RENFROE LAND MANAGEMENT

103 SCHNEIDER ROAD, LIGHT INDUSTRIAL DEVELOPMENT, OTTAWA, ON

SERVICING REPORT

APRIL 6, 2021
1ST SUBMISSION

RENFROE LAND MANAGEMENT

wsp

103 SCHNEIDER ROAD, LIGHT INDUSTRIAL DEVELOPMENT, OTTAWA, ON

SERVICING REPORT

RENFROE LAND MANAGEMENT

SITE PLAN APPLICATION
1ST SUBMISSION

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

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April 6, 2021

David Renfroe
Renfroe Land Management

Attention: David Renfroe,

Dear Sir:

Subject: 103 Schneider Road – Light Industrial 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.: 211-01794-00

QUALITY MANAGEMENT

ISSUE/REVISION	FIRST ISSUE	REVISION 1	REVISION 2	REVISION 3
Remarks	Issued for Site Plan Application			
Date	April 6thDecember 4, 2021			
Prepared by	Ding Bang (Winston) Yang			
Signature				
Checked by	Ishaque Jafferjee			
Signature				
Project number	211-01794-00			

SIGNATURES

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1 GENERAL

1.1 EXECUTIVE SUMMARY

WSP was retained by Renfroe Land Management to provide servicing and grading design services for the proposed new industrial development, including three new light industrial and commercial buildings, located at 105A Schneider Road, north of Carling Ave, south of Legget Dr, west of Herzberg Road and east of Schneider Road. This report outlines findings and calculations pertaining to the servicing of the proposed development for building A, B and C with a gross lot area of 42,860 m².

Currently the land proposed for the light industrial development is natural landscaping area with mainly covered by grass and trees. The total building footprint for Building A, B and C is 8,764.0 m². The site is surrounded by commercial and light industrial development. It is part of lot 6 concession 4, and part of easement between concession 4 and existing development, 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 ground, predominantly grass and shrubs, sloping from the high elevation of 77.91 m in the west of the easement adjacent to Schneider road to a low elevation of 74.68 m in the northeast comer of the site. The overall topography of the three south existing developed sites including 101 and 101A Schneider Road and 4017 Carling Ave are draining south to north toward the Kizell Drain via the proposed development area. Existing on-site detention facilities have not been constructed in the existing sites. The existing topographic conveys overland runoff to Kizell Drain. Tcity direction. the proposed land and the three existing developed lands Kizell Drain. 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 Schneider Road to the development as recorded from as-built drawings from City of Ottawa:

Schneider Road:

- 250 mm sanitary sewer and 305mm watermain.

It is proposed that:

- On-site stormwater management systems, employing surface and roof storage will be provided to attenuate flow rates leaving the new parking lot and new building roof. 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 6th, 2021.

1.3 LOCATION MAP AND PLAN

The proposed light industrial development at 105A Schneider Road, in the City of Ottawa at the location shown in Figure 1-1 below.

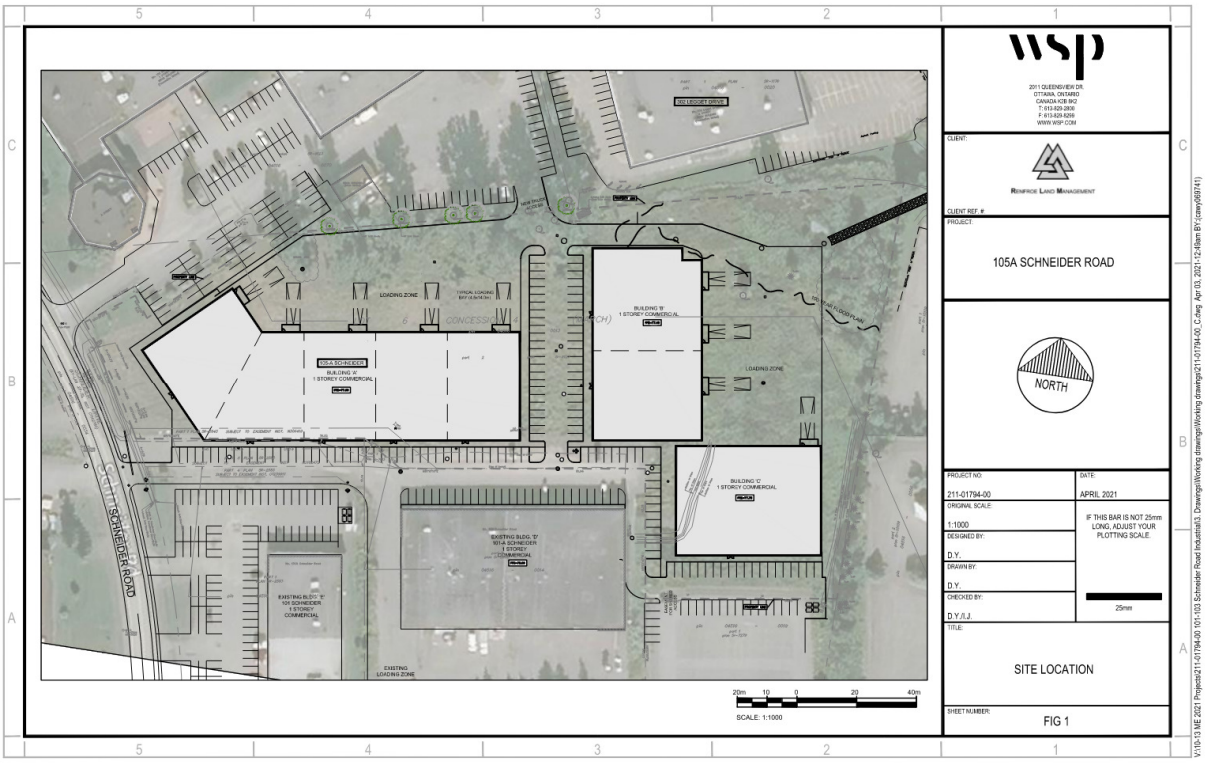


Figure 1-1 Site Location

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 December 15, 2020. 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

A municipal sanitary sewer and a watermain are located within Schneider Road right of way. And a private watermain is servicing 101A Schneider Road via the Easement. A new sanitary sewer will be connected to the existing sewers along Schneider Road from the proposed development. New private water service will be connected to the existing private watermain at the Easement east of Schneider Road. A new piped stormwater system conveys both external developed and proposed drainage to Kizell Drain. Quantity control is required to restrict the discharge leaving the development areas, as noted in the Stormwater Management Report. The existing boundary road at the site will remain open.

1.9 ENVIRONMENTALLY SIGNIFICANT AREAS, WATERCOURSES AND MUNICIPAL DRAINS

The proposed development site is surrounded by commercial and light industrial lands. Portions of the property are located within the 1:100-year flood plain of the Kizell Drain, which was approved by the MVCA Board of Directors in 2017. Runoff

from the development site is directed to Kizell Drain Watershed. Oil grit separator has 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 Kizell Drain to the northeast corner. The site topographic survey, included in Appendix A, provides evidence of direction of overland flow of the site from west to east.

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

The existing 250 mm dia. watermain running west-east across the development area to provide domestic and fire demand to 101A Schneider Road has been verified as active, and will be rerouted to the south via the Easement south of proposed building A. The existing fire hydrant located within the proposed building A footprint has to be relocated to the south at the same time of rerouting. It will be connected to the mains along Schneider Road at present location. Temporary shut down for the existing water services will be required for making the final connection. 101A Schneider Road, located to the south, will be out of service when making the final connection. The rerouting and exiting fire hydrant relocation have to be completed prior to the excavation of the remaining portion of the existing watermain running under the proposed building A. The existing 250 mm valve box close to the main connection will be replaced by a DMA chamber at the same time of rerouting.

1.12 DEVELOPMENT PHASING

No development phasing is expected for the current proposal.

1.13 GEOTECHNICAL SUTDY

A geotechnical investigation report has been prepared by Paterson Group (Report PG5682-1, March 31, 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 is an existing 305mm diameter public watermain along Schneider Road providing water to 101A Schneider Road via the existing 250mm diameter private watermain. For the proposed development, the existing 250mm diameter private watermain extended from the existing 305mm municipal watermain along Schneider Road will continue to provide water demand and fire protection to the proposed and existing development at 105A and 101A Schneider Road. Four water services connections will be extended to the 101A Schneider Road, proposed Building A, B and C mechanical room. An existing private fire hydrant will be relocated south of the Easement within 45m of the Siamese connection. An addition fire hydrant will be installed to provide fire protection for Building B and C. The municipal fire hydrant at the current entrance to 101A Schneider Road will be relocated south as per the new entrance layout. No changes are required to the existing City water distribution system to allow servicing for this property.

The existing 250 mm diameter watermain running west-east across the development area. This existing water service is serves 101A Schneider Road, and supplies nearby private fire hydrant. Rerouting the existing 250 mm diameter watermain must be done prior to the construction of the building A foundation.

2.2 SYSTEM CONSTRAINTS AND BOUNDARY CONDITIONS

Boundary conditions have not yet been obtained from the City of Ottawa at the 305 mm diameter watermain on Schneider Road for the development, and if obtained, will be added to Appendix B. A max fire flow demand of 150 l/s (9,000 l/min) has been calculated for the proposed development and a fire flow demand of 150 l/s (9,000 l/min) has also been calculated for the existing building at 101A Schneider Road as noted in Section 2.4.

Table 2-1: Boundary Conditions

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

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 105A	Existing 101A
Average Day	0.94 l/s	0.31 l/s

Maximum Day	1.41 l/s	0.46 l/s
Peak Hour	2.53 l/s	0.83 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.

Further confirmation can be obtained from a review of boundary condition.

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 150 l/s for Building A, 133 l/s for Building B, 117 l/s for Building C and 150 l/s for the existing building at 101A Schneider Road have been calculated. A copy of the calculation is included in Appendix B.

The proposed and existing development can be serviced through the combination of existing and proposed hydrants. There areis one existing private fire hydrant on site, one municipal fire hydrant at the site entrance and one new private hydrant in the middle of all four buildings. The new private hydrant is within 45 m of the building fire department connection for both Building B and c. The relocated existing private fire hydrant is within 45 m of the building fire department connection of both proposed Building A and existing Building 101A. all the proposed and existing hydrants are rated at 5700 l/min.

The proposed building A, B and C on site and the existing building at 101A Schneider Road will be serviced by a single 203 mm service off the 250 mm private watermain. The service 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 new private fire hydrant from the private access road.

Minimum residual pressure will be evaluated once the boundary condition is obtained.

2.5 CHECK OF HIGH PRESSURE

High pressure check will be evaluated once the boundary condition is obtained.

2.6 PHASING CONSTRAINTS

No phasing constraints exist.

2.7 RELIABILITY REQUIREMENTS

DMA chamber as per city of Ottawa standard W3 and shot off valve will be provided at the study boundary from Schneider Road. The existing 250mm private watermain is connected to a looped section of the 305mm City watermain at Schneider Road. Water flow can be isolated from either direction along Schneider Road. A redundant service is not required as the buildings use are non-residential.

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 townhouses and apartment buildings.

2.10 DESCRIPTION OF PROPOSED WATER DISTRIBUTION NETWORK

The existing 250 mm private watermain will continue to be used to service both the development and existing site. The existing private hydrant will be relocated to the south of the easement and is located within 45 metres of the fire department connection to both Building A and existing building at 101A Schneider Road. A new private hydrant will be installed in the middle of the four buildings and is located within 45 metres of the fire department connection to both Building B and C.

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 a 250mm watermain, two private fire hydrants, one existing and one new, four water services for buildings A, B, C and existing building 101A Schneider Road. A model schematic will be provided with InfoWater for this development once the boundary condition is obtained.

