2705460 ONTARIO INC.

1151 AND 1131 TERON ROAD RESIDENTIAL DEVELOPMENT, OTTAWA, ON

SERVICING REPORT

APRIL 16, 2021
1ST SUBMISSION

1151 AND 1131 TERON ROAD, RESIDENTIAL DEVELOPMENT, OTTAWA, ON

SERVICING REPORT

MANOR PARK MANAGEMENT

SITE PLAN APPLICATION
1ST SUBMISSION

PROJECT NO.: 211-01794-00
DATE: APRIL 2021

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April 16, 2021

David Renfroe
Manor Park Management

Attention: David Renfroe,

Dear Sir:

Subject: 1151 and 1131 Teron Road – Residential Development - Servicing Report

Please find attached our servicing report, including civil engineering design drawings, prepared for your review prior to first submission.

Yours sincerely,

Ding Bang (Winston) Yang, P.Eng.
Project Engineer

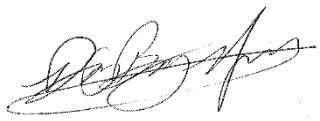
WSP ref.: 20M-01534-00

QUALITY MANAGEMENT

ISSUE/REVISION	FIRST ISSUE	REVISION 1	REVISION 2	REVISION 3
Remarks	Issued for Site Plan Application			
Date	April 16th, 2021			
Prepared by	Ding Bang (Winston) Yang			
Signature				
Checked by	Ishaque Jafferjee			
Signature				
Project number	20M-01534-00			

SIGNATURES

PREPARED BY



Ding Bang (Winston) Yang, P.Eng
Project Engineer

REVIEWED BY

Ishaque Jafferjee, P.Eng.
Senior Project Manager

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1 GENERAL

1.1 EXECUTIVE SUMMARY

WSP was retained by 2705460 Ontario Inc. C/O Anand Aggarwal to provide servicing, grading and stormwater management design services, in support of the site plan approval, for the proposed residential development located at 1151 and 1131 Teron Road, north of Teron Road, south of March Road and east of Steacie Drive. The proposed development consists of two residential towers, 1151 Teron Road – 9 storeys and 1131 Teron Road – 3 storeys, over 1 level of underground parking garage. This report will provide sufficient detail to demonstrate that the proposed development can be supported by the existing municipal infrastructure services, such as watermain, sanitary and storm sewers and that the servicing design conforms to the applicable standards and guidelines. The report will also include measures to be taken during the construction to minimize erosion and sedimentation. A separate report (1151 and 1131 Teron Road – Stormwater Management Report) will be provided detailing stormwater management approach, addressing the quantity control and quality measures in accordance with the applicable guidelines.

Currently the land proposed for the 1151 Teron Road residential development is natural landscaping area with mainly covered by grass and trees. The gross building area for 1151 is 9,889.0 m². The land proposed for the 1131 Teron Road residential development is occupied by a bungalow and drawing. The site is surrounded by commercial and residential development. It is part of lot 5 concession 4, Geographic Township of March, now City of Ottawa (refer to Appendix A for the Topographical Survey Plan by Annis, O'Sullivan, Vollebekk Ltd, February 2021). Based on the topographic survey, the 1151 Teron Road ground, predominantly grass and shrubs, sloping from the high elevation of 89.71 m in the south to the March Road ditch in the north of the site. For 1131 Teron Road, the overall topography is draining north to south toward Teron Road. Existing on-site detention facilities have not been constructed in the existing sites. The existing topographic conveys overland runoff to March Road Ditch and Teron Road ROW. Quality control will be provided as specified by the MVCA.
The City of Ottawa required that the design of a drainage and stormwater management system in this development must be prepared in accordance with the following documents:

- Sewer Design Guidelines, City of Ottawa, October 2012;
- Stormwater Management Planning and Design Manual, Ministry of the Environment, March 2003; and
- Stormwater Management Facility Design Guidelines, City of Ottawa, April 2012

This report was prepared utilizing servicing design criteria obtained from available sources, and outlines the design for water, sanitary wastewater, and stormwater facilities.

The format of this report matches that of the servicing study checklist found in Section 4 of the City of Ottawa's Servicing Study Guidelines for Development Applications, November 2009.

The following municipal services are available within Teron Road to the development as recorded from as-built drawings from City of Ottawa:

Teron Road:

- 225 and 300 mm conc storm sewer, 610mm watermain.

Steacie Drive:

- 305mm watermain.

Weeping Wilow Lane:

- 250 mm sanitary sewer.

It is proposed that:

- On-site stormwater management systems, bioswale will be provided to attenuate flow rates leaving the new parking lot to March Road ditch.
- On-site stormwater management systems, employing surface and roof storage will be provided to attenuate flow rates leaving new building to Teron Road.
- Existing drainage patterns, previously established controlled flow rates will be maintained. Refer to the stormwater management report for details.

1.2 DATE AND REVISION NUMBER

This version of the report is the first revision, dated April 16th, 2021.

1.3 LOCATION MAP AND PLAN

The proposed residential development at 1151 and 1131 Teron Road, in the City of Ottawa at the location shown in Figure 1-1 below.

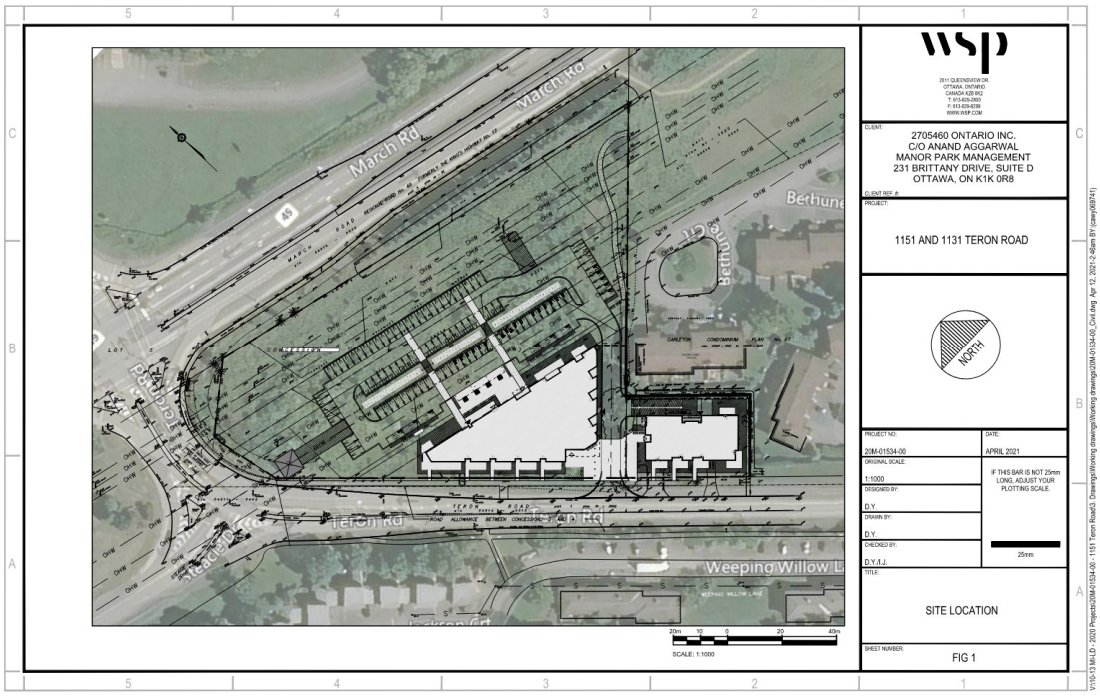


Figure 1-1 Site Location

1.4 ADHERENCE TO ZONING AND RELATED REQUIREMENTS

The proposed property use will be in conformance with zoning and related requirements prior to approval and construction and is understood to be in conformance with current zoning.

1.5 PRE-CONSULTATION MEETINGS

A pre-consultation meeting was held with the City of Ottawa on January 14, 2021. Notes from this meeting are provided in Appendix A.

1.6 HIGHER LEVEL STUDIES

The review for servicing has been undertaken in conformance with, and utilizing information from, the following documents:

- Ottawa Sewer Design Guidelines, Second Edition, Document SDG002, October 2012, City of Ottawa including:
    - Technical Bulletin ISDTB-2012-4 (20 June 2012)
    - Technical Bulletin ISDTB-2014-01 (05 February 2014)
    - Technical Bulletin PIEDTB-2016-01 (September 6, 2018)
    - 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.

1.7 STATEMENT OF OBJECTIVES AND SERVICING CRITERIA

The objective of the site servicing is to meet the requirements for the proposed modification of the site while adhering to the stipulations of the applicable higher-level studies and City of Ottawa servicing design guidelines.

1.8 AVAILABLE EXISTING AND PROPOSED INFRASTRUCTURE

As described above, a municipal storm sewer and a watermain are located within Teron Road right of way. But the city has stated connecting to the 610 mm watermain along Teron Road is not allowed. Watermain connection is required to route to the 300 mm watermain along Steacie Drive, and one water service will be connected to the existing 150 mm hydrant lead north of Teron Road for redundancy. Since no sanitary sewer is anticipated along Teron Road. New sanitary sewer will be connected to the existing sanitary sewers along Weeping Wilow Lane from the proposed development. A new piped stormwater system conveys the proposed parking lot drainage to March Road ditch. Quantity control is required to restrict

the discharge leaving the development areas to March Road ditch and Teron Road, as noted in the Stormwater Management Report. Thus, the on-site storm runoff for the south side will be captured by the proposed deck drains and roof drains and directed to the external cistern located on the west side of the building at 1151 Teron Road. For the north side will be captured by the proposed bio-swale and directed to the March Road ditch to the north of the site.

The existing boundary road at the site will remain open. Temporary one lane closure for Teron Road is foreseen during the connection and installation of the proposed watermain to Steacie Drive and Teron Road intersection.

1.9 ENVIRONMENTALLY SIGNIFICANT AREAS, WATERCOURSES AND MUNICIPAL DRAINS

The proposed development site is surrounded by commercial and residential lands. The subjected site is divided into parking lot and building parcel. Runoff from parking lot is directed to the March Road ditch north of the site.

Runoff from the building parcel is directed to the 225 mm storm sewer along Teron Road. Bio-swale and Oil grit separator have been proposed to provide quality control as specified by the MVCA.

1.10 CONCEPT LEVEL MASTER GRADING PLAN

A detailed grading plan for the development site has been developed, matching the existing overland flow pattern of directing overflow drainage to March Road ditch and Teron Road. The site topographic survey, included in Appendix A, provides evidence of direction of overland flow of the site from south to north.

Grading will employ terraced slopes of 3H:1V to provide transitions from the new work areas to existing grades. No changes will be made to grades at the property perimeter.

1.11 IMPACTS ON PRIVATE SERVICES

There are no existing domestic private services (septic system and well) located on the site. There are no neighbouring properties using private services.

1.12 DEVELOPMENT PHASING

No development phasing is expected for the current proposal.

1.13 GEOTECHNICAL SUTDY

A preliminary geotechnical investigation report has been prepared by Paterson Group, project number, PG5283-1, dated April 1, 2021, and its recommendations has been taken into account in developing the engineering specifications.

1.14 DRAWING REQUIREMENT

The engineering plans submitted for site plan approval are in compliance with City requirements.

2 WATER DISTRIBUTION

2.1 CONSISTENCY WITH MASTER SERVICING STUDY AND AVAILABILITY OF PUBLIC INFRASTRUCTURE

There are an existing 305mm diameter municipal watermain along Steacie Drive and 610mm diameter municipal watermain along Teron Road providing water to 1151 and 1131 Teron Road. For the proposed development, a 203mm diameter private watermain looping extended from the existing 305mm municipal watermain along Steacie Drive and a 150mm diameter private watermain extended from the existing 150mm diameter hydrant lead at the proposed entrance will provide redundancy for the development. Two water services connections will be extended to the 1151 and 1131 Building mechanical rooms.
The existing municipal fire hydrant at the proposed entrance will be relocated east of the new entrance within 45m of the Siamese connection. No changes are required to the existing City water distribution system to allow servicing for this property.

The new apartment buildings will be protected with a supervised automatic fire protection sprinkler system and will required a 250mm diameter water service.

2.2 SYSTEM CONSTRAINTS AND BOUNDARY CONDITIONS

Boundary conditions have been obtained from the City of Ottawa at the 305 mm diameter watermain on Steacie Drive and 150mm diameter watermain along Teron Road for the development, are included in Appendix B. A max fire flow demand of 167 l/s (10,000 l/min) has been calculated for the proposed development as noted in Section 2.4. The boundary conditions were supplied by the City of Ottawa, based on fire flows and domestic demands estimated by WSP for the proposed residential development.

Table 2-1: Boundary Conditions for Connection 1 – Steacie Drive

BOUNDARY CONDITIONS (To be completed later)	
SCENARIO	HGL (m)
Maximum HGL	130.2
Minimum HGL (Peak Hour)	126.9
Max Day + Fire Flow	127.6

Table 2-2: Boundary Conditions for Connection 2 – Teron Road

BOUNDARY CONDITIONS (To be completed later)	
SCENARIO	HGL (m)
Maximum HGL	130.2
Minimum HGL (Peak Hour)	126.9
Max Day + Fire Flow	127.9

2.3 CONFIRMATION OF ADEQUATE DOMESTIC SUPPLY AND PRESSURE

Water demands are based on Table 4.2 of the Ottawa Design Guidelines – Water Distribution. As previously noted, the development is considered as light industrial development, consisting of three one-storey commercial buildings. A water demand calculation sheet is included in Appendix B, and the total water demands are summarized as follows:

	Proposed 9-Stprey	Proposed 3-Storey
Average Day	0.64 l/s	0.10 l/s
Maximum Day	1.59 l/s	0.26 l/s
Peak Hour	3.49 l/s	0.57 l/s

The 2010 City of Ottawa Water Distribution Guidelines stated that the preferred practice for design of a new distribution system is to have normal operating pressures range between 345 kPa (50 psi) and 552 kPa (80 psi) under maximum daily flow conditions. Other pressure criteria identified in the guidelines are as follows:

Minimum Pressure	Minimum system pressure under peak hour demand conditions shall not be less than 276 kPa (40 psi)
Fire Flow	During the period of maximum day demand, the system pressure shall not be less than 140 kPa (20 psi) during a fire flow event.
Maximum Pressure	Maximum pressure at any point the distribution system shall not exceed 689 kPa (100 psi). In accordance with the Ontario Building/Plumbing Code, the maximum pressure should not exceed 552 kPa (80 psi). Pressure reduction controls may be required for buildings where it is not possible/feasible to maintain the system pressure below 552 kPa.

Water pressure at municipal connections check:

Min. HGL @ Connection 1 – Pavement elevation = 126.90m – 89.91m = 36.99m = 362.66 kPa

Min. HGL @ Connection 2 – Pavement elevation = 126.90m – 90.48m = 36.42m = 357.07 kPa

Water pressure at building connection (at average day) check:

Max. HGL @ Connection 1 – Finished floor elevation = 130.20m – 91.00 = 39.2m = 384.32 kPa

Max. HGL @ Connection 2 – Finished floor elevation = 130.20m – 91.00 = 39.2m = 384.32 kPa

Water pressure at building connection (at max. hour demand) check:

Min. HGL @ Connection 1 – Finished floor elevation = 126.90m-91.00m = 35.90m = 351.97 kPa

Min. HGL @ Connection 2 – Finished floor elevation = 126.90m-91.00m = 35.90m = 351.97 kPa

Water pressure at building connection (at max. day + fire demand):

(Max Day + Fire) HGL @ Connection 1 - Finished floor elevation = 127.60m-91.00m = 36.60m = 358.83 kPa

(Max Day + Fire) HGL @ Connection 2 - Finished floor elevation = 127.90m-91.00m = 36.90m = 361.77 kPa

The minimum water pressure inside the building at the connection is determined with the minimum HGL condition, resulting in a pressure of 351.97 kPa which exceed the minimum requirement of 276 kPa per the guidelines.

