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FUNCTIONAL SERVICING REPORT

FOR

CAIVAN (ORLEANS VILLAGE 2) LIMITED

PROPOSED RESIDENTIAL SUBDIVISION

ORLEANS VILLAGE PHASE 4
CITY OF OTTAWA

PROJECT NO.: 22-1296

APRIL 2022

FUNCTIONAL SERVICING REPORT
FOR
PROPOSED RESIDENTIAL SUBDIVISION

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FOR
PROPOSED RESIDENTIAL SUBDIVISION
CAIVAN (ORLEANS VILLAGE 2) LIMITED

APRIL 2022

CITY OF OTTAWA
PROJECT NO.: 22-12

1.0 INTRODUCTION

David Schaeffer Engineering Limited (DSEL) has been retained to prepare a Functional Servicing Report in support zoning by-law amendment and draft plan of subdivision for the Orleans Village (OV) Phase 4 development on behalf of Caivan (Orleans Village 2) Limited (COVL).

The subject property at 245 and 275 Lamarche Avenue is located within the City of Ottawa urban boundary in the Innes Ward and is defined in the attached General Plan (DSEL, 2018) provided in ***Appendix A***. The subdivision encompasses lands north of Innes Road, west of Lamarche Avenue and south of existing OV Phases 1, 2 and 3. The subject property is known as PIN 04404-1892 and is under private ownership, and measures approximately 4.7ha. The existing Orleans Village is shown in the legal plan found in ***Appendix A*** prepared by J.D. Barnes Limited with the subject lands referenced as Blocks 147 and 148

The subject property is zoned as a Development Reserve (DR) Zone. Per the detailed ***Design Brief*** prepared in November 2018 for Caivan (Orleans Village) Limited 340 Innes Road, the existing servicing infrastructure has been designed to accommodate development of 245 and 275 Lamarche Avenue. As-built engineering drawings of Lamarche Avenue are located in ***Appendix A***.

The objective of this report is to provide sufficient detail to demonstrate that the proposed development area can be supported by municipal services.

1.1 Existing Conditions

The subject lands totals 4.7 hectares. The subdivision lands are currently undeveloped and are within the jurisdiction of the Rideau Valley Conservation Authority. Light industrial uses are associated with the adjacent properties to the north and east of the subject property. The subject property shares its west and south boundary with residential lots. The existing elevation within the subject property generally ranges between 88m - 92m. The topography is gently sloping from north (higher) to south (lower).

There is minimal vegetation present within the subject property with much of the property being composed of agricultural land and parking lots with few trees present. The subsurface conditions of the subject property, the subsurface conditions consist of fill and glacial till overlaying shallow limestone bedrock (Golder, November 2016). Geotechnical studies and other studies related to the Planning Act applications for the subject lands will characterize and provide management recommendations for subsurface conditions, including soil, rock, groundwater, and any nearby wells.

1.2 Development Layout

The proposed development consists of a park block, residential blocks with a mix of townhouse, rear lane townhouse, back-to-back townhomes, 18.0m right-of-way (ROW), and 8.5m ROW (see proposed draft plan in **Appendix A)**

The predicted populations currently associated with the development concept are described in the following table below.

Table 1: Development Statistics for Orleans Village Phase 4

Land Use	Total Area (ha)	Projected Residential Units	Residential Population per Unit *	Projected Population
Townhouses		175	2.7	~473
Parks/walkways	0.51			
Collector				
Local Roads				
Total	**4.7**	**175**		**~473**

** NOTE: Population projections may differ from population estimates used in background Transportation Studies, Planning Rationale, and other studies.*

1.3 Consultation Summary

Consultation with the City of Ottawa was initiated by COVL in February 2022, under the *Planning Act* process for development applications. The City of Ottawa submitted a set of relevant engineering comments from the pre-application consultation, which are provided in ***Appendix A***. The key items areas are as follow:

- Water: Service areas with a basic demand greater than 50 m^3/day shall be connected with a minimum of two water services, separated by an isolation valve, to avoid creation of vulnerable service area; and a District Metering Area Chamber (DMA) is required for services 150mm or greater in diameter.
- Wastewater: DSEL to demonstrate that adequate capacity for Phase 4 has been allocated by the existing OV per the Design Brief.
- Stormwater: site is subject to Development Charges for the Gloucester Urban Center Stormwater Management Facilities; existing STM Pond 1 must be upgraded prior to the development of this site per the OV Design Brief; and RVCA to confirm quality control requirements

1.4 Required Permits / Approvals

Once Draft Plan of Subdivision is obtained, the City of Ottawa must approve detailed engineering design drawings and reports prior to construction of the municipal infrastructure identified in this report.

The following additional approvals and permits listed in Table 2 are expected to be required prior to construction of the municipal infrastructure detailed herein. Other permits and approvals may be required, as detailed in the other studies submitted as part of the Planning Act applications (e.g. *Tree Conservation Report, Phase 1 Environmental Site Assessment, etc*.).

Table 2: Potential Required Permits/Approvals

Agency	Permit/Approval Required	Trigger	Remarks
MECP / City of Ottawa	Environmental Compliance Approval	Construction of new sanitary & storm sewers.	MECP is expected to review the stormwater collection system and wastewater collection system by transfer of review.
MECP	Permit to Take Water	Construction of proposed land uses (e.g. basements for residential homes) and services.	Pumping of groundwater will be required during construction, given groundwater conditions and proposed land uses/ municipal infrastructure.
City of Ottawa	MOE Form 1 – Record of Watermains Authorized as a Future Alteration	Construction of watermains.	The City of Ottawa is expected to review the watermains on behalf of the MECP.

2.0 GUIDELINES, PREVIOUS STUDIES, AND REPORTS

2.1 Existing Studies, Guidelines, and Reports

The following documents were referenced in the preparation of this report:

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

  - **Technical Bulletin ISDTB-2014-01, Revisions to Ottawa Design Guidelines – Sewer,**
    City of Ottawa, February 5, 2014.
    (*ISDTB-2014-01*)

  - **Technical Bulletin PIEDTB-2016-01, Revisions to Ottawa Design Guidelines – Sewer,**
    City of Ottawa, September 6, 2016.
    (*PIEDTB-2016-01*)

  - **Technical Bulletin ISTB-2018-01, Revisions to Ottawa Design Guidelines – Sewer,**
    City of Ottawa, March 21, 2018.
    (*ISTB-2018-01*)

  - **Technical Bulletin ISTB-2018-03, Revisions to Ottawa Design Guidelines – Sewer,**
    City of Ottawa, June, 2018.
    (*ISTB-2018-04*)

  - **Technical Bulletin ISTB-2019-02, Revisions to Ottawa Design Guidelines – Sewer,**
    City of Ottawa, July 8, 2019.
    (*ISTB-2019-02*)

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

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

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

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

- **Technical Bulletin ISTB-2021-03**
  City of Ottawa, August 18, 2021
  (ISTB-2021-03)

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

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

- **Ontario Building Code Compendium**
  Ministry of Municipal Affairs and Housing Building Development Branch,
  January 1, 2010 Update.
  (OBC)

- **Mississippi-Rideau Source Water Protection Plan,**
  MVCA & RVCA, August 2014.

- **Erosion & Sediment Control Guidelines for Urban Construction,**
  Greater Golden Horseshoe Area Conservation Authorities, December 2006.

- **Geotechnical Investigation – Commercial and Residential Development,**
  3490 Innes Road, Ottawa, Ontario
  Golder Associates, February 2018 **(Geotechnical Report)**

- **Design Brief for Caivan (Orleans Village) Limited,**
  3490 Innes Road, Ottawa, Ontario
  DSEL, November 2018 **(Design Brief)**

- **Stormwater Management Report for the Orleans Village Subdividion**
  JFSA File No. 883-10, January 2018 **(SWM Report)**

3.0 WATER SUPPLY SERVICING

3.1 Existing Water Supply Services

The subject property is located within the 2E pressure zone, as shown in the excerpt from the City of Ottawa Water Distribution Mapping in ***Appendix B***. The proposed subdivision is located north of the Town's current watermain network located in the existing Orleans Village. A 400mm diameter waterman exists within the Innes Road ROW and a 300mm diameter watermain exists on the Lamarche Avenue ROW. In additional, 200mm diameter watermain stubs with dropped at the southeast corners of blocks 147 and 148.

3.2 Water Supply Servicing Design

The City of Ottawa was contacted on March 16, 2022, to obtain boundary conditions associated with the estimated water demand as indicated in the boundary request correspondence included in ***Appendix B***. The City of Ottawa provided both the anticipated minimum and maximum water pressures, as well as the estimated water pressure during fire flow demand for the demands.

Figure 6 shows the proposed configuration of watermains for the subject property. The proposed system has a looped connection to the existing 300mm diameter watermain on Lamarche Avenue that connects to the existing 400mm diameter watermain on Innes Road.

The water servicing approach for the subject lands is for potable water to be supplied through pressurized local watermains on each street conforming to the ***Water Supply Guidelines***.

Table 3: Water Supply Design Criteria

Design Parameter	Value
Residential Single Detached	3.4 P/unit
Residential Townhouse	2.7 P/unit
Residential Average Daily Demand	280 L/d/P
Residential Maximum Daily Demand	3 x Average Daily *
Residential Maximum Hourly*	5.5 x Average Daily *
Minimum Watermain Size	150 mm diameter
Minimum Depth of Cover	2.4 m from top of watermain to finished grade
During normal operating conditions desired operating pressure is within	350 kPa and 480 kPa
During normal operating conditions pressure must not drop below	275 kPa
During normal operating conditions pressure must not exceed	552 kPa
During fire flow operating pressure must not drop below	140 kPa
**Residential Max. Daily and Max. Hourly peaking factors per MOE Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons. City Guidelines used for populations greater than 500 persons.* *-Table updated to reflect ISTB-2018-02*	

Table 4, below, summarizes the estimated domestic water and fire flow demands along with the boundary conditions provided by the City.

Table 4: Water Demand Proposed Conditions

Design Parameter	Estimated Demand[1] (L/s)	Boundary Condition Connection 1 (m H_2O / kPa)	Boundary Condition Connection 2 (m H_2O / kPa)
Average Daily Demand	1.53	130.8 / 397.3	130.8 / 410.1
Maximum Daily Demand Fire Scenario #1	4.45 + 166.7 = 171.1	126.9 / 359.0	125.7 / 360.0
Maximum Daily Demand Fire Scenario #2	4.45 + 233.3 = 278.8	124.8 / 338.4	122.6 / 329.6
Maximum Hourly Daily Demand	6.59	127.1 / 361.0	127.1 / 373.8

- Water demand calculation per ***Water Supply Guidelines***. See ***Appendix B*** for detailed calculations.
- Ground elevation at Connection 1 = 90.3m
- Ground elevation at Connection 2 = 89.0m

Fire demands were estimated to be limited 10,000 L/min for townhomes conforming to ***ISTB-2014-02***. The contemplated rear lane town house units and back-to-back units had an estimated fire flow of 14,000L/min. Fire flow calculations are detailed in the ***Appendix B***, calculated in accordance with the ***Fire Underwriters Survey's Water Supply for Public Fire Protection Guideline*** (1999) and ***Technical Bulletins ISDTB-2014-02*** and ***ISTB-2018-02***.

The City provided both the anticipated minimum and maximum water pressures, as well as, the estimated water pressure during fire flow demand for the demands indicated by the correspondence in ***Appendix B***. As shown in ***Table 4***, the minimum and maximum pressures fall within the required range identified in ***Table 3***.

3.3 Water Supply Conclusion

It is anticipated that the proposed concept plan OV Phase 4 can be adequately serviced by a network of local watermains that connects to existing infrastructure on Lamarche Avenue.

The City of Ottawa must confirm available water pressures during average, peak hourly, and fire flow demands.

The proposed water supply design will conform with all relevant City of Ottawa Guidelines and Policies.

4.0 WASTEWATER SERVICING

4.1 Existing Wastewater Services

Sanitary sewers exists west of the Phase 4 area and are located along Lamarche Avenue (see sanitary drainage plan found in ***Appendix C***, extracted from the approved subdivision plans). The outlet connection to existing sewers is as follows:

- Existing 375 mm / 250 mm diameter sanitary trunk running north along Lamarche Avenue at an approximate depth of 86.5 that extends just to the southern corner of Block 148.
- Wastewater outlet for Block 147 - MH104A to MH 23A; Block 148 - MH 101A to MH22A

The subject site, Blocks 147 and 148, were considered in the ***Design Brief***, which previously contemplated sanitary outflows from the subject lands. Block 147 had accounted for a population allowance of 1039 people for a 2.16-hectare area; and Block 148 had accounted for a population allowance of 1222 persons and a 2.54-hectare area.

4.2 Wastewater Design

The development is proposed to connect to the existing sanitary sewer within Lamarche Avenue. The subject property will be serviced by an internal gravity sewer system that follows the local road network and any required easements. The subject lands are tributary to Lamarche Avenue and will discharge through the existing infrastructure in accordance with the approved Master Servicing Study and subsequent background studies. The existing main described above on Lamarche Avenue will need to be extended approximately 90 m north to service the proposed Rear Lane Towns.

The Phase 4 development plan was estimated to have a population of 473. The proposed Phase 4 design anticipates a peak flow of ***6.75 L/s***. Refer to calculations in ***Appendix C*** for details. The contemplated development plan reduces the expected wastewater contributions from the subject lands by 80%. The reduction in population is not expected to have a negative impact on the receiving sewers. The as-built sanitary sewer calculation sheet is included in ***Appendix C***.

Sufficient depth exists for frost cover and gravity to support the subject development.

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

Table 5: Wastewater Design Criteria

Design Parameter	Value
Residential – Townhome/ Semi	2.7 P/unit
Residential – Apartment / Back To Back	1.8 P/unit
Average Daily Demand	280 L/d/per
Peaking Factor	Harmon's Peaking Factor. Max 4.0, Min 2.0 Harmon's Corrector Factor 0.8
Infiltration and Inflow Allowance	0.05 L/s/ha (Dry Weather) 0.28 L/s/ha (Wet Weather) 0.33 L/s/ha (Total)
Park Flows	0.33 L/s/ha
Parking Peaking Factor	9300 L/ha/d
Sanitary sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} AR^{2/3} S^{1/2}$
Minimum Sewer Size	200 mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5 m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6 m/s
Maximum Full Flowing Velocity	3.0 m/s
Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, October 2012, and recent residential subdivisions in City of Ottawa (including revisions per ISTB Sewer-2018-01)	

4.3 Wastewater Servicing Conclusions

The site is tributary to the Lamarche Avenue sewer. The subject property will be serviced by local sanitary sewers which will outlet to the existing infrastructure on Lamarche Avenue ROW. There is residual capacity in the downstream sewers there is sufficient capacity within the existing infrastructure to accommodate the flow from the proposed development.

The proposed wastewater design conforms to all relevant ***City Standards***.

5.0 STORMWATER MANAGEMENT

5.1 Existing Stormwater Services

Stormwater runoff from the subject property is tributary to the City of Ottawa sewer system located on Lamarche Avenue (see ***Stormwater Drainage Plan*** found in ***Appendix D***, extracted from the approved subdivision plans).

The existing stormwater runoff from the site area generally drains west and is collected by the existing storm sewer located on Lamarche Avenue. Stormwater is directed overland by sheet flow from north to south towards the East Urban Community Pond 1 (EUC Pond 1) North Forebay/North Main Cell as well as associated existing ditch depressions. The outlet connection to existing sewers for the Phase 4 property is as follows:

- Existing 1350 mm / 825 mm / 375 mm / 300 mm diameter stormwater outlets run north along Lamarche Avenue. Stormwater control outlet for Block 147 - MH101 to MH 13; Block 148 - MH 104 to MH15

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

The subject site, comprising of blocks 147 and 148 was contemplated to have a Rational Method Runoff coefficient of 0.80 (Block 147 2.16ha @ 0.75 and Block 148 2.54ha @ 0.85). The Design Brief assumed time of concentrations of 10mins for each block for a total expected peak flow of 815L/s.

5.2 Post-Development Stormwater Management Target

Stormwater management requirements for the subject property have been carried forward from the ***Design Brief*** and ***SWM Report***.

The following City standards are required for stormwater management within the subject property:

- Storm sewers on local roads are to be designed to provide a minimum 2-year level of service per the City's latest Technical Bulletin PIEDTB-2016-01;
- For less frequent storms (i.e. larger than 1:2 year minimum or 1:5 year minimum), the minor system sewer capture will be restricted with the use of inlet control devices to prevent excessive hydraulic surcharges;
- Under full flow conditions, the allowable velocity in storm sewers is to be no less than 0.80 m/s and no greater than 6.0 m/s;
- For the 100-year storm and for all roads, the maximum depth of water (static and/or dynamic) on streets, rear yards, public space and parking areas shall not exceed 0.35 m at the gutter;
- When catchbasins are installed in rear yards, safe overland flow routes are to be provided to allow the release of excess flows from such areas. A minimum of 30 cm of vertical clearance is required between the rear yard spill elevation and the ground elevation at the adjacent building envelope;

- The product of the maximum flow depths on streets and maximum flow velocity must be less than 0.60 m2/s on all roads;
- Blocks 147 and 148 to retain all storms up to and including the 100-year based;
- Quality Controls are addressed in the existing downstream stormwater management facility.

5.3 Proposed Minor System

The subject property is expected to be serviced by an internal gravity storm sewer system that is to generally follow the local road network and servicing easements as required.

Table 6: Storm Sewer Design Criteria

Design Parameter	Value
Minimum Minor System Design Return Period	2-Year (Local Streets), 5-Year (Collector Streets), 10-Year (Arterial Streets) – PIEDTB-2016-01
Major System Design Return Period	1:100 year
Intensity Duration Frequency Curve (IDF) 2-year storm event: A = 732.951; B = 6.199; C = 0.810 5-year storm event: A = 998.071; B = 6.053; C = 0.814	$i = \frac{A}{(t_c + B)^C}$
Minimum Time of Concentration	10 minutes
Rational Method	$Q = CiA$
Storm sewers are to be sized employing the Manning's Equation	$Q = \frac{1}{n} A R^{2/3} S^{1/2}$
Runoff coefficient for paved and roof areas	0.9
Runoff coefficient for landscaped areas	0.2
Minimum Sewer Size	250 mm diameter
Minimum Manning's 'n' for pipe flow	0.013
Minimum Depth of Cover	2.0m from crown of sewer to grade (or 1.5m where USF freeboard to HGL is not a constraint, such as in slab-on-grade products)
Minimum Full Flowing Velocity	0.8 m/s
Maximum Full Flowing Velocity	6.0 m/s (where velocities in excess of 3.0 m/s are proposed, provision shall be made to protect against displacement of sewers by sudden movement)
Clearance from 100-Year Hydraulic Grade Line to Building Opening (USF)	0.30 m
Max. Allowable Flow Depth on Municipal Roads	35 cm above gutter (PIEDTB-2016-01)
Extent of Major System	To be contained within the municipal right-of-way or adjacent to the right-of-way provided that the water level must not touch any part of the building envelope and

	must remain below the lowest building opening during the stress test event (100-year + 20%) and 15cm vertical clearance is maintained between spill elevation on the street and the ground elevation at the nearest building envelope (PIEDTB-2016-01)
Stormwater Management Model	DDSWMM (release 2.1), SWMHYMO (v. 5.02) and XPSWMM (v. 10)
Model Parameters	Fo = 76.2 mm/hr, Fc = 13.2 mm/hr, DCAY = 4.14/hr, D.Stor.Imp. = 1.57 mm, D.Stor.Per. = 4.67 mm
Imperviousness	Based on runoff coefficient (C) where Percent Imperviousness = (C - 0.2) / 0.7 x 100%.
Design Storms	Chicago 3-hour Design Storms and 24-hour SCS Type II Design Storms. Maximum intensity averaged over 10 minutes.
Historical Events	July 1st, 1979, August 4th, 1988 and August 8th, 1996
Climate Change Street Test	20% increase in the 100-year, 3-hour Chicago storm
Extracted from City of Ottawa Sewer Design Guidelines, October 2012, and Technical Bulletins	

5.4 Hydraulic Grade Line Analysis

A detailed hydraulic grade line (HGL) modelling analysis will be completed for the proposed system at the detailed design level, based on the 100-year 3-hour Chicago, 12-hour DCD, and 24-hour SCS design storms, including historical design storms and climate change stress test as required.

5.5 Major System Design

Major system conveyance, or overland flow (OLF), will be provided to accommodate flows more than the minor system capacity. OLF is accommodated by generally storing stormwater up to the 100-year design event in road sags then routing additional surface flow along the road network and service easements towards the proposed drainage features.

The ***Design Brief*** and ***SWM Report*** assumed that the subject lands would be designed as private development blocks complete with on-site storage. Furthermore, the SWM Report assumed minor system release rates for Block 147 to be limited to the 2-year + 20% and Block 148 to the 2-year event.

The ***SWM Report*** estimated on-site storage requirements for blocks 147 and 148 to be 604m^3 and 395m^3. However, that estimate was based on impervious values of 79% for Block 147 and 93% for Block 148, for a combined imperviousness of 86%. The revised draft plan has an estimated imperviousness of 74%. Therefore, the anticipated storage requirement is approximately 860m^3. Refer to runoff coefficient figures included in ***Figures***.

