Stormwater Management and Servicing Report

Apartment Building
1509 Merivale Road
Nepean, Ontario

Prepared for:

Katasa Group
69, Rue Jean-Proulx unité #301
Gatineau (QC) J8V 1W2

Attention: Tanya Chowieri

LRL File No.: 200255

Revision 1: April 11, 2023
December 23rd, 2021

5430 Canotek Road | Ottawa, ON, K1J 9G2 | info@lrl.ca | www.lrl.ca | (613) 842-3434

TABLE OF CONTENTS

APPENDICES

Appendix A	**Pre-consultation / Correspondence**
Appendix B	**Water Supply Calculations**
Appendix C	**Wastewater Collection Calculations**
Appendix D	**Stormwater Management Calculations**
Appendix E	**Civil Engineering Drawings**
Drawings/Figures	**Proposed Site Plan**
	Legal Survey
	As-built

LIST OF TABLES

LIST OF FIGURES

1 INTRODUCTION AND SITE DESCRIPTION

LRL Associates Ltd. was retained by Katasa Group to complete a Stormwater Management Analysis and Servicing Brief for a proposed nine (9) storey mixed-use building located at 1509-1531 Merivale Road in Ottawa, Ontario. The legal description of the property is Part Block **F** (part 1 and 4 Plan 5R-7688) registered plan **605,** city of Ottawa.

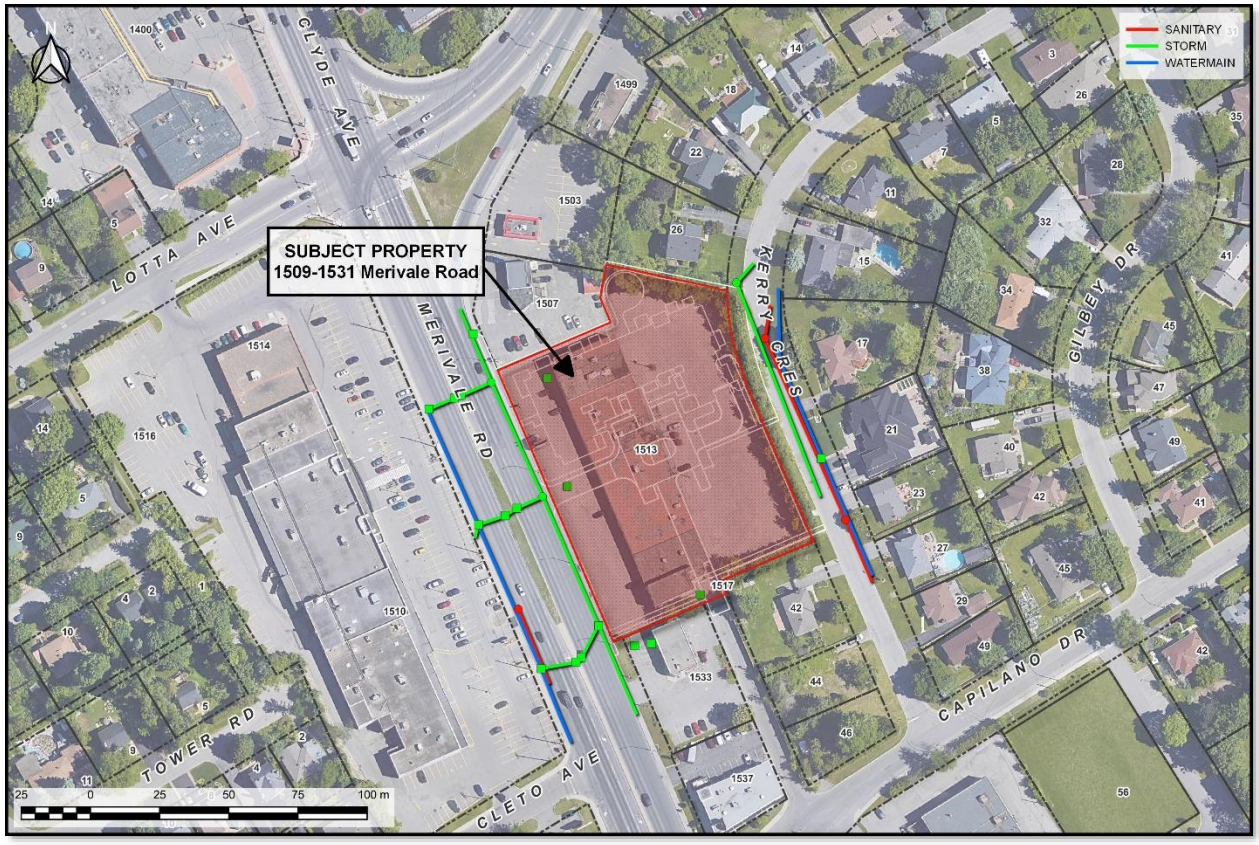


Figure 1: Arial View of Proposed Development

The site at 1509 Merivale Road has approximately 106 metres of frontage along Merivale Road and a maximum depth of approximately 87 metres. The overall lot area is approximately **0.89 ha.** Currently there is a 1 and 2 storey strip mall with 10 units facing the westerly side of the property and paved surface parking on the east and west side of the building with access from Merivale Road. Under the Zoning By-law 2008-250 the site is zoned under AM10 (Arterial Mainstreet Zone). The proposed uses of the site are in conformity with the existing zoning.

Phase 1 of the development proposes a new nine (9) storey residential apartment building that transitions down to 6-storeys, consisting altogether of two hundred and ten (210) units with underground vehicular parking. Future Phase 2 of the development contemplates a second building with approximately 210 residential units, mirroring the Phase 1 proposed building to be located on the southern portion of the property.

This report has been prepared in consideration of the terms and conditions noted above and with the civil drawings prepared for the new development. Should there be any changes in the design features, which may relate to the stormwater considerations, LRL Associates Ltd. Should be advised to review the report recommendations.

2 Existing Site and Drainage Description

The subject site measures ***0.89 ha*** and currently consists of a 1 and 2 storey strip mall retail building with 10 units, front and rear surface parking with an entrance from Merivale Road. Existing elevations of the site range between 94.36m at the northeast corner, 95.25m at the southeast corner, 95.93m at the southwest corner and 95.61m at the northwest corner of the site.

Sewer and watermain mapping, along with as-built information collected from the City of Ottawa indicate the following existing infrastructure located within the adjacent right-of-ways:

Merivale Road:

- 305 mm diameter DI watermain (south-bound lanes)
- 250 mm diameter Concrete sanitary sewer (south-bound lanes)
- 525 mm & 600 mm diameter Concrete storm sewer (north-bound lanes)

Kerry Cres:

- 200 mm diameter CI watermain
- 200 mm diameter Concrete sanitary sewer
- 300 mm & 375 mm diameter Concrete storm sewer

3 Scope of Work

As per applicable guidelines, the scope of work includes the following:

Stormwater management

- Calculate the allowable stormwater release rate.
- Calculate the anticipated post-development stormwater release rates.
- Demonstrate how the target quantity objectives will be achieved.

Water services

- Calculate the expected water supply demand at average and peak conditions.
- Calculate the required fire flow as per the Fire Underwriters Survey (FUS) method.
- Confirm the adequacy of water supply and pressure during peak flow and fire flow.
- Describe the proposed water distribution network and connection to the existing system.

Sanitary services

- Describe the existing sanitary sewers available to receive wastewater from the building.
- Calculate peak flow rates from the development.

- Describe the proposed sanitary sewer system.
- Review impact of increased sanitary flow on downstream sanitary sewer.

4 REGULATORY APPROVALS

An MECP Environmental Compliance Approval is expected to be required for the proposed extension of municipal sanitary sewer within Merivale Road. A Permit to Take Water is not anticipated to be required for pumping requirements for sewer installation. The Rideau Valley Conservation Authority will need to be consulted in order to obtain municipal approval for site development. No other approval requirements from other regulatory agencies beyond the City of Ottawa are anticipated.

5 WATER SUPPLY AND FIRE PROTECTION

5.1 Existing Water Supply Services and Fire Hydrant Coverage

The subject property lies within the City of Ottawa ME water distribution network pressure zone. Refer to ***Appendix B*** for the water network pressure zone map.

The subject property is located within proximity to an existing 305 mm dia. ductile iron watermain within the Merivale Road right-of-way and a 200 mm dia. cast iron watermain within the Kerry Crescent right-of-way.

There are currently four (4) existing fire hydrants near the property: Refer to ***Appendix B*** for the location of fire hydrants.

5.2 Water Supply Servicing Design

The subject property is proposed to be serviced via 150mm diameter PVC DR-18 service lateral connected to the 200mm diameter CI watermain located within Kerry Crescent and a150mm diameter PVC DR-18 service lateral connected to the 300mm diameter DI watermain located within Merivale Road. Refer to Site Servicing Plan C401 in ***Appendix E*** for servicing layout.

Table 1 summarizes the City of Ottawa Design Guidelines design parameters utilized in the preparation of the water demand estimate.

Table 1: City of Ottawa Design Guidelines Design Parameters

Design Parameter	Value
Residential Bachelor / 1 Bedroom Apartment Population	1.4 P/unit
Residential 2 Bedroom Apartment Population	2.1 P/unit
Residential Average Apartment Population	1.8 P/unit
Average Daily Demand	280 L/d/per
Minimum Depth of Cover	2.4 m from top of watermain to finished grade

Desired operating pressure range during normal operating conditions	350 kPa and 480 kPa
During normal operating conditions pressure must not drop below	275 kPa
During normal operating conditions pressure shall not exceed	552 kPa
During fire flow operating conditions pressure must not drop below	140 kPa
**Table updated to reflect technical Bulletin ISDTB-2018-02*	

The interior layout and architectural floor plans have been reviewed, and it was determined that the proposed phase one building will house:

- 169 studio/one bedroom apartments, and
- 41 two-bedroom apartments.

Anticipated demands from future Phase 2 of the development were also accounted for in the design of Phase 1. Hence, water domestic demands include the future contemplated demand of an additional 210 average apartments.

Based on the City of Ottawa Design guidelines for population projection, this translates to approximately 700.7 residents.

Table 2 below summarizes the proposed development as interpreted using table 4.1 of the City of Ottawa Design Guidelines.

Table 2: Development Residential Population Estimate

Proposed Unit type	Persons Per Unit	Number of Units	Population
Studio/1 Bedroom	1.4	169	236.6
2 Bedroom Apartment	2.1	41	86.1
Phase two average apartments	1.8	210	378.0
	Total Residential Population		**700.7**

The required water supply requirements for the residential units in proposed building have been calculated using the following formula:

Where: $Q = (q \times P \times M)$

q = average water consumption (L/capita/day)

P = design population (capita)

M = Peak factor

Using a calculated Maximum Day Factor and Peak Hour factor of 2.5 and 2.2 respectively as per Table 4-2 in the *City of Ottawa Design Guidelines – Water Distribution*, anticipated demands were calculated as follows:

- Average daily domestic water demand is **2.27** L/s,
- Maximum daily demand is **5.68** L/s, and
- Maximum hourly is **12.49** L/s.

Refer to ***Appendix B*** for water demand calculations.

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***. Table 3 below summarizes boundary conditions for the proposed development.

Table 3: Summary of Anticipated Demands and Boundary Conditions

Design Parameter	Anticipated Demand (L/s)	Boundary Conditions @ Merivale Road * (m H_20 / kPa)	Boundary Conditions @ Kerry Crescent ** (m H_20 / kPa)
Average Daily Demand	2.27	146.5 / 501.8	146.5 / 508.6
Max Day + Fire Flow (per FUS)	5.68 + 166.7	148.5 / 521.4	133.8 / 384.1
Peak Hour	12.49	158.2 / 616.6	158.2 / 623.4
** Assumed Ground elevation at connection point = 95.35 m.* *** Assumed Ground elevation at connection point = 94.65 m.*			
Water demand calculation per City of Ottawa Water Design guidelines. See Appendix B for details.			

As shown above, pressures from boundary conditions exceed the minimum required threshold in all scenarios. However, pressure reducing valves may be required as pressures in the Average Daily demand scenario exceed the maximum recommended outlined in Table 1.

As this development is proposed to be a high-rise building, the requirement for pressure reducing valves or booster pumps on the upper floors and for the sprinkler system should be addressed in the detailed design stage.

The estimated fire flow for the proposed buildings was calculated in accordance with *ISTB-2018-02*. The following parameters were provided by the Architect, see ***Appendix A*** for collaborating correspondence:

- Type of construction – Non-combustible construction
- Occupancy type – Limited Combustibility
- Sprinkler Protection – Standard Fully Supervised Sprinkler System

The fire flow demand was estimated to be **10,000 L/min**, see ***Appendix B*** for details.

There are four (4) existing fire hydrants in proximity to the proposed building that are available to provide the required fire flow demand of 10,000 L/min. Refer to ***Appendix B*** for fire hydrant locations. Table 4 below summarizes the aggregate fire flow of the contributing hydrants in close proximity to the proposed development based on Table 18.5.4.3 of *ISTB-2018-02*.

Table 4: Fire Protection Summary Table

Building	Fire Flow Demand (L/min)	Fire Hydrants(s) within 75m	Fire Hydrant(s) within 150m	Fire Hydrant(s) within 200m	Available Combined Fire Flow (L/min)
Proposed 9 Storey Building	10,000	1	0	3	(1 x 5678) + (3 x 2839) = 14,195

The total available fire flow from contributing hydrants is equal to **14,195 L/min** which will provide adequate fire flow for the proposed development. 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.

The proposed water supply design conforms to all relevant City Guidelines and Policies.

6 SANITARY SERVICE

6.1 Existing Sanitary Sewer Services

There is an existing 250mm dia. concrete sanitary sewer within Merivale Road across from the subject site where the wastewater flow is ultimately conveyed to the Lynwood Collector trunk sewer. Refer to ***Appendix C*** for the trunk sewer map. There is another existing 200mm dia. concrete sanitary sewer within Kerry Crescent which flows are conveyed to the Borden Side Road Collector trunk sewer.

The pre-development conditions of the lot were reviewed to calculate a total wet wastewater flow of **0.73 L/s** based on assumed conditions of the existing 10-unit commercial strip mall.

The ultimate post development total flow from Phase 1 and contemplated future Phase 2 was calculated to be **9.14 L/s** as a result of the proposed residential population (700.7 residents) and a small portion of infiltration. Refer to ***Appendix C*** for further information on the calculated sanitary flows. The post development conditions increase existing wastewater flow by approximately **8.41 L/s** as a result of additional residential population from pre-development conditions.

Based on inverts from the City of *Ottawa Water and Wastewater networks – interactive map* website, the existing 250mm dia. concrete sanitary sewer within Merivale Road is sloped at 0.34% and is calculated to have a maximum capacity of **34.68 L/s**. The proposed increase in total wastewater flow of **9.14 L/s** represents approximately 26% of existing maximum capacity. The additional flow created by the proposed development (including future phase) is at the most upstream portion of the existing local sewer network, hence it is anticipated that there will be little to no additional contributions at this section of the network.

6.2 Sanitary Sewer Servicing Design

The proposed development will be serviced via a 200mm dia. sanitary service lateral which will connect to a new sanitary manhole (SAN MH 01) on the west-side of Merivale Road, a length of 250mm dia. sanitary pipe will extend the existing municipal sanitary network by connecting the new sanitary manhole to the existing sanitary structure to the south. There will also be a sanitary maintenance hole (SAN MH02) located just within the site boundary.

Refer to LRL drawing C401 in ***Appendix E*** for the proposed sanitary servicing.

The parameters used to calculate the anticipated sanitary flows are:

- residential average population per unit of
  - 1.4 person for single units
  - 2.1 persons for two-bedroom units
- an anticipated second phase value of 210 apartments with an average population unit of 1.8 persons
- a residential daily demand of 280 L/p/day
- a residential peaking factor of 3.9
- a total infiltration rate of 0.33 L/s/ha

Based on these parameters and the total site area of 0.89 ha, the total anticipated wet sanitary flow was estimated to be **9.14 L/s**.

Refer to ***Appendix C*** for the site sanitary sewer design sheet.

7 STORMWATER MANAGEMENT

7.1 Existing Stormwater Infrastructure

Stormwater runoff from the subject property is tributary to the City of Ottawa sewer system as such, approvals for the proposed development within this area are under the approval authority of the City of Ottawa.

In pre-development conditions, the stormwater runoff from the front of the building (west) would be collected via catch basins within the parking lot to be conveyed to the municipal storm sewer within the Merivale Road right-of-way. Existing storm sewers lie within Merivale Road, sized from 450mm diameter at the southern end of the site, up to 600mm diameter at the northern end of the site. The stormwater runoff from the rear of the building would flow uncontrolled overland towards the Kerry Crescent right-of-way. There is an offsite watershed from the property located south of the subject site that drains onto the property and is ultimately directed towards Merivale Road.

Refer to ***Appendix E*** for pre-development/ existing watershed information.

7.2 Design Criteria

The stormwater management criteria for this development are based on the pre-consultation with City of Ottawa officials, the City of Ottawa Sewer Design Guidelines including City of Ottawa

Stormwater Management Design Guidelines, 2012 (City standards), as well as the Ministry of the Environment's Stormwater Planning and Design Manual, 2003 (SWMP Manual).

7.2.1 Water Quality

The subject property lies within the Ottawa River West sub-watershed and is therefore subject to review by the Rideau Valley Conservation Authority (RVCA). It was determined that no further treatment is required for stormwater runoff from the proposed development. Correspondence with RVCA is included in ***Appendix A***.

7.2.2 Water Quantity

Based on pre-consultation with the city, correspondence included in ***Appendix A***, the following stormwater management requirements were identified for the subject site:

- Meet an allowable release rate based on the existing Rational Method Coefficient equal to 0.50, employing the City of Ottawa IDF parameters for a 2-year storm with a calculated time of concentration equal to or greater than 10 minutes; and

- Attenuate all storms up to and including the City of Ottawa 100-year storm event on site.

It was determined that the allowable release rate for the subject site would be **136.02 L/s** for all storms up to and including the 100-year storm event. This release rate combines the pre-development 2-year allowable release rate of 94.96L/s from the onsite flows (EWS-01 and EWS-02) and the 100-year allowable release rate of 41.06L/s from the offsite flows (EWS-03). EWS-03 will not be disturbed and will remain as is in post development conditions. Refer to ***Appendix D*** for all storm calculations.

7.3 Method of Analysis

The Modified Rational Method has been used to calculate the runoff rate from the site to quantify the detention storage required for quantity control of the development. Refer to ***Appendix D*** for storage calculations.

7.4 Proposed Stormwater Quantity Controls

The proposed stormwater management quantity control for this development will be accomplished through the use of an underground cistern, an inlet control device (ICD) installed at the outlet pipe within Storm CBMH02 and the use of roof drains.

The existing site is delineated by catchments: EWS-01 (0.433 ha), which currently drains uncontrolled in the rear of the property towards Kerry Crescent and EWS-02 (0.456 ha) which is collected by catch basins within the front parking area and is assumed to drain uncontrolled to the existing storm sewer within Merivale Road. Flows from an existing external watershed, delineated by EWS-03 (0.095 ha), from the adjacent property to the south, sheet flows towards the subject property and is collected via an existing catch basin at the southern end of the existing building and is ultimately directed to Merivale Road.

Storage required because of quantity control measures will be accomplished through the use of roof storage, underground cistern storage and surface ponding within the landscaped areas located at CBMH01 and CBMH02.

The subject site is proposed to be serviced via one outlet. A single 375mm diameter sewer will carry flows from the foundation drain, underground cistern, roof drains and controlled flows from the landscaped areas to the existing 525mm diameter storm sewer within Merivale Road.

The proposed site storm sewer and stormwater management system are shown on drawings C401 and C601 found in **Appendix E**. The detailed calculations, including the design sheet, can be found in ***Appendix D***.

The proposed site development has been analyzed and post development watersheds have been allocated.

- WS-01 (0.140 ha), which consists of pavers and grass cover, will flow uncontrolled towards the Kerry Crescent right-of-way.
- WS-02 (0.044ha), which consists of pavers, grass, concrete and asphalt areas, will flow uncontrolled towards the Merivale Road right-of-way.
- WS-03 (0.178ha), which consists of the roof envelope, will be controlled using roof drains and directed downstream of the underground cistern.
- WS-04 (0.017ha), which consists of the concrete parkade ramp, will be directed to a trench drain that will ultimately direct flows to the underground cistern.
- WS-05 (0.163ha), which consists of grass, pavers, concrete and asphalt areas, is located above the underground parkade. Flows from this area will be directed to two area drains, which will ultimately direct flows to the underground cistern.
- WS-06 (0.138ha), consists of concrete and landscaped areas. Flows from this watershed will be directed to STM CBMH01 and will ultimately be controlled through an ICD located within STM CBMH02.
- EWS-03 (0.095ha), which includes the existing asphalt and grass areas on the adjacent property to the south of the subject site will flow into STM CB01 and will ultimately be controlled through an ICD located within STM CBMH02.
- WS-07 (0.027ha), consists of an asphalt onsite access road. Flows from this watershed will be directed towards STM CB01 and will ultimately be controlled through an ICD located within STM CBMH02.
- WS-08 (0.182ha), consists of concrete and landscaped areas. Flows from the watershed will be directed to STM CBMH02 and controlled through an ICD located within STM CBMH02.

Table 5 and Table 6 below summarize the pre-development and post-development drainage areas. Calculations can be seen in ***Appendix D.***

Table 5: Pre-Development Drainage Areas

Watershed	Total Area (ha)	Weighted Runoff Coefficient
EWS-01 (Uncontrolled to Kerry Crescent)	0.433	0.81
EWS-02 (Uncontrolled to Merivale Road)	0.456	0.90
EWS-03 (Offsite Flows)	0.095	0.87
Total	**0.984**	**0.84**

Table 6: Post-Development Drainage Areas

Watershed	Total Area (ha)	Weighted Runoff Coefficient	100 Year Weighted Runoff Coefficient (25% increase)
WS-01(Uncontrolled to Kerry Crescent)	0.140	0.35	0.43
WS-02 (Uncontrolled to Merivale Road)	0.044	0.49	0.61
WS-03 (Roof Controlled)	0.178	0.90	1.00
WS-04 (Ramp Controlled)	0.017	0.90	1.00
WS-05 (Controlled - Area Over Parkade)	0.163	0.67	0.83
WS-06 (Controlled - East Landscaped Area)	0.138	0.25	0.31
WS-07 (Controlled - Onsite Road)	0.027	0.90	1.00
WS-08 (Controlled - West Landscaped Area)	0.182	0.23	0.29
EWS-03 (Offsite Flows)	0.095	0.87	1.00
Total	**0.984**	**0.55**	**0.68**

Allowable Release Rate

In existing site conditions 0.433ha (EWS-01) of the site is being directed toward Kerry Crescent and 0.551ha (EWS-02 & EWS-03) of the site including the offsite watershed is being directed towards Merivale Road. For design purposes, it was determined that the total allowable release rate for the site would be equal to 136.02L/s. This release rate considers the entire site. Since a portion of the site is being directed to Kerry Crescent and a portion is being directed to Merivale Road in the existing conditions, calculations were conducted to confirm that flows in post-development do not exceed flows in existing conditions to Kerry Crescent and Merivale Road. Table 7 below outlines the existing 2-year and 100-year release rates to Merivale Road and Kerry Crescent.

Table 7: Pre-Development Release Rates

Watershed	Total Area (ha)	$\sum R_{2\&5}$	$\sum R_{100}$	Q=2.78CIA (L/s) 2-YEAR	Q=2.78CIA (L/s) 100-YEAR
EWS-01 (Uncontrolled to Kerry Crescent)	0.433	0.81	1.0	74.9	215.1
EWS-02 (Uncontrolled flows to Merivale Road)	0.456	0.90	1.0	87.7	226.5
EWS-03 (Offsite Uncontrolled Flows to Merivale Road)	0.095	0.87	1.0	17.6	47.1
Total Flows to Merivale Road	0.551	0.89	1.0	**105.3**	**273.6**
Total Flows to Kerry Crescent	0.433	0.81	1.0	**74.9**	**215.1**
Total Site	**0.98**	**0.86**	**1.0**	**180.2**	**488.7**

EWS-02 and EWS-03 have a combined weighted runoff coefficient of 0.89 and an area of 0.551ha. It was determined that the existing release rates to Merivale Road in the 2-year and 100-year storms are equal to 105.3L/s and 273.6L/s respectively. In post development, the release rates to Merivale Road in the 2-year and 100-year storms are equal to 97.48L/s and 106.2L/s respectively.

EWS-01 has a weighted runoff coefficient of 0.81 and an area of 0.433ha. It was determined that the existing release rates to Kerry Crescent at the 2-year and 100-year storm are equal to 74.9L/s and 215.1L/s respectively. In post development, the release rates to Kerry Crescent in the 2-year and 100-year storms are equal to 10.36L/s and 30.11L/s.

Table 8 below outlines the post-development 2-year and 100-year release rates to Merivale Road and Kerry Crescent.

Table 8: Post-Development Release Rates

Post Development Flows to Merivale Road		
	2-Year Storm Flow (L/s)	**100-year Storm Flow (L/s)**
Uncontrolled	4.57	13.29
Controlled Cistern	50.35	50.35
Controlled ICD	35.00	35.00
Controlled Roof	7.56	7.56
Total	**97.48**	**106.20**
Post Development Flows to Kerry Crescent		
	2-Year Storm Flow (L/s)	**100-year Storm Flow (L/s)**
Uncontrolled	**10.36**	**30.11**

Table 9 below compares the 2-year and 100-year pre and post development release rates to Merivale Road and Kerry Crescent.

Table 9: Comparison of Pre and Post Development Rates

Release Rates		
	Merivale Road	**Kerry Crescent**
2-Year Pre-Development Flow (L/s)	105.3	74.9
2-Year Post Development Flow (L/s)	97.48	10.36
100-Year Pre-Development Flow (L/s)	273.6	215.1
100-Year Post Development Flow (L/s)	106.20	30.11

As shown in table 9, the flows in post-development conditions at the 2-year and 100-year storms to Merivale Road and Kerry Crescent have been significantly reduced from flows in existing conditions.

Storage

To achieve storage requirements in the 100-year storm the post development stormwater controls propose the use of roof storage, underground cistern storage and surface storage.

WS-03 will be controlled through roof drains. It was determined that a total of **72.60m^3** of rooftop storage would be required at the 100-Year storm event. The proposed building's rooftop was analysed, and it was determined that there would be **81.22m^3** of available rooftop storage. A total of **twelve (12)** roof drains would be used, each roof drain would have a restricted discharge rate of **0.63L/s**, resulting in a total release rate from the roof (WS-03) of **7.56 L/s** with a proposed head

of **0.15m**. The proposed roof drains are to be WATTS Adjustable Accutrol RD-100-A1 with fully closed weir openings. For rooftop storage, flow calculations and detailed information regarding the selected roof drain type and flow restrictor, refer to ***Appendix D***. For additional details on the roof storage areas refer to drawing *C.601* in **Appendix E.**

Surface Storage:

Flows from WS-06, WS-07, WS-08 and EWS-03 will ultimately be controlled to a maximum release rate of **35.00 L/s** by using a **HYDROVEX 200VHV-2 ICD** at the outlet pipe within STM CBMH02. At the release rate of 35.00L/s a storage volume of **50.35m^3** will be required at the 100-year storm, a storage volume of **10.83m^3** will be required at the 5-year storm and a storage volume of **2.46m^3** of storage will be required at the 2-year storm. There is a total of **387.73m^3** of available surface storage. There will be no surface ponding in the 2-year event as there is sufficient storage within the underground sewers and manhole structures. There will be no surface ponding in WS-07 for the 2-year, 5-year or 100-year storm events. Ponding extents for the 5-year and 100-year storm events will be within the grassed landscaped areas and have been delineated in drawing C.601 found in **Appendix E.**

Cistern Storage:

WS-04 and WS-05 will be directed to the underground cistern. Flows from the cistern will be controlled to a rate of **50.06L/s** and a cistern storage volume of **16.32m^3** of storage will be required.

All controlled flow from the site will be connected to STM MH01 and carried through a single 375mm diameter sewer that will connect to the 525mm diameter sewer connected within Merivale Road.

Table 10 below summarizes the release rates and storage volumes required to meet the allowable release rate of **136.02 L/s** for the 100-year storm event.

Table 10: Stormwater Release Rate and Storage Volume Summary (100-Year)

Summary of Release Rates and Storage Volumes					
Catchment Areas	**Drainage Areas (Ha)**	**Combined Areas (Ha)**	**100-Year Release Rate (L/s)**	**100-Year Required Storage (m^3)**	**Total Available Storage (m^3)**
WS-01(Roof)	0.178	0.178	7.56	65.93	81.22
WS-04 (Ramp Controlled to Cistern)	0.017	0.180	50.06	16.32	18.00
WS-05 (Controlled - Area Over Parkade to Cistern)	0.163				
WS-06 (Controlled - East Landscaped Area Controlled Through ICD)	0.138	0.441	35.00	50.35	387.73
WS-07 (Controlled - Onsite Road Controlled Through ICD)	0.027				
WS-08 (Controlled - West Landscaped Area Controlled Through ICD)	0.182				

EWS-03 (Offsite Flows Controlled Through ICD)	0.095				
Total Controlled	**0.800**	**0.800**	**92.62**	**132.61**	**486.95**
WS-01(Uncontrolled To Kerry Crescent)	0.140	0.140	30.11	0.00	0.00
WS-02 (Uncontrolled To Merivale Road)	0.044	0.044	13.29	0.00	0.00
Total Uncontrolled	**0.044**	**0.184**	**43.40**	**0.00**	**0.00**
Total	**0.844**	**0.984**	**136.02**	**132.61**	**486.95**

To meet the allowable release rate of **136.02 L/s,** a total of **132.61 m^3** of storage will be required (**65.93 m^3** of roof storage, **16.32 m^3** of cistern storage and **50.35 m^3** of surface storage), the subject site will have a total of **486.95 m^3** of available storage (**81.22 m^3** of roof storage, **18.00 m^3** of Cistern storage and **387.73 m^3** of surface storage). The 5-year and 100-year maximum ponding depths can be found on drawing "C601 – Stormwater Management Plan" of ***Appendix E***. There will be no surface ponding at the 2-year storm event as there is sufficient capacity within the 300mm diameter storm sewer and maintenance hole structures.

8 Erosion and Sediment Control

During construction, erosion and sediment controls will be provided primarily via a sediment control fence to be erected along the perimeter of the site where runoff has the potential of leaving the site. Inlet sediment control devices are also to be provided in any catch basin and/or manholes on and around the site that may be impacted by the site construction. Construction and maintenance requirements for erosion and sediment controls are to comply with Ontario Provincial Standard Specification OPSS 577.

Best management practices (BMPs) shall be undertaken during the construction phase. These BMPs aim to minimize soil erosion, sedimentation, and other negative impacts on water quality and natural habitats. Some examples of BMPs for erosion and sediment control are;

- Controlling mud tracking: By means of installing, maintaining, and using stabilized construction entrances and exits at all access locations. Mud matts shall be maintained and cleaned on a regular basis.
- Inlet sediment control devices: To prevent surface erosion from entering any storm sewer system during construction, filter bags will be placed under grates of nearby catchbasins and structures.
- Establish vegetation: Vegetation, such as grasses and trees, can help stabilize soil and prevent erosion. In areas where vegetation is not present, consider planting native species that are well adapted to the local soil and climate conditions.
- Install silt fences: Silt fences are permeable barriers made of geotextile fabric that are used to trap sediment and prevent it from entering nearby waterways.

- Implement erosion control blankets: Erosion control blankets are made of biodegradable materials such as straw or coconut fiber and can be used to protect soil from erosion and promote vegetation growth.
- Use sediment basins: Sediment basins are temporary detention ponds that capture sediment and slow down water flow, allowing sediment to settle out before the water is discharged.
- Manage construction activities: Proper management of construction activities is essential to minimize soil disturbance and sedimentation. This may include controlling runoff from disturbed areas, using proper excavation techniques, and minimizing the amount of time that soil is exposed.
- Implement good housekeeping practices: This includes properly managing and disposing of waste materials, regularly maintaining equipment to prevent leaks and spills, and keeping work areas clean and free of debris.

It's important to note that the specific BMPs used for erosion and sediment control may vary depending on the site conditions and project requirements. Therefore, it's important to ensure that the appropriate BMPs are selected and implemented for this site.

Refer to drawing C101 in ***Appendix E*** for erosion and sediment control details.

9 CONCLUSION

This Stormwater Management and Servicing Report for the development proposed at 1509 Merivale Road presents the rationale and details for the servicing requirements for the subject property.

In accordance with the report objectives, the servicing requirements for the development are summarized below:

Water Service

- The maximum required fire flow was calculated at **10,000 L/min** using the FUS method.
- There are four (4) existing fire hydrants available to service the proposed development. They will provide a combined fire flow of **14,195 L/min** to the site.
- The new development/expansion will be serviced by two (2) new connections: a new 150mm diameter water service to be connected to the existing 200mm diameter watermain within Kerry Crescent and a new 150mm diameter water service to be connected to the existing 300mm diameter watermain within Merivale Road.
- Boundary conditions received from the City of Ottawa indicate that sufficient pressure is available to service the proposed site.

Sanitary Service

- The anticipated sanitary flow from the proposed development is **9.14 L/s.**
- The proposed development will be serviced by a 200mm dia. sanitary service lateral which will connect to a new sanitary manhole on Merivale Road.
- From the new sanitary manhole on Merivale Road, a length of 250mm diameter sanitary pipe will extend the existing municipal sanitary network by connecting to the existing sanitary structure to the south.

Stormwater Management

- Stormwater quality controls are not required as per consultation with the RVCA.
- The storm water release rates from the proposed development will meet the calculated allowable release rate of **136.02 L/s.**
- Stormwater quantity control objectives will be met through on-site storm water surface ponding, roof storage and cistern sub-surface storage.
- External flows entering the site from the south property, which are delineated as EWS-01, have been taken into consideration to calculate the allowable release rate and have been accounted for in post development conditions.

10 REPORT CONDITIONS AND LIMITATIONS

The report conclusions are applicable only to this specific project described in the preceding pages. Any changes, modifications or additions will require a subsequent review by LRL Associates Ltd. to ensure the compatibility with the recommendations contained in this document. If you have any questions or comments, please contact the undersigned.

Prepared by:
LRL Associates Ltd.

Virginia Johnson, P. Eng.
Civil Engineer

Tamara Harb, EIT
Civil EIT

APPENDIX A

Pre-consultation / Correspondence

DEVELOPMENT SERVICING STUDY CHECKLIST	
Project #: 200295	
Date: 2021-12-17	
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 which individual developments must adhere.	Section 1
Summary of Pre-consultation Meetings with City and other approval agencies.	Appendix A
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.	Sections: 5.1, 6.1, 7.1
Statement of objectives and servicing criteria.	Section 1
Identification of existing and proposed infrastructure available in the immediate area.	Sections: 5.1, 6.1, 7.1
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).	Section 7
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.	Drawing C301 / Appendix E
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.	Section 1
Reference to geotechnical studies and recommendations concerning servicing.	Drawing C401 / Appendix E
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	Drawing C401 / Appendix E

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 5.1
Identification of system constraints	Section 5.1
Identify boundary conditions	Section 5.2
Confirmation of adequate domestic supply and pressure	Section 5.2
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 5.2
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.	Section 5.2
Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	Section 5.2
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 5.2
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.	Section 5.2
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 5.2
Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	Appendix B
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 6.2
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 6.1

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 6.2
Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	Section 6.2 / Appendix C
Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 6.2
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*
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 7.1
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 7.2.2
Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 7.2.1
Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 7.4
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 (1:2 year return period) and major events (1:100 year return period).	Section 7.4

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 7.4 / Appendix D
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.	Appendix D
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 Identification of municipal drains and related approval requirements.	*N/A*
Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 7.4
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.	Section 8.0
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 Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.	*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 9.0
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.	Noted
All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	Noted

Mike Allen

From: Robert Verch <rverch@rlaarchitecture.ca>
Sent: June 24, 2021 11:50 AM
To: Amr Salem; Ashwani Kumar
Cc: Rachel Irving-Beer
Subject: 1618 - 1509 Merivale - Fireflow Assumptions to be confirmed

The current stat sheet shows a total construction area (above grade) of 158,101 sq. ft.

We should not use the roof for water storage. We will need a cistern anyways so we can simply make it larger. Plus the roof will have amenity terrace on it. We can not store water on a finished amenity area.

Rob

From: Amr Salem <asalem@lrl.ca>
Sent: June-23-21 5:21 PM
To: Robert Verch <rverch@rlaarchitecture.ca>; Ashwani Kumar <akumar@rlaarchitecture.ca>; Victoria McCartney <vmccartney@rlaarchitecture.ca>
Cc: Rachel Irving-Beer <rirvingbeer@rlaarchitecture.ca>
Subject: RE: 1509 Merivale - Fireflow Assumptions to be confirmed

Thanks Rob,

Can you guys confirm the gross floor area?

I also anticipate we'll utilize roofstop storage - and so I'll need the roof plan in CAD showing the area drain locations, extents of rooftop storage areas, and scupper locations per OBC.

Thanks,

Amr Salem
B.Eng, Civil Engineering Services
LRL Engineering
5430 Canotek Road
Ottawa, Ontario K1J 9G2
T (613) 842-3434 or (877) 632-5664 ext 248
F (613) 842-4338
E asalem@lrl.ca
W www.lrl.ca

From: Robert Verch <rverch@rlaarchitecture.ca>
Sent: June 21, 2021 3:53 PM
To: Ashwani Kumar <akumar@rlaarchitecture.ca>; Amr Salem <asalem@lrl.ca>; Victoria McCartney

<vmccartney@rlaarchitecture.ca>
Cc: Rachel Irving-Beer <rirvingbeer@rlaarchitecture.ca>
Subject: 1509 Merivale - Fireflow Assumptions to be confirmed

Yes this building will have a “fully supervised sprinkler system”
The ISO class is 3.

Total floor area:??? How is the stat sheet coming, do we need one?

Rob

From: Ashwani Kumar <akumar@rlaarchitecture.ca>
Sent: June-21-21 3:28 PM
To: Amr Salem <asalem@lrl.ca>; Victoria McCartney <vmccartney@rlaarchitecture.ca>
Cc: Robert Verch <rverch@rlaarchitecture.ca>; Rachel Irving-Beer <rirvingbeer@rlaarchitecture.ca>
Subject: RE: (LRL200255) - 1509 Merivale - Fireflow Assumptions to be confirmed

Hello Amr,

I have copied Rob and Rachel on this email who are the lead architects on this project. They will be able to answer your questions.

Ashwani Kumar *B.Arch, MCP, LEED® Green Associate*
Urban Designer
RLA Architecture
Tel: 613.724.9932 x 313
Toll Free: 888.724.9932

From: Amr Salem <asalem@lrl.ca>
Sent: June 18, 2021 10:10 AM
To: Victoria McCartney <vmccartney@rlaarchitecture.ca>; Ashwani Kumar <akumar@rlaarchitecture.ca>
Subject: (LRL200255) - 1509 Merivale - Fireflow Assumptions to be confirmed

Good morning Victoria & Ashwani,

I believe you’re the lead architects on this file, please direct me to the right contact if not.

I’m looking to confirm a few assumptions that will help us determine water and fireflow demands for the proposed development;

- Please confirm unit stats below;

UNIT STATISTICS	
STUDIO	19
1 BEDROOM UNIT	101
1 BEDROOM + DEN UNIT	39
2 BEDROOM UNIT	41
2 BEDROOM + DEN UNIT	3
TOTAL	203

- Can you please confirm the total floor area of the building is **11,753.2 m2**

- Can you confirm if *fully supervised sprinkler system* is proposed? Definition of supervised sprinkler system as per below;

Supervised System definition:

Code [10], the National Fire Protection Association (NFPA) describes "supervision" of sprinkler systems as requiring two types of signals:

- a distinctive supervisory signal to indicate conditions that could impair the satisfactory operation of the sprinkler system (a fault alarm), which is to sound and be displayed, either at a location within the building that is constantly attended by qualified personnel (such as a security room), or at an approved remotely located receiving facility (such as a monitoring facility of the sprinkler system manufacturer); and
- a water flow alarm to indicate that the sprinkler system has been activated, which is to be transmitted to an approved, proprietary alarm-receiving facility, a remote station, a central station or the fire department.

- Would you be able to provide the **ISO class** per ISO Guide sections 1, 2 and 3. I have included a brief summary of ISO Guide (review chapter 2 for construction types) as well as the section from the City's technical bulletin. Note that ISO refers only to fire-resistive for fire ratings not less than 1-hour.

A. *Determine the type of construction.*

- Coefficient *C* in the FUS method is equivalent to coefficient *F* in the ISO method:

Correspondence between FUS and ISO construction coefficients

FUS type of construction	ISO class of construction	Coefficient *C*
Fire-resistive construction	Class 6 (fire resistive)	0.6
	Class 5 (modified fire resistive)	0.6
Non-combustible construction	Class 4 (masonry non-combustible)	0.8
	Class 3 (non-combustible)	0.8
Ordinary construction	Class 2 (joisted masonry)	1.0
Wood frame construction	Class 1 (frame)	1.5

However, the FUS definition of fire-resistive construction is more restrictive than those of ISO construction classes 5 and 6 (modified fire resistive and fire resistive). FUS requires structural members and floors in buildings of fire-resistive construction to have a fire-resistance rating of 3 hours or longer.

- With the exception of fire-resistive construction that is defined differently by FUS and ISO, practitioners can refer to the definitions of the ISO construction classes (and the supporting definitions of the types of materials and assemblies that make up the ISO construction classes) found in the current ISO guide [4] (see Annex i) to help select coefficient *C*.
- To identify the most appropriate type of construction for buildings of mixed construction, the rules included in the current ISO guide [4] can be followed (see Annex i). For a building to be assigned a given classification, the rules require ⅔ (67%) or more of the total wall area and ⅔ (67%) or more of the total floor and roof area of the building to be constructed according to the given construction class or a higher class.
- New residential developments (less than 4 storeys) are predominantly of wood frame construction ($C = 1.5$) or ordinary construction ($C = 1.0$) if exterior walls are of brick or masonry. Residential buildings with exterior walls of brick or masonry veneer and those with less than ⅔ (67%) of their exterior walls made of brick or masonry are considered wood frame construction ($C = 1.5$).

Please feel free to reach out if you have questions.

Thanks,

LRL
ENGINEERING | INGÉNIERIE

Amr Salem
B.Eng, Civil Engineering Services
LRL Engineering
5430 Canotek Road
Ottawa, Ontario K1J 9G2
T (613) 842-3434 or (877) 632-5664 ext 248
F (613) 842-4338

Amr Salem

From: Eric Lalande <eric.lalande@rvca.ca>
Sent: June 18, 2021 3:47 PM
To: Amr Salem
Subject: RE: (LRL200255) - 1509 Merivale Road - SWM Quality Control Requirements

Hi Amr,

The RVCA does not require water quality protection based on the draft phase 1 plan, however encourage best management practices to promote on-site design where available.

Thanks,

Eric Lalande, MCIP, RPP
Planner, RVCA
613-692-3571 x1137

From: Jamie Batchelor <jamie.batchelor@rvca.ca>
Sent: Thursday, June 17, 2021 4:38 PM
To: Eric Lalande <eric.lalande@rvca.ca>
Subject: FW: (LRL200255) - 1509 Merivale Road - SWM Quality Control Requirements

Hi Eric,

This would be in your area.

Jamie Batchelor, MCIP, RPP
Planner, ext. 1191
Jamie.batchelor@rvca.ca

Rideau Valley Conservation Authority
3889 Rideau Valley Drive
PO Box 599, Manotick ON K4M 1A5
T 613-692-3571 | 1-800-267-3504 **F** 613-692-0831 | www.rvca.ca

---

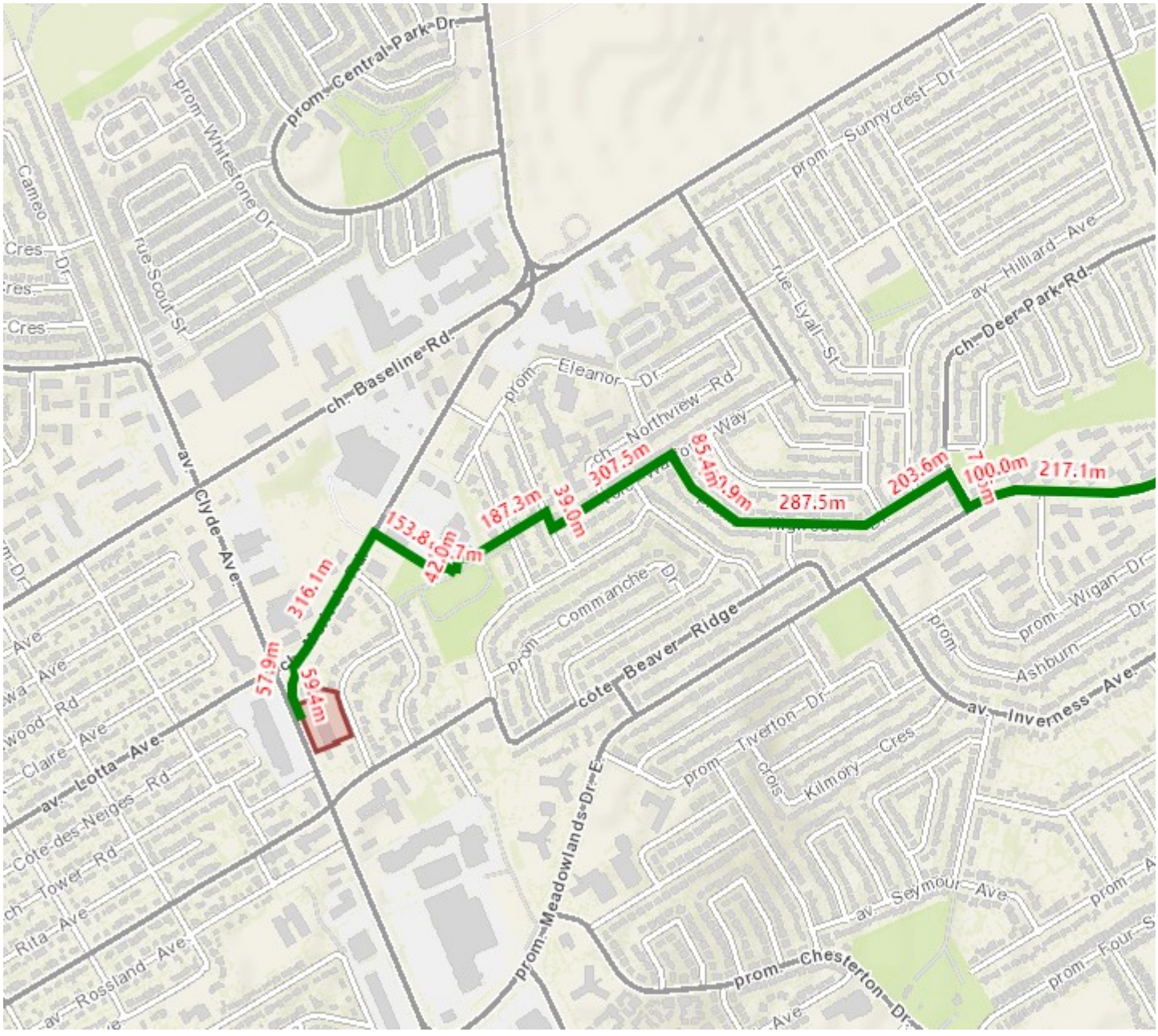
From: Amr Salem <asalem@lrl.ca>
Sent: Thursday, June 17, 2021 4:34 PM
To: Jamie Batchelor <jamie.batchelor@rvca.ca>
Subject: (LRL200255) - 1509 Merivale Road - SWM Quality Control Requirements

Hello Jamie,

I'm looking to confirm the quality control requirements for Phase 1 proposed development located at 1509 Merivale Rd. Phase 1 includes a single 9-storey residential building consisting of approx. 203 units and a large undeveloped/landscaped area.
8 visitor surface parking spots along with an **underground parking** are proposed to accommodate all the building's parking needs.
Phase 2 contemplates a future building and expansion of the U/G parking garage, *however it is outside the scope of this application*.

The current site consists of commercial buildings and a large asphalt paved surface parking lot covering the majority of the site area.

Runoff from the proposed development is expected to be collected via roof drains and area drains to be discharged into municipal sewer within Merivale Rd and ultimately travel approx. 3.7 kms to outlet into the Rideau River.



Please confirm any SWM quality control requirements that may be required for the subject site.

Thanks,

Amr Salem
B.Eng, Civil Engineering Services
LRL Engineering
5430 Canotek Road
Ottawa, Ontario K1J 9G2
T (613) 842-3434 or (877) 632-5664 ext 248
F (613) 842-4338
E asalem@lrl.ca
W www.lrl.ca

From: Dickinson, Mary <mary.dickinson@ottawa.ca>
Sent: January 16, 2020 10:55 AM
To: Jeff Nadeau <nadeau@fotenn.com>
Cc: Knight, Melanie (Planning) <Melanie.Knight@ottawa.ca>; Gervais, Josiane <josiane.gervais@ottawa.ca>; Kuruvilla, Santhosh <Santhosh.Kuruvilla@ottawa.ca>; Doug Yonson <yonny@bell.net>
Subject: Pre-con Follow-up - 1509 Merivale Road

Jeff,

Please refer to the below and attached notes regarding the Pre-Application Consultation (pre-con) Meeting held on December 18, 2019 for the property at 1509 Merivale Road for Site Plan Control in order to allow the development of a 9-storey retirement residence. I have also attached the required Plans & Study List for application submission.

Below and attached are preliminary comments based on the information available at the time of pre-con meeting:

Planning

- The subject site is zoned AM10
- The subject site is designated Arterial Mainstreet according to the Official Plan
- The subject site is within the area for the Merivale Road Secondary Plan
- No variances were identified at the meeting as being required, although if this changes, please reach out to staff at your earliest opportunity so the Committee of Adjustment Planner can be advised and provide comment.
- A pedestrian pathway connection through the site from Kerry to Merivale should be included in the site design.
- There appears to be vehicular access (formal or informal) through the subject site to the auto service use and the Dairy Queen. Without this access, there are no appropriate options to get vehicles travelling south along Merivale to these adjacent uses, as there is currently a no U-turn sign at the intersection of Capilano and Merivale when travelling south. Consideration on how appropriate access to these adjacent site needs to be reviewed as part of this development application. Staff will initiate a discussion with our traffic staff about the no U-turn intersection. I will provide you with any feedback I receive. Your Transportation Impact Assessment will need to address this challenge and present a solution.
- Orientation and location of windows and balconies should be thought out carefully as it relates to overlook on the surrounding homes.
- The existing tree row along and near the Kerry property line provides successful screening from the established low-rise neighbourhood to the subject site. Maintaining these trees would be viewed as positive. In general, both new and existing landscaping should be used to green and screen the subject site.
- The Merivale Road Secondary Plan places an emphasis on fostering a pedestrian friendly environment. The landscape design within the right of way will be

important in ensuring this goal is met. Street trees, wide sidewalks, and possibly planters and benches are all elements that will help achieve these goals.

- The stepping down of the proposed building is appreciated and the resulting massing represents a design that exhibits a deliberate transition towards the established residential neighbourhood that surrounds this site.
- In addition to meeting the zoning by-law requirements, the parking on site should be adequate to accommodate commercial and visitors, staff and residents. Please clearly show your parking calculation breakdown in your submission.
- The ground floor commercial along Merivale Road is appreciated.
- The submission should identify how the 'phase 2' lands will be treated in the interim.

Urban Design

General comments:

- It would be beneficial to see an overall master plan for the site to understand how the site will function, the relationship between the two buildings (phase 1 and 2) and adjacent properties and the impact to the public realm along Merivale Road.
- This site is within a Design Priority Area and so a formal review of the Site Plan Control application is required by the Urban Design Review Panel. More information on the dates and submission requirements can be found online Urban Design Review Panel.

Site Design:

- On-site vehicular circulation needs to be studied to determine the best area for loading, underground garage access and access from Merivale Road. For example, the alcove for the loading area could be used as a courtyard when loading is not needed if it is thoughtfully designed with a multiple purpose use. It appears that there may also be a conflict created having the underground parking garage access intersecting the building's amenity space and the outdoor amenity space. It is appreciated that no vehicular access is proposed from Kerry.
- On-site pedestrian circulation needs to be studied to determine the best routes for pedestrians to Merivale Road, outdoor amenity spaces and to Kerry Cres and the residential neighbourhoods to the east.
- Consideration also needs to be given to the publicly accessible uses within the building (amenities, commercial uses) and how people will access these areas either by car or on foot.

Massing, setbacks and uses:

- The current proposal meets the performance standards of the AM10 zone, please consider the setbacks of any rooftop outdoor amenity space from the residential uses along Kerry Cres.
- Consider enlarging the main lobby of the building so it also has a presence on Merivale Road.

- Front door access from Merivale Road to the commercial uses is currently not shown on the plans. Direct door access to commercial uses from Merivale Road should be incorporated into the design.
- The alcove where the loading area is identified would be an appropriate place for a courtyard for the residents.

Engineering

- The Servicing Study Guidelines for Development Applications are available at the following link: https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans
- Record drawings and utility plans are available for purchase from the City's Information Centre. Contact the City's Information Centre by email at informationcentre@ottawa.ca or by phone at (613) 580-2424 x44455
- Stormwater quantity control criteria – Control the release rate to the 2 year event using a C=0.5 with a computed Tc, for all storms up to and including the 100-year storm.
- Stormwater quality control – Consult with the Conservation Authority (RVCA) for their requirements. Include the correspondence with MVCA in the stormater/site servicing report.
- Service connections (water and sewers) can be made to Merivale Road.
- Clearly show and label the property lines on all sides of the property.
- Clearly show and label all the easements (if any) on the property, on all plans.
- When calculating the post development composite runoff coefficient (C), please provide a drawing showing the individual drainage area and its runoff coefficient.
- When using the modified rational method to calculate the storage requirements for the site, the 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, in this case, underestimates the storage requirement prior to the 1:100 year head elevation being reached. Alternately, if you wish to include the underground storage, you may use an assumed average release rate equal to 50% of the peak allowable rate. Otherwise, disregard the underground storage as available storage or provide modeling to support the design.
- Engineering plans are to be submitted on standard A1 size (594mm x 841mm) sheets.
- Phase 1 ESA and Phase 2 ESA must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.
- Provide the following information for water main boundary conditions:
    1. Location map with water service connection location
    2. Average daily demand (l/s)
    3. Maximum daily demand (l/s)
    4. Maximum hourly demand (l/s)
    5. Fire flow demand (provide detailed fire flow calculations based on the fire underwriters survey method)
- If you are proposing any exterior light fixtures, all must be included and approved as

part of the site plan approval. Therefore, the lights must be clearly identified by make, model and part number. 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 applicant must provide certification from an acceptable professional engineer. The location of all exterior fixtures, a table showing the fixture types (including make, model, part number), and the mounting heights must be included on a plan.

Feel free to contact Infrastructure Project Manager, Santhosh Kuruvilla, at Santhosh.kuruvilla@ottawa.ca or 613-580-2424 ext 27599, for follow-up questions.

Transportation

- Follow Traffic Impact Assessment Guidelines
  - A TIA is required.
  - Start this process asap. The application will not be deemed complete until the submission of the draft step 1-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable).
  - Request base mapping asap if RMA is required. Contact Engineering Services (https://ottawa.ca/en/city-hall/planning-and-development/engineering-services)
- ROW protection on Merivale between Baseline and West Hunt Club is 44.5m even. – The TMP 2031 Network Concept identifies Merivale Road as a Transit Priority Corridor (Continuous Lanes); therefore improvements to Merivale Road would be beyond 2031.
- Sight triangle as per Zoning by-law is 6 m x 6 m measure on the curb line.
- Minimum Clear throat requirements for apartments (100-200 units) off an arterial is 25m.
  - Note that a lay-by lane is not to be provided within this distance, as it provides conflict points (vehicles turning into/leaving lay-by area, pedestrians crossings, etc.) within the distance that should be kept clear to ensure efficient operation of driveways.
- On site plan:
  - Show all details of the roads abutting the site up to and including the opposite curb; include such items as pavement markings, accesses and/or sidewalks.
  - Turning templates will be required for all accesses showing the largest vehicle to access the site; required for internal movements and at all access (entering and exiting and going in both directions).
  - Show all curb radii measurements; ensure that all curb radii are reduced as much as possible
  - Show lane/aisle widths.
  - Sidewalk is to be depressed and continuous across access as per City Specification 7.1.
  - Grey out any area that will not be impacted by this application.
- AODA legislation is in effect for all organizations, please ensure that the design

conforms to these standards.

- Noise Impact Studies required for the following:
  - Road
  - Aircraft
  - Stationary due to the proximity to neighbouring exposed mechanical equipment and/or if there will be any exposed mechanical equipment due to the proximity to neighbouring noise sensitive land uses.

Feel free to contact Transportation Project Manager, Josiane Gervais, at Josiane.gervais@ottawa.ca or 613-580-2424 ext 21765, for follow-up questions.

Environmental

- Tree preservation is desirable, especially along the periphery of the subject site.
- Any tree removal will require a Tree Conservation Report and a tree permit will need to be issued prior to any removals taking place.

Parkland

- Cash in lieu of parkland will apply to the subject property.

Community representative comments

- Please see attached from Doug Yonson

Other

- You are encouraged to contact the Ward Councillor, Councillor Keith Egli, at ward9@ottawa.ca about the proposal.

Please refer to the links to "Guide to preparing studies and plans" and fees for further information. Additional information is available related to building permits, development charges, and the Accessibility Design Standards. Be aware that other fees and permits may be required, outside of the development review process. You may obtain background drawings by contacting informationcentre@ottawa.ca.

These pre-con comments are valid for one year. If you submit a development application(s) after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.

Please do not hesitate to contact me if you have any questions.

Regards,
Mary Dickinson

Mary Dickinson, MCIP, RPP

Planner
Development Review West
Urbaniste

Examen des demandes d'aménagement ouest

City of Ottawa | Ville d'Ottawa
613.580.2424 ext./poste 13923
ottawa.ca/planning / ottawa.ca/urbanisme

'

'

File No.: **PC2021-0222**
Date: July 8, 2021

ADDRESS: 1509 Merivale Road
Pre-Consultation Meeting Minutes
Meeting Date: June 23, 2021

Attendee	Role	Organization
Lisa Stern	File Lead	City of Ottawa
Josiane Gervais	Transportation	
Randolph Wang	Urban Designer	
Adrian Van Wyk	Urban Designer	
Santhosh Kuruvilla	Engineering Project Management	
Rod Lahey	Architect	RLA Architecture
Rachel Irving Beer		
Kersten Nitsche	Planner	Fotenn Consulting
Bria Aird	Planner	
Tanya Chowieri		Land Owner
Tony Sroka		Community Association Representative
Doug Yonson		

Comments from the Applicant:

1. Proposal to develop a 9-storey residential building as Phase 1 of developing the site.
2. Access will be taken from Merivale Road and the rear lane way which extends to Capilano Drive.
3. A previous preconsultation was held in December 2019, access and building heights have been revised since this meeting.

Planning Comments:

1. The application will require a complex site plan application. The application form, timeline and fees can be found here.
2. The site is designated under schedule B of the Official Plan as Arterial Mainstreet and are zoned AM10.
3. No variances were identified at the meeting as being required, although if this changes, please reach out to staff at your earliest opportunity so the Committee of Adjustment Planner can be advised and provide comment.
4. The City is currently working on a new Official Plan and will likely be presented before Committee and Council in Fall 2021. Please review the new Official Plan policies relating Urban Design in the City.
5. The site is within the boundaries of the Merivale Road Secondary Plan.
6. The site is within 600m of future BRT on Baseline Road. Guidelines for Arterial Mainstreets, TOD Development and Bird Friendly Design apply.
7. Please provide a Planning Rationale which discusses how the proposal meets the intent of policy and guidelines. A high quality built form and pedestrian oriented public realm is expected.
8. The arterial mainstreet designation and the Merivale Road Secondary Plan both speak to providing a mix of uses – commercial uses should be provided fronting Merivale Road. Please provide a 4.5m ground floor height and individual front door access for commercial units along Merivale Road.

9. The Merivale Road Secondary Plan places an emphasis on fostering a pedestrian friendly environment. The landscape design within the right of way will be important in ensuring this goal is met. Street trees, wide sidewalks, and possibly planters and benches are all elements that will help achieve these goals. Please ensure that front yard setbacks can accommodate these features.
10. Compatibility with existing single detached dwellings on Kerry Crescent important and should be discussed in the Planning Rationale and design brief.
11. Orientation and location of windows and balconies should be thought out carefully as it relates to overlook on the surrounding homes.
12. The existing tree row along and near the Kerry property line provides successful screening from the established low-rise neighbourhood to the subject site. Maintaining these trees would be viewed as positive. In general, both new and existing landscaping should be used to green and screen the subject site.
13. To improve compatibility between the existing and planned context on Kerry Cres consider stepping down the building at the Kerry frontage, the provision of grade related units, and utilizing amenity space to provide an appropriate transition.
14. Please provide a concept plan for the entire site identifying building entrances, vehicular and pedestrian connections.
15. The submission should identify how the 'phase 2' lands will be treated in the interim.
16. Cash-in-lieu of parkland and associated appraisal fee will be required as a condition of approval as per the Parkland Dedication Bylaw.
17. Please consult with the Ward Councillor prior to submission.

Urban Design:

1. A Design Brief is required for the submission. The Terms of Reference is attached for convenience.
2. The site is within a Design Priority Area. Formal review by the City's Urban Design Review Panel is required.
3. The applicants indicated that a number of design alternatives had been explored. Could the applicants share these alternatives with staff? It will be useful to include these alternatives in the Design Brief as well as the UDRP submission.
4. The applicants also indicated that the development is in compliance with the zoning. It is within this context urban design provides the following suggestions for consideration:
    a. The proposed quart yard concept is interesting. However, has considerations been given to a quart yard design with a different orientation? (see attached diagrams).
    b. Transition to the low-rise neighbourhood is crucially important
        i. Please study pedestrian level views along Kerry;
        ii. Protecting the existing row of trees along Kerry can ensure memories of the past be maintained.
        iii. A building setback from Kerry in keeping with the rest of the neighbourhood with allowance for healthy growth of mature canopy trees can contribute to compatibility.
        iv. Please study the appropriateness and feasibility of grade-related units along Kerry.
        v. The relationship with future development on abutting properties should be further studied and illustrated. The proposed building setback along the north property line may be too tight.
    c. Merivale frontage should be prominent with extensive glazing and animation at grade to support the vision of a main street.
    d. Overall, a base-middle-top approach to built form design is appropriate.

Transportation:

1. Follow Traffic Impact Assessment Guidelines
    a. A TIA is required. Consider including Phases 1 and 2 within the TIA.
    b. Please submit Screening Form as soon as possible to Josiane.Gervais@ottawa.ca
    c. Start this process asap. The application will not be deemed complete until the submission of the draft step 1-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable).
    d. Request base mapping asap if RMA is required. Contact Engineering Services (https://ottawa.ca/en/city-hall/planning-and-development/engineering-services)
    e. An update to the *TRANS Trip Generation Manual* has been completed (October 2020). This manual is to be utilized for this TIA. A copy of this document can be provided upon request.
2. ROW protection on Merivale between Baseline and West Hunt Club is 44.5m even.
3. Minimum clear throat requirements for apartments with >200 units off an arterial is 40m.
4. Corner Clearances should follow minimum distances set out within TAC Figure 8.8.2.
5. The TMP 2031 Network Concept identifies Merivale Road as a Transit Priority Corridor (Continuous Lanes); therefore improvements to Merivale Road would be beyond 2031.
6. On site plan:
    a. Show all details of the roads abutting the site up to and including the opposite curb; include such items as pavement markings, accesses and/or sidewalks.
    b. Turning movement diagrams required for all accesses showing the largest vehicle to access/egress the site.
    c. Turning movement diagrams required for internal movements (loading areas, garbage).
    d. Show all curb radii measurements; ensure that all curb radii are reduced as much as possible
    e. Show lane/aisle widths.
    f. Sidewalk is to be continuous across access as per City Specification 7.1.
    g. Grey out any area that will not be impacted by this application.
7. As the site proposed is residential, AODA legislation applies for all areas accessed by the public (i.e. outdoor pathways, visitor parking, etc.).
    a. A residential building can be considered a small organization for the purposes of IASR if it has employees, which is probable for a rental building and should therefore be AODA compliant.
    b. When determining the number of required accessible parking stalls, it is my understanding that the AODA applies to the visitor parking component only for residential buildings and would not apply to parking spaces available for purchase or rent. For resident parking spaces, Section 111 of the Traffic and Parking By-law would apply to determine the number of required accessible parking spaces.
8. Noise Impact Studies required for the following:
    a. Road
    b. Aircraft, site is within the Airport Vicinity Development Zone
    c. Stationary, due to the proximity to neighboring exposed mechanical equipment or if there will be any exposed mechanical equipment due to the proximity to neighboring noise sensitive land uses.

Engineering:

1. The Servicing Study Guidelines for Development Applications are available at the following link: https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-

application-review-process/development-application-submission/guide-preparing-studies-and-plans

2. Record drawings and utility plans are available for purchase from the City's Information Centre. Contact the City's Information Centre by email at informationcentre@ottawa.ca or by phone at (613) 580-2424 x44455
3. Stormwater quantity control criteria – Control the release rate to the 2 year event using a C=0.5 with a computed Tc, for all storms up to and including the 100-year storm.
4. Stormwater quality control – Consult with the Conservation Authority (RVCA) for their requirements. Include the correspondence with MVCA in the stormater/site servicing report.
5. Service connections (water and sewers) can be made to Merivale Road.
6. Clearly show and label the property lines on all sides of the property.
7. Clearly show and label all the easements (if any) on the property, on all plans.
8. When calculating the post development composite runoff coefficient (C), please provide a drawing showing the individual drainage area and its runoff coefficient.
9. When using the modified rational method to calculate the storage requirements for the site, the 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, in this case, underestimates the storage requirement prior to the 1:100 year head elevation being reached. Alternately, if you wish to include the underground storage, you may use an assumed average release rate equal to 50% of the peak allowable rate. Otherwise, disregard the underground storage as available storage or provide modeling to support the design.
10. Engineering plans are to be submitted on standard A1 size (594mm x 841mm) sheets.
11. Phase 1 ESA and Phase 2 ESA must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.
12. Provide the following information for water main boundary conditions:
    a. Location map with water service connection location
    b. Average daily demand (l/s)
    c. Maximum daily demand (l/s)
    d. Maximum hourly demand (l/s)
13. Fire flow demand (provide detailed fire flow calculations based on the fire underwriters survey method)
14. If you are proposing any exterior light fixtures, all must be included and approved as part of the site plan approval. Therefore, the lights must be clearly identified by make, model and part number. 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 applicant must provide certification from an acceptable professional engineer. The location of all exterior fixtures, a table showing the fixture types (including make, model, part number), and the mounting heights must be included on a plan.

Feel free to contact Infrastructure Project Manager, Santhosh Kuruvilla, at Santhosh.kuruvilla@ottawa.ca or 613-580-2424 ext 27599, for follow-up questions.

Community Association:
Please see attached memo

Please refer to the links to "Guide to preparing studies and plans" and fees for general information. Additional information is available related to building permits, development

From: Colleen McKeracher <cmckeracher@rlaarchitecture.ca>
Sent: April 10, 2023 1:00 PM
To: Virginia Johnson; Thomas Freeman
Cc: Tanya Chowieri; Chaxu Baria; Tamara Harb; Bria Aird
Subject: RE: LRL200255-1509 Merivale Road - Draft Civil Drawings

Follow Up Flag: Follow up
Flag Status: Flagged

Hi,

This email is confirming that 1509 Merivale road is to be built with non-combustible construction and include a fully supervised sprinkler system.

Colleen McKeracher *M.Arch, OAA*
Architect

RLA/ Architecture
56 Beech Street,
Ottawa, Ontario K1S 3J6
Tel: 613.724.9932 x 316
Toll Free: 800.724.9932
cmckeracher@rlaarchitecture.ca

rla/architecture
roderick lahey architect inc.

APPENDIX B

Water Supply Calculations

PRESSURE ZONE MAP

City of Ottawa - Water Distribution System
Facilities & Feedermains

SUBJECT SITE

1E
2E
MONT
1W
2W
ME
MG
EMR
3W
BARR
2C
3C
4C
WTP
PS
T
FLEET STREET PS.
LEMIEUX ISLAND PURIFICATION PLANT & P.S. & RES.
BRITANNIA PURIFICATION PLANT & P.S. & RES.
MORGAN'S GRANT P.S.
CAMPEAU DR. P.S.
ENERGY MINES & RESOURCES P.S.
GLEN CAIRN P.S. & RES
STITTSVILLE ELEVATED TANK
Abbott Iber St. Backup P.S.
MOODIE ELEVATED TANK
BARRHAVEN RES. & P.S.
CARLINGTON HEIGHTS P.S. & RES.
Ogilvie Rd. Backup P.S.
MONTREAL ROAD P.S.
BRITTANY DRIVE P.S.
ORLEANS RES.
FOREST RIDGE P.S
ORLEANS P.S.
INNES RD ELEVATED TANK
Innes Rd/BearBrook Rd Backup P.S.
Innes Rd Backup P.S.
HURDMAN P.S.
BILLINGS BRIDGE P.S.
CONROY RD ELEVATED TANK
SOUTH GLOUCESTER P.S. (INACTIVE)
LEITRIM P.S.
OTTAWA SOUTH P.S & RES.
Merivale Rd. Backup P.S.
BARRHAVEN P.S.
Shadow Ridge
OLD MONTREAL RD
DUNNING RD
REGIONAL ROAD 174
INNES RD
TENTH LINE RD
NAVAN RD
COLONIAL RD
ANDERSON RD
MILTON RD
RUSSELL RD
HIGHWAY 417
LEITRIM RD
DEVINE RD
MITCH OWENS RD
BOUNDARY RD
8TH LINE RD
VICTORIA ST
DUNROBIN RD
CARP RD
MARCH RD
HAZELDEAN RD
HOPE SIDE RD
RICHMOND RD
CARLING AVE
BASELINE RD
GREENBANK RD
CEDARVIEW RD
WOODROFFE AVE
MERIVALE RD
FISHER AVE
RIVER RD
CONROY RD
ALBION RD
SUSSEX DR
OGILVIE RD
CYRVILLE RD
MAIN ST
SCOTT ST
SMYTH RD
HUNT CLUB RD

Tamara Harb

From: Rathnasooriya, Shika <Thakshika.Rathnasooriya@ottawa.ca>
Sent: March 27, 2023 1:27 PM
To: Virginia Johnson
Cc: Stern, Lisa; Tamara Harb; Thomas Freeman
Subject: RE: LRL200255 - 1509 Merivale Road - Boundary Conditions - Updated water demands
Attachments: 1509 Merivale Road March 2023.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi,

Please see boundary conditions below:

The following are boundary conditions, HGL, for hydraulic analysis at 1509 Merivale Road (zone ME) assumed to be connected to the 305 mm on Merivale Road and the 203 mm on Kerry Crescent (see attached PDF for location).

At both connections:

Minimum HGL: 146.5 m

Maximum HGL: 158.2 m

Max Day + Fire Flow (166.7 L/s): 148.5 m (Merivale)

Max Day + Fire Flow (166.7 L/s): 133.8 m (Kerry)

The maximum pressure is estimated to be more than 80 psi. A pressure check at completion of construction is recommended to determine if pressure control is required.

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.

Regards,
Shika Rathnasooriya, P.Eng
Project Manager
Planning, Real Estate and Economic Development Department - West Branch
City of Ottawa
110 Laurier Avenue West Ottawa, ON
613.580.2424 ext. 23433

From: Rathnasooriya, Shika
Sent: March 27, 2023 12:28 PM
To: Virginia Johnson <vjohnson@lrl.ca>

LRL Engineering
5430 Canotek Road
Ottawa, Ontario K1J 9G2
T (613) 842 - 3434 or (877) 632-5664 ext.222
C (613) 915 - 0350
F (613) 842 - 4338
E tharb@lrl.ca
W www.lrl.ca

*We care deeply, so let us know how we did by completing our **Customer Satisfaction Survey**.*
*Nous nous soucions profondément de votre opinion, nous vous invitons donc à nous faire savoir si nous avons satisfait vos attentes en remplissant notre **sondage sur la satisfaction de la clientèle***

From: Tamara Harb
Sent: February 2, 2023 11:43 AM
To: Santhosh.Kuruvilla@ottawa.ca
Cc: Virginia Johnson <vjohnson@lrl.ca>
Subject: LRL200255 - 1509 Merivale Road - Boundary Conditions - Updated water demands

Good morning Santhosh,

We had previously requested and received boundary conditions for the site located at 1509 Merivale Road (Please see attached correspondence). The architectural plans have been slightly altered and the unit counts have changed. The following table shows the demands based on the previous arch design and the updated demands based on the updated arch design. Could you please confirm if the boundary conditions that were provided are still applicable?

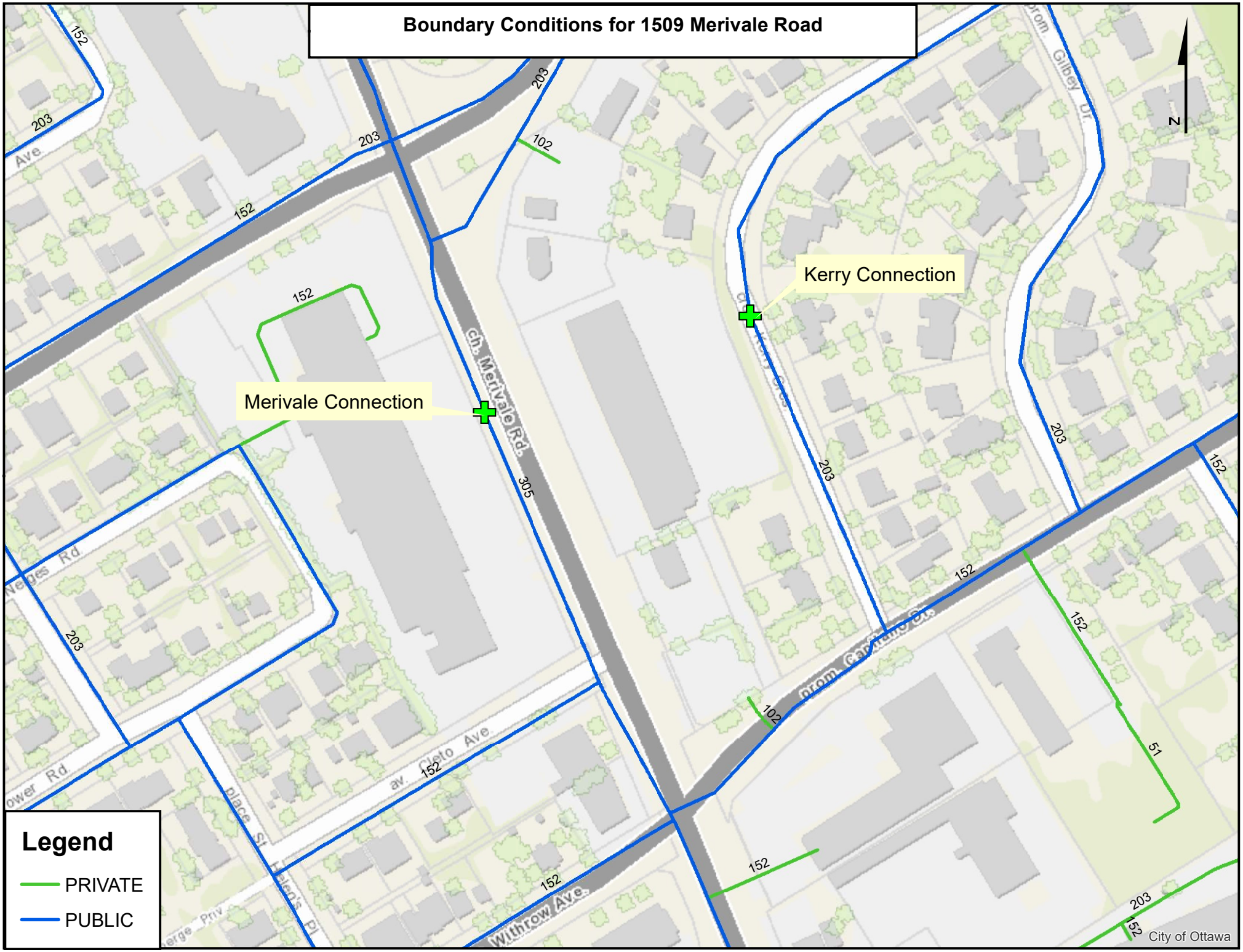
	Demand (PRE) L/s	Demand (UPDATED) L/s
Avg. Daily	2.48	2.27
Max Day + FUS	6.20 + 200	5.68 + 166.7
Peak Hour	13.64	12.49

I have also attached our water and fire demand calculation sheets. Please let me know if you have any questions.

Thank you,

TAMARA HARB, EIT, CPESC-IT
Civil Engineer in Training

LRL Engineering
5430 Canotek Road
Ottawa, Ontario K1J 9G2
T (613) 842 - 3434 or (877) 632-5664 ext.222
C (613) 915 - 0350
F (613) 842 - 4338
E tharb@lrl.ca
W www.lrl.ca


Boundary Conditions for 1509 Merivale Road
Kerry Connection
Merivale Connection
ch. Merivale Rd.
prom. Gilbey Cir.
prom. Gilbey Ur
prom. Gamelin Cir.
av. Cleto Ave.
Withrow Ave.
Legend
PRIVATE
PUBLIC
N
City of Ottawa

Water Supply Calculations for Proposed Building

LRL File No.	200255
Project Location	1509 Merivale
Date	February 2, 2023
Prepared by	Tamara Harb

Residential Demand based on the City of Ottawa Design Guidelines-Water Distribution, 2010

Unit Type	Persons Per Unit	Number of Units	Population
Studio / 1 Bedroom Apartment	1.4	169	236.6
2 Bedroom Apartment	2.1	41	86.1
Average Apartment	1.8	210	378.0
	Total	**420**	**700.7**

Average Water Consumption Rate	280	L/c/d		
Average Day Demand	**196,196**	**L/d**	**2.27**	**L/s**
Maximum Day Factor	2.5		(Water Design Guidelines Table 4.2)	
Maximum Daily Demand	**490,490**	**L/d**	**5.68**	**L/s**
Peak Hour Factor	2.2		(Water Design Guidelines Table 4.2)	
Maximum Hour Demand	**1,079,078**	**L/d**	**12.49**	**L/s**

Water Service Pipe Sizing

Q = VA

Where: V = velocity
A = area of pipe
Q = flow rate

Assuming a maximum velocity of 1.8m/s, the diameter of pipe is calculated as:

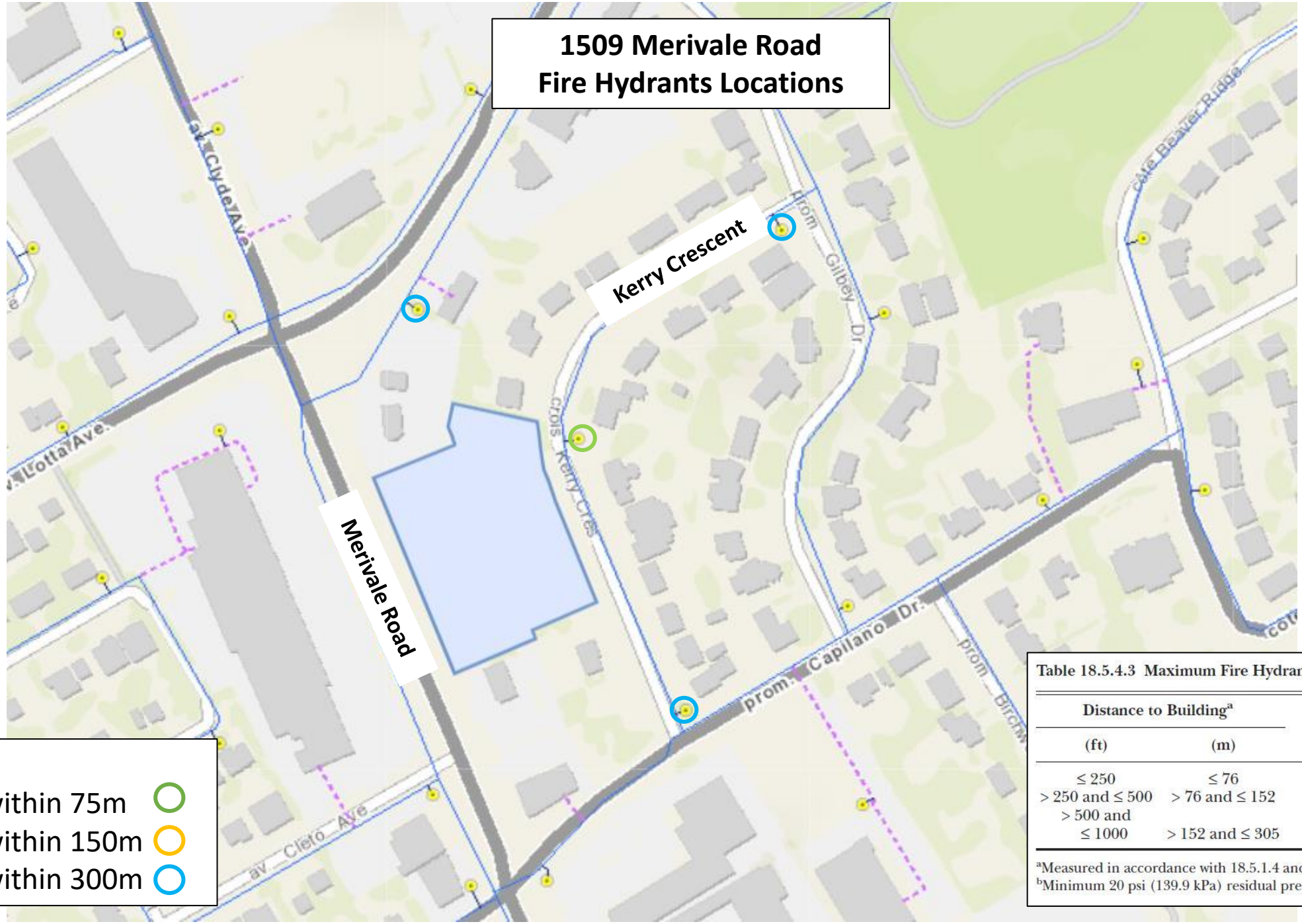
Minimum pipe diameter (d) =	$(4Q/\pi V)^{1/2}$	
=	0.094	m
=	94	mm
Proposed pipe diameter (d) =	**150**	mm
=	**6**	Inches

Fire Flow Calculations

LRL File No. 200255
Date February 02,2023
Method Fire Underwriters Survey (FUS)
Prepared by Tamara Harb

Step	Task	Term	Options	Multiplier	Choose:	Value	Unit	Fire Flow
Structural Framing Material								
1	Choose frame used for building	Coefficient C related to the type of construction	Wood Frame	1.5	Non-combustible construction	**0.8**		
			Ordinary Construction	1.0				
			Non-combustible construction	0.8				
			Fire resistive construction <2 hrs	0.7				
			Fire resistive construction >2 hrs	0.6				
Floor Space Area (A)								
2	Total area					**11,594**	m^2	
3	Obtain fire flow before reductions	Required fire flow	Fire Flow = 220 x C x $A^{0.5}$				L/min	**18,951**
Reductions or surcharge due to factors affecting burning								
4	Choose combustibility of contents	Occupancy hazard reduction or surcharge	Non-combustible	-25%	Limited combustible	**-15%**	L/min	**16,108**
			Limited combustible	-15%				
			Combustible	0%				
			Free burning	15%				
			Rapid burning	25%				
5	Choose reduction for sprinklers	Sprinkler reduction	Full automatic sprinklers	-30%	True	**-30%**	L/min	**8,054**
			Water supply is standard for both the system and fire department hose lines	-10%	True	**-10%**		
			Fully supervised system	-10%	True	**-10%**		
6	Choose separation	Exposure distance between units	North side	10.1 to 20m	15%		L/min	**10,470**
			East side	>30m	0%			
			South side	10.1 to 20m	15%			
			West side	>30m	0%	**30%**		
Net required fire flow								
7	Obtain fire flow, duration, and volume	Minimum required fire flow rate (rounded to nearest 1000)					L/min	**10,000**
		Minimum required fire flow rate					L/s	**166.7**
		Required duration of fire flow					hr	**3.25**

1509 Merivale Road
Fire Hydrants Locations



LEGEND

Hydrants within 75m

Hydrants within 150m

Hydrants within 300m

Table 18.5.4.3 Maximum Fire Hydrant Fire Flow Capacity

Distance to Building[a]		Maximum Capacity[b]	
(ft)	(m)	(gpm)	(L/min)
≤ 250	≤ 76	1500	5678
> 250 and ≤ 500	> 76 and ≤ 152	1000	3785
> 500 and ≤ 1000	> 152 and ≤ 305	750	2839

[a]Measured in accordance with 18.5.1.4 and 18.5.1.5.
[b]Minimum 20 psi (139.9 kPa) residual pressure.

APPENDIX C

Wastewater Collection Calculations

LRL File No.	200255	**Sanitary Design Parameters**	**Pipe Design Parameters**
Project:	9-Storey Residential BLDG	Average Daily Flow = 280 L/p/day Commercial & Institutional Flow = 28000 L/ha/day Light Industrial Flow = 35000 L/ha/day Heavy Industrial Flow = 55000 L/ha/day Maximum Residential Peak Factor = 4.0 Commercial & Institutional Peak Factor = 1.5	Industrial Peak Factor = as per Appendix 4-B = 7 Extraneous Flow = 0.33L/s/gross ha	Minimum Velocity = 0.60 m/s Manning's n = 0.013
Location:	1509 Merivale Road			
Date:	March 29, 2023			

EXISTING WASTERWATER FLOW

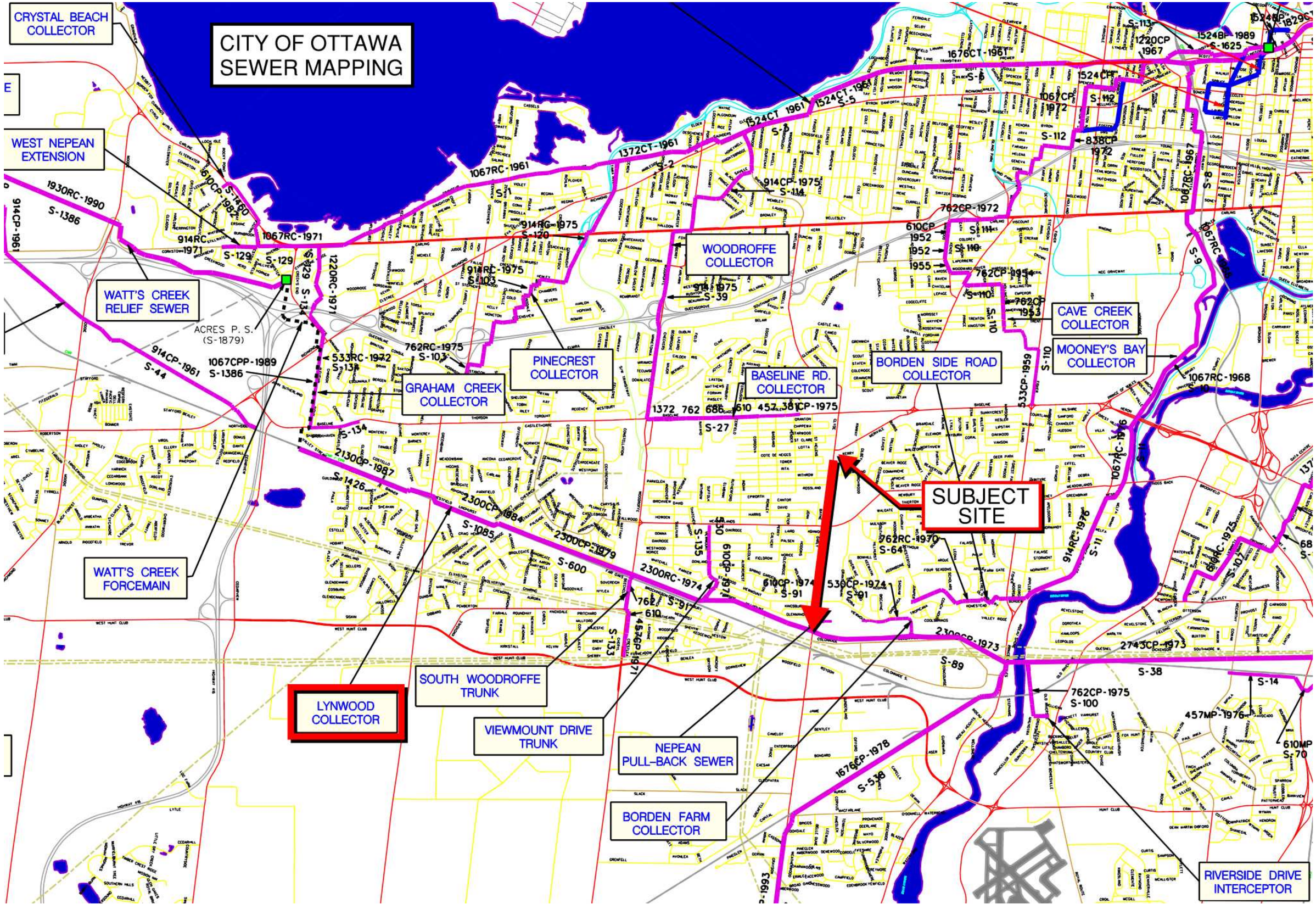
LOCATION			RESIDENTIAL AREA AND POPULATION						COMMERCIAL		INDUSTRIAL			INSTITUTIONAL		C+I+I	INFILTRATION			TOTAL FLOW (l/s)	PIPE					
STREET	FROM MH	TO MH	AREA (Ha)	POP.	CUMMULATIVE AREA (Ha)	CUMMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	**AREA (Ha)**	**ACCU. AREA (Ha)**	AREA (Ha)	ACCU. AREA (Ha)	PEAK FACT.	AREA (Ha)	ACCU. AREA (Ha)	**PEAK FLOW (l/s)**	TOTAL AREA (Ha)	ACCU. AREA (Ha)	INFILT. FLOW (l/s)		LENGTH (m)	DIA. (mm)	SLOPE (%)	MATERIAL	CAP. (FULL) (l/s)	VEL. (FULL) (m/s)
Ex. Building - Merivale Rd	Ex. Building	Ex. San MH	0.000	0.0	0.00	0.0	4.0	0.00	**0.890**	**0.890**	0.00	0.00	7.0	0.0	0.0	**0.43**	0.89	0.89	0.29	**0.73**	72.0	250	0.34%	PVC	34.68	0.71

PROPOSED WASTEWATER FLOW

LOCATION			**RESIDENTIAL AREA AND POPULATION**						COMMERCIAL		INDUSTRIAL			INSTITUTIONAL		C+I+I	**INFILTRATION**			TOTAL FLOW (l/s)	PIPE					
STREET	FROM MH	TO MH	**AREA (Ha)**	**POP.**	**CUMMULATIVE AREA (Ha)**	**CUMMULATIVE POP.**	**PEAK FACT.**	**PEAK FLOW (l/s)**	AREA (Ha)	ACCU. AREA (Ha)	AREA (Ha)	ACCU. AREA (Ha)	PEAK FACT.	AREA (Ha)	ACCU. AREA (Ha)	PEAK FLOW (l/s)	**TOTAL AREA (Ha)**	**ACCU. AREA (Ha)**	**INFILT. FLOW (l/s)**		LENGTH (m)	DIA. (mm)	SLOPE (%)	MATERIAL	CAP. (FULL) (l/s)	VEL. (FULL) (m/s)
Merivale Rd	Prop. Building	SAN MH02	**0.890**	**700.7**	**0.89**	**700.7**	**3.9**	**8.84**	0.000	0.000	0.00	0.00	7.0	0.0	0.0	0.00	**0.89**	**0.89**	**0.29**	**9.14**	5.0	200	1.00%	PVC	32.80	1.04
Merivale Rd	SAN MH02	SAN MH01	**0.000**	**0.0**	**0.89**	**700.7**	**3.9**	**8.84**	0.000	0.000	0.00	0.00	7.0	0.0	0.0	0.00	**0.00**	**0.89**	**0.29**	**9.14**	28.1	200	1.00%	PVC	32.80	1.04
Merivale Rd	SAN MH01	Ex. San MH	**0.000**	**0.0**	**0.89**	**700.7**	**3.9**	**8.84**	0.000	0.000	0.00	0.00	7.0	0.0	0.0	0.00	**0.00**	**0.89**	**0.29**	**9.14**	25.7	250	0.70%	PVC	49.75	1.01

NOTES	Existing inverts and slopes are estimated. They are to be confirmed on-site.

Designed: T.H.	PROJECT: 9-Storey Residential Building		
Checked: V.J.	LOCATION: 1509-1531 Merivale Road		
Dwg. Reference: C.401	File Ref.: 200255	Date: 2023-03-29	Sheet No. 1 of 1


CITY OF OTTAWA
SEWER MAPPING
CRYSTAL BEACH
COLLECTOR
WEST NEPEAN
EXTENSION
WATT'S CREEK
RELIEF SEWER
WATT'S CREEK
FORCEMAIN
LYNWOOD
COLLECTOR
GRAHAM CREEK
COLLECTOR
PINECREST
COLLECTOR
WOODROFFE
COLLECTOR
SOUTH WOODROFFE
TRUNK
VIEWMOUNT DRIVE
TRUNK
BASELINE RD.
COLLECTOR
NEPEAN
PULL-BACK SEWER
BORDEN FARM
COLLECTOR
BORDEN SIDE ROAD
COLLECTOR
CAVE CREEK
COLLECTOR
MOONEY'S BAY
COLLECTOR
RIVERSIDE DRIVE
INTERCEPTOR
SUBJECT
SITE
ACRES P. S.
(S-1879)
1930RC-1990
S-1386
914CP-1961
914RC
1971
1067RC-1971
914CP-1982
S-1460
S-129
S-134
220RC-1971
914CP-1961
S-44
1067CPP-1989
S-1386
533RC-1972
S-138
762RC-1975
S-103
914RC-1975
S-103
914RC-1975
S-120
1372CT-1961
1067RC-1961
S-2
914CP-1975
S-114
1524CT-1961
S-5
1524CT 1961
S-6
1676CT-1961
S-6
1524CP-1989
S-1625
1220CP
1967
1524CP
1067CP
1972
S-112
838CP
1972
S-113
762CP-1972
610CP
1952
1952
1955
762CP-1954
762CP
1953
S-111
S-110
S-110
S-110
1067RC-1967
S-8
S-9
1067RC-1968
S-10
533CP-1959
914CP-1975
S-27
1372 762 686 610 457 381
2130CP-1987
S-1426
2300CP-1984
2300CP-1979
S-600
S-1085
2300RC-1974
762
610
457CP-1971
S-91
610CP-1974
S-91
530CP-1974
S-91
762RC-1970
S-64
914RC-1976
S-11
610RC-1975
S-102
68
S-
137
2300CP-1973
2743CP-1973
S-89
S-38
762CP-1975
S-100
S-14
457MP-1976
610MP
S-70
1676CP-1978
S-536

APPENDIX D

Stormwater Management Calculations

LRL Associates Ltd.
Storm Watershed Summary

LRL File No.	200255
Project:	9-Storey Residential Building
Location:	1508 Merivale Road
Date:	March 21, 2023
Designed:	Tamara Harb
Drawing Reference:	C701/C702

Pre-Development Catchments

WATERSHED	C = 0.2	C=0.7	C = 0.90	Total Area (m^2)	Total Area (ha)	Combined C
EWS-01 (UNCONTROLLED TO KERRY CRESCENT)	571.9	0.0	3760.7	4332.6	0.433	0.81
EWS-02 (UNCONTROLLED TO MERIVALE ROAD)	0.0	0.0	4562.6	4562.6	0.456	0.90
TOTAL (ONSITE FLOWS)	**571.9**	**0.0**	**8323.2**	**8895.2**	**0.890**	**0.81**
EWS-03 (OFFSITE FLOWS)	37.8	0.0	910.6	948.4	0.095	0.87
TOTAL (OFFISE FLOWS)	**37.8**	**0.0**	**910.6**	**948.4**	**0.095**	**0.87**
TOTAL	**609.70**	**0.00**	**9233.86**	**9843.56**	**0.984**	**0.84**

Post-Development Catchments

WATERSHED	C = 0.20	C = 0.70	C = 0.90	Total Area (m^2)	Total Area (ha)	Combined C
WS-01(UNCONTROLLED TO KERRY CRESCENT)	1020.11	308.05	72.76	1400.92	0.140	0.35
WS-02 (UNCONTROLLED TO MERIVALE ROAD)	248.24	45.09	147.74	441.07	0.044	0.49
WS-03 (ROOF CONTROLLED)	0.00	0.00	1784.37	1784.37	0.178	0.90
WS-04 (RAMP CONTROLLED)	0.00	0.00	173.79	173.79	0.017	0.90
WS-05 (CONTROLLED - AREA OVER PARKADE)	445.51	332.24	852.40	1630.15	0.163	0.67
WS-06 (CONTROLLED - EAST LANDSCAPED AREA)	1286.32	0.00	92.84	1379.16	0.138	0.25
WS-07 (CONTROLLED - ONSITE ROAD)	0.00	0.00	270.15	270.15	0.027	0.90
WS-08 (CONTROLLED - WEST LANDSCAPED AREA)	1733.68	0.00	82.01	1815.69	0.182	0.23
EWS-03 (OFFSITE FLOWS)	37.80	0.00	910.60	948.40	0.095	0.87
TOTAL	**4771.7**	**685.4**	**4386.6**	**9843.7**	**0.984**	**0.55**

LRL File No. 200255
Project: 9-Storey Residential Building
Location: 1508 Merivale Road
Date: March 21, 2023
Designed: Tamara Harb
Drawing Ref.: C601

Stormwater Management
Design Sheet 2-YR Pre to 100-YR Post

Runoff Equation

Q = 2.78CIA (L/s)
C = Runoff coefficient
I = Rainfall intensity (mm/hr) = A / (Td + C)^{B}
A = Area (ha)
T_c = Time of concentration (min)

Pre-Development Release Rate Calculations

Pre-development Stormwater Management - 2 Year Storm

***Considers flows from EWS-01 and EWS-02**

2 year storm

I2 = 732.95 / (Td + 6.199)$^{0.81}$ **a = 732.951** **b = 0.810** **C = 6.199**

C =	0.50	max of 0.5 as per City of Ottawa
I =	76.8	mm/hr
Tc =	10	min
Total Area =	0.890	ha

2-Year Allowable Release Rate= 94.96 L/s

Pre-development Stormwater Management - 100 Year Storm

***Considers flows from EWS-03. These are offsite flows contributing to the site. As per discussions with the City, since this site is to control these offiste flows. Only the pre100year to post 100year flows will be considered for control. Pre to post C value will remain.**

I_{100} = 1735.688 / (Td + 6.014)$^{0.820}$ **a = 1735.688** **b = 0.820** **C = 6.014**

C =	0.87	
I =	178.6	mm/hr
Tc =	10	min
Total Area =	0.095	ha

100-Year Allowable Release Rate= 41.06 L/s

Total Allowable Release Rate = 136.02 L/s

***Total allowable release rate combines the existing onsite 2-year allowable release rate and the existing offsite 100-year alloable release rate**

Post Development Watersheds Information Table

					$\sum R_{2\&5}$	$\sum R_{100}$
	Total Site Area =	**0.705**	ha	**∑R=**		
Controlled	WS-03 (ROOF CONTROLLED)	0.178	ha	R=	0.90	1.00
	WS-04 (RAMP CONTROLLED)	0.017	ha	R=	0.90	1.00
	WS-05 (CONTROLLED - AREA OVER PARKADE)	0.163	ha	R=	0.67	0.83
	WS-06 (CONTROLLED - EAST LANDSCAPED AREA)	0.138	ha	R=	0.25	0.31
	WS-07 (CONTROLLED - ONSITE ROAD)	0.027	ha	R=	0.90	1.00
	WS-08 (CONTROLLED - WEST LANDSCAPED AREA)	0.182	ha	R=	0.23	0.29
	EWS-03 (OFFSITE FLOWS)	0.095	ha	R=	0.87	1.00
	Total Controlled to Cistern =	**0.180**	ha	R=	**0.69**	**0.86**
	Total Controlled to ICD =	**0.441**	ha	R=	**0.42**	**0.52**
	Total Controlled =	**0.705**	**ha**	**∑R=**	**0.55**	**0.68**
Un-Controlled	WS-01(UNCONTROLLED TO KERRY CRESCENT)	0.140	ha	R=	**0.35**	0.43
	WS-02 (UNCONTROLLED TO MERIVALE ROAD)	0.044	ha	R=	**0.49**	0.61
	Total Un-Controlled =	**0.184**	**ha**	**∑R=**	**0.38**	**0.47**

Post-development Stormwater Management (Uncontrolled Catchments WS-01 & WS-02)

100 Year Storm Event:

I_{100} = 1735.688 / (Td + 6.014)$^{0.820}$ **a = 1735.688** **b = 0.820** **C = 6.014**

Time (min)	Intensity (mm/hr)	Uncontrolled Runoff (L/s)	Controlled Release Rate Constant (L/s)	Total Release Rate (L/s)	
10	178.6	30.11	0.00	30.11	*Uncontrolled flow to Kerry Crescent
10	178.6	13.29	0.00	13.29	*Uncontrolled flow to Merivale Road
10	**178.6**	**43.40**	**0.00**	**43.40**	**Total uncontrolled flow from the site**

In Pre-Development conditions, at the 2-year storm, there was a total uncontrolled release rate to Kerry Crescent from the site equal to **74.71** L/s
In post-development this rate has significantly decreased to **30.11L/s**

LRL File No. 200255
Project: 9-Storey Residential Building
Location: 1508 Merivale Road
Date: March 21, 2023
Designed: Tamara Harb
Drawing Ref.: C601

Stormwater Management
Design Sheet 2-YR Pre to 100-YR Post

Post-development Stormwater Management (WS-01 ROOF)

100 Year Storm Event:

$I_{100} = 1735.688 / (Td + 6.014)^{0.820}$ a = 1735.688 b = 0.820 C = 6.014

Time (min)	Intensity (mm/hr)	Storage Required: Controlled Runoff (L/s)	Storage Required: Storage Volume (m^3)	Controlled Release Rate Constant (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.6	88.58	48.61	7.56	0.00	7.56
15	142.9	70.88	56.99	7.56	0.00	7.56
20	120.0	59.50	62.33	7.56	0.00	7.56
25	103.8	51.51	65.93	7.56	0.00	7.56
30	91.9	45.57	68.42	7.56	0.00	7.56
35	82.6	40.96	70.15	7.56	0.00	7.56
40	75.1	37.28	71.32	7.56	0.00	7.56
45	69.1	34.25	72.07	7.56	0.00	7.56
50	64.0	31.72	72.49	7.56	0.00	7.56
60	55.9	27.73	72.60	7.56	0.00	7.56
70	49.8	24.70	71.98	7.56	0.00	7.56
80	45.0	22.32	70.84	7.56	0.00	7.56
90	41.1	20.39	69.30	7.56	0.00	7.56
100	37.9	18.80	67.45	7.56	0.00	7.56
110	35.2	17.46	65.36	7.56	0.00	7.56
120	32.9	16.32	63.06	7.56	0.00	7.56

Summary of Roof Storage

Maximum Required Roof Storage (100 Year) =	72.60	m^3
Proposed Head =	150	mm
Control Flow/Drain =	0.63	L/s
Number of Roof Drains =	**12**	
Total Flow from Roof Drain =	7.56	L/s
Available Roof Surface =	81.22	m^3
Roof Drain Model =	*WATTS adjustable roof drain w/ fully closed weir opening*	
Total Storage Required =	**72.60**	**m^3**
Available Roof Storage =	**81.22**	**m^3**

*An Emergency overflow scupper is provided above this height.

refer to LRL Plan C601

Post-development Stormwater Management (WS-04 & WS-05 CISTERN)

100 Year Storm Event:

$I_{100} = 1735.688 / (Td + 6.014)^{0.820}$ a = 1735.688 b = 0.820 C = 6.014

Time (min)	Intensity (mm/hr)	Storage Required: Controlled Runoff (L/s)	Storage Required: Storage Volume (m^3)	Controlled Release Rate Constant (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.6	77.27	16.32	50.06	0.00	50.06
15	142.9	61.83	10.60	50.06	0.00	50.06
20	120.0	51.91	2.21	50.06	0.00	50.06
25	103.8	44.94	0.00	50.06	0.00	50.06
30	91.9	39.75	0.00	50.06	0.00	50.06
35	82.6	35.73	0.00	50.06	0.00	50.06
40	75.1	32.52	0.00	50.06	0.00	50.06
45	69.1	29.88	0.00	50.06	0.00	50.06
50	64.0	27.67	0.00	50.06	0.00	50.06
60	55.9	24.19	0.00	50.06	0.00	50.06
70	49.8	21.55	0.00	50.06	0.00	50.06
80	45.0	19.47	0.00	50.06	0.00	50.06
90	41.1	17.79	0.00	50.06	0.00	50.06
100	37.9	16.40	0.00	50.06	0.00	50.06
110	35.2	15.23	0.00	50.06	0.00	50.06
120	32.9	14.23	0.00	50.06	0.00	50.06

Total Storage Required =	**16.32**	**m^3**
Available Storage =	**18.00**	**m^3**

Post-development Stormwater Management (WS-06, WS-07, WS-08 & EWS-03) Orifice

100 Year Storm Event:

$I_{100} = 1735.688 / (Td + 6.014)^{0.820}$ a = 1735.688 b = 0.820 C = 6.014

Time (min)	Intensity (mm/hr)	Storage Required: Controlled Runoff (L/s)	Storage Required: Storage Volume (m^3)	Controlled Release Rate Constant (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.6	113.65	47.19	35.00	0.00	35.00
15	142.9	90.95	50.35	35.00	0.00	35.00
20	120.0	76.35	49.62	35.00	0.00	35.00

LRL File No. 200255
Project: 9-Storey Residential Building
Location: 1508 Merivale Road
Date: March 21, 2023
Designed: Tamara Harb
Drawing Ref.: C601

Stormwater Management
Design Sheet 2-YR Pre to 100-YR Post

25	103.8	66.10	46.64	35.00	0.00	35.00
30	91.9	58.47	42.25	35.00	0.00	35.00
35	82.6	52.56	36.87	35.00	0.00	35.00
40	75.1	47.83	30.79	35.00	0.00	35.00
45	69.1	43.95	24.16	35.00	0.00	35.00
50	64.0	40.71	17.12	35.00	0.00	35.00
60	55.9	35.58	2.07	35.00	0.00	35.00
70	49.8	31.69	0.00	35.00	0.00	35.00
80	45.0	28.64	0.00	35.00	0.00	35.00
90	41.1	26.17	0.00	35.00	0.00	35.00
100	37.9	24.12	0.00	35.00	0.00	35.00
110	35.2	22.41	0.00	35.00	0.00	35.00
120	32.9	20.94	0.00	35.00	0.00	35.00

Total Storage Required = **50.35** m^3
Available Storage = **387.73** m^3

SUMMARY OF RELEASE RATES AND STORAGE VOLUMES

CATCHMENT AREAS	DRAINAGE AREAS (ha)	COMBINED AREAS (ha)	100-YEAR RELEASE RATE	100-YEAR REQUIRED STORAGE (m3)	TOTAL AVAILABLE STORAGE (m3)
WS-01(ROOF)	0.178	0.178	7.56	65.93	81.22
WS-04 (RAMP CONTROLLED)	0.017	0.180	50.06	16.32	18.00
WS-05 (CONTROLLED - AREA OVER PARKADE)	0.163				
WS-06 (CONTROLLED - EAST LANDSCAPED AREA)	0.138	0.441	35.00	50.35	387.73
WS-07 (CONTROLLED - ONSITE ROAD)	0.027				
WS-08 (CONTROLLED - WEST LANDSCAPED AREA)	0.182				
EWS-03 (OFFSITE FLOWS)	0.095				
TOTAL CONTROLLED	**0.800**	**0.800**	**92.62**	**132.61**	**486.95**
WS-01(UNCONTROLLED TO KERRY CRESCENT)	0.140	0.140	30.11	0.00	0.00
WS-02 (UNCONTROLLED TO MERIVALE ROAD)	0.044	0.044	13.29	0.00	0.00
TOTAL UNCONTROLLED	**0.044**	**0.184**	**43.40**	**0.00**	**0.00**
TOTAL	**0.844**	**0.984**	**136.02**	**132.61**	**486.95**

LRL File No. 200255
Project: 9-Storey Residential Building
Location: 1508 Merivale Road
Date: March 21, 2023
Designed: Tamara Harb
Drawing Ref.: C601

Stormwater Management
Design Sheet 2-YR Pre to 5-YR Post

Runoff Equation

Q = 2.78CIA (L/s)
C = Runoff coefficient
I = Rainfall intensity (mm/hr) = A / (Td + C)^{B}
A = Area (ha)
T_c = Time of concentration (min)

Pre-Development Release Rate Calculations

Pre-development Stormwater Management - 2 Year Storm

***Considers flows from EWS-01 and EWS-02**

2 year storm

I2 = 732.95 / (Td + 6.199)$^{0.81}$ **a = 732.951** **b = 0.810** **C = 6.199**

C =	0.50	max of 0.5 as per City of Ottawa
I =	76.8	mm/hr
Tc =	10	min
Total Area =	0.890	ha

2-Year Allowable Release Rate= **94.96** L/s

Pre-development Stormwater Management - 100 Year Storm

***Considers flows from EWS-03. These are offsite flows contributing to the site. As per discussions with the City, since this site is to control these offiste flows. Only the pre100year to post 100year flows will be considered for control. Pre to post C value will remain.**

I_{100} = 1735.688 / (Td + 6.014)$^{0.820}$ **a = 1735.688** **b = 0.820** **C = 6.014**

C =	0.87	
I =	178.6	mm/hr
Tc =	10	min
Total Area =	0.095	ha

100-Year Allowable Release Rate= **41.06** L/s

Total Allowable Release Rate = **136.02** L/s

***Total allowable release rate combines the existing onsite 2-year allowable release rate and the existing offsite 100-year alloable release rate**

Post Development Watersheds Information Table

					$\sum R_{2\&5}$
	Total Site Area =	**0.705**	ha	**∑R=**	
Controlled	WS-03 (ROOF CONTROLLED)	0.178	ha	R=	0.90
	WS-04 (RAMP CONTROLLED)	0.017	ha	R=	0.90
	WS-05 (CONTROLLED - AREA OVER PARKADE)	0.163	ha	R=	0.67
	WS-06 (CONTROLLED - EAST LANDSCAPED AREA)	0.138	ha	R=	0.25
	WS-07 (CONTROLLED - ONSITE ROAD)	0.027	ha	R=	0.90
	WS-08 (CONTROLLED - WEST LANDSCAPED AREA)	0.182	ha	R=	0.23
	EWS-03 (OFFSITE FLOWS)	0.095	ha	R=	0.87
	Total Controlled to Cistern =	**0.180**	ha	R=	**0.69**
	Total Controlled to ICD =	**0.441**	ha	R=	**0.42**
	Total Controlled =	**0.705**	**ha**	**∑R=**	**0.55**
Un-Controlled	WS-01(UNCONTROLLED TO KERRY CRESCENT)	0.140	ha	R=	**0.35**
	WS-02 (UNCONTROLLED TO MERIVALE ROAD)	0.044	ha	R=	**0.49**
	Total Un-Controlled =	**0.184**	**ha**	**∑R=**	**0.38**

Post-development Stormwater Management (Uncontrolled Catchments WS-01 & WS-02)

100 Year Storm Event:

I_5 = 998.071 / (Td + 6.053)$^{0.814}$ **a = 998.071** **b = 0.814** **C = 6.053**

Time (min)	Intensity (mm/hr)	Uncontrolled Runoff (L/s)	Controlled Release Rate Constant (L/s)	Total Release Rate (L/s)	
10	178.6	24.09	0.00	24.09	*Uncontrolled flow to Kerry Crescent
10	178.6	10.63	0.00	10.63	*Uncontrolled flow to Merivale Road
10	**178.6**	**34.72**	**0.00**	**34.72**	**Total uncontrolled flow from the site**

LRL File No. 200255
Project: 9-Storey Residential Building
Location: 1508 Merivale Road
Date: March 21, 2023
Designed: Tamara Harb
Drawing Ref.: C601

Stormwater Management
Design Sheet 2-YR Pre to 5-YR Post

Post-development Stormwater Management (WS-01 ROOF)

100 Year Storm Event:

$I_5 = 998.071 / (Td + 6.053)^{0.814}$ a = 998.071 b = 0.814 C = 6.053

Time (min)	Intensity (mm/hr)	Storage Required: Controlled Runoff (L/s)	Storage Required: Storage Volume (m^3)	Controlled Release Rate Constant (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	104.2	46.52	23.37	7.56	0.00	7.56
15	83.6	37.30	26.77	7.56	0.00	7.56
20	70.3	31.36	28.56	7.56	0.00	7.56
25	60.9	27.19	29.44	7.56	0.00	7.56
30	53.9	24.08	29.73	7.56	0.00	7.56
35	48.5	21.66	29.61	7.56	0.00	7.56
40	44.2	19.73	29.20	7.56	0.00	7.56
45	40.6	18.14	28.56	7.56	0.00	7.56
50	37.7	16.81	27.75	7.56	0.00	7.56
60	32.9	14.71	25.73	7.56	0.00	7.56
70	29.4	13.11	23.32	7.56	0.00	7.56
80	26.6	11.86	20.63	7.56	0.00	7.56
90	24.3	10.84	17.73	7.56	0.00	7.56
100	22.4	10.00	14.66	7.56	0.00	7.56
110	20.8	9.30	11.46	7.56	0.00	7.56
120	19.5	8.69	8.15	7.56	0.00	7.56

Summary of Roof Storage

Maximum Required Roof Storage (100 Year) =	29.73	m^3	
Proposed Head =	150	mm	*An Emergency overflow scupper is provided above this height.
Control Flow/Drain =	0.63	L/s	
Number of Roof Drains =	**12**		
Total Flow from Roof Drain =	7.56	L/s	
Available Roof Surface =	81.22	m^3	
Roof Drain Model =	*WATTS adjustable roof drain w/ fully closed weir opening*		
Total Storage Required =	**29.73**	**m^3**	
Available Roof Storage =	**81.22**	**m^3**	refer to LRL Plan C601

Post-development Stormwater Management (WS-04 & WS-05 CISTERN)

100 Year Storm Event:

$I_5 = 998.071 / (Td + 6.053)^{0.814}$ a = 998.071 b = 0.814 C = 6.053

Time (min)	Intensity (mm/hr)	Storage Required: Controlled Runoff (L/s)	Storage Required: Storage Volume (m^3)	Controlled Release Rate Constant (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	104.2	36.07	0.00	50.06	0.00	50.06
15	83.6	28.93	0.00	50.06	0.00	50.06
20	70.3	24.32	0.00	50.06	0.00	50.06
25	60.9	21.08	0.00	50.06	0.00	50.06
30	53.9	18.67	0.00	50.06	0.00	50.06
35	48.5	16.80	0.00	50.06	0.00	50.06
40	44.2	15.30	0.00	50.06	0.00	50.06
45	40.6	14.06	0.00	50.06	0.00	50.06
50	37.7	13.03	0.00	50.06	0.00	50.06
60	32.9	11.40	0.00	50.06	0.00	50.06
70	29.4	10.17	0.00	50.06	0.00	50.06
80	26.6	9.20	0.00	50.06	0.00	50.06
90	24.3	8.41	0.00	50.06	0.00	50.06
100	22.4	7.76	0.00	50.06	0.00	50.06
110	20.8	7.21	0.00	50.06	0.00	50.06
120	19.5	6.74	0.00	50.06	0.00	50.06

Total Storage Required =	0.00
Available Storage =	18.00

Post-development Stormwater Management (WS-06, WS-07, WS-08 & EWS-03) Orifice

100 Year Storm Event:

$I_5 = 998.071 / (Td + 6.053)^{0.814}$ a = 998.071 b = 0.814 C = 6.053

Time (min)	Intensity (mm/hr)	Storage Required: Controlled Runoff (L/s)	Storage Required: Storage Volume (m^3)	Controlled Release Rate Constant (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	104.2	53.05	10.83	35.00	0.00	35.00
15	83.6	42.55	6.79	35.00	0.00	35.00
20	70.3	35.77	0.92	35.00	0.00	35.00
25	60.9	31.01	0.00	35.00	0.00	35.00

LRL File No. 200255
Project: 9-Storey Residential Building
Location: 1508 Merivale Road
Date: March 21, 2023
Designed: Tamara Harb
Drawing Ref.: C601

Stormwater Management
Design Sheet 2-YR Pre to 5-YR Post

30	53.9	27.46	0.00	35.00	0.00	35.00
35	48.5	24.70	0.00	35.00	0.00	35.00
40	44.2	22.50	0.00	35.00	0.00	35.00
45	40.6	20.69	0.00	35.00	0.00	35.00
50	37.7	19.17	0.00	35.00	0.00	35.00
60	32.9	16.77	0.00	35.00	0.00	35.00
70	29.4	14.96	0.00	35.00	0.00	35.00
80	26.6	13.52	0.00	35.00	0.00	35.00
90	24.3	12.37	0.00	35.00	0.00	35.00
100	22.4	11.41	0.00	35.00	0.00	35.00
110	20.8	10.60	0.00	35.00	0.00	35.00
120	19.5	9.91	0.00	35.00	0.00	35.00

Total Storage Required = **10.83**
Available Storage = **387.73**

LRL File No. 200255
Project: 9-Storey Residential Building
Location: 1508 Merivale Road
Date: March 21, 2023
Designed: Tamara Harb
Drawing Ref.: C601

Stormwater Management
Design Sheet 2-YR Pre to 2-YR Post

Runoff Equation

Q = 2.78CIA (L/s)
C = Runoff coefficient
I = Rainfall intensity (mm/hr) = $A / (Td + C)^B$
A = Area (ha)
T_c = Time of concentration (min)

Pre-Development Release Rate Calculations

Pre-development Stormwater Management - 2 Year Storm

***Considers flows from EWS-01 and EWS-02**

2 year storm

$I2 = 732.95 / (Td + 6.199)^{0.81}$ **a = 732.951** **b = 0.810** **C = 6.199**

C =	0.50	max of 0.5 as per City of Ottawa
I =	76.8	mm/hr
Tc =	10	min
Total Area =	0.890	ha

2-Year Allowable Release Rate= 94.96 L/s

Pre-development Stormwater Management - 100 Year Storm

***Considers flows from EWS-03. These are offsite flows contributing to the site. As per discussions with the City, since this site is to control these offiste flows. Only the pre100year to post 100year flows will be considered for control. Pre to post C value will remain.**

$I_{100} = 1735.688 / (Td + 6.014)^{0.820}$ **a = 1735.688** **b = 0.820** **C = 6.014**

C =	0.87	
I =	178.6	mm/hr
Tc =	10	min
Total Area =	0.095	ha

100-Year Allowable Release Rate= 41.06 L/s

Total Allowable Release Rate = 136.02 L/s

***Total allowable release rate combines the existing onsite 2-year allowable release rate and the existing offsite 100-year alloable release rate**

Post Development Watersheds Information Table

					$\sum R_{2\&5}$
	Total Site Area =	**0.705**	ha	**∑R=**	
Controlled	WS-03 (ROOF CONTROLLED)	0.178	ha	R=	0.90
	WS-04 (RAMP CONTROLLED)	0.017	ha	R=	0.90
	WS-05 (CONTROLLED - AREA OVER PARKADE)	0.163	ha	R=	0.67
	WS-06 (CONTROLLED - EAST LANDSCAPED AREA)	0.138	ha	R=	0.25
	WS-07 (CONTROLLED - ONSITE ROAD)	0.027	ha	R=	0.90
	WS-08 (CONTROLLED - WEST LANDSCAPED AREA)	0.182	ha	R=	0.23
	EWS-03 (OFFSITE FLOWS)	0.095	ha	R=	0.87
	Total Controlled to Cistern =	**0.180**	ha	R=	**0.69**
	Total Controlled to ICD =	**0.441**	ha	R=	**0.42**
	Total Controlled =	**0.705**	**ha**	**∑R=**	**0.55**
Un-Controlled	WS-01(UNCONTROLLED TO KERRY CRESCENT)	0.140	ha	R=	**0.35**
	WS-02 (UNCONTROLLED TO MERIVALE ROAD)	0.044	ha	R=	**0.49**
	Total Un-Controlled =	**0.184**	**ha**	**∑R=**	**0.38**

Post-development Stormwater Management (Uncontrolled Catchments WS-01 & WS-02)

2 Year Storm Event:

$I2 = 732.95 / (Td + 6.199)^{0.81}$ **a = 732.951** **b = 0.810** **C = 6.199**

Time (min)	Intensity (mm/hr)	Uncontrolled Runoff (L/s)	Controlled Release Rate Constant (L/s)	Total Release Rate (L/s)	
10	76.8	10.36	0.00	10.36	*Uncontrolled flow to Kerry Crescent
10	76.8	4.57	0.00	4.57	*Uncontrolled flow to Merivale Road
10	76.8	**14.93**	**0.00**	**14.93**	**Total uncontrolled flow from the site**

Post-development Stormwater Management (WS-01 ROOF)

100 Year Storm Event:

$I_2 = 732.95 / (Td + 6.199)^{0.81}$ **a = 732.951** **b = 0.810** **C = 6.199**

		Storage Required				
Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate Constant (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	76.8	34.29	16.04	7.56	0.00	7.56
15	61.8	27.58	18.01	7.56	0.00	7.56
20	52.0	23.23	18.80	7.56	0.00	7.56
25	45.2	20.16	18.91	7.56	0.00	7.56

LRL File No. 200255
Project: 9-Storey Residential Building
Location: 1508 Merivale Road
Date: March 21, 2023
Designed: Tamara Harb
Drawing Ref.: C601

Stormwater Management
Design Sheet 2-YR Pre to 2-YR Post

30	40.0	17.88	18.57	7.56	0.00	7.56
35	36.1	16.10	17.93	7.56	0.00	7.56
40	32.9	14.67	17.07	7.56	0.00	7.56
45	30.2	13.50	16.04	7.56	0.00	7.56
50	28.0	12.52	14.88	7.56	0.00	7.56
60	24.6	10.96	12.25	7.56	0.00	7.56
70	21.9	9.78	9.34	7.56	0.00	7.56
80	19.8	8.85	6.21	7.56	0.00	7.56
90	18.1	8.10	2.92	7.56	0.00	7.56
100	16.7	7.48	0.00	7.56	0.00	7.56
110	15.6	6.95	0.00	7.56	0.00	7.56
120	14.6	6.50	0.00	7.56	0.00	7.56

Summary of Roof Storage

Maximum Required Roof Storage (100 Year) =	18.91	m^3	
Proposed Head =	150	mm	*An Emergency overflow scupper is provided above this height.
Control Flow/Drain =	0.63	L/s	
Number of Roof Drains =	**12**		
Total Flow from Roof Drain =	7.56	L/s	
Available Roof Surface =	81.22	m^3	
Roof Drain Model =	*WATTS adjustable roof drain w/ fully closed weir opening*		
Total Storage Required =	**18.91**	**m^3**	
Available Roof Storage =	**81.22**	**m^3**	refer to LRL Plan C601

Post-development Stormwater Management (WS-04 & WS-05 CISTERN)

100 Year Storm Event:

$I_2 = 732.95 / (Td + 6.199)^{0.81}$ **a = 732.951** **b = 0.810** **C = 6.199**

		Storage Required				
Time (min)	**Intensity (mm/hr)**	**Controlled Runoff (L/s)**	**Storage Volume (m^3)**	**Controlled Release Rate Constant (L/s)**	**Uncontrolled Runoff (L/s)**	**Total Release Rate (L/s)**
10	76.8	26.59	0.00	50.06	0.00	50.06
15	61.8	21.38	0.00	50.06	0.00	50.06
20	52.0	18.01	0.00	50.06	0.00	50.06
25	45.2	15.64	0.00	50.06	0.00	50.06
30	40.0	13.86	0.00	50.06	0.00	50.06
35	36.1	12.48	0.00	50.06	0.00	50.06
40	32.9	11.38	0.00	50.06	0.00	50.06
45	30.2	10.47	0.00	50.06	0.00	50.06
50	28.0	9.71	0.00	50.06	0.00	50.06
60	24.6	8.50	0.00	50.06	0.00	50.06
70	21.9	7.59	0.00	50.06	0.00	50.06
80	19.8	6.86	0.00	50.06	0.00	50.06
90	18.1	6.28	0.00	50.06	0.00	50.06
100	16.7	5.80	0.00	50.06	0.00	50.06
110	15.6	5.39	0.00	50.06	0.00	50.06
120	14.6	5.04	0.00	50.06	0.00	50.06

Post-development Stormwater Management (WS-06, WS-07, WS-08 & EWS-03) Orifice

100 Year Storm Event:

$I2 = 732.95 / (Td + 6.199)^{0.81}$ **a = 732.951** **b = 0.810** **C = 6.199**

		Storage Required				
Time (min)	**Intensity (mm/hr)**	**Controlled Runoff (L/s)**	**Storage Volume (m^3)**	**Controlled Release Rate Constant (L/s)**	**Uncontrolled Runoff (L/s)**	**Total Release Rate (L/s)**
10	76.8	39.11	2.46	35.00	0.00	35.00
15	61.8	31.45	0.00	35.00	0.00	35.00
20	52.0	26.49	0.00	35.00	0.00	35.00
25	45.2	23.00	0.00	35.00	0.00	35.00
30	40.0	20.39	0.00	35.00	0.00	35.00
35	36.1	18.36	0.00	35.00	0.00	35.00
40	32.9	16.73	0.00	35.00	0.00	35.00
45	30.2	15.40	0.00	35.00	0.00	35.00
50	28.0	14.28	0.00	35.00	0.00	35.00
60	24.6	12.50	0.00	35.00	0.00	35.00
70	21.9	11.16	0.00	35.00	0.00	35.00
80	19.8	10.10	0.00	35.00	0.00	35.00
90	18.1	9.24	0.00	35.00	0.00	35.00
100	16.7	8.53	0.00	35.00	0.00	35.00
110	15.6	7.93	0.00	35.00	0.00	35.00
120	14.6	7.41	0.00	35.00	0.00	35.00

Required Storage =	**2.46**	**m^3**	There is a more than sufficient capacity within the manholes and 300mm STM sewer.
Available Storage in Underground Pipes =	**11.53**	**m^3**	There will be no above ground ponding during the 2 year storm.

LRL Associates Ltd.

Storm Design Sheet

LRL File No.	200255
Project:	9-Storey Residential Building
Location:	1508 Merivale Road
Date:	March 21, 2023
Designed:	Tamara Harb
Drawing Reference:	C.401

Storm Design Parameters

Rational Method Q = 2.78CIA

Q = Peak flow in litres per second (L/s)
A = Drainage area in hectares (ha)
C = Runoff coefficient
I = Rainfall intensity (mm/hr)

Runoff Coefficient (C)

Grass	0.20
Gravel	0.70
Asphalt / rooftop	0.90

Ottawa Macdonald-Cartier International Airport IDF curve equation (10 year event, intensity in mm/hr)

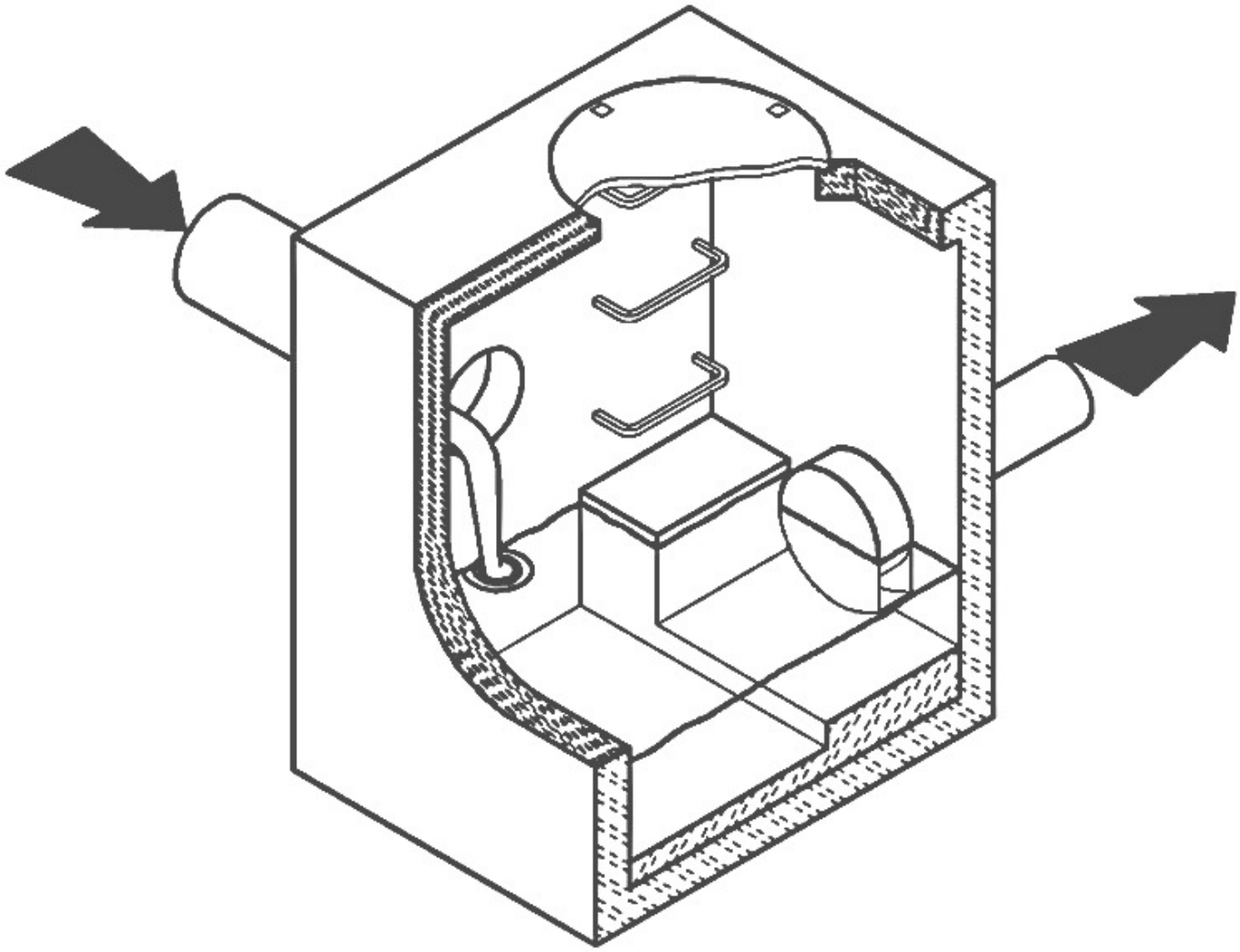
I100 = 1735.688 / (Td + 6.014)0.820

Min. velocity = 0.80 m/s
Manning's "n" = 0.013

LOCATION			AREA (ha)			FLOW						STORM SEWER							
WATERSHED / STREET	From	To	C = 0.20	C = 0.70	C = 0.90	Indiv. 2.78AC	Accum. 2.78AC	Time of Conc. (min.)	Rainfall Intensity (mm/hr)	Peak Flow Q (L/s)	Controlled Flow Q (L/s)	Pipe Diameter (mm)	Type	Slope (%)	Length (m)	Capacity Full (L/s)	Velocity Full (m/s)	Time of Flow (min.)	Ratio (Q/Q_{FULL})
WS-07	STM CB01	PROP 300mm STM SEWER	0.000	0.000	0.027	0.068	0.068	10.00	178.6	12.07		200	PVC	1.00%	1.1	32.8	1.04	0.02	0.37
WS-06, WS-07, WS-08 & EWS-03	STM CBMH01	STM CB MH02	0.31	0.00	0.14	0.509	0.577	10.02	178.6	103.01	35.00	300	PVC	0.35%	42.9	57.2	0.81	0.88	0.61
WS-06, WS-07, WS-08 & EWS-03	STM CBMH02	ST MH01					0.577	10.90	178.6	103.01	35.00	300	PVC	0.35%	30.1	57.2	0.81	0.62	0.61
WS-03(ROOF) & WS-04(RAMP)	BUILDING	STM MH01	0.00	0.00	0.20	0.490	0.490	10.00	178.6	87.50	57.62	375	PVC	0.35%	3.1	103.7	0.94	0.06	0.56
WS-06, WS-07, WS-08, EWS-03, WS-03(ROOF) & WS-04(RAMP)	STM MH01	EX 525mm STM SEWER					1.067	10.96	178.6	190.51	92.62	375.00	PVC	1.50%	5.80	214.73	1.94	0.05	0.89

CSO/STORMWATER MANAGEMENT

HYDROVEX® VHV / SVHV
Vertical Vortex Flow Regulator



JOHN MEUNIER

APPLICATIONS

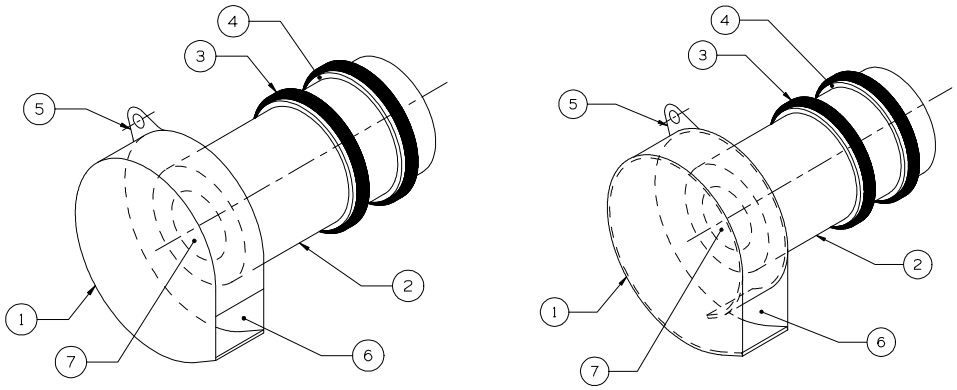
One of the major problems of urban wet weather flow management is the runoff generated after a heavy rainfall. During a storm, uncontrolled flows may overload the drainage system and cause flooding. Due to increased velocities, sewer pipe wear is increased dramatically and results in network deterioration. In a combined sewer system, the wastewater treatment plant may also experience significant increases in flows during storms, thereby losing its treatment efficiency.

A simple means of controlling excessive water runoff is by controlling excessive flows at their origin (manholes). **John Meunier Inc.** manufactures the **HYDROVEX® VHV / SVHV** line of vortex flow regulators to control stormwater flows in sewer networks, as well as manholes.

The vortex flow regulator design is based on the fluid mechanics principle of the forced vortex. This grants flow regulation without any moving parts, thus reducing maintenance. The operation of the regulator, depending on the upstream head and discharge, switches between orifice flow (gravity flow) and vortex flow. Although the concept is quite simple, over 12 years of research have been carried out in order to get a high performance.

The **HYDROVEX® VHV / SVHV** Vertical Vortex Flow Regulators **(refer to Figure 1)** are manufactured entirely of stainless steel, and consist of a hollow body (**1**) (in which flow control takes place) and an outlet orifice (**7**). Two rubber "O" rings (**3**) seal and retain the unit inside the outlet pipe. Two stainless steel retaining rings (**4**) are welded on the outlet sleeve to ensure that there is no shifting of the "O" rings during installation and use.

1. BODY
2. SLEEVE
3. O-RING
4. RETAINING RINGS (SQUARE BAR)
5. ANCHOR PLATE
6. INLET
7. OUTLET ORIFICE



VHV *SVHV*

FIGURE 1: HYDROVEX® VHV-SVHV VERTICAL VORTREX FLOW REGULATORS

ADVANTAGES

- The **HYDROVEX® VHV / SVHV** line of flow regulators are manufactured entirely of stainless steel, making them durable and corrosion resistant.
- Having no moving parts, they require minimal maintenance.
- The geometry of the **HYDROVEX® VHV / SVHV** flow regulators allows a control equal to an orifice plate, having a cross section area 4 to 6 times smaller. This decreases the chance of blockage of the regulator, due to sediments and debris found in stormwater flows. **Figure 2** illustrates the comparison between a regulator model 100 SVHV-2 and an equivalent orifice plate. One can see that for the same height of water, the regulator controls a flow approximately four times smaller than an equivalent orifice plate.
- Installation of the **HYDROVEX® VHV / SVHV** flow regulators is quick and straightforward and is performed after all civil works are completed.
- Installation requires no special tools or equipment and may be carried out by any contractor.
- Installation may be carried out in existing structures.

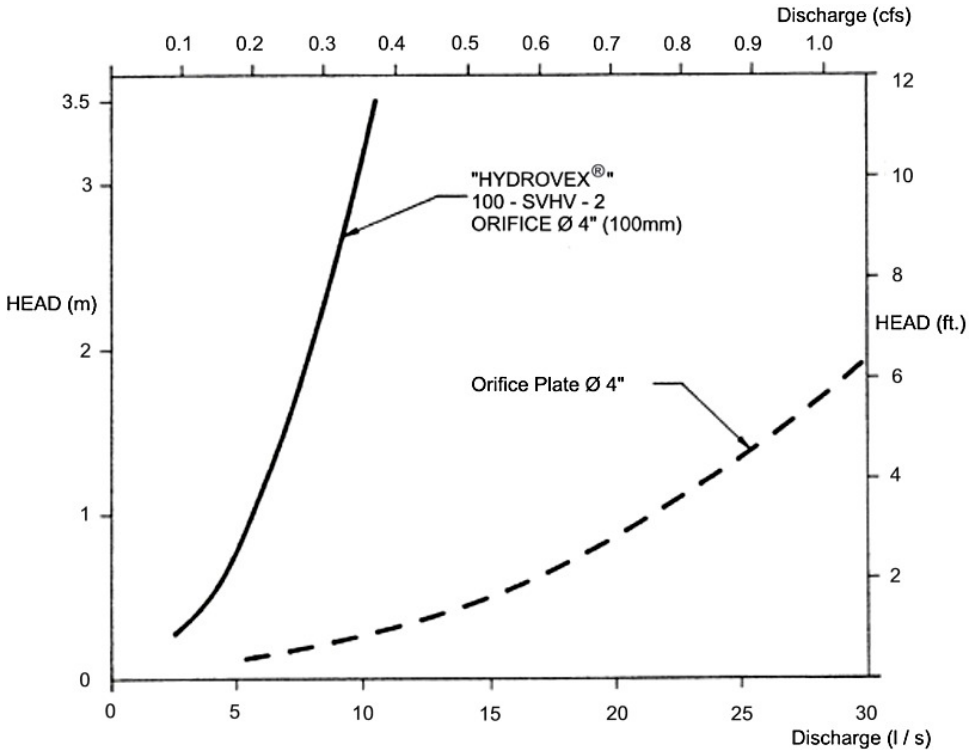


FIGURE 2: DISCHARGE CURVE SHOWING A HYDROVEX® FLOW REGULATOR VS AN ORIFICE PLATE

SELECTION

Selection of a **VHV or SVHV** regulator can be easily made using the selection charts found at the back of this brochure (see **Figure 3**). These charts are a graphical representation of the maximum upstream water pressure (head) and the maximum discharge at the manhole outlet. The maximum design head is the difference between the maximum upstream water level and the invert of the outlet pipe. All selections should be verified by John Meunier Inc. personnel prior to fabrication.

Example:

✓ Maximum design head	2m (6.56 ft.)
✓ Maximum discharge	6 L/s (0.2 cfs)
✓ Using **Figure 3** - VHV	model required is a **75 VHV-1**

INSTALLATION REQUIREMENTS

All **HYDROVEX® VHV / SVHV** flow regulators can be installed in circular or square manholes. **Figure 4** gives the various minimum dimensions required for a given regulator. ***It is imperative to respect the minimum clearances shown to ensure easy installation and proper functioning of the regulator.***

SPECIFICATIONS

In order to specify a **HYDROVEX®** regulator, the following parameters must be defined:

- The model number (ex: 75-VHV-1)
- The diameter and type of outlet pipe (ex: 6" diam. SDR 35)
- The desired discharge (ex: 6 l/s or 0.21 CFS)
- The upstream head (ex: 2 m or 6.56 ft.) *
- The manhole diameter (ex: 36" diam.)
- The minimum clearance "H" (ex: 10 inches)
- The material type (ex: 304 s/s, 11 Ga. standard)

* ***Upstream head is defined as the difference in elevation between the maximum upstream water level and the invert of the outlet pipe where the HYDROVEX® flow regulator is to be installed.***

PLEASE NOTE THAT WHEN REQUESTING A PROPOSAL, WE SIMPLY REQUIRE THAT YOU PROVIDE US WITH THE FOLLOWING:

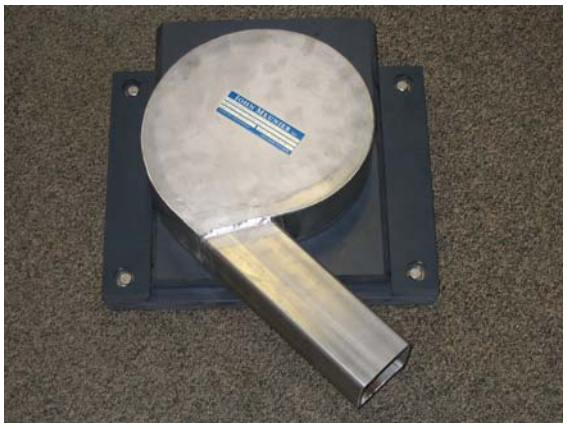
- ***project design flow rate***
- ***pressure head***
- ***chamber's outlet pipe diameter and type***

Typical VHV model in factory

OPTIONS

FV – SVHV (mounted on sliding plate)

VHV-1-O (standard model with odour control inlet)



FV – VHV-O (mounted on sliding plate with odour control inlet)

VHV with Gooseneck assembly in existing chamber without minimum release at the bottom

VHV with air vent for minimal slopes

HYDROVEX®

VHV Vertical Vortex Flow Regulator

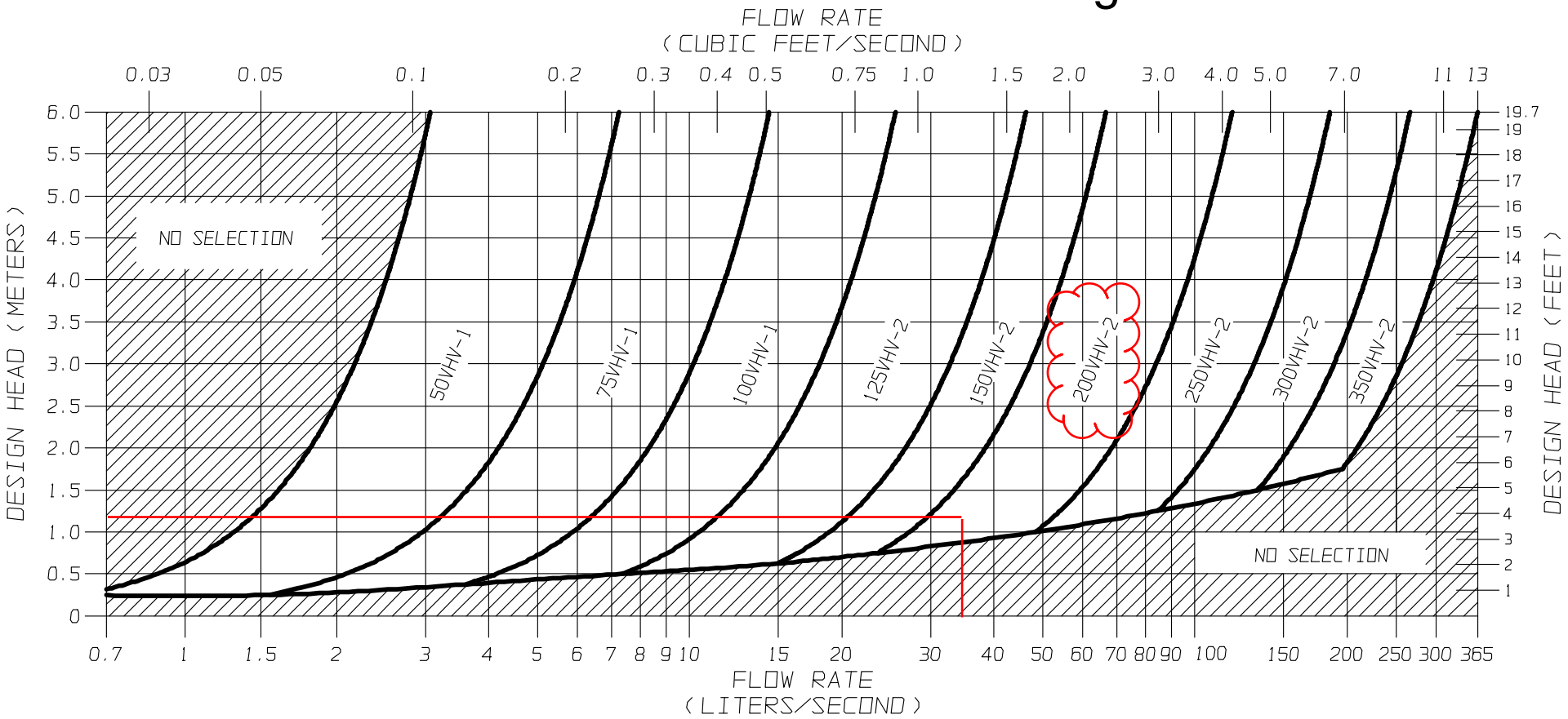


FIGURE 3 - VHV

JOHN MEUNIER

HYDROVEX®

SVHV Vertical Vortex Flow Regulator

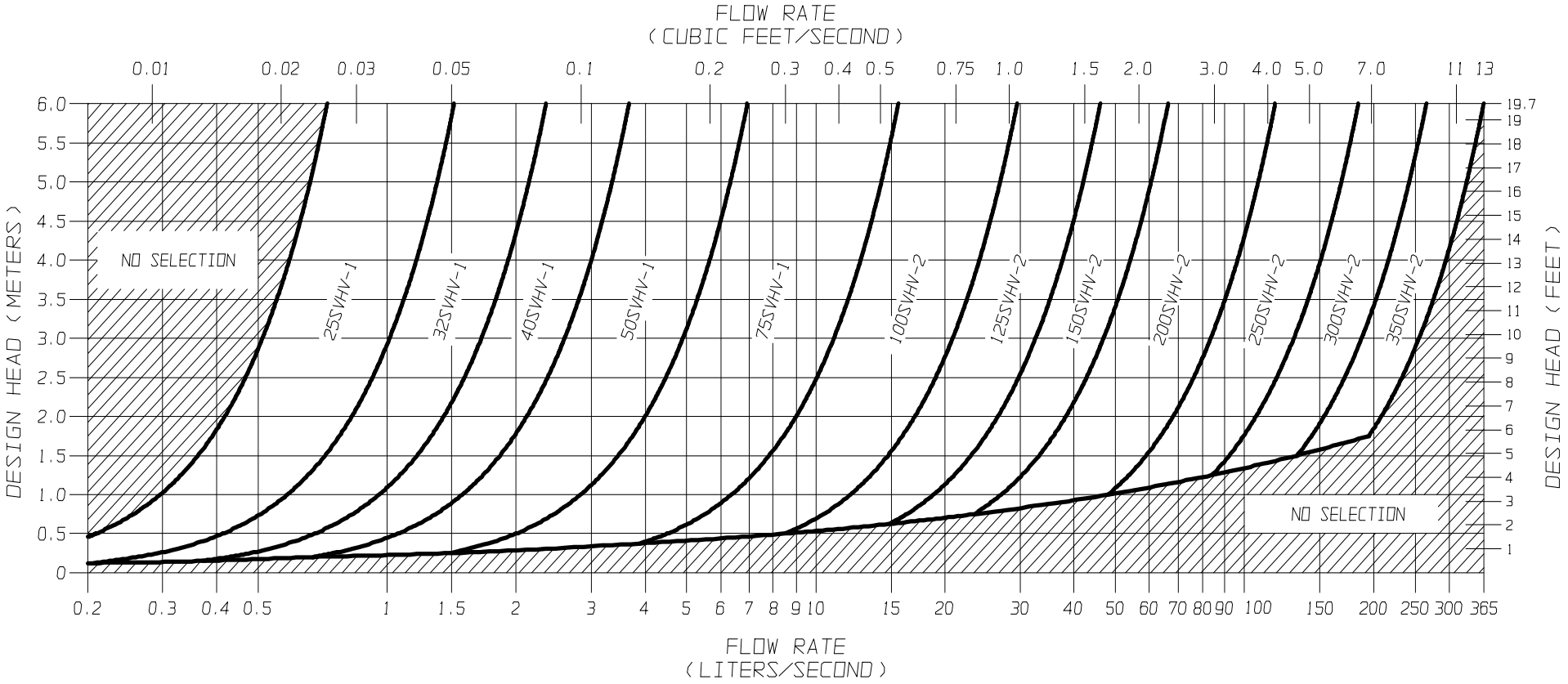
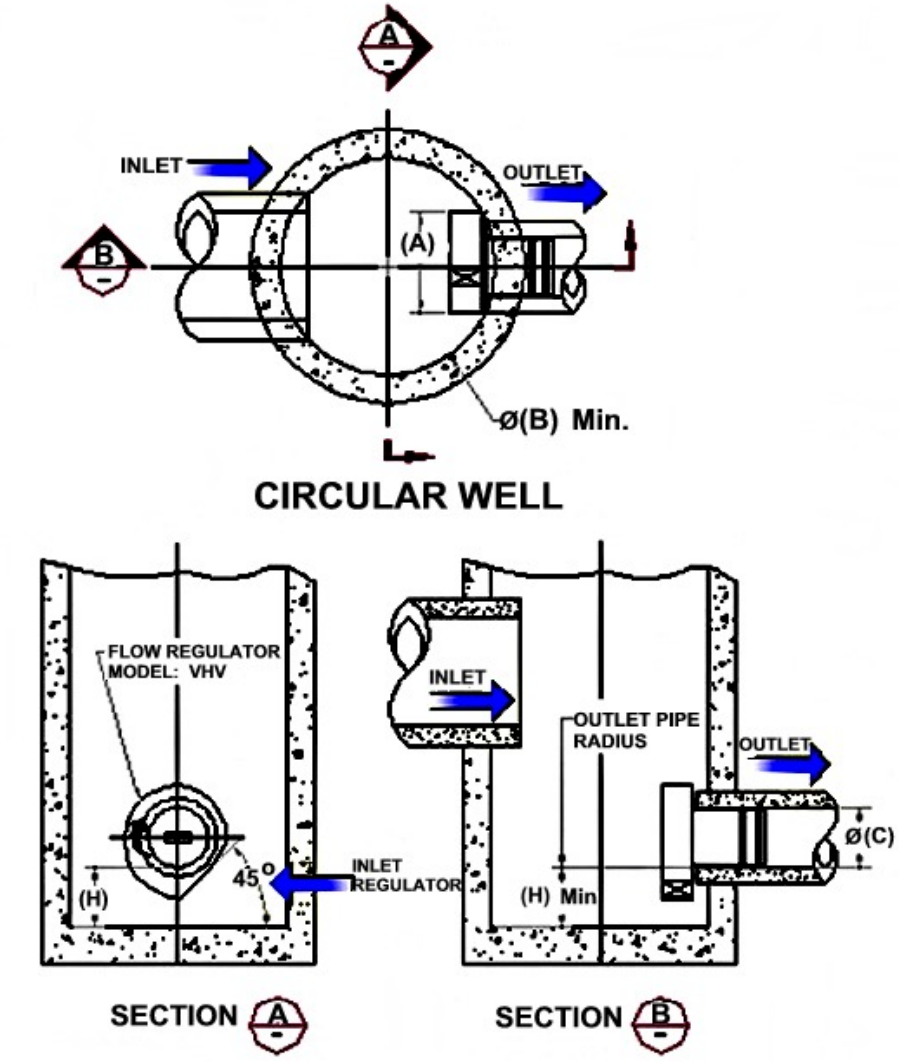


FIGURE 3 - SVHV

JOHN MEUNIER

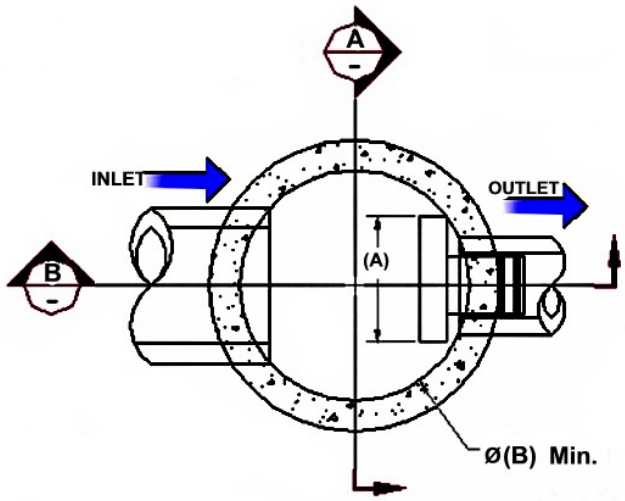
FLOW REGULATOR TYPICAL INSTALLATION IN CIRCULAR MANHOLE
FIGURE 4 (MODEL VHV)

Model Number	Regulator Diameter		Minimum Manhole Diameter		Minimum Outlet Pipe Diameter		Minimum Clearance	
	A (mm)	**A** (in.)	**B** (mm)	**B** (in.)	**C** (mm)	**C** (in.)	**H** (mm)	**H** (in.)
50VHV-1	150	6	600	24	150	6	150	6
75VHV-1	250	10	600	24	150	6	150	6
100VHV-1	325	13	900	36	150	6	200	8
125VHV-2	275	11	900	36	150	6	200	8
150VHV-2	350	14	900	36	150	6	225	9
200VHV-2	450	18	1200	48	200	8	300	12
250VHV-2	575	23	1200	48	250	10	350	14
300VHV-2	675	27	1600	64	250	10	400	16
350VHV-2	800	32	1800	72	300	12	500	20

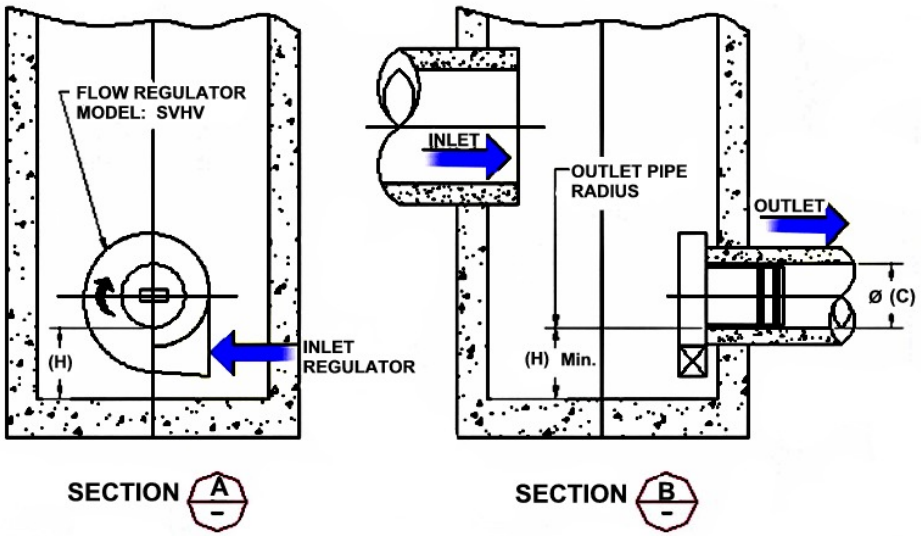


FLOW REGULATOR TYPICAL INSTALLATION IN CIRCULAR MANHOLE
FIGURE 4 (MODEL SVHV)

Model Number	Regulator Diameter		Minimum Manhole Diameter		Minimum Outlet Pipe Diameter		Minimum Clearance	
	A (mm)	**A** (in.)	**B** (mm)	**B** (in.)	**C** (mm)	**C** (in.)	**H** (mm)	**H** (in.)
25 SVHV-1	125	5	600	24	150	6	150	6
32 SVHV-1	150	6	600	24	150	6	150	6
40 SVHV-1	200	8	600	24	150	6	150	6
50 SVHV-1	250	10	600	24	150	6	150	6
75 SVHV-1	375	15	900	36	150	6	275	11
100 SVHV-2	275	11	900	36	150	6	250	10
125 SVHV-2	350	14	900	36	150	6	300	12
150 SVHV-2	425	17	1200	48	150	6	350	14
200 SVHV-2	575	23	1600	64	200	8	450	18
250 SVHV-2	700	28	1800	72	250	10	550	22
300 SVHV-2	850	34	2400	96	250	10	650	26
350 SVHV-2	1000	40	2400	96	250	10	700	28



CIRCULAR WELL

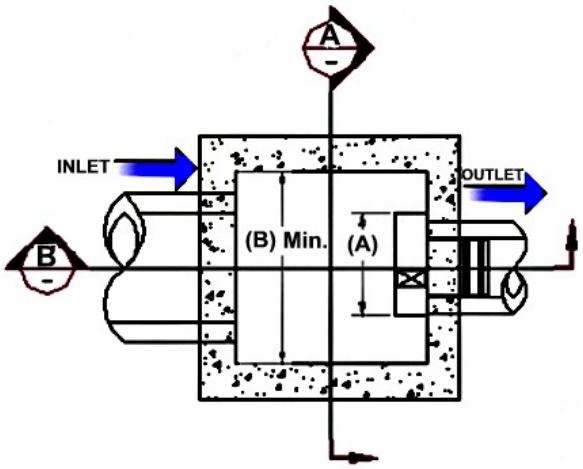


SECTION A **SECTION B**

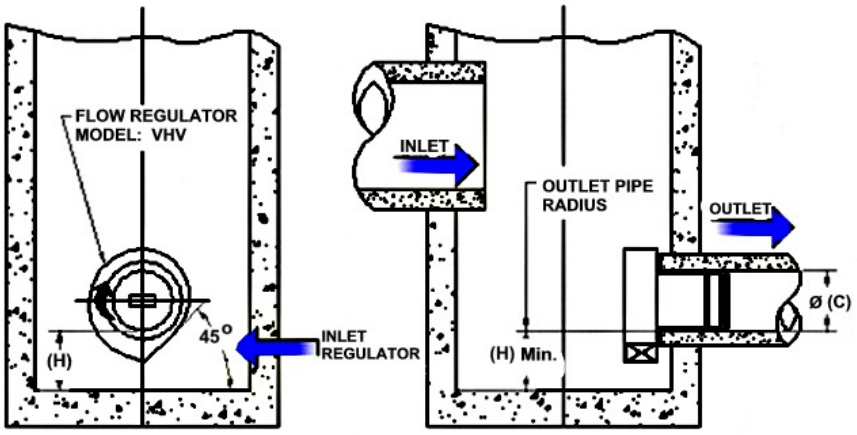
FLOW REGULATOR TYPICAL INSTALLATION IN SQUARE MANHOLE
FIGURE 4 (MODEL VHV)

Model Number	Regulator Diameter		Minimum Chamber Width		Minimum Outlet Pipe Diameter		Minimum Clearance	
	A (mm)	**A** (in.)	**B** (mm)	**B** (in.)	**C** (mm)	**C** (in.)	**H** (mm)	**H** (in.)
50VHV-1	150	6	600	24	150	6	150	6
75VHV-1	250	10	600	24	150	6	150	6
100VHV-1	325	13	600	24	150	6	200	8
125VHV-2	275	11	600	24	150	6	200	8
150VHV-2	350	14	600	24	150	6	225	9
200VHV-2	450	18	900	36	200	8	300	12
250VHV-2	575	23	900	36	250	10	350	14
300VHV-2	675	27	1200	48	250	10	400	16
350VHV-2	800	32	1200	48	300	12	500	20

NOTE: ***In the case of a square manhole, the outlet flow pipe must be centered on the wall to ensure enough clearance for the unit.***



SQUARE / RECTANGULAR WELL

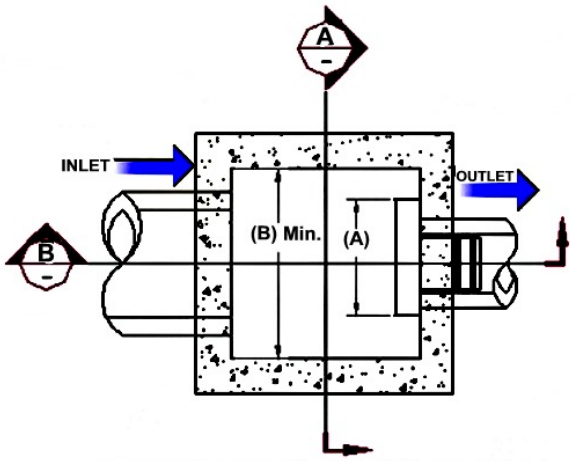


SECTION A **SECTION B**

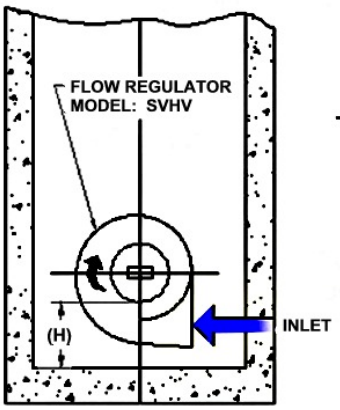
FLOW REGULATOR TYPICAL INSTALLATION IN SQUARE MANHOLE
FIGURE 4 (MODEL SVHV)

Model Number	Regulator Diameter		Minimum Chamber Width		Minimum Outlet Pipe Diameter		Minimum Clearance	
	A (mm)	**A** (in.)	**B** (mm)	**B** (in.)	**C** (mm)	**C** (in.)	**H** (mm)	**H** (in.)
25 SVHV-1	125	5	600	24	150	6	150	6
32 SVHV-1	150	6	600	24	150	6	150	6
40 SVHV-1	200	8	600	24	150	6	150	6
50 SVHV-1	250	10	600	24	150	6	150	6
75 SVHV-1	375	15	600	24	150	6	275	11
100 SVHV-2	275	11	600	24	150	6	250	10
125 SVHV-2	350	14	600	24	150	6	300	12
150 SVHV-2	425	17	600	24	150	6	350	14
200 SVHV-2	575	23	900	36	200	8	450	18
250 SVHV-2	700	28	900	36	250	10	550	22
300 SVHV-2	850	34	1200	48	250	10	650	26
350 SVHV-2	1000	40	1200	48	250	10	700	28

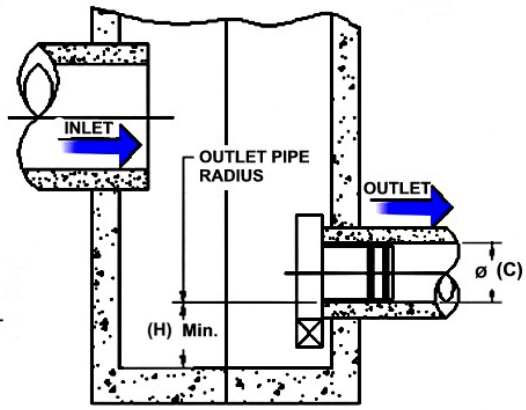
NOTE: ***In the case of a square manhole, the outlet flow pipe must be centered on the wall to ensure enough clearance for the unit.***



SQUARE / RECTANGULAR WELL



SECTION A



SECTION B

INSTALLATION

The installation of a **HYDROVEX®** regulator may be undertaken once the manhole and piping is in place. Installation consists of simply fitting the regulator into the outlet pipe of the manhole. **John Meunier Inc.** recommends the use of a lubricant on the outlet pipe, in order to facilitate the insertion and orientation of the flow controller.

MAINTENANCE

HYDROVEX® regulators are manufactured in such a way as to be maintenance free; however, a periodic inspection (every 3-6 months) is suggested in order to ensure that neither the inlet nor the outlet has become blocked with debris. The manhole should undergo periodically, particularly after major storms, inspection and cleaning as established by the municipality

GUARANTY

The **HYDROVEX®** line of **VHV / SVHV** regulators are guaranteed against both design and manufacturing defects for a period of 5 years. Should a unit be defective, **John Meunier Inc.** is solely responsible for either modification or replacement of the unit.

John Meunier Inc.
ISO 9001 : 2008

Head Office
4105 Sartelon
Saint-Laurent (Quebec) Canada H4S 2B3
Tel.: 514-334-7230 www.johnmeunier.com
Fax: 514-334-5070 cso@johnmeunier.com

Ontario Office
2000 Argentia Road, Plaza 4, Unit 430
Mississauga (Ontario) Canada L5N 1W1
Tel.: 905-286-4846 www.johnmeunier.com
Fax: 905-286-0488 ontario@johnmeunier.com

USA Office
2209 Menlo Avenue
Glenside, PA USA 19038
Tel.: 412- 417-6614 www.johnmeunier.com
Fax: 215-885-4741 asteele@johnmeunier.com

Revised: 2011-05-03

APPENDIX E

Civil Engineering Drawings

PROPOSED 9-STOREY MULTI-USE BUILDING
1509 MERIVALE ROAD, OTTAWA, ON.

REVISION 02

KEY PLAN (N.T.S.)

DRAWING INDEX	
DRAWING NAME	**DRAWING NUMBER**
TITLE PAGE	
GENERAL NOTES	C001
SEDIMENT AND EROSION CONTROL PLAN	C101
DEMOLITION PLAN	C102
GRADING AND DRAINAGE PLAN	C301
SERVICING PLAN	C401
STORMWATER MANAGEMENT PLAN	C601
PRE-DEVELOPMENT WATERSHED PLAN	C701
POST-DEVELOPMENT WATERSHED PLAN	C702
CONSTRUCTION DETAIL PLAN	C901

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

PROPOSED 9-STOREY MULTI-USE BUILDING
1509 MERIVALE ROAD, OTTAWA, ON.
REV.01 - ISSUED FOR MUNICIPAL APPROVAL - APRIL 11, 2023
LRL PROJECT no: 200255

LICENSED PROFESSIONAL ENGINEER
V. JOHNSON
100510576
04-11-2023
PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

NO. 18657

D07-12-21-0233

GENERAL NOTES

1. ALL WORKS MATERIALS SHALL CONFIRM TO THE LAST REVISION OF THE STANDARDS AND SPECIFICATIONS FOR THE CITY OF OTTAWA, ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS), WHERE APPLICABLE. LOCAL UTILITY STANDARDS AND MINISTRY OF TRANSPORTATION STANDARDS WILL APPLY WHERE REQUIRED.
2. THE CONTRACTORS SHALL CONFIRM THE LOCATION OF ALL EXISTING UTILITIES WITHIN THE SITE AND ADJACENT WORK AREAS. THE CONTRACTORS SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ANY SERVICES OR UTILITIES DISTURBED DURING CONSTRUCTION , TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION.
3. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION, ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER. LOST TIME DUE TO FAILURE OF THE CONTRACTORS TO CONFIRM UTILITY LOCATIONS AND NOTIFY ENGINEER OF POSSIBLE CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT CONTRACTORS EXPENSE.
4. ANY AREA BEYOND THE LIMIT OF THE SITE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION AT THE CONTRACTOR'S EXPENSE.
   RELOCATING OF EXISTING SERVICES AND/OR UTILITIES SHALL BE AS SHOWN ON THE DRAWINGS OR DETECTED BY THE ENGINEER AT THE EXPENSE OF DEVELOPERS.
5. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE 'OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS'. THE GENERAL CONTRACTORS SHALL BE DEEMED TO BE THE 'CONTRACTOR' AS DEFINED IN THE ACT.
6. ALL THE CONSTRUCTION SIGNAGE MUST CONFIRM TO THE MINISTRY OF TRANSPORTATION OF ONTARIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PER LATEST AMENDMENT.
7. THE CONTRACTOR IS ADVISED THAT WORKS BY OTHERS MAY BE ONGOING DURING THE PERIOD OF THE CONTRACT. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES TO PREVENT CONFLICTS.
8. ALL DIMENSIONS ARE IN METRES UNLESS SPECIFIED OTHERWISE.
9. THERE WILL BE NO SUBSTITUTION OF MATERIALS UNLESS PRIOR WRITTEN APPROVAL IS RECEIVED FROM THE ENGINEER.
10. ALL CONSTRUCTION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RECOMMENDATIONS MADE IN THE GEOTECHNICAL REPORT.
11. FOR DETAILS RELATING TO STORMWATER MANAGEMENT AND ROOF DRAINAGE REFER TO THE SITE SERVICING AND STORMWATER MANAGEMENT REPORT.
12. ALL SEWERS CONSTRUCTED WITH GRADES LESS THAN 1.0% SHALL BE INSTALLED USING LASER ALIGNMENT AND CHECKED WITH LEVEL INSTRUMENT PRIOR TO BACKFILLING.
13. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED AND TO BEAR THE COST OF THE SAME.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADDITIONAL BEDDING, OR ADDITIONAL STRENGTH PIPE IF THE MAXIMUM TRENCH WIDTH AS SPECIFIED BY OPSD IS EXCEEDED.
15. ALL PIPE/CULVERT SECTION SIZES REFER TO INSIDE DIMENSIONS.
16. SHOULD DEEPLY BURIED ARCHAEOLOGICAL REMAINS BE FOUND ON THE PROPERTY DURING CONSTRUCTION ACTIVITIES, THE HERITAGE OPERATIONS UNIT OF THE ONTARIO MINISTRY OF CULTURE MUST BE NOTIFIED IMMEDIATELY.
17. ALL NECESSARY CLEARING AND GRUBBING SHALL BE COMPLETED BY THE CONTRACTOR. REVIEW WITH CONTRACT ADMINISTRATOR AND THE CITY OF OTTAWA PRIOR TO ANY TREE CUTTING/REMOVAL.
18. DRAWINGS SHALL BE READ ON CONJUNCTION WITH ARCHITECTURAL SITE PLAN.
19. THE CONTRACTOR SHALL PROVIDE THE PROJECT ENGINEER ON SET OF AS CONSTRUCTED SITE SERVICING AND GRADING DRAWINGS.
20. BENCHMARKS: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THAT THE SITE BENCHMARK(S) HAS NOT BEEN ALTERED OR DISTURBED AND THAT ITS RELATIVE ELEVATION AND DESCRIPTION AGREES WITH THE INFORMATION DEPICTED ON THIS PLAN.

EROSION AND SEDIMENT CONTROL NOTES

GENERAL

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.

THE CONTRACTOR ACKNOWLEDGES THAT SURFACE EROSION AND SEDIMENT RUNOFF RESULTING FROM THEIR CONSTRUCTION OPERATIONS HAS POTENTIAL TO CAUSE A DETRIMENTAL IMPACT TO ANY DOWNSTREAM WATERCOURSE OR SEWER, AND THAT ALL CONSTRUCTION OPERATIONS THAT MAY IMPACT UPON WATER QUALITY SHALL BE CARRIED OUT IN MANNER THAT STRICTLY MEETS THE REQUIREMENT OF ALL APPLICABLE LEGISLATION AND REGULATIONS.

AS SUCH, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CARRYING OUT THEIR OPERATIONS, AND SUPPLYING AND INSTALLING ANY APPROPRIATE CONTROL MEASURES, SO AS TO PREVENT SEDIMENT LADEN RUNOFF ENTERING ANY SEWER OR WATERCOURSE WITHIN OR DOWNSTREAM OF THE WORKING AREA.

THE CONTRACTOR ACKNOWLEDGES THAT NO ONE MEASURE IS LIKELY TO BE 100% EFFECTIVELY FOR EROSION PROTECTION AND CONTROLLING SEDIMENT RUNOFF AND DISCHARGES FROM THE SITE. THEREFORE, WHERE NECESSARY THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL MEASURES ARRANGED IN SUCH MANNER AS TO MITIGATE SEDIMENT RELEASE FROM THE CONSTRUCTION OPERATIONS AND ACHIEVE SPECIFIC MAXIMUM PERMITTED CRITERIA WHERE APPLICABLE. SUGGESTED ON-SITE MEASURES MAY INCLUDE, BUT SHALL NOT BE LIMITED TO, THE FOLLOWING METHODS: SEDIMENT PONDS, FILTER BAGS, PUMP FILTERS, SETTLING TANKS, SILT FENCE, STRAW BALES, FILTER CLOTHS, CATCH BASIN FILTERS, CHECK DAMS AND/OR OTHER RECOGNIZED TECHNOLOGIES AND METHOD AVAILABLE AT THE TIME OF CONSTRUCTION. SPECIFIC MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF OPSS 577 WHERE APPROPRIATE, OR IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

WHERE, IN THE OPINION OF THE CONTRACT ADMINISTRATOR OR REGULATORY AGENCY, THE INSTALLED CONTROL MEASURES FAIL TO PERFORM ADEQUATELY, THE CONTRACTOR SHALL SUPPLY AND INSTALL ADDITIONAL OR ALTERNATIVE MEASURES AS DIRECTED BY THE CONTRACT ADMINISTRATOR OR REGULATORY AGENCY, AS SUCH, THE CONTRACTOR SHALL HAVE ADDITIONAL CONTROL MATERIALS ON SITE AT ALL TIME WHICH ARE EASILY ACCESSIBLE AND MAY BE IMPLEMENTED BY HIM AT THE MOMENT'S NOTICE.

PRIOR TO COMMENCING WORK, THE CONTRACTOR SHALL SUBMIT TO THE CONTRACT ADMINISTRATOR SIX COPIES OF A DETAILED EROSION AND SEDIMENT CONTROL PLAN (ESCP). THE ESCP WILL CONSIST OF WRITTEN DESCRIPTION AND DETAILED DRAWINGS INDICATING THE ON-SITE ACTIVITIES AND MEASURES TO BE USED TO CONTROL EROSION AND SEDIMENT MOVEMENT FOR EACH STEP OF THE WORK.

CONTRACTOR'S RESPONSIBILITIES

THE CONTRACTOR SHALL ENSURE THAT ALL WORKERS, INCLUDING SUB-CONTRACTOR, IN THE WORKING ARE ARE AWARE OF THE IMPORTANCE OF THE EROSION AND SEDIMENT CONTROL MEASURES AND INFORMED OF THE CONSEQUENCES OF THE FAILURE TO COMPLY WITH THE REQUIREMENTS OF ALL REGULATORY AGENCIES.

THE CONTRACTOR SHALL PERIODICALLY, AND WHEN REQUESTED BY THE CONTRACT ADMINISTRATOR, CLEAN OUT ACCUMULATED SEDIMENT DEPOSITS AS REQUIRED AT THE SEDIMENT CONTROL DEVICES, INCLUDING THOSE DEPOSITS THAT MAY ORIGINATE FROM OUTSIDE THE CONSTRUCTION AREA. ACCUMULATED SEDIMENT SHALL BE REMOVED IN SUCH A MANNER THAT PREVENTS THE DEPOSITION OF THIS MATERIAL INTO THE SEWER WATERCOURSE AND AVOIDS DAMAGE TO CONTROL MEASURES. THE SEDIMENT SHALL BE REMOVED FROM THE SITE AT THE CONTRACTOR'S EXPENSE AND MANAGED IN COMPLIANCE WITH REQUIREMENTS FRO EXCESS EARTH MATERIAL, AS SPECIFIED ELSEWHERE IN THE CONTRACT.

THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE CONTRACT ADMINISTRATOR ANY ACCIDENTAL DISCHARGES OF SEDIMENT MATERIAL INTO EITHER THE WATERCOURSE OR THE STORM SEWER SYSTEM. FAILURE TO REPORT WILL BE CONSTITUTE A BRACH OF THIS SPECIFICATION AND THE CONTRACTOR MAY ALSO BE SUBJECT TO THE PENALTIES IMPOSED BY THE APPLICABLE REGULATORY AGENCY. APPROPRIATE RESPONSE MEASURES, INCLUDING ANY REPAIRS TO EXISTING CONTROL MEASURES OR THE IMPLEMENTATION OF ADDITIONAL CONTROL MEASURES, SHALL BE CARRIED OUT BY THE CONTRACTOR WITHOUT DELAY.

THE SEDIMENT CONTROL MEASURES SHALL ONLY BE REMOVED WHEN, IN THE OPINION OF THE CONTRACT ADMINISTRATOR, THE MEASURE OR MEASURES, IS NO LONGER REQUIRED. NO CONTROL MEASURE MAY BE PERMANENTLY REMOVED WITHOUT PRIOR AUTHORIZATION FROM THE CONTRACT ADMINISTRATOR. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED IN A MANNER THAT AVOIDS THE ENTRY OF ANY EQUIPMENT, OTHER THAN HAND-HELD EQUIPMENT, INTO ANY WATERCOURSE, AND PREVENTS THE RELEASE OF ANY SEDIMENT OR DEBRIS INTO ANY SEWER OR WATERCOURSE WITHIN OR DOWNSTREAM OF THE WORKING AREA. ALL ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE WORKING AREA AT THE CONTRACTOR'S EXPENSE AND MANAGED IN COMPLIANCE WITH THE REQUIREMENTS FOR EXCESS EARTH MATERIAL

WHERE, IN THE OPINION OF EITHER THE CONTRACT ADMINISTRATOR OR A REGULATORY AGENCY, ANY OF THE TERMS SPECIFIED HEREIN HAVE NOT BEEN COMPLIED WITH OR PERFORMED IN A SUITABLE MANNER, OR TAT ALL, THE CONTRACTOR ADMINISTRATOR OR A REGULATORY AGENCY HAS THE RIGHT TO IMMEDIATELY WITHDRAW ITS PERMISSION TO CONTINUE THE WORK BUT MAY RENEW ITS PERMISSION UPON BEING SATISFIED THAT THE DEFAULTS OR DEFICIENCIES IN THE PERFORMANCE OF THIS SPECIFICATION BY THE CONTRACTOR HAVE BEEN REMEDIED.

SPILL CONTROL NOTES

1. ALL CONSTRUCTION EQUIPMENT SHALL BE RE-FUELED, MAINTAINED, AND STORED NO LESS THAN 30 METRES FROM WATERCOURSE, STEAMS, CREEKS, WOODLOTS, AND ANY ENVIRONMENTALLY SENSITIVE AREAS, OR AS OTHERWISE SPECIFIED.
2. THE CONTRACTOR MUST IMPLEMENT ALL NECESSARY MEASURES IN ORDER TO PREVENT LEAKS, DISCHARGES OR SPILLS OF POLLUTANTS, DELETERIOUS MATERIALS, OR OTHER SUCH MATERIALS OR SUBSTANCES WHICH WOULD OR COULD CAUSE AN ADVERSE IMPACT TO THE NATURAL ENVIRONMENT.
3. IN THE EVENT OF A LEAK, DISCHARGE OR SPILL OF POLLUTANT, DELETERIOUS MATERIAL OR OTHER SUCH MATERIAL OR SUBSTANCE WHICH WOULD OR COULD CAUSE AN ADVERSE IMPACT TO THE NATURAL ENVIRONMENT, THE CONTRACTOR SHALL:
   - 3.1. IMMEDIATELY NOTIFY APPROPRIATE FEDERAL, PROVINCIAL, AND LOCAL GOVERNMENT MINISTRIES, DEPARTMENTS, AGENCIES, AND AUTHORITIES OF THE INCIDENT IN ACCORDANCE WITH ALL CURRENT LAWS, LEGISLATION, ACTS, BY-LAWS, PERMITS, APPROVALS, ETC.
   - 3.2. TAKE IMMEDIATE MEASURES TO CONTAIN THE MATERIAL OR SUBSTANCE, AND TO TAKE SUCH MEASURES TO MITIGATE AGAINST ADVERSE IMPACTS TO THE NATURAL ENVIRONMENT.
   - 3.3. RESTORE THE AFFECTED AREA TO THE ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITIES HAVING JURISDICTION.

MUD MAT NOTES

1. THE GRANULAR MATERIAL WILL REQUIRE PERIODIC REPLACEMENT AS IT BECOMES CONTAMINATED BY VEHICLE TRAFFIC.
2. SEDIMENT SHALL BE CLEANED FROM PUBLIC ROADS AT THE END OF EACH DAY.
3. SEDIMENT SHALL BE REMOVED FROM PUBLIC ROADS BY SHOVELING OR SWEEPING AND DISPOSED OR PROPERLY IN A CONTROLLED SEDIMENT DISPOSAL AREA.

SITE GRADING NOTES

1. PRIOR TO THE COMMENCEMENT OF THE SITE GRADING WORKS, ALL SILTATION CONTROL DEVICES SHALL BE INSTALLED AND OPERATIONAL PER EROSION CONTROL PLAN.
2. ALL GRANULAR AND PAVEMENT FOR ROADS/PARKING AREAS SHALL BE CONSTRUCTED IN ACCORDANCE WITH GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
3. ALL TOPSOIL AND ORGANIC MATERIAL SHALL BE STRIPPED WITHIN THE ROAD AND PARKING AREAS ALLOWANCE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
4. CONCRETE CURB SHALL BE IN ACCORDANCE WITH THE CITY OF OTTAWA STD. SC1.1 PROVISION SHALL BE MADE OR CURB DEPRESSIONS AS INDICATED ON ARCHITECTURAL SITE PLAN. CONCRETE SIDEWALK SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD SC1.4. ALL CURBS, CONCRETE ISLANDS, AND SIDEWALKS SHOWN O THIS DRAWING ARE TO BR PRICED IN SITE WORKS PORTION OF THE CONTRACT.
5. PAVEMENT REINSTATEMENT FOR SERVICE AND UTILITY CUTS SHALL BE IN ACCORDANCE WITH THE CITY OF OTTAWA STD. R10 AND OPSD 509.010 AND OPSS 310.
6. GRANULAR 'A' SHALL BE PLACED TO A MINIMUM THICKNESS OF 30MM AROUND ALL STRUCTURES WITHIN THE PAVEMENT AREA.
7. SUB-EXCAVATE SOFT AREAS AND FILL WITH GRANULAR 'B' COMPACTED IN MAXIMUM 30MM LIFTS.
8. ALL WORK ON THE MUNICIPAL RIGHT OF WAY AND EASEMENTS TO BE INSPECTED BY THE MUNICIPALITY PRIOR BACKFILLING.
9. CONTRACTOR TO OBTAIN A ROAD OCCUPANCY PERMIT 48 HOURS PRIOR TO COMMENCING ANY WORK WITHIN THE MUNICIPAL ROAD ALLOWANCE, IF REQUIRED BY THE MUNICIPALITY.
10. ALL PAVEMENT MARKING FEATURES AND SITE SIGNAGE SHALL BE PLACED PER ARCHITECTURAL SITE PLAN. LINE PAINTING AND DIRECTIONAL SYMBOLS SHALL BE APPLIED WITH A MINIMUM OF TWO COATS OF ORGANIC SOLVENT PAINT.
11. REFER TO ARCHITECTURAL SITE PLAN FOR DIMENSIONS AND SITE DETAILS.
12. STEP JOINTS ARE TO BE USED WHERE PROPOSED ASPHALT MEETS EXISTING ASPHALT. ALL JOINTS MUST BE SEALED.
13. SIDEWALKS TO BE 13MM & BEVELED AT 2:1 OR 6MM WITH NO BEVEL REQUIRED BELOW THE FINISHED FLOOR SLAB ELEVATION AT ENTRANCES REQUIRED TO BE BARRIER-FREE, UNLESS OTHERWISE NOTED. ALL IN ACCORDANCE WITH OBC 3.8.1.3 & OTTAWA ACCESSIBILITY DESIGN STANDARDS.
14. WHERE APPLICABLE THE CONTRACTOR IS TO SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. SHOP DRAWINGS MUST BE SITE SPECIFIC, SIGNED AND SEALED BY A LICENSED STRUCTURAL ENGINEER. THE CONTRACTOR WILL ALSO BE REQUIRED TO SUPPLY AND GEOTECHNICAL CERTIFICATION OF THE AS-CONSTRUCTED RETAINING WALL TO THE ENGINEER PRIOR TO FINAL ACCEPTANCE.

ROADWORK SPECIFICATIONS

15. ROADWORK TO BE COMPLETED IN ACCORDANCE WITH GEOTECHNICAL REPORT, PREPARED BY LRL ASSOCIATES. DATED NOVEMBER 2020.
16. AL TOPSOIL AND ORGANIC MATERIAL SHALL BE STRIPPED WITHIN THE ROAD ALLOWANCE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AND STOCK PILLED ON SITE AS DIRECTED BY NATIONAL MUNICIPALITY.
17. THE SUBGRADE SHALL BE CROWNED AND SLOPED AT LEAST 2% AND PROOF ROLLED WITH HEAVY ROLLERS.
18. SUB-EXCAVATE SOFT AREAS AND FILL WITH GRANULAR 'A', TYPE II COMPACTED IN MAXIMUM 300MM LIFTS.
19. ALL GRANULAR FOR ROADS SHALL BE COMPACTED TO MINIMUM OF 100% STANDARD PROCTOR DENSITY MAXIMUM DRY DENSITY (SPMDD).

SANITARY, FOUNDATION DRAIN, STORM SEWER AND WATERMAIN NOTES

GENERAL

1. LASER ALIGNMENT CONTROL TO BE UTILIZED ON ALL SEWER INSTALLATIONS.
2. CLAY SEALS TO BE INSTALLED AS PER CITY STANDARD DRAWING S8. THE SEALS SHOULD BE AT LEAST 1.5M LONG (IN THE TRENCH DIRECTION) AND SHOULD EXTEND FROM TRENCH WALL TO TRENCH WALL. THE SEALS SHOULD EXTEND FROM THE FROST LINE AND FULLY PENETRATE THE BEDDING, SUB-BEDDING, AND COVER MATERIAL. THE BARRIERS SHOULD CONSIST OF RELATIVELY DRY AND COMPATIBLE BROWN SILTY CLAY PLACED IN MAXIMUM 225MM LIFTS AND COMPACTED TO A MINIMUM OF 95% SPMDD. THE CLAY SEALS SHOULD BE PLACED AT THE SITE BOUNDARIES AND AT 60M INTERVALS IN THE SERVICE TRENCHES.
3. SERVICES TO BUILDING TO BE TERMINATED 1.0M FROM THE OUTSIDE FACE OF BUILDING UNLESS OTHERWISE NOTED.
4. ALL MAINTENANCE STRUCTURE AND CATCH BASIN EXCAVATIONS TO BE BACKFILLED WITH GRANULAR MATERIAL COMPACTED TO 98% STANDARD PROCTOR DENSITY. A MINIMUM OF 300MM AROUND STRUCTURES.
5. "MODULOC" OR APPROVED PRE-CAST MAINTENANCE STRUCTURE AND CATCH BASIN ADJUSTERS TO BE USED IN LIEU OF BRICKING. PARGE ADJUSTING UNITS ON THE OUTSIDE ONLY.
6. SAFETY PLATFORMS SHALL BE PER OPSD 404.02.
7. DROP STRUCTURES SHALL BE IN ACCORDANCE WITH OPSD 1003.01, IF APPLICABLE.
8. THE CONTRACTOR IS TO PROVIDE CCTV CAMERA INSPECTIONS OF ALL SEWERS, INCLUDING PICTORIAL REPORT, ONE (1) CD COPY AND TWO (2) VIDEO RECORDING IN A FORMAT ACCEPTABLE TO ENGINEER. ALL SEWER ARE TO BE FLUSHED PRIOR TO CAMERA INSPECTION. ASPHALT WEAR COURSE SHALL NOT BE PLACED UNTIL THE VIDEO INSPECTION OF SEWERS AND NECESSARY REPAIRS HAVE BEEN COMPLETED TO THE SATISFACTION OF THE ENGINEER.
9. CONTRACTOR SHALL PERFORM LEAKAGE TESTING, IN THE PRESENCE OF THE CONSULTANT, FOR SANITARY SEWERS IN ACCORDANCE WITH OPSS 407. CONTRACTOR SHALL PERFORM VIDEO INSPECTION OF ALL SEWERS. A COPY OF THE VIDEO AND INSPECTION REPORT SHALL BE SUBMITTED TO THE CONSULTANT FOR REVIEW AND APPROVAL PRIOR TO PLACEMENT OF WEAR COURSE ASPHALT.

SANITARY

10. ALL SANITARY SEWER INSTALLATION SHALL CONFORM TO THE LATEST REVISIONS OF THE CITY OF OTTAWA AND THE ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD). AND SPECIFICATIONS (OPSS).
11. ALL SANITARY GRAVITY SEWER SHALL BE PVC SDR 35, IPEX 'RING-TITE' (OR APPROVED EQUIVALENT) PER CSA STANDARD B182.2 OR LATEST AMENDMENT, UNLESS SPECIFIED OTHERWISE.
12. EXISTING MAINTENANCE STRUCTURES TO BE RE-BENCHED WHERE A NEW CONNECTION IS MADE.
13. SANITARY GRAVITY SEWER TRENCH AND BEDDING SHALL BE PER CITY OF OTTAWA STD. S6 AND S7 CLASS 'B' BEDDING, UNLESS SPECIFIED OTHERWISE.
14. SANITARY MAINTENANCE STRUCTURE FRAME AND COVERS SHALL BE PER CITY OF OTTAWA STD. S24 AND S25.
15. SANITARY MAINTENANCE STRUCTURES SHALL BE BENCHED PER OPSD 701.021.
16. 100MM THICK HIGH-DENSITY GRADE 'A' POLYSTYRENE INSULATION TO BE INSTALLED IN ACCORDANCE WITH CITY STD W22 WHERE INDICATED ON DRAWING SSP-1.

STORM

17. ALL REINFORCED CONCRETE STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH CSA A257.2, OR LATEST AMENDMENT. ALL NON-REINFORCED CONCRETE STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH CSA A257.1, OR LATEST AMENDMENT. PIPE SHALL BE JOINED WITH STD. RUBBER GASKETS AS PER CSA A257.3, OR LATEST AMENDMENT.
18. ALL STORM SEWER TRENCH AND BEDDING SHALL BE IN ACCORDANCE WITH THE CITY OF OTTAWA STD. S6 AND S7 CLASS 'B' UNLESS OTHERWISE SPECIFIED. BEDDING AND COVER MATERIAL SHALL BE SPECIFIED BY PROJECT GEOTECHNICAL ENGINEER.
19. ALL PVC STORM SEWERS ARE TO BE SDR 35 APPROVED PER C.S.A. B182.2 OR LATEST AMENDMENT, UNLESS OTHERWISE SPECIFIED.
20. CATCH BASIN SHALL BE IN ACCORDANCE WITH OPSD 705.010.
21. CATCH BASIN LEADS SHALL BE IN 200MM DIA. AT 1% SLOPE (MIN) UNLESS SPECIFIED OTHERWISE.
22. ALL CATCH BASINS SHALL HAVE 600MM SUMPS, UNLESS SPECIFIED OTHERWISE.
23. ALL CATCH BASIN LEAD INVERTS TO BE 1.5M BELOW FINISHED GRADE UNLESS SPECIFIED OTHERWISE.
24. THE STORM SEWER CLASSES HAVE BEEN DESIGNED BASED ON BEDDING CONDITIONS SPECIFIED ABOVE. WHERE THE SPECIFIED TRENCH WIDTH IS EXCEEDED , THE CONTRACTOR IS REQUIRED TO PROVIDE AND SHALL BE RESPONSIBLE FOR EXTRA TEMPORARY AND/OR PERMANENT REPAIRS MADE NECESSARY BY THE WIDENED TRENCH.
25. ALL ROAD AND PARKING LOT CATCH BASINS TO BE INSTALLED WITH ORTHOGONALLY PLACED SUBDRAINS IN ACCORDANCE WITH DETAIL. PERFORATED SUBDRAIN FOR ROAD AND PARKING LOT CATCH BASIN SHALL BE INSTALLED PER CITY STD R1 UNLESS OTHERWISE NOTED.
26. PERFORATED SUBDRAIN FOR REAR YARD AND LANDSCAPING APPLICATIONS SHALL BE INSTALLED PER CITY STD S29, S30 AND S31, WHERE APPLICABLE.
27. RIP-RAP TREATMENT SEWER AND CULVERT OUTLETS PER OPSD 810.010.
28. ALL STORM SEWER/ CULVERTS TO BE INSTALLED WITH FROST TREATMENT PER OPSD 803.031 WHERE APPLICABLE.
29. ALL STORM MANHOLES WITH PIPE LESS THAN 900MM IN DIAMETER SHALL BE CONSTRUCTED WITH A 300MM SUMP AS PER SDG, CLAUSE 6.2.6.

WATERMAIN

30. ALL WATERMAIN INSTALLATION SHALL CONFORM TO THE LATEST REVISIONS OF THE CITY OF OTTAWA AND THE ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS).
31. ALL PVC WATERMAINS SHALL BE AWWA C-900 CLASS 150, SDR 18 OR APPROVED EQUIVALENT.
32. ALL WATER SERVICES LESS THAN OR EQUAL TO 50MM IN DIAMETER TO BE TYPE 'K' COPPER.
33. WATERMAIN TRENCH AND BEDDING SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARD W17. UNLESS SPECIFIED OTHERWISE. BEDDING AND COVER MATERIAL SHALL BE SPECIFIED BY THE PROJECT GEOTECHNICAL ENGINEER.
34. ALL PVC WATERMAINS, SHALL BE INSTALLED WITH A 10 GAUGE STRANDED COPPER TWU OR RWU TRACER WIRE IN ACCORDANCE WITH CITY OF OTTAWA STD. W.36.
35. CATHODIC PROTECTION IS REQUIRED ON ALL METALLIC FITTINGS PER CITY OF OTTAWA STD.25.5 AND W25.6.
36. VALVE BOXES SHALL BE INSTALLED PER CITY OF OTTAWA STD W24.
37. WATERMAIN IN FILL AREAS TO BE INSTALLED WITH RESTRAINED JOINTS PER CITY OF OTTAWA STD.25.5 AND W25.6.
38. THRUST BLOCKING OF WATERMAINS TO BE INSTALLED PER CITY OF OTTAWA STD. W25.3 AND W25.4.
39. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY CAPS, PLUGS, BLOW-OFFS, AND NOZZLES REQUIRED FOR TESTING AND DISINFECTION OF THE WATERMAIN.
40. WATERMAIN CROSSING OVER AND BELOW SEWERS SHALL BE IN ACCORDANCE WITH THE CITY OF OTTAWA STD. W25,2 AND W25, RESPECTIVELY.
41. WATER SERVICES ARE TO BE INSULATED PER CITY STD. W23 WHERE SEPARATION BETWEEN SERVICES AND MAINTENANCE HOLES ARE LESS THAN 2.4M.
42. THE MINIMUM VERTICAL CLEARANCE BETWEEN WATERMAIN AND SEWER/UTILITY IS 0.5M PER MOE GUIDELINES. FOR CROSSING UNDER SEWERS, ADEQUATE STRUCTURAL SUPPORT FOR THE SEWER IS REQUIRED TO PREVENT EXCESSIVE DEFLECTION OF JOINTS AND SETTLING. THE LENGTH OF WATER PIPE SHALL BE CENTERED AT THE POINT OF CROSSING TO ENSURE THAT THE JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER.
43. ALL WATERMAINS SHALL HAVE A MINIMUM COVER OR 2.4M, OTHERWISE THERMAL INSULATION IS REQUIRED AS PER STD DWG W22.
44. GENERAL WATER PLANT TO UTILITY CLEARANCE AS PER STD DWG R20.
45. FIRE HYDRANT INSTALLATION AS PER STD DWG W19, ALL BOTTOM OF HYDRANT FLANGE ELEVATIONS TO BE INSTALLED 0.10M ABOVE PROPOSED FINISHED GRADE AT HYDRANT; FIRE HYDRANT LOCATION AS PER STD DWG W18.
46. BUILDING SERVICE TO BE CAPPED 1.0M OFF THE FACE OF THE BUILDING UNLESS OTHERWISE NOTED AND MUST BE RESTRAINED A MINIMUM OF 12M BACK FROM STUB.
47. ALL WATERMAINS SHALL BE HYDROSTATICALLY TESTED IN ACCORDANCE WITH THE CITY OF OTTAWA AND ONTARIO GUIDELINES UNLESS OTHERWISE DIRECTED. PROVISIONS FOR FLUSHING WATER LINE PRIOR TO TESTING, ETC. MUST BE PROVIDED.
48. ALL WATERMAINS SHALL BE BACTERIOLOGICALLY TESTED IN ACCORDANCE WITH THE CITY OF OTTAWA AND ONTARIO GUIDELINES. ALL CHLORINATED WATER TO BE DISCHARGED AND PRETREATED TO ACCEPTABLE LEVELS PRIOR TO DISCHARGE. ALL DISCHARGED WATER MUST BE CONTROLLED AND TREATED SO AS NOT TO ADVERSELY EFFECT ENVIRONMENT. IT IS RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL MUNICIPAL AND/OR PROVINCIAL REQUIREMENTS ARE FOLLOWED.
49. ALL WATERMAIN STUBS SHALL BE TERMINATED WITH A PLUG AND 50MM BLOW OFF UNLESS OTHERWISE NOTED.

No.	REVISIONS	BY	DATE
02	RE-ISSUED FOR MUNICIPAL APPROVAL	T.H.	11 APR 2023
01	ISSUED FOR MUNICIPAL APPROVAL	A.S.	23 DEC 2021

LICENSED PROFESSIONAL ENGINEER
V. JOHNSON
100510576
04-11-2023
PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT
KATASA GROUP

DESIGNED BY:	DRAWN BY:	APPROVED BY:
T.H.	T.H.	V.J.

PROJECT
PROPOSED 9-STOREY MULTI USE BUILDING
1509 MERIVALE ROAD, OTTAWA, ON.

DRAWING TITLE
GENERAL NOTES

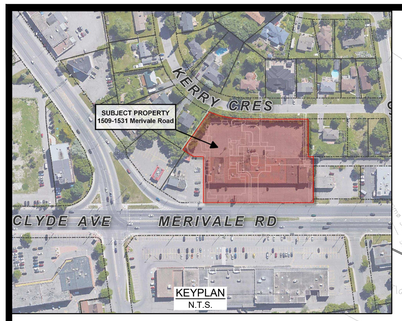
PROJECT NO.
200255

DATE
APRIL, 2023

C001

NO. 18657

D07-12-21-0233



BENCHMARK
TOP OF FIRE HYDRANT SPINDLE
ELEV. = 95.56m

KERRY CRESCENT

PHASE 1 PHASE 2

PROTECT EXISTING CB STRUCTURES WITH INLET SEDIMENT CONTROL FILTER SOCKS AS PER DETAIL 01.

PROPOSED SILT FENCE BARRIER AS PER OPSD 219.110

RAMP ON 29.2M @ 12.0%

6 STOREY

7th - 9th FLOOR OUTLINE

9 STOREY

EXIT

PHASING LINE

EXTENTS OF U/G PARKING

R1F ZONE

COURTYARD
Metal Shed
LOBBY
(F.F.= 96.15)
(U/S F.= 92.00)

9 STOREY RESIDENTIAL APARTMENT BUILDING

MOVING PARCEL

9 STOREY

EXIT

Interlock

STREET
LOBBY
(F.F.= 95.65)

8th - 9th FLOOR OUTLINE

PROPOSED MUD MAT AS PER DETAIL

PHASE 2 BUILDING OUTLINE

ROAD WIDENING

Sign on Concrete Base

Concrete Sidewalk

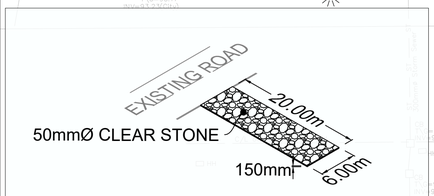
Edge of Asphalt

MERIVALE ROAD

PHASE 1 PHASE 2

PROTECT EXISTING CB'S AND NEARBY STRUCTURES WITH INLET SEDIMENT CONTROL FILETER SOCK AS PER DETAIL 01.

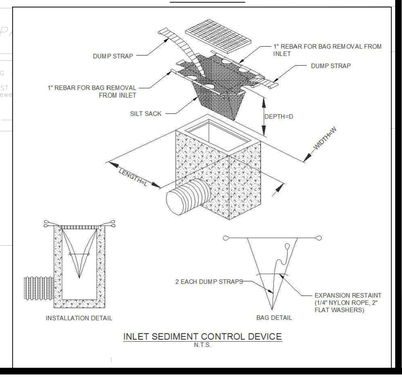
MUD MAT - CONSTRUCTION ACCESS



LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED TERRACING (3:1 MIN.)
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED FENCE
- PROPOSED DOOR ENTRANCE/EXIT
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED RIP RAP
- ×50.00 PROPOSED ELEVATION
- ×50.00TG PROPOSED TOP OF GRATE
- ×50.00TL PROPOSED TOP OF LID
- ×50.00BE PROPOSED BOTTOM OF EDGE
- ×50.00TE PROPOSED TOP OF EDGE
- ×50.00BC PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
- ×50.00TC PROPOSED TOP OF CURB ELEVATION
- ×50.00BW PROPOSED EXPOSED BOTTOM OF RETAINING WALL
- ×50.00TW PROPOSED TOP OF RETAINING WALL
- ×50.00EX MATCH INTO EXISTING ELEVATION
- ×70.19 EXISTING ELEVATION
- SCUPPER
- PROPOSED OVERLAND MAJOR FLOW ROUTE
- SUB SUB PROPOSED 100mmØ PERFORATED SUBDRAIN
- STM STM PROPOSED STORM SEWER
- SAN SAN PROPOSED SANITARY SEWER
- WTR WTR PROPOSED WATERMAIN
- STM STM EXISTING STORM SEWER
- SAN SAN EXISTING SANITARY SEWER
- WTR WTR EXISTING WATERMAIN
- GAS GAS EXISTING GAS LINE
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED CURB STOP
- PROPOSED PIPE INSULATION
- PROPOSED HIGH WATER LEVELS
- STORM WATERSHED EXTENTS
- WS-XX / CONTROLLER / AREA / RUNOFF — WATERSHED NAME, RUNOFF COEFFICIENT, AREA IN HECTARES

DETAIL 01



INLET SEDIMENT CONTROL DEVICE
N.T.S.

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHARGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES, THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

5m 0 5 10m
SCALE: 1:250

No.	REVISIONS	BY	DATE
02	RE-ISSUED FOR MUNICIPAL APPROVAL	T.H.	11 APR 2023
01	ISSUED FOR MUNICIPAL APPROVAL	A.S.	23 DEC 2021

LICENSED PROFESSIONAL ENGINEER
V. JOHNSON
100510576
04-11-2023
PROVINCE OF ONTARIO
NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT
KATASA GROUP

DESIGNED BY:	DRAWN BY:	APPROVED BY:
T.H.	T.H.	V.J.

PROJECT
PROPOSED 9-STOREY MULTI USE BUILDING
1509 MERIVALE ROAD, OTTAWA, ON.

DRAWING TITLE
EROSION AND SEDIMENT CONTROL PLAN

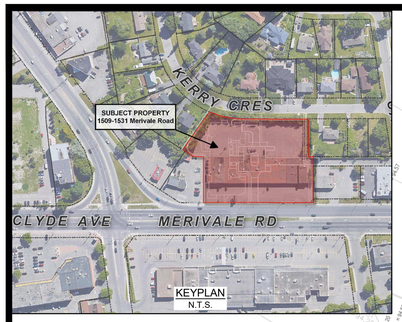
PROJECT NO.
200255

DATE
APRIL, 2023

C101

NO. 18657

D07-12-21-0233



REMOVE EXISTING ASPHALT SURFACE AND GRANULAR BASE AND REMOVE OFFSITE

1509-1531 MERIVALE ROAD
EXISTING 10-UNIT STRIP MALL BUILDING TO BE DEMOLISHED

REMOVE EXISTING STORM STRUCTURES AND ABANDON LEADS UP TO CITY STORM SEWER AS PER CITY OF OTTAWA STD DETAIL S11.4. ANY ASPHALT REINSTATEMENT SHALL MATCH EXISTING GRANULAR AND ASPHALT THICKNESS. CONTRACTOR TO COMPLETE ROAD CUT AS PER CITY OF OTTAWA STD DETAIL R10.

LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED TERRACING (3:1 MIN.)
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED FENCE
- PROPOSED DOOR ENTRANCE/EXIT
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED RIP RAP
- ×50.00 PROPOSED ELEVATION
- ×50.00TG PROPOSED TOP OF GRATE
- ×50.00TL PROPOSED TOP OF LID
- ×50.00BE PROPOSED BOTTOM OF EDGE
- ×50.00TE PROPOSED TOP OF EDGE
- ×50.00BC PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
- ×50.00TC PROPOSED TOP OF CURB ELEVATION
- ×50.00BW PROPOSED EXPOSED BOTTOM OF RETAINING WALL
- ×50.00TW PROPOSED TOP OF RETAINING WALL
- ×50.00EX MATCH INTO EXISTING ELEVATION
- ×70.19 EXISTING ELEVATION
- SCUPPER
- PROPOSED OVERLAND MAJOR FLOW ROUTE
- SUB — SUB — PROPOSED 100mmØ PERFORATED SUBDRAIN
- STM — STM — PROPOSED STORM SEWER
- SAN — SAN — PROPOSED SANITARY SEWER
- WTR — WTR — PROPOSED WATERMAIN
- STM — STM — EXISTING STORM SEWER
- SAN — SAN — EXISTING SANITARY SEWER
- WTR — WTR — EXISTING WATERMAIN
- GAS — GAS — EXISTING GAS LINE
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED CURB STOP
- PROPOSED PIPE INSULATION
- PROPOSED HIGH WATER LEVELS
- STORM WATERSHED EXTENTS
- WS-XX CONTROLLED — WATERSHED NAME
- AREA / RUNOFF — RUNOFF COEFFICIENT
- AREA IN HECTARES

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHARGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES. THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

5m 0 5 10m
SCALE: 1:250

No.	REVISIONS	BY	DATE
02	RE-ISSUED FOR MUNICIPAL APPROVAL	T.H.	11 APR 2023
01	ISSUED FOR MUNICIPAL APPROVAL	A.S.	23 DEC 2021

LICENSED PROFESSIONAL ENGINEER
V. JOHNSON
100510576
04-11-2023
PROVINCE OF ONTARIO
NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road I Ottawa, ON, K1J 9G2
www.lrl.ca I (613) 842-3434

CLIENT
KATASA GROUP

DESIGNED BY:	DRAWN BY:	APPROVED BY:
T.H.	T.H.	V.J.

PROJECT
PROPOSED 9-STOREY MULTI USE BUILDING
1509 MERIVALE ROAD, OTTAWA, ON.

DRAWING TITLE
DEMOLITION PLAN

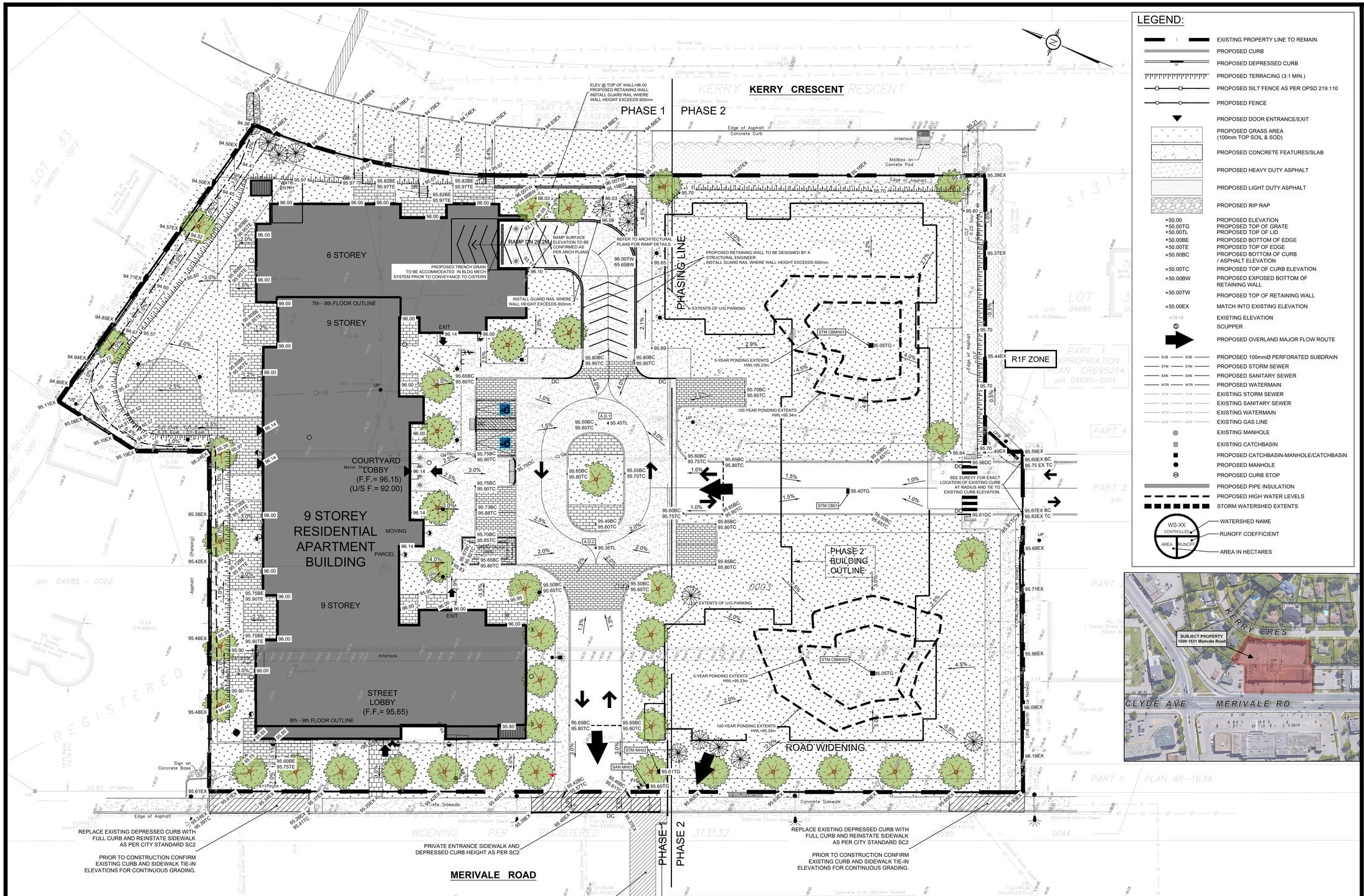
PROJECT NO.
200255

DATE
APRIL, 2023

C102

NO. 18657

D07-12-21-0233



LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED TERRACING (3:1 MIN.)
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED FENCE
- PROPOSED DOOR ENTRANCE/EXIT
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED RIP RAP
- ×50.00 PROPOSED ELEVATION
- ×50.00TG PROPOSED TOP OF GRATE
- ×50.00TL PROPOSED TOP OF LID
- ×50.00BE PROPOSED BOTTOM OF EDGE
- ×50.00TE PROPOSED TOP OF EDGE
- ×50.00BC PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
- ×50.00TC PROPOSED TOP OF CURB ELEVATION
- ×50.00BW PROPOSED EXPOSED BOTTOM OF RETAINING WALL
- ×50.00TW PROPOSED TOP OF RETAINING WALL
- ×50.00EX MATCH INTO EXISTING ELEVATION
- ×70.19 EXISTING ELEVATION
- SCUPPER
- PROPOSED OVERLAND MAJOR FLOW ROUTE
- SUB SUB PROPOSED 100mmØ PERFORATED SUBDRAIN
- STM STM PROPOSED STORM SEWER
- SAN SAN PROPOSED SANITARY SEWER
- WTR WTR PROPOSED WATERMAIN
- STM STM EXISTING STORM SEWER
- SAN SAN EXISTING SANITARY SEWER
- WTR WTR EXISTING WATERMAIN
- GAS GAS EXISTING GAS LINE
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED CURB STOP
- PROPOSED PIPE INSULATION
- PROPOSED HIGH WATER LEVELS
- STORM WATERSHED EXTENTS
- WS-XX CONTROLLED AREA RUNOFF
  - WATERSHED NAME
  - RUNOFF COEFFICIENT
  - AREA IN HECTARES

RIGID PAVEMENT STRUCTURE LOWER LEVEL

MATERIAL DESCRIPTION	THICKNESS (mm)
Exposure Class C2 - 32 MPa Concrete (5 to 8% Air Entrainment)	150
BASE - OPSS Granular A Crushed Stone	300
SUBGRADE - Existing imported fill, or OPSS Granular B Type I or II material placed over bedrock.	

NOTE:
IN PREPARATION FOR PAVEMENT CONSTRUCTION AT THIS SITE, ANY SURFICIAL OR NEAR SURFACE/SUBGRADE LEVEL TOPSOIL AND ANY SOFT, WET OR DELETERIOUS MATERIALS SHOULD BE REMOVED FROM THE PROPOSED PAVED AREAS. THE EXPOSED SUBGRADE SHOULD BE INSPECTED AND APPROVED BY GEOTECHNICAL PERSONNEL AND ANY SOFT AREAS EVIDENT SHOULD BE SUBEXCAVATED AND REPLACED WITH SUITABLE EARTH BORROW APPROVED BY THE GEOTECHNICAL ENGINEER. THE SUBGRADE SHOULD BE SHAPED AND CROWNED TO PROMOTE DRAINAGE OF THE SITE DRAINAGE STRUCTURES. FOLLOWING APPROVAL OF THE PREPARATION OF THE SUBGRADE, THE PAVEMENT GRANULARS MAY BE PLACED.

REFER TO GEOTECHNICAL INVESTIGATION REPORT (PG5812-1) BY PATERSON GROUP INC., DATED MAY 7, 2021 FOR FURTHER INFORMATION.

PAVEMENT STRUCTURE

COURSE	MATERIAL	THICKNESS (mm) ACCESS LANE/ TRUCK ROUTE	THICKNESS (mm) PAVEMENT STRUCTURE ABOVE PARKADE STRUCTURAL SLAB **
SURFACE	HL.3 A/C (PG 58-28)	40	50
BINDER	HL.8 A/C (PG 58-28)	50	50
BASECOURSE	OPSS GRANULAR "A"	150	Varied depth of 50-300 to top of Structural Garage Roof Assembly based on architectural elevations and surface grading
SUBBASE	OPSS GRANULAR "B" TYPE II	450	

NOTE:
IN PREPARATION FOR PAVEMENT CONSTRUCTION AT THIS SITE, ANY SURFICIAL OR NEAR SURFACE/SUBGRADE LEVEL TOPSOIL AND ANY SOFT, WET OR DELETERIOUS MATERIALS SHOULD BE REMOVED FROM THE PROPOSED PAVED AREAS. THE EXPOSED SUBGRADE SHOULD BE INSPECTED AND APPROVED BY GEOTECHNICAL PERSONNEL AND ANY SOFT AREAS EVIDENT SHOULD BE SUBEXCAVATED AND REPLACED WITH SUITABLE EARTH BORROW APPROVED BY THE GEOTECHNICAL ENGINEER. THE SUBGRADE SHOULD BE SHAPED AND CROWNED TO PROMOTE DRAINAGE OF THE SITE DRAINAGE STRUCTURES. FOLLOWING APPROVAL OF THE PREPARATION OF THE SUBGRADE, THE PAVEMENT GRANULARS MAY BE PLACED.

REFER TO GEOTECHNICAL INVESTIGATION REPORT (PGS812-1) BY PATERSON GROUP INC., DATED MAY 7, 2021 FOR FURTHER INFORMATION.

** TO BE CONFIRMED BY GEOTECHNICAL AND STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION.

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHARGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES, THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

5m 0 5 10m
SCALE: 1:250

No.	REVISIONS	BY	DATE
02	RE-ISSUED FOR MUNICIPAL APPROVAL	T.H.	11 APR 2023
01	ISSUED FOR MUNICIPAL APPROVAL	A.S.	23 DEC 2021

LICENSED PROFESSIONAL ENGINEER
V. JOHNSON
100510576
04-11-2023
PROVINCE OF ONTARIO
NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road I Ottawa, ON, K1J 9G2
www.lrl.ca I (613) 842-3434

CLIENT
KATASA GROUP

DESIGNED BY:	DRAWN BY:	APPROVED BY:
T.H.	T.H.	V.J.

PROJECT
PROPOSED 9-STOREY MULTI USE BUILDING
1509 MERIVALE ROAD, OTTAWA, ON.

DRAWING TITLE
GRADING AND DRAINAGE PLAN

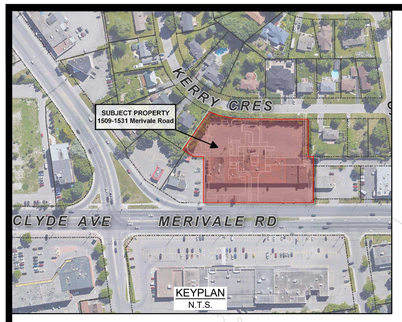
PROJECT NO.
200255

DATE
APRIL, 2023

C301

NO. 18657

D07-12-21-0233



ASPHALT REINSTATEMENT SHALL MATCH EXISTING GRANULAR AND ASPHALT THICKNESS WHILE MAINTAINING A MINIMUM OF:
40mm OF HL3
50mm OF HL8
150mm OF GRANULAR "A"
300mm OF GRANULAR "B"
CONTRACTOR TO COMPLETE ROAD CUT AS PER CITY OF OTTAWA DETAIL R10

BENCHMARK
TOP OF FIRE HYDRANT SPINDLE
ELEV. = 95.56m

PROP 150mmØ x 200mmØ CONNECTION BY CITY FORCES.
EXCAVATION AND REINSTATEMENT BY CONTRACTOR,
T/G = ±94.65
EX. WATERMAIN OBV = ±92.25

EX. CBMH
T/G = 94.20
INV = ±92.30

PROP WTR SERVICE 23.2m - 150mm± PVC DR-18 TO BE INSTALLED 2.4m FROM T/O WTR SERVICE TO FINISHED GRADE.
PROVIDE INSULATION WHERE COVER IS LESS THAN 2.4 AS PER DETAIL ON C901
INV @ BLDG = 93.40

ELEV @ TOP OF WALL=96.00
PROPOSED RETAINING WALL
INSTALL GUARD RAIL WHERE
WALL HEIGHT EXCEEDS 600mm

KERRY CRESCENT

PHASE 1 | PHASE 2

Edge of Asphalt
Concrete Curb

Interlock

Mailbox on Concrete Pad

Edge of Asphalt

WATER ENTRY

6 STOREY

L6 ROOF

RAMP DN 28.2M @ 12.0%

PROPOSED TRENCH DRAIN TO BE ACCOMMODATED IN BLDG MECH SYSTEM PRIOR TO CONVEYANCE TO CISTERN

7th - 9th FLOOR OUTLINE

9 STOREY

EXIT

PHASING LINE

PROPOSED RETAINING WALL TO BE DESIGNED BY A STRUCTURAL ENGINEER.
INSTALL GUARD RAIL WHERE WALL HEIGHT EXCEEDS 600mm.

EXTENTS OF U/G PARKING

PROP STM CBMH01
T/G = 95.05
SW INV = 94.33

R1F ZONE

ROOF OVER MECHANICAL PENTHOUSE

COURTYARD LOBBY
Metal
(F.F.= 96.15)
(U/S F.= 92.00)

9 STOREY RESIDENTIAL APARTMENT BUILDING

PARCEL

PROPOSED DRAINS TO DIRECT FLOW TO UNDERGROUND CISTERN

PROP STM 42.9m - 300mmØ
PVC DR-35 @ 0.35%

PROP STM CB01
T/G = 95.43
SE INV = 94.39

300mmØ INV=94.26
200mmØ INV=94.36

PROP STM 3.0m - 200mmØ
PVC DR-35 @ 1.00%

PHASE 2 BUILDING OUTLINE

9 STOREY

L9 ROOF

EXIT

EXTENTS OF U/G PARKING

FLOWS FROM THE ROOF, CISTERN AND FOUNDAITION DRAIN WILL BE CONNECTED INTERNALLY WITHIN THE BUILDING AND WILL OUTLET TO A SINGLE 375mmØ STORM PIPE.

ROOFDRAINS TO OUTLET DOWNSTREAM OF CISTERN

APPROXIMATE UNDERGROUND CISTERN LOCATION

Interlock

STREET LOBBY
(F.F.= 95.65)

8th - 9th FLOOR OUTLINE

PROP SAN INV = 94.68
C/W BACKWATER VALVE AS PER CITY STD S14 ON C901

WATER METER LOCATED IN P1 IN WATER ENTRY ROOM

PROP SAN 5.0m - 200mmØ
PVC DR-28 @ 1.0%

PROP STM 3.1m - 375mmØ
PVC DR-35 @ 0.35%
INV @ STUB = 93.99

PROP 1200mmØ STM CBMH02
T/G = 95.05
NE INV = 94.18
NW INV = 94.12
C/W HYDROVEX 200VHV-2 ICD
100-YR H = 1.22m
100-YR Q= 35.0 L/s

PROP STM 30.1m - 300mmØ
PVC DR-35 @ 0.35%

PROP STM MH01
T/G = 95.61
SE INV = 94.02
NE INV = 93.98
SW INV = 93.95

PROP STM 5.8m - 375mmØ
PVC DR-35 @ 1.50%

PROP SAN MH02
T/G = 95.61
NE INV = 94.63
SW INV = 94.57

PC
EX. STM OBV = 94.24
PROP SAN INV = 94.54
0.30m CLEARANCE

CONNECT PROP 375mmØ STM TO EX. 525mmØ STM SEWER
EX. INV = ±93.72
EX. SPRINGLINE ELEV = 93.98
PROP INV = 93.87

PROP SAN 28.1m - 200mmØ
PVC DR-28 @ 1.0%

PHASE 1

PHASE 2

MERIVALE ROAD

ASPHALT REINSTATEMENT SHALL MATCH EXISTING GRANULAR AND ASPHALT THICKNESS WHILE MAINTAINING A MINIMUM OF:
40mm OF HL3
50mm OF HL8
150mm OF GRANULAR "A"
300mm OF GRANULAR "B"
CONTRACTOR TO COMPLETE ROAD CUT AS PER CITY OF OTTAWA DETAIL R10

PROP WTR SERVICE 34.4m - 150mm± PVC DR-18 TO BE INSTALLED 2.4m FROM T/O WTR SERVICE TO FINISHED GRADE.
PROVIDE INSULATION WHERE COVER IS LESS THAN 2.4 AS PER DETAIL ON C901
INV @ BLDG = 93.40

PROP SAN MH 01
T/G = ±95.40
E INV = 94.29
S INV = 94.23

PROP SAN 25.7m - 250mmØ
PVC DR-28 @ 0.70%

CONNECT TO EX. SAN MH
T/G = 95.62
S. INV = 93.79
PROP N. INV = 94.04

PROP 150Ø x 300Ø CONNECTION BY CITY FORCES.
EXCAVATION AND REINSTATEMENT BY CONTRACTOR,
T/G = ±95.35
EX. WATERMAIN OBV = ±92.95

EX. CBMH
T/G = 95.17

LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED TERRACING (3:1 MIN.)
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED FENCE
- PROPOSED DOOR ENTRANCE/EXIT
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED RIP RAP
- ×50.00 PROPOSED ELEVATION
- ×50.00TG PROPOSED TOP OF GRATE
- ×50.00TL PROPOSED TOP OF LID
- ×50.00BE PROPOSED BOTTOM OF EDGE
- ×50.00TE PROPOSED TOP OF EDGE
- ×50.00BC PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
- ×50.00TC PROPOSED TOP OF CURB ELEVATION
- ×50.00BW PROPOSED EXPOSED BOTTOM OF RETAINING WALL
- ×50.00TW PROPOSED TOP OF RETAINING WALL
- ×50.00EX MATCH INTO EXISTING ELEVATION
- ×70.19 EXISTING ELEVATION
- SCUPPER
- PROPOSED OVERLAND MAJOR FLOW ROUTE
- SUB SUB PROPOSED 100mmØ PERFORATED SUBDRAIN
- STM STM PROPOSED STORM SEWER
- SAN SAN PROPOSED SANITARY SEWER
- WTR WTR PROPOSED WATERMAIN
- STM STM EXISTING STORM SEWER
- SAN SAN EXISTING SANITARY SEWER
- WTR WTR EXISTING WATERMAIN
- GAS GAS EXISTING GAS LINE
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED CURB STOP
- PROPOSED PIPE INSULATION
- PROPOSED HIGH WATER LEVELS
- STORM WATERSHED EXTENTS
- WS-XX CONTROLLED AREA RUNOFF — WATERSHED NAME / RUNOFF COEFFICIENT / AREA IN HECTARES

NOTE:

- CONTRACTOR TO LOCATE ALL EXISTING SERVICES AND CAP AT MAIN.
- SEWER SERVICES TO BE CAP/ABANDONED AS PER CITY OF OTTAWA STANDARD DWG S11.4

STORM STRUCTURES

No.	Cover	Structure	Diameter(mm)	T/G Elevation	MH Invert(s)	Location
STM CBMH01	S19	OPSD 701.010	1200	95.05	SW INV=94.33	Easting:364660.6890 Northing: 5024379.6608
STM CB01	S19	OPSD 705.010	600X600	95.43	SE INV= 94.39	Easting:364642.0131 Northing: 5024374.8249
STM CBMH02	S19	OPSD 701.010	1200	95.05	NE INV=84.18 NW INV=94.12	Easting:364621.2814 Northing:5024362.5560
STM MH02	S25	OPSD 701.010	1200	95.61	SE INV=94.02 SW INV=93.95	Easting:364598.4499 Northing: 5024383.1572

SANITARY STRUCTURES

No.	Cover	Structure	Diameter(mm)	T/G Elevation	MH Invert(s)	Location
SAN MH02	S24/S25	OPSD 701.010	1200	95.61	NE INV=94.63 SW INV=94.57	Easting:364596.1304 Northing: 5024383.7612
SAN MH01	S24/S25	OPSD 701.010	1200	95.4	E=94.29 S=94.23	Easting:364570.3406 Northing: 5024372.7820

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHARGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES, THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

5m 0 5 10m
SCALE: 1:250

No.	REVISIONS	BY	DATE
02	RE-ISSUED FOR MUNICIPAL APPROVAL	T.H.	11 APR 2023
01	ISSUED FOR MUNICIPAL APPROVAL	A.S.	23 DEC 2021

LICENSED PROFESSIONAL ENGINEER
V. JOHNSON
100510576
04-11-2023
PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road I Ottawa, ON, K1J 9G2
www.lrl.ca I (613) 842-3434

CLIENT
KATASA GROUP

DESIGNED BY:	DRAWN BY:	APPROVED BY:
T.H.	T.H.	V.J.

PROJECT
PROPOSED 9-STOREY MULTI USE BUILDING
1509 MERIVALE ROAD, OTTAWA, ON.

DRAWING TITLE
SERVICING PLAN

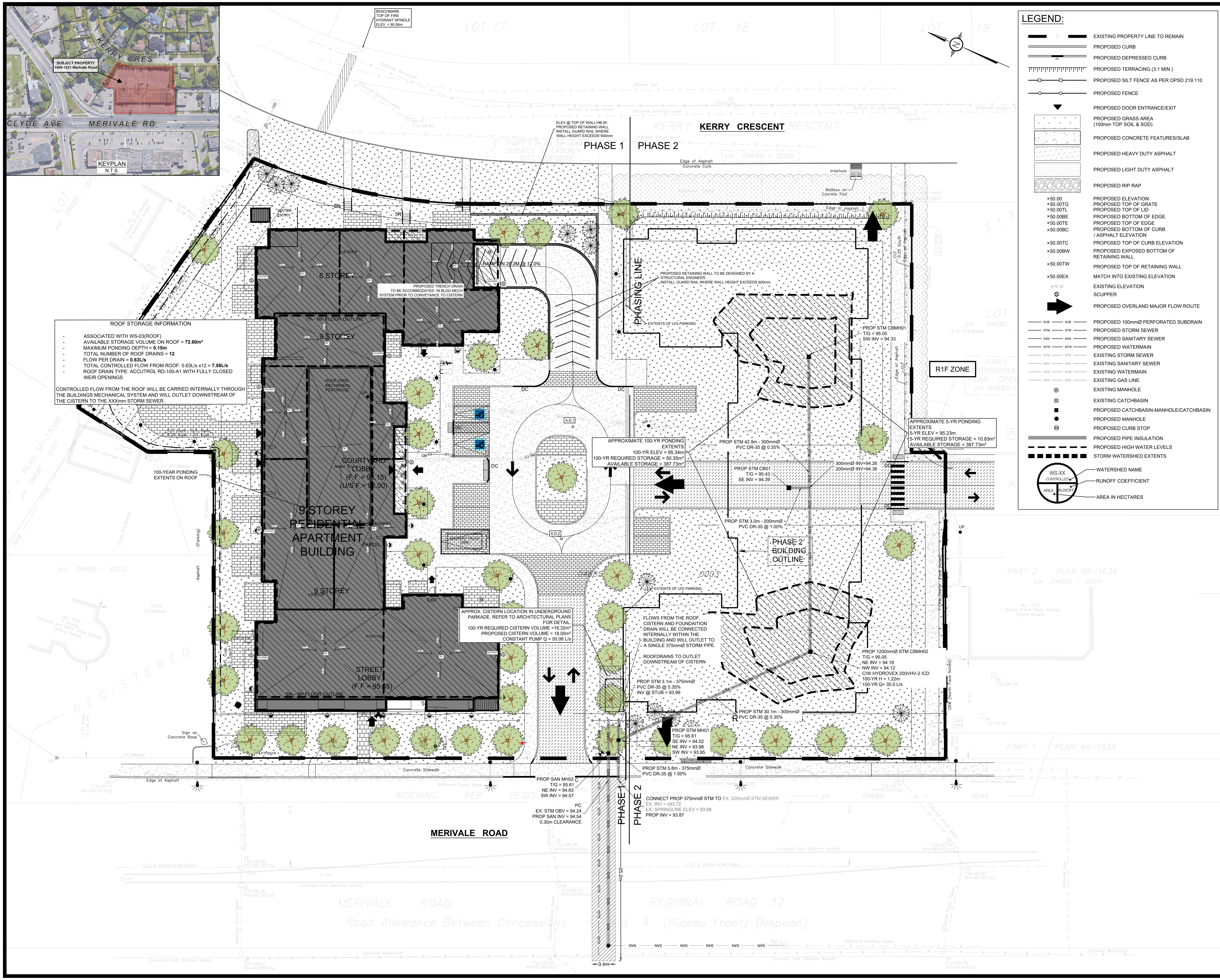
PROJECT NO.
200255

DATE
APRIL, 2023

C401

NO. 18657

D07-12-21-0233



USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHARGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES. THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

5m 0 5 10m

SCALE: 1:250

No.	REVISIONS	BY	DATE
02	RE-ISSUED FOR MUNICIPAL APPROVAL	T.H.	11 APR 2023
01	ISSUED FOR MUNICIPAL APPROVAL	A.S.	23 DEC 2021

LICENSED PROFESSIONAL ENGINEER
V. JOHNSON
100510576
04-11-2023
PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT
KATASA GROUP

DESIGNED BY:	DRAWN BY:	APPROVED BY:
T.H.	T.H.	V.J.

PROJECT
PROPOSED 9-STOREY MULTI USE BUILDING
1509 MERIVALE ROAD, OTTAWA, ON.

DRAWING TITLE
STORMWATER MANAGEMENT PLAN

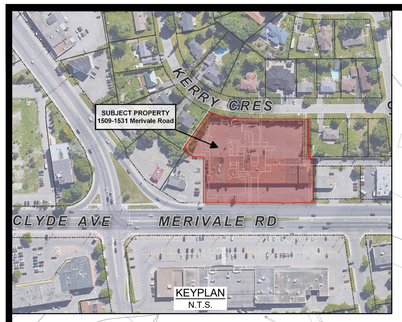
PROJECT NO.
200255

DATE
APRIL, 2023

C601

NO. 18657

D07-12-21-0233



LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED TERRACING (3:1 MIN.)
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED FENCE
- PROPOSED DOOR ENTRANCE/EXIT
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED RIP RAP
- ×50.00 PROPOSED ELEVATION
- ×50.00TG PROPOSED TOP OF GRATE
- ×50.00TL PROPOSED TOP OF LID
- ×50.00BE PROPOSED BOTTOM OF EDGE
- ×50.00TE PROPOSED TOP OF EDGE
- ×50.00BC PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
- ×50.00TC PROPOSED TOP OF CURB ELEVATION
- ×50.00BW PROPOSED EXPOSED BOTTOM OF RETAINING WALL
- ×50.00TW PROPOSED TOP OF RETAINING WALL
- ×50.00EX MATCH INTO EXISTING ELEVATION
- ×70.19 EXISTING ELEVATION
- SCUPPER
- PROPOSED OVERLAND MAJOR FLOW ROUTE
- SUB SUB PROPOSED 100mmØ PERFORATED SUBDRAIN
- STM STM PROPOSED STORM SEWER
- SAN SAN PROPOSED SANITARY SEWER
- WTR WTR PROPOSED WATERMAIN
- STM STM EXISTING STORM SEWER
- SAN SAN EXISTING SANITARY SEWER
- WTR WTR EXISTING WATERMAIN
- GAS GAS EXISTING GAS LINE
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED CURB STOP
- PROPOSED PIPE INSULATION
- PROPOSED HIGH WATER LEVELS
- STORM WATERSHED EXTENTS

WS-XX (CONTROLLED) — AREA | RUNOFF

- WATERSHED NAME
- RUNOFF COEFFICIENT
- AREA IN HECTARES

EWS-01 (UN-CONTROLLED): 0.433 | 0.81

EWS-02 (UN-CONTROLLED): 0.456 | 0.90

EWS-03 (UN-CONTROLLED): 0.095 | 0.87

5m 0 5 10m

SCALE: 1:250

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHARGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES, THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

No.	REVISIONS	BY	DATE
02	RE-ISSUED FOR MUNICIPAL APPROVAL	T.H.	11 APR 2023
01	ISSUED FOR MUNICIPAL APPROVAL	A.S.	23 DEC 2021

LICENSED PROFESSIONAL ENGINEER — V. JOHNSON — 100510576 — 04-11-2023 — PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
www.lrl.ca | (613) 842-3434

CLIENT

KATASA GROUP

DESIGNED BY:	DRAWN BY:	APPROVED BY:
T.H.	T.H.	V.J.

PROJECT

PROPOSED 9-STOREY MULTI USE BUILDING
1509 MERIVALE ROAD, OTTAWA, ON.

DRAWING TITLE

PRE-DEVELOPMENT
WATERSHED PLAN

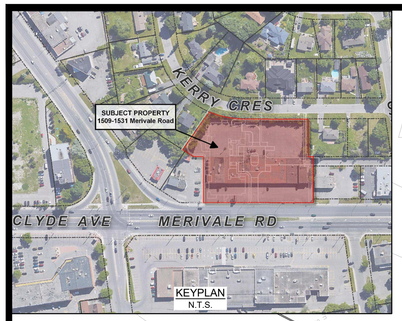
PROJECT NO.
200255

DATE
APRIL, 2023

C701

NO. 18657

D07-12-21-0233



BENCHMARK
TOP OF FIRE HYDRANT SPINDLE
ELEV. = 95.56m

KERRY CRESCENT

PHASE 1 | PHASE 2

PHASING LINE

EXTENTS OF U/G PARKING

6 STOREY

9 STOREY

7th - 9th FLOOR OUTLINE

ROOF OVER MECHANICAL PENTHOUSE

COURTYARD LOBBY (F.F.= 96.15) (U/S F.= 92.00)

9 STOREY RESIDENTIAL APARTMENT BUILDING

9 STOREY

STREET LOBBY (F.F.= 95.65)

8th - 9th FLOOR OUTLINE

RAMP ON 28.2M @ 12.0%

EXIT

WATER ENTRY

L6 ROOF

L9 ROOF

PHASE 2 BUILDING OUTLINE

R1F ZONE

Edge of Asphalt

Concrete Curb

Interlock

Mailbox on Concrete Pad

Sign on Concrete Base

Entrance

Concrete Sidewalk

Edge of Asphalt

MERIVALE ROAD

WS-01 UN-CONTROLLED 0.140 0.35

WS-02 UN-CONTROLLED 0.044 0.49

WS-03 CONTROLLED 0.178 0.90

WS-04 CONTROLLED 0.017 0.90

WS-05 CONTROLLED 0.163 0.67

WS-06 CONTROLLED 0.138 0.25

WS-07 CONTROLLED 0.027 0.90

WS-08 CONTROLLED 0.182 0.23

EWS-03 CONTROLLED 0.095 0.87

PROP STM CBMH01
T/G = 95.05
SW INV = 94.33

PROP STM 42.9m - 300mmØ
PVC DR-35 @ 0.35%

PROP STM CB01
T/G = 95.43
SE INV = 94.39

300mmØ INV=94.26
200mmØ INV=94.36

PROP STM 3.0m - 200mmØ
PVC DR-35 @ 1.00%

FLOWS FROM THE ROOF, CISTERN AND FOUNDAITION DRAIN WILL BE CONNECTED INTERNALLY WITHIN THE BUILDING AND WILL OUTLET TO A SINGLE 375mmØ STORM PIPE.

ROOFDRAINS TO OUTLET DOWNSTREAM OF CISTERN

PROP STM 3.1m - 375mmØ
PVC DR-35 @ 0.35%
INV @ STUB = 93.99

PROP 1200mmØ STM CBMH02
T/G = 95.05
NE INV = 94.18
NW INV = 94.12
C/W HYDROVEX 200VHV-2 ICD
100-YR H = 1.22m
100-YR Q= 35.0 L/s

PROP STM 30.1m - 300mmØ
PVC DR-35 @ 0.35%

PROP STM MH01
T/G = 95.61
SE INV = 94.02
NE INV = 93.98
SW INV = 93.95

PROP STM 5.8m - 375mmØ
PVC DR-35 @ 1.50%

PROP SAN MH02 C
T/G = 95.61
NE INV = 94.63
SW INV = 94.57

PC
EX. STM OBV = 94.24
PROP SAN INV = 94.54
0.30m CLEARANCE

CONNECT PROP 375mmØ STM TO EX. 525mmØ STM SEWER
EX. INV = ±93.72
EX. SPRINGLINE ELEV = 93.98
PROP INV = 93.87

PHASE 1
PHASE 2

LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB
- PROPOSED TERRACING (3:1 MIN.)
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED FENCE
- PROPOSED DOOR ENTRANCE/EXIT
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED RIP RAP
- ×50.00 PROPOSED ELEVATION
- ×50.00TG PROPOSED TOP OF GRATE
- ×50.00TL PROPOSED TOP OF LID
- ×50.00BE PROPOSED BOTTOM OF EDGE
- ×50.00TE PROPOSED TOP OF EDGE
- ×50.00BC PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
- ×50.00TC PROPOSED TOP OF CURB ELEVATION
- ×50.00BW PROPOSED EXPOSED BOTTOM OF RETAINING WALL
- ×50.00TW PROPOSED TOP OF RETAINING WALL
- ×50.00EX MATCH INTO EXISTING ELEVATION
- ×70.19 EXISTING ELEVATION
- SCUPPER
- PROPOSED OVERLAND MAJOR FLOW ROUTE
- SUB — SUB PROPOSED 100mmØ PERFORATED SUBDRAIN
- STM — STM PROPOSED STORM SEWER
- SAN — SAN PROPOSED SANITARY SEWER
- WTR — WTR PROPOSED WATERMAIN
- STM — STM EXISTING STORM SEWER
- SAN — SAN EXISTING SANITARY SEWER
- WTR — WTR EXISTING WATERMAIN
- GAS — GAS EXISTING GAS LINE
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED CURB STOP
- PROPOSED PIPE INSULATION
- PROPOSED HIGH WATER LEVELS
- STORM WATERSHED EXTENTS

WS-XX CONTROLLED — AREA — RUNOFF

- WATERSHED NAME
- RUNOFF COEFFICIENT
- AREA IN HECTARES

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHARGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING LRL'S PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES, THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

5m 0 5 10m
SCALE: 1:250

No.	REVISIONS	BY	DATE
02	RE-ISSUED FOR MUNICIPAL APPROVAL	T.H.	11 APR 2023
01	ISSUED FOR MUNICIPAL APPROVAL	A.S.	23 DEC 2021

LICENSED PROFESSIONAL ENGINEER
V. JOHNSON
100510576
04-11-2023
PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRJ
ENGINEERING | INGÉNIERIE
5430 Canotek Road I Ottawa, ON, K1J 9G2
www.lrl.ca I (613) 842-3434

CLIENT
KATASA GROUP

DESIGNED BY:	DRAWN BY:	APPROVED BY:
T.H.	T.H.	V.J.

PROJECT
PROPOSED 9-STOREY MULTI USE BUILDING
1509 MERIVALE ROAD, OTTAWA, ON.

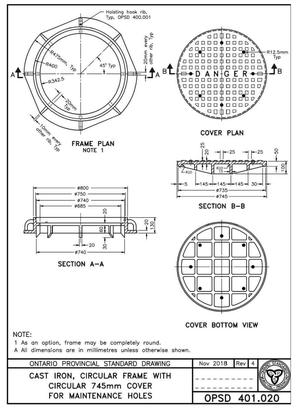
DRAWING TITLE
POST-DEVELOPMENT WATERSHED PLAN

PROJECT NO. 200255
DATE APRIL, 2023

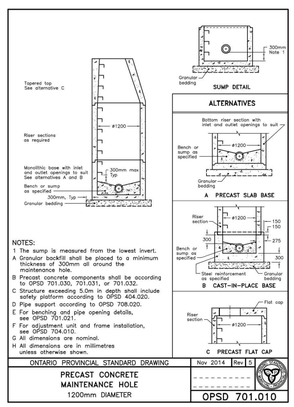
C702

NO. 18657

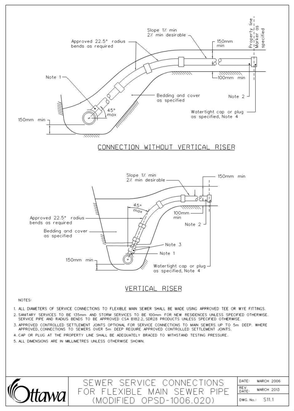
D07-12-21-0233



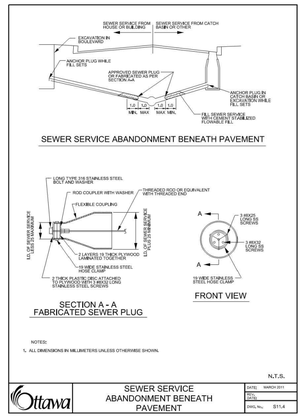
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 4
CAST IRON, CIRCULAR FRAME WITH CIRCULAR 745mm COVER FOR MAINTENANCE HOLES		
	OPSD 401.020	



ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 5
PRECAST CONCRETE MAINTENANCE HOLE 1200mm DIAMETER		
	OPSD 701.010	

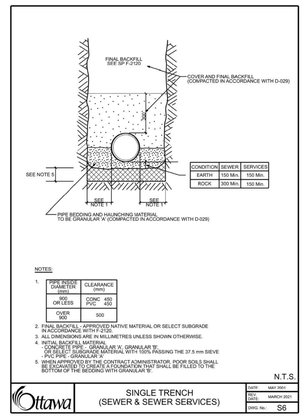


SEWER SERVICE CONNECTIONS FOR FLEXIBLE MAIN SEWER PIPE (MODIFIED OPSD-1006.020)	DATE: MARCH 2006 REV. DATE: MARCH 2010 DWG. No.: SR.1

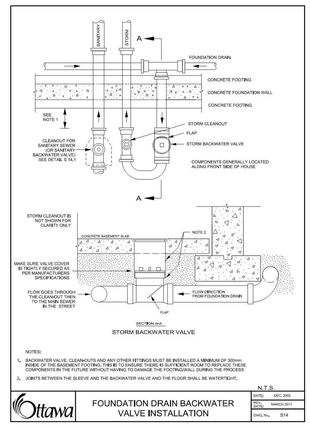


SEWER SERVICE ABANDONMENT BENEATH PAVEMENT	DATE: MARCH 2011 REV. DATE: DWG. No.: S11.4

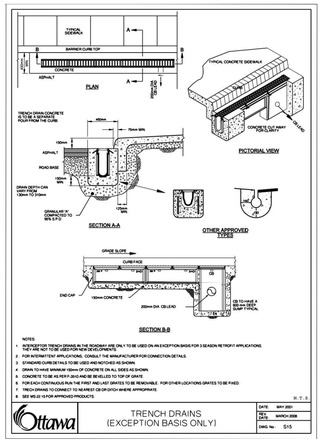
SEWER SERVICE ABANDONMENT BENEATH PAVEMENT	N.T.S. DATE: MAY 2001 REV. DATE: MAY 2010 DWG. No.: SC2



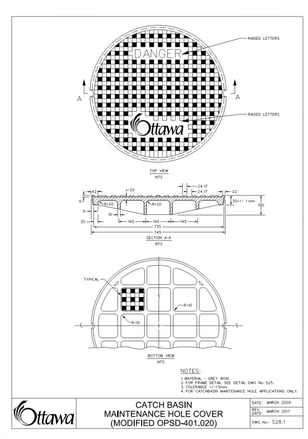
SINGLE TRENCH (SEWER & SEWER SERVICES)	N.T.S. DATE: MAY 2003 REV. DATE: MARCH 2021 DWG. No.: S6



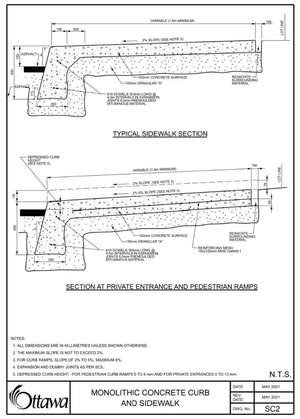
FOUNDATION DRAIN BACKWATER VALVE INSTALLATION	N.T.S. DATE: SEC. 2002 REV. DATE: MARCH 2011 DWG. No.: S14



TRENCH DRAINS (EXCEPTION BASIS ONLY)	DATE: MAY 2001 REV. DATE: MARCH 2008 DWG. No.: S15

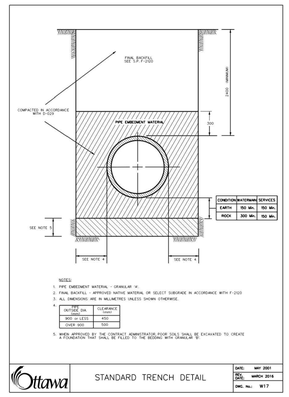


CATCH BASIN MAINTENANCE HOLE COVER (MODIFIED OPSD-401.020)	DATE: MARCH 2009 REV. DATE: MARCH 2017 DWG. No.: S28.1

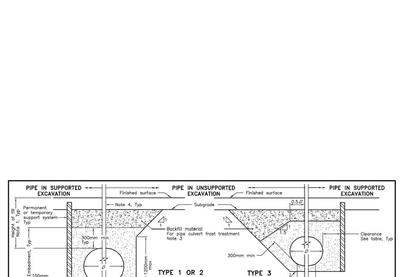


NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. THE MAXIMUM SLOPE IS NOT TO EXCEED 2%.
3. FOR CURB RAMPS, SLOPE OF 2% TO 5%, MAXIMUM 8%.
4. EXPANSION AND DUMMY JOINTS AS PER SC5.
5. DEPRESSED CURB HEIGHT - FOR PEDESTRIAN CURB RAMPS 0 TO 6 mm AND FOR PRIVATE ENTRANCES 0 TO 15 mm.

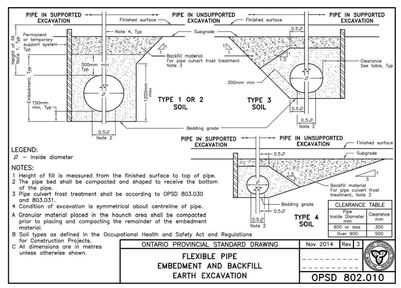
MONOLITHIC CONCRETE CURB AND SIDEWALK	N.T.S. DATE: MAY 2001 REV. DATE: MAY 2010 DWG. No.: SC2



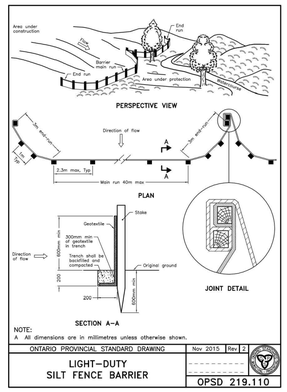
STANDARD TRENCH DETAIL	DATE: MAY 2001 REV. DATE: MARCH 2018 DWG. No.: W17



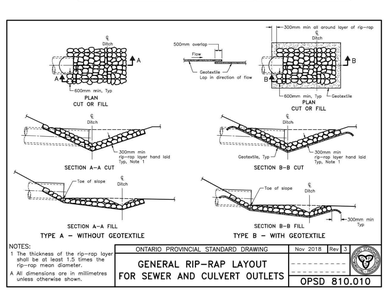
CAST IRON, SQUARE FRAME WITH SQUARE OVERFLOW TYPE DISHED GRATE FOR CATCH BASINS, HERRING BONE OPENINGS	Nov 2018	Rev 3
	OPSD 400.010	



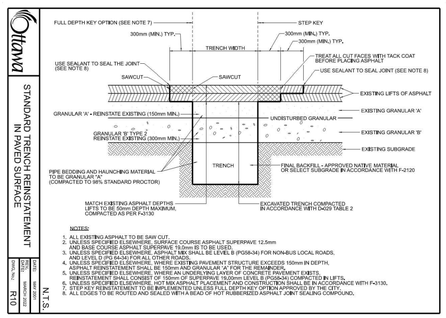
FLEXIBLE PIPE EMBEDMENT AND BACKFILL EARTH EXCAVATION	Nov 2014	Rev 3
	OPSD 802.010	



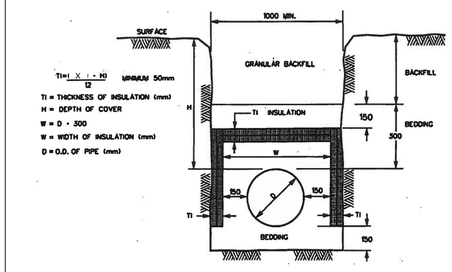
LIGHT–DUTY SILT FENCE BARRIER	Nov 2015	Rev 2
	OPSD 219.110	



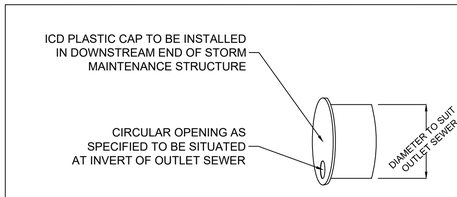
GENERAL RIP–RAP LAYOUT FOR SEWER AND CULVERT OUTLETS	Nov 2018	Rev 3
	OPSD 810.010	



STANDARD TRENCH REINSTATEMENT IN PAVED SURFACE	N.T.S. DATE: MARCH 2018 REV. DATE: DWG. No.: R10



TYPICAL STORM AND SANITARYSEWER AND WATERMAIN INSULATION DETAIL
(N.T.S.)



INLET CONTROL DEVICE (ICD) DETAIL PLASTIC "PLUG" STYLE
(N.T.S.)

USE AND INTERPRETATION OF DRAWINGS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION ARE PART OF THE CONTRACT DOCUMENTS AND DESCRIBE USE AND INTENT OF THE DRAWING. THE CONTRACT DOCUMENTS INCLUDE NOT ONLY THE DRAWINGS, BUT ALSO THE OWNER-CONTRACTOR AGREEMENTS, CONDITIONS OF THE CONTRACT, THE SPECIFICATIONS, ADDENDA, AND MODIFICATIONS ISSUED AFTER EXECUTION OF THE CONTRACT. THESE CONTRACT DOCUMENTS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. WORK NOT COMPLETELY DELINEATED HEREON SHALL BE CONSTRUCTED OF THE SAME MATERIALS AND DETAILED SIMILARLY AS WORK SHOWN MORE COMPLETELY ELSEWHERE IN THE CONTRACT DOCUMENTS.

BY USE OF THE DRAWINGS FOR CONSTRUCTION OF THE PROJECT, THE OWNER CONFIRMS THAT HE HAS REVIEWED AND APPROVED THE DRAWINGS. THE CONTRACTOR CONFIRMS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE LOCAL CONDITIONS, VERIFIED FIELD DIMENSIONS AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

AS INSTRUMENTS OF SERVICE, ALL DRAWINGS, SPECIFICATIONS, CADD FILES OR OTHER ELECTRONIC MEDIA AND COPIED THERE OF FURNISHED BY THE ENGINEER ARE HIS PROPERTY. THEY ARE TO BE USED ONLY FOR THIS PROJECT AND ARE NOT TO BE USED ON ANY OTHER PROJECT, INCLUDING REPEATS OF THE PROJECT. CHANGES TO THE DRAWINGS MAY ONLY BE MADE BY THE ENGINEER.

UNLESS THE REVISION TITLE IS "ISSUED FOR CONSTRUCTION", THESE DRAWINGS SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED AS A CONSTRUCTION DOCUMENT.

THESE DRAWINGS ILLUSTRATES THE WORK TO BE DONE. THE ENGINEER IS NOT RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO DO THE WORK, OR THE SAFETY ASPECTS OF CONSTRUCTION, AND NOTHING ON THESE DRAWINGS EXPRESSED OR IMPLIED CHANGES THIS CONDITION. CONTRACTOR SHALL DETERMINE ALL CONDITIONS AT THE SITE AND SHALL BE RESPONSIBLE FOR KNOWING HOW THEY AFFECT THE WORK. SUBMITTAL OF A BID TO PERFORM THIS WORK IS ACKNOWLEDGEMENT OF THE RESPONSIBILITIES, AND THAT THEY HAVE BEEN FULLY CONSIDERED IN PLANNING OF THE WORK, AND THE BID PRICE. NO CLAIMS FOR EXTRA CHARGES DUE TO THESE CONDITIONS WILL BE FORTHCOMING.

UNAUTHORIZED CHANGES:

IN THE EVENT THE CLIENT, THE CLIENT'S CONTRACTORS OR SUBCONTRACTORS, OR ANYONE FOR WHOM THE CLIENT IS LEGALLY LIABLE MAKES OR PERMITS TO BE MADE ANY CHANGES TO ANY REPORTS, PLANS, SPECIFICATIONS OR OTHER CONSTRUCTION DOCUMENTS PREPARED BY LRL ASSOCIATES LTD. (LRL) WITHOUT OBTAINING PRIOR AND PRIOR WRITTEN CONSENT, THE CLIENT SHALL ASSUME FULL RESPONSIBILITY FOR THE RESULTS OF SUCH CHANGES, THEREFORE THE CLIENT AGREES TO WAIVE ANY CLAIM AGAINST LRL AND TO RELEASE LRL FROM ANY LIABILITY ARISING DIRECTLY OR INDIRECTLY FROM SUCH UNAUTHORIZED CHANGES.

IN ADDITION, THE CLIENT AGREES, TO THE FULLEST EXTENT PERMITTED BY LAW, TO INDEMNIFY AND HOLD HARMLESS LRL FROM ANY DAMAGES, LIABILITIES OR COST, INCLUDING REASONABLE ATTORNEY'S FEES AND COST OF DEFENSE, ARISING FROM SUCH CHANGES.

IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

No.	REVISIONS	BY	DATE
02	RE-ISSUED FOR MUNICIPAL APPROVAL	T.H.	11 APR 2023
01	ISSUED FOR MUNICIPAL APPROVAL	A.S.	23 DEC 2021

LICENSED PROFESSIONAL ENGINEER — V. JOHNSON — 100510576 — 04-11-2023 — PROVINCE OF ONTARIO

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRJ
ENGINEERING | INGÉNIERIE
5430 Canotek Road I Ottawa, ON, K1J 9G2
www.lrl.ca I (613) 842-3434

CLIENT

KATASA GROUP

DESIGNED BY:	DRAWN BY:	APPROVED BY:
T.H.	T.H.	V.J.

PROJECT

PROPOSED 9-STOREY MULTI USE BUILDING
1509 MERIVALE ROAD, OTTAWA, ON.

DRAWING TITLE

CONSTRUCTION DETAIL PLAN

PROJECT NO. 200255

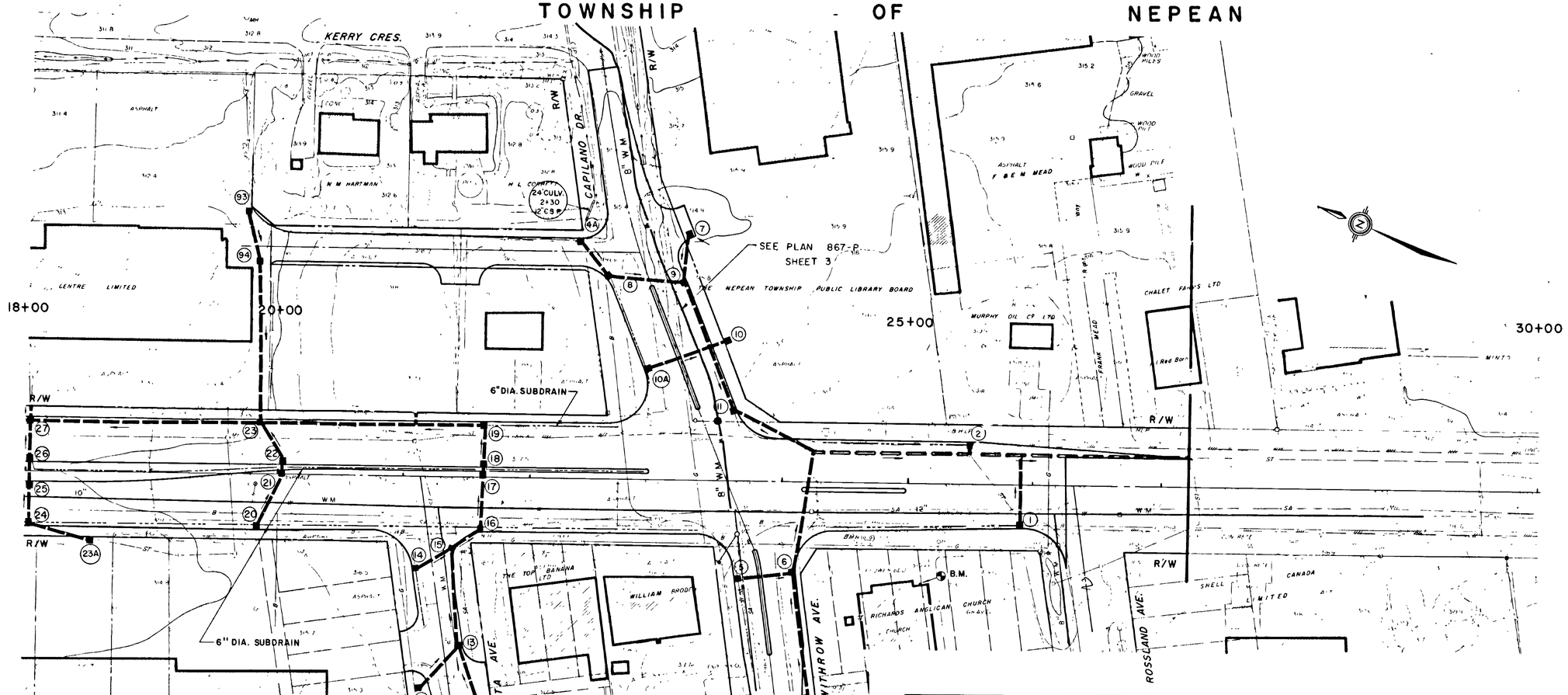
DATE APRIL, 2023

C901

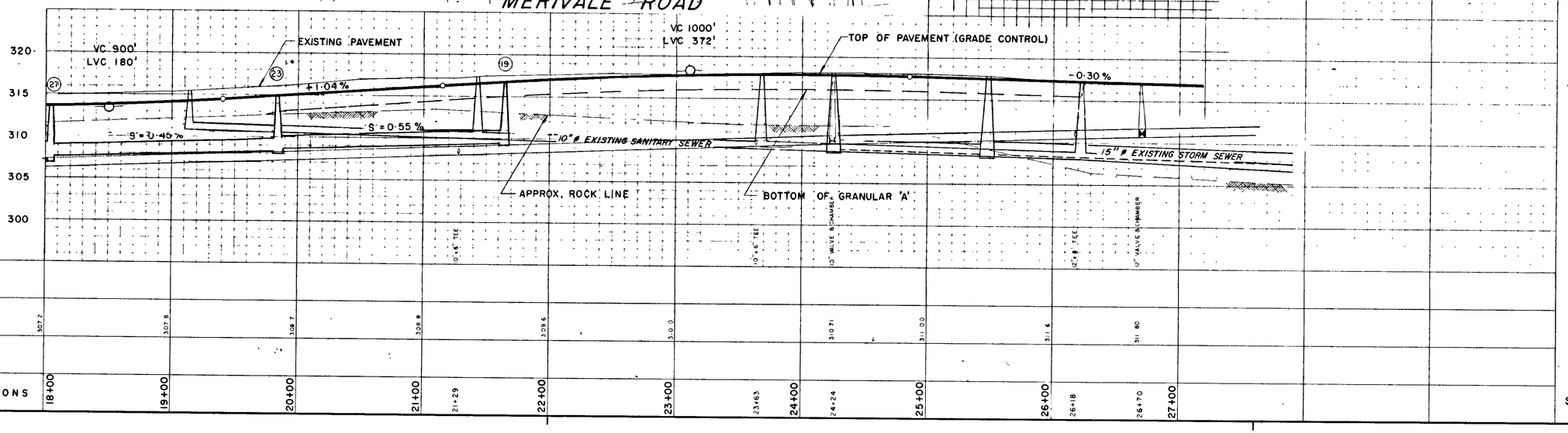
DRAWINGS/FIGURES

Proposed Site Plan
Legal Survey
As-builts

TOWNSHIP OF NEPEAN



G.B.M. ELEV. 318·08
TABLET IN E. FDN. WALL 5·5' FROM S. COR. OF ST. RICHARDS ANGLICAN CHURCH. STA. 25+10



MANHOLE AND CATCHBASIN DATA

No.	STATION	OFFSET	TYPE		ELEVATION	
			STRUCT.	COVER	GRATE	LOW INV.
1	25+90	33 0'LT	S-313	S-318	316 96	312 21
2	25+50	33 0'RT	S-313	S-318	317 11	312 36
3	W2+00	26 0'LT	S-311	S-315	315 9±	312 38
4	W1+80	27 0'RT	S-311	S-315	316·1±	312·71
4A	C 2+05	45 0'LT	S-313	S-318	316 26	311 76
5	W0+80	19 0'RT	S-313	S-318	316 32	311 57
6	W0+80	27 0'LT	S-313	S-318	316 16	311·16
7	C1+95	45 0'RT	S-311	S-315	314 9±	311 49
8	C1+85	31 0'LT	S-313	S-318	315·64	311 39
9	C1+60	27 0'RT	S-313	S-318	315 89	310 99
10	C1+00	39 0'RT	S-311	S-315	315 5±	311·50
11	C0+50	27 0'RT	S-313	S-318	316 67	309 86
12	R1+65	25 0'RT	S-311	S-315	315 0±	312·32
13	R1+35	14 0'LT	S-313	S-318	315 82	311·99
14	R0+70	14 0'RT	S-313	S-318	315 04	311·87
15	R0+60	19 0'LT	S-313	S-318	315 05	311 54
16	21+65	42 0'RT	S-313	S-318	316 14	311·04
17	21+65	3 0'LT	S-313	S-318	316 46	310·54
18	21+65	9 0'LT	S-313	S-318	316 46	310·29
19	21+65	42·0'LT	S-313	S-318	316 14	309 54
20	19+90	42·0'RT	S-313	S-318	314 26	309 76
21	20+00	1·0'LT	S-313	S-318	314·70	309·24
22	20+00	9 0'LT	S-313	S-318	314 70	309 15
23	19+85	42 0'LT	S-313	S-318	314 26	308·33
24	18+05	42 0'RT	S-313	S-318	312 75	308 25
25	18+05	9 0'RT	S-313	S-318	313·15	307 96
26	18+05	9 0'LT	S-313	S-318	313·15	307 80
27	18+05	42 0'LT	S-313	S-318	312·75	307·27
10A	C1+05	27 0'LT	S-313	S-318	316 27	311 52
93	19+75	207'LT	S-313	S-318	313 6±	309 15
94	19+85	168'LT	S-313	S-318	313 4±	308 90
23A	18+55	53 0'RT	S-313	S-318	313 8±	309 50

SEWER DATA

No.	to No.	SIZE	LENGTH	CLASS	INVERTS	
					INLET	OUTLET
1	TRUNK	9"	55'	C-14-ES	312 21	309 0±
2	EXIST.	9"	8'	C-14-ES	312 36	311 86
3	6	12"	120'	C-14-ES	312 38	311·16
4	TRUNK	12"	53'	C-14-ES	312 71	312 2±
5	6	9"	46'	C-14-ES	311·57	311 16
6	EXIST.	15"	96'	C-14-ES	311·16	310 00
7	9	9"	38'	C-14-ES	311 49	310 99
8	9	9"	64'	C-14-ES	311·39	310 99
9	11	12"	110'	C-14-ES	310 99	309 86
10	TRUNK	9"	12'	C-14-ES	311·50	310 8±
11	EXIST.	15"	72'	C-14-ES	309 86	309·14
EXIST.	13	12"	75'	C-14-ES	315 39	311 99
12	13	12"	50'	C-14-ES	312 32	311·99
13	15	15"	75'	C-14-ES	311 99	311 54
14	15	9"	34'	C-14-ES	311 87	311 54
15	16	15"	28'	C-14-ES	311 54	311 04
16	17	15"	46'	C-14-ES	311 04	310·54
17	18	15"	6'	C-14-ES	310 54	310 29
18	19	15"	33'	C-14-ES	310 29	309 79
19	23	18"	180	C-76-IV	309·54	308·58
20	21	9"	44'	C-14-ES	309 76	309 24
21	22	9"	8'	C-14-ES	309·24	309 15
22	23	9"	36'	C-14-ES	309 15	308 72
23	27	21"	180'	C-76-IV	308·33	307·52
24	25	12"	33'	C-14-ES	308 25	307 96
25	26	12"	18'	C-14-ES	307·96	307·80
26	27	12"	33'	C-14-ES	307·80	307·52
27	32	24"	210'	C-76-IV	307·23	306·37
4A	8	9"	36	C-14-ES	311 76	311 39
EXIST.	27	12"	10'	C-14-ES	310 0	307 27
10A	TRUNK	9"	54	C-14-ES	311 52	310 8±
93	94	9"	40'	C-14-ES	309 15	308 90
94	23	12"	125'	C-14-ES	308 90	308 33
23A	24	12"	50'	C-14-ES	309 50	308 50

McCORMICK, RANKIN & ASSOCIATES LIMITED
CONSULTING ENGINEERS
W. M. Rankin

NO	REVISION	BY	DATE
1	W M AS BUILT		7/17/17

THE REGIONAL MUNICIPALITY OF
OTTAWA—CARLETON
Transportation Department

MERIVALE ROAD
CLYDE TO ROSSLAND

N-291-2

Des. M.J.R.	Chkd W.M.H.
Dwn H.R.	Chkd W.M.H.
Date: FEB. 1977	
Scale Horiz 1" = 40' Vert 1" = 6'	
CONTRACT NO. 76 - 504	

N. H. ORR P. ENG.
Director Design & Construction
Chief Design Engineer

DWG. NO. R 870-R-9
SHEET 9 OF 36

55+2

TOPOGRAPHICAL PLAN OF SURVEY OF

PART OF LOTS 34, 35 AND 36 AND PART OF BLOCK A REGISTERED PLAN 313132 CITY OF OTTAWA

Prepared by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 250

10 7.5 5.0 2.5 0 5 10 Metres

Metric

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

Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act and the Surveyors Act and the regulations made under them.
2. The survey was completed on the 20th day of October, 2020.

October 29, 2020 — Date

A. J. Broxham — Andrew J. Broxham, Ontario Land Surveyor

Notes & Legend

Denotes		
○	=	Survey Monument Planted
■	=	Survey Monument Found
SIB	=	Standard Iron Bar
SSIB	=	Short Standard Iron Bar
IB	=	Iron Bar
CC	=	Cut Cross
CP	=	Concrete Pin
IBØ	=	Round Iron Bar
SSIB*	=	Short Standard Iron Bar
IB*	=	Iron Bar
(WIT)	=	Witness
Meas.	=	Measured
(AOG)	=	Annis, O'Sullivan, Vollebekk Ltd.
(P1)	=	(AOG) Plan dated August 16, 2016 (Job No. 17208-16)
(P2)	=	Plan 4R-1634
(P3)	=	(857) Plan dated June 29, 1994
(P4)	=	(AOG) Plan dated September 29, 1987
(P5)	=	(671) Plan dated June 11, 1973
(DI)	=	Inst. CR615684
	=	Deciduous Tree
FH	=	Fire Hydrant
WV	=	Water Valve
SP	=	Water Stand Post
AN	=	Anchor
MH-ST	=	Maintenance Hole (Storm Sewer)
MH-S	=	Maintenance Hole (Sanitary)
ST	=	Underground Storm Sewer
S	=	Underground Sanitary Sewer
G	=	Underground Gas
W	=	Underground Water
OHW	=	Overhead Wires
CB	=	Catch Basin
M-W	=	Monitoring Well
GM	=	Gas Meter
HH	=	Handhole
B	=	Bollard
S	=	Sign
T/G	=	Top of Grade
CLF	=	Chain Link Fence
BF	=	Board Fence
	=	Gate
PO-M	=	Metal Pole
UP	=	Utility Pole
LS	=	Light Standard
EOA	=	Edge of Asphalt
CRW	=	Concrete Retaining Wall
Ø	=	Diameter
65.00	=	Location of Elevations
65.00	=	Top of Concrete Curb & Wall Elevation
C/L	=	Centreline
	=	Property Line

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
2141733

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29 (3).

SITE AREA = 8897 m²

Bearings are grid, derived from Can-Net 2016 Real Time Network GPS observations, MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

For bearing comparisons, a rotation of 0°02'00" clockwise was applied to bearings on (P1)

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

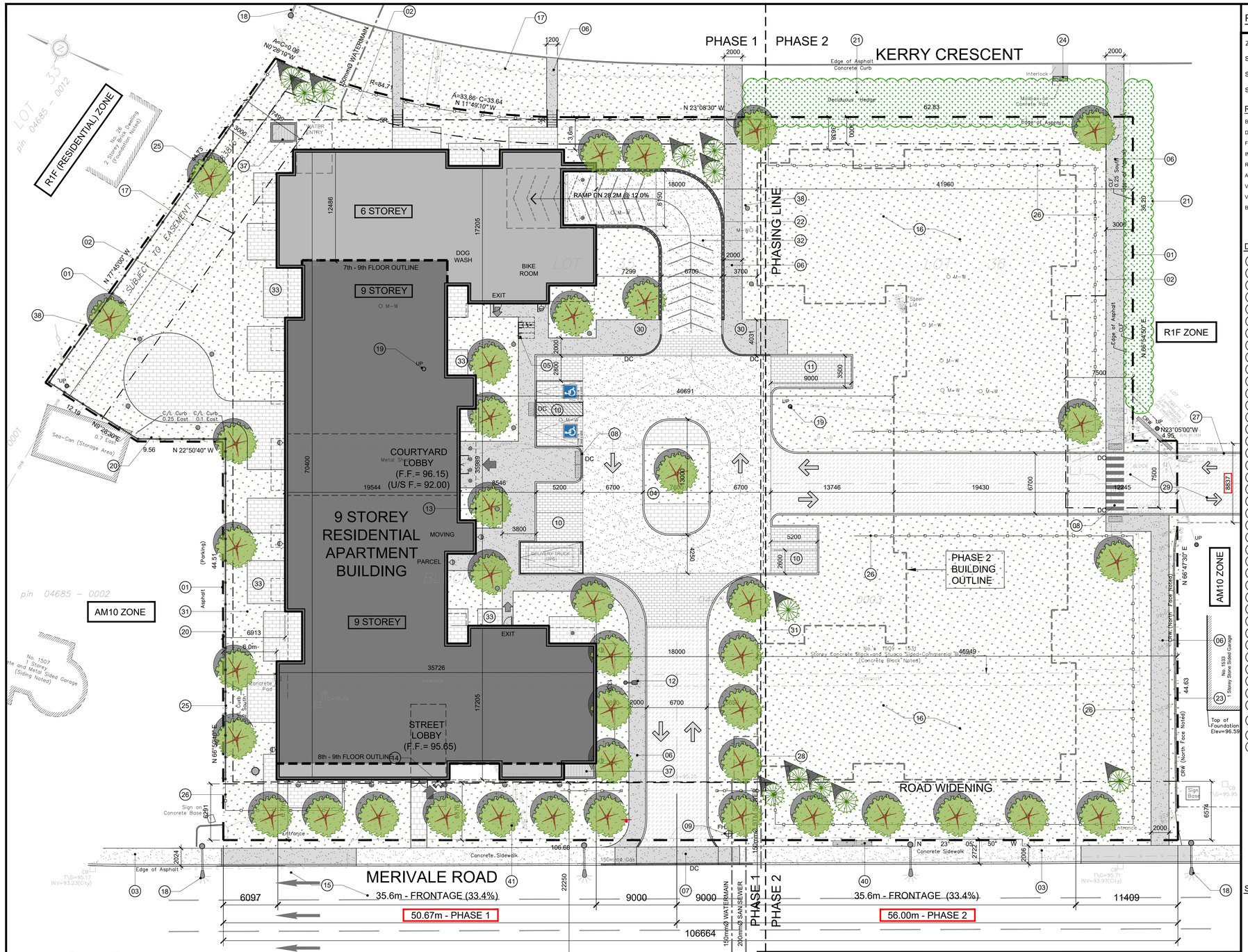
1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.
4. Location of Underground Services and Inverts are taken from from City of Ottawa Engineering Plans : K-04-12, K-04-18, K-05-25 and R870-R-9 (Sheets 8 & 9 of 36) .

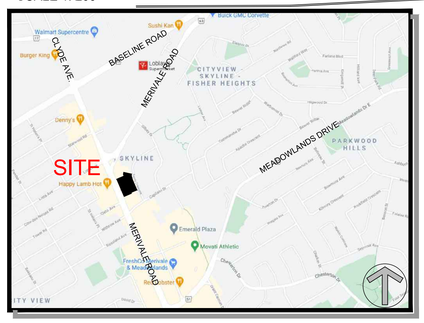
ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com

Ontario Land Surveyors

Job No. 21007-20 MerivaleRd Pt1,Lts34-36 BlkA RP313132 PQS F DG

DETAIL
Scale 1:100





KEY MAP

PROJECT INFORMATION

ZONING	AM10
SITE AREA (OVERALL)	8,896.0 sq. m. 95,756 sq. ft.
SITE AREA (PHASE 1)	5,357.3 sq. m. 57,666 sq. ft.
SITE AREA (PHASE 2)	3,538.7 sq. m. 38,090 sq. ft.

REQUIRED

BUILDING HEIGHT	9 STOREY'S - 30 m
DENSITY - F.S.I.	3.5
FRONT YARD SETBACK	3.0 m
INTERIOR YARD SETBACK	0.0 , 3.0 & 7.5 m
REAR YARD SETBACK	3.0 m.
AMENITY AREA PER UNIT	6.0 sq. m.
VEHICLE PARKING - RESIDENTIAL	0.5 PER UNIT
VEHICLE PARKING - VISITOR ONLY	0.1 PER UNIT (AREA X)
BICYCLE PARKING - RESIDENTIAL	0.5 PER UNIT

PROVIDED

BUILDING HEIGHT	9 STOREY'S - 29.0 m
GRADE	95.80m geo. elev.
DENSITY - F.S.I. PHASE 1 ONLY	2.74
FRONT YARD SETBACK	6.7 m.
INTERIOR YARD SETBACK	6.1 m.
REAR YARD SETBACK	3.6 m.
AMENITY AREA PER UNIT	6.0 sq. m.
TOWER FOOTPRINT	890 sq. m.
VEHICLE PARKING - RESIDENTIAL	0.79 PER UNIT
VEHICLE PARKING - VISITOR ONLY	0.2 PER UNIT
BICYCLE PARKING - RESIDENTIAL	1 PER UNIT

DRAWING NOTES

1. PROPERTY LINE
2. BUILDING SETBACK LINE
3. EXISTING CONCRETE SIDEWALK TO REMAIN
4. LANDSCAPE ISLAND WITH 150mm BARRIER CURB
5. BICYCLE PARKING SPACES (0.6 x 1.8M) WITH RACK
6. CONCRETE WALK, WIDTH AS NOTED
7. DEPRESSED CURB & SIDEWALK, CONTINUOUS
8. DEPRESSED CURB & TWSI
9. FIRE HYDRANT
10. STANDARD PARKING SPACE (2.6 X 5.2 M)
11. LOADING ZONE
12. LIGHT STANDARD - LOCATION TO BE CONFIRMED
13. BUILDING CANOPY
14. SIAMESE CONNECTION
15. FIRE ROUTE
16. SOFT LANDSCAPING
17. EXISTING CEDAR HEDGE TO BE REMOVED
18. EXISTING STREET LIGHT
19. EXISTING HYDRO POLE TO BE REMOVED
20. EXISTING MOVABLE CURB TO BE REMOVED
21. EXISTING CEDAR HEDGE
22. RAMP RETAINING WALL, MAX. HT. 1.1m ABOVE GRADE
23. EXISTING RETAINING WALL
24. EXISTING CANADA POST MAIL BOXES
25. 2.1m HT. SOLID WOOD FENCE, SEE LANDSCAPE
26. LOW METAL PICKED FENCE, SEE LANDSCAPE
27. EXISTING RETAINING WALL TO BE REMOVED
28. BELOW GRADE CISTERN WITH ACCESS MH
29. EXISTING SERVICE LANE TO BE EXTENDED
30. REFUGE PICK UP AREA WITH DEPRESSED CURB
31. EXTENT OF BELOW GROUND PARKING GARAGE
32. HEATED GARAGE RAMP WITH TRENCH DRAIN
33. PRIVATE PATIO AT GRADE
34. EXISTING FIRE HYDRANT
35. HYDRO EQUIPMENT
36. TEMPORARY SNOW STORAGE AREA
37. INTAKE / EXHAUST GRILL FOR U/G PARKING GARAGE
38. LIGHT BOLLARD
39. REPLACE EXISTING DEPRESSED CURB AND SIDEWALK WITH BARRIER CURB AND SIDEWALK
40. OC TRANSPO BUS STOP WITH WOODEN BENCHES
41. EXISTING RAISED BILLBOARD TO BE REMOVED

BUILDING STATISTICS

UNIT STATISTICS

STUDIO	24
1 BEDROOM UNIT	84
1 BEDROOM + DEN UNIT	55
2 BEDROOM UNIT	37
2 BEDROOM + DEN UNIT	2
TOTAL	202

GROSS BUILDING FLOOR AREA
(OTTAWA ZONING DEFINITION)

GROUND FLOOR		913.9 sq. m. 9,837 sq. ft.
2nd - 6th FLOOR	5 x 1,492.4 sq. m. 5 x 16,064 sq. ft.	7,462.0 sq. m. 80,320 sq. ft.
7th FLOOR		1,103.4 sq. m. 11,877 sq. ft.
8th - 9th FLOOR	2 x 1,057.5 sq. m. 2 x 11,383 sq. ft.	2,115 sq. m. 22,766 sq. ft.
TOTAL AREA ABOVE GRADE		11,594.3 sq. m. 124,800 sq. ft.

CAR PARKING

REQUIRED

RESIDENT	0.5 PER UNIT (202 UNITS)	101
VISITOR	0.1 PER UNIT (AREA X)	202
TOTAL		123

PROVIDED

RESIDENT	0.79 PER UNIT	161
VISITOR	0.2 PER UNIT	41
TOTAL		202

LOCATION

SURFACE PARKING SPACES	8
LEVEL P1 PARKING SPACES	93
LEVEL P2 PARKING SPACES	101

TYPE / SIZE

STANDARD PARKING SPACE	2.6 x 5.2 m	173
SMALL CAR PARKING SPACE	2.4 x 4.6 m	27
BARRIER FREE SPACE - TYPE A	3.4 x 5.2 m	2
BARRIER FREE SPACE - TYPE B	2.4 x 5.2 m	0

BICYCLE PARKING

REQUIRED

RESIDENT	0.5 PER UNIT (202 UNITS)	102

PROVIDED

RESIDENT	1 PER UNIT	202
GROUND FLOOR BIKE ROOM		56
UNDERGROUND PARKING LEVEL P1		100
UNDERGROUND PARKING LEVEL P2		46

SITE PLAN SYMBOLS

- ASPHALT DRIVING AISLE
- CONCRETE DRIVING AISLE
- CONCRETE SIDEWALK / WALK
- CONCRETE PAVERS, SEE LANDSCAPE DRAWINGS
- CONCRETE PAVERS ON DRIVING SURFACE
- PROPERTY LINE
- BUILDING SETBACK LINE
- 1.2m & 1.5m HT. METAL PICKET FENCE
- 2.1m HT. SOLID WOOD FENCE
- BIKE RACK
- ENTRANCE / EXIT DOOR
- FH FIRE HYDRANT
- VEHICULAR DIRECTION
- PROPOSED TREES
- SIAMESE CONNECTION
- SITE LIGHTING

NOTE:
SEE LANDSCAPE FOR ALL SURFACE MATERIAL AND PATTERN

AMENITY AREA

AT GRADE EXTERIOR - PRIVATE	360.1 sq. m.
AT GRADE EXTERIOR - COMMUNAL	481.1 sq. m.
INTERIOR AMENITY - COMMUNAL	287.6 sq. m.
EXTERIOR AMENITY - COMMUNAL	532.1 sq. m.
BALCONIES - PRIVATE	1,528.1 sq. m.
TOTAL	2,828.8 sq. m.
TOTAL COMMUNAL	1,300.8 sq. m.

REQUIRED (202 UNITS X 6 m²) = 1,212 sq. m.
REQUIRED COMMUNAL @ 50% = 606 sq. m.

SITE COVERAGE

BUILDING FOOTPRINT	34.2%	1,804.3 sq. m.
DRIVING SURFACE	18.6%	980.3 sq. m.
LANDSCAPE AREA	47.3%	2,498.4 sq. m.
PHASE 1 TOTAL	100.0%	5,283 sq. m.

SOLID WASTE COLLECTION

	PROVIDED	
GARBAGE COMPACTED @ 0.053 cu yd per unit	10.76 yd	12 yd
GMP CONTAINERS @ 0.018 cu yd per unit	3.65 yd	4 yd
FIBRE CONTAINERS @ 0.018 cu yd per unit	7.71 yd	8 yd
ORGANICS CONTAINERS @ one 240L per 50 unit	4.06	4

NOTATION SYMBOLS:

- (00) INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- (00) INDICATES ASSEMBLIE TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDUAL.
- (00) INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A900 SERIES.
- (000) INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A900 SERIES.
- 00 DETAIL NUMBER / 00 TITLE / SCALE
- DETAIL REFERENCE PAGE
- DETAIL CROSS REFERENCE PAGE

GENERAL NOTES:

A. REFER TO TYPICAL ASSEMBLIES SHEET FOR WALL, PARTITION, ROOF CEILING & FLOOR TYPES.

B. FOR DOOR TYPES AND HARDWARE REQUIREMENTS REFER TO DOOR SCHEDULE ON A900 SERIES.

C. ALL INTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF DRYWALL.

D. ALL EXTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF CLADDING.

E. ALL EXTERIOR WALLS ARE TO BE TYPE 'W1' UNLESS NOTED OTHER WISE.

F. ALL INTERIOR PARTITIONS ARE TO BE TYPE 'P1' UNLESS NOTED OTHER WISE.

No.	DESCRIPTION	DATE (D/M/Y)
12	ISSUED FOR SPC ROUND 1 CITY RESPONSE	10 04 2023
11	REVISED AS PER UDRP COMMENTS	27 09 2022
10	GENERAL REVISIONS REQUESTED BY OWNER	29 07 2022
9	ISSUED FOR UDRP	22 06 2022
8	ISSUED FOR SPC ROUND 1 CITY RESPONSE	03 05 2022
7	ISSUED FOR SITE PLAN CONTROL	20 12 2021
6	ISSUED FOR CONSULTANT COORDINATION	19 11 2021
5	REVISED BUILDING DESIGN	31/08/2020
4	REVISED BUILDING DESIGN	17/06/2020
3	ISSUED FOR REZONING APPLICATION-R1	31/01/2020
2	ISSUED FOR REZONING APPLICATION	15/10/2019
1	ISSUED FOR COMMUNITY MEETING	03/10/2019

REVISIONS:

ARCHITECT SEAL: ONTARIO ASSOCIATION OF ARCHITECTS — RODERICK J. LAHEY — LICENCE 4375 — SEAL DATE: STAMP DATE

NORTH ARROW:

CLIENT:
KATASA GROUPE + DÉVELOPPEMENT

ARCHITECT:
rla/architecture
roderick lahey architect inc.
56 beech street, ottawa, ontario K1S 3J6
t. 613.724.9932 f. 613.724.1209 rlaarchitecture.ca

PROJECT TITLE:
1509 MERIVALE ROAD
OTTAWA ONTARIO

SHEET TITLE:
SITE PLAN

DRAWN: RV	CHECKED: R.V.
SCALE: 1:200	SHEET No. SP-1
PROJECT No. 2034	

D07-12-21-0233

TRANSPORTATION ENGINEER
CGH Transportation Inc.
628 Haines Road
Newmarket, ON L3Y 6V5
Tel: (905) 251-4070
Email: andrew.harte@cghtransportation.com

CIVIL ENGINEER
LRL Engineering
5430 Canotek Rd,
Ottawa, ON K1J 9G2
Tell: 613 842-3434
E-Mail: asalem@lrl.ca

PROJECT DEVELOPER
Katasa
69 Rue Jean-Proulx #301,
Gatineau, QC J8Z 1W2
T 819. 771.2787
E-Mail: tanya@katasa.ca

SURVEYOR
Annis O'Sullivan Vollebekk Ltd.
Ontario Land Surveyors
14 Concourse Gate, Suite 500,
Nepean, Ontario K2E 7S6
Tel: (613) 727-0850
Fax: (613) 727-1079
E-Mail: andrewb@aovltd.com

LANDSCAPE ARCHITECT
Gino J. Aiello Landscape Architect
110 Didsbury Road Unit 9,
Ottawa, Ontario K2E 0C2
Tel: (613) 852-1343
Cell: (613)
Email: gino@giala.com

LEGAL DESCRIPTION
PART OF LOTS 34, 35 AND 36
AND
PART OF BLOCK A
REGISTERED PLAN 313132
CITY OF OTTAWA

GEOTECHNICAL ENGINEER
Paterson Group
154 Colonnade Road South
Ottawa, Ontario
K2E 7J5
Tel: 613.226-7381
Email: DGilbert@Patersongroup.ca

URBAN PLANNER
Fotenn Consulting
396 Cooper Street
Suite 300
Ottawa, ON K2P 2H7
T 613.730.5709
E-Mail: sutherland@fotenn.com