2.4 CONFIRMATION OF ADEQUATE FIRE FLOW PROTECTION

The fire flow rate has been calculated using the Fire Underwriters Survey (FUS) method. The method takes into account the type of building construction, the building occupancy, the use of sprinklers and the exposures to adjacent structures. Assuming non-combustible construction and with sprinkler system, a fire flow demand of 167 l/s (10,000 l/min) for the 9-Storey building at 1151 Teron Road, and 100 l/s (6,000 l/min) for the 3-Storey building at 1131 Teron Road have been calculated. A copy of the calculation is included in Appendix B.

The demand of 10,000 l/min can be delivered through three municipal fire hydrants. Two existing public hydrants are located along Teron Road, one is within 45 m of the building at the proposed entrance, and is rated at 5700 l/min. The second public hydrant is located east of Bethune Way along Teron Road, is within 150 m of the building, and is rated at 3800 l/min. The third one is at the south-west corner of the intersection of Steacie Drive and Teron Road, is within 170 m of the building, and are rated at 3800 l/min each. The three hydrants have a combined total of 13,300 l/min.

The proposed apartment buildings will be serviced by a 250 mm service off the 305 mm watermain at the intersection of Steacie Drive and Teron Road and a 150 mm service off the 610 mm watermain along Teron Road. The services will run into the water entry room. The proposed building will be sprinklered and fire protection will be provided with the fire department Siamese connection within 45 m of the public fire hydrant from the private access road.

The boundary condition for Maximum Day and Fire Flow results in a pressure of 358.83 kPa and 361.77 kPa at the ground floor level for both connections. In the guidelines, a minimum residual pressure of 140 kPa must be maintained in the distribution system for a fire flow and maximum day event. As a pressure of 358.837 kPa and 361.77 kPa are achieved, the fire flow requirement is exceeded.

2.5 CHECK OF HIGH PRESSURE

High pressure is not a concern. The maximum water pressure inside the building at the connection is determined with the maximum HGL condition, resulting in a pressure of 384.32 kPa which is less than the 552 kPa threshold in the guideline in which pressure control is required. Based on this result, pressure control is not required for this building.

2.6 PHASING CONSTRAINTS

No phasing constraints exist.

2.7 RELIABILITY REQUIREMENTS

DMA chamber as per city of Ottawa standard W3 and shut off valve will be provided at the study boundary from Teron Road. The existing 250mm private watermain is connected to a looped section of the 305mm City watermain at Steacie Drive. Water flow can be isolated from either direction along Steacie Drive and Teron Road. A redundant 150mm service is connected off the 610mm watermain along Teron Road, and shut off valve will be provided.

2.8 NEED FOR PRESSURE ZONE BOUNDAY MODIFICATION

There is no need for a pressure zone boundary modification.

2.9 CAPABILITY OF MAJOR INFRASTRUCTURE TO SUPPLY SUFFICIENT WATER

The current infrastructure is capable of meeting the domestic demand based on City requirements and fire demand as determined by FUS requirements for the proposed apartment buildings.

2.10 DESCRIPTION OF PROPOSED WATER DISTRIBUTION NETWORK

A 250mm and a 150mm private watermain looping is proposed to be provided into the proposed residential development. The 250mm private water service will be connected to the 305mm municipal watermain along Steacie Drive. The 150mm private water service will be connected to the 610mm municipal watermain along Teron Road. A relocated existing public hydrant is located within 45 metres of the fire department connection on the south side of the building as per OBC requirements.

2.11 OFF-SITE REQUIREMENTS

No off-site improvements to watermains, feedermains, pumping stations, or other water infrastructure are required to maintain existing conditions and service the adjacent buildings, other than the connection of the new private watermain to the City watermain in the west frontage of the site.

2.12 CALCULATION OF WATER DEMANDS

Water demands were calculated by as described in Sections 2.3 and 2.4 above.

2.13 MODEL SCHEMATIC

The water works consist only two building services, a model schematic is not required for this development.

3 WASTEWATER DISPOSAL

3.1 DESIGN CRITERIA

In accordance with the City of Ottawa's Sewer Design Guidelines, the following design criteria have been utilized in order to predict wastewater flows generated by the subject site and complete the sewer design;

- Minimum Velocity 0.6 m/s
- Maximum Velocity 3.0 m/s
- Manning Roughness Coefficient 0.013
- Average sanitary flow for residential use 280 L/cap/day
- Average sanitary flor for commercial use 28,000 L/Ha/day
- Commercial/Institutional Peaking Factor 1.5
- Infiltration Allowance (Total) 0.33 L/s/Ha
- Minimum Sewer Slopes – 200 mm diameter 0.32%

3.2 CONSISTENCY WITH MASTER SERVICING STUDY

The outlet for the sanitary service from the proposed apartment buildings is the 250 mm diameter private sanitary sewer on Weeping Willow Lane. The Ottawa Sewer Design Guidelines provide estimates of sewage flows based on residential development. The sanitary design sheet have been attached to Appendix C for reference.

3.3 REVIEW OF SOIL CONDITIONS

There are no specific local subsurface conditions that suggest the need for a higher extraneous flow allowance.

3.4 DESCRIPTION OF EXISTING SANITARY SEWER

The outlet sanitary sewer for this development is the existing 250 mm diameter sewer on Weeping Willow Lane. This private sewer will outlet to a 900 mm diameter sanitary trunk sewer, then discharge to municipal wastewater treatment facility.

3.5 VERIFICATION OF AVAILABLE CAPACITY IN DOWNSTREAM SEWER

The capacity of the downstream 250 mm diameter sewer on Weeping Willow Lane at 0.20% slope is 26.59 L/s, which is adequate for the flow assumptions from the proposed development. This existing sewer also services approximately 7.9 ha of the residential development area along Jackson Crt. Assuming this existing area generate a proportional flow of 0.61 L/s, then the combined existing and anticipated flow estimate is 3.22 L/s.

3.6 CALCULATIONS FOR NEW SANITARY SEWER

A sanitary sewer design sheet is provided for the proposed development. See Appendix C for details.

3.7 DESCRIPTION OF PROPOSED SEWER NETWORK

The proposed sanitary sewer network on site will consist of series manholes and 200 mm diameter public sanitary sewers with 200 mm diameter building service.

3.8 ENVIRONMENTAL CONSTRAINTS

There are no previously identified environmental constraints that impact the sanitary servicing design in order to preserve the physical condition of watercourses, vegetation, or soil cover, or to manage water quantity or quality.

3.9 PUMPING REQUIREMENTS

The proposed development will have no impact on existing pumping stations and will not require new pumping facilities.

3.10 FORCE-MAINS

No force-mains are required specifically for this development.

3.11 EMERGENCY OVERFLOWS FROM SANITARY PUMPING STATIONS

No pumping stations are required for this site, except as required internally for the plumbing design to service the lower area of the building.

3.12 SPECIAL CONSIDERATIONS

There is no known need for special considerations for sanitary sewer design related to existing site conditions.

4 SITE STORM SERVICING

4.1 EXISTING CONDITION

Drainage from the site currently flows overland to a receiving March Road ditch on the north of the property. Further downstream, drainage is conveyed via piped storm sewer network along March Road. As noted in the pre-consultation meeting and associated notes from Mississippi Valley Conservation Authority and the City of Ottawa, the stormwater design criteria for the site modifications are the following:

- Areas discharging to March Road ditch will require to control post-development flows up to the 100-yr controlled to corresponding pre-development flows.
- Areas discharging to Teron Road Storm sewer will require post-development flows up to the 100-yr controlled to the pre-development 5-yr with a C-value of existing or 0.5, whichever is less, and a calculated time of concentration no less than 10 min.

The Mississippi Valley Conservation Authority has asked that 80% TSS removal be provided for stormwater discharges.

4.2 ANALYSIS OF AVAILABLE CAPACITY IN PUBLIC INFRASTRUCTURE

The allowable release rate for the 2.32 Ha site has been calculated in SWM Report. The total allowable release rate to March Road ditch is 48 L/s and to Teron Road is 29 L/s. Detailed calculations are provided in SWM Report. The receiving March Road ditch and downstream storm sewer network along Teron Road and March Road already accept uncontrolled flow from the site equal to or greater than the allowable release rate of 48 L/s to March Road and 29 L/s to Teron Road that will be generated from the proposed development under the 100-year return period storm event. The existing topography for 1151 Teron Road conveys overland runoff to March Road ditch. And for 1131 Teron Road, the overland runoff goes to Teron Road. No capacity issues with existing infrastructure have been noted during consultations with the City or MVCA.

4.3 DRAINAGE DRAWING

Drawing C03 shows the receiving storm sewer and site storm sewer network. Drawing C02 provides proposed grading and drainage and includes existing grading information. Drawing C04 provide a post-construction drainage sub-area plan, including both site and roof information. Site sub-area information is also provided on the storm sewer design sheet attached in Appendix D.

4.4 WATER QUANTITY CONTROL OBJECTIVE

Refer to the Stormwater Management Memo for the water quantity objective for the site.

4.5 WATER QUALITY CONTROL OBJECTIVE

As noted previously, the designated water quality control objective is the achieve 80% TSS removal. This objective will be achieved through the use of oil and grit separator for the runoff generated from the building parcel, achieving the approximate TSS removal required as well as oil capture. For the parking parcel, it can be achieved through the use of bio-swale. Also, hydrocarbon capture and retention will be provided with the designed bio-swale for the parking parcel.

4.6 DESIGN CRITERIA

The stormwater system was designed following the principles of dual drainage, making accommodation for both major and minor flow.

Some of the key criteria include the following:

- Design Storm (minor system) — 1:2-year return (Ottawa)
- Rational Method Sewer Sizing
- Initial Time of Concentration — 10 minutes
- Runoff Coefficients
  - Landscaped Areas — C = 0.25
  - Asphalt/Concrete — C = 0.90
  - Traditional Roof — C = 0.90
- Pipe Velocities — 0.80 m/s to 6.0 m/s
- Minimum Pipe Size — 250 mm diameter (200 mm CB Leads and service pipes)

4.7 PROPOSED MINOR SYSTEM

The detailed design for this site provides two storm sewer outlets, one to the north March Road ditch, the other one to Teron Road south of the development site.

For the parking parcel, the drainage system consists of a series of catchbasins, manholes and storm sewers leading to the outlet manhole STMH102 at the northwest corner of the site. All drainage areas for the parking areas are collected in the bio-swale system. But the large amount of undisturbed existing grass areas of uncontrolled surface drainage will also enter the ditch to the north. Grading beyond the developed areas will be consistent with existing conditions, and will not generate additional flows to these off-site areas.

For the building parcel, The drainage system consists of a series of deck-drains, cistern and storm sewers leading to the outlet manhole cbmh201 at the south of the site. All drainage areas on the site are collected in the building piping system with no exception of uncontrolled flow leaving the building parcel.

It is also customary for larger buildings to be provided with piped storm services for roof drainage. There are no downspouts proposed. The storm services are connected to the storm sewer downstream of the controlled flow point, ensuring an unobstructed flow for these areas.

Using the above noted criteria, the on-site storm sewers were sized accordingly. A detailed storm sewer design sheet and the associated post development storm sewer drainage area plan are included in Appendix D.

4.8 STORMWATER MANAGEMENT

Refer to Stormwater Management Report for details.

4.9 INLET CONTROLS

Refer to Stormwater Management Report for details.

4.10 ON-SITE DETENTION

Refer to Stormwater Management Report for details.

4.11 WATERCOURSES

For the parking parcel, the minor and major flow will be ultimately directed to the March Road ditch then to the downstream storm sewer network along March Road. For the building parcel, the minor and major flow will be ultimately directed to the downstream storm sewer network along Teron Road.

4.12 PRE AND POST DEVELOPMENT PEAK FLOW RATES

Pre and post development peak flow rates for the impacted areas of the site have been noted in the Stormwater Management Report and storm sewer design sheet.

4.13 DIVERSION OF DRAINAGE CATCHMENT AREAS

There will be no diversion of existing drainage catchment areas arising from the proposed work described in this report.

4.14 DOWNSTREAM CAPACITY WHERE QUANTITY CONTROL IS NOT PROPOSED

This checklist item is not applicable to this development as quantity control is provided.

4.15 IMPACTS TO RECEIVING WATERCOURSES

No significant negative impact is anticipated to downstream receiving watercourses due to proposed quantity and quality control measures.

4.16 MUNICIPAL DRAINS AND RELATED APPROVALS

There is no municipal drain on the site or associated with the drainage from the site.

4.17 MEANS OF CONVEYANCE AND STORAGE CAPACITY

The means of flow conveyance and storage capacity are described in the Stormwater Management Report.

4.18 HYDRAULIC ANALYSIS

Hydraulic calculations for the site storm sewers are provided in the storm sewer design sheet and the Stormwater Management Report.

4.19 IDENTIFICATION OF FLOODPLAINS

There is no designated floodplain on the site of this development.

4.20 FILL CONSTRAINTS

There is no known fill constraint applicable to this site related to any floodplain. The site is generally being raised higher relative to existing conditions. No fill constraints related to soil conditions are anticipated, as confirmed in the geotechnical report.

5 SEDIMENT AND EROSION CONTROL

5.1 GENERAL

During construction, existing storm sewer system can be exposed to sediment loadings. A number of construction techniques designed to reduce unnecessary construction sediment loadings will be used including;

- The installation of straw bales within existing drainage features surrounding the site;
- Bulkhead barriers will be installed in the outlet pipes;
- Filter cloths will remain on open surface structures such as manholes and catchbasins until these structures are commissioned and put into use;
- Installation of silt fence, where applicable, around the perimeter of the proposed work area.

During construction of the services, any trench dewatering using pumps will be fitted with a "filter sock." Thus, any pumped groundwater will be filtered prior to release to the existing surface runoff. The contractor will inspect and maintain the filter sock as needed including sediment removal and disposal.

All catchbasins, and to a lesser degree, manholes, convey surface water to sewers. Consequently, until the surrounding surface has been completed, these structures will be covered to prevent sediment from entering the minor storm sewer system. These measures will stay in place and be maintained during construction and build-out until it is appropriate to remove them.

During construction of any development both imported and native soils are placed in stockpiles. Mitigative measures and proper management to prevent these materials entering the sewer system are needed.

During construction of the deeper watermains and sewers, imported granular bedding materials are temporarily stockpiled on site. These materials are however quickly used up and generally placed before any catchbasins are installed.

Refer to the Erosion and Sedimentation Control Plan C07 provided in Appendix E.

6 APPROVAL AND PERMIT REQUIREMENTS

6.1 GENERAL

The proposed development is subject to site plan approval and building permit approval.

MVCA will provide review or direction for the SWM design.

No permits or approvals are anticipated to be required from the Ontario Ministry of Transportation, National Capital Commission, Parks Canada, Public Works and Government Services Canada, or any other provincial or federal regulatory agency.

7 CONCLUSION CHECKLIST

7.1 CONCLUSIONS AND RECOMMENDATIONS

It is concluded that the proposed development can meet all provided servicing constraints and associated requirements. It is recommended that this report be submitted to the City of Ottawa in support of the application for site plan approval.

7.2 COMMENTS RECEIVED FROM REVIEW AGENCIES

This is the first submission, there is no comment at this point.

APPENDIX

A

- PRE-CONSULTATION MEETING NOTES
- TOPOGRAPHIC SURVEY PLAN
- SIGNED EASEMENT AGREEMENT

Yang, Winston

From: Armstrong, Justin <justin.armstrong@ottawa.ca>
Sent: January 14, 2021 3:59 PM
To: Yang, Winston; Worth, Ben
Subject: 1131 - 1151 Teron Road SPC Discussion

Hi Winston and Ben,

See the following bullet-point summary of our discussion from earlier today.

