Robinson
Land Development

Servicing & Stormwater Management Report

Wateridge Lifestyles
Block 21
Wateridge Village at Rockcliffe
Ottawa, ON

Prepared For:

Wateridge Lifestyles Ltd.

Prepared By:

Robinson Land Development

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LEGAL NOTIFICATION

This report was prepared by Robinson Land Development for the account of **Wateridge Lifestyles Ltd.**

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. **Robinson Land Development** accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project

1.0 INTRODUCTION

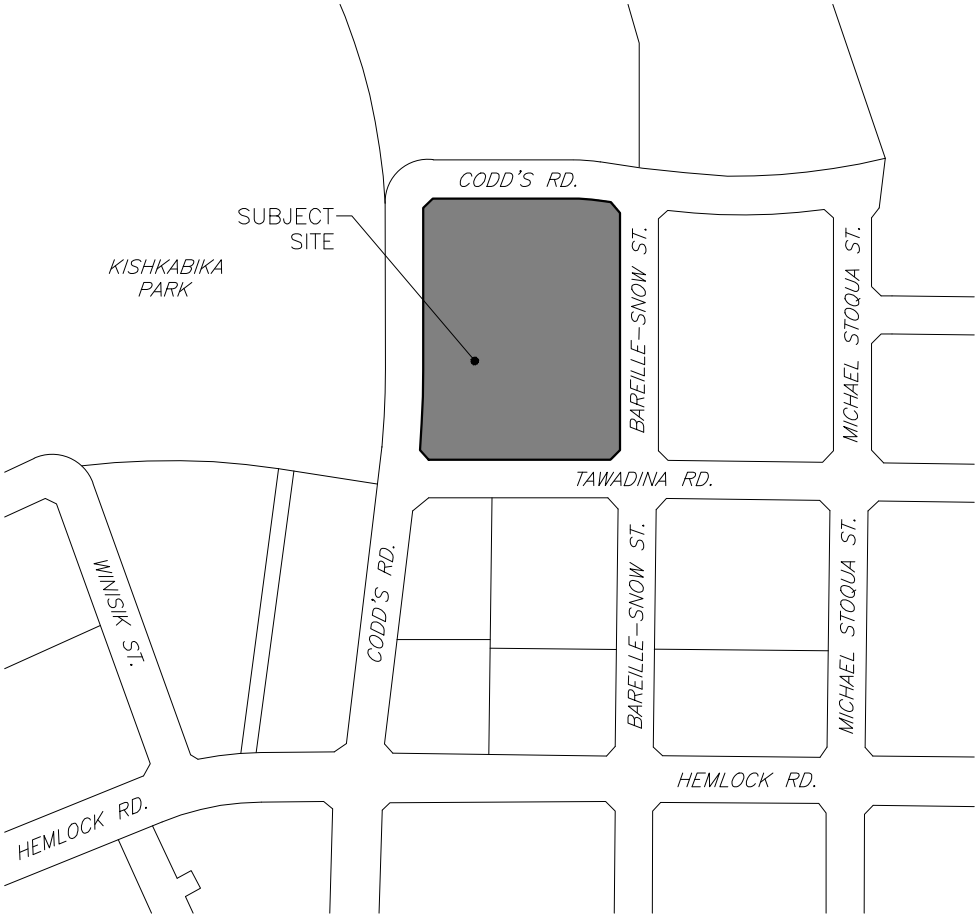
Robinson Land Development have been retained by Wateridge Lifestyles Ltd. to prepare detailed servicing and stormwater management designs in support of the proposed development located at 200 Codd's Road in the City of Ottawa. The subject site is located within Block 21 of Phase 7 of Wateridge Village at Rockcliffe. The site is bound by Codd's Road to the west and north, Bareille-Snow Street to the east, and Tawadina Road to the south (refer to **Figure 1.0 – Key Plan** following page 1).

This report will detail the proposed means of servicing the site and will provide details on how the stormwater management requirements will be achieved in accordance with overarching reports and current City of Ottawa guidelines.

2.0 GUIDELINES, STUDIES AND REPORTS

The servicing and stormwater management designs for the subject site have been prepared in keeping with the following documents:

- **Sewer Design Guidelines**, City of Ottawa, December 2025 (herein referred to as OSDG).
- **Water Distribution Design Guidelines**, City of Ottawa, December 2025 (herein referred to as OWDG).
- **Design Guidelines for Sewage Works**, Ministry of the Environment, 2008 (herein referred to as MECP Design Guidelines).
- **Design Guidelines for Drinking-Water Systems**, Ministry of the Environment, 2008 (herein referred to as MECP Water Design Guidelines).
- **Stormwater Planning and Design Manual,** Ministry of the Environment, March 2003 (herein referred to as MECP SWM Design Guidelines).
- **Water Supply for Public Fire Protection**, Fire Underwriters Survey, 2020 (herein referred to as FUS Guidelines).
- **Ontario Building Code Compendium**, Ministry of Municipal Affairs and Housing Building Development Branch, June 27, 2025 (herein referred to as OBC).
- **Former CFB Rockcliffe, Master Servicing Study,** IBI Group, August 2015 (herein referred to as the MSS).
- **Stormwater Management Existing Conditions & LID Pilot Project Scoping, Final Report**, Aquafor Beech, August 2015 (herein referred to as the LID Pilot Project Report).
- **Wateridge Village Phases 6 & 7, Developer Checklist**, Aquafor Beech Limited, November 2024 (herein referred to as the Developer Checklist).
- **Design Brief, Wateridge Village at Rockcliffe Phases 6 and 7**, Arcadis, August 2025 (herein referred to as the Arcadis Design Brief).



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scale N.T.S.	BLOCK 21, WATERIDGE VILLAGE	project no. 25117
date 09/01/26		
drawn by BLM	KEY PLAN	FIG 1.0

A pre-consultation meeting was held with the City of Ottawa on November 12, 2025 to discuss requirements for the proposed development. The pre-consultation meeting feedback has been provided under **Appendix A** for reference.

3.0 EXISTING CONDITIONS

The subject site is contained within a 1.41-hectare block which forms part of Phase 7 of Wateridge Village at Rockcliffe. The subject site (i.e. Block 21) is designated to have a mid-rise mixed-use land use as identified on *Figure 1.7 – Phasing Plan* from the Arcadis Design Brief (provided under **Appendix A**). The lands to west, east, and north of the site are currently undeveloped, however, underground construction for Phases 6 and 7 of the subdivision is anticipated to start in early 2026. The municipal right-of-way to the south (i.e. Tawadina Road) has been constructed to wear course asphalt and concrete curb and sidewalk have been installed on the north side, abutting the subject site. Refer to **Figure 2.0** below for an aerial view of the site under its current development state.



Figure 2.0: Existing Conditions

The topography of the property is generally flat and slopes towards the north. Refer to the topographic plan prepared by Monument-Urso Surveying Ltd. under **Appendix A** for more details. Existing municipal infrastructure is available within the adjacent right-of-ways as detailed in the sections below.

4.0 DEVELOPMENT PROPOSAL

The Owner is proposing to develop the subject site to accommodate three new multi-storey buildings which will be constructed in three phases. The key features of each phase have been summarized below:

<u>Phase 1</u>

- Site area of 0.63 hectares
- 6-Storey retirement home building
- Building footprint of 2,912 m^2
- 1 level of underground parking
- Access road connection to Bareille-Snow Street
- Drop-off zone connection to Tawadina Street
- Landscaped amenity area
- 188 dwelling units
    - (98) assisted care units
    - (30) bachelor units
    - (47) 1-bedroom units
    - (13) 2-bedroom units

Phase 2

- Site area of 0.47 hectares
- 9-Storey apartment building
- Building footprint of 2,060 m^2
- 1 level of underground parking (extension of Phase 1 parking garage)
- Enclosed link to the Phase 1 building
- Extension of internal access road
- Landscaped amenity areas
- 170 dwelling units

Phase 3

- Site area of 0.31 hectares
- 9-Storey apartment building
- Building footprint of 1,012 m^2
- 1 level of underground parking (extension of Phase 2 parking garage)
- Landscaped amenity areas
- 100 dwelling units

The full buildout of the subject site will provide a total of 458 residential units. Refer to the Site Plan, prepared by T Bonhomme Architect, under **Appendix B** for more details. The site will be serviced with new water, sanitary and storm infrastructure via connections to the existing municipal systems as detailed in the sections below.

5.0 WATER SERVICING

5.1 Existing System

Phases 6 and 7 of Wateridge Village at Rockcliffe will be serviced with potable water via connections to the existing 406mm diameter watermain located within the Tawadina Road right-of-way. The distribution system is located within the Montreal Road Pressure Zone (Zone MONT). The existing and proposed distribution systems are shown on *Figure 2.1* from the Arcadis Design Brief (provided under **Appendix C**). Municipal watermains will be available in proximity to the subject site as follows:

- A 406mm diameter PVC watermain within the Tawadina Road right-of-way (previously constructed as part of Phase 2B).

- A 203mm diameter PVC watermain within the Codd's Road right-of-way (to be constructed as part of Phase 6-7).
- A 203mm diameter PVC watermain within the Bareille-Snow Street right-of-way (to be constructed as part of Phase 6-7).

Service stub locations for Phase 1 have been coordinated with the design for Phases 6 and 7 of Wateridge Village. Refer to the *General Plan of Services,* prepared by Arcadis for Phases 6-7, under **Appendix A** for more details.

5.2 Design Criteria

The design of the watermain distribution system for Phases 6 and 7 of Wateridge Village at Rockcliffe is detailed in the overarching Arcadis Design Brief. The following design criteria were established for the subject site in keeping with the current OWDG:

Residential

- Basic Day (BSDY) Demand — 280 L/person/day
- Maximum Day (MXDY) Demand — AVGDY x 2.5
- Peak Hour (PKHR) Demand — MXDY x 2.2
- Apartment (average) — 1.8 persons/unit

Commercial Retail

- Basic Day (BSDY) Demand — 2,500 L/1000 m^2/day
- Maximum Day (MXDY) Demand — AVGDY x 2.5
- Peak Hour (PKHR) Demand — MXDY x 1.8

- Operating Pressure Range — 50 to 80 psi
- Fire Flow Demand — 9,000 L/min

Since the Phase 1 building will be classified as a retirement home (i.e. institutional use), water demands for the units which are provided with assisted care have been calculated using the following design criteria:

- Basic Day (BSDY) Demand — 450 L/bed/day — (OSDG; Appendix 4-A)
- Maximum Day (MXDY) Demand — AVGDY x 1.5 — (OWDG; Table 4.2)
- Peak Hour (PKHR) Demand — MXDY x 1.8 — (ISD-2010-2)

5.3 Water Demands

The Arcadis Design Brief provided domestic water demand calculations based on assumed development parameters for the site (i.e. Block 21). The Arcadis Design Brief allocated demands for a total population of 724 people and 2,292 m^2 of commercial retail space. The domestic water demands have been recalculated based on the current development proposal and are summarized in the table below.

Table 5.1: Domestic Water Demands

Development Stage	Basic Day Demand (L/s)	Maximum Day Demand (L/s)	Peak Hour Demand (L/s)
Phase 1	0.95	1.86	3.79
Phase 2	1.06	2.64	5.75
Phase 3	0.58	1.46	3.21
Total Design	**2.59**	**5.96**	**12.75**
Arcadis Design[*1]	*2.42*	*6.03*	*13.20*

Notes:
1. As per Design Brief prepared for Phases 6 and 7 of Wateridge Village at Rockcliffe.

As shown in the table above, the basic day demand has increased by 7.0% while the maximum day and peak hour demands have marginally decreased from the values allocated in the Arcadis Design Brief. The hydraulic model outputs from the Arcadis Design Brief indicate that the pressures within the distribution system range from 69.6 psi to 84.98 psi (480.15 kPa to 585.92 kPa) under the basic day scenario. The 7.0% increase in basic day demand is not anticipated to lower the system pressures below the acceptable range. Refer to the Arcadis water demand calculations and the current water demand calculations provided under **Appendix C** for more details.

5.4 Proposed System

The development of the subject site will be phased with the intention that each phase will undergo a future severance. Since each building will ultimately have independent ownership, each building will be provided with independent water service connections to the municipal distribution system. In accordance with the current OWDG, individual residential facilities with basic day demands greater than 50 m^3/day shall be connected with a minimum of two water services, separated by an isolation valve, to avoid the creation of a vulnerable service area (VSA). Since the basic day demands will exceed 50 m^3/day, twin water service connections (separated by an isolation valve) will be provided for each building.

The Phase 1 and Phase 3 buildings will receive water supply via individual 152mm diameter water service connections to the existing 203mm diameter watermain on Bareille-Snow Street. The Phase 2 building will receive water supply via individual 152mm diameter water service connections to the existing 203mm diameter watermain on Codd's Road. As noted under **Section 5.1**, service stub locations for Phase 1 have been coordinated with the design for Phases 6 and 7 of Wateridge Village. The proposed watermain network is shown on the Servicing Plan (DWG. 25117-S1) provided under **Appendix B**.

5.5 System Pressures

A boundary condition request has been made to the City of Ottawa for the proposed water service connections to the municipal distribution system. At the time of writing this report, boundary conditions have still not been provided. It is likely that boundary conditions will not be available until such a time that the watermain distribution system within the adjacent right-of-ways are constructed and deemed in service. In lieu of boundary conditions, the hydraulic water model outputs from the Arcadis Design Brief have been used to assess the system pressures at the proposed building locations. The proposed water service connections for the Phase 1 and Phase 3 building will be assessed by the junction node on Bareille-Snow Street (i.e. J16) and the water service connections for the Phase 2 building will be assessed by the junction node on Codd's Road (i.e. J10). Refer to the *Hydraulic Water Model Figure* prepared

by Arcadis under **Appendix C**. The Arcadis Design Brief provided hydraulic model outputs for the minimum and maximum HGL scenarios. The results of those scenarios are summarized in the table below:

Table 5.2: Hydraulic Water Model Outputs

Model Junction	Street	Min. HGL (psi)	Max. HGL (psi)
J10	Codd's Rd.	75.74	76.46
J16	Bareille-Snow St.	75.74	76.44

Notes:
1. Outputs as per Arcadis Design Brief.
2. J10 represents anticipated pressures for the Phase 2 building.
3. J16 represents anticipated pressures for the Phase 1 and Phase 3 buildings.

As shown in the table above, the minimum pressures modelled at the service connections exceed the desired minimum operating pressure of 50 psi and therefore are in accordance with the current OWDG. The maximum pressures modelled at the service connections are below the desired maximum operating pressure of 80 psi and therefore pressure reducing valves (PRVs) will not be required. Refer to the hydraulic model outputs from the Arcadis Design Brief under **Appendix C** for more details.

5.6 Fire Flows

The hydraulic water model developed (by Arcadis) for Phases 6 and 7 of Wateridge Village at Rockcliffe assigned a fire flow demand of 15,000 L/min (250 L/s). The results of the hydraulic simulation verified that all nodes in the system exceed the minimum residual pressure of 20 psi (150 kPa) under the under the max. day plus fire flow scenario.

In accordance with the current OWDG, the total required fire flow shall first be calculated based on OBC *Appendix A-3.2.5.7*. The water supply coefficient (K) is derived from OBC Table 1 based on the type of construction and group classification for the building (as confirmed by the Architect).

The total of spatial coefficient (S_{TOT}) is interpolated from OBC Figure 1 based on exposure distances measured from the proposed building. Where a building has exposures on more than one side, the percentage increase in the fire protection water supply should be totaled to reflect all exposure protection requirements. Note that the total of spatial coefficient need not exceed a value of 2.0.

The required minimum water supply flow rate can then be derived from OBC Table 2 based on the calculated minimum supply of water (Q). The fire flow calculations for each building have been summarized in the table below:

Table 5.3: OBC Fire Flow Calculations

Parameter	Phase 1 Building	Phase 2 Building	Phase 3 Building
Water Supply Coefficient (K)[*1]	10	10	10
Building Volume (V)[*2]	54,673 m^3	42,773 m^3	26,026 m^3
Total of Spatial Coefficient (S_{TOT})[*3]	1.5	2.0	1.5
Type of Construction[*4]	Non-combustible		
Group Classification[*5]	B3	C	C
Minimum Supply of Water (Q)[*6]	820,091 L	855,466 L	390,383 L
Required Water Supply Flow Rate[*7]	9,000 L/min	9,000 L/min	9,000 L/min

Notes:
1. Derived from OBC Table 1.
2. Calculated based on floor areas and heights provided by Architect.
3. Interpolated from OBC Figure 1
4. Constructed type confirmed by Architect.
5. Group classification confirmed by Architect.
6. $Q = K \times V \times S_{TOT}$
7. Derived from OBC Table 2.

In accordance with the current OWDG, where a pressurized hydrant is available and the required minimum water supply flow rate is 9,000 L/min (or greater), the required fire flow shall also be calculated using FUS guidelines. As shown in the table above, the required water supply flow rates for the buildings are not less than 9,000 L/min and therefore additional calculations using FUS guidelines are warranted.

The total required fire flows have been calculated in accordance with the FUS guidelines using the following input parameters:

- Type of Construction — Non-combustible
- Effective Floor Area — Single largest floor area + 25% of two adjoining floors
- Occupancy Class — Limited Combustible
- Sprinkler Protection — Automatic sprinkler protection
Full supervision of sprinkler system
Water supply is standard for system and hose lines
- Exposure Distances — Separations as per Site Plan

Using the parameters above, the total required fire flows have been calculated and summarized in the table below:

Table 5.4: FUS Fire Flow Calculations

Structure	Total Required Fire Flow (L/min)
Phase 1 Building	5,000
Phase 2 Building	4,000
Phase 3 Building	3,000

As shown in the table above, the Phase 1 building will generate the highest required fire flow and therefore will govern the site design. Since the total required fire flow is below the 15,000 L/min fire demand assumed in the Arcadis hydraulic water model, the watermain distribution system will be able to provide adequate fire flow to meet the site demand. Refer to the supporting fire flow calculations provided under **Appendix C** for more details.

5.7 Hydrant Coverage

In accordance with current OWDG, the aggregate fire flow capacity of all contributing fire hydrants within 150 m of a building shall not be less than the required fire flow. The contribution to the required fire flow is dependent on the distance from the hydrant to building being considered. A flow of 5,700 L/min should be assigned to all hydrants with a distance of less than or equal to 75 m from the building being considered and 3,800 L/min to all hydrants with a distance between 75 m and 150 m from the building being considered (as per *Table 1* from *Appendix I* for AA rated hydrants). Coverage for the on-site buildings will be provided by the municipal hydrants located within the adjacent right-of-ways. Since the buildings will be sprinklered, a hydrant must also be located within 45 m of the building's siamese connection in accordance with the Ontario Building Code (OBC). Two hydrants located within 75 m of the subject building will provide a contributing fire flow of 11,400 L/min (5,700 L/min + 5,700 L/min) which well exceeds the total required fire flows calculated above. Refer to **Figure 3.0: Hydrant Coverage Plan** provided under **Appendix C**.

6.0 SANITARY SERVICING

6.1 Existing System

All wastewater flows from Phases 6 and 7 of Wateridge Village at Rockcliffe will be conveyed to the existing sanitary sewer system currently stubbed within Bareille-Snow Street (outlet constructed as part of Phase 2). Wastewater flows will ultimately discharge to the Ottawa Interceptor Sewer which bisects the CLC property south of the subject site. The existing and proposed sanitary sewer network is shown on *Figure 3.1* from the Arcadis Design Brief (provided under **Appendix D**). Municipal sanitary sewers will be available in proximity to the subject site as follows:

- A 250mm diameter PVC sanitary sewer within the Tawadina Road right-of-way (previously constructed as part of Phase 2B).
- A 250mm diameter PVC sanitary sewer within the Codd's Road right-of-way (to be constructed as part of Phase 6-7).
- A 250mm diameter PVC sanitary sewer within the Bareille-Snow Street right-of-way (to be constructed as part of Phase 6-7).

Service stub locations for Phase 1 have been coordinated with the design for Phases 6 and 7 of Wateridge Village. Refer to the *General Plan of Services,* prepared by Arcadis for Phases 6-7, under **Appendix A** for more details.

6.2 Design Criteria

The design of the sanitary sewer system for Phases 6 and 7 of Wateridge Village at Rockcliffe is detailed in the overarching Arcadis Design Brief. The following design criteria were established for the subject site in keeping with the current OSDG:

• Average Residential Flow	280 L/person/day	(ISTB-2018-01)
• Residential Peaking Factor	Modified Harmon Eq.	(ISTB-2018-01)

- Commercial Flow 28,000 L/ha/day (ISTB-2018-01)
- Comm./Instit. Peaking Factor 1.5 (ISTB-2018-01)
- Infiltration Allowance 0.33 L/s/ha (ISTB-2018-01)
- Minimum Full Flow Velocity 0.60 m/s (OSDG S6.1.2.2)
- Maximum Full Flow Velocity 3.0 m/s (OSDG S6.1.2.2)
- Manning's 'n' Value 0.013 (OSDG S6.1.8.2)
- Average Apartment 1.8 persons/unit (OSDG Table 4.2)

Since the Phase 1 building will be classified as a retirement home (i.e. institutional use), sanitary flows for the units which are provided with assisted care have been calculated using the following design criteria:

- Average Institutional Flow 450 L/bed/day (OSDG; Appendix 4-A)
- Peaking Factor 1.5 (Institutional)

Since the unit types for the Phase 1 building are known, populations have been calculated using population densities from the OSDG. Population values for the future buildings (i.e. Phase 2 and 3) are based on the average apartment population density in keeping with the Arcadis Design Brief.

- Bachelor Apartment 1.4 persons/unit (OSDG Table 4.2)
- 1-Bedroom Apartment 1.4 persons/unit (OSDG Table 4.2)
- 2-Bedroom Apartment 2.1 persons/unit (OSDG Table 4.2)

6.3 Existing System Allocation

The design of the sanitary sewer system for Phases 6 and 7 of Wateridge Village at Rockcliffe allocated peak sanitary design flows for the subject site (i.e. Block 21). The design assumed that the subject site would have two sanitary outlets. An outlet to the sanitary sewer system on Codd's Road and a secondary outlet to the sanitary sewer system on Bareille-Snow Street. The allocated peak sanitary design flows are summarized in the table below.

Table 6.1: Allocated Peak Sanitary Design Flows

Outlet	Pop.[*1]	Peak Res. Flow (L/s)	Comm. Area (ha)	Peak Comm. Flow[*2] (L/s)	Infilt. (L/s)	Total Design Flow (L/s)
Codd's[*3]	345.6	3.85	0.15	0.05	0.23	4.13
Bareille-Snow[*4]	378.0	3.72	0.08	0.03	0.23	3.98
Total	**723.6**	**7.57**	**0.23**	**0.07**	**0.47**	**8.12**

Notes:
1. Population based on average apartment density of 1.8 persons/unit.
2. Peak commercial flow calculated using peaking factor of 1.0 as per Arcadis sanitary sewer design sheet.
3. Corresponds to Area MH1A tributary to pipe run MH1A to MH2A.
4. Corresponds to Area MH5A tributary to pipe run MH5A to MH20A.

As shown in the table above, the sanitary sewer system design for Phases 6 and 7 allocated a peak sanitary design flow of 4.13 L/s within the sewer on Codd's Road and 3.98 L/s within the sewer on Bareille-Snow Street for a total design flow of 8.12 L/s from the subject site (i.e. Block 21). Refer to the *sanitary sewer design sheet* and *Sanitary Drainage Area Plan* prepared by Arcadis under **Appendix D** for more details.

6.4 Sanitary Design Flows

Using the design criteria established above, peak sanitary design flows for the subject site have been calculated and summarized in the table below. Since detailed floor plans are not available for Phases 2 and 3 at this time, the commercial area allocated in the Arcadis Design Brief has been assigned to the Phase 2 building which fronts onto Codd's Road. The actual area of commercial retail space provided will need to be reassessed during the detailed design of future phases.

Table 6.2: Peak Sanitary Design Flows

Phase	Peak Res. Flow (L/s)	Peak Comm. Flow (L/s)	Peak Inst. Flow[*2] (L/s)	Infilt. (L/s)	Total Design Flow (L/s)
Phase 1	1.56	0.00	0.77	0.21	2.53
Phase 2	3.43	0.11	0.00	0.16	3.70
Phase 3	2.06	0.00	0.00	0.10	2.16
Total	**7.05**	**0.11**	**0.77**	**0.47**	**8.39**

Notes:
1. Population based on average apartment density of 1.8 persons/unit.
2. Peak commercial flow calculated using peaking factor of 1.0 as per Arcadis sanitary sewer design sheet.
3. Corresponds to Area MH1A tributary to pipe run MH1A to MH2A.
4. Corresponds to Area MH5A tributary to pipe run MH5A to MH20A.

As shown in the table above, the full buildout of the subject site will have a peak sanitary design flow of 8.39 L/s. This value exceeds the peak flow of 8.12 L/s allocated in the Arcadis Design Brief by 0.27 L/s (3.3%). The municipal sanitary sewer system will have adequate capacity to convey peak sanitary design flows from Phase 1, Phase 2, and approximately 88% of Phase 3 based on current design assumptions. At the detailed design stage for Phase 3, the development plans will need to be adjusted to reduce the peak sanitary design flow, or it will need to be demonstrated that the municipal system has adequate capacity to convey additional flows from the subject site.

6.5 Proposed System

The development of the subject site will be phased with the intention that each phase will undergo a future severance. Since each building will ultimately have independent ownership, each building will be provided with independent sanitary service connections to the municipal system. Wastewater flows from the Phase 1 building will be conveyed by a 250mm diameter sanitary service to the 250mm diameter sanitary sewer on Bareille-Snow Street (between MH20A and MH304A). Wastewater flows from the Phase 2 building will be conveyed by a 250mm diameter sanitary service to the 250mm diameter sanitary sewer on Codd's Road (between MH1A and MH2A). Wastewater flows from the Phase 3 building will be conveyed by a 250mm diameter sanitary service to the 250mm diameter sanitary sewer on Bareille-Snow Street (between MH5A and MH20A). As noted under **Section 6.1**, service stub locations for Phase 1 have been coordinated with the design for Phases 6 and 7 of Wateridge Village. The proposed sanitary network is shown on the Servicing Plan (DWG. 25117-S1) provided under **Appendix B**.

Although the peak sanitary design flows could be adequately conveyed with a smaller service size, 250mm diameter pipes have been specified to align with the mechanical design which requires a larger pipe diameter. The proposed sanitary sewers have been designed with

adequate capacity to convey the peak sanitary design flows and to meet self-cleansing velocities under full flow and partial flow conditions. In accordance with the City of Ottawa Sewer-Use By-Law, monitoring maintenance holes will be provided inside the property line for each service connection to the municipal system. Refer to the sanitary sewer design sheet provided under **Appendix D** for more details.

7.0 STORM SERVICING

7.1 Existing System

The minor storm sewer system for Phases 6 and 7 of Wateridge Village at Rockcliffe will discharge to the existing 1650mm diameter storm sewer within Kishkabika Park (outlet constructed as part of Phase 1A). Stormwater will ultimately discharge to the Eastern SWM Facility located northwest of the subject site. The existing and proposed storm sewer network is shown on *Figure 4.1* from the Arcadis Design Brief (provided under **Appendix E**). Municipal storm sewers will be available in proximity to the subject site as follows:

- 750mm diameter concrete storm sewers within the Tawadina Road right-of-way (previously constructed as part of Phase 2B).
- 450mm-1200mm diameter concrete storm sewer within the Codd's Road right-of-way (to be constructed as part of Phase 6-7).
- 525mm-600mm diameter concrete storm sewers within the Bareille-Snow Street right-of-way (to be constructed as part of Phase 6-7).

Service stub locations for Phase 1 have been coordinated with the design for Phases 6 and 7 of Wateridge Village. Refer to the *General Plan of Services,* prepared by Arcadis for Phases 6-7, under **Appendix A** for more details.

7.2 Design Criteria

The design of the minor storm sewer system for Phases 6 and 7 of Wateridge Village at Rockcliffe is detailed in the overarching Arcadis Design Brief. The following design criteria were established for the subject site in keeping with the current OSDG:

• Peak Flow (Q)	2.78CiA	(Rational Method)
• Rainfall Intensity (i)	City of Ottawa IDF Curve Equations	
• Runoff Coefficient (C)	0.80	(Allocated for Blocks)
• Inlet Time	10 minutes	(OSDG S5.1.4)
• Minimum Full Flow Velocity	0.80 m/s	(OSDG S6.1.2.1)
• Maximum Full Flow Velocity	3.0 m/s	(OSDG S6.1.2.1)
• Manning's 'n' Value	0.013	(OSDG S6.1.8.1)
• Design Level of Service	2-Year Event	(PIEDTB-2016-01)

The Arcadis Design Brief assumed a runoff coefficient of 0.80 for all development blocks within Phase 6 and 7. The runoff coefficients for the site design will be calculated based on the actual surface covers proposed on the Site Plan. In accordance with the OSDG, runoff coefficients will be increased by 25% (up to a maximum of 1.0) during the 100-year event. The runoff coefficients for the site design are as follows:

• Pervious Areas	0.20	(100-Year = 0.25)
• Impervious Areas	0.90	(100-Year = 1.00)
• Gravel Areas	0.80	(100-Year = 1.00)

7.3 Existing System Allocation

The design of the minor storm sewer system for Phases 6 and 7 of Wateridge Village at Rockcliffe allocated peak design flows for the subject site (i.e. Block 21). The design assumed that the subject site would have two storm sewer outlets. An outlet to the storm sewer system on Codd's Road and a secondary outlet to the storm sewer system on Bareille-Snow Street. The allocated unrestricted 2-year peak design flows are summarized in the table below.

Table 7.1: Allocated Unrestricted 2-Year Peak Flows

Outlet	Runoff Coefficient[*1]	Area[*1] (ha)	AC	2-Year Peak Flow (L/s)
Codd's Road[*2]	0.80	0.70	0.56	119.57
Bareille-Snow Street[*3]	0.80	0.71	0.57	121.28
Total		**1.41**		**240.85**

Notes:
1. Values as per Arcadis Design Brief.
2. Corresponds to Area S1A tributary to pipe run MH1 to MH2.
3. Corresponds to Area S21 tributary to pipe run MH21 to MH20.

As shown in the table above, the minor storm sewer system design for Phases 6 and 7 allocated a 2-year peak design flow of 119.57 L/s within the sewer on Codd's Road and 121.28 L/s within the sewer on Bareille-Snow Street for a total minor system design flow of 240.85 L/s from the subject site (i.e. Block 21). Refer to the *storm sewer design sheet* and *Storm Drainage Area Plan* prepared by Arcadis under **Appendix E** for more details.

7.4 Minor System Peak Flows

In keeping with the Arcadis Design Brief, the subject site will have two outlets for minor system flows. Approximately 0.62 hectares of the site area will be captured and discharged to the existing storm maintenance hole (MH20) on Bareille-Snow Street and approximately 0.37 hectares will be captured and discharged downstream of the existing storm maintenance hole (MH1) on Codd's Road. The unrestricted 2-year peak flows have been summarized in the table below.

Table 7.2: Unrestricted 2-Year Peak Flows

Outlet	AC[*3]	2-Year Peak Flow (L/s)
Codd's Road[*1]	0.34	71.58
Bareille-Snow Street[*2]	0.49	102.25
Total		**173.83**

Notes:
1. Tributary to pipe run MH1 to MH2.
2. Tributary to pipe run MH20 to MH5.
3. Runoff coefficient calculations provided under **Appendix E**.

As shown in the table above, the unrestricted 2-year peak flows tributary to the municipal storm sewer systems are less than the values allocated for in the Arcadis Design Brief and therefore the downstream systems should have adequate capacity to convey minor system flows from the subject site.

7.5 Storm Sewer Design

Stormwater runoff from the internal access road and parking lot areas will be captured by surface inlets and conveyed to the proposed storm sewer systems. Runoff captured by the catch basin located within the Phase 1 parking area (denoted as CB 1) will be conveyed by the proposed storm sewer system to the outlet on Bareille-Snow Street. The catch basins located within the future parking lot extension and amenity area (denoted as CB 2, CB 3, and CB 4) will be located atop the proposed Phase 2 parking garage structure. Runoff captured by these inlets will be conveyed by the building's internal plumbing system (to be designed by the Mechanical Engineer) to the storm sewer outlet on Codd's Road.

Stormwater runoff from the proposed underground parking garage ramp will be captured by a trench drain and conveyed by the building's internal plumbing system (to be designed by the Mechanical Engineer) to the storm sewer outlet on Bareille-Snow Street.

The proposed storm sewers have been designed with adequate capacity to convey the unrestricted 2-year peak flow from the subject site. The storm sewers have also been designed to convey the restricted 100-year peak flow without surcharging of the system. The storm sewers have been designed to meet the allowable full flow velocities for self-cleansing in accordance with the current OSDG. Refer to the Storm Drainage Area Plan (DWG. 25117-STM1) and the storm sewer design sheet provided under **Appendix E** for more details.

7.6 Foundation Drainage System

In accordance with the Geotechnical Investigation, perimeter and subfloor foundation drainage systems are recommended for the proposed buildings. The captured groundwater will be conveyed to building sumps. The sumps will incorporate a duplexed pump arrangement for 100% pumping redundancy and will be equipped with emergency power (to be designed by others). The foundation drainage systems will outlet to the proposed building storm services.

7.7 Roof Drainage

The proposed buildings will incorporate flat roof designs. Stormwater runoff will be captured by roof drains and conveyed to the building storm services. Stormwater runoff from the Phase 1 and Phase 3 building roofs will be captured by roof drains and conveyed by the proposed storm sewer system to the outlet on Bareille-Snow Street. Runoff from the Phase 2 building roof will be captured by roof drains and conveyed to the storm sewer outlet on Codd's Road. The sizing of the building storm services has been coordinated with mechanical design requirements. In accordance with City of Ottawa standards, the roof drainage system shall not discharge directly to the foundation drainage system. Refer to **Section 8.4** for additional details on the roof controls.

7.8 Free Flow to Municipal Minor System

Stormwater runoff from the perimeter of the site will be conveyed uncontrolled to the municipal storm sewer systems located within the adjacent right-of-ways. Drainage area FF1 is comprised of the free flow area along the southern perimeter of the site which will be conveyed uncontrolled to the Tawadina Road right-of-way. The runoff will be captured within the existing pipe run MH304 to MH305. Drainage area FF2 is comprised of the free flow area along the western perimeter of the site which will be conveyed uncontrolled to the Codd's Road right-of-way. The runoff will be captured within pipe run MH1 to MH2. Drainage area FF3 is comprised of the free flow area along the northern perimeter of the site which will be conveyed uncontrolled to the Codd's Road right-of-way. The runoff will be captured within pipe run MH4 to MH3. Drainage area FF4 is comprised of the free flow area along the eastern perimeter of

the site which will be conveyed uncontrolled to the Bareille-Snow Street right-of-way. The runoff will be captured within pipe run MH20 to MH5.

The capacities of the municipal storm sewers to accommodate additional flow from the site's free flow areas during the design level of service event (i.e. 2-year) have been assessed and summarized in the table below.

Table 7.3: Downstream Storm Sewer Assessment

Street	Pipe Run	Full Flow Capacity*1 (L/s)	Peak Design Flow*1 (L/s)	Free Flow*2 (L/s)	Revised Percent Full*3 (%)
Tawadina Rd.	MH304 to MH305	604.10	*4	10.3	*4
Codd's Rd.	MH1 to MH2	248.81	161.21	8.4	68.2
Codd's Rd.	MH4 to MH3	1,838.53	1,167.47	4.5	63.7
Bareille-Snow St.	MH20 to MH5	906.40	248.85	11.3	28.7

Notes:
1. As per storm sewer design sheet prepared for Wateridge Village at Rockcliffe.
2. Refer to free flow calculations under **Appendix F**.
3. (Peak Design Flow + Free Flow) / (Full Flow Capacity) *100
4. The peak design flow from the existing phase design is unknown, however, the 2-year free flow accounts for only 1.7% of the total pipe capacity.

As shown in the table above, the municipal storm sewers will have adequate capacity to accommodate free flow from the subject site.

7.9 Interim Storm Servicing

The proposed development will be phased and as such will require an interim storm servicing design to manage stormwater runoff until the future phases are constructed. Under the interim condition (i.e. only Phase 1 constructed), runoff from the parking area and building roof will be conveyed by the proposed storm sewer system to the outlet on Bareille-Snow Street as under the ultimate condition. Stormwater runoff from the future Phase 2 and Phase 3 lands will be conveyed by a drainage swale to a temporary ditch inlet catch basin (denoted as DICB 1). The temporary DICB forms part of the Wateridge Village Phase 6-7 design prepared by Arcadis and discharges to pipe run MH20 to MH5 on Bareille-Snow Street via a 200mm diameter catch basin lead. Refer to the interim Storm Drainage Area Plan (DWG. 25117-STM2) and interim storm sewer design sheet provided under **Appendix E** for more details.

8.0 STORMWATER MANAGEMENT

8.1 Existing System

The stormwater management design for Phases 6 and 7 of Wateridge Village at Rockcliffe has implemented a dual drainage design with minor and major systems. The minor system is conveyed by the storm sewer network to the trunk sewer within Kishkabika Park and ultimately to the Eastern SWM Facility. Inlet control devices (ICDs) are utilized to minimize surcharging in the minor system during infrequent storm events, to maximize available surface storage, and to meet the downstream system allowance. The minor system capture is generally based on the 100-year simulated flow for the individual catchments which is increased above the OSDG 2-year target to minimize major system flow leaving the site. The balance of surface runoff not captured by the minor system is conveyed via the major system. The major overland

/ emergency flow route cascades stormwater to the limit of Codd's Road, east of Michael Stoqua Street. Refer to the *DDSWMM Model Schematic*, prepared by Arcadis, under **Appendix F** for more details.

The hydraulic stormwater model (developed by Arcadis) has assumed that the individual development blocks (i.e. the subject site) will incorporate minor system inflow restrictions with major system flow cascading to the adjacent right-of-ways.

8.2 Design Criteria

In accordance with the overarching Arcadis Design Brief and current OSDG, the following stormwater management design criteria have been implemented for the subject site:

- Control minor system peak flows to the allocated rates provided in *Table 5-3* of the Arcadis Design Brief.
- Control major system flows to the allocated rates provided in *Table 5-7* of the Arcadis Design Brief.
- Provide on-site storage (in excess of the allowable release rates) for all storm events up to and including the 100-year event.
- No surface ponding during the 2-year design event.
- Maximum surface ponding depth of 350mm.
- Minimum 300mm of freeboard between 100-year spill elevation and any building openings.
- No spill from stress test (100-year + 20%) onto permanent structures.
- Minimum 150mm of freeboard between spill elevations and ground elevation at building envelope (in proximity to flow route or ponding area).
- Provide a major overland flow route to the adjacent municipal right-of-ways.
- Low Impact Development (LID) targets
    - Infiltration 4mm
    - Erosion Control 4mm
    - Water Quality 15mm (includes 4mm infiltration/erosion target)
- Quality control via the Eastern SWM Facility

8.3 Allowable Release Rates

The stormwater management design for Phases 6 and 7 of Wateridge Village at Rockcliffe allocated minor and major system flows from the subject site (i.e. Block 21). The subject site is identified as catchments B1A and B21 in the Arcadis Design Brief. The minor system design target was based on the 5-year event, and the major system flow was based on the 100-year 3-hour Chicago storm. As discussed under **Section 7.3**, the Arcadis design assumed that the subject site would have two outlets for stormwater. Catchment B1A is conveyed to an outlet on Codd's Road and catchment B21 is conveyed to an outlet on Bareille-Snow Street. The minor and major system allowable release rates for each outlet are summarized in the table below.

Table 8.1: Allowable Release Rates

Outlet	Arcadis Drainage Area ID	Minor System Capture[*1] (L/s)	Major System Flow[*2] (L/s)
Codd's Road[*3]	B1A	142	121
Bareille-Snow Street[*4]	B21	144	122
Total		**286**	**243**

Notes:
1. As per *Table 5-3* from the Arcadis Design Brief. Provided under **Appendix F**.
2. As per *Table 5-7* from the Arcadis Design Brief. Provided under **Appendix F**.
3. Corresponds to Area B1A tributary to pipe run MH1 to MH2.
4. Corresponds to Area B21 tributary to pipe run MH21 to MH20.

8.4 Quantity Control

In order to restrict stormwater peak flows to the allowable release rates established in the overarching Arcadis Design Brief, quantity controls will be required. Drainage area STM1 is comprised largely of the Phase 1 parking area. Since the proposed storm sewers have capacity to convey the unrestricted 100-year peak flow from area STM1, quantity controls for are not required and the drainage area is assumed to be uncontrolled.

Drainage area STM2, STM3, and STM4 are comprised of the future Phase 2 and Phase 3 parking area and adjacent amenity spaces. The catch basins (denoted as CB 2, CB 3, and CB4) will be located atop the proposed Phase 2 parking garage structure and as such will be conveyed by the building's internal plumbing system (to be designed by the Mechanical Engineer). For stormwater management purposes, these drainage areas are assumed to be uncontrolled to avoid the need for inlet restrictions within the shallow inlet structures located atop the parking garage structure.

Drainage areas R1-R3 are comprised of the building roofs and will be restricted by roof drain controls. At the time of writing this report, the total number of roof drains is unknown. The roof drains have been assumed to have a cumulative maximum release rate of 50 L/s/ha taken over the total roof area. Supporting details on the roof drain designs will need to be provided in subsequent submissions. A Watts roof drain specification sheet has been provided under **Appendix F** for reference.

Drainage area FF1 is comprised of the free flow area along the southern perimeter of the site which will be conveyed uncontrolled to the Tawadina Road right-of-way. The runoff will be captured within the existing pipe run MH304 to MH305. Drainage area FF2 is comprised of the free flow area along the western perimeter of the site which will be conveyed uncontrolled to the Codd's Road right-of-way. The runoff will be captured within pipe run MH1 to MH2. Drainage area FF3 is comprised of the free flow area along the northern perimeter of the site which will be conveyed uncontrolled to the Codd's Road right-of-way. The runoff will be captured within pipe run MH4 to MH3. Drainage area FF4 is comprised of the free flow area along the eastern perimeter of the site which will be conveyed uncontrolled to the Bareille-Snow Street right-of-way. The runoff will be captured within pipe run MH20 to MH5. To be conservative, no reduction in free flows resulting from stormwater retention in the proposed bioretention cells has been accounted for. Refer to the free flow calculations provided under **Appendix F**.

Drainage area FF5 is comprised of the underground parking garage ramp and will be captured by a trench drain and conveyed by the building's internal plumbing system (to be designed by the Mechanical Engineer). For stormwater management purposes, the drainage area is assumed to be uncontrolled since there will be no surface storage available at the trench drain location.

Peak flows for the 2-year through 100-year design events have been calculated using the Rational Method. The results have been summarized in the tables below.

Table 8.2: Stormwater Peak Flows (to Codd's Road Outlet)

Drainage Area	2-Year Peak Flow (L/s)	5-Year Peak Flow (L/s)	100-Year Peak Flow (L/s)	Flow Control
STM2[*2] (Minor)	15.2	20.6	39.5	Uncontrolled
STM3[*2] (Minor)	4.8	6.5	12.4	Uncontrolled
STM4[*2] (Minor)	10.5	14.3	28.1	Uncontrolled
R2[*1] (Minor)	10.7	10.7	10.7	Roof Drains
FF2[*2] (Major)	8.4	11.5	23.0	Uncontrolled
FF3[*2] (Major)	4.5	6.1	12.6	Uncontrolled
Total (Minor)	**41.2**	**52.1**	**90.8**	
Total (Major)	**12.9**	**17.5**	**35.5**	
Allowable (Minor)[*3]	**142**	**142**	**142**	
Allowable (Major)[*3]	**121**	**121**	**121**	

Notes:
1. Peak flows for roof areas are based on a maximum roof drain release rate of 50 L/s/ha.
2. Peak flows for uncontrolled areas are calculated at a time of concentration of 10 minutes.
3. Allowable release rates as per Arcadis Design Brief.

Table 8.3: Stormwater Peak Flows (to Bareille-Snow Outlet)

Drainage Area	2-Year Peak Flow (L/s)	5-Year Peak Flow (L/s)	100-Year Peak Flow (L/s)	Flow Control
STM1[*3] (Minor)	21.3	28.9	55.2	Uncontrolled
R1[*1] (Minor)	14.6	14.6	14.6	Roof Drains
R3[*1] (Minor)	5.9	5.9	5.9	Roof Drains
FF4[*2] (Major)	11.3	15.3	30.5	Uncontrolled
FF5[*2] (Minor)	3.5	4.8	9.1	Uncontrolled
Total (Minor)	**45.3**	**54.1**	**84.8**	
Total (Major)	**11.3**	**15.3**	**30.5**	
Allowable (Minor)[*4]	**144**	**144**	**144**	
Allowable (Major)[*4]	**122**	**122**	**122**	

Notes:
1. Peak flows for roof areas are based on a maximum roof drain release rate of 50 L/s/ha.
2. Peak flows for free flow areas are calculated using the Rational Method at a time of concentration of 10 minutes.
3. Peak flow calculated using the Rational Method at a time of concentration of 10 minutes.
4. Allowable release rates as per Arcadis Design Brief.

Table 8.4: Cumulative Stormwater Peak Flows

Outlet	2-Year Peak Flow (L/s)	5-Year Peak Flow (L/s)	100-Year Peak Flow (L/s)
Codd's Rd. (Minor)	41.2	52.1	90.8
Codd's Rd. (Major)	12.9	17.5	35.5
Bareille-Snow St. (Minor)	45.3	54.1	84.8
Bareille-Snow St. (Major)	11.3	15.3	30.5
Tawadina Rd.[*1] (Major)	10.3	14.0	27.6
Total (Minor)	**86.5**	**106.3**	**175.5**
Total (Major)	**34.6**	**46.9**	**93.7**
Allowable (Minor)[*2]	**286**	**286**	**286**
Allowable (Major)[*2]	**243**	**243**	**243**

Notes:
1. Peak flows for free flow area FF1.
2. Allowable release rates as per Arcadis Design Brief.

As shown in the tables above, the total peak flows from the subject site do not exceed the allowable release rates and therefore the site has been designed in accordance with the overarching Arcadis Design Brief.

8.5 Quantity Storage

In order to restrict stormwater peak flows to the rates provided in **Section 8.4**, on-site storage will be required. On-site storage (in excess of the allowable release rates) will be required for all storm events up to and including the 100-year event. In accordance with the current OSDG, there shall be no surface ponding during the 2-year event, and the maximum ponding depth shall not exceed 350mm. Required storage volumes have been calculated for each drainage area using the Modified Rational Method and the allowable release rates provided in **Section 8.4**.

Since drainage areas STM1-STM4 will be uncontrolled, stormwater runoff for up to and including the 100-year design event will be fully captured by the minor system and no surface storage will be required.

The required storage volumes for drainage areas R1-R3 will be provided as rooftop storage. At the time of writing this report, ponding details for the building roofs are unknown. Available storage volumes for the roofs have been estimated by assuming a conical shaped ponding area with a maximum ponding depth of 150mm. Supporting details on the roof storage designs will need to be provided in subsequent submissions.

Storage volumes and ponding depths for the on-site catchment areas during the 100-year design event have been summarized in the table below.

Table 8.5: 100-Year Storage Volumes & Ponding Depths

Drainage Area	100-Year Event		
	Required Storage Volume (m^3)	Available Storage Volume (m^3)	Surface Ponding Depth[*1] (m)
STM1	0.0[*4]	3.6[*2]	0.00
STM2	0.0[*4]	5.1[*2]	0.00
STM3	0.0[*4]	21.1[*2]	0.00
STM4	0.0[*4]	0.7[*2]	0.00
R1	112.1	146.2[*3]	0.15
R2	82.2	107.2[*3]	0.15
R3	45.2	58.9[*3]	0.15

Notes:
1. Ponding depths are measured from the ponding elevation to the top of grate elevation.
2. Available surface storage volumes are calculated using AutoCAD Civil3D by Autodesk.
3. Available roof storage estimated based on conical shaped ponding area at 150mm ponding depth.
4. Capacity of minor system exceeds peak flow therefore no surface storage is required.

As shown in the table above, adequate on-site storage has been provided to detain the 100-year event to the allowable release rates established in the overarching Arcadis Design Brief. Refer to the Ponding Area Plan (DWG. 25117-PA1) and the storage volume tables provided under **Appendix F** for more details.

8.6 Stress Test (100-YR + 20%) and Freeboard

The stress test (100-year + 20%) event must be assessed to ensure that ponding limits do not encroach onto adjacent permanent structures. Flows and required storage volumes for the stress test event are shown on the storage volume tables provided under **Appendix F**. For drainage areas STM1-STM4, no surface ponding will occur during the street test event. For building floodproofing, a minimum freeboard of 0.30m must also be provided between the maximum static ponding elevation and any building openings adjacent to the ponding area. The table below demonstrates the provided freeboard for the subject site:

Table 8.6: Provided Freeboard

Drainage Area	Max. Static Ponding Elev.[*1] (m)	Building Opening Elevation (m)	Freeboard (m)	Stress Test Ponding Elev. (m)	Ground Surface Elev.[*2] (m)	Freeboard (m)
STM1	90.27	90.65	0.38	90.18[*3]	90.48	0.30
STM2	90.31	90.65	0.34	90.21[*3]	90.60	0.39
STM3	90.28	90.65	0.37	90.08[*3]	90.45	0.37
STM4	90.60	90.90	0.30	90.50[*3]	90.85	0.35

Notes:
1. Maximum static ponding elevation before spilling occurs.
2. Ground surface elevation at perimeter of closest permanent structure adjacent to ponding area.
3. Where no surface ponding will occur, ponding elevations are set to the T/G elevation.

As shown in the table above, adequate freeboard has been provided to protect the on-site buildings from flooding for up to and including the stress test event. Refer to the Ponding Area Plan (DWG. 25117-PA1) provided under **Appendix F** for more details.

8.7 Major System

The major system for the subject site has been designed to cascade overland flow from the individual catchment areas to the adjacent municipal right-of-ways. Overland flow from drainage area STM4 and STM1 will cascade east to the Bareille-Snow Street right-of-way. Overland flow from drainage areas STM2 and STM3 will cascade north to the Codd's Road right-of-way. As discussed further under **Section 8.6**, adequate freeboard has been provided in accordance with the current OSDG.

8.8 Low Impact Development (LID)

8.8.1 LID Design Targets

Low impact development (LID) targets for the subject site were established in the overarching Wateridge Village Phases 6 & 7 Developer Checklist prepared by Aquafor Beech Limited. The design targets have been summarized below:

- Infiltration Target — 4mm (applied to full catchment area)
- Erosion Control Target — 4mm (applied to full catchment area)
- Water Quality Target — Minimum: 15mm (applied to impervious catchment area)
  Enhanced: 25mm (applied to impervious catchment area)

Using the above design targets, stormwater volumes have been calculated for the ultimate development. The required volumes associated with the LID design targets have been summarized in the table below:

Table 8.7: LID Design Targets

Total Site Area (m^2)	Impervious Area (m^2)	Infiltration/ Erosion Control Target[*1] (m^3)	Water Quality Target[*2] (m^3)	
			Minimum	Enhanced
13,979	9,802	55.9	107.8	205.8

Notes:
1. Based on target of 4mm. Catchment based target applied over the full catchment area.
2. Based on target of 11mm for minimum requirements and 21mm for enhanced. Target is applied directly to contributing impervious area. The water quality target includes the infiltration/erosion control target (i.e. water quality target = 15mm water quality event – 4mm infiltration/erosion control target).

The above targets will be achieved through the implementation of various LID measures as discussed in the sections below. Refer to the LID Drainage Area Plan & Details (DWG. 25117-LID1) under **Appendix G**.

8.8.2 Infiltration Chambers

A portion of the LID design targets will be achieved by incorporating underground infiltration chambers within the on-site storm sewer system to promote stormwater retention and infiltration. The depths of the underground storage chambers and corresponding available storage volumes are constrained by the interpolated bedrock depths. The underground storage chambers are proposed to be GreenStorm systems designed by Stormcon (or

approved equivalent). The modular design of the GreenStorm system provides flexibility in constrained sites while maximizing the available storage volume. Each chamber will be equipped with access ports to facilitate operation and maintenance activities. Detailed shop drawings for each chamber will be provided prior to final approval. Refer to the GreenStorm product manual under **Appendix G** for more details.

Infiltration Chamber 1:

Stormwater runoff from the Phase 1 building roof and underground parking garage ramp (LID-3) will be conveyed to an underground infiltration chamber downstream of storm maintenance hole ST201. Each roof drain will be equipped with a self-locking polyethylene dome which will prevent large debris (i.e leaves) from being captured, providing pre-treatment upstream of the chambers. The available storage volume (for retention and infiltration) is equal to the chamber sump volume located below the inlet/outlet pipe invert elevations. The available storage volume within the chamber sump has been calculated to be 12.4 m^3 which represents the approximate runoff volume from a 4mm event. The depth and available storage volume of the chamber is constrained by the native bedrock surface (refer to **Section 8.8.8** for more details). In the event that the chamber sump is full, overflow will be conveyed to the downstream maintenance hole (ST205) via the outlet pipe.

Infiltration Chamber 2:

Stormwater runoff from the Phase 3 building roof (LID-4) will be conveyed to an underground infiltration chamber downstream of storm maintenance hole ST203. The available storage volume (for retention and infiltration) is equal to the total chamber storage volume since the obvert of the system is located at the same elevation as the outlet pipe in storm maintenance hole ST203. The available storage volume within the chamber has been calculated to be 13.5 m^3 which represents the approximate runoff volume from a 11mm event. The depth and available storage volume of the chamber is constrained by the native bedrock surface (refer to **Section 8.8.8** for more details). In the event that the chamber is full, stormwater will bypass the chamber and be conveyed to the downstream maintenance hole (ST204) via the outlet pipe in ST203. Refer to the supporting storage volume calculations provided under **Appendix G**.

Infiltration Chamber Drawdown Time

The time to fully drain each chamber has been estimated using the following equation:

$$t = \frac{d}{f}$$

Where: [Sustainable Technologies Evaluation Program]

t = drawdown time (hrs)
d = ponding depth (mm)
f = design infiltration rate (mm/hr)

The borehole data indicates that above the underlying bedrock is a layer of silty sand material. Extensive infiltration testing was completed by Paterson Group in support of Phases 6 & 7 of Wateridge Village at Rockcliffe. Test location, PT 1, is located within the boundary of the subject site (i.e. Block 21) and is in proximity to the proposed infiltration chambers. The field measured infiltration rate was determined to range from 72.21 mm/hr to 79.24 mm/hr. The measured infiltration rate must be divided by a safety correction factor (from *Table C2* of the LID Manual) to determine the design infiltration rate. The safety correction factor is based on the ratio of the mean infiltration rate at the proposed bottom of the LID practice relative to the

mean infiltration rate 1.5 metres below. In review of the boreholes north and south of the proposed infiltration chambers, the native soil (i.e. silty sand) appears to remain consistent above the bedrock surface. Further geotechnical testing is ongoing to verify infiltration rates, however, a safety correction factor of 3.5 has been selected to be conservative. The design infiltration rate has been calculated to be 20.63 mm/hr. Refer to excerpts from the Paterson Geotechnical Report under **Appendix G** for more details.

Chamber 1:

t = (310 mm) / (20.63 mm/hr)

t = 15.0 hrs

Chamber 2:

t = (660 mm) / (20.63 mm/hr)

t = 32.0 hrs

Drawdown times of 15.0 hrs and 32.0 hrs have been calculated for chamber 1 and chamber 2 respectively which are below the maximum recommended drawdown time of 48 hours.

8.8.3 Permeable Surfaces

A portion of the LID design targets will be achieved by the implementation of permeable surfaces to promote retention and infiltration. Permeable pavement is proposed within the limits of the Phase 1 parking area (LID-1) and permeable sidewalks are proposed on the north side of the Phase 1 building (LID-2). Areas of the site which are located directly above the underground parking garage structures are not considered suitable for permeable surfaces. The drop off access from Tawadina Road and the adjacent sidewalk were considered, however, the Owner intends to install heat tracing materials in this area to prevent slipping hazards for the senior residents and therefore permeable surfaces were not feasible in this location. The permeable surfaces are proposed to be manufactured by PurePave (or approved equivalent). PurePave systems offer the following benefits:

- Superior Infiltration: 35 to 70 times more permeable than traditional materials.
- Extreme Durability: 3 to 6 times stronger than asphalt.
- Winter Performance: Designed for extreme winter conditions, resisting frost heave, ice buildup, and salt damage.
- Low Maintenance: Self-draining surface eliminates ponding, reducing erosion and long-term maintenance costs.

Refer to the PurvePave brochure and specifications under **Appendix G** for more details. The PurePave system includes the following key elements:

- PurePave surface material
- Compacted clear stone layer
- Perforated underdrain (optional – required in high groundwater conditions or with impermeable liner)
- Biaxial geogrid on bottom and sides
- Concrete header (required where there is a transition to different material type)
- Impermeable liner (required within 4 metres of building foundation)

The typical PurePave structure will vary depending on the application (i.e. heavy-duty pavement vs sidewalks). Detailed shop drawings will be provided by PurePave for each application prior to approval. Where a permeable surface is proposed within 4.0 metres of a building foundation, an impermeable liner will be required. On the north side of the Phase 1 building, a 100mm diameter perforated subdrain is proposed within the PurePave system to provide an outlet for stormwater in the area where an impermeable liner is required. Stormwater storage will be provided within the underlying clear stone layers to achieve the LID design targets for the site.

8.8.4 Bioretention

A portion of the LID design targets will be achieved by the implementation of bioretention areas to promote stormwater retention and infiltration. In total three bioretention cells are proposed. A bioretention cell (LID-5) will retain stormwater runoff from the landscaped area on the east side of the Phase 1 building. A second bioretention cell (LID-6) will retain stormwater runoff from the landscaped area on the south side of the Phase 1 building, east of the access road. A third bioretention cell (LID-7) will retain stormwater runoff from the landscaped area on the south side of the Phase 1 building, west of the access road. Each bioretention area will incorporate the following key features:

- Maximum surface ponding depth of 150mm
- 75mm mulch layer
- 500mm filter media layer
- 100mm pea stone choking layer
- 300mm clear stone storage layer

The size of each bioretention feature has been assessed using the following equation:

$$A = \frac{WQV}{d*V}$$

Where: [LID Manual]

A = Footprint surface area (m^2)
WQV = Water quality volume (m^3)
d = Bioretention cell depth (m)
V = Void ratio for filter media and gravel storage layer (recommended to be 0.40)

The water quality volume (WQV) has been assigned as the greater of the infiltration/erosion control target or the water quality target. Since the catchment areas of the bioretention cells have minimal impervious area, the infiltration/erosion control target returns the greatest volumes and has therefore been used in the sizing calculations. The sizing calculations have been summarized in the table below.

Table 8.8: Bioretention Surface Area Sizing

LID ID	Total Catchment Area (m^2)	Infiltration/ Erosion Control Target*1 (m^3)	Bioretention Cell Depth (m)	Required Footprint Surface Area (m^2)	Provided Footprint Surface Area (m^2)
LID-5	503	2.0	0.98	5.1	14.0
LID-6	297	1.2	0.98	3.0	30.0
LID-7	421	1.7	0.98	4.3	45.0

Notes:
1. Based on target of 4mm. Catchment based target applied over the full catchment area.

As shown in the table above, the provided surface areas of each bioretention cell exceed the required surface areas calculated using the equation from the LID Manual.

8.8.5 Provided Storage Volumes

The implementation of infiltration chambers, permeable surfaces, and bioretention cells will provide adequate retention volumes to meet the LID design targets established for the site. The provided storage volumes for each LID feature have been summarized in the table below.

Table 8.9: LID Provided Storage Volumes

LID ID	Feature Type	Surface Area of LID Feature*1 (m^2)	Depth of Clear Stone Storage Layer*2 (m)	Provided Storage Volume (m^3)
LID-1	Permeable Pavement	545	0.40	87.2
LID-2	Permeable Sidewalk	177	0.30	21.2
LID-3	Infiltration Chamber	50	n/a*3	12.4
LID-4	Infiltration Cahmber	26	n/a*3	13.5
LID-5	Bioretention	14	0.40	2.2
LID-6	Bioretention	30	0.40	4.8
LID-7	Bioretention	45	0.40	7.2
			Total	**148.6**

Notes:
1. Surface area of LID features excludes areas within municipal right-of-way.
2. Void ratio of 0.40 assumed for clear stone layers.
3. Storage is provided within the GreenStorm open chamber.

As shown in the table above, the cumulative provided storage volume for all on-site LID measures is 148.6 m^3. When averaged over the total site area (13,979 m^2) the average rainfall depth retained is equal to 10.6mm which well exceeds the 4mm infiltration/ erosion control target. When average over the total site impervious area (9,818 m^2) the average rainfall depth retained is equal to 15.1mm which exceeds the 11mm water quality target.

8.8.6 Ratio of Impervious Area

For each LID measure, the ratio of impervious area to LID feature surface area has been assessed based on recommendations from the LID Manual. The results have been summarized in the table below.

Table 8.10: Ratio of Impervious Area to LID Surface Area

LID ID	Feature Type	Contributing Imp. Drainage Area (m^2)	LID Feature Surface Area[*2] (m^2)	Ratio of Imp. Area to LID Surface Area
LID-1	Permeable Pavement	480[*1]	545	0.9:1
LID-2	Permeable Sidewalk	78	177	0.4:1
LID-3	Infiltration Chamber	3107	50	62.2:1
LID-4	Infiltration Cahmber	1178	26	46.0:1
LID-5	Bioretention	71	14	5.1:1
LID-6	Bioretention	22	30	0.7:1
LID-7	Bioretention	64	45	1.4:1

Notes:
1. Contributing area to permeable pavement excludes area treated by permeable sidewalk.
2. LID feature surface area excludes area within the municipal right-of-way.

Table 3.4.1 from the LID Manual (provided under **Appendix G** for reference) provides typical impervious area to facility treatment area ratios for various LID practices. For permeable surfaces, the recommended ratio is 1:1 to 1.2:1. As shown in the table above, the ratios for the permeable surfaces do not exceed 1.2:1 and are in accordance with the LID Manual recommendations. For bioretention, the recommended ratio is 5:1 to 15:1. As shown in the table above, the ratios for the bioretention areas do not exceed the recommended values. For infiltration chambers, the recommended ratio is 5:1 to 20:1. As shown in the table above, the ratios for the infiltration chambers exceed the recommend values. The storm sewers which convey stormwater runoff from the building roofs to the infiltration chambers have been designed with minimal cover to maximize separation to bedrock and groundwater. Due to the noted constraints, it is not feasible to expand the size of the infiltration chambers while meeting minimum separation requirements. The intention of the recommended ratio for infiltration chambers is to prevent premature clogging of the system which typically consists of a clear stone trench. The GreenStorm chambers proposed for the subject site utilize a modular design which does not rely on clear stone layers for storage. Sediments accumulate within the base of the chambers and can easily be removed via the access ports; compared to a typical clear stone infiltration trench which is inaccessible without excavation. The GreenStorm chambers can be designed to incorporate treatment rows to compartmentalize inlets allowing for easier and localized cleaning. The rate of sediment accumulation will need to be monitored to establish an appropriate operation and maintenance frequency. Refer to the GreenStorm maintenance manual provided under **Appendix G** for more details.

8.8.7 Soil Amendments

In accordance with the Developer Checklist and as discussed in the Arcadis Design Brief, all landscaped areas will require soil amendments to further enhance water quality benefits. The following excerpts are from the Arcadis Design Brief:

Soil amendments are typically composed of the addition of additional organic matter in the form of compost. Compost amendments are tilled or mixed into existing soils thereby enhancing or restoring soil properties by reversing the loss of organic matter and compaction.

In general, soils with appropriate levels of organics, nutrients and good structure are capable of supporting plant and animal life while also providing important stormwater management

functions. Healthy soils efficiently infiltrate and store water, adsorb excess nutrients, filter sediments, remove pollutants through biological decomposition, as well as moderate peak stream flows and temperatures. In addition, healthy soils support vigorous plant and tree growth that also intercepts rainfall and return it to the atmosphere through evaporation and transpiration. Healthy soils also support urban tree canopy cover, a focus of many urban planners and ecologists.

Hydrologically speaking, soil amendments are used to make Hydrologic Group C and D soils suitable for on-site stormwater control and infiltration. Soil amendments benefits include increased infiltration, stormwater storage in the soil matrix, survival rate of new plantings, root growth and stabilization against erosion, improved overall tree and plant health and decreased need for irrigation and fertilization of landscaping. Amended soils are suitable for any pervious area where soils have been or will be compacted by the grading and construction process. [Arcadis Design Brief, Section 6.5]

The options for soil amendments (as detailed in the Developer Checklist) have been provided under **Appendix G** for reference.

8.8.8 Site Constraints

Approximately 62% of the total site area will be comprised of underground parking garage structures which limits the available space to implement infiltration based measures. A minimum horizontal separation of 4.0 m is recommended between building foundations and infiltration based LID measures. Where minimum separations cannot be achieved, impermeable liners shall be implemented. The site is also constrained by 5.0 m wide hydro easements spanning the western and northern property boundaries, further reducing the available space to implement LID measures on-site.

Section 3.1 of the Developer Checklist outlines site conditions which are considered unsuitable or may increase facility failure rate for infiltration based controls. A geotechnical assessment is required to confirm site conditions and the suitability of LID measures. At the time of writing this report, seasonally high groundwater data is unavailable. However, groundwater readings were taken within the on-site monitoring wells at the time of the site investigations (December 2025). The groundwater depth ranged from 2.2 m (86.50m) up to 4.6 m (85.30m) below the original ground surface. Groundwater levels will continue to be monitored at the site to verify the seasonally high groundwater elevation. The proposed LID designs will need to be amended accordingly depending on the results of the testing.

Manual groundwater readings were recorded by Paterson Group in support of the Wateridge Village Phase 6 & 7 development. A single borehole (BH 1-23) was located within the limits of the subject site (i.e. Block 21). Groundwater readings were recorded in September, May and April 2023. The groundwater was recorded as dry in September and May 2023. In April 2023, the groundwater was recorded at a depth of 1.57 m (87.45m) below original ground (refer to summary of groundwater levels under **Appendix G**). Until further groundwater levels become available, the highest groundwater level recorded at the site (87.45m) will be used to assess the proposed LID designs.

The recent geotechnical investigations for the site have identified that underlying bedrock was encountered at all borehole locations. Of the four boreholes recently completed, the depth to bedrock ranged from 1.3 m (88.60m) up to 2.8 m (85.80m) below the original ground surface. Refer to excerpts from the geotechnical investigation under **Appendix G** for more details.

Table 8.11: Summary of LID Constraints

LID ID	Finished Surface Elev. (m)	Bottom of LID Elev. (m)	Bedrock Elev. (m)	Bedrock Separation[*2] (m)	HGW Elev.[*1] (m)	HGW Separation (m)
LID-1	89.77-90.82	89.31-90.36	86.25-87.90	2.46[*3]	87.45	1.86
LID-2	89.92-91.25	89.57-90.90	86.64-88.60	2.30[*3]	87.45	2.12
LID-3	90.00-90.55	88.06	87.04	1.02	87.45	0.61
LID-4	90.22-90.37	88.12	87.07	1.05	87.45	0.67
LID-5	89.84	88.89	87.30	1.59	87.45	1.44
LID-6	90.27	89.29	87.24	2.05	87.45	1.84
LID-7	90.72	89.74	87.88	1.86	87.45	2.29

Notes:
1. Groundwater level recorded by Paterson Group in BH 1-23 on April 20th, 2023.
2. Inferred bedrock elevations based on on-site investigations.
3. Assessed at highest bedrock location.

As shown in the table above, the bottom of the proposed LID measures will meet the minimum 1.0 metre separation to bedrock based on inferred elevations between test locations. The separation to bedrock at the proposed infiltration chambers (i.e. LID-3 and LID-4) only marginally exceeds the minimum separation. Additional investigations will be completed at these locations to determine if the minimum separation can be achieved. In the event that the bedrock is higher than anticipated, the footprints of the chambers will need to be reduced or omitted entirely.

As shown in the table above, the bottom of the proposed LID measures will meet the minimum 1.0 metre separation to the seasonally high groundwater table with the exception of the proposed infiltration chambers (i.e. LID-3 and LID-4). If additional groundwater monitoring (to be completed in spring 2026) indicates that the separation cannot be achieved, further investigations, such as a groundwater mounding analysis, may be warranted. If supported through additional analysis, there remains a benefit for the implementation of infiltration based measures for the remainder of the year when groundwater levels are lower.

8.8.9 Winter Operation

For the permeable surfaces, PurePave is designed for extreme winter conditions and is functional in all seasons. PurePave has been tested and proven to reduce ice accumulation, support snow melt and reduce dependency on de-icing treatments. Winter maintenance operations which could potentially clog the system, such as frequent sanding, should be avoided.

The proposed infiltration chambers will have over 1.5 metres of cover depth (measured to system obvert) and are anticipated to have no loss of function during winter operation. Thermal insulation can be provided along the top of the chambers for added protection against freezing conditions.

The proposed bioretention cells will not function during winter conditions as the surface areas will be inundated with snow cover and the filter media layer will be in a frozen condition. During the spring thaw, the systems will regain their infiltration potential.

8.9 Quality Control

Stormwater runoff from the subject site will ultimately discharge to the Eastern SWM Facility located northwest of the development. The Eastern SWM Facility was designed to provide enhanced level quality control for the tributary drainage area (which includes the subject site). The Arcadis Design Brief provided updated design calculations to demonstrate that the facility remains adequately sized to provide water quality treatment for the tributary drainage area following the development of Phase 6 and Phase 7. Since quality control will be provided by the existing SWM facility, no additional on-site measures are required. However, the LID measures discussed under **Section 8.8** will provide additional quality control for a portion of the site's stormwater runoff.

8.10 Interim Stormwater Management

The proposed development will be phased and as such will require an interim stormwater management design to manage stormwater runoff until the future phases are constructed. Since the site will remain largely undeveloped, stormwater peak flows will be reduced compared to the ultimate condition. Under the interim condition (i.e. only Phase 1 constructed), runoff from the parking area and building roof will be controlled by the same measures as under the ultimate condition, however, the tributary drainage area to CB 1 (denoted as STM1-1) will be reduced. Stormwater runoff from the future Phase 2 and Phase 3 lands (denoted as STM2-1) will be conveyed by a drainage swale to a temporary ditch inlet catch basin (denoted as DICB 1). The temporary DICB forms part of the Wateridge Village Phase 6-7 design prepared by Arcadis and discharges to pipe run MH20 to MH5 on Bareille-Snow Street via a 200mm diameter catch basin lead. Using the Modified Rational Method and the capacity of the temporary DICB lead as a release rate, it has been determined that no surface ponding will occur for up to and including the 100-year design event. Refer to the supporting flow and storage volume calculations provided under **Appendix F** for more details.

9.0 EROSION AND SEDIMENT CONTROL

Prior to construction and until vegetation has been re-established in disturbed areas, temporary erosion and sediment control measures must be implemented to mitigate the impact of construction on receiving watercourses and existing infrastructure. The following erosion and sediment control (ESC) measures have been proposed for the subject site:

- Limiting the extent of exposed soils at any given time.
- Erosion and sediment control measures shall be maintained until vegetation has been re-established in all disturbed areas. Re-vegetate disturbed areas in accordance with approved Landscape Plan as soon as possible.
- Stockpile soil away (15 metres or greater) from watercourses, drainage features and top of steep slopes.
- Installation of silt sacks between frame and cover on all proposed and existing catch basins and open cover storm manholes until construction is completed.
- Silt fence barriers to be installed and maintained along property boundaries and where indicated on the erosion and sediment control plans.
- Installation of mud mats at all construction entrances.
- For dry weather periods (active and/or inactive construction phases) inspections of ESC measures shall be undertaken on a weekly basis.
- Inspection of ESC measures shall be undertaken immediately after major storm events (>25mm of rain in 24 hour period), significant snowmelt events (melting of snow at a rate which adversely affects the performance and function of the system), and extreme weather events.

- Visual inspections shall also be undertaken in anticipation of large storm events (or a series of rainfall and/or snowmelt days) that could potentially yield significant runoff volumes.
- Identify and rectify any deficiencies and undertake necessary maintenance measures as soon as possible.
- Inspections and maintenance of temporary ESC measures shall continue until they are no longer required.
- The Contractor shall ensure that records of inspection are taken, including at a minimum:
  - the inspector's name;
  - date of inspection;
  - visual observations;
  - any necessary remedial measures taken to maintain the interim ESC measures.
- Care shall be taken to prevent damage to ESC during construction operations.
- In some cases, barriers may be removed temporarily to accommodate construction operations. The affected barriers shall be reinstated immediately after construction operations are completed.
- ESC should be adjusted during construction to adapt to site features as the site becomes developed.
- ESC shall be cleaned of accumulated sedimentation as required and replaced as necessary.
- During the course of construction, if the Engineer believes that additional prevention methods are required to control erosion and sedimentation, the Contractor shall implement additional measures, as required, to the satisfaction of the Engineer.
- Construction and maintenance requirements for erosion and sediment controls are to comply with Ontario Provincial Standard Specification (OPSS) 805.

Refer to the Erosion and Sediment Control Plan (DWG. 25117-ESC1) and Interim Erosion and Sediment Control Plan (DWG. 25117-ESC2) under **Appendix B** for more details.

9.1 ESC for LID Practices

LID practices which rely on infiltration require specific ESC during construction to prevent contamination and/or clogging of the systems during construction. The LID Pilot Project Report prepared by Aquafor Beech provides guidance on ESC for LID practices. Best management practices for a LID ESC plan should include:

- A multi-barrier approach which begins with erosion controls, followed by sediment controls and avoids reliance on a single control point for sediment.
- Retain existing vegetation to the greatest extent possible for as long as possible.
- Minimize disturbed areas.
- Reduce runoff velocities and detain runoff to promote settling.
- Divert runoff from problem areas and away from infiltration based LID practices.
- Minimize slope length and gradient of disturbed areas.
- Maintain overland sheet flow and avoid concentrated flows.
- Store and stockpile soils away from LID practices, watercourses, drainage features and top-of-slopes.
- Acknowledgment that ESC plans are dynamic and require application of the Adaptive Management Approach (AMA) whereby the ESC plan is continually updated as a result of site inspections.

ESC measures to protect the proposed LID practices are shown on the Erosion and Sediment Control Plans under **Appendix B**. The ESC plan will need to be reassessed once construction staging plans are known.

10.0 CONCLUSIONS

It has been demonstrated that the proposed development for Block 21 within Phase 7 of Wateridge Village at Rockcliffe can be adequately serviced and stormwater management requirements can be achieved in keeping with current City of Ottawa guidelines and overarching reports. Specifically, the development of the site will include the following key servicing and stormwater management design features:

- Each building will receive independent water supply via twin 152mm diameter water service connections to the municipal watermains within Codd's Road and Bareille-Snow Street.
- Water supply for fire protection will be provided by the municipal hydrants located along the adjacent right-of-ways.
- Wastewater flows will be conveyed via 250mm diameter sanitary services to the municipal sanitary sewer systems within Codd's Road and Bareille-Snow Street.
- Stormwater runoff (minor system) will be captured and conveyed by on-site storm sewer systems to the municipal storm sewer systems within Codd's Road and Bareille-Snow Street.
- Stormwater peak flows will be restricted to the allowable release rates established in the overarching Arcadis Design Brief prepared for Phase 6 and Phase 7 of the Wateridge Village at Rockcliffe.
- Adequate on-site storage will be provided for all events up to and including the 100-year design event.
- The major system design will convey overland flow to the adjacent municipal right-of-ways.
- Low impact development (LID) measures have been incorporated into the site design to achieve infiltration (water balance) and erosion control targets (where feasible).
- Enhanced level quality control of stormwater runoff will be provided by the existing Eastern SWM Facility.
- Erosion and sediment control measures will be implemented prior to construction and maintained until vegetation has been re-established in disturbed areas.

Report Prepared By:



Brandon MacKechnie, P.Eng.
Project Engineer

Appendix A

Pre-Consultation Meeting Feedback

Topographic Plan (prepared by Monument-Urso Surveying Ltd.)

Figure 1.7 – Phasing Plan
(prepared by Arcadis)

General Plan of Services
(prepared by Arcadis)

File No.: PC2025-0281

November 24, 2025

Bridgette Alchawa
Keeper Co.
Via email: bridgette@keeperco.ca

Subject: Pre-Consultation: Meeting Feedback
Proposed Site Plan Control Application – 200 Codd's Road

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on November 12, 2025.

Pre-Consultation Preliminary Assessment

Next Steps

1. A review of the proposal and materials submitted for the above-noted pre-consultation has been undertaken. For your next submission, please submit the required Application Form, together with the necessary studies and/or plans to planningcirculations@ottawa.ca, copy (cc:) to the file lead and planning support.

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

3. Please note, if your development proposal changes significantly in scope, design, or density it is recommended that a subsequent pre-consultation application be submitted.

4. If the Urban Design Review Panel (UDRP) Report is listed as a required submission material in the Study and Plan Identification List, the applicant must visit the UDRP prior to formally submitting the planning application. The UDRP report is required for the application to be considered complete.

Supporting Information and Material Requirements

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

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

Consultation with Technical Agencies

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

Planning

Comments:

Official Plan

1. Inner Urban Transect

    a. Minor Corridors provide residents with a full range of services within a walking distance from home, in order to support the growth of 15-minute neighbourhoods.

    b. Privatization of curb space through increasing private approaches is generally discouraged.

    c. Transportation will accommodate motor vehicle access and movement provided doing so does not erode the public realm nor undermine the priority of pedestrians, cyclists and transit users.

    d. Where new development is proposed to include parking as an accessory use, such parking shall be hidden from the public realm by being located behind or within a building, or underground. Parking shall be accessed in ways that minimize impact on the public realm and public/private trees.

    e. All buildings along Minor Corridors shall have active entrances facing the Corridor.

2. Codd's on west side of site – Minor Corridor

    a. Development shall ensure appropriate transitions in height.

    b. Enhance circulation network throughout the site for pedestrians and cyclists.

    c. Provide for a mix of uses.

d. Development shall address the corridor, and access shall generally be provided from the parallel or side street.

3. Evolving Overlay

Secondary Plan

4. Low-Rise to Mid-Rise mixed-use.

    a. Requires a variety of uses including mixed-uses at-grade

5. Building Frontage – west side of block on Codd's

    a. Schedule A – Frontages – the ground floor will be developed to have active retail-type frontages with clear windows and functional entrances across the majority of the building façade (West – Codd's Road)

6. Schedule B - Max height: 30m

7. Schedule C - 143 units per hectare

8. Section 3 2) Surface parking areas are to be located within the interior of development blocks and separated on a minimum of three sides from public rights of way, parks and open spaces with built form

9. Section 6.2 4) Master Plan is required – must show how the development adheres to the SP direction, including density.

Zoning

10. GM31 H(30)

General Comments

11. Staff appreciate the provision of additional density within the Wateridge Subdivision, which surpass the density targets of the Secondary Plan – however, please consult the IPM's comments regarding the infrastructure capacity requirements below.

12. Staff have concerns with the at-grade surface parking lot. The policy framework indicates that parking shall be hidden from the public realm and separated from a minimum of three sides from the public right-of way. Please explore opportunities to better screen and reorient the parking lot to have less of an impact on the public realm.

    a. If all parking were to be located underground, with exception of screened visitor and staff parking, the at-grade conditions would provide for a significant amount of outdoor amenity space for residents as opposed to prioritizing vehicles.

b. The provision of perpendicular parking may represent some safety issues given the lack of crosswalks through the parking lot as well as the curvature of the driveway.

13. In the same vein, we have very significant concerns with the phase 1 parking lot given the SP policies pertaining to the location of parking. An underground parking garage should be provided instead of surface parking at-grade. We have doubts with regards to supportability of the Phase 1 concept plan given it does not adhere to the OP and Secondary Plan Policies relating to location of vehicular parking and impacts to the public realm.

14. Please explore opportunities to make the loading areas and parking garage ramps more efficient. They are all in close proximity to each other and result in a wide expanse of paved area. Look into how they can be consolidated and better oriented to mitigate conflict between vehicles and pedestrians. Some considerations include

    a. Providing one entrance to the underground parking garage. The proposed two entrances are very close to each other.

    b. Internalizing the loading areas to be within the building massing and locating the entrances further from each other.

15. Explore opportunities to improve pedestrian circulation through the parking lot. The current configuration provides for pedestrian crossings at opposite ends of the lot, which may present accessibility and safety concerns for those travelling between buildings.

16. Explore opportunities to locate the horseshoe driveway along the interior of the site at the rear of the retirement home. Staff understand that retirement home facilities have certain requirements for these sorts of accesses, but given the policies of the Secondary Plan, which aim to prioritize pedestrian and cyclist movement and provide for a pedestrian friendly public realm, staff encourage opportunities to better address the integration of the southern frontage along the street to benefit the pedestrian scale public realm.

17. Ensure that the developments meet the Urban Design policies of the Official Plan pertaining to providing an appropriate transition to surrounding developments through articulation of the massing, which should include step-backs to provide for a more pedestrian scale podium massing.

18. Dwelling units located at-grade are encouraged to provide for independent entrances to improve the streetscape through physical and visual activation of the façade.

19. Further, along Codd's Road, the Secondary Plan policies note that the ground floor will be developed to have active retail-type frontages with clear windows and functional entrances across the majority of the building façade. Please incorporate a mix of permitted uses at-grade, such as medical facilities, etc. to provide for a mix of uses that serve the buildings on-site and the surrounding area.

20. Landscaping and street trees within the Wateridge subdivision are a priority. In your formal submission, we will want to see a mix of private and public trees throughout the site.

21. A mix of dwelling unit sizes is highly encouraged and supported by Official Plan policies to provide for a diverse range of residents and needs within the community. Large household dwelling units (being 3 dwelling units or an equivalent size) are requested.

22. A 1:1 ratio of bicycle parking spaces per dwelling unit is highly encouraged for the apartment building.

23. While staff can appreciate the proposed development is meant to be a cohesive and connected development, the two apartment buildings do not meet the definition of a Retirement Home, and therefore need to meet the requirements of the Zoning By-law applying to mid-rise apartment buildings.

    The Zoning By-law includes the following definition: "**Retirement home** means a building or a part of a building containing rooming units or a combination of rooming and dwelling units, providing residence mostly to senior citizens who do not require assistance with daily living, and which may provide ancillary health, personal service, and recreational services to serve the residents of the home, and may have up to 25 per cent of its gross floor area devoted to providing supervised or supportive in-house care for those who need assistance with daily living including on-going medical care, nursing care, counselling and social support services. (maison de retraite) (By-law 2016-131)"

24. The proposed development will need to meet the requirements of the Planned Unit Development provisions (Section 131).

25. The proposed canopy/awning in front of the Retirement Home will be considered a permitted projection. Please ensure the development meets the requirements of Section 65 of the Zoning By-law as it pertains to projections such as canopies and awnings. Staff will be looking to review the massing impacts of this projection at the time of review for the Site Plan Control application.

26. Please refer to Section 109 of the Zoning By-law (Location of Parking) to ensure the proposed parking spaces adhere to the requirements, which prohibit parking in a required front yard, in a required corner side yard, or in the extension of a required corner side yard into a rear yard.

27. If zoning relief is required, then please consult with Staff on the required submission materials for a complete Zoning By-law Amendment application.

Please feel free to contact, Jack Smith, Planner II, for follow-up questions.

Urban Design

Comments:

28. Urban Design Brief is required. Please see attached customized Terms of Reference to guide the preparation.

    a. The Urban Design Brief should be structured by generally following the headings highlighted under Section 3 – Contents of these Terms of Reference.

    b. Please ensure the Design Brief Addresses the following policy/guidelines:

        i. Official Plan

        ii. Water ridge Secondary Plan

        iii. Water Ridge Community Design Plan

29. Additional drawings and studies are required as shown on the SPIL. Please follow the terms of references (Planning application submission information and materials | City of Ottawa) to prepare these drawings and studies. These include:

    a. Site Plan

    b. Landscape Plan

    c. Elevations

    d. Conceptual Floorplans

    e. Shadow Analysis

    f. UDRP Report

Urban Design Review Panel Review and Report

30. The site is located within a Design Priority Area and is subject to review by the Urban Design Review Panel. UDRP review occurs within the preconsultation stage. To proceed with UDRP review, please contact udrp@ottawa.ca.

31. The submission of a UDRP report is a requirement for deeming an application complete. Please follow the instructions provided in the Terms of Reference available here: Urban Design Review Panel Report (ottawa.ca)

Comments on Preliminary Design

32. Ottawa is currently in the process of developing Urban Design Guidelines for Mid-Rise buildings - Urban Design Guidelines for Mid-Rise Buildings | Engage Ottawa. Please keep informed on this process.

33. Overall, the site is overly auto oriented. Look at alternate massing and site plan options to internalize some of the auto and loading functions within the buildings to improve amenity and wayfinding within the site:

    a. Parking garage ramps should be internalized within the building. Look at opportunities to consolidate to 1 ramp

    b. Consider locating garbage within the parking garage and winch up to minimize space for loading/garbage at grade.

    c. Ensure that parking spaces are buffered from the building by landscaping.

    d. Underground parking should be provided in Phase 1.

34. Parking and loading areas should be screened from the ROW:

    a. Please look at alternate building configurations to provide additional building frontage on Bareille-Snow Street to screen loading and parking garage entrances.

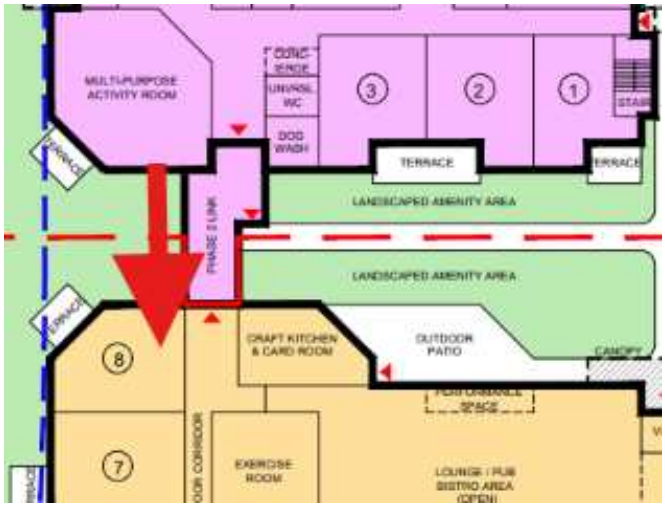
    b. Provide drop off for the retirement home internal to the site to reduce curb cuts.

    c. Surface parking internal to the site should be located behind building faces. Parking spaces adjacent to Codd's road and Bareille-Snow should be removed.

35. Building Massing/Site Design:

    a. Provide a base/middle/top approach to building design. Please rationalize the proposed height of the building base proposed based on datum lines taken from surrounding development. A building stepback should be provided above the building base to provide a human scaled development and to provide transition to surrounding development.

    b. Please rationalize the building separation between Phase 1 and Phase 2, the buildings look quite close – will adequate light be provided to units and ground floor amenity?



36. Public Realm Interface:

    a. Provide active frontages along Codd's road. Including the provision of 'active uses', a high percentage of glazing and pedestrian entrances.

    b. For the apartment buildings, provide ground floor terraces with landscaped edges to provide engagement with the street. Consider providing individual access to the sidewalk.

    c. Ensure that tree plantings and significant landscaped areas are provided along the 4 roadway frontages.

Please feel free to contact, Lisa Stern, Urban Design Planner III, for follow-up questions.

Engineering

Comments:

37. The Stormwater Management Criteria, for the subject site, is to be based on the following:

    a. Please reference the approved **Design Brief, Wateridge Village at Rockcliffe Phase 6 and 7, Prepared by Arcadis Professional Services, dated August 2025,** for the stormwater manament **Quantity control** criteria. In the Phase 6 and 7 subdivision stormwater management system design, the development blocks are subjected to minor system inflow restriction with major flow cascading to a street segment. The restricted rates are provided in Table 5.3 Minor flow capture, taken from the **Design Brief, Wateridge Village at Rockcliffe Phase 6 and 7, Prepared by Arcadis Professional Services, dated August 2025.**

b. Water **Quality Control** of the subdivision is provided by end of pipe treatment via the Eastern SWM facility and is designed to provide an Enhanced Level of Protection.

c. For the LID piolit project targets please refer to the **Wateridge Phase 2B Devloper's Checklist dated May13th, 2018.**

d. Storm water management design must be included for all three phases of the proposed project showing a master design as well as the storm water design proposed for the phase of the project. The report is required to document how the mater design will function, as well as the interim design through the development of each phase.

e. Application of the IDF information derived from the Meteorological Services of Canada rainfall data, taken from the MacDonald Cartier Airport, collected 1966 to 1997.

f. For separated sewer systems built up until 2016, the design of the storm sewers were based on a 5-year storm; storm systems after such time are, generally, based on a 2-year level-of-service.

g. In separated areas, the pre-development runoff shall be the lower of the existing coefficient or a maximum equivalent 'C' of 0.5, whichever is less (§ 8.3.7.3).

h. A calculated time of concentration (cannot be less than 10 minutes).

i. Document how any foundation drainage system will be integrated into the servicing design and show the positive outlet on the plan. Foundation drainage is to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention.

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

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

l. **Underground Storage:** Please note that the Modified Rational Method for storage computation in the Sewer Design Guidelines was originally intended to be used for above ground storage (i.e. parking lot) where the

change in head over the orifice varied from 1.5 m to 1.2 m (assuming a 1.2 m deep CB and a max ponding depth of 0.3 m). This change in head was small and hence the release rate fluctuated little, therefore there was no need to use an average release rate.

When underground storage is used, the release rate fluctuates from a maximum peak flow based on maximum head down to a release rate of zero. This difference is large and has a significant impact on storage requirements. **We therefore require that an average release rate equal to 50% of the peak allowable rate shall be applied to estimate the required volume. Alternatively, the consultant may choose to use a submersible pump in the design to ensure a constant release rate.**
If there is a disagreement from the designer regarding the required storage, The City will require that the designer demonstrate their rationale utilizing dynamic modelling, that will then be reviewed by City modellers in the Water Resources Group.
Provide information on type of underground storage system including product name and model, number of chambers, chamber configuration, confirm invert of chamber system, top of chamber system, required cover over system and details, interior bottom slope (for self-cleansing), chart of storage values, length, width and height, capacity, entry ports (maintenance) etc. UG storage to provide actual 2- and 100-year event storage requirements.
In regard to all proposed UG storage, ground water levels (and in particular HGW levels) will need to be reviewed to ensure that the proposed system does not become surcharged and thereby ineffective. Modeling can be provided to ensure capacity for both storm and sanitary sewers for the proposed development by City's Water Distribution Dept. – Modeling Group, through PM and upon request.

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

38. Deep Services (Storm, Sanitary and/or Water Supply)

a. Provide existing servicing information and the recommended location for the proposed connections. Services should ideally be grouped in a common trench to minimize the number of road cuts.

b. Connections to trunk sewers and easement sewers are typically not permitted.

c. Provide information on the monitoring manhole requirements – should be located in an accessible location on private property near the property line (ie. Not in a parking area).

d. Review provision of a high-level sewer.

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

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

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

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

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

39. Water

a. Water Supply Redundancy: Residential buildings with a basic day demand greater than 50m3/day (0.57 L/s) or where there are 50 or more residential units are required to be connected to a minimum of two water services separated by an isolation valve to avoid a vulnerable service area as per the Ottawa Design Guidelines - Water Distribution, WDG001, July 2010 Clause 4.3.1 Configuration. The basic day demand for this site is expected to exceed 50m3/day. Water Data Card (future requirement).

b. Please review Technical Bulletin ISTB-2018-02, maximum fire flow hydrant capacity is provided in Section 3 Table 1 of Appendix I. A hydrant coverage figure shall be provided and demonstrate there is adequate fire protection for the proposal. Two or more public hydrants are anticipated to be required to handle fire flow.

c. Water Boundary condition requests must include the location of the service (map or plan with connection location(s) indicated) and the expected loads required by the proposed development, including calculations. Please provide the following information:

    i. Location of service

    ii. Type of development

iii. The amount of fire flow required (per OBC or FUS).

iv. Average daily demand: ___ l/s.

v. Maximum daily demand: ___l/s.

vi. Maximum hourly daily demand: ___ l/s.

40. Sewer (sanitary and storm)

    a. Sanitary capacity is limited to what was designed in the **Design Brief, Wateridge Village at Rockcliffe Phase 6 and 7,** Prepared by Arcadis Professional Services, dated August 2025.

41. Geotechnical (including, where applicable, detailed sensitive marine clay investigation)

    The geotechnical consultant is required to review and comment on the approved **Geotechnical Investigation Report,** PG6331-1 Revision 10 dated October 31, 2025, and the approved **Groundwater Impact Assessment Report,** PH5006-REP.01 November 29,2024, to assess and confirm that there is no negative impact on the drinking wells at Fairhaven.

    Protection of the interceptor sewer is required to be discussed if any blasting is to occur within 30m of the interceptor sewer.

42. Sewer

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

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

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

44. Phase One Environmental Site Assessment - A Phase I ESA is required to be completed in accordance with Ontario Regulation 153/04 in support of this development proposal to determine the potential for site contamination. Depending on the Phase I recommendations a Phase II ESA may be required. The Phase I ESA shall provide all the required Environmental Source Information as required by O. Reg. 153/04. ERIS records are available to public at a reasonable cost and need to be included in the ESA report to comply with O.Reg.

153/04 and the Official Plan. The City will not be in a position to approve the Phase I ESA without the inclusion of the ERIS reports.

45. Background studies and plans:

    a. Former CFB Rockcliffe Master Servicing Study Report 33952-5.2.2 Revised June 2020.

    b. Design Brief, Wateridge Village at Rockcliffe Phase 6 and 7, Prepared by Arcadis Professional Services, dated August 2025

    c. Geotechnical Investigation Report**,** PG6331-1 Revision 10 dated October 31, 2025.

    d. Groundwater Impact Assessment Report, PH5006-REP.01 November 29,2024.

    e. Wateridge Phase 2B Devloper's Checklist dated May13th, 2018.

    f. **Cover Sheet,** prepared by Arcadis, Project No. 139653, dated 2025-07-31.

    g. **General Plan of Services**, Drawing No. 001, prepared by Arcadis, Project No. 139653, revision 8, dated 2025-07-31.

    h. **General Notes, Legend and CB Data Table**, Drawing No. 010, prepared by Arcadis, Project No. 139653, revision 7, dated 2025-07-31.

    i. **Street Sections, Drawing No. 011,** prepared by Arcadis, Project No. 139653, revision 6, dated 2025-06-27.

    j. **chemin CODD'S Road, STA. 0+620 to STA. 0+920,** Drawing No. 100, prepared by Arcadis, Project No. 139653, revision 7, dated 2025-07-31.

    k. **chemin CODD's Road STA. 0+920 TO STA. 1+010,** chemin WANAKI Road STA. 0+320 TO STA. 0+400, Drawing No. 101, prepared by Arcadis, Project No. 139653, revision 7, dated 2025-07-31.

    l. **rue Bareile-SNOW Street STA. 0+117.5 TO STA. 0+260,** Drawing No. 102, prepared by Arcadis, Project No. 139653, revision 7, dated 2025-07-31.

    m. **rue MICHAEL STOQUA Street STA. 0+117.5 TO STA. 0+260, Drawing** No. 103, prepared by Arcadis, Project No. 139653, revision 7, dated 2025-07-31.

    n. **rue MOSES TENNISCO Street STA. 0+117.5 TO STA. 0+195,** Drawing No. 104, prepared by Arcadis, Project No. 139653, revision 7, dated 2025-07-31.

o. **chemin WANAKI Road STA. 0+000 TO STA. 0+320,** Drawing No. 105, prepared by Arcadis, Project No. 139653, revision 8, dated 2025-07-31.

p. **STORM SEWER – KISHKABIKA PARK STA. 0+115 TO STA. 0+380,** Drawing No. 106, prepared by Arcadis, Project No. 139653, revision 7, dated 2025-07-31.

q. **GRADING PLAN,** Drawing No. 200, prepared by Arcadis, Project No. 139653, revision 8, dated 2025-07-31.

r. **GRADING PLAN,** Drawing No. 201, prepared by Arcadis, Project No. 139653, revision 8, dated 2025-07-31.

s. **SANITARY DRAINAGE AREA PLAN,** Drawing No. 400, prepared by Arcadis, Project No. 139653, revision 7, dated 2025-07-31.

t. **STORM DRAINAGE AREA PLAN,** Drawing No. 500, prepared by Arcadis, Project No. 139653, revision 7, dated 2025-07-31.

u. **PONDING PLAN,** Drawing No. 600, prepared by Arcadis, Project No. 139653, revision 7, dated 2025-07-31.

v. **SEDIMENT AND EROSION CONTROL PLAN,** Drawing No. 900, prepared by Arcadis, Project No. 139653, revision 7, dated 2025-07-31.

w. **PHASE 6 & 7 BIORETENTION BUMP-OUTS GENERAL PLAN / EROSION & SEDIMENT CONTROL PLAN,** Drawing No. GP-1, prepared by Aquafor, Project No. 139653, revision 5, dated 06/19/2025.

x. **PHASE 6 & 7 BIORETENTION BUMP-OUTS GENERAL PLAN – PHASE 1,** Drawing No. GP-2, prepared by Aquafor, Project No. 139653, revision 5, dated 06/19/2025.

y. **PHASE 6 & 7 BIORETENTION BUMP-OUTS GENERAL PLAN CROSS SECTION,** Drawing No. XS-1, prepared by Aquafor, Project No. 139653, revision 5, dated 06/19/2025.

z. **BIORETENTION BUMP-OUT PHASE 1 DETAILS,** Drawing No. CD-1, prepared by Aquafor, Project No. 139653, revision 5, dated 06/19/2025.

aa. **BIORETENTION BUMP-OUT PHASE 2 DETAILS,** Drawing No. CD-2, prepared by Aquafor, Project No. 139653, revision 5, dated 06/19/2025.

bb. **BIORETENTION BUMP-OUT PHASE 2 DETAILS,** Drawing No. CD-3, prepared by Aquafor, Project No. 139653, revision 5, dated 06/19/2025.

cc. **PHASE 6 & 7 BIORETENTION BUMP-OUTS EROSION & SEDIMENT CONTROL PLAN,** Drawing No. ESC-1, prepared by Aquafor, Project No. 139653, revision 5, dated 06/19/2025.

dd. **PHASE 6 & 7 BIORETENTION BUMP-OUTS PLANTING PLAN,** Drawing No. LP-1, prepared by Aquafor, Project No. 139653, revision 5, dated 06/19/2025.

ee. **PHASE 6 & 7 SOIL AMENDMENTS,** Drawing No. SA-1, prepared by Aquafor, Project No. 139653, revision 5, dated 06/19/2025.

Feel free to contact Amy Whelan, Project Manager, for follow-up questions.

Noise

Comments:

46. Noise requirements:

    a. As per the approved Enviromental Noise Impact Assessment Wateridge Village Phases 6&7, Prepared by Arcadis IBI Group, August 9, 2024, the following warning clause for aircraft noise is as follows:

       "Purchasers/tenants are advised that due to the proximity of this development to the nearby Rockcliffe Airport, sound levels from the facility may at times be audible."

Feel free to contact Amy Whelan, Project Manager, for follow-up questions.

Transportation

Comments:

47. Right-of-way protection.

    a. See Schedule C16 of the Official Plan.

    b. Any requests for exceptions to ROW protection requirements must be discussed with Transportation Planning and concurrence provided by Transportation Planning management.

48. The Transportation comments were based on the Screening Form, which indicated that the site plan and proposed development of the Seniors Apartments and Retirement Home would generate sufficient traffic to warrant the preparation of a Transportation Impact Assessment (TIA). During our meeting, the consultant clarified that only Phase 1 – the Retirement Home will be constructed at this time, and this phase was already addressed in the original TIA report. Accordingly, the Screening Form must be revised to clearly specify the scope of construction (i.e.,

Phase 1 only), and the Transportation Demand Management (TDM) Measures Checklist must be submitted for review.

49. The Tactile Walking Surface Indicator (TWSI) should be provided at pedestrian crossings. Under the Integrated Accessibility Standards of the Accessibility for Ontarians with Disabilities Act, 2005, and the City of Ottawa Accessibility Design Standards, TWSI's are required for new construction and the redevelopment of elements in public spaces, such as for exterior paths of travel (e.g. sidewalks and at the top of stairs).

50. The City's policy for the provision of pedestrian facilities as set forth by the Official Plan (OP), the Transportation Master Plan (TMP) and the Pedestrian Plan (OPP) specifically direct pedestrian facilities on City roads that lead to areas of work and employment ("retail/commercial/employment").

51. The Owner acknowledges and agrees that all private accesses to Roads shall comply with the City's Private Approach By-Law being By-Law No. 2003-447 as amended https://ottawa.ca/en/living-ottawa/laws-licences-and-permits/laws/law-z/private-approach-law-no-2003-447 or as approved through the Site Plan control process.

52. The concrete sidewalks are to meet City standards and be 2.0 metres in width and to be continuous along property frontage and depressed through the proposed accesses.

53. Please note that Section 4.3 of the Official Plan requires that the proposed development include safe, direct, and attractive pedestrian access form the public sidewalks to the major building entrance. The plans must also include pedestrian connections to the optional additional developments should they proceed.

54. Bicycle parking spaces are required as per Section 111 of the Ottawa Comprehensive Zoning By-law. Bicycle parking spaces should be located in safe, secure places near main entrances and preferably protected from the weather.

55. Standard ROW cross sections are to be used to indicate minimum clearances that are to be incorporated into the design of any new developments involving new and existing streets. Any variations to the standard ROW cross sections are subject to the Infrastructure Services Deviation Process. If proposed cross sections do not comply with new city standards, a deviation process would be required. This would apply only to public streets and not private streets.

56. Ensure that the pedestrian sidewalk has a clear and non-obstructive path of 2.0 metres width minimum and that the bicycle spaces do not interfere with the pedestrian crosswalk.

57. Minimum lane width for fire trucks is 6.0 metres. A fire truck three-point turn as it relates to the proposed lane configurations is to be confirmed by the Fire Chief.

58. The Owner shall be required to enter into maintenance and liability agreement for all pavers, plant and landscaping material placed in the City right-of-way and the Owner shall assume all maintenance and replacement responsibilities in perpetuity.

Feel free to contact Wally Dubyk, Transportation Project Manager, for follow-up questions.

Environment

Comments:

59. This site plan is addressed in the "Wateridge Village: Phases 6 and 7 Environmental Impact Statement and Tree Conservation Report prepared by Arcadis June 2025". Please review for a complete list of mitigation measures however several items to consider at site plan from the EIS include:

    a. Incorporate Low Impact Design (LID) practices, such as bioretention bump-outs and permeable sidewalks designed to achieve the infiltration, erosion, and water quality design targets.

    b. Landscaping planting plans should consider naturalized features with native vegetation seeding and plantings where feasible. For example, a naturalized pollinator gardens should be designed and planted within open park spaces to provide native vegetation within the proposed development, as well as an opportunity for infiltration of stormwater.

60. Bird-Safe Design Guidelines - Please review and incorporate bird safe design elements, where feasible. Some of the risk factors include glass and related design traps such as corner glass and fly-through conditions (e.g., elevated walkways), ventilation grates and open pipes, landscaping, light pollution. More guidance and solutions are available in the guidelines which can be found here: https://documents.ottawa.ca/sites/documents/files/birdsafedesign_guidelines_en.pdf

61. Please consider if there are features that can be added reduce the urban heat island effect (see OP 10.3). For example, this impact can be reduced by adding large canopy trees, green rooves or vegetation walls, or incorporating building with low heat absorbing materials.

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

Forestry

Comments:

62. A Tree Conservation Report (TCR) and Landscape Plan (LP) are submission requirements of a Site Plan Control application. The TCR can be waived if it's proven there are no trees 10 cm in diameter or greater on or adjacent to the site.

63. Space for trees must be provided throughout the development site, not just along the street frontages (OP Section 4.8.2, policy 3(a)). Ensure the parking garage and LID infrastructure is designed to ensure there is space for trees throughout the site. Maximize soft landscaped areas for amenity space and along outdoor travel corridors. parking garage should be designed to stay at least 3 m from the edge of the property boundary to provide adequate planting space. This is a provision of the New Zoning By-law (Provision 210).

64. Incorporating space and adequate soil volume to plant trees along all street frontages is a direction of the Official Plan (Section 4.1.3, Section 4.8.2).

65. The City of Ottawa is working towards a 40% canopy cover target. This application must demonstrate in the Landscape Plan how the site was designed to reach this target as closely as possible. For a site of this site and the development typology, 25% canopy coverage should be a minimum.

66. The Geotechnical Investigation must address landscaping considerations, including tree planting. The Investigation must speak to how a parking garage would influence tree planting setbacks. The Landscape Plan must note it was prepared in conjunction with the Geotechnical Investigation (date, year).

Feel free to contact Hayley Murray, Forester, for follow-up questions.

Parkland

Comments:

67. Park dedication has been satisfied through the subdivision agreement with CLC. We note that the current phase is over-dedicated.

Parkland Dedication

68. The amount of required parkland conveyance is to be calculated per the City of Ottawa Parkland Dedication By-law No.2022-280 (or as amended):

    a. For cash-in-lieu of conveyance of parkland (residential > 18 units/net ha):

        i. one hectare per 1,000 net residential units but shall not exceed a maximum of 10% of the gross land area where less than or equal to five hectares.

b. For conveyance of parkland, cash-in-lieu of conveyance parkland, or combination thereof:

   i. 5% of the gross land area (residential ≤ 18 units/net ha).

   ii. 5% of the gross land area (other purposes, including residential care facility as defined by the Zoning By-law, excluding residential).

   iii. 2% of the gross land area (commercial & industrial uses).

c. Where land is developed for a mix of uses within a building, the conveyance requirement shall be the cumulative sum for each use, as calculated using the applicable rate prorated proportionally to the gross floor area allocated to each use.

Form of Parkland Dedication

69. PFP will be requesting **land dedication** for parkland dedication in accordance with the Parkland Dedication By-law.

    a. Site Area = 14,162 sq.m (per summary statistics in Site Plan)

    b. Proposed Development:

       i. 1 - 6 storey Residential Care Facility building with 15,818 square meters GFA, and 198 dwelling units.

       ii. 1 – 9 storey Seniors Apartment building with 19,541 square meters GFA and 180 dwelling units

       iii. 1 – 9 storey Apartment building with 10,106 square metres GFA and 100 dwelling units.

    c. Total GFA on Site = 45,465 sq.m. (per summary statistics in Site Plan)

       i. Total Residential GFA = 29,647 sq.m (65.2%)

       ii. Total Residential Care GFA = 15,818 sq.m (34.8%)

    d. Residential Dedication = (14,162 sq.m x 10%) x 65.2% = 923.4 sq.m

    e. Residential Care Facility Dedication = (14,162 sq.m x 5%) x 34.8% = 246.4 sq.m

70. Total dedication required for the proposed development = 1,169.8 sq.m

* Park dedication has been satisfied through the subdivision agreement with CLC*

71. Please note, if the proposed unit count or land use changes, then the parkland dedication requirement will be re-evaluated accordingly.

72. Please note that the park comments are preliminary and will be finalized (and subject to change) upon receipt of the development application.

Feel free to contact Ryan Paliga, Parks Planner, for follow-up questions.

Community issues

Comments:

73. The Wateridge Village Community Association welcomes the overall concept of this development. Wateridge Village contains a wide range of housing types including apartments, townhouses, detached and semi detached houses, and stacked dwellings available for both rental and purchase. We have previously received comments from the community that there is, to date, no specific development directed at seniors, and this proposal would fill that gap.

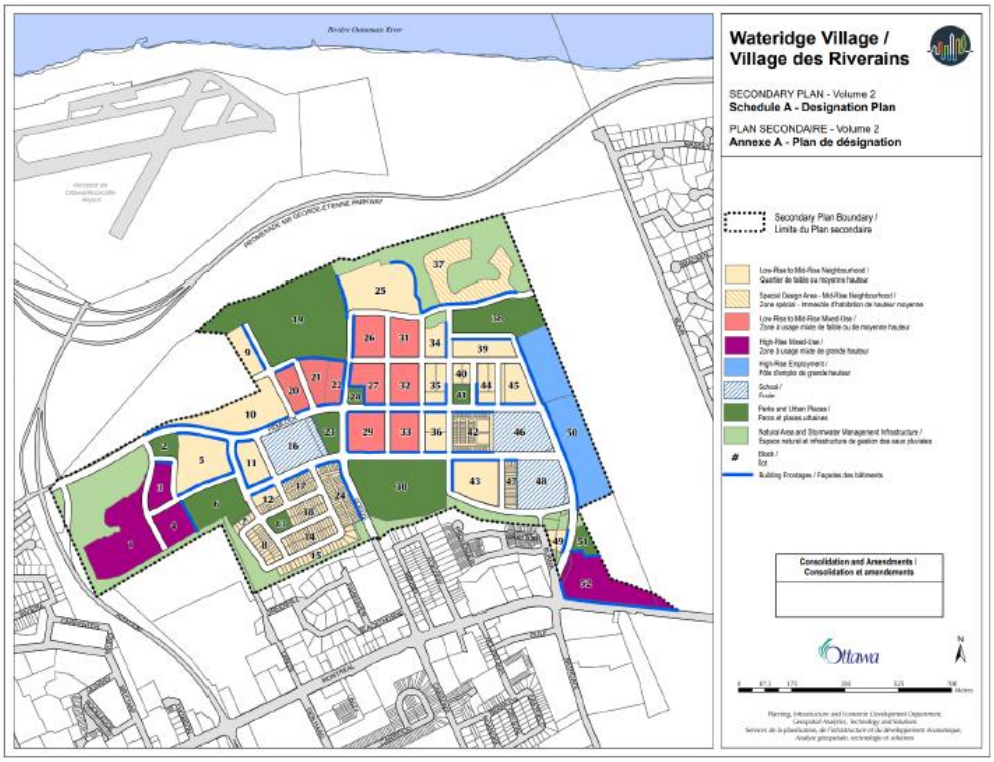
74. The offerings proposed, particularly the multiple levels of care and independent living will provide options for residents to remain in the neighbourhood through more stages of life as well as welcome new residents to enjoy our neighbourhood. The additional employment opportunities that this development would bring to the community are also welcomed.

75. Building Frontages in the Wateridge Core area & Interaction with Kishkabika Park:

    a. This proposed development is the entirety of block 26 in the secondary plan.

    b. Under section 2.2 of the secondary plan:

    c. Where the main / primary building façade(s) is required to face the public realm, as shown on Schedule A – Designation Plan, the ground floor level will be developed to have active retail-type frontages with clear windows and functional entrances across the majority of the building façade.



Schedule A specifies the west side of the block (facing Codd's Road and across from Kishkabika Park-block 19) as an active building frontage.

d. We would suggest that the Codd's Road west side frontage would be better used for some of this development's extensive amenity spaces such as the dining hall, lounge/pub, pool, fitness, library etc.. This combined with large ground-floor windows & tall ceilings (meeting the above requirements) would provide residents with views of Kishkabika park - which will be the largest city-owned park in Rideau-Rockcliffe ward. It is also one of 6 parks or greenspaces along Codd's Road - the same street as this development. The area closest to this development is proposed to contain naturalized areas, natural forested areas, walking paths, and a dog park - uses compatible with a senior population.



This proposed development is in the white area in the lower right corner of the diagram.

e. In the current concept, some of those amenity spaces look out at parking garage ramps and loading zones. The front entrance to the retirement home is also directly across the street from the loading area, garbage area and parking entrance for 375 Codd's Rd. Shifting to the Codd's frontage could present a much more pleasant, natural view when approaching or leaving the development.

f. There is also a concern along Tawadina Road to ensure compatibility with vehicle entrances on the south side of the street to avoid turning conflicts if the drop-off loop is placed on the Tawadina side of the complex.

76. Motor Vehicle Parking

a. The vehicle parking for this development seems appropriate in quantity and is appropriately positioned between the buildings or below grade. We do believe the parking ramps would be better if integrated into the structures, and the east ramp moved away from the street sidewalk. This would provide easier winter operation as well as a more appealing aesthetic.

b. We are concerned that none of the underground garage is proposed in phase 1 construction. The use of surface parking goes against community design and secondary plans. Even though the proposal is temporary,

temporary things can end up lasting much longer than intended due to hard to control factors like economic and market conditions.

c. The applicant expressed the possibility to sever off phase 3 from phases 1 and 2. If this is being considered, care must be given to ensure the garage is designed in a manner that does not result in parking spaces against the wall next to dead ends with no turning space. The applicant expressed concern about the building population requiring parking areas that are easy to maneuver in and out of and the current concept design would result in some very tough spots to enter and exit from if a wall was constructed dividing the phases.

d. The proposed site plan indicates that there won't be an underground parking garage below the Phase 1 building. However, the community has a demonstrated need for more parking, and this presents an opportunity. We don't know if zoning allows for this, or if it would be economically feasible, but perhaps the proponent could explore the idea of incorporating a paid public parking garage under Phase 1, to provide an additional income stream to the building owners, and to help alleviate the shortage of public parking in the community. In addition to neighbourhood residents, over 40 businesses will ultimately be located within 300m of Phase 1 and many of their patrons will also benefit from the availability of additional nearby parking. Until Phases 2 and 3 are completed, this parking facility could be used by the residents and employees of Phase 1, eliminating the need for a temporary surface parking lot.

77. Bicycle Parking

a. We note the development provides fairly extensive bicycle parking, both indoor and outdoor. Like many urban areas, Wateridge has experienced a significant amount of bicycle theft - often during overnight hours. It might be advantageous to future residents and staff to consider moving a portion of the outdoor parking that may be used by residents or staff into some sort of enclosed pavilion accessible using whatever key card, key fob or other access control system will be used by residents and staff. This pavilion could be abutted to the side of one of the other buildings or a separate free-standing structure.

78. General Design

a. If they have not already done so, we would like to remind the proponent of the need to refer to Canada Lands Company's Wateridge Village Urban Design Guidelines and Architectural Controls documentation, which provides specificity surrounding the means by which to achieve the policies contained in the Community Design Plan and the Secondary Plan. The Wateridge Village Secondary Plan is based on the Former CFB Rockcliffe Community Design Plan (CDP) and translates the key aspects

of the CDP into statutory policy. The Urban Design Guidelines and Architectural Controls include detailed guidelines for building design, massing and volume, and façade treatment, that must be referred to in the preparation of development applications.

Other

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

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

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

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

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

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

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

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

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

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

Submission Requirements and Fees

1. For submission requirements and fees please see the Site Plan Control | City of Ottawa
    a. Additional information regarding fees related to planning applications can be found here.
2. The attached **Study and Plan Identification List** outlines the information and material that has been identified as either required (R) or advised (A) as part of a future complete application submission.
    a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.
3. All of the above comments or issues should be addressed to ensure the effectiveness of the application submission review.

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

Yours Truly,
Jack Smith, Planner II

Encl. Studies and Plans Identification List
Urban Design Brief Terms of Reference
Supplementary Development Information
List of Technical Agencies
HPDS Overview for Applicants
HPDS Example Checklist
ADS Site Plan Checklist

c.c. Jean-Charles Renaud, Planner III
Spencer Mulvaney, Planner I
Lisa Stern, Urban Design Planner III
Wally Dubyk, Transportation Project Manager
Amy Whelan, Infrastructure Project Manager
Ryan Paliga, Parks Planner II
Hayley Murray, Planner Forester
Matthew Hayley, Environmental Planner III
Amy MacPherson, Planner II, SI

Darren Kipp, Wateridge Village Community Association - darrenkipp@gmail.com
John Grant, Wateridge Village Community Association - jhg@granty.ca

TOPOGRAPHIC PLAN OF

PART OF WATER RIDGE DEVELOPMENT BEING SHOWN AS BLOCK 21 ON DRAFT M-PLAN LOCATED NORTH OF TAWADINA ROAD AND EAST OF CODD'S ROAD

GEOGRAPHIC TOWNSHIP OF GLOUCESTER

CITY OF OTTAWA

MONUMENT-URSO SURVEYING LTD.

SCALE 1 : 250

10 7.5 5 2.5 0 5 10

METRIC

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

NOV. 26, 2025
DATE

J.E. ANDERSON
ONTARIO LAND SURVEYOR

LEGEND

EOA	DENOTES	EDGE OF ASPHALT
EOG	-	EDGE OF GRAVEL
BC	-	BACK OF CURB
FH	-	FIRE HYDRANT
CB	-	CATCH BASIN
	-	WELL
MH-W	-	MAINTENANCE HOLE - WATER
MH-H	-	MAINTENANCE HOLE - HYDRO
MH-S	-	MAINTENANCE HOLE - SANITARY
MH-ST	-	MAINTENANCE HOLE - STORMWATER
MH	-	MAINTENANCE HOLE - UNIDENTIFIED
MW	-	MONITORING WELL
WV	-	WATER VALVE
AN	-	ANCHOR
UP	-	UTILITY POLE
Ø	-	DIAMETER
— OH —	-	OVERHEAD WIRES
88.00	-	EXISTING ELEVATIONS
+88.00	-	TOP OF WALL/CURB ELEVATIONS
	-	DECIDUOUS TREE

BLOCK 23

BLOCK 22

CHEMIN CODD'S ROAD

SUBDIVISION

PLAN 04273

DRAFT PLAN 1225

BLOCK 21

BLOCK 24

BLOCK 20

CHEMIN CODD'S ROAD

BARRIELLE-SNOW STREET

BLOCK 15 (0.30 RESERVE)
PART 1 PLAN 4R-29378
SUBJECT TO EASEMENT INST. OC1771382
PIN 04273 - 0844

BLOCK 14 (0.30 RESERVE)

CHEMIN TAWADINA ROAD
PIN 04273 - 0851

BLOCK 2 REGISTERED PLAN 4M-1718
PIN 04273 - 0847

BLOCK 13 (0.30 RESERVE)

BLOCK 12

REGISTERED PLAN 4M-1651

SITE BENCHMARK
FIRE HYDRANT
Top Of Spindle
Elev.=91.69

MH-W T/O=90.78

MH-ST T/O=90.84

MH-S T/O=90.80

MH T/O=90.23

CB T/O=90.13

MH-H T/O=90.34

MH-ST T/O=90.23

MH-S T/O=90.34

MH-W T/O=90.31

CB T/O=90.14

MH-W T/O=90.22

UTILITY NOTE

THIS DRAWING DOES NOT SERVE AS A COMPREHENSIVE CONFIRMATION OF ALL UTILITIES PRESENT. IT IS THE USERS RESPONSIBILITY TO CONTACT THE RELEVANT UTILITY AUTHORITIES FOR VERIFICATION.

ONLY UTILITIES VISIBLE ON THE SURFACE HAVE BEEN IDENTIFIED PRIOR TO ANY ACTIVITIES SUCH AS DIGGING, IT IS MANDATORY TO OBTAIN A FIELD LOCATION OF UNDERGROUND UTILITIES FROM THE APPROPRIATE AUTHORITY.

ELEVATION NOTE

ELEVATIONS ARE GEODETIC AND REFERRED TO THE CANADIAN GEODETIC VERTICAL DATUM (CGVD2013:78) BY DIRECT MEASUREMENT TO A REAL TIME NETWORK.

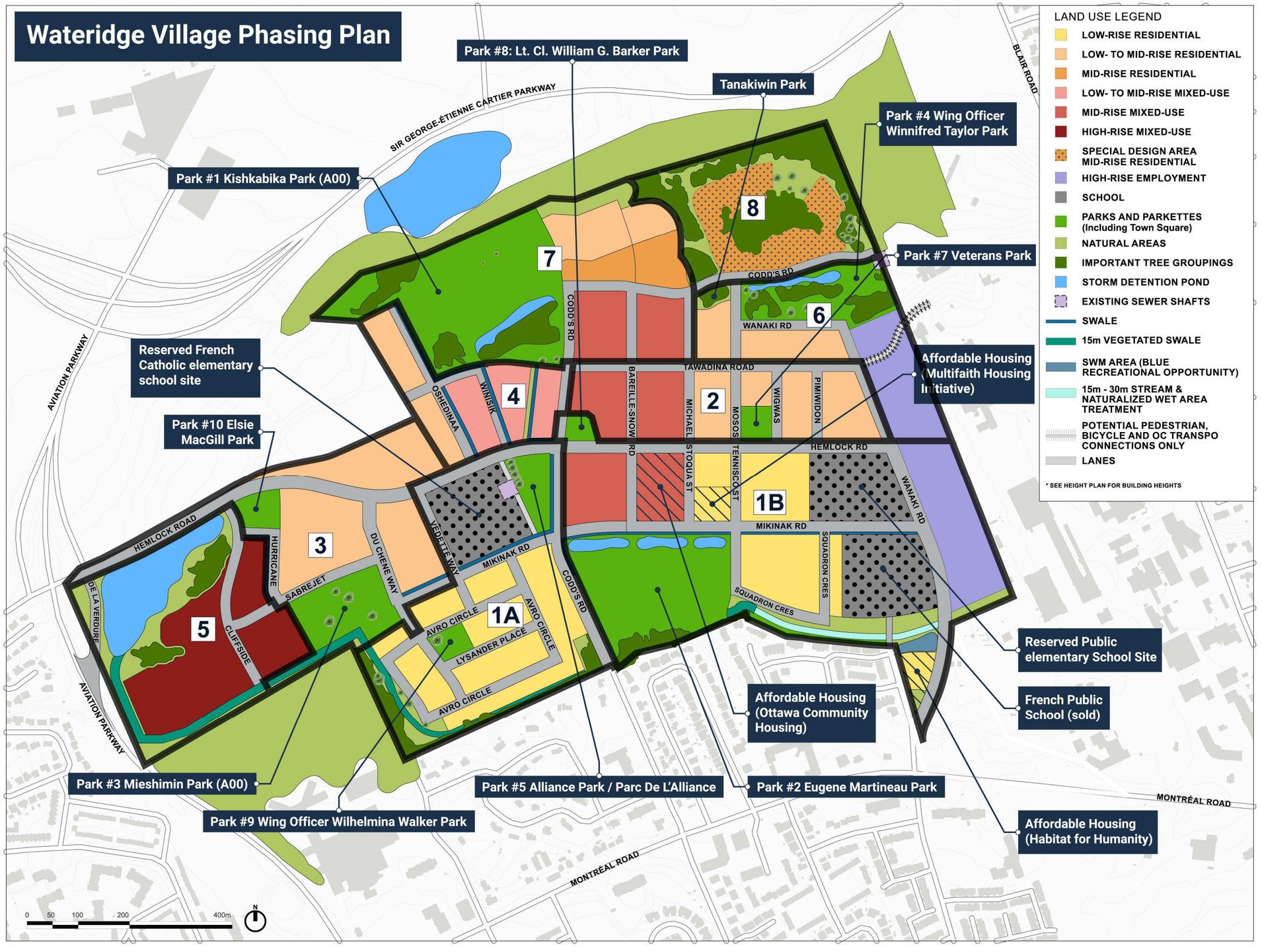
THE USER OF THIS INFORMATION BEARS THE RESPONSIBILITY TO CONFIRM THAT THE JOB BENCHMARK REMAINS UNALTERED AND UNDISTURBED, AND THAT ITS RELATIVE HEIGHT AND DESCRIPTION ALIGN WITH THE DETAILS PRESENTED IN THIS PLAN.

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Ontario Land Surveyors | Canada Land Surveyors
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536 'C' FOURTH LINE EAST
SAULT STE. MARIE ON, P6A 6J8
TEL: (705) 254-7851
FAX: (705) 254-5571

DRAWN: ED	FIELD: JH	FILE No: 25-0473_Waterridge Village BLK 21 (Charlton)_TPOS_2D
PROCESSED: JA	CHECKED: JA	

Wateridge Village Phasing Plan



LAND USE LEGEND

- LOW-RISE RESIDENTIAL
- LOW- TO MID-RISE RESIDENTIAL
- MID-RISE RESIDENTIAL
- LOW- TO MID-RISE MIXED-USE
- MID-RISE MIXED-USE
- HIGH-RISE MIXED-USE
- SPECIAL DESIGN AREA MID-RISE RESIDENTIAL
- HIGH-RISE EMPLOYMENT
- SCHOOL
- PARKS AND PARKETTES (Including Town Square)
- NATURAL AREAS
- IMPORTANT TREE GROUPINGS
- STORM DETENTION POND
- EXISTING SEWER SHAFTS
- SWALE
- 15m VEGETATED SWALE
- SWM AREA (BLUE RECREATIONAL OPPORTUNITY)
- 15m - 30m STREAM & NATURALIZED WET AREA TREATMENT
- POTENTIAL PEDESTRIAN, BICYCLE AND OC TRANSPO CONNECTIONS ONLY
- LANES

* SEE HEIGHT PLAN FOR BUILDING HEIGHTS

J:\139653_600399-49__W\7.0_Production\7.03_Design\04_Civil\Sheets\Design Brief\Figure 1.7 PHASING PLAN.dwg Last Saved By: milnem4626 Last Saved At: Jun. 23, 25

ARCADIS

Project Title
DESIGN BRIEF
WATERIDGE VILLAGE AT ROCKCLIFFE
PHASES 6 & 7

Drawing Title
PHASING PLAN

Sheet No.
FIGURE 1.7
2025-06-27

Project North

chemin CODD'S Road

rue BAREILLE-SNOW Street

rue MICHAEL STOQUA Street

rue MOSES TENNISCO Street

chemin WANAKI Road

chemin TAWADINA Road

KISHKABIKA PARK

BLOCK 1 BLOCK 2 BLOCK 3 BLOCK 4 BLOCK 5 BLOCK 6 BLOCK 7 BLOCK 8 BLOCK 9 BLOCK 10 BLOCK 11 BLOCK 12 BLOCK 13 BLOCK 14 BLOCK 15 BLOCK 16 BLOCK 17 BLOCK 18 BLOCK 19 BLOCK 20 BLOCK 21 BLOCK 22 BLOCK 23 BLOCK 24 BLOCK 25 BLOCK 26 BLOCK 27 BLOCK 28

100 101 102 103 104 105 106

CLIENT

CANADA LANDS COMPANY

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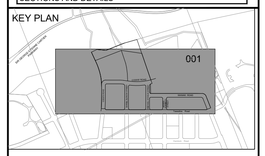
Arcadis Professional Services (Canada) Inc.
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ISSUES

No.	DESCRIPTION	DATE
1	SUBMISSION NO.1 FOR CITY REVIEW	2023-10-05
2	REVISED WANAKI ROAD AND MOSES TENNISCO STREET PROFILES	2023-12-01
3	ISSUED FOR CLIENT REVIEW	2024-06-12
4	SUBMISSION NO.2 FOR CITY REVIEW	2024-06-21
5	ISSUED FOR GEOTECHNICAL REVIEW	2024-11-26
6	SUBMISSION NO.3 FOR CITY REVIEW	2024-12-20
7	SUBMISSION NO.4 FOR CITY REVIEW	2025-06-27
8	SUBMISSION NO.5 FOR CITY REVIEW	2025-07-31
9	ISSUED FOR CONSTRUCTION	2025-12-05
10	REVISED PER CITY/HYDRO	2026-02-03
11	ADDED SERVICES TO BLOCK 21	2026-02-19

SEE 010, 011 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS

KEY PLAN



1:1250 0 12.5 37.5 62.5m

SEAL

LICENSED PROFESSIONAL ENGINEER
S. E. LABADIE
100214983
2026/02/19
PROVINCE OF ONTARIO

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333 Preston Street - Suite 500
Ottawa ON K1S 5N4 Canada
tel 613 225 1311
www.arcadis.com

PROJECT

WATERIDGE VILLAGE AT ROCKCLIFFE

PHASES 6 AND 7

PROJECT NO: 139653	
DRAWN BY: **M.M.**	CHECKED BY: **J.I.M.**
PROJECT MGR: **S.L.**	APPROVED BY: **S.L.**

SHEET TITLE

GENERAL PLAN OF SERVICES

SHEET NUMBER	ISSUE
001	11

SCALE CHECK

CITY PLAN No.19055 CITY FILE No. D07-16-15-0003

File Location: J:\139653_600399-49__W1\7.0_Production\7.03_Design\04_Civil\Sheets\000 GENERAL PLAN.dwg Last Saved: January 29, 2026, by mlinem4926 Plotted: February 19, 2026 10:31:46 AM by Milne, Marian

Appendix B

Site Plan
(prepared by T Bonhomme Architect)

Servicing Plan (DWG. 25117-S1)

Interim Servicing Plan
(DWG. 25117-S2)

Grading Plan (DWG. 25117-GR1)

Interim Grading Plan
(DWG. 25117-GR2)

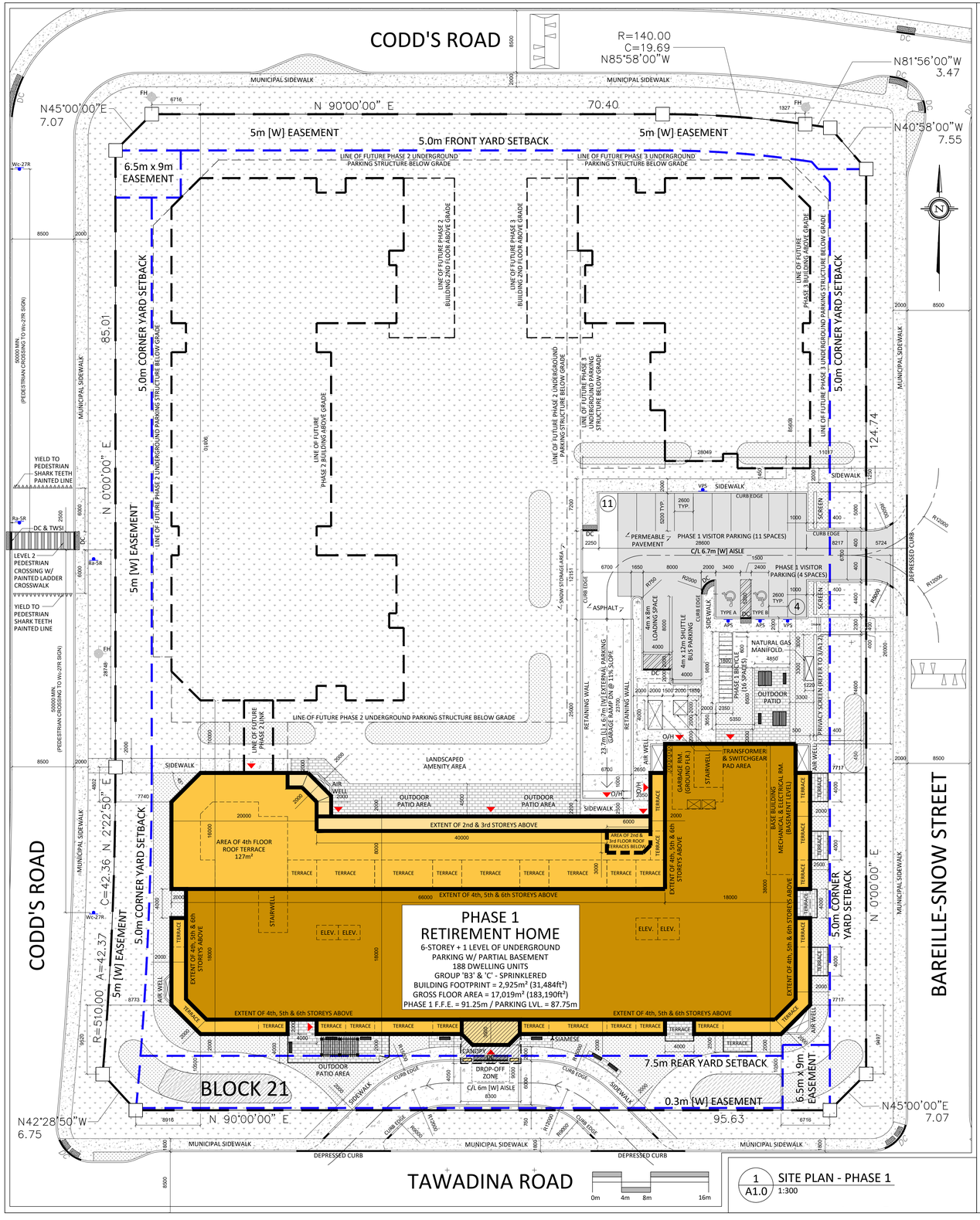
Underground Parking Garage Plan &
Profile (DWG. 25117-P1)

Erosion and Sediment Control Plan
(DWG. 25117-ESC1)

Interim Erosion and Sediment Control
Plan (DWG. 25117-ESC1)

Notes & Details (DWG. 25117-N1)

Existing Conditions and Removals Plan
(DWG. 25117-R1)



1 / A1.0 SITE PLAN - PHASE 1
1:300

Site Information

Legal Description: Part of Lot 23, Concession 1 (Ottawa Front), Geographic Township of Gloucester and Part of Reserve Block 15 on 4M-1651

Block 21 - Lot Area: 14,162m² (1.4162 hectares or 3.5 acres)

Disclaimer: The concept site plan has been compiled using information contained in the Plan of Subdivision - Registered Plan 4M-1651 provided by Annis, O'Sullivan, Vollebekk Ltd., Ontario Land Surveyors.

Block 21 - Zoning Information GM31 H(30)

GM31 H(30)	Zoning Requirement	Provided
Minimum Front Yard with Residential Land Use at Grade:	5.0m	85.6m (Codd's Road - North)
Minimum Corner Side Yard with Residential Land Use at Grade:	5.0m	7.7m (Bareille-Snow Street & Codd's Rd.- West)
Minimum Interior Side Yard with Residential Land Use at Grade:	3.0m	N/A
Minimum Rear Yard with Residential Land Use at Grade:	7.5m	9.0m (Tawadina Road)
Additional Front & Corner Side Yard Setback Required for 4th Floor:	2.0m	2.0m
Minimum Separation between Portions of a Building above 4 Storeys:	23.0m	28.0m (Phase 1 & Future Phase 2) 39.0m (Phase 1 & Future Phase 3)
Maximum Building Area of Floor Plates at 7th Floor and Above:	750m²	N/A (6-Storey Building)
Maximum Building Height:	30.0m	23.625m (Phase 1 Building / 6-Storeys)

Phase 1 Retirement Home Building Information

Floor Level	Area	Group 'B3' & 'C' Details	Rentable Area of Suites / GFA
Basement Floor Area:	2,956m² (31,818ft²)	(0) Dwelling Units	0m² (0ft²) = 0% of GFA
Ground Floor Area:	2,925m² (31,484ft²)	(6) Dwelling Units	468m² (5,038ft²) = 16% of GFA
2nd Floor Area:	2,773m² (29,848ft²)	(49) Dwelling Units	1,789m² (19,257ft²) = 64% of GFA
3rd Floor Area:	2,773m² (29,848ft²)	(49) Dwelling Units	1,789m² (19,257ft²) = 64% of GFA
4th Floor Area:	1,864m² (20,064ft²)	(28) Dwelling Units	1,520m² (16,361ft²) = 82% of GFA
5th Floor Area:	1,864m² (20,064ft²)	(28) Dwelling Units	1,536m² (16,533ft²) = 82% of GFA
6th Floor Area:	1,864m² (20,064ft²)	(28) Dwelling Units	1,536m² (16,533ft²) = 82% of GFA
Gross Floor Area (GFA):	17,019m² (183,190ft²)	(188) Dwelling Units	8,638m² (92,979ft²) = 51% of GFA

Proposed Building Height: 23.625m measured from grade to top of parapet
Number of Storeys: (6) storeys above grade

Phase 1 Vehicular Parking Information

Phase 1 Retirement Home Building Parking		Zoning Requirement	Provided
Resident:	0.25 spaces per Unit = 188 units x 0.25 = 47 spaces	Table 101 - R20 - Column II	47 spaces (provided in below grade indoor parking garage)
Staff:	1 space per 100m² GFA used for medical, health or personal services = 900m² GFA x 1 = 9 spaces	Table 101 - R20 - Column II	13 spaces * (provided in below grade indoor parking garage)
Visitor:	No requirement for Retirement Home		15 spaces ** (surface parking)
Total Phase 1 Building - Vehicular Parking Required:		= 56 spaces	
Total Phase 1 Building - Vehicular Parking Provided:		= 75 spaces consisting of (15) exterior surface & (60) indoor parking	

General Phase 1 Parking Space Note:

* When the Phase 2 Senior's Apartment Building and underground parking structure is completed, (2) standard indoor parking spaces for Phase 1 staff will be removed to accommodate for the 6.7m [W] drive aisle connection between the Phase 1 & Phase 2 indoor parking garages (Refer to Master Plan - A1.1 and Master Plan - Underground - A1.2).

** When the Phase 3 Senior's Apartment Building and underground parking structure is completed, (11) standard exterior surface spaces for Phase 1 visitors will be transferred to the Phase 3 parking requirements and consisting of (10) standard exterior surface spaces for Phase 3 visitors and (1) Phase 3 loading space (Refer to Master Plan - A1.1 and Master Plan - Underground - A1.2).

Exterior Surface Parking (15 spaces): **

13 standard spaces @ 2.6m x 5.2m
1 accessible Type 'A' space @ 3.4m x 5.2m with 1.5m shared access aisle
1 accessible Type 'B' space @ 2.4m x 5.2m with 1.5m shared access aisle

Underground Indoor Parking (60 spaces): *

38 standard spaces @ 2.6m x 5.2m
16 compact car spaces @ 2.4m x 5.2m
3 parallel spaces @ 2.6m x 6.7m
1 accessible Type 'A' space @ 3.5m x 5.2m with 1.5m shared access aisle
1 accessible Type 'B' space @ 2.6m x 5.2m with 1.5m shared access aisle
1 accessible Type 'B' space @ 2.4m x 5.2m with 1.5m access aisle

Phase 1 Bicycle Parking Information

Phase 1 Retirement Home Building Parking		Zoning Requirement
Resident:	0.25 spaces per Unit = 188 units x 0.25 = 47 spaces	Table 111A (a) - Retirement Home
Total Phase 1 Building - Bicycle Parking Required:		= 47 spaces
Total Phase 1 Building - Bicycle Parking Provided:		= 50 spaces consisting of: 16 (surface) & 34 (indoor) bicycle spaces @ 0.6m x 1.8m space per bicycle with minimum 1.5m access aisle

Site Plan & Master Plan Symbol Legend

- Denotes proposed Phase 1 retirement home building
- Denotes proposed Phase 2 senior's apartment building
- Denotes proposed Phase 3 senior's apartment building
- Denotes concrete surface
- Denotes unit paver surface
- Denotes seed/ sod ground landscape cover
- Denotes shrub / perennial bed
- Denotes bio-retention area
- Denotes building feature above
- Denotes property line
- Denotes site setback
- Denotes proposed phasing line
- Denotes c/l drive aisle
- Denotes building entrance
- Denotes accessible parking
- Denotes depressed curb
- Denotes high colour contrast pavement marking
- Denotes tactile walking surface indicator (TWSI)
- Denotes aluminum sign
- Denotes bench seating
- Denotes fire hydrant

ISSUE RECORD

REV.	DESCRIPTION	DATE
01	FOR SITE PLAN APPROVAL	01/20/2026
02	FOR SITE PLAN APPROVAL	02/27/2026

GENERAL NOTES

1. DO NOT SCALE DRAWINGS. ALL MEASUREMENTS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT.
3. ALL WORK DESCRIBED UNDER THIS CONTRACT TO COMPLY WITH ONTARIO BUILDING CODE, 2024 AND/OR NATIONAL BUILDING CODE, 2020 AND OTHER CODES AND BY-LAWS IN EFFECT.
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PROJECT TEAM

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KEY PLAN



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TOMMY R. BONHOMME
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11096

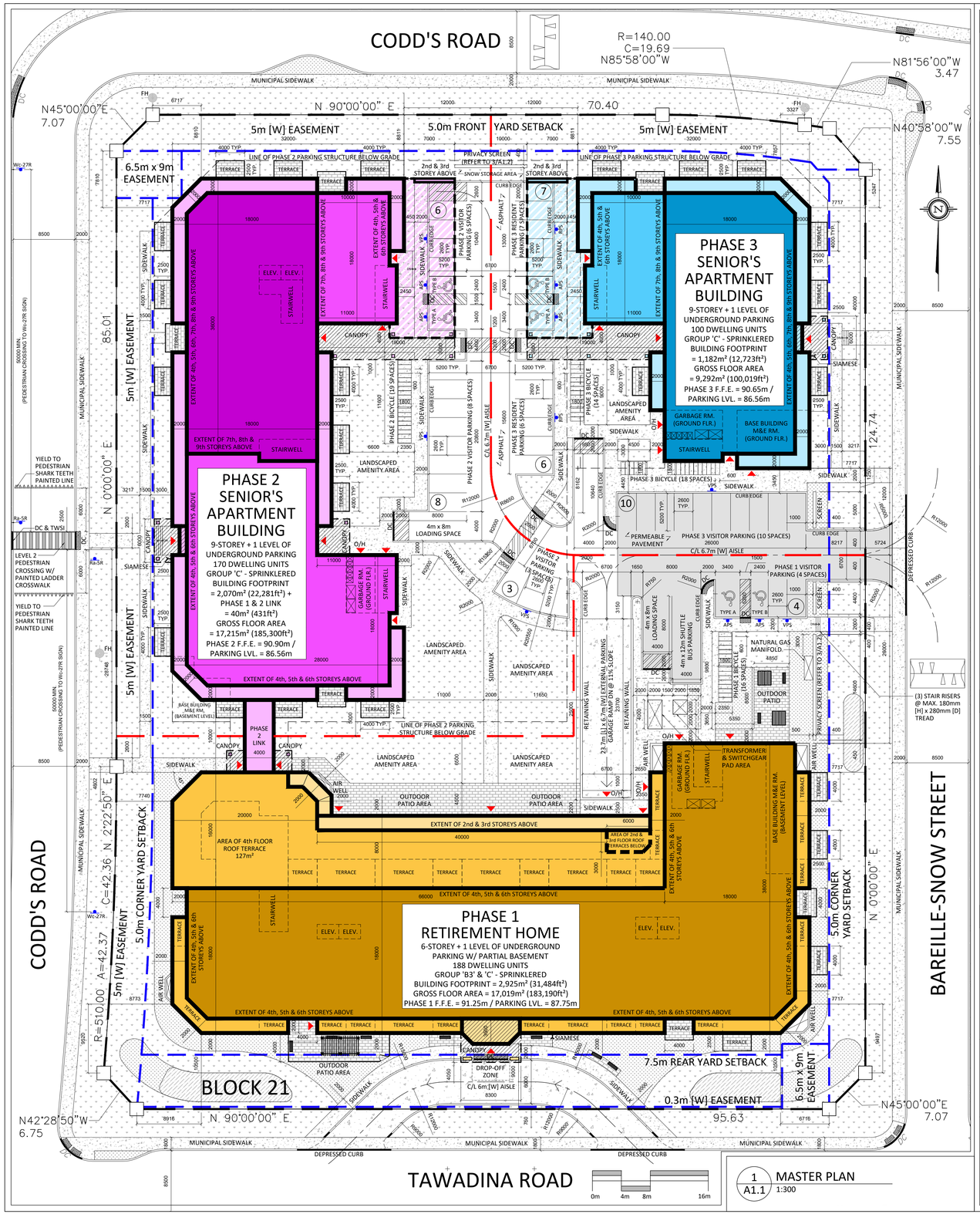
T Bonhomme Architect

PROJECT TITLE
WATERIDGE LIFESTYLES - PHASE 1 RETIREMENT HOME
BLOCK 21 WATERIDGE VILLAGE
200 CODD'S ROAD, OTTAWA ON K1K 5C6

DRAWING LIST
SITE PLAN - PHASE 1

JOB No.	TBA-2026-01	DRAWING No.
DATE	01/20/2026	A1.0
SCALE	AS NOTED	
DRAWN & REVIEWED BY T.B.		

FILE No. xx / PLAN No. xx



Site Information

Legal Description:	Part of Lot 23, Concession 1 (Ottawa Front), Geographic Township of Gloucester and Part of Reserve Block 15 on 4M-1651
Block 21 - Lot Area:	14,162m² (1.4162 hectares or 3.5 acres)
Disclaimer:	The concept site plan has been compiled using information contained in the Plan of Subdivision - Registered Plan 4M-1651 provided by Annis, O'Sullivan, Vollebekk Ltd., Ontario Land Surveyors.

Block 21 - Zoning Information GM31 H(30)

GM31 H(30)	Zoning Requirement	Provided
Minimum Front Yard with Residential Land Use at Grade:	5.0m	7.8m (Codd's Road - North)
Minimum Corner Side Yard with Residential Land Use at Grade:	5.0m	7.7m (Bareille-Snow Street & Codd's Rd. - West)
Minimum Interior Side Yard with Residential Land Use at Grade:	3.0m	N/A
Minimum Rear Yard with Residential Land Use at Grade:	7.5m	9.0m (Tawadina Road)
Additional Front & Corner Side Yard Setback Required for 4th Floor:	2.0m	2.0m
Minimum Separation between Portions of a Building above 4 Storeys:	23.0m	28.0m (Phases 1 & 2), 39.0m (Phases 1 & 3) 26.0m (Phases 2 & 3)
Maximum Building Area of Floor Plates at 7th Floor and Above:	750m²	Phase 1 - N/A, Phase 2 - 652m², Phase 3 - 652m²
Maximum Building Height:	30.0m	23.625m (Phase 1 Building / 6-Storeys) 30.0m (Phase 2 & 3 Buildings / 9-Storeys)

Phase 1 Retirement Home Building Information

Floor Level	Area	Group 'B3' & 'C' Details	Rentable Area of Suites / GFA
Basement Floor Area:	2,956m² (31,818ft²)	(0) Dwelling Units	0m² (0ft²) = 0% of GFA
Ground Floor Area:	2,925m² (31,484ft²)	(6) Dwelling Units	468m² (5,038ft²) = 16% of GFA
2nd Floor Area:	2,773m² (29,848ft²)	(49) Dwelling Units	1,789m² (19,257ft²) = 64% of GFA
3rd Floor Area:	2,773m² (29,848ft²)	(49) Dwelling Units	1,789m² (19,257ft²) = 64% of GFA
4th Floor Area:	1,864m² (20,064ft²)	(28) Dwelling Units	1,520m² (16,361ft²) = 82% of GFA
5th Floor Area:	1,864m² (20,064ft²)	(28) Dwelling Units	1,536m² (16,533ft²) = 82% of GFA
6th Floor Area:	1,864m² (20,064ft²)	(28) Dwelling Units	1,536m² (16,533ft²) = 82% of GFA
Gross Floor Area (GFA):	17,019m² (183,190ft²)	(188) Dwelling Units	8,638m² (92,979ft²) = 51% of GFA
Proposed Building Height:	23.625m measured from grade to top of parapet		
Number of Storeys:	(6) storeys above grade		

Phase 2 Senior's Apartment Building Information

Floor Level	Area	Group 'C' Details
Underground Parking Garage Area:	4,411m² (47,480ft²)	(0) Dwelling Units
Link between Phase 1 & 2 Buildings:	40m² (431ft²)	(0) Dwelling Units
Ground Floor Area:	1,900m² (20,451ft²)	(18) Dwelling Units
2nd Floor Area:	2,066m² (22,238ft²)	(25) Dwelling Units
3rd Floor Area:	2,066m² (22,238ft²)	(25) Dwelling Units
4th Floor Area:	1,592m² (17,136ft²)	(25) Dwelling Units
5th Floor Area:	1,592m² (17,136ft²)	(25) Dwelling Units
6th Floor Area:	1,592m² (17,136ft²)	(25) Dwelling Units
7th Floor Area:	652m² (7,018ft²)	(9) Dwelling Units
8th Floor Area:	652m² (7,018ft²)	(9) Dwelling Units
9th Floor Area:	652m² (7,018ft²)	(9) Dwelling Units
Gross Floor Area (GFA):	17,215m² (185,300ft²)	(170) Dwelling Units
Proposed Building Height:	30.0m measured from grade to top of parapet	
Number of Storeys:	(9) storeys above grade	

Phase 3 Senior's Apartment Building Information

Floor Level	Area	Group 'C' Details
Underground Parking Garage Area:	1,448m² (15,586ft²)	(0) Dwelling Units
Ground Floor Area:	1,012m² (10,893ft²)	(8) Dwelling Units
2nd Floor Area:	1,178m² (12,680ft²)	(13) Dwelling Units
3rd Floor Area:	1,178m² (12,680ft²)	(13) Dwelling Units
4th Floor Area:	840m² (9,042ft²)	(13) Dwelling Units
5th Floor Area:	840m² (9,042ft²)	(13) Dwelling Units
6th Floor Area:	840m² (9,042ft²)	(13) Dwelling Units
7th Floor Area:	652m² (7,018ft²)	(9) Dwelling Units
8th Floor Area:	652m² (7,018ft²)	(9) Dwelling Units
9th Floor Area:	652m² (7,018ft²)	(9) Dwelling Units
Gross Floor Area (GFA):	9,292m² (100,019ft²)	(100) Dwelling Units
Proposed Building Height:	30.0m measured from grade to top of parapet	
Number of Storeys:	(9) storeys above grade	

Phase 1, 2 & 3 Vehicular Parking Information

Phase 1 Retirement Home Building Parking		Zoning Requirement	Provided
Resident:	0.25 spaces per Unit = 188 units x 0.25 = 47 spaces	Table 101 - R20 - Column II	47 spaces (provided in below grade indoor parking garage)
Staff:	1 space per 100m² GFA used for medical, health or personal services = 900m² GFA x 1 = 9 spaces	Table 101 - R20 - Column II	11 spaces (provided in below grade indoor parking garage)
Visitor:	No requirement for Retirement Home		4 spaces (surface parking)

Phase 2 Senior's Apartment Building (Mid-High Rise) Parking		Zoning Requirement	Provided
Resident:	0.5 spaces per Unit = 170 units x 0.5 = 85 spaces * (designed for 0.75 spaces per Unit = 128 spaces)	Table 101 - R12 - Column II	129 spaces (provided in below grade indoor parking garage)
Visitor:	0.1 spaces per Unit = 170 units x 0.1 = 17 spaces	Table 102 - Mid-High Rise - Column II	17 spaces (surface parking)

Phase 3 Senior's Apartment Building (Mid-High Rise) Parking		Zoning Requirement	Provided
Resident:	0.5 spaces per Unit = 100 units x 0.5 = 50 spaces	Table 101 - R12 - Column II	37 spaces (provided in below grade indoor parking garage) 13 spaces (surface parking)
Visitor:	0.1 spaces per Unit = 100 units x 0.1 = 10 spaces	Table 102 - Mid-High Rise - Column II	10 spaces (surface parking)

Bicycle Parking Information

Phase 1 Retirement Home Building

Bicycle Parking Required - Table 111A (a):

0.25 spaces / 188 dwelling units = 47 spaces

Bicycle Parking Provided:

50 bicycle parking spaces consisting of:

16 (surface) & 34 (indoor) @ 0.6m x 1.8m space per bicycle w/ 1.5m access aisle

Phase 2 Senior's Apartment Building

Bicycle Parking Required - Table 111A (b):

0.5 spaces / 170 dwelling units = 85 spaces

Bicycle Parking Provided:

85 bicycle parking spaces consisting of:

19 (surface) & 66 (indoor) @ 0.6m x 1.8m space per bicycle w/ 1.5m access aisle

Phase 3 Senior's Apartment Building

Bicycle Parking Required - Table 111A (b):

0.5 spaces / 100 dwelling units = 50 spaces

Bicycle Parking Provided:

50 bicycle parking spaces consisting of:

32 (surface) & 18 (indoor) @ 0.6m x 1.8m space per bicycle w/ 1.5m access aisle

1 / A1.1 MASTER PLAN
1:300

0m 4m 8m 16m

ISSUE RECORD

REV.	DESCRIPTION	DATE
01	FOR SITE PLAN APPROVAL	01/20/2026
02	FOR SITE PLAN APPROVAL	02/27/2026

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KEY PLAN



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T Bonhomme Architect

PROJECT TITLE

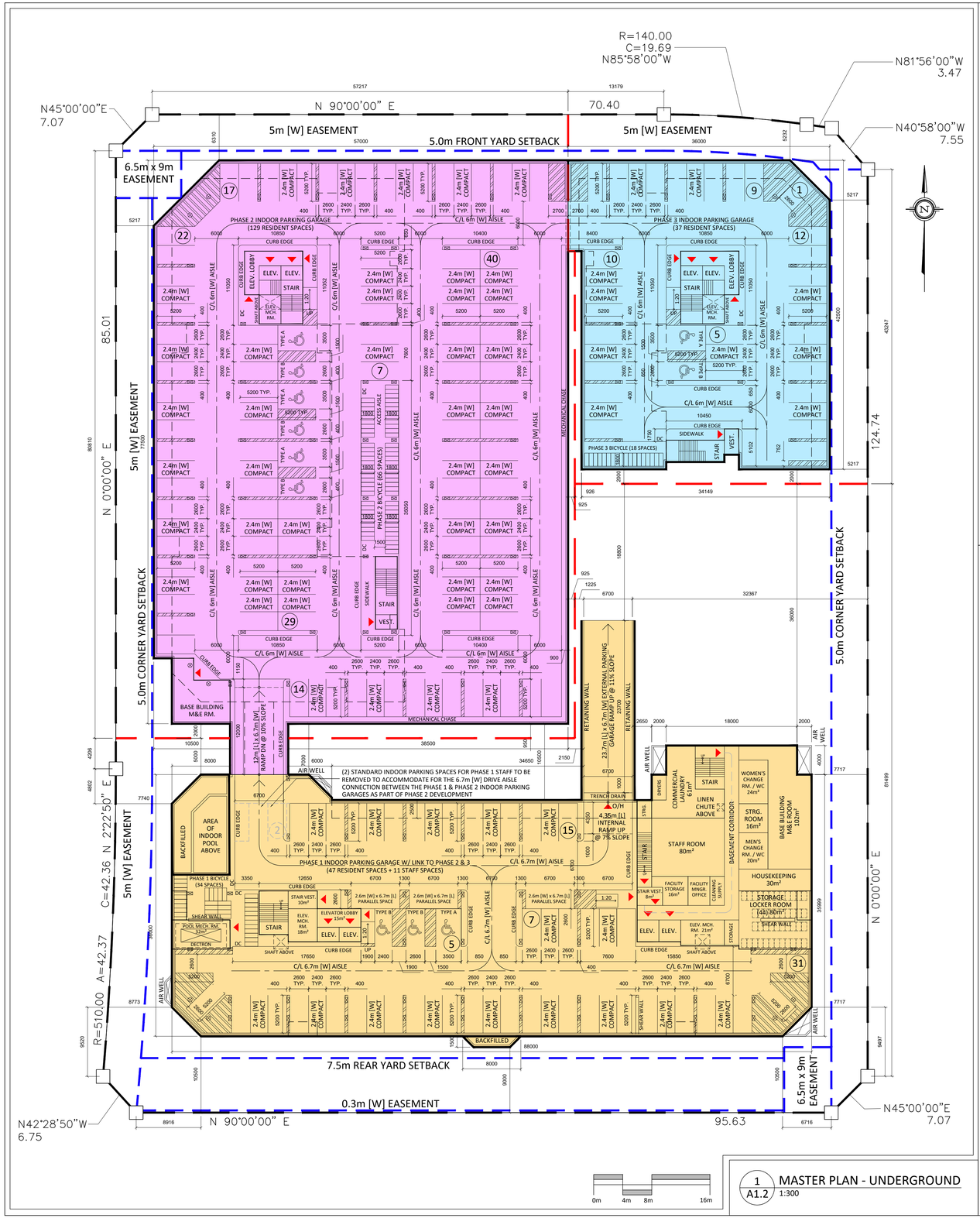
WATERIDGE LIFESTYLES - PHASE 1 RETIREMENT HOME
BLOCK 21 WATERIDGE VILLAGE
200 CODD'S ROAD, OTTAWA ON K1K 5C6

DRAWING LIST

MASTER PLAN

JOB No.	TBA-2026-01	DRAWING No.
DATE	01/20/2026	A1.1
SCALE	AS NOTED	
DRAWN & REVIEWED BY T.B.		

FILE No. xx / PLAN No. xx



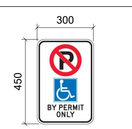
1 A1.2 MASTER PLAN - UNDERGROUND
1:300



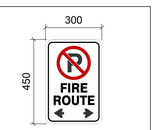
PEDESTRIAN CROSSING
SIGN - RIGHT (Ra-5R)



ADVANCE PEDESTRIAN
CROSSING SIGN - RIGHT (Wc-27R)



ACCESSIBLE
PARKING SIGN (APS)



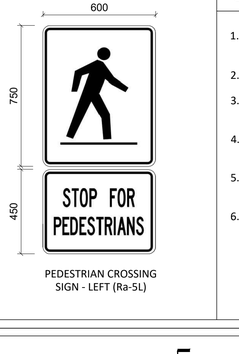
DIRECTIONAL
FIRE ACCESS
ROUTE SIGN (FARS)



DIRECTIONAL
RESIDENT PARKING
SIGN (RPS)



DIRECTIONAL
VISITOR PARKING
SIGN (VPS)

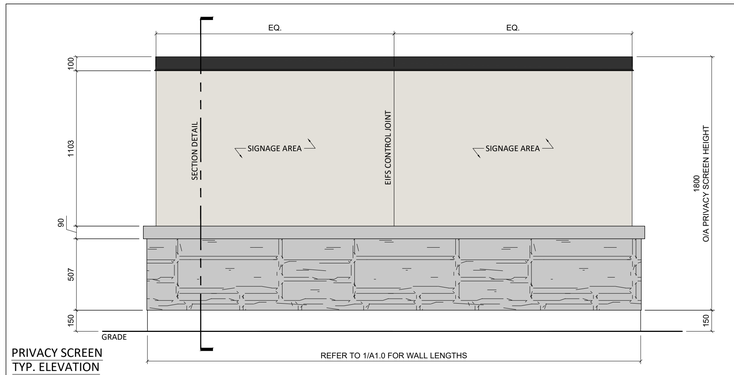


PEDESTRIAN CROSSING
SIGN - LEFT (Ra-5L)

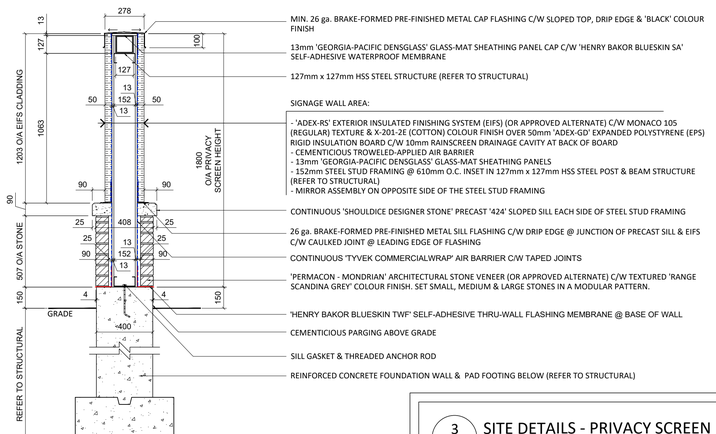
Signage Notes:

1. All signs to be aluminum and mounted on a permanent 60mm Ø galvanized steel post set in a 457mm Ø to 610mm Ø concrete base.
2. All signs to be visible day and night with scotch light reflective vinyl background & lettering.
3. Mount the bottom edge of the accessible parking, resident parking & visitor parking signs at 1200mm above the asphalt surface.
4. Mount the bottom edge of the fire access route sign at 2000mm above the asphalt surface & spaced max. 25m apart.
5. Provide multi-directional arrows identifying the fire access route or a single directional arrow indicating the limit of the fire access route.
6. Locate the signs as per the architectural site plan where noted by the symbol:

2 A1.2 SITE DETAILS - SIGNAGE
N.T.S.



PRIVACY SCREEN
TYP. ELEVATION



PRIVACY SCREEN SECTION DETAIL

3 A1.2 SITE DETAILS - PRIVACY SCREEN
1:20

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KEY PLAN



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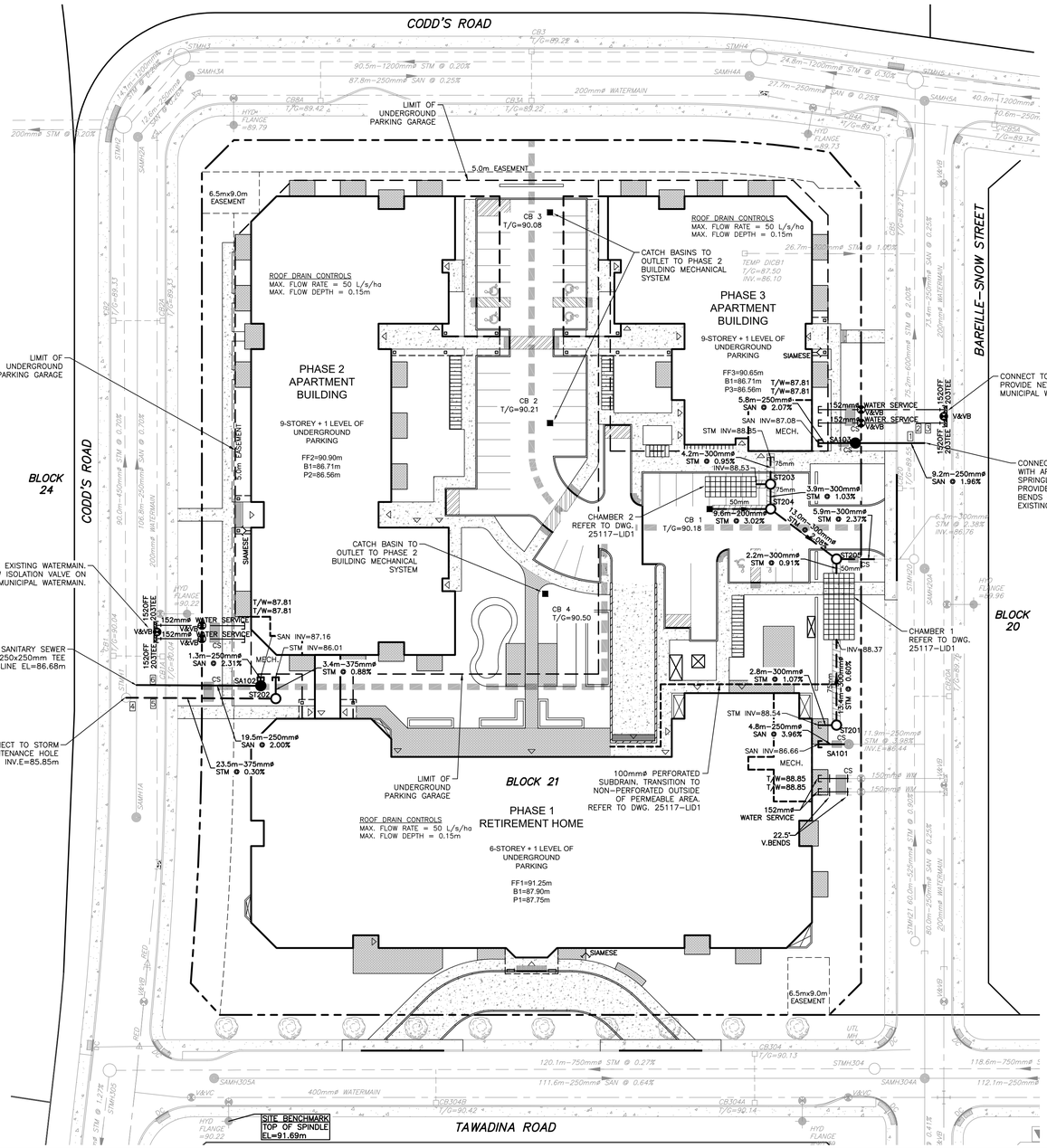
DRAWING LIST
MASTER PLAN - UNDERGROUND & SITE DETAILS

JOB No.	TBA-2026-01
DATE	01/20/2026
SCALE	AS NOTED
DRAWN & REVIEWED BY T.B.	

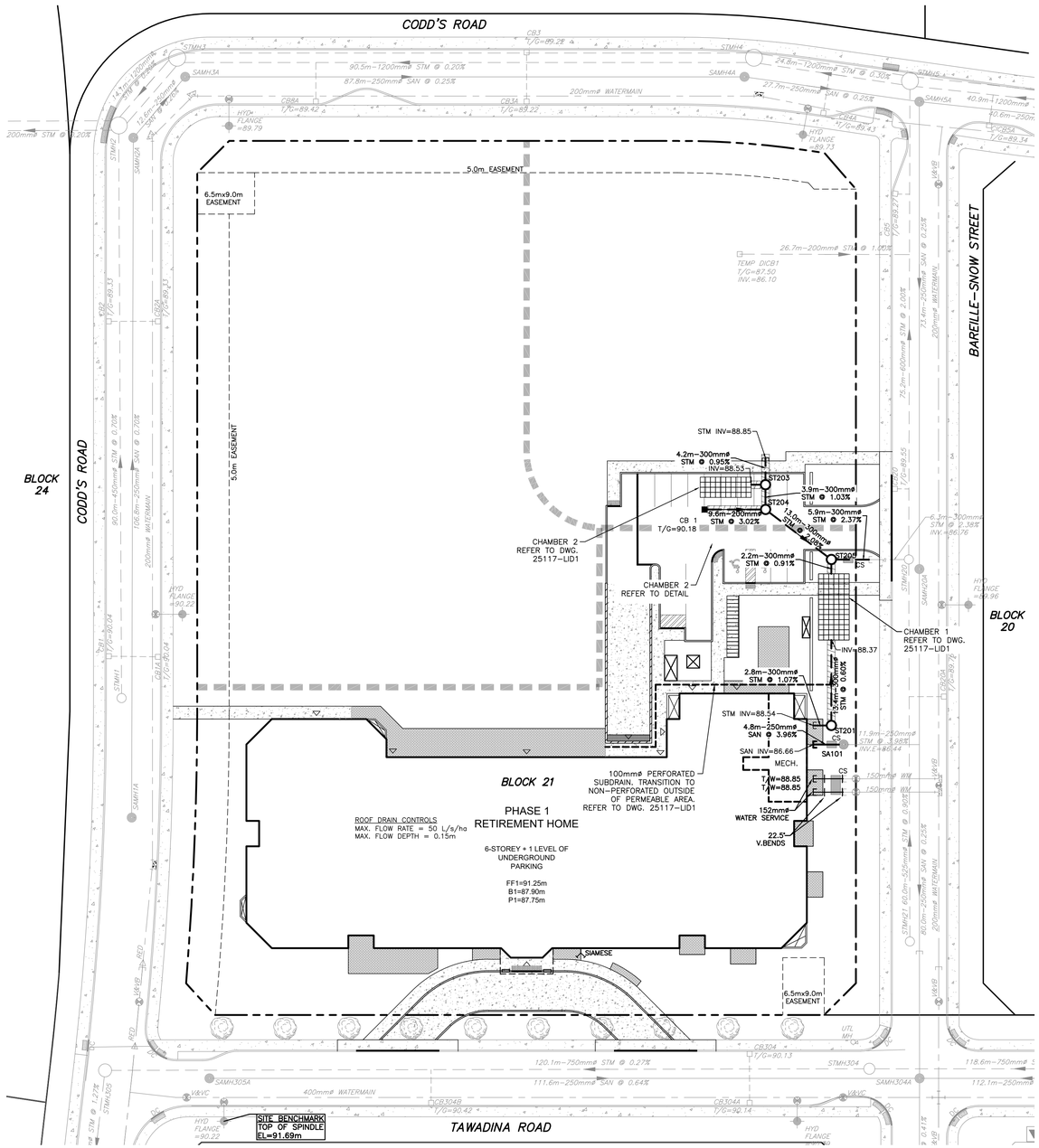
DRAWING No. A1.2

FILE No. xx / PLAN No. xx

NOT FOR CONSTRUCTION


CODD'S ROAD
BARELLE-SNOW STREET
TAWADINA ROAD
BLOCK 24
BLOCK 20
BLOCK 21
LIMIT OF UNDERGROUND PARKING GARAGE
5.0m EASEMENT
6.5mx9.0m EASEMENT
PHASE 2 APARTMENT BUILDING
9-STOREY + 1 LEVEL OF UNDERGROUND PARKING
FF2=90.90m
B1=86.71m
P2=86.56m
PHASE 3 APARTMENT BUILDING
9-STOREY + 1 LEVEL OF UNDERGROUND PARKING
FF3=90.65m
B1=86.71m
P3=86.56m
PHASE 1 RETIREMENT HOME
6-STOREY + 1 LEVEL OF UNDERGROUND PARKING
FF1=91.25m
B1=87.90m
P1=87.75m
ROOF DRAIN CONTROLS
MAX. FLOW RATE = 50 L/s/ha
MAX. FLOW DEPTH = 0.15m
CB 1 T/G=90.18
CB 2 T/G=90.21
CB 3 T/G=90.08
CB 4 T/G=90.50
CHAMBER 1 REFER TO DWG. 25117-LID1
CHAMBER 2 REFER TO DWG. 25117-LID1
CATCH BASINS TO OUTLET TO PHASE 2 BUILDING MECHANICAL SYSTEM
CATCH BASIN TO OUTLET TO PHASE 2 BUILDING MECHANICAL SYSTEM
100mmø PERFORATED SUBDRAIN. TRANSITION TO NON-PERFORATED OUTSIDE OF PERMEABLE AREA. REFER TO DWG. 25117-LID1
CONNECT TO EXISTING WATERMAIN. PROVIDE NEW ISOLATION VALVE ON MUNICIPAL WATERMAIN.
CONNECT TO SANITARY SEWER WITH APPROVED 250x250mm TEE SPRINGLINE EL=85.48m PROVIDE LONG RADIUS 22.5° BENDS AND CROSS ABOVE EXISTING STORM SEWER
CONNECT TO SANITARY SEWER WITH APPROVED 250x250mm TEE SPRINGLINE EL=86.68m
CONNECT TO STORM MAINTENANCE HOLE INV.E=85.85m
SITE BENCHMARK TOP OF SPINDLE EL=91.69m
ST203
ST204
ST200
ST202
ST201
SA103
SA101
SA102
SAMH3
SAMH3A
SAMH4
SAMH4A
SAMH5
SAMH5A
SAMH1
SAMH1A
SAMH2
SAMH2A
SAMH305
SAMH305A
SAMH304
SAMH304A
STMH1
STMH2
STMH3
STMH3A
STMH4
STMH4A
STMH5
STMH5A
STMH304
CB304
CB304A
CB304B
V&VB
V&VC
SIAMESE
CS
UTL MH
HYD FLANGE
4.4m–1200mmø STM @ 0.30%
90.5m–1200mmø STM @ 0.20%
87.8m–250mmø SAN @ 0.25%
200mmø WATERMAIN
24.8m–1200mmø STM @ 0.30%
27.7m–250mmø SAN @ 0.25%
40.9m–1200mmø
10.6m–250m
200mmø STM @ 1.20%
16.6m–250mmø SAN @ 2.00%
90.0m–450mmø STM @ 0.70%
106.8m–250mmø SAN @ 0.70%
400mmø WATERMAIN
26.7m–200mmø STM @ 1.00%
73.4m–250mmø SAN @ 0.25%
200mmø WATERMAIN
75.2m–600mmø STM @ 2.00%
STMH21 60.0m–525mmø STM @ 0.90%
80.0m–250mmø SAN @ 0.25%
200mmø WATERMAIN
6.3m–300mmø STM @ 2.38%
INV=86.76
120.1m–750mmø STM @ 0.27%
111.6m–250mmø SAN @ 0.64%
118.6m–750mmø S
112.1m–250mmø
0.41%
9.2m–250mmø SAN @ 1.96%
4.2m–300mmø STM @ 0.95%
3.9m–300mmø STM @ 1.03%
5.9m–300mmø STM @ 2.37%
2.2m–300mmø STM @ 0.91%
2.8m–300mmø STM @ 1.07%
3.4m–300mmø STM @ 0.60%
4.8m–250mmø SAN @ 3.96%
1.9m–250mmø STM @ 3.95%
INV.E=86.44
1.3m–250mmø SAN @ 2.31%
3.4m–375mmø STM @ 0.88%
19.5m–250mmø SAN @ 2.00%
23.5m–375mmø STM @ 0.30%
5.8m–250mmø SAN @ 2.07%
9.6m–200mmø STM @ 3.02%
13.0m–300mmø STM @ 2.00%
152mmø WATER SERVICE
1350FF 203TEE
1.52mmø WATER SERVICE
22.5° V.BENDS
T/W=87.81
T/W=87.81
T/W=88.85
T/W=88.85
SAN INV=87.08
STM INV=88.85
SAN INV=87.16
STM INV=86.01
SAN INV=86.66
STM INV=88.54
INV=88.37
MECH.
TEMP. DICB1 T/G=87.50 INV=86.10
T/G=89.42
T/G=89.22
T/G=89.43
T/G=89.14
T/G=89.79
T/G=89.77
T/G=89.33
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NOT FOR CONSTRUCTION

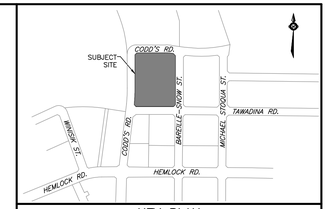


STORM STRUCTURE TABLE				
STRUCTURE ID	DIMENSIONS (mm)	FRAME	T/G ELEV	INVERT
CB 1	600x600	S19	90.18	E=88.38
CB 2	CUSTOM	S19	90.21	MECH.
CB 3	CUSTOM	S19	90.08	MECH.
CB 4	CUSTOM	S19	90.50	MECH.
ST201	1200	S24.1	90.46	N=88.45 W=88.51
ST202	1200	S24.1	90.96	N=85.98 W=85.92
ST203	1200	S24.1	90.29	N=88.81 S=88.78 W=88.55
ST204	1200	S24.1	90.27	N=88.74 W=88.09 SE=87.45
ST205	1200	S24.1	90.15	NW=87.18 S=86.35 E=86.90

NOTES:
1. CB2, CB3, AND CB4 TO OUTLET TO PHASE 2 BUILDING MECHANICAL SYSTEM.

SANITARY STRUCTURE TABLE				
STRUCTURE ID	DIMENSIONS (mm)	FRAME	T/G ELEV	INVERT
SA103	1200	S24	89.91	W=86.96 E=86.93
SA101	1200	S24	90.13	W=86.47 E=86.44
SA102	1200	S24	90.80	N=87.13 W=87.07

152mmø WATERMAIN GRADE TABLE – PHASE 1 BUILDING TWIN SERVICES				
STATION	FINISHED GRADE (m)	TOP OF WATER (m)	COVER DEPTH (m)	COMMENTS
1+000	90.10	87.70	2.40	V&VB (BY OTHERS)
1+002	90.26	87.70	2.56	22.5° VERTICAL BEND
1+004.8	91.15	88.75	2.40	22.5° VERTICAL BEND
1+006.7	91.25	88.85	2.40	CAP



LEGEND

- PROPERTY BOUNDARY
- PHASING LIMIT
- EASEMENT
- EXISTING HYDRANT
- EXISTING CATCH BASIN
- EXISTING WATERMAIN
- V&VB — EXISTING VALVE & VALVE BOX
- V&VC — EXISTING VALVE & VALVE CHAMBER
- EXISTING SANITARY SEWER & MANHOLE
- EXISTING STORM SEWER & MANHOLE
- EXISTING TREE
- WATERMAIN
- V&VB — VALVE & VALVE BOX
- SIAMESE CONNECTION
- CATCH BASIN
- SANITARY SEWER & MANHOLE (WATERTIGHT COVER)
- STORM SEWER & MANHOLE
- CS — CLAY SEAL (CITY STD. S8)
- BUILDING ENTRANCE
- 1 — CROSSING NUMBER
- 50mm — INSULATION & THICKNESS (CITY STD. W22/S35)
- BOREHOLE (REFER TO GEOTECHNICAL REPORT)

NOTES

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NO.	REVISION DESCRIPTION	DATE	BY
2	REVISED PER CLC COMMENTS	27/02/26	BLM
1	ISSUED FOR REVIEW	16/01/26	BLM

SCALE
0 4m 8m 16m
HORIZONTAL 1:400

LICENSED PROFESSIONAL ENGINEER
B.L. MACKECHNIE
100199554
27 Feb '26
PROVINCE OF ONTARIO

Robinson Land Development
2936 Baseline Road
Suite 200
Ottawa, ON K2H 1B3
(613) 592-6060 rcii.com

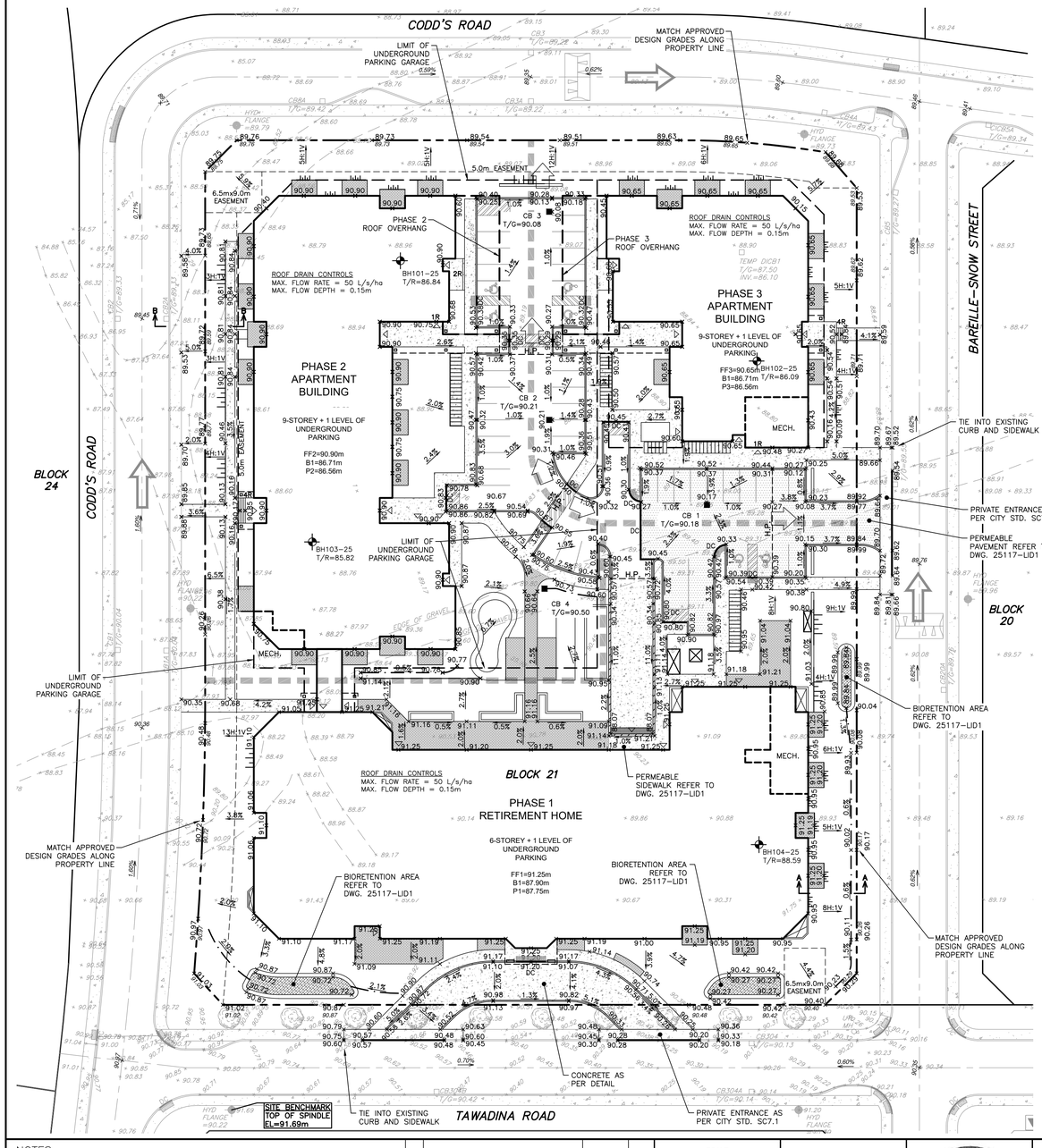
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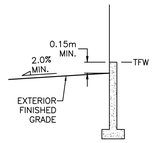
WATERIDGE LIFESTYLES LTD.

WATERIDGE VILLAGE
BLOCK 21
CITY OF OTTAWA, ON

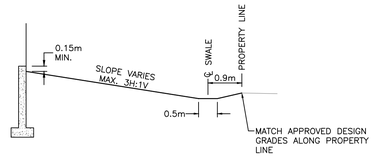
INTERIM
SERVICING PLAN

PROJECT No.	25117
SURVEY	MONUMENT-URSO SURVEYING LTD.
DATED	FEBRUARY 2026
DWG. No:	25117-S2

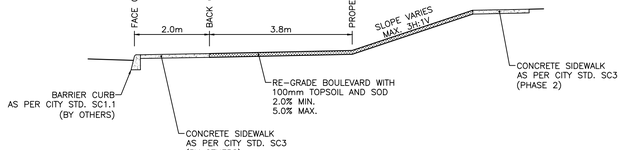




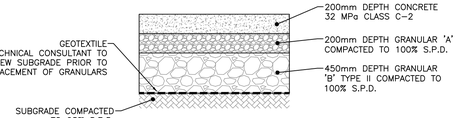
TYPICAL FOUNDATION DETAIL
N.T.S.



SECTION A–A (TYP.)
N.T.S.

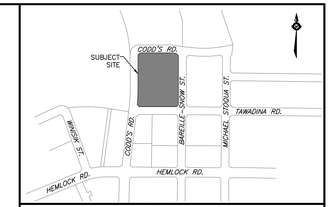


SECTION B–B (TYP.)
N.T.S.



NOTE: HEAT TRACING DETAILS TO BE SPECIFIED BY OTHERS.

TAWADINA ROAD ACCESS / PARKING GARAGE RAMP STRUCTURE DETAIL
N.T.S.



KEY PLAN



LEGEND

- PROPERTY BOUNDARY
- PHASING LIMIT
- EASEMENT
- × 88.00 EXISTING ELEVATION
- × 90.00 PROPOSED GRADE
- × 90.00 APPROVED DESIGN GRADE
- 2.0% PROPOSED DRAINAGE SLOPE & DIRECTION
- 3R PROPOSED NUMBER OF RISERS
- EXISTING HYDRANT
- EXISTING CATCH BASIN
- EXISTING TREE
- CATCH BASIN
- BUILDING ENTRANCE
- BOREHOLE (REFER TO GEOTECHNICAL REPORT)
- TERRACING (3H:1V MAX.)
- SWALE
- 100-YR PONDING LIMIT
- RETAINING WALL
- H.P. HIGH POINT
- DC DEPRESSED CURB WITH TWSI
- MAJOR OVERLAND FLOW ROUTE
- EXTERNAL MAJOR OVERLAND FLOW ROUTE
- PERMEABLE PAVEMENT STRUCTURE

FF1 FINISHED FLOOR ELEVATION
B1 BASEMENT LEVEL ELEVATION
P1 PARKING GARAGE LEVEL ELEVATION

NOTE:
NO SURFACE PONDING OCCURS DURING THE 2-YEAR THROUGH 100-YEAR DESIGN EVENTS. REFER TO PONDING AREA PLAN (DWG. 25117-PA1) FOR MORE DETAILS.

NOT FOR CONSTRUCTION

NOTES

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SCALE
0 4m 8m 16m
HORIZONTAL 1:400

LICENSED PROFESSIONAL ENGINEER
B.L. MACKECHNIE
100199554
27 Feb '26
PROVINCE OF ONTARIO

Robinson Land Development
2936 Baseline Road
Suite 200
Ottawa, ON K2H 1B3
(613) 592-6060 rcii.com

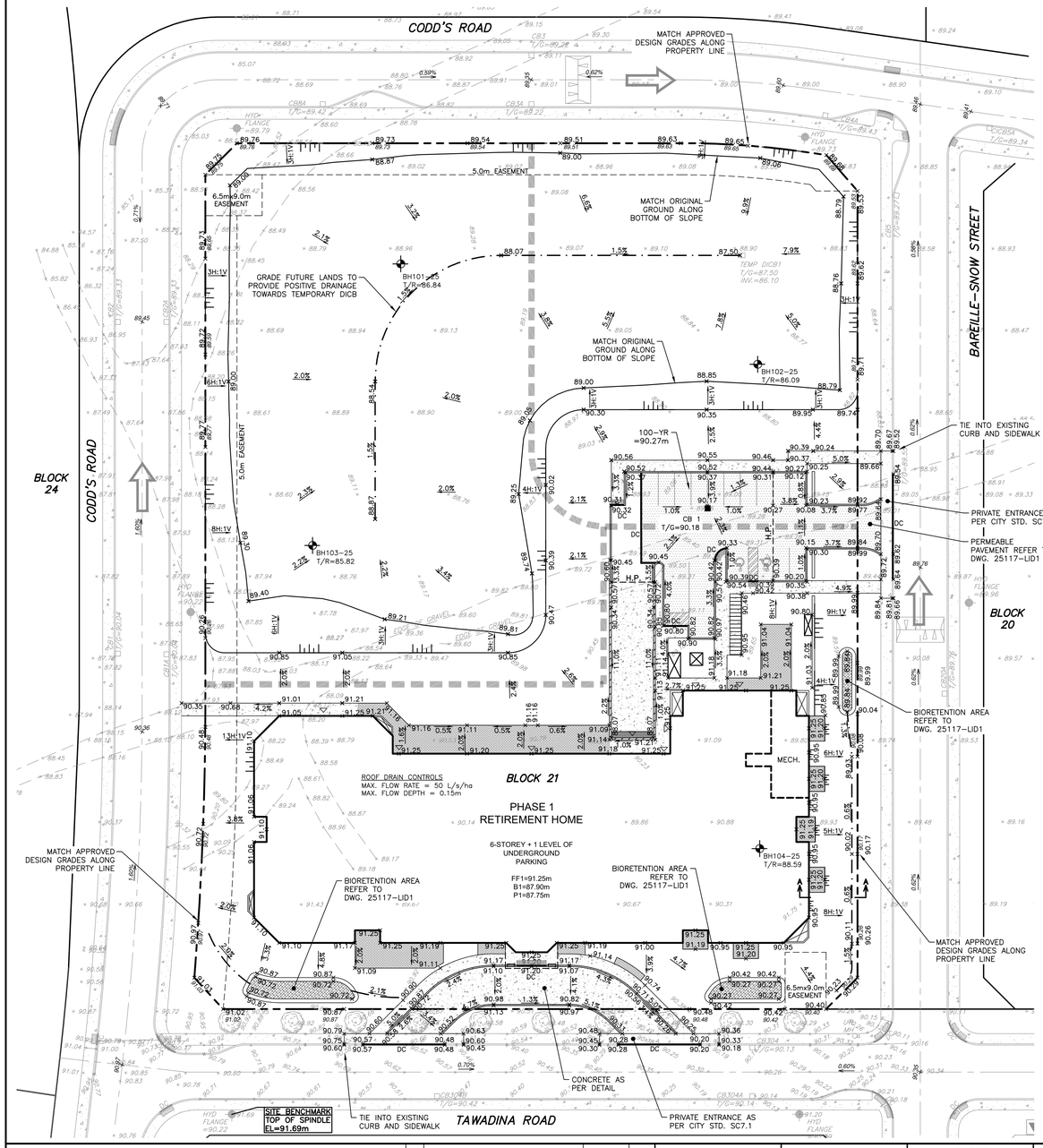
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APPROVED	BLM

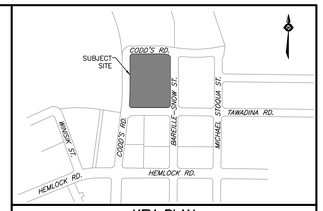
WATERIDGE LIFESTYLES LTD.

WATERIDGE VILLAGE
BLOCK 21
CITY OF OTTAWA, ON

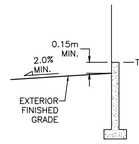
GRADING AND DRAINAGE PLAN

PROJECT No.	25117
SURVEY	MONUMENT-URSO SURVEYING LTD.
DATED	FEBRUARY 2026
DWG. No:	25117-GR1

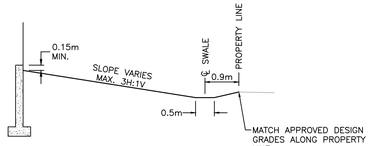




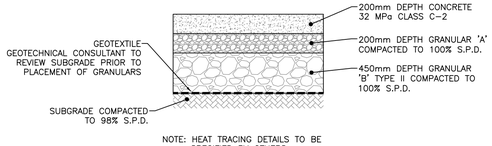
KEY PLAN



TYPICAL FOUNDATION DETAIL
N.T.S.



SECTION A–A (TYP.)
N.T.S.



NOTE: HEAT TRACING DETAILS TO BE SPECIFIED BY OTHERS.

TAWADINA ROAD ACCESS / PARKING GARAGE RAMP STRUCTURE DETAIL
N.T.S.

LEGEND

- PROPERTY BOUNDARY
- PHASING LIMIT
- EASEMENT
- × 88.00 EXISTING ELEVATION
- × 90.00 PROPOSED GRADE
- × 90.00 APPROVED DESIGN GRADE
- 2.0% PROPOSED DRAINAGE SLOPE & DIRECTION
- 3R PROPOSED NUMBER OF RISERS
- EXISTING HYDRANT
- EXISTING CATCH BASIN
- EXISTING TREE
- CATCH BASIN
- BUILDING ENTRANCE
- BOREHOLE (REFER TO GEOTECHNICAL REPORT)
- TERRACING (3H:1V MAX.)
- SWALE
- 100–YR PONDING LIMIT
- RETAINING WALL
- H.P. HIGH POINT
- DC DEPRESSED CURB WITH TWSI
- MAJOR OVERLAND FLOW ROUTE
- EXTERNAL MAJOR OVERLAND FLOW ROUTE
- PERMEABLE PAVEMENT STRUCTURE

FF1 FINISHED FLOOR ELEVATION
B1 BASEMENT LEVEL ELEVATION
P1 PARKING GARAGE LEVEL ELEVATION

NOTE:
NO SURFACE PONDING OCCURS DURING THE 2–YEAR THROUGH 100–YEAR DESIGN EVENTS. REFER TO PONDING AREA PLAN (DWG. 25117–PA1) FOR MORE DETAILS.

NOT FOR CONSTRUCTION

NOTES

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1	ISSUED FOR REVIEW	16/01/26	BLM

SCALE
0 4m 8m 16m
HORIZONTAL 1:400

LICENSED PROFESSIONAL ENGINEER
B.L. MACKECHNIE
100199554
27 Feb. '26
PROVINCE OF ONTARIO

Robinson Land Development
2936 Baseline Road
Suite 200
Ottawa, ON K2H 1B3
(613) 592-6060 rcii.com

DESIGN	BLM
CHECKED	SG
DRAWN	BLM
CHECKED	SG
APPROVED	BLM

WATERIDGE LIFESTYLES LTD.

WATERIDGE VILLAGE
BLOCK 21
CITY OF OTTAWA, ON

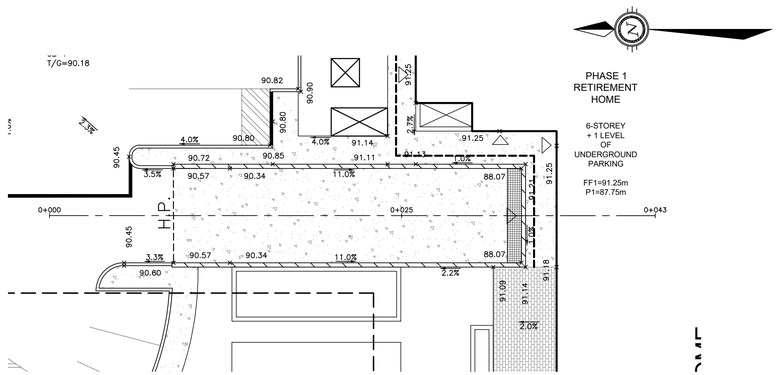
INTERIM
GRADING AND DRAINAGE PLAN

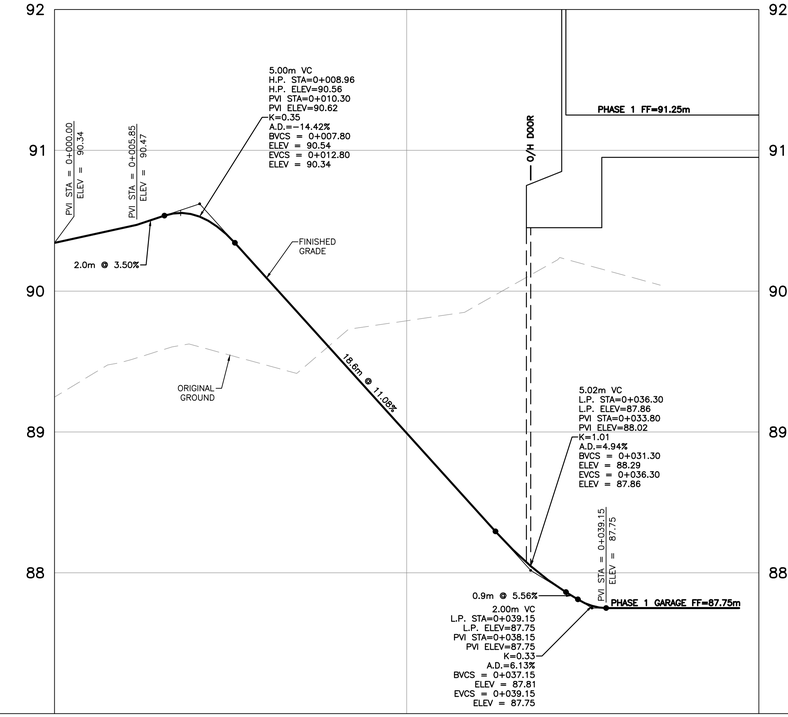
PROJECT No.	25117
SURVEY	MONUMENT-URSO SURVEYING LTD.
DATED	FEBRUARY 2026
DWG. No:	25117-GR2

NOT FOR CONSTRUCTION



KEY PLAN





PROPOSED RAMP ELEVATION		90.34 90.47 90.56 90.53	88.99	88.05 87.77 87.75
ORIGINAL GROUND		*89.25*	*89.79*	
CHAINAGE		**0+000**	**0+025**	**0+050**

NOTES

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SCALE

VERTICAL 1:20 (0, 0.2m, 0.4m, 0.6m)

HORIZONTAL 1:200 (0, 2m, 4m, 8m)

LICENSED PROFESSIONAL ENGINEER
B.L. MACKECHNIE
100199554
27 Feb. '26
PROVINCE OF ONTARIO

Robinson Land Development
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DESIGN	BLM
CHECKED	SG
DRAWN	BLM
CHECKED	SG
APPROVED	BLM

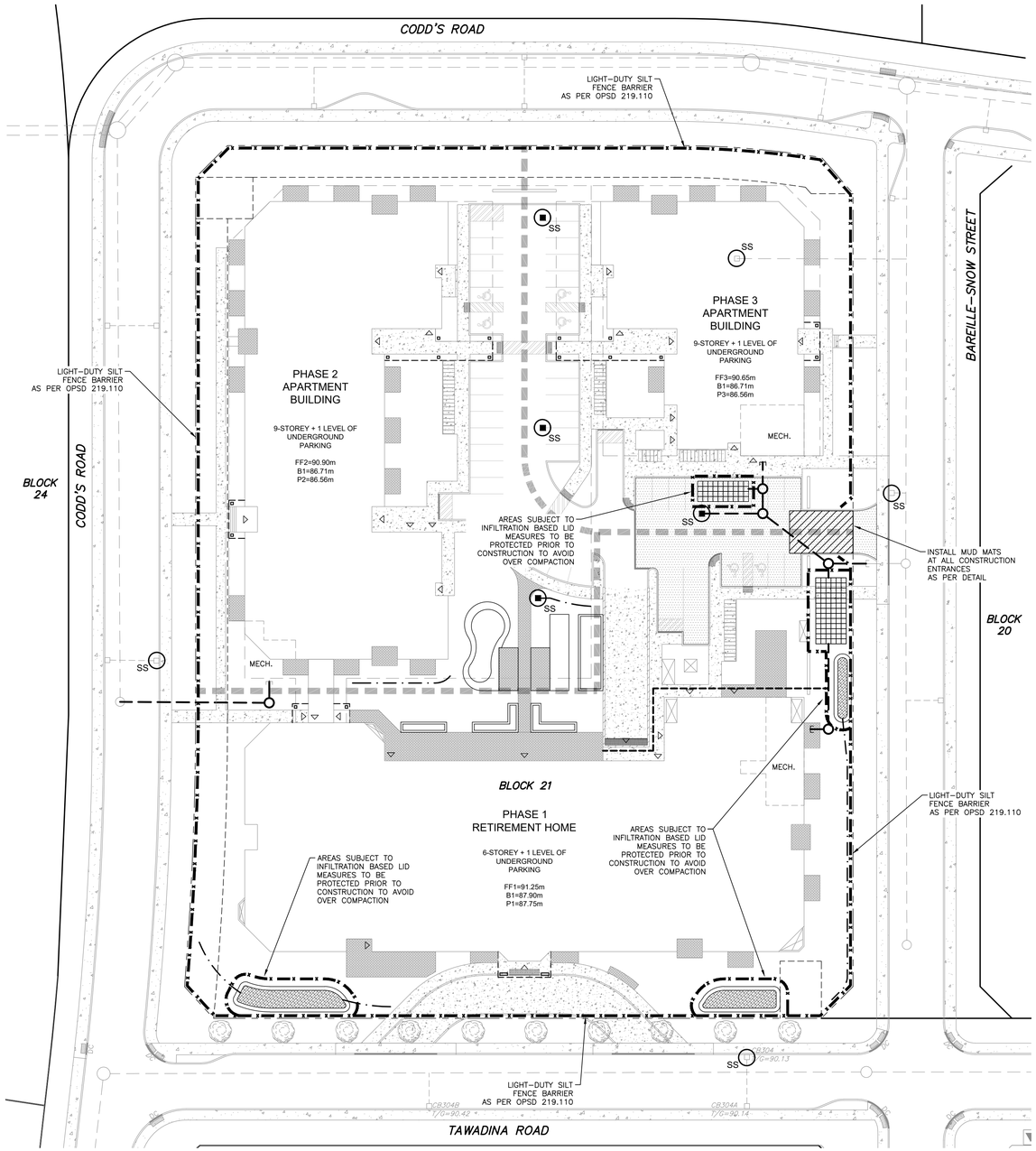
WATERIDGE LIFESTYLES LTD.

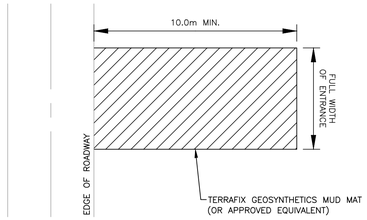
WATERIDGE VILLAGE
BLOCK 21
CITY OF OTTAWA, ON

UNDERGROUND PARKING
GARAGE RAMP
PLAN & PROFILE

PROJECT No.	25117
SURVEY	MONUMENT-URSO SURVEYING LTD.
DATED	FEBRUARY 2026
DWG. No:	25117-P1

NOT FOR CONSTRUCTION

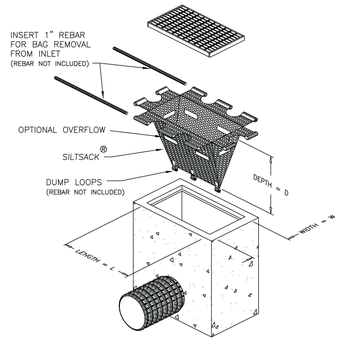


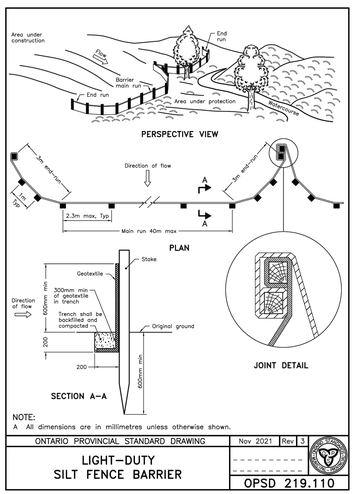


NOTES:
1. SEDIMENT SHALL BE CLEANED FROM ROADWAYS AS REQUIRED.
2. INSTALL AND MAINTAIN MUD MATS AT ALL CONSTRUCTION ENTRANCES.

MUD MAT DETAIL
N.T.S.

Typical Siltsack® Construction - Type B





ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev 3
LIGHT-DUTY SILT FENCE BARRIER		OPSD 219.110



KEY PLAN

LEGEND

- PROPERTY BOUNDARY
- PHASING LIMIT
- EASEMENT
- EXISTING CATCH BASIN
- EXISTING STORM SEWER & MANHOLE
- CATCH BASIN
- STORM SEWER & MANHOLE
- BUILDING ENTRANCE
- TERRACING (3H:1V MAX.)
- SWALE
- LIGHT-DUTY SILT FENCE BARRIER
- SS — SILT SACK (OR APPROVED EQUIVALENT)

NOTES:

1. THE CONTRACTOR SHALL IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE ULTIMATE RECEIVING WATERCOURSE DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
2. LIMIT THE EXTENT OF EXPOSED SOILS AT ANY GIVEN TIME.
3. RETAIN EXISTING VEGETATION TO THE GREATEST EXTENT POSSIBLE FOR AS LONG AS POSSIBLE.
4. MINIMIZE SLOPE LENGTH AND GRADIENT OF DISTURBED AREAS.
5. MAINTAIN OVERLAND SHEET FLOW AND AVOID CONCENTRATED FLOWS.
6. REDUCE RUNOFF VELOCITIES AND DETAIN RUNOFF TO PROMOTE SETTLING.
7. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL VEGETATION HAS BEEN RE-ESTABLISHED IN ALL DISTURBED AREAS. RE-VEGETATE DISTURBED AREAS AS SOON AS POSSIBLE.
8. DIVERT RUNOFF FROM PROBLEM AREAS AND AWAY FROM INFILTRATION BASED LID PRACTICES.
9. AVOID HEAVY VEHICLE TRAFFIC WHERE INFILTRATION BASED LID MEASURES ARE PROPOSED.
10. CONTRACTOR SHALL MINIMIZE THE AMOUNT OF STOCKPILED MATERIAL. ALL STOCKPILE SOIL SHALL BE AWAY (15 METRES OR GREATER) FROM WATERCOURSES, LID PRACTICES, DRAINAGE FEATURES AND TOP OF STEEP SLOPES. THE DOWNSTREAM SIDE OF ALL STOCKPILES SHALL BE PROTECTED WITH SILT FENCE. FIBRE ROLLS OR EQUIVALENT MEASURES PRIOR TO A RAINFALL EVENT.
11. SILT SACKS ARE TO BE PLACED UNDERNEATH THE FRAME AND COVER OF ALL PROPOSED AND EXISTING CATCH BASIN AND OPEN COVER STORM MANHOLES UNTIL CONSTRUCTION IS COMPLETED.
12. LIGHT-DUTY SILT FENCE BARRIERS SHALL BE INSTALLED AS PER OPSD 219.110 WHERE INDICATED AND MAINTAINED AS REQUIRED.
13. DURING ACTIVE CONSTRUCTION PERIODS, VISUAL INSPECTIONS SHALL BE UNDERTAKEN ON A WEEKLY BASIS AND AFTER MAJOR STORM EVENTS (>25mm RAIN IN 24 HOUR PERIOD) ON SEDIMENT CONTROL BARRIERS AND ANY DAMAGE REPAIRED IMMEDIATELY.
14. EROSION AND SEDIMENT CONTROL BARRIERS SHALL ALSO BE ASSESSED (AND REPAIRED AS REQUIRED) FOLLOWING SIGNIFICANT SNOWMELT EVENTS.
15. VISUAL INSPECTIONS SHALL ALSO BE UNDERTAKEN IN ANTICIPATION OF LARGE STORM EVENTS (OR A SERIES OF RAINFALL AND/OR SNOWMELT DAYS) THAT COULD POTENTIALLY YIELD SIGNIFICANT RUNOFF VOLUMES.
16. CARE SHALL BE TAKEN TO PREVENT DAMAGE TO EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION OPERATIONS.
17. IN SOME CASES, BARRIERS MAY BE REMOVED TEMPORARILY TO ACCOMMODATE THE CONSTRUCTION OPERATIONS. THE AFFECTED BARRIERS SHALL BE REINSTATED IMMEDIATELY AFTER CONSTRUCTION OPERATIONS ARE COMPLETED.
18. SEDIMENT CONTROL DEVICES SHALL BE CLEANED OF ACCUMULATED SEDIMENTATION AS REQUIRED AND REPLACED AS NECESSARY.
19. DURING THE COURSE OF CONSTRUCTION, IF THE ENGINEER BELIEVES THAT ADDITIONAL PREVENTION METHODS ARE REQUIRED TO CONTROL EROSION AND SEDIMENTATION, THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL MEASURES, AS REQUIRED, TO THE SATISFACTION OF THE ENGINEER.
20. CONSTRUCTION AND MAINTENANCE REQUIREMENTS FOR EROSION AND SEDIMENT CONTROLS ARE TO COMPLY WITH OPSS 805.
21. MUD MATS SHALL BE INSTALLED AT ALL CONSTRUCTION ENTRANCES.
22. INSPECTION AND MAINTENANCE OF TEMPORARY ESC MEASURES SHALL CONTINUE UNTIL THEY ARE NO LONGER REQUIRED.
23. THE CONTRACTOR SHALL ENSURE THAT RECORDS OF INSPECTION ARE TAKEN, INCLUDING INSPECTOR'S NAME, DATE OF INSPECTION, VISUAL OBSERVATIONS, AND ANY NECESSARY REMEDIAL MEASURES TAKEN TO MAINTAIN INTERIM ESC MEASURES.

NOTES

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PROPERTY BOUNDARIES ARE DERIVED FROM TOPOGRAPHIC PLAN OF PART OF WATER RIDGE DEVELOPMENT BEING SHOWN AS BLOCK 21 ON DRAFT M-PLAN LOCATED NORTH OF TAWADINA ROAD AND EAST OF CODD'S ROAD, GEOGRAPHIC TOWNSHIP OF GLOUCESTER, CITY OF OTTAWA, MONUMENT-URSO SURVEYING LTD. ELEVATIONS ARE GEODETIC AND REFERRED TO THE CANADIAN GEODETIC VERTICAL DATUM (CGVD28:78).

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SCALE
0 4m 8m 16m
HORIZONTAL 1:400

LICENSED PROFESSIONAL ENGINEER
B.L. MACKECHNIE
100199554
27 Feb '26
PROVINCE OF ONTARIO

Robinson Land Development
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Suite 200
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(613) 592-6060 rcii.com

DESIGN	BLM
CHECKED	SG
DRAWN	BLM
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APPROVED	BLM

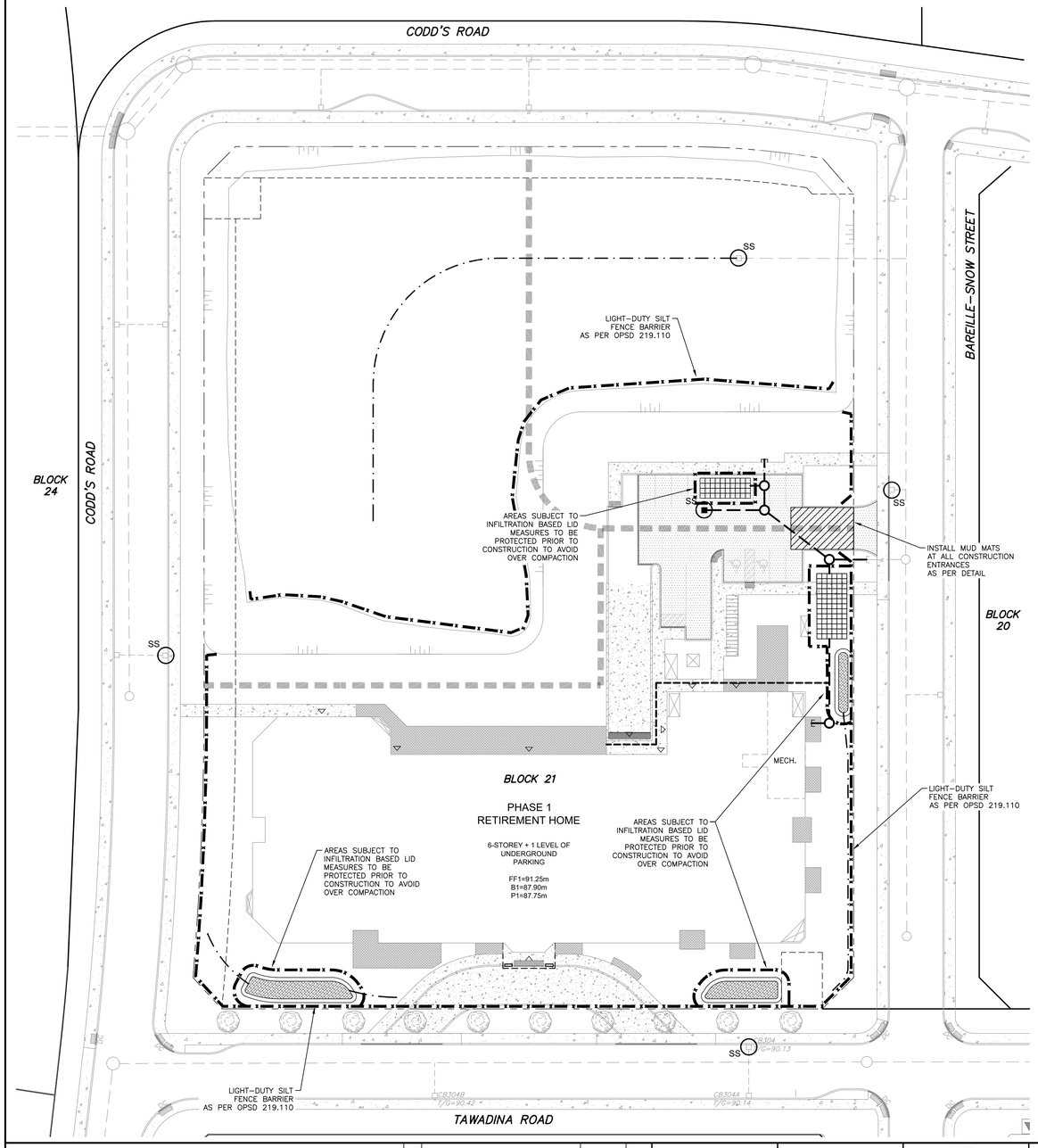
WATERIDGE LIFESTYLES LTD.

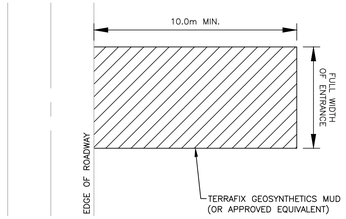
WATERIDGE VILLAGE
BLOCK 21
CITY OF OTTAWA, ON

EROSION AND SEDIMENT CONTROL PLAN

PROJECT No.	25117
SURVEY	MONUMENT-URSO SURVEYING LTD.
DATED	FEBRUARY 2026
DWG. No:	25117-ESC1

NOT FOR CONSTRUCTION

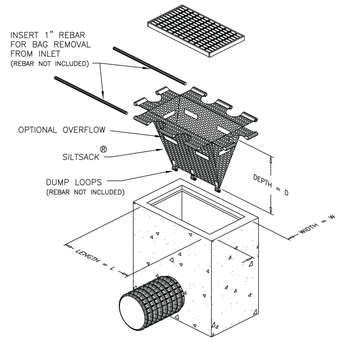


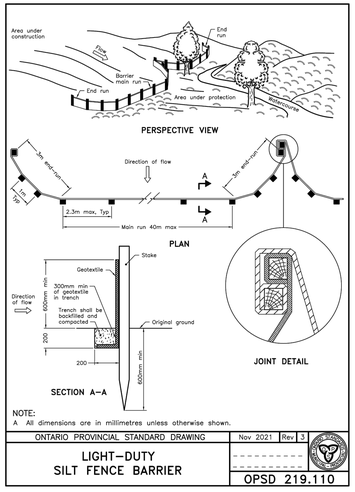


NOTES:
1. SEDIMENT SHALL BE CLEANED FROM ROADWAYS AS REQUIRED.
2. INSTALL AND MAINTAIN MUD MATS AT ALL CONSTRUCTION ENTRANCES.

MUD MAT DETAIL
N.T.S.

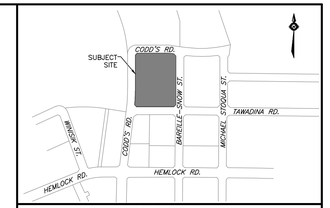
Typical Siltsack® Construction - Type B





NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev 3
LIGHT-DUTY SILT FENCE BARRIER		OPSD 219.110



KEY PLAN



LEGEND

- PROPERTY BOUNDARY
- PHASING LIMIT
- EASEMENT
- EXISTING CATCH BASIN
- EXISTING STORM SEWER & MANHOLE
- CATCH BASIN
- STORM SEWER & MANHOLE
- BUILDING ENTRANCE
- TERRACING (3H:1V MAX.)
- SWALE
- LIGHT-DUTY SILT FENCE BARRIER
- SILT SACK (OR APPROVED EQUIVALENT) — SS

NOTES:

1. THE CONTRACTOR SHALL IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE ULTIMATE RECEIVING WATERCOURSE DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
2. LIMIT THE EXTENT OF EXPOSED SOILS AT ANY GIVEN TIME.
3. RETAIN EXISTING VEGETATION TO THE GREATEST EXTENT POSSIBLE FOR AS LONG AS POSSIBLE.
4. MINIMIZE SLOPE LENGTH AND GRADIENT OF DISTURBED AREAS.
5. MAINTAIN OVERLAND SHEET FLOW AND AVOID CONCENTRATED FLOWS.
6. REDUCE RUNOFF VELOCITIES AND DETAIN RUNOFF TO PROMOTE SETTLING.
7. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL VEGETATION HAS BEEN RE-ESTABLISHED IN ALL DISTURBED AREAS. RE-VEGETATE DISTURBED AREAS AS SOON AS POSSIBLE.
8. DIVERT RUNOFF FROM PROBLEM AREAS AND AWAY FROM INFILTRATION BASED LID PRACTICES.
9. AVOID HEAVY VEHICLE TRAFFIC WHERE INFILTRATION BASED LID MEASURES ARE PROPOSED.
10. CONTRACTOR SHALL MINIMIZE THE AMOUNT OF STOCKPILED MATERIAL. ALL STOCKPILE SOIL SHALL BE AWAY (15 METRES OR GREATER) FROM WATERCOURSES, LID PRACTICES, DRAINAGE FEATURES AND TOP OF STEEP SLOPES. THE DOWNSTREAM SIDE OF ALL STOCKPILES SHALL BE PROTECTED WITH SILT FENCE. FIBRE ROLLS OR EQUIVALENT MEASURES PRIOR TO A RAINFALL EVENT.
11. SILT SACKS ARE TO BE PLACED UNDERNEATH THE FRAME AND COVER OF ALL PROPOSED AND EXISTING CATCH BASIN AND OPEN COVER STORM MANHOLES UNTIL CONSTRUCTION IS COMPLETED.
12. LIGHT-DUTY SILT FENCE BARRIERS SHALL BE INSTALLED AS PER OPSD 219.110 WHERE INDICATED AND MAINTAINED AS REQUIRED.
13. DURING ACTIVE CONSTRUCTION PERIODS, VISUAL INSPECTIONS SHALL BE UNDERTAKEN ON A WEEKLY BASIS AND AFTER MAJOR STORM EVENTS (>25mm RAIN IN 24 HOUR PERIOD) ON SEDIMENT CONTROL BARRIERS AND ANY DAMAGE REPAIRED IMMEDIATELY.
14. EROSION AND SEDIMENT CONTROL BARRIERS SHALL ALSO BE ASSESSED (AND REPAIRED AS REQUIRED) FOLLOWING SIGNIFICANT SNOWMELT EVENTS.
15. VISUAL INSPECTIONS SHALL ALSO BE UNDERTAKEN IN ANTICIPATION OF LARGE STORM EVENTS (OR A SERIES OF RAINFALL AND/OR SNOWMELT DAYS) THAT COULD POTENTIALLY YIELD SIGNIFICANT RUNOFF VOLUMES.
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NOTES

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LICENSED PROFESSIONAL ENGINEER
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100199554
27 Feb. '26
PROVINCE OF ONTARIO

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WATERIDGE LIFESTYLES LTD.

WATERIDGE VILLAGE
BLOCK 21
CITY OF OTTAWA, ON

INTERIM
EROSION AND SEDIMENT
CONTROL PLAN

PROJECT No.	25117
SURVEY	MONUMENT-URSO SURVEYING LTD.
DATED	FEBRUARY 2026
DWG. No:	25117-ESC2

GENERAL NOTES:

1. ALL WORKS AND MATERIALS SHALL CONFORM TO THE LATEST REVISIONS OF THE STANDARDS AND SPECIFICATIONS OF THE CITY OF OTTAWA AND ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS), AS AMENDED BY THE CITY OF OTTAWA.
2. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL EXISTING UTILITIES WITHIN THE SITE AND ADJACENT WORK AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY SERVICES OR UTILITIES DISTURBED DURING CONSTRUCTION, TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION.
3. ALL DIMENSIONS AND ELEVATIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER.
4. DESIGN ELEVATIONS GIVEN ARE TO BE ADHERED TO WITH NO CHANGES WITHOUT PRIOR WRITTEN APPROVAL BY ROBINSON LAND DEVELOPMENT.
5. ANY AREAS BEYOND THE LIMIT OF THE SITE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION AT THE CONTRACTOR'S EXPENSE.
6. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE "OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS". THE GENERAL CONTRACTOR SHALL BE DEEMED TO BE THE CONSTRUCTOR AS DEFINED IN THE ACT.
7. ALL CONSTRUCTION SIGNAGE MUST CONFORM TO THE M.T.O. MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (LATEST AMENDMENT).
8. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
9. THE CONTRACTOR WILL BE RESPONSIBLE FOR ADDITIONAL BEDDING OR ADDITIONAL STRENGTH PIPE IF THE MAXIMUM TRENCH WIDTH, AS SPECIFIED BY OPSD, IS EXCEEDED.
10. ALL NECESSARY CLEARING AND GRUBBING SHALL BE COMPLETED BY THE CONTRACTOR. REVIEW WITH THE CITY OF OTTAWA PRIOR TO AND TREE CUTTING.
11. REFER TO GEOTECHNICAL INVESTIGATION PREPARED BY CAMBIUM DATED FEBRUARY 26, 2026.
12. THE CONTRACTOR IS RESPONSIBLE FOR AND SHALL PROVIDE FOR DEWATERING, SUPPORT AND PROTECTION OF EXCAVATIONS AND TRENCHING AS WELL AS RELEASE OF ANY PUMPED GROUNDWATER IN A CONTROLLED AND APPROVED MANNER.
13. DO NOT CONSTRUCT USING DRAWINGS THAT ARE NOT MARKED "ISSUED FOR CONSTRUCTION".
14. CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT FOR CONSTRUCTION PURPOSES.
15. CLAY SEALS SHALL BE INSTALLED WITHIN SEWER TRENCHES IN ACCORDANCE WITH CITY STANDARD S8.
16. MOVEMENT OF MATERIAL ON AND/OR OFF SITE SHALL BE IN ACCORDANCE WITH ONTARIO EXCESS SOIL REGULATION O.REG. 406/19.
17. THE CONTRACTOR SHALL COMPLETE A CCTV INSPECTION OF ALL NEW SANITARY AND STORM SEWERS. A COPY OF THE VIDEO INSPECTION SHALL BE PROVIDED TO THE ENGINEER FOR REVIEW.

STORM SEWERS:

1. ALL REINFORCED CONCRETE STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH CSA A257.2 (LATEST AMENDMENT). ALL NON-REINFORCED CONCRETE STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH CSA A257.1 (LATEST AMENDMENT). PIPE SHALL BE JOINTED WITH STD. RUBBER GASKETS AS PER CSA A257.3 (LATEST AMENDMENT).
2. ALL STORM SEWER TRENCH AND BEDDING SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. S6 AND S7 CLASS 'B' UNLESS OTHERWISE SPECIFIED. BEDDING AND COVER MATERIAL SHALL BE SPECIFIED BY PROJECT GEOTECHNICAL ENGINEER.
3. ALL PVC STORM SEWERS ARE TO BE SDR 35 APPROVED PER C.S.A. B182.2 OR LATEST AMENDMENT, UNLESS OTHERWISE SPECIFIED.
4. STORM MANHOLE FRAME AND COVERS SHALL BE AS PER CITY OF OTTAWA STD. S24.1.
5. CATCH BASIN MANHOLE FRAME AND COVERS SHALL BE AS PER CITY OF OTTAWA STD. S28.1.
6. STORM SEWER MANHOLES SERVING SEWERS LESS THAN 900mm SHALL BE CONSTRUCTED WITH A 300mm SUMP. FOR STORM SEWERS 900mm AND OVER USE BENCHING IN ACCORDANCE WITH OPSD 701.021.
7. THE STORM SEWER CLASSES HAVE BEEN DESIGNED BASED ON BEDDING CONDITIONS SPECIFIED ABOVE. WHERE THE SPECIFIED TRENCH WIDTH IS EXCEEDED, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE ADDITIONAL BEDDING, A DIFFERENT TYPE OF BEDDING OR A HIGHER PIPE STRENGTH AT HIS OWN EXPENSE AND SHALL ALSO BE RESPONSIBLE FOR EXTRA TEMPORARY AND/OR PERMANENT REPAIRS MADE NECESSARY BY THE WIDENED TRENCH.
8. ALL STORM MANHOLES SHALL BE 1200mm DIAMETER AS PER OPSD 701.010 UNLESS OTHERWISE NOTED.
9. ALL CATCH BASINS SHALL BE 600mm X 600mm AS PER OPSD 705.010 UNLESS OTHERWISE NOTED.

SANITARY SEWERS:

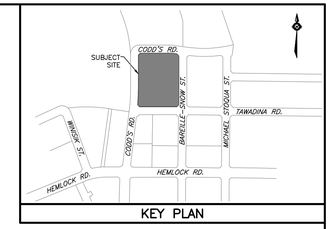
1. ALL SANITARY SEWERS 200mm IN DIAMETER (OR GREATER) SHALL BE PVC SDR 35, IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS.
2. ALL SANITARY SERVICES 135mm IN DIAMETER SHALL BE PVC SDR 28, IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS.
3. ALL SANITARY SEWERS/SERVICES WITH LESS THAN 2.5m HORIZONTAL SEPARATION TO WATERMAINS SHALL BE CONSTRUCTED USING SEWER PIPE IN ACCORDANCE WITH OPSS 1841, WITH JOINTS CAPABLE OF 345 kPa MINIMUM, CONFORMING TO PSM PVC, CSA B182.2/CSA 182.7 OR CSA B137.3 OR AWWA 302.
4. SANITARY SEWER TRENCH AND BEDDING SHALL BE AS PER CITY OF OTTAWA STD. S6 AND S7, CLASS 'B' BEDDING UNLESS OTHERWISE NOTED.
5. ALL SANITARY SERVICES ARE TO BE EQUIPPED WITH APPROVED BACKWATER VALVES.
6. SANITARY MANHOLE FRAME AND COVERS SHALL BE WATERTIGHT AS PER CITY OF OTTAWA STD. S24.
7. SANITARY SEWER MANHOLES SHALL BE BENCHED AS PER OPSD 701.021.
8. FOR SANITARY MANHOLES, DEPENDING ON THE ELEVATION OF THE GROUNDWATER TABLE, AND BASED ON THE RECOMMENDATION OF THE PROJECT GEOTECHNICAL CONSULTANT, CRETEX SEALS, OR A SIMILAR PRODUCT, SHALL BE INSTALLED IN THE PRE-CAST MANHOLE SECTION TO JUST BELOW THE MANHOLE FRAME TO PREVENT INFILTRATION.
9. CONTRACTOR SHALL PERFORM EXFILTRATION TESTING, IN THE PRESENCE OF THE CONSULTANT, FOR ALL SANITARY SEWERS IN ACCORDANCE WITH OPSS 410.

WATER SUPPLY:

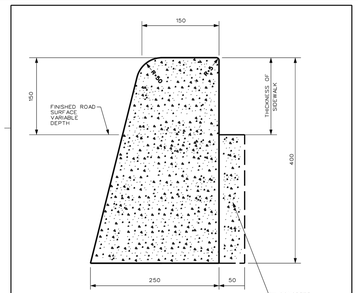
1. ALL PVC WATERMAINS SHALL BE EQUAL TO AWWA C-900 CLASS 150, SDR 18, OR APPROVED EQUAL.
2. WATERMAIN TRENCH AND BEDDING SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARD W17, UNLESS OTHERWISE SPECIFIED. BEDDING AND COVER MATERIAL SHALL BE SPECIFIED BY PROJECT GEOTECHNICAL ENGINEER.
3. ALL PVC WATERMAINS SHALL BE INSTALLED WITH A 10 GAUGE STRANDED COPPER TWU OR RWU TRACER WIRE IN ACCORDANCE WITH CITY OF OTTAWA STD. W36.
4. CATHODIC PROTECTION IS REQUIRED ON ALL METALLIC FITTINGS AS PER CITY OF OTTAWA STD. W40 AND W42.
5. CONTRACTOR TO SUPPLY HYDRANT EXTENSION TO ADJUST THE LENGTH OF HYDRANT BARREL IF REQUIRED.
6. FIRE HYDRANTS SHALL BE INSTALLED AS PER CITY OF OTTAWA STD. W19, AND LOCATED AS PER CITY STD. W18.
7. VALVE IN BOXES SHALL BE INSTALLED AS PER CITY OF OTTAWA STD. W24.
8. WATERMAIN IN FILL AREAS TO BE INSTALLED WITH RESTRAINED JOINTS AS PER CITY OF OTTAWA STD. W25.5 AND W25.6.
9. THRUST BLOCKING OF WATERMAIN TO BE INSTALLED AS PER CITY OF OTTAWA STD. W25.3 AND W25.4.
10. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY CAPS, PLUGS AND BLOW-OFFS AND NOZZLES REQUIRED FOR TESTING AND DISINFECTION OF THE WATERMAIN.
11. INSULATION FOR WATERMAIN CROSSING OVER AND BELOW SEWER SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. W25.2 AND W25, RESPECTIVELY, WHERE WATERMAIN COVER IS LESS THAN 2.4m.
12. WATERMAINS CROSSING ABOVE SEWERS SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. W25.2. MINIMUM BARREL TO BARREL SEPARATION SHALL BE 500mm.
13. WATERMAINS CROSSING BELOW SEWERS SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. W25. MINIMUM BARREL TO BARREL SEPARATION SHALL BE 500mm.
14. CONNECTION TO EXISTING WATERMAIN TO BE PERFORMED BY CITY FORCES. CONTRACTOR TO PROVIDE EXCAVATION, MATERIAL, BACKFILL AND ASSISTANCE AS REQUIRED.
15. SWABBING, DISINFECTION, AND HYDROSTATIC TESTING TO BE CONDUCTED AS PER CITY OF OTTAWA STANDARDS IN THE PRESENCE OF A CITY INSPECTOR AND/OR CONSULTANT.

ROADWORK SPECIFICATIONS:

1. CONCRETE BARRIER CURB SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. SC1.1.
2. ALL BARRIER CURB TO BE 150mm ABOVE FINISHED ASPHALT GRADE UNLESS OTHERWISE NOTED.
3. CONCRETE SIDEWALK SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. SC3.
4. TWSIs SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF OTTAWA STD. SC7.3.
5. ANY PAVEMENT REINSTATEMENT FOR SERVICE AND UTILITY CUTS SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. R10.
6. GRANULAR "A" SHALL BE PLACED TO A MINIMUM THICKNESS OF 300mm AROUND ALL STRUCTURES WITHIN PAVEMENT AREA.
7. ALL GRANULAR FOR ROADS SHALL BE COMPACTED TO A MINIMUM OF 98% STANDARD PROCTOR DENSITY.
8. SUB-EXCAVATE SOFT AREAS AND FILL WITH GRANULAR 'B' COMPACTED IN MAXIMUM 300mm LIFTS.
9. ALL EDGES OF DISTURBED PAVEMENT SHALL BE SAW-CUT TO FORM A NEAT AND STRAIGHT LINE PRIOR TO PLACING NEW ASPHALT.
10. PAVEMENT STRUCTURE DETAILS TO BE PROVIDED BY THE GEOTECHNICAL CONSULTANT.
11. GEOTECHNICAL CONSULTANT SHALL REVIEW SUBGRADE PRIOR TO PLACEMENT OF GRANULAR SUB-BASE.



KEY PLAN



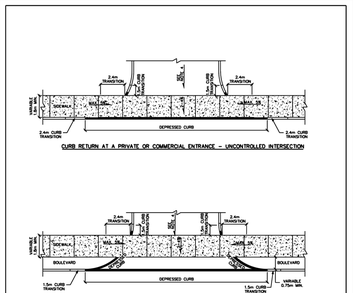
CONCRETE BARRIER CURB

NOTES:

1. THE FULL CURB DEPTH SHALL BE CARRIED THROUGH THE DEPRESSED ACCESS CROSSING.
2. A CONCRETE SUPPORT IS REQUIRED WHEN BUILT ADJACENT TO THE SIDEWALK.
3. IF AN EXTRUSION CURBING MACHINE IS USED, THE EXPANSION BITUMINOUS MATERIAL AND THE 15 mm EXPANSION TO BE PLACED AT THE END OF THE EXTRUSION
4. 10M BARS @ 300mm C/C EACH WAY IN CURB.
5. DEPRESSED CURB HEIGHT - 7 FOR PEDESTRIAN CURB RAMPS 0 TO 6 mm AND FOR PRIVATE ENTRANCES 0 TO 13mm.

(DIMENSIONS mm)
NTS

Ottawa	CONCRETE BARRIER CURB FOR GRANULAR BASE PAVEMENT (MODIFIED OPSD 600.110)	DATE: JAN 2003 REV. DATE: JANUARY 2026 DWG No.: SC1



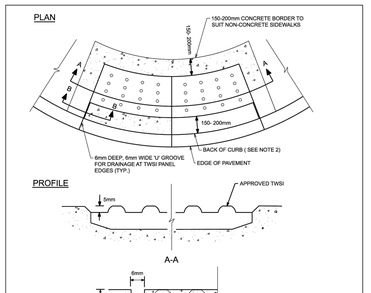
CURB RETURN AT A PRIVATE OR COMMERCIAL ENTRANCE - UNCONTROLLED INTERSECTION

CURB RETURN AT A PRIVATE OR COMMERCIAL ENTRANCE WITH BOULEVARD - UNCONTROLLED INTERSECTION

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. CURB DETAILS SEE SC1.1, SC1.2 AND SC1.3.
3. SIDEWALK DETAILS SEE SC2 AND SC3.
4. MAXIMUM SLOPE VARIES, SEE PRIVATE APPROACH BYLAW.
5. UNCONTROLLED INTERSECTION MEANS AN ENTRANCE NOT LOCATED AT A TRAFFIC SIGNAL OR ALL-WAY STOP CONTROL.

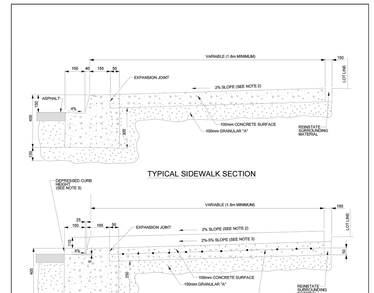
Ottawa	CURB RETURN ENTRANCES - UNCONTROLLED INTERSECTIONS	DATE: MARCH 2007 REV. DATE: MARCH 2021 DWG No.: SC7.1



NOTES:

1. TOPS OF TWSI'S (TACTILE WALKING SURFACE INDICATOR) SHALL BE ALIGNED & LEVEL WITH THE ADJACENT CONCRETE SURFACE & INSTALLATION IN WET CONCRETE SHALL BE EFFECTIVE IN PERMANENTLY SECURING THE TWSI IN PLACE ONCE DRY.
2. FOR MONOLITHIC SIDEWALKS, TWSI SHALL BE 300 TO 350mm BACK FROM THE CURB FACE.
3. JOINTS SHALL BE CONSTRUCTED TRANSVERSELY ACROSS THE SIDEWALK, PERPENDICULAR TO THE FACE OF CURB OR SIDEWALK.
4. WHEN JOINTS ARE CONSTRUCTED ADJACENT TO TWSI'S, THE JOINTS SHALL EXTEND FROM THE BACK CORNERS OF THE OUTSIDE TWSI PLATES TO THE BACK OF SIDEWALK, OR TERMINATE AT AN ADJACENT JOINT.
5. THE TERMINATION OF THE JOINTS AT BOTH THE FRONT AND BACK OF SIDEWALK SHALL BE NO LESS THAN 600mm APART.
6. JOINTS IN ALL CONCRETE ELEMENTS SHALL BE LAID OUT TO ENSURE THAT NO INDIVIDUAL RESULTING CONCRETE PANEL IS LESS THAN 0.5m² OR GREATER THAN 6m²

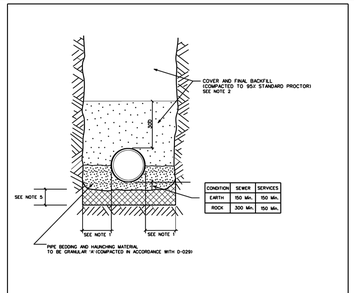
Ottawa	TITLE: ATTENTION TWSI DETAIL	DATE: MAR 2015 REV: JAN 2026 DWG No: SC7.3



NOTES:

1. ALL MEASUREMENTS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED
2. THE MAXIMUM SLOPE IS NOT TO EXCEED 2%
3. FOR CURB RAMPS, SLOPE OF 2% TO 5%, MAXIMUM 8%
4. EXPANSION AND DUMMY JOINTS AS PER SC5
5. DEPRESSED CURB HEIGHT - FOR PEDESTRIAN CURB RAMPS 0 TO 6 mm AND FOR PRIVATE ENTRANCES 0 TO 13mm

Ottawa	TITLE: CONCRETE CURB AND GUTTER WITH SIDEWALK	DATE: MAY 2001 REV: JULY 2025 DWG No: SC3



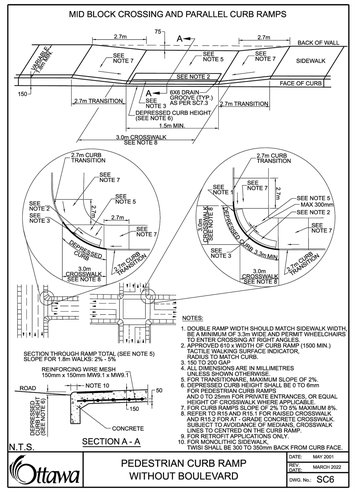
NOTES:

1.

PIPE INSIDE DIAMETER (mm)	CLEARANCE (mm)	
900 OR LESS	CONC PVC	450 450
OVER 900	500	

2. FINAL BACKFILL - APPROVED NATIVE MATERIAL OR SELECT SUBGRADE IN ACCORDANCE WITH F-1100 AND F-2100.
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
4. INITIAL BACKFILL MATERIAL
   CONCRETE PIPE - GRANULAR 'A', GRANULAR 'B' OR SELECT SUBGRADE MATERIAL WITH 100% PASSING THE 37.5mm SIEVE
   PVC PIPE - GRANULAR 'A'
5. WHEN APPROVED BY THE CONTRACT ADMINISTRATOR, POOR SOILS SHALL BE EXCAVATED TO CREATE A FOUNDATION THAT SHALL BE FILLED TO THE BOTTOM OF THE BEDDING WITH GRANULAR 'B'.

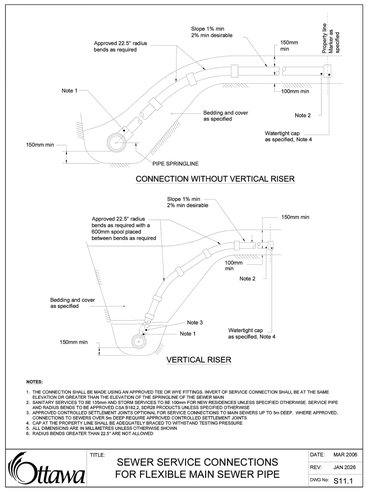
Ottawa	SINGLE TRENCH (SEWER & SEWER SERVICES)	DATE: MAY 2001 REV. DATE: JAN 2026 DWG. No.: S6



NOTES:

1. DOUBLE RAMP WIDTH SHOULD MATCH SIDEWALK WIDTH, BE A MINIMUM OF 3.1m WIDE AND PERMIT WHEELCHAIRS TO ENTER CROSSING AT RIGHT ANGLES.
2. APPROVED 610 x WIDTH OF CURB RAMP (1500 MIN.) TACTILE WALKING SURFACE INDICATOR, RADIUS TO MATCH CURB.
3. 150 TO 200mm.
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
5. FOR TRANSITIONARE, MAXIMUM SLOPE OF 2%.
6. DEPRESSED CURB HEIGHT SHALL BE 0 TO 6mm FOR PEDESTRIAN CURB RAMPS.
   DEPRESSED CURB HEIGHT FOR PRIVATE ENTRANCES, OR EQUAL HEIGHT OF CROSSWALK WHERE APPLICABLE.
7. FOR CURB RAMPS SLOPE OF 2% TO 5% MAXIMUM 8%.
8. REFER TO R15 AND R15.1 FOR RAISED CROSSWALK AND R15.2 FOR AT - GRADE CONCRETE CROSSWALK. SEE SC7.1 FOR CURB RAMP LOCATIONS. CROSSWALK LINES TO CENTRED ON THE CURB RAMP.
9. FOR RETROFIT APPLICATIONS ONLY.
10. FOR MONOLITHIC SIDEWALK, TWSI SHALL BE 300 TO 350mm BACK FROM CURB FACE.

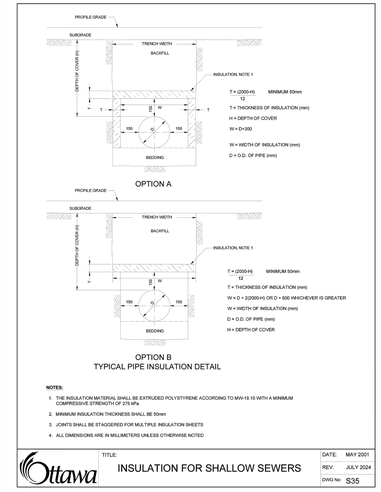
Ottawa	PEDESTRIAN CURB RAMP WITHOUT BOULEVARD	DATE: MAY 2001 REV. DATE: MARCH 2022 DWG. No.: SC6



NOTES:

1. THE CONNECTION SHALL BE MADE USING AN APPROVED TEE OR WYE FITTINGS. INVERT OF SERVICE CONNECTION SHALL BE AT THE SAME ELEVATION OR HIGHER THAN THE INVERT OF THE MAIN SEWER AT THE POINT OF CONNECTION.
2. SANITARY SERVICES TO BE 135mm AND STORM SERVICES TO BE 160mm FOR MEW RESIDENCES UNLESS SPECIFIED OTHERWISE. SERVICE PIPE AND RADIUS BENDS TO BE APPROVED CSA B182.2. ISOPEX PRODUCTS UNLESS SPECIFIED OTHERWISE
3. ALL CONNECTIONS TO BE MADE WITH APPROVED FLEXIBLE COUPLING CONNECTIONS TO MAIN SEWERS UP TO 5m DEEP. WHERE APPROVED, CONNECTIONS TO SEWERS OVER 5m DEEP REQUIRE APPROVED CONTROLLED SETTLEMENT JOINTS
4. CAP AT THE PROPERTY LINE SHALL BE ADEQUATELY BRACED TO WITHSTAND TESTING PRESSURE
5. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
6. RADIUS BENDS GREATER THAN 22.5° ARE NOT ALLOWED

Ottawa	SEWER SERVICE CONNECTIONS FOR FLEXIBLE MAIN SEWER PIPE	DATE: MAR 2006 REV: JAN 2026 DWG No: S11.1



T = (2000-H) MINIMUM 50mm
12

T = THICKNESS OF INSULATION (mm)

H = DEPTH OF COVER

W = D+300

W = WIDTH OF INSULATION (mm)

D = O.D. OF PIPE (mm)

T = (2000-H) MINIMUM 50mm
12

T = THICKNESS OF INSULATION (mm)

W = D + 2(2000-H) OR D + 600 WHICHEVER IS GREATER

W = WIDTH OF INSULATION (mm)

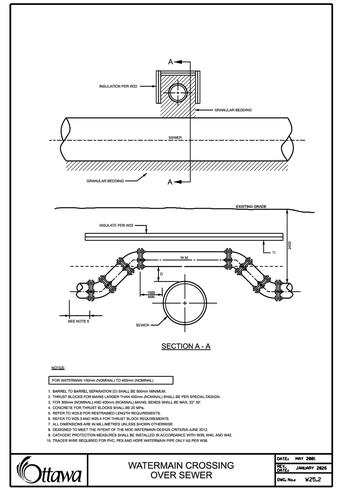
D = O.D. OF PIPE (mm)

H = DEPTH OF COVER

NOTES:

1. THE INSULATION MATERIAL SHALL BE EXTRUDED POLYSTYRENE ACCORDING TO MW-19.15 WITH A MINIMUM COMPRESSIVE STRENGTH OF 275 kPa
2. MINIMUM INSULATION THICKNESS SHALL BE 50mm
3. JOINTS SHALL BE STAGGERED FOR MULTIPLE INSULATION SHEETS
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED

Ottawa	TITLE: INSULATION FOR SHALLOW SEWERS	DATE: MAY 2001 REV: JULY 2024 DWG No: S35

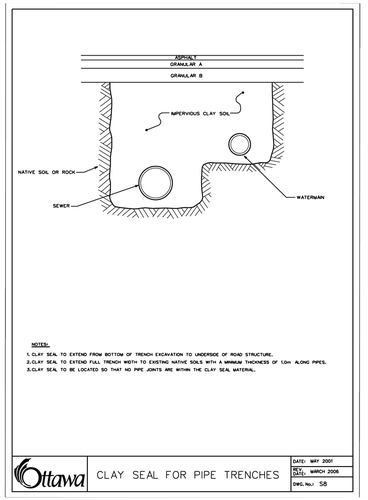


NOTES

FOR WATERMAIN 150mm (NOMINAL) TO 400mm (NOMINAL)

1. BARREL TO BARREL SEPARATION (D) SHALL BE 500mm MINIMUM.
2. FOR 150mm (NOMINAL) AND 200mm (NOMINAL) WATERMAIN, BENDS SHALL BE PER SPECIAL DESIGN.
3. FOR 300mm (NOMINAL) AND 400mm (NOMINAL) MAINS, BENDS SHALL BE MAX. 22° 30'.
4. CONCRETE FOR THRUST BLOCKS SHALL BE 20 MPa.
5. REFER TO W25.4 FOR RESTRAINED LENGTH REQUIREMENTS.
6. REFER TO W25.3 AND W25.4 FOR THRUST BLOCK REQUIREMENTS.
7. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.
8. DESIGNED TO MEET THE INTENT OF THE MOE WATERMAIN DESIGN CRITERIA JUNE 2012.
9. CATHODIC PROTECTION MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH W39, W40, AND W42.
10. TRACER WIRE REQUIRED FOR PVC, PEA AND HDPE WATERMAIN PIPE ONLY AS PER W36.

Ottawa	WATERMAIN CROSSING OVER SEWER	DATE: MAY 2001 REV. DATE: JANUARY 2026 DWG No: W25.2



NOTES:

1. CLAY SEAL TO EXTEND FROM BOTTOM OF TRENCH EXCAVATION TO UNDERSIDE OF ROAD STRUCTURE.
2. CLAY SEAL TO EXTEND FULL TRENCH WIDTH TO EXISTING NATIVE SOILS WITH A MINIMUM THICKNESS OF 1.0m ALONG PIPES.
3. CLAY SEAL TO BE LOCATED SO THAT NO PIPE JOINTS ARE WITHIN THE CLAY SEAL MATERIAL.

Ottawa	CLAY SEAL FOR PIPE TRENCHES	DATE: MAY 2001 REV. DATE: MARCH 2006 DWG. No.: S8

NOT FOR CONSTRUCTION

NOTES

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.

PROPERTY BOUNDARIES ARE DERIVED FROM TOPOGRAPHIC PLAN OF PART OF WATER RIDGE DEVELOPMENT BEING SHOWN AS BLOCK 21 ON DRAFT M-PLAN LOCATED NORTH OF TAWADINA ROAD AND EAST OF CODD'S ROAD, GEOGRAPHIC TOWNSHIP OF GLOUCESTER, CITY OF OTTAWA, MONUMENT-URSO SURVEYING LTD. ELEVATIONS ARE GEODETIC AND REFERRED TO THE CANADIAN GEODETIC VERTICAL DATUM (CGVD28:78).

NO.	REVISION DESCRIPTION	DATE	BY
2	REVISED PER CLC COMMENTS	27/02/26	BLM
1	ISSUED FOR REVIEW	16/01/26	BLM

SCALE

LICENSED PROFESSIONAL ENGINEER
B.L. MACKECHNIE
100199554
27 Feb '26
PROVINCE OF ONTARIO

Robinson Land Development
2936 Baseline Road
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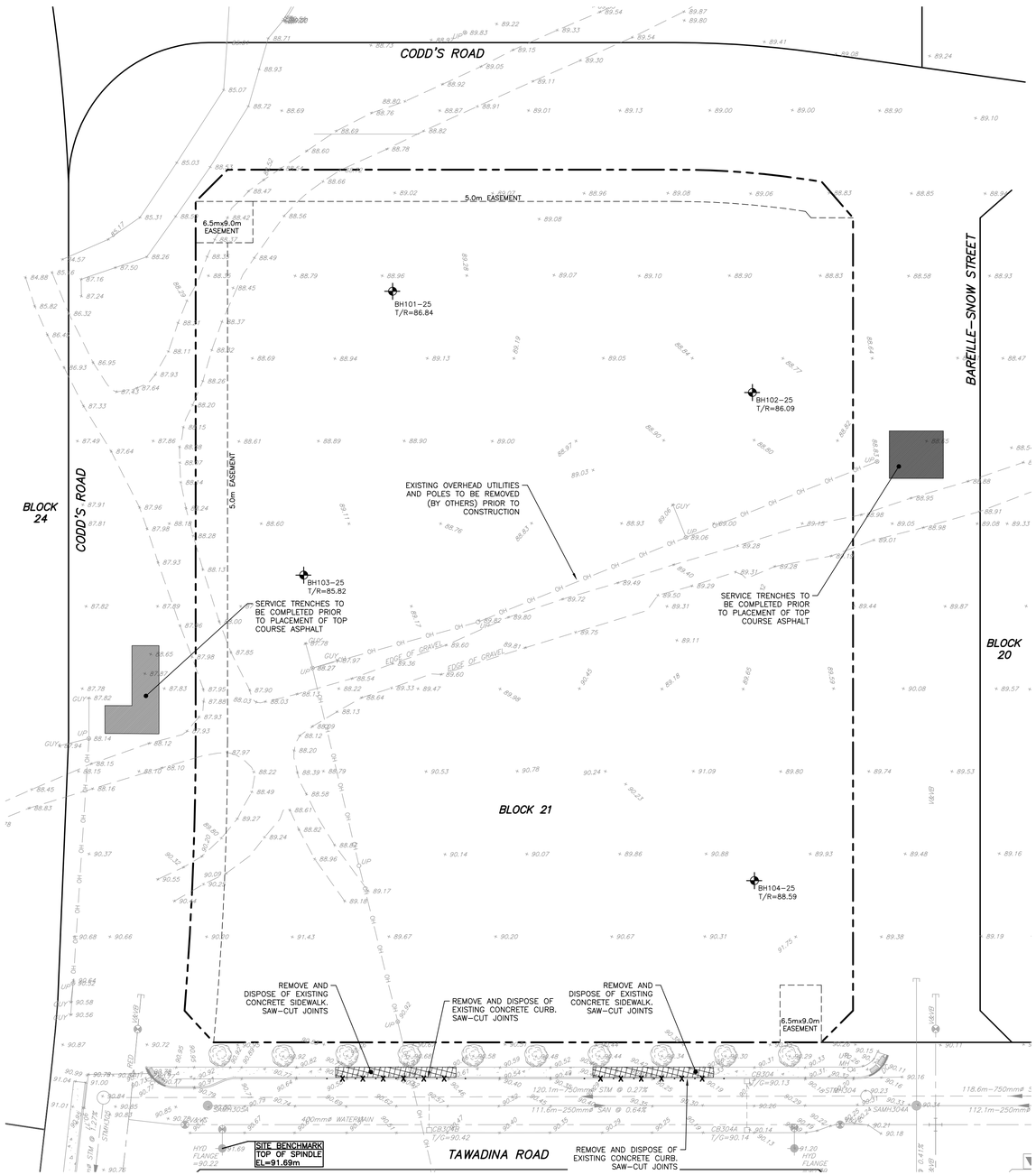
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APPROVED	BLM

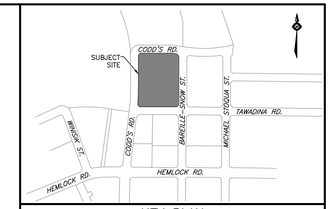
WATERIDGE LIFESTYLES LTD.

WATERIDGE VILLAGE
BLOCK 21
CITY OF OTTAWA, ON

NOTES & DETAILS

PROJECT No.	25117
SURVEY	MONUMENT-URSO SURVEYING LTD.
DATED	FEBRUARY 2026
DWG No:	25117-N1





KEY PLAN

LEGEND

- PROPERTY BOUNDARY
- EASEMENT
- × 88.00 EXISTING ELEVATION
- EXISTING HYDRANT
- EXISTING CATCH BASIN
- EXISTING WATERMAIN
- VALVE EXISTING VALVE & VALVE BOX
- VALVE EXISTING VALVE & VALVE CHAMBER
- EXISTING SANITARY SEWER & MANHOLE
- EXISTING STORM SEWER & MANHOLE
- EXISTING TREE
- UP GUY EXISTING UTILITY POLE AND GUY
- OH OH EXISTING OVERHEAD UTILITIES
- BOREHOLE (REFER TO GEOTECHNICAL REPORT)
- CONCRETE SIDEWALK REMOVAL
- CONCRETE CURB REMOVAL

NOT FOR CONSTRUCTION

NOTES

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PROPERTY BOUNDARIES ARE DERIVED FROM TOPOGRAPHIC PLAN OF PART OF WATER RIDGE DEVELOPMENT BEING SHOWN AS BLOCK 21 ON DRAFT M-PLAN LOCATED NORTH OF TAWADINA ROAD AND EAST OF CODD'S ROAD, GEOGRAPHIC TOWNSHIP OF GLOUCESTER, CITY OF OTTAWA, MONUMENT-URSO SURVEYING LTD. ELEVATIONS ARE GEODETIC AND REFERRED TO THE CANADIAN GEODETIC VERTICAL DATUM (CGVD28:78).

NO.	REVISION DESCRIPTION	DATE	BY
2	REVISED PER CLC COMMENTS	27/02/26	BLM
1	ISSUED FOR REVIEW	16/01/26	BLM

SCALE
0 4m 8m 16m
HORIZONTAL 1:400

LICENSED PROFESSIONAL ENGINEER
B.L. MACKECHNIE
100199554
27 Feb '26
PROVINCE OF ONTARIO

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Ottawa, ON K2H 1B3
(613) 592-6060 rcii.com

DESIGN	BLM
CHECKED	SG
DRAWN	BLM
CHECKED	SG
APPROVED	BLM

WATERIDGE LIFESTYLES LTD.

WATERIDGE VILLAGE
BLOCK 21
CITY OF OTTAWA, ON

EXISTING CONDITIONS AND REMOVALS PLAN

PROJECT No.	25117
SURVEY	MONUMENT-URSO SURVEYING LTD.
DATED	FEBRUARY 2026
DWG. No:	25117-R1

Appendix C

Figure 2.1 – Proposed Water Plant
(prepared by Arcadis)

Water Demand Calculations
(prepared by Arcadis)

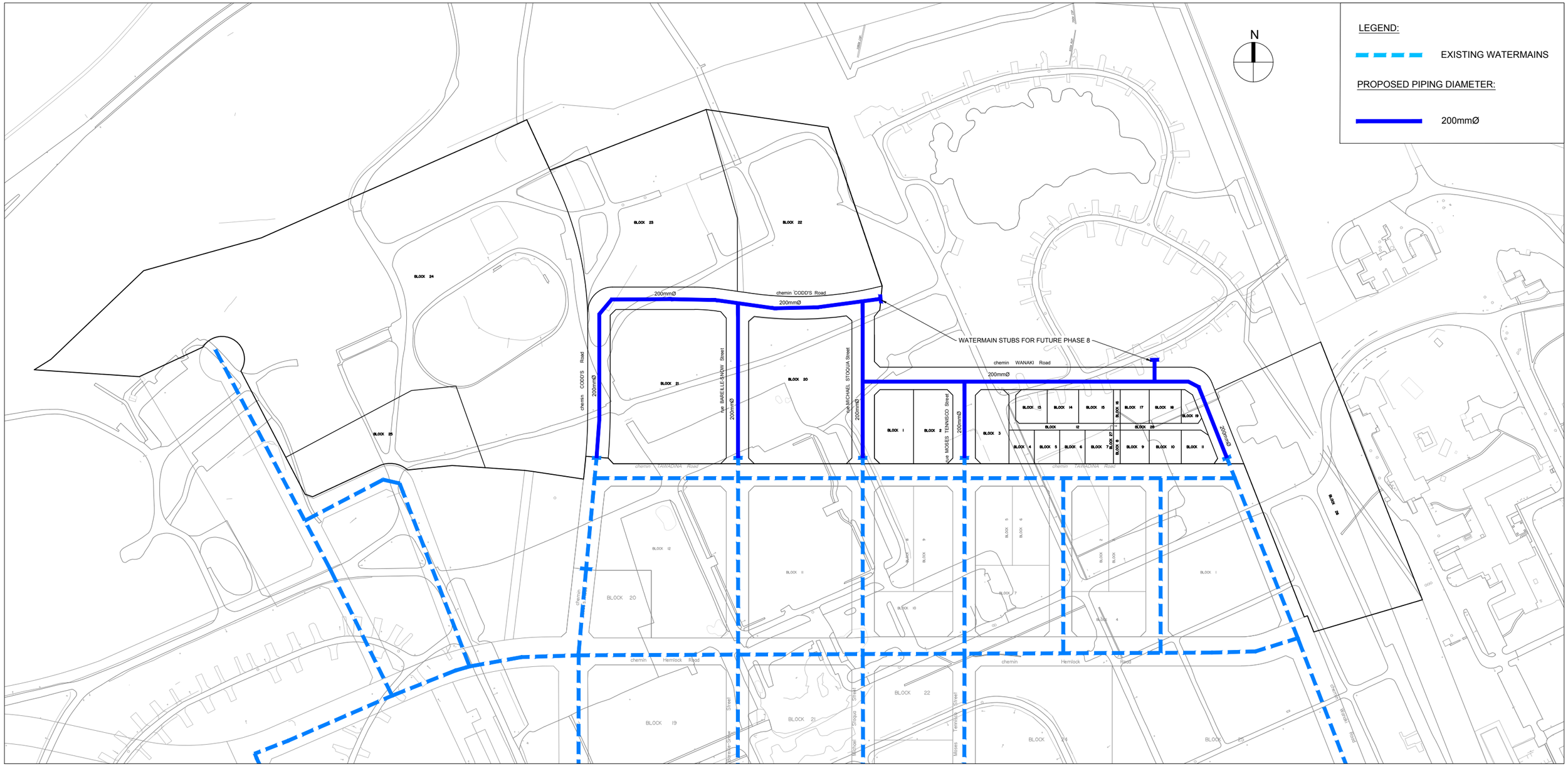
Water Demand Calculations

Hydraulic Water Model Figure
(prepared by Arcadis)

Hydraulic Water Model Outputs
(prepared by Arcadis)

Fire Flow Calculations

Figure 3.0: Hydrant Coverage Plan



J:\139653_600399-49__W\7.0_Production\7.03_Design\04_Civil\Sheets\Design Brief\Figure 2.1 PROPOSED WATER PLAN.dwg Last Saved By: milnem4626 Last Saved At: Jun. 25, 25

ARCADIS

Project Title

DESIGN BRIEF
WATERIDGE VILLAGE AT ROCKCLIFFE
PHASES 6 & 7

Drawing Title

PROPOSED WATER PLAN

Sheet No.

FIGURE 2.1
2025-06-27

WATERMAIN DEMAND CALCULATION SHEET

IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

PROJECT : Wateridge Village Phases 6, 7, 8
LOCATION : City of Ottawa

FILE: 139653.6.04
DATE PRINTED: 2025-01-27
DESIGN: SEL

NODE	RESIDENTIAL				NON-RESIDENTIAL			AVERAGE DAILY DEMAND (l/s)			MAXIMUM DAILY DEMAND (l/s)			MAXIMUM HOURLY DEMAND (l/s)			FIRE DEMAND
	Single	Town	Apt	POP'N	INDTRL (ha.)	COMM. (ha.)	RETAIL (m^2)	Res.	Non-res.	Total	Res.	Non-res.	Total	Res.	Non-res.	Total	(l/min)
Block 10 and 31		70		189			-	0.61	0.00	**0.61**	1.53	0.00	**1.53**	3.37	0.00	**3.37**	**13,000**
Block 30			367	661			493	2.14	0.01	**2.15**	5.35	0.04	**5.39**	11.77	0.06	**11.83**	**9,000**
Block 29			402	724			2,292	2.35	0.07	**2.42**	5.86	0.17	**6.03**	12.90	0.30	**13.20**	**9,000**
Block 35 and 44		76	258	670			-	2.17	0.00	**2.17**	5.43	0.00	**5.43**	11.94	0.00	**11.94**	**13,000**
Phase 8		22	296	592			-	1.92	0.00	**1.92**	4.80	0.00	**4.80**	10.56	0.00	**10.56**	**11,000**
TOTALS										**9.27**			**23.16**			**50.89**	

ASSUMPTIONS

RESIDENTIAL DENSITIES

Singles	3.4	p / p / u
Towns	2.7	p / p / u
Apartment (avg)	1.8	p / p / u

** Residential Daily Demand reduced to coincide with current waste water guidelines

AVG. DAILY DEMAND

Residential:**	280	l / cap / day
Industrial:		l / ha / day
Commercial:		l / ha / day
Retail:	2,500	l / 1000m^2 / day

MAX. DAILY DEMAND

Residential:	700	l / cap / day
Industrial:		l / ha / day
Commercial:		l / ha / day
Retail:	6,250	l / 1000m^2 / day

MAX. HOURLY DEMAND

Residential:	1,540	l / cap / day
Industrial:		l / ha / day
Commercial:		l / ha / day
Retail:	11,250	l / 1000m^2 / day

FIRE FLOW

From FUS Calculation	13,000	l / min

WATER DEMAND CALCULATIONS

Wateridge Lifestyles, Wateridge Village at Rockcliffe
Project No. 25117

Robinson Land Development

JUNCTION NODE	RESIDENTIAL POPULATION					No. OF BEDS	COMMERCIAL RETAIL AREA (m^2)	BASIC DAY DEMAND (L/s)				MAX. DAY DEMAND (L/s)				PEAK HOUR DEMAND (L/s)				BASIC DAY DEMAND (m^3/day)
	AVERAGE	BACHELOR	1-BEDROOM	2-BEDROOM	TOTAL POPULATION			RES.	COMM.	INST.	TOTAL	RES.	COMM.	INST.	TOTAL	RES.	COMM.	INST.	TOTAL	
PHASE 1		30	47	13	135.1	98.0		0.44		0.51	0.95	1.09		0.77	1.86	2.41		1.38	3.79	81.9
PHASE 2	170				306.0		2292.0	0.99	0.07		1.06	2.48	0.17		2.64	5.45	0.30		5.75	91.4
PHASE 3	100				180.0			0.58			0.58	1.46			1.46	3.21			3.21	50.4
Total	**270**	**30**	**47**	**13**	**621.1**		**2292.0**	**2.01**	**0.07**	**0.51**	**2.59**	**5.03**	**0.17**	**0.77**	**5.96**	**11.07**	**0.30**	**1.38**	**12.75**	**223.7**

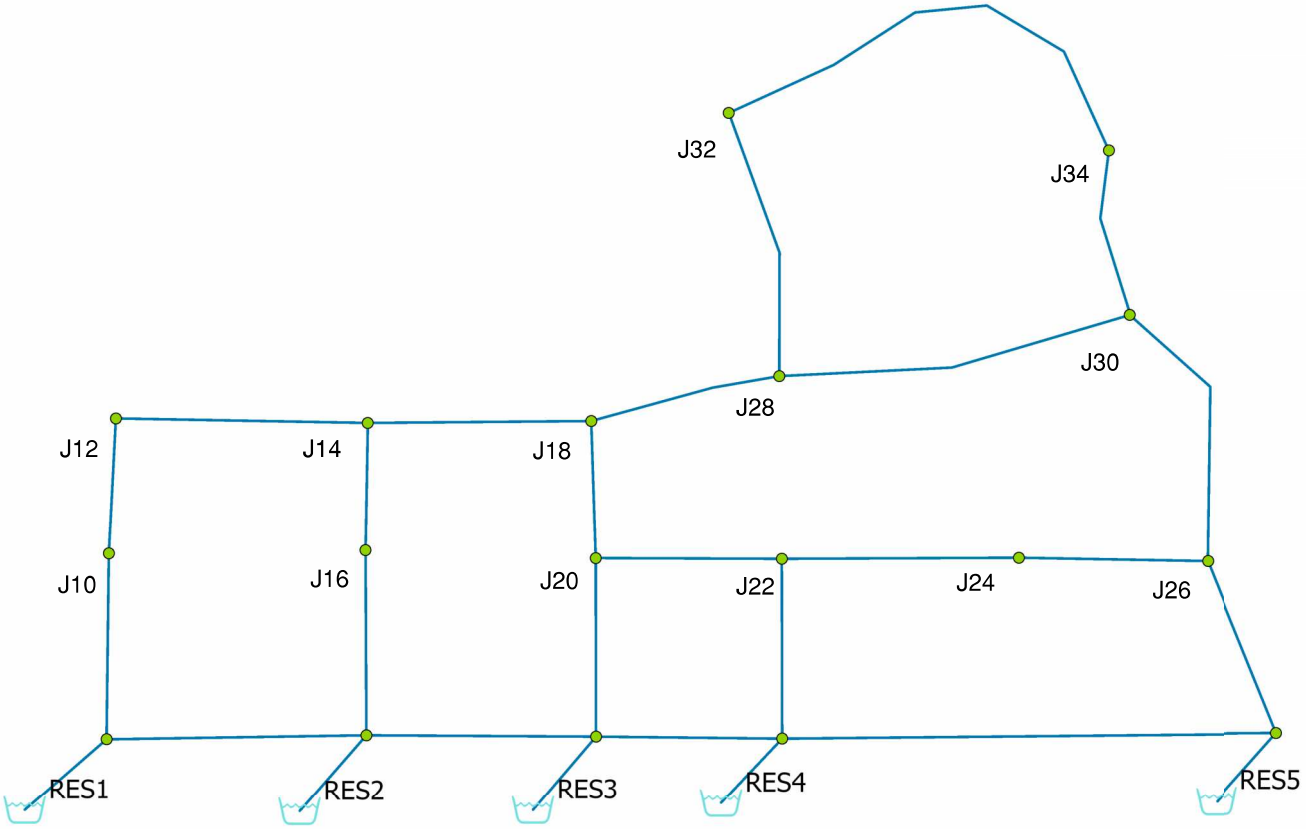
Notes:
1. Per unit populations as per OWDG Table 4.1.

Apartment Per Unit Populations

Bachelor =	1.4	persons/unit
1-Bedroom =	1.4	persons/unit
2-Bedroom =	2.1	persons/unit
Average =	1.8	persons/unit

Basic Day Demand:			Max. Day Demand:			Peak Hour Demand:		
Residential	**280**	**L/person/day**	**Residential**	**2.5**	**x Avg. Day**	**Residential**	**2.2**	**x Max. Day**
Commercial Retail	**2500**	**L/1000 m^2/day**	**Commercial**	**2.5**	**x Avg. Day**	**Commercial**	**1.8**	**x Max. Day**
Nursing & Rest. Homes	**450**	**L/bed/day**	**Institutional**	**1.5**	**x Avg. Day**	**Institutional**	**1.8**	**x Max. Day**

Node IDs


J32
J34
J30
J28
J12
J14
J18
J10
J16
J20
J22
J24
J26
RES1
RES2
RES3
RES4
RES5

Average Day

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1	☐	CONN1	0.00	91.00	143.00	509.54
2	☐	CONN2	0.00	90.35	143.00	515.91
3	☐	CONN3	0.00	90.67	143.00	512.78
4	☐	CONN4	0.00	92.60	143.00	493.87
5	☐	CONN5	0.00	94.00	143.00	480.15
6	☐	J10	1.16	89.70	142.99	522.24
7	☐	J12	1.13	89.70	142.99	522.23
8	☐	J14	0.00	89.45	142.99	524.68
9	☐	J16	2.30	89.70	142.99	522.23
10	☐	J18	1.04	89.33	142.99	525.86
11	☐	J20	1.19	89.80	143.00	521.27
12	☐	J22	0.37	91.00	143.00	509.52
13	☐	J24	0.00	92.20	143.00	497.77
14	☐	J26	0.17	92.85	143.00	491.40
15	☐	J28	0.65	86.20	142.99	556.53
16	☐	J30	0.00	84.50	142.99	573.19
17	☐	J32	0.78	83.20	142.99	585.92
18	☐	J34	0.48	83.40	142.99	583.96

Peak Hour

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1	☐	CONN1	0.00	91.00	143.60	515.43
2	☐	CONN2	0.00	90.35	143.60	521.80
3	☐	CONN3	0.00	90.67	143.60	518.66
4	☐	CONN4	0.00	92.60	143.60	499.75
5	☐	CONN5	0.00	94.00	143.60	486.04
6	☐	J10	6.36	89.70	143.50	527.19
7	☐	J12	6.19	89.70	143.48	527.02
8	☐	J14	0.00	89.45	143.48	529.47
9	☐	J16	12.58	89.70	143.48	527.02
10	☐	J18	5.74	89.33	143.48	530.65
11	☐	J20	6.53	89.80	143.53	526.49
12	☐	J22	2.02	91.00	143.55	514.98
13	☐	J24	0.00	92.20	143.55	503.22
14	☐	J26	0.91	92.85	143.55	496.84
15	☐	J28	3.59	86.20	143.47	561.24
16	☐	J30	0.00	84.50	143.49	578.04
17	☐	J32	4.32	83.20	143.47	590.55
18	☐	J34	2.65	83.40	143.47	588.67

Side	Phase 1 Building		Phase 2 Building		Phase 3 Building	
	Exposure Distance (m)	S_{side}	Exposure Distance (m)	S_{side}	Exposure Distance (m)	S_{side}
West	17.8	0.0	17.8	0.0	5.0	0.5
North	5.0	0.5	18.9	0.0	18.9	0.0
East	17.7	0.0	5.0	0.5	17.7	0.0
South	19.0	0.0	5.0	0.5	19.0	0.0
Total		1.5		2.0		1.5

FIGURE 1

SPATIAL COEFFICIENT VS EXPOSURE DISTANCE

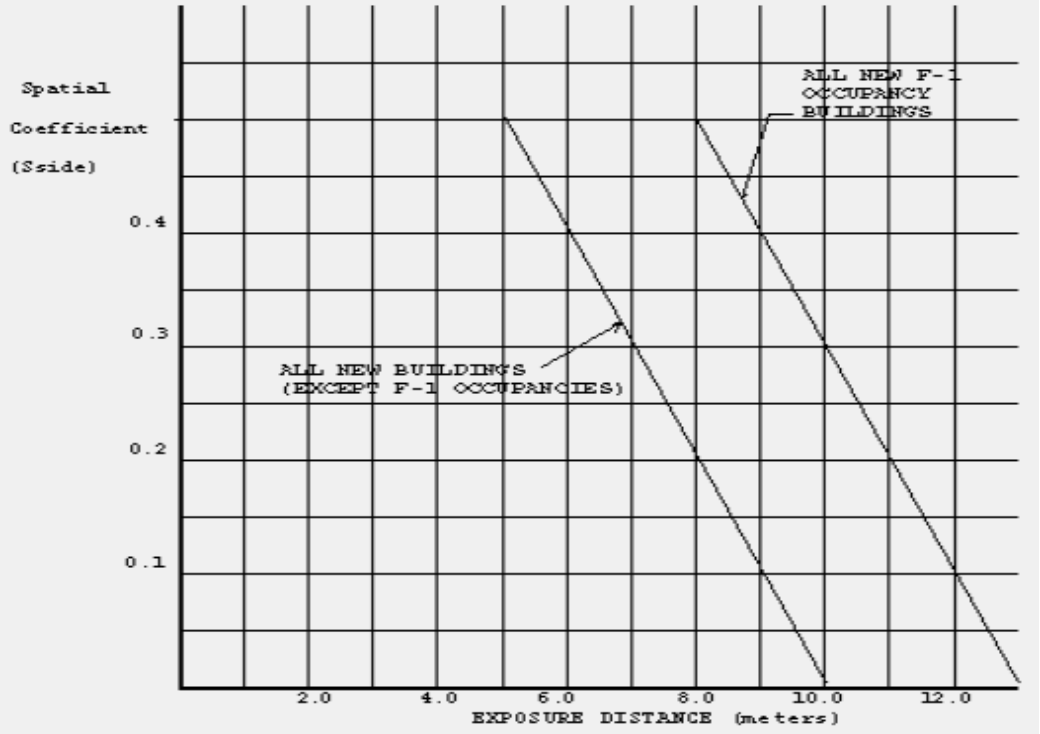


Table 1: Water Supply Coefficient - K					
TYPE OF CONSTRUCTION	Classification by Group or Division in Accordance with Table 3.1.2.1 of the Ontario Building Code				
	A-2 B-1 B-2 B-3 C D	A-4 F-3	A-1 A-3<	E F-2	F-1
Building is of noncombustible construction with fire separations and fire-resistance ratings provided in accordance with Subsection 3.2.2. of the OBC, including loadbearing walls, columns and arches.	10	12	14	17	23
Building is of noncombustible construction or of heavy timber construction conforming to Article 3.1.4.6. of the OBC. Floor assemblies are fire separations but with no fire-resistance rating. Roof assemblies, mezzanines, loadbearing walls, columns and arches do not have a fire-resistance rating.	16	19	22	27	37
Building is of combustible construction with fire separations and fire-resistance ratings provided in accordance with Subsection 3.2.2. of the OBC, including loadbearing walls, columns and arches. Noncombustible construction may be used in lieu of fire-resistance rating where permitted in Subsection 3.2.2. of the OBC.	18	22	25	31	41
Building is of combustible construction. Floor assemblies are fire separations but with no fire-resistance rating. Roof assemblies, mezzanines, loadbearing walls, columns and arches do not have a fire-resistance rating.	23	28	32	39	53
Column 1	2	3	4	5	6

Table 2: **Minimum Water Supply Flow Rates**	
Building Code, **Part 3 Buildings**	**Required Minimum Water Supply Flow Rate (L/min.)**
One-storey building with building area not exceeding 600m² (excluding F-1 occupancies)	1800
All other buildings	2700 (If **Q** ≤ 108,000L)[1] 3600 (If **Q** > 108,000L **and** ≤ 135,000L)[1] 4500 (If **Q** > 135,000L **and** ≤ 162,000L)[1] 5400 (If **Q** > 162,000L **and** ≤ 190,000L)[1] 6300 (If **Q** > 190,000L **and** ≤ 270,000L)[1] 9000 (If **Q** > 270,000L)[1]

Note: [1] $\mathbf{Q=KVS_{Tot}}$ as referenced in Section 3(a)

Project Name:	Wateridge Lifestyles
Project Location:	200 Codd's Road, Ottawa
Project No:	25117
Date:	Feb. 27-26
Building Type:	6-Storey Retirement Home
Building Being Considered:	Phase 1 Building

Robinson Land Development

Calculations for Total Required Fire Flow

Step	Parameter				Value	
A	Type of Construction	**Options**	**C**	Non-Combustible Construction (Type II)	0.8	
		Wood Frame (Type V)	1.5			
		Ordinary Construction (Type III)	1.0			
		Non-Combustible Construction (Type II)	0.8			
		Fire Resistive Construction (Type I)	0.6			
B	Ground Floor Area			(100% of area used in calculation)	2925.0	m^2
	2nd Floor Area			(25% of area used in calculation)	693.8	m^2
	3rd Floor Area			(25% of area used in calculation)	693.8	m^2
	Total Effective Floor Area				**4,312.5**	**m^2**
C	**Fire Flow**				**12,000**	**L/min**
D	Occupancy Class	**Options**	**Charge**	Limited Combustible	-0.15	
		Non-combustible	-0.25			
		Limited Combustible	-0.15			
		Combustible	0.00			
		Free burning	0.15			
		Rapid Burning	0.25			
	Occupancy Adjustment				**-1800**	**L/min**
	Fire Flow				**10,200**	**L/min**
E	Sprinkler Protection	**Options**	**Charge**	Automatic Sprinkler Protection	-0.30	
		Automatic Sprinkler Protection	-0.30			
		None	0.00			
		Water Supply is Standard for System and Hose Lines	-0.10	Yes	-0.10	
		Full Supervision of the Sprinker System	-0.10	Yes	-0.10	
	Sprinkler Reduction				**-5,100**	**L/min**
	Exposures					
	West Side					
	Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems				No	
	Exposed Building Fully Protected with Automatic Sprinker Systems				No	
	Exposed Wall Length				0	m
	Exposed Wall No. of Storeys				0	
	Length-Height Factor of Exposed Wall				0	m.storeys
	Construction Type of Exposed Wall	**Options**		Noncombustible or Fire Resistive with Unprotected Openings		
		Wood Frame				
		Ordinary with Unprotected Openings				
		Ordinary without Unprotected Openings				
		Noncombustible or Fire Resistive with Unprotected Openings				
		Noncombustible or Fire Resistive without Unprotected Openings				
	Separation Distance			**>30m; No Exposure**	31	m
	West Side Exposure Charge				**0.00**	

	North Side				
	Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems			Yes	
	Exposed Building Fully Protected with Automatic Sprinker Systems			Yes	
	Exposed Wall Length			28	m
	Exposed Wall No. of Storeys			9	
	Length-Height Factor of Exposed Wall			252	m.storeys
	Construction Type of Exposed Wall	**Options**	Noncombustible or Fire Resistive with Unprotected Openings		
		Wood Frame			
		Ordinary with Unprotected Openings			
		Ordinary without Unprotected Openings			
		Noncombustible or Fire Resistive with Unprotected Openings			
		Noncombustible or Fire Resistive without Unprotected Openings			
	Separation Distance			10	m
	North Side Exposure Charge			**0.00**	
F	**East Side**				
	Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems			No	
	Exposed Building Fully Protected with Automatic Sprinker Systems			No	
	Exposed Wall Length			0	m
	Exposed Wall No. of Storeys			0	
	Length-Height Factor of Exposed Wall			0	m.storeys
	Construction Type of Exposed Wall	**Options**	Noncombustible or Fire Resistive with Unprotected Openings		
		Wood Frame			
		Ordinary with Unprotected Openings			
		Ordinary without Unprotected Openings			
		Noncombustible or Fire Resistive with Unprotected Openings			
		Noncombustible or Fire Resistive without Unprotected Openings			
	Separation Distance		**>30m; No Exposure**	31	m
	East Side Exposure Charge			**0.00**	
	South Side				
	Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems			No	
	Exposed Building Fully Protected with Automatic Sprinker Systems			No	
	Exposed Wall Length			0	m
	Exposed Wall No. of Storeys			0	
	Length-Height Factor of Exposed Wall			0	m.storeys
	Construction Type of Exposed Wall	**Options**	Noncombustible or Fire Resistive with Unprotected Openings		
		Wood Frame			
		Ordinary with Unprotected Openings			
		Ordinary without Unprotected Openings			
		Noncombustible or Fire Resistive with Unprotected Openings			
		Noncombustible or Fire Resistive without Unprotected Openings			
	Separation Distance		**>30m; No Exposure**	31	m
	South Side Exposure Charge			**0.00**	
	Total Exposure Charage			**0**	**< 0.75**
	Increase for Exposures			**0**	**L/min**
G	**Total Required Fire Flow**			**5,000**	**L/min**

Notes:

1. Fire flow calculations have been prepared in accordance with Fire Underwriters Survey (v. 2020)

2. Where buildings are at a diagonal to each other, the shortest separtion distance is increased by 3 metres and used as the exposure distance (Ref. FUS v.2020 pg.30).

Project Name:	Wateridge Lifestyles
Project Location:	200 Codd's Road, Ottawa
Project No:	25117
Date:	Feb. 27-26
Building Type:	9-Storey Senior's Apartment
Building Being Considered:	Phase 2 Building

Robinson Land Development

Calculations for Total Required Fire Flow

Step	Parameter				Value	
A	Type of Construction	**Options**	**C**	Non-Combustible Construction (Type II)	0.8	
		Wood Frame (Type V)	1.5			
		Ordinary Construction (Type III)	1.0			
		Non-Combustible Construction (Type II)	0.8			
		Fire Resistive Construction (Type I)	0.6			
B	Ground Floor Area			(100% of area used in calculation)	1900.0	m^2
	2nd Floor Area			(25% of area used in calculation)	516.5	m^2
	3rd Floor Area			(25% of area used in calculation)	516.5	m^2
	Total Effective Floor Area				**2,933.0**	**m^2**
C	**Fire Flow**				**10,000**	**L/min**
D	Occupancy Class	**Options**	**Charge**	Limited Combustible	-0.15	
		Non-combustible	-0.25			
		Limited Combustible	-0.15			
		Combustible	0.00			
		Free burning	0.15			
		Rapid Burning	0.25			
	Occupancy Adjustment				**-1500**	**L/min**
	Fire Flow				**8,500**	**L/min**
E	Sprinkler Protection	**Options**	**Charge**	Automatic Sprinkler Protection	-0.30	
		Automatic Sprinkler Protection	-0.30			
		None	0.00			
		Water Supply is Standard for System and Hose Lines	-0.10	Yes	-0.10	
		Full Supervision of the Sprinker System	-0.10	Yes	-0.10	
	Sprinkler Reduction				**-4,250**	**L/min**
	Exposures					
	West Side					
	Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems				No	
	Exposed Building Fully Protected with Automatic Sprinker Systems				No	
	Exposed Wall Length				0	m
	Exposed Wall No. of Storeys				0	
	Length-Height Factor of Exposed Wall				0	m.storeys
	Construction Type of Exposed Wall	**Options**		Noncombustible or Fire Resistive with Unprotected Openings		
		Wood Frame				
		Ordinary with Unprotected Openings				
		Ordinary without Unprotected Openings				
		Noncombustible or Fire Resistive with Unprotected Openings				
		Noncombustible or Fire Resistive without Unprotected Openings				
	Separation Distance			**>30m; No Exposure**	31	m
	West Side Exposure Charge				**0.00**	

	North Side				
	Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems			No	
	Exposed Building Fully Protected with Automatic Sprinker Systems			No	
	Exposed Wall Length			0	m
	Exposed Wall No. of Storeys			0	
	Length-Height Factor of Exposed Wall			0	m.storeys
	Construction Type of Exposed Wall	**Options**	Noncombustible or Fire Resistive with Unprotected Openings		
		Wood Frame			
		Ordinary with Unprotected Openings			
		Ordinary without Unprotected Openings			
		Noncombustible or Fire Resistive with Unprotected Openings			
		Noncombustible or Fire Resistive without Unprotected Openings			
	Separation Distance		**>30m; No Exposure**	31	m
	North Side Exposure Charge			**0.00**	
F	**East Side**				
	Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems			Yes	
	Exposed Building Fully Protected with Automatic Sprinker Systems			Yes	
	Exposed Wall Length			22	m
	Exposed Wall No. of Storeys			9	
	Length-Height Factor of Exposed Wall			198	m.storeys
	Construction Type of Exposed Wall	**Options**	Noncombustible or Fire Resistive with Unprotected Openings		
		Wood Frame			
		Ordinary with Unprotected Openings			
		Ordinary without Unprotected Openings			
		Noncombustible or Fire Resistive with Unprotected Openings			
		Noncombustible or Fire Resistive without Unprotected Openings			
	Separation Distance			10	m
	East Side Exposure Charge			**0.00**	
	South Side				
	Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems			Yes	
	Exposed Building Fully Protected with Automatic Sprinker Systems			Yes	
	Exposed Wall Length			66	m
	Exposed Wall No. of Storeys			6	
	Length-Height Factor of Exposed Wall			396	m.storeys
	Construction Type of Exposed Wall	**Options**	Noncombustible or Fire Resistive with Unprotected Openings		
		Wood Frame			
		Ordinary with Unprotected Openings			
		Ordinary without Unprotected Openings			
		Noncombustible or Fire Resistive with Unprotected Openings			
		Noncombustible or Fire Resistive without Unprotected Openings			
	Separation Distance			10	m
	South Side Exposure Charge			**0.00**	
	Total Exposure Charage			**0**	**< 0.75**
	Increase for Exposures			**0**	**L/min**
G	**Total Required Fire Flow**			**4,000**	**L/min**

Notes:

1. Fire flow calculations have been prepared in accordance with Fire Underwriters Survey (v. 2020)

2. Where buildings are at a diagonal to each other, the shortest separtion distance is increased by 3 metres and used as the exposure distance (Ref. FUS v.2020 pg.30).

Project Name:	Wateridge Lifestyles
Project Location:	200 Codd's Road, Ottawa
Project No:	25117
Date:	Feb. 27-25
Building Type:	9-Storey Apartment
Building Being Considered:	Phase 3 Building

Robinson Land Development

Calculations for Total Required Fire Flow

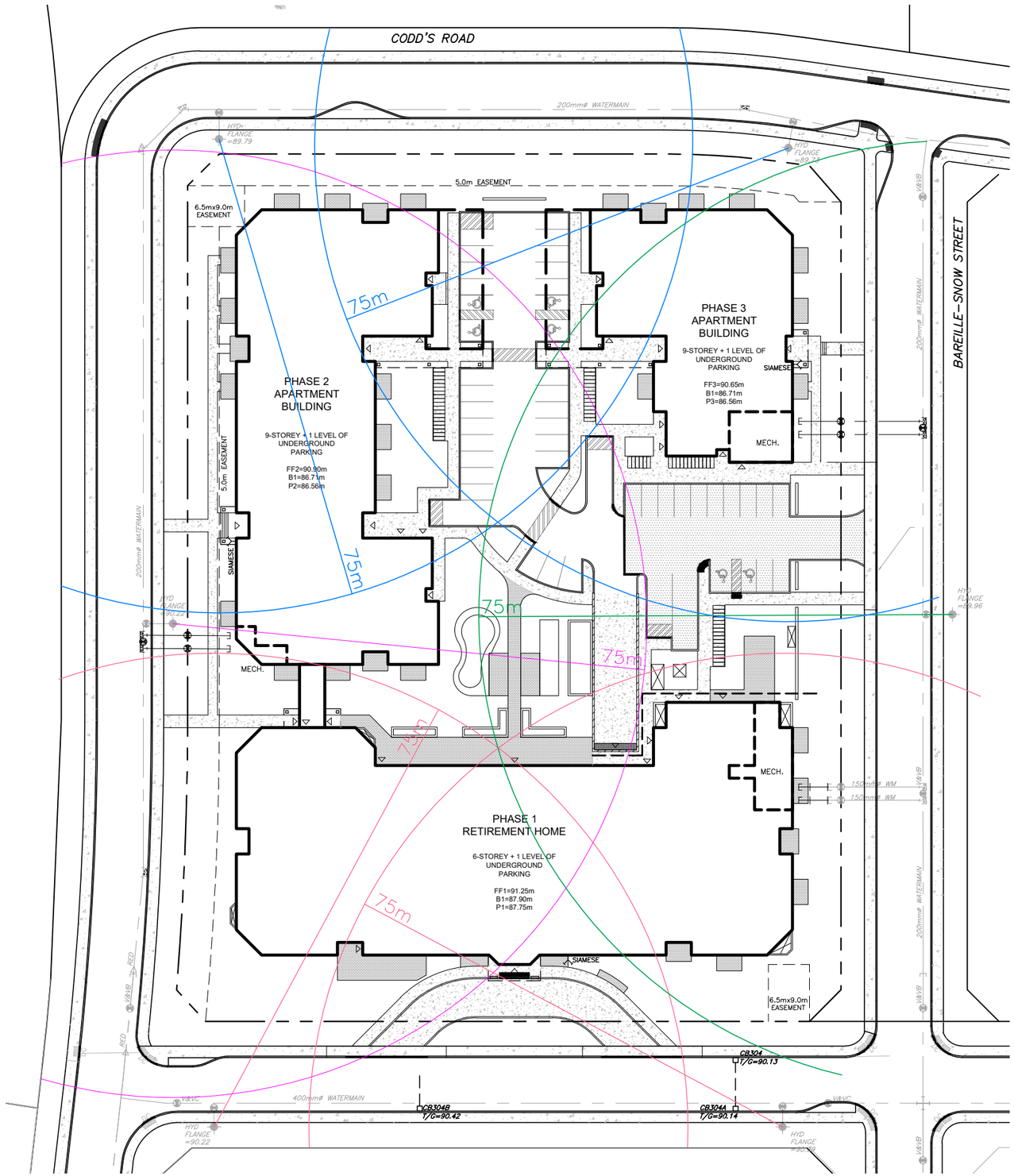
Step	Parameter				Value	
A	Type of Construction	**Options**	**C**	Non-Combustible Construction (Type II)	0.8	
		Wood Frame (Type V)	1.5			
		Ordinary Construction (Type III)	1.0			
		Non-Combustible Construction (Type II)	0.8			
		Fire Resistive Construction (Type I)	0.6			
B	Ground Floor Area			(100% of area used in calculation)	1012.0	m^2
	2nd Floor Area			(25% of area used in calculation)	294.5	m^2
	3rd Floor Area			(25% of area used in calculation)	294.5	m^2
	Total Effective Floor Area				**1,601.0**	**m^2**
C	**Fire Flow**				**7,000**	**L/min**
D	Occupancy Class	**Options**	**Charge**	Limited Combustible	-0.15	
		Non-combustible	-0.25			
		Limited Combustible	-0.15			
		Combustible	0.00			
		Free burning	0.15			
		Rapid Burning	0.25			
	Occupancy Adjustment				**-1050**	**L/min**
	Fire Flow				**5,950**	**L/min**
E	Sprinkler Protection	**Options**	**Charge**	Automatic Sprinkler Protection	-0.30	
		Automatic Sprinkler Protection	-0.30			
		None	0.00			
		Water Supply is Standard for System and Hose Lines	-0.10	Yes	-0.10	
		Full Supervision of the Sprinker System	-0.10	Yes	-0.10	
	Sprinkler Reduction				**-2,975**	**L/min**
	Exposures					
	West Side					
	Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems				Yes	
	Exposed Building Fully Protected with Automatic Sprinker Systems				Yes	
	Exposed Wall Length				22	m
	Exposed Wall No. of Storeys				9	
	Length-Height Factor of Exposed Wall				198	m.storeys
	Construction Type of Exposed Wall	**Options**		Noncombustible or Fire Resistive with Unprotected Openings		
		Wood Frame				
		Ordinary with Unprotected Openings				
		Ordinary without Unprotected Openings				
		Noncombustible or Fire Resistive with Unprotected Openings				
		Noncombustible or Fire Resistive without Unprotected Openings				
	Separation Distance				10	m
	West Side Exposure Charge				**0.00**	

	North Side				
	Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems			No	
	Exposed Building Fully Protected with Automatic Sprinker Systems			No	
	Exposed Wall Length			0	m
	Exposed Wall No. of Storeys			0	
	Length-Height Factor of Exposed Wall			0	m.storeys
	Construction Type of Exposed Wall	**Options**	Noncombustible or Fire Resistive with Unprotected Openings		
		Wood Frame			
		Ordinary with Unprotected Openings			
		Ordinary without Unprotected Openings			
		Noncombustible or Fire Resistive with Unprotected Openings			
		Noncombustible or Fire Resistive without Unprotected Openings			
	Separation Distance		**>30m; No Exposure**	31	m
	North Side Exposure Charge			**0.00**	
F	**East Side**				
	Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems			No	
	Exposed Building Fully Protected with Automatic Sprinker Systems			No	
	Exposed Wall Length			0	m
	Exposed Wall No. of Storeys			0	
	Length-Height Factor of Exposed Wall			0	m.storeys
	Construction Type of Exposed Wall	**Options**	Noncombustible or Fire Resistive with Unprotected Openings		
		Wood Frame			
		Ordinary with Unprotected Openings			
		Ordinary without Unprotected Openings			
		Noncombustible or Fire Resistive with Unprotected Openings			
		Noncombustible or Fire Resistive without Unprotected Openings			
	Separation Distance		**>30m; No Exposure**	31	m
	East Side Exposure Charge			**0.00**	
	South Side				
	Subject Building and Exposed Building Fully Protected with Automatic Sprinker Systems			Yes	
	Exposed Building Fully Protected with Automatic Sprinker Systems			Yes	
	Exposed Wall Length			18	m
	Exposed Wall No. of Storeys			6	
	Length-Height Factor of Exposed Wall			108	m.storeys
	Construction Type of Exposed Wall	**Options**	Noncombustible or Fire Resistive with Unprotected Openings		
		Wood Frame			
		Ordinary with Unprotected Openings			
		Ordinary without Unprotected Openings			
		Noncombustible or Fire Resistive with Unprotected Openings			
		Noncombustible or Fire Resistive without Unprotected Openings			
	Separation Distance		**>30m; No Exposure**	38	m
	South Side Exposure Charge			**0.00**	
	Total Exposure Charage			**0**	**< 0.75**
	Increase for Exposures			**0**	**L/min**
G	**Total Required Fire Flow**			**3,000**	**L/min**

Notes:

1. Fire flow calculations have been prepared in accordance with Fire Underwriters Survey (v. 2020)

2. Where buildings are at a diagonal to each other, the shortest separtion distance is increased by 3 metres and used as the exposure distance (Ref. FUS v.2020 pg.30).



Robinson Land Development

scale 1:750	BLOCK 21, WATERIDGE VILLAGE	project no. 25117
date 27/02/26	HYDRANT COVERAGE PLAN	FIG. 3.0
drawn by BLM		

Appendix D

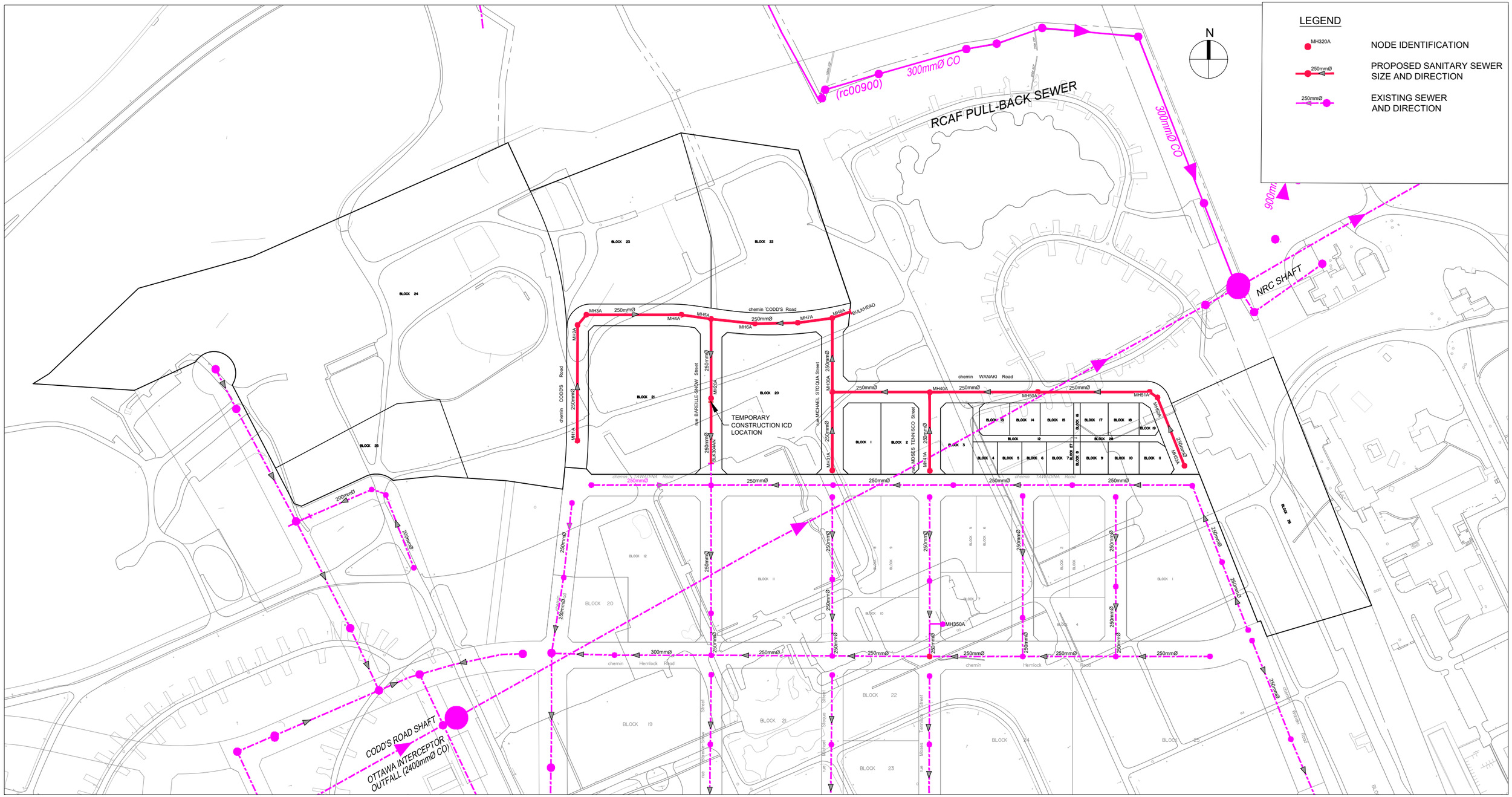
Figure 3.1 – Proposed Wastewater Plan (prepared by Arcadis)

Sanitary Sewer Design Sheet (prepared by Arcadis)

Sanitary Drainage Area Plan (prepared by Arcadis)

Sanitary Sewer Design Sheet

J:\139653_600399-49__W\7.0_Production\7.03_Design\04_Civil\Sheets\Design Brief\Figure 3.1 PROPOSED WASTEWATER PLAN.dwg Last Saved By: milnem4626 Last Saved At: Jun. 25, 25



Project Title

DESIGN BRIEF
WATERIDGE VILLAGE AT ROCKCLIFFE
PHASES 6 & 7

Drawing Title

PROPOSED WASTEWATER PLAN

Sheet No.

FIGURE 3.1
2025-06-27

IBI GROUP
400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

SANITARY SEWER DESIGN SHEET

Wateridge Village Phase 6, 7
CITY OF OTTAWA
Canada Lands Company

LOCATION				RESIDENTIAL										ICI AREAS								INFILTRATION ALLOWANCE			FIXED FLOW (L/s)		TOTAL FLOW	PROPOSED SEWER DESIGN							
				AREA w/ Units (Ha)	UNIT TYPES			AREA w/o Units (Ha)	POPULATION		RES PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)						ICI PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)		FLOW				CAPACITY	LENGTH	DIA	SLOPE	VELOCITY (full)	AVAILABLE CAPACITY	
STREET	AREA ID	FROM MH	TO MH		SF	TH/SD	APT		IND	CUM			INSTITUTIONAL		COMMERCIAL		INDUSTRIAL				IND	CUM	(L/s)	IND	CUM	(L/s)	(L/s)	(m)	(mm)	(%)	(m/s)	L/s	(%)
													IND	CUM	IND	CUM	IND	CUM															
CODDS ROAD	MH1A, Blk21W	MH1A	MH2A	0.84			192		345.6	345.6	3.44	3.85		0.0	0.15	0.15		0.0	1.00	0.05	0.99	0.99	0.33		0.0	4.23	52.06	106.79	250	0.70	1.027	47.83	91.87%
CODDS ROAD	MH2A	MH2A	MH3A	0.03					0.0	345.6	3.44	3.85		0.0		0.15		0.0	1.00	0.05	0.03	1.02	0.34		0.0	4.24	31.80	12.56	250	0.26	0.628	27.56	86.67%
CODDS ROAD	MH3A, Blk23	MH3A	MH4A	2.16		42	130		347.4	693.0	3.32	7.45		0.0		0.15		0.0	1.00	0.05	2.16	3.18	1.05		0.0	8.55	31.05	87.82	250	0.25	0.613	22.50	72.47%
CODDS ROAD	MH4A	MH4A	MH5A	0.05					0.0	693.0	3.32	7.45		0.0		0.15		0.0	1.00	0.05	0.05	3.23	1.07		0.0	8.57	31.17	27.73	250	0.25	0.615	22.60	72.52%
WANAKI ROAD	53A, Com	MH53A	MH52A	0.16					0.0	0.0	3.80	0.00		0.0	0.82	0.82		0.0	1.50	0.40	0.98	0.98	0.32		0.0	0.72	76.03	67.91	250	1.50	1.500	75.31	99.05%
WANAKI ROAD	52A	MH52A	MH51A	0.02					0.0	0.0	3.80	0.00		0.0		0.82		0.0	1.50	0.40	0.02	1.00	0.33		0.0	0.73	76.03	8.85	250	1.50	1.501	75.30	99.04%
WANAKI ROAD	51A, Blk4-19	MH51A	MH50A	1.35		43			116.1	116.1	3.58	1.35		0.0		0.82		0.0	1.50	0.40	1.35	2.35	0.78		0.0	2.52	43.87	103.37	250	0.50	0.866	41.35	94.25%
WANAKI ROAD	50A	MH50A	MH40A	0.19					0.0	116.1	3.58	1.35		0.0		0.82		0.0	1.50	0.40	0.19	2.54	0.84		0.0	2.58	71.01	100.00	250	1.31	1.401	68.42	96.36%
MOSES TENNISCO STRE	41A, Blk2, Blk3	MH41A	MH40A	0.56		18			48.6	48.6	3.65	0.58		0.0		0.00		0.0	1.00	0.00	0.56	0.56	0.18		0.0	0.76	97.70	72.50	250	2.48	1.928	96.94	99.22%
MOSES TENNISCO STRE	40A	MH40A	MH30A	0.17					0.0	164.7	3.54	1.89		0.0		0.82		0.0	1.50	0.40	0.17	3.27	1.08		0.0	3.37	53.73	90.00	250	0.75	1.060	50.36	93.73%
MICHAEL STOQUA STRE	MH31A, Blk20E, Blk1	MH31A	MH30A	0.98		9	190		366.3	366.3	3.43	4.07		0.0		0.00		0.0	1.00	0.00	0.98	0.98	0.32		0.0	4.40	66.26	72.51	250	1.14	1.308	61.86	93.36%
MICHAEL STOQUA STRE	MH30A	MH30A	MH8A	0.12					0.0	531.0	3.37	5.80		0.0		0.82		0.0	1.00	0.27	0.12	4.37	1.44		0.0	7.50	39.01	68.28	250	0.40	0.770	31.51	80.76%
CODDS ROAD (FUTURE)		*MH8A*	*CAP (FUT)*						*0.0*	*531.0*	*3.37*	*5.80*		*0.0*		*0.82*		*0.0*	*1.00*	*0.27*	*0.00*	*4.37*	*1.44*		*0.0*	*7.50*	*116.06*	*18.00*	*250*	*3.50*	*2.291*	*108.56*	*93.53%*
CODDS ROAD	MH8A, Blk22	MH8A	MH7A	1.77		34	128		322.2	853.2	3.27	9.05		0.0		0.82		0.0	1.00	0.27	1.77	6.14	2.03		0.0	11.35	40.93	32.17	250	0.44	0.808	29.58	72.28%
CODDS ROAD	MH7A	MH7A	MH6A	0.08					0.0	853.2	3.27	9.05		0.0		0.82		0.0	1.00	0.27	0.08	6.22	2.05		0.0	11.37	31.10	39.78	250	0.25	0.614	19.73	63.44%
CODDS ROAD	MH6A	MH6A	MH5A	0.08					0.0	853.2	3.27	9.05		0.0		0.82		0.0	1.00	0.27	0.08	6.30	2.08		0.0	11.40	30.80	40.58	250	0.25	0.608	19.40	62.98%
BAREILLE-SNOW STRE	MH5A, Blk21E, Blk20W	MH5A	MH20A	1.31			387		696.6	2242.8	3.04	22.08		0.0	0.13	1.10		0.0	1.00	0.36	1.44	10.97	3.62		0.0	26.05	30.72	73.43	250	0.25	0.606	4.67	15.19%
BAREILLE-SNOW STRE	MH20A	MH20A	BLK304AN	0.12					0.0	2242.8	3.04	22.08		0.0		1.10		0.0	1.00	0.36	0.12	11.09	3.66		0.0	26.09	31.02	60.00	250	0.25	0.612	4.93	15.89%
BAREILLE-SNOW STRE	MH21A	BLK304AN	EXMH304A	0.03					0.0	2242.8	3.04	22.08		0.0		1.10		0.0	1.00	0.36	0.03	11.12	3.67		0.0	26.10	31.02	20.00	250	0.25	0.612	4.92	15.85%

Design Parameters:

Residential			ICI Areas			
SF	3.4	p/p/u	INST	28,000	L/Ha/day	
TH/SD	2.7	p/p/u	COM	28,000	L/Ha/day	
APT	1.8	p/p/u	IND	35,000	L/Ha/day	MOE Chart
MSS	1.0	p/p/u		17000	L/Ha/day	
Other	60	p/p/Ha				

Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 280 L/day
3. Infiltration allowance: 0.33 L/s/Ha
4. Residential Peaking Factor:
Harmon Formula = 1+(14/(4+(P/1000)^0.5))0.8
where K = 0.8 Correction Factor
5. Commercial and Institutional Peak Factors based on total area,

Designed: SEL
Checked: JIM
Dwg. Reference: 139653-400

No.	Revision	Date
1.	Submission No. 1	2023-09-29
2.	Submission No. 2	2024-05-13
3.	Submission No. 3	2024-11-11
1.	Submission No. 4	2025-05-14

File Reference: **Date:** **Sheet No:**

LEGEND :

MH10A
0.31 | 0.0
AREA NUMBER
POPULATION
AREA IN HECTARES

BLOCK 23
MH3A
1.99 | 47.4
BLOCK 22
MH8A
1.71 | 22.2
BLOCK 24
KISHKABIKA PARK
BLOCK 25
BLOCK 20
BLOCK 21
chemin CODD'S Road
chemin TAWADINA Road
chemin WANAKI Road
rue BAKER KNOWLTON Street
rue MICHAEL STOQUA Street
rue MCCAUL ENNISCO Street
MH2A 0.03 | 0.0
MH3A 0.17 | 0.0
MH4A 0.05 | 0.0
MH6A 0.08 | 0.0
MH7A 0.08 | 0.0
MH8A 0.06 | 0.0
MH30A 0.12 | 0.0
MH5A 0.14 | 0.0
MH1A 0.70 | 45.6
MH5A 0.71 | 78.0
MH5A 0.59 | 18.6
MH31A 0.59 | 42.0
MH1A 0.29 | 0.0
MH20A 0.12 | 0.0
BLK304A 0.03 | 0.0
MH40A 0.17 | 0.0
MH50A 0.20 | 0.0
MH51A 0.20 | 0.0
MH52A 0.02 | 0.0
MH53A 0.82 | 0.0
MH31A 0.23 | 24.3
MH41A 0.23 | 24.3
MH31A 0.16 | 0.0
MH41A 0.14 | 0.0
MH41A 0.19 | 24.3
MH51A 1.15 | 16.1
MH53A 0.16 | 0.0
BLOCK 1
BLOCK 2
BLOCK 3
BLOCK 4
BLOCK 5
BLOCK 6
BLOCK 7
BLOCK 8
BLOCK 9
BLOCK 10
BLOCK 11
BLOCK 12
BLOCK 13
BLOCK 14
BLOCK 15
BLOCK 16
BLOCK 17
BLOCK 18
BLOCK 19
BLOCK 26
BLOCK 27
BLOCK 28

CLIENT

CANADA LANDS COMPANY

CANADA LANDS COMPANY
SOCIÉTÉ IMMOBILIÈRE DU CANADA

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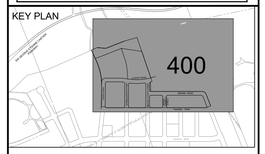
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ISSUES

No.	DESCRIPTION	DATE
1	SUBMISSION NO.1 FOR CITY REVIEW	2023-10-05
2	ISSUED FOR CLIENT REVIEW	2024-06-12
3	SUBMISSION NO.2 FOR CITY REVIEW	2024-06-21
4	ISSUED FOR GEOTECHNICAL REVIEW	2024-11-26
5	SUBMISSION NO.3 FOR CITY REVIEW	2024-12-20
6	SUBMISSION NO.4 FOR CITY REVIEW	2025-06-27
7	SUBMISSION NO.5 FOR CITY REVIEW	2025-07-31
8		

SEE 010, 011 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS

KEY PLAN



1:1250 0 12.5 37.5 62.5m

SEAL

LICENCED PROFESSIONAL ENGINEER
S. E. LABADIE
100214983
2025/07/31
PROVINCE OF ONTARIO

ARCADIS
333 Preston Street - Suite 500
Ottawa ON K1S 5N4 Canada
tel 613 225 1311
www.arcadis.com

PROJECT
WATERIDGE VILLAGE AT ROCKCLIFFE

PHASES 6 AND 7

PROJECT NO: 139653

DRAWN BY:	CHECKED BY:
M.M.	**J.I.M.**
PROJECT MGR:	APPROVED BY:
S.L.	**S.L.**

SHEET TITLE
SANITARY DRAINAGE AREA PLAN

SHEET NUMBER 400

ISSUE 7

SCALE CHECK

CITY PLAN No. 19055 CITY FILE No. D07-16-15-0003

File Location: J:\139653_600399-49__W7-0_Production\7.03_Design\04_Civil\Sheets\400 SANITARY DRAINAGE AREA PLAN.dwg Last Saved: June 26, 2025, by mlivens4926 Plotted: July 31, 2025 2:39:53 PM by Milne, Marian

SANITARY SEWER DESIGN SHEET
BLOCK 21, WATERIDGE VILLAGE AT ROCKCLIFFE

Robinson Land Development

LOCATION			APARTMENT UNIT COUNT				RESIDENTIAL FLOW						INSTITUTIONAL				COMMERCIAL				INFILTRATION			PEAK DESIGN FLOW (L/s)	PIPE							
							INDIVIDUAL		CUMULATIVE																							
STREET	FROM MH	TO MH	AVERAGE	BACHELOR	1-BEDROOM	2-BEDROOM	POP.	AREA (ha)	POP.	AREA (ha)	PEAK FACTOR	PEAK RES. FLOW (L/s)	No. OF BEDS	CUM. No. OF BEDS	PEAK FACTOR	PEAK FLOW (L/s)	AREA (ha)	CUM. AREA (ha)	PEAK FACTOR	PEAK FLOW (L/s)	AREA (ha)	CUM. AREA (ha)	EXTRAN. FLOW (L/s)		LENGTH (m)	DIAMETER (mm)	SLOPE (%)	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	EXCESS CAPACITY (L/s)	PERCENT FULL
TO BAREILLE-SNOW STREET SEWER (MH20A TO MH304A)																															
PHASE 1	BLDG	EX101		30	47	13	135.1	0.63	135.1	0.63	3.56	1.56	98	98	1.50	0.77	0.00	0.00	1.50	0.00	0.63	0.63	0.21	2.53	4.8	251.46	3.96	120.31	2.42	0.96	117.78	2.11
TO CODD'S ROAD SEWER (MH1A TO MH2A)																															
PHASE 2	BLDG	102	170				306.0	0.47	306.0	0.47	3.46	3.43	0	0	1.50	0.00	0.23	0.23	1.50	0.11	0.47	0.47	0.16	3.70	1.3	251.46	2.31	91.89	1.85	0.89	88.19	4.02
	102	MAIN					0.0	0.00	306.0	0.47	3.46	3.43	0	0	1.50	0.00	0.00	0.23	1.50	0.11	0.00	0.47	0.16	3.70	19.5	251.46	2.00	85.50	1.72	0.85	81.80	4.32
TO BAREILLE-SNOW STREET SEWER (MH5A TO MH20A)																															
PHASE 3	BLDG	103	100				180.0	0.31	180.0	0.31	3.53	2.06	0	0	1.50	0.00	0.00	0.00	1.50	0.00	0.31	0.31	0.10	2.16	5.8	251.46	2.07	86.99	1.75	0.73	84.82	2.49
	103	MAIN					0.0	0.00	180.0	0.31	3.53	2.06	0	0	1.50	0.00	0.00	0.00	1.50	0.00	0.00	0.31	0.10	2.16	9.2	251.46	1.96	84.64	1.70	0.72	82.48	2.55
							621.1	**1.41**				**7.05**	**98**			**0.77**	**0.23**			**0.11**	**1.41**		**0.47**	**8.39**								

DESIGN PARAMETERS

Average Daily Flow =	280	L/person/day
Institutional Flow =	28,000	L/ha/day
Commercial Flow =	28,000	L/ha/day
Maximum Residential Peak Factor =	4.0	
Harmon - Correction Factor (K) =	0.8	
Commercial/Institutional Peak Factor =	1.5	
Extraneous Flow =	0.33	L/s/ha
Minimum Velocity =	0.6	m/s
Maximum Velocity =	3.0	m/s

Per Unit Populations:

Single Family	3.4	persons/unit
Semi-detached	2.7	persons/unit
Duplex	2.3	persons/unit
Townhouse	2.7	persons/unit
Apartments:		
Bachelor	1.4	persons/unit
1 Bedroom	1.4	persons/unit
2 Bedroom	2.1	persons/unit
3 Bedroom	3.1	persons/unit
Average Apt.	1.8	persons/unit

Institutions:

Nursing Homes & Rest Homes	450	L/bed/day	(OSDG Appendix 4-A)

Appendix E

Figure 4.1 – Proposed Minor Storm Plan (prepared by Arcadis)

Storm Sewer Design Sheet (prepared by Arcadis)

Storm Drainage Area Plan (prepared by Arcadis)

Storm Drainage Area Plan (DWG. 25117-STM1)

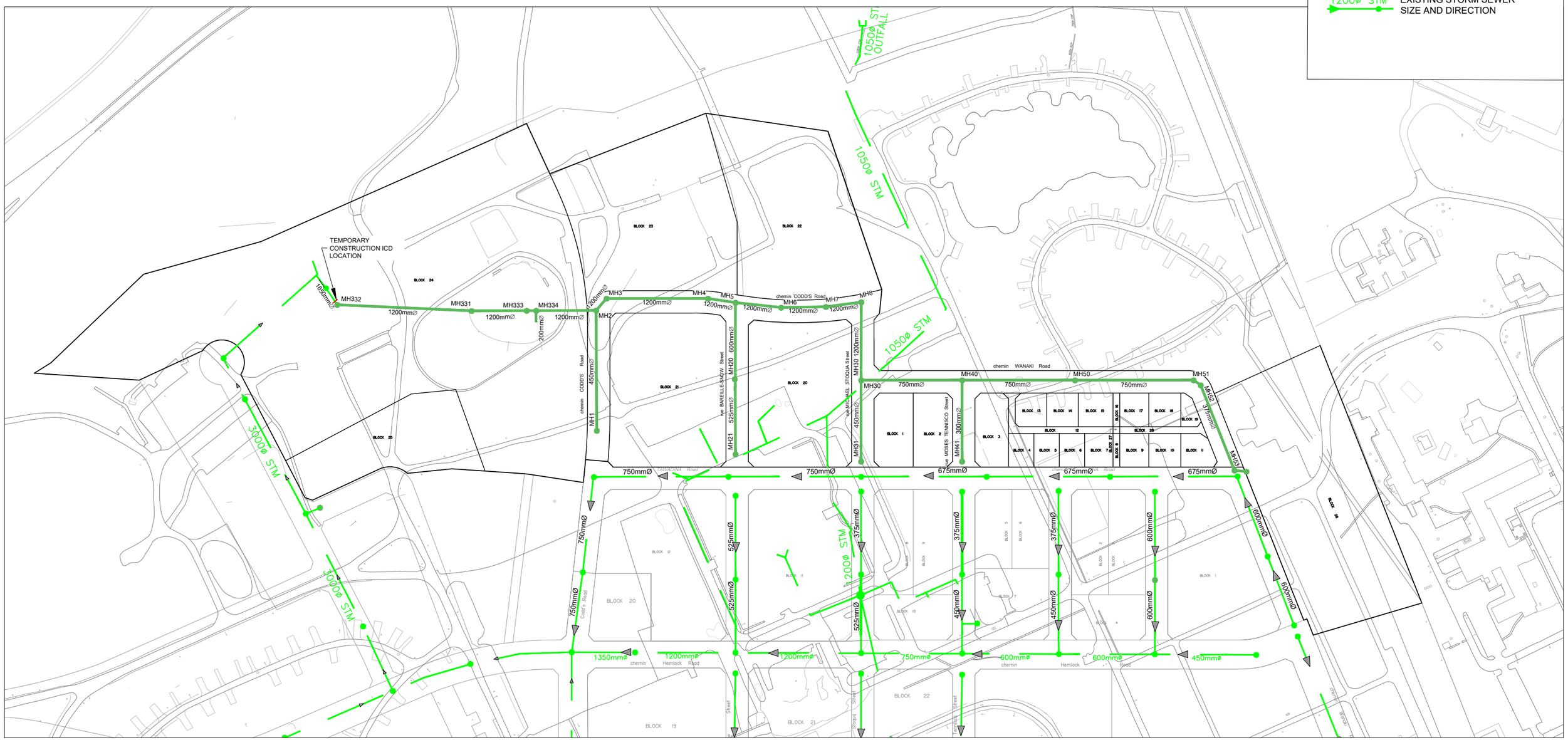
Storm Sewer Design Sheet

Interim Storm Drainage Area Plan (DWG. 25117-STM2)

Interim Storm Sewer Design Sheet

Runoff Coefficient Calculations

J:\139653_600399-49__W7.0_Production\7.03_Design\04_Civil\Sheets\Design Brief\Figure 4.1 PROPOSED MINOR STORM PLAN.dwg Last Saved By: milnem4626 Last Saved At: Jun. 25, 25



Project Title

DESIGN BRIEF
WATERIDGE VILLAGE AT ROCKCLIFFE
PHASES 6 & 7

Drawing Title

PROPOSED MINOR STORM PLAN

Sheet No.

FIGURE 4.1
2025-06-27

IBI GROUP
400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

STORM SEWER DESIGN SHEET

Wateridge Village Phase 6, 7
CITY OF OTTAWA
Canada Lands Company

LOCATION				AREA (Ha)										RATIONAL DESIGN FLOW														SEWER DATA									
STREET	AREA ID	FROM	TO	C= 0.20	C= 0.25	C= 0.30	C= 0.50	C= 0.57	C= 0.65	C= 0.69	C= 0.70	C= 0.75	C= 0.80	IND 2.78AC	CUM 2.78AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (2) (mm/hr)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	2yr PEAK FLOW (L/s)	5yr PEAK FLOW (L/s)	10yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW IND	FIXED FLOW CUM	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm) DIA	PIPE SIZE (mm) W	PIPE SIZE (mm) H	SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (2yr) (L/s)	AVAIL CAP (2yr) (%)
CODDS ROAD	S1, S1A, S1B	MH1	MH2						0.30				0.70	2.10	2.10	10.00	1.18	11.18	76.81	104.19	122.14	178.56	161.21	218.69	256.36	374.78		0.00	161.21	248.81	107.18	450			0.70	1.516	87.61	35.21%
BAREILLE-SNOW ST	S21, S21A, S21B	MH21	MH20						0.08				1.30	3.04	3.04	10.00	0.53	10.53	76.81	104.19	122.14	178.56	233.16	316.31	370.79	542.06		0.00	233.16	425.62	60.00	525			0.90	1.905	192.46	45.22%
BAREILLE-SNOW ST	S20, S20A	MH20	MH5						0.16					0.29	3.32	10.53	0.40	10.93	74.85	101.50	118.97	173.90	248.85	337.47	395.56	578.19		0.00	248.85	906.40	75.16	600			2.00	3.106	657.55	72.54%
TRANSITWAY	S60	MH60	MH53									0.25		0.52	0.52	12.11	0.18	12.29	69.56	94.24	110.42	161.35	36.26	49.12	57.56	84.10		0.00	36.26	71.62	10.71	300			0.50	0.982	35.36	49.37%
WANAKI ROAD	S53, S53A	MH53	MH52						0.16				0.58	1.58	2.10	12.29	0.69	12.98	69.01	93.48	109.53	160.03	144.93	196.33	230.03	336.11		0.00	144.93	224.04	81.65	375			1.50	1.965	79.11	35.31%
WANAKI ROAD		MH52	MH51											0.00	2.10	12.98	0.07	13.05	66.98	90.70	106.26	155.23	140.68	190.50	223.17	326.03		0.00	140.68	224.10	7.79	375			1.50	1.966	83.41	37.22%
WANAKI ROAD	S51, S51A	MH51	MH50						0.28				1.06	2.86	4.96	13.05	0.99	14.03	66.80	90.45	105.96	154.79	331.55	448.94	525.93	768.32		0.00	331.55	820.89	106.49	750			0.50	1.800	489.34	59.61%
WANAKI ROAD	S50	MH50	MH40						0.25					0.45	5.42	14.03	0.56	14.60	64.15	86.81	101.68	148.52	347.38	470.14	550.66	804.29		0.00	347.38	1,349.45	100.00	750			1.35	2.959	1002.07	74.26%
MOSES TENNISCO ST	S41, S41A	MH41	MH40						0.28				0.15	0.84	0.84	10.00	0.55	10.55	76.81	104.19	122.14	178.56	64.48	87.48	102.55	149.91		0.00	64.48	158.87	72.50	300			2.48	2.177	94.39	59.41%
WANAKI ROAD	S40	MH40	MH30						0.21					0.38	6.63	14.60	0.65	15.25	62.74	84.88	99.41	145.18	416.21	563.15	659.53	963.20		0.00	416.21	1,047.42	90.00	750			0.81	2.297	631.21	60.26%
MICHAEL STOQUA ST	S31, S31A, S31B	MH31	MH30						0.19				0.74	1.99	1.99	10.00	0.60	10.60	76.81	104.19	122.14	178.56	152.77	207.25	242.95	355.17		0.00	152.77	332.30	72.50	450			1.25	2.024	179.53	54.03%
MICHAEL STOQUA ST	S30	MH30	MH8						0.14					0.25	8.88	15.25	0.52	15.77	61.18	82.76	96.91	141.51	543.10	734.60	860.24	1,256.16		0.00	543.10	2,602.73	69.60	1200			0.41	2.229	2059.63	79.13%
CODDS ROAD	S8, S8A, S8B	MH8	MH7						0.09				1.48	3.45	12.33	15.77	0.26	16.03	60.01	81.15	95.02	138.74	739.93	1,000.61	1,171.65	1,710.72		0.00	739.93	2,390.10	31.85	1200			0.35	2.047	1650.17	69.04%
CODDS ROAD		MH7	MH6											0.00	12.33	16.03	0.32	16.35	59.44	80.37	94.11	137.40	732.93	991.04	1,160.39	1,694.20		0.00	732.93	2,408.23	39.93	1200			0.35	2.063	1675.30	69.57%
CODDS ROAD	S6, S6A	MH6	MH5						0.27					0.49	12.82	16.35	0.33	16.68	58.75	79.43	93.00	135.77	753.09	1,018.16	1,192.08	1,740.38		0.00	753.09	2,422.13	40.89	1200			0.35	2.075	1669.05	68.91%
CODDS ROAD	S5, S5A	MH5	MH4						0.01				1.68	3.75	19.90	16.68	0.22	16.90	58.07	78.49	91.90	134.16	1,155.38	1,561.84	1,828.55	2,669.42		0.00	1,155.38	2,237.75	24.78	1200			0.30	1.917	1082.37	48.37%
CODDS ROAD	S4, S4A	MH4	MH3						0.20					0.36	20.26	16.90	0.96	17.85	57.63	77.89	91.19	133.12	1,167.47	1,578.04	1,847.46	2,696.93		0.00	1,167.47	1,838.53	90.54	1200			0.20	1.575	671.06	36.50%
CODDS ROAD		MH3	MH2											0.00	20.26	17.85	0.15	18.01	55.76	75.34	88.19	128.72	1,129.65	1,526.36	1,786.71	2,607.83		0.00	1,129.65	1,815.62	14.05	1200			0.20	1.555	685.97	37.78%
PHASE 4 PARK	S2	MH2	MH334			1.28								1.07	21.33	18.01	0.58	18.58	55.48	74.96	87.74	128.06	1,183.18	1,598.60	1,871.23	2,731.12		0.00	1,183.18	1,802.28	53.48	1200			0.20	1.544	619.10	34.35%
		MH334	STUB																												200						
		MH334	MH333											0.00	21.33	18.58	0.08	18.67	54.43	73.52	86.06	125.59	1,160.80	1,568.04	1,835.31	2,678.44		0.00	1,160.80	1,976.44	8.47	1200			0.24	1.693	815.64	41.27%
	S333	MH333	MH331			1.25								1.04	22.37	18.67	0.44	19.11	54.28	73.32	85.82	125.24	1,214.24	1,640.17	1,919.72	2,801.58		0.00	1,214.24	2,170.89	49.14	1200			0.28	1.860	956.65	44.07%
	S331	MH331	MH332			2.45								2.04	24.41	19.11	1.08	20.18	53.51	72.28	84.59	123.44	1,306.43	1,764.44	2,065.05	3,013.46		0.00	1,306.43	2,164.98	120.00	1200			0.28	1.854	858.54	39.66%
		MH332	EXSTMH											0.00	24.41	20.18	0.18	20.36	51.74	69.85	81.74	119.26	1,263.01	1,705.17	1,995.41	2,911.35		0.00	1,263.01	3,699.47	17.84	1650			0.15	1.676	2436.46	65.86%

Definitions:
Q = 2.78CiA, where:
Q = Peak Flow in Litres per Second (L/s)
A = Area in Hectares (Ha)
i = Rainfall intensity in millimeters per hour (mm/hr)
[i = 732.951 / (TC+6.199)^0.810] 2 YEAR
[i = 998.071 / (TC+6.053)^0.814] 5 YEAR
[i = 1174.184 / (TC+6.014)^0.816] 10 YEAR
[i = 1735.688 / (TC+6.014)^0.820] 100 YEAR

Notes:
1. Mannings coefficient (n) = 0.013

Designed: SEL

Checked: JIM

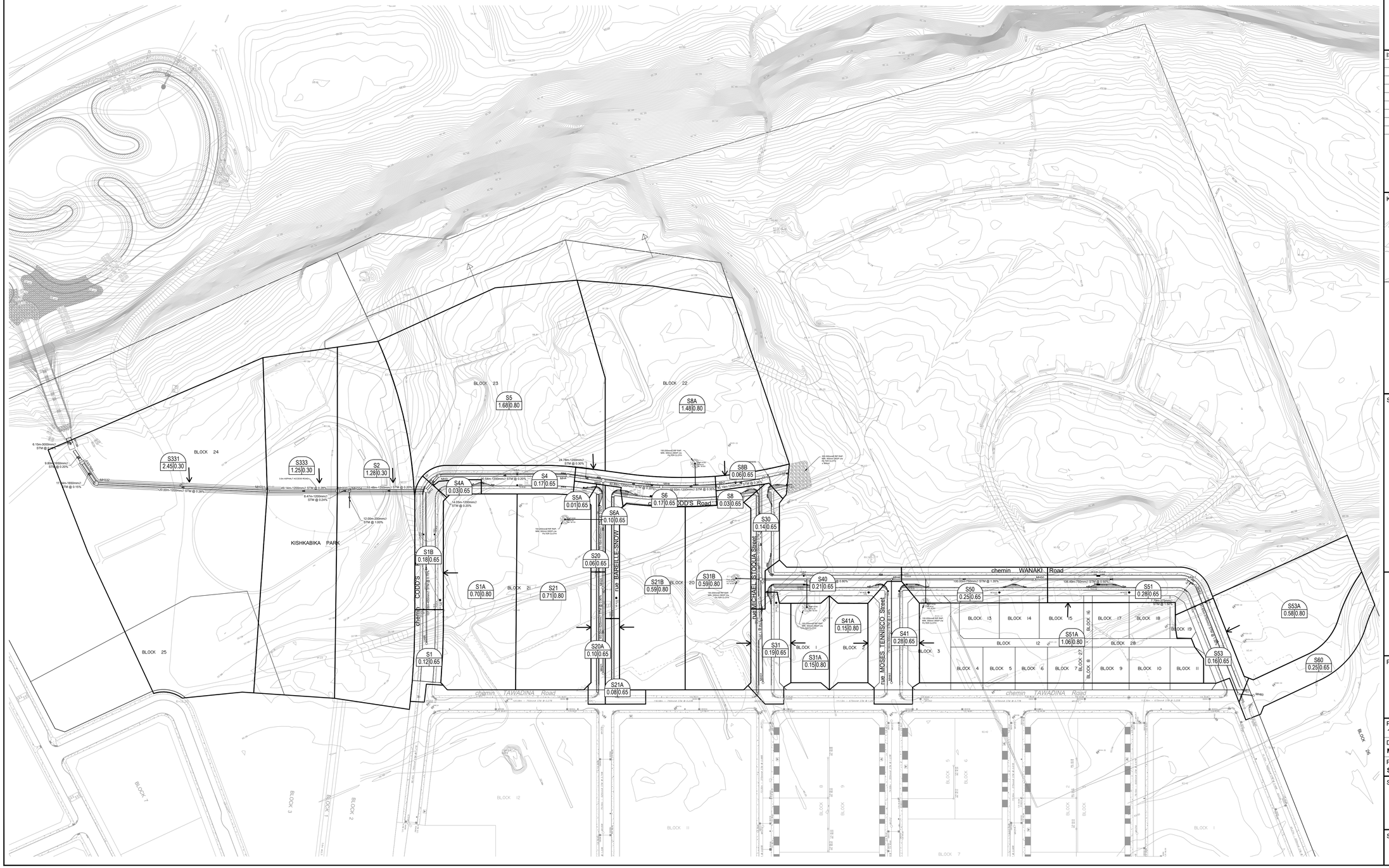
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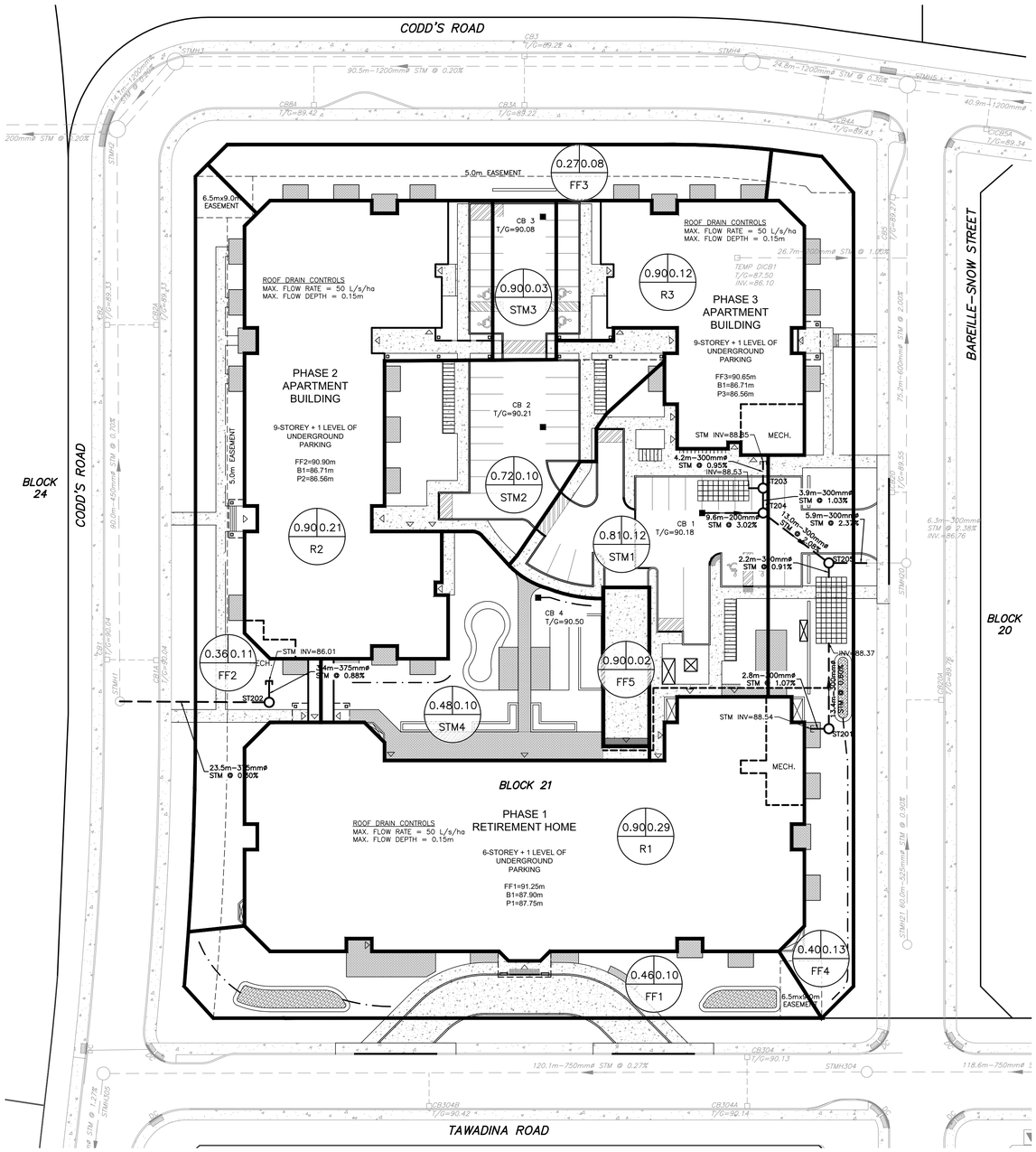
No.	Revision	Date
1.	Submission No. 1	2023-09-11
2.	Submission No. 2	2024-05-13
3.	Submission No. 4	2025-05-14

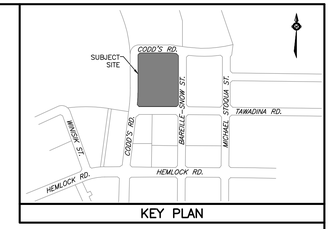
File Reference: 139653.6.04.04
Date: 2025-05-14
Sheet No: 1 of 1

LEGEND :

MH8
0.10|0.70
- AREA NUMBER
- RUNOFF COEFFICIENT
- AREA IN HECTARES


S331 2.45|0.30
S333 1.25|0.30
S2 1.28|0.30
S1 0.12|0.65
S1A 0.70|0.80
S1B 0.18|0.65
S4 0.17|0.65
S4A 0.03|0.65
S5 1.68|0.80
S5A 0.01|0.65
S6 0.17|0.65
S6A 0.10|0.65
S8 0.03|0.65
S8A 1.48|0.80
S8B 0.06|0.65
S20 0.06|0.65
S20A 0.10|0.65
S21 0.71|0.80
S21A 0.08|0.65
S21B 0.59|0.80
S30 0.14|0.65
S31 0.19|0.65
S31A 0.15|0.80
S31B 0.59|0.80
S40 0.21|0.65
S41 0.28|0.65
S41A 0.15|0.80
S50 0.25|0.65
S51 0.28|0.65
S51A 1.06|0.80
S53 0.16|0.65
S53A 0.58|0.80
S60 0.25|0.65
BLOCK 1
BLOCK 2
BLOCK 3
BLOCK 4
BLOCK 5
BLOCK 6
BLOCK 7
BLOCK 8
BLOCK 9
BLOCK 10
BLOCK 11
BLOCK 12
BLOCK 13
BLOCK 14
BLOCK 15
BLOCK 16
BLOCK 17
BLOCK 18
BLOCK 19
BLOCK 20
BLOCK 21
BLOCK 22
BLOCK 23
BLOCK 24
BLOCK 25
BLOCK 26
BLOCK 27
BLOCK 28
KISHKABIKA PARK
CODD'S Road
chemin WANAKI Road
chemin TAWADINA Road
rue BARRIELLE-SNOWY
rue MICHAEL-SYCOLIA Street
rue MOSES-TENNISCO Street
MH60
MH61
MH102
MH103
MH104
MH105
MH106
MH107
MH108
MH109
MH110
MH111
MH112
MH113
MH114
MH115
MH116
MH117
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MH119
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MH124
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MH127
MH128
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MH130
MH131
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MH133
MH134
MH135
MH136
MH137
MH138
MH139
MH140
MH141





KEY PLAN

LEGEND

- PROPERTY BOUNDARY
- PHASING LIMIT
- EASEMENT
- EXISTING CATCH BASIN
- EXISTING STORM SEWER & MANHOLE
- CATCH BASIN
- STORM SEWER & MANHOLE
- SWALE
- STORM DRAINAGE AREA BOUNDARY

RUNOFF COEFFICIENT
0.85 0.10 ← AREA (ha)
STM1
DRAINAGE AREA ID

NOT FOR CONSTRUCTION

NOTES

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.

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NO.	REVISION DESCRIPTION	DATE	BY
2	REVISED PER CLC COMMENTS	27/02/26	BLM
1	ISSUED FOR REVIEW	16/01/26	BLM

SCALE
0 4m 8m 16m
HORIZONTAL 1:400

LICENSED PROFESSIONAL ENGINEER
B.L. MACKECHNIE
100199554
27 Feb. '26
PROVINCE OF ONTARIO

Robinson Land Development
2936 Baseline Road
Suite 200
Ottawa, ON K2H 1B3
(613) 592-6060 rcii.com

DESIGN	BLM
CHECKED	SG
DRAWN	BLM
CHECKED	SG
APPROVED	BLM

WATERIDGE LIFESTYLES LTD.

WATERIDGE VILLAGE
BLOCK 21
CITY OF OTTAWA, ON

STORM DRAINAGE AREA PLAN

PROJECT No.	25117
SURVEY	MONUMENT-URSO SURVEYING LTD.
DATED	FEBRUARY 2026
DWG. No:	25117-STM1

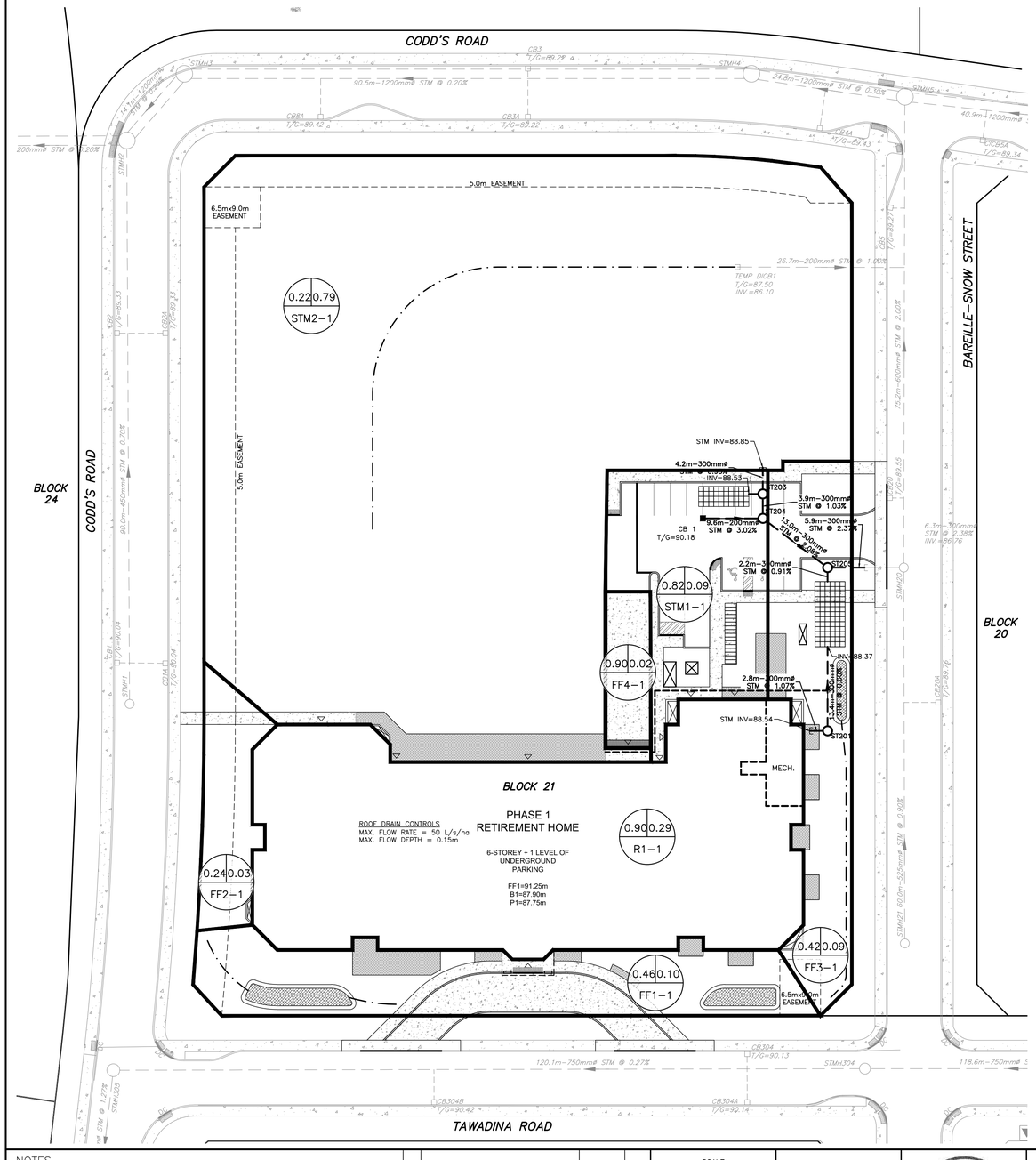
STORM SEWER DESIGN SHEET
BLOCK 21, WATERIDGE VILLAGE AT ROCKCLIFFE

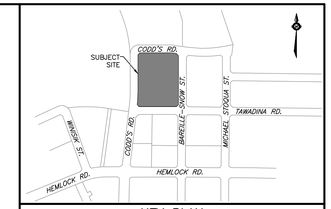
LOCATION			AREA (ha)	C	C (100 YR)	2-YR		100-YR		TIME OF CONC. (min)	2-YR RAINFALL INTENSITY (mm/hr)	2-YR PEAK FLOW (L/s)	100-YR RAINFALL INTENSITY (mm/hr)	100-YR PEAK FLOW (L/s)	100-YR RESTRICTED FLOW (L/s)	CUMULATIVE RESTRICTED FLOW (L/s)	PROPOSED SEWER							
DRAINAGE AREA	FROM MH	TO MH				INDIV. 2.78AC	ACCUM. 2.78AC	INDIV. 2.78AC	ACCUM. 2.78AC								PIPE DIA. (mm)	GRADE (%)	LENGTH (m)	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	TIME OF FLOW (min)	2-YR PERCENT FULL	100-YR PERCENT FULL WITH RESTRICTED CONTROLS
TO CODD'S ROAD STORM SEWER (MH1 TO MH2)																								
STM3	CB 3	BLDG	0.03	0.90	1.00	0.06	0.06	0.07	0.07	10.00	76.81	4.81	178.56	12.43	12.43	12.43	251.46	1.00	1.0	60.46	1.22	0.01	8%	21%
STM2	CB 2	BLDG	0.10	0.72	0.80	0.20	0.20	0.22	0.22	10.00	76.81	15.17	178.56	39.54	39.54	39.54	251.46	1.00	1.0	60.46	1.22	0.01	25%	65%
STM4	CB 4	BLDG	0.10	0.48	0.55	0.14	0.14	0.16	0.16	10.00	76.81	10.53	178.56	28.07	28.07	28.07	251.46	1.00	1.0	60.46	1.22	0.01	17%	46%
R2	BLDG	202	0.21	0.90	1.00	0.54	0.93	0.60	1.04	10.00	76.81	71.72	178.56	186.48	10.72	90.76	366.42	0.88	3.4	154.79	1.47	0.04	46%	59%
	202	EX1	0.00	0.00	0.00	0.00	0.93	0.00	1.04	10.04	76.66	71.58	178.21	186.11	0.00	90.76	366.42	0.30	23.5	90.38	0.86	0.46	79%	100%
			0.44																					
TO BAREILLE-SNOW STREET STORM SEWER (MH20 TO MH5)																								
R3	BLDG	203	0.12	0.90	1.00	0.29	0.29	0.33	0.33	10.00	76.81	22.64	178.56	58.48	5.89	5.89	299.36	0.95	4.2	93.81	1.33	0.05	24%	6%
	203	204	0.00	0.00	0.00	0.00	0.29	0.00	0.33	10.05	76.60	22.58	178.08	58.32	0.00	5.89	299.36	1.03	3.9	97.68	1.39	0.05	23%	6%
STM1	CB 1	204	0.12	0.81	0.91	0.28	0.28	0.31	0.31	10.00	76.81	21.29	178.56	55.20	55.20	55.20	201.16	3.02	9.6	57.94	1.82	0.09	37%	95%
	204	205	0.00	0.00	0.00	0.00	0.57	0.00	0.64	10.10	76.43	43.71	177.66	113.10	0.00	61.09	299.36	2.08	13.0	138.81	1.97	0.11	31%	44%
R1 + FF5	BLDG	201	0.31	0.90	1.00	0.78	0.78	0.86	0.86	10.00	76.81	59.71	178.56	154.24	23.68	23.68	299.36	1.07	2.8	99.56	1.41	0.03	60%	24%
	201	CHAMBER	0.00	0.00	0.00	0.00	0.78	0.00	0.86	10.03	76.68	59.61	178.26	153.98	0.00	23.68	299.36	0.60	13.4	74.55	1.06	0.21	80%	32%
	CHAMBER	205	0.00	0.00	0.00	0.00	0.78	0.00	0.86	10.24	75.88	58.99	176.36	152.34	0.00	23.68	299.36	0.91	2.2	91.82	1.30	0.03	64%	26%
	205	STUB	0.00	0.00	0.00	0.00	1.35	0.00	1.50	10.27	75.78	102.25	176.11	264.24	0.00	84.77	299.36	2.37	5.9	148.17	2.11	0.05	69%	57%
			0.55																					
												173.83												
Design Parameters																								

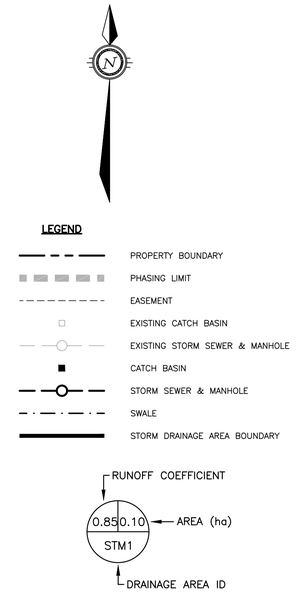
Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Peak flows calculated using the Rational Method.
   Q = 2.78CIA, where:
   Q = Peak Flow (L/s)
   A = Drainage Area (ha)
   I = Rainfall Intensity (mm/hr)
   C = Runoff Coefficient
3. Manning's roughness coefficient = 0.013
4. Full flow velocity: MIN 0.8 m/s; MAX 3.0 m/s (City of Ottawa Sewer Design Guidelines, v.2012)

IDF curve equations (Intensity in mm/hr)

100 year Intensity = 1735.688 / (Time in min + 6.014) $^{0.820}$
50 year Intensity = 1569.580 / (Time in min + 6.014) $^{0.820}$
25 year Intensity = 1402.884 / (Time in min + 6.018) $^{0.819}$
10 year Intensity = 1174.184 / (Time in min + 6.014) $^{0.816}$
5 year Intensity = 998.071 / (Time in min + 6.053) $^{0.814}$
2 year Intensity = 732.951 / (Time in min + 6.199) $^{0.810}$







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NOTES

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NO.	REVISION DESCRIPTION	DATE	BY
2	REVISED PER CLC COMMENTS	27/02/26	BLM
1	ISSUED FOR REVIEW	16/01/26	BLM

SCALE
0 4m 8m 16m
HORIZONTAL 1:400

LICENSED PROFESSIONAL ENGINEER
B.L. MACKECHNIE
100199554
27 Feb. '26
PROVINCE OF ONTARIO

Robinson Land Development
2936 Baseline Road
Suite 200
Ottawa, ON K2H 1B3
(613) 592-6060 rcii.com

DESIGN	BLM
CHECKED	SG
DRAWN	BLM
CHECKED	SG
APPROVED	BLM

WATERIDGE LIFESTYLES LTD.

WATERIDGE VILLAGE
BLOCK 21
CITY OF OTTAWA, ON

INTERIM STORM DRAINAGE AREA PLAN

PROJECT No.	25117
SURVEY	MONUMENT-URSO SURVEYING LTD.
DATED	FEBRUARY 2026
DWG. No:	25117-STM2

INTERIM STORM SEWER DESIGN SHEET
BLOCK 21, WATERIDGE VILLAGE AT ROCKCLIFFE

LOCATION			AREA (ha)	C	C (100 YR)	2-YR		100-YR		TIME OF CONC. (min)	2-YR RAINFALL INTENSITY (mm/hr)	2-YR PEAK FLOW (L/s)	100-YR RAINFALL INTENSITY (mm/hr)	100-YR PEAK FLOW (L/s)	100-YR RESTRICTED FLOW (L/s)	CUMULATIVE RESTRICTED FLOW (L/s)	PROPOSED SEWER							
DRAINAGE AREA	FROM MH	TO MH				INDIV. 2.78AC	ACCUM. 2.78AC	INDIV. 2.78AC	ACCUM. 2.78AC								PIPE DIA. (mm)	GRADE (%)	LENGTH (m)	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)	TIME OF FLOW (min)	2-YR PERCENT FULL	100-YR PERCENT FULL WITH RESTRICTED CONTROLS
TO BAREILLE-SNOW STREET STORM SEWER (MH20 TO MH5)																								
STM1-1	CB 1	204	0.09	0.82	0.91	0.19	0.19	0.22	0.22	10.00	76.81	14.92	178.56	38.69	38.69	38.69	201.16	3.02	9.6	57.94	1.82	0.09	26%	67%
	204	205	0.00	0.00	0.00	0.00	0.19	0.00	0.22	10.09	76.47	14.86	177.76	38.51	0.00	38.69	299.36	2.08	13.0	138.81	1.97	0.11	11%	28%
R1-1 + FF4-1	BLDG	201	0.31	0.90	1.00	0.78	0.78	0.86	0.86	10.00	76.81	59.71	178.56	154.24	23.68	23.68	299.36	1.07	2.8	99.56	1.41	0.03	60%	24%
	201	CHAMBER	0.00	0.00	0.00	0.00	0.78	0.00	0.86	10.03	76.68	59.61	178.26	153.98	0.00	23.68	299.36	0.60	13.4	74.55	1.06	0.21	80%	32%
	CHAMBER	205	0.00	0.00	0.00	0.00	0.78	0.00	0.86	10.24	75.88	58.99	176.36	152.34	0.00	23.68	299.36	0.91	2.2	91.82	1.30	0.03	64%	26%
	205	STUB	0.00	0.00	0.00	0.00	0.97	0.00	1.08	10.27	75.78	73.63	176.11	190.28	0.00	62.37	299.36	2.37	5.90	148.17	2.11	0.05	50%	42%
STM2-1	DICB 1	MAIN	0.79	0.22	0.27	0.48	0.48	0.59	0.59	15.00	61.77	29.73	142.89	84.90	84.90	84.90	201.16	1.00	26.7	33.34	1.05	0.42	89%	255%
Design Parameters																								

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Peak flows calculated using the Rational Method.
   Q = 2.78CIA, where:
   Q = Peak Flow (L/s)
   A = Drainage Area (ha)
   I = Rainfall Intensity (mm/hr)
   C = Runoff Coefficient
3. Manning's roughness coefficient = 0.013
4. Full flow velocity: MIN 0.8 m/s; MAX 3.0 m/s (City of Ottawa Sewer Design Guidelines, v.2025)

IDF curve equations (Intensity in mm/hr)

100 year Intensity = $1735.688 / (\text{Time in min} + 6.014)^{0.820}$
50 year Intensity = $1569.580 / (\text{Time in min} + 6.014)^{0.820}$
25 year Intensity = $1402.884 / (\text{Time in min} + 6.018)^{0.819}$
10 year Intensity = $1174.184 / (\text{Time in min} + 6.014)^{0.816}$
5 year Intensity = $998.071 / (\text{Time in min} + 6.053)^{0.814}$
2 year Intensity = $732.951 / (\text{Time in min} + 6.199)^{0.810}$

Runoff Coefficient Calculations

Drainage Area ID	Impervious Area (ha)	Pervious Area (ha)	Gravel Area (ha)	Total Area (ha)	C	C (100 YR)	Percent Impervious (%)
R1	0.29	0.00	0.00	0.29	0.90	1.00	100.0
R2	0.21	0.00	0.00	0.21	0.90	1.00	100.0
R3	0.12	0.00	0.00	0.12	0.90	1.00	100.0
STM1	0.11	0.02	0.00	0.12	0.81	0.91	87.4
STM2	0.07	0.03	0.00	0.10	0.72	0.80	73.9
STM3	0.03	0.00	0.00	0.03	0.90	1.00	100.0
STM4	0.04	0.06	0.00	0.10	0.48	0.55	39.7
FF1	0.04	0.07	0.00	0.10	0.46	0.53	37.4
FF2	0.03	0.08	0.00	0.11	0.36	0.43	23.5
FF3	0.01	0.07	0.00	0.08	0.27	0.33	10.4
FF4	0.04	0.09	0.00	0.13	0.40	0.46	28.5
FF5	0.02	0.00	0.00	0.02	0.90	1.00	100.0

Runoff Coefficient Calculations (Interim - Phase 1)

Drainage Area ID	Impervious Area (ha)	Pervious Area (ha)	Gravel Area (ha)	Total Area (ha)	C	C (100 YR)	Percent Impervious (%)
R1-1	0.29	0.00	0.00	0.29	0.90	1.00	100.0
STM1-1	0.08	0.01	0.00	0.09	0.82	0.91	88.5
STM2-1	0.02	0.77	0.00	0.79	0.22	0.27	2.7
FF1-1	0.04	0.07	0.00	0.10	0.46	0.53	37.4
FF2-1	0.002	0.03	0.00	0.03	0.24	0.30	6.3
FF3-1	0.03	0.06	0.00	0.09	0.42	0.49	31.5
FF4-1	0.02	0.00	0.00	0.02	0.90	1.00	100.0

Cumulative Runoff Coefficient Calculations

Drainage Area ID	Impervious Area (ha)	Pervious Area (ha)	Gravel Area (ha)	Total Area (ha)	C	C (100 YR)	Percent Impervious (%)
R2 + STM2 + STM3 + STM4	0.35	0.09	0.00	0.44	0.76	0.85	80.1
R1 + FF5	0.31	0.00	0.00	0.31	0.90	1.00	100.0
R1-1 + FF4-1	0.31	0.00	0.00	0.31	0.90	1.00	100.0

Runoff Coefficients (100-YR):
$C_{impervious}$ = 0.90 (1.0)
$C_{pervious}$ = 0.20 (0.25)
C_{gravel} = 0.80 (1.0)

Appendix F

DDWMM Model Schematic
(prepared by Arcadis)

Table 5-3 Minor Flow Capture
(prepared by Arcadis)

Table 5-7 Major Flow from Development Blocks
(prepared by Arcadis)

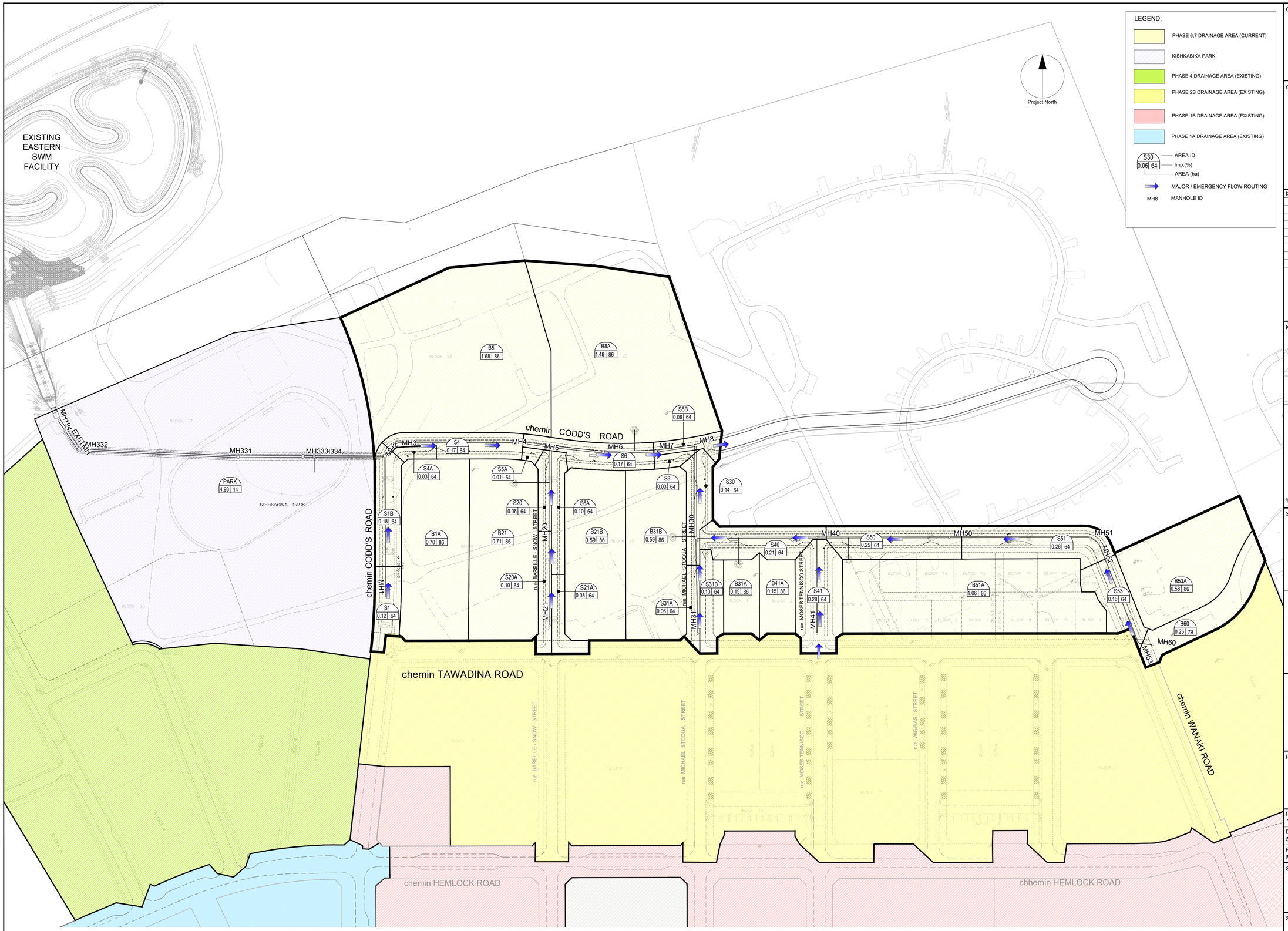
Table F1: Ponding and Orifice Calculations

Roof Drain Specification Sheet

Free Flow Calculations

Storage Volume Tables

Ponding Area Plan (DWG. 25117-PA1)



CLIENT

WATERIDGE VILLAGE PHASE 6 & 7

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ISSUES

No.	DESCRIPTION	DATE
1	SUBMISSION NO.1 FOR CITY REVIEW	2023-10-05
2	SUBMISSION NO.2 FOR CITY REVIEW	2024-06-14
3	SUBMISSION NO.4 FOR CITY REVIEW	2025-06-27
4		
5		
6		
7		
8		

KEY PLAN



NOT FOR CONSTRUCTION

SEAL



ARCADIS
333 Preston Street - Suite 500
Ottawa ON K1S 5N4 Canada
tel 613 225 1311
www.arcadis.com

PROJECT
WATERIDGE VILLAGE AT ROCKCLIFFE

PROJECT NO: 139653

DRAWN BY:	CHECKED BY:
S.V.	**M.B.**
PROJECT MGR: **M.B.**	APPROVED BY: **P.S.**

SHEET TITLE
DDSWMM MODEL SCHEMATIC

SHEET NUMBER	ISSUE
750	3

CITY PLAN No. ____ CITY FILE No. D07-16-15-0003

SCALE CHECK

File Location: J:\139653_400399-49__WY7.0_Production\7.03_Design\27_Water\Sheets\139653-750-DDSWMM MODEL SCHEMATIC.dwg Last Saved: June 25, 2025, by vukics5258 Plotted: June 25, 2025 5:05:13 PM by Vukic, Slavica

Drainage Area ID	Area (ha)	D/S Segment ID	XPSWMM Node ID	IMP Ratio [Tp (h)]	Segment Length (m)	Subcatchment Width (m)	Available Static Ponding (m^3)
B8A	1.48	S6	MH6	0.86	167	333	0.0

Table 5-3 Minor Flow Capture

Drainage Area ID	Continuous/Sag[1],[2]	Road Type	Minor System Design Target	Generated Flow on Individual Segment for Minor System Design Target (DDSWMM Simulation) (l/s)	ICD (l/s)	Note
S1	Continuous	20m Row, 8.5m asphalt	100	41	12	
S1B	Sag	20m Row, 8.5m asphalt	100	59	126	
S20	Sag	20m Row, 8.5m asphalt	100	20	86	
S20A	Continuous	20m Row, 8.5m asphalt	100	33	19	
S21A	Continuous	20m Row, 8.5m asphalt	100	28	19	
S30	Sag	20m Row, 8.5m asphalt	100	49	95	
S31A	Sag	20m Row, 8.5m asphalt	100	21	86	
S31B	Sag	20m Row, 8.5m asphalt	100	42	86	
S4	Sag	20m Row, 8.5m asphalt	100	59	172	
S40	Sag	20m Row, 8.5m asphalt	100	68	172	
S41	Continuous	20m Row, 8.5m asphalt	100	93	43	
S4A	Sag	20m Row, 8.5m asphalt	100	11	28	

Drainage Area ID	Continuous/Sag[1],[2]	Road Type	Minor System Design Target	Generated Flow on Individual Segment for Minor System Design Target (DDSWMM Simulation) (l/s)	ICD (l/s)	Note
S50	Continuous	20m Row, 8.5m asphalt	100	84	25	
S51	Sag	20m Row, 8.5m asphalt	100	95	416	
S53	Continuous	20m Row, 8.5m asphalt	100	55	76	
S5A	Sag	20m Row, 8.5m asphalt	100	5	6	
S6	Sag	20m Row, 8.5m asphalt	100	59	228	
S6A	Sag	20m Row, 8.5m asphalt	100	31	86	
S8	Sag	20m Row, 8.5m asphalt	100	10	19	
S8B	Continuous	20m Row, 8.5m asphalt	100	21	57	
Park & Development Blocks						
Park	Rear Yard	Rear Yard	5	200	200	
B1A	Rear Yard	Rear Yard	5	142	142	
B21	Rear Yard	Rear Yard	5	144	144	
B21B	Rear Yard	Rear Yard	5	120	120	
B31A	Rear Yard	Rear Yard	5	31	31	
B31B	Rear Yard	Rear Yard	5	120	120	
B41A	Rear Yard	Rear Yard	5	31	31	
B5	Rear Yard	Rear Yard	5	338	338	
B51A	Rear Yard	Rear Yard	5	215	215	

Drainage Area ID	D/S Segment ID	Overflow (l/s)[1]	Velocity (m/s)[2]	Max. Static Ponding Depth Utilized (Where Applicable) (m)	Dynamic Depth of Flow (where applicable) (m)[3]	Max. Depth (Static + Dynamic, where applicable) (m)	Velocity x Depth (m^2/s)
S8	D13	0.00	0.00	0.06	0.00	0.06	0.00
S8B		0.93	2.41	0.00	0.11	0.11	0.26

(1) Overflow from DDSWMM output 139653-3CHI120.out
(2) Velocity from SWMHYMO output 139653VD.out
(3) Depth of the cascading overflow was determined from the Calculation Sheet: Overflow From Typical Road Ponding Area provided in the February 2014 Technical Bulletin ISDTB-2014-01. For those areas which have a continuous road grade (or no dummy segment), the depth was taken from SWMHYMO VxD simulation.

During the 100 year 3 hour Chicago storm, the summation of depth of ponding and depth of cascading flow for all street segments is less than the City guideline of 0.35 m. The product of depth and velocity is also less than the City guideline of 0.6 m^2/s.

During the sensitivity analysis applying the 100 year 3 hour Chicago storm increased by 20%, the summation of depth of ponding and depth of cascading flow for all street segments is less than 0.35 m except at drainage areas S30, S4, S51 and S6. At all locations, the product of depth and velocity is less than the City guideline of 0.6 m^2/s.

To assist in the design of future site plan proposals, a summary of major flow from development blocks is summarized in the below table. Refer also to **Drawing 139653-750** for major flow connectivity.

Table 5-7 Major Flow from Development Blocks (100 year 3 hour Chicago storm and stress test)

Drainage Area ID	Major Flow Recipient		Major Flow (cms)	
	Street	Model Drainage Area ID	100 year 3 hour Chicago Storm	100 year 3 hour Chicago Storm + 20%
B1A	Codd's Road	S1	0.121	0.184
B21	Bareille-Snow Street	S20A	0.122	0.186
B21B	Bareille-Snow Street	S21A	0.101	0.154
B31A	Michael Stoqua Street	S31B	0.027	0.040
B31B	Michael Stoqua Street	S31A	0.102	0.155
B41A	Moses Tennisco Street	S41	0.027	0.400
B5	Codd's Road	S4	0.287	0.437

Table F1: Ponding and Orifice Calculations

Structure	Drainage Area	Outlet Pipe Inv. Elev. (m)	Outlet Pipe Diam. (m)	C/L Orifice Elev. (m)	T/G Elev. (m)	2-YR Ponding Depth (m)	2-YR Ponding Elev. (m)	2-YR Head (m)	5-YR Ponding Depth (m)	5-YR Ponding Elev. (m)	5-YR Head (m)	100-YR Ponding Depth (m)	100-YR Ponding Elev. (m)	100-YR Head (m)	100-YR + 20% Ponding Depth (m)	100-YR + 20% Ponding Elev. (m)	100-YR + 20% Head (m)	2-YR Outflow (L/s)	5-YR Outflow (L/s)	100-YR Outflow (L/s)	100-YR + 20% Outflow (L/s)	Orifice Area (m^2)	Orifice Diameter (mm)	Orifice Type
Temp. DICB 1	STM2-1	86.10	0.201	86.20	87.50	0.00	87.50	1.30	0.00	87.50	1.30	0.00	87.50	1.30	0.00	87.50	1.30	131.6	131.6	131.6	131.6	0.032	201	Pipe lead

Notes:

1. Ponding depths are measured from the ponding elevation to the T/G elevation.
2. Heads are measured from the ponding elevation to the centreline of orifice elevation.
3. Orifice Area = (Q/1000) / 0.82(2*9.81*H_{100})$^{0.5}$ (see note 6)
4. Orifice areas are calculated using 2-year head and outflow values.
5. Equivalent orifice diameter would be less than 83mm.

WATTS®	Adjustable Accutrol Weir Tag: _____	Adjustable Flow Control for Roof Drains

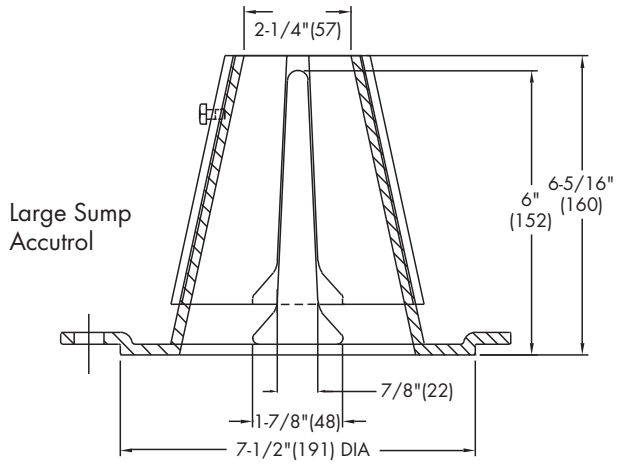
ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

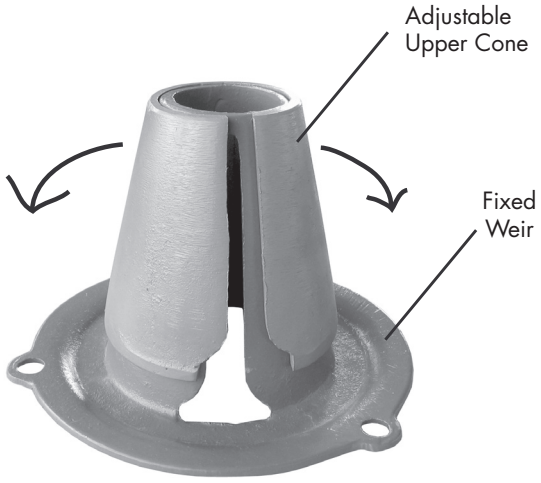
For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the flow rate for depths over 2" of head, set the slot in the adjustable upper cone according to the flow rate required. Refer to Table 1 below.
Note: Flow rates are directly proportional to the amount of weir opening that is exposed.

EXAMPLE:

For example, if the adjustable upper cone is set to cover 1/2 of the weir opening, flow rates above 2"of head will be restricted to 2-1/2 gpm per inch of head.

Therefore, at 3"of head, the flow rate through the Accutrol Weir that has 1/2 the slot exposed will be:
[5 gpm (per inch of head) x 2 inches of head] + 2-1/2 gpm (for the third inch of head) = 12-1/2 gpm.





1/2 Weir Opening Exposed Shown Above

TABLE 1. Adjustable Accutrol Flow Rate Settings

Weir Opening Exposed	1"	2"	3"	4"	5"	6"
	Flow Rate (gallons per minute)					
Fully Exposed	5	10	15	20	25	30
3/4	5	10	13.75	17.5	21.25	25
1/2	5	10	12.5	15	17.5	20
1/4	5	10	11.25	12.5	13.75	15
Closed	5	5	5	5	5	5

Job Name _____ Contractor _____

Job Location _____ Contractor's P.O. No. _____

Engineer _____ Representative _____

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Free Flow Calculations - Area FF1 (to Tawadina Road - Pipe Run MH304 to MH305)

Area ID = FF1
Area (ha) = 0.10
C = 0.46
C (100 YR) = 0.53

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)
2 Year	**10**	**76.8**	**10.3**
	15	61.8	8.3
	20	52.0	7.0
	25	45.2	6.1
	30	40.0	5.4
	35	36.1	4.9
5 Year	**10**	**104.2**	**14.0**
	15	83.6	11.3
	20	70.3	9.5
	25	60.9	8.2
	30	53.9	7.3
	35	48.5	6.5
100 Year	**10**	**178.6**	**27.6**
	15	142.9	22.1
	20	120.0	18.6
	25	103.8	16.1
	30	91.9	14.2
	35	82.6	12.8

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Flow calculated using the Rational Method. Q=2.78CiA
3. C (100 YR) = C + 25% (Max. 1.0)

Free Flow Calculations - Area FF2 (to Codd's Road - Pipe Run MH1 to MH2)

Area ID = FF2
Area (ha) = 0.11
C = 0.36
C (100 YR) = 0.43

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)
2 Year	**10**	**76.8**	**8.4**
	15	61.8	6.8
	20	52.0	5.7
	25	45.2	5.0
	30	40.0	4.4
	35	36.1	4.0
5 Year	**10**	**104.2**	**11.5**
	15	83.6	9.2
	20	70.3	7.7
	25	60.9	6.7
	30	53.9	5.9
	35	48.5	5.3
100 Year	**10**	**178.6**	**23.0**
	15	142.9	18.4
	20	120.0	15.4
	25	103.8	13.3
	30	91.9	11.8
	35	82.6	10.6

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Flow calculated using the Rational Method. Q=2.78CiA
3. C (100 YR) = C + 25% (Max. 1.0)

Free Flow Calculations - Area FF3 (to Codd's Road - Pipe Run MH4 to MH3)

Area ID = FF3
Area (ha) = 0.08
C = 0.27
C (100 YR) = 0.33

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)
2 Year	**10**	**76.8**	**4.5**
	15	61.8	3.6
	20	52.0	3.0
	25	45.2	2.6
	30	40.0	2.3
	35	36.1	2.1
5 Year	**10**	**104.2**	**6.1**
	15	83.6	4.9
	20	70.3	4.1
	25	60.9	3.6
	30	53.9	3.2
	35	48.5	2.8
100 Year	**10**	**178.6**	**12.6**
	15	142.9	10.1
	20	120.0	8.4
	25	103.8	7.3
	30	91.9	6.5
	35	82.6	5.8

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Flow calculated using the Rational Method. Q=2.78CiA
3. C (100 YR) = C + 25% (Max. 1.0)

Free Flow Calculations - Area FF4 (to Bareille-Snow St. - Pipe Run MH20 to MH5)

Area ID = FF4
Area (ha) = 0.13
C = 0.40
C (100 YR) = 0.46

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)
2 Year	**10**	**76.8**	**11.3**
	15	61.8	9.1
	20	52.0	7.7
	25	45.2	6.7
	30	40.0	5.9
	35	36.1	5.3
5 Year	**10**	**104.2**	**15.3**
	15	83.6	12.3
	20	70.3	10.3
	25	60.9	9.0
	30	53.9	7.9
	35	48.5	7.1
100 Year	**10**	**178.6**	**30.5**
	15	142.9	24.4
	20	120.0	20.5
	25	103.8	17.8
	30	91.9	15.7
	35	82.6	14.1

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Flow calculated using the Rational Method. Q=2.78CiA
3. C (100 YR) = C + 25% (Max. 1.0)

Free Flow Calculations - Area FF5 (to Phase 1 Building Storm Service)

Area ID = FF5
Area (ha) = 0.02
C = 0.90
C (100 YR) = 1.00

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)
2 Year	**10**	**76.8**	**3.5**
	15	61.8	2.8
	20	52.0	2.4
	25	45.2	2.1
	30	40.0	1.8
	35	36.1	1.6
5 Year	**10**	**104.2**	**4.8**
	15	83.6	3.8
	20	70.3	3.2
	25	60.9	2.8
	30	53.9	2.5
	35	48.5	2.2
100 Year	**10**	**178.6**	**9.1**
	15	142.9	7.2
	20	120.0	6.1
	25	103.8	5.3
	30	91.9	4.7
	35	82.6	4.2

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Flow calculated using the Rational Method. Q=2.78CiA
3. C (100 YR) = C + 25% (Max. 1.0)

Storage Volume Calculations - Area R1 (PHASE 1 ROOF)

Area ID =	R1	Roof Drain Release Rate (L/s/ha) =	50.0
Area (ha) =	0.29	2-Year Release Rate (L/s) =	14.6
C =	0.90	5-Year Release Rate (L/s) =	14.6
C (100 YR) =	1.00	100-Year Release Rate (L/s) =	14.6
		100-Year + 20% Release Rate (L/s) =	14.6
		Available Storage Volume (m^3) =	146.2

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)	Release Rate (L/s)	Net Runoff to be Stored (L/s)	Storage Required (m^3)
2 Year	10	76.8	56.2	14.6	41.6	24.9
	15	61.8	45.2	14.6	30.6	27.5
	20	**52.0**	**38.1**	**14.6**	**23.5**	**28.1**
	25	45.2	33.1	14.6	18.4	27.6
	30	40.0	29.3	14.6	14.7	26.4
	35	36.1	26.4	14.6	11.8	24.7
5 Year	15	83.6	61.1	14.6	46.5	41.9
	20	70.3	51.4	14.6	36.8	44.1
	25	**60.9**	**44.6**	**14.6**	**29.9**	**44.9**
	30	53.9	39.5	14.6	24.8	44.7
	35	48.5	35.5	14.6	20.9	43.8
	40	44.2	32.3	14.6	17.7	42.5
100 Year	40	75.1	61.1	14.6	46.5	111.5
	45	69.1	56.1	14.6	41.5	112.1
	50	**64.0**	**52.0**	**14.6**	**37.4**	**112.1**
	55	59.6	48.5	14.6	33.9	111.7
	60	55.9	45.4	14.6	30.8	111.0
	65	52.6	42.8	14.6	28.2	109.9
100 Year + 20%	50	76.7	62.4	14.6	47.8	143.3
	55	71.5	58.2	14.6	43.6	143.7
	60	**67.1**	**54.5**	**14.6**	**39.9**	**143.7**
	65	63.2	51.4	14.6	36.7	143.3
	70	59.7	48.6	14.6	34.0	142.6
	75	56.7	46.1	14.6	31.5	141.7

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA

Storage Volume Calculations - Area R2 (PHASE 2 ROOF)

Area ID =	R2	Roof Drain Release Rate (L/s/ha) =	50.0
Area (ha) =	0.21	2-Year Release Rate (L/s) =	10.7
C =	0.90	5-Year Release Rate (L/s) =	10.7
C (100 YR) =	1.00	100-Year Release Rate (L/s) =	10.7
		100-Year + 20% Release Rate (L/s) =	10.7
		Available Storage Volume (m^3) =	107.2

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)	Release Rate (L/s)	Net Runoff to be Stored (L/s)	Storage Required (m^3)
2 Year	10	76.8	41.2	10.7	30.5	18.3
	15	61.8	33.1	10.7	22.4	20.2
	20	**52.0**	**27.9**	**10.7**	**17.2**	**20.6**
	25	45.2	24.2	10.7	13.5	20.3
	30	40.0	21.5	10.7	10.8	19.4
	35	36.1	19.3	10.7	8.6	18.1
5 Year	15	83.6	44.8	10.7	34.1	30.7
	20	70.3	37.7	10.7	27.0	32.4
	25	**60.9**	**32.7**	**10.7**	**22.0**	**32.9**
	30	53.9	28.9	10.7	18.2	32.8
	35	48.5	26.0	10.7	15.3	32.1
	40	44.2	23.7	10.7	13.0	31.2
100 Year	40	75.1	44.8	10.7	34.1	81.8
	45	69.1	41.2	10.7	30.4	82.2
	50	**64.0**	**38.1**	**10.7**	**27.4**	**82.2**
	55	59.6	35.5	10.7	24.8	81.9
	60	55.9	33.3	10.7	22.6	81.4
	65	52.6	31.4	10.7	20.7	80.6
100 Year + 20%	45	82.9	49.4	10.7	38.7	104.4
	50	76.7	45.8	10.7	35.0	105.1
	55	**71.5**	**42.7**	**10.7**	**31.9**	**105.4**
	60	67.1	40.0	10.7	29.3	105.3
	65	63.2	37.7	10.7	26.9	105.1
	70	59.7	35.6	10.7	24.9	104.6

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA

Storage Volume Calculations - Area R3 (PHASE 3 ROOF)

Area ID =	R3	Roof Drain Release Rate (L/s/ha) =	50.0
Area (ha) =	0.12	2-Year Release Rate (L/s) =	5.9
C =	0.90	5-Year Release Rate (L/s) =	5.9
C (100 YR) =	1.00	100-Year Release Rate (L/s) =	5.9
		100-Year + 20% Release Rate (L/s) =	5.9
		Available Storage Volume (m^3) =	58.9

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)	Release Rate (L/s)	Net Runoff to be Stored (L/s)	Storage Required (m^3)
2 Year	10	76.8	22.6	5.9	16.7	10.0
	15	61.8	18.2	5.9	12.3	11.1
	20	**52.0**	**15.3**	**5.9**	**9.4**	**11.3**
	25	45.2	13.3	5.9	7.4	11.1
	30	40.0	11.8	5.9	5.9	10.6
	35	36.1	10.6	5.9	4.7	9.9
5 Year	15	83.6	24.6	5.9	18.7	16.9
	20	70.3	20.7	5.9	14.8	17.8
	25	**60.9**	**17.9**	**5.9**	**12.1**	**18.1**
	30	53.9	15.9	5.9	10.0	18.0
	35	48.5	14.3	5.9	8.4	17.7
	40	44.2	13.0	5.9	7.1	17.1
100 Year	40	75.1	24.6	5.9	18.7	44.9
	45	69.1	22.6	5.9	16.7	45.2
	50	**64.0**	**20.9**	**5.9**	**15.1**	**45.2**
	55	59.6	19.5	5.9	13.6	45.0
	60	55.9	18.3	5.9	12.4	44.7
	65	52.6	17.2	5.9	11.4	44.3
100 Year + 20%	45	82.9	27.1	5.9	21.2	57.4
	50	76.7	25.1	5.9	19.2	57.7
	55	**71.5**	**23.4**	**5.9**	**17.5**	**57.9**
	60	67.1	22.0	5.9	16.1	57.9
	65	63.2	20.7	5.9	14.8	57.7
	70	59.7	19.6	5.9	13.7	57.4

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA

Storage Volume Calculations - Area STM1 (CB 1)

Area ID =	STM1	2-Year Release Rate (L/s) =	UNCONTROLLED
Area (ha) =	0.12	5-Year Release Rate (L/s) =	UNCONTROLLED
C =	0.81	100-Year Release Rate (L/s) =	UNCONTROLLED
C (100 YR) =	0.91	100-Year + 20% Release Rate (L/s) =	UNCONTROLLED
		Available Surface Storage Volume (m^3) =	3.6

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)	Release Rate (L/s)	Net Runoff to be Stored (L/s)	Storage Required (m^3)
2 Year	10	76.8	21.3	21.3	0.0	0.0
	15	61.8	17.1	17.1	0.0	0.0
	20	52.0	14.4	14.4	0.0	0.0
	25	45.2	12.5	12.5	0.0	0.0
	30	40.0	11.1	11.1	0.0	0.0
	35	36.1	10.0	10.0	0.0	0.0
5 Year	10	104.2	28.9	28.9	0.0	0.0
	15	83.6	23.2	23.2	0.0	0.0
	20	70.3	19.5	19.5	0.0	0.0
	25	60.9	16.9	16.9	0.0	0.0
	30	53.9	14.9	14.9	0.0	0.0
	35	48.5	13.4	13.4	0.0	0.0
100 Year	10	178.6	55.2	55.2	0.0	0.0
	15	142.9	44.2	44.2	0.0	0.0
	20	120.0	37.1	37.1	0.0	0.0
	25	103.8	32.1	32.1	0.0	0.0
	30	91.9	28.4	28.4	0.0	0.0
	35	82.6	25.5	25.5	0.0	0.0
100 Year + 20%	10	214.3	66.2	66.2	0.0	0.0
	15	171.5	53.0	53.0	0.0	0.0
	20	143.9	44.5	44.5	0.0	0.0
	25	124.6	38.5	38.5	0.0	0.0
	30	110.2	34.1	34.1	0.0	0.0
	35	99.1	30.6	30.6	0.0	0.0

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA

Storage Volume Calculations - Area STM2 (CB 2)

Area ID =	STM2	2-Year Release Rate (L/s) =	UNCONTROLLED
Area (ha) =	0.10	5-Year Release Rate (L/s) =	UNCONTROLLED
C =	0.72	100-Year Release Rate (L/s) =	UNCONTROLLED
C (100 YR) =	0.80	100-Year + 20% Release Rate (L/s) =	UNCONTROLLED
		Available Storage Volume (m^3) =	21.1

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)	Release Rate (L/s)	Net Runoff to be Stored (L/s)	Storage Required (m^3)
2 Year	10	76.8	15.2	15.2	0.0	0.0
	15	61.8	12.2	12.2	0.0	0.0
	20	52.0	10.3	10.3	0.0	0.0
	25	45.2	8.9	8.9	0.0	0.0
	30	40.0	7.9	7.9	0.0	0.0
	35	36.1	7.1	7.1	0.0	0.0
5 Year	10	104.2	20.6	20.6	0.0	0.0
	15	83.6	16.5	16.5	0.0	0.0
	20	70.3	13.9	13.9	0.0	0.0
	25	60.9	12.0	12.0	0.0	0.0
	30	53.9	10.7	10.7	0.0	0.0
	35	48.5	9.6	9.6	0.0	0.0
100 Year	10	178.6	39.5	39.5	0.0	0.0
	15	142.9	31.6	31.6	0.0	0.0
	20	120.0	26.6	26.6	0.0	0.0
	25	103.8	23.0	23.0	0.0	0.0
	30	91.9	20.3	20.3	0.0	0.0
	35	82.6	18.3	18.3	0.0	0.0
100 Year + 20%	10	214.3	47.5	47.5	0.0	0.0
	15	171.5	38.0	38.0	0.0	0.0
	20	143.9	31.9	31.9	0.0	0.0
	25	124.6	27.6	27.6	0.0	0.0
	30	110.2	24.4	24.4	0.0	0.0
	35	99.1	21.9	21.9	0.0	0.0

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA

Storage Volume Calculations - Area STM3 (CB 3)

Area ID =	STM3	2-Year Release Rate (L/s) =	UNCONTROLLED
Area (ha) =	0.03	5-Year Release Rate (L/s) =	UNCONTROLLED
C =	0.90	100-Year Release Rate (L/s) =	UNCONTROLLED
C (100 YR) =	1.00	100-Year + 20% Release Rate (L/s) =	UNCONTROLLED
		Available Storage Volume (m3) =	5.1

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)	Release Rate (L/s)	Net Runoff to be Stored (L/s)	Storage Required (m3)
2 Year	10	76.8	4.8	4.8	0.0	0.0
	15	61.8	3.9	3.9	0.0	0.0
	20	52.0	3.3	3.3	0.0	0.0
	25	45.2	2.8	2.8	0.0	0.0
	30	40.0	2.5	2.5	0.0	0.0
	35	36.1	2.3	2.3	0.0	0.0
5 Year	10	104.2	6.5	6.5	0.0	0.0
	15	83.6	5.2	5.2	0.0	0.0
	20	70.3	4.4	4.4	0.0	0.0
	25	60.9	3.8	3.8	0.0	0.0
	30	53.9	3.4	3.4	0.0	0.0
	35	48.5	3.0	3.0	0.0	0.0
100 Year	10	178.6	12.4	12.4	0.0	0.0
	15	142.9	9.9	9.9	0.0	0.0
	20	120.0	8.3	8.3	0.0	0.0
	25	103.8	7.2	7.2	0.0	0.0
	30	91.9	6.4	6.4	0.0	0.0
	35	82.6	5.7	5.7	0.0	0.0
100 Year + 20%	10	214.3	14.9	14.9	0.0	0.0
	15	171.5	11.9	11.9	0.0	0.0
	20	143.9	10.0	10.0	0.0	0.0
	25	124.6	8.7	8.7	0.0	0.0
	30	110.2	7.7	7.7	0.0	0.0
	35	99.1	6.9	6.9	0.0	0.0

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA

Storage Volume Calculations - Area STM2-1 (Temp. DICB 1)

Area ID =	STM2-1	2-Year Release Rate (L/s) =	131.6
Area (ha) =	0.79	5-Year Release Rate (L/s) =	131.6
C =	0.22	100-Year Release Rate (L/s) =	131.6
C (100 YR) =	0.27	100-Year + 20% Release Rate (L/s) =	131.6
		Available Storage Volume (m^3) =	

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)	Release Rate (L/s)	Net Runoff to be Stored (L/s)	Storage Required (m^3)
2 Year	10	76.8	37.0	131.6	-94.6	-56.8
	15	61.8	29.7	131.6	-101.8	-91.7
	20	52.0	25.0	131.6	-106.5	-127.8
	25	45.2	21.7	131.6	-109.8	-164.8
	30	40.0	19.3	131.6	-112.3	-202.2
	35	36.1	17.4	131.6	-114.2	-239.9
5 Year	10	104.2	50.2	131.6	-81.4	-48.9
	15	83.6	40.2	131.6	-91.4	-82.2
	20	70.3	33.8	131.6	-97.8	-117.3
	25	60.9	29.3	131.6	-102.3	-153.4
	30	53.9	26.0	131.6	-105.6	-190.1
	35	48.5	23.4	131.6	-108.2	-227.3
100 Year	10	178.6	106.1	131.6	-25.5	-15.3
	15	142.9	84.9	131.6	-46.7	-42.0
	20	120.0	71.3	131.6	-60.3	-72.4
	25	103.8	61.7	131.6	-69.9	-104.8
	30	91.9	54.6	131.6	-77.0	-138.6
	35	82.6	49.1	131.6	-82.5	-173.3
100 Year + 20%	10	214.3	127.3	131.6	-4.3	-2.6
	15	171.5	101.9	131.6	-29.7	-26.7
	20	143.9	85.5	131.6	-46.1	-55.3
	25	124.6	74.0	131.6	-57.5	-86.3
	30	110.2	65.5	131.6	-66.1	-118.9
	35	99.1	58.9	131.6	-72.7	-152.7

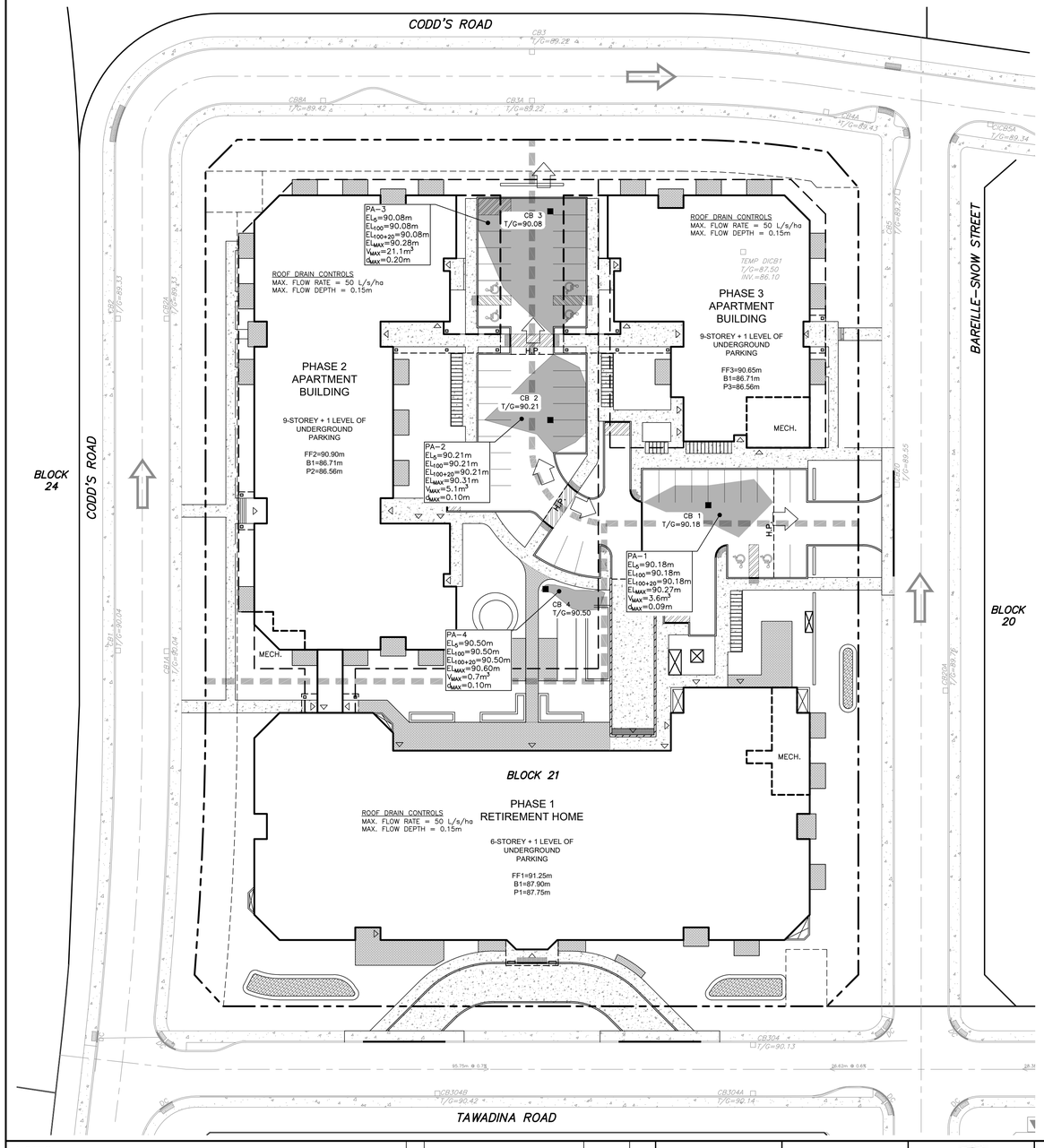
Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA

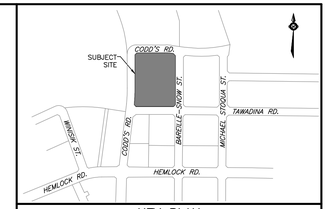
Storage Volume Calculations - Area STM4 (CB 4)

Area ID =	STM4	2-Year Release Rate (L/s) =	UNCONTROLLED
Area (ha) =	0.10	5-Year Release Rate (L/s) =	UNCONTROLLED
C =	0.48	100-Year Release Rate (L/s) =	UNCONTROLLED
C (100 YR) =	0.55	100-Year + 20% Release Rate (L/s) =	UNCONTROLLED
		Available Storage Volume (m3) =	0.7

Design Event	Time (min)	Rainfall Intensity (mm/hr)	Flow (L/s)	Release Rate (L/s)	Net Runoff to be Stored (L/s)	Storage Required (m3)
2 Year	10	76.8	10.5	10.5	0.0	0.0
	15	61.8	8.5	8.5	0.0	0.0
	20	52.0	7.1	7.1	0.0	0.0
	25	45.2	6.2	6.2	0.0	0.0
	30	40.0	5.5	5.5	0.0	0.0
	35	36.1	4.9	4.9	0.0	0.0
5 Year	10	104.2	14.3	14.3	0.0	0.0
	15	83.6	11.5	11.5	0.0	0.0
	20	70.3	9.6	9.6	0.0	0.0
	25	60.9	8.4	8.4	0.0	0.0
	30	53.9	7.4	7.4	0.0	0.0
	35	48.5	6.7	6.7	0.0	0.0
100 Year	10	178.6	28.1	28.1	0.0	0.0
	15	142.9	22.5	22.5	0.0	0.0
	20	120.0	18.9	18.9	0.0	0.0
	25	103.8	16.3	16.3	0.0	0.0
	30	91.9	14.4	14.4	0.0	0.0
	35	82.6	13.0	13.0	0.0	0.0
100 Year + 20%	10	214.3	33.7	33.7	0.0	0.0
	15	171.5	27.0	27.0	0.0	0.0
	20	143.9	22.6	22.6	0.0	0.0
	25	124.6	19.6	19.6	0.0	0.0
	30	110.2	17.3	17.3	0.0	0.0
	35	99.1	15.6	15.6	0.0	0.0

Notes:
1. Rainfall intensity calculated using City of Ottawa IDF curve equations.
2. Provided storage volumes have been calculated using Civil3D by Autodesk.
3. Flow calculated using the Rational Method. Q=2.78CiA





KEY PLAN

N

LEGEND

- PROPERTY BOUNDARY
- PHASING LIMIT
- EASEMENT
- EXISTING CATCH BASIN
- CATCH BASIN
- BUILDING ENTRANCE
- 100-YR PONDING LIMIT
- H.P. HIGH POINT
- MAJOR OVERLAND FLOW ROUTE
- EXTERNAL MAJOR OVERLAND FLOW ROUTE
- MAX. STATIC PONDING LIMIT

PA-1	PONDING AREA ID
EL_5	5-YEAR PONDING ELEVATION
EL_{100}	100-YEAR PONDING ELEVATION
EL_{100+20}	100-YEAR + 20% PONDING ELEVATION
EL_{MAX}	MAXIMUM STATIC PONDING ELEVATION
V_{MAX}	MAXIMUM AVAILABLE SURFACE STORAGE
d_{MAX}	MAXIMUM STATIC PONDING DEPTH

NOT FOR CONSTRUCTION

NOTES

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.

PROPERTY BOUNDARIES ARE DERIVED FROM TOPOGRAPHIC PLAN OF PART OF WATER RIDGE DEVELOPMENT BEING SHOWN AS BLOCK 21 ON DRAFT M-PLAN LOCATED NORTH OF TAWADINA ROAD AND EAST OF CODD'S ROAD, GEOGRAPHIC TOWNSHIP OF GLOUCESTER, CITY OF OTTAWA, MONUMENT-URSO SURVEYING LTD. ELEVATIONS ARE GEODETIC AND REFERRED TO THE CANADIAN GEODETIC VERTICAL DATUM (CGVD28:78).

NO.	REVISION DESCRIPTION	DATE	BY
2	REVISED PER CLC COMMENTS	27/02/26	BLM
1	ISSUED FOR REVIEW	16/01/26	BLM

SCALE
0 4m 8m 16m
HORIZONTAL 1:400

LICENSED PROFESSIONAL ENGINEER
B.L. MACKECHNIE
100199554
27 Feb. '26
PROVINCE OF ONTARIO

Robinson Land Development
2936 Baseline Road
Suite 200
Ottawa, ON K2H 1B3
(613) 592-6060 rcii.com

DESIGN	BLM
CHECKED	SG
DRAWN	BLM
CHECKED	SG
APPROVED	BLM

WATERIDGE LIFESTYLES LTD.

WATERIDGE VILLAGE
BLOCK 21
CITY OF OTTAWA, ON

PONDING AREA PLAN

PROJECT No.	25117
SURVEY	MONUMENT-URSO SURVEYING LTD.
DATED	FEBRUARY 2026
DWG. No:	25117-PA1

Appendix G

Cambium Report
- Bedrock Excerpt
- Groundwater Excerpt
- Site Location Plan
- Boreholes

GreenStorm Product Manual
GreenStorm Maintenance Manual
GreenStorm Storage Volume Calculations

Paterson Report
- Infiltration Rates
- Infiltration Testing Location Plan
- Groundwater Levels

PurePave Brochure
PurePave Specifications

Table 3.4.1

Soil Amendment Options

LID Drainage Area Plan & Details (DWG. 25117-LID1)

silt in borehole BH104-25. Cobbles and boulders were noted in the native material in boreholes BH102-25 and BH103-25.

The native material was encountered at depths ranging from 0.8 to 2.3 mbgs and extended to depths ranging from 1.3 to 2.8 mbgs. The native material has a thickness measured 1.8 m in BH102-25 and 0.5 m in boreholes BH103-25 and BH104-25.

SPT N values measured within the native soils range from 10 to over 50 blows per 305 mm of penetration, increasing with depth, indicative of a compact to very dense relative density.

4.3 Bedrock

All boreholes were terminated on within the underlying bedrock at the site. The validity of the bedrock was confirmed by rock coring and terminated at target depths of about 6.1 mbgs.

The bedrock is limestone of the Gull River Formation, the rock in this area is generally grey, thinly to medium bedded, slightly decomposed, moderately fractured, and of very poor to good quality. The Rock Core Logs and Rock Core Photos are provided in Appendix B and Appendix C, respectively.

The boreholes advanced by Others within or near the subject property all encountered practical refusal. Based on the consistency of the refusal depths, it is likely that that refusal was encountered on the underlying bedrock. Refusal depths in the area range from 0.4 to 3.1 mbgs. The subsurface soils do contain cobbles and boulders and therefore refusal may have also been encountered on a boulder within the overburden.

Table 3 presents the depths and elevations of (presumed) bedrock in all boreholes. The relevant boreholes completed by Others are also summarized in the table.

Table 3 Depths and Elevations of the Bedrock

Borehole	Surface Elevation (mASL)	Bedrock or Refusal Depth/Elevation (mbgs / mASL)
BH101-25	88.8	2.0 / 86.8
BH102-25	88.7	2.6 / 86.1
BH103-25	88.6	2.8 / 85.8
BH104-25	89.9	1.3 / 88.6
Boreholes Advanced by Others		
BH1-22	87.9	1.8 / 86.1
BH2-22	89.2	1.3 / 87.9
BH3-22	88.4	1.1 / 87.3
BH4-22	89.2	2.1 / 87.1
BH8-22	88.8	2.3 / 86.6
BH27-22	89.7	0.4 / 89.3
BH59-22	88.0	2.0 / 86.0
BH61-22	89.8	2.5 / 87.2
BH1-23	89.0	2.2 / 86.8
BH2-23	89.2	3.1 / 86.2
BH14-27	90.5	1.8 / 88.7

It should be noted that site grades have changed since the time of completion of the geotechnical investigation report by Others. Surface elevations and depth to refusal noted will likely differ, however refusal elevations encountered at each location should be the similar. As previously discussed, refusal may have also occurred on boulders within the overburden and do not necessarily indicate bedrock. This is likely the case for BH27-22.

4.4 Groundwater

No groundwater was encountered in the boreholes following drilling. Stabilized groundwater readings were measured in following drilling. The following table provides a summary of the groundwater readings within the wells installed in boreholes BH101-25 through BH104-25.

Table 4 Depths and Elevations of Groundwater

Borehole	Surface Elevation (mASL)	Depth/Elevation of (mbgs/mASL)
		December 16, 2025
BH101-25	88.8	4.3 / 84.5
BH102-25	88.7	2.2 / 86.5
BH103-25	88.6	3.2 / 85.4
BH104-25	89.9	4.6 / 85.3

Groundwater levels at the Site appear to vary between the borehole locations and will fluctuate on a seasonal basis and in response to significant precipitation or snowmelt events. Groundwater levels are generally within or just above the bedrock depths at about 85 mASL ±1.5 m.

4.5 Chemical Analysis

One sample of the native soils was submitted to a qualified third-party laboratory for chemical corrosivity analysis. The laboratory results and certificate of analysis are presented in Appendix E. The sample was analysed for chloride, sulphate, pH, resistivity, redox potential, and sulphide concentrations. The submitted sample was taken from 1.5 to 2.3 mbgs from BH102-25.

To determine the potential for corrosion, the laboratory results were compared to the ANSI/AWWA corrosivity rating system, as shown in Table 5. Based on the total points scored, the soil is determined to be not corrosive.



GEOTECHNICAL INVESTIGATION

WATERIDGE LIFESTYLES LTD.
Block 21 - Wateridge Village
Ottawa, Ontario

LEGEND

- Benchmark
- Borehole
- Boreholes by Others
- Proposed Road
- Site (approximate)
- Subject Property (approximate)

Notes:
- Aerial imagery from the Digital Raster Acquisition Project Eastern Ontario (DRAPE) 2004. Source: Ontario Ministry of Natural Resources and Forestry.
- © Copyright: 2004 Kings Printer of Ontario. All Rights Reserved.
- This document contains information licensed under the Open Government Licence – Ontario.
- Distances on this plan are in metres and can be converted to feet by dividing by 0.3048.
- Cambium Inc. makes every effort to ensure this map is free from errors but cannot be held responsible for any damages due to error or omissions. This map should not be used for navigation or legal purposes. It is intended for general reference use only.

CAMBIUM
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www.cambium-inc.com

SITE LOCATION PLAN

Project No.: 24896.001	Date: December 2025
Scale: 1:1,500	Projection: NAD 1983 UTM Zone 18N
Created by: CC	Checked by: BV
Figure: 2	

CAMBIUM

Client:	Wateridge Lifestyles Ltd.	**Project Name:**	Wateridge Lifestyles Block 21	**Log of Borehole:**	BH101-25
Contractor:	Marathon Underground	**Method:**	Track Mounted Hollow Stem Auger	Page:	1 of 1
Project No.:	24896-001	**Elevation:**	88.80 mASL	**Date Completed:**	Dec. 8, 2025
Location:	Block 21 Hemlock Road, Ottawa ON	**UTM:**	18T **N:** 5033762.49 **E:** 450486.51		

DRAFT

Elevation (m)	Depth	Description	Elevation / Depth	Number	Type	% Recovery	SPT (N)	Atterberg Limits (%) LL PL PI 25 50 75 / % Moisture 25 50 75	Shear Strength Cu, kPa nat V. rem V. 20 40 60 80 / SPT (N) 20 40 60 80	Well Installation	Log Notes
88.8	0	**FILL:** (SM) SILTY SAND: dark brown, with rootlets and plastic debris; non-cohesive, moist, loose		1	SS	46	5		5	Cap	Borehole caving not observed. Groundwater not encountered. Standing water not observed.
88.3	0.5										
87.8	1	brown, very dense, with cobbles and boulders		2A	SS	100	54		54		
				2B	SS						
87.3	1.5	dark brown	88.84	3	SS	100	50 / 100 mm		50	Bentonite Plug	
86.8	2	**Limestone:** See rock core logs for details.	1.96							Riser	
86.3	2.5										
85.8	3										
85.3	3.5										
84.8	4										
84.3	4.5										Groundwater measured on Dec. 16, 2025.
83.8	5									Sand Pack	
83.3	5.5									PVC Screen	
82.8	6		82.65							Cap	
		Borehole terminated @ 6.1 mbgs due to target depth achieved.	6.15								
82.3	6.5										
81.8	7										
81.3											

GRAINSIZE DISTRIBUTION: SAMPLE | GRAVEL | SAND | SILT | CLAY

Logged By: RR **Input By:** RR

CAMBIUM

Client:	Wateridge Lifestyles Ltd.	**Project Name:**	Wateridge Lifestyles Block 21	**Log of Borehole:**	BH102-25
Contractor:	Marathon Underground	**Method:**	Track Mounted Hollow Stem Auger	Page:	1 of 1
Project No.:	24896-001	**Elevation:**	88.71 mASL	**Date Completed:**	Dec. 8, 2025
Location:	Block 21 Hemlock Road, Ottawa ON	**UTM:**	18T **N:** 5033746.77 **E:** 450542.86		

Elevation (m)	Depth	Description	Elevation / Depth	Number	Type	% Recovery	SPT (N)	Atterberg Limits (%) LL PL PI 25 50 75 / % Moisture 25 50 75	Shear Strength Cu, kPa nat V. rem V. 20 40 60 80 / SPT (N) 20 40 60 80	Well Installation	Log Notes
88.7	0	**FILL:** (ML) sandy SILT: trace gravel; dark brown, with rootlets; non-cohesive, moist, compact	87.95	1	SS	40	16		16	Cap	ENV: BH102-25_1.5-2.3: Corrosivity, Sulfides, Redox Potential
88.2	0.5										
87.7	1	**(SM) gravelly SILTY SAND:** brown with cobbles and boulders; non-cohesive, moist, compact	0.76	2	SS	50	19		19		
87.2	1.5										
86.7	2	increase in silt content		3	SS	83	23		23	Bentonite Plug	
86.2	2.5	light brown, increase in sand, decrease in silt content	86.09	4	SS	92	50 / 25 mm		50	Riser	Groundwater measured on Dec. 16, 2025.
85.7	3	**Limestone:** See bedrock core logs for details.	2.62								Borehole caving not observed. Groundwater not encountered. Standing water not observed.
85.2	3.5										
84.7	4										
84.2	4.5										
83.7	5									Sand Pack	
83.2	5.5									PVC Screen	
82.7	6		82.56							Cap	
82.2	6.5	Borehole terminated @ 6.1 mbgs due to target depth achieved.	6.15								
81.7	7										
81.2											

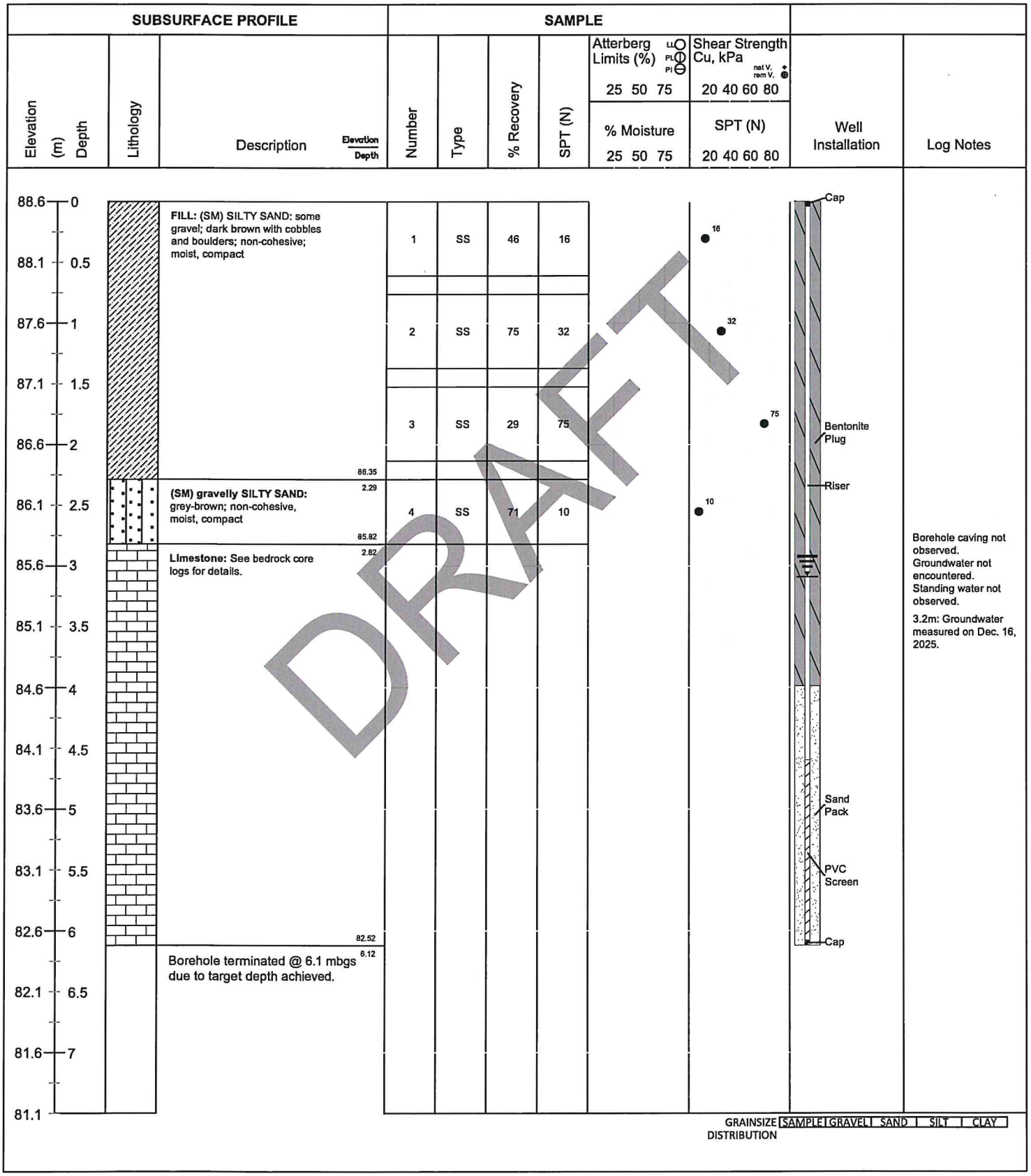
DRAFT

GRAINSIZE DISTRIBUTION: SAMPLE | GRAVEL | SAND | SILT | CLAY

Logged By: RR **Input By:** RR

CAMBIUM

Client:	Wateridge Lifestyles Ltd.	**Project Name:**	Wateridge Lifestyles Block 21	**Log of Borehole:**	BH103-25
Contractor:	Marathon Underground	**Method:**	Track Mounted Hollow Stem Auger	Page:	1 of 1
Project No.:	24896-001	**Elevation:**	88.64 mASL	**Date Completed:**	Dec. 8, 2025
Location:	Block 21 Hemlock Road, Ottawa ON	**UTM:**	18T N: 5033718.24 E: 450472.47		



DRAFT

Logged By: RR **Input By:** RR

CAMBIUM

Client:	Wateridge Lifestyles Ltd.	**Project Name:**	Wateridge Lifestyles Block 21	**Log of Borehole:**	BH104-25
Contractor:	Marathon Underground	**Method:**	Track Mounted Hollow Stem Auger	Page:	1 of 1
Project No.:	24896-001	**Elevation:**	89.91 mASL	**Date Completed:**	Dec. 8, 2025
Location:	Block 21 Hemlock Road, Ottawa ON	**UTM:**	18T **N:** 5033670.21 **E:** 450542.03		

Elevation (m)	Depth	Description	Elevation / Depth	Number	Type	% Recovery	SPT (N)	Atterberg Limits (%) 25 50 75 / % Moisture 25 50 75	Shear Strength Cu, kPa (nat V., rem V.) 20 40 60 80 / SPT (N) 20 40 60 80	Well Installation	Log Notes
89.9	0	**FILL:** (SM+GP) SILTY SAND and GRAVEL: trace clay; dark brown with brick and asphalt debris; non-cohesive, moist, dense	89.15	1	SS	83	34		34	Cap	Borehole caving not observed. Groundwater not encountered. Standing water not observed.
89.4	0.5										
88.9	1	**(SW) SAND and SILT:** trace clay; light brown, with cobbles and boulders; non-cohesive, moist, very dense	0.76 / 88.59	2	SS		50 / 25 mm		50		
88.4	1.5	**Limestone:** See bedrock core logs for details.	1.32							Bentonite Plug	
87.9	2									Riser	
87.4	2.5										
86.9	3										
86.4	3.5										
85.9	4										
85.4	4.5										Groundwater measured on Dec. 16, 2025.
84.9	5									Sand Pack	
84.4	5.5									PVC Screen	
83.9	6		83.76								
83.4	6.5	Borehole terminated @ 6.1 mbgs due to target depth achieved.	6.15							Cap	
82.9	7										
82.4											

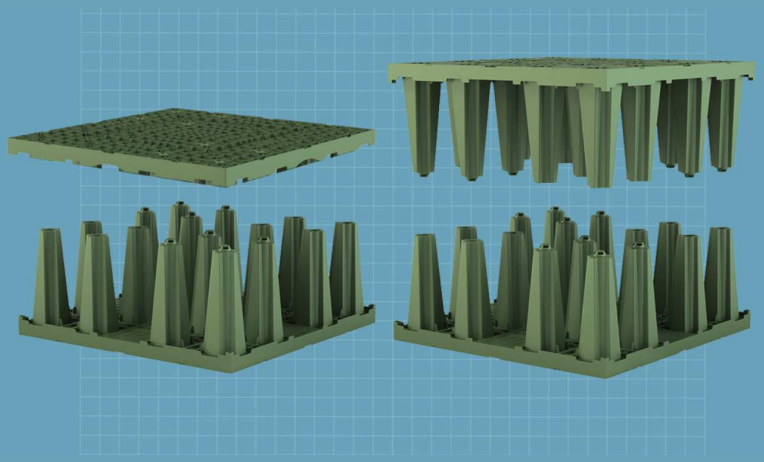
DRAFT

GRAINSIZE DISTRIBUTION: SAMPLE | GRAVEL | SAND | SILT | CLAY

Logged By: RR **Input By:** RR

STORMCON

STORMWATER MANAGEMENT
STORMWATER STORAGE



GREENSTORM ST
GREENSTORM ST-B

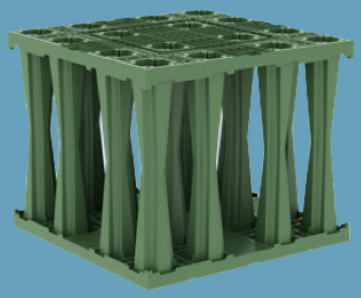
UNDERGROUND STORAGE INFILTRATION MODULES

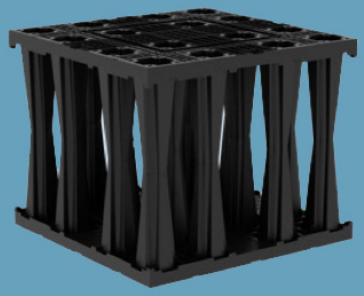
www.stormcon.ca

STORMCON

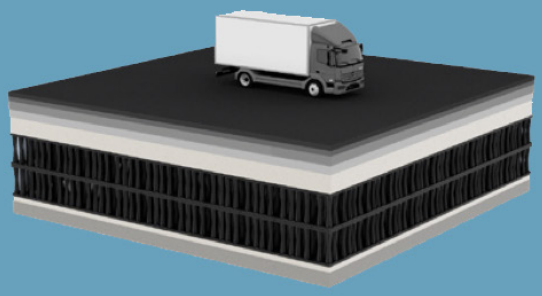
GREENSTORM ST* SYSTEM

Certifcation CSTB









EXTREMELY HIGH VOLUME **VERY EASY TO INSTALL** **100% INSPECTABLE**

NB

In what follows, an illustrative explanation of the GreenStorm system will be given by means of the green module. All properties and advantages also apply to the GreenStorm ST-B system. The systems have been optimised for different installation situations.

In the following, please be sure to pay attention to these signs:

Statements marked with this sign apply to both GreenStorm ST and GreenStorm ST-B.

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STORING STORMWATER WITH STORAGE/ INFILTRATION SYSTEMS

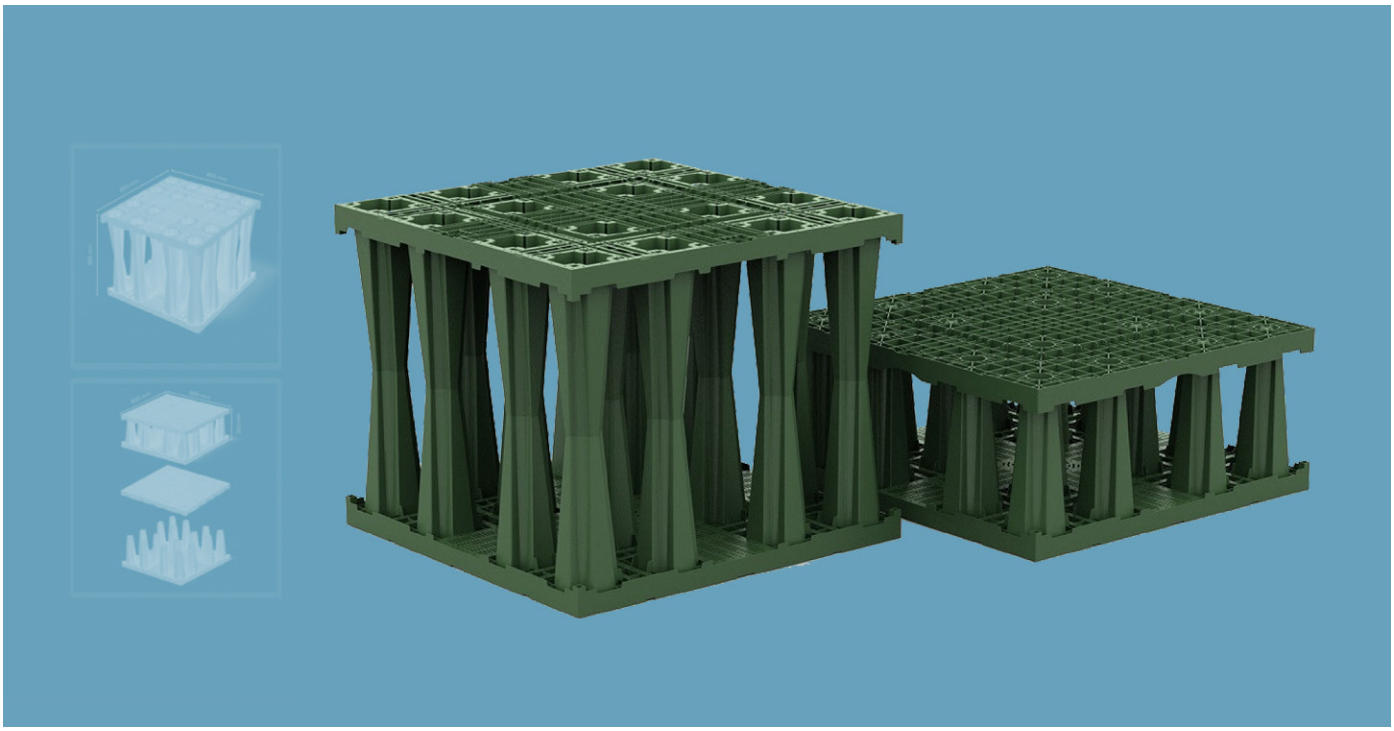
Basic element for underground water storage facilities

GreenStorm ST* are plastic tanks to be installed underground (storage/ infiltration modules) in which water is collected and stored. Storage/infiltration systems temporarily collect stormwater and discharge it later. In addition to infiltration using underdrained swale systems, pipe swales, and gravel swales common in the past, increasingly more storage/infiltration systems are being built today.

The storage space of the storage/ infiltration system consists of numerous GreenStorm ST* modules which can be combined three - dimensionally to form large systems.

The advantage of this method is that the void ratio is up to three times larger in these infiltration systems than in gravel swales which saves space and excavation work.

GreenStorm ST* is a modular system which is characterised by high flexibility, rapid installation and a high level of user-friendliness.



APPLICATION – INFILTRATION

Stormwater infiltration – giving back to nature

Large amounts of stormwater can reduce the performance of wastewater treatment systems. Infiltrating unpolluted stormwater nearby has therefore several advantages.

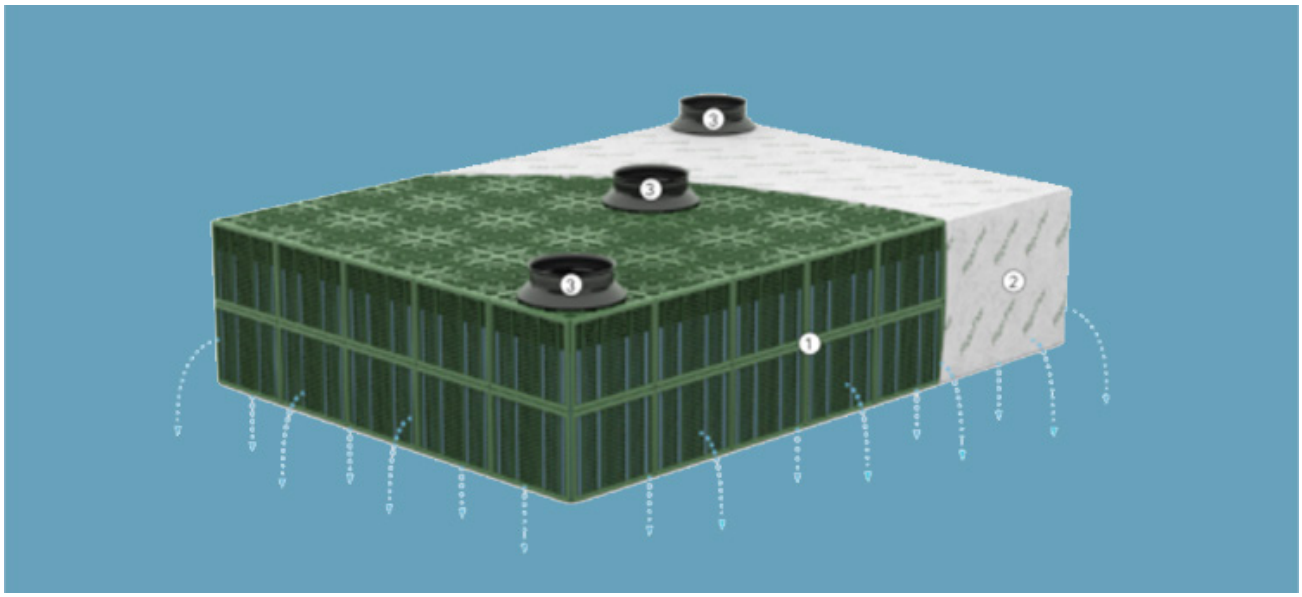
A constant growth in built-up areas and increase in impervious surfaces prevent natural infiltration of stormwater into the soil. Special infiltration systems are used in order to discharge it to the water cycle. In addition to infiltration using pipe swales, increasingly more storage/infiltration systems are being built.

The advantage of this method is that the storage volume of the infiltration system is increased, and space and excavation are saved as compared to gravel swales.

Stormwater is thus returned to the natural water cycle and can contribute to producing new groundwater. Infiltration systems are subject to very high requirements. Consequently, they have become an important component of urban drainage.

Storage/infiltration systems considerably increase the underground storage volume. High-performance storage/infiltration systems can be installed even in confined space.

In particular in urban construction no additional space is required and precious building ground is saved.



1 GreenStorm ST* storage/infiltration module 2 Geotextile 3 QuadrControl ST system shaft

APPLICATION – RETENTION

Retaining stormwater – instead of flooding

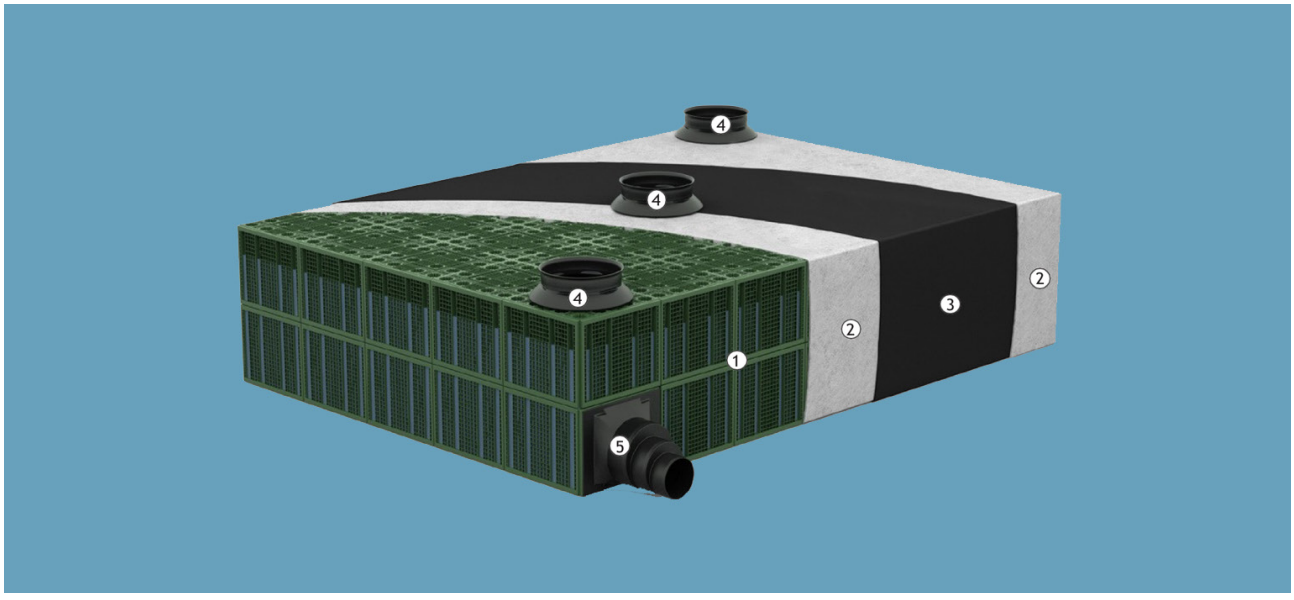
If subsoil conditions are unfavourable to infiltration, the goal is to retain the stormwater and ensure a retarded, timelagged discharge. Exposure to impulsive stress can be eliminated or reduced in sewer networks, wastewater treatment systems and waterbodies.

Stormwater retention systems retard the infiltration of stormwater. They are comprised of a watertight retaining element, an inlet and a vortex outlet.

The stormwater distributes evenly in the system where it can be stored and is then discharged in a controlled manner through throttle shafts. If infiltration must be avoided or to prevent unintended discharge of groundwater or strata water (e.g., in case of contaminated soil), it is necessary to waterproof the retention system.

Stormwater runoff from impervious surfaces that cannot infiltrate naturally leads to peak loads in sewer systems.

Stormwater retention facilities collect stormwater in an underground storage tank and discharge it in a retarded manner but continuously. Their very short construction times make storage/ infiltration systems an inexpensive alternative to conventional retention facilities such as retention channels or underground concrete tanks.



1 GreenStorm ST* storage/infiltration module 2 Geotextile 3 Impermeable membrane
4 QuadroControl ST system shaft 5 Adapter

APPLICATION – HARVESTING / FIRE WATER STORAGE

Retaining stormwater – instead of flooding

Water – particularly drinking water – is a priceless resource which should be treated responsibly and used sparingly. It is therefore wise to collect, store and use stormwater if the water must not necessarily be suitable for drinking purposes, instead of allowing the water to infiltrate into the soil unused or diverting it into the sewer system.

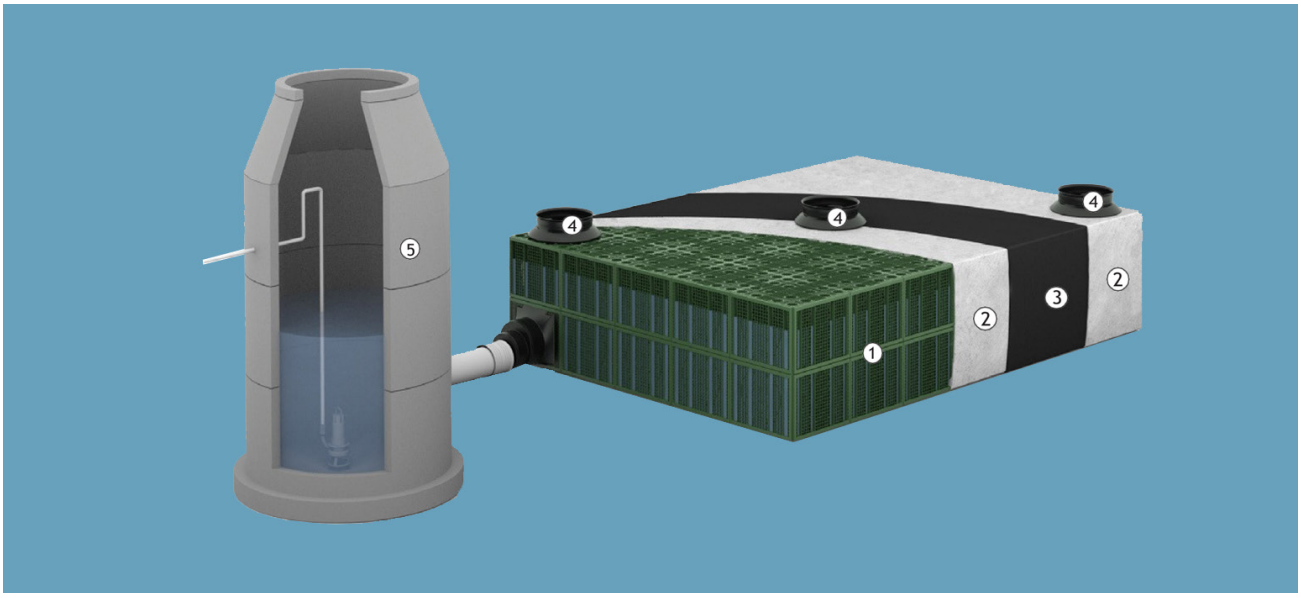
There are many examples: irrigation for greens, car wash, use in toilets, etc.

Water is diverted into a waterproof storage/ infiltration system and can be supplied for use via a pumping system

The use of the GreenStorm inspect system allows for finding solutions that fit project-specific requirements – even under the most difficult conditions such as very tight space, narrow conditions, low cover, high groundwater level, etc.

Stormwater harvesting systems provide waterfor different domestic and industrial water uses. They comprise a watertight retaining element, an inlet with upstream stormwater treatment system, a pump shaft and a system control.

Using GreenStorm ST* for fire water storage also saves water, since system checks can be made in a filled state and water does not have to be pumped out as is the case with conventional concrete tanks.



1 GreenStorm ST* storage/infiltration module 2 Geotextile 3 Impermeable membrane
4 QuadroControl ST system shaft 5 Adapter

APPLICATION – MODULAR DESIGN

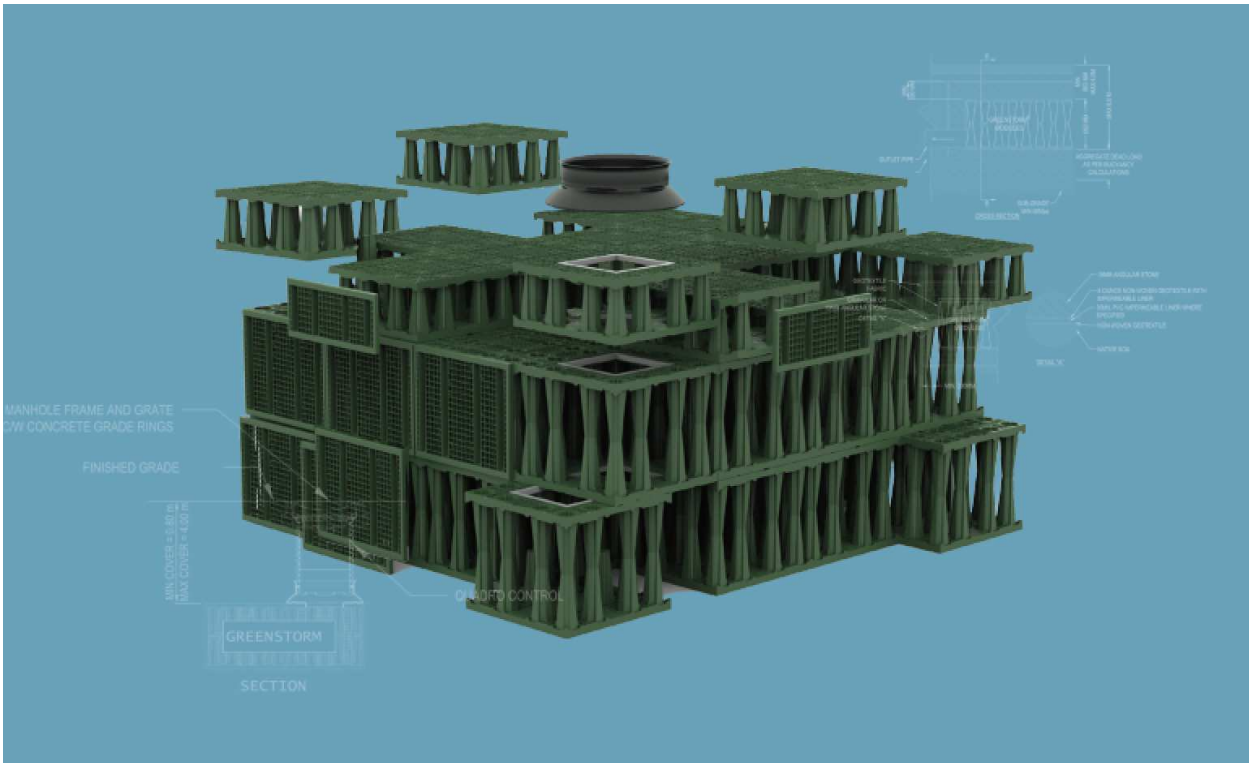
Individual system geometries due to modular design

Sizes (length and width) of GreenStorm Storage/infiltration systems can be freely designed with hardly any limitations. The 31.4961 in cellular block type structure can easily be adapted to fit nearly any layout.

With heights of 25.9843 in (full block) and 350 mm (half block), systems can be built in various sizes to accommodate any single or multi-layer combination. Therefore, the system can very easily be adapted to on-site requirements.

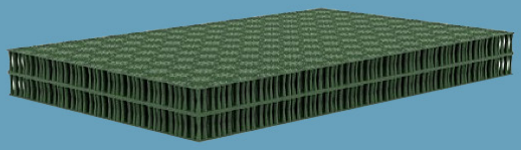
Under high groundwater conditions or low permeability of backfill soil, for example, rather shallow depth systems are to be preferred.

For soils with good permeability, however, high and compact systems are favourable and may be built accordingly. The maximum space available is used.

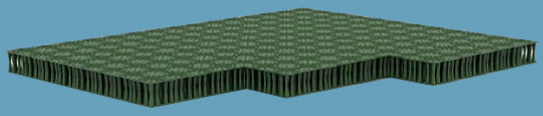


*GreenStorm ST/STB underground infiltration/storage modules *Rigofill ST RigofillST-B

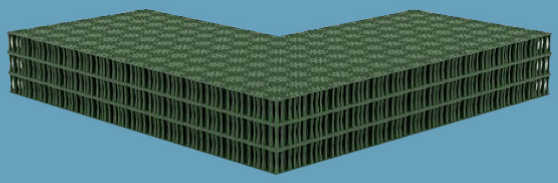
POSSIBLE SYSTEM GEOMETRIES



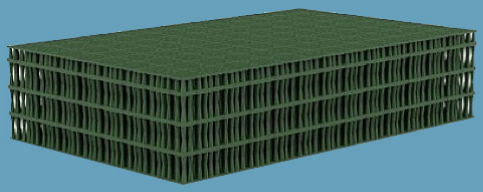
GreenStorm ST*
2 Layer



GreenStorm ST*
1 Layer



GreenStorm ST*
3 Layer



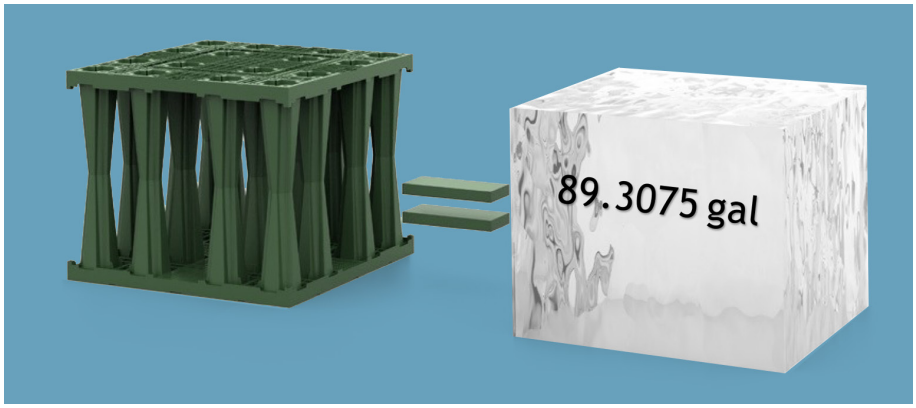
GreenStorm ST*
3 1/2 Layer

STORAGE VOLUME

Extremely high volume

The GreenStorm ST* full block provides a storage volume of 89.3075 gallons with a gross volume of 92.827 gallons. With a storage volume of more than 96 %, it stores three times as much water as gravel swales.

The half block has a height of 13.7795 in and is used if shallow systems are required, e.g, in case of high groundwater levels. With a gross volume of 49.2731 gallons, it offers a storage volume of 46.6335 gallons.

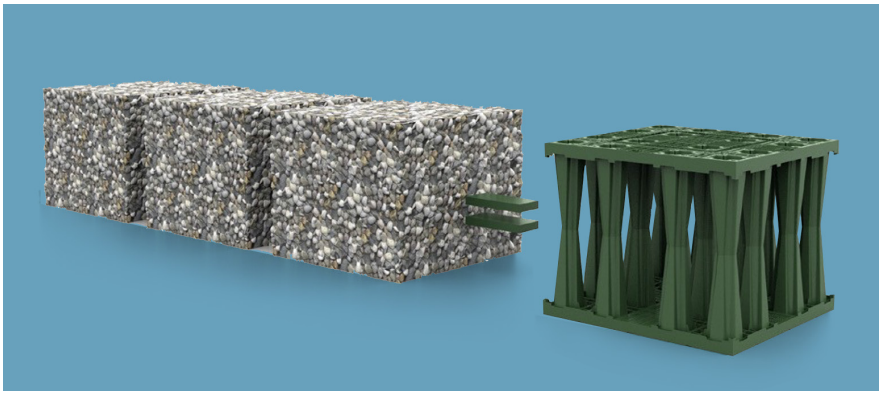


Pipe and gravel swales only use approx. 30 % of their volume to store water. Therefore, three times the required water storage volume must be provided by excavation.

This requires lots of space which is frequently not available in urban areas. GreenStorm ST* storage/infiltration systems save an enormous amount of space and excavation work.

Thus, subsoil storage spaces for stormwater can be built in a very efficient and cost-saving way.

Storage/infiltration systems considerably increase the storage space. High- performance storage/infiltration systems can be installed even in confined space.



*GreenStorm ST/STB underground infitration/storage modules *Rigofill ST RigofillST-B

INSTALLATION

Easy construction site handling

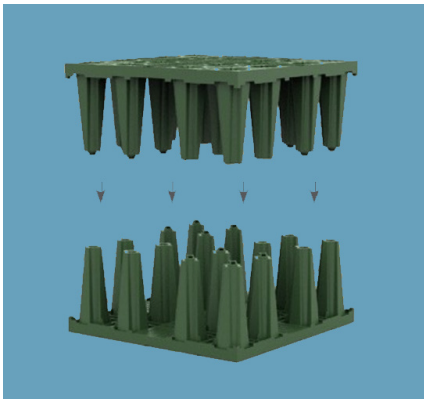
REQUIRES LITTLE SPACE FOR STORAGE.

The storage/infiltration modules are delivered in compact, stacked units with 17 modules per pallet. The easy stackability of the GreenStorm ST* and ST-B modules allows them to be stored even in confined construction space, even outside the excavation pit. This facilitates installation, since no additional storage space must be provided in the excavation pit. Installation is neither impeded nor constrained.



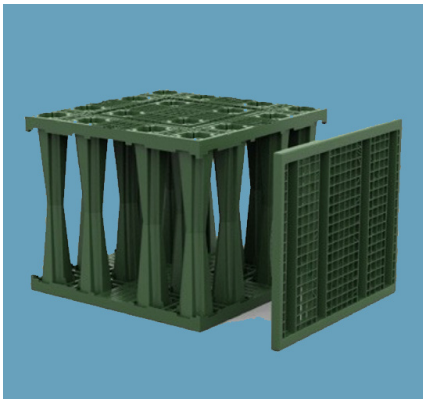
PRE-ASSEMBLY

Depending on the requirements, GreenStorm ST and GreenStorm ST*-B modules can be pre-assembled in no time at all, both outside and inside the excavation pit with just one easy move. Easy high tensile strength snap connections allow for combining two half elements to create a reliable unit in only a short period of time. This can easily be done by one person alone without requiring any additional tools. The moveable parts of the snap connection are recessed and thus protected from damage.



EASY ASSEMBLY

There is no need to adhere to any complex installation pattern – the pre-assembled modules or half blocks can just as well be connected to create a single unit. The low weight allows this to be done by one person only. Connectors establish firm connections between the individual modules. The surface can be accessed immediately without any risk of accidents, since the hole size of the columns is dimensioned respectively (< 3.93701 in).
Thus, no additional covers of column holes are required.





UP TO **88%**
The storage/infiltration modstorage space saved as compared to unstackable storage/infiltration modules

*GreenStorm ST/STB underground infitration/storage modules *Rigofill ST RigofillST-B

INSPECTION

CCTV inspection even when filled

Storage/infiltration systems are durable structures for urban drainage; they must work reliably for decades. Durability and reliability are essential requirements. The best way to inspect the state of a system using state-of-the-art technology is CCTV inspection. Thus, a storage/infiltration system can be inspected excellently – for final acceptance or later. This provides safety for authorities, engineers, construction companies, customers, and operators.

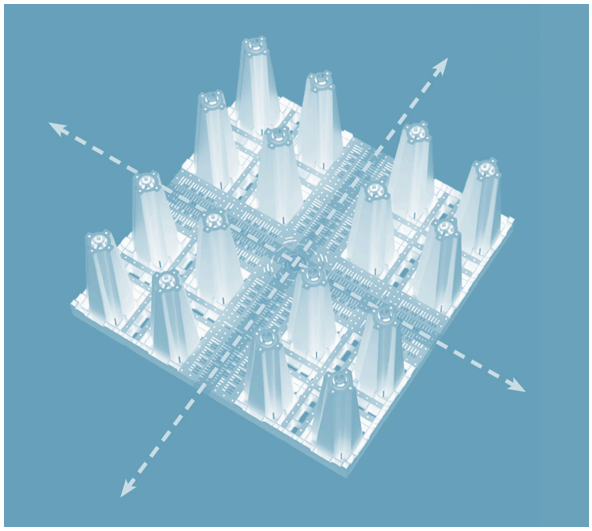
Cross-shaped inspection tunnel

GreenStorm ST* modules have a cross-shaped tunnel which makes the storage/ infiltration system camera-accessible and flushable in two axes and thus in four dimensions.The special and open design of the inspection tunnel allows for an unobstructed view of the entire interior and not only the inspection tunnel.

For example, the statically relevant load-bearing elements, the condition of the geotextile and the entire soil area can be viewed. GreenStorm ST* and GreenStorm ST*-B thus provide excellent options to control the “inner life” of a storage/ infiltration system at any time.

100 %
INSPECTABLE

The ideal, level and vibration-free running surface and the slim column structure allow for an unobstructed view of the entire module volume. The Quadro Control ST shaft for GreenStorm ST*, which can be integrated, allows for easy access of the automotive dolly for both professional final acceptance inspection and flushing technology.



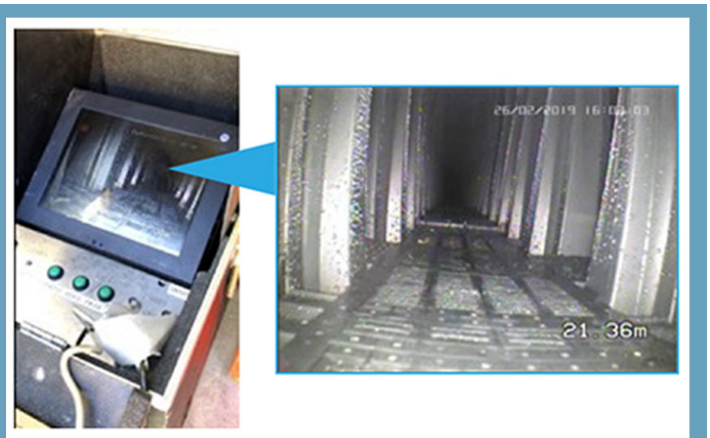
*GreenStorm ST/STB underground infitration/storage modules *Rigofill ST RigofillST-B

INSPECTION

Recommended camera equipment

A standard sewer camera is sufficient for camera inspection. A rotatable and height-adjustable camera head allows for an optimal view of the lateral soil area, a controllable carriage ensures a centred positioning, and high- performance optics together with lighting allow for a perfect picture.





Recommended: tender invitation for final acceptance inspection

Final acceptance of sewers using camera inspection has long since become a matter of course in sewer construction.
Also in the construction of storage/ infiltration systems, the final acceptance inspection is important! Planning engineers should absolutely include this in their tender documents.



Certified CCTV accessibility

GreenStorm ST* has been designed for the use of modern CCTV inspection technology. The inspectability of the GreenStorm ST* and QuadroControl ST system unit has been tested and confirmed by leading manufacturers of pipe CCTV inspection technology.

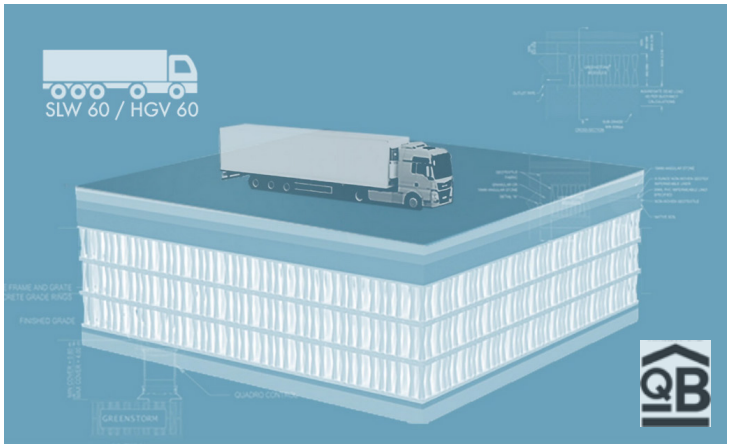


LOADING

Heavy traffic

Storage/infiltration systems are subsoil structures and must have sufficient load-carrying capacity against impacting soil and traffic loads.

GreenStorm ST* storage/ infiltration sys- tems are extremely strong and have been designed with various applications in mind: While GreenStorm ST* has been designed in particular for traffic loads of up to 13 tons axle load.



High resistance

When installed under traffic areas, relevant national guidelines must be observed.
To build the planum for the road construction, an upper levelling layer must be provided.

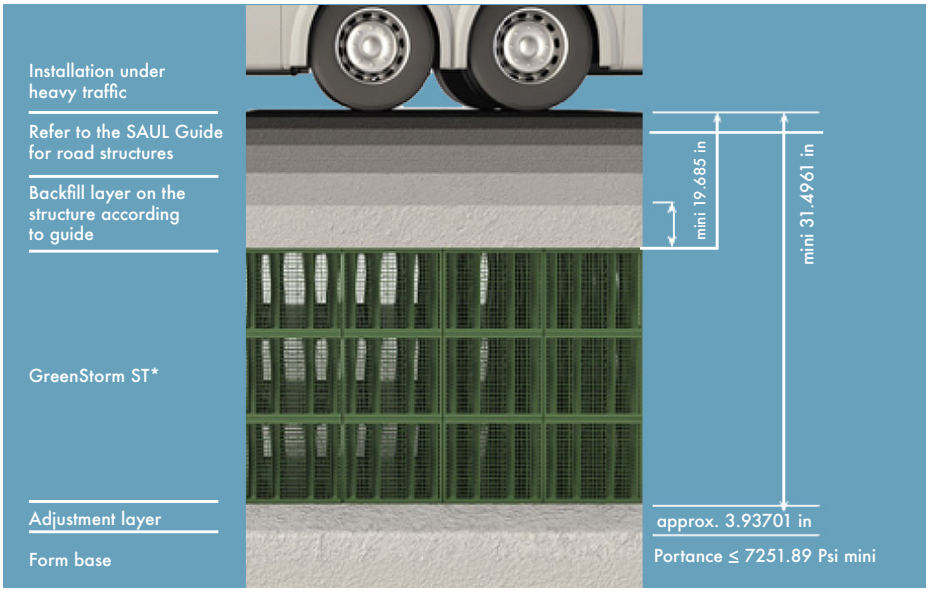
It should preferably be built as a gravel sub-base with a thickness of at least 13.7795 in, other materials usually result in larger covers.

Generally, a uniform modulus of deformation EV2 ≥ 45 MN/m² must be proven on the planum.

Installation under traffic area

The subsoil structures must have sufficient load-carrying capacity against impacting soil and traffic loads to ensure reliable stability.

This is why GreenStorm ST* is suitable for traffic loads of up to 15 tons axle load (20 tons possible, please refer to our technical department).





With conventional installation parameters*, depths of cover of DC 157.48 in and soil depths DSof 236.22 in are possible for infiltration systems. A project-specific stability analysis can be prepared by STORMCON.

*specific weight of soil 18 kN/m3 Mean soil temperature max. 73.4°F, 236.22 in. soil depth, = 0.3, 4-layer

LOADING

Light traffic, green spaces

The special material composition of GreenStorm ST-B* makes it ideal for surfaces with less traffic such as sports fields or green spaces. STORMCON storage/ infiltration systems have been designed for a minimum lifetime of 50 years.



Installation under traffic areas

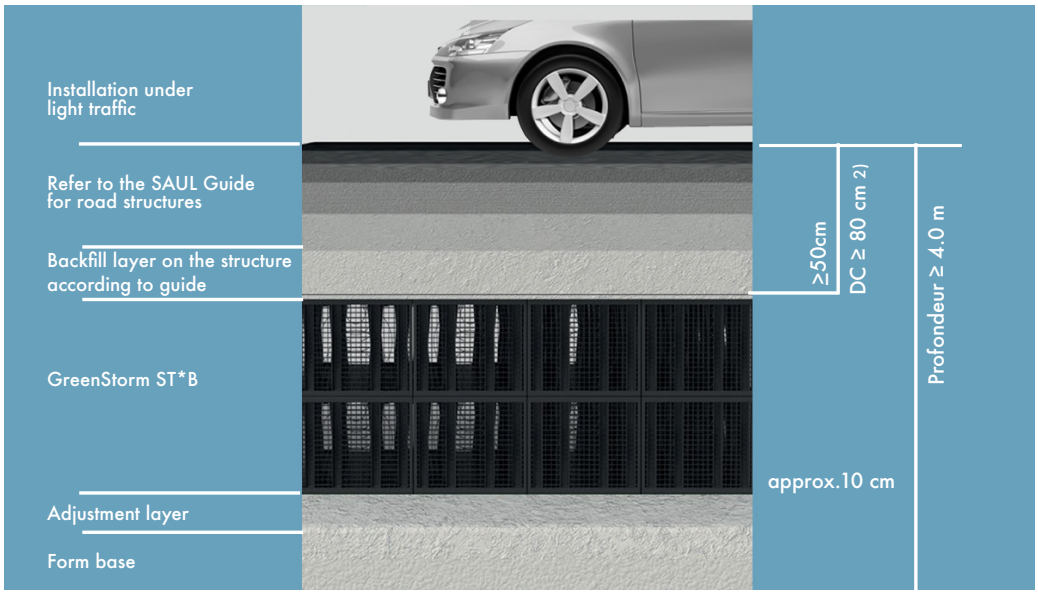
When installed under traffic areas, relevant national guidelines must be observed.
To build the planum for the road construction, an upper levelling layer must be provided.

It should preferably be built as a gravel sub-base with a thickness of at least 13.7795 in, other materials usually result in larger covers.

Generally, a uniform modulus of deformation EV2 ≥ 45 MN/m² must be proven on the planum.

Standard installation under a traffic area

The GreenStorm ST-B* storage/infiltration module is suitable for traffic loads of up to 10 tons axle load and therefore also suitable for the construction of systems under parks, greens and car parks.



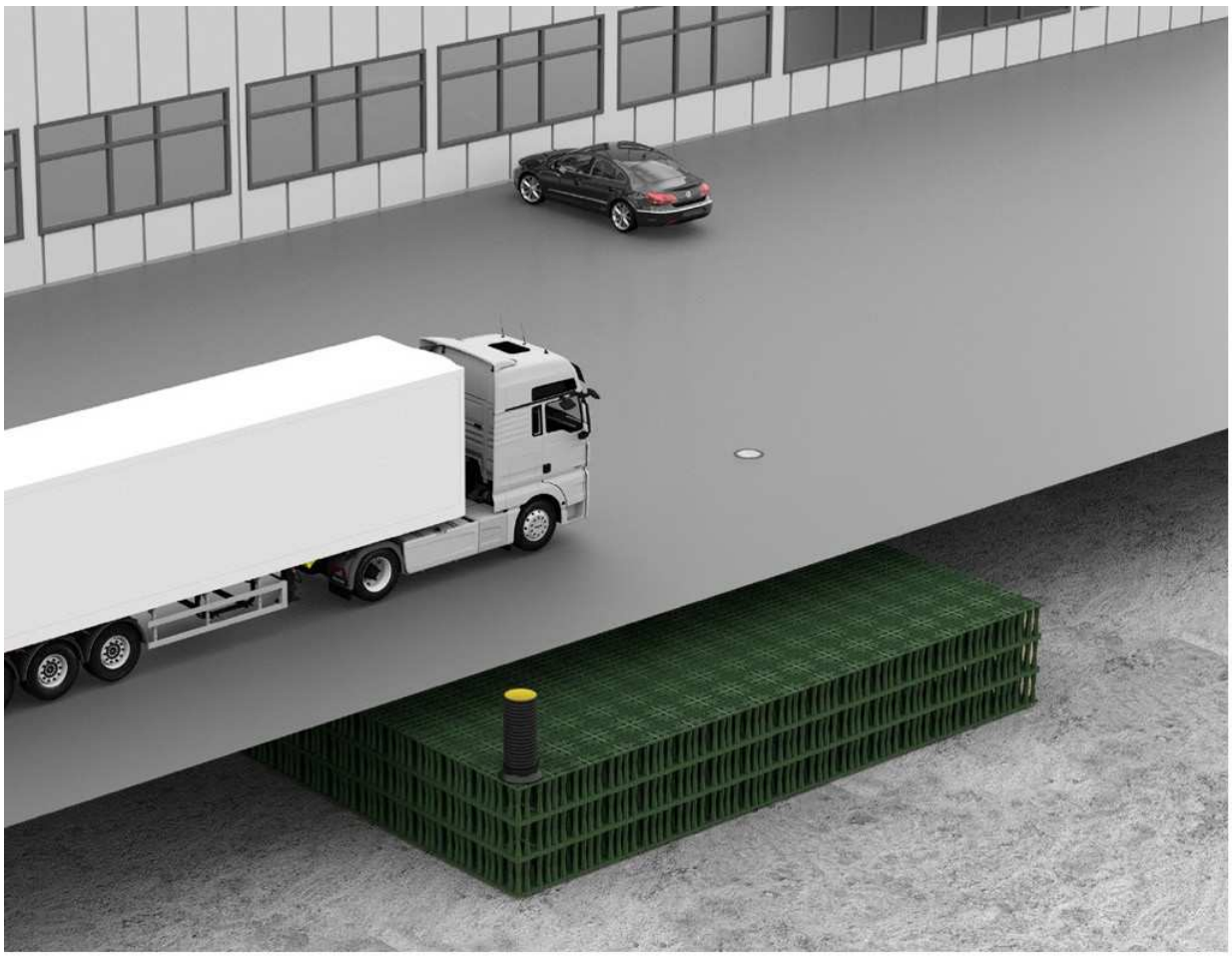
With conventional installation parameters*, depths of cover up to 2.5 m and soil depths up to 4m are possible for infiltration systems. A project-specific stability analysiscan be prepared by STORMCON.

*Light traffic, specific weight of soil 18 kN/m3
Mean soil temperature max. 23 °C, = 0.3

*GreenStorm ST/STB underground infitration/storage modules *Rigofill ST RigofillST-B

LOADING

Heavy traffic example GreenStorm ST*

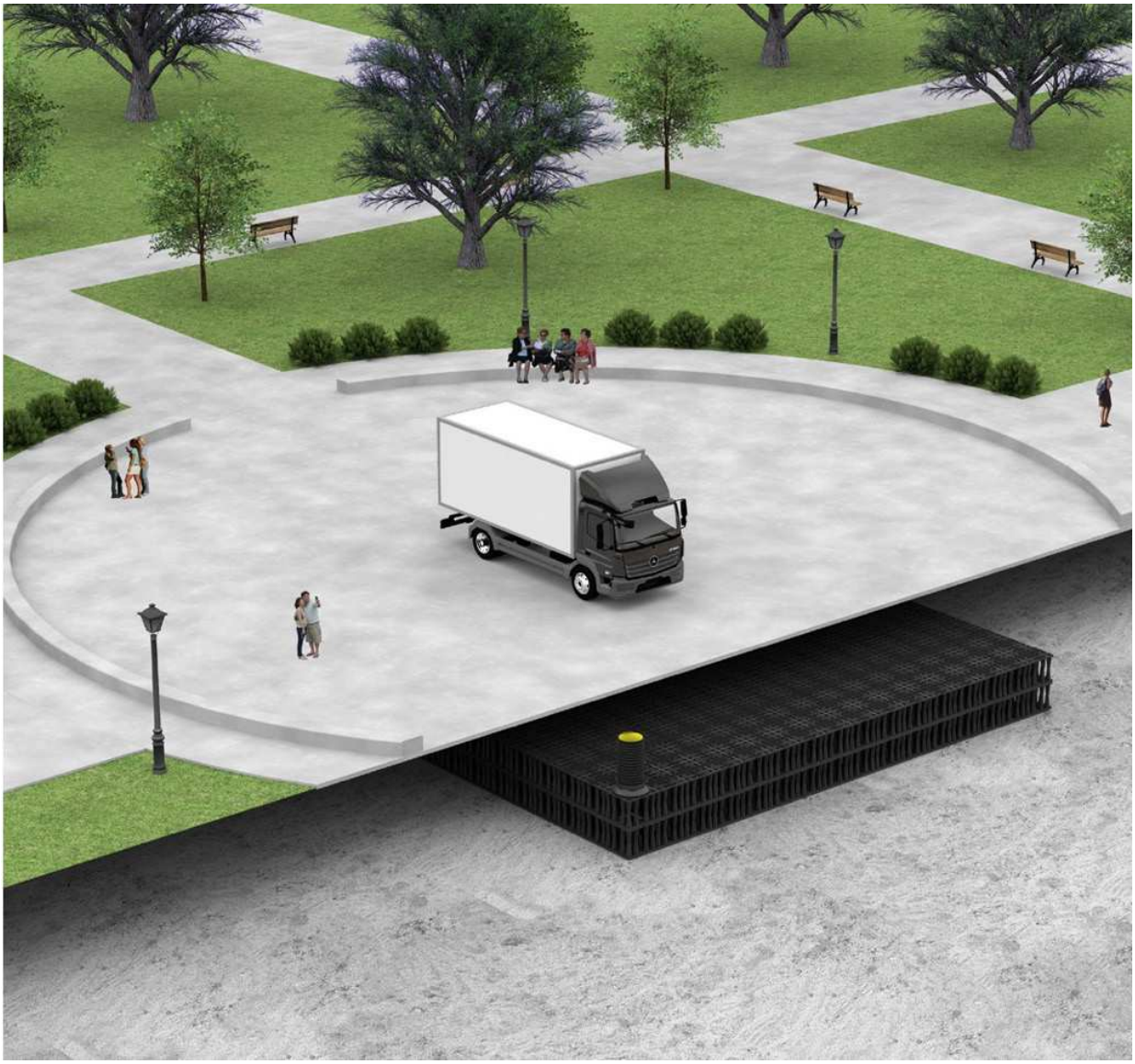




*GreenStorm ST/STB underground infiltration/storage modules *Rigofill ST RigofillST-B

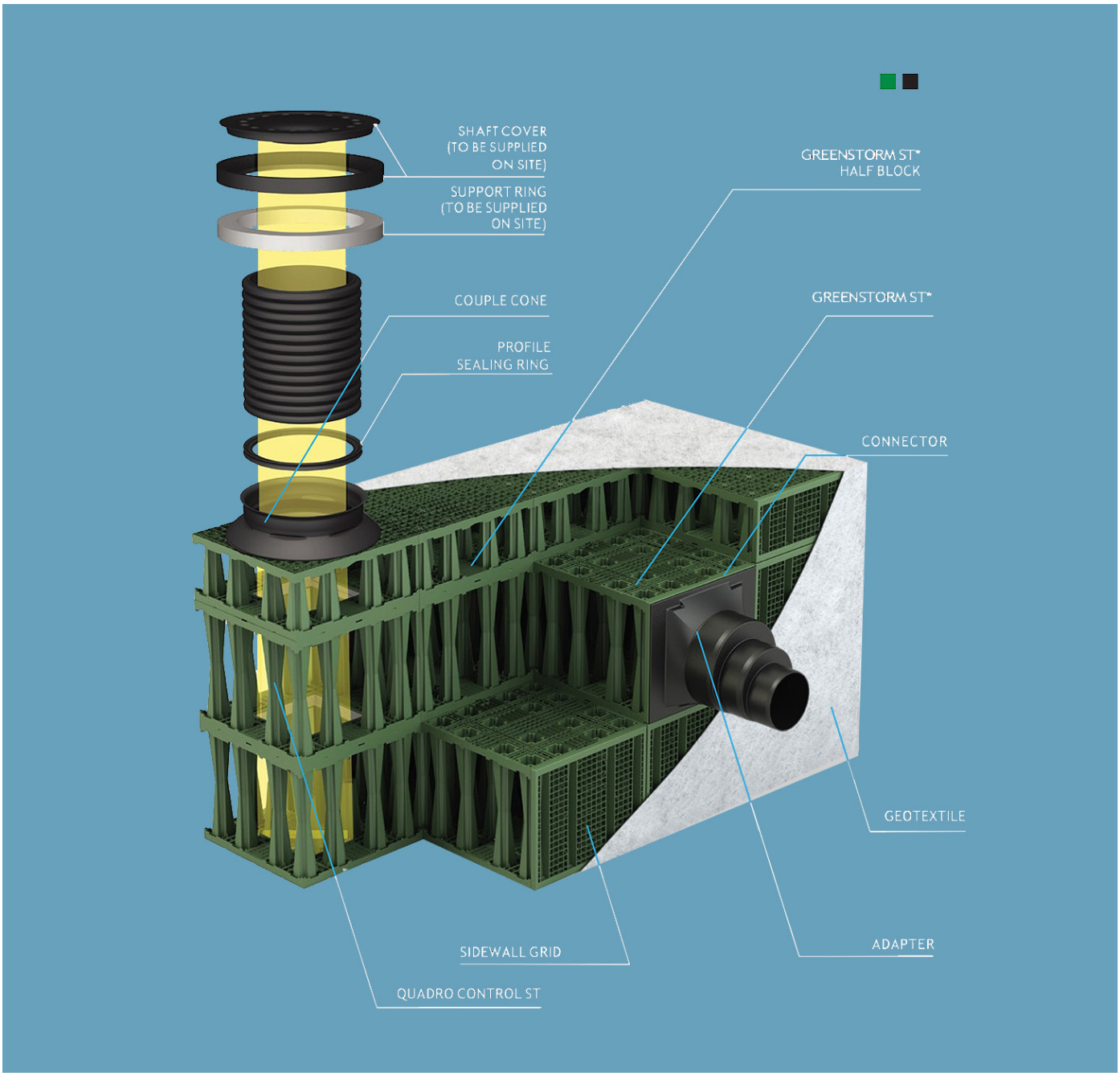
LOADING

Light traffic example GreenStorm ST*



STORMCON

Quadro® Control ST – system shaft



*GreenStorm ST/STB underground infiltration/storage modules *Rigofill ST RigofillST-B

INTEGRATED INSPECTION SHAFTS

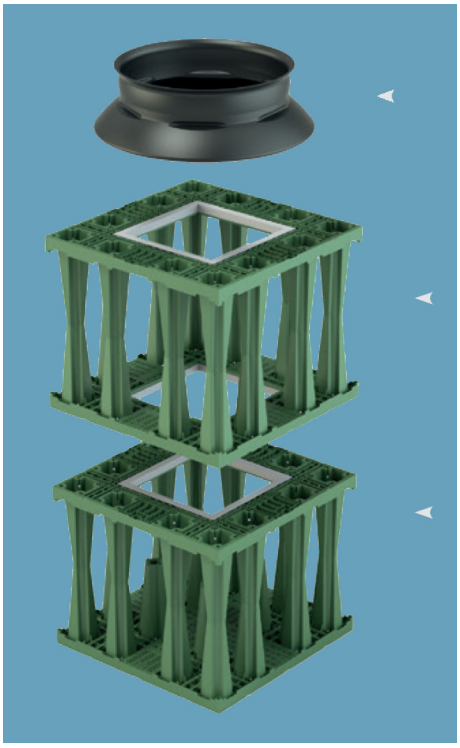
Quadro® Control ST is a polypropylene inspection shaft which can be integrated in the storage/infiltration system.

It is square with a base of 800 x 800 mm and can be used in any position of the layout.

Its height results from the number of layers of the connected storage/ infiltration system. The shaft allows for comfortable access to the inspection tunnel from aboveground. High-performance inspection and flushing equipment can easily be inserted into the inspection

tunnel. The shaft is integrated in the storage/infiltration system and grows layer by layer as construction progresses. QuadroControl ST is delivered with all required components and will be assembled on site.

Structure



The shaft cone is the transition to the extension pipe. The length of the extension pipe is chosen depending on the installation depth.

The shaft is integrated in the storage/ infiltration system and grows layer by layer as construction progresses.

The shaft components are stackable and delivery includes the cone with all required components as shaft package.



Arrangement of inspection shafts

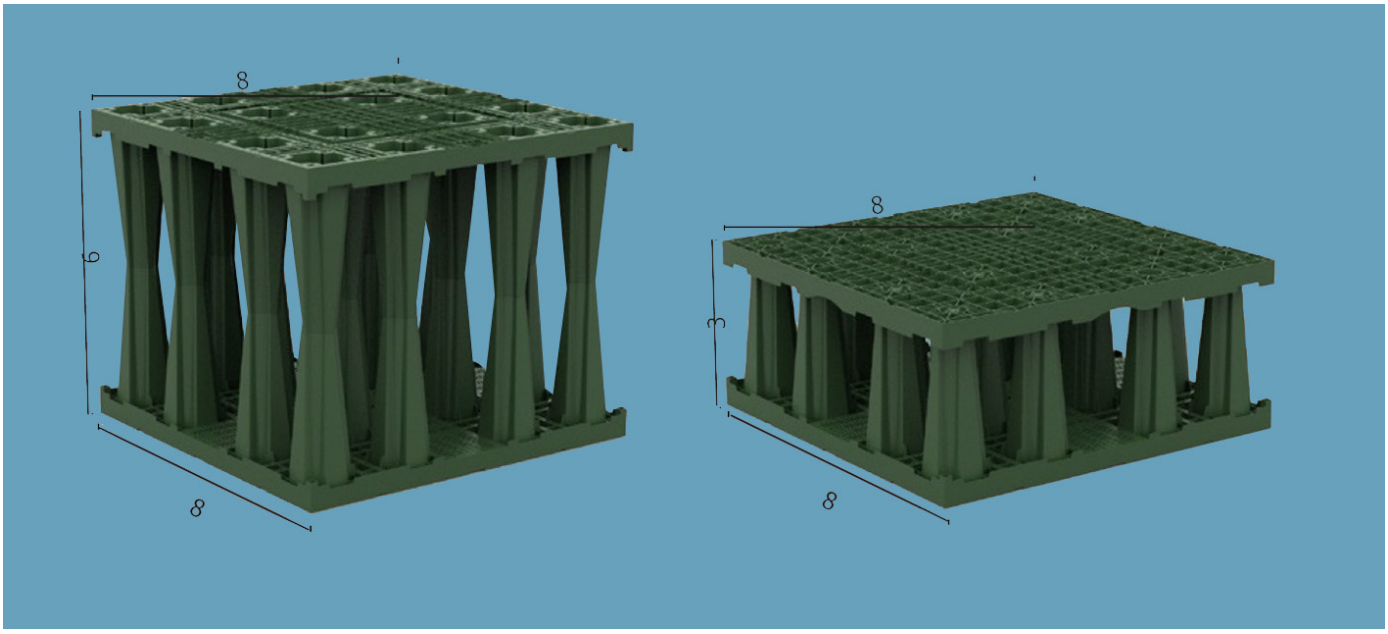
Number of and position in the system are above all determined by the size of the system, access, pipe connections and design of the outdoor facilities.

In order to ensure that flushing of the complete system is possible, each module should comprise at least one inspection shaft. In addition, the shafts should be positioned such that the shaft covers do not interfere with the design of the outdoor facilities, but can easily be accessed by vehicles for maintenance purposes.

Adjacent shafts should be staggered in the layout.

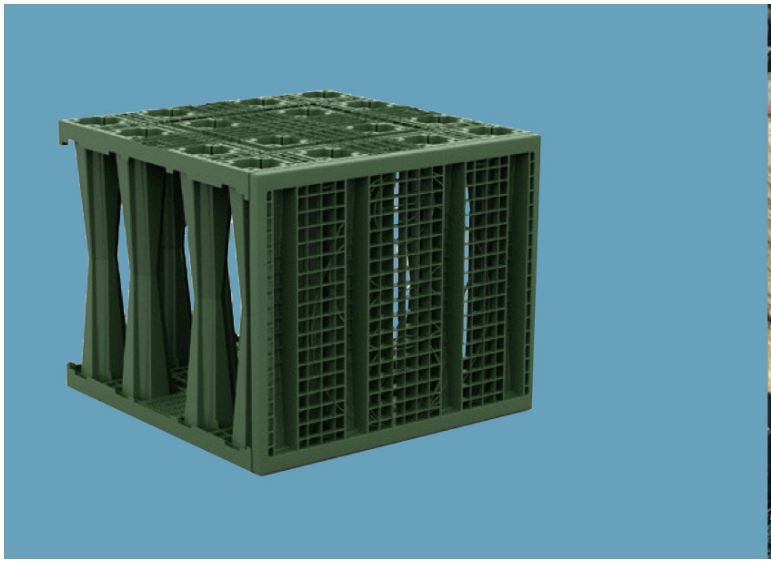


DESIGN-RELEVANT DIMENSIONS



Sidewall grid connection options

Full block connection options
Dia 100 mm, 135 mm, 150 mm, 200 mm,
250 mm, 300 mm, 375 mm et 450 mm





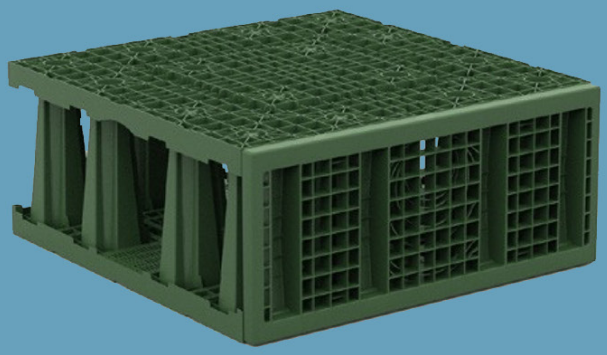
This allows all available nominal diameters to be realised both at the top and the bottom of the module.

.

SIDEWALL GRID CONNECTION OPTIONS

Sidewall grid connection options

Half block connection options
Dia 100 mm, 135 mm, 150 mm,
200 mm et 250 mm



The side plates can be drilled to the height and desired position within the frame.

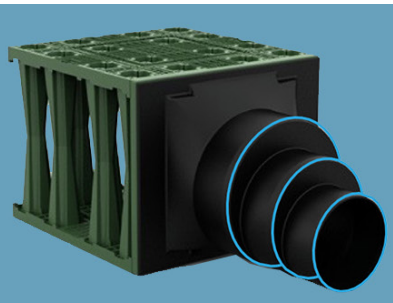


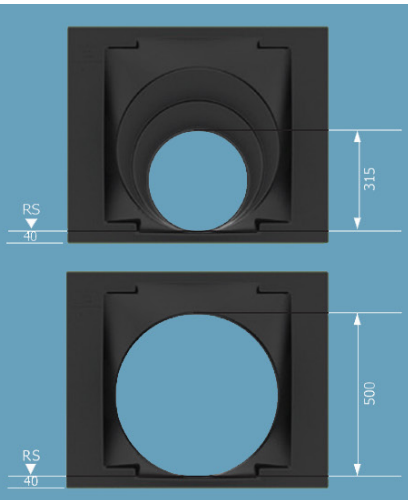
ADAPTER CONNECTION OPTIONS

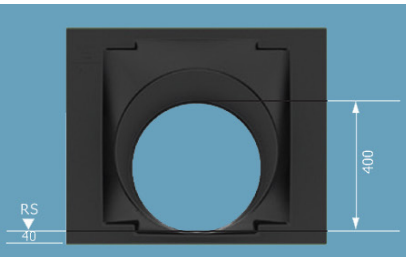
Connections:
Dia 300 mm, 450 mm
et 525 mm

Outside diameter 315 mm for a pipe diameter 300 mm PVC

Outside diameter 400 mm for a pipe diameter 450 mm PVC. A flexible sleeve off center is required.





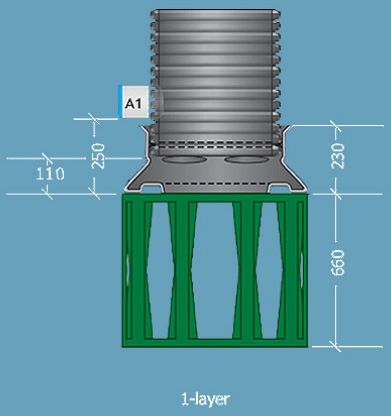


Outside diameter 500 mm for a pipe of diameter 525 mm.
A flexible sleeve off center is required

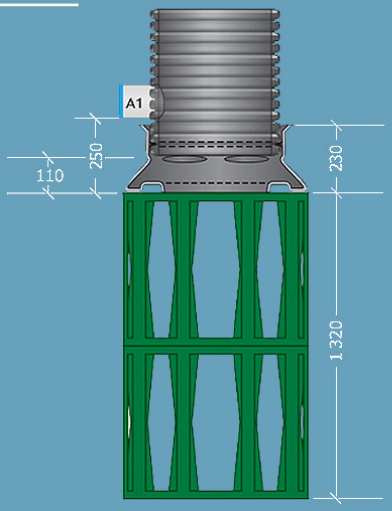
DIMENSIONS OF QUADRO® CONTROL ST

CONNECTION OPTION

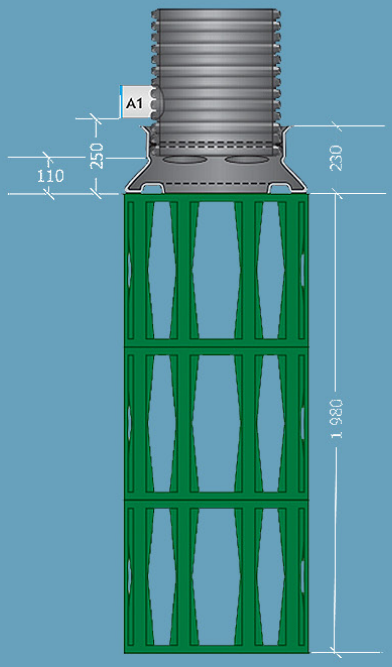
A1 DN/OD 200 OR DN/OD 315 CONNECTION POSSIBLE



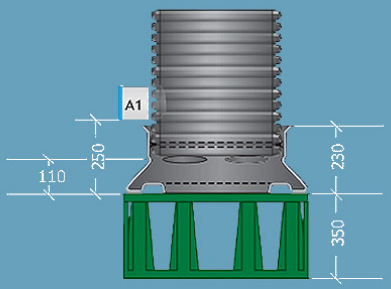
1-layer



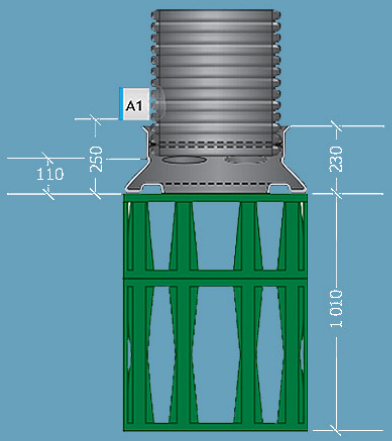
2-layer



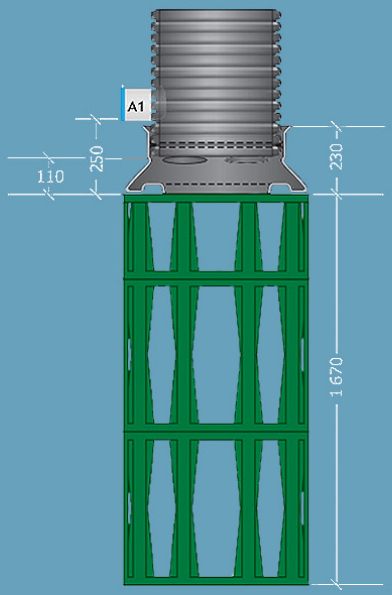
3-layer



1/2-layer



1 1/2-layer



2 1/2-layer

*GreenStorm ST/STB underground infiltration/storage modules *Rigofill ST RigofillST-B

SHAFT DESIGN OF QUADRO® CONTROL ST

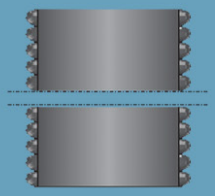
Structure of inspection shaft



Class B or D
shaft cover acc. to DIN EN 124,
CW 610



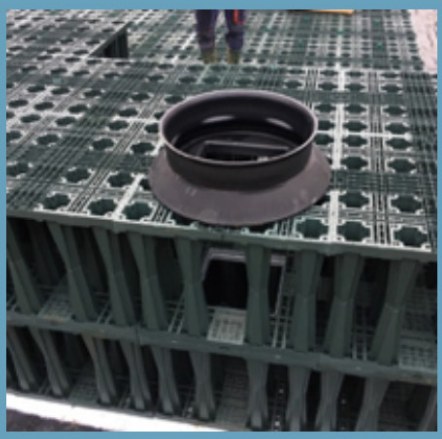
Support ring acc. to DIN 4034,
D_1 = 625 mm

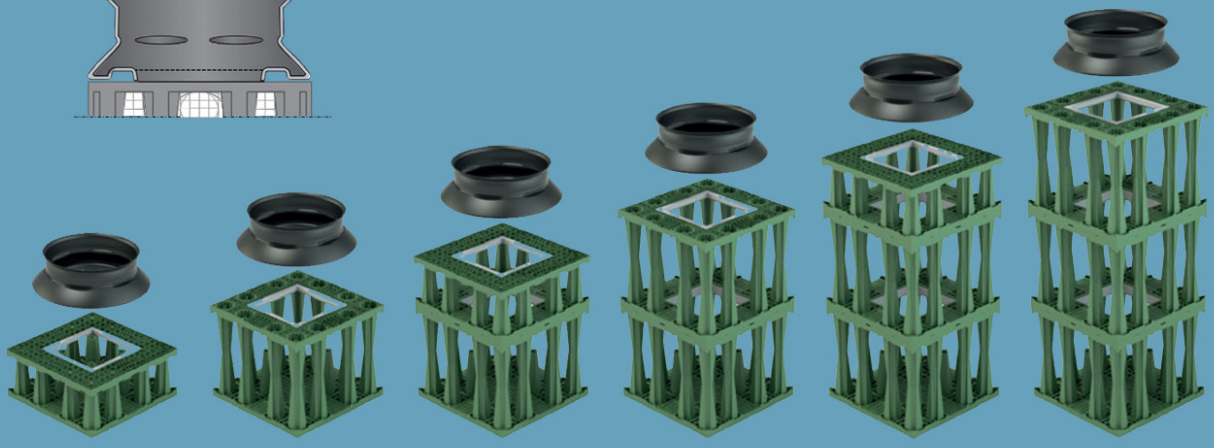


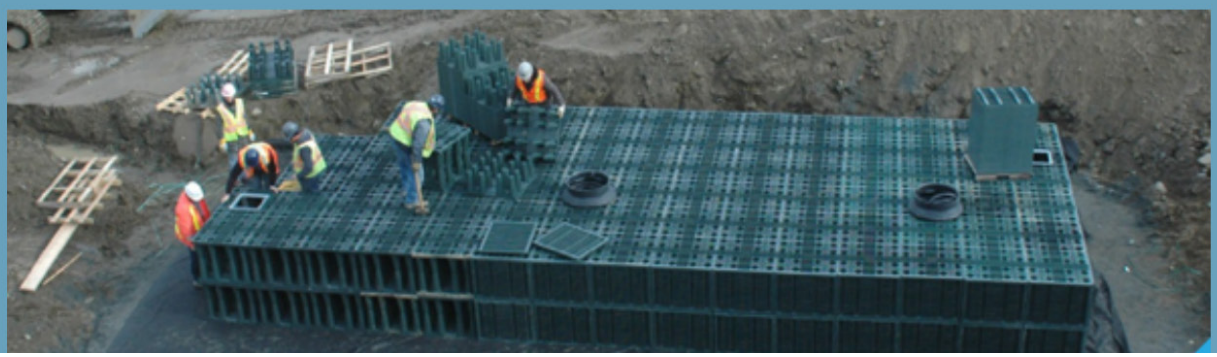
Extension pipe
D_O 600



Sealing ring







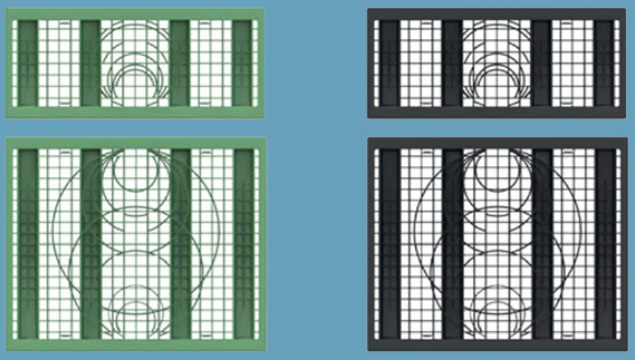
Sidewall grid

The sidewall grids serve as external boundary.

They can be assembled easily using snap connections. The predefined position of the connections at the sidewall grids guarantees that the connections of inlet pipe and outlet pipe and the tunnel are same level. The sidewall grids can be assembled easily also outside the excavation pit.

The sidewall grid for the full block and Quadro® Control ST and Quadro® Control ST-B has a size of W x D x H = 800 x 30 x 660 mm and is suited for connecting lateral solid wall pipes DN 110, 125, 160,
200, 225, 250, 315, 400 and 500.

The sidewall grid for the half block or the half-layer shaft has a size of W x D x H = 800 x 30 x 350 mm and is suited for connecting lateral solid wall pipes DN 110, 125, 160, 200, 225 and 250. In storage/infiltration designs with inside corners, shortened sidewall grids are used at one side.



Different connection heights (regardless of the nominal diameter) are required above the bottom depending on the number of floors:

ST	ST-B	Number of floors	Connection height
○	●	0.5-layer	40 mm
○	●	1-layer	40 mm
○	●	1.5-layer	700 mm
○	●	2-layer	700 mm
○	●	2.5-layer	1 360 mm
○	●	3-layer	1 360 mm

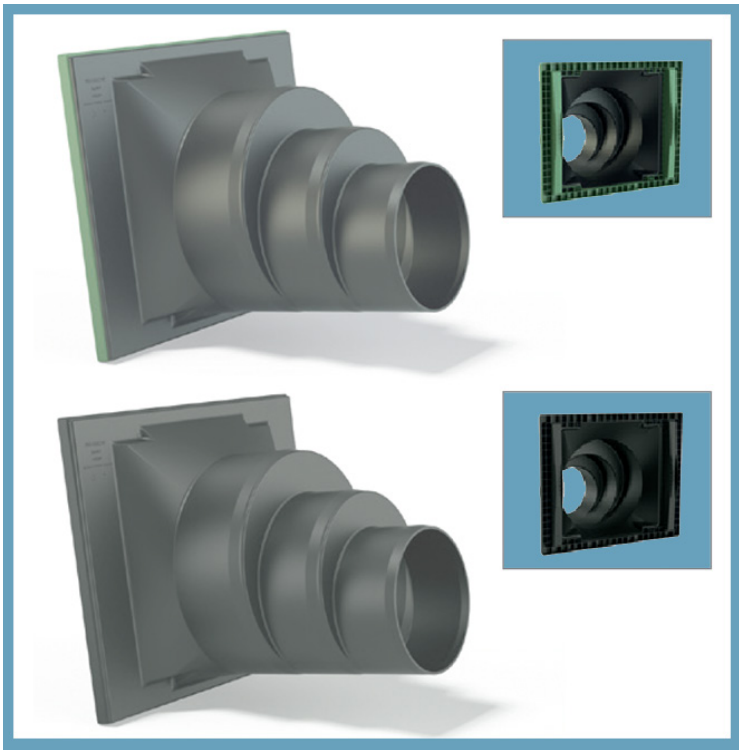
Adapter

The adapter for GreenStorm ST* and GreenStorm ST-B* has a length of 800 mm and a height of 660 mm and serves as an inlet and outlet connection.

It provides an inlet connection with an optimised flow design with diffusor effect for solid wall pipes DN 315, 400 and 500. It can be connected to GreenStorm ST* and GreenStorm ST-B* easily and quickly thanks to the snap connection.

The predefined position of the snap connection at the module guarantees that inlet pipe and outlet pipe and tunnel connect same level.

The adapter ensures a connection with the same crown, as it is installed turned by 180°.



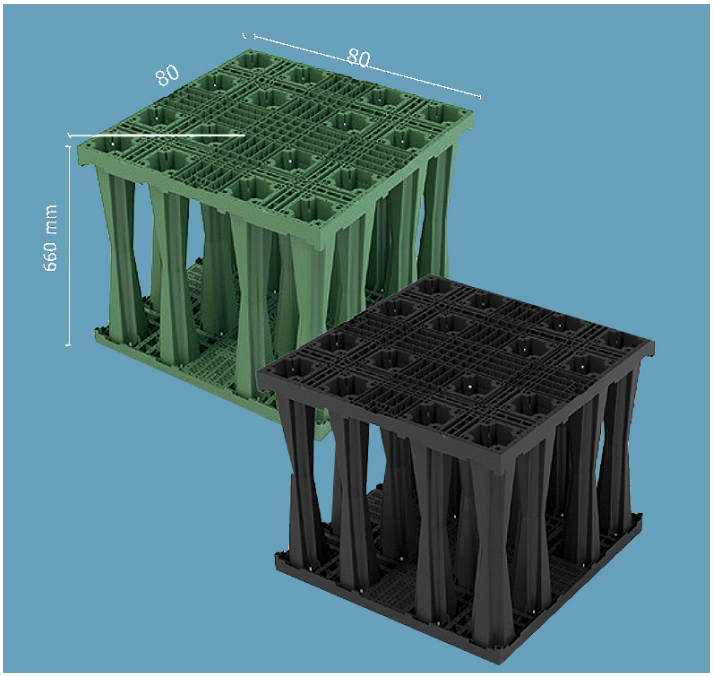
STORMCON

GREENSTORM ST* AND ST-B* – HALF BLOCK

GreenStorm ST* and GreenStorm ST-B* are highly durable and hard-wearing storage/infiltration module with a base of 800 x 800 mm and a height of 660 mm full blocks.

The polypropylene full block consists of two half elements to be installed on site and has a void ratio of more than 96 %. Water can flow through the module three-dimensionally almost without any obstacles. GreenStorm ST* and GreenStorm ST-B* allows for virtually any size and geometry of the systems.

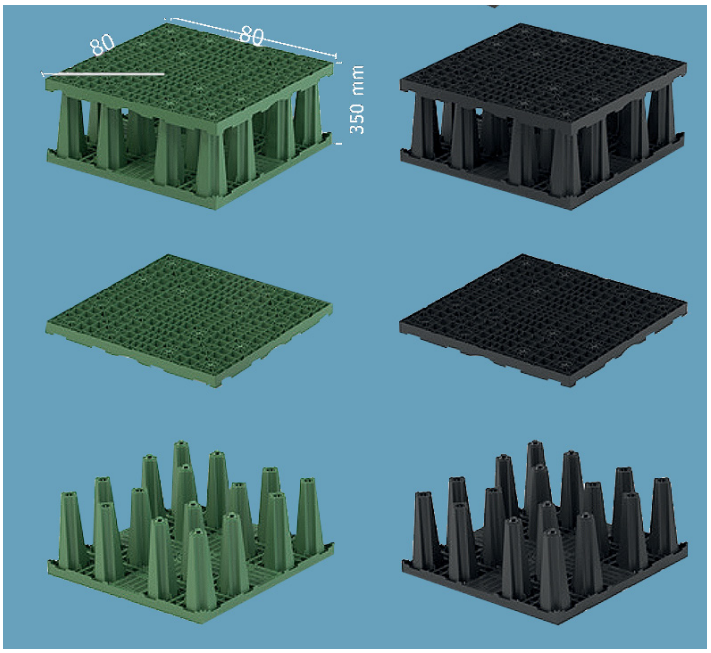
The cross-shaped inspection tunnel in the storage/ infiltration modules has been designed for the use of automotive dollies. This allows the effective drainage surface and the entire system volume with all statically relevant bearing-type fixtures to be inspected.



The GreenStorm ST* and GreenStorm ST-B* half block have a base of 800 x 800 mm and a height of 350 mm

It consists of only one half element which must be assembled with a roof slab on site. This roof slab is only required for the half block. The GreenStorm ST* and GreenStorm ST-B* half block are used in particular for systems with shallow installation depths, e.g, in case of high groundwater levels.

Systems in various heights can be realised in 35cm steps and adjusted to almost any layout in combination with the full block.

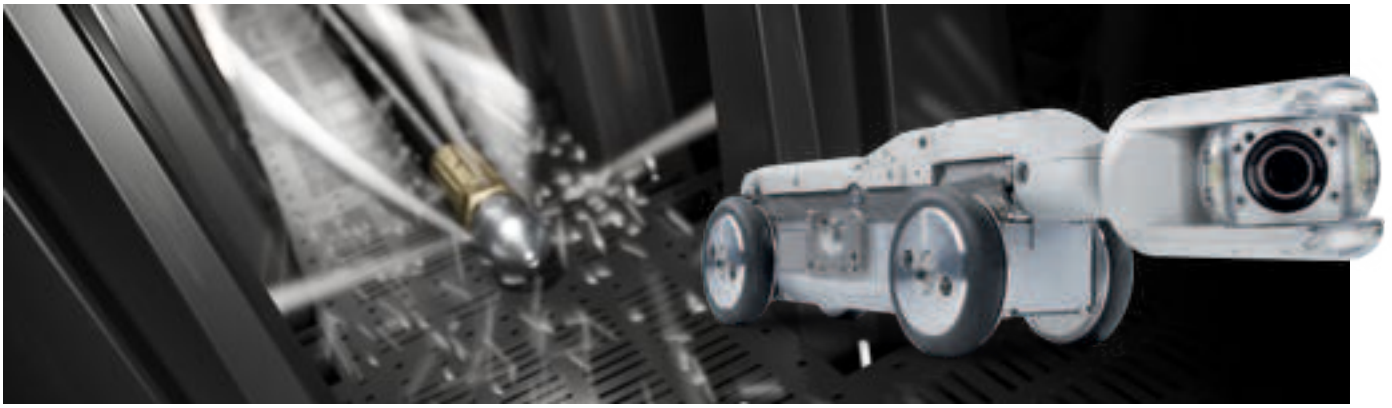


STORMCON

NOTES

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Maintenance instructions for Rigofill® ST-S and Rigofill® ST-A infiltration and storage systems



General planning instructions

The maintenance effort for an infiltration/storage system greatly depends on the degree of pollution of the connected areas and subsequently on the pollution load of the discharged water. Generally, prevention of dirt ingress should already be considered in the planning phase. This can mean in particular: An upstream filter and/or cleaning unit that filters coarse and fine particles (AFS) as well as light liquids from the water to prevent them from impairing the operational capability of the infiltration/storage system itself. Moreover, the treatment systems are usually designed to ensure easy, centralised and, above all, continuous maintenance in order to minimise the maintenance costs when considering the fact that a block system has a service life of 50 years. For roof surfaces, detention is recommended already in/on the gutter system (foliage). In addition to our maintenance recommendations, we strongly recommend observing the relevant provisions as applicable.

Maintenance intervals

During construction, always make sure that neither dirt nor foreign objects enter the shafts. During and immediately after the construction phase, increased contaminant load from the connected areas can be expected. The first check (and, if required, adjustment) of the infiltration system should be performed after completion and before the handover of the system. Visual inspection of the system and shafts as well as camera inspection of the infiltration elements are recommended. A standard sewer camera for pipe diameters ≥ DN 200 can be used for this purpose. A rotatable and height-adjustable camera head coupled with high-performance optics and lighting allows for an optimal view of the statically relevant components as well as the lateral geotextile and/or membrane surfaces. In this way, it is also possible to perform a quick and easy visual check of the quality of pipe connections. The results should be recorded in a log. Further inspections are to be defined project-specifically. The intervals also depend on whether there is an upstream treatment system and what quality it has.

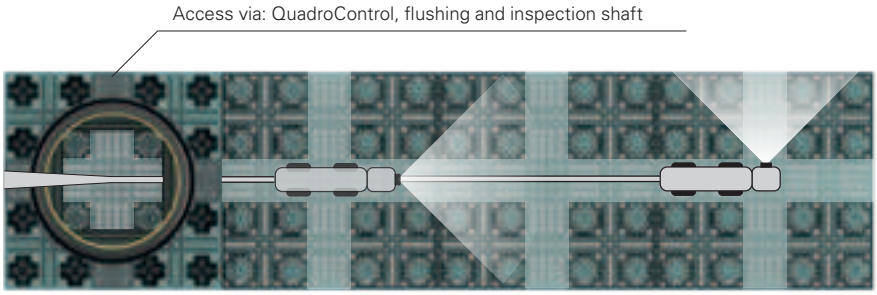
Inspection

Our Rigofill ST block systems have been designed for the use of modern CCTV inspection technology. Pipe inspection cameras for pipes ≥ DN 200 can get access to the inspection tunnels of the adjacent storage/infiltration modules through the QuadroControl shaft integrated into the storage/infiltration system. The cross-shaped inspection tunnel inside the shaft allows for the maintenance equipment to leave the shaft in four dimensions as well. The dedicated and open design of the Rigofill block allows for an unobstructed view of the entire interior and not only the inspection tunnel. The optimal, level and vibration-free running surface of the inspection tunnel allows for excellent video quality. Thanks to the special shape of the columns as well as their arrangement next to the inspection tunnel, the CCTV inspection camera and the cleaning nozzle are securely guided through the inside of the block system preventing any potential deviation from the route.

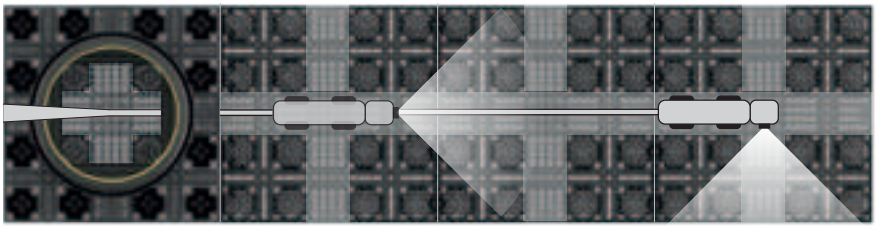




The inspectability of the Rigofill ST-S/-A and QuadroControl ST-S/-A system units has been validated, and they have been proven to be suitable for the use of automotive dollies with a camera size for pipes starting from DN 200.



Rigofill ST-A system with cross-shaped inspection tunnel



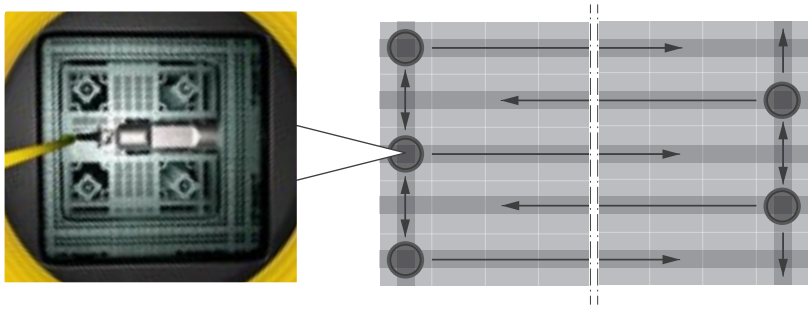
Rigofill ST-S system with cross-shaped inspection tunnel

NB

For complete inspection of the system, each row can be accessed. This way, any damage to the system as a whole can be detected and documented.

ATTENTION

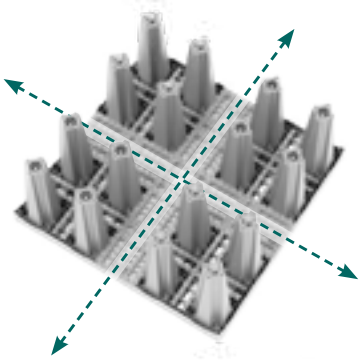
Usually, the lowest tunnel layer is used for inspection and cleaning purposes. The inspection camera is lowered to the shaft bottom and inserted into the adjacent tunnel. In case of multiple-layer systems, layers above, however, can also be accessed and flushed, if necessary, via the built-in tunnels.



Cleaning

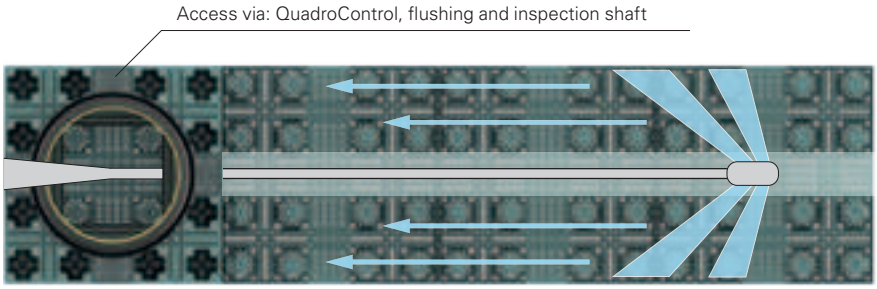
The block system can be flushed by means of sewer cleaning equipment via the cross-shaped tunnels of Rigofill ST. The flush water transports the dirt to the QuadroControl ST inspection shaft and is extracted there.

We recommend using a 90° rotatable nozzle with an additional 45° rotation angle.

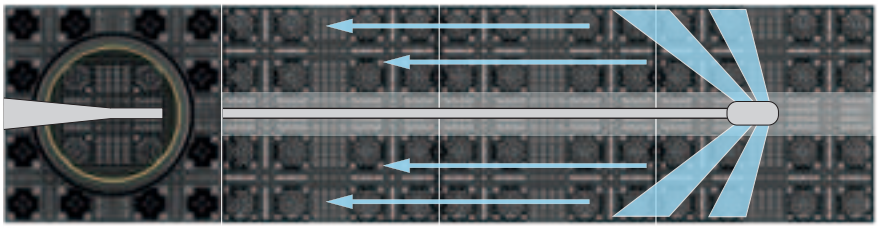


ATTENTION

Usually, the lowest tunnel layer is used for inspection and cleaning purposes. The cleaning nozzle is lowered to the shaft bottom and inserted into the adjacent tunnel. In case of multiple-layer systems, layers above, however, can also be accessed and flushed, if necessary, via the built-in tunnels.



Rigofill ST-A system with inspection tunnel



Rigofill ST-S system with inspection tunnel





ATTENTION

Substances such as sludge and sand as well as the flushing water removed from the tank may contain hydrocarbons and heavy metals. These substances have to be disposed of according to the local regulations.

NB

Flushing pressure approx. 90 – 120 bar (similar to the flushing of plastic sewer pipes)

Filter sets for swale inlets

The filter sets consisting of a dirt trap (bucket) and a geotextile bag (please observe the dimensions of the connected area), and/or a sediment trap in case of vortex shafts, use the principle of detention and accumulation of particles. This means that the accumulated dirt load must be removed at regular intervals. This regular inspection and cleaning are critical for the long-term operational capability of the entire infiltration/storage system.

Depending on the pollution load of the discharged water and the determined safety coefficient, a significantly shorter cleaning interval may be required (e.g. a few weeks in extreme cases).

We therefore recommend starting with inspection and cleaning intervals of some weeks and increasing them depending on the determined degree of pollution, if applicable. From experience, the critical period is in spring due to increased pollen count.

The geotextile filter bag can be fixed to the bucket by pulling the strings over the edge of the bucket. Held by the handle, the bucket can be pulled out. To do so, a lifting hook may be required. First, the bucket must be emptied. Large amounts of dirt in the geotextile filter bag should be removed as well. Dirt which is hard to remove may be extracted by means of a water hose, a high-pressure cleaner, or by washing out.

The full original permeability can usually no longer be achieved, so after repeated cleaning, the geotextile filter bag will probably have to be exchanged. In this case, a replacement set can be purchased.

ATTENTION

Permanent removal of cleaning and filter units is recommended under no circumstances, since this may severely compromise the system operation.

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EN.90175/2.04.25 | Subject to change without notice | 04/2025 [AT.90172/2]

GreenStorm Product Parameters		
Full Block		
Block Length =	0.800	m
Block Width =	0.800	m
Block Height =	0.660	m
Block Available Storage Volume =	0.338	m^3
GreenStorm System Design (Chamber 1 - Phase 1 Building Roof)		
Inlet Pipe Diameter =	0.300	m
Inlet Pipe Invert Elevation =	88.37	m
Pipe Obvert to System Obvert =	0.050	m
System Obvert Elevation =	88.72	m
System Invert Elevation =	88.06	m
Available Sump Depth =	0.310	m
Total Number of Blocks =	78	
Number of Rows =	1	
Surface Area of System =	49.92	m^2
Void Ratio =	0.80	
Available Storage Volume in System Sump =	12.4	m^3
GreenStorm System Design (Chamber 2 - Phase 3 Building Roof)		
Inlet Pipe Diameter =	0.200	m
Inlet Pipe Invert Elevation =	88.53	m
Pipe Obvert to System Obvert =	0.050	m
System Obvert Elevation =	88.78	m
System Invert Elevation =	88.12	m
Total Number of Blocks =	40	
Number of Rows =	1	
Surface Area of System =	25.60	m^2
Available Storage Volume in System =	13.5	m^3

Field saturated hydraulic conductivity values were determined using the Engineering Technologies Canada (ETC) Ltd. Reference tables provided in the most recent ETC Past Permeameter User Guide dated July 2018. Infiltration rates have been determined based on the relationship described in Appendix C of the Credit Valley Conservation Authority and Toronto and Region Conservation Authority Low Impact Development Stormwater Management Planning and Design Guide (2011). The testing locations are presented on Drawing PG6331-5 – In-Situ Infiltration Testing Location Plan included in Appendix 2.

The measured K_{fs} values are consistent with similar material Paterson has encountered on other sites which generally range from 1.4 x 10^{-8} to 2.4 x 10^{-5} m/sec for silty sand to sandy silt and glacial till, and from 1.4 x 10^{-8} to 5.3 x 10^{-7} m/sec for silty clay. The range in K_{fs} values is generally due to the variability in composition and consistency of the material encountered.

It is important to note that the infiltration rates derived from the K_{fs} values in the table below are unfactored. Prior to use for design purposes, a safety correction factor will need to be applied to the above infiltration rates to account for a number of factors including variations in soil composition and anticipated accumulation of fine-grained material over time. For use in the design of Low Impact Development measures (LID's), the safety correction factor to be incorporated will be dependent on the size and invert depth of the system relative to the infiltration rates observed up to 1.5 m below the base of the system. It should also be noted that for most infiltration-based LID measures, the bottom of the facility should be separated at least 1 m from the bedrock surface and from the seasonally high groundwater table.

Table 3 – Summary of Field Saturated Hydraulic Conductivity Values and Infiltration Rates

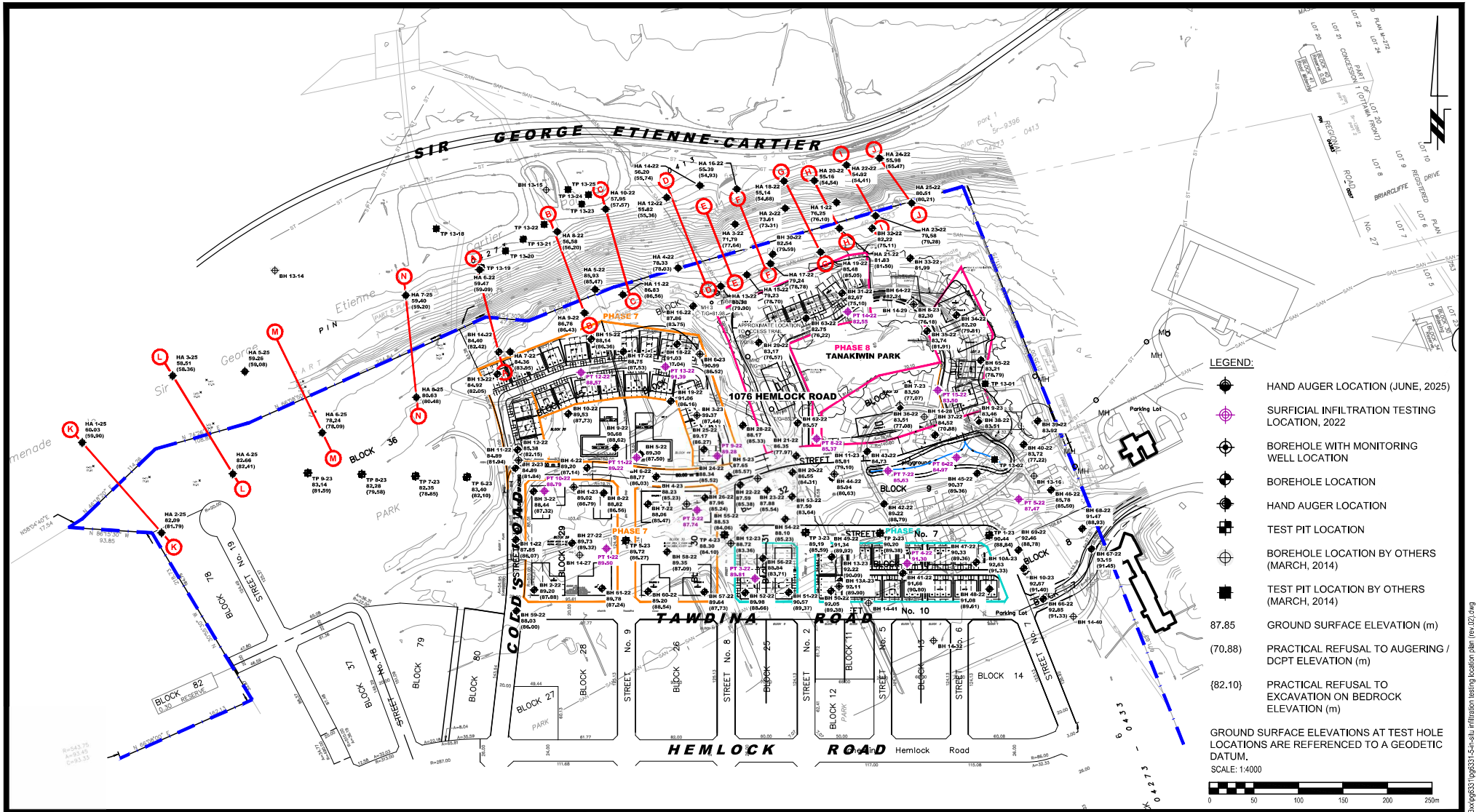
Test Location ID	Ground Surface Elevation (m)	Depth of Permeameter Testing (m)	Elevation of Permeameter Testing (m asl)	Kfs (m/sec)	Infiltration Rate (mm/hr)	Soil Type
PT 1	89.50	0.20	89.30	7.50×10^{-06}	79.24	Silty sand with rocks
		0.50	89.00	5.30×10^{-06}	72.21	Silty Sand with Gravel
PT 2	87.74	0.30	87.44	1.10×10^{-06}	47.41	Clayey Silt
		0.80	86.94	1.40×10^{-08}	14.74	Silty Clay
PT 3	89.81	0.25	89.56	2.70×10^{-06}	60.28	Silty Sand with Clay
		0.75	89.06	1.90×10^{-05}	101.62	Silty Sand

Table 3 – Summary of Field Saturated Hydraulic Conductivity Values and Infiltration Rates – Continued

Test Location ID	Ground Surface Elevation (m)	Depth of Permeameter Testing (m)	Elevation of Permeameter Testing (m asl)	Kfs (m/sec)	Infiltration Rate (mm/hr)	Soil Type
PT 4	91.29	0.25	91.04	8.20×10^{-07}	43.82	Clayey Silt
		0.75	90.54	1.10×10^{-05}	87.80	Silty Sand
PT 5	87.46	0.20	87.26	4.30×10^{-06}	68.28	Silty Sand
		0.60	86.86	5.30×10^{-08}	21.05	Silty Clay
PT 6	84.97	0.30	84.67	5.30×10^{-07}	38.99	Silty Clay
		0.80	84.17	8.00×10^{-07}	43.53	Clayey Silt
PT 7	85.63	0.20	85.43	1.60×10-06	52.41	Clayey Silt
		0.60	85.03	5.30×10-07	38.99	Silty Clay
PT 8	89.28	0.30	85.06	2.70×10^{-06}	60.28	Silty Sand with Clay
		0.75	84.66	2.70×10^{-08}	17.58	Silty Clay
PT 9	89.28	0.25	89.03	5.90×10^{-06}	74.31	Silty Sand
		0.50	88.78	1.10×10^{-05}	87.80	Silty Sand
PT 10	88.78	0.30	88.48	2.20×10^{-05}	105.69	Silty Sand
		0.80	87.98	8.50×10^{-06}	81.94	Silty Sand
PT 11	89.22	0.30	88.92	2.40×10^{-05}	108.18	Silty Sand
		0.80	88.42	1.60×10^{-05}	97.06	Silty Sand
PT 12	88.57	0.20	88.37	7.50×10^{-06}	79.24	Silty Sand
		0.60	87.97	1.10×10^{-06}	47.41	Silty Sand
PT 13	91.39	0.30	91.09	2.70×10^{-06}	60.28	Sand with Gravel
		0.75	90.64	6.40×10^{-06}	75.95	Silty Sand
PT 14	82.55	0.30	82.25	1.40×10^{-07}	27.30	Silty Clay
		0.80	81.75	1.40×10^{-08}	14.74	Glacial Till
PT 15	83.49	0.20	83.29	8.50×10^{-06}	81.94	Silty Sand
		0.60	82.89	1.75×10^{-07}	28.94	Silty Clay

Groundwater

Groundwater levels were manually measured in the installed piezometers and monitoring wells on November 18, 2022, March 24, 2023, April 20, 2023, May 30, 2023, and September 20, 2023.



LEGEND:

- HAND AUGER LOCATION (JUNE, 2025)
- SURFICIAL INFILTRATION TESTING LOCATION, 2022
- BOREHOLE WITH MONITORING WELL LOCATION
- BOREHOLE LOCATION
- HAND AUGER LOCATION
- TEST PIT LOCATION
- BOREHOLE LOCATION BY OTHERS (MARCH, 2014)
- TEST PIT LOCATION BY OTHERS (MARCH, 2014)

87.85 GROUND SURFACE ELEVATION (m)

(70.88) PRACTICAL REFUSAL TO AUGERING / DCPT ELEVATION (m)

{82.10} PRACTICAL REFUSAL TO EXCAVATION ON BEDROCK ELEVATION (m)

GROUND SURFACE ELEVATIONS AT TEST HOLE LOCATIONS ARE REFERENCED TO A GEODETIC DATUM.

SCALE: 1:4000

0 50 100 150 200 250m

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
2.	REVISED AS PER CITY COMMENTS AND ADDED 2025 HAND AUGER HOLE LOCATION HA 1-25 TO HA 8-25	20/06/2025	YZ
1.	REVISED AS PER CITY COMMENTS	12/02/2025	YZ

CANADA LANDS COMPANY, C/O ARCADIS

GEOTECHNICAL INVESTIGATION
PROPOSED DEVELOPMENT
WATERIDGE VILLAGE - PHASE 6, 7 AND 8
OTTAWA, ONTARIO

Title:

IN-SITU INFILTRATION TESTING LOCATION PLAN

Scale: 1:4000	Date: 12/2024
Drawn by: GK	Report No.: PG6331-1
Checked by: ZB	Dwg. No.: PG6331-5
Approved by: ML	Revision No.: 2

p:\autocad drawings\geotechnical\pg6331\pg6331-5-in-situ infiltration testing location plan (rev. 02).dwg

11x17

In addition, data loggers were installed in the monitoring wells to record seasonal fluctuations and precipitation collected within the upper portion of the subsurface profile across the site.

The manual groundwater level (GWL) readings are presented in Table 4 below and are shown on the Soil Profile and Test Data sheets in Appendix 1.

Table 4 – Summary of Groundwater Levels

Borehole Number	Ground Surface Elevation (m)	Measured Groundwater Level		Date Recorded
		Depth (m)	Elevation (m)	
BH 1-23	89.02	Dry	NA	September 20, 2023
BH 2-23	84.89	1.94	82.95	
BH 4-23	88.23	2.23	86.01	
BH 5-23	87.65	Dry	NA	
BH 6-23	90.99	Dry	NA	
BH 7-23	83.5	2.32	81.18	
BH 8-23	82.3	2.13	80.17	
BH 9-23	83.46	2.92	80.54	
BH 11-23	85.81	2.99	82.82	
BH 12-23	88.72	3.94	84.78	
BH 13A-23	92.11	Dry	NA	
BH 1-23	89.02	Dry	NA	May 30, 2023
BH 4-23	88.23	2.53	85.70	
BH 5-23	87.65	1.84	85.81	
BH 6-23	90.99	Dry	NA	
BH 7-23	83.5	3.02	80.48	
BH 8-23	82.3	2.82	79.48	
BH 11-23	85.81	3.45	82.36	
BH 13A-23	92.11	Dry	NA	
BH 1-23	89.02	1.57	87.45	April 20, 2023
BH 2-23	84.89	1.82	83.07	
BH 4-23	88.23	1.3	86.93	
BH 5-23	87.65	Dry	NA	
BH 6-23	90.99	Dry	NA	
BH 7-23	83.5	1.71	81.79	


Canadian Science Publishing
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TORONTO
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JAGUAR
Canadian Construction Association
TECNO SCIENTIFICA
Government of Canada
PUREPAVE
PUREPAVE 2025
PERMEABLE MANUFACTURING AND SUPPLY



Why PurePave?

PurePave technology was developed with funding from the National Research Council of Canada**.** They needed a way to produce permeable surfaces for **winter climates, erosion control, flood mitigation and hot climates alike.** A system that could resist freeze-thaw, support snow plows, immune to salt and **filter an enormous amount of water.**

Chemists joined forces with our engineers. After years of testing at the University of Ottawa, we developed the first completely freeze-thaw resistant material composite, 35-70x more infiltration than permeable pavers and 6x stronger than asphalt!

OUR VISION: MANAGE STORMWATER IN EVERY CITY



PERFORMANCE MEETS VALUE

Porous Driveways

PurePave driveways blend upscale beauty with strength and practicality. Our resin-bound surfacing offers endless design possibilities, from interlock borders to glow stones, creating a custom look you'll love.

Crushed granite and quartz are bound by our proprietary dual-resin system, topped with PurePave Spray-Tech for durability. With a 10+ year warranty, PurePave driveways are as stunning as they are long-lasting.

Superior Strength and Durability

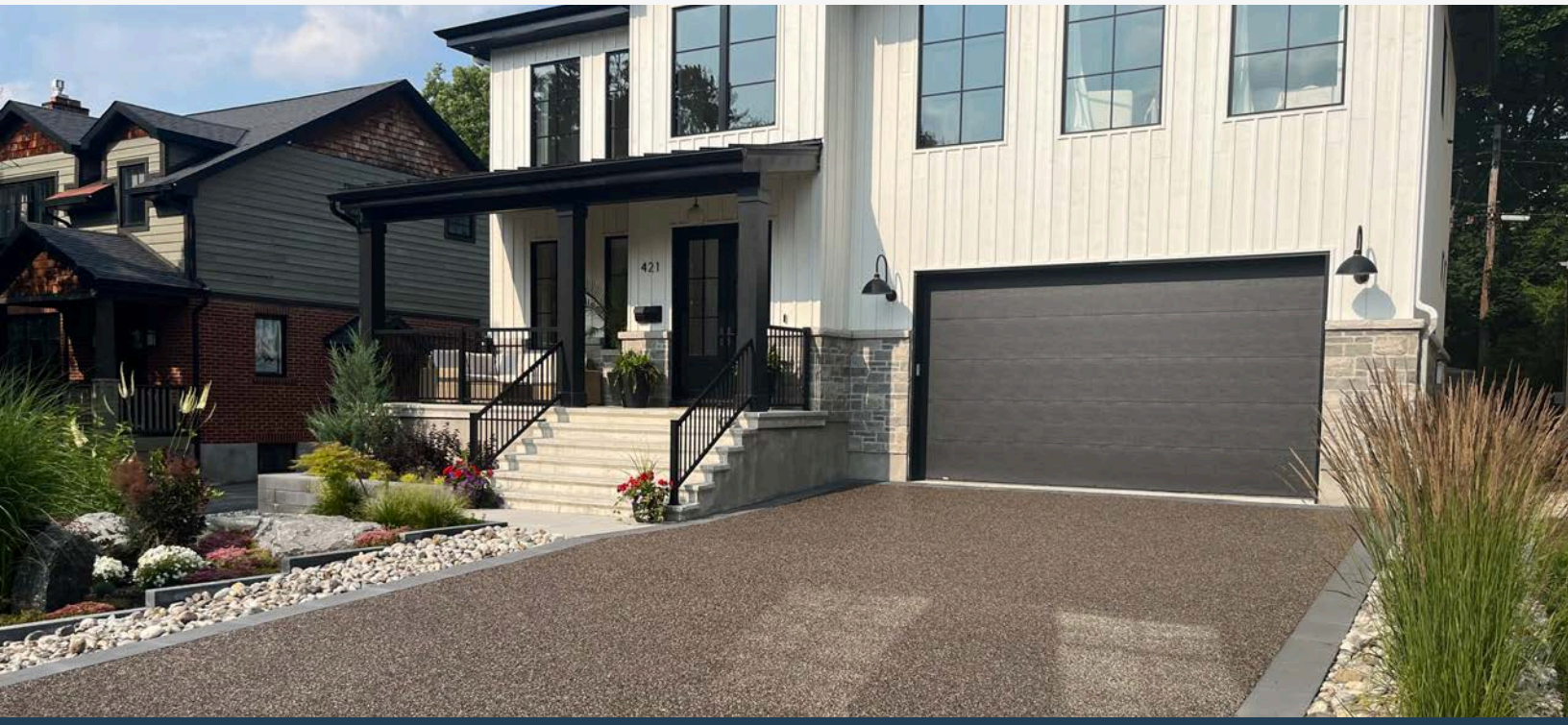
PurePave's dual-resin system is 6 times stronger than regular asphalt and is resistant to freeze-thaw cycles, ensuring that your driveway withstands the harshest conditions for decades.

Impressive Warranty

We stand behind the quality of our work. Our driveways come with a 10-year warranty, so you can rest assured that your investment is protected.

Aesthetic Appeal

The upscale beauty of resin-bound surfacing combined with the practicality of permeable paving makes PurePave driveways a designer's dream. We offer over 10 granite, quartz, and marble color options, along with additional design elements like interlock borders and glow stones.



Intro to PurePave Design

PurePave flood proofs your property, and controls stormwater for entire parking lots or neighbourhoods.

Home Builders can install PurePave systems for less and get a product that actually works long-term in any climate.

Cities can install bike paths, road shoulders, boulevards for the price of concrete.

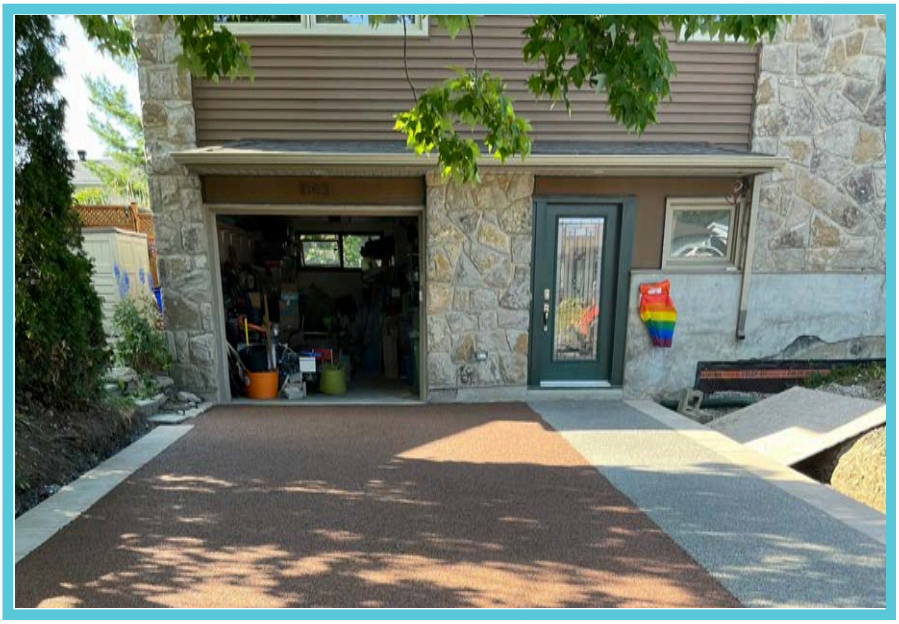
And they get to meet their sustainability goals, flood-proof their city and provide a stunning and functional surface.

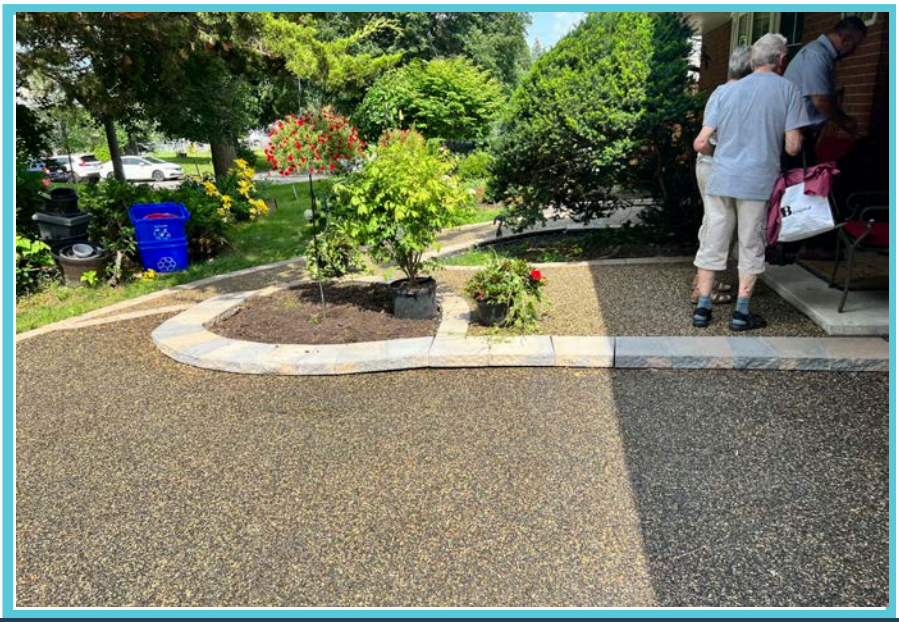
Reduce the Heat-Island Effect in hot climates, melt snow and ice in cold climates.

DEVELOPERS ARE SAVING 30-50% on parking lot development when they use PUREPAVE for all the parking spaces in order to delete traditional storm systems.

- **Parking Lot SWM**
- **Neighbourhood Pond Reduction**
- **Safety Surfacing in public space**
- **Increased Climate Resilliance**
- **Flood mitigation strategies**
- **Snow plow, fire truck friendly**
- **Save Land, Build Bigger.**







Designer Driveways - Stormwater Management

Design / Advantages / Warranty

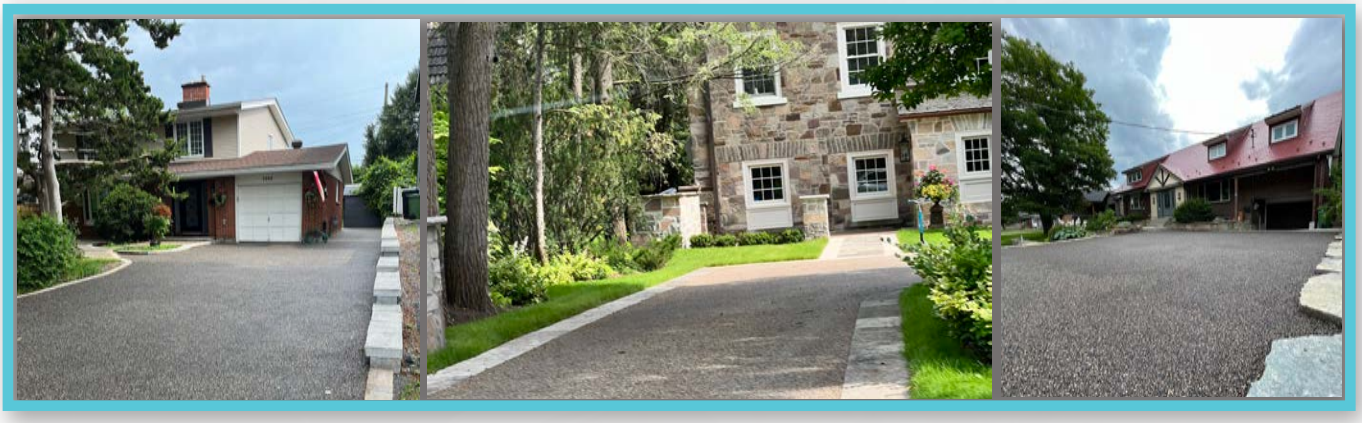
Our most famous innovation has been supplied and installed everywhere from the city of Toronto's Boulevards to the most exclusive golf courses in New York City to developer's full-scale parking lots.

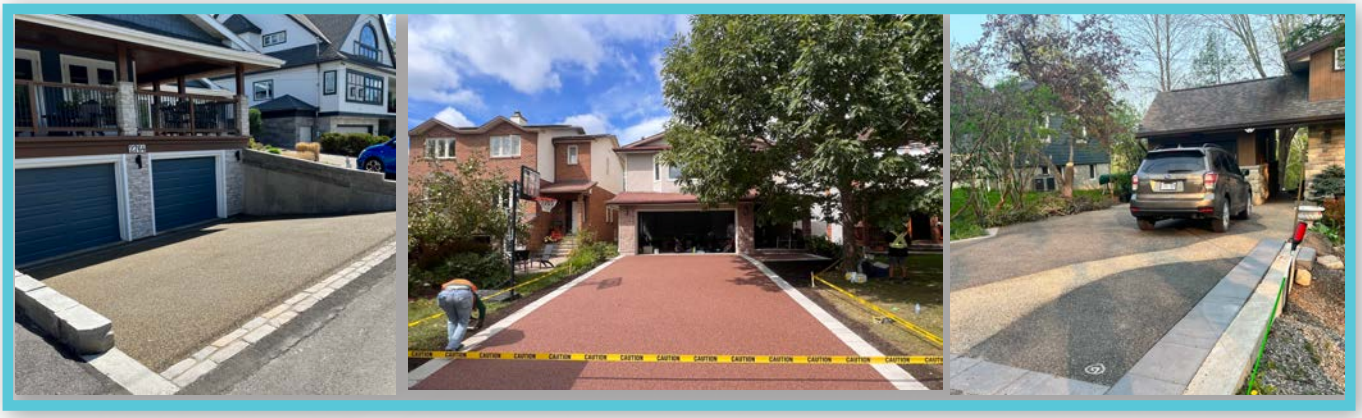
The upscale beauty of Resin-Bound Surfacing meets the practicality and strength of Permeable Paving. This uniquely beautiful pavement is a designers dream. Interlock borders, glow stones and landscape design elements enable us to create a completely custom driveway you will love and be proud of.

Cities are offering grants to residents to install PUREPAVE and developers are saving 30-50% on stormwater infrastructure.

Design for the future today.







Premium Manufacturing

With Journal Publications, Federal Specification, Airports and Cities Standardizing it's use in Green Infrastructure, PurePave ensures the highest quality in permeable systems North-America Wide.

As both manufacturer and supplier, we oversee every step—from processing premium granites to engineering our advanced resin-binding systems—guaranteeing durability, strength, and aesthetic excellence. Our Scientists are working non-stop for you.

Premium Materials and Patents
High-quality granite, quartz, and marble, rigorously inspected for strength and consistency.

Advanced Bonding
Our proprietary resin system delivers superior durability and weather resistance in any climate.

Proven Performance
Over three decades of lab testing ensure exceptional infiltration, strength, and freeze-thaw resilience.



Over 2400 permeable formulations tested by our PhD Civil Eng and Science Team.



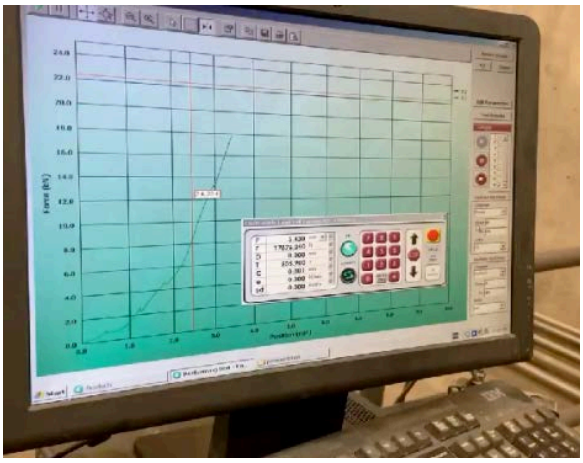
PurePave's material composite Patent contains recycled materials, is the most affordable system with highest strength, permeability, and Freeze-thaw to heat resistance.

In The Lab With PurePave

PurePave is the result of years of scientific research and material engineering, designed to revolutionize permeable systems technology. Developed with funding from the National Research Council of Canada, **our proprietary system has been published in scientific and engineering journals as a material composite breakthrough**. With superior infiltration, unmatched durability, and low maintenance, PurePave surpasses traditional permeable materials in every aspect.



Ottawa University Testing with Professor Majeed - Civil Engineer



Ottawa University Flexural Strength and Freeze Thaw Testing

THE KEY BENEFITS OF PUREPAVE PERMEABLE SYSTEMS

Superior Infiltration

35-70x more permeable than traditional brick pavers, allowing water to drain quickly and efficiently.

Extreme Durability

3-6x stronger than asphalt, with a flexural strength of 6.18MPa

No Freeze-Thaw Loss

Designed for extreme winter conditions, resisting frost heave, ice buildup, and salt damage.

Low Maintenance

Self-draining surface eliminates pooling, reducing erosion and long-term upkeep costs.

Canadian Science Publishing

NRC·CNRC Canada

TECNO SCIENTIFICA

Sustainable Civil Engineering

Sponge Cities

PUREPAVE
Earth Conscious Surfacing

Rapid urbanization has led to increased flooding, overwhelmed drainage systems, and environmental strain. Sponge cities are a revolutionary solution designed to absorb, store, and reuse rainwater efficiently, reducing flood risks and replenishing groundwater.

HOW PUREPAVE SUPPORTS SPONGE CITIES

- **High-Performance Permeability**
  PurePave infiltrates 35-70x more water than traditional materials, reducing runoff and preventing urban flooding.

- **Eco-Friendly Drainage**
  Our permeable systems naturally filter and return rainwater to the ground, restoring the water cycle. 3.5x less CO2 per square foot than asphalt.

- **Resilient Infrastructure**
  Designed for extreme weather conditions, PurePave withstands freeze-thaw cycles without cracking.

- **Sustainable Urban Design**
  Ideal for road shoulders, driveways, walkways, and parking lots, bike paths and sidewalks. Helping cities achieve long-term environmental resilience.



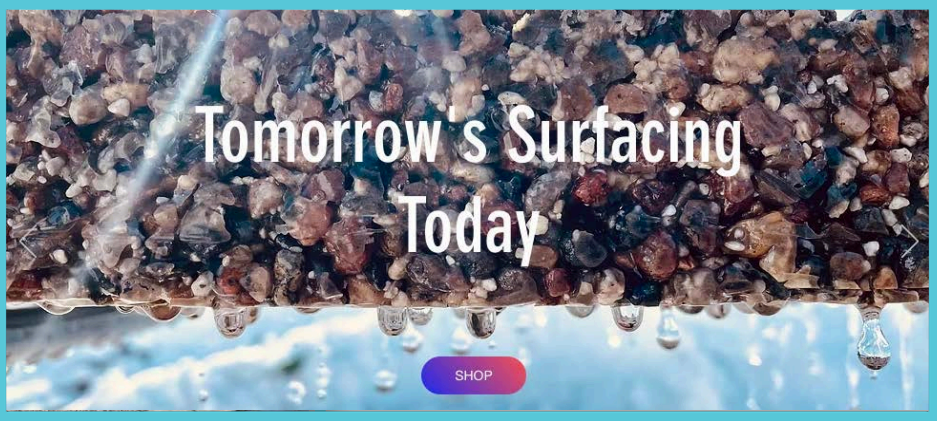
SUSTAINABLE DESIGN

Landscaping Features

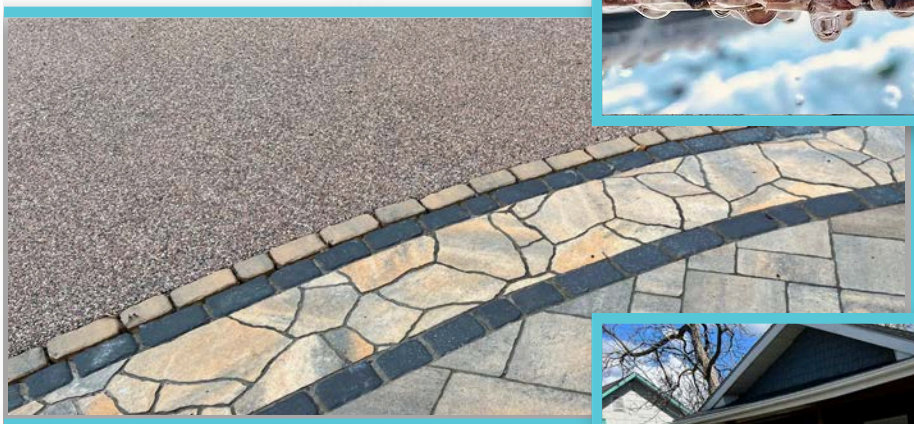
PUREPAVE
Earth Conscious Surfacing



Sponge Cities, one driveway at a time.



LOVE Your Front Yard.



PAVERS AND PUREPAVE



10 YEAR TO LIFETIME WARRANTY



Clean, Seal and renew

Neighbourhood Development

Imagine a neighborhood where every surface prevents stormwater runoff and reduces flood risks. That's the future of urban design with PurePave.

Developers can save space by eliminating stormwater ponds, cutting infrastructure costs, and securing faster permit approvals. Our permeable systems eliminate runoff where applied, maximize land use, and integrate sponge city principles for sustainable drainage.

Choose PurePave Technology and build a flood-resilient future.



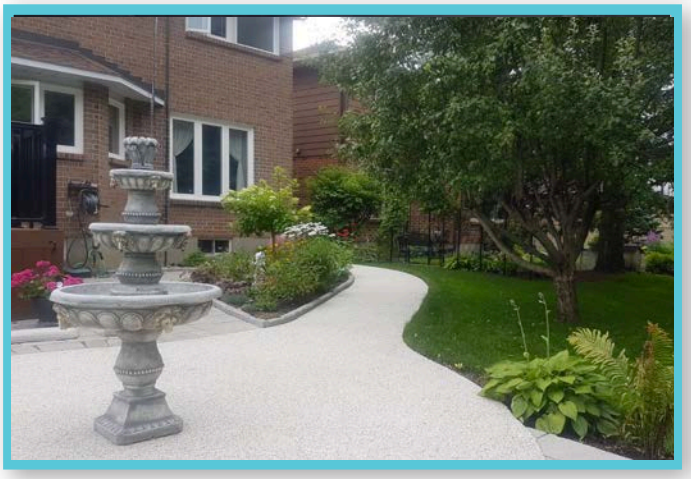
Sustainable Landscape Design

PERMEABLE PAVERS, FILTER STONE AND PUREPAVE

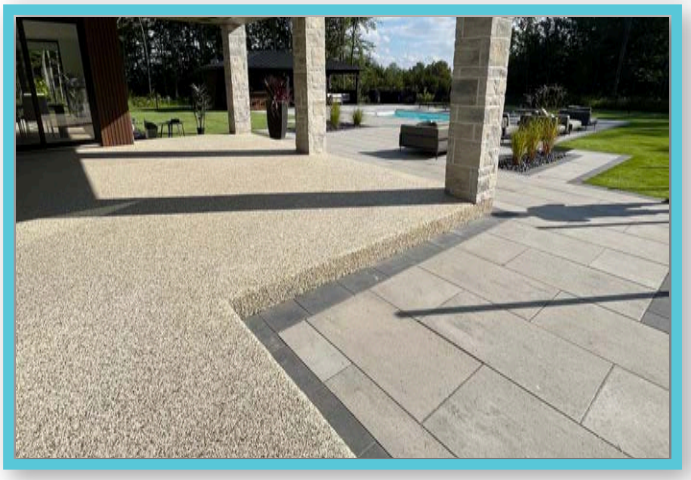
Landscape features can now significantly reduce your stormwater requirements. Unique design meets functional surfacing for your clients and sustainable development leading to savings for builders.











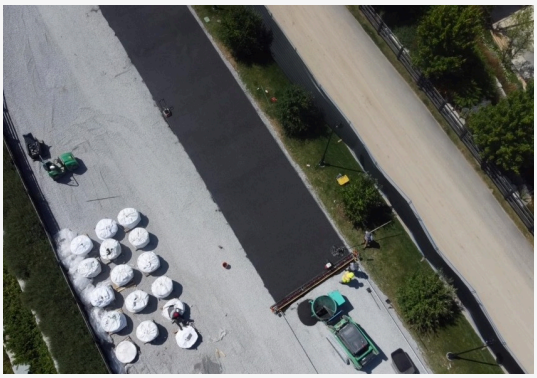


Developers: Save on Stormwater

PurePave is selected for large-scale parking lot projects, delivering premium infiltration at the best rate possible. Developers secure faster city approvals and significantly reduced infrastructure expenses.

The **projects** to date have **saved between 28-47% overall** by eliminating the need for traditional drainage systems, showcasing PurePave as a smart, sustainable solution for large commercial developments.

With market forces like these, we are making sponge cities a reality in NA.











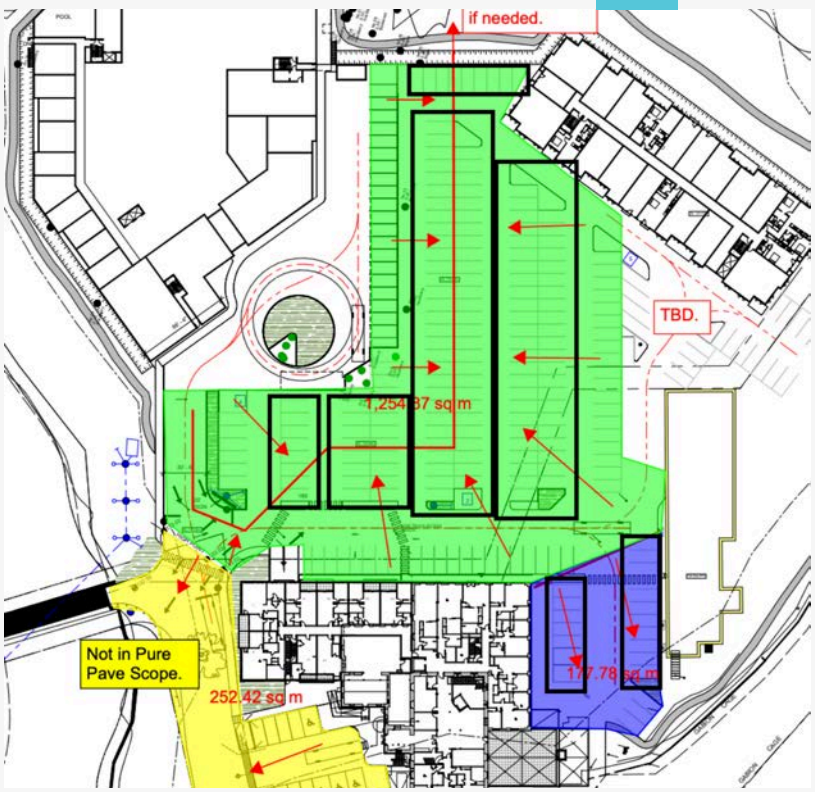
30% - 50%

SAVED ON INFRASTRURE COSTS - $$

Developers have reduced infrastructure costs by 30-50% with PurePave's efficient and cost-effective permeable system.

By eliminating ALL runoff, we reduce or delete the need for costly drainage solutions.

A **cost effective design** uses the majority of **parking stalls as PurePave drainage area,** and keeps **driving lanes asphalt** to balance costs with infiltration needs.



PurePave Contractor Training

“We installed over $2.8 Million of PurePave in our first full season” - Dylan Sandarage, Owner PermeablePlus.ca, PurePave PRO contractor

FREE **TRAINING INCLUDES:**

Technical Education
Installation expertise in PurePave’s proprietary materials and their benefits, including freeze-thaw resistance, durability and permeability.

Sales and Marketing
From sales templates and funnels to marketing videos, PR Stories, launch strategies and more. **We already know what works. Plug into profits.**

By referring a contractor to PurePave, your company will earn commissions, tracked by your profile.
Login on PurePave.com



PurePave Contractor Options

GROW WITH US, OWN YOUR MARKET

Order PurePave materials online and have them shipped anywhere nationwide. Our high-performance, permeable systems are now easier than ever to access and install.

Better materials, best prices, happy clients.



MANUFACTURED IN USA OR CANADA FOR BEST RATES IN NA.

PurePave Certified

Certified Installer Price List
Rebate after 20,000 SF
Referral Bonuses
National Brand Exposure
1 Day Sales Crash Course
1/2 Day Installation Training
Equipment: Distributor Prices

Get Started

PurePave PRO

All Certified Features+
PurePave PRO Price List
Shared Cost Marketing Plan
Co-branding PR Stories (your city)
Monthly Sales Coaching calls
Advanced Sales Presentation Training
2 Day Training at your facility
Project Support on site (5 / year)
Rental options for PurePave Paver

Go PRO

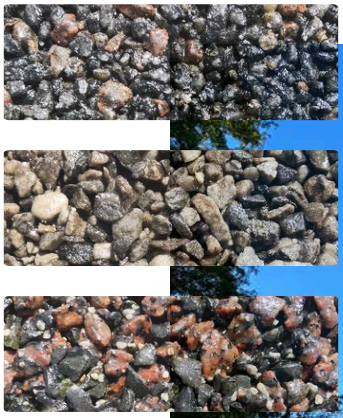
PurePave Partner

All PRO Features +
Partner Prices, priority shipping
Territory growth plan (CEO Team)
Sales services: cities, commercial
Project Support as requested
Preferred Rate Paver+Mixer Rental
Exclusivity with QA + Targets

Apply

Install PurePave in your territory and get leads, marketing, branding, sales support and more.

Luxury Home Builders





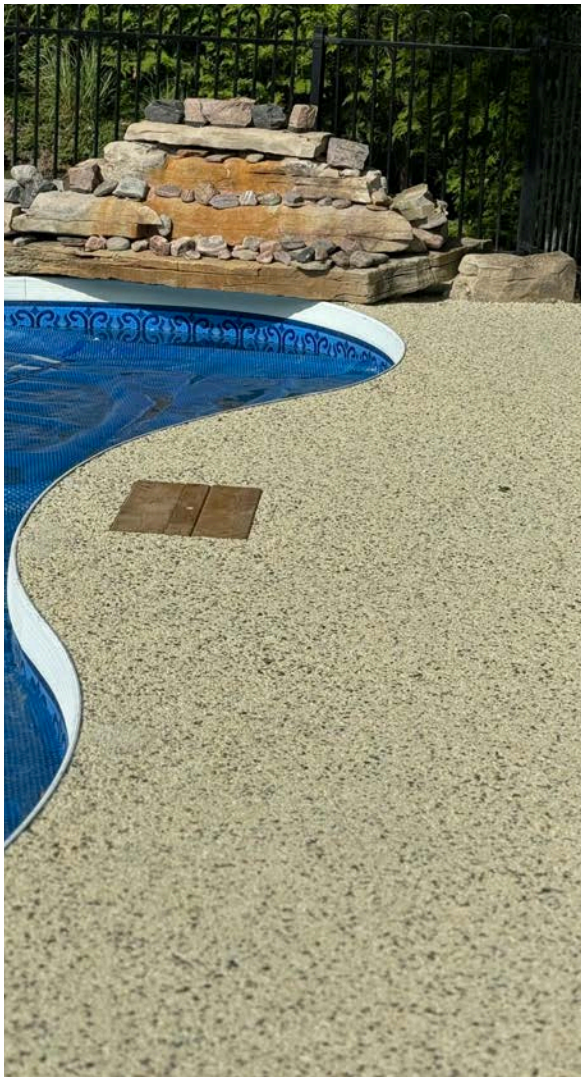


High-end, customizable granite surfacing that enhances the beauty, sustainability and value of luxury homes. Choose from a variety of colors, textures, and designs to create a driveway that matches any aesthetic. PurePave provides the perfect balance of style and function, with the added benefits of permeability, strength, and durability for any climate.

Heat Reducing Pool Solutions

PurePave is redefining pool decks with a surface that stays cool underfoot, resists mold and ants, and eliminates puddles. “PurePave HeatShield” was designed for Florida’s climate. This innovative permeable pool surfacing system provides a safe, durable, and beautiful solution without the hassle of constant maintenance.

Upgrade your poolside experience with PurePave



WHY CHOOSE PUREPAVE FOR YOUR POOL DECK?

Cool & Comfortable
No more scorching hot surfaces on sunny days.

Slip-Resistant
Safe for wet areas, reducing the risk of slips and falls.

No Puddles or Mold
Water drains instantly, preventing standing water and mold growth.

Ant-Free & Maintenance-Free
No cracks or gaps for ants to nest in, and no need for constant upkeep.

High-Value Luxury.

PurePave Parking lots

More practical paving assets

Stronger, permeable, more natural looking pavement that drinks an entire 100 year storm for fun.

Typically used to create larger eco-friendly surfaces where permeability, longevity, storm water solutions are required.

1. **Eliminate need for costly drainage systems.**
2. **Increase lot coverage on your property.**
3. **Save money on maintenance.**

Excellent for new parking lots that don't have an existing drainage system. Developers have saved hundreds of thousands using PurePave parking stalls to drain all water.

Reverse-grade asphalt to flow toward the permeable parking stalls, get the design approved by the City, and save with a sustainable drainage plan.



This developer in Ontario increased lot coverage 10% on his site.



Property managers love our all-season systems.

PUREPAVE
Earth Conscious Surfacing

Commercial Property

Advantages / Options / Design / Glowstone

Deal with water issues, melt snow / ice for safety surfacing and make your insurance provider happy.

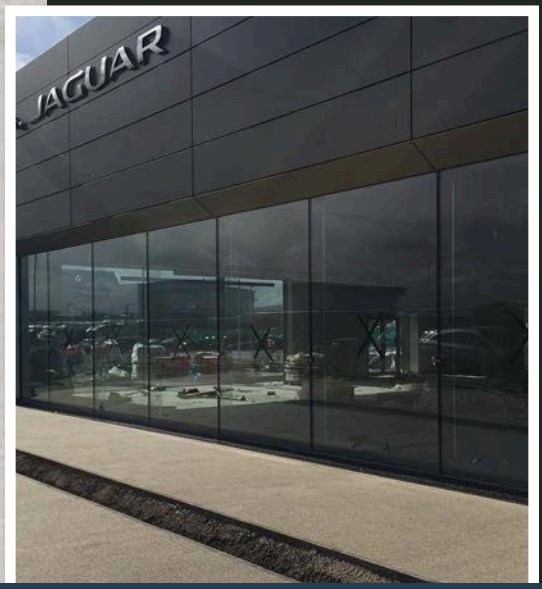
Unique Designs with local aggregates can provide an impressive wow-factor for any property.

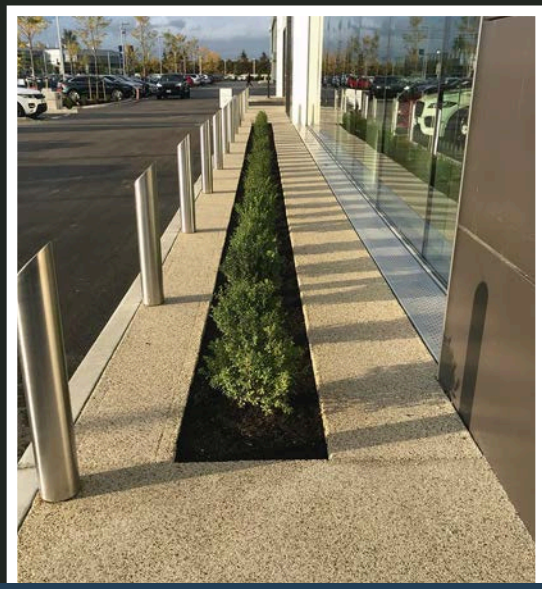
Design Entirely Permeable communities for natural stormwater management.

Benefits

- Net-zero runoff property
- Eliminate Drainage Issues
- Snow Plow friendly
- Remarkably Durable
- Anti-slip, no ice build-up
- Stunning natural aggregates
- Lower insurance premiums (regional)

- Permeable Driveways
- Parking Lots for Stormwater
- Pathways + Bike Paths
- Premium auto dealerships
- Green Street City Medians Public
- Space Patios
- Sidewalks / Walkways
- Pool Surrounds Sport Courts
- Can Overlay Concrete / Asphalt







Granite and Marble Colour Selection

Check Online for updated colours in your area.
Enhance your space with the natural beauty and durability of PurePave's permeable surfacing. Our premium selection of Granite, Quartz, and Marble offers both stunning aesthetics and superior anti-slip grip. Whether you're looking for a classic or modern finish, we have over 10+ colours to match your vision.

Black Granite



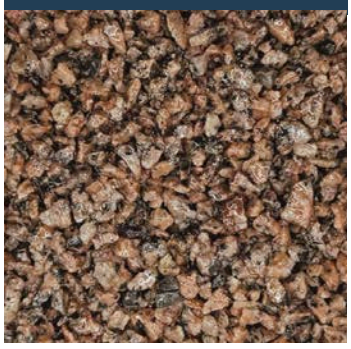
Canadian Shield



Sunset Shield



Sunset Granite



Sunset Black



Green Marble



EXPLORE MORE OPTIONS AT PUREPAVE.COM

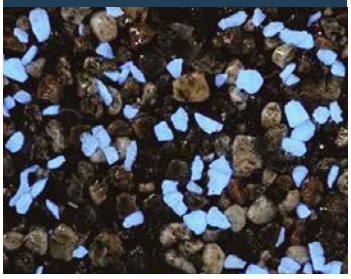
Stones, Colours and Textures (manufactured in-house)

PurePave Permeable Surfacing and anti-slip grip: Granite, Quartz & Marble.
For many other options visit our website www.PurePave.com

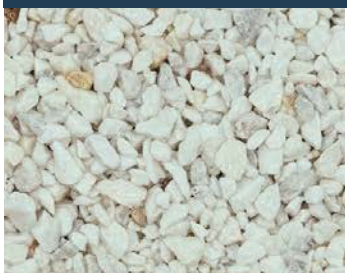
Canadian Snow



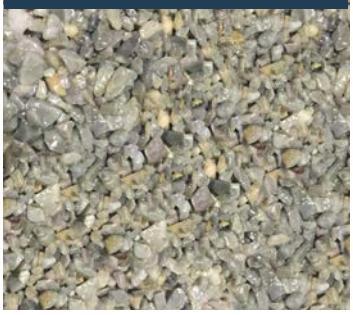
Canadian Glow



White Marble



Tremblant Grey



Smokey Black



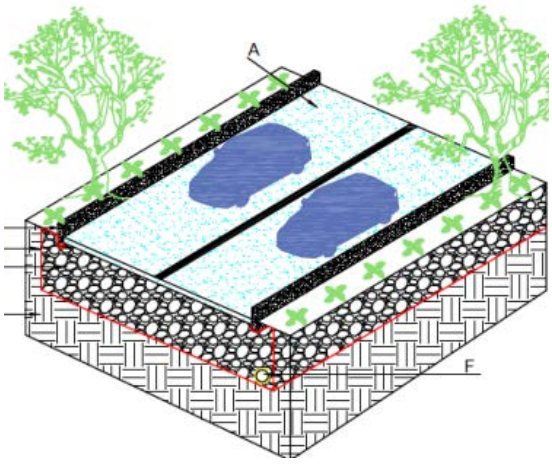
Scandinavia



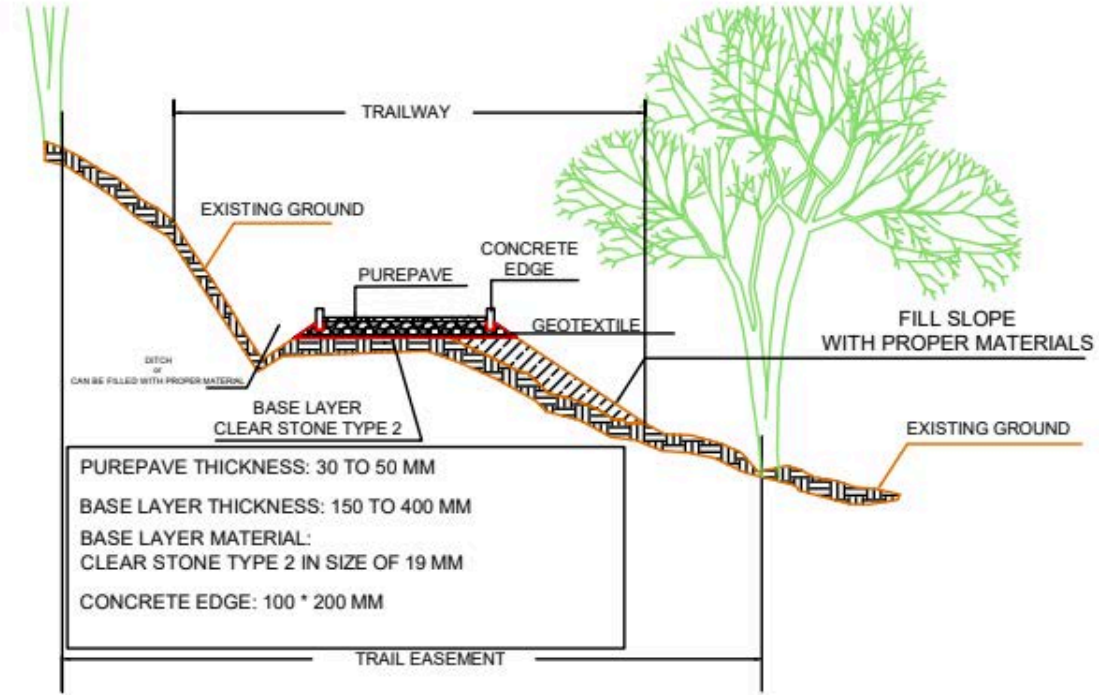


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PRODUCT SPECIFICATION

PurePave Winterized Permeable Surfacing

SCOPE

A. These 3-part specifications outline the general requirements for PurePave permeable surfacing (PurePave) construction work in projects involving either the construction of new or the rehabilitation of old parking lots and areas with light-duty applications.

B. These 3-part specifications cover the requirements for the installation of PurePave in urban stormwater management applications as a Low Impact Development (LID) feature designed to manage the Water Quality Volume (WQV), reduce flooding risk, mitigate runoff, and improve stormwater quality.

C. These 3-part specifications also apply to the use of PurePave in residential and commercial landscaping applications, including driveways, patios, pool decks, and walkways as well as in urban infrastructure such as sidewalks, pedestrian pathways, walking trails, cycling trails, multi-use paths, green spaces, tree pits, and boulevards, where enhanced drainage, slip resistance, and aesthetic appeal are desired.

D. These 3-part specifications apply to the use of PurePave in cold climate regions for infrastructure susceptible to freeze-thaw damage. PurePave's properties enhances durability through multiple freeze–thaw cycles, enhance drainage, reduce ice buildup, and minimize the need for de-icing treatments.

E. The design of PurePave is consistent with the *"Low Impact Development Stormwater Management Planning and Design Guide" (Toronto and Region Conservation Authority, Version 1.0, 2010)*, the *"Low Impact Development Technical Guidance Report for Implementation in Areas with Hydrological Constraints" (February 2021, Report No. 19-9327)*, *"Permeable pavement in northern North American urban areas: research review and knowledge gaps" (Weiss et al. 2019)*, the *"City of Toronto Design Criteria for Green Infrastructure in the Right-of-Way manual" September 2021,* and *"City of New York Department of Environmental Protection (NYC DEP) Standard Green Infrastructure Specifications" (August 1, 2024)*. Any deviations or adaptations have been made only where necessary to accommodate the specific design characteristics, installation methods, and material performance requirements of the PurePave system, while maintaining alignment with established LID and green infrastructure performance objectives.

NOTE: *The design and configuration of each PurePave system is project-specific and shall be developed based on site conditions, performance requirements, and engineering considerations.*

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes providing all materials, labor, tools, and equipment for the installation of the PurePave.

B. PurePave systems are designed to function as ecological recovery and sustainability systems, enabling the utility of vehicular and human traffic in natural settings while minimizing harm to the environment.

C. PurePave system incorporates engineered design features intended to support stormwater management objectives through the following functions:

- Reduction of stormwater peak flow rates and runoff volume through infiltration and temporary subsurface storage.
- Enhancing groundwater recharge by facilitating infiltration to underlying native soil subject to site conditions.
- Reduction of pollutant transport (e.g., sediments, hydrocarbons, road debris, and metals) through filtration, retention, and treatment of captured WQV prior to discharge.

The PurePave system provides:

- A permeable surface capable of capturing and managing the WQV.
- Subsurface storage for temporary detention of stormwater prior to infiltration and/or controlled discharge.
- Full, partial, or zero-infiltration configurations based on site-specific geotechnical and environmental conditions.
- Controlled conveyance of excess runoff through an underdrain system where infiltration capacity is limited.
- Reduction of surface runoff through distributed infiltration and subsurface storage.
- Filtration and retention of suspended solids and associated urban pollutants.
- Rapid post-storm drainage to reduce prolonged saturation and associated freeze–thaw risks.
- Reduced surface ponding through distributed infiltration and internal storage.
- Resistance to ice buildup under winter conditions.
- Reduced ice formation during melting and refreezing periods.
- Accelerated snowmelt relative to conventional impervious surfaces.
- Structural support suitable for pedestrian areas and low to medium traffic applications.
- High flexural strength to resist surface stresses and localized loading.
- Durability under repeated freeze–thaw cycles.
- Anti-slip surface characteristics to enhance user safety.
- Compatibility with routine snow removal and maintenance operations where applicable.
- Long-term hydraulic performance when maintained in accordance with recommended inspection and cleaning practices.
- Integration with stormwater infrastructure where required.
- Support for inspection, maintenance, and long-term performance monitoring.
- Accessibility-compliant surface where applicable.
- Contribution to reduction of peak runoff rates from adjacent impervious areas.
- Support of LID objectives across a variety of site development applications.

1.2 REFERENCES

This specification refers to the following standards, specifications or publications:

City of Toronto Standard Specifications

- TS 2.10 General Excavation
- TS 501 Amendment to OPSS.MUNI 501 – Construction Specification for Compacting
- TS 1010 Material Specification for Aggregate – Base, Subbase, Select Subgrade, and Backfill Material
- TS 856 Construction Specification for Pipes in Green Infrastructure
- TS 858 Construction Specification for Monitoring Wells

City of Toronto Standard Drawings

- T-708.01-5 Surface Cleanout
- T-850.041 Monitoring Well

Ontario Provincial Standard Specifications

- OPSS.MUNI 180 General Specification for the Management of Excess Materials
- OPSS.MUNI 1860 Material Specification for Geotextiles
- OPSS.PROV 1001 Material Specification for Aggregates – General
- OPSS.PROV 1004 Material Specification for Aggregates - Miscellaneous
- OPSS.MUNI 1010 Material Specification for Aggregate – Base, Subbase, Select Subgrade, Granular Surface, Shouldering, Bedding and Backfill Material
- OPSS.MUNI 320 Construction Specification for Open Graded Drainage Aggregate

Canadian Standards Association

- A23.1 Concrete Materials and Methods of Concrete Construction/ Methods of Test and Standard Practices for Concrete
- A23.2A Sieve Analysis of Fine and Coarse Aggregates
- A23.2-16A Resistance to Degradation of Small-size Coarse Aggregate by Abrasion and Impact
- A23.2-17A Resistance to Degradation of Large-size Coarse Aggregate by Abrasion and Impact

ASTM Standards

- C78 Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
- C127 Standard Test Method for Relative Density (Specific Gravity) and Absorption of Coarse Aggregate
- C128 Standard Test Method for Relative Density (Specific Gravity) and Absorption of Fine Aggregate

- C131 Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
- C535 Standard Test Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
- C666 Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
- C1688 Standard Test Method for Density and Void Content of Freshly Mixed Pervious Concrete
- C1701 Standard Test Method for Infiltration Rate of In Place Pervious Concrete
- D448 Standard Classification for Sizes of Aggregate for Road and Bridge Construction
- D638 Standard Test Method for Tensile Properties of Plastics
- D695 Standard Test Method for Compressive Properties of Rigid Plastics
- D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil using Standard Effort
- D790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
- D2240 Standard Test Method for Rubber Property—Durometer Hardness
- D2434 Standard Test Methods for Measurement of Hydraulic Conductivity of Coarse-Grained Soils
- D2937 Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method
- D3385 Standard Test Method for Infiltration Rate of Soils in Field Using Double-Ring Infiltrometer

Other Standards

- City of New York Department of Transportation, Infrastructure Design Standards, Standard Highway Specifications and
- The city of New York Department of Environmental Protection; Standard Green Infrastructure Specifications. More Info

1.3 DEFINITIONS

The PurePave system provides:

For the purpose of this specification, the following definitions apply:

PurePave Winterized Permeable Surfacing (PurePave) means a permeable pavement system consisting of a resin-bound aggregate surface installed over an open-graded aggregate storage layer and associated drainage components, designed to provide structural support while enabling stormwater infiltration, storage, and controlled conveyance.

Polymeric Binder means the engineered polyurethane-based binding material that coats and bonds aggregates together to form a continuous, permeable, load-distributing surface layer.

Storage Layer or Aggregate Reservoir means a layer of open-graded aggregate placed below the PurePave to provide temporary subsurface storage and conveyance of stormwater.

Open-Graded Aggregate Storage Layer means a layer of clean, uniformly graded aggregate placed above the prepared subgrade to provide structural support and temporary subsurface storage.

Underdrain means a perforated pipe installed within the aggregate reservoir to convey excess water from the system when infiltration capacity is exceeded.

Raised Underdrain means an underdrain installed above the base of the aggregate reservoir to allow internal water storage and promote partial infiltration prior to discharge.

Full Infiltration System means a permeable pavement system configured to infiltrate captured stormwater entirely into the underlying native soils without reliance on an underdrain for routine drainage.

Partial Infiltration System means a permeable pavement system configured to allow a portion of captured stormwater to infiltrate into the underlying native soils while conveying excess water through an underdrain system.

Zero-Infiltration System means a permeable pavement system configured to prevent infiltration into the underlying soils through the use of an impermeable liner or equivalent barrier, with captured stormwater conveyed through an underdrain or drainage system for discharge.

Water Quality Volume (WQV) means the stormwater runoff volume associated with the design rainfall event intended to be captured, treated, and managed within the PurePave system.

Edge Restraint means a curb, edging, building interface, or other appurtenance intended to confine the permeable pavement system and prevent lateral movement of the surface or underlying aggregates.

Joint means a vertical interface between the permeable pavement system and adjacent pavement or rigid infrastructure.

Subgrade means the native soil or prepared surface upon which the permeable pavement structure is constructed.

Inspection and Maintenance Access means provisions within the system allowing for monitoring, cleaning, and flushing of underdrains or aggregate layers.

Monitoring Well means a vertical access point installed within the system to allow observation and measurement of subsurface water levels or system performance.

Surface Cleanout means a surface-accessible maintenance point connected to the underdrain system to allow inspection and flushing.

Impermeable Liner means a continuous geomembrane barrier installed within or beneath the PurePave system to prevent infiltration into underlying soils and to direct captured stormwater toward controlled drainage systems where required by design.

Geotextile means a permeable nonwoven fabric installed within the PurePave system to provide separation, filtration, and stabilization between soil and aggregate layers, and to protect drainage components such as underdrains and monitoring wells from migration of fines.

Stiff Biaxial Geogrid means a polymeric grid structure with high junction strength and stiffness, installed within the PurePave system—typically at the subgrade interface—to improve load distribution, enhance subgrade stabilization, and provide lateral confinement of the aggregate base.

Structural Internal Grid (SIG) means a load-distributing structural layer installed between the PurePave surface course and the aggregate reservoir to enhance structural stability and support load transfer.

Drainage Cell means a modular subsurface component installed to provide additional void space for stormwater storage while supporting load distribution.

Concrete Divider means a cast-in-place or precast concrete element installed within the system to enhance structural integrity and load distribution where required by design.

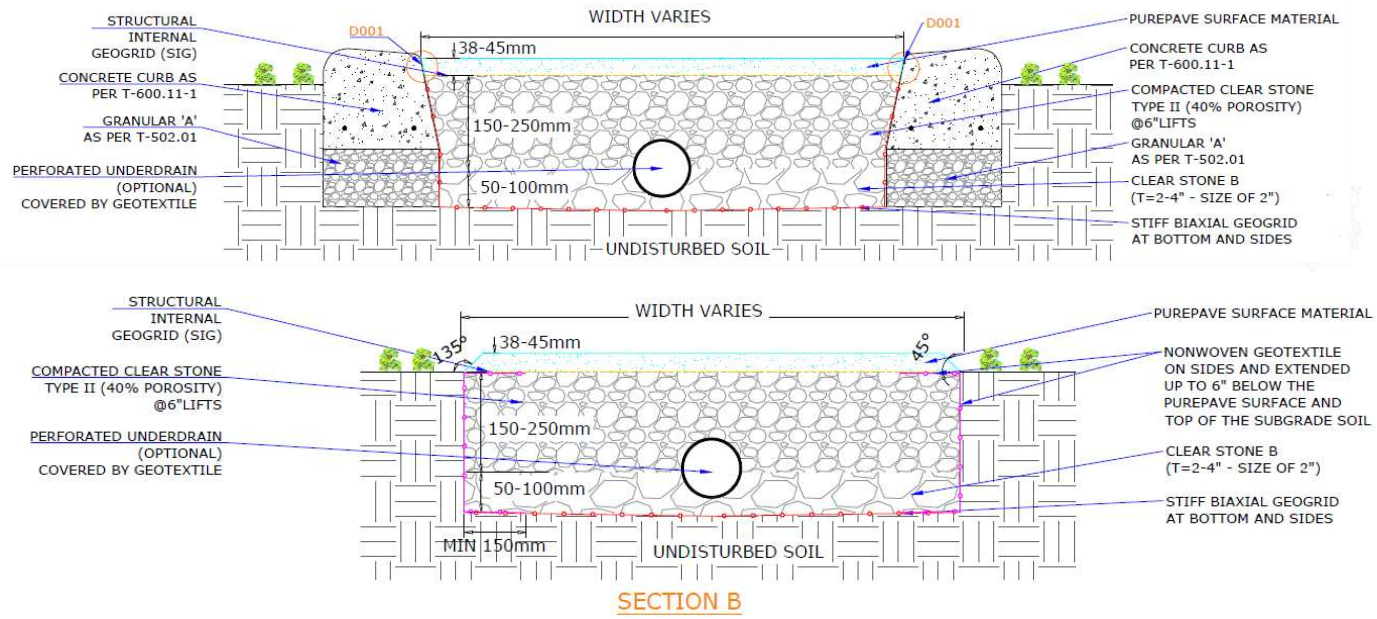
Full Depth Concrete Flush Header means a cast-in-place or precast concrete element extending through the full depth of the PurePave system, installed flush with adjacent surfaces to provide lateral separation between the permeable system and adjoining infrastructure.

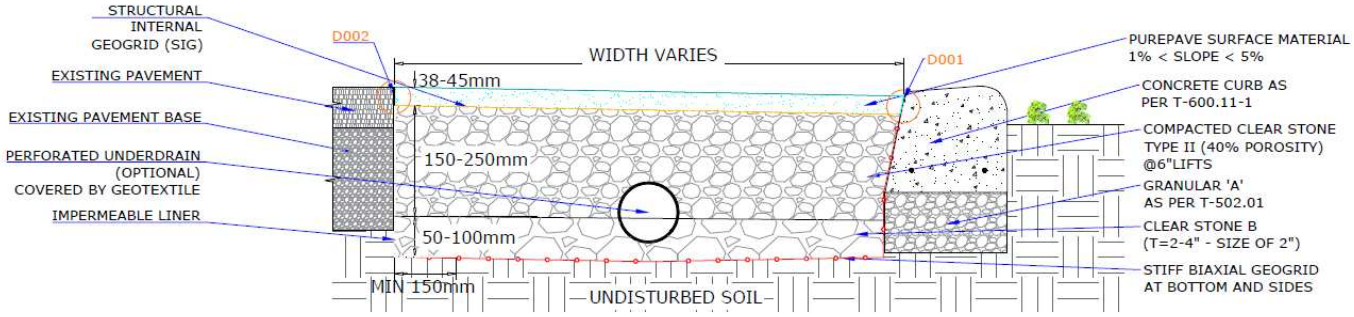
1.4 SUBMITTALS

A. PurePave product information can be found at: https://www.purepave.com/

B. Installation guidelines:

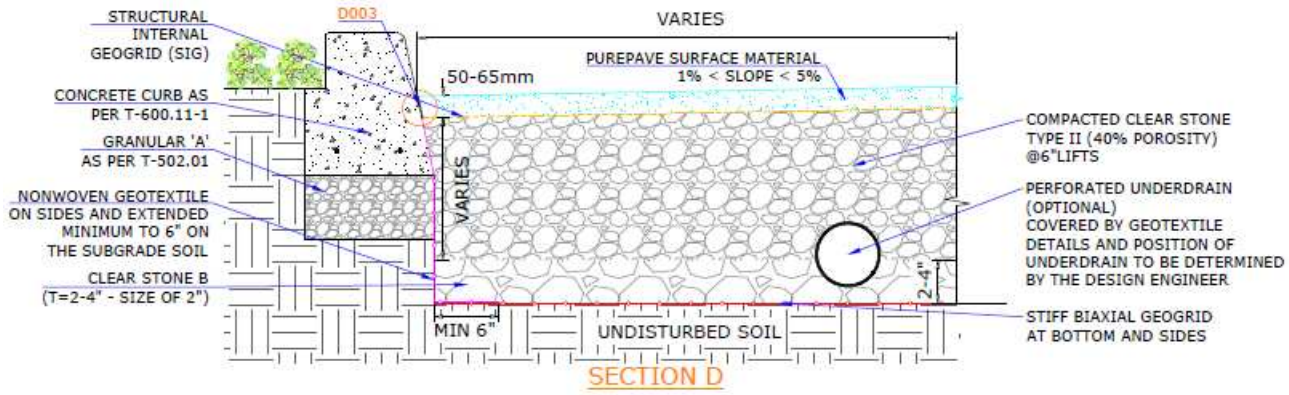
- Site preparation, mixing instructions, CAD illustrations, installation, equipment, and post-installation care are created for each individual project; show materials properties, dimensions of the area, the portion of mixing materials, cross-section of PurePave, edge details, and required tests.
- Example images of PurePave for light-duty applications:



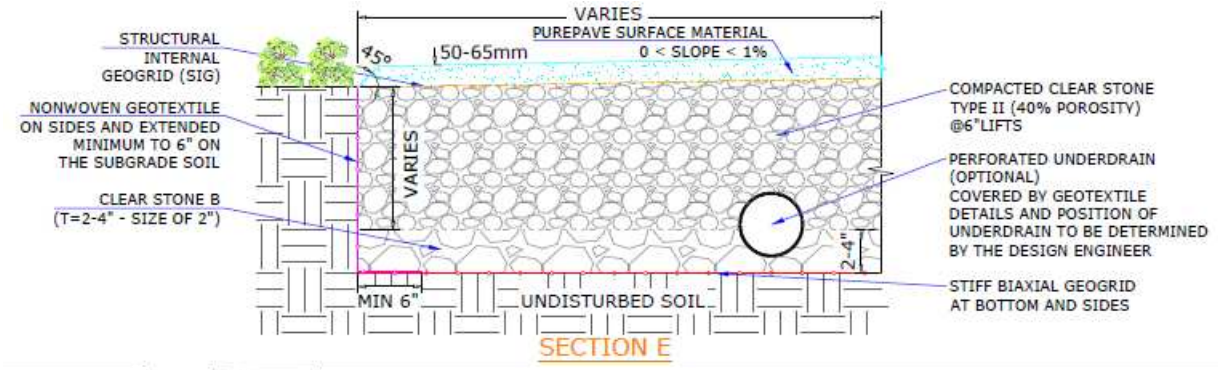


SECTION C

- Example images of PurePave for parking lots.

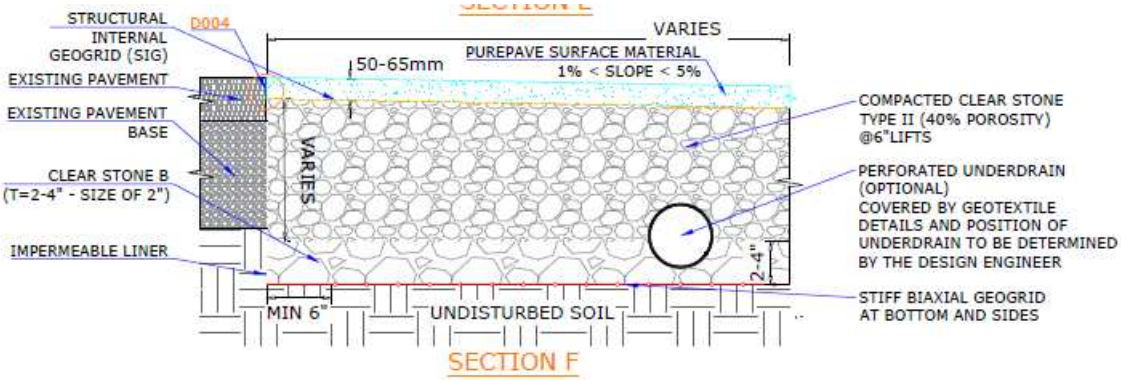


SECTION D



SECTION E

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- Equipment data sheets confirming the paving machine meets the performance requirements in Part 2.
- Calibration documentation for paving thickness controls and leveling systems.
- Operator qualifications demonstrating experience with fully automatic paving equipment for uniform thin-lift aggregate placement.
- Maintenance and inspection records (if applicable) showing the machine is in proper working condition.

C. Closeout Submittals:

- Pre-Installation Meeting: Prior to installation of any materials, a pre-installation meeting shall be conducted to discuss the scope of work and review installation requirements. The pre-installation meeting shall be attended by all parties involved in the installation of the PurePave system.
- Installation should be performed by certified contractors of PurePave and verified by emailing projects@PurePave.com.
- PurePave provides a 5-10-year guarantee for cracking, settlement, and deflection for the installed PurePave by certified contractors of PurePave. Installers also offer to renew the warranty indefinitely, with maintenance checks and cleaning every 3 years.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURE

- PurePave Technology Inc., 1505 Laperriere Ave, K1Z 7T1, Ottawa, ON, Canada. Phone: (613) 614-1868 | (613) 691-4751 | E-mail: Taylor@purepave.com | Website: www.purepave.com

2.2 PUREPAVE

A. Material specifications:

1. PurePave uses a polymeric binder, a 2-part blend, partial plant-based polyurethane (PU) binder, or single-part binder, depending on use case and climate.
2. PurePave can be installed in cold temperatures down to 14 °F/-10°C
3. PurePave uses a wide range of aggregate types (granite, dolomite, marble) and colors (white, multi-red, grey, sunset red, black).
4. PurePave uses different aggregate sizes with different PU contents in the mixtures.

5. PurePave uses clear stone granular B and clear stone type 2 as a base material.
6. PurePave uses a stiff biaxial geogrid to ensure structural integrity.
7. PurePave uses SIG between PurePave surface layer and Open-graded Coarse aggregate layer to increase structural integrity and prevent cracking.
8. PurePave uses perforated HDPE/PVC underdrain pipes if the subgrade soil infiltration rates are insufficient (< 15mm/hr or 0.59 inch/hr).
9. PurePave might use R-tank drainage cells[1] with a minimum void area of 85% in base layer.
10. PurePave might use microgrid to prevent the clear stones from entering the R-tank drainage cells, while allowing for the free flow of water within the system.
11. PurePave uses Terrafix 360R non-woven geotextile fabric layer to cover the perforated underdrain pipes and monitoring wells for infiltration purposes, and in weak soils.
12. PurePave uses Terrafix 360R non-woven geotextile fabric where required to provide separation, filtration, and stabilization at interfaces where native soils or adjacent materials may migrate into the open-graded aggregate base of the PurePave system..
13. PurePave should be separated from the existing pavement (asphalt or concrete) to prevent lateral water migration and protect the structural integrity of the existing pavement.
14. PurePave should be separated from the existing sidewalk with proper edge restraint incorporating proper non-woven geotextile layer as defined in #12.[2]
15. PurePave may include concrete dividers to increase structural integrity and improve load-bearing capacity. In this case, the properties to be determined by the design engineer.
16. Check dams may be installed within the PurePave storage layer, if specified in the design, to control longitudinal flow, reduce runoff velocity, and provide additional storage. Properties, spacing, elevations, and dimensions to be determined by the design engineer.
17. PurePave may incorporate monitoring wells in accordance with T-850.041 for the purpose of observing subsurface water levels, evaluating system performance, and supporting long-term maintenance and performance monitoring.
18. PurePave may incorporate water level sensors, water quality sensors, pavement deflection sensors, and load-bearing sensors to support performance monitoring. The type and location of sensors shall be determined by the Design Engineer.
19. PurePave may be installed with different edge configurations as illustrated in Section 1.4B, including curbed edges, 45° sloped edges, and mixed interfaces with adjacent pavement separated by flexible joints.
20. PurePave may incorporate surface cleanouts for inspection, flushing, and maintenance of the underdrain system, in accordance with T-708.01-5.

B. Physical Properties:

1. PU binder of PurePave has a tensile strength of 75.8 MPa (11,000 psi) and elongation of up to 209%.
2. Aggregate sizes of PurePave ranges are Size 0: < 0.075 mm (0.0029”), Size 1: 2.36-4.75 mm (No.8-No.4), and Size 2: 4.75 mm (No.4) which mix with different PU content (5-7%).
3. The aggregate specific gravity is about 1.6 g/cm^3 (100 lb/ft^3).

[1] PPRS may incorporate drainage cells where required by the design; the use of such cells is not mandatory and is determined based on project-specific hydraulic and structural requirements.
[2] Concrete curb as per T-600.11-1 or to be determined by designed engineer.

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4. Clear stone granular B, single graded, with particle size of 50 mm (2”); used in depth of 50-100 mm (2-4”) on top of the subgrade soil.
5. Clear stone Type 2, single-graded, with particle sizes of 19 mm (3/4”), used in successive layers as specified.
6. PurePave should have a minimum flexural strength of 2.76 MPa (400 psi) when tested in accordance with ASTM C78, a porosity between 15% and 25% conforming ASTM C1688, and a minimum permeability of 6530 L/m^2/hr (250 inch/hr) when tested in accordance with ASTM C1701.
7. Titan Gladiator Grid® 650 has a flexural rigidity of 3,500,000 mg-cm based on ASTM D7748, Radial stiffness at 0.5% strain of 44,551 lb/ft (650 kN/m) according to ASTM D6637, 100% resistance to UV degradation at 500 hours in accordance with ASTM D4355, 100% resistance to chemical degradation based on EPA 9090, and aperture size of 33.0 mm (1.30 inch) in both directions.
8. The SIG properties should be in accordance with the manufacturer’s specifications, shall be installed between the PurePave permeable surfacing material and the open-graded aggregate storage layer.
9. Terrafix 360R non-woven geotextile to wrap the perforated underdrain pipes and monitoring wells for infiltration purposes and to provide separation in areas with weak soils and to provide separation along the interface with the PPRS and sidewalk where required.
10. R-tank drainage cell[3] units have a minimum surface void area of 85%, minimum compressive strength of 1.65 MPa (240.2 psi) in accordance with ASTM D2412 and ASTM F2418 and required 150 mm (6 inches) cover to support HS-20 loads.
11. Microgrid should have an ultimate strength – machine direction (MD) of 1,700+/- 5% lbs./ft and ultimate strength – cross machine direction (XMD) of 1,400 +/- 5% lbs./ft based on ASTM 4595, aperture size of 0.08 +/- 5% inches, and ultraviolet resistance (500 hours) of 78% conforming ASTM D4355.
12. The Impermeable Liner types include EPDM (Ethylene Propylene Diene Monomer), GCL (Geosynthetic Clay Liner), RPE (Reinforced Polyethylene), PVC (Poly Vinyl Chloride), and others as approved. Impermeable liner seams shall be sealed per manufacturer specifications. Impermeable liner suggested to be made of of PVC geomembrane of minimum 10 mil thickness, meeting or exceeding the requirements of ASTM D7176 Standard Specification for PVC geomembranes used in buried applications.
13. When concrete dividers are required, their properties and spacing must be specified by the design engineer.
14. Edge restraint is concrete curb as per T-600.11-1 or to be determined by designed engineer.
15. Monitoring Wells as per T-850.041.
16. Surface cleanouts shall be provided in accordance with T-708.01-5 to allow access for inspection, flushing, and maintenance of the underdrain system.

C. Performance Characteristics:

1. PurePave has a flexural strength of 6.18 MPa (896.3 psi) with no strength loss after 40 cycles of freeze-thaw (-40°C in a freezer followed by one hour at +35°C in a heated storage unit).
2. PurePave has high flexibility and is crack-resistant.
3. PurePave has a high resistance to UV, salt, vehicle weight, or water.
4. PurePave has an average surface infiltration rate of 38,000 l/m^2/hr (933 gal/ft^2/hr).

[3] R-Tank drainage cells are optional. If R-Tank units are not used, the base layer shall be filled with clear stone B and Type 2 in accordance with the design specifications.

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5. PurePave has an average porosity of 20% and infiltrates water over the entire surface.
6. PurePave is resistant to ice build-up and with a permeable clear stone base, has the ability to melt snow ~ 50% faster compared to standard surfaces.
7. PurePave has a ~ 30 times lower carbon footprint compared to concrete/asphalt.
8. PurePave has the ability to infiltrate polluted stormwaters and contributes to reducing the urban heat island effect.
9. PurePave is an Accessibility for Ontarians with Disabilities Act (AODA) compliant, ideal for wheelchair access.

D. Dimensions

1. The base layer thickness varies for each project depending on the specific project requirements, surface slope, existing storm sewer, necessity of underdrain, traffic load and hydrological conditions.
2. The thickness of the PurePave surface is typically between 38 and 45 mm for light-duty applications and between 50 and 65 mm for parking lot applications, as determined based on traffic loads.
3. PurePave width and length has no restrictions for parking lot applications. PurePave width for light-duty applications varies based on the project conditions, with no restrictions on length.
4. The dimensions and locations of check dams shall vary based on project-specific design requirements, including longitudinal slope, hydraulic performance objectives, and drainage configuration.
5. The HDPE/PVC 200 mm (8") diameter perforated underdrain shall be installed with lengths determined by the design and elevations set in accordance with the selected system configuration (full infiltration, partial infiltration, or zero infiltration). Raised underdrains shall be designed to meet applicable LID guidelines and achieve a drawdown time of less than 48 hours. The effects of frost penetration shall also be considered; where underdrain elevation cannot meet frost depth requirements, the associated limitations shall be identified and documented in the design.

E. Equipment

E.1. Automatic Paving Machine Requirements

PurePave uses a fully automatic custom permeable paving machine specifically engineered for the placement of thin-lift PurePave Rustic HD permeable surfacing layers. Equipment used to finish PurePave layer differs significantly from conventional asphalt or concrete paving machinery. Unlike asphalt pavers or concrete screeds, designed for high-temperature mixes or rigid cementitious materials, the PurePave paving system is developed to handle polymeric binder mixes, maintain aggregate coating integrity, and place PurePave without segregation or compaction damage. The system incorporates controlled heating, binder-compatible delivery components, and a precision self-leveling screed suitable for PurePave materials.

Key machine features include:

- **Working Width:** Variable paving width up to 2,700 mm or 107.3 inches (adjustable).
- **Paving Speed and Productivity:** Continuously variable paving speed from 0.8 to 4.5 m/min (2.62 to 14.75 ft/min).
- **Area production capacity:** Up to 730 m²/hr (8180 ft²/hr) under optimal conditions.
- **Thickness Control:** Automated layer thickness from 0 to 65 mm (0 to 2.5”), adjustable from both sides of the machine.
- **Material Compatibility:** Engineered to spread PurePave mixtures uniformly without segregation or

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over-compaction.

- **Self-Leveling System:** Includes lateral screed bar, automatic grade and curve control, and sensor-based leveling to ensure a smooth, jointless surface.
- **Binder-Compatible Handling:** Equipped with appropriate heating elements and overflow systems to ensure uniform distribution of elastic, polymer-bound aggregates.

E.2. Manual and Hand-Application Equipment

Hand Spreaders / Rakes:

- Aluminum or steel landscape rakes with non-damaging tines, suitable for spreading clear stone and leveling thin-lift aggregates.
- Must enable consistent distribution without causing particle segregation.

Hand Tamping Tools:

- Manual tampers used for localized compaction near edges, structures, posts, catch basins, guardrails, or areas inaccessible to mechanical equipment.
- Must not alter the air void structure or damage permeable materials.

Screeding Bars / Straightedges:

- Adjustable aluminum or steel screed bars for hand-leveling and surface refinement.
- Must be lightweight, rigid, and capable of achieving flatness tolerance required for PurePave systems.

Mixing / Measuring Tools

- Graduated containers, mixing paddles, and handheld mixing equipment.

Edge-Forming Tools

Trowels, edging tools, or form boards for shaping edges, transitions, and utility interface zones.

PART 3 EXECUTION

3.1 EXAMINATION

A. Conduct a site inspection prior to design and installation to assess existing conditions relevant to the PurePave system.

B. Geotechnical and hydrological reports might be required to support the design of PurePave.

B.1. Geotechnical investigations to determine soil composition/types, stratification, properties, bearing capacity, depth to bedrock, soil management option in view of their quality, i.e. to determine if contamination is present under Part XV.1 of the Environmental Protection Act (EPA).

B.2. Hydrological Investigations:

i. In-situ infiltration testing to confirm hydraulic conductivity and design infiltration rates
ii. Groundwater conditions, including seasonally high groundwater elevation, seasonal fluctuation, and potential for groundwater contamination.

C. Verify that site conditions match those shown on the drawings. Confirmation of subgrade conditions is essential for proper PurePave design and performance.

3.2 PREPARATION

A. Site Preparation

1. Remove all surface debris, organic material, vegetation, and unsuitable soils from areas designated for PurePave installation.
2. Ensure access is available for mechanical and manual installation equipment.
3. Protect adjacent pavements, structures, utilities, and vegetation from damage during excavation and material placement.

B. Subgrade Preparation

1. Excavate to the required depth as indicated on the drawings and as required to achieve design elevations.
2. Excavation must be made to dimensions enough to accommodate placement of the biaxial geogrid, clean open graded stone, drainage cells if applicable, microgrid geotextile and leveling course with PurePave. NOTE: The existence of drainage cells depends on the design requirements.
3. Any overcut underlying soil must be removed from the excavation, and the bottom must be compacted only as specified and required elsewhere.
4. Inspect the exposed subgrade for stability, uniformity, and moisture content.
5. The subgrade under the storage layer must not be compacted unless specified in the design.
6. Prepared subgrades under all infiltration areas must not be compacted and must not be subjected to construction equipment traffic. Where erosion has caused accumulation of sediment or ponding on the subgrade, remove sediment with light equipment and/or manually.
7. Install check dams where specified in the design. Check dam dimensions, spacing, and elevations shall be determined by the design engineer. Construct check dams on the prepared subgrade prior to placement of biaxial geogrid and open-graded stone base, ensuring they are keyed into the subgrade and aligned perpendicular to flow. In most cases, check dams consist of in-situ subgrade material formed during excavation and grading, and do not require imported materials.

C. Impermeable Liner

1. The Impermeable Liner must be made of Polyvinyl Chloride (PVC) geomembrane of 30 mil thickness or approved materials, meeting or exceeding the requirements of ASTM D7176 Standard Specification for PVC geomembranes used in buried applications.
2. The finished liner must be free of pinholes, blisters, and contaminants.
3. The impermeable liner will be sized, cut and installed in accordance with the approved shop drawings and specifications. The impermeable liner will cover the entire footprint of which concrete is intended to be poured.
4. The impermeable liner will cover the interface between PurePave base layer and adjacent pavement.

D. Edge Restraint

1. Dimensioned in accordance with specifications, Contract Drawings, and directions of the Engineer.
2. Edge restraint type shall be selected based on the project configuration and may include concrete curb as per T-600.11-1, sloped edge transitions, or flexible interfaces adjacent to asphalt or other hardscape surfaces.

3. Installed over undisturbed subgrade or a well-compacted Granular 'A' unless otherwise noted.
4. Where concrete curb is used, it shall maintain the profile and elevation required to match adjacent surfaces and provide proper grade separation.
5. Where sloped edges or mixed interfaces are used, the edge treatment shall be constructed to provide lateral confinement and prevent migration of base materials, in accordance with the design drawings.

E. Geotechnical Components

1. Each biaxial geogrid roll must be wrapped with an overlaying material that will protect the material, including the ends of the roll, from damage due to shipment, water, sunlight, and contaminants.
2. Each geotextile roll must be wrapped with an overlaying material that will protect the geotextile, including the ends of the roll, from damage due to shipment, water, sunlight, and contaminants. The protective wrapping must be maintained during periods of shipment and storage.
3. Each microgrid roll must be wrapped with an overlaying material that will protect the material, including the ends of the roll, from damage due to shipment, water, sunlight, and contaminants. The protective wrapping must be maintained during periods of shipment and storage.
4. Install geotextile fabric, if specified, in accordance with manufacturer recommendations and project drawings.
5. Place a stiff biaxial geogrid, as specified in the drawings, on the prepared subgrade where required to ensure structural stability and load distribution.
6. The biaxial geogrid to be continued up along the trench sides as specified in the drawings.
7. Ensure geosynthetic materials are placed smooth, without wrinkles, folds, or tension.

F. Underdrain Preparation (If specified)

Follow the manufacturer's drawings and documents.

G. Verification Prior to Installation

1. Confirm all elevations, grades, slopes, and drainage features match design intent.
2. Ensure subgrade elevation and check dam position are within tolerance required for PurePave layer uniformity.
3. Obtain approval from the Owner's Representative or Engineer before placing subbase materials.

3.3 INSTALLATION

A. General Installation Requirements

1. Install all PurePave components in accordance with the approved design drawings, manufacturer recommendations, and these specifications.
2. Do not install materials during rain, excessive surface moisture, or when temperatures fall below the minimum binder installation requirements.
3. Ensure all layers are placed true to line, grade, and thickness as specified.

B. Monitoring Well (If Required)

1. Install Monitoring wells at the locations and depths indicated on the drawings to allow monitoring of subbase and subgrade drainage performance.
2. Monitoring wells may extend to the subgrade soil or terminate at the top of the geomembrane layer, as indicated on the drawings.
3. Construct wells using 150 mm (6”) perforated HDPE/PVC pipe, or as specified in the documents (T-850.041), surrounded by clear stone and wrapped in geotextile as specified.
4. Ensure the top of the well is fitted with a secure cap, flush with or slightly above finished grade, as required.
1. Verify wells remain vertical, unobstructed, and protected during construction.

C. Biaxial Geogrid

2. Install the biaxial geogrid directly over the prepared subgrade, free of wrinkles, folds, or tension. Ensure the geogrid is placed in intimate contact with the subgrade to provide proper reinforcement.
3. If the biaxial geogrid is damaged during installation, the damaged section(s) must be removed, and the damaged area must be covered with a patch of new fabric which will overlap the undamaged fabric with twelve (12) inches in all directions.
4. Secure the geogrid in place using pins, stakes, or stone ballast to prevent movement during stone placement. Do not allow construction equipment to disturb or displace the geogrid after placement.

D. Geotextile

1. Install the non-woven geotextile, if specified, on the prepared cast-in-place concrete curb in accordance with the drawings.
2. The non-woven geotextile to be continued on the subgrade soil as specified in the drawings.

E. Underdrain Installation (If Required)

1. Install perforated HDPE/PVC underdrain pipes, fittings, and cleanouts at the locations and elevations shown on the drawings.
2. Wrap underdrain pipes with geotextile fabric as specified to enhance treatment and reduce clogging.
3. Perforated underdrain pipes with single-sided perforations shall be installed with the perforations located along the lower half of the pipe. Where pipes with 360° perforations are used, a geotextile or membrane strip shall be placed over the pipe to minimize migration of fines from the overlying media. or PurePave applications, covering the underdrain with geotextile is preferred.
4. Backfill underdrain trenches with Clear Stone B and Type 2 based on the design and ensure positive drainage to the specified outlet.
5. Verify that underdrain components do not shift during placement of subbase or PurePave materials.
6. The underdrain shall be installed at a longitudinal slope between 1% and 5%, as determined by project-specific design requirements. Where check dams are incorporated, a continuous underdrain may not be required along the full length of the PurePave. The underdrain length and configuration shall be as specified in the design documents and drawings.

F. Drainage Cells[4]

1. Base of the excavation for the drainage cells must be uniform, level, and free of lumps, debris, or soft yielding subgrade areas.
2. If indications of the water table are observed during excavation, the Engineer must be contacted to provide recommendations. It is recommended that the bottom of the PurePave remain at least 1 m above the seasonal high water table.
3. Place a thin layer (80.0 mm (3") unless otherwise specified) of clean open-graded stone base, over the biaxial geogrid on the subgrade to establish a level working platform for the drainage cells. Level to within 13.0 mm (+/-6.35 mm) (½" (+/- ¼")) or as shown on the plans. Bedding materials must be prepared in accordance with the contract documents.
4. Install drainage cells in layers in accordance with the contract drawings. drainage cell components must be connected to all other components for each layer. Layers must stack on top of each preceding layer evenly. No vertical connection between layers is required. The panels are to be oriented and at the required depth as per the contract drawings.
5. Wrap the drainage cells top and sides in specified microgrid material as approved and directed by the Engineer. Use special care to avoid any damage to microgrid during installation.

G. Storage Layer

1. Place Clear Stone B to a depth of 50-100 mm (2-4") on the prepared subgrade and incorporated geotextile/geogrid/geomembrane layers, followed by Clear Stone Type 2 base placed in lifts with a maximum thickness of 150 mm (6") and compacted accordingly.
2. Where the PurePave incorporates drainage cells, the perimeter of the drainage cells shall be surrounded with Clear Stone Type 2 placed in 150 mm (6") lifts. Each lift shall be placed around the entire perimeter such that the difference in elevation between adjacent backfill locations does not exceed 600 mm (24") at any point along the perimeter of the drainage cells.
3. Open-graded stone base shall be carefully placed and compacted in the perimeter spaces around the drainage cells. No fill shall be placed over top of drainage cells until the perimeter backfill has been completed.
4. Each lift must be compacted until no further densification is observed. The side lifts must be compacted by walk plate compactor.
5. Use special care to ensure the compaction process does not allow machinery to come into contact with the drainage cells due to the potential for damage to the Microgrid and drainage cells.
6. No compaction equipment is permissible to operate directly on drainage cells.
7. During construction, keep the drainage cells free from foreign matter. The cells must be left thoroughly clean to the satisfaction of the Engineer.
8. If no drainage cells are used in PurePave system, the clean open-graded stone base must be compacted. A minimum 200-pound walk-behind plate compactor must be used on each lift of 150 mm (6"). Compaction using the plate compactor must include four (4) passes in each direction longitudinally along length of the

[4] R-Tank drainage cells are optional. If R-Tank units are not used, the base layer shall be filled with clear stone Type 2 in accordance with the design specifications.

trench.

9. The surface tolerance of the compacted clean open-graded stone base must be a maximum of +/- 19.0 mm (¾") under a 3.0 m (10') straightedge in all directions.
10. If specified on the drawings, install a biaxial geogrid layer between clear stone lifts for added reinforcement and stability.

H. Sensor Installation (If Required)

1. Install water level and water quality sensors within monitoring wells or designated locations within the storage layer prior to placement of the PurePave surface layer, as indicated on the drawings.
2. Ensure sensors intended for hydraulic monitoring are installed after completion of the storage layer and underdrain system but before placement of the SIG and surface course.
3. Install pavement deflection sensors and load-bearing sensors within or directly above the storage layer as specified in the design.
4. Verify all sensors are securely positioned, protected from construction damage, and connected in accordance with manufacturer recommendations before placement of overlying materials.
5. Sensor types, elevations, and locations shall be as specified in the design documents.

I. PurePave Mixture Placement

J. Place SIG layer on top of the storage layer before placing the PurePave.

1. Prepare binder and aggregate components per manufacturer requirements, ensuring proper mixing ratios and PU content for the specified aggregate size.
2. Place PurePave mix immediately after blending to ensure workable viscosity and uniform coating.
3. Spread material using either:

   a. Mechanical paving equipment (automatic paver with adjustable screed, thickness control, and leveling features), or

   b. Manual tools such as rakes, spreaders, or hand screeds for restricted-access areas.
4. Install PurePave mixture to the thickness indicated on the drawings.
5. Ensure even distribution without segregation or resin pooling.

K. Mechanical Screeding and Leveling

1. Use an automated, self-leveling paver equipped with a lateral moving screed bar to compact and finish the polyurethane-based PurePave surface.
2. Ensure the paver includes automatic grade/curve control and an integrated sensor-based leveling system to maintain elevation accuracy and produce a smooth, jointless finish.
3. Equipment must be capable of handling elastic, binder-based mixes using appropriate heating and overflow mechanisms to ensure uniform distribution of PurePave-coated aggregates.
4. Set paving width, speed, and screed inclination according to required lift and surface tolerances.
5. Operate the paver at a consistent, uniform speed to avoid ridges, dips, and surface irregularities.
6. Inspect and adjust machine settings regularly to maintain consistent installation quality.

L. Manual Finishing

7. Use hand screeds, trowels, and straightedges to finish areas inaccessible to mechanical equipment.
8. Blend manual edges into machine-finished surfaces to maintain uniform appearance.
9. Remove and rework areas with visible aggregate segregation or binder-rich spots.

M. Joint Treatment Between PurePave and Existing Pavement

1. Provide a properly constructed joint between the PurePave and the adjacent asphalt or concrete pavement.
2. Joint filler and joint sealing materials shall meet the requirements specified in the designed documents.
3. Install joint filler or expansion joint material to the full depth indicated, ensuring full contact with both the PurePave material and the existing pavement edge.
4. Ensure the joint creates a physical separation that:
   a. Prevents water migration from the permeable shoulder into the underlying layers of the existing pavement.
   b. Accommodates differential movement between pavement structures.
   c. Protects the edges of both pavement systems from raveling and erosion.
5. Final joint condition shall be flush, uniform, and free of gaps, deformation, or discontinuities.

N. Curing

1. Allow PurePave to cure undisturbed for the duration specified by the manufacturer, considering climate and temperature.
2. Protect the surface from traffic, precipitation, debris, and freezing during the curing period.
3. Prevent premature loading by pedestrians or vehicles until full strength is achieved.

O. Cleanup

1. Remove excess materials, packaging, and debris from the work area.
2. Clean adjacent pavements, curbs, and structures from any binder or aggregate spills.
3. Restore all disturbed areas to their original condition or as specified.

3.4 POST-INSTALLATION

1. Protect the completed PurePave from traffic, equipment, and loads until curing is complete and the material has reached sufficient structural strength.
2. Inspect all surfaces for defects, irregularities, or damage caused during curing and repair as required.
3. Confirm all joints, edges, observation wells, and interface components have been installed according to the drawings and specifications.
4. Remove all temporary protection, debris, and construction materials after installation is complete and the surface is ready for service.
5. Perform on-site permeability tests at multiple locations across the installed PurePave surface after curing, following the manufacturer's guidelines, to verify that the system meets the required infiltration rates.

3.5 MAINTENANCE

1. Maintain PurePave in accordance with manufacturer guidelines and the project maintenance plan.
2. Perform routine inspections to identify sediment buildup, surface clogging, or structural distress; clean surface pores as needed using vacuum sweeping, low-pressure washing, or other approved methods.
3. Inspect joints, edges, and observation wells periodically to ensure proper function and drainage.
4. Conduct maintenance by PurePave-certified contractors to maintain warranty validity, including scheduled cleaning and checks every three years or as specified.
5. Inspect installed sensors, including water level, water quality, pavement deflection, and load-bearing sensors, to ensure proper operation. Repair, recalibrate, or replace sensors as required in accordance with manufacturer recommendations.
6. Repair minor surface defects promptly to prevent moisture infiltration, freeze–thaw damage, or progressive deterioration.

END OF SECTION

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Table 3.4.1 Comparison of site constraints for a range of structural LID SWM practices

LID Stormwater Management Practice	Depth to high water table or bedrock[1] (m)	Typical Ratio of Impervious Drainage Area to Treatment Facility Area	Native Soil Infiltration Rate (mm/hr)[3]	Head[4] (m)	Space[5] %	Slope[6] %	Pollution Hot Spots[7]	Set backs[8]
Rain barrel	Not applicable	[5 to 50 m^2][2]	Not applicable	1	0	NA	Yes	None
Cistern	1	[50 to 3000 m^2][2]	Not applicable	1 to 2	0 to 1	NA	Yes	U, T
Green roof	Not applicable	1:1	Not applicable	0	0	0	Yes	None
Roof downspout disconnection	Not applicable	[5 to 100 m^2][2]	Amend if < 15 mm/hr[9]	0.5	5 to 20	1 to 5	Yes	B
Soakaway, infiltration trench or chamber	1	5:1 to 20:1	Not a constraint	1 to 2	0 to 1	< 15%	No	B, U, T, W
Bioretention	1	5:1 to 15:1	Underdrain required if < 15 mm/hr	1 to 2	5 to 10	0 to 2	No	B, U, W
Biofilter (filtration only Bioretention design)	Not applicable	5:1	Not applicable	1 to 2	2 to 5	0 to 2	Yes	B, T
Vegetated filter strip	1	5:1	Amend if < 15 mm/hr[9]	0 to 1	15 to 20	1 to 5	No	None
Permeable pavement	1	1:1 to 1.2:1	Underdrain required if < 15 mm/hr	0.5 to 1	0	1 to 5	No	U, W
Enhanced grass swale	1	5:1 to 10:1	Not applicable	1 to 3	5 to 15	0.5 to 6	No	B, U
Dry swale	1	5:1 to 15:1	Underdrain required if < 15 mm/hr	1 to 3	5 to 10	0.5 to 6	No	B, U, W
Perforated pipe system	1	5:1 to 10:1	Not a constraint	1 to 3	0	< 15%	No	B, U, T, W

Notes:
1. Minimum depth between the base of the facility and the elevation of the seasonally high water table or top of bedrock.
2 Values for rain barrels, cisterns and roof downspout disconnection represent typical ranges for impervious drainage area treated.
3. Infiltration rate estimates based on measurements of hydraulic conductivity under field saturated conditions at the proposed location and depth of the practice.
4. Vertical distance between the inlet and outlet of the LID practice.
5. Percent of open pervious land on the site that is required for the LID practice.
6. Slope at the LID practice location.
7. Suitable in pollution hot spots or runoff source areas where land uses or activities have the potential to generate highly contaminated runoff (*e.g.*, vehicle fueling, servicing or demolition areas, outdoor storage or handling areas for hazardous materials and some heavy industry sites).
8. Setback codes: B = Building foundation; U = Underground utilities; T = Trees; W = drinking water wellhead protection areas.
9. Native soils should be tilled and amended with compost to improve infiltration rate, moisture retention capacity and fertility.

OPTION 1
On-Site Soil Amendment - Default Ratio 3:1
All Building Types

Materials

- Amend existing site topsoil using 3:1 ratio by volume (3 parts existing topsoil, 1 part amendment material)
- Amendment Material: organic matter primarily leaf, yard and bark waste compost of 20-30% by dry weight as determined by Loss-on-Ignition (LOI) and a pH of 6.0 to 8.0
- No uncomposted manure or other organic materials, sphagnum peat or organic amendments that contain sphagnum peat

Placement and Amendments

1. Remove existing topsoil and preserve on-site.
2. Rip native subsoil (decompaction) using the teeth of an excavator or bobcat bucket or equivalent to a depth of 100-200mm. Rip using a perpendicular pattern (See Detail No.1) ensuring full site coverage. No ripping within tree protection areas (See Detail No.2) or within 3m of building foundations (See Detail No.3).
3. Amend existing site topsoil to meet post construction soil amendment requirements using 3:1 ratio by volume (topsoil : amendment material).
4. Two (2) methods for amending the existing soils in place are acceptable:

Method No.1 - Layer and Incorporate (Detail No.4)

i. Apply 100mm of existing site topsoil followed by 50mm of amendment material and incorporate/mix amended material.
ii. Lightly roll or smooth using the back of the machinery bucket.
iii. Repeat i. and ii.
iv. Adjust layer quantities to ensure a settled amended topsoil depth of 300m and compliance with site grading. Placement should account for 10% settlement.

Method No.2 - Mechanical or Bucket Mix

i. Successively add, mix and pile one (1) unit of amendment material with three (3) units of existing site topsoil.
ii. Thoroughly mix.
iii. Repeat i. and ii to ensure thorough mixing until required volume is achieved.
iv. Place 150mm of amended topsoil, lightly roll or smooth using the back of the machinery bucket.
v. Repeat iv.
vi. Adjust layer quantities to ensure a settled amended topsoil depth of 300m and compliance with site grading.

Amended topsoil should be wetted after application, allowed to settle for a minimum of one (1) week and grades adjusted as required prior to installation of turf.

-IMPORTANT-

Documentation Requirements

As part of verification, the owners shall produce delivery tickets, receipts and specifications detailing the delivery address, quantities and product description and sources for verification by City inspectors. Delivery address is to be listed and must correspond to the property/site being inspected. Site without proper documentation may be subject to additional verification procedures including laboratory testing at the expense of the owner. The owner's engineer shall provide a duly notarized letter with all supporting documentation certifying the proper installation and placement of amended soil.

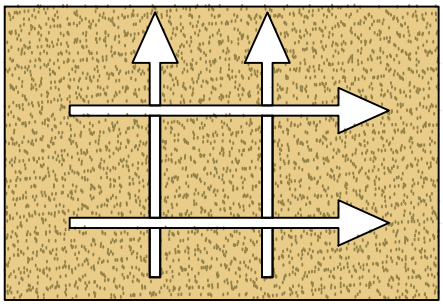
Consultant Verification/Inspection

Verification may occur after the minimum one (1) week settlement period. Verification is suggested prior to turf placement. Non-compliant sites shall be rectified at the expense of the owner.

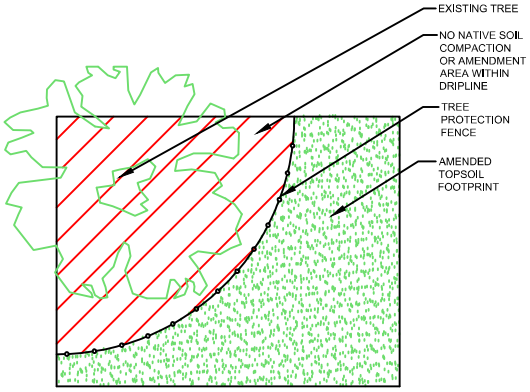
At random, the Developer's consultant shall dig at least one (1) test hole to verify amended topsoil depth and uncompacted soil depths.

Requirements:

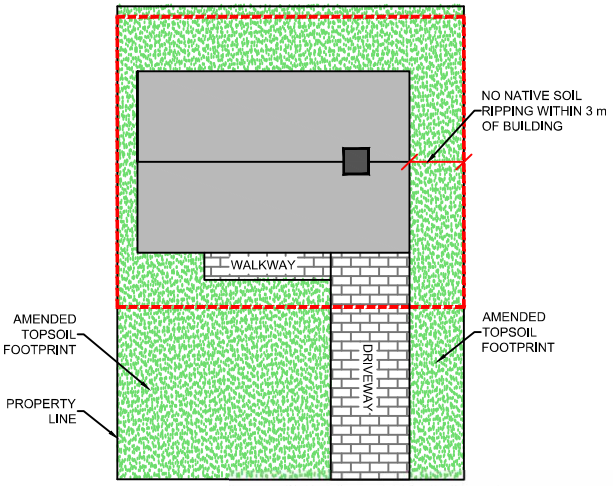
1. Amended topsoil layer shall be easily dug using only the inspector's weight or cored without other mechanical assistance.
2. The amended topsoil layer shall be darker in color than the unamended- ripped subsoil and particles of organic matter should be easily visible.
3. Measured amended topsoil depths shall be deemed to be in conformance based on the following:
   - Using a common garden spade, the measured depth of amended topsoil shall be equal to the required 300mm depth (±25mm)
   - Using a small diameter coring unit, the measured core depth of amended topsoil shall be equal to the required 300mm depth (±50mm)



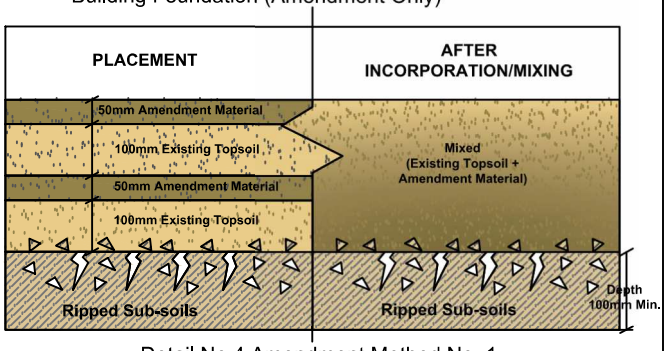
Detail No.1 - Perpendicular Native Soil Ripping Pattern



Detail No.2 - No Native Soil Ripping within Tree Protection Areas or Amendment



Detail No.3 - No native soil ripping within 3.0m of Building Foundation (Amendment Only)



Detail No.4 Amendment Method No. 1

Soil Amendment Requirements for Wateridge Village - For Development Requiring a Building Permit Only

City of Ottawa

May 13, 2019

OPTION 2
On-Site Soil Amendment
Import and Replace Topsoil with Amendment Material
All Building Types and Parks

Materials

- Amendment material shall be obtained from a Compost Quality Assurance (CQA) licensed and OMOE/ CCME approved facility and shall comply with the Category "A" compost designation. The amendment material must contain:
  - Organic matter primarily leaf, yard and bark waste compost of 8-15% by dry weight as determined by Loss-on-Ignition (LOI) and a pH of 6.0 to 8.0.
  - No uncomposted manure or other organic materials, sphagnum peat or organic amendments that contain sphagnum peat.

Placement and Amendments

1. Remove existing topsoil and dispose off-site in accordance with OPSS 206 and OPSS 180, O. Reg. 153/06, the Environmental Protection Act or municipal by-laws and policies, whichever supersedes.
2. Rip native subsoil (decompaction) using the teeth of an excavator or bobcat bucket or equivalent to a native subsoil at depth of 100-200mm. Rip using a perpendicular pattern (See Detail No.1) ensuring full site coverage. No ripping within tree protection areas (See Detail No.2) or within 3m of building foundations (See Detail No.3).
3. Import pre-mixed amended topsoil (300mm depth of coverage required).
4. Place imported pre-mixed amended topsoil in 150mm lifts, lightly roll or smooth using machinery bucket and repeat. Adjust layer quantities to ensure a settled amended topsoil depth of 300mm and compliance with site grading. (See Detail No.4).

Amended topsoil should be wetted after application, allowed to settle for a minimum of one (1) week and grades adjusted as required prior to installation of turf.

-IMPORTANT-

Documentation Requirements

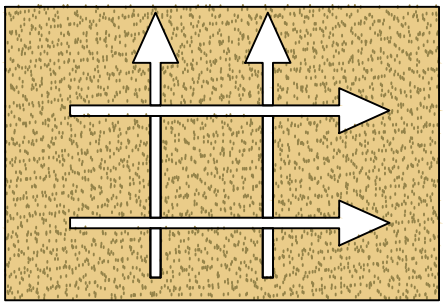
As part of verification, the owners shall produce delivery tickets, receipts and specifications detailing the delivery address, quantities and product description and sources for verification by City inspectors. Delivery address is to be listed and must correspond to the property/site being inspected. Sites without proper documentation may be subject to additional verification procedures including laboratory testing at the expense of the owner. The owner's engineer shall provide a duly notarized letter with all supporting documentation certifying the proper installation and placement of amended soil.

Consultant Verification/Inspection

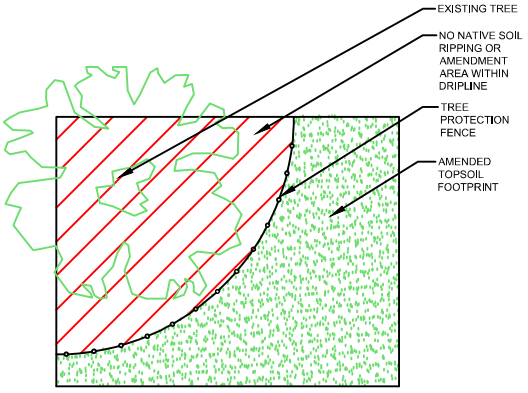
Verification may occur after the minimum one (1) week settlement period. Verification is suggested prior to turf placement. Non-compliant sites shall be rectified at the expense of the owner

At random, the Developer's consultant shall dig at least one (1) test hole to verify amended topsoil depth and uncompacted soil depths.
Requirements:

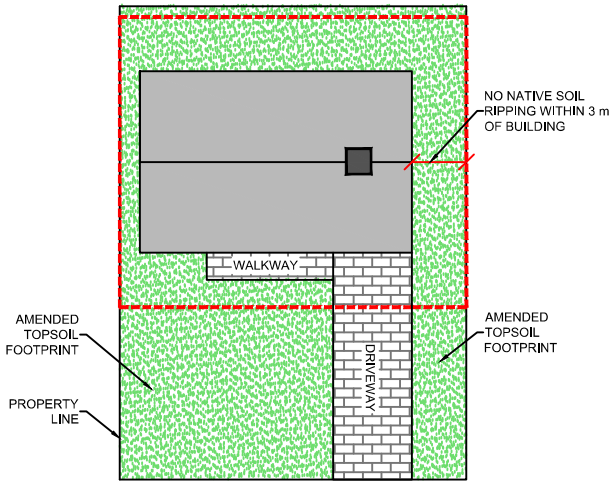
1. Amended topsoil layer shall be easily dug using only the inspector's weight or cored without other mechanical assistance.
2. The amended topsoil layer shall be darker in color than the unamended- ripped subsoil and particles of organic matter should be easily visible.
3. Measured amended topsoil depths shall be deemed to be in conformance based on the following:
   - Using a common garden spade, the measured depth of amended topsoil shall be equal to the required 300mm depth (±25mm)
   - Using a small diameter coring unit, the measured core depth of amended topsoil shall be equal to the required 300mm depth (±50mm)



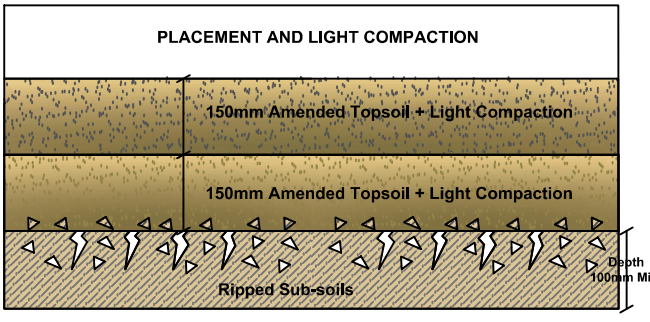
Detail No.1 - Perpendicular Native Soil Ripping Pattern



Detail No.2 - No Native Soil Ripping within Tree Protection Areas or Amendment



Detail No.3 - No Native Soil Ripping within 3.0m of Building Foundation (Amendment Only)

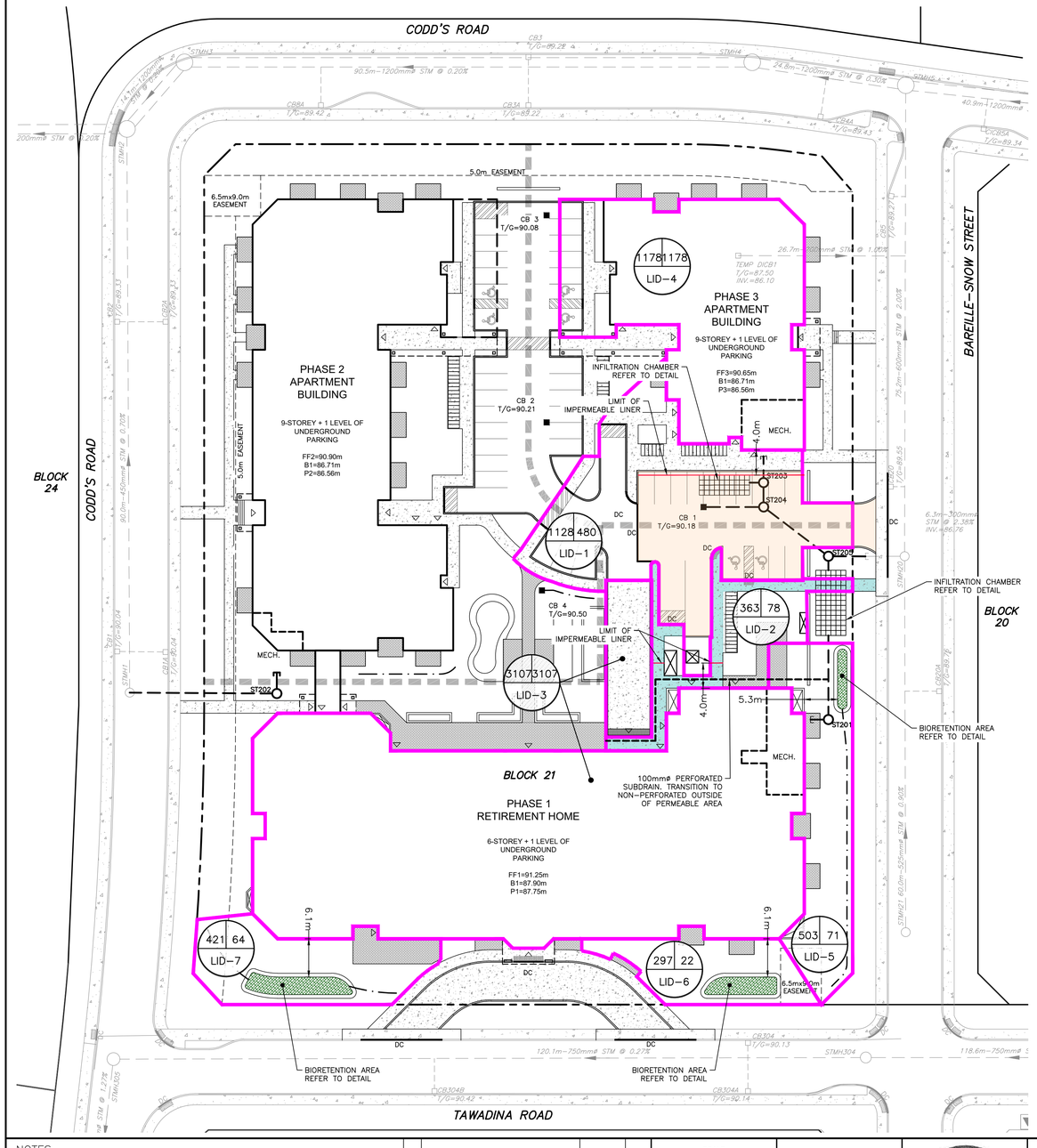


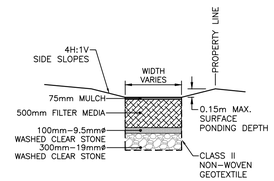
Detail No.4 Placement and Compaction Lifts for Amended Topsoil

Soil Amendment Requirements for Wateridge Village
- For Development Requiring a Building Permit Only

City of Ottawa
May 13, 2019

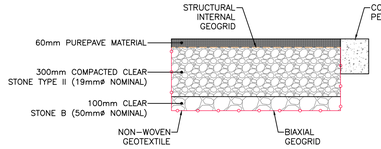
NOT FOR CONSTRUCTION





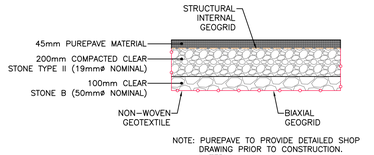
BIORETENTION DETAIL
N.T.S.

FILTER MEDIA COMPOSITION:
- 85 to 88% SAND
- 8 to 12% SOIL FINES
- 2 to 5% ORGANIC MATTER (LEAF COMPOST)
- PHOSPHOROUS SOIL TEST INDEX (P-INDEX) BETWEEN 10 to 30 ppm
- CATIONIC EXCHANGE CAPACITY (CEC) GREATER THAN 10 meq/100g
- FREE OF STONES, STUMPS, ROOTS AND OTHER LARGE DEBRIS
- pH BETWEEN 5.5 to 7.5
- INFILTRATION RATE GREATER THAN 25 mm/hr



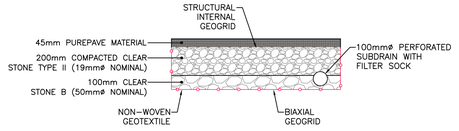
NOTE: PUREPAVE TO PROVIDE DETAILED SHOP DRAWING PRIOR TO CONSTRUCTION. MATERIAL

PUREPAVE DETAIL FOR PAVEMENT AREAS
N.T.S.



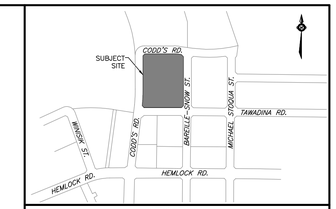
NOTE: PUREPAVE TO PROVIDE DETAILED SHOP DRAWING PRIOR TO CONSTRUCTION. MATERIAL

PUREPAVE DETAIL FOR SIDEWALK AREAS
N.T.S.



NOTE: PUREPAVE TO PROVIDE DETAILED SHOP DRAWING PRIOR TO CONSTRUCTION. MATERIAL

PUREPAVE DETAIL FOR SIDEWALK AREAS WITH PERORATED SUBDRAIN
N.T.S.



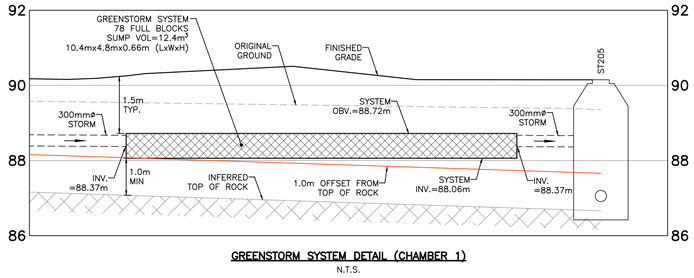
KEY PLAN



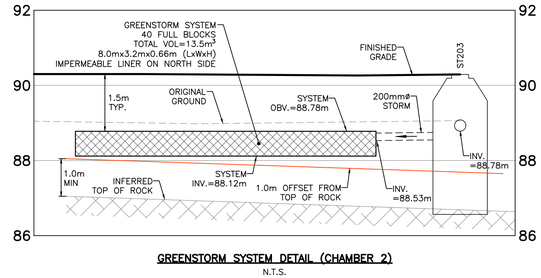
LEGEND

- PROPERTY BOUNDARY
- PHASING LIMIT
- EASEMENT
- EXISTING CATCH BASIN
- EXISTING STORM SEWER & MANHOLE
- CATCH BASIN
- STORM SEWER & MANHOLE
- SWALE
- CATCHMENT AREA BOUNDARY
- PERMEABLE PAVEMENT
- PERMEABLE SIDEWALK
- BIORETENTION

TOTAL CATCHMENT AREA (m^2)
100 | 50 — CONTRIBUTING IMPERVIOUS AREA (m^2)
LID-1 — LID CATCHMENT AREA ID



GREENSTORM SYSTEM DETAIL (CHAMBER 1)
N.T.S.



GREENSTORM SYSTEM DETAIL (CHAMBER 2)
N.T.S.

NOTES

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.

PROPERTY BOUNDARIES ARE DERIVED FROM TOPOGRAPHIC PLAN OF PART OF WATER RIDGE DEVELOPMENT BEING SHOWN AS BLOCK 21 ON DRAFT M-PLAN LOCATED NORTH OF TAWADINA ROAD AND EAST OF CODD'S ROAD, GEOGRAPHIC TOWNSHIP OF GLOUCESTER, CITY OF OTTAWA, MONUMENT-URSO SURVEYING LTD. ELEVATIONS ARE GEODETIC AND REFERRED TO THE CANADIAN GEODETIC VERTICAL DATUM (CGVD28:78).

NO.	REVISION DESCRIPTION	DATE	BY
2	REVISED PER CLC COMMENTS	27/02/26	BLM
1	ISSUED FOR REVIEW	16/01/26	BLM

SCALE
0 4m 8m 16m
HORIZONTAL 1:400

LICENSED PROFESSIONAL ENGINEER
B.L. MACKECHNIE
100199554
27 Feb. '26
PROVINCE OF ONTARIO

Robinson Land Development
2936 Baseline Road
Suite 200
Ottawa, ON K2H 1B3
(613) 592-6060 rcii.com

DESIGN	BLM
CHECKED	SG
DRAWN	BLM
CHECKED	SG
APPROVED	BLM

WATERIDGE LIFESTYLES LTD.

WATERIDGE VILLAGE
BLOCK 21
CITY OF OTTAWA, ON

LID DRAINAGE AREA PLAN & DETAILS

PROJECT No.	25117
SURVEY	MONUMENT-URSO SURVEYING LTD.
DATED	FEBRUARY 2026
DWG. No:	25117-LID1