

**PROPOSED  
THREE (3) STOREY APARTMENT BUILDING SITE  
LOT 75  
R-PLAN 263  
370 ATHLONE AVENUE  
CITY OF OTTAWA**

**SERVICEABILITY REPORT  
REPORT No. R-823-83A**

**T.L. MAK ENGINEERING CONSULTANTS LTD.**

**MAY 2024**

**REFERENCE FILE NUMBER 823-83**

## **Introduction**

The developer of this property is proposing to redevelop the existing residential lot described as Lot 75 Registered Plan 263 City of Ottawa by constructing a three (3) storey residential apartment building plus a basement consisting of sixteen (16)-units, including four (2)-bedroom units, eight (1)-bedroom units and four (4) bachelor units.

The municipal address of this property is referenced as 370 Athlone Avenue and it is located in the City Ward (15 - Kitchissippi). The site is situated on the west side of Athlone Avenue, south of Scott Street and north of Richmond Road, see site plan and legal survey plan in Appendix A for details.

The area of this property is  $\pm 0.0508$  hectares. In addition to the three (3) storey residential building, the other development features will comprise of an interlock paver access to the front entrance plus an interlock paver access along the north side yard to the waste storage and bike racks at the rear (west) side of the building and an amenity area is also located in the rear yard including landscaped areas throughout the site, etc., to meet the City of Ottawa's site plan requirements.

A site geotechnical report was prepared by the owner's soils engineer Paterson Group entitled "Geotechnical Investigation – Proposed Multi Storey Building" 370 Athlone Avenue (Project No. PG6996-1) dated February 12, 2024 for this proposed development property.

This serviceability report will provide the City of Ottawa with our serviceability brief to address the proposed servicing scheme for this site.

## **Existing Site Conditions and Servicing**

This property is presently occupied by a one (1) storey vinyl sided residential building. The existing house is located near the front centre on this property with an existing garage structure, concrete shed and gravel laneway located along the north side of the property limit which currently provides vehicle access and parking for this lot. For additional details of the site's pre-development conditions, refer to the coloured Google Image (2020) and aerial photography from (GeoOttawa 2022) in Appendix B.

Approximately one half of this site is currently permeable surface covered and consisting of grass/landscaped areas with the remaining areas being roof area, gravel laneway, concrete steps and deck. Currently, most of the landscape areas are concentrated at the rear of lot and along the south side yard.

The topography of the land is found to be graded primarily to drain from front to the rear of the lot (east to west). The existing gradient of the property is sloping approximately 3.5% from front to back.

The existing house water and sanitary service lateral currently servicing the existing dwelling on 370 Athlone Avenue will be removed. The existing water services shall be blanked at the main and the existing house laterals shall be capped at the front property line for re-development of this lot.

As for the availability of underground municipal services, there are existing municipal services along Railway Street in front of this property consisting of a 600mm diameter storm sewer, a 300mm diameter sanitary sewer, and a 150mm diameter watermain for development of this property. Refer to the City of Ottawa Athlone Avenue UCC drawing and As-Built plan and profile drawing included in Appendix C for details.

Because the site will be connecting to and outletting into the separated Athlone Avenue storm sewer located within the Athlone Avenue road right of way in the City of Ottawa, therefore, the approval exemption under Ontario Regulations 525/98 would apply since storm water discharges from this site will outlet flow into a downstream storm sewer. Thus, an Environmental Compliance Approval (ECA) application will not be required to be submitted to the Ministry.

### **Proposed Residential Apartment Building Site**

There are no requirements for vehicle access or parking for this site. Interlock pavers are proposed at the front and at the north side of the new building for pedestrian access to the waste disposal and bicycle parking located in the rear accessory building.

#### **A. Water Supply**

The proposed building located within Pressure Zone 1W at 370 Athlone Avenue is 3-storey residential building consisting of 16 residential units. The building contains four (4) 2-bedroom, eight (8) 1-bedroom, and (4) four bachelor units. Each floor covers an area of approximately 2,555 ft<sup>2</sup> (237 m<sup>2</sup>), for a gross floor area of 7,665 ft<sup>2</sup> (712 m<sup>2</sup>), excluding the basement.

The building is to be serviced by the 150 mm diameter watermain along Athlone Avenue. The ground elevation along Athlone Avenue is approximately 65.2 m.

#### **Demand Projections**

The domestic demands were calculated using the City of Ottawa's Water Design Guidelines, where the residential consumption rate of 280 L/cap/d was used to estimate average day

demands (AVDY). Persons per unit (PPU) for each unit were estimated based on the City of Ottawa’s Water Design Guidelines.

Following discussions with the City, peaking factors are to be estimated from Table 3-3 of the MECP Design Guidelines for Drinking-Water Systems, given that the proposed development population is less than 500 people. Maximum day (MXDY) demands were calculated by multiplying AVDY demands by a factor of 9.5. Peak hour (PKHR) demands were calculated by multiplying AVDY by a factor of 14.3. **Table 1** shows the estimated domestic demands of the proposed building.

**Table 1: Estimated Domestic Demand**

Unit Type	Unit Count	PPU	Consumption	AVDY		MXDY		PKHR	
				L/d	L/s	L/d	L/s	L/d	L/s
Apartment, 2-Bedroom	4	2.1	280	2,352	0.03	22,344	0.26	33,634	0.39
Apartment, 1-Bedroom	8	1.4	280	3,136	0.04	29,792	0.34	44,845	0.52
Apartment, Bachelor	4	1.4	280	1,568	0.02	14,896	0.17	22,422	0.26
<b>Total</b>	<b>16</b>			<b>7,056</b>	<b>0.08</b>	<b>67,032</b>	<b>0.78</b>	<b>100,901</b>	<b>1.17</b>

The fire flow required was determined following the Fire Underwriter Survey (FUS) method and is provided in the attached worksheet. It was assumed that building would have a wood-frame construction with a limited combustibility. It is understood that the building won’t be equipped with sprinklers. It was also assumed that the basement is below 50% above ground level. The resulting total required fire flow is 13,000 L/min (200 L/s) for a duration of 2.75 hours.

Details are provided in the attached **Fire Flow Calculations** (See Appendix D). Furthermore, **Figure 1** found in Appendix D provides separation distances for the FUS calculations. The proposed **Site Plan** attached in Appendix D was used to determine distances from the proposed building to the property lines.

In summary, the estimated water demands for the proposed building are as follows:

- AVDY = 7,056 L/d (0.08 L/s)
- MXDY = 67,032 L/d (0.78 L/s);
- PKHR = 100,901 L/d (1.17 L/s); and,
- Fire Flow (FUS) = 13,000 L/min (217 L/s).

Boundary Conditions

The hydraulic gradeline (HGL) boundary conditions for 370 Athlone Avenue, as presented in **Table 2**, were provided by the City on May 16, 2024 (see attached **Water Boundary Conditions Email** in Appendix D).

**Table 2: Boundary Conditions**

Demand Scenario	Head (m)	Flow (L/s)
Minimum HGL (Peak Hour)	108.7	
Maximum HGL (Average Day)	114.9	
Available Fire Flow @ Residual 20 psi		86 <sup>1</sup>

<sup>1</sup> From the 152 mm dia. watermain on Athlone Avenue, only.

However, the City indicated that 217 L/s (13,000 L/min) can be met from the local hydrants flowing simultaneously (see attached **Water Boundary Conditions Email** in Appendix D). This value was considered in the hydraulic analysis to compare to the fire flow requirement for the proposed building.

### Hydraulic Analysis

#### **Peak Hour & Average Day**

During peak hour demands, the resulting minimum hydraulic gradeline of 108.7 m corresponds to a peak hour pressure of 426 kPa (62 psi). This value is above the minimum pressure objective of 276 kPa (40 psi) for residential buildings up to two storeys. Adding 5 psi per floor above two stories, to account for headloss due to elevation and pipe losses, a minimum pressure of 310 kPa (45 psi) would be required to service the third floor. The peak hour pressure at ground level is above this objective and therefore considered acceptable.

During average day demands, the resulting maximum hydraulic gradeline of 114.9 m corresponds to a maximum pressure of 487 kPa (71 psi). This value is less than the maximum pressure objective of 552 kPa (80 psi) and therefore considered acceptable.

**Supporting hydraulic calculations** are attached in Appendix D.

#### **Maximum Day + Fire Flow**

A he reported available fire flow at a residual pressure of 20 psi is 86 L/s (5,160 L/min). This is less than the RFF of 4,500 L/min, as per FUS. However, the City indicated that 13,000 L/min can be met from the local hydrants flowing simultaneously, meeting the RRF. Hydrant coverage and classes in the vicinity of the proposed building are illustrated in **Figure 2** attached in Appendix D.

Based on Table 1 of Appendix I of the City of Ottawa Technical Bulletin ISTB-2018-02 and a desktop review (i.e., Google Street View) to confirm hydrant class, five (5) hydrants are located in the vicinity of the proposed building. Two (2) Class AA hydrants are within 75 m, both with a capacity contribution of up to 5,700 L/min. Three (3) other Class AA hydrants are within 150 m

from the site, both with a capacity contribution of up to 3,800 L/min. The combined hydrant flow coverage for 370 Athlone Avenue is therefore 22,800 L/min, which is above the RFF obtained from the FUS (13,000 L/min) method. A breakdown of the hydrant coverage is summarized in **Table 3** below.

**Table 3: Fire Hydrant Coverage**

Building	Fire Flow Demand (L/min)	Fire Hydrants					Combined Hydrant Flow Coverage (L/min)
		Hydrant Class	Within 75 m		Between 75 m and 150 m		
			Quantity	Max Contrib. to RFF	Quantity	Max Contrib. to RFF	
370 Athlone Avenue	13,000 L/min (FUS)	AA	2	5,700	3	3,800	22,800*
		A					
		B					
		C					

\* For this analysis, the hydrant capacity considered is the reported available multi-hydrant flow noted above (i.e., 13,000 L/min).

In conclusion, based on the boundary condition provided, the local watermain network in the vicinity of the proposed building at 370 Athlone Avenue provides adequate fire flow capacity, as per the Fire Underwriters Survey (FUS) method. Resulting pressures during anticipated demand flows meet the pressure objectives during average and peak demand conditions, as per the City of Ottawa’s Drinking Water Design Guidelines.

#### B. Sanitary Flow

The peak sanitary flow for the 16 units, which comprise of four (2)-bedroom, eight (1)-bedroom and four bachelor apartment units, is estimated at  $Q = 0.32$  L/s with an infiltration rate of 0.02 L/s. Refer to Appendix E sheet 1 of 1 regarding sanitary flow calculations. This flow will enter the existing 300mm diameter sanitary sewer on Athlone Avenue via the proposed 150mm diameter PVC sanitary service lateral from the three (3)-storey residential apartment building.

The existing peak sanitary flow of the site for single detached dwelling unit is  $Q = 0.06$  L/s with an infiltration rate of 0.02 L/s. The net increase in flow from this proposed development is 0.26 L/s which is not expected to negatively impact the existing 300mm dia. sanitary sewer.

Waste water from the Athlone Avenue 300mm dia. sanitary sewer then in turn outlets north into the existing downstream 1500mm dia. concrete sanitary collector sewer located along the Scott Street corridor which further direct sewage flow eastward.

### C. Storm Flow

The storm-water outlet for the proposed development property will be the existing 600mm diameter concrete storm sewer located on Athlone Avenue. Stormwater attenuation on site will be accomplished by means of rooftop storage with controlled roof drains that regulate flow off site.

The building foundation weeping-tile drainage system shall have its own separate pipe for gravity flow where weeping-tile water is outletted via a 150mm diameter storm pipe to the existing 600mm diameter storm sewer. The storm-water outlet for the rooftop water from roof drains will be a separately designated proposed 150mm diameter PVC pipe that will also be outletted directly into the existing 600mm diameter storm sewer. The 150mm dia. roof water drain pipe will "wye" into the 150mm dia. weeping tile storm lateral on private property and outlet to the existing Athlone Avenue storm sewer.

Two (2) roof drains are proposed for this apartment building to restrict flow at a rate of 0.316 L/s each or  $2 \times 0.316 \text{ L/s} = 0.63 \text{ L/s}$  into the Athlone Avenue storm sewer. The calculated net allowable controlled release rate from this site is estimated at 5.45 L/s.

Based on the residential site plan from the owner's architect, the average post-development runoff coefficient is estimated at  $C = 0.79$  and  $A = 0.0508$  hectares.

An estimation of the pre-development flow condition was carried out using the criteria accepted by the City of Ottawa. If post-development  $C$  value exceeds the lesser of the  $C_{pre} = 0.55$  or  $C_{allow} = 0.5$  (max) then SWM is required. So from our calculations, the  $C_{allow} = 0.5$  value will be used at  $t_c = 10$  minutes for pre-development allowable flow calculation off-site.

The pre-development calculated flow rate into the 600mm dia. storm sewer for this residential area is the lesser of either the two (2)-year storm event where  $C_{allow} = 0.5$  (max.) runoff value or the average  $C_{pre}$  value which is 0.55 using  $t_c = 10$  minutes. Because this site  $C_{post} = 0.79$  and  $C_{allow} = 0.5$  then SWM measures are required.

Therefore, based on our calculation, on-site retention is required for this proposed development site, because the site post-development  $C$  value of 0.79 is greater than the  $C_{allow} = 0.5$ .

The storage volume for the two (2)-year and up to the 100-year storm event will be stored by means of flat rooftop at the top of the 3-storey apartment building. Also refer to the site storm drainage report (Report No. R-823-83) for further details.

## Conclusion

At this proposed residential site and to develop this lot to house a 16 unit apartment building on a 0.0508 ha. parcel of land, the estimated allowable flow off-site is calculated at 5.45 L/s based on City of Ottawa Drainage and Stormwater Management (SWM) criteria of 2-year pre-development flow at  $C_{\text{allow}} = 0.50$ . For on-site SWM attenuation, the flat roof top of the proposed apartment building will be utilized and (2) controlled roof drains are incorporated each with a controlled release rate of 0.316 L/s (5.0 U.S. gal/min.). The controlled flow from this site totals to 0.63 L/s for the post development condition. The uncontrolled 2-year post development flow from the remainder of the site is estimated at 3.52 L/s and 9.27 L/s for the 100-year event respectively.

During the two (2)-year storm event for the flat rooftop storage, the ponding depth of rooftop area 1 and 2 is estimated at 110 mm at the drain and 0mm at the roof perimeter, assuming a 1.9% minimum roof pitch to the drain. The rooftop storage available at Roof Area 1 is 2.46 m<sup>3</sup> and the rooftop storage available at Roof Area 2 is 2.48 m<sup>3</sup>, for a total of 4.94 m<sup>3</sup>, which is greater than the required volume of 3.62 m<sup>3</sup>.

During the 100-year storm event for the flat rooftop storage, the ponding depth of Roof Area 1 and 2 is estimated at 150 mm at the drain and 0mm at the roof perimeter, assuming a 1.9% minimum roof pitch to the drain. The rooftop storage available at Roof Area 1 is 6.39 m<sup>3</sup> and the rooftop storage available at Roof Area 2 is 6.40 m<sup>3</sup>, for a total of 12.79 m<sup>3</sup>, which is greater than the required volume of 12.66 m<sup>3</sup>.

Therefore, by means of flat building rooftop storage and grading the site to the proposed grades as shown on the Proposed Grading and Servicing Plan and Proposed Rooftop Stormwater Management Plan Dwg. 823-83 G-1 and 823-83 SWM-1 respectively, the desirable two (2)-year storm and 100-year storm event detention volume of 4.94 m<sup>3</sup> and 12.79 m<sup>3</sup> respectively will be available on site. Refer to Appendix D for detailed calculations of available storage volumes.

Thus for this development site, the 2-year maximum post development flow draining off-site is the controlled roof top flow plus the uncontrolled flow from the remainder of the site totals to 4.15 L/s (0.63 L/s + 3.52 L/s) which is less than the allowable 5.45 L/s. For event up to and including 100 year, the estimated maximum post development flow draining off-site is 9.90 L/s (0.63 L/s + 9.27 L/s) which exceeds the site allowable of 5.45 L/s by 4.45 L/s for this site.

In comparing the pre-development flow of the current site conditions to the post development flow, the SWM regulated flow plus uncontrolled flow from the proposed site under the post development conditions at the 2-year event = 4.15 L/s and the 100 year event = 9.90 L/s where



both of the post development flow events are less than current pre-development flow estimate for the site at 2-Year  $p_{re} = 5.99$  L/s and 100-Year  $p_{re} = 15.65$  L/s. Therefore with this proposed development, stormwater flow is improved from that of the existing condition.

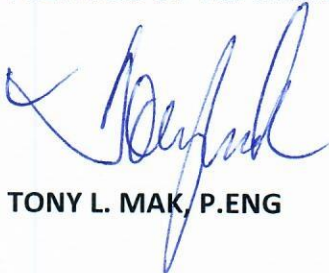
The building weeping tile drainage will outlet via its separate 150mm diameter PVC storm lateral. The roof drains will be outletted also via a separate 150mm PVC storm lateral from the apartment building which “wye” into the proposed 150mm dia. weeping tile storm lateral, whereupon both laterals are outletting to the existing Athlone Avenue 600mm diameter storm sewer with only one (1) connection. The City of Ottawa recommends that pressurized drain pipe material be used in the building for the roof drain leader pipe in the event of surcharging on the City storm sewer system. Refer to the proposed site grading and servicing plan Dwg. 823-83 G-1 for details.

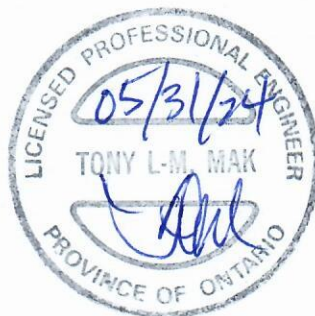
### **Erosion and Sediment Control**

The contractor shall implement Best Management Practices to provide for protection of the receiving storm sewer during construction activities. These practices are required to ensure no sediment and/or associated pollutants are released to the receiving watercourse. These practices include installation of a “siltsack” catch basin sediment control device or equal in catch basins as recommended by manufacturer on-site and off-site within the Athlone Avenue road right of way adjacent to this property. Siltsack shall be inspected every 2 to 3 weeks and after major storm. The deposits will be disposed of as per the requirements of the contract. See Dwg. #823-83 ESC-1 for details.

Refer to Appendix G for the summary of the Development Servicing Study Checklist that is applicable to this development.

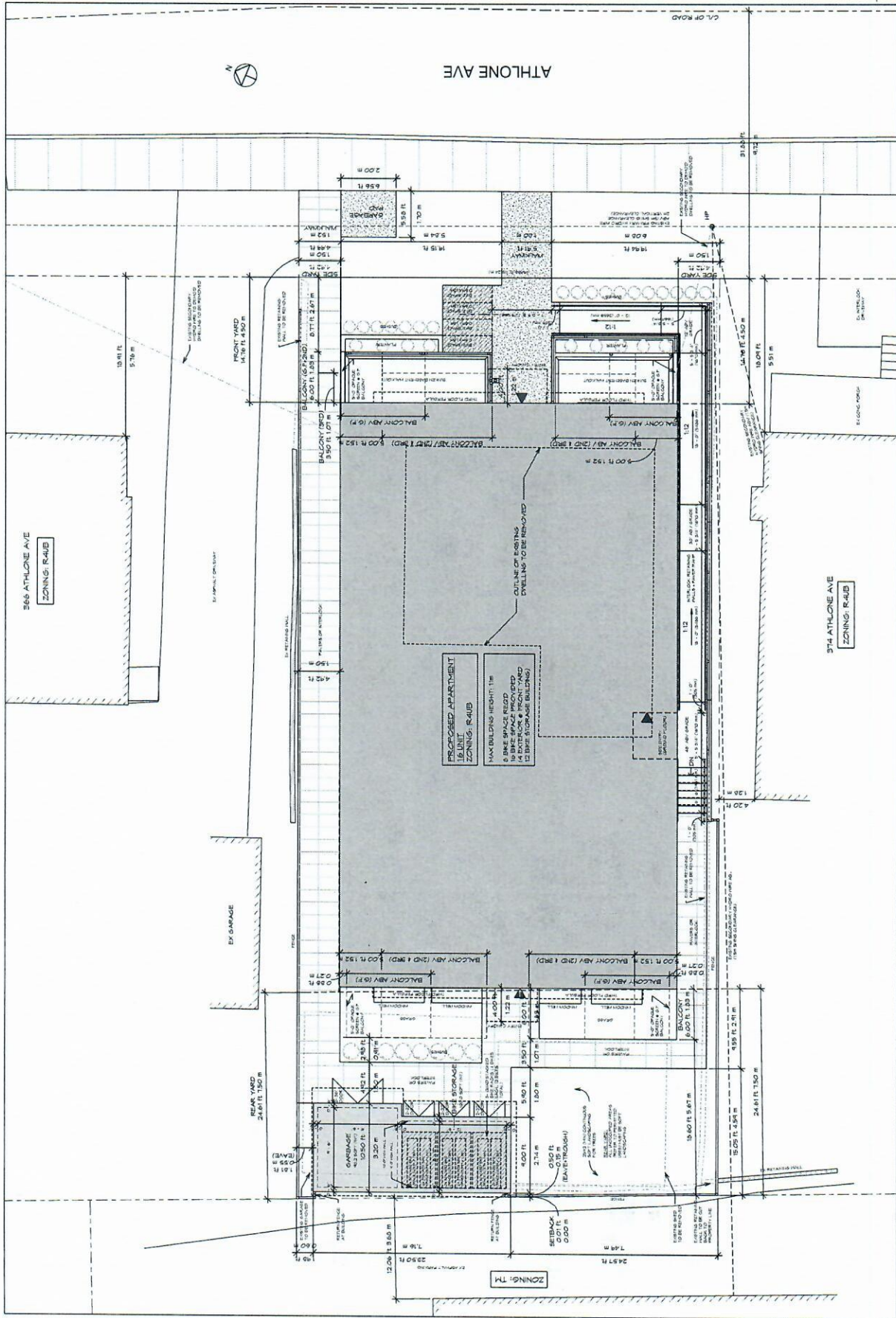
**PREPARED BY T.L. MAK ENGINEERING CONSULTANTS LTD.**

  
TONY L. MAK, P.ENG



**PROPOSED**  
**THREE (3) STOREY APARTMENT BUILDING SITE**  
**LOT 75**  
**R-PLAN 263**  
**370 ATHLONE AVENUE**  
**CITY OF OTTAWA**

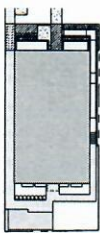
**APPENDIX A**  
**SITE PLAN AND LEGAL SURVEY PLAN**



**OVERALL SITE AREAS**  
 LOT AREA: 54721 SQ FT  
 BUILDING AREA: 27871 SQ FT  
 PARKING: 14 SPACES  
 COVERAGE RATIO: 50.9% OF LOT (50% MIN)



**SECTION 1**  
 1248.5 SQ FT  
 47.0% OF YARD (40% MIN)  
 SOFT LANDSCAPE: 3551 SQ FT  
 RATIO: 65.0% OF YARD (50% MIN)



**SECTION 2**  
 1248.5 SQ FT  
 47.0% OF YARD (40% MIN)  
 SOFT LANDSCAPE: 3551 SQ FT  
 RATIO: 65.0% OF YARD (50% MIN)



**SITE PLAN**  
**370 ATHLONE AVE**

FEB 13 2024  
 SCALE: 1/8" = 1'-0"  
 DATE: 02/13/2024  
 PREPARED BY: GRANLEY HENLEY #  
 PRELIMINARY, NOT FOR CONSTRUCTION

ATHLONE AVE

366 ATHLONE AVE  
 ZONING: R4UB

374 ATHLONE AVE  
 ZONING: R4UB

**PROPOSED APARTMENT**  
 ZONING: R4UB  
 MAX BUILDING HEIGHT: 11M  
 8 BDRM SPACE PROVIDED  
 13 BATHS (6 COMMON BATHS)  
 13 BDRM (6 COMMON BDRM)

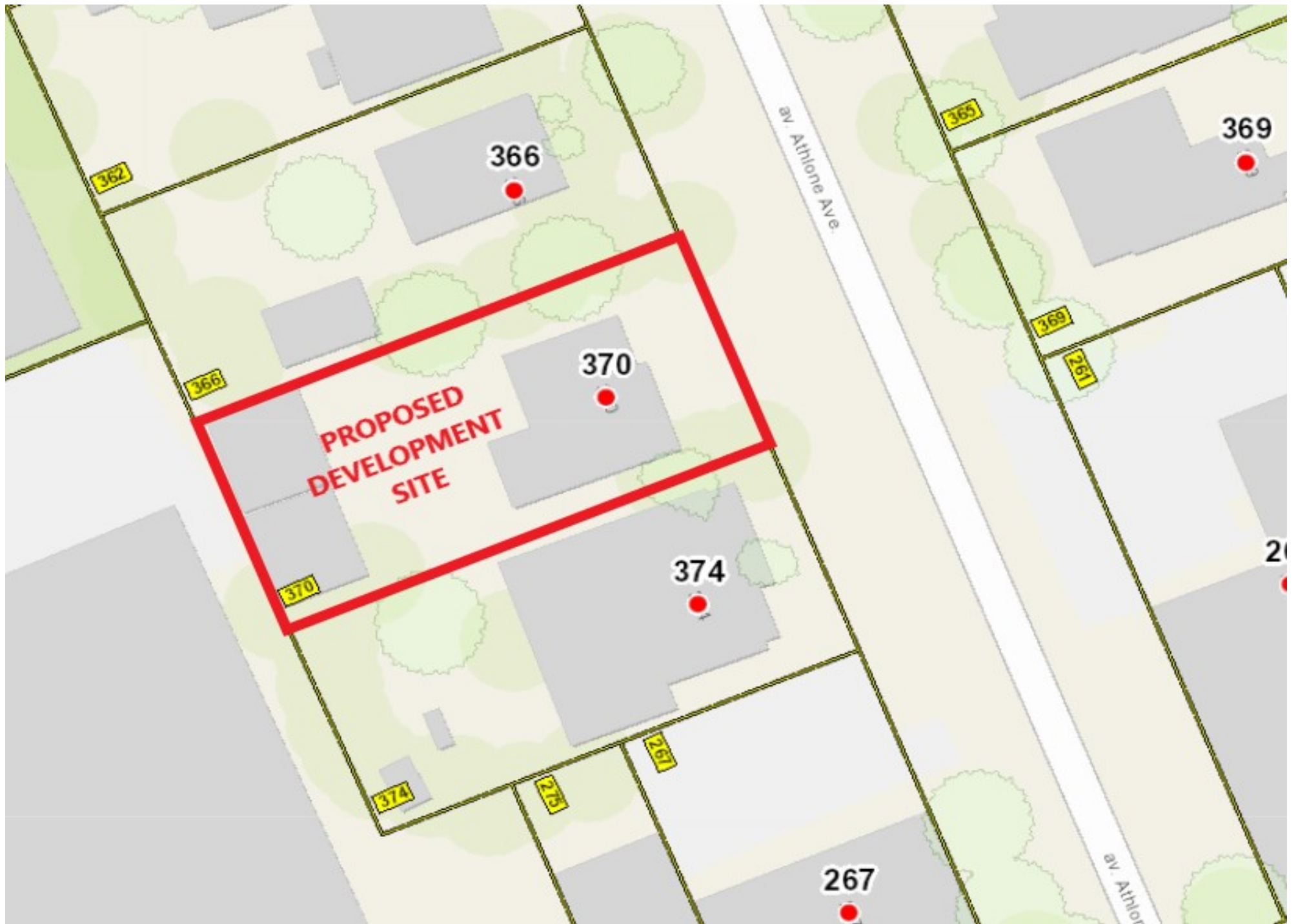
ZONING: TM



**PROPOSED  
THREE (3) STOREY APARTMENT BUILDING SITE  
LOT 75  
R-PLAN 263  
370 ATHLONE AVENUE  
CITY OF OTTAWA**

**APPENDIX B  
SITE PRE-DEVELOPMENT CONDITION  
GOOGLE IMAGE (2020)  
AND  
AERIAL PHOTOGRAPHY 2022 (GEOOTTAWA)**









**PROPOSED**  
**THREE (3) STOREY APARTMENT BUILDING SITE**  
**LOT 75**  
**R-PLAN 263**  
**370 ATHLONE AVENUE**  
**CITY OF OTTAWA**

**APPENDIX C**  
**ATHLONE AVENUE**  
**CITY OF OTTAWA**  
**PLAN AND PROFILE**  
**AND**  
**UCC DRAWINGS**

**NOTES**

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, AS APPLICABLE, AND THE STANDARD SPECIFICATIONS FOR BRIDGE CONSTRUCTION, AS APPLICABLE.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.

3. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AND UTILITIES AT ALL TIMES.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES AND STRUCTURES.

5. THE CONTRACTOR SHALL MAINTAIN ADEQUATE DRAINAGE AND EROSION CONTROL MEASURES THROUGHOUT THE PROJECT.

6. THE CONTRACTOR SHALL MAINTAIN ADEQUATE SAFETY MEASURES THROUGHOUT THE PROJECT.

7. THE CONTRACTOR SHALL MAINTAIN ADEQUATE RECORDS OF ALL WORK DONE.

8. THE CONTRACTOR SHALL MAINTAIN ADEQUATE COMMUNICATIONS THROUGHOUT THE PROJECT.

9. THE CONTRACTOR SHALL MAINTAIN ADEQUATE RECORDS OF ALL MATERIALS USED.

10. THE CONTRACTOR SHALL MAINTAIN ADEQUATE RECORDS OF ALL LABORERS EMPLOYED.

11. THE CONTRACTOR SHALL MAINTAIN ADEQUATE RECORDS OF ALL EQUIPMENT USED.

12. THE CONTRACTOR SHALL MAINTAIN ADEQUATE RECORDS OF ALL TESTS PERFORMED.

13. THE CONTRACTOR SHALL MAINTAIN ADEQUATE RECORDS OF ALL INSPECTIONS.

14. THE CONTRACTOR SHALL MAINTAIN ADEQUATE RECORDS OF ALL MEETINGS.

15. THE CONTRACTOR SHALL MAINTAIN ADEQUATE RECORDS OF ALL CORRECTIONS.

16. THE CONTRACTOR SHALL MAINTAIN ADEQUATE RECORDS OF ALL DELAYS.

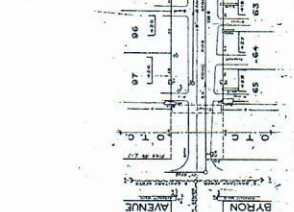
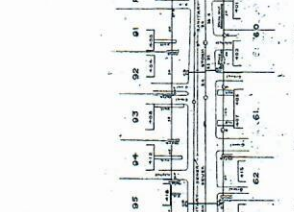
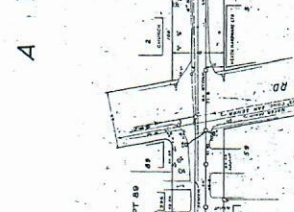
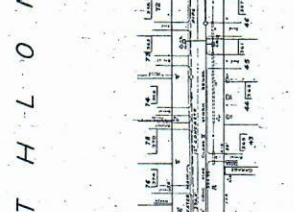
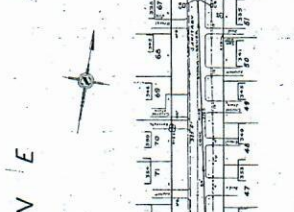
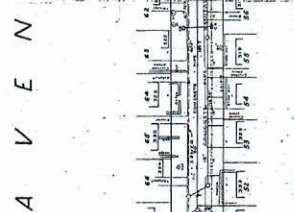
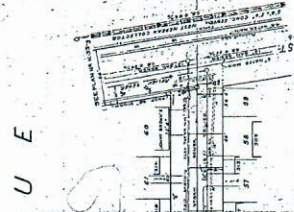
17. THE CONTRACTOR SHALL MAINTAIN ADEQUATE RECORDS OF ALL COSTS.

18. THE CONTRACTOR SHALL MAINTAIN ADEQUATE RECORDS OF ALL INJURIES.

19. THE CONTRACTOR SHALL MAINTAIN ADEQUATE RECORDS OF ALL DEATHS.

20. THE CONTRACTOR SHALL MAINTAIN ADEQUATE RECORDS OF ALL OTHER INCIDENTS.

NO.	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
1	Excavation	100	cu yd	1.00	100.00
2	Backfill	100	cu yd	1.00	100.00
3	Concrete	100	cu yd	1.00	100.00
4	Reinforcement	100	lb	1.00	100.00
5	Formwork	100	sq ft	1.00	100.00
6	Drainage	100	ft	1.00	100.00
7	Erosion Control	100	ft	1.00	100.00
8	Safety	100	hr	1.00	100.00
9	Records	100	hr	1.00	100.00
10	Tests	100	hr	1.00	100.00
11	Inspections	100	hr	1.00	100.00
12	Meetings	100	hr	1.00	100.00
13	Corrections	100	hr	1.00	100.00
14	Delays	100	hr	1.00	100.00
15	Costs	100	hr	1.00	100.00
16	Injuries	100	hr	1.00	100.00
17	Deaths	100	hr	1.00	100.00
18	Other	100	hr	1.00	100.00



**ATHLONE AVENUE**

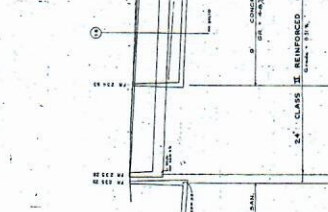
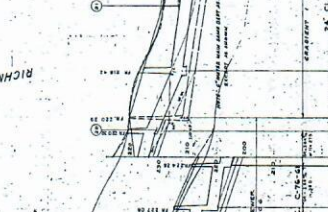
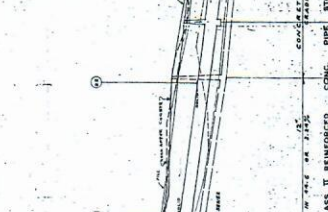
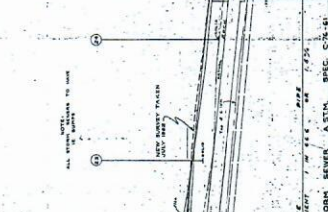
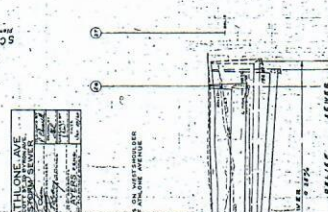
SECTION 1

STATIONING: 0+00 TO 1+00

VERTICAL CURVE DATA:

Station	0+00	0+25	0+50	0+75	1+00
Elevation	100.00	100.00	100.00	100.00	100.00

NO.	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
1	Excavation	100	cu yd	1.00	100.00
2	Backfill	100	cu yd	1.00	100.00
3	Concrete	100	cu yd	1.00	100.00
4	Reinforcement	100	lb	1.00	100.00
5	Formwork	100	sq ft	1.00	100.00
6	Drainage	100	ft	1.00	100.00
7	Erosion Control	100	ft	1.00	100.00
8	Safety	100	hr	1.00	100.00
9	Records	100	hr	1.00	100.00
10	Tests	100	hr	1.00	100.00
11	Inspections	100	hr	1.00	100.00
12	Meetings	100	hr	1.00	100.00
13	Corrections	100	hr	1.00	100.00
14	Delays	100	hr	1.00	100.00
15	Costs	100	hr	1.00	100.00
16	Injuries	100	hr	1.00	100.00
17	Deaths	100	hr	1.00	100.00
18	Other	100	hr	1.00	100.00



**ATHLONE AVENUE**

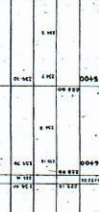
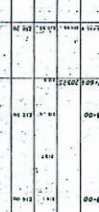
SECTION 2

STATIONING: 1+00 TO 2+00

VERTICAL CURVE DATA:

Station	1+00	1+25	1+50	1+75	2+00
Elevation	100.00	100.00	100.00	100.00	100.00

NO.	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
1	Excavation	100	cu yd	1.00	100.00
2	Backfill	100	cu yd	1.00	100.00
3	Concrete	100	cu yd	1.00	100.00
4	Reinforcement	100	lb	1.00	100.00
5	Formwork	100	sq ft	1.00	100.00
6	Drainage	100	ft	1.00	100.00
7	Erosion Control	100	ft	1.00	100.00
8	Safety	100	hr	1.00	100.00
9	Records	100	hr	1.00	100.00
10	Tests	100	hr	1.00	100.00
11	Inspections	100	hr	1.00	100.00
12	Meetings	100	hr	1.00	100.00
13	Corrections	100	hr	1.00	100.00
14	Delays	100	hr	1.00	100.00
15	Costs	100	hr	1.00	100.00
16	Injuries	100	hr	1.00	100.00
17	Deaths	100	hr	1.00	100.00
18	Other	100	hr	1.00	100.00



**ATHLONE AVENUE**

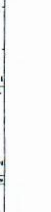
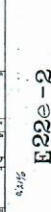
SECTION 3

STATIONING: 2+00 TO 3+00

VERTICAL CURVE DATA:

Station	2+00	2+25	2+50	2+75	3+00
Elevation	100.00	100.00	100.00	100.00	100.00

NO.	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
1	Excavation	100	cu yd	1.00	100.00
2	Backfill	100	cu yd	1.00	100.00
3	Concrete	100	cu yd	1.00	100.00
4	Reinforcement	100	lb	1.00	100.00
5	Formwork	100	sq ft	1.00	100.00
6	Drainage	100	ft	1.00	100.00
7	Erosion Control	100	ft	1.00	100.00
8	Safety	100	hr	1.00	100.00
9	Records	100	hr	1.00	100.00
10	Tests	100	hr	1.00	100.00
11	Inspections	100	hr	1.00	100.00
12	Meetings	100	hr	1.00	100.00
13	Corrections	100	hr	1.00	100.00
14	Delays	100	hr	1.00	100.00
15	Costs	100	hr	1.00	100.00
16	Injuries	100	hr	1.00	100.00
17	Deaths	100	hr	1.00	100.00
18	Other	100	hr	1.00	100.00



E22e-1

E22e-2







**PROPOSED**  
**THREE (3) STOREY APARTMENT BUILDING SITE**  
**LOT 75**  
**R-PLAN 263**  
**370 ATHLONE AVENUE**  
**CITY OF OTTAWA**

**APPENDIX D**  
**CITY OF OTTAWA**

- **SITE PLAN AND ARCHITECTURAL DRAWINGS**
- **WATER BOUNDARY CONDITIONS E-MAIL**
- **FUS FIRE FLOW CALCULATION**
- **FUS EXPOSURE DISTANCES – FIGURE 1**
- **SUPPORTING HYDRAULIC CALCULATIONS**
- **HYDRANT SPACING – FIGURE 2**

**ATTACHMENT 1 : SITE PLAN AND ARCHITECTURAL DRAWINGS**





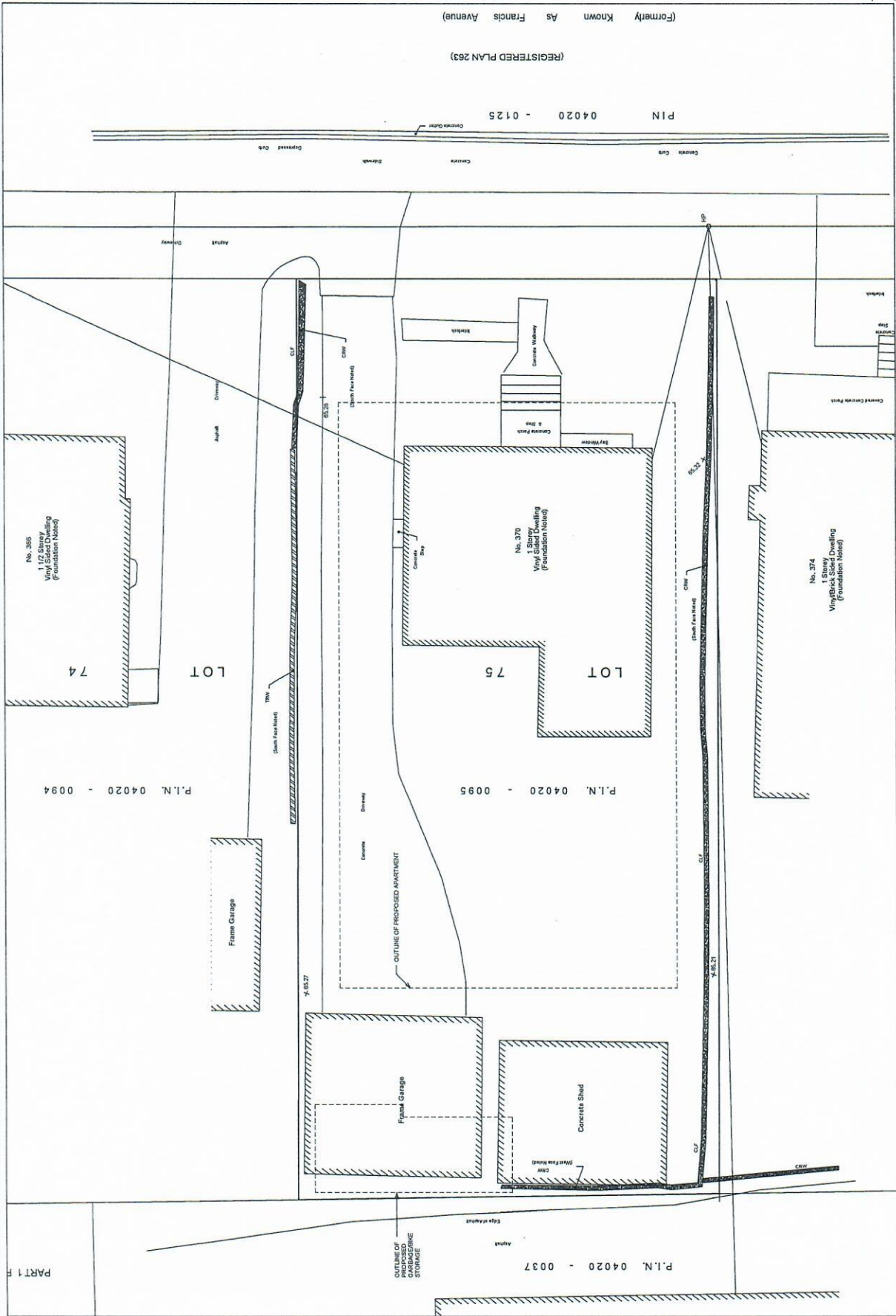




**SITE PLAN-EXISTING**  
**370 ATHLONE AVE**

FEB 13 2024  
 SCALE: 3/16" = 1'-0"  
**A0.3**  
**HERNLEY**

PRELIMINARY-NOT FOR CONSTRUCTION



PART 1 F



**BUILDING AREA EFFICIENCY**

REGULATION	408.51 SF	14.0%
DWELLING	2,679.91 SF	86.0%
TOTAL	3,088.41 SF	

**BASEMENT**

REGULATION	378.4 SF	15%
000	378.4 SF	15%
DWELLING	545.6 SF	23%
UNIT 001	540.0 SF	22%
UNIT 002	556.3 SF	22%
UNIT 003	422.0 SF	17%
UNIT 004	2043.0 SF	83%

**GROUND FLOOR**

REGULATION	463.1 SF	15%
100	463.1 SF	15%
DWELLING	631.6 SF	21%
UNIT 101	661.3 SF	24%
UNIT 102	482.6 SF	18%
UNIT 103	371.7 SF	15%
UNIT 104	2047.2 SF	81%

**SECOND FLOOR**

REGULATION	204.5 SF	11%
200	204.5 SF	11%
DWELLING	670.2 SF	26%
UNIT 201	671.4 SF	23%
UNIT 202	671.5 SF	23%
UNIT 203	471.6 SF	16%
UNIT 204	2392.7 SF	84%

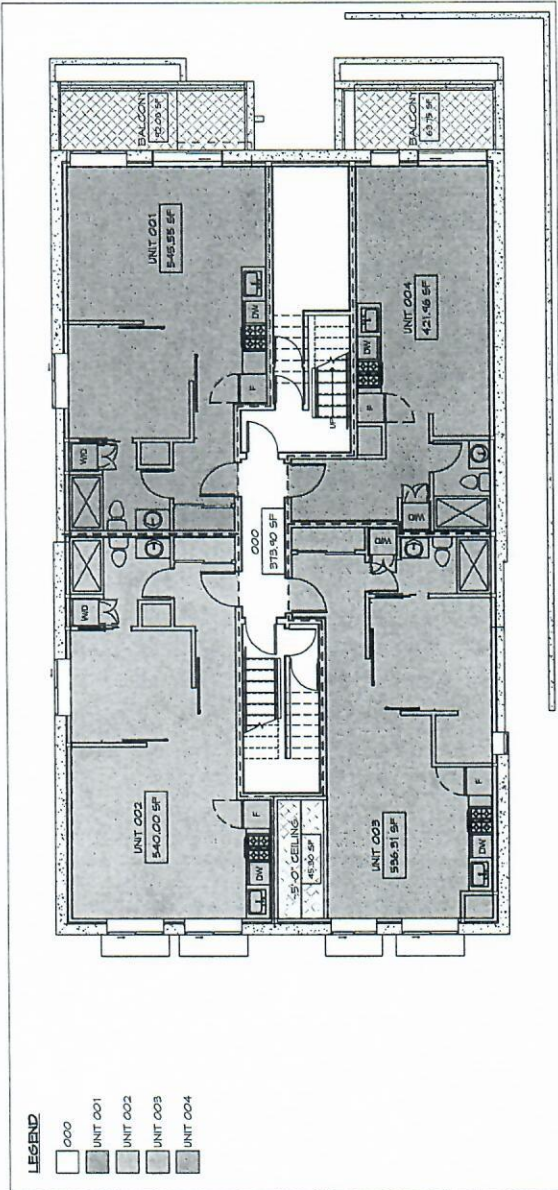
**THIRD FLOOR**

REGULATION	267.0 SF	10%
300	267.0 SF	10%
DWELLING	631.0 SF	25%
UNIT 301	644.6 SF	26%
UNIT 302	671.5 SF	23%
UNIT 303	426.3 SF	17%
UNIT 304	2500.2 SF	50%

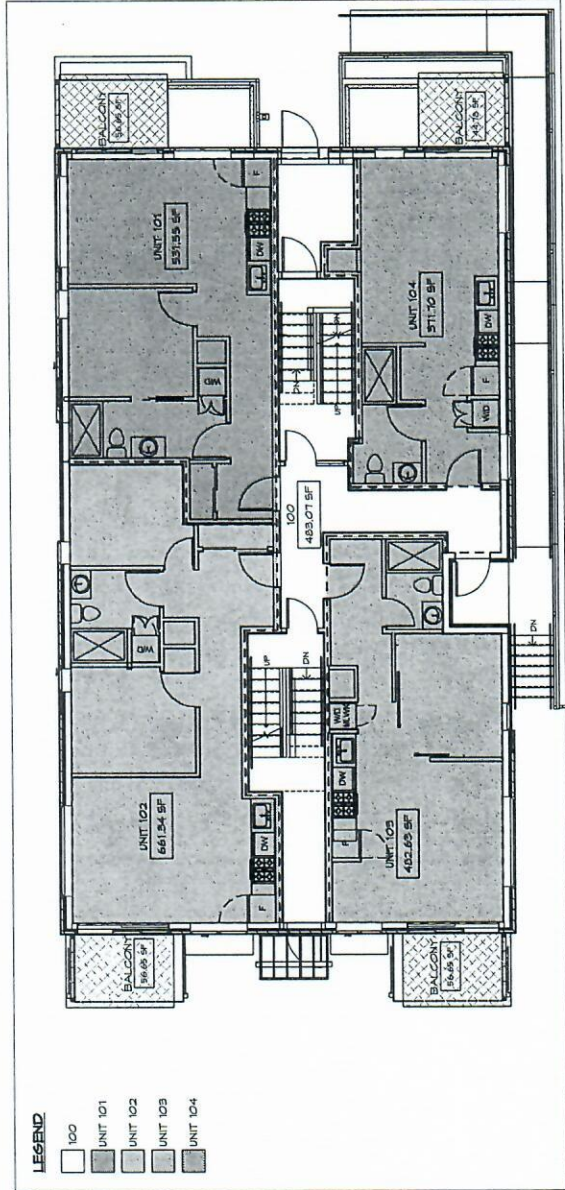
**AREA CALCULATION NOTES**  
 - FROM FINISHED FACE OF EXTERIOR WALLS  
 - FROM CENTERLINE OF INTERIOR FIRE SEPARATION WALLS  
 - BALCONIES NOT INCLUDED IN UNIT OR OVERALL AREAS

**AREA PLANS 1**  
**370 ATHLONE AVE**

FEB 13 2024  
 SCALE: 3/16" = 1'-0"  
 PREP: HAY DANIELS P.L.L.C.  
**A1.0**  
**GRANT HENLEY**  
 PRELIMINARY - NOT FOR CONSTRUCTION



① AREA PLAN - BASEMENT  
 3/16" = 1'-0"



② AREA PLAN - GROUND FLOOR  
 3/16" = 1'-0"

**BUILDING AREA EFFICIENCY**

CIRCULATION	1408.81 SF	14.0%
DWELLING	8575.41 SF	85.0%
TOTAL	9984.22 SF	

**BASEMENT**

CIRCULATION		
000 HALLWAY, STAIRS, CRAWL SPACE	919.9 SF	15%
	919.9 SF	15%

**DWELLING**

UNIT 001	1 BEDROOM / 1 BATH	845.6 SF	23%
UNIT 002	1 BEDROOM / 1 BATH	840.0 SF	22%
UNIT 003	1 BEDROOM / 1 BATH	836.9 SF	22%
UNIT 004	STUDIO / 1 BATH	422.0 SF	11%
		2043.5 SF	25%

**GROUND FLOOR**

CIRCULATION		
100 HALLWAY, STAIRS, ENTRY	493.1 SF	18%
	493.1 SF	18%

**DWELLING**

UNIT 101	1 BEDROOM / 1 BATH (BP)	651.6 SF	21%
UNIT 102	2 BEDROOM / 1 BATH (BP)	661.3 SF	26%
UNIT 103	1 BEDROOM / 1 BATH (BP)	482.6 SF	19%
UNIT 104	STUDIO / 1 BATH	371.1 SF	15%
		2047.2 SF	21%

**SECOND FLOOR**

CIRCULATION		
200 HALLWAY, STAIRS	264.9 SF	11%
	264.9 SF	11%

**DWELLING**

UNIT 201	2 BEDROOM / 1 BATH	670.2 SF	26%
UNIT 202	1 BEDROOM / 1 BATH	571.4 SF	23%
UNIT 203	1 BEDROOM / 1 BATH	571.5 SF	23%
UNIT 204	STUDIO / 1 BATH	411.6 SF	16%
		2224.7 SF	25%

**THIRD FLOOR**

CIRCULATION		
300 HALLWAY, STAIRS	267.0 SF	10%
	267.0 SF	10%

**DWELLING**

UNIT 301	2 BEDROOM / 1 BATH	631.9 SF	25%
UNIT 302	2 BEDROOM / 1 BATH	644.6 SF	25%
UNIT 303	1 BEDROOM / 1 BATH	571.5 SF	23%
UNIT 304	STUDIO / 1 BATH	426.3 SF	11%
		2300.3 SF	20%

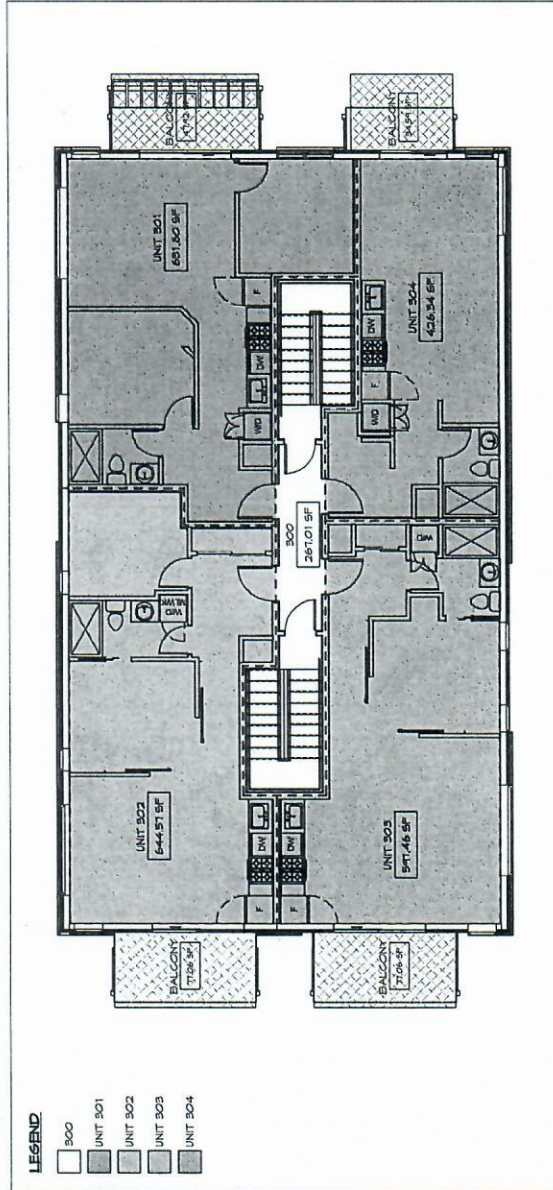
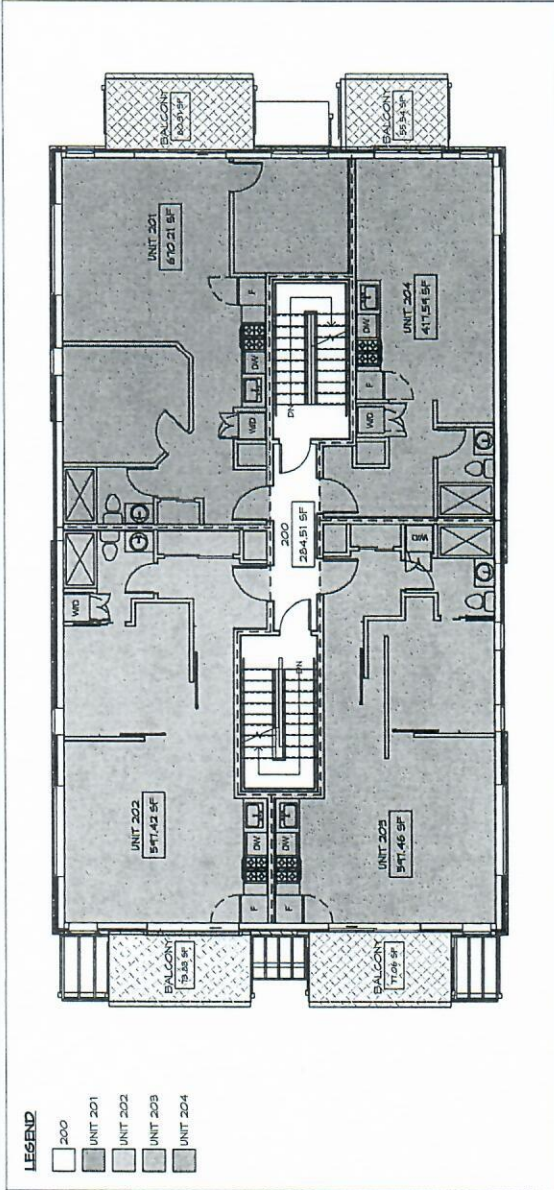
**AREA CALCULATION NOTES:**

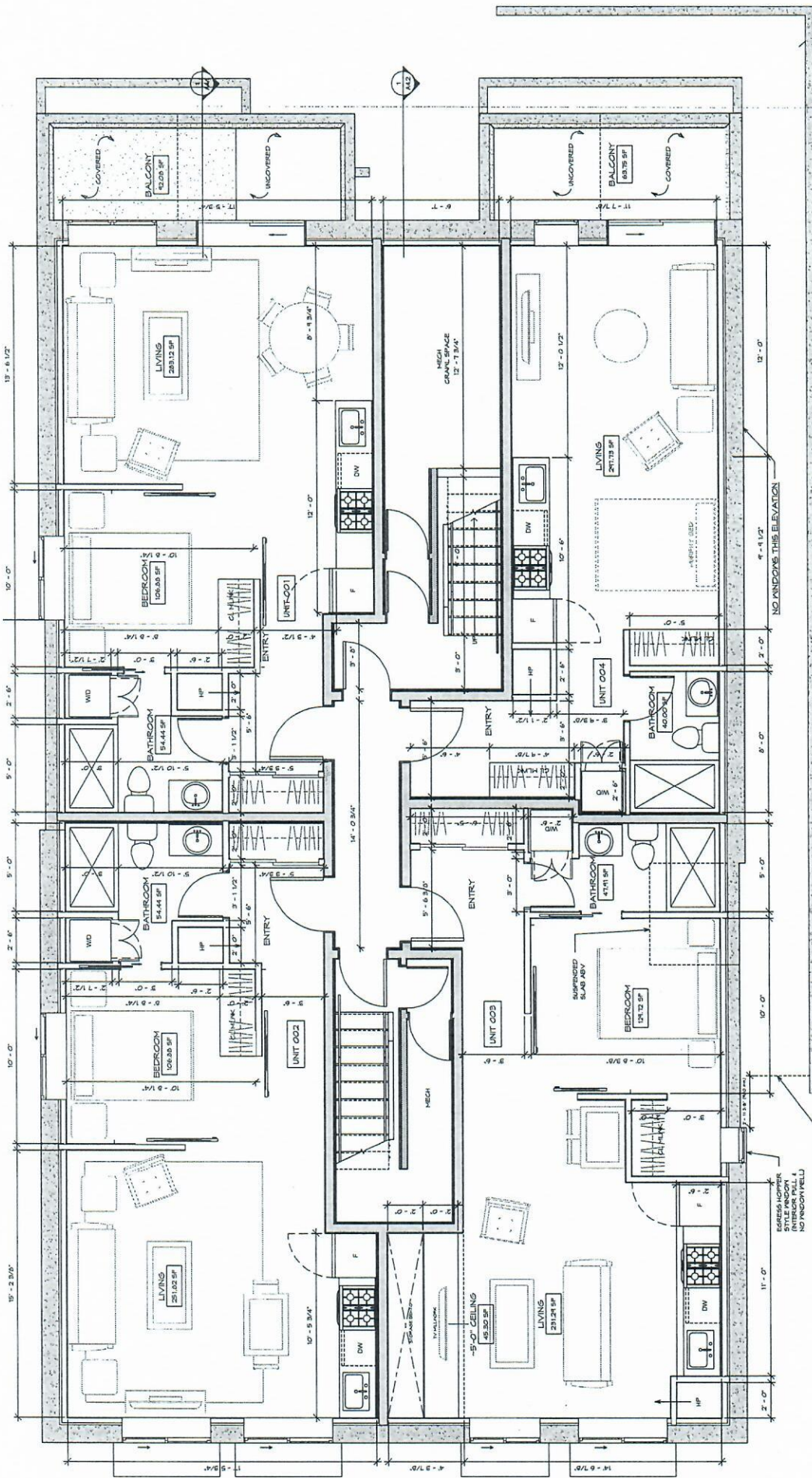
- FROM FINISHED FACE OF EXTERIOR WALLS
- FROM CENTERLINE OF INTERIOR FIRE SEPARATION WALLS
- BALCONIES NOT INCLUDED IN UNIT OR OVERALL AREAS

**AREA PLANS 2  
370 ATHLONE AVE**

FEB 13 2024  
SCALE: 3/16" = 1'-0"  
A1.1  
GRANT  
HENLEY

PRELIMINARY - NOT FOR CONSTRUCTION





**BUILDING AREA EFFICIENCY**

CIRCULATION	1403.51 SF	14.0%
LANDING	1403.91 SF	14.0%
TOTAL	10202.41 SF	100.0%

CONSTRUCTION LEADER  
TYPICAL WALL (WOOD STUD)  
PRE SEPARATOR (WOOD STUD)  
PRE SEPARATOR (STEEL STUD)

**BASEMENT**

UNIT 000	1 BEDROOM / 1 BATH	545.6 SF	25%
UNIT 001	1 BEDROOM / 1 BATH	540.0 SF	23%
UNIT 002	1 BEDROOM / 1 BATH	532.9 SF	22%
UNIT 003	1 BEDROOM / 1 BATH	422.0 SF	17%
UNIT 004	STUDIO / 1 BATH	2045.8 SF	82%

**GROUND FLOOR**

UNIT 100	1 BEDROOM / 1 BATH (BF)	531.6 SF	21%
UNIT 201	2 BEDROOM / 1 BATH	670.2 SF	26%
UNIT 202	1 BEDROOM / 1 BATH	571.4 SF	23%
UNIT 203	1 BEDROOM / 1 BATH	571.5 SF	23%
UNIT 204	STUDIO / 1 BATH	411.6 SF	16%
TOTAL		2282.7 SF	84%

**SECOND FLOOR**

UNIT 300	2 BEDROOM / 1 BATH	670.2 SF	26%
UNIT 301	2 BEDROOM / 1 BATH	644.6 SF	25%
UNIT 302	1 BEDROOM / 1 BATH	571.5 SF	23%
UNIT 303	1 BEDROOM / 1 BATH	426.3 SF	17%
UNIT 304	STUDIO / 1 BATH	2300.2 SF	50%

**THIRD FLOOR**

UNIT 400	2 BEDROOM / 1 BATH	670.2 SF	26%
UNIT 401	2 BEDROOM / 1 BATH	644.6 SF	25%
UNIT 402	1 BEDROOM / 1 BATH	571.5 SF	23%
UNIT 403	1 BEDROOM / 1 BATH	426.3 SF	17%
UNIT 404	STUDIO / 1 BATH	2300.2 SF	50%

**BASEMENT**

UNIT 000	1 BEDROOM / 1 BATH	545.6 SF	15%
UNIT 001	1 BEDROOM / 1 BATH	540.0 SF	15%
UNIT 002	1 BEDROOM / 1 BATH	532.9 SF	15%
UNIT 003	1 BEDROOM / 1 BATH	422.0 SF	11%
UNIT 004	STUDIO / 1 BATH	2045.8 SF	82%

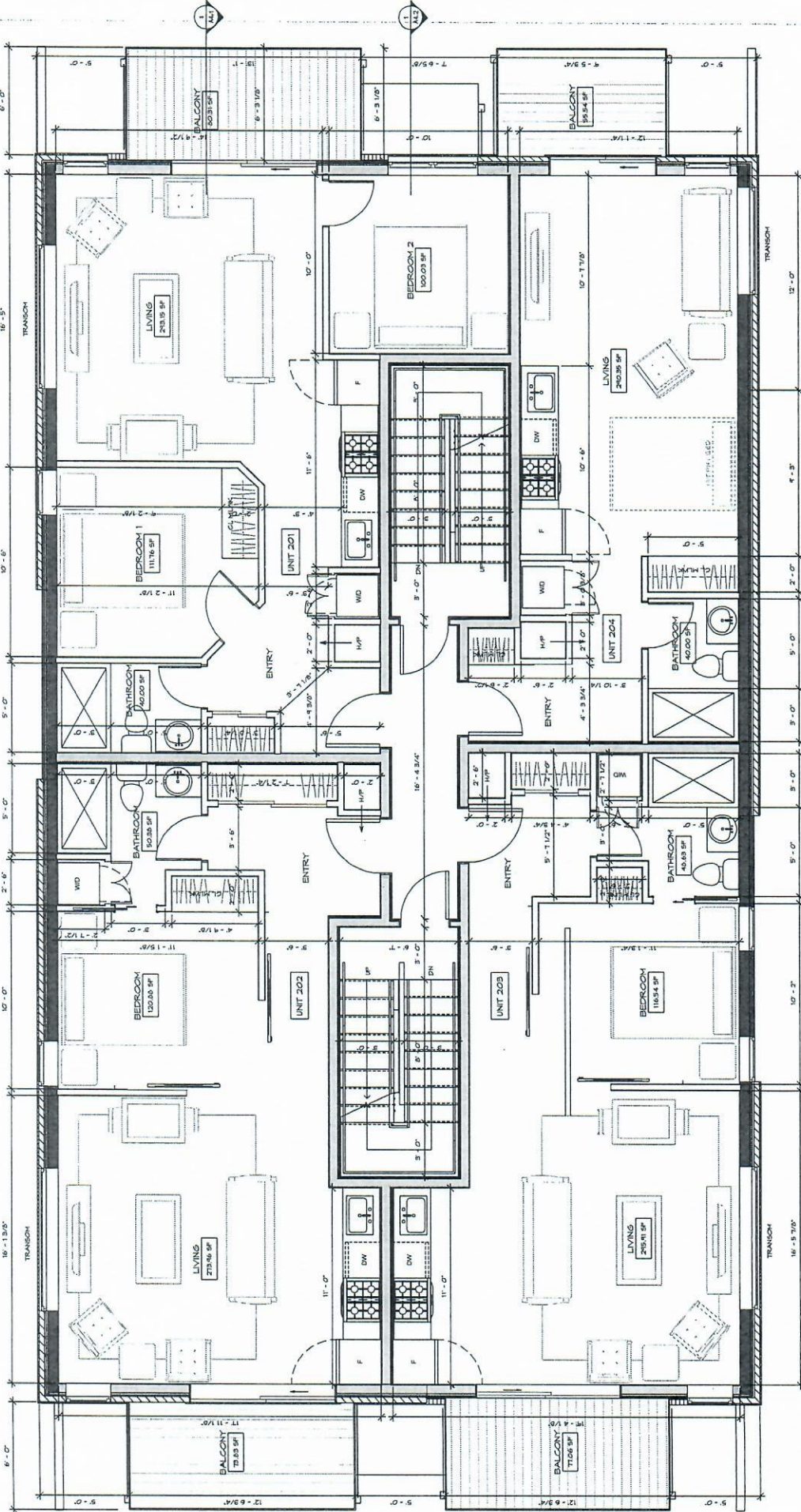
**THIRD FLOOR**

UNIT 300	2 BEDROOM / 1 BATH	670.2 SF	11%
UNIT 301	2 BEDROOM / 1 BATH	644.6 SF	11%
UNIT 302	1 BEDROOM / 1 BATH	571.5 SF	9%
UNIT 303	1 BEDROOM / 1 BATH	426.3 SF	6%
UNIT 304	STUDIO / 1 BATH	2300.2 SF	34%

NO WINDOWS THIS ELEVATION







**SECOND FLOOR**  
**370 ATHLONE AVE**  
 FEB 13 2024  
 SCALE: 3/8" = 1'-0"  
 HENNEY  
 PRELIMINARY - NOT FOR CONSTRUCTION

BASEMENT		GROUND FLOOR		SECOND FLOOR		THIRD FLOOR	
CIRCULATION	HALLWAY, STAIRS, CRAWL SPACE	CIRCULATION	HALLWAY, STAIRS, ENTRY	CIRCULATION	HALLWAY, STAIRS	CIRCULATION	HALLWAY, STAIRS
1420.51 SF	14.0%	483.1 SF	18%	284.5 SF	11%	257.0 SF	10%
8673.91 SF	56.0%	2691.9 SF	10%	264.5 SF	11%	247.0 SF	10%
<b>TOTAL</b>		<b>3173.4 SF</b>	<b>15%</b>	<b>547.5 SF</b>	<b>2%</b>	<b>504.0 SF</b>	<b>2%</b>

BASEMENT		GROUND FLOOR		SECOND FLOOR		THIRD FLOOR	
CIRCULATION	HALLWAY, STAIRS, CRAWL SPACE	CIRCULATION	HALLWAY, STAIRS, ENTRY	CIRCULATION	HALLWAY, STAIRS	CIRCULATION	HALLWAY, STAIRS
1420.51 SF	14.0%	483.1 SF	18%	284.5 SF	11%	257.0 SF	10%
8673.91 SF	56.0%	2691.9 SF	10%	264.5 SF	11%	247.0 SF	10%
<b>TOTAL</b>		<b>3173.4 SF</b>	<b>15%</b>	<b>547.5 SF</b>	<b>2%</b>	<b>504.0 SF</b>	<b>2%</b>

BASEMENT		GROUND FLOOR		SECOND FLOOR		THIRD FLOOR	
CIRCULATION	HALLWAY, STAIRS, CRAWL SPACE	CIRCULATION	HALLWAY, STAIRS, ENTRY	CIRCULATION	HALLWAY, STAIRS	CIRCULATION	HALLWAY, STAIRS
1420.51 SF	14.0%	483.1 SF	18%	284.5 SF	11%	257.0 SF	10%
8673.91 SF	56.0%	2691.9 SF	10%	264.5 SF	11%	247.0 SF	10%
<b>TOTAL</b>		<b>3173.4 SF</b>	<b>15%</b>	<b>547.5 SF</b>	<b>2%</b>	<b>504.0 SF</b>	<b>2%</b>

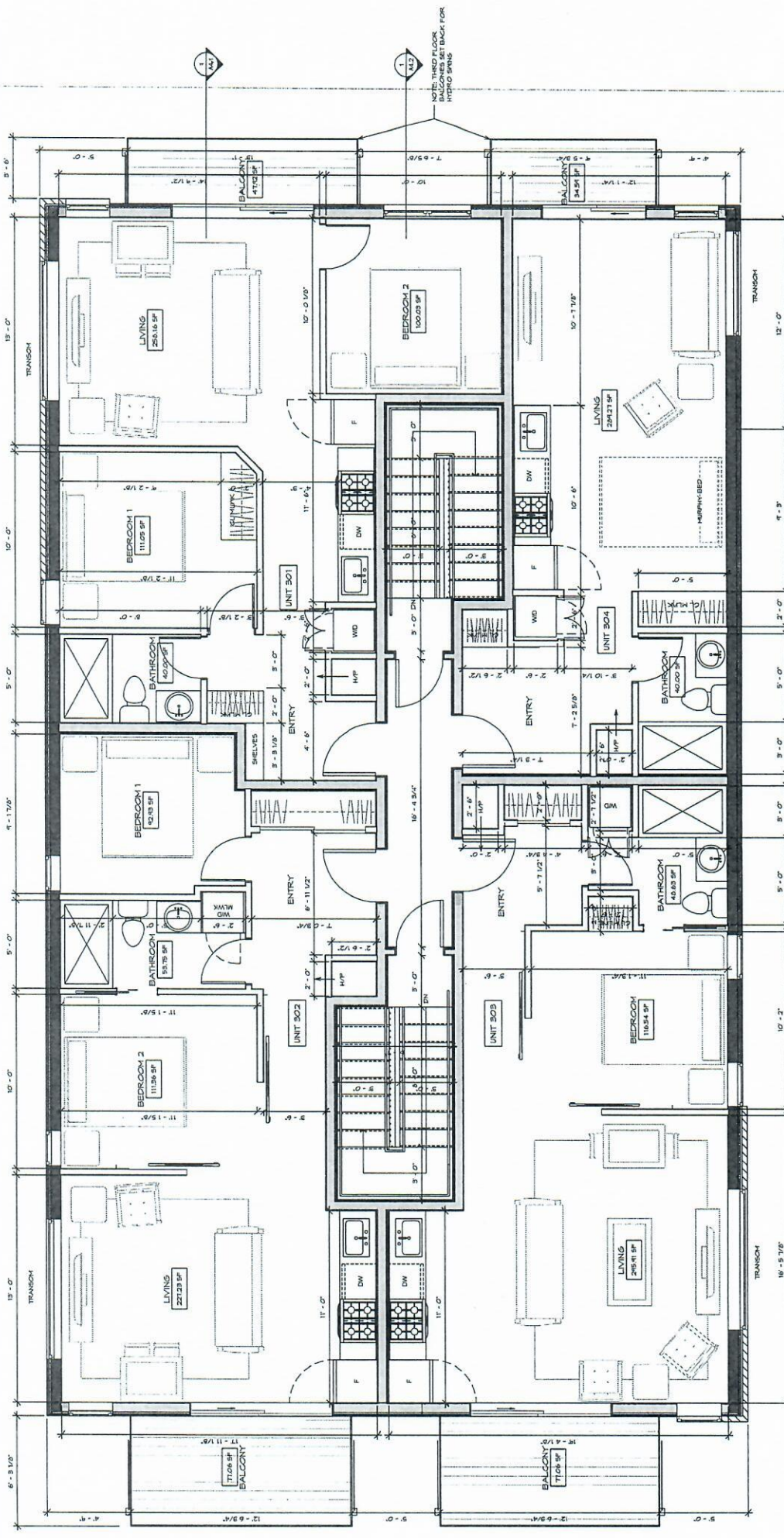
BASEMENT		GROUND FLOOR		SECOND FLOOR		THIRD FLOOR	
CIRCULATION	HALLWAY, STAIRS, CRAWL SPACE	CIRCULATION	HALLWAY, STAIRS, ENTRY	CIRCULATION	HALLWAY, STAIRS	CIRCULATION	HALLWAY, STAIRS
1420.51 SF	14.0%	483.1 SF	18%	284.5 SF	11%	257.0 SF	10%
8673.91 SF	56.0%	2691.9 SF	10%	264.5 SF	11%	247.0 SF	10%
<b>TOTAL</b>		<b>3173.4 SF</b>	<b>15%</b>	<b>547.5 SF</b>	<b>2%</b>	<b>504.0 SF</b>	<b>2%</b>

BASEMENT		GROUND FLOOR		SECOND FLOOR		THIRD FLOOR	
CIRCULATION	HALLWAY, STAIRS, CRAWL SPACE	CIRCULATION	HALLWAY, STAIRS, ENTRY	CIRCULATION	HALLWAY, STAIRS	CIRCULATION	HALLWAY, STAIRS
1420.51 SF	14.0%	483.1 SF	18%	284.5 SF	11%	257.0 SF	10%
8673.91 SF	56.0%	2691.9 SF	10%	264.5 SF	11%	247.0 SF	10%
<b>TOTAL</b>		<b>3173.4 SF</b>	<b>15%</b>	<b>547.5 SF</b>	<b>2%</b>	<b>504.0 SF</b>	<b>2%</b>

**BUILDING AREA EFFICIENCY**

CONSTRUCTION/USE:

- TYPICAL WALL (WOOD STUD)
- PRE-SEPARATION (WOOD STUD)
- PRE-SEPARATION (SHEEL STUD)



**THIRD FLOOR**  
**370 ATHLONE AVE**  
 FEB 13 2024  
 SCALE: 3/8" = 1'-0"  
 NOTE: SEE PLAN FOR UNIT  
**ARENLEY**  
 PRELIMINARY, NOT FOR CONSTRUCTION

**THIRD FLOOR**

CIRCULATION	HALLWAY	STAIRS	100%
300	267.0 SF	267.0 SF	100%

**DWELLING**

UNIT	1	2	3	4
UNIT 301	631.9 SF	644.6 SF	591.5 SF	426.3 SF
UNIT 302	670.2 SF	571.4 SF	541.5 SF	411.6 SF
UNIT 303	670.2 SF	571.4 SF	541.5 SF	411.6 SF
UNIT 304	2892.1 SF	2892.1 SF	2892.1 SF	2892.1 SF

**SECOND FLOOR**

CIRCULATION	HALLWAY	STAIRS	100%
200	204.5 SF	204.5 SF	11%

**DWELLING**

UNIT	1	2	3	4
UNIT 201	670.2 SF	571.4 SF	541.5 SF	411.6 SF
UNIT 202	670.2 SF	571.4 SF	541.5 SF	411.6 SF
UNIT 203	670.2 SF	571.4 SF	541.5 SF	411.6 SF
UNIT 204	2892.1 SF	2892.1 SF	2892.1 SF	2892.1 SF

**GROUND FLOOR**

CIRCULATION	HALLWAY	STAIRS	ENTRY	100%
100	493.1 SF	493.1 SF	493.1 SF	19%

**DWELLING**

UNIT	01	02	03	04
UNIT 01	531.6 SF	613.3 SF	482.6 SF	2021.2 SF
UNIT 02	531.6 SF	613.3 SF	482.6 SF	2021.2 SF
UNIT 03	531.6 SF	613.3 SF	482.6 SF	2021.2 SF
UNIT 04	2021.2 SF	2021.2 SF	2021.2 SF	2021.2 SF

**BASEMENT**

CIRCULATION	HALLWAY	STAIRS	CRAVL SPACE	15%
000	579.4 SF	579.4 SF	579.4 SF	15%

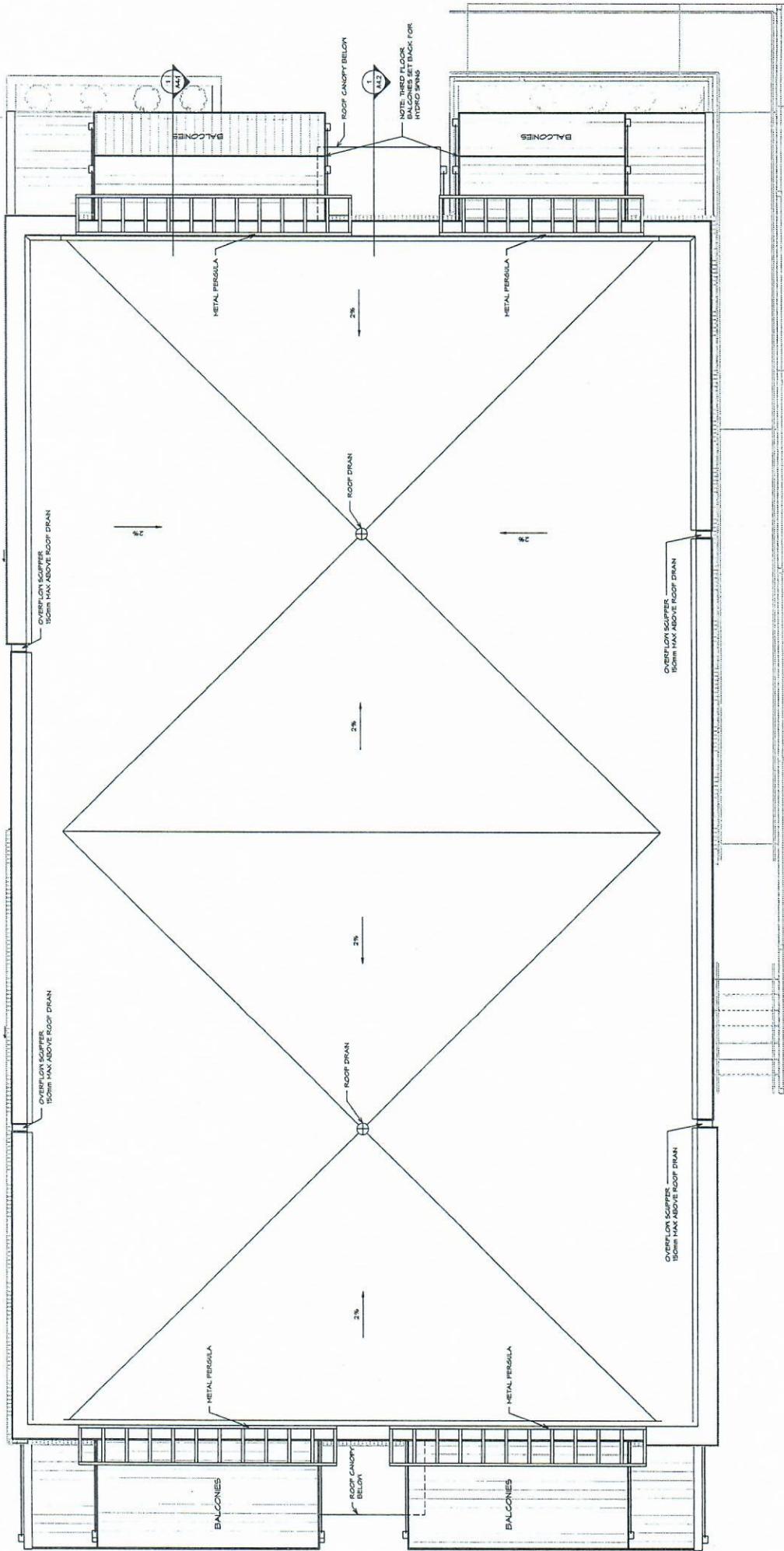
**DWELLING**

UNIT	001	002	003	004
UNIT 001	545.6 SF	540.0 SF	556.3 SF	423.0 SF
UNIT 002	545.6 SF	540.0 SF	556.3 SF	423.0 SF
UNIT 003	545.6 SF	540.0 SF	556.3 SF	423.0 SF
UNIT 004	2045.8 SF	2045.8 SF	2045.8 SF	2045.8 SF

**BUILDING AREA EFFICIENCY**

CIRCULATION	1403.51 SF	14.0%
DWELLING	8713.91 SF	86.0%
TOTAL	10029.41 SF	

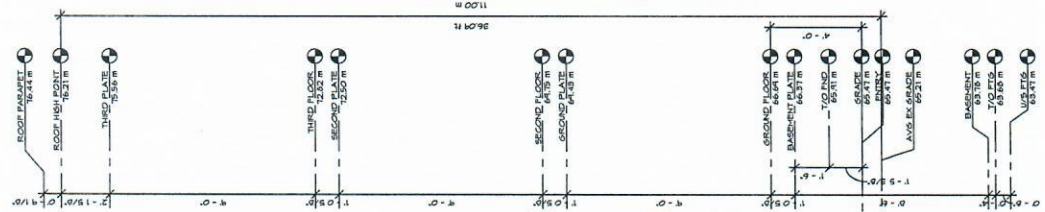
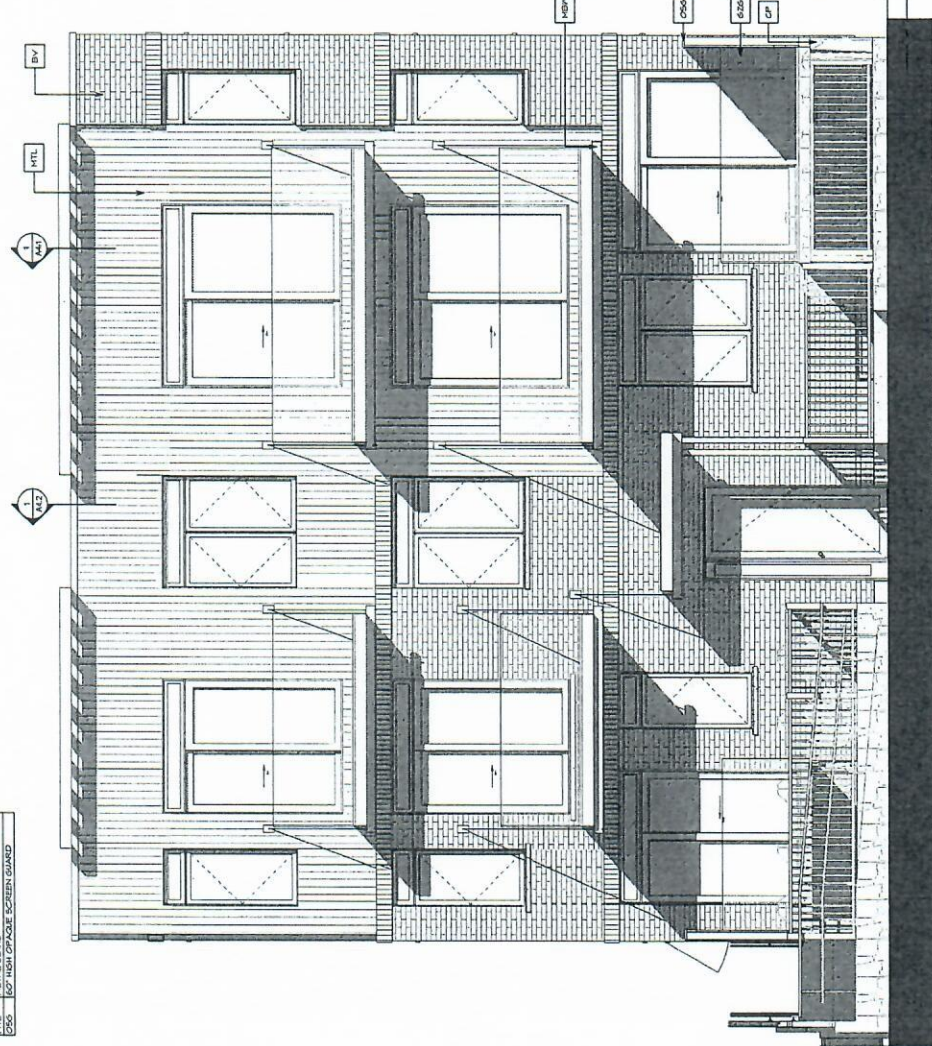
GENERAL LICENSE  
 TYPICAL FULL (WOOD STUD)  
 PRE SEPARATION (WOOD STUD)  
 PRE SEPARATION (STEEL STUD)



**ROOF PLAN**  
**370 ATHLONE AVE**

FEB 13 2024  
 SCALE: 3/8" = 1'-0"  
 100% MAX ABOVE FLOOR FIN.  
 A2.4  
 GRANLEY  
 HENLEY &  
 PRELIMINARY. NOT FOR CONSTRUCTION.

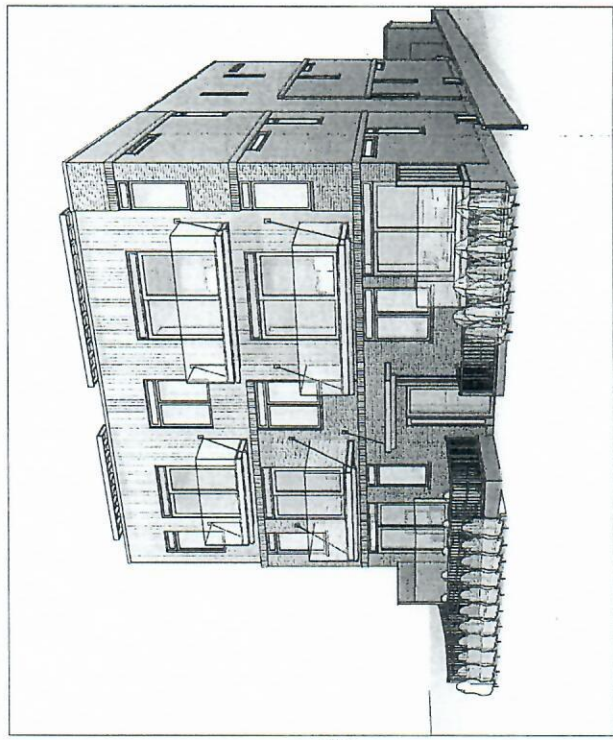
MATERIALS	
01	BRICK - COMMON
02	CONCRETE PARAPETS
03	HANDERAIL FINISHING BY JAMES HARZIE
04	4" X 4" FRAMED BALCONY GYM W/RE SUPPORT 2ND AND 3RD FLOOR
05	6" X 6" TYPICAL SCREEN GUARD



WALL/WINDOW RATIO	
ELEVATION	MAX RATIO
FRONT	5.10:14.41(10.2)
LEFT	1.0:1.0
REAR	1.0:1.0
RIGHT	1.0:1.0
TOTAL	1.0:1.0

EXPOSED BUILDING FACE	WIND	SETBACK	MAX ESD	MAX RATIO	CONSTRUCTION
FRONT	40.14%	14.22 FT	218.95 SF	5.10:14.41(10.2)	CONSTRUCTION 1
LEFT	5.47%	1.50 FT	16.10 SF	1%	MIN. CLADDING PERMITTED, 45 MIN PER
REAR	44.71%	1.50 FT	459.41 SF	1%	MIN. CLADDING PERMITTED, 45 MIN PER
RIGHT	1.34%	1.20 FT	16.10 SF	1%	MIN. CLADDING PERMITTED, 45 MIN PER
TOTAL	113.67%				NON-CONVERTIBLE CONSTRUCTION



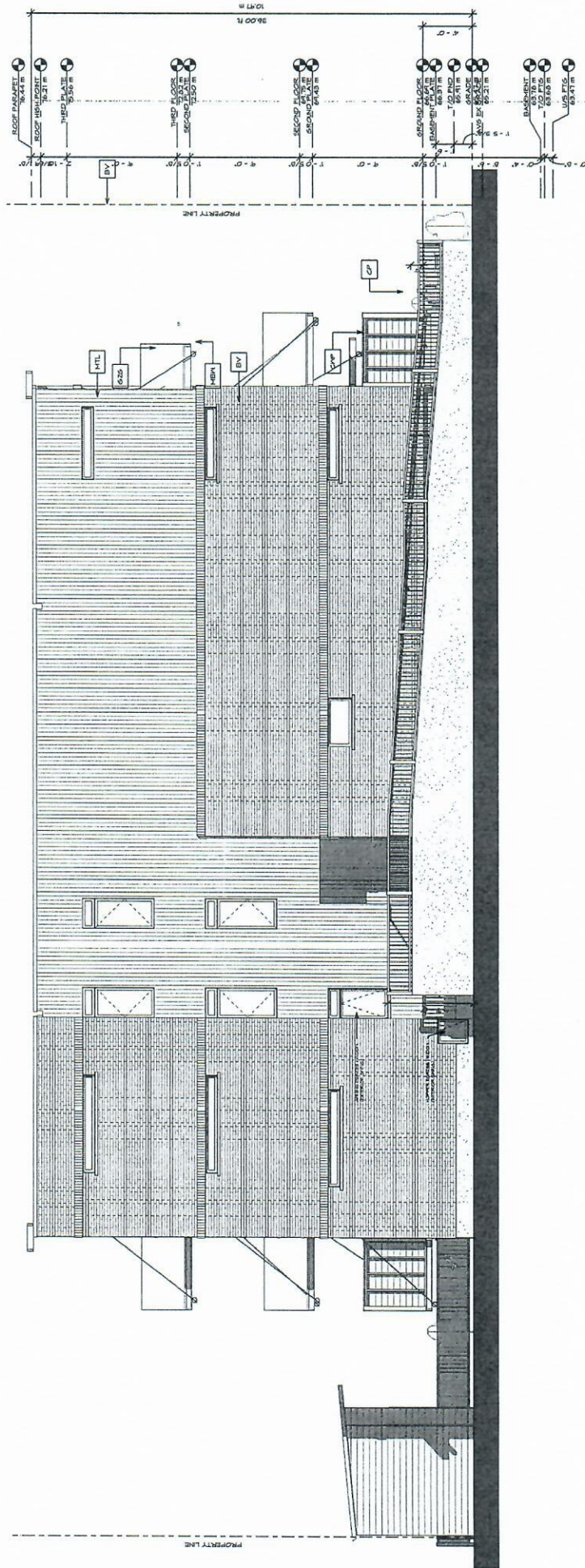
FRONT ELEVATION  
370 ATHLONE AVE

FEB 13 2024  
SCALE: 3/8" = 1'-0"  
PREPARED BY: GRANT HENLEY  
PRELIMINARY - NOT FOR CONSTRUCTION

MATERIALS	
BY	BRICK VENEER
CP	CONCRETE PARAPETS
GP	GRANITE PANELED
HA	HANDRAILED
MB	METAL FRAMED BALCONY
MT	METAL TRIM
SP	SPRINKLER
ST	STEEL
SS	STAINLESS STEEL
TR	TRIM
WC	WOOD CLADDING
WS	WOOD SCREEN GUARD

WALL/WINDOW RATIO		MAX GROSS FLOOR AREA		MAX GROSS FLOOR AREA		MAX GROSS FLOOR AREA		MAX RATIO		CONSTRUCTION		
ELEVATION	FRONT	REAR	LEFT	RIGHT	FRONT	REAR	LEFT	RIGHT	FRONT	REAR	LEFT	RIGHT
FRONT	153,221 SF	153,245 SF	153,245 SF	153,245 SF	40.14%	40.14%	40.14%	40.14%	15,014.41(16)	15,014.41(16)	15,014.41(16)	15,014.41(16)
REAR	154,200 SF	154,200 SF	154,200 SF	154,200 SF	3.47%	3.47%	3.47%	3.47%	19,500 SF	19,500 SF	19,500 SF	19,500 SF
LEFT	154,919 SF	154,919 SF	154,919 SF	154,919 SF	44.31%	44.31%	44.31%	44.31%	6,094.15 SF	6,094.15 SF	6,094.15 SF	6,094.15 SF
RIGHT	147,500 SF	147,500 SF	147,500 SF	147,500 SF	1.34%	1.34%	1.34%	1.34%	15,500 SF	15,500 SF	15,500 SF	15,500 SF
TOTAL	153,221 SF	153,245 SF	153,245 SF	153,245 SF	15.33%	15.33%	15.33%	15.33%				

SCALE: 1/8" = 1'-0" (VERTICAL) 1/4" = 1'-0" (HORIZONTAL)



LEFT ELEVATION  
370 ATHLONE AVE

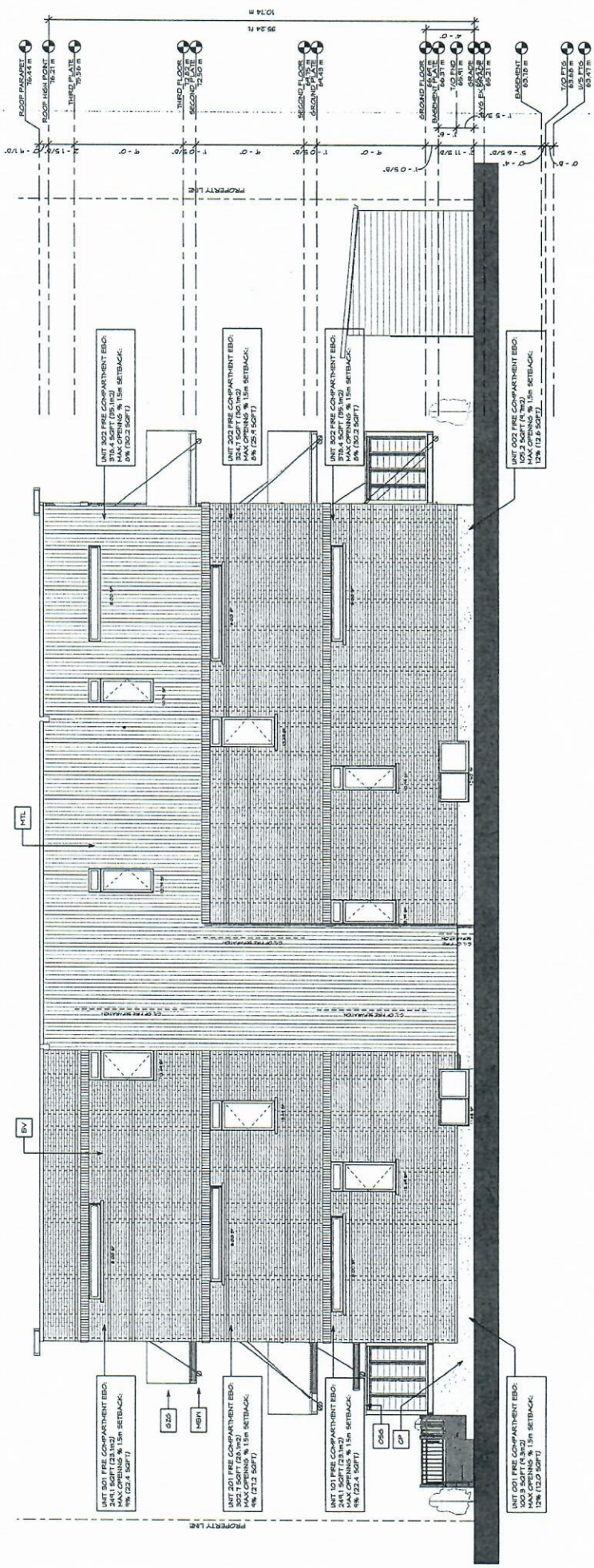
FEB 13 2024  
SCALE: 1/8" = 1'-0"  
DATE: 02/13/2024  
PREPARED BY: JAMES HANDE  
A3.2  
GRANT & HENLEY INC.  
PRELIMINARY - NOT FOR CONSTRUCTION



MATERIALS	
BR	BRICK, VARIER
CON	CONCRETE, FANDORIS
GL	GLASS, CLEAR
GR	GRANITE, JANE, SENSE BY JAMES UNDEE
CP	CORNER, METAL, FRAMED BALCONY GUYWIRE
MR	METAL, FRAMED BALCONY GUYWIRE
SP	SUPPORT, 2ND AND 3RD FLOOR
MTL	METAL, HIGH CAPACITY SCREEN GUARD
CS	CAST

ELEVATION	UNPROTECTED EXPOSED BUILDING FACE	RATIO	SETBACK	MAX EBO	MAX EBO	MAX EBO	CONSTRUCTION
FRONT	132,822 SF	40.13%	14.22 R	132,822 SF	218,935 SF	410,144 (102)	CONSTRUCTION CLADDING PERMITTED, 48 HMT PER MIN
LEFT	138,252 SF	25.03%	5.47%	151,600 SF	151,600 SF	151,600 SF	CONSTRUCTION PERMITTED, 48 HMT PER MIN
REAR	148,494 SF	32.26%	44.74%	252,415 SF	169,441 SF	169,441 SF	CONSTRUCTION PERMITTED, 48 HMT PER MIN
RIGHT	194,502 SF	33.00%	13.44%	161,600 SF	15,500 SF	161,600 SF	CONSTRUCTION PERMITTED, 48 HMT PER MIN
TOTAL	403,910 SF	32.13%	14.55%				

\* CALCULATED BY FIRE COMPARTMENT EBO PER 4.10.4.1 (1) PER 4.10.4.1 (2) PER 4.10.4.1 (3)



**RIGHT ELEVATION**  
370 ATHLONE AVE

FEB 13 2024  
SCALE: 1/8" = 1'-0"  
A3.4  
HENLEY  
PRELIMINARY, NOT FOR CONSTRUCTION







**ATTACHMENT 2 : WATER BOUNDARY CONDITIONS E-MAIL**

## Mineault-Guitard, Alexandre

---

**From:** Whelan, Amy <amy.whelan@ottawa.ca>  
**Sent:** Thursday, May 16, 2024 1:49 PM  
**To:** TL MaK  
**Cc:** Mineault-Guitard, Alexandre  
**Subject:** RE: 370 Athlone Avenue - Water Boundary Conditions Request

Hi Tony,

Water resources team has confirmed that the hydrants identified in the multi-hydrant analysis can provide the fire flow of 13,000L/min. You may use this email as confirmation from the City of Ottawa that the hydrants you identified in the multi-hydrant analysis can provide the required fire flow. Please use the results from the initial boundary condition request for the serviceability report.

The following are boundary conditions, HGL, for hydraulic analysis at 370 Athlone Avenue (zone 1W) assumed to be connected to the 152mm watermain on Athlone Avenue (see attached PDF for location).

Minimum HGL: 108.7 m

Maximum HGL: 114.9 m

Available Fire Flow at 20 (psi): 86.0 L/s, assuming ground elevation of 65.2 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.*

Kind regards,

Amy

**From:** TL MaK <tlmakecl@bellnet.ca>  
**Sent:** May 15, 2024 2:19 PM  
**To:** Whelan, Amy <amy.whelan@ottawa.ca>  
**Cc:** 'Mineault-Guitard, Alexandre' <Alexandre.Mineault-Guitard@stantec.com>  
**Subject:** RE: 370 Athlone Avenue - Water Boundary Conditions Request

**CAUTION: This email originated from an External Sender. Please do not click links or open attachments unless you recognize the source.**



Boundary Conditions for 370 Athlone Avenue

**Legend**

Private

Public

**ATTACHMENT 3 : FUS FIRE FLOW CALCULATION**



## FUS Fire Flow Calculation - Long Method

Calculations based on: "Water Supply for Public Fire Protection" by Fire Underwriters' Survey, 2020

Stantec Project #: 163401084

Project Name: 370 Athelone Ave. - Potable Water Serviceability Assessment Fire Flow Calculation #: 1

Date: March 11, 2024

Building Type/Description/Name: Residential

Data inputted by: Hamidreza Mohabbat, M.A.Sc.

Data reviewed by: Alexandre Mineault-Guitard, P.Eng.

Notes: Wood frame; multi-unit 3 storeys building with a basement 50% below grade. Gross floor area of 8,670 sqf. Not sprinklered. Calculations based on the updated plans (received on Feb 13, 2024)

Fire Underwriters Survey Determination of Required Fire Flow - Long Method										
Step	Task	Term	Options	Multiplier Associated with Option	Choose:	Value Used	Unit	Total Fire Flow (L/min)		
1	Choose Frame Used for Construction of Unit	Coefficient related to type of construction (C)	Framing Material						m	
			Type V - Wood Frame	1.5	Type V - Wood Frame	1.5				
			Type IV-A - Mass Timber	0.8						
			Type IV-B - Mass Timber	0.9						
			Type IV-C - Mass Timber	1						
			Type IV-D - Mass Timber	1.5						
			Type III - Ordinary construction	1						
			Type II - Non-combustible construction	0.8						
Type I - Fire resistive construction	0.6									
2	Choose Type of Housing (if TH, Enter Number of Units Per TH Block)	Type of Housing	Floor Space Area						Units	
			Single Family	1	Other (Comm, Ind, Apt etc.)	16				
			Townhouse - indicate # of units	0						
			Other (Comm, Ind, Apt etc.)	16						
2.2	# of Storeys	Number of Floors/Storeys in the Unit (do not include basement if 50% below grade):	3	3				Storeys		
3	Enter Ground Floor Area of One Unit	Average Floor Area (A) based on total floor area of all floors for one unit (non-fire resistive construction):	2,555	2,555	Area in Square Metres (m <sup>2</sup> )					
3.1	Obtain Total Effective Building Area	Total Effective Building Area (# of Storeys x # of Units (if single family or townhouse) x Average Floor Area):	712	712						
4	Obtain Required Fire Flow without Reductions	Required Fire Flow (without reductions or increases per FUS) ( $F = 220 \cdot C \cdot \sqrt{A}$ ) Round to nearest 1,000 L/min						9,000		
5	Apply Factors Affecting Burning	Reductions/Increases Due to Factors Affecting Burning								
5.1	Choose Combustibility of Building Contents	Occupancy Content Hazard Reduction or Surcharge	Non-combustible	-0.25	Limited combustible	-0.15	N/A	7,650		
			Limited combustible	-0.15						
			Combustible	0						
			Free burning	0.15						
			Rapid burning	0.25						
5.2	Choose Reduction Due to Presence of Sprinklers	Sprinkler Reduction	Adequate Sprinkler conforms to NFPA13	-0.3	None	0	N/A	0		
			None	0						
		Water Supply Credit	Water supply is standard for sprinkler and fire dept. hose line	-0.1	Water supply is not standard or N/A	0	N/A	0		
			Water supply is not standard or N/A	0						
Sprinkler Supervision Credit	Sprinkler system is fully supervised	-0.1	Sprinkler not fully supervised or N/A	0	N/A	0				
	Sprinkler not fully supervised or N/A	0								
5.3	Choose Presence of Sprinklers for Exposures within 30m	Sprinkler Conforms to NFPA13	Adequate sprinkler for exposures conforms to NFPA13		None for exposures		N/A	0		
			None for exposures							
		Water Supply	Water supply is standard for sprinkler and fire dept. hose line of exposures		Water supply is not standard or N/A for exposures	0	N/A			
			Water supply is not standard or N/A for exposures							
		Sprinkler Supervision	Sprinkler system of exposures is fully supervised		Sprinkler not fully supervised or N/A for exposures		N/A			
			Sprinkler not fully supervised or N/A for exposures							
5.4	Choose Separation Distance Between Units	Exposure Distance Between Units	Front Yard	20.1 to 30.1m	0.1	0.75	m	5,738		
			Right Side	0 to 3.0m	0.25					
			Rear Yard	10.1 to 20.0m	0.15					
			Left Side	0 to 3.0m	0.25					
6	Obtain Required Fire Flow, Duration & Volume	Total Required Fire Flow, rounded to nearest 1,000 L/min, with max/min limits applied:						13,000		
		Total Required Fire Flow (above) in L/s:						217		
		Required Duration of Fire Flow (hrs)						2.75		
		Required Volume of Fire Flow (m <sup>3</sup> )						2,145		

**ATTACHMENT 4 : FIGURE 1 – FUS EXPOSURE DISTANCES**



**Figure 1: FUS Exposure Distances (Property Line to Adjacent Buildings)**

Source: geoOttawa 2024; Contains information licensed under the Open Government Licence – City of Ottawa.



**ATTACHMENT 5 : SUPPORTING HYDRAULIC CALCULATIONS**



### Supporting Hydraulic Calculations

Stantec Project #: 163401084

Project Name: 370 Athelone Avenue

Date: May 16, 2024

Data inputted by: Alexandre Mineault-Guitard, M.A.Sc., P.Eng.

Data reviewed by: Alexandre Mineault-Guitard, M.A.Sc., P.Eng.

#### Boundary Conditions provided by the City:

Scenario 1: Peak Hour (Min HGL): 108.7 m;

Scenario 2: Average Day (Max HGL): 114.9 m; and

Scenario 3: Maximum Day plus Fire Flow: 79.3 m.

#### Sample Calculations

$$HGL (m) = hp + hz \quad (1)$$

where:  $hp$  = Pressure Head (m); and  $hz$  = Elevation Head (m), estimated from topography.

For Scenario 1, we have:

$$HGL(m) = 108.7 \text{ and } hz (m) = 65.2.$$

Rearranging Equation 1, we can calculate the Pressure Head ( $hp$ ) as follow:

$$hp (m) = HGL - hz$$

$$\therefore hp = 108.7 - 65.2 \text{ m} = 43.5 \text{ m}.$$

To convert from Pressure Head (m) to a pressure value (kPa), the following equation can be used:

$$P (kPa) = (\rho * g * hp) / 1000 \quad (2)$$

where:  $\rho$  = density of water = 1000 kg/m<sup>3</sup>; and  $g$  = gravitational acceleration = 9.81 m/s<sup>2</sup>.

Using Equation 2, we can calculate the Pressure Head ( $hp$ ) as follow:

$$P (kPa) = (1000 * 9.81 * 43.5) / 1000$$

$$\therefore P = 426 \text{ kPa}.$$

Considering that 1 kPa = 0.145 psi, the pressure under Scenario 1 is equal to:

$$P = 62 \text{ psi}.$$

Applying the same procedures, the pressures under Scenario 2 and Scenario 3 are calculated as follows:

Scenario 2:  $P = 71$  psi; and Scenario 3:  $P = 20$  psi.

To summarize:

Scenario 1: Minimum Pressure under Peak Hour Demand: 426 kPa (62 psi)
Scenario 2: Maximum Pressure under Average Day Demand: 487 kPa (71 psi)
Scenario 3: Minimum Pressure under Maximum Day + Fire Flow Demand: 138 kPa (20 psi)

**ATTACHMENT 6 : FIGURE 2 – HYDRANT SPACING**



**Figure 2: Hydrant Spacing**

Source: geoOttawa 2024; Contains information licensed under the Open Government License – City of Ottawa.

**PROPOSED**  
**THREE (3) STOREY APARTMENT BUILDING SITE**  
**LOT 75**  
**R-PLAN 263**  
**370 ATHLONE AVENUE**  
**CITY OF OTTAWA**

**APPENDIX E**  
**CITY OF OTTAWA**  
**SANITARY SEWER DESIGN SHEET**  
**SHEET No. 1 OF 1**



**PROPOSED  
THREE (3) STOREY APARTMENT BUILDING SITE  
LOT 75  
R-PLAN 263  
370 ATHLONE AVENUE  
CITY OF OTTAWA**

**APPENDIX F  
DEVELOPMENT SERVICING STUDY CHECKLIST SUMMARY**

## Servicing study guidelines for development applications

### 4. Development Servicing Study Checklist

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

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

#### 4.1 General Content

- Executive Summary (for larger reports only).
- Date and revision number of the report.
- Location map and plan showing municipal address, boundary, and layout of proposed development.
- Plan showing the site and location of all existing services.
- 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.
- Summary of Pre-consultation Meetings with City and other approval agencies.
- 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 defensible design criteria.
- Statement of objectives and servicing criteria.
- Identification of existing and proposed infrastructure available in the immediate area.
- 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).
- 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.
- 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.
- Proposed phasing of the development, if applicable.



- Reference to geotechnical studies and recommendations concerning servicing.
- 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

#### **4.2 Development Servicing Report: Water**

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

- 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.
- 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.
- Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.
- Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.

#### **4.3 Development Servicing Report: Wastewater**

- Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).
- Confirm consistency with Master Servicing Study and/or justifications for deviations.
- 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.
- Description of existing sanitary sewer available for discharge of wastewater from proposed development.
- 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)
- Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.
- Description of proposed sewer network including sewers, pumping stations, and forcemains.
- 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).
- Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.
- Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.
- Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.
- Special considerations such as contamination, corrosive environment etc.

#### 4.4 Development Servicing Report: Stormwater Checklist

- Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property)
- Analysis of available capacity in existing public infrastructure.
- A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.
- 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.
- Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.
- Description of the stormwater management concept with facility locations and descriptions with references and supporting information.
- Set-back from private sewage disposal systems.
- Watercourse and hazard lands setbacks.
- Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.
- Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.
- Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).
- Identification of watercourses within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.
- 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.
- Any proposed diversion of drainage catchment areas from one outlet to another.
- Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.
- 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.
- Identification of potential impacts to receiving watercourses
- Identification of municipal drains and related approval requirements.
- Descriptions of how the conveyance and storage capacity will be achieved for the development.
- 100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.

- Inclusion of hydraulic analysis including hydraulic grade line elevations.
- Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.
- 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.
- Identification of fill constraints related to floodplain and geotechnical investigation.

#### **4.5 Approval and Permit Requirements: Checklist**

The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development as well as the relevant issues affecting each approval. The approval and permitting shall include but not be limited to the following:

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

#### **4.6 Conclusion Checklist**

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