- SWM quantity criteria to reflect previous requirements:
    - Areas discharging to March Road ditch - post-development flows up to the 100-yr controlled to corresponding pre-development flows.
    - Areas discharging to Teron Road storm sewer - post-development flows up to the 100-yr controlled to the pre-development 5-yr with a C-value of existing or 0.5, whichever is less, and a calculated time of concentration no less than 10 min).
- SWM quality criteria to be confirmed by the MVCA, however 80% TSS removal was previously required and should be assumed for the site unless MVCA indicates otherwise. MVCA to confirm if treatment is required for rooftop portion of site discharging to the Teron Road storm sewer. Matt Craig mcraig@mvc.on.ca was included as an MVCA contact in previous comments letter.
- There is no sanitary sewer fronting the site in Teron Road or March Road. A connection to the private sanitary sewer within Weeping Willow Lane was previously proposed. A letter of agreement must be provided from the owner of the private sanitary sewer to allow for the connection / easement / works on private property. An easement & or a Joint Use & Maintenance Agreement with the owner of the sewer will be needed. An assessment of available capacity will also need to be performed.
- Water service connections to the 610mm feedermain within Teron Road are not permitted. As such, a local watermain extension must be made from Steacie Drive and extended along Teron Road to the development site in order to service the development. A **second** connection to the existing hydrant lateral (fed by the 610mm feedermain) would be accepted, assuming a **first** connection to the local watermain off Steacie Drive is provided. If the 610mm feedermain is taken offline, there must be another watermain feed to service the development.

Feel free to contact me should you have any more questions.

Justin

Justin Armstrong, E.I.T.
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - West Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2400 ext./poste 21746, justin.armstrong@ottawa.ca

'

'

TOPOGRAPHICAL PLAN OF

PART OF LOT 5
CONCESSION 4
GEOGRAPHIC TOWNSHIP OF MARCH
CITY OF OTTAWA

Prepared by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 250

10 7.5 5.0 2.5 0 5 10 Metres

Metric

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

Feb 9, 2021
Date

E.H. Herweyer O.L.S.

Notes & Legend

Denotes

- Deciduous Tree
- Coniferous Tree
- Fire Hydrant
- MH-ST – Maintenance Hole (Storm Sewer)
- MH-S – Maintenance Hole (Sanitary)
- MH-H – Maintenance Hole (Hydro)
- MH-T – Maintenance Hole (Traffic)
- MH-B – Maintenance Hole (Bell Telephone)
- MH – Maintenance Hole (Unidentified)
- OHW – Overhead Wires
- CB – Catch Basin
- UP – Utility Pole
- LS – Light Standard
- Ø – Diameter
- +65.00 – Location of Elevations
- x 65.00 – Top of Concrete Curb Elevation
- S – Sign
- TOS – Top of Slope
- BOS – Bottom of Slope
- Property Line
- HT – Hydro Transformer
- TB-T – Traffic Terminal Box
- TB-C – Cable Terminal Box

Topographic data was collected under Winter Conditions. Snow cover and ice preclude determining location and elevation of some topographical data that is otherwise visible.

SITE AREA = 14807 m²

BOUNDARY INFORMATION COMPILED FROM PLAN 4R-15089, Plan 4R-11329 AND (857) PLAN DATED JUNE 6, 2019

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum, derived from control monument No. 019680013 having an elevation of 77.204 metres.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

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

Job No. 21057-20 PH LVS CS MA T F

EASEMENT AGREEMENT

THIS AGREEMENT (the "**Agreement**") is made as of November 14th, 2018.

BETWEEN:

KANCO-VARLEY LTD.

(hereinafter referred to as the "**Grantor**")

- and -

1550751 ONTARIO LIMITED & PHILLIP BOTTRIELL

(hereinafter collectively referred to as the "**Grantee**")

- and -

NORTHVIEW APARTMENT REIT

(hereinafter referred to as "**Northview**")

RECITALS:

A. The Grantor is the owner of the lands legally described in Schedule "A" hereto (the "**Grantor's Lands**").

B. The Grantee is the owner of the lands legally described in Schedule "B" hereto (the "**Grantee's Lands**").

C. There is a sewer (the "**Sewer**") on the Grantor's Lands that is owned by the City of Ottawa (the "**City**"), located within an existing easement on the Grantor's Lands in favour of the City, which Sewer has the capacity to service the Grantee's Lands.

D. The Grantor has agreed to convey an easement over a portion of the Grantor's Lands as marked on Schedule "C" hereto (the "**Servient Lands**"), on the terms and conditions as set out in this Agreement.

NOW THEREFORE, in consideration of the Purchase Price (as hereafter defined), the mutual covenants and agreements set forth in this Agreement, and for other good and valuable consideration (the receipt and sufficiency of which are hereby acknowledged), the parties hereto covenant and agree as follows:

1. **Recitals:** The above recitals are true and accurate and in full force and effect as though repeated herein at length.

2. **Grant of Easement:** The Grantor hereby agrees to grant to the Grantee a temporary easement for the purpose of constructing a connection to the Sewer to service the Grantee's Lands (hereafter referred to as the "**Works**"), on the terms set out in Schedule "D" to this Agreement

PB

(hereafter referred to as the "**Temporary Easement**"). The Grantor shall execute such documentation as may be necessary to effect the registration of the Temporary Easement on title to the Servient Lands, and the cost of such registration shall be paid by the Grantee. The terms of the Temporary Easement set out in Schedule "D" to this Agreement shall be included as a schedule to the Temporary Easement registered on title to the Servient Lands as aforesaid. The Temporary Easement hall be subject to the provisions of the Planning Act (Ontario) (the "**Act**"). The Grantee shall be responsible, at its sole cost and expense, to obtain any consents to the Temporary Easement from the applicable Committee of Adjustment, as may be required under the Act. Pending such consent, the term of the easement shall not be more than twenty-one (21) years less one (1) day.

3. **Purchase Price:** In consideration of the grant of Temporary Easement, the Grantee agrees to pay to the Grantor's parent entity, Northview, or such other person as Northview may direct in its sole discretion, the sum of Twenty-five Thousand Dollars ($25,000.00) (the "**Purchase Price**") as follows:

    a. Ten Thousand Dollars ($10,000.00) paid to Northview by Certified Cheque or Bank Draft within two (2) business days following execution of this Agreement by all parties; and

    b. Fifteen Thousand Dollars ($15,000.00) on the earlier of December 1, 2018 and seven (7) calendar days before the commencement of any construction on the Servient Lands.

4. **Changes:** Any change to the path or location of the Temporary Easement shall require the consent of Northview, which consent shall not be unreasonably withheld.

5. **Acknowledgments:** The Parties hereby acknowledge and agree as follows:

    a. Each party hereto has reviewed, or had adequate opportunity to review, the report of David Schaeffer Engineering Ltd. (the "**Engineering Report**") confirming the capacity of the Sewer, and each party hereto has, by the Engineering Report or otherwise, satisfied themselves that the Sewer has adequate and sufficient capacity to service the Grantee's Property in addition to the Grantor's Property, provided that, during the term of the Temporary Easement, the Grantee shall not construct more units on the Grantee's Property than shall be approved by the City in light of the capacity of the Sewer, and in any event, regardless of the City's approval, during the term of the Temporary Easement, the Grantee shall not construct more units on the Grantee's Property than the number of units that the Grantee knows, after reasonable inquiry, are within the capacity of the Sewer to service.

    b. No party hereto has made any representations or warranties of any kind to any other party hereto regarding the Engineering Report or the contents thereof, or as capacity of the Sewer.

PB

6. **Covenants of Grantee:**

   a. Prior to commencing any construction on the Servient Lands, the Grantee shall retain the services of qualified consultant to clean and perform a camera assessment of the Sewer, and the Grantee shall provide to Northview a copy of the report regarding the Sewer obtained from such consultant.

   b. The Grantee shall advise Northview, by email at the email address provided herein, of its intention to commence construction on the Servient Lands, at least seven (7) days prior to commencement of such construction.

   c. The Grantee shall use reasonable efforts to ensure that the road forming part of the Servient Lands will not be diverted for more than two (2) days.

   d. The Grantee shall obtain a plan of survey from a qualified land surveyor showing the location of the Servient Lands, and cause such plan of survey to be registered on title to such property/properties as may be required with respect to the easements contemplated by this Agreement.

   e. The Grantee hereby undertakes and agrees to reinstate the Grantor's Lands to its condition prior to any construction. In particular, the excavated road section will be compacted and paved and the grassed area will be sodded by the Grantee. The Grantee will water the sod in place and replace or replant any damages lilac bushes as necessary. The Grantee will provide before and after photos and inspection reports showing the work being undertaken and completed.

7. **Legal Fees:** The Grantee agrees to reimburse Northview for its legal fees associated with this Agreement, or the easements or any of the documents or other matters contemplated hereby, up to a maximum of Three Thousand Dollars ($3,000.00), inclusive of Harmonized Sales Tax ("**HST**").

8. **HST:** If the transfer of the Temporary Easement is subject to HST then such tax shall be in addition to the Purchase Price. The Grantor will not collect HST if the Grantee provides to the Grantor a warranty that the Grantee is registered under the Excise Tax Act (the "**ETA**"), together with a copy of the Grantee's ETA registration, a warranty that the Grantee will self-assess and remit the HST payable and file the prescribed form and shall indemnify the Grantor in respect of any HST payable. The foregoing warranties shall not merge but shall survive the completion of the transaction. If the transfer of the Temporary Easement is not subject to HST, the Grantor agrees to certify on or before closing, that the transaction is not subject to HST.

9. **Permanent Easement:** Upon completion of the Works, the Grantor shall, for nominal consideration, convey to the City a permanent easement over the Servient Lands (the "**Permanent Easement**") for the purpose of operating and maintaining the Works, which Permanent Easement shall contain such terms as the City may require. The Grantor shall execute such documentation as may be required to convey the Permanent Easement to the City, and to effect the registration of the Permanent Easement on title to the Servient Lands, as may be required by the City, and the cost of registering the Permanent Easement on title to

the Servient Lands shall be paid by the Grantee or the City, as may be determined between those two parties.

10. **Release of Temporary Easement:** Upon the registration of the Permanent Easement being duly certified by the Land Registrar for Ontario, the Grantee shall release all right, title and interest in and to the Temporary Easement, and the Grantee shall prepare and execute such documentation as may be required to effect the deletion of the Temporary Easement from title to the Servient Lands (the "**Release Documents**"). The Grantor shall also execute such Release Documents as may be required to delete the Temporary Easement from title to the Servient Lands, and the cost of registering the required Release Documents shall be paid by the Grantee.

11. **Non-Construction:** The Grantee agrees that, once paid, the Purchase Price is non-refundable, regardless of whether the Grantee constructs or commences construction of the Works. In the event the Grantee commences but does not complete construction of the Works during the term of the Temporary Easement, the Grantee shall be responsible for the cost of reinstating the Servient Lands to the state they were in prior to construction by the Grantee and for discharging the Temporary Easement and registering such discharge on title to the Servient Lands.

12. **Notices:** Notices to be delivered pursuant to this Agreement may be delivered by electronic mail as follows:

    To the Grantor: Brianna Guenther & Chris Slater – bguenther@northviewreit.com and cslater@northviewreit.com

    To the Grantee: Phil Bottriell - philb@propertyinspection.ca

13. **Entire Agreement:** This Agreement constitutes the entire agreement between the parties hereto relating to the subject matter hereof and supersedes all prior agreements, understandings, negotiations and discussions between the parties, whether oral or written.

14. **Further and other acts:** Each of the parties hereto shall from time to time hereafter and upon any reasonable request of any other party, execute and deliver, make or cause to be made all such further acts, deeds, assurances and things as may be required or necessary to more effectually implement and carry out the true intent and meaning of this Agreement.

15. **Successors and assigns:** All of the covenants and agreements in this Agreement shall be binding upon the parties hereto and their respective successors and permitted assigns and shall enure to the benefit of and be enforceable by the parties hereto and their respective successors and their permitted assigns.

16. **Governing law:** This Agreement shall be governed by and construed in accordance with the laws of the Province of Ontario.

17. **Counterparts/Electronic Signatures:** This Agreement may be executed in separate counterparts and transmitted by electronic means, and in any number of counterparts, and all such counterparts taken together will be deemed to constitute one and the same original

PB

instrument and signatures conveyed by electronic means shall be treated as of originals, provided that each party hereto undertakes to deliver to each other party hereto a copy bearing its original signature as soon as possible following a request for same.

[*signature page to follow*]

IN WITNESS WHEREOF the parties have executed this Agreement as of the first date written above.

KANCO-VARLEY LTD.

Per: _____
Name: Brianna Guenther
Title: Corporate Secretary & legal counsel
I have authority to bind the Corporation

1550751 ONTARIO LIMITED

Per: _____
Name: Phil Bottriell
Title: President
I have authority to bind the Corporation

_____
WITNESS:

_____
PHILLIP BOTTRIELL

NORTHVIEW APARTMENT REIT

Per: _____
Name: Brianna Guenther
Title: Corporate Secretary & legal counsel
I have authority to bind the Trust

SCHEDULE "A"

Grantor's Lands:

Firstly: BLK T, PL 815 , S/T MH7206,N472609,N472728,N472758 KANATA. S/T EASEMENT IN GROSS AS IN OC474764 (PIN 04151-0183 (LT));

Secondly: BLK S, PL 815 , S/T N524849 ; S/T MH6689,MH7206,N472609,N472728,N472758 KANATA. S/T EASEMENT IN GROSS AS IN OC474764 (PIN 04515-0163 (LT))

PB

SCHEDULE "B"

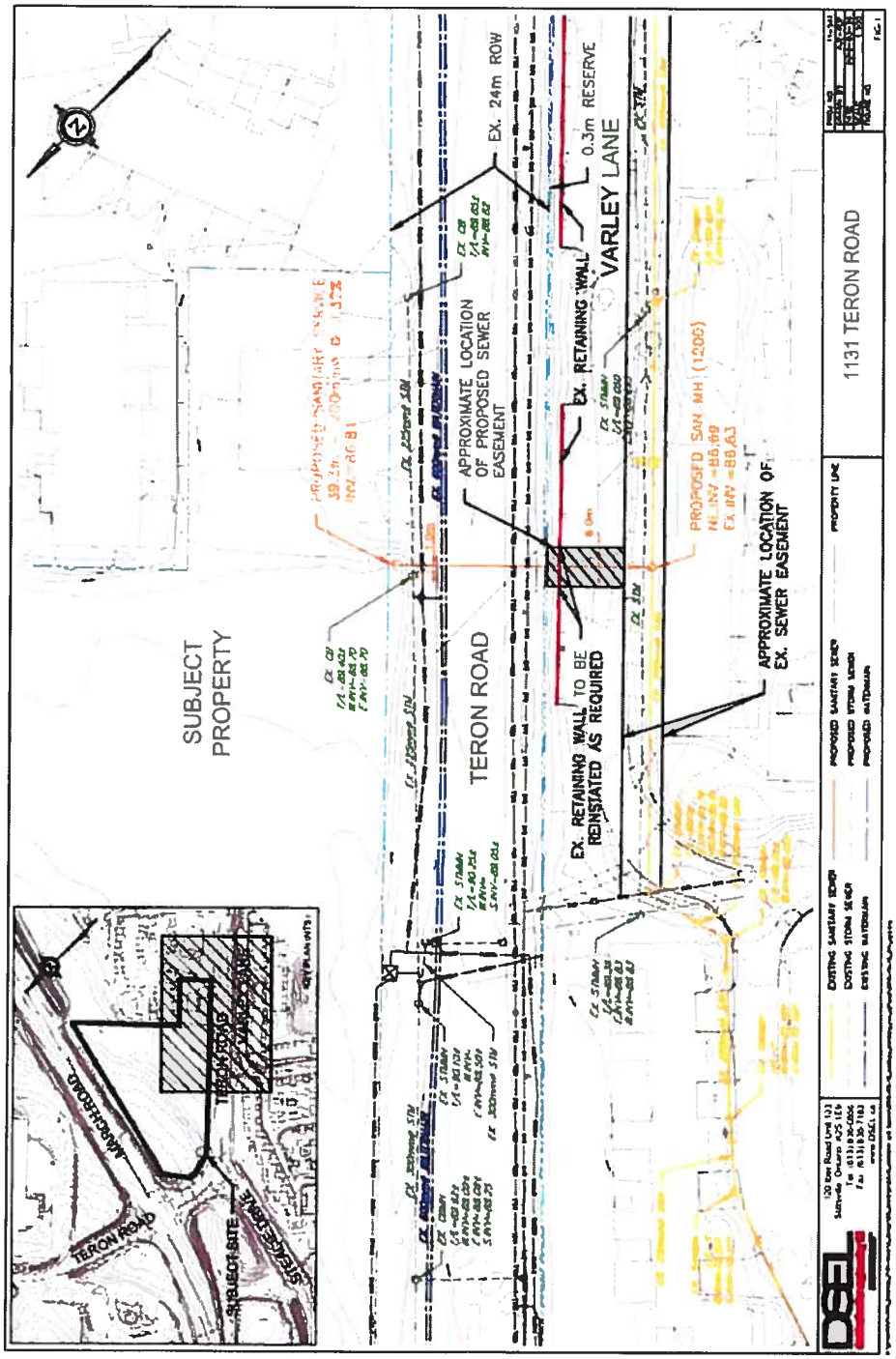
Grantee's Lands:

Firstly: PT LT 5, CON 4 BEING PTS 3, 4, 5 & 6, 4R15089, MARCH/KANATA. SUBJECT TO AN EASEMENT IN FAVOUR OF THE HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO, AS IN MH3313. SUBJECT TO AN EASEMENT IN FAVOUR OF THE HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO, AS IN MH3625 (PIN 04514-0316 (LT)).

Secondly: PT LT 5, CON 4; AS IN N405176; KANATA/MARCH (PIN 04514-0002 (LT)).

SCHEDULE "C"

LOCATION OF EASEMENT



SCHEDULE "D"

TEMPORARY EASEMENT

SEWER EASEMENT

The Grantor grants, conveys and transfers to the Grantee, its successors and assigns, but subject to all the terms and conditions hereinafter contained the following:

(a) the temporary right and easement over that piece of land shown as the hatched rectangle on Schedule "A" hereto (the "**Sewer Connection**") for the purpose to enter on and construct, install, place, lay, erect, operate, maintain, alter, repair, replace, reconstruct and remove a sewer lateral connection as necessary for servicing the lands described as Pt Lt 5, Con 4; as in N405176; Kanata/March (PIN 04514-0002 (LT)) and Pt Lt 5 Con 4 being Pts 3, 4, 5 & 6, 4R15089, March/Kanata (PIN 04514-0316 (LT)) (the "**Dominant Lands**"), and equipment appurtenant thereto including all pipes, fixtures and equipment as the Grantee may from time to time or at any time hereafter deem requisite under the lands of the Grantor described as Blk T, Pl 815 , S/T MH7206, N472609, N472728, N472758 Kanata. S/T Easement in Gross as in OC474764 (PIN 04151-0183 (LT)(the "**Servient Lands**"), for the purpose of creating a connection to the City of Ottawa sewer system to service the Dominant Lands, which sewer currently runs under the lands described as Parts 1, 2, 3, 4, 5 & 6 on Plan 5R-12392.

(b) the temporary right and easement for the purpose to provide access and to enter on and to pass and repass at any and all times in, over, along, across and upon the Servient Lands for all purposes necessary or convenient for the construction and installation of the utilities necessary for servicing the Dominant Lands.

Together with the temporary right and licence of free, uninterrupted, unimpeded and unobstructed access to the Grantee, its servants, agents, contractors and sub-contractors to enter on and to pass and repass at any and all times from the date of acceptance of this easement, in, over, along and upon the Servient Lands, with or without vehicles, supplies, machinery and equipment for all purposes necessary or convenient to the exercise and enjoyment of the rights and easement hereby granted.

Together with the temporary right and licence to trim, trees and brush and to remove any concrete or asphalt surface or soil necessary and incidental to permit access to construct, maintain, repair and replace any part of the said sewer connection.

The aforementioned rights and easement are herein granted on the following terms and conditions which are hereby mutually covenanted and agreed to by and between the Grantor and the Grantee.

1. The Grantee shall be responsible for any damage to the property of the Grantor on the Servient Lands caused by the acts or omissions of the Grantee or of persons acting under the authority of the Grantor.

2. Notwithstanding any rule of law or equity, the utilities and all other equipment and appurtenances, brought onto or buried in or under the Servient Lands by the Grantee shall at

all times remain the property of the Grantee notwithstanding that the same may be annexed or affixed to the freehold and shall at any time and from time to time be removable in whole or in part by the Grantee or its successors and assigns.

3. Following completion of any work on the Servient Lands or surrounding lands in relation to the Sewer Connection, the Grantee shall, at its expense, reinstate the Servient Lands to the condition they were in prior to the commencement of construction, including:

    a. compacting and paving any excavated road section of the Servient Lands or surrounding lands;

    b. sodding any excavated grassed areas on the Servient Lands or surrounding lands, and watering the sod in place;

    c. replacing or replanting any damaged lilac bushes as necessary;

    d. rebuild the stone retaining wall on the Servient Lands as may be required; and

    e. the Grantee will provide before and after photographs of the Servient Lands showing the completion of the above-referenced work (the "**Restoration**")

4. The Grantor shall not interfere with the Sewer Connection, and shall not excavate, drill, install, erect, build or permit to be excavated, drilled, installed, erected or built, on, in, over, through or under the Servient Lands any pit, well, building, structure, trees, shrubs, hedges, new shade or ornamental trees or other obstruction of any nature without the prior written consent of the Grantee, which consent shall not be unreasonably withheld, but otherwise the Grantor shall have the right fully to use and enjoy the Servient Lands, subject always to and so as not to interfere with the rights and easement hereby granted to the Grantee.

5. The Grantor retains the right to grant easements, on, in, over, along, across, upon or under the Servient Lands to any person, public utility or municipal body it desires and under any terms and conditions it deems desirable, provided however that no such grant shall interfere with the prior rights conferred on the Grantee by this grant of easement. Prior to the construction or any other works being the subject matter of any additional or further easements, within the Servient Lands, the grantees of such further easements, will be required to submit plans for the review of the Grantee herein and to obtain from the Grantee herein the written consent, which consent shall not be unreasonably withheld, to enter on the Servient Lands or to construct the other works so as to ensure that no conflict will exist between the parties as regards the installation of the other works.

6. The Grantee shall save harmless and indemnify the Grantor from and against all manner of action, causes of action, claims, demands, loss, costs, suits, including legal costs of such suits that may arise, be sustained or prosecuted against the Grantor arising from the Grantee's use of the Servient Lands in respect of this easement.

7. The Grantee shall be responsible for the maintenance of the utilities on or with respect to the

Sewer Connection on the Servient Lands during their term of use to the reasonable satisfaction of the Grantor.

8. The Grantee shall comply with all applicable municipal by-laws and Provincial Statutes when excavating on the Servient Lands and shall erect suitable protective fencing and/or barricades and flashers around any such excavation.

   The term of this Temporary Easement shall expire on the date that is the earlier of:

   a. the date the Grantee releases all right, title and interest under this Temporary Easement; and

   b. October 1, 2038;

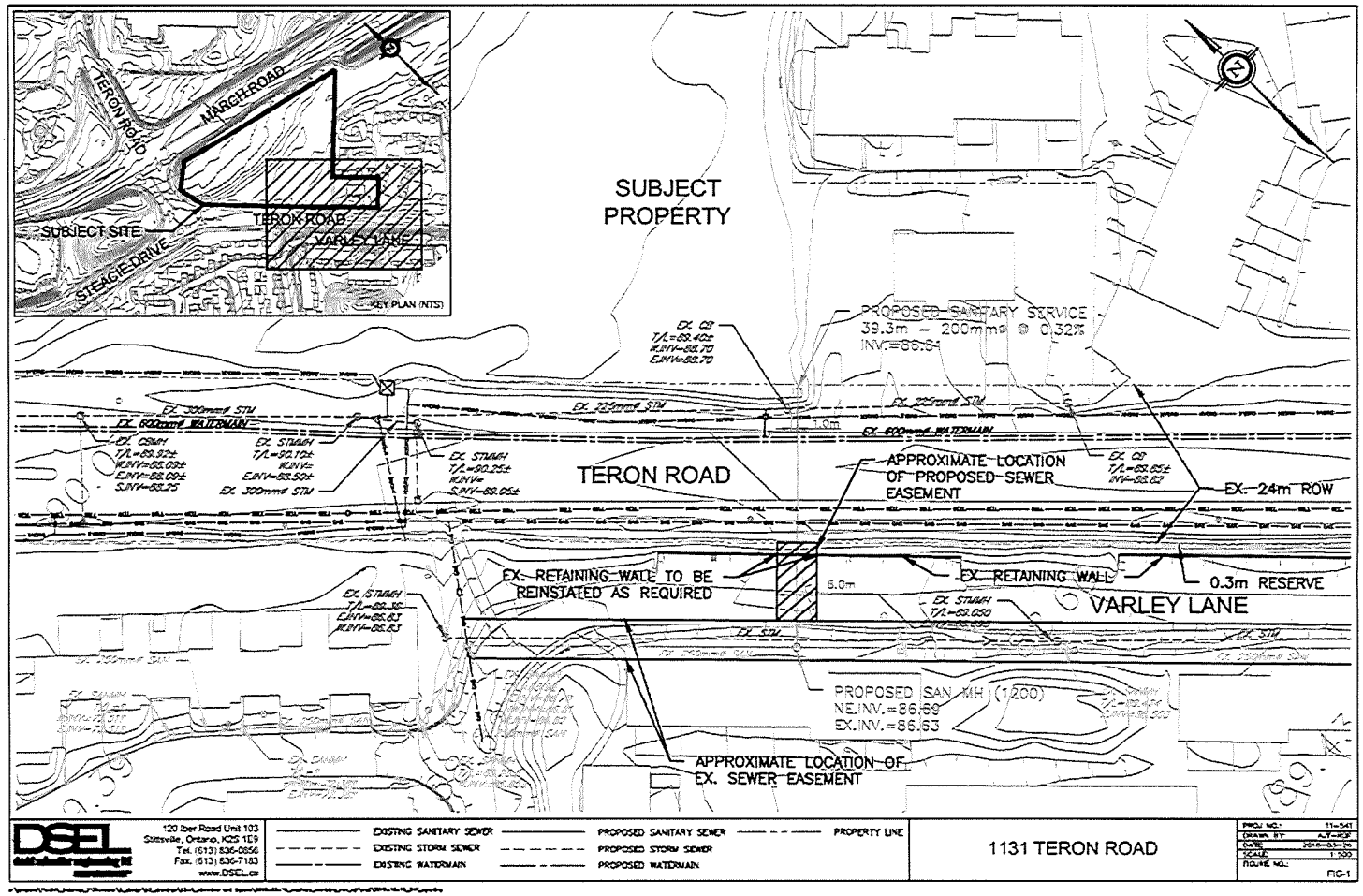
   after which date the Grantee shall have released this Temporary Easement and all rights and interests appurtenant thereto, and the Grantee shall thereafter have no claim of any kind whatsoever with respect to the Servient Lands.

9. The rights and easements hereby granted are and shall be of the same force and effect to all intents and purposes as a covenant running with the land and this transfer, including all the covenants and conditions herein contained, shall extend to, be binding upon and enure to the benefit of the heirs, executors, administrators, successors in title and assigns of the parties hereto respectively, and all covenants herein contained shall be construed to be several as well as joint, and wherever the singular or masculine is used, it shall be construed as if the plural or the feminine or the neutral, as the case may be, had been used where the context or the party or parties hereto so require, and the rest of the sentence shall be construed as if the grammatical and terminological changes thereby rendered necessary had been made.

10. The Grantor covenants with the Grantee that no other easement will be granted concerning the Servient Lands described herein prior to the registration of this document.

SCHEDULE "A"

LOCATION OF EASEMENT


KEY PLAN (NTS)
TERON ROAD
MARCH ROAD
SUBJECT SITE
TERON ROAD
VARLEY LANE
STEAGIE DRIVE
SUBJECT PROPERTY
PROPOSED SANITARY SERVICE
39.3m - 200mmø @ 0.32%
INV.=86.84
TERON ROAD
APPROXIMATE LOCATION OF PROPOSED SEWER EASEMENT
EX. 24m ROW
EX. RETAINING WALL TO BE REINSTATED AS REQUIRED
EX. RETAINING WALL
0.3m RESERVE
VARLEY LANE
PROPOSED SAN. MH (1200)
NE.INV.=86.69
EX.INV.=86.63
APPROXIMATE LOCATION OF EX. SEWER EASEMENT
120 Iber Road Unit 103
Stittsville, Ontario, K2S 1E9
Tel. (613) 836-0856
Fax. (613) 836-7183
www.DSEL.ca
EXISTING SANITARY SEWER
EXISTING STORM SEWER
EXISTING WATERMAIN
PROPOSED SANITARY SEWER
PROPOSED STORM SEWER
PROPOSED WATERMAIN
PROPERTY LINE
1131 TERON ROAD
PROJ. NO.: 11-541
DRAWN BY: AJT-KGP
DATE: 2014-01-30
SCALE: 1:500
FIGURE NO.: FIG-1

APPENDIX

APPENDIX

B

- WATERMAIN BOUNDARY CONDITIONS FROM CITY OF OTTAWA
- EMAILS FROM CITY OF OTTAWA
- FIRE UNDERWRITERS SURVEY – FIRE FLOW CALCULATION
- WATER DEMAND CALCULATION

Boundary Conditions
1151 and 1131 Teron Road

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	45	0.75
Maximum Daily Demand	111	1.85
Peak Hour	244	4.06
Fire Flow Demand #1	10,000	166.67

Location

Results

Connection 1 – Steacie Dr.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.2	57.4
Peak Hour	126.9	52.7
Max Day plus Fire 1	127.6	53.7

Ground Elevation = 89.8 m

Connection 2 – Teron Rd.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.2	57.2
Peak Hour	126.9	52.5
Max Day plus Fire 1	127.9	54.0

Ground Elevation = 89.9 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.

Yang, Winston

From: Armstrong, Justin <justin.armstrong@ottawa.ca>
Sent: March 4, 2021 10:08 AM
To: Yang, Winston
Subject: RE: Boundary Condition for 1151 and 1131 Teron Road
Attachments: 1151 and 1131 Teron Road_03March2021.docx

Hi Winston,

See attached boundary conditions for 1151 and 1131 Teron.

Regards,

Justin

From: Yang, Winston <Winston.Yang@wsp.com>
Sent: February 17, 2021 12:21 PM
To: Armstrong, Justin <justin.armstrong@ottawa.ca>
Subject: RE: Boundary Condition for 1151 and 1131 Teron Road

Hi Justin,

Sorry for the mistake. Thanks for pointing it out.
It should be limited combustible instead of non-combustible.
And the numbers mentioned below are correct, please proceed.

Yours truly,

Ding Bang (Winston) Yang, P.Eng.
Project Engineer
Infrastructure

T+ 1 613-690-0538

2611 Queensview Drive, Suite 300
Ottawa, Ontario,
K2B 8K2, Canada

www.wsp.com

From: Armstrong, Justin <justin.armstrong@ottawa.ca>
Sent: February 17, 2021 10:36 AM
To: Yang, Winston <Winston.Yang@wsp.com>
Subject: RE: Boundary Condition for 1151 and 1131 Teron Road

Thanks for providing this Winston.

Before I send it off for boundary conditions, I just wanted to clarify the following item:

- As identified in the Technical Bulletin to the City of Ottawa Water Design Guidelines, ISTB-2018-02, residential buildings are to be attributed a Limited Combustible Occupancy (-15%) rather than the Non-Combustible Occupancy (-25%) that was applied. When this change is made to the FUS calculations, the RFF for the 3-storey building becomes 6,000 L/min while the RFF for the 9-storey building becomes 10,000 L/min.

