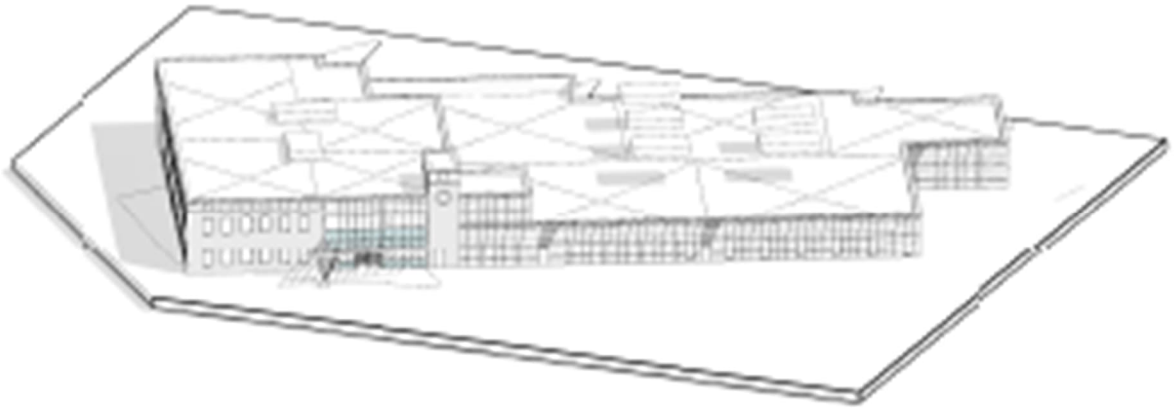
SITE SERVICING & STORMWATER MANAGEMENT REPORT
GASTOPS LTD. HEADQUARTERS

Project No.: CCO-24-2748



Prepared for:

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Prepared by:

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Carp, ON
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Revision 1: 2/10/2025

egis

Table of Content

1.0 PROJECT DESCRIPTION

1.1 Purpose

Egis Canada Ltd. (Egis) has been retained by CSV Architects to prepare this Servicing and Stormwater Management Report in support of the Site Plan Control process for the proposed Gastops Headquarters located in the proposed Riverside South Business Park, Ottawa ON.

The main purpose of this report is to present a servicing design for the development in accordance with the recommendations and guidelines provided by the City of Ottawa (Municipality), the Rideau Valley Conservation Authority (RVCA). This report will address the water, sanitary, and storm sewer servicing for the development, ensuring that existing and available services will adequately service the proposed development.

This report should be read in conjunction with the following drawings:

C101 – Lot Grading, Drainage and Erosion Sediment Control Plan; and
C102 – Site Servicing Plan

1.2 Site Description

The subject property, herein referred to as the site, is located at 3700 Twin Falls Pl within the Riverside South - Findlay Creek Ward, City of Ottawa. The site covers approximately 2.41 ha and is located at the northeast corner of the future Mosquito Drive and Gastops St intersection. The site is zoned for Industrial use (IL).

See Site Location Plan in Appendix A for more details.

Figure 1: Site Location (sketch provided by Urbandale Corp.)

1.3 Existing Conditions and Infrastructure

The existing property is currently undeveloped and consists primarily of vegetated lands, with no existing observable stormwater design.

Sewer systems and watermain mapping collected from the City of Ottawa's GIS information, and the Riverside Business Park Plans indicate that the following services exist or will exist across the property frontages within adjacent municipal rights-of-ways (ROW):

- Limebank Road:
    - 305mm diameter watermain;
    - 600mm diameter concrete storm sewer – tributary to the Rideau Valley Watershed, and;
    - 375mm diameter concrete sanitary sewer – tributary to the West Rideau Trunk Collector.
- Mosquito Drive (Riverside South Business Park):
    - 300mm diameter watermain, and;
    - 375mm diameter sanitary sewer.
- Gastops Street (Riverside South Business Park):
    - 200mm diameter watermain, and;
    - 200mm diameter sanitary sewer.

1.4 Proposed Development and Statistics

The proposed development for phase 1 consists of a +/- 2116 m^2 1-storey building, a 1239 m^2 2-storey building, 205 proposed parking stalls, and 7 barrier-free parking stalls. For phase 2 of the development, a further 2263 m^2 1-storey building is accounted for and addressed within this report. Entrances are located along Gastops Street to the west. Further details are available in the site plan provided by CSV Architects included in Appendix B.

1.5 Approvals

The proposed development is subject to the City of Ottawa site plan control approval process. Site plan control requires the City to review, provide concurrence and approve the engineering design package. Permits to construct can be requested once the City has issued a site plan agreement.

An Environmental Compliance Approval (ECA) through the Ministry of Environment, Conservation and Parks (MECP) is not anticipated to be required since the proposed storm system services one parcel of land, will be predominantly an office building and does not propose industrial use, and does not outlet to a combined sewer. The MECP and City have been contacted to further discuss this requirement

1.0 BACKGROUND STUDIES, STANDARDS, AND REFERENCES

1.1 Background Reports / Reference Information

Background studies have been completed for the proposed development, which include the City of Ottawa's as-built drawings, a topographical survey, and a geotechnical report.

As-built drawings of existing services, provided by the City of Ottawa Information Centre, within the vicinity of the proposed site were reviewed in order to identify infrastructure available to service the proposed development.

The following reports have previously been completed and are available under separate cover:

- Assessment Of Adequacy Of Public Services (Prepared by IBI Group, dated July 2022);
- Geotechnical Investigation (Prepared by Paterson Group, dated July 5, 2022); and
- Gastops Ltd. Headquarters – Site Plan (Prepared by CSV Architects)
- Design Brief Phase 1 – 3700 Twin Falls Place, Riverside South (Prepared by Arcadis, dated April 25, 2024)

The reports indicated above were used in developing the civil design within this report and will be referenced throughout.

1.2 Applicable Guidelines and Standards

City of Ottawa:

- Ottawa Sewer Design Guidelines, City of Ottawa, SDG002, October 2012. (Ottawa Sewer Guidelines)
    - Technical Bulletin ISTB-2014-01 City of Ottawa, February 2014. (ISTB-2014-01)
    - Technical Bulletin PIEDTB-2016-01 City of Ottawa, September 2016. (PIEDTB-2016-01)
    - Technical Bulletin ISTB-2018-01 City of Ottawa, January 2018. (ISTB-2018-01)
    - Technical Bulletin ISTB-2018-04 City of Ottawa, March 2018. (ISTB-2018-04)
    - Technical Bulletin ISTB-2019-02 City of Ottawa, February 2019. (ISTB-2019-02)
- Ottawa Design Guidelines – Water Distribution City of Ottawa, July 2010. (Ottawa Water Guidelines)
    - Technical Bulletin ISD-2010-2 City of Ottawa, December 15, 2010. (ISD-2010-2)
    - Technical Bulletin ISDTB-2014-02 City of Ottawa, May 2014. (ISDTB-2014-02)
    - Technical Bulletin ISTB-2018-02 City of Ottawa, March 2018. (ISTB-2018-02)
    - Technical Bulletin ISTB-2021-03 City of Ottawa, August 2021. (ISTB-2021-03)

Ministry of Environment, Conservation and Parks:

- Stormwater Planning and Design Manual, Ministry of the Environment, March 2003. (MECP Stormwater Design Manual)
- Design Guidelines for Sewage Works, Ministry of the Environment, 2008. (MECP Sewer Design Guidelines)

Other:

- Water Supply for Public Fire Protection, Fire Underwriters Survey, 2020. (FUS Guidelines)

2.0 PRE-CONSULTATION SUMMARY

A pre-consultation meeting was conducted on May 28, 2024, regarding the proposed site. Specific design parameters to be incorporated within this design include the following:

- Stormwater Management Criteria (quantity and quality control) is to follow the design laid out in the subdivision's adequacy of public services report (APSR).
- On-site quality control at an enhanced level is required (80% TSS removal).
- The use of LIDs is to be considered for this site.
- Existing water and sanitary stubs from Limebank Road may be used, watermain is inactive and would need to be recommissioned.
- An onsite manhole shall be incorporated into the design for sanitary as per City of Ottawa guidelines.
- Stormwater management design shall be completed as per the City of Ottawa guidelines.

3.0 WATERMAIN

3.1 Existing Watermain

The site is located within the 1W pressure zone, as per the Water Distribution System mapping. A 305mm watermain is located on Limebank Road. A 200mm watermain on Gastops Street and a 300mm watermain on Mosquito Drive as a part of the proposed Riverside South Business Park development are under construction as designed by IBI.

3.2 Proposed Watermain

New 152 mm diameter water services connected to the 300 mm diameter watermain stub coming from Limebank Road is proposed. The water services will contain water valves located at the property line. The water services are designed to have a minimum of 2.4 m cover. The watermain calculations below assumes the overall Phase 2 build-out in the calculations.

The Fire Underwriters Survey 2020 (FUS) method was utilized to determine the required fire flow for the site. The 'C' factor (type of construction) for the FUS calculation was determined to be 0.8 (non-combustible construction). The building will also to have a supervised sprinkler system. The total floor area ('A' value) for the FUS calculation was determined to be 6,859 m^2. The results of the calculations yielded a required fire flow of 8,000 L/min. A fire flow of 9,000 L/min was calculated using the Ontario Building Code (OBC) criteria. The detailed calculations for the FUS and OBC can be found in Appendix C.

The water demands for the proposed building have been calculated to adhere to the Ottawa Design Guidelines – Water Distribution manual and can be found in Appendix C. The results have been summarized in Table 1, below.

These calculations account for the phase 1 and phase 2 buildings.

Table 1: Water Demands

Design Parameter	Value
Site Area	2.41 ha
Floor Area	6,859 m^2
Commercial	28,000 L/ha/day
Average Day Demand (L/s)	0.22

Maximum Day Demand (L/s)	0.33
Peak Hour Demand (L/s)	0.60
OBC Fire Flow Requirement (L/s)	150
FUS Fire Flow Requirement (L/s)	133

Boundary conditions for the site were requested and received from the city, dated July 8, 2024. The model assumed demands for the property as - Average Day = 0.26 L/s, Maximum Day = 0.39 L/s and Maximum Hourly = 0.70, and the fire flow to be 133.33 L/s, results are summarized in Table 2 below.

Table 2: Boundary Conditions

Scenario	Total HGL (m)	Head Pressure* (m)	Head Pressure (psi)
300mm Diameter Watermain Connection on Mosquito Drive			
Average Day (Maximum HGL)	147.00	91.00	79.68
Maximum Day + Fire Flow	144.90	91.00	76.69
Peak Hourly (Minimum HGL)	145.60	91.00	77.68

The boundary conditions were used to ensure the normal operating pressure range is not less than 275kPa (40psi) or more than 552kPa (80psi). The resultant hydraulic grade line (HGL) shows that the minimum pressure limit is satisfied during the average day and peak hour scenario.

In addition to normal operations, the maximum day plus fire flow conditions were reviewed to ensure that there is sufficient fire flow available to meet the required 133 L/sec flow rate, while maintaining a minimum of 20psi (140kPa) within the City's distribution system as per the City of Ottawa Design Guidelines for Water Distribution, 2010. The resulting HGL shows that the minimum pressure is satisfied during a fire scenario.

In addition to the review of the boundary conditions, the available fire flow based on hydrant spacing was analysed as per the City of Ottawa's technical bulletin ISTB 2018-02 Appendix I, Table 1. All existing and proposed municipal hydrants within 150m clear distance to the nearest face of the building were used to find a combined available fire flow to support the site. Existing and proposed hydrants were assumed to be class AA (painted blue) by visual inspection through the latest imagery provided on Google Street View. A total contribution of 5,700

L/min and 3,800 L/min was used for each hydrant within 75m, and between 75m and 150m of the building, respectively. The results are summarized below in Table 3. Please refer to Appendix C for a hydrant location map.

Table 3: Fire Hydrant Protection

Location	Assumed Class	Status	Distance	Flow Contribution (L/min)
4101 Limebank Rd	AA	Existing	82m	3,800
Gastops Street	AA	Proposed (Business Park)	43m	5,700
Gastops Street	AA	Proposed (Business Park)	60m	5,700
Mosquito Drive	AA	Proposed (Business Park)	33m	5,700
Mosquito Drive	AA	Proposed (Business Park)	52m	5,700
Total				26,600

Based on City guidelines (ISTB-2018-02), the existing hydrants can provide adequate fire protection to the proposed development.

4.0 SANITARY DESIGN

4.1 Existing Sanitary Sewer

A 375mm sanitary sewer is located on Limebank Road, and a 200mm sanitary sewer and a 375mm sanitary sewer are proposed on Gastops Street and Mosquito Drive, respectively, as a part of the proposed Riverside South Business Park development.

4.2 Proposed Sanitary Sewer

A new 150 mm diameter PVC gravity sanitary lateral is proposed to be connected to a proposed manhole which outlets to the existing 375 mm diameter sanitary sewer lateral connected to Limebank Road. Refer to civil drawing C102 for a detailed servicing layout. The sanitary design below assumes the overall Phase 2 building footprint in the calculations.

The peak design flows for the proposed buildings were calculated using criteria from the Ottawa Sewer Design Guidelines (2012) and are summarized in Table . The proposed site development will generate a flow of 1.13 L/s under peak wet weather conditions. See Appendix D for more details.

Table 4: Sanitary Design Criteria

Design Parameter	Value
Site Area	2.41 ha
Commercial	2,800 L/1,000m^2/day
Institutional/Commercial Peaking Factor	1.5
Extraneous Flow Allowance	0.33 L/s/ha
Total Infiltration Flow	0.80 L/s
Average Dry Weather Flow	0.34 L/s
Peak Sewage Flow	0.45 L/s
Total Peak Wet Weather Flow	1.13 L/s

4.3 Allowable Release Rate

To confirm the adequacy of the existing sanitary sewer the Assessment of Adequacy of Public Services prepared by IBI Group dated July, 2022, was reviewed. The report indicates a design flow 36.2 L/s for the employment lands, the peak wet weather flow for this development is expected to be less than 3% of its available design capacity.

Due to the complexity of the downstream network, it is requested that the City advise of any additional downstream constraints not considered in this report that may be impacted by these flows. Please refer to Appendix D for detailed calculations.

5.0 STORM SEWER DESIGN

5.1 Existing Storm Sewers

A 600mm storm sewer is located on Limebank Road. The site currently drains to Mosquito Creek. Storm ditches that are part of the industrial subdivision are to be available for outlet.

5.2 Proposed Storm Sewers

Storm sewers are proposed to convey storm flow from the catch basins in the parking areas west of the building to retention area on the southwest corner and then outlet to the Roadside Ditch along Gastops Street. Perforated pipes are also proposed beneath the proposed swales along the north, south and east property lines to convey stormwater to the retention area along the north property line as outline in plan C102. Inlet Control Devices and roof drains are specified for quantity control and catch basin shields and surface treatment are utilised for quality control.

6.0 PROPOSED STORMWATER MANAGEMENT

6.1 Design Criteria and Methodology

Stormwater management for the proposed development will be maintained through positive drainage away from the proposed building and be conveyed toward a retention area. The overland flow route for the site will be directed to the roadside ditching along the south and west sides of the property. The quantitative properties of the storm runoff for both the pre- and post-development flows are further detailed below.

In summary, the following design criteria has been employed in development the stormwater management design for the site:

Quantity Control

- The maximum allowable release rate from the site is 54 L/s. Per Design Brief Phase 1 – 3700 Twin Falls Place, Riverside South & the pre-consultation.
- Additional impermeable areas proposed for the Phase 2 expansion were included in the calculations.

Quality Control

- Enhanced level is required (80% TSS removal).

6.2 Runoff Calculations

Runoff calculations presented in this report are derived using the Rational Method, given as:

$$Q = 2.78CIA \text{ (L/s)}$$

Where: C = Runoff coefficient

I = Rainfall intensity in mm/hr (City of Ottawa IDF curves)

A = Drainage area in ha

It is recognized that the Rational Method tends to overestimate runoff rates. As a result, the conservative calculation of runoff ensures that any SWM facility sized using this method is expected to function as intended.

The following coefficients were used to develop an average C for each area, summarized in Table 5.

Table 5: Runoff Coefficients

Land Cover	C
Roofs/Concrete/Asphalt	0.90
Gravel	0.60
Undeveloped/Grass	0.20

As per the City of Ottawa – Sewer Design Guidelines (2012), the 5-Year balanced C-value must be increased by 25% for a 100-Year storm event to a maximum of 1.0.

6.3 Pre-Development Drainage

The existing site drainage limits are demonstrated on the Pre-Development Drainage Area Plan. A summary of the Pre-Development Runoff Calculations can be found in Table 6.

Table 6: Pre-Development Runoff Summary

Drainage Area	Area (ha)	Runoff Coefficient (5-Year)	Runoff Coefficient (100-Year)	5-Year Peak Flow (L/s)	100-Year Peak Flow (L/s)
A1	2.37	0.21	0.26	97.90	208.95

See the Pre-Development Drainage Area Plan in Appendix F and SWM Calculations in Appendix E.

The previously accepted pre-development release rates from Table 4.5 in the Subdivision Design Brief prepared by Arcadis are summarized in Table 7.

Table 7: Required Restricted Flow - Previously Accepted

Drainage Area	Area (ha)	Required Release Rate (100-Year)
A1	2.41	54.0 L/s

6.4 Post-Development Drainage Areas

The proposed site drainage limits are demonstrated on the Post-Development Drainage Area Plan found in Appendix G of this report. A summary of the Post-Development Runoff Calculations for the site are shown in Table 8.

Table 8: Post-Development Runoff Summary

Drainage Area	Unrestricted Flow (L/S)			Restricted Flow (L/S)			Storage Required (m^3)			Storage Provided (m^3)		
	2-year	5-year	100-Year	2-Year	5-Year	100-Year	2-Year	5-Year	100-Year	2-Year	5-Year	100-Year
B1	65.69	89.46	174.14	8.76	9.29	11.58	45.61	68.8	155.3	48.0	71.3	156.9
B2	64.23	87.46	166.54	3.24	4.32	7.56	63.38	86.9	166.8	75.5	100.7	176.1
B3	164.04	223.37	433.55	8.25	9.92	12.80	161.46	227.2	487.8	175.1	238.8	495.9
B4	3.99	5.43	11.64	3.99	5.43	11.64						
B5	2.70	3.67	7.87	2.70	3.67	7.87						
Total	300.65	409.40	793.73	26.94	32.64	51.45	270.45	382.84	809.95	298.52	410.73	828.96

6.5 Quantity Control

The total post-development runoff for this site has been restricted to match the required release rates outlined in table 7. Reducing site flows will be achieved using flow restrictions and the existing onsite storage.

Area B1 conveys water via catch basins, pipes and swales to a stormwater retention area in the grass area on the southwest property corner, where the release rate to the ditch along Gastops St. is controlled to 11.58 L/s in a 100-year event. Area B2 is the roof area where stormwater is collected by 9 flow-controlled roof drains controlling the to 7.56 L/s in a 100-year event to outlet to the ditch along Gastops St. Area B3 conveys water via catch basins, pipes, swales and landscape catch basin to a stormwater retention area in the grass area along the north property line, where the release rate to Gastops St. is controlled to 12.80 L/s in a 100-year event. Area B4 flows unrestricted along the North and west property lines. Area B5 flows unrestricted to the east of the site.

In an event that exceeds the 100-year storm event (calculated using the 20% stress test), or in the event of a sewer blockage, emergency overland flow routes have been identified to convey water overland to the subdivision stormwater infrastructure. Area B1 will spill to the Gastops Street roadside ditch with the highest spill elevation of 91.99, therefore 1.16m of freeboard is provided from the finished floor (93.15). Area B2 will also spill to the Gastops Street roadside ditch with the highest spill elevation being 92.60 from the CB1 catchment area, providing 0.55m of freeboard. The CB2 catchment area is spilling at a lower elevation of 92.57 toward the Gastops right-of-way, and the CB3 catchment spills to the stormwater storage area at an elevation of 92.40. Refer to Drawing C101 for locations of overland flow route.

See Appendix E for SWM calculations.

6.6 Quality Control

The development of this lot will employ Best Management Practices (BMP's) wherever possible. The intent of implementing stormwater BMP's is to ensure that water quality and quantity concerns are addressed at all stages of development. Lot level BMP's typically include temporary retention of the lot runoff, minimizing ground slopes and maximizing landscaped areas. Some of these BMP's cannot be provided for this site due to site constraints and development requirements.

Area B2 collects water predominantly from the rooftop and is therefore assumed to be clean. Areas B4 and B5 are entirely landscaped areas. Therefore, quality control is to be provided to Areas B1 & B3 which contain the parking lots on site.

Two quality treatment units have been proposed to provide a TSS removal rate of 80% as per the requirements. The OGS (Oil & Grit Separator) units will provide a water quality of at least 80% TSS. The OGS Units shall be placed downstream of the parking area's storm structures and sewers to provide the required water quality treatment for the site runoff before discharging to the ditch in the adjacent easement.

7.0 EROSION AND SEDIMENT CONTROL

7.1 Temporary Measures

Before construction begins, temporary silt fence and straw bale/rock flow check dams will be installed at all natural runoff outlets from the property. It is crucial that these controls be maintained throughout construction and inspection of erosion and sediment control will be facilitated by the Contractor or Contract Administration staff throughout the construction period.

Silt fences will be installed where shown in the final engineering plans, specifically along the downstream property limits. The Contractor, at their discretion, or at the instruction of the Municipality, Conservation Authority, or Contract Administrator, shall increase the quantity of erosion and sediment controls on-site to ensure that the site is operating as intended and no additional sediment finds its way off site. The check dams and silt fences shall be inspected weekly and after rain events. Care shall be taken to properly remove sediment from the fences and check dams as required. Inlet sediment control devices (ISCD) are to be placed under the grates of all existing catchbasins and manholes surrounding the site that will come in contact with flows during construction. Any new structures will have an ISCD installed immediately upon installation. The measures for the existing/proposed structures are to be removed only after all areas have been paved. Care shall be taken at the removal stage to ensure that any sediment that has accumulated is properly handled and disposed of. Removal of all silt fences and ISCDs prior to removal of the sediments shall not be permitted.

Although not anticipated, work through the winter months shall be closely monitored for erosion along sloped areas. Should erosion be noted, the Contractor shall be alerted and shall take all necessary steps to rectify the problematic area(s). Should the Contractor's efforts fail at remediating the eroded areas, the Contractor shall contact the Municipality and/or Conservation Authority to review the site conditions and determine the

appropriate course of action. As the ground begins to thaw, the Contractor shall place silt fencing at all required locations as soon as the ground conditions warrant. Please see the Site Grading and Sediment & Erosion Control Plan for additional details regarding the temporary measures to be installed and their appropriate OPSD references.

7.2 Permanent Measures

Rip-rap will be placed at all locations that have the potential for concentrated flow. It is crucial that the Contractor ensure that the geotextile is keyed in properly to ensure runoff does not undermine the rip rapped area. Additional rip-rap is to be placed at erosion prone locations as identified by the Contractor / Contract Administrator / Municipality or Conservation Authority.

It is expected that the Contractor will promptly ensure that all disturbed areas receive topsoil and seed/sod and that grass be established as soon as possible. Any areas of excess fill shall be removed or levelled as soon as possible and must be located a sufficient distance from any watercourse to ensure that no sediment is washed out into the watercourse. As the vegetation growth within the site provides a key component to the control of sediment for the site, it must be properly maintained once established. Once the construction is complete, it will be up to the landowner to maintain the vegetation and ensure that the vegetation is not overgrown or impeded by foreign objects.

8.0 SUMMARY

- Office building is proposed at block 2 of the proposed Riverside South Business Park at 3700 Twin Falls Pl. in Ottawa, Ontario.
- A 150mm watermain service is proposed to service the site, connecting to the 300mm watermain extension from Limebank Road.
- A 150mm sanitary service lateral will be connected to the existing 375mm sanitary sewer stub located from Limebank Road.
- Storage for the 2-, 5- and 100-year storm events will be provided within the rooftop and in two above-ground storage areas.
- Water quality control will be provided on-site by two OGS units.

9.0 RECOMMENDATION

Based on the information presented in this report, we recommend that the Municipality approve this Servicing Report in support of the proposed building addition.

The report is respectfully being submitted for approval.

Regards,

Egis Canada Ltd.

Alison Gosling, P. Eng
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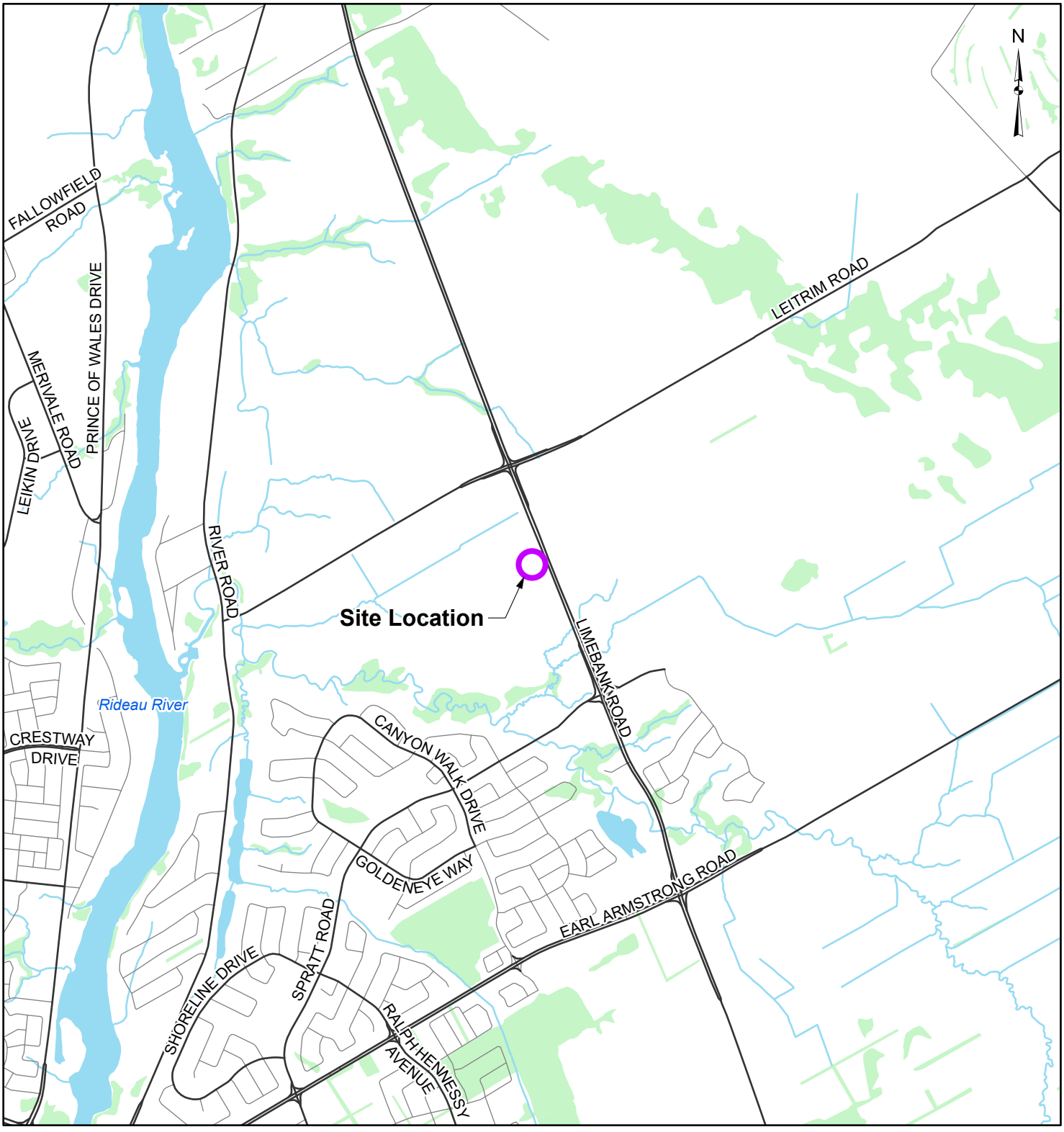
APPENDIX A
KEY PLAN



LEGEND

- Site Location
- Local Road
- Major Road
- Watercourse
- Waterbody
- Wooded Area

800 400 0 800

Scale 1:25,000 Metres

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2024.

CLIENT: CSV ARCHITECTS
190 O'CONNOR STREET, SUITE 100
OTTAWA, ON

PROJECT: LOT GRADING & SERVICING PLAN

TITLE: LOCATION PLAN

egis
115 Walgreen Road, RR3, Carp, ON K0A1L0
Tel: 613-836-2184 Fax: 613-836-3742

PROJECT NO:	CCO-24-2748
Date	May., 28, 2024
GIS	AH
Checked By	RP

FIGURE: 00

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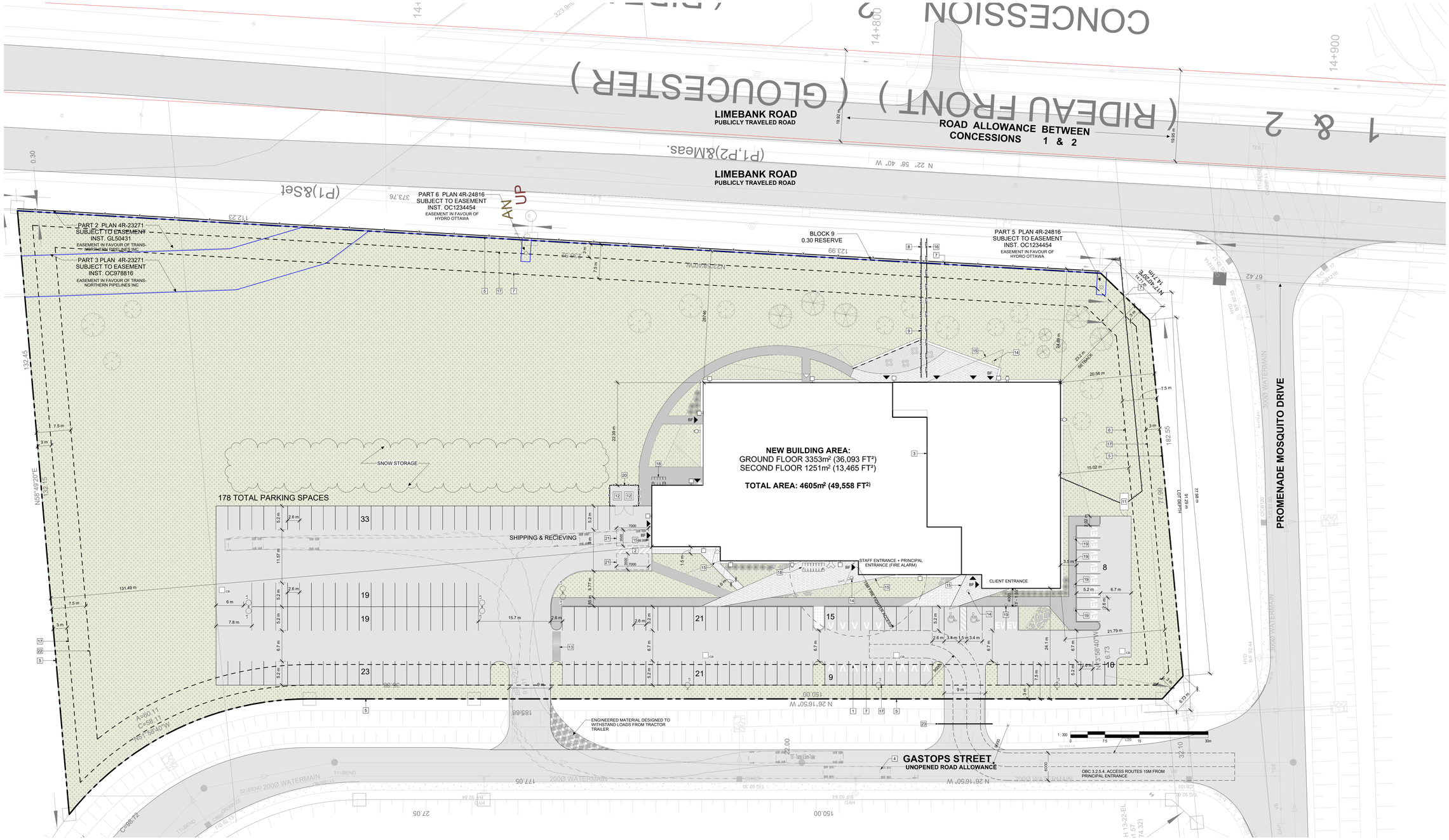
APPENDIX B
BACKGROUND DOCUMENTS



1 SITE PLAN
.A100 | 1 : 300

SITE PLAN LEGEND:

- EXISTING BUILDING & SITE ELEMENTS
- DEMOLISHED BUILDING & SITE ELEMENTS
- ASPHALT PAVING
- GRASS
- STONE DUST/ SAND
- PAVER TYPE 1
- PAVER TYPE 2
- PAVER TYPE 3
- ENTRANCE/ BARRIER-FREE ENTRANCE
- MAIN ENTRANCE
- VEHICLE ACCESS
- PROPERTY LINE
- FENCE PER SURVEY
- DOMESTIC WATER PER CIVIL
- SANITARY PER CIVIL
- NEW STORM PER CIVIL
- NEW ELECTRICAL SERVICE (BELOW GRADE) PER CIVIL
- GAS PER CIVIL
- OVERHEAD WIRE
- SUBJECT TO EASEMENT
- CATCH BASIN, REFER TO CIVIL
- LIGHT STANDARD
- FIRE HYDRANT
- MAINTENANCE HOLE
- UTILITY POLE
- SIAMESE CONNECTION
- DROPPED CURB
- TREE
- SHRUB
- EXTERIOR WALL SCONCES PER LIGHTING PACKAGE
- LIGHT STAND PER LIGHTING PACKAGE
- HOSE BIB

SITE PLAN KEYNOTES:

1. LINE OF SETBACK
2. DROP OFF / LOADING BAY
3. OUTLINE OF SECOND STOREY
4. TRUCK TURNING RADIUS
5. LINE OF PROPERTY
6. FRONT YARD SETBACK
7. CORNER YARD SETBACK
8. EXISTING SANITARY CONNECTION
9. NEW SANITARY CONNECTION
10. FIRE TRUCK ROUTE
11. TRANSFORMER
12. GARBAGE
13. PEDESTRIAN WALKWAY
14. CANOPY COLUMN
15. CANOPY
16. DOMESTIC WATER
17. 3m LANDSCAPE BUFFER
18. BIKE PARKING
19. DOUBLE EV CHARGER (FUTURE)
20. 2m TALL GARBAGE ENCLOUSRE FENCE
21. 3.5m X 7m LOADING SPACE
22. REAR YARD SETBACK
23. CULVERT, REFER TO MECHANICAL

SITE PLAN GENERAL NOTES:

1. ALL GENERAL SITE INFORMATION AND CONDITIONS COMPILED FROM EXISTING PLANS AND SURVEYS
2. DO NOT SCALE THIS DRAWING
3. REPORT ANY DISCREPANCIES PRIOR TO COMMENCING WORK. NO RESPONSIBILITY IS BORN BY THE CONSULTANT FOR UNKNOWN SUBSURFACE CONDITIONS
4. CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE CONSULTANT
5. REINSTATE ALL AREAS AND ITEMS DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES TO THE SATISFACTION OF THE CONSULTANT
6. CONTRACTOR TO LAYOUT PLANTING BEDS, PATHWAYS ETC. TO APPROVAL OF CONSULTANT PRIOR TO ANY LANDSCAPE EXCAVATION
7. THE ACCURACY OF THE POSITION OF UTILITIES IS NOT GUARANTEED - CONTRACTOR TO VERIFY PRIOR TO EXCAVATION
8. INDIVIDUAL UTILITY COMPANY MUST BE CONTACTED FOR CONFIRMATION OF UTILITY EXISTENCE AND LOCATION PRIOR TO DIGGING
9. ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE NOTED

LEGAL DESCRIPTION:

BLOCK 2, PLAN 4M-1746

REFERENCE SURVEY:

BASED ON INFORMATION FROM SURVEY TITLED "**PART OF LOTS 16** and **17 CONCESSION 1 (RIDEAU FRONT)** Geographic Township of Gloucester **CITY OF OTTAWA** " DRAWN BY Surveyed by Annis , O'Sullivan , Vollebekk Ltd. DATED APR. 23, 2024

MUNICIPAL ADDRESS:

NOT YET ESTABLISHED

DEVELOPMENT INFORMATION:

SITE AREA:	24,708m²
BUILDING AREA: (OBC DEFINITION)	3353 m²
GROSS FLOOR AREA:	4605m²
LIGHT INDUSTRIAL:	1995M²
OFFICE:	2610M²
ZONE:	IL
SCHEDULE 1:	AREA [C]
SCHEDULE 1A:	AREA [C]

ZONING PROVISION:	REQUIRED:	PROVIDED:
MIN. LOT WIDTH:	NO MINIMUM	86.88m
MIN. LOT AREA:	2000 m²	24708m²
MAX. LOT COVERAGE:	65%	13.6%
MIN. FRONT YARD SETBACK:	7.5 m	20.56m
MIN. CORNER YARD SETBACK: EAST	7.5 m	23.20m
MIN. CORNER YARD SETBACK: WEST	7.5m	24.01m
MIN. REAR YARD SETBACK:	7.5 m	131.49m
MIN. INTERIOR YARD SETBACK:	7.5 m	N/A
MAXIMUM FLOOR SPACE INDEX:	2	0.186
MAXIMUM BUILDING HEIGHT:	18 m	8.44m
MINIMUM LANDSCAPE AREA:	NO MINIMUM	15530m²
MINIMUM LANDSCAPE BUFFER:	3m	>3m

PARKING QUEUING + LOADING	REQUIRED:	PROVIDED:
TOTAL SPACES:	16 FOR LIGHT INDUSTRIAL 63 FOR OFFICES TOTAL = 79	178
TYPICAL SPACES:	77	176
ACCESSIBLE PARKING:	2	2
BICYCLE PARKING:	13	13
LOADING SPACES:	2	2

REFUSE COLLECTION	REQUIRED:	PROVIDED:
MIN SETBACK FROM LOT LINE (ABUTTING STREET)	9M	>9M
MIN SETBACK FROM LOT LINE (ABUTTING STREET)	3M	>3M
MINIMUM SCREENING REQUIREMENTS	OPAQUE SCREEN WITH MINIMUM HEIGHT OF 2M	WOOD PRIVACY FENCE, 2M

CSV ARCHITECTS
sustainable design - conception écologique
613.564.8118 www.csv.ca
190 O'Connor Street, Suite 100 Ottawa, Ontario,K2P 2R3

STRUCTURAL ENGINEER
CLELAND JARDINE
580 Terry Fox Drive
Kanata, Ontario K2L 4B9

MECHANICAL ENGINEER
QUASAR CONSULTING GROUP
150 Isabella Street, Suite 400
Ottawa, Ontario K1S 5H3

ELECTRICAL ENGINEER
QUASAR CONSULTING GROUP
150 Isabella Street, Suite 400
Ottawa, Ontario K1S 5H3

CIVIL ENGINEER
EGIS GROUP
115 Walgreen Road
R.R. 3 Carp, Ontario K0A 1L0

LANDSCAPE ARCHITECT
URBAN TYPOLOGY INC.
163 Sterling Road Unit 10
Toronto, Ontario M6R 2B2

STAMP

REV	DATE	ISSUE
5	2024-12-10	ISSUED FOR SPC
4	2024-11-15	ISSUED FOR SPC COORDINATION
3	2024-11-01	ISSUED FOR SPC REVIEW
2	2024-07-30	ISSUED FOR CLIENT COORDINATION

SPC APPLICATION #:

NOTES

CLIENT

GASTOPS

OTTAWA
ONTARIO, CANADA

PROJECT

GASTOPS NEW FACILITY

3700 Twin Falls Place

TITLE

SITE PLAN

PROJECT NO: 2023-2260
DRAWN: KM, RR
APPROVED: DH
SCALE: As indicated
DATE PRINTED: 2/5/2025 4:56:36 PM

REV 5 DRAWING NO. .A100

File No.: PC2024-0189

May 28, 2024

Paolo Marinelli
CSV Architects
Via email: marinelli@csv.ca

Subject: **Pre-Consultation: Meeting Feedback**
Proposed Site Plan Control Application – 3700 Twin Falls

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on May 24, 2024.

Pre-Consultation Preliminary Assessment

1 ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☒

One (1) indicates that considerable major revisions are required while five (5) suggests that the proposal appears to meet the City's key land use policies and guidelines. This assessment is purely advisory and does not consider technical aspects of the proposal or in any way guarantee application approval.

Next Steps

Please proceed to complete a Phase 3 Pre-Consultation by submitting the required studies and plans and completing the Pre-consultation Application Form. Send the submission to planningcirculations@ottawa.ca.

In your subsequent pre-consultation submission, include a detailed cover letter stating how each comment detailed herein was addressed. Please coordinate the numbering of your responses within the cover letter with the comment number(s) herein.

Note: If your development proposal changes significantly in scope, design, or density before the Phase 3 pre-consultation, staff may require a Phase 2 pre-consultation.

Supporting Information and Material Requirements

The attached **Study and Plan Identification List** outlines the information and material that has been identified, during this phase of pre-consultation, as either required (R) or advised (A) as part of a future complete application submission.

The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.

Consultation with Technical Agencies

Staff encourage applicants to consult with technical agencies early in the development process and throughout the development of your project concept. Refer to the attached list of technical agencies.

Planning Comments

1. The Official Plan designates the property Industrial and Logistics within the Suburban Transect. The Official Plan permits traditional heavy and industrial uses and accessory offices in this designation.

   The property is also within the Riverside South Secondary Plan. City Council approved the Secondary Plan on May 1st, 2024, and it is within the statutory 20-day appeal period. The approved Secondary Plan policy text, staff report and schedules are available at the following link: https://pub-ottawa.escribemeetings.com/Meeting.aspx?Id=3a8d2f7c-bb06-453d-9163-2ae3a9ebdef5&Agenda=Agenda&lang=English&Item=59&Tab=attachments

   Key policies to be aware of include:

   - Schedule B – Maximum Building Heights
   - Section 2.5 Policy 4)

     To minimize the urban heat island effect, where possible, development should: a) Have a front yard that supports soft landscaping and mature trees; b) Have a soft landscaped buffer around parking areas; c) Provide soft landscaping within parking areas; and d) Design buildings with light coloured and/or reflective materials. Cool and green roofs are encouraged.

   - Section 2.5 Policy 6)

     Development within the Industrial and Logistics designation that is also within the Airport Operating Influence Zone, per Schedule C14 – Land Use Constraints Due to Aircraft Noise in Volume 1 of the Official Plan, is subject to the Airport Operating Influence Zone policies in section 10.2.2 in Volume 1 of the Official Plan.

   - Section 2.5 Policy 7)

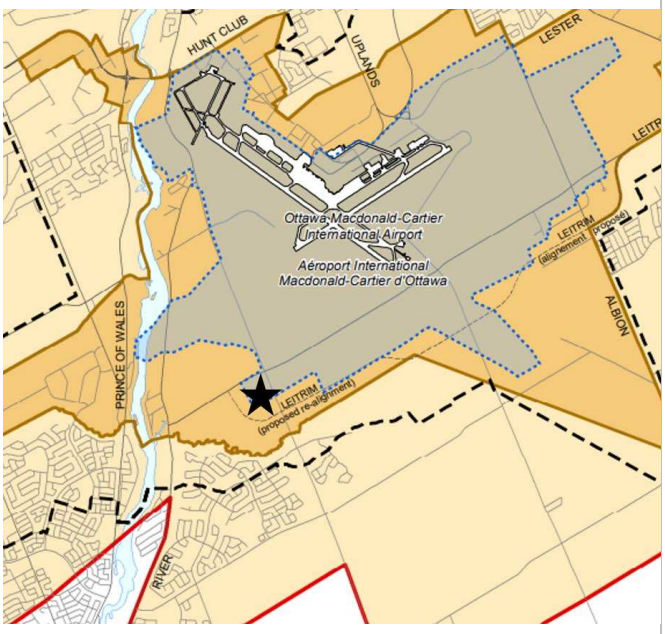
     Per the recommendations of the Master Drainage Plan for Mosquito Creek, the City may require that development incorporate Low Impact Development measures to the treatment train approach for Stormwater Management Facilities.

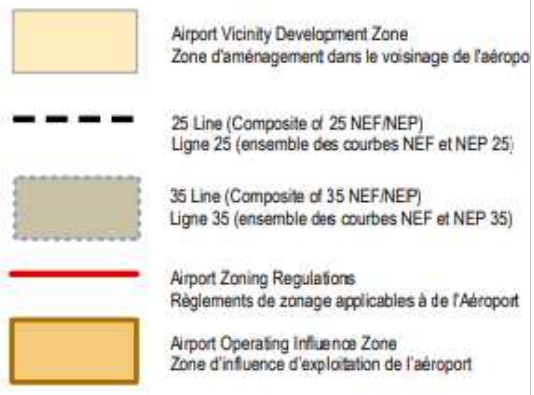
2. The property is also within the City's Ottawa International Airport Economic District. The objective of this Special District is to guide development and support the preparation of a secondary plan to recognize its role as an economic generator and to balance employment and mixed uses around the airport. See Section 6.6.3.1 of the Official Plan.

3. The property falls within the Airport Operating Zone and the 25 Line (i.e., Composite of the Noise Exposure Forecast and Noise Exposure Projection) as shown on Schedule C14 (see screenshot below). The northern portion of the site also falls within the 35 Line, where no noise sensitive land uses are permitted.

   The Official Plan requires a noise control study as part of a complete application for any development proposal within the 25 Line (Section 10.2.2 Policy 3). For more information on

the contents of the study, refer to Section 4.0 of the City's Environmental Noise Control Guidelines.





4. There is an existing utility corridor impacting the subject property as shown on Schedule A of the Riverside South Secondary Plan. Review the registered easement agreement to confirm allowable building footprints and setbacks.

5. The property is zoned Light Industrial (IL), and the preliminary site plan concept appears to comply to the applicable provisions. Please take note the following provisions:

   - Section 203 limits accessory display and sale areas to 25% of the gross floor area
   - Based on the size of the building, 1 oversized loading space is required. Refer to the dimension and aisle provisions in Section 113.
   - Minimum parking rate requirements are based on the gross floor area of the proposed building(s). The applicable rate is:
     - 0.8 spaces per 100 m^2 for the first 5000 m^2 and 0.4 spaces per 100 100 m^2 for the remainder.

     Note: If the office only services the warehouse on-site, you can rely on the above parking rate. However, if the office serves other locations, staff will request that the parking calculation is separated for the warehouse use and office use by applying the applicable minimum parking rates.

6. Accessible parking spaces will be required. The number of required Type A and Type B spaces will depend on the total number of provided parking spaces. Refer to Section 3.0 of the City's Accessibility Design Standards for more information.

7. Consider the following City Guidelines through the design development process:

- Bird-Safe Design Guidelines
- Tree Planting in Sensitive Marine Clay Soils – 2017 Guidelines.

8. Preliminary Site Plan Comments:

    a) As shown in the meeting, explore opportunities to incorporate additional soft landscaping in the surface parking lot (i.e., perimeter and interior landscaped areas).

    b) Staff recommend planting trees around the amenity area to create a comfortable environment for users.

    c) Denote the snow storage areas on the site plan and landscape plan.

    Locate snow storage areas in strategic locations given the amount of surface parking. If the applicant identifies parking spaces for snow storage, please note that the spaces cannot contribute to the minimum required parking count.

    d) Denote the waste management area on the site plan and landscape plan.

    Section 110(3) of the Zoning By-law includes specific provisions for waste management areas contained within a parking lot.

    e) Include the aisle width dimensions within the parking lot, including the loading space. Please note that the aisle width of the loading space will depend on the angle to turn into the loading space.

    f) Ensure that the site plan includes the relevant content as per the City's Terms of Reference

If you have any questions regarding the above comments, please contact Siobhan Kelly, Planner I, at siobhan.kelly@ottawa.ca

Urban Design Comments

9. This looks to be an existing project, especially if the architecture and landscape design work together. Staff appreciate the inclusion of future phases outlined on the plans.

10. Consider shifting some of the parking spaces to establish a great landscape area along Leitrim and Gastops Street. This will help signify the building entrance and sense of arrival to the site. Understandably some stalls are needed for visitors but a few of the stalls in the front yard setback adjacent to Leitrim and a few along Gastops should be shifted giving a greater presence to the building entrance.

11. Please include architectural treatments and features at the northeast corner of the building (viewable from Limebank and Leitrim). Even though it is not the main entrance corner, the building should have a strong street presence.

12. For the façade facing Limebank, please include windows when possible. Where blank facades cannot be avoided, utilize landscape elements to break up the building wall.

13. Larger landscape islands are supported and where possible, include pedestrian links from the surface parking stalls to main entrances in a logical desire line.

14. Please provide bicycle parking stalls near entrances and preferably covered stalls.

15. Will there be a sidewalk along Gastops? If so, please provide clear pedestrian connections to the main entrances.

16. Please provide as many trees as possible, great opportunity along the Limebank Road frontage.

17. Refer to the attached list of prohibited plant material for projects within the airport influence zones.

18. In the next submission, please provide more information on the adjacent site conditions.

19. Submission Requirements:

    a) An Urban Design Brief is required. Refer to the attached customized Terms of Reference to guide the preparation.

       Note: the Urban Design Brief should follow the structure of the headings highlighted under Section 3 – Contents of these Terms of Reference.

    b) Attendance at the Urban Design Review Panel is not required.

    c) Additional drawings are required as identified on the attached Study and Plan Identification List (SPIL). Please follow the associated Terms of References when preparing the drawings. (Planning application submission information and materials | City of Ottawa

If you have any questions regarding the above comments, please contact Molly Smith, Planner II Urban Design, at molly.smith@ottawa.ca

Engineering Comments

20. The site is a part of a larger subdivision at 3700 Twin Falls carried out by Riverside South Development Corporation (RSDC).

    a. Stormwater Management Criteria (quantity and quality control) is to follow the design laid out in the subdivision's adequacy of public services report (APSR), design brief and the in the Mosquito Creek Infrastructure Servicing Study Update (ISSU).

i. On-site quality control at an enhanced level is required (80% TSS removal). Details can be found in the APSR.

ii. The maximum allowable release rate from the site is 54 L/s (per the subdivision design brief). Runoff outlet is roadside ditches along Gastops Street.

iii. Interim and ultimate conditions need to be considered (the ultimate condition is the urbanized future Leitrim Road). Refer to APSR for details.

iv. The use of LIDs is to be considered for this site. The City will be releasing a technical bulletin that will go into detail about the applications of LIDs within the next few weeks (today being May 24th).

b. For water and sanitary connections, there are existing stubs coming into the southeast side of the site from Limebank. These can be used, however, the watermain that the stub connects to along Limebank is inactive and would need to be recommissioned.

c. A sanitary monitoring manhole is required at an accessible location on private property.

d. Water Boundary condition requests must include the location of the service (map or plan with connection location(s) indicated) and the expected loads required by the proposed development, including calculations. Please provide the following information:

i. Location of service

ii. Type of development

iii. The amount of fire flow required (per OBC or FUS).

iv. Average daily demand: ___ l/s.

v. Maximum daily demand: ___l/s.

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

21. An MECP ECA is not anticipated to be required for this site.

Feel free to contact Reed Adams, Project Manager, for follow-up questions.

Transportation Comments

22. A noise study is required due to the office use.

23. Please ensure that the following right-of-way protections are shown on the site plan:

a) See Schedule C16 of the Official Plan.

b) Any requests for exceptions to ROW protection requirements must be discussed with Transportation Planning and concurrence provided by Transportation Planning management.

The new required corner triangle dimensions will be embedded within Schedule C16 of the OP. Until then here are the requirements at all intersection types:

- Arterial/Arterial: overlapping 5m x 15m triangles
- Arterial/Collector: overlapping 5m x 15m triangles
- Collector/Collector: overlapping 5m x 15m triangles
- Arterial/Local: 3m x 9m with the longer dimension along the arterial road
- Collector/Local: 3m x 9m with the longer dimension along the collector road
- Local/Local: 3m x 3m
- Lane/Local: 3m x 3m

Note: Any exceptions to the above requirements requires approval from Transportation Planning – Max Walker from Transportation Policy & Networks.

24. A Transportation Impact Assessment (TIA) is required as per included screening form. Please submit step 2 (i.e., scoping report) 14 days prior to the Phase 3 pre-consultation submission.

25. Transportation staff have no concerns with the two accesses proposed on Gastops Street.

If you have any questions regarding the above comments, please contact **Mike Giampa**, Transportation Project Manager, at mike.giampa@ottawa.ca

Environment Planning Comments

26. There are no natural heritage features, surface water features, or species at risk habitat on or near the site that would trigger the need for an Environmental Impact Statement (EIS). Though no EIS is required for this submission, there are some minor considerations from the EIS for the subdivision application that are applicable here.

    a. Pollinator gardens, stocked with milkweed to provide food for monarch butterflies (among other plants), should be constructed. The EIS suggests that these should be “planted adjacent to parking lots to provide native vegetation as well as an opportunity for infiltration of stormwater run off to minimize erosion within the adjacent valleylands.” This should be considered, but locations not adjacent to parking lots would also be welcome.

    b. Consideration should be given to the landscaping and maintenance procedures with regard to the impacts on monarch butterflies. Per the EIS: “Pesticide use should be limited or avoided, when possible, in landscape maintenance to reduce risk of exposure to Monarch.” The main pesticide group to avoid using is neonicitinoids.

27. Additional tree plantings wherever possible should be considered. The City prefers that all plantings be of native and non-invasive species.

28. The Bird Safe Design Guidelines will apply here, which has some implications for the design of the structure itself.

29. This area is in the Airport Bird Hazard Zone, which affects what types of vegetation can be planted. A list of tree species to avoid will be provided.

If you have questions regarding the above comments, please contact Mark Elliott, Environmental Planner at mark.elliott@ottawa.ca

Forestry Planning Comments

30. The City of Ottawa is working towards a 40% canopy cover target. Staff expect the applicant to prioritize the planting of large canopy native species with this development application.

31. Section 4.1.4 of the Official Plan lists surface parking lot design requirements. This includes landscaping requirements for the right of way around the perimeter of parking lots and includes regular spacing of tree islands that support the growth of mature shade trees.

32. Staff do not recommend that the applicant plant trees in areas planned for future expansion. Instead, focus on planting areas that can foster long term tree growth and health, including the large expanses of greenspace and the property perimeter.

33. Staff recommend planting trees around the amenity area to provide shade and encourage use in the warmer months.

34. A Tree Conservation Report (TCR) is required. Staff adapted the following TCR requirements from Schedule E of the Urban Tree Protection Guidelines.

    a) Any tree 10 cm in diameter or greater and City-owned trees of any diameter requires a tree permit issued under the Tree Protection Bylaw (Bylaw 2020 – 340); the permit will be based on an approved TCR and made available at or near plan approval.

    b) The TCR must contain 2 separate plans/maps:

        - Plan/Map 1 - showing existing conditions with tree cover information.

        - Plan/Map 2 - showing proposed development with tree cover information

    c) The TCR must list all trees on site and off-site trees if the Critical Root Zone (CRZ) extends into the developed area. The TCR must identify the trees by species, diameter, and health condition. Please note that averages can be used if there are forested areas.

    d) Identify trees by ownership – private onsite, private on adjoining site, city owned, co-owned (trees on a property line)

    e) If trees are to be removed, the TCR must clearly show where they are and document the reason retention is not possible.

f) The removal of trees on a property line will require the permission of both property owners.

g) All retained trees must be shown, and all retained trees within the area impacted by the development process must be protected as per City guidelines available at Tree Protection Specification or by searching Ottawa.ca

h) Staff encourage the retention of healthy trees. Where possible, seek opportunities for tree retention that contributes to the design/function of the site.

i) Removal of a City tree is not permitted unless justified. If justified, monetary compensation for the value of the tree must be paid before a tree removal permit is issued.

35. Landscape Plan Requirements:

a) The landscape plan must adhere to the City's Landscape Plan Terms of Reference

36. Additional elements for tree planting in the right-of-way:

a) Please ensure any retained trees are shown on the landscape plan.

b) The site is impacted by sensitive marine clay. Please follow the City's Tree Planting in Sensitive Marine Clay Soils Guidelines.

c) Where possible, prioritize planting native species as it increases the probability of survival to maturity.

d) Staff encourage all applicants to contribute to the city's future tree canopy cover at the site level by planting and retaining existing trees. The landscape plan must show/document that the proposed planting will contribute to the overall canopy cover over time. Please also provide a 40-year projection of the site's canopy

37. Minimum Planting Setbacks:

- Maintain a 1.5 m distance from a sidewalk, multi-use path (MUP)/cycle track, or water service laterals.
- Maintain 2.5 m from curbs
- Coniferous species require a minimum 4.5m setback from curb, sidewalk, or MUP/cycle track/pathway.
- Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing, except where otherwise approved in naturalization / afforestation areas.
- Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.

38. Tree specifications:

- Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.
- Maximize the use of large deciduous species wherever possible to maximize future canopy coverage.
- Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; and if possible, include watering and warranty as described in the specification.
- No root barriers, dead-man anchor systems, or planters are permitted.
- No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)

39. Hard surface planting

- If there are hard surface plantings, a planting detail must be provided.
- Curb style planters are highly recommended.
- No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.
- Trees are to be planted at grade.
- Soil Volume - Please demonstrate as per the Landscape Plan Terms of Reference that the available soil volumes for new plantings will meet or exceed the minimum soil volumes requested.

If you have questions regarding the above comments, please contact Hayley Murray, Planning Forester, at hayley.murray@ottawa.ca

Parks and Facilities Planning Comments

40. All parkland dedication requirements for the site are being addressed through the Phase 1 subdivision agreement for the current draft plan of subdivision application for 3700 Twin Falls Place and 4020 Spratt Road, File No. D07-16-22-0014.

If you have any questions, please contact Burl Walker, Parks Planner, at burl.walker@ottawa.ca

RVCA Comments

41. The RVCA did not provide comments on the Phase 1 pre-consultation submission.

Other Comments

42. The High-Performance Development Standard (HPDS) is a collection of voluntary and required standards that raise the performance of new building projects to achieve sustainable and resilient design. The HPDS was passed by Council on April 13, 2022.

    Currently, the HPDS is not in effect and Council has referred the 2023 HPDS Update Report back to staff with direction to bring forward an updated report to Committee with recommendations for revised phasing timelines, resource requirements and associated amendments to the Site Plan Control By-law by no later than Q1 2024. Refer to the HPDS information at ottawa.ca/HPDS.

Submission Requirements

1. The attached **Study and Plan Identification List** outlines the information and material that has been identified as either required (R) or advised (A) as part of a future complete application submission.

   The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.

2. Address all the comments to ensure the effectiveness of the application submission review.

3. The 2024 Planning Application Fees are outlined on the City's website: https://ottawa.ca/en/planning-development-and-construction/residential-property-regulations/development-application-review-process/development-application-submission/development-applications/site-plan-control

Should there be any questions, please do not hesitate to contact myself or the contact identified for the above disciplines.

Regards,

Siobhan Kelly
Planner I
Development Review, South
Planning, Development and Building Code Services Department

Attached: Study and Plan Identification List
List of Technical Agencies to Consult
List of Prohibited Species in the Airport Zones
Urban Design Brief Terms of Reference
Pre-Consultation Supplementary Development Information

cc. Reed Adams, Infrastructure Project Manager
Molly Smith, Planner II Urban Design
Mark Elliott, Planner II Environnemental Planning
Mike Giampa, Transportation Project Manager
Hayley Murray, Forester
Burl Walker, Parks Planner

APPENDIX C
WATERMAIN CALCULATIONS

CO-24-2748 - Gastops LTD. Headquarters - Water Demands

Project:	Gastops LTD. Headquarters
Project No.:	CO-24-2748
Designed By:	RP
Checked By:	AG
Date:	November 20, 2024
Site Area:	2.41 gross ha

Commercial 6859 m2

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	280	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m² /d
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Park with no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d

AVERAGE DAILY DEMAND	Residential	0.00	L/s
	Commercial/ Industrial / Institutional	0.22	L/s

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	9.5	x avg. day	L/c/d
Industrial	1.5	x avg. day	L/gross ha/d
Commercial	1.5	x avg. day	L/gross ha/d
Institutional	1.5	x avg. day	L/gross ha/d

MAXIMUM DAILY DEMAND	Residential	0.00	L/s
	Commercial/ Industrial / Institutional	0.33	L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT		UNITS
Residential	14.3	x avg. day	L/c/d
Industrial	1.8	x max. day	L/gross ha/d
Commercial	1.8	x max. day	L/gross ha/d
Institutional	1.8	x max. day	L/gross ha/d

MAXIMUM HOUR DEMAND	Residential	0.00	L/s
	Commercial/ Industrial / Institutional	0.60	L/s

WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

AVERAGE DAILY DEMAND	0.22	L/s
MAXIMUM DAILY DEMAND	0.33	L/s
MAXIMUM HOUR DEMAND	0.60	L/s

CO-24-2748 - Gastops LTD. Headquarters - OBC Fire Calculations

Project:	Gastops LTD. Headquarters
Project No.:	CO-24-2748
Designed By:	RP
Checked By:	AG
Date:	November 20, 2024

Ontario 2006 Building Code Compendium (Div. B - Part 3)

Water Supply for Fire-Fighting - Store/Office & Warhouse Building

Building is classified as Group : D, E and F2 up to 2 Storeys (from table 3.2.2.55)
Building is of noncombustible construction with fire separations and fire-resistance ratings provided in accordance with subsections 3.2.2., including loadbearing walls, columns and arches

From Div. B A-3.2.5.7. of the Ontario Building Code - 3. Building On-Site Water Supply:

(a) Q = K x V x Stot

where:

Q = minimum supply of water in litres

K = water supply coefficient from Table 1

V = total building volume in cubic metres

Stot = total of spatial coefficient values from the property line exposures on all sides as obtained from the formula:

Stot = 1.0 + [Sside1+Sside2+Sside3+..etc.]

K	17	(from Table 1 pg A-31) (Worst case occupancy {E/ F2} 'K' value used)
V	27,436	(Total building volume in m³.)
Stot	1.0	(From figure 1 pg A-32)
Q =	466,412.00 L	

From Figure 1 (A-32)

Snorth	70	m	0.0
Seast	740	m	0.0
Ssouth	480	m	0.0
Swest	42	m	0.0

* approximate distances

From Table 2: Required Minimum Water Supply Flow Rate (L/s)

9000 L/min if Q > 270,000 L — Use FUSper 4.2.11
2378 gpm

CO-24-2748 - Gastops LTD. Headquarters - Fire Underwriters Survey

Project:	Gastops LTD. Headquarters
Project No.:	CO-24-2748
Designed By:	RP
Checked By:	CM
Date:	November 20, 2024

From the Fire Underwriters Survey (2020)

From Part II – Guide for Determination of Required Fire Flow Copyright I.S.O.:
City of Ottawa Technical Bulletin ISTB-2018-02 Applied Where Applicable

A. BASE REQUIREMENT (Rounded to the nearest 1000 L/min)

F = 220 x C x √A Where: F = Required fire flow in liters per minute
C = Coefficient related to the type of construction.
A = The total floor area in square meters (including all storey's, but excluding basements at least 50 percent below grade) in the building being considered.

Construction Type Non-Combustible Construction

C	0.8	A	6,859.0 m^2
	Total Floor Area (per the 2020 FUS Page 20 - Total Effective Area)		6,859.0 m^2
Calculated Fire Flow			14,576.2 L/min
			15,000.0 L/min

B. REDUCTION FOR OCCUPANCY TYPE (No Rounding)

From Page 24 of the Fire Underwriters Survey:

Combustible	0%	
Fire Flow		15,000.0 L/min

C. REDUCTION FOR SPRINKLER TYPE (No Rounding)

Fully Supervised Sprinklered	-50%	
Reduction		-7,500.0 L/min

D. INCREASE FOR EXPOSURE (No Rounding)

	Separation Distance (m)	Cons.of Exposed Wall	Length Exposed Adjacent Wall (m)	Height (Stories)	Length-Height Factor	
Exposure 1	Over 30 m	Fire Resistive - Non Combustible (Unprotected Openings)	20	1	20.0	0%
Exposure 2	Over 30 m	Wood frame	20	1	20.0	0%
Exposure 3	Over 30 m	Ordinary - Mass Timber (Unprotected)	20	1	20.0	0%
Exposure 4	Over 30 m	Wood frame	20	2	40.0	0%
					% Increase*	0%

Increase*	0.0 L/min

E. Total Fire Flow (Rounded to the Nearest 1000 L/min)

Fire Flow	7,500.0 L/min
Fire Flow Required**	8,000.0 L/min

*In accordance with Part II, Section 4, the Increase for separation distance is not to exceed 75%
**In accordance with Section 4 the Fire flow is not to exceed 45,000 L/min or be less than 2,000 L/min

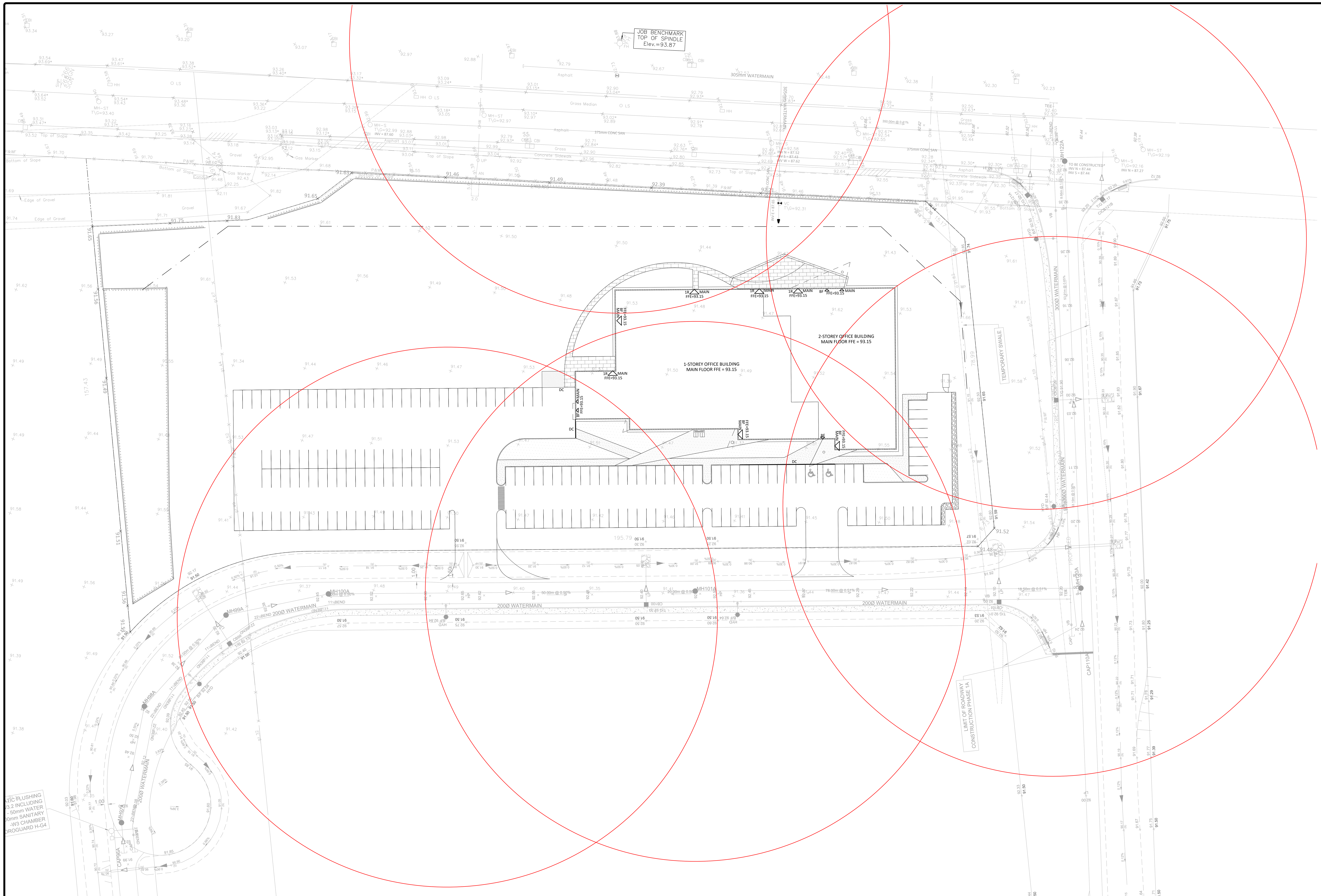
CO-24-2748 - Gastops LTD. Headquarters - Boundary Condition Unit Conversion

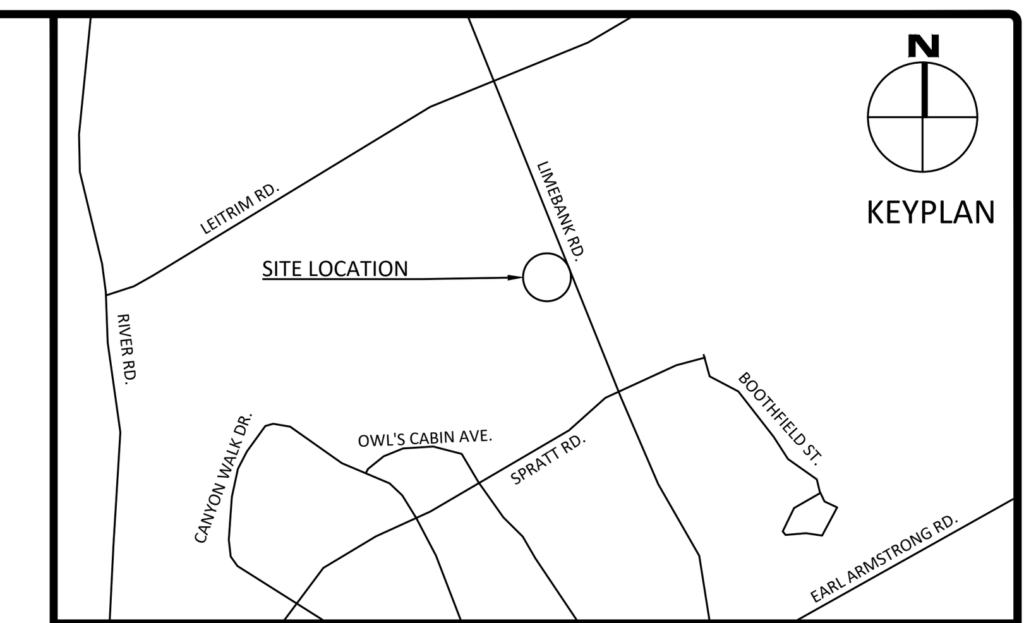
Project:	Gastops LTD. Headquarters
Project No.:	CO-24-2748
Designed By:	RP
Checked By:	CM
Date:	November 20, 2024

Boundary Conditions Unit Conversion

*Limebank & Spratt

Scenario	Height (m)	Elevation (m)	m H_2O	PSI	kPa
Avg. DD	147.00	91.00	56.00	79.68	549.36
Fire Flow (133 L/s or 8,000 L/min)	144.90	91.00	53.90	76.69	528.76
Peak Hour	145.60	91.00	54.60	77.68	535.63





LEGEND

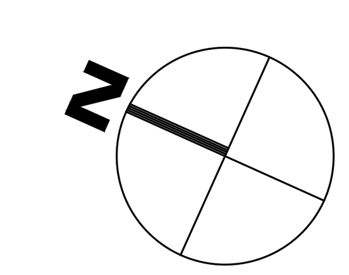
- LEGAL BOUNDARY
- EXISTING FENCE
- EXISTING STORM STRUCTURE
- EXISTING CATCHBASIN
- EXISTING SANITARY STRUCTURE
- EXISTING FIRE HYDRANT
- EXISTING VALVE & VALVE BOX
- EXISTING HYDRO POLE — H.P.
- EXISTING HYDRO
- EXISTING UTILITIES — HBCG
- EXISTING ELEVATION — ×99.00
- PROPOSED STORM MANHOLE
- PROPOSED STORM CATCHBASIN MH
- PROPOSED SANITARY STRUCTURE
- PROPOSED WATER VALVE/HYDRANT
- PROPOSED CURB OUTLET PER OPSD 604.010
- PROPOSED FINISHED GROUND ELEVATION — ×99.00
- PROPOSED TOP OF WALL ELEVATION — ×99.00TW
- PROPOSED BOTTOM OF WALL ELEVATION — ×99.00BW
- PROPOSED DITCH ELEVATION — ×99.00(D)
- PROPOSED SWALE ELEVATION — ×99.00(S)
- PROPOSED SLOPE — 1.0%
- PROPOSED TERRACING (3:1 MAX)
- PROPOSED BARRIER CURB
- PROPOSED RETAINING WALL
- PROPOSED DRAINAGE SWALE
- PROPOSED CONCRETE SIDEWALK
- ENTRY/EXIT LOCATION, ELEVATION & LEVEL — BF,1R, OH MAIN,L1 FFE=74.40
  BF = BARRIER FREE
  1R = ONE RISER, OH = OVERHEAD DOOR

No.	Revisions	Date

Check and verify all dimensions before proceeding with the work — Do not scale drawings

SCALE 1 : 500 (0 10 20 30 40 50 Metres)

egis



Stamp:

Client:
CSV ARCHITECTS
190 O'CONNOR ST, SUITE 100
OTTAWA, ON

Project:
GASTOPS LTD. HEADQUARTERS
RIVERSIDE SOUTH BUSINESS PARK,
OTTAWA, ON

Drawing Title:
HYDRANT SKETCH

Scale: 1:500	Project Number: CO-24-2748
Drawn By: RP	
Checked By: CM	Drawing Number: HYD
Designed By:	

D07-00-000

#18662

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

FILENAME: U:\Ottawa\01 Project - Proposals\2024 Jobs\CCO\CCO-24-2748 CSV_Gastops Ltd. World HQ_Riverside South Business Park\12 - Drawings\CO-24-2748 - Design_2.dwg
LAST SAVED: Tuesday, November 19, 2024 LAST SAVED BY: r.pickard
LAST PLOTTED: Wednesday, November 20, 2024 CTB FILE USED: ----

Boundary Conditions
3700 Twin Falls Place

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	16	0.26
Maximum Daily Demand	23	0.39
Peak Hour	42	0.70
Fire Flow Demand #1	8,000	133.33

Location

Results

Existing Conditions

Connection 1 – Limebank & Spratt

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	132.2	57.5
Peak Hour	125.0	47.4
Max Day plus Fire Flow #1	125.0	47.4

[1] Ground Elevation = 91.7 m

Future SUC

Connection 1 – Limebank & Spratt

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	147.0	78.6
Peak Hour	144.9	75.6
Max Day plus Fire Flow #1	145.6	76.6

[1] Ground Elevation = 91.7 m

Notes

1. Typically, water boundary result is provided off the public looped watermains, not the dead-end main. Thus, demands for proposed Connection 1 at existing water main along Limebank Rd. were assigned to upstream junction at Spratt & Limebank intersection. The engineer must calculate head loss off the dead-end main.

Disclaimer

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

APPENDIX D
SANITARY CALCULATIONS

CCO-24-2748 - Gastops LTD. Headquarters - Sanitary Demands

Project:	Gastops LTD. Headquarters
Project No.:	CCO-24-2748
Designed By:	RP
Checked By:	AG
Date:	November 20, 2024

Site Area	2.41	Gross ha
Office Space	6859	m^2

DESIGN PARAMETERS

Institutional/Commercial Peaking Factor	1.5	
Residential Peaking Factor	3.80	* Using Harmon Formula = 1+(14/(4+P^0.5))* 0.8 where P = population in thousands, Harmon's Correction Factor = 0.8
Mannings coefficient (n)	0.013	
Demand (per capita)	280	L/day
Infiltration allowance	0.33	L/s/Ha

EXTRANEOUS FLOW ALLOWANCES

Infiltration / Inflow	Flow (L/s)
Dry	0.12
Wet	0.67
Total	0.80

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS	POPULATION / AREA	Flow (L/s)
Residential	280	L/c/d		0
Industrial - Light**	35,000	L/gross ha/d		0
Industrial - Heavy**	55,000	L/gross ha/d		0
Commercial / Amenity	2,800	L/(1000m²/d)	6859	0.22
Restaurant	125	L/(9.2m²/d)		0
Schools	70	L/(Student/d)		0
Trailer Parks no Hook-Ups	340	L/(space/d)		0
Trailer Park with Hook-Ups	800	L/(space/d)		0
Campgrounds	225	L/(campsite/d)		0
Mobile Home Parks	1,000	L/(Space/d)		0
Motels	150	L/(bed-space/d)		0
Hotels	225	L/(bed-space/d)		0
Office	75	L/7.0m^2/d		0
Tourist Commercial	28,000	L/gross ha/d		0
Other Commercial	28,000	L/gross ha/d		0

AVERAGE RESIDENTIAL FLOW	0.00	L/s
PEAK RESIDENTIAL FLOW	0.00	L/s
AVERAGE ICI FLOW	0.22	L/s
PEAK INSTITUTIONAL/ COMMERCIAL FLOW	0.33	L/s
PEAK INDUSTRIAL FLOW	0.00	L/s
TOTAL PEAK ICI FLOW	0.33	L/s

TOTAL SANITARY DEMAND

TOTAL ESTIMATED AVERAGE DRY WEATHER FLOW	0.34	L/s
TOTAL ESTIMATED PEAK DRY WEATHER FLOW	0.45	L/s
TOTAL ESTIMATED PEAK WET WEATHER FLOW	1.13	L/s

SANITARY SEWER DESIGN SHEET

PROJECT: CCO-24-2748
LOCATION: GASTOPS ST.
CLIENT: CSV

LOCATION				RESIDENTIAL									ICI AREAS							INFILTRATION ALLOWANCE			FLOW	SEWER DATA						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	**22**	23	24	25	26	27	28	29	30	**31**
STREET	AREA ID	FROM	TO	UNIT TYPES				AREA	POPULATION		PEAK FACTOR	PEAK FLOW (L/s)	AREA (ha)						PEAK FLOW (L/s)	AREA (ha)		FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	DIA (mm)	SLOPE (%)	VELOCITY (full) (m/s)	AVAILABLE CAPACITY	
				SF	SD	TH	APT	(ha)	IND	CUM			INSTITUTIONAL		COMMERCIAL		INDUSTRIAL			IND	CUM								L/s	(%)
													IND	CUM	IND	CUM	IND	CUM											
Street No. 1	A-1	Building	MH1A									0.00		0.00	0.69	0.69		0.00	0.33	2.41	2.41	0.80	1.13	27.52	8.82	150	3.00	1.509	26.39	95.90

Design Parameters:

Residential			ICI Areas			
						Peak Factor
SF	3.4	p/p/u				
TH/SD	2.7	p/p/u	INST	28,000	L/Ha/day	1.5
APT	2.3	p/p/u	COM	28,000	L/Ha/day	1.5
Other	60	p/p/Ha	IND	35,000	L/Ha/day	MOE Chart

Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 280 L/day
3. Infiltration allowance: 0.33 L/s/Ha
4. Residential Peaking Factor:
Harmon Formula = 1+(14/(4+P^0.5)*0.8)
where P = population in thousands

Designed: RP

Checked: AG

Project No.: CCO-24-2748

No.	Revision	Date
1.	Submission No. 1	9/12/2024

Sheet No:
1 of 1

APPENDIX E
STORMWATER CALCULATIONS

CO-24-2748 - Gastops Ltd - SWM Calculations

Tc (min)	Intensity (mm/hr) 2-Year	5-Year	100-Year	
20	51.6	70.3	120.0	PRE-DEVELOPMENT
10	76.5	104.2	178.6	POST-DEVELOPMENT

C-Values	
Impervious	0.90
Gravel	0.60
Pervious	0.20

Pre-Development Runoff Coefficient

Drainage Area	Impervious Area (m^2)	Gravel (m^2)	Pervious Area (m^2)	Average C (2-year)	Average C (5-year)	Average C (100-year)
A1	0	682	23,018	0.21	0.21	0.26

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C 2-Year	C 5-Year	C 100-Year	Tc (min)	Q (L/s) 2-Year	5-Year	100-Year
A1	2.37	0.21	0.21	0.26	10	71.89	97.90	208.95

Post-Development Runoff Coefficient

Drainage Area	Impervious Area (m^2)	Gravel (m^2)	Pervious Area (m^2)	Average C (2-year)	Average C (5-year)	Average C (100-year)
B1	2,820	0	2,752	0.55	0.55	0.63
B2	3,355	0	0	0.90	0.90	1.00
B3	7,245	0	5,956	0.58	0.58	0.66
B4	0	0	938	0.20	0.20	0.25
B5	0	0	634	0.20	0.20	0.25

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C 2-Year	C 5-Year	C 100-Year	Tc (min)	Q (L/s) 2-Year	5-Year	100-Year	
B1	0.557	0.55	0.55	0.63	10	65.69	89.46	174.14	Restricted South East
B2	0.336	0.90	0.90	1.00	10	64.23	87.46	166.54	Restricted roof
B3	1.320	0.58	0.58	0.66	10	164.04	223.37	433.55	Restricted South West
B4	0.094	0.20	0.20	0.25	10	3.99	5.43	11.64	Unrestricted Limebank
B5	0.063	0.20	0.20	0.25	10	2.70	3.67	7.87	Unrestricted Gastops
Total	2.37					300.65	409.40	793.73	

Required Restricted Flow

Drainage Area	Area (ha)	Q (L/s)
A1	2.37	54.00

Post-Development Restricted Runoff Calculations

Drainage Area	Unrestricted Flow 2-year	5-year	100-Year	Restricted Flow 2-Year	5-Year	100-Year	Storage Required (m^3) 2-Year	5-Year	100-Year	Storage Provided (m^3) 2-Year	5-Year	100-Year
B1	65.69	89.46	174.14	8.76	9.29	11.58	45.61	68.8	155.3	48.0	71.3	156.9
B2	64.23	87.46	166.54	3.24	4.32	7.56	63.38	86.9	166.8	75.5	100.7	176.1
B3	164.04	223.37	433.55	8.25	9.92	12.80	161.46	227.2	487.8	175.1	238.8	495.9
B4	3.99	5.43	11.64	3.99	5.43	11.64						
B5	2.70	3.67	7.87	2.70	3.67	7.87						
Total	300.65	409.40	793.73	26.94	32.64	51.45	270.45	382.84	809.95	298.52	410.73	828.96

Storage Requirements for Area B1

2-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B1	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
5	102.6	88.09	8.76	79.33	23.80
15	61.0	52.37	8.76	43.61	39.25
25	44.5	38.21	8.76	29.45	44.17
35	35.5	30.48	8.76	21.72	45.61
45	29.8	25.59	8.76	16.83	45.43

Maximum Storage Required 2-year =	46	m^3

5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B1	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	89.46	9.29	80.17	48.10
25	60.9	52.29	9.29	43.00	64.50
40	44.2	37.95	9.29	28.66	68.78
55	35.1	30.14	9.29	20.85	68.79
70	29.4	25.24	9.29	15.95	67.00

Maximum Storage Required 5-year =	69	m^3

100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B1	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	174.18	11.58	162.60	97.56
20	120.0	117.03	11.58	105.45	126.54
30	91.9	89.62	11.58	78.04	140.48
40	75.1	73.24	11.58	61.66	147.98
50	64.0	62.41	11.58	50.83	152.50
60	55.9	54.52	11.58	42.94	154.57
70	49.8	48.57	11.58	36.99	155.34
80	45.0	43.89	11.58	32.31	155.06
90	41.1	40.08	11.58	28.50	153.91
100	37.9	36.96	11.58	25.38	152.29

Maximum Storage Required 100-year =	155	m^3

2-Year Storm Event Storage Summary

		Water Elev. (m) =		91.8		
Location	INV. (in)	INV. (out)	Area (m^2)	Depth (m)	Head (m)	Volume (m^3)
MH5	X	90.85	130.8	X	0.80	48.0

Storage Available (m^3) =	48.0	*
Storage Required (m^3) =	45.6	

5-Year Storm Event Storage Summary

		Water Elev. (m) =		91.96		
Location	T/G	INV. (out)	Area (m^2)	Depth (m)	Head (m)	Volume (m^3)
MH5	X	90.85	160.9	X	0.96	71.3

Storage Available (m^3) =	71.3	*
Storage Required (m^3) =	68.8	

100-Year Storm Event Storage Summary

		Water Elev. (m) =		92.38		
Location	T/G	INV. (out)	Area (m^2)	Depth (m)	Head (m)	Volume (m^3)
MH5	X	90.85	253.3	X	1.38	156.9

Storage Available (m^3) =	156.9	*
Storage Required (m^3) =	155.3	

* Available Storage calculated from AutoCAD

IPEX LMF-105

Storage Requirements for Area B2

2-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B2	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	76.0	63.80	3.24	60.56	36.33
60	24.1	20.23	3.24	16.99	61.16
110	15.3	12.84	3.24	9.60	63.38
160	11.4	9.57	3.24	6.33	60.76
210	9.2	7.72	3.24	4.48	56.48

Maximum Storage Required 2-year =	63	m^3

5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B2	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	104.2	87.47	4.32	83.15	49.89
40	44.2	37.10	4.32	32.78	78.68
70	29.4	24.68	4.32	20.36	85.51
100	22.4	18.80	4.32	14.48	86.90
130	18.3	15.36	4.32	11.04	86.12

Maximum Storage Required 5-year =	87	m^3

100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B2	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	166.58	7.56	159.02	95.41
30	91.9	85.71	7.56	78.15	140.68
50	64.0	59.69	7.56	52.13	156.40
70	49.8	46.45	7.56	38.89	163.33
90	41.1	38.33	7.56	30.77	166.18
110	35.2	32.83	7.56	25.27	166.79
130	30.9	28.82	7.56	21.26	165.83
150	27.6	25.74	7.56	18.18	163.64
170	25.0	23.32	7.56	15.76	160.72
190	22.9	21.36	7.56	13.80	157.30

Maximum Storage Required 100-year =	167	m^3

2-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	2516.25	0.030	75.49

Storage Available (m^3) =	75.49
Storage Required (m^3) =	63.38

5-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	2516.25	0.040	100.65

Storage Available (m^3) =	100.65
Storage Required (m^3) =	86.90

100-Year Storm Event Storage Summary

Roof Storage			
Location	Area*	Depth	Volume (m^3)
Roof	2516.25	0.070	176.14

Storage Available (m^3) =	176.14
Storage Required (m^3) =	166.79

* Area is 75% of the total roof area

Roof Drain Flow (B2)

Roof Drains Summary			
Type of Control Device	Watts Drainage - Accutrol Weir		
Number of Roof Drains	9		
	2-Year	5-Year	100-Year
Rooftop Storage (m^3)	75.49	100.65	176.14
Storage Depth (m)	0.030	0.040	0.070
Flow (Per Roof Drain) (L/s)	0.36	0.48	0.84
Total Flow (L/s)	3.24	4.32	7.56

Flow Rate Vs. Build-Up (One Weir)	
Depth (mm)	Flow (L/s)
15	0.18
20	0.24
25	0.30
30	0.36
35	0.42
40	0.48
45	0.54
50	0.60
55	0.66

* Roof Drain model to be Accutrol Weirs, See attached sheets

* Roof Drain Flow information taken from Watts Drainage website

CALCULATING ROOF FLOW EXAMPLES

1 roof drain during a 5 year storm
elevation of water = 25mm
Flow leaving 1 roof drain = (1 x 0.30 L/s) = 0.30 L/s

1 roof drain during a 100 year storm
elevation of water = 50mm
Flow leaving 1 roof drain = (1 x 0.60 L/s) = 0.60 L/s

4 roof drains during a 5 year storm
elevation of water = 25mm
Flow leaving 4 roof drains = (4 x 0.30 L/s) = 1.20 L/s

4 roof drains during a 100 year storm
elevation of water = 50mm
Flow leaving 4 roof drains = (4 x 0.60 L/s) = 2.40 L/s

Roof Drain Flow		
Flow (l/s)	Storage Depth (mm)	Drains Flow (l/s)
0.18	15	1.62
0.24	20	2.16
0.30	25	2.70
0.36	30	3.24
0.42	35	3.78
0.48	40	4.32
0.54	45	4.86
0.60	50	5.40
0.66	55	5.94
0.72	60	6.48
0.78	65	7.02
0.84	70	7.56
0.90	75	8.10
0.96	80	8.64
1.02	85	9.18
1.08	90	9.72
1.14	95	10.26
1.20	100	10.80
1.26	105	11.34
1.32	110	11.88
1.38	115	12.42
1.44	120	12.96
1.50	125	13.50
1.56	130	14.04
1.62	135	14.58
1.68	140	15.12
1.74	145	15.66
1.80	150	16.20

Note: The flow leaving through a restricted roof drain is based on flow vs. head information

Storage Requirements for Area B3

2-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B3	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
0	166.0	355.88	8.25	347.63	0.00
50	27.6	59.17	8.25	50.92	152.76
100	16.4	35.16	8.25	26.91	161.46
150	12.0	25.73	8.25	17.48	157.29
200	9.6	20.58	8.25	12.33	147.97

Maximum Storage Required 2-year =	161	m^3

5-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B3	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
0	230.5	494.16	9.92	484.24	0.00
75	27.9	59.81	9.92	49.89	224.52
150	16.4	35.16	9.92	25.24	227.15
225	11.9	25.51	9.92	15.59	210.49
300	9.5	20.37	9.92	10.45	188.04

Maximum Storage Required 5-year =	227	m^3

100-Year Storm Event

Tc (min)	I (mm/hr)	Runoff (L/s) B3	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m^3)
10	178.6	433.65	12.80	420.85	252.51
85	43.0	104.41	12.80	91.61	467.19
160	26.2	63.61	12.80	50.81	487.82
235	19.3	46.86	12.80	34.06	480.27
310	15.5	37.63	12.80	24.83	461.93
385	13.0	31.56	12.80	18.76	433.46
460	11.3	27.44	12.80	14.64	403.98
535	10.0	24.28	12.80	11.48	368.52
610	9.0	21.85	12.80	9.05	331.32
685	8.1	19.67	12.80	6.87	282.24

Maximum Storage Required 100-year =	488	m^3

2-Year Storm Event Storage Summary

		Water Elev. (m) =		91.26		
Location	T/G	INV. (out)	Area (m^2)	Depth (m)	Head (m)	Volume (m^3)
MH6	X	90.91	1043.1	X	0.23	175.1

Storage Available (m^3) = 175.1 *
Storage Required (m^3) = 161.5

5-Year Storm Event Storage Summary

		Water Elev. (m) =		91.32		
Location	T/G	INV. (out)	Area (m^2)	Depth (m)	Head (m)	Volume (m^3)
MH6	X	90.91	1081.9	X	0.28	238.8

Storage Available (m^3) = 238.8 *
Storage Required (m^3) = 227.2

100-Year Storm Event Storage Summary

		Water Elev. (m) =		91.55		
Location	T/G	INV. (out)	Area (m^2)	Depth (m)	Head (m)	Volume (m^3)
MH6	X	90.93	1212.9	X	0.49	495.9

Storage Available (m^3) = 495.9 *
Storage Required (m^3) = 487.8

* Available Storage calculated from AutoCAD IPEX Type A

Time of Concentration Pre-Development

Drainage Area ID	Sheet Flow Distance (m)	Slope of Land (%)	Tc (min) (5-Year)	Tc (min) (100-Year)
A1	75	1.00	25	24

Therefore, a Tc of 20 can be used

Tc= (3.26(1.1-c)L^0.5/S^0.33)

c = Balanced Runoff Coefficient

L = Length of drainage area

S = Average slope of watershed

STORM SEWER DESIGN SHEET

PROJECT: CCO-24-2748
LOCATION: Gastops St
CLIENT: CSV

LOCATION				CONTRIBUTING AREA (ha)				RATIONAL DESIGN FLOW										SEWER DATA								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
STREET	AREA ID	FROM MH	TO MH	C-VALUE	AREA	INDIV AC	CUMUL AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	5yr PEAK FLOW (L/s)	10yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm)			SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (5yr)	
																					DIA	W	H			(L/s)	(%)
	B1	CB1	CBMH1	0.84	0.15	0.13	0.13	10.00	0.15	10.15	104.19	122.14	178.56	36.86	43.21	63.17		36.86	41.15	7.30	250			0.44	0.812	4.29	10.43%
	B1	CB2	MAIN	0.86	0.11	0.09	0.09	10.00	0.16	10.16	104.19	122.14	178.56	27.40	32.12	46.96		27.40	36.70	7.00	250			0.35	0.724	9.30	25.34%
	B1	CB3	MAIN	0.90	0.08	0.07	0.07	10.16	0.19	10.35	103.35	121.15	177.10	20.69	24.25	35.45		20.69	36.70	8.40	250			0.35	0.724	16.02	43.64%
	B1	CBMH1	OGS1				0.29	10.15	1.91	12.06	103.41	121.22	177.20	84.48	99.03	144.76		84.48	91.46	92.14	375			0.25	0.802	6.98	7.63%
	B1	OGS1	MH2				0.29	12.06	0.02	12.08	94.42	110.64	161.66	77.14	90.38	132.07		77.14	304.42	3.30	375			2.77	2.670	227.29	74.66%
	B1	LCB6	LCB7	0.35	0.02	0.01	0.01	10.00	0.64	10.64	104.19	122.14	178.56	1.52	1.78	2.61		1.52	45.16	34.00	250			0.53	0.891	43.64	96.63%
	B1	LCB7	LCB8	0.35	0.07	0.03	0.03	10.64	0.53	11.17	100.95	118.32	172.95	8.58	10.05	14.69		8.58	48.06	30.20	250			0.60	0.948	39.48	82.16%
	B1	LCB8	LCB9	0.22	0.05	0.01	0.04	11.17	0.56	11.73	98.41	115.33	168.56	11.39	13.34	19.50		11.39	34.54	23.00	250			0.31	0.682	23.16	67.03%
	B1	LCB9	EPOND	0.20	0.06	0.01	0.05	11.73	0.45	12.17	95.87	112.34	164.16	14.29	16.75	24.47		14.29	44.30	23.40	250			0.51	0.874	30.01	67.74%
	B1	EPOND	MH2	0.20	0.03	0.01	0.35	10.00	0.04	10.04	104.19	122.14	178.56	102.59	120.26	175.80		102.59	105.81	3.70	300			1.10	1.450	3.22	3.04%
	B1	MH2	GASTOPSST				0.65	10.04	0.08	10.13	103.97	121.88	178.17	187.30	219.56	320.98	11.58	11.58	145.18	6.40	375			0.63	1.273	133.60	92.02%
	B2	BUILDING	GASTOPSST	1.00	0.34	0.34	0.34	10.00	0.37	10.37	104.19	122.14	178.56	97.18	113.92	166.54	7.56	97.18	123.55	38.00	300			1.50	1.693	26.37	21.35%
	B3	DICB1	OGS2	0.91	0.38	0.34	0.34	10.00	0.07	10.07	104.19	122.14	178.56	99.21	116.31	170.03		99.21	121.33	4.50	375			0.44	1.064	22.12	18.23%
	B3	OGS2	W POND				0.34	10.07	0.26	10.33	103.82	121.70	177.92	98.86	115.89	169.42		98.86	114.23	15.40	375			0.39	1.002	15.37	13.45%
	B3	LCB6	LCB5	0.25	0.07	0.02	0.02	10.00	0.75	10.75	104.19	122.14	178.56	5.34	6.26	9.15		5.34	33.98	30.00	250			0.30	0.671	28.64	84.29%
	B3	LCB5	LCB4	0.23	0.12	0.03	0.05	10.75	0.64	11.39	100.41	117.69	172.02	13.09	15.34	22.42		13.09	33.98	25.80	250			0.30	0.671	20.89	61.49%
	B3	LCB4	LCB3	0.20	0.16	0.03	0.08	11.39	0.64	12.03	97.40	114.14	166.80	21.19	24.84	36.30		21.19	33.98	25.80	250			0.30	0.671	12.79	37.63%
	B3	LCB3	LCB2	0.20	0.16	0.03	0.11	12.03	0.64	12.66	94.58	110.82	161.93	28.94	33.91	49.55		28.94	33.98	25.60	250			0.30	0.671	5.04	14.83%
	B3	LCB2	LCB1	0.20	0.12	0.02	0.13	12.66	0.55	13.21	91.95	107.73	157.39	34.27	40.15	58.66		34.27	55.26	24.90	300			0.30	0.757	20.98	37.97%
	B3	LCB1	LCB0	0.20	0.06	0.01	0.15	13.21	0.55	13.77	89.82	105.21	153.70	36.47	42.73	62.42		36.47	55.26	25.20	300			0.30	0.757	18.78	33.99%
	B3	LCB0	W POND	0.20	0.08	0.02	0.16	13.77	0.56	14.32	87.76	102.80	150.16	39.40	46.15	67.41		39.40	55.26	25.30	300			0.30	0.757	15.86	28.70%
	B3	W POND	MH1	0.20	0.27	0.05	0.56	10.00	0.04	10.04	104.19	122.14	178.56	161.37	189.17	276.55		161.37	212.41	2.80	450			0.51	1.294	51.04	24.03%
	B3	MH1	GASTOPS				0.56	10.04	0.15	10.18	104.00	121.92	178.23	161.08	188.83	276.04	12.80	12.80	55.26	6.70	300			0.30	0.757	42.46	76.83%

Definitions:
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 = 998.071 / (TC+6.053)^0.814] 5 YEAR
[i = 1174.184 / (TC+6.014)^0.816] 10 YEAR
[i = 1735.688 / (TC+6.014)^0.820] 100 YEAR

Notes:
1. Mannings coefficient (n) = 0.013

Designed:
RP

Checked:
AG

Project No.:
CCO-24-2748

No.	Revision	Date
1.	Submission 1	2/10/2025

Date: 2/10/2025

Sheet No: 1 of 1

Volume III: TEMPEST INLET CONTROL DEVICES

Municipal Technical Manual Series

SECOND EDITION

LMF (Low to Medium Flow) ICD

HF (High Flow) ICD

MHF (Medium to High Flow) ICD

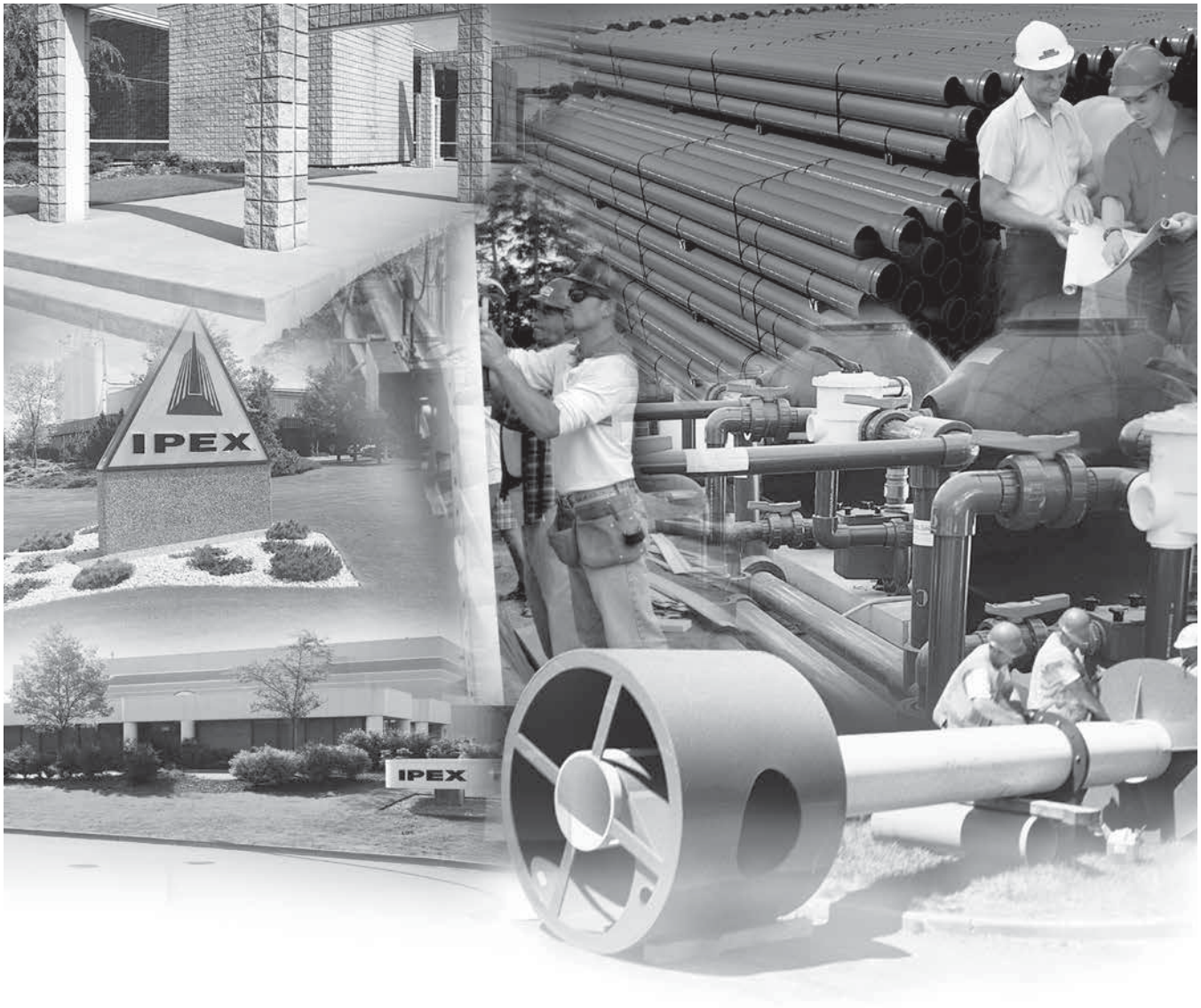
IPEX
by aliaxis

IPEX Tempest™ Inlet Control Devices

Municipal Technical Manual Series

Vol. I, 2nd Edition

For information contact: IPEX, Marketing,
1425 North Service Road East, Oakville, Ontario, Canada, L6H 1A7



ABOUT IPEX

At IPEX, we have been manufacturing non-metallic pipe and fittings since 1951. We formulate our own compounds and maintain strict quality control during production. Our products are made available for customers thanks to a network of regional stocking locations throughout North America. We offer a wide variety of systems including complete lines of piping, fittings, valves and custom-fabricated items.

More importantly, we are committed to meeting our customers' needs. As a leader in the plastic piping industry, IPEX continually develops new products, modernizes manufacturing facilities and acquires innovative process technology. In addition, our staff take pride in their work, making available to customers their extensive thermoplastic knowledge and field experience. IPEX personnel are committed to improving the safety, reliability and performance of thermoplastic materials. We are involved in several standards committees and are members of and/or comply with the organizations listed on this page.

For specific details about any IPEX product, contact our customer service department.

CONTENTS

PRODUCT INFORMATION: TEMPEST LOW, MEDIUM FLOW (LMF) ICD

Purpose

To control the amount of storm water runoff entering a sewer system by allowing a specified flow volume out of a catch basin or manhole at a specified head. This approach conserves pipe capacity so that catch basins downstream do not become uncontrollably surcharged, which can lead to basement floods, flash floods and combined sewer overflows.

Product Description

Our LMF ICD is designed to accommodate catch basins or manholes with sewer outlet pipes 6" in diameter and larger. Any storm sewer larger than 12" may require custom modification. However, IPEX can custom build a TEMPEST device to accommodate virtually any storm sewer size.

Available in 14 preset flow curves, the LMF ICD has the ability to provide flow rates: 2lps – 17lps (31gpm – 270gpm)

Product Function

The LMF ICD vortex flow action allows the LMF ICD to provide a narrower flow curve using a larger orifice than a conventional orifice plate ICD, making it less likely to clog. When comparing flows at the same head level, the LMF ICD has the ability to restrict more flow than a conventional ICD during a rain event, preserving greater sewer capacity.

Product Construction

Constructed from durable PVC, the LMF ICD is light weight 8.9 Kg (19.7 lbs).

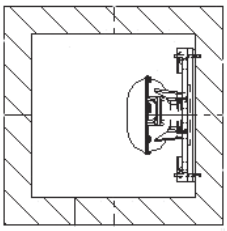
Product Applications

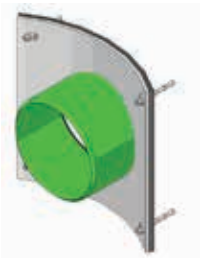
Will accommodate both square and round applications:

Square Application

Round Application

Universal Mounting Plate





+

Spigot CB Wall Plate

=

Universal Mounting Plate Hub Adapter

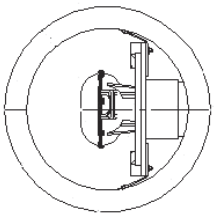


Chart 1: LMF 14 Preset Flow Curves

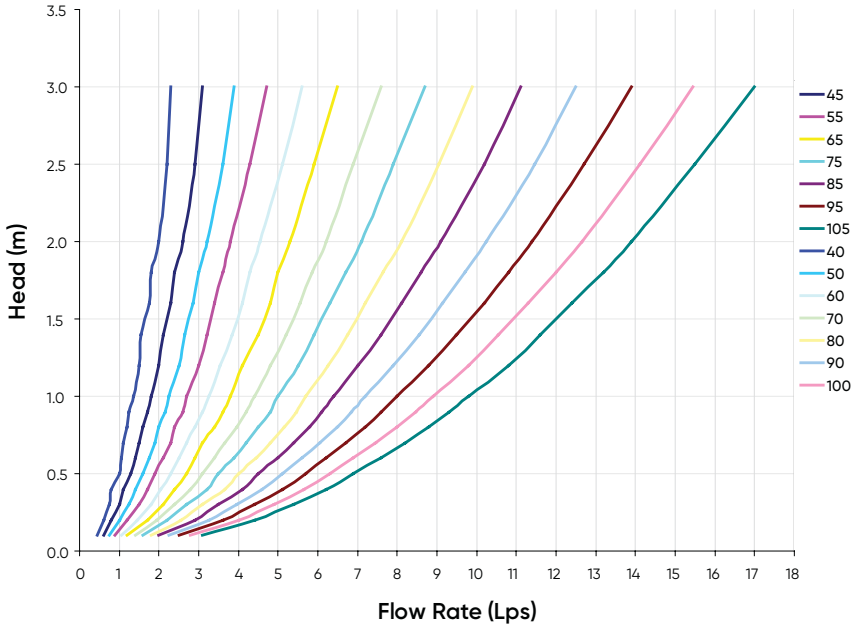
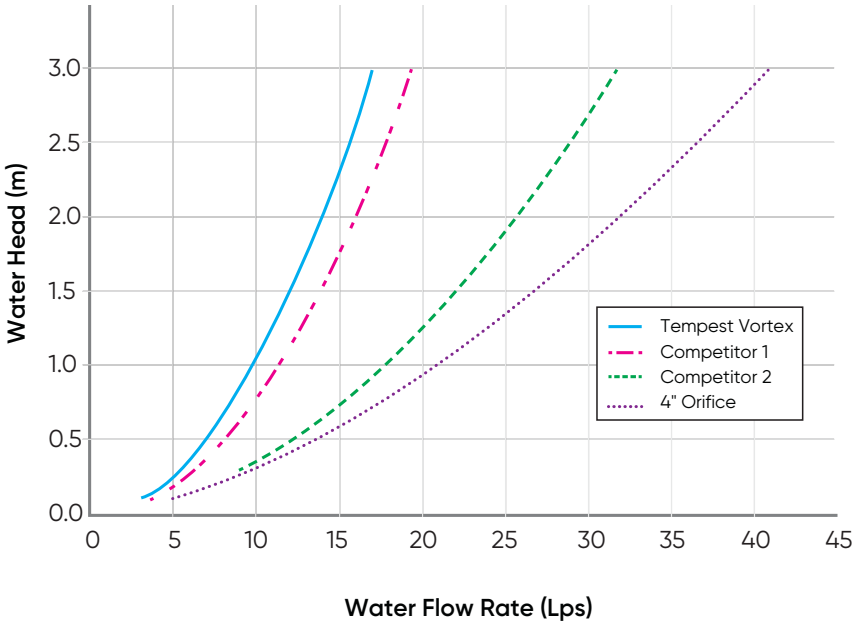


Chart 2: LMF Flow vs. ICD Alternatives



PRODUCT INSTALLATION

Instructions to assemble a TEMPEST LMF ICD into a Square Catch Basin:

STEPS:

1. Materials and tooling verification:
   - Tooling: impact drill, 3/8" concrete bit, torque wrench for 9/16" nut, hand hammer, level, and marker.
   - Material: (4) concrete anchor 3/8 x 3-1/2, (4) washers, (4) nuts, universal mounting plate, ICD device.
2. Use the mounting wall plate to locate and mark the hole (4) pattern on the catch basin wall. You should use a level to ensure that the plate is at the horizontal.
3. Use an impact drill with a 3/8" concrete bit to make the four holes at a minimum of 1-1/2" depth up to 2-1/2". Clean the concrete dust from the holes.
4. Install the anchors (4) in the holes by using a hammer. Thread the nuts on the top of the anchors to protect the threads when you hit the anchors with the hammer. Remove the nuts from the ends of the anchors.
5. Install the universal mounting plate on the anchors and screw the 4 nuts in place with a maximum torque of 40 N.m (30 lbf-ft). There should be no gap between the wall mounting plate and the catch basin wall.
6. From the ground above using a reach bar, lower the ICD device by hooking the end of the reach bar to the handle of the ICD device. Align the triangular plate portion into the mounting wall plate. Push down the device to be sure it has centered in to the universal mounting plate and has created a seal.

⚠ WARNING

- Verify that the outlet pipe doesn't protrude into the catch basin. If it does, cut down the pipe flush to the catch basin wall.
- Call your IPEX representative for more information or if you have any questions about our products.

Instructions to assemble a TEMPEST LMF ICD into a Round Catch Basin:

STEPS:

1. Materials and tooling verification.
   - Tooling: impact drill, 3/8" concrete bit, torque wrench for 9/16" nut, hand hammer, level and marker.
   - Material: (4) concrete anchor 3/8 x 3-1/2, (4) washers and (4) nuts, spigot CB wall plate, universal mounting plate hub adapter, ICD device.
2. Use the spigot catch basin wall plate to locate and mark the hole (4) pattern on the catch basin wall. You should use a level to ensure that the plate is at the horizontal.
3. Use an impact drill with a 3/8" concrete bit to make the four holes at a depth between 1-1/2" to 2-1/2". Clean the concrete dust from the holes.
4. Install the anchors (4) in the holes by using a hammer. Thread the nuts on the top of the anchors to protect the threads when you hit the anchors with the hammer. Remove the nuts from the ends of the anchors.
5. Install the CB spigot wall plate on the anchors and screw the 4 nuts in place with a maximum torque of 40 N.m (30 lbf-ft). There should be no gap between the spigot wall plate and the catch basin wall.
6. Apply solvent cement on the hub of the universal mounting plate, hub adapter and the spigot of the CB wall plate, then slide the hub over the spigot. Make sure the universal mounting plate is at the horizontal and its hub is completely inserted onto the spigot. Normally, the corners of the universal mounting plate hub adapter should touch the catch basin wall.
7. From ground above using a reach bar, lower the ICD device by hooking the end of the reach bar to the handle of the ICD device. Align the triangular plate portion into the mounting wall plate. Push down the device to be sure it has centered in to the mounting plate and has created a seal.

⚠ WARNING

- Verify that the outlet pipe doesn't protrude into the catch basin. If it does, cut back the pipe flush to the catch basin wall.
- The solvent cement which is used in this installation is to be approved for PVC.
- The solvent cement should not be used below 0°C (32°F) or in a high humidity environment. Refer to the IPEX solvent cement guide to confirm the required curing time or visit the IPEX Online Solvent Cement Training Course available at ipexna.com.
- Call your IPEX representative for more information or if you have any questions about our products.

NOTE: Do not use or test the products in this manual with compressed air or other gases including air-over-water-boosters

PRODUCT TECHNICAL SPECIFICATION

General

Inlet control devices (ICD's) are designed to provide flow control at a specified rate for a given water head level and also provide odour and floatable control. All ICD's will be IPEX Tempest or approved equal.

All devices shall be removable from a universal mounting plate. An operator from street level using only a T-bar with a hook will be able to retrieve the device while leaving the universal mounting plate secured to the catch basin wall face. The removal of the TEMPEST devices listed above must not require any unbolting or special manipulation or any special tools.

High Flow (HF) Sump devices will consist of a removable threaded cap which can be accessible from street level with out entry into the catchbasin (CB). The removal of the threaded cap shall not require any special tools other than the operator's hand.

ICD's shall have no moving parts.

Materials

ICD's are to be manufactured from Polyvinyl Chloride (PVC) or Polyurethane material, designed to be durable enough to withstand multiple freeze-thaw cycles and exposure to harsh elements.

The inner ring seal will be manufactured using a Buna or Nitrile material with hardness between Duro 50 and Duro 70.

The wall seal is to be comprised of a 3/8" thick Neoprene Closed Cell Sponge gasket which is attached to the back of the wall plate.

All hardware will be made from 304 stainless steel.

Dimensioning

The Low Medium Flow (LMF), High Flow (HF) and the High Flow (HF) Sump shall allow for a minimum outlet pipe diameter of 200mm with a 600mm deep Catch Basin sump.

Installation

Contractor shall be responsible for securing, supporting and connecting the ICD's to the existing influent pipe and catchbasin/manhole structure as specified and designed by the Engineer.

PRODUCT INFORMATION: TEMPEST HF & MHF ICD

Product Description

Our HF, HF Sump and MHF ICD's are designed to accommodate catch basins or manholes with sewer outlet pipes 6" in diameter or larger. Any storm sewer larger than 12" may require custom modification. However, IPEX can custom build a TEMPEST device to accommodate virtually any storm sewer size.

Available in 5 preset flow curves, these ICDs have the ability to provide constant flow rates: 9lps (143 gpm) and greater

Product Function

TEMPEST HF (High Flow): designed to manage moderate to higher flows 15 L/s (240 gpm) or greater and prevent the propagation of odour and floatables. With this device, the cross-sectional area of the device is larger than the orifice diameter and has been designed to limit head losses. The HF ICD can also be ordered without flow control when only odour and floatable control is required.

TEMPEST HF (High Flow) Sump: The height of a sewer outlet pipe in a catch basin is not always conveniently located. At times it may be located very close to the catch basin floor, not providing enough sump for one of the other TEMPEST ICDs with universal back plate to be installed. In these applications, the HF Sump is offered. The HF Sump offers the same features and benefits as the HF ICD; however, is designed to raise the outlet in a square or round catch basin structure. When installed, the HF sump is fixed in place and not easily removed. Any required service to the device is performed through a clean-out located in the top of the device which can be often accessed from ground level.

TEMPEST MHF (Medium to High Flow): The MHF plate or plug is designed to control flow rates 9 L/s (143 gpm) or greater. It is not designed to prevent the propagation of odour and floatables.

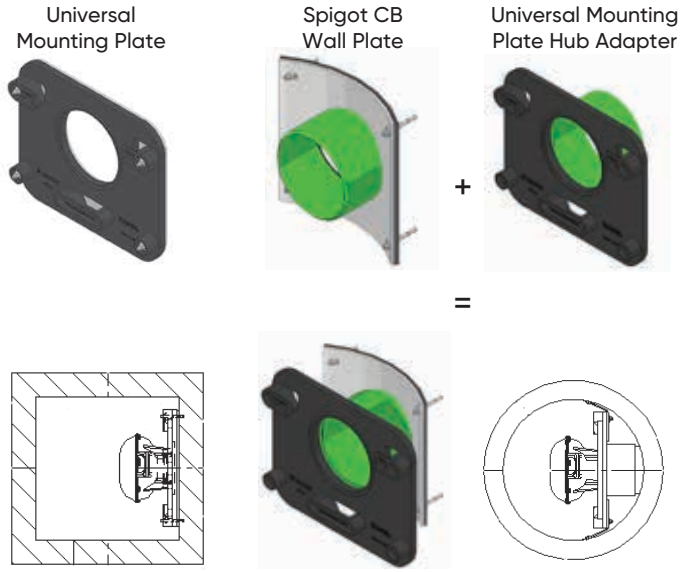
Product Construction

The HF, HF Sump and MHF ICDs are built to be light weight at a maximum weight of 6.8 Kg (14.6 lbs).

Product Applications

The HF and MHF ICD's are available to accommodate both square and round applications:

Square Application **Round Application**



The HF Sump is available to accommodate low to no sump applications in both square and round catch basins:

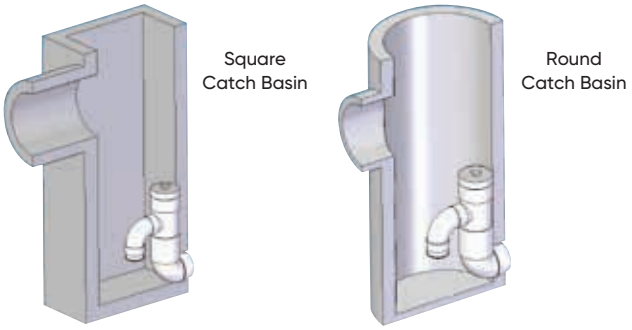
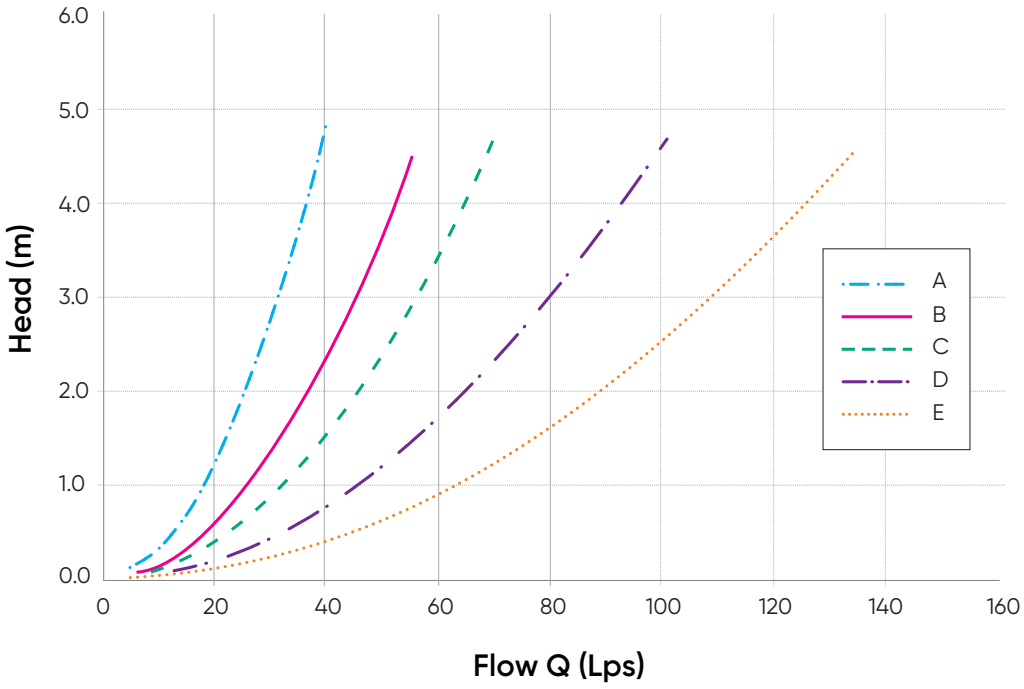


Chart 3: HF & MHF Preset Flow Curves



PRODUCT INSTALLATION

Instructions to assemble a TEMPEST HF or MHF ICD into a Square Catch Basin:

1. Materials and tooling verification:
   - Tooling: impact drill, 3/8" concrete bit, torque wrench for 9/16" nut, hand hammer, level, and marker.
   - Material: (4) concrete anchor 3/8 x 3-1/2, (4) washers, (4) nuts, universal mounting plate, ICD device
2. Use the mounting wall plate to locate and mark the hole (4) pattern on the catch basin wall. You should use a level to ensure that the plate is at the horizontal.
3. Use an impact drill with a 3/8" concrete bit to make the four holes at a minimum of 1-1/2" depth up to 2-1/2". Clean the concrete dust from the holes.
4. Install the anchors (4) in the holes by using a hammer. Thread the nuts on the top of the anchors to protect the threads when you hit the anchors with the hammer. Remove the nuts from the ends of the anchors.
5. Install the universal wall mounting plate on the anchors and screw the 4 nuts in place with a maximum torque of 40 N.m (30 lbf-ft). There should be no gap between the wall mounting plate and the catch basin wall.
6. From the ground above using a reach bar, lower the device by hooking the end of the reach bar to the handle of the ICD device. Align the triangular plate portion into the mounting wall plate. Push down the device to be sure it has centered in to the universal wall mounting plate and has created a seal.

⚠ WARNING

- Verify that the outlet pipe doesn't protrude into the catch basin. If it does, cut down the pipe flush to the catch basin wall.
- Call your IPEX representative for more information or if you have any questions about our products.

Instructions to assemble a TEMPEST HF or MHF ICD into a Round Catch Basin:

STEPS:

1. Materials and tooling verification.
   - Tooling: impact drill, 3/8" concrete bit, torque wrench for 9/16" nut, hand hammer, level and marker.
   - Material: (4) concrete anchor 3/8 x 3-1/2, (4) washers and (4) nuts, spigot CB wall plate, universal mounting plate hub adapter, ICD device.
2. Use the round catch basin spigot adaptor to locate and mark the hole (4) pattern on the catch basin wall. You should use a level to ensure that the plate is at the horizontal.
3. Use an impact drill with a 3/8" concrete bit to make the four holes at a depth between 1-1/2" to 2-1/2". Clean the concrete dust from the holes.
4. Install the anchors (4) in the holes by using a hammer. Thread the nuts on the top of the anchors to protect the threads when you hit the anchors with the hammer. Remove the nuts from the ends of the anchors.
5. Install the spigot CB wall plate on the anchors and screw the 4 nuts in place with a maximum torque of 40 N.m (30 lbf-ft). There should be no gap between the spigot CB wall plate and the catch basin wall.
6. Put solvent cement on the hub of the universal mounting plate, hub adapter and the spigot of the CB wall plate, then slide the hub over the spigot. Make sure the universal mounting plate is at the horizontal and its hub is completely inserted onto the spigot. Normally, the corners of the hub adapter should touch the catch basin wall.
7. From ground above using a reach bar, lower the device by hooking the end of the reach bar to the handle of the ICD device. Align the triangular plate portion into the mounting wall plate. Push down the device to be sure it has centered in to the wall mounting plate and has created a seal.

⚠ WARNING

- Verify that the outlet pipe doesn't protrude into the catch basin. If it does, cut down the pipe flush to the catch basin wall.
- The solvent cement which is used in this installation is to be approved for PVC.
- The solvent cement should not be used below 0°C (32°F) or in a high humidity environment. Refer to the IPEX solvent cement guide to confirm the required curing time or visit the IPEX Online Solvent Cement Training Course available at www.ipexinc.com.
- Call your IPEX representative for more information or if you have any questions about our products.

NOTE: Do not use or test the products in this manual with compressed air or other gases including air-over-water-boosters

Instructions to assemble a TEMPEST HF Sump into a Square or Round Catch Basin:

STEPS:

1. Materials and tooling verification:
   - Tooling: impact drill, 3/8" concrete bit, torque wrench for 9/16" nut, hand hammer, level, mastic tape and metal strapping
   - Material: (2) concrete anchor 3/8 x 3-1/2, (2) washers, (2) nuts, HF Sump pieces (2).
2. Apply solvent cement to the spigot end of the top half of the sump. Apply solvent cement to the hub of the bottom half of the sump. Insert the spigot of the top half of the sump into the hub of the bottom half of the sump.
3. Install the 8" spigot of the device into the outlet pipe. Use the mastic tape to seal the device spigot into the outlet pipe. You should use a level to be sure that the fitting is standing at the vertical.
4. Use an impact drill with a 3/8" concrete bit to make a series of 2 holes along each side of the body throat. The depth of the hole should be between 1-1/2" to 2-1/2". Clean the concrete dust from the 2 holes.
5. Install the anchors (2) in the holes by using a hammer. Put the nuts on the top of the anchors to protect the threads when you hit the anchors. Remove the nuts from the ends of the anchors.
6. Cut the metal strapping to length and connect each end of the strapping to the anchors. Screw the nuts in place with a maximum torque of 40 N.m (30 lbf-ft). The device should be completely flush with the catch basin wall.

⚠ WARNING

- **Verify that the outlet pipe doesn't protrude into the catch basin. If it does, cut down the pipe flush to the catch basin wall.**
- **The solvent cement which is used in this installation is to be approved for PVC.**
- **The solvent cement should not be used below 0°C (32°F) or in a high humidity environment. Refer to the IPEX solvent cement guide to confirm the required curing time or visit the IPEX Online Solvent Cement Training Course available at www.ipexinc.com.**
- **Call your IPEX representative for more information or if you have any questions about our products.**

PRODUCT TECHNICAL SPECIFICATION

General

Inlet control devices (ICD's) are designed to provide flow control at a specified rate for a given water head level and also provide odour and floatable control where specified. All ICD's will be IPEX Tempest or approved equal.

All devices shall be removable from a universal mounting plate. An operator from street level using only a T-bar with a hook shall be able to retrieve the device while leaving the universal mounting plate secured to the catch basin wall face. The removal of the TEMPEST devices listed above shall not require any unbolting or special manipulation or any special tools.

High Flow (HF) Sump devices shall consist of a removable threaded cap which can be accessible from street level with out entry into the catchbasin (CB). The removal of the threaded cap shall not require any special tools other than the operator's hand.

ICD's shall have no moving parts.

Materials

ICD's are to be manufactured from Polyvinyl Chloride (PVC) or Polyurethane material, designed to be durable enough to withstand multiple freeze-thaw cycles and exposure to harsh elements.

The inner ring seal will be manufactured using a Buna or Nitrile material with hardness between Duro 50 and Duro 70.

The wall seal is to be comprised of a 3/8" thick Neoprene Closed Cell Sponge gasket which is attached to the back of the wall plate.

All hardware will be made from 304 stainless steel.

Dimensioning

The Low Medium Flow (LMF), High Flow (HF) and the High Flow (HF) Sump shall allow for a minimum outlet pipe diameter of 200mm with a 600mm deep Catch Basin sump.

Installation

Contractor shall be responsible for securing, supporting and connecting the ICD's to the existing influent pipe and catchbasin/manhole structure as specified and designed by the Engineer.

NOTES

SALES AND CUSTOMER SERVICE

IPEX Inc.
Toll Free: (866) 473-9462
ipexna.com

About the IPEX Group of Companies

As leading suppliers of thermoplastic piping systems, the IPEX Group of Companies provides our customers with some of the largest and most comprehensive product lines. All IPEX products are backed by more than 50 years of experience. With state-of-the-art manufacturing facilities and distribution centers across North America, we have established a reputation for product innovation, quality, end-user focus and performance.

Markets served by IPEX group products are:

- Electrical systems
- Telecommunications and utility piping systems
- PVC, CPVC, PP, ABS, PEX, FR-PVDF and PE pipe and fittings (1/4" to 48")
- Industrial process piping systems
- Municipal pressure and gravity piping systems
- Plumbing and mechanical piping systems
- PE Electrofusion systems for gas and water
- Industrial, plumbing and electrical cements
- Irrigation systems

Products manufactured by IPEX Inc.
Tempest™ is a trademark of IPEX Branding Inc.

IPEX by aliaxis

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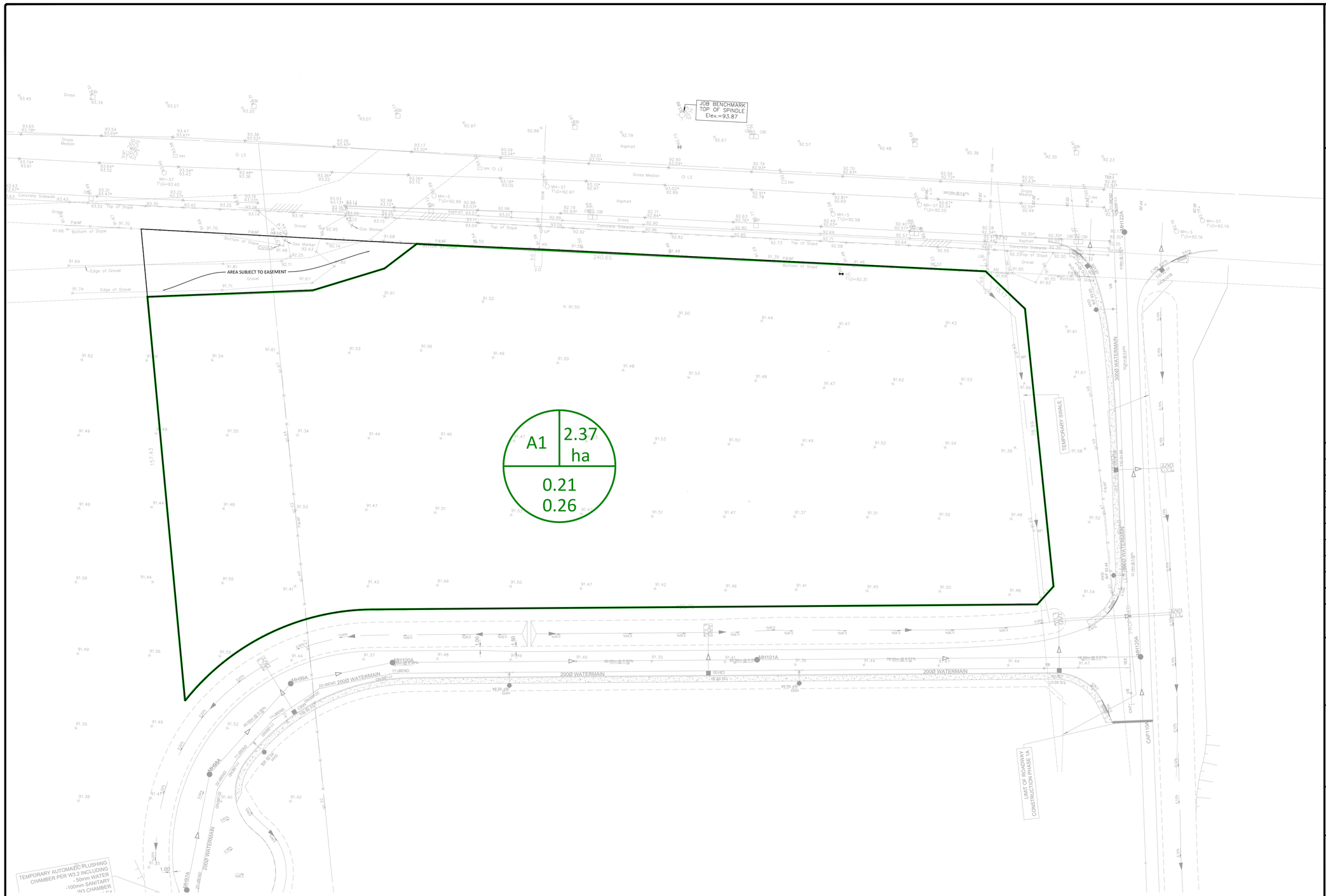
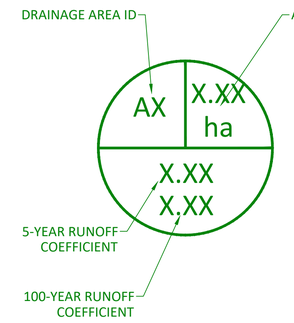
APPENDIX F
PRE DEVELOPMENT





No.	Revisions	Date

Check and verify all dimensions before proceeding with the work

Do not scale drawings

SCALE 1 : 500

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egis

Stamp:

Client:

CSV ARCHITECTS
190 O'CONNOR ST, SUITE 100
OTTAWA, ON

Project:

GASTOPS LTD. HEADQUARTERS
RIVERSIDE SOUTH BUSINESS PARK,
OTTAWA, ON

Drawing Title:

PRE DEVELOPMENT DRAINAGE PLAN

Scale: 1:500	Project Number: CO-24-2748
Drawn By: RP	
Checked By: CM	Drawing Number: PRE
Designed By:	

D07-00-000

#18662

FOR REVIEW ONLY
NOT FOR CONSTRUCTION

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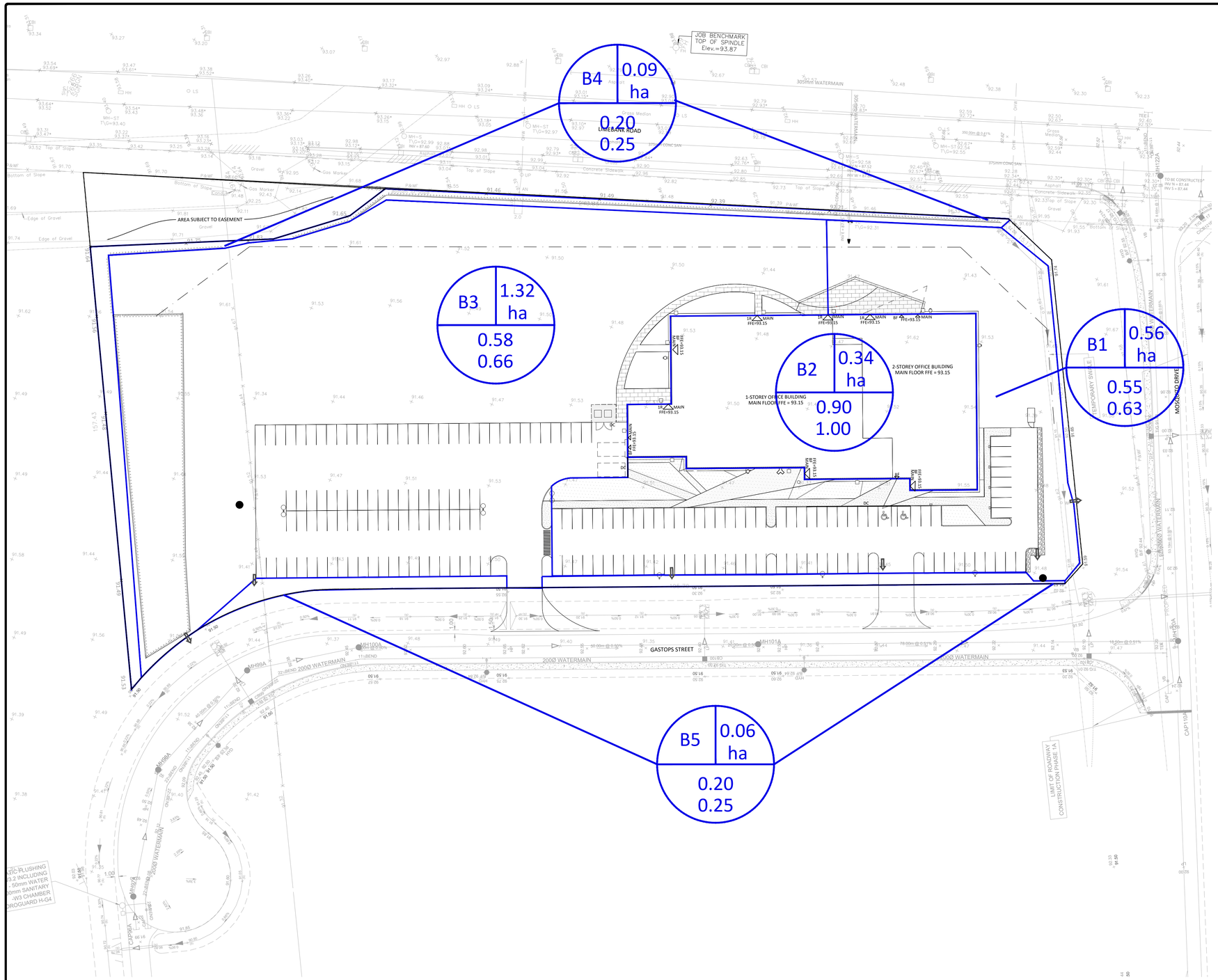
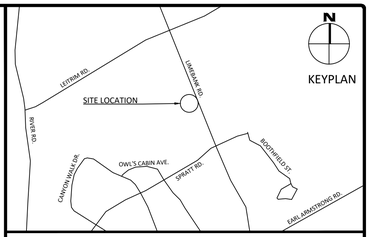
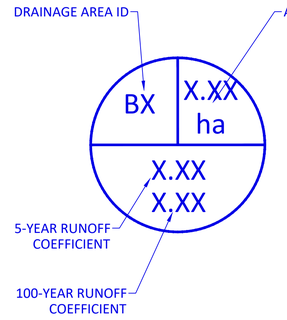
LAST SAVED: Monday, February 10, 2025 LAST SAVED BY: r.pickard
LAST PLOTTED: Monday, February 10, 2025 CTB FILE USED:

APPENDIX G
POST DEVELOPMENT







No.	Revisions	Date

Check and verify all dimensions before proceeding with the work

Do not scale drawings

SCALE 1 : 500

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egis

Stamp:

Client:

CSV ARCHITECTS
190 O'CONNOR ST, SUITE 100
OTTAWA, ON

Project:

GASTOPS LTD. HEADQUARTERS
RIVERSIDE SOUTH BUSINESS PARK,
OTTAWA, ON

Drawing Title:

POST DEVELOPMENT DRAINAGE PLAN

Scale: 1:500	Project Number: CO-24-2748
Drawn By: RP	
Checked By: CM	Drawing Number: POST
Designed By:	D07-00-000

#18662

FOR REVIEW ONLY
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FILENAME: U:\Ottawa\01 Project - Proposal\03\24 Jobs\CCO\CO-24-2748 CSV_Gastops Ltd. World HQ_Riverside South Business Park\12 - Drawings\CO-24-2748 - Design.dwg
LAST SAVED: Monday, February 10, 2025 LAST SAVED BY: r.pickard
LAST PLOTTED: Monday, February 10, 2025 7:58 PM EST

APPENDIX H
CITY OF OTTAWA DESIGN CHECKLIST

4. Development Servicing Study Checklist

The following section describes the checklist of the required content of servicing studies. It is expected that the proponent will address each one of the following items for the study to be deemed complete and ready for review by City of Ottawa Infrastructure Approvals staff.

The level of required detail in the Servicing Study will increase depending on the type of application. For example, for Official Plan amendments and re-zoning applications, the main issues will be to determine the capacity requirements for the proposed change in land use and confirm this against the existing capacity constraint, and to define the solutions, phasing of works and the financing of works to address the capacity constraint. For subdivisions and site plans, the above will be required with additional detailed information supporting the servicing within the development boundary.

4.1 General Content

Criteria	Location (if applicable)
☐ Executive Summary (for larger reports only).	N/A
☐ Date and revision number of the report.	On Cover
☐ Location map and plan showing municipal address, boundary, and layout of proposed development.	Appendix A
☐ Plan showing the site and location of all existing services.	N/A
☐ Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	1.1 Purpose 1.2 Site Description 6.0 Storm Sewer Design
☐ Summary of pre-consultation meetings with City and other approval agencies.	Appendix B
☐ 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.	1.1 Purpose 1.2 Site Description 6.0 Storm Sewer Design
☐ Statement of objectives and servicing criteria.	3.0 Pre-Consultation Summary

☐ Identification of existing and proposed infrastructure available in the immediate area.	N/A
☐ Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	N/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.	N/A
☐ 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.	N/A
☐ Proposed phasing of the development, if applicable.	N/A
☐ Reference to geotechnical studies and recommendations concerning servicing.	N/A
☐ All preliminary and formal site plan submissions should have the following information: o Metric scale o North arrow (including construction North) o Key plan o Name and contact information of applicant and property owner o Property limits including bearings and dimensions o Existing and proposed structures and parking areas o Easements, road widening and rights-of-way o Adjacent street names	N/A

4.2 Development Servicing Report: Water

Criteria	Location (if applicable)
☐ Confirm consistency with Master Servicing Study, if available	N/A
☐ Availability of public infrastructure to service proposed development	N/A
☐ Identification of system constraints	N/A
☐ Identify boundary conditions	Appendix C
☐ Confirmation of adequate domestic supply and pressure	N/A
☐ 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.	Appendix C
☐ 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.	N/A
☐ Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	N/A
☐ Address reliability requirements such as appropriate location of shut-off valves	N/A
☐ Check on the necessity of a pressure zone boundary modification.	N/A
☐ 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	Appendix C, Section 4.2 Proposed Water Servicing

☐ 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.	Site Servicing Plan (C101)
☐ 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.	N/A
☐ Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Appendix C
☐ Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	N/A

4.3 Development Servicing Report: Wastewater

Criteria	Location (if applicable)
☐ 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).	N/A
☐ Confirm consistency with Master Servicing Study and/or justifications for deviations.	N/A
☐ 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.	N/A
☐ Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 5.2 Proposed Sanitary Servicing

☐ 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)	Section 5.2 Proposed Sanitary Servicing
☐ Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	N/A
☐ Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 5.2 Proposed Sanitary Servicing
☐ Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	N/A
☐ Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	N/A
☐ Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	N/A
☐ Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	N/A
☐ Special considerations such as contamination, corrosive environment etc.	N/A

4.4 Development Servicing Report: Stormwater Checklist

Criteria	Location (if applicable)
☐ Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 6.0 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management
☐ Analysis of available capacity in existing public infrastructure.	N/A
☐ A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Pre & Post-Development Plans
☐ 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.	Section 6.0 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management
☐ Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Section 6.0 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management
☐ Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 6.0 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management
☐ Set-back from private sewage disposal systems.	N/A
☐ Watercourse and hazard lands setbacks.	N/A
☐ Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	N/A
☐ Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A
☐ Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5-year return period) and major events (1:100-year return period).	Appendix G

☐ Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	Site Grading Plan (C101)
☐ 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.	Appendix G, Section 7.0 Proposed Stormwater Management
☐ Any proposed diversion of drainage catchment areas from one outlet to another.	Section 6.0 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management
☐ Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Section 6.0 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management
☐ 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.	N/A
☐ Identification of potential impacts to receiving watercourses	N/A
☐ Identification of municipal drains and related approval requirements.	N/A
☐ Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 6.0 Storm Sewer Servicing & Section 7.0 Proposed Stormwater Management
☐ 100-year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	Site Grading Plan (C101)
☐ Inclusion of hydraulic analysis including hydraulic grade line elevations.	N/A

☐ Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Section 8.0 Sediment & Erosion Control
☐ 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.	N/A
☐ Identification of fill constraints related to floodplain and geotechnical investigation.	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:

Criteria	Location (if applicable)
☐ 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.	N/A
☐ Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	N/A
☐ Changes to Municipal Drains.	N/A
☐ Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	N/A

4.6 Conclusion Checklist

Criteria	Location (if applicable)
☐ Clearly stated conclusions and recommendations	Section 9.0 Summary Section 10.0 Recommendations
☐ 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.	All are stamped
☐ All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	All are stamped