Site Servicing and Stormwater Management Report
1869 Maple Grove Road, Ottawa, ON

Client:
10886378 Canada Incorporated
190 Lisgar Street
Ottawa, ON K2P OCA

Submitted for:
Zoning By-law Amendment, Plan of Subdivision

Project Name:
1869 Maple Grove Road

Project Number:
OTT-00254810-A0

Prepared By:
EXP
2650 Queensview Drive
Ottawa, ON K2B 8H8
t: +1.613.688.1899
f: +1.613.225.7337

Date Submitted:
April 6, 2020

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f: +1.613.225.7337

Prepared by:

Jason Fitzpatrick, P.Eng.
Project Engineer

Approved by:

Bruce Thomas, P.Eng.
Senior Project Manager

Date Submitted:
April 6, 2020

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1 Introduction

1.1 Overview

EXP Services Inc. (EXP) was retained by 10886378 Canada Incorporated to prepare a Site Servicing and Stormwater Management Report for the proposed redevelopment of 1869 Maple Grove Road in support of a Plan of Subdivision, Zoning By-law Amendment and Part Lot Control applications.

The 0.41-hectare site is situated along Maple Grove Road as illustrated in **Figure 1-1** below. The site is within the City of Ottawa urban boundary, outside the Greenbelt, and situated in Ward 6 (Stitsville-Kanata West). The description of the subject property is noted below:

- Part of Lot 1, Concession 1, Geographic Township of Huntley, City of Ottawa, Part 1, Plan 5R-2908, consisting of:
- PIN 044870350

The proposed development will consist of three (3) blocks containing a total of eight (8) townhomes that will face Maple Grove Road, eight (8) townhomes that will face Bensinger Way, and two (2) townhomes that will face Mykonos Crescent.

This report will discuss the adequacy of the adjacent municipal watermain, sanitary sewers and storm sewers to provide the required water supply, convey the sewage and stormwater flows that will result from the proposed development. This report provides a design brief for submission, along with the engineering drawings, for City approval.

Figure 1-1 - Site Location

2 Existing Conditions

The existing property is surrounded by the Fairwinds West residential subdivision. Development of the adjacent subdivision began in 2012 and was completed in 2015.

The existing site topography slopes northwest towards Bensinger Way and appears to be self contained with no drainage outlet. A single residential home is situated on the property.

3 Existing Infrastructure

The site includes a single-family detached home that will be removed during the redevelopment of the site.

From review of the sewer and watermain mapping, as-built drawings and Utility Central Registry (UCC) plans, the following summarizes the infrastructure within the subject property and the infrastructure on the adjacent streets along the frontage of the property and adjacent offsite infrastructure:

Within property

- A well, and septic system within the property that will be abandoned.

Maple Grove Road

- 300mm watermain.
- 200mm sanitary sewer.
- 450mm sanitary sewer.
- 525mm storm sewer.
- 2250mm storm sewer.
- Gas / Bell / Streetlighting/ Hydro.

Bensinger Way

- 200mm watermain.
- 200mm sanitary sewer.
- 600mm storm sewer.
- Gas /Bell / Streetlighting / Hydro.

Mykonos Crescent

- 200mm watermain.
- 200mm sanitary sewer.
- 375mm storm sewer.
- 450mm storm sewer.
- Gas / Hydro / Bell / Streetlighting.

As-built drawings for Maple Grove Road, Bensinger Way, and Mykonos Crescent were obtained from the City of Ottawa and are included in **Appendix F** for reference.

1.3 Pre-Consultation / Permits / Approvals

A pre-consultation meeting was held with the City prior to design commencement. This meeting outlined the submission requirements and provided information to assist with the development proposal. The proposed site is located within Mississippi Valley Conservation Authority (MVCA) jurisdiction, therefore signoff from the MVCA will be required prior to final approval. The MVCA was contacted to confirm the stormwater management quality control requirements. A copy of the correspondence with the MVCA is attached in **Appendix E**.

It is expected that an Environmental Compliance Approval (ECA) will be required from the Ministry of Environment, Conservation and Parks (MECP), formerly the Ministry of the Environment and Climate Change (MOECC), for this onsite private Sewage Works. The onsite Sewage Works will include the onsite stormwater works for flow controls and associated stormwater detention. Further discussions with City of Ottawa staff will be required to confirm the ECA requirements and to determine whether a direct submission or Transfer-of-Review submission will be required.

In addition, various design guidelines were referred to in preparing the current report including:

- Bulletin ISDTB-2012-4 (20 June 2012)
  - Technical Bulletin ISDTB-2014-01 (05 February 2014)
  - Technical Bulletin PIEDTB-2016-01 (September 6, 2016)
  - Technical Bulletin ISDTB-2018-01 (21 March 2018)
  - Technical Bulletin ISDTB-2018-04 (27 June 2018)
- Ottawa Design Guidelines – Water Distribution, July 2010 (WDG001), including:
  - Technical Bulletin ISDTB-2014-02 (May 27, 2014)
  - Technical Bulletin ISTB-2018-02 (21 March 2018)
- Stormwater Management Planning and Design Manual, Ontario Ministry of the Environment and Climate Change, March 2003 (SMPDM).
- Design Guidelines for Drinking-Water Systems, Ontario Ministry of the Environment and Climate Change, 2008 (GDWS).
- Fire Underwriters Survey, Water Supply for Public Fire Protection (FUS), 1999.
- Ontario Building Code 2012, Ministry of Municipal Affairs and Housing.

4 Water Servicing

4.1 Existing Water Servicing

The site is within the City of Ottawa 3W pressure zone and supplied from the Stittsville elevated reservoir. The existing home is serviced by an onsite well which will be abandoned prior to development.

4.2 Water Servicing Proposal

The proposed development will consist of 18-townhome units. An architectural site plan is provided in **Appendix H.** The site will be serviced by the existing 305mm watermain on Maple Grove Road, the 203mm watermain on Bensinger Way, and the 203mm watermain on Mykonos Crescent.

Water supply for each townhome will be provided by individual water services connecting to the existing watermains. The proposed servicing plan is provided in drawing C100 of **Appendix H.**

4.3 Water Servicing Design

The water servicing requirements for the proposed development is designed in accordance with the City Design Guidelines (July 2010). The following steps indicate the basic methodology that was used in our analysis:

- Estimated water demands under average day, maximum day and peak hour conditions. As the total population estimate was less than 500, therefore residential peaking factors based on MECP Table 3-3 used.
- Estimated the required fire flow (RFF) based on the Fire Underwriters Survey (FUS).
- Obtained hydraulic boundary conditions (HGL) from the City, based on the above water demands and required fire flows.
- Boundary condition data and water demands were used to estimate the pressure at the proposed blocks, and this was compared to the City's design criteria.

Please refer to **Appendix B** for detailed calculations of the total water demands.

A review of the estimated watermain pressures at the building connections, based on the boundary conditions provided, were completed based on using a single water service feed to each individual townhome unit. **Table B-6** in **Appendix B** provides a comparison of anticipated pressures at the building connection based on using a single 19mm service.

Based on results, a single 19mm service to each unit would result in a pressure of 66.7 psi to 66.9 psi at the buildings under peak hour conditions.

Detailed calculations of the anticipated water pressures, based on City of Ottawa boundary conditions, is provided in **Table B-6**.

No pressure reducing measures are required as operating pressures are within 50 psi and 80 psi. It was estimated that the anticipated pressures under average day demands will range between 72.9 psi and 73.1 psi.

4.4 Water Servicing Design Criteria

The design parameters that were used to establish water and fire flow demands are summarized **Table 4-1**.

Table 4-1 - Summary of Water Supply Design Criteria

Design Parameter	Value	Applies
Population Density – Single-family Home	3.4 persons/unit	
Population Density – Semi-detached Home	2.7 persons/unit	
Population Density – Townhome or Terrace Flat	1.8 persons/unit	✓
Population Density – Bachelor Apartment	1.4 persons/unit	
Population Density – Bachelor + Den Apartment	1.4 persons/unit	
Population Density – One Bedroom Apartment	1.4 persons/unit	
Population Density – One Bedroom plus Den Apartment	1.4 persons/unit	
Population Density – Two Bedroom Apartment	2.1 persons/unit	
Population Density – Two Bedroom plus Den Apartment	2.1 persons/unit	
Average Day Demands – Residential	350 L/person/day	✓
Average Day Demands – Commercial / Institutional	28,000 L/gross ha/day	
Average Day Demands – Light Industrial / Heavy Industrial	35,000 or 55,000 L/gross ha/day	
Maximum Day Demands – Residential	9.5 x Average Day Demands (MECP)	✓
Maximum Day Demands – Commercial / Institutional	1.5 x Average Day Demands	
Peak Hour Demands – Residential	14.3 x Average Day Demands (MECP)	✓
Peak Hour Demands – Commercial / Institutional	2.7 x Average Day Demands	
Fire Flow Requirements Calculation	FUS	✓
Depth of Cover Required	2.4m	✓
Maximum Allowable Pressure	551.6 kPa (80 psi)	✓
Minimum Allowable Pressure	275.8 kPa (40 psi)	✓
Minimum Allowable Pressure during fire flow conditions	137.9 kPa (20 psi)	✓

4.5 Estimated Water Demands

Table 4-2 below summarizes the anticipated domestic water demands for all residential blocks under average day, maximum day and peak hour conditions.

Table 4-2 : Water Demand Summary

Water Demand Conditions	Water Demands (L/sec) for Block #			Totals (L/sec)
	Block 1	Block 2	Block 3	
Average Day	0.09	0.02	0.09	0.20
Max Day	0.83	0.21	0.83	1.87
Peak Hour	1.25	0.31	1.25	2.82

4.6 Boundary Conditions

Hydraulic Grade Line (HGL) boundary conditions were obtained from the City for design purposes. A copy of the correspondence received from the City is provided in **Appendix F**.

The following hydraulic grade line (HGL) boundary conditions are summarized in **Table 4-3** below:

Table 4-3 : Boundary Conditions and Pressures Summary

Water Demand Conditions	Demands per Block		
	Block 1	Block 2	Block 3
Minimum HGL	156.4	156.4	156.4
Max Day + Fire Flow	154.7	147.0	141.4
Maximum HGL	160.2	160.2	160.2
Min Pressure (psi)	69.4	69.4	69.7
Max Pressure (psi)	74.8	74.8	75.1

4.7 Fire Flow Requirements

Water for fire protection will be available utilizing the proposed fire hydrants located along the adjacent roadways: Maple Grove Road, Bensinger Way, and Mykonos Crescent. The required fire flows for the proposed blocks were calculated based on typical values as established by the Fire Underwriters Survey 1999 (FUS).

The following equation from the Fire Underwriters document “Water Supply for Public Fire Protection”, 1991, was used for calculation of the on-site supply rates required to be supplied by the hydrants:

$F = 200 * C * \sqrt{(A)}$

where:

F	=	Required Fire flow in Litres per minute
C	=	Coefficient related to type of Construction
A	=	Total Floor Area in square metres

The proceeding

Table 4-4 summarizes the parameters used for estimating the Required Fire Flows (RFF) based on the Fire Underwriters Survey (FUS) and the latest City of Ottawa Technical Bulletins. The RFFs were estimated in accordance with ISTB-2018-02, and based on floor areas provided by the architect, which are illustrates in **Appendix H.**

The following summarizes the parameters used for both proposed blocks.

- Type of Construction Non-combustible
- Occupancy Limited combustible
- Sprinkler Protection no sprinkler system

Blocks 1 and 3 will be divided in half with a firewall to reduce the building area and the required fire flow.

Table 4-4 : Summary of Design Parameters Used in Calculating Required Fire Flows (RFF) Using FUS

Design Parameter	Block 1		Block 2	Block 3	
	4 western units	4 eastern units		4 western units	4 eastern units
Coefficient Related to type of Construction., C	1.5	1.5	1.5	1.5	1.5
Total Floor Area (m2)	673	673	368	673	673
Fire Flow prior to reduction (L/min)	9,000	9,000	6,000	9,000	9,000
Reduction Due to Occupancy Non-combustible (-25%), Limited Combustible (-15%), Combustible (0%), Free Burning (+15%), Rapid Burning (+25%)	-15%	-15%	-15%	-15%	-15%
Reduction due to Sprinkler (Max 50%) Sprinkler Conforming to NFPA 13 (-30%), Standard Water Supply (-10%), Fully Supervised Sprinkler (-10%)	0%	0%	0%	0%	0%
Increase due to Exposures	+44%	+40%	+39%	+52%	+32%
Can the Total Fire Flow be Capped at 10,000 L/min (167 L/sec) based on "TECHNCAL BULLETIN ISTB-2018-02", (yes/no)	no	yes	yes	yes	yes
Total RFF	183	167	117	167	167

The estimated required fire flows (RFFs) based on the FUS methods is: 183 L/sec for Block 1 (most critical), 117 L/sec for Block 2, and 167 L/sec for Block 3.

4.8 Review of Hydrant Spacing

A review of the hydrant spacing was completed to ensure compliance with Appendix I of Technical Bulletin ISTB-2018-02. As per Section 3 of Appendix I all hydrants within 150 metres were reviewed to assess the total possible contribution of flow from these contributing hydrants. For each hydrant the distance to the proposed block was determined to arrive at the contribution of fire flow from each. All hydrants are expected to be of Class AA as per Section 5.1 of Appendix I. For each hydrant the straight-line distance, distance measured along a fire route or roadway, whether its location is accessible, and its contribution to the required fire flow.

Table 4-5 – Required Fire Flows

Block Number	Required Fire Flow (L/min)	Available Fire Flow Based on Hydrant Spacing as per ISTB-2018-02 (L/min)
Block 1 (4 west units)	11,000 (or 183 L/sec)	±24,700
Block 1 (4 east units)	10,000 (or 167 L/sec)	±22,800
Block 2	7,000 (or 117 L/sec)	±13,300
Block 3 West (4 west units)	10,000 (or 167 L/sec)	±17,100
Block 3 East (4 east units)	10,000 (or 167 L/sec)	±17,100

The total minimum available contribution of flow from hydrants was estimated at 22,800 L/min for Block 1, 13,300 L/min for Block 2, and 17,100 L/min for Block 3, whereas the maximum required fire flows (RFF) for each block is 11,000 L/min, 7,000 L/min, and 10,000 L/min respectively. Therefore, the available flows from hydrants exceed each building's fire flow requirements as identified in Appendix I of Technical Bulletin ISTB-2018-02. Additional information on the available flows from hydrants is provided in **Table B-5**.

5 Sewage Servicing

5.1 Existing Sewage Conditions

Sewage from the existing onsite residential home is discharged into a septic tank and field bed.

5.2 Proposed Sewage Conditions

It is proposed to provide single sanitary sewer service connections from each proposed townhome unit to the existing sanitary sewers on Maple Grove Drive, Bensinger Way, and Mykonos Crescent. The sanitary sewer laterals were sized based on a population flow with an area-based infiltration allowance. Individual 135mm diameter sanitary sewer laterals are proposed with a minimum 1.0% slope, having a capacity of 11.5 L/sec based on Manning's Equation under full flow conditions. **Table 5-1** below summarizes the design parameters used.

Table 5-1 – Summary of Wastewater Design Criteria / Parameters

Design Parameter	Value	Applies
Population Density – Single-family Home	3.4 persons/unit	
Population Density – Semi-detached Home	2.7 persons/unit	
Population Density – Duplex	2.3 persons/unit	
Population Density – Townhome (row)	2.7 persons/unit	✓
Population Density – Bachelor Apartment	1.4 persons/unit	
Population Density – Bachelor + Den Apartment	1.4 persons/unit	
Population Density – One Bedroom Apartment	1.4 persons/unit	
Population Density – One Bedroom plus Den Apartment	1.4 persons/unit	
Population Density – Two Bedroom Apartment	2.1 persons/unit	
Population Density – Two Bedroom plus Den Apartment	2.1 persons/unit	
Average Daily Residential Sewage Flow	280 L/person/day	✓
Average Daily Commercial / Intuitional Flow	28,000 L/gross ha/day	
Average Light / Heavy Industrial Daily Flow	35,000 / 55,000 L/gross ha/day	
Residential Peaking Factor – Harmon Formula (Min = 2.0, Max =4.0, with K=0.8)	$M = 1 + \frac{14}{4 + P^{0.5}} * k$	✓
Commercial Peaking Factor	1.5	
Institutional Peaking Factor	1.5	
Industrial Peaking Factor	As per Table 4-B (SDG002)	
Unit of Peak Extraneous Flow (Dry Weather / Wet Weather)	0.05 or 0.28 L/s/gross ha	
Unit of Peak Extraneous Flow (Total I/I)	0.33 L/s/gross ha	✓

The total estimated peak sanitary flow rate from the proposed property is **0.75 L/sec** (all blocks) based on City Design Guidelines. Sewage rates below include a total infiltration allowance of 0.33 L/ha/sec based on the total gross site area.

Table 5-2 – Summary of Anticipated Sewage Rates

Sewage Condition	Sanitary Sewage Flow (L/sec)		
	Maple Grove Drive	Bensinger Way	Mykonos Cres
Average Day Sewage Flow	0.070	0.070	0.018
Infiltration Flow (at 0.33 L/ha/sec)	0.045	0.045	0.045
Peak Wet Weather Sewage Flow	0.32	0.32	0.11

The minimum sewer capacity of the 200mm diameter connecting sanitary sewer run on Maple Grove Drive (with a slope of 0.60%) has a calculated full flow capacity of 25.9 L/sec. The 200mm diameter pipe then connects into a 450mm diameter pipe downstream of the sewer run. The total estimated peak sewage flow is 0.75 L/s compared to the existing single home with an estimated peak sewage flow of 0.18 L/sec. It is anticipated that the increase in peak sewage flows can be accommodated in the downstream sanitary sewer system.

6 Storm Servicing & Stormwater Management

The proposed site is located within the Mississippi Valley Conservation Authority (MVCA) jurisdiction, stormwater works are therefore subject to both the Mississippi Valley Conservation Authority (MVCA) and City of Ottawa (COO) approval. The MVCA has been contacted to discuss the stormwater management quality control requirements.

The MVCA was contacted to determine quality control requirements for the site. Correspondence from the MVCA is provided in **Appendix F**, which clarifies that no onsite quality control is required. Also clarified during the pre-consultation meeting, the requirements related to stormwater quantity control are noted as follows:

- *Stormwater quantity control criteria – be consistent with the criteria specified in the Pond 4 final report (see attached) and/or in the Kanata west Master servicing Study.*
- When using the modified rational method to calculate the storage requirements for the site, the underground storage should not be included in the overall available storage. The modified rational method assumes that the restricted flow rate is constant throughout the storm which, in this case, underestimates the storage requirement prior to the 100-year head elevation being reached. Alternately, if you wish to include the underground storage, you may use an assumed average release rate equal to 50% of the peak allowable rate. Otherwise, disregard the underground storage as available storage or provide modeling to support the design.

6.1 Design Criteria

The proposed stormwater system is designed in conformance with the latest version of the City of Ottawa Design Guidelines (October 2012). Section 5 “Storm and Combined Sewer Design” and Section 8 “Stormwater Management”. A summary of the design criteria that relates to this design report is the proceeding sections below.

6.2 Minor System Design Criteria

- The storm sewer was sized based on the Rational Method and Manning’s Equation under free flow conditions for the 5-year storm using a 10-minute inlet time.
- Since a detailed site plan was available for the site, including building footprints, calculations of the average runoff coefficients for each drainage area was completed.
- Minimum sewer slopes to be based on minimum velocities for storm sewers of 0.80 m/sec.

6.3 Major System Design Criteria

- The major system has been designed to accommodate on-site detention with sufficient capacity to attenuate the 100-year design storm. On-site storage is calculated based on the 100-year design storm with on-site detention storage provided using underground chambers.
- On site storage is provided and calculated for up to the 100-year design storm. There is no surface ponding proposed on the ground surface.
- Overland flow routes are provided.
- The vertical distance from the spill elevation on the street and the ground elevation at the buildings is at least 150mm.
- The emergency overflow spill elevation is at least 30 cm below the lowest building opening.

6.4 Runoff Coefficients

Runoff coefficients used were based on actual areas taken from CAD. Runoff coefficients for impervious surfaces (roofs, asphalt, and concrete) were taken as 0.90, whereas those for pervious surfaces (grass/landscaping) were taken as 0.20. Average runoff coefficients were calculated for catchments (or drainage areas) using the area-weighting routine in PCSWMM. The runoff coefficients for pre-development and post-development catchments are provided in **Appendix D**, with a summary provided in in **Table 6-1** below.

Table 6-1 – Summary of Runoff Coefficients

Location	Area (hectares)	Pre-Development Runoff Coefficient, C_{AVG}	Post-Development Runoff Coefficient, C_{AVG}
Entire Site	0.4052	0.28	0.53

6.5 Time of Concentration

A minimum time of concentration of 10-minutes was used for both pre-development and post-development subcatchments.

6.6 Pre-Development Conditions

Under current conditions stormwater runoff from the 0.4052-hectare site is relatively self contained due to the build up of residential homes around it. Prior to development of the adjacent subdivision, runoff from the site was directed in a north easterly direction. Pre-development runoff rates were estimated based on a calculated time of concentration. **Figure A-1** illustrates these pre-development conditions and the following table provides pre-development peak runoff rates using the calculated time of concentration of 15.8 minutes.

Table 6-2 – Summary of Pre-Development Flows

Return Period Storm	Total Peak Flows (L/sec)
2-year	18.9
5-year	25.6
100-year	54.7

6.7 Allowable Release Rate

The Kanata West Master Servicing Study assigned a runoff coefficient of 0.65 for the subject site based on the 5-year storm with a time of concentration of 10 minutes. Therefore, control of runoff for up to the 100-year storm will be controlled to the 5-year rate with a runoff coefficient of 0.65, and a time of concentration of 10 minutes.

The allowable release rate of 76.4 L/sec from the proposed site will be based on a 5-year storm event. **Table D-3** provides detailed calculations on the allowable peak flow.

6.8 Proposed Stormwater System

Stormwater runoff from the proposed site will drain from a combination of controlled and uncontrolled areas. As a result of the changes onsite the overall post-development runoff coefficient will increase over pre-development conditions. This increase in runoff is the result of changes due to site development (i.e. additional hard surfaces, roof areas and hard landscaping).

A storm drainage plan is illustrated on **Figure A-2**. A total four (4) subcatchments (or drainage areas) within the development site are shown on this drawing with average runoff coefficients calculated for each drainage area. The proposed stormwater works consists of the following elements:

- Underground storage chambers complete with a downstream inlet control device (ICD). This then discharges to the storm sewer on Maple Grove Road.
- Remaining drainage areas along frontage of Maple Grove Road, Bensinger Way and Mykonos Crescent flow uncontrolled to the municipal right-of-way.

Table 6-3 – Summary of Post-Development Flows

Return Period Storm	Peak Flows to Maple Grove Road Storm Sewers (L/sec)		Peak Uncontrolled Flows to Bensinger Way (L/sec)	Peak Uncontrolled Flows to Mykonos Cres (L/sec)	Total Peak Flows (L/sec)	Allowable Peak Flows (L/sec)
	Uncontrolled	Controlled				
2-year	10.3	2.8	10.3	2.8	26.3	76.4
5-year	14.0	3.7	14. 0	3. 9	35.6	
100-year	30.0	8.0	30.1	8.3	76.4	

6.9 Flow Attenuation

As a result of utilizing flow control, attenuation (or storage) of runoff is necessary. This will be achieved utilizing storage in underground chambers. Using the allowable release rates, the Modified Rational Method was used to determine the 2-year, 5-year, and 100-year volumes that will occur for corresponding release rates.

6.10 Summary of Post Development storage

Table D-13, provides the volumes necessary to detain the release rates. **Table D-12** summarizes the combined controlled and uncontrolled flows leaving the subject site. A summary of the 100-year flows, 100-year required storage volumes, with the provided voles in Identified in **Table 6-4** below.

Table 6-4 – Summary of Post-Development Storage

Area No.	Outlet	Release Rate (L/s)			Storage Required (m^3) (MRM)			Storage Provided (m^3)	Control Method
		2-yr	5-yr	100-yr	2-yr	5-yr	100-yr	Chambers	ICD
S01	Maple Grove Road Storm Sewer	2.8	3.7	8.0	21.8	29.0	61.2	62.7	TEMPEST Model LMF-75

7 Erosion & Sediment Control

During all construction activities, erosion and sedimentation shall be controlled by the following techniques:

- Filter cloth shall be installed between the frame and cover of all adjacent catch basins and catch basin manhole structures.
- Heavy duty silt fencing will be used to control runoff around the construction area. Silt fencing locations are identified on the site grading and erosion control plan.
- A mud mat will be installed at the construction entrance to help avoid mud from being transported to offsite roads.
- Visual inspection shall be completed daily on sediment control barriers and any damage repaired immediately. Care will be taken to prevent damage during construction operations.
- In some cases, barriers may be removed temporarily to accommodate the construction operations. The affected barriers will be reinstated at night when construction is completed.
- Sediment control devices will be cleaned of accumulated silt as required. The deposits will be disposed of as per the requirements of the contract.
- During the course of construction, if the engineer believes that additional prevention methods are required to control erosion and sedimentation, the contractor will install additional silt fences or other methods as required to the satisfaction of the engineer.
- Construction and maintenance requirements for erosion and sediment controls are to comply with Ontario Provincial Standard Specification (OPSS) OPSS 805 and City of Ottawa specifications.

8 Conclusions and Recommendations

This Functional Servicing & Stormwater Report outlines the rationale which will be used to service the proposed development. The following summarizes the servicing requirements for the site:

Water

- Single water services shall connect into each townhome connecting off the facing street.
- The Required Fire Flows (RFFs) were estimated at **11,000 L/min** (183 L/sec) and **10,000 L/min** (167 L/sec) for Block 1, **7,000 L/min** (117 L/sec) for Block 2, and **10,000 L/min** (167 L/sec) for Block 3. For Blocks 1 and 3, fire walls will be used to separate the blocks into two areas. The total available flows for firefighting purposes, based on the contribution from hydrants, was estimated at **22,800 L/min** for Block 1, **13,300 L/min** for Block 2, and **17,100 L/min** for Block 3.
- Based on hydraulic boundary conditions (HGL) provided by the City of Ottawa, a system pressure of between **66.7 psi** and **66.9 psi** under peak hourly demands is anticipated at all three blocks. This exceeds the City's guideline of 20 psi.

Sewage

- Estimated peak sewage flows **0.75 L/sec** are anticipated. This exceeds current sewage flows of 0.18 L/sec under existing conditions. Although peak sewage rates exceed existing conditions, the receiving sanitary sewers on adjacent streets have adequate capacity to convey sewage flows, as offsite sanitary sewers accounted for the site during their design process.

Stormwater

- For the stormwater system, the allowable capture rate from the entire site was calculated based on a runoff coefficient of 0.65, time of concentration of 10 minutes for a 5-year storm event. The allowable release rate for the entire site was calculated to be **76.4 L/sec**. Runoff in excess of this will be detained onsite for up to the 100-year storm.
- Two minor surface drainage areas will flow uncontrolled to the right-of-way. The 100-year peak flows from these two areas were accounted for (i.e. subtracted) from the total runoff rate to establish the allowable rate.
- In order to meet the allowable release rate, a total retention volume of **±61.2 m^3** metres is required.
- Runoff from the surface areas will be collected and detained in an underground stormwater chamber located along the east side of the site and connects into Maple Grove Road storm sewer. The volume necessary to detain the 100-year event, is **61.2 m^3**, based on using 50% of the allowable release rate as required by the City of Ottawa. The underground chambers will be sized to hold a minimum volume of approximately **62.7 m^3.**
- A single inlet control device (Tempest LMF-75) within a storm manhole just downstream of the underground chambers will be used to control storm outflow.

Erosion & Sediment Control

- Erosion and sediment control methods will be used during construction to limit erosion potential.

9 Legal Notification

This report was prepared by EXP Services Inc. for the account of 10886378 Canada Incorporated.

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

Appendix A - Figures

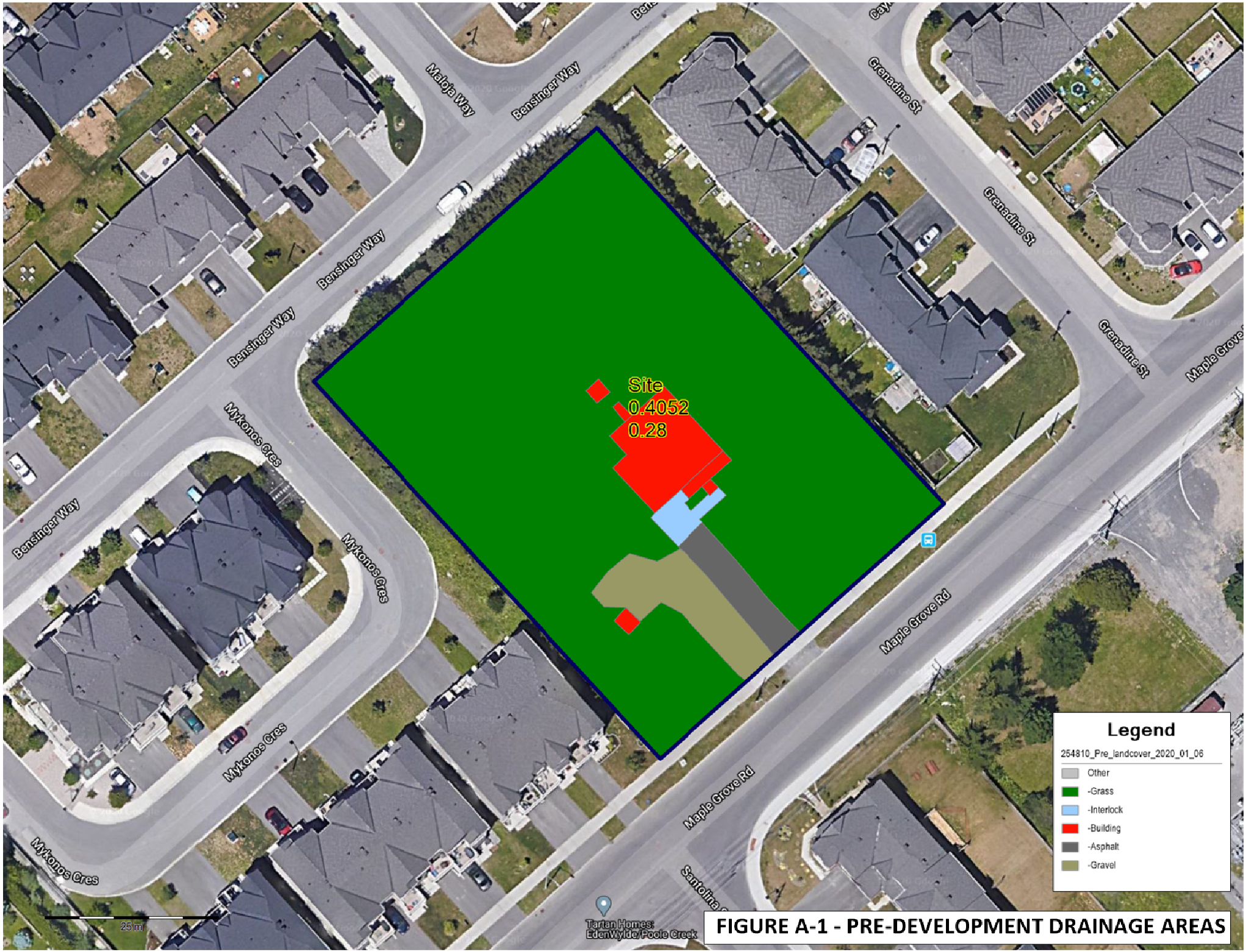


FIGURE A-1 - PRE-DEVELOPMENT DRAINAGE AREAS

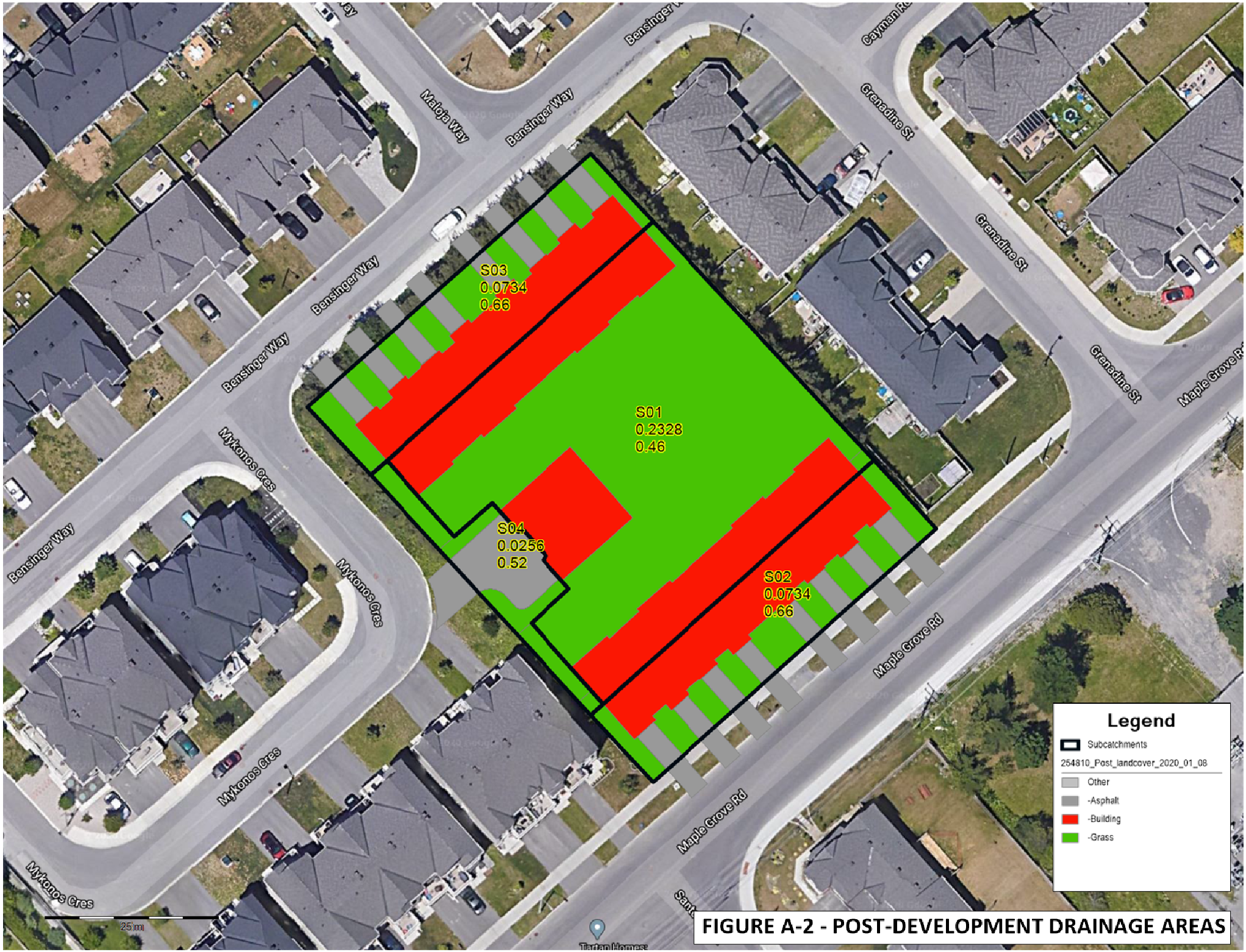


FIGURE A-2 - POST-DEVELOPMENT DRAINAGE AREAS

exp Services Inc.
100-2650 Queensview Drive
Ottawa, ON K2B 8H6

www.exp.com

DESIGN MZG	1869 MAPLE GROVE ROAD	SCALE 1:2500
DRAWN MZG		SKETCH NO
DATE FEB 2020	FIRE HYDRANT LOCATIONS	FIG A–3
FILE NO 254810		

Appendix B – Water Servicing Tables

Table B-1 – Water Demand Chart

Table B-2 – Fire Flow Requirements Based on Fire Underwriters Survey (FUS) – Block 1-West

Table B-3 – Fire Flow Requirements Based on Fire Underwriters Survey (FUS) – Block 1-East

Table B-4 – Fire Flow Requirements Based on Fire Underwriters Survey (FUS) – Block 2

Table B-5 – Fire Flow Requirements Based on Fire Underwriters Survey (FUS) – Block 3-West

Table B-6 – Fire Flow Requirements Based on Fire Underwriters Survey (FUS) – Block 3-East

Table B-7 – Available Fire Flows Based on Hydrant Spacing

Table B-8 – Estimated Water Pressure at Proposed Blocks

TABLE B-1: Water Demand Chart

Location: 1869 Maple Grove Rd
Project No: OTT-00254810
Designed by: J.Fitzpatrick
Checked By: B. Thomas
Date Revised: April 2020

Water Consumption
Residential = **350** L/cap/day
Commercial = 5,000 L/1000m^2/day

Population Densities

Single Family	3.4	person/unit
Semi-Detahced	2.7	person/unit
Duplex	2.3	person/unit
Townhome (Row)	2.7	person/unit
Bachelor Apartment	1.4	person/unit
1 Bedroom Apartment	1.4	person/unit
2 Bedroom Apartment	2.1	person/unit
3 Bedroom Apartment	3.1	person/unit
4 Bedroom Apartment	4.1	person/unit
Avg. Apartment	1.8	person/unit

Proposed Buildings	No. of Residential Units: Singles/Semis/Towns: Single Family	Semi-Detached	Duplexz	Townhome	Apartments: Bachelor	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	Avg Apt.	Total Persons (pop)	Residential Demands in (L/sec): Avg. Day Demand (L/day)	Peaking Factors (x Avg Day): Max Day	Peak Hour	Max Day Demand (L/day)	Peak Hour Demand (L/day)	Commercial: Area (m^2)	Avg Demand (L/day)	Peaking Factors (x Avg Day): Max Day	Peak Hour	Max Day Demand (L/day)	Peak Hour Demand (L/day)	Total Demands (L/sec): Avg Day (L/s)	Max Day (L/s)	Max Hour (L/s)
Block 1				8							21.6	7,560	9.50	14.30	71,820	108,108							0.09	0.83	1.25
Block 2				2							5.4	1890	9.50	14.30	17,955	27,027							0.02	0.21	0.31
Block 3				8							21.6	7,560	9.50	14.30	71,820	108,108							0.09	0.83	1.25
Total =				18							48.6	17,010			161,595	243,243							0.20	1.87	2.82

PEAKING FACTORS FROM MOECC TABLE 3-3 (Peaking Factors for Water Systems Servicing Fewer Than 500 persons

Dwelling Units Serviced	Equiv Pop	Night Min Factor	Maximum Day Factor	Peak Hour Factor
10	30	0.10	9.50	14.30
50	150	0.10	4.90	7.40
100	300	0.20	3.60	5.40
150	450	0.30	3.00	4.50
167	500	0.40	2.90	4.30

TABLE B-2
FIRE FLOW REQUIREMENTS BASED ON FIRE UNDERWRITERS SURVEY(FUS) 1999
LOCATION: **Block 1 - WEST**

An estimate of the Fire Flow required for a given fire area may be estimated by:

F = 220 * C * SQRT(A)

where: F = required fire flow in litres per minute
A = total floor area in m^2 (including all storeys, but excluding basements at least 50% below grade)
C = coefficient related to the type of construction

Task	Options	Multiplier	Input				Value Used	Fire Flow Total (L/min)
Choose Building Frame (C)	Wood Frame	1.5	Wood Frame				1.5	
	Ordinary Construction	1						
	Non-combustible Construction	0.8						
	Fire Resistive Construction	0.6						
Input Building Floor Areas (A)			Area	% Used	Area Used	Fire Wall Used to Split Block	673.0 m²	
	Floor 2		673	50%	337			
	Floor 1		673	50%	337			
Fire Flow (F)	F = 220 * C * SQRT(A)							8,561
Fire Flow (F)	Rounded to nearest 1,000							**9,000**

Reductions/Increases Due to Factors Effecting Burning

Task	Options	Multiplier	Input	Value Used	Fire Flow Change (L/min)	Fire Flow Total (L/min)
Choose Combustibility of Building Contents	Non-combustible	-25%	Limited Combustible	-15%	-1,350	7,650
	Limited Combustible	-15%				
	Combustible	0%				
	Free Burning	15%				
	Rapid Burning	25%				
Choose Reduction Due to Sprinkler System	**Adequate** Sprinkler Conforms to NFPA13	-30%	No Sprinkler	0%	0	7,650
	No Sprinkler	0%				
	Standard Water Supply for Fire Department Hose Line and for Sprinkler System	-10%	Not Standard Water Supply or Unavailable	0%	0	7,650
	Not Standard Water Supply or Unavailable	0%				
	Fully Supervised Sprinkler System	-10%	Not Fully Supervised or N/A	0%	0	7,650
	Not Fully Supervised or N/A	0%				

Choose Structure Exposure Distance	Exposures	Separ-ation Dist (m)	Cond	Separation Conditon	Exposed Wall type	Exposed Wall Length: Length (m)	No of Storeys	Lenth-height Factor	Sub-Conditon	Charge (%)	Total Charge (%)	Total Exposure Charge (L/min)	
	Side 1 (west)	23	4	20.1 to 30	Type A	14	2	28	4A	8%	44%	3,366	11,016
	Side 2 (east)	0	1	0 to 3	Fire Wall					10%			
	Side 3 (north)	27	4	20.1 to 30	Type A	31	2	62	4C	9%			
	Side 4 (south)	9	2	3.1 to 10	Type A	14	2	28	2A	17%			

Obtain Required Fire Flow		
	Total Required Fire Flow, Rounded to the Nearest 1,000 L/min =	**11,000**
	Total Required Fire Flow, L/s =	**183**
	Can the Total Fire Flow be Capped at 10,000 L/min (167 L/sec) based on "TECHNCAL BULLETIN ISTB-2018-02", (yes/no) =	**No**
	Total Required Fire Flow (RFF). If RFF < 167 use RFF (L/sec) =	**183**

Exposure Charges for Exposing Walls of Wood Frame Construciton (from Table G5)

Type A	Wood-Frame or non-conbustible
Type B	Ordinary or fire-resisitve with unprotected openings
Type C	Ordinary or fire-resisitve with semi-protected openings
Type D	Ordinary or fire-resisitve with blank wall

Conditons for Separation

Separation Dist	Condition
0m to 3m	1
3.1m to 10m	2
10.1m to 20m	3
20.1m to 30m	4
30.1m to 45m	5
> 45.1m	6

TABLE B-3
FIRE FLOW REQUIREMENTS BASED ON FIRE UNDERWRITERS SURVEY(FUS) 1999
LOCATION: **Block 1 - EAST**

An estimate of the Fire Flow required for a given fire area may be estimated by:

F = 220 * C * SQRT(A)

where: F = required fire flow in litres per minute
A = total floor area in m^2 (including all storeys, but excluding basements at least 50% below grade)
C = coefficient related to the type of construction

Task	Options	Multiplier	Input				Value Used	Fire Flow Total (L/min)
Choose Building Frame (C)	Wood Frame	1.5	Wood Frame				1.5	
	Ordinary Construction	1						
	Non-combustible Construction	0.8						
	Fire Resistive Construction	0.6						
Input Building Floor Areas (A)			Area	% Used	Area Used	Fire Wall Used to Split Block	673.0 m²	
	Floor 2		673	50%	337			
	Floor 1		673	50%	337			
Fire Flow (F)	F = 220 * C * SQRT(A)							8,561
Fire Flow (F)	Rounded to nearest 1,000							**9,000**

Reductions/Increases Due to Factors Effecting Burning

Task	Options	Multiplier	Input	Value Used	Fire Flow Change (L/min)	Fire Flow Total (L/min)
Choose Combustibility of Building Contents	Non-combustible	-25%	Limited Combustible	-15%	-1,350	7,650
	Limited Combustible	-15%				
	Combustible	0%				
	Free Burning	15%				
	Rapid Burning	25%				
Choose Reduction Due to Sprinkler System	**Adequate** Sprinkler Conforms to NFPA13	-30%	No Sprinkler	0%	0	7,650
	No Sprinkler	0%				
	Standard Water Supply for Fire Department Hose Line and for Sprinkler System	-10%	Not Standard Water Supply or Unavailable	0%	0	7,650
	Not Standard Water Supply or Unavailable	0%				
	Fully Supervised Sprinkler System	-10%	Not Fully Supervised or N/A	0%	0	7,650
	Not Fully Supervised or N/A	0%				

Choose Structure Exposure Distance	Exposures	Separ-ation Dist (m)	Cond	Separation Conditon	Exposed Wall type	Exposed Wall Length: Length (m)	No of Storeys	Lenth-height Factor	Sub-Conditon	Charge (%)	Total Charge (%)	Total Exposure Charge (L/min)	
	Side 1 (west)	23	4	20.1 to 30	Type A	Fire Wall				10%	40%	3,060	10,710
	Side 2 (east)	9	2	3.1 to 10	Type A	14	2	28	2A	17%			
	Side 3 (north)	26	4	20.1 to 30	Type A	4.6	2	9.2	4A	8%			
	Side 4 (south)	34	5	30.1 to 45	Type A	25	2	50	5B	5%			

Obtain Required Fire Flow		
	Total Required Fire Flow, Rounded to the Nearest 1,000 L/min =	**11,000**
	Total Required Fire Flow, L/s =	**183**
	Can the Total Fire Flow be Capped at 10,000 L/min (167 L/sec) based on "TECHNCAL BULLETIN ISTB-2018-02", (yes/no) =	**Yes**
	Total Required Fire Flow (RFF). If RFF < 167 use RFF (L/sec) =	**167**

Exposure Charges for Exposing Walls of Wood Frame Construciton (from Table G5)

Type A	Wood-Frame or non-conbustible
Type B	Ordinary or fire-resisitve with unprotected openings
Type C	Ordinary or fire-resisitve with semi-protected openings
Type D	Ordinary or fire-resisitve with blank wall

Conditons for Separation

Separation Dist	Condition
0m to 3m	1
3.1m to 10m	2
10.1m to 20m	3
20.1m to 30m	4
30.1m to 45m	5
> 45.1m	6

TABLE B-4
FIRE FLOW REQUIREMENTS BASED ON FIRE UNDERWRITERS SURVEY(FUS) 1999
LOCATION: **Block 2**

An estimate of the Fire Flow required for a given fire area may be estimated by:

F = 220 * C * SQRT(A)

where: F = required fire flow in litres per minute
A = total floor area in m^2 (including all storeys, but excluding basements at least 50% below grade)
C = coefficient related to the type of construction

Task	Options	Multiplier	Input				Value Used	Fire Flow Total (L/min)
Choose Building Frame (C)	Wood Frame	1.5	Wood Frame				1.5	
	Ordinary Construction	1						
	Non-combustible Construction	0.8						
	Fire Resistive Construction	0.6						
Input Building Floor Areas (A)			Area	% Used	Area Used		368.0 m²	
	Floor 2		184	100%	184			
	Floor 1		184	100%	184			
Fire Flow (F)	F = 220 * C * SQRT(A)							6,330
Fire Flow (F)	Rounded to nearest 1,000							**6,000**

Reductions/Increases Due to Factors Effecting Burning

Task	Options	Multiplier	Input	Value Used	Fire Flow Change (L/min)	Fire Flow Total (L/min)
Choose Combustibility of Building Contents	Non-combustible	-25%	Limited Combustible	-15%	-900	5,100
	Limited Combustible	-15%				
	Combustible	0%				
	Free Burning	15%				
	Rapid Burning	25%				
Choose Reduction Due to Sprinkler System	**Adequate** Sprinkler Conforms to NFPA13	-30%	No Sprinkler	0%	0	5,100
	No Sprinkler	0%				
	Standard Water Supply for Fire Department Hose Line and for Sprinkler System	-10%	Not Standard Water Supply or Unavailable	0%	0	5,100
	Not Standard Water Supply or Unavailable	0%				
	Fully Supervised Sprinkler System	-10%	Not Fully Supervised or N/A	0%	0	5,100
	Not Fully Supervised or N/A	0%				

Choose Structure Exposure Distance	Exposures	Separ-ation Dist (m)	Cond	Separation Conditon	Exposed Wall type	Exposed Wall Length: Length (m)	No of Storeys	Lenth-height Factor	Sub-Conditon	Charge (%)	Total Charge (%)	Total Exposure Charge (L/min)	
	Side 1 (west)	50	6	> 45.1	Type A	0	0	0	6	0%	39%	1,989	7,089
	Side 2 (east)	38	5	30.1 to 45	Type A	14	2	28	5A	5%			
	Side 3 (north)	9	2	3.1 to 10	Type A	14	2	28	2A	17%			
	Side 4 (south)	10	2	3.1 to 10	Type A	14	2	28	2A	17%			

Obtain Required Fire Flow		
	Total Required Fire Flow, Rounded to the Nearest 1,000 L/min =	**7,000**
	Total Required Fire Flow, L/s =	**117**
	Can the Total Fire Flow be Capped at 10,000 L/min (167 L/sec) based on "TECHNCAL BULLETIN ISTB-2018-02", (yes/no) =	**Yes**
	Total Required Fire Flow (RFF). If RFF < 167 use RFF (L/sec) =	**117**

Exposure Charges for Exposing Walls of Wood Frame Construciton (from Table G5)

Type A	Wood-Frame or non-conbustible
Type B	Ordinary or fire-resisitve with unprotected openings
Type C	Ordinary or fire-resisitve with semi-protected openings
Type D	Ordinary or fire-resisitve with blank wall

Conditons for Separation

Separation Dist	Condition
0m to 3m	1
3.1m to 10m	2
10.1m to 20m	3
20.1m to 30m	4
30.1m to 45m	5
> 45.1m	6

TABLE B-5
FIRE FLOW REQUIREMENTS BASED ON FIRE UNDERWRITERS SURVEY(FUS) 1999
LOCATION: **Block 3 - WEST**

An estimate of the Fire Flow required for a given fire area may be estimated by:

F = 220 * C * SQRT(A)

where: F = required fire flow in litres per minute
A = total floor area in m^2 (including all storeys, but excluding basements at least 50% below grade)
C = coefficient related to the type of construction

Task	Options	Multiplier	Input				Value Used	Fire Flow Total (L/min)
Choose Building Frame (C)	Wood Frame	1.5	Wood Frame				1.5	
	Ordinary Construction	1						
	Non-combustible Construction	0.8						
	Fire Resistive Construction	0.6						
Input Building Floor Areas (A)			Area	% Used	Area Used		673.0 m²	
	Floor 2		673	50%	337			
	Floor 1		673	50%	337			
Fire Flow (F)	F = 220 * C * SQRT(A)							8,561
Fire Flow (F)	Rounded to nearest 1,000							**9,000**

Reductions/Increases Due to Factors Effecting Burning

Task	Options	Multiplier	Input	Value Used	Fire Flow Change (L/min)	Fire Flow Total (L/min)
Choose Combustibility of Building Contents	Non-combustible	-25%	Limited Combustible	-15%	-1,350	7,650
	Limited Combustible	-15%				
	Combustible	0%				
	Free Burning	15%				
	Rapid Burning	25%				
Choose Reduction Due to Sprinkler System	**Adequate** Sprinkler Conforms to NFPA13	-30%	No Sprinkler	0%	0	7,650
	No Sprinkler	0%				
	Standard Water Supply for Fire Department Hose Line and for Sprinkler System	-10%	Not Standard Water Supply or Unavailable	0%	0	7,650
	Not Standard Water Supply or Unavailable	0%				
	Fully Supervised Sprinkler System	-10%	Not Fully Supervised or N/A	0%	0	7,650
	Not Fully Supervised or N/A	0%				

Choose Structure Exposure Distance	Exposures	Separ-ation Dist (m)	Cond	Separation Conditon	Exposed Wall type	Exposed Wall Length: Length (m)	No of Storeys	Lenth-height Factor	Sub-Conditon	Charge (%)	Total Charge (%)	Total Exposure Charge (L/min)	
	Side 1 (west)	6	2	3.1 to 10	Type A	14	2	28	2A	17%	52%	3,978	11,628
	Side 2 (east)	0	1	0 to 3	Type A	Fire Wall				10%			
	Side 3 (north)	10	2	3.1 to 10	Type A	14	2	28	2A	17%			
	Side 4 (south)	30	4	20.1 to 30	Type A	15	2	30	4A	8%			

Obtain Required Fire Flow		
	Total Required Fire Flow, Rounded to the Nearest 1,000 L/min =	**12,000**
	Total Required Fire Flow, L/s =	**200**
	Can the Total Fire Flow be Capped at 10,000 L/min (167 L/sec) based on "TECHNCAL BULLETIN ISTB-2018-02", (yes/no) =	**Yes**
	Total Required Fire Flow (RFF). If RFF < 167 use RFF (L/sec) =	**167**

Exposure Charges for Exposing Walls of Wood Frame Construciton (from Table G5)

Type A	Wood-Frame or non-conbustible
Type B	Ordinary or fire-resisitve with unprotected openings
Type C	Ordinary or fire-resisitve with semi-protected openings
Type D	Ordinary or fire-resisitve with blank wall

Conditons for Separation

Separation Dist	Condition
0m to 3m	1
3.1m to 10m	2
10.1m to 20m	3
20.1m to 30m	4
30.1m to 45m	5
> 45.1m	6

TABLE B-6
FIRE FLOW REQUIREMENTS BASED ON FIRE UNDERWRITERS SURVEY(FUS) 1999
LOCATION: **Block 3 - EAST**

An estimate of the Fire Flow required for a given fire area may be estimated by:

F = 220 * C * SQRT(A)

where: F = required fire flow in litres per minute
A = total floor area in m^2 (including all storeys, but excluding basements at least 50% below grade)
C = coefficient related to the type of construction

Task	Options	Multiplier	Input				Value Used	Fire Flow Total (L/min)
Choose Building Frame (C)	Wood Frame	1.5	Wood Frame				1.5	
	Ordinary Construction	1						
	Non-combustible Construction	0.8						
	Fire Resistive Construction	0.6						
Input Building Floor Areas (A)			Area	% Used	Area Used		673.0 m²	
	Floor 2		673	50%	337			
	Floor 1		673	50%	337			
Fire Flow (F)	F = 220 * C * SQRT(A)							8,561
Fire Flow (F)	Rounded to nearest 1,000							**9,000**

Reductions/Increases Due to Factors Effecting Burning

Task	Options	Multiplier	Input	Value Used	Fire Flow Change (L/min)	Fire Flow Total (L/min)
Choose Combustibility of Building Contents	Non-combustible	-25%	Limited Combustible	-15%	-1,350	7,650
	Limited Combustible	-15%				
	Combustible	0%				
	Free Burning	15%				
	Rapid Burning	25%				
Choose Reduction Due to Sprinkler System	**Adequate** Sprinkler Conforms to NFPA13	-30%	No Sprinkler	0%	0	7,650
	No Sprinkler	0%				
	Standard Water Supply for Fire Department Hose Line and for Sprinkler System	-10%	Not Standard Water Supply or Unavailable	0%	0	7,650
	Not Standard Water Supply or Unavailable	0%				
	Fully Supervised Sprinkler System	-10%	Not Fully Supervised or N/A	0%	0	7,650
	Not Fully Supervised or N/A	0%				

Choose Structure Exposure Distance	Exposures	Separ-ation Dist (m)	Cond	Separation Conditon	Exposed Wall type	Exposed Wall Length: Length (m)	No of Storeys	Lenth-height Factor	Sub-Conditon	Charge (%)	Total Charge (%)	Total Exposure Charge (L/min)	
	Side 1 (west)	0	1	0 to 3	Type A	Fire Wall				10%	32%	2,448	10,098
	Side 2 (east)	10	2	3.1 to 10	Type A	14	2	28	2A	17%			
	Side 3 (north)	34	5	30.1 to 45	Type A	25	2	50	5B	5%			
	Side 4 (south)	50	6	> 45.1	Type A	0	0	0	6	0%			

Obtain Required Fire Flow		
	Total Required Fire Flow, Rounded to the Nearest 1,000 L/min =	**10,000**
	Total Required Fire Flow, L/s =	**167**
	Can the Total Fire Flow be Capped at 10,000 L/min (167 L/sec) based on "TECHNCAL BULLETIN ISTB-2018-02", (yes/no) =	**Yes**
	Total Required Fire Flow (RFF). If RFF < 167 use RFF (L/sec) =	**167**

Exposure Charges for Exposing Walls of Wood Frame Construciton (from Table G5)

Type A	Wood-Frame or non-conbustible
Type B	Ordinary or fire-resisitve with unprotected openings
Type C	Ordinary or fire-resisitve with semi-protected openings
Type D	Ordinary or fire-resisitve with blank wall

Conditons for Separation

Separation Dist	Condition
0m to 3m	1
3.1m to 10m	2
10.1m to 20m	3
20.1m to 30m	4
30.1m to 45m	5
> 45.1m	6

TABLE B-7: FIRE FLOW CONTRIBUTIONS BASED ON HYDRANT SPACING

Hydrant #	Block 1 (West)		Block 1 (East)		Block 2		Block 3 (West)		Block 3 (East)	
	[1]Distance (m)	[2]Fire Flow Contribution (L/min)	[1]Distance (m)	[2]Fire Flow Contribution (L/min)	Distance (m)	Fire Flow Contribution (L/min)	Distance (m)	Fire Flow Contribution (L/min)	Distance (m)	Fire Flow Contribution (L/min)
348015H064	NA		NA		NA		83	3,800	104	3,800
348016H070	NA		NA		NA		29	5,700	36	5,700
348016H071	NA		NA		NA		118	3,800	94	3,800
348015H065	59	5,700	127	3,800	50	5,700	NA		NA	
348016H081	50	5,700	73	5,700	79	3,800	NA		NA	
348016H080	63	5,700	63	5,700	132	3,800	NA		NA	
348016H079	136	3,800	119	3,800	NA		NA		NA	
348016H063	107	3,800	83	3,800	NA		147	3,800	125	3,800
Total Fire Fflow Avail in L/min (L/sec)		24,700		22,800		13,300		17,100		17,100
		(412)		(380)		(222)		(285)		(285)
FUS RFF in L/min (L/sec)		11,000		10,020		7,000		10,020		10,020
		(183)		(167)		(117)		(167)		(167)
Meets Requreiment (Yes/No)		Yes		Yes		Yes		Yes		Yes

Notes:

[1]Distance is measured along a road or fire route.

[2]Fire Flow Contribution for Class AA Hydrant from Table 1 of Appendix I, ISTB-2018-02

Appendix C – Sanitary Servicing Tables

Table C-1 – Sanitary Sewer Design Sheet

Table C1: SANITARY SEWER CALCULATION SHEET

LOCATION				RESEDENTIAL AREAS AND POPULAITONS												COMMERCIAL			INDUSTRIAL			INSTITUTIONAL		INFILTRATION			TOTAL	SEWER DATA						
Street	U/S MH	D/S MH	Desc	Area (ha)	NUMBER OF UNITS							POPULATION		Peak Factor	Peak Flow (L/sec)	AREA (ha)		Peak Flow (L/sec)	AREA (ha)		Peak Factor (per	AREA (Ha)	ACCU AREA (Ha)	AREA (ha)		INFILT FLOW (L/s)	TOTAL FLOW (L/s)	Nom Dia (mm)	Actual Dia (mm)	Slope (%)	Length (m)	Capacity (L/sec)	Q/Q_{CAP} (%)	Full Velocity (m/s)
					Singles	Semis	Towns	1-Bed Apt.	2-Bed Apt.	3-Bed Apt.	4-Bed Apt.	INDIV	ACCU			INDIV	ACCU		INDIV	ACCU				INDIV	ACCU									
Maple Grove Rd	MHSA65072	MHSA65073		0.1719			8.00					21.6	21.6	3.70	0.26									0.1719	0.17	0.06	0.32	200	201.2	0.58	72.020	25.4	1%	0.92
Mykonos Cres			*EXSA1*	*0.2521*			*14.00*					*37.8*	37.8																					
Mykonos Cres			*EXSA2*	*0.0512*			*2.00*					*5.4*	43.2																					
Mykonos Cres	MHSA65629	MHSA65630	SA2	0.0665			2.00					5.4	48.6	3.65	0.57									0.0665	0.3186	0.11	0.68	200	201.2	1.51	10.610	41.0	2%	1.49
Mykonos Cres	MHSA65630	MHSA6526	*EXSA3*	0.0530									48.6	3.65	0.57									0.0530	0.3716	0.12	0.70	200	201.2	1.00	35.120	33.3	2%	1.21
														3.80																			
Bensinger Way			*EXSA4*	*0.3682*			*15.00*					*40.5*	89.1	3.61	1.04									0.3682	0.7398	0.24	1.29							
Bensinger Way			*EXSA5*	*0.1883*			*5.00*					*13.5*	102.6	3.59	1.19									0.1883	0.1883	0.06	1.26							
Bensinger Way	MHSA6526	MHSA6525	SA3	0.1667			8.00					21.6	124.2	3.57	1.44									0.1667	0.5383	0.18	1.61	200	201.2	1.04	50.840	34.0	5%	1.24
				1.32			**54**					**145.8**			**5.08**									**1.01**										

Residential Avg. Daily Flow, q (L/p/day) =	280	
Commercial Avg. Daily Flow (L/gross ha/day) =	28,000	
or L/gross ha/sec =	0.324	
Institutianal Avg. Daily Flow (L/s/ha) =	28,000	
or L/gross ha/sec =	0.324	
Light Industrial Flow (L/gross ha/day) =	35,000	
or L/gross ha/sec =	0.40509	
Light Industrial Flow (L/gross ha/day) =	55,000	
or L/gross ha/sec =	0.637	

Commercial Peak Factor =	1.5	(when area >20%)
	1.0	(when area <20%)
Institutional Peak Factor =	1.5	(when area >20%)
	1.0	(when area <20%)
Residential Correction Factor, K =	0.80	
Manning N =	0.013	
Peak extraneous flow, I (L/s/ha) =	0.33	(Total I/I)

Peak Population Flow, (L/sec) =	P*q*M/86.4
Peak Extraneous Flow, (L/sec) =	I*Ac
Residential Peaking Factor, M =	1 + (14/(4+P^0.5)) * K
A_c = Cumulative Area (hectares)	
P = Population (thousands)	
Sewer Capacity, Qcap (L/sec) = (Manning's Equation)	$1/N \; S^{1/2} \; R^{2/3} \; A_c$

Unti Type	Persons/Unit
Singles	3.4
Semi-Detached	5.7
Townhomes	2.7
Single Apt. Unit	1.4
2-bed Apt. Unit	2.1
3-bed Apt. Unit	3.1
4-bed Apt. Unit	4.1

Designed:	Project:
J. Fitzpatrick, P.Eng.	1869 Maple Grove Drive
Checked:	Location:
B. Thomas, P.Eng.	Ottawa, Ontario
File Reference:	Page No:
254810 SAN - Sewer Design Sheet, Apr 2020.xlsx	**1 of 1**

Appendix D – Stormwater Servicing Tables

Table D-1 – Estimation of Catchment Time of Concentration (Pre-Development Conditions)

Table D-2 – Estimation of Pre-Development Peak Flows

Table D-3 – Estimation of Allowable Peak Flows (Based on Max C=0.50 with Tc=10mins)

Table D-4 – Average Runoff Coefficients for Post-Development

Table D-5 – Summary of Post-Development Peak Flows (Uncontrolled and Controlled)

Table D-6 – Summary of Post Development Storage

Table D-7 – Storage Volumes for 2-year, 5-year and 100-Year Storms (Full Site)

Table D-8 – 5-Year Storm Sewer Calculation Sheet

TABLE D1: ESTIMATION OF CATCHMENT TIME OF CONCENTRATION (PRE-DEVELOPMENT CONDITIONS)

Catchment No.	Area (ha)	High Elev (m)	Low Elev (m)	Flow Path Length (m)	Indiv Slope	Avg. C	Time of Conc. Tc	Description
PRE_S01	0.4052	107.5	106.6	51.0	1.8	**0.28**	15.8	See Note 2
Total	0.4052							

Notes

1) For Catchments with Runoff Coefficient less than C=0.40, Time of Concentration Based on Federal Aviation Formula (Airport Method), from MTO Drainage Manual Equation 8.16, where: $T_C = 3.26* (1.1-C)* L^{0.5}/ S_W^{0.33}$

TABLE D2: ESTIMATION OF PEAK FLOWS (PRE-DEVELOPMENT CONDITIONS) USING CALACUTLED TIME OF CONCENTRATIONS

Catchment No.	Area (ha)	Time of Conc, Tc (min)	Storm = 2 yr			Storm = 5 yr			Storm = 100 yr		
			I_2 (mm/hr)	Cavg	Q_{5PRE} (L/sec)	I_5 (mm/hr)	Cavg	Q_{5PRE} (L/sec)	I_{100} (mm/hr)	Cavg	Q_{100PRE} (L/sec)
PRE_S01	0.4052	15.77	60.01	0.28	18.9	81.15	0.28	25.6	138.74	0.35	54.7
Total	0.4052				18.9			25.6			54.7

Notes

1) Intensity, $I = 732.951/(Tc+6.199)^{0.810}$ (2-year, City of 0ttawa)

2) Intensity, $I = 998.071/(Tc+6.035)^{0.814}$ (5-year, City of 0ttawa)

3) Intensity, $I = 1735.688/(Tc+6.014)^{0.820}$ (100-year, City of Ottawa)

4) Cavg for 100-year is increased by 25% to a maximum of 1.0

TABLE D3: ESTIMATION OF ALLOWABLE PEAK FLOWS (Based on 5 year Pre-Development Rates and Max C=0.65 & Tc=10mins)

Catchment No.	Area (ha)	Time of Conc, Tc (min)	Storm = 2 yr			Storm = 5 yr		
			I_2 (mm/hr)	Cavg	Q_{ALLOW} (L/sec)	I_5 (mm/hr)	Cavg	Q_{ALLOW} (L/sec)
PRE_S01	0.4052	10	76.81	0.65	56.2	104.29	0.65	76.4
Total					**56.2**			**76.4**

Notes

1) Allowable runoff coefficent to meet pre-deveopment Cavg or C = 0.65 (maximum based on Report by DSEL

2) Time of Concentration (Tc) is based on the standard 10 minutes as per City Guidelines. The higher time of 10 minutes was used as it results in lower (more stringent) peak runoff rate used to establish allowable discharge rates

TABLE D4: AVERAGE RUNOFF COEFFICIENTS (Post-Development)

Runoff Coeffients $C_{ASPH/CONC}$ = 0.90 C_{ROOF} = 0.90 C_{GRASS} = 0.20

Area No.	Asphalt & Conc Areas (m^2)	A * C_{ASPH}	Roof Areas (m^2)	A * C_{ROOF}	Grassed Areas (m^2)	A * C_{GRASS}	Sum AC	Total Area (m^2)	C_{AVG} (see note)	Comment
S01								2328	0.46	Surface Areas
S02								734	0.66	Surface Areas
S03								734	0.66	Surface Areas
S04								256	0.52	Surface Areas
Totals								4,052	0.54	

Notes

1) Cavg derived with area-weighting command in PCSWMM

TABLE D5: SUMMARY OF POST-DEVELOPMENT PEAK FLOWS (Uncontrolled and Controlled)

Area No	Area (ha)	Time of Conc, Tc (min)	Storm = 2 yr				Storm = 5 yr				Storm = 100 yr				Comments
			C_{AVG}	I_2 (mm/hr)	Q (L/sec)	Q_{CAP} (L/sec)	C_{AVG}	I_5 (mm/hr)	Q (L/sec)	Q_{CAP} (L/sec)	C_{AVG}	I_{100} (mm/hr)	Q (L/sec)	Q_{CAP} (L/sec)	
S01	0.2328	10	0.46	76.81	22.9	2.75	0.46	104.19	31.0	3.73	0.58	178.56	66.4	7.98	Uncontrolled/Controlled - Maple Grove
S02	0.0734	10	0.66	76.81	10.3	(10.34)	0.66	104.19	14.0	(14.03)	0.83	178.56	30.1	(30.06)	
Total to Maple Grove Road Storm Sewers (overland+pipe) =						**13.1**				**17.8**				**38.0**	
S03	0.0734	10	0.66	76.81	10.3	(10.34)	0.66	104.19	14.0	(14.03)	0.83	178.56	30.1	(30.06)	Uncontrolled - Bensinger
Total to Bensinger Way Storm Sewers (overland) =						**10.3**				**14.0**				**30.1**	
S04	0.0256	10	0.52	76.81	2.8	2.8	0.52	104.19	3.9	3.9	0.65	178.56	8.3	8.3	Uncontrolled- Mykonos
Total to Mykonos Crescent Storm Sewers (overland) =						**(2.8)**				**(3.9)**				**(8.3)**	
Totals =	0.4052				46.4	**26.3**			62.9	**35.6**			134.8	**76.4**	
Total allowable rates for comparison						*26.3*				*35.6*				*76.4*	

Notes

2-yr Storm Intensity, I = 732.951/(Tc+6.199)^0.810 (City of Ottawa)

5-yr Storm Intensity, I = 998.071/(Tc+6.035)^0.814 (City of Ottawa)

100-yr Storm Intensity, I = 1735.688/(Tc+6.014)&^0.820 (City of Ottawa)

*Time of Concentration (min), Tc = **10***

*For Flows under column Qcap which are shown in brackets **(0.0)** , denotes flows that are uncontrolled*

TABLE D6: SUMMARY OF POST DEVELOPMENT STORAGE

Area No.	Area (ha)	Release Rate (L/s)			[1] Storage Required (m^3)			Storage Provided (m^3)					Control Method
		2-yr	5-yr	100-yr	2-yr (MRM)	5-yr (MRM)	100-yr (MRM)	Pipe	Surface Ponding	UG Chambers	UG CB/MHs	Total	
S01	0.2328	2.7	3.7	8.0	21.8	29.0	61.2			62.7		62.7	ICD - TEMPEST LMF TYPE 75
S02	0.0734	10.3	14.0	30.1									
S03		10.3	14.0	30.1									
S04	2.8424	10.3	3.9	30.1									

Notes

1) Storage Requried Based on the Modified Rational Method (MRM) for the relase rates noted.

TABLE D8: 5-YEAR STORM SEWER CALCULATION SHEET

Return Period Storm =	**5-year**	(2-year, 5-year, 100-year)
Default Inlet Time=	10	(minutes)
Manning Coefficient =	0.013	(dimensionless)

From Node	To Node	Street	AREA INFO				FLOW (UNRESTRICTED)							SEWER DATA									
			Area No.	Area (ha)	∑ Area (ha)	Average R	Indiv. 2.78*A*R	Accum. 2.78*A*R	Tc (mins)	I (mm/h)	Indiv. Flow	Return Period	Q (L/s)	Dia (mm) Actual	Dia (mm) Nominal	Type	Slope (%)	Length (m)	Capacity, Q_{CAP} (L/sec)	Velocity (m/s) Vf	Velocity (m/s) Va	Time in Pipe, Tt (min)	Hydraulic Ratios Q/Q_{CAP}	Hydraulic Ratios Va/Vf
MHST67819	MHST67820	Maple Grove Road	*EX Maple Grove*	*0.9574*	*0.9574*	*0.65*	1.730	*1.730*	*10.00*	*104.19*	*180.25*	*5-year*	*180.3*											
		Maple Grove Road	S01	0.2328	1.1902	0.46	0.298	2.028	10.00	104.19	31.02	5-year	211.3											
		Maple Grove Road	S02	0.0734	1.2636	0.66	0.135	1.865	10.00	104.19	14.03	5-year	194.3	533.0	525	CONC	0.64	73.55	358.21	1.59	1.12	1.09	0.54	0.71
		Mykonos Cres	*EX Mykonos Cres*	0.5100	0.5100	0.69	0.978	0.978	10.60	101.13	98.93	5-year	98.9											
MHST68715	MHST68712	Mykonos Cres	S04	0.0256	0.5356	0.52	0.037	1.015	10.60	101.13	3.74	5-year	102.7	447.9	450	PVC	0.92	10.85	270.03	1.72	1.22	0.15	0.38	0.71
		Bensinger Way	EX Bensinger Way	1.1834	1.1830	0.69	2.270	*2.270*	*12.82*	*91.33*	*207.33*	*5-year*	*207.3*											
MHST68712	MHST67058	Bensinger Way	S03	0.0256	1.2086	0.66	0.047	2.317	12.82	91.33	4.29	5-year	211.6	610.0	600	PVC	0.20	10.85	286.97	0.97	0.95	0.19	0.74	0.98
TOTALS =				**3.01**			**5.495**																	

Definitions:

Q = 2.78*AIR, where

Q = Peak Flow in Litres per second (L/s)

A = Watershed Area (hectares)

I = Rainfall Intensity (mm/h)

R = Runoff Coefficients (dimensionless)

Ottawa Rainfall Intensity Values from Sewer Design Guidelines, SDG002

	a	b	c
2-year	732.951	6.199	0.810
5-year	998.071	6.053	0.814
100-year	1735.688	6.014	0.820

Designed:	Project:	
J. Fitzpatrick, P.Eng.	1869 Hazeldean Road	
Checked:	Location:	
B. Thomas, P.Eng.	1869 Hazeldean Road, Ottawa, ON	
Dwg Reference:	File Ref:	Sheet No:
C004	254810 STM - Sewer Design Sheets, Apr 2020.xlsx	1 of 1

Appendix E – Consultation / Correspondence

Email on Water System Boundary Conditions

Email Received from MCVA on Stormwater Management Requirements

Boundary Conditions
1869 Maple Grove

Provided Information

Connection 1	Demand	
	L/min	L/s
Average Daily Demand	5	0.09
Maximum Daily Demand	48	0.80
Peak Hour	78	1.30
Fire Flow Demand #1	10,020	167.00

Connection 2	Demand	
	L/min	L/s
Average Daily Demand	1	0.02
Maximum Daily Demand	12	0.20
Peak Hour	19	0.31
Fire Flow Demand #1	7,020	117.00

Connection 3	Demand	
	L/min	L/s
Average Daily Demand	5	0.09
Maximum Daily Demand	48	0.80
Peak Hour	78	1.30
Fire Flow Demand #1	12,000	200.00

Location

Results

Connection 1 - Maple Grove Rd.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	160.2	75.1
Peak Hour	156.4	69.7
Max Day plus Fire 1	154.7	67.2

[1] Ground Elevation = 107.4 m

Connection 2 - Mykonos Cres.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	160.2	74.7
Peak Hour	156.4	69.3
Max Day plus Fire 1	147.0	55.9

[1] Ground Elevation = 107.6 m

Connection 3 - Bensinger Way

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	160.2	74.8
Peak Hour	156.4	69.4
Max Day plus Fire 1	141.4	48.0

[1] Ground Elevation = 107.6 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.

Moe Ghadban

From: Kuruvilla, Santhosh <Santhosh.Kuruvilla@ottawa.ca>
Sent: Friday, March 6, 2020 7:51 AM
To: Moe Ghadban
Cc: Shen, Stream
Subject: RE: Request for Boundary Conditions - 1869 Maple Grove Road
Attachments: 1869 Maple Grove _Boundary Conditions_04March2020.docx

Hi Moe,

Please find attached the boundary conditions for the subject application.

Also, a second feed may be required if the number of units fed by the P-loop exceeds 50. A new watermain connecting BC #1 and #3 is preferred.

Thanks,

Santhosh
Ext. 27599

From: Moe Ghadban <Moe.Ghadban@exp.com>
Sent: February 28, 2020 2:30 PM
To: Kuruvilla, Santhosh <Santhosh.Kuruvilla@ottawa.ca>
Subject: Request for Boundary Conditions - 1869 Maple Grove Road

We are working on a site plan application for 1869 Maple Grove Rd , and would appreciate if you could arrange for IAD/water Resources to provide hydraulic boundary conditions that we will need for the watermain design. I have attached a sketch of the site and the approximate boundary condition locations.

The following is a summary of the demands and the required fire flows (RFF) we have estimated. We would appreciate the hydraulic boundary conditions based on our estimated water demands and required fire flows as noted below:

There are 3 separate blocks, and they shall all connect into different streets (Maple Grove Rd, Mykonos Cres, and Bensinger Way).

1869 Maple Grove Rd (Block 1, Boundary Location #1):

Average Day: 0.09L/sec
Max Day: 0.8 L/sec
Peak Hour: 1.3 L/sec

Fire flow (RFF): 167 L/sec (based on FUS method)
Max Day + FF: 167.8 L/sec.

1869 Maple Grove Rd (Block 2, Boundary Location #2):

Average Day: 0.02L/sec
Max Day: 0.2 L/sec
Peak Hour: 0.31 L/sec
Fire flow (RFF): 117 L/sec (based on FUS method)
Max Day + FF: 117.2 L/sec.

1869 Maple Grove Rd (Block 3, Boundary Location #3):

Average Day: 0.09L/sec
Max Day: 0.8 L/sec
Peak Hour: 1.3 L/sec
Fire flow (RFF): 200 L/sec (based on FUS method)
Max Day + FF: 200.8 L/sec.

Regards,

Moe Ghadban, P.Eng
EXP | Engineering Designer
t : +1.613.688.1899 | m : +1.613.808.4089 | e : moe.ghadban@exp.com
2650 Queensview Drive
Suite 100
Ottawa, ON K2B 8H6
CANADA

Moe Ghadban

From: Matt Craig <mcraig@mvc.on.ca>
Sent: Wednesday, January 15, 2020 10:05 AM
To: Moe Ghadban
Cc: Jason Fitzpatrick; Bruce Thomas
Subject: RE: Request for SWM Criteria for 1869 Maple Grove

Hi Moe,

The original criteria in the Kanata West Mater Servicing Study is normal water quality control. Recent SWM facility (e.g. Arcadia ponds) have been designed for enhanced water quality control. This increase in criteria is at the request of the City Ottawa.

MVCA issued a permit for Pond 4 (Permit No. W14-126) so it is understood that water quality control criteria is already set for this specific subdivision.

Regards

Matt Craig | Manager of Planning and Regulations | Mississippi Valley Conservation Authority

www.mvc.on.ca |t. 613 253 0006 ext. 226| f. 613 253 0122 | mcraig@mvc.on.ca

---

From: Moe Ghadban <Moe.Ghadban@exp.com>
Sent: January 13, 2020 4:36 PM
To: Matt Craig <mcraig@mvc.on.ca>
Cc: Jason Fitzpatrick <jason.fitzpatrick@exp.com>; Bruce Thomas <bruce.thomas@exp.com>
Subject: FW: Request for SWM Criteria for 1869 Maple Grove

Hi Matt,

We are preparing a site servicing and stormwater report for a proposed 18 unit townhome development, located at 1869 Maple Grove Road in the City of Kanata. As the site is within the MVCA's jurisdiction we are requesting CA's clarification on the stormwater management requirements. The project will require Major Zoning By-law Amendment, Plan of Subdivision and Lifting of Part Lot Control Applications.

The subject property is within the Kanata west – Pond 4 subcatchment, which was designed for normal level of protection (70%TSS). In addition the storm water quantity control requirements were established at a 5 year capture with the minor system flows to the local 525mm on Maple Grove Dr with major system flows routed to maple grove drive. It is our intent to provide a storm connection from the interior rear yard areas, with the remaining drainage from the front yards to discharge directly to Maple Grove Dr, Bensinger Way, and Mykonos Cres.

Please see the attached site plan. Thank you for your review and input.

Regards,

Moe Ghadban
EXP | Engineering Designer
t : +1.613.688.1899 | m : +1.613.808.4089 | e : moe.ghadban@exp.com
2650 Queensview Drive
Suite 100
Ottawa, ON K2B 8H6
CANADA

Appendix F – Background Information

City of Ottawa Vault Drawings (Plan and Profiles) 10 pages

Excerpt pages from "Design Brief for the Reconstruction of Maple Grove Road Mattamy Homes", DSEL, May 31, 2012 (3 pages)

Tempest-Technical-Manual (page 5 only)

PAVEMENT DESIGN

40mm SUPERPAVE 12.5 ASPHALTIC CONCRETE WEAR COURSE
50mm SUPERPAVE 19.0 ASPHALTIC CONCRETE UPPER BINDER COURSE
50mm SUPERPAVE 19.0 ASPHALTIC CONCRETE LOWER BINDER COURSE
150mm GRANULAR "A" CRUSHED STONE OPSS
600mm GRANULAR "B" TYPE II OPSS

NOTE RE: WATERMAIN / WATER SERVICE

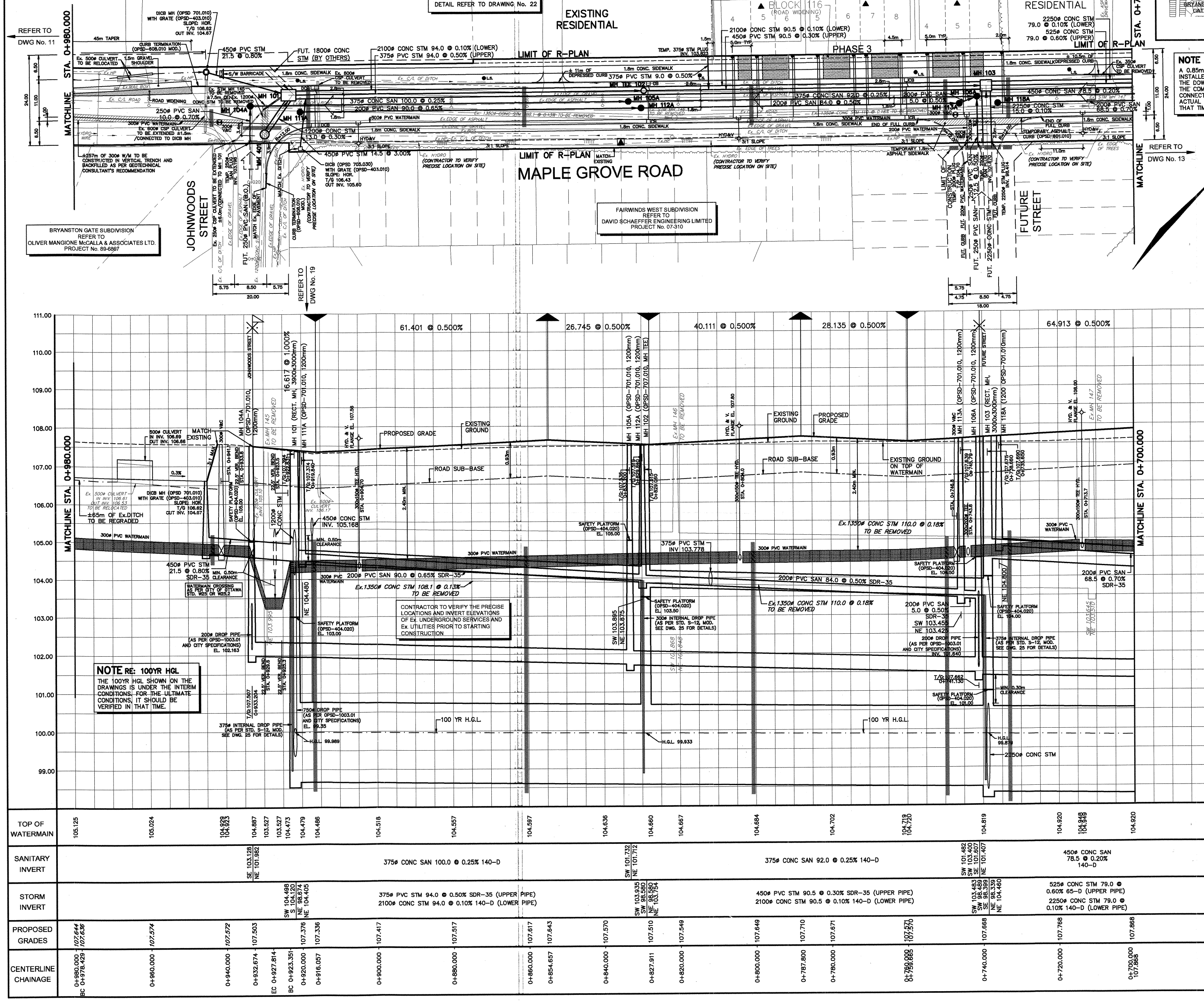
1. INSULATION REQUIRED FOR WATERMAIN / WATER SERVICE WHERE THE SEPARATION BETWEEN WATERMAIN / WATER SERVICE AND OTHER SERVICES AND STRUCTURES IS LESS THAN 1.5m AND THE COVER IS LESS THAN 2.4m. REFER TO CITY STD. W23 FOR DETAIL.
2. FOR SERVICE INSTALLATION AT SEWER CROSSING, REFER TO CITY STD. W38 FOR DETAIL.

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

NOTE: FOR MH101 AND MH103 BENCHING DETAIL REFER TO DRAWING No. 22

PERMISSION REQUIRED FOR WORK ON ADJACENT LANDS

FAIRWINDS NORTH SUBDIVISION REFER TO DAVID SCHAEFFER ENGINEERING LIMITED PROJECT No. 07-309



NOTE RE: MH 103
A 0.85m DIAMETER ORIFICE IS TO BE INSTALLED AT THE OUTLET OF MH 103 TO THE DOWNSTREAM OF THE SYSTEM UPON THE COMPLETION OF THE STORM SYSTEM CONNECTED TO ULTIMATE POND 4. THE ACTUAL ORIFICE SIZE TO BE VERIFIED IN THAT TIME.

KEY PLAN
SCALE 1:10000

LEGEND

- STORM MANHOLE
- SANITARY MANHOLE
- Ex. STORM MANHOLE
- Ex. SANITARY MANHOLE
- STORM MANHOLE BY OTHERS
- SANITARY MANHOLE BY OTHERS
- CATCH BASIN MANHOLE
- SINGLE STORM HOUSE CONNECTION
- SINGLE SANITARY HOUSE CONNECTION
- WATER CONNECTION
- HYDRANT
- TEE
- VALVE AND BOX
- VALVE & CHAMBER
- SINGLE/DOUBLE CATCHBASIN
- OVERLAND FLOW DIRECTION
- CLAY SEAL (REFER TO GENERAL NOTES. No.18, ON DWG. No. 1, AND GEOTECHNICAL CONSULTANT'S SPECIFICATIONS)
- PHASE LINE
- BUILDING ENVELOPE
- TRANSFORMER

Reviewed By Development Review Branch
Signed: [signature]
Date: Jan 21 2013

PLAN #14707

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 05-10-439-02, SURVEY DATED JULY 6, 2011 AND
PROJECT No. 0X-10-628-02, SURVEY DATED NOVEMBER 27, 2008 AND
PROJECT No. 06-10-561-01-00, SURVEY DATED FEBURARY 24, 2008 AND
PROJECT No. 06-10-628-00, SURVEY DATED MARCH 29, 2007.

TOPOGRAPHIC INFORMATION PROVIDED BY STANTEC CONSULTING LIMITED AND WEBSTER & SIMMONDS SURVEYING LIMITED, FILE No. 161610660-111 RECEIVED ON DECEMBER 1, 2006.

LEGAL INFORMATION

CALCULATED R-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 07-10-820-00, SURVEY DATED MAY 30, 2012.

BENCH MARK No. 0011988U502

STITTSVILLE CONCRETE CULVERT ALONG HAZELDEAN ROAD, 1.3 KM NE OF ROAD INTERSECTION WITH MAIN ST NORTH. BRASS CAP SET ON TOP OF CONC CULVERT, SOUTH SIDE OF THE ROAD, 30 CM WEST OF EASTERLY EXTREMITY, 30 CM NORTH OF THE SOUTH FACE, SLIGHTLY BELOW ROAD LEVEL.
ELEVATION = 106.039 m

No.	BY	DATE	DESCRIPTION
7	Z.L	13-01-04	REVISED FUTURE STREET LOCATION & SERVICING LAYOUT
6	Z.L	12-09-26	REVISED STM SEWER FROM CBMH TO MH 101 AS PER JFSA
5	Z.L	12-09-07	REPLACED MH TEE 401 WITH MANHOLE, AND CONNECTED DICB LEAD TO 2100ø STM BETWEEN MH 101 AND 102
4	Z.L	12-05-31	4th SUBMISSION
3	Z.L	12-04-13	3rd SUBMISSION
2	Z.L	12-02-14	2nd SUBMISSION
1	Z.L	11-08-02	1st SUBMISSION

Ottawa CITY OF OTTAWA

LICENSED PROFESSIONAL ENGINEER Z. LI PROVINCE OF ONTARIO

PROJECT No. 10-451

MATTAMY (FAIRWINDS NORTH) LIMITED

PLAN AND PROFILE OF MAPLE GROVE ROAD (STA. 0+700.000 TO STA. 0+980.000)

© DSEL

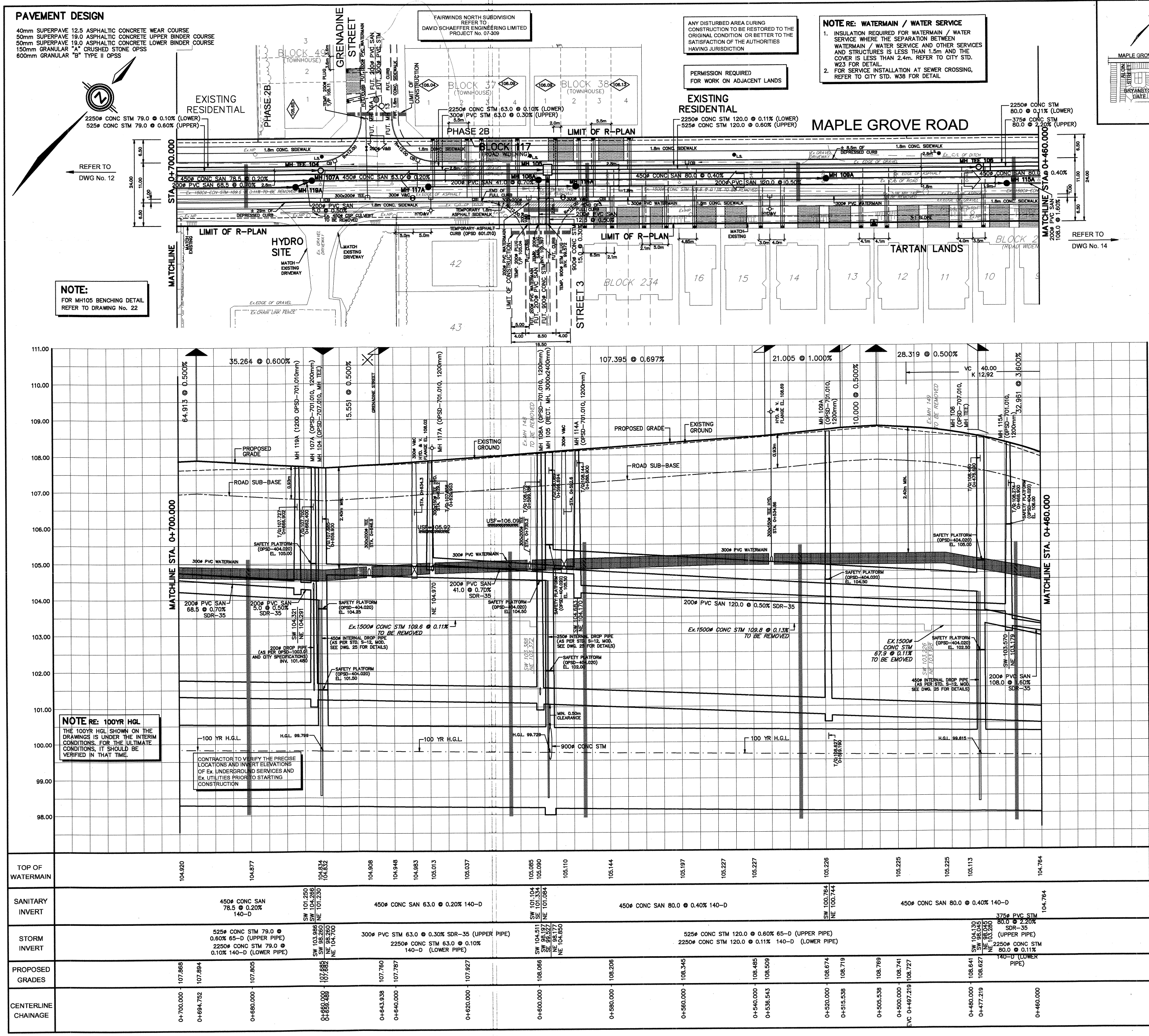
RECONSTRUCTION OF MAPLE GROVE ROAD

DSEL david schaeffer engineering ltd
120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

DRAWN BY: P.P./W.L.	CHECKED BY: K.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: K.M.	CHECKED BY: Z.L.		12
SCALE: H1:500, V1:50	DATE: JULY 2011		

D07-16-06-0014 MAPLE

14707



LEGEND

- STORM MANHOLE
- SANITARY MANHOLE
- Ex. STORM MANHOLE
- Ex. SANITARY MANHOLE
- STORM MANHOLE BY OTHERS
- SANITARY MANHOLE BY OTHERS
- CATCH BASIN MANHOLE
- SINGLE STORM HOUSE CONNECTION
- SINGLE SANITARY HOUSE CONNECTION
- WATER CONNECTION
- HYDRANT
- TEE
- VALVE AND BOX
- VALVE & CHAMBER
- SINGLE/DOUBLE CATCHBASIN
- OVERLAND FLOW DIRECTION
- CLAY SEAL (REFER TO GENERAL NOTES. No.18. ON DWG. No. 1, AND GEOTECHNICAL CONSULTANT'S SPECIFICATIONS)
- PHASE LINE
- BUILDING ENVELOPE
- TRANSFORMER

Reviewed By Development Review Branch
Signed: [signature]
Date: JAN 25, 2013
PLAN # 14707

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 05-10-439-02, SURVEY DATED JULY 6, 2011 AND PROJECT No. 0X-10-628-02, SURVEY DATED NOVEMBER 27, 2008 AND PROJECT No. 06-10-561-01-00, SURVEY DATED FEBURARY 24, 2008 AND PROJECT No. 06-10-628-00, SURVEY DATED MARCH 29, 2007.

TOPOGRAPHIC INFORMATION PROVIDED BY STANTEC CONSULTING LIMITED AND WEBSTER & SIMMONDS SURVEYING LIMITED, FILE No. 161610660-111 RECEIVED ON DECEMBER 1, 2006.

LEGAL INFORMATION

CALCULATED R-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 07-10-820-00, SURVEY DATED MAY 30, 2012.

BENCH MARK No. 0011988U502

STITTSVILLE CONCRETE CULVERT ALONG HAZELDEAN ROAD, 1.3 KM NE OF ROAD INTERSECTION WITH MAIN ST NORTH. BRASS CAP SET ON TOP OF CONC CULVERT, SOUTH SIDE OF THE ROAD, 30 CM WEST OF EASTERLY EXTREMITY, 30 CM NORTH OF THE SOUTH FACE, SLIGHTLY BELOW ROAD LEVEL.
ELEVATION = 106.039 m

No.	BY	DATE	DESCRIPTION
6	Z.L.	13-01-04	REVISED TARTAN LANDS FRONTAGE, SANITARY & STORM PIPES BETWEEN MH's 114A-118A & 108-1060 REVISED
5	Z.L.	12-09-26	REMOVED ICDS FOR CB AT MAPLE GROVE RD./GRENADINE ST. AS PER JFSA
4	Z.L.	12-05-31	4th SUBMISSION
3	Z.L.	12-04-13	3rd SUBMISSION
2	Z.L.	12-02-14	2nd SUBMISSION
1	Z.L.	11-08-02	1st SUBMISSION

BY

Ottawa CITY OF OTTAWA

LICENSED PROFESSIONAL ENGINEER Z. LI PROVINCE OF ONTARIO

PROJECT No. 10-451

PLAN AND PROFILE OF
MAPLE GROVE ROAD
(STA. 0+460.000 TO STA. 0+700.000)
© DSEL

MATTAMY (FAIRWINDS NORTH) LIMITED

RECONSTRUCTION OF MAPLE GROVE ROAD

DSEL david schaeffer engineering ltd
120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

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DESIGNED BY: K.M.	CHECKED BY: Z.L.		13
SCALE: H1:500, V1:50	DATE: JULY 2011		

D07-16-06-0014 MAPLE

14707

PAVEMENT DESIGN

40mm SUPERPAVE 12.5 ASPHALTIC CONCRETE WEAR COURSE
50mm SUPERPAVE 19.0 ASPHALTIC CONCRETE UPPER BINDER COURSE
50mm SUPERPAVE 19.0 ASPHALTIC CONCRETE LOWER BINDER COURSE
150mm GRANULAR "A" CRUSHED STONE OPSS
600mm GRANULAR "B" TYPE II OPSS

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

PERMISSION REQUIRED FOR WORK ON ADJACENT LANDS

EXISTING RESIDENTIAL

MONTSERRAT STREET

FAIRWINDS NORTH SUBDIVISION
REFER TO
DAVID SCHAEFFER ENGINEERING LIMITED
PROJECT No. 07-309

MAPLE GROVE ROAD

PHASE 1

PHASE 4

LIMIT OF R-PLAN

TARTAN LANDS

FUTURE STREET

MATCHLINE STA. 0+460.000

MATCHLINE STA. 0+210.000

REFER TO DWG No. 13

REFER TO DWG No. 15

KEY PLAN
SCALE 1:10000

NOTE:
FOR MH107 BENCHING DETAIL REFER TO DRAWING No. 22

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 1.5m 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 RE: 100YR HGL
THE 100YR HGL SHOWN ON THE DRAWINGS IS UNDER THE INTERIM CONDITIONS. FOR THE ULTIMATE CONDITIONS, IT SHOULD BE VERIFIED IN THAT TIME.

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

LEGEND

- STORM MANHOLE
- SANITARY MANHOLE
- Ex. STORM MANHOLE
- Ex. SANITARY MANHOLE
- STORM MANHOLE BY OTHERS
- SANITARY MANHOLE BY OTHERS
- CATCH BASIN MANHOLE
- SINGLE STORM HOUSE CONNECTION
- SINGLE SANITARY HOUSE CONNECTION
- WATER CONNECTION
- HYDRANT
- TEE
- VALVE AND BOX
- VALVE & CHAMBER
- SINGLE/DOUBLE CATCHBASIN
- OVERLAND FLOW DIRECTION
- CLAY SEAL (REFER TO GENERAL NOTES. No.18. ON DWG. No. 1, AND GEOTECHNICAL CONSULTANT'S SPECIFICATIONS)
- PHASE LINE
- BUILDING ENVELOPE
- TRANSFORMER

Reviewed By
Development Review Branch
Signed:
Date: Jan 15, 2012
PLAN # 14707

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 05-10-439-02, SURVEY DATED JULY 6, 2011 AND
PROJECT No. 04-10-628-02, SURVEY DATED NOVEMBER 27, 2008 AND
PROJECT No. 06-10-561-01-00, SURVEY DATED FEBURARY 24, 2008 AND
PROJECT No. 06-10-628-00, SURVEY DATED MARCH 29, 2007.

TOPOGRAPHIC INFORMATION PROVIDED BY STANTEC CONSULTING LIMITED AND WEBSTER & SIMMONDS SURVEYING LIMITED, FILE No. 161610660-111 RECEIVED ON DECEMBER 1, 2006.

LEGAL INFORMATION

CALCULATED R-PLAN PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 07-10-820-00, SURVEY DATED MAY 30, 2012.

BENCH MARK No. 0011988U502

SITTSVILLE CONCRETE CULVERT ALONG HAZELDEAN ROAD, 1.3 KM NE OF ROAD INTERSECTION WITH MAIN ST NORTH. BRASS CAP SET ON TOP OF CONC CULVERT, SOUTH SIDE OF THE ROAD, 30 CM WEST OF EASTERLY EXTREMITY, 30 CM NORTH OF THE SOUTH FACE, SLIGHTLY BELOW ROAD LEVEL.
ELEVATION = 106.039 m

No.	BY	DATE	DESCRIPTION
5	Z.L.	13-01-04	REVISED TARTAN LANDS FRONTAGE, HYDRANT REVISED OPPOSITE 7/9 MAPLE GROVE ROAD, SUMMARY & STORM PIPES BETWEEN MH's 116A~116A & 108~1060 REVISED
4	Z.L.	12-05-31	4th SUBMISSION
3	Z.L.	12-04-13	3rd SUBMISSION
2	Z.L.	12-02-14	2nd SUBMISSION
1	Z.L.	11-08-02	1st SUBMISSION

Ottawa CITY OF OTTAWA

PROJECT No. 10-451

LICENSED PROFESSIONAL ENGINEER
Z. LI
1-0-04
PROVINCE OF ONTARIO

PLAN AND PROFILE OF
MAPLE GROVE ROAD
(STA. 0+210.000 TO STA. 0+460.000)
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MATTAMY (FAIRWINDS NORTH) LIMITED

RECONSTRUCTION OF MAPLE GROVE ROAD

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david schaeffer engineering ltd
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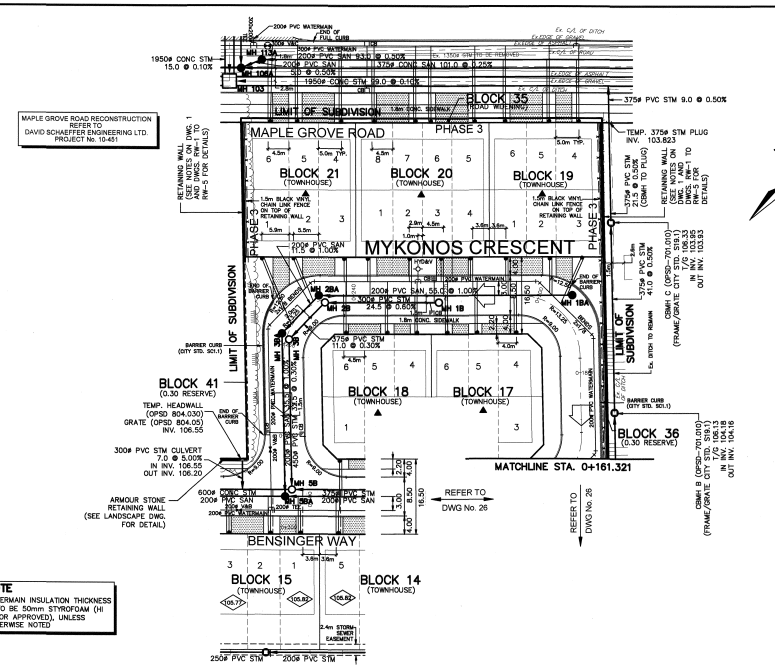
DESIGNED BY: K.M.	CHECKED BY: Z.L.		14
SCALE: H:1:500 ,V:1:50	DATE: JULY 2011		

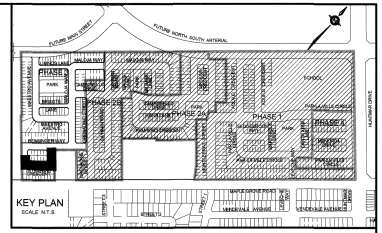
D07-16-06-0014 MAPLE

14707

PAVEMENT DESIGN

40mm HL-3 OR SUPERPAVE 12.5 ASPHALT CONCRETE
50mm HL-8 SUPERPAVE 19.0 ASPHALT CONCRETE BINDER COURSE
150mm GRANULAR "A" OPSS
400mm MIN. GRANULAR "B" TYPE II





NOTE

WATERMAIN INSULATION THICKNESS IS TO BE 50mm STYROFOAM (HI 60 OR APPROVED), UNLESS OTHERWISE NOTED

LEGEND

- STORM MANHOLE
- SANITARY MANHOLE
- CATCHBASIN MANHOLE RLCB = TEE SECTION (REFER TO CITY STD. S30)
- SINGLE STORM HOUSE CONNECTION
- SINGLE SANITARY HOUSE CONNECTION
- WATER CONNECTION
- HYDRANT
- TEE
- VALVE AND BOX
- VALVE & CHAMBER
- SINGLE/DOUBLE CATCHBASIN
- CATCHBASINS DENOTED AS 100YR INTAKES, WITH STANDARD LEADS UNLESS OTHERWISE NOTED
- CATCHBASINS WITH INLET CONTROL DEVICE TYPE A (Q max = 21.0 l/s)
- CATCHBASINS WITH INLET CONTROL DEVICE TYPE B (Q max = 28.4 l/s)
- CATCHBASINS WITH INLET CONTROL DEVICE TYPE C (Q max = 37.0 l/s)
- CATCHBASINS WITH INLET CONTROL DEVICE TYPE D (Q max = 54.0 l/s)
- LS LIGHT STANDARD
- 100.00 MIN. U/S FOOTING ELEVATION
- OVERLAND FLOW DIRECTION
- EXTERNAL OVERLAND FLOW DIRECTION
- 250ø PERFORATED PIPE (REFER TO CITY STD'S S29, S30 FOR REAR YARD TRENCH AND PIPE DETAILS ONLY)
- BUILDING ENVELOPE
- CLAY SEAL (REFER TO CITY STD. S8, GENERAL NOTES. No.18. 19. ON DWG. No. 1, AND GEOTECHNICAL CONSULTANT'S SPECIFICATIONS)
- INFERRED TOP OF BEDROCK ELEVATION PROVIDED BY PATERSON GROUP CONSULTING ENGINEERS MARCH 2009
- SLAB ON GRADE
- WOOD ACOUSTIC FENCE (SEE LANDSCAPE DWG. FOR DETAILS)
- 1.5m HIGH BLACK VINYL CHAIN LINK FENCE
- PHASE LINE
- OTHER PHASES

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 06-10-561-00-00, SURVEY DATED JULY 6, 2007 AND PROJECT No. 06-10-561-01-00, SURVEY DATED FEBRUARY 24, 2009.

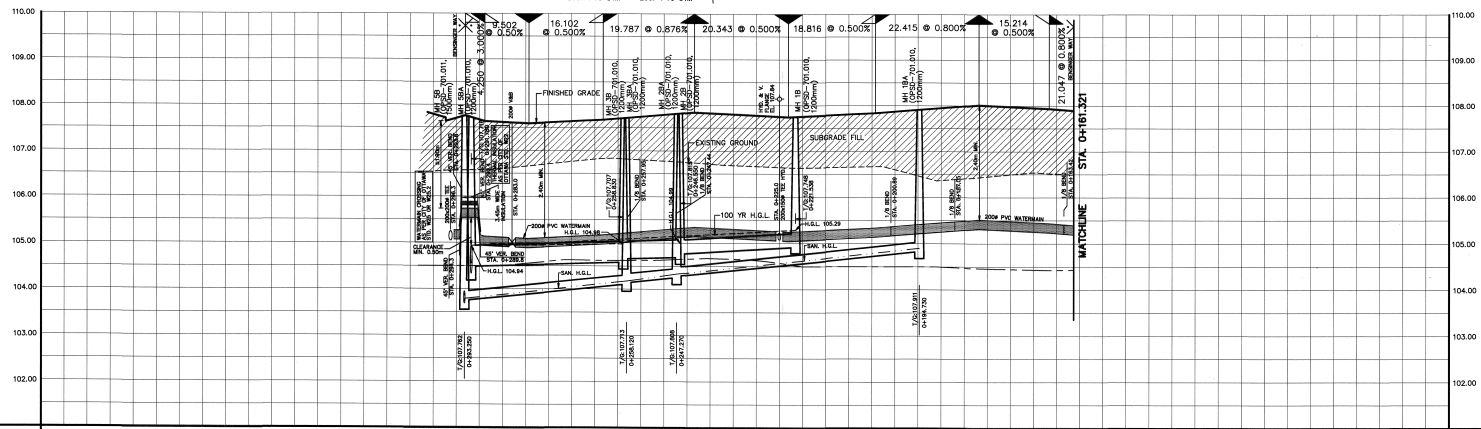
LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 06-10-561-00-2B(PHASE 3), SURVEY DATED JULY 15, 2013.

BENCH MARK No. 00119881502

TOWNSHIP: STITTSVILLE
BRASS CAP SET IN ROCK ALONG HAZELDEAN ROAD, 1.3 KM NE OF ROAD INTERSECTION WITH MAIN ST NORTH, BRASS CAP SET ON TOP OF CONC CULVERT, SOUTH SIDE OF THE ROAD, 30 CM WEST OF EASTERLY EXTREMITY, 30 CM NORTH OF THE SOUTH FACE, SLIGHTLY BELOW ROAD LEVEL.
ELEVATION = 106.030 m

No.	BY	DATE	DESCRIPTION
11	C.K.S	16-08-23	ISSUED FOR MYLAR PRINTING
10	T.S.	14-01-08	AS-RECORDED
9	Z.L.	13-07-30	REVISED AS PER M-PLAN, CITY COMMENTS, AND CUP CIRCULATION
8	Z.L.	13-04-02	REVISION AS PER MPLAN CHANGE – PHASE 3
7	Z.L.	12-05-25	REVISION AS PER MPLAN CHANGE
6	Z.L.	12-05-02	MOE SUBMISSION
5	Z.L.	12-04-05	5TH SUBMISSION – PHASE 2B, 3, AND 4
4	Z.L.	10-03-03	4TH SUBMISSION – PHASE 2B, 3, AND 4
3	Z.L.	08-12-19	3RD SUBMISSION
2	Z.L.	08-10-17	2ND SUBMISSION
1	Z.L.	08-06-27	1ST SUBMISSION



TOP OF WATERMAIN	
SANITARY INVERT	200ø PVC SAN 35.5 @ 1.90% SDR-35 0.99% · 200ø PVC SAN 11.5 @ 1.00% SDR-35 1.39% · 200ø PVC SAN 55.0 @ 0.96% SDR-35 0.96%
STORM INVERT	450ø PVC STM 32.5 @ 0.30% SDR-35 0.25% · 375ø PVC STM 11.0 @ 0.30% SDR-35 0.30% · 300ø PVC STM 24.5 @ 0.60% SDR-35 0.57%
PROPOSED GRADES	
CENTERLINE CHAINAGE	0+300.000 · PI 0+293.061 · VPI 0+288.811 · 0+280.000 · VPI 0+279.309 · 0+260.000 · VPI 0+253.207 · EC 0+243.420 · 0+260.000 · VPI 0+243.420 · BC 0+241.668 · 0+240.000 · 0+223.077 · VPI 0+220.000 · 0+204.261 · VPI 0+200.000 · BC 0+183.672 · VPI 0+181.846 · EC 0+180.000 · 0+166.632 · VPI 0+161.321

CITY OF OTTAWA

PROJECT No. 07-309

LICENSED PROFESSIONAL ENGINEER · A. C. FINNSON · 100149736 · 16-08-23 · PROVINCE OF ONTARIO

PLAN AND PROFILE OF
MYKONOS CRESCENT
(STA. 0+161.321 TO STA. 0+293.257) © DSEL

MATTAMY (FAIRWINDS NORTH) LIMITED

FAIRWINDS NORTH SUBDIVISION
PHASE 3

DSEL david schaeffer engineering ltd
120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

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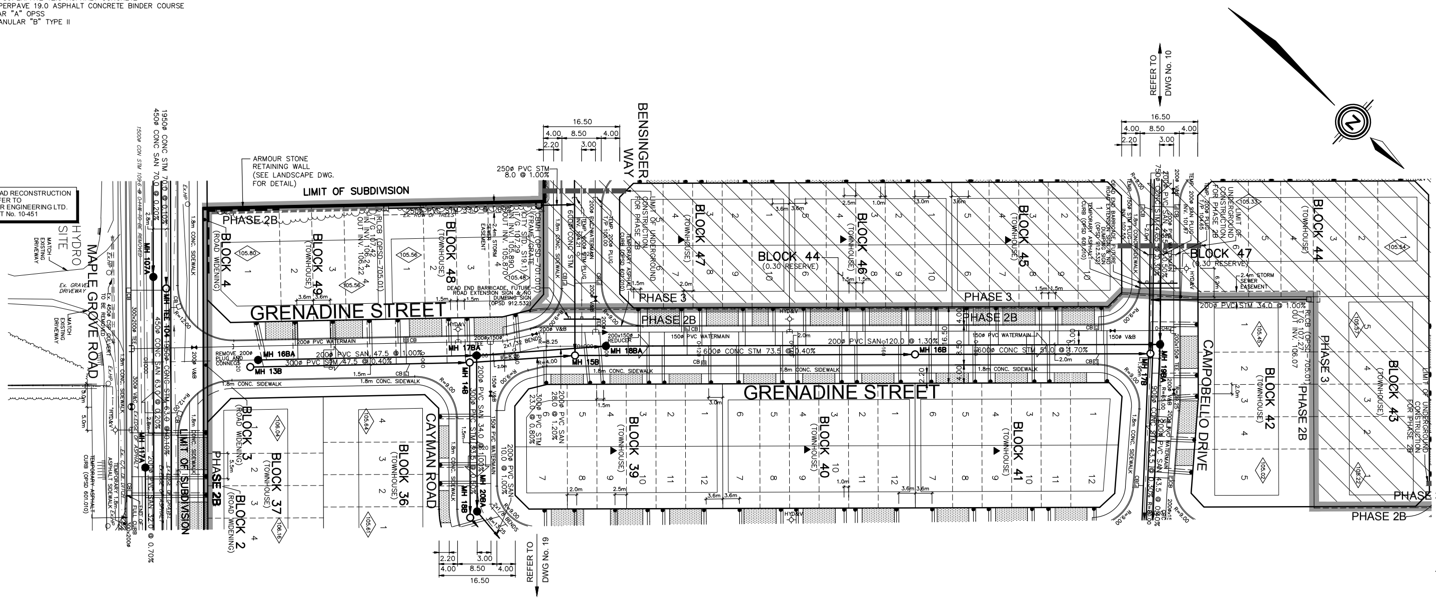
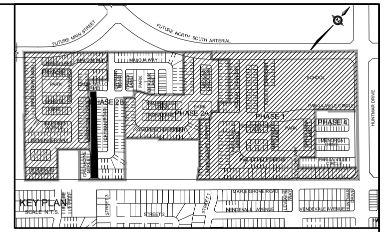
SCALE: H 1:500 , V 1:50	DATE: JUNE 2008		

14707

PAVEMENT DESIGN

40mm HL-3 OR SUPERPAVE 12.5 ASPHALT CONCRETE
50mm HL-8 SUPERPAVE 19.0 ASPHALT CONCRETE BINDER COURSE
150mm GRANULAR "A" OPSS
400mm MIN. GRANULAR "B" TYPE II





LEGEND

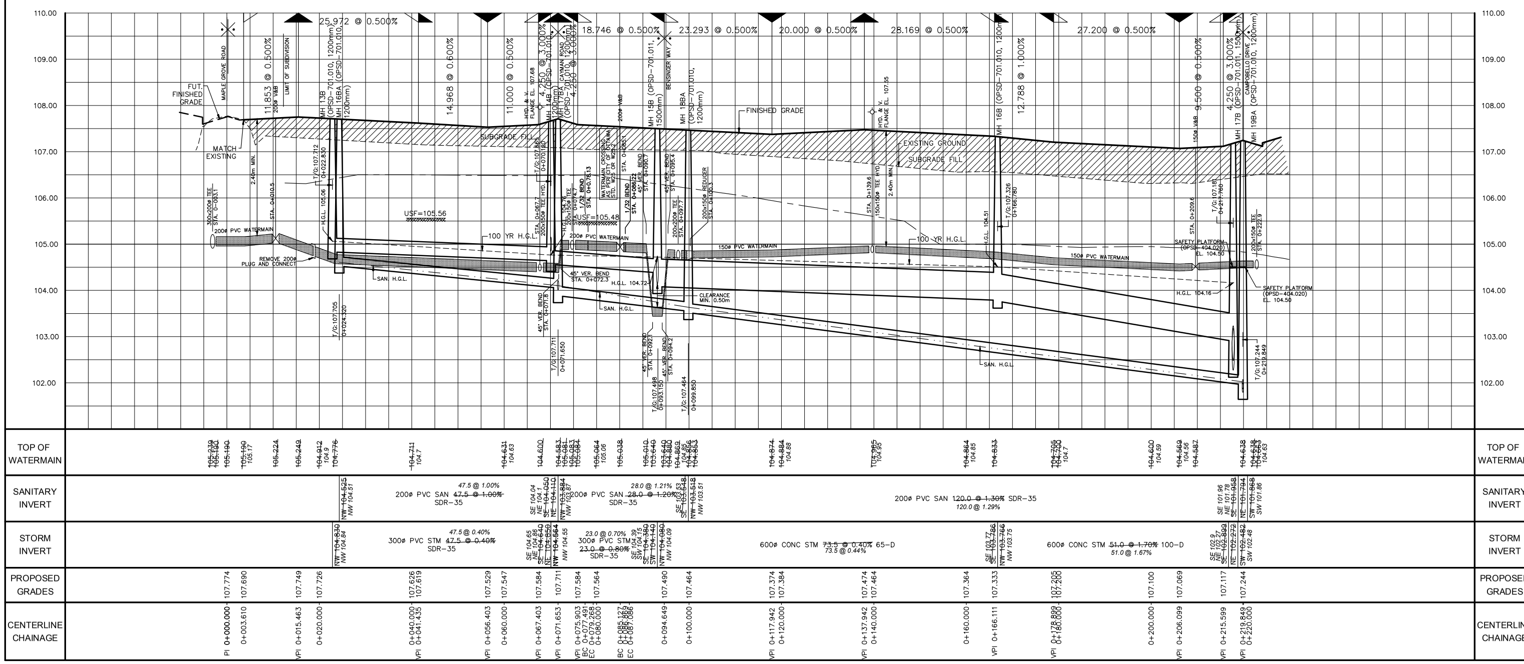
- STORM MANHOLE
- SANITARY MANHOLE
- CATCHBASIN MANHOLE
- RLCB – TEE SECTION (REFER TO CITY STD. S30)
- SINGLE STORM HOUSE CONNECTION
- SINGLE SANITARY HOUSE CONNECTION
- WATER CONNECTION
- HYDRANT
- TEE
- VALVE AND BOX
- VALVE & CHAMBER
- SINGLE/DOUBLE CATCHBASIN
- CATCHBASINS DENOTED AS 100YR INTAKES, WITH STANDARD LEADS UNLESS OTHERWISE NOTED
- CATCHBASINS WITH INLET CONTROL DEVICE TYPE A (Q max = 21.0 l/s)
- CATCHBASINS WITH INLET CONTROL DEVICE TYPE B (Q max = 28.4 l/s)
- CATCHBASINS WITH INLET CONTROL DEVICE TYPE C (Q max = 37.0 l/s)
- CATCHBASINS WITH INLET CONTROL DEVICE TYPE D (Q max = 54.0 l/s)
- LIGHT STANDARD
- MIN. U/S FOOTING ELEVATION
- OVERLAND FLOW DIRECTION
- EXTERNAL OVERLAND FLOW DIRECTION
- 250ø PERFORATED PIPE (REFER TO CITY STD'S S29, S30 FOR REAR YARD TRENCH AND PIPE DETAILS ONLY)
- BUILDING ENVELOPE
- CLAY SEAL (REFER TO CITY STD. S8, GENERAL NOTES. No.18. 19. ON DWG. No. 1, AND GEOTECHNICAL CONSULTANT'S SPECIFICATIONS)
- INFERRED TOP OF BEDROCK ELEVATION PROVIDED BY PATERSON GROUP CONSULTING ENGINEERS MARCH 2009
- SLAB ON GRADE
- WOOD ACOUSTIC FENCE (SEE LANDSCAPE DWG. FOR DETAILS)
- PHASE LINE
- PHASE 3

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 06-10-561-00-00, SURVEY DATED JULY 6, 2007 AND PROJECT No. 06-10-561-01-00, SURVEY DATED FEBRUARY 24, 2009.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 06-10-561-00-PH 2B & PH 4, SURVEY DATED JULY 31, 2012.



BENCH MARK No. 0011988U502

TOWNSHIP: STITTSVILLE
CONCRETE CULVERT ALONG HAZELDEAN ROAD, 1.3 KM NE OF ROAD INTERSECTION WITH MAIN ST NORTH. BRASS CAP SET ON TOP OF CONC CULVERT, SOUTH SIDE OF THE ROAD, 30 CM WEST OF EASTERLY EXTREMITY, 30 CM NORTH OF THE SOUTH FACE, SLIGHTLY BELOW ROAD LEVEL.
ELEVATION = 106.039 m

No.	BY	DATE	DESCRIPTION	BY
10	C.K.S	16-07-20	ISSUED FOR MYLAR PRINTING	
9	T.S.	14-01-08	AS-RECORDED	
8	Z.L.	12-08-02	REVISION AS PER MPLAN CHANGE – PHASE 2B AND 4	
7	Z.L.	12-05-25	REVISION AS PER MPLAN CHANGE	
6	Z.L.	12-05-02	MOE SUBMISSION	
5	Z.L.	12-04-05	5TH SUBMISSION – PHASE 2B, 3, AND 4	
4	Z.L.	10-03-03	4TH SUBMISSION – PHASE 2B, 3, AND 4	
3	Z.L.	08-12-19	3RD SUBMISSION	
2	Z.L.	08-10-17	2ND SUBMISSION	
1	Z.L.	08-06-27	1ST SUBMISSION	

Ottawa CITY OF OTTAWA

LICENSED PROFESSIONAL ENGINEER A. C. FINNSON 100149736 16-07-20 PROVINCE OF ONTARIO

PROJECT No. 07-309

PLAN AND PROFILE OF
GRENADINE STREET
(STA. 0+000.000 TO STA. 0+219.849)
© DSEL

MATTAMY (FAIRWINDS NORTH) LIMITED

FAIRWINDS NORTH SUBDIVISION
PHASE 2B AND 4

DSEL david schaeffer engineering ltd
120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
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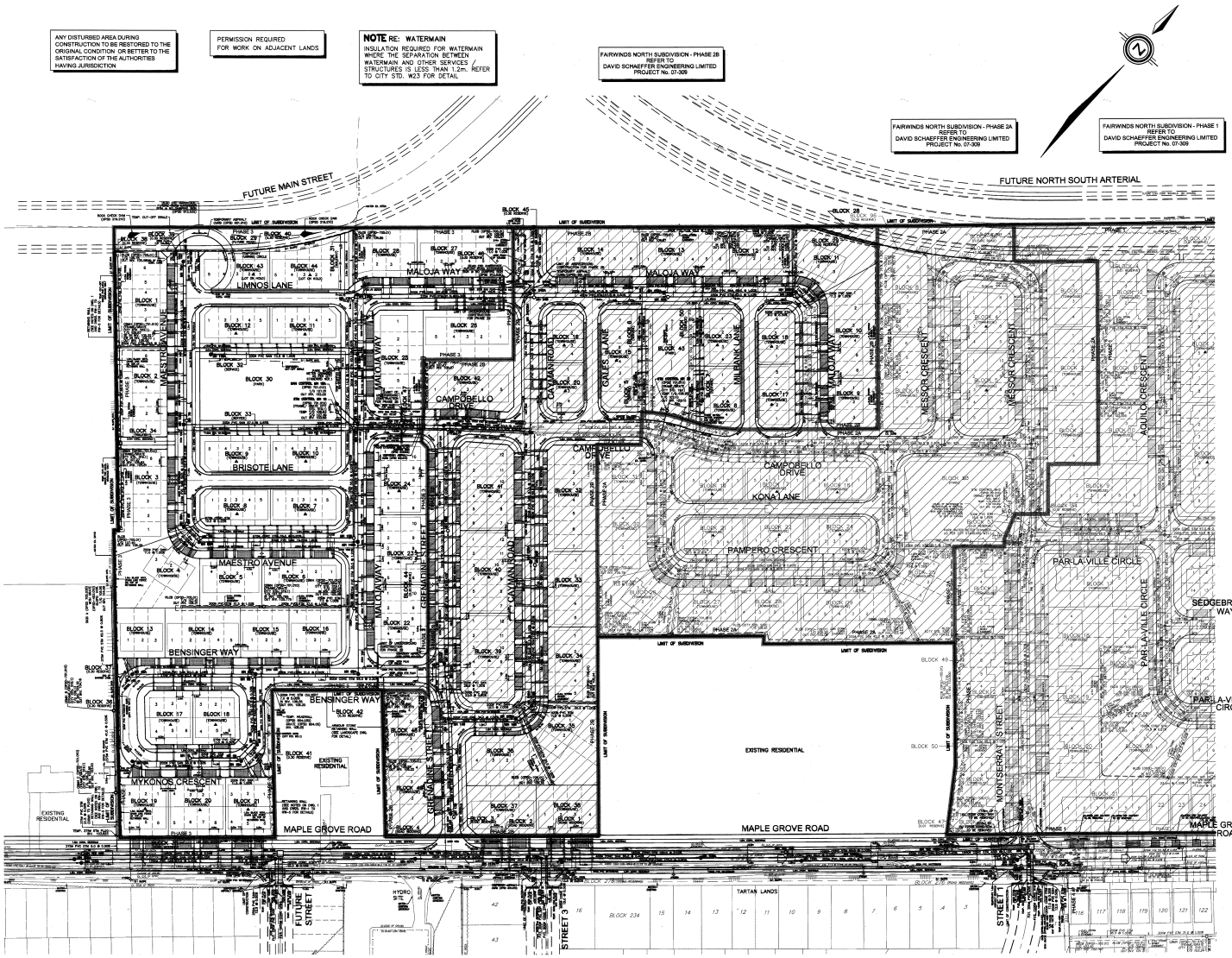
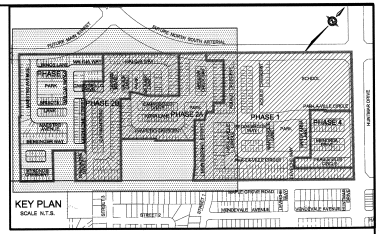
DESIGNED BY: K.M.	CHECKED BY: Z.L.		21
SCALE: H1:500, V1:50	DATE: JUNE 2008		





LEGEND

- STORM MANHOLE
- SANITARY MANHOLE
- CATCHBASIN MANHOLE
- RLCB – TEE SECTION (REFER TO CITY STD. S30)
- SINGLE STORM HOUSE CONNECTION
- SINGLE SANITARY HOUSE CONNECTION
- WATER CONNECTION
- HYDRANT
- TEE
- VALVE & BOX
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- CATCHBASINS WITH INLET CONTROL DEVICE TYPE D (Q max = 54.0 l/s)
- PHASE LINE
- OVERLAND FLOW DIRECTION
- EXTERNAL OVERLAND FLOW DIRECTION
- WOOD ACOUSTIC FENCE (SEE LANDSCAPE DWG. FOR DETAILS)
- 1.5m HIGH BLACK VINYL CHAIN LINK FENCE
- 250ø PERFORATED PIPE (REFER TO CITY STD'S S29, S30 FOR REAR YARD TRENCH AND PIPE DETAILS ONLY)
- SLAB ON GRADE
- BUILDING ENVELOPE
- OTHER PHASES

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 06-10-561-00-00, SURVEY DATED JULY 6, 2007 AND PROJECT No. 06-10-561-01-00, SURVEY DATED FEBRUARY 24, 2009.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 06-10-561-00-28(PHASE 3), SURVEY DATED JULY 15, 2013.

BENCH MARK No. 0011988U502

TOWNSHIP: STITTSVILLE
CONCRETE CULVERT ALONG HAZELDEAN ROAD, 1.3 KM NE OF ROAD INTERSECTION WITH MAIN ST NORTH. BRASS CAP SET ON TOP OF CONC CULVERT, SOUTH SIDE OF THE ROAD, 30 CM WEST OF EASTERLY EXTREMITY, 30 CM NORTH OF THE SOUTH FACE, SLIGHTLY BELOW ROAD LEVEL.
ELEVATION = 106.039 m

No.	BY	DATE	DESCRIPTION
9	Z.L.	13-07-30	REVISED AS PER M-PLAN, CITY COMMENTS, AND CUP CIRCULATION
8	Z.L.	13-04-02	REVISION AS PER MPLAN CHANGE – PHASE 3
7	Z.L.	12-05-25	REVISION AS PER MPLAN CHANGE
6	Z.L.	12-05-02	MOE SUBMISSION
5	Z.L.	12-04-05	5TH SUBMISSION – PHASES 2B, 3, AND 4
4	Z.L.	10-03-03	4TH SUBMISSION – PHASES 2B, 3, AND 4
3	Z.L.	08-12-19	3RD SUBMISSION
2	Z.L.	08-10-17	2ND SUBMISSION
1	Z.L.	08-06-27	1ST SUBMISSION

CITY OF OTTAWA

PROJECT No. 07-309

PROFESSIONAL ENGINEER – Z. LI – 15-07-30 – PROVINCE OF ONTARIO

GENERAL PLAN

© DSEL

MATTAMY (FAIRWINDS NORTH) LIMITED

FAIRWINDS NORTH SUBDIVISION
PHASE 3

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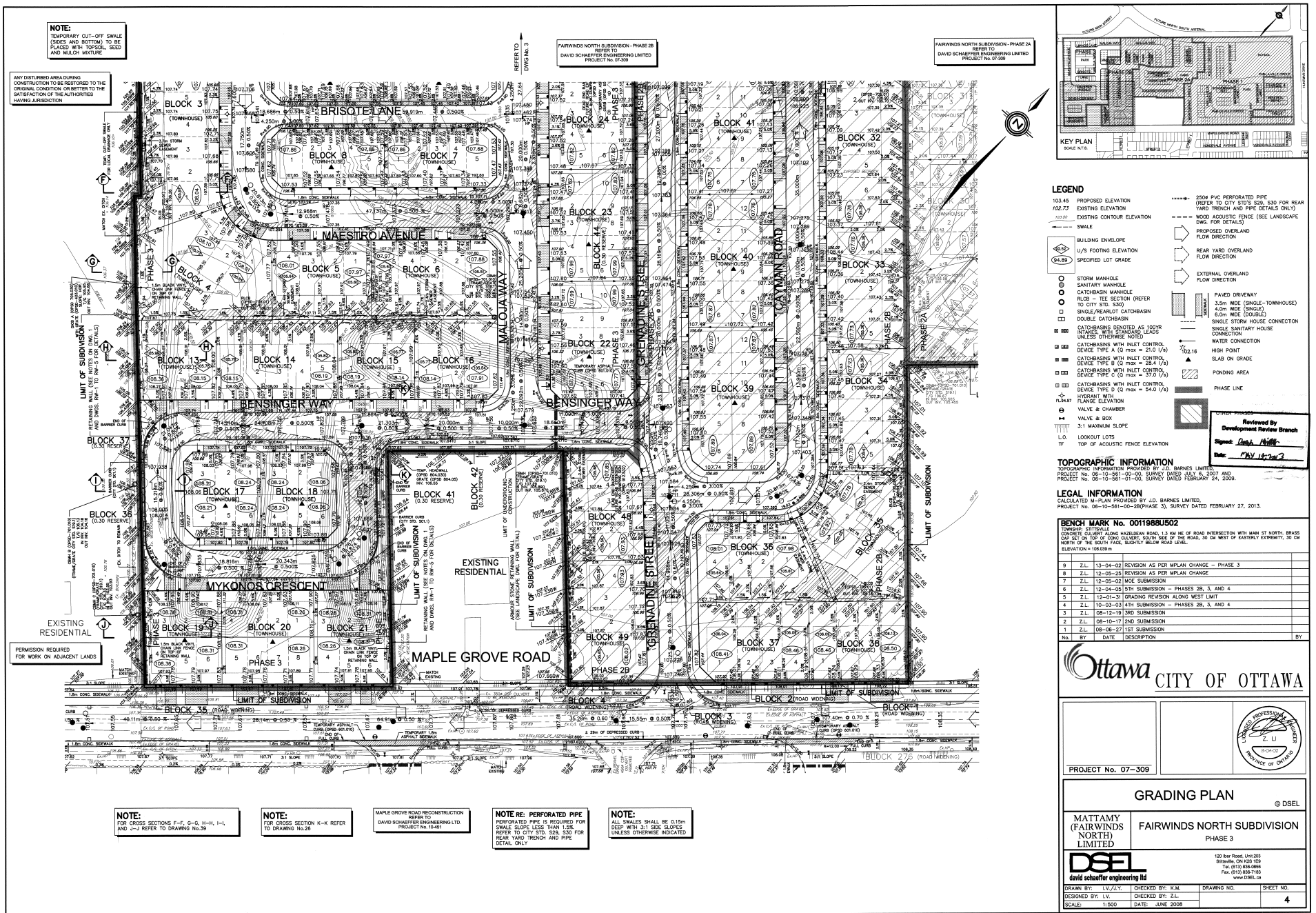
DRAWN BY: P.P./W.L.	CHECKED BY: K.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: K.M.	CHECKED BY: Z.L.		2
SCALE: 1:1000	DATE: JUNE 2008		

D07-16-0014

14707


NOTE:
TEMPORARY CUT-OFF SWALE (SIDES AND BOTTOM) TO BE PLACED WITH TOPSOIL, SEED AND MULCH MIXTURE
ANY DISTURBED AREA DURING CONSTRUCTION TO BE RESTORED TO THE ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITIES HAVING JURISDICTION
REFER TO DWG No. 3
FAIRWINDS NORTH SUBDIVISION - PHASE 2B REFER TO DAVID SCHAEFFER ENGINEERING LIMITED PROJECT No. 07-309
FAIRWINDS NORTH SUBDIVISION - PHASE 2A REFER TO DAVID SCHAEFFER ENGINEERING LIMITED PROJECT No. 07-309
BRISOTE LANE
MAESTRO AVENUE
MALOJA WAY
CAYMAN ROAD
GRENADINE STREET
BENSINGER WAY
MYKONOS CRESCENT
MAPLE GROVE ROAD
EXISTING RESIDENTIAL
LIMIT OF SUBDIVISION
PERMISSION REQUIRED FOR WORK ON ADJACENT LANDS
NOTE:
FOR CROSS SECTIONS F-F, G-G, H-H, I-I, AND J-J REFER TO DRAWING No.39
NOTE:
FOR CROSS SECTION K-K REFER TO DRAWING No.26
MAPLE GROVE ROAD RECONSTRUCTION REFER TO DAVID SCHAEFFER ENGINEERING LTD. PROJECT No. 10-451
NOTE RE: PERFORATED PIPE
PERFORATED PIPE IS REQUIRED FOR SWALE SLOPE LESS THAN 1.5% REFER TO CITY STD. S29, S30 FOR REAR YARD TRENCH AND PIPE DETAIL ONLY
NOTE:
ALL SWALES SHALL BE 0.15m DEEP WITH 3:1 SIDE SLOPES UNLESS OTHERWISE INDICATED
KEY PLAN
SCALE N.T.S.
LEGEND
103.45 PROPOSED ELEVATION
102.73 EXISTING ELEVATION
103.00 EXISTING CONTOUR ELEVATION
SWALE
BUILDING ENVELOPE
92.50 U/S FOOTING ELEVATION
94.69 SPECIFIED LOT GRADE
STORM MANHOLE
SANITARY MANHOLE
CATCHBASIN MANHOLE
RLCB – TEE SECTION (REFER TO CITY STD. S30)
SINGLE/REARLOT CATCHBASIN
DOUBLE CATCHBASIN
CATCHBASINS DENOTED AS 100YR INTAKES, WITH STANDARD LEADS UNLESS OTHERWISE NOTED
CATCHBASINS WITH INLET CONTROL DEVICE TYPE A (Q max = 21.0 l/s)
CATCHBASINS WITH INLET CONTROL DEVICE TYPE B (Q max = 28.4 l/s)
CATCHBASINS WITH INLET CONTROL DEVICE TYPE C (Q max = 37.0 l/s)
CATCHBASINS WITH INLET CONTROL DEVICE TYPE D (Q max = 54.0 l/s)
HYDRANT WITH FLANGE ELEVATION
VALVE & CHAMBER
VALVE & BOX
3:1 MAXIMUM SLOPE
L.O. LOOKOUT LOTS
TF TOP OF ACOUSTIC FENCE ELEVATION
250ø PVC PERFORATED PIPE (REFER TO CITY STD'S S29, S30 FOR REAR YARD TRENCH AND PIPE DETAILS ONLY)
WOOD ACOUSTIC FENCE (SEE LANDSCAPE DWG. FOR DETAILS)
PROPOSED OVERLAND FLOW DIRECTION
REAR YARD OVERLAND FLOW DIRECTION
EXTERNAL OVERLAND FLOW DIRECTION
PAVED DRIVEWAY
3.5m WIDE (SINGLE-TOWNHOUSE)
4.0m WIDE (SINGLE)
6.0m WIDE (DOUBLE)
SINGLE STORM HOUSE CONNECTION
SINGLE SANITARY HOUSE CONNECTION
WATER CONNECTION
102.16 HIGH POINT
SLAB ON GRADE
PONDING AREA
PHASE LINE
Reviewed by Development Review Branch
Signed: Derek Moodie
Date: MAY 15, 2013
TOPOGRAPHIC INFORMATION
TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED.
PROJECT No. 06-10-561-00-00, SURVEY DATED JULY 6, 2007 AND
PROJECT No. 06-10-561-01-00, SURVEY DATED FEBRUARY 24, 2009.
LEGAL INFORMATION
CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED.
PROJECT No. 06-10-561-00-2B(PHASE 3), SURVEY DATED FEBRUARY 27, 2013.
BENCH MARK No. 0011988U502
TOWNSHIP: SITTSVILLE
CONCRETE CULVERT ALONG HAZELDEAN ROAD, 1.3 KM NE OF ROAD INTERSECTION WITH MAIN ST NORTH. BRASS CAP SET ON TOP OF CONC CULVERT, SOUTH SIDE OF THE ROAD, 30 CM WEST OF EASTERLY EXTREMITY, 30 CM NORTH OF THE SOUTH FACE. SLIGHTLY BELOW ROAD LEVEL.
ELEVATION = 108.039 m
No. BY DATE DESCRIPTION
9 Z.L. 13-04-02 REVISION AS PER MPLAN CHANGE – PHASE 3
8 Z.L. 12-05-25 REVISION AS PER MPLAN CHANGE
7 Z.L. 12-05-02 MOE SUBMISSION
6 Z.L. 12-04-05 5TH SUBMISSION – PHASES 2B, 3, AND 4
5 Z.L. 12-01-31 GRADING REVISION ALONG WEST LIMIT
4 Z.L. 10-03-03 4TH SUBMISSION – PHASES 2B, 3, AND 4
3 Z.L. 08-12-19 3RD SUBMISSION
2 Z.L. 08-10-17 2ND SUBMISSION
1 Z.L. 08-06-27 1ST SUBMISSION
CITY OF OTTAWA
PROJECT No. 07-309
LICENSED PROFESSIONAL ENGINEER Z. LI 100100 PROVINCE OF ONTARIO
GRADING PLAN
© DSEL
MATTAMY (FAIRWINDS NORTH) LIMITED
FAIRWINDS NORTH SUBDIVISION
PHASE 3
DSEL david schaeffer engineering ltd
120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca
DRAWN BY: I.V./J.Y. CHECKED BY: K.M.
DESIGNED BY: I.V. CHECKED BY: Z.L.
SCALE: 1:500 DATE: JUNE 2008
DRAWING NO.
SHEET NO. 4
14707
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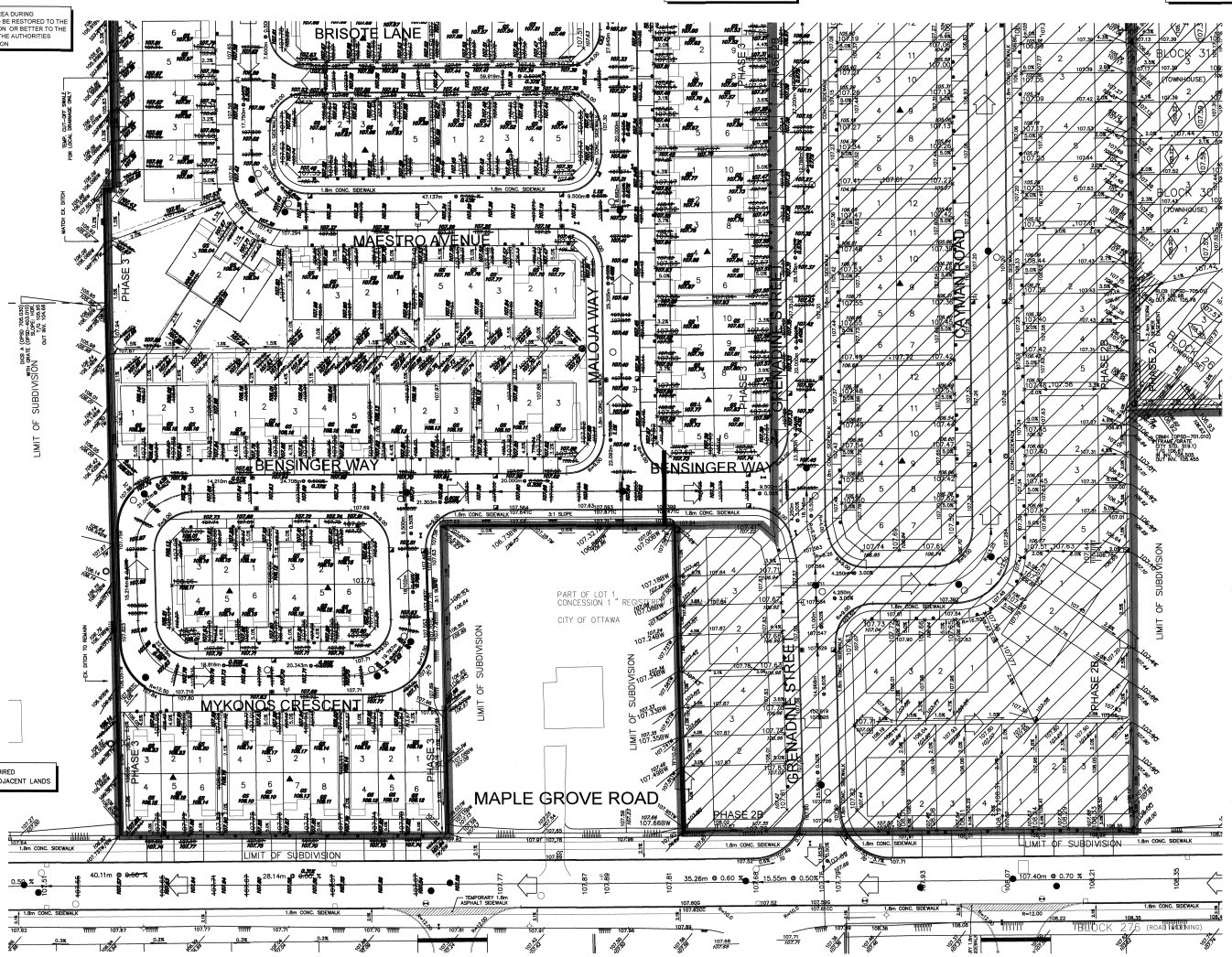
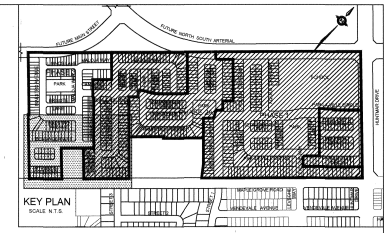




LEGEND

- 103.45 PROPOSED ELEVATION
- 102.73 EXISTING ELEVATION
- 103.00 EXISTING CONTOUR ELEVATION
- SWALE
- 92.50 / 94.89 BUILDING ENVELOPE U/S FOOTING ELEVATION / SPECIFIED LOT GRADE
- STORM MANHOLE
- SANITARY MANHOLE
- CATCHBASIN MANHOLE
- RLCB — TEE SECTION (REFER TO CITY STD. S30)
- SINGLE/REARLOT CATCHBASIN
- DOUBLE CATCHBASIN
- CATCHBASINS DENOTED AS 100YR INTAKES, WITH STANDARD LEADS UNLESS OTHERWISE NOTED
- CATCHBASINS WITH INLET CONTROL DEVICE TYPE A (Q max = 21.0 l/s)
- CATCHBASINS WITH INLET CONTROL DEVICE TYPE B (Q max = 28.1 l/s)
- CATCHBASINS WITH INLET CONTROL DEVICE TYPE C (Q max = 37.0 l/s)
- CATCHBASINS WITH INLET CONTROL DEVICE TYPE D (Q max = 54.0 l/s)
- FL.94.57 HYDRANT WITH FLANGE ELEVATION
- VALVE & CHAMBER
- VALVE & BOX
- 3:1 MAXIMUM SLOPE
- L.O. LOOKOUT LOTS
- TF TOP OF ACOUSTIC FENCE ELEVATION
- 250ø PVC PERFORATED PIPE (REFER TO CITY STD'S S29, S30 FOR REAR YARD TRENCH AND PIPE DETAILS ONLY)
- WOOD ACOUSTIC FENCE (SEE LANDSCAPE DWG. FOR DETAILS)
- 1.5m HIGH BLACK VINYL CHAIN LINK FENCE
- PROPOSED OVERLAND FLOW DIRECTION
- REAR YARD OVERLAND FLOW DIRECTION
- EXTERNAL OVERLAND FLOW DIRECTION
- PAVED DRIVEWAY
  - 3.5m WIDE (SINGLE-TOWNHOUSE)
  - 4.0m WIDE (SINGLE)
  - 6.0m WIDE (DOUBLE)
- SINGLE STORM HOUSE CONNECTION
- SINGLE SANITARY HOUSE CONNECTION
- WATER CONNECTION
- 102.16 HIGH POINT
- SLAB ON GRADE
- PONDING AREA
- PHASE LINE
- OTHER PHASES

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED.
PROJECT No. 06-10-561-00-00, SURVEY DATED JULY 6, 2007 AND
PROJECT No. 06-10-561-01-00, SURVEY DATED FEBRUARY 24, 2009.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 06-10-561-00-2B(PHASE 3), SURVEY DATED JULY 15, 2013.

BENCH MARK No. 00119880502

TOWNSHIP: STITTSVILLE
CONCRETE CULVERT ALONG HAZELDEAN ROAD, 1.3 KM NE OF ROAD INTERSECTION WITH MAIN ST NORTH. BRASS CAP SET ON TOP OF CONC CULVERT, SOUTH SIDE OF THE ROAD, 30 CM WEST OF EASTERLY EXTREMITY, 30 CM NORTH OF THE SOUTH FACE, SLIGHTLY BELOW ROAD LEVEL.
ELEVATION = 106.039 m

No.	BY	DATE	DESCRIPTION
12	C.K.S	16-08-23	ISSUED FOR MYLAR PRINTING
11	C.K.S	16-01-14	AS RECORDED INFORMATION ADDED BY J.D. BARNES
10	Z.L.	13-07-30	REVISED AS PER M-PLAN, CITY COMMENTS, AND CUP CIRCULATION
9	Z.L.	13-04-02	REVISION AS PER MPLAN CHANGE – PHASE 3
8	Z.L.	12-05-25	REVISION AS PER MPLAN CHANGE
7	Z.L.	12-05-02	MOE SUBMISSION
6	Z.L.	12-04-05	5TH SUBMISSION – PHASES 2B, 3, AND 4
5	Z.L.	12-01-31	GRADING REVISION ALONG WEST LIMIT
4	Z.L.	10-03-03	4TH SUBMISSION – PHASES 2B, 3, AND 4
3	Z.L.	08-12-19	3RD SUBMISSION
2	Z.L.	08-10-17	2ND SUBMISSION
1	Z.L.	08-06-27	1ST SUBMISSION

Ottawa CITY OF OTTAWA

PROJECT No. 07-309

LICENSED PROFESSIONAL ENGINEER
A. C. FINNSON
100149736
16-08-23
PROVINCE OF ONTARIO

GRADING PLAN

© DSEL

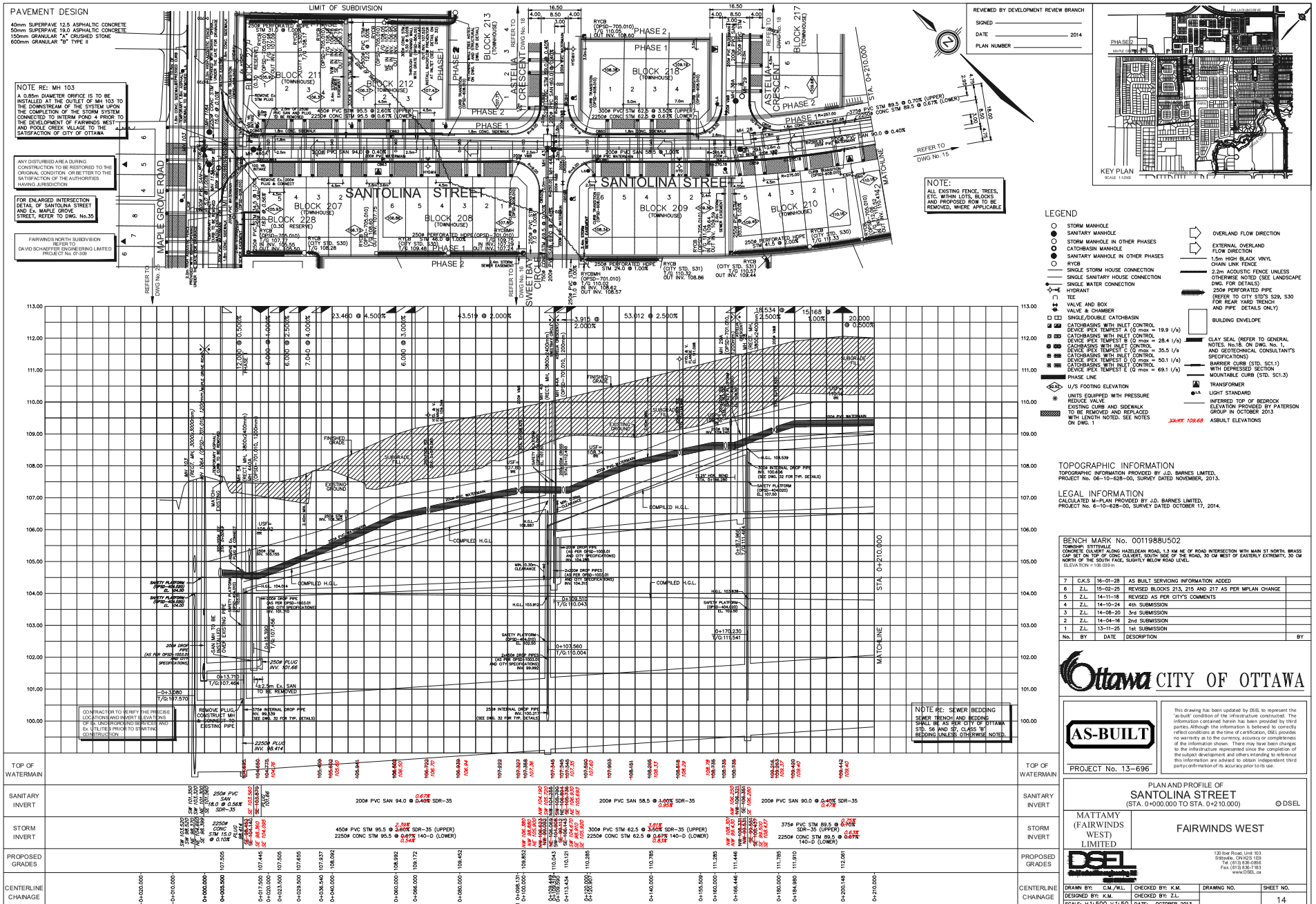
MATTAMY (FAIRWINDS NORTH) LIMITED

FAIRWINDS NORTH SUBDIVISION
PHASE 3

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

DRAWN BY: I.W./A.Y.	CHECKED BY: K.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: I.V.	CHECKED BY: Z.L.		4
SCALE: 1:500	DATE: JUNE 2008		

14707



Ottawa CITY OF OTTAWA

AS-BUILT

PROJECT No. 13-696

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
SANTOLINA STREET
(STA. 0+000.000 TO STA. 0+210.000)
© DSEL

MATTAMY (FAIRWINDS WEST) LIMITED

FAIRWINDS WEST

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

DRAWN BY: C.M./W.L.	CHECKED BY: K.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: K.M.	CHECKED BY: Z.L.		14
SCALE: H:1:500 ,V:1:50	DATE: OCTOBER 2013		

PAVEMENT DESIGN

40mm SUPERPAVE 12.5 ASPHALTIC CONCRETE WEAR COURSE
50mm SUPERPAVE 19.0 ASPHALTIC CONCRETE UPPER BINDER COURSE
50mm SUPERPAVE 19.0 ASPHALTIC CONCRETE LOWER BINDER COURSE
150mm GRANULAR "A" CRUSHED STONE OPSS
600mm GRANULAR "B" TYPE II OPSS

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 1.5m 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

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

PERMISSION REQUIRED FOR WORK ON ADJACENT LANDS

FAIRWINDS NORTH SUBDIVISION REFER TO DAVID SCHAEFFER ENGINEERING LIMITED PROJECT No. 07-309

FOR ENLARGED INTERSECTION DETAIL OF SANTOLINA STREET AND Ex. MAPLE GROVE STREET, REFER TO DWG. No.35

REVIEWED BY DEVELOPMENT REVIEW BRANCH

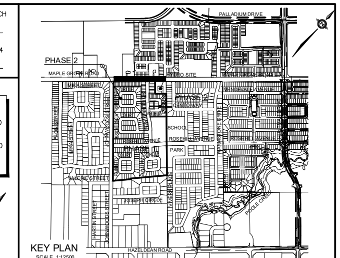
SIGNED ______________

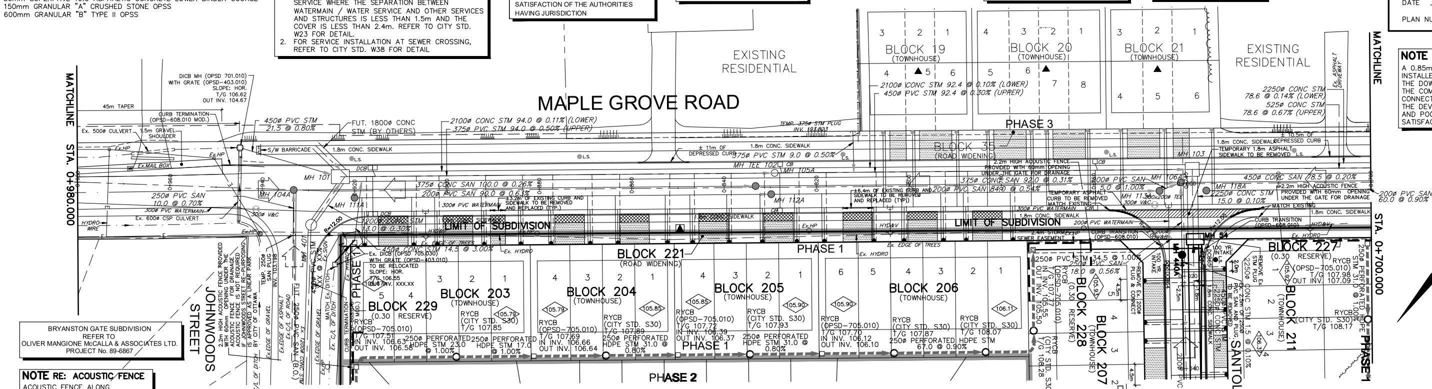
DATE ______________ 2014

PLAN NUMBER ______________

NOTE RE: MH 103

A 0.85m DIAMETER ORIFICE IS TO BE INSTALLED AT THE OUTLET OF MH 103 TO THE DOWNSTREAM OF THE SYSTEM UPON THE COMPLETION OF THE STORM SYSTEM CONNECTED TO INTERIM POND 4 PRIOR TO THE DEVELOPMENT OF FAIRWINDS WEST AND POOLE CREEK VILLAGE TO THE SATISFACTION OF CITY OF OTTAWA

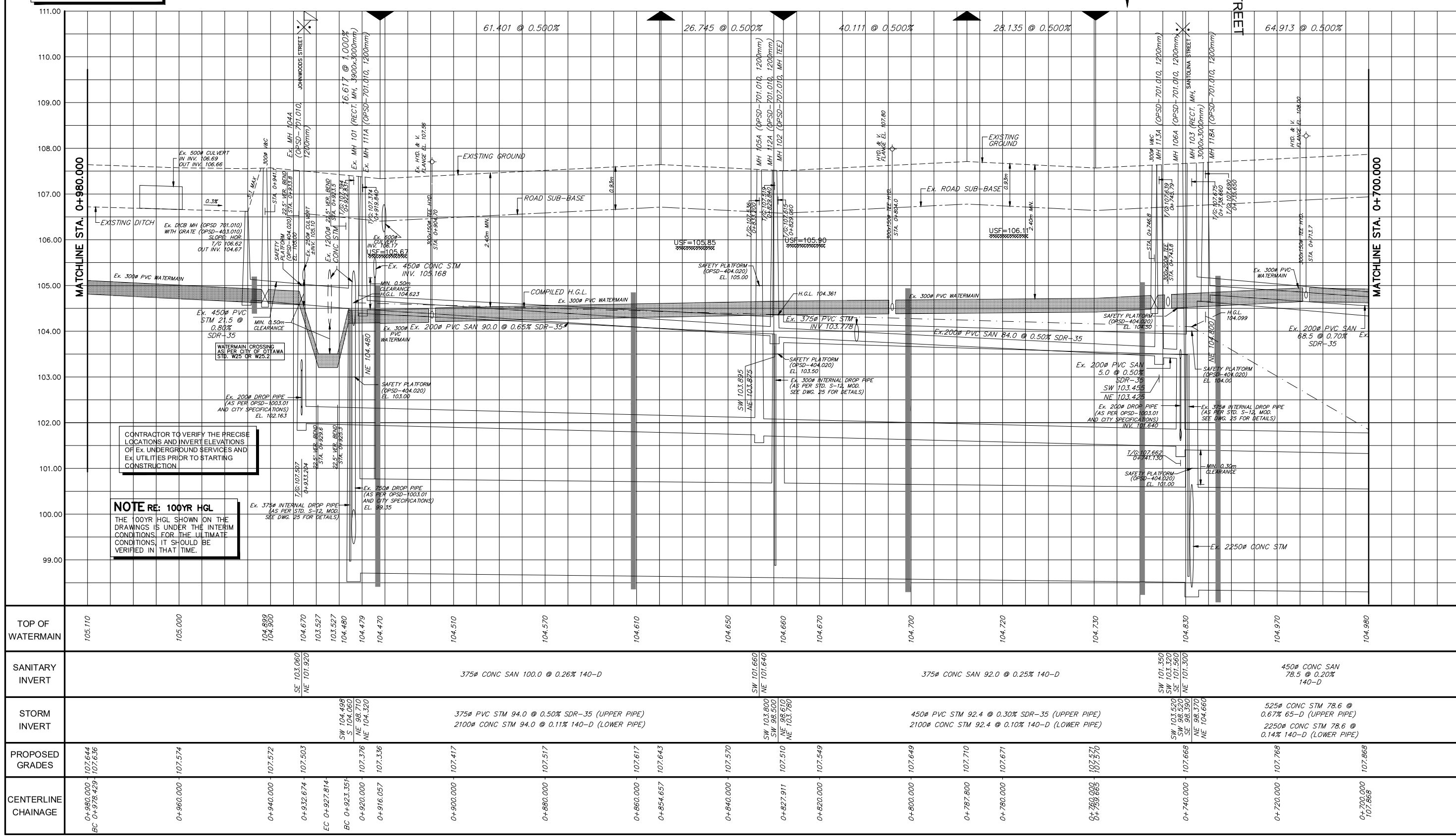




BRYANSTON GATE SUBDIVISION REFER TO OLIVER MANGIONE McCALLA & ASSOCIATES LTD. PROJECT No. 89-6867

NOTE RE: ACOUSTIC FENCE

ACOUSTIC FENCE ALONG JOHNWOODS STREET NORTH OF ROSEHILL AVENUE IS NOT REQUIRED IF JOHNWOODS STREET RE-PURPOSING IS APPROVED AS A LINEAR PARK BY CITY OF OTTAWA



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

NOTE RE: 100YR HGL

THE 100YR HGL SHOWN ON THE DRAWINGS IS UNDER THE INTERIM CONDITIONS. FOR THE ULTIMATE CONDITIONS, IT SHOULD BE VERIFIED IN THAT TIME.

LEGEND

- STORM MANHOLE
- SANITARY MANHOLE
- STORM MANHOLE IN OTHER PHASES
- CATCHBASIN MANHOLE
- SANITARY MANHOLE IN OTHER PHASES
- RYCB
- SINGLE STORM HOUSE CONNECTION
- SINGLE SANITARY HOUSE CONNECTION
- SINGLE WATER CONNECTION
- HYDRANT
- TEE
- VALVE AND BOX
- VALVE & CHAMBER
- SINGLE/DOUBLE CATCHBASIN
- CATCHBASINS WITH INLET CONTROL DEVICE IPEX TEMPEST A (Q max = 19.9 l/s)
- CATCHBASINS WITH INLET CONTROL DEVICE IPEX TEMPEST B (Q max = 28.4 l/s)
- CATCHBASINS WITH INLET CONTROL DEVICE IPEX TEMPEST C (Q max = 35.5 l/s)
- CATCHBASINS WITH INLET CONTROL DEVICE IPEX TEMPEST D (Q max = 50.1 l/s)
- CATCHBASINS WITH INLET CONTROL DEVICE IPEX TEMPEST E (Q max = 69.1 l/s)
- PHASE LINE
- U/S FOOTING ELEVATION
- UNITS EQUIPPED WITH PRESSURE REDUCE VALVE
- EXISTING CURB AND SIDEWALK TO BE REMOVED AND REPLACED WITH LENGTH NOTED. SEE NOTES ON DWG. 1
- OVERLAND FLOW DIRECTION
- EXTERNAL OVERLAND FLOW DIRECTION
- 1.5m HIGH BLACK VINYL CHAIN LINK FENCE
- 2.2m ACOUSTIC FENCE UNLESS OTHERWISE NOTED (SEE LANDSCAPE DWG. FOR DETAILS)
- 250ø PERFORATED PIPE (REFER TO CITY STD'S S29, S30 FOR REAR YARD TRENCH AND PIPE DETAILS ONLY)
- BUILDING ENVELOPE
- CLAY SEAL (REFER TO GENERAL NOTES. No.18. ON DWG. No. 1, AND GEOTECHNICAL CONSULTANT'S SPECIFICATIONS)
- BARRIER CURB (STD. SC1.1) WITH DEPRESSED SECTION
- MOUNTABLE CURB (STD. SC1.3)
- TRANSFORMER
- LIGHT STANDARD
- INFERRED TOP OF BEDROCK ELEVATION PROVIDED BY PATERSON GROUP IN OCTOBER 2013
- XXX.XX 100.975 AS BUILT ELEVATIONS

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 06-10-628-00, SURVEY DATED NOVEMBER, 2013.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED, PROJECT No. 6-10-628-00, SURVEY DATED OCTOBER 17, 2014.

NO ASBUILT INFORMATION ADDED

BENCH MARK No. 0011988U502

TOWNSHIP: STITTSVILLE
CONCRETE CULVERT ALONG HAZELDEAN ROAD, 1.3 KM NE OF ROAD INTERSECTION WITH MAIN ST NORTH. BRASS CAP SET ON TOP OF CONC CULVERT, SOUTH SIDE OF THE ROAD, 30 CM WEST OF EASTERLY EXTREMITY, 30 CM NORTH OF THE SOUTH FACE, SLIGHTLY BELOW ROAD LEVEL.
ELEVATION = 106.039 m

No.	BY	DATE	DESCRIPTION	BY
6	C.K.S	17-01-05	AS BUILT SERVICING INFORMATION ADDED	
5	Z.L.	14-11-18	REVISED AS PER CITY'S COMMENTS	
4	Z.L.	14-10-24	4th SUBMISSION	
3	Z.L.	14-08-20	3rd SUBMISSION	
2	Z.L.	14-04-16	2nd SUBMISSION	
1	Z.L.	13-11-25	1st SUBMISSION	

Ottawa CITY OF OTTAWA

AS-BUILT

PROJECT No. 13-696

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
MAPLE GROVE ROAD
(STA. 0+700.000 TO STA. 0+980.000)

MATTAMY (FAIRWINDS WEST) LIMITED

FAIRWINDS WEST

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

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DESIGNED BY: K.M.	CHECKED BY: Z.L.		25
SCALE: H1:500 ,V1:50	DATE: OCTOBER 2013		

david schaeffer engineering ltd
SMART SUBDIVISIONS™

120 Iber Road, Unit 203
Stittsville, Ontario K2S 1E9
Tel. (613) 836-0856
Fax (613) 836-7183
www.DSEL.ca

DESIGN BRIEF

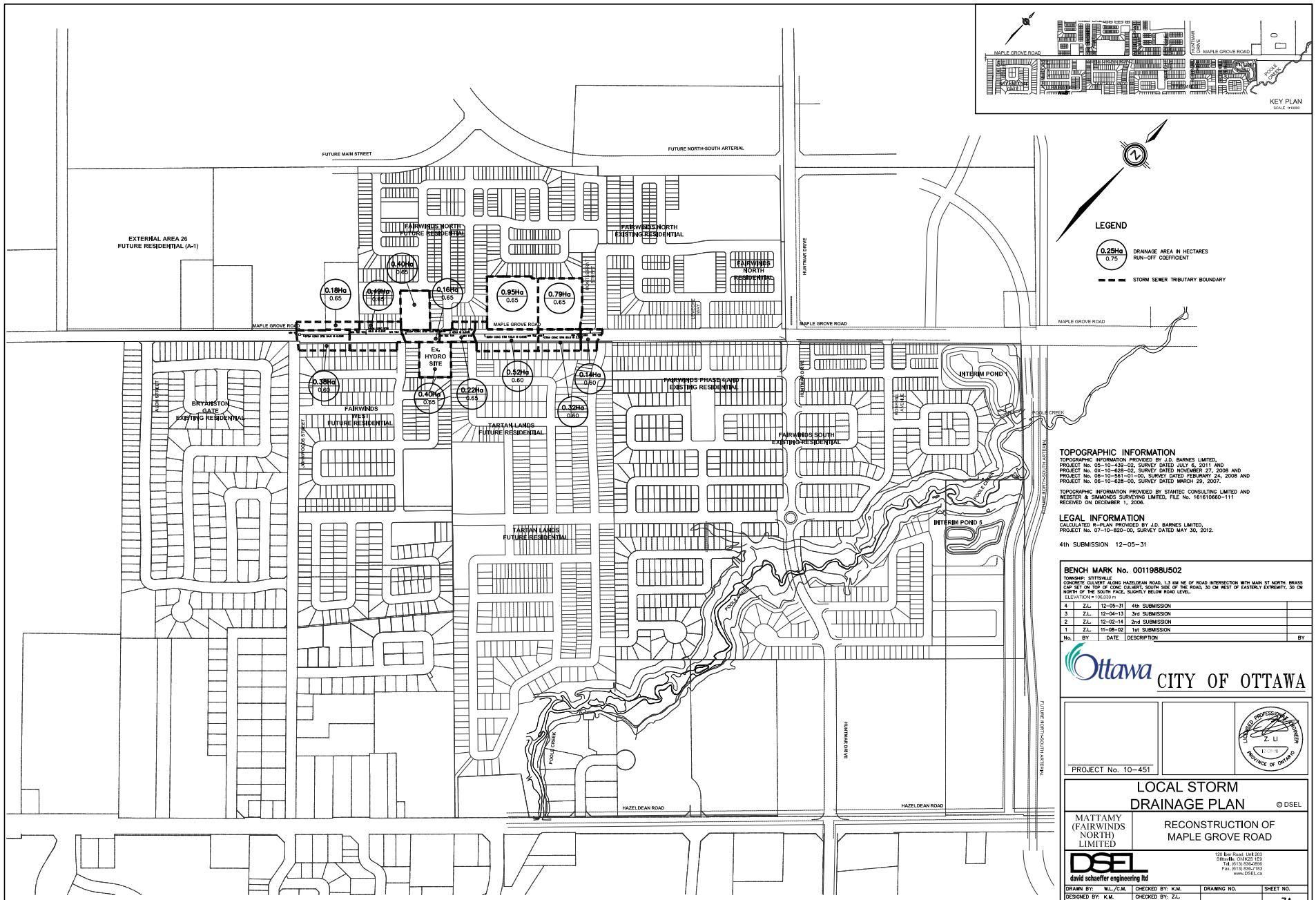
FOR THE

RECONSTRUCTION OF MAPLE GROVE ROAD MATTAMY HOMES

CITY OF OTTAWA

PROJECT NO.: 10-451

MAY 31, 2012
REVISION 4, 4TH SUBMISSION



TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 05-10-439-02, SURVEY DATED JULY 6, 2011 AND
PROJECT No. 09-10-628-02, SURVEY DATED NOVEMBER 27, 2008 AND
PROJECT No. 06-10-561-01-00, SURVEY DATED FEBURARY 24, 2008 AND
PROJECT No. 06-10-628-00, SURVEY DATED MARCH 29, 2007.

TOPOGRAPHIC INFORMATION PROVIDED BY STANTEC CONSULTING LIMITED AND
WEBSTER & SIMMONDS SURVEYING LIMITED, FILE No. 161610660-111
RECEIVED ON DECEMBER 1, 2006.

LEGAL INFORMATION

CALCULATED R-PLAN PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 07-10-820-00, SURVEY DATED MAY 30, 2012.

4th SUBMISSION 12-05-31

BENCH MARK No. 0011988U502

TOWNSHIP: STITTSVILLE
CONCRETE CULVERT ALONG HAZELDEAN ROAD, 1.3 KM NE OF ROAD INTERSECTION WITH MAIN ST NORTH; BRASS CAP SET ON TOP OF CONC CULVERT, SOUTH SIDE OF THE ROAD, 30 CM WEST OF EASTERLY EXTREMITY, 30 CM NORTH OF THE SOUTH FACE, SLIGHTLY BELOW ROAD LEVEL.
ELEVATION = 106.039 m

No.	BY	DATE	DESCRIPTION	BY
4	Z.L.	12-05-31	4th SUBMISSION	
3	Z.L.	12-04-13	3rd SUBMISSION	
2	Z.L.	12-02-14	2nd SUBMISSION	
1	Z.L.	11-08-02	1st SUBMISSION	

CITY OF OTTAWA

PROJECT No. 10-451

LICENSED PROFESSIONAL ENGINEER
Z. LI
PROVINCE OF ONTARIO

LOCAL STORM DRAINAGE PLAN

MATTAMY (FAIRWINDS NORTH) LIMITED

RECONSTRUCTION OF MAPLE GROVE ROAD

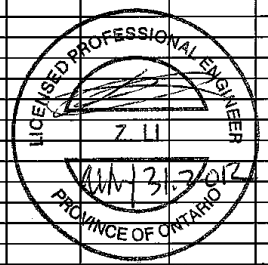
DSEL
david schaeffer engineering ltd
120 Iber Road, Unit 203
Stittsville, ONK2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

DRAWN BY: W.L./C.M.	CHECKED BY: K.M.	DRAWING NO.	SHEET NO.
DESIGNED BY: K.M.	CHECKED BY: Z.L.		7A
SCALE: 1:3000	DATE: JULY 2011		

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Manning 0.013 Return Frequency

	LOCATION		AREA (Ha)										FLOW					SEWER DATA								
			R= 0.38		R= 0.45		R= 0.60		R= 0.61		R= 0.65		Indiv.	Accum.	Time of	Rainfall	Peak Flow	DIA. (mm)	DIA. (mm)	TYPE	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME OF	RATIO
Location	From Node	To Node	A	No.	A	No.	A	No.	A	No.	A	No.	2.78 AC	2.78 AC	Conc.	Intensity	Q (l/s)	(actual)	(nominal)		(%)	(m)	(l/s)	(m/s)	FLOW (min.)	Q/Q full
MAPLE GROVE ROAD																										
											0.18		0.33	0.33												
	101	102					0.38						0.63	0.96	10.00	104.19	100	375	375	PVC	0.50	94.0	124	1.12	1.40	0.81
	102	103									0.49		0.89	0.89	10.00	104.19	92	450	450	PVC	0.30	99.0	156	0.98	1.68	0.59
											0.40		0.72	0.72												
											0.40		0.72	1.45												
	103	104									0.16		0.29	1.73	10.00	104.19	181	525	525	CONC	0.60	70.0	333	1.54	0.76	0.54
	104	105									0.22		0.40	0.40	10.00	104.19	41	300	300	PVC	0.30	63.0	53	0.75	1.40	0.78
											0.95		1.72	1.72												
	105	106					0.52						0.87	2.58	10.00	104.19	269	525	525	CONC	0.60	120.0	333	1.54	1.30	0.81
											0.79		1.43	1.43												
	106	1060					0.32						0.53	1.96	10.00	104.19	204	375	375	PVC	3.20	80.0	314	2.84	0.47	0.65
	1060	107					0.14						0.23	0.23	10.00	104.19	24	375	375	PVC	2.50	43.0	277	2.51	0.29	0.09



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

Designed: K.M.
Checked: Z.L.
Dwg. Reference: Local Storm Drainage Plan, Dwg No.7A

PROJECT: RECONSTRUCTION OF MAPLE GROVE ROAD
LOCATION: City of Ottawa
File Ref: 10-451
Date: May, 2012
Sheet No. 1 of 1

david schaeffer engineering ltd
SMART SUBDIVISIONS™

120 Iber Road, Unit 203
Stittsville, Ontario K2S 1E9
Tel. (613) 836-0856
Fax (613) 836-7183
www.DSEL.ca

DESIGN BRIEF

FOR

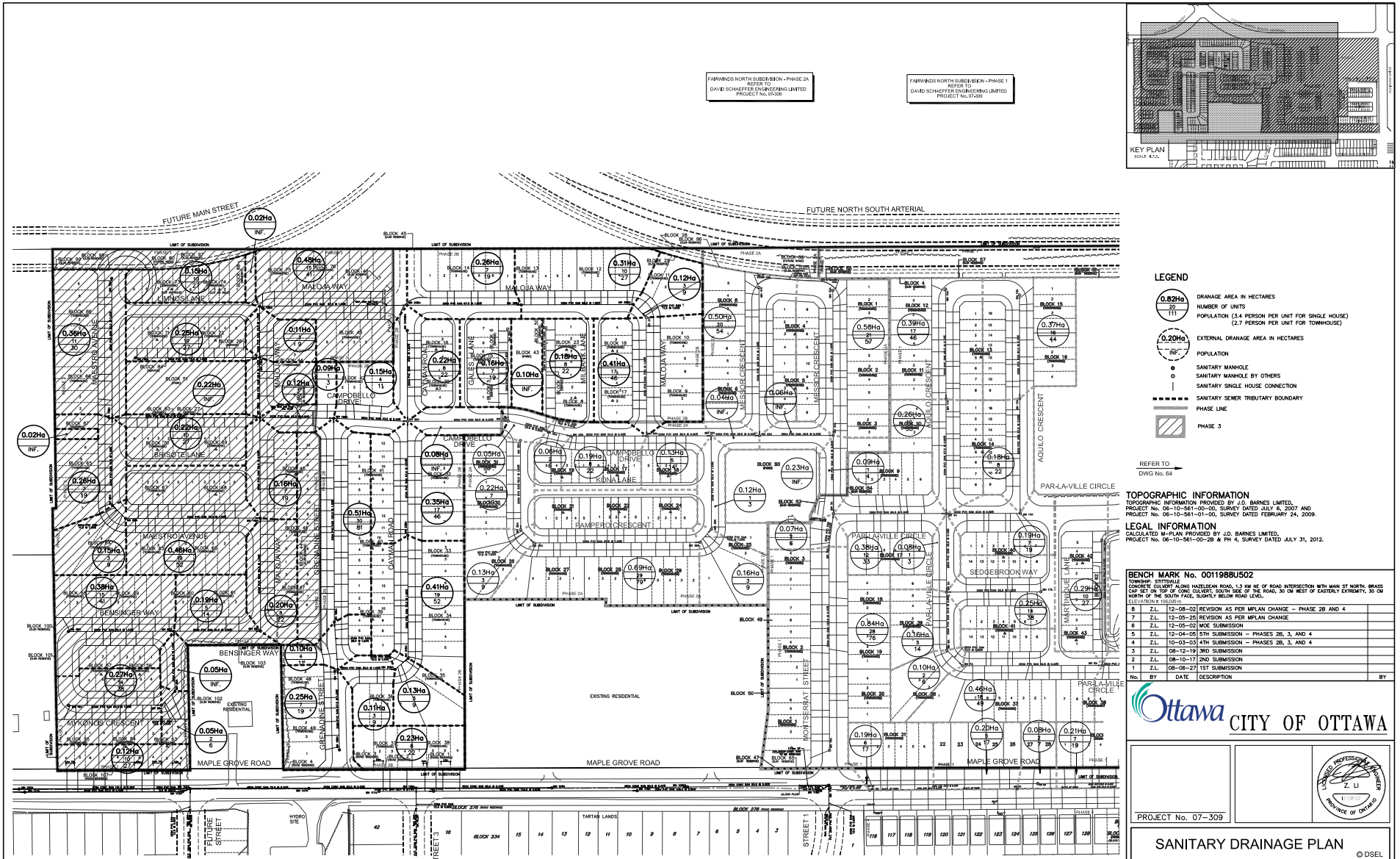
FAIRWINDS NORTH PHASE 2B AND 4

MATTAMY HOMES

CITY OF OTTAWA

PROJECT NO.: 07-309

AUGUST 2, 2012
REVISION 5, 5TH SUBMISSION



LEGEND

- 0.82Ha / 20 / 111 — DRANAGE AREA IN HECTARES; NUMBER OF UNITS; POPULATION (3.4 PERSON PER UNIT FOR SINGLE HOUSE) (2.7 PERSON PER UNIT FOR TOWNHOUSE)
- 0.20Ha / INF. — EXTERNAL DRANAGE AREA IN HECTARES; POPULATION
- SANITARY MANHOLE
- SANITARY MANHOLE BY OTHERS
- SANITARY SINGLE HOUSE CONNECTION
- SANITARY SEWER TRIBUTARY BOUNDARY
- PHASE LINE
- PHASE 3

REFER TO DWG No. 64

TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 06-10-561-00-00, SURVEY DATED JULY 6, 2007 AND
PROJECT No. 06-10-561-01-00, SURVEY DATED FEBRUARY 24, 2009.

LEGAL INFORMATION

CALCULATED M-PLAN PROVIDED BY J.D. BARNES LIMITED,
PROJECT No. 06-10-561-00-2B & PH 4, SURVEY DATED JULY 31, 2012.

BENCH MARK No. 0011988U502

TOWNSHIP: SITTSVILLE
CONCRETE CULVERT ALONG HAZELDEAN ROAD, 1.3 KM NE OF ROAD INTERSECTION WITH MAIN ST NORTH. BRASS CAP SET ON TOP OF CONC CULVERT, SOUTH SIDE OF THE ROAD, 30 CM WEST OF EASTERLY EXTREMITY, 30 CM NORTH OF THE SOUTH FACE, SLIGHTLY BELOW ROAD LEVEL.
ELEVATION = 106.039 m

No.	BY	DATE	DESCRIPTION	BY
8	Z.L.	12-08-02	REVISION AS PER MPLAN CHANGE – PHASE 2B AND 4	
7	Z.L.	12-05-25	REVISION AS PER MPLAN CHANGE	
6	Z.L.	12-05-02	MOE SUBMISSION	
5	Z.L.	12-04-05	5TH SUBMISSION – PHASES 2B, 3, AND 4	
4	Z.L.	10-03-03	4TH SUBMISSION – PHASES 2B, 3, AND 4	
3	Z.L.	08-12-19	3RD SUBMISSION	
2	Z.L.	08-10-17	2ND SUBMISSION	
1	Z.L.	08-06-27	1ST SUBMISSION	

Ottawa CITY OF OTTAWA

PROJECT No. 07-309

LICENCE PROFESSIONAL ENGINEER Z. LI PROVINCE OF ONTARIO

SANITARY DRAINAGE PLAN

© DSEL

MATTAMY (FAIRWINDS NORTH) LIMITED

FAIRWINDS NORTH SUBDIVISION
PHASE 2B AND 4

DSEL
david schaeffer engineering ltd
120 Iber Road, Unit 203
Stittsville, ON K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca

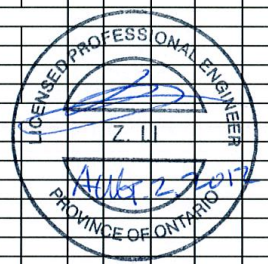
DRAWN BY:	P.P./W.L.	CHECKED BY:	K.M.	DRAWING NO.	SHEET NO.
DESIGNED BY:	K.M.	CHECKED BY:	Z.L.		6
SCALE:	1:1000	DATE:	JUNE 2008		

K:\07309\Phases2B_3_4\Submit_Ph2B_4\1Tributary\9fl_09A_09bsin.dwg, 8/2/2012 6:26:20 PM, hoan, H.P.

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Manning 0.013 Return Frequency = 5 years

Location	From Node	To Node	AREA (Ha) R= 0.25 A	No.	R= 0.27 A	No.	R= 0.50 A	No.	R= 0.64 A	No.	R= 0.90 A	No.	R= 0.57 A	No.	R= 0.69 A	No.	R= 0.80 A	No.	R= 0.84 A	No.	FLOW Indiv. 2.78 AC	Accum. 2.78 AC	Time of Conc.	Rainfall Intensity	Peak Flow Q (l/s)	SEWER DATA DIA. (mm) (actual)	DIA. (mm) (nominal)	TYPE	SLOPE (%)	LENGTH (m)	CAPACITY (l/s)	VELOCITY (m/s)	TIME OF FLOW (min.)	RATIO Q/Q full
Phase 3																																		
Bensinger Way																																		
	4B	5B													0.14	5			0.14	4	0.60	0.60	10.00	104.19	62	366.42	375	PVC	0.60	63.5	128	1.21	0.87	0.49
To Bensinger Way, Pipe 5B-15B																						0.60	10.87											
Mykonos Crescent																																		
	1B	2B																	0.26	1	0.61	0.61	10.00	104.19	63	299.36	300	PVC	0.60	24.5	74	1.06	0.39	0.85
	2B	3B																	0.06	2	0.14	0.75	10.39	102.20	76	366.42	375	PVC	0.30	11.0	90	0.86	0.21	0.85
	3B	5B																	0.05	3	0.12	0.86	10.60	101.13	87	447.87	450	PVC	0.30	32.5	154	0.98	0.55	0.57
To Bensinger Way, Pipe 5B-15B																						0.86	11.15											
Bensinger Way																																		
Contribution From Bensinger Way, Pipe 4-5																					0.60	0.60	10.87											
Contribution From Mykonos Crescent, Pipe 3-5																					0.86	1.46	11.15											
	5B	15B	0.40	7											0.28	6					0.82	2.27	11.15	98.47	224	610.00	600	CONC	0.20	98.0	287	0.98	1.66	0.78
To Grenadine Street, Pipe 15B-16B																						2.27	12.82											
Maestro Avenue																																		
	6B	7B													0.50	34	0.14	35			1.27	1.27	10.00	104.19	132	686.00	675	CONC	0.30	85.5	481	1.30	1.10	0.28
	7B	8B													0.12	33	0.08	32			0.41	1.68	11.10	98.74	166	686.00	675	CONC	0.20	52.0	392	1.06	0.82	0.42
	8B	9B													0.05	24					0.10	1.77	11.91	95.07	169	686.00	675	CONC	0.20	10.0	392	1.06	0.16	0.43
	9B	10B													0.15	25	0.10	26			0.51	2.28	12.07	94.40	216	686.00	675	CONC	0.20	76.5	392	1.06	1.20	0.55
To Maloja Way, Pipe 10B-12B																						2.28	13.27											



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 = 0.76 m/sec

Designed:	K.M.
Checked:	Z.L.
Dwg. Reference:	Storm Drainage Plan, Dwg No. 7, 7A
PROJECT:	Fairwinds North Subdivision PHASES 2B, 3, 4
LOCATION:	City of Ottawa
File Ref:	07-309
Date:	August, 2012
Sheet No.	1 of 4

Chart 1: LMF 14 Preset Flow Curves

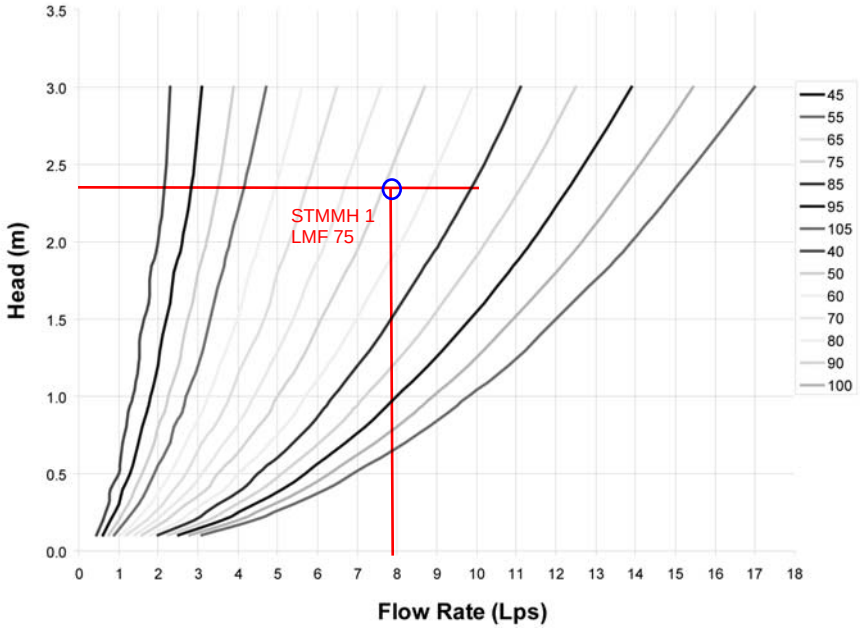
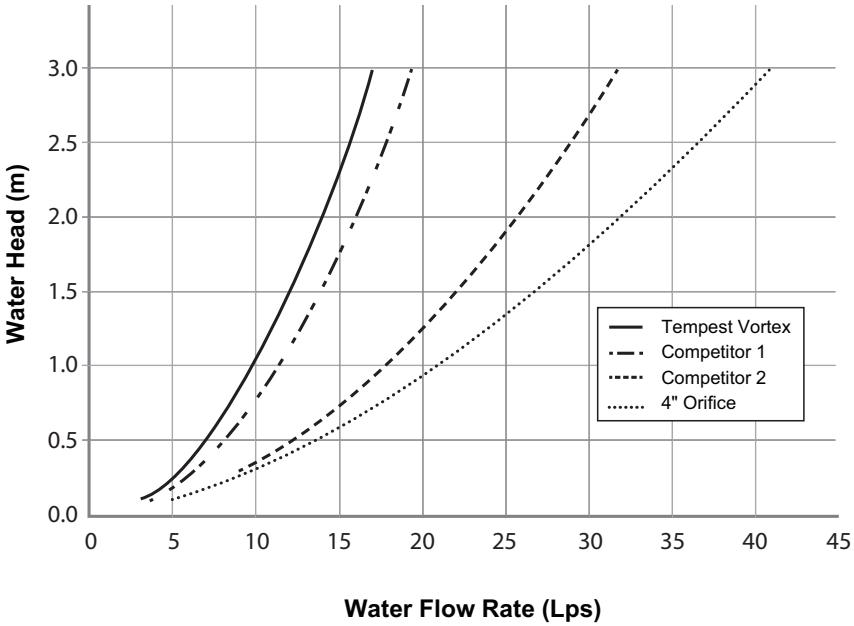


Chart 2: LMF Flow vs. ICD Alternatives



Appendix G – Checklist

GENERAL CONTENT		RESPONSE
☐	Executive Summary (for larger reports only).	Not included
☒	Date and revision number of the report.	Date of report provided
☒	Location map and plan showing municipal address, boundary, and layout of proposed development.	Page 1, and Appendix A
☒	Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	Section 2 of report
☒	Summary of Pre-consultation Meetings with City and other approval agencies.	In Appendix E
☐	Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.	No Master Servicing Studies.
☒	Statement of objectives and servicing criteria.	Section 1 of report
☒	Identification of existing and proposed infrastructure available in the immediate area.	Section 2 & 3 of report
☐	Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	Not applicable
☐	Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	Not applicable
☐	Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	Not applicable
☐	Proposed phasing of the development, if applicable.	Not applicable
☐	Reference to geotechnical studies and recommendations concerning servicing.	Not applicable
☒	All preliminary and formal site plan submissions should have the following information: Metric scale North arrow (including construction North) Key plan name and contact information of applicant and property owner Property limits including bearings and dimensions Existing and proposed structures and parking areas Easements, road widening and rights-of-way Adjacent street names	Functional Report, Civil and Architectural Plans provided all this information.
DEVELOPMENT SERVICING REPORT: WATER		**RESPONSE**
☐	Confirm consistency with Master Servicing Study, if available Availability of public infrastructure to service proposed development Identification of system constraints	Not applicable
☒	Identify boundary conditions	Section 4.5
☒	Confirmation of adequate domestic supply and pressure	Section 4.2
☒	Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Section 4.2
☒	Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	Section 4.2 & Table B-5 Appendix B
☐	Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	Not applicable
☒	Address reliability requirements such as appropriate location of shut-off valves Check on the necessity of a pressure zone boundary modification.	Section 4.2, Drawing C100
☒	Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range	Section 4.4 & Table B-1, Table B-2, Appendix B
☒	Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	Section 4.2

☐	Description of off-site required feeder mains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	Not applicable
☒	Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Table B-1 Appendix B
☐	Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	Not applicable
DEVELOPMENT SERVICING REPORT: WASTEWATER		**RESPONSE**
☒	Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	Section 5.1
☐	Confirm consistency with Master Servicing Study and/or justifications for deviations.	Not applicable
☒	Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	Section 5.2
☒	Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 5.2
☐	Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)	Not applicable
☒	Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	Table C-1 in Appendix C
☒	Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 5.2
☐	Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	Not applicable
☐	Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	Not applicable
☐	Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	Not applicable
☐	Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	Not applicable
☐	Special considerations such as contamination, corrosive environment etc.	Not applicable
DEVELOPMENT SERVICING REPORT: STORMWATER CHECKLIST		**RESPONSE**
☒	Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 6
☐	Analysis of available capacity in existing public infrastructure.	Not applicable
☐	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Site is too small to be considered
☐	Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Not Applicable
☐	Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Not Applicable
☒	Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 6.2 & 6.3
☐	Set-back from private sewage disposal systems. Watercourse and hazard lands setbacks.	Not Applicable
☒	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	Appendix E
☐	Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	Not Applicable
☒	Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).	Section 6.9 & Table D-5 of Appendix D

☐	Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	Not Applicable
☒	Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Section 6.6, 6.8 & Table D-1 & D-4 of Appendix D
☐	Any proposed diversion of drainage catchment areas from one outlet to another.	Not Applicable
☒	Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Section 6.8
☐	If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	Not Applicable
☐	Identification of potential impacts to receiving watercourses Identification of municipal drains and related approval requirements.	Not Applicable
☒	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 6.9
☒	100-year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	Site Grading and Erosion and Sediment Plan
☐	Inclusion of hydraulic analysis including hydraulic grade line elevations.	Not Applicable
☒	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Section 7
☐	Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	Not Applicable – No requirements from Conservation Authority
☐	Identification of fill constraints related to floodplain and geotechnical investigation.	See geotechnical report
☒	The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development as well as the relevant issues affecting each approval. The approval and permitting shall include but not be limited to the following:	Appendix E
☐	Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in theAct.	Not Applicable
☐	Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	Not Applicable
☐	Changes to Municipal Drains.	Not Applicable
☐	Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	Not Applicable
CONCLUSION CHECKLIST		**RESPONSE**
☒	Clearly stated conclusions and recommendations	In Section 8
☒	Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	Appendix E
☒	All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	Signed and stamped

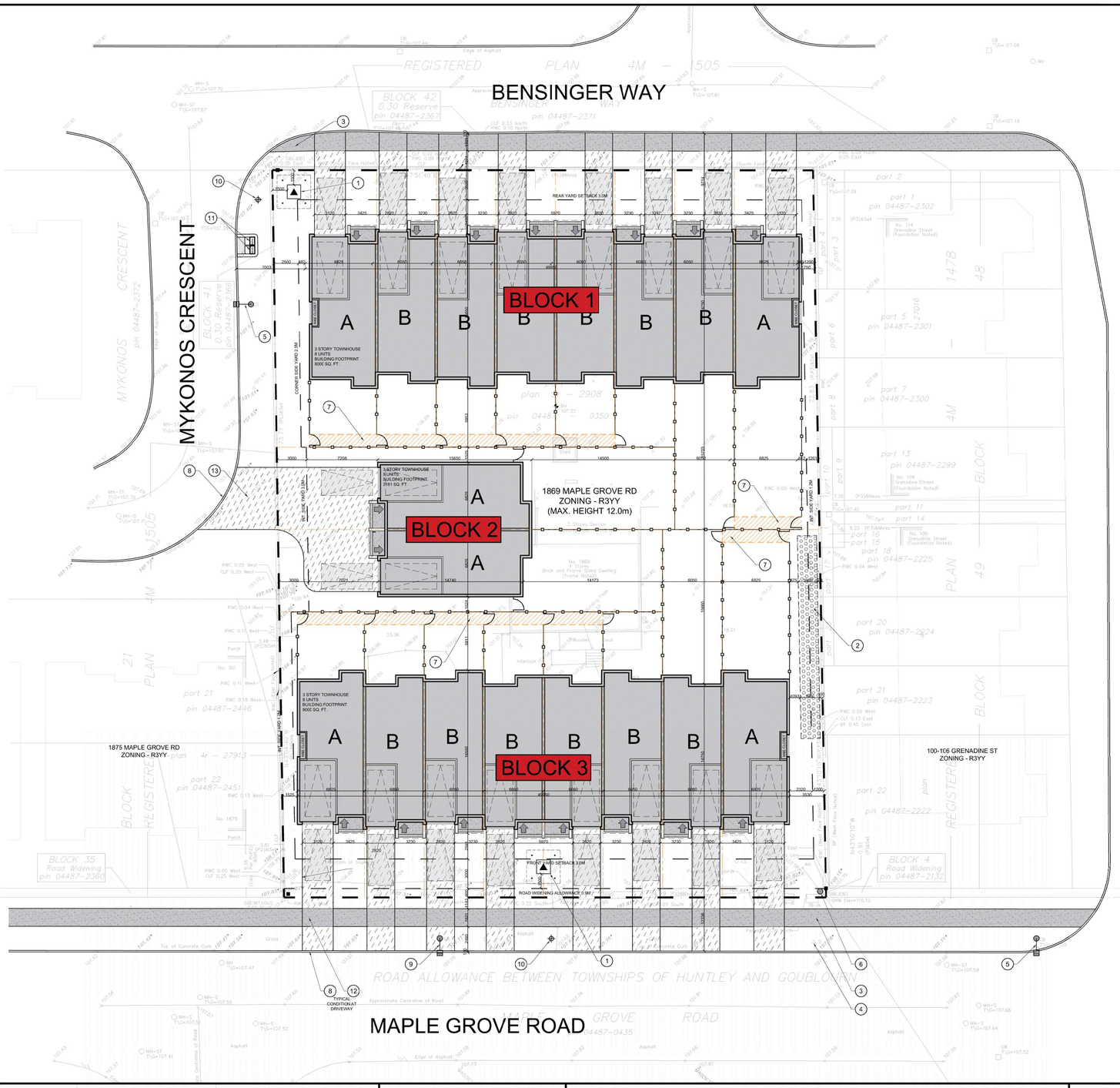
Appendix H – Drawings

Architectural Site Plan Drawings

- Site Plan, SP-00

Engineering Drawings (included separately)

- Notes and Legend, C001
- Site Servicing Plan, C002
- Site Grading Plan, C003
- Storm Drainage Plan, C004.
- Sanitary Drainage Plan, C005
- Erosion and Sediment Control Plan, C006
- Details Page, C007



IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND TO REPORT ALL ERRORS AND/OR OMISSIONS TO THE ARCHITECT.

ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.

THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ARCHITECT.

DO NOT SCALE DRAWINGS.

NOTATION SYMBOLS:

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

PROJECT NOTES

1. TRANSFORMER
2. STORM WATER MANAGEMENT TANK
3. CONCRETE SIDEWALK BUILT TO CITY OF OTTAWA STANDARDS
4. BUS STOP TO POTENTIALLY BE RELOCATED
5. EXISTING LIGHT STANDARD
6. EXISTING UTILITY POLE
7. 1300mm WIDE REAR YARD ACCESS EASEMENT (TO BE CONFIRMED ON SURVEY DRAWING)
8. 150mm WIDE MOUNTABLE CURB
9. EXISTING LIGHT STANDARD TO BE RELOCATED
10. NEW FIRE HYDRANT (EXACT LOCATION TO BE CONFIRMED BY CIVIL ENGINEER)
11. COMMON MAIL BOXES
12. PROVIDE DEPRESSED SIDEWALK
13. SHARED DRIVEWAY (REQUIRES JUMA)
14. RESERVED
15. RESERVED
16. RESERVED
17. RESERVED
18. RESERVED
19. RESERVED
20. RESERVED

GENERAL NOTES:

- A. REFER TO TYPICAL ASSEMBLIES SHEET FOR WALL, PARTITION, ROOF CEILING & FLOOR TYPES.
- B. FOR DOOR TYPES AND HARDWARE REQUIREMENTS REFER TO DOOR SCHEDULE ON A900 SERIES.
- C. ALL INTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF STUD
- D. ALL EXTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF STUD
- E. ALL EXTERIOR WALLS ARE "TO BE TYPE 'W1' UNLESS NOTED OTHER WISE.
- F. ALL INTERIOR PARTITIONS ARE TO BE TYPE 'P1' UNLESS NOTED OTHER WISE.
- G. ALL REINFORCED CONCRETE SUSPENDED SLABS, COLUMNS & BEAMS HAVE A MIN. FRR OF 1.5 HRS (AS DETERMINED BY OBC SB-2) UNLESS OTHERWISE STATED.

LEGEND

- UNIT ENTRY POINT
- GEODETIC ELEVATION MARKER
- TOP OF CURB MARKER
- FIRE HYDRANT
- UTILITY POLE
- LIGHT STANDARD
- PROPERTY LINE
- SETBACK LINE
- SUBDIVIDED PROPERTY LINE
- EASEMENT OUTLINE
- NEW 2.5m HT PRIVACY FENCE
- PROPOSED BUILDING OUTLINE
- NEW PRIVATE DRIVEWAY
- PUBLIC SIDEWALKS

PROJECT DEVELOPER
GNCR DEVELOPMENTS

Konaklar Mh. Akasyalı Sk.
No:26 34330
Beşiktaş İstanbul Turkey

PHONE: +90 212 212 60 60
FAX: +90 212 284 82 77

CIVIL ENGINEER
EXP SERVICES INC.

2650 QUEENSVIEW DRIVE
SUITE 100
OTTAWA, ONTARIO
K2B 8H6

PHONE: 613 688 1899

TRAFFIC ENGINEER
EXP SERVICES INC.

2650 QUEENSVIEW DRIVE
SUITE 100
OTTAWA, ONTARIO
K2B 8H6

PHONE: 613 688 1899

LANDSCAPE ARCHITECT
JAMES B. LENNOX AND ASSOCIATES INC

3332 CARLING AVE.
OTTAWA, ONTARIO, CANADA
K2H 5A8

PHONE: 613 722 5168
FAX: 1 866 343 3942

SURVEYOR
ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 CONCOURSE GATE, SUITE 500
NEPEAN, ONTARIO, CANADA
K2E 7S6

PHONE: 613 727 0850
FAX: 613 727 1079

SITE INFORMATION

ZONING	DR
MAX BUILDING HEIGHT	11.0 M.
LOT AREA	4,051.7 SQ. M.
1169 MAPLE GROVE RD STITTSVILLE, ONTARIO, CANADA K2S 1B9	
RE-ZONE TO	**R3YY**
MAX BUILDING HEIGHT	12.0 M.
LOT AREA	4,051.7 SQ. M.
1169 MAPLE GROVE RD STITTSVILLE, ONTARIO, CANADA K2S 1B9	
SITE AREA	
TOTAL SITE AREA	4,051.7 SQ. M.

RESIDENTIAL UNITS

TRADITIONAL TOWNHOUSES:	16
SEMI-DETACHED HOUSES:	2
TOTAL UNITS:	18

DEVELOPMENT STATISTICS

SITE SETBACKS (R3YY)	**REQUIRED**	**PROVIDED**
FRONT YARD (MAPLE GROVE ROAD)	3.0m	3.0m
CORNER SIDE YARD (MYKONOS CRESCENT)	2.5m	2.5m
TYPICAL INTERIOR SIDE YARD	1.2m	1.2m
REAR YARD (BENSINGER WAY)	6.0m	3.0m

BUILDING FOOTPRINTS		**# OF UNITS**	**TOTAL AREA**
BLOCK 1	-	8	7,588 SQFT
BLOCK 2	-	2	2,082 SQFT
BLOCK 3	-	8	7,588 SQFT
TOTAL	-		17,258 SQFT (1,603.3 SQM)

BUILDING STATISTICS	**AREA**	**# OF UNITS**	**TOTAL UNIT AREA**
TRADITIONAL TOWN TYPE A -	2,414 SQFT	4	9,656 SQFT
TRADITIONAL TOWN TYPE B -	2,145 SQFT	12	25,740 SQFT
SEMI-DETACHED TYPE A -	2,610 SQFT	2	5,220 SQFT
TOTAL -		18	40,616 SQFT (3,773.4 SQM)

PARKING		**REQUIRED**
TRADITIONAL TOWNS		
RESIDENTIAL:		1.0 PER DWELLING
VISITOR:		0.2 PER DWELLING
SEMI-DETACHED TOWNS		
RESIDENTIAL:		1.0 PER DWELLING
VISITOR:		0.2 PER DWELLING

PARKING	**REQUIRED**	**PROVIDED**
TRADITIONAL TOWNS		
RESIDENTIAL:	16	16
VISITOR:	3.2	16
SEMI-DETACHED TOWNS		
RESIDENTIAL:	2	2
VISITOR:	0.4	2
TOTAL:	21.6	36

*REQUIRED BICYCLE PARKING PROVIDED IN GARAGE

SITE COVERAGE

SPACE		**AREA (sq.m.)**
BUILDING FOOTPRINT	-	1,603.3
PARKING LOT	-	0.0
SIDEWALKS	-	0.0
DRIVEWAYS	-	398.3
TOTAL	-	2001.6
LOT AREA		
1869 MAPLE GROVE ROAD	-	4,051.7
LANDSCAPE SPACE	-	2,050.1
TOTAL LANDSCAPE SPACE (%)	-	50.6

ADDITIONAL NOTES

1. DEDICATED SNOW STORAGE WILL NOT BE PROVIDED ON THIS SITE - AS ALL UNITS FRONT ONTO PUBLIC STREETS, STREET SNOW REMOVAL WILL BE THE RESPONSIBILITY OF THE CITY OF OTTAWA.

2. AS ALL UNITS FRONT ONTO PUBLIC STREETS, ALL UNITS SHOULD BE ELIGIBLE FOR CITY GARBAGE COLLECTION

3. BLOCK 2 WILL REQUIRE A JOINT USE MAINTENANCE AGREEMENT GIVEN THE SHARED DRIVEWAY

4. EXISTING BUILDING TO BE DEMOLISHED PRIOR TO CONSTRUCTION

No.	DESCRIPTION	DATE
6	ISSUED FOR COORDINATION	25-03-2020
5	ISSUED FOR COORDINATION	24-03-2020
4	ISSUED FOR COORDINATION	04-03-2020
3	ISSUED FOR COORDINATION	28-02-2020
2	ISSUED FOR COORDINATION	30-01-2020
1	ISSUED FOR COORDINATION	10-01-2020

REVISIONS:

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

NORTH ARROW:

CLIENT:
gncr DEVELOPMENTS

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

PROJECT TITLE:
1869 MAPLE GROVE ROAD
OTTAWA ONTARIO

SHEET TITLE:
SITE PLAN

DRAWN:	CHECKED:
L.M.	R.V.
SCALE: 1:200	SHEET No. SP-00
PROJECT No. 1921	

D07-12-19-0089

PLOT DATE: Wednesday, March 25, 2020

Plan No.: #18003