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32 Years

Scissons Road Development

Servicing and Stormwater Management Design Brief

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SCISSONS ROAD DEVELOPMENT
SERVICING AND STORMWATER MANAGEMENT DESIGN BRIEF

Prepared For:

Olympia Homes

Prepared By:

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August 19th, 2015

Novatech File No.: 115090
Report Reference No.: R-2015-113

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August 19th, 2015

City of Ottawa
Planning and Infrastructure Approvals
110 Laurier Street West, 4th Floor
Ottawa, ON, K1P 1J1

Attention: **Mr. Damian Whittaker**

Reference: **Scissons Road Residential Subdivision**
Servicing and Stormwater Management Design Brief
Our File No.: 115090

Please find enclosed the Servicing and Stormwater Management Design Brief for the proposed Scissons Road residential subdivision located at 27, 33, and 35 Scissons Road in Ottawa, Ontario. The site fronts Scissons Road and is bounded by the new Urbandale development to the west and north and by existing residential houses to the south.

This report addresses the approach to site servicing (e.g. sanitary, stormwater management, and watermain) for the subject property and is submitted in support of the application for re-zoning and subdivision approval.

Should you have any questions, or require additional information, please contact the undersigned at 613-254-9643 ext. 278.

Yours truly,

NOVATECH

Adam Lambros, E.I.T.
Engineering Intern

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1.0 INTRODUCTION

Pegasus Development Corporation (Olympia Homes) plans to develop the lands located on Scissons Road and described as 27, 33 and 35 Scissons Road. Plans are to extend Scissons Road to the north including the extension of storm sewer, sanitary sewer and watermain. A private crescent will be constructed off Scissons Road with 16 single family dwellings. The site location is shown in **Figure 1** and the proposed development concept (site plan) is shown in **Figure 2**.

This serviceability report is submitted in support of a rezoning and subdivision application.

1.1 The Site

The proposed 0.75 ha Scissons Road residential subdivision is located at 27, 33, and 35 Scissons Road in the former City of Kanata, now part of the City of Ottawa. The three property parcels are owned by Olympia Homes. The site is bounded by Scissons Road to the east, the new Urbandale Development to the west and north, and existing residential houses to the south. Undeveloped NCC lands are adjacent to Scissons Road to the east. Refer to the **Figure 1** – Key Plan.

The site is located within the urban designated area and as such will be serviced by municipal storm, sanitary and water services.

The Scissons Road development site is proposed to be developed as a residential subdivision which will consist of 16 single detached dwellings as shown on **Figure 2** – Site Plan.

The site presently is occupied by two (2) existing residential houses, which will be demolished during construction, and consists of grassed lawns, dense vegetation and trees. Refer to **Figure 3** – Existing Conditions.

The grade is relatively flat and drainage currently sheet drains to the western portion of the site where it is picked up by three (3) rear yard catch basins as part of the Urbandale development on the southwest, west and northwest part of the site. Drainage from Scissons Road is collected by roadside ditches. A drainage ditch on the west side of Scissons Road crosses Scissons Road via a 600mm culvert approximately 30 m south of the site.

1.2 Planning Context

The subject property is designated General Urban Area in the City of Ottawa Official Plan. The General Urban Area designation permits all types and densities of housing as well as employment, retail, service, industrial, cultural, leisure, green space, entertainment and institutional uses. New residential development proposed in established neighbourhoods is encouraged to relate to the existing community character so that it enhances and builds upon desirable established patterns and built form. The subdivision conforms to these policies of the Official Plan. Refer to the planning rationale by Wright Consulting Services, submitted under separate cover.

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KEY PLAN

SCISSONS RD DEVELOP. (CITY OF OTTAWA)

DATE	JOB	FIGURE
AUG 2015	115090	FIGURE 1

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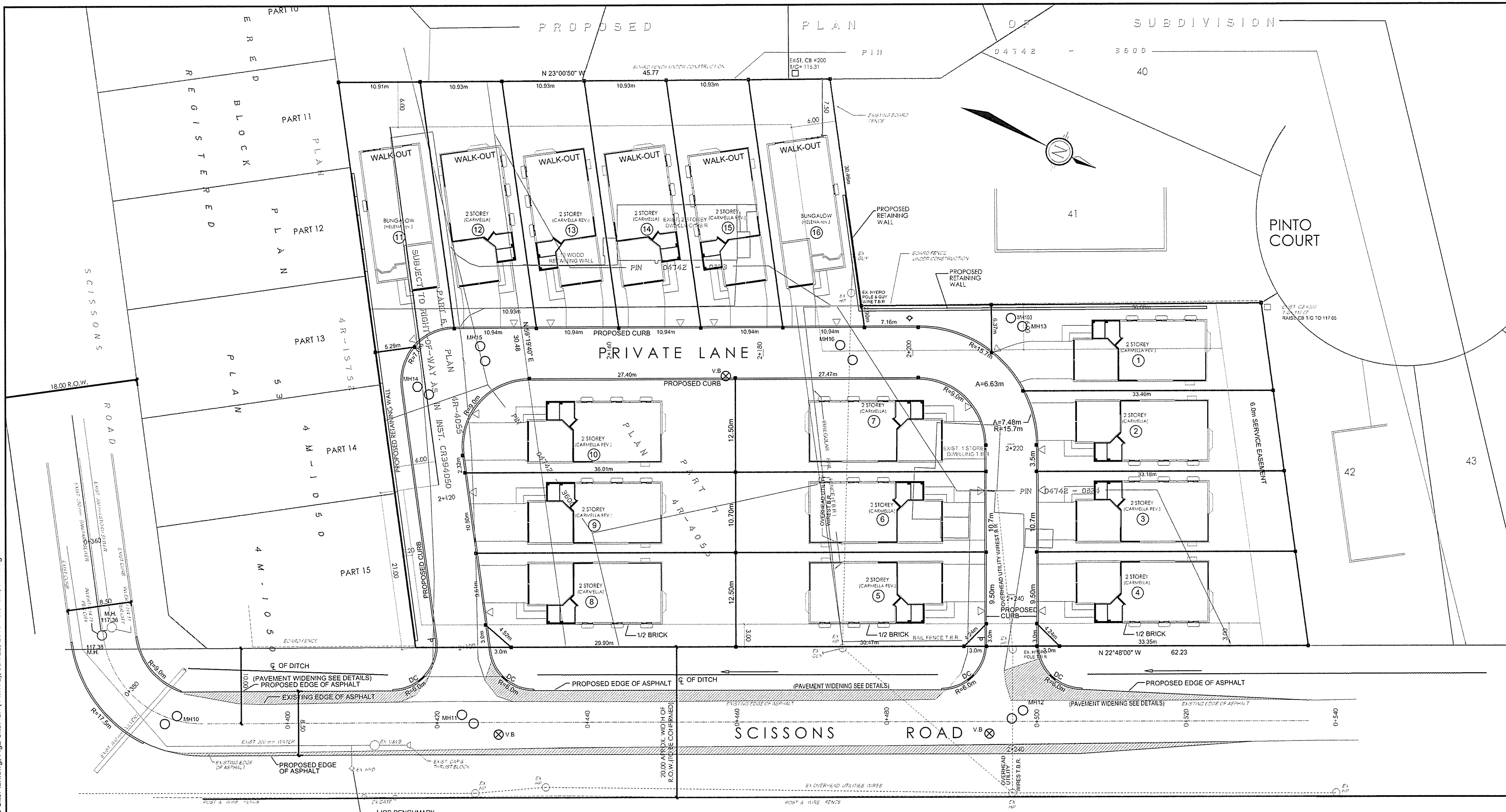

