

Site Servicing & Storm Water Management Report

Six-Storey Residential on Holland 91-93 Holland Avenue

Ainley Group
Project No. 21007-1

Prepared for:
Nicholson Gluckstein

September 24, 2021



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1.0 INTRODUCTION

The Ainley Group has been retained by Nicholson Gluckstein to prepare a Site Servicing & Stormwater Management report addressing the Site Plan Approval process requirements of the City of Ottawa.

The subject site is located at 91-93 Holland Avenue approximately mid-way between Armstrong Street and Wellington Street West, on the east side of Holland Avenue. (See Key Map in Appendix A).

The subject site is currently two residential lots converted into commercial (i.e. restaurant) use, with a total site area of 0.072 ha. The proposed development will be a 6 storey (19.0m, 22.0m including roof top amenities) apartment building with a total combined floor area of approx. 2,700sq.m and 32 residential units. The 32 units will be divided into one-bedroom and two-bedroom apartments. Also currently proposed is one small commercial space of 96sq.m (i.e. which could become a residential unit). Therefore, for this report, we have simply added it to residential unit count for a total of 33 units overall as this would be the most conservative approach.

This report will address the sanitary, storm, and water servicing requirements for the proposed 6 storey apartment building as well as the stormwater management requirements.

2.0 MUNICIPAL DRINKING & FIRE PROTECTION WATER SERVICES

Only one 150mm diameter water service is proposed to service the 6 storey apartment building off of the existing 403mm diameter watermain along Holland Avenue, since the average daily demand is less than 50cu.m/day (0.57 L/s). The proposed layout can be seen on drawing 21007–S1 in Appendix D.

Using the City of Ottawa guidelines, this report considers that there will be a population of 60 persons (i.e. using 1.8 persons per unit) at 350 L/person/day. Thus, the anticipated average daily demand for the 6 storey apartment building has been calculated at **0.24 L/s**. The anticipated maximum daily demand and maximum hourly daily demand (peak hour) based on average peaking factors (i.e. between 10 units and 50 units) from MOE Table 3.3 – Peaking Factors for Drinking-Water Systems Serving Fewer than 500 People will be **1.73 L/s** and **2.60 L/s** respectfully.

- Average Daily Demand: 60 persons X 350 L/person/day = 21,000 L/day = 0.24 L/s
- Max. Daily Demand: 0.24 L/s X 7.2 (average peaking factor of {9.5 + 4.9}/2) = 1.73 L/s
- Max. Hourly Daily Demand (Peak Hour): 0.24 L/s X 10.85 (average peaking factor of {14.3 + 7.4}/2) = 2.60L/s

The anticipated fire flow (based on the Fire Underwriters Survey - 1999) was calculated to be 8,000 L/min or **133 L/s**. A detailed calculation can be seen in Appendix B.

An existing fire hydrant is located along the east side of Holland Avenue directly in front of the proposed development. The location of the existing fire hydrant can be seen on drawing 21007–S1 in Appendix D.

A boundary condition analysis has been provided by the City of Ottawa. The results are as follows and can be seen in Appendix B:

Minimum HGL = 108.1m
Maximum HGL = 114.5m
Max Day + Fire Flow = 109.7m

Based on a ground elevation of 63.55m:

Minimum HGL = 63.3 psi
Maximum HGL = 72.4 psi
Max Day + Fire Flow = 65.6 psi

Ainley has reviewed the results of the City of Ottawa hydraulic analysis and find that they meet the requirements set out by the ODG for water distribution, as seen below:

- Normal operating pressure ranges between 50 psi and 80 psi under a condition of maximum daily flow.
- Under maximum hourly demand conditions, the pressures are not less than 40 psi.
- During periods of maximum day and fire flow demand, the residual pressure at any point in the distribution system shall not be less than 20 psi.
- The maximum pressure at any point in the distribution system in occupied areas outside of the public right-of-way shall not exceed 80 psi.
- The maximum pressure at any point in the distribution system in unoccupied areas shall not exceed 100 psi.

3.0 SANITARY SEWER SERVICES

A 150mm diameter sanitary service is proposed to service the 6 storey apartment building off of the existing 600mm diameter sanitary sewer along Holland Avenue. The proposed layout can be seen on

drawing 21007–S1 in Appendix D.

Based on the proposed population of 60 people (i.e. 33 units at 1.8 persons per unit) at 350 L/person/day, the anticipated peak sanitary flow has been calculated at **0.99 L/s**.

$$60 \text{ persons} \times 350 \text{ L/person/day} = 21,000 \text{ L/day} = 0.24 \text{ L/s}$$

$$0.24 \text{ L/s} \times 4.0 \text{ (peaking factor)} + (0.07 \text{ ha} \times 0.28 \text{ L/s/gross ha}) = 0.99 \text{ L/s}$$

A peaking factor of 4.0 was used for this area and the standard 0.28 L/s/gross ha was used for infiltration allowance.

Due to the small nature of this project, we don't anticipate that the negligible increase in sanitary flow will adversely affect the capacity of the existing 600mm diameter sewer along Holland Ave.

4.0 DRAINAGE & STORM SEWER SYSTEM

With regards to stormwater management, we note that the site (i.e. based on the pre-consultation meeting which took place with the City of Ottawa) was to be controlled up to and including the 100 year storm event to a 2 year pre-development level.

Rational Method

$$Q = R \times A \times I \times N$$

Total Site Area	A =	0.072 hectares
Runoff Coefficient	R =	0.85 (actual)
	R =	0.50 (used)
Time of Concentration	T _c =	20 min
2 year Rainfall Intensity	I =	52.0 mm/hr

$$\begin{aligned} \text{2 year Pre-Development Flow:} \quad Q &= 0.50 \times 0.072 \times 52.0 \times 2.78 \\ Q &= 5.20 \text{ L/s} \end{aligned}$$

That being said, due to the nature of this project (i.e. building taking up most of the small site) and based on further discussion with the City of Ottawa, it was agreed that only the building would be controlled to the 2-year pre-development level and that the rest of the site would drain uncontrolled.

We note that in pre-development conditions, a good portion of the site (approx. 0.05ha of the total 0.07ha) drains towards the east (i.e. not towards the municipal right of way). Due to the existing topography, and the fact that an existing walkway (within a 2.44m easement) will be shared with the neighbouring property (i.e. 89 Holland Ave.), a small section of the proposed redeveloped area (drainage area A2) will drain uncontrolled to the east as per the existing drainage pattern. As well, a small section of the proposed redeveloped area (drainage area A3) will drain uncontrolled to the west towards Holland Avenue. Drainage area A1 (proposed building) will be controlled to the 2-year pre-development level as noted previously.

Thus, the total 100 year Post-Development release rate for the building shall be less or equal to **5.20 L/s**.

This has been achieved by providing a storm water tank (i.e. cistern) inside the building. (Refer to the Storm Water Management Plan Dwg. 21007 – SWM1” in Appendix ‘D’)

Storm water tank storage requirements including maximum release rate has been determined for the building and shall be implemented by the Mechanical Engineer as follows:

Storm Water Tank 100 year Storage volume requirements = **18.8 cu.m**
Storm Water Tank Controlled Release Rate = **5.0 L/s**

Storage volume requirements were determined by applying the 5-year and 100-year rainfall intensity values at 10-minute intervals until a peak storage volume was attained, (Refer to Storage tables 2 through 4 in Appendix ‘C’).

Table 1 “Stormwater Management Summary Sheet” in appendix ‘C’ summarizes the drainage areas, composite ‘C’ values, and controlled release rates. The resulting 100-year release rate from the building is **5.0 L/s**, which is less and/or equal to the allowable release rate of 5.20 L/s.

Based on the proposed site plan, and further to our discussion / correspondence with the RVCA, it was confirmed that no on-site stormwater quality requirements will be required for this site (please see attached correspondence / email in Appendix C).

Also, based on our review, it’s our understanding that the exemptions set out under Ontario Regulations 525/98 - Approval Exemptions are satisfied and that this project will not be subject to an Environmental Compliance Approval (ECA). Correspondence has been sent to the MECP to confirm

our above noted statement as requested by the City. It was noted that since the City of Ottawa participates in the ToR program, it's the Ministry's expectation that the ECA requirement determination would be completed by the City's review engineer/project manager. In situations where the review engineer/project manager is unsure of the requirements, it is expected that the City would contact MECP Ottawa District Office for clarification.

5.0 EROSION AND SEDIMENT CONTROL

Erosion and sediment control measures shall be implemented during construction to minimize the migration of sediments from the proposed construction. To accomplish this task, items such as silt fences, and geo-textile membranes shall be installed to capture sediment before it leaves the construction areas. In addition, all stockpiles shall be covered and located away from waterways and exposed areas and shall be vegetated as soon as possible. During construction, all erosion control features shall be maintained and repaired as necessary and adjacent roadways kept free of debris and sediment as required. A mud mat may be required on construction entrances to the site, depending on frequency of heavy vehicle travel and condition of the site.

(Refer to the Grading and Drainage Plan "Dwg. 21007 – GR1" in Appendix 'D').

6.0 CONCLUSION

1. The max daily and fire flow water demands for the site were calculated to be 1.73 L/s and 133 L/s respectfully. A building fire sprinkler system is anticipated in this development.
2. The peak wastewater flow for the site was calculated to be 0.99 L/s including the infiltration allowance.
3. The stormwater management measures proposed will result in a 100 year post-development release rate of 5.0 L/s, which is less/equal to the allowable release rate of 5.20 L/s. A storm water tank (i.e. cistern) will be constructed in the building to achieve the 100 year stormwater storage requirement of 18.8 cu.m.

We trust that this Site Servicing & Stormwater Management report meets all of your requirements. Should you have any questions or require further clarification, please do not hesitate to contact our office.

Sincerely,

Prepared by:

Reviewed by:

Ainley Graham and Associates Ltd.

Ainley Graham and Associates Ltd.