Please confirm that you are agreeable to the above point, and I will forward the boundary conditions for the site with the following demands:

Average Daily Demand	0.75 L/s
Maximum Daily Demand	1.85 L/s
Maximum Hourly Demand	4.06 L/s
Fire Flow Demand	10,000 L/min, 167 L/s

Thanks,

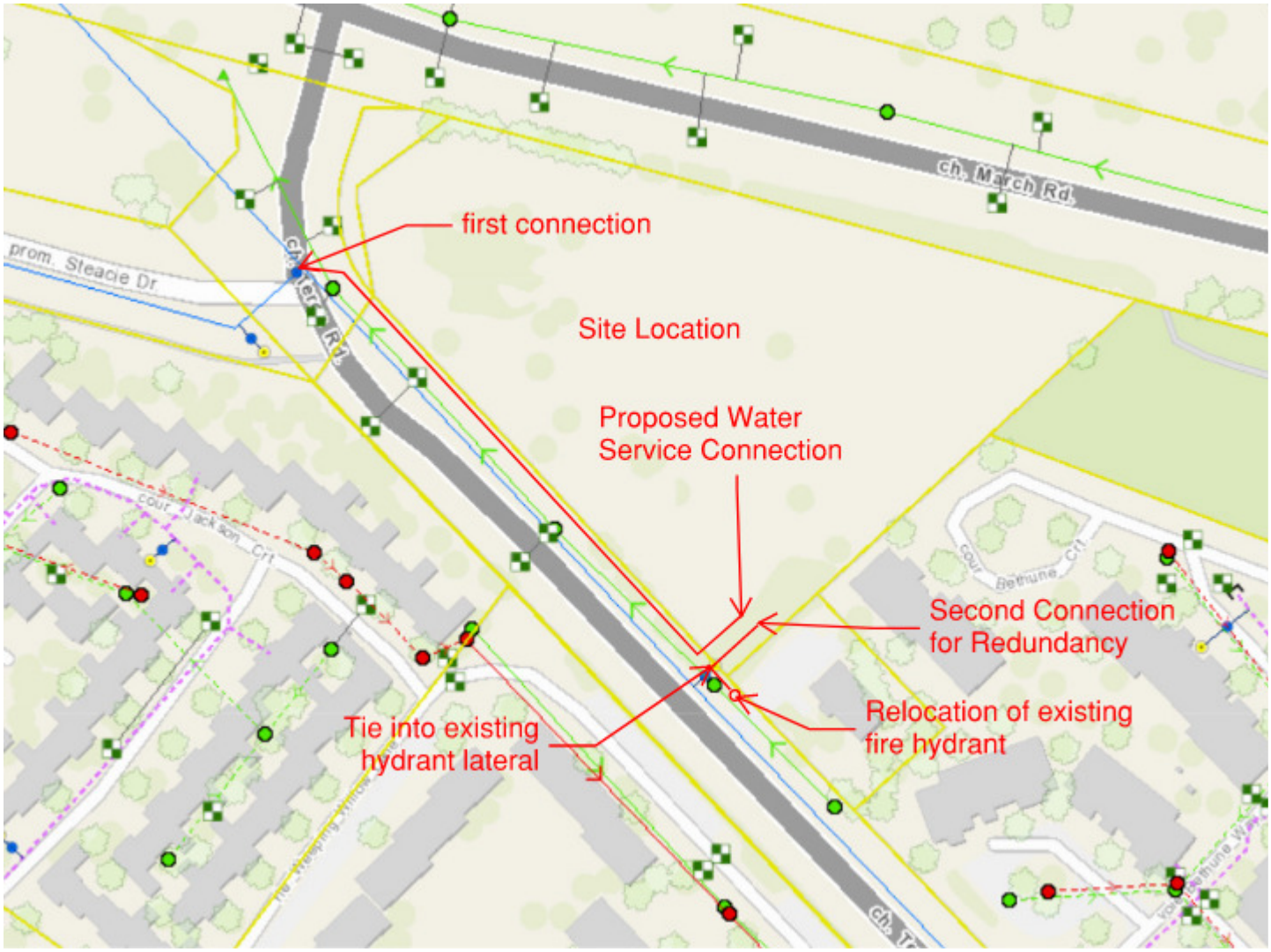
Justin

From: Yang, Winston <Winston.Yang@wsp.com>
Sent: February 16, 2021 4:00 PM
To: Armstrong, Justin <justin.armstrong@ottawa.ca>
Subject: Boundary Condition for 1151 and 1131 Teron Road

Hi Justin,

Thanks for the St. James Boundary Condition.
We also need the boundary condition for the 1151 and 1131 Teron Road project.
The proposed 9-Storey and 3-Storey Buildings will be serviced by an extension from Steacie Drive and extended along Teron Road to he development site.
For redundancy, the second connection will be tied into the existing hydrant lateral along Teron Road. And the existing hydrant will be relocated since the existing hydrant is in conflict with the proposed entrance.

Please see below site location and proposed connection for your reference.



The fire flow and domestic water demands calculations are attached for your review.

Please provide boundary condition at the connection points of Steacie Drive and Teron Road.

Should you have any questions please do not hesitate to contact me.

Yours truly,

Ding Bang (Winston) Yang, P.Eng.
Project Engineer
Infrastructure

T+ 1 613-690-0538

2611 Queensview Drive, Suite 300
Ottawa, Ontario,
K2B 8K2, Canada

www.wsp.com

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Fire Flow Design Sheet (FUS)
1131 and 1151 Teron Road
City of Ottawa
WSP Project No. 20M-01534-00
Date: 12-Apr-21

Proposed 9-Storey Building
Fire Flow Requirements Based on Fire Underwriters Survey (FUS) 1999

1. An estimate of the Fire Flow required for a given fire area may be estimated by: $F = 220\ C\ \sqrt{A}$

F = required fire flow in litres per minute
C = coefficient related to the type of construction
- 1.5 for wood construction (structure essentially combustible)
- 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior)
- 0.8 for noncombustible construction (unprotected metal structural components, masonry or metal walls)
- 0.6 for fire-resistive construction (fully protected frame, floors, roof)

A = total floor area in square metres (including all storeys, but excluding basements at least 50% below grade)

A = 9889 m^2
C = 0.8
F = 17502.0 L/min

rounded off to 18,000 L/min (min value of 2000 L/min)

2. The value obtained in 1. may be reduced by as much as 25% for occupancies having a low contents fire hazard.

Non-combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Reduction due to low occupancy hazard -15% x 18,000 = 15,300 L/min

3. The value obtained in 2. may be reduced by as much as 50% for buildings equipped with automatic sprinkler protection.

Adequate Sprinkler confirms to NFPA13	-30%
Water supply common for sprinklers & fire hoses	-10%
Fully supervised system	-10%
No Automatic Sprinkler System	0%

Reduction due to Sprinkler System -50% x 15,300 = -7,650 L/min

4. The value obtained in 2. is increased for structures exposed within 45 metres by the fire area under consideration.

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20%
10.1 to 20 m	15%
20.1 to 30 m	10%
30.1 to 45 m	5%

Side 1	170	0%	north side
Side 2	18	15%	east side
Side 3	46	0%	south side
Side 4	270	0%	west side
		15%	(Total shall not exceed 75%)

Increase due to separation 15% x 15,300 = 2,295 L/min

5. The flow requirement is the value obtained in 2., minus the reduction in 3., plus the addition in 4.

The fire flow requirement is 10,000 L/min (Rounded to nearest 1000 L/min)
or **167 L/sec**
or 2,642 gpm (us)
or 2,200 gpm (uk)

Based on method described in:
"Water Supply for Public Fire Protection - A Guide to Recommended Practice", 1991
by Fire Underwriters Survey

Fire Flow Design Sheet (FUS)
1131 and 1151 Teron Road
City of Ottawa
WSP Project No. 20M-01534-00
Date: 12-Apr-21

Proposed 3-Storey Building
Fire Flow Requirements Based on Fire Underwriters Survey (FUS) 1999

1. An estimate of the Fire Flow required for a given fire area may be estimated by: $F = 220\ C\ \sqrt{A}$

F = required fire flow in litres per minute
C = coefficient related to the type of construction
- 1.5 for wood construction (structure essentially combustible)
- 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior)
- 0.8 for noncombustible construction (unprotected metal structural components, masonry or metal walls)
- 0.6 for fire-resistive construction (fully protected frame, floors, roof)

A = total floor area in square metres (including all storeys, but excluding basements at least 50% below grade)

A = 1640 m^2
C = 0.8
F = 7127.5 L/min

rounded off to 7,000 L/min (min value of 2000 L/min)

2. The value obtained in 1. may be reduced by as much as 25% for occupancies having a low contents fire hazard.

Non-combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Reduction due to low occupancy hazard -15% x 7,000 = 5,950 L/min

3. The value obtained in 2. may be reduced by as much as 50% for buildings equipped with automatic sprinkler protection.

Adequate Sprinkler confirms to NFPA13	-30%
Water supply common for sprinklers & fire hoses	-10%
Fully supervised system	-10%
No Automatic Sprinkler System	0%

Reduction due to Sprinkler System -50% x 5,950 = -2,975 L/min

4. The value obtained in 2. is increased for structures exposed within 45 metres by the fire area under consideration.

Separation	Charge
0 to 3 m	25%
3.1 to 10 m	20%
10.1 to 20 m	15%
20.1 to 30 m	10%
30.1 to 45 m	5%

Side 1	15	15%	north side
Side 2	11	15%	east side
Side 3	46	0%	south side
Side 4	18	15%	west side
		45%	(Total shall not exceed 75%)

Increase due to separation 45% x 5,950 = 2,678 L/min

5. The flow requirement is the value obtained in 2., minus the reduction in 3., plus the addition in 4.

The fire flow requirement is 6,000 L/min (Rounded to nearest 1000 L/min)
or **100 L/sec**
or 1,585 gpm (us)
or 1,320 gpm (uk)

Based on method described in:
"Water Supply for Public Fire Protection - A Guide to Recommended Practice", 1991
by Fire Underwriters Survey

Water Demand Calculation Sheet

Project:	**1131 and 1151 Teron Road**	**Date:**	**2021-04-12**
Location:	**City of Ottawa**	**Design:**	**WY**
WSP Project No.	**20M-01534-00**	**Page:**	**1 of 1**

Proposed Buildings	Residential				Non-Residentail			Average Daily			Maximum Daily			Maximum Hourly			Fire
	Units			Pop.	Industrial	Institutional	Commercial	Demand (l/s)			Demand (l/s)			Demand (l/s)			Demand
	SF	APT	ST		(ha)	(ha)	(ha)	Res.	Non-Res.	Total	Res.	Non-Res.	Total	Res.	Non-Res.	Total	(l/s)
Proposed 9-Storey Building																	
1 Bedroom		59		83				0.27		0.27	0.67		0.67	1.47		1.47	167
2 Bedroom		54		113				0.37		0.37	0.92		0.92	2.02		2.02	167
Proposed 3-Storey Building																	
1 Bedroom		8		11				0.04		0.04	0.09		0.09	0.20		0.20	100
2 Bedroom		10		21				0.07		0.07	0.17		0.17	0.37		0.37	100

Population Densities

Single Family	3.4	person/unit
Semi-Detached	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

Average Daily Demand

Residentail	280	l/cap/day
Industrial	35000	l/ha/day
Institutional	28000	l/ha/day
Commercial	28000	l/ha/day

Maximum Daily Demand

Residential	2.5	x avg. day
Industrial	1.5	x avg. day
Institutional	1.5	x avg. day
Commercial	1.5	x avg. day

Maximum Hourly Demand

Residential	2.2	x max. day
Industrial	1.8	x max. day
Institutional	1.8	x max. day
Commercial	1.8	x max. day

APPENDIX

APPENDIX

C

- SANITARY SEWER DESIGN SHEET

SANITARY SEWER DESIGN SHEET

1131 and 1151 Teron Road
Residential Development
Project: 20M-01534-00
Date: April, 2021

LOCATION				RESIDENTIAL AREA AND POPULATION												INDUSTRIAL				COMMERCIAL		INSTITUTIONAL		I+C+I	INFILTRATION			TOTAL	PIPE					
LOCATION	FROM M.H.	TO M.H.	SANITARY DRAINAGE AREA ID	INDV AREA (ha)	ACCU AREA (ha)	NUMBER OF UNITS						POPULATION		PEAK FACT.	PEAK FLOW (l/s)	GROSS AREA (ha)	DEVEL. AREA (ha)	ACCU. AREA (ha)	PEAK FACTOR	INDIV AREA (ha)	ACCU. AREA (ha)	INDIV AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	INDIV AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	LENGTH (m)	DIA. (mm)	SLOPE (%)	CAP. (FULL) (l/s)	VEL. (FULL) (m/s)	AVAIL. CAP. (%)
						SINGLES	SEMIS	TOWNS	1-BED APT.	2-BED APT.	3-BED APT.	INDIV POP.	ACCU POP.																					
TO WEEPING WILLOW LANE																																	
	BLDG	SAMH101		0.174	0.174				67.00	64.00		228	228	3.50	2.59										0.174	0.17	0.06	**2.65**	0.75	200	1.00	32.80	1.04	**91.93%**
	SAMH101	SAMH102			0.174							0	228	3.50	2.59										0.000	0.17	0.06	**2.65**	22.70	200	1.00	32.80	1.04	**91.93%**
	SAMH102	SAMH103			0.174								228	3.50	2.59										0.000	0.17	0.06	**2.65**	15.70	200	1.00	32.80	1.04	**91.93%**
Jackson Court	*EXISTING*	*EXISTING*		0.690	0.690			9.00				24	24	3.69	0.29										0.690	0.69	0.23	**0.52**	*118.00*	*250*	*0.20*	26.59	0.54	**98.05%**
Weeping Willow Lane	*EXISTING*	SAMH103		0.080	0.770			2.00				5	30	3.68	0.35										0.080	0.77	0.25	**0.61**	*53.00*	*250*	*0.20*	26.59	0.54	**97.71%**
Weeping Willow Lane	SAMH103	*EXISTING*			0.944							0	258	3.48	2.91										0.000	0.94	0.31	**3.22**	*48.00*	*250*	*0.20*	26.59	0.54	**87.88%**

DESIGN PARAMETERS

RESIDENTIAL AVG. DAILY FLOW =	280	l/cap/day	COMMERCIAL PEAK FACTOR =	1.5	(WHEN AREA > 20%)	PEAK POPULATION FLOW, (l/s) =	P*q*M/86400	UNIT TYPE	PERSONS/UNIT	**DESIGNED:**	**NO.**	**REVISION**	**DATE**
COMMERCIAL AVG. DAILY FLOW =	28,000	l/ha/day		1.0	(WHEN AREA < 20%)	PEAK EXTRANEOUS FLOW, (l/s) =	I*Ac	SINGLES	3.4	Ding Bang Yang, P.Eng.	1.	City Submission No.1	2021-04-12
	0.324	l/ha/s				RESIDENTIAL PEAKING FACTOR, M =	1+(14/(4+P^0.5))*K	SEMI-DETACHED	2.7	**CHECKED:**			
INSTITUTIONAL AVG. DAILY FLOW =	28,000	l/ha/day	INSTITUTIONAL PEAK FACTOR =	1.5	(WHEN AREA > 20%)	Ac = CUMULATIVE AREA (ha)		TOWNHOMES	2.7	Ishaque Jefferjee, P.Eng.			
	0.324	l/ha/s		1.0	(WHEN AREA < 20%)	P = POPULATION (THOUSANDS)		SINGLE APT. UNIT	1.4	**PROJECT:**			
LIGHT INDUSTRIAL FLOW =	35,000	l/ha/day						2-BED APT. UNIT	2.1	1131 and 1151 Teron Road			
	0.405	l/ha/s	RESIDENTIAL CORRECTION FACTOR, K =	0.80		SEWER CAPACITY, Qcap (l/s) =	1/N S^(1/2) R^(2/3) Ac	3-BED APT. UNIT	3.1	Residential Development			
HEAVY INDUSTRIAL FLOW =	55,000	l/ha/day	MANNING N =	0.013		(MANNING'S EQUATION)				**LOCATION:**			
	0.637	l/ha/s	PEAK EXTRANEOUS FLOW, I (l/s/ha) =	0.33						Ottawa, Ontario			
										PAGE NO:	**FILE & DWG. REFERENCE:**		
										1 of 1			

APPENDIX

APPENDIX

D

- STORM SEWER DESIGN SHEET
- STORM DRAINAGE PLAN C04
- GRADING PLAN C02
- SERVICING PLAN C03
- STORMCEPTOR EF4 DETAILS AND SIZING REPORT

STORM SEWER DESIGN SHEET

1131 and 1151 Teron Road
Residential Development
Project: 20M-01534-00
Date: April, 2021

LOCATION				AREA (Ha)						RATIONAL DESIGN FLOW												PROPSOED SEWER DATA								
STREET	AREA ID	FROM	TO	C= 0.25	C= 0.35	C= 0.50	C= 0.60	C= 0.75	C= 0.90	IND 2.78AC	CUM 2.78 AC	INLET (min)	TOTAL (min)	i (2) (mm/hr)	i (5) (mm/hr)	i (100) (mm/hr)	BLDG FLOW (L/s)	2yr PEAK FLOW (L/s)	5yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	ICD FIXED FLOW (L/s)	DESIGN FLOW (L/s)	MODIFIED DESIGN FLOW (L/s)	MATERIAL PIPE	SIZE (mm)	SLOPE (%)	LENGTH (m)	CAPACITY (l/s)	VELOCITY (m/s)	TIME IN PIPE	AVAIL CAP (2yr) (L/s)	AVAIL CAP (2yr) (%)
ToTeron Road																															
Teron Road	B-BLDG1 & BBLDG 2	BUILDING SERVICE	STMH204						0.203	0.508	0.508	10.00	10.02	76.81	104.19	178.56		39.01				39.01	17.00	PVC DR-35	250.0	1.00	1.70	59.53	1.21	0.02	20.52	71.44%
Teron Road	B-101 & B-102	CISTERN	CBMH201	0.061					0.113	0.325	0.325	10.00	10.01	76.81	104.19	178.56		24.97				24.97		PVC DR-35	300.0	1.00	1.15	96.80	1.37	0.01	71.83	74.20%
Teron Road		CBMH201	STMH202							0.000	0.325	10.01	10.04	76.75	104.12	178.43		24.95				24.95		PVC DR-35	300.0	0.65	1.40	78.04	1.10	0.02	53.09	68.03%
Teron Road		STMH202	STMH203							0.000	0.325	10.04	10.13	76.67	104.01	178.24		24.93				24.93		PVC DR-35	300.0	0.65	6.05	78.04	1.10	0.09	53.11	68.06%
To March Road Ditch																															
March Road	A-101	CB101	STMH101	0.042					0.146	0.394	0.394	10.00	10.21	76.81	104.19	178.56		30.30				30.30		PVC DR-35	200.0	1.00	13.38	32.83	1.04	0.21	2.53	7.72%
	A-102	CB102	STMH101-STMH102	0.022					0.100	0.265	0.265	10.00	10.18	76.81	104.19	178.56		20.39				20.39		PVC DR-35	200.0	1.00	11.00	32.83	1.04	0.18	12.44	37.89%
	A-103	CB103	STMH101-STMH102	0.044					0.132	0.361	0.361	10.00	10.17	76.81	104.19	178.56		27.71				27.71		PVC DR-35	200.0	1.00	10.90	32.83	1.04	0.17	5.12	15.59%
		STMH101	STMH102							0.000	1.021	10.21	11.42	75.99	103.08	176.63		77.58				77.58		PVC DR-35	375.0	0.30	63.15	96.13	0.87	1.21	18.55	19.30%
		STMH102	OUTLET							0.000	1.021	11.42	11.69	71.74	97.23	166.51		73.23				73.23		PVC DR-35	375.0	0.30	14.05	96.13	0.87	0.27	22.90	23.82%

Definition:
Q=2.78CiA, where:
Q = Peak Flow in Litres per Second (L/s)
A = Area in Hectares (Ha)
i = Rainfall Intensity in millimeters per hour (mm/hr)
i = 732.951/(TC+6.199)^0.810 — 2 Year
i = 1174.184/(TC+6.014)^0.816 — 5 Year
i = 1735.688/(TC+6.014)^0.820 — 100 Year

Notes:
1. Mannings coefficient (n) = 0.013

Time-of-Concentration in the Swale
FAA Equation: t (min) = 3.258 [(1.1 - C) L^0.5 / S^.33]
Where: Longest Watercourse Length, L (m). S (%)
Runoff Coef.C = Impervious

No.	L (m)	S %	Tc (min)
			#DIV/0!

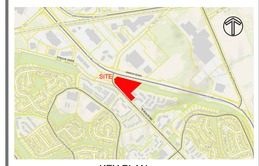
Designed: D.B.Y.
Checked: D.B.Y./I.J.
Dwg. Reference: C04

No.	Revision	Date
1.	City Submission No. 1	2021-04-12

File Reference: 20M-01534-00
Date: 2021-04-12
Sheet No: 1 of 1

GENERAL NOTES:

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



KEY PLAN
(N.T.S)

PROPERTY LINE

TIE INTO EXISTING GRADE AT 3:1 MAX

PROPOSED BIOSWALE

UNDERGROUND PARKING LIMIT

PROPOSED 9-STOREY BUILDING
FFE=91.00 (GROUND)
FFE=87.20 (BSMT)

PROPOSED 3-STOREY BUILDING
FFE=91.00 (GROUND)
FFE=87.20 (BSMT)

115m LONG LANDSCAPE RETAINING WALL BOTTOM OF WALL WILL TIE INTO THE EXISTING GRADE ALONG THE PROPERTY LINE. (CONTRACTOR TO CONFIRM THE EXISTING ELEVATION AT PROPERTY LINE PRIOR TO CONSTRUCTION)

EXISTING 2 STOREY TOWNHOUSE

HYDRO TOWER

REGIONAL ROAD No. 49 FORMERLY THE KING'S HIGHWAY No. 17

MARCH ROAD

TERON ROAD

TERON RD.

ROAD CUT TO BE REINSTATED AS PER CITY STD R10

CARLETON CONDOMINIUM PLAN

No.	REVISIONS	BY	DATE
01	ISSUED FOR SPC	D.Y.	2021-04-16

HORIZONTAL SCALE:
5m 2 0 5 10m
SCALE: 1:300

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

REGISTERED PROFESSIONAL ENGINEER
D. B. YANG
100230568
2021-04-16
PROVINCE OF ONTARIO

NOT VALID UNLESS SIGNED AND DATED

wsp
2611 Queensview Dr. Ottawa, ON Canada K2B 8K2
t: 613.829.2800 f: 613.829.8299 www.wspgroup.com

CLIENT

2705460 ONTARIO INC.
C/O ANAND AGGARWAL
MANOR PARK MANAGEMENT
231 BRITTANY DRIVE, SUITE D
OTTAWA, ON K1K 0R8

project1 studio

ANNIS,O'SULLIVAN, VOLLEBEKK
Ontario Land Surveyors
14 CONCOURSE GATE, SUITE 500, NEPEAN, ONTARIO, K2E 7S6
TEL.(613)727-0850 FAX(613)727-1079

DESIGNED BY:	DRAWN BY:	APPROVED BY:
D.Y.	D.Y.	D.Y./I.J.

PROJECT

1151 AND 1131 TERON ROAD
RESIDENTIAL DEVELOPMENT

DRAWING TITLE

GRADING PLAN

PROJECT NO.	DRAWING NO.
20M-01534-00	C02

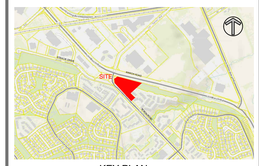
D07-XX-XX-XXXX

#XXXX

FILENAME: V:\10-13 MM-LD - 2020 Projects\20M-01534-00 - 1151 Teron Road\3. Drawings\Working drawings\Working drawings\20M-01534-00_Civil.dwg
PLOTDATE: Apr 15, 2021 - 11:42am, cawx999741

GENERAL NOTES:

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



KEY PLAN
(N.T.S)

No.	REVISIONS	BY	DATE
01	ISSUED FOR SPC	D.Y.	2021-04-16

HORIZONTAL SCALE:
5m 2 0 5 10m
SCALE: 1:300

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

REGISTERED PROFESSIONAL ENGINEER
D. B. YANG
100230568
2021-04-16
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TEL.(613)727-0850 FAX(613)727-1079

DESIGNED BY:	DRAWN BY:	APPROVED BY:
D.Y.	D.Y.	D.Y./I.J.

PROJECT

1151 AND 1131 TERON ROAD
RESIDENTIAL DEVELOPMENT

DRAWING TITLE

SERVICING PLAN

PROJECT NO.	DRAWING NO.
20M-01534-00	C03

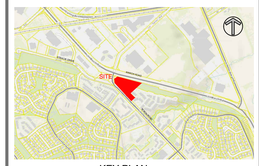
FILENAME: V:\01-13 MLD - 2020 Projects\20M-01534-00 - 1151 Teron Road\3. Drawings\Working drawings\20M-01534-00_Civil.dwg
PLOTDATE: Apr 16, 2021 - 11:42am, cawy69741

D07-XX-XX-XXXX

#XXXX

GENERAL NOTES:

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



KEY PLAN
(N.T.S)

No.	REVISIONS	BY	DATE
01	ISSUED FOR SPC	D.Y.	2021-04-16

HORIZONTAL SCALE:
5m 2 0 5 10m
SCALE: 1:300

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

REGISTERED PROFESSIONAL ENGINEER
D. B. YANG
100230568
2021-04-16
PROVINCE OF ONTARIO

NOT VALID UNLESS SIGNED AND DATED

2611 Queensview Dr. Ottawa, ON Canada K2B 8K2
t: 613.829.2800 f: 613.829.8299 www.wspgroup.com

CLIENT

2705460 ONTARIO INC.
C/O ANAND AGGARWAL
MANOR PARK MANAGEMENT
231 BRITTANY DRIVE, SUITE D
OTTAWA, ON K1K 0R8

project1 studio

ANNIS,O'SULLIVAN, VOLLEBEKK
Ontario Land Surveyors
14 CONCOURSE GATE, SUITE 500, NEPEAN, ONTARIO, K2E 7S6
TEL:(613)727-0850 FAX(613)727-1079

DESIGNED BY:	DRAWN BY:	APPROVED BY:
D.Y.	D.Y.	D.Y./I.J.

PROJECT

1151 AND 1131 TERON ROAD
RESIDENTIAL DEVELOPMENT

DRAWING TITLE

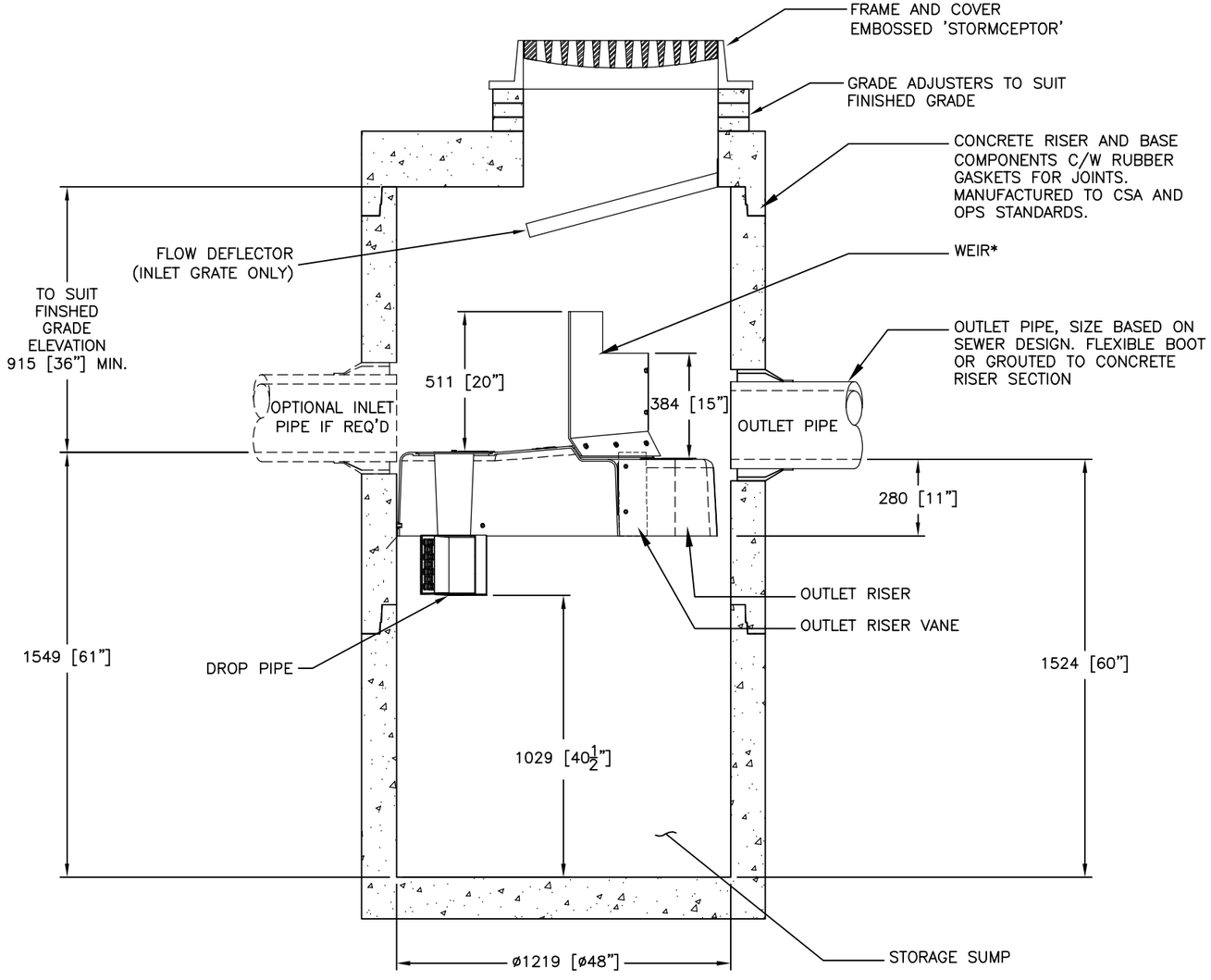
DRAINAGE AREA PLAN

PROJECT NO.	DRAWING NO.
20M-01534-00	C04

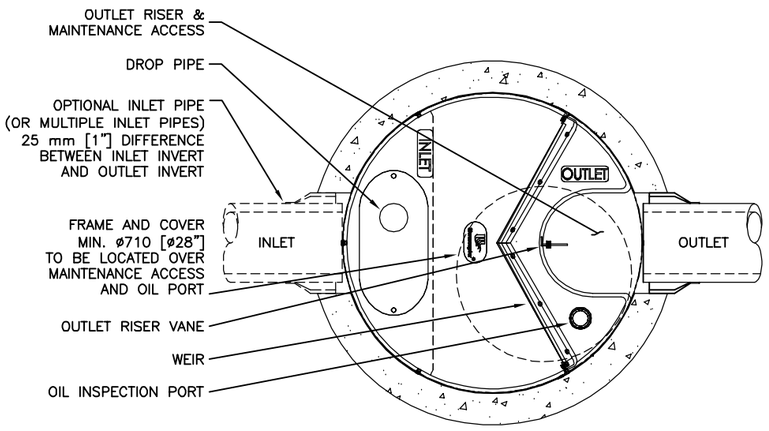
D07-XX-XX-XXXX

#XXXX

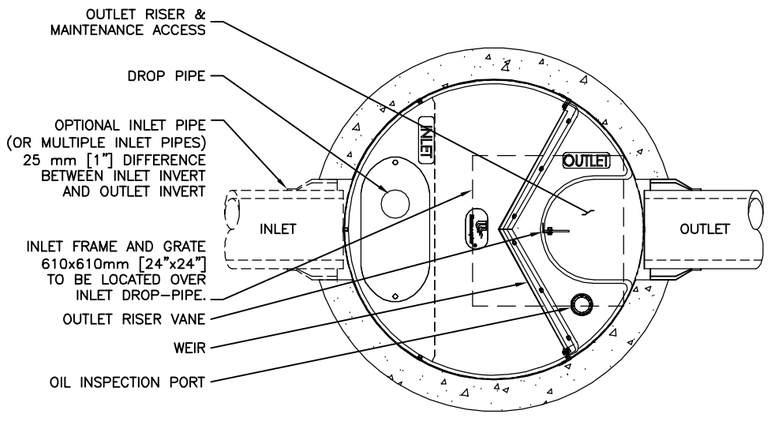
FILENAME: V:\10-13 M.L.D - 2020 Projects\20M-01534-00 - 1151 Teron Road\3. Drawings\Working drawings\working drawings\20M-01534-00_Civil.dwg
PLOTDATE: Apr 15, 2021 - 11:43am, cawy069741



SECTION VIEW



PLAN VIEW (STANDARD)



PLAN VIEW (INLET TOP)

FOR SITE SPECIFIC DRAWINGS PLEASE CONTACT YOUR LOCAL STORMCEPTOR REPRESENTATIVE. SITE SPECIFIC DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION AT THE TIME. SOME FIELD REVISIONS TO THE SYSTEM LOCATION OR CONNECTION PIPING MAY BE NECESSARY BASED ON AVAILABLE SPACE OR SITE CONFIGURATION REVISIONS. ELEVATIONS SHOULD BE MAINTAINED EXCEPT WHERE NOTED ON BYPASS STRUCTURE (IF REQUIRED).

