANITARY MAINTENANCE HOLE
EXISTING STORM MAINTENANCE HOLE
EXISTING CATCHBASIN
EXISTING VALVE & VALVE BOX LOCATION
EXISTING HYDRANT
DC — *EXISTING DEPRESSED CURB*
EXISTING STREET LIGHT
LEAN CONCRETE REQUIRED UNDER FOOTING TO 3.5m BELOW FINISHED GRADE (FOOTING WITHIN 4.5m OF PROPOSED TREE)
SITE BOUNDARY
LAND TO BE TRANSFERRED TO THE CITY

GRADING AND PAVEMENT NOTES:

1. ALL TOPSOIL, ORGANIC OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED HARD SURFACE (ie. PAVEMENT, CURB, SIDEWALK, ETC.) AREAS AS DIRECTED BY THE SITE ENGINEER OR GEOTECHNICAL ENGINEER.
2. EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE HEAVILY PROOF ROLLED WITH A LARGE (10 TON) VIBRATORY STEEL DRUM ROLLER UNDER DRY CONDITIONS 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 PLACED IN MAXIMUM 300mm LIFTS AND COMPACTED TO AT LEAST 98% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE. ANY ADDITIONAL GRANULAR FILL USED BELOW THE PROPOSED PAVEMENT SHOULD BE PLACED IN MAXIMUM 300mm LIFTS AND COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE.
5. SUBGRADE TO BE INSPECTED BY THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION TO REVIEW IF A WOVEN GEOTEXTILE IS REQUIRED BELOW THE GRANULAR MATERIALS; AND TO CONFIRM THE DEPTH AND COMPACTION OF GRANULAR 'B'
6. PRIOR TO PLACEMENT OF WEAR COURSE ASPHALT, THE CONTRACTOR SHALL ADJUST ALL STRUCTURES TO FINAL GRADE PER CITY OF OTTAWA STANDARDS.
7. MINIMUM OF 2% GRADE FOR ALL GRASSED AREAS UNLESS OTHERWISE NOTED.
8. MAXIMUM TERRACING GRADE TO BE 3:1 UNLESS OTHERWISE NOTED.
9. ALL GRADES BY CURBS ARE EDGE OF PAVEMENT GRADES UNLESS OTHERWISE INDICATED.
10. ALL CURBS SHALL BE BARRIER CURB UNLESS OTHERWISE NOTED AND CONSTRUCTED PER CITY OF OTTAWA STANDARD (SC1.1).
11. ALL SIDEWALKS ARE TO HAVE 2% CROSSFALL UNLESS OTHERWISE NOTED. CROSSFALL IS TO BE DIRECTED AWAY FROM BUILDINGS AND PROPERTY LINES UNLESS OTHERWISE NOTED. WHERE PATHWAY TO HAVE 1% CROSSFALL, LONGITUDINAL FALL IS TO BE 2% MINIMUM.
12. REFER TO LANDSCAPE PLAN FOR PLANTING AND OTHER LANDSCAPE FEATURE DETAILS.
13. DESCHÂTELETS AVENUE IS A COLLECTOR ROADWAY. ALL ASPHALT USED FOR ROAD CUT REINSTATEMENTS SHALL BE LEVEL B (PG 58-34) PER R10 AND THE APPROVED SUBDIVISION PLANS.
14. ASPHALT TO BE PLACED IN LIFT THICKNESSES NOT EXCEEDING 60mm OR AS OTHERWISE RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
15. REFER TO "GEOTECHNICAL INVESTIGATION - PROPOSED RESIDENTIAL DEVELOPMENT - 295 & 355 DESCHÂTELETS AVENUE, PREPARED BY PATERSON GROUP, DATED FEBRUARY 1, 2024" FOR ADDITIONAL INFORMATION.
16. RIGHT OF WAY CURBS AND SIDEWALK TO BE CONSTRUCTED AS PER SC1.1 AND SC1.4 OR SC2. ENTRANCES TO BE CONSTRUCTED AS PER SC7.1
17. ARCHITECT IS TO PROVIDE UP-STANDS (RAISED FOUNDATIONS) IN LOCALIZED AREAS AS REQUIRED TO ACHIEVE A MINIMUM 0.15m CLEARANCE FROM THE PROPOSED TERRACE ELEVATIONS TO THE TOP OF FOUNDATION.



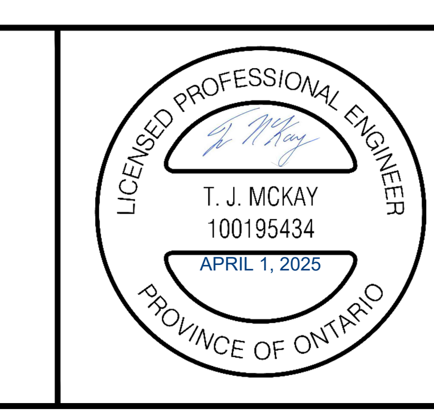
PATHWAY DETAIL
(TYPICAL)

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
7.	REVISED PER CITY COMMENTS	APR 01/25	TJM
6.	UPDATED UNIT ELEVATIONS	MAR 25/25	TJM
5.	REVISED PER CITY COMMENTS	DEC 20/24	TJM
4.	REVISED PER CITY COMMENTS	NOV 29/24	TJM
3.	RE-ISSUED FOR SITE PLAN APPROVAL	OCT 17/24	TJM
2.	ISSUED FOR SITE PLAN APPROVAL	AUG 14/24	TJM
1.	ISSUED FOR DISCUSSION	APR 26/24	TJM

SCALE 1:250

DESIGN SAM
CHECKED TJM
DRAWN SAM
CHECKED TJM
APPROVED TJM



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

LOCATION
CITY of OTTAWA
GREYSTONE VILLAGE

DRAWING NAME
BLOCK 29
GRADING PLAN

PROJECT No. 114025
REV REV #7
DRAWING No. 114025-FT-GR1

D07-12-24-0130

#19191

FUTURE ACCESS ROAD/FIRE ROUTE
(225 SCHOLASTIC DRIVE DEVELOPMENT)

AVENUE DE MAZENOD AVENUE

AVENUE DESCHÂTELETS AVENUE

RUE HAZEL STREET

BARRIER CURB

HYDRO EASEMENT

APPROXIMATE LIMIT OF GRADING TIE INTO EXISTING GROUND AT 3:1 MAXIMUM SLOPE

APPROXIMATELY 100mm OF TOPSOIL TO BE ADDED TO EXISTING GRADE WITHIN THE OFFSITE CRITICAL ROOT ZONE LIMITS OF THE TREES, AS DIRECTED BY THE ARBOURIST.

CB-1
T/G=64.92
INV.SW=63.72

CB-2
T/G=64.84
INV.W=63.64

T6-11
FF=65.75
TF=65.75
USF=63.41

T6-12
FF=65.75
TF=65.75
USF=63.41
SF=65.35

T6-13
FF=65.75
TF=65.75
USF=63.41
SF=65.35

T6-14
FF=65.75
TF=65.75
USF=63.41
SF=65.55

T7-15
FF=65.45
TF=65.45
USF=63.11

T7-16
FF=65.45
TF=65.45
USF=63.11
SF=65.25

T7-17
FF=65.45
TF=65.45
USF=63.11
SF=65.25

T7-18
FF=65.45
TF=65.45
USF=63.11

T5-19
FF=65.47
TF=65.47
USF=63.13

T5-20
FF=65.47
TF=65.47
USF=63.13

T9-21
FF=65.30
TF=65.30
USF=62.96

T9-22
FF=65.30
TF=65.30
USF=62.96

T10-23
FF=65.20
TF=65.20
USF=62.86

T10-24
FF=65.20
TF=65.20
USF=62.86

T11-25
FF=64.98
TF=64.98
USF=62.64

T11-26
FF=64.98
TF=64.98
USF=62.64

T12-27
FF=64.90
TF=64.90
USF=62.56

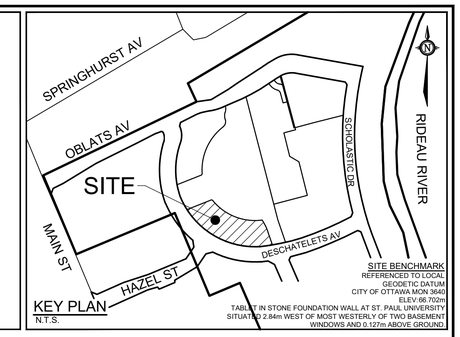
T12-28
FF=64.90
TF=64.90
USF=62.56
SF=64.50

T12-29
FF=64.90
TF=64.90
USF=62.56
SF=64.50

T12-30
FF=64.90
TF=64.90
USF=62.56
SF=64.50

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.

NORTH



KEY PLAN
N.T.S.

SITE BENCHMARK
REFERENCED TO LOCAL GEODETIC DATUM
CITY OF OTTAWA MON 3640
ELEV.66.702m
TABLET IN STONE FOUNDATION WALL AT ST. PAUL UNIVERSITY SITUATED 2.84m WEST OF MOST WESTERLY OF TWO BASEMENT WINDOWS AND 0.127m ABOVE GROUND.

SOURCE REFERENCE:
PLAN OF SUBDIVISION OF PART OF LOT "H" CONCESSION "D" (RIDEAU FRONT), PREPARED BY ANNIS, O-SULLIVAN, VOLLEBEKK LTD. ON DECEMBER 15, 2017. (PLAN 4M-1596)

TOPOGRAPHIC INFORMATION:
HORIZONTAL DATUM: NAD 83 (ORIGINAL), MTM - ZONE 9
VERTICAL DATUM: CGVD28:78
1. *DRAFT PLAN OF SUBDIVISION OF PART OF LOT "H" CONCESSION "D" (RIDEAU FRONT), PREPARED BY ANNIS, O-SULLIVAN, VOLLEBEKK LTD (2015)*
2. *NOVATECH TOPOGRAPHIC SURVEY, APRIL 2024*

LEGEND

- 97.00 / 96.50 — PROPOSED ELEVATION / *EXISTING GROUND ELEVATION*
- 97.00 / 96.50 — PROPOSED ELEVATION / PROPOSED ELEVATION (SUBDIVISION)
- EXISTING CONTOUR AND ELEVATION
- TERRACE TO EXISTING (3:1 MAX)
- PROPOSED GRADING TIE-IN LIMITS
- PROPOSED SANITARY MAINTENANCE HOLE
- PROPOSED STORM MAINTENANCE HOLE
- CB — PROPOSED CATCHBASIN
- SP — PROPOSED STAND POST LOCATION
- DC — DEPRESSED CURB
- T6-12 — UNIT ID
  FF=65,75 FINISHED FLOOR ELEVATION
  TF=65,75 TOP OF FOUNDATION ELEVATION
  USF=63.41 UNDERSIDE OF FOOTING ELEVATION
  SF=65.35 SUNKEN FLOOR ELEVATION
- *EXISTING SANITARY MAINTENANCE HOLE*
- *EXISTING STORM MAINTENANCE HOLE*
- *EXISTING CATCHBASIN*
- *EXISTING VALVE & VALVE BOX LOCATION*
- *EXISTING HYDRANT*
- DC — *EXISTING DEPRESSED CURB*
- *EXISTING STREET LIGHT*
- LEAN CONCRETE REQUIRED UNDER FOOTING TO 3.5m BELOW FINISHED GRADE (FOOTING WITHIN 4.5m OF PROPOSED TREE)
- SITE BOUNDARY

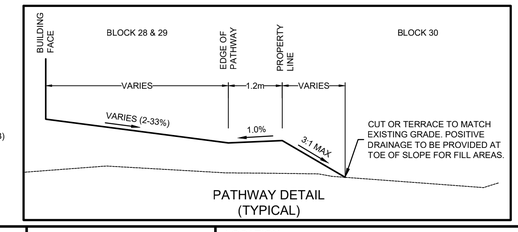
GRADING AND PAVEMENT NOTES:

1. ALL TOPSOIL, ORGANIC OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED HARD SURFACE (ie. PAVEMENT, CURB, SIDEWALK, ETC.) AREAS AS DIRECTED BY THE SITE ENGINEER OR GEOTECHNICAL ENGINEER.
2. EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE HEAVILY PROOF ROLLED WITH A LARGE (10 TON) VIBRATORY STEEL DRUM ROLLER UNDER DRY CONDITIONS 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 PLACED IN MAXIMUM 300mm LIFTS AND COMPACTED TO AT LEAST 98% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE. ANY ADDITIONAL GRANULAR FILL USED BELOW THE PROPOSED PAVEMENT SHOULD BE PLACED IN MAXIMUM 300mm LIFTS AND COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE.
5. SUBGRADE TO BE INSPECTED BY THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION TO REVIEW IF A WOVEN GEOTEXTILE IS REQUIRED BELOW THE GRANULAR MATERIALS; AND TO CONFIRM THE DEPTH AND COMPACTION OF GRANULAR 'B'
6. PRIOR TO PLACEMENT OF WEAR COURSE ASPHALT, THE CONTRACTOR SHALL ADJUST ALL STRUCTURES TO FINAL GRADE PER CITY OF OTTAWA STANDARDS.
7. MINIMUM OF 2% GRADE FOR ALL GRASSED AREAS UNLESS OTHERWISE NOTED.
8. MAXIMUM TERRACING GRADE TO BE 3:1 UNLESS OTHERWISE NOTED.
9. ALL GRADES BY CURBS ARE EDGE OF PAVEMENT GRADES UNLESS OTHERWISE INDICATED.
10. ALL CURBS SHALL BE BARRIER CURB UNLESS OTHERWISE NOTED AND CONSTRUCTED PER CITY OF OTTAWA STANDARD (SC1.1).
11. ALL SIDEWALKS ARE TO HAVE 2% CROSSFALL UNLESS OTHERWISE NOTED. CROSSFALL IS TO BE DIRECTED AWAY FROM BUILDINGS AND PROPERTY LINES UNLESS OTHERWISE NOTED. WHERE PATHWAY TO HAVE 1% CROSSFALL, LONGITUDINAL FALL IS TO BE 2% MINIMUM.
12. REFER TO LANDSCAPE PLAN FOR PLANTING AND OTHER LANDSCAPE FEATURE DETAILS.
13. DESCHÂTELETS AVENUE IS A COLLECTOR ROADWAY. ALL ASPHALT USED FOR ROAD CUT REINSTATEMENTS SHALL BE LEVEL B (PG 58-34) PER R10 AND THE APPROVED SUBDIVISION PLANS.
14. ASPHALT TO BE PLACED IN LIFT THICKNESSES NOT EXCEEDING 60mm OR AS OTHERWISE RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
15. REFER TO "GEOTECHNICAL INVESTIGATION - PROPOSED RESIDENTIAL DEVELOPMENT - 295 & 355 DESCHÂTELETS AVENUE, PREPARED BY PATERSON GROUP, DATED FEBRUARY 1, 2024" FOR ADDITIONAL INFORMATION.
16. RIGHT OF WAY CURBS AND SIDEWALK TO BE CONSTRUCTED AS PER SC1.1 AND SC1.4 OR SC2. ENTRANCES TO BE CONSTRUCTED AS PER SC7.1
17. ARCHITECT IS TO PROVIDE UP-STANDS (RAISED FOUNDATIONS) IN LOCALIZED AREAS AS REQUIRED TO ACHIEVE A MINIMUM 0.15m CLEARANCE FROM THE PROPOSED TERRACE ELEVATIONS TO THE TOP OF FOUNDATION.

PAVEMENT STRUCTURE:

DESCHÂTELETS AVENUE
40mm ASPHALT SP12.5 (LEVEL B)
50mm ASPHALT SP19.0 (LEVEL B)
50mm ASPHALT SP19.0 (LEVEL B)
150mm GRANULAR "A"
300mm GRANULAR "B"
500mm TOTAL DEPTH

CAR COURT AREAS
50mm ASPHALT SP12.5 (LEVEL B)
150mm GRANULAR "A"
300mm GRANULAR "B"
500mm TOTAL DEPTH



PATHWAY DETAIL
(TYPICAL)

No.	REVISION	DATE	BY
7.	REVISED PER CITY COMMENTS	APR 01/25	TJM
6.	UPDATED UNIT ELEVATIONS	MAR 25/25	TJM
5.	REVISED PER CITY COMMENTS	DEC 20/24	TJM
4.	REVISED PER CITY COMMENTS	NOV 29/24	TJM
3.	RE-ISSUED FOR SITE PLAN APPROVAL	OCT 17/24	TJM
2.	ISSUED FOR SITE PLAN APPROVAL	AUG 14/24	TJM
1.	ISSUED FOR DISCUSSION	APR 26/24	TJM

SCALE
1:250
1:250
0 2 4 6 8 10

DESIGN SAM
CHECKED TJM
DRAWN SAM
CHECKED TJM
APPROVED TJM

LICENSED PROFESSIONAL ENGINEER
T. J. MCKAY
100195434
APRIL 1, 2025
PROVINCE OF ONTARIO

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

LOCATION
CITY of OTTAWA
GREYSTONE VILLAGE

DRAWING NAME
BLOCK 28
GRADING PLAN

PROJECT No. 114025-00
REV REV #7
DRAWING No. 114025-FT-GR2

D07-12-24-0130

M:\2014\114025\CAD\design\Forecourt Towns\114025-FT-GR.dwg, FT-GR2, Apr 01, 2025 - 3:25pm, channa

#19191