**Professional Engineers
Ontario** September 24, 2021
L i m i t e d L i c e n s e e

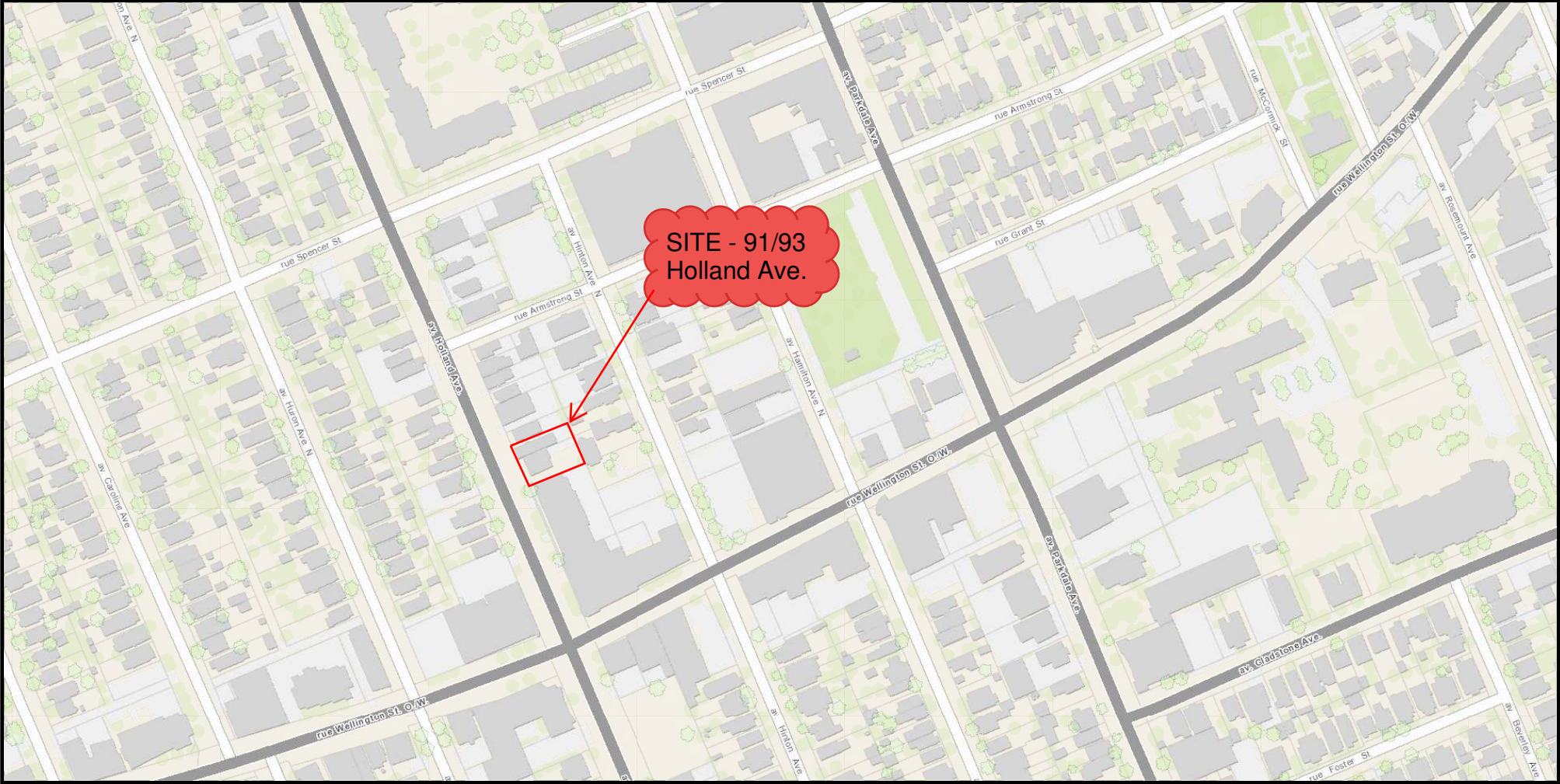
Name: J.W.XU
Number: 100171806 *J Xu*
Category: CIVIL: see limitation
Limitations:
This licence is subject to the limitations as detailed on the certificate.
Association of Professional Engineers of Ontario



Jiawu Xu, LEL, C.E.T.
Project Manager

Guy Ste-Croix, LEL, C.E.T., PMP
Vice President & Branch Manager

APPENDIX A



APPENDIX B

FUS Calculations

Six-Storey Residential on Holland / 91-93 Holland Avenue.

$$F = 220 \times C \times \sqrt{A}$$

Where $C = 0.6$ for fire-resistive construction (fully protected frame, floors, roof)

For fire-resistive building, consider the two largest adjoining floors plus 50 percent of each of any floors immediately above them up to eight, when the vertical openings are inadequately protected. If the vertical openings and exterior vertical communications are properly protected (one hour rating), consider only the area of the largest floor plus 25 percent of each of the two immediately adjoining floors.

We note the following statements will apply for this project / building:

- The exterior will only have a fire rating of 1 hour if close to an interior property line. The exterior wall against the street will not require a fire rating.

Therefore, it's our interpretation that the underlined requirement noted above shall apply for this project / building.

Floor area = 450 m²

$$A = (2 \times 450) + (0.5 \times 4 \times 450)$$

$$A = 1,800 \text{ m}^2$$

$$F = 220 \times 0.6 \times \sqrt{1,800}$$

$$F = 5,600 \text{ L/min}$$

$$F \sim 6,000 \text{ L/min}$$

FUS Reductions / Increases:

Occupancy

It is noted that 'Apartments' are examples of Low Hazard Occupancies.

Therefore, a "limited combustibility" reduction of 15% (900 L/min) will be applied.

$$F = 5,100 \text{ L/min}$$

Modifier for Sprinkler System

A conservative modifier of 25% will be applied under the assumption that the sprinkler system will conform to the current standards required by the NFPA. It is possible to increase this credit by either providing a standard water supply for both the system and fire department hose lines, and/or providing a fully supervised system.

$$M_1 = 1,275 \text{ L/min}$$

Modifier for Exposure

The proposed building will have the following approximate clearances to existing structures:

East: bet'w 3.1 and 10m	<i>20% increase</i>
West: bet'w 20.1 and 30m	<i>10% increase</i>
North: less than 3m	<i>25% increase</i>
South: less than 3m	<i>25% increase</i>
Total Increase:	<i>80%</i>

$$M_2 = 4,080 \text{ L/min}$$

The final fire flow, according to the FUS, will be the fire flow as a result of the Occupancy reduction (5,100 L/s), minus the value M_1 , and plus the value M_2 .

$$F = 5,100 \text{ L/min} - 1,275 \text{ L/min} + 4,080 \text{ L/min}$$

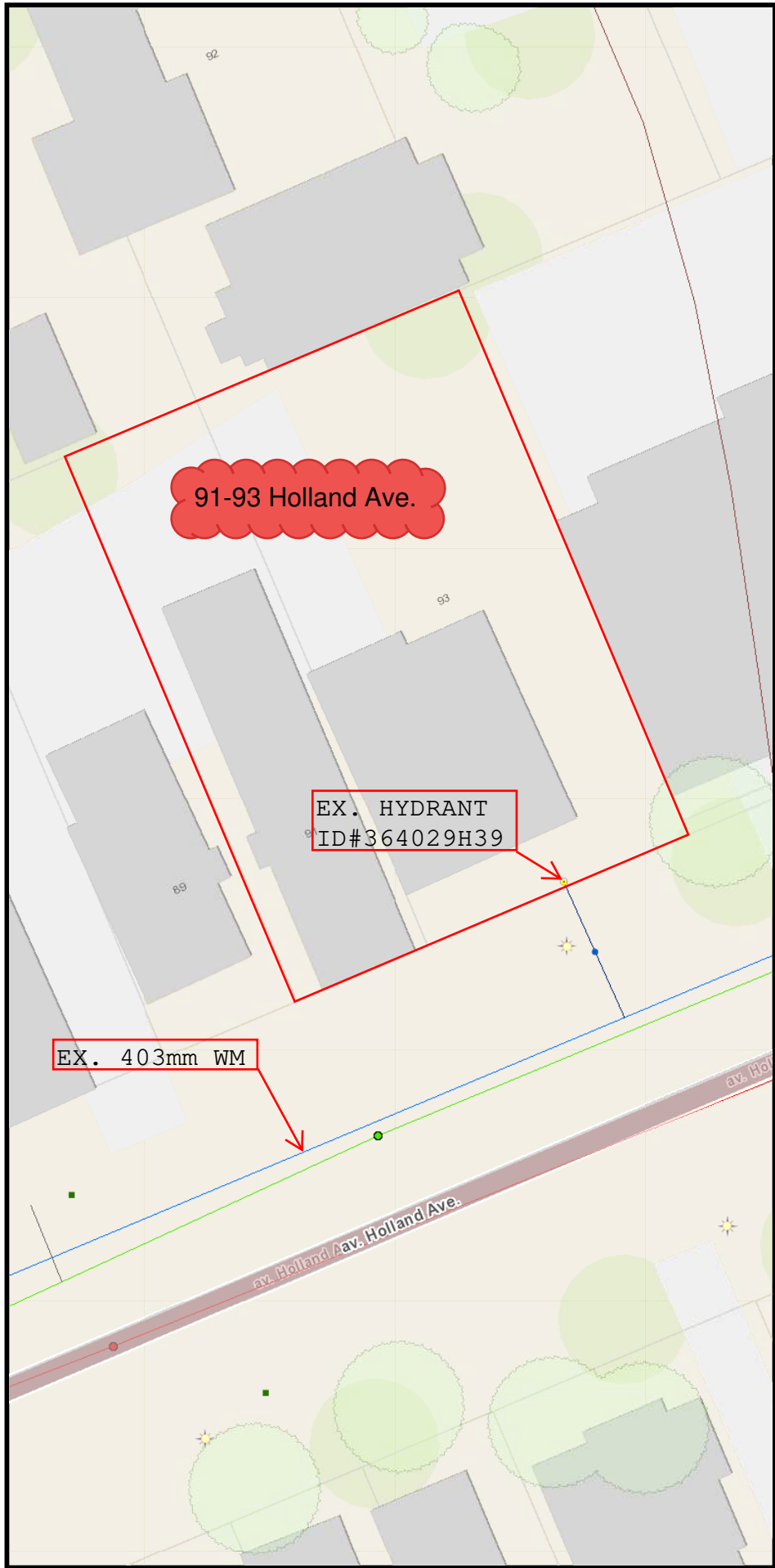
$$F = 7,905 \text{ L/min}$$

$$F \sim 8,000 \text{ L/min}$$

$$F \sim 133 \text{ L/s}$$

Conclusion:

The conservative FUS fire flow requirement for this building (based on our assumptions noted above) is **133 L/s**.



91-93 Holland Ave.

EX. HYDRANT
ID#364029H39

EX. 403mm WM

av. Holland Ave. Holland Ave.