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 Commercial Flow 28,000 L/Ha/day
- Average sanitary flow for Light Industrial Flow 35,000 L/Ha/day
- Light Industrial 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 three buildings is the 250 mm diameter municipal sewer on Schneider Road. The Ottawa Sewer Design Guidelines provide estimates of sewage flows based on light industrial development. The anticipated average flow based on an estimated development area of 1.90 Ha out of Gross area of 2.32 Ha is 0.77 L/s. Applying the peaking factor of 1.5, and adding the extraneous flow, the estimated ultimate peak flow is 1.79 L/s.

The Ottawa Sewer Design Guidelines provide estimates of sewage flows based on light industrial development. A sanitary drainage area plan C06 and 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 is the existing 250 mm diameter sewer on Schneider Road. This local sewer will outlet to a pumping station at Legget Drive via 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 Schneider Road at 1.37% slope is 69.60 L/s, which is adequate for the flow assumptions from the proposed development as noted above. As noted above, the expected flow based on the proposed development will be lower than the flow allowance assumed for the site based on the Sewer Design Guidelines.

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 private sanitary sewers with 200 mm diameter building services.

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 Kizell Drain on the north east of the property. Further downstream, drainage is conveyed to Ruisseau Watts Creek.

As noted in the pre-consultation meeting and associated notes from Mississippi Valley Conservation Authority and the City of Ottawa, the stormwater design for the site modifications is required to result post-development peak flows for the site will be controlled to pre-development peak flows.

Portions of the property are located within the 1:100-year flood plain of the Kizell Drain. The MVCA has asked that new development should be directed outside the flood plain and 80% TSS removal to be provide for stormwater discharge.

4.2 ANALYSIS OF AVAILABLE CAPACITY IN PUBLIC INFRASTRUCTURE

The allowable release rate for the 2.32 Ha site has been calculated in SWM memo. The total allowable release rate is 246 L/s L/s. Detailed calculations are provided in SWM memo. The receiving Kizell Drain and downstream Watts Creek already accept uncontrolled flow from the site equal to or greater than the allowable release rate of 246 L/s that will be generated from the proposed development under the 100-year return period storm event. Existing on-site detention facilities have not been constructed in the existing sites including 101 and 101A Schneider Road, 4017 Carling Ave. The existing topography conveys overland runoff to Kizell Drain.

4.3 DRAINAGE DRAWING

Drawing C04 shows the receiving storm sewer and site storm sewer network. Drawing C03 provides proposed grading and drainage and includes existing grading information. Drawing C05 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 developed and existing sites, achieving the approximate TSS removal required as well as oil capture. Also, hydrocarbon capture and retention will be provided with the designed oil and grit separator.

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 a storm sewer outlet to the northeast Kizell Drain and small areas of uncontrolled surface drainage entering the roadside ditch within the Schneider Road ROW to the west. A limited amount of uncontrolled surface flow will also enter the 105 Schneider Road to the north for parking expansion and the undisturbed grass area to the east and northeast, (consistent with existing conditions), with both directed to the existing drains to the northeast.

Using the above noted criteria, the proposed on-site storm sewers were sized accordingly. A detailed storm sewer design sheet and the associated storm sewer drainage area plan is included in Appendix D. Please note that an allocation for flows from the adjacent developed lands to the south of the site will be directed to the developed site and conveys to the storm piped system without any restriction.

It is also customary for larger buildings to be provided with piped storm services for roof drainage. There are no downspouts proposed. Separate outlet pipes are provided for foundation drains and roof drains, and therefore roof drainage will not negatively impact the foundation. 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 Memo for details.

4.9 INLET CONTROLS

Refer to Stormwater Management Memo for details.

4.10 ON-SITE DETENTION

Refer to Stormwater Management Memo for details.

4.11 WATERCOURSES

The minor and major flow will be ultimately directed to the Kizell Drain then to Ruisseau Watts Creek.

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 Memo and storm sewer design sheet.

4.13 DIVERSION OF DRAINAGE CATCHMENT AREAS

There will be diversion of existing drainage catchment areas arising from the proposed work described in this report. The major and minor flow from the external drainage to the south of the proposed site will be eventually directed to Kizell Drain via piped system and overland. No quantity control has been implemented, but quality control will be provided from the oil and grit separator.

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

Kizell Drain is the receiving watercourse for the proposed development. Drainage from the proposed and existing sites will be ultimately directed to the Kizell Drain then the Ruisseau Watts Creek.

4.17 MEANS OF CONVEYANCE AND STORAGE CAPACITY

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

4.18 HYDRAULIC ANALYSIS

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

4.19 IDENTIFICATION OF FLOODPLAINS

Portion of the property are located within the 1:100-year flood plain of the Kizell Drain. The proposed stormwater management measures will be directed outside the flood plain which are described in the Stormwater Management Memo.

4.20 FILL CONSTRAINTS

There are no known fill constraints applicable to this site related to Kizell Drain 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 to the 1:100 year flood plain of Kizell Drain.

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

File No.: PC2020-0342
Date: December 22, 2020

101A, 103 and 105A Schneider Road
Pre-Consultation Meeting Minutes
Meeting Date: December 15, 2020

Attendee	Role	Organization
Lisa Stern	Planner	City of Ottawa
Josiane Gervais	Transportation PM	
Justyna Garbos	Parks	
Adam Palmer	Forestry	
Justin Armstrong	Engineering PM	
Erica Ogden	Planner	Mississippi Valley CA
David Renfroe		Applicant

Additional comments have been provided by email from Urban Design and CREO.

Comments from the Applicant:

1. Will be providing an expansion to 101 Schneider, and two industrial buildings and an office/warehouse at 103 Schneider.
2. Proposing a public park for workers adjacent to Schneider.
3. Proposing to realign access as well as modify the internal circulation. Proposing a one-way access around 101(A) Schneider to allow trucks to come back out to Schneider vs. Carling. Proposing access into the 105 Schneider site.

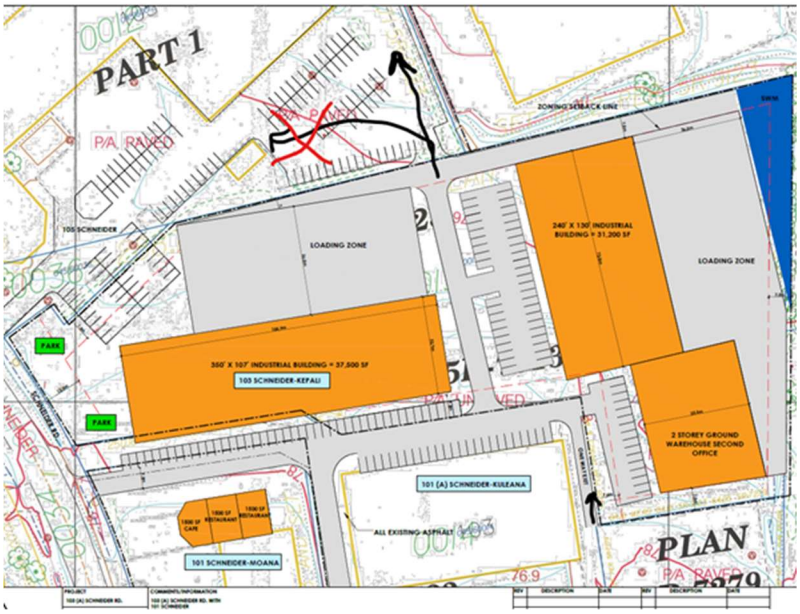
Planning Comments:

1. This is a Complex Site Plan Control Application subject to manager approval and public consultation. The application form, timeline and fees can be found here. A portion of the site is regulated by the Mississippi Valley Conservation Authority, as such CA fees are required.
2. The subject lands are designated Urban Employment Area within the City's Official Plan and are zoned General Industrial Subzone 6 (IG6), 101A Schneider Road is zoned IG6(300) which allows for additional restaurant and service uses.
3. The site will be considered one site for zoning purposes.
4. Please show the entire property on the plans.
5. A consent application is required to formalize any lot line adjustments or easements that are required for access.
6. The site is located within 300m of a rail line, as such a noise and vibration study will be required. Emphasis should be placed on outdoor amenity space and patios.
7. Please show pedestrian pathways on a site plan and ensure that there are no conflicts with vehicle movements.
8. Please provide landscape plans. Hard surfacing should be minimized, including loading areas. Parking and drive aisles should be further broken up by additional landscaping. Landscaped areas should be provided along the north and east lot lines as well as the Schneider Road frontage.
9. Cash-in-lieu of parkland and associated appraisal fee will be required as a condition of approval as per the Parkland Dedication Bylaw.
10. Please consult with the Ward Councillor prior to submission.

Engineering Comments:

1. See attached memo

Transportation Comments:

1. Follow Traffic Impact Assessment Guidelines
    a. A TIA is required. The Scoping report can be submitted directly to josiane.gervais@ottawa.ca
    b. Start this process asap. The application will not be deemed complete until the submission of the draft step 1-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable).
    c. Request base mapping asap if RMA is required. Contact Engineering Services (https://ottawa.ca/en/city-hall/planning-and-development/engineering-services)
2. ROW protection on Carling Ave between March Road and Herzberg is 44.5m even. Subject to unequal widening, the 44.5m is measured from the existing south ROW limit. The required property line should be shown on the site plan.
3. The 101 Schneider Rd property falls within 600m of the Teron/March Road BRT transit station.
4. Corner triangles as per OP Annex 1 - Road Classification and Rights-of-Way at the following locations on the final plan will be required (measure on the property line/ROW protected line; no structure above or below this triangle): Local Road to Arterial Road: 5 m x 5 m
5. Sight triangle as per Zoning by-law is 6 m x 6 m measure on the curb line.
6. Utilizing the existing access on Schneider Rd as identified on the site plan is supported.
7. Access consolidation along Schneider is encouraged.
8. Providing access through the 105 Schneider site is possible. However from a transportation perspective, consideration should be given to the impacts to the neighboring site. If vehicles turn left towards Schneider, then the driving aisle on 105 Schneider separates the parking and building, and therefore sending heavy vehicles through the site raises concern for pedestrian safety. If heavy vehicles travel northbound directly to Legget, then it's less a concern. Signage/geometric changes could be provided to address this concern.
9. 

10. Ensure that all movements can be accommodated so that a heavy vehicle may both enter and exit from the main site access off Schneider.

11. Parking lots are preferred over parking along the drive aisles. This encourage separation of pedestrians/personal vehicles from heavy vehicles.
12. A clear throat length of 15m is encouraged off Schneider.
13. Clarify that the "One Way Exit" east of the 101 (A) building is northbound within the site.
14. On site plan:
    a. The site plan should show the entire property.
    b. Show all details of the roads abutting the site up to and including the opposite curb; include such items as pavement markings, accesses and/or sidewalks.
    c. Ensure pedestrian pathways are provided.
    d. Turning movement diagrams required for all accesses showing the largest vehicle to access/egress the site.
    e. Turning movement diagrams required for internal movements (loading areas, garbage).
    f. Show all curb radii measurements; ensure that all curb radii are reduced as much as possible.
    g. Show lane/aisle widths.
    h. Grey out any area that will not be impacted by this application.
15. The City recommends development on private property be in accordance with the City's Accessibility Design Standards (see attached Site Plan Checklist, which summarizes AODA requirements). As the proposed site is industrial and for general public use, AODA legislation applies.

Parks Comments:

1. Cash-in-lieu of parkland will be calculated as 2% of the gross land area of the vacant parcel at 103 Schneider Road. Thomas Quinn in Real Estate prepares land valuations, and the applicant will be required to pay the $565 (including HST) assessment fee.

Corporate Real Estate (CREO) Comments:

1. The proposed development at 101-103 Schneider Road is located within 300 m from the Renfrew Subdivision operating rail corridor. The adopted Guidelines for New Development in Proximity to Rail Operations were created by the Railway Association of Canada and the Federation of Canadian Municipalities, see: https://www.proximityissues.ca/wp-content/uploads/2017/09/2013_05_29_Guidelines_NewDevelopment_E.pdf. CREO's main objective in its adoption of these guidelines is to mitigate railway-oriented impacts such as noise, vibration, and safety hazards, to ensure that the quality of life of a building's occupants and users are not negatively affected and to the maintain the long-term integrity and viability of the rail corridor.
2. It is also recommended that a noise and vibration study should be conducted according to page 28 of the guidelines.