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SCISSIONS ROAD DEVELOPMENT

SITE PLAN

SCALE	DATE	JOB	FIGURE
1 : 500 (0, 5m, 10m, 20m)	AUG 2015	115090	FIGURE 2

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LEGEND

SITE BOUNDARY/PROPERTY LINE

IMAGE SOURCE: GOOGLE EARTH PRO (2014)

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SCISSIONS ROAD DEVELOPMENT

EXISTING CONDITIONS

SCALE 1 : 500 (0, 5m, 10m, 20m)

DATE AUG 2015 | JOB 115090 | FIGURE FIGURE 3

The subject property is zoned Development Reserve (DR) in the City of Ottawa Zoning By-law 2008-250. The purpose of the DR Zone is to recognize lands intended for future urban development in areas designated as General Urban Area and Developing Communities in the Official Plan. The DR zone is essentially a placeholder to prevent intensive development before studies have been completed and approved to determine the appropriate use of the land in an emerging community. It is proposed to rezone the site to R3Z to permit this from of development and to be compatible with the adjacent land uses.

1.3 Geotechnical Investigation

Morey Associates Ltd. conducted a geotechnical review in support of the proposed subdivision. The field program was carried out on December 11, 2012 and consisted of seven (7) test pits advanced to depths ranging from about 0.8 to 3.5 metres below the existing ground surface.

The findings of this investigation are included in the report titled: *Geotechnical Investigation: Proposed Residential Buildings – 27 and 35 Scissons Road, Ottawa, Ontario (Morey Associates Ltd., January 2013, No. 012370)*. The principle findings are as follows:

- The soil conditions at the location of the test pits consists of top soil overlying fine to medium or medium to coarse sand. Beneath the sand layer the soils consist of silty clay and/or glacial till (gravel, cobbles, boulders in a matrix of silty sand with a trace of clay).

- No groundwater seepage in the test pits was observed at the time of excavation; however, groundwater levels may be higher during wet periods of the year, such as the early spring.

- A maximum allowable grade raise of 2.5 metres is suggested for the site.

2.0 STORMWATER MANAGEMENT

The following section outlines the stormwater management criteria and stormwater management approach to servicing the lands.

2.1 Stormwater Management Criteria

The subject property is tributary to the Monahan stormwater management facility that outlets to Mahoney Creek, which drains to the Jock River and eventually the Rideau River. The site falls under the jurisdiction of the Rideau Valley Conservation Authority (RVCA).

The following stormwater management criteria have been developed based on the City of Ottawa and RVCA design guidelines, as well as our understanding of site conditions:

Quality Control

- The subject property is tributary to the Monahan stormwater facility which provides the quality control treatment for the site. Therefore, on-site water quality treatment is not required.
- Lot level and conveyance Best Management Practices should be encouraged to promote infiltration and pre-treatment of storm runoff.

Quantity Control

The subject site lacks an adequate storm sewer outlet. That is, the adjacent Urbandale development to the west and the development to the south have not accounted for the post-development flows from the subject property. The existing rear yard catch basins on the adjacent Urbandale property have been sized to accept the 5 year pre-development flow (C=0.35) from the site only. Therefore, the following stormwater management approach is proposed.

- Rear year drainage will outlet to the existing three catch basins along the rear property line of the adjacent Urbandale subdivision (Pinto Court and Sunnyridge Crescent) controlled to the drainage area x runoff coefficient (i.e. A x C) in the Urbandale design.
- Front yard drainage and roadway drainage will be conveyed overland to the roadside ditch on Scissons Road. Drainage will then be conveyed southerly, through a 600 mm diameter culvert at the bend in Scissons Road, and then southerly to an existing DICB behind the houses on Sawyer Way (53-55 Sawyer Way). This DICB was designed to take pre-development drainage from the Scissons Road right of way plus another 3.0 hectares of vacant land area.
- Foundation drainage will be collected by a storm sewer and will discharge to the existing storm sewer on Scissons Road.

Conveyance / Flood Protection

- The proposed ditches and overland drainage routes are to be sized to convey the 1:100 year post-development overland peak flow;
- Overland flows are to be confined within the right-of-ways and/or defined drainage easements for all storms up to and including the 1:100 year event and designed to meet all applicable City of Ottawa criteria; and,
- Culverts will be sized to convey the 25-year event (local urban roads).

2.2 Existing Conditions

Under existing conditions, storm runoff from the subject site drains west to the Urbandale development and is picked up by three (3) rear yard catch basins, which drain to the roadway storm sewer system within the Urbandale Development. Drainage from Scissons Road drains southerly to an outlet ditch behind the houses on Sawyer Way.

The allowable release rate to the Urbandale development was determined based on the storm drainage area plan prepared by J.L. Richards and Associates Ltd. (JLR No. 16761-08), which is included in **Appendix A**. J.L. Richards and Associates Ltd. split the site into three (3) parcels each with a runoff coefficient of 0.35.

Using the rational method and a 15-minute time-of-concentration for rear yards, the drainage area and runoff coefficient (A*C) values and allowable release rates for a 5-year and 100-year storm event are presented in **Table 1** below.

Table 1: Allowable Release Rates

Area ID*	Drainage Area (ha)	Runoff Coefficient	A*C	Allowable Release Rate** (L/s)	
				5-year	100-year***
A1 (684-683)	0.18	0.35	0.063	14.6	31.3
A2 (685-684)	0.41	0.35	0.144	33.3	71.5
A3 (693-675)	0.14	0.35	0.049	11.4	24.3

**Refer to Drawing 115090-STM (Storm Drainage Area Plan)*
***Tc = 15 minutes (rear yards)*
****Runoff coefficient increased by 25%*

As per the City of Ottawa Sewer Design Guidelines (October 2012) the rational method was calculated as follows:

Q_{peak} = *2.78 x Drainage Area (ha) x Runoff Coefficient x Rainfall Intensity (mm/hr)*

- For the 100-year storm event the runoff coefficient is increased by 25%
- Tc (rear yards) = 15 min; Tc (front yards / roads) = 10 min
- Rainfall Intensity based on City of Ottawa IDF Parameters:
  - 5-year Rainfall Intensity = $998.071 / (Tc (min) + 6.053)^{0.814}$
    - Tc = 15 min; I_{5yr} = 83.56 mm/hr
    - Tc = 10 min; I_{5yr} = 104.19 mm/hr
  - 100-year Rainfall Intensity = $1735.688 / (Tc (min) + 6.014)^{0.820}$
    - Tc = 15 min; I_{100yr} = 142.89 mm/hr
    - Tc = 10 min; I_{100yr} = 178.56 mm/hr

2.3 Post-Development Conditions

The proposed Scissons Road residential subdivision will be serviced by the three (3) existing rear yard catch basins that are part of the Urbandale development and by a proposed roadside ditch along Scissons Road. A 250mm storm sewer will be used to collect foundation drains. Refer to the General Plan of Services located in the back of this report.

Water Quality

Water quality control for the areas draining to the Urbandale development will be provided by the Monahan stormwater management facility.

Minor System (Drainage to Urbandale Development)

By diverting some drainage to the roadside ditch along Scissons Road the drainage area and runoff coefficient (A*C) and post-development peak flows entering the Urbandale development storm sewer system will be reduced, as shown in **Table 2** and **Table 3** below. Pre-development flows are shown in **Table** 1.

Table 2: Post-Development Peak Flows into Urbandale Development

Area ID*	Allowable			Post-Development			Post-Allowable A*C
	Drainage Area (ha)	Runoff Coef.	A*C	Drainage Area (ha)	Runoff Coef.	A*C	
A1 (684-683)	0.18	0.35	0.063	0.09	0.60	0.054	-0.009
A2 (685-684)	0.41	0.35	0.144	0.09	0.60	0.054	-0.090
A3 (693-675)	0.14	0.35	0.049	0.09	0.49	0.044	-0.005

**Refer to Drawing 115090-STM (Storm Drainage Area Plan)*

Table 3: Allowable vs. Post-Development Peak Flows into Urbandale Development

Area ID*	Allowable Release Rate (L/s)		Post-Development Peak Flows (L/s)**	
	5-year	100-year**	5-year	100-year***
A1 (684-683)	14.6	31.3	12.5	26.8
A2 (685-684)	33.3	71.5	12.5	26.8
A3 (693-675)	11.4	24.3	10.2	21.9

**Refer to Drawing 115090-STM (Storm Drainage Area Plan)*
***Tc = 15 minutes (rear yards)*
****Runoff coefficient increased by 25%*

Major System (Drainage to Scissons Roadside Ditch)

The drainage from the roadways, the six (6) units internal to the looped private road, and drainage from Scissons Road will drain to a proposed roadside ditch along Scissons Road. Post-development peak flows into the roadside ditch are shown in **Table 4**. For these catchments a 10-minute time-of-concentration was used as per the City of Ottawa Sewer Design Guidelines (October 2012).

Based on Manning's equation, the 0.75 m deep v-bottom roadside ditch with 3:1 side slopes has capacity to convey the 100-year peak flows from the site and upstream drainage area along Scissons Road, as shown in **Table 5** below. The depth in the ditch during a 100-year event is 0.39 m, which provides 0.36 m freeboard from the top of the ditch.

Table 4: Post-Development Peak Flows into Scissons Roadside Ditch

Area ID*	Drainage Area (ha)	Runoff Coefficient	A*C	Peak Flow (L/s)**	
				5-year	100-year***
Site (Area Draining to Scissons Roadside Ditch)					
B1	0.09	0.70	0.063	18.2	39.1
B2	0.17	0.57	0.097	28.1	60.2
B3	0.22	0.61	0.134	38.9	83.3
TOTAL (B1, B2, B3)	**0.48**	**0.61**	**0.293**	**84.8**	**181.7**
Scissons Road					
C1	0.02	0.69	0.014	4.0	8.7
C2	0.05	0.66	0.033	9.6	20.5
C3	0.10	0.65	0.065	18.8	40.3
C4	0.10	0.50	0.050	14.5	31.0
TOTAL (C1, C2, C3, C4)	**0.27**	**0.60**	**0.162**	**46.9**	**100.5**
TOTAL Site / Scissons Rd.	***0.75***	***0.61***	***0.458***	***132.5***	***283.9***

**Refer to Drawing 115090-STM (Storm Drainage Area Plan)*
***Tc = 10 minutes (front yards / roads)*
****Runoff coefficient increased by 25%*

Table 5: Capacity of the Proposed Scissons Roadside Ditch (Manning's Equation)

Parameter	Units	Value (Q_{max})	Value (Q_{5yr})	Value (Q_{100yr})
Depth	m	0.75	0.29	0.39
Side slopes	1 to X	3	3	3
Top Width	m	4.5	1.74	2.34
Area	m^2	1.688	0.252	0.456
Perimeter	m	4.74	1.83	2.47
R=A/P	m	0.36	0.14	0.18
n		0.035	0.035	0.035
Slope	m/m	0.005	0.005	0.005
Q_{max}	**m^3/s**	**1.712**	**0.136**	**0.299**
V_{max}	**m/s**	**1.014**	**0.538**	**0.656**

Culverts

The proposed outlet for the areas draining to the proposed drainage ditch along Scissons Road is an existing 600mm culvert that crosses Scissons Road approximately 30 m downstream of the site. This culvert has approximately 300mm of cover. Based on the inlet nomographs, provided in **Appendix A**, the capacity of this culvert without overtopping the road (HW/D = 1.5) is approximately 500 L/s. The full flow capacity of the culvert (i.e. HW/D = 1.0) is 325 L/s. Therefore, this culvert can convey the 100-year storm flow without overtopping the road as shown in **Table 5** above.

Foundation Drain Collector

A proposed 250mm storm sewer will serve as a foundation drain collector and will not take any stormwater from the surface. Anticipated peak flows in the foundation drain collector were estimated based on the City of Ottawa Sewer Design Guidelines (October 2012) as shown in **Table 6**.

Table 6: Anticipated Peak Flows within the Foundation Drain Collector

Foundation Drain Allowance (Less than 10 ha)	Drainage Area to Foundation Drains	Estimated Peak Flow in Foundation Drain
5.0 L/s/gross ha	0.75 ha	3.75 L/s

A 250mm storm sewer sloped at a minimum slope of 0.44% has a full flow conveyance capacity of 41.1 L/s, which is greater than the minimum required peak flow.

3.0 SANITARY SEWER SYSTEM

3.1 Sanitary Flows

Sanitary drainage will be collected by a 250 mm diameter sanitary sewer and conveyed to the sanitary sewer on Scissons Road. Sanitary flows are calculated as follows in **Table 7**.

Table 7: Sanitary Flow Summary

Development Condition	Population	Peak Res. Flow (L/s)	Peak Ext. Flow (L/s)	Peak Design Flow (L/s)
Lots (1-20)	55	0.89	0.21	1.10

** Based on 3.4 persons per unit, PF = 4.0, Area = 0.75 ha, infiltration = 0.28 L/S/ha.*

The downstream sanitary sewers should have adequate capacity for the addition of these very small flows.

4.0 WATER SUPPLY SYSTEM

It is proposed to extend the existing 300 mm diameter watermain on Scissons northerly to service the development. A 200 mm diameter loop will be constructed off Scissons to serve the site. The following design criteria (from the City of Ottawa) will be used to assess the proposed watermain sizes:

Residential

Residential Demand:	350L per person per day
Singles:	3.4 persons per unit
Maximum Daily Demand:	2.5 x Average Daily Demand
Peak Hour Demand:	2.2 x Maximum Daily Demand
Fire Flow Demand:	Fire Underwriters Survey
Fire Demand:	167 L/s for Single Residential Units as per Fire Underwriter's Survey for Public Fire Protection

System Pressures:

Maximum (System):	690 kPa (100 psi) as per City of Ottawa Guidelines
Maximum (Service):	550 kPa (80 psi) as per Ontario Plumbing Code
Minimum:	275 kPa (40 psi) except during fire flow condition
Minimum (fire):	140 kPa (20 psi)

Friction Factors:

Size	C-Factor
Less than 200mm	100
200mm-300mm	110

EPANET Modeling Results:

The domestic water demands will be very similar to the sanitary demands in order of magnitude and are not presented here. EPANET hydraulic modeling was undertaken to calculate the minimum system pressure during fire flow demand with results shown in **Table 8** and **Figure** 4. The model was also run under average day demand and peak hour demand to assess the water age and residual pressures with results shown in **Table 9** and **Table 10.** Related background calculations and data is included in **Appendix B**.

Table 8 Fire Demand Pressure Check

Node	Elevation (m)	Demand (LPS)	Head (m)	Pressure	
				(m)	(PSI)
2	115.10	0.00	146.07	30.97	44
3	115.30	0.31	144.06	28.76	41
4	115.63	167.24	141.70	26.07	37
5	115.01	0.00	145.62	30.61	44
Resvr 1		-167.55	146.30		

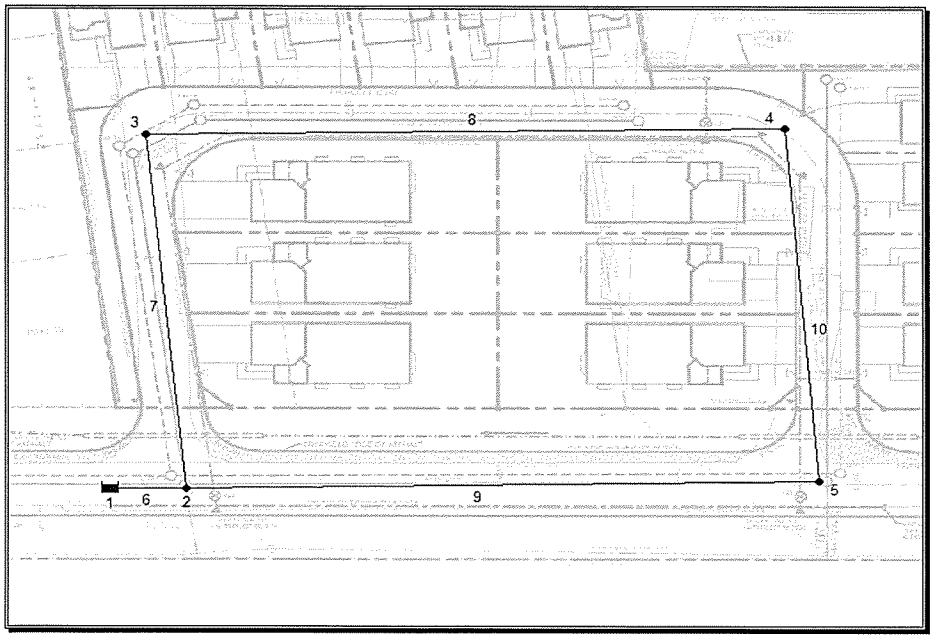
Table 9 High Pressure Check (Water Age)

Node	Elevation	Demand	Head	Pressure		Age
	(m)	(LPS)	(m)	(m)	(PSI)	(hrs)
2	115.10	0.00	163.30	48.20	68.86	1.02
3	115.30	0.13	163.30	48.00	68.57	6.83
4	115.63	0.10	163.30	47.67	68.10	17.62
5	115.01	0.00	163.30	48.29	68.99	13.00
Resvr 1		-0.23	163.30			

Table 10 Peak Hour Pressure Check

Node	Elevation	Demand	Head	Pressure	
	(m)	(LPS)	(m)	(m)	(PSI)
2	115.10	0.00	155.40	40.30	58
3	115.30	0.69	155.40	40.10	57
4	115.63	0.53	155.40	39.77	57
5	115.01	0.00	155.40	40.39	58
Resvr 1		-1.22	155.40		

Figure 4 EPANET Model Schematic



5.0 EROSION AND SEDIMENT CONTROL

Erosion and sediment control measures will be implemented during construction in accordance with the "Guidelines on Erosion and Sediment Control for Urban Construction Sites" (Government of Ontario, May 1987).

Typical erosion and sediment control measures recommended include, but are not limited to, the use of silt fences around perimeter of site (OPSD 219.110), filter fabric or inserts under catch basin/maintenance hole lids, heavy duty silt fence barrier (OPSD 219.130), straw bale check dams (OPSD 219.180), rock check dams (219.210 or OPSD 219.211), turbidity curtain (OPSD 219.260), dewatering trap (OPSD 219.240), temporary water passage system (OPSD 221.030), riprap (OPSS 511), mud mats, silt bags for dewatering operations, topsoil and sod to disturbed areas and natural grassed waterways. Dewatering and sediment control techniques will be developed for the individual situations based on the above guidelines and utilizing typical measures to ensure erosion and sediment control is controlled in an acceptable manner and there is no negative impact to adjacent lands, water bodies or water treatment/conveyance facilities.

It will be the responsibility of the Contractor to submit a detailed construction schedule and appropriate staging, dewatering and erosion and sediment control plans to the Contract Administrator for review and approval prior to the commencement of work.

General

- All erosion and sediment control measures are to be installed to the satisfaction of the engineer, the municipality and the conservation authority prior to undertaking any site alterations (filling, grading, removal of vegetation, etc.) and remain present during all phases of site preparation and construction.
- A qualified inspector should conduct daily visits during construction to ensure that the contractor is working in accordance with the design drawings and that mitigation measures are being implemented as specified.
    - A light duty silt fence barrier is to be installed in the locations shown on the Erosion and Sediment Control Plan.
    - Straw bale barriers are to be installed in drainage ditches.
    - Filter cloth is to be placed under the grates of all proposed and existing catchbasins and structures.
    - After complete build-out, all sewers are to be inspected and cleaned and all sediment and construction fencing is to be removed.
- The contractor shall ensure that proper dust control is provided with the application of water (and if required, calcium chloride) during dry periods.
- The contractor shall immediately report to the engineer or inspector any accidental discharges of sediment material into any ditch or sewer system. Appropriate response measures shall be carried out by the contractor without delay.
- The contractor acknowledges that failure to implement erosion and sediment control measures may result in penalties imposed by any applicable regulatory agency.

6.0 CONCLUSIONS

- Storm servicing for the development will be provided by the existing three (3) catch basins within the Urbandale development and by the roadside ditch along Scissons Road.
- The post-development drainage area x runoff coefficient (A*C) values and peak flows into the three (3) catchbasins within the Urbandale development will be less than those allocated
- The existing 600mm culvert crossing Scissons Road has capacity to convey the estimated 100-year peak flows from the site.
- A 250mm storm sewer will serve as a foundation drain collector and connect the existing 300mm storm sewer along Scissons Road approximately 30m south of the site. The foundation drain collector will not intercept any stormwater from the surface.
- Stormwater quality control for the proposed development is provided by the Monahan stormwater management facility.
- Sanitary service will be provided by 250mm-diameter sanitary sewer connecting to the sanitary sewer on Scissons Road,
- Water service will be provided by a 200mm-diameter watermain loop on the private crescent connected to the extension of the 300 mm diameter watermain on Scissons road. A check on minimum pressures during maximum day plus fire demand and during peak hour demand was undertaken and residual pressures are adequate. Also, water age and pressure was assessed under the high pressure demand and were within City guidelines.
- Erosion and sediment control measures associated with construction are to be implemented as outlined in Section 6.0.

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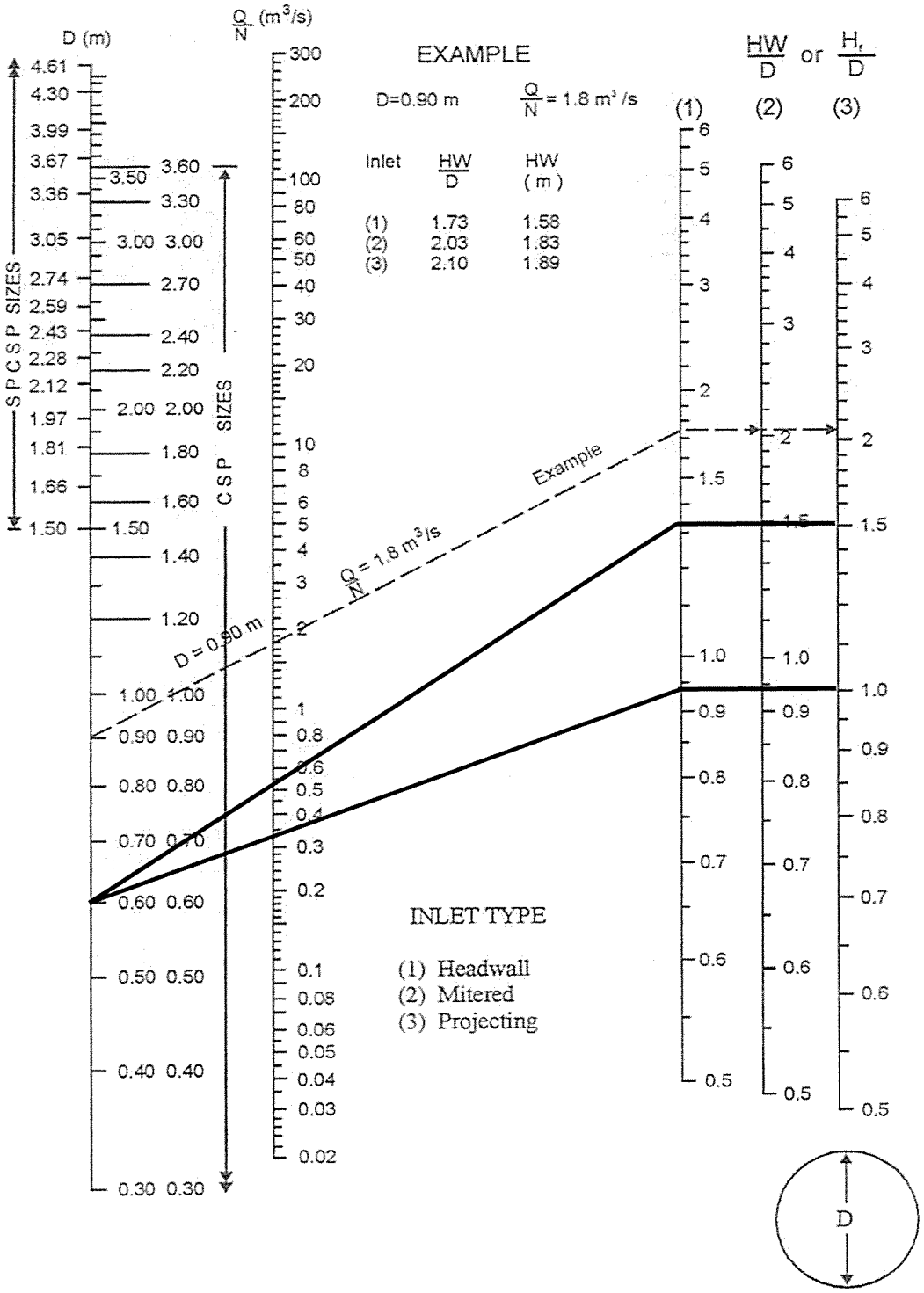
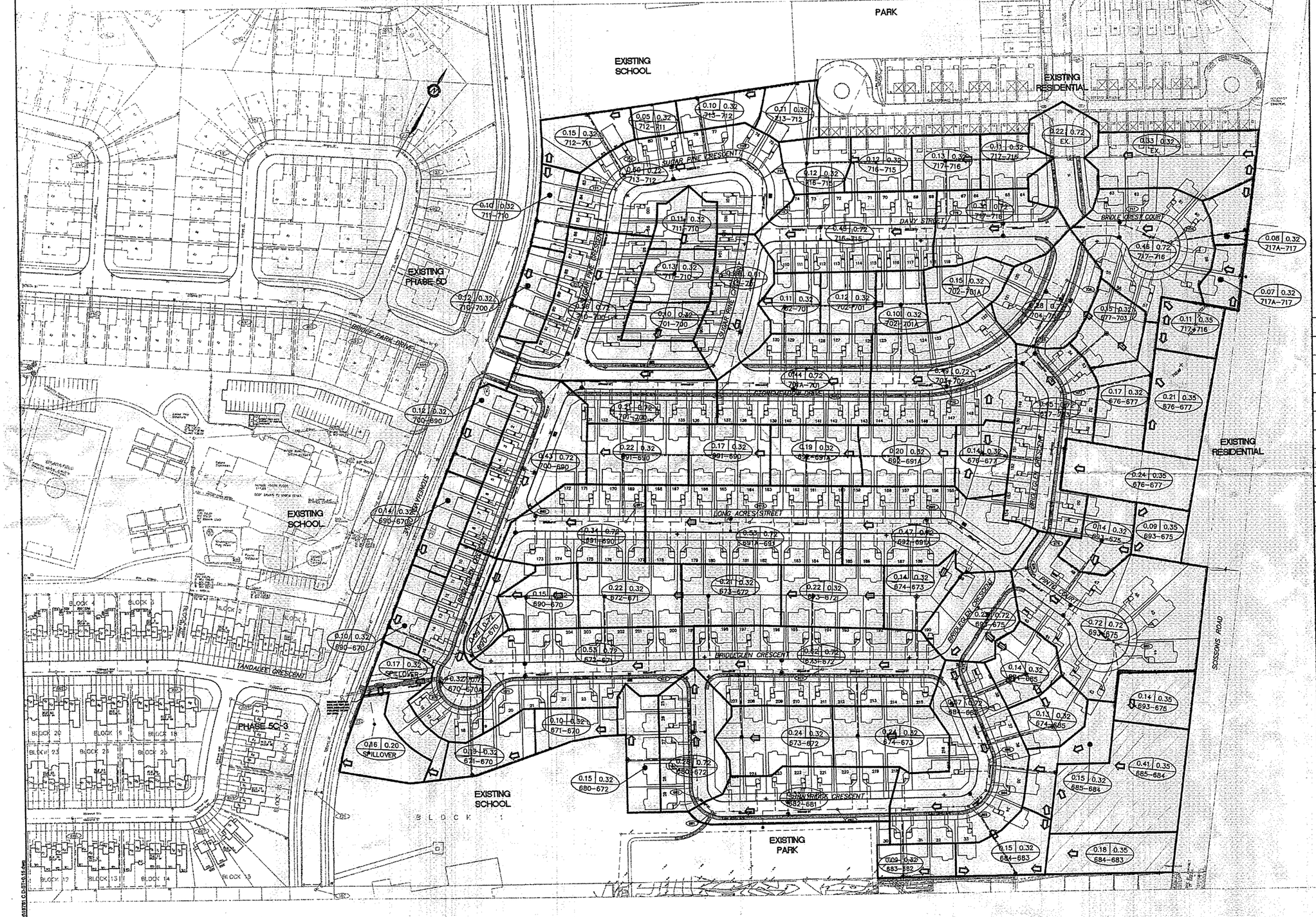
APPENDIX A

Storm Sewer Design Information

MTO Drainage Management Manual
Design Chart 2.32: Inlet Control: Circular CSP and SPCSP Culverts

600mm Culvert Crossing Scissons Road





LEGEND

- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- PROPOSED CATCH BASIN MANHOLE
- INTERCONNECTED ROADWAY CB C/W INDIVIDUAL IPEX TYPE ICD OR CITY APPROVED EQUIVALENT (REFER TO ICD SYMBOL FOR ICD SIZE)
- CATCH BASIN WITH INDIVIDUAL 8.0 L/S HYDROVEX FLOW REGULATOR (OR CITY APPROVED EQUIVALENT)
- CATCH BASIN WITH INDIVIDUAL 12.0 L/S HYDROVEX FLOW REGULATOR (OR CITY APPROVED EQUIVALENT)
- CATCH BASIN WITH INDIVIDUAL 22.0 L/S IPEX TYPE 'A' ICD (OR CITY APPROVED EQUIVALENT)
- CATCH BASIN WITH INDIVIDUAL 42.0 L/S IPEX TYPE 'C' ICD (OR CITY APPROVED EQUIVALENT)
- 250mm ø PERFORATED PIPE @ 1.0% c/w FILTER SOCK
- PROPOSED ELBOW CATCHBASIN
- HYDRANT
- STORM SEWER & MANHOLE
- LOT NUMBER
- DRAINAGE BOUNDARY
- AREA IN HECTARES
- 0.08 | 0.32 / 717A–717 — RUNOFF COEFFICIENT / PIPE REACH UPSTREAM MANHOLE TO DOWNSTREAM MANHOLE
- MAJOR FLOW DIRECTION

Reviewed By
Development Review Branch
Signed:
Date: JULY 8 2013

NO.	ISSUE	DATE
6	REVISED PER CITY COMMENTS	JAN. 14/13
5	REVISED PER CITY COMMENTS	NOV. 9/12
4	REVISED PER CITY COMMENTS	JULY 20/12
3	ISSUED TO CITY OF OTTAWA FOR REVIEW AND APPROVAL	JAN. 30/12
2	ISSUED TO CITY FOR REVIEW AND APPROVAL (MINOR LOT REVISION)	FEB. 19/08
1	ISSUED TO CITY OF OTTAWA FOR REVIEW AND APPROVAL	JULY 6/07

SCALE: 1:1000

URBANDALE CORPORATION
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Ottawa, ON
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(613) 731-6331

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PROFESSIONAL STAMP

LICENSED PROFESSIONAL ENGINEER
K.R. FERREY MORRIS
100122432
PROVINCE OF ONTARIO

PROJECT NORTH

PROJECT:
URBANDALE CORPORATION
BRIDLEWOOD
PHASE 6
(310 STONEHAVEN DRIVE)
CITY OF OTTAWA

DRAWING:
STORM DRAINAGE PLAN

DESIGN: K.F.	DRAWING NO.: D-ST
DRAWN: T.S.	
CHECKED: L.D.	JLR NO: 16761-08
PLOTTED: Jul 03, 2013	

D07-11-04-0031

16151

File Location: V:\1676\1.active\16761.C.D-ST-0.15.dwg

APPENDIX B

Water Demands and Boundary Conditions - Scissons Road

Boundary Conditions at Scissons Road

Information Provided:

Date provided: 04th August 2015

Criteria	Demand (L/s)
Average Demand	0.22
Maximum Daily Demand	0.56
Peak Hourly Demand	1.23
Fire Flow Demand	167
Maximum Daily + Fire Flow Demand	167.56

Location:

Results

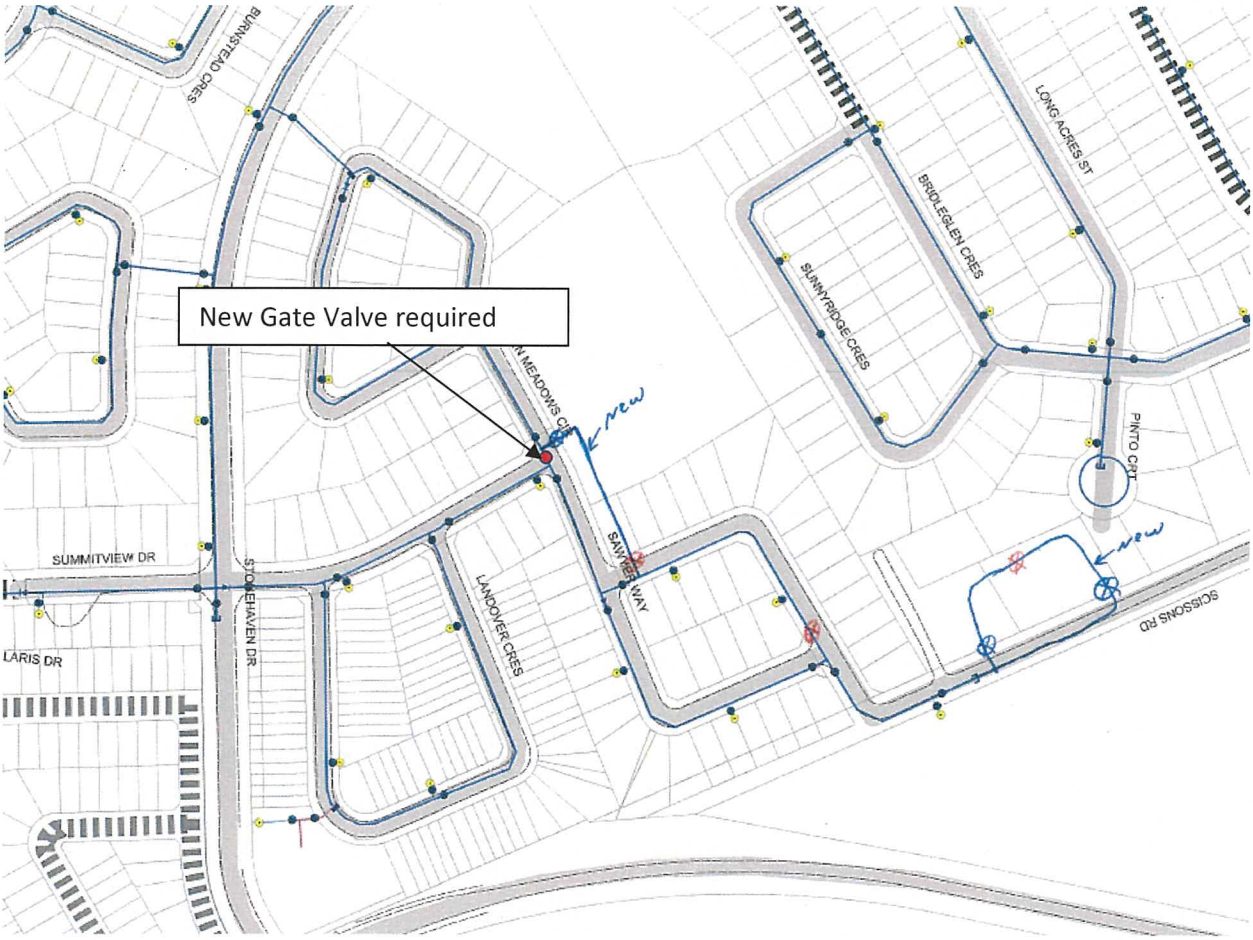
Connection:

Criteria	Head (m)
Max HGL	163.3
PKHR	155.4
MXDY + Fire Flow (167 L/s)	146.3

Note:

This boundary condition is applied based on the following conditions –

As showing in the following Figure, the proposed (by consultant)new second connection will meet the City's Guidelines (*Ottawa Design Guidelines – Water Distribution, WDG001, July 2010, Clause 4.3.1.*) through creating a loop for the proposed service area. The area also requires to install a Gate Valve between the connections of Glen Meadows Cir/Summitview Dr and New pipe/Glen Meadows Cir to have available supply during either side of pipe failure.



Disclaimer

The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

APPENDIX C

Development Servicing Study Checklist

Project Name: Scissons Road
Project Number: 115090
Date: July 2, 2015

Development Servicing Study Checklist

4.1 General Content	Addressed (Y/N/NA)	Section	Comments
Executive Summary (for larger reports only).	NA		
Date and revision number of the report.	Y	Cover	
Location map and plan showing municipal address, boundary, and layout of proposed development.	Y		Figures 1, 2 and 3
Plan showing the site and location of all existing services.	Y		Figures 3
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.	Y	1.0	
Summary of Pre-consultation Meetings with City and other approval agencies.	N		
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.	Y	2.0	
Statement of objectives and servicing criteria.	Y		
Identification of existing and proposed infrastructure available in the immediate area.	Y	2.0 - 3.0	
Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	N		Stoney Swamp to The East which will not be impacted.
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 neighboring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	Y		Grading Plan

Development Servicing Study Checklist

4.1 General Content	Addressed (Y/N/NA)	Section	Comments
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.	NA		Refer to Geotechnical Investigation Report
Proposed phasing of the development, if applicable.	NA		
Reference to geotechnical studies and recommendations concerning servicing.	Y	1.3	
All preliminary and formal site plan submissions should have the following information:			
Metric scale	Y	ALL	
North arrow (including construction North)	Y	ALL	
Key plan	Y	ALL	
Name and contact information of applicant and property owner	Y	ALL	
Property limits including bearings and	Y	ALL	
Existing and proposed structures and parking	Y	ALL	
Easements, road widening and rights-of-way	Y	ALL	
Adjacent street names	Y	ALL	

Development Servicing Study Checklist

4.2 Water	Addressed (Y/N/NA)	Section	Comments
Confirm consistency with Master Servicing Study, if available.	NA		
Availability of public infrastructure to service proposed development.	Y		
Identification of system constraints.	Y	4.0	
Identify boundary conditions.	Y	4.0	
Confirmation of adequate domestic supply and pressure.	Y	4.0	
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.	Y	4.0	
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.	Y	4.0	
Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design.	NA		
Address reliability requirements such as appropriate location of shut-off valves.	N		Detailed Design Requirement
Check on the necessity of a pressure zone boundary modification.	NA		
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.	N		Fire Demand Checked Only
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.	Y	4.0	
Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	NA		
Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Y	4.0	
Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	Y		Appendix B

Development Servicing Study Checklist

4.3 Wastewater	Addressed (Y/N/NA)	Section	Comments
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).	Y	3.0	
Confirm consistency with Master Servicing Study and/or justifications for deviations.	NA		
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.	NA		
Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Y	3.0	
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)	Y	3.0	
Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	N		
Description of proposed sewer network including sewers, pumping stations, and forcemains.	Y	3.0	General Plan of Services
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).	NA		
Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	NA		
Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	NA		
Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	NA		
Special considerations such as contamination, corrosive environment etc.	NA		

Development Servicing Study Checklist

4.4 Stormwater	Addressed (Y/N/NA)	Section	Comments
Description of drainage outlets and downstream constraints including legality of outlet (i.e. municipal drain, right-of-way, watercourse, or private property).	Y	2.0	
Analysis of the available capacity in existing public infrastructure.	Y	2.0	
A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns and proposed drainage patterns.	Y		Figures 2 and 3
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.	Y	2.0	
Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Y	2.0	
Description of stormwater management concept with facility locations and descriptions with references and supporting information.	Y	2.0	
Set-back from private sewage disposal systems.	NA		
Watercourse and hazard lands setbacks.	NA		
Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	NA		
Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	Y	3.0	
Storage requirements (complete with calcs) and conveyance capacity for 5 yr and 100 yr events.	Y	3.0	
Identification of watercourse within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	NA		
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.	Y	2.0	
Any proposed diversion of drainage catchment areas from one outlet to another.	NA		
Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and SWM facilities.	Y	2.0	
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.	Y	2.0	

Development Servicing Study Checklist

4.4 Stormwater	Addressed (Y/N/NA)	Section	Comments
Identification of municipal drains and related approval requirements.	NA		
Description of how the conveyance and storage capacity will be achieved for the development.	Y	2.0	
100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	Y	2.0	100 Year HGL not available
Inclusion of hydraulic analysis including HGL elevations.	N		
Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Y	2.0	
Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	NA		
Identification of fill constrains related to floodplain and geotechnical investigation.	NA		

Development Servicing Study Checklist

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

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