5.6 Grading and Drainage Design

The following additional grading criteria and guidelines are applied to detailed design, per City of **Ottawa Guidelines**:

- Driveway slopes will have a maximum slope of 6%;
- Slope in grassed areas will be between 2% and 7%;
- Grades in excess of 7% will require terracing to a maximum of a 3:1 slope;
- Swales are to be 0.15m deep with 3:1 side slopes unless otherwise indicated on the drawings; and,
- Perforated pipe will be required for drainage swales if they are less than 1.5% in slope.

The proposed road profile will consist of a saw tooth road pattern. Roughly 500m of the proposed 18m right-of-way will be graded with a high-point to high-point at 0.2% or less. Approximately 145m^3/100m of surface storage can be accommodated within a saw tooth pattern at 0.2%. Therefore, it is anticipated that 750m^3 of sag storage is available within the right-of-way.

5.7 Stormwater Servicing Conclusions

The site is tributary to the Lamarche Avenue storm sewer. The subject property will be serviced by local storm sewers which will outlet to the existing infrastructure on Lamarche Avenue ROW.

The subject site was contemplated in the design of the receiving sewers and stormwater management facility at a higher imperviousness than the current proposal.

There is residual capacity in the downstream sewers there is sufficient capacity within the existing infrastructure to accommodate the flow from the proposed development.

The contemplated design conforms to all relevant ***City Standards***.

6.0 EROSION AND SEDIMENT CONTROL

Soil erosion occurs naturally and is a function of soil type, climate and topography. The extent of erosion losses is exaggerated during construction where vegetation has been removed and the top layer of soil becomes agitated. Prior to topsoil stripping, earthworks or construction, erosion and sediment controls will be implemented and will be maintained throughout construction.

Silt fencing will be installed around the perimeter of the active part of the site (and headwater features) and will be cleaned and maintained throughout construction. The silt fence will remain in place until the working areas have been stabilized and re-vegetated. Material stockpiles shall not be permitted near the existing EUC Pond 1.

Catchbasins will have catchbasin inserts installed during construction to protect from silt entering the storm sewer system.

A mud mat will be installed at the construction access to prevent mud tracking onto adjacent roads.

The following additional recommendations to the Contractor will be included in contract documents:

- Limit extent of exposed soils at any given time.
- Re-vegetate exposed areas as soon as possible.
- Minimize the area to be cleared and grubbed.
- Protect exposed slopes with plastic or synthetic mulches.
- Install silt fence to prevent sediment from entering any existing ditches.
- No refueling or cleaning of equipment near existing watercourses.
- Provide sediment traps and basins during dewatering.

The Contractor will be required to complete regular inspections and guarantee proper performance. The inspection is to include:

- Verification that water is not flowing under silt barriers.
- Clean and change inserts at catch basins.

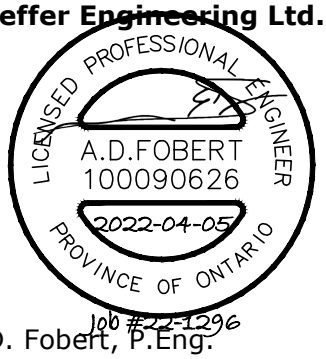
7.0 CONCLUSION AND RECOMMENDATIONS

David Schaeffer Engineering Ltd. (DSEL) has been retained by Caivan (Orleans Village 2) Limited to prepare a Functional Servicing Report in support of the application for draft plan of subdivision at 245 and 275 Lamarche Avenue. The preceding report outlines the following:

- Water – a 300mm diameter water main is available to support the subject lands. The City of Ottawa was contacted to confirm boundary conditions for the subject lands. The results were not available at the time of publication.
- Wastewater – Sanitary sewers are available on Larmarche Avenue and were designed to sufficiently convey wastewater from the subject property.
- Stormwater – Block 147 and 148 were previously conceived to be private development blocks with on-site storage. The proposed change in land use and resulting reduction in imperviousness reduces site runoff and storage requirements. The on-site storage requirements can be met within road sag storage.

The submitted materials demonstrate that the existing water, sanitary, and storm services can accommodate the contemplated development.

Prepared by,
David Schaeffer Engineering Ltd.



Per: Adam D. Fobert, P.Eng.

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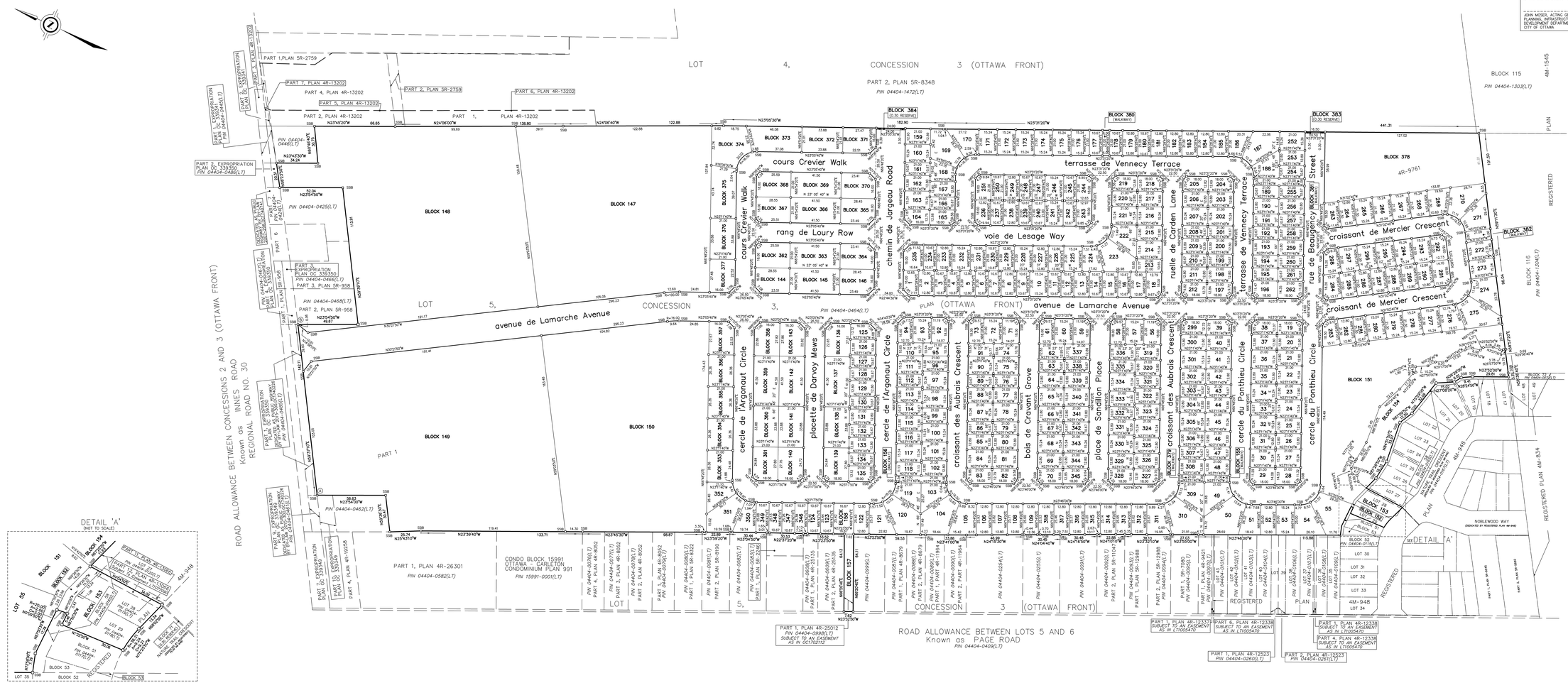
APPENDIX A

Pre-Consultation



APPROVED UNDER SECTION 51 of the PLANNING ACT, by the City of Ottawa, this _____ day of _____, 2018.

JOHN MOSER, ACTING GENERAL MANAGER
PLANNING, INFRASTRUCTURE AND ECONOMIC DEVELOPMENT DEPARTMENT
CITY OF OTTAWA

PLAN 4M-

I CERTIFY THAT THIS PLAN IS REGISTERED IN THE LAND REGISTRY OFFICE FOR THE LAND TITLES DIVISION OF OTTAWA-CARLETON (No. 4)
AT _____ O'CLOCK ON THE _____ DAY
OF _____, 2018 AND ENTERED IN THE PARCEL REGISTER FOR PROPERTY IDENTIFIER _____
AND THE REQUIRED CONSENTS ARE REGISTERED AS PLAN DOCUMENT No. _____

_____
LAND REGISTRAR

THIS PLAN COMPRISES ALL OF PINS 04404-0464(LT), 04404-0998(LT), 04404-0116(LT), 04404-0116(LT) AND PART OF PIN 04404-0105(LT).
PIN 04404-0998(LT) SUBJECT TO AN EASEMENT AS IN OC1702112.
PIN 04404-0116(LT) SUBJECT TO AN EASEMENT AS IN OC1077090.

PART OF LOT 5 CONCESSION 3 (OTTAWA FRONT)
GEOGRAPHIC TOWNSHIP OF GLOUCESTER
NOW IN THE
CITY OF OTTAWA
AND
PART OF BLOCK 58
AND
LOTS 28 AND 29 REGISTERED PLAN 4M-948
CITY OF OTTAWA

SCALE 1 : 1000
0 10 20 30 40 50 metres

J.D. BARNES LIMITED

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

OWNER'S CERTIFICATE - PLAN OF SUBDIVISION

THIS IS TO CERTIFY THAT:
1. LOTS 1 TO 330 BOTH INCLUSIVE, BLOCKS 331 TO 382 BOTH INCLUSIVE, THE STREETS, NAMELY AVENUE DE LAMARCHE AVENUE, CROISSANT DE MERCIER CRESCENT, RUE DE BEAUGENCY STREET, AND THE 0.3m RESERVES NAMELY BLOCKS 383 AND 384, HAVE BEEN LAID OUT IN ACCORDANCE WITH OUR INSTRUCTIONS.

2. THE STREETS ARE HEREBY DEDICATED TO .

DATED THIS _____ DAY OF _____, 201x

OWNERS NAME

_____
GIBSON PATTERSON
"I HAVE THE AUTHORITY TO BIND THE CORPORATION"

NOTES

BEARINGS ARE MTM GRID, DERIVED FROM OBSERVED REFERENCE POINTS A AND B, BY REAL TIME NETWORK (RTN) OBSERVATIONS, MTM ZONE 09, NAD83 (CSRS) (2010.0).

DISTANCES ARE GROUND AND, CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.9999534.

INTEGRATION DATA

OBSERVED REFERENCE POINTS (ORPs): MTM ZONE 09, NAD83 (CSRS) (2010.0).
COORDINATES TO URBAN ACCURACY PER SECTION 14 (2) OF O.REG. 216/10.

POINT ID	EASTING	NORTHING
ORP A	380 987.01	5 034 571.28
ORP B	381 109.60	5 034 643.16

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

LEGEND

■	DENOTES SURVEY MONUMENT FOUND
□	DENOTES SURVEY MONUMENT SET
SSIB	DENOTES STANDARD IRON BAR
SSIB	DENOTES SHORT STANDARD IRON BAR
PIB	DENOTES PLASTIC BAR
WIT	DENOTES WITNESS
MEAS	DENOTES MEASURED
JDB	DENOTES J.D. BARNES LIMITED

ALL SET SSIB AND PIB MONUMENTS WERE USED DUE TO LACK OF OVERBURDEN AND/OR PRESENCE OF UNDERGROUND UTILITIES IN ACCORDANCE WITH SECTION 11 (4) OF O.REG. 525/91.

SURVEY MONUMENTS PLANTED ARE IRON BARS UNLESS OTHERWISE NOTED.
DISTANCES SHOWN ON CURVED LIMITS ARE ARC MEASUREMENTS.
SURVEY MONUMENTS FOUND ARE J.D. BARNES LIMITED UNLESS OTHERWISE NOTED.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:
1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON

_____ DATE

_____
GEORGE ZERVOS
ONTARIO LAND SURVEYOR

J.D.BARNES LIMITED
SURVEYING MAPPING GIS
LAND INFORMATION SPECIALISTS
300-840 SILVER SEVEN ROAD, OTTAWA, ON K2V 1C1
T: (613) 721-7266 F: (613) 721-8950 www.jdbarnes.com

DRAWN BY:	CHECKED BY:	REFERENCE NO.
QC/CE/AP		16-10-118-00_ALL PHASES

FILE: G:\16-10-118\2D\mp\16101800-str_phases.dgn
DATED: MAR. 8th, 2018
PLOTTED: 5/8/2018

NOTE RE: PROPOSED CONNECTION ON EXISTING PAVEMENT

PROPOSED UNDERGROUND CONNECTIONS WITHIN EXISTING PAVEMENT TO BE CONSTRUCTED AS FOLLOWS:
1. PROPOSED UNDERGROUND CONNECTIONS TO BE CONSTRUCTED IN VERTICAL TRENCH AND BACKFILLED WITH UNSHRINKABLE FILL.
2. CONTRACTOR TO VERIFY THE PRECISE LOCATIONS AND INVERT ELEVATIONS OF Ex. UNDERGROUND SERVICES AND Ex. UTILITIES PRIOR TO STARTING CONSTRUCTION
3. ANY DISTURBED AREAS, INCLUDING CURB, SIDEWALK AND BOULEVARD, TO BE RESTORED TO THE ORIGINAL CONDITION OR BETTER.
4. ALL REMOVED ASPHALT PAVEMENT TO BE DEPOSITED OFF SITE.
5. ALL WORKS INCLUDING REMOVAL AND RESTORATION TO THE SATISFACTION OF CITY OF OTTAWA

CONTRACTOR TO VERIFY THE PRECISE LOCATIONS AND INVERT ELEVATIONS OF Ex. UNDERGROUND SERVICES AND Ex. UTILITIES PRIOR TO STARTING CONSTRUCTION

ANY DISTURBED AREA DURING CONSTRUCTION TO BE RESTORED TO THE ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITIES HAVING JURISDICTION

NOTE RE: WATERMAIN / WATER SERVICE

1. INSULATION REQUIRED FOR WATERMAIN / WATER SERVICE WHERE THE SEPARATION BETWEEN WATERMAIN / WATER SERVICE AND OTHER SERVICES AND STRUCTURES IS LESS THAN 1.2m AND THE COVER IS LESS THAN 2.4m. REFER TO CITY STD. W23 FOR DETAIL.
2. FOR SERVICE INSTALLATION AT SEWER CROSSING, REFER TO CITY STD. W38 FOR DETAIL

NOTE:
THE COVER OF EX. MH, CB, CHAMBER AND OTHER ABOVEGROUND FEATURES TO BE ADJUSTED TO SUIT THE NEW FINISHED GRADE, WHERE APPLICABLE

NOTE RE: TEST PIT/BOREHOLE EXCAVATIONS
ANY DISTURBED MATERIAL ENCOUNTERED BELOW THE SUBGRADE LEVEL WITHIN A BUILDING FOOTPRINT TO BE SUB-EXCAVATED AND BACKFILLED WITH COMPACTED ENGINEERED FILL AS PER GEOTECHNICAL ENGINEERS RECOMMENDATION.

NOTE
FOR WATERMAIN CROSSING BELOW AND ABOVE SEWERS, REFER TO CITY STD. W25 AND W25.2, RESPECTIVELY, WHERE APPLICABLE

NOTE
FOR WATERMAIN STUBS, 2.4m MIN. COVER TO BE PROVIDED

NOTE
FOR HOUSE CONNECTIONS INSTALLED UNDER DRIVEWAYS, SLEEVE SHALL BE USED

NOTE:
ALL WATERMAIN CONNECTIONS AND DECOMMISSIONING OF EXISTING WATERMAINS TO BE COMPLETED BY CITY FORCES. TRENCH BACKFILL/REINSTATEMENT TO BE COMPLETED BY THE CONTRACTOR TO THE SATISFACTION OF THE CITY OF OTTAWA.

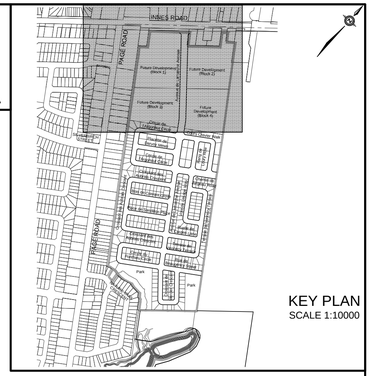
NOTE:
ALL EXISTING POST & WIRE FENCE, CULVERTS, UTILITY WIRE / POLES, TREES, SHRUBS ETC. WITHIN LOTS, BLOCKS AND ROADS TO BE REMOVED, UNLESS OTHERWISE NOTED

PERMISSION REQUIRED FOR WORK ON ADJACENT LANDS

APPROVED ☐ REFUSED ☐

THIS ____ DAY OF _____, 20____

JOSHUA WHITE, P.ENG
PROJECT MANAGER – EAST BRANCH
PLANNING, INFRASTRUCTURE & ECONOMIC DEVELOPMENT DEPARTMENT, CITY OF OTTAWA



PAVEMENT DESIGN
40mm HL–3 OR SUPERPAVE 12.5
50mm HL–8 OR SUPERPAVE 19.0
150mm GRANULAR "A"
600mm GRANULAR "B" TYPE II

PERMISSION REQUIRED
FOR WORK ON ADJACENT LANDS

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NOTE
FOR WATERMAIN STUBS, 2.4m MIN. COVER TO BE PROVIDED

NOTE: ICD
FOR ICD APPLICATION, REFER TO DRAWING 72 FOR DETAIL.

NOTE:
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NOTE:
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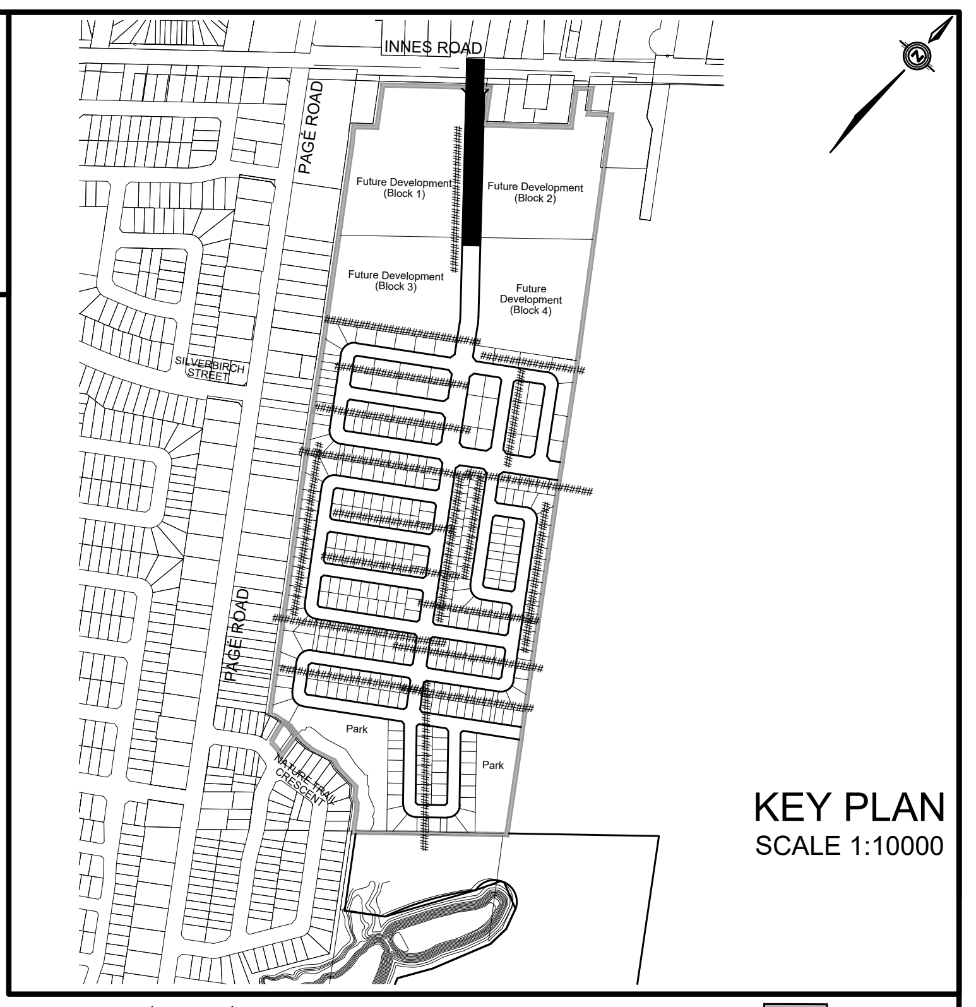
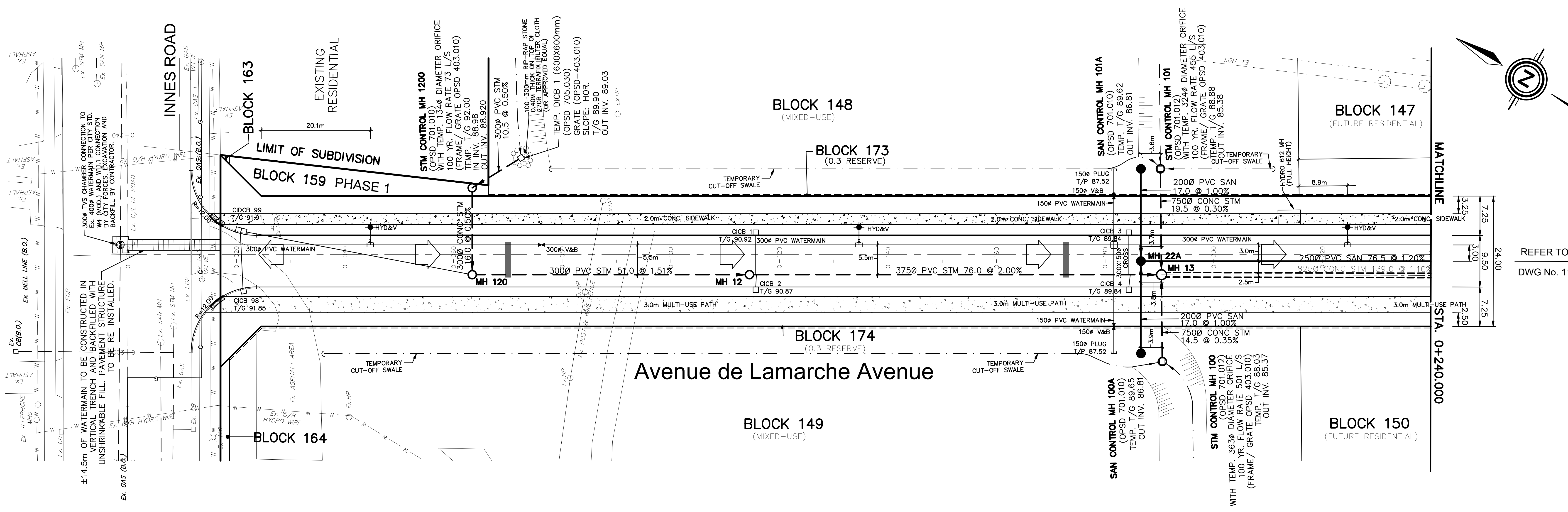
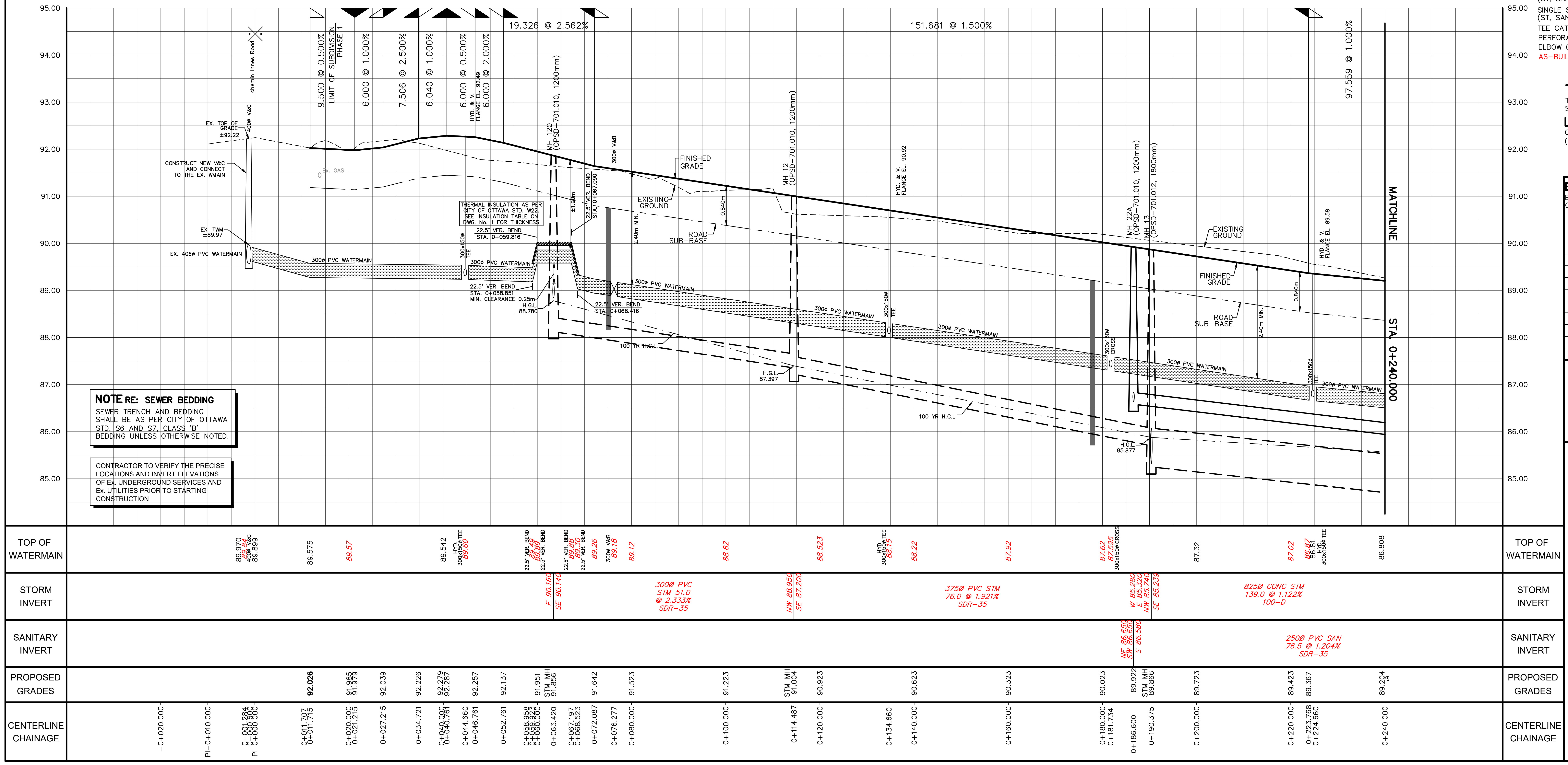


KEY PLAN
SCALE 1:10000





NOTE RE: SEWER BEDDING
SEWER TRENCH AND BEDDING SHALL BE AS PER CITY OF OTTAWA STD. S6 AND S7, CLASS 'B' BEDDING UNLESS OTHERWISE NOTED.

CONTRACTOR TO VERIFY THE PRECISE LOCATIONS AND INVERT ELEVATIONS OF Ex. UNDERGROUND SERVICES AND Ex. UTILITIES PRIOR TO STARTING CONSTRUCTION

LEGEND
CROSS
45° BEND
LATERAL
HYDRANT, VALVE & VB
TEE
VALVE & VC
VALVE & VB
22.5° BEND
11.25° BEND
REDUCER
CAP
SANITARY MAINTENANCE HOLE
CAP
STREET CATCHBASIN & LEAD
STREET CATCHBASIN WITH CLOSED LID & LEAD
STORM MAINTENANCE HOLE
CURB INLET CATCHBASIN & LEAD
CATCHBASIN/ MAINTENANCE HOLE
INTERCONNECTED CATCH BASIN & LEADS
CAP
SINGLE SERVICE LOCATION (ST, SAN & WM)
SINGLE SERVICE LOCATION (ST, SAN & WM)
TEE CATCHBASIN
PERFORATED PIPE
ELBOW CATCHBASIN
AS–BUILT ELEVATION *86.205*

305mmØ WM, V&C, V&B, 200mmØ SAN, MH202A, 375mmØ ST, MH202, CBMH201

HYDRO SWITCHGEAR
HYDRO TRANSFORMER
STREET LIGHT STANDARD — L.S.
CONCRETE SIDEWALK — 1.8m CONC. SIDEWALK
CURB & DEPRESSED CURB — DC, BARRIER, MOUNTABLE
ASPHALT WALKWAY — 3.0m ASPH. WALKWAY
CHAINLINK FENCE (1.5m UNLESS OTHERWISE NOTED)
NOISE BARRIER (3.0m UNLESS OTHERWISE NOTED)
DECORATIVE FENCE (SEE LANDSCAPE DWGS FOR DETAIL)
WOOD PRIVACY BARRIER
POST AND RAIL FENCE
PROPERTY BOUNDARY
BOREHOLE (BH)
TEST PIT (TP)
AUGER HOLE (AH)
MONITORING WELL LOCATION
CONCEPTUAL WELL LOCATION
— AS PER GEOTECHNICAL REPORT
TOP OF FOUNDATION ELEVATION — 90.55
FINISHED FLOOR ELEVATION — 90.85
UNDERSIDE OF FOOTING ELEVATION — 88.03
NUMBER OF RISERS — 3R
6
UNITS REQUIRING PRESSURE REDUCING VALVES — PRV
WALKOUT UNITS — W.O.
SLAB ON GRADE — SOG
OVERLAND FLOW DIRECTION
EXTERNAL OVERLAND FLOW DIRECTION
EMERGENCY OVERLAND FLOW DIRECTION — E
TACTILE WALKING SURFACE INDICATOR (AS PER CITY OF OTTAWA STD. SC6)
PHASE LINE
CLAY SEAL (REFER TO GENERAL NOTES AND GEOTECHNICAL REPORT)

TOPOGRAPHIC INFORMATION
TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 16–10–116–00. SURVEYS DATED NOVEMBER 30, 2017.

LEGAL INFORMATION
CALCULATED M–PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 16–10–116–00 (PHASE 1 & 2) DATED SEPTEMBER 14, 2018.

ELEVATION NOTE
ELEVATION = 86.12 m

ELEVATIONS ARE GEODETIC AND ARE DERIVED FROM SITE BENCHMARK NCC CONTROL POINT 001196530229 HAVING A PUBLISHED ELEVATION OF 86.12m

No.	DATE	BY	DESCRIPTION
7.	21–03–03	L.M.	AS–BUILT SERVICING INFORMATION ADDED
6.	18–10–30	M.Z.	REVISED M–PLAN
5.	18–07–27	M.Z.	REVISED WEST BOUNDARY STORM SYSTEM
4.	18–07–10	M.Z.	MYLARS FOR PHASE 1 COMMENCE WORK
3.	18–06–28	M.Z.	REVISED AS PER CITY AND UTILITY COMMENTS
2.	18–05–09	M.Z.	ISSUED FOR MOE APPROVAL
1.	18–01–24	M.Z.	1st SUBMISSION

CITY OF OTTAWA

AS-BUILT

PROJECT No. 16–881

This drawing has been updated by DSEL to represent the 'as-built' condition of the infrastructure constructed. The information contained herein has been provided by third parties. Although the information is believed to correctly reflect conditions at the time of certification, DSEL provides no warranty as to the currency, accuracy or completeness of the information shown. There may have been changes to the infrastructure represented since the completion of the subject development and others intending to reference this information are advised to obtain independent third party confirmation of its accuracy prior to its use.

PLAN AND PROFILE OF
Avenue de Lamarche Avenue
(FROM STA. 0+000.000 TO STA. 0+240.000)

CAIVAN
(ORLEANS VILLAGE)
LIMITED

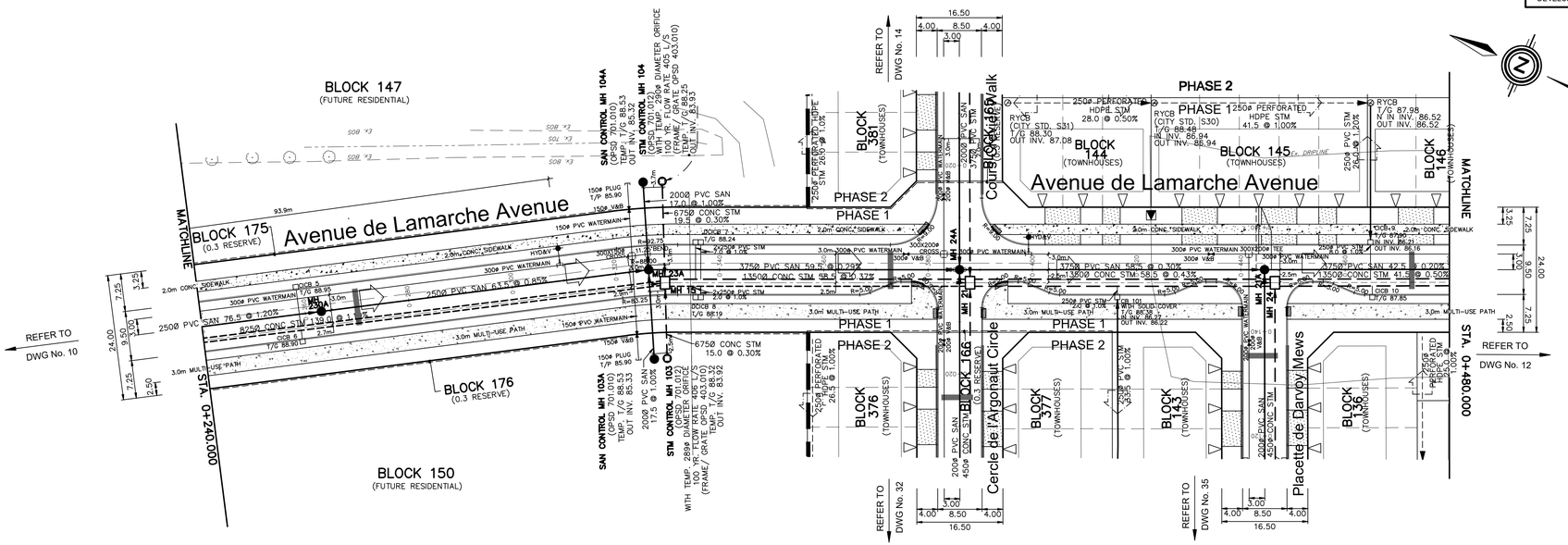
ORLEANS VILLAGE

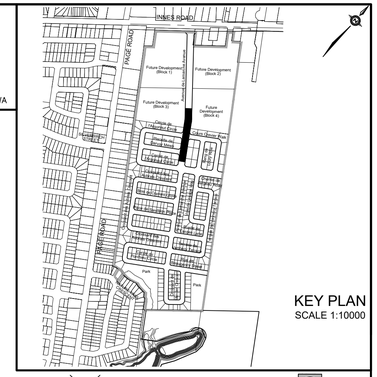
DSEL
david schaeffer engineering ltd
120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

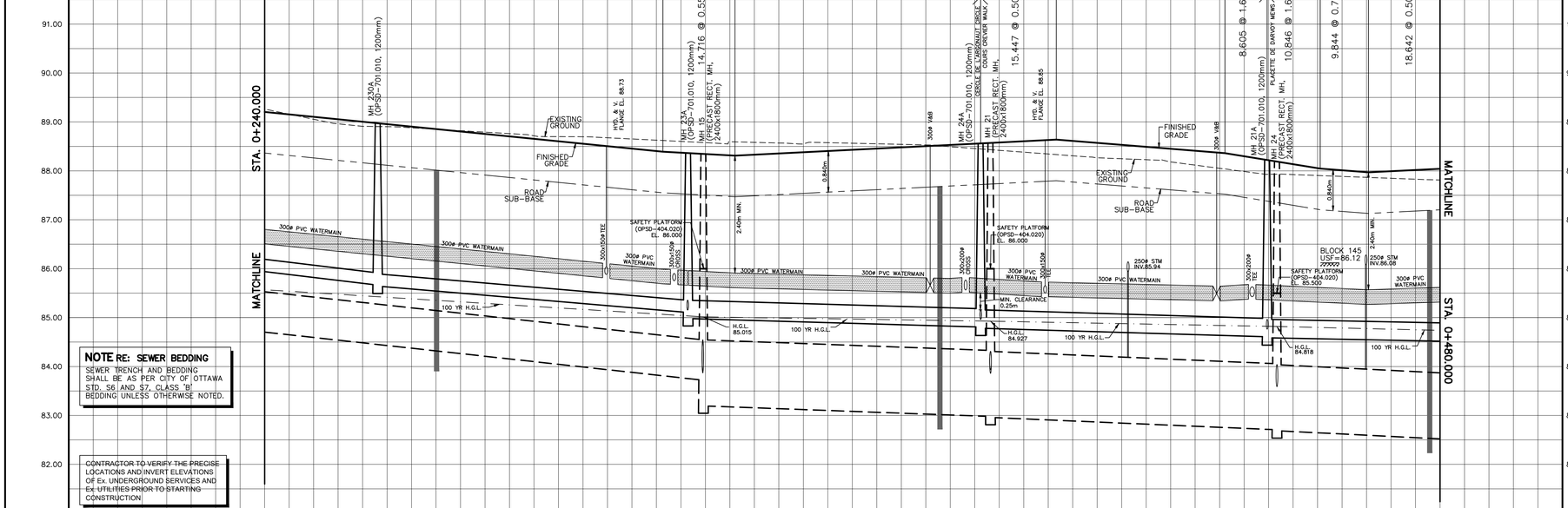
DRAWN BY: M.Z.	CHECKED BY: P.P.	DRAWING NO.	SHEET NO.
DESIGNED BY: P.P.	CHECKED BY: M.Z.		10
SCALE: H=1:500/V=1:50	DATE: JANUARY 2018		

CITY PLAN No. 17675

CITY FILE No. D07-16-16-0022







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APPROVED ☐ REFUSED ☐
THIS ____ DAY OF__________, 20____

JOSHUA WHITE, P.ENG
PROJECT MANAGER – EAST BRANCH
PLANNING, INFRASTRUCTURE & ECONOMIC
DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

KEY PLAN
SCALE 1:10000

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CONTRACTOR TO VERIFY THE PRECISE LOCATIONS AND INVERT ELEVATIONS OF Ex. UNDERGROUND SERVICES AND Ex. UTILITIES PRIOR TO STARTING CONSTRUCTION

TOP OF WATERMAIN
STORM INVERT
SANITARY INVERT
PROPOSED GRADES
CENTERLINE CHAINAGE

LEGEND
- CROSS
- 45° BEND
- LATERAL
- HYDRANT, VALVE & VB
- TEE
- VALVE & VC (V&C)
- VALVE & VB (V&B)
- 22.5° BEND
- 11.25° BEND
- REDUCER
- CAP
- SANITARY MAINTENANCE HOLE (MH202A)
- CAP
- STREET CATCHBASIN & LEAD
- STREET CATCHBASIN WITH CLOSED LID & LEAD
- STORM MAINTENANCE HOLE (MH202)
- CURB INLET CATCHBASIN & LEAD
- CATCHBASIN/ MAINTENANCE HOLE (CBMH201)
- INTERCONNECTED CATCH BASIN & LEADS
- CAP
- SINGLE SERVICE LOCATION (ST, SAN & WM)
- SINGLE SERVICE LOCATION (ST, SAN & WM)
- TEE CATCHBASIN
- PERFORATED PIPE
- ELBOW CATCHBASIN
- AS–BUILT ELEVATION 86.205
- HYDRO SWITCHGEAR
- HYDRO TRANSFORMER
- STREET LIGHT STANDARD (L.S.)
- CONCRETE SIDEWALK (1.8m CONC. SIDEWALK)
- CURB & DEPRESSED CURB (DC, BARRIER, MOUNTABLE)
- ASPHALT WALKWAY (3.0m ASPH. WALKWAY)
- CHAINLINK FENCE (1.5m UNLESS OTHERWISE NOTED)
- NOISE BARRIER (3.0m UNLESS OTHERWISE NOTED)
- DECORATIVE FENCE (SEE LANDSCAPE DWGS FOR DETAIL)
- WOOD PRIVACY BARRIER
- POST AND RAIL FENCE
- PROPERTY BOUNDARY
- BOREHOLE (BH), TEST PIT (TP), AUGER HOLE (AH), MONITORING WELL LOCATION, CONCEPTUAL WELL LOCATION — AS PER GEOTECHNICAL REPORT
- TOP OF FOUNDATION ELEVATION (90.55)
- FINISHED FLOOR ELEVATION (90.85)
- UNDERSIDE OF FOOTING ELEVATION (88.03)
- NUMBER OF RISERS (3R)
- UNITS REQUIRING PRESSURE REDUCING VALVES (PRV)
- WALKOUT UNITS (W.O.)
- SLAB ON GRADE (SOG)
- OVERLAND FLOW DIRECTION
- EXTERNAL OVERLAND FLOW DIRECTION
- EMERGENCY OVERLAND FLOW DIRECTION (E)
- TACTILE WALKING SURFACE INDICATOR (AS PER CITY OF OTTAWA STD. SC6)
- PHASE LINE
- CLAY SEAL (REFER TO GENERAL NOTES AND GEOTECHNICAL REPORT)

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Ottawa CITY OF OTTAWA

AS-BUILT
PROJECT No. 16–881

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PLAN AND PROFILE OF
Avenue de Lamarche Avenue
(FROM STA. 0+240.000 TO STA. 0+480.000)

CAIVAN
(ORLEANS VILLAGE)
LIMITED

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david schaeffer engineering ltd
120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

DRAWN BY: M.Z.	CHECKED BY: P.P.	DRAWING NO.	SHEET NO.
DESIGNED BY: P.P.	CHECKED BY: M.Z.		11
SCALE: H=1:500/V=1:50	DATE: JANUARY 2018		

CITY PLAN No. 17675
CITY FILE No. D07-16-16-0022

Site Plan/Zoning Pre-Application Consultation Notes

Date: Tuesday, February 8, 2022.
Site Location: 245, 275 Lamarche Ave
Type of Development: ☒ **Residential (**☐ **townhomes,** ☐ **stacked,** ☐ **singles,** ☐ **apartments),** ☐ **Office Space,** ☐ **Commercial,** ☐ **Retail,** ☐ **Institutional,** ☐ **Industrial, Other:** N/A

Infrastructure

Water

Existing public services:

- Lamarche Ave – 305mm PVC

Watermain Frontage Fees to be paid ($190.00 per metre) ☐ **Yes** ☒ **No**

Boundary conditions:
Civil consultant must request boundary conditions from the City's assigned Project Manager prior to first submission.

- Water boundary condition requests must include the location of the service(s) and the expected loads required by the proposed developments. Please provide all the following information:
  - Location of service(s)
  - Type of development and the amount of fire flow required (as per FUS, 1999)
  - Average daily demand: ___ L/s
  - Maximum daily demand: ___ L/s
  - Maximum hourly daily demand: ___ L/s
- Fire protection (Fire demand, Hydrant Locations)

General comments

- Service areas with a basic demand greater than 50 m^3/day shall be connected with a minimum of two water services, separated by an isolation valve, to avoid creation of vulnerable service area.
- A District Metering Area Chamber (DMA) is required for services 150mm or greater in diameter.

Sanitary Sewer

Existing public services:

- Lamarche Ave – 250mm PVC

Is a monitoring manhole required on private property? ☒ **Yes** ☐ **No**

General comments

- The designer must demonstrate that the proposed development is within the sanitary capacity that was allocated as part of the Orleans Village detail design servicing report:
  - Design Brief for Caivan (Orleans Village) Ltd 340 Innes Road, prepared by DSEL, project 15-881, dated Nov 2018, rev 3

Storm Sewer

Existing public services:

- Lamarche Ave – 250mm PVC

General comments

- The site is subject to the Development Charges for the Gloucester Urban Center Stormwater Management Facilities
- The existing SWM Pond 1 must be upgraded prior to the development of this site. Please refer to the Orleans Village detail design report:
  - Design Brief for Caivan (Orleans Village) Ltd 340 Innes Road, prepared by DSEL, project 15-881, dated Nov 2018, rev 3

- Stormwater Management Report for the Orleans Village Subdivision, prepared by JFSA, project 883-10, dated Jan 2018, rev Jul 2018.

Stormwater Management

Quality Control:

- Rideau Valley Conservation Authority to confirm quality control requirements.

Quantity Control:

- Site is located within the Mud (Green's) Creek Area Subwatershed Study Area draining to the Ottawa River
- Allowable flowrate: The existing subdivision servicing report should be referenced for permitted release rates and LID features to be incorporated
- When both underground and above ground storage is utilized, the release rate from the system will significantly differ than when solely one level storage is being used (i.e. greater range of head vs smaller change of head during storm event). If both levels of storage are to be accounted for then there are two options for SWM calculations: 1) use a dynamic computer model or 2) use an assumed average flow rate of half (50%) of the controlled peak flow rate of the area(s) utilizing two levels of storage.

General Service Design Comments

- Existing sewer or watermains that are not reused must be decommissioned as per City Standards. Please show all road cuts on the plans.
- The City of Ottawa Standard Detail Drawings should be referenced where possible for all work within the Public Right-of-Way.
- The subdivision agreement conditions should be referred to when preparing the application to sure all remaining noise barriers, sidewalks, infrastructure features have been included

Other

Capital Works Projects within proximity to application? ☒ **Yes** ☐ **No**

- There is currently an intersection modification occurring at Innes Rd and Lamarche Ave

References and Resources

- As per section 53 of the Professional Engineers Act, O. Reg 941/40, R.S.O. 1990, all documents prepared by engineers must be signed and dated on the seal.
- All required plans & reports are to be provided in *.pdf format (at application submission and for any, and all, re-submissions)
- Please find relevant City of Ottawa Links to Preparing Studies and Plans below: https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans#standards-policies-and-guidelines
- To request City of Ottawa plan(s) or report information please contact the City of Ottawa Information Centre:
  InformationCentre@ottawa.ca<mailto:InformationCentre@ottawa.ca>
  (613) 580-2424 ext. 44455
- geoOttawa
  http://maps.ottawa.ca/geoOttawa/

PLANS & STUDIES LIST

For information on preparing required studies and plans refer to:
http://ottawa.ca/en/development-application-review-process-0/guide-preparing-studies-and-plans

S/Z	Number of copies	ENGINEERING		S/A	Number of copies
S		1. Site Servicing Plan	2. Site Servicing Brief	**S/Z**	
S		3. Grade Control and Drainage Plan	4. Geotechnical Study	**S/Z**	
		5. Composite Utility Plan	6. Groundwater Impact Study		
		7. Servicing Options Report	8. Wellhead Protection Study		
		9. Community Transportation Study and/or Transportation Impact Study / Brief	10. Erosion and Sediment Control Plan / Brief	**S**	
S/Z		11. Storm water Management Brief	12. Hydro-geological and Terrain Analysis		
		13. Water main Analysis	14. Noise / Vibration Study		
		15. Roadway Modification Design Plan	16. Confederation Line Proximity Study		

S – Required for Site Plan Control
Z – Required for Zoning By-Law Amendment

APPENDIX B

Water Supply

ORLEANS P.S.

FOREST RIDGE P.S

ORLEANS RES.

1E

2E

SUBJECT SITE

INNES RD ELEVATED TANK

REGIONAL ROAD 174

JOSEPH BLVD

BLAIR RD

ORLEANS BLVD

TRIM RD

TENTH LINE RD

MONT

P S

B P S

305mm

406mm

610mm

762mm

914mm

Adam Fobert

From: Rasool, Rubina <Rubina.Rasool@ottawa.ca>
Sent: March 15, 2022 3:42 PM
To: Adam Fobert
Cc: Emma Perry
Subject: RE: 1296 Caivan - Orleans Village Ph 4: Water Demand Request

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Adam,

I have forward your request for WBC, it usually takes 10 business days for request.

Best,

Rubina

Rubina Rasool, E.I.T.
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review – East Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue Laurier Ouest. Ottawa (Ontario) K1P 1J1 rubina.rasool@ottawa.ca

---

From: Adam Fobert <AFobert@dsel.ca>
Sent: March 15, 2022 3:39 PM
To: Rasool, Rubina <Rubina.Rasool@ottawa.ca>
Cc: Emma Perry <EPerry@dsel.ca>
Subject: 1296 Caivan - Orleans Village Ph 4: Water Demand Request

Hello Rubina,

I understand that Caivan Communities completed a pre-consultation with the City on February 8, 2022 for the properties at 245 & 275 Lamarche Avenue and that you have been assigned as the Infrastructure Approvals Project Manager.

We would like to request watermain boundary conditions for the subject lands to support the submission for zoning amendment and draft plan of subdivision.

Please see the attached location of proposed service connection points.

The subject lands are residential containing townhomes, rear lane townhomes, and back to back units. We anticipate the following required fire flow per ISTB-2018:

- 10,000L/min
- 14,000L/min

Average daily demand: 1.53L/s
Maximum daily demand: 4.45L/s
Maximum hourly daily demand: 6.59L/s

Let me know if you require any additional information.

Adam Fobert, P.Eng.

DSEL

david schaeffer engineering ltd.

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

office: (613) 836-0856
direct: (613) 836-0626
cell: (613) 222-9493
email: afobert@DSEL.ca

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

Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4	-	0
Semi-detached	2.7	-	0
Townhouse	2.7	175	473
Apartment			0
Bachelor	1.4	-	0
1 Bedroom	1.4	-	0
2 Bedroom	2.1	-	0
3 Bedroom	3.1	-	0
Average	1.8	-	0

	Pop	Avg. Daily		Max Day		Peak Hour	
		m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Total Domestic Demand	473	132.4	92.0	384.1	266.7	569.5	395.5

Fire Flow Estimation per Fire Underwriters Survey

Water Supply For Public Fire Protection - 1999

Fire Flow Required

1. Base Requirement

$$F = 220C\sqrt{A}$$ L/min

*Where **F** is the fire flow, **C** is the Type of construction and **A** is the Total floor area*

Type of Construction: Wood Frame

C	1.5		*Type of Construction Coefficient per FUS Part II, Section 1*
A	876.0	m^2	*Total floor area based on FUS Part II section 1*

Fire Flow	9767.1	L/min	
	10000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Adjustments

2. Reduction for Occupancy Type

Limited Combustible	-15%	
Fire Flow	**8500.0**	**L/min**

3. Reduction for Sprinkler Protection

Non-Sprinklered	0%	
Reduction	**0**	**L/min**

4. Increase for Separation Distance

	Cons. of Exposed Wall	S.D	Lw	Ha	LH	EC
N	Wood Frame	3.1m-10m	14.3	2	29	17%
S	Wood Frame	3.1m-10m	14.3	2	29	17%
E	Wood Frame	3.1m-10m	30.65	2	62	19%
W	Wood Frame	10.1m-20m	30.65	2	62	14%
		% Increase				**67%** *value not to exceed 75%*

Increase	**5695.0**	**L/min**

Lw = Length of the Exposed Wall
Ha = number of storeys of the adjacent structure. Max 5 stories
LH = Length-height factor of exposed wall. Value rounded up.
EC = Exposure Charge

Total Fire Flow

Fire Flow	14195.0	L/min	
	14000.0	**L/min**	*rounded to the nearest 1,000 L/min*

Notes:
-Type of construction, Occupancy Type and Sprinkler Protection information provided by _____.
-Calculations based on City of Ottawa ISTB-2018

Fire Flow Estimation per Fire Underwriters Survey

Water Supply For Public Fire Protection - 1999

Fire Flow Required

1. Base Requirement

$$F = 220C\sqrt{A}$$ L/min

*Where **F** is the fire flow, **C** is the Type of construction and **A** is the Total floor area*

Type of Construction: Wood Frame

C	1.5		*Type of Construction Coefficient per FUS Part II, Section 1*
A	937.4	m^2	*Total floor area based on FUS Part II section 1*

Fire Flow	10103.6	L/min
	10000.0	**L/min** *rounded to the nearest 1,000 L/min*

Adjustments

2. Reduction for Occupancy Type

Limited Combustible -15%

Fire Flow	**8500.0**	**L/min**

3. Reduction for Sprinkler Protection

Non-Sprinklered 0%

Reduction	**0**	**L/min**

4. Increase for Separation Distance

	Cons. of Exposed Wall	S.D	Lw	Ha	LH	EC	
N	Wood Frame	20.1m-30m	33.2	2	67	9%	
S	Wood Frame	10.1m-20m	33.2	2	67	14%	
E	Wood Frame	3.1m-10m	21.4	2	43	18%	
W	Wood Frame	3.1m-10m	21.4	2	43	18%	
		% Increase				**59%**	*value not to exceed 75%*

Increase	**5015.0**	**L/min**

Lw = Length of the Exposed Wall
Ha = number of storeys of the adjacent structure. Max 5 stories
LH = Length-height factor of exposed wall. Value rounded up.
EC = Exposure Charge

Total Fire Flow

Fire Flow	13515.0	L/min
	14000.0	**L/min** *rounded to the nearest 1,000 L/min*

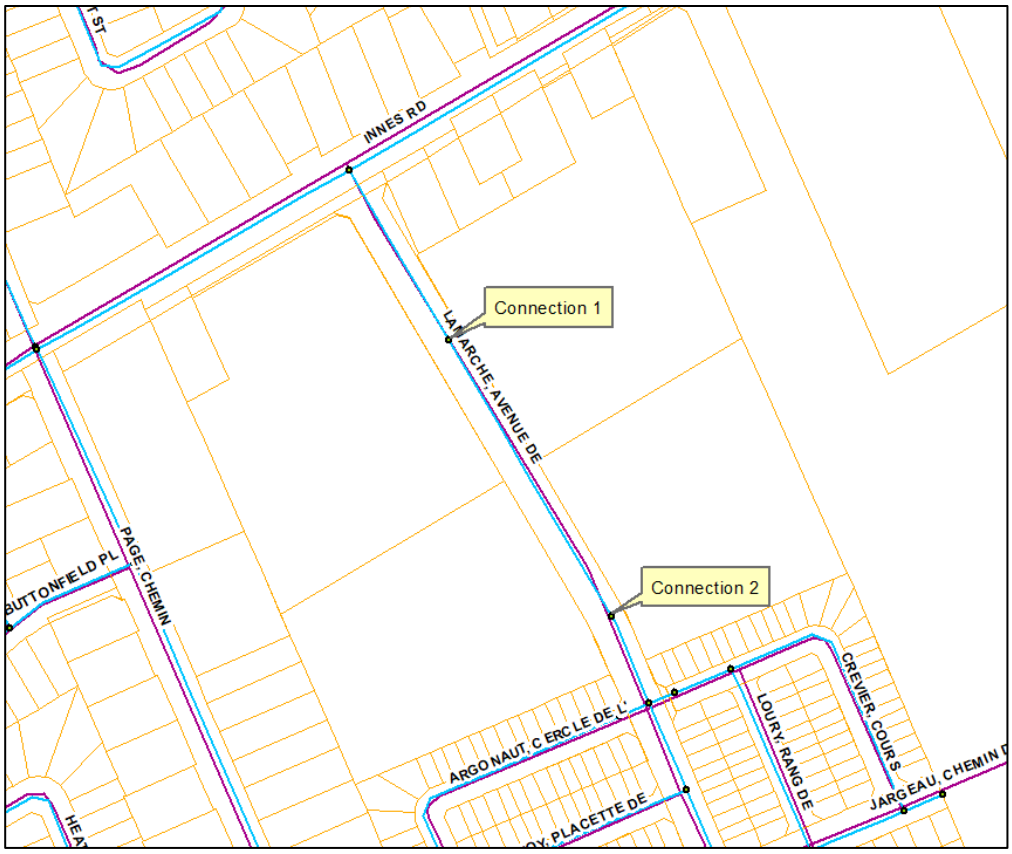
Notes:
-Type of construction, Occupancy Type and Sprinkler Protection information provided by _____.
-Calculations based on City of Ottawa ISTB-2018

Boundary Conditions
1296 Caivan - Orleans Village Ph 4

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	92	1.53
Maximum Daily Demand	267	4.45
Peak Hour	395	6.59
Fire Flow Demand #1	10,000	166.67
Fire Flow Demand #2	14,000	233.33

Location



Results

Connection 1 – Lamarche Ave.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.8	57.6
Peak Hour	127.1	52.3
Max Day plus Fire 1	126.9	52.0
Max Day plus Fire 2	124.8	49.0

Ground Elevation = 90.3 m

Connection 2 – Lamarche Ave.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.8	59.5
Peak Hour	127.1	54.3
Max Day plus Fire 1	125.7	52.3
Max Day plus Fire 2	122.6	47.9

Ground Elevation = 89.0 m

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. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

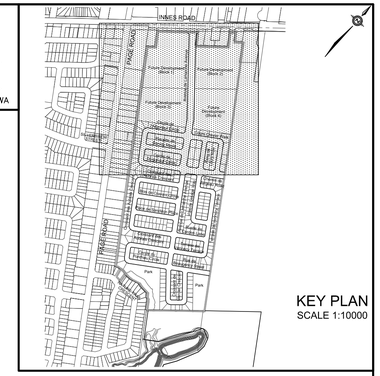
APPENDIX C

Wastewater Collection

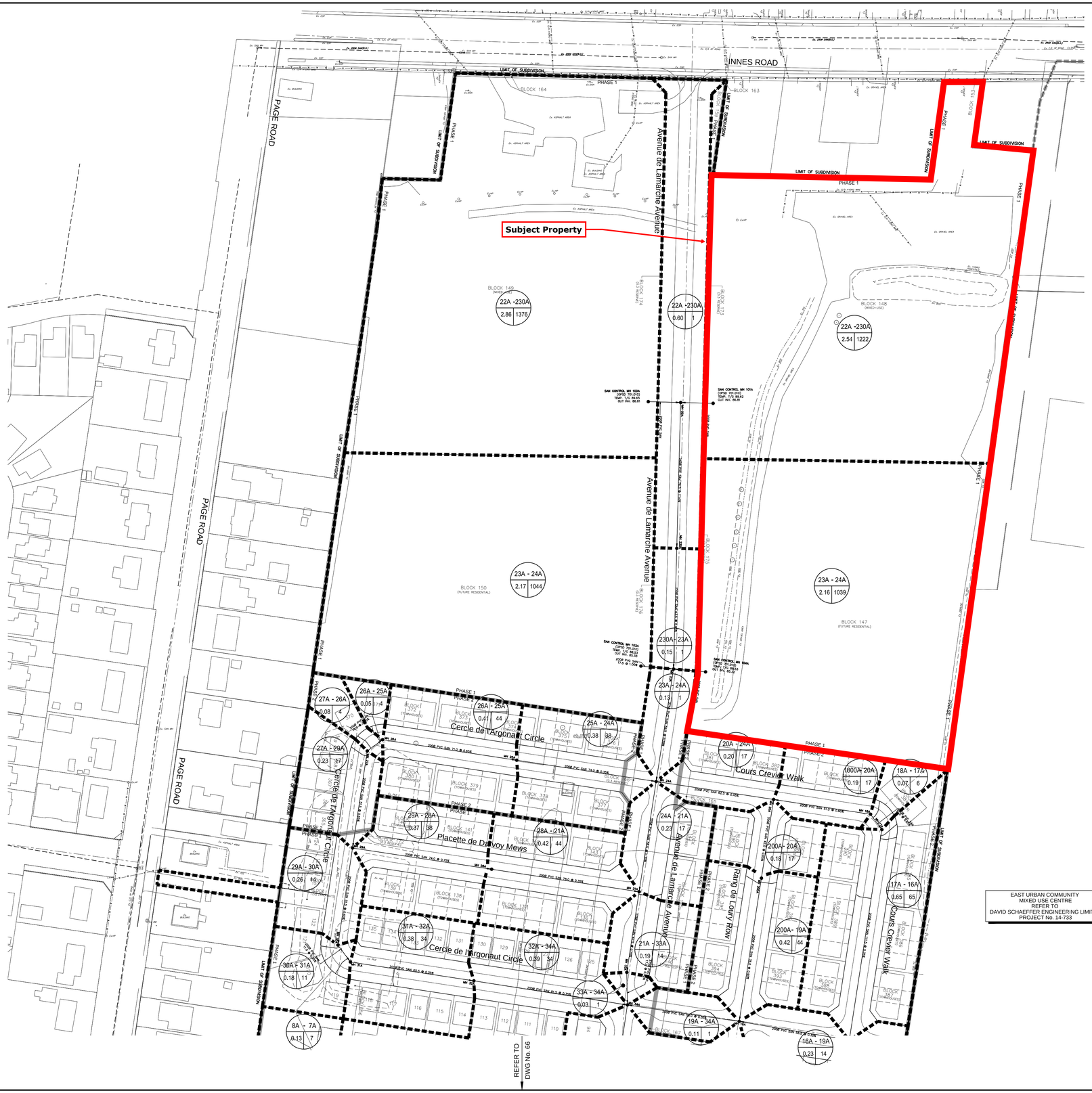
APPROVED ☐ REFUSED ☐

THIS ____ DAY OF _____, 20____

JOSHUA WHITE, P.ENG
PROJECT MANAGER – EAST BRANCH
PLANNING, INFRASTRUCTURE & ECONOMIC
DEVELOPMENT DEPARTMENT, CITY OF OTTAWA



KEY PLAN
SCALE 1:10000



EAST URBAN COMMUNITY
MIXED USE CENTRE
REFER TO
DAVID SCHAEFFER ENGINEERING LIMITED
PROJECT No. 14-733

LEGEND

- SANITARY DRAINAGE BOUNDARY
- SANITARY SUB-DRAINAGE BOUNDARY
- SANITARY DRAINAGE BOUNDARY (OTHER PHASES)
- UPSTREAM MH TO DOWNSTREAM MH — 43A - 44A
- AREA IN HECTARES — 0.78
- POPULATION — 61
- UPSTREAM MH TO DOWNSTREAM MH — 43A - 44A
- AREA IN OTHER PHASES IN HECTARES — 0.78
- POPULATION — 61
- EXTERNAL AREA IN HECTARES — A=53.63
- EXTERNAL POPULATION — POP=5739
- DENSITY (PERSONS/HECTARE) — 107
- EXTERNAL LAND USE — RESIDENTIAL
- MAINTENANCE HOLE — 200mm SDR 35 — MH202A
- CAP

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 16-10-116-00. SURVEYS DATED NOVEMBER 30, 2017.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 16-10-116-00 (PHASE 1 & 2) DATED SEPTEMBER 14, 2018.

ELEVATION NOTE

ELEVATION = 86.12 m

ELEVATIONS ARE GEODETIC AND ARE DERIVED FROM SITE BENCHMARK NCC CONTROL POINT 001196330229 HAVING A PUBLISHED ELEVATION OF 86.12m

No.	DATE	BY	DESCRIPTION
6.	18-10-30	M.Z.	REVISED M-PLAN
5.	18-07-27	M.Z.	REVISED WEST BOUNDARY STORM SYSTEM
4.	18-07-10	M.Z.	MYLARS FOR PHASE 1 COMMENCE WORK
3.	18-06-28	M.Z.	REVISED AS PER CITY AND UTILITY COMMENTS
2.	18-05-09	M.Z.	ISSUED FOR MOE APPROVAL
1.	18-01-24	M.Z.	1st SUBMISSION

Ottawa CITY OF OTTAWA

PROJECT No. 16-881

LICENSED PROFESSIONAL ENGINEER
M.ZDRAVEVSKI
100130902
18-10-30
PROVINCE OF ONTARIO

SANITARY DRAINAGE PLAN

© DSEL

CAIVAN (ORLEANS VILLAGE) LIMITED

ORLEANS VILLAGE

DSEL david schaeffer engineering ltd
120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

DRAWN BY: M.Z./J.Y.	CHECKED BY: P.P.	DRAWING NO.	SHEET NO.
DESIGNED BY: P.P.	CHECKED BY: M.Z.		65
SCALE: 1:1000	DATE: JANUARY 2018		

CITY FILE No. D07-16-16-0022 CITY PLAN No. 17675

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION							COMM		INSTIT		PARK		C+I+I	INFILTRATION					PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	**SLOPE AS-BUILT (%)**	CAP (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
Rang de Loury Row - 03																												
	200A	19A	0.42		44	0.42	44	3.66	0.52								0.42	0.42	0.14	0.66	76.00	200	0.90	**0.88**	30.77	0.02	0.98	0.38
To Chemin de Jargeau Road, Pipe 19A - 34A						0.42	44											0.42										
	200A	20A	0.18		17	0.18	17	3.71	0.20								0.18	0.18	0.06	0.26	42.00	200	0.65	**0.60**	25.41	0.01	0.81	0.26
To Cours Crevier Walk, Pipe 20A - 24A						0.18	17											0.18										
Cercle de l'Argonaut Circle - 12																												
	27A	26A	0.08		4	0.08	4	3.76	0.05								0.08	0.08	0.03	0.08	10.00	200	0.65	**0.80**	29.34	0.00	0.93	0.06
			0.05		4	0.13	8										0.05	0.13										
	26A	25A	0.41		44	0.54	52	3.65	0.62								0.41	0.54	0.18	0.80	71.00	200	0.65	**0.63**	26.03	0.03	0.83	0.37
	25A	24A	0.38		38	0.92	90	3.60	1.05								0.38	0.92	0.30	1.35	74.00	200	0.35	**0.36**	19.68	0.07	0.63	0.36
To Avenue de Lamarche Avenue, Pipe 24A - 21A						0.92	90											0.92										
	27A	29A	0.23		17	0.23	17	3.71	0.20								0.23	0.23	0.08	0.28	51.50	200	0.65	**0.67**	26.85	0.01	0.85	0.27
	29A	30A	0.26		14	0.49	31	3.68	0.37								0.26	0.49	0.16	0.53	51.50	200	0.60	**0.47**	22.49	0.02	0.72	0.28
	30A	31A	0.18		11	0.67	42	3.66	0.50								0.18	0.67	0.22	0.72	11.00	200	0.35	**0.62**	25.83	0.03	0.82	0.36
	31A	32A	0.38		34	1.05	76	3.62	0.89								0.38	1.05	0.35	1.24	65.50	200	0.35	**0.35**	19.40	0.06	0.62	0.34
	32A	34A	0.39		34	1.44	110	3.59	1.28								0.39	1.44	0.48	1.76	81.50	200	0.35	**0.38**	20.22	0.09	0.64	0.40
To Avenue de Lamarche Avenue, Pipe 34A - 35A						1.44	110											1.44										
Placette de Darvoy Mews - 13																												
	29A	28A	0.37		38	0.37	38	3.67	0.45								0.37	0.37	0.12	0.57	74.00	200	0.75	**0.73**	28.02	0.02	0.89	0.35
	28A	21A	0.42		44	0.79	82	3.61	0.96								0.42	0.79	0.26	1.22	78.00	200	0.35	**0.33**	18.84	0.06	0.60	0.33
To Avenue de Lamarche Avenue, Pipe 21A - 33A						0.79	82											0.79										
Croissant des Aubrais Crescent - 10																												
	8A	9A	0.55		41	0.55	41	3.67	0.49								0.55	0.55	0.18	0.67	75.00	200	0.65	**0.67**	26.85	0.02	0.85	0.33
	9A	35A	0.30		24	0.85	65	3.63	0.76								0.30	0.85	0.28	1.04	72.50	200	0.35	**0.32**	18.55	0.06	0.59	0.32
To Avenue de Lamarche Avenue, Pipe 35A - 36A						0.85	65											0.85										
	8A	7A	0.13		7	0.13	7	3.74	0.08								0.13	0.13	0.04	0.12	10.00	200	0.65	**0.90**	31.12	0.00	0.99	0.06
	7A	38A	0.23		14	0.36	21	3.70	0.25								0.23	0.36	0.12	0.37	51.50	200	0.35	**0.31**	18.26	0.02	0.58	0.23
To Bois de Cravant Grove, Pipe 38A - 37A						0.36	21											0.36										
	38A	40A	0.25		17	0.25	17	3.71	0.20								0.25	0.25	0.08	0.28	59.00	200	0.65	**0.64**	26.24	0.01	0.84	0.27
	40A	41A	0.22		14	0.47	31	3.68	0.37								0.22	0.47	0.16	0.53	51.50	200	0.35	**0.39**	20.48	0.03	0.65	0.29
	41A	42A	0.14		7	0.61	38	3.67	0.45								0.14	0.61	0.20	0.65	10.00	200	0.35	**0.70**	27.44	0.02	0.87	0.34
	42A	43A	0.40		34	1.01	72	3.62	0.84								0.40	1.01	0.33	1.17	69.00	200	0.35	**0.32**	18.55	0.06	0.59	0.32
	43A	52A	0.36		31	1.37	103	3.59	1.20								0.36	1.37	0.45	1.65	78.00	200	0.35	**0.35**	19.40	0.09	0.62	0.38
To Avenue de Lamarche Avenue, Pipe 52A - 53A						1.37	103											1.37										
Bois de Cravant Grove - 14																												
Contribution From Croissant des Aubrais Crescent, Pipe 7A - 38A						0.36	21										0.36	0.36										
	38A	37A	0.39		34	0.75	55	3.64	0.65								0.39	0.75	0.25	0.90	69.50	200	0.35	**0.35**	19.40	0.05	0.62	0.32
	37A	36A	0.34		28	1.09	83	3.61	0.97								0.34	1.09	0.36	1.33	85.00	200	0.35	**0.39**	20.48	0.06	0.65	0.36
To Avenue de Lamarche Avenue, Pipe 36A - 44A						1.09	83											1.09										

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha			
Average Daily Flow =	280	l/p/day			Industrial Peak Factor = as per MOE Graph		
Comm/Inst Flow =	28000	L/ha/da	0.5787	l/s/Ha	Extraneous Flow =	0.330	L/s/ha
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha	Minimum Velocity =	0.600	m/s
Max Res. Peak Factor =	4.00				Manning's n = (Conc)	0.013 (Pvc)	0.013
Commercial/Inst./Park Peak Factor =	1.00				Townhouse coeff=	2.7	
Institutional =	0.32	l/s/Ha			Single house coeff=	3.4	

Designed: P.P

Checked: M.Z

Dwg. Reference: Sanitary Drainage Plan, Dwgs. No.

PROJECT: **ORLEANS VILLAGE**

LOCATION: **City of Ottawa**

File Ref: 16-881 | Date: 2018-07-27 | Sheet No. 1 of 4

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION							COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	**SLOPE AS-BUILT (%)**	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
Place de Sandillon Place - 11																											
	40A	39A	0.38		34	0.38	34	3.68	0.41								0.38	0.38	0.13	0.54	69.50	200	0.65	**0.63**	26.03	0.02	0.83	0.32
	39A	44A	0.34		28	0.72	62	3.64	0.73								0.34	0.72	0.24	0.97	85.00	200	0.40	**0.33**	18.84	0.05	0.60	0.31
To Avenue de Lamarche Avenue, Pipe 44A - 52A						0.72	62											0.72									
Cours Crevier Walk- 02																											
	18A	17A	0.07		6	0.07	6	3.75	0.07								0.07	0.07	0.02	0.09	10.00	200	0.65	**0.57**	24.76	0.00	0.79	0.05
	17A	16A	0.65		65	0.72	71	3.63	0.84								0.65	0.72	0.24	1.08	111.50	200	0.35	**0.33**	18.84	0.06	0.60	0.33
To Chemin de Jargeau Road, Pipe 16A - 19A						0.72	71											0.72									
	18A	20A	0.19		17	0.19	17	3.71	0.20								0.19	0.19	0.06	0.26	51.50	200	0.80	**0.80**	29.34	0.01	0.93	0.30
Contribution From Rang de Loury Row, Pipe 200A - 20A						0.18	17										0.18	0.37									
	20A	24A	0.20		17	0.57	51	3.65	0.60								0.20	0.57	0.19	0.79	62.50	200	0.45	**0.37**	19.95	0.04	0.64	0.31
To Avenue de Lamarche Avenue, Pipe 24A - 21A						0.57	51											0.57									
Chemin de Jargeau Road - 04																											
	10A	16A	0.12		7	0.12	7	3.74	0.08								0.12	0.12	0.04	0.12	26.50	200	0.65		26.44	0.00	0.84	0.05
Contribution From Cours Crevier Walk, Pipe 17A - 16A						0.72	71										0.72	0.84									
	16A	19A	0.23		14	1.07	92	3.60	1.07								0.23	1.07	0.35	1.42	58.50	200	0.35	**0.41**	21.00	0.07	0.67	0.38
Contribution From Rang de Loury Row, Pipe 200A - 19A						0.42	44										0.42	1.49									
	19A	34A	0.11		1	1.60	137	3.56	1.58								0.11	1.60	0.53	2.11	59.00	200	0.35	**0.32**	18.55	0.11	0.59	0.38
To Avenue de Lamarche Avenue, Pipe 34A - 35A						1.60	137											1.60									
Voie de Lesage Way - 05																											
	190A	15A	0.21		14	0.21	14	3.72	0.17								0.21	0.21	0.07	0.24	42.50	200	0.65	**0.67**	26.85	0.01	0.85	0.27
	15A	14A	0.60		55	0.81	69	3.63	0.81								0.60	0.81	0.27	1.08	106.50	200	0.35	**0.36**	19.68	0.05	0.63	0.33
	14A	13A	0.13		7	0.94	76	3.62	0.89								0.13	0.94	0.31	1.20	11.50	200	0.35	**0.34**	19.12	0.06	0.61	0.34
	13A	45A	0.16		11	1.10	87	3.61	1.02								0.16	1.10	0.36	1.38	49.00	200	0.35	**0.36**	19.68	0.07	0.63	0.36
To Terrase de Vennecy Terrace, Pipe 45A - 47A						1.10	87											1.10									
Terrase de Vennecy Terrace - 06																											
	15A	11A	0.15		11	0.15	11	3.73	0.13								0.15	0.15	0.05	0.18	49.00	200	0.65	**0.65**	26.44	0.01	0.84	0.27
	11A	12A	0.11		7	0.26	18	3.71	0.22								0.11	0.26	0.09	0.31	11.50	200	0.35	**0.35**	19.40	0.02	0.62	0.24
	12A	45A	0.64		55	0.90	73	3.62	0.86								0.64	0.90	0.30	1.16	106.50	200	0.35	**0.35**	19.40	0.06	0.62	0.34
Contribution From Voie de Lesage Way, Pipe 13A - 45A						1.10	87										1.10	2.00									
	45A	47A	0.43		31	2.43	191	3.52	2.18								0.43	2.43	0.80	2.98	111.00	250	0.30	**0.33**	34.16	0.09	0.70	0.43
	47A	48A	0.12		7	2.55	198	3.52	2.26								0.12	2.55	0.84	3.10	10.50	250	0.30	**0.38**	36.66	0.08	0.75	0.45
	48A	53A	0.59		55	3.14	253	3.49	2.86								0.59	3.14	1.04	3.90	108.50	250	0.30	**0.30**	32.57	0.12	0.66	0.44
To Avenue de Lamarche Avenue, Pipe 53A - 55A						3.14	253											3.14									
Ruelle de Carden Lane - 07																											
	46A	52A	0.56		48	0.56	48	3.65	0.57								0.56	0.56	0.18	0.75	105.50	200	0.65	**0.64**	26.24	0.03	0.84	0.37
To Avenue de Lamarche Avenue, Pipe 52A - 53A						0.56	48											0.56									

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha				
Average Daily Flow =	280	l/p/day			Industrial Peak Factor = as per MOE Graph			
Comm/Inst Flow =	28000	L/ha/da	0.5787	l/s/Ha	Extraneous Flow =	0.330	L/s/ha	
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha	Minimum Velocity =	0.600	m/s	
Max Res. Peak Factor =	4.00				Manning's n = (Conc)	0.013	(Pvc)	0.013
Commercial/Inst./Park Peak Factor =	1.00				Townhouse coeff=	2.7		
Institutional =	0.32	l/s/Ha			Single house coeff=	3.4		

Designed: P.P

Checked: M.Z

Dwg. Reference: Sanitary Drainage Plan, Dwgs. No.

PROJECT: **ORLEANS VILLAGE**

LOCATION: **City of Ottawa**

File Ref: 16-881 | Date: 2018-07-27 | Sheet No. 2 of 4

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION				RESIDENTIAL AREA AND POPULATION							COMM		INSTIT		PARK		C+I+I	INFILTRATION					PIPE						
STREET		FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	SLOPE AS-BUILT (%)	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
Croissant de Mercier Crescent- 09																												
		4A	5A	0.13		7	0.13	7	3.74	0.08								0.13	0.13	0.04	0.12	7.00	200	0.95	**0.71**	27.64	0.00	0.88	0.05
		5A	6A	0.61		48	0.74	55	3.64	0.65								0.61	0.74	0.24	0.89	107.50	200	0.50	**0.53**	23.88	0.04	0.76	0.36
To Cercle du Ponthieu Circle, Pipe 6A - 55A							0.74	55											0.74									
		4A	3A	0.21		11	0.21	11	3.73	0.13								0.21	0.21	0.07	0.20	46.50	200	0.65	**0.62**	25.83	0.01	0.82	0.26
		3A	2A	0.08		4	0.29	15	3.72	0.18								0.08	0.29	0.10	0.28	10.50	200	0.35	**0.45**	22.00	0.01	0.70	0.22
		2A	54A	0.60		51	0.89	66	3.63	0.78								0.60	0.89	0.29	1.07	100.50	200	0.35	**0.41**	21.00	0.05	0.67	0.35
		54A	55A	0.05		4	0.94	70	3.63	0.82								0.05	0.94	0.31	1.13	13.50	200	0.35	**0.67**	26.85	0.04	0.85	0.41
To Cercle du Ponthieu Circle, Pipe 55A - 58A							0.94	70											0.94									
Avenue de Lamarche Avenue - 01																												
				0.60		1	0.60	1			2.54	2.54						3.14	3.14										
	236.500			2.54		240	3.14	241			2.86	5.40						5.40	8.54										
		22A	230A	2.86		1376	6.00	1617	3.12	16.35		5.40					1.75	2.86	11.40	3.76	21.86	76.50	250	1.20	**1.22**	65.68	0.33	1.34	1.21
		230A	23A	0.15		1	6.15	1618	3.12	16.36		5.40					1.75	0.15	11.55	3.81	21.92	63.50	250	0.85	**0.85**	54.83	0.40	1.12	1.05
				0.13		1	6.28	1619				5.40						0.13	11.68										
				2.16		1039	8.44	2658				5.40						2.16	13.84										
		23A	24A	2.17		1044	10.61	3702	2.89	34.67		5.40					1.75	2.17	16.01	5.28	41.70	59.50	375	0.29	**0.29**	94.42	0.44	0.85	0.82
Contribution From Cours Crevier Walk, Pipe 20A - 24A							0.57	51										0.57	16.58										
Contribution From Cercle de l'Argonaut Circle, Pipe 25A - 24A							0.92	90										0.92	17.50										
		24A	21A	0.23		17	12.33	3860	2.88	36.03		5.40					1.75	0.23	17.73	5.85	43.63	58.50	375	0.30	**0.29**	94.42	0.46	0.85	0.83
Contribution From Placette de Darvoy Mews, Pipe 28A - 21A							0.79	82										0.79	18.52										
		21A	33A	0.19		14	13.31	3956	2.87	36.79		5.40					1.75	0.19	18.71	6.17	44.71	42.50	375	0.20	**0.21**	80.35	0.56	0.73	0.75
		33A	34A	0.03		1	13.34	3957	2.87	36.80		5.40					1.75	0.03	18.74	6.18	44.73	17.00	375	0.42	**0.28**	92.78	0.48	0.84	0.83
Contribution From Chemin de Jargeau Road, Pipe 19A - 34A							1.60	137										1.60	20.34										
Contribution From Cercle de l'Argonaut Circle, Pipe 32A - 34A							1.44	110										1.44	21.78										
		34A	35A	0.29		24	16.67	4228	2.85	39.05		5.40					1.75	0.29	22.07	7.28	48.08	59.00	375	0.20	**0.24**	85.89	0.56	0.78	0.80
Contribution From Croissant des Aubrais Crescent, Pipe 9A - 35A							0.85	65										0.85	22.92										
		35A	36A	0.31		28	17.83	4321	2.84	39.77		5.40					1.75	0.31	23.23	7.67	49.19	58.50	375	0.20	**0.23**	84.09	0.58	0.76	0.79
Contribution From Bois de Cravant Grove, Pipe 37A - 36A							1.09	83										1.09	24.32										
		36A	44A	0.32		28	19.24	4432	2.83	40.65		5.40					1.75	0.32	24.64	8.13	50.53	58.50	375	0.20	**0.22**	82.24	0.61	0.74	0.78
Contribution From Place de Sandillon Place, Pipe 39A - 44A							0.72	62										0.72	25.36										
		44A	52A	0.29		24	20.25	4518	2.83	41.44		5.40					1.75	0.29	25.65	8.46	51.65	58.50	450	0.15	**0.12**	98.76	0.52	0.62	0.63
Contribution From Croissant des Aubrais Crescent, Pipe 43A - 52A							1.37	103										1.37	27.02										
Contribution From Ruelle de Carden Lane, Pipe 46A - 52A							0.56	48										0.56	27.58										
		52A	53A	0.09		1	22.27	4670	2.82	42.68		5.40					1.75	0.09	27.67	9.13	53.56	58.50	450	0.15	**0.19**	124.27	0.43	0.78	0.75
Contribution From Terrase de Vennecy Terrace, Pipe 48A - 53A							3.14	253										3.14	30.81										
Contribution From Cercle du Ponthieu Circle, Pipe 51A - 53A							0.80	69										0.80	31.61										
		53A	55A	0.09		1	26.30	4993	2.80	45.31		5.40					1.75	0.09	31.70	10.46	57.52	61.50	450	0.15	**0.16**	114.04	0.50	0.72	0.72
To Cercle du Ponthieu Circle, Pipe 55A - 58A							26.30	4993				5.40							31.70										

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha			
Average Daily Flow =	280	l/p/day			Industrial Peak Factor = as per MOE Graph		
Comm/Inst Flow =	28000	L/ha/da	0.5787	l/s/Ha	Extraneous Flow =	0.330	L/s/ha
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha	Minimum Velocity =	0.600	m/s
Max Res. Peak Factor =	4.00				Manning's n = (Conc)	0.013 (Pvc)	0.013
Commercial/Inst./Park Peak Factor =	1.00				Townhouse coeff=	2.7	
Institutional =	0.32	l/s/Ha			Single house coeff=	3.4	

Designed: P.P

Checked: M.Z

Dwg. Reference: Sanitary Drainage Plan, Dwgs. No.

PROJECT: **ORLEANS VILLAGE**

LOCATION: **City of Ottawa**

File Ref: 16-881 | Date: 2018-07-27 | Sheet No. 3 of 4

SANITARY SEWER CALCULATION SHEET

Manning's n=0.013

LOCATION			RESIDENTIAL AREA AND POPULATION							COMM		INSTIT		PARK		C+I+I	INFILTRATION				PIPE						
STREET	FROM M.H.	TO M.H.	AREA (ha)	UNITS	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	DIST (m)	DIA (mm)	SLOPE (%)	**SLOPE AS-BUILT (%)**	CAP. (FULL) (l/s)	RATIO Q act/Q cap	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
Cercle du Ponthieu Circle - 08																											
	50A	51A	0.25		21	0.25	21	3.70	0.25								0.25	0.25	0.08	0.33	41.50	200	0.70	**0.67**	26.85	0.01	0.85	0.27
	51A	53A	0.55		48	0.80	69	3.63	0.81								0.55	0.80	0.26	1.07	98.50	200	0.55	**0.62**	25.83	0.04	0.82	0.39
To Avenue de Lamarche Avenue, Pipe 53A - 55A						0.80	69											0.80									
	490A	49A	0.14		7	0.14	7	3.74	0.08								0.14	0.14	0.05	0.13	11.00	200	0.65	**0.64**	26.44	0.00	0.84	0.05
	49A	57A	0.24		14	0.38	21	3.70	0.25								0.24	0.38	0.13	0.38	50.50	200	0.35	**0.34**	19.12	0.02	0.61	0.24
	57A	58A	0.09		4	0.47	25	3.69	0.30								0.09	0.47	0.16	0.46	14.00	200	0.35	**0.39**	20.48	0.02	0.65	0.25
To Nature Trail Crescent, Pipe 58A - 59A						0.47	25											0.47									
Rue de Beaugency Street - 08																											
	500A	501A	0.33		24	0.33	24	3.70	0.29					0.65	0.65	0.07	0.98	0.98	0.32	0.68	62.50	200	0.65	**0.59**	26.44	0.03	0.84	0.37
	501A	502A	0.19		14	0.52	38	3.67	0.45						0.65	0.07	0.19	1.17	0.39	0.91	78.50	200	0.35	**0.55**	19.40	0.05	0.62	0.32
	502A	55A				0.52	38	3.67	0.45						0.65	0.07	0.00	1.17	0.39	0.91	2.50	200	1.65	**0.80**	29.34	0.03	0.93	0.41
Cercle du Ponthieu Circle - 08																											
	503A	504A	0.25		17	0.25	17	3.71	0.20								0.25	0.25	0.08	0.28	57.50	200.00	0.65	**0.65**	26.44	0.01	0.84	0.27
	504A	505A	0.26		17	0.51	34	3.68	0.41					0.77	0.77	0.08	1.03	1.28	0.42	0.91	69.50	200.00	0.50	**0.45**	22.00	0.04	0.70	0.34
	505A	58A				0.51	34	3.68	0.41						0.77	0.08	0.00	1.28	0.42	0.91	3.00	200.00	1.00	**0.67**	26.85	0.03	0.85	0.37
To Nature Trail Crescent, Pipe 58A - 59A						0.51	34								0.77			1.28									
	1A	6A	63.57		6462	63.57	6462	2.71	56.75	53.65	53.65			10.45	10.45	18.51	127.67	127.67	42.13	117.39	88.50	675	0.11		278.79	0.42	0.78	0.74
Contribution From Croissant de Mercier Crescent, Pipe 5A - 6A						0.74	55										0.74	128.41									
	6A	55A				64.31	6517	2.71	57.23		53.65				10.45	18.51	0.00	128.41	42.38	118.12	57.00	675	0.11	**0.09**	278.79	0.42	0.78	0.74
Contribution From Avenue de Lamarche Avenue, Pipe 53A - 55A						26.30	4993				5.40						31.70	160.11									
Contribution From Croissant de Mercier Crescent, Pipe 54A - 55A						0.94	70										0.94	161.05									
	55A	58A				92.07	11618	2.51	94.50		59.05				11.10	20.33	0.00	161.05	53.15	167.98	143.00	675	0.11	**0.10**	265.82	0.63	0.74	0.78
To Sanitary Easement, Pipe 58A - 59A						92.07	11618				59.05				11.10			161.05									
Sanitary Easement - 20																											
Contribution From Cercle du Ponthieu Circle, Pipe 505A - 58A						0.51	34								0.77		1.28	1.28		0.00							
Contribution From Cercle du Ponthieu Circle, Pipe 55A - 58A						92.07	11618				59.05				11.10		161.05	162.33		0.00							
Contribution From Cercle du Ponthieu Circle, Pipe 57A - 58A						0.47	25										0.47	162.80									
	58A	59A	0.07		1	93.12	11678	2.51	94.99		59.05				11.87	20.41	0.07	162.87	53.75	169.15	48.00	675	0.11	**0.30**	460.41	0.37	1.29	1.19
			0.01		1	93.13	11679				59.05				11.87		0.01	162.88									
	59A	60A	0.05		1	93.18	11680	2.51	95.01		59.05				11.87	20.41	0.05	162.93	53.77	169.19	33.00	675	0.11	**0.11**	278.79	0.61	0.78	0.82
To Nature Trail Crescent, Pipe 60A - 61A						93.18	11680				59.05				11.87			162.93		0.00								
Nature Trail Crescent - 21																											
Contribution From Sanitary Easement, Pipe 59A - 60A						93.18	11680				59.05				11.87		162.93	162.93		0.00							
			0.06		4	93.24	11684				59.05				11.87		0.06	162.99									
	60A	61A	1.47		82	94.71	11766	2.51	95.71		59.05				11.87	20.41	1.47	164.46	54.27	170.39	11.00	675	0.11	**0.09**	252.18	0.68	0.70	0.75
	61A	62A	0.59		47	95.30	11813	2.51	96.09		59.05				11.87	20.41	0.59	165.05	54.47	170.97	73.50	675	0.11	**0.08**	237.75	0.72	0.66	0.72

DESIGN PARAMETERS

Park Flow =	9300	L/ha/da	0.10764	l/s/Ha				
Average Daily Flow =	280	l/p/day			Industrial Peak Factor = as per MOE Graph			
Comm/Inst Flow =	28000	L/ha/da	0.5787	l/s/Ha	Extraneous Flow =	0.330	L/s/ha	
Industrial Flow =	35000	L/ha/da	0.40509	l/s/Ha	Minimum Velocity =	0.600	m/s	
Max Res. Peak Factor =	4.00				Manning's n = (Conc)	0.013	(Pvc)	0.013
Commercial/Inst./Park Peak Factor =	1.00				Townhouse coeff=	2.7		
Institutional =	0.32	l/s/Ha			Single house coeff=	3.4		

Designed: P.P

Checked: M.Z

Dwg. Reference: Sanitary Drainage Plan, Dwgs. No.

PROJECT: **ORLEANS VILLAGE**

LOCATION: **City of Ottawa**

File Ref: 16-881

Date: 2018-07-27

Sheet No. 4 of 4

Wastewater Design Flows per Unit Count
City of Ottawa Sewer Design Guidelines, 2004

Site Area	4.700	**ha**

Extraneous Flow Allowances

Infiltration / Inflow	**1.55**	**L/s**

Domestic Contributions

Unit Type	Unit Rate	Units	Pop
Single Family	3.4		0
Semi-detached and duplex	2.7		0
Townhouse	2.7	175	473
Stacked Townhouse	2.3		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0

Total Pop	**473**	
Average Domestic Flow	**1.53**	**L/s**
Peaking Factor	**3.39**	
Peak Domestic Flow	**5.20**	**L/s**

Institutional / Commercial / Industrial Contributions

Property Type	Unit Rate		No. of Units	Avg Wastewater (L/s)
Nursing / Rest homes	450	L/bed/d		0.00
Housekeeping Facilities	225	L/per/d		0.00
Dining room	125	L/per/d		0.00
Commercial floor space*	5	$L/m^2/d$		0.00
Hospitals	900	L/bed/d		0.00
School	70	L/student/d		0.00
Industrial - Light**	35,000	L/gross ha/d		0.00
Industrial - Heavy**	55,000	L/gross ha/d		0.00

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

** assuming a 12 hour commercial operation*

*** peak industrial flow per City of Ottawa Sewer Design Guidelines Appendix 4B*

Total Estimated Average Dry Weather Flow Rate	**1.53**	**L/s**
Total Estimated Peak Dry Weather Flow Rate	**5.20**	**L/s**
Total Estimated Peak Wet Weather Flow Rate	**6.75**	**L/s**

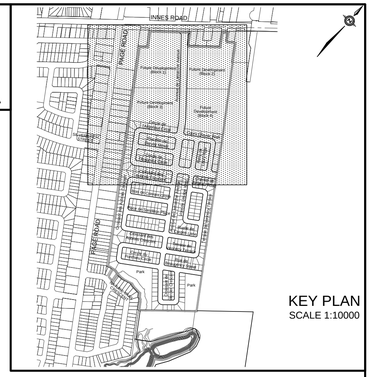
APPENDIX D

Stormwater Management

APPROVED ☐ REFUSED ☐

THIS ____ DAY OF_____, 20____

JOSHUA WHITE, P.ENG
PROJECT MANAGER – EAST BRANCH
PLANNING, INFRASTRUCTURE & ECONOMIC
DEVELOPMENT DEPARTMENT, CITY OF OTTAWA



Subject lands

INNES ROAD
PAGE ROAD
Avenue de Lamarche Avenue
Cercle de l'Argonaut Circle
Placette de Darvoy Mews
Croissant des Aubrais Crescent
Cours Crevier Walk
Rang de Lurry Row
Chemin de Jargeau Road
LIMIT OF SUBDIVISION
PHASE 1
PHASE 2
BLOCK 149 (MIXED-USE)
BLOCK 148 (MIXED-USE)
BLOCK 150 (FUTURE RESIDENTIAL)
BLOCK 147 (FUTURE RESIDENTIAL)
BLOCK 164
BLOCK 153
BLOCK 151
BLOCK 176
BLOCK 175
BLOCK 177
INTERIM

EAST URBAN COMMUNITY
MIXED USE CENTRE
REFER TO
DAVID SCHAEFFER ENGINEERING LIMITED
PROJECT No. 14-733

REFER TO DWG No. 68

LEGEND

- STORM DRAINAGE BOUNDARY
- STORM DRAINAGE BOUNDARY (OTHER PHASES)
- UPSTREAM MH TO DOWNSTREAM MH
- AREA IN HECTARES
- RUNOFF COEFFICIENT
- EXTERNAL 2.78AC =
- EXTERNAL TIME OF CONCENTRATION
- EXTERNAL BLENDED RUNOFF COEFFICIENT
- STREET CATCHBASIN & LEAD
- STREET CATCHBASIN WITH CLOSED LID & LEAD MAINTENANCE HOLE
- CURB INLET CATCHBASIN & LEAD CATCHBASIN/ MAINTENANCE HOLE
- INTERCONNECTED CATCH BASIN & LEADS
- CAP
- OVERLAND FLOW DIRECTION
- EXTERNAL OVERLAND FLOW DIRECTION
- EMERGENCY OVERLAND FLOW DIRECTION

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 16-10-116-00. SURVEYS DATED NOVEMBER 30, 2017.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 16-10-116-00 (PHASE 1 & 2) DATED SEPTEMBER 14, 2018.

ELEVATION NOTE

ELEVATION = 86.12 m

ELEVATIONS ARE GEODETIC AND ARE DERIVED FROM SITE BENCHMARK NCC CONTROL POINT 001196530229 HAVING A PUBLISHED ELEVATION OF 86.12m

No.	DATE	BY	DESCRIPTION
6.	18-10-30	M.Z.	REVISED M-PLAN
5.	18-07-27	M.Z.	REVISED WEST BOUNDARY STORM SYSTEM
4.	18-07-10	M.Z.	MYLARS FOR PHASE 1 COMMENCE WORK
3.	18-06-28	M.Z.	REVISED AS PER CITY AND UTILITY COMMENTS
2.	18-05-09	M.Z.	ISSUED FOR MOE APPROVAL
1.	18-01-24	M.Z.	1st SUBMISSION

Ottawa CITY OF OTTAWA

PROJECT No. 16-881

LICENSED PROFESSIONAL ENGINEER M. ZDRAVEVSKI 100130902 PROVINCE OF ONTARIO

STORM DRAINAGE PLAN

CAIVAN (ORLEANS VILLAGE) LIMITED

ORLEANS VILLAGE

DSEL david schaeffer engineering ltd
120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

DRAWN BY: M.Z.	CHECKED BY: P.P.	DRAWING NO.	SHEET NO.
DESIGNED BY: P.P.	CHECKED BY: M.Z.		67
SCALE: 1:1000	DATE: JANUARY 2018		

CITY FILE No. D07-16-16-0022 CITY PLAN No. 17675

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Arterial Roads Return Frequency = 10 years

Manning 0.013

	LOCATION		AREA (Ha)														FLOW						SEWER DATA								
			2 YEAR				5 YEAR				10 YEAR				100 YEAR				Time of	Intensity	Intensity	Intensity	Intensity	Peak Flow	DIA. (mm)	DIA. (mm)	TYPE	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME OF	RATIO
			AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	Conc.	2 Year	5 Year	10 Year	100 Year										
Location	From Node	To Node	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(min)	(mm/h)	(mm/h)	(mm/h)	(mm/h)	Q (l/s)	(actual)	(nominal)		(%)	(m)	(l/s)	(m/s)	FLOW (min.	Q/Q full
West Boundary STM System																																
					0.00	0.00			0.00	0.00			0.00	0.00	1.74	0.55	2.66	2.66														
					0.00	0.00			0.00	0.00			0.00	0.00	0.02	0.70	0.04	2.70														
					0.00	0.00			0.00	0.00			0.00	0.00	0.14	0.50	0.19	2.89														
					0.00	0.00			0.00	0.00			0.00	0.00	0.05	0.50	0.07	2.96	Tc=340/(2*60)+10min. (For 340.0m and 2.0m/s)					-59	FLOW TO MH C8 TO 5								
	MH C12 (100yr. Intake	HW C13			0.00	0.00			0.00	0.00			0.00	0.00	0.44	0.50	0.61	3.58	12.80	67.50	91.41	0.00	156.46	500	600	600	CONC	0.90	22.0	583	2.06	0.18	0.86
	.																															

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/s

Designed: P.P./C.M.	PROJECT: **Caivan Communities** **Orleans Village**		
Checked: M.Z.	LOCATION: **City of Ottawa**		
Dwg. Reference:	File Ref:	Date: 30 Oct 2018	Sheet No. SHEET 1 OF 5

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Arterial Roads Return Frequency = 10 years

Manning 0.013

	LOCATION		AREA (Ha)														FLOW						SEWER DATA								
			2 YEAR				5 YEAR				10 YEAR				100 YEAR				Time of	Intensity	Intensity	Intensity	Intensity	Peak Flow	DIA. (mm)	DIA. (mm)	TYPE	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME OF	RATIO
			AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	Conc.	2 Year	5 Year	10 Year	100 Year										
Location	From Node	To Node	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(min)	(mm/h)	(mm/h)	(mm/h)	(mm/h)	Q (l/s)	(actual)	(nominal)		(%)	(m)	(l/s)	(m/s)	FLOW (min.	Q/Q full
Block 155 - 2003																																	
Contribution From Block 155, Pipe C8 - 5																								59	SUBDRAIN FLOW								
	C8	5			0.00	0.00			0.00	0.00			0.00	0.00	0.06	0.50	0.08	0.08	10.00	76.81	104.19	0.00	178.56	74	300	300	PVC	1.00	26.0	97	1.37	0.32	0.76
To Cercle du Ponthieu Circle, Pipe 5 - 56						0.00				0.00				0.00				0.08	10.32					59									
Rue de Beaugency Street-08																																	
	CTRL MH 106	4	0.66	0.40	0.73	0.73			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	56	300	300	CONC	0.50	10.5	68	0.97	0.18	0.82
			0.13	0.50	0.18	0.18			0.00	0.00			0.00	0.00			0.00	0.00															
	4	58	0.25	0.70	0.49	1.40			0.00	0.00			0.00	0.00			0.00	0.00	10.18	76.12	103.25	0.00	176.92	107	375	375	PVC	0.70	81.5	147	1.33	1.02	0.73
			0.14	0.70	0.27	1.01			0.00	0.00			0.00	0.00			0.00	0.00															
	58	57	0.22	0.50	0.31	3.45			0.00	0.00			0.00	0.00			0.00	0.00	11.20	72.47	98.24	0.00	168.26	250	450	450	PVC	1.25	61.5	319	2.00	0.51	0.78
To Avenue de Lamarche Avenue, Pipe 57 - 1TEE						3.45				0.00				0.00				0.00	11.72														
Contribution Block 155, Pipe C8 - 5						0.00				0.00				0.00				0.08	10.32					59									
			0.30	0.50	0.42	0.42			0.00	0.00			0.00	0.00			0.00	0.08															
	5	56	0.63	0.70	1.23	1.64			0.00	0.00			0.00	0.00			0.00	0.08	10.32	75.61	102.55	0.00	175.71	198	675	675	CONC	0.95	138.0	819	2.29	1.00	0.24
To Avenue de Lamarche Avenue, Pipe 56 - 57						1.64				0.00				0.00				0.08	11.32					59									
	5	6			0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	0	300	300	PVC	1.00	14.5	97	1.37	0.18	0.00
	6	7			0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00	10.18	76.13	103.27	0.00	176.96	0	300	300	PVC	0.65	47.0	78	1.10	0.71	0.00
	7	8			0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00	10.89	73.56	99.73	0.00	170.84	0	300	300	PVC	0.55	12.0	72	1.01	0.20	0.00
			0.13	0.50	0.18	0.18			0.00	0.00			0.00	0.00			0.00	0.00															
	8	9	0.27	0.70	0.53	0.71			0.00	0.00			0.00	0.00			0.00	0.00	11.08	72.88	98.80	0.00	169.22	51	300	300	PVC	0.55	68.0	72	1.01	1.12	0.72
	CTRL MH 105	9	0.71	0.40	0.79	0.79			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	61	375	375	PVC	0.40	10.5	111	1.00	0.17	0.55
			0.18	0.50	0.25				0.00	0.00			0.00	0.00			0.00	0.00															
	9	57	0.20	0.70	0.39	2.14			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	164	375	375	CONC	1.30	71.5	200	1.81	0.66	0.82
To Avenue de Lamarche Avenue, Pipe 57 - 1TEE						2.14				0.00				0.00				0.00	10.17														
Voie de Lesage Way - 05																																	
	410	42	0.07	0.70	0.14	0.14			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	10	300	300	PVC	0.69	51.0	80	1.14	0.75	0.13
			0.17	0.50	0.24	0.37			0.00	0.00			0.00	0.00			0.00	0.00															
	42	45	0.35	0.70	0.68	1.05			0.00	0.00			0.00	0.00			0.00	0.00	10.75	74.05	100.40	0.00	172.00	78	375	375	PVC	0.35	103.0	104	0.94	1.83	0.75
	45	46			0.00	1.05			0.00	0.00			0.00	0.00			0.00	0.00	12.58	68.15	92.31	0.00	158.00	72	375	375	PVC	0.72	10.5	149	1.35	0.13	0.48
			0.05	0.50	0.07	1.12			0.00	0.00			0.00	0.00			0.00	0.00															
	46	47	0.25	0.70	0.49	1.61			0.00	0.00			0.00	0.00			0.00	0.00	12.71	67.77	91.79	0.00	157.10	109	450	450	CONC	0.47	45.5	195	1.23	0.62	0.56
To Terrase de Vennecy Terrace, Pipe 47 - 54						1.61				0.00				0.00				0.00	13.32														
Terrase de Vennecy Terrace - 06																																	
			0.22	0.50	0.31	0.31			0.00	0.00			0.00	0.00			0.00	0.00															
	42	43	0.26	0.70	0.51	0.81			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	62	375	375	PVC	0.66	45.5	142	1.29	0.59	0.44
	43	44			0.00	0.81			0.00	0.00			0.00	0.00			0.00	0.00	10.59	74.62	101.19	0.00	173.36	61	375	375	PVC	1.04	10.5	179	1.62	0.11	0.34
			0.13	0.50	0.18	0.99			0.00	0.00			0.00	0.00			0.00	0.00															
	44	47	0.34	0.70	0.66	1.65			0.00	0.00			0.00	0.00			0.00	0.00	10.70	74.23	100.65	0.00	172.44	123	450	450	CONC	0.38	103.0	176	1.11	1.55	0.70
Contribution From Voie de Lesage Way, Pipe 46 - 47						1.61				0.00				0.00				0.00	13.32														
			0.05	0.50	0.07	3.33			0.00	0.00			0.00	0.00			0.00	0.00															
			0.12	0.50	0.17	3.50			0.00	0.00			0.00	0.00			0.00	0.00															
			0.13	0.50	0.18	3.68			0.00	0.00			0.00	0.00			0.00	0.00															
	47	54	0.33	0.70	0.64	4.32			0.00	0.00			0.00	0.00			0.00	0.00	13.32	66.03	89.40	0.00	152.98	285	600	600	CONC	0.39	111.5	383	1.36	1.37	0.74
	54	55			0.00	4.32			0.00	0.00			0.00	0.00			0.00	0.00	14.69	62.50	84.56	0.00	144.63	270	600	600	CONC	0.35	10.0	363	1.28	0.13	0.74
			0.18	0.50	0.25	4.57			0.00	0.00			0.00	0.00			0.00	0.00															
	55	56	0.31	0.70	0.60	5.18			0.00	0.00			0.00	0.00			0.00	0.00	14.82	62.19	84.13	0.00	143.89	322	675	675	CONC	0.52	110.0	606	1.69	1.08	0.53
To Avenue de Lamarche Avenue, Pipe 56 - 57						5.18				0.00				0.00				0.00	15.91														
Ruelle de Carden Lane - 07																																	
			0.28	0.50	0.39	0.39			0.00	0.00			0.00	0.00			0.00	0.00															
	48	52	0.37	0.70	0.72	1.11			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	85	375	375	PVC	1.10	110.0	184	1.66	1.10	0.46
To Avenue de Lamarche Avenue, Pipe 52 - 56						1.11				0.00				0.00				0.00	11.10														

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/s

Designed: P.P./C.M.
Checked: M.Z.
Dwg. Reference:

PROJECT: **Caivan Communities**
Orleans Village
LOCATION:
City of Ottawa
File Ref:
Date: 30 Oct 2018
Sheet No. SHEET 2 OF 5

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Arterial Roads Return Frequency = 10 years

Manning 0.013

	LOCATION		AREA (Ha)																FLOW						SEWER DATA							
			2 YEAR				5 YEAR				10 YEAR				100 YEAR				Time of	Intensity	Intensity	Intensity	Intensity	Peak Flow	DIA. (mm)	DIA. (mm)	TYPE	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME OF	RATIO
			AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	Conc.	2 Year	5 Year	10 Year	100 Year										
Location	From Node	To Node	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(min)	(mm/h)	(mm/h)	(mm/h)	(mm/h)	Q (l/s)	(actual)	(nominal)		(%)	(m)	(l/s)	(m/s)	FLOW (min.	Q/Q full
Place de Sandillon Place - 11																																
			0.13	0.50	0.18	0.18			0.00	0.00			0.00	0.00			0.00	0.00														
	36	37	0.26	0.70	0.51	0.69			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	53	300	300	PVC	0.68	59.0	80	1.13	0.87	0.66
			0.17	0.50	0.24	0.92			0.00	0.00			0.00	0.00			0.00	0.00														
	37	38	0.26	0.70	0.51	1.43			0.00	0.00			0.00	0.00			0.00	0.00	10.87	73.61	99.80	0.00	170.96	105	375	375	PVC	0.75	80.5	152	1.37	0.98	0.69
To Avenue de Lamarche Avenue, Pipe 38 - 52						1.43				0.00				0.00				0.00	11.85														
Bois de Cravant Grove - 14																																
Contribution From Croissant des Aubrais Crescent, Pipe 35 - 10						0.00				0.00				0.00				0.00	11.18														
			0.12	0.50	0.17	0.17			0.00	0.00			0.00	0.00			0.00	0.00														
	10	11	0.26	0.70	0.51	0.67			0.00	0.00			0.00	0.00			0.00	0.00	11.18	72.54	98.33	0.00	168.42	49	375	375	PVC	0.38	69.0	108	0.98	1.18	0.45
			0.19	0.50	0.26	0.94			0.00	0.00			0.00	0.00			0.00	0.00														
	11	34	0.29	0.70	0.56	1.50			0.00	0.00			0.00	0.00			0.00	0.00	12.36	68.80	93.19	0.00	159.53	103	375	375	PVC	0.76	80.5	153	1.38	0.97	0.68
To Avenue de Lamarche Avenue, Pipe 34 - 38						1.50				0.00				0.00				0.00	13.33														
Croissant des Aubrais Crescent - 10																																
			0.05	0.50	0.07	0.07			0.00	0.00			0.00	0.00			0.00	0.00														
			0.29	0.50	0.40	0.47			0.00	0.00			0.00	0.00			0.00	0.00														
	31	33	0.68	0.70	1.32	1.80			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	138	450	450	CONC	0.85	143.0	263	1.65	1.44	0.52
To Avenue de Lamarche Avenue, Pipe 33 - 34						1.80				0.00				0.00				0.00	11.44														
	31	35			0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	0	300	300	PVC	1.05	9.5	99	1.40	0.11	0.00
	35	10			0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00	10.11	76.37	103.60	0.00	177.53	0	300	300	PVC	0.35	52.0	57	0.81	1.07	0.00
To Bois de Cravant Grove, Pipe 10 - 11						0.00				0.00				0.00				0.00	11.18														
	10	49	0.19	0.70	0.37	0.37			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	28	300	300	PVC	0.69	106.5	80	1.14	1.56	0.35
	49	50			0.00	0.37			0.00	0.00			0.00	0.00			0.00	0.00	11.56	71.29	96.61	0.00	165.44	26	300	300	PVC	0.35	9.5	57	0.81	0.20	0.46
			0.13	0.50	0.18	0.55			0.00	0.00			0.00	0.00			0.00	0.00														
			0.17	0.50	0.24	0.79			0.00	0.00			0.00	0.00			0.00	0.00														
	50	52	0.62	0.70	1.21	1.99			0.00	0.00			0.00	0.00			0.00	0.00	11.76	70.66	95.74	0.00	163.94	141	450	450	CONC	0.50	142.5	202	1.27	1.87	0.70
To Avenue de Lamarche Avenue, Pipe 52 - 56						1.99				0.00				0.00				0.00	13.63														
Chemin de Jargeau Road - 04																																
	39	40	0.04	0.54	0.06	0.06			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	5	300	300	PVC	1.60	27.0	122	1.73	0.26	0.04
Contribution From Cours Crevier Walk, Pipe 16 - 40						1.09				0.00				0.00				0.00	11.79														
			0.03	0.54	0.05	1.19			0.00	0.00			0.00	0.00			0.00	0.00														
	40	41	0.24	0.70	0.47	1.66			0.00	0.00			0.00	0.00			0.00	0.00	11.79	70.55	95.60	0.00	163.69	117	525	525	CONC	0.30	54.5	236	1.09	0.83	0.50
Contribution From Rang de Loury Row, Pipe 180 - 41						0.75				0.00				0.00				0.00	10.99														
			0.01	0.70	0.02	2.42			0.00	0.00			0.00	0.00			0.00	0.00														
			0.03	0.54	0.05	2.47			0.00	0.00			0.00	0.00			0.00	0.00														
	41	30	0.13	0.70	0.25	2.72			0.00	0.00			0.00	0.00			0.00	0.00	12.63	68.00	92.10	0.00	157.65	185	525	525	CONC	0.80	64.0	385	1.78	0.60	0.48
To Avenue de Lamarche Avenue, Pipe 30 - 33						2.72				0.00				0.00				0.00	13.23														
Block 158 - 2002																																
															0.06	0.25	0.04	0.04														
															0.95	0.55	1.45	1.49						-29	SUBDRAIN FLOW							
	C100	C4													0.19	0.50	0.26	1.76	10.00	76.81	104.19	0.00	178.56	285	375	375	PVC	3.40	6.0	323	2.93	0.03	0.88
																			10.03														
															0.25	0.55	0.38	0.38														
	C101	C4													0.11	0.50	0.15	0.54	10.00	76.81	104.19	0.00	178.56	67	300	300	PVC	2.00	4.5	137	1.93	0.04	0.49
																			10.04														
	C4	2200															0.00	2.29	10.00	76.81	104.19	0.00	178.56	381	450	450	CONC	2.40	31.0	442	2.78	0.19	0.86
To Cercle de l'Argonaut Circle, Pipe 2200 - 27						0.00				0.00				0.00				2.29	10.19					-29									
Placette de Darvoy Mews - 13																																
	22	24	0.50	0.72	1.00	1.00			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	77	450	450	CONC	0.75	147.5	247	1.55	1.58	0.31
To Avenue de Lamarche Avenue, Pipe 24 - 25						1.00				0.00				0.00				0.00	11.58														
Cercle de l'Argonaut Circle - 12																																
			0.02	0.72	0.04	0.04			0.00	0.00			0.00	0.00			0.00	0.00														
			0.05	0.50	0.07	0.11			0.00	0.00			0.00	0.00			0.00	0.00														
			0.12	0.70	0.23	0.34			0.00	0.00			0.00	0.00			0.00	0.00														
			0.15	0.54	0.23	0.57			0.00	0.00			0.00	0.00			0.00	0.00														
	19	21	0.46	0.72	0.92	1.49			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	114	450	450	CONC	0.75	141.0	247	1.55	1.51	0.46
To Avenue de Lamarche Avenue, Pipe 21 - 24						1.49				0.00				0.00				0.00	11.51														

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/s

Designed: P.P./C.M.
Checked: M.Z.
Dwg. Reference:

PROJECT: **Caivan Communities**
Orleans Village
LOCATION: **City of Ottawa**
File Ref:
Date: 30 Oct 2018
Sheet No. SHEET 3 OF 5

881_STM5_Rev.xlsx

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Arterial Roads Return Frequency = 10 years

Manning 0.013

LOCATION			AREA (Ha) 2 YEAR				AREA (Ha) 5 YEAR				AREA (Ha) 10 YEAR				AREA (Ha) 100 YEAR				FLOW						SEWER DATA								
			AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	Time of Conc.	Intensity 2 Year	Intensity 5 Year	Intensity 10 Year	Intensity 100 Year	Peak Flow	DIA. (mm)	DIA. (mm)	TYPE	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME OF	RATIO
Location	From Node	To Node	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(min)	(mm/h)	(mm/h)	(mm/h)	(mm/h)	Q (l/s)	(actual)	(nominal)		(%)	(m)	(l/s)	(m/s)	FLOW (min.	Q/Q full
	19	26			0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	0	300	300	PVC	0.35	9.5	57	0.81	0.20	0.000
			0.07	0.70	0.14	0.14			0.00	0.00			0.00	0.00			0.00	0.00															
	26	22	0.12	0.54	0.18	0.32			0.00	0.00			0.00	0.00			0.00	0.00	10.20	76.06	103.17	0.00	176.79	24	300	300	PVC	0.40	52.0	61	0.87	1.00	0.393
	22	2200			0.00	0.32			0.00	0.00			0.00	0.00			0.00	0.00	11.20	72.49	98.27	0.00	168.31	23	300	300	PVC	0.41	29.0	62	0.88	0.55	0.370
Contribution From Block 158 Pipe C4 - 2200						0.00				0.00				0.00				2.29	10.19					-29.00									
	2200	27			0.00	0.32			0.00	0.00			0.00	0.00			0.00	2.29	11.75	70.68	95.78	0.00	164.01	399	675	675	CONC	0.50	19.0	594	1.66	0.19	0.670
	27	28			0.00	0.32			0.00	0.00			0.00	0.00			0.00	2.29	11.94	70.08	94.95	0.00	162.58	395	675	675	CONC	1.00	10.5	841	2.35	0.07	0.470
			0.05	0.50	0.07	0.39			0.00	0.00			0.00	0.00			0.00	2.29															
			0.05	0.54	0.08	0.46			0.00	0.00			0.00	0.00			0.00	2.29															
			0.10	0.50	0.14	0.60			0.00	0.00			0.00	0.00			0.00	2.29															
			0.10	0.54	0.15	0.75			0.00	0.00			0.00	0.00			0.00	2.29															
	28	30	0.67	0.70	1.30	2.05			0.00	0.00			0.00	0.00			0.00	2.29	12.01	69.85	94.64	0.00	162.03	515	750	750	CONC	0.50	142.5	787	1.78	1.33	0.654
To Avenue de Lamarche Avenue, Pipe 30 - 33						2.05				0.00				0.00				2.29	13.35					-29									
Rang de Loury Row - 03																																	
	180	18	0.16	0.72	0.32	0.32			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	25	300	300	PVC	1.06	38.0	100	1.41	0.45	0.247
To Cours Crevier Walk, Pipe 18 - 21						0.32				0.00				0.00				0.00	10.45														
			0.19	0.54	0.29	0.29			0.00	0.00			0.00	0.00			0.00	0.00															
	180	41	0.23	0.72	0.46	0.75			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	57	300	300	PVC	0.88	76.0	91	1.28	0.99	0.631
To Chemin de Jargeau Road, Pipe 41 - 30						0.75				0.00				0.00				0.00	10.99														
Cours Crevier Walk - 02																																	
	17	16			0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	0	300	300	PVC	2.00	9.5	137	1.93	0.08	0.000
			0.15	0.54	0.23	0.23			0.00	0.00			0.00	0.00			0.00	0.00															
	16	40	0.43	0.72	0.86	1.09			0.00	0.00			0.00	0.00			0.00	0.00	10.08	76.49	103.76	0.00	177.81	83	375	375	PVC	0.44	108.0	116	1.05	1.71	0.714
To Chemin de Jargeau Road, Pipe 40 - 41						1.09				0.00				0.00				0.00	11.79														
	17	18	0.00	0.00	0.00	0.00			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	0	300	300	PVC	1.09	48.0	101	1.43	0.56	0.000
Contribution From Rang de Loury Row, Pipe 180 - 18						0.32				0.00				0.00				0.00	10.45														
			0.02	0.72	0.04	0.36			0.00	0.00			0.00	0.00			0.00	0.00															
			0.15	0.54	0.23	0.59			0.00	0.00			0.00	0.00			0.00	0.00															
	18	21	0.21	0.72	0.42	1.01			0.00	0.00			0.00	0.00			0.00	0.00	10.56	74.72	101.32	0.00	173.60	75	375	375	PVC	0.54	67.0	129	1.17	0.96	0.583
To Avenue de Lamarche Avenue, Pipe 21 - 24						1.01				0.00				0.00				0.00	11.52														
Avenue de Lamarche Avenue - 01																																	
			0.05	0.40	0.06	0.06			0.00	0.00			0.00	0.00			0.00	0.00															
	CTRL MH 1200	120	0.52	0.47	0.68	0.74			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	56	300	300	PVC	0.50	16.0	68	0.97	0.28	0.826
			0.04	0.85	0.09	0.83																											
	120	12	0.06	0.85	0.14	0.97			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	75	300	300	PVC	1.51	51.0	119	1.68	0.51	0.628
	12	13	0.35	0.85	0.83	1.80			0.00	0.00			0.00	0.00			0.00	0.00	10.51	74.92	101.60	0.00	174.06	135	375	375	PVC	2.00	76.0	248	2.25	0.56	0.543
			2.86	0.85	6.76				0.00	0.00			0.00	0.00			0.00	0.00															
	CTRL MH 100	13	0.11	0.40	0.12	6.88			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	528	750	750	CONC	0.35	14.5	659	1.49	0.16	0.802
			0.07	0.56	0.11				0.00	0.00			0.00	0.00			0.00	0.00															
	CTRL MH 101	13	2.54	0.85	6.00	6.11			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	469	750	750	CONC	0.30	19.5	610	1.38	0.24	0.770
	13	15	0.18	0.85	0.43	15.22			0.00	0.00			0.00	0.00			0.00	0.00	10.24	75.91	102.97	0.00	176.43	1155	825	825	CONC	1	139	1505	2.82	0.82	0.767
	CTRL MH 103	15	2.17	0.75	4.52	4.52			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	348	675	675	CONC	0.30	15.0	460	1.29	0.19	0.755
	CTRL MH 104	15	2.16	0.75	4.50	4.50			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	346	675	675	CONC	0.30	19.5	460	1.29	0.25	0.751
	15	21	0.30	0.85	0.71	24.95			0.00	0.00			0.00	0.00			0.00	0.00	10.25	75.85	102.88	0.00	176.28	1893	1350	1350	CONC	0.37	59	3247	2.27	0.43	0.583
Contribution From Cours Crevier Walk, Pipe 18 - 21						1.01				0.00				0.00				0.00	11.52														
Contribution From Cercle de l'Argonaut Circle, Pipe 19 - 21						1.49				0.00				0.00				0.00	11.51														
			0.05	0.72	0.10	27.55			0.00	0.00			0.00	0.00			0.00	0.00															
	21	24	0.18	0.54	0.27	27.82			0.00	0.00			0.00	0.00			0.00	0.00	11.52	71.43	96.81	0.00	165.78	1987	1350	1350	CONC	0.43	58.5	3500	2.45	0.40	0.568
Contribution From Placette de Darvoy Mews, Pipe 220 - 24						1.00				0.00				0.00				0.00	11.58														
			0.19	0.54	0.29	29.10			0.00	0.00			0.00	0.00			0.00	0.00															
	24	25	0.26	0.72	0.52	29.62			0.00	0.00			0.00	0.00			0.00	0.00	11.92	70.16	95.06	0.00	162.75	2078	1350	1350	CONC	0.50	41.5	3774	2.64	0.26	0.551
	25	30			0.00	29.62			0.00	0.00			0.00	0.00			0.00	0.00	12.18	69.34	93.94	0.00	160.83	2054	1350	1350	CONC	0.49	14.0	3736	2.61	0.09	0.550

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/s

Designed: P.P./C.M.
Checked: M.Z.
Dwg. Reference:

PROJECT: **Caivan Communities**
Orleans Village
LOCATION: **City of Ottawa**
File Ref:
Date: 30 Oct 2018
Sheet No. SHEET 4 OF 5

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Arterial Roads Return Frequency = 10 years

Manning 0.013

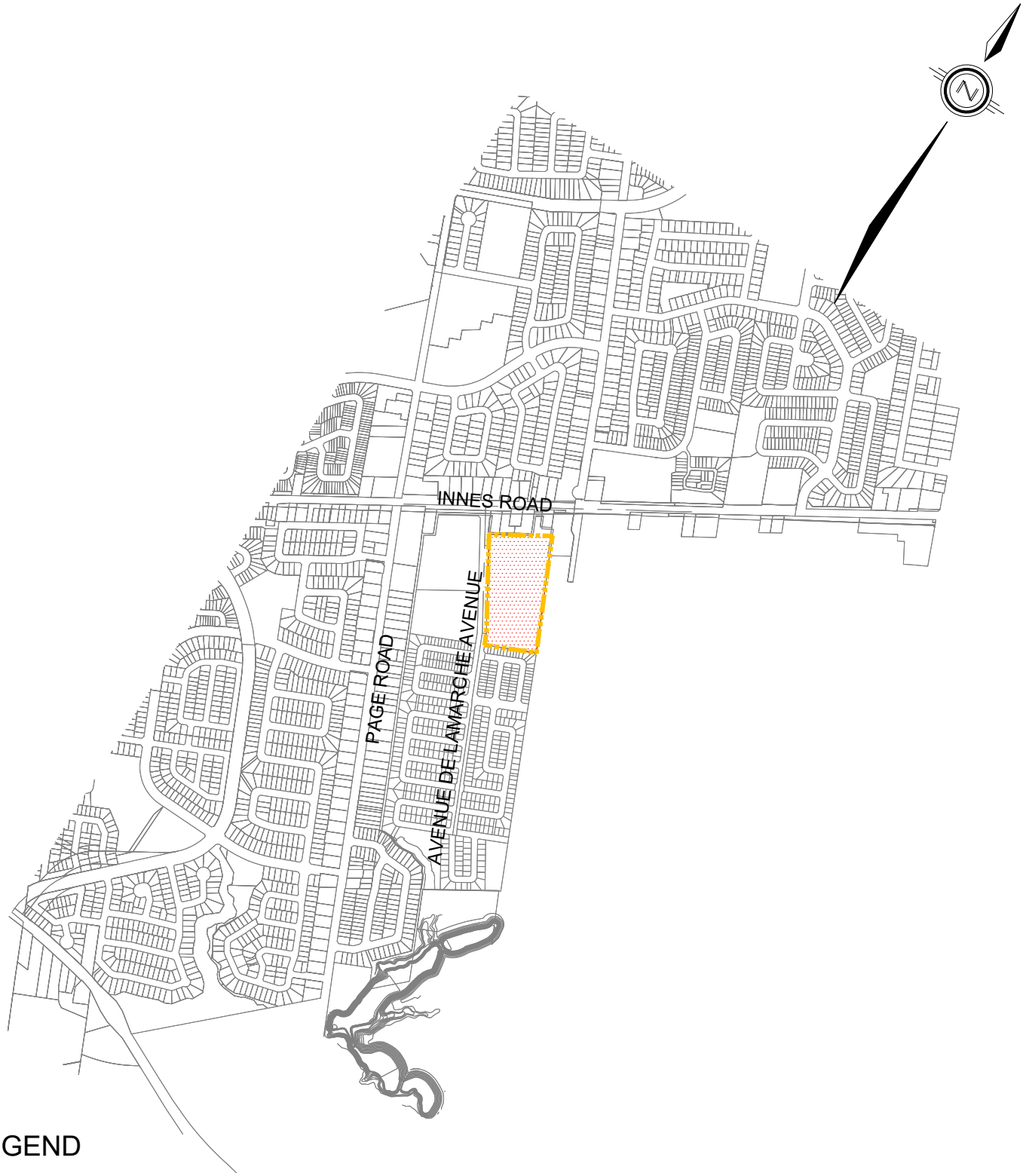
LOCATION			AREA (Ha) 2 YEAR				AREA (Ha) 5 YEAR				AREA (Ha) 10 YEAR				AREA (Ha) 100 YEAR				FLOW						SEWER DATA							
			AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	Time of Conc.	Intensity 2 Year	Intensity 5 Year	Intensity 10 Year	Intensity 100 Year	Peak Flow	DIA. (mm)	DIA. (mm)	TYPE	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME OF	RATIO
Location	From Node	To Node	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(min)	(mm/h)	(mm/h)	(mm/h)	(mm/h)	Q (l/s)	(actual)	(nominal)		(%)	(m)	(l/s)	(m/s)	FLOW (min.	Q/Q full
Contribution From Cercle de l'Argonaut Circle, Pipe 28 - 30						2.05				0.00				0.00				2.29	13.35					-29									
Contribution From Chemin de Jargeau Road, Pipe 41 - 30						2.72				0.00				0.00				0.00	13.23														
	30	33			0.00	34.40			0.00	0.00			0.00	0.00			0.00	2.29	13.35	65.97	89.31	0.00	152.82	2620	1500	1500	CONC	0.20	63.5	3161	1.79	0.59	0.829
Contribution From Croissant des Aubrais Crescent, Pipe 31 - 33						1.80				0.00				0.00				0.00	11.44														
			0.25	0.50	0.35	36.54			0.00	0.00			0.00	0.00			0.00	2.29															
	33	34	0.31	0.70	0.60	37.15			0.00	0.00			0.00	0.00			0.00	2.29	13.94	64.39	87.15	0.00	149.10	2734	1500	1500	CONC	0.23	58.5	3390	1.92	0.51	0.806
Contribution From Bois de Cravant Grove, Pipe 11 - 34						1.50				0.00				0.00				0.00	13.33														
	34	38			0.00	38.65			0.00	0.00			0.00	0.00			0.00	2.29	14.45	63.10	85.39	0.00	146.05	2774	1500	1500	CONC	0.24	58.5	3463	1.96	0.50	0.801
Contribution From Place de Sandillon Place, Pipe 37 - 38						1.43				0.00				0.00				0.00	11.85														
	38	52	0.28	0.70	0.54	40.62			0.00	0.00			0.00	0.00			0.00	2.29	14.94	61.90	83.74	0.00	143.20	2843	1650	1650	CONC	0.16	54.5	3646	1.71	0.53	0.780
Contribution From Ruelle de Carden Lane, Pipe 48 - 52						1.11				0.00				0.00				0.00	11.10														
Contribution From Croissant des Aubrais Crescent, Pipe 50 - 52						1.99				0.00				0.00				0.00	13.63														
	52	56			0.00	43.72			0.00	0.00			0.00	0.00			0.00	2.29	15.48	60.66	82.05	0.00	140.29	2974	1650	1650	CONC	0.18	58.5	3867	1.81	0.54	0.769
Contribution From Cercle du Ponthieu Circle, Pipe 5 - 56						1.64				0.00				0.00				0.08	11.32					59									
Contribution From Terrase de Vennecy Terrace, Pipe 55 - 56						5.18				0.00				0.00				0.00	15.91														
	56	57	0.11	0.70	0.21	50.76			0.00	0.00			0.00	0.00			0.00	2.38	16.02	59.47	80.41	0.00	137.47	3404	1650	1650	CONC	0.23	60.5	4371	2.04	0.49	0.779
Contribution From Cercle du Ponthieu Circle, Pipe 58 - 57						3.45				0.00				0.00				0.00	11.72														
Contribution From Cercle du Ponthieu Circle, Pipe 9 - 57						2.14				0.00				0.00				0.00	10.17														
	57	1TEE			0.00	56.34			0.00	0.00			0.00	0.00			0.00	2.38	16.51	58.42	78.98	0.00	134.99	3671	1800	1800	CONC	0.15	10.5	4452	1.75	0.10	0.825
To Croissant de Mercier Crescent, Pipe 1TEE - 2TEE						56.34				0.00				0.00				2.38	16.61					30									
Croissant de Mercier Crescent - 09																																	
			0.20	0.50	0.28	0.28			0.00	0.00			0.00	0.00			0.00	0.00															
			0.24	0.50	0.33	0.61			0.00	0.00			0.00	0.00			0.00	0.00															
	590	59	0.39	0.70	0.76	1.37			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	0.00	178.56	105	375	375	PVC	0.85	102.0	162	1.46	1.16	0.651
	59	63			0.00	1.37			0.00	0.00			0.00	0.00			0.00	0.00	11.16	72.62	98.43	0.00	168.60	100	375	375	PVC	0.45	8.5	118	1.06	0.13	0.846
	63	60			0.00	1.37			0.00	0.00			0.00	0.00			0.00	0.00	11.29	72.17	97.82	0.00	167.53	99	375	375	PVC	0.60	9.0	136	1.23	0.12	0.728
To Unknown Road5, Pipe 60 - 61TEE						1.37				0.00				0.00				0.00	11.42														
Contribution From Avenue de Lamarche Avenue, Pipe 57 - 1TEE						56.34				0.00				0.00				2.38	16.61					30									
			0.19	0.70	0.37	56.71			0.00	0.00			0.00	0.00			0.00	2.38															
	1TEE	2TEE	0.39	0.70	0.76	57.47			0.00	0.00			0.00	0.00			0.00	2.38	16.61	58.21	78.69	0.00	134.50	3695	1800	1800	CONC	0.15	105.0	4452	1.75	1.00	0.830
	2TEE	3TEE	0.25	0.50	0.35	57.81			0.00	0.00			0.00	0.00			0.00	2.38	17.61	56.22	75.97	0.00	129.81	3589	1800	1800	CONC	0.15	13.5	4452	1.75	0.13	0.806
	3TEE	60			0.00	57.81			0.00	0.00			0.00	0.00			0.00	2.38	17.74	55.98	75.64	0.00	129.24	3574	1800	1800	CONC	0.15	41.5	4452	1.75	0.40	0.803
To Block 382, Pipe 60 - 61TEE						57.81				0.00				0.00				2.38	18.13					30									
Block 382 - 51																																	
Contribution From Croissant de Mercier Crescent, Pipe 3TEE - 60						57.81				0.00				0.00				2.38	18.13					30									
Contribution From Croissant de Mercier Crescent, Pipe 63 - 60						1.37				0.00				0.00				0.00	11.42														
	60	61TEE			0.00	59.19			0.00	0.00			0.00	0.00			0.00	2.38	18.13	55.24	74.63	0.00	127.50	3602	1800	1800	CONC	0.15	30.5	4452	1.75	0.29	0.809
	61TEE	62TEE			0.00	59.19			0.00	0.00			0.00	0.00			0.00	2.38	18.42	54.71	73.91	0.00	126.26	3568	1800	1800	CONC	0.15	73.5	4452	1.75	0.70	0.802
	62TEE	600TEE			0.00	59.19			0.00	0.00			0.00	0.00			0.00	2.38	19.12	53.48	72.23	0.00	123.36	3489	1800	1800	CONC	0.15	48.0	4452	1.75	0.46	0.784
	600TEE	64TEE			0.00	59.19			0.00	0.00			0.00	0.00			0.00	2.38	19.58	52.71	71.18	0.00	121.55	3439	1800	1800	CONC	0.15	23.5	4452	1.75	0.22	0.772
	64TEE	65			0.00	59.19			0.00	0.00			0.00	0.00			0.00	2.38	19.81	52.35	70.68	0.00	120.69	3415	1800	1800	CONC	0.15	3.0	4452	1.75	0.03	0.767

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/s

Designed: P.P./C.M.
Checked: M.Z.
Dwg. Reference:

PROJECT: **Caivan Communities**
Orleans Village
LOCATION: **City of Ottawa**
File Ref:
Date: 30 Oct 2018
Sheet No. SHEET 5 OF 5



LEGEND

SITE BOUNDARY

ORLEAN VILLAGE PHASE 4	SITE LOCATION	DATE: MARCH 2022
		SCALE: 1:15000
		PROJECT No.: 22-1296
		FIGURE: 1

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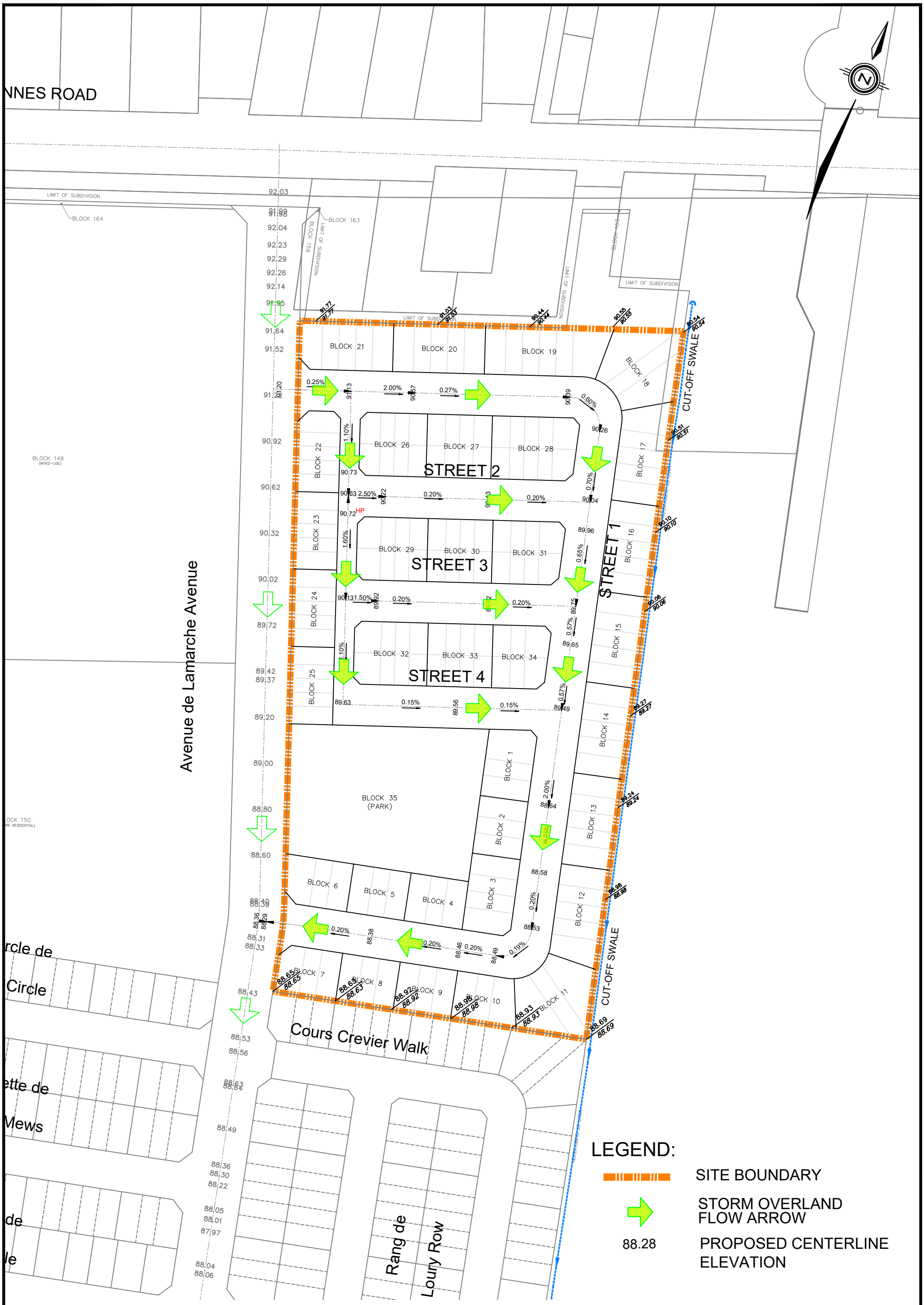
CONCEPT PLAN
ORLEAN VILLAGE PHASE 4

DATE: MARCH 2022
SCALE: 1:1500
PROJECT No.: 22-1296
FIGURE: 2



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CONCEPT GRADING PLAN
ORLEAN VILLAGE PHASE 4

DATE: MARCH 2022
SCALE: 1:1500
PROJECT No.: 22-1296
FIGURE: 3

LEGEND:

- SITE BOUNDARY
- STORM TRIBUTARY BOUNDARY
- PROPOSED STORM MANHOLE
- STORM SERVICING
- 0.03 Ha / 0.70 — STORM DRAINAGE AREA RUNOFF COEFFICIENT
- EXISTING STORM SERVICING

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STORM SERVICING PLAN
ORLEAN VILLAGE PHASE 4

DATE: MARCH 2022
SCALE: 1:1500
PROJECT No.: 22-1296
FIGURE: 4

INNES ROAD

LIMIT OF SUBDIVISION

BLOCK 164

BLOCK 163

BLOCK 159

BLOCK 153

BLOCK 21

BLOCK 20

BLOCK 19

BLOCK 18

MH 2A

MH 1A

MH 15A

MH 3A

BLOCK 22

BLOCK 26

BLOCK 27

BLOCK 28

STREET 2

BLOCK 17

MH 4A

2.7
4.6Ha
175
473

BLOCK 23

BLOCK 29

BLOCK 30

BLOCK 31

STREET 3

MH 5A

STREET 1

BLOCK 16

EX. MH 22A

BLOCK 24

MH 6A

MH 7A

BLOCK 32

BLOCK 33

BLOCK 34

STREET 4

BLOCK 15

BLOCK 25

MH 8A

MH 9A

MH 11A

BLOCK 14

BLOCK 1

BLOCK 35
(PARK)

BLOCK 2

BLOCK 13

BLOCK 149
(MIXED-USE)

Avenue de Lamarche Avenue

250Ø PVC SAN 63.5 @ 0.85%

EX. MH 23A

BLOCK 6

BLOCK 5

BLOCK 4

BLOCK 3

BLOCK 12

MH 12A

BLOCK 150
(FUTURE RESIDENTIAL)

EX. SAN CONTROL MH
103A (OPSD 701.010)
TEMP. T/G 88.53
OUT INV. 88.33

200Ø PVC SAN
17.5 @ 1.00%

EX. SAN CONTROL MH
104A (OPSD 701.010)
TEMP. T/G 88.53
OUT INV. 88.32

MH 14A

MH 13A

BLOCK 7

BLOCK 8

BLOCK 9

BLOCK 10

BLOCK 11

EX. MH 24A

Cercle de
naut Circle

Placette de
rvoy Mews

ercle de
t Circle

Cours Crevier Walk

Rang de
oury Row

LEGEND:

SITE BOUNDARY

SANITARY TRIBUTARY BOUNDARY

PROPOSED SANITARY MANHOLE

SANITARY SERVICING

2.7
4.52Ha
175
473

SANITARY DRAINAGE AREA
TOTAL UNITS
TOTAL POPULATION

EXISTING SANITARY SERVICING

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SANITARY SERVICING PLAN
ORLEAN VILLAGE PHASE 4

DATE: MARCH 2022

SCALE: 1:1500

PROJECT No.: 22-1296

FIGURE: 5

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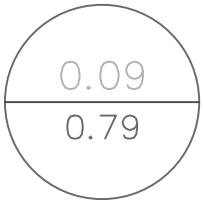
WATERMAIN SERVICING PLAN
ORLEAN VILLAGE PHASE 4

DATE: MARCH 2022
SCALE: 1:1500
PROJECT No.: 22-1296
FIGURE: 6



DIMENSIONS:
A = 3.00 m
B = 1.50 m
C = 1.50 m
DRIVEWAY WIDTH: 100% FRONT WIDTH
ENVELOPE LENGTH: 30.64 m
LOT: 33.65x18.90 m

NOTE:
TOTAL AREA: 921.92 m2
TOTAL IMP AREA: 773.26 m2
IMP %: 84%
RC: 0.79

8.5 m ROW RLTH
RC FIGURE

LEGENDS

PERVIOUS HATCH

TOTAL AREA 0.09 / 0.79 RC VALUE

STM TRIB LINE

6.05 LOT DIMENSION

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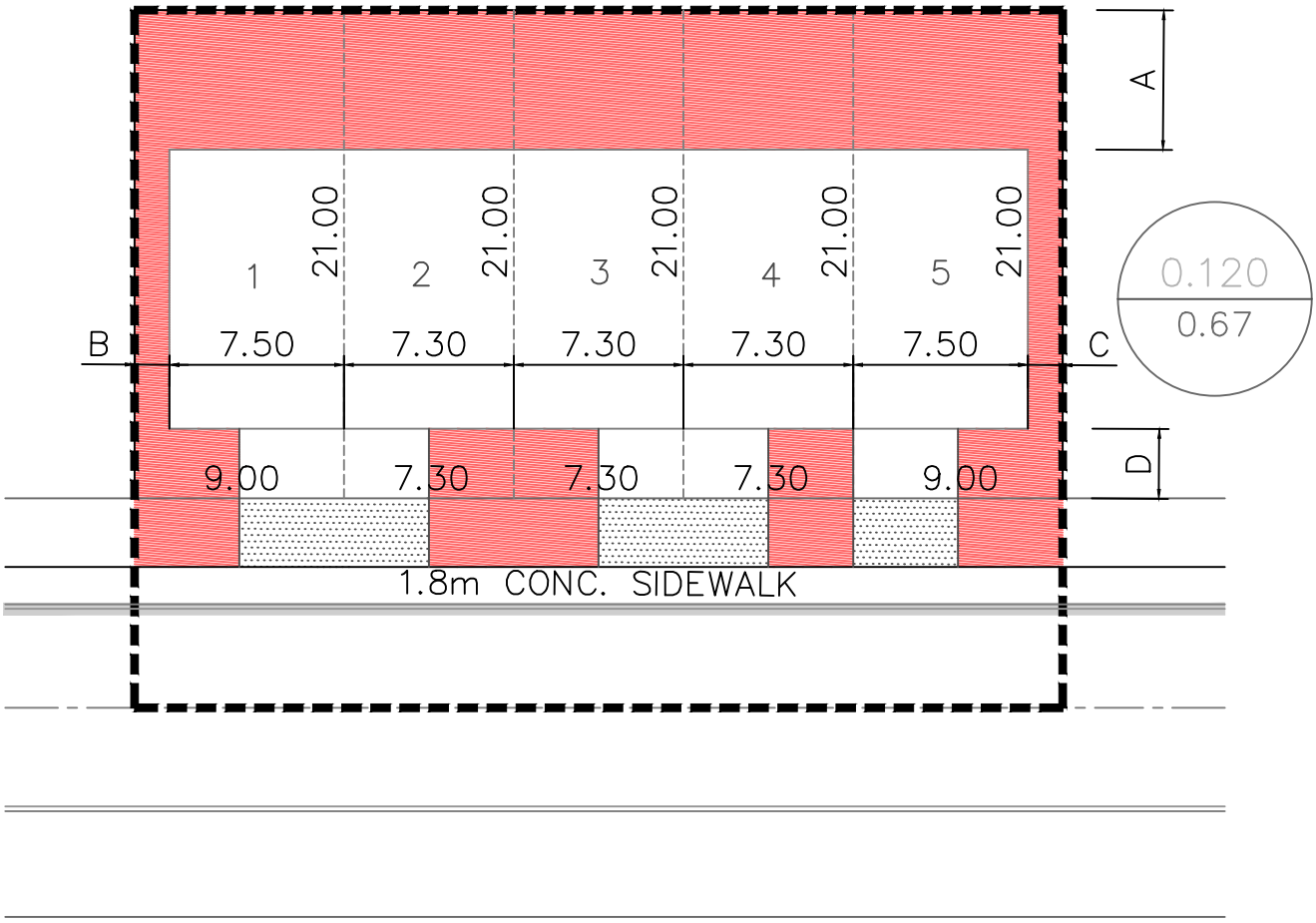
SCALE:	NTS	PROJECT No.:	20-1296
DATE:	MAR 2022	FIGURE: 7	



DIMENSIONS:
A = 6.00 m
B = 1.50 m
C = 1.50 m
D = 3.00 m
DRIVEWAY WIDTH: 50% FRONT WIDTH
ENVELOPE LENGTH: 12.00 m
LOT: 39.90x21.00 m

NOTE:
TOTAL AREA: 1197.00 m2
TOTAL IMP AREA: 802.90 m2
IMP %: 67%
RC: 0.67

18 m ROW TH RC FIGURE

LEGENDS
PERVIOUS HATCH
TOTAL AREA 0.035 / 0.65 RC VALUE
STM TRIB LINE
7.30 LOT DIMENSION

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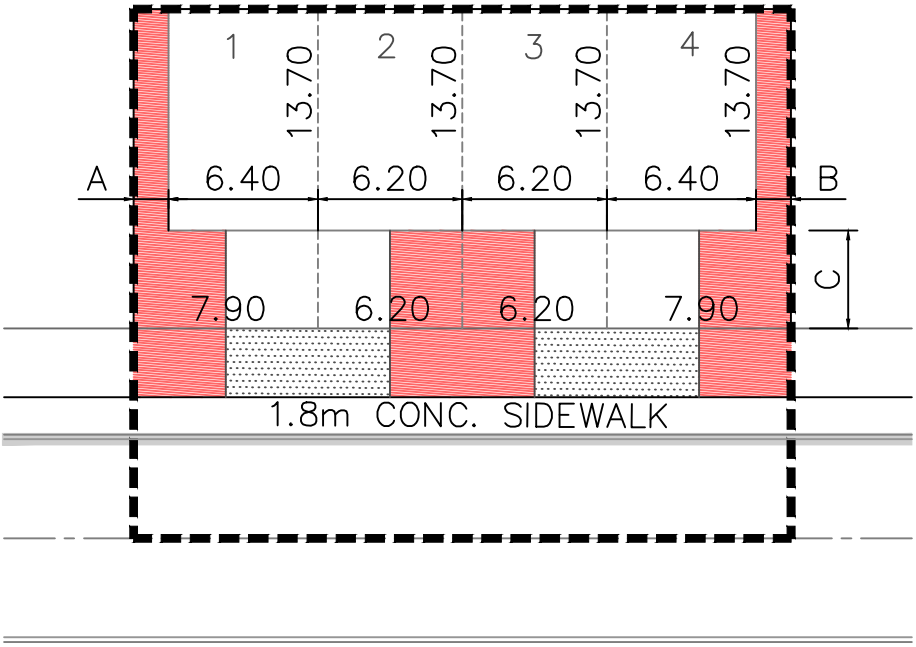
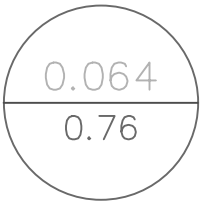
SCALE:	NTS	PROJECT No.:	20-1296
DATE:	MAR 2022	FIGURE: 8	





DIMENSIONS:
A = 1.50 m
B = 1.50 m
C = 4.20 m
DRIVEWAY WIDTH: 50% FRONT WIDTH
ENVELOPE LENGTH: 9.50 m
LOT: 28.820x13.70 m

NOTE:
TOTAL AREA: 640.14 m2
TOTAL IMP AREA: 510.83 m2
IMP %: 80%
RC: 0.76

18 m ROW B2B RC FIGURE

LEGENDS

PERVIOUS HATCH

TOTAL AREA 0.035 / 0.65 RC VALUE

STM TRIB LINE

6.20 LOT DIMENSION

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SCALE:	NTS	PROJECT No.:	20-1296
DATE:	MAR 2022	FIGURE: 9	


LIMIT OF SUBDIVISION
LIMIT OF SUBDIVISION
LIMIT OF SUBDIVISION
LIMIT OF SUBDIVISION
BLOCK 21
BLOCK 20
BLOCK 19
BLOCK 18
BLOCK 17
BLOCK 16
BLOCK 15
BLOCK 14
BLOCK 13
BLOCK 12
BLOCK 11
BLOCK 10
BLOCK 9
BLOCK 8
BLOCK 7
BLOCK 6
BLOCK 5
BLOCK 4
BLOCK 3
BLOCK 2
BLOCK 1
BLOCK 22
BLOCK 23
BLOCK 24
BLOCK 25
BLOCK 26
BLOCK 27
BLOCK 28
BLOCK 29
BLOCK 30
BLOCK 31
BLOCK 32
BLOCK 33
BLOCK 34
BLOCK 35
(PARK)
STREET 1
STREET 2
STREET 3
STREET 4
1.5Ha
0.76
0.4Ha
0.79
2.2Ha
0.67
0.5Ha
0.40
Avenue de Lamarche Avenue
Cours Crevier Walk
OVERALL
RESIDENTIAL:
4.1Ha
0.72
AREA
RC VALUE