RE: 91-93 Holland Ave - Boundary Conditions

Bakhit, Reza <reza.bakhit@ottawa.ca>

Wed 2021-09-22 8:40 AM

To: Guy Ste-Croix <stecroix@ainleygroup.com>

Good morning Guy,

Since the updated demand is lower, the previous BC is still valid.

Regards,

Reza Bakhit, P.Eng, C.E.T

Project Manager

Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique

Development Review - Central Branch

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1

613.580.2400 ext./poste 19346, reza.bakhit@ottawa.ca

Please note: Given the current pandemic, I will be working from home until further notice; reaching me by email is the easiest. I will be checking my voicemail, just not as frequently as I normally would be.

From: Guy Ste-Croix <stecroix@ainleygroup.com>

Sent: Friday, September 17, 2021 12:04 PM

To: Bakhit, Reza <reza.bakhit@ottawa.ca>

Subject: Re: 91-93 Holland Ave - Boundary Conditions

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Hi Reza,

We note that the water demands including fire flow requirements have changed slightly for this project (going from a proposed 9 storey building to 6 storey building). The revised information is as follows:

- Average Daily Demand = 0.24 L/s
- Max. Daily Demand = 1.73 L/s
- Peak Hour Demand = 2.60 L/s
- Fire Flow req'm = 133 L/s (see attached)
- Ex. fire hydrant location / ID (see attached)

I assume we need new boundary conditions?

Should you have any questions, please don't hesitate to contact me.

Regards,

Guy Ste-Croix, LEL, C.E.T., PMP

Branch Manager



Tel: (613) 822-1052 Ext. 225

Cell: (613) 858-8943

WWW.AINLEYGROUP.COM

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From: Bakhit, Reza <reza.bakhit@ottawa.ca>
Sent: April 1, 2021 7:40 AM
To: Guy Ste-Croix <stecroix@ainleygroup.com>
Subject: RE: 91-93 Holland Ave - Boundary Conditions

Hi Guy,

The following are boundary conditions, HGL, for hydraulic analysis at 91-93 Holland (zone 1W) assumed to be connected to the 406 mm on Holland Ave (see attached PDF for location).

Minimum HGL = 108.1 m

Maximum HGL = 114.5 m

Max Day + Fire Flow (150 L/s) = 109.7 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,

Reza Bakhit, P.Eng, C.E.T

Project Manager

Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique

Development Review - Central Branch

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613.580.2400 ext./poste 19346, reza.bakhit@ottawa.ca

Please note: Given the current pandemic, I will be working from home until further notice; reaching me by email is easiest. I will be checking my voicemail, just not as frequently as I normally would be.

From: Guy Ste-Croix <stecroix@ainleygroup.com>**Sent:** Thursday, March 25, 2021 8:04 AM**To:** Bakhit, Reza <reza.bakhit@ottawa.ca>**Subject:** 91-93 Holland Ave - Boundary Conditions

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Hi Reza,

At this time, we ask that the City provide boundary conditions for the 91-93 Holland Ave. project. The proposed development will be a 9 storey apartment building with 50 residential units. The 50 units will be divided into one-bedroom and two-bedroom apartments. Also currently proposed is one small commercial space of 62sq.m (i.e. which could become a residential unit). Therefore for this assessment, we have simply added it to residential unit count for a total of 51 units overall.

We provide the following information as requested:

- Average Daily Demand = 0.37 L/s
- Max. Daily Demand = 1.81 L/s
- Peak Hour Demand = 2.74 L/s
- Fire Flow req'm = 150.0 L/s (see attached)
- Ex. fire hydrant location / ID (see attached)

We note that the peaking factors used to calculate the anticipated residential maximum daily demand and maximum hourly daily demand (peak hour) is based on MOE Table 3.3 – Peaking Factors for Drinking-Water Systems Serving Fewer than 500 People.

Should you have any questions, please don't hesitate to call.

Regards,

Guy Ste-Croix, LEL, C.E.T., PMP
Branch Manager



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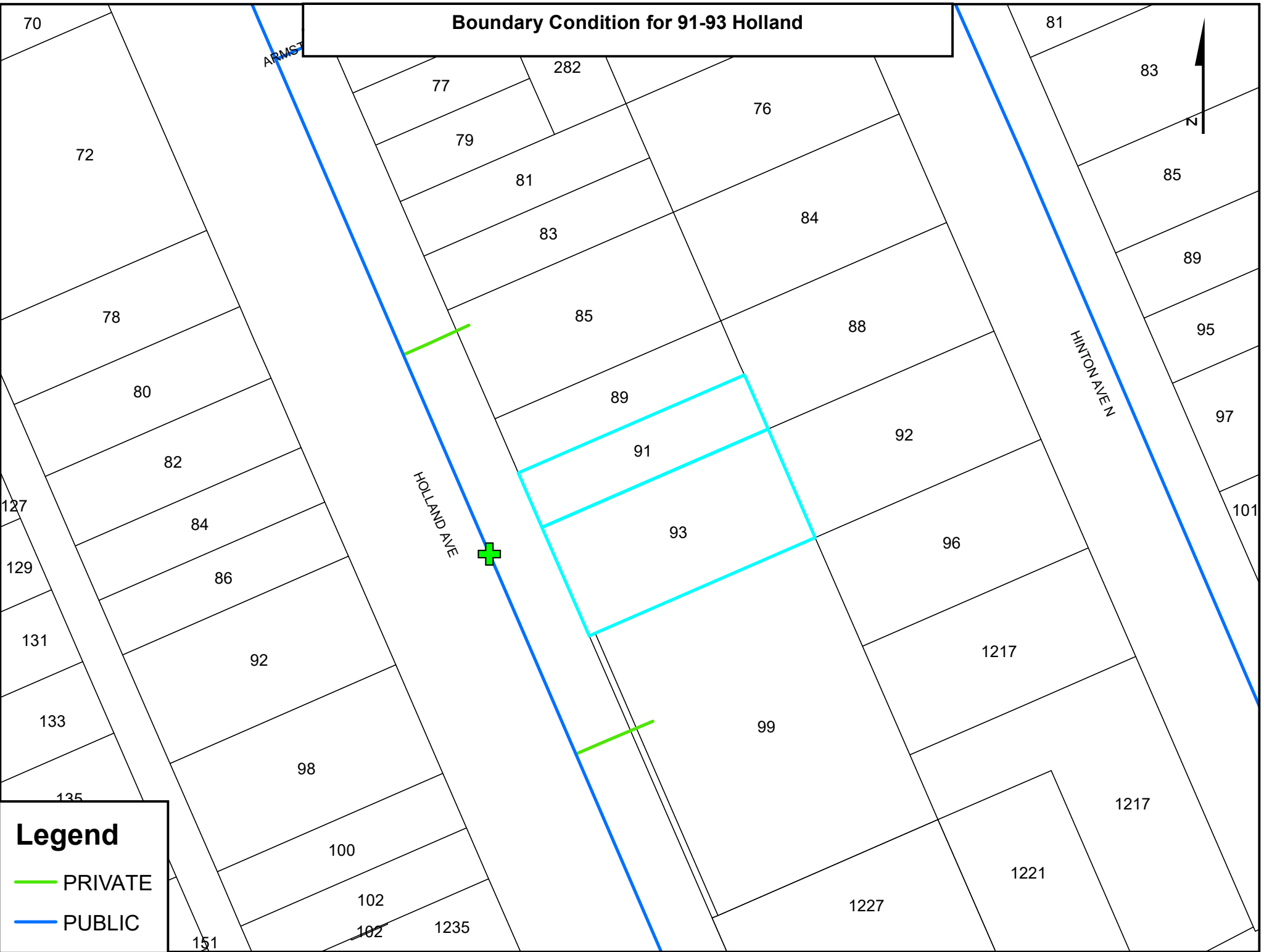
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,

Boundary Condition for 91-93 Holland



Legend

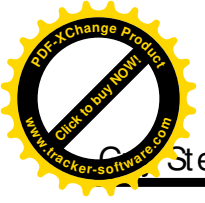
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APPENDIX C

Table 2 - Storage Requirements for A1 (BUILDING)						
Area		0.06	hectares			
Runoff Coefficient =		0.9	post development 100 year ave C		1	
Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Controlled Release	Net Runoff To Be Stored (L/s)	Storage Req'd m3
2 Year	10	76.81	11.61	5.0	6.6	4.0
	20	52.03	7.86	5.0	2.9	3.4
	30	40.04	6.05	5.0	1.1	1.9
	40	32.86	4.97	5.0	0.0	-0.1
	50	28.04	4.24	5.0	-0.8	-2.3
5 Year	10	104.19	15.75	5.0	10.7	6.4
	20	70.25	10.62	5.0	5.6	6.7
	30	53.93	8.15	5.0	3.1	5.7
	40	44.18	6.68	5.0	1.7	4.0
	50	37.65	5.69	5.0	0.7	2.1
100 Year	10	178.56	29.98	5.0	25.0	15.0
	20	119.95	20.14	5.0	15.1	18.2
	30	91.87	15.43	5.0	10.4	18.8
	40	75.15	12.62	5.0	7.6	18.3
	50	63.95	10.74	5.0	5.7	17.2

Table 3 - Storage Requirements for A2 (FREE FLOW)						
Area		0.00	hectares			
Runoff Coefficient =		0.90	post development 100 year ave C		1	
Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Controlled Release	Net Runoff To Be Stored (L/s)	Storage Req'd m3
2 Year	10	76.81	0.67	0.7	0.0	0.0
	20	52.03	0.46	0.7	-0.2	-0.3
	30	40.04	0.35	0.7	-0.3	-0.6
	40	32.86	0.29	0.7	-0.4	-0.9
	50	28.04	0.25	0.7	-0.4	-1.3
5 Year	10	104.19	0.91	0.9	0.0	0.0
	20	70.25	0.62	0.9	-0.3	-0.4
	30	53.93	0.47	0.9	-0.4	-0.8
	40	44.18	0.39	0.9	-0.5	-1.3
	50	37.65	0.33	0.9	-0.6	-1.7
100 Year	10	178.56	1.74	1.7	0.0	0.0
	20	119.95	1.17	1.7	-0.6	-0.7
	30	91.87	0.89	1.7	-0.8	-1.5
	40	75.15	0.73	1.7	-1.0	-2.4
	50	63.95	0.62	1.7	-1.1	-3.4

Table 4 - Storage Requirements for A3 (FREE FLOW)						
Area		0.01	hectares			
Runoff Coefficient =		0.60	post development		100 year ave C	0.75
Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Controlled Release	Net Runoff To Be Stored (L/s)	Storage Req'd m3
2 Year	10	76.81	0.96	1.0	0.0	0.0
	20	52.03	0.65	1.0	-0.3	-0.4
	30	40.04	0.50	1.0	-0.5	-0.8
	40	32.86	0.41	1.0	-0.5	-1.3
	50	28.04	0.35	1.0	-0.6	-1.8
5 Year	10	104.19	1.31	1.3	0.0	0.0
	20	70.25	0.88	1.3	-0.4	-0.5
	30	53.93	0.68	1.3	-0.6	-1.1
	40	44.18	0.55	1.3	-0.8	-1.8
	50	37.65	0.47	1.3	-0.8	-2.5
100 Year	10	178.56	2.80	2.8	0.0	0.0
	20	119.95	1.88	2.8	-0.9	-1.1
	30	91.87	1.44	2.8	-1.4	-2.4
	40	75.15	1.18	2.8	-1.6	-3.9
	50	63.95	1.00	2.8	-1.8	-5.4



Ste-Croix

From: Eric Lalande <eric.lalande@rvca.ca>
Sent: April 8, 2021 10:55 AM
To: Guy Ste-Croix
Subject: RE: Nine-Storey Residential on Holland / 91-93 Holland Ave.

Hi Guy,

The RVCA will not require water quality control based on the proposed site plan, best management practices are encouraged where possible.

Thanks,

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

From: Evelyn Liu <evelyn.liu@rvca.ca>
Sent: Thursday, March 25, 2021 9:37 AM
To: Eric Lalande <eric.lalande@rvca.ca>
Subject: Fw: Nine-Storey Residential on Holland / 91-93 Holland Ave.

2nd one , thanks

morning Eric

Thought the site if under your site scope? Can you please response , with anything may be required for the application? thanks

From: Guy Ste-Croix <stecroix@ainleygroup.com>
Sent: Thursday, March 25, 2021 9:26 AM
To: Evelyn Liu <evelyn.liu@rvca.ca>
Subject: Nine-Storey Residential on Holland / 91-93 Holland Ave.

Hi Evelyn,

Similarly to the other email I sent you, we are also working on a proposed development (i.e. 9 storey residential building) at 91-93 Holland Avenue in Ottawa. The building will take up most of the property. No outside parking lots are proposed. The ramp going down to the underground parking lot is located at the front of the building, so no lane way is required. We attach the building plans (i.e. including proposed site plan) for your reference. The site will be controlled to the 2-year pre-development level. That being said, with regards to water quality control, the City of Ottawa has requested: *"Please contact 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."*

Any assistance you can provide in this regard is greatly appreciated. Please feel free to forward my email on to whomever is responsible for this... if not yourself.

Regards,



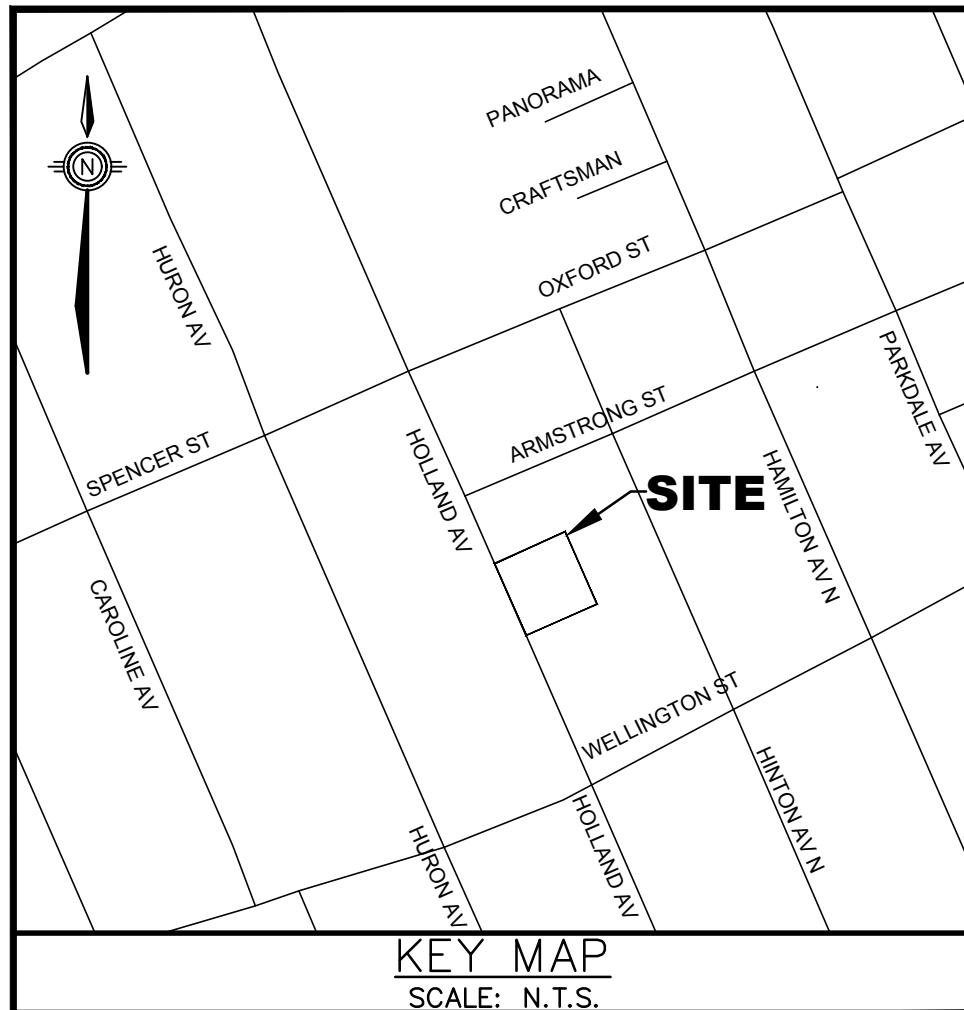
Guy Ste-Croix, LEL, C.E.T., PMP
Branch Manager



Ainley Graham & Associates Limited
2724 Fenton Road
Ottawa, Ontario, K1T 3T7
Tel: (613) 822-1052 ext. 225
Fax: (613) 822-1573
Cell: (613) 858-8943
stecroix@ainleygroup.com

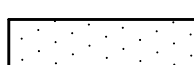

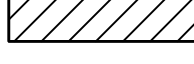
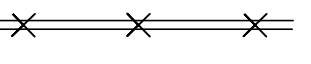


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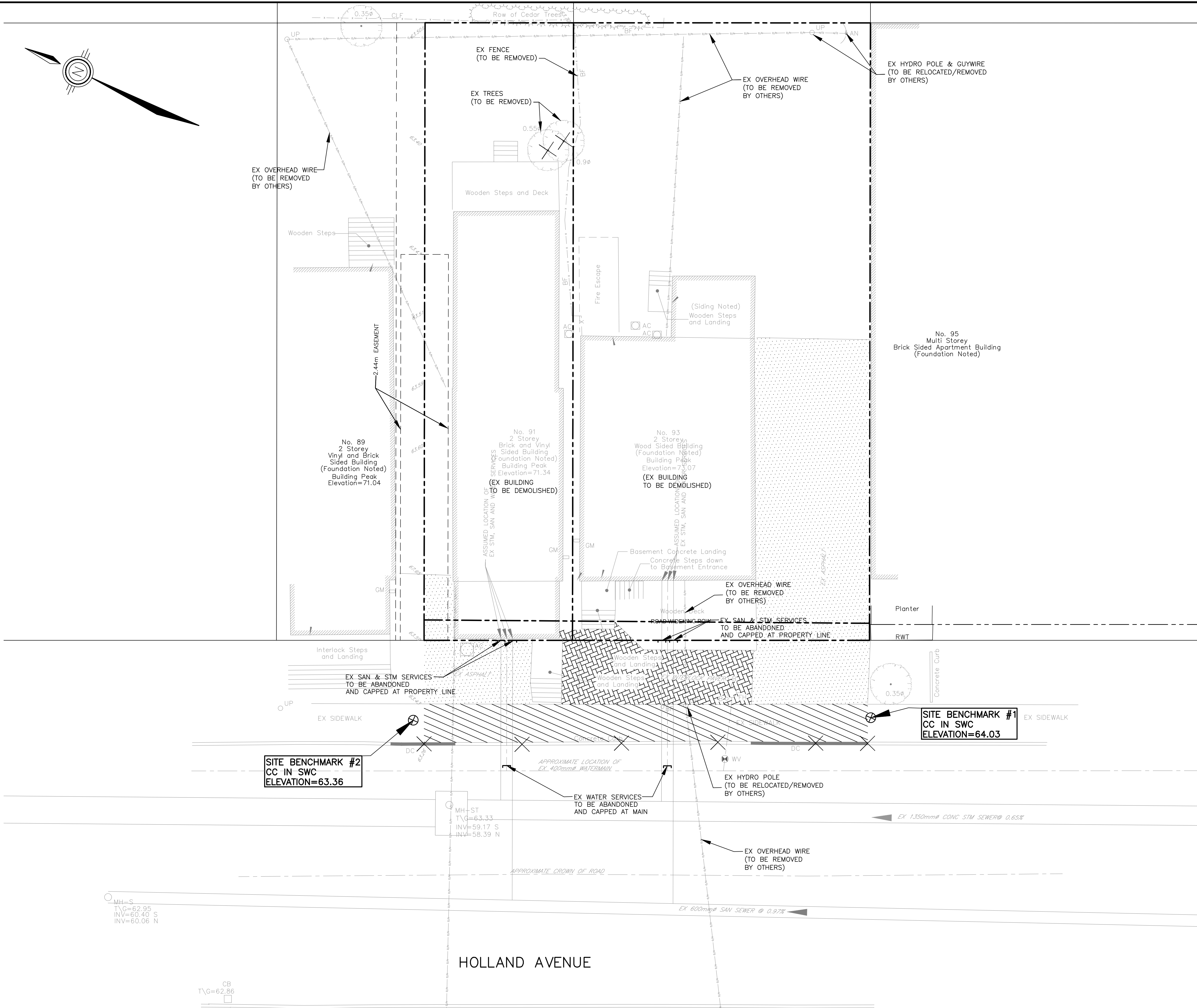
APPENDIX D



KEY MAP
SCALE: N.T.S.

REMOVALS

-  ASPHALT REMOVAL (ROAD, DRIVEWAYS, PARKING AREAS)
-  INTERLOCK PAVER REMOVAL
-  CONCRETE SIDEWALK REMOVAL
-  REMOVE EXISTING CONCRETE CURB
-  REMOVE EXISTING TREE
-  CAP



Sep 23, 2021 1: \DRAWINGS\21007-1 91-93 Holland Ave\Design\001-21007-REM1.dwg

CONTRACT DRAWINGS:
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Professional Engineers
Ontario
SEPT 24, 2021
Limited Licensee
Name: J.W.XU
Number: 100171806
Category: CIVIL see limitation
This license is subject to the limitations as detailed on the certificate.
Association of Professional Engineers of Ontario

SCALE: 1 : 100
DESIGN: JX
DRAWN: MH
CHECKED: GSC/JX
DATE: MARCH 2021

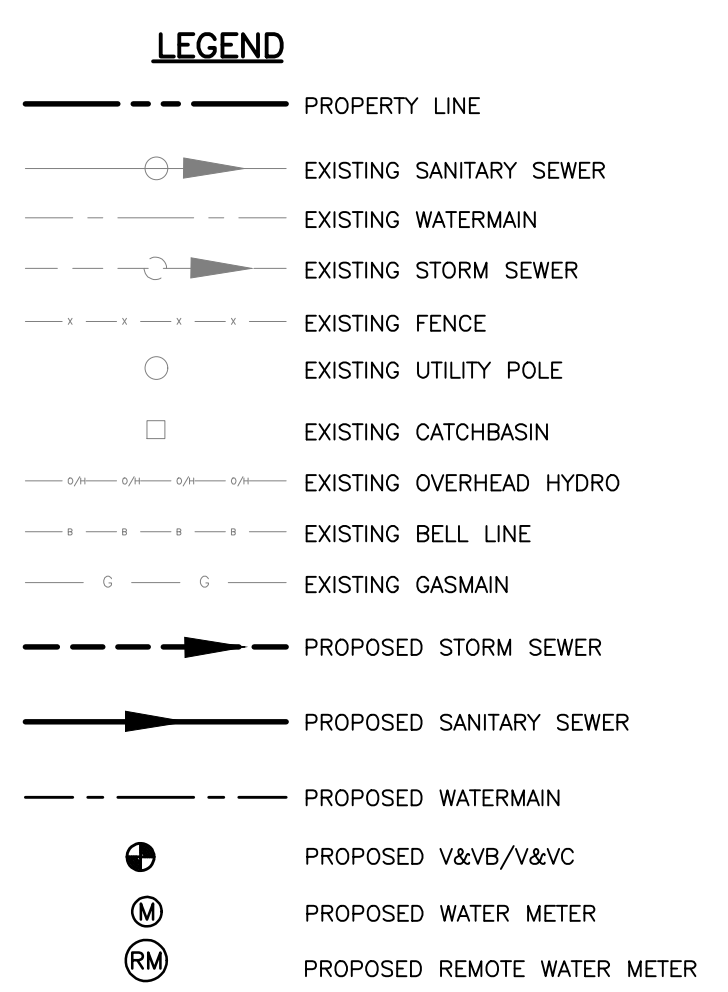
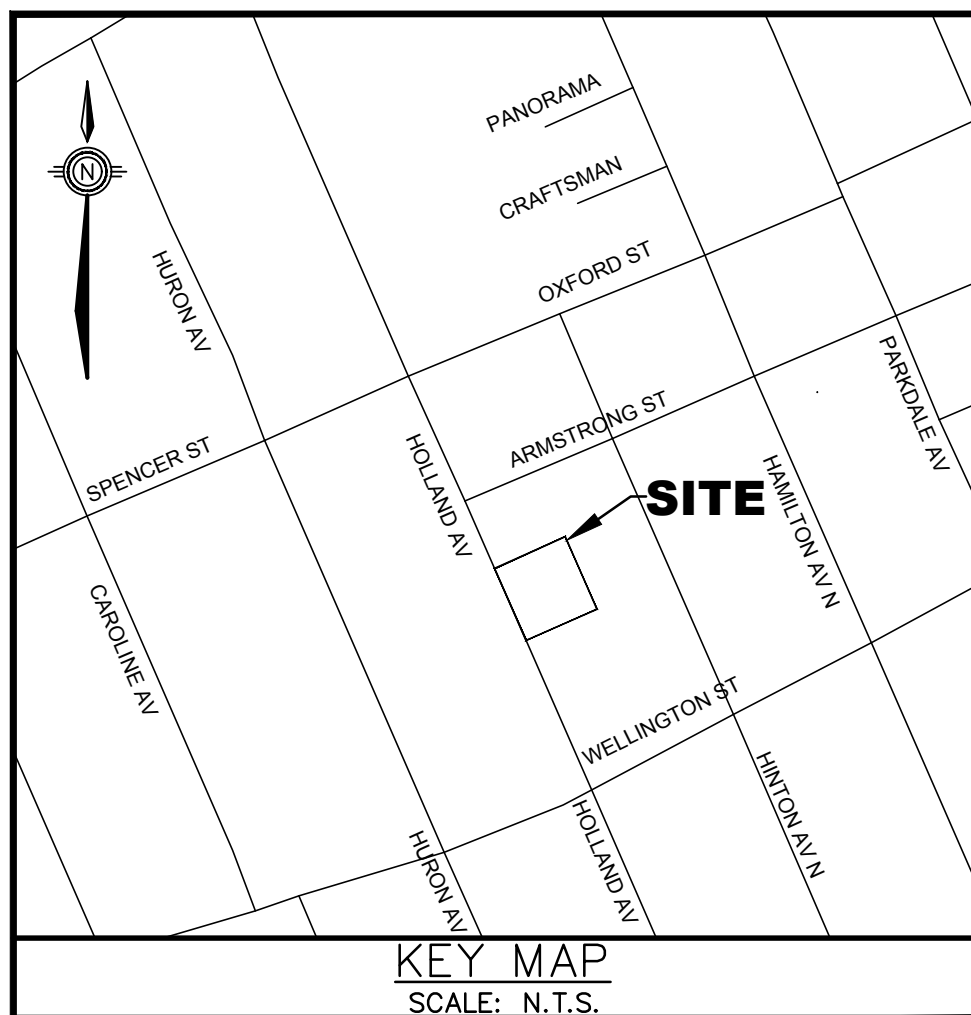
NINE-STORY RESIDENTIAL BUILDING
91-93 HOLLAND AVENUE
CITY OF OTTAWA

EXISTING CONDITIONS/REMOVALS PLAN



Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. 21007 001-21007-REM1



NOTES: GENERAL

- CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT FOR CONSTRUCTION
- ALL ELEVATIONS / DIMENSIONS ARE IN METRIC UNITS.
- JOB BENCH MARK - CONFIRM WITH LEGAL SURVEYOR PRIOR TO UTILIZATION.
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- REFER TO ARCHITECT'S SITE PLAN FOR BUILDING DIMENSIONS AND SITE LAYOUT. DIMENSIONS AND LAYOUT INFORMATION SHALL BE CONFIRMED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- CONTRACTOR IS RESPONSIBLE FOR ALL DEWATERING, SUPPORT AND PROTECTION OF EXCAVATIONS.
- REFER TO LANDSCAPE ARCHITECT'S PLAN FOR SIDEWALK, PATHWAYS, CONCRETE MEDIAN, WALLS, FENCES, GATES, PLANTING AND OTHER LANDSCAPE FEATURE MATERIALS AND LOCATIONS.
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- DESIGN ELEVATIONS AS GIVEN ON THIS PLAN ARE TO BE ADHERED TO WITH NO CHANGES WITHOUT PRIOR WRITTEN APPROVAL BY THE ENGINEER.
- U/G CONTRACTOR TO INSTALL AND MAINTAIN A FILTER CLOTH "CATCH" ACROSS ALL MH/CB LIDS TO PREVENT SEDIMENTS AND GRANULARS FROM ENTERING STRUCTURES UNTIL SOD AND PAVING IS COMPLETE. ANY SEDIMENTS/GANULARS ENTERING STRUCTURES AND SEWERS SHALL BE IMMEDIATELY REMOVED.
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- THE CONTRACTOR SHALL VERIFY ALL SURFACE AND SUBSURFACE CONDITIONS PRIOR TO COMMENCING CONSTRUCTION BY REVIEWING THE GEOTECHNICAL INVESTIGATION REPORT PREPARED BY XXXX XXXX, DATED XX XX, XXXX
- THE CONTRACTOR SHALL APPRAISE HIS/HER SELF OF ALL SURFACE AND SUBSURFACE CONDITIONS TO BE ENCOUNTERED AND SHALL CARRY OUT THEIR OWN TEST PITS AS REQUIRED TO MAKE THEIR OWN INDEPENDENT ASSESSMENT OF GROUND CONDITIONS. THE CONTRACTOR SHALL NOT MAKE ANY CLAIM FOR ANY EXTRA COST DUE TO ANY SUCH GROUND CONDITIONS VARYING FROM THOSE ANTICIPATED BY THE CONTRACTOR.
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- PRIOR TO PLACING GRANULAR FILL FOR THE ROADWAYS AND PARKING AREAS, THE EXPOSED SUBGRADE SHOULD BE HEAVILY ROLLED WITH A LARGE (10 TONNE) VIBRATORY STEEL DRUM ROLLER UNDER DRY CONDITIONS. ANY SOFT AREAS EVIDENT FROM THE PROOF ROLLING SHOULD BE SUBEXCAVATED AND REPLACED WITH SUITABLE, COMPACTED EARTH BORROW.
- THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND CONSTRUCTION OF ALL SEDIMENT AND EROSION CONTROL MEASURES TO ENSURE THAT SEDIMENT DOES NOT MIGRATE FROM THE CONSTRUCTION SITE. SEDIMENTS SHALL BE CONTAINED AND DISPOSED OF IN A MANNER CONSISTENT WITH THE CITY OF OTTAWA SPECIFICATIONS. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES. THIS INCLUDES LIMITING THE AMOUNT OF EXPOSED SOIL USING FILTER CLOTH UNDER THE GRATES OF CATCHBASINS AND MANHOLES AND INSTALLING SILT FENCES (PER OPSD 219.110) AND OTHER EFFECTIVE SEDIMENT TRAPS.
- THE CONTRACTOR IS TO PROVIDE 'AS-CONSTRUCTED' INFORMATION (i.e. ASPHALT GRADES, TOP OF CURB GRADES, WATERMAIN OVERSITS, SEWER INVERTS, ETC.) TO THE ENGINEER AND/OR CLIENT.
- ASPHALTIC CONCRETE SHALL NOT BE PLACED UNTIL FINAL CCTV INSPECTION OF THE SEWERS IN ACCORDANCE WITH OPSS 409 HAVE BEEN COMPLETED AND TO THE ENGINEER AND/OR CLIENT.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL RE-CCTV RESULTING FROM DEFICIENCY REPAIRS AS DEEMED NECESSARY BY THE ENGINEER. CCTV INSPECTIONS WILL BE CONDUCTED UNTIL SUCH TIME AS THE RESULTS HAVE BEEN APPROVED BY THE ENGINEER AND/OR CITY OF OTTAWA AT NO ADDITIONAL COST TO THE CLIENT.
- A MUD MAT IS TO BE INSTALLED AT EACH CONSTRUCTION ENTRANCE AND SHALL BE MAINTAINED UNTIL THE PLACEMENT OF THE GRANULAR SUB-BASE. MUD MAT SHALL BE CONSTRUCTED OF 100mm CLEAR STONE, 400mm THICK. MUD MAT SHALL BE OF SUFFICIENT LENGTH TO ENSURE THAT A MINIMUM AMOUNT OF MATERIALS IS TRUCKED OFF SITE ONTO ADJACENT ROADS.

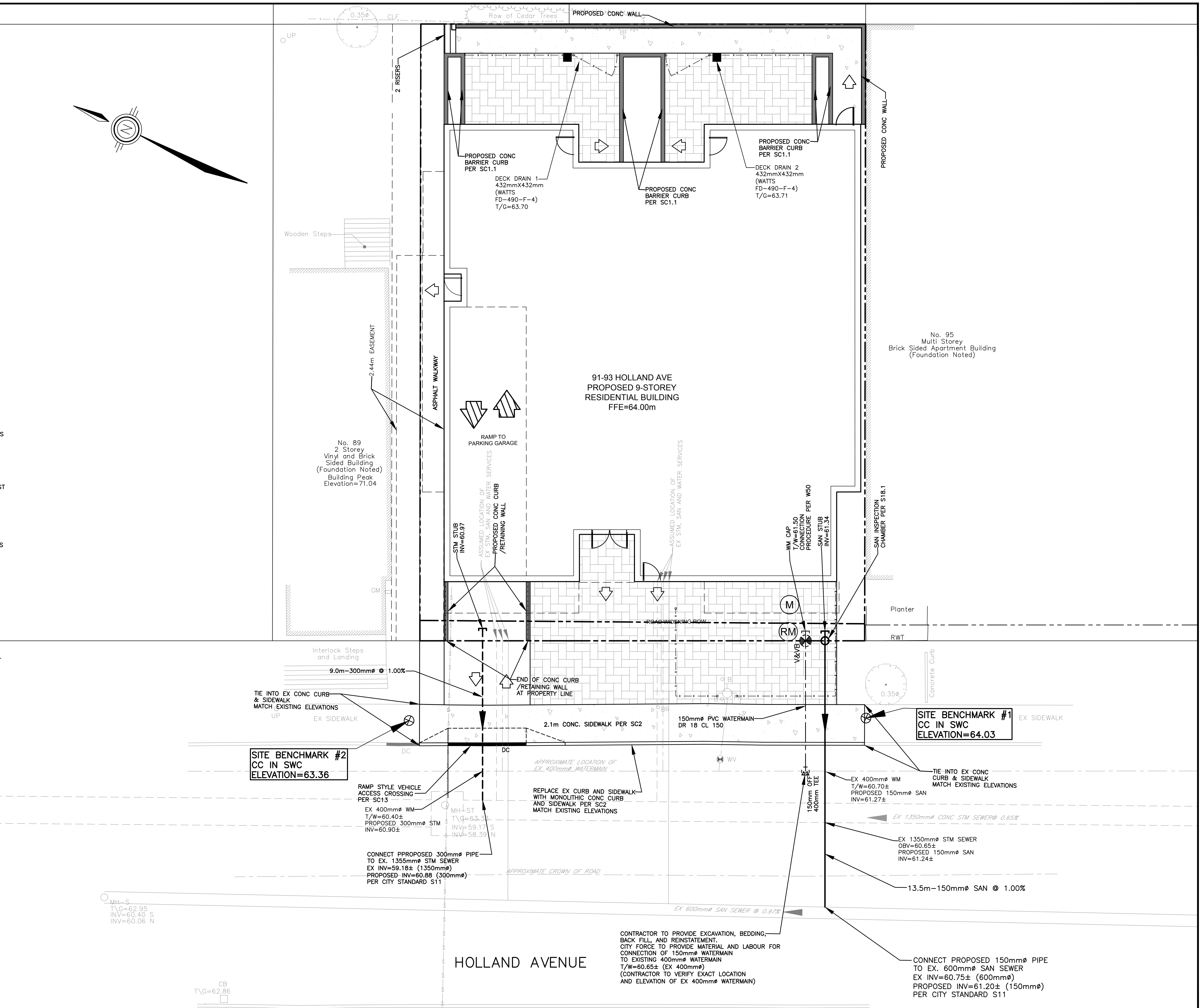
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NOTES: SEWER

- ALL SANITARY SERVICES ARE TO BE THE SIZES INDICATED AND THE MATERIAL SHALL BE PVC SDR 35.
- ALL STORM SEWERS 375mm OR SMALLER SHALL BE PVC SDR 35. STORM SEWERS LARGER THAN 375mm SHALL BE CONCRETE CLASS 6SD, UNLESS OTHERWISE NOTED.
- THE BEDDING FOR THE PROPOSED STORM AND SANITARY SEWERS AND WATERMAIN SHOULD CONSIST OF AT LEAST 150mm OF CRUSHED STONE MEETING OPSS REQUIREMENTS FOR GRANULAR 'A'. ALLOWANCE SHOULD BE MADE FOR A 150 TO 300 MILLIMETRE THICK SUBBEDDING LAYER OF OPSS GRANULAR 'B' TYPE II IF THE SUBGRADE SOIL BECOMES DISTURBED DURING EXCAVATION.
- COVER MATERIAL, FROM PIPE SPRING LINE TO AT LEAST 300mm ABOVE THE TOPS OF THE PIPES, SHOULD CONSIST OF OPSS GRANULAR 'A'. THE GRANULAR BEDDING AND COVER MATERIALS FOR THE SERVICE PIPES SHOULD BE COMPACTED IN MAXIMUM 150mm THICK LIFTS TO AT LEAST 95 PERCENT OF THE STANDARD PROCTOR DRY DENSITY VALUE.
- ALL WORK SHALL BE PERFORMED, AS APPLICABLE, IN ACCORDANCE WITH CITY OF OTTAWA STANDARD SPECIFICATIONS AND IN PARTICULAR WITH O.P.S.S. 407, AND 410.
- SUPPLY AND INSTALL ALL PIPING AND APPURTENANCES AS SHOWN TO WITHIN 1.0m OF BUILDING WALLS. PROVIDE TEMPORARY CAPS.
- DECK DRAINS TO BE 432mmX432mm (WATTS FD-490-F-4).
- THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS AND COORDINATION FOR ALL INSPECTION AND TESTING.
- THE FOUNDATION DRAIN IS TO BE CONNECTED TO THE STORM SEWER (IF APPLICABLE).
- FOUNDATION DRAIN BACKWATER VALVES OR BACKFLOW PREVENTION DEVICE SHALL BE INSTALLED PER CITY STANDARD S14.
- SANITARY BACKWATER VALVES SHALL BE INSTALLED ON ALL SANITARY SERVICE LATERALS PER CITY STANDARD S14.1.
- SANITARY INSPECTION CHAMBER SHALL BE INSTALLED ON SANITARY SERVICE LATERALS PER CITY STANDARD S18.1.

NOTES: WATERMAIN

- ALL WATERMAIN WORK AND MATERIAL SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS. NO WORK SHALL COMMENCE UNLESS A CITY WATER WORKS INSPECTOR IS ON SITE.
- INSTALLATION OF WATER METER AND REMOTE RECEPTACLE SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS (REFER TO MECHANICAL DRAWINGS).
- ALL WATERMAIN TO BE INSTALLED AT MINIMUM COVER OF 2.4m. IF COVER IS LESS THAN 2.4m, REFER TO CITY STANDARD W21 & W22.
- WATERMAIN BEDDING IS TO BE AS PER CITY STANDARD DETAIL W17.
- THRUST BLOCKS AND RESTRAINT AS PER CITY OF OTTAWA DWGS: W25.3 AND W25.4, W25.5 AND W25.6.
- WATERMAIN VALVE BOX AS PER CITY OF OTTAWA STANDARD W24.
- CATHODIC PROTECTION REQUIRED FOR ALL IRON FITTINGS PER CITY OF OTTAWA DWGS: W39, W40, W41
- UNLESS OTHERWISE NOTED WATER SERVICE LATERAL TO BUILDING & HYDRANT SHALL BE PVC DR 18 AT SIZES INDICATED.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS AND COORDINATION FOR ALL INSPECTION AND TESTING.
- CONTRACTOR TO VERIFY THE EXACT LOCATION OF THE EXISTING WATER SERVICES AND PROVIDE EXCAVATION, BEDDING, BACKFILL AND REINSTATEMENT. THE EX WATER SERVICES SHALL BE BLANKED AT CITY WATERMAIN BY CITY FORCES.



NO.	REVISIONS	DATE	INITIAL
4	ISSUED FOR SPA	SEPT 24/21	JX
3	REVISED PER NEW SITE PLAN	SEPT 20/21	JX
2	REVISED PER NEW SITE PLAN	APR 21/21	JX
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 Ontario
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Limited Licensee
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 Number: 100171806
 Category: CIVIL see limitation
 Limitations:
 This license is subject to the limitations as detailed on the certificate.
 Association of Professional Engineers of Ontario

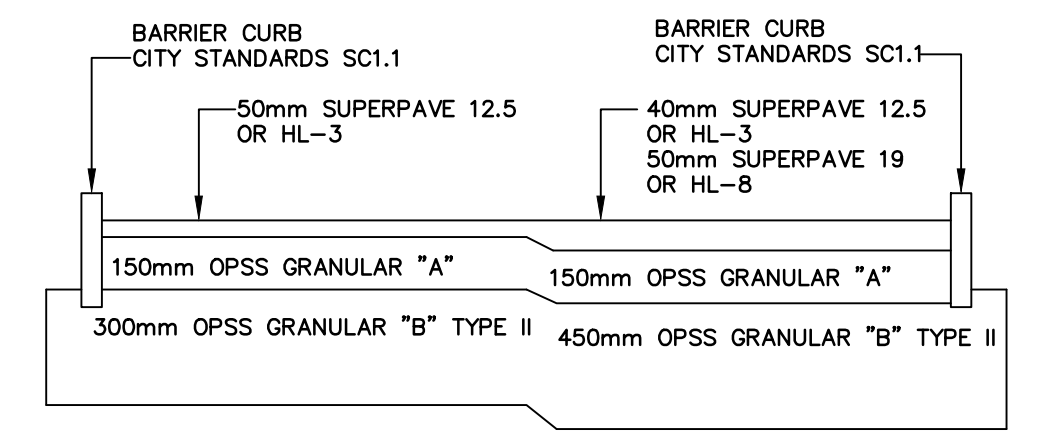
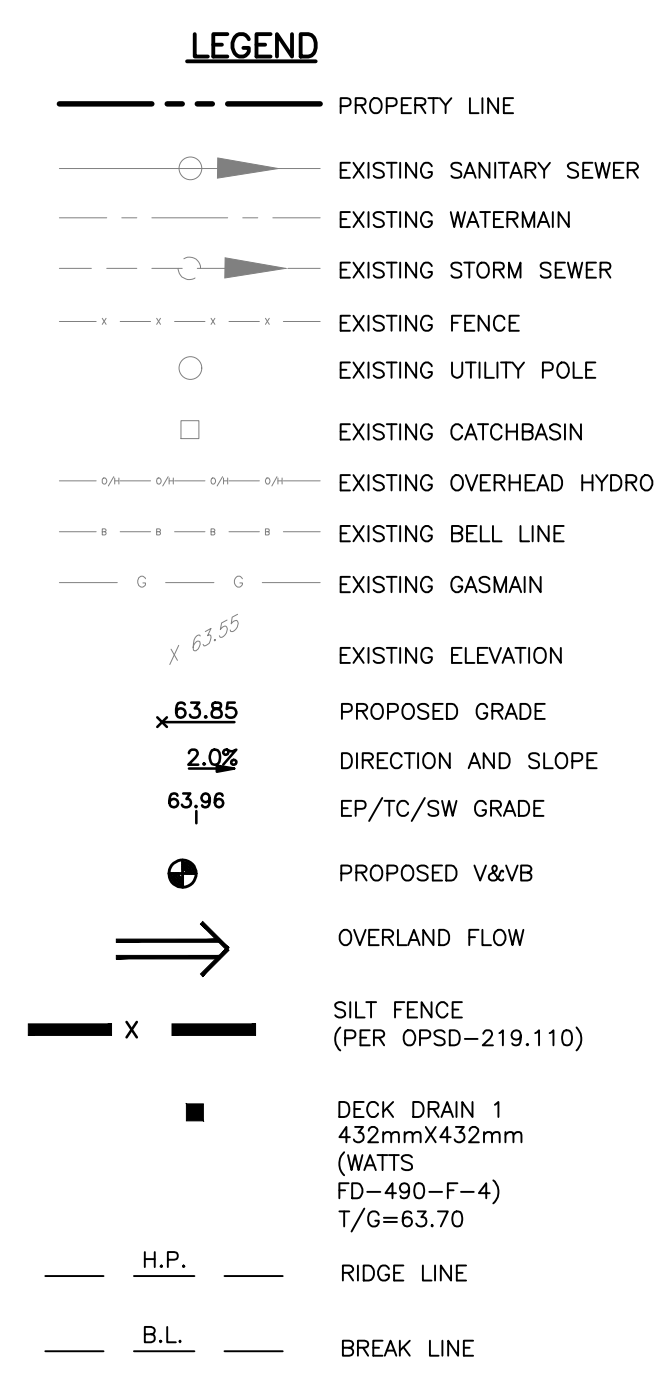
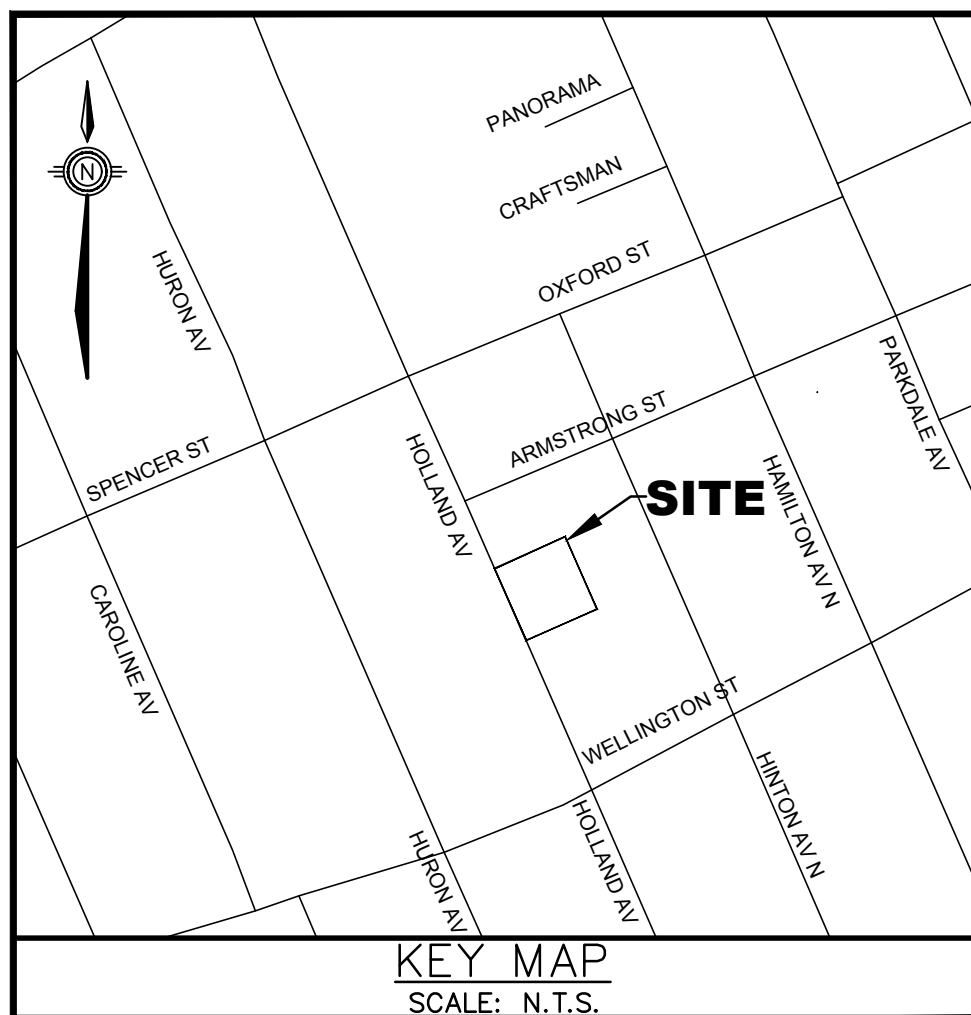
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 DESIGN: JX
 DRAWN: MH
 CHECKED: GSC/JX
 DATE: MARCH 2021

NINE-STORY RESIDENTIAL BUILDING
91-93 HOLLAND AVENUE
CITY OF OTTAWA

SITE SERVICING PLAN

CONTRACT No. 21007 **002-21007-S1**

Anley GROUP CONSULTING ENGINEERS PLANNERS

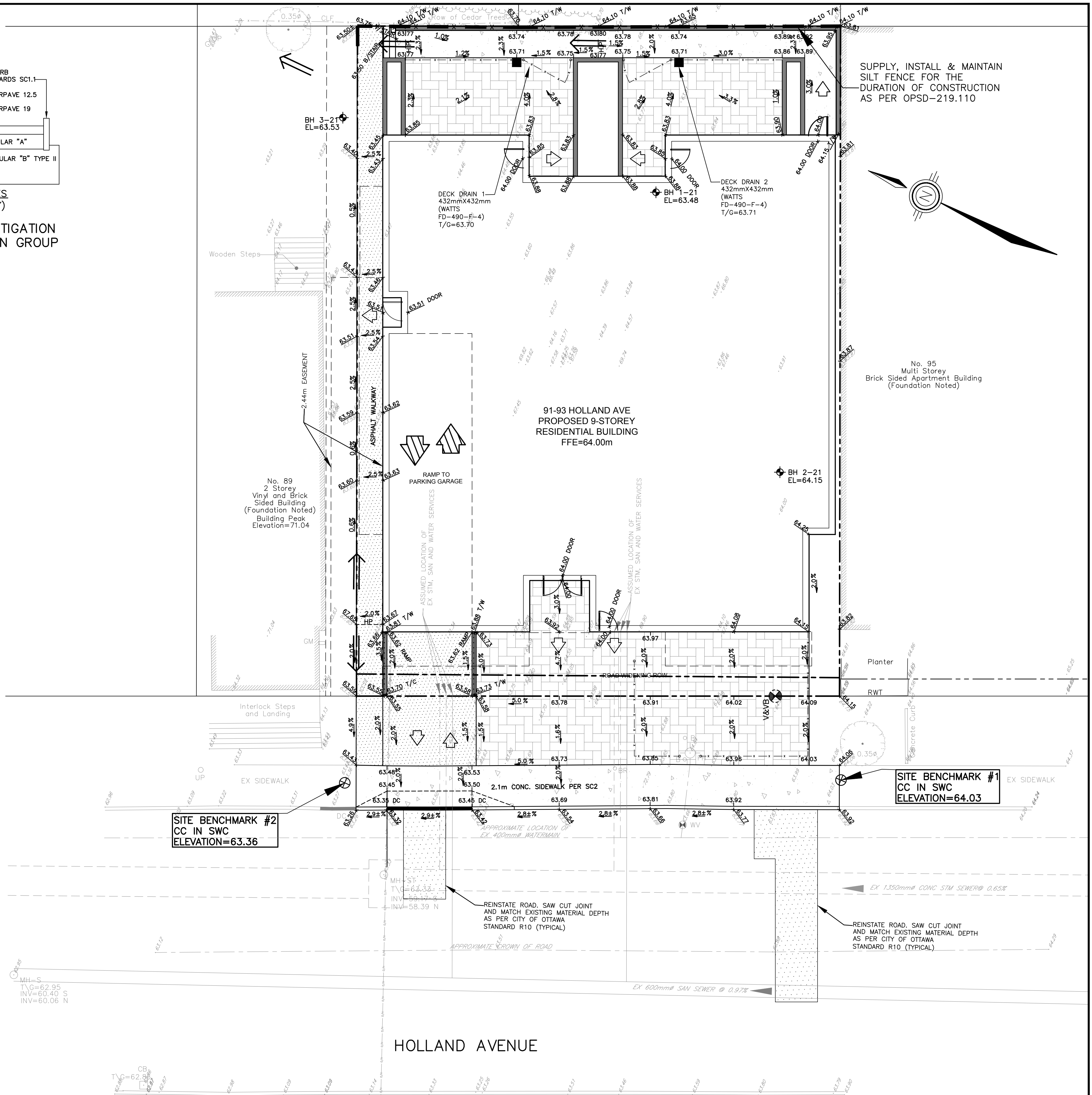


PARKING AREAS (LIGHT DUTY)
N.T.S.
ACCESS LANES (HEAVY DUTY)
N.T.S.
(REFER TO GEOTECHNICAL INVESTIGATION REPORT PREPARED BY PATERSON GROUP DATED APRIL 06, 2021)

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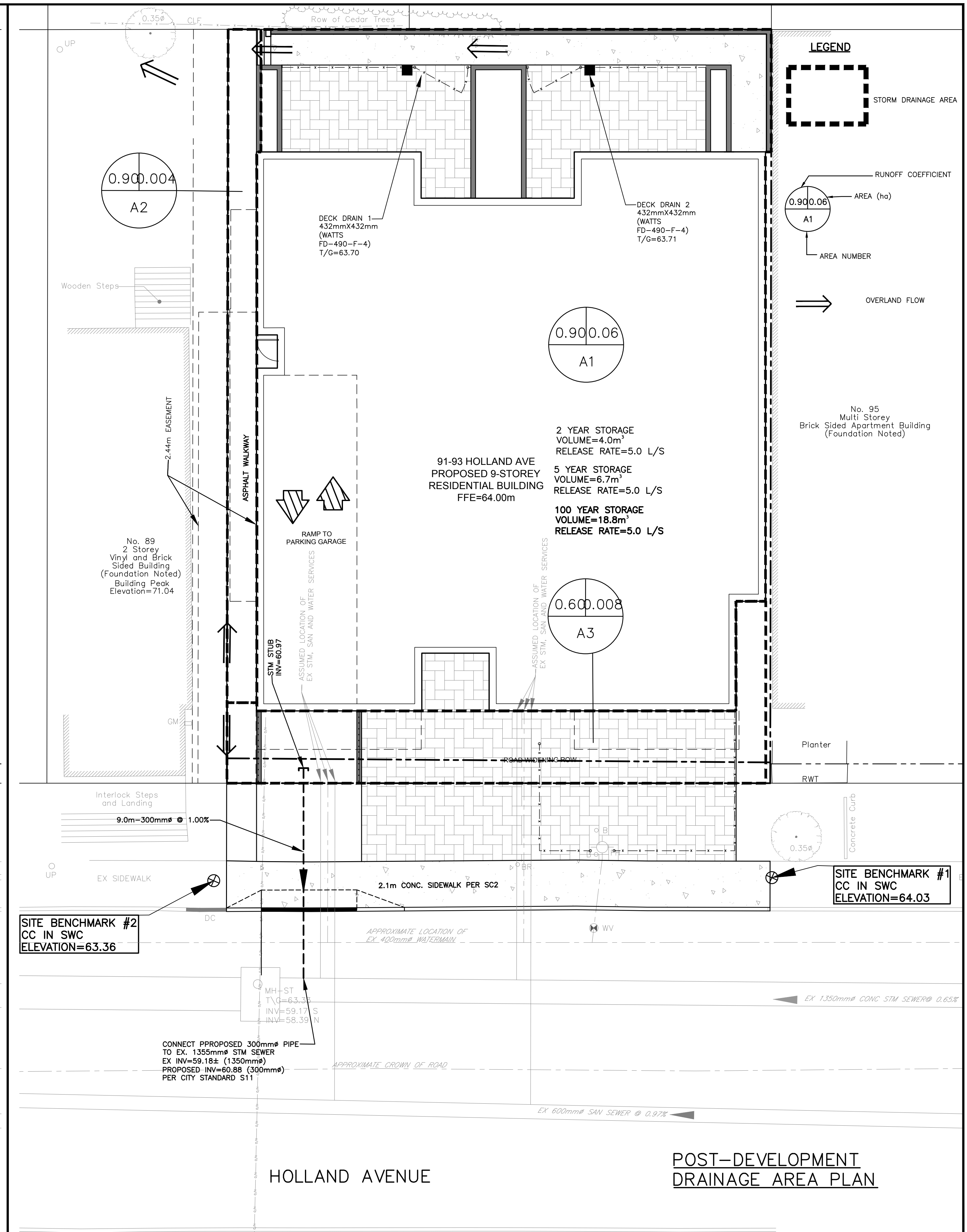
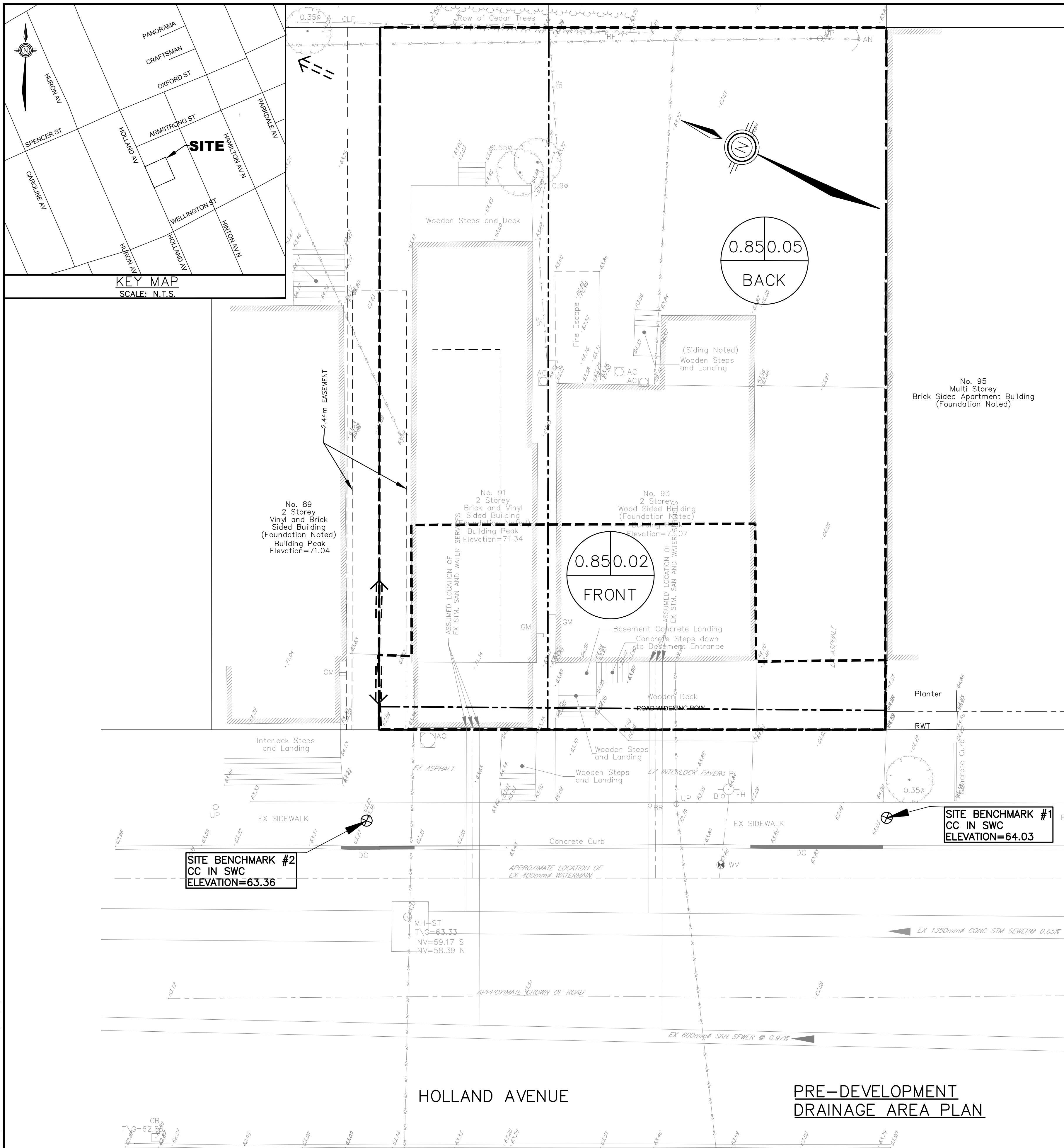
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Category: CIVIL see limitation
Limitations:
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Association of Professional Engineers of Ontario

SCALE: 1 : 100
DESIGN: JX
DRAWN: MH
CHECKED: GSC/JX
DATE: MARCH 2021
NINE-STOREY RESIDENTIAL BUILDING
91-93 HOLLAND AVENUE
CITY OF OTTAWA
GRADING AND DRAINAGE PLAN

CONSULTING ENGINEERS PLANNERS
CONTRACT No. 21007 003-21007-GR1



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NO.	REVISIONS	DATE	INITIAL
4	ISSUED FOR SPA	SEPT 24/21	JX
3	REVISED PER NEW SITE PLAN	SEPT 20/21	JX
2	REVISED PER NEW SITE PLAN	APR 21/21	JX
1	ISSUED FOR REVIEW/COORDINATION	APR 08/21	JX

Not Valid Unless Signed And Dated

Professional Engineers
Ontario
SEPT 24, 2021
Limited Licensee
Name: J.W.XU
Number: 100171806
Category: CIVIL see limitation
This license is subject to the limitations as detailed on the certificate.
Association of Professional Engineers of Ontario

SCALE: 1 : 100
DESIGN: JX
DRAWN: MH
CHECKED: GSC/JX
DATE: MARCH 2021

NINE-STORY RESIDENTIAL BUILDING
91-93 HOLLAND AVENUE
CITY OF OTTAWA

PRE-DEVELOPMENT DRAINAGE AREA PLAN
POST-DEVELOPMENT DRAINAGE AREA PLAN

Ainley GROUP CONSULTING ENGINEERS PLANNERS

CONTRACT No. 21007 004-21007-STM1

Sep 23, 2021 1: D:\DRAWINGS\21007-1 91-93 Holland Ave\Design\004-21007-STM1.dwg