Urban Design Comments:

1. Please provide a landscape plan that illustrates the anticipated pedestrian circulation around the site, between the various parking zones and the buildings and with the public right of way.
2. In one location the drive aisle runs through parking while in other locations to the north there is a separate drive aisle running parallel to a parking drive aisle. Can these be consolidated and the extra land be dedicated to additional landscaping and trees?
3. We would like to better understand the restaurant building, how it is sited, its connectivity for pedestrians and vehicles and with the public right of way.

4. A Design Brief is a required submittal for all Site Plan/Re-zoning applications. Please see the Design Brief Terms of Reference (attached).

Conservation Authority:

1. The Mississippi Valley Conservation Authority (MVCA) confirms that a portion of the subject property is regulated under Ontario Regulation 153/06, *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*. Under Ontario Regulation 153/06, written permission is required from the MVCA prior to the initiation of development (which includes construction, site grading and the placement or removal of fill) within an area regulated by the Conservation Authority (regulation limit delineated in yellow on the attached regulation mapping) as well as straightening, changing, diverting or interfering in any way with the existing channel or the shoreline of a watercourse.
2. Portions of the property are located within the 1:100 year flood plain (delineated in orange on the enclosed mapping) of the Kizell Drain, which was approved by the MVCA Board of Directors in 2017. We note this updated mapping has not yet been carried forward in the City of Ottawa Zoning By-law.
3. The preliminary plan includes a stormwater management facility within the flood plain, which MVCA does not support. New development should be directed outside the flood plain.
4. The stormwater water quality requirement for the Kizell Drain is an enhanced level of protection, which requires 80% total suspended solids removal.
5. Low Impact Development techniques are recommended for stormwater management and water temperature controls should also be taken into consideration.
6. The Kizell Drain has been assessed as a part of the City Stream Watch Program. A copy of the Kizell Drain Summary Report from 2016 is available on our website https://mvc.on.ca/wp-content/uploads/2020/08/Kizell-2016.pdf
7. Digital copies of the flood plain mapping are available upon request.

Please refer to the links to "Guide to preparing studies and plans" and fees for general information. Additional information is available related to building permits, development charges, and the Accessibility Design Standards. Be aware that other fees and permits may be required, outside of the development review process. You may obtain background drawings by contacting informationcentre@ottawa.ca.

These pre-con comments are valid for one year. If you submit a development application(s) after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.
Please contact me at Lisa.Stern@ottawa.ca or at 613-580-2424 extension 21108 if you have any questions.

Sincerely,

Lisa Stern, RPP MCIP
Planner

MEMO

Date: December 15, 2020

To / Destinataire	Lisa Stern, Planner
From / Expéditeur	Justin Armstrong, Project Manager, Infrastructure Approvals
Subject / Objet	**Pre-Application Consultation** **101-105 Schneider Road, Ward 4** **Site Plan Control Application,**
	File No. PC2020-0342

Please note the following information regarding the engineering design submission for the above noted site:

1. The Servicing Study Guidelines for Development Applications are available at the following address: http://ottawa.ca/en/development-application-review-process-0/servicing-study-guidelines-development-applications

2. Servicing and site works shall be in accordance with the following documents:

   - ⇨ Ottawa Sewer Design Guidelines (October 2012)
   - ⇨ Ottawa Design Guidelines – Water Distribution (2010)
   - ⇨ Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
   - ⇨ City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
   - ⇨ City of Ottawa Environmental Noise Control Guidelines (January, 2016)
   - ⇨ City of Ottawa Park and Pathway Development Manual (2012)
   - ⇨ City of Ottawa Accessibility Design Standards (2012)
   - ⇨ Ottawa Standard Tender Documents (latest version)
   - ⇨ Ontario Provincial Standards for Roads & Public Works (2013)

3. Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-2424 x.44455).

4. The Stormwater Management Criteria, for the subject site, is to be based on the following:

    i. Post-development peak flows for the site will need to be controlled to pre-development peak flows. The existing drainage patterns for the site should be maintained.

    ii. Quality control to be provided as specified by the MVCA.

    iii. Note that any stormwater runoff for the site that currently drains to Kizzel Municipal Drain must cross a portion of 302 Legget Drive before reaching the Kizzel Municipal Drain. Drainage rights across this land are not maintained if the portion of the site draining to this location is modified. If this is the case, an agreement will need to be in place with the owner of 302 Leggett in order to maintain this drainage outlet.

5. There is a 250mm diameter concrete sanitary sewer in Schneider Road. The City's Asset Management Branch will be circulated as it relates to a connection to this sewer once a detailed civil design is complete and a formal application has been made.

6. There is a 305mm diameter DI watermain in Schneider Road. A water boundary condition request should be made as it relates to a connection to this main. Water boundary condition requests must include the location of the service and the expected loads required by the proposed development. Please provide Justin Armstrong the following information:

    i. Location of service

    ii. Type of development and the amount of fire flow required (as per FUS, 1999).

    iii. Average daily demand: ___ l/s.

    iv. Maximum daily demand: ___l/s.

v. Maximum hourly daily demand: ___ l/s.

7. Although most infrastructure related comments will largely be dependent on the proposed design, the following are some general comments to consider:

   i. Services should ideally be grouped in a common trench to minimize the number of road cuts.

   ii. A DMA chamber is needed for private developments serviced by a water connection 150mm in diameter or larger.

   iii. A monitoring maintenance hole should be provided for the sanitary connection – it should be located in an accessible location on private property near the property line (ie. Not in a parking area).

   iv. Sewer connections to rigid mains are to be made above the springline of the sewermain as per:

      a. Std Dwg S11 (For rigid main sewers) – lateral must be less than 50% the diameter of the sewermain,

      b. Std Dwg S11.2 (for rigid main sewers using bell end insert method) – for larger diameter laterals where manufactured inserts are not available; lateral must be less than 50% the diameter of the sewermain,

      c. Laterals greater than 50% the diameter of the sewermain require a maintenance hole.

   v. There should be no stormwater ponding in parking areas or drive aisles during the 2-year storm.

8. MOECC ECA Requirements

   It is anticipated that an MOECC Environmental Compliance Approval (ECA) for stormwater works (Private Sewage Works &/or Industrial Sewage Works) will be required, however, this will be confirmed once a detailed civil design is complete and a formal application is made.

9. Phase 1 ESAs and Phase 2 ESAs must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.

Should you have any questions or require additional information, please contact me directly at (613) 580-2424, x21746 or by email at Justin.Armstrong@ottawa.ca.

TOPOGRAPHICAL PLAN OF

PART OF LOT 6
CONCESSION 4
Geographic Township of March
CITY OF OTTAWA

Prepared by Annis, O'Sullivan, Vollebekk Ltd.
February 22, 2021
Revised to show additional topographical information northeast of the property
March 26, 2021.

Scale 1 : 300

12 9 6 3 0 6 12 Metres

Metric

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

Date

E.H. Herweyer, O.L.S.

Notes & Legend

Denotes		
	-	Coniferous Tree
	-	Deciduous Tree
O FH	-	Fire Hydrant
O MH-ST	-	Maintenance Hole (Storm Sewer)
O MH-S	-	Maintenance Hole (Sanitary)
OHW	-	Overhead Wires
B	-	Bollard
S	-	Sign
VC	-	Valve Chamber (Watermain)
BF	-	Board Fence
UP	-	Utility Pole
AN	-	Anchor
LS	-	Light Standard
Ø	-	Diameter
+ 65.00	-	Location of Elevations
+ 65.00	-	Top of Concrete Curb Elevation
C/L	-	Centreline
HTB	-	Hydro Transformer Bolt
BOS	-	Bottom of Slope
TOS	-	Top of Slope
CSP	-	Corrugated Steel Pipe
T/P	-	Top of Pipe
T/G	-	Top of Grate

SITE AREA = 23173 m²

BOUNDARY INFORMATION COMPILED FROM PLANS 5R-5843 AND 5R-9123.

Bearings are grid, derived from Can-Net 2016 Real Time Network GPS observations, MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

For bearing comparisons, a rotation of 0°21'40" counter-clockwise was applied to bearings on plans 5R-9123.

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum, derived from vertical NCC control monument No. 019670014 having an elevation of 79.654 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, 2021. "THIS PLAN IS PROTECTED BY COPYRIGHT"

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Ontario Land Surveyors

Job No. 21195-21 Kepali Holdings Pt6 C4 MarshTopo F2 | ig

APPENDIX

APPENDIX

B

- WATERMAIN BOUNDARY CONDITIONS FROM CITY OF OTTAWA (TO BE ADDED IN LATER REVISION)
- EMAILS FROM CITY OF OTTAWA
- FIRE UNDERWRITERS SURVEY – FIRE FLOW CALCULATION
- WATER DEMAND CALCULATION
- WATER MODEL OUTPUT – INFOWATER (TO BE ADDED IN LATER REVISION)

Water Demand Calculation Sheet

Project:	**103 Schneider Road**	**Date:**	**2021-03-30**
Location:	**City of Ottawa**	**Design:**	**WY**
WSP Project No.	**211-01794-00**	**Page:**	**1 of 1**

Proposed Buildings	Residential				Non-Residentail			Average Daily Demand (l/s)			Maximum Daily Demand (l/s)			Maximum Hourly Demand (l/s)			Max Fire Demand
	Units			Pop.	Industrial	Institutional	Commercial										
	SF	APT	ST		(ha)	(ha)	(ha)	Res.	Non-Res.	Total	Res.	Non-Res.	Total	Res.	Non-Res.	Total	(l/s)
Proposed 105A							2.32		0.94	0.94		1.41	1.41		2.53	2.53	150
Existing 101A							0.76		0.31	0.31		0.46	0.46		0.83	0.83	150

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

Fire Flow Design Sheet (FUS)
101 - 103 Schneider Road
City of Ottawa
WSP Project No. 211-01794-00
Date: 30-Mar-21

Existing Building 103A
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 = 3013 m^2
C = 0.8
F = 9660.8 L/min

rounded off to 10,000 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 10,000 = 8,500 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 -40% x 8,500 = -3,400 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	22	10%	north side
Side 2	16	15%	east side
Side 3	44	5%	south side
Side 4	19	15%	west side
		45%	(Total shall not exceed 75%)

Increase due to separation 45% x 8,500 = 3,825 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 9,000 L/min (Rounded to nearest 1000 L/min)
or **150 L/sec**
or 2,378 gpm (us)
or 1,980 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)
101 - 103 Schneider Road
City of Ottawa
WSP Project No. 211-01794-00
Date: 30-Mar-21

Building A
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 = 4578 m^2
C = 0.8
F = 11908.3 L/min

rounded off to 12,000 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 12,000 = 10,200 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 -40% x 10,200 = -4,080 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	45	5%	north side
Side 2	24	10%	east side
Side 3	22	10%	south side
Side 4	56	0%	west side
		25%	(Total shall not exceed 75%)

Increase due to separation 25% x 10,200 = 2,550 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 9,000 L/min (Rounded to nearest 1000 L/min)
or **150 L/sec**
or 2,378 gpm (us)
or 1,980 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)
101 - 103 Schneider Road
City of Ottawa
WSP Project No. 211-01794-00
Date: 16-Mar-21

Building B
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 = 2378 m^2
C = 0.8
F = 8582.6 L/min

rounded off to 9,000 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 9,000 = 7,650 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 -40% x 7,650 = -3,060 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	28	10%	north side
Side 2	85	0%	east side
Side 3	1.5	25%	south side
Side 4	24	10%	west side
		45%	(Total shall not exceed 75%)

