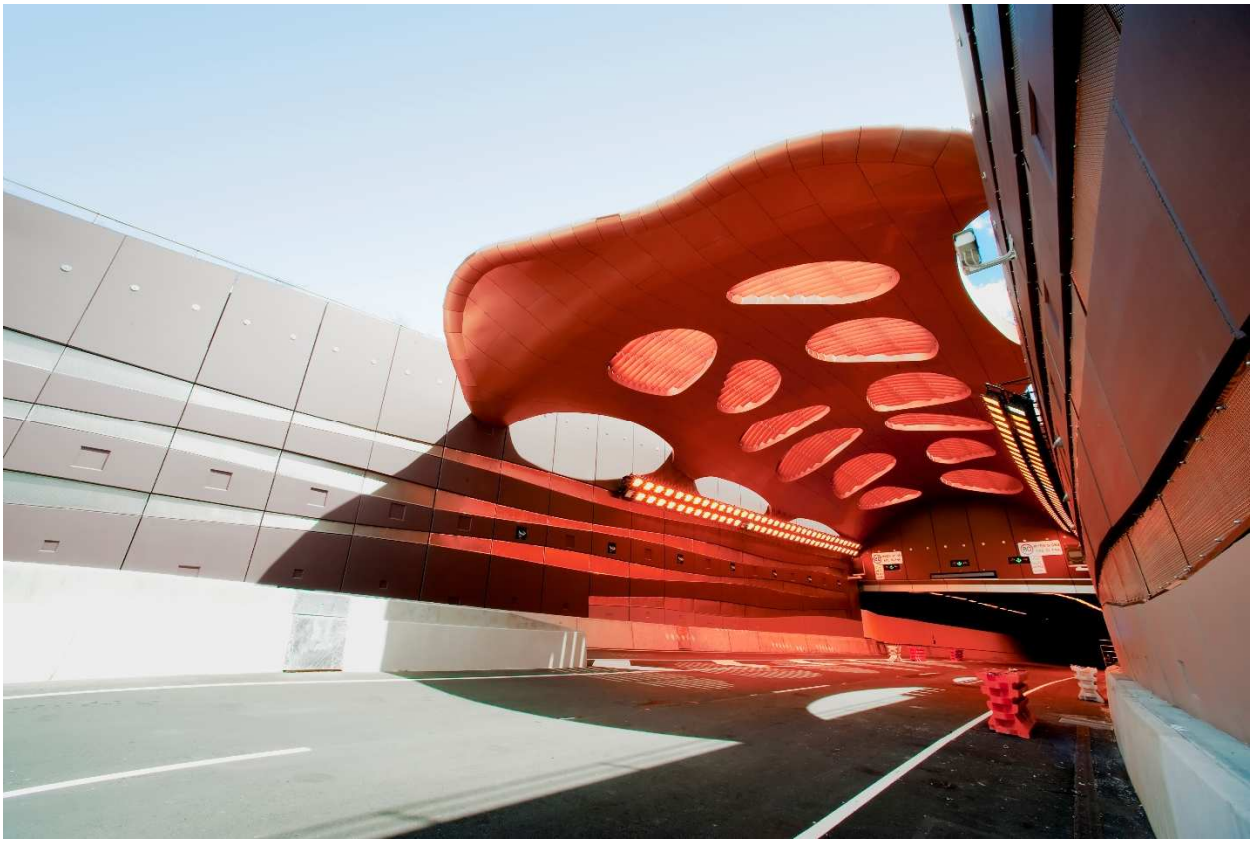
CLV GROUP DEVELOPMENTS INC.

STORMWATER MANAGEMENT REPORT

951 GLADSTONE AVE & 145 LORETTA AVE N

APRIL 19, 2024



STORMWATER MANAGEMENT REPORT

951 GLADSTONE AVE & 145 LORETTA AVE N

CLV GROUP DEVELOPMENTS INC.

PROJECT NO.: 20M-01441
DATE: APRIL 2024

WSP
SUITE 300
2611 QUEENSVIEW DRIVE
OTTAWA, ON, CANADA K2B 8K2

TEL.: +1 613 829-2800
FAX: +1 613 829-8299
WSP.COM

QUALITY MANAGEMENT

ISSUE/REVISION	REMARKS	DATE	PREPARED BY	REVIEWED BY	PROJECT NUMBER
First Issue	Issued for Site Plan Application	9-Apr-2021	Nick Zorn	Michelle Hughes	20M-01441-00
Second Issue	Re-Issued for Site Plan Application	19-Apr-2024	Jared Delpellaro	Michael Flowers	20M-01441-00

SIGNATURES

PREPARED BY

Jared Delpellaro, E.I.T.
Municipal Designer

REVIEWED BY

Michael Flowers, P.Eng., PMP, LEED
Municipal Engineer

This report was prepared by WSP for the account of CLV Group Developments Inc., in accordance with the professional services agreement. The disclosure of any information contained in this report is the sole responsibility of the intended recipient. The material in it reflects WSP's best judgement in light of the information available to it at the time of preparation. 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. WSP accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This limitations statement is considered part of this report.

The original of the technology-based document sent herewith has been authenticated and will be retained by WSP for a minimum of ten years. Since the file transmitted is now out of WSP's control and its integrity can no longer be ensured, no guarantee may be given with regards to any modifications made to this document.

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

1 INTRODUCTION

1.1 SCOPE

WSP has been retained to provide civil engineering consulting services to support the Site Plan Approval application for mixed-use development at 951 Gladstone Ave and 145 Loretta Ave N. The proposed development has been broken up into three (3) parcels with one (1) tower on each parcel. This stormwater management (SWM) report examines the potential water quality and quantity impacts of the proposed development and details SWM measures to be provided to address these impacts in accordance with the City of Ottawa *Sewer Design Guidelines* (2012) and associated Technical Bulletins, Pre-application consultation meeting minutes (**Appendix A**), and the City of Ottawa *Servicing Study Guidelines for Development Applications* (2009). The associated submission checklist from the *Servicing Study Guidelines* has been included in **Appendix A**. The *Assessment of Adequacy of Public Services* completed by DSEL (2019) has been included in **Appendix B**.

1.2 SITE LOCATION

The site of the proposed development is located within the City of Ottawa, within the Kitchissippi Ward, as shown in **Figure 1**. The site is approximately 1 ha and is bounded by Gladstone Avenue to the south, Loretta Avenue to the west, the O-Train Trillium Line to the east, and 131 Loretta Ave (Loretta Studios and Gallery) to the north.

Figure 1: Project Location

1.3 PHASING

The proposed development is anticipated to be constructed in two (2) phases and will be split into three (3) parcels. The first phase will be the construction of Tower 3 located on the northernmost parcel. The second phase will be the

construction of tower 2 and Tower 1 which are located on the two (2) southern parcels. The stormwater management design of all three (3) towers and parcels has been considered herein although tower 2 and Tower 1 will be submitted under a separate Site Plan Control Application.

1.4 OBJECTIVES

The objectives of this SWM plan are noted below:

- Determine the site-specific stormwater management requirements for the proposed development, as indicated by associated Provincial, Municipal, and Conservation Authority regulations and guidelines, as well as pre-consultation with the City of Ottawa and the Rideau Valley Conservation Authority (RVCA).
- In collaboration with the design team and the Client, develop a strategy to address the SWM criteria on-site. Complete calculations and analyses necessary to determine the required size of the SWM features and demonstrate compliance with the design criteria.
- Produce a SWM report documenting the above tasks in a manner suitable for review by the City`s development review department.
- Address review comments by the City to refine and finalize the SWM report.

1.5 DESIGN CRITERIA

Based on applicable design guidelines and standards, pre-application consultation with the City (**Appendix A**), and coordination with the City and RVCA completed previously by DSEL (**Appendix B**), the SWM design criteria for the development have been summarized below:

- Stormwater runoff from all events up to and including the 100-year storm will be controlled to 2-year pre-development rates, calculated using the smaller of a runoff coefficient of 0.5 or the actual existing site runoff coefficient.
- If proposing underground storage, stormwater detained on-site must be above the HGL of the receiving storm sewer.
- Storage volumes calculated using the Modified Rational Method must be calculated to control to 50% of the release rate. Otherwise, a hydrodynamic model should be used to calculate storage volume.
- Enhanced treatment (80% TSS removal) shall be provided to stormwater runoff prior to discharge off-site.

2 PRE-DEVELOPMENT CONDITIONS

2.1 EXISTING LAND-USE AND DRAINAGE PATTERNS

The project site is approximately 1 ha in area and is currently occupied by several commercial buildings with paved and gravel parking areas, grassed boulevards and landscaped areas. In its existing condition, the site has an imperviousness of approximately 94% and a runoff coefficient of 0.85. Site runoff is generally collected by parking lot CBs and roof drains. The receiving storm sewer is a 1350-mm RCP that flows north along Loretta Ave alongside a 300-mm combined sewer. A combined sewer overflow (CSO) is located approximately 60 m north of the site. Drainage area and land use information is shown in **Figure 2**.

Figure 2: Existing Drainage (left) and Land Cover (right)

2.2 ALLOWABLE FLOW RATES

As noted in Section 1.4, stormwater runoff from all events up to and including the 100-year storm will be controlled to 2-year pre-development rates, calculated using the smaller of a runoff coefficient of 0.5 or the actual existing site runoff coefficient. IDF parameters are as per the City of Ottawa *Sewer Design Guidelines* (2012) and shown below.

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	$= 732.951 / (\text{Time in min} + 6.199)^{0.810}$

Release rates using a runoff coefficient of 0.5 (smaller than the actual existing site runoff coefficient) calculated using PCSWMM have been shown in **Table 1**. PCSWMM output has been included in **Appendix C**.

Table 1: Existing Conditions Peak Flow

Storm Event	Peak Flow (L/s)
2-year	100
5-year	140
10-year	170
25-year	210
50-year	240
100-year	270

Site runoff from all events up to and including the 100-year storm must therefore be controlled to the release rate of 100 L/s.

3 POST-DEVELOPMENT CONDITIONS

The proposed development will consist of three (3) high rise mixed-use towers with two levels of underground parking. The development will be constructed in two (2) phases and will retain the Standard Bread Building (constructed in 1924). At-grade features include driveways, pedestrian walkways, limited vehicular parking, landscaped features and plaza areas. The proposed development has been subdivided into three (3) post development catchment areas; B1, B2, and B3. The catchment areas parameters are shown in **Table 2**. Catchment maps are included in **Appendix E**.

Table 2: Proposed Catchment Area Parameters

	B1	B2	B3
Area (ha)	0.22	0.34	0.44
Imperviousness	86.36%	82.35%	90.45%
Runoff Coefficient	0.84	0.81	0.87

Uncontrolled peak flow rates of stormwater runoff generated by the site in response to the 2- through 100-year storm events have been shown in **Table 3**. PCSWMM output is included in **Appendix C**.

Table 3: Proposed Conditions (Uncontrolled) Peak Flows

Storm Event	B1 - Peak Flow (L/s)	B2 - Peak Flow (L/s)	B3 - Peak Flow (L/s)	Total (L/s)
2-year	40	60	90	190
5-year	60	90	120	270
10-year	70	100	150	320
25-year	80	130	170	380
50-year	100	140	190	430
100-year	110	160	220	490

As shown in **Appendix D**, surface grading has been completed to direct all site runoff toward CBs and storm sewers. Runoff will subsequently drain to one (1) of three (3) underground storage tank and oil-grit separator (OGS), one (1) located within each parcel, before the flow outlets into the Loretta Ave storm sewer. Stormwater management is detailed further in the following subsections. During conveyance of storm events that exceed the capacity of the storm sewer system, runoff will drain away from the buildings toward the major flow route outlet into Loretta Avenue ROW, as shown in **Appendix D**.

3.1 QUANTITY CONTROL

As discussed in Section 1.4 and 2.2, runoff from 2- through 100-year events must be controlled on-site to a release rate of 100 L/s. To this end, one (1) underground tank will be required for B1, B2, and B3 with sizes of 80 m^3, 110 m^3, and 155 m^3, respectively to achieve the quantity control requirements of the site. The three (3) tanks will be located within each of the catchment areas to store runoff from the respective catchment area. As shown in **Appendix D**, the outlet of the tank will include a 100-mm orifice plate for catchment B1 and a 125-mm orifice plate for catchment areas B2 and B3. Controlled peak flow rates downstream of the storage tank and the associated storage volume utilized have been summarized in **Table 4**. PCSWMM output is included in **Appendix C**.

Table 4: Proposed Conditions (Controlled) Peak Flows and Volume Utilized

	Catchment B1		Catchment B2		Catchment B3		Total	
Storm Event	Peak Flow (L/s)	Storage Utilized (m^3)	Peak Flow (L/s)	Storage Utilized (m^3)	Peak Flow (L/s)	Storage Utilized (m^3)	Peak Flow (L/s)	Storage Utilized (m^3)
2-year	11	28	19	36	25	55	55	119
5-year	13	40	24	54	30	80	67	174
10-year	15	49	27	66	34	97	76	212
25-year	17	60	31	82	38	119	86	261
50-year	18	69	33	95	40	136	91	300
100-year	19	78	36	107	43	153	98	338

The phase 1 works will include the construction of Tower 3 and all proposed works within the most northern parcel of the site. Included in the phase 1 works all storm sewers, catchbasins, and stormwater storage tank within the parcel will be implemented to convey and control the stormwater runoff within the parcel. As part of the initiation of the phase 1 works existing stormwater drainage paths from the existing southern parcels will be maintained.

The existing buildings located on the southern two (2) parcels of the sites and all features within the southern two (2) parcels will be developed in phase 2.

3.2 QUALITY CONTROL

As noted in Section 1.4, Enhanced treatment (80% TSS removal) must be provided to runoff prior to discharge from the site. This requirement will be achieved through the use of a Hydro International First Defence FD-4HC (or equivalent) OGS units for all three catchment areas, as shown in **Appendix C**. The three (3) OGS's will be located downstream of the storage tanks, as shown in Appendix **D**. As noted in Section 3.0, site grading has been completed to ensure the entire 1.0-ha site drains to the OGS units.

4 CONCLUSIONS

WSP has completed stormwater management analysis, calculations, and reporting in support of the Site Plan Application for the proposed development at 951 Gladstone Ave & 145 Loretta Ave N. Stormwater management requirements for the site have been determined and associated on-site quantity and quality control infrastructure has been sized. An underground storage tank with a minimum storage of 78 m^3 will be provided with a 100-mm outlet orifice plate for catchment area B1. An underground storage tank with a minimum storage of 107 m^3 will be provided with a 125-mm outlet orifice plate for catchment area B2. An underground storage tank with a minimum storage of 153 m^3 will be provided with a 125-mm outlet orifice plate for catchment area B3. The three (3) storage tanks and orifice plates will control the post-development peak flows for the 2- through 100-year storm events to a pre-development of 100 L/s. Enhanced treatment (80% TSS removal) of runoff will be provided using a Hydro International First Defence FD-4HC (or equivalent) OGS.

APPENDIX

A

PRE-APPLICATION CONSULTATION MEETING MINUTES

Formal Pre-application Consultation Meeting Minutes
Address: 951 Gladstone Avenue & 145 Loretta Avenue North
Formal Pre-consultation File No.: PC2020-0113 (Site Plan Control)
Date: Monday June 8, 2020, 11:00am to noon
Location: Videoconference – Teams
City Contact: Ann O'Connor

City of Ottawa Invitees:
Ann O'Connor – Planner, Development Review, PIED - ann.oconnor@ottawa.ca
Mark Fraser – Infrastructure Project Manager, PIED – mark.fraser@ottawa.ca
Wally Dubyk – Transportation Project Manager, PIED – wally.dubyk@ottawa.ca
Randolph Wang – Urban Designer, ROWHUD – Randolph.wang@ottawa.ca
MacKenzie Kimm – Heritage Program Manager, ROWHUD – lesley.collins@ottawa.ca

Community Association Representative:
Linda Hoad – Hintonburg Community Association – linda.hoad@teksavvy.com

Applicant Team:
Jenn Morrison – CLV (Owner) – jennifer.morrison@clvgroup.com
Oz Drewniak – CLV (Owner) – oz.drewniak@clvgroup.com
Maria J. Martinez – PBC Group (Owner) – mmartinez@pbcgroup.ca
Aaron Cameron – Trinity Group (Project Manager) – acameron@trinity-group.com
Paul Black – Planner, Fotenn (Planning) – black@fotenn.com
Scott Alain – Planner, Fotenn (Planning) – alain@fotenn.com
Barry Hobin – Architect (Hobin Architects) – bjhobin@hobinarc.com
Todd Duckworth – Architect (Hobin Architects) – tduckworth@hobinarc.com
Jafferjee Ishaque – WSP (Civil Engineer) – guy.somers@wsp.com
Michael Jans – WSP (Civil Engineer) – michael.jans@wsp.com
Ben Worth – WSP (Civil Engineer) – ben.worth@wsp.com

Introductions and Acknowledgements

- Round table introductions

- Acknowledgement that Linda Hoad is in attendance representing the Hintonburg Community Association and has signed an NDA.

Overview of Proposal (applicant team)

- Jenn Morrison and Oz Drewniak confirm that CLV and PBC have purchased the property from Trinity
    - Trinity will remain on the file as consultants
    - CLV and PBC are excited to be involved in the project

- Paul Black provides an overview of the status of the associated Official Plan Amendment and Zoning By-law Amendment applications

- The team is working through the noise issues with the Canadian Bank Note building.
- Proposal is to be a Mixed-Use Centre in parking Area Z
- The Site Plan Control process will implement and refine the previous designs.

- Todd and Barry provide an overview of the design of the Site Plan proposal

Preliminary Comments from the City

Planning Comments (Ann O'Connor)

- Based on the current proposal and policy context, the following applications and processes will apply:
  - Site Plan Control, New, Complex, Non-Rural application (potentially multiple, depending on the phasing / timing for construction of the entire site)
  - Formal Review at the Urban Design Review Panel (UDRP) during the application process is recommended.

- The associated Official Plan and Zoning By-law amendments are on-going and are to be followed through the Site Plan Control submission. Depending on the timing of the Site Plan Control submission, please provide an update on progress on the outstanding items for the associated applications.

- A Planning Rationale should address the policy context, including the proposed new policy designations, the Draft Gladstone Station District Secondary Plan, and all applicable urban design guidelines.

- The submission should also address the proposed phasing for the development.

Infrastructure Comments (Mark Fraser)

- An application to consolidate the parcels of land will be required otherwise the proposed stormwater works will be servicing more than one parcel of land and thus does not meet the exemption set out in O.Reg. 525/98. This would mean an ECA would be required regardless of who owns the parcels.

- Concerns about roadway drainage spilling into the underground parking garage. Please make sure that the entrances to the underground garage is 0.30m higher than the spill point on the street. Entrance should not be located within a sag (low point) in the road.

- A deep excavation and dewatering operations have the potential to cause damages to the neighboring adjacent buildings/ City infrastructure. Document that construction activities (excavation, dewatering, vibrations associated with

construction, etc.) will not have an impact on any adjacent buildings and infrastructure.

- The developer shall be aware that the City is planning on reconstructing Lorretta Ave. N. in 2021 (road, sewer and water). As the development is planned to occur during the same time-period as the City project, works will need to be coordinated. The Owner may encounter potential restrictions and delays associated with the development of the lands, which will be reasonably mitigated through coordination of construction activities, as required. The developer shall contact and consult with Marc Tremblay (ext. 14391), City of Ottawa Project Manager Infrastructure Services, as early as possible to obtain design drawings and to coordinate the planned works, ensuring the projects will function together.

- A Record of Site Condition (RSC) in accordance with O.Reg. 153/04 will be required to be filed and acknowledged by the Ministry prior to issuance of a building permit due to a change in property use from industrial to residential.

- A 1372mm dia. backbone watermain and Trunk Sewers are located within Loretta Ave. N and Gladstone Ave. Please note that in order to ensure the integrity of the nearby watermain and sewers during construction the applicant will be required to develop a Vibration Monitoring Program. A Vibration Monitoring Specialist Engineer shall undertake vibration monitoring, develop a vibration monitoring plan, and prepare a protection plan, an emergency response plan, ensure conformance and shall issue certificates of conformance. The Vibration Monitoring Specialist Engineer shall be a licensed engineer in the Province of Ontario with a minimum of five years of experience in the field of Vibration Monitoring. Vibration monitors are to be to be placed directly on the watermain. The Maximum Peak Particle Velocities are to be in accordance with Table 1 of the City of Ottawa Specification F-1201.

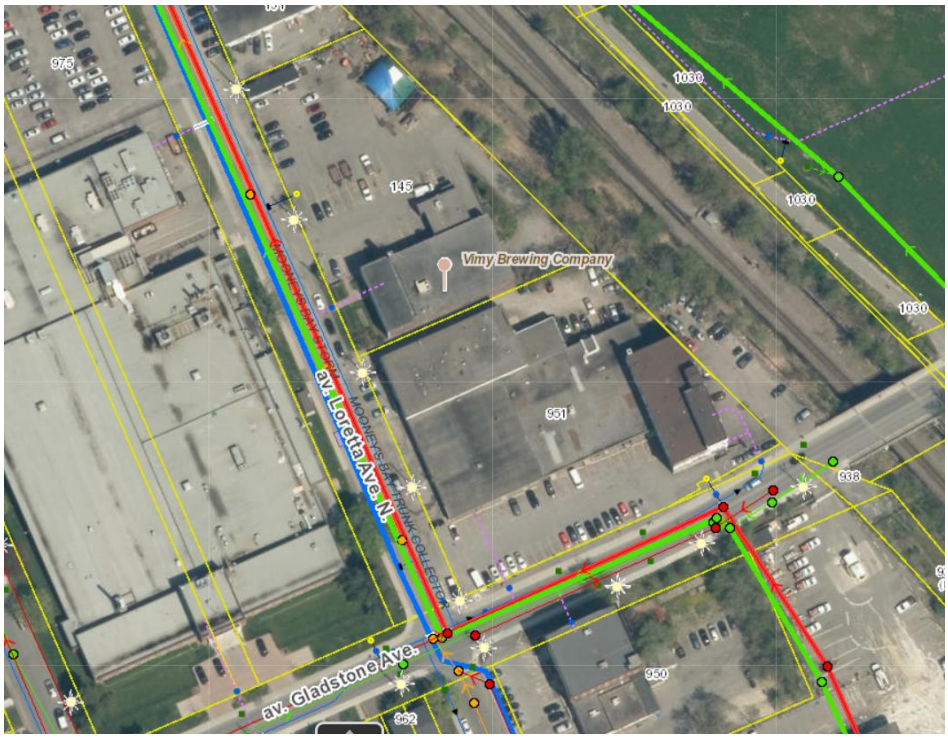
General:

- It is the sole responsibility of the consultant to investigate the location of existing underground utilities in the proposed servicing area to avoid any conflict with utilities. The location of existing utilities and services shall be documented on an Existing Conditions Plan.

- All underground and above ground building footprints and permanent walls need to be shown on the plans to confirm that any permanent structure does not extend either above or below into the existing property lines and sight triangles and/or future road widening protection limits.

- Please note that the proposed servicing design and site works shall be in accordance with the following documents:
    - Ottawa Sewer Design Guidelines (October 2012)
    - Technical Bulletin PIEDTB-2016-01
    - Technical Bulletins ISTB-2018-01, ISTB-2018-02 and ISTB-2018-03.

- Ottawa Design Guidelines - Water Distribution (2010)
- Design Guidelines for Sewage Works, MECP, 2008
- Stormwater Planning and Design Manual, MECP, March 2003
- Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
- City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
- City of Ottawa Environmental Noise Control Guidelines (January 2016)
- City of Ottawa Accessibility Design Standards (November 2015) (City recommends development be in accordance with these standards on private property)
- Ottawa Standard Tender Documents (latest version)
- Ontario Provincial Standards for Roads & Public Works (2013)
- Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-424 x.44455). Include copies in the Appendix of the report as supporting documentation.



Disclaimer:
The City of Ottawa does not guarantee the accuracy or completeness of the data and information contained on the above image(s) and does not assume any responsibility or liability with respect to any damage or loss arising from the use or interpretation of the image(s) provided. This image is for schematic purposes only.

Stormwater Management Criteria (Quantity and Quality Control) and Information:

- Refer to the Assessment of Adequacy of Public Services report prepared by DSEL dated August 2019-REV.2 in support of the OPA and ZBLA applications for servicing and SWM requirements.

- Water Quantity Control: Control post-development runoff, up to and including the 100-year storm event, to a 2-year pre-development level. The pre-development runoff coefficient will need to be determined using the smaller of a runoff coefficient of C=0.5 or the actual existing site runoff coefficient. The time of concentration used to determine the pre-development condition will be the larger of 10min. or the calculated time of concentration. [Tc should not be less than 10 min. since IDF curves become unrealistic at less than 10 min; Tc of 10 minutes shall be used for all post-development calculations].

- Any storm events greater than the calculated 2-year allowable release rate, up to and including the 100-year storm event, shall be detained on-site by appropriate SWM measures to avoid impact on the downstream sewer system.

- Water Quality Control: An enhanced quality level of protection (80% TSS Removal) is required to be achieved for this development. Please consult with the local conservation authority (RVCA) regarding water quality criteria and requirements prior to submission of an application. It is consultant's responsibility to check with the RVCA for quality control issues and include this information in the SWM report.

- Compare pre-development flows to post-developments flows in the SWM report.

- The receiving storm sewer system is uncontrolled therefore subject to surcharge (HGL will be elevated for events greater than the 2-year). The impact from the receiving system HGL will need to be considered if proposing underground storage The SWM solution will need to be designed accordingly. The storm connection will need to be above the receiving sewer HGL.

- If rooftop control and storage is considered as part of the SWM solution sufficient details (Cl. 8.3.8.4) shall be discussed and documented in the report and on the plans. A roof drainage plan and detailed roof drain summary table with supporting drain manufacturer information will be required. The roof drainage plan will need to document roof drain type, flow rates, emergency scupper locations and spill over elevations and ponding areas.

- Please note that the HGL within the receiving sewer system will need to be assessed if underground storage (cistern) is proposed as part of the stormwater management solution to ensure the system does not become surcharged and thereby ineffective do to a loss in available storage.

- Underground Storage: Underground storage volumes are to be based on 50% peak flow rates or use dynamic compute model. 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.

- In the event that 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.

- Note that the above will added to upcoming revised Sewer Design Guidelines to account for underground storage, which is now widely used.

- If a storage tank (internal cistern) is considered as part of the SWM solution sufficient details and system information will need to be provided. A detailed cross-section of such system (provided from the mechanical engineer and shown on the plans) with sufficient details and information (HWLs, release rate, volume, location, size (dimensions), control device, emergency flow outlet and backflow protection, etc.) will need to be provided. An appropriate emergency overflow location will need to be determined and documented. Backup power supply necessary if pump controlled. Details regarding the proposed on-site stormwater management system are to be provided for review.

- Please include a Pre-Development Drainage Area Plan to define the pre-development drainage areas/patterns. Existing drainage patterns shall be maintained and discussed as part of the proposed SWM solution. Runoff shall not be directed toward to adjacent LRT corridor.

Storm Sewer:

- Existing 1350mm storm trunk sewer within Loretta Ave. N. and Gladstone Ave. and a 375mm dia. storm sewer within Gladstone Ave. draining to the Ottawa River.

- 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) (2)(3) Monitoring Devices as the site will have a commercial component with the residential development.

- As-built drawings of the existing services within the vicinity of the site are available and Loretta Ave. N. road, sewer and watermain reconstruction plans are to be obtained from Infrastructure Services and reviewed in order to determine proper servicing and SWM plan for the subject site.

- Foundation drainage system details are to be discussed in the report and document how the system will be integrated into the servicing design. Please note that foundation drain is to be independently connected to sewermain unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention.

Sanitary Sewer:

- The subject site is located within the Mooney's Bay Trunk Collector Sewer area.

- Existing 1050mm Mooney's Bay sanitary trunk collector sewer within Loretta Ave. N. and Gladstone Ave and 250mm dia. sanitary sewer within Gladstone Ave.

- An analysis and demonstration that there is sufficient/adequate residual capacity to accommodate any increase in wastewater flows in the receiving and downstream wastewater system is required to be provided. It is suggested to calculate the total peak wastewater demand for the proposed development and send it to the City as soon as possible in advance of a submission of an application, as an initial step to determine whether or not there is sufficient capacity in the city system to accommodate the proposed wastewater flow. Please note that it takes approx. 10 business days to get a response back from the internal circulation.

- The groundwater at this site has been found to be contaminated. Any groundwater material discharged from an onsite groundwater remediation system is required to be directed to the sanitary sewer system as per the Sewer Use By-law.

- The sanitary sewer criteria shall reflect the new Technical Bulletin PIEDTB-2018-01.

- A 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) (2)(3)Monitoring Devices as the site will have a commercial component with the residential development.

- A backwater valve is required on the sanitary service for protection.

Water:

- A local 203mm dia. PVC watermain is located within Gladstone Ave. and a local 203mm dia. UCI watermain is located within Loretta Ave. N. The existing 200mm dia. UCI watermain on Loretta Ave. N. is planned to be replaced within a new 200mm dia. PVC watermain as part of the road reconstruction project.

- A connection to the 1371 dia. backbone watermain within Loretta Ave. N. will not be permitted.

- Water Supply Redundancy: Residential buildings with a basic day demand greater than 50m3/day (0.57 L/s) 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. This proposed development will required two (2) separate water service connections if the basic day demand for this site exceeds 50m3/day. There shall be a primary water service (Loretta Ave. N.) and a secondary connection (Gladstone Ave.). This is a corner lot so we will not support the installation of a new isolation valve on the City watermain to satisfy this requirement.

- Include a hydrant coverage figure and demonstrate there is adequate fire protection for the building per Technical Bulletin ISTB-2018-02 . Multiple municipal hydrants will be required for fire protection.

- Boundary conditions, HGL, shall be requested and a hydraulic analysis completed to show that there is adequate flow and pressure in the water distribution system to meet the required water demands. Use Table 3-3 of the MOE Design Guidelines for Drinking-Water System to determine Maximum Day and Maximum Hour peaking factors for 0 to 500 persons. provide the following information to the City of Ottawa via email to request water distribution network boundary conditions for the subject site. Please note that once this information has been provided to the City of Ottawa it takes approximately 5-10 business days to receive boundary conditions.
    - Type of Development and Units
    - Site Address (Street Number and Name)
    - Location of service(s).
    - A plan showing the proposed water service connection locations.
    - Average Daily Demand (L/s)
    - Maximum Daily Demand (L/s)
    - Peak Hour Demand (L/s)
    - Required Fire Flow (L/min) FUS calculations are to be provided with request for boundary conditions.
    - [Fire flow demand requirements shall be based on Fire Underwriters Survey (FUS) Water Supply for Public Fire Protection
    - 1999 and Technical Bulletin ISTB-2018-02]

- Exposure separation distances shall be defined on a figure to support the FUS calculation and required fore flow (RFF).
- Fire flow demands will be inputted as point loads at each connection separately unless otherwise noted. A multi-hydrant analysis can be requested if necessary.
- If fire protection is provided by existing municipal hydrants, hydrant capacity shall be assessed to demonstrate the RFF can be achieved. Identify which hydrants are being considered to meet the RFF on a fire hydrant coverage figure as part of the boundary conditions request.

- Hydrant capacity shall be assessed if relying on any public hydrants to provide fire protection particularly if high design fire flows are being proposed to demonstrate the RFF can be achieved. Refer to Table 1: Maximum flow to be considered from a given hydrant in Appendix I of Technical Bulletin ISTB-2018-02.Appropriate fire protection mitigation measures shall be investigated/proposed to lower the RFF for the site to an appropriate level.

- The subject site is located within the 1W Pressure Zone.

Permits and Approvals:

- The consultant shall determine if this project will be subject to an Environmental Compliance Approval (ECA) for Private Sewage Works. It shall be determined if the exemptions set out in Ontario Regulation 525/98: Approval Exemptions are satisfied. All regulatory approvals shall be documented and discussed in the report.

Source Protection Policy Screening:

- The address lies within the Mississippi-Rideau Source Protection Region and is subject to the policies of the Mississippi-Rideau Source Protection Plan.

- <u>The entire property lies within the Surface Water Intake Protection Zone</u> (IPZ) for the Ottawa River (Lemieux) Intake, IPZ-2 (vulnerability score of 8.1) where significant threat policies apply. Policies are only applicable for significant drinking water threat activities as outlined in the Clean Water Act.

    - The *Clean Water Act* Tables of Circumstances identify circumstances under which certain activities would be considered a significant threat to drinking water within certain designated vulnerable area, and the Mississippi-Rideau Source Protection Plan contains policies related to significant drinking water threat activities to protect the drinking water supply.

    - Activities that may be considered a significant drinking water threat within the IPZ-2 (score 8.1) include the following:
        - Untreated stormwater from a stormwater retention pond
            - Note that a stormwater management facility is only considered a significant drinking water threat within this zone

if the facility drains more than 100 ha of industrial/commercial land.
        - Sewage treatment plant effluent discharges
        - Combined sewer discharge from a stormwater outlet
        - Sewage treatment plant bypass discharge
        - Industrial effluent discharge
        - Waste disposal site
        - Agricultural activities (application or storage of manure or chemical fertilizers or pesticides, or use of land for livestock grazing)

    - Based on the information available to date, the proposed activity does not meet the circumstances to be considered a significant drinking water threat, thus there are no applicable legally-binding source protection policies.

- The area is not within a Wellhead Protection Area (WHPA).

- The area is located within a Highly Vulnerable Aquifer (HVA). Note that there are no legally binding policies under the Mississippi-Rideau Source Protection Plan for activities within Highly Vulnerable Aquifers.

- The area is not within a Significant Groundwater Recharge Area.

Capital Works:

- The developer shall be aware that the City is planning on reconstructing Lorretta Ave. N. in 2021 (road, sewer and water). As the development is planned to occur during the same time-period as the City project, works will need to be coordinated. The Owner may encounter potential restrictions and delays associated with the development of the lands, which will be reasonably mitigated through coordination of construction activities, as required. The developer shall contact and consult with Marc Tremblay (ext. 14391), City of Ottawa Project Manager Infrastructure Services, as early as possible to obtain design drawings and to coordinate the planned works, ensuring the projects will function together.

Sight Triangle and Any Road widening Requirement (By Transportation Project Manager Wally Dubyk)

Required Engineering Plans and Studies in Support of SPC application:

PLANS:

- Existing Conditions and Removals Plan
- Site Servicing Plan (includes Profile Detail of the proposed service connections and crossings)
- Grade Control and Drainage Plan
- Erosion and Sediment Control Plan
- Pre-Development Drainage Area Plan

- Post-Development Drainage Area Plan
- Roof Drainage Plan w/ Roof Drain Summary Table (if rooftop SWM storage is being considered)
- Stormwater Storage System Detail (Cistern Details from the Mechanical Engineer if being considered)
- Foundation Drainage System Details
- Legal Survey Plan
- Site Lighting Plan, Photometric Plan and Site Lighting Certification Letter

REPORTS:

- Site Servicing and Stormwater Management Report
- Geotechnical Study/Investigation
- Detailed Noise Study (Transportation Noise Assessment, Stationary Noise Assessment, Class 4 Designation)
- Vibration Study
- Phase I ESA (in accordance with Ontario Regulation 153/04)
- Phase II ESA
- Record of Site Condition (RSC) will be required for this property.
- Wind Study (Type 1 Wind Analysis)
- LRT Proximity Study

Servicing Report Template and Guidelines:

- Please find attached the Servicing Report Template & Study Guidelines" and prepare the servicing study accordingly. For capacity issue, please see section 3.2.1 page 3-3 and follow this section. A completed checklist with corresponding references from the servicing study is mandatory for the completeness of the study. Please add a completed checklist in the report. Please ensure you are using current guidelines, by-laws and standards.

- Please refer to the City of Ottawa Guide to Preparing Studies and Plans [Engineering]:

- https://ottawa.ca/en/planning-development-and-construction/developing-property/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans

Phase One Environmental Site Assessment (Official Plan Section 4.8.4):

- A NEW updated Phase I ESA is required to be completed in accordance with Ontario Regulation 153/04 (not per CSA standards) in support of this development proposal to determine the potential for site contamination. The 2017 Phase I ESA will not be accepted.

- A NEW updated Phase II ESA will be required in accordance with Ontario Regulation 153/04. Assessment of potential off-site migration to be reflected in the updated report. The 2017 Phase II ESA will not be accepted.

- A Site Remediation Action Plan and potential off-site Contamination Management Plan will be required to be provided and will be subject to City review and approval. The remediation action plan must detail all remedial activities, method of disposal for contaminated soil and groundwater and volume of disposed contaminated soil and groundwater.

- The Phase I ESA shall discuss the requirement to file a RSC with the Ministry. A Record of Site Condition (RSC) in accordance with O.Reg. 153/04 will be required to be filed and acknowledged by the Ministry prior to issuance of a building permit due to a change in property use from commercial (less sensitive) to residential (more sensitive). As per the Official Plan (4.8.4) we do not consider an RSC acknowledged by the Ministry until either its has been confirmed that it will not be audited or it has passed the Ministry audit.

- Please also note that in the event soil and/or groundwater contamination is identified on this site and the proposal is for a more sensitive land use, the MECP will require approximately 1-1.5 years to review the RSC. PIED will apply appropriate conditions, based on Environmental Protection Act (Section 168.3.1 (1)) and O.Reg. 153/04 (Parts IV and V) regarding requirements for RSC prior to building permit issuance. Dependent on the levels/types of contamination, timelines for building permit issuance may be longer than expected and we recommend applicant speak to Building Code Services, at the earliest convenience, so as to discuss these timelines in more detail, if deemed applicable.

- Environmental Risk Information Services (ERIS) report is required to be included as part of the Phase I ESA.
    - https://www.ontario.ca/page/guide-completing-phase-one-environmental-site-assessments-under-ontario-regulation-15304
    - https://www.ontario.ca/laws/regulation/040153#BK43

Geotechnical Investigation (Official Plan Section 4.8.3):

- A Geotechnical Study/Investigation shall be prepared in support of this development proposal.

- As per the recommendations of the Due Diligence Geotechnical Investigation Report prepared by DST Consulting Engineers Inc. a Hydrogeological Investigation and Ground Settlement Analysis and Impact Assessment due to dewatering are required to investigate the effect of short-term and long-term lowering of the groundwater level and the impact on the adjacent lands and existing neighboring structures. The City is concerned that reducing the groundwater level in this area can lead to damages to surrounding structures due to excessive differential settlements of the ground. The impact of groundwater lowering on adjacent properties needs to be discussed and investigated to

ensure there will be no short term and long term damages associated with lowering the groundwater in this area.

- Geotechnical Study shall be consistent with the Geotechnical Investigation and Reporting Guidelines for Development Applications.

