Proposed Townhouse Development

1020, 1024, 1028, 1032 and 1042 Sixth Line Road
Oakville, Ontario

Functional Servicing
and
Preliminary
Stormwater Management Report

(in Support of a Re-Zoning and Official Plan Amendment Application)

Prepared by:

Engineers, Planners and Landscape Architects

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1609514 Ontario Corp.

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Table 5.1 100 Year Storm – Modified Rational Method

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<th>DWG. NO.</th>
<th>TITLE</th>
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<tr>
<td>G-1</td>
<td>Preliminary Grading Plan</td>
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</table>
1.0 INTRODUCTION

1.1 Objectives

This report has been prepared as supporting documentation for a re-zoning and official plan amendment application for the property at 1020, 1024, 1028, 1032 and 1042 Sixth Line Road. The development consists of townhouse units and two existing single family units as indicated on the Architectural Site Plan prepared by O.P. Design Inc.

1.2 Scope of Report

The servicing of the development is addressed with respect to storm and sanitary drainage. Water demand for domestic and fire flow requirements are presented. Stormwater management requirements are based on the Town of Oakville’s criteria for stormwater management

In more detail the Municipal Servicing sections of this report will address:

- anticipated domestic water consumption based on the Halton of Region's criteria
- anticipated fire flow demand based on the nature of the development and the requirements of the Fire Underwriter’s Survey, 1999 (FUS).
- review of existing watermains servicing the area.
- pressure and flow test of existing watermain(s).
- determine if upgrades are required to the existing watermain infrastructure.
- anticipated sanitary discharge from the development.
- current capacity of existing sanitary sewer to which the development will connect.
- impact to the existing sanitary sewer as a result of the new demand will be assessed.
- determine if upgrades are required to the existing sanitary sewer infrastructure.
- storm drainage from the development will be controlled to 5 year predevelopment run-off levels for storm event up to and including the 1:100 year event as per the Town’s criteria.
• the existing storm sewer capacity will be determined.
• impact to the existing storm sewer as a result of the new controlled flow from the development will be assessed.
• determine if upgrades are required to the existing storm sewer infrastructure.

With regards to stormwater management the following is addressed:
• the Preliminary Grading Plan enclosed with the report indicates the direction of surface drainage.
• emergency overland flow route is indicated on the Grading Plan.
• storage volumes are provided for detention storage of return period storms up to and including the 1:100 year event.
• water quality calculation indicating 80% TSS removal.

1.3 Study Area

The entire site is 3.235 ha. (7.992 ac.) and the developable site area is 1.47 ha. (3.63 ac.) in area and is bound by Sunnycrest Lane to the northwest, Sixth Line Road to the northeast, and Sixteen Mile Creek to the south (see Figure No. 1 Key Plan).

Presently on the site are two (2) existing single family dwellings which are to remain (1024 and 1042 Sixth Line Road). The site is bound by Sixteen Mile Creek along the west side. The elevation of the creek edge is 87.0 m ± and the top of bank is at approximately 110.0 m ± which is a 23.0 m ± difference in elevation. Over the 15.0 m buffer from the top of bank the site continues to rise in elevation, at the west the ground elevation is approximately 111.0 m and to the east the elevation flattens out and slopes eastward. Along the east side of the site is Ministry of Transportation (MTO) lands. A service road runs east of the site parallel to the QEW/403 Highway and goes under the QEW/403 bridge which crosses Sixteen Mile Creek.
The balance of the developable lands slopes from west to east with Sunnycrest Lane ranging from 111.93 m at the west to 110.15 m at Sixth Line Road. From Sunnycrest Lane to the easterly limit of the site the elevation reduces to 109.0 m±.

Figure No. 1 – Key Plan
2.0 DEVELOPMENT CONCEPT

2.1 Development

The proposed residential development consists of 8 blocks of townhouse units for a total of 81 units (see the Architectural Site Plan Drawing No. SP-1 by OP Design Inc.).

The two existing single family units will be incorporated into the development.

Three (3) access points are proposed for the development. One access is out onto Sunnycrest Lane and the other two are onto Sixth Line Road.

A total of 179 parking spaces are being provided which include 21 visitor spaces. Six (6) of the visitor spaces are proposed as parallel parking spaces fronting Block ‘F’ along the southwest side of Sixth Line Road.
3.0 SANITARY SEWERS

3.1 Existing Sanitary Sewers

Fronting the site in Sixth Line Road is an existing 450 mm sanitary sewer at 1.06% slope. The full flow capacity of this sewer is 305 l/s. The sanitary sewer is located along the centre line of Sixth Line Road.

3.2 Proposed Sanitary Sewer Design

.1 Sanitary Population Density:

The Town of Oakville sanitary sewers are under the jurisdiction of Halton Region. The Region does not have a population count on a per unit bases, instead the population density is based on 135 persons per hectare. The cumulative population for the 81 unit development is 199 persons.