Increase due to separation 45% x 7,650 = 3,443 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 8,000 L/min (Rounded to nearest 1000 L/min)
or **133 L/sec**
or 2,113 gpm (us)
or 1,760 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)
101 - 103 Schneider Road
City of Ottawa
WSP Project No. 211-01794-00
Date: 16-Mar-21

Building C
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 = 1808 m^2
C = 0.8
F = 7483.6 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 0% x 7,000 = 7,000 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 -40% x 7,000 = -2,800 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	1.5	25%	north side
Side 2	58	0%	east side
Side 3	51	0%	south side
Side 4	16	15%	west side
		40%	(Total shall not exceed 75%)

Increase due to separation 40% x 7,000 = 2,800 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 7,000 L/min (Rounded to nearest 1000 L/min)
or **117 L/sec**
or 1,849 gpm (us)
or 1,540 gpm (uk)

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

APPENDIX

APPENDIX

C

- SANITARY DRAIANGE PLAN C06
- SANITARY SEWER DESIGN SHEET

SANITARY SEWER DESIGN SHEET

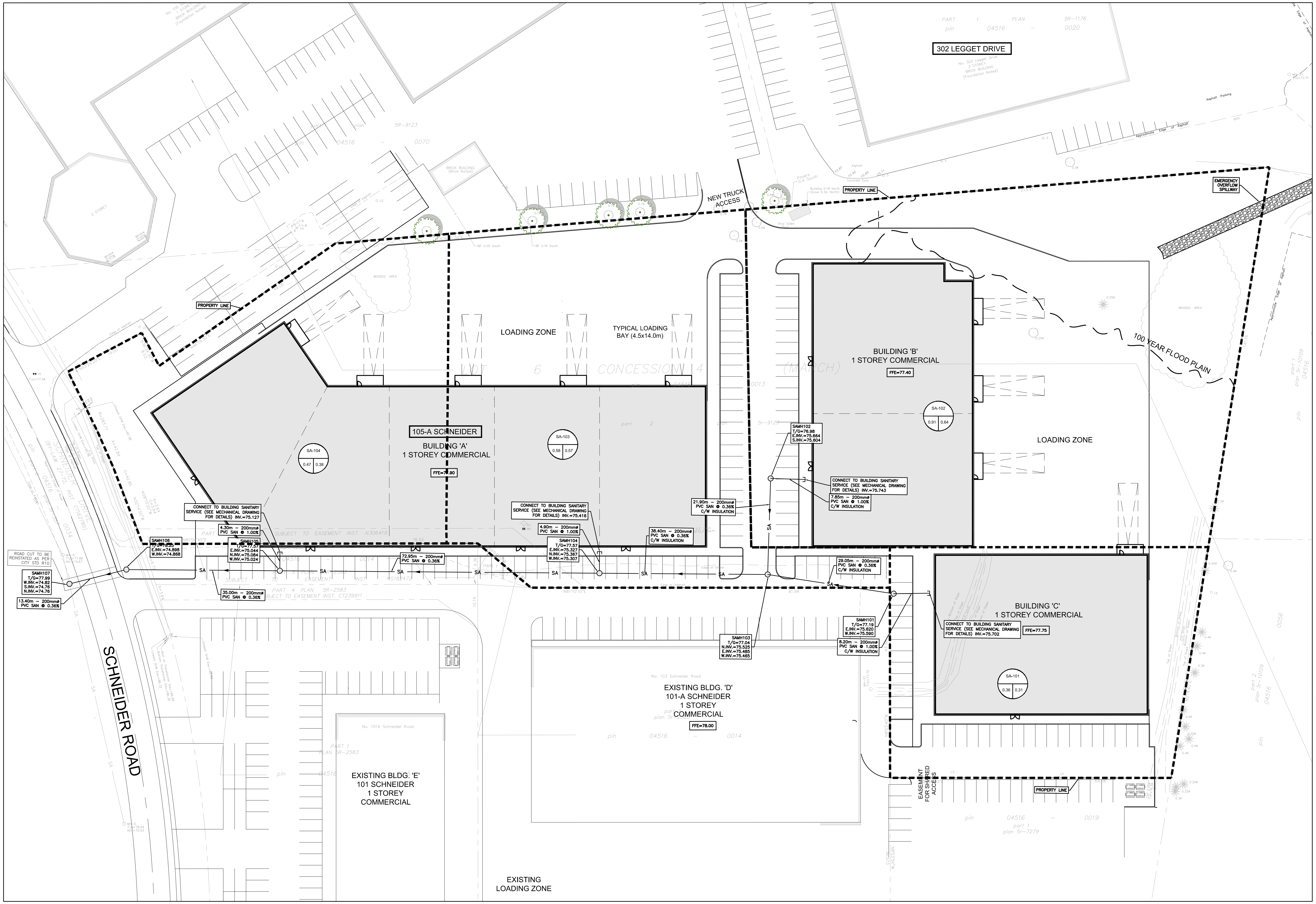
103 Schneider Road
Industrial Development
Project: 211-01794-00
Date: April, 2021

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 SCHNEIDER ROAD																																
	BLDG C	SAMH101	SA-101		0.000							0	0	3.80	0.00	0.36	0.31	0.31	1.50					0.19	0.312	0.31	0.10	**0.29**	8.20	200	1.00	32.80	1.04	**99.11%**
	SAMH101	SAMH103			0.000							0	0	3.80	0.00			0.31	1.50					0.19	0.000	0.31	0.10	**0.29**	29.05	200	0.36	19.68	0.63	**98.51%**
	BLDG B	SAMH102	SA-102		0.000							0	0	3.80	0.00	0.91	0.64	0.64	1.50					0.39	0.640	0.64	0.21	**0.60**	7.85	200	1.00	32.80	1.04	**98.17%**
	SAMH102	SAMH103			0.000							0	0	3.80	0.00			0.64	1.50					0.39	0.000	0.64	0.21	**0.60**	21.90	200	0.36	19.68	0.63	**96.95%**
	SAMH103	SAMH104			0.000								0	3.80	0.00			0.95	1.50					0.58	0.000	0.95	0.31	**0.89**	38.40	200	0.36	19.68	0.63	**95.46%**
	BLDG A	SAMH104	SA-103		0.000								0	3.80	0.00	0.58	0.57	0.57	1.50					0.35	0.573	0.57	0.19	**0.54**	4.90	200	1.00	32.80	1.04	**98.36%**
	SAMH104	SAMH105			0.000								0	3.80	0.00			1.53	1.50					0.93	0.000	1.53	0.50	**1.43**	72.95	200	0.36	19.68	0.63	**92.73%**
	BLDG A	SAMH105	SA-104		0.000								0	3.80	0.00	0.47	0.38	0.38	1.50					0.23	0.379	0.38	0.13	**0.36**	4.30	200	1.00	32.80	1.04	**98.92%**
	SAMH105	SAMH106			0.000								0	3.80	0.00			1.90	1.50					1.16	0.000	1.90	0.63	**1.79**	33.70	200	0.36	19.68	0.63	**90.93%**
Schneider Road	SAMH106	SAMH107			0.000								0	3.80	0.00			1.90	1.50					1.16	0.000	1.90	0.63	**1.79**	14.65	200	0.36	19.68	0.63	**90.93%**

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
COMMERCIAL AVG. DAILY FLOW =	28,000	l/ha/day		1.0	(WHEN AREA < 20%)	PEAK EXTRANEOUS FLOW, (l/s) =	I*Ac	SINGLES	3.4
	0.324	l/ha/s				RESIDENTIAL PEAKING FACTOR, M =	1+(14/(4+P^0.5))*K	SEMI-DETACHED	2.7
INSTITUTIONAL AVG. DAILY FLOW =	28,000	l/ha/day	INSTITUTIONAL PEAK FACTOR =	1.5	(WHEN AREA > 20%)	Ac = CUMULATIVE AREA (ha)		TOWNHOMES	2.7
	0.324	l/ha/s		1.0	(WHEN AREA < 20%)	P = POPULATION (THOUSANDS)		SINGLE APT. UNIT	1.4
LIGHT INDUSTRIAL FLOW =	35,000	l/ha/day						2-BED APT. UNIT	2.1
	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
HEAVY INDUSTRIAL FLOW =	55,000	l/ha/day	MANNING N =	0.013		(MANNING'S EQUATION)			
	0.637	l/ha/s	PEAK EXTRANEOUS FLOW, I (l/s/ha) =	0.33					

DESIGNED:	NO.	REVISION	DATE
Ding Bang Yang, P.Eng.	1.	City Submission No.1	2021-04-06
CHECKED:			
Ishaque Jefferjee, P.Eng.			
PROJECT:			
105A Schneider Road			
Industrial Development			
LOCATION:			
Ottawa, Ontario			
PAGE NO:	**FILE & DWG. REFERENCE:**		
1 of 1	C06		



302 LEGGET DRIVE
NEW TRUCK ACCESS
PROPERTY LINE
EMERGENCY OVERFLOW SPILLWAY
LOADING ZONE
TYPICAL LOADING BAY (4.5x14.0m)
CONCESSION 4
100 YEAR FLOOD PLAIN
105-A SCHNEIDER
BUILDING 'A'
1 STOREY COMMERCIAL
FFE=77.90
SA-104
0.47 0.38
SA-103
0.58 0.57
BUILDING 'B'
1 STOREY COMMERCIAL
FFE=77.40
SA-102
0.91 0.64
LOADING ZONE
BUILDING 'C'
1 STOREY COMMERCIAL
FFE=77.75
SA-101
0.36 0.31
SAMH102 T/G=76.98 E.INV.=75.664 S.INV.=75.604
CONNECT TO BUILDING SANITARY SERVICE (SEE MECHANICAL DRAWING FOR DETAILS) INV.=75.743
7.85m – 200mmø PVC SAN @ 1.00% C/W INSULATION
21.90m – 200mmø PVC SAN @ 0.36% C/W INSULATION
CONNECT TO BUILDING SANITARY SERVICE (SEE MECHANICAL DRAWING FOR DETAILS) INV.=75.127
4.30m – 200mmø PVC SAN @ 1.00%
CONNECT TO BUILDING SANITARY SERVICE (SEE MECHANICAL DRAWING FOR DETAILS) INV.=75.416
4.90m – 200mmø PVC SAN @ 1.00%
38.40m – 200mmø PVC SAN @ 0.36% C/W INSULATION
SAMH106 E.INV.=74.898 W.INV.=74.868
SAMH105 E.INV.=75.044 N.INV.=75.084 W.INV.=75.024
SAMH104 T/G=77.57 E.INV.=75.327 N.INV.=75.367 W.INV.=75.307
72.95m – 200mmø PVC SAN @ 0.36%
29.05m – 200mmø PVC SAN @ 0.36% C/W INSULATION
ROAD CUT TO BE REINSTATED AS PER CITY STD R10
SAMH107 T/G=77.99 W.INV.=74.82 S.INV.=74.76 N.INV.=74.76
13.40m – 200mmø PVC SAN @ 0.36%
35.00m – 200mmø PVC SAN @ 0.36%
SAMH103 T/G=77.04 N.INV.=75.525 E.INV.=75.485 W.INV.=75.465
SAMH101 T/G=77.19 E.INV.=75.620 W.INV.=75.590
8.20m – 200mmø PVC SAN @ 1.00% C/W INSULATION
CONNECT TO BUILDING SANITARY SERVICE (SEE MECHANICAL DRAWING FOR DETAILS) INV.=75.702
SCHNEIDER ROAD
EXISTING BLDG. 'D'
101-A SCHNEIDER
1 STOREY
COMMERCIAL
FFE=78.00
EXISTING BLDG. 'E'
101 SCHNEIDER
1 STOREY
COMMERCIAL
EASEMENT FOR SHARED ACCESS
EXISTING LOADING ZONE
SCALE: 1:400

wsp

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SEAL:

REGISTERED PROFESSIONAL ENGINEER
D. B. YANG
100230568
2021-04-06
PROVINCE OF ONTARIO

NORTH

CLIENT:

RENFROE LAND MANAGEMENT

CLIENT REF. #:

PROJECT:

103 SCHNEIDER ROAD

KEY PLAN:

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IS	RE	DATE	DESCRIPTION
1		2021-04-06	ISSUED FOR SPA

PROJECT NO.: 211-01794-00
DATE: APRIL 2021
ORIGINAL SCALE: 1:400
IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm
DESIGNED BY: D.Y.
DRAWN BY: D.Y.
CHECKED BY: D.Y./I.J.

DISCIPLINE: CIVIL

TITLE:

SANITARY DRAINAGE AREA PLAN

SHEET NUMBER: C06
SHEET #: 6 OF 7

ISSUE: ISSUED FOR SPA
REV #: 0
DATE OF: 2021-04-06

APPENDIX

APPENDIX

D

- STORM SEWER DESIGN SHEET
- STORM DRAINAGE PLAN C05
- GRADING PLAN C02 AND C03
- SERVICING PLAN C04 AND C04
- STORMCEPTOR EFO12 DETAILS AND SIZING REPORT

STORM SEWER DESIGN SHEET

103 Schneider Road
Industrial Development
Project: 211-01794-00
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) (%)
External Drainage Areas																															
External	S-EXT1-3, S-U1, S-U3	CBMH101	CBMH103	0.072					0.856	2.192	2.192	10.00	10.63	76.81	104.19	178.56		168.34				168.34		PVC DR-35	450.0	0.60	52.65	221.07	1.39	0.63	52.73	23.85%
	S-EXT4, S-U2	CBMH103	STMH104	0.005					0.179	0.451	2.643	10.63	10.68	74.46	100.97	172.98		196.81				196.81		PVC DR-35	450.0	0.70	4.50	238.78	1.50	0.05	41.97	17.58%
Proposed Areas																															
Proposed	S-BC	BUILDING C	STMH102						0.181	0.453	0.453	10.00	10.11	76.81	104.19	178.56		34.78				34.78		PVC DR-35	250.0	1.00	8.20	59.53	1.21	0.11	24.75	41.57%
		STMH102	STMH104							0.000	0.453	10.11	10.70	76.37	103.60	177.53		34.59				34.59		PVC DR-35	250.0	0.55	31.85	44.15	0.90	0.59	9.56	21.65%
	S-106	CB04	STMH104-STMH110	0.012					0.090	0.234	0.234	10.00	10.02	76.81	104.19	178.56		17.94				17.94		PVC DR-35	200.0	1.00	1.55	32.83	1.04	0.02	14.90	45.37%
		STMH104	STMH110							0.000	3.329	10.70	11.27	74.20	100.62	172.37		247.06				247.06		PVC DR-35	600.0	0.25	36.70	307.32	1.09	0.56	60.25	19.61%
	S-BA	BUILDING A	STMH110						0.458	1.146	1.146	10.00	10.21	76.81	104.19	178.56		88.01				88.01		PVC DR-35	375.0	0.40	12.50	111.00	1.00	0.21	22.99	20.71%
		STMH110	STMH106							0.000	4.475	11.27	11.70	72.26	97.95	167.75		323.39				323.39		PVC DR-35	600.0	0.40	35.30	388.73	1.37	0.43	65.34	16.81%
	S-102	CB01	CBMH105-STMH106	0.007					0.189	0.478	0.478	10.00	10.03	76.81	104.19	178.56		36.69				36.69		PVC DR-35	250.0	1.00	2.40	59.53	1.21	0.03	22.83	38.36%
	S-103	CB02	CBMH105-STMH106	0.014					0.074	0.195	0.195	10.00	10.03	76.81	104.19	178.56		14.97				14.97		PVC DR-35	250.0	1.00	2.00	59.53	1.21	0.03	44.56	74.86%
	S-101	CBMH105	STMH106	0.018					0.111	0.290	0.963	10.03	11.28	76.68	104.02	178.26		73.83				73.83		PVC DR-35	350.0	0.60	88.15	113.10	1.17	1.25	39.27	34.72%
		STMH106	STMH111							0.000	5.438	11.70	12.14	70.86	96.02	164.42		385.33				385.33		PVC DR-35	675.0	0.35	37.35	497.80	1.39	0.45	112.47	22.59%
	S-BB	BUILDING B	STMH111						0.238	0.595	0.595	10.00	10.02	76.81	104.19	178.56		45.74				45.74		PVC DR-35	250.0	1.00	1.70	59.53	1.21	0.02	13.79	23.17%
		STMH111	STMH108							0.000	6.034	12.14	12.47	69.45	94.09	161.08		419.05				419.05		PVC DR-35	675.0	0.40	28.95	532.17	1.49	0.32	113.12	21.26%
	S-105	CB03	CBMH107-STMH108	0.004					0.175	0.441	0.441	10.00	10.01	76.81	104.19	178.56		33.84				33.84		PVC DR-35	250.0	1.00	0.90	59.53	1.21	0.01	25.68	43.15%
	S-104	CBMH107	STMH108						0.133	0.333	0.773	10.01	10.72	76.76	104.13	178.45		59.36				59.36		PVC DR-35	300.0	0.60	45.20	74.98	1.06	0.71	15.62	20.83%
		STMH108	STMH109							0.000	6.807	12.47	12.69	68.47	92.74	158.76		466.09				466.09		PVC DR-35	675.0	0.45	20.95	564.45	1.58	0.22	98.37	17.43%
		STMH109	OUTLET							0.000	6.807	12.69	13.35	67.82	91.85	157.21		461.65				461.65		PVC DR-35	675.0	0.45	62.75	564.45	1.58	0.66	102.80	18.21%

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

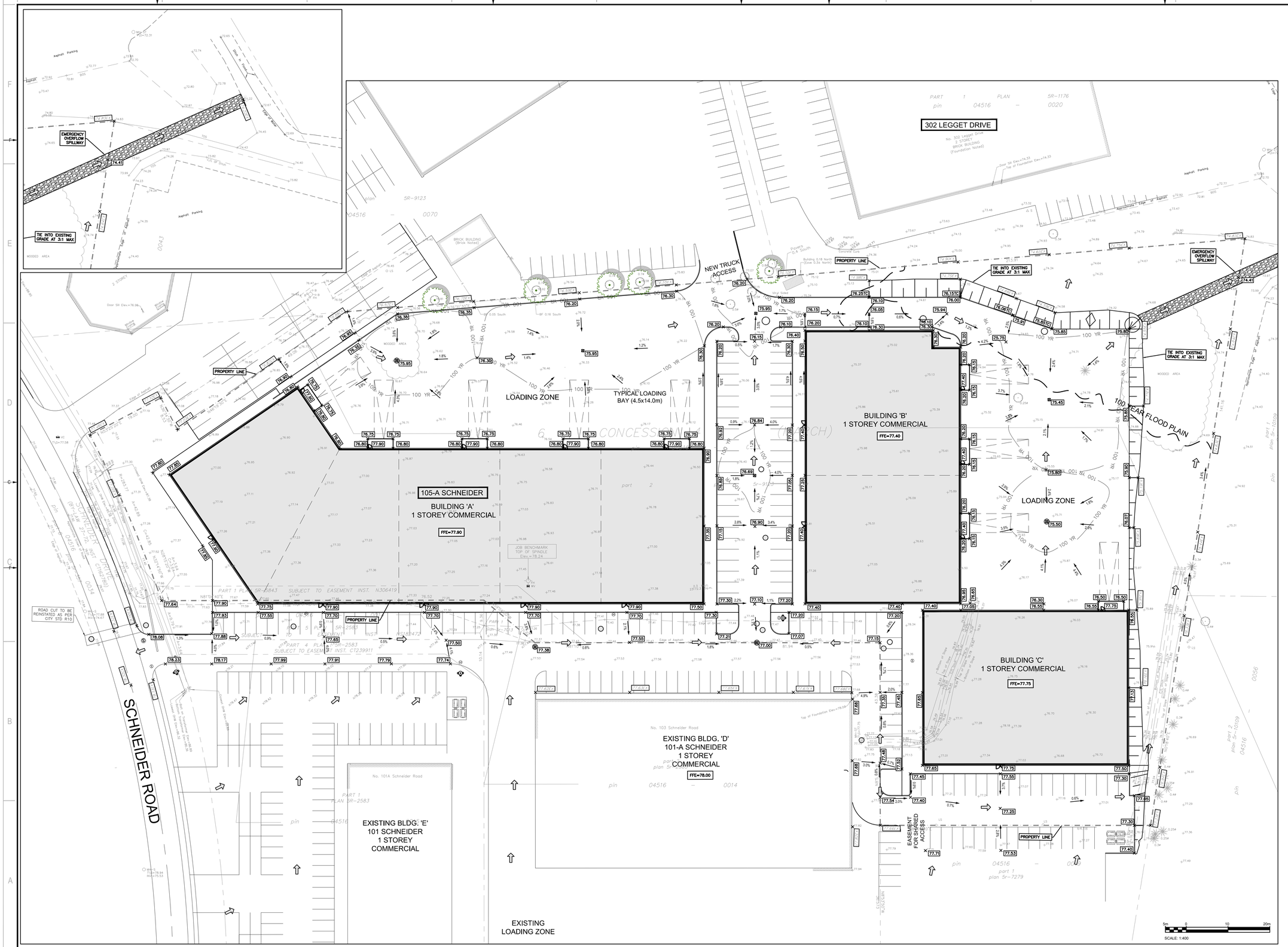
Time-of-Concentration in the Swale
FAA Equation: t (min) = 3.258 [(1.1 - C) L^0.5 / S^.33]
Where: Longest Watercourse Length, L (m). S (%)
Runoff Coef.C = 0.00 Impervious

No.	L (m)	S %	Tc (min)
N/A	0	0.00	#DIV/0!

Designed: D.Y.
Checked: D.Y./I.J.
Dwg. Reference: C05

No.	Revision	Date
1.	City Submission No. 1	2021-04-06

File Reference: 211-01794-00
Date: 2021-04-06
Sheet No: 1 of 1



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t. 613.724.9932 f. 613.724.1209 rlaarchitecture.ca

SEAL:

REGISTERED PROFESSIONAL ENGINEER
D. B. YANG
100230568
2021-04-06
PROVINCE OF ONTARIO

NORTH

CLIENT:

RENFROE LAND MANAGEMENT

CLIENT REF. #:

PROJECT:

103 SCHNEIDER ROAD

KEY PLAN:

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ISSUED FOR - REVISION:

IS	RE	DATE	DESCRIPTION
1		2021-04-06	ISSUED FOR SPA

PROJECT NO: 211-01794-00
DATE: APRIL 2021
ORIGINAL SCALE: 1:400
IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm
DESIGNED BY: D.Y.
DRAWN BY: D.Y.
CHECKED BY: D.Y./I.J.

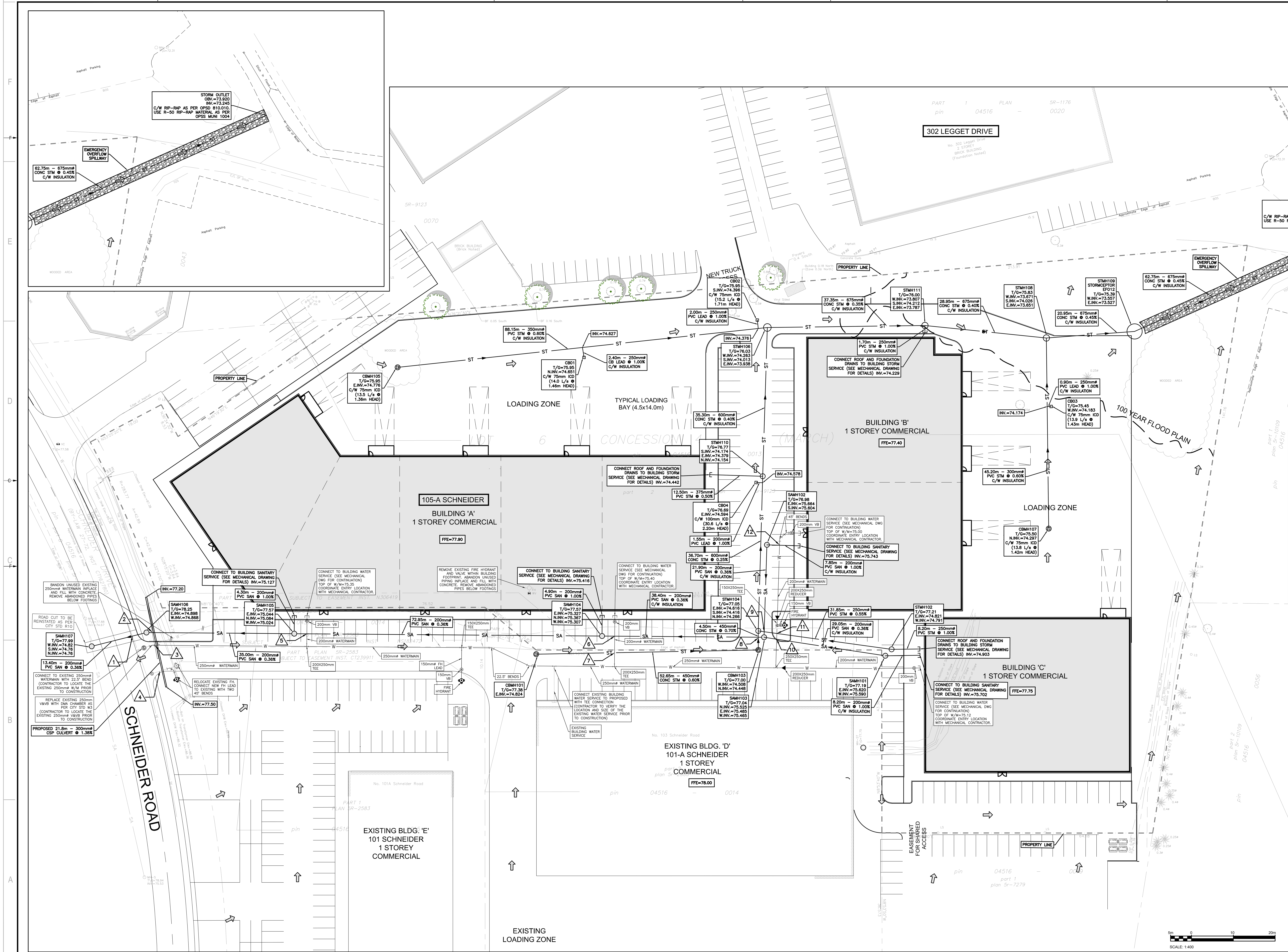
DISCIPLINE: CIVIL

TITLE: GRADING PLAN

SHEET NUMBER: C03
SHEET #: 3 OF 7

ISSUE: ISSUED FOR SPA
DATE OF: 2021-04-06
REV #: 0

V:\10-13\ME 202 Projects\211-01794-00 101-103 Schneider Road Industrial\3. Drawings\Working drawings\Working drawings\211-01794-00_C.dwg Apr 06, 2021-1:07pm BY (zanyl)(69241)



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SEAL:

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D. B. YANG
100230568
2021-04-06
PROVINCE OF ONTARIO

NORTH

CLIENT:

RENFROE LAND MANAGEMENT

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103 SCHNEIDER ROAD

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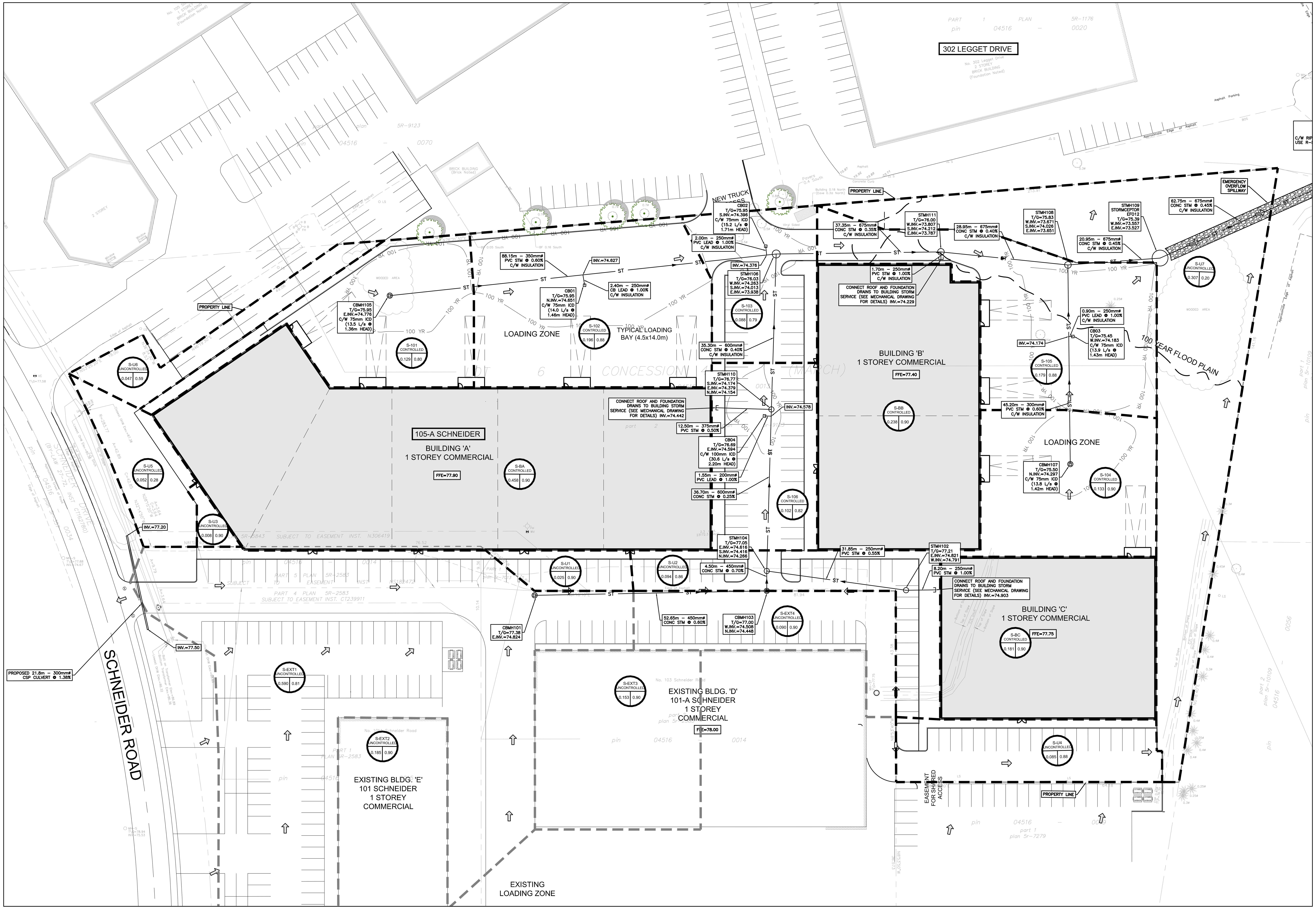
25mm
DESIGNED BY: D.Y.
DRAWN BY: D.Y.
CHECKED BY: D.Y./I.J.
DISCIPLINE: CIVIL
TITLE: SERVICING PLAN
SHEET NUMBER: C04
SHEET #: 4 OF 7
ISSUE: ISSUED FOR SPA
REV #: 0
DATE OF: 2021-04-06



wsp

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SEAL:

REGISTERED PROFESSIONAL ENGINEER
D. B. YANG
100230568
2021-04-06
PROVINCE OF ONTARIO

NORTH

CLIENT:

RENFROE LAND MANAGEMENT

CLIENT REF. #:

PROJECT:

103 SCHNEIDER ROAD

KEY PLAN:

DISCLAIMER: COPYRIGHT:

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ISSUED FOR - REVISION:

IS	RE	DATE	DESCRIPTION
1		2021-04-06	ISSUED FOR SPA

PROJECT NO.: 211-01794-00
DATE: APRIL 2021
ORIGINAL SCALE: 1:400
DESIGNED BY: D.Y.
DRAWN BY: D.Y.
CHECKED BY: D.Y./I.J.

IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm

DISCIPLINE: CIVIL

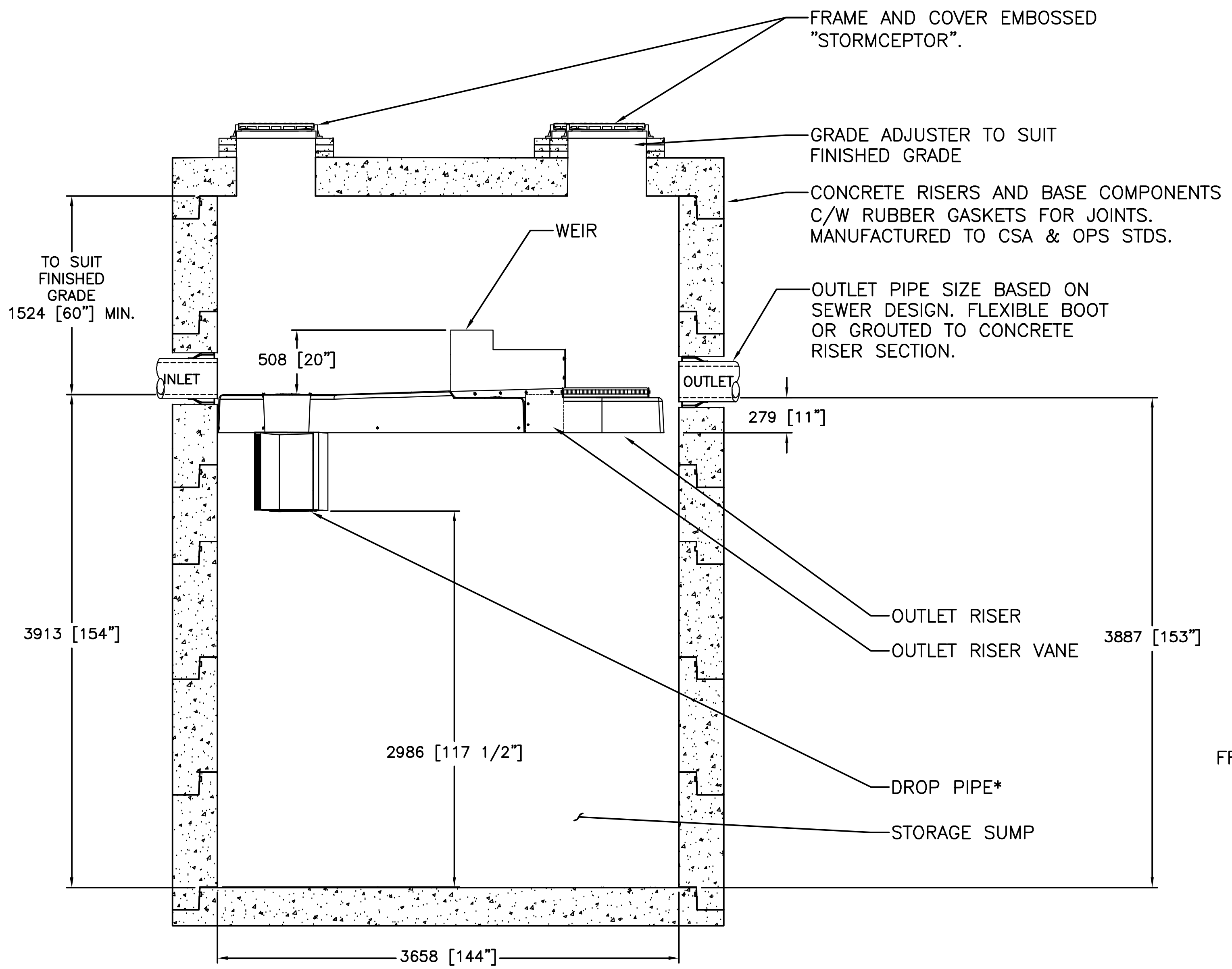
TITLE: DRAINAGE AREA PLAN

SHEET NUMBER: C05

SHEET #: 5 OF 7

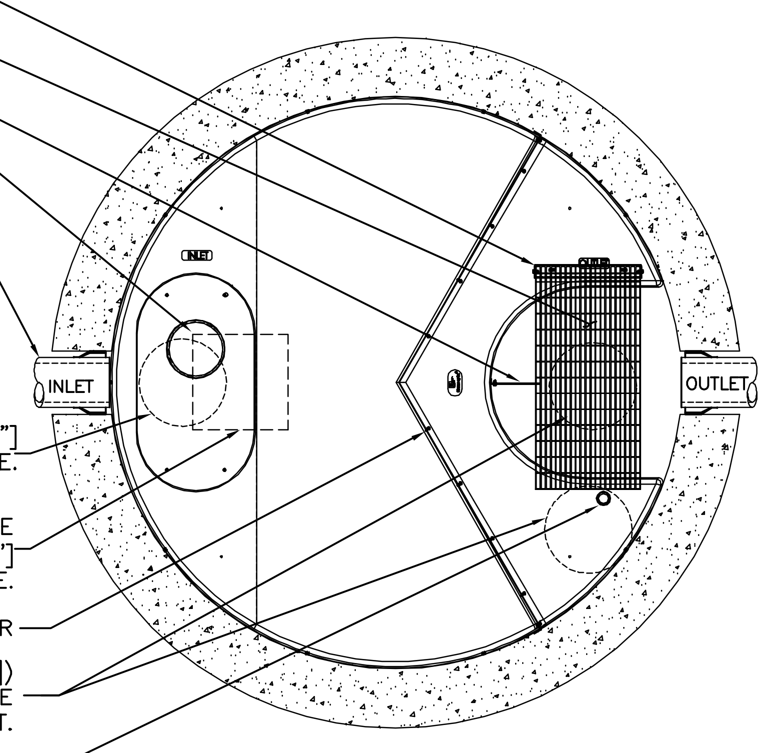
ISSUE: ISSUED FOR SPA
REV #: 0
DATE OF: 2021-04-06

DRAWING NOT TO BE USED FOR CONSTRUCTION



FRAME AND COVER EMBOSSED "STORMCEPTOR".
GRADE ADJUSTER TO SUIT FINISHED GRADE
CONCRETE RISERS AND BASE COMPONENTS C/W RUBBER GASKETS FOR JOINTS. MANUFACTURED TO CSA & OPS STDS.
WEIR
TO SUIT FINISHED GRADE 1524 [60"] MIN.
OUTLET PIPE SIZE BASED ON SEWER DESIGN. FLEXIBLE BOOT OR GROUTED TO CONCRETE RISER SECTION.
508 [20"]
INLET
OUTLET
279 [11"]
OUTLET RISER
OUTLET RISER VANE
3913 [154"]
3887 [153"]
2986 [117 1/2"]
DROP PIPE*
STORAGE SUMP
3658 [144"]

SECTION VIEW



OUTLET PLATFORM
OUTLET RISER & MAINTENANCE ACCESS
OUTLET RISER VANE
DROP PIPE
SINGLE OR MULTIPLE INLET PIPE 25mm [1"] DIFFERENCE BETWEEN INLET AND OUTLET INVERT
FRAME AND COVER, MIN. ø575 [22"] TO BE LOCATED OVER DROP PIPE.
OPTIONAL INLET FRAME AND GRATE MIN. 610x610 mm [24"x24"] TO BE LOCATED OVER DROP PIPE.
WEIR
FRAMES AND COVERS (MIN. ø575 [22"]) TO BE LOCATED OVER MAINTENANCE ACCESS AND OIL INSPECTION PORT.
OIL INSPECTION PORT
INLET
OUTLET

PLAN VIEW

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 EF12 AND 535 L/min/m^2 (13.1 gpm/ft^2) FOR STORMCEPTOR EFO12 (OIL CAPTURE CONFIGURATION).

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.

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).

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	EFO12				
STRUCTURE ID	*				
HYDROCARBON STORAGE REQ'D (L)	*				
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	OUTLET PLATFORM	JSK
0	5/26/17	INITIAL RELEASE	JSK

Stormceptor® EF

imbrium®

SCALE = NTS

DATE: 10/24/2017	
DESIGNED: JSK	DRAWN: JSK
CHECKED: BSF	APPROVED: SP
PROJECT No.: EFO12	SEQUENCE No.: *
SHEET: 1 OF 1	

I:\IMBRIUM\PRODUCTS\STORMCEPTOR EF\40 DRAWINGS & DETAILS\STANDARD DETAILS\EFO STANDARD DETAILS\EFO12-DETAIL.DWG 4/12/2019 11:11 AM

Stormceptor® EF Sizing Report

STORMCEPTOR®
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

04/05/2021

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

Site Name:	105A Schneider Road
Drainage Area (ha):	2.849
Runoff Coefficient 'c':	0.87
Particle Size Distribution:	Fine
Target TSS Removal (%):	80.0

Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	89.58
Oil / Fuel Spill Risk Site?	Yes
Upstream Flow Control?	Yes
Upstream Orifice Control Flow Rate to Stormceptor (L/s):	614.00
Peak Conveyance (maximum) Flow Rate (L/s):	
Site Sediment Transport Rate (kg/ha/yr):	

Project Name:	105A Schneider Road
Project Number:	211-01794-00
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:	

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EFO4	50
EFO6	65
EFO8	73
EFO10	79
EFO12	84

Recommended Stormceptor EFO Model: EFO12

Estimated Net Annual Sediment (TSS) Load Reduction (%): 84

Water Quality Runoff Volume Capture (%): > 90

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.

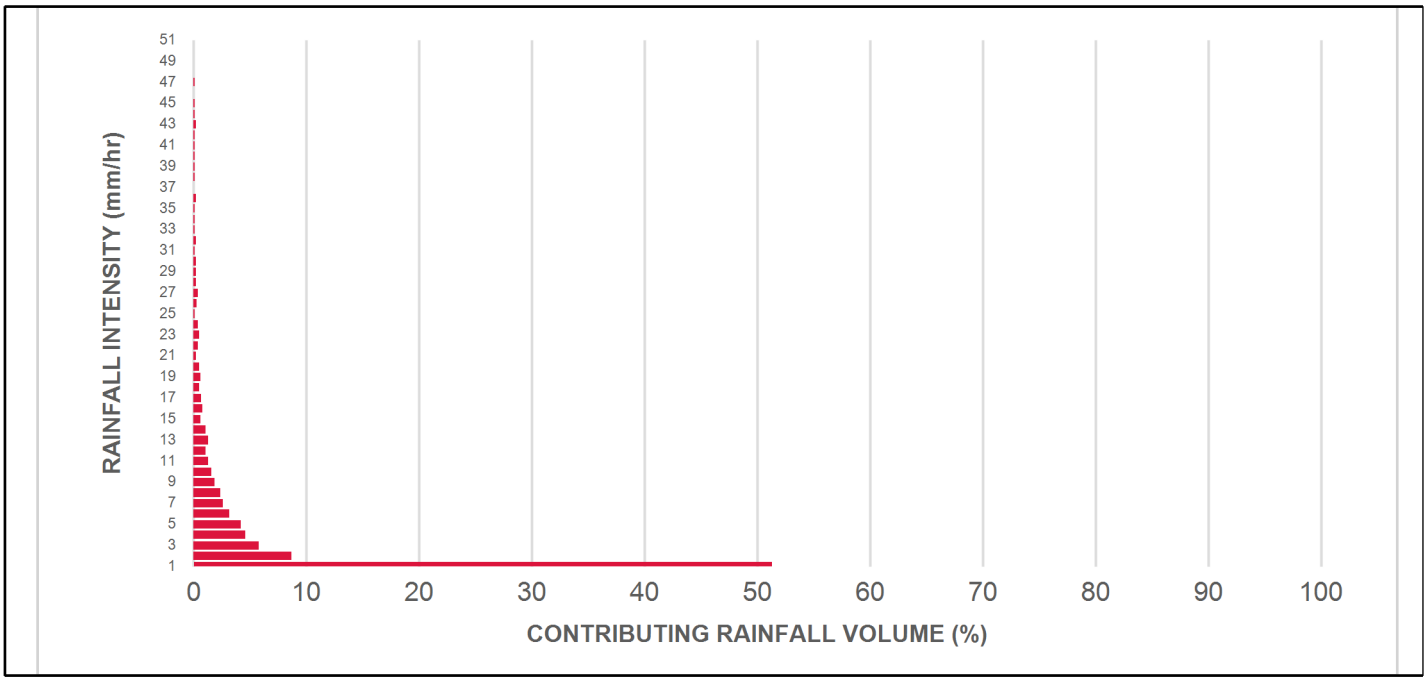
Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

Upstream Flow Controlled Results

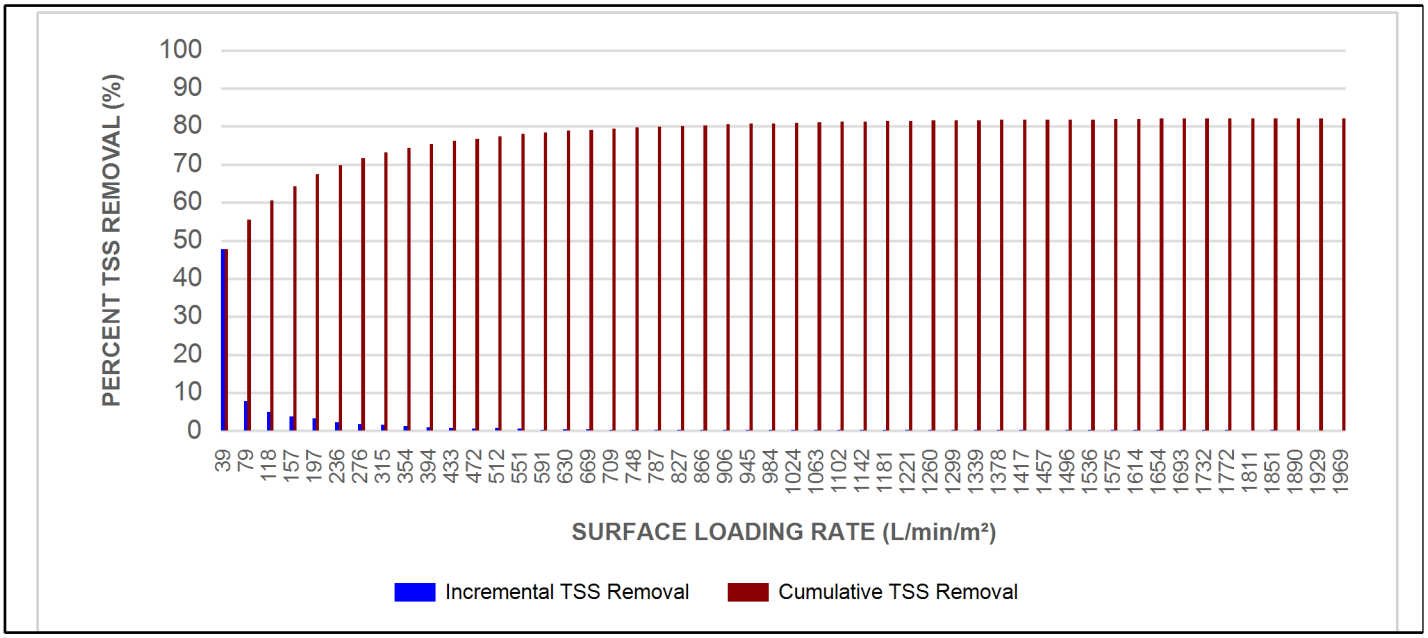
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
1	51.3	51.3	6.89	413.0	33.0	93	47.7	47.7
2	8.7	60.0	13.78	827.0	66.0	91	7.9	55.6
3	5.8	65.8	20.67	1240.0	99.0	87	5.0	60.7
4	4.6	70.4	27.56	1654.0	132.0	84	3.8	64.5
5	4.2	74.6	34.45	2067.0	165.0	80	3.4	67.9
6	3.2	77.8	41.34	2481.0	198.0	77	2.5	70.3
7	2.6	80.4	48.23	2894.0	232.0	73	1.9	72.3
8	2.4	82.8	55.12	3307.0	265.0	71	1.7	73.9
9	1.9	84.7	62.02	3721.0	298.0	68	1.3	75.2
10	1.6	86.3	68.91	4134.0	331.0	64	1.0	76.3
11	1.3	87.6	75.80	4548.0	364.0	62	0.8	77.1
12	1.1	88.7	82.69	4961.0	397.0	59	0.6	77.7
13	1.3	90.0	89.58	5375.0	430.0	57	0.7	78.5
14	1.1	91.1	96.47	5788.0	463.0	56	0.6	79.1
15	0.6	91.7	103.36	6202.0	496.0	55	0.3	79.4
16	0.8	92.5	110.25	6615.0	529.0	54	0.4	79.8
17	0.7	93.2	117.14	7028.0	562.0	53	0.4	80.2
18	0.5	93.7	124.03	7442.0	595.0	52	0.3	80.5
19	0.6	94.3	130.92	7855.0	628.0	52	0.3	80.8
20	0.5	94.8	137.81	8269.0	661.0	52	0.3	81.0
21	0.2	95.0	144.70	8682.0	695.0	52	0.1	81.1
22	0.4	95.4	151.59	9096.0	728.0	51	0.2	81.4
23	0.5	95.9	158.48	9509.0	761.0	51	0.3	81.6
24	0.4	96.3	165.37	9922.0	794.0	51	0.2	81.8
25	0.1	96.4	172.26	10336.0	827.0	51	0.1	81.9

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	179.16	10749.0	860.0	51	0.2	82.0
27	0.4	97.1	186.05	11163.0	893.0	51	0.2	82.2
28	0.2	97.3	192.94	11576.0	926.0	50	0.1	82.3
29	0.2	97.5	199.83	11990.0	959.0	50	0.1	82.4
30	0.2	97.7	206.72	12403.0	992.0	50	0.1	82.5
31	0.1	97.8	213.61	12817.0	1025.0	50	0.1	82.6
32	0.2	98.0	220.50	13230.0	1058.0	50	0.1	82.7
33	0.1	98.1	227.39	13643.0	1091.0	49	0.0	82.7
34	0.1	98.2	234.28	14057.0	1125.0	49	0.0	82.8
35	0.1	98.3	241.17	14470.0	1158.0	49	0.0	82.8
36	0.2	98.5	248.06	14884.0	1191.0	48	0.1	82.9
37	1.5	100.0	254.95	15297.0	1224.0	48	0.7	83.6
38	0.1	100.1	261.84	15711.0	1257.0	48	0.0	83.7
39	0.1	100.2	268.73	16124.0	1290.0	47	0.0	83.7
40	0.1	100.3	275.62	16537.0	1323.0	47	0.0	83.8
41	0.1	100.4	282.51	16951.0	1356.0	47	0.0	83.8
42	0.1	100.5	289.40	17364.0	1389.0	46	0.0	83.9
43	0.2	100.7	296.30	17778.0	1422.0	45	0.1	84.0
44	0.1	100.8	303.19	18191.0	1455.0	44	0.0	84.0
45	0.1	100.9	310.08	18605.0	1488.0	44	0.0	84.0
46	-0.9	100.0	316.97	19018.0	1521.0	42	N/A	83.7
47	0.1	100.1	323.86	19431.0	1555.0	42	0.0	83.7
48	-0.1	100.0	330.75	19845.0	1588.0	41	N/A	83.7
49	0.0	100.0	337.64	20258.0	1621.0	40	0.0	83.7
50	0.0	100.0	344.53	20672.0	1654.0	39	0.0	83.7
							Estimated Net Annual Sediment (TSS) Load Reduction =	**84 %**

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

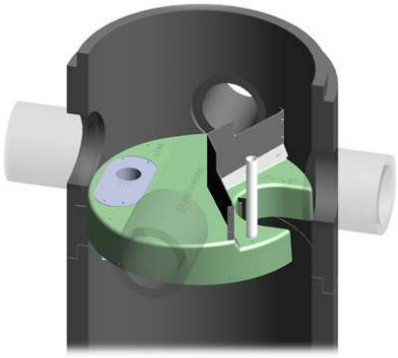
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test 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.

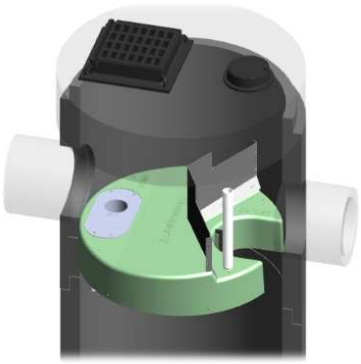
DESIGN FLEXIBILITY

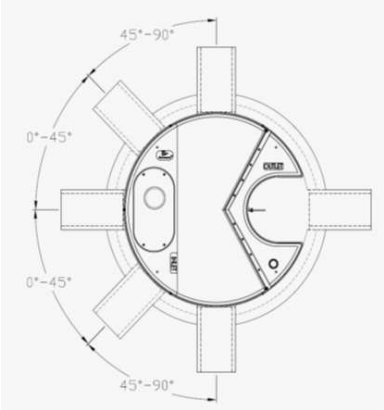
►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend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

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.

3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV **Program's Procedure for Laboratory Testing of Oil-Grit Separators,** with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to assess whether light liquids captured after a spill are effectively retained at high flow rates.

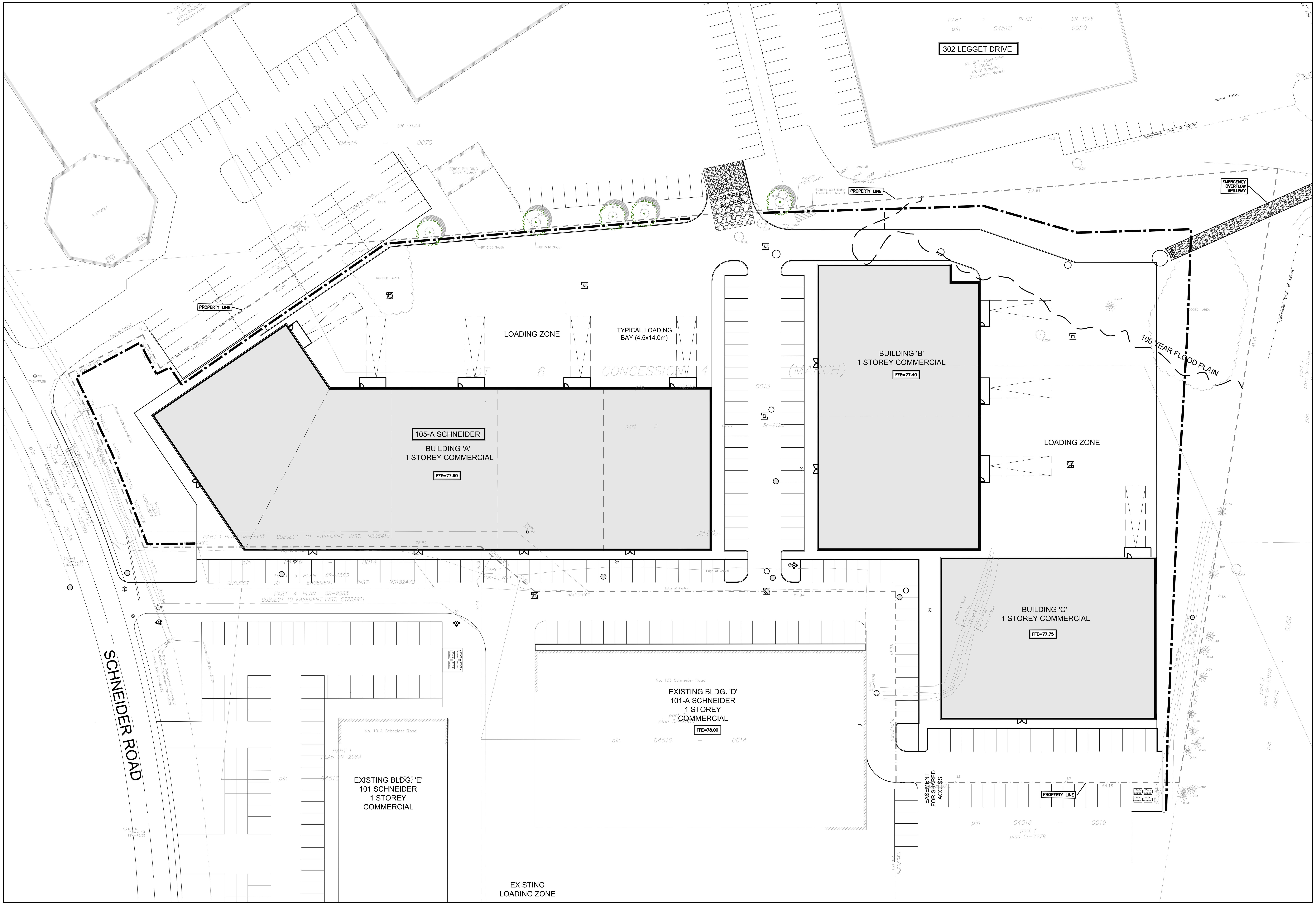
3.4.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m2 to 2600 L/min/m2) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

APPENDIX

APPENDIX

E

- EROSION AND SEDIMENTATION CONTROL PLAN C07



LEGEND

- LIGHT DUTY SILT FENCE AS PER OPSD-219.110
- SNOW FENCE
- ROCK CHECK DAM AS PER OPSD-219.211
- STRAW BALE CHECK DAM AS PER OPSD-219.180
- FILTER CLOTH PLACED UNDER CB AND CBMH COVER

SCALE: 1:400

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SEAL:
REGISTERED PROFESSIONAL ENGINEER
D. B. YANG
100230568
2021-04-06
PROVINCE OF ONTARIO

NORTH

CLIENT:
RENFROE LAND MANAGEMENT

CLIENT REF. #:

PROJECT:
103 SCHNEIDER ROAD

KEY PLAN:

DISCLAIMER: COPYRIGHT:
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THIS DRAWING IS NOT TO BE SCALED.

ISSUED FOR - REVISION:

IS	RE	DATE	DESCRIPTION
1		2021-04-06	ISSUED FOR SPA

PROJECT NO: 211-01794-00
DATE: APRIL 2021
ORIGINAL SCALE: 1:400
DESIGNED BY: D.Y.
DRAWN BY: D.Y.
CHECKED BY: D.Y./I.J.
IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm

DISCIPLINE: CIVIL

TITLE:
EROSION AND SEDIMENTATION CONTROL PLAN

SHEET NUMBER: C07
SHEET #: 7 OF 7

ISSUE: ISSUED FOR SPA
REV #: 0
DATE OF: 2021-04-06

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 C04*

☒ 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: Reference is provided to Kizell Drain by MVCA, 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 C04*

☒ 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 C03*

☒ 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 C03 and C04*

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: Model schematic will be provided after the boundary condition is received.
Refer to Servicing Report Section 2.13

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 C04*

☒ 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 C04

☒ 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: