Site Servicing and Stormwater Management Report 266-268 Carruthers Avenue, Ottawa, ON

Client:
McCormick Park Developments Inc.
P.O. Box 74155 Beechwood Ave
Ottawa, ON, K1M 2H9

Submitted for:
Site Plan Control

Project Name:
266-268 Carruthers Avenue

Project Number:
OTT-22014656

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Date Submitted:
November 10, 2022

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November 10, 2022

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1 Introduction

1.1 Overview

EXP Services Inc. (EXP) was retained by McCormick Park Developments Inc. to prepare a Site Servicing and Stormwater Management Report for the proposed redevelopment of 266-268 Carruthers Avenue in support of a Site Plan Application.

The 0.04-hectare site is located 45 m north of the Carruthers Avenue and Armstrong Street intersection, on Carruthers Avenue. **Figure 1-1** Illustrates the site location. The site is inside the Greenbelt and situated in Ward 15 (Kitchissippi). The description of the subject properties is noted below:

- Part of Lot 1, Registered Plan 83, in the City of Ottawa, consisting of:
    - PIN 04094-0152 or 266 Carruthers Avenue
- Part of Lot 6, Registered Plan 83, in the City of Ottawa, consisting of:
    - PIN 04094-0152 or 268 Carruthers Avenue (Part of property taken for proposed development)

The proposed site development will consist of an apartment building comprised of 18 units, consisting of a mix of 1-bedroom, and 2-bedroom, and studio apartments.

This report discusses the adequacy of the adjacent municipal watermain, sanitary sewers and storm sewers to provide the required water supply, convey the sewage and stormwater flows that will result from the proposed development. This report provides a design brief for submission, along with the engineering drawings, for City approval.

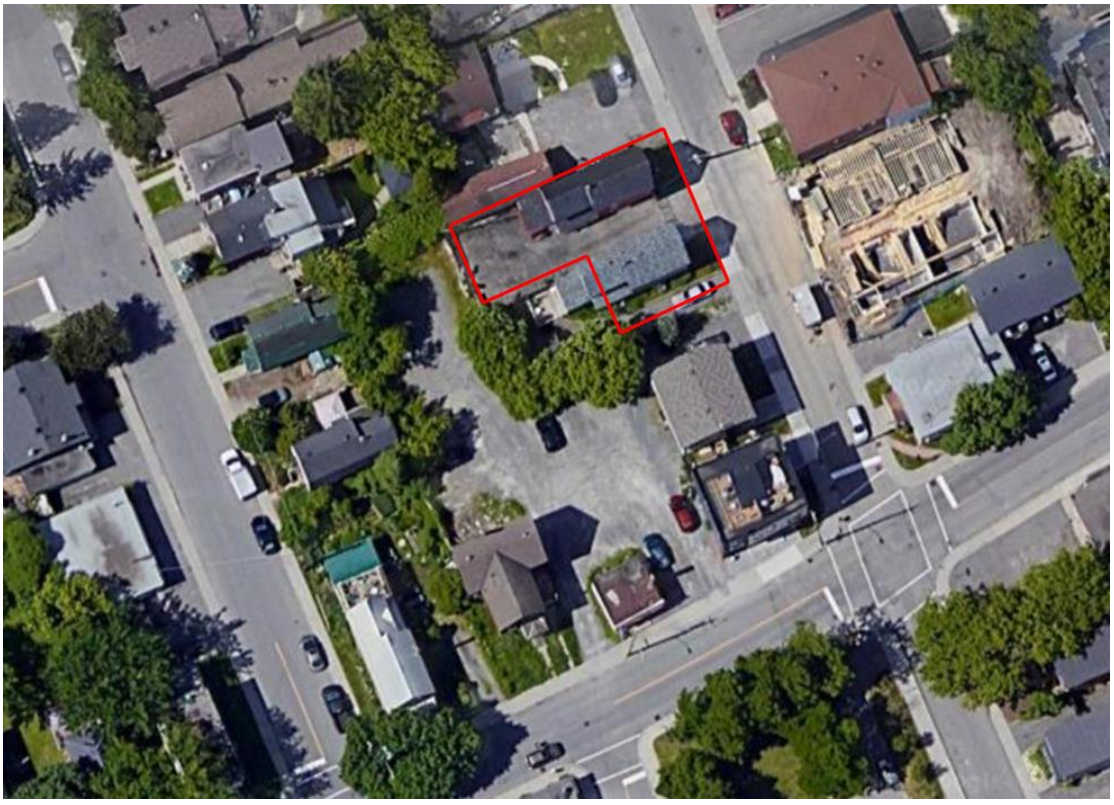


Figure 1-1 - Site Location

2 Existing Conditions

Within the property, there are two (2) existing buildings. The following summarizes the current land use conditions:

- 266 Carruthers Ave Abandoned single home
- 268 Carruthers Ave Abandoned single home

The existing topography of the subject site falls in an easterly direction along Carruthers Avenue.

3 Existing Infrastructure

The site includes two single homes that will be removed during the redevelopment of the site.

From review of the sewer and watermain mapping, as-built drawings and Utility Central Registry (UCC) plans, the following summarizes the onsite and adjacent offsite infrastructure:

Within property (266-268 Carruthers Avenue)

- Storm, sanitary, and watermain laterals to the property that will be used in the servicing design

On Carruthers Avenue

- 200mm watermain
- 1200mm sanitary sewer
- 300mm storm sewer
- Gas / Bell / Streetlighting/ Hydro

As-built drawings for Carruthers Avenue were obtained from the City's vault and are included in **Appendix F**.

3.1 Pre-Consultation / Permits / Approvals

A pre-consultation meeting was held with the City prior to design commencement. This meeting outlined the submission requirements and provided information to assist with the development proposal.

The proposed site is located within the Rideau Valley Conservation Authority (RVCA) jurisdiction, therefore signoff from the RVCA will be required prior to Site Plan approval. The RVCA has been contacted to confirm the stormwater management quality control requirements. A copy of the correspondence with the RCVA is attached in **Appendix E**.

Generally, an Environmental Compliance Approval (ECA) would be obtained from the Ministry of Environment, Conservation and Parks (MECP), formerly the Ministry of the Environment and Climate Change (MOECC), for any onsite private Sewage Works; however, an Approval Exemption under Ontario Regulation 525/98 can be applied. Under Section 3 of O'Reg 525/98, Section 53 (1) and (3) do not apply to the alteration, extension, replacement, or a change to a stormwater management facility that 1) is designed to service one lot or parcel of land, b) discharges into a storm sewer that is not a combined sewer, c) does not service industrial land or a structure located on industrial land, and finally d) is not located on industrial land. The onsite Sewage Works would generally include the onsite stormwater works such as flow controls, associated stormwater detention, and treatment works.

Based on this exemption, if the parcels noted above are merged into one property parcel, then the Approval Exemptions under O'Reg 525/98, would be satisfied; an ECA would not be required an ECA. The southern portion of the 266 Carruthers Avenue property would have to be merged with the northern portion of the 268 Carruthers Avenue property. Prior to City signoff on the

infrastructure design, a pre-consultation meeting will be held with the local MECP to confirm that the site will not require an ECA.

In addition, various design guidelines were referred to in preparing the current report including:

- Bulletin ISDTB-2012-4 (20 June 2012)
  - Technical Bulletin ISDTB-2014-01 (05 February 2014)
  - Technical Bulletin PIEDTB-2016-01 (September 6, 2016)
  - Technical Bulletin ISDTB-2018-01 (21 March 2018)
  - Technical Bulletin ISDTB-2018-03 (21 March 2018)
  - Technical Bulletin ISDTB-2018-04 (27 June 2018)
  - Technical Bulletin ISDTB-2019-02 (08 July 2019)
- Ottawa Design Guidelines – Water Distribution, July 2010 (WDG001), including:
  - Technical Bulletin ISDTB-2014-02 (May 27, 2014)
  - Technical Bulletin ISTB-2018-02 (21 March 2018)
- Stormwater Management Planning and Design Manual, Ontario Ministry of the Environment and Climate Change, March 2003 (SMPDM).
- Design Guidelines for Drinking-Water Systems, Ontario Ministry of the Environment and Climate Change, 2008 (GDWS).
- Fire Underwriters Survey, Water Supply for Public Fire Protection (FUS), 2020.
- Ontario Building Code 2012, Ministry of Municipal Affairs and Housing.

4 Water Servicing

4.1 Existing Water Servicing

The subject site is within the City of Ottawa 1W pressure zone. The site is currently serviced by the existing 200mm watermain on Carruthers Avenue. The existing residential buildings within 266-268 Carruthers Avenue are serviced by laterals that will remain during construction.

4.2 Water Servicing Proposal

The proposed development at 266-268 Carruthers Avenue will consist of a 3-storey apartment building with 18 units. Architectural site plans are provided in **Appendix H.**

Water supply for the apartment building will be provided by a 50mm water service connecting to the existing watermain. Along with the service, a shutoff valve will be installed at the property line. The proposed servicing plan is provided in drawing C200**.**

4.3 Water Servicing Design

The water servicing requirements for the proposed building is designed in accordance with the City Design Guidelines (July 2010). The following steps indicate the basic methodology that was used in our analysis:

- Estimated water demands under average day, maximum day and peak hour conditions. As the total population estimate was less than 500, residential peaking factors were based on MECP Table 3-3.

- Estimated the required fire flow (RFF) based on the Fire Underwriters Survey (FUS).
- Obtained hydraulic boundary conditions (HGL) from the City, based on the above water demands and required fire flows.
- Boundary condition data and water demands were used to estimate the pressure at the proposed building, and this was compared to the City's design criteria.

Please refer to **Appendix B** for detailed calculations of the total water demands.

A review of the estimated watermain pressures at the building connection, based on the boundary conditions provided, was completed using a single water service servicing to the building. **Table B-4** in **Appendix B** provides data calculations of anticipated pressures at the building connection based on using a single 50mm water service.

Based on results, a single 50mm service would result in a pressure of ±60.5 psi at the building. A review of pressures on the top floor was also completed and would result in a pressure of ±44.5 psi to the middle of the third floor. This is based on a supply of water from the mechanical room to a unit on the 3rd floor, using the average peak demand for one apartment unit an a 25mm internal water supply from the mechanical room. Based on this, pressures on 3rd floor exceed the City's requirement under peak four conditions of 40 psi.

No pressure reducing measures are required as operating pressures are within 50 psi and 80 psi.

4.4 Water Servicing Design Criteria

Table 4-1 below summarizes the Design Criteria that was used to establish the water demands and the required fire flows, based on the proposed building uses. The design parameters that apply to this project and used for calculations are identified below in **Table 4-1**.

Table 4-1 - Summary of Water Supply Design Criteria

Design Parameter	Value	Applies
Population Density – Single-family Home	**3.4 persons/unit**	
Population Density – Semi-detached Home	**2.7 persons/unit**	
Population Density – Townhome or Terrace Flat	**1.8 persons/unit**	
Population Density – Bachelor Apartment (Studio)	**1.4 persons/unit**	✓
Population Density – Bachelor + Den Apartment	**1.4 persons/unit**	
Population Density – One Bedroom Apartment	**1.4 persons/unit**	✓
Population Density – One Bedroom plus Den Apartment	**1.4 persons/unit**	
Population Density – Two Bedroom Apartment	**2.1 persons/unit**	✓
Population Density – Two Bedroom plus Den Apartment	**2.1 persons/unit**	
Average Day Demands – Residential	**350 L/person/day**	✓
Average Day Demands – Commercial / Institutional	**28,000 L/gross ha/day**	
Average Day Demands – Light Industrial / Heavy Industrial	**35,000 or 55,000 L/gross ha/day**	
Maximum Day Demands – Residential	**8.45 x Average Day Demands**	✓
Maximum Day Demands – Commercial / Institutional	**1.5 x Average Day Demands**	
Peak Hour Demands – Residential	**12.72 x Average Day Demands**	✓
Peak Hour Demands – Commercial / Institutional	**2.7 x Average Day Demands**	

Fire Flow Requirements Calculation	**FUS**	✓
Depth of Cover Required	**2.4m**	✓
Maximum Allowable Pressure	**551.6 kPa (80 psi)**	✓
Minimum Allowable Pressure	**275.8 kPa (40 psi)**	✓
Minimum Allowable Pressure during fire flow conditions	**137.9 kPa (20 psi)**	✓

4.5 Estimated Water Demands

The following **Table 4-2** below summarizes the anticipated water demands for the proposed development based on following:

- The apartment building having 18 units and estimated population of 32.9 persons.

Table 4-2 : Water Demand Summary

Water Demand Conditions	Total Water Demands (L/sec)
Average Day	**0.11**
Max Day	**1.00**
Peak Hour	**1.51**

4.6 Boundary Conditions

Hydraulic Grade Line (HGL) boundary conditions were obtained from the City for design purposes. A copy of the correspondence received from the City is provided in **Appendix E**.

The following hydraulic grade line (HGL) boundary conditions were provided:

- Minimum HGL = 107.9 m
- Max Day + Fire Flow = 102.9 m
- Maximum HGL = 115.0 m

Based on a ground elevation of approximately 63.6m at the boundary condition location this results in a system water pressure between ±62.7 psi and ±73.1 psi during peak hour conditions.

4.7 Fire Flow Requirements

Water for fire protection will be available using the proposed fire hydrants located along the adjacent roadways: Carruthers Avenue, Armstrong Street, and Hinchey Avenue. The required fire flows for the proposed buildings were calculated based on typical values as established by the Fire Underwriters Survey 2020 (FUS).

The following equation from the Fire Underwriters document “Water Supply for Public Fire Protection”, 2020, was used for calculation of the on-site supply rates required to be supplied by the hydrants:

$F = 200 * C * \sqrt{(A)}$

where:

F = Required Fire flow in Litres per minute
C = Coefficient related to type of Construction
A = Total Floor Area in square metres

The proceeding **Table 4-3** summarizes the parameters used for estimating the Required Fire Flows (RFF) based on the Fire Underwriters Survey (FUS) and the latest City of Ottawa Technical Bulletins. The RFFs were estimated in accordance with ISTB-2018-02, and based on floor areas provided by the architect, which are illustrates in **Appendix H.**

The following summarizes the parameters used for both proposed buildings.

- Type of Construction — Wood Frame
- Occupancy — Limited combustible
- Sprinkler Protection — None

Table 4-3 - Summary of Design Parameters Used in Calculating Required Fire Flows (RFF) Using FUS

Design Parameter	Value
Coefficient Related to type of Construction C	**1.5**
Total Floor Area (m^2)	**1,858**
Fire Flow prior to reduction (L/min)	**10,000**
Reduction Due to Occupancy Non-combustible (-25%), Limited Combustible (-15%), Combustible (0%), Free Burning (+15%), Rapid Burning (+25%)	**-15%**
Reduction due to Sprinkler (Max 50%) Sprinkler Conforming to NFPA 13 (-30%), Standard Water Supply (-10%), Fully Supervised Sprinkler (-10%)	**0%**
Exposures	**+58%**
Can the Total Fire Flow be Capped at 10,000 L/min (167 L/sec) based on "TECHNCAL BULLETIN ISTB-2018-02", (yes/no)	**No**
Total RFF	**217**

The estimated required fire flows (RFF) based on the FUS methods is 217 L/sec for the proposed 3-storey apartment building.

4.8 Review of Hydrant Spacing

A review of the hydrant spacing was completed to ensure compliance with Appendix I of Technical Bulletin ISTB-2018-02. As per Section 3 of Appendix I all hydrants within 150 metres were reviewed to assess the total possible available flow from these contributing hydrants. For each hydrant the distance to the proposed building was determined to arrive at the contribution of fire flow from each. All hydrants are expected to be of Class AA as per Section 5.1 of Appendix I. For each hydrant the straight-line distance, distance measured along a fire route or roadway, whether its location is accessible, and its contribution to the required fire flow.

Table 4-4 – Required Fire Flows

Building	Required Fire Flow (L/min)	Available Fireflow Based on Hydrant Spacing as per ISTB-2018-02 (L/min)
266-268 Carruthers Avenue	**13,020 (or 217 L/sec)**	**±17,100**

The total available contribution of flow from hydrants was estimated at ±17,100 L/min, whereas the required fire flows (RFF) for the development is 13,020 L/min. Therefore, the available flows from hydrants exceed the developments fire flow requirements as identified in Appendix I of Technical Bulletin ISTB-2018-02. Additional information on the available flows from hydrants is provided in **Table B-3**.

5 Sewage Servicing

5.1 Existing Sewage Conditions

The existing residential building within the subject property is currently serviced by the existing 1200 mm sanitary sewer on Carruthers Avenue and a 150 mm PVC sanitary lateral. The existing sanitary lateral is to remain and will be used in the redesign of the development.

5.2 Proposed Sewage Conditions

It is proposed to use the existing 150 mm PVC sanitary sewer connection from the subject property to the existing sanitary sewer on Carruthers Avenue. The sanitary sewer system was designed based on a population flow with an area-based infiltration allowance. A 150 mm diameter sanitary sewer is proposed with a minimum 2% slope, having a capacity of 20.8 L/sec based on Manning's Equation under full flow conditions. Based on the OBC, the maximum permitted hydraulic load for a 150 mm pipe at 2% is 2,900 fixture units. **Table 5-1** below summarizes the design parameters used.

Table 5-1– Summary of Wastewater Design Criteria / Parameters

Design Parameter	Value	Applies
Population Density – Single-family Home	3.4 persons/unit	
Population Density – Semi-detached Home	2.7 persons/unit	
Population Density – Duplex	2.3 persons/unit	
Population Density – Townhome (row)	2.7 persons/unit	
Population Density – Studio Apartment	1.4 persons/unit	✓
Population Density – Bachelor + Den Apartment	1.4 persons/unit	
Population Density – One Bedroom Apartment	1.4 persons/unit	✓
Population Density – One Bedroom plus Den Apartment	1.4 persons/unit	
Population Density – Two Bedroom Apartment	2.1 persons/unit	✓
Population Density – Two Bedroom plus Den Apartment	2.1 persons/unit	
Average Daily Residential Sewage Flow	280 L/person/day	
Average Daily Commercial / Intuitional Flow	28,000 L/gross ha/day	
Average Light / Heavy Industrial Daily Flow	35,000 / 55,000 L/gross ha/day	
Residential Peaking Factor – Harmon Formula (Min = 2.0, Max =4.0, with K=0.8)	$M = 1 + \frac{14}{4 + P^{0.5}} * k$	✓
Commercial Peaking Factor	1.5	
Institutional Peaking Factor	1.5	
Industrial Peaking Factor	As per Table 4-B (SDG002)	
Unit of Peak Extraneous Flow (Dry Weather / Wet Weather)	0.05 or 0.28 L/s/gross ha	
Unit of Peak Extraneous Flow (Total I/I)	0.33 L/s/gross ha	✓

The estimated peak sanitary flow rate from the proposed property at 266-268 Carruthers Avenue is **0.44 L/sec** based on City Design Guidelines. Sewage rates below include a total infiltration allowance of 0.33 L/ha/sec based on the total gross site area.

Table 5-2 – Summary of Anticipated Sewage Rates

Sewage Condition	Sanitary Sewage Flow (L/sec)
Peak Residential	**0.43**
Infiltration Flow	**0.01**
Peak Design Flow	**0.44**

The minimum sewer capacity of the last sewer run on Carruthers Avenue (with a slope of 0.42%) has a calculated full flow capacity of 2,127 L/sec. The increase in peak sewage flows up to 0.44 L/sec is minor in comparison to the total capacity of the existing sanitary sewer.

6 Storm Servicing & Stormwater Management

The proposed site is located within the Rideau Valley Conservation Authority (RVCA) jurisdiction, stormwater works are therefore subject to both the Rideau Valley Conservation Authority (RVCA) and City of Ottawa (COO) approval. The RVCA was contacted to discuss the stormwater management quality control requirements.

Correspondence from the RVCA is provided in **Appendix F**, states that the RVCA does not have any water quality requirements for the subject site.

6.1 Design Criteria

The proposed stormwater system is designed in conformance with the latest version of the City of Ottawa Design Guidelines (October 2012). Section 5 “Storm and Combined Sewer Design” and Section 8 “Stormwater Management”. A summary of the design criteria that relates to this design report is the proceeding sections below.

6.2 Minor System Design Criteria

- The storm sewer was sized based on the Rational Method and Manning’s Equation under free flow conditions for the 100-year storm using a 10-minute inlet time.
- Since a detailed site plan was available for the site, including building footprints, calculations of the average runoff coefficients for each drainage area were completed.
- Minimum sewer slopes to be based on minimum velocities for storm sewers of 0.80 m/s.

6.3 Major System Design Criteria

- The major system has been designed to accommodate on-site detention with sufficient capacity to attenuate the 100-year design storm. On-site storage is calculated based on the 100-year design storm with on-site detention storage provided on the roof.
- On site storage is provided and calculated for up to the 100-year design storm. There is no surface ponding proposed on the ground surface.
- Overland flow routes are provided.
- The vertical distance from the spill elevation on the street and the ground elevation at the buildings is at least 15cm.

- The emergency overflow spill elevation is at least 30 cm below the lowest building opening.

6.4 Runoff Coefficients

Runoff coefficients used were based on areas taken from CAD. The site was divided into four (4) drainage areas: S1, S2, S3, and S4. Average runoff coefficients were calculated for each drainage area using the area-weighting routine in PCSWMM. The runoff coefficients for the post-development drainage areas are provided in **Appendix A**, with a summary provided in **Table 6-1** below.

Table 6-1 – Summary of Runoff Coefficients

Location	Area (hectares)	Post-Development Runoff Coefficient, C_{AVG}
S1	0.0293	0.90
S2	00.0131	0.56
S3	0.0006	0.71

6.5 Time of Concentration

A minimum time of concentration of 10-minutes was used for the post-development drainage areas (refer to **Table D-1)**.

6.6 Pre-Development Conditions

Under pre-development conditions, stormwater runoff from the 0.0429-hectare site drainage to the rear of the lot. Only a single drainage area for the entire site was considered, discharging on to Carruthers Avenue.

Table 6-2 – Summary of Pre-Development Flows

Return Period Storm	Total Peak Flows (L/sec)
2-year	7.6
5-year	10.3
100-year	21.3

6.7 Allowable Release Rate

The allowable release rate of 4.6 L/sec from the proposed site was calculated based on a 100-year storm event, a time of concentration (Tc) of 10 minutes, and a runoff coefficient of 0.50. **Table D-3** provides detailed calculations on the allowable peak flow.

6.8 Proposed Stormwater System

Stormwater runoff from the proposed site will drain from a combination of controlled and uncontrolled areas. As a result of the changes onsite the overall post-development runoff coefficient will change over pre-development conditions. This increase / decrease in runoff is the result of changes due to site development (i.e. additional hard surfaces, roof areas and hard landscaping).

A storm drainage plan is illustrated on **Figure A-2**. A total three (3) subcatchments (or drainage areas) within the development site are shown on this drawing with average runoff coefficients calculated for each drainage area. The stormwater works shall consist of the following elements:

- Flow-control roof drains for the building to have a separate storm lateral connection to municipal system.
- Runoff from surface areas will be collected by area drains and discharge to the existing storm lateral.
- Remaining drainage area along the south side of the site to flow uncontrolled to the adjacent property (also owned by the client).

Table 6-3 – Summary of Post-Development Flows

Return Period Storm	Unattenuated Peak Flow Rates (L/sec)	Attenuated Peak Flows Rates (L/sec)
2-year	**7.9**	**1.4**
5-year	**10.7**	**1.8**
100-year	**21.0**	**3.7**

To achieve the quantity control requirements and meet the allowable discharge rates as noted in **Section 6.7**, the roof drains will require flow-controlled weirs. Based on the roof areas, an estimate of the number of roof drains required was completed. WATTS ACCUTROL weirs were used to determine the total discharge rates from the roof areas based on the number of drains. In addition, the total cumulative prism volumes on the roofs were calculated at a maximum permitted depth of 150mm. Additional information on the estimated 100-year volumes is provided in **Section 6.9**.

6.9 Flow Attenuation

Stormwater flow attenuation will be achieved by using roof storage and stormwater storage in perforated pipes. Using the allowable release rates, the Modified Rational Method was used to determine the 2-year, 5-year, and 100-year volumes that will occur for corresponding release rates.

Table D-9 provides the summary of storage volumes necessary on the roof and stormwater storage in the perforated pipes to attenuate the controlled release rates with detailed calculations provided in **Table D-5 to D-8**. **Table D-3** summarizes the combined controlled and uncontrolled flows leaving the subject site. A summary of release rates, storage volume requirements, and provided storage volumes are identified in **Table 6-4** below.

Table 6-4 – Summary of Post-Development Storage

Area No.	Release Rate (L/s)			Storage Required (m^3) (MRM)			Storage Provided (m^3)					Control Method
	2-yr	5-yr	100-yr	2-yr	5-yr	100-yr	Roof	U/G Pipes	Infiltration Trench	UG CB/MH	Totals	
S01	**1.16**	**1.58**	**1.58**	**3.79**	**5.08**	**12.66**	**15.5**				**15.5**	**Flow Controlled Roof Drains with Weir Set at Closed Position**
S02	**0.8**	**1.1**	**2.3**	**0.46**	**0.62**	**2.58**		**0.65**	**3.58**	**0.61**	**4.85**	**Infiltration Trench with Perforated Pipes**
S03	**0.1**	**0.1**	**0.3**	**0**	**0**	**0**					**0**	
Totals	**2.1**	**2.8**	**4.2**	**4.2**	**5.7**	**15.2**					**20.4**	

20.40 m^3 of combined storage will be provided by 13.3 m length of 250 mm dia. Pipes and 3 catchbasin structures. A detailed calculation is provided in **Table D5-D8** in Appendix D.

The inlet control device (ICD) for the underground storm sewer was sized for 50% of the allowable rate of 4.6 L/sec (or 2.3 L/sec) at 1.08 m head. This was completed so that the ICD is sized to ensure the required 100-year volume is provided in the underground storm network. A IPEX LMF-50 or equivalent will be used to control the discharge rate. Refer to the IPEX technical manual attached in Appendix F.

7 Erosion & Sediment Control

During all construction activities, erosion and sedimentation shall be controlled by the following techniques:

- Filter bags shall be installed between the frame and cover of all adjacent catch basins and catch basin manhole structures.
- Heavy duty silt fencing will be used to control runoff around the construction area. Silt fencing locations are identified on the site grading and erosion control plan.
- A mud mat will be installed at the construction entrance to help avoid mud from being transported to offsite roads.
- Visual inspection shall be completed daily on sediment control barriers and any damage repaired immediately. Care will be taken to prevent damage during construction operations.
- In some cases, barriers may be removed temporarily to accommodate the construction operations. The affected barriers will be reinstated at night when construction is completed.
- Sediment control devices will be cleaned of accumulated silt as required. The deposits will be disposed of as per the requirements of the contract.
- During the course of construction, if the engineer believes that additional prevention methods are required to control erosion and sedimentation, the contractor will install additional silt fences or other methods as required to the satisfaction of the engineer.
- Construction and maintenance requirements for erosion and sediment controls are to comply with Ontario Provincial Standard Specification (OPSS) OPSS 805 and City of Ottawa specifications.

8 Conclusions and Recommendations

This Functional Servicing & Stormwater Report outlines the rationale which will be used to service the proposed development. The following summarizes the servicing requirements for the site:

Water

- The existing water service lateral is to remain to service the 3-storey apartment building, as the average day demands do not exceed 50 m^3 per day.
- The Required Fire Flow (RFFs) were estimated at **13,000 L/min** (217 L/sec). The total minimum available flows for firefighting purposes, based on the contribution from hydrants, was estimated at **17,100 L/min**.
- Based on hydraulic boundary conditions (HGL) provided by the City of Ottawa, a system pressure of **±63 psi** under peak hourly demands is anticipated at the building, and **±44.5 psi** at the top floor of the proposed building. This exceeds the City's guidelines of 20 psi.

Sewage

- Estimated peak sewage flows of **0.43 L/sec** are anticipated. A cursory review of the downstream sanitary sewer system from the site indicates minimum pipe capacity of 20.8 L/sec for a sewer run on Carruthers Ave.

Stormwater

- For the stormwater system, the allowable capture rate from the entire site was calculated based on a runoff coefficient of 0.50, time of concentration of 10 minutes for a 2-year storm event. The allowable discharge rate for the entire site was calculated to be **4.6 L/sec**. Runoff in excess of this will be detained onsite for up to the 100-year storm.
- The back area surface drainage area will flow uncontrolled to the adjacent property, which is also owned by McCormick Park Developments Inc. The 100-year peak flow from this area was accounted for (i.e. subtracted) in the total runoff rate to establish the allowable rate.
- In order to meet the allowable release rate, total storage volume of **±15.5 m^3** is required.
- Runoff on the building roofs will be controlled using flow-controlled roof drains. Five (5) roof-drains, each equipped with WATTS ACCUTROL weirs and set at CLOSED position, are proposed. Each drain having maximum discharge rate of 5 gpm at 150mm depth. A maximum discharge rate of **1.58 L/sec** was established for the 100-year event.
- A total 100-year storage volume requirements on the roof were estimated at **12.7 m^3**, based on the above release rate, using the Modified Rational Method. The volumes available on the roof is **15.5 m^3**, therefore meeting the required volumes.
- Runoff from rest of the site will be collected and detained using an underground perforated storm sewer network. The volume necessary to detain the 100-year event, is **2.58 m^3**, based on using 50% of the allowable release rate as required by the City of Ottawa. The underground sewers will detain a volume of approximately **4.85 m^3**,which is estimated to hold up the total required volume capacity for a 100-year event.

Erosion & Sediment Control

- Erosion and sediment control methods will be used during construction to limit erosion potential.

9 Legal Notification

This report was prepared by EXP Services Inc. for the account of McCormick Park Developments Inc.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. EXP Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project.

Appendix A - Figures

Figure A-1 - Pre-Development Drainage Areas

Figure A-2 - Post-Development Drainage Areas

Figure A-3 – Hydrant Location Plan

FIGURE A1 - PRE-DEVELOPMENT DRAINAGE AREAS

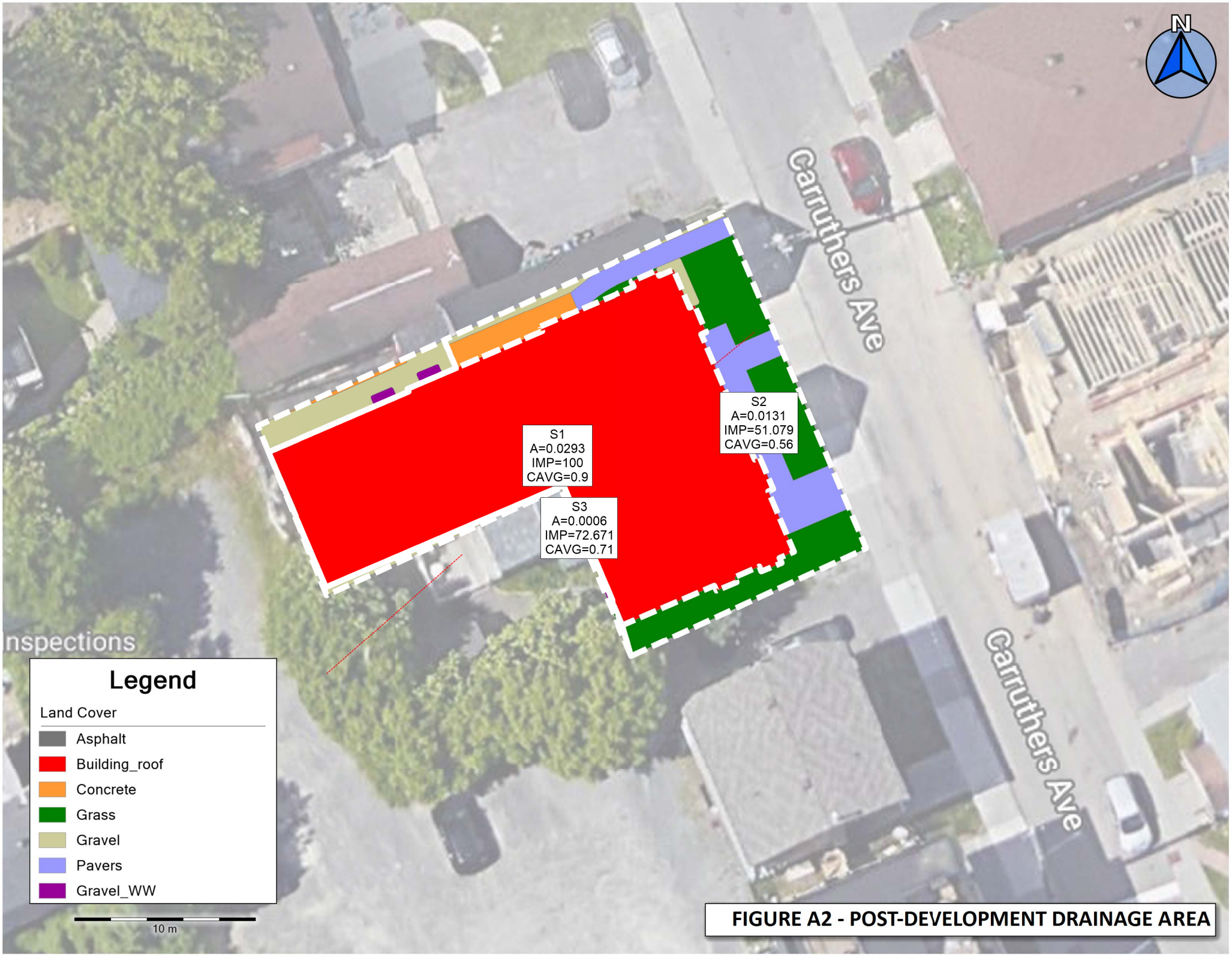


FIGURE A2 - POST-DEVELOPMENT DRAINAGE AREA

Figure A3: Fire hydrant spacing to 266-268 Carruthers Ave.

Appendix B – Water Servicing Tables

Table B-1 – Water Demand Chart

Table B-2 – Fire Flow Requirements Based on Fire Underwriters Survey (FUS)

Table B-3 – Available Fire Flows Based on Hydrant Spacing

Table B-4 – Estimated Water Pressure at Proposed Building

TABLE B-1: Water Demand Chart

Location: 266-268 Carruthers Avenue
Project No: OTT-22014656
Designed by: J.Fitzpatrick
Checked By: B. Thomas
Date Revised: Oct 2022

Water Consumption
Residential = **280** L/cap/day
Commercial = 5.0 L/m^2/day

Population Densities

Single Family	3.4	person/unit
Semi-Detahced	2.7	person/unit
Duplex	2.3	person/unit
Townhome (Row)	2.7	person/unit
Bachelor Apartment	1.4	person/unit
1 Bedroom Apartment	1.4	person/unit
2 Bedroom Apartment	2.1	person/unit
3 Bedroom Apartment	3.1	person/unit
4 Bedroom Apartment	4.1	person/unit
Avg. Apartment	1.8	person/unit

Proposed Buildings	No. of Residential Units: Singles/Semis/Towns: Single Family	Semi-Detached	Duplex	Townhome	Apartments: Studio	1 Bedroom	2 Bedroom	3 Bedroom	4 Bedroom	Avg Apt.	Total Persons (pop)	Residential Demands in (L/sec): Avg. Day Demand (L/day)	Peaking Factors (x Avg Day): Max Day	Peak Hour	Max Day Demand (L/day)	Peak Hour Demand (L/day)	Commercial: Area (m^2)	Avg Demand (L/day)	Peaking Factors (x Avg Day): Max Day	Peak Hour	Max Day Demand (L/day)	Peak Hour Demand (L/day)	Total Demands (L/sec): Avg Day (L/s)	Max Day (L/s)	Max Hour (L/s)
Appartment Building					2	5	11				32.9	9,212	9.39	14.13	86,490	130,195							0.107	1.001	1.507
Total =					2	5	11				32.9	9,212			86,490	130,195							0.11	1.00	1.51

PEAKING FACTORS FROM MOECC TABLE 3-3 (Peaking Factors for Water Systems Servicing Fewer Than 500 persons)

Dwelling Units Serviced	Equiv Pop	Night Min Factor	Maximum Day Factor	Peak Hour Factor
10	30	0.10	9.50	14.30
50	150	0.10	4.90	7.40
100	300	0.20	3.60	5.40
150	450	0.30	3.00	4.50
167	500	0.40	2.90	4.30

266-268 Carruthers Ave

FIRE FLOW REQURIEMENTS BASED ON FIRE UNDERWRITERS SURVEY(FUS) 2020

PROJECT: OTT-22014656-A0

LOCATION: **266-268 Carruthers Avenue**

An estimate of the Fire Flow required for a given fire area may be estimated by:

F = 220 * C * SQRT(A)

where: F = required fire flow in litres per minute
A = total floor area in m^2 (including all storeys, but excluding basements at least 50% below grade)
C = coefficient related to the type of construction

Task	Options	Multiplier	Input				Value Used	Fire Flow Total (L/min)
Choose Building Frame (C)	Wood Frame	1.5	Wood Frame				1.5	
	Ordinary Construction	1						
	Non-combustible Construction	0.8						
	Fire Resistive Construction	0.6						
Input Building Floor Areas (A)			Area	% Used	Area Used	Comment	926.1 m²	
	Floor 3		319	100%	318.8			
	Floor 2		319	100%	318.8			
	Floor 1		289	100%	288.5			
	Basement (At least 50% below grade, not included)		287	0%	0.0			
Fire Flow (F)	F = 220 * C * SQRT(A)							10,043
Fire Flow (F)	Rounded to nearest 1,000							**10,000**

Reductions/Increases Due to Factors Effecting Burning

Task	Options	Multiplier	Input	Value Used	Fire Flow Change (L/min)	Fire Flow Total (L/min)
Choose Combustibility of Building Contents	Non-combustible	-25%	Limited Combustible	-15%	-1,500	8,500
	Limited Combustible	-15%				
	Combustible	0%				
	Free Burning	15%				
	Rapid Burning	25%				
Choose Reduction Due to Sprinkler System	**Adequate** Sprinkler Conforms to NFPA13	-30%	No Sprinkler	0%	0	8,500
	No Sprinkler	0%				
	Standard Water Supply for Fire Department Hose Line and for Sprinkler System	-10%	Not Standard Water Supply or Unavailable	0%	0	8,500
	Not Standard Water Supply or Unavailable	0%				
	Fully Supervised Sprinkler System	-10%	Not Fully Supervised or N/A	0%	0	8,500
	Not Fully Supervised or N/A	0%				

Choose Structure Exposure Distance	Exposures	Separ-ation Dist (m)	Cond	Separation Conditon	Exposed Wall type	Exposed Wall Length: Length (m)	No of Storeys	Length-Height Factor	Sub-Conditon	Charge (%)	Total Charge (%)	Total Exposure Charge (L/min)	
	Side 1 (north)	3.4	2	3.1 to 10	Type V	16.6	3	49.8	2C	17%	58%	4,930	13,430
	Side 2 (west)	15.4	3	10.1 to 20	Type V	4.1	2	8.26	3A	10%			
	Side 3 (south)	8.5	2	3.1 to 10	Type V	4.29	3	12.87	2A	15%			
	Side 4 (east)	7.7	2	3.1 to 10	Type V	8.9	3	26.7	2B	16%			
Obtain Required Fire Flow											Total Required Fire Flow, Rounded to the Nearest 1,000 L/min =		**13,000**
											Total Required Fire Flow, L/s =		**217**

Exposure Charges for Exposing Walls of Wood Frame Construciton (from Table G5)

Type V	Wood Frame
Type IV-III (U)	Mass Timber or Ordinary with Unprotected Openings
Type IV-III (P)	Mass Timber or Ordinary with Protected Openings
Type II-I (U)	Noncombustible or Fire Resistive with Unprotected Openings
Type II-I (P)	Noncombustible or Fire Resistive with Protected Openings

Conditons for Separation

Separation Dist	Condition
0m to 3m	1
3.1m to 10m	2
10.1m to 20m	3
20.1m to 30m	4
> 30.1m	5

TABLE B-3: FIRE FLOW CONTRIBUTIONS BASED ON HYDRANT SPACING

Hydrant #	Location	[1]Distance (m)	[2]Fire Flow Contribution (L/min)	Comment
364029H165	Carruthers Ave	147	3800	
364029H063	Armstrong St	91.7	3800	
364029H166	Carruthers Ave	66.4	5700	
364029H047	Hinchey Ave	131.7	3800	
Total Fireflow Available in L/min (L/sec)			17,100	
or L/sec			(285)	
FUS RFF in L/min			13,020	
or L/sec			(217)	
Meets Requreiment (Yes/No)			Yes	

Notes:

[1]Distance is measured along a road or fire route.

[2]Fire Flow Contribution for Class AA Hydrant from Table 1 of Appendix I, ISTB-2018-02

[3]Straight distance from hydrant ot closest part of building.

TABLE B-4

ESTIMATED WATER PRESSURE AT PROPOSED BUILDING

Description	From	To	Demand (L/sec)	Pipe Length (m)	Pipe Dia (mm)	Dia (m)	Q (m3/sec)	Area (m2)	C	Vel (m/s)	Slope of HGL (m/m)	Head Loss (m)	Elev From (m)	Elev To (m)	*Elev Diff (m)	Pressure From kPa	Pressure From (psi)	Pressure To kPa	Pressure To (psi)	Pressure Drop (psi)
Avg Day Conditons																				
Single 50mm water service	Main	Building	0.11	12 m	50	0.050	0.0001	0.001963	110	0.0545	0.00017	0.0021	63.82	65.41	-1.6	432.4	(62.7)	416.8	(60.5)	2.3
Single 25mm water to single Apt on 3rd floor	Building	3rd Floor	0.0059	10 m	25	0.025	0.0000	0.000491	110	0.0121	2.3E-05	0.0002	65.41	76.31	-10.9	416.8	(60.5)	309.9	(44.9)	15.5
Max Day Conditons																				
Single 100mm watermain	Main	Building	1.00	12 m	50	0.050	0.0010	0.001963	110	0.5093	0.01065	0.1329	63.60	65.41	-1.8	432.4	(62.7)	413.4	(60.0)	2.8
Single 25mm water to single Apt on 3rd floor	Building	3rd Floor	0.0556	10 m	25	0.025	0.0001	0.000491	110	0.1132	0.00147	0.0152	65.41	76.31	-10.9	413.4	(60.0)	306.3	(44.4)	15.5
Peak Hour Conditons																				
Single 100mm watermain	Main	Building	1.51	12 m	50	0.050	0.0015	0.001963	110	0.769	0.02285	0.2851	63.60	65.41	-1.8	434.6	(63.0)	414.0	(60.0)	3.0
Single 25mm water to single Apt on 3rd floor	Building	3rd Floor	0.0839	10 m	25	0.025	0.0001	0.000491	110	0.1709	0.00316	0.0326	65.41	76.31	-10.9	414.0	(60.0)	306.8	(44.5)	15.6

Water Demand Info

Average Demand =	0.11	L/sec
Max Day Demand =	1.00	L/sec
Peak Hr Deamand =	1.51	L/sec
Fireflow Requriement =	217	L/sec
Max Day Plus FF Demand =	218.0	L/sec
Number of units in building =	18.0	units

Pipe Lengths

From watermain to mechanical room =	12 m
From mechanical room to top floor =	10 m
Hazen Williams C Factor for Friction Loss in Pipe, C=	110

Boundary Conditon

	Min HGL	Max HGL	Peak Hr	Max Day + Fireflow	
HGL (m)	107.9	115	107.9	102.9	(From City of Ottawa)
Approx Ground Elev (m) =	63.8	63.6	63.6	63.6	
Approx Bldg FF Elev (m) =	65.41	65.41	65.41	65.41	
Pressure (m) =	44.08	51.4	44.3	39.3	
Pressure (Pa) =	432,425	504,234	434,583	385,533	
Pressure (psi) =	62.7	73.1	63.0	55.9	

Appendix C – Sanitary Servicing Tables

Table C-1 – Sanitary Sewer Design Sheet

Table C-1: SANITARY SEWER CALCULATION SHEET

LOCATION			RESEDENTIAL AREAS AND POPULAITONS												COMMERCIAL			INSTITUTIONAL		INFILTRATION			TOTAL	SEWER DATA						
Street	U/S MH	D/S MH	Area (ha)	NUMBER OF UNITS							POPULATION		Peak Factor	Peak Flow (L/sec)	AREA (m^2)		Peak Flow (L/sec)	AREA (Ha)	ACCU AREA (Ha)	AREA (ha)		INFILT FLOW (L/s)	TOTAL FLOW (L/s)	Nom Dia (mm)	Actual Dia (mm)	Slope (%)	Length (m)	Capacity (L/sec)	Q/Q_{CAP} (%)	Full Velocity (m/s)
				Singles	Studio	Semi	1-Bed Apt.	2-Bed Apt.	3-Bed Apt.	4-Bed Apt.	INDIV	ACCU			INDIV	ACCU				INDIV	ACCU									
Carruthers Ave	bldg	Main	0.0429		2		5	11			32.9	32.9	4.00	0.426						0.04	0.04	0.014	0.44	150.0	148.0	2.00	2.6	20.8	2%	1.72
			0.0429		**2**		**5**	**11**			**32.9**									**0.043**									

Residential Avg. Daily Flow, q (L/p/day) = 280
Commercial Avg. Daily Flow (L/m^2/day) = 5.0

Institutianal Avg. Daily Flow (L/s/ha) = 28,000
or L/gross ha/sec = 0.324
Light Industrial Flow (L/gross ha/day) = 35,000
or L/gross ha/sec = 0.40509
Light Industrial Flow (L/gross ha/day) = 55,000
or L/gross ha/sec = 0.637

Commercial Peak Factor = 1.5 (when area >20%)
1.0 (when area <20%)

Institutional Peak Factor = 1.5 (when area >20%)
1.0 (when area <20%)

Residential Correction Factor, K = 0.80
Manning N = 0.013
Peak extraneous flow, I (L/s/ha) = 0.33 (Total I/I)

Peak Population Flow, (L/sec) : P*q*M/86.4
Peak Extraneous Flow, (L/sec) : I*Ac
Residential Peaking Factor, M : 1 + (14/(4+P^0.5)) * K
A_c = Cumulative Area (hectares)
P = Population (thousands)
Sewer Capacity, Qcap (L/sec) : $1/N \; S^{1/2} \; R^{2/3} \; A_c$
(Manning's Equation)

Unit Types	PPU
Singles	3.4
Studio	1.4
Semi	2.7
1-bed Apt. Unit	1.4
2-bed Apt. Unit	2.1
3-bed Apt. Unit	3.1
4-bed Apt. Unit	4.1

Designed:	Project:
J. Fitzpatrick, P.Eng	266-268 Carruther Ave
Checked:	Location:
B. Thomas, P.Eng.	Ottawa, Ontario
File Reference:	Page No:
22014656 Sanitary Design Sheet - October 2022.xlsx	**1 of 1**

Appendix D – Stormwater Servicing Tables

Table D-1 – Estimation of Pre-Development Peak Flows

Table D-2 – Estimation of Allowable Peak Flows (Based on Max C=0.50 with Tc=10mins)

Table D-3 – Summary of Post-Development Peak Flows (Uncontrolled and Controlled)

Table D-4 – Summary of Post-Development Storage

Table D-5 – Calculation of Available Surface Storage (not provided)

Table D-6 – Calculation of Available Underground Storage

Table D-7 – Calculation of Available Underground Infiltration Trench Storage

Table D-8 – Calculation of Underground Structure Storage

Table D-9 - 5-year & 100-year Roof Drains Design Sheet - using Flow Controlled Roof Drains

Table D-10 - Storage Volumes Roof Area #S02-1 (5 Year and 100Year Storms)

Table D-11 - Storage Volumes Roof Area #S02-2 (5 Year and 100Year Storms)

Table D-12 - Storage Volumes Roof Area #S02-3 (5 Year and 100Year Storms)

Table D-13 - Storage Volumes Roof Area #S02-4 (5 Year and 100Year Storms)

Table D-14 - Storage Volumes Roof Area #S02-1 (5 Year and 100Year Storms)

TABLE D-1: ESTIMATION OF PRE-DEVELOPMENT PEAK FLOWS

Catchment No.	Area (ha)	Outlet Location	Time of Conc, Tc (min)	Storm = 2 yr			Storm = 5 yr			Storm = 100 yr		
				I_2 (mm/hr)	Cavg	Q_{2PRE} (L/sec)	I_5 (mm/hr)	Cavg	Q_{5PRE} (L/sec)	I_{100} (mm/hr)	Cavg	Q_{100PRE} (L/sec)
Full Site	0.0429	Carruthers Avenue	10.00	76.81	0.83	7.6	104.19	0.83	10.3	178.56	1.00	21.3
Totals	0.0429					7.6			10.3			21.3

Notes

1) Intensity, I = $732.951/(Tc+6.199)^{0.810}$ (2-year, City of 0ttawa)

2) Intensity, I = $998.071/(Tc+6.035)^{0.814}$ (5-year, City of 0ttawa)

3) Intensity, I = $1735.688/(Tc+6.014)^{0.820}$ (100-year, City of Ottawa)

4) Cavg for 100-year is increased by 25% to a maximum of 1.0

Table D-2 ESTIMATION OF ALLOWABLE PEAK FLOWS (Based on Max C=0.50 with Tc=10mins)

Area (onsite)	Area (ha)	Time of Conc, Tc (min)	Storm = 2 yr			Storm = 5 yr			Storm = 100 yr		
			I_5 (mm/hr)	Cavg	Q_{5ALLOW} (L/sec)	I_5 (mm/hr)	Cavg	Q_{5ALLOW} (L/sec)	I_5 (mm/hr)	Cavg	Q_{5ALLOW} (L/sec)
Full Site	0.0429	10	76.81	0.50	4.6	104.29	0.50	6.2	178.56	0.65	13.9
Totals	**0.0429**				**4.6**			**6.2**			**13.9**

Notes

1) Allowable Capture Rate is based on 2-year storm at Tc=10 minutes.

Allowable Discharge (based on 2-yr storm)

TABLE D-3: SUMMARY OF POST-DEVELOPMENT PEAK FLOWS (Uncontrolled and Controlled)

Area No	Area (ha)	Time of Conc, Tc (min)	Storm = 2 yr				Storm = 5 yr				Storm = 100 yr				Comments
			C_{AVG}	I_2 (mm/hr)	Q (L/sec)	Q_{CAP} (L/sec)	C_{AVG}	I_5 (mm/hr)	Q (L/sec)	Q_{CAP} (L/sec)	C_{AVG}	I_{100} (mm/hr)	Q (L/sec)	Q_{CAP} (L/sec)	
S1	0.0326	10	0.9	76.81	6.3	**(1.16)**	0.90	104.19	8.5	**(1.58)**	1.00	178.56	16.2	**(1.58)**	Roof (2 - Closed)
S2	0.0131	10	0.56	76.81	1.6	**(0.8)**	0.56	104.19	2.1	**(1.1)**	0.70	178.56	4.6	**(2.34)**	ICD (LMF 50)
S3	0.0006	10	0.71	76.81	0.1	0.1	0.71	104.19	0.1	0.1	0.89	178.56	0.3	0.3	side - UNCL
Total =	0.0463				**7.9**	**(2.1)**			**10.7**	**(2.8)**			**21.0**	**(4.2)**	
pre_dev =														*4.6*	

Notes

2-yr Storm Intensity, I = 732.951/(Tc+6.199)^0.810 (City of Ottawa)

5-yr Storm Intensity, I = 998.071/(Tc+6.035)^0.814 (City of Ottawa)

100-yr Storm Intensity, I = 1735.688/(Tc+6.014)&^0.820 (City of Ottawa)

Time of Concentration (min), Tc = ***10***

For Flows under column Qcap which are shown in brackets ***(0.0)*** *, denotes flows that are controlled*

TABLE D-4: SUMMARY OF POST DEVELOPMENT STORAGE

Area No.	Area (ha)	Release Rate (L/s)			[1] Storage Required (m^3)			Storage Provided (m^3)						Control Method
		2-yr	5-yr	100-yr	2-yr (MRM)	5-yr (MRM)	100-yr (MRM)	Roof	Surface Ponding	UG PIPES	Infiltration Trench	UG CB/MHs	Total	
S1	0.0326	1.16	1.58	1.58	3.79	5.08	12.66	15.5					15.5	Roof Drains
S2	0.0131	0.8	1.1	2.3	0.46	0.62	2.58			0.65	3.58	0.61	4.85	13.3 m x 0.85 m Trench (S29) with ICD in CB02 (IPEX LMF-50)
S3	0.0006	0.1	0.1	0.3	0.0	0.0	0.0						0.0	Un-Controlled
		2.1	**2.8**	**4.2**	**4.2**	**5.7**	**15.2**						20.4	

Notes

1) Storage Requried Based on the Modified Rational Method (MRM) for the relase rates noted.

TABLE D5

CALCULATION OF AVAILABLE SURFACE STORAGE (not provided)

Drainage Area	Ponding Number	Min W/L or T/G (m)	Indiv Spill Elev (m)	[1]Max Depth (m)	Area (m^2)	Max Volume (m^3)
S01						0.0
S02						0.0
S03						0.0
Totals						**0.0**

Notes:

The Max Depth is is the distance from the Min W/L (T/G) and the lower of the Indiv Spill or System Spill Elev

TABLE D6

CALCULATION OF AVAILABLE UNDERGROUND PIPE STORAGE

Drainage Area	U/S Manhole	D/S Manhole	Pipe Type	Length (m)	Pipe Dia (mm)	Pipe Area (m^2)	Pipe Volume (m3)
S01							
S02	CBE01	CB02	HDPE	6.6	250	0.049	0.32
	CBE03	CB02	HDPE	6.7	250	0.049	0.33
S03							
Totals							**0.65**

TABLE D7

CALCULATION OF AVAILABLE UNDERGROUND INFILTRATION TRENCH STORAGE

Drainage Area	U/S Manhole	D/S Manhole	Trench Width (m)	Trench Length (m)	Trench Height (m)	Pipe Area	Granular Void Ratio	Availabe Storage Area (m^2)	Pipe Volume (m3)
S01									
S02	CBE01	CB02	0.85	6.6	0.85	0.049	0.40	0.269	1.778
	CBE03	CB02	0.85	6.7	0.85	0.049	0.40	0.269	1.805
S03									
Totals									**3.58**

TABLE D8

CALCULATION OF UNDERGROUND STRUCTURE STORAGE

Drainage Area	Structure No.	Size	T/G (m)	Spill Elev (m)	Inv Elev (m)	Sump Elev (m)	[1]Storage Depth (m)	Area (m^2)	Volume (m^3)
S01									
S02	CB01	300 dia	63.76	63.76	62.83	62.83	0.93	0.09	0.08
	CB02	610 square	63.83	63.83	62.63	62.63	1.20	0.37	0.45
	CB03	300 dia	63.82	63.82	62.89	62.89	0.93	0.09	0.08
S03									
Totals									**0.61**

Notes:

The Storage Depth is the distance from the invert elevation to either the T/G or Spill Elev (whichever is lower)

Table D 9: 5-year & 100-year Roof Drains Design Sheet - using Flow Controlled Roof Drains

Project: 266-268 Carruthers Ave
Location: City of Ottawa
Date: Nov 2022

Area #	Drain Type	Roof Drain Type	No Drains per Area	No of Weirs per Drain	Weir Position	Runoff Coeff (Cavg)		Drainage Area		5-year Event						100-year Event						Storage Required *(MRM)*		Maximum Storage Provided at Spill Elevation			
						5-year	100-year	m^2	ha	Runoff Rate (L/sec)	5yr Ponding Depth (mm)	Roof Drain Capacity Per Weir (gpm)	Roof Drain Capacity Per Drain per weir (gpm)	Roof Drain Capacity Per Drain (L/sec)	Total Flow From Roof Drains (L/sec)	Runoff Rate (L/sec)	100yr Ponding Depth (mm)	Roof Drain Capacity Per Weir (gpm)	Roof Drain Capacity Per Drain per weir (gpm)	Roof Drain Capacity Per Drain (L/sec)	Total Flow From Roof Drains (L/sec)	5-year (m^3)	100-year (m^3)	Area Available for Storage (m^2)	Max Prism Depth (mm)	Max Prisim Volume (m^3)	Total Volume (m3)
S1-01	RD	RD1	1	1	2-Closed	0.90	0.90	65.17	0.0065	1.699	103	5.0	5.0	0.315	0.315	2.912	134	5.0	5.0	0.315	0.315	1.01	2.18	61.9	150	3.1	3.10
S1-02	RD	RD1	1	1	2-Closed	0.90	0.90	62.07	0.0062	1.618	102	5.0	5.0	0.315	0.315	2.773	133	5.0	5.0	0.315	0.315	0.94	2.04	59.0	150	2.9	2.95
S1-03	RD	RD1	1	1	2-Closed	0.90	0.90	81.96	0.0082	2.137	107	5.0	5.0	0.315	0.315	3.662	137	5.0	5.0	0.315	0.315	1.42	2.99	77.9	150	3.9	3.89
S1-04	RD	RD1	1	1	2-Closed	0.90	0.90	54.95	0.0055	1.432	100	5.0	5.0	0.315	0.315	2.455	131	5.0	5.0	0.315	0.315	0.78	1.72	52.2	150	2.6	2.61
S1-05	RD	RD1	1	1	2-Closed	0.90	0.90	62.24	0.0062	1.623	103	5.0	5.0	0.315	0.315	2.781	133	5.0	5.0	0.315	0.315	0.94	2.05	59.1	150	3.0	2.96
Totals						0.9	0.9	**326**	**0.0326**	8.509		**25.00**		**1.58**	**1.58**	**14.58**		**25.00**		**1.58**	**1.58**	**5.10**	**10.99**	**310**		**15.5**	**15.5**
Min											**100**						**131**										
Max											**107**						**137**										

Runoff Based on the Following:

Storm Frequency (years) =	5	100
Time of Conc (mins) =	10	10
Storm Intensity (mm/hr) =	104.2	178.6

Qyr(cont) = 1.2
V2yr = 3.8

Roof Drain Types

Drain Type =	RD1
Max Overflow Depth (mm	150 mm
Flow Controlled (Yes/No)	Yes
Ponding	Yes
Weir Desc	Accutrol
No. Weirs	1

Roof Drains have Following Flow Rates: WATTS Flow Controlled Drain

Weir Position		Flow (gpm) per depth							Max Flow Rate per Weir
		0	25	50	75	100	125	150	
		0	0.025	0.05	0.075	0.1	0.125	0.15	
1-None		0	0	0	0	0	0	0	0.000
2-Closed		0	5	5	5	5	5	5	0.315
3-1/4 open		0	5	10	11	13	14	15	0.946
4-1/2 open		0	5	10	12	15	18	20	1.262
5-3/4 open		0	5	10	14	18	21	25	1.577
6-Full		0	5	10	15	20	25	30	1.893

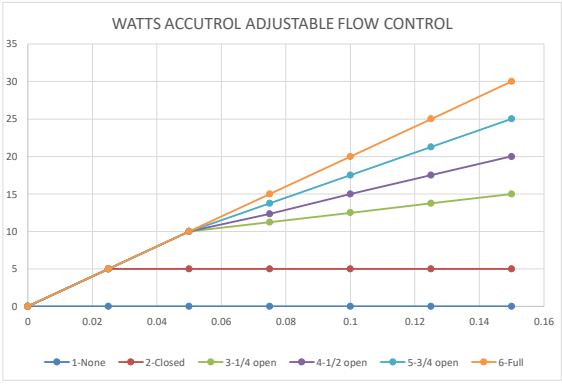


Table D10 Storage Volumes Roof Area #S02-1 (5 Year and 100Year Storms)

C_{AVG} = 0.90 (dimmensionless)
C_{AVG} = 0.90
Time Interval = 10 (mins)
Drainage Area = 0.00652 (hectares)

	Release Rate = 0.315 (L/sec)					Release Rate = 0.3155 (L/sec)				
	Return Period = 5 (years)					Return Period = 100 (years)				
	IDF Parameters, A = 998.071 , B = 0.814					IDF Parameters, A = 1735.688 , B = 0.820				
	(I = A/(T_c+C) , C = 6.053					(I = A/(T_c+C) , C = 6.014				
Duration (min)	Rainfall Intensity, I (mm/hr)	Peak Flow (L/sec)	Release Rate (L/sec)	Storage Rate (L/sec)	Storage (m^3)	Rainfall Intensity, I (mm/hr)	Peak Flow (L/sec)	Release Rate (L/sec)	Storage Rate (L/sec)	Storage (m^3)
0	230.5	3.8	0.32	3.4	0.00	398.6	6.5	0.315	6.2	0.00
10	104.2	1.7	0.32	1.4	0.83	178.6	2.9	0.315	2.6	1.56
20	70.3	1.1	0.32	0.8	1.00	120.0	2.0	0.315	1.6	1.97
30	53.9	0.9	0.32	0.6	1.01	91.9	1.5	0.315	1.2	2.13
40	44.2	0.7	0.32	0.4	0.97	75.1	1.2	0.315	0.9	2.18
50	37.7	0.6	0.32	0.3	0.90	64.0	1.0	0.315	0.7	2.18
60	32.9	0.5	0.32	0.2	0.80	55.9	0.9	0.315	0.6	2.15
70	29.4	0.5	0.32	0.2	0.69	49.8	0.8	0.315	0.5	2.08
80	26.6	0.4	0.32	0.1	0.56	45.0	0.7	0.315	0.4	2.01
90	24.3	0.4	0.32	0.1	0.44	41.1	0.7	0.315	0.4	1.92
100	22.4	0.4	0.32	0.0	0.30	37.9	0.6	0.315	0.3	1.82
110	20.8	0.3	0.32	0.0	0.16	35.2	0.6	0.315	0.3	1.71
120	19.5	0.3	0.32	0.0	0.01	32.9	0.5	0.315	0.2	1.59
130	18.3	0.3	0.32	0.0	-0.13	30.9	0.5	0.315	0.2	1.47
140	17.3	0.3	0.32	0.0	-0.28	29.2	0.5	0.315	0.2	1.34
150	16.4	0.3	0.32	0.0	-0.44	27.6	0.5	0.315	0.1	1.21
160	15.6	0.3	0.32	-0.1	-0.59	26.2	0.4	0.315	0.1	1.08
170	14.8	0.2	0.32	-0.1	-0.75	25.0	0.4	0.315	0.1	0.94
180	14.2	0.2	0.32	-0.1	-0.91	23.9	0.4	0.315	0.1	0.80
190	13.6	0.2	0.32	-0.1	-1.07	22.9	0.4	0.315	0.1	0.66
200	13.0	0.2	0.32	-0.1	-1.23	22.0	0.4	0.315	0.0	0.52
210	12.6	0.2	0.32	-0.1	-1.40	21.1	0.3	0.315	0.0	0.37
220	12.1	0.2	0.32	-0.1	-1.56	20.4	0.3	0.315	0.0	0.22
230	11.7	0.2	0.32	-0.1	-1.72	19.7	0.3	0.315	0.0	0.07
240	11.3	0.2	0.32	-0.1	-1.89	19.0	0.3	0.315	0.0	-0.08
Max =					**1.01**					**2.18**

Notes

1) Peak flow is equal to the product of 2.78 x C x I x A
2) Rainfall Intensity, $I = A/(Tc+C)^B$
3) Release Rate = Min (Release Rate, Peak Flow)
4) Storage Rate = Peak Flow - Release Rate
5) Storage = Duration x Storage Rate
6) Maximium Storage = Max Storage Over Duration

Table D11 Storage Volumes Roof Area #S02-2 (5 Year and 100Year Storms)

C_{AVG} = 0.90 (dimmensionless)
C_{AVG} = 0.90
Time Interval = 10 (mins)
Drainage Area = 0.00621 (hectares)

	Release Rate = 0.315 (L/sec)					Release Rate = 0.3155 (L/sec)				
	Return Period = 5 (years)					Return Period = 100 (years)				
	IDF Parameters, A = 998.071 , B = 0.814					IDF Parameters, A = 1735.688 , B = 0.820				
	(I = A/(Tc+C) , C = 6.053					(I = A/(Tc+C) , C = 6.014				
Duration (min)	Rainfall Intensity, I (mm/hr)	Peak Flow (L/sec)	Release Rate (L/sec)	Storage Rate (L/sec)	Storage (m^3)	Rainfall Intensity, I (mm/hr)	Peak Flow (L/sec)	Release Rate (L/sec)	Storage Rate (L/sec)	Storage (m^3)
0	230.5	3.6	0.32	3.3	0.00	398.6	6.2	0.315	5.9	0.00
10	104.2	1.6	0.32	1.3	0.78	178.6	2.8	0.315	2.5	1.47
20	70.3	1.1	0.32	0.8	0.93	120.0	1.9	0.315	1.5	1.86
30	53.9	0.8	0.32	0.5	0.94	91.9	1.4	0.315	1.1	2.00
40	44.2	0.7	0.32	0.4	0.89	75.1	1.2	0.315	0.9	2.04
50	37.7	0.6	0.32	0.3	0.81	64.0	1.0	0.315	0.7	2.03
60	32.9	0.5	0.32	0.2	0.71	55.9	0.9	0.315	0.6	1.99
70	29.4	0.5	0.32	0.1	0.59	49.8	0.8	0.315	0.5	1.92
80	26.6	0.4	0.32	0.1	0.47	45.0	0.7	0.315	0.4	1.84
90	24.3	0.4	0.32	0.1	0.33	41.1	0.6	0.315	0.3	1.74
100	22.4	0.3	0.32	0.0	0.20	37.9	0.6	0.315	0.3	1.64
110	20.8	0.3	0.32	0.0	0.05	35.2	0.5	0.315	0.2	1.53
120	19.5	0.3	0.32	0.0	-0.09	32.9	0.5	0.315	0.2	1.41
130	18.3	0.3	0.32	0.0	-0.24	30.9	0.5	0.315	0.2	1.28
140	17.3	0.3	0.32	0.0	-0.40	29.2	0.5	0.315	0.1	1.15
150	16.4	0.3	0.32	-0.1	-0.55	27.6	0.4	0.315	0.1	1.02
160	15.6	0.2	0.32	-0.1	-0.71	26.2	0.4	0.315	0.1	0.88
170	14.8	0.2	0.32	-0.1	-0.87	25.0	0.4	0.315	0.1	0.74
180	14.2	0.2	0.32	-0.1	-1.03	23.9	0.4	0.315	0.1	0.60
190	13.6	0.2	0.32	-0.1	-1.19	22.9	0.4	0.315	0.0	0.46
200	13.0	0.2	0.32	-0.1	-1.35	22.0	0.3	0.315	0.0	0.31
210	12.6	0.2	0.32	-0.1	-1.52	21.1	0.3	0.315	0.0	0.16
220	12.1	0.2	0.32	-0.1	-1.68	20.4	0.3	0.315	0.0	0.01
230	11.7	0.2	0.32	-0.1	-1.85	19.7	0.3	0.315	0.0	-0.14
240	11.3	0.2	0.32	-0.1	-2.02	19.0	0.3	0.315	0.0	-0.29
Max =					**0.94**					**2.04**

Notes

1) Peak flow is equal to the product of 2.78 x C x I x A
2) Rainfall Intensity, $I = A/(Tc+C)^B$
3) Release Rate = Min (Release Rate, Peak Flow)
4) Storage Rate = Peak Flow - Release Rate
5) Storage = Duration x Storage Rate
6) Maximium Storage = Max Storage Over Duration

Table D12 Storage Volumes Roof Area #S02-3 (5 Year and 100Year Storms)

C_{AVG} = 0.90 (dimmensionless)
C_{AVG} = 0.90
Time Interval = 10 (mins)
Drainage Area = 0.00820 (hectares)

	Release Rate = 0.315 (L/sec)					Release Rate = 0.3155 (L/sec)				
	Return Period = 5 (years)					Return Period = 100 (years)				
	IDF Parameters, A = 998.071 , B = 0.814					IDF Parameters, A = 1735.688 , B = 0.820				
	(I = A/(T_c+C) , C = 6.053					(I = A/(T_c+C) , C = 6.014				
Duration (min)	Rainfall Intensity, I (mm/hr)	Peak Flow (L/sec)	Release Rate (L/sec)	Storage Rate (L/sec)	Storage (m^3)	Rainfall Intensity, I (mm/hr)	Peak Flow (L/sec)	Release Rate (L/sec)	Storage Rate (L/sec)	Storage (m^3)
0	230.5	4.7	0.32	4.4	0.00	398.6	8.2	0.315	7.9	0.00
10	104.2	2.1	0.32	1.8	1.09	178.6	3.7	0.315	3.3	2.01
20	70.3	1.4	0.32	1.1	1.35	120.0	2.5	0.315	2.1	2.57
30	53.9	1.1	0.32	0.8	1.42	91.9	1.9	0.315	1.6	2.82
40	44.2	0.9	0.32	0.6	1.42	75.1	1.5	0.315	1.2	2.94
50	37.7	0.8	0.32	0.5	1.37	64.0	1.3	0.315	1.0	2.99
60	32.9	0.7	0.32	0.4	1.30	55.9	1.1	0.315	0.8	2.99
70	29.4	0.6	0.32	0.3	1.20	49.8	1.0	0.315	0.7	2.96
80	26.6	0.5	0.32	0.2	1.10	45.0	0.9	0.315	0.6	2.91
90	24.3	0.5	0.32	0.2	0.99	41.1	0.8	0.315	0.5	2.85
100	22.4	0.5	0.32	0.1	0.86	37.9	0.8	0.315	0.5	2.77
110	20.8	0.4	0.32	0.1	0.74	35.2	0.7	0.315	0.4	2.68
120	19.5	0.4	0.32	0.1	0.60	32.9	0.7	0.315	0.4	2.59
130	18.3	0.4	0.32	0.1	0.47	30.9	0.6	0.315	0.3	2.48
140	17.3	0.4	0.32	0.0	0.32	29.2	0.6	0.315	0.3	2.37
150	16.4	0.3	0.32	0.0	0.18	27.6	0.6	0.315	0.3	2.26
160	15.6	0.3	0.32	0.0	0.03	26.2	0.5	0.315	0.2	2.14
170	14.8	0.3	0.32	0.0	-0.12	25.0	0.5	0.315	0.2	2.01
180	14.2	0.3	0.32	0.0	-0.27	23.9	0.5	0.315	0.2	1.89
190	13.6	0.3	0.32	0.0	-0.42	22.9	0.5	0.315	0.2	1.76
200	13.0	0.3	0.32	0.0	-0.57	22.0	0.5	0.315	0.1	1.62
210	12.6	0.3	0.32	-0.1	-0.73	21.1	0.4	0.315	0.1	1.49
220	12.1	0.2	0.32	-0.1	-0.89	20.4	0.4	0.315	0.1	1.35
230	11.7	0.2	0.32	-0.1	-1.05	19.7	0.4	0.315	0.1	1.21
240	11.3	0.2	0.32	-0.1	-1.21	19.0	0.4	0.315	0.1	1.07
Max =					**1.42**					**2.99**

Notes

1) Peak flow is equal to the product of 2.78 x C x I x A
2) Rainfall Intensity, $I = A/(Tc+C)^B$
3) Release Rate = Min (Release Rate, Peak Flow)
4) Storage Rate = Peak Flow - Release Rate
5) Storage = Duration x Storage Rate
6) Maximium Storage = Max Storage Over Duration

Table D13 Storage Volumes Roof Area #S02-4 (5 Year and 100Year Storms)

C_{AVG} = 0.90 (dimmensionless)
C_{AVG} = 0.90
Time Interval = 10 (mins)
Drainage Area = 0.00550 (hectares)

	Release Rate = 0.315 (L/sec)					Release Rate = 0.3155 (L/sec)				
	Return Period = 5 (years)					Return Period = 100 (years)				
	IDF Parameters, A = 998.071 , B = 0.814					IDF Parameters, A = 1735.688 , B = 0.820				
	(I = A/(Tc+C) , C = 6.053					(I = A/(Tc+C) , C = 6.014				
Duration (min)	Rainfall Intensity, I (mm/hr)	Peak Flow (L/sec)	Release Rate (L/sec)	Storage Rate (L/sec)	Storage (m^3)	Rainfall Intensity, I (mm/hr)	Peak Flow (L/sec)	Release Rate (L/sec)	Storage Rate (L/sec)	Storage (m^3)
0	230.5	3.2	0.32	2.9	0.00	398.6	5.5	0.315	5.2	0.00
10	104.2	1.4	0.32	1.1	0.67	178.6	2.5	0.315	2.1	1.28
20	70.3	1.0	0.32	0.7	0.78	120.0	1.6	0.315	1.3	1.60
30	53.9	0.7	0.32	0.4	0.77	91.9	1.3	0.315	0.9	1.71
40	44.2	0.6	0.32	0.3	0.70	75.1	1.0	0.315	0.7	1.72
50	37.7	0.5	0.32	0.2	0.61	64.0	0.9	0.315	0.6	1.69
60	32.9	0.5	0.32	0.1	0.49	55.9	0.8	0.315	0.5	1.63
70	29.4	0.4	0.32	0.1	0.37	49.8	0.7	0.315	0.4	1.55
80	26.6	0.4	0.32	0.0	0.24	45.0	0.6	0.315	0.3	1.45
90	24.3	0.3	0.32	0.0	0.10	41.1	0.6	0.315	0.2	1.35
100	22.4	0.3	0.32	0.0	-0.04	37.9	0.5	0.315	0.2	1.23
110	20.8	0.3	0.32	0.0	-0.19	35.2	0.5	0.315	0.2	1.11
120	19.5	0.3	0.32	0.0	-0.34	32.9	0.5	0.315	0.1	0.98
130	18.3	0.3	0.32	-0.1	-0.50	30.9	0.4	0.315	0.1	0.85
140	17.3	0.2	0.32	-0.1	-0.66	29.2	0.4	0.315	0.1	0.72
150	16.4	0.2	0.32	-0.1	-0.81	27.6	0.4	0.315	0.1	0.58
160	15.6	0.2	0.32	-0.1	-0.98	26.2	0.4	0.315	0.0	0.43
170	14.8	0.2	0.32	-0.1	-1.14	25.0	0.3	0.315	0.0	0.29
180	14.2	0.2	0.32	-0.1	-1.30	23.9	0.3	0.315	0.0	0.14
190	13.6	0.2	0.32	-0.1	-1.47	22.9	0.3	0.315	0.0	-0.01
200	13.0	0.2	0.32	-0.1	-1.63	22.0	0.3	0.315	0.0	-0.16
210	12.6	0.2	0.32	-0.1	-1.80	21.1	0.3	0.315	0.0	-0.31
220	12.1	0.2	0.32	-0.1	-1.97	20.4	0.3	0.315	0.0	-0.47
230	11.7	0.2	0.32	-0.2	-2.14	19.7	0.3	0.315	0.0	-0.62
240	11.3	0.2	0.32	-0.2	-2.31	19.0	0.3	0.315	-0.1	-0.78
Max =					**0.78**					**1.72**

Notes

1) Peak flow is equal to the product of 2.78 x C x I x A
2) Rainfall Intensity, $I = A/(Tc+C)^B$
3) Release Rate = Min (Release Rate, Peak Flow)
4) Storage Rate = Peak Flow - Release Rate
5) Storage = Duration x Storage Rate
6) Maximium Storage = Max Storage Over Duration

Table D14 Storage Volumes Roof Area #S02-5 (5 Year and 100Year Storms)

C_{AVG} = 0.90 (dimmensionless)
C_{AVG} = 0.90
Time Interval = 10 (mins)
Drainage Area = 0.00622 (hectares)

	Release Rate = 0.315 (L/sec)					Release Rate = 0.3155 (L/sec)				
	Return Period = 5 (years)					Return Period = 100 (years)				
	IDF Parameters, A = 998.071 , B = 0.814					IDF Parameters, A = 1735.688 , B = 0.820				
	(I = A/(T_c+C) , C = 6.053					(I = A/(T_c+C) , C = 6.014				
Duration (min)	Rainfall Intensity, I (mm/hr)	Peak Flow (L/sec)	Release Rate (L/sec)	Storage Rate (L/sec)	Storage (m^3)	Rainfall Intensity, I (mm/hr)	Peak Flow (L/sec)	Release Rate (L/sec)	Storage Rate (L/sec)	Storage (m^3)
0	230.5	3.6	0.32	3.3	0.00	398.6	6.2	0.315	5.9	0.00
10	104.2	1.6	0.32	1.3	0.78	178.6	2.8	0.315	2.5	1.48
20	70.3	1.1	0.32	0.8	0.93	120.0	1.9	0.315	1.6	1.86
30	53.9	0.8	0.32	0.5	0.94	91.9	1.4	0.315	1.1	2.01
40	44.2	0.7	0.32	0.4	0.89	75.1	1.2	0.315	0.9	2.05
50	37.7	0.6	0.32	0.3	0.81	64.0	1.0	0.315	0.7	2.04
60	32.9	0.5	0.32	0.2	0.71	55.9	0.9	0.315	0.6	2.00
70	29.4	0.5	0.32	0.1	0.60	49.8	0.8	0.315	0.5	1.93
80	26.6	0.4	0.32	0.1	0.47	45.0	0.7	0.315	0.4	1.85
90	24.3	0.4	0.32	0.1	0.34	41.1	0.6	0.315	0.3	1.75
100	22.4	0.3	0.32	0.0	0.20	37.9	0.6	0.315	0.3	1.65
110	20.8	0.3	0.32	0.0	0.06	35.2	0.5	0.315	0.2	1.54
120	19.5	0.3	0.32	0.0	-0.09	32.9	0.5	0.315	0.2	1.42
130	18.3	0.3	0.32	0.0	-0.24	30.9	0.5	0.315	0.2	1.29
140	17.3	0.3	0.32	0.0	-0.39	29.2	0.5	0.315	0.1	1.16
150	16.4	0.3	0.32	-0.1	-0.55	27.6	0.4	0.315	0.1	1.03
160	15.6	0.2	0.32	-0.1	-0.70	26.2	0.4	0.315	0.1	0.89
170	14.8	0.2	0.32	-0.1	-0.86	25.0	0.4	0.315	0.1	0.76
180	14.2	0.2	0.32	-0.1	-1.02	23.9	0.4	0.315	0.1	0.61
190	13.6	0.2	0.32	-0.1	-1.18	22.9	0.4	0.315	0.0	0.47
200	13.0	0.2	0.32	-0.1	-1.35	22.0	0.3	0.315	0.0	0.32
210	12.6	0.2	0.32	-0.1	-1.51	21.1	0.3	0.315	0.0	0.17
220	12.1	0.2	0.32	-0.1	-1.68	20.4	0.3	0.315	0.0	0.02
230	11.7	0.2	0.32	-0.1	-1.84	19.7	0.3	0.315	0.0	-0.13
240	11.3	0.2	0.32	-0.1	-2.01	19.0	0.3	0.315	0.0	-0.28
Max =					**0.94**					**2.05**

Notes

1) Peak flow is equal to the product of 2.78 x C x I x A
2) Rainfall Intensity, $I = A/(Tc+C)^B$
3) Release Rate = Min (Release Rate, Peak Flow)
4) Storage Rate = Peak Flow - Release Rate
5) Storage = Duration x Storage Rate
6) Maximium Storage = Max Storage Over Duration

Appendix E – Consultation / Correspondence

City of Ottawa Memo from Pre-Consultation Meeting.

Email on Water System Boundary Conditions.

Email Received from RCVA on Stormwater Management Requirements.

Hi Jeff,

Please forward the below information to the applicant regarding a development proposal at **266-268 Carruthers Avenue, Ottawa for a three storey + basement low rise apartment building with approximately 22 units**. Note that the information is considered **preliminary,** and the assigned Development Review Project Manager may modify and/or add additional requirements and conditions upon review of an application if deemed necessary.

General:

- It is the sole responsibility of the consultant to investigate the location of existing underground utilities in the proposed servicing area and submit a request for locates to avoid conflict(s). The location of existing utilities and services shall be documented on an **Existing Conditions Plan**.
- Any easements on the subject site shall be identified and respected by any development proposal and shall adhere to the conditions identified in the easement agreement. A **legal survey plan** shall be provided, and all easements shall be shown on the engineering plans.
- **Concern** about sanitary and storm sewer capacity, please provide the new sanitary and storm sewer discharge and we confirm if sanitary sewer main has the capacity. Also provide the size proposed sanitary service.
- An application to consolidate the parcels (266 and 268 Carruthers Avenue) of land will be required otherwise the proposed stormwater works will be servicing more than one parcel of land and thus does not meet the exemption set out in O.Reg. 525/98. This would mean an **ECA would be required** regardless of who owns the parcels.
- Only one service connection is permitted per property parcel. Therefore, if all three properties (266 Carruthers, 268 Carruthers, and 177 Armstrong) are merged as a single property parcel, only one service connection is permitted for the parcel.

- Reference documents for information purposes:
  - Ottawa Sewer Design Guidelines (October 2012)
  - Technical Bulletin PIEDTB-2016-01
  - Technical Bulletins ISTB-2018-01, ISTB-2018-02 and ISTB-2018-03.
  - Ottawa Design Guidelines - Water Distribution (2010)
  - Technical Bulletin ISTB-2021-03
  - Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
  - City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
  - City of Ottawa Environmental Noise Control Guidelines (January 2016)
  - City of Ottawa Accessibility Design Standards (2012) (City recommends development be in accordance with these standards on private property)
  - Ottawa Standard Tender Documents (latest version)
  - Ontario Provincial Standards for Roads & Public Works (2013)

- Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-424 x.44455).

Please note that this is the applicant responsibility to refer to the latest applicable guidelines while preparing reports and studies.

Disclaimer:
The City of Ottawa does not guarantee the accuracy or completeness of the data and information contained on the above image(s) and does not assume any responsibility or liability with respect to any damage or loss arising from the use or interpretation of the image(s) provided. This image is for schematic purposes only.

Stormwater Management Criteria and Information:

- **Water Quantity Control:** In the absence of area specific SWM criteria please control post-development runoff from the subject site, up to and including the **100-year storm event**, to **a 2-year pre-development level.** The pre-development runoff coefficient will need to be determined **as per existing conditions** but in no case more than 0.5. [**If 0.5 applies it needs to be clearly demonstrated in the report that the pre-development runoff coefficient is greater than 0.5**]. The time of concentration (T_c) used to determine the pre-development condition should be calculated. *Tc should not be less than 10 min. since IDF curves become unrealistic at less than 10 min; T_c of 10 minutes shall be used for all post-development calculations*].

- Any storm events greater than the established **2-year allowable** release rate, up to and including the **100-year storm event**, shall be detained on-site. The SWM measures required to avoid impact on downstream sewer system will be subject to review.
- Please note that foundation drainage is to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention. **It is recommended that the foundation drainage system be drained by a sump pump connection to the storm sewer to minimize risk of basement flooding as it will provide the best protection from the uncontrolled sewer system compared to relying on the backwater valve.**
- **Water Quality Control:** Please consult with the local conservation authority (RVCA) regarding water quality criteria prior to submission of a Site Plan Control Proposal application to establish any water quality control restrictions, criteria and measures for the site. Correspondence and clearance shall be provided in the Appendix of the report.
- Please note that as per *Technical Bulletin PIEDTB-2016-01 section 8.3.11.1 (p.12 of 14)* **there shall be no surface ponding on private parking areas during the 2-year storm rainfall event**.
- **Underground Storage:** Please note that the Modified Rational Method for storage computation in the Sewer Design Guidelines was originally intended to be used for above ground storage (i.e., parking lot) where the change in head over the orifice varied from 1.5 m to 1.2 m (assuming a 1.2 m deep CB and a max ponding depth of 0.3 m). This change in head was small and hence the release rate fluctuated little, therefore there was no need to use an average release rate.
    - When underground storage is used, the release rate fluctuates from a maximum peak flow based on maximum head down to a release rate of zero. This difference is large and has a significant impact on storage requirements. **We therefore require that an average release rate equal to 50% of the peak allowable rate shall be applied to estimate the required volume. Alternatively, the consultant may choose to use a submersible pump in the design to ensure a constant release rate.**
    - In the event that there is a disagreement from the designer regarding the required storage, The City will require that the designer demonstrate their rationale utilizing dynamic modelling, that will then be reviewed by City modellers in the Water Resources Group.
    - Please provide information on UG storage pipe. Provide required cover over pipe and details, chart of storage values, capacity etc. How will this pipe be cleaned of sediment and debris?
    - Provide information on type of underground storage system including product name and model, number of chambers, chamber configuration, confirm invert of chamber system, top of chamber system, required cover over system and details, interior bottom slope (for self-cleansing), chart of storage values, length, width and height, capacity, entry ports (maintenance) etc.

- Provide a cross section of underground chamber system showing invert and obvert/top, major and minor HWLs, top of ground, system volume provided during major and minor events. UG storage to provide actual 2- and 100-year event storage requirements.
- Regarding all proposed UG storage, ground water levels (and in particular HGW levels) will need to be reviewed to ensure that the proposed system does not become surcharged and thereby ineffective.
- Modeling can be provided to ensure capacity for both storm and sanitary sewers for the proposed development by City's Water Distribution Dept. – Modeling Group, through PM and upon request.

- Please note that the minimum orifice dia. for a plug style **ICD is 83mm and the minimum flow rate from a vortex ICD is 6 L/s** in order to reduce the likelihood of plugging.
- Post-development site grading shall match existing property line grades in order to minimize disruption to the adjacent residential properties. A **topographical plan of survey** shall be provided as part of the submission and a note provided on the plans.
- Please provide a **Pre-Development Drainage Area Plan** to define the pre-development drainage areas/patterns. **Existing drainage patterns shall be maintained and discussed as part of the proposed SWM solution**.
- **If rooftop control** and storage is proposed as part of the SWM solutions sufficient details (Cl. 8.3.8.4) shall be discussed and document in the report and on the plans. Roof drains are to be connected downstream of any incorporated ICDs within the SWM system and not to the foundation drain system. Provide a **Roof Drain Plan** as part of the submission.
- If **Window wells** are proposed, they are to be indirectly connected to the footing drains. A detail of window well with indirect connection is required, as is a note at window well location speaking to indirect connection.
- There must be at least **15cm of vertical clearance** between the spill elevation and the ground elevation at the building envelope that is in proximity of the flow route or ponding area. The exception in this case would be at reverse sloped loading dock locations. At these locations, a minimum of 15cm of vertical clearance must be provided below loading dock openings. Ensure to provide discussion in report and ensure grading plan matches if applicable.
- Rear yard on grade parking to be permeable pavement. Refer to City Standard Detail Drawings SC26 (maintenance/temp parking areas), SC27 or permeable asphalt materials. No gravel or stone dust parking areas permitted.

Storm Sewer:

- A 300mm dia. PVC storm sewer (1996) is available within Carruthers Avenue**.**
- A 300mm dia. PVC storm sewer (1995) is available within Armstrong Street**.**

Sanitary Sewer:

- A 1200 mm dia. CONC Sanitary sewer (1912) is available within Carruthers Avenue.

- A 300 mm dia. PVC Sanitary sewer (1992) is available within Armstrong Street.
- Please provide the new Sanitary sewer discharge and we confirm if sanitary sewer main has the capacity. An analysis and demonstration that there is sufficient/adequate residual capacity to accommodate any increase in wastewater flows in the receiving and downstream wastewater system is required to be provided. Needs to be demonstrated that there is adequate capacity to support any increase in wastewater flow.
- Please apply the wastewater design flow parameters *in Technical Bulletin PIEDTB-2018-01.*
- Sanitary sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) *Monitoring Devices*.
- A backwater valve is required on the sanitary service for protection.

Water:

- A 203 mm dia. PVC watermain (1995) is available within Carruthers Avenue**.**
- A 203 mm dia. PVC watermain (1992) is available within Armstrong Street**.**
- Existing residential service to be blanked at the main.
- **Water Supply Redundancy:** Residential buildings with a basic day demand greater than 50m^3/day (0.57 L/s) are required to be connected to a minimum of two water services separated by an isolation valve to avoid a vulnerable service area as per the *Ottawa Design Guidelines - Water Distribution, WDG001, July 2010 Clause 4.3.1 Configuration.* The basic day demand for this site not expected to exceed 50m^3/day.
- Please **review Technical Bulletin ISTB-2018-02**, maximum fire flow hydrant capacity is provided in Section 3 Table 1 of Appendix I. A **hydrant coverage figure** shall be provided and **demonstrate there is adequate fire protection for the proposal**. Two or more public hydrants are anticipated to be required to handle fire flow.
- Boundary conditions are required to confirm that the require fire flows can be achieved as well as availability of the domestic water pressure on the City street in front of the development. Use Table 3-3 of the MOE Design Guidelines for Drinking-Water System to determine Maximum Day and Maximum Hour peaking factors for 0 to 500 persons and use Table 4.2 of the Ottawa Design Guidelines, Water Distribution for 501 to 3,000 persons. Please provide the following information to the City of Ottawa via email to request water distribution network boundary conditions for the subject site. Please note that once this information has been provided to the City of Ottawa it takes approximately 5-10 business days to receive boundary conditions.
    - Type of Development and Units
    - Site Address
    - A plan showing the proposed water service connection location.
    - **Average Daily Demand** (L/s)
    - **Maximum Daily Demand** (L/s)
    - **Peak Hour Demand** (L/s)
    - **Fire Flow** (L/min)

[*Fire flow demand requirements shall be based on* ***Fire Underwriters Survey (FUS)*** *Water Supply for Public Fire Protection 1999*]
[Fire flow demand requirements shall be based on ISTB-2021-03]
Note: The OBC method can be used if the fire demand for the private property is less than 9,000 L/min. If the OBC fire demand reaches 9000 L/min, then the FUS method is to be used.
Exposure separation distances shall be defined on a figure to support the FUS calculation and required fore flow (RFF).

- **Hydrant capacity shall be assessed to demonstrate the RFF can be achieved**. Please identify which hydrants are being considered to meet the RFF on a fire hydrant coverage plan as part of the boundary conditions request.

Snow Storage:

- Any portion of the subject property which is intended to be used for permanent or temporary snow storage shall be as shown on the approved site plan and grading plan. Snow storage shall not interfere with approved grading and drainage patters or servicing. Snow storage areas shall be setback from the property lines, foundations, fencing or landscaping a minimum of 1.5m. Snow storage areas shall not occupy driveways, aisles, required parking spaces or any portion of a road allowance. If snow is to be removed from the site, please indicate this on the plan(s).

Trees:

- Please note that a new Tree By-law is now in effect.

General Bulletin_New Tree Protection Bylaw

Severance:

- If severance is planned, this needs to be addressed in servicing to satisfy severance requirements. Where a large parcel with multiple buildings is planned, City will require an ultimate servicing plan to appropriately understand how severance requirements are being met.

Gas pressure regulating station

- A gas pressure regulating station may be required depending on HVAC needs (typically for 12+ units). Be sure to include this on the Grading, Site Servicing, SWM and Landscape plans. This is to ensure that there are no barriers for overland flow routes (SWM) or conflicts with any proposed grading or landscape features with installed structures and has nothing to do with supply and demand of any product.

Gas Pressure Regulating Station.pd

Regarding Quantity Estimates:

- Please note that external Garbage and/or bicycle storage structures are to be added to QE under Landscaping as it is subject to securities. In addition, sump pumps for Sanitary and Storm laterals and/or cisterns are to be added to QE under Hard items as it is subject to securities, even though it is internal and is spoken to under SWM and Site Servicing Report and Plan.

CCTV sewer inspection

- CCTV sewer inspection required for pre and post construction conditions to ensure no damage to City Assets surrounding site.

Pre-Construction Survey

- Pre-Construction (Piling/Hoe Ramming or proximity to City Assets) and/or Pre-Blasting (if applicable) Survey required for any buildings/dwellings in proximity of 75m of site and circulation of notice of vibration/noise to residents within 150 m of site. Conditions for Pre-Construction/ Pre-Blast Survey & Use of Explosives will be applied to agreements. Refer to City's Standard S.P. No. F-1201 entitled Use of Explosives, as amended.

Road Reinstatement

- Where servicing involves three or more service trenches, either a full road width or full lane width 40 mm asphalt overlay will be required, as per amended Road Activity By-Law 2003-445 and City Standard Detail Drawing R10. The amount of overlay will depend on condition of roadway and width of roadway(s).

Permits and Approvals:

- Please note that this project will be subject to an Environmental Compliance Approval (ECA) for Private Sewage Works. (Any connection to a combined Sewer system required the Ministry (MECP) approval)

Required Engineering Plans and Studies:
PLANS:

- Existing Conditions and Removals Plan
- Site Servicing Plan
- Grade Control and Drainage Plan
- Erosion and Sediment Control Plan
- Roof Drainage Plan
- Foundation Drainage System Detail (if applicable)
- Topographical survey

REPORTS:

- Site Servicing and Stormwater Management Report

- Geotechnical Study/Investigation (including sensitive marine clays and unstable slopes) is required per section 10.1.4 of OP)
- Slope Stability Assessment Reports (if required, please see requirements below)
- Phase I ESA
- Phase II ESA (Depending on recommendations of Phase I ESA)
- ECA (If the SWM system services two parcels)

Please refer to the **City of Ottawa Guide to Preparing Studies and Plans [Engineering]:**
Specific information has been incorporated into both the Guide to Preparing Studies and Plans for a site plan. The guide outlines the requirement for a statement to be provided on the plan about where the property boundaries have been derived from.
Added to the general information for servicing and grading plans is a note that an O.L.S. should be engaged when reporting on or relating information to property boundaries or existing conditions. The importance of engaging an O.L.S. for development projects is emphasized.

Phase One Environmental Site Assessment:

- A Phase I ESA is required to be completed in accordance with Ontario Regulation 153/04 in support of this development proposal to determine the potential for site contamination. Depending on the Phase I recommendations a Phase II ESA may be required.
- The Phase I ESA shall provide all the required Environmental Source Information as required by O. Reg. 153/04. ERIS records are available to public at a reasonable cost and need to be included in the ESA report to comply with O.Reg. 153/04 and the Official Plan. The City will not be in a position to approve the Phase I ESA without the inclusion of the ERIS reports.
- Official Plan Section 4.8.4:

https://ottawa.ca/en/city-hall/planning-and-development/official-plan-and-master-plans/official-plan/volume-1-official-plan/section-4-review-development-applications#4-8-protection-health-and-safety

ECA application

- Environmental Compliance Approval (ECA) for stormwater works the services more than one parcel of land.

Geotechnical Investigation:

- A Geotechnical Study/Investigation shall be prepared in support of this development proposal.
- Reducing the groundwater level in this area can lead to potential damages to surrounding structures due to excessive differential settlements of the ground. The impact of groundwater lowering on adjacent properties needs to be discussed and investigated to ensure there will be no short term and long-term damages associated with lowering the groundwater in this area.
- Geotechnical Study shall be consistent with the **Geotechnical Investigation and Reporting Guidelines for Development Applications**.

https://documents.ottawa.ca/sites/documents/files/geotech_report_en.pdf

Slope Stability Assessment Reports

- A report addressing the stability of slopes, prepared by a qualified geotechnical engineer licensed in the Province of Ontario, should be provided wherever a site has slopes (existing or proposed) steeper than 5 horizontal to 1 vertical (i.e., 11 degree inclination from horizontal) and/or more than 2 metres in height.
- A report is also required for sites having retaining walls greater than 1 metre high, that addresses the global stability of the proposed retaining walls. https://documents.ottawa.ca/en/document/slope-stability-guidelines-development-applications

Fourth (4th) Review Charge:

Please be advised that additional charges for each review, after the 3rd review, will be applicable to each file. There will be no exceptions.

Construction approach – Please contact the Right-of-Ways Permit Office TMconstruction@ottawa.ca early in the Site Plan process to determine the ability to construct site and copy File Lead on this request.

Please note that these comments are considered preliminary based on the information available to date and therefore maybe amended as additional details become available and presented to the City. It is the responsibility of the applicant to verify the above information. The applicant may contact me for follow-up questions related to engineering/infrastructure prior to submission of an application if necessary.

If you have any questions or require any clarification, please let me know.

Regards,

Sarah McLaughlin, P.Eng
Project Manager
Planning, Real Estate and Economic Development Department / Direction générale de la planification, des biens immobiliers et du développement économique
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON, K1P 1J1 | 110, avenue Laurier Ouest, Ottawa, ON, K1P 1J1
613.580.2400 ext./poste 26821, sarah.mclaughlin@ottawa.ca

From: Wessel, Shawn <shawn.wessel@ottawa.ca>
Sent: November 7, 2022 2:30 PM
To: Jason Fitzpatrick
Cc: Bruce Thomas; Alexandria Cushing
Subject: RE: 266-268 Carruthers Ave.
Attachments: 266-268 Carruthers Avenue October 2022.pdf

Good afternoon.

The following are boundary conditions, HGL, for hydraulic analysis at 266-268 Carruthers Avenue (zone 1W) assumed to be connected to the 203 mm watermain on Carruthers Avenue (see attached PDF for location).

Minimum HGL: 107.9 m

Maximum HGL: 115.0 m

Max Day + Fire Flow (217 L/s): 102.9 m

These are for current conditions and are based on computer model simulation.

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.

If you require additional information or clarification, please do not hesitate to contact me anytime.

Thank you

Regards,

Shawn Wessel, A.Sc.T.,rcji
Project Manager - Infrastructure Approvals

From: Eric Lalande <eric.lalande@rvca.ca>
Sent: October 31, 2022 12:35 PM
To: Jason Fitzpatrick
Cc: Bruce Thomas
Subject: RE: 266, 268 Carruthers, Avenue.

Hi Jason,

The RVCA does not have any water quality control requirements for the project based on the site plan and details provided.

Thank you,

Eric Lalande, MCIP, RPP
Planner, RVCA
613-692-3571 x1137

From: Jason Fitzpatrick <jason.fitzpatrick@exp.com>
Sent: Sunday, October 30, 2022 9:19 PM
To: Eric Lalande <eric.lalande@rvca.ca>
Cc: Bruce Thomas <bruce.thomas@exp.com>
Subject: 266, 268 Carruthers, Avenue.

Hi Eric,

I'm working on a site plan application for the redevelopment of 266 & 268 Carruthers Avenue. This will consist of the demolition of these two lots, and the construction of a new 18-unit 4-storey apartment unit.

As noted in the pre-consultation meeting, we require that the Conservation Authority's confirm the water quality requirements for the proposed development. I've therefore attached the site plan, and highlighted the site.

The site area is 0.0429 ha, and the roof makes up 0.0293 ha, or 68% of the site area. The remaining area is landscaping and walkways, etc. There are no proposed parking areas or driveways. We have a fairly restrictive release rate (Max C=0.50, and control to 2yr storm, so we will be using flow controlled roof drains and a small section of perforated pipes to capture runoff in the front yard. As for quality control, can you confirm if needed. Since there is a small percentage of surface runoff, of which there will be no parking areas, etc., we are hoping that water quality treatment is not required.

Can you confirm the RVCA requirement for this site.

Much appreciated.

Jason Fitzpatrick, P.Eng.
EXP | Project Engineer
t : +1.613.688.1899, 63258 | m : +1.613.302.7441 | e : jason.fitzpatrick@exp.com
2650 Queensview Drive
Suite 100
Ottawa, ON K2B 8H6
CANADA

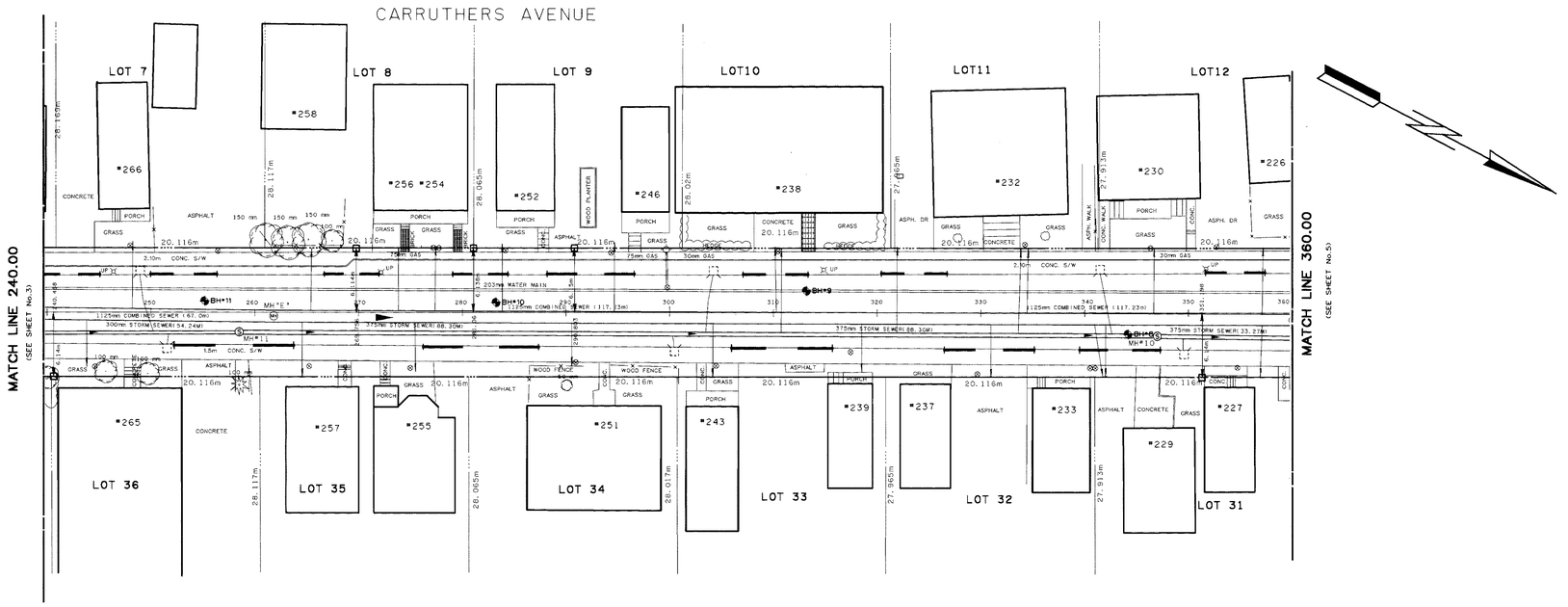
Appendix F – Background Information

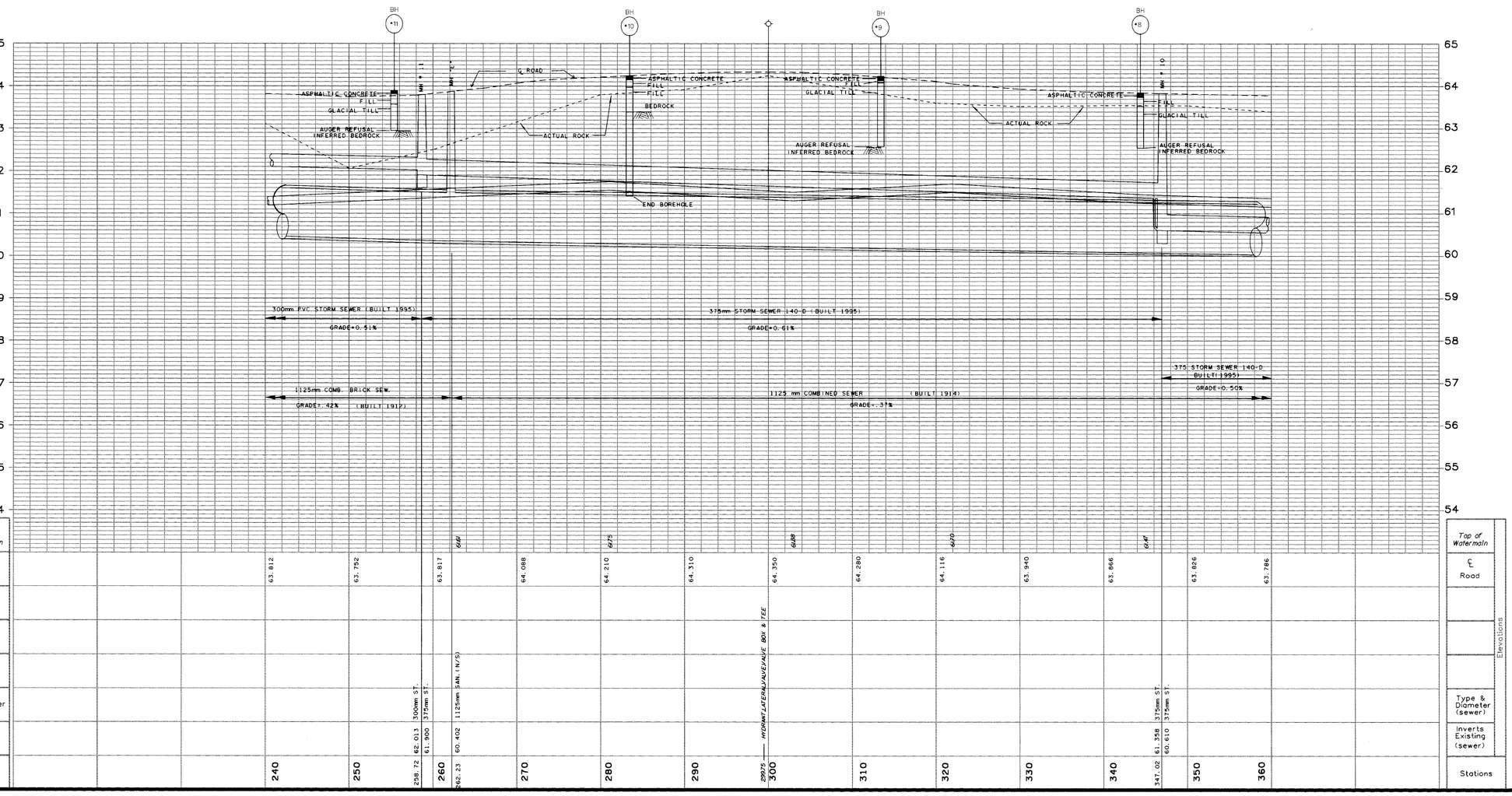
City of Ottawa Vault Drawings (2 drawings)

WATTS ACCUTROL Weir for Roof Drains (1 page)

IPEX-Technical-Manual (14 pages)

2825 CARRUTHERS AVENUE (4)





Elevations	240	250	258.72	260	262.23	270	280	290	299.75	300	310	320	330	340	347.02	350	360
Top of Watermain																	
℄ Road	63.812	63.752		63.817		64.088	64.210	64.310		64.350	64.280	64.116	63.940	63.866		63.826	63.786
				6681			6675			6688		6670			6647		
									HYDRANT LATERAL/VALVE/VALVE BOX & TEE								
Type & Diameter (sewer)			300mm ST.	375mm ST.	1125mm SAN.(N/S)										375mm ST.	375mm ST.	
Inverts Existing (sewer)			62.013	61.900	60.402										61.358	60.610	
Stations	240	250	258.72	260	262.23	270	280	290	299.75	300	310	320	330	340	347.02	350	360

This drawing was created using Microstation 4.0 (CADD)

Revisions:

No.	Date	Description	Drawn By	Approved By

Design:

Designed By: I. BHATIA	Date: JAN./95	Checked By:	Date:
Survey Detail By: G.BARNEY, T.SCAFFIDI	Date: JULY/94	Field Checked By:	Date:
Drafting By: J. FRANCE, D. GREEN	Date: MAR./95	Checked By:	Date:

Chief Design & Const. Eng.
H. PASCOE, P.Eng

Final Measurements:

Construction Type: SEWERS , WATERMAIN , SIDEWALK , ROAD		Inspector: J. FRANCE	
Work Commenced: JULY/95		Project Manager: ISHWAR BHATIA	
Work Completed: JUNE/96		Field Book #: 5435	
Contractor: PEDRO CONS.T		Date: 1995	
Drafting Revisions: J. FRANCE	Date: NOV./96	Checked By: ISHWAR BHATIA	

Notes:

- While illustrations and utilities shown are taken from the best available information, they cannot be guaranteed.
- The contractor is requested to check with all utility companies before digging.
- Soil information shown is not guaranteed and contactors are advised to collect additional soils information as deemed necessary
- The actual rock line was recorded during construction of the existing STORM sewer.
- Soil information taken from : J.D. PATERSON ,JAN.16/95
- Reference bench mark : ST. FRANCOIS CHURCH MON.#3606 (ELEV. 67.236)
- Date of television inspection : TAMARACK JAN./91
- This plan supercedes (in whole or in part) plan # 11a
- Registered Plan # : 83
- When reduced, the scale of this drawing is approximately 1:400 horizontally and 1:80 vertically. Do not scale this drawing.
- See additional notes on sheet no. 1

As Built Notes:

- Boreholes prior to construction.
- See typical cross sections for road structure material depths

Watermain Notes:

- All watermain materials and construction methods shall be in accordance with the latest edition of the R.M.O.C. Standard Specifications and Standard Drawings.
- All connections of new watermains to existing watermains and all blankings of existing mains and services shall be performed by R.M.O.C. staff. The Contractor shall provide excavation, backfilling and reinstatement.
- All copper services (19mm to 51mm) shall be installed by R.M.O.C. staff after the watermain has been successfully disinfected
- All new water services shall be installed at 2.4m cover.
- All new water services that conflict with sanitary and storm sewers at crossings shall be installed under the sewers unless otherwise directed by the REGIONAL PROJECT MANAGER
- The proposed watermain shall be insulated at specified locations per R.M.O.C. Specification WSD-23.
- A minimum 2.0m separation is required between all new water services and catchbasins or open structures and shall be insulated per R.M.O.C. Specification WSD-23 as applicable.
- A minimum 2.0m separation is required between all new hydrants and catchbasins or open structures and shall be insulated per R.M.O.C. Specification WSD-23 as applicable.

The Contractor shall be responsible to determine via excavation the exact location and elevation of the existing watermains as required for all connections , relocations and blanking.

City of Ville d' **Ottawa**

Department Of Engineering And Works
Engineering Branch
Design And Construction Division
111 SUSSEX DRIVE, SUSSEX PAVILION, 7TH FLOOR, OTTAWA, ONTARIO, K1N 5A1

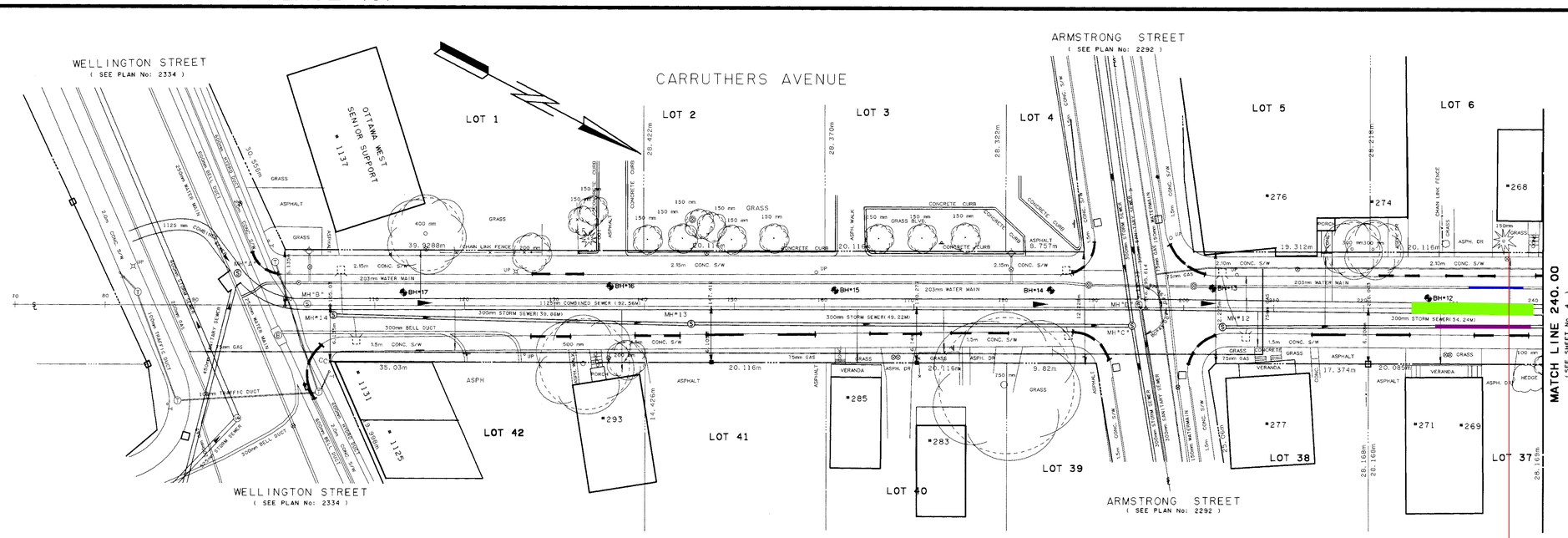
E.M. Robinson, Commissioner	W.R. Cole, P.Eng., Branch Director

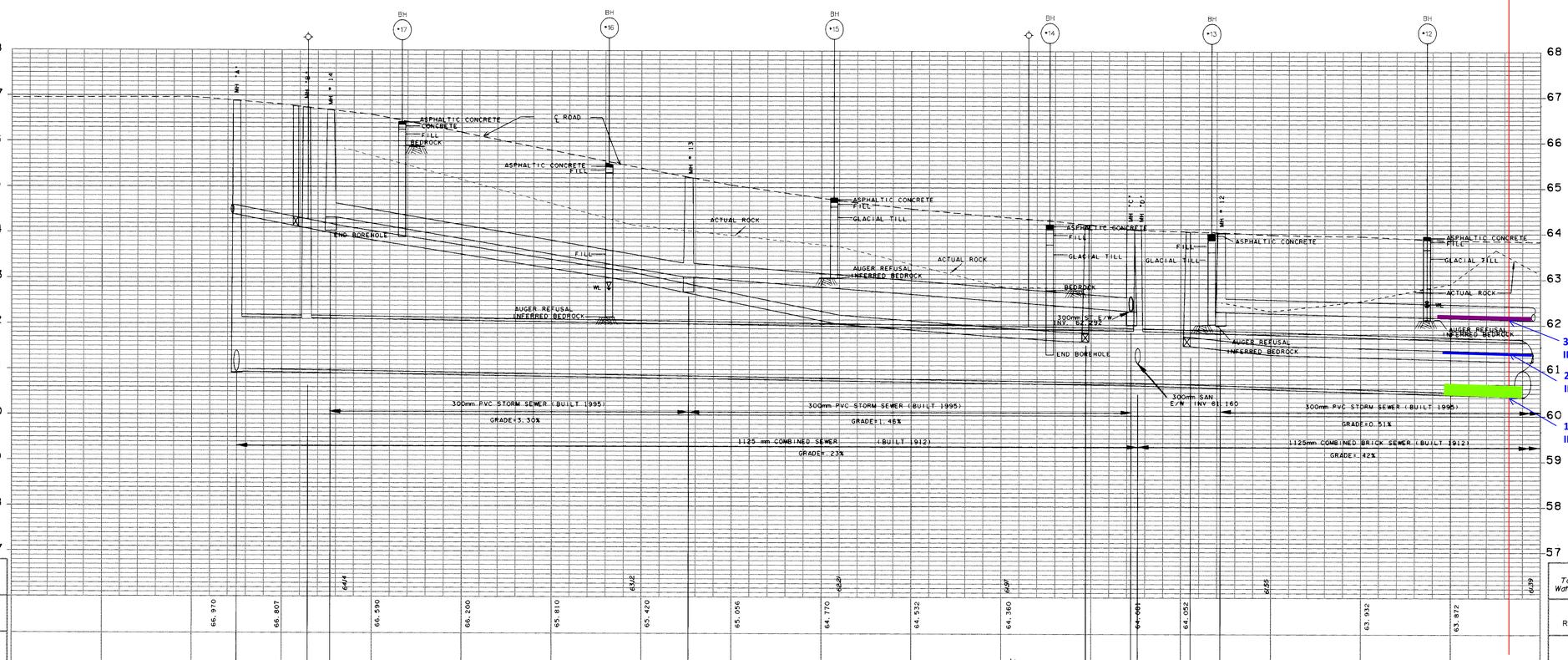
CARRUTHERS AVENUE

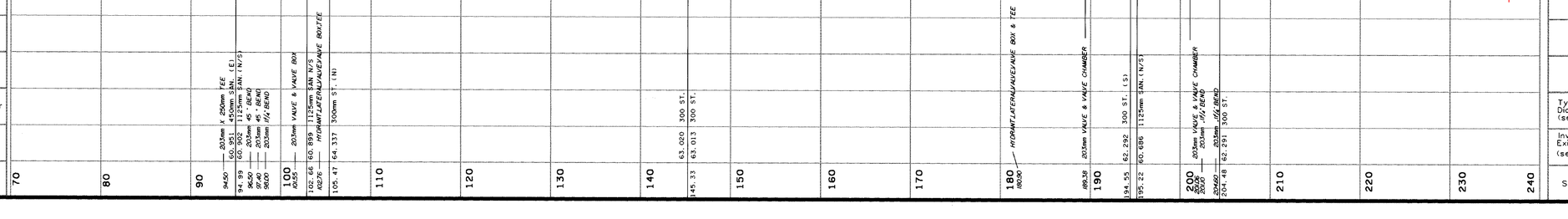
Contract No: 95C2825	Survey Books: 2825	Scales: (See note) HOR. 1:250 VERT. 1:50	Plan No: 2825 Sheet 4 of 8

CADD Filename: 2825s2.dgn

2825 CARRUTHERS AVENUE (3)







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Chief Design & Const. Eng.
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Final Measurements:

Construction Type: SEWERS , WATERMAIN , SIDEWALK , ROAD	Inspector: J. FRANCE
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Work Completed: JUNE/96	Field Book #: 5495
Contractor: PEDRO CONS.T	Date: 1995
Drafting Revisions: J. FRANCE	Date: NOV./96 — Checked By: ISHWAR BHATIA

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- Registered Plan # : 83
- When reduced, the scale of this drawing is approximately 1:400 horizontally and 1:80 vertically. Do not scale this drawing.
- See additional notes on sheet no. 1

As Built Notes:

- Boreholes prior to construction.
- See typical cross sections for road structure material depths

Watermain Notes:

- All watermain materials and construction methods shall be in accordance with the latest edition of the R.M.O.C. Standard Specifications and Standard Drawings.
- All connections of new watermains to existing watermains and all blankings of existing mains and services shall be performed by R.M.O.C. staff. The Contractor shall provide excavation, backfilling and reinstatement.
- All copper services (19mm to 51mm) shall be installed by R.M.O.C. staff after the watermain has been successfully disinfected
- All new water services shall be installed at 2.4m cover.
- All water services that conflict with sanitary and storm sewers at crossings shall be installed under the sewers unless otherwise directed by the REGIONAL PROJECT MANAGER.
- The proposed watermain shall be insulated at specified locations per R.M.O.C. Specification WSD-23.
- A minimum 2.0m separation is required between all new water services and catchbasins or open structures and shall be insulated per R.M.O.C. Specification WSD-23 as applicable.
- A minimum 2.0m separation is required between all new hydrants and catchbasins or open structures and shall be insulated per R.M.O.C. Specification WSD-23 as applicable.
- The Contractor shall be responsible to determine via excavation the exact location and elevation of the existing watermains as required for all connections , relocations and blanking.

City of Ville d' **Ottawa**

Department Of Engineering And Works
Engineering Branch
Design And Construction Division
111 SUSSEX DRIVE, SUSSEX PAVILION, 7TH FLOOR, OTTAWA, ONTARIO, K1N 5A1

E.M. Robinson, Commissioner — W.R. Cole, P.Eng., Branch Director

CARRUTHERS AVENUE

Contract No:	Survey Books:	Scales: (See Note)	Plan No:
95C2825	2825	HOR. 1:250 VERT. 1:50	2825 Sheet 3 of 8

CADD Filename: 2825s1.dgn

WATTS®	Adjustable Accutrol Weir Tag: _____	Adjustable Flow Control for Roof Drains

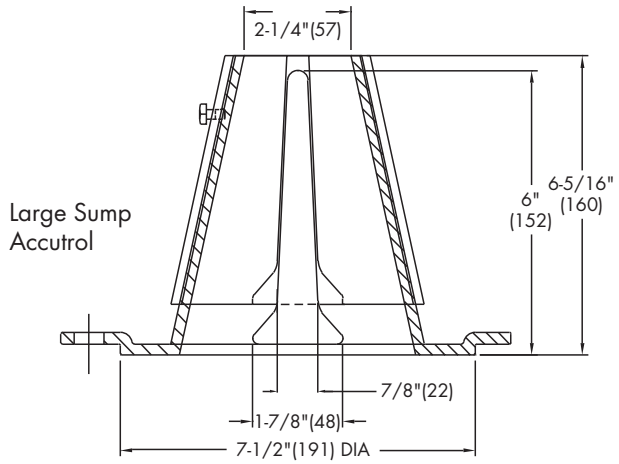
ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

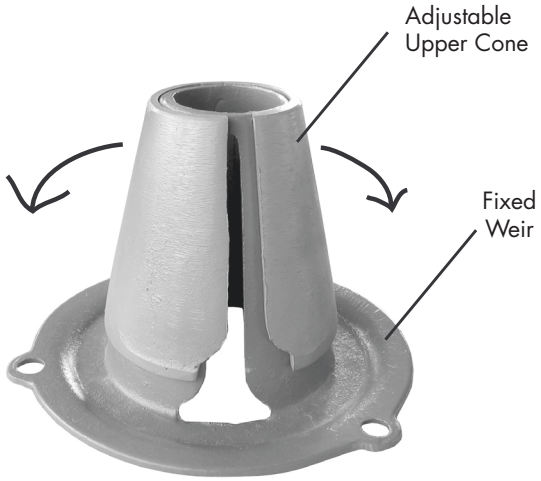
For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the flow rate for depths over 2" of head, set the slot in the adjustable upper cone according to the flow rate required. Refer to Table 1 below.
Note: Flow rates are directly proportional to the amount of weir opening that is exposed.

EXAMPLE:

For example, if the adjustable upper cone is set to cover 1/2 of the weir opening, flow rates above 2"of head will be restricted to 2-1/2 gpm per inch of head.

Therefore, at 3"of head, the flow rate through the Accutrol Weir that has 1/2 the slot exposed will be:
[5 gpm (per inch of head) x 2 inches of head] + 2-1/2 gpm (for the third inch of head) = 12-1/2 gpm.





1/2 Weir Opening Exposed Shown Above

TABLE 1. Adjustable Accutrol Flow Rate Settings

Weir Opening Exposed	1"	2"	3"	4"	5"	6"
	Flow Rate (gallons per minute)					
Fully Exposed	5	10	15	20	25	30
3/4	5	10	13.75	17.5	21.25	25
1/2	5	10	12.5	15	17.5	20
1/4	5	10	11.25	12.5	13.75	15
Closed	5	5	5	5	5	5

Job Name _____ Contractor _____

Job Location _____ Contractor's P.O. No. _____

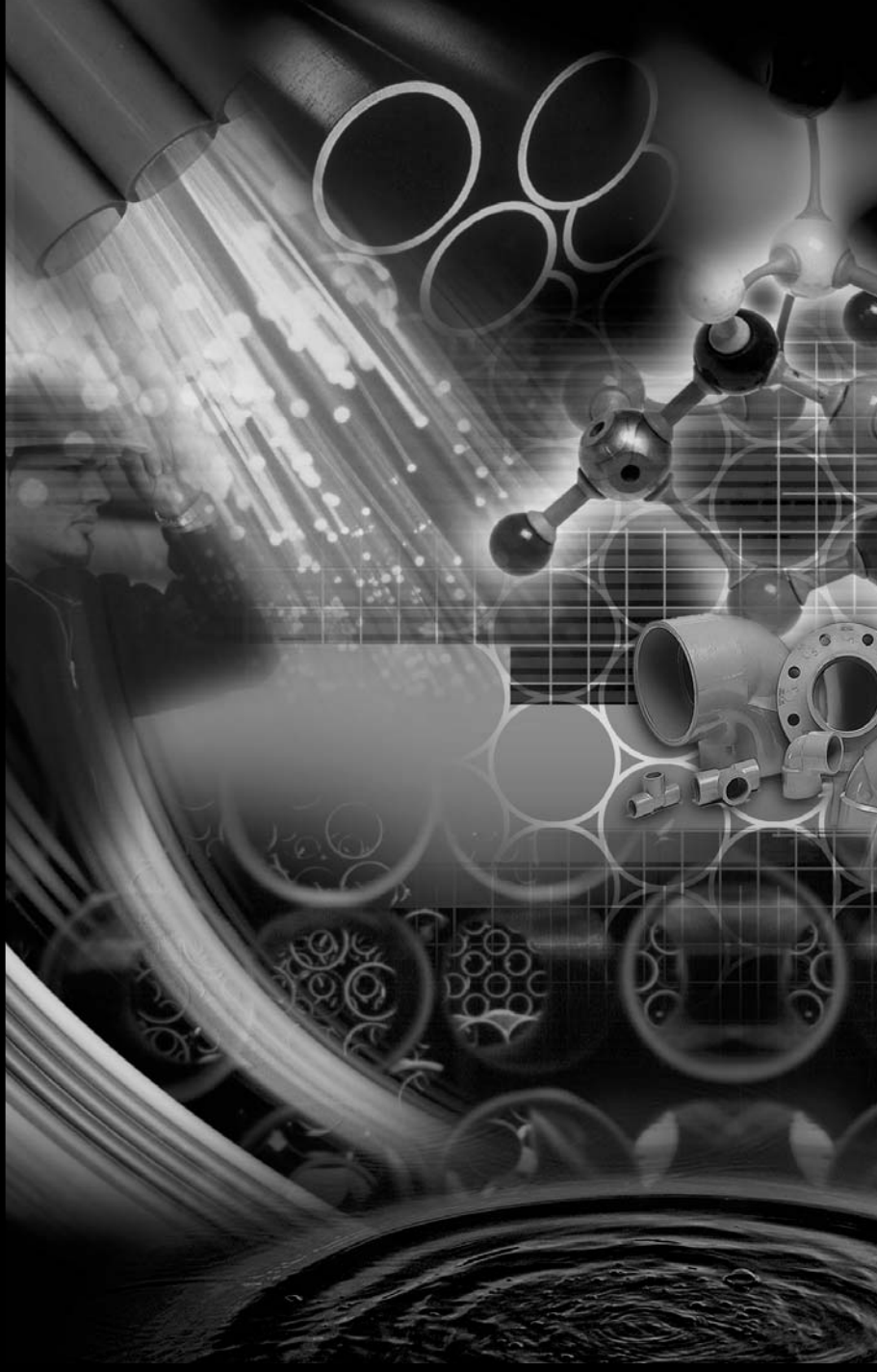
Engineer _____ Representative _____

USA: Tel: (800) 338-2581 • Fax: (828) 248-3929 • Watts.com
Canada: Tel: (905) 332-4090 • Fax: (905) 332-7068 • Watts.ca
Latin America: Tel: (52) 81-1001-8600 • Fax: (52) 81-8000-7091 • Watts.com

WATTS®
A Watts Water Technologies Company

Volume III: TEMPEST™ INLET CONTROL DEVICES

Municipal Technical Manual Series



SECOND EDITION

LMF (Low to Medium Flow) ICD

HF (High Flow) ICD

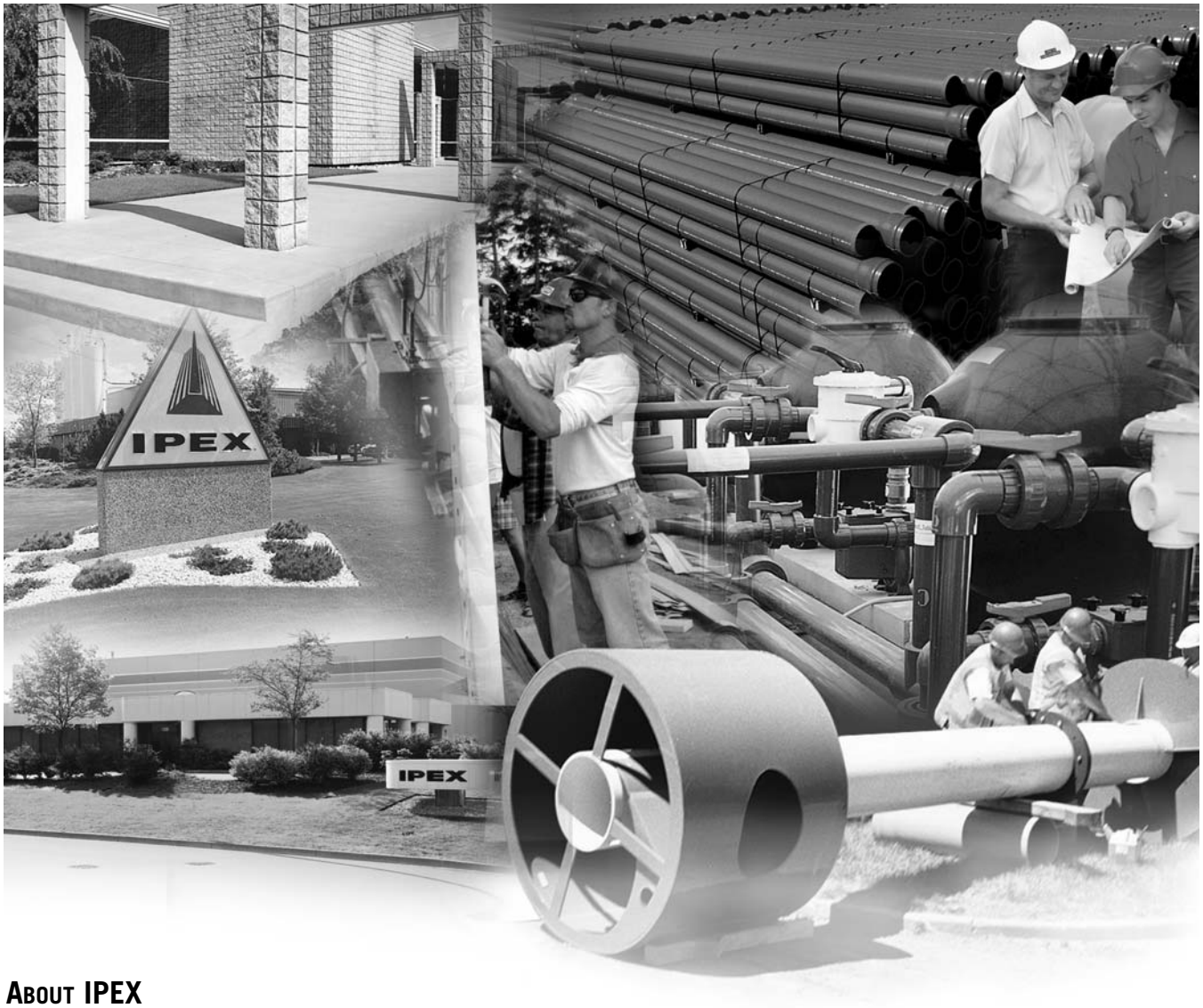
MHF (Medium to High Flow) ICD

IPEX

IPEX Tempest™ Inlet Control Devices

Municipal Technical Manual Series

Vol. I, 2nd Edition



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

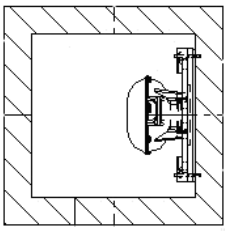
Constructed from durable PVC, the LMF ICD is light weight 8.9 Kg (19.7 lbs).

Product Applications

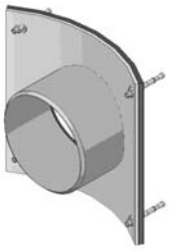
Will accommodate both square and round applications:

Square Application

Universal Mounting Plate



Round Application



+

Spigot CB Wall Plate

=

Universal Mounting Plate Hub Adapter

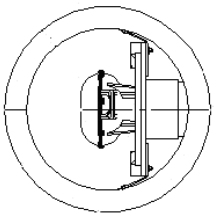


Chart 1: LMF 14 Preset Flow Curves

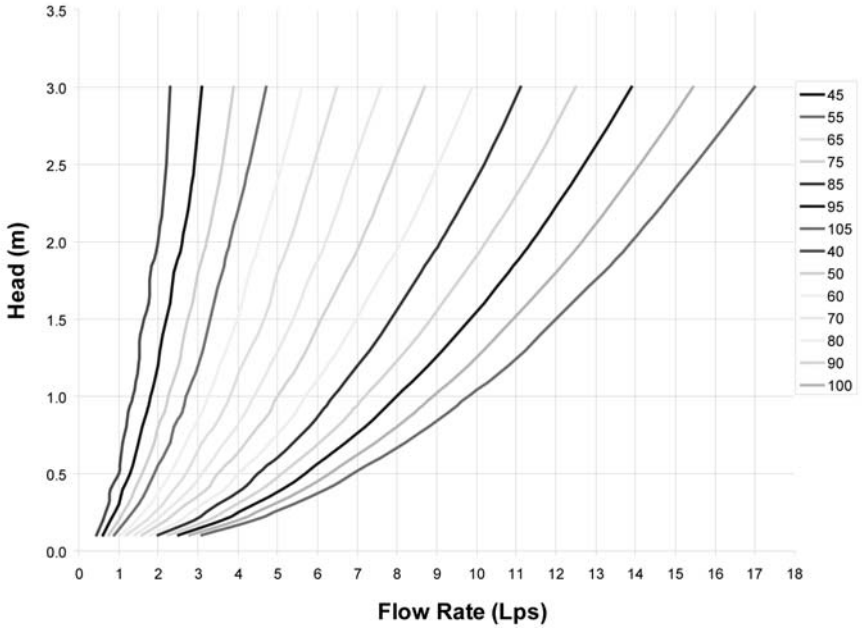
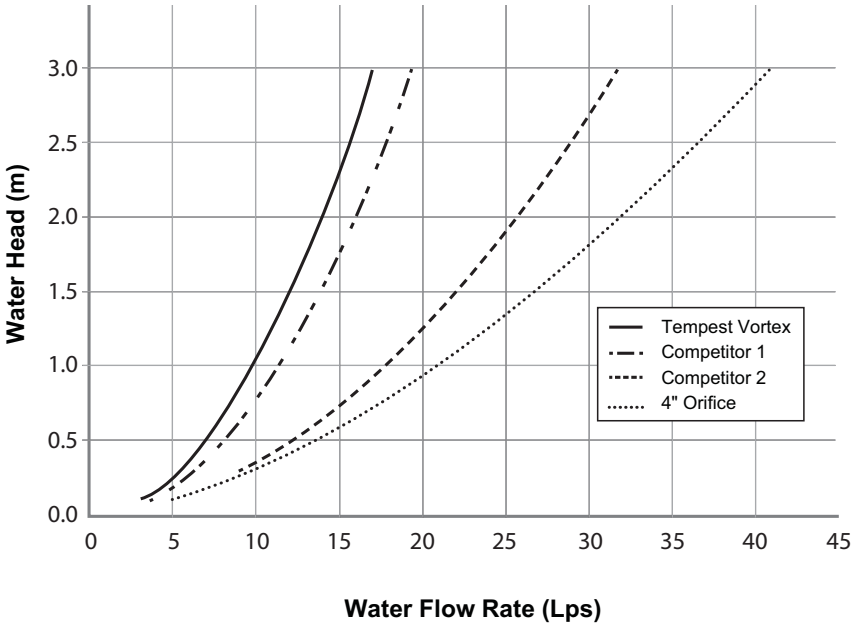


Chart 2: LMF Flow vs. ICD Alternatives



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 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. 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.

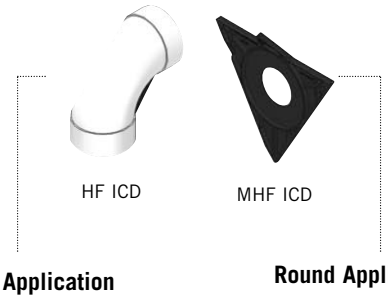
TEMPEST MHF (Medium to High Flow):
The MHF plate or plug is designed to control flow rates 9 L/s (143 gpm) or greater. It is not designed to prevent the propagation of odour and floatables.

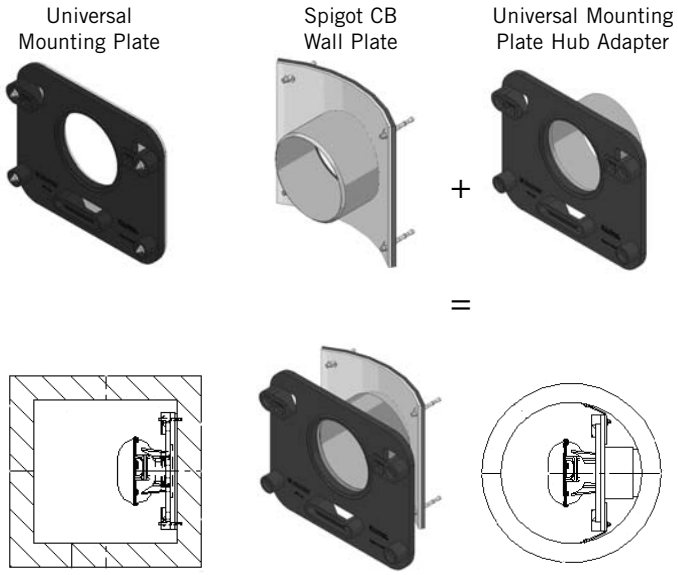
Product Construction

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:





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

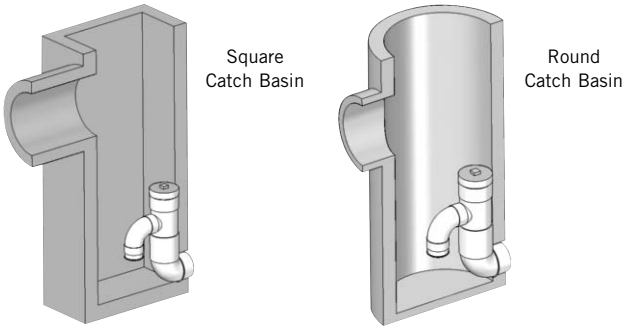
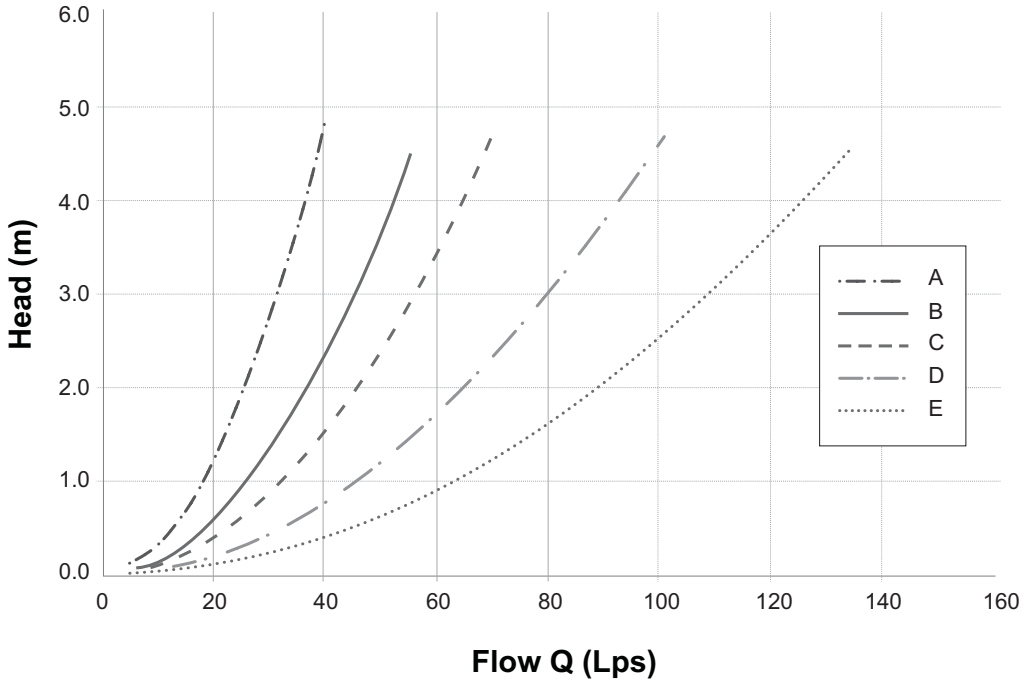


Chart 3: HF & MHF Preset Flow Curves



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.

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.

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

SALES AND CUSTOMER SERVICE

Canadian Customers call IPEX Inc.

Toll free: (866) 473-9462

www.ipexinc.com

U.S. Customers call IPEX USA LLC

Toll free: (800) 463-9572

www.ipexamerica.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. and distributed in the United States by IPEX USA LLC.

MNMNTPIP110817

IPEX

Appendix G – Checklist

GENERAL CONTENT		RESPONSE
☐	Executive Summary (for larger reports only).	Not included
☒	Date and revision number of the report.	Date of report provided
☒	Location map and plan showing municipal address, boundary, and layout of proposed development.	Page 1
☒	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.	Section 2 of report
☒	Summary of Pre-consultation Meetings with City and other approval agencies.	In Appendix E
☐	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.	No Master Servicing Studies.
☒	Statement of objectives and servicing criteria.	Section 1 of report
☒	Identification of existing and proposed infrastructure available in the immediate area.	Section 2 & 3 of report
☐	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).	Not applicable
☐	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.	Not applicable
☐	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.	Not applicable
☐	Proposed phasing of the development, if applicable.	Not applicable
☐	Reference to geotechnical studies and recommendations concerning servicing.	Not applicable
☒	All preliminary and formal site plan submissions should have the following information: Metric scale North arrow (including construction North) Key plan name and contact information of applicant and property owner Property limits including bearings and dimensions Existing and proposed structures and parking areas Easements, road widening and rights-of-way Adjacent street names	Functional Report, Civil and Architectural Plans provided all this information.
DEVELOPMENT SERVICING REPORT: WATER		**RESPONSE**
☐	Confirm consistency with Master Servicing Study, if available Availability of public infrastructure to service proposed development Identification of system constraints	Not applicable
☒	Identify boundary conditions	Section 4.6
☒	Confirmation of adequate domestic supply and pressure	Section 4.3
☒	Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Section 4.7
☒	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.	Section 4.6 & Table B-7 Appendix B
☐	Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design	Not applicable
☒	Address reliability requirements such as appropriate location of shut-off valves Check on the necessity of a pressure zone boundary modification.	Section 4.3
☒	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	Section 4.5 & Table B-4, Table B-5, Appendix B
☒	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.	Section 4.2

☐	Description of off-site required feeder mains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	Not applicable
☒	Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Table B-1 Appendix B
☐	Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	Not applicable
DEVELOPMENT SERVICING REPORT: WASTEWATER		**RESPONSE**
☒	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).	Section 5.1
☐	Confirm consistency with Master Servicing Study and/or justifications for deviations.	Not applicable
☒	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.	Section 5.2
☒	Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Section 5.2
☐	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)	Not applicable
☐	Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	Not applicable
☒	Description of proposed sewer network including sewers, pumping stations, and forcemains.	Section 5.2
☐	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).	Not applicable
☐	Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	Not applicable
☐	Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	Not applicable
☐	Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	Not applicable
☐	Special considerations such as contamination, corrosive environment etc.	Not applicable
DEVELOPMENT SERVICING REPORT: STORMWATER CHECKLIST		**RESPONSE**
☒	Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)	Section 6
☐	Analysis of available capacity in existing public infrastructure.	Not applicable
☐	A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.	Site is too small to be considered
☐	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.	Not Applicable
☐	Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Not Applicable
☒	Description of the stormwater management concept with facility locations and descriptions with references and supporting information.	Section 6.2 & 6.3
☐	Set-back from private sewage disposal systems. Watercourse and hazard lands setbacks.	Not Applicable
☒	Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	Appendix E
☐	Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	Not Applicable
☒	Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).	Section 6.9 & Table D3-D8 of Appendix D

☐	Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	Not Applicable
☒	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.	Section 6.6, 6.8 & Table D-1 & D-2 of Appendix D
☐	Any proposed diversion of drainage catchment areas from one outlet to another.	Not Applicable
☒	Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.	Section 6.8
☐	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.	Not Applicable
☐	Identification of potential impacts to receiving watercourses Identification of municipal drains and related approval requirements.	Not Applicable
☒	Descriptions of how the conveyance and storage capacity will be achieved for the development.	Section 6.9
☒	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 and Erosion and Sediment Plan
☐	Inclusion of hydraulic analysis including hydraulic grade line elevations.	Not Applicable
☒	Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Section 7
☐	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.	Not Applicable – No requirements from Conservation Authority
☐	Identification of fill constraints related to floodplain and geotechnical investigation.	See geotechnical report
☒	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:	Appendix E
☐	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 theAct.	Not Applicable
☐	Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	Not Applicable
☐	Changes to Municipal Drains.	Not Applicable
☐	Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	Not Applicable
CONCLUSION CHECKLIST		**RESPONSE**
☒	Clearly stated conclusions and recommendations	In Section 8
☒	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.	Appendix E
☒	All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario	Signed and stamped

Appendix H – Drawings

Architectural Site and Building Plans (20 pages)

Notes and Legend Sheet, C000 (Provided Separately)

Site Servicing Plan, C100 Rev 1(Provided Separately)

Site Grading Plan, C200 Rev 1 (Provided Separately)

Erosion and Sedimentation Control Plan, C300 (Provided Separately)

Storm Drainage Plan, C400 (Provided Separately)

CARRUTHERS AVENUE DEVELOPMENT

266-268 Carruthers Avenue, Ottawa, ON

2022-08-16 11:53:37 AM

ARCHITECTURAL DRAWINGS

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OTTAWA, ONTARIO K2E 8B7
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INTERIOR WALL ASSEMBLIES

P1 - NON-RATE INTERIOR PARTITION

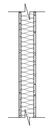
NON-LOAD BEARING/ NON- INSULATED PARTITION.
STUDS & GYPSUM TO U/S OF FLOOR/ TRUSS OR GYPSUM CEILING (UNO)

- 1/2" GYPSUM BOARD + (TAPED, SANDED & PAINT)
- 2x4 SPF STUD @ 16" O.C.
- 1/2" GYPSUM BOARD + (TAPED, SANDED & PAINT)

P2 - NON-RATE INTERIOR PARTITION

NON-LOAD BEARING/ INSULATED PARTITION
STUDS & GYPSUM TO U/S OF FLOOR/ TRUSS OR GYPSUM CEILING (UNO)

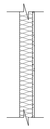
- 1/2" GYPSUM BOARD + (TAPED, SANDED & PAINT)
- 2x4 SPF STUD @ 16" O.C. C/W BATT INSULATION
- 1/2" GYPSUM BOARD + (TAPED, SANDED & PAINT)



P3 - NON-RATED INTERIOR PLUMBING CHASE

NON-LOAD BEARING/ INSULATED PLUMBING CHASE STUDS & GYPSUM TO U/S OF FLOOR/ TRUSS OR GYPSUM CEILING (UNO)

- 1/2" GYPSUM BOARD + (TAPED, SANDED & PAINT)
- 2x4 SPF STUD @ 16" O.C. C/W BATT INSULATION



P4 - 1HR RATED INTERIOR PARTITION (45MIN FRR REQUIRED)

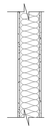
RATED, INTERIOR, LOAD BEARING AND NON LOAD BEARING, PARTY WALLS
STUDS & GYPSUM TO U/S OF BEAM/JOIST OR FIRE RATED GYPSUM CEILING (UNO)
1HR FRR (2012 OBC W4a)
STC-51

- 5/8" TYPE-X GYPSUM BOARD + (TAPED, SANDED & PAINT)
- 2X6 WOOD STUD FRAMING @ 16" O.C. MAX C/W BATT INSULATION
- 1/2" RESILIENT METAL CHANNELS SPACED 24" O/C
- 5/8" TYPE-X GYPSUM BOARD
- 5/8" TYPE-X GYPSUM BOARD + (TAPED, SANDED & PAINT)

P5 - 1HR RATED INTERIOR PARTITION (45MIN FRR REQUIRED)

RATED, LOAD BEARING AND NON LOAD BEARING, INTERIOR WALLS
STUDS & GYPSUM TO U/S OF BEAM/JOIST OR FIRE RATED GYPSUM CEILING (UNO)
1HR FRR (2012 OBC W1a)
STC-36

- 5/8" TYPE-X GYPSUM BOARD + (TAPED, SANDED & PAINT)
- 2X6 WOOD STUD FRAMING @ 16" O.C. MAX C/W
- BATT INSULATION (AS PER OBC SB-2 WALL TYPE W1a SUB TEXT [1])
- 5/8" TYPE-X GYPSUM BOARD + (TAPED, SANDED & PAINT)



P5' - NON-RATE INTERIOR PARTITION

SAME AS P5 - 2X4 STUD REPLACED WITH 2X6 STUD @ 16" O.C.

FLOOR ASSEMBLIES

FL1 BASEMENT SLAB

- FLOOR FINISH (TBD BY OWNER)
- 4" CONCRETE SLAB C/W WELDED WIRE MESH
- 2" rigid insulation
- 6mil REINFORCED POLY. VAPOR BARRIER
- 8" COMPACTED GRANULAR FILL TO OBC 2012 9.16.2.1
- UNDISTURBED SOIL OR COMPACTED FILL AS GEO-TECH ENGINEERING

PROVIDE VAPOR RETARDER UNDER ENTIRE LEVEL 1 SLAB ON GRADE

FL2 TYPICAL FLOOR ASSEMBLY

TYPICAL RATED FLOOR ASSEMBLY
45min FRR (FLOOR TYPE F9h - 2012 OBC)
STC 53

- FLOOR FINISH (TBD BY OWNER)
- 5/8" T&G PLYWOOD SUBFLOOR (GLUED & SCREWED)
- 14" TGI FLOOR JOISTS (REFER TO MANUFACTURER SHOP DWGS) C/W BATT INSULATION
- RESILIENT METAL CHANNELS SPACED @ 24" O.C.
- 2 LAYERS OF 1/2" TYPE 'X' GYPSUM BOARD (TAPED, SANDED & PAINT)

ALL HVAC DUCT WORK TO BE CONCEALED IN DROP BULKHEADS BELOW RATED CEILING MEMBRANE

FOUNDATION WALLS

F1 - EXTERIOR FOUNDATION WALL

- CEMENT PARGING FOR EXPOSED FDN WALL TO 8" BELOW GRADE
- HDPE DIMPLED DRAINAGE MEMBRANE FROM GRADE TO FOOTING
- BITUMINOUS DAMPPROOFING
- CONCRETE WALL (THICKNESS AS INDICATED ON PLANS)

F2 - INTERIOR FOUNDATION WALL

- CONCRETE WALL (THICKNESS AS INDICATED ON PLANS)

EXTERIOR WALL ASSEMBLIES

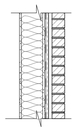
W1 - WALL TYPE

LOAD BEARING EXTERIOR WALL WITH STONE/BRICK VENEER (REFER TO ELEVATIONS), COLOUR & PROFILE TBD BY OWNER

1 HOUR FRR (OBC SB-3 W1b)

MIN: R-19 + CI R5

- 3-1/3" MASONRY VENEER C/W TIES & WEEP HOLES
- 1" AIR SPACE & MASONRY CAVITY MESH
- 1" RIGID INSULATION (R-5 CI)
- VAPOR PERMEABLE AIR BARRIER OR SELF ADHESIVE WATERPROOFING MEMBRANE (BLUESKIN) - ALL JOINTS SEALED.
- 5/8" DENSGLASS SHEATHING W. FIREGUARD
- 2"x6" WOOD STUDS AS PER STRUCTURAL
- C/W R-19 MINERAL FIBER INSULATING (AS PER OBC SB-2 WALL TYPE W1b [1Hr][7])
- 6MIL POLY VAPOR BARRIER (LAP & SEAL ALL JOINTS)
- 1/2" TYPE X GYPSUM BOARD + (TAPED, SANDED & PAINT)



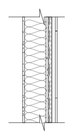
W2 - WALL TYPE

LOAD BEARING EXTERIOR WALL WITH ALUMINUM PLATE PANEL SYSTEM - COLOUR TBD BY OWNER

MIN: R-19 + CI R5

- ALUMINUM PLATE PANEL C/W THERMALLY BROKEN FASTENING SYSTEM AS PER MANUFACTURER
- 1" AIRSPACE
- 1" RIGID INSULATION (R-5 CI)
- AIR BARRIER OR SELF ADHESIVE WATERPROOFING MEMBRANE (BLUESKIN) - ALL JOINTS SEALED
- 5/8" DENSGLASS SHEATHING W. FIREGUARD
- 2"x6" WOOD STUDS AS PER STRUCTURAL
- C/W R-19 MINERAL FIBER INSULATING (AS PER OBC SB-2 WALL TYPE W1b [1Hr][7])
- 6MIL POLY VAPOR BARRIER (LAP & SEAL ALL JOINTS)

1/2" TYPE X GYPSUM BOARD + (TAPED, SANDED & PAINT)



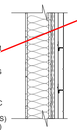
W3 - WALL TYPE

LOAD BEARING EXTERIOR WALL WITH HORIZONTAL METAL SIDING - COLOUR TBD BY OWNER

MIN: R-19 + CI R5

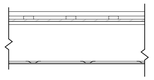
- PRE-FINISHED METAL CLADDING
- THERMALLY BROKEN CLADDING SUPPORT SYSTEM
- 1" AIRSPACE
- 1" RIGID INSULATION (R-5 CI)
- AIR BARRIER OR SELF ADHESIVE WATERPROOFING MEMBRANE (BLUESKIN) - ALL JOINTS SEALED
- 5/8" DENSGLASS SHEATHING W. FIREGUARD
- 2"x6" WOOD STUDS AS PER STRUCTURAL
- C/W R-19 MINERAL FIBER INSULATING (AS PER OBC SB-2 WALL TYPE W1b [1Hr][7])
- 6MIL POLY VAPOR BARRIER (LAP & SEAL ALL JOINTS)

1/2" TYPE X GYPSUM BOARD + (TAPED, SANDED & PAINT)



FL3 - TYPICAL BALONEY

- PRESSURE TREATED WOOD DECKING ON
- 1x3 PRESSURE TREATED WOOD SLEEPERS (LINE SLEEPERS UP WITH DIRECTION OF SLOPE)
- 3 PLY MOPED BITCHUMEN ROOF MEMBRANE
- 1/2" EXTERIOR GRADE SHEATHING MECHANICALLY FASTENED TO
- 1 1/2" TO NOTHING DIMENSIONAL LUMBER RUNNING PERPENDICULAR TO FLOOR JOIST BELOW. (PROVIDE MIN 1% SLOPE)
- WOOD JOIST @ 16" O.C. C/W (AS PER STRUCTURAL)
- 1/2" RESILIENT METAL CHANNEL SPACED 16" O.C.
- VENTED SOFFIT



ROOF ASSEMBLIES

R1 - TYPICAL ROOF TERRACE

TYPICAL RATED ROOF ASSEMBLY
45min FRR (FLOOR TYPE F9h - 2012 OBC)
R-VALUE = R33 MIN

- (2) 5/8" X 2' X 2' COMPOSITE PANEL PAVER SYSTEM C/W
- ADJUSTABLE PAVER PEDESTALS
- FULLY ADHERED TPO ROOF MEMBRANE ASSEMBLY
- 1/2" MEMBRANE UNDERLAYMENT
- SLOPED INSULATION (AS INDICATED ON ROOF PLAN)
- 5/8" EXTERIOR GRADE SHEATHING C/W H-CLIPS
- 16" LVL (REFER TO MANUFACTURER SHOP DWGS)
- MIN. R-31 MEDIUM DENSITY (2-LB) CLOSED CELL SPRAY FOAM INSULATION (CONTINUOUS VAPOR BARRIER)
- 1/2" RESILIENT CHANNEL @ 24" O.C. MAX.
- 1/2" TYPE X GYPSUM BOARD
- 1/2" TYPE X GYPSUM BOARD (TAPED, SANDED & PAINT)

R2 - ROOF ABOVE STAIRS

R-VALUE = R31 MIN

- FULLY ADHERED TPO ROOF MEMBRANE ASSEMBLY
- 1/2" MEMBRANE UNDERLAYMENT
- SLOPED INSULATION (AS INDICATED ON ROOF PLAN)
- 5/8" EXTERIOR GRADE SHEATHING C/W H-CLIPS
- 2X8 ROOF JOIST (REFER TO MANUFACTURER SHOP DWGS)
- MIN. R-31 MEDIUM DENSITY (2-LB) CLOSED CELL SPRAY FOAM INSULATION (CONTINUOUS VAPOR BARRIER)
- 1"x3" WOOD STRAPPING @ 16" O.C. MAX.
- 1/2" TYPE X GYPSUM BOARD (TAPED, SANDED & PAINT)

Wall Legend
SCALE 1 : 20

ONTARIO BUILDING CODE MATRIX

Item			OBC Reference
1	Project Description: WINCHESTER DEVELOPMENT, 454 LANCASTER LANE, WINCHESTER, ON, BUILDING B	☑ New ☐ Addition ☐ Alteration ☐ Change of Use	☐ Part 11 11.1 to 11.4 / ☐ Part 3 1.1.2. [A] / ☑ Part 9 1.1.2. [A]&9.10.1.3.
2	Major Occupancy (s)	Group C	3.1.2.1. (1) / 9.10.2.
3	Building Area (m²)	Existing 0m² New 382m² Total 382m²	1.4.1.2. [A] / 1.1.1.2. [A]
4	Gross Area (m²)	Existing 0m² New 1,528m² Total 1,528m²	1.4.1.2. [A] / 1.1.1.2. [A]
5	Number of Stories	Above Grade 3 Below Grade 1	1.4.1.2. [A] & 3.2.1.1. / 1.1.1.2. [A] & 9.10.4.
6	Height of Building (m)	+/- 11.18m	
7	Number of Streets/ Fire Fighter Access	1	3.2.2.10. & 3.2.5. / 9.10.20.
8	Building Classification	RESIDENTIAL OBC	3.2.2.20. - .83 / 9.10.2.
9	Sprinkler System Proposed	☑ Entire Building ☐ Selected Compartments ☐ Selected Floor Areas ☐ Basement ☐ In lieu of roof rating ☐ Not Required	3.2.2.20. - .83 3.2.1.5. 3.2.2.17. INDEX / 9.10.8.2. INDEX
10	Standpipe Required	☐ Yes ☑ No	3.2.9. / N/A
11	Fire Alarm Required	☐ Yes ☑ No	3.2.4. / 9.10.18.
12	Water Service/ Supply is adequate	☑ Yes ☐ No	3.2.5.7. / N/A
13	High Building	☐ Yes ☑ No	3.2.6. / N/A
14	Permitted Construction / Actual Construction	☑ Combustible ☐ Non-Combustible / ☑ Combustible ☐ Non-Combustible	3.2.2.20. - .83 / 9.10.6.
15	Mezzanine(s) Area (m²)	0	3.2.1.1. (3)-(8) / 9.10.4.1.
16	Occupant load based on: 1st and second Floor: Occupancy Group / Basement ( ): Occupancy Group / 4th floor ( ): Occupancy Group / Total Occupant Load	☐ m²/person ☑ Design of building: Load 0 Persons; Load 21 Persons; Load 21 Persons; Load 42 Persons	3.1.1.7. / 9.9.1.3.
17	Barrier-free Design	☐ Yes ☑ No	3.8. / 9.5.2.
18	Hazardous Substances	☐ Yes ☑ No	3.3.1.2. & 3.3.1.19 / 9.10.1.3. (4)
19	Required Fire Resistance Rating (FRR): Floors 45min / 1Hr; Roof 0Hr; Mezzanine n/a; Exits n/a	Horizontal Assemblies FRR (Hours) / Listed Design No. or Description (SB-2): Refer to Assemblies	3.2.2.20. .83 & 3.2.1.4. / 9.10.8. 9.10.9.
	FRR of Supporting Members: Floors 45min / 1Hr; Roof 0Hr; Mezzanine n/a	Listed Design No. or Description (SB-2): Refer to Assemblies	
20	Spatial Separation - Construction of Exterior Walls		3.2.3. / 9.10.14.

Wall	Area of EBF (m²)	L.D. (m)	L/H or H/L	Permitted Max % of openings	FRR (Hours)	Listed Design or Description	Construction Comb.	Construction NonComb.	Cladding Comb.	Cladding NonComb.
North			na	100%	0Hr		☑	☑	☑	☑
East			na	100%	0Hr		☑	☑	☑	☑
South			na	100%	0Hr		☐	☐	☐	☐
West	REFER TO SOUTH ELEVATION FOR CALCS				1Hr	SB-2 W1b	☐	☐	☐	☑

SB-12 COMPLIANCE PACKAGE = TABLE 3.1.1.2.A (IP) COMPLIANCE PACKAGE A5

GENERAL NOTES:

GENERAL NOTES:

1. ALL WALLS TO BE CONTINUOUS FROM SLAB TO SLAB UNLESS NOTED OTHERWISE.

2. ALL INTERIOR CORRIDORS AND DEMISING WALLS BETWEEN SUITES TO BE TYPE P5 UNLESS OTHERWISE NOTED.

3. REFER TO FINISH SCHEDULE IN ID PACKAGE. REPLACE GYPSUM BOARD WITH TILE BACKER IN ALL AREAS HAVING CERAMIC TILE WALL FINISH. ENSURE LISTED FIRE RATINGS ARE MAINTAINED.

4. INTERIOR STUD WALLS:
PROVIDE TWO ROWS OF CONTINUOUS ACOUSTIC CAULKING AT STUD TRACK AT TOP OF SLAB, UNDERSIDE OF SLAB AND AT VERTICAL FACE WHERE STUDS ABUT STRUCTURE.

5. PIECEMEAL OF GYPSUM BOARD SHEETS IS NOT ACCEPTABLE.

6. JOINTS OF LAYERED GYPSUM BOARD SHOULD BE STAGGERED.

7. CAULK AT TOP AND BOTTOM OF WALLS AT EDGE OF GYPSUM BOARD PANELS.

8. PROVIDE CAULKING ROD BACKUP AT ANY GAP OVER 1/4".

9. ELECTRICAL AND DEVICE BOXES ON OPPOSING FACES OF WALL SHALL BE LOCATED IN SEPARATE STUD CAVITIES.

10. RUN FIBERGLASS BATT/MINERAL WOOL (REFER TO WALL TYPE) INSULATION BEHIND AND AROUND ALL ELECTRICAL BOXES. - NO BACK TO BACK ELECTRICAL BOXES.

11. BACKING TO BE PROVIDED AT ALL MILLWORK LOCATIONS, COORDINATE ON SITE.

12. SEAL ALL PENETRATIONS THROUGH ACOUSTICAL RATED WALLS (PARTY WALLS AND CORRIDOR WALLS) TIGHT WITH A COMBINATION OF JOINT COMPOUND AND ACOUSTICAL CAULK.

13. SEAL ALL PENETRATIONS THROUGH FIRE RATED WALLS (PARTY WALLS, CORRIDOR WALLS, ETC) TIGHT WITH A COMBINATION OF JOINT COMPOUND AND FIRE CAULK, TO ENSURE A CONTINUOUS FIRE RATING. PROVIDE TESTED ASSEMBLIES FOR ALL FIRE STOPPING.

14. PROVIDE WOOD BLOCKING WITHIN WALL TO PROVIDE ANCHORAGE FOR CABINETS, WASHROOM ACCESSORIES, HAND RAILINGS, ETC. BLOCKING SHALL NOT LINK BOTH SIDES OF A WALL, PLYWOOD MAY BE USED AS BLOCKING ON THE INNER LAYER OF DOUBLE LAYER WALL ASSEMBLIES. 18GA METAL STRIPS IN 6" IN WIDTH & CONTINUOUS THROUGHOUT LENGTH OF BLOCKING REQUIREMENT MAY ALSO BE USED.

15. PROVIDE 3/4" FIRE-RATED OUT TREATED PLYWOOD, GOOD ONE SIDE WITH FIRE RETARDANT PAINT, FOR MOUNTING OF ALL ELECTRICAL PANELS, CABLING, COMMUNICATION, BELL, AND SECURITY PANELS. REFER TO ELECTRICAL DRAWINGS FOR LOCATIONS.

16. THICKEN WALLS AS REQUIRED TO ACCOMMODATE ELECTRICAL PANELS & MECHANICAL ITEMS. CONTRACTOR TO CONFIRM CODE COMPLIANCE WITH ARCHITECT BEFORE SITE WORK BEGINS.

17. ALL EXPOSED CONCRETE TO BE ENCLOSED WITH 12.7mm GYPSUM BOARD ON 41mm STEEL STUDS UNLESS NOTED OTHERWISE ON PLANS OR DETAILS.

18. FOR ASSEMBLIES REQUIRING TO CONFORM TO A LISTED ULC/UL RATING, MATERIALS WITHIN THE ASSEMBLY SHALL BE EXACTLY AS PER THE TESTED ASSEMBLY. ALL MATERIAL SHALL BE LABELED WITH ULC/UL IDENTIFICATION.

19. ALL ELECTRICAL SWITCHES ARE TO BE LOCATED BETWEEN 4"-8" FROM THE ENTRANCE DOOR TO A ROOM. LOCATE STUDS TO ACCOMMODATE THE LOCATION OF SWITCHES SHOWN ON ELECTRICAL DRAWINGS AND SUIT THE APPROVED SUITE MOCK-UP.

20. PROVIDE SCUPPERS AT EDGES OF ROOF WHERE OVER FLOW CONTROL ROOF DRAINS ARE SPECIFIED. CONFIRM LOCATIONS WITH ARCHITECT.

21. ALL FIRE DAMPER INSTALLATION TO BE PER MANUFACTURER INSTRUCTIONS - HVAC CONTRACTOR TO COORDINATE ON SITE WITH DRYWALL/FRAMING CONTRACTOR TO ENSURE INSTALLATION INSTRUCTIONS ARE FOLLOWED EXACTLY AND ACCESS DOORS ARE PROVIDED.

22. PROVIDE ALL CLOSETS WITH MINIMUM 2 FULL WIDTH SHELF 12" DEEP AND WITH ONE FULL WIDTH HANGER ROD.

23. ANY WASHROOM WALLS ADJACENT TO LIVING SPACES/PUBLIC AREAS ARE TO HAVE SOUND ATTENUATING BATT INSULATION -ULC APPROVED- IN THE STUD CAVITIES (TO FILL CAVITY).

24. ALL STEEL STUDS TO BE FRAMED @ 406mm o/c U.N.O ON PLAN.

25. ALL STEEL STUDS ARE TO EXTEND TO UNDERSIDE OF STRUCTURE U.N.O.

26. ALL GYPSUM BOARD IS TO EXTEND TO FULL HEIGHT OF PARTITION U.N.O.

27. INTERIOR DOORS TO BE INSTALLED 100mm FROM ADJACENT WALL U/N/O

28. INTERIOR FINISHES AS PER ID PACKAGE

30. FRAME DOOR OPENINGS SO THERE IS 100mm FROM EDGE OF DOOR FRAME TO PERPENDICULAR WALL

LIST OF ABBREVIATIONS:

ACT	ACOUSTIC CEILING TILE
AFF	ABOVE FINISH FLOOR
ALUM	ALUMINUM
ARCH	ARCHITECTURAL
ASSY	ASSEMBLY
BD	BOARD
BG	BUILDING GRADE
BLDG	BUILDING
CB	CATCH BASIN
CC	CENTER TO CENTER
CJ	CONTROL JOINT
CL	CENTER LINE
CLG	CEILING
CLR	CLEAR
COL	COLUMN
CONC	CONCRETE
CPT	CARPET
CR	CARD READER
CT	CERAMIC TILE
CW	CURTAIN WALL
C/W	COMPLETE WITH
DIM	DIMENSION
DO	HANDICAP DOOR OPERATOR
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EIFS	EXTERIOR INSULATED & FINISH SYSTEM
EP	ELECTRICAL PANEL
EQ	EQUAL
ES	EMERGENCY SCUPPER
EXP	EXPOSED
EXT	EXTERIOR
FA	FIRE ALARM
FD	FLOOR DRAIN
FEC	FIRE EXTINGUISHER CABINET
FHC	FIRE HOSE CABINET
FIN	FINISH
FL	FLOOR
FRR	FIRE RISISTANCE RATING
GL	GLASS/ GLAZING
GB	GRAB BAR
GYP	GYPSUM WALLBOARD
HM	HOLLOW METAL
HWT	HOT WATER TANK
INT	INTERIOR
JT	JOINT
LTG	LIGHTING
MAX	MAXIMUM
MECH	MECHANICAL
MC	MEDICINE CABINET
MIN	MINIMUM
NBC	NATIONAL BUILDING CODE
NO	NUMBER
NTS	NOT TO SCALE
OBC	ONTARIO BUILDING COAD
OC	ON CENTER
OH	OVERHEAD
PT	PRESSURE TREATED
PLAM	PLASTIC LAMINATE
PSF	PRESSED STEEL FRAME
PVC	POLY VINYL CHLORIDE
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REINF	REINFORCED
REQD	REQUIRED
RWL	RAIN WATER LEADER
S	SHOWER
SIM	SIMILAR
SS	STAINLESS STEEL
T/O	TOP OF
TYP	TYPICAL
U/S	UNDERSIDE
VCT	VINYL COMPOSITION TILE
VEST	VESTIBULE
WC	WATER CLOSET

SECTION CUT
1 / A101 — DRAWING NUMBER / ROOM NUMBER

ROOM TAG
ROOM NAME / ROOM NUMBER

DOOR TAG
1t — DOOR NUMBER

WINDOW TAG
W# — (B) -BASEMENT (M) -MAIN FLOOR (S) -SECOND FLOOR (T) -THIRD FLOOR (#) -WINDOW No.

CONSTRUCTION ASSEMBLY
1t A1010 100 — (W) -WALL (EW) -EXISTING WALL (P) -PARTITION (F) -FLOOR (R) -ROOF (#) -ASSEMBLY No.

POINT ELEVATION TAG
1000 — ELEVATION HEIGHT

ELEVATION TAG
Elevation Name — ELEVATION HEIGHT / NAME OF ELEVATION

REVISION
REV 1 — REVISION LOCATION AND NUMBER

GRID TAG
0 — GRID NUMBER

CALLOUT TAG
1 / A101 — DRAWING NUMBER / SHEET NUMBER

THEBERGE HOMES

N-

1) ALL WORK TO BE IN COMPLIANCE WITH LOCAL BUILDING CODES, REGULATIONS AND BY-LAWS.

2) ADDITIONAL DRAWINGS MAY BE ISSUED FOR CLARIFICATION TO ASSIST PROPER EXECUTION OF WORK. SUCH DRAWINGS WILL HAVE THE SAME MEANING AND INTENT AS IF THEY WERE INCLUDED WITH PLANS IN CONTRACT DOCUMENTS.

3) DO NOT SCALE DRAWINGS.

4) ALL SUB-CONTRACTORS TO TAKE THEIR OWN ON-SITE MEASUREMENTS AND BE RESPONSIBLE FOR THEIR ACCURACY

5) NOTIFY SHAWN J. LAWRENCE ARCHITECT FOR ANY ERRORS AND/OR OMISSIONS PRIOR TO START OF WORK.

NORTH ARROW:

No.	DATE	REVISION
02	2022.08.15	ISSUED FOR COORDINATION
01	2022.07.05	ISSUED FOR REVIEW

S.J.LAWRENCE ARCHITECT INCORPORATED
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PROJECT:
CARRUTHERS AVENUE DEVELOPMENT
266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
GENERAL NOTES AND SPECS

DRAWN BY: R.R. | CHECKED BY: B.L. S.J.L.

PLOT DATE: 2022-08-16 11:53:40 AM

JOB NUMBER: SL-1077-22 | SCALE: As indicated

A0.1

PLAN #

APPLICATION #

GENERAL STRUCTURAL NOTES

1. ALL POSTS MUST BE CARRIED DOWN TO CONCRETE FOUNDATION WALL, PIER OR FOOTING.
2. FOUNDATION ANCHOR BOLTS TO BE 1/2" A307 ANCHOR BOLTS @8' O.C. MAX.
3. ENGINEERED WOOD POST AND RAILS IN COMPLIANCE WITH 0.B.C. 9.8.8.8. SB-7 AND/OR 4.1.10.1.
4. THE INFORMATION PRESENTED ON THESE DRAWINGS HAS BEEN DESIGNED AND ANALYZED IN ACCORDANCE WITH DIVISION B PART 9 OF THE O.B.C. REG. 350/06. CONSTRUCTION IS TO BE PERFORMED IN ACCORDANCE WITH THIS AND ALL OTHER APPLICABLE CODES.
5. GUARD RAILS AND HAND RAILS SHALL BE DESIGNED AND CERTIFIED BY THE FABRICATOR'S PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO IN ACCORDANCE WITH THE LOAD PROVIDED IN THE 2012 ONTARIO BUILDING CODE.
6. GUARDS ARE REQUIRED ON DECKS AND OTHER WALKING SURFACES THAT EXTEND TO 23 5/8"(600mm) ABOVE GRADE AND SHALL CONFORM TO THE LOADING CRITERIA IN PART 4 OF THE O.B.C. REG. 350/06 OR BE CONSTRUCTED AS SET OUT IN THE O.B.C. REG. 350/06 SUPPLEMENTARY STANDARD SB-7. (9.8.8.8.) FOR METAL GUARDS SUPPLIERS SHOP DRAWINGS MUST BE CERTIFIED FOR DESIGN INSTALLATION CONFORMING TO O.B.C. REG. 350/06 4.1.10.1.
7. GRAVITY LOADS:

ROOF (SNOW FACTOR)
Sa = 2.4 KPa
Sr = 0.4 KPa
S = Sa x 0.55 + Sr + SNOW DRIFT
DEFLECTION - LIVE = L/360
DEFLECTION - TOTAL = L/240
DEAD LOAD = 1.44 KPa

FLOOR
LIVE LOAD = UNITS 1.9 KPa
DEAD LOAD = 1.20 KPa
DEFLECTION - LIVE = L/360
DEFLECTION - TOTAL = L/240

ENTRANCE
LIVE LOAD = 4.8 KPa
DEAD LOAD = 3.0 KPa

8. METAL AND GLASS GUARD ARE TO BE DESIGNED AS PER OBC 2012 BY THE PREFABRICATED GUARD ENGINEER INCLUDING ALL CONNECTIONS. SHOP DRAWINGS TO BE STAMPED BY AN ENGINEER AND TO BE ISSUED FOR REVIEW.

WOOD CONSTRUCTION

1. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS.
2. ALL WOOD FRAMING TO BE MIN SPF NO.2 OR BETTER, SURFACE DRY AT 19% MOISTURE CONTENT UNLESS OTHERWISE NOTED. 'STUD' GRADE IS NOT ACCEPTABLE FOR BEARING WALLS, LINTELS AND POSTS.
3. ALL BEARING WALLS ARE TO HAVE HORIZONTAL BLOCKING AT MID HEIGHT.
4. ALL LOAD BEARING WALLS OVER 9'-0" TO 12'-0" TO HAVE CONTINUOUS HORIZONTAL BLOCKING (U/N) AT MID POINT. ALL LOAD BEARING WALLS OVER 12'-0" TO HAVE CONTINUOUS HORIZONTAL BLOCKING AT THIRD POINTS.
5. SAWN LUMBER SHALL CONFORM TO CAN/CSA 086.1-M94 AND SHALL IDENTIFY LUMBER BY OFFICIAL GRADE MARKS.
6. ALL BEAMS REQUIRE RESTRAINT AGAINST LATERAL DISPLACEMENT AND ROTATION AT THE POINTS OF BEARING.
7. FOR BUILT-UP BEAMS, IT IS ASSUMED THAT EACH PLY IS A SINGLE CONTINUOUS MEMBER, FASTENED TOGETHER SECURELY AT INTERVALS NOT EXCEEDING 4 TIMES THE DEPTH AND THAT EACH PLY IS EQUALLY LOADED.
8. BUILT-UP RECTANGULAR COMPRESSION MEMBERS SHALL CONSIST OF INDIVIDUAL MEMBERS OF EQUAL LENGTH FASTENED TOGETHER USING NAILS, LAG SCREWS OR BOLTS.
9. THEN INDIVIDUAL PIECES OF THE BUILT-UP MEMBER ARE WIDER THAN 3 TIMES THEIR THICKNESS (U/N) (ie. d>3d). THERE SHALL BE AT LEAST 2 ROWS OF FASTENERS ACROSS THE MEMBER WIDTH.
10. NAILS SHALL BE ZINC COATED CONFORMING TO CSA B11.
11. WHEN USED, NAILS SHALL PENETRATE THROUGH AT LEAST OF 3/4 OF THE THICKNESS OF THE LAST INDIVIDUAL PIECE. THE NAILS SHALL BE DRIVEN FROM EITHER FACE OF THE BUILT-UP MEMBER ALONG THE LENGTH.
12. FRAMING ANCHORS SHALL BE 18 GAUGE ZINC COATED SHEET STEEL CONFORM TO CSA STANDARDS.
13. PRE-ENGINEERED WOOD ELEMENTS (I-JOIST & LAMINATED PRODUCTS) SHOP DRAWINGS, SHALL BE STAMPED BY AN ENGINEER REGISTERED IN THE PROVINCE OF ONTARIO AND SHALL DETAIL ALL SIZES, SPACING, BRIDGING, BLOCKING, HANGERS, UPLIFT CLIPS, ETC. FASTENERS AND CONNECTOR TYPES, SIZES AND LOCATIONS ARE TO BE NOTED ON THE DRAWINGS. ALL ELEMENTS / CONNECTORS ARE TO BE DESIGNED IN ACCORDANCE WITH O.B.C. REG. 350/06.
14. MAXIMUM DEFLECTION UNDER TOTAL LOAD SHALL NOT EXCEED L/240 OF THE SPAN AND IT SHALL NOT EXCEED L/360 OF THE SPAN UNDER LIVE LOAD FOR ALL ROOF AND FLOOR COMPONENTS.
15. ALL CONCEALED EXTERIOR WOOD POSTS PRESSURE TREATED SPF NO.1&2 UNLESS NOTED OTHERWISE. MOUNTED ON GALVANIZED METAL ADJUSTABLE POST BASE W/ MIN. 1" STANDOFF. SIMILAR TO SIMPSON STRONG TIE "ABI" SERIES.
16. PLYWOOD ROOF SHEATHING TO BE CONSTRUCTION-GRADE, EXTERIOR GRADE, GOOD-ONE-SIDE SOFTWOOD PLYWOOD TO CAN/CSA O151-M1978 OR DOUGLAS FIR PLYWOOD TO CAN/CSA O121-M1978.
17. OSB ROOF SHEATHING TO BE DESIGN-RATED OSB TYPES 1, 2 & 3 CERTIFIED FOR ENGINEERING USES TO CAN/CSA O437.0-93 AND CAN/CSA O452.0-94. UNLOCKED DIAPHRAGM WITH 2 1/2" COMMON NAILS AT 4" O.C PLACED AT PANEL EDGES TO BE H-CLIPPED AND 6" O.C AT INTERMEDIATE SUPPORT.
18. PROPRIETARY (ENGINEERED) PRODUCTS AS SPECIFIED ON THE PLANS, SUBSTITUTIONS FROM THE SPECIFIED PRODUCTS BY WRITTEN APPROVAL OF THE ENGINEER ONLY.

WOOD ROOF TRUSSES/JOISTS

1. TRUSS SHOP DRAWINGS SHALL BE SINGLE SOURCE AND SHALL BE SIGNED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER RESPONSIBLE FOR THE DESIGN AND LICENSE TO PRACTICE IN ONTARIO.
2. WOOD TRUSSES, BRIDGING AND BRACING. DESIGN SHALL CONFORM TO CA/CSA 086.1-2014 FOR ENGINEERING DESIGN IN WOOD-LIMIT STATES DESIGN.
3. EACH TRUSS TO BE ANCHORED TO WOOD PLATES AND SHEATHINGS WITH TENSION ANCHORS BY SIMPSON OR EQUAL AND SHALL CONFORM TO O.B.C. REG. 350/06 SECTION 9.23.3. TRUSS MANUFACTURER TO DESIGN AND SUPPLY CONNECTORS.
4. MAXIMUM DEFLECTION UNDER TOTAL LOAD SHALL NOT EXCEED L/240 OF THE SPAN AND IT SHALL NOT EXCEED L/360 OF THE SPAN UNDER LIVE LOAD FOR ALL ROOF AND FLOOR COMPONENTS.
5. HOIST TRUSSES INTO POSITION IN ACCORDANCE WITH DESIGN DRAWINGS.
6. PROVIDE TEMPORARY HORIZONTAL CROSS BRACING TO HOLD TRUSSES PLUMB AND IN A SAFE CONDITION UNTIL PERMANENT BRACING IS INSTALLED.
7. INSTALL PERMANENT BRACING AND RELATED COMPONENT AS PER TYPICAL INSTALLATION GUIDELINES PRIOR TO APPLICATION OF LOAD TO TRUSSES.
8. DO NOT CUT OR REMOVE ANY TRUSS MEMBERS.
9. PRE-ENGINEERED WOOD JOISTS TO BE BY WEYERHAUSER OR APPROVED EQUAL. CONTRACTOR MAY REDUCE SPACING OR PROVIDE LVL FRAMING AS REQUIRED IN ORDER TO MAINTAIN FRAMING DEPTH AT CONTRACTOR'S OWN COST. ALL PRE-ENGINEERED JOIST AND LVL FRAMING COMPLETE WITH BEARING AND CONNECTIONS BY CONTRACTOR'S ENGINEER UNLESS OTHERWISE INDICATED ON SECTIONS/DETAILS. CONTRACTOR TO PROVIDE STAMPED SHOP DRAWINGS FOR REVIEW.

CONCRETE

1. THE DESIGN AND CONSTRUCTION OF CONCRETE IS TO CONFORM TO THE REQUIREMENTS OF THE FOLLOWING STANDARDS (LATEST EDITION);
   - CONCRETE MATERIALS & METHODS OF CONCRETE CONSTRUCTION — CAN3-A23.1
   - METHODS OF TEST FOR CONCRETE — CAN3-A23.2
   - CODE FOR DESIGN OF CONCRETE STRUCTURES FOR BUILDINGS — CAN3-A23.3
   - BILLET STEEL BARS FOR CONCRETE REINFORCEMENT — Fy = 400 MPa TO CSA G30.18
   - QUALIFICATION CODES FOR TESTING LABORATORIES — CSA A283
   - AIR ENTRAINING ADMIXTURES FOR CONCRETE — CAN3-A266.1
   - CHEMICAL ADMIXTURES FOR CONCRETE — CAN3-A266.2
   - GUIDELINES FOR THE USE OF ADMIXTURES IN CONCRETE — CAN3 A266.4
2. CONCRETE MIXES TO COMPLY WITH SECTION 9.3.1.7 OF O.B.C. REG. 350/06.
3. CONCRETE COMPRESSIVE STRENGTH AFTER 28 DAYS TO COMPLY WITH SECTION 9.3.1.6 OF O.B.C. REG. 350/06.
   - FOOTINGS = 25 MPa
   - FOUNDATION WALLS = 25 MPa CLASS F-2
   - SLAB-ON-GRADE = 25 MPa
   - GARAGE SLAB = 32 MPa CLASS C-2
   - BASEMENT SLAB = 20 MPa
4. BASEMENT SLAB MIN. 3" CONCRETE SLAB (25 MPa) WITH WELDED WIRE MESH AT MID DEPTH OVER OVER 6mil. POLY VAPOUR BARRIER & 8" GRANULAR BASE ON UNDISTURBED SOIL.
5. GARAGE SLAB MIN .5" CONCRETE SLAB (25 MPa) WITH WELDED WIRE MESH AT MID DEPTH OVER 8" GRANULAR BASE ON COMPACTED FILL.
6. ALL FOOTINGS TO BEAR ON UNDISTURBED NATIVE MATERIAL OR COMPACTED GRANULAR WITH MINIMUM ALLOWABLE BEARING STRENGTH OF 100 kPa (SLS), 150 kPa (ULS) UNLESS NOTED BY STRUCTURAL ENGINEER. TO BE CONFIRMED ON SITE BY A GEOTECHNICAL ENGINEER PRIOR TO POURING CONCRETE
7. CONCRETE COVER CLEAR TO REINFORCING SHALL BE FOR UNDERSIDE OF:
   - FOOTINGS = 75 MM
   - SLABS = 25 MM
8. AIR ENTRAINED CONCRETE WITH 5% TO 7% AIR CONTENT SHALL BE USED FOR ALL WORK EXPOSED TO EARTH OR WEATHER.

FOUNDATIONS

1. ALL FOOTINGS TO BEAR ON SOUND AND UNDISTURBED ROCK OR SOIL WITH A MIN. ALLOWABLE BEARING VALUE A MINIMUM OF 75 kPa (SLS) & 100 kPa ULS). PROVIDE 50mm CONCRETE MUD SLAB AS REQUIRED TO ALLOW CONSTRUCTION ACTIVITY.
2. PROTECT SUB-GRADE FROM WATER AND FREEZING ADJACENT TO AND BELOW ALL FOOTINGS AT ALL TIMES DURING CONSTRUCTION.
3. PROVIDE 5'-0" MINIMUM FROST COVER (FINISHED GRADE TO U/S FOOTING) FOR HEATED FOOTINGS. CONSULT SOIL REPORT NOTED FOR ADDITIONAL REQUIREMENTS.
4. BACKFILLING TO PROCEED SIMULTANEOUSLY ON BOTH SIDES OF FOUNDATION WALLS (EXCEPT WHERE TEMPORARY SUPPORT FOR THE WALL IS PROVIDED), AND COMPACTED IN LAYERS AS SPECIFIED BY GEOTECHNICAL ENGINEER.
5. CONSULT GEOTECHNICAL ENGINEER FOR COMPOSITION AND COMPACTION OF FILL SUPPORTING SLAB ON GRADE.
6. PROVIDE DOWELS FROM FOOTINGS TO MATCH VERTICAL REINFORCING OF WALLS AND PIERS UNLESS OTHERWISE SHOWN.
7. UNLESS OTHERWISE NOTED, FOOTINGS AND PIERS ARE TO BE CONCENTRIC WITH COLUMN GRID LINES.
8. ALL HORIZONTAL WALL REINFORCING TO BE CONTINUOUS THROUGH PIERS.
9. CONSTRUCTION JOINTS AND CONTROL JOINTS IN WALLS SHALL BE POSITIONED AT PIERS AS SHOWN. MAXIMUM SPACING OF CONSTRUCTION JOINTS SHALL BE 20m U/N.
10. NO SLEEVES, PIPES, HOLES OR NOTCHES SHALL BE PLACED THROUGH WALLS, SLABS, OR PIERS EXCEPT AS DESIGNATED ON THE DRAWINGS.

REINFORCING STEEL

1. SPACING OF BARS SHALL BE APPROXIMATELY UNIFORM WITHIN THE CORRESPONDING STRIPS. DO NOT ELIMINATE OR DISPLACE REINFORCEMENT TO ACCOMMODATE HARDWARE. IF INSERTS CANNOT BE LOCATED AS SPECIFIED OBTAIN APPROVAL OF ALL MODIFICATIONS FROM ARCHITECT/ENGINEER BEFORE PLACING.
2. WHERE TENSION LAPS ARE SPECIFIED, LAP REINFORCING STEEL IN ACCORDANCE WITH THE REQUIREMENT OF CAN3-A23.3 LATEST EDITION. ALL OTHER LAPS AND EMBEDMENT OF DOWELS SHALL BE 24 BAR DIAMETERS BUT NOT LESS THAN 600MM IF NOT SPECIFIED OTHERWISE. WIRE MESH LAPS SHALL BE 150MM MINIMUM.

STRUCTURAL STEEL

1. THE DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL IS TO CONFORM TO THE REQUIREMENTS OF THE FOLLOWING STANDARDS (LATEST EDITION);
   - GENERAL REQUIREMENTS FOR ROLLED OR WELDED STRUCTURAL QUALITY STEELCAN/CSA G40.21
   - STRUCTURAL QUALITY STEELS — CAN/CSA-G40.20/G40.21
   - LIMIT STATES DESIGN OF STEEL STRUCTURES — CAN3-S16.1
   - CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL STRUCTURES — CSA-W47.1
   - ELECTRODE STANDARDS — CSA-W48.1 TO CSA-W48.7 (LATEST)
   - WELDED STEEL CONSTRUCTION (METAL ARC WELDING) — SA-W59
2. STEEL STRENGTHS SHALL BE AS FOLLOWS:
   - STRUCTURAL STEEL GRADE — G40.21M 350W — Fy = 345 MPa FOR W SHAPES
   - HSS GRADE — G40.21M 350W, (CLASS H) Fy = 350 MPa
   - CONNECTOR BOLTS — A325/A325M (U/N)
   - ANCHOR BOLTS — A307/A307M (U/N)
3. ALL STEEL WORK SHALL BE GIVEN ONE COAT OF APPROVED PRIMER.
4. SHOP CONNECTIONS SHALL BE WELDED. ALL FIELD CONNECTIONS SHALL BE WELDED OR BOLTED - USING HIGH TENSILE BOLTED BEARING TYPE. CONNECTION SHALL BE C.I.S.C. DOUBLE ANGLE BEAM CONNECTIONS FOR A325 BOLTS AND E70XX FILLET WELDS. MINIMUM SIZE OF BOLTS 3/4" (20 mm) DIA.
5. WELDING SHALL CONFORM TO LATEST CSA SPECIFICATION W59 AND BE UNDERTAKEN BY A FABRICATOR APPROVED BY THE CANADIAN WELDING BUREAU TO THE REQUIREMENTS OF CSA SPECIFICATION W47.1. ALL EXPOSED WELDS SHALL BE CONTINUOUS AND BE GROUND SMOOTH.
6. ALL EXTERIOR EXPOSED STRUCTURAL STEEL SHALL BE GALVANIZED OR PAINTED WITH APPROVED RUST INHIBITIVE PAINT.

CONCRETE WALL/PAD FOOTINGS

F1 5'-0" X 5'-0" X 10" C/W 5-15M BEW + HOOK TO TOP
F2 3'-0" X 10" STRIP FOOTING C/W 3-15M BOT CONT
F3 5'-0" X 10" RETAINING WALL FOOTING C/W 5-15M BOT CONT + 15M @ 8" T&B SHORT (HOOK TOP BARS TO BOT)

DESIGN BEARING CAPACITIES:
- 75 kPa @ SLS
- 100 kPa @ ULS

PROVIDE MIN SOIL COVERING AT ALL FOUNDATIONS OR EQUIVALENT COVER FROM RIGID INSULATION.

NOTE: ALL STEEL BEAMS TO RECEIVE 3/8" THICK BRICK PLATE

WOOD BEAMS

B1 - 2 PLY 2x8
B2 - 2 PLY 2x10
B3 - 2 PLY 1.75"x9.25" 2900Fb LVL
B4 - 3 PLY 1.75"x9.25" 2900Fb LVL
B5 - 2 PLY 1.75"x11.25" 2900Fb LVL
B6 - 3 PLY 1.75"x11.25" 2900Fb LVL
B7 - 2 PLY 1.75"x14" 2900Fb LVL
B8 - 3 PLY 1.75"x14" 2900Fb LVL

NOTE: JOIST/LVL SUPPLIER TO DESIGN ALL CONNECTIONS, TIES, CLIPS, HANGERS FOR ALL WOOD BEAMS IN ADDITION TO DESIGN OF LVL FRAMING BEAMS.

LOOSE LAID LINTEL SCHEDULE - 90mm (3-1/2") BRICK MASONRY/100mm STONE (MAX 50 PSF)

SPANS < 1200 (48") L90x90x6.4 (L31/2"x31/2"x1/4")
SPANS < 1800 (72") L102x90x7.9 (L4"x31/2"x5/16") LLV
SPANS < 2400 (96") L127x90x7.9 (L5"x31/2"x5/16") LLV
SPANS < 3000 (120") L152x102x10 (L6"x4"x3/8") LLV
SPANS < 4400 (172") L152x102x13 (L6"x4"x1/2") LLV - MAX. BRICK HEIGHT OVER OPENING 1'-6"

NOTE: PROVIDE LOOSE LINTELS ABOVE ALL MASONRY CLADDING OPENING U.N.O. ALL LOOSE LAID LINTELS TO BE POWDER COATED U.N.O. PROVIDE MIN 6" BEARING ON EACH END.

STRUCTURAL NOTES

POSTS (TO U/S OF LINTEL OR BEAM)

P1 4-2"x6" SPF #1/2
P2 4-2"x4" SPF #1/2
P3 5-2"x4" SPF #1/2
P4 1-6"X6" SPF #1 PRESSURE TREATED C/W ABW66Z BY SIMPSON. CONTRACTOR TO CAST IN ANCHORS AS REQUIRED BY BASE SPECIFICATIONS. PROVIDE 12" DIAMETER SONOTUBE REINFORCED WITH 4-15M VERT + HOOKED DWLS AND 10M TIES @ 12" O.C. ON 28" DIAMETER BASE.

SC1 HSS 89X89X8.0 C/W 250X125X16 BPL W/ 2 - 5/8" DIA. HAS-E THREADED RODS (200 EMBEDMENT + 50 HOOK)
SC2 HSS 102X102X8.0 C/W 250X125X20 BPL W/ 2 - 3/4" DIA BOLTS CAST INTO WALL (400 EMBEDMENT + 50 HOOK)

JOISTS

J1 - 2x6 @ 24" c/c
J2 - 2x10 P.T. @ 16" c/c
J3 - 14" TJI 360 @ 16" c/c
J4 - 1.75"x16" 2900Fb LVL @ 24" c/c
J5 - 1.75"x16" 2900Fb LVL @ 16" c/c
J6 - 2 PLY 1.75"x16" 2900Fb LVL @ 24" c/c

NOTE: JOIST/LVL SUPPLIER TO DESIGN ALL CONNECTIONS, TIES, AND CLIPS, HANGERS FOR ALL JOISTS IN ADDITION TO DESIGN OF PRE-ENGINEERED WOOD JOISTS.

WALL FRAMING

W1 - 2x6 @ 16" c/c
W2 - 2x6 @ 16" c/c
W3 - 2-2x6 @ 24" c/c
W4 - 2-2x6 @ 16" c/c

STRUCTURAL LEGEND

(A) TOP MOUNT JOIST HANGER (BY JOIST FABRICATOR'S ENGINEER)

(B) PROVIDE PERPENDICULAR BLOCKING TIGHT BETWEEN JOISTS AT ALL JOIST/BEAM BEARING POINTS.

(C) CANTILEVER JOISTS BEYOND EXTERIOR WALL TO EDGE OF FRAMING, SISTER DIRECTLY TO FLOOR/ROOF JOISTS (BUILD OUT TJI WEBS FLUSH WITH FLANGES) WITH 3 ROWS OF 3" LONG NAILS SPACED AT 16" c/c MAX.

(D) POINT LOAD FROM ABOVE. PROVIDE SOLID BLOCKING WITHIN JOIST SPACE.

(E) PROVIDE SIMPSON H2.5A OR ENGINEER APPROVED EQUIVALENT HURRICANE TIES AT EACH END OF ALL ROOF JOISTS ON THIS LEVEL.

(F) BRICK PLATE TO BE WELDED TO BOTH EDGES OF STEEL BEAM BOTTOM FLANGE

CONSTRUCTION NOTES

1. PROVIDE SOILS REPORT TO INSPECTOR AT TIME OF INSPECTION STATED MIN. BEARING CAPACITY OF A MINIMUM OF 75 kPa (SLS) & 100 kPa (ULS). PROVIDE 50mm CONCRETE MUD SLAB AS REQUIRED TO ALLOW CONSTRUCTION ACTIVITY.
2. STRUCTURAL INFORMATION INCLUDED IN ASSEMBLY & CONSTRUCTION NOTES ARE SUPERSEDED BY STRUCTURAL NOTES. REFER TO STRUCTURAL NOTES, FOOTING SCHEDULES & DETAILS FOR CONCRETE WALL/FOOTING REINFORCING.
3. JOISTS TO BE DESIGNED BY SUPPLIER. JOIST SUPPLIER TO PROVIDE SHOP DRAWINGS INDICATING LAYOUT AND SPACING.
4. FILL BEAM POCKET CAVITIES AT TOP OF FOUNDATION WALL WITH NON-SHRINK GROUT.
5. REFER TO DRAWINGS FOR THICKNESS OF POURED CONCRETE FOUNDATION WALLS.
6. PROVIDE BRICK OR STONE TIES & WEEP VENT HOLES AS PER OBC 9.20.13.
7. PROVIDE FILTER CLOTH OVER WEEPING TILE.
8. PROVIDE CEMENT PARGING TO 8" BELOW GRADE ALL EXPOSED CONCRETE FOUNDATION WALLS.
9. PROVIDE TYPE S ROLL ROOFING ISOLATION MEMBRANE BETWEEN CONCRETE BELOW GRADE & WOOD FRAMING OR BATT INSULATION.
10. INTERIOR WOOD FRAMED WALLS USE 2"x4" @16" OC, UNLESS NOTED OTHERWISE.
11. EXTERIOR WOOD FRAMED WALLS USE 2"x6" @16" OC, UNLESS NOTED OTHERWISE.
12. TAPE & SEAL ALL JOINTS IN TYVEK AIR / MOISTURE BARRIER. PROVIDE AIR SEAL TO ALL OPENINGS.
13. LAP & SEAL ALL JOINTS IN POLYETHYLENE VAPOUR BARRIER.
14. ALL GYPSUM BOARD WALLS & CEILINGS TO BE TAPED & SANDED FOR PAINT OR SPECIFIED INTERIOR FINISH. PIECEMEAL OF GYPSUM BOARD SHEETS IS NOT ACCEPTABLE.
15. PROVIDE MOISTURE RESISTANT GYPSUM BOARD IN ALL WET AREAS, WASHROOM, CEILINGS & WASHROOM WALLS. CEMENT BOARD TO BE USE ON ALL TUB DECKS & SHOWER ENCLOSURES.
16. PROVIDE 5/8" PLYWOOD UNDERLAY WITH 1/8" GAPS WHERE CERAMIC TILE IS TO BE INSTALLED AS PER OBC.
17. CERAMIC TILE ON ALL TUB AREAS WALLS TO UNDERSIDE OF BULKHEAD.
18. ALL TOILETS MUST HAVE A MAXIMUM 6 LITRES / FLUSH CAPACITY.
19. ALL BATHROOM / POWDER ROOM EXHAUST FANS MUST VENT TO EXTERIOR.
20. BACKING TO BE PROVIDED FOR ALL MILLWORK, WASHROOM ACCESSORIES, HAND RAILINGS, ETC. & TO BE COORDINATED ON SITE.
21. PROVIDE ALL CLOSETS WITH MIN. ONE (1) FULL WIDTH SHELF 12" DEEP & ONE (1) FULL WIDTH ROD.
22. DRYER VENT MUST EXHAUST TO EXTERIOR.
23. ALL INTERIOR GUARDRAILS MUST BE MIN. 3'-0" HIGH. ALL STAIR HANDRAILS MUST BE MINIMUM 2'-7" & MAXIMUM 3'-2" ABOVE THE STAIR.
24. ALL PENETRATIONS THROUGH FIRE-RATED WALLS (PARTY WALLS, CORRIDOR WALLS, ETC) MUST BE SEALED TIGHT WITH A COMBINATION OF JOINT COMPOUND AND FIRE CAULK, TO ENSURE A CONTINUOUS FIRE RATING.
25. THICKEN WALLS AS REQUIRED TO ACCOMMODATE ELECTRICAL PANELS & MECHANICAL ITEMS. CONTRACTOR TO CONFIRM CODE COMPLIANCE WITH ARCHITECT BEFORE SITE WORK BEGINS.
26. FOR ASSEMBLIES REQUIRING TO CONFORM TO A LISTED ULC/UL RATING, MATERIALS WITHIN THE ASSEMBLY SHALL BE EXACTLY AS PER THE TESTED ASSEMBLY. ALL MATERIAL SHALL BE LABELED WITH ULC/UL IDENTIFICATION.
27. ALL ELECTRICAL SWITCHES ARE TO BE LOCATED BETWEEN 4"-8" FROM THE ENTRANCE DOOR TO A ROOM. LOCATE STUDS TO ACCOMMODATE THE LOCATION OF SWITCHES SHOWN ON DRAWINGS AND SUIT THE APPROVED SUITE MOCK-UP.
28. PROVIDE SCUPPERS AT EDGES OF ROOF WHERE OVER FLOW CONTROL ROOF DRAINS ARE SPECIFIED. CONFIRM LOCATIONS WITH ARCHITECT.
29. ALL FIRE DAMPER INSTALLATION TO BE PER MANUFACTURER INSTRUCTIONS - HVAC CONTRACTOR TO COORDINATE ON SITE WITH DRYWALL/FRAMING CONTRACTOR TO ENSURE INSTALLATION INSTRUCTIONS ARE FOLLOWED EXACTLY.
30. ANY WASHROOM WALLS ADJACENT TO LIVING SPACES/PUBLIC AREAS ARE TO HAVE SOUND ATTENUATING BATT INSULATION -ULC APPROVED- IN THE STUD CAVITIES (TO FILL CAVITY).
31. ALL GYPSUM BOARD IS TO EXTEND TO FULL HEIGHT OF PARTITION U.N.O.
32. PROVIDE PERPENDICULAR BLOCKING/BRIDGING AT 6'-0" c/c WITHIN FIRST JOIST SPACE ADJACENT FIRST INTERIOR JOIST RUNNING PARALLEL TO WALL EDGE

THEBERGE HOMES

N

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4) ALL SUB-CONTRACTORS TO TAKE THEIR OWN ON-SITE MEASUREMENTS AND BE RESPONSIBLE FOR THEIR ACCURACY

5) NOTIFY SHAWN J. LAWRENCE ARCHITECT FOR ANY ERRORS AND/OR OMISSIONS PRIOR TO START OF WORK.

NORTH ARROW:

No.	DATE	REVISION
02	2022.08.15	ISSUED FOR COORDINATION
01	2022.07.05	ISSUED FOR REVIEW

S.J.LAWRENCE ARCHITECT INCORPORATED
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SUITE 205
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PROJECT:
CARRUTHERS AVENUE DEVELOPMENT
266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
STRUCUTRAL NOTES

DRAWN BY: **R.R.** CHECKED BY: **B.L. S.J.L.**

PLOT DATE: **2022-08-16 11:53:40 AM**

JOB NUMBER: **SL-1077-22** SCALE:

S1.0

PLAN #

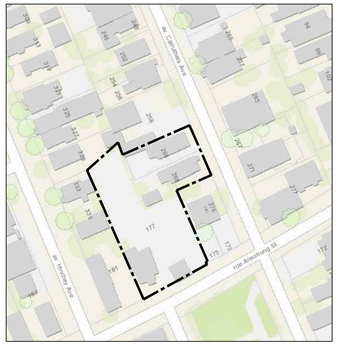
APPLICATION #

LEGEND

- NEW OVERHEAD DOOR (O/H)
- NEW DOOR / ENTRANCE
- PROPOSED RIVERSTONE MULCH
- EXISTING VEGETATION REFER TO LANDSCAPE DWGS (0.3m)
- BICYCLE PARKING SPACE (1.8Mx0.6M)
- NO PARKING LINES
- PROPOSED PRECAST CONCRETE PAVERS
- PROPOSED SOD - REFER TO LANDSCAPE DWGS
- NEW SAWCUT CONCRETE SIDEWALK
- PARKING STALL COUNT PER ROW (#)
- NEW SIGN, REFER TO SIGN LEGEND (S#)
- STREET LIGHT (SL)
- HYDRO POST (SL)
- DESIGNATED ACCESSIBLE PARKING SPACE AS PER AODA STANDARDS
- V VISITOR PARKING
- TWO WAY TRAFFIC
- DEPRESSED CURB (DC)
- PROPERTY LINE
- EXISTING FENCE
- MINIMUM SETBACKS (ZONING)
- NEW CONSTRUCTION
- EXISTING BUILDINGS
- BUILDING MOUNTED LIGHTS REFER TO ELECTRICAL DWGS (X)
- *REFER TO LANDSCAPE DWGS

LEGAL DESCRIPTION:
PART OF LOTS 6 & 7 REGISTERED PLAN 83
CITY OF OTTAWA
FARLEY, SMITH & DENIS SURVEYING LTD. 2022

KEY PLAN



CITY OF OTTAWA ZONING BY-LAW

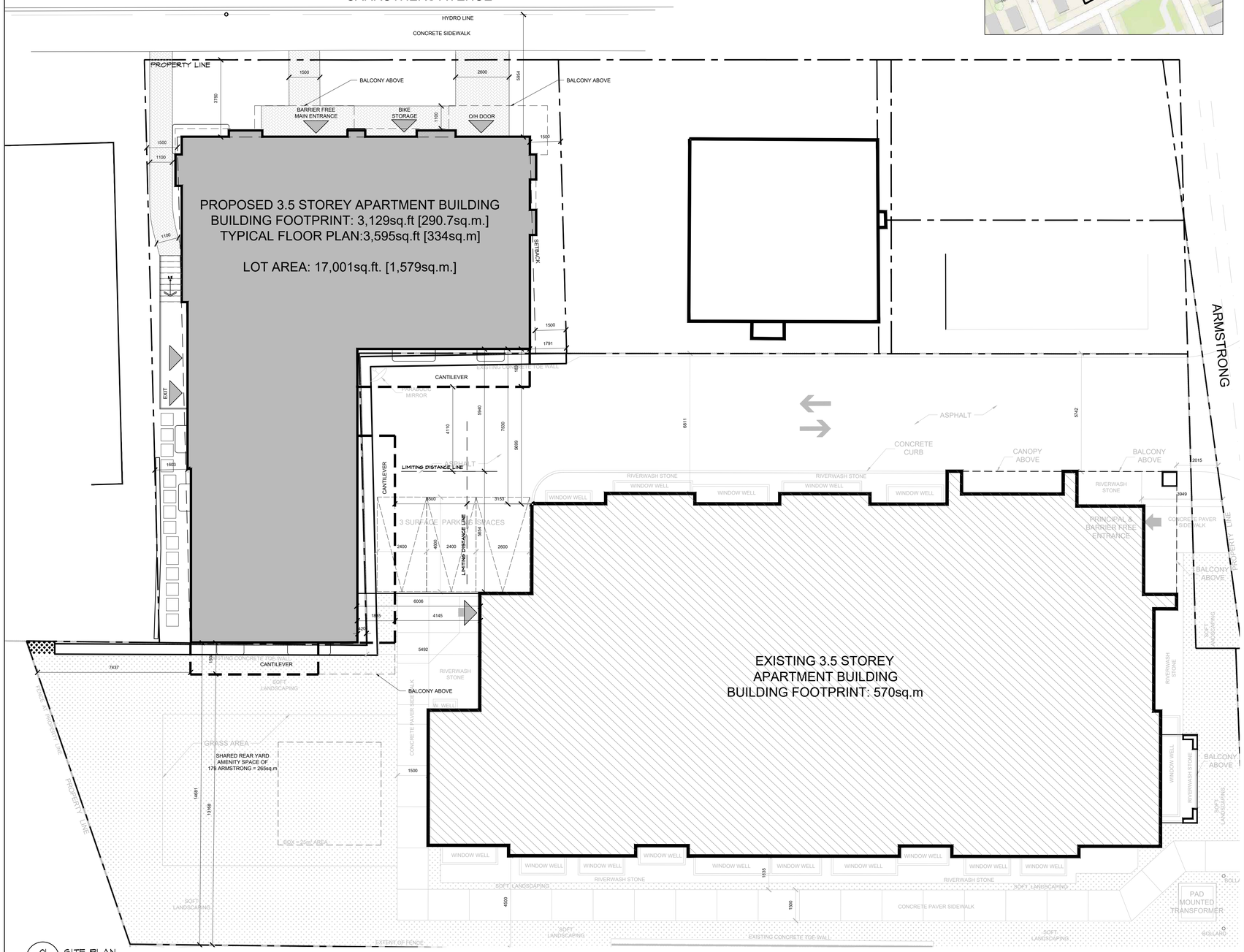
ZONING MECHANISM	R4UB PREVISIONS		PROPOSED DEVELOPMENT
MINIMUM LOT WIDTH	N/A		20m
MINIMUM LOT AREA	1,400 m²		1,858m²
MAXIMUM BUILDING HEIGHT	11m		11m
MAXIMUM NUMBER OF UNITS FOR A LOW-RISE APARTMENT IN R4UB	12 UNITS		18 UNITS (PROPOSED NEW DEVELOPMENT) 51 UNITS (TOTAL IN PUD)
MINIMUM FRONT YARD SETBACK (SECTION 144 AND SECTION 162)	3.91m (MEASURED FOR 276 CARRUTHERS)		3.75m
MINIMUM CORNER SIDE YARD SETBACK (SECTION 144 AND SECTION 162)	1.5m		3m
MINIMUM REAR YARD SETBACK (SECTION 162 NOTE 1)	25% OF THE LOT DEPTH AND NEED NOT EXCEED 7.5m		13.1m (FROM EXISTING CONCRETE TOE WALL CANTILEVER)
MINIMUM INTERIOR SIDE YARD SETBACK (SECTION 162 NOTE 1)	FOR THE FIRST 18m BACK FROM THE STREET 1.5m FOR THE REMAINDER: 25% OF THE LOT DEPTH TO A MAXIMUM 7.5m		1.5m FOR THE FIRST 18m BACK MIN. 1.5m FOR THE REMAINDER
LANDSCAPED AREA, TOTAL LOT (SECTION 161)	30%		TBD
LANDSCAPED AREA, REAR YARD (SECTION 161)	ANY PART OF THE REAR YARD NOT OCCUPIED MUST BE SOFTLY LANDSCAPED.		COMPLIES
	MINIM AREA OF SOFT LANDSCAPING:	50% OF THE REAR YARD	REAR YARD AREA: 250sq.m SOFT LANDSCAPE: 146sq.m = 58%
LANDSCAPED AREA,FRONT YARD (SECTION 161)	FRONT YARD SETBACK >3M	40% IN THE CASE OF ANY LOT WITH A WIDTH OF 12 M OR MORE	TOTAL FRONT AREA = 75sq.m FRONT SOFT LANDSCAPE AREA=46sq.m TOTAL SOFT LANDSCAPE AREA = 61%
MINIMUM WIDTH OF PRIVATE WAY (SECTION 131)	6m		5.7m
MINIMUM SETBACK FOR ANY WALL OF A RESIDENTIAL USE BUILDING TO A PRIVATE WAY (SECTION 131)	1.8m		N/A
MINIMUM SEPERATION DISTANCE BETWEEN BUILDINGS (SECTION 131)	WHERE THE HEIGHT OF ABUTTING BUILDINGS WITHIN THE PUD IS EQUAL TO OR LESS THAN 14.5M: 1.2m		4.15m
NUMBER OF 2-BEDROOM UNITS	25% OF DWELLING UNITS = 4.5 UNITS		28% = 5 TWO BEDROOM UNITS
AMENITY AREA (SECTION 137)	R4UB ZONE NOT REQUIRED TO HAVE AMENITY SPACE. TOTAL AMENITY AREA REQUIRED AT GRADE FOR LOW-RISE APARTMENT DWELLINGS IN A PUD DOES NOT NEED TO EXCEED 120 M²		SHARED REAR AMENITY SPACE: 265 M²
ADITIONAL NOTES	161 (3) - WHERE A PLANNED UNIT DEVELOPMENT IS PERMITTED ON A LOT IN THE SUBZONE, THE PROVISIONS OF SECTION 131 APPLY, AND THE ASSOCIATED SUBZONE PROVISIONS IDENTIFIED IN TABLE 162 A AFFECTING PERMISSION OF USES, MINIMUM LOT WIDTHS AND LOT AREAS, AS WELL AS MINIMUM REQUIRED SETBACKS APPLY TO THE WHOLE OF THE LOT, WHILE THE MAXIMUM HEIGHT APPLIES TO EACH PERMITTED DWELLING TYPE WITHIN THE PLANNED UNIT DEVELOPMENT.		NOTED FOR REFERANCE
	THE FRONT YARD MUST BE EQUIPPED WITH SOLID PERMANENT FIXTURES TO PREVENT VEHICLE PARKING.		PROVIDED
	AT LEAST ONE PRINCIPAL ENTRANCE TO A GROUND-FLOOR UNIT OR TO A COMMON INTERIOR CORRIDOR MUST BE LOCATED ON THE FAçADE AND PROVIDE DIRECT ACCESS TO THE STREET.		COMPLIES.
	FRONT FAçADE MUST COMPRISE AT LEAST 25% WINDOWS; ANY CORNER SIDE FAçADE MUST COMPRISE AT LEAST 15% WINDOWS		COMPLIES
	AT LEAST 20% OF THE AREA OF THE FRONT FAçADE MUST BE RECESSED AN ADDITIONAL 0.6 METRES FROM THE FRONT SETBACK LINE, EXCEPT WHEN BALCONIES OR PORCHES ARE PROVIDED.		COMPLIES
EXCEPTION 2701			
MAXIMUM NUMBER OF DWELLING UNITS	33 UNITS		51 UNITS
RESIDENTIAL PARKING	NOT REQUIRED		3 SPACES
MINIMUM PARKING SPACE WIDTH	2.4M		2.4M
MINIMUM PARKING SPACE DEPTH	4.6M		4.6M
MINIMUM ROOFTOP ACCESS SETBACK FROM THE FRONT WALL FOR A MAXIMUM WIDTH OF 6.5 METRES	0M		PROVIDED
MAXIMUM ROOFTOP ACCESS AREA:	46.3 m²		46.4 m²
PRINCIPAL ENTRANCE	ONLY ONE PRINCIPAL ENTRANCE IS REQUIRED.		PROVIDED
MAXIMUM LOT AREA:	1,430 m²		1,858 m²
PARKING/ BICYCLE PARKING	**PREVISIONS**		**PROPOSED (PROPOSED DEVELOPMENT ONLY**
MINIMUM PARKING RATES AREA X SCHEDULE 1A SECTION 101 & 102	**DWELLING, LOW-RISE** 0.5 SPACES / UNIT (AFTER THE FIRST 12 UNITS) = 3 SPACES **VISITOR** 0.1 SPACES / UNIT (AFTER THE FIRST 12 UNITS AND UP TO A MAXIMUM OF 30 SPACES PER BUILDING) = 1 SPACE **TOTAL:** 4 SPACES		0 SPACES
MAXIMUM PARKING RATES NEAR RAPID TRANSIT HALF OF SITE IS LOCATED WITHIN 600M OF TUNNEY'S PASTURE SECTION 103	**AREA B SCHEDULE 1** 1.75 SPACES / UNIT (TOTAL RESIDENT + VISITOR)		0 SPACES
PARKING SPACE PROVISIONS SECTION 106	**Minimum:** 2.6 m x 5.2 m **Maximum:** 3.1 m x 5.2 m **Parallel Parking Length:** 6.7 m		2.4 m x 4.6 m
AISLES AND DRIVEWAYS SECTION 107 PARKING NOT LOCATED IN A PARKING LOT OR PARKING GARAGE 71-90 DEGREE ANGLE OF PARKING	**DRIVEWAYS:** MINIMUM WIDTH: 2.6 M **AISLES:** MINIMUM WIDTH: 6.7 M		DRIVEWAY: 5.7m
LOCATION OF PARKING SECTION 109	NO PARKING IS PERMITTED IN A REQUIRED FRONT OR CORNER SIDE YARD ALL PORTIONS OF THE FRONT AND CORNER SIDE YARD NOT OCCUPIED BY PARKING SPACES, DRIVEWAYS, AISLES, PERMITTED PROJECTIONS, ACCESSORY BUILDINGS OR STRUCTURES OR WALKWAYS MUST BE**LANDSCAPED WITH SOFT LANDSCAPING** ALL PORTIONS OF ANY OTHER YARD NOT COVERED BY PARKING SPACES, AISLES, PERMITTED PROJECTIONS, WALKWAYS, BUILDINGS OR STRUCTURES MUST BE **LANDSCAPED**		COMPLIES
LOCATION OF PARKING– PUD SECTION 131	MAY BE LOCATED ANYWHERE WITHIN THE DEVELOPMENT. REQUIRED VISITOR PARKING MAY BE PROVIDED AS PARALLEL PARKING ON A PRIVATE WAY, PROVIDED THE PRIVATE WAY HAS A MIN. WIDTH OF 8.5 M		PARALLEL PARKING NOT PROPOSED
BICYCLE PARKING SPACES	**APARTMENT BUILDING, LOW RISE**0.5 SPACES / UNIT = 9 SPACES		18 SPACES
BICYCLE PARKING PROVISIONS AND SECTION 111 LOCATION SECTION 111	**HORIZONTAL:** 0.6 M X 1.8 M (MINIMUM 50% OF THESE SPACES REQUIRED AT GROUND LEVEL) **VERTICAL:** 0.5 M X 1.5 M		**14 STACKED** **4 VERTICAL** **TOTAL : 18 BICYCLE SPACES @ GROUND LEVEL**
	ACCESS AISLE: 1.5 M		**MIN. 1.5m**
	MAXIMUM OF 50% OF THE REQUIRED PARKING OR 15 SPACES, WHICHEVER IS GREATER, MAY BE LOCATED IN A LANDSCAPED AREA		**N/A ALL BICYCLE PARKING IS INDOOR**

BUILDING AREAS

	CONSTRUCTION AREA (SQ.M)	CONSTRUCTION AREA (SQ.FT)
LOWER LEVEL	287 sq.m	3,090 sq.ft
GROUND FLOOR LEVEL	288.5 sq.m	3,106 sq.ft
SECOND FLOOR LEVEL	318.8 sq.m	3,432 sq.ft
THIRD FLOOR LEVEL	318.8 sq.m	3,432 sq.ft
TOTAL	926.1 sq.m	9,970 sq.ft

BUILDING FLOOR STATISTICS

FLOOR	SUITES	2 BED	1 BED	STUDIO
LOWER LEVEL	4	1	2	1
GROUND FLOOR	4	N/A	3	1
SECOND FLOOR	5	2	3	N/A
THIRD FLOOR	5	2	3	N/A
TOTAL	18	5	11	2
SUITE MIX		28%	61%	11%



01 SITE PLAN
A100 SCALE: 1: 100

CLIENT NAME: THEBERGE HOMES

NOTES:
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SEAL: NORTH ARROW:

No.	DATE	REVISION
03	2022.08.15	ISSUED FOR COORDINATION
02	2022.07.27	ISSUED FOR REVIEW
01	2022.07.05	ISSUED FOR REVIEW

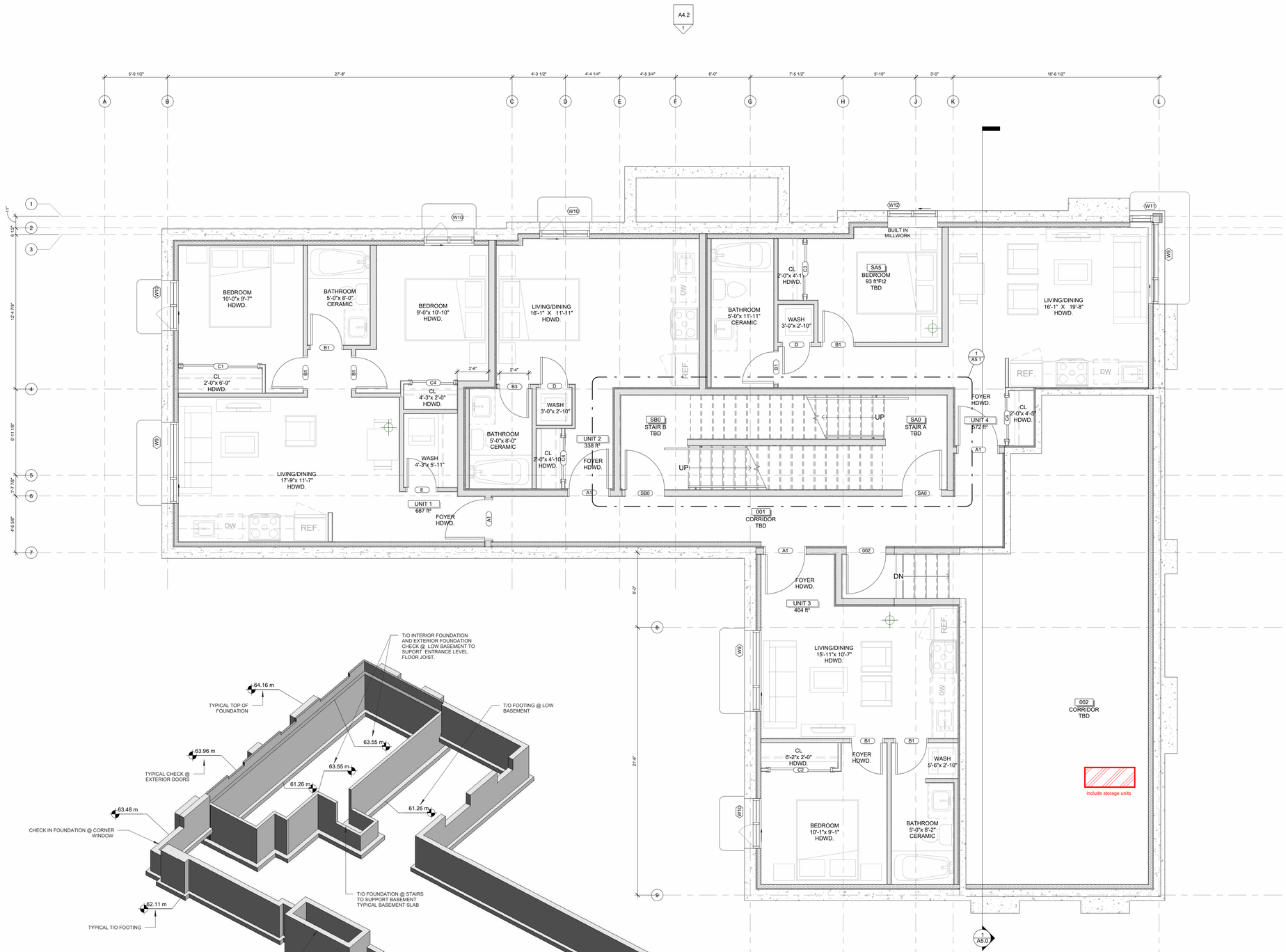
S.J.LAWRENCE ARCHITECT INCORPORATED
18 DEAKIN STREET
SUITE 205
OTTAWA, ONTARIO
K2E 8B7
T: (613) 739.7770
F: (613) 739.7703
sjl@sjlarchitect.com

PROJECT:
CARRUTHERS DEVELOPMENT
266 CARRUTHERS, OTTAWA, ON

SHEET TITLE:
PRELIMINARY SITE PLAN

DRAWN BY: A.L. CHECKED BY: S.J.L.
PLOT DATE: 2022.07.27 PROJECT DATE: 2022.06.06
JOB NUMBER: SL-1077-22 SCALE: AS SHOWN
SHEET NUMBER: A100

PLAN #
APPLICATION #



1
A4.1

1
A2.0
-T.O. Slab
SCALE 1/4" = 1'-0"

3
A2.0
3D FOUNDATION
SCALE

Area Schedule (Gross Building)		
UNUN	Area	Level
1 BED		
UNIT 3	464 ft²	BASEMENT
UNIT 4	572 ft²	BASEMENT
UNIT 6	575 ft²	LEVEL 1
UNIT 7	496 ft²	LEVEL 1
UNIT 8	577 ft²	LEVEL 1
UNIT 9	517 ft²	LEVEL 2
UNIT 11	556 ft²	LEVEL 2
UNIT 12	571 ft²	LEVEL 2
UNIT 14	517 ft²	LEVEL 3
UNIT 16	556 ft²	LEVEL 3
UNIT 17	589 ft²	LEVEL 3
2 BED		
UNIT 1	687 ft²	BASEMENT
UNIT 10	852 ft²	LEVEL 2
UNIT 13	674 ft²	LEVEL 2
UNIT 15	852 ft²	LEVEL 3
UNIT 18	686 ft²	LEVEL 3
BACHELOR		
UNIT 2	338 ft²	BASEMENT
UNIT 5	340 ft²	LEVEL 1

THEBERGE HOMES

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LAWRENCE ARCHITECT INCORPORATED

PROJECT:
CARRUTHERS AVENUE DEVELOPMENT
266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
BASEMENT PLAN

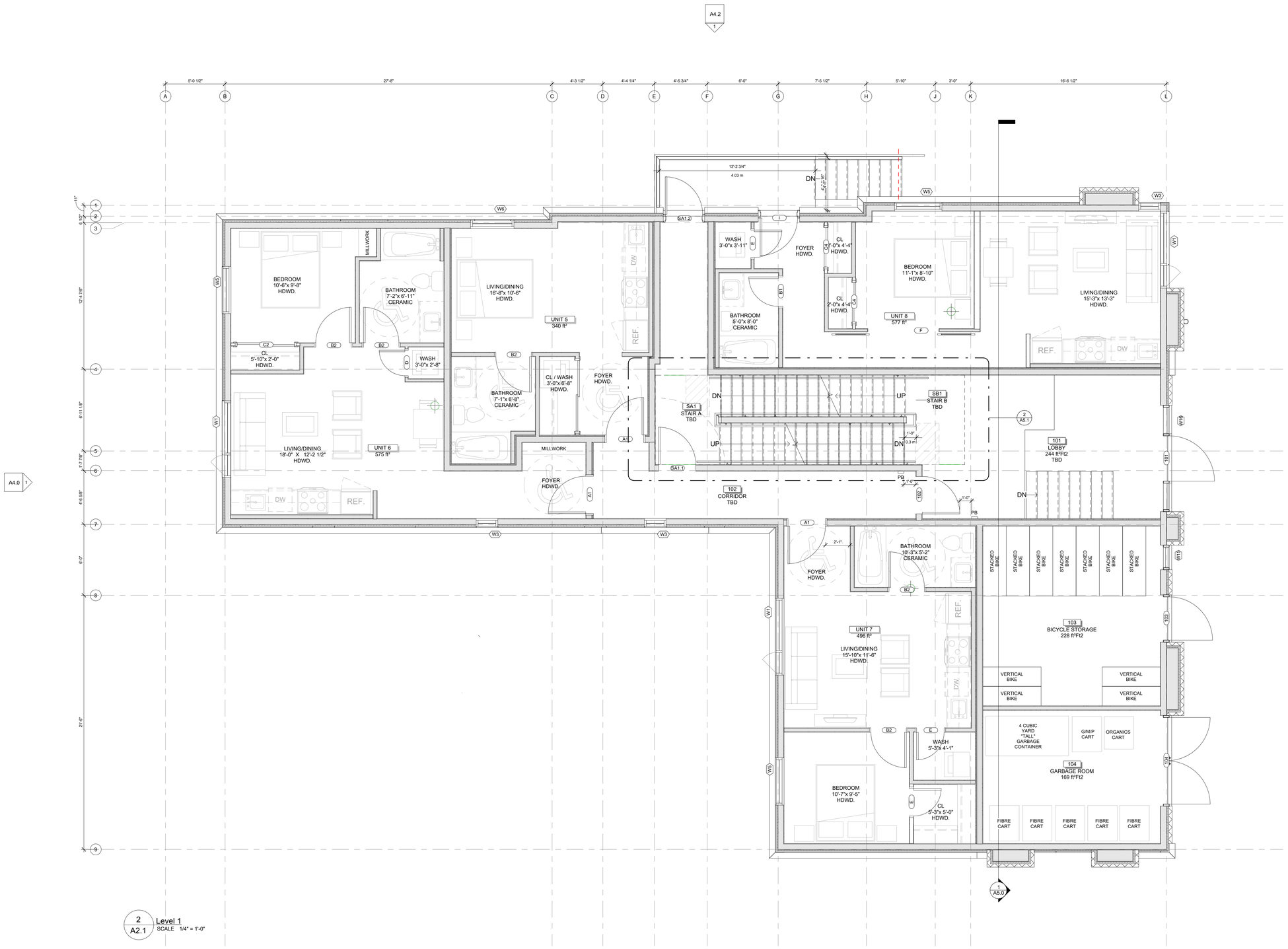
DRAWN BY: **R.R.**
CHECKED BY: **B.L. S.J.L.**

PLOT DATE: **2022-08-16 11:53:46 AM**

JOB NUMBER: **SL-1077-22**
SCALE: **1/4" = 1'-0"**

A2.0
PLAN #

APPLICATION #



2 A2.1 Level 1
SCALE 1/4" = 1'-0"

1 A2.1 Level 1
SCALE 1/4" = 1'-0"

Area Schedule (Gross Building)		
UNUN	Area	Level
1 BED		
UNIT 3	464 ft²	BASEMENT
UNIT 4	572 ft²	BASEMENT
UNIT 6	575 ft²	LEVEL 1
UNIT 7	496 ft²	LEVEL 1
UNIT 8	577 ft²	LEVEL 1
UNIT 9	517 ft²	LEVEL 2
UNIT 11	556 ft²	LEVEL 2
UNIT 12	571 ft²	LEVEL 2
UNIT 14	517 ft²	LEVEL 3
UNIT 16	556 ft²	LEVEL 3
UNIT 17	589 ft²	LEVEL 3
2 BED		
UNIT 1	687 ft²	BASEMENT
UNIT 10	852 ft²	LEVEL 2
UNIT 13	674 ft²	LEVEL 2
UNIT 15	852 ft²	LEVEL 3
UNIT 18	686 ft²	LEVEL 3
BACHELOR		
UNIT 2	338 ft²	BASEMENT
UNIT 5	340 ft²	LEVEL 1

THEBERGE HOMES

N

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sjl@sjlarchitect.com

PROJECT:
CARRUTHERS AVENUE DEVELOPMENT
266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
GROUND FLOOR PLAN

DRAWN BY: **R.R.**
CHECKED BY: **B.L. S.J.L.**

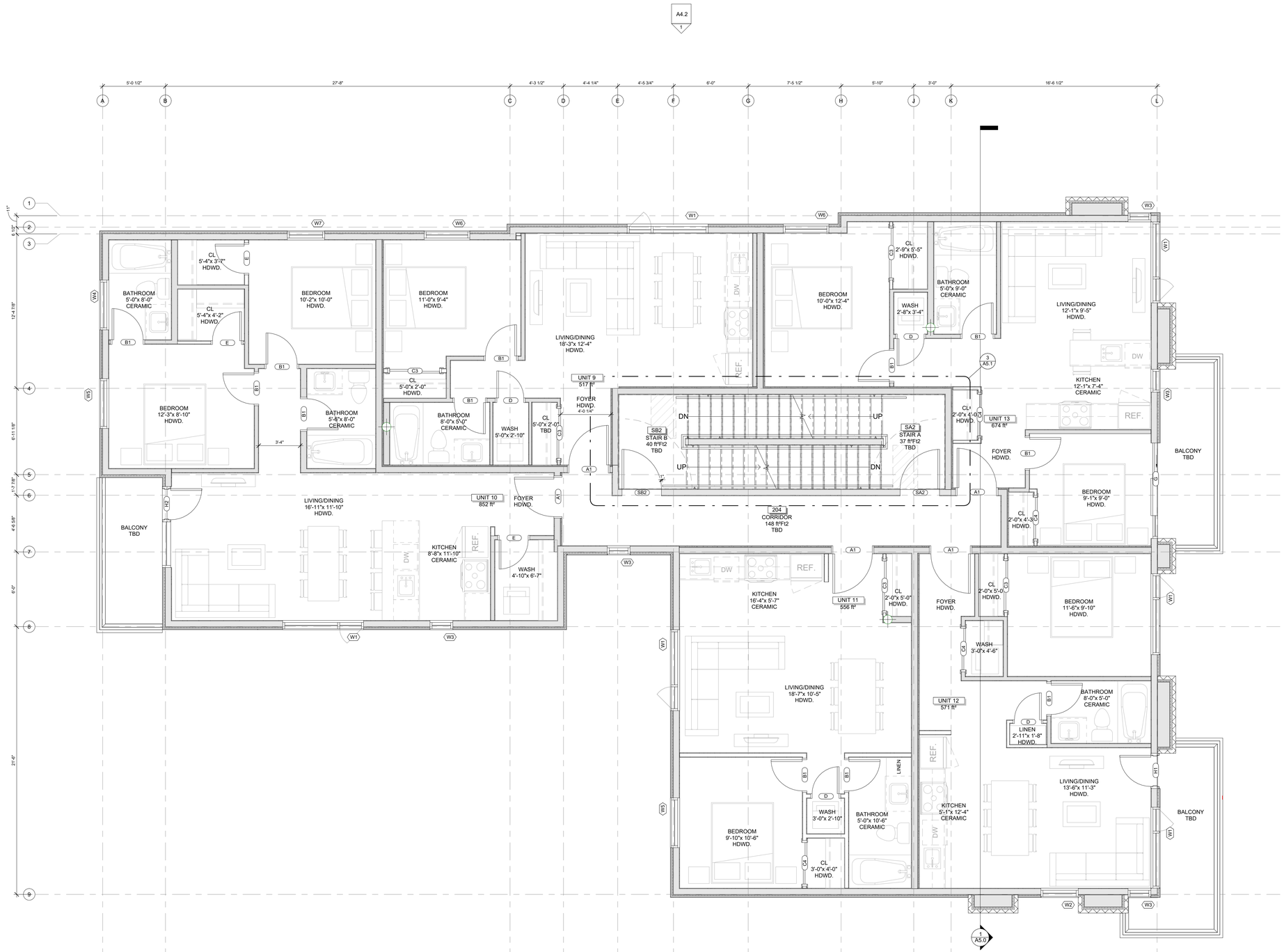
PLOT DATE: **2022-08-16 11:53:48 AM**

JOB NUMBER: **SL-1077-22**
SCALE: **1/4" = 1'-0"**

A2.1
PLAN #

APPLICATION #

Area Schedule (Gross Building)		
UNUN	Area	Level
1 BED		
UNIT 3	464 ft²	BASEMENT
UNIT 4	572 ft²	BASEMENT
UNIT 6	575 ft²	LEVEL 1
UNIT 7	496 ft²	LEVEL 1
UNIT 8	577 ft²	LEVEL 1
UNIT 9	517 ft²	LEVEL 2
UNIT 11	556 ft²	LEVEL 2
UNIT 12	571 ft²	LEVEL 2
UNIT 14	517 ft²	LEVEL 3
UNIT 16	556 ft²	LEVEL 3
UNIT 17	589 ft²	LEVEL 3
2 BED		
UNIT 1	687 ft²	BASEMENT
UNIT 10	852 ft²	LEVEL 2
UNIT 13	674 ft²	LEVEL 2
UNIT 15	852 ft²	LEVEL 3
UNIT 18	686 ft²	LEVEL 3
BACHELOR		
UNIT 2	338 ft²	BASEMENT
UNIT 5	340 ft²	LEVEL 1



2 A2.2 Level 2
SCALE 1/4" = 1'-0"

1 A2.2 Level 2
SCALE 1/4" = 1'-0"

THEBERGE HOMES

N

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3) DO NOT SCALE DRAWINGS.

4) ALL SUB-CONTRACTORS TO TAKE THEIR OWN ON-SITE MEASUREMENTS AND BE RESPONSIBLE FOR THEIR ACCURACY

5) NOTIFY SHAWN J. LAWRENCE ARCHITECT FOR ANY ERRORS AND/OR OMISSIONS PRIOR TO START OF WORK.

NORTH ARROW:

No.	DATE	REVISION
02	2022.08.15	ISSUED FOR COORDINATION
01	2022.07.05	ISSUED FOR REVIEW

S.J.LAWRENCE ARCHITECT INCORPORATED

18 DEAKIN STREET
SUITE 205
OTTAWA, ONTARIO
K2E 8B7

T: (613) 739.7770
F: (613) 739.7703
sjl@sjlarchitect.com

PROJECT:
CARRUTHERS AVENUE DEVELOPMENT
266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
SECOND AND THIRD FLOOR PLAN

DRAWN BY: **R.R.**
CHECKED BY: **B.L. S.J.L.**

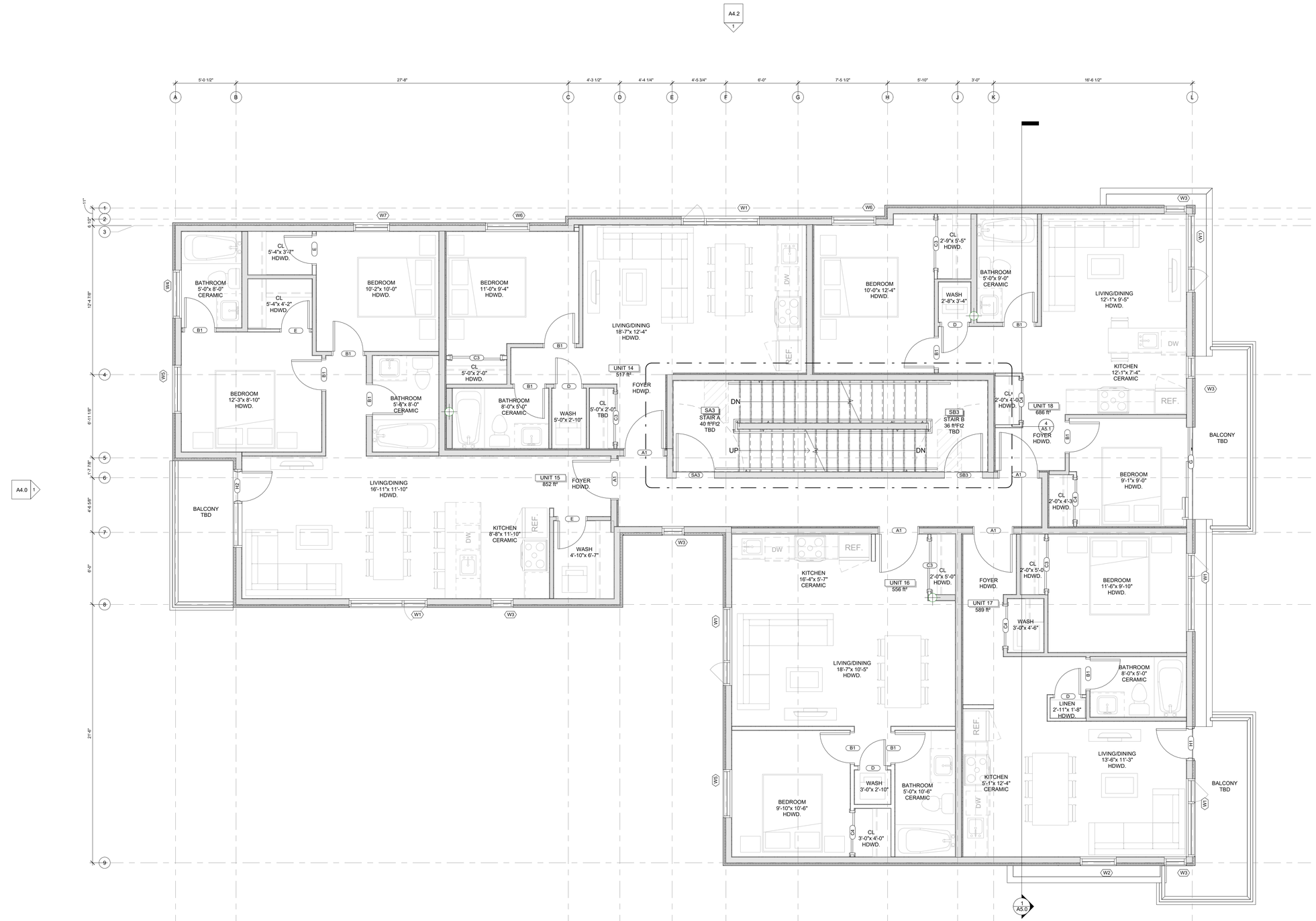
PLOT DATE: **2022-08-16 11:53:50 AM**

JOB NUMBER: **SL-1077-22**
SCALE: **1/4" = 1'-0"**

A2.2

PLAN #

APPLICATION #



Area Schedule (Gross Building)		
UNUN	Area	Level
1 BED		
UNIT 3	464 ft²	BASEMENT
UNIT 4	572 ft²	BASEMENT
UNIT 6	575 ft²	LEVEL 1
UNIT 7	496 ft²	LEVEL 1
UNIT 8	577 ft²	LEVEL 1
UNIT 9	517 ft²	LEVEL 2
UNIT 11	556 ft²	LEVEL 2
UNIT 12	571 ft²	LEVEL 2
UNIT 14	517 ft²	LEVEL 3
UNIT 16	556 ft²	LEVEL 3
UNIT 17	589 ft²	LEVEL 3
2 BED		
UNIT 1	687 ft²	BASEMENT
UNIT 10	852 ft²	LEVEL 2
UNIT 13	674 ft²	LEVEL 2
UNIT 15	852 ft²	LEVEL 3
UNIT 18	686 ft²	LEVEL 3
BACHELOR		
UNIT 2	338 ft²	BASEMENT
UNIT 5	340 ft²	LEVEL 1

THEBERGE HOMES

N

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LAWRENCE ARCHITECT INCORPORATED

PROJECT:
CARRUTHERS AVENUE DEVELOPMENT
266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
THIRD FLOOR PLAN

DRAWN BY: **R.R.**
CHECKED BY: **B.L. S.J.L.**

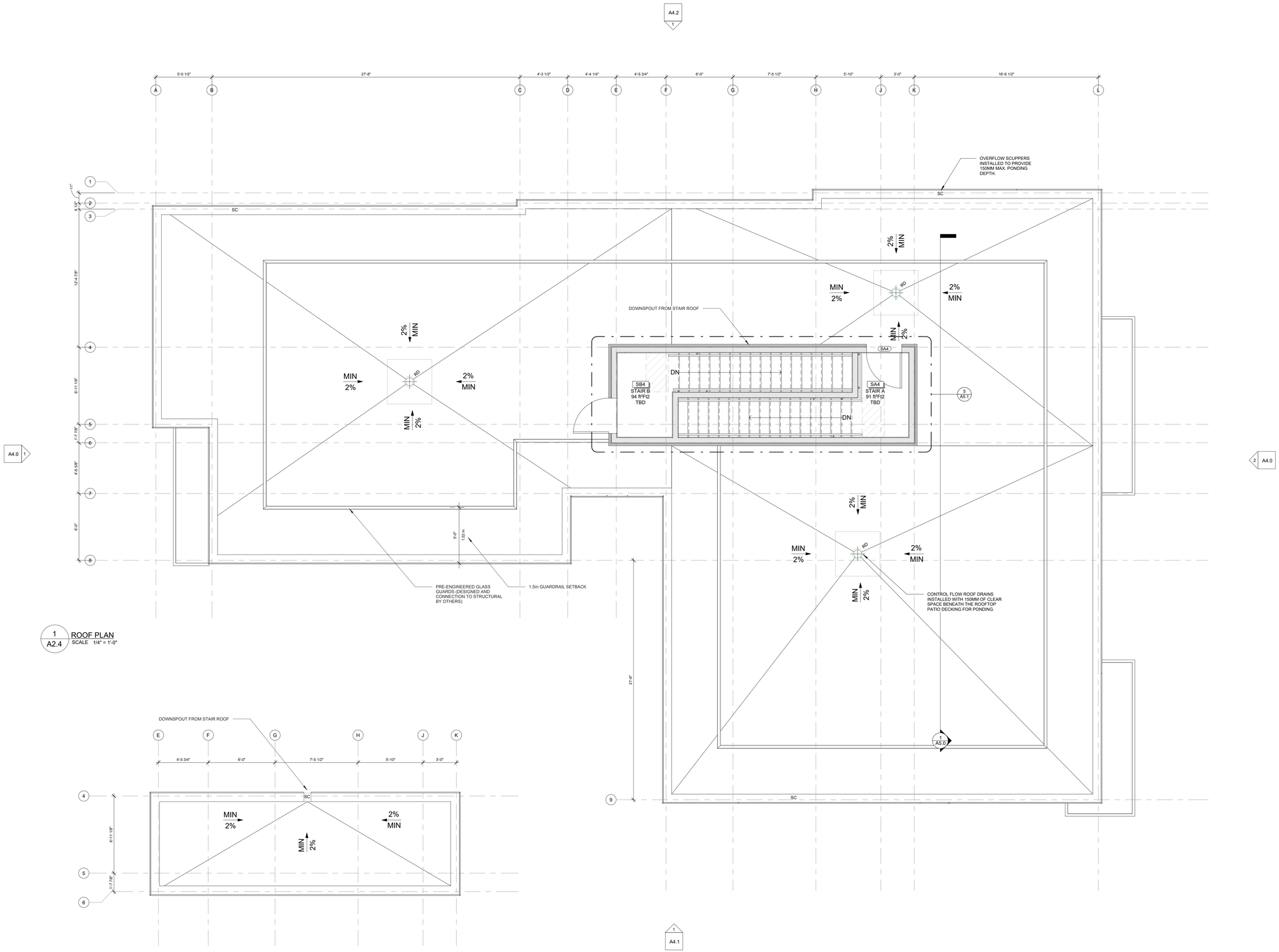
PLOT DATE: **2022-08-16 11:53:53 AM**

JOB NUMBER: **SL-1077-22**
SCALE: **1/4" = 1'-0"**

A2.3

PLAN #

APPLICATION #



1 A2.4 ROOF PLAN
SCALE 1/4" = 1'-0"

2 A2.4 T/O STAIR ROOF STRUCTURE
SCALE 1/4" = 1'-0"

N

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01	2022.07.05	ISSUED FOR REVIEW

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PROJECT:
CARRUTHERS AVENUE DEVELOPMENT
266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
ROOF PLAN

DRAWN BY: R.R.
CHECKED BY: B.L. S.J.L.

PLOT DATE:
2022-08-16 11:53:54 AM

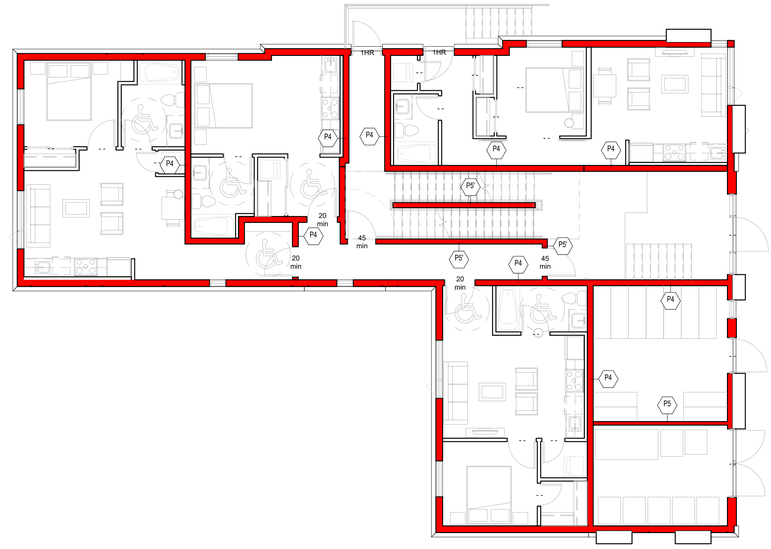
JOB NUMBER: SL-1077-22
SCALE: 1/4" = 1'-0"

A2.4

PLAN #

APPLICATION #

1 / A2.5 -T.O. Slab FRR
SCALE 1/8" = 1'-0"



2 / A2.5 Level 1 FRR
SCALE 1/8" = 1'-0"

3 / A2.5 Level 2 FRR
SCALE 1/8" = 1'-0"

4 / A2.5 Level 3 FRR
SCALE 1/8" = 1'-0"

THEBERGE HOMES

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LAWRENCE ARCHITECT INCORPORATED

PROJECT:
CARRUTHERS AVENUE DEVELOPMENT
266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
FRR PLANS

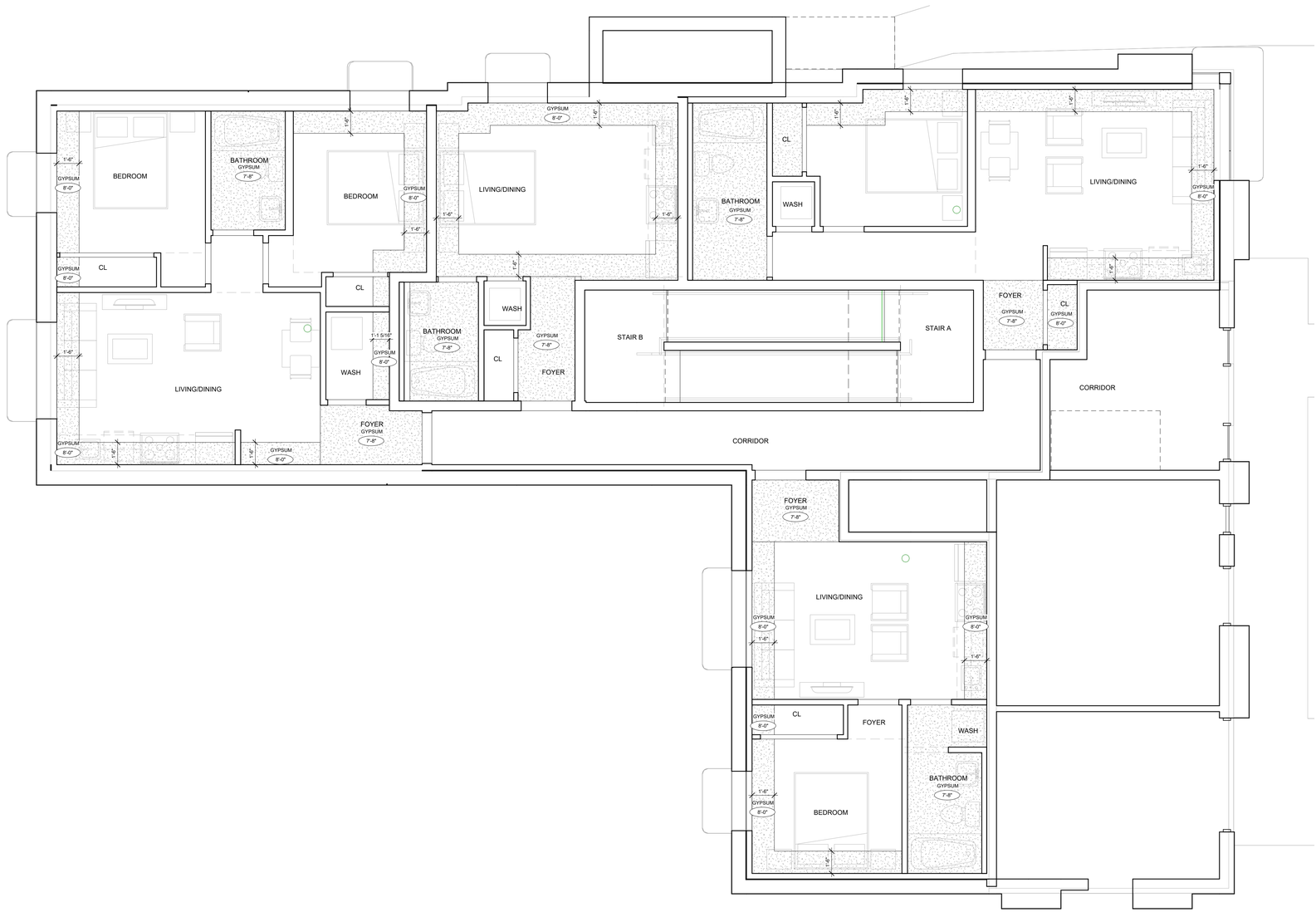
DRAWN BY: **R.R.**
CHECKED BY: **B.L. S.J.L.**

PLOT DATE: **2022-08-16 11:53:56 AM**

JOB NUMBER: **SL-1077-22**
SCALE: **1/8" = 1'-0"**

A2.5
PLAN #

APPLICATION #



1 / A3.0 -T.O. Slab
SCALE 1/4" = 1'-0"

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PROJECT:
CARRUTHERS AVENUE DEVELOPMENT
266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
REFLECTED CEILING PLANS

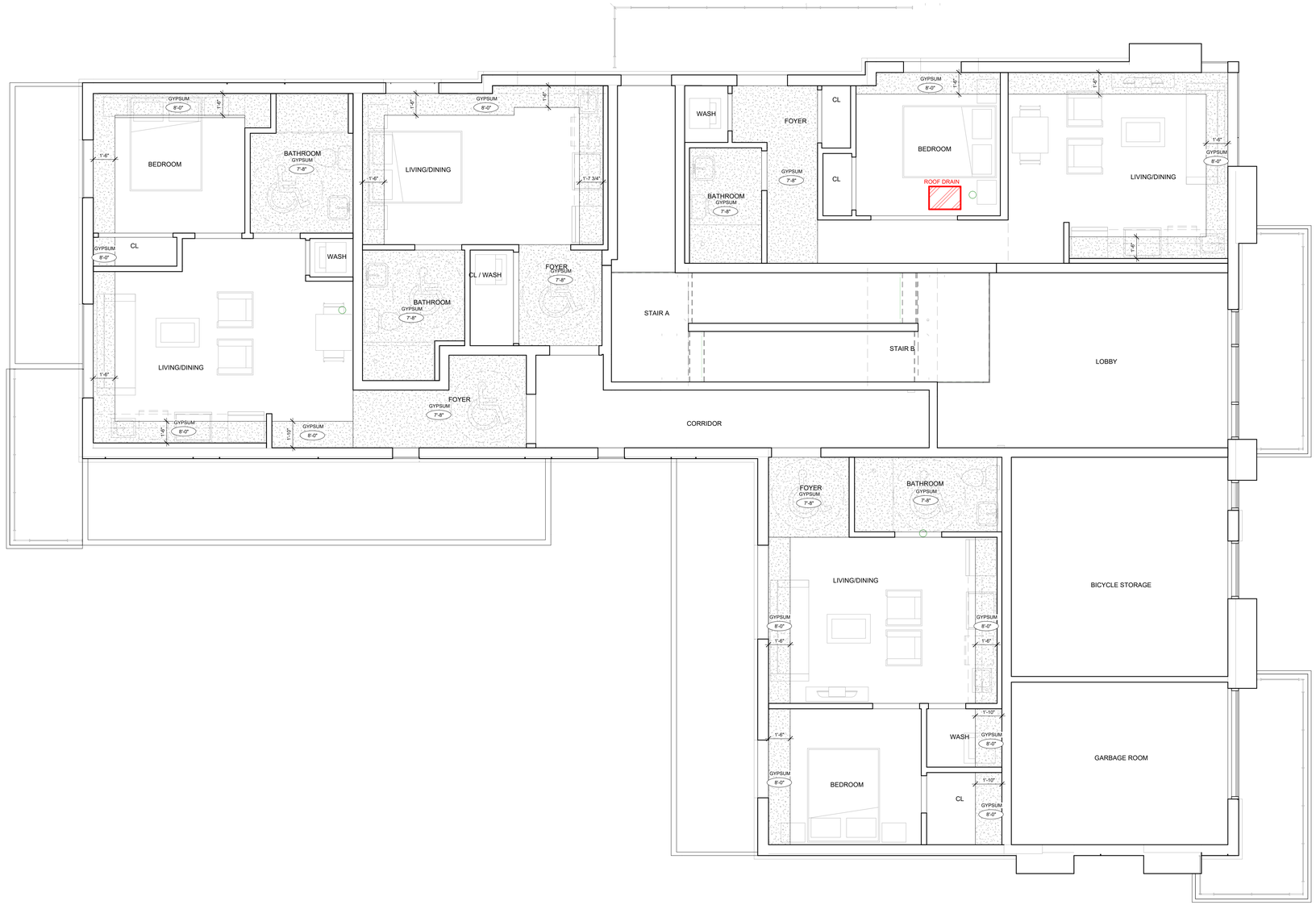
DRAWN BY: **R.R.**
CHECKED BY: **B.L. S.J.L.**

PLOT DATE: **2022-08-16 11:53:57 AM**

JOB NUMBER: **SL-1077-22**
SCALE: **1/4" = 1'-0"**

A3.0
PLAN #

APPLICATION #



1 / A3.1 Level 1
SCALE 1/4" = 1'-0"

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266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
REFLECTED CEILING PLANS

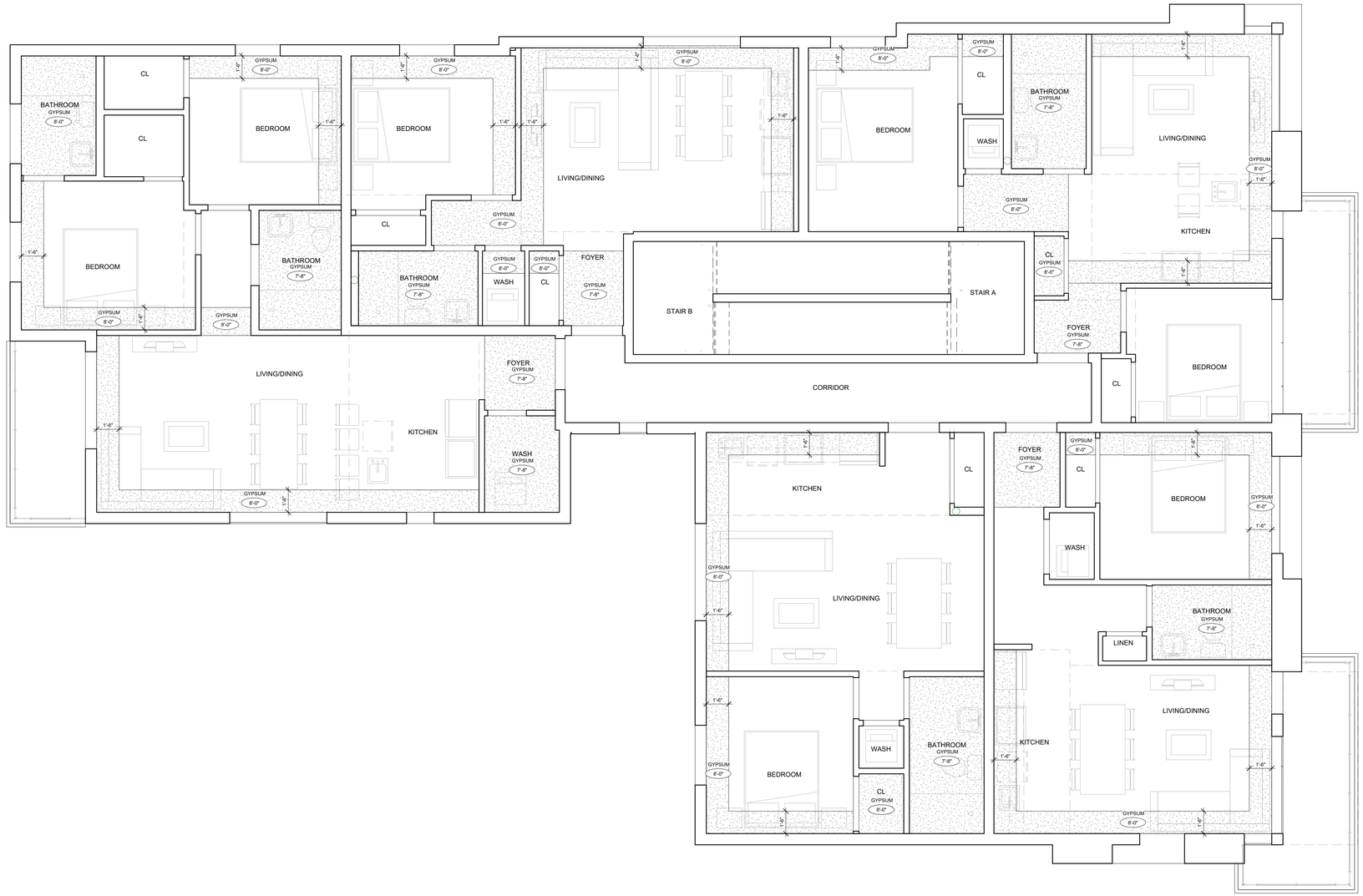
DRAWN BY: **R.R.**
CHECKED BY: **B.L. S.J.L.**

PLOT DATE: **2022-08-16 11:53:59 AM**

JOB NUMBER: **SL-1077-22**
SCALE: **1/4" = 1'-0"**

A3.1
PLAN #

APPLICATION #



1 / A3.2 Level 2
SCALE 1/4" = 1'-0"

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266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
REFLECTED CEILING PLANS

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CHECKED BY: **B.L. S.J.L.**

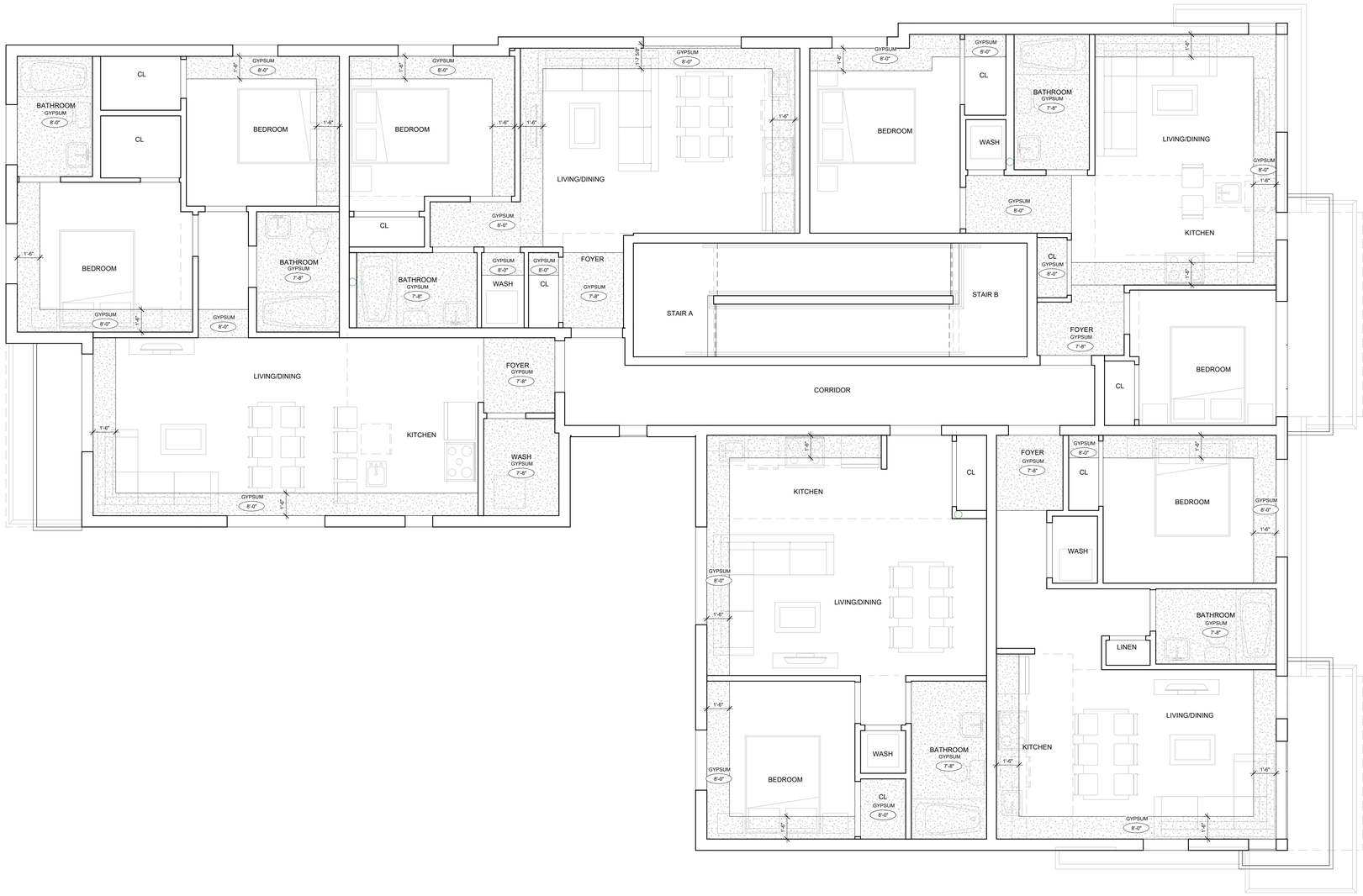
PLOT DATE: **2022-08-16 11:54:00 AM**

JOB NUMBER: **SL-1077-22**
SCALE: **1/4" = 1'-0"**

A3.2

PLAN #

APPLICATION #



1 / A3.3 Level 3
SCALE 1/4" = 1'-0"

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PROJECT:
CARRUTHERS AVENUE DEVELOPMENT
266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
REFLECTED CEILING PLANS

DRAWN BY: **R.R.**
CHECKED BY: **B.L. S.J.L.**

PLOT DATE: **2022-08-16 11:54:01 AM**

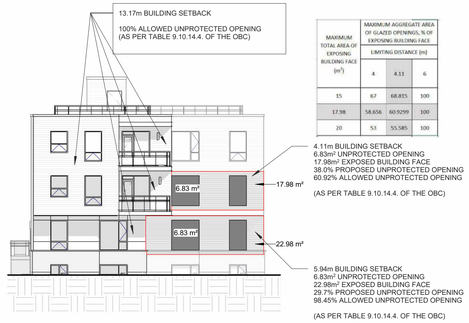
JOB NUMBER: **SL-1077-22**
SCALE: **1/4" = 1'-0"**

A3.3
PLAN #

APPLICATION #

1 A4.0 **WEST ELEVATION**
SCALE 3/16" = 1'-0"

2 A4.0 **EAST ELEVATION**
SCALE 3/16" = 1'-0"



MAXIMUM TOTAL AREA OF EXPOSING BUILDING FACE (m²)	MAXIMUM AGGREGATE AREA OF GLAZED OPENINGS, % OF EXPOSING BUILDING FACE		
	LIMITING DISTANCE (m)		
	4	4.11	6
15	67	68.815	100
17.98	58.656	60.9299	100
20	53	55.585	100

4.11m BUILDING SETBACK
6.83m² UNPROTECTED OPENING
17.98m² EXPOSED BUILDING FACE
38.0% PROPOSED UNPROTECTED OPENING
60.92% ALLOWED UNPROTECTED OPENING

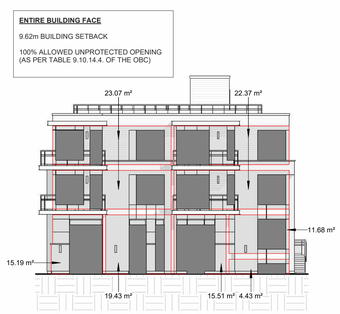
(AS PER TABLE 9.10.14.4. OF THE OBC)

5.94m BUILDING SETBACK
6.83m² UNPROTECTED OPENING
22.98m² EXPOSED BUILDING FACE
29.7% PROPOSED UNPROTECTED OPENING
98.45% ALLOWED UNPROTECTED OPENING

(AS PER TABLE 9.10.14.4. OF THE OBC)

MAXIMUM TOTAL AREA OF EXPOSING BUILDING FACE (m²)	MAXIMUM AGGREGATE AREA OF GLAZED OPENINGS, % OF EXPOSING BUILDING FACE		
	LIMITING DISTANCE (m)		
	4	5.94	6
20	53	98.59	100
22.98	48.232	98.447	100
25	45	98.35	100

3 A4.0 **WEST ELEVATION LIMITING DISTANCE CALCS**
SCALE 1 : 200



4 A4.0 **EAST ELEVATION LIMITING DISTANCE CALCS**
SCALE 1 : 200

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KEYNOTES-ELEVATION

NOTE NUMBER	NOTE TEXT
1	CEMENT PARGING ON ALL EXPOSED FOUNDATION TO 0" BELOW GRADE
2	STONE VENEER A
3	4" PRECAST CONCRETE SILL
4	WALL SCONCE
5	PRE-FINISHED METAL FASCIA
6	FIBER CEMENT COMPOSITE PANEL - COLOUR TBD BY OWNER
7	PRE-FINISHED METAL GUARD RAIL (3'-6" TALL)
8	FIBER CEMENT LAP SIDING - COLOUR TBD BY OWNER
9	OVERFLOW SCUPPER, REFER TO ROOF PLAN

NORTH ARROW:

No.	DATE	REVISION
02	2022.08.15	ISSUED FOR COORDINATION
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LAWRENCE ARCHITECT INCORPORATED

PROJECT:
CARRUTHERS AVENUE DEVELOPMENT
266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
ELEVATIONS

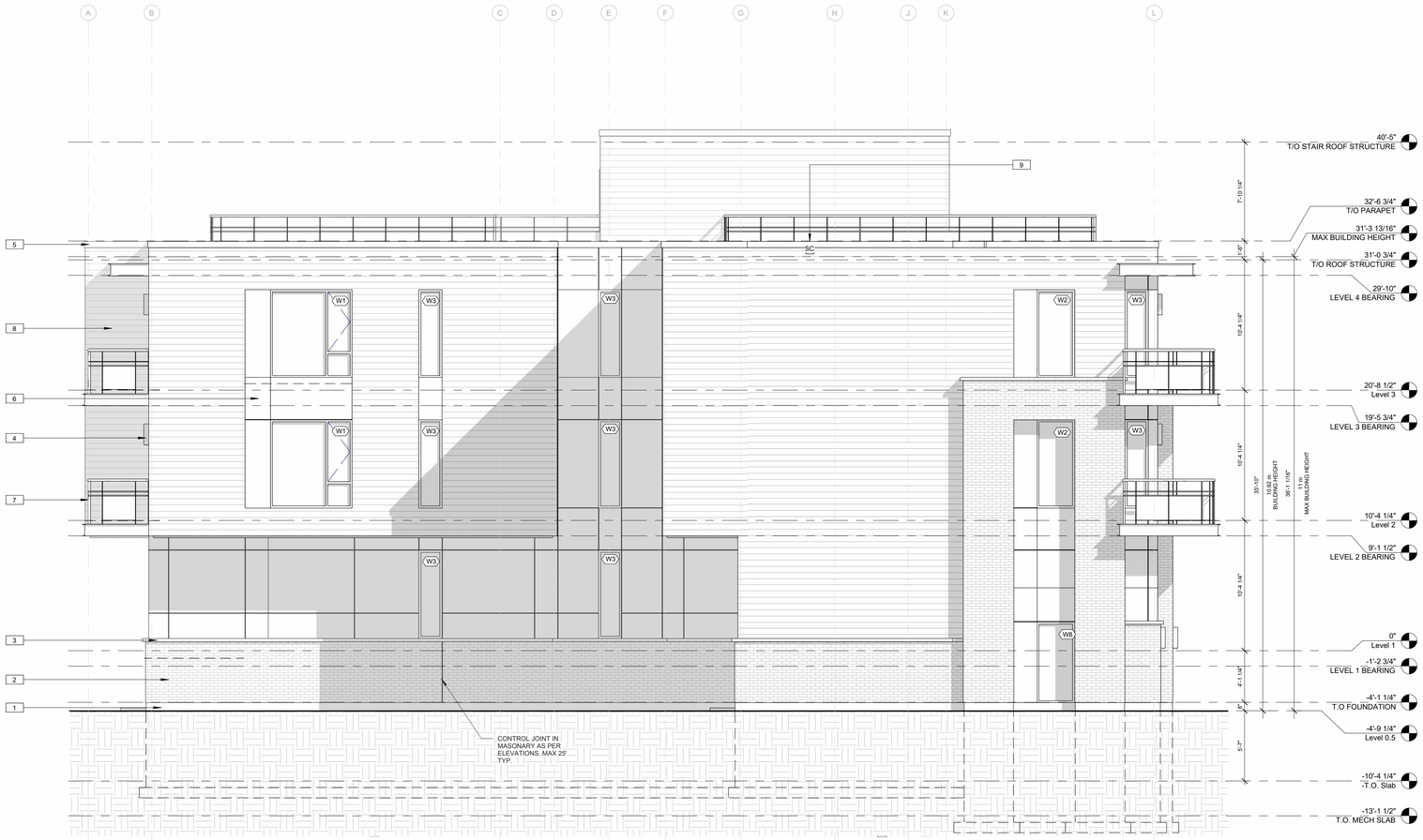
DRAWN BY: **R.R.**
CHECKED BY: **B.L. S.J.L.**

PLOT DATE: **2022-08-16 11:54:09 AM**

JOB NUMBER: **SL-1077-22**
SCALE: **As indicated**

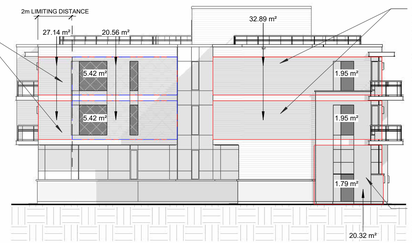
A4.0
PLAN #

APPLICATION #



1 / A4.1 SOUTH ELEVATION
SCALE 3/16" = 1'-0"

MAXIMUM TOTAL AREA OF EXPOSING BUILDING FACE (m^2)	MAXIMUM AGGREGATE AREA OF GLAZED OPENINGS, % OF EXPOSING BUILDING FACE		
	LIMITING DISTANCE (m)		
	3	3.5	4
25	26	35.5	45
27.14	24.716	33.574	42.432
30	23	31	39



3.5m BUILDING SETBACK
5.42m² UNPROTECTED OPENING
27.14m² EXPOSED BUILDING FACE
20.56m² LIMITING DISTANCE AREA
26.36% PROPOSED UNPROTECTED OPENING
33.57% ALLOWED UNPROTECTED OPENING

(AS PER TABLE 9.10.14.4. OF THE OBC)

15.001m BUILDING SETBACK
1.95m² UNPROTECTED OPENING
32.89m² EXPOSED BUILDING FACE
5.93% PROPOSED UNPROTECTED OPENING
8.71% ALLOWED UNPROTECTED OPENING

(AS PER TABLE 9.10.14.4. OF THE OBC)

NON COMBUSTIBLE CONSTRUCTION AND NON COMBUSTIBLE CLADDING

1.501m BUILDING SETBACK
1.79m² UNPROTECTED OPENING
20.32m² EXPOSED BUILDING FACE
8.81% PROPOSED UNPROTECTED OPENING
9.93% ALLOWED UNPROTECTED OPENING

(AS PER TABLE 9.10.14.4. OF THE OBC)

NON COMBUSTIBLE CONSTRUCTION AND NON COMBUSTIBLE CLADDING

MAXIMUM TOTAL AREA OF EXPOSING BUILDING FACE (m^2)	MAXIMUM AGGREGATE AREA OF GLAZED OPENINGS, % OF EXPOSING BUILDING FACE		
	LIMITING DISTANCE (m)		
	1.5	1.501	2
30	9	9.006	12
32.89	8.711	8.717	11.711
40	8	8.006	11

MAXIMUM TOTAL AREA OF EXPOSING BUILDING FACE (m^2)	MAXIMUM AGGREGATE AREA OF GLAZED OPENINGS, % OF EXPOSING BUILDING FACE		
	LIMITING DISTANCE (m)		
	1.5	1.501	3
20	10	10.0033	15
20.32	9.936	9.93929	14.872
25	9	9.00267	13

2 / A4.1 SOUTH ELEVATION LIMITING DISTANCE CALCS
SCALE 1 : 200

THEBERGE HOMES

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KEYNOTES-ELEVATION

NOTE NUMBER	NOTE TEXT
1	CEMENT PARGING ON ALL EXPOSED FOUNDATION TO 8" BELOW GRADE
2	STONE VENEER A
3	4" PRECAST CONCRETE SILL
4	WALL SCONCE
5	PRE-FINISHED METAL FASCIA
6	FIBER CEMENT COMPOSITE PANEL - COLOUR TBD BY OWNER
7	PRE-FINISHED METAL GUARD RAIL (3'-6" TALL)
8	FIBER CEMENT LAP SIDING - COLOUR TBD BY OWNER
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PROJECT:
CARRUTHERS AVENUE DEVELOPMENT
266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
ELEVATIONS

DRAWN BY: **R.R.**
CHECKED BY: **B.L. S.J.L.**

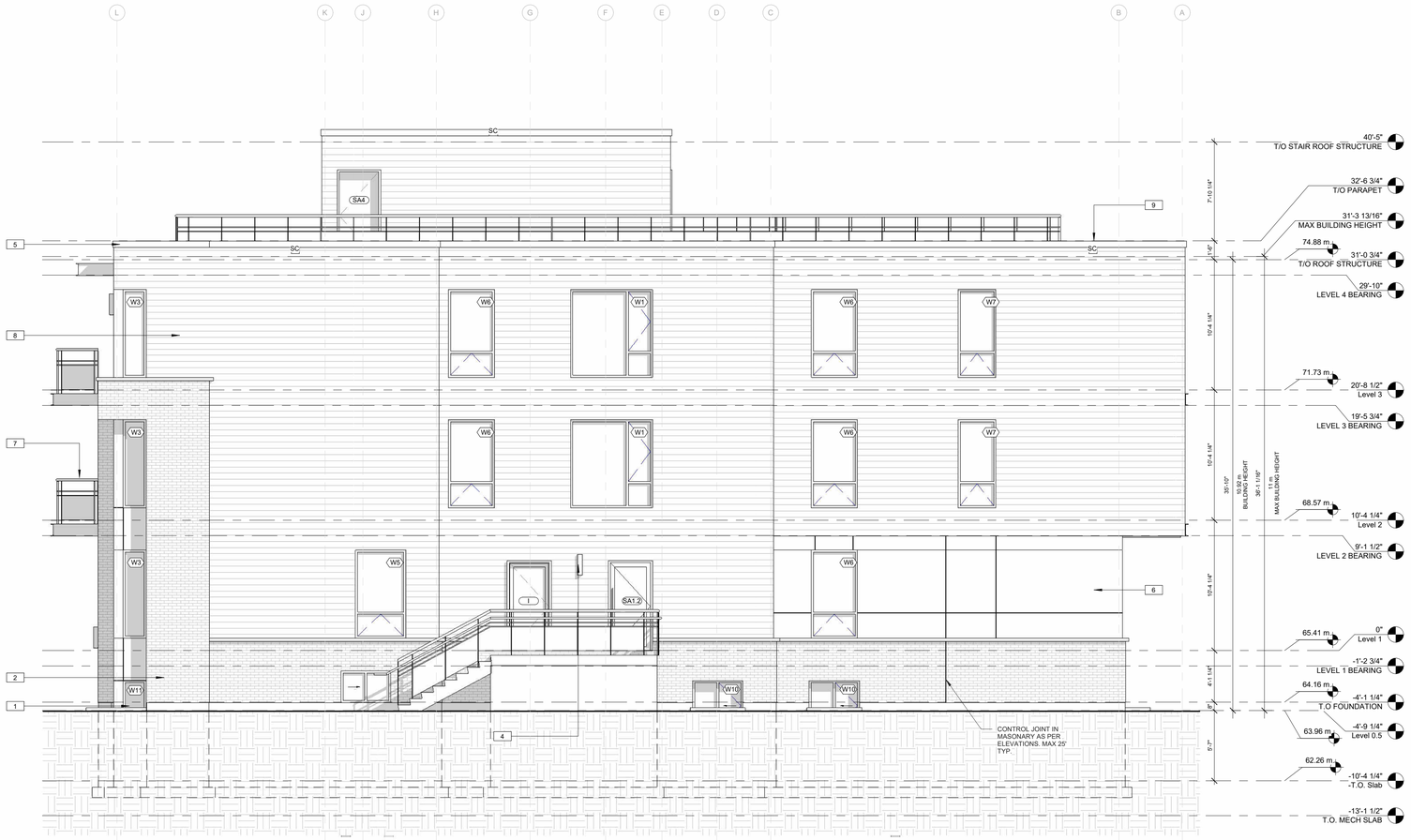
PLOT DATE: **2022-08-16 11:54:17 AM**

JOB NUMBER: **SL-1077-22**
SCALE: **As indicated**

A4.1

PLAN #

APPLICATION #



1 / A4.2 NORTH ELEVATION
SCALE 3/16" = 1'-0"

MAXIMUM TOTAL AREA OF EXPOSING BUILDING FACE (m^2)	MAXIMUM AGGREGATE AREA OF GLAZED OPENINGS, % OF EXPOSING BUILDING FACE		
	LIMITING DISTANCE (m)		
	1.5	1.58	2
25	9	9.64	13
25.04	9	9.63872	12.992
30	9	9.48	12

MAXIMUM TOTAL AREA OF EXPOSING BUILDING FACE (m^2)	MAXIMUM AGGREGATE AREA OF GLAZED OPENINGS, % OF EXPOSING BUILDING FACE		
	LIMITING DISTANCE (m)		
	1.5	1.58	2
25	9	9.64	13
25.04	9	9.63872	12.992
30	9	9.48	12

LOWER UNIT

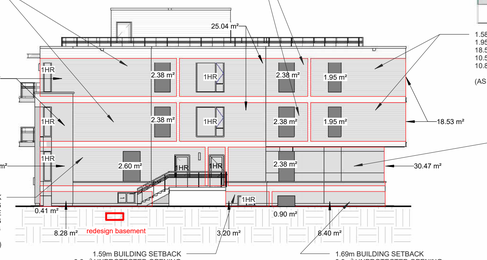
1.58m BUILDING SETBACK
2.38m² UNPROTECTED OPENING
26.55m² EXPOSED BUILDING FACE
8.96% PROPOSED UNPROTECTED OPENING
9.63% ALLOWED UNPROTECTED OPENING

(AS PER TABLE 9.10.14.4. OF THE OBC)

1.77m BUILDING SETBACK
2.38m² UNPROTECTED OPENING
25.04m² EXPOSED BUILDING FACE
9.50% PROPOSED UNPROTECTED OPENING
9.63% ALLOWED UNPROTECTED OPENING

(AS PER TABLE 9.10.14.4. OF THE OBC)

ENTIRE BUILDING FACE TO BE NON COMBUSTIBLE CONSTRUCTION AND NON COMBUSTIBLE CLADDING



1.58m BUILDING SETBACK
1.95m² UNPROTECTED OPENING
18.53m² EXPOSED BUILDING FACE
10.52% PROPOSED UNPROTECTED OPENING
10.89% ALLOWED UNPROTECTED OPENING

(AS PER TABLE 9.10.14.4. OF THE OBC)

MAXIMUM TOTAL AREA OF EXPOSING BUILDING FACE (m^2)	MAXIMUM AGGREGATE AREA OF GLAZED OPENINGS, % OF EXPOSING BUILDING FACE		
	LIMITING DISTANCE (m)		
	1.5	1.58	2
15	10	11.12	17
18.53	10	10.8941	15.588
20	10	10.8	15

MAXIMUM TOTAL AREA OF EXPOSING BUILDING FACE (m^2)	MAXIMUM AGGREGATE AREA OF GLAZED OPENINGS, % OF EXPOSING BUILDING FACE		
	LIMITING DISTANCE (m)		
	1.5	1.51	2
30	9	9.06	12
32.89	8.711	8.771	11.711
40	8	8.06	11

1.59m BUILDING SETBACK
0.0m² UNPROTECTED OPENING
3.2m² EXPOSED BUILDING FACE
0% PROPOSED UNPROTECTED OPENING
12.18% ALLOWED UNPROTECTED OPENING

(AS PER TABLE 9.10.14.4. OF THE OBC)

MAXIMUM TOTAL AREA OF EXPOSING BUILDING FACE (m^2)	MAXIMUM AGGREGATE AREA OF GLAZED OPENINGS, % OF EXPOSING BUILDING FACE		
	LIMITING DISTANCE (m)		
	1.5	1.51	2
10	12	12.18	21
10	#DIV/0!	#DIV/0!	#DIV/0!
10	12	12.18	21

1.69m BUILDING SETBACK
0.9m² UNPROTECTED OPENING
8.4m² EXPOSED BUILDING FACE
10.71% PROPOSED UNPROTECTED OPENING
12.18% ALLOWED UNPROTECTED OPENING

(AS PER TABLE 9.10.14.4. OF THE OBC)

MAXIMUM TOTAL AREA OF EXPOSING BUILDING FACE (m^2)	MAXIMUM AGGREGATE AREA OF GLAZED OPENINGS, % OF EXPOSING BUILDING FACE		
	LIMITING DISTANCE (m)		
	1.5	1.51	2
10	12	12.18	21
10	#DIV/0!	#DIV/0!	#DIV/0!
10	12	12.18	21

1.51m BUILDING SETBACK
2.38m² UNPROTECTED OPENING
30.47m² EXPOSED BUILDING FACE
7.81% PROPOSED UNPROTECTED OPENING
9.01% ALLOWED UNPROTECTED OPENING

(AS PER TABLE 9.10.14.4. OF THE OBC)

MAXIMUM TOTAL AREA OF EXPOSING BUILDING FACE (m^2)	MAXIMUM AGGREGATE AREA OF GLAZED OPENINGS, % OF EXPOSING BUILDING FACE		
	LIMITING DISTANCE (m)		
	1.5	1.51	2
30	9	9.06	12
30.47	8.953	9.013	11.953
40	8	8.06	11

2 / A4.2 NORTH ELEVATION LIMITING DISTANCE CALCS
SCALE 1 : 200

THEBERGE HOMES

NOTES:

1) ALL WORK TO BE IN COMPLIANCE WITH LOCAL BUILDING CODES, REGULATIONS AND BY-LAWS.

2) ADDITIONAL DRAWINGS MAY BE ISSUED FOR CLARIFICATION TO ASSIST PROPER EXECUTION OF WORK. SUCH DRAWINGS WILL HAVE THE SAME MEANING AND INTENT AS IF THEY WERE INCLUDED WITH PLANS IN CONTRACT DOCUMENTS.

3) DO NOT SCALE DRAWINGS.

4) ALL SUB-CONTRACTORS TO TAKE THEIR OWN ON-SITE MEASUREMENTS AND BE RESPONSIBLE FOR THEIR ACCURACY

5) NOTIFY SHAWN J. LAWRENCE ARCHITECT FOR ANY ERRORS AND/OR OMISSIONS PRIOR TO START OF WORK.

KEYNOTES-ELEVATION

NOTE NUMBER	NOTE TEXT
1	CEMENT PARGING ON ALL EXPOSED FOUNDATION TO 8" BELOW GRADE
2	STONE VENEER A
3	4" PRECAST CONCRETE SILL
4	WALL SCONCE
5	PRE-FINISHED METAL FASCIA
6	FIBER CEMENT COMPOSITE PANEL - COLOUR TBD BY OWNER
7	PRE-FINISHED METAL GUARD RAIL (3'-6" TALL)
8	FIBER CEMENT LAP SIDING - COLOUR TBD BY OWNER
9	OVERFLOW SCUPPER. REFER TO ROOF PLAN

NORTH ARROW:

No.	DATE	REVISION
02	2022.08.15	ISSUED FOR COORDINATION
01	2022.07.05	ISSUED FOR REVIEW

S.J.LAWRENCE ARCHITECT INCORPORATED
18 DEAKIN STREET
SUITE 205
OTTAWA, ONTARIO
K2E 8B7
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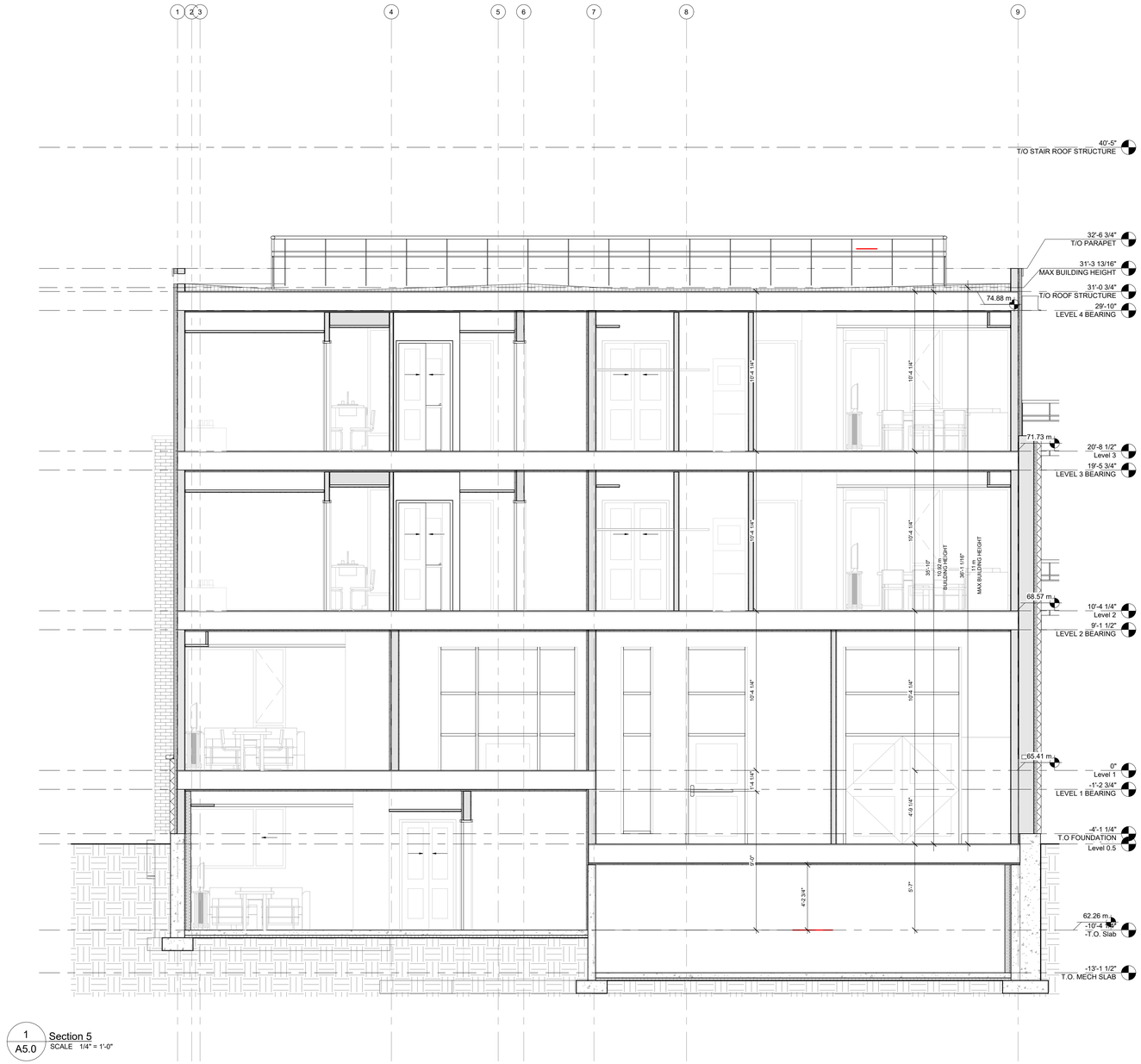
PROJECT:
CARRUTHERS AVENUE DEVELOPMENT
266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
ELEVATIONS

DRAWN BY: R.R.
CHECKED BY: B.L. S.J.L.
PLOT DATE: 2022-08-16 11:54:24 AM
JOB NUMBER: SL-1077-22
SCALE: As indicated

A4.2

PLAN #
APPLICATION #



1
A5.0
Section 5
SCALE 1/4" = 1'-0"

THEBERGE HOMES

N

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NORTH ARROW:

No.	DATE	REVISION
02	2022.08.15	ISSUED FOR COORDINATION
01	2022.07.05	ISSUED FOR REVIEW

S.J.LAWRENCE ARCHITECT INCORPORATED

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LAWRENCE ARCHITECT INCORPORATED

PROJECT:
CARRUTHERS AVENUE DEVELOPMENT
266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
BUILDING SECTIONS

DRAWN BY: **R.R.**
CHECKED BY: **B.L. S.J.L.**

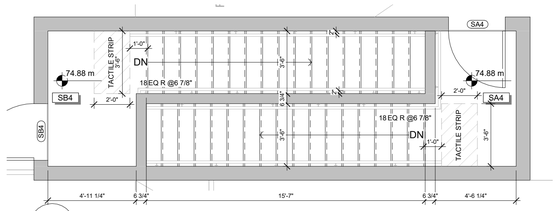
PLOT DATE: **2022-08-16 11:54:25 AM**

JOB NUMBER: **SL-1077-22**
SCALE: **1/4" = 1'-0"**

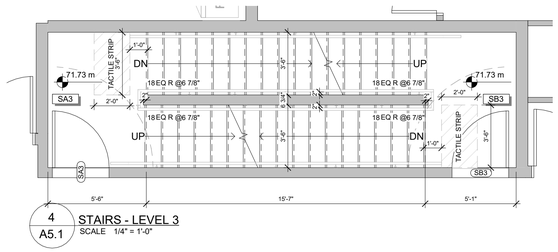
A5.0

PLAN #

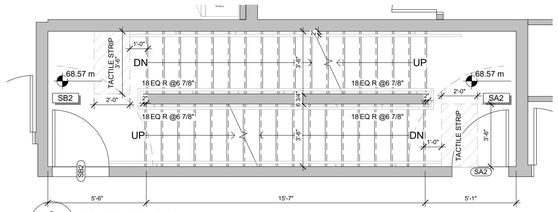
APPLICATION #



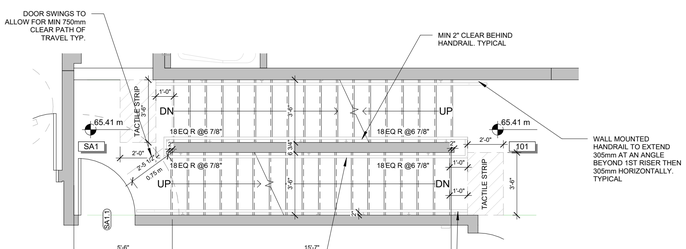
5 A5.1 STAIRS - ROOFTOP
SCALE 1/4" = 1'-0"



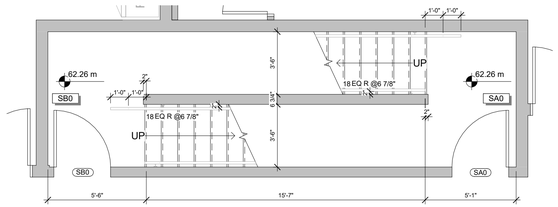
4 A5.1 STAIRS - LEVEL 3
SCALE 1/4" = 1'-0"



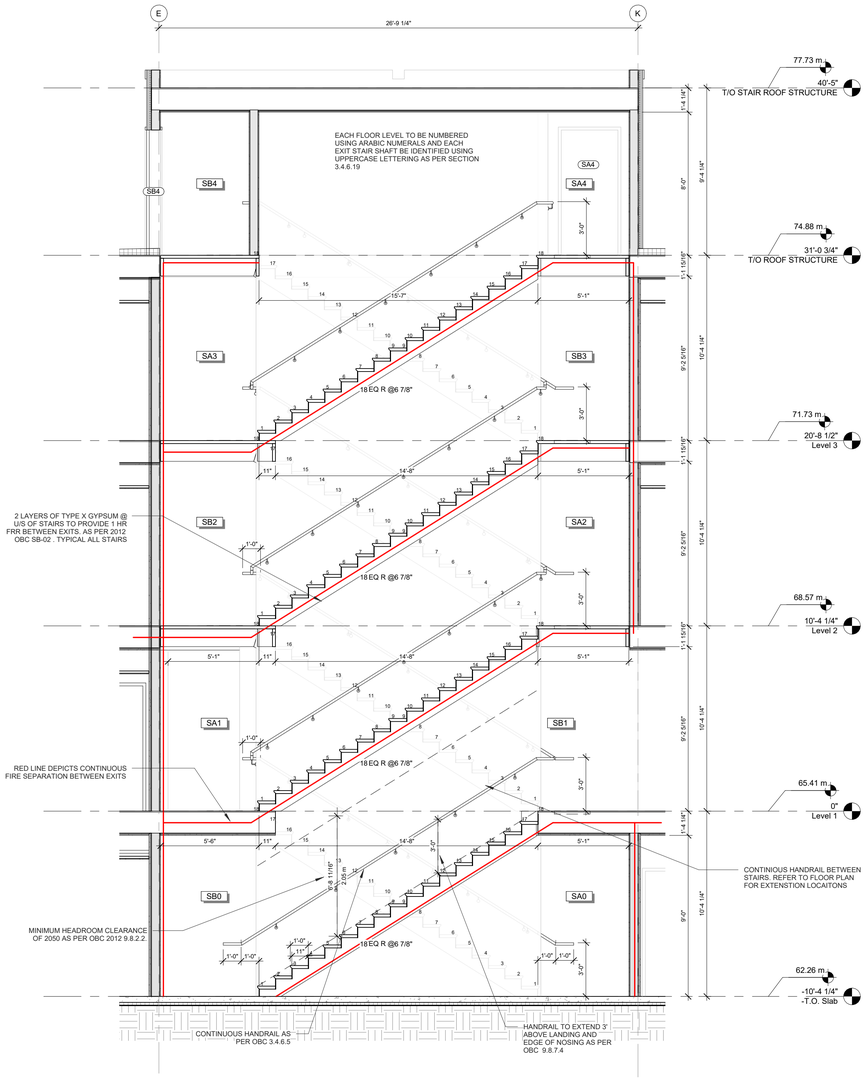
3 A5.1 STAIRS - LEVEL 2
SCALE 1/4" = 1'-0"



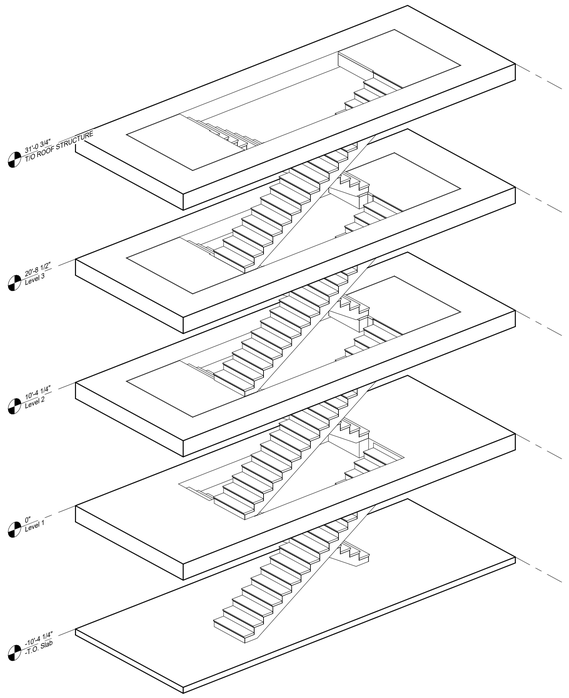
2 A5.1 STAIRS - LEVEL 1
SCALE 1/4" = 1'-0"



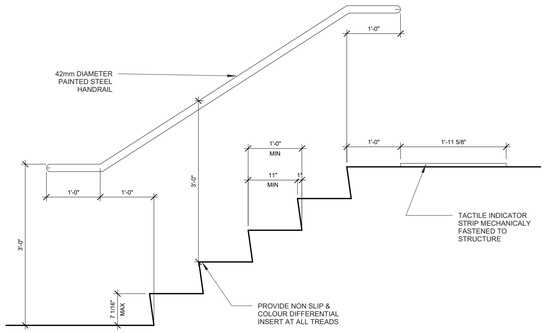
1 A5.1 STAIRS - BASEMENT
SCALE 1/4" = 1'-0"



6 A5.1 Section 6 - Callout 1
SCALE 1/4" = 1'-0"

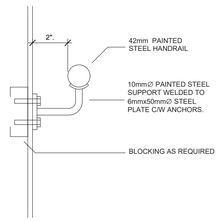


8 A5.1 3D STAIR
SCALE



7 A5.1 TYPICAL STAIR DETAILS
SCALE 3/4" = 1'-0"

NOTE:
DESIGN & ATTACHMENT OF HANDRAIL TO RESIST LOADS AS PER OBC 9.8.7.7. & 3.4.6.5



THEBERGE HOMES

N

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NORTH ARROW:

No.	DATE	REVISION
02	2022.08.15	ISSUED FOR COORDINATION
01	2022.07.05	ISSUED FOR REVIEW

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sjl@sjlarchitect.com

LAWRENCE ARCHITECT INCORPORATED

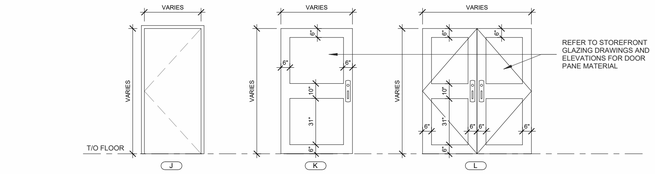
PROJECT:
CARRUTHERS AVENUE DEVELOPMENT
266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
STAIR SECTION AND DETAILS

DRAWN BY: **R.R.**
CHECKED BY: **B.L. S.J.L.**
PLOT DATE: **2022-08-16 11:54:29 AM**
JOB NUMBER: **SL-1077-22**
SCALE: **As indicated**

A5.1
PLAN #

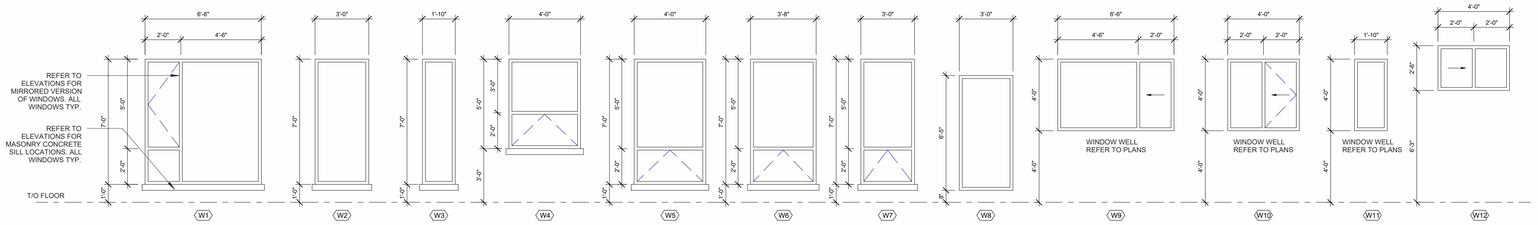
APPLICATION #



1 A8.0 NON SUITE DOORS
SCALE 1/4" = 1'-0"

Door Schedule

Mark	From Room	To Room	DOOR TYPE	DOOR SIZE (HxWxT)	DOOR Fire Rating	DOOR Type Mark	DOOR FINISH	FRAME Frame Type	FRAME FINISH	DOOR HARDWARE	NOTES
-T.O. Slab											
002	CORRIDOR	CORRIDOR	HOLLOW METAL	84" x 38"x1 3/4"	45 min	J	PAINTED	PRESSED STEEL	PAINTED	[A] [C] [J] [L]	
SA0	CORRIDOR	STAIR A	HOLLOW METAL	84" x 38"x1 3/4"	45 min	J	PAINTED	PRESSED STEEL	PAINTED	[A] [H] [P] [L]	
SB0	CORRIDOR	STAIR B	HOLLOW METAL	84" x 38"x1 3/4"	45 min	J	PAINTED	PRESSED STEEL	PAINTED	[A] [H] [P] [L]	
Level 0.5											
101	EXTERIOR	CORRIDOR	ALUMINUM	84" x 46"x1 3/4"	- -	K	BLACK ANODIZED	ALUMINUM	BLACK ANODIZE	[A] [P] [H] [J] [K] [L] [O]	
103	EXTERIOR	CORRIDOR	ALUMINUM	84" x 44"x1 3/4"	- -	K	BLACK ANODIZED	ALUMINUM	BLACK ANODIZE	[A] [C] [J] [K] [L]	
104	EXTERIOR	CORRIDOR	ALUMINUM	84" x 88"x1 3/4"	- -	L	BLACK ANODIZED	ALUMINUM	BLACK ANODIZE	[A] [E] [J] [K] [L] [O]	
Level 1											
102	CORRIDOR	LOBBY	HOLLOW METAL	84" x 38"x1 3/4"	45 min	J	PAINTED	PRESSED STEEL	PAINTED	[A] [H] [L] [P] [M]	
SA1.1	CORRIDOR	STAIR A	HOLLOW METAL	84" x 38"x1 3/4"	45 min	J	PAINTED	PRESSED STEEL	PAINTED	[A] [H] [P] [L]	
SA1.2	STAIR A	EXTERIOR	INSULATED METAL	84" x 38"x1 3/4"	1HR	K	PAINTED	PRESSED STEEL	PAINTED	[A] [P] [H] [J] [K] [L] [O]	
Level 2											
SA2	STAIR A	CORRIDOR	HOLLOW METAL	84" x 38"x1 3/4"	45 min	J	PAINTED	PRESSED STEEL	PAINTED	[A] [H] [P] [L]	
SB2	CORRIDOR	STAIR B	HOLLOW METAL	84" x 38"x1 3/4"	45 min	J	PAINTED	PRESSED STEEL	PAINTED	[A] [H] [P] [L]	
Level 3											
SA3	EXTERIOR	STAIR A	HOLLOW METAL	84" x 38"x1 3/4"	45 min	J	PAINTED	PRESSED STEEL	PAINTED	[A] [H] [P] [L]	
SB3	STAIR B	EXTERIOR	HOLLOW METAL	84" x 38"x1 3/4"	45 min	J	PAINTED	PRESSED STEEL	PAINTED	[A] [H] [P] [L]	
T/O ROOF STRUCTURE											
SA4	EXTERIOR	STAIR A	HOLLOW METAL	84" x 38"x1 3/4"	45 min	J	PAINTED	PRESSED STEEL	PAINTED	[A] [H] [P] [L]	
SB4			HOLLOW METAL	84" x 38"x1 3/4"	45 min	J	PAINTED	PRESSED STEEL	PAINTED	[A] [H] [P] [L]	



2 A8.0 WINDOW LEGEND
SCALE 1/4" = 1'-0"

NOTES:

SP = INSULATED SPANDREL PANEL
GL = GLAZING
FR = FIRE RATED GLASS "FIRELITE"
GWG = GEORGIAN WIRE GLASS
TG = TEMPERED GLASS
FG = FROSTED GLASS

** REFER TO ELEVATIONS FOR FROSTED GLASS LOCATION AND OPERATOR DIRECTION FOR WALL WINDOWS AND DOORS

GENERAL NOTES:

- ALL EXTERIOR WINDOW/DOOR FRAMES TO BE TIED INTO CONTINUOUS AIR BARRIER AS INDICATED ON THE ARCHITECTURAL DETAILS.
- ALL WINDOW AND DOOR FRAMES TO HAVE GYPSUM BOARD RETURNS U/N OTHERWISE.
- ALL INTERIOR / EXTERIOR FRAMES TO BE CAULKED TO ADJACENT MATERIALS USING APPROPRIATE CAULKING AS INDICATED IN DETAILS

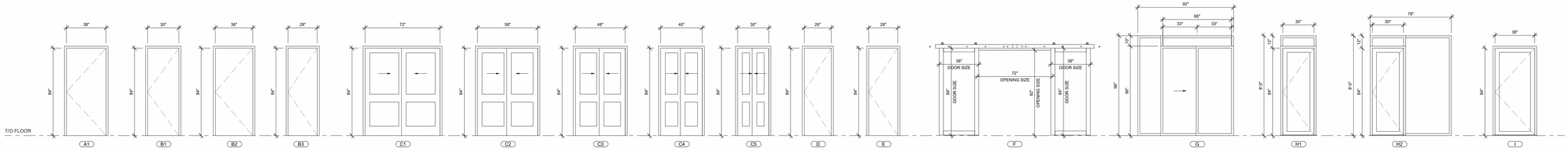
GENERAL WINDOW NOTES

1. ALL WINDOWS - BLACK ALUMINUM
2. ALL SIDE LIGHTS - SAME AS ADJACENT DOOR MATERIAL
3. NO BRICK MOULDING FOR BASEMENT WINDOWS
4. SEE ELEVATIONS FOR OPERABLE DIRECTION
5. ALL WINDOWS TO BE RESIST FORCED ENTRY AS PER O.B.C. 9.7.6
6. ALL WINDOWS/ SLIDING GLASS DOORS SHALL HAVE A MAXIMUM U-VALUE OF 1.4
7. CONFIRM ROUGH OPENING WITH MANUFACTURER
8. ALL OPERABLE WINDOWS WITH A SILL HEIGHT GREATER THAN 480mm TO BE INSTALLED WITH A MECHANISM THAT WILL LIMIT THE OPENING TO LESS THAN 100mm, IN ACCORDANCE WITH OBC 2012 9.8.8
9. SITE MEASURE WINDOW SCREENS TO CONFIRM OVERALL DIMENSIONS

GENERAL DOOR NOTES

1. ALL EXT. DOORS TO RESIST FORCED ENTRY AS PER OBC 9.6.8
2. THERMAL RESISTANCE FOR EXT. DOORS TO BE NOT LESS THAN R4 AS PER SB-12 2.1.19 (1)
3. ALL EXTERIOR DOORS TO BE WEATHER-STRIPPED
4. CONFIRM ROUGH OPENING WITH MANUFACTURER

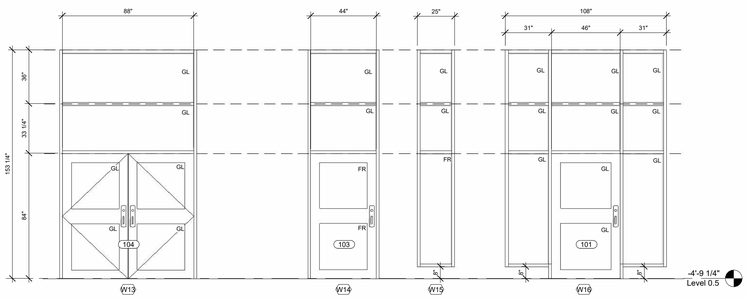
- [A] - HINGES
- [B] - DEADBOLT LOCK
- [C] - LOCKSET
- [D] - PRIVACY SET
- [E] - PASSAGE SET
- [F] - DUMMY SET/BALL CATCH
- [G] - FLUSH BOLT
- [H] - PULL
- [I] - PUSH
- [J] - WEATHER STRIPPING
- [K] - THRESHOLD
- [L] - SELF CLOSER
- [M] - PUSH BUTTON / ELEC. OPERATOR
- [N] - ROLLER CATCH
- [O] - FOB
- [P] - PANIC BAR



3 A8.0 SUITE DOORS
SCALE 1/4" = 1'-0"

DOOR SCHEDULE-SUITES

Door Type	Fire Rating	DOOR SIZE (WxHxT)	DOOR Description	DOOR FINISH	FRAME Frame Type	FRAME FINISH	NOTES	DOOR HARDWARE
A1	20 min	38" x 84" x 1.75"	METAL	PRE-FINISHED	PRESSED STEEL	PAINTED		[A] [B] [E] [J] [L]
B1	- -	30" x 84" x 1.75"	HOLLOW CORE WD	PAINTED/STAIN	TBD	PAINTED		[A] [D]
B2	- -	36" x 84" x 1.75"	HOLLOW CORE WD	PAINTED/STAIN	TBD	PAINTED		[A] [D]
B3	- -	28" x 84" x 1.75"	HOLLOW CORE WD	PAINTED/STAIN	TBD	PAINTED		[A] [D]
C1	- -	72" x 84" x 1.75"	HOLLOW CORE WD. (x2) SLIDING	PAINTED/STAIN	--	--	DOUBLE SLIDING DOOR	SLIDING DOOR HARDWARE
C2	- -	58" x 84" x 1.75"	HOLLOW CORE WD. (x2) SLIDING	PAINTED/STAIN	--	--	DOUBLE SLIDING DOOR	SLIDING DOOR HARDWARE
C3	- -	48" x 84" x 1.75"	HOLLOW CORE WD. (x2) SLIDING	PAINTED/STAIN	--	--	DOUBLE SLIDING DOOR	SLIDING DOOR HARDWARE
C4	- -	40" x 84" x 1.75"	HOLLOW CORE WD. (x2) SLIDING	PAINTED/STAIN	--	--	DOUBLE SLIDING DOOR	SLIDING DOOR HARDWARE
C5	- -	30" x 84" x 1.75"	HOLLOW CORE WD. (x2) SLIDING	PAINTED/STAIN	--	--	DOUBLE SLIDING DOOR	SLIDING DOOR HARDWARE
D	- -	26" x 84" x 1.75"	HOLLOW CORE WD	PAINTED/STAIN	TBD	PAINTED		[A] [F] [H]
E	- -	28" x 84" x 1.75"	HOLLOW CORE WD	PAINTED/STAIN	TBD	PAINTED		[A] [E]
F	- -	38" x 84" x 1.00"	WOOD	STAINED	--	--	BARN DOOR	BARN DOOR HARDWARE
G	- -	70" x 86" x 1.75"	INSULATED ALUMINUM	BLACK ANODIZED	INSULATED ALUMINUM	BLACK ANODIZED	SLIDING DOOR	SLIDING GLASS DORR HARDWARE
H1	- -	30" x 84" x 1.75"	INSULATED ALUMINUM	BLACK ANODIZED	INSULATED ALUMINUM	BLACK ANODIZED		[A] [C] [J] [K]
H2	- -	30" x 84" x 1.75"	INSULATED ALUMINUM	BLACK ANODIZED	INSULATED ALUMINUM	BLACK ANODIZED		[A] [C] [J] [K]
I	1HR	38" x 84" x 1.75"	INSULATED METAL	PRE-FINISHED	PRESSED STEEL	PAINTED		[A] [B] [E] [J] [K]



4 A8.0 STORFRONT GLAZING - FRONT
SCALE 1/4" = 1'-0"

THEBERGE HOMES

N

1) ALL WORK TO BE IN COMPLIANCE WITH LOCAL BUILDING CODES, REGULATIONS AND BY-LAWS.

2) ADDITIONAL DRAWINGS MAY BE ISSUED FOR CLARIFICATION TO ASSIST PROPER EXECUTION OF WORK. SUCH DRAWINGS WILL HAVE THE SAME MEANING AND INTENT AS IF THEY WERE INCLUDED WITH PLANS IN CONTRACT DOCUMENTS.

3) DO NOT SCALE DRAWINGS.

4) ALL SUB-CONTRACTORS TO TAKE THEIR OWN ON-SITE MEASUREMENTS AND BE RESPONSIBLE FOR THEIR ACCURACY

5) NOTIFY SHAWN J. LAWRENCE ARCHITECT FOR ANY ERRORS AND/OR OMISSIONS PRIOR TO START OF WORK.

NORTH ARROW:

No.	DATE	REVISION
02	2022.08.15	ISSUED FOR COORDINATION
01	2022.07.05	ISSUED FOR REVIEW

S.J.LAWRENCE ARCHITECT INCORPORATED
18 DEAKIN STREET
SUITE 205
OTTAWA, ONTARIO
K2E 8B7
T: (613) 739.7770
F: (613) 739.7703
sjl@sjlarchitect.com

PROJECT:
CARRUTHERS AVENUE DEVELOPMENT
266-268 Carruthers Avenue, Ottawa, ON

SHEET TITLE:
BUILDING SCHEDULES

DRAWN BY: **R.R.**
CHECKED BY: **B.L. S.J.L.**
PLOT DATE: **2022-08-16 11:54:32 AM**
JOB NUMBER: **SL-1077-22**
SCALE: **1/4" = 1'-0"**

A8.0

PLAN #
APPLICATION #