- https://documents.ottawa.ca/sites/default/files/documents/cap137602.pdf

Noise Study:

- A Transportation Noise Assessment is required as the subject development is located within 100m of Gladstone Ave. (Major Collector Road), adjacent to light rail transit corridor (Trillium Line), and within 500m of HWY 417.

- A Stationary Noise Assessment is required in order to assess the noise impact of the proposed sources of stationary noise (mechanical HVAC system/equipment) of the development onto the surrounding residential area to ensure the noise levels do not exceed allowable limits specified in the City Environmental Noise Control Guidelines.

- Detailed Noise Study in Support of Class 4 Designation that verifies applicable sound level limits will be met at the new noise sensitive land use with the appropriate mitigation measures for all noise sources to achieve a Class 4 designation.

- Noise Study shall be consistent with the City's Environmental Noise Control Guidelines.

- https://documents.ottawa.ca/sites/default/files/documents/enviro_noise_guide_en.pdf

Vibration Study [Official Plan Section 4.8.7]:

- LRT Vibration Assessment/Study is required to be undertaken as the subject site is located within 75m of the light-rail transit corridor (Trillium Line).

- Vibration mitigation and warning clauses required if vibration levels due to LRT activity are determined to be above acceptable limits.

Wind Study:

- Windy Analysis, required as the development exceeds 10-storeys.

- https://documents.ottawa.ca/sites/documents/files/torwindanalysis_en.pdf

Exterior Site Lighting:

- Any proposed light fixtures (both pole-mounted and wall mounted) must be part of the approved Site Plan. All external light fixtures must meet the criteria for Full Cut-off Classification as recognized by the Illuminating Engineering Society of

North America (IESNA or IES), and must result in minimal light spillage onto adjacent properties (as a guideline, 0.5 fc is normally the maximum allowable spillage). In order to satisfy these criteria, the please provide the City with a Site Lighting Plan, Photometric Plan and Certification (Statement) Letter from an acceptable professional engineer stating that the design is compliant.

Transportation Comments (Wally Dubyk)

- A TIA reflecting the most up to date proposal is required.
- Gladstone Avenue is designated as a Major Collector roadway

Urban Design Comments (Randolph Wang)

- The site is not within a Design Priority Area currently. But the project was reviewed by the UDRP previously for the OPA and ZBLA. UDRP review is highly recommended for the site plan control process.

- A Design Brief is required for the site plan control application. The Terms of Reference for the Design Brief is attached for reference. Please note that:

    - A secondary wind study is required as detailed in the City's Terms of Reference. The preliminary wind study, including the Addendum has found a few challenging conditions on the site, particularly in the POPS between Towers 2 and 3. The design should address to these findings and the detailed design measures should be tested for their effectiveness.

    - A shadow study is also required to reflect the latest massing option.

- With respect to the design, please consider the following. Please note some of these comments were provided previously through the OPA and ZBLA process but have not been addressed to-date.
    - Stepping back the top of the podium along Loretta.
    - Providing an architectural reveal between the podium and Tower 1.
    - Examining the horizontal relationship between the base of the heritage building and the base of the podium, including the three dimensional effects.
    - Considering the material palette of towers, and exploring opportunities for contextualization (The materials proposed look very similar to those used in some of the recent projects done by the architect).
    - Extending the POPS between Towers 2 and 3 to Lorretta.
    - Designing the drop-off area as a forecourt where people and cars can mingle.
    - Mitigating the impacts the parking ramp on the forecourt (drop-off area).
    - Considering a transition zone between the POPS and the MUP along the O-Train, and resolving the relationship between the POPS, the MUP, and the walkway east of Tower 2.

Heritage Comments (MacKenzie Kimm)

- As Council issued their notice of intention to designate this property under Part IV of the Ontario Heritage Act at the time of the ZBA and OPA associated with this proposal, a heritage permit application will be required to facilitate the alterations to the property.

- The heritage permit application should be submitted concurrently with the Site Plan and staff recommend visiting the UDRP prior to the submission of the heritage permit package.

- Staff can follow up with the applicant directly in terms of application requirements when they are preparing for the submission. As discussed in the meeting, a Phase II of the Cultural Heritage Impact Statement (CHIS) will be required as part of the Site Plan and Heritage applications.

- Staff will also follow up with the details on application type and the associated fee closer to the submission.

- The CHIS should provide details on the conservation approach, identify any impacts and propose mitigation measures, as well as outline the specific recommendations for how the work will be undertaken, as part of an associated Conservation Plan.

- Staff continue to have questions about the following aspects of the proposal, which will require further consideration:
    - The treatment of the entry/entrance to the designated building as well as any sign board being proposed
    - The treatment of the west façade and how the glass link will be attached to the heritage building
    - The relationship between the horizontal features of the heritage building (cornice, windows, sills/lintels, entrance etc.) and those of the podium for Tower 1, particularly at both bases
    - The ground floor expression of the podium for Tower 1, particularly the canopies which may distract from the heritage building
    - How the interior columns (identified as heritage attributes) will be incorporated into the interior floor plan design
    - How the paint will be removed on the exterior
    - The introduction of the residential-style windows on the east façade/ how the existing openings on this façade are to be incorporated and conserved

Environmental Planner Comments (Matthew Haley)

- An EIS is required to address potential species at risk habitat.

Forestry Comments (Mark Richardson)

- A Tree Conservation Report, which can be included in the Landscape Plan, is required.

- The TCR must address all trees on the site, and all trees on adjacent sites if the Critical Root Zone extends onto the development site.

- Below is the list of TCR requirements:
  1. a Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City; an approved TCR is a requirement of Site Plan approval
  2. any removal of privately-owned trees 10cm or larger in diameter requires a tree permit issued under the Urban Tree Conservation Bylaw; the permit is based on the approved TCR
  3. any removal of City-owned trees will require the permission of Forestry Services who will also review the submitted TCR
  4. for this site, the TCR may be combined with the Landscape Plan provided all information is clearly displayed
  5. the TCR must list all trees on site by species, diameter and health condition – separate stands of trees may be combined using averages
  6. the TCR must address all trees with a critical root zone that extends into the developable area – all trees that could be impacted by the construction that are outside the developable area need to be addressed.
  7. trees with a trunk that crosses/touches a property line are considered co-owned by both property owners; permission from the adjoining property owner must be obtained prior to the removal of co-owned trees
  8. If trees are to be removed, the TCR must clearly show where they are, and document the reason they can not be retained – please provide a plan showing retained and removed treed areas
  9. All retained trees must be shown and all retained trees within the area impacted by the development process must be protected as per City guidelines listed on Ottawa.ca
     a. the location of tree protection fencing must be shown on a plan
     b. include distance indicators from the trunk of the retained tree to the nearest part of the tree protection fencing
     c. show the critical root zone of the retained trees
     d. if excavation will occur within the critical root zone, please show the limits of excavation and calculate the percentage of the area that will be disturbed
  10. the City encourages the retention of healthy trees; if possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.
  11. Please ensure newly planted trees have an adequate soil volume for their size at maturity. The minimum recommended soil volumes are:

Tree Type/Size	Single Tree Soil Volume (m3)	Multiple Tree Soil Volume (m3/tree)
Ornamental	15	9

Columnar	15	9
Small	20	12
Medium	25	15
Large	30	18
Conifer	25	15

- For more information on the process or help with tree retention options, contact Mark Richardson mark.richardson@ottawa.ca

Hintonburg Community Association Representative Comments (Linda Hoad)

- Standard Bread building
  - very pleased that the building will be leased to the artists on a subsidized basis using Section 37 funds
  - looking forward to the Heritage Permit Application and the CHIS part 2 including the conservation approach and plan
  - concern about the Gladston Station sign shown on the heritage building – glad to learn that it is a placeholder only. The Heritage Permit Application should address signage – suggest that the tenants be involved in designing the signage
  - unfortunate that the live/work units are not intended to be 'affordable' (or at least some of them)

- Live/work units
  - suggest that city work on a definition of this type of use which seems to be useful addition to the mix of units in a Mixed-Use Zone

- POPS
  - glad to learn that these spaces do not replace CIL of parkland
  - other than the link between Loretta and the MUP/Transit Station, I do not find these spaces attractive or useful to the public – residents, office employees maybe
  - good signage will be required to ensure that the public know that the link exists and is public, not private

- Bicycle Parking
  - more needed since times are changing
  - many people who are car free (and many will have to be in these residential towers) own more than one bike
  - the present situation is encouraging more people to use bicycles and cities are devoting more road space to bikes and pedestrians – this change is almost certainly permanent for many residents

Next Steps

- Refine the proposal to address issues raised through the pre-consultation.

- It is recommended that the applicant team seek continued input from the Ward Councillor Jeff Leiper, Community Associations, and neighbouring property owners.

APPENDIX

B

ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES

david schaeffer engineering ltd

120 Iber Road, Suite 103
Ottawa, Ontario K2S 1E9
Tel. (613) 836-0856
Fax (613) 836-7183
www.DSEL.ca

ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES

FOR

TRINITY DEVELOPMENT GROUP INC.
145 LORETTA AVENUE NORTH
& 951 GLADSTONE AVENUE

CITY OF OTTAWA

PROJECT NO.: 18-1026
CITY APPLICATION NO.: D07-12-XX-XXXX

NOVEMBER 2019 – REV. 3

ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES
FOR
145 LORETTA AVENUE NORTH
& 951 GLADSTONE AVENUE

TRINITY DEVELOPMENT GROUP INC.

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

ASSESSMENT OF ADEQUACY OF PUBLIC SERVICES
FOR
145 LORETTA AVENUE NORTH
& 951 GLADSTONE AVENUE
TRINITY DEVELOPMENT GROUP INC.
NOVEMBER 2019 – REV. 3

CITY OF OTTAWA
PROJECT NO.: 18-1026

1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has been retained by Trinity Development Group Inc. to prepare an Assessment of Adequacy of Public Services report in support of the application for Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBLA) at 145 Loretta Avenue North and 951 Gladstone Avenue.

The subject property is located within the City of Ottawa urban boundary, in the Kitchissippi Ward. As illustrated in ***Figure 1***, below, the subject property is located north east of the intersection of Loretta Avenue and Gladstone Avenue. The subject property measures approximately ***1.0 ha*** and is zoned General Industrial, (IG1 H(11)).

Figure 1: Site Location

The existing site area consists of two 2-storey, one 1-storey, and one 3-storey commercial buildings. Surface parking also exists on site. The application for OPA and ZBLA would allow for the mixed-use development of three multi-storey residential towers (30, 33, and 35 stories) above a common retail and office podium with a contemplated zoning of

Mixed-Use Centre (MC). The redevelopment of the subject property involves the retention of the existing 3-storey Standard Bread Building constructed in 1924.

The contemplated redevelopment is anticipated to be constructed in 2 phases. Phase 1 includes residential Towers 1 and 2 (35 and 33 storeys respectively) consisting of approximately ***553*** residential units. Both towers are contemplated to share a common podium consisting of ***3,276 m²*** of total retail area (including existing retail), and approximately ***17,569 m²*** of office space. The underground parking garage is also estimated to be constructed as part of the first phase. The contemplated phase 2 development includes the 30-storey residential tower (Tower 3) consisting of approximately ***192*** residential units. A total of ***745*** residential units is contemplated between the two phases.

The objective of this report is to provide sufficient detail to demonstrate that the contemplated development is supported by existing municipal services.

1.1 Existing Conditions

Sewer and watermain mapping collected from the City of Ottawa indicate that the following services exist across the property frontages within the adjacent municipal right-of-ways:

Loretta Avenue:

- 203 mm diameter unlined cast iron watermain;
- 1372 mm diameter concrete pressure watermain backbone pipe;
- 1350 mm diameter concrete storm sewer tributary to the Ottawa River, and outletting approximately 1.5 km downstream;
- 1050 mm diameter concrete sanitary Mooney's Bay trunk sewer; and
- 300 mm diameter concrete combined sewer.

Gladstone Avenue:

- 203 mm diameter PVC watermain, east of Loretta and Gladstone intersection;
- 406 mm diameter PVC watermain, west of Loretta and Gladstone intersection;
- 1350 mm diameter concrete storm sewer tributary to the Ottawa River, and outletting approximately 1.5 km downstream;
- 375 mm diameter PVC storm sewer tributary to the Ottawa River, and outletting approximately 1 km downstream;

- 1050mm diameter concrete Mooney's Bay sanitary sewer, east of Loretta and Gladstone intersection; and
- 250 mm diameter PVC sanitary sewer west of Loretta and Gladstone intersection.

1.2 Required Permits / Approvals

The contemplated development is subject to the Zoning By-law Amendment approval process. The City of Ottawa must approve engineering reports prior to issuing ZBLA approval.

1.3 Pre-consultation

Pre-consultation correspondence from the City of Ottawa, along with the servicing guidelines checklist, is located in ***Appendix A***.

Pre-consultation with RVCA was conducted to confirm stormwater management targets on July 24, 2019, see ***Appendix A.***

2.0 GUIDELINES, PREVIOUS STUDIES, AND REPORTS

2.1 Existing Studies, Guidelines, and Reports

The following studies were utilized in the preparation of this report:

- **Ottawa Sewer Design Guidelines**,
  City of Ottawa, *SDG002,* October 2012.
  (City Standards)

  - **Technical Bulletin ISTB-2018-01**
    City of Ottawa, March 21, 2018.
    (*ISTB-2018-01*)

  - **Technical Bulletin ISTB-2018-03**
    City of Ottawa, March 21, 2018.
    (*ISTB-2018-03*)

- **Ottawa Design Guidelines – Water Distribution**
  City of Ottawa, July 2010.
  (Water Supply Guidelines)

  - **Technical Bulletin ISD-2010-2**
    City of Ottawa, December 15, 2010.
    (*ISD-2010-2*)

  - **Technical Bulletin ISDTB-2014-02**
    City of Ottawa, May 27, 2014.
    (*ISDTB-2014-02*)

  - **Technical Bulletin ISDTB-2018-02**
    City of Ottawa, March 21, 2018.
    (*ISDTB-2018-02*)

- **Design Guidelines for Sewage Works,**
  Ministry of the Environment, 2008.
  (MOE* Design Guidelines*)

- **Stormwater Planning and Design Manual,**
  Ministry of the Environment, March 2003.
  (SWMP Design Manual)

- **Ontario Building Code Compendium**
  Ministry of Municipal Affairs and Housing Building Development Branch,

January 1, 2010 Update.
(OBC)

- **Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems**
  National Fire Protection Association,
  2016 Edition.
  (NFPA)

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The subject property lies within the City of Ottawa 1W pressure zone. A local 203 mm diameter watermain and a 1372 mm diameter backbone pipeline exist within the Loretta Avenue right-of-way and a 203 mm diameter watermain exists within the Gladstone Avenue right-of-way east of the intersection, as shown by the ***City Water Distribution Mapping*** located in ***Appendix B***.

Table 1, below, estimates the water demand of the existing buildings, based on the ***Water Supply Guidelines*** shown in ***Table 2.***

Table 1
Water Demand
Existing Conditions

Design Parameter	Anticipated Demand[1] (L/min)
Average Daily Demand	22.5
Max Day	33.8
Peak Hour	60.8

1) Water demand calculation per ***Water Supply Guidelines***. See ***Appendix B*** for detailed calculations.

3.2 Water Supply Servicing Design

It is anticipated that the contemplated development will be serviced via a minimum of 2 service connections to the 203 mm diameter watermains within Gladstone and Loretta Avenues. As the water demand exceeds 50 m^3/day it is contemplated to loop the services internally to allow for redundancy in case of interruption of service to either service.

Table 2, below, summarizes the ***Water Supply Guidelines*** employed in the preparation of the preliminary water demand estimate.

Table 2
Water Supply Design Criteria

Design Parameter	Value
Residential 1 Bedroom Apartment	1.4 P/unit
Residential 2 Bedroom Apartment	2.1 P/unit
Residential 3 Bedroom Apartment	3.1 P/unit
Residential Average Daily Demand	280 L/d/P
Residential Maximum Daily Demand	2.5 x Average Daily *
Residential Maximum Hourly	5.5 x Average Daily *
Commercial Space	2500 L/(1000m^2/d)
Minimum Watermain Size	150 mm diameter
Minimum Depth of Cover	2.4 m from top of watermain to finished grade
During normal operating conditions desired operating pressure is within	350 kPa and 480 kPa
During normal operating conditions pressure must not drop below	275 kPa
During normal operating conditions pressure must not exceed	552 kPa
During fire flow operating pressure must not drop below	140 kPa
** Residential Max. Daily and Max. Hourly peaking factors per MOE Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons. Above 500 persons, refer to Table 4.2 from City Guidelines.* *-Table updated to reflect ISD-2018-02*	

Table 3, below, summarizes the anticipated water supply demand and boundary conditions, received from the City of Ottawa, for the Contemplated development based on the ***Water Supply Guidelines***. Refer to ***Appendix B*** for correspondence with the City of Ottawa.

Table 3
Water Demand and Boundary Conditions
Contemplated Conditions

Design Parameter	Estimated Demand[1] (L/min)	Connection 1 Boundary Conditions[2] (m H_2O / kPa)		Connection 2 Boundary Conditions[3] (m H_2O / kPa)	
Average Daily Demand	373.4	47.6	466.7	47.3	464.2
Max Day + Fire Flow Scenario 1 (per ISDTB-2018-02)	823.8 +4,150	41.6	407.8	40.2	394.6
Peak Hour	1746.5	40.3	395.0	40.2	392.6

1) Water demand calculation per ***Water Supply Guidelines***. See ***Appendix B*** for detailed calculations.
2) Boundary conditions above for connection 1 to Gladstone Avenue assumed ground elevation equal to 67.2m
3) Boundary condition for connection 2 to Loretta Avenue assumed ground elevation equal to 67.5m

The City of Ottawa was contacted to obtain boundary conditions associated with the estimated water demand, as indicated in the boundary request correspondence included in ***Appendix B***.

Based on correspondence with the City of Ottawa, Loretta North Avenue will undergo reconstruction, resulting in the replacement of the existing 203 mm diameter watermain between Gladstone and Laurel with a 203 mm diameter watermain. The future watermain project could potentially affect the boundary condition results, refer to ***Appendix B*** for correspondence with the City.

For the purpose of estimating fire flow, the short method within the National Fire Protection Association (NFPA) standards was utilized. As indicated by Section 11.2.2 from the ***NFPA Standards***, fire flow requirements are to be determined by combining the required flow rate for the sprinkler system, along with the estimated hose stream. As indicated by Table 11.2.2.1 and Table 11.2.3.1.2 extracted from the ***NFPA Standards*** and included in ***Appendix B***, the estimated fire flow requirements for the sprinkler system is ***3,200 L/min*** (850 gpm) and the estimated internal and external total combined inside and outside hose stream demand is ***950 L/min*** (250 gpm).

As a result, the total fire flow is estimated to be ***4,150 L/min*** (1,100 gpm), refer to supporting calculation in ***Appendix B***. Based on the boundary conditions provided by the City of Ottawa, sufficient supply is available for fire flow. A certified fire protection system specialist will need to be employed to design the building's fire suppression system and confirm the actual fire flow demand.

3.3 Water Supply Conclusion

The anticipated water demand based on the concept plan was submitted to the City of Ottawa for establishing boundary conditions. As demonstrated by ***Table 3***, the municipal system is capable of delivering water within the ***Water Supply Guidelines*** pressure range.

A certified fire protection system specialist will need to be employed in order to design the building's fire suppression system and confirm the maximum fire flow demand for the design. However, the current maximum fire flow that can be supplied to the contemplated development exceeds the maximum fire flow required as per ***NFPA Standards***.

DSEL employed a daily consumption rate of 280 L/person/day to align with the revised wastewater rates identified by City of Ottawa Technical Bulletin ISTB-2018-03. As a result, DSEL is submitting for a deviation from the ***Water Supply Guidelines***.

4.0 WASTEWATER SERVICING

4.1 Existing Wastewater Services

The subject site lies within Mooney's Bay Collector Sewer catchment area, as shown by the ***Sanitary & Storm Collection System Maps,*** included in ***Appendix C***. There is an existing 1050 mm diameter Mooney's Bay Collector Trunk sanitary sewer within Loretta Avenue and within Gladstone Avenue east of the Gladstone and Loretta intersection. A 250 mm diameter sanitary sewer exists within Gladstone Avenue fronting the subject property.

Table 4, below, summarizes the estimated wastewater flows for the existing development.

Table 4
Summary of Estimated Existing Peak Wastewater Flow

Design Parameter	Existing Flow (L/s)
Estimated Average Dry Weather Flow	0.75
Estimated Peak Dry Weather Flow	1.13
Estimated Peak Wet Weather Flow	1.46

The existing building is comprised primarily of commercial space and is estimated to have a peak wastewater flow of **1.46 L/s**.

4.2 Wastewater Design

The contemplated development is anticipated to discharge to the 1050 mm diameter sanitary trunk within Loretta Avenue.

Table 5, below, summarizes the ***City Standards*** employed in the design of the Contemplated wastewater sewer system.

Table 5
Wastewater Design Criteria

Design Parameter	Value
Residential 1 Bedroom Apartment	1.4 P/unit
Residential 2 Bedroom Apartment	2.1 P/unit
Residential 3 Bedroom Apartment	3.1 P/unit
Average Daily Demand	280 L/d/per
Peaking Factor	Harmon's Peaking Factor. Max 3.8, Min 2.0
Commercial Floor Space	5 L/m^2/d
Commercial Office Space	75 L/9.3m^2/d
Infiltration and Inflow Allowance	0.33 L/s/ha
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Minimum Sewer Size	250 mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5 m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6 m/s
Maximum Full Flowing Velocity	3.0 m/s
Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012.	

Table 6, below demonstrates the anticipated peak flow from the Contemplated development. See ***Appendix C*** for associated calculations.

Table 6
Summary of Estimated Contemplated Peak Wastewater Flow

Design Parameter	Contemplated Flow (L/s)
Estimated Average Dry Weather Flow	6.41
Estimated Peak Dry Weather Flow	16.95
Estimated Peak Wet Weather Flow	17.28

The anticipated peak wet weather flow of ***17.28 L/s*** is a ***15.82 L/s*** increase from the existing condition.

The City was contacted in order to confirm available capacity and resulting HGL within the existing 1050 mm sanitary trunk sewer. As indicated in the correspondence located in ***Appendix A,*** the 1050 mm trunk sewer has sufficient capacity to accommodate the increase in wastewater flow from the proposed development. Anticipated connections to the existing trunk sewer are to be a minimum of 0.30m above the receiving sewer's ***HGL,*** or anticipated wastewater flow from the contemplated development shall be pumped.

The City of Ottawa conducted a Hydraulic Grade Line (***HGL***) analysis of the sanitary sewers surrounding the site. ***Table 7*** below, summarized the results provided by the City at three maintenance structures.

Table 7
Summary of 100-Year HGL Levels

Maintenance Structure	Location	HGL (m)		
		6 hr SCS	3 hr Chicago	Hurricane Frances (scaled)
MHSA00934	Northwest Corner	59.5	59.1	58.9
MHSA00935	Southwest Corner	60.1	59.6	59.4
MHSA00936	Southeast Corner	60.3	59.8	59.6

4.3 Wastewater Servicing Conclusions

The site is tributary to the Mooney's Bay Collector Trunk sanitary sewer. The anticipated wet weather flow is ***17.28 L/s*** which is a ***15.82 L/s*** increase from the existing condition.

The City provided confirmation that the existing 1050 mm sanitary trunk sewer within Loretta and Gladstone Avenues is capable of accommodating the increase in flow as indicated in the correspondence located in ***Appendix A***.

The contemplated wastewater servicing design conforms to all relevant City Guidelines and Policies.

5.0 STORMWATER MANAGEMENT

5.1 Existing Stormwater Services

Stormwater runoff from the subject property is tributary to the City of Ottawa sewer system and is located within the Ottawa Central sub-watershed. As such, approvals for contemplated developments within this area are under the approval authority of the City of Ottawa.

Flows that influence the watershed in which the subject property is located are further reviewed by the principal authority. The subject property is located within the Ottawa River watershed, and is therefore subject to review by the Rideau Valley Conservation Authority (RVCA). Consultation with the RVCA is located in ***Appendix A***.

An existing 1350 mm diameter Mooney's Bay Collector Storm Sewer Trunk runs along Loretta Avenue and Gladstone Avenue east of Loretta and Gladstone intersection.

It is anticipated that the existing development contains no stormwater management controls for flow attenuation. The estimated pre-development peak flows for the 2, 5, and 100-year events are summarized in ***Table 8,*** below

Table 8
Summary of Existing Peak Storm Flow Rates

City of Ottawa Design Storm	Estimated Peak Flow Rate (L/s)
2-year	192.0
5-year	260.5
100-year	496.0

5.2 Post-development Stormwater Management Target

City of Ottawa Standards and pre-consultation was used to determine stormwater management requirements, where the development is required to:

- Meet an allowable release rate based on the lesser of either the existing calculated Rational Method Coefficient of 0.50, employing the City of Ottawa IDF parameters for a 2-year storm with a time of concentration equal to or greater than 10 minutes;
- Attenuate all storms up to and including the City of Ottawa 100-year design event on site; and
- Based on coordination with the RVCA, enhanced quality level treatment (80% TSS removal) will be required for the contemplated development; correspondence with the RVCA is included in ***Appendix A***.

Based on the above, the allowable release rate for the contemplated development is ***106.7 L/s***. Refer to city pre-consultation correspondence in ***Appendix A.***

5.3 Proposed Stormwater Management System

It is anticipated that the stormwater outlet from the contemplated development will discharge to the existing 1350 mm diameter Mooney's Bay Collector Storm sewer within Loretta Avenue. The proposed development is contemplated to utilize an internal cistern to meet the stormwater objectives.

Table 9, below summarizes post-development flow rates. The following storage requirement estimate assumes that approximately 10% of the development area will be directed to Loretta Avenue and Gladstone Avenue right-of-ways without flow attenuation. These areas will be compensated for in areas with flow attenuation.

Table 9
Stormwater Flow Rate Summary

Control Area	5-Year Release Rate	5-Year Storage	100-Year Release Rate	100-Year Storage
	(L/s)	(m^3)	(L/s)	(m^3)
Unattenuated Areas	23.2	0.0	49.6	0.0
Attenuated Areas	28.2	155.0	57.1	313.9
Total	**51.3**	**155.0**	**106.7**	**313.9**

It is anticipated that approximately ***314 m^3*** of storage, provided via an internal cistern, will be required on site to attenuate flow to the established release rate of ***106.7 L/s***; storage calculations are contained within ***Appendix D***.

The City of Ottawa conducted a Hydraulic Grade Line (***HGL***) analysis of the storm sewers surrounding the site. ***Table 10*** below, summarized the results provided by the City at three maintenance structures.

Table 10
Summary of 100-Year HGL Levels

Maintenance Structure	Location	HGL (m)
MHST101877	Northwest Corner	60.53
MHST101876	Southwest Corner	61.76
MHST101875	Southeast Corner	62.40

The HGL analysis will need to be reviewed and included during the detailed design. Refer to ***Appendix A*** for correspondence with the City, identifying the maintenance structures above. Anticipated connections to the existing 1350 mm diameter collector storm sewer are to be a minimum of 0.30m above the receiving sewer's ***HGL.*** Alternatively, anticipated storm flow from the contemplated development will be required to be pumped.

Actual storage volumes will need to be confirmed at the detailed design stage based on a number of factors including, but not limited to, grading constraints and external drainage.

To meet quality controls, on-site treatment including LID measures and oil/grit separators will be contemplated to achieve 80% TSS removal.

5.4 Stormwater Servicing Conclusions

In accordance with City of Ottawa ***City Standards***, post development stormwater runoff will be required to be restricted to the allowable target release rate for storm events up to and including the 100-year storm. The post-development allowable release rate was calculated as ***106.7 L/s***; it is estimated that ***314 m^3*** of storage provided by an internal cistern to meet the established release rate.

Based on coordination with the RVCA, enhanced quality level treatment (80% TSS removal) will be required for the contemplated development; correspondence with the RVCA is included in ***Appendix A***. To meet quality controls, on-site treatment including LID measures and oil/grit separators will be contemplated to achieve 80% TSS removal.

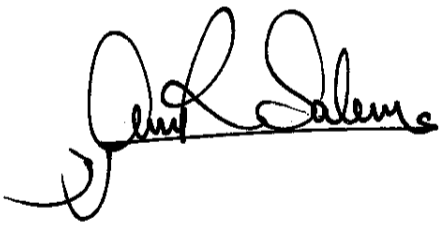
The contemplated stormwater design conforms to all relevant ***City Standards*** and Policies for approval.

6.0 CONCLUSION AND RECOMMENDATIONS

David Schaeffer Engineering Ltd. (DSEL) has been retained by Trinity Development Group Inc. to prepare an Assessment of Adequacy of Public Services report in support of the application for an Official Plan and Zoning Bylaw Amendment at 145 Loretta Avenue North and 951 Gladstone Avenue. The preceding report outlines the following:

- Based on boundary conditions provided by the City, the existing municipal water infrastructure is capable of providing the contemplated development with water within the City's required pressure range;
- The ***NFPA Standards*** method for estimating maximum fire flow indicated ***4,150 L/min*** is required for the contemplated development;
- The contemplated development is anticipated to have a peak wet weather flow of ***17.28 L/s***, which is a ***15.82 L/s*** increase from the existing condition. It is anticipated that the 1050 mm diameter Mooney's Bay Collector Trunk sewer is capable of accommodating this increase in flow;
- Based on the City of Ottawa's City Standards the contemplated development will be required to attenuate post development flows to an equivalent release rate of ***106.7 L/s*** for all storms up to and including the 100-year storm event;
- It is contemplated that stormwater objectives will be met by an internal cistern, it is estimated that ***314 m^3*** of onsite storage will be required to attenuate flow to the established release rate;
- To meet quality controls, on-site treatment including various LID and oil/grit separators will be contemplated to achieve 80% TSS removal.

Prepared by,
David Schaeffer Engineering Ltd.



Per: Amr Salem

Reviewed by,
David Schaeffer Engineering Ltd.

Per: Robert Freel, P.Eng.

Prepared by,
David Schaeffer Engineering Ltd.

Per: Brandon Chow

z:\projects\18-1026_trinity_loretta-gladstone\b_design\b3_reports\b3-2_servicing (dsel)\2019-10-17_sub3_aes\aes-2019-11-08_1026_aas.docx

APPENDIX A

Pre-Consultation

DEVELOPMENT SERVICING STUDY CHECKLIST

18-1026 2019-11-07

4.1 General Content		
☐	Executive Summary (for larger reports only).	N/A
☒	Date and revision number of the report.	Report Cover Sheet
☒	Location map and plan showing municipal address, boundary, and layout of proposed development.	Drawings/Figures
☒	Plan showing the site and location of all existing services.	Figure 1
☒	Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	Section 1.0
☒	Summary of Pre-consultation Meetings with City and other approval agencies.	Section 1.3
☒	Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.	Section 2.1
☒	Statement of objectives and servicing criteria.	Section 1.0
☒	Identification of existing and proposed infrastructure available in the immediate area.	Sections 3.1, 4.1, 5.1
☐	Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	N/A
☐	Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	N/A
☐	Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	N/A
☐	Proposed phasing of the development, if applicable.	N/A
☐	Reference to geotechnical studies and recommendations concerning servicing.	N/A
☐	All preliminary and formal site plan submissions should have the following information: -Metric scale -North arrow (including construction North) -Key plan -Name and contact information of applicant and property owner -Property limits including bearings and dimensions -Existing and proposed structures and parking areas -Easements, road widening and rights-of-way -Adjacent street names	N/A

4.2 Development Servicing Report: Water		
☐	Confirm consistency with Master Servicing Study, if available	N/A
☒	Availability of public infrastructure to service proposed development	Section 3.1
☒	Identification of system constraints	Section 3.1
☒	Identify boundary conditions	Section 3.1, 3.2
☒	Confirmation of adequate domestic supply and pressure	Section 3.3

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Section 3.2
☐	Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	N/A
☐	Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	N/A
☐	Address reliability requirements such as appropriate location of shut-off valves	N/A
☐	Check on the necessity of a pressure zone boundary modification	N/A
☒	Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range	Section 3.2, 3.3
☐	Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	N/A
☐	Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	N/A
☒	Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Section 3.2
☐	Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	N/A

4.3 Development Servicing Report: Wastewater

☒	Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	Section 4.2
☐	Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A
☐	Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	N/A
☒	Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 4.1
☒	Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)	Section 4.2
☒	Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	Section 4.2, Appendix C
☒	Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 4.2
☐	Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	N/A

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☐	Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
☐	Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
☐	Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A
☐	Special considerations such as contamination, corrosive environment etc.	N/A

4.4 Development Servicing Report: Stormwater Checklist

☒	Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 5.1
☐	Analysis of available capacity in existing public infrastructure.	N/A
☐	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	N/A
☒	Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Section 5.2
☒	Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 5.2
☒	Description of the stormwater management concept with facility locations and descriptions with references and supporting information	Section 5.3
☐	Set-back from private sewage disposal systems.	N/A
☐	Watercourse and hazard lands setbacks.	N/A
☒	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	Appendix A
☐	Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
☒	Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).	Section 5.3
☐	Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	N/A
☒	Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Section 5.1, Section 5.3
☐	Any proposed diversion of drainage catchment areas from one outlet to another.	N/A
☐	Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	N/A
☐	If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	N/A
☐	Identification of potential impacts to receiving watercourses	N/A
☐	Identification of municipal drains and related approval requirements.	N/A

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

☒	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 5.3
☐	100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	N/A
☐	Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A
☐	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	N/A
☐	Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A
☐	Identification of fill constraints related to floodplain and geotechnical investigation.	N/A

4.5 Approval and Permit Requirements: Checklist

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

4.6 Conclusion Checklist

☒	Clearly stated conclusions and recommendations	Section 6.0
☐	Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	
☐	All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	

*Extracted from the City of Ottawa-Servicing Study Guidelines for Development Applications

Charlotte Kelly

Subject: FW: 145 Loretta Avenue North/ 951 Gladstone Avenue

From: Fraser, Mark <Mark.Fraser@ottawa.ca>
Sent: August 7, 2019 4:09 PM
To: Brandon Chow <BChow@dsel.ca>
Cc: O'Connor, Ann <Ann.O'Connor@ottawa.ca>
Subject: RE: 145 Loretta Avenue North/ 951 Gladstone Avenue

Hi Brandon,

The stormwater management criteria noted in the attached correspondence was provided in error after further review of the install year of the receiving storm sewer. Based on the install year of **1967** the 1350mm dia. storm sewer within Loretta Ave. was only designed to a 2-year level of service not a 5-year level of service [pre-1970 the design of the storm sewers were based on a 2-year storm].

Post-development flows from the subject site are to be controlled up to a 100-year storm event, to a **2-year allowable release rate** calculated using a runoff coefficient (C) determined using the pre-development runoff coefficient or a maximum equivalent 'C' of 0.5, whichever is less (Cl.8.3.7.3) [If 0.5 applies it needs to be clearly demonstrated in the report that the pre-development runoff coefficient is greater than 0.5], and a calculated time of concentration (T_c) using an appropriate method to justify the parameter selection [*T_c of 20 minutes should be used for all pre-development calculations without engineering justification, Tc should not be less than 10 min. since IDF curves become unrealistic at less than 10 min; T_c of 10 minutes shall be used for all post-development calculations*].

Please note that the impact from the receiving storm system HGL will need to be assessed if underground storage is proposed as part of the stormwater management solution. The receiving storm sewer system is uncontrolled and therefore subject to surcharge (HGL will be elevated for events greater than 2-year storm event).

If using the modified rational method to calculate the storage requirements for the site any underground storage should not be included in the overall available storage. The modified rational method assumes that the restricted flow rate is constant throughout the storm which underestimates the storage requirement prior to the 1:100 year head elevation being reached. Please note that if you wish to utilize any underground storage as available storage, the $Q_{(release)}$ must be modified to compensate for the lack of head on the orifice. An assumed average release rate equal to 50% of the peak allowable rate shall be applied. Otherwise, disregard the underground storage as available storage or provide modeling to support the SWM strategy.

If you have any questions or require any clarification please let me know.

Regards,

Mark Fraser
Project Manager, Planning Services
Development Review Central Branch
City of Ottawa | Ville d'Ottawa
Planning, Infrastructure and Economic Development Department
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1
Tel:613.580.2424 ext. 27791
Fax: 613-580-2576
Mail: Code 01-14
Email: Mark.Fraser@ottawa.ca

From: Brandon Chow <BChow@dsel.ca>
Sent: August 06, 2019 5:41 PM
To: Fraser, Mark <Mark.Fraser@ottawa.ca>
Subject: 145 Loretta Avenue North/ 951 Gladstone Avenue

Hi Mark,

We would like to confirm stormwater management requirements for the proposed development at the above noted site.
A City comment on the Adequacy of Services Report noted that the receiving storm sewer system is a 2-year system. Previous correspondence with the City (attached) indicated the allowable release rate to be based on the below criteria.

- 1:5 year storm
- C=0.5
- 10min concentration time

Can you please confirm?

Thanks,

Brandon Chow
Project Coordinator / Intermediate Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.532
fax: (613) 836-7183
email: bchow@DSEL.ca

'

Amr Salem

From: Eric Lalande <eric.lalande@rvca.ca>
Sent: September 26, 2018 9:29 AM
To: Amr Salem
Cc: Steve Merrick
Subject: RE: 1026- 145 Loretta Ave N/951 Gladstone Ave

Hi Amr,

The RVCA looks for on-site enhance level of protection (80% TSS Removal) for quality control for sites less than 2km away from an outlet without an intervening storm water management facility. Specifically as it relates to surface parking, this standard is expected to be achieved, on-site best management practices including LID could be provided and demonstrated through the Site Servicing report.

Thanks,

Eric Lalande, MCIP, RPP
Planner, Rideau Valley Conservation Authority
613-692-3571 x1137

From: Amr Salem <ASalem@dsel.ca>
Sent: Wednesday, September 26, 2018 9:24 AM
To: Eric Lalande <eric.lalande@rvca.ca>
Cc: Steve Merrick <SMerrick@dsel.ca>
Subject: FW: 1026- 145 Loretta Ave N/951 Gladstone Ave

Good morning Eric,

I just wanted to follow up on this. Did you get a chance to review?

Please let me know if you have any questions.

Thank you,

Amr Salem
Project Coordinator

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 512
email: asalem@DSEL.ca

From: Jamie Batchelor <jamie.batchelor@rvca.ca>
Sent: September 21, 2018 1:47 PM
To: Amr Salem <ASalem@dsel.ca>
Cc: Steve Merrick <SMerrick@dsel.ca>; Eric Lalande <eric.lalande@rvca.ca>
Subject: RE: 1026- 1045 Loretta Ave N/951 Gladstone Ave

Good Afternoon Amr,

I am forwarding this to Eric as it would be in his area.

From: Amr Salem <ASalem@dsel.ca>
Sent: Friday, September 21, 2018 11:47 AM
To: Jamie Batchelor <jamie.batchelor@rvca.ca>
Cc: Steve Merrick <SMerrick@dsel.ca>
Subject: 1026- 1045 Loretta Ave N/951 Gladstone Ave

Good morning Jamie ,

We wanted to consult with you regarding a mixed-use development we are working on located at the intersection of Gladstone Avenue and Lorretta Avenue North.

The existing stormwater on site discharges to the municipal infrastructure (1350 mm Diameter Storm Sewer) within Gladstone Avenue and Lorretta Avenue. The stormwater collected from the site travels approximately 1.3 km through municipal sewer to a direct outlet into the Ottawa River.

The development proposes to construct new mixed use buildings (commercial/office/residential) consisting of three high-rise residential towers with one of which stemming from a large commercial/office building fronting Gladstone Ave with the other towers located to the North. The site will be landscape with storm water primarily coming from the roof tops collected from the towers. There will be approximately parking for 14 cars on the surface of the lot with the majority of parking located underground.

At present, the existing site area consists of mostly paved asphalt for surface parking (50+ spots) and 4 buildings.

Can you please provide your input regarding quality controls that maybe required for the site.

Please feel free to contact me if you have any questions.

Regards,

Amr Salem
Project Coordinator

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 512
email: asalem@DSEL.ca

Brandon Chow

To: Fraser, Mark
Subject: RE: 145 Loretta and 951 Gladstone - ZBLA engineering comments

From: Fraser, Mark <Mark.Fraser@ottawa.ca>
Sent: November 7, 2019 3:15 PM
To: Brandon Chow <BChow@dsel.ca>
Subject: RE: 145 Loretta and 951 Gladstone - ZBLA engineering comments

Hi Brandon,

The Water Resources Assets Unit has no anticipated issues with the proposed peak wastewater flow from the development discharging to the 1050mm dia. Collector Sewer. No additional analysis is necessary.

As this proposal only proposes a private building service the OBC method of calculating fire flow can be used. However please note that there are internal discussions happening with Building Code Services (BCS) and Ottawa Fire Services (OFS) regarding this approach so requirements may change at the time of Site Plan Control.

Regards,

Mark Fraser
Project Manager, Planning Services
Development Review Central Branch
City of Ottawa | Ville d'Ottawa
Planning, Infrastructure and Economic Development Department
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1
Tel:613.580.2424 ext. 27791
Fax: 613-580-2576
Mail: Code 01-14
Email: Mark.Fraser@ottawa.ca

From: Fraser, Mark
Sent: November 05, 2019 2:50 PM
To: Brandon Chow <BChow@dsel.ca>
Subject: RE: 145 Loretta and 951 Gladstone - ZBLA engineering comments

Hi Brandon,

Please see the below wastewater flows within the sanitary trunk sewer as requested.

#	STRUCT_ID	From MH	To MH	100 year Peak Flow (L/s)		
				6 hr SCS	3 hr Chicago	Hurricane Frances (scaled)
1	SAN00976	MHSA00935	MHSA00934	1420	1220	940
2	SAN00975	MHSA00934	MHSA00933 (1A)	1440	1240	960

Regards,

Mark Fraser
Project Manager, Planning Services
Development Review Central Branch
City of Ottawa | Ville d'Ottawa
Planning, Infrastructure and Economic Development Department
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1
Tel:613.580.2424 ext. 27791
Fax: 613-580-2576
Mail: Code 01-14
Email: Mark.Fraser@ottawa.ca

From: Brandon Chow <BChow@dsel.ca>
Sent: October 30, 2019 3:54 PM
To: Fraser, Mark <Mark.Fraser@ottawa.ca>
Subject: RE: 145 Loretta and 951 Gladstone - ZBLA engineering comments

Hi Mark,

We would like to request the flows that have been computed in the City's model for the 1050mm sanitary trunk that is anticipated to receive flows from the subject proposal.
Can you please provide the computed flows for the sanitary trunk between nodes 1A to MHSA00934 and MHSA00934 to MHSA00935? See attachment for reference.

Thanks,

Brandon Chow
Project Coordinator / Intermediate Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.532
fax: (613) 836-7183
email: bchow@DSEL.ca

From: Fraser, Mark <Mark.Fraser@ottawa.ca>
Sent: October 28, 2019 3:51 PM

To: Brandon Chow <BChow@dsel.ca>
Subject: RE: 145 Loretta and 951 Gladstone - ZBLA engineering comments

Hi Brandon,

The Water Resources Assets Unit has no anticipated issues with the proposed peak wastewater flow however confirmation of available sanitary sewer capacity needs to be discussed and assessed to demonstrate that the sewer system can accommodate the anticipated wastewater flow from the subject proposal for documentation purposes.

Regards,

Mark Fraser
Project Manager, Planning Services
Development Review Central Branch
City of Ottawa | Ville d'Ottawa
Planning, Infrastructure and Economic Development Department
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1
Tel:613.580.2424 ext. 27791
Fax: 613-580-2576
Mail: Code 01-14
Email: Mark.Fraser@ottawa.ca

From: Brandon Chow <BChow@dsel.ca>
Sent: October 25, 2019 5:25 PM
To: Fraser, Mark <Mark.Fraser@ottawa.ca>
Subject: RE: 145 Loretta and 951 Gladstone - ZBLA engineering comments

Hi Mark,

Thank you for providing the HGL. Would you be able confirm with the modelling group that the receiving sanitary trunk has capacity to support the anticipated flows from the subject development?

Thanks,

Brandon Chow
Project Coordinator / Intermediate Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.532

fax: (613) 836-7183
email: bchow@DSEL.ca

From: Fraser, Mark <Mark.Fraser@ottawa.ca>
Sent: October 24, 2019 3:18 PM
To: Brandon Chow <BChow@dsel.ca>
Subject: RE: 145 Loretta and 951 Gladstone - ZBLA engineering comments

Hi Brandon,

Please see attached and below the 100-year HGL in the sanitary trunk sewer model as requested.

#	STRUCT_ID	100 year HGL (m)		
		6 hr SCS	3 hr Chicago	Hurricane Frances (scaled)
1	**MHSA00934**	59.5	59.1	58.9
2	**MHSA00935**	60.1	59.6	59.4
3	**MHSA00936**	60.3	59.8	59.6

Regards,

Mark Fraser
Project Manager, Planning Services
Development Review Central Branch
City of Ottawa | Ville d'Ottawa
Planning, Infrastructure and Economic Development Department
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1
Tel:613.580.2424 ext. 27791
Fax: 613-580-2576
Mail: Code 01-14
Email: Mark.Fraser@ottawa.ca

*Please consider your environmental responsibility before printing this e-mail

---

From: Fraser, Mark
Sent: October 23, 2019 9:22 AM
To: Brandon Chow <BChow@dsel.ca>
Subject: RE: 145 Loretta and 951 Gladstone - ZBLA engineering comments

Hi Brandon,

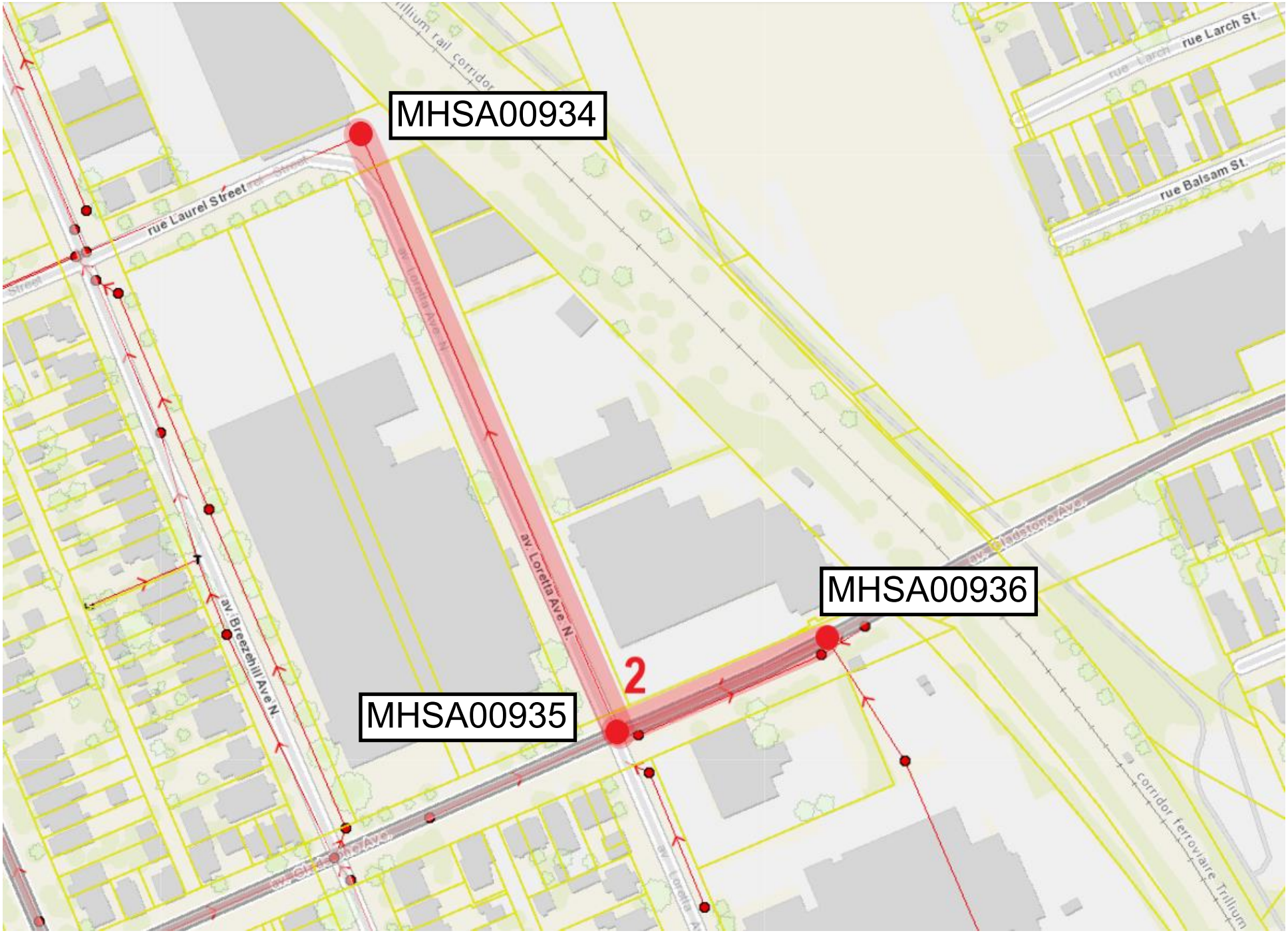
I have been advised that some preliminary design drawings were completed for the reconstruction of Loretta Ave. N. (North of Gladstone Ave.) however Asset Management is now considering replacing the existing backbone watermain within Loretta Ave. N. as part of the reconstruction works which will change the design. There is no timeline to revise the preliminary design prior to Spring 2020 thus no plans are available at this time.

You will need to contact and discuss with the City Project Manager (Marc Tremblay) of this reconstruction project to ensure both projects are planned to function together and the latest design details are obtained. It is my understanding

there has been no discussion to date on how this development proposal will function with the ultimate condition of Loretta Ave. N.

Regards,

Mark Fraser
Project Manager, Planning Services
Development Review Central Branch
City of Ottawa | Ville d'Ottawa
Planning, Infrastructure and Economic Development Department
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1
Tel:613.580.2424 ext. 27791
Fax: 613-580-2576
Mail: Code 01-14
Email: Mark.Fraser@ottawa.ca


MHSA00934
MHSA00936
MHSA00935
2
rue Laurel Street
av. Loretta Ave N.
av. Breezehill Ave N.
rue Larch St.
rue Balsam St.
corridor ferroviaire Trillium

Charlotte Kelly

Subject: FW: 145 Loretta and 951 Gladstone - D02-02-18-0099

From: Buchanan, Richard <Richard.Buchanan@ottawa.ca>
Sent: May 29, 2019 12:05 PM
To: Brandon Chow <BChow@dsel.ca>
Cc: O'Connor, Ann <Ann.O'Connor@ottawa.ca>
Subject: 145 Loretta and 951 Gladstone - D02-02-18-0099

Hi Brandon

This is the 100-year HGL at three MH near this site:

MHST101877: 60.53 m
MHST101876: 61.76 m
MHST101875: 62.40 m

Richard Buchanan, CET

Coordinator, Front Ending Agreements and Brownfields Programs
Planning Services, Development Review Branch
Planning, Infrastructure and Economic Development Department
City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 27801

From: Brandon Chow <BChow@dsel.ca>
Sent: May 29, 2019 11:10 AM
To: Buchanan, Richard <Richard.Buchanan@ottawa.ca>
Subject: RE: 1026 - Loretta and Gladstone

Good morning Richard,

I would like to touch base regarding the above noted site. We've received the City's engineering comments relating to the submission of the Adequacy of Public Services Report dated October 2018 and would like to request info based on the comment below. Would you be able to direct me to the contact who will be looking after this project?

J.1 - The consultant must keep in mind that the receiving storm system is only a 2 year system and not a 5 year system. In addition, if they plan to use underground storage, they will need to consider the impact from the receiving system HGL. The receiving system is uncontrolled, therefore the HGL will be elevated for events greater than 2 years.

We will require the City to provide the HGL in the receiving system in order to review the impacts on the system.

Thanks,

Brandon Chow
Project Coordinator / Intermediate Designer

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext.532
fax: (613) 836-7183
email: bchow@DSEL.ca

From: Buchanan, Richard <Richard.Buchanan@ottawa.ca>
Sent: October 11, 2018 9:25 AM
To: Amr Salem <ASalem@dsel.ca>
Cc: O'Connor, Ann <Ann.O'Connor@ottawa.ca>
Subject: FW: 1026 - Loretta and Gladstone - Boundary Request

Amr

FYI

Richard Buchanan, CET

Project Manager, Development Approvals
Planning, Infrastructure and Economic Development Department
Planning & Growth Management Branch
City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 27801
ottawa.ca/planning / ottawa.ca/urbanisme

From: Tremblay, Marc (ISD)
Sent: Thursday, October 11, 2018 9:23 AM
To: Buchanan, Richard <Richard.Buchanan@ottawa.ca>
Subject: RE: 1026 - Loretta and Gladstone - Boundary Request

Hi Richard

The existing 200mm watermain on Loretta North between Gladstone and Laurel is to be replaced with a new 200mm diameter watermain as part of the road reconstruction project. This reconstruction work will not occur until 2020 at the earliest.

Regards
Marc

From: Buchanan, Richard
Sent: Thursday, October 11, 2018 8:24 AM
To: 'Amr Salem' <ASalem@dsel.ca>
Subject: FW: 1026 - Loretta and Gladstone - Boundary Request

Good Morning Amr

Please note that I believe there's future watermain projects (on Loretta specifically) in this area that could affect the results, especially the fire flow results. I'm trying to confirm with our water division to see what the plan is and when it's scheduled for.

The following are boundary conditions, HGL, for hydraulic analysis at 1026 Loretta/Gladstone (zone 1W) assumed to be connected to the 203mm on Gladstone (Connection 1) and 203mm on Loretta (Connection 2). See attached PDF for locations.

	Connection 1 (Gladstone)	Connection 2 (Loretta)
Min HGL	107.5m	107.5m
Max HGL	114.8m	114.8m

Max day + FireFlow (57.5L/s),	108.5m	107.3m
Max day + FireFlow (317 L/s),	104.8m	85.5m
Max day + FireFlow (433 L/s),	102.1m	Available Flow @ 20psi = 350 L/s assuming a ground elevation of 67m

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

Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation.

Richard Buchanan, CET

Project Manager, Development Approvals
Planning, Infrastructure and Economic Development Department
Planning & Growth Management Branch
City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 27801
ottawa.ca/planning / ottawa.ca/urbanisme

From: Amr Salem <ASalem@dsel.ca>
Sent: Thursday, September 27, 2018 1:04 PM
To: Buchanan, Richard <Richard.Buchanan@ottawa.ca>
Cc: Steve Merrick <SMerrick@dsel.ca>
Subject: 1026 - Loretta and Gladstone - Boundary Request

Good afternoon Richard,

We would like to kindly request boundary conditions for the proposed development at **145 Loretta Avenue North/ 951 Gladstone Avenue** using the following proposed development demands:

1. Location of Service / Street Number: **145 Loretta Avenue North/ 951 Gladstone Avenue**

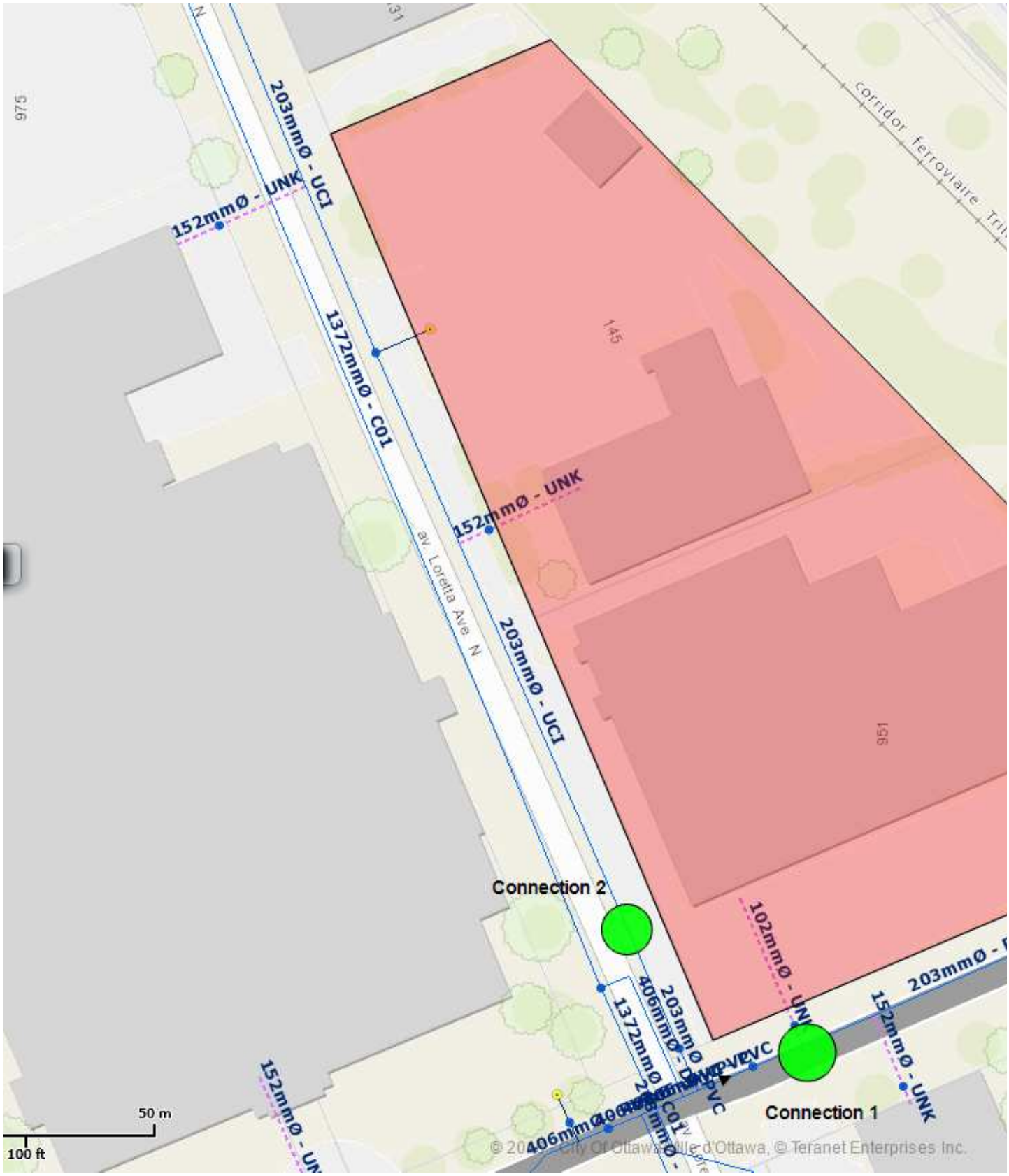
2. Type of development: **The proposed mixed-use development involves 3 multi-storey residential towers (30, 35 and 40 storeys) above a common retail and office podium, consisting of a total of 931 residential units. An underground parking garage extending the footprint of the site is also proposed. Please note that the existing 3-storey Standard Bread Building is to be retained.**

Please find attached the Site Plan for reference.

3. Proposed Connection points:
   - **Connection 1 to existing 203mm diameter watermain along Gladstone Avenue east of Loretta and Gladstone intersection.**
   - **Connection 2 to existing 203mm diameter watermain along Loretta Avenue north of Loretta and Gladstone intersection.**
     Please see the diagram below for reference.

4. **Please provide pressures for the following water demand scenarios required for the proposed development**:

	L/min	L/s
Avg. Daily	397.6	6.63
Max Day + FUS 1	904.8 + 26000.0 = 26904.8	15.1 + 433.3 = 448.4
Max Day + FUS 2/3	904.8 + 19000.0 = 19904.8	15.1 + 316.7 = 331.8
Max Day + OBC	904.8 + 3450.0 =4354.8	15.1 + 57.5 = 72.6
Peak Hour	1937.1	32.3



Please find attached the related water demand and FUS calculations as well as OBC demand methodology used for reference.

If you have any questions please feel free to contact me.

Thank you,

Amr Salem
Project Coordinator

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 512
email: asalem@DSEL.ca

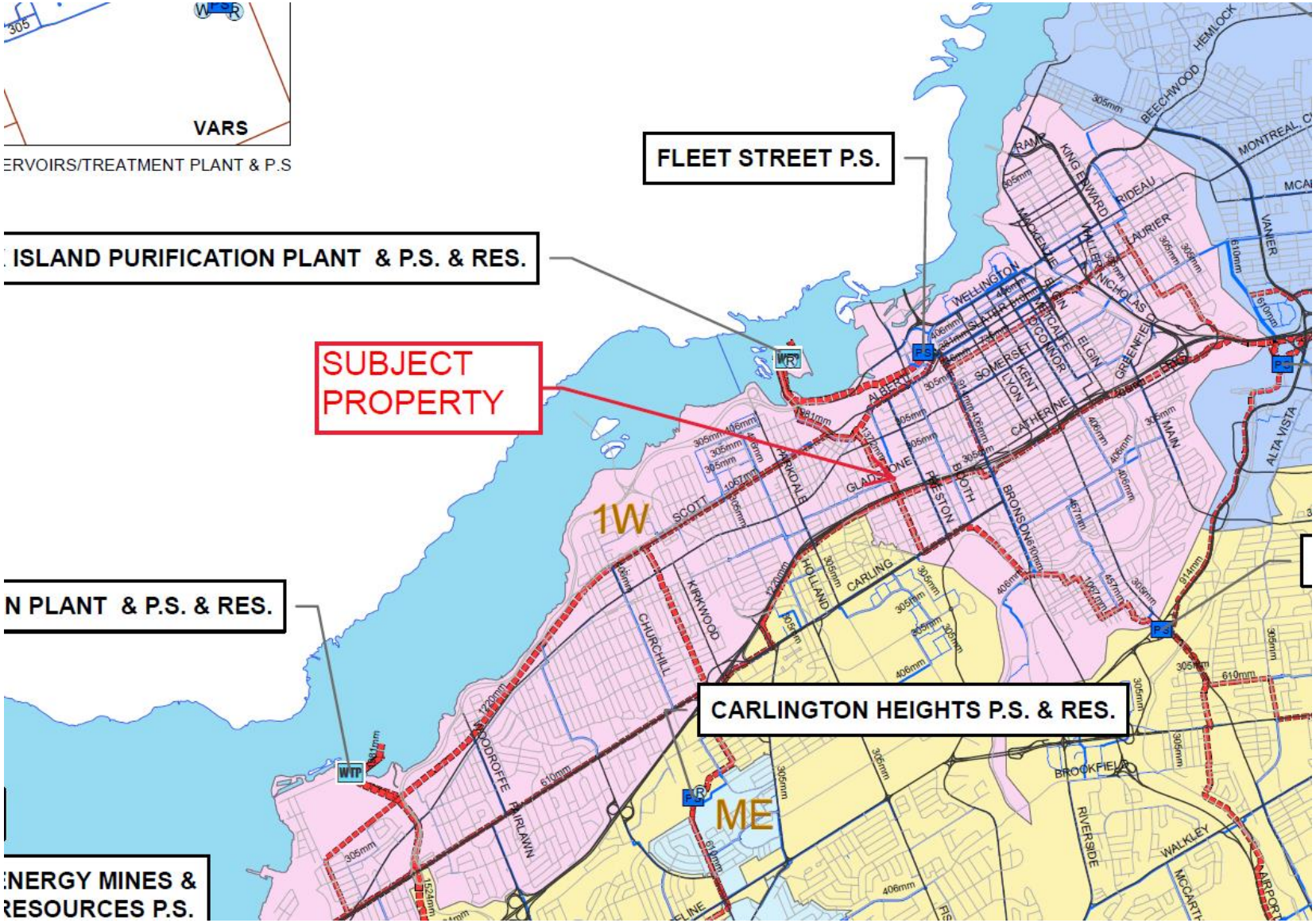
'

'

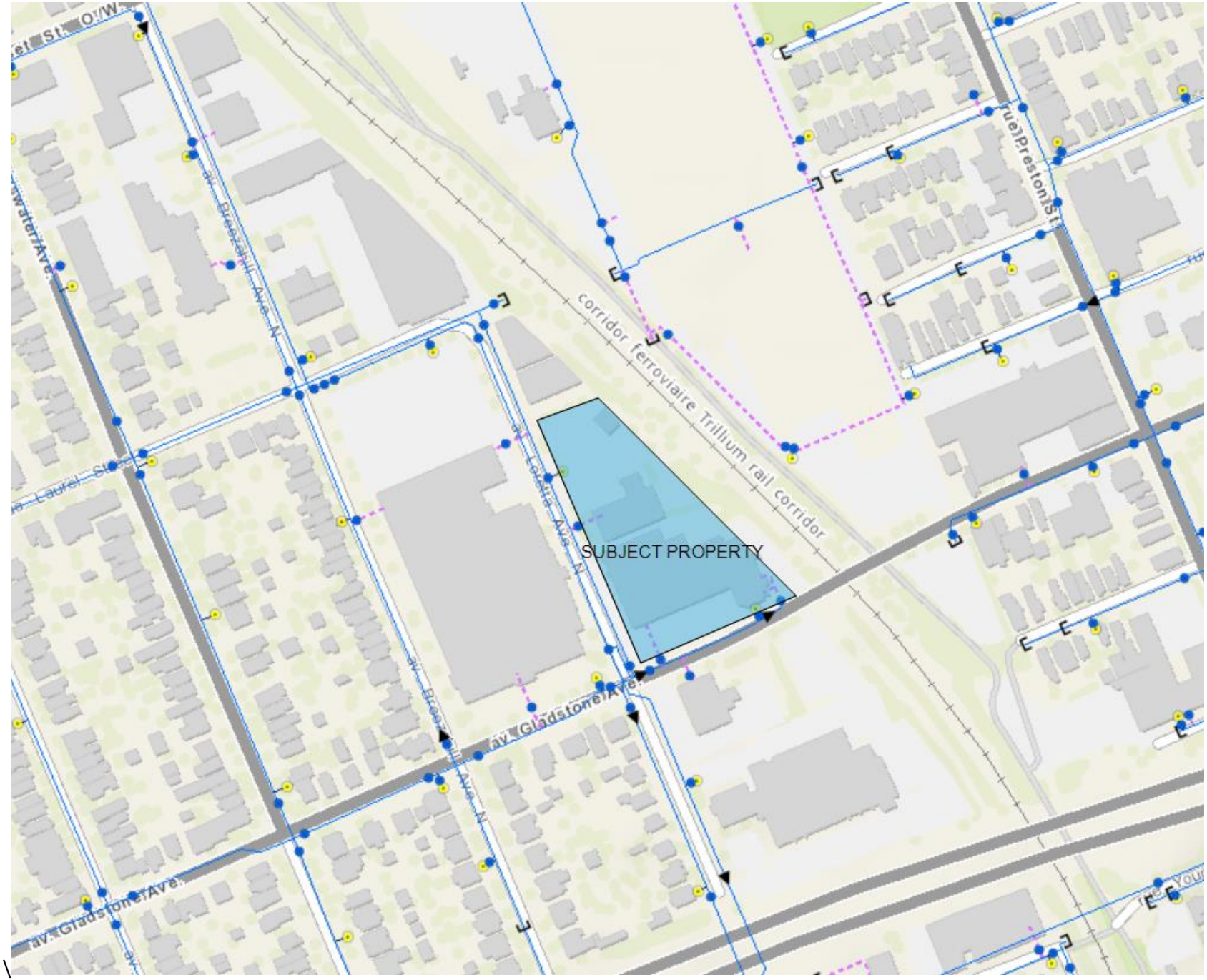
APPENDIX B

Water Supply

Water Pressure Zone Map



Water Distribution Map



\

145 Loretta Avenue North / 951 Gladstone Avenue
Trinity Development Group Inc
Existing Site Water Demand

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010

Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4		0
Semi-detached	2.7		0
Townhouse	2.7		0
Apartment			0
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0

	Pop	Avg. Daily		Max Day		Peak Hour	
		m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Total Domestic Demand	0	0.0	0.0	0.0	0.0	0.0	0.0

Institutional / Commercial / Industrial Demand

				Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**		**Units**	m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Water Closets	150.0	L/hr		0.00	0.0	0.0	0.0	0.0	0.0
Restaurant	125.0	L/seat/d		0.00	0.0	0.0	0.0	0.0	0.0
Commercial floor space**	5.0	$L/m^2/d$	6,482	32.41	22.5	48.6	33.8	87.5	60.8
Laundry	1,200.0	L/machine/d		0.00	0.0	0.0	0.0	0.0	0.0
School	70	L/student/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Light	35,000	L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000	L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
		Total I/CI Demand		32.4	22.5	48.6	33.8	87.5	60.8
		Total Demand		**32.4**	**22.5**	**48.6**	**33.8**	**87.5**	**60.8**

* Based on a daily demand of 200L/day per person as identified by Appendix 4-A of the Sewer design guidelines
**Assuming a 12 hour commercial operation

145 Loretta Avenue North / 951 Gladstone Avenue
Trinity Development Group Inc
Proposed Site Water Demand

Water Demand Design Flows per Unit Count
City of Ottawa - Water Distribution Guidelines, July 2010

Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4		0
Semi-detached	2.7		0
Townhouse	2.7		0
Apartment			0
Bachelor	1.4	120	168
1 Bedroom	1.4	244	342
2 Bedroom	2.1	336	706
3 Bedroom	3.1	45	140
Average	1.8		0

	Pop	Avg. Daily		Max Day		Peak Hour	
		m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Total Domestic Demand	1356	379.7	263.7	949.2	659.2	2088.2	1450.2

Institutional / Commercial / Industrial Demand

			Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**	**Units**	m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Office	75 L/9.3m^2/d	17,569	141.68	98.4	212.5	147.6	382.5	265.7
Commercial floor space**	5 L/m^2/d	3,276	16.38	11.4	24.6	17.1	44.2	30.7
Laundry	1,200 L/machine/d		0.00	0.0	0.0	0.0	0.0	0.0
School	70 L/student/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Light	35,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000 L/gross ha/d		0.00	0.0	0.0	0.0	0.0	0.0
	Total I/CI Demand		158.1	109.8	237.1	164.7	426.8	296.4
	Total Demand		**537.7**	**373.4**	**1186.3**	**823.8**	**2515.0**	**1746.5**

**Assuming a 12 hour commercial operation

Boundary Conditions Unit Conversion

CONNECTION 1 [203mm dia. – Gladstone Ave.]
Grnd Elev 67.23

	Hight (m)	m H2O	PSI	kPa
Avg. Day	**114.8**	47.57	67.7	466.7
Peak Hour	**107.5**	40.27	57.3	395.0
Max Day + FF	**108.8**	41.57	59.1	407.8

CONNECTION 2 [203mm dia. – Loretta Ave. N.]
Grnd Elev 67.48

	Hight (m)	m H2O	PSI	kPa
Avg. Day	**114.8**	47.32	67.3	464.2
Peak Hour	**107.5**	40.02	56.9	392.6
Max Day + FF	**107.7**	40.22	57.2	394.6

Amr Salem

From: Amr Salem
Sent: July 26, 2019 3:52 PM
To: 'Buchanan, Richard'
Cc: Brandon Chow
Subject: 145 Loretta Avenue North/ 951 Gladstone Avenue - Updated Boundary Conditions Request
Attachments: 2019-07-22 - Architecture Coordination Set.pdf; 2019-07-26 _wtr_Proposed_Conditions_aas.pdf; 2019-07-23_1026_OBC_NFPA_aas.pdf

Hello Richard,

We would like to kindly request updated boundary conditions for the proposed development at **145 Loretta Avenue North/ 951 Gladstone Avenue** using the following proposed development demands:

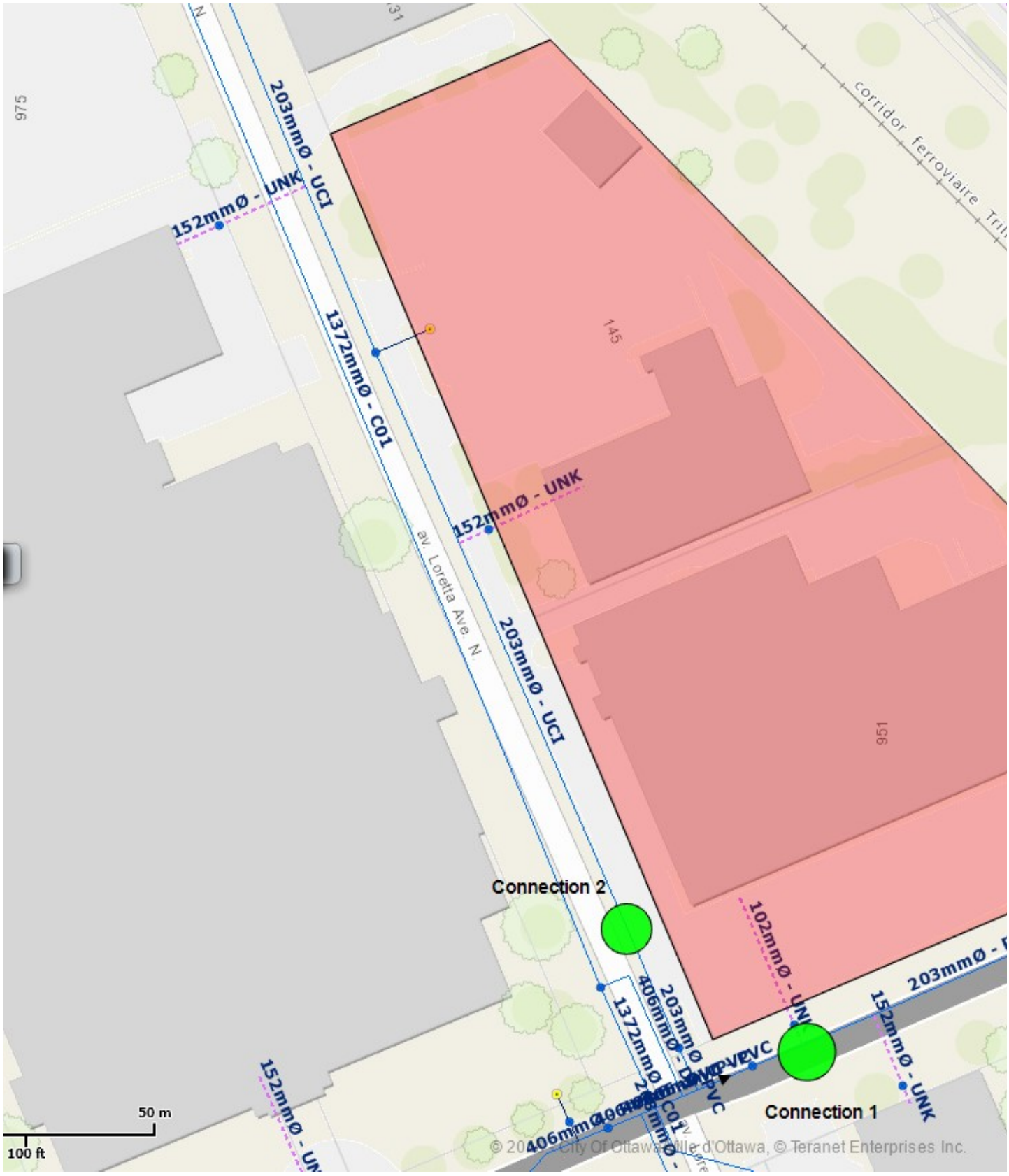
1. Location of Service / Street Number: **145 Loretta Avenue North/ 951 Gladstone Avenue**

2. Type of development: **The proposed mixed-use development involves 3 multi-storey residential towers (30, 33 and 35 storeys) above a common retail and office podium, consisting of a total of 745 residential units. An underground parking garage extending the footprint of the site is also proposed. Please note that the existing 3-storey Standard Bread Building is to be retained.**
Please find attached the Site Plan for reference.

3. Proposed Connection points:
   - **Connection 1 to existing 203mm diameter watermain along Gladstone Avenue east of Loretta and Gladstone intersection.**
   - **Connection 2 to existing 203mm diameter watermain along Loretta Avenue north of Loretta and Gladstone intersection.**
   Please see the diagram below for reference.

4. Please provide pressures for the following water demand scenarios required for the proposed development:

	L/min	L/s
Avg. Daily	373.4	6.2
Max Day + NFPA	823.8 + 4150.0 = 4,973.8	13.7 + 69.2 = 82.9
Peak Hour	1746.5	29.1



Thank you in advance,

Amr Salem
Project Coordinator

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 512
email: asalem@DSEL.ca

Amr Salem

From: Fraser, Mark <Mark.Fraser@ottawa.ca>
Sent: August 2, 2019 11:50 AM
To: Amr Salem
Cc: O'Connor, Ann; Brandon Chow
Subject: RE: 145 Loretta Avenue North/ 951 Gladstone Avenue - Updated Boundary Conditions Request
Attachments: 145 Loretta_Gladstone Aug 2019.pdf; 2019-07-22 - Architecture Coordination Set.pdf; 2019-07-26_wtr_Proposed_Conditions_aas.pdf; 2019-07-23_1026_OBC_NFPA_aas.pdf

Hi Arm,

Please find below updated boundary conditions for hydraulic analysis at 145 Loretta Ave. N. / 951 Gladstone Ave. (zone 1W) assumed to be connected to the 203m on Gladstone (Connection 1) and 203mm on Loretta (Connection 2) as requested. See attached PDF for connection locations.

CONNECTION 1 [203mm dia. – Gladstone Ave.]
Minimum HGL = 107.5M
Maximum HGL = 114.8m
MaxDay + Fire Flow (69 L/s) = 108.8m

CONNECTION 2 [203mm dia. – Loretta Ave. N.]
Minimum HGL = 107.5mm
Maximum HGL = 114.8m
MaxDay + Fire Flow (69 L/s) = 107.7m

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

Please refer to *City of Ottawa, Ottawa Design Guidelines – Water Distribution, First Edition, July 2010, WDG001 Clause 4.2*.2 for watermain pressure and demand objectives.

Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation.

If you have any questions please let me know.

Regards,

Mark Fraser
Project Manager, Planning Services
Development Review Central Branch
City of Ottawa | Ville d'Ottawa
Planning, Infrastructure and Economic Development Department
110 Laurier Avenue West. 4th Floor, Ottawa ON, K1P 1J1
Tel:613.580.2424 ext. 27791
Fax: 613-580-2576
Mail: Code 01-14
Email: Mark.Fraser@ottawa.ca

From: Amr Salem <ASalem@dsel.ca>
Sent: July 26, 2019 3:55 PM
To: Buchanan, Richard <Richard.Buchanan@ottawa.ca>
Cc: Brandon Chow <BChow@dsel.ca>
Subject: 145 Loretta Avenue North/ 951 Gladstone Avenue - Updated Boundary Conditions Request

Hello Richard,

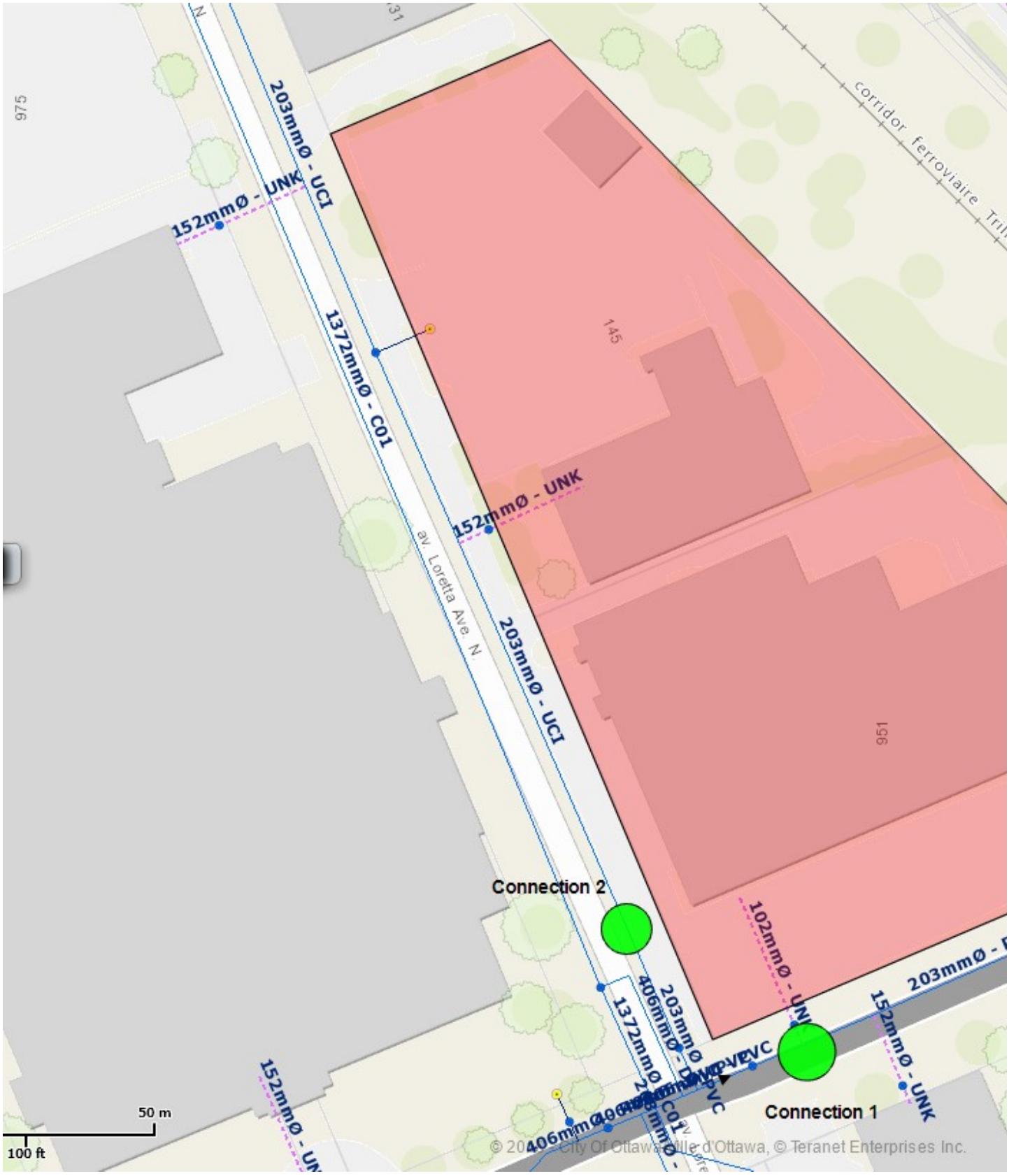
We would like to kindly request updated boundary conditions for the proposed development at **145 Loretta Avenue North/ 951 Gladstone Avenue** using the following proposed development demands:

1. Location of Service / Street Number: **145 Loretta Avenue North/ 951 Gladstone Avenue**

2. Type of development: **The proposed mixed-use development involves 3 multi-storey residential towers (30, 33 and 35 storeys) above a common retail and office podium, consisting of a total of 745 residential units. An underground parking garage extending the footprint of the site is also proposed. Please note that the existing 3-storey Standard Bread Building is to be retained.**
   Please find attached the Site Plan for reference.

3. Proposed Connection points:
   - **Connection 1 to existing 203mm diameter watermain along Gladstone Avenue east of Loretta and Gladstone intersection.**
   - **Connection 2 to existing 203mm diameter watermain along Loretta Avenue north of Loretta and Gladstone intersection.**
     Please see the diagram below for reference.

4. Please provide pressures for the following water demand scenarios required for the proposed development:



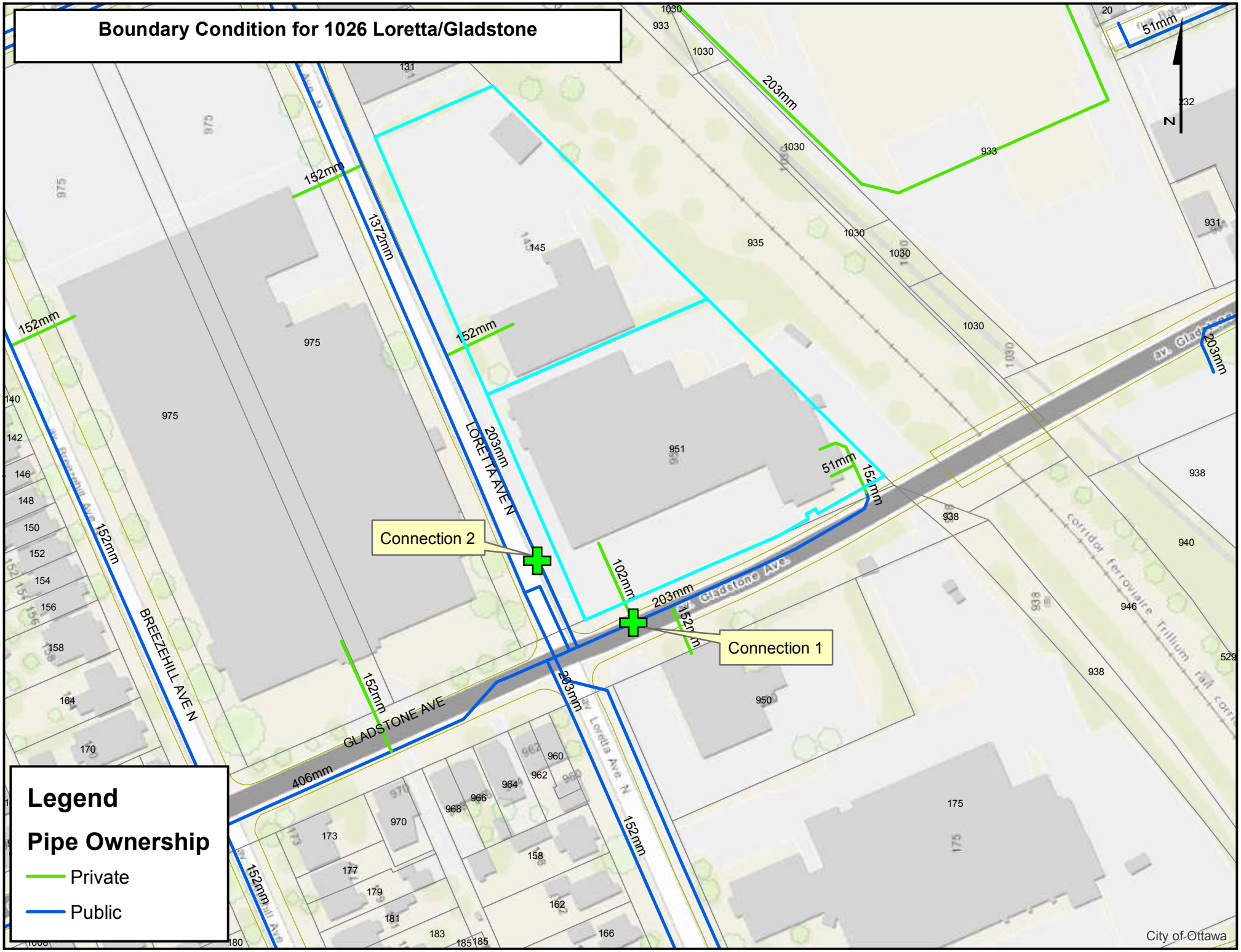
Thank you in advance,

Amr Salem
Project Coordinator

DSEL
david schaeffer engineering ltd.

120 Iber Road, Unit 103
Stittsville, ON K2S 1E9

phone: (613) 836-0856 ext. 512
email: asalem@DSEL.ca


Boundary Condition for 1026 Loretta/Gladstone
Connection 2
Connection 1
LORETTA AVE N
BREEZEHILL AVE N
GLADSTONE AVE
Gladstone Ave
Loretta Ave N
1372mm
406mm
203mm
152mm
102mm
51mm
Legend
Pipe Ownership
Private
Public
N
City of Ottawa

National Fire Protection Association (NFPA) 13 – Standard for the Installation of Sprinkler Systems

Table 11.2.2.1, Table 11.2.3.1.2

National Fire Protection Association 13 - Standard for the Installation of Sprinkler Systems Report, Table 11.2.2.1

Table 11.2.2.1 Water Supply Requirements for Pipe Schedule Sprinkler Systems

Occupancy Classification	Minimum Residual Pressure Required		Acceptable Flow at Base of Riser (Including Hose Stream Allowance)		Duration (minutes)
	psi	bar	gpm	L/min	
Light hazard	15	1	500–750	1900-2850	30–60
Ordinary hazard	20	1.4	850–1500	3200-5700	60–90

National Fire Protection Association 13 - Standard for the Installation of Sprinkler Systems Report, Table 11.2.3.1.2

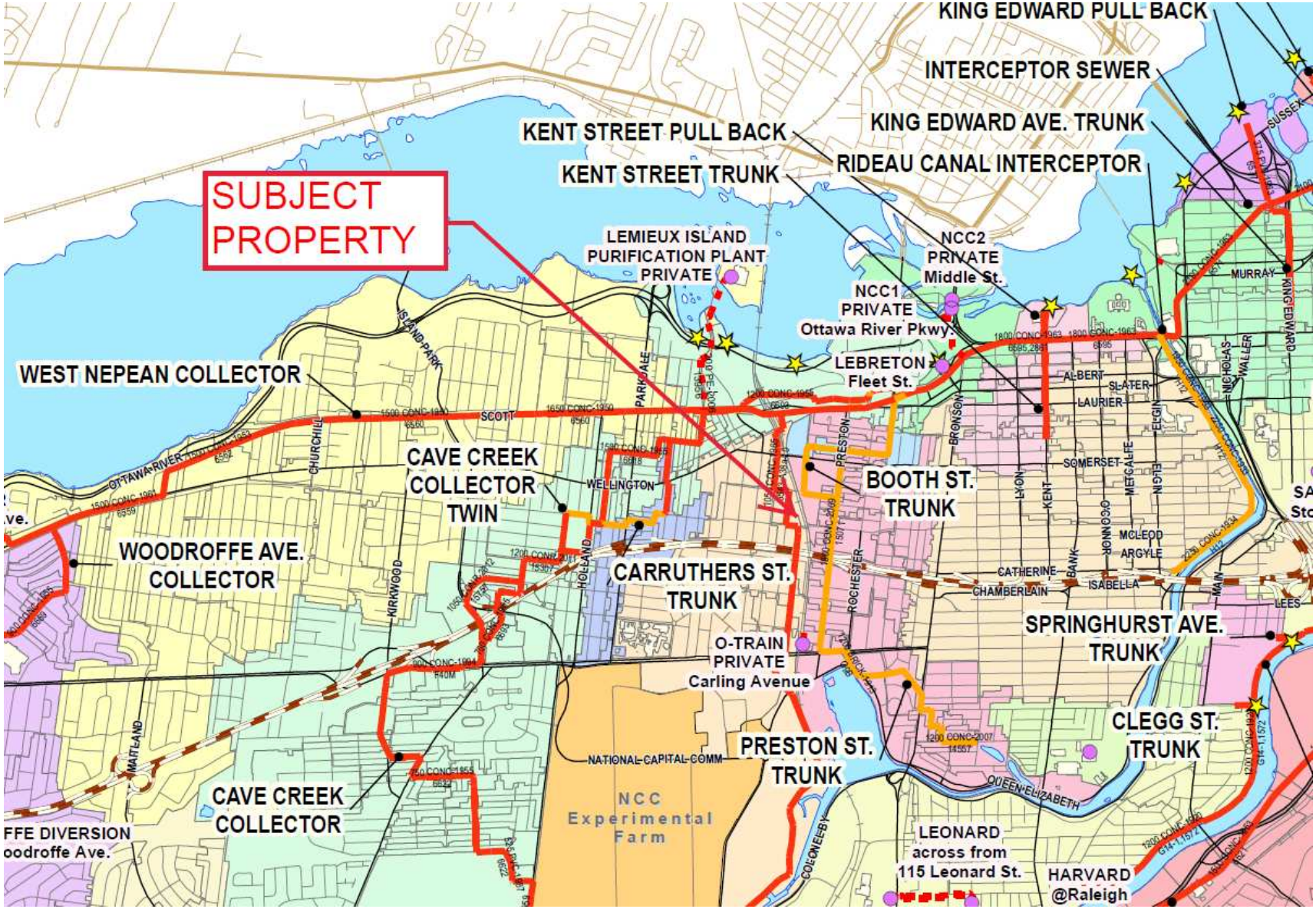
Table 11.2.3.1.2 Hose Stream Allowance and Water Supply Duration Requirements for Hydraulically Calculated Systems

Occupancy	Inside Hose		Total Combined Inside and Outside Hose		Duration (minutes)
	gpm	L/min	gpm	L/min	
Light hazard	0, 50, or 100	0, 190, or 380	100	380	30
Ordinary hazard	0, 50, or 100	0, 190, or 380	250	950	60–90
Extra hazard	0, 50, or 100	0, 190, or 380	500	1900	90–120

APPENDIX C

Wastewater Collection

Sanitary Trunk Sewer Map



Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2012

Site Area	1.00	**ha**

Extraneous Flow Allowances

Infiltration / Inflow	**0.33**	**L/s**

Domestic Contributions

Unit Type	**Unit Rate**	**Units**	**Pop**
Single Family	3.4		0
Semi-detached and duplex	2.7		0
Townhouse	2.7		0
Stacked Townhouse (Duplex)	2.3		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0
Type of Housing	**Per/Bed**	**Beds**	**Pop**
Boarding*	1		0

Total Pop	**0**	
Average Domestic Flow	**0.00**	**L/s**
Peaking Factor	**3.80**	
Peak Domestic Flow	**0.00**	**L/s**

Institutional / Commercial / Industrial Contributions

Property Type	**Unit Rate**		**No. of Units**	**Avg Wastewater (L/s)**
Water Closets	150	L/hr		0.00
Restaurant	125	L/seat/d		0.00
Commercial floor space*	5	L/m^2/d	6,482	0.75
Laundry*	1,200	L/machine/d		0.00
Hospitals	900	L/bed/d		0.00
School	70	L/student/d		0.00

Average I/C/I Flow	**0.75**
Peak Institutional / Commercial Flow	1.13
Peak Industrial Flow**	0.00
Peak I/C/I Flow	**1.13**

** assuming a 12 hour commercial operation*

Total Estimated Average Dry Weather Flow Rate	**0.75**	**L/s**
Total Estimated Peak Dry Weather Flow Rate	**1.13**	**L/s**
Total Estimated Peak Wet Weather Flow Rate	**1.46**	**L/s**

145 Loretta Avenue North / 951 Gladstone Avenue
Trinity Development Group Inc
Proposed Development Sanitary Flow

Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2012

Site Area	1.00	**ha**

Extraneous Flow Allowances

Infiltration / Inflow	**0.33**	**L/s**

Domestic Contributions

Unit Type	Unit Rate	Units	Pop
Single Family	3.4		0
Semi-detached and duplex	2.7		0
Townhouse	2.7		0
Stacked Townhouse (Duplex)	2.3		0
Apartment			
Bachelor	1.4	120	168
1 Bedroom	1.4	244	342
2 Bedroom	2.1	336	706
3 Bedroom	3.1	45	140
Average	1.8		0

Total Pop	**1356**	
Average Domestic Flow	**4.39**	**L/s**
Peaking Factor	**3.17**	
Peak Domestic Flow	**13.92**	**L/s**

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate		No. of Units	Avg Wastewater (L/s)
Office	75	L/9.3m^2/d	17,569	1.64
Restaurant	125	L/seat/d		0.00
Commercial floor space*	5	L/m^2/d	3,276	0.38
Laundry*	1,200	L/machine/d		0.00
Hospitals	900	L/bed/d		0.00
School	70	L/student/d		0.00

Average I/C/I Flow	**2.02**
Peak Institutional / Commercial Flow	3.03
Peak Industrial Flow**	0.00
Peak I/C/I Flow	**3.03**

** assuming a 12 hour commercial operation*

Total Estimated Average Dry Weather Flow Rate	**6.41 L/s**
Total Estimated Peak Dry Weather Flow Rate	**16.95 L/s**
Total Estimated Peak Wet Weather Flow Rate	**17.28 L/s**

APPENDIX D

Stormwater Management

Estimated Peak Stormwater Flow Rate
City of Ottawa Sewer Design Guidelines, 2012

Existing Drainage Charateristics From Internal Site

Area	1.00	ha	
C	0.90	Rational Method runoff coefficient	
L	139	m	
Up Elev	67.25	m	
Dn Elev	64.25	m	
Slope	2.2	%	
Tc	6.0	min	
Tc	10.0	min	<-- Assume 10 minutes as minimum

1) Time of Concentration per Federal Aviation Administration

$$t_c = \frac{1.8(1.1-C)L^{0.5}}{S^{0.333}}$$

tc, in minutes
C, rational method coefficient, (-)
L, length in ft
S, average watershed slope in %

Estimated Peak Flow

	2-year	**5-year**	**100-year**	
i	76.8	104.2	178.6	mm/hr
Q	192.0	260.5	496.0	L/s

Stormwater - Proposed Development
City of Ottawa Sewer Design Guidelines, 2012
Target Flow Rate

Area 1.00 ha
C 0.50 Rational Method runoff coefficient
t_c 10.0 min **Based on a time of concentration equal to or greater than 10 min*

2-year
i 76.8 mm/hr
Q 106.7 L/s

Estimated Post Development Peak Flow from Unattenuated Areas

Total Area 0.100 ha **Conservative estimate of 10% of total site area for unattenuated areas*
C 0.80 Rational Method runoff coefficient

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual}* (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10.0	104.2	23.2	23.2	0.0	0.0	178.6	49.6	49.6	0.0	0.0

Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

Estimated Post Development Peak Flow from Attenuated Areas

Total Area 0.90 ha
C 0.84 Rational Method runoff coefficient

	5-year					100-year				
t_c (min)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)	i (mm/hr)	Q_{actual} (L/s)	$Q_{release}$ (L/s)	Q_{stored} (L/s)	V_{stored} (m^3)
10	104.2	218.8	28.0	190.8	114.5	178.6	446.4	57.1	389.3	233.6
15	83.6	175.5	28.0	147.4	132.7	142.9	357.2	57.1	300.2	270.1
20	70.3	147.5	28.1	119.4	143.3	120.0	299.9	57.1	242.8	291.4
25	60.9	127.9	28.1	99.8	149.7	103.8	259.6	57.1	202.5	303.8
30	53.9	113.2	28.1	85.1	153.2	91.9	229.7	57.1	172.6	310.7
35	48.5	101.9	28.2	73.7	154.8	82.6	206.4	57.1	149.4	313.7
40	44.2	92.8	28.2	64.6	155.0	75.1	187.9	57.1	130.8	313.9
45	40.6	85.3	28.2	57.1	154.2	69.1	172.6	57.1	115.6	312.0
50	37.7	79.1	28.2	50.8	152.5	64.0	159.9	57.1	102.8	308.4
55	35.1	73.8	28.2	45.5	150.2	59.6	149.1	57.1	92.0	303.6
60	32.9	69.2	28.3	40.9	147.3	55.9	139.7	57.1	82.7	297.6
65	31.0	65.2	28.3	36.9	144.0	52.6	131.6	57.1	74.5	290.7
70	29.4	61.7	28.3	33.4	140.3	49.8	124.5	57.1	67.4	283.1
75	27.9	58.6	28.3	30.3	136.2	47.3	118.1	57.1	61.1	274.8
80	26.6	55.8	28.3	27.5	131.9	45.0	112.5	57.1	55.4	265.9
85	25.4	53.3	28.3	25.0	127.3	43.0	107.4	57.1	50.3	256.6
90	24.3	51.0	28.3	22.7	122.5	41.1	102.8	57.1	45.7	246.8
95	23.3	48.9	28.3	20.6	117.5	39.4	98.6	57.1	41.5	236.6
100	22.4	47.1	28.3	18.7	112.3	37.9	94.8	57.1	37.7	226.1
105	21.6	45.3	28.4	17.0	106.9	36.5	91.2	57.1	34.2	215.3
110	20.8	43.7	28.4	15.4	101.4	35.2	88.0	57.1	30.9	204.2

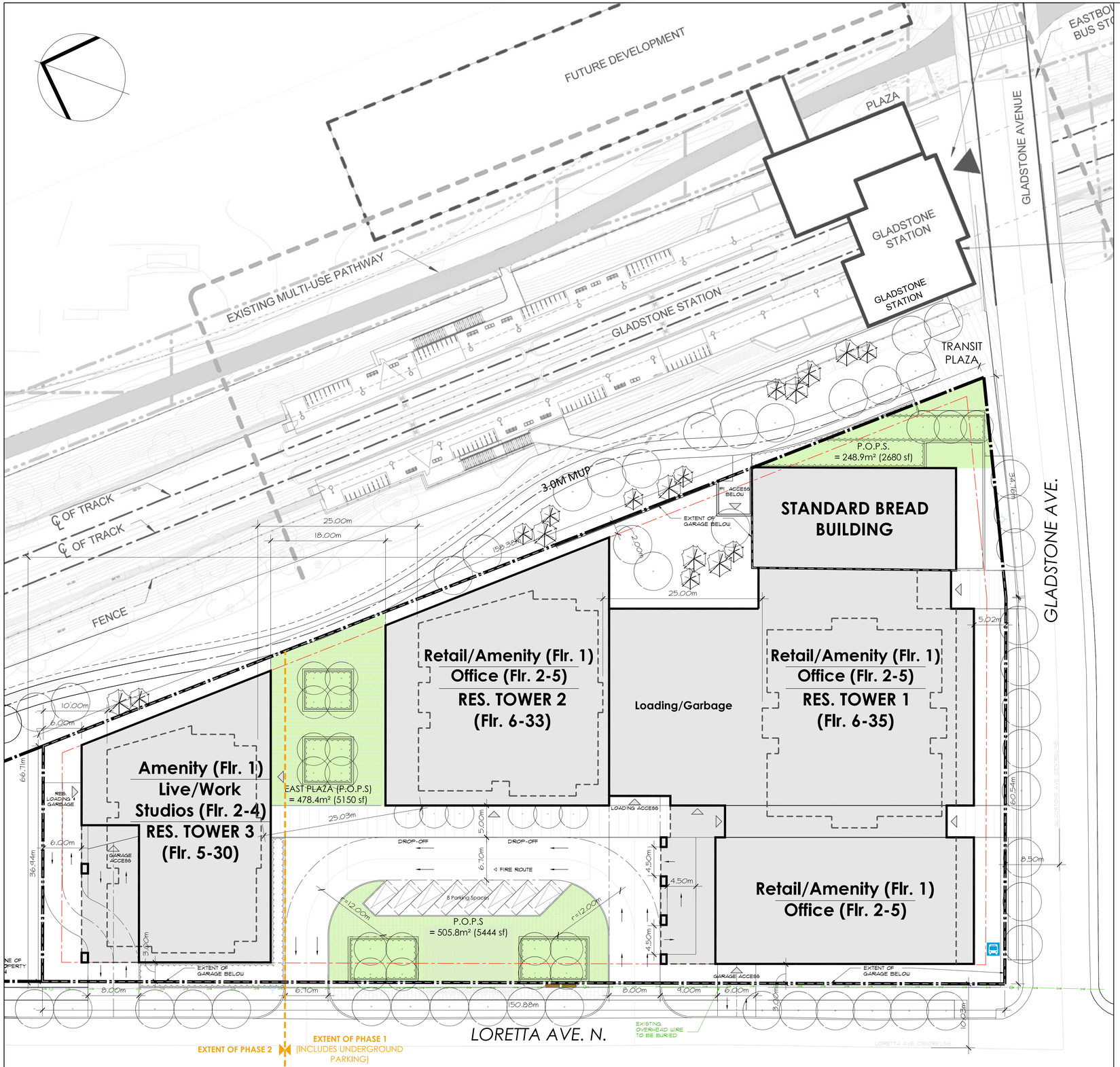
Note:
C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

5-year $Q_{attenuated}$ 28.19 L/s **100-year $Q_{attenuated}$ 57.07 L/s**
5-year Max. Storage Required 155.0 m^3 **100-year Max. Storage Required 313.9 m^3**

Summary of Release Rates and Storage Volumes

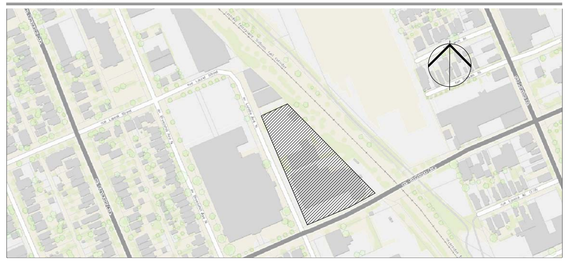
Control Area	5-Year Release Rate (L/s)	5-Year Storage (m^3)	100-Year Release Rate (L/s)	100-Year Storage (m^3)
Unattenuated Areas	23.2	0.0	49.6	0.0
Attenutated Areas	28.2	155.0	57.1	313.9
Total	**51.3**	**155.0**	**106.7**	**313.9**

DRAWINGS / FIGURES



1 SITE PLAN
A0.01 1 :300

LOCATION PLAN



Zoning Information		
Existing Zone: IGI H(11) – General Industrial Zone, Subzone 1, Height Limit 11m		
Proposed Zone: MC[XXXX] SXXX		
Proposal: Mixed-use development with office, retail, and residential uses in three high-rise towers at 30, 35 and 41 storeys in height		
Zoning Mechanism	**Required**	**Provided**
Minimum Lot Width	NO MINIMUM	66.7m IRREGULAR
Etc.		

Parking & Loading Information		
Schedule 1A, Zoning By-law 2008-250: Area X: Inner Urban		
Performance Standard	**Required**	**Proposed**
Vehicular Parking	1,973 MAX. SPACES	521 SPACES
Bicycle Parking	451 SPACES	518 SPACES
Loading		

ZONING NOTES:

CURRENT ZONING: **IG1 H(11)**

DEVELOPMENT STATS

		PROPOSED
LOT AREA		10,012.3 m² (107,772 sq.ft.)
LOT WIDTH		66.7m IRREGULAR
LOT DEPTH		150.9m
TOTAL UNITS		168
FRONT YARD SETBACK	GLADSTONE AVE.	5 m
REAR YARD SETBACK	N/A	5 m
CORNER SIDE YARD SETBACK	LORETTA AVE. N.	3 m
INTERIOR SIDE YARD SETBACK	TRILLIUM RAIL CORRIDOR	2 m
MAXIMUM HEIGHT		± 123 m
NUMBER OF STOREYS		35
BUILDING FOOTPRINT AREA		5,841 m² (62,874 sq.ft)
GROSS FLOOR AREA		94,673 m² (1,019,062 sq.ft)

PARKING REQUIREMENTS

1. REQUIRED PARKING

LAND USE	REQUIRED	PROVIDED VEHICLE PARKING
APARTMENT	1.75 MAX SPACE PER UNIT	375 SPACES (0.5 SPACES/UNIT)
VISITOR	0.1 SPACE MIN. PER UNIT BUT MAX. 30 SPACES	30 SPACES
RETAIL	3.6 MAX SPACES / 100m² GFA	17 SPACES (1 SPACE / 1076 ft²)
OFFICE	2.2 MAX SPACES / 100m² GFA	99 SPACES (0.75 SPACES / 1076 ft²)
TOTAL		521 SPACES

3. BICYCLE PARKING
REQUIRED BICYCLE PARKING SPACES
RESIDENTIAL (0.5 SPACE/UNIT)
COMMERCIAL (1 / 500 SQ.M. COMMERCIAL GFA)

4. AMENITY SPACE REQUIREMENTS
REQUIRED AMENITY SPACE 6 m² REQUIRED PER UNIT

5. REQUIRED AREA FOR PRIVATELY OWNED PUBLIC SPACE - P.O.P.S.
REQUIRED 1,001m² (10,777 sq.ft.)
PROVIDED 1,233.1m² (13,273 sq.ft.)

NOTE: ALL EXISTING SITE INFORMATION AS PER SITE SURVEY PLAN DATED ____, 2018 AND PREPARED BY STANTEC

LEGEND

BUS STOP		PROPERTY LINE	
OVERHEAD WIRE	OH OH OH	SETBACK LINE	
FIRE HYDRANT		RETAINING WALL	
EXISTING HYDRO POLE		ROAD CENTRELINE	

0 m 10 m 25 m 50 m

no.	date	revision
05	JULY 29, 2019	CHANGES TO TITLEBLOCK
04	JULY 19, 2019	ENTRY TO BUILDING B
03	JUNE 03, 2019	EXTENT OF PH. 1 & PH. 2
02	MAY 24, 2019	LANDSCAPE UPDATED
01	APRIL 17, 2019	LANDSCAPE & PODIUMS

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

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

Do not scale drawings.

This drawing may not be used for construction until signed.

TRINITY

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

PROJECT/LOCATION:
951 GLADSTONE AVE.
& 145 LORETTA AVE. NORTH

DRAWING TITLE:
SITE PLAN

DRAWN BY:	DATE:	SCALE:
TD	19/04/17	1:300

PROJECT: 1726

DRAWING NO.: A001

REVISION NO.:

None

HOBIN
ARCHITECTURE

GLADTONE + LORETTA
SITE STATS

7/19/2019

Site Area (sq.ft.): **107,772**
Total GFA, Excl. Parking (sq.ft.) **1,019,062**
FSI: **9.46**

Area Schedule (GFA by Floor)

Level	Retail (Incl. Pedestrian Street) (sq.ft.)	Retail Loading (sq.ft.)	Office (sq.ft.)	Existing Building (sq.ft.)	Residential (sq.ft.)			GFA / Level (sq.ft.)	(x) # of Floors	GFA Totals (sq.ft.)
Level P1 - P2								103,476	2	**206,952**
					Podium 1 Ground Flr (Res.)	**Podium 2 Ground Flr**	**Podium 3 Ground Flr**			
Level 1	17,894	5,514	1,390	5,790	5,185	13,258	10,656	59,687	1	**59,687**
					Tower 1 (35 Flrs.)	**Tower 2 (33 Flrs.)**	**Tower 3 (30 Flrs.)**			
Level 2 - 3	0	0	46,930	5,790			12,733	65,453	2	**130,906**
Level 4	0	0	46,930	0			12,733	59,663	1	**59,663**
Level 5	0	0	46,930	0			8,311	55,241	1	**55,241**
Level 6 - 18	0	0	0	0	8,791	8,751	8,311	25,853	13	**336,089**
Level 19 - 25	0	0	0	0	9,308	8,751	8,311	26,370	7	**184,590**
Level 26 - 29	0	0	0	0	9,308	8,751	8,593	26,652	4	**106,608**
Level 30	0	0	0	0	8,799	8,751	8,593	26,143	1	**26,143**
Level 31	0	0	0	0	8,799	9,089		17,888	1	**17,888**
Level 32	0	0	0	0	8,799	9,089		17,888	1	**17,888**
Level 33	0	0	0	0	5,090	9,089		14,179	1	**14,179**
Level 34	0	0	0	0	5,090			5,090	1	**5,090**
Level 35	0	0	0	0	5,090			5,090	1	**5,090**
Level 36	0	0	0	0				0	1	**0**
										1,019,062

GLADTONE + LORETTA
SITE STATS

7/19/2019

Area Schedule (GFA by Type)

GFA Type			GFA Totals (sq.ft)
Retail			17,894
Retail Loading			5,514
Office			189,110
Existing Building			17,370
Residential	Cumulative Podium Res. / Amenity	67,298	
	Tower 1 (30 / 35 Flrs.)	258,338	
	Tower 2 (29 / 33 Flrs.)	246,042	
	Tower 3 (26 / 30 Flrs.)	217,496	
	Total Res.		789,174
			1,019,062

Residential GFA vs Net Area Comparison

Area Type	GFA	Net Area	Efficiency
Tower 1 (35 Flrs.)	258,338	219,500	85.0%
Tower 2 (33 Flrs.)	246,042	211,640	86.0%
Tower 3 (30 Flrs.)	217,496	187,446	86.2%
	721,876	618,586	85.7%

Unit Count

Unit Type	% of total	TOWER 1	TOWER 2	TOWER 3	RES. TOTALS
BACHELOR	16.1%	54	56	10	120
1 BED	32.8%	96	112	36	244
2 BED	45.1%	120	112	104	336
3 BED	6.0%	3	0	42	45
Totals		**273**	**280**	**192**	**745**

Bylaw Amenity Requirements (Bylaw 2008-250, Table 137 - "Amenity Area")

(5) Apartment Bldg Mid - High Rise: 6m² per dwelling unit (x740) = **4,440 m²**

Amenity Area Provided

Location of Amenity	Area (m²)
Landscape Area at Grade	1,233
Rooftop Terrace	3,179
Indoor Communal Amenity	1,150
Balconies	1,894
Total	**7,456**

GLADTONE + LORETTA
SITE STATS

7/19/2019

Parking Information

No. of Parking Levels:		2
No. of Spaces:	Surface	8
	(P1)	253
	(P2)	260
	Total	**521**

Bylaw Parking Rates (Bylaw 2008-250, Section 103 - "Maximum Limit on Number of Parking Spaces Near Rapid Transit Stations"):

(a) Apartment Bldg Mid - High Rise (Combined Resident & Visitor)	1.75	MAX. spaces per dwelling unit
(e) Office	2.2	MAX. spaces per 1076 sq.ft. (100m²) GFA
(h) Retail	3.6	MAX. spaces per 1076 sq.ft. (100m²) GFA

Visitor Parking (Bylaw 2008-250, Section 102 - "Minimum Visitor Parking Space Rates"):

(2) / Table 102 — 0.1 MIN. spaces per unit MAX. required =30 spaces

Total Anticipated

	# of Units	Total Area	# of Spaces / Unit	# Spaces / 1076ft2	# Spaces
Apartment Bldg	745		0.50		375
Office		142,180		0.75	99
Retail		17,894		1	17
Visitor Parking					30
				Total	**521**

Bylaw Bicycle Parking Rates (Bylaw 2008-250, Section 111 - "Bicycle Parking Space Rates & Provisions"

(b) Apartment Bldg	0.5	MIN. per dwelling unit (x787)	372.5
(e) Office, Retail & Studio	1	MIN. Space per 2691 sq.ft. (250m²) GFA (208,006 / 2,691)	78
Total Required			**450.5**
Total Provided (Anticipated)			**518**

APPENDIX

C CALCULATIONS

Hydro First Defense® - HC

Rev. 9.9

Project Name:	**Gladstone + Loretta**	*Report Date:*	**2021-03-22**
Street:	**-**	*City:*	**Ottawa**
Province:	**ON**	*Country:*	**Canada**
Designer:	**Nick Zorn**	*email:*	**Nick.Zorn@wsp.com**

Paste

Treatment Parameters:

Structure ID:	OGS	
TSS Goal:	80	% Removal
TSS Particle Size:	Fine	
Area:	1.02	ha
Percent Impervious:	97%	
Rational C value:	0.85	Calc. Cn
Rainfall Station:	Ottawa, ONT	MAP
Peak Storm Flow:	-	L/s

RESULTS SUMMARY

Model	TSS	Volume
FD-3HC	80.8%	96.3%
FD-4HC	**85.3%**	**99.4%**
FD-5HC	89.2%	99.8%
FD-6HC	91.5%	100.0%
FD-8HC	94.7%	99.9%

Model Specification:

Model:	**FD-4HC**	
Diameter:	1200	mm
Peak Flow Capacity:	510.00	L/s
Sediment Storage:	0.54	m^3
Oil Storage:	723.00	L

Installation Configuration:

Placement:	Online		
Outlet Pipe Size:		mm	*OK*
Inlet Pipe 1 Size:		mm	*OK*
Inlet Pipe 2 Size:		mm	*OK*
Inlet Pipe 3 Size:		mm	*OK*
Rim Level:		m	Calc Invs.
Outlet Pipe Invert:		m	
Invert Pipe 1:		m	*OK!*
Invert Pipe 2:		m	
Invert Pipe 3:		m	

Net Annual Removal Model: FD-4HC

Intensity[1]	Fraction of Rainfall[1]	FD-4HC Removal Efficiency[2]	Weighted Net Annual Efficiency
(mm/hr)	(%)	(%)	(%)
0.50	0.1%	100.0%	0.1%
1.00	14.1%	95.8%	13.5%
1.50	14.2%	92.3%	13.1%
2.00	14.1%	89.8%	12.7%
2.50	4.2%	88.0%	3.7%
3.00	1.5%	86.5%	1.3%
3.50	8.5%	85.3%	7.3%
4.00	5.4%	84.2%	4.6%
4.50	1.2%	83.3%	1.0%
5.00	5.5%	82.5%	4.6%
6.00	4.3%	81.1%	3.5%
7.00	4.5%	80.0%	3.6%
8.00	3.1%	79.0%	2.4%
9.00	2.3%	78.1%	1.8%
10.00	2.6%	77.4%	2.0%
20.00	9.2%	72.5%	6.7%
30.00	2.6%	69.8%	1.8%
40.00	1.2%	68.0%	0.8%
50.00	0.5%	66.6%	0.4%
100.00	0.7%	62.4%	0.4%
150.00	0.1%	60.1%	0.0%
200.00	0.0%	58.5%	0.0%
Total Net Annual Removal Efficiency:			**85.3%**
Total Annual Runoff Volume Treated:			**99.4%**

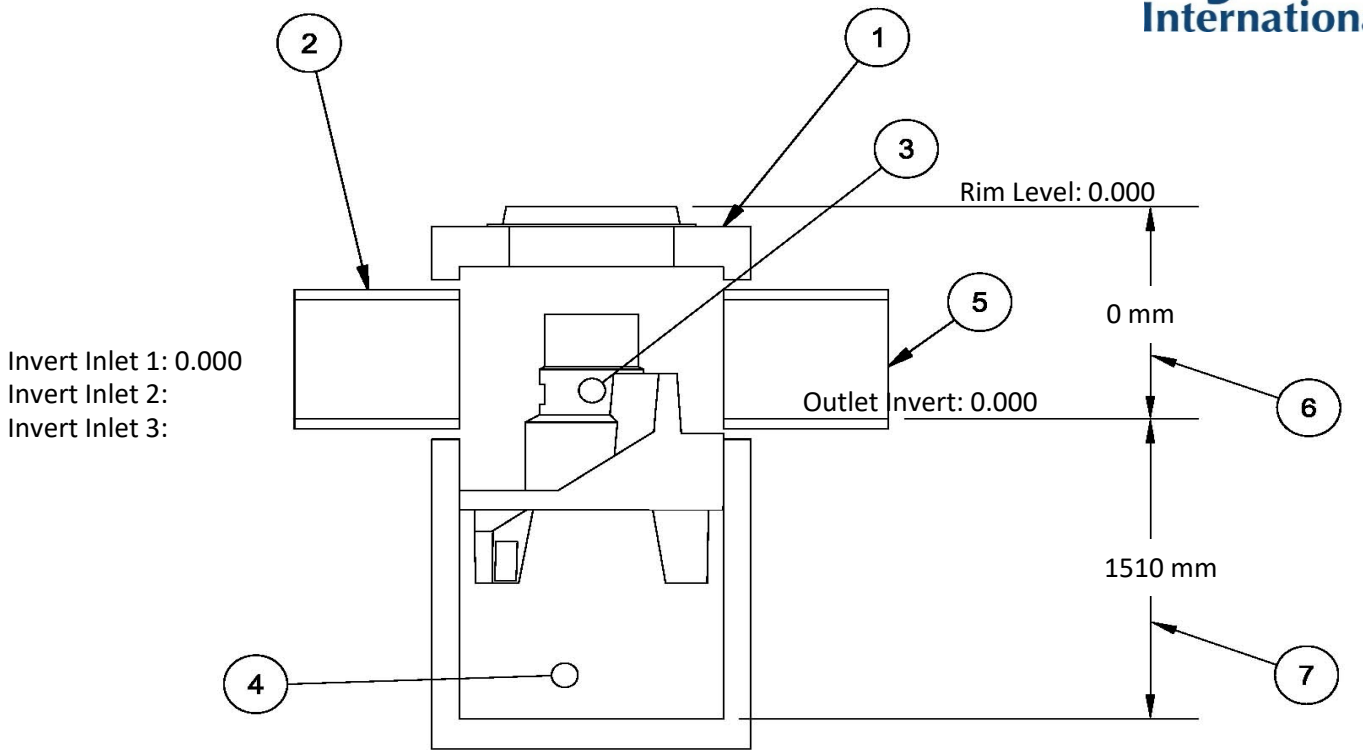
1. Rainfall Data: 1960:2007, HLY03, Ottawa, ONT, 6105976 & 6105978.

2. Based on third party verified data and appoximating the removal of a PSD similar to the STC Fine distribution

3. Rainfall adjusted to 5 min peak intensity based on hourly average.

Designer Notes:

Hydro First Defense® - HC



All drawing elevations are metres.

FD-4HC Specification

1	Vortex Chamber Diameter	1200	mm
2	Inlet Pipe Diameter	0	mm
3	Oil Storage Capacity	723.00	L
4	Min. Provided Sediment Storage Capacity	0.54	m^3
5	Outlet Pipe Diameter	0	mm
6	Height(Final Grade to Outlet Invert)	0	mm
7	Sump Depth(Outlet Invert to Sump)	1130	mm
	Total Depth	**1130**	**mm**

Notes:

Proposed 100-Year PCSWMM Results

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

****
Element Count
****
Number of rain gages 6
Number of subcatchments ... 3
Number of nodes 6
Number of links 3
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
100-Year	100-year	INTENSITY	10 min.
10-Year	10-year	INTENSITY	10 min.
25-Year-3hr-Chicago	25-Year-3hr-Chicago	INTENSITY	10 min.
2-Year	2-year	INTENSITY	10 min.
50-Year-3hr-Chicago	50-Year-3hr-Chicago	INTENSITY	10 min.
5-Year-3hr-Chicago	5-Year-3hr-Chicago	INTENSITY	10 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
S1	0.44	94.32	90.45	12.0700	100-Year	SU1
S2	0.34	71.35	82.35	1.8100	100-Year	SU2
S3	0.22	52.70	86.36	2.4000	100-Year	SU3

****
Node Summary
****

	Invert	Max.	Ponded	External

Name	Type	Elev.	Depth	Area	Inflow
OF1	OUTFALL	0.00	0.00	0.0	
OF2	OUTFALL	0.00	0.00	0.0	
OF3	OUTFALL	0.00	0.00	0.0	
SU1	STORAGE	0.00	2.00	0.0	
SU2	STORAGE	0.00	2.00	0.0	
SU3	STORAGE	0.00	2.00	0.0	

****
Link Summary
****

Name	From Node	To Node	Type	Length	%Slope	Roughness
OR1	SU1	OF1	ORIFICE			
OR2	SU2	OF2	ORIFICE			
OR3	SU3	OF3	ORIFICE			

****
Cross Section Summary
****

Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow

****
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
****

****
Analysis Options
****
Flow Units ..... CMS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO

```
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... HORTON
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... EXTRAN
Starting Date ..... 03/14/2024 00:00:00
Ending Date ..... 03/15/2024 00:00:00
Antecedent Dry Days ..... 0.0
Report Time Step ..... 00:01:00
Wet Time Step ..... 00:05:00
Dry Time Step ..... 00:05:00
Routing Time Step ..... 5.00 sec
Variable Time Step ..... YES
Maximum Trials ..... 8
Number of Threads ..... 1
Head Tolerance ..... 0.001524 m
```

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	0.072	71.677
Evaporation Loss	0.000	0.000
Infiltration Loss	0.006	5.845
Surface Runoff	0.065	65.072
Final Storage	0.001	1.363
Continuity Error (%)	-0.843	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.065	0.651
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.065	0.651
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

```
**************************
Time-Step Critical Elements
```

```
  ***************************
  None


  *******************************
  Highest Flow Instability Indexes
  *******************************
  All links are stable.


  ************************
  Routing Time Step Summary
  ************************
  Minimum Time Step           :     4.50 sec
  Average Time Step           :     5.00 sec
  Maximum Time Step           :     5.00 sec
  Percent in Steady State     :     0.00
  Average Iterations per Step :     2.00
  Percent Not Converging      :     0.00
  Time Step Frequencies       :
      5.000 -  3.155 sec      :   100.00 %
      3.155 -  1.991 sec      :     0.00 %
      1.991 -  1.256 sec      :     0.00 %
      1.256 -  0.792 sec      :     0.00 %
      0.792 -  0.500 sec      :     0.00 %


  ***************************
  Subcatchment Runoff Summary
  ***************************


-------------------------------------------------------------------------------
-----------------------------------------
                            Total      Total      Total      Total     Imperv
 Perv      Total       Total     Peak  Runoff
                           Precip      Runon       Evap      Infil     Runoff
Runoff     Runoff      Runoff   Runoff   Coeff
  Subcatchment                mm         mm         mm         mm         mm
   mm         mm    10^6 ltr      CMS

-------------------------------------------------------------------------------
-----------------------------------------
  S1                        71.68       0.00       0.00       4.19      63.57
 3.04      66.62        0.29     0.22   0.929
  S2                        71.68       0.00       0.00       7.87      58.09
 5.08      63.17        0.21     0.16   0.881
  S3                        71.68       0.00       0.00       6.03      60.85
 4.07      64.93        0.14     0.11   0.906
```

```
  ******************
  Node Depth Summary
  ******************


--------------------------------------------------------------------------------
                                 Average  Maximum  Maximum  Time of Max
Reported
                                   Depth    Depth      HGL   Occurrence   Max
Depth
  Node                 Type       Meters   Meters   Meters  days hr:min
Meters

--------------------------------------------------------------------------------
  OF1                  OUTFALL      0.00     0.00     0.00     0  00:00
0.00
  OF2                  OUTFALL      0.00     0.00     0.00     0  00:00
0.00
  OF3                  OUTFALL      0.00     0.00     0.00     0  00:00
0.00
  SU1                  STORAGE      0.09     1.53     1.53     0  01:23
1.53
  SU2                  STORAGE      0.06     1.07     1.07     0  01:23
1.07
  SU3                  STORAGE      0.05     0.78     0.78     0  01:24
0.78


  *******************
  Node Inflow Summary
  *******************


--------------------------------------------------------------------------------
---------------
                                 Maximum  Maximum                  Lateral
Total        Flow
                                 Lateral    Total  Time of Max      Inflow
Inflow     Balance
                                  Inflow   Inflow   Occurrence      Volume
Volume       Error
  Node                 Type          CMS      CMS  days hr:min    10^6 ltr
10^6 ltr     Percent

--------------------------------------------------------------------------------
---------------
  OF1                  OUTFALL      0.000    0.043     0  01:23           0
0.293       0.000
  OF2                  OUTFALL      0.000    0.036     0  01:23           0
```

```
0.215       0.000
  OF3                OUTFALL      0.000    0.019     0  01:24           0
0.143       0.000
  SU1                STORAGE      0.215    0.215     0  01:10       0.293
0.293       0.000
  SU2                STORAGE      0.160    0.160     0  01:10       0.215
0.215       0.000
  SU3                STORAGE      0.106    0.106     0  01:10       0.143
0.143       0.000


  **********************
  Node Surcharge Summary
  **********************

  No nodes were surcharged.


  **********************
  Node Flooding Summary
  **********************

  No nodes were flooded.


  **********************
  Storage Volume Summary
  **********************


-------------------------------------------------------------------------------
---------------
                         Average     Avg  Evap Exfil       Maximum     Max    Time
of Max    Maximum
                          Volume    Pcnt  Pcnt  Pcnt        Volume    Pcnt
Occurrence    Outflow
  Storage Unit           1000 m3    Full  Loss  Loss       1000 m3    Full    days
hr:min        CMS

-------------------------------------------------------------------------------
---------------
  SU1                      0.009       5     0     0         0.153      77       0
 01:23      0.043
  SU2                      0.006       3     0     0         0.107      54       0
 01:23      0.036
  SU3                      0.005       3     0     0         0.078      39       0
 01:24      0.019


  **********************
```

Outfall Loading Summary

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
OF1	32.19	0.011	0.043	0.293
OF2	31.39	0.008	0.036	0.215
OF3	34.59	0.005	0.019	0.143
System	32.72	0.023	0.098	0.651

Link Flow Summary

Link	Type	Maximum |Flow| CMS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
OR1	ORIFICE	0.043	0 01:23			1.00
OR2	ORIFICE	0.036	0 01:23			1.00
OR3	ORIFICE	0.019	0 01:24			1.00

Flow Classification Summary

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl

Conduit Surcharge Summary

No conduits were surcharged.

Analysis begun on: Fri Apr 19 09:00:13 2024
Analysis ended on: Fri Apr 19 09:00:14 2024
Total elapsed time: 00:00:01

Existing 2-Year PCSWMM Results

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.013)

****
Element Count
****
Number of rain gages 20
Number of subcatchments ... 1
Number of nodes 1
Number of links 0
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
100yr	100yr	INTENSITY	10 min.
100yr_3hr_Chicago	100yr_3hr_Chicago	INTENSITY	10 min.
100yr_3hr_Chicago_Climate_Change	100yr_3hr_Chicago_Increase_20percent	INTENSITY	10 min.
100yr_6hr_Chicago	100yr_6hr_Chicago	INTENSITY	10 min.
100yr_6hr_Chicago_Climate_Change	100yr_6hr_Chicago_Increase_20percent	INTENSITY	10 min.
100yr+20%	100yr+20%	INTENSITY	10 min.
10yr	10yr	INTENSITY	10 min.
10yr_3hr_Chicago	10yr_3hr_Chicago	INTENSITY	10 min.
10yr_6hr_Chicago	10yr_6hr_Chicago	INTENSITY	10 min.
25mm_3hr_Chicago	25mm_3hr_Chicago	INTENSITY	10 min.
25mm_4hr_Chicago	25mm_4hr_Chicago	INTENSITY	10 min.
25yr_3hr_Chicago	25yr_3hr_Chicago	INTENSITY	10 min.
25yr_6hr_Chicago	25yr_6hr_Chicago	INTENSITY	10 min.
2yr	2yr	INTENSITY	10 min.
2yr_3hr_Chicago	2yr_3hr_Chicago	INTENSITY	10 min.
2yr_6hr_Chicago	2yr_6hr_Chicago	INTENSITY	10 min.
50yr_3hr_Chicago	50yr_3hr_Chicago	INTENSITY	10 min.
50yr_6hr_Chicago	50yr_6hr_Chicago	INTENSITY	10 min.
5yr_3hr_Chicago	5yr_3hr_Chicago	INTENSITY	10 min.
5yr_6hr_Chicago	5yr_6hr_Chicago	INTENSITY	10 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage

```
  Outlet

-------------------------------------------------------------------------------
-------------------------
  S4                         1.02    127.05     46.00    0.3500 2yr
  OF1


  ************
  Node Summary
  ************
                                          Invert      Max.    Ponded    External
  Name                  Type                Elev.     Depth      Area    Inflow
  ----------------------------------------------------------------------------
  OF1                   OUTFALL             0.00      0.00       0.0


  ****************
  Transect Summary
  ****************

  Transect 507+080_pr
  Area:
              0.0017    0.0038    0.0063    0.0091    0.0123
              0.0159    0.0199    0.0244    0.0297    0.0374
              0.0486    0.0618    0.0760    0.0929    0.1108
              0.1292    0.1479    0.1670    0.1864    0.2061
              0.2262    0.2466    0.2673    0.2883    0.3099
              0.3324    0.3558    0.3807    0.4074    0.4343
              0.4613    0.4885    0.5157    0.5431    0.5706
              0.5983    0.6261    0.6539    0.6819    0.7101
              0.7383    0.7667    0.7952    0.8238    0.8526
              0.8814    0.9105    0.9400    0.9698    1.0000
  Hrad:
              0.0286    0.0527    0.0744    0.0948    0.1142
              0.1328    0.1461    0.1567    0.1644    0.1258
              0.1182    0.1463    0.1549    0.1677    0.1936
              0.2209    0.2484    0.2754    0.3020    0.3283
              0.3541    0.3796    0.4048    0.4292    0.4461
              0.4578    0.4700    0.4625    0.4794    0.5076
              0.5356    0.5634    0.5909    0.6182    0.6453
              0.6722    0.6989    0.7254    0.7516    0.7777
              0.8036    0.8293    0.8548    0.8801    0.9052
              0.9302    0.9483    0.9656    0.9829    1.0000
  Width:
              0.0624    0.0751    0.0876    0.0996    0.1115
              0.1235    0.1403    0.1611    0.1872    0.3096
              0.4298    0.4416    0.5128    0.5795    0.5987
              0.6113    0.6222    0.6330    0.6439    0.6548
```

```
            0.6656     0.6765     0.6873     0.6988     0.7228
            0.7553     0.7878     0.8571     0.8836     0.8876
            0.8917     0.8957     0.8997     0.9037     0.9077
            0.9118     0.9158     0.9198     0.9238     0.9278
            0.9319     0.9359     0.9399     0.9439     0.9480
            0.9520     0.9634     0.9756     0.9878     1.0000

Transect 507+210_pr
Area:
            0.0009     0.0020     0.0033     0.0048     0.0066
            0.0086     0.0107     0.0131     0.0157     0.0186
            0.0217     0.0258     0.0319     0.0403     0.0511
            0.0644     0.0802     0.0980     0.1178     0.1395
            0.1624     0.1858     0.2099     0.2345     0.2597
            0.2855     0.3120     0.3391     0.3668     0.3948
            0.4230     0.4512     0.4797     0.5083     0.5370
            0.5659     0.5950     0.6242     0.6535     0.6830
            0.7127     0.7425     0.7724     0.8026     0.8332
            0.8646     0.8970     0.9303     0.9647     1.0000
Hrad:
            0.0319     0.0584     0.0820     0.1036     0.1242
            0.1440     0.1633     0.1822     0.2008     0.2191
            0.2180     0.1795     0.1578     0.1494     0.1510
            0.1582     0.1697     0.1863     0.2032     0.2217
            0.2514     0.2805     0.3091     0.3371     0.3643
            0.3909     0.4171     0.4429     0.4708     0.5039
            0.5369     0.5696     0.6022     0.6347     0.6670
            0.6991     0.7310     0.7628     0.7945     0.8260
            0.8574     0.8886     0.9197     0.9446     0.9650
            0.9706     0.9770     0.9841     0.9918     1.0000
Width:
            0.0279     0.0338     0.0398     0.0458     0.0518
            0.0578     0.0638     0.0698     0.0759     0.0819
            0.0963     0.1411     0.1998     0.2674     0.3367
            0.4059     0.4717     0.5257     0.5797     0.6297
            0.6461     0.6626     0.6790     0.6955     0.7129
            0.7305     0.7480     0.7656     0.7791     0.7833
            0.7875     0.7918     0.7960     0.8003     0.8046
            0.8088     0.8131     0.8173     0.8216     0.8258
            0.8301     0.8343     0.8386     0.8484     0.8622
            0.8898     0.9173     0.9449     0.9724     1.0000

Transect 507+330_pr
Area:
            0.0006     0.0014     0.0024     0.0037     0.0052
            0.0076     0.0113     0.0163     0.0225     0.0300
            0.0388     0.0488     0.0602     0.0728     0.0867
            0.1019     0.1185     0.1363     0.1555     0.1761
            0.1979     0.2211     0.2454     0.2709     0.2969
            0.3231     0.3493     0.3757     0.4022     0.4288
```

0.4556 0.4824 0.5094 0.5366 0.5638
0.5912 0.6187 0.6463 0.6741 0.7020
0.7300 0.7582 0.7866 0.8153 0.8445
0.8743 0.9046 0.9354 0.9670 1.0000
Hrad:
0.0282 0.0506 0.0706 0.0894 0.0962
0.0834 0.0879 0.0980 0.1106 0.1246
0.1393 0.1546 0.1703 0.1857 0.2012
0.2169 0.2328 0.2489 0.2650 0.2813
0.2977 0.3152 0.3331 0.3538 0.3858
0.4177 0.4494 0.4810 0.5125 0.5438
0.5749 0.6059 0.6368 0.6676 0.6982
0.7287 0.7590 0.7892 0.8189 0.8482
0.8773 0.9063 0.9345 0.9510 0.9675
0.9841 1.0006 1.0172 1.0135 1.0000
Width:
0.0207 0.0273 0.0339 0.0405 0.0531
0.0906 0.1281 0.1656 0.2031 0.2406
0.2781 0.3157 0.3532 0.3917 0.4308
0.4699 0.5090 0.5482 0.5873 0.6264
0.6655 0.7021 0.7376 0.7667 0.7704
0.7741 0.7778 0.7815 0.7852 0.7889
0.7926 0.7963 0.8000 0.8037 0.8074
0.8111 0.8148 0.8185 0.8226 0.8270
0.8314 0.8358 0.8409 0.8566 0.8722
0.8878 0.9035 0.9191 0.9538 1.0000

Transect 507+450_pr
Area:
0.0007 0.0016 0.0027 0.0041 0.0058
0.0077 0.0098 0.0122 0.0148 0.0176
0.0208 0.0251 0.0342 0.0485 0.0677
0.0885 0.1098 0.1316 0.1537 0.1761
0.1988 0.2216 0.2448 0.2681 0.2917
0.3155 0.3396 0.3639 0.3885 0.4133
0.4388 0.4653 0.4928 0.5205 0.5484
0.5764 0.6045 0.6328 0.6613 0.6898
0.7185 0.7474 0.7764 0.8059 0.8360
0.8669 0.8984 0.9306 0.9644 1.0000
Hrad:
0.0307 0.0551 0.0768 0.0973 0.1169
0.1361 0.1549 0.1735 0.1919 0.2102
0.2284 0.1385 0.1064 0.1050 0.1204
0.1536 0.1861 0.2182 0.2521 0.2857
0.3189 0.3517 0.3843 0.4165 0.4484
0.4801 0.5114 0.5425 0.5733 0.6011
0.6136 0.6265 0.6490 0.6820 0.7148
0.7474 0.7799 0.8122 0.8444 0.8764
0.9083 0.9400 0.9695 0.9837 0.9980
1.0126 1.0273 1.0297 1.0131 1.0000

Width:

0.0216 0.0283 0.0350 0.0417 0.0484
0.0551 0.0618 0.0685 0.0752 0.0819
0.0886 0.1793 0.3208 0.4622 0.5637
0.5775 0.5913 0.6044 0.6110 0.6175
0.6241 0.6307 0.6372 0.6438 0.6504
0.6569 0.6635 0.6701 0.6766 0.6863
0.7140 0.7418 0.7583 0.7622 0.7661
0.7700 0.7739 0.7778 0.7817 0.7856
0.7895 0.7934 0.7991 0.8177 0.8362
0.8548 0.8734 0.9029 0.9515 1.0000

Transect c42
Area:

0.0006 0.0024 0.0058 0.0115 0.0192
0.0281 0.0383 0.0502 0.0635 0.0773
0.0915 0.1059 0.1206 0.1356 0.1510
0.1667 0.1831 0.2001 0.2176 0.2358
0.2558 0.2773 0.3015 0.3263 0.3512
0.3762 0.4012 0.4263 0.4515 0.4768
0.5021 0.5275 0.5529 0.5785 0.6041
0.6298 0.6555 0.6813 0.7072 0.7332
0.7592 0.7853 0.8116 0.8380 0.8645
0.8911 0.9180 0.9450 0.9722 1.0000

Hrad:

0.0161 0.0306 0.0389 0.0508 0.0698
0.0892 0.1045 0.1189 0.1418 0.1669
0.1933 0.2193 0.2449 0.2690 0.2916
0.3126 0.3304 0.3486 0.3672 0.3774
0.3698 0.3750 0.3660 0.3937 0.4215
0.4490 0.4764 0.5036 0.5305 0.5573
0.5839 0.6103 0.6366 0.6627 0.6886
0.7143 0.7399 0.7653 0.7906 0.8156
0.8399 0.8632 0.8864 0.9094 0.9322
0.9534 0.9739 0.9942 1.0091 1.0000

Width:

0.0418 0.0825 0.1597 0.2398 0.2921
0.3342 0.3888 0.4482 0.4753 0.4911
0.5009 0.5106 0.5204 0.5321 0.5465
0.5627 0.5846 0.6051 0.6247 0.6584
0.7294 0.7798 0.8682 0.8714 0.8741
0.8767 0.8792 0.8818 0.8843 0.8869
0.8894 0.8920 0.8944 0.8969 0.8993
0.9017 0.9041 0.9066 0.9090 0.9114
0.9147 0.9189 0.9232 0.9275 0.9318
0.9376 0.9442 0.9508 0.9628 1.0000

Transect c43
Area:

0.0045 0.0141 0.0257 0.0379 0.0507

0.0639 0.0777 0.0919 0.1067 0.1219
0.1374 0.1533 0.1695 0.1862 0.2031
0.2205 0.2381 0.2560 0.2741 0.2926
0.3113 0.3303 0.3496 0.3693 0.3893
0.4099 0.4309 0.4523 0.4743 0.4974
0.5211 0.5449 0.5688 0.5927 0.6167
0.6407 0.6648 0.6891 0.7135 0.7379
0.7626 0.7875 0.8127 0.8384 0.8644
0.8907 0.9173 0.9443 0.9718 1.0000
Hrad:
0.0150 0.0387 0.0610 0.0863 0.1105
0.1341 0.1572 0.1790 0.2012 0.2247
0.2475 0.2698 0.2911 0.3123 0.3339
0.3553 0.3780 0.4004 0.4217 0.4428
0.4638 0.4841 0.5041 0.5236 0.5386
0.5546 0.5706 0.5855 0.5933 0.5899
0.6149 0.6397 0.6644 0.6890 0.7134
0.7376 0.7609 0.7834 0.8058 0.8281
0.8503 0.8720 0.8934 0.9142 0.9346
0.9540 0.9732 0.9920 1.0054 1.0000
Width:
0.2954 0.3663 0.4123 0.4298 0.4481
0.4653 0.4820 0.5007 0.5169 0.5284
0.5404 0.5528 0.5661 0.5793 0.5910
0.6025 0.6113 0.6200 0.6301 0.6402
0.6501 0.6607 0.6715 0.6826 0.6994
0.7148 0.7301 0.7468 0.7729 0.8151
0.8175 0.8200 0.8225 0.8249 0.8274
0.8298 0.8332 0.8373 0.8414 0.8455
0.8519 0.8643 0.8768 0.8892 0.9011
0.9122 0.9233 0.9367 0.9557 1.0000

Transect c47
Area:
0.0016 0.0072 0.0142 0.0224 0.0315
0.0418 0.0528 0.0644 0.0773 0.0928
0.1089 0.1257 0.1429 0.1605 0.1784
0.1966 0.2152 0.2341 0.2534 0.2730
0.2929 0.3131 0.3336 0.3545 0.3757
0.3973 0.4194 0.4421 0.4655 0.4898
0.5143 0.5389 0.5636 0.5884 0.6133
0.6383 0.6633 0.6885 0.7137 0.7391
0.7645 0.7900 0.8156 0.8413 0.8670
0.8929 0.9189 0.9453 0.9723 1.0000
Hrad:
0.0182 0.0328 0.0563 0.0774 0.0961
0.1171 0.1398 0.1618 0.1528 0.1750
0.1973 0.2206 0.2444 0.2688 0.2930
0.3175 0.3410 0.3641 0.3872 0.4101
0.4329 0.4555 0.4780 0.4986 0.5191

```
            0.5382     0.5548     0.5690     0.5774     0.5917
            0.6175     0.6430     0.6684     0.6936     0.7186
            0.7436     0.7685     0.7931     0.8176     0.8419
            0.8661     0.8901     0.9140     0.9377     0.9612
            0.9846     1.0078     1.0299     1.0441     1.0000
Width:
            0.0943     0.2300     0.2661     0.3039     0.3447
            0.3752     0.3965     0.4173     0.5308     0.5558
            0.5785     0.5964     0.6116     0.6243     0.6362
            0.6467     0.6588     0.6709     0.6825     0.6937
            0.7048     0.7156     0.7264     0.7396     0.7527
            0.7676     0.7859     0.8077     0.8381     0.8595
            0.8629     0.8663     0.8697     0.8731     0.8764
            0.8794     0.8825     0.8856     0.8886     0.8917
            0.8948     0.8978     0.9008     0.9038     0.9068
            0.9098     0.9208     0.9385     0.9603     1.0000

Transect Cholette_Cr_Ditch
Area:
            0.0002     0.0010     0.0022     0.0039     0.0060
            0.0087     0.0118     0.0154     0.0195     0.0240
            0.0289     0.0343     0.0401     0.0463     0.0529
            0.0600     0.0676     0.0756     0.0843     0.0935
            0.1034     0.1140     0.1251     0.1369     0.1493
            0.1624     0.1766     0.1930     0.2147     0.2401
            0.2699     0.3005     0.3317     0.3636     0.3962
            0.4295     0.4635     0.4982     0.5336     0.5697
            0.6065     0.6441     0.6824     0.7214     0.7616
            0.8043     0.8498     0.8978     0.9481     1.0000
Hrad:
            0.0260     0.0521     0.0781     0.1041     0.1302
            0.1562     0.1823     0.2083     0.2363     0.2645
            0.2924     0.3199     0.3473     0.3744     0.4014
            0.4278     0.4494     0.4715     0.4902     0.5087
            0.5281     0.5483     0.5691     0.5905     0.6124
            0.6245     0.6186     0.6144     0.6022     0.5452
            0.4699     0.5116     0.5526     0.5929     0.6326
            0.6717     0.7103     0.7479     0.7851     0.8219
            0.8582     0.8939     0.9293     0.9643     0.9690
            0.9580     0.9572     0.9613     0.9776     1.0000
Width:
            0.0091     0.0183     0.0274     0.0365     0.0457
            0.0548     0.0639     0.0731     0.0815     0.0896
            0.0977     0.1058     0.1139     0.1220     0.1301
            0.1384     0.1484     0.1584     0.1698     0.1817
            0.1937     0.2056     0.2175     0.2294     0.2413
            0.2575     0.2831     0.3746     0.4455     0.5429
            0.5731     0.5860     0.5989     0.6120     0.6251
            0.6382     0.6513     0.6649     0.6784     0.6920
            0.7057     0.7195     0.7333     0.7471     0.7850
```

```
            0.8390     0.8874     0.9337     0.9697     1.0000

Transect Cholette_Cr_Swale
Area:
            0.0009     0.0034     0.0076     0.0132     0.0203
            0.0291     0.0392     0.0499     0.0612     0.0732
            0.0857     0.0988     0.1125     0.1266     0.1412
            0.1561     0.1716     0.1874     0.2037     0.2204
            0.2375     0.2551     0.2731     0.2915     0.3105
            0.3299     0.3497     0.3701     0.3909     0.4122
            0.4348     0.4594     0.4858     0.5127     0.5398
            0.5670     0.5945     0.6221     0.6499     0.6779
            0.7060     0.7343     0.7629     0.7916     0.8204
            0.8500     0.8810     0.9183     0.9583     1.0000
Hrad:
            0.0185     0.0370     0.0575     0.0770     0.0942
            0.1118     0.1391     0.1672     0.1942     0.2204
            0.2458     0.2706     0.2980     0.3248     0.3510
            0.3768     0.4021     0.4273     0.4523     0.4769
            0.5012     0.5248     0.5472     0.5694     0.5914
            0.6132     0.6348     0.6562     0.6775     0.6920
            0.6724     0.6553     0.6615     0.6918     0.7219
            0.7516     0.7811     0.8103     0.8392     0.8679
            0.8963     0.9245     0.9524     0.9800     1.0058
            1.0055     1.0057     1.0027     1.0007     1.0000
Width:
            0.0403     0.0806     0.1149     0.1491     0.1877
            0.2264     0.2450     0.2593     0.2736     0.2879
            0.3022     0.3164     0.3268     0.3371     0.3475
            0.3578     0.3682     0.3783     0.3881     0.3980
            0.4079     0.4181     0.4291     0.4401     0.4511
            0.4621     0.4730     0.4840     0.4950     0.5109
            0.5553     0.6025     0.6309     0.6351     0.6393
            0.6436     0.6478     0.6520     0.6562     0.6605
            0.6647     0.6689     0.6731     0.6774     0.6828
            0.7072     0.7910     0.9234     0.9617     1.0000

Transect generic_major
Area:
            0.0044     0.0176     0.0375     0.0580     0.0785
            0.0990     0.1195     0.1399     0.1604     0.1809
            0.2014     0.2218     0.2423     0.2628     0.2833
            0.3038     0.3242     0.3447     0.3652     0.3857
            0.4061     0.4266     0.4471     0.4676     0.4881
            0.5085     0.5290     0.5495     0.5700     0.5904
            0.6109     0.6314     0.6519     0.6724     0.6928
            0.7133     0.7338     0.7543     0.7747     0.7952
            0.8157     0.8362     0.8567     0.8771     0.8976
            0.9181     0.9386     0.9590     0.9795     1.0000
Hrad:
```

0.0143 0.0287 0.0523 0.0801 0.1075
0.1345 0.1610 0.1871 0.2127 0.2380
0.2629 0.2873 0.3115 0.3352 0.3586
0.3816 0.4043 0.4266 0.4486 0.4703
0.4917 0.5128 0.5335 0.5540 0.5742
0.5941 0.6137 0.6330 0.6521 0.6709
0.6895 0.7078 0.7259 0.7437 0.7613
0.7787 0.7959 0.8128 0.8295 0.8460
0.8623 0.8783 0.8942 0.9099 0.9254
0.9407 0.9558 0.9707 0.9854 1.0000
Width:
0.4286 0.8571 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000

Transect SWALE_507+100
Area:
0.0010 0.0033 0.0064 0.0103 0.0162
0.0234 0.0316 0.0409 0.0528 0.0682
0.0842 0.1006 0.1173 0.1343 0.1516
0.1692 0.1870 0.2051 0.2235 0.2422
0.2613 0.2809 0.3016 0.3239 0.3487
0.3737 0.3988 0.4241 0.4494 0.4748
0.5003 0.5259 0.5515 0.5772 0.6030
0.6288 0.6547 0.6807 0.7068 0.7329
0.7591 0.7853 0.8117 0.8381 0.8647
0.8914 0.9182 0.9452 0.9724 1.0000
Hrad:
0.0172 0.0356 0.0533 0.0713 0.0700
0.0882 0.1064 0.1214 0.1094 0.1262
0.1522 0.1775 0.2033 0.2288 0.2542
0.2793 0.3042 0.3283 0.3514 0.3737
0.3942 0.4098 0.4094 0.4084 0.4066
0.4332 0.4595 0.4857 0.5124 0.5388
0.5651 0.5912 0.6172 0.6430 0.6687
0.6944 0.7199 0.7452 0.7704 0.7955
0.8204 0.8452 0.8689 0.8920 0.9149
0.9377 0.9595 0.9794 0.9992 1.0000
Width:
0.0625 0.0959 0.1257 0.1511 0.2411
0.2770 0.3101 0.3512 0.5044 0.5643
0.5777 0.5913 0.6019 0.6122 0.6216
0.6308 0.6400 0.6499 0.6614 0.6737

0.6888	0.7122	0.7656	0.8330	0.8903
0.8942	0.8982	0.9020	0.9046	0.9073
0.9099	0.9125	0.9152	0.9178	0.9204
0.9229	0.9254	0.9278	0.9303	0.9327
0.9352	0.9377	0.9413	0.9455	0.9498
0.9540	0.9591	0.9662	0.9733	1.0000

****
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
****

****
Analysis Options
****
Flow Units ..... CMS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... NO
  Water Quality ..... NO
Infiltration Method ..... HORTON
Surcharge Method ..... EXTRAN
Starting Date 11/10/2013 00:10:00
Ending Date 11/10/2013 09:00:00
Antecedent Dry Days 0.0
Report Time Step 00:05:00
Wet Time Step 00:05:00
Dry Time Step 00:05:00

**********	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
**********	---------	-------
Total Precipitation	0.032	31.860
Evaporation Loss	0.000	0.000
Infiltration Loss	0.017	17.201
Surface Runoff	0.014	14.064
Final Storage	0.001	0.728
Continuity Error (%)	-0.417	

**********	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
**********	---------	---------
Dry Weather Inflow	0.000	0.000

Wet Weather Inflow	0.014	0.143
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.014	0.143
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
S4	31.86	0.00	0.00	17.20	14.06	0.01	14.06	0.14	0.10	0.441

Analysis begun on: Fri Apr 19 10:33:39 2024
Analysis ended on: Fri Apr 19 10:33:39 2024
Total elapsed time: < 1 sec

APPENDIX

D CIVIL DRAWING

951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH MIXED-USE

OTTAWA, ONTARIO

KEY PLAN
N.T.S

CIVIL DRAWING LIST

CLV GROUP DEVELOPMENTS INC.
485 BANK STREET, SUITE 200
OTTAWA, ON, K2P 1Z2

1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

RE-ISSUED FOR SITE PLAN CONTROL

DATE: APRIL 2024

1. UNLESS OTHERWISE NOTED ON DRAWINGS

1.1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
1.2. ALL DIMENSIONS ARE TO BE CHECKED AND VERIFIED ON THE SITE AND ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER.
1.3. THIS DRAWING IS PART OF A SET AND MUST BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS, DETAILS, NOTES, AND WRITTEN SPECIFICATIONS INCLUDED IN THE CONTRACT DOCUMENTS.
1.4. DRAWINGS ARE NOT TO BE SCALED.
1.5. THE TERM "ENGINEER" REFERS TO THE OWNERS CONSULTING ENGINEER OR REPRESENTATIVE OBSERVING THE WORK BEING PERFORMED BY THE CONTRACTOR FOR COMPLIANCE WITH THE APPLICABLE STANDARDS AND SPECIFICATIONS.
1.6. THE TERM "GEOTECHNICAL CONSULTANT" REFERS TO THE GEOTECHNICAL ENGINEER OR THEIR REPRESENTATIVE THAT IS PROVIDING GEOTECHNICAL SERVICES TO ENSURE COMPLIANT INSTALLATION AND TESTING OF MATERIALS IN ORDER TO PROVIDE DOCUMENTATION THAT WILL FORM PART OF THE CONSULTING ENGINEER'S CERTIFICATION PACKAGE TO THE CITY.
1.7. CONTRACTOR MUST WORK WITH THE LATEST REVISION OF THE CONTRACT DRAWINGS. COORDINATE WITH ENGINEER. ALL ENGINEERING DOCUMENTS SHOULD BE ISSUED TO ALL SUBS - ANY DISCREPANCY SHOULD BE REPORTED TO THE ENGINEER.
1.8. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE 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. GENERAL NOTES

2.1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED BY CITY.
2.2. TOPOGRAPHIC SURVEY COMPLETED BY STANTEC GEOMATICS LTD. DATED JULY 6,2017
2.3. ELEVATIONS ARE CGVD28.
2.4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL UTILITIES AND SERVICES. ALL UTILITIES ARE NOT NECESSARILY SHOWN ON THE DRAWINGS.
2.5. LOCATION OF ALL EXISTING DETAIL SHOWN ON THE DRAWINGS IS APPROXIMATE AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR. FIELD LOCATE UTILITIES AND COORDINATE WITH LOCAL AUTHORITIES.
2.6. ITEMS ENCOUNTERED BELOW GRADE THAT ARE NOT SHOWN ON THE DRAWINGS SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER.
2.7. ALL WORKS SHALL BE IN COMPLIANCE WITH CITY STANDARDS AND SPECIFICATIONS, AND THE ONTARIO PROVINCIAL STANDARDS DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS) UNLESS OTHERWISE NOTED.
2.8. THE CONTRACTOR SHALL SUPPLY ALL THE MATERIALS IN NEW CONDITION AND IN LABOUR QUANTITIES SUFFICIENT TO COMPLETE THE WORK SHOWN ON THESE DRAWINGS.
2.9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERTICAL AND HORIZONTAL CONTROL, AND FOR THE LAYOUT OF THE WORK. CONTRACTOR TO CONFIRM REFERENCE POINTS PRIOR TO COMMENCEMENT OF THE WORK.
2.10. TRENCHING, BACKFILLING AND COMPACTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 401.
2.11. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TEMPORARY DRAINAGE MEASURES AND/OR PUMPING FOR THE DEWATERING OF THE CONSTRUCTION AREA AND TO KEEP EXCAVATION AND WORK AREAS FREE FROM WATER DURING CONSTRUCTION IN ACCORDANCE WITH OPSS 517 AND OPSS 518, AS REQUIRED.
2.12. EXCAVATING, BACKFILLING AND COMPACTING FOR MAINTENANCE HOLES, CATCH BASINS, DITCH INLETS AND VALVE CHAMBERS SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 402.
2.13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REINSTATEMENT OF ALL DISTURBED AREAS TO A CONDITION EQUAL TO OR BETTER THAN EXISTING TO THE SATISFACTION OF THE OWNER.
2.14. COMPACTION OF ALL MATERIAL SHALL BE IN ACCORDANCE WITH OPSS 501 AND SHALL BE VERIFIED BY GEOTECHNICAL CONSULTANT PRIOR TO BACKFILLING. REFER TO TESTING AND SUBMITTALS SECTIONS FOR GEOTECHNICAL REQUIREMENTS.
2.15. WHERE THE CONTRACTOR REQUESTS A DEVIATION OR ALTERATION TO A STANDARD OR SPECIFICATION, THE CONTRACTOR SHALL, AT THEIR EXPENSE, AND PRIOR TO ANY NON-STANDARD WORK BEING PERFORMED, SEEK AND ATTAIN WRITTEN AUTHORIZATION FROM THE CITY, AND PROVIDE THE AUTHORIZATION TO THE ENGINEER. REQUESTS MADE BY THE CONTRACTOR TO MODIFY AND/OR DELETE CITY STANDARDS WILL NOT BE ACCEPTED DURING CONSTRUCTION.
2.16. WHERE THE CONTRACTOR WISHES A MODIFICATION OR DEVIATION FROM THE DESIGN REQUIREMENTS OF THE CONTRACT DRAWINGS OR DOCUMENTS, THE CONTRACTOR WILL SUBMIT A DETAILED REQUEST IN WRITING TO THE ENGINEER FOR APPROVAL PRIOR TO ANY MODIFIED OR DEVIATED WORK BEING PERFORMED. SHOULD THE CONTRACTOR MAKE UNAUTHORIZED CHANGES OR DEVIATIONS TO THE DESIGN REQUIREMENTS WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER, THEY WILL BE RESPONSIBLE TO PERFORM AND/OR PAY FOR REMEDIES REQUIRED BY THE ENGINEER.

3. TESTING

3.1. THE CONTRACTOR SHALL RETAIN AN INDEPENDENT GEOTECHNICAL CONSULTANT FOR SUBGRADE, ASPHALT, GRANULAR AND CONCRETE TESTING, IN ACCORDANCE WITH CITY AND OPSS REQUIREMENTS. GEOTECHNICAL ENGINEER TO BE APPROVED IN WRITING BY THE OWNER OR ENGINEER.
3.2. THE CONTRACTOR SHALL COORDINATE ALL REQUIRED GEOTECHNICAL FIELD TESTING AND PROVIDE COPIES OF REPORTS, CERTIFICATIONS AND LETTERS OF APPROVAL TO THE ENGINEER FOR REVIEW.
3.3. SUBGRADE TESTING SHALL BE COMPLETED BY THE GEOTECHNICAL CONSULTANT. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH WRITTEN APPROVAL FROM THE GEOTECHNICAL CONSULTANT PRIOR TO BACKFILLING.
3.4. COMPACTION TESTING SHALL BE COMPLETED BY THE GEOTECHNICAL CONSULTANT.
3.5. WHERE SAMPLED MATERIAL OR INSTALLATION FAILS TO MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, THE CONTRACTOR WILL BE RESPONSIBLE FOR REMOVING AND REINSTALLING COMPLIANT MATERIAL AT THEIR OWN EXPENSE.
3.6. WATER SERVICE PRESSURE TESTING, CHLORINATION, AND BACTERIOLOGICAL TESTING SHALL BE AS PER OPSS 441 AND AWWA C651-05 AND CITY OF OTTAWA STANDARDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH WATERMAIN TESTING AND SHALL PROVIDE THE ENGINEER WITH AT LEAST 72 HOURS WRITTEN NOTICE IN ADVANCE OF ANY SUCH TESTING.

4. SUBMITTALS

4.1. ALL MATERIAL TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO BACKFILLING.
4.2. COMPACTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF ASPHALT AND CONCRETE.
4.3. WATER SAMPLING AND PRESSURE TESTING RESULTS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF ASPHALT.
4.4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN A NEAT AND ACCURATE RECORD OF CONSTRUCTION AND AS-BUILT DRAWINGS FOR THE OWNER'S RECORD.

5. SITE PREPARATION AND REMOVALS

5.1. REMOVALS SHALL BE IN ACCORDANCE WITH OPSS 510 UNLESS NOTED OTHERWISE.
5.2. THE CONTRACTOR IS RESPONSIBLE FOR ALL GRADING SHOWN ON THE DRAWINGS.
5.3. THE CONTRACTOR SHALL DISPOSE OF ALL CONSTRUCTION DEBRIS AND SURPLUS OR UNWANTED MATERIAL AT LEGALLY DESIGNATED SITES IN ACCORDANCE WITH APPLICABLE LAW AT THE THEIR OWN EXPENSE. THE OWNER, IN CONSULTATION WITH THE ENGINEER AND GEOTECHNICAL CONSULTANT, SHALL FIELD DETERMINE MATERIALS SUITABLE FOR USE WITHIN THE PROJECT.
5.4. THE MOST SEVERE LOADING CONDITIONS ON THE SUBSOIL COULD OCCUR DURING CONSTRUCTION DUE TO HEAVY TRUCK AND EQUIPMENT TRAFFIC. SPECIAL PROVISIONS MAY BE REQUIRED BY THE CONTRACTOR SUCH AS ADDITIONAL SUBBASE AND/OR RESTRICTED LOADINGS OR PROVISIONS FOR TEMPORARY ROADS, ETC.
5.5. ABANDONED SECTIONS OF STORM SEWER SHALL BE PLUGGED WITH GROUT IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS. GROUT SHALL CONSIST OF A MIXTURE OF ONE PART PORTLAND CEMENT ACCORDING TO OPSS 1301 AND TWO PARTS MORTAR SAND ACCORDING TO OPSS 1004, WETTED WITH SUFFICIENT WATER TO MAKE THE MIXTURE PLASTIC.
5.6. WHERE A REMOVAL OR PARTIAL REMOVAL REQUIRES THE FILLING OF A RESULTING TRENCH, HOLE, OR PIT, BACKFILLING SHALL BE TO THE REQUIRED GRADE USING SUITABLE EXCAVATED MATERIAL AND SHALL INCLUDE LEVELLING AND TRIMMING OF THE SITE TO MATCH REQUIRED CONTOURS AND PROVIDE ADEQUATE DRAINAGE. BACKFILL MATERIAL SHALL BE PLACED IN LAYERS NOT EXCEEDING 200mm AND COMPACTED ACCORDING TO OPSS 501 AND APPROVED BY THE GEOTECHNICAL CONSULTANT.
5.7. CONTRACTOR SHALL STOCKPILE TOPSOIL ON SITE FOR REUSE.
5.8. THE SUBGRADE SHALL BE FREE OR ORGANICS, SHAPED, PROOF ROLLED AND APPROVED BY THE GEOTECHNICAL CONSULTANT PRIOR TO BACKFILLING. REFER TO SUBMITTALS SECTION FOR GEOTECHNICAL REQUIREMENTS AND LIST OF SUBMITTALS.
5.9. IF EXCAVATION IS REQUIRED BEYOND THE DEPTHS NOTED ON THE CONTRACT DRAWINGS THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING PRIOR TO EXCAVATING, ADDITIONAL DEPTHS. IF EXCAVATION CONTINUES WITHOUT AUTHORIZATION FROM THE ENGINEER IN WRITING, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES ASSOCIATED WITH ADDITIONAL EXCAVATION AND BACKFILL.
5.10. CIVIL WORK SHALL BE COORDINATED WITH BUILDING WORK INCLUDING THE PARKING GARAGE INSTALLATION AND PHASING.

6. SILT MITIGATION

6.1. SILT MITIGATION AND THE CONTROL OF AIRBORNE CONTAMINANTS SHALL FORM A MAJOR COMPONENT IN THIS PROJECT. THE CONTRACTOR SHALL CONSIDER SILT MITIGATION PRIOR TO UNDERTAKING ANY ACTIVITY ON THE SITE AND TAKE ALL REQUIRED MEASURES AND PRECAUTIONS TO PREVENT SILT OR OTHER CONTAMINANTS FROM ENTERING THE NATURAL ENVIRONMENT OR AREAS BEYOND LIMITS OF THE WORK AREA. SILT MITIGATION REQUIREMENTS SHALL BE STRICTLY ENFORCED.
6.2. SILT MITIGATION FEATURES SHALL BE INSTALLED TO SUIT THE CONDITIONS. SHALL INCLUDE TEMPORARY SEDIMENT TRAPS (TYPE 2) PER CITY OF OTTAWA STANDARDS FOR CATCH BASINS. THE FOLLOWING OPSD STANDARD DRAWINGS SHALL ALSO BE USED TO IMPLEMENT THE SILT MITIGATION MEASURES AS REQUIRED (ADDITIONAL MEASURES MAY BE REQUIRED):
  6.2.1. 219.100 LIGHT DUTY STRAW BALE BARRIER
  6.2.2. 219.110 LIGHT DUTY SILT FENCE BARRIER
  6.2.3. 219.150 SANDBAG BARRIER
  6.2.4. 219.180 STRAW BALE FLOW CHECK DAM
  6.2.5. 219.190 SILT FENCE FLOW CHECK DAM
6.3. THE CONTRACTOR SHALL ENSURE MUNICIPAL ROADWAYS ARE KEPT FREE OF MUD OR DIRT AND PROMPTLY CLEAN THE ROADWAY SHOULD THERE BE AN OCCURRENCE.
6.4. ALL EXISTING AND PROPOSED CATCH BASIN GRATES WITHIN IMMEDIATE VICINITY OF WORK AREA TO BE TREATED WITH A SEDIMENT CAPTURE DEVICE (SCD).
6.5. SILT MITIGATION MEASURES SHALL BE MONITORED ON A REGULAR BASIS AND REPAIRED OR MAINTAINED AS REQUIRED TO ENSURE SILT OR AIRBORNE CONTAMINANTS DO NOT ENTER THE NATURAL ENVIRONMENT.
6.6. ALL SILT MITIGATION MEASURES ARE TO REMAIN IN PLACE UNTIL VEGETATION IS WELL ESTABLISHED. CONTRACTOR TO REMOVE SILT MITIGATION ONCE VEGETATION IS WELL ESTABLISHED.
6.7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DUST SUPPRESSION IN ACCORDANCE WITH OPSS 506. WATER OR CALCIUM CHLORIDE SHALL BE PROVIDED AS REQUIRED TO PREVENT DUST.
6.8. THE CONTRACTOR IS RESPONSIBLE TO KEEP THE ROADS FREE AND CLEAN FROM MUD OR DEBRIS.
6.9. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE 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 AN APPLICABLE REGULATOR AGENCY.

7. WATERMAIN:

7.1. THE CONTRACTOR SHALL CONFIRM THE LOCATION, ELEVATION, SIZE, AND TYPE OF THE EXISTING WATERMAIN WITHIN THE WORK AREA PRIOR TO CONNECTION. THE CONTRACTOR SHALL PREPARE AND SUBMIT A DETAILED PLAN TO THE ENGINEER FOR REVIEW AND APPROVAL FOR THE WATERMAIN PRIOR TO ORDERING FITTINGS. THE PLAN SHALL DETAIL THE TYPE, MAKE AND LOCATION OF ALL PROPOSED FITTINGS, RESTRAINTS AND ASSOCIATED APPURTENANCES. THE PLAN SHALL ALSO DETAIL THE PROPOSED DISINFECTION PROCEDURES, SEQUENCING AND DURATION OF WORK REQUIRED FOR THE WATERMAIN.
7.2. CONTRACTOR SHALL COORDINATE TIMING AND DURATION OF SERVICE DISRUPTIONS WITH THE OWNER AND SHALL PROVIDE WRITTEN NOTIFICATION A MINIMUM OF TWO WEEKS PRIOR TO ANY PROPOSED DISRUPTION. NO WORK AFFECTING THE WATER OR OTHER MUNICIPAL SERVICES MAY COMMENCE UNTIL THE CONTRACTOR HAS RECEIVED WRITTEN APPROVAL FROM THE OWNER OR ENGINEER.
7.3. ALL WATERMAIN 300MM DIAMETER AND SMALLER TO BE POLY VINYL CHLORIDE (PVC) CLASS 150 DR 18 MEETING AWWA SPECIFICATION C900.
7.4. ALL WATERMAIN TO BE INSTALLED AT MINIMUM COVER OF 2.4M BELOW FINISHED GRADE. WHERE WATERMAINS CROSS OVER OTHER UTILITIES, A MINIMUM 0.30M CLEARANCE SHALL BE MAINTAINED; WHERE WATERMAINS CROSS UNDER OTHER UTILITIES, A MINIMUM 0.50M CLEARANCE SHALL BE MAINTAINED. WHERE THE MINIMUM SEPARATION CANNOT BE ACHIEVED, THE WATERMAIN SHALL BE INSTALLED AS PER CITY OF OTTAWA STANDARDS W25 AND W25.2. WHERE 2.4M MINIMUM DEPTH CANNOT BE ACHIEVED, THERMAL INSULATION SHALL BE PROVIDED AS PER CITY OF OTTAWA STANDARD W22. WHERE A WATERMAIN IS IN CLOSE PROXIMITY TO AN OPEN STRUCTURE, THERMAL INSULATION SHALL BE PROVIDED AS PER CITY OF OTTAWA STANDARD W23.
7.5. CONCRETE THRUST BLOCKS AND MECHANICAL RESTRAINTS ARE TO BE INSTALLED AT ALL TEES, BENDS, HYDRANTS, REDUCERS, ENDS OF MAINS AND CONNECTIONS 100MM AND LARGER, IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS W25.3 & W25.4.
7.6. CATHODIC PROTECTION REQUIRED FOR ALL IRON FITTINGS AS PER CITY OF OTTAWA STANDARD W40 & W42.
7.7. ALL VALVES AND VALVE BOXES AND CHAMBERS, HYDRANTS, AND HYDRANT VALVES AND ASSEMBLES SHALL BE INSTALLED AS PER CITY OF OTTAWA STANDARD.
7.8. FIRE HYDRANT LOCATION AND INSTALLATION AS PER CITY OF OTTAWA STANDARD W18 & W19. CONTRACTOR TO PROVIDE FLOW TEST AND PAINTING OF NEW HYDRANT IN ACCORDANCE WITH CITY STANDARDS.
7.9. IF WATERMAIN MUST BE DEFLECTED TO MEET ALIGNMENT, ENSURE THAT THE AMOUNT OF DEFLECTION USED IS LESS THAN HALF THAT RECOMMENDED BY THE MANUFACTURER.
7.10. WATERMAIN DEAD ENDS SHALL BE IN ACCORDANCE WITH CITY STANDARD DETAIL W37.2
7.11. CONNECTION TO THE EXISTING WATERMAIN SHALL BE COORDINATED WITH THE ENGINEER, OWNER AND THE CITY OF OTTAWA. THE CONTRACTOR SHALL SUPPLY ALL MATERIALS AND EQUIPMENT REQUIRED TO MAKE THE CONNECTION. AT NO TIME SHALL THE CONTRACTOR OPERATE VALVES WITHIN CITY OF OTTAWA DISTRIBUTION SYSTEM. THIS FUNCTION SHALL BE CARRIED OUT BY CITY OF OTTAWA UTILITY PROVIDERS ONLY. ALL FEES CHARGED BY CITY OF OTTAWA UTILITY PROVIDERS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
7.12. CONTRACTOR TO BACKFILL WITH SUITABLE NATIVE MATERIAL SIMILAR TO ADJACENT GROUND UP TO THE SUB-BASE GRANULAR FILL. BACKFILL MATERIAL SHALL BE PLACED IN LAYERS NOT EXCEEDING 200mm AND COMPACTED ACCORDING TO OPSS 501 AND APPROVED BY THE GEOTECHNICAL CONSULTANT.

8. STORM STRUCTURES

8.1. DITCH INLETS, CATCHBASINS AND MAINTENANCE HOLES SHALL BE INSTALLED IN ACCORDANCE WITH OPSS 407 AND CITY OF OTTAWA STANDARDS AND GUIDELINES.
8.2. PRECAST STORM SEWER MAINTENANCE HOLES SHALL BE 1200mm & 1500mm DIAMETER AS PER OPSD 701.030, 701.011 AND 701.031 c/w STEPS AS PER OPSD 405.010. DECK DRAINS, TANKS, OGS AND OTHER STRUCTURES SHALL BE ACCORDANCE TO DRAWINGS AS SPECIFIED.
8.3. FROST STRAPPING FOR ALL STRUCTURES SHALL BE IN ACCORDANCE WITH OPSD 701.100.
8.4. DITCH INLETS, CATCHBASINS SHALL BE PROVIDED WITH 600mm. DEEP SUMP UNLESS OTHERWISE NOTED. MAINTENANCE HOLES SHALL BE PROVIDED WITH 300mm DEEP SUMPS.
8.5. MAINTENANCE HOLE FRAME AND GRATES SHALL BE AS PER OPSD 401.010 - TYPE A UNLESS OTHERWISE NOTED. CATCH BASIN FRAME AND GRATES SHALL BE PER CITY STANDARD DETAIL S19.
8.6. ADJUSTMENT OF MAINTENANCE HOLE SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 408.
8.7. BASEMENT AREA DRAINS SHALL BE PVC, OR APPROVED EQUIVALENT. REFER TO DRAWING PACKAGE FOR RESPECTIVE MECHANICAL DETAILS AND SPECIFICATIONS FOR PARKING GARAGE PIPING FOR DRAINAGE AND COLLECTION WHERE APPLICABLE.
8.8. BASEMENT DRAINAGE STRUCTURE FRAME & GRATES SHALL BE AS SPECIFIED IN DRAWINGS, AS MANUFACTURED BY NYLOPLAST OR APPROVED EQUIVALENT.

9. STORMWATER QUANITY/QUALITY DEVICES

9.1. TANK CISTEN SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. FINAL DETAILS AND DESIGN SHALL BE REVIEWED BY ENGINEER PRIOR TO SELECTION AND FINAL LOCATION/ARRANGEMENT SHALL BE COORDINATED BETWEEN MECHANICAL, CIVIL AND ARCHITECTURE FOR PLACEMENT ON SITE WITHIN PARKING GARAGE.
9.2. OIL AND GRIT SEPARATORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. FINAL DETAILS AND DESIGN SHALL BE REVIEWED BY ENGINEER PRIOR TO SELECTION AND FINAL LOCATION/ARRANGEMENT SHALL BE COORDINATED BETWEEN MECHANICAL, CIVIL AND ARCHITECTURE FOR PLACEMENT ON SITE WITHIN PARKING GARAGE.

10. SEWERS

10.1. SEWERS SHALL BE INSTALLED IN ACCORDANCE WITH OPSS 410 AND CITY OF OTTAWA STANDARDS
10.2. STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH OPSS 1840.
10.3. SANITARY SEWERS SHALL BE TO CSA B182.2 IN ACCORDANCE WITH OPSS 1841.
10.4. ALL SEWERS AND SERVICE LATERALS WITH LESS THAN 2.0m COVER REQUIRE THERMAL INSULATION AS PER DETAIL 11/ C1.4 OR APPROVED BY THE ENGINEER.INSULATION SHALL BE RIGID HIGHLOAD 40 EXTRUDED POLYSTYRENE BY DOW OR AS PER THE APPROVED CITY MATERIAL SPECIFICATIONS(MW-19.15)
10.5. ALL SANITARY SEWER, SANITARY SEWER APPURTENANCES AND CONSTRUCTION METHODS SHALL CONFORM TO THE CURRENT CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. PROVIDE CCTV INSPECTION REPORTS FOR ALL NEW SANITARY PIPING. PROVIDE DYE TESTING FOR NEW SERVICES.
10.6. ALL STORM SEWER MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO THE CURRENT CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. PROVIDE CCTV INSPECTION REPORTS FOR ALL NEW STORM SEWERS, SERVICES AND CB LEADS.
10.7. SEWER BEDDING AS PER CITY OF OTTAWA DETAIL S6.
10.8. ALL CATCHBASIN LEADS TO BE MINIMUM 200mm DIAMETER AT MINIMUM 1.0% SLOPE UNLESS OTHERWISE SPECIFIED.

11. SUBDRAINS

11.1. SUBDRAINS SHALL BE 150mm RIGID PERFORATED HDPE PIPE COMPLETE WITH FILTER SOCK AND SHALL BE INSTALLED IN ACCORDANCE WITH OPSS 405.

12. ASPHALT AND GRANULARS

12.1. ALL MATERIALS MUST CONFORM TO THE CITY OF OTTAWA AND ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS. REFER TO TESTING SECTION FOR GEOTECHNICAL REQUIREMENTS AND A LIST OF SUBMITTALS.
12.2. HOT MIX ASPHALT SHALL BE INSTALLED IN ACCORDANCE WITH OPSS 310.
12.3. COMPACTION OF ASPHALT SHALL BE IN ACCORDANCE WITH TABLE 10 OF OPSS 310.
12.4. ALL SAWCUTS SHALL BE STRAIGHT MATCH LINES BETWEEN THE EXISTING PAVEMENT AND NEW PAVEMENT. KEY GRIND A MINIMUM 0.50m WIDE BY 35mm DEEP EDGE WHEN TYING INTO EXISTING ASPHALT AND SEAL JOINTS WITH DENSO ASPHALT REINSTATEMENT TAPE.
12.5. THE LONG-TERM PERFORMANCE OF THE PAVEMENT STRUCTURE IS HIGHLY DEPENDENT UPON THE INITIAL SUBGRADE SUPPORT CONDITIONS. STRINGENT CONSTRUCTION CONTROL PROCEDURES MUST BE MAINTAINED THROUGHOUT TO ENSURE THAT UNIFORM SUBGRADE MOISTURE AND DENSITY CONDITIONS ARE ACHIEVED. THE FINISHED PAVEMENT SURFACE AND UNDERLYING SUBGRADE SHALL BE FREE OF DEPRESSIONS AND SLOPED TO PROVIDE POSITIVE DRAINAGE.
12.6. ALL ASPHALT, BASE, AND SUBBASE THICKNESS INDICATED REPRESENT THICKNESS REQUIRED AT COMPACTION INDICATED.
12.7. COMPACTION OF BASE AND SUBBASE MATERIALS SHALL BE TO 100% SPMDD.

13. CURBS

13.1. CONCRETE CURBS SHALL BE INSTALLED IN ACCORDANCE WITH OPSS 353.

14. SIDEWALKS

14.1. SIDEWALKS SHALL BE INSTALLED IN ACCORDANCE WITH OPSS 351.
14.2. TACTILE PLATES SHALL BE INSTALLED AS NOTED ON DRAWINGS.

15. LANDSCAPING

15.1. ALL GRASSED AREAS DISTURBED BY CONSTRUCTION SHALL BE RESTORED WITH 100mm TOPSOIL AND SOD IN ACCORDANCE WITH OPSS 802 AND OPSS 803.
15.2. AT THE TIME OF FINAL INSPECTION ALL SODDED AND SEEDED AREAS SHALL BE IN A HEALTHY, VIGOROUS GROWING CONDITION, IN FULL ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS.

16. SIGNAGE

16.1. ALL SIGNS ARE NOT NECESSARILY SHOWN ON DRAWINGS. THE CONTRACTOR SHALL REMOVE, SALVAGE AND REINSTALL EXISTING SIGNAGE AS REQUIRED.
16.2. SUPPLY AND INSTALL VAN ACCESSIBLE PARKING SIGNS WHERE SPECIFIED ON THE DRAWINGS COMPLETE WITH POST AS PER OPSD 990.110.

17. PAINTING

17.1. LINE PAINTING SHALL BE INSTALLED AS PER OPSS 710.

wsp
1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

CONSULTANT:

SEAL:

CLIENT:

CLV GROUP

CLV GROUP DEVELOPMENTS INC.
485 BANK STREET, SUITE 200
OTTAWA, ON, K2P 1Z2

CLIENT REF. #: --

PROJECT:

951 GLADSTONE AVENUE AND
145 LORETTA AVENUE NORTH
MIXED-USE

KEY PLAN:

DISCLAIMER:

ISSUED FOR - REVISION:

IS	RE	DATE	DESCRIPTION
5		2024-04-19	RE-ISSUED FOR SITE PLAN CONTROL
4		2022-10-14	RE-ISSUED FOR SITE PLAN CONTROL
3		2022-03-04	RE-ISSUED FOR SITE PLAN CONTROL
2		2021-12-23	RE-ISSUED FOR SITE PLAN CONTROL
1		2021-04-14	ISSUED FOR SITE PLAN CONTROL

PROJECT NO: 20M-01441-00
DATE: FEBRUARY 2021
ORIGINAL SCALE: 1:250
DESIGNED BY: JD/MF
DRAWN BY: JT/STR
CHECKED BY: MF
IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm

DISCIPLINE: CIVIL

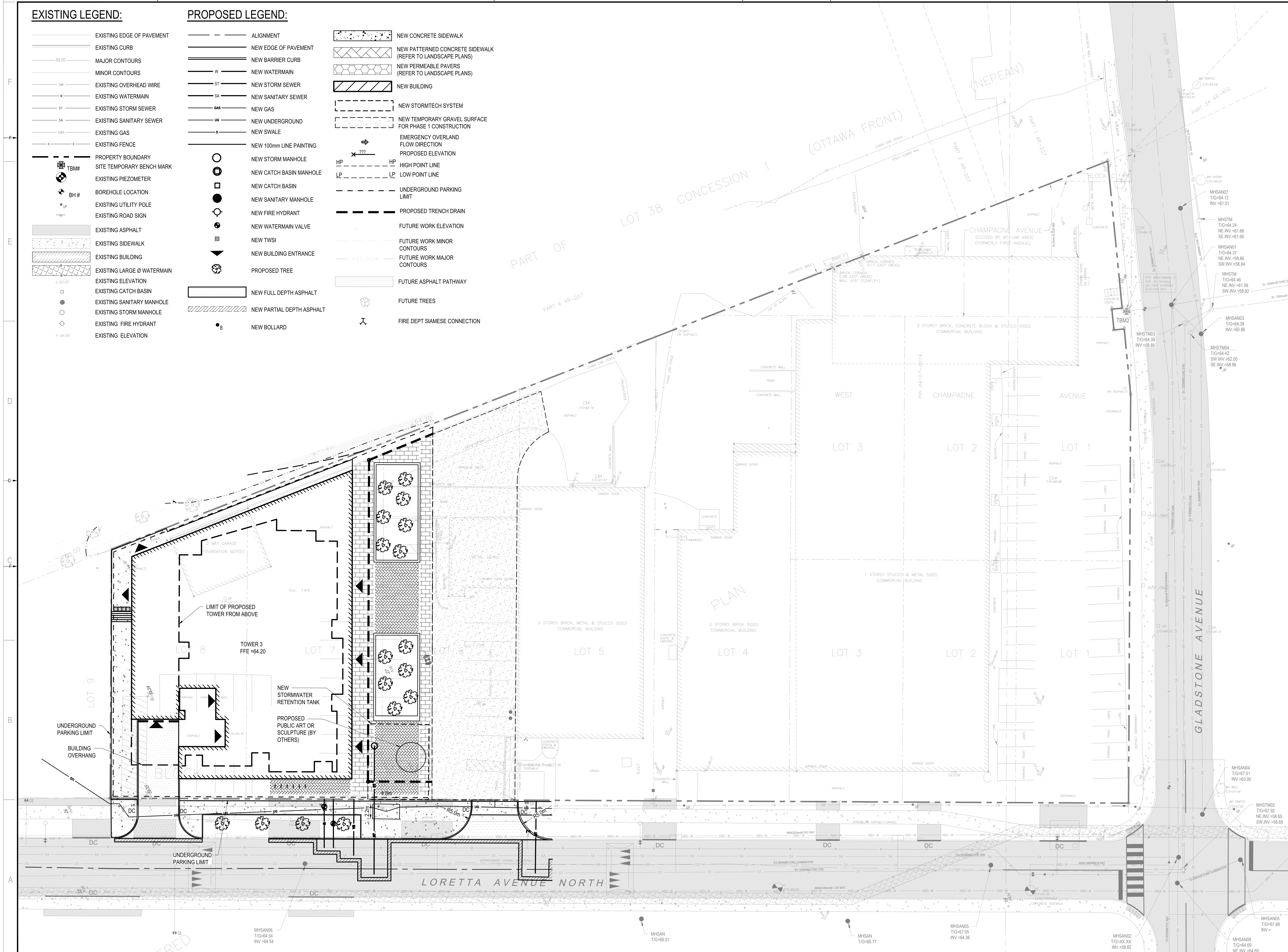
TITLE: NOTES

SHEET NUMBER: C0.1
SHEET #: 1 OF 11

ISSUE: RE-ISSUED FOR SITE PLAN CONTROL
REV #: 0
DATE OF: 2024-04-19

M:\2020\20M-01441-00 - Gladstone- Trinity Mixed Use & Residential\14.0 - Tech & Prof Services\14.02 - Drawings\01. Civil\01. Production\20M-01441-00 Notes.dwg, Apr 19, 2024 5:01 pm BY (Stephanie Thorsell)

18526



wsp

1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

CONSULTANT:

SEAL:

NORTH

CLIENT:

CLV GROUP

CLV GROUP DEVELOPMENTS INC.
485 BANK STREET, SUITE 200
OTTAWA, ON, K2P 1Z2

CLIENT REF. #: –

PROJECT:

951 GLADSTONE AVENUE AND
145 LORETTA AVENUE NORTH
MIXED-USE

KEY PLAN:

NORTH

DISCLAIMER: COPYRIGHT:

THIS DRAWING AND DESIGN IS COPYRIGHT PROTECTED WHICH SHALL NOT BE USED, REPRODUCED OR REVISED WITHOUT WRITTEN PERMISSION BY WSP. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND UTILITY LOCATIONS AND REPORT ALL ERRORS AND OMISSIONS PRIOR TO COMMENCING WORK.
THIS DRAWING IS NOT TO BE SCALED.

ISSUED FOR - REVISION:

IS	RE	DATE	DESCRIPTION
5		2024-04-19	RE-ISSUED FOR SITE PLAN CONTROL
4		2022-10-14	RE-ISSUED FOR SITE PLAN CONTROL
3		2022-03-04	RE-ISSUED FOR SITE PLAN CONTROL
2		2021-12-23	RE-ISSUED FOR SITE PLAN CONTROL
1		2021-04-14	ISSUED FOR SITE PLAN CONTROL

PROJECT NO: 20M-01441-00
DATE: FEBRUARY 2021
ORIGINAL SCALE: 1:250
IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm
DESIGNED BY: JD/MF
DRAWN BY: JT/STR
CHECKED BY: MF

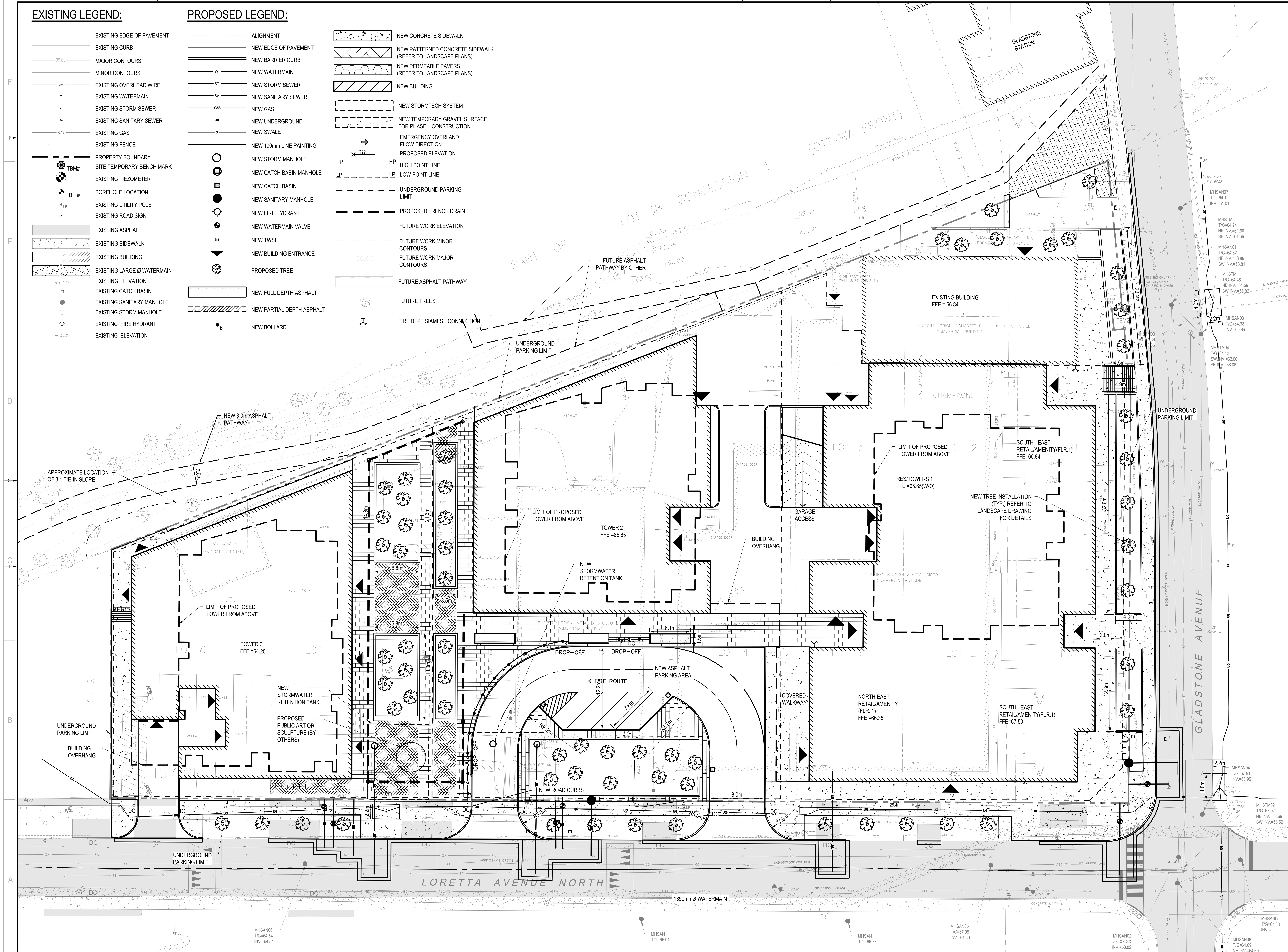
DISCIPLINE: CIVIL

TITLE:

GENERAL ARRANGEMENT PLAN - PHASE 1

SHEET NUMBER: C0.2
SHEET #: 2 OF 11

ISSUE: RE-ISSUED FOR SITE PLAN CONTROL
REV #: 0
DATE OF: 2024-04-19



wsp

1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

CONSULTANT:

SEAL:

CLIENT:

CLV GROUP

CLV GROUP DEVELOPMENTS INC.
485 BANK STREET, SUITE 200
OTTAWA, ON, K2P 1Z2

CLIENT REF. #: --

PROJECT:

951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH MIXED-USE

KEY PLAN:

NORTH

DISCLAIMER: COPYRIGHT:

THIS DRAWING AND DESIGN IS COPYRIGHT PROTECTED WHICH SHALL NOT BE USED, REPRODUCED OR REVISED WITHOUT WRITTEN PERMISSION BY WSP. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND UTILITY LOCATIONS AND REPORT ALL ERRORS AND OMISSIONS PRIOR TO COMMENCING WORK.
THIS DRAWING IS NOT TO BE SCALED.

ISSUED FOR - REVISION:

IS	RE	DATE	DESCRIPTION
5		2024-04-19	RE-ISSUED FOR SITE PLAN CONTROL
4		2022-10-14	RE-ISSUED FOR SITE PLAN CONTROL
3		2022-03-04	RE-ISSUED FOR SITE PLAN CONTROL
2		2021-12-23	RE-ISSUED FOR SITE PLAN CONTROL
1		2021-04-14	ISSUED FOR SITE PLAN CONTROL

PROJECT NO.: 20M-01441-00
DATE: FEBRUARY 2021
ORIGINAL SCALE: 1:250
DESIGNED BY: JD/MF
DRAWN BY: JT/STR
CHECKED BY: MF

IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm

DISCIPLINE: CIVIL

TITLE:

GENERAL ARRANGEMENT PLAN - PHASE 2

SHEET NUMBER: C0.3
SHEET #: 3 OF 11

ISSUE: RE-ISSUED FOR SITE PLAN CONTROL
REV #: 0
DATE OF: 2024-04-19

WSP
1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

CONSULTANT:

SEAL:

NORTH

CLIENT:

CLV GROUP

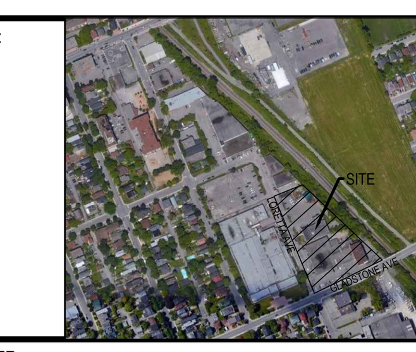
CLV GROUP DEVELOPMENTS INC.
485 BANK STREET, SUITE 200
OTTAWA, ON, K2P 1Z2

CLIENT REF. #: --

PROJECT:

951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH MIXED-USE

KEY PLAN:



NORTH

DISCLAIMER:

ISSUED FOR - REVISION:

IS	RE	DATE	DESCRIPTION
5		2024-04-19	RE-ISSUED FOR SITE PLAN CONTROL
4		2022-10-14	RE-ISSUED FOR SITE PLAN CONTROL
3		2022-03-04	RE-ISSUED FOR SITE PLAN CONTROL
2		2021-12-23	RE-ISSUED FOR SITE PLAN CONTROL
1		2021-04-14	ISSUED FOR SITE PLAN CONTROL

PROJECT NO: 20M-01441-00

DATE: FEBRUARY 2021

ORIGINAL SCALE: 1:250

IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.

25mm

DESIGNED BY: JD/MF

DRAWN BY: JT/STR

CHECKED BY: MF

DISCIPLINE: CIVIL

TITLE:

HYDRANT COVERAGE

SHEET NUMBER: C0.4

SHEET #: 4 OF 11

ISSUE: RE-ISSUED FOR SITE PLAN CONTROL

REV #: 0

DATE OF: 2024-04-19

EXISTING LEGEND:

- EXISTING EDGE OF PAVEMENT
- EXISTING CURB
- MAJOR CONTOURS
- MINOR CONTOURS
- EXISTING OVERHEAD WIRE
- EXISTING WATERMAIN
- EXISTING STORM SEWER
- EXISTING SANITARY SEWER
- EXISTING GAS
- EXISTING FENCE
- PROPERTY BOUNDARY
- SITE TEMPORARY BENCH MARK (TBM#)
- EXISTING PIEZOMETER
- BOREHOLE LOCATION (BH #)
- EXISTING UTILITY POLE
- EXISTING ROAD SIGN
- EXISTING ASPHALT
- EXISTING SIDEWALK
- EXISTING BUILDING
- EXISTING LARGE Ø WATERMAIN
- EXISTING ELEVATION
- EXISTING CATCH BASIN
- EXISTING SANITARY MANHOLE
- EXISTING STORM MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING ELEVATION

REMOVAL LEGEND:

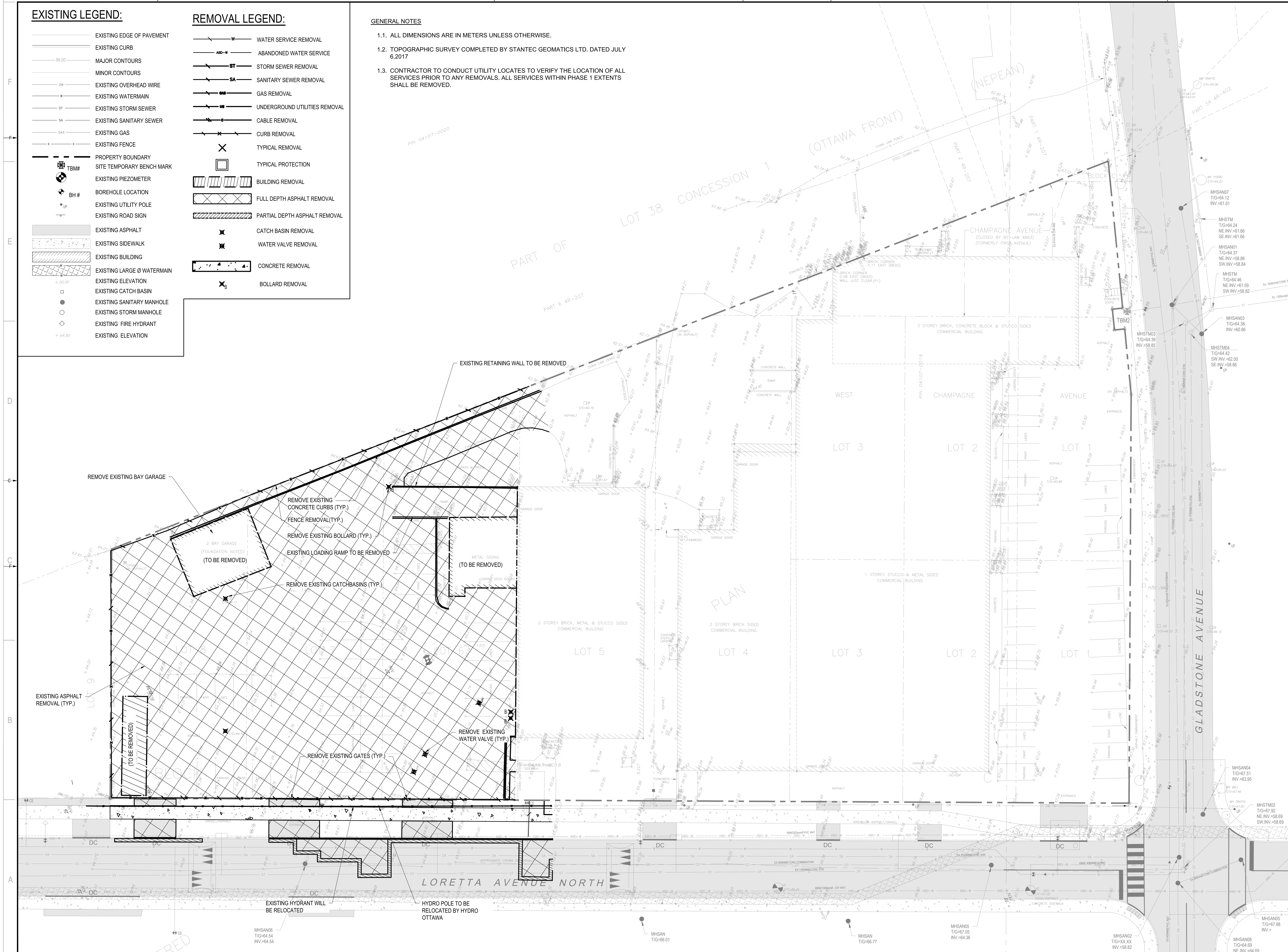
- WATER SERVICE REMOVAL
- ABANDONED WATER SERVICE
- STORM SEWER REMOVAL
- SANITARY SEWER REMOVAL
- GAS REMOVAL
- UNDERGROUND UTILITIES REMOVAL
- CABLE REMOVAL
- CURB REMOVAL
- TYPICAL REMOVAL
- TYPICAL PROTECTION
- BUILDING REMOVAL
- FULL DEPTH ASPHALT REMOVAL
- PARTIAL DEPTH ASPHALT REMOVAL
- CATCH BASIN REMOVAL
- WATER VALVE REMOVAL
- CONCRETE REMOVAL
- BOLLARD REMOVAL

GENERAL NOTES

1.1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE.

1.2. TOPOGRAPHIC SURVEY COMPLETED BY STANTEC GEOMATICS LTD. DATED JULY 6,2017

1.3. CONTRACTOR TO CONDUCT UTILITY LOCATES TO VERIFY THE LOCATION OF ALL SERVICES PRIOR TO ANY REMOVALS. ALL SERVICES WITHIN PHASE 1 EXTENTS SHALL BE REMOVED.



EXISTING RETAINING WALL TO BE REMOVED
REMOVE EXISTING BAY GARAGE
REMOVE EXISTING CONCRETE CURBS (TYP.)
FENCE REMOVAL(TYP.)
REMOVE EXISTING BOLLARD (TYP.)
EXISTING LOADING RAMP TO BE REMOVED
(TO BE REMOVED)
REMOVE EXISTING CATCHBASINS (TYP.)
EXISTING ASPHALT REMOVAL (TYP.)
REMOVE EXISTING WATER VALVE (TYP.)
REMOVE EXISTING GATES (TYP.)
EXISTING HYDRANT WILL BE RELOCATED
HYDRO POLE TO BE RELOCATED BY HYDRO OTTAWA
LORETTA AVENUE NORTH
GLADSTONE AVENUE
CHAMPAGNE AVENUE (CLOSED BY BY-LAW 4863) (FORMERLY FIRST AVENUE)
LOT 38 CONCESSION 1 (OTTAWA FRONT)
PART OF
(NEPEAN)
WEST CHAMPAGNE AVENUE
PLAN
LOT 5
LOT 4
LOT 3
LOT 2
LOT 1
2 STOREY BRICK, METAL & STUCCO SIDED COMMERCIAL BUILDING
2 STOREY BRICK SIDED COMMERCIAL BUILDING
1 STOREY STUCCO & METAL SIDED COMMERCIAL BUILDING
3 STOREY BRICK, CONCRETE BLOCK & STUCCO SIDED COMMERCIAL BUILDING
TBM2
MHSAN07 T/G=64.12 INV.=61.01
MHSTM T/G=64.24 NE.INV.=61.66 SE.INV.=61.66
MHSAN01 T/G=64.37 NE.INV.=58.86 SW.INV.=58.84
MHSTM T/G=64.46 NE.INV.=61.59 SW.INV.=58.82
MHSAN03 T/G=64.38 INV.=60.86
MHSTM03 T/G=64.39 INV.=58.85
MHSTM04 T/G=64.42 SW.INV.=62.00 SE.INV.=58.86
MHSAN04 T/G=67.51 INV.=63.95
MHSTM02 T/G=67.92 NE.INV.=58.69 SW.INV.=58.69
MHSAN05 T/G=67.88 INV.=
MHSAN08 T/G=64.69 NE.INV.=64.69 SW.INV.=58.70
MHSAN02 T/G=XX.XX INV.=58.82
MHSAN05 T/G=67.05 INV.=64.36
MHSAN T/G=66.77
MHSAN T/G=66.01
MHSAN06 T/G=64.54 INV.=64.54

WSP
1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

CONSULTANT:

SEAL:

NORTH

CLIENT:

CLV GROUP

CLV GROUP DEVELOPMENTS INC.
485 BANK STREET, SUITE 200
OTTAWA, ON, K2P 1Z2

CLIENT REF. #: --

PROJECT:

951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH MIXED-USE

KEY PLAN:

NORTH

DISCLAIMER: COPYRIGHT:

ISSUED FOR - REVISION:

IS	RE	DATE	DESCRIPTION
5		2024-04-19	RE-ISSUED FOR SITE PLAN CONTROL
4		2022-10-14	RE-ISSUED FOR SITE PLAN CONTROL
3		2022-03-04	RE-ISSUED FOR SITE PLAN CONTROL
2		2021-12-23	RE-ISSUED FOR SITE PLAN CONTROL
1		2021-04-14	ISSUED FOR SITE PLAN CONTROL

PROJECT NO.: 20M-01441-00
DATE: FEBRUARY 2021
ORIGINAL SCALE: 1:250
IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm
DESIGNED BY: JD/MF
DRAWN BY: JT/STR
CHECKED BY: MF
DISCIPLINE: CIVIL

TITLE: REMOVALS PLAN - PHASE 1

SHEET NUMBER: R1.0
SHEET #: 5 OF 11

ISSUE: RE-ISSUED FOR SITE PLAN CONTROL
REV #: 0
DATE OF: 2024-04-19

EXISTING LEGEND:

- EXISTING EDGE OF PAVEMENT
- EXISTING CURB
- 99.00 — MAJOR CONTOURS
- MINOR CONTOURS
- OW — EXISTING OVERHEAD WIRE
- EXISTING WATERMAIN
- EXISTING STORM SEWER
- EXISTING SANITARY SEWER
- GAS — EXISTING GAS
- X — X — EXISTING FENCE
- PROPERTY BOUNDARY
- TBM# — SITE TEMPORARY BENCH MARK
- EXISTING PIEZOMETER
- BH # — BOREHOLE LOCATION
- UP — EXISTING UTILITY POLE
- EXISTING ROAD SIGN
- EXISTING ASPHALT
- EXISTING SIDEWALK
- EXISTING BUILDING
- EXISTING LARGE Ø WATERMAIN
- + 00.00 — EXISTING ELEVATION
- EXISTING CATCH BASIN
- EXISTING SANITARY MANHOLE
- EXISTING STORM MANHOLE
- EXISTING FIRE HYDRANT
- + 64.90 — EXISTING ELEVATION

PROPOSED LEGEND:

- ALIGNMENT
- NEW EDGE OF PAVEMENT
- NEW BARRIER CURB
- W — NEW WATERMAIN
- ST — NEW STORM SEWER
- SA — NEW SANITARY SEWER
- GAS — NEW GAS
- UG — NEW UNDERGROUND
- S — NEW SWALE
- NEW 100mm LINE PAINTING
- NEW STORM MANHOLE
- NEW CATCH BASIN MANHOLE
- NEW CATCH BASIN
- NEW SANITARY MANHOLE
- NEW FIRE HYDRANT
- NEW WATERMAIN VALVE
- NEW TWSI
- NEW BUILDING ENTRANCE
- PROPOSED TREE
- NEW FULL DEPTH ASPHALT
- NEW PARTIAL DEPTH ASPHALT
- 8 — NEW BOLLARD
- NEW CONCRETE SIDEWALK
- NEW PATTERNED CONCRETE SIDEWALK (REFER TO LANDSCAPE PLANS)
- NEW PERMEABLE PAVERS (REFER TO LANDSCAPE PLANS)
- NEW BUILDING
- NEW STORMTECH SYSTEM
- NEW TEMPORARY GRAVEL SURFACE FOR PHASE 1 CONSTRUCTION
- EMERGENCY OVERLAND FLOW DIRECTION
- ??? — PROPOSED ELEVATION
- HP — HP — HIGH POINT LINE
- LP — LP — LOW POINT LINE
- UNDERGROUND PARKING LIMIT
- PROPOSED TRENCH DRAIN
- FUTURE WORK ELEVATION
- FUTURE WORK MINOR CONTOURS
- 63.00 — FUTURE WORK MAJOR CONTOURS
- FUTURE ASPHALT PATHWAY
- FUTURE TREES
- FIRE DEPT SIAMESE CONNECTION

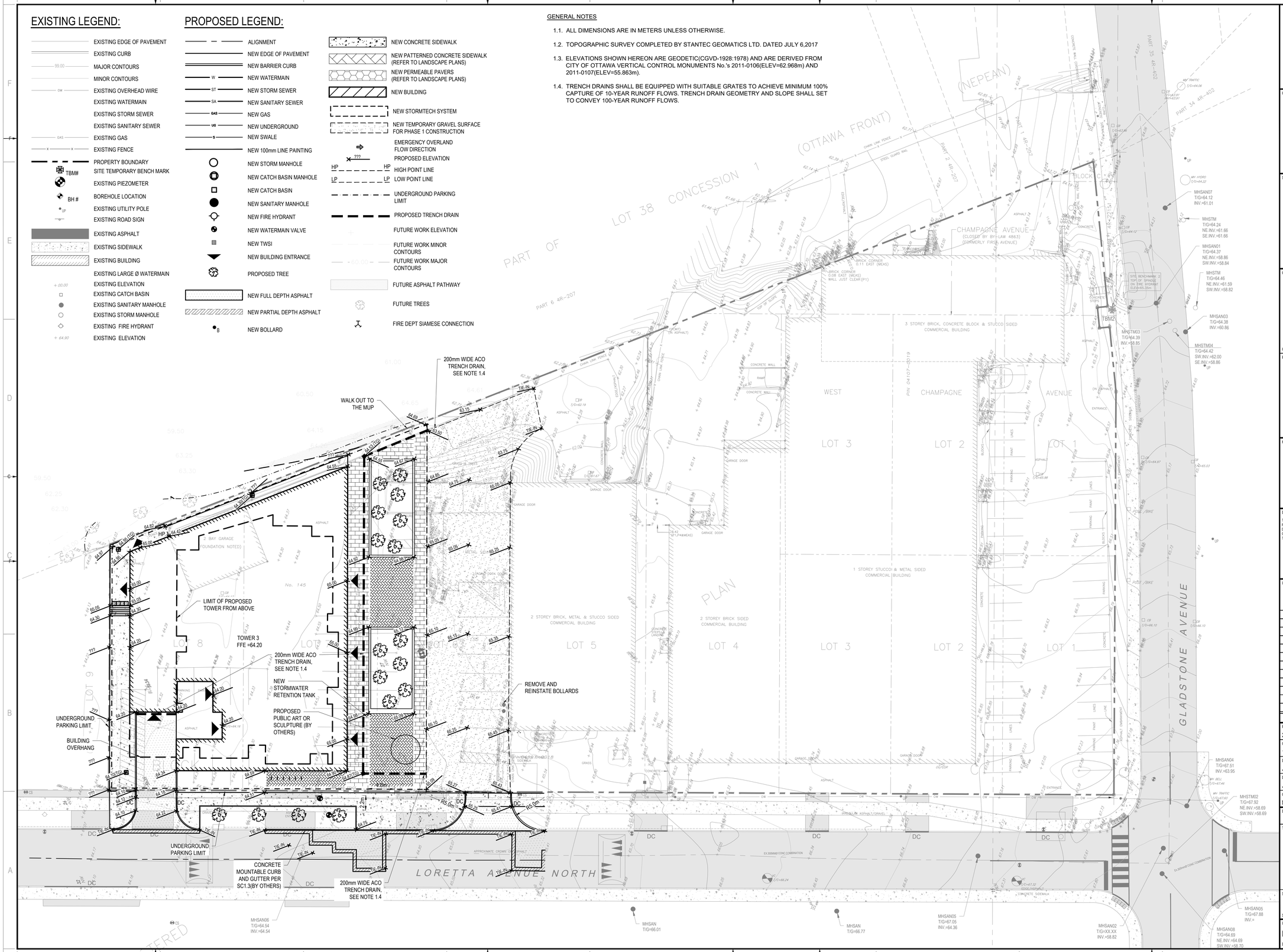
GENERAL NOTES

1.1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE.

1.2. TOPOGRAPHIC SURVEY COMPLETED BY STANTEC GEOMATICS LTD. DATED JULY 6,2017

1.3. ELEVATIONS SHOWN HEREON ARE GEODETIC(CGVD-1928:1978) AND ARE DERIVED FROM CITY OF OTTAWA VERTICAL CONTROL MONUMENTS No.'s 2011-0106(ELEV=62.968m) AND 2011-0107(ELEV=55.863m).

1.4. TRENCH DRAINS SHALL BE EQUIPPED WITH SUITABLE GRATES TO ACHIEVE MINIMUM 100% CAPTURE OF 10-YEAR RUNOFF FLOWS. TRENCH DRAIN GEOMETRY AND SLOPE SHALL SET TO CONVEY 100-YEAR RUNOFF FLOWS.



wsp
1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

CONSULTANT:

SEAL:

NORTH

CLIENT:

CLV GROUP

CLV GROUP DEVELOPMENTS INC.
485 BANK STREET, SUITE 200
OTTAWA, ON, K2P 1Z2

CLIENT REF. #: --

PROJECT:

951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH MIXED-USE

KEY PLAN:

ISSUED FOR - REVISION:

IS	RE	DATE	DESCRIPTION
5		2024-04-19	RE-ISSUED FOR SITE PLAN CONTROL
4		2022-10-14	RE-ISSUED FOR SITE PLAN CONTROL
3		2022-03-04	RE-ISSUED FOR SITE PLAN CONTROL
2		2021-12-23	RE-ISSUED FOR SITE PLAN CONTROL
1		2021-04-14	ISSUED FOR SITE PLAN CONTROL

PROJECT NO: 20M-01441-00
DATE: FEBRUARY 2021
ORIGINAL SCALE: 1:250
DESIGNED BY: JD/MF
DRAWN BY: JT/STR
CHECKED BY: MF
IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm

DISCIPLINE: CIVIL

TITLE: GRADING PLAN - PHASE 1

SHEET NUMBER: C1.1
SHEET #: 6 OF 11

ISSUE: RE-ISSUED FOR SITE PLAN CONTROL
REV #: 0
DATE OF: 2024-04-19

M:\2020\20M01441\60-Gladstone-Trinity-Mixed-Use-&-Residential\14.0 - Tech & Prof Services\14.02 - Drawings\01 Civil\01 Production\2024-01441-00 Grading Plan - Phase 1.dwg Apr 19, 2024-5:03pm BY (Stephanie.Trowsdell.R)

D07-12-21-0053

18526

EXISTING LEGEND:

- EXISTING EDGE OF PAVEMENT
- EXISTING CURB
- 99.00 MAJOR CONTOURS
- MINOR CONTOURS
- OW EXISTING OVERHEAD WIRE
- W EXISTING WATERMAIN
- ST EXISTING STORM SEWER
- SA EXISTING SANITARY SEWER
- GAS EXISTING GAS
- X EXISTING FENCE
- PROPERTY BOUNDARY
- TBM# SITE TEMPORARY BENCH MARK
- BH # BOREHOLE LOCATION
- UP EXISTING UTILITY POLE
- EXISTING ROAD SIGN
- EXISTING ASPHALT
- EXISTING SIDEWALK
- EXISTING BUILDING
- + 00.00 EXISTING ELEVATION
- EXISTING CATCH BASIN
- EXISTING SANITARY MANHOLE
- EXISTING STORM MANHOLE
- EXISTING FIRE HYDRANT
- + 64.90 EXISTING ELEVATION

PROPOSED LEGEND:

- ALIGNMENT
- NEW EDGE OF PAVEMENT
- NEW BARRIER CURB
- W NEW WATERMAIN
- ST NEW STORM SEWER
- SA NEW SANITARY SEWER
- GAS NEW GAS
- UG NEW UNDERGROUND
- S NEW SWALE
- NEW 100mm LINE PAINTING
- NEW STORM MANHOLE
- NEW CATCH BASIN MANHOLE
- NEW CATCH BASIN
- NEW SANITARY MANHOLE
- NEW FIRE HYDRANT
- NEW WATERMAIN VALVE
- NEW TWSI
- NEW BUILDING ENTRANCE
- PROPOSED TREE
- NEW 65 FULL DEPTH ASPHALT
- NEW PARTIAL DEPTH ASPHALT
- B NEW BOLLARD
- NEW CONCRETE SIDEWALK
- NEW PATTERNED CONCRETE SIDEWALK (REFER TO LANDSCAPE PLANS)
- NEW PERMEABLE PAVERS (REFER TO LANDSCAPE PLANS)
- NEW BUILDING
- NEW STORMTECH SYSTEM
- EMERGENCY OVERLAND FLOW DIRECTION
- ??? PROPOSED ELEVATION
- HP HIGH POINT LINE
- LP LOW POINT LINE
- UNDERGROUND PARKING LIMIT
- PROPOSED TRENCH DRAIN
- FUTURE WORK ELEVATION
- FUTURE WORK MINOR CONTOURS
- FUTURE WORK MAJOR CONTOURS
- FUTURE ASPHALT PATHWAY
- FUTURE TREES
- FIRE DEPT SIAMESE CONNECTION

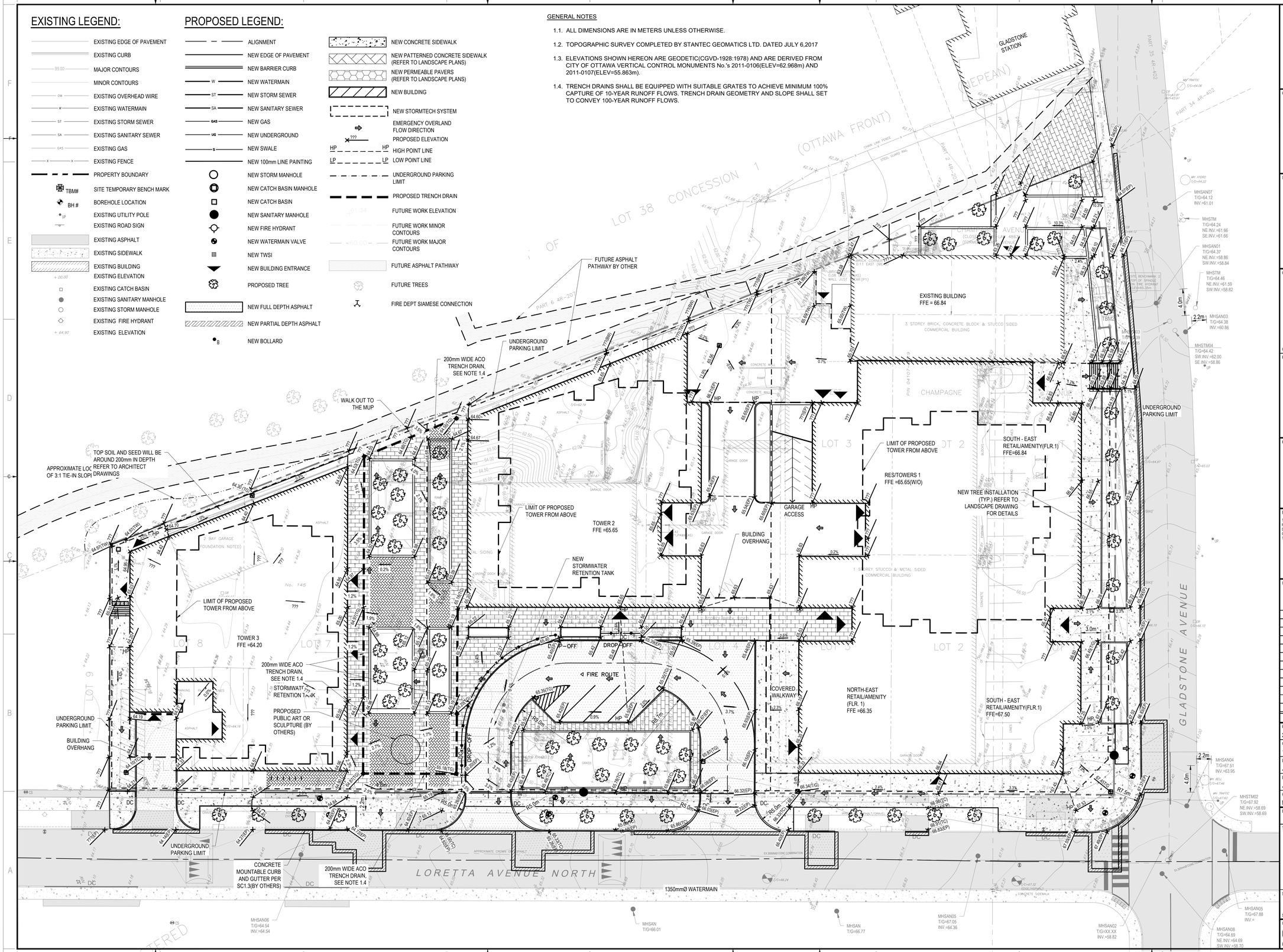
GENERAL NOTES

1.1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE.

1.2. TOPOGRAPHIC SURVEY COMPLETED BY STANTEC GEOMATICS LTD. DATED JULY 6,2017

1.3. ELEVATIONS SHOWN HEREON ARE GEODETIC(CGVD-1928:1978) AND ARE DERIVED FROM CITY OF OTTAWA VERTICAL CONTROL MONUMENTS No.'s 2011-0106(ELEV=62.968m) AND 2011-0107(ELEV=55.863m).

1.4. TRENCH DRAINS SHALL BE EQUIPPED WITH SUITABLE GRATES TO ACHIEVE MINIMUM 100% CAPTURE OF 10-YEAR RUNOFF FLOWS. TRENCH DRAIN GEOMETRY AND SLOPE SHALL SET TO CONVEY 100-YEAR RUNOFF FLOWS.



wsp
1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

CONSULTANT:

SEAL:

NORTH

CLIENT:

CLV GROUP

CLV GROUP DEVELOPMENTS INC.
485 BANK STREET, SUITE 200
OTTAWA, ON, K2P 1Z2

CLIENT REF. #: --

PROJECT:

951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH MIXED-USE

KEY PLAN:

ISSUED FOR - REVISION:

IS	RE	DATE	DESCRIPTION
5		2024-04-19	RE-ISSUED FOR SITE PLAN CONTROL
4		2022-10-14	RE-ISSUED FOR SITE PLAN CONTROL
3		2022-03-04	RE-ISSUED FOR SITE PLAN CONTROL
2		2021-12-23	RE-ISSUED FOR SITE PLAN CONTROL
1		2021-04-14	ISSUED FOR SITE PLAN CONTROL

PROJECT NO: 20M-01441-00
DATE: FEBRUARY 2021
ORIGINAL SCALE: 1:250
IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm
DESIGNED BY: JD/MF
DRAWN BY: JT/STR
CHECKED BY: MF

DISCIPLINE: CIVIL

TITLE: GRADING PLAN - PHASE 2

SHEET NUMBER: C1.2
SHEET #: 7 OF 11

ISSUE: RE-ISSUED FOR SITE PLAN CONTROL
REV #: 0
DATE OF: 2024-04-19

18526

M:\2020\20M01441\00 - Gladstone-Trinity-Mixed Use & Residential\14.0 - Tech & Prof Services\14.02 - Drawings\01. Civil\01. Production\20M-01441-00 Grading Plan - Phase 2.dwg Apr 19, 2024-5:04pm BY (Stephane Truscott RI)

PIPE DATA Proposed Storm								
FROM	TO	INLET ELEV. (m)	OUTLET ELEV. (m)	SIZE	LENGTH	SLOPE	CITY STANDARD	MIN. COVER (m)
Tank 2	ST2	61.735	61.627	250 mm	10.8 m	1.00%	DR 35 PVC Pipe SI	3.37
Tank 1	ST3	60.161	60.050	250 mm	11.1 m	1.00%	DR 35 PVC Pipe SI	4.28

PIPE DATA Proposed Sanitary								
FROM	TO	INLET ELEV. (m)	OUTLET ELEV. (m)	SIZE	LENGTH	SLOPE	CITY STANDARD	MIN. COVER (m)
Tower 3	SA3	58.610	58.527	300 mm	8.3 m	1.00%	DR 35 PVC Pipe SI	5.71

PIPE DATA Proposed WM								
FROM	TO	INLET ELEV. (m)	OUTLET ELEV. (m)	SIZE	LENGTH	SLOPE	CITY STANDARD	MIN. COVER (m)
Tower 3S	W3S	62.202	62.130	150 mm	7.2 m	1.00%	PVC Pipe SI	2.19
Tower 3N	W3N	62.172	62.100	150 mm	7.2 m	1.00%	PVC Pipe SI	2.19

PIPE CROSSING TABLE								
CROSSING		Obvert	Invert			Obvert	Invert	
1	300mmØ PVC SAN	58.838	58.538	3.152	Clearance Under	62.190	61.990	EX. 200mmØ PVC W/M
2	250mmØ PVC STM	60.339	60.089	3.721	Clearance Under	64.260	64.060	EX. 200mmØ PVC W/M
3	250mmØ PVC STM	60.330	60.080	0.500	Clearance Over	59.580	58.530	EX. 1050mmØ CONC SAN
4	250mmØ PVC STM	60.315	60.065	0.525	Clearance Under	61.140	60.840	EX. 300mmØ PVC COMBINED
5	250mmØ PVC STM	61.914	61.664	0.796	Clearance Under	62.910	62.710	EX. 200mmØ PVC W/M
6	250mmØ PVC STM	61.903	61.653	2.013	Clearance Over	59.640	58.590	EX. 1050mmØ CONC SAN
7	250mmØ PVC STM	61.890	61.640	0.500	Clearance Over	61.140	60.840	EX. 300mmØ PVC COMBINED

*Note: Provide Concrete Encased for crossing clearance less than 0.3m

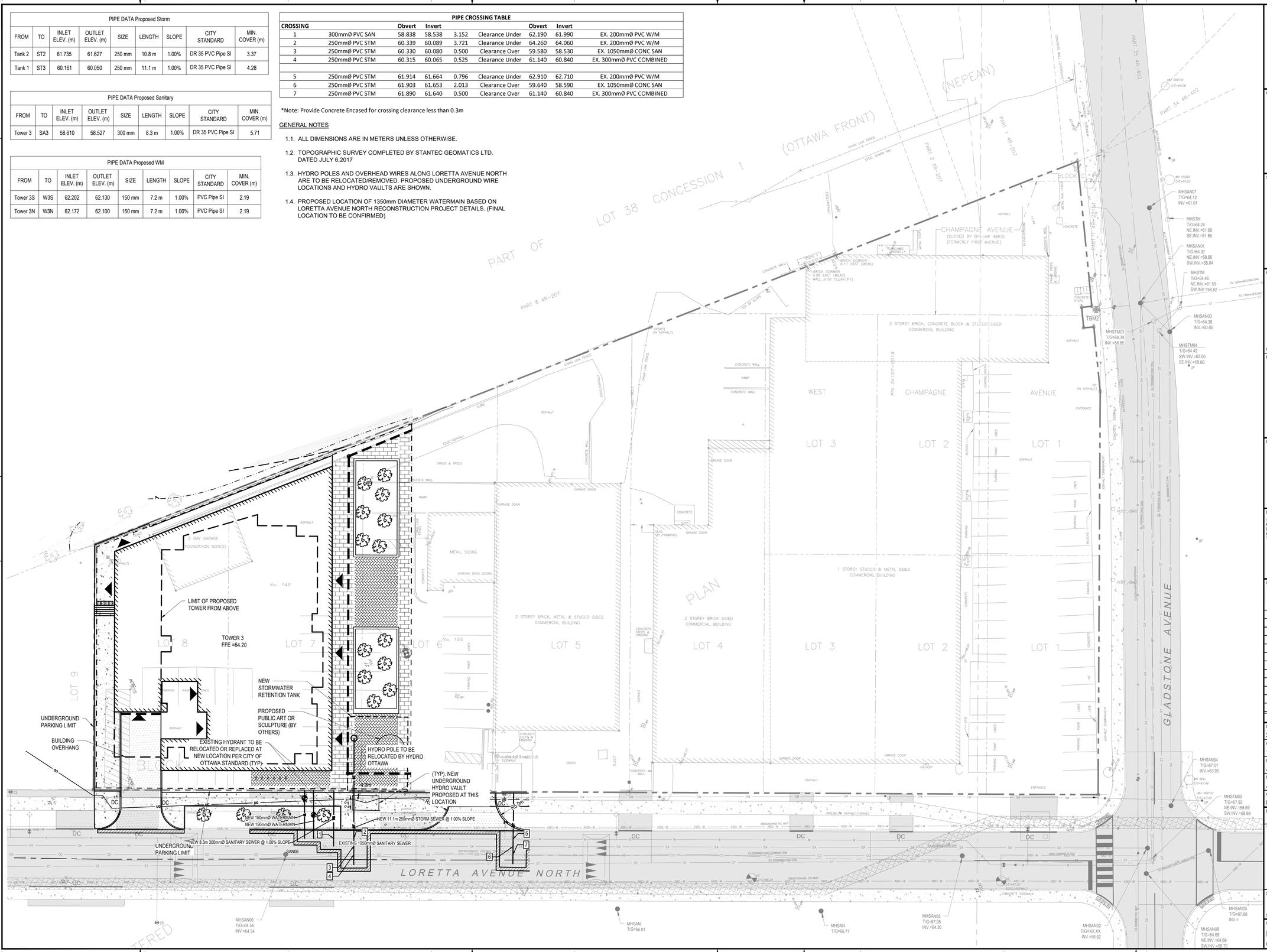
GENERAL NOTES

1.1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE.

1.2. TOPOGRAPHIC SURVEY COMPLETED BY STANTEC GEOMATICS LTD. DATED JULY 6,2017

1.3. HYDRO POLES AND OVERHEAD WIRES ALONG LORETTA AVENUE NORTH ARE TO BE RELOCATED/REMOVED. PROPOSED UNDERGROUND WIRE LOCATIONS AND HYDRO VAULTS ARE SHOWN.

1.4. PROPOSED LOCATION OF 1350mm DIAMETER WATERMAIN BASED ON LORETTA AVENUE NORTH RECONSTRUCTION PROJECT DETAILS. (FINAL LOCATION TO BE CONFIRMED)



wsp
1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

CONSULTANT:

SEAL:

NORTH

CLIENT:

CLV GROUP

CLV GROUP DEVELOPMENTS INC.
485 BANK STREET, SUITE 200
OTTAWA, ON, K2P 1Z2

CLIENT REF. #: --

PROJECT:

951 GLADSTONE AVENUE AND
145 LORETTA AVENUE NORTH
MIXED-USE

KEY PLAN:

ISSUED FOR - REVISION:

IS	RE.	DATE	DESCRIPTION
5		2024-04-19	RE-ISSUED FOR SITE PLAN CONTROL
4		2022-10-14	RE-ISSUED FOR SITE PLAN CONTROL
3		2022-03-04	RE-ISSUED FOR SITE PLAN CONTROL
2		2021-12-23	RE-ISSUED FOR SITE PLAN CONTROL
1		2021-04-14	ISSUED FOR SITE PLAN CONTROL

PROJECT NO: 20M-01441-00
DATE: FEBRUARY 2021
ORIGINAL SCALE: 1:250
DESIGNED BY: JD/MF
DRAWN BY: JT/STR
CHECKED BY: MF
IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm

DISCIPLINE: CIVIL

TITLE: SERVICING PLAN - PHASE 1

SHEET NUMBER: C1.3
SHEET # 8 OF 11

ISSUE: RE-ISSUED FOR SITE PLAN CONTROL
DATE OF: 2024-04-19
REV # 0

18526

PIPE DATA Proposed Storm

FROM	TO	INLET ELEV. (m)	OUTLET ELEV. (m)	SIZE	LENGTH	SLOPE	CITY STANDARD	MIN. COVER (m)
Tank 2	ST2	61.735	61.627	250 mm	10.8 m	1.00%	DR 35 PVC Pipe SI	3.37
Tower 1	ST1	60.329	60.226	250 mm	10.3 m	1.00%	DR 35 PVC Pipe SI	5.84
Tank 1	ST3	60.161	60.050	250 mm	11.1 m	1.00%	DR 35 PVC Pipe SI	4.28

PIPE DATA Proposed Sanitary

FROM	TO	INLET ELEV. (m)	OUTLET ELEV. (m)	SIZE	LENGTH	SLOPE	CITY STANDARD	MIN. COVER (m)
Tower 1	SA1	58.899	58.827	300 mm	7.2 m	1.00%	DR 35 PVC Pipe SI	7.91
Tower 2	SA2	58.693	58.611	300 mm	8.2 m	1.00%	DR 35 PVC Pipe SI	6.55
Tower 3	SA3	58.610	58.527	300 mm	8.3 m	1.00%	DR 35 PVC Pipe SI	5.71

PIPE DATA Proposed WM

FROM	TO	INLET ELEV. (m)	OUTLET ELEV. (m)	SIZE	LENGTH	SLOPE	CITY STANDARD	MIN. COVER (m)
Tower 1LOR	W1Lor	64.705	64.599	150 mm	10.6 m	1.00%	PVC Pipe SI	2.59
Tower 1GLAD	W1Glad	64.641	64.581	150 mm	6.0 m	1.00%	PVC Pipe SI	2.49
Tower 2S	W2S	63.101	63.030	150 mm	7.1 m	1.00%	PVC Pipe SI	2.12
Tower 2N	W2N	63.031	62.960	150 mm	7.1 m	1.00%	PVC Pipe SI	2.15
Tower 3S	W3S	62.202	62.130	150 mm	7.2 m	1.00%	PVC Pipe SI	2.19
Tower 3N	W3N	62.172	62.100	150 mm	7.2 m	1.00%	PVC Pipe SI	2.19

PIPE CROSSING TABLE

CROSSING		Obvert	Invert			Obvert	Invert	
1	300mmØ PVC SAN	58.838	58.538	3.152	Clearance Under	62.190	61.990	EX. 200mmØ PVC W/M
2	250mmØ PVC STM	60.339	60.089	3.721	Clearance Under	64.260	64.060	EX. 200mmØ PVC W/M
3	250mmØ PVC STM	60.330	60.080	0.500	Clearance Over	59.580	58.530	EX. 1050mmØ CONC SAN
4	250mmØ PVC STM	60.315	60.065	0.525	Clearance Under	61.140	60.840	EX. 300mmØ PVC COMBINED
5	250mmØ PVC STM	61.914	61.664	0.796	Clearance Under	62.910	62.710	EX. 200mmØ PVC W/M
6	250mmØ PVC STM	61.903	61.653	2.013	Clearance Over	59.640	58.590	EX. 1050mmØ CONC SAN
7	250mmØ PVC STM	61.890	61.640	0.500	Clearance Over	61.140	60.840	EX. 300mmØ PVC COMBINED
8	300mmØ PVC SAN	58.922	58.622	4.008	Clearance Under	63.130	62.930	EX. 200mmØ PVC W/M
9	250mmØ PVC STM	60.509	60.259	3.271	Clearance Under	63.980	63.780	EX. 200mmØ PVC W/M
10	250mmØ PVC STM	60.500	60.250	0.500	Clearance Over	59.750	58.700	EX. 1050mmØ CONC SAN
11	250mmØ PVC STM	60.486	60.236	1.116	Clearance Over	59.120	58.820	EX. 300mmØ PVC COMBINED
12	150mmØ PVC W/M	64.770	64.620	4.770	Clearance Over	59.850	57.800	EX. 1050mmØ CONC SAN
13	150mmØ PVC W/M	64.760	64.610	4.590	Clearance Over	60.020	58.970	EX. 1350mmØ CONC STM

*Note: Provide Concrete Encased for crossing clearance less than 0.3m

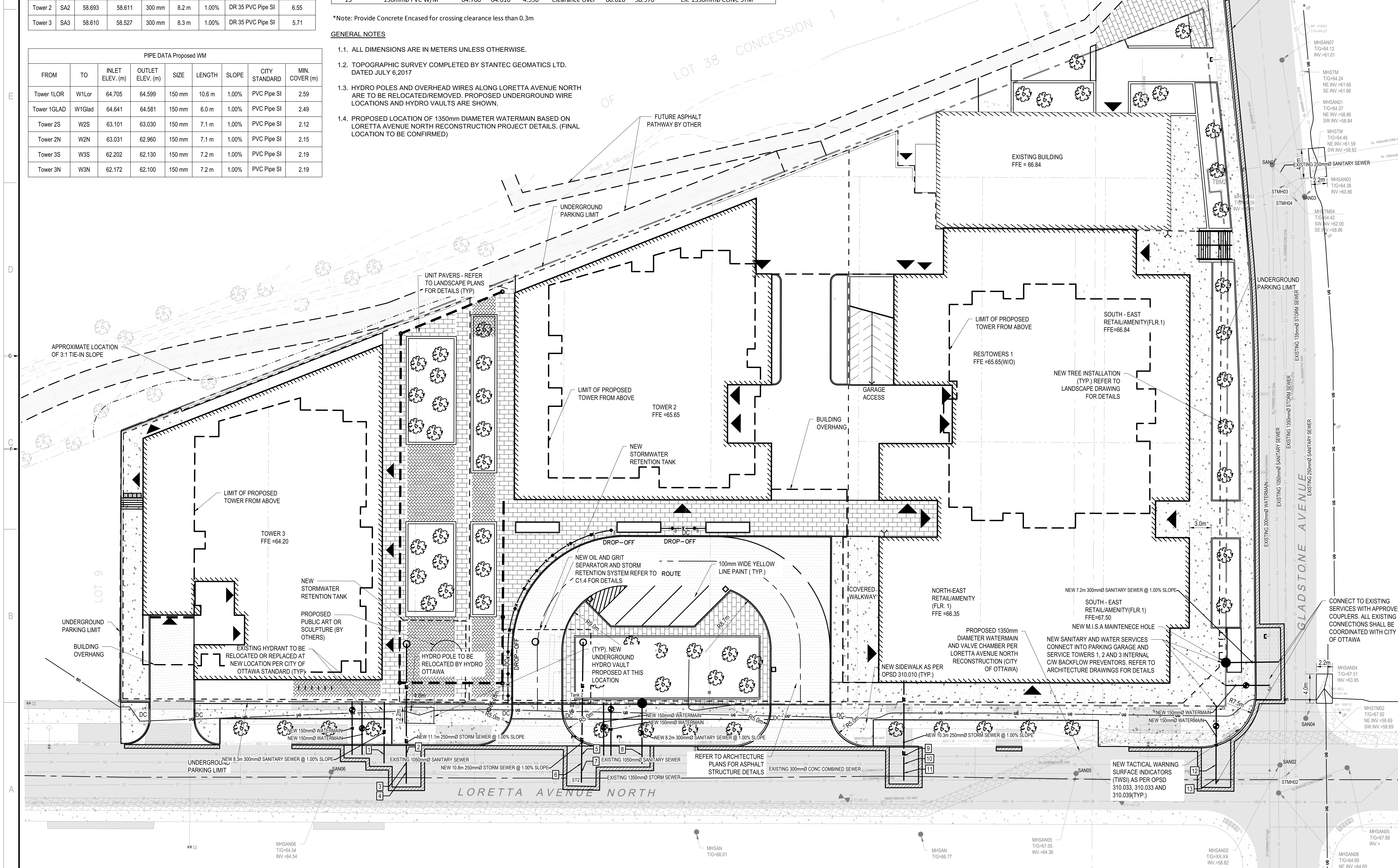
GENERAL NOTES

1.1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE.

1.2. TOPOGRAPHIC SURVEY COMPLETED BY STANTEC GEOMATICS LTD. DATED JULY 6,2017

1.3. HYDRO POLES AND OVERHEAD WIRES ALONG LORETTA AVENUE NORTH ARE TO BE RELOCATED/REMOVED. PROPOSED UNDERGROUND WIRE LOCATIONS AND HYDRO VAULTS ARE SHOWN.

1.4. PROPOSED LOCATION OF 1350mm DIAMETER WATERMAIN BASED ON LORETTA AVENUE NORTH RECONSTRUCTION PROJECT DETAILS. (FINAL LOCATION TO BE CONFIRMED)



WSP
1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

CONSULTANT:

SEAL:

NORTH

CLIENT:
CLV GROUP DEVELOPMENTS INC.
485 BANK STREET, SUITE 200
OTTAWA, ON, K2P 1Z2

CLIENT REF. #: --

PROJECT:
951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH MIXED-USE

KEY PLAN:

DISCLAIMER: COPYRIGHT:

ISSUED FOR - REVISION:

IS	RE	DATE	DESCRIPTION
5		2024-04-19	RE-ISSUED FOR SITE PLAN CONTROL
4		2022-10-14	RE-ISSUED FOR SITE PLAN CONTROL
3		2022-03-04	RE-ISSUED FOR SITE PLAN CONTROL
2		2021-12-23	RE-ISSUED FOR SITE PLAN CONTROL
1		2021-04-14	ISSUED FOR SITE PLAN CONTROL

PROJECT NO: 20M-01441-00
DATE: FEBRUARY 2021
ORIGINAL SCALE: 1:250
IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm
DESIGNED BY: JD/MF
DRAWN BY: JT/STR
CHECKED BY: MF
DISCIPLINE: CIVIL
TITLE: SERVICING PLAN - PHASE 2
SHEET NUMBER: C1.4
SHEET #: 9 OF 11
ISSUE: RE-ISSUED FOR SITE PLAN CONTROL
REV #: 0
DATE OF: 2024-04-19

M:\2020\20M-01441-00 - Gladstone-Trinity-Mixed-Use & Residential\14.0 - Tech & Prof Services\14.02 - Drawings\01_Civil\01_Production\20M-01441-00 Servicing Plan - Phase 2.dwg Apr 19, 2024-5:05pm BY:(Stephanie.Truscott.R)

18526

EXISTING LEGEND:

- EXISTING EDGE OF PAVEMENT
- EXISTING CURB
- 99.00 MAJOR CONTOURS
- MINOR CONTOURS
- OW EXISTING OVERHEAD WIRE
- W EXISTING WATERMAIN
- ST EXISTING STORM SEWER
- SA EXISTING SANITARY SEWER
- GAS EXISTING GAS
- X EXISTING FENCE
- PROPERTY BOUNDARY
- TBM# SITE TEMPORARY BENCH MARK
- EXISTING PIEZOMETER
- BH # BOREHOLE LOCATION
- UP EXISTING UTILITY POLE
- EXISTING ROAD SIGN
- EXISTING ASPHALT
- EXISTING SIDEWALK
- EXISTING BUILDING
- EXISTING LARGE Ø WATERMAIN
- + 00.00 EXISTING ELEVATION
- EXISTING CATCH BASIN
- EXISTING SANITARY MANHOLE
- EXISTING STORM MANHOLE
- EXISTING FIRE HYDRANT
- + 64.90 EXISTING ELEVATION

PROPOSED LEGEND:

- ALIGNMENT
- NEW EDGE OF PAVEMENT
- NEW BARRIER CURB
- W NEW WATERMAIN
- ST NEW STORM SEWER
- SA NEW SANITARY SEWER
- GAS NEW GAS
- UG NEW UNDERGROUND
- S NEW SWALE
- NEW 100mm LINE PAINTING
- NEW STORM MANHOLE
- NEW CATCH BASIN MANHOLE
- NEW CATCH BASIN
- NEW SANITARY MANHOLE
- NEW FIRE HYDRANT
- NEW WATERMAIN VALVE
- NEW TWSI
- NEW BUILDING ENTRANCE
- PROPOSED TREE
- NEW FULL DEPTH ASPHALT
- NEW PARTIAL DEPTH ASPHALT
- B NEW BOLLARD
- NEW CONCRETE SIDEWALK
- NEW PATTERNED CONCRETE SIDEWALK (REFER TO LANDSCAPE PLANS)
- NEW PERMEABLE PAVERS (REFER TO LANDSCAPE PLANS)
- NEW BUILDING
- NEW STORMTECH SYSTEM
- NEW TEMPORARY GRAVEL SURFACE FOR PHASE 1 CONSTRUCTION
- EMERGENCY OVERLAND FLOW DIRECTION
- ??? PROPOSED ELEVATION
- HP HIGH POINT LINE
- LP LOW POINT LINE
- UNDERGROUND PARKING LIMIT
- PROPOSED TRENCH DRAIN
- FUTURE WORK ELEVATION
- FUTURE WORK MINOR CONTOURS
- +60.00 FUTURE WORK MAJOR CONTOURS
- FUTURE ASPHALT PATHWAY
- FUTURE TREES
- FIRE DEPT SIAMESE CONNECTION

ESC LEGEND:

- LIGHT DUTY SILT FENCE (OPSD 219.110)
- FILTER CLOTH PROTECTION (CITY OF OTTAWA STANDARDS)
- MUD MAT

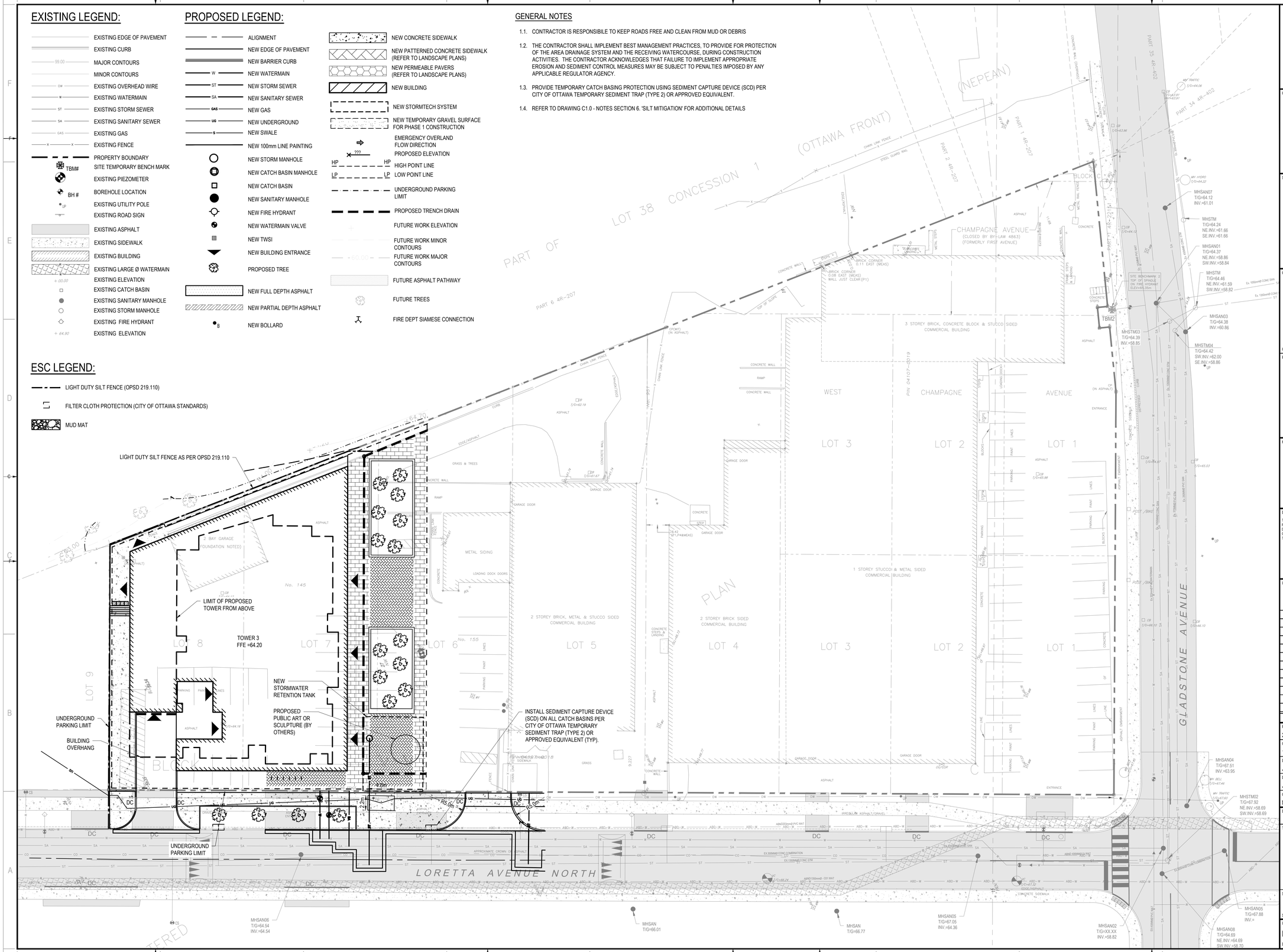
GENERAL NOTES

1.1. CONTRACTOR IS RESPONSIBILE TO KEEP ROADS FREE AND CLEAN FROM MUD OR DEBRIS

1.2. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE 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 REGULATOR AGENCY.

1.3. PROVIDE TEMPORARY CATCH BASING PROTECTION USING SEDIMENT CAPTURE DEVICE (SCD) PER CITY OF OTTAWA TEMPORARY SEDIMENT TRAP (TYPE 2) OR APPROVED EQUIVALENT.

1.4. REFER TO DRAWING C1.0 - NOTES SECTION 6. 'SILT MITIGATION' FOR ADDITIONAL DETAILS



wsp
1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

CONSULTANT:

SEAL:

NORTH

CLIENT:

CLV GROUP

CLV GROUP DEVELOPMENTS INC.
485 BANK STREET, SUITE 200
OTTAWA, ON, K2P 1Z2

CLIENT REF. #: --

PROJECT:

951 GLADSTONE AVENUE AND
145 LORETTA AVENUE NORTH
MIXED-USE

KEY PLAN:

ISSUED FOR - REVISION:

IS	RE	DATE	DESCRIPTION
5		2024-04-19	RE-ISSUED FOR SITE PLAN CONTROL
4		2022-10-14	RE-ISSUED FOR SITE PLAN CONTROL
3		2022-03-04	RE-ISSUED FOR SITE PLAN CONTROL
2		2021-12-23	RE-ISSUED FOR SITE PLAN CONTROL
1		2021-04-14	ISSUED FOR SITE PLAN CONTROL

PROJECT NO: 20M-01441-00
DATE: FEBRUARY 2021
ORIGINAL SCALE: 1:250
DESIGNED BY: JD/MF
DRAWN BY: JT/STR
CHECKED BY: MF
IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm

DISCIPLINE: CIVIL

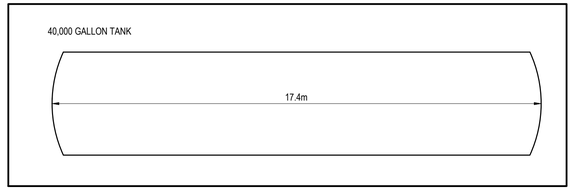
TITLE:

EROSION AND SEDIMENT CONTROL PLAN - PHASE 1

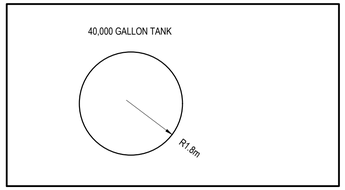
SHEET NUMBER: C1.5
SHEET #: 10 OF 11

ISSUE: RE-ISSUED FOR SITE PLAN CONTROL
DATE OF: 2024-04-19
REV #: 0

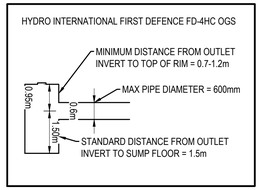
18526



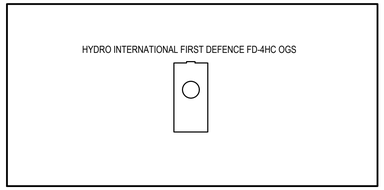
1 C1.6 TYPICAL STORMWATER TANK LENGTH
SCALE: 1:100



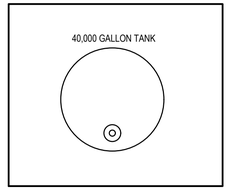
2 C1.6 TYPICAL STORMWATER TANK RADII
SCALE: 1:100



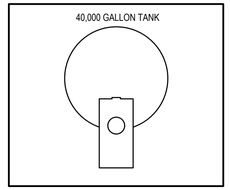
3 C1.6 OIL/ GRIT SEPARATOR
SCALE: 1:100



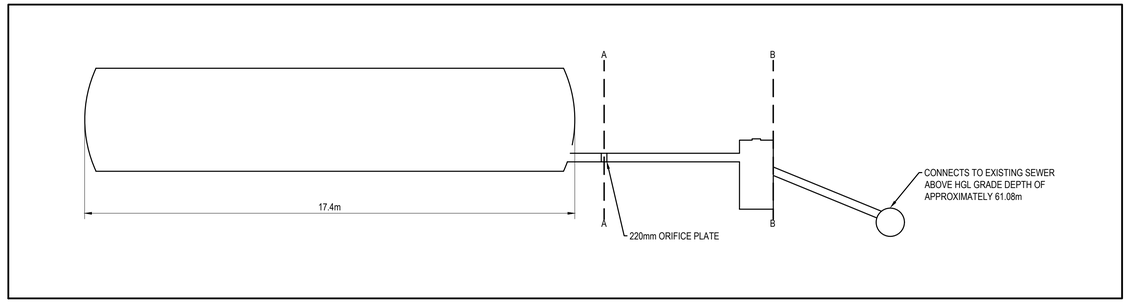
4 C1.6 OIL/ GRIT SEPARATOR CROSS SECTION
SCALE: 1:100



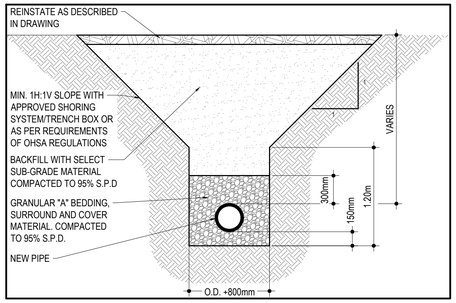
5 C1.6 A-A CROSS SECTION
SCALE: 1:100



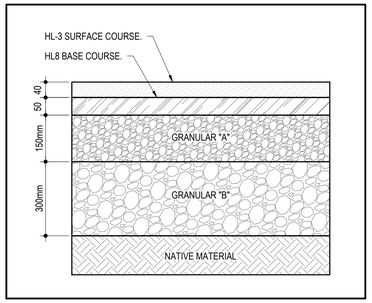
6 C1.6 B-B CROSS SECTION
SCALE: 1:100



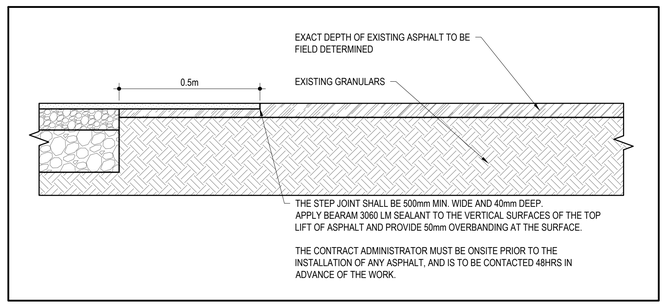
7 C1.6 TYPICAL STORMWATER SYSTEM PROFILE VIEW
SCALE: 1:100



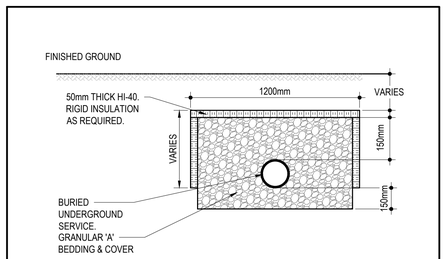
8 C1.6 TYPICAL TRENCH DESIGN
SCALE: N.T.S.



9 C1.6 ASPHALT STRUCTURE DETAIL
SCALE: N.T.S.



10 C1.6 TYPICAL STEP CONNECTION DETAIL TO EXISTING ASPHALT
SCALE: N.T.S.



11 C1.6 TYPICAL FROST PROTECTION DETAIL - TYPE 'A'
SCALE: N.T.S.

TEMPORARY BENCH MARKS

T.B.M. #	ELEVATION (m)	DESCRIPTION
1	65.38	TOP OF SPINDLE ON FIRE HYDRANT
2	65.35	TOP OF SPINDLE ON FIRE HYDRANT

wsp
1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

CONSULTANT:

SEAL:

CLIENT:

CLV GROUP

CLV GROUP DEVELOPMENTS INC.
485 BANK STREET, SUITE 200
OTTAWA, ON, K2P 1Z2

CLIENT REF. #: --

PROJECT:

951 GLADSTONE AVENUE AND
145 LORETTA AVENUE NORTH
MIXED-USE

KEY PLAN:

ISSUED FOR - REVISION:

IS	RE	DATE	DESCRIPTION
5		2024-04-19	RE-ISSUED FOR SITE PLAN CONTROL
4		2022-10-14	RE-ISSUED FOR SITE PLAN CONTROL
3		2022-03-04	RE-ISSUED FOR SITE PLAN CONTROL
2		2021-12-23	RE-ISSUED FOR SITE PLAN CONTROL
1		2021-04-14	ISSUED FOR SITE PLAN CONTROL

PROJECT NO: 20M-01441-00
DATE: FEBRUARY 2021
ORIGINAL SCALE: 1:250
IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm
DESIGNED BY: JD/MF
DRAWN BY: JT/STR
CHECKED BY: MF

DISCIPLINE: CIVIL

TITLE: DETAILS

SHEET NUMBER: C1.6
SHEET #: 11 OF 11

ISSUE: RE-ISSUED FOR SITE PLAN CONTROL
REV #: 0
DATE OF: 2024-04-19

M:\2020\20M-01441-00 - Gladstone- Trinity Mixed Use & Residential\4.0 - Tech & Prof Services\4.02 - Drawings\01 Civil\01 Production\20M-01441-00 Details.dwg Apr 19, 2024-5:05pm BY (Stephanie Truscott Bl)

DOT-22-21-0053

18526

APPENDIX

E CATCHMENT MAP

CATCHMENT CHARACTERISTICS						
	GRASSED ● C-FACTOR BELOW	GRAVEL ● C-FACTOR BELOW	ASPH/CONC ● C-FACTOR BELOW	ROOFED ● C-FACTOR BELOW		
	0.25	0.65	0.90	0.95		
CATCHMENT ID	GRASSED AREA (ha)	GRAVEL AREA (ha)	ASPH./CONC AREA (ha)	ROOFED AREA (ha)	TOTAL AREAS (ha)	WEIGHTED C-FACTOR
A1	0.005	0.000	0.567	0.407	0.98	0.92
TOTAL	0.005	0.000	0.567	0.407	0.979	0.92

TIME OF CONCENTRATION CALCULATION - CATCHMENT A1
(BRANSBY WILLIAM FORMULA, RUNOFF COEFFICIENT GREATER THAN 0.4)

$Tc = (0.057 * L) / (Sw^{0.2} * A^{0.1})$
$Tc = (0.057 * 74.23) / (2.33^{0.2} * 1.00^{0.1})$
$Tc = 3.57$ min

WHERE:

Tc = TIME OF CONCENTRATION, MINUTES	**= 3.57 min (USE MINIMUM Tc OF 10 min)**
C = RATIONAL METHOD RUNOFF COEFFICIENT	= 0.92
L = CATCHMENT LENGTH, m	= 74.32m
Sw = CATCHMENT SLOPE, %	= 2.33%
A = CATCHMENT AREA, ha	= 1.00 ha

LEGEND:

- CATCHMENT AREA
- WATERSHED LENGTH
- ROOF AREA
- CONRETE/ASPHALT AREA

— CATCHMENT ID
0.00 ha | 0.00 — RUNOFF COEFFICIENT / CATCHMENT AREA

A1
1.00 ha | 0.92

CATCHMENT A1 WATERSHED LENGTH 74.32m @ 2.33%

10% SLOPE ELEVATION

85% SLOPE ELEVATION

PART OF LOT 38 CONCESSION 1 (OTTAWA FRONT)

(NEPEAN)

PART 1 4R-207
PART 2 4R-207
PART 6 4R-207
PART 35 4R-402
PART 34 4R-402
PART 1 4R-22151

BLOCK C

CHAMPAGNE AVENUE (CLOSED BY BY-LAW 4863) (FORMERLY FIRST AVENUE)

WEST CHAMPAGNE AVENUE

LOT 9 | LOT 8 | LOT 7 | LOT 6 | LOT 5 | LOT 4 | LOT 3 | LOT 2 | LOT 1

No. 145 | No. 156

PIN 04107-0020

PIN 04107-0121

BAY GARAGE (FOUNDATION NOTED)

2 STOREY BRICK, METAL & STUCCO SIDED COMMERCIAL BUILDING

3 STOREY BRICK, CONCRETE BLOCK & STUCCO SIDED COMMERCIAL BUILDING

2 STOREY BRICK SIDED COMMERCIAL BUILDING

1 STOREY STUCCO & METAL SIDED COMMERCIAL BUILDING

BLOCK

GLADSTONE AVENUE

LORETTA AVENUE NORTH

TBM

MHSAN07 T/G=64.12 INV.=61.01
MHSTM T/G=64.24 NE.INV.=61.66 SE.INV.=61.66
MHSAN01 T/G=64.37 NE.INV.=58.86 SW.INV.=58.84
MHSTM T/G=64.46 NE.INV.=61.59 SW.INV.=58.82
MHSAN03 T/G=64.38 INV.=60.86
MHSTM03 T/G=64.39 INV.=58.85
MHSTM04 T/G=64.42 SW.INV.=62.00 SE.INV.=58.86
MHSAN04 T/G=67.51 INV.=63.95
MHSTM02 T/G=67.92 NE.INV.=5 SW.INV.=5
MHSAN05 T/G=67.05
MHSAN06
MHSAN

DC

wsp
1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

CONSULTANT:

SEAL:

CLIENT:

CLV GROUP

CLV GROUP DEVELOPMENTS INC.
485 BANK STREET, SUITE 200
OTTAWA, ON, K2P 1Z2

CLIENT REF. #: --

PROJECT:

951 GLADSTONE AVENUE AND
145 LORETTA AVENUE NORTH
MIXED-USE & RESIDENTIAL

KEY PLAN:

NORTH

ISSUED FOR - REVISION:

IS	RS	DATE	DESCRIPTION
1		2022-04-19	ISSUED FOR SITE PLAN APPLICATION

PROJECT NO: 20M-01441-00
DATE: APRIL 2024
ORIGINAL SCALE: 1:250
DESIGNED BY: JD
DRAWN BY: JD
CHECKED BY: MF
IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm

DISCIPLINE: CIVIL

TITLE: PRE-DEVELOPMENT CATCHMENT MAP

SHEET NUMBER: SK1
SHEET #: 1 OF: 2

ISSUE: ISSUED FOR REVIEW
DATE OF: 2024-04-16
REV #: 0

18526

CATCHMENT CHARATERISTICS						
	GRASSED @ C-FACTOR BELOW	GRAVEL @ C-FACTOR BELOW	ASPH/CONC @ C-FACTOR BELOW	ROOFED @ C-FACTOR BELOW		
	0.25	0.65	0.90	0.95		
CATCHMENT ID	GRASSED AREA (ha)	GRAVEL AREA (ha)	ASPH./CONC AREA (ha)	ROOFED AREA (ha)	TOTAL AREAS (ha)	WEIGHTED C-FACTOR
B1	0.027	0.000	0.071	0.123	0.22	0.85
B2	0.057	0.000	0.129	0.151	0.34	0.81
B3	0.043	0.000	0.071	0.327	0.44	0.87
TOTAL	0.127	0.000	0.271	0.602	1.000	0.85

TIME OF CONCENTRATION CALCULATION - CATCHMENT B1
(BRANSBY WILLIAM FORMULA, RUNOFF COEFFICIENT GREATER THAN 0.4)

$Tc = (0.057 * L) / (Sw^{0.2} * A^{0.1})$

$Tc = (0.057 * 32.20) / (2.40^{0.2} * 0.16^{0.1})$

Tc = 1.85 min

WHERE:

Tc = TIME OF CONCENTRATION, MINUTES	**= 1.85 min (USE MINIMUM Tc OF 10 min)**
C = RATIONAL METHOD RUNOFF COEFFICIENT	= 0.84
L = CATCHMENT LENGTH, m	= 32.20m
Sw = CATCHMENT SLOPE, %	= 2.40%
A = CATCHMENT AREA, ha	= 0.16 ha

TIME OF CONCENTRATION CALCULATION - CATCHMENT B2
(BRANSBY WILLIAM FORMULA, RUNOFF COEFFICIENT GREATER THAN 0.4)

$Tc = (0.057 * L) / (Sw^{0.2} * A^{0.1})$

$Tc = (0.057 * 39.11) / (1.81^{0.2} * 0.40^{0.1})$

Tc = 2.17 min

WHERE:

Tc = TIME OF CONCENTRATION, MINUTES	**= 2.17 min (USE MINIMUM Tc OF 10 min)**
C = RATIONAL METHOD RUNOFF COEFFICIENT	= 0.81
L = CATCHMENT LENGTH, m	= 39.11m
Sw = CATCHMENT SLOPE, %	= 1.81%
A = CATCHMENT AREA, ha	= 0.40 ha

TIME OF CONCENTRATION CALCULATION - CATCHMENT B3
(BRANSBY WILLIAM FORMULA, RUNOFF COEFFICIENT GREATER THAN 0.4)

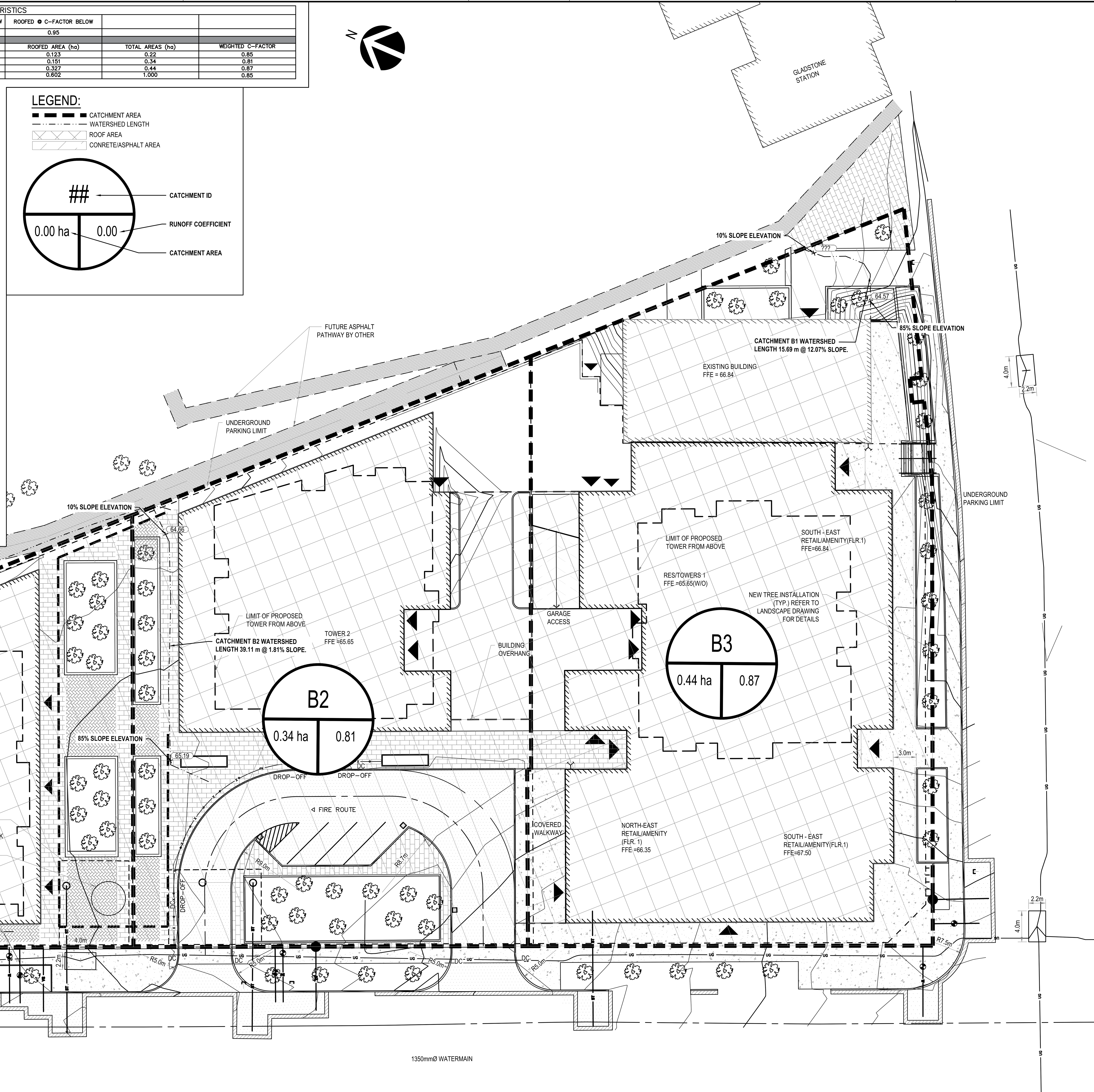
$Tc = (0.057 * L) / (Sw^{0.2} * A^{0.1})$

$Tc = (0.057 * 15.69) / (12.07^{0.2} * 0.44^{0.1})$

Tc = 0.59 min

WHERE:

Tc = TIME OF CONCENTRATION, MINUTES	**= 0.59 min (USE MINIMUM Tc OF 10 min)**
C = RATIONAL METHOD RUNOFF COEFFICIENT	= 0.87
L = CATCHMENT LENGTH, m	= 15.69m
Sw = CATCHMENT SLOPE, %	= 12.07%
A = CATCHMENT AREA, ha	= 0.44 ha



LEGEND:
CATCHMENT AREA
WATERSHED LENGTH
ROOF AREA
CONRETE/ASPHALT AREA
##
0.00 ha
0.00
CATCHMENT ID
RUNOFF COEFFICIENT
CATCHMENT AREA
GLADSTONE STATION
10% SLOPE ELEVATION
85% SLOPE ELEVATION
CATCHMENT B1 WATERSHED LENGTH 15.69 m @ 12.07% SLOPE.
EXISTING BUILDING FFE = 66.84
FUTURE ASPHALT PATHWAY BY OTHER
UNDERGROUND PARKING LIMIT
LIMIT OF PROPOSED TOWER FROM ABOVE
SOUTH - EAST RETAIL/AMENITY(FLR.1) FFE=66.84
RES/TOWERS 1 FFE =65.65(W/O)
NEW TREE INSTALLATION (TYP.) REFER TO LANDSCAPE DRAWING FOR DETAILS
B3
0.44 ha
0.87
GARAGE ACCESS
BUILDING OVERHANG
TOWER 2 FFE =65.65
CATCHMENT B2 WATERSHED LENGTH 39.11 m @ 1.81% SLOPE.
B2
0.34 ha
0.81
APPROXIMATE LOCATION OF 3:1 TIE-IN SLOPE
B1
0.22 ha
0.84
NEW STORMWATER RETENTION TANK
PROPOSED PUBLIC ART OR SCULPTURE (BY OTHERS)
DROP-OFF
FIRE ROUTE
COVERED WALKWAY
NORTH-EAST RETAIL/AMENITY (FLR. 1) FFE =66.35
SOUTH - EAST RETAIL/AMENITY(FLR.1) FFE=67.50
CATCHMENT B3 WATERSHED LENGTH 32.20 m @ 2.40% SLOPE.
OVERHANG
1350mmØ WATERMAIN

WSP
1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

CONSULTANT:

SEAL:

CLIENT:

CLV GROUP
CLV GROUP DEVELOPMENTS INC.
485 BANK STREET, SUITE 200
OTTAWA, ON, K2P 1Z2

CLIENT REF. #: –

PROJECT:

951 GLADSTONE AVENUE AND 145 LORETTA AVENUE NORTH MIXED-USE & RESIDENTIAL

KEY PLAN:

NORTH

ISSUED FOR - REVISION:

IS	RE	DATE	DESCRIPTION
1		2022-04-19	ISSUED FOR SITE PLAN APPLICATION

PROJECT NO: 20M-01441-00
DATE: APRIL 2024
ORIGINAL SCALE: 1:250
DESIGNED BY: JD
DRAWN BY: JD
CHECKED BY: MF

IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm

DISCIPLINE: CIVIL

TITLE: POST-DEVELOPMENT CATCHMENT MAP

SHEET NUMBER: SK2

SHEET #: 2 OF 2

ISSUE: ISSUED FOR REVIEW
DATE OF: 2024-04-16
REV #: 0