.2 Sanitary Demand:
The sanitary demand using 275 l/capita/day including infiltration and a peaking factor is 3.05 l/s.

3.3 Sanitary Sewer Design

A 200 mm minimum sewer size will be used throughout the development. Minimum slope on the first leg is 1.00%. The intent is to have one (1) outlet to Sixth Line Road. The proposed sanitary flow from the site is 1.0% of the full flow capacity of the existing 450 sanitary sewer.

3.4 Summary and Conclusion

- The anticipated flow from the development is 3.05 l/s.
- It is anticipated that the existing 450 mm sanitary sewer in Sixth Line Road has adequate capacity as the development will only be adding 1.0% to the full flow capacity of the existing sanitary sewer.
4.0 WATER DISTRIBUTION

4.1 Existing Watermains

A 300mm watermain exists in Sixth Line Road, which is located approximately under the west curb line of the street.

4.2 Design Parameters

The watermain design must accommodate the demand for two conditions, which are domestic and fire supply. The Region of Halton’s standard for domestic supply is 275 l/person/day, which is the average daily demand. The maximum daily demand will be based on a factor of 2.25 times the average daily demand and the maximum hourly demand or peak hour, will be based on a factor of 4.0 times the average daily demand.

Based on the above the domestic demand requirements are the following:

<table>
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<tr>
<th></th>
<th>l/min.</th>
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<tbody>
<tr>
<td>Average Daily</td>
<td>38.0</td>
</tr>
<tr>
<td>Maximum Daily</td>
<td>85.5</td>
</tr>
<tr>
<td>Maximum Hourly</td>
<td>152.0</td>
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</table>

Fire demand for the development is based on the type of building construction and the requirements of “Water Supply for Public Fire Protection 1999” Fire Underwriters Survey.

A review of the townhouse units and the fire separation between each unit will need to be reviewed with the architect to determine the required fire flow demand.

4.3 Layout of Proposed Watermain

The watermain within the development will be a 150 mm PVC pipe. The system will service both the domestic and fire demand requirements within the development.
4.4 **Summary and Conclusions**

- A hydrant pressure and flow test will be carried out on the existing 300 mm watermain within Sixth Line Road. The results will be supplied to the Town and Region.
5.0 STORM DRAINAGE AND PRELIMINARY STORMWATER MANAGEMENT

5.1 Existing Site Drainage and Storm Sewer System

Sixth Line Road does have an existing storm sewer which drains south towards the North Service Road. The size of the existing storm sewer fronting the development is a 525 mm pipe at 1.2% slope. This sewer has a full flow capacity of 491 l/s.

5.2 Storm Sewer Design

The proposed storm sewer design and layout will be designed to the 5-year storm and will outlet into a stormwater management detention tank before leaving the site as a controlled flow.

5.3 Preliminary Stormwater Management

The stormwater management criteria used to assess and design the system provided at the site, is to the Town of Oakville’s criteria. The 100 year post-development flow is controlled to the 5 year pre-development flow.

Based on this criteria a detention stormwater management tank will be sized to accommodate the required detention storage volume of 377.4 m³ (see Table 5.1 modified rational method analysis).

5.4 Summary and Conclusions

- The allowable outflow from the site is 116.6 l/s based on the 5-year pre-development criteria.
- Under the 1:100 year event 377.4 m³ of storage is required.
- Storage of 377.4 m³ will be provided.

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Reviewed By

Breht Schuknecht, P.Eng.
### TABLE 5.1

#### Pre-Development Condition
- Site area - \( A = 1.47 \) ha
- Site runoff coefficient - \( C = 0.25 \)
- Time of concentration = 10 min.
- Peak runoff rate for 5 year storm event = 116.6 l/s

**Therefore:** Design peak outflow rate for 116.6 l/s

#### Post Development Condition
- Contributing Area - \( A = 1.47 \) ha
- Uncontrolled Area - \( A_u = 0 \) ha
- Uncontrolled 100yr Flow = 0.00 l/s
- Site runoff coefficient - \( C = 0.8 \)
- Rainfall intensity - \( I \) (100 Year Storm)

\[
\text{Inflows} = Q = A \times C \times I/360
\]

\[
\text{Outflow} = A \text{ flow} - A_u \text{ flow} = 116.60 \text{ l/s}
\]

#### 100 YEAR STORM

<table>
<thead>
<tr>
<th>Time (Min.)</th>
<th>Intensity (mm/hr)</th>
<th>Inflows (m³/sec.)</th>
<th>Inflow Volumes (m³)</th>
<th>Outflows (m³/sec.)</th>
<th>Outflow Volumes (m³)</th>
<th>Storage Volume (m³)</th>
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<tbody>
<tr>
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<td>70.0</td>
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<td>158.3</td>
<td>0.517</td>
<td>465.3</td>
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Required Storage = 377.4 m³