GENERAL NOTES:

* MAXIMUM SURFACE LOADING RATE (SLR) INTO LOWER CHAMBER THROUGH DROP PIPE IS 1135 L/min/m^2 (27.9 gpm/ft^2) FOR STORMCEPTOR EF4 AND 535 L/min/m^2 (13.1 gpm/ft^2) FOR STORMCEPTOR EFO4 (OIL CAPTURE CONFIGURATION). WEIR HEIGHT IS 150 mm (6 INCH) FOR EF04.

1. ALL DIMENSIONS INDICATED ARE IN MILLIMETERS (INCHES) UNLESS OTHERWISE SPECIFIED.
2. STORMCEPTOR STRUCTURE INLET AND OUTLET PIPE SIZE AND ORIENTATION SHOWN FOR INFORMATIONAL PURPOSES ONLY.
3. UNLESS OTHERWISE NOTED, BYPASS INFRASTRUCTURE, SUCH AS ALL UPSTREAM DIVERSION STRUCTURES, CONNECTING STRUCTURES, OR PIPE CONDUITS CONNECTING TO COMPLETE THE STORMCEPTOR SYSTEM SHALL BE PROVIDED AND ADDRESSED SEPARATELY.
4. DRAWING FOR INFORMATION PURPOSES ONLY. REFER TO ENGINEER'S SITE/UTILITY PLAN FOR STRUCTURE ORIENTATION.
5. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED)
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT)
D. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT THE DEVICE FROM CONSTRUCTION-RELATED EROSION RUNOFF.
E. DEVICE ACTIVATION, BY CONTRACTOR, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE STORMCEPTOR UNIT IS CLEAN AND FREE OF DEBRIS.

STANDARD DETAIL
NOT FOR CONSTRUCTION

SITE SPECIFIC DATA REQUIREMENTS

STORMCEPTOR MODEL	EF4
STRUCTURE ID	*
WATER QUALITY FLOW RATE (L/s)	*
PEAK FLOW RATE (L/s)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
DRAINAGE AREA (HA)	*
DRAINAGE AREA IMPERVIOUSNESS (%)	*

PIPE DATA:	I.E.	MAT'L	DIA	SLOPE %	HGL
INLET #1	*	*	*	*	*
INLET #2	*	*	*	*	*
OUTLET	*	*	*	*	*

* PER ENGINEER OF RECORD

MARK	DATE	REVISION DESCRIPTION	BY
1	6/8/18	UPDATES	JSK
0	5/26/17	INITIAL RELEASE	JSK

Stormceptor® EF

SCALE = NTS

imbrium®
7007 RIDGE ROAD, SUITE 350, HANOVER, MD 21076
USA 888-279-9828 CA 800-388-4601 INTL +1-416-960-9900

DATE: 5/26/2017

DESIGNED:	DRAWN:
JSK	JSK
CHECKED:	APPROVED:
BSF	SP
PROJECT No.:	SEQUENCE No.:
EF4	*

SHEET: 1 OF 1

Stormceptor®

Stormceptor® EF Sizing Report

STORMCEPTOR®
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

04/12/2021

Province:	Ontario - Sault Ste Marie
City:	Ottawa
Nearest Rainfall Station:	OTTAWA MACDONALD-CARTIER INT'L AP
NCDC Rainfall Station Id:	6000
Years of Rainfall Data:	37

Site Name:	1151 - 1131 Teron Road
Drainage Area (ha):	0.17
Runoff Coefficient 'c':	0.67
Particle Size Distribution:	Fine
Target TSS Removal (%):	80.0

Project Name:	1151 - 1131 Teron Road Res Project
Project Number:	20M-01534-00
Designer Name:	Ding Bang Yang
Designer Company:	WSP Canada Inc
Designer Email:	winston.yang@wsp.com
Designer Phone:	613-690-0538
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	4.12
Oil / Fuel Spill Risk Site?	No
Upstream Flow Control?	Yes
Upstream Orifice Control Flow Rate to Stormceptor (L/s):	18.00
Peak Conveyance (maximum) Flow Rate (L/s):	
Site Sediment Transport Rate (kg/ha/yr):	

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EF4	89
EF6	91
EF8	92
EF10	93
EF12	93

Recommended Stormceptor EF Model: EF4

Estimated Net Annual Sediment (TSS) Load Reduction (%): 89

Water Quality Runoff Volume Capture (%): > 90

imbrium

THIRD-PARTY TESTING AND VERIFICATION

►**Stormceptor® EF and Stormceptor® EFO** are the latest evolutions in the Stormceptor® oil-grit separator (OGS) technology series, and are designed to remove a wide variety of pollutants from stormwater and snowmelt runoff. These technologies have been third-party tested in accordance with the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** and performance has been third-party verified in accordance with the **ISO 14034 Environmental Technology Verification (ETV)** protocol.

PERFORMANCE

►**Stormceptor® EF and EFO** remove stormwater pollutants through gravity separation and floatation, and feature a patent-pending design that generates positive removal of total suspended solids (TSS) throughout each storm event, including high-intensity storms. Captured pollutants include sediment, free oils, and sediment-bound pollutants such as nutrients, heavy metals, and petroleum hydrocarbons. Stormceptor is sized to remove a high level of TSS from the frequent rainfall events that contribute the vast majority of annual runoff volume and pollutant load. The technology incorporates an internal bypass to convey excessive stormwater flows from high-intensity storms through the device without resuspension and washout (scour) of previously captured pollutants. Proper routine maintenance ensures high pollutant removal performance and protection of downstream waterwavs.

PARTICLE SIZE DISTRIBUTION (PSD)

►The **Canadian ETV PSD** shown in the table below was used, or in part, for this sizing. This is the identical PSD that is referenced in the Canadian ETV ***Procedure for Laboratory Testing of Oil-Grit Separators*** for both sediment removal testing and scour testing. The Canadian ETV PSD contains a wide range of particle sizes in the sand and silt fractions, and is considered reasonably representative of the particle size fractions found in typical urban stormwater runoff.

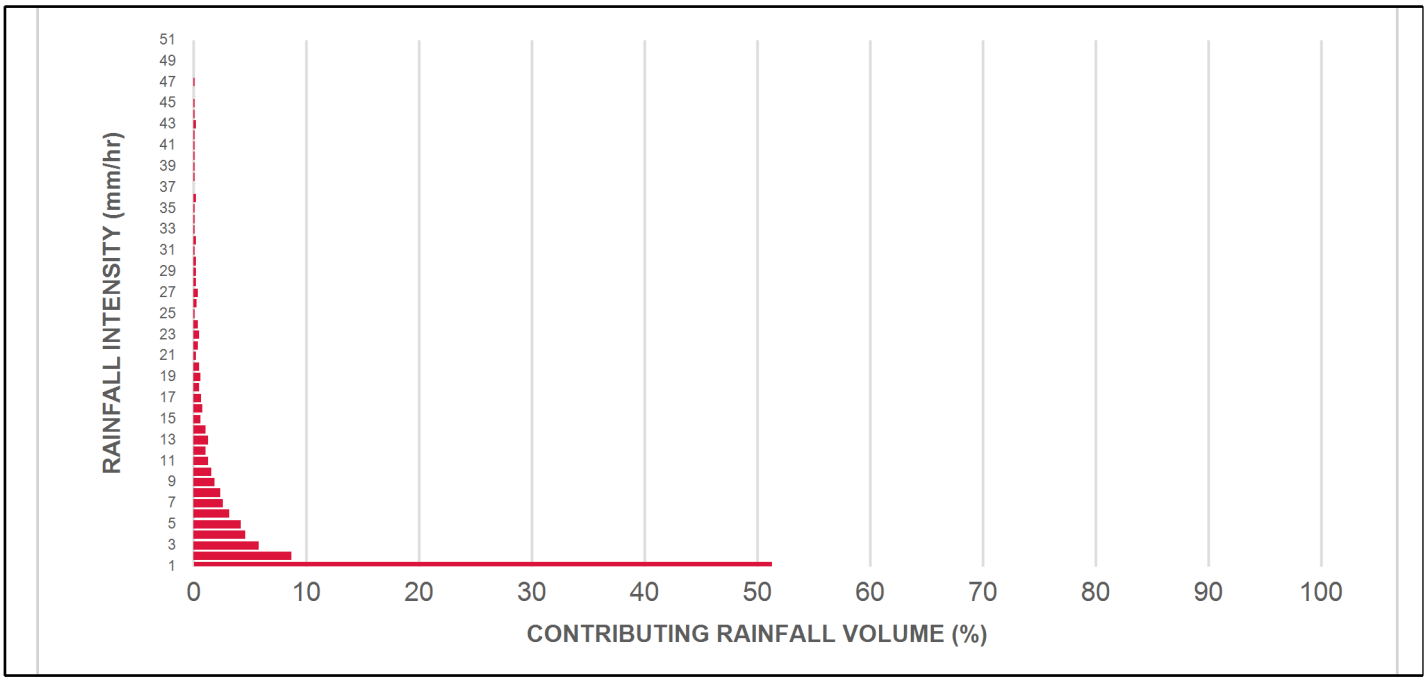
Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

Upstream Flow Controlled Results

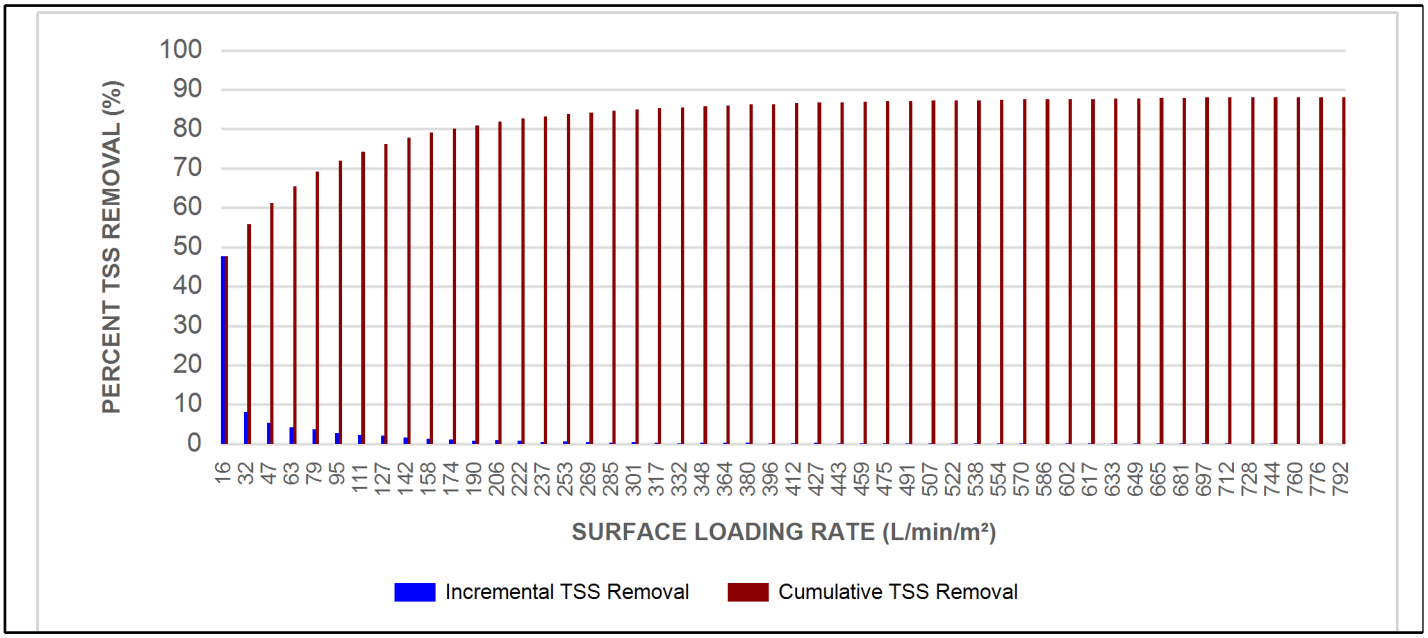
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
1	51.3	51.3	0.32	19.0	16.0	93	47.7	47.7
2	8.7	60.0	0.63	38.0	32.0	93	8.1	55.8
3	5.8	65.8	0.95	57.0	47.0	93	5.4	61.2
4	4.6	70.4	1.27	76.0	63.0	91	4.2	65.4
5	4.2	74.6	1.58	95.0	79.0	89	3.7	69.1
6	3.2	77.8	1.90	114.0	95.0	88	2.8	71.9
7	2.6	80.4	2.22	133.0	111.0	86	2.2	74.2
8	2.4	82.8	2.53	152.0	127.0	85	2.0	76.2
9	1.9	84.7	2.85	171.0	142.0	83	1.6	77.8
10	1.6	86.3	3.17	190.0	158.0	81	1.3	79.1
11	1.3	87.6	3.48	209.0	174.0	79	1.0	80.1
12	1.1	88.7	3.80	228.0	190.0	77	0.8	80.9
13	1.3	90.0	4.12	247.0	206.0	76	1.0	81.9
14	1.1	91.1	4.43	266.0	222.0	74	0.8	82.7
15	0.6	91.7	4.75	285.0	237.0	73	0.4	83.2
16	0.8	92.5	5.07	304.0	253.0	72	0.6	83.8
17	0.7	93.2	5.38	323.0	269.0	70	0.5	84.2
18	0.5	93.7	5.70	342.0	285.0	69	0.3	84.6
19	0.6	94.3	6.02	361.0	301.0	67	0.4	85.0
20	0.5	94.8	6.33	380.0	317.0	66	0.3	85.3
21	0.2	95.0	6.65	399.0	332.0	64	0.1	85.5
22	0.4	95.4	6.97	418.0	348.0	63	0.3	85.7
23	0.5	95.9	7.28	437.0	364.0	62	0.3	86.0
24	0.4	96.3	7.60	456.0	380.0	60	0.2	86.3
25	0.1	96.4	7.92	475.0	396.0	59	0.1	86.3

Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
26	0.3	96.7	8.23	494.0	412.0	58	0.2	86.5
27	0.4	97.1	8.55	513.0	427.0	58	0.2	86.7
28	0.2	97.3	8.87	532.0	443.0	58	0.1	86.8
29	0.2	97.5	9.18	551.0	459.0	57	0.1	86.9
30	0.2	97.7	9.50	570.0	475.0	57	0.1	87.1
31	0.1	97.8	9.82	589.0	491.0	57	0.1	87.1
32	0.2	98.0	10.13	608.0	507.0	57	0.1	87.2
33	0.1	98.1	10.45	627.0	522.0	57	0.1	87.3
34	0.1	98.2	10.77	646.0	538.0	57	0.1	87.3
35	0.1	98.3	11.08	665.0	554.0	57	0.1	87.4
36	0.2	98.5	11.40	684.0	570.0	56	0.1	87.5
37	1.5	100.0	11.72	703.0	586.0	56	0.8	88.4
38	0.1	100.1	12.03	722.0	602.0	56	0.1	88.4
39	0.1	100.2	12.35	741.0	617.0	56	0.1	88.5
40	0.1	100.3	12.67	760.0	633.0	56	0.1	88.5
41	0.1	100.4	12.98	779.0	649.0	56	0.1	88.6
42	0.1	100.5	13.30	798.0	665.0	56	0.1	88.6
43	0.2	100.7	13.62	817.0	681.0	56	0.1	88.7
44	0.1	100.8	13.93	836.0	697.0	56	0.1	88.8
45	0.1	100.9	14.25	855.0	712.0	55	0.1	88.9
46	-0.9	100.0	14.57	874.0	728.0	55	N/A	88.4
47	0.1	100.1	14.88	893.0	744.0	55	0.1	88.4
48	-0.1	100.0	15.20	912.0	760.0	55	N/A	88.4
49	0.0	100.0	15.52	931.0	776.0	55	0.0	88.4
50	0.0	100.0	15.83	950.0	792.0	55	0.0	88.4
Estimated Net Annual Sediment (TSS) Load Reduction =								**88 %**

RAINFALL DATA FROM OTTAWA MACDONALD-CARTIER INT'L AP RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

SCOUR PREVENTION AND ONLINE CONFIGURATION

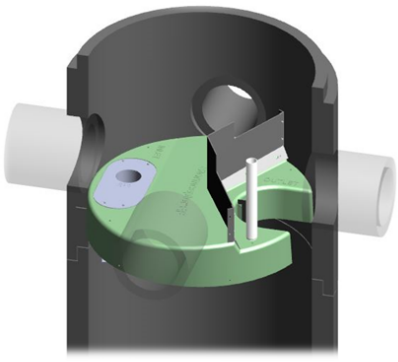
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test performance has been third-party verified in accordance with the ISO 14034 ETV protocol. As a result, Stormceptor EF and EFO are approved for online installation, eliminating the need for costly additional bypass structures, piping, and installation expense.

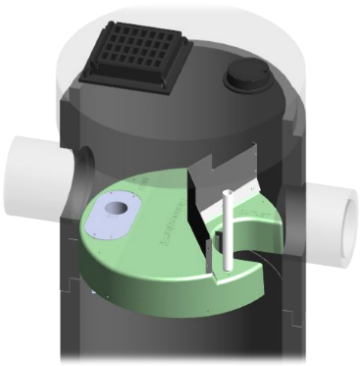
DESIGN FLEXIBILITY

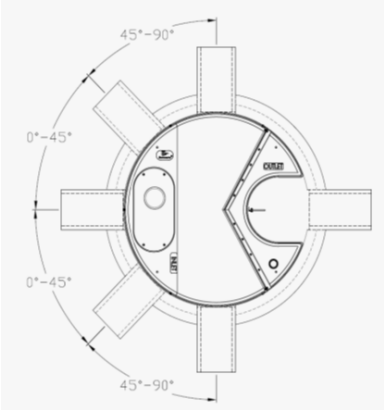
►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle, and can be modified to ensure performance in submerged conditions.

OIL CAPTURE AND RETENTION

►While Stormceptor® EF will capture and retain oil from dry weather spills and low intensity runoff, **Stormceptor® EFO** has demonstrated superior oil capture and greater than 99% oil retention in third-party testing according to the light liquid re-entrainment testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**. Stormceptor EFO is recommended for sites where oil capture and retention is a requirement.







INLET-TO-OUTLET DROP

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.
0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.
45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure. The applicable K value for calculating minor losses through the unit is 1.1. For submerged conditions the applicable K value is 3.0.

Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft^3)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

*Increased sump depth may be added to increase sediment storage capacity
** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft^3)

Feature	Benefit	Feature Appeals To
Patent-pending enhanced flow treatment and scour prevention technology	Superior, verified third-party performance	Regulator, Specifying & Design Engineer
Third-party verified light liquid capture and retention for EFO version	Proven performance for fuel/oil hotspot locations	Regulator, Specifying & Design Engineer, Site Owner
Functions as bend, junction or inlet structure	Design flexibility	Specifying & Design Engineer
Minimal drop between inlet and outlet	Site installation ease	Contractor
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade	Maintenance Contractor & Site Owner

STANDARD STORMCEPTOR EF/EFO DRAWINGS

For standard details, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

For specifications, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

STANDARD PERFORMANCE SPECIFICATION FOR "OIL GRIT SEPARATOR" (OGS) STORMWATER QUALITY TREATMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The **minimum** sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1

4 ft (1219 mm) Diameter OGS Units:	1.19 m^3 sediment / 265 L oil
6 ft (1829 mm) Diameter OGS Units:	3.48 m^3 sediment / 609 L oil
8 ft (2438 mm) Diameter OGS Units:	8.78 m^3 sediment / 1,071 L oil
10 ft (3048 mm) Diameter OGS Units:	17.78 m^3 sediment / 1,673 L oil
12 ft (3657 mm) Diameter OGS Units:	31.23 m^3 sediment / 2,476 L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing shall be determined using historical rainfall data and a sediment removal performance curve derived from the actual third-party verified laboratory testing data. The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m^2.

APPENDIX

APPENDIX

E

- EROSION AND SEDIMENTATION CONTROL PLAN C05

PROPERTY LINE

PROPOSED SILT FENCE AS PER OPSD 219.210

PROPERTY LINE

PROPOSED BIOSWALE

PROPOSED BIOSWALE

STRAW BALE CHECK DAM AS PER OPSD-219.180

PROPOSED BIOSWALE

UNDERGROUND PARKING LIMIT

PROPOSED 9-STOREY BUILDING FFE=91.00 (GROUND) FFE=87.20 (BSMT)

HYDRO TOWER

PROPERTY LINE

PROPOSED SILT FENCE AS PER OPSD 219.210

STORMWATER DETENTION CISTERN
TOTAL STORAGE REQUIRED 25m³
TOTAL STORAGE PROVIDED 55m³
BOTTOM OF CISTERN=88.431
TOP OF CISTERN=89.063

PROPERTY LINE

PROPOSED SILT FENCE AS PER OPSD 219.210

115m LONG LANDSCAPE RETAINING WALL BOTTOM OF WALL WILL TIE INTO THE EXISTING GRADE ALONG THE PROPERTY LINE. (CONTRACTOR TO CONFIRM THE EXISTING ELEVATION AT PROPERTY LINE PRIOR TO CONSTRUCTION)

EXISTING 2 STOREY TOWNHOUSE

UNDERGROUND PARKING LIMIT

PROPOSED 3-STOREY BUILDING FFE=91.00 (GROUND) FFE=87.20 (BSMT)

CENTERLINE OF FIRE ACCESS ROUTE

INSTALL MUD MAT AT CONSTRUCTION ACCESS (REFER TO DETAIL ON DWG C01)

MARCH ROAD REGIONAL No. 49 FORMERLY THE KING'S HIGHWAY No. 17

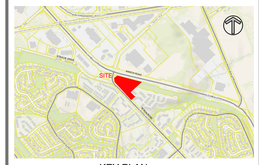
TERON RD.

ROAD ALLOWANCE BETWEEN CONCESSIONS 3 AND 4

CARLETON CONDOMINIUM PLAN

GENERAL NOTES:

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



KEY PLAN
(N.T.S)

No.	REVISIONS	BY	DATE
01	ISSUED FOR SPC	D.Y.	2021-04-16

HORIZONTAL SCALE:
5m 2 0 5 10m
SCALE: 1:300

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

REGISTERED PROFESSIONAL ENGINEER
D. B. YANG
100230568
2021-04-16
PROVINCE OF ONTARIO

NOT VALID UNLESS SIGNED AND DATED

wsp
2611 Queensview Dr. Ottawa, ON Canada K2B 8K2
t: 613.829.2800 f: 613.829.8299 www.wspgroup.com

CLIENT

2705460 ONTARIO INC.
C/O ANAND AGGARWAL
MANOR PARK MANAGEMENT
231 BRITTANY DRIVE, SUITE D
OTTAWA, ON K1K 0R8

project1 studio

ANNIS,O'SULLIVAN, VOLLEBEKK
Ontario Land Surveyors
14 CONCOURSE GATE, SUITE 500, NEPEAN, ONTARIO, K2E 7S6
TEL.(613)727-0850 FAX(613)727-1079

DESIGNED BY:	DRAWN BY:	APPROVED BY:
D.Y.	D.Y.	D.Y./I.J.

PROJECT

1151 AND 1131 TERON ROAD
RESIDENTIAL DEVELOPMENT

DRAWING TITLE

EROSION AND SEDIMENTATION CONTROL PLAN

PROJECT NO.
20M-01534-00

DRAWING NO.
C05

D07-XX-XX-XXXX

#XXXX

FILENAME: V1\0-53 MHJD - 2020 Projects\20M-01534-00 - 1151 Teron Road\3. Drawings\Working drawings\Working drawings\20M-01534-00_Civil.dwg
PLOTDATE: Apr 15, 2021 - 11:43am, cawx069741

APPENDIX

APPENDIX

F

- SUBMISSION CHECK LIST

4.1 General Content

☒ Executive Summary (for larger reports only).

Comments: Refer to Servicing Report Section 1.1

☒ Date and revision number of the report.

Comments: *Refer to front page of the Report*

☒ Location map and plan showing municipal address, boundary, and layout of proposed development.

Comments: *Refer to Figure 1.1 Site Location for Location Map and Plan*

☒ Plan showing the site and location of all existing services.

Comments: *Refer to drawing C03*

☒ 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.

Comments: *Refer to Architectural Site Plan for development statistics and Servicing Report for technical references.*

☒ Summary of Pre-consultation Meetings with City and other approval agencies.

Comments: Refer to Appendix A for Pre-Consultation Meeting Notes

☒ 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.

Comments: Direction by MVCA and City of Ottawa, and conformance is confirmed in the Stormwater Management Report.

☒ Statement of objectives and servicing criteria.

Comments: Refer to Servicing Report Section 1.7

☒ Identification of existing and proposed infrastructure available in the immediate area.

Comments: *Refer to drawing C03*

☒ 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).

Comments: *N/A*

☒ 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.

Comments: *Refer to drawing C02*

☒ 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.

Comments: *N/A*

☒ Proposed phasing of the development, if applicable.

Comments: *N/A*

☒ Reference to geotechnical studies and recommendations concerning servicing.

Comments: Reference provided to Paterson Group report.

☒ 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

Comments: *Refer to drawing C02 and C03*

4.2 Development Servicing Report: Water

☒ Confirm consistency with Master Servicing Study, if available

Comments: *Refer to Servicing Report Section 2.1*

☒ Availability of public infrastructure to service proposed development

Comments: Refer to Servicing Report Section 2.1

☒ Identification of system constraints

Comments: N/A

☒ Identify boundary conditions

Comments: *Refer to Servicing Report Section 2.2*

☒ Confirmation of adequate domestic supply and pressure

Comments: *Refer to Servicing Report Section 2.3*

☒ 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.

Comments: *Refer to Servicing Report Section 2.4*

☒ 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.

Comments: *Refer to Servicing Report Section 2.5*

☒ Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design

Comments: *Refer to Servicing Report Section 2.6*

☒ Address reliability requirements such as appropriate location of shut-off valves

Comments: *Refer to Servicing Report Section 2.7*

☒ Check on the necessity of a pressure zone boundary modification.

Comments: *Refer to Servicing Report Section 2.8*

☒ 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

Comments: *Refer to Servicing Report Section 2.9*

☒ 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.

Comments: *Refer to Servicing Report Section 2.10*

☒ 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.

Comments: *Refer to Servicing Report Section 2.11*

☒ Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.

Comments: *Refer to Servicing Report Section 2.12*

☒ Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.

Comments: N/A

4.3 Development Servicing Report: Wastewater

☒ Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).

Comments: *Refer to Servicing Report Section 3.1*

☒ Confirm consistency with Master Servicing Study and/or justifications for deviations.

Comments: Refer to Servicing Report Section 3.2. Design based on Ottawa Sewer Design Guidelines.

☒ 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.

Comments: *Refer to Servicing Report Section 3.3*

☒ Description of existing sanitary sewer available for discharge of wastewater from proposed development.

Comments: *Refer to Servicing Report Section 3.4*

☒ 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)

Comments: *Refer to Servicing Report Section 3.5*

☒ Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.

Comments: Refer to Servicing Report Section 3.9 and 3.11

☒ Special considerations such as contamination, corrosive environment etc.

Comments: *Refer to Servicing Report Section 3.8*

4.4 Development Servicing Report: Stormwater

☒ Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)

Comments: *Refer to Servicing Report Section 4.1*

☒ Analysis of available capacity in existing public infrastructure.

Comments: *Refer to Servicing Report Section 4.2*

☒ A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.

Comments: *Refer to drawing C03*

☒ 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.

Comments: *Refer to Stormwater Management Report*

☒ Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.

Comments: Refer to Stormwater Management Report

☒ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.

Comments: *Refer to Stormwater Management Report*

☒ Set-back from private sewage disposal systems.

Comments: *N/A*

☒ Watercourse and hazard lands setbacks.

Comments: N/A

☒ Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.

Comments: Refer to Appendix A

☒ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.

Comments: Consistency confirmed with requirements for Kizell Drain.

☒ Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).

Comments: *Refer to Stormwater Management Report for storage requirements and major events. Refer to Section 4 for existing minor system capacity and Appendix C*

☒ Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.

Comments: N/A

☒ Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.

Comments: *Refer to Stormwater Management Report*

☒ Any proposed diversion of drainage catchment areas from one outlet to another.

Comments: *Refer to Servicing Report Section 4.13*

☒ Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.

Comments: Refer to Servicing Report Section 4.6-4.10, Appendix D and drawing C03

☒ 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.

Comments: N/A

☒ Identification of potential impacts to receiving watercourses

Comments: *Refer to Servicing Report Section 4.15*

☒ Identification of municipal drains and related approval requirements.

Comments: N/A

☒ Descriptions of how the conveyance and storage capacity will be achieved for the development.

Comments: *Refer to Servicing Report Section 4.17*

☒ 100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.

Comments: Refer to drawings C03 and C04.

☒ Inclusion of hydraulic analysis including hydraulic grade line elevations.

Comments: *Refer to Servicing Report Section 4.18*

☒ Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.

Comments: *Refer to Servicing Report Section 5.0*

☒ 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.

Comments: *N/A*

☒ Identification of fill constraints related to floodplain and geotechnical investigation.

Comments: *N/A*

4.5 Approval and Permit Requirements: Checklist

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:

☐ 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.

Comments: No approval anticipated. MVCA will be circulated.

☐ Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.

Comments: No ECA required based on information provided from previous inquiry made by City of Ottawa with MECP.

☐ Changes to Municipal Drains.

Comments: *Not applicable.*

☐ Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)

Comments: *Not applicable.*

4.6 Conclusion Checklist

☒ Clearly stated conclusions and recommendations

Comments:

☐ 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.

Comments: *Further comments to be added following site plan application review.*

☒ All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario

Comments: