NOVATECH
Engineers, Planners & Landscape Architects

M E M O R A N D U M

DATE: **FEBRUARY 14, 2025**

REVISED: **MARCH 4, 2025**

TO: **VINCENT DUQUETTE**

FROM: **MICHAEL PETEPIECE / KALLIE AULD**

RE: **GREYSTONE VILLAGE**
PCSWMM MODEL UPDATES FOR PHASE 3
NOVATECH PROJECT # 114025

CC: **ABDUL MOTTALIB, CITY OF OTTAWA**

Following the submission of the Greystone Village Master Servicing Study (MSS) Updated PCSWMM model on January 17, 2025, which was reviewed and approved on January 25, 2025, and the updated MSS report on January 28, 2025, there have been some minor changes to the storm drainage design for the Phase 3 site plan. The PCSWMM model has been updated to reflect the changes and confirm there are no adverse impacts when compared to the previous model. This memo provides a list of the changes made to the model and a summary of the model results.

Model Updates

The following sections outline the changes made to the PCSWMM model:

- Drainage areas have been updated to reflect changes to building footprints and surrounding areas;
- Roof flows have been updated to reflect new roof drain calculations;
- The connection point from the building service to Deschatelets Avenue has been updated to reflect the revised design.

Drainage Areas

The table below outlines the changes to the area and runoff coefficients for the six (6) catchments that have been revised as part of this update.

Drainage Area ID	Old Area (ha)	New Area (ha)	Old C	New C
Storm Outlet 1				
21A	0.14	0.16	0.90	0.90
21B	0.11	0.11	0.70	0.70
21C	0.05	0.03	0.40	0.33
22A	0.04	0.04	0.50	0.53
22B	0.11	0.11	0.53	0.53
22C	0.09	0.08	0.40	0.46

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Drainage Area ID	Old Area (ha)	New Area (ha)	Old C	New C
Storm Outlet 2				
B18	0.09	0.07	0.57	0.51
B20	0.12	0.12	0.45	0.44
B20A	0.08	0.08	0.48	0.35

Refer to the following plans for the old and new catchment areas:

- Phase 3 Site Area: *Stormwater Management Plan, dated January 20, 2025*
- Outlet 1 – Old: *Storm Drainage Areas Plan - Phase 1A and 1B, dated October 23, 2024*
- Outlet 1 – New: *Storm Drainage Areas Plan - Phase 1A and 1B, dated March 4, 2025*
- Outlet 2 – Old: *Storm Drainage Areas Plan - Phase 2 and 3, dated January 20, 2025*
- Outlet 2 – New: *Storm Drainage Areas Plan - Phase 2 and 3, dated March 4, 2025*

Roof Flows

The roof design has been revised and the PCSWMM model has been updated to reflect the new controlled roof drain flows from the south building (Area 21A). The revised flows are slightly higher than the previous model but the increase is not significant with respect to the capacity of the receiving sewer on Deschatelets Avenue.

Area 21A (South Building Roof)	Peak Flow (L/s)	
	5-year	100-year
Old Roof Flows	8.25	10.49
New Roof Flows	9.80	13.08

Storm Service Connection

In the previously approved PCSWMM model (January 17, 2025), the storm service from the Phase 3 south building (Area 21A) was connected to the storm sewer on Deschatelets Avenue at MH126. The model has been updated to more accurately show the service connection location between MH128 and MH126 by adding a new node to the model (J21).

Model Results

The impacts to the model resulting from the model updates for Phase 3 (peak flows, HGL elevations) are summarized below.

Peak Flows at Outlet 1

Outlet 1 - Phase 1	Peak Flow (L/s)	
	5-year	100-year
Old Flows	1,103	1,695
New Flows	1,105	1,698

Peak flows at the Phase 1 Outlet have increased by approximately 3L/s (0.2% increase) during the 100-year event, which will not have any adverse impact on the receiving watercourse.

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Peak Flows at Outlet 2

Outlet 2 - Phase 2&3	Peak Flow (L/s)	
	5-year	100-year
Old Flows	489	920
New Flows	487	913

Peak flows at the Phase 2/3 Outlet have decreased by approximately 7L/s (0.8% decrease) during the 100-year event, which will not have any adverse impact on the receiving watercourse.

Hydraulic Grade Line (HGL)

The 100-year HGL elevations in the receiving storm sewer were checked to evaluate whether the changes to the model had any adverse impacts on the level of service provided. The model results show a maximum increase in the HGL of 2cm at MH126, which is the next MH downstream of the storm service connection tributary to Outlet 1 from the Phase 3 building. Changes to areas tributary to Outlet 2 resulted in a slight decrease in HGL elevations in the Outlet 2 sewers. The HGL elevations are still at least 0.3m below the as-built USF elevations, so there is no adverse impact resulting from the model updates.

MH/ Node ID	HGL Elevations (100-Year Event)		
	Old HGL (m)	New HLG (m)	As-Built USF (m)
Phase 1			
J21 (storm service lateral from Phase 3)	61.17	61.18	61.61
MH128	61.27	61.28	61.60
MH126	61.62	61.64	62.83
MH124	60.90	60.91	61.41
MH114	60.05	60.06	60.93
MH118	59.46	59.46	60.93
Phase 2&3			
MH306	59.67	59.67	60.19
MH308	59.20	59.19	N/A
MH310	58.65	58.64	N/A
MH324	60.73	60.73	N/A
MH326	59.30	59.30	N/A
MH328	58.73	58.72	N/A
MH334	58.53	58.52	N/A

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Conclusions

The updates to the PCSWMM model to reflect the changes to the Phase 3 site plan since the previous submission result in very minor changes to flows (+3 L/s or 0.2% increase at Outlet 1, and - 8 L/s or 0.8% decrease at Outlet 2) and the HGL elevations (maximum increase of 0.02m at MH 126).

Based on these findings, we believe that a full review of the PCSWMM model is not required and that the January 17, 2025 approved model should continue to form the basis for the Master Servicing Study Update (MSSU). A section describing the changes to the Phase 3 site plan and the modelling results will be added to the MSSU and a copy of the updated PCSWMM files will be provided for the City of Ottawa's future use.

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Michael Petepiece, P.Eng
Sr. Project Manager | Water Resources

Attachments:

- Stormwater Management Plan, dated January 20, 2025

Refer to Appendix A of the MSSU, dated March 4, 2025 for the following documents:

- Storm Drainage Areas Plan, Phase 1A and 1B, dated October 23, 2024
- Storm Drainage Areas Plan, Phase 1A and 1B, dated March 4, 2025
- Storm Drainage Areas Plan Phase 2 and 3, dated January 20, 2025
- Storm Drainage Areas Plan Phase 2 and 3, dated March 4, 2025

Refer to the MSSU (March 4, 2025) submission package for the following files:

- PCSWMM Model 114025-MSSU_20250117_5yr-Approved.pcz
- PCSWMM Model 114025-MSSU_20250117_100yr-Approved.pcz
- PCSWMM Model 114025-MSSU_20250304_5yr.pcz
- PCSWMM Model 114025-MSSU_20250304_100yr.pcz

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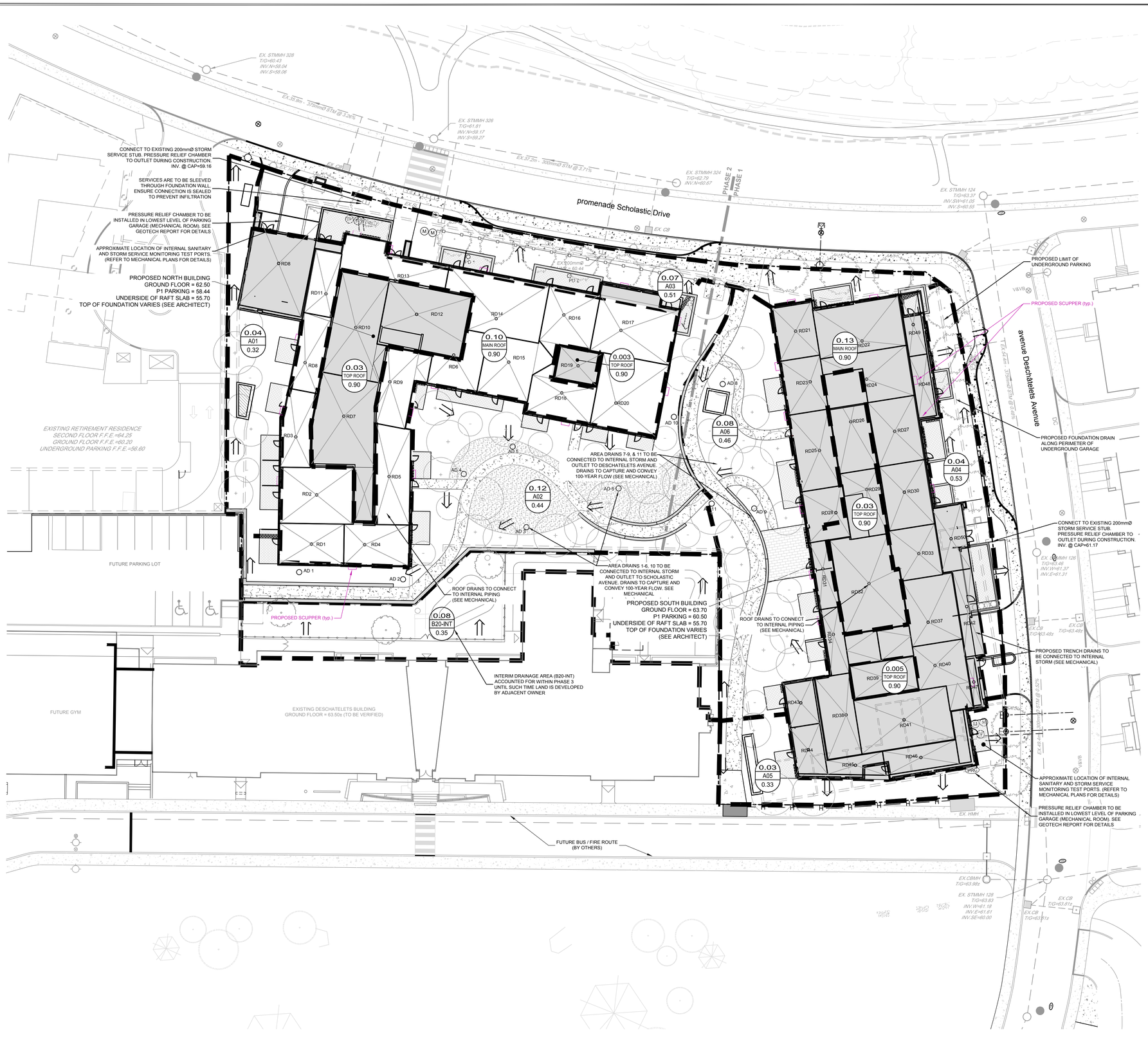

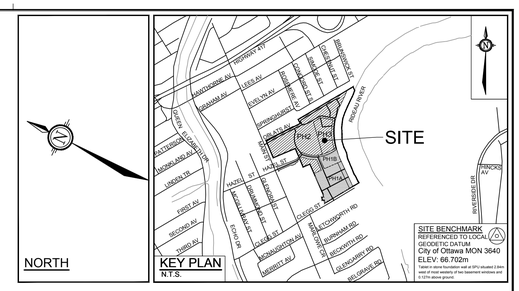

LEGEND

- SITE BOUNDARY
- STORM DRAINAGE AREA
- MAJOR OVERLAND FLOW ROUTE
- 0.07 / A01 / 0.71 — DRAINAGE AREA (HECTARES) / DRAINAGE AREA I.D. / RUNOFF COEFFICIENT
- PROPOSED STORM SEWER AND DIRECTION OF FLOW
- AD1 — PROPOSED AREA DRAIN
- RD1 — PROPOSED ROOF DRAIN
- RD1 — PROPOSED ROOF DRAIN WITH 100YR PONDING CONTOUR
- PROPOSED ROOF SCUPPER LOCATION
- PROPOSED LIMITS OF UNDERGROUND PARKING
- PROPOSED RETAINING WALL
- PROPOSED RETAINING WALL AND ACOUSTIC FENCE
- PROPOSED ACOUSTIC FENCE
- PROPOSED TREES / SHRUBS
- M — PROPOSED WATER METER LOCATION
- TP — PROPOSED SANITARY / STORM MONITORING TEST PORT
- PRESC — PROPOSED PRESSURE RELIEF CHAMBER

- STM MH — EXISTING STORM MANHOLE AND SEWER
- SAN MH — EXISTING SANITARY MANHOLE
- VVB — EXISTING VALVE AND VALE BOX
- EX.HYD — EXISTING FIRE HYDRANT
- EX.CB — EXISTING CATCHBASIN
- TG — EXISTING TOP OF GRATE
- EX.UP — EXISTING UTILITY POLE C/W GUY WIRES
- LS — EXISTING LIGHT STANDARD
- EXISTING LIMITS OF CONCRETE
- PROPOSED LIMITS OF CONCRETE
- PROPOSED LIMITS OF STONEDUST PAVING
- PROPOSED METAL GRATE / FOOTBRIDGE
- PROPOSED LIMITS OF GREEN ROOF

PHASE 3 CONDOS - ROOF DRAIN TABLE

AREA ID	ZURN SPECIFICATION	NOTCHES	POST DEVELOPMENT ZURN ROOFDRAIN CONTROL PARAMETERS 1:5 - YEAR EVENT HEAD(m)	Q(l/s)	VOL(m³)	1:100 - YEAR EVENT HEAD(m)	Q(l/s)	VOL(m³)
NORTH BUILDING								
RD1	ZCF121-1W-X4-Z-105-10-77	1	0.099	0.37	0.88	0.131	0.49	2.00
RD2	ZCF121-1W-X4-Z-105-10-77	1	0.105	0.39	1.63	0.137	0.51	3.60
RD3	ZCF121-1W-X4-Z-105-10-77	1	0.097	0.36	0.71	0.129	0.48	1.63
RD4	ZCF121-1W-X4-Z-105-10-77	1	0.100	0.37	0.88	0.131	0.49	2.01
RD5	ZCF121-1W-X4-Z-105-10-77	1	0.103	0.39	1.20	0.134	0.50	2.71
RD6	ZCF121-1W-X4-Z-105-10-77	1	0.095	0.35	0.64	0.125	0.47	1.48
RD7	ZCF121-1W-X4-Z-105-10-77	1	0.109	0.41	2.45	0.143	0.53	5.34
RD8	ZCF121-1W-X4-Z-105-10-77	1	0.110	0.41	2.76	0.142	0.53	5.98
RD9	ZCF121-1W-X4-Z-105-10-77	1	0.100	0.37	0.93	0.131	0.49	2.11
RD10	ZCF121-1W-X4-Z-105-10-77	1	0.109	0.41	2.36	0.141	0.53	5.14
RD11	ZCF121-1W-X4-Z-105-10-77	1	0.093	0.35	0.48	0.124	0.46	1.14
RD12	ZCF121-1W-X4-Z-105-10-77	1	0.109	0.41	2.37	0.141	0.53	5.14
RD13	ZCF121-1W-X4-Z-105-10-77	1	0.108	0.40	1.10	0.133	0.50	2.47
RD14	ZCF121-1W-X4-Z-105-10-77	1	0.108	0.40	2.17	0.140	0.52	4.74
RD15	ZCF121-1W-X4-Z-105-10-77	1	0.105	0.39	1.20	0.137	0.51	2.69
RD16	ZCF121-1W-X4-Z-105-10-77	1	0.103	0.38	1.09	0.135	0.50	2.45
RD17	ZCF121-1W-X4-Z-105-10-77	1	0.114	0.43	2.29	0.148	0.55	5.00
RD18	ZCF121-1W-X4-Z-105-10-77	1	0.101	0.38	0.87	0.134	0.50	2.00
RD19	ZCF121-1W-X4-Z-105-10-77	1	0.090	0.33	0.31	0.121	0.45	0.76
RD20	ZCF121-1W-X4-Z-105-10-77	1	0.108	0.40	2.06	0.140	0.52	4.52
SUBTOTAL				7.70	28.39		10.05	62.91
SOUTH BUILDING								
RD21	ZCF121-1W-X4-Z-105-10-77	1	0.097	0.36	0.67	0.128	0.48	1.54
RD22	ZCF121-1W-X4-Z-105-10-77	1	0.106	0.40	1.78	0.138	0.52	3.92
RD23	ZCF121-1W-X4-Z-105-10-77	1	0.095	0.36	0.65	0.126	0.47	1.50
RD24	ZCF121-1W-X4-Z-105-10-77	1	0.105	0.39	1.75	0.137	0.51	3.84
RD25	ZCF121-1W-X4-Z-105-10-77	1	0.101	0.38	1.11	0.133	0.50	2.51
RD26	ZCF121-1W-X4-Z-105-10-77	1	0.111	0.41	1.45	0.144	0.54	3.21
RD27	ZCF121-1W-X4-Z-105-10-77	1	0.101	0.38	1.05	0.133	0.49	2.39
RD28	ZCF121-1W-X4-Z-105-10-77	1	0.096	0.36	0.63	0.127	0.47	1.47
RD29	ZCF121-1W-X4-Z-105-10-77	1	0.109	0.40	0.73	0.144	0.54	1.69
RD30	ZCF121-1W-X4-Z-105-10-77	1	0.101	0.38	1.05	0.133	0.49	2.39
RD31	ZCF121-1W-X4-Z-105-10-77	1	0.089	0.33	0.32	0.120	0.45	0.78
RD32	ZCF121-1W-X4-Z-105-10-77	1	0.110	0.41	2.57	0.143	0.53	5.61
RD33	ZCF121-1W-X4-Z-105-10-77	1	0.097	0.36	0.72	0.128	0.48	1.64
RD34	ZCF121-1W-X4-Z-105-10-77	1	0.099	0.37	0.73	0.130	0.49	1.67
RD37	ZCF121-1W-X4-Z-105-10-77	1	0.107	0.40	1.76	0.139	0.52	3.88
RD38	ZCF121-1W-X4-Z-105-10-77	1	0.047	0.17	0.10	0.102	0.38	1.00
RD39	ZCF121-1W-X4-Z-105-10-77	1	0.095	0.30	0.60	0.127	0.47	1.42
RD40	ZCF121-1W-X4-Z-105-10-77	1	0.107	0.40	0.89	0.141	0.53	2.03
RD41	ZCF121-1W-X4-Z-105-10-77	1	0.109	0.41	2.19	0.141	0.53	4.80
RD42	ZCF121-1W-X4-Z-105-10-77	1	0.092	0.34	0.41	0.141	0.46	0.97
RD43	ZCF121-1W-X4-Z-105-10-77	1	0.087	0.32	0.32	0.117	0.44	0.77
RD44	ZCF121-1W-X4-Z-105-10-77	1	0.088	0.33	0.35	0.118	0.44	0.84
RD45	ZCF121-1W-X4-Z-105-10-77	1	0.082	0.31	0.20	0.111	0.42	0.51
RD46	ZCF121-1W-X4-Z-105-10-77	1	0.098	0.36	0.74	0.101	0.38	0.82
RD47	ZCF121-1W-X4-Z-105-10-77	1	0.058	0.22	0.02	0.084	0.31	0.08
RD48	ZCF121-1W-X4-Z-105-10-77	1	0.082	0.31	0.21	0.112	0.42	0.53
RD49	ZCF121-1W-X4-Z-105-10-77	1	0.082	0.31	0.21	0.112	0.42	0.53
RD50	ZCF121-1W-X4-Z-105-10-77	1	0.083	0.35	0.49	0.118	0.44	1.00
SUBTOTAL				9.80	23.71		13.08	53.34
	TOTAL			17.50	52.10		23.13	116.25

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
10.	ISSUED FOR CONSTRUCTION	JAN 20/25	SAZ
9.	REVISED ROOF DRAINS	NOV 7/24	SAZ
8.	REVISED ROOF DRAINS	NOV 5/24	SAZ
7.	REVISED ROOF DRAINS	OCT 29/24	SAZ
6.	REVISED AS PER CITY OF OTTAWA COMMENTS	JAN 20/23	SAZ
5.	REVISED AS PER CITY OF OTTAWA COMMENTS	NOV 24/22	SAZ
4.	REVISED AS PER CITY OF OTTAWA COMMENTS	AUG 19/22	SAZ
3.	ISSUED FOR COORDINATION	AUG 10/22	SAZ
2.	REVISED AS PER CITY OF OTTAWA COMMENTS	JUN 3/22	SAZ
1.	ISSUED WITH SITE PLAN APPLICATION	JUL 22/21	JAG

SCALE 1:250 (1:250, 0 2 4 6 8 10)

DESIGN SAZ · CHECKED MSP · DRAWN MTM · CHECKED SAZ · APPROVED MSP

LICENSED PROFESSIONAL ENGINEER S.AN. ZORGEL 100191487 PROVINCE OF ONTARIO

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CITY OF OTTAWA
375 DESCHÂTELETS AVENUE
GREYSTONE VILLAGE PHASE 3

DRAWING NAME
STORMWATER MANAGEMENT PLAN

PROJECT No. 114025-PH3
REV # 10
DRAWING No. 114025-STM(PH3)

#17640 D07